L-force catalogue

Automation systems
Drive solutions

Controls
Inverters
Motors
Gearboxes
Engineering Tools

Motors: MH three-phase AC motors

Gearboxes: GKS helical-bevel gearboxes

Lenze
As easy as that.

Contents of the L-force catalogue

Selected portfolio

Additional portfolio

Lenze makes many things easy for you.

With our motivated and committed approach, we work together with you to create the best possible solution and set your ideas in motion - whether you are looking to optimise an existing machine or develop a new one. We always strive to make things easy and seek perfection therein. This is anchored in our thinking, in our services and in every detail of our products. It's as easy as that!

1

Developing ideas

Are you looking to build the best machine possible and already have some initial ideas? Then get these down on paper together with us, starting with small innovative details and stretching all the way to completely new machines. Working together, we will develop an intelligent and sustainable concept that is perfectly aligned with your specific requirements.

2

Drafting concepts

We see welcome challenges in your machine tasks, supporting you with our comprehensive expertise and providing valuable impetus for your innovations. We take a holistic view of the individual motion and control functions here and draw up consistent, end-to-end drive and automation solutions for you - keeping everything as easy as possible and as extensive as necessary.

3

Implementing solutions

Our easy formula for satisfied customers is to establish an active partnership with fast decision-making processes and an individually tailored offer. We have been using this simple principle to meet the ever more specialised customer requirements in the field of mechanical engineering for many years.

4

Manufacturing machines

Functional diversity in perfect harmony: as one of the few full-range providers in the market, we can provide you with precisely those products that you actually need for any machine task – no more and no less. Our L-force product portfolio, a consistent platform for implementing drive and automation tasks, is invaluable in this regard.

5

Ensuring productivity

Productivity, reliability and new performance peaks on a daily basis – these are our key success factors for your machine. After delivery, we offer you cleverly devised service concepts to ensure continued safe operation. The primary focus here is on technical support, based on the excellent application expertise of our highly-skilled and knowledgeable after-sales team.

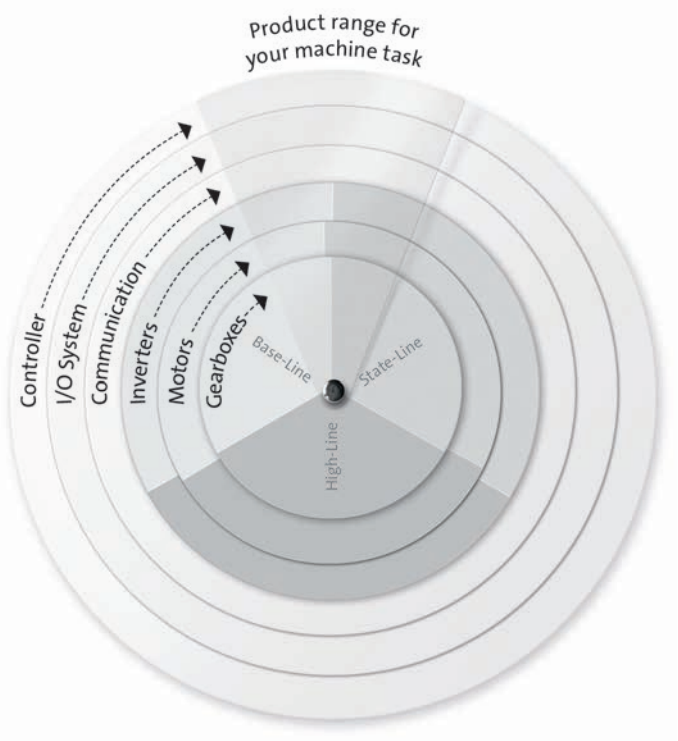
A matter of principle: the right products for every application.

Lenze's extensive L-force product portfolio follows a very simple principle. The functions of our finely scaled products are assigned to the three lines Base-Line, State-Line or High-Line.

But what does this mean for you? It allows you to quickly recognise which products represent the best solution for your own specific requirements.

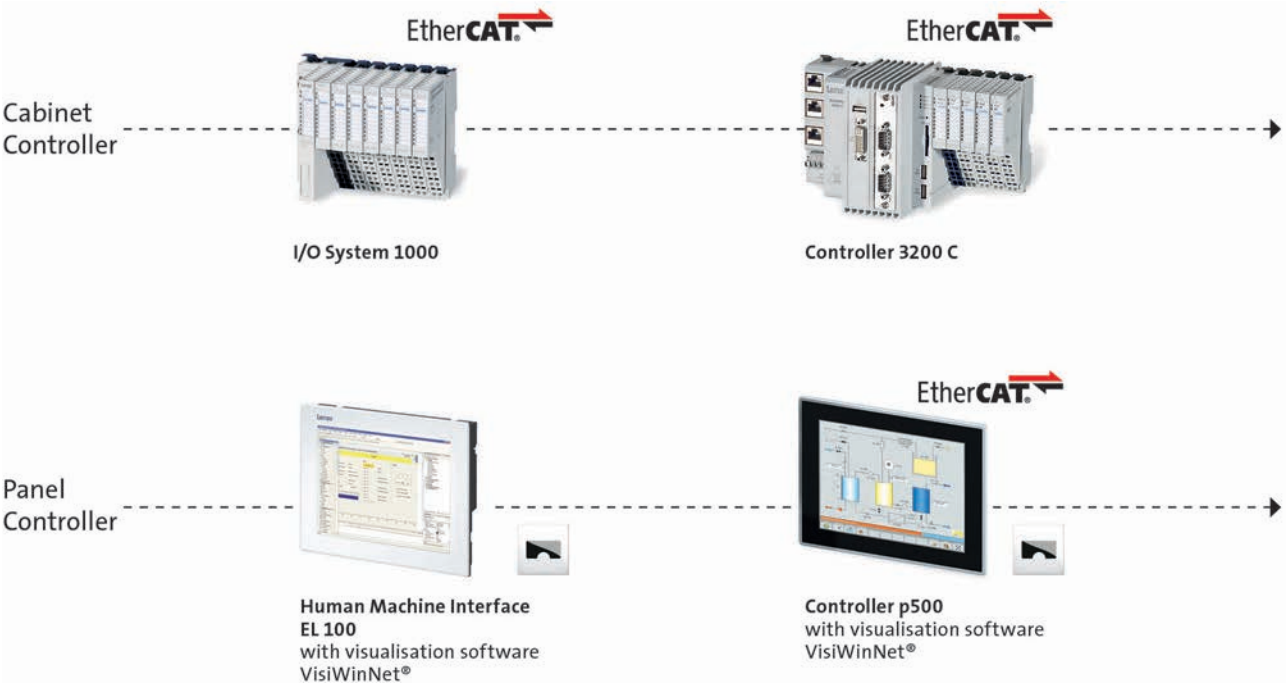
Powerful products with a major impact:
- Easy handling
- High quality and durability
- Reliable technologies in tune with the latest developments

Lenze products undergo the most stringent testing in our own laboratory. This allows us to ensure that you will receive consistently high quality and a long service life. In addition to this, five logistics centres ensure that the Lenze products you select are available for quick delivery anywhere across the globe. It's as easy as that!

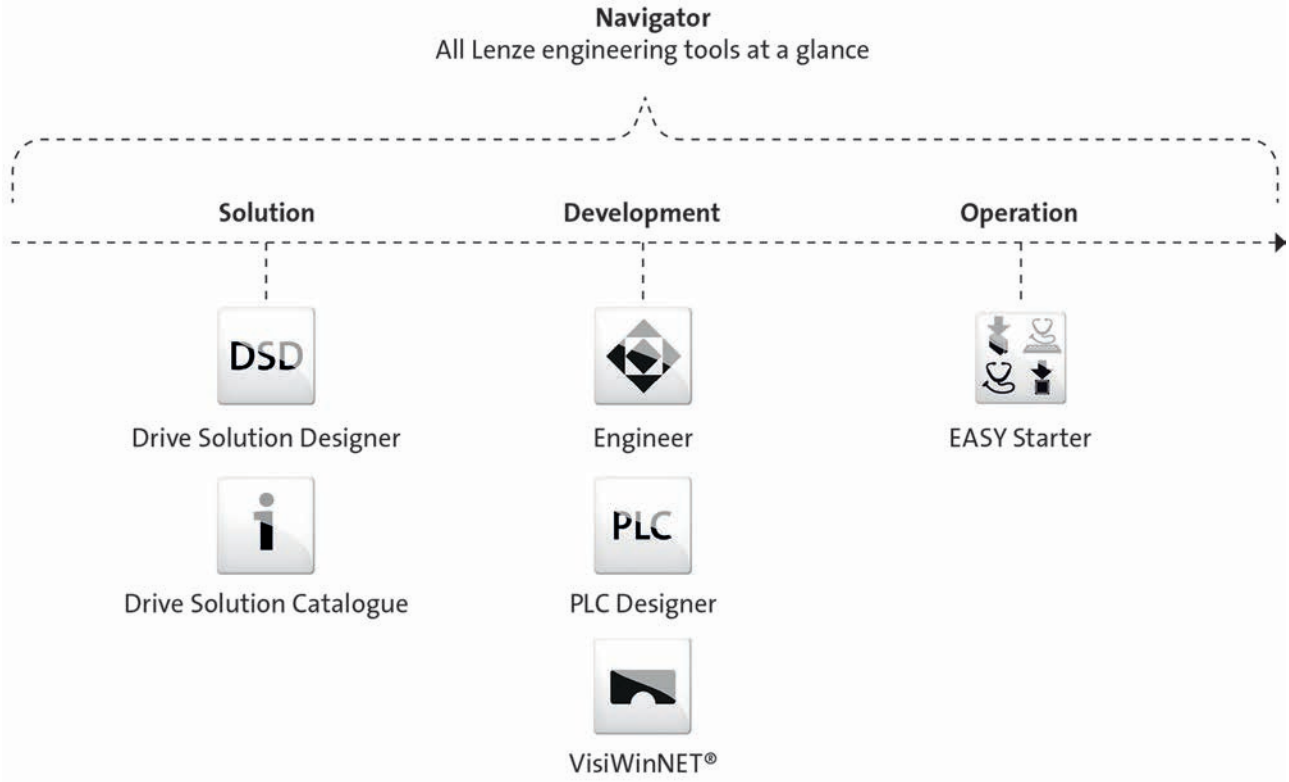


L-force product portfolio

Controls

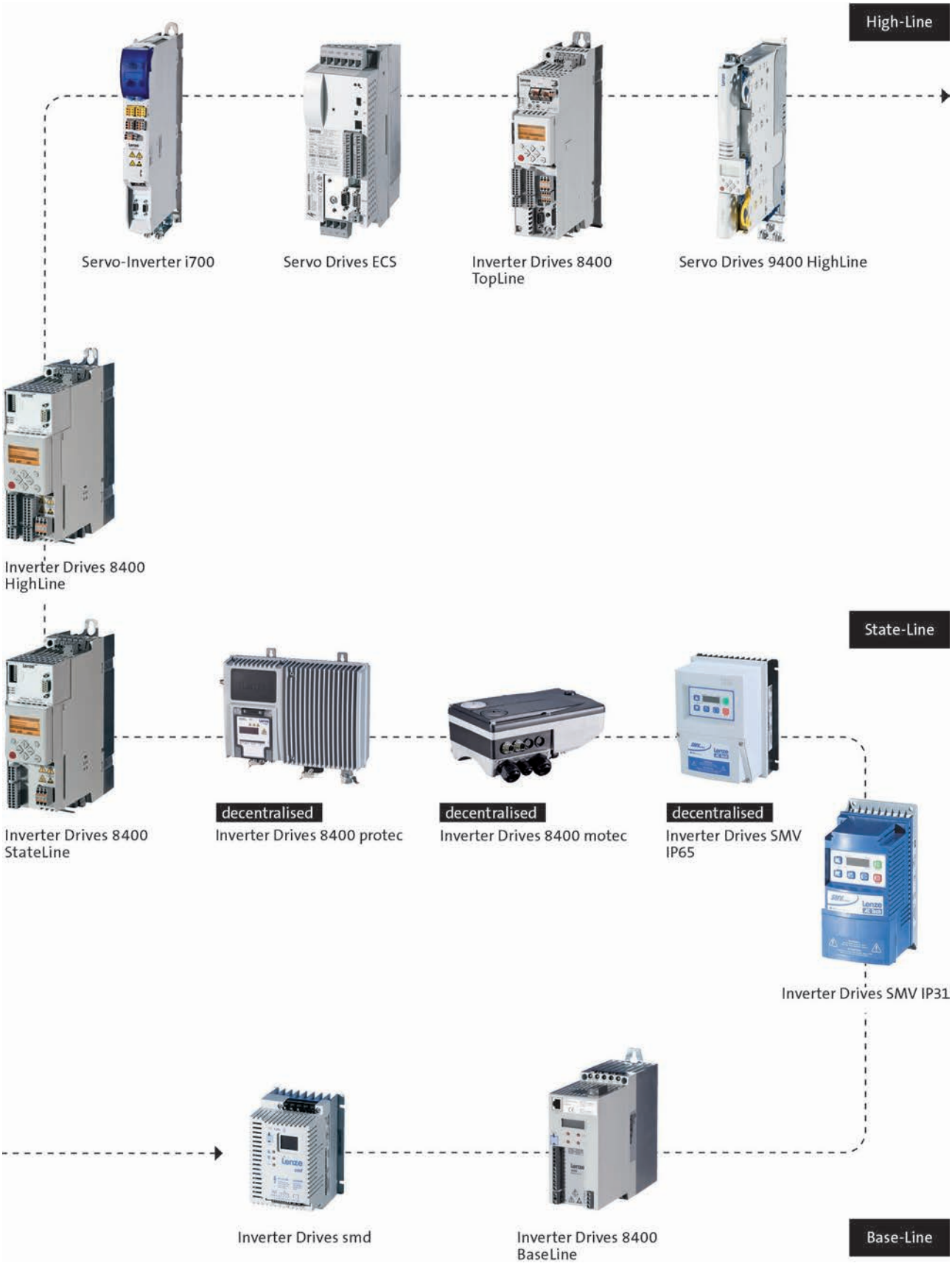


Engineering Tools



L-force product portfolio

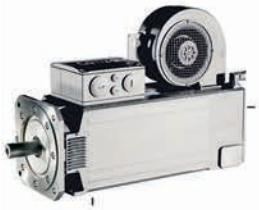
Inverters



L-force product portfolio

Motors

High-Line



MQA asynchronous servo motors

SDSGS synchronous servo motors

MDXKS synchronous servo motors

Synchronous servo motors MCS

Asynchronous servo motors MCA

Asynchronous servo motors SDSGA

State-Line

MF three-phase AC motors

MH three-phase AC motors

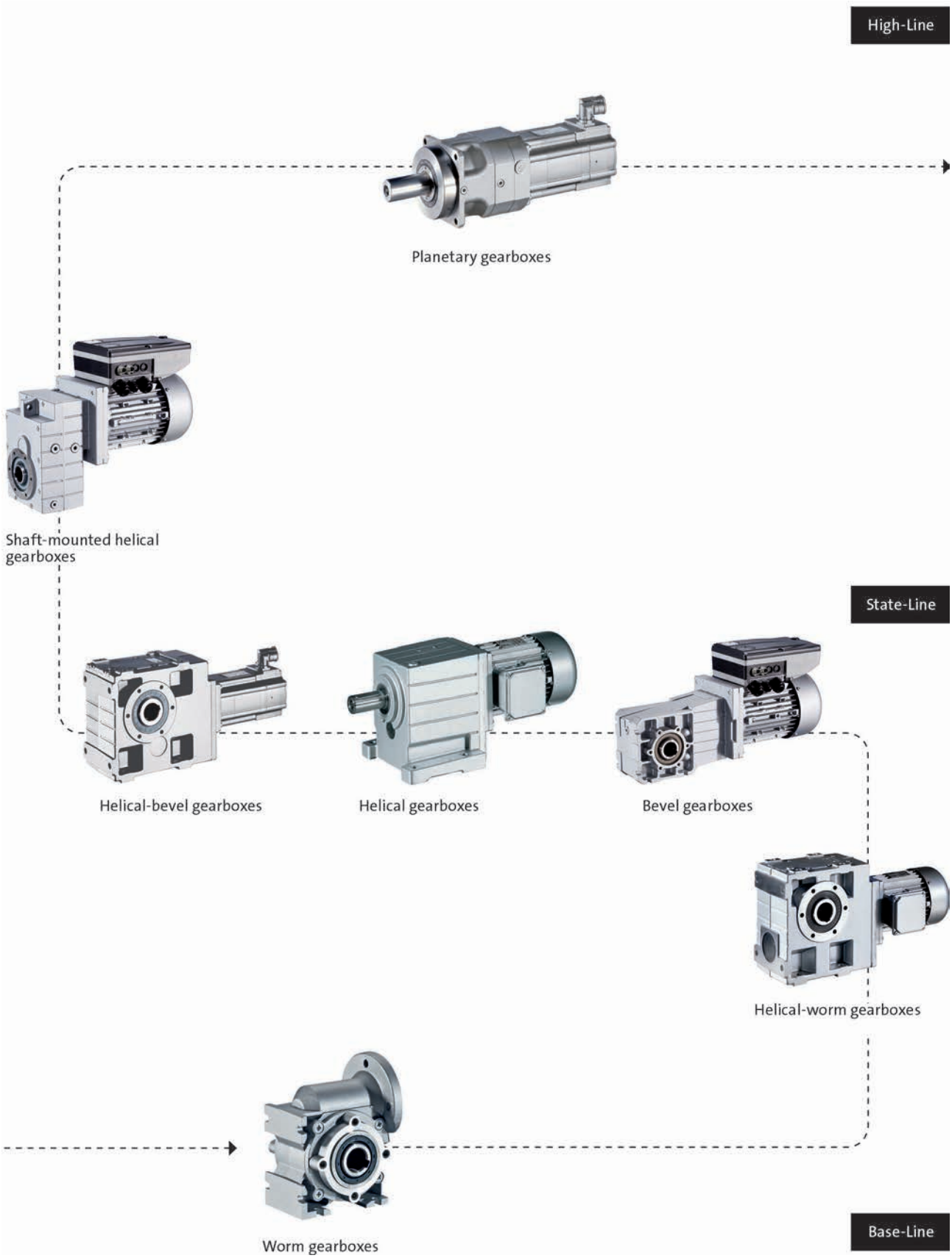
MD three-phase AC motors

Basic MD/MH three-phase AC motors

Base-Line

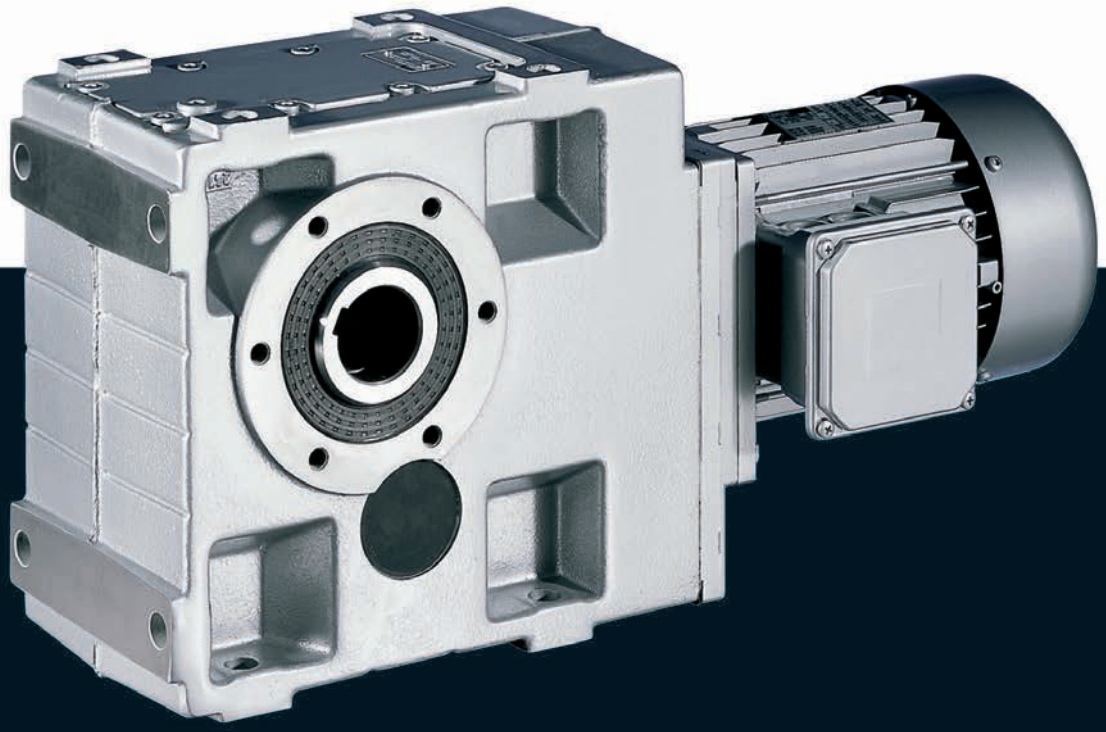
L-force product portfolio

Gearboxes



GKS helical-bevel gearboxes

0.75 to 45 kW



GKS helical-bevel gearboxes

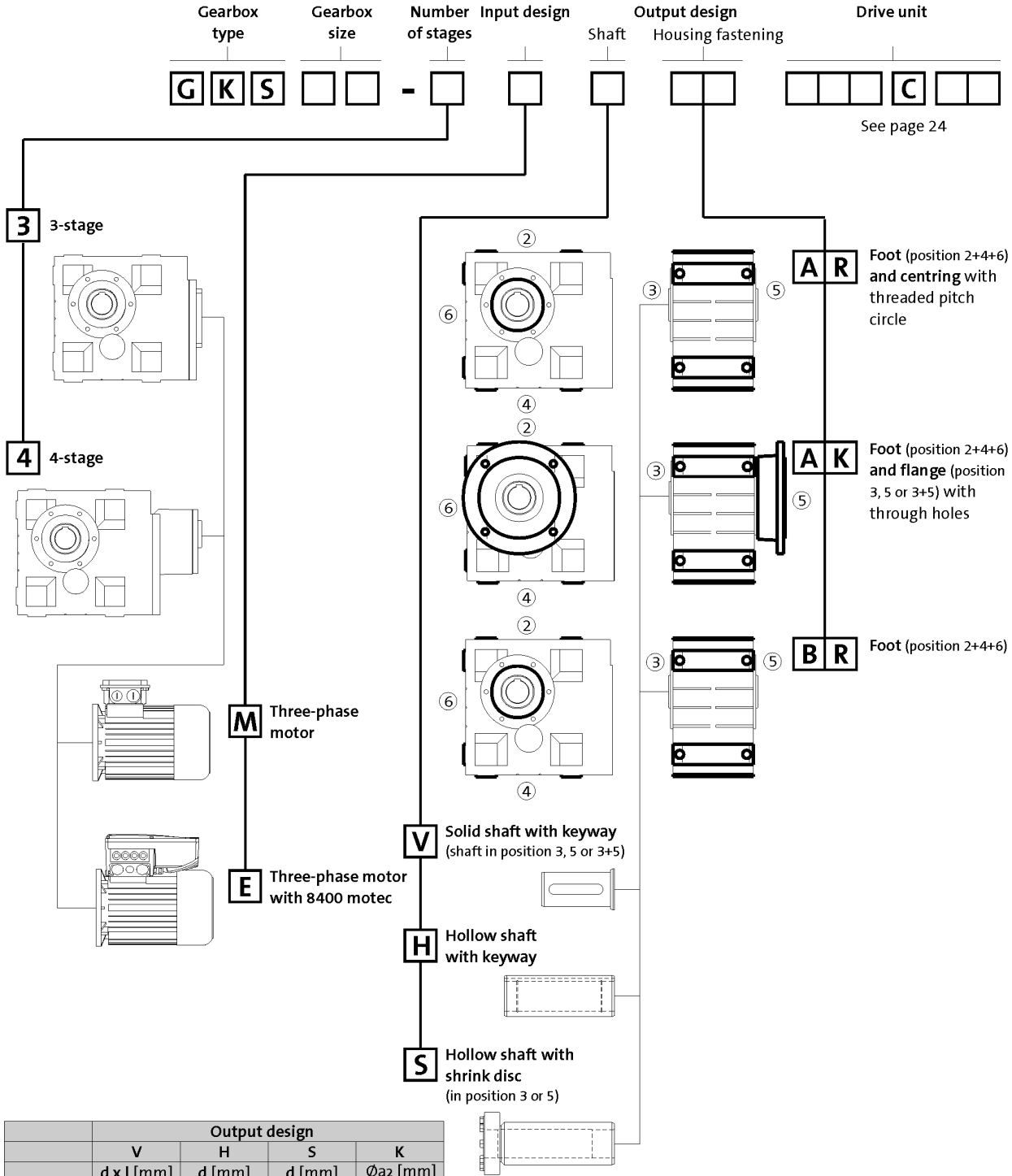
Contents

List of abbreviations

$\eta_{c=1}$		Efficiency
c		Load capacity
f_N	[Hz]	Rated frequency
$F_{ax,max}$	[N]	Max. axial force
$F_{rad,max}$	[N]	Max. radial force
H_{max}	[m]	Site altitude
i		Ratio
J	[kgcm²]	Moment of inertia
m	[kg]	Mass
M_2	[Nm]	Output torque
n_2	[r/min]	Output speed
n_N	[r/min]	Rated speed
P_N	[kW]	Rated power
$S_{hü}$	[1/h]	Transition operating frequency
$T_{opr,max}$	[°C]	Max. ambient operating temperature
$T_{opr,min}$	[°C]	Min. ambient operating temperature
$U_{N,\Delta}$	[V]	Rated voltage
$U_{N,Y}$	[V]	Rated voltage

CE	Communauté Européenne
CSA	Canadian Standards Association
DIN	Deutsches Institut für Normung e.V.
EMC	Electromagnetic compatibility
EN	European standard
IEC	International Electrotechnical Commission
IM	International Mounting Code
IP	International Protection Code
NEMA	National Electrical Manufacturers Association
UL	Underwriters Laboratory Listed Product
UR	Underwriters Laboratory Recognized Product
VDE	Verband deutscher Elektrotechniker (Association of German Electrical Engineers)
CCC	China Compulsory Certificate
GOST	Certificate for Russian Federation
cURus	Combined certification marks of UL for the USA and Canada
UkrSEPRO	Certificate for Ukraine

Product key

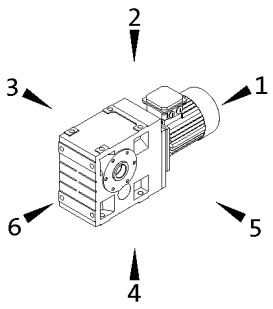
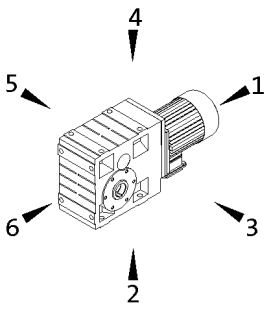
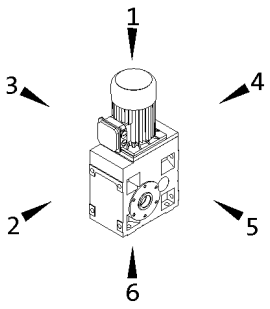
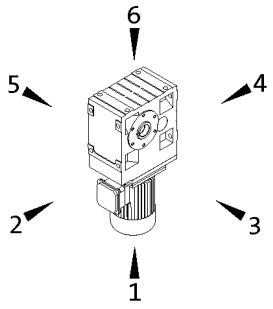
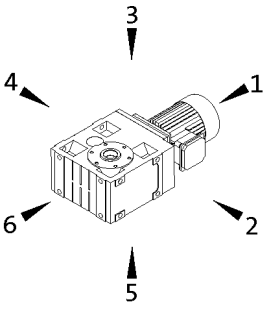
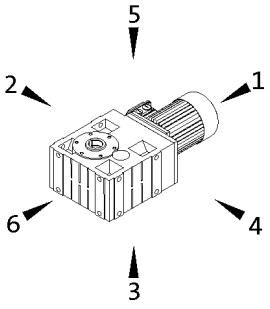


	Output design			
	V	H	S	K
	d x l [mm]	d [mm]	d [mm]	Øa2 [mm]
GKS04-3	25x50	25/30	25/30	160
GKS05-3/4	30x60	30/35	35	200
GKS06-3/4	40x80	40/45	40	200[1]/250
GKS07-3/4	50x100	50/55	50	250/300
GKS09-3/4	60x120	60/70	65	350
GKS11-3/4	80x160	70/80	80	400/450
GKS14-3/4	100x200	100	100	450

[1] Only in the case of H and S type of output

Product key

Mounting position (A to F) and position of system blocks (1 to 6)

A	B	C
		
D	**E**	**F**
		

Hollow shaft: 0
Solid shaft: 3, 5, 8 (3+5)
Hollow shaft with shrink disc: 3, 5

Without flange: 0
Flange: 3, 5, 8 (3+5)
Terminal box / motec: 2, 3, 4, 5

Gearbox designs

Basic versions	
Motor efficiency	Standard efficiency Increased efficiency (IE2)
Surface and corrosion protection	OKS-G (primer: grey) OKS-S (paint: RAL 7012)
Lubricant	CLP 460 (mineral)
Ventilation	Oil control plugs for GKS05 to 14 Breather elements for GKS06 ... 14

Options	
Surface and corrosion protection	OKS-S (special paint according to RAL) OKS-M (special paint according to RAL) OKS-L (special paint according to RAL)
Lubricant	CLP HC 320 (synthetic) CLP HC 220 USDA H1 (synthetic)
Shaft sealing rings	Driven shaft: Viton
Ventilation	Breather elements for GKS05 Compensation reservoir for GKS09 to 14-3 in mounting position C
Accessories	Torque plate on threaded pitch circle Housing foot torque plate 2nd output shaft end Shrink disc cover Hoseproof hollow shaft cover Mounting set for hollow shaft circlip
Nameplate	Metal nameplate (supplied loose) Adhesive nameplate (supplied loose)

Product information

Lenze provides a geared motor construction kit, which covers a wide range of requirements. Numerous drive-side and output-side options enable precise adaptation of the drive to the specific application. This is the basis for versatile applications and functional scalability of our gearboxes and geared motors.
The modular concept and high power density make extremely compact sizes possible. Optimised teeth profiles and ground gears ensure low-noise operation and low backlash. The gearboxes are of compact and hence space-saving construction.

For maximum precision

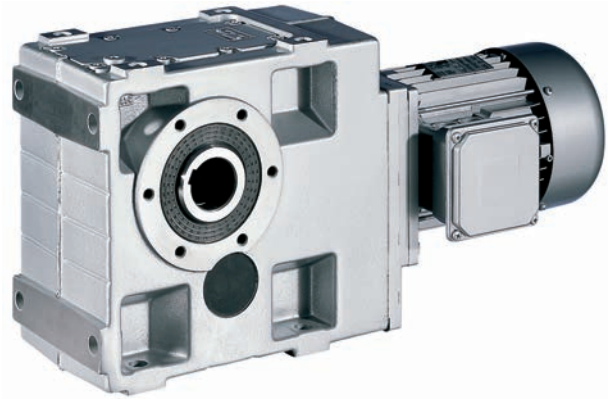
Helical-bevel gearboxes have the major benefit of enabling extremely precise and reproducible positioning movements owing to their high torsional stiffness and low backlash. Our helical-bevel gearboxes can be combined with three-phase AC motors and servo motors to form a compact unit. They are available in 3- and 4-stage versions with a torque of up to 11,639 Nm and a ratio of up to i=1,936.

Inverters for motor-proximity installation

The Drive Package with decentralised Inverter Drives 8400 motec covers a power range up to 7.5 kW.

Designs

- 3-stage and 4-stage gearboxes
- Hollow shaft with keyway or shrink disc
- Solid shaft with keyway
- Foot or flange mounting
- Torque plate, including rubber buffer
- With MH three-phase AC motors (efficiency classes IE2)power range 0.75 ... 45 kW



Helical-bevel geared motor GKS07-3M HBR 100-32

Functions and features

Gearbox type	GKS
Housing	
Design	Cuboid
Material	Aluminium / cast iron
Solid shaft	
Design	with keyway to DIN 6885
Tolerance	k6 (d ≤ 50 mm) m6 (d > 50 mm)
Material	Tempered steel C45 or 42CrMo4
Hollow shaft	
Design	H: with keyway S: smooth
Tolerance	Bore H7
Material	Tempered steel C45
Toothed part	
Design	Ground tooth flanks Optimised tooth flank geometry
Material	Case-hardened steel
Shaft-hub joint	1st stage/prestage/helical (bevel) gearbox: Friction-type connection Output stage (= 2nd, 3rd or 4th stage): Friction-type or positive-fit connection
Shaft sealing rings	
Design	With dust lip
Material	NB / FP
Bearing	
Design	Ball bearing / tapered-roller bearing depending on size and design
Schmierstoffe	
Standard	DIN 51502
Quantities	corresponding to mounting position (see operating instructions)
Mechanical efficiency	
1-stage gearboxes [$\eta_{c=1}$]	
2-stage gearboxes [$\eta_{c=1}$]	
3-stage gearboxes [$\eta_{c=1}$]	0.95
4-stage gearboxes [$\eta_{c=1}$]	0.93
Notes	

Functions and features

Lubricants

Lenze gearboxes and geared motors are ready for operation on delivery and are filled with lubricants specific to both the drive and the design. The mounting position and design specified in the order are key factors in choosing the volume of lubricant.

The lubricants listed in the lubricant table are approved for use in Lenze drives.

Lubricant table

Mode	CLP 460	CLP HC 320	CLP HC 220 USDA H1
Ambient temperature [°C]	0 ... +40	-25 ... +50	-20 ... +40
Specification	Mineral based oil with additives	Synthetic-based oil (synthetic hydrocarbon / poly-alpha-olefin oil)	
Note			For food processing industry
Changing interval	16000 operating hours not later than after three years (oil temperature 70 to 80 °C)	25000 operating hours not later than after three years (oil temperature 70 to 80 °C)	16000 operating hours not later than after three years (oil temperature 70 to 80 °C)
Fuchs	Fuchs Renolin CLP 460	Fuchs Renolin Unisyn CLP 320	bremer & leguil Cassida Fluid GL 220
Klüber	Klüberoil GEM1-460 N	Klübersynth GEM4-320 N	Klüberoil 4 UH1-220 N
Shell	Shell Omala S2 G 460	Shell Omala S4 GX HD 320	

► Please contact your Lenze sales office if you are operating at ambient temperatures in areas up to< -20 °C bzw. > or up to +40°C.

Functions and features

Surface and corrosion protection

For optimum protection of geared motors against ambient conditions, the surface and corrosion protection system (OKS) offers tailor-made solutions.

Various surface coatings combined with other protective measures ensure that the geared motors operate reliably even at high air humidity, in outdoor installations or in the presence of atmospheric impurities. Any colour from the RAL Classic collection can be chosen for the top coat. The geared motors are also available unpainted (no surface and corrosion protection).

Surface and corrosion protection system	Applications	Measures
	Catalogue text	Catalogue text
OKS-G (primed)	• Dependent on subsequent top coat applied	• 2K PUR priming coat (grey) • Zinc-coated screws • Rust-free breather elements Optional measures • Stainless steel nameplate
OKS-S (small)	• Standard applications • Internal installation in heated buildings • Air humidity up to 90%	• Surface coating as per corrosivity category C1 (in line with EN 12944-2) • Zinc-coated screws • Rust-free breather elements Optional measures • Stainless steel nameplate
OKS-M (medium)	• Internal installation in non-heated buildings • Covered, protected external installation • Air humidity up to 95%	• Surface coating as per corrosivity category C2 (in line with EN 12944-2) • Zinc-coated screws • Rust-free breather elements Optional measures • Stainless steel shaft • Stainless steel nameplate • Rust-free shrink disc (on request)
OKS-L (high)	• External installation • Air humidity above 95% • Chemical industry plants • Food industry	• Surface coating as per corrosivity category C3 (in line with EN 12944-2) • Blower cover and B end shield additionally primed • Cable glands with gaskets • Corrosion-resistant brake with cover ring, stainless friction plate, and chrome-plated armature plate (on request) • All screws/screw plugs zinc-coated • Stainless breather elements • Threaded holes that are not used are closed by means of plastic plugs Optional measures • Sealed recesses on motor (on request) • Stainless steel shaft • Stainless steel nameplate • Rust-free shrink disc (on request) • Additional priming coat on cast iron fan • Oil expansion tank and torque plates painted separately and supplied loose

Functions and features

Structure of surface coating

Surface and corrosion protection system	Corrosivity category	Surface coating	Colour
	DIN EN ISO 12944-2	Structure	
Without OKS (uncoated)		Dipping primed gearbox	
OKS-G (primed)		Dipping primed gearbox 2K PUR priming coat	
OKS-S (small)	C1	Dipping primed gearbox 2K-PUR top coat	Standard: RAL 7012 Optional: RAL Classic
OKS-M (medium)	C2	Dipping primed gearbox 2K PUR priming coat 2K-PUR top coat	Standard: RAL 7012 Optional: RAL Classic
OKS-L (high)	C3	Dipping primed gearbox 2K PUR priming coat 2K-PUR top coat	Standard: RAL 7012 Optional: RAL Classic

Functions and features

Ventilation

Non-ventilated gearboxes
No ventilation is required for gearbox GKS04.

Gearboxes that may optionally be equipped with ventilation
Special measures are not usually required when using the GST05 gearbox. In borderline cases, e.g. at input speeds > 2000 rpm, we recommend the use of breather elements, which we can supply if required.

Ventilated gearboxes
Gearboxes GKS06 to 14 are supplied with breather elements as standard.

Special measures for mounting position C (motor on top)
We recommend that an oil compensation reservoir is always used with gearbox sizes G□□09 to 14 in this mounting position. This reservoir can be purchased as an option. For illustrations and measures, please refer to the Accessories chapter.

This is not required at higher ratios or low input speeds. Please contact Lenze for confirmation in this case.

Dimensioning

General information about the data provided in this catalogue

Powers, torques and speeds
The powers, torques and speeds specified in this catalogue are rounded values and are valid under the following conditions:
- Operating time/day = 8 h (100% OT)
- Duty class I for up to 10 switching operations/h
- Mounting positions and designs in this catalogue
- Standard lubricant
- T_{amb} = 20 °C for gearboxes,
  T_{amb} = 40 °C for motors (in accordance with EN 60034)
- Site altitude < = 1000 m amsl
- The selection tables provide the permissible mechanical powers and torques. For notes on the thermal power limit, see chapter drive dimensioning.
- The rated power specified for motors and geared motors applies to operating mode S1 (in accordance with EN 60034).

Under different operating conditions, the values obtained may vary from those listed here.
In the case of extreme operating conditions, please consult your Lenze sales office.

Dimensioning

Thermal power limit

The thermal power limit, defined by the heat balance, limits the permissible gearbox continuous power. It may be less than the mechanical power ratings listed in the selection tables.

The thermal power limit is affected by:
- the churning losses in the lubricant. These are determined by the mounting position and the circumferential speed of the wheels
- the load and the speed
- the ambient conditions: temperature, air circulation, input or dissipation via shafts and the foundation

Please consult your Lenze sales office
- if the following input speeds n_1 are exceeded on a continuous basis (continuous is defined as more than 8 h/day):

Motor frame size	Mounting position A, B, E, F	Mounting position C, D
063 ... 100	3000 r/min	3000 r/min
112 ... 132	3000 r/min	1500 r/min
160 ... 225	2000 r/min	1500 r/min

- if the following input speeds n_1 are exceeded:

Motor frame size	Mounting position A, B, E, F	Mounting position C, D
063 ... 100	4000 r/min	3000 r/min
112 ... 132	4000 r/min	2000 r/min
160 ... 225	3000 r/min	1500 r/min

- or if you are using the following gearbox type, size and ratio combinations at an input speed of n_1 > 1500 r/min:

Gearbox type	Gearbox size	Ratio i
GKS helical-bevel gearbox	07, 09, 11, 14	≤ 25

Possible ways of extending the application area

- synthetic lubricant (option)
- shaft sealing rings made from FP material/Viton (option)
- reduction in lubricant quantity
- cooling of the geared motor by means of air convection on the machine/system

Dimensioning

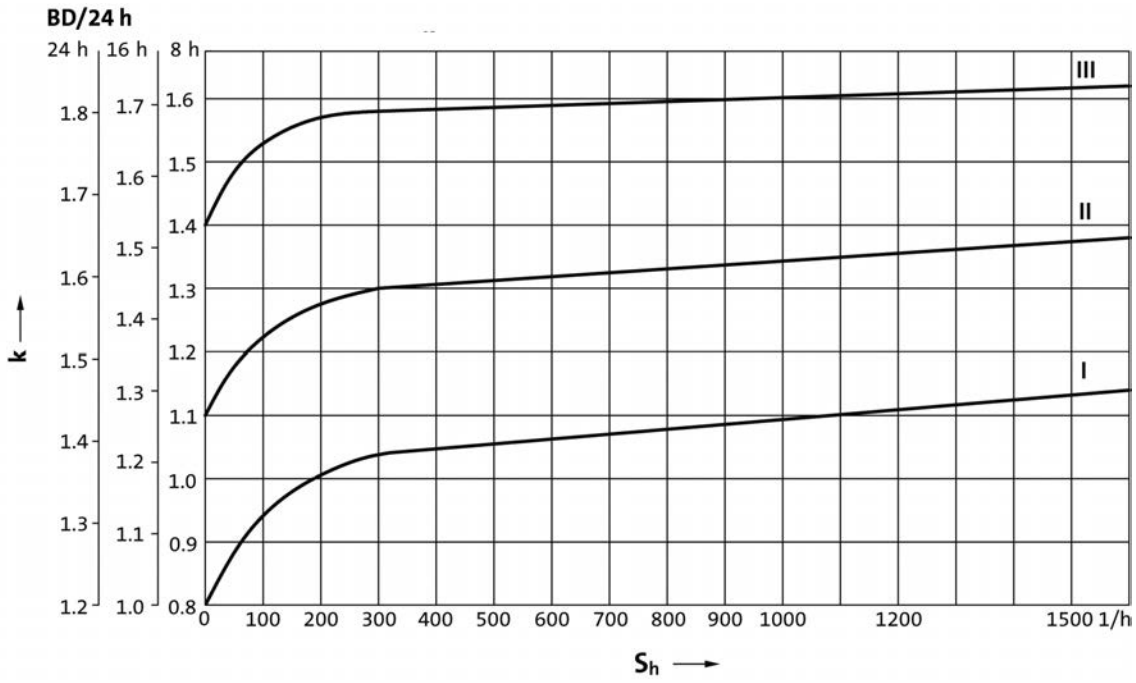
Load capacity and application factor

Load capacity c of gearbox
Rated value for the load capacity of Lenze geared motors.
- c is the ratio of the permissible rated torque of the gearbox to the rated torque supplied by the drive component (e.g. the built-in Lenze motor).
- The value of c must always be greater than the value of the application factor k calculated for the application.

Application factor k (according to DIN 3990)
Takes into account the influence of temporally variable loads which are actually present during the anticipated operating time of gearboxes and geared motors.
k is determined by:
- the type of load
- the load intensity
- temporal influences

Duty class	Load type
I	Smooth operation, small or light jolts
II	Uneven operation, average jolts
III	Uneven operation, severe jolts and/or alternating load

Application factor k



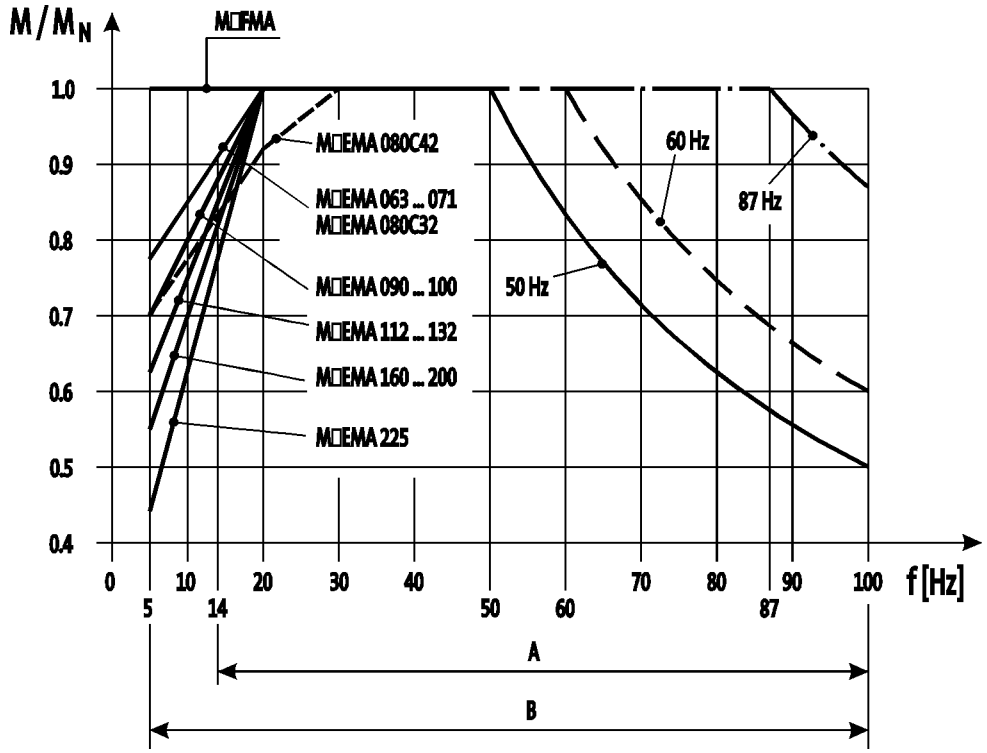
6.9

Dimensioning

Torque derating at low motor frequencies

Motor size-dependent torque reduction, taking into account the thermal response during operation on the inverter.

Torque characteristics



A = Operation with integral fan and brake
B = Operation with integral fan and brake control "Holding current reduction"

You can use the Drive Solution Designer for precise drive dimensioning.

The Drive Solution Designer helps you to carry out a fast and high-quality drive dimensioning.
The software includes well-founded and proven knowledge on drive applications and electro-mechanical drive components.

Please contact your Lenze sales office.

Dimensioning

Notes on the selection tables

The selection tables show the available combinations of gearbox type, number of stages, ratio and motor. They are used only to provide basic orientation.
The following legend indicates the structure of the selection tables.

Gearbox type

GST helical gearbox

Technical data

Selection tables

Rated speed n_N of the drive motor

Product key of geared motor

Rated power P_N of the drive motor in relation to the rated frequency

► 50 Hz, 60 Hz: P_N = 0.75 kW

n_N	1410 r/min			1720 r/min			i		
f_N	50 Hz			60 Hz					
	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c			
	881	8.0	2.4	1069	6.6	2.8	1.600	GST04-1M □□□080C32	76
	689	10	2.2	835	8.4	2.6	2.048	GST04-1M □□□080C32	76

Output speed n_2

Output torque M_2 (constant for all listed frequencies)

The load capacity c of the gearbox c is the ratio of the gearbox's rated torque to the rated torque of the three-phase motor (calculated in respect of its application to the output shaft). c must always be greater than the application factor k determined for the application

Ratio i

Page number for dimensions

$$c = \frac{M_{2,zul}}{M_{1N} \cdot i \cdot \eta_{Getr}} > k$$

Dimensioning

Notes on the selection tables

Motor voltages

The power values and torques indicated in the selection tables relate to the following motor voltages:
- 50 Hz : Δ 230 V / Y 400 V
- 60 Hz : 230 V or 460 V
- 87 Hz : Δ 400 V

Operation at 87 Hz

In 87 Hz operation, the three-phase AC motor (which is designed for a voltage of Δ 230 V / Y 400 V at 50 Hz) is operated on an inverter with 400 V rated voltage in a delta connection. It is important to note here that the inverter must be configured for 87Hz output.
This offers the following advantages over 50 Hz operation:
- the setting range of the motor is increased by a factor of 1.73.
- the motor can then provide around 1.73 times greater output, which in turn allows a smaller and more affordable motor to be selected for the application.
- the efficiency of the motor is also improved.

Notes on ordering

We want to be sure that you receive the correct products in good time.

To allow us to achieve this we need:
- your address and your company data
- our product key for the individual products in this catalogue
- your delivery date and delivery address

Ordering procedure
Please use the ordering information checklist to ensure that you provide all the ordering information required for the various products.

The ordering information checklist, the product key, the basic versions, options, mounting position and position of the system blocks will be found in the General – Product key section.

A list of Lenze's worldwide sales offices can be found on the Internet: www.Lenze.com.

Ordering details checklist

☐ **Offer**

Page __ of __

☐ **Order**

Customer No.

Job No.

Fax No. _____

Sender

Company _____ Made out by (name) _____

Street/P.O. Box _____ Department _____

P.O. Box, City _____ Telephone No. _____

Date _____ Signature _____

Delivery address (if different)

Street/P.O. Box _____ Desired delivery date _____

P.O. Box, City _____ Dispatching notes _____

Invoice recipient (if different)

Street/P.O. Box _____

Postal code, City _____

Ordering details checklist

Customer No.

Job No.

Page __

Quantity

Efficiency class ☐ Standard efficiency ☐ High efficiency (IE2)

Rated frequency ☐ 50 Hz ☐ 60 Hz ☐ 87 Hz

Ratio i

GKS ☐☐ – 3 / 4 M / E V / H / S A / B R / K

Motor frame size ☐☐☐C☐☐

Hollow shaft d = ☐ mm

Flange a_2 = ☐ mm

Mounting position A B C D E F

Position of system blocks

Shaft/shrink disc: 0 3 4 8

Flange: 0 3 5 8

Terminal box: 2 3 4 5

Surface and corrosion protection ☐ OKS-S colour: RAL 7012 ☐ OKS-G (primed)

Options

Special lubricants ☐ CLP HC 320 (synthetic) ☐ CLP HC 220 USDA H1 (for the food industry)

Surface and corrosion protection ☐ OKS-S (small) ☐ OKS-M (medium) RAL ☐ OKS-L (high) ☐ OKS-G (primed)

Accessories ☐ Torque support for housing foot ☐ Torque support for threaded pitch circle ☐ 2nd output shaft end ☐ Mounting set for hollow-shaft circlip ☐ Shrink disc cover ☐ Hollow shaft cover, hoseproof

Shaft sealing rings ☐ Viton

Breathing ☐ Breather elements for GKS05 ☐ Compensation reservoir in mounting position for GKS09 ... 14-3

Ordering details checklist

Three-phase AC motors options

Customer No. ☐☐☐☐☐☐☐☐

Job No. ☐☐☐☐☐☐☐☐☐☐

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Motor connection

Terminal box
- ☐ with plug-in connector ICN 6-pin. Adhere to permissible rated motor current 20 A!
- ☐ with plug-in connector ICN 8-pin. Adhere to permissible rated motor current 20 A!
- ☐ with plug-in connector HAN10E. Adhere to permissible rated current 16 A!
- ☐ with plug-in connector HAN-Modular. Adhere to permissible rated current 16 / 40 A!

Cable entry
only with M□□MAXX/LL063 ... 132
or terminal box with plug-in connector
in position 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Blower

☐ 1~ ☐ 3~

☐ Terminal box with plug-in connector ICN

Terminal box position 2 ☐ 3 ☐ 4 ☐ 5 ☐

Spring-applied brake

Brake version ☐ Standard ☐ Longlife

Brake size ☐

Characteristic torque ☐ Nm

Rated voltage AC ☐ DC ☐ ☐ V

Rectifier
Only in the case of AC supply voltage

- ☐ Half-wave rectifier
- ☐ Bridge rectifier
- ☐ Bridge/half-wave rectifier (overexcitation)
- ☐ Bridge/half-wave rectifier (holding current reduction)

Brake options
Manual release lever in position 2 ☐ 3 ☐ 4 ☐ 5 ☐

☐ Low-noise version (Standard in the case of brake with speed/position encoder)

6.9

Ordering details checklist

Three-phase AC motors options

Customer No. ☐☐☐☐☐☐☐☐

Job No. ☐☐☐☐☐☐☐☐☐☐

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Speed/position encoder

Resolver	☐ RS1				
Incremental encoder HTL	☐ IG128-24V-H	☐ IG512-24V-H	☐ IG1024-24V-H	☐ IG2048-24V-H	
Incremental encoder TTL		☐ IG512-5V-T	☐ IG1024-5V-T	☐ IG2048-5V-T	
Feedback with ICN connector	☐ IG128-24V-H not possible with plug-in connector!				

Motor protection

☐ PTC ☐ KTY 83-110 ☐ KTY 84-130

Approval

☐ UL/CSA approval: cURus ☐ CCC ☐ China Energy Label

Further options

Indication of supply voltage only for motor frame sizes 112C32 to 225C22

☐ Δ; 400V-50Hz; 460V-60Hz

☐ Y/Δ; 400/230V-50Hz; 460/265V-60Hz (-/400V-87Hz possible in operation with frequency inverter)

☐ Protection cover

☐ 2nd shaft end

☐ Handwheel

☐ Increased centrifugal mass

☐ 2nd nameplate (adhesive nameplate/metal nameplate)

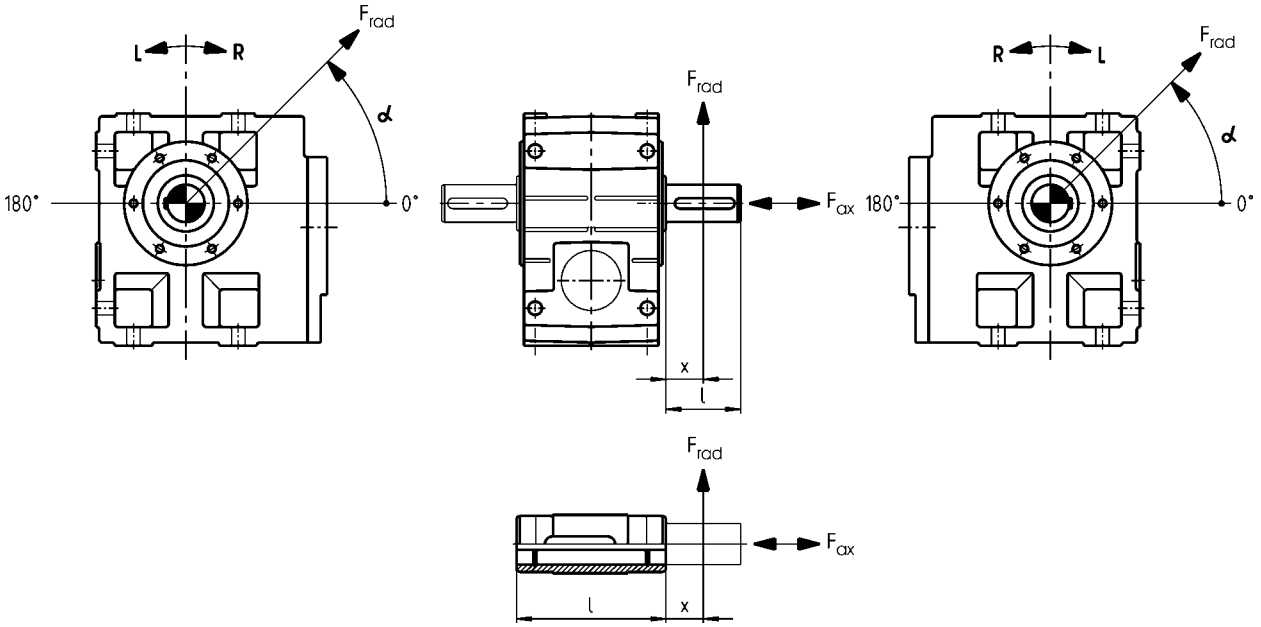
Permissible radial and axial forces at output

Permissible radial force
$F_{rad,per} = \min(f_w \times f_\alpha \times F_{rad,max}$; $f_w \times F_{rad,max}$ at $n_2 \leq 16$ r/min)

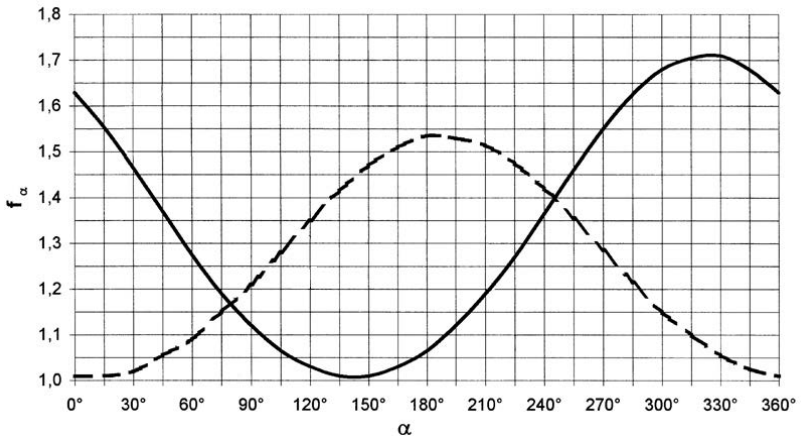
Permissible axial force
$F_{ax,per} = F_{ax,max}$ if $F_{rad} = 0$

If F_{rad} **and** $F_{ax} \neq 0$, please contact your Lenze sales office.

Application of forces



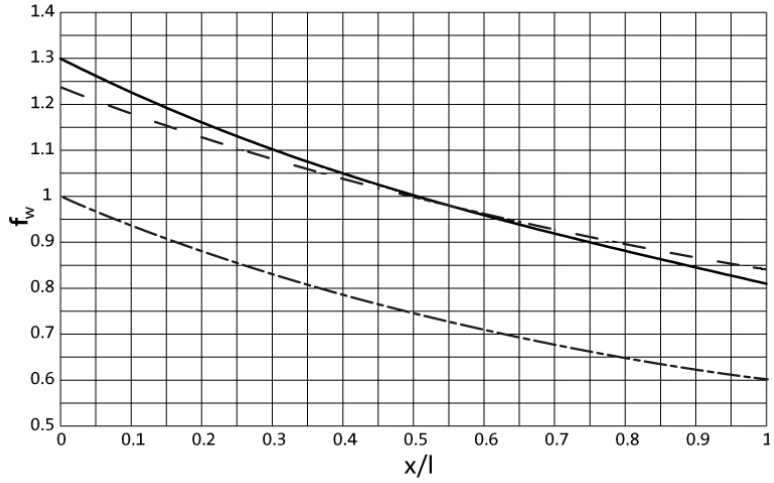
Effective direction factor f_α at output shaft



——— Direction of rotation R
— — — Direction of rotation L

Permissible radial and axial forces at output

Additional load factor f_w at output shaft



——— Solid shaft (V□□)
— · — Hollow shaft (H□□)
— — — Solid shaft with flange (V□K)

GKS□□-3/4□ H□□

Size	n_2 [r/min]								
Gearbox	630	400	250	160	100	63	40	25	≤16

	Max. radial force, Hollow shaft								
	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
GKS04	3100	3900	4500	5100	5900	6800	7000	7000	7000
GKS05	2400	3500	4200	4630	5000	6200	7300	7300	7300
GKS06	3000	4600	5600	6400	7000	8200	10400	12000	12000
GKS07		5400	6300	7400	8700	10500	12500	15100	16000
GKS09		7500	8200	9400	10600	12200	15500	21000	24000
GKS11		9000	10000	11000	14000	16000	18500	25000	30000
GKS14		15000	15500	16500	17500	18500	21000	28000	40000

	Max. axial force, Hollow shaft								
	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
GKS04	3300	4200	5000	5500	5500	5500	5500	5500	5500
GKS05	2800	3500	4240	5090	6160	6600	6600	6600	6600
GKS06	3500	4440	5580	6930	8710	10000	10000	10000	10000
GKS07		4900	6230	7820	9940	12600	14000	14000	14000
GKS09		6500	7400	8000	10500	13000	17000	21000	21000
GKS11		7000	8000	9200	12000	14500	18500	27000	27000
GKS14		6000	8000	10000	13000	16000	20000	28000	35000

- Application of force F_{rad}: at hollow shaft end face (x = 0)
- $F_{ax,max}$ only valid with F_{rad} = 0
- Neither radial nor axial forces are permissible for the hollow shaft with shrink disc (S□□).

Permissible radial and axial forces at output

GKS□□-3/4□ V□R

Size	n_2 [r/min]								
Gearbox	630	400	250	160	100	63	40	25	≤16

	Max. radial force, Solid shaft without flange								
	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
GKS04	2400	3000	3400	3600	3600	3600	3600	3600	3600
GKS05	2200	2800	3200	3600	4100	4900	5800	5800	5800
GKS06	2700	3700	4300	4900	5300	6200	7900	9000	9000
GKS07		4000	4900	5800	6600	8000	9600	12000	12000
GKS09 [1]		6200	6400	7100	8400	9500	11800	16000	18000
GKS11 [1]		7100	7500	8200	10000	11200	13000	19000	23000
GKS14		57900	61000	64100	65000	65000	65000	65000	65000

	Max. axial force, Solid shaft without flange								
	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
GKS04	3300	4200	5000	5500	5500	5500	5500	5500	5500
GKS05	2800	3500	4240	5090	6160	6600	6600	6600	6600
GKS06	3500	4440	5580	6930	8710	10000	10000	10000	10000
GKS07		4900	6230	7820	9940	12600	14000	14000	14000
GKS09 [1]		6500	7400	8000	10500	13000	17000	21000	21000
GKS11 [1]		7000	8000	9200	12000	14500	18500	27000	27000
GKS14		35000	35000	35000	35000	35000	35000	35000	35000

[1] Reinforced output shaft bearings are available on request for V□R versions.

- Application of force F_{rad}: centre of shaft journal (x = l/2)
- $F_{ax,max}$ only valid with F_{rad} = 0

Permissible radial and axial forces at output

GKS□□-3/4□ V□K

Size	n_2 [r/min]								
Gearbox	630	400	250	160	100	63	40	25	≤16

	Max. radial force, Solid shaft with flange								
	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
GKS04	3100	3800	4300	4600	4600	4600	4600	4600	4600
GKS05	3800	4640	5420	6280	7000	7000	7000	7000	7000
GKS06	4700	6400	7500	8800	9800	10000	10000	10000	10000
GKS07		7000	8250	9630	11000	13000	14000	14000	14000
GKS09		9900	10500	12000	14000	15000	15000	15000	15000
GKS11		14500	16000	17600	21000	24500	28000	30000	30000
GKS14		20500	23700	27200	31300	35000	41000	43000	43000

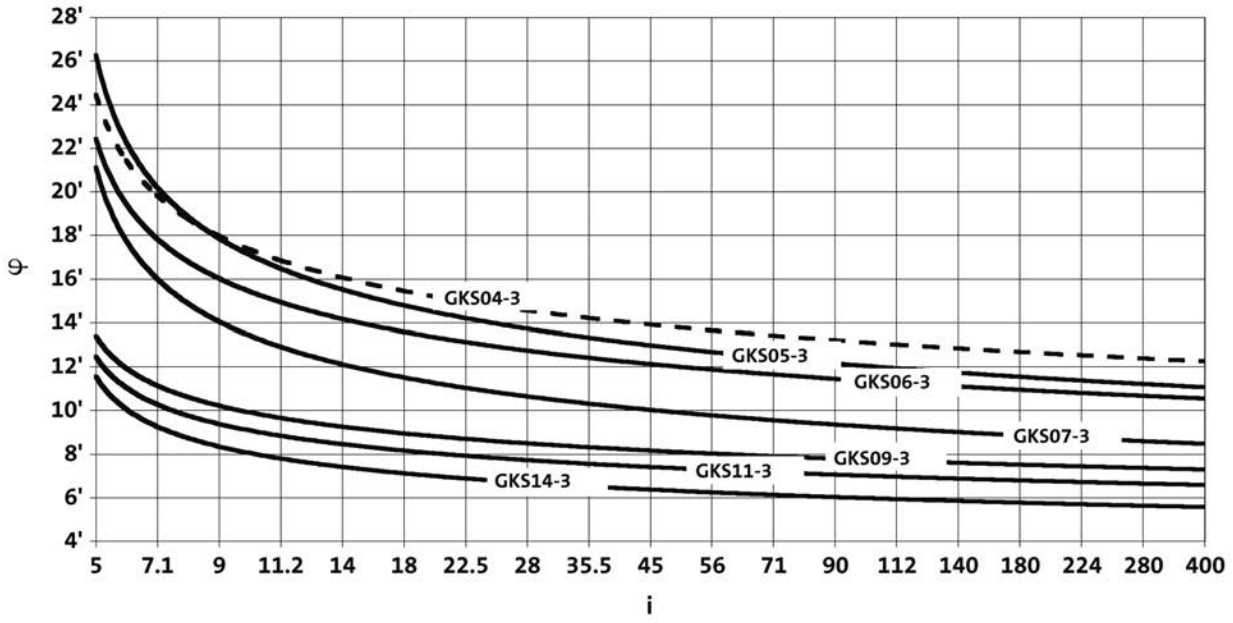
	Max. axial force, Solid shaft with flange								
	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
GKS04	3300	4200	4400	4400	4400	4400	4400	4400	4400
GKS05	2900	3630	4440	5420	6600	6600	6600	6600	6600
GKS06	3700	4660	5880	7320	9230	10000	10000	10000	10000
GKS07		5700	7000	8500	10400	11500	11500	11500	11500
GKS09		6000	6600	7600	10000	12000	15000	17000	17000
GKS11		7000	7500	8500	10500	13000	17500	27000	27000
GKS14		8400	10000	11500	13000	15000	19000	28000	35000

- Application of force F_{rad}: centre of shaft journal (x = l/2)
- $F_{ax,max}$ only valid with F_{rad} = 0

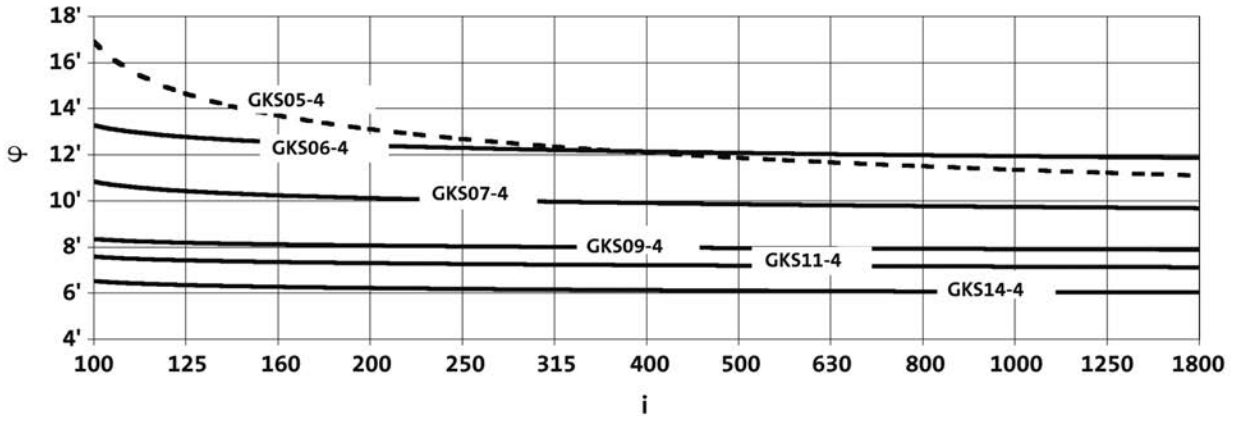
Output backlash in angular minutes

► Backlash ϕ depending on ratio i

GKS04 to 14-3



GKS05 to 14-4



6.9

Moments of inertia

GKS□□-3

► Moment of inertia (J) depending on ratio i

Gearbox			GKS04
5.123	J	[kgcm²]	1.170
7.025	J	[kgcm²]	0.676
8.167	J	[kgcm²]	0.863
8.991	J	[kgcm²]	0.444
11.730	J	[kgcm²]	0.729
13.067	J	[kgcm²]	0.701
14.333	J	[kgcm²]	0.346
16.087	J	[kgcm²]	0.443
17.920	J	[kgcm²]	0.428
20.588	J	[kgcm²]	0.302
22.522	J	[kgcm²]	0.262
25.088	J	[kgcm²]	0.254
28.727	J	[kgcm²]	0.182
32.000	J	[kgcm²]	0.177
35.191	J	[kgcm²]	0.136
39.200	J	[kgcm²]	0.132
44.240	J	[kgcm²]	0.090
50.943	J	[kgcm²]	0.181
56.976	J	[kgcm²]	0.061
64.978	J	[kgcm²]	0.132
72.210	J	[kgcm²]	0.040
79.598	J	[kgcm²]	0.103
90.491	J	[kgcm²]	0.027
100.067	J	[kgcm²]	0.069
111.467	J	[kgcm²]	0.069
128.874	J	[kgcm²]	0.048
143.556	J	[kgcm²]	0.048
163.332	J	[kgcm²]	0.032
181.939	J	[kgcm²]	0.032
204.682	J	[kgcm²]	0.022
228.000	J	[kgcm²]	0.022
269.660	J	[kgcm²]	0.014
300.381	J	[kgcm²]	0.014

Gearbox			GKS05
6.863	J	[kgcm²]	1.900
9.412	J	[kgcm²]	1.170
10.569	J	[kgcm²]	1.600
11.667	J	[kgcm²]	1.647
13.176	J	[kgcm²]	0.711
14.494	J	[kgcm²]	1.045
16.000	J	[kgcm²]	1.040
17.054	J	[kgcm²]	1.505
19.216	J	[kgcm²]	1.474
23.388	J	[kgcm²]	0.964
26.353	J	[kgcm²]	0.948
29.931	J	[kgcm²]	0.674
32.744	J	[kgcm²]	0.584
36.894	J	[kgcm²]	0.576
41.765	J	[kgcm²]	0.419
47.059	J	[kgcm²]	0.414
51.162	J	[kgcm²]	0.321
57.647	J	[kgcm²]	0.317
66.592	J	[kgcm²]	0.200
75.033	J	[kgcm²]	0.198
82.833	J	[kgcm²]	0.145
93.333	J	[kgcm²]	0.144
107.196	J	[kgcm²]	0.091
120.784	J	[kgcm²]	0.091
130.097	J	[kgcm²]	0.067
146.588	J	[kgcm²]	0.066
166.276	J	[kgcm²]	0.043
187.353	J	[kgcm²]	0.042
211.200	J	[kgcm²]	0.081
227.484	J	[kgcm²]	0.060
256.320	J	[kgcm²]	0.060
290.745	J	[kgcm²]	0.038
327.600	J	[kgcm²]	0.038

► The moments of inertia relate to the drive shaft of the gearbox.
► The total moment of inertia is calculated by adding the values of the gearbox, motor and accessories.

Moments of inertia

GKS□□-3

► Moment of inertia (J) depending on ratio i

Gearbox			GKS06
6.485	J	[kgcm²]	5.870
9.196	J	[kgcm²]	5.048
10.147	J	[kgcm²]	4.858
11.382	J	[kgcm²]	2.492
12.612	J	[kgcm²]	3.199
14.824	J	[kgcm²]	4.287
16.699	J	[kgcm²]	4.163
17.809	J	[kgcm²]	2.126
20.329	J	[kgcm²]	2.794
22.902	J	[kgcm²]	2.729
26.017	J	[kgcm²]	1.941
28.461	J	[kgcm²]	1.666
32.063	J	[kgcm²]	1.632
36.303	J	[kgcm²]	1.183
41.472	J	[kgcm²]	2.110
44.471	J	[kgcm²]	0.900
53.074	J	[kgcm²]	1.523
57.882	J	[kgcm²]	0.578
65.207	J	[kgcm²]	0.570
72.000	J	[kgcm²]	0.422
81.111	J	[kgcm²]	0.416
93.176	J	[kgcm²]	0.257
104.967	J	[kgcm²]	0.254
113.082	J	[kgcm²]	0.189
127.392	J	[kgcm²]	0.186
142.941	J	[kgcm²]	0.122
161.029	J	[kgcm²]	0.121
190.080	J	[kgcm²]	0.227
214.133	J	[kgcm²]	0.226
230.688	J	[kgcm²]	0.168
259.880	J	[kgcm²]	0.167
291.600	J	[kgcm²]	0.109
328.500	J	[kgcm²]	0.109

Gearbox			GKS07
5.955	J	[kgcm²]	19.300
8.254	J	[kgcm²]	11.800
9.171	J	[kgcm²]	16.000
10.124	J	[kgcm²]	15.882
11.378	J	[kgcm²]	7.019
12.711	J	[kgcm²]	10.164
14.798	J	[kgcm²]	14.306
16.674	J	[kgcm²]	13.965
17.270	J	[kgcm²]	7.258
20.511	J	[kgcm²]	9.084
23.111	J	[kgcm²]	8.906
25.244	J	[kgcm²]	6.716
28.274	J	[kgcm²]	5.567
31.858	J	[kgcm²]	5.473
36.063	J	[kgcm²]	3.650
40.906	J	[kgcm²]	6.934
44.178	J	[kgcm²]	2.779
50.345	J	[kgcm²]	5.298
57.501	J	[kgcm²]	1.748
64.790	J	[kgcm²]	1.725
70.474	J	[kgcm²]	1.295
79.407	J	[kgcm²]	1.280
92.563	J	[kgcm²]	0.808
104.296	J	[kgcm²]	0.799
112.338	J	[kgcm²]	0.592
126.578	J	[kgcm²]	0.586
140.548	J	[kgcm²]	1.113
158.364	J	[kgcm²]	1.113
184.600	J	[kgcm²]	0.687
208.000	J	[kgcm²]	0.685
224.037	J	[kgcm²]	0.510
252.436	J	[kgcm²]	0.509
283.193	J	[kgcm²]	0.330
319.091	J	[kgcm²]	0.329

► The moments of inertia relate to the drive shaft of the gearbox.
► The total moment of inertia is calculated by adding the values of the gearbox, motor and accessories.

Moments of inertia

GKS□□-3

► Moment of inertia (J) depending on ratio i

Gearbox			GKS09
12.283	J	[kgcm²]	34.200
13.360	J	[kgcm²]	33.400
16.122	J	[kgcm²]	22.600
17.536	J	[kgcm²]	22.200
19.541	J	[kgcm²]	30.600
22.022	J	[kgcm²]	29.900
25.649	J	[kgcm²]	20.500
29.228	J	[kgcm²]	15.900
32.940	J	[kgcm²]	15.600
35.193	J	[kgcm²]	12.200
39.662	J	[kgcm²]	12.000
43.146	J	[kgcm²]	9.000
48.625	J	[kgcm²]	8.870
58.456	J	[kgcm²]	5.540
65.879	J	[kgcm²]	5.470
70.982	J	[kgcm²]	4.140
79.996	J	[kgcm²]	4.100
91.860	J	[kgcm²]	2.630
103.524	J	[kgcm²]	2.610
111.484	J	[kgcm²]	1.920
125.641	J	[kgcm²]	1.900
140.921	J	[kgcm²]	1.260
158.816	J	[kgcm²]	1.250
182.000	J	[kgcm²]	2.250
205.111	J	[kgcm²]	2.240
220.882	J	[kgcm²]	1.660
248.930	J	[kgcm²]	1.650
279.205	J	[kgcm²]	1.100
314.659	J	[kgcm²]	1.100

Gearbox			GKS11
12.094	J	[kgcm²]	104.000
13.154	J	[kgcm²]	101.000
15.874	J	[kgcm²]	68.000
17.265	J	[kgcm²]	66.500
19.515	J	[kgcm²]	90.300
21.989	J	[kgcm²]	90.400
25.615	J	[kgcm²]	61.200
28.021	J	[kgcm²]	52.200
31.573	J	[kgcm²]	51.300
35.741	J	[kgcm²]	36.800
40.272	J	[kgcm²]	36.200
43.783	J	[kgcm²]	27.900
49.333	J	[kgcm²]	27.500
57.683	J	[kgcm²]	17.700
64.995	J	[kgcm²]	17.500
70.887	J	[kgcm²]	13.000
79.873	J	[kgcm²]	12.900
91.737	J	[kgcm²]	8.300
103.365	J	[kgcm²]	8.210
111.335	J	[kgcm²]	6.050
125.448	J	[kgcm²]	5.990
140.732	J	[kgcm²]	3.960
158.571	J	[kgcm²]	3.930
186.572	J	[kgcm²]	7.070
210.222	J	[kgcm²]	7.050
226.431	J	[kgcm²]	5.210
255.133	J	[kgcm²]	5.200
286.219	J	[kgcm²]	3.440
322.500	J	[kgcm²]	3.430

► The moments of inertia relate to the drive shaft of the gearbox.
► The total moment of inertia is calculated by adding the values of the gearbox, motor and accessories.

Moments of inertia

GKS□□-3

► Moment of inertia (J) depending on ratio i

Gearbox			GKS14
12.435	J	[kgcm²]	283.000
13.525	J	[kgcm²]	275.000
16.646	J	[kgcm²]	198.000
18.311	J	[kgcm²]	173.000
20.065	J	[kgcm²]	249.000
22.609	J	[kgcm²]	243.000
24.696	J	[kgcm²]	183.000
27.165	J	[kgcm²]	159.000
30.609	J	[kgcm²]	156.000
34.692	J	[kgcm²]	111.000
39.089	J	[kgcm²]	109.000
42.531	J	[kgcm²]	82.400
47.923	J	[kgcm²]	81.100
56.251	J	[kgcm²]	54.200
63.382	J	[kgcm²]	53.500
68.942	J	[kgcm²]	38.900
77.681	J	[kgcm²]	38.400
90.551	J	[kgcm²]	25.100
102.029	J	[kgcm²]	24.900
109.896	J	[kgcm²]	18.300
123.826	J	[kgcm²]	18.100
138.913	J	[kgcm²]	12.000
156.522	J	[kgcm²]	11.900
186.572	J	[kgcm²]	21.600
210.222	J	[kgcm²]	21.500
226.431	J	[kgcm²]	15.900
255.133	J	[kgcm²]	15.800
286.219	J	[kgcm²]	10.500
322.500	J	[kgcm²]	10.500

► The moments of inertia relate to the drive shaft of the gearbox.
► The total moment of inertia is calculated by adding the values of the gearbox, motor and accessories.

Moments of inertia

GKS□□-4

► Moment of inertia (J) depending on ratio i

Gearbox			GKS05
95.238	J	[kgcm²]	0.143
114.987	J	[kgcm²]	0.196
126.933	J	[kgcm²]	0.196
146.667	J	[kgcm²]	0.142
161.905	J	[kgcm²]	0.141
185.547	J	[kgcm²]	0.195
209.067	J	[kgcm²]	0.195
225.867	J	[kgcm²]	0.073
236.667	J	[kgcm²]	0.141
289.917	J	[kgcm²]	0.108
326.667	J	[kgcm²]	0.108
364.467	J	[kgcm²]	0.073
410.667	J	[kgcm²]	0.073
469.389	J	[kgcm²]	0.050
510.000	J	[kgcm²]	0.023
528.889	J	[kgcm²]	0.050
594.894	J	[kgcm²]	0.033
670.303	J	[kgcm²]	0.033
820.760	J	[kgcm²]	0.050
924.800	J	[kgcm²]	0.050
1040.215	J	[kgcm²]	0.033
1172.073	J	[kgcm²]	0.033
1303.560	J	[kgcm²]	0.023
1468.800	J	[kgcm²]	0.023
1717.389	J	[kgcm²]	0.014
1935.086	J	[kgcm²]	0.014

Gearbox			GKS06
103.721	J	[kgcm²]	0.300
113.205	J	[kgcm²]	0.234
127.059	J	[kgcm²]	0.264
140.816	J	[kgcm²]	0.213
155.647	J	[kgcm²]	0.191
174.336	J	[kgcm²]	0.112
202.588	J	[kgcm²]	0.168
224.524	J	[kgcm²]	0.074
252.000	J	[kgcm²]	0.155
279.286	J	[kgcm²]	0.069
316.800	J	[kgcm²]	0.102
361.429	J	[kgcm²]	0.064
408.000	J	[kgcm²]	0.068
458.067	J	[kgcm²]	0.042
517.091	J	[kgcm²]	0.044
555.927	J	[kgcm²]	0.041
640.800	J	[kgcm²]	0.062
696.668	J	[kgcm²]	0.028
812.137	J	[kgcm²]	0.040
914.907	J	[kgcm²]	0.040
1017.741	J	[kgcm²]	0.028
1146.529	J	[kgcm²]	0.028
1340.834	J	[kgcm²]	0.017
1510.507	J	[kgcm²]	0.017

► The moments of inertia relate to the drive shaft of the gearbox.
► The total moment of inertia is calculated by adding the values of the gearbox, motor and accessories.

Moments of inertia

GKS□□-4

► Moment of inertia (J) depending on ratio i

Gearbox			GKS07
103.039	J	[kgcm²]	0.837
112.391	J	[kgcm²]	0.632
126.222	J	[kgcm²]	0.729
137.748	J	[kgcm²]	0.571
154.622	J	[kgcm²]	0.527
179.201	J	[kgcm²]	0.283
201.254	J	[kgcm²]	0.454
222.909	J	[kgcm²]	0.199
246.659	J	[kgcm²]	0.417
273.199	J	[kgcm²]	0.184
321.049	J	[kgcm²]	0.256
358.829	J	[kgcm²]	0.169
399.353	J	[kgcm²]	0.182
464.367	J	[kgcm²]	0.106
516.810	J	[kgcm²]	0.113
563.572	J	[kgcm²]	0.101
636.581	J	[kgcm²]	0.161
683.972	J	[kgcm²]	0.074
823.810	J	[kgcm²]	0.101
928.237	J	[kgcm²]	0.101
999.806	J	[kgcm²]	0.073
1126.542	J	[kgcm²]	0.073
1277.842	J	[kgcm²]	0.047
1439.822	J	[kgcm²]	0.047

Gearbox			GKS09
100.551	J	[kgcm²]	2.480
113.320	J	[kgcm²]	2.456
123.275	J	[kgcm²]	2.107
138.929	J	[kgcm²]	2.091
151.012	J	[kgcm²]	1.516
170.188	J	[kgcm²]	1.505
204.596	J	[kgcm²]	1.244
230.577	J	[kgcm²]	1.239
248.439	J	[kgcm²]	1.128
279.986	J	[kgcm²]	1.125
323.365	J	[kgcm²]	0.713
364.427	J	[kgcm²]	0.710
402.234	J	[kgcm²]	0.509
453.311	J	[kgcm²]	0.507
520.538	J	[kgcm²]	0.466
586.638	J	[kgcm²]	0.465
631.744	J	[kgcm²]	0.443
711.965	J	[kgcm²]	0.443
817.551	J	[kgcm²]	0.276
921.367	J	[kgcm²]	0.276
992.209	J	[kgcm²]	0.201
1118.204	J	[kgcm²]	0.201
1254.197	J	[kgcm²]	0.130
1413.461	J	[kgcm²]	0.130

► The moments of inertia relate to the drive shaft of the gearbox.
► The total moment of inertia is calculated by adding the values of the gearbox, motor and accessories.

Moments of inertia

GKS□□-4

► Moment of inertia (J) depending on ratio i

Gearbox			GKS11
102.119	J	[kgcm²]	7.276
115.063	J	[kgcm²]	7.205
125.095	J	[kgcm²]	6.233
140.952	J	[kgcm²]	6.186
153.242	J	[kgcm²]	4.500
172.667	J	[kgcm²]	4.469
201.890	J	[kgcm²]	3.735
227.481	J	[kgcm²]	3.717
248.106	J	[kgcm²]	3.355
279.556	J	[kgcm²]	3.343
322.931	J	[kgcm²]	2.088
363.866	J	[kgcm²]	2.081
395.787	J	[kgcm²]	1.521
445.958	J	[kgcm²]	1.517
512.196	J	[kgcm²]	1.385
577.122	J	[kgcm²]	1.382
621.619	J	[kgcm²]	1.314
700.416	J	[kgcm²]	1.312
816.455	J	[kgcm²]	0.819
919.949	J	[kgcm²]	0.818
990.879	J	[kgcm²]	0.600
1116.484	J	[kgcm²]	0.599
1252.516	J	[kgcm²]	0.386
1411.286	J	[kgcm²]	0.385

Gearbox			GKS14
97.467	J	[kgcm²]	23.471
109.822	J	[kgcm²]	23.232
119.493	J	[kgcm²]	19.936
134.640	J	[kgcm²]	19.777
158.039	J	[kgcm²]	16.438
178.072	J	[kgcm²]	16.348
193.754	J	[kgcm²]	12.076
218.315	J	[kgcm²]	12.016
237.467	J	[kgcm²]	10.871
267.568	J	[kgcm²]	10.830
321.729	J	[kgcm²]	6.420
362.512	J	[kgcm²]	6.398
390.671	J	[kgcm²]	4.749
440.193	J	[kgcm²]	4.734
513.121	J	[kgcm²]	4.330
578.164	J	[kgcm²]	4.322
622.742	J	[kgcm²]	4.122
701.681	J	[kgcm²]	4.116
805.901	J	[kgcm²]	2.620
908.058	J	[kgcm²]	2.617
978.071	J	[kgcm²]	1.912
1102.052	J	[kgcm²]	1.909
1236.326	J	[kgcm²]	1.259
1393.043	J	[kgcm²]	1.258

► The moments of inertia relate to the drive shaft of the gearbox.
► The total moment of inertia is calculated by adding the values of the gearbox, motor and accessories.

Weights

GKS□□-3M HAR / HBR

			080C32	090C12	090C32	100C12	100C32	112C22	132C12	132C22
GKS04	m	[kg]	23	29	31					
GKS05	m	[kg]	33	39	41	47	49			
GKS06	m	[kg]	47	53	55	61	64	77	99	106
GKS07	m	[kg]	73	79	81	87	89	102	125	132
GKS09	m	[kg]		127	129	135	138	150	174	181
GKS11	m	[kg]				235	237	249	272	279
GKS14	m	[kg]						420	440	447

			160C22	160C32	180C12	180C32	180C42	225C12	225C22
GKS07	m	[kg]	175	190					
GKS09	m	[kg]	224	239	290	295			
GKS11	m	[kg]	322	337	388	393	413	612	632
GKS14	m	[kg]	490	505	556	561	581	779	799

GKS□□-3M HAK

			080C32	090C12	090C32	100C12	100C32	112C22	132C12	132C22
GKS04	m	[kg]	26	31	33					
GKS05	m	[kg]	37	43	45	51	53			
GKS06	m	[kg]	54	60	62	68	71	84	106	113
GKS07	m	[kg]	84	90	92	98	100	113	136	143
GKS09	m	[kg]		143	145	151	154	166	190	197
GKS11	m	[kg]				259	261	273	296	303
GKS14	m	[kg]						453	473	480

			160C22	160C32	180C12	180C32	180C42	225C12	225C22
GKS07	m	[kg]	186	201					
GKS09	m	[kg]	240	255	306	311			
GKS11	m	[kg]	346	361	412	417	437	636	656
GKS14	m	[kg]	523	538	589	594	614	812	832

► Weights with oil filling for mounting position A; all values are approximate.
The weights relate to the basic version. Bear in mind that additional weights may be needed, e.g. for motor options.

Weights

GKS□□-3M VAR / VBR

			080C32	090C12	090C32	100C12	100C32	112C22	132C12	132C22
GKS04	m	[kg]	24	29	31					
GKS05	m	[kg]	34	40	42	48	50			
GKS06	m	[kg]	49	56	58	64	66	79	101	108
GKS07	m	[kg]	78	84	86	92	94	107	130	137
GKS09	m	[kg]		135	137	143	146	158	182	189
GKS11	m	[kg]				251	253	265	288	295
GKS14	m	[kg]						453	473	480

			160C22	160C32	180C12	180C32	180C42	225C12	225C22
GKS07	m	[kg]	180	195					
GKS09	m	[kg]	232	247	298	303			
GKS11	m	[kg]	338	353	404	409	429	628	648
GKS14	m	[kg]	523	538	589	594	614	812	832

GKS□□-3M VAK

			080C32	090C12	090C32	100C12	100C32	112C22	132C12	132C22
GKS04	m	[kg]	26	32	34					
GKS05	m	[kg]	38	44	46	52	54			
GKS06	m	[kg]	56	63	65	71	73	86	108	115
GKS07	m	[kg]	89	95	97	103	105	118	141	148
GKS09	m	[kg]		151	153	159	162	174	198	205
GKS11	m	[kg]				275	277	289	312	319
GKS14	m	[kg]						486	506	513

			160C22	160C32	180C12	180C32	180C42	225C12	225C22
GKS07	m	[kg]	191	206					
GKS09	m	[kg]	248	263	314	319			
GKS11	m	[kg]	362	377	428	433	453	652	672
GKS14	m	[kg]	556	571	622	627	647	845	865

► Weights with oil filling for mounting position A; all values are approximate.
The weights relate to the basic version. Bear in mind that additional weights may be needed, e.g. for motor options.

Weights

GKS□□-3M SAR / SBR

			080C32	090C12	090C32	100C12	100C32	112C22	132C12	132C22
GKS04	m	[kg]	24	29	31					
GKS05	m	[kg]	34	40	42	48	50			
GKS06	m	[kg]	48	54	56	62	65	78	100	107
GKS07	m	[kg]	74	80	82	88	91	104	126	133
GKS09	m	[kg]		130	132	138	141	153	177	184
GKS11	m	[kg]				240	242	254	277	284
GKS14	m	[kg]						431	451	458

			160C22	160C32	180C12	180C32	180C42	225C12	225C22
GKS07	m	[kg]	176	191					
GKS09	m	[kg]	227	242	293	298			
GKS11	m	[kg]	327	342	393	398	418	617	637
GKS14	m	[kg]	501	516	567	572	592	790	810

GKS□□-3M SAK

			080C32	090C12	090C32	100C12	100C32	112C22	132C12	132C22
GKS04	m	[kg]	26	32	34					
GKS05	m	[kg]	38	44	46	52	54			
GKS06	m	[kg]	55	61	63	69	72	85	107	114
GKS07	m	[kg]	85	91	93	99	102	115	137	144
GKS09	m	[kg]		146	148	154	157	169	193	200
GKS11	m	[kg]				264	266	278	301	308
GKS14	m	[kg]						464	484	491

			160C22	160C32	180C12	180C32	180C42	225C12	225C22
GKS07	m	[kg]	187	202					
GKS09	m	[kg]	243	258	309	314			
GKS11	m	[kg]	351	366	417	422	442	641	661
GKS14	m	[kg]	534	549	600	605	625	823	843

► Weights with oil filling for mounting position A; all values are approximate.
The weights relate to the basic version. Bear in mind that additional weights may be needed, e.g. for motor options.

Weights

GKS□□-4M HAR / HBR

			080C32	090C12	090C32	100C12	100C32	112C22	132C12	132C22	160C22	160C32	180C12
GKS06	m	[kg]	51	56									
GKS07	m	[kg]	81	87	89	95							
GKS09	m	[kg]	134	140	142	148	151	164					
GKS11	m	[kg]	242	248	250	256	258	271	294	301			
GKS14	m	[kg]		433	435	441	444	456	480	487	530	545	596

GKS□□-4M HAK

			080C32	090C12	090C32	100C12	100C32	112C22	132C12	132C22	160C22	160C32	180C12
GKS06	m	[kg]	58	63									
GKS07	m	[kg]	92	98	100	106							
GKS09	m	[kg]	150	156	158	164	167	180					
GKS11	m	[kg]	266	272	274	280	282	295	318	325			
GKS14	m	[kg]		466	468	474	477	489	513	520	563	578	629

► Weights with oil filling for mounting position A; all values are approximate.
The weights relate to the basic version. Bear in mind that additional weights may be needed, e.g. for motor options.

Weights

GKS□□-4M VAR / VBR

			080C32	090C12	090C32	100C12	100C32	112C22	132C12	132C22	160C22	160C32	180C12
GKS06	m	[kg]	53	59									
GKS07	m	[kg]	86	92	94	100							
GKS09	m	[kg]	142	148	150	156	159	172					
GKS11	m	[kg]	258	264	266	272	274	287	310	317			
GKS14	m	[kg]		466	468	474	477	489	513	520	563	578	629

GKS□□-4M VAK

			080C32	090C12	090C32	100C12	100C32	112C22	132C12	132C22	160C22	160C32	180C12
GKS06	m	[kg]	60	66									
GKS07	m	[kg]	97	103	105	111							
GKS09	m	[kg]	158	164	166	172	175	188					
GKS11	m	[kg]	282	288	290	296	298	311	334	341			
GKS14	m	[kg]		499	501	507	510	522	546	553	596	611	662

► Weights with oil filling for mounting position A; all values are approximate.
The weights relate to the basic version. Bear in mind that additional weights may be needed, e.g. for motor options.

Weights

GKS□□-4M SAR / SBR

			080C32	090C12	090C32	100C12	100C32	112C22	132C12	132C22	160C22	160C32	180C12
GKS06	m	[kg]	52	57									
GKS07	m	[kg]	82	88	90	96							
GKS09	m	[kg]	137	143	145	151	154	167					
GKS11	m	[kg]	247	253	255	261	263	276	299	306			
GKS14	m	[kg]		444	446	452	455	467	491	498	541	556	607

GKS□□-4M SAK

			080C32	090C12	090C32	100C12	100C32	112C22	132C12	132C22	160C22	160C32	180C12
GKS06	m	[kg]	59	64									
GKS07	m	[kg]	93	99	101	107							
GKS09	m	[kg]	153	159	161	167	170	183					
GKS11	m	[kg]	271	277	279	285	287	300	323	330			
GKS14	m	[kg]		477	479	485	488	500	524	531	574	589	640

► Weights with oil filling for mounting position A; all values are approximate.
The weights relate to the basic version. Bear in mind that additional weights may be needed, e.g. for motor options.

Selection tables

50 Hz, 60 Hz: P_N = 0.75 kW

n_N	1410 r/min				1720 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	275	25	3.3		334	20	3.8	5.123	GKS04-3M □□□080C32	74
	201	34	2.7		243	28	3.2	7.025	GKS04-3M □□□080C32	74
	173	39	3.3		209	32	3.8	8.167	GKS04-3M □□□080C32	74
	157	43	2.4		190	36	2.8	8.991	GKS04-3M □□□080C32	74
	143	47	2.2		174	39	2.6	9.836	GKS04-3M □□□080C32	74
	120	57	3.2		146	46	3.7	11.730	GKS04-3M □□□080C32	74
	108	63	2.6		131	52	3.1	13.067	GKS04-3M □□□080C32	74
	107	64	2.6		130	52	3.0	13.176	GKS05-3M □□□080C32	74
	98	69	2.4		119	57	2.8	14.333	GKS04-3M □□□080C32	74
	88	78	2.3		106	64	2.7	16.087	GKS04-3M □□□080C32	74
	79	86	1.9		95	71	2.2	17.920	GKS04-3M □□□080C32	74
	73	93	3.2		90	76	3.7	19.216	GKS05-3M □□□080C32	74
	69	99	1.8		83	81	2.1	20.588	GKS04-3M □□□080C32	74
	63	109	1.7		76	89	2.0	22.522	GKS04-3M □□□080C32	74
	56	121	1.4		68	99	1.6	25.088	GKS04-3M □□□080C32	74
	49	139	1.3		60	114	1.5	28.727	GKS04-3M □□□080C32	74
	47	144	2.3		57	118	2.7	29.931	GKS05-3M □□□080C32	74
	44	154	1.1		53	127	1.3	32.000	GKS04-3M □□□080C32	74
	43	158	2.1		52	130	2.4	32.744	GKS05-3M □□□080C32	74
	40	170	1.1		49	139	1.3	35.191	GKS04-3M □□□080C32	74
	38	178	1.7		46	146	2.0	36.894	GKS05-3M □□□080C32	74
	36	189	0.9		44	155	1.0	39.200	GKS04-3M □□□080C32	74
	34	202	1.6		41	165	1.9	41.765	GKS05-3M □□□080C32	74
	32	213	0.9		39	175	1.1	44.240	GKS04-3M □□□080C32	74
	30	227	1.3		36	186	1.6	47.059	GKS05-3M □□□080C32	74
	28	247	1.3		33	202	1.6	51.162	GKS05-3M □□□080C32	74
	25	278	1.1		30	228	1.3	57.647	GKS05-3M □□□080C32	74
	24	279	2.5		30	229	3.0	57.882	GKS06-3M □□□080C32	74
	22	315	2.0		26	258	2.4	65.207	GKS06-3M □□□080C32	74
	21	321	1.0		26	263	1.3	66.592	GKS05-3M □□□080C32	74
	20	347	2.0		24	285	2.5	72.000	GKS06-3M □□□080C32	74
	19	362	0.9		23	297	1.0	75.033	GKS05-3M □□□080C32	74
	17	391	1.6		21	321	2.0	81.111	GKS06-3M □□□080C32	74
	17	400	0.8		21	328	1.0	82.833	GKS05-3M □□□080C32	74
	15	447	2.9		19	366	3.5	92.563	GKS07-3M □□□080C32	74
	15	450	1.6		18	369	1.9	93.176	GKS06-3M □□□080C32	74
	14	489	2.6		17	401	3.2	103.039	GKS07-4M □□□080C32	82
	14	492	1.4		17	403	1.7	103.721	GKS06-4M □□□080C32	82
	14	503	2.4		16	413	2.9	104.296	GKS07-3M □□□080C32	74
	13	506	1.3		16	415	1.5	104.967	GKS06-3M □□□080C32	74

Selection tables

50 Hz, 60 Hz: P_N = 0.75 kW

n_N	1410 r/min				1720 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	13	542	2.5		15	444	3.0	112.338	GKS07-3M □□□080C32	74
	13	533	2.0		15	437	2.4	112.391	GKS07-4M □□□080C32	82
	13	546	1.3		15	447	1.6	113.082	GKS06-3M □□□080C32	74
	13	537	1.0		15	440	1.2	113.205	GKS06-4M □□□080C32	82
	11	599	2.2		14	491	2.6	126.222	GKS07-4M □□□080C32	82
	11	611	2.0		14	501	2.4	126.578	GKS07-3M □□□080C32	74
	11	603	1.1		14	494	1.4	127.059	GKS06-4M □□□080C32	82
	11	615	1.0		13	504	1.3	127.392	GKS06-3M □□□080C32	74
	10	653	1.6		12	536	2.0	137.748	GKS07-4M □□□080C32	82
	10	668	0.8		12	547	1.0	140.816	GKS06-4M □□□080C32	82
	9.9	690	1.0		12	565	1.2	142.941	GKS06-3M □□□080C32	74
	9.1	733	1.8		11	601	2.2	154.622	GKS07-4M □□□080C32	82
	9.1	738	0.9		11	605	1.1	155.647	GKS06-4M □□□080C32	82
	8.8	777	0.8		11	637	1.0	161.029	GKS06-3M □□□080C32	74
	7.9	850	1.2		9.5	697	1.5	179.201	GKS07-4M □□□080C32	82
	7.6	891	1.5		9.3	730	1.8	184.600	GKS07-3M □□□080C32	74
	7.0	954	1.4		8.5	782	1.7	201.254	GKS07-4M □□□080C32	82
	6.8	1004	1.2		8.2	823	1.5	208.000	GKS07-3M □□□080C32	74
	6.3	1057	1.0		7.7	867	1.2	222.909	GKS07-4M □□□080C32	82
	6.3	1081	1.2		7.6	886	1.5	224.037	GKS07-3M □□□080C32	74
	5.7	1170	1.1		6.9	959	1.4	246.659	GKS07-4M □□□080C32	82
	5.6	1218	1.0		6.8	998	1.2	252.436	GKS07-3M □□□080C32	74
	5.2	1296	0.8		6.3	1062	1.0	273.199	GKS07-4M □□□080C32	82
	5.0	1366	1.0		6.0	1120	1.2	283.193	GKS07-3M □□□080C32	74
	4.4	1523	0.9		5.3	1248	1.1	321.049	GKS07-4M □□□080C32	82
	4.4	1534	2.0		5.3	1257	2.4	323.365	GKS09-4M □□□080C32	82
	3.9	1728	1.8		4.7	1417	2.2	364.427	GKS09-4M □□□080C32	82
	3.5	1908	1.6		4.3	1564	1.9	402.234	GKS09-4M □□□080C32	82
	3.1	2150	1.4		3.8	1762	1.7	453.311	GKS09-4M □□□080C32	82
	2.7	2469	1.2		3.3	2024	1.5	520.538	GKS09-4M □□□080C32	82
	2.4	2782	1.1		2.9	2281	1.4	586.638	GKS09-4M □□□080C32	82
	2.2	2996	1.0		2.7	2456	1.2	631.744	GKS09-4M □□□080C32	82
	2.0	3377	0.9		2.4	2768	1.1	711.965	GKS09-4M □□□080C32	82
	1.7	3872	1.5		2.1	3174	1.9	816.455	GKS11-4M □□□080C32	82
	1.5	4363	1.4		1.9	3577	1.7	919.949	GKS11-4M □□□080C32	82
	1.4	4699	1.3		1.7	3852	1.6	990.879	GKS11-4M □□□080C32	82
	1.3	5295	1.1		1.5	4341	1.4	1116.484	GKS11-4M □□□080C32	82
	1.1	5940	1.0		1.4	4870	1.2	1252.516	GKS11-4M □□□080C32	82
	1.0	6693	0.9		1.2	5487	1.1	1411.286	GKS11-4M □□□080C32	82

Selection tables

50 Hz, 60 Hz: P_N = 1.1 kW

n_N	1430 r/min				1740 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	279	36	2.3		338	29	2.6	5.123	GKS04-3M □□□090C12	74
	208	48	3.1		252	39	3.6	6.863	GKS05-3M □□□090C12	74
	204	49	1.9		246	40	2.2	7.025	GKS04-3M □□□090C12	74
	175	57	2.3		212	47	2.6	8.167	GKS04-3M □□□090C12	74
	159	63	1.6		192	52	1.9	8.991	GKS04-3M □□□090C12	74
	152	66	2.5		184	54	2.9	9.412	GKS05-3M □□□090C12	74
	145	69	1.5		176	56	1.8	9.836	GKS04-3M □□□090C12	74
	135	74	3.1		164	61	3.6	10.569	GKS05-3M □□□090C12	74
	123	81	3.1		148	67	3.6	11.667	GKS05-3M □□□090C12	74
	122	82	2.2		148	67	2.5	11.730	GKS04-3M □□□090C12	74
	109	91	1.8		132	75	2.1	13.067	GKS04-3M □□□090C12	74
	109	92	1.8		131	76	2.1	13.176	GKS05-3M □□□090C12	74
	100	100	1.6		121	82	1.9	14.333	GKS04-3M □□□090C12	74
	99	101	2.5		119	83	2.9	14.494	GKS05-3M □□□090C12	74
	89	112	2.5		108	92	2.9	16.000	GKS05-3M □□□090C12	74
	89	112	1.6		108	92	1.9	16.087	GKS04-3M □□□090C12	74
	84	119	2.6		101	98	3.1	17.054	GKS05-3M □□□090C12	74
	80	125	1.3		97	103	1.5	17.920	GKS04-3M □□□090C12	74
	74	134	2.2		90	110	2.6	19.216	GKS05-3M □□□090C12	74
	70	144	1.3		84	118	1.5	20.588	GKS04-3M □□□090C12	74
	64	157	1.2		77	129	1.3	22.522	GKS04-3M □□□090C12	74
	61	163	2.0		74	134	2.3	23.388	GKS05-3M □□□090C12	74
	57	175	1.0		69	144	1.1	25.088	GKS04-3M □□□090C12	74
	54	184	1.6		66	151	1.9	26.353	GKS05-3M □□□090C12	74
	50	200	0.9		60	165	1.1	28.727	GKS04-3M □□□090C12	74
	48	209	1.6		58	172	1.8	29.931	GKS05-3M □□□090C12	74
	45	224	2.7		54	184	3.2	32.063	GKS06-3M □□□090C12	74
	44	228	1.4		53	188	1.7	32.744	GKS05-3M □□□090C12	74
	39	253	2.7		48	208	3.1	36.303	GKS06-3M □□□090C12	74
	39	257	1.2		47	212	1.4	36.894	GKS05-3M □□□090C12	74
	34	291	1.1		41	239	1.3	41.765	GKS05-3M □□□090C12	74
	32	310	2.2		39	255	2.7	44.471	GKS06-3M □□□090C12	74
	30	328	0.9		37	270	1.1	47.059	GKS05-3M □□□090C12	74
	28	357	0.9		34	293	1.1	51.162	GKS05-3M □□□090C12	74
	27	370	1.9		33	304	2.3	53.074	GKS06-3M □□□090C12	74
	25	404	1.7		30	332	2.1	57.882	GKS06-3M □□□090C12	74
	22	452	2.6		27	372	3.2	64.790	GKS07-3M □□□090C12	74
	22	455	1.4		27	374	1.7	65.207	GKS06-3M □□□090C12	74
	20	492	2.7		25	404	3.3	70.474	GKS07-3M □□□090C12	74
	20	502	1.4		24	413	1.7	72.000	GKS06-3M □□□090C12	74

Selection tables

50 Hz, 60 Hz: P_N = 1.1 kW

n_N	1430 r/min				1740 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	18	554	2.2		22	455	2.6	79.407	GKS07-3M □□□090C12	74
	18	566	1.1		21	465	1.4	81.111	GKS06-3M □□□090C12	74
	15	646	2.1		19	531	2.5	92.563	GKS07-3M □□□090C12	74
	15	650	1.1		19	534	1.3	93.176	GKS06-3M □□□090C12	74
	14	707	1.8		17	581	2.2	103.039	GKS07-4M □□□090C12	82
	14	711	1.0		17	585	1.2	103.721	GKS06-4M □□□090C12	82
	14	728	1.7		17	598	2.0	104.296	GKS07-3M □□□090C12	74
	14	732	0.9		17	602	1.1	104.967	GKS06-3M □□□090C12	74
	13	784	1.7		15	644	2.1	112.338	GKS07-3M □□□090C12	74
	13	771	1.4		15	634	1.7	112.391	GKS07-4M □□□090C12	82
	13	789	0.9		15	648	1.1	113.082	GKS06-3M □□□090C12	74
	11	866	1.5		14	711	1.8	126.222	GKS07-4M □□□090C12	82
	11	883	1.4		14	726	1.7	126.578	GKS07-3M □□□090C12	74
	10	945	1.1		13	776	1.4	137.748	GKS07-4M □□□090C12	82
	10	953	3.2		13	783	3.9	138.929	GKS09-4M □□□090C12	82
	10	981	1.4		12	806	1.7	140.548	GKS07-3M □□□090C12	74
	10	983	2.7		12	808	3.3	140.921	GKS09-3M □□□090C12	74
	9.5	1036	2.9		12	851	3.6	151.012	GKS09-4M □□□090C12	82
	9.3	1061	1.2		11	872	1.5	154.622	GKS07-4M □□□090C12	82
	9.0	1105	1.1		11	908	1.3	158.364	GKS07-3M □□□090C12	74
	9.0	1108	2.7		11	911	3.3	158.816	GKS09-3M □□□090C12	74
	8.4	1167	2.6		10	959	3.1	170.188	GKS09-4M □□□090C12	82
	8.0	1229	0.9		9.7	1010	1.0	179.201	GKS07-4M □□□090C12	82
	7.9	1270	2.4		9.5	1044	2.9	182.000	GKS09-3M □□□090C12	74
	7.8	1288	1.0		9.4	1059	1.3	184.600	GKS07-3M □□□090C12	74
	7.1	1380	0.9		8.6	1134	1.2	201.254	GKS07-4M □□□090C12	82
	7.0	1403	2.2		8.5	1153	2.6	204.596	GKS09-4M □□□090C12	82
	7.0	1431	2.2		8.4	1176	2.6	205.111	GKS09-3M □□□090C12	74
	6.9	1451	0.8		8.3	1193	1.0	208.000	GKS07-3M □□□090C12	74
	6.5	1541	2.0		7.8	1267	2.4	220.882	GKS09-3M □□□090C12	74
	6.4	1563	0.9		7.7	1285	1.0	224.037	GKS07-3M □□□090C12	74
	6.2	1581	1.9		7.5	1300	2.3	230.577	GKS09-4M □□□090C12	82
	5.8	1704	1.8		7.0	1400	2.2	248.439	GKS09-4M □□□090C12	82
	5.7	1737	1.8		7.0	1427	2.2	248.930	GKS09-3M □□□090C12	74
	5.1	1948	1.6		6.2	1601	1.9	279.205	GKS09-3M □□□090C12	74
	5.1	1920	1.6		6.2	1578	1.9	279.986	GKS09-4M □□□090C12	82
	4.5	2195	1.4		5.5	1804	1.7	314.659	GKS09-3M □□□090C12	74
	4.4	2215	2.7		5.4	1820	3.3	322.931	GKS11-4M □□□090C12	82
	4.4	2218	1.4		5.4	1823	1.7	323.365	GKS09-4M □□□090C12	82
	3.9	2496	2.4		4.8	2051	2.9	363.866	GKS11-4M □□□090C12	82

Selection tables

50 Hz, 60 Hz: P_N = 1.1 kW

n_N	1430 r/min				1740 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	3.9	2499	1.2		4.8	2054	1.5	364.427	GKS09-4M □□□090C12	82
	3.6	2715	2.2		4.4	2231	2.7	395.787	GKS11-4M □□□090C12	82
	3.6	2759	1.1		4.3	2267	1.3	402.234	GKS09-4M □□□090C12	82
	3.2	3059	2.0		3.9	2514	2.4	445.958	GKS11-4M □□□090C12	82
	3.2	3109	1.0		3.8	2555	1.2	453.311	GKS09-4M □□□090C12	82
	2.8	3513	1.7		3.4	2887	2.1	512.196	GKS11-4M □□□090C12	82
	2.8	3570	0.8		3.3	2934	1.0	520.538	GKS09-4M □□□090C12	82
	2.5	3958	1.5		3.0	3253	1.9	577.122	GKS11-4M □□□090C12	82
	2.3	4264	1.4		2.8	3504	1.7	621.619	GKS11-4M □□□090C12	82
	2.0	4804	1.3		2.5	3948	1.5	700.416	GKS11-4M □□□090C12	82
	1.8	5527	2.1		2.2	4543	2.5	805.901	GKS14-4M □□□090C12	82
	1.8	5600	1.1		2.1	4602	1.3	816.455	GKS11-4M □□□090C12	82
	1.6	6228	1.9		1.9	5118	2.3	908.058	GKS14-4M □□□090C12	82
	1.6	6310	1.0		1.9	5186	1.2	919.949	GKS11-4M □□□090C12	82
	1.5	6708	1.7		1.8	5513	2.1	978.071	GKS14-4M □□□090C12	82
	1.4	6796	0.9		1.8	5585	1.1	990.879	GKS11-4M □□□090C12	82
	1.3	7559	1.5		1.6	6212	1.9	1102.052	GKS14-4M □□□090C12	82
	1.2	8480	1.4		1.4	6969	1.6	1236.326	GKS14-4M □□□090C12	82
	1.0	9554	1.2		1.2	7852	1.5	1393.043	GKS14-4M □□□090C12	82

Selection tables

50 Hz, 60 Hz: P_N = 1.5 kW

n_N	1435 r/min				1745 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	280	49	1.7		339	40	1.9	5.123	GKS04-3M □□□090C32	74
	209	65	2.3		253	54	2.6	6.863	GKS05-3M □□□090C32	74
	204	67	1.4		247	55	1.6	7.025	GKS04-3M □□□090C32	74
	176	77	1.7		212	64	1.9	8.167	GKS04-3M □□□090C32	74
	160	85	1.2		193	70	1.4	8.991	GKS04-3M □□□090C32	74
	153	89	1.8		184	73	2.1	9.412	GKS05-3M □□□090C32	74
	146	93	1.1		176	77	1.3	9.836	GKS04-3M □□□090C32	74
	136	100	2.3		164	82	2.6	10.569	GKS05-3M □□□090C32	74
	126	108	3.1		152	89	3.5	11.382	GKS06-3M □□□090C32	74
	123	111	2.3		149	91	2.6	11.667	GKS05-3M □□□090C32	74
	122	111	1.6		148	91	1.9	11.730	GKS04-3M □□□090C32	74
	110	124	1.3		133	102	1.5	13.067	GKS04-3M □□□090C32	74
	109	125	1.3		132	103	1.5	13.176	GKS05-3M □□□090C32	74
	100	136	1.2		121	112	1.4	14.333	GKS04-3M □□□090C32	74
	99	137	1.8		120	113	2.1	14.494	GKS05-3M □□□090C32	74
	90	152	1.8		108	125	2.1	16.000	GKS05-3M □□□090C32	74
	89	153	1.2		108	125	1.4	16.087	GKS04-3M □□□090C32	74
	84	162	1.9		102	133	2.2	17.054	GKS05-3M □□□090C32	74
	81	169	3.1		97	139	3.5	17.809	GKS06-3M □□□090C32	74
	80	170	1.0		97	140	1.1	17.920	GKS04-3M □□□090C32	74
	75	182	1.6		90	150	1.9	19.216	GKS05-3M □□□090C32	74
	70	195	0.9		84	161	1.1	20.588	GKS04-3M □□□090C32	74
	64	214	0.9		77	176	1.0	22.522	GKS04-3M □□□090C32	74
	61	222	1.5		74	182	1.7	23.388	GKS05-3M □□□090C32	74
	55	247	2.8		67	203	3.2	26.017	GKS06-3M □□□090C32	74
	55	250	1.2		66	205	1.4	26.353	GKS05-3M □□□090C32	74
	50	270	2.5		61	222	2.9	28.461	GKS06-3M □□□090C32	74
	48	284	1.2		58	233	1.3	29.931	GKS05-3M □□□090C32	74
	45	304	2.0		54	250	2.3	32.063	GKS06-3M □□□090C32	74
	44	310	1.1		53	255	1.2	32.744	GKS05-3M □□□090C32	74
	40	344	2.0		48	283	2.3	36.303	GKS06-3M □□□090C32	74
	39	350	0.9		47	288	1.0	36.894	GKS05-3M □□□090C32	74
	34	396	0.8		42	326	1.0	41.765	GKS05-3M □□□090C32	74
	32	422	1.6		39	347	2.0	44.471	GKS06-3M □□□090C32	74
	27	503	1.4		33	414	1.7	53.074	GKS06-3M □□□090C32	74
	25	545	2.4		30	448	2.9	57.501	GKS07-3M □□□090C32	74
	25	549	1.3		30	451	1.5	57.882	GKS06-3M □□□090C32	74
	22	614	1.9		27	505	2.4	64.790	GKS07-3M □□□090C32	74
	22	618	1.0		27	508	1.2	65.207	GKS06-3M □□□090C32	74
	20	668	2.0		25	549	2.4	70.474	GKS07-3M □□□090C32	74

Selection tables

50 Hz, 60 Hz: P_N = 1.5 kW

n_N	1435 r/min				1745 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	20	683	1.0		24	561	1.3	72.000	GKS06-3M □□□090C32	74
	18	753	1.6		22	619	1.9	79.407	GKS07-3M □□□090C32	74
	18	769	0.8		21	632	1.0	81.111	GKS06-3M □□□090C32	74
	16	871	2.9		19	716	3.6	91.860	GKS09-3M □□□090C32	74
	16	878	1.5		19	722	1.8	92.563	GKS07-3M □□□090C32	74
	14	937	3.2		17	771	3.9	100.551	GKS09-4M □□□090C32	82
	14	960	1.3		17	790	1.6	103.039	GKS07-4M □□□090C32	82
	14	982	2.9		17	807	3.6	103.524	GKS09-3M □□□090C32	74
	14	989	1.2		17	813	1.5	104.296	GKS07-3M □□□090C32	74
	13	1057	2.6		16	869	3.1	111.484	GKS09-3M □□□090C32	74
	13	1065	1.2		15	876	1.5	112.338	GKS07-3M □□□090C32	74
	13	1048	1.0		15	861	1.2	112.391	GKS07-4M □□□090C32	82
	13	1056	2.8		15	869	3.5	113.320	GKS09-4M □□□090C32	82
	12	1149	2.6		14	945	3.2	123.275	GKS09-4M □□□090C32	82
	11	1191	2.6		14	980	3.1	125.641	GKS09-3M □□□090C32	74
	11	1176	1.1		14	967	1.3	126.222	GKS07-4M □□□090C32	82
	11	1200	1.0		14	987	1.2	126.578	GKS07-3M □□□090C32	74
	10	1284	0.8		13	1056	1.0	137.748	GKS07-4M □□□090C32	82
	10	1295	2.3		13	1065	2.8	138.929	GKS09-4M □□□090C32	82
	10	1333	1.0		12	1096	1.2	140.548	GKS07-3M □□□090C32	74
	10	1336	2.0		12	1099	2.4	140.921	GKS09-3M □□□090C32	74
	9.5	1407	2.1		12	1157	2.6	151.012	GKS09-4M □□□090C32	82
	9.3	1441	0.9		11	1185	1.1	154.622	GKS07-4M □□□090C32	82
	9.1	1502	0.8		11	1235	1.0	158.364	GKS07-3M □□□090C32	74
	9.0	1506	2.0		11	1238	2.4	158.816	GKS09-3M □□□090C32	74
	8.4	1586	1.9		10	1304	2.3	170.188	GKS09-4M □□□090C32	82
	7.9	1726	1.8		9.5	1419	2.1	182.000	GKS09-3M □□□090C32	74
	7.0	1907	1.6		8.5	1568	1.9	204.596	GKS09-4M □□□090C32	82
	7.0	1945	1.6		8.5	1599	1.9	205.111	GKS09-3M □□□090C32	74
	6.5	2094	1.4		7.9	1722	1.8	220.882	GKS09-3M □□□090C32	74
	6.2	2149	1.4		7.5	1767	1.7	230.577	GKS09-4M □□□090C32	82
	5.8	2315	1.3		7.0	1904	1.6	248.439	GKS09-4M □□□090C32	82
	5.8	2360	1.3		7.0	1941	1.6	248.930	GKS09-3M □□□090C32	74
	5.1	2647	1.1		6.2	2177	1.4	279.205	GKS09-3M □□□090C32	74
	5.1	2610	1.2		6.2	2146	1.4	279.986	GKS09-4M □□□090C32	82
	4.6	2983	1.0		5.5	2453	1.3	314.659	GKS09-3M □□□090C32	74
	4.4	3010	2.0		5.4	2475	2.4	322.931	GKS11-4M □□□090C32	82
	4.4	3014	1.0		5.4	2478	1.2	323.365	GKS09-4M □□□090C32	82
	3.9	3391	1.8		4.8	2789	2.2	363.866	GKS11-4M □□□090C32	82
	3.9	3397	0.9		4.8	2793	1.1	364.427	GKS09-4M □□□090C32	82

Selection tables

50 Hz, 60 Hz: P_N = 1.5 kW

n_N	1435 r/min				1745 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	3.6	3689	1.6		4.4	3033	2.0	395.787	GKS11-4M □□□090C32	82
	3.6	3749	0.8		4.3	3083	1.0	402.234	GKS09-4M □□□090C32	82
	3.2	4156	1.5		3.9	3418	1.8	445.958	GKS11-4M □□□090C32	82
	2.8	4774	1.3		3.4	3926	1.5	512.196	GKS11-4M □□□090C32	82
	2.5	5379	1.1		3.0	4423	1.4	577.122	GKS11-4M □□□090C32	82
	2.3	5794	1.0		2.8	4764	1.3	621.619	GKS11-4M □□□090C32	82
	2.1	6528	0.9		2.5	5368	1.1	700.416	GKS11-4M □□□090C32	82
	1.8	7511	1.5		2.2	6177	1.9	805.901	GKS14-4M □□□090C32	82
	1.6	8463	1.4		1.9	6960	1.7	908.058	GKS14-4M □□□090C32	82
	1.5	9116	1.3		1.8	7496	1.5	978.071	GKS14-4M □□□090C32	82
	1.3	10271	1.1		1.6	8447	1.4	1102.052	GKS14-4M □□□090C32	82
	1.2	11523	1.0		1.4	9476	1.2	1236.326	GKS14-4M □□□090C32	82
	1.0	12983	0.9		1.3	10677	1.1	1393.043	GKS14-4M □□□090C32	82

Selection tables

50 Hz, 60 Hz: P_N = 2.2 kW

n_N	1445 r/min				1750 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	223	90	2.9		269	74	3.4	6.485	GKS06-3M □□□100C12	74
	211	95	1.6		254	78	1.8	6.863	GKS05-3M □□□100C12	74
	157	127	2.9		190	105	3.4	9.196	GKS06-3M □□□100C12	74
	154	130	1.3		185	107	1.5	9.412	GKS05-3M □□□100C12	74
	142	140	2.9		172	116	3.4	10.147	GKS06-3M □□□100C12	74
	137	146	1.6		165	121	1.8	10.569	GKS05-3M □□□100C12	74
	127	157	2.1		153	130	2.4	11.382	GKS06-3M □□□100C12	74
	124	161	1.6		150	133	1.8	11.667	GKS05-3M □□□100C12	74
	115	174	2.4		138	144	2.8	12.612	GKS06-3M □□□100C12	74
	110	182	0.9		132	150	1.0	13.176	GKS05-3M □□□100C12	74
	100	200	1.3		120	165	1.5	14.494	GKS05-3M □□□100C12	74
	98	205	2.9		118	169	3.4	14.824	GKS06-3M □□□100C12	74
	90	221	1.3		109	182	1.5	16.000	GKS05-3M □□□100C12	74
	87	231	2.6		105	190	3.0	16.699	GKS06-3M □□□100C12	74
	85	236	1.3		102	194	1.5	17.054	GKS05-3M □□□100C12	74
	81	246	2.1		98	203	2.4	17.809	GKS06-3M □□□100C12	74
	75	265	1.1		91	219	1.3	19.216	GKS05-3M □□□100C12	74
	71	281	2.4		86	232	2.7	20.329	GKS06-3M □□□100C12	74
	63	316	1.9		76	261	2.2	22.902	GKS06-3M □□□100C12	74
	62	323	1.0		75	267	1.2	23.388	GKS05-3M □□□100C12	74
	56	359	1.9		67	297	2.2	26.017	GKS06-3M □□□100C12	74
	55	364	0.8		66	301	0.9	26.353	GKS05-3M □□□100C12	74
	51	390	3.1		62	322	3.5	28.274	GKS07-3M □□□100C12	74
	51	393	1.7		61	325	2.0	28.461	GKS06-3M □□□100C12	74
	45	440	2.7		55	363	3.1	31.858	GKS07-3M □□□100C12	74
	45	443	1.4		54	366	1.6	32.063	GKS06-3M □□□100C12	74
	40	498	2.6		48	411	3.0	36.063	GKS07-3M □□□100C12	74
	40	501	1.4		48	414	1.6	36.303	GKS06-3M □□□100C12	74
	35	573	1.2		42	473	1.4	41.472	GKS06-3M □□□100C12	74
	33	610	2.1		40	504	2.6	44.178	GKS07-3M □□□100C12	74
	33	614	1.1		39	507	1.4	44.471	GKS06-3M □□□100C12	74
	29	695	1.9		35	574	2.3	50.345	GKS07-3M □□□100C12	74
	27	733	0.9		33	605	1.1	53.074	GKS06-3M □□□100C12	74
	25	794	1.6		30	656	2.0	57.501	GKS07-3M □□□100C12	74
	25	799	0.9		30	660	1.1	57.882	GKS06-3M □□□100C12	74
	22	895	1.3		27	739	1.6	64.790	GKS07-3M □□□100C12	74
	21	973	1.4		25	804	1.6	70.474	GKS07-3M □□□100C12	74
	20	980	3.1		25	809	3.7	70.982	GKS09-3M □□□100C12	74
	18	1097	1.1		22	905	1.3	79.407	GKS07-3M □□□100C12	74
	18	1105	2.8		22	912	3.4	79.996	GKS09-3M □□□100C12	74

Selection tables

50 Hz, 60 Hz: P_N = 2.2 kW

n_N	1445 r/min				1750 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	16	1269	2.4		19	1047	2.9	91.860	GKS09-3M □□□100C12	74
	16	1278	1.0		19	1055	1.3	92.563	GKS07-3M □□□100C12	74
	14	1365	2.2		17	1127	2.7	100.551	GKS09-4M □□□100C12	82
	14	1399	0.9		17	1155	1.1	103.039	GKS07-4M □□□100C12	82
	14	1430	2.2		17	1180	2.6	103.524	GKS09-3M □□□100C12	74
	14	1440	0.8		17	1189	1.0	104.296	GKS07-3M □□□100C12	74
	13	1538	2.9		16	1270	3.5	111.335	GKS11-3M □□□100C12	74
	13	1540	2.0		16	1271	2.4	111.484	GKS09-3M □□□100C12	74
	13	1551	0.9		16	1281	1.0	112.338	GKS07-3M □□□100C12	74
	13	1538	2.0		15	1270	2.4	113.320	GKS09-4M □□□100C12	82
	12	1673	1.8		14	1382	2.2	123.275	GKS09-4M □□□100C12	82
	12	1732	2.9		14	1430	3.5	125.448	GKS11-3M □□□100C12	74
	12	1735	1.8		14	1433	2.1	125.641	GKS09-3M □□□100C12	74
	10	1886	1.6		13	1557	1.9	138.929	GKS09-4M □□□100C12	82
	10	1943	2.3		12	1605	2.8	140.732	GKS11-3M □□□100C12	74
	10	1946	1.5		12	1607	1.9	140.921	GKS09-3M □□□100C12	74
	10	1913	3.1		12	1580	3.7	140.952	GKS11-4M □□□100C12	82
	9.6	2050	1.5		12	1693	1.8	151.012	GKS09-4M □□□100C12	82
	9.4	2080	2.8		11	1718	3.4	153.242	GKS11-4M □□□100C12	82
	9.1	2190	2.3		11	1808	2.8	158.571	GKS11-3M □□□100C12	74
	9.1	2193	1.4		11	1811	1.7	158.816	GKS09-3M □□□100C12	74
	8.5	2310	1.3		10	1908	1.6	170.188	GKS09-4M □□□100C12	82
	8.4	2344	2.5		10	1935	3.1	172.667	GKS11-4M □□□100C12	82
	7.9	2513	1.2		9.6	2075	1.5	182.000	GKS09-3M □□□100C12	74
	7.7	2577	2.3		9.4	2127	2.8	186.572	GKS11-3M □□□100C12	74
	7.2	2741	2.2		8.6	2263	2.6	201.890	GKS11-4M □□□100C12	82
	7.1	2777	1.1		8.5	2293	1.3	204.596	GKS09-4M □□□100C12	82
	7.0	2833	1.1		8.5	2339	1.3	205.111	GKS09-3M □□□100C12	74
	6.9	2903	2.0		8.3	2397	2.5	210.222	GKS11-3M □□□100C12	74
	6.5	3050	1.0		7.9	2519	1.2	220.882	GKS09-3M □□□100C12	74
	6.4	3127	1.9		7.7	2582	2.3	226.431	GKS11-3M □□□100C12	74
	6.4	3088	1.9		7.7	2550	2.3	227.481	GKS11-4M □□□100C12	82
	6.3	3130	1.0		7.6	2585	1.2	230.577	GKS09-4M □□□100C12	82
	5.8	3368	1.8		7.0	2781	2.1	248.106	GKS11-4M □□□100C12	82
	5.8	3373	0.9		7.0	2785	1.1	248.439	GKS09-4M □□□100C12	82
	5.8	3438	0.9		7.0	2839	1.1	248.930	GKS09-3M □□□100C12	74
	5.7	3523	1.7		6.8	2909	2.0	255.133	GKS11-3M □□□100C12	74
	5.2	3795	1.6		6.2	3134	1.9	279.556	GKS11-4M □□□100C12	82
	5.2	3801	0.8		6.2	3138	1.0	279.986	GKS09-4M □□□100C12	82
	5.1	3953	1.5		6.1	3264	1.8	286.219	GKS11-3M □□□100C12	74

Selection tables

50 Hz, 60 Hz: P_N = 2.2 kW

n_N	1445 r/min				1750 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	4.5	4367	2.6		5.4	3606	3.2	321.729	GKS14-4M □□□100C12	82
	4.5	4454	1.3		5.4	3677	1.6	322.500	GKS11-3M □□□100C12	74
	4.5	4384	1.4		5.4	3620	1.7	322.931	GKS11-4M □□□100C12	82
	4.0	4921	2.3		4.8	4063	2.8	362.512	GKS14-4M □□□100C12	82
	4.0	4939	1.2		4.8	4079	1.5	363.866	GKS11-4M □□□100C12	82
	3.7	5303	2.2		4.5	4379	2.6	390.671	GKS14-4M □□□100C12	82
	3.7	5373	1.1		4.4	4436	1.3	395.787	GKS11-4M □□□100C12	82
	3.3	5976	1.9		4.0	4934	2.3	440.193	GKS14-4M □□□100C12	82
	3.2	6054	1.0		3.9	4999	1.2	445.958	GKS11-4M □□□100C12	82
	2.8	6953	0.9		3.4	5741	1.0	512.196	GKS11-4M □□□100C12	82
	2.8	6966	1.6		3.4	5752	2.0	513.121	GKS14-4M □□□100C12	82
	2.5	7849	1.5		3.0	6481	1.8	578.164	GKS14-4M □□□100C12	82
	2.3	8454	1.4		2.8	6980	1.6	622.742	GKS14-4M □□□100C12	82
	2.1	9525	1.2		2.5	7865	1.5	701.681	GKS14-4M □□□100C12	82
	1.8	10940	1.1		2.2	9033	1.3	805.901	GKS14-4M □□□100C12	82
	1.6	12327	0.9		1.9	10178	1.1	908.058	GKS14-4M □□□100C12	82
	1.5	13277	0.9		1.8	10963	1.0	978.071	GKS14-4M □□□100C12	82

Selection tables

50 Hz, 60 Hz: P_N = 3.0 kW

n_N	1445 r/min				1755 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	223	122	2.2		269	101	2.5	6.485	GKS06-3M □□□100C32	74
	211	129	1.1		254	106	1.3	6.863	GKS05-3M □□□100C32	74
	157	173	2.2		190	143	2.5	9.196	GKS06-3M □□□100C32	74
	154	177	0.9		185	146	1.1	9.412	GKS05-3M □□□100C32	74
	142	191	2.2		172	157	2.5	10.147	GKS06-3M □□□100C32	74
	137	199	1.1		165	164	1.3	10.569	GKS05-3M □□□100C32	74
	127	214	2.9		153	176	3.3	11.378	GKS07-3M □□□100C32	74
	127	214	1.5		153	176	1.8	11.382	GKS06-3M □□□100C32	74
	124	220	1.1		150	181	1.3	11.667	GKS05-3M □□□100C32	74
	115	237	1.8		138	196	2.1	12.612	GKS06-3M □□□100C32	74
	100	273	0.9		120	225	1.1	14.494	GKS05-3M □□□100C32	74
	98	279	2.2		118	230	2.5	14.824	GKS06-3M □□□100C32	74
	90	301	0.9		109	248	1.1	16.000	GKS05-3M □□□100C32	74
	87	314	1.9		105	259	2.2	16.699	GKS06-3M □□□100C32	74
	85	321	1.0		102	264	1.1	17.054	GKS05-3M □□□100C32	74
	84	325	3.1		101	268	3.5	17.270	GKS07-3M □□□100C32	74
	81	335	1.5		98	276	1.8	17.809	GKS06-3M □□□100C32	74
	75	362	0.8		91	298	0.9	19.216	GKS05-3M □□□100C32	74
	71	383	1.7		86	315	2.0	20.329	GKS06-3M □□□100C32	74
	63	431	1.4		76	355	1.6	22.902	GKS06-3M □□□100C32	74
	57	475	2.5		69	391	2.9	25.244	GKS07-3M □□□100C32	74
	56	490	1.4		67	403	1.6	26.017	GKS06-3M □□□100C32	74
	51	532	2.3		62	438	2.6	28.274	GKS07-3M □□□100C32	74
	51	536	1.3		61	441	1.5	28.461	GKS06-3M □□□100C32	74
	45	600	2.0		55	494	2.3	31.858	GKS07-3M □□□100C32	74
	45	604	1.0		54	497	1.2	32.063	GKS06-3M □□□100C32	74
	40	679	1.9		48	559	2.2	36.063	GKS07-3M □□□100C32	74
	40	684	1.0		48	563	1.2	36.303	GKS06-3M □□□100C32	74
	35	781	0.9		42	643	1.0	41.472	GKS06-3M □□□100C32	74
	33	832	1.6		40	685	1.9	44.178	GKS07-3M □□□100C32	74
	33	837	0.8		39	690	1.0	44.471	GKS06-3M □□□100C32	74
	29	948	1.4		35	781	1.7	50.345	GKS07-3M □□□100C32	74
	25	1083	1.2		30	892	1.5	57.501	GKS07-3M □□□100C32	74
	25	1101	2.8		30	906	3.3	58.456	GKS09-3M □□□100C32	74
	22	1220	1.0		27	1005	1.2	64.790	GKS07-3M □□□100C32	74
	22	1241	2.5		27	1021	3.0	65.879	GKS09-3M □□□100C32	74
	21	1327	1.0		25	1093	1.2	70.474	GKS07-3M □□□100C32	74
	20	1337	2.3		25	1101	2.8	70.982	GKS09-3M □□□100C32	74
	18	1495	0.8		22	1231	1.0	79.407	GKS07-3M □□□100C32	74
	18	1506	2.0		22	1240	2.5	79.996	GKS09-3M □□□100C32	74

Selection tables

50 Hz, 60 Hz: P_N = 3.0 kW

n_N	1445 r/min				1755 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	16	1728	2.5		19	1422	3.1	91.737	GKS11-3M □□□100C32	74
	16	1730	1.8		19	1424	2.1	91.860	GKS09-3M □□□100C32	74
	14	1861	1.6		17	1533	2.0	100.551	GKS09-4M □□□100C32	82
	14	1890	3.0		17	1556	3.6	102.119	GKS11-4M □□□100C32	82
	14	1947	2.5		17	1603	3.1	103.365	GKS11-3M □□□100C32	74
	14	1950	1.6		17	1605	1.9	103.524	GKS09-3M □□□100C32	74
	13	2097	2.1		16	1726	2.6	111.335	GKS11-3M □□□100C32	74
	13	2099	1.4		16	1729	1.8	111.484	GKS09-3M □□□100C32	74
	13	2098	1.4		15	1727	1.7	113.320	GKS09-4M □□□100C32	82
	13	2130	2.8		15	1754	3.3	115.063	GKS11-4M □□□100C32	82
	12	2282	1.3		14	1879	1.6	123.275	GKS09-4M □□□100C32	82
	12	2316	2.5		14	1907	3.0	125.095	GKS11-4M □□□100C32	82
	12	2362	2.1		14	1945	2.6	125.448	GKS11-3M □□□100C32	74
	12	2366	1.3		14	1948	1.6	125.641	GKS09-3M □□□100C32	74
	10	2572	1.2		13	2117	1.4	138.929	GKS09-4M □□□100C32	82
	10	2650	1.7		12	2182	2.1	140.732	GKS11-3M □□□100C32	74
	10	2654	1.1		12	2185	1.4	140.921	GKS09-3M □□□100C32	74
	10	2609	2.3		12	2148	2.8	140.952	GKS11-4M □□□100C32	82
	9.6	2795	1.1		12	2302	1.3	151.012	GKS09-4M □□□100C32	82
	9.4	2837	2.0		11	2336	2.5	153.242	GKS11-4M □□□100C32	82
	9.1	2986	1.7		11	2459	2.1	158.571	GKS11-3M □□□100C32	74
	9.1	2991	1.0		11	2462	1.3	158.816	GKS09-3M □□□100C32	74
	8.5	3150	1.0		10	2594	1.2	170.188	GKS09-4M □□□100C32	82
	8.4	3196	1.9		10	2632	2.3	172.667	GKS11-4M □□□100C32	82
	7.9	3427	0.9		9.6	2822	1.1	182.000	GKS09-3M □□□100C32	74
	7.7	3513	1.7		9.4	2893	2.1	186.572	GKS11-3M □□□100C32	74
	7.2	3737	1.6		8.6	3077	1.9	201.890	GKS11-4M □□□100C32	82
	7.1	3787	0.8		8.5	3118	1.0	204.596	GKS09-4M □□□100C32	82
	6.9	3959	1.5		8.3	3260	1.8	210.222	GKS11-3M □□□100C32	74
	6.4	4264	1.4		7.7	3511	1.7	226.431	GKS11-3M □□□100C32	74
	6.4	4211	1.4		7.7	3467	1.7	227.481	GKS11-4M □□□100C32	82
	5.8	4593	1.3		7.0	3782	1.6	248.106	GKS11-4M □□□100C32	82
	5.7	4805	1.2		6.8	3956	1.5	255.133	GKS11-3M □□□100C32	74
	5.2	5175	1.2		6.2	4261	1.4	279.556	GKS11-4M □□□100C32	82
	5.1	5390	1.1		6.1	4438	1.3	286.219	GKS11-3M □□□100C32	74
	4.5	5956	1.9		5.4	4904	2.3	321.729	GKS14-4M □□□100C32	82
	4.5	6073	1.0		5.4	5000	1.2	322.500	GKS11-3M □□□100C32	74
	4.5	5978	1.0		5.4	4922	1.2	322.931	GKS11-4M □□□100C32	82
	4.0	6711	1.7		4.8	5525	2.1	362.512	GKS14-4M □□□100C32	82
	4.0	6736	0.9		4.8	5546	1.1	363.866	GKS11-4M □□□100C32	82

Selection tables

50 Hz, 60 Hz: P_N = 3.0 kW

n_N	1445 r/min				1755 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	3.7	7232	1.6		4.5	5954	1.9	390.671	GKS14-4M □□□100C32	82
	3.7	7327	0.8		4.4	6032	1.0	395.787	GKS11-4M □□□100C32	82
	3.3	8149	1.4		4.0	6709	1.7	440.193	GKS14-4M □□□100C32	82
	2.8	9499	1.2		3.4	7821	1.5	513.121	GKS14-4M □□□100C32	82
	2.5	10703	1.1		3.0	8812	1.3	578.164	GKS14-4M □□□100C32	82
	2.3	11528	1.0		2.8	9492	1.2	622.742	GKS14-4M □□□100C32	82
	2.1	12989	0.9		2.5	10695	1.1	701.681	GKS14-4M □□□100C32	82

Selection tables

50 Hz, 60 Hz: P_N = 4.0 kW

n_N	1455 r/min				1760 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	244	148	3.2		295	123	3.6	5.955	GKS07-3M □□□112C22	74
	224	162	1.6		271	134	1.9	6.485	GKS06-3M □□□112C22	74
	176	206	2.6		213	170	3.0	8.254	GKS07-3M □□□112C22	74
	159	229	3.2		191	189	3.6	9.171	GKS07-3M □□□112C22	74
	158	229	1.6		191	190	1.9	9.196	GKS06-3M □□□112C22	74
	144	252	3.2		173	209	3.6	10.124	GKS07-3M □□□112C22	74
	143	253	1.6		173	209	1.9	10.147	GKS06-3M □□□112C22	74
	128	284	2.2		154	235	2.5	11.378	GKS07-3M □□□112C22	74
	128	284	1.2		154	235	1.3	11.382	GKS06-3M □□□112C22	74
	115	314	1.4		139	260	1.6	12.612	GKS06-3M □□□112C22	74
	115	317	2.6		138	262	3.0	12.711	GKS07-3M □□□112C22	74
	98	369	2.8		119	305	3.2	14.798	GKS07-3M □□□112C22	74
	98	370	1.6		118	306	1.9	14.824	GKS06-3M □□□112C22	74
	87	416	2.6		105	344	3.0	16.674	GKS07-3M □□□112C22	74
	87	416	1.5		105	344	1.7	16.699	GKS06-3M □□□112C22	74
	84	431	2.3		102	356	2.7	17.270	GKS07-3M □□□112C22	74
	82	444	1.2		99	367	1.3	17.809	GKS06-3M □□□112C22	74
	72	507	1.3		86	419	1.5	20.329	GKS06-3M □□□112C22	74
	71	511	2.2		86	423	2.5	20.511	GKS07-3M □□□112C22	74
	64	571	1.1		77	472	1.2	22.902	GKS06-3M □□□112C22	74
	63	576	2.0		76	476	2.3	23.111	GKS07-3M □□□112C22	74
	58	629	1.9		70	520	2.1	25.244	GKS07-3M □□□112C22	74
	56	649	1.0		68	536	1.2	26.017	GKS06-3M □□□112C22	74
	52	705	1.7		62	583	2.0	28.274	GKS07-3M □□□112C22	74
	51	710	1.0		62	587	1.1	28.461	GKS06-3M □□□112C22	74
	46	794	1.5		55	657	1.7	31.858	GKS07-3M □□□112C22	74
	40	899	1.4		49	743	1.6	36.063	GKS07-3M □□□112C22	74
	37	989	3.0		44	818	3.5	39.662	GKS09-3M □□□112C22	74
	36	1020	1.3		43	843	1.5	40.906	GKS07-3M □□□112C22	74
	34	1076	2.8		41	889	3.4	43.146	GKS09-3M □□□112C22	74
	33	1102	1.2		40	911	1.4	44.178	GKS07-3M □□□112C22	74
	30	1213	2.5		36	1002	3.0	48.625	GKS09-3M □□□112C22	74
	29	1255	1.0		35	1038	1.3	50.345	GKS07-3M □□□112C22	74
	25	1434	0.9		31	1185	1.1	57.501	GKS07-3M □□□112C22	74
	25	1458	2.1		30	1205	2.5	58.456	GKS09-3M □□□112C22	74
	22	1643	1.9		27	1358	2.2	65.879	GKS09-3M □□□112C22	74
	21	1768	2.7		25	1461	3.3	70.887	GKS11-3M □□□112C22	74
	21	1770	1.7		25	1463	2.1	70.982	GKS09-3M □□□112C22	74
	18	1992	2.7		22	1647	3.3	79.873	GKS11-3M □□□112C22	74
	18	1995	1.5		22	1649	1.9	79.996	GKS09-3M □□□112C22	74

Selection tables

50 Hz, 60 Hz: P_N = 4.0 kW

n_N	1455 r/min				1760 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	16	2258	2.7		19	1867	3.3	90.551	GKS14-3M □□□112C22	74
	16	2288	2.2		19	1891	2.6	91.737	GKS11-3M □□□112C22	74
	16	2291	1.3		19	1894	1.6	91.860	GKS09-3M □□□112C22	74
	15	2465	1.2		18	2038	1.5	100.551	GKS09-4M □□□112C22	82
	14	2544	2.7		17	2103	3.3	102.029	GKS14-3M □□□112C22	74
	14	2503	2.3		17	2069	2.7	102.119	GKS11-4M □□□112C22	82
	14	2578	2.2		17	2131	2.6	103.365	GKS11-3M □□□112C22	74
	14	2581	1.2		17	2134	1.4	103.524	GKS09-3M □□□112C22	74
	13	2740	2.3		16	2265	2.7	109.896	GKS14-3M □□□112C22	74
	13	2776	1.8		16	2295	2.2	111.335	GKS11-3M □□□112C22	74
	13	2780	1.1		16	2298	1.3	111.484	GKS09-3M □□□112C22	74
	13	2778	1.1		16	2296	1.3	113.320	GKS09-4M □□□112C22	82
	13	2820	2.1		15	2332	2.5	115.063	GKS11-4M □□□112C22	82
	12	3022	1.0		14	2498	1.2	123.275	GKS09-4M □□□112C22	82
	12	3088	2.3		14	2553	2.7	123.826	GKS14-3M □□□112C22	74
	12	3066	1.9		14	2535	2.3	125.095	GKS11-4M □□□112C22	82
	12	3128	1.8		14	2586	2.2	125.448	GKS11-3M □□□112C22	74
	12	3133	1.0		14	2590	1.2	125.641	GKS09-3M □□□112C22	74
	11	3464	1.8		13	2864	2.2	138.913	GKS14-3M □□□112C22	74
	11	3405	0.9		13	2815	1.1	138.929	GKS09-4M □□□112C22	82
	10	3509	1.5		13	2901	1.8	140.732	GKS11-3M □□□112C22	74
	10	3455	1.7		13	2856	2.1	140.952	GKS11-4M □□□112C22	82
	9.6	3702	0.8		12	3060	1.0	151.012	GKS09-4M □□□112C22	82
	9.5	3756	1.5		12	3105	1.9	153.242	GKS11-4M □□□112C22	82
	9.3	3903	1.8		11	3227	2.2	156.522	GKS14-3M □□□112C22	74
	9.2	3874	3.0		11	3203	3.6	158.039	GKS14-4M □□□112C22	82
	9.2	3954	1.5		11	3269	1.8	158.571	GKS11-3M □□□112C22	74
	8.4	4232	1.4		10	3499	1.7	172.667	GKS11-4M □□□112C22	82
	8.2	4365	2.6		9.9	3609	3.2	178.072	GKS14-4M □□□112C22	82
	7.8	4652	1.3		9.4	3846	1.6	186.572	GKS11-3M □□□112C22	74
	7.8	4652	2.5		9.4	3846	3.0	186.572	GKS14-3M □□□112C22	74
	7.5	4749	2.4		9.1	3926	2.9	193.754	GKS14-4M □□□112C22	82
	7.2	4949	1.2		8.7	4091	1.5	201.890	GKS11-4M □□□112C22	82
	6.9	5242	1.1		8.4	4334	1.4	210.222	GKS11-3M □□□112C22	74
	6.9	5242	2.2		8.4	4334	2.7	210.222	GKS14-3M □□□112C22	74
	6.7	5351	2.1		8.0	4424	2.6	218.315	GKS14-4M □□□112C22	82
	6.4	5646	1.1		7.8	4668	1.3	226.431	GKS11-3M □□□112C22	74
	6.4	5646	2.1		7.8	4668	2.5	226.431	GKS14-3M □□□112C22	74
	6.4	5576	1.1		7.7	4610	1.3	227.481	GKS11-4M □□□112C22	82
	6.1	5821	2.0		7.4	4812	2.4	237.467	GKS14-4M □□□112C22	82

Selection tables

50 Hz, 60 Hz: P_N = 4.0 kW

n_N	1455 r/min				1760 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	5.9	6082	1.0		7.1	5028	1.2	248.106	GKS11-4M □□□112C22	82
	5.7	6362	0.9		6.9	5260	1.1	255.133	GKS11-3M □□□112C22	74
	5.7	6362	1.8		6.9	5260	2.2	255.133	GKS14-3M □□□112C22	74
	5.4	6559	1.8		6.6	5422	2.1	267.568	GKS14-4M □□□112C22	82
	5.2	6853	0.9		6.3	5665	1.1	279.556	GKS11-4M □□□112C22	82
	5.1	7137	0.8		6.1	5900	1.0	286.219	GKS11-3M □□□112C22	74
	5.1	7137	1.6		6.1	5900	2.0	286.219	GKS14-3M □□□112C22	74
	4.5	7886	1.5		5.5	6520	1.8	321.729	GKS14-4M □□□112C22	82
	4.5	8042	1.4		5.4	6648	1.7	322.500	GKS14-3M □□□112C22	74
	4.0	8886	1.3		4.8	7346	1.6	362.512	GKS14-4M □□□112C22	82
	3.7	9576	1.2		4.5	7917	1.4	390.671	GKS14-4M □□□112C22	82
	3.3	10790	1.1		4.0	8920	1.3	440.193	GKS14-4M □□□112C22	82
	2.8	12578	0.9		3.4	10398	1.1	513.121	GKS14-4M □□□112C22	82
	2.5	14172	0.8		3.0	11716	1.0	578.164	GKS14-4M □□□112C22	82

Selection tables

50 Hz, 60 Hz: P_N = 5.5 kW

n_N	1470 r/min				1775 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	247	202	2.3		297	167	2.7	5.955	GKS07-3M □□□132C12	74
	227	220	1.2		273	182	1.4	6.485	GKS06-3M□□□132C12	74
	178	280	1.9		214	232	2.2	8.254	GKS07-3M □□□132C12	74
	160	311	2.3		193	258	2.7	9.171	GKS07-3M □□□132C12	74
	160	312	1.2		193	258	1.4	9.196	GKS06-3M□□□132C12	74
	145	344	2.3		175	285	2.7	10.124	GKS07-3M □□□132C12	74
	145	344	1.2		174	285	1.4	10.147	GKS06-3M□□□132C12	74
	129	386	1.6		156	320	1.8	11.378	GKS07-3M □□□132C12	74
	129	386	0.9		156	320	1.0	11.382	GKS06-3M□□□132C12	74
	117	428	1.0		140	354	1.1	12.612	GKS06-3M□□□132C12	74
	116	431	1.9		139	357	2.2	12.711	GKS07-3M □□□132C12	74
	99	502	2.1		120	416	2.4	14.798	GKS07-3M □□□132C12	74
	99	503	1.2		119	417	1.4	14.824	GKS06-3M□□□132C12	74
	88	566	1.9		106	469	2.2	16.674	GKS07-3M □□□132C12	74
	88	567	1.1		106	469	1.2	16.699	GKS06-3M□□□132C12	74
	85	586	1.7		103	485	1.9	17.270	GKS07-3M □□□132C12	74
	83	604	0.9		99	501	1.0	17.809	GKS06-3M□□□132C12	74
	72	690	1.0		87	571	1.1	20.329	GKS06-3M□□□132C12	74
	72	696	1.6		86	576	1.8	20.511	GKS07-3M □□□132C12	74
	64	784	1.5		77	650	1.7	23.111	GKS07-3M □□□132C12	74
	58	857	1.4		70	710	1.6	25.244	GKS07-3M □□□132C12	74
	52	960	1.3		63	795	1.4	28.274	GKS07-3M □□□132C12	74
	50	992	2.9		61	821	3.4	29.228	GKS09-3M □□□132C12	74
	46	1081	1.1		56	895	1.2	31.858	GKS07-3M □□□132C12	74
	45	1118	2.7		54	926	3.0	32.940	GKS09-3M □□□132C12	74
	42	1194	2.5		50	989	2.9	35.193	GKS09-3M □□□132C12	74
	41	1224	1.1		49	1014	1.2	36.063	GKS07-3M □□□132C12	74
	37	1346	2.2		45	1115	2.5	39.662	GKS09-3M □□□132C12	74
	36	1388	0.9		43	1150	1.1	40.906	GKS07-3M □□□132C12	74
	34	1464	2.1		41	1213	2.5	43.146	GKS09-3M □□□132C12	74
	33	1499	0.9		40	1242	1.0	44.178	GKS07-3M □□□132C12	74
	30	1650	1.8		36	1367	2.2	48.625	GKS09-3M □□□132C12	74
	26	1958	3.1		31	1621	3.7	57.683	GKS11-3M □□□132C12	74
	25	1984	1.5		30	1643	1.8	58.456	GKS09-3M □□□132C12	74
	23	2206	2.7		27	1827	3.3	64.995	GKS11-3M □□□132C12	74
	22	2236	1.4		27	1852	1.6	65.879	GKS09-3M □□□132C12	74
	21	2406	2.5		25	1992	3.0	70.887	GKS11-3M □□□132C12	74
	21	2409	1.3		25	1995	1.5	70.982	GKS09-3M □□□132C12	74
	18	2711	2.2		22	2245	2.7	79.873	GKS11-3M □□□132C12	74
	18	2715	1.1		22	2248	1.4	79.996	GKS09-3M □□□132C12	74

Selection tables

50 Hz, 60 Hz: P_N = 5.5 kW

n_N	1470 r/min				1775 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	16	3113	1.9		19	2578	2.3	91.737	GKS11-3M □□□132C12	74
	15	3252	3.1		18	2693	3.7	97.467	GKS14-4M □□□132C12	82
	14	3407	1.7		17	2821	2.0	102.119	GKS11-4M □□□132C12	82
	14	3508	1.7		17	2905	2.1	103.365	GKS11-3M □□□132C12	74
	13	3664	3.0		16	3034	3.6	109.822	GKS14-4M □□□132C12	82
	13	3730	3.2		16	3089	3.8	109.896	GKS14-3M □□□132C12	74
	13	3778	1.6		16	3129	1.9	111.335	GKS11-3M □□□132C12	74
	13	3839	1.5		15	3179	1.8	115.063	GKS11-4M □□□132C12	82
	12	3986	2.7		15	3301	3.3	119.493	GKS14-4M □□□132C12	82
	12	4202	2.8		14	3480	3.3	123.826	GKS14-3M □□□132C12	74
	12	4173	1.4		14	3456	1.7	125.095	GKS11-4M □□□132C12	82
	12	4257	1.4		14	3526	1.7	125.448	GKS11-3M □□□132C12	74
	11	4492	2.5		13	3720	3.0	134.640	GKS14-4M □□□132C12	82
	11	4714	2.5		13	3904	3.0	138.913	GKS14-3M □□□132C12	74
	10	4702	1.3		13	3894	1.5	140.952	GKS11-4M □□□132C12	82
	9.6	5112	1.1		12	4234	1.4	153.242	GKS11-4M □□□132C12	82
	9.4	5312	2.2		11	4399	2.6	156.522	GKS14-3M □□□132C12	74
	9.3	5272	2.2		11	4366	2.6	158.039	GKS14-4M □□□132C12	82
	8.5	5760	1.0		10	4770	1.2	172.667	GKS11-4M □□□132C12	82
	8.3	5941	1.9		9.9	4920	2.3	178.072	GKS14-4M □□□132C12	82
	7.9	6332	0.9		9.5	5244	1.1	186.572	GKS11-3M □□□132C12	74
	7.9	6332	1.8		9.5	5244	2.2	186.572	GKS14-3M □□□132C12	74
	7.6	6464	1.8		9.1	5353	2.2	193.754	GKS14-4M □□□132C12	82
	7.3	6735	0.9		8.8	5578	1.1	201.890	GKS11-4M □□□132C12	82
	7.0	7134	0.8		8.4	5908	1.0	210.222	GKS11-3M □□□132C12	74
	7.0	7134	1.6		8.4	5908	2.0	210.222	GKS14-3M □□□132C12	74
	6.7	7283	1.6		8.1	6032	1.9	218.315	GKS14-4M □□□132C12	82
	6.5	7684	1.5		7.8	6364	1.8	226.431	GKS14-3M □□□132C12	74
	6.2	7922	1.4		7.5	6561	1.7	237.467	GKS14-4M □□□132C12	82
	5.8	8659	1.3		6.9	7171	1.6	255.133	GKS14-3M □□□132C12	74
	5.5	8926	1.3		6.6	7392	1.6	267.568	GKS14-4M □□□132C12	82
	5.1	9713	1.2		6.2	8044	1.4	286.219	GKS14-3M □□□132C12	74
	4.6	10733	1.1		5.5	8889	1.3	321.729	GKS14-4M □□□132C12	82
	4.6	10945	1.1		5.5	9064	1.3	322.500	GKS14-3M □□□132C12	74
	4.1	12094	1.0		4.9	10015	1.2	362.512	GKS14-4M □□□132C12	82
	3.8	13033	0.9		4.5	10793	1.1	390.671	GKS14-4M □□□132C12	82

Selection tables

50 Hz, 60 Hz: P_N = 7.5 kW

n_N	1460 r/min				1765 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	245	277	1.7		296	230	1.9	5.955	GKS07-3M □□□132C22	74
	225	302	0.9		271	250	1.0	6.485	GKS06-3M□□□132C22	74
	177	385	1.4		213	318	1.6	8.254	GKS07-3M □□□132C22	74
	159	427	1.7		192	353	1.9	9.171	GKS07-3M □□□132C22	74
	159	428	0.9		191	354	1.0	9.196	GKS06-3M□□□132C22	74
	144	472	1.7		174	390	1.9	10.124	GKS07-3M □□□132C22	74
	144	473	0.9		173	391	1.0	10.147	GKS06-3M□□□132C22	74
	128	530	1.2		155	439	1.3	11.378	GKS07-3M □□□132C22	74
	119	572	2.8		143	473	3.2	12.283	GKS09-3M □□□132C22	74
	115	592	1.4		139	490	1.6	12.711	GKS07-3M □□□132C22	74
	109	622	2.8		132	515	3.2	13.360	GKS09-3M □□□132C22	74
	99	690	1.5		119	570	1.7	14.798	GKS07-3M □□□132C22	74
	99	691	0.9		119	571	1.0	14.824	GKS06-3M□□□132C22	74
	91	751	2.4		109	621	2.7	16.122	GKS09-3M □□□132C22	74
	88	777	1.4		106	643	1.6	16.674	GKS07-3M □□□132C22	74
	85	805	1.2		102	666	1.4	17.270	GKS07-3M □□□132C22	74
	83	817	2.4		100	676	2.7	17.536	GKS09-3M □□□132C22	74
	75	911	2.8		90	753	3.2	19.541	GKS09-3M □□□132C22	74
	71	956	1.2		86	791	1.3	20.511	GKS07-3M □□□132C22	74
	66	1026	2.6		80	849	3.0	22.022	GKS09-3M □□□132C22	74
	63	1077	1.1		76	891	1.2	23.111	GKS07-3M □□□132C22	74
	58	1176	1.0		70	973	1.1	25.244	GKS07-3M □□□132C22	74
	57	1195	2.4		69	989	2.7	25.649	GKS09-3M □□□132C22	74
	52	1317	0.9		62	1090	1.0	28.274	GKS07-3M □□□132C22	74
	50	1362	2.1		60	1127	2.5	29.228	GKS09-3M □□□132C22	74
	44	1535	1.9		53	1270	2.2	32.940	GKS09-3M □□□132C22	74
	42	1640	1.8		50	1356	2.1	35.193	GKS09-3M □□□132C22	74
	37	1848	1.6		44	1529	1.9	39.662	GKS09-3M □□□132C22	74
	36	1876	3.1		44	1552	3.6	40.272	GKS11-3M □□□132C22	74
	34	2010	1.5		41	1663	1.8	43.146	GKS09-3M □□□132C22	74
	33	2040	2.8		40	1688	3.4	43.783	GKS11-3M □□□132C22	74
	30	2266	1.3		36	1874	1.6	48.625	GKS09-3M □□□132C22	74
	30	2299	2.6		36	1901	3.1	49.333	GKS11-3M □□□132C22	74
	25	2688	2.2		31	2223	2.7	57.683	GKS11-3M □□□132C22	74
	25	2724	1.1		30	2253	1.3	58.456	GKS09-3M □□□132C22	74
	23	3028	2.0		27	2505	2.4	64.995	GKS11-3M □□□132C22	74
	22	3070	1.0		27	2539	1.2	65.879	GKS09-3M □□□132C22	74
	21	3303	1.8		25	2732	2.2	70.887	GKS11-3M □□□132C22	74
	21	3307	0.9		25	2736	1.1	70.982	GKS09-3M □□□132C22	74
	19	3620	3.2		23	2994	3.8	77.681	GKS14-3M □□□132C22	74

Selection tables

50 Hz, 60 Hz: P_N = 7.5 kW

n_N	1460 r/min				1765 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	18	3722	1.6		22	3079	2.0	79.873	GKS11-3M □□□132C22	74
	18	3727	0.8		22	3083	1.0	79.996	GKS09-3M □□□132C22	74
	16	4219	2.7		19	3490	3.3	90.551	GKS14-3M □□□132C22	74
	16	4274	1.4		19	3536	1.7	91.737	GKS11-3M □□□132C22	74
	15	4464	2.2		18	3693	2.7	97.467	GKS14-4M □□□132C22	82
	14	4754	2.4		17	3933	3.0	102.029	GKS14-3M □□□132C22	74
	14	4677	1.2		17	3869	1.5	102.119	GKS11-4M □□□132C22	82
	14	4816	1.3		17	3984	1.5	103.365	GKS11-3M □□□132C22	74
	13	5030	2.2		16	4161	2.6	109.822	GKS14-4M □□□132C22	82
	13	5121	2.3		16	4236	2.8	109.896	GKS14-3M □□□132C22	74
	13	5188	1.2		16	4291	1.4	111.335	GKS11-3M □□□132C22	74
	13	5270	1.1		15	4360	1.3	115.063	GKS11-4M □□□132C22	82
	12	5473	2.0		15	4527	2.4	119.493	GKS14-4M □□□132C22	82
	12	5770	2.0		14	4773	2.4	123.826	GKS14-3M □□□132C22	74
	12	5730	1.0		14	4740	1.2	125.095	GKS11-4M □□□132C22	82
	12	5845	1.0		14	4835	1.3	125.448	GKS11-3M □□□132C22	74
	11	6167	1.8		13	5101	2.2	134.640	GKS14-4M □□□132C22	82
	11	6473	1.8		13	5354	2.2	138.913	GKS14-3M □□□132C22	74
	10	6456	0.9		13	5340	1.1	140.952	GKS11-4M □□□132C22	82
	9.5	7019	0.8		12	5806	1.0	153.242	GKS11-4M □□□132C22	82
	9.3	7293	1.6		11	6033	1.9	156.522	GKS14-3M □□□132C22	74
	9.2	7239	1.6		11	5988	1.9	158.039	GKS14-4M □□□132C22	82
	8.2	8156	1.4		9.9	6747	1.7	178.072	GKS14-4M □□□132C22	82
	7.8	8693	1.3		9.4	7191	1.6	186.572	GKS14-3M □□□132C22	74
	7.5	8875	1.3		9.1	7341	1.6	193.754	GKS14-4M □□□132C22	82
	7.0	9795	1.2		8.4	8103	1.4	210.222	GKS14-3M □□□132C22	74
	6.7	9999	1.1		8.1	8272	1.4	218.315	GKS14-4M □□□132C22	82
	6.5	10551	1.1		7.8	8727	1.3	226.431	GKS14-3M □□□132C22	74
	6.2	10877	1.1		7.4	8997	1.3	237.467	GKS14-4M □□□132C22	82
	5.7	11888	1.0		6.9	9834	1.2	255.133	GKS14-3M □□□132C22	74
	5.5	12255	0.9		6.6	10138	1.1	267.568	GKS14-4M □□□132C22	82
	5.1	13336	0.9		6.2	11032	1.1	286.219	GKS14-3M □□□132C22	74

Selection tables

50 Hz, 60 Hz: P_N = 11.0 kW

n_N	1470 r/min				1775 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	247	404	1.2		297	335	1.3	5.955	GKS07-3M □□□160C22	74
	178	560	1.0		214	464	1.1	8.254	GKS07-3M □□□160C22	74
	160	622	1.2		193	516	1.3	9.171	GKS07-3M □□□160C22	74
	145	687	1.2		175	569	1.3	10.124	GKS07-3M □□□160C22	74
	120	834	1.9		144	690	2.2	12.283	GKS09-3M □□□160C22	74
	116	863	1.0		139	715	1.1	12.711	GKS07-3M □□□160C22	74
	110	907	1.9		133	751	2.2	13.360	GKS09-3M □□□160C22	74
	99	1004	1.0		120	832	1.2	14.798	GKS07-3M □□□160C22	74
	93	1077	2.9		112	892	3.3	15.874	GKS11-3M □□□160C22	74
	91	1094	1.6		110	906	1.9	16.122	GKS09-3M □□□160C22	74
	88	1132	0.9		106	937	1.1	16.674	GKS07-3M □□□160C22	74
	85	1172	2.9		103	971	3.3	17.265	GKS11-3M □□□160C22	74
	85	1172	0.9		103	971	1.0	17.270	GKS07-3M □□□160C22	74
	84	1190	1.6		101	986	1.9	17.536	GKS09-3M □□□160C22	74
	75	1326	1.9		91	1098	2.2	19.541	GKS09-3M □□□160C22	74
	67	1495	1.8		80	1238	2.0	22.022	GKS09-3M □□□160C22	74
	57	1739	2.9		69	1440	3.3	25.615	GKS11-3M □□□160C22	74
	57	1741	1.6		69	1442	1.9	25.649	GKS09-3M □□□160C22	74
	53	1902	2.7		63	1575	3.1	28.021	GKS11-3M □□□160C22	74
	50	1984	1.5		61	1643	1.7	29.228	GKS09-3M □□□160C22	74
	47	2143	2.6		56	1775	2.9	31.573	GKS11-3M □□□160C22	74
	45	2236	1.3		54	1852	1.5	32.940	GKS09-3M □□□160C22	74
	42	2389	1.3		50	1978	1.4	35.193	GKS09-3M □□□160C22	74
	41	2426	2.3		50	2009	2.7	35.741	GKS11-3M □□□160C22	74
	37	2692	1.1		45	2229	1.3	39.662	GKS09-3M □□□160C22	74
	37	2733	2.1		44	2264	2.5	40.272	GKS11-3M □□□160C22	74
	34	2929	1.0		41	2425	1.2	43.146	GKS09-3M □□□160C22	74
	34	2972	2.0		40	2461	2.4	43.783	GKS11-3M □□□160C22	74
	30	3300	0.9		36	2733	1.1	48.625	GKS09-3M □□□160C22	74
	30	3348	1.8		36	2773	2.1	49.333	GKS11-3M □□□160C22	74
	26	3818	3.0		32	3162	3.6	56.251	GKS14-3M □□□160C22	74
	26	3915	1.5		31	3242	1.8	57.683	GKS11-3M □□□160C22	74
	23	4302	2.7		28	3563	3.2	63.382	GKS14-3M □□□160C22	74
	23	4411	1.4		27	3653	1.6	64.995	GKS11-3M □□□160C22	74
	21	4679	2.4		26	3875	3.0	68.942	GKS14-3M □□□160C22	74
	21	4811	1.2		25	3985	1.5	70.887	GKS11-3M □□□160C22	74
	19	5273	2.2		23	4367	2.6	77.681	GKS14-3M □□□160C22	74
	18	5421	1.1		22	4490	1.3	79.873	GKS11-3M □□□160C22	74
	16	6146	1.9		20	5090	2.3	90.551	GKS14-3M □□□160C22	74
	15	6503	1.5		18	5386	1.9	97.467	GKS14-4M □□□160C22	82

Selection tables

50 Hz, 60 Hz: P_N = 11.0 kW

n_N	1470 r/min				1775 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	14	6925	1.7		17	5735	2.0	102.029	GKS14-3M □□□160C22	74
	13	7327	1.5		16	6068	1.8	109.822	GKS14-4M □□□160C22	82
	13	7459	1.6		16	6177	1.9	109.896	GKS14-3M □□□160C22	74
	12	7973	1.4		15	6603	1.6	119.493	GKS14-4M □□□160C22	82
	12	8405	1.4		14	6960	1.7	123.826	GKS14-3M □□□160C22	74
	11	8983	1.3		13	7440	1.5	134.640	GKS14-4M □□□160C22	82
	9.3	10544	1.1		11	8733	1.3	158.039	GKS14-4M □□□160C22	82
	8.3	11881	1.0		9.9	9840	1.2	178.072	GKS14-4M □□□160C22	82
	7.9	12664	0.9		9.5	10488	1.1	186.572	GKS14-3M □□□160C22	74
	7.6	12927	0.9		9.1	10706	1.1	193.754	GKS14-4M □□□160C22	82
	7.0	14269	0.8		8.4	11817	1.0	210.222	GKS14-3M □□□160C22	74

Selection tables

50 Hz, 60 Hz: P_N = 15.0 kW

n_N	1470 r/min				1775 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	247	551	0.9		297	456	1.0	5.955	GKS07-3M □□□160C32	74
	160	849	0.9		193	703	1.0	9.171	GKS07-3M □□□160C32	74
	145	937	0.9		175	776	1.0	10.124	GKS07-3M □□□160C32	74
	122	1119	2.5		146	927	2.8	12.094	GKS11-3M □□□160C32	74
	120	1137	1.4		144	942	1.6	12.283	GKS09-3M □□□160C32	74
	112	1217	2.5		135	1008	2.8	13.154	GKS11-3M □□□160C32	74
	110	1237	1.4		133	1024	1.6	13.360	GKS09-3M □□□160C32	74
	93	1469	2.1		112	1217	2.4	15.874	GKS11-3M □□□160C32	74
	91	1492	1.2		110	1236	1.4	16.122	GKS09-3M □□□160C32	74
	85	1598	2.1		103	1323	2.4	17.265	GKS11-3M □□□160C32	74
	84	1623	1.2		101	1344	1.4	17.536	GKS09-3M □□□160C32	74
	75	1806	2.5		91	1496	2.8	19.515	GKS11-3M □□□160C32	74
	75	1809	1.4		91	1498	1.6	19.541	GKS09-3M □□□160C32	74
	67	2035	2.4		81	1685	2.7	21.989	GKS11-3M □□□160C32	74
	67	2038	1.3		80	1688	1.5	22.022	GKS09-3M □□□160C32	74
	57	2371	2.1		69	1963	2.4	25.615	GKS11-3M □□□160C32	74
	57	2374	1.2		69	1966	1.4	25.649	GKS09-3M □□□160C32	74
	53	2594	2.0		63	2148	2.3	28.021	GKS11-3M □□□160C32	74
	50	2705	1.1		61	2240	1.2	29.228	GKS09-3M □□□160C32	74
	47	2922	1.9		56	2420	2.2	31.573	GKS11-3M □□□160C32	74
	45	3049	1.0		54	2525	1.1	32.940	GKS09-3M □□□160C32	74
	42	3211	3.1		51	2659	3.6	34.692	GKS14-3M □□□160C32	74
	42	3257	0.9		50	2698	1.1	35.193	GKS09-3M □□□160C32	74
	41	3308	1.7		50	2740	2.0	35.741	GKS11-3M □□□160C32	74
	38	3618	3.0		45	2996	3.5	39.089	GKS14-3M □□□160C32	74
	37	3671	0.8		45	3040	0.9	39.662	GKS09-3M □□□160C32	74
	37	3727	1.6		44	3087	1.8	40.272	GKS11-3M □□□160C32	74
	35	3937	2.7		42	3260	3.3	42.531	GKS14-3M □□□160C32	74
	34	4052	1.4		40	3356	1.7	43.783	GKS11-3M □□□160C32	74
	31	4436	2.5		37	3673	3.1	47.923	GKS14-3M □□□160C32	74
	30	4566	1.3		36	3782	1.6	49.333	GKS11-3M □□□160C32	74
	26	5206	2.2		32	4312	2.7	56.251	GKS14-3M □□□160C32	74
	26	5339	1.1		31	4422	1.4	57.683	GKS11-3M □□□160C32	74
	23	5866	2.0		28	4858	2.4	63.382	GKS14-3M □□□160C32	74
	23	6016	1.0		27	4982	1.2	64.995	GKS11-3M □□□160C32	74
	21	6381	1.8		26	5285	2.2	68.942	GKS14-3M □□□160C32	74
	21	6561	0.9		25	5434	1.1	70.887	GKS11-3M □□□160C32	74
	19	7190	1.6		23	5954	1.9	77.681	GKS14-3M □□□160C32	74
	18	7393	0.8		22	6122	1.0	79.873	GKS11-3M □□□160C32	74
	16	8381	1.4		20	6941	1.7	90.551	GKS14-3M □□□160C32	74

Selection tables

50 Hz, 60 Hz: P_N = 15.0 kW

n_N	1470 r/min				1775 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	15	8868	1.1		18	7344	1.4	97.467	GKS14-4M □□□160C32	82
	14	9443	1.2		17	7821	1.5	102.029	GKS14-3M □□□160C32	74
	13	9992	1.1		16	8275	1.3	109.822	GKS14-4M □□□160C32	82
	13	10172	1.2		16	8424	1.4	109.896	GKS14-3M □□□160C32	74
	12	10872	1.0		15	9004	1.2	119.493	GKS14-4M □□□160C32	82
	12	11461	1.0		14	9492	1.2	123.826	GKS14-3M □□□160C32	74
	11	12250	0.9		13	10145	1.1	134.640	GKS14-4M □□□160C32	82
	9.3	14379	0.8		11	11908	1.0	158.039	GKS14-4M □□□160C32	82

Selection tables

50 Hz, 60 Hz: P_N = 18.5 kW

n_N	1475 r/min				1775 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	122	1376	2.0		147	1143	2.3	12.094	GKS11-3M □□□180C12	74
	120	1397	1.2		145	1161	1.3	12.283	GKS09-3M □□□180C12	74
	112	1496	2.0		135	1244	2.3	13.154	GKS11-3M □□□180C12	74
	110	1520	1.2		133	1263	1.3	13.360	GKS09-3M □□□180C12	74
	93	1806	1.7		112	1501	1.9	15.874	GKS11-3M □□□180C12	74
	92	1834	1.0		110	1524	1.1	16.122	GKS09-3M □□□180C12	74
	89	1894	3.1		107	1574	3.6	16.646	GKS14-3M □□□180C12	74
	85	1964	1.7		103	1632	1.9	17.265	GKS11-3M □□□180C12	74
	84	1995	1.0		101	1658	1.1	17.536	GKS09-3M □□□180C12	74
	81	2083	3.0		97	1731	3.4	18.311	GKS14-3M □□□180C12	74
	76	2220	2.0		91	1845	2.3	19.515	GKS11-3M □□□180C12	74
	76	2223	1.2		91	1847	1.3	19.541	GKS09-3M □□□180C12	74
	67	2502	2.0		81	2079	2.2	21.989	GKS11-3M □□□180C12	74
	67	2505	1.1		81	2082	1.2	22.022	GKS09-3M □□□180C12	74
	60	2810	3.1		72	2335	3.6	24.696	GKS14-3M □□□180C12	74
	58	2914	1.7		69	2422	1.9	25.615	GKS11-3M □□□180C12	74
	58	2918	1.0		69	2425	1.1	25.649	GKS09-3M □□□180C12	74
	54	3090	3.0		65	2568	3.4	27.165	GKS14-3M □□□180C12	74
	53	3188	1.6		63	2649	1.8	28.021	GKS11-3M □□□180C12	74
	51	3325	0.9		61	2763	1.0	29.228	GKS09-3M □□□180C12	74
	48	3482	2.9		58	2894	3.3	30.609	GKS14-3M □□□180C12	74
	47	3592	1.5		56	2985	1.7	31.573	GKS11-3M □□□180C12	74
	43	3947	2.5		51	3280	2.9	34.692	GKS14-3M □□□180C12	74
	41	4066	1.4		50	3379	1.6	35.741	GKS11-3M □□□180C12	74
	38	4447	2.5		45	3695	2.8	39.089	GKS14-3M □□□180C12	74
	37	4582	1.3		44	3807	1.5	40.272	GKS11-3M □□□180C12	74
	35	4839	2.2		42	4021	2.7	42.531	GKS14-3M □□□180C12	74
	34	4981	1.2		41	4139	1.4	43.783	GKS11-3M □□□180C12	74
	31	5452	2.1		37	4531	2.5	47.923	GKS14-3M □□□180C12	74
	30	5612	1.1		36	4664	1.3	49.333	GKS11-3M □□□180C12	74
	26	6399	1.8		32	5318	2.2	56.251	GKS14-3M □□□180C12	74
	26	6562	0.9		31	5453	1.1	57.683	GKS11-3M □□□180C12	74
	23	7211	1.6		28	5992	1.9	63.382	GKS14-3M □□□180C12	74
	23	7394	0.8		27	6144	1.0	64.995	GKS11-3M □□□180C12	74
	21	7843	1.5		26	6518	1.8	68.942	GKS14-3M □□□180C12	74
	19	8837	1.3		23	7344	1.6	77.681	GKS14-3M □□□180C12	74
	16	10302	1.1		20	8560	1.3	90.551	GKS14-3M □□□180C12	74
	15	10900	0.9		18	9058	1.1	97.467	GKS14-4M □□□180C12	82
	15	11607	1.0		17	9646	1.2	102.029	GKS14-3M □□□180C12	74
	13	12282	0.9		16	10206	1.1	109.822	GKS14-4M □□□180C12	82

Selection tables

50 Hz, 60 Hz: P_N = 18.5 kW

n_N	1475 r/min				1775 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	13	12502	0.9		16	10389	1.1	109.896	GKS14-3M □□□180C12	74
	12	13363	0.8		15	11105	1.0	119.493	GKS14-4M □□□180C12	82
	12	14087	0.8		14	11706	1.0	123.826	GKS14-3M □□□180C12	74

Selection tables

50 Hz, 60 Hz: P_N = 22.0 kW

n_N	1470 r/min				1775 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	122	1642	1.7		146	1360	1.9	12.094	GKS11-3M □□□180C32	74
	120	1667	1.0		144	1381	1.1	12.283	GKS09-3M □□□180C32	74
	112	1786	1.7		135	1479	1.9	13.154	GKS11-3M □□□180C32	74
	110	1814	1.0		133	1502	1.1	13.360	GKS09-3M □□□180C32	74
	93	2155	1.4		112	1785	1.6	15.874	GKS11-3M □□□180C32	74
	91	2189	0.8		110	1813	0.9	16.122	GKS09-3M □□□180C32	74
	88	2260	2.6		106	1871	3.0	16.646	GKS14-3M □□□180C32	74
	85	2344	1.4		103	1941	1.6	17.265	GKS11-3M □□□180C32	74
	84	2380	0.8		101	1971	0.9	17.536	GKS09-3M □□□180C32	74
	80	2486	2.5		97	2059	2.8	18.311	GKS14-3M □□□180C32	74
	75	2649	1.7		91	2194	1.9	19.515	GKS11-3M □□□180C32	74
	75	2653	1.0		91	2197	1.1	19.541	GKS09-3M □□□180C32	74
	67	2985	1.6		81	2472	1.9	21.989	GKS11-3M □□□180C32	74
	67	2990	0.9		80	2476	1.0	22.022	GKS09-3M □□□180C32	74
	60	3352	2.6		72	2776	3.0	24.696	GKS14-3M □□□180C32	74
	57	3477	1.4		69	2880	1.6	25.615	GKS11-3M □□□180C32	74
	57	3482	0.8		69	2884	0.9	25.649	GKS09-3M □□□180C32	74
	54	3688	2.5		65	3054	2.8	27.165	GKS14-3M □□□180C32	74
	53	3804	1.4		63	3150	1.5	28.021	GKS11-3M □□□180C32	74
	48	4155	2.4		58	3441	2.8	30.609	GKS14-3M □□□180C32	74
	47	4286	1.3		56	3550	1.5	31.573	GKS11-3M □□□180C32	74
	42	4709	2.1		51	3900	2.4	34.692	GKS14-3M □□□180C32	74
	41	4852	1.2		50	4018	1.3	35.741	GKS11-3M □□□180C32	74
	38	5306	2.1		45	4395	2.4	39.089	GKS14-3M □□□180C32	74
	37	5467	1.1		44	4528	1.2	40.272	GKS11-3M □□□180C32	74
	35	5774	1.9		42	4782	2.3	42.531	GKS14-3M □□□180C32	74
	34	5944	1.0		40	4922	1.2	43.783	GKS11-3M □□□180C32	74
	31	6505	1.7		37	5388	2.1	47.923	GKS14-3M □□□180C32	74
	30	6697	0.9		36	5546	1.1	49.333	GKS11-3M □□□180C32	74
	26	7636	1.5		32	6324	1.8	56.251	GKS14-3M □□□180C32	74
	23	8604	1.3		28	7126	1.6	63.382	GKS14-3M □□□180C32	74
	21	9359	1.2		26	7751	1.5	68.942	GKS14-3M □□□180C32	74
	19	10545	1.1		23	8733	1.3	77.681	GKS14-3M □□□180C32	74
	16	12292	0.9		20	10180	1.1	90.551	GKS14-3M □□□180C32	74
	14	13850	0.8		17	11470	1.0	102.029	GKS14-3M □□□180C32	74

Selection tables

50 Hz, 60 Hz: P_N = 30.0 kW

n_N	1465 r/min				1770 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	121	2246	1.2		146	1859	1.4	12.094	GKS11-3M □□□180C42	74
	111	2443	1.2		134	2022	1.4	13.154	GKS11-3M □□□180C42	74
	92	2948	1.0		111	2440	1.2	15.874	GKS11-3M □□□180C42	74
	88	3092	1.9		106	2559	2.2	16.646	GKS14-3M □□□180C42	74
	85	3207	1.0		102	2654	1.2	17.265	GKS11-3M □□□180C42	74
	80	3401	1.8		96	2815	2.1	18.311	GKS14-3M □□□180C42	74
	75	3625	1.2		90	3000	1.4	19.515	GKS11-3M □□□180C42	74
	67	4084	1.2		80	3380	1.4	21.989	GKS11-3M □□□180C42	74
	59	4587	1.9		72	3797	2.2	24.696	GKS14-3M □□□180C42	74
	57	4758	1.0		69	3938	1.2	25.615	GKS11-3M □□□180C42	74
	54	5046	1.8		65	4176	2.1	27.165	GKS14-3M □□□180C42	74
	52	5205	1.0		63	4308	1.1	28.021	GKS11-3M □□□180C42	74
	48	5685	1.8		58	4706	2.0	30.609	GKS14-3M □□□180C42	74
	46	5865	0.9		56	4854	1.1	31.573	GKS11-3M □□□180C42	74
	42	6444	1.6		51	5333	1.8	34.692	GKS14-3M □□□180C42	74
	41	6639	0.9		49	5495	1.0	35.741	GKS11-3M □□□180C42	74
	38	7261	1.5		45	6009	1.7	39.089	GKS14-3M □□□180C42	74
	34	7900	1.4		42	6539	1.6	42.531	GKS14-3M □□□180C42	74
	31	8901	1.3		37	7368	1.5	47.923	GKS14-3M □□□180C42	74
	26	10448	1.1		31	8648	1.3	56.251	GKS14-3M □□□180C42	74
	23	11773	1.0		28	9744	1.2	63.382	GKS14-3M □□□180C42	74
	21	12806	0.9		26	10599	1.1	68.942	GKS14-3M □□□180C42	74

Selection tables

50 Hz, 60 Hz: P_N = 37.0 kW

n_N	1483 r/min				1787 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	123	2737	1.0		147	2271	1.2	12.094	GKS11-3M □□□225C12	74
	119	2814	1.8		143	2335	2.0	12.435	GKS14-3M □□□225C12	74
	113	2977	1.0		136	2470	1.2	13.154	GKS11-3M □□□225C12	74
	110	3061	1.8		132	2540	2.0	13.525	GKS14-3M □□□225C12	74
	93	3592	0.9		112	2981	1.0	15.874	GKS11-3M □□□225C12	74
	89	3767	1.6		107	3126	1.8	16.646	GKS14-3M □□□225C12	74
	86	3907	0.9		103	3243	1.0	17.265	GKS11-3M □□□225C12	74
	81	4144	1.5		97	3439	1.7	18.311	GKS14-3M □□□225C12	74
	76	4416	1.0		91	3665	1.2	19.515	GKS11-3M □□□225C12	74
	74	4541	1.8		89	3768	2.0	20.065	GKS14-3M □□□225C12	74
	67	4976	1.0		81	4130	1.1	21.989	GKS11-3M □□□225C12	74
	66	5116	1.8		79	4246	2.0	22.609	GKS14-3M □□□225C12	74
	60	5589	1.6		72	4638	1.8	24.696	GKS14-3M □□□225C12	74
	58	5797	0.9		70	4811	1.0	25.615	GKS11-3M □□□225C12	74
	55	6148	1.5		66	5102	1.7	27.165	GKS14-3M □□□225C12	74
	53	6341	0.8		64	5263	0.9	28.021	GKS11-3M □□□225C12	74
	49	6927	1.5		58	5748	1.7	30.609	GKS14-3M □□□225C12	74
	43	7851	1.3		51	6515	1.5	34.692	GKS14-3M □□□225C12	74
	38	8846	1.2		46	7341	1.4	39.089	GKS14-3M □□□225C12	74
	35	9625	1.1		42	7988	1.4	42.531	GKS14-3M □□□225C12	74
	31	10845	1.0		37	9000	1.3	47.923	GKS14-3M □□□225C12	74
	26	12730	0.9		32	10564	1.1	56.251	GKS14-3M □□□225C12	74
	23	14344	0.8		28	11903	1.0	63.382	GKS14-3M □□□225C12	74

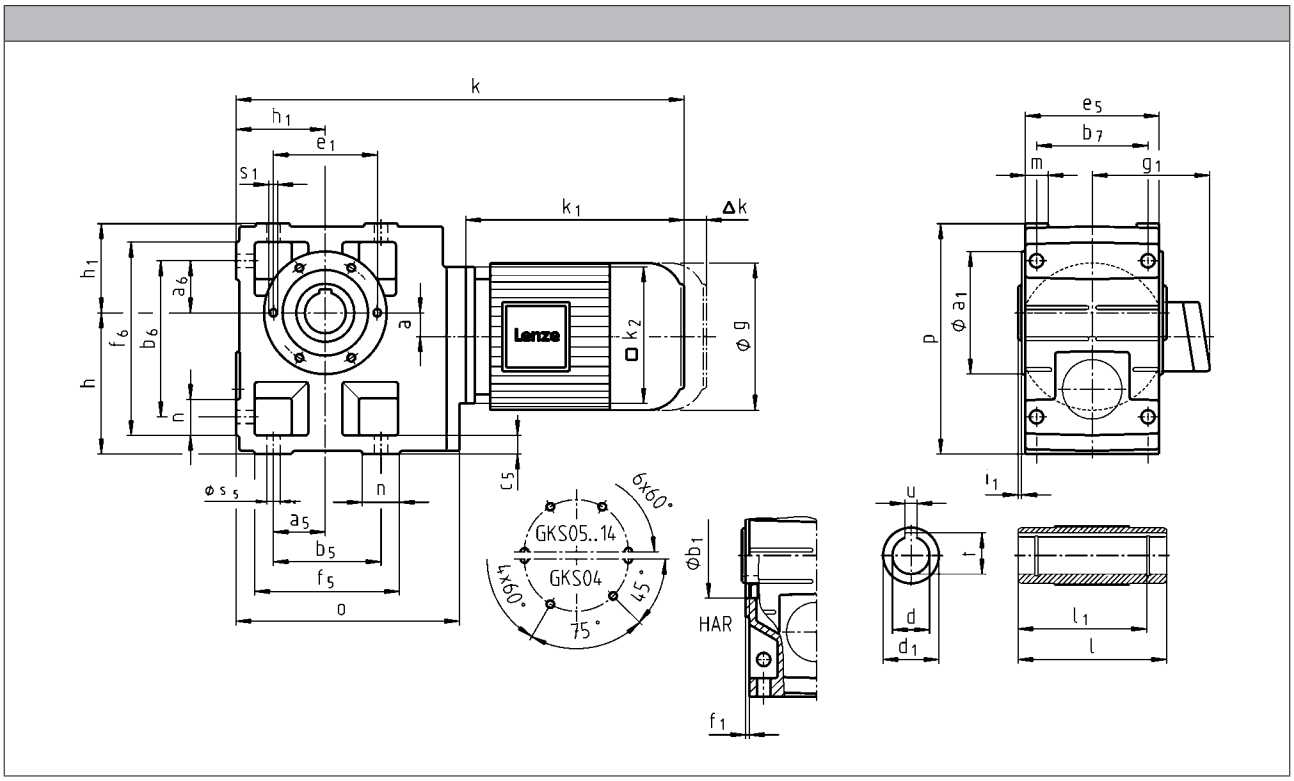
Selection tables

50 Hz, 60 Hz: P_N = 45.0 kW

n_N	1480 r/min				1784 r/min			i		
f_N	50 Hz				60 Hz					
	n_2 [r/min]	M_2 [Nm]	c		n_2 [r/min]	M_2 [Nm]	c			
	122	3335	0.8		148	2767	0.9	12.094	GKS11-3M □□□225C22	74
	119	3429	1.5		143	2845	1.7	12.435	GKS14-3M □□□225C22	74
	113	3628	0.8		136	3010	0.9	13.154	GKS11-3M □□□225C22	74
	109	3730	1.5		132	3094	1.7	13.525	GKS14-3M □□□225C22	74
	89	4591	1.3		107	3809	1.5	16.646	GKS14-3M □□□225C22	74
	81	5050	1.2		97	4189	1.4	18.311	GKS14-3M □□□225C22	74
	76	5382	0.8		91	4465	0.9	19.515	GKS11-3M □□□225C22	74
	74	5534	1.5		89	4591	1.7	20.065	GKS14-3M □□□225C22	74
	67	6064	0.8		81	5031	0.9	21.989	GKS11-3M □□□225C22	74
	66	6235	1.5		79	5173	1.7	22.609	GKS14-3M □□□225C22	74
	60	6811	1.3		72	5650	1.5	24.696	GKS14-3M □□□225C22	74
	55	7492	1.2		66	6215	1.4	27.165	GKS14-3M □□□225C22	74
	48	8442	1.2		58	7003	1.4	30.609	GKS14-3M □□□225C22	74
	43	9568	1.0		51	7937	1.2	34.692	GKS14-3M □□□225C22	74
	38	10780	1.0		46	8943	1.2	39.089	GKS14-3M □□□225C22	74
	35	11730	0.9		42	9731	1.1	42.531	GKS14-3M □□□225C22	74
	31	13217	0.9		37	10965	1.0	47.923	GKS14-3M □□□225C22	74

Dimensions

GKS□□-3M H□R



		080C32	090C12	090C32	100C12	100C32	112C22
g		156	176		194		218
g_1	MHEMAXX	150	152	157	166		176
	MHEMABR	132	137		147		158
k_1	MHEMAXX	224.5	274		309	324	363
k_2		145	180				222
Δ k	MHEMABR	73	68		76		90
	MHFMAXX		128		109		102
	MHFMABR	183	181		170		183
		k					
GKS04		441	501				
GKS05		461	521		556	571	
GKS06		517	577		612	627	672
GKS07		573	633		668	683	728
GKS09			704		739	754	799
GKS11					830	845	890
GKS14							989

		132C12 132C22	160C22	160C32	180C12 180C32	180C42	225C12 225C22
g		258	310		348		447
g_1	MHEMAXX	195	210		230		346
	MHEMABR	187	210		230		346
k_1	MHEMAXX	403	457.5	501.5	561	618	848
k_2		265	300				
Δ k	MHEMABR	109.5	105		113		
	MHFMAXX	115	149			155	213
	MHFMABR	201.5	179		215		213
		k					
GKS06		720					
GKS07		776	835	879			
GKS09		847	906	950	1010		
GKS11		938	997	1041	1101	1158	1388
GKS14		1037	1096	1140	1200	1257	1487

	a	h[1)]	h_1	o	p[1)]
GKS04	20	100	71	203	171
GKS05	23	125	80	232	205
GKS06	28	150	100	291	250
GKS07	34	190	120	354	310
GKS09	41	236	150	429	386
GKS11	54	300	185	527	485
GKS14	67	375	230	636	605

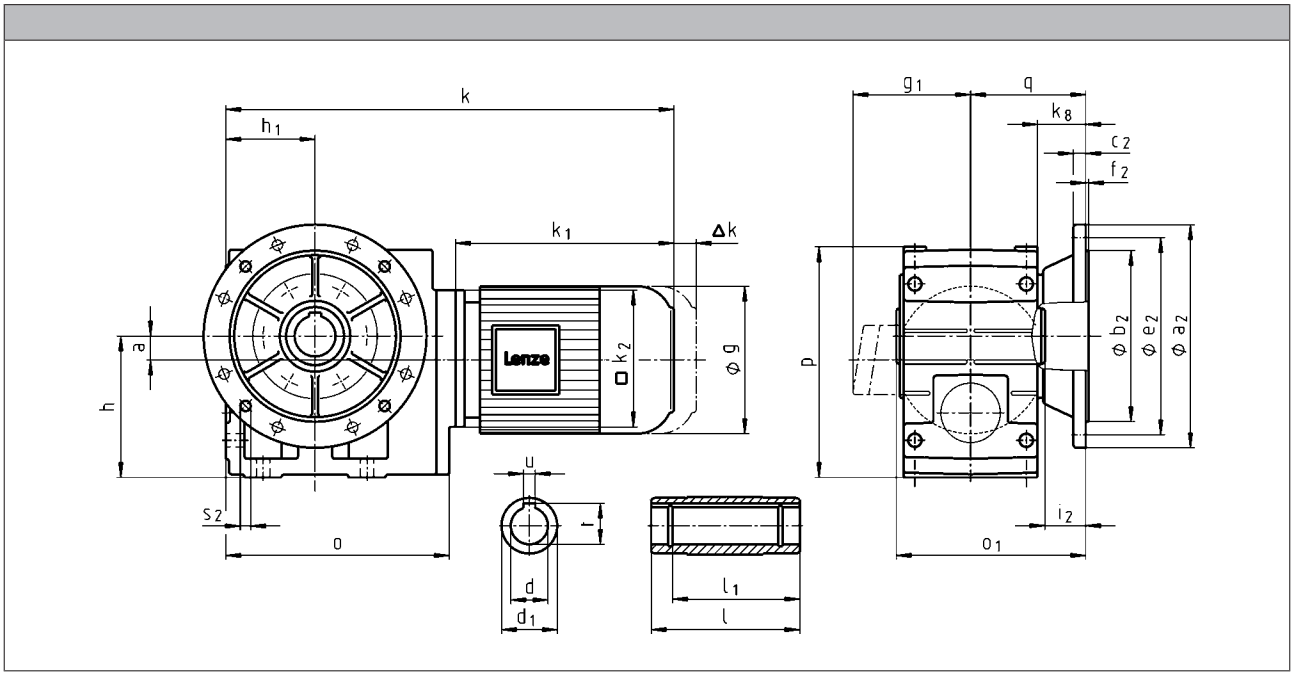
	d	d_1	l[1)]	l_1	u	t	i_1	a_1	b_1	e_1	f_1	s_1
	H7				JS9	+0,2			H7			
GKS04	25 30	45 45	115 115	100 100	8 8	28.3 33.3	2.5 2.5	104	75	90	3	M6x12
GKS05	30 35	50 50	140 140	124 124	8 10	33.3 38.3	4 4	118	80	100	4	M8x15
GKS06	40 45	65 65	160 160	140 140	12 14	43.3 48.8	5 5	140	100	120	4	M10x16
GKS07	50 55	75 75	200 200	175 175	14 16	53.8 59.3	5 5	165	115	140	5	M12x18
GKS09	60 70	95 95	240 240	210 210	18 20	64.4 74.9	5 5	205	145	175	6	M16x24
GKS11	70 80	108 108	290 290	250 250	20 22	74.9 85.4	6 6	240	170	205	4	M20x32
GKS14	100	135	350	305	28	106.4	7	290	170	250	6	M24x35

	a_5	a_6	b_5	b_6	b_7	c_5	e_5	f_5	f_6	m	n	s_5
GKS04	45	45	110	119	85	14	105	132	141	21	22	9
GKS05	47.5	47.5	115	140	105	17	115	144	169	21	29	11
GKS06	60	60	155	170	120	20	145	191	206	23	36	14
GKS07	70	70	190	210	150	25	180	235	255	28	45	18
GKS09	90	90	240	266	185	30	222	300	326	37	60	22
GKS11	105	105	290	325	225	40	270	363	398	43	73	26
GKS14	135	135	360	415	275	50	328	442	497	52	82	33

[1)] k_2 !

Dimensions

GKS□□-3M HAK



		080C32	090C12	090C32	100C12	100C32	112C22
g		156	176		194		218
g_1	MHEMAXX	150	152	157	166		176
	MHEMABR	132	137		147		158
k_1	MHEMAXX	224.5	274		309	324	363
k_2		145	180				222
Δ k	MHEMABR	73	68		76		90
	MHFMAXX		128		109		102
	MHFMABR	183	181		170		183
		k					
GKS04		441	501				
GKS05		461	521		556	571	
GKS06		517	577		612	627	672
GKS07		573	633		668	683	728
GKS09			704		739	754	799
GKS11					830	845	890
GKS14							989

		132C12 132C22	160C22	160C32	180C12 180C32	180C42	225C12 225C22
g		258	310		348		447
g_1	MHEMAXX	195	210		230		346
	MHEMABR	187	210		230		346
k_1	MHEMAXX	403	457.5	501.5	561	618	848
k_2		265	300				
Δ k	MHEMABR	109.5	105		113		
	MHFMAXX	115	149			155	213
	MHFMABR	201.5	179		215		213
		k					
GKS06		720					
GKS07		776	835	879			
GKS09		847	906	950	1010		
GKS11		938	997	1041	1101	1158	1388
GKS14		1037	1096	1140	1200	1257	1487

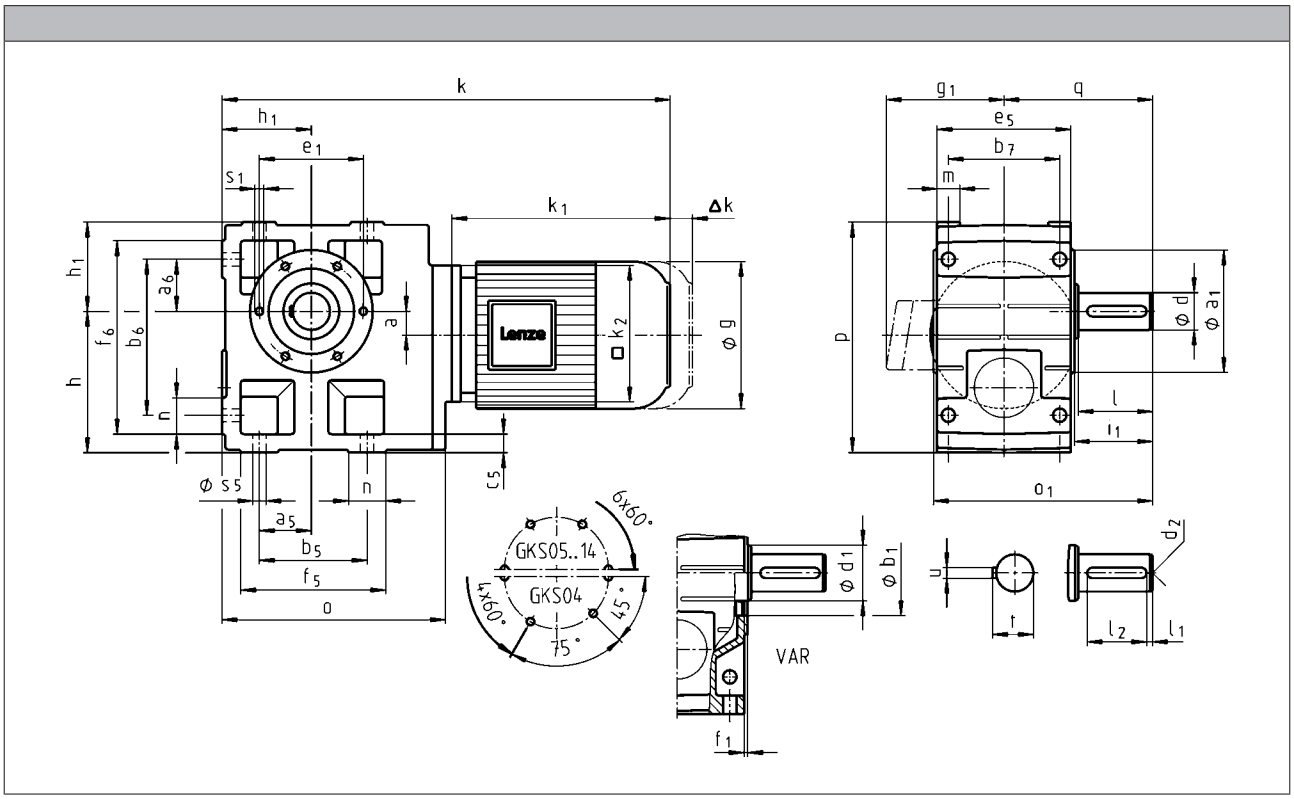
	a	h[1)]	h_1	k_8	o	p[1)]	q
GKS04	20	100	71	38.5	203	171	91
GKS05	23	125	80	40	232	205	103.5
GKS06	28	150	100	49	291	250	121.5
GKS07	34	190	120	65.5	354	310	155.5
GKS09	41	236	150	69.5	429	386	180.5
GKS11	54	300	185	70.5	527	485	205.5
GKS14	67	375	230	71.5	636	605	235.5

	d	d_1	l	l_1	u	t	i_2	o_1[1)]	a_2	b_2	c_2	e_2	f_2	s_2
	H7				JS9	+0,2				j7				
GKS04	25 30	45 45	115 115	100 100	8 8	28.3 33.3	33.5 33.5	148.5 148.5	160	110	10	130	3.5	4 x 9
GKS05	30 35	50 50	140 140	124 124	8 10	33.3 38.3	33 33	173.5 173.5	200	130	12	165	4	4 x 11
GKS06	40 45	65 65	160 160	140 140	12 14	43.3 48.8	42 41	201.5 201.5	200 250	180 130	12 15	165 215	3.5 4	4 x 11 4 x 14
GKS07	50 55	75 75	200 200	175 175	14 16	53.8 59.3	55 55	255.5 255.5	250 300	180 230	15 17	215 265	4 4	4 x 14 4 x 14
GKS09	60 70	95 95	240 240	210 210	18 20	64.4 74.9	60 60	300.5 300.5	350	250	18	300	4	4 x 17.5
GKS11	70 80	108 108	290 290	250 250	20 22	74.9 85.4	60 60	350.5 350.5	400 450	300 350	20 22	350 400	5 5	4 x 17.5 8 x 17.5
GKS14	100	135	350	305	28	106.4	60	410.5	450	350	22	400	5	8 x 17.5

[1)] k_2 !

Dimensions

GKS□□-3M V□R



		080C32	090C12	090C32	100C12	100C32	112C22
g		156	176		194		218
g_1	MHEMAXX	150	152	157	166		176
	MHEMABR	132	137		147		158
k_1	MHEMAXX	224.5	274		309	324	363
k_2		145	180				222
Δ k	MHEMABR	73	68		76		90
	MHFMAXX		128		109		102
	MHFMABR	183	181		170		183
		k					
	GKS04	441	501				
	GKS05	461	521		556	571	
	GKS06	517	577		612	627	672
	GKS07	573	633		668	683	728
	GKS09		704		739	754	799
	GKS11				830	845	890
	GKS14						989

		132C12 132C22	160C22	160C32	180C12 180C32	180C42	225C12 225C22
g		258	310		348		447
g_1	MHEMAXX	195	210		230		346
	MHEMABR	187	210		230		346
k_1	MHEMAXX	403	457.5	501.5	561	618	848
k_2		265	300				
Δ k	MHEMABR	109.5	105		113		
	MHFMAXX	115	149			155	213
	MHFMABR	201.5	179		215		213
		k					
GKS06		720					
GKS07		776	835	879			
GKS09		847	906	950	1010		
GKS11		938	997	1041	1101	1158	1388
GKS14		1037	1096	1140	1200	1257	1487

	a	h[1)]	h_1	o	p[1)]	q
GKS04	20	100	71	203	171	107.5
GKS05	23	125	80	232	205	130
GKS06	28	150	100	291	250	160
GKS07	34	190	120	354	310	200
GKS09	41	236	150	429	386	240
GKS11	54	300	185	527	485	305
GKS14	67	375	230	636	605	375

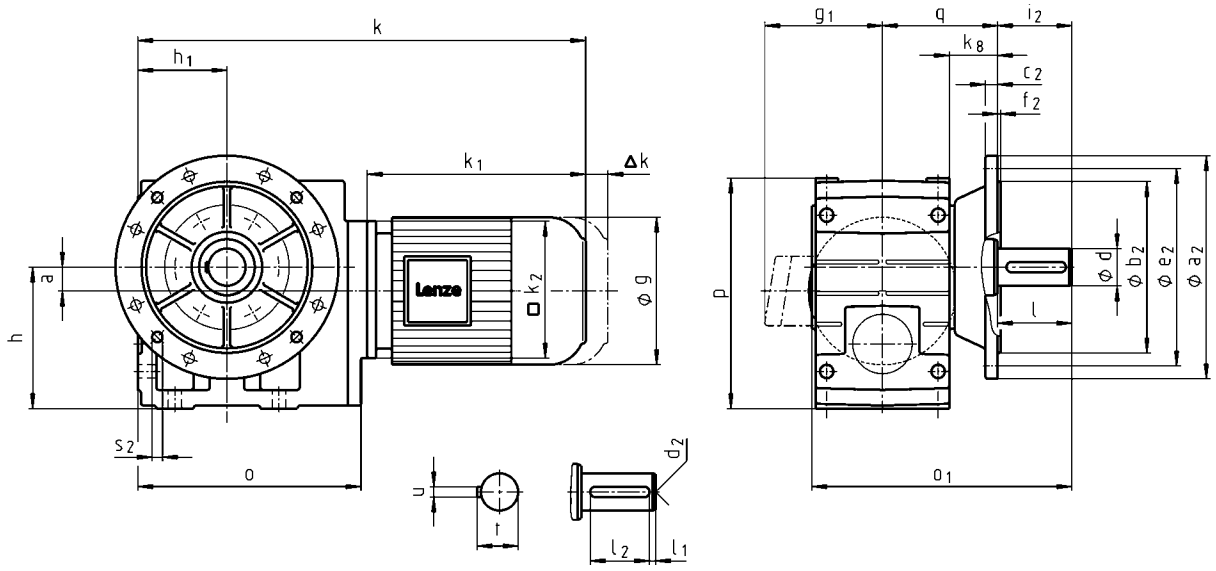
	d	d	d_1	d_2	l	l_1	l_2	u	t	i_1	o_1[1)]	a_1	b_1	e_1	f_1	s_1
	k6	m6											H7			
GKS04	25		45	M10	50	6	40	8	28	52.5	162.5	104	75	90	3	M6x12
GKS05	30		45	M10	60	6	45	8	33	64	196.5	118	80	100	4	M8x15
GKS06	40		65	M16	80	7	63	12	43	85	235.5	140	100	120	4	M10x16
GKS07	50		75	M16	100	8	80	14	53.5	105	295.5	165	115	140	5	M12x18
GKS09		60	95	M20	120	8	100	18	64	125	355.5	205	145	175	6	M16x24
GKS11		80	108	M20	160	15	125	22	85	166	444.5	240	170	205	4	M20x32
GKS14		100	135	M24	200	18	160	28	106	207	543.5	290	170	250	6	M24x35

	a_5	a_6	b_5	b_6	b_7	c_5	e_5	f_5	f_6	m	n	s_5
GKS04	45	45	110	119	85	14	105	132	141	21	22	9
GKS05	47.5	47.5	115	140	105	17	115	144	169	21	29	11
GKS06	60	60	155	170	120	20	145	191	206	23	36	14
GKS07	70	70	190	210	150	25	180	235	255	28	45	18
GKS09	90	90	240	266	185	30	222	300	326	37	60	22
GKS11	105	105	290	325	225	40	270	363	398	43	73	26
GKS14	135	135	360	415	275	50	328	442	497	52	82	33

[1)] k_2 !

Dimensions

GKS□□-3M VAK



		080C32	090C12	090C32	100C12	100C32	112C22
g		156	176		194		218
g_1	MHEMAXX	150	152	157	166		176
	MHEMABR	132	137		147		158
k_1	MHEMAXX	224.5	274		309	324	363
k_2		145	180				222
Δ k	MHEMABR	73	68		76		90
	MHFMAXX		128		109		102
	MHFMABR	183	181		170		183
		k					
GKS04		441	501				
GKS05		461	521		556	571	
GKS06		517	577		612	627	672
GKS07		573	633		668	683	728
GKS09			704		739	754	799
GKS11					830	845	890
GKS14							989

		132C12 132C22	160C22	160C32	180C12 180C32	180C42	225C12 225C22
g		258	310		348		447
g_1	MHEMAXX	195	210		230		346
	MHEMABR	187	210		230		346
k_1	MHEMAXX	403	457.5	501.5	561	618	848
k_2		265	300				
Δ k	MHEMABR	109.5	105		113		
	MHFMAXX	115	149			155	213
	MHFMABR	201.5	179		215		213
		k					
GKS06		720					
GKS07		776	835	879			
GKS09		847	906	950	1010		
GKS11		938	997	1041	1101	1158	1388
GKS14		1037	1096	1140	1200	1257	1487

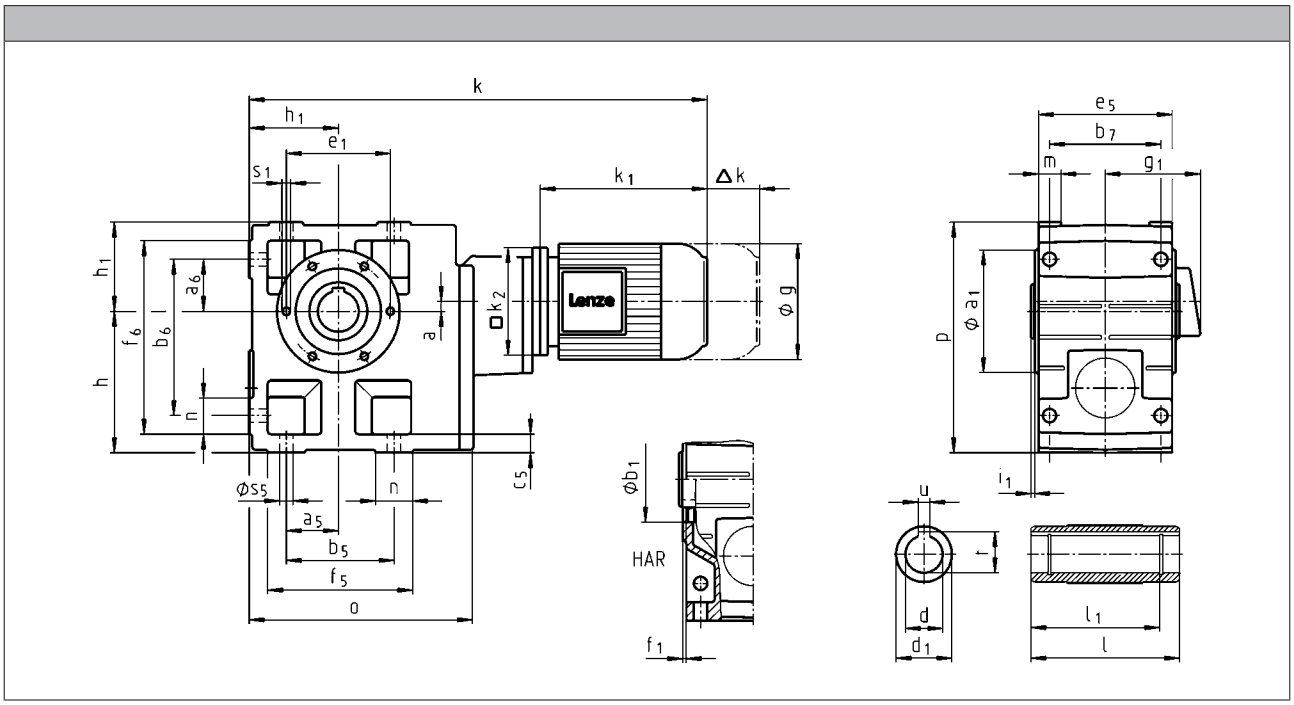
	a	h[1)]	h_1	k_8	o	p[1)]	q
GKS04	20	100	71	38.5	203	171	91
GKS05	23	125	80	40	232	205	103.5
GKS06	28	150	100	49	291	250	121.5
GKS07	34	190	120	65.5	354	310	155.5
GKS09	41	236	150	69.5	429	386	180.5
GKS11	54	300	185	70.5	527	485	205.5
GKS14	67	375	230	71.5	636	605	235.5

	d	d	d_2	l	l_1	l_2	u	t	i_2	o_1[1)]	a_2	b_2	c_2	e_2	f_2	s_2
	k6	m6										j7				
GKS04	25		M10	50	6	40	8	28	50	195.5	160	110	10	130	3.5	4 x 9
GKS05	30		M10	60	6	45	8	33	60	229.5	200	130	12	165	4	4 x 11
GKS06	40		M16	80	7	63	12	43	80	276.5	250	180	15	215	4	4 x 14
GKS07	50		M16	100	8	80	14	53.5	100	350.5	250 300	180 230	15 17	215 265	4 4	4 x 14 4 x 14
GKS09		60	M20	120	8	100	18	64	120	415.5	350	250	18	300	4	4 x 17.5
GKS11		80	M20	160	15	125	22	85	160	504.5	400 450	300 350	20 22	350 400	5 5	4 x 17.5 8 x 17.5
GKS14		100	M24	200	18	160	28	106	200	603.5	450	350	22	400	5	8 x 17.5

[1)] k_2 !

Dimensions

GKS□□-4M H□R



		080C32	090C12	090C32	100C12	100C32
g		156	176		194	
g_1	MHEMAXX	150	152	157	166	
	MHEMABR	132	137		147	
k_1	MHEMAXX	224.5	274		309	324
k_2		145	180			
Δ k	MHEMABR	73	68		76	
	MHFMAXX	128			109	
	MHFMABR	183	181		170	
		k				
GKS06		611	670			
GKS07		678	737		772	
GKS09		767	826		861	876
GKS11		877	936		971	986
GKS14			1069		1104	1119

		112C22	132C12 132C22	160C22	160C32	180C12
g		218	258	310		348
g_1	MHEMAXX	176	195	210		230
	MHEMABR	158	187	210		230
k_1	MHEMAXX	363	403	457.5	501.5	561
k_2		222	265	300		
Δ k	MHEMABR	90	109.5	105		113
	MHFMAXX	102	115	149		
	MHFMABR	183	201.5	179		215
		k				
GKS09		921				
GKS11		1031	1079			
GKS14		1164	1212	1272	1316	1375

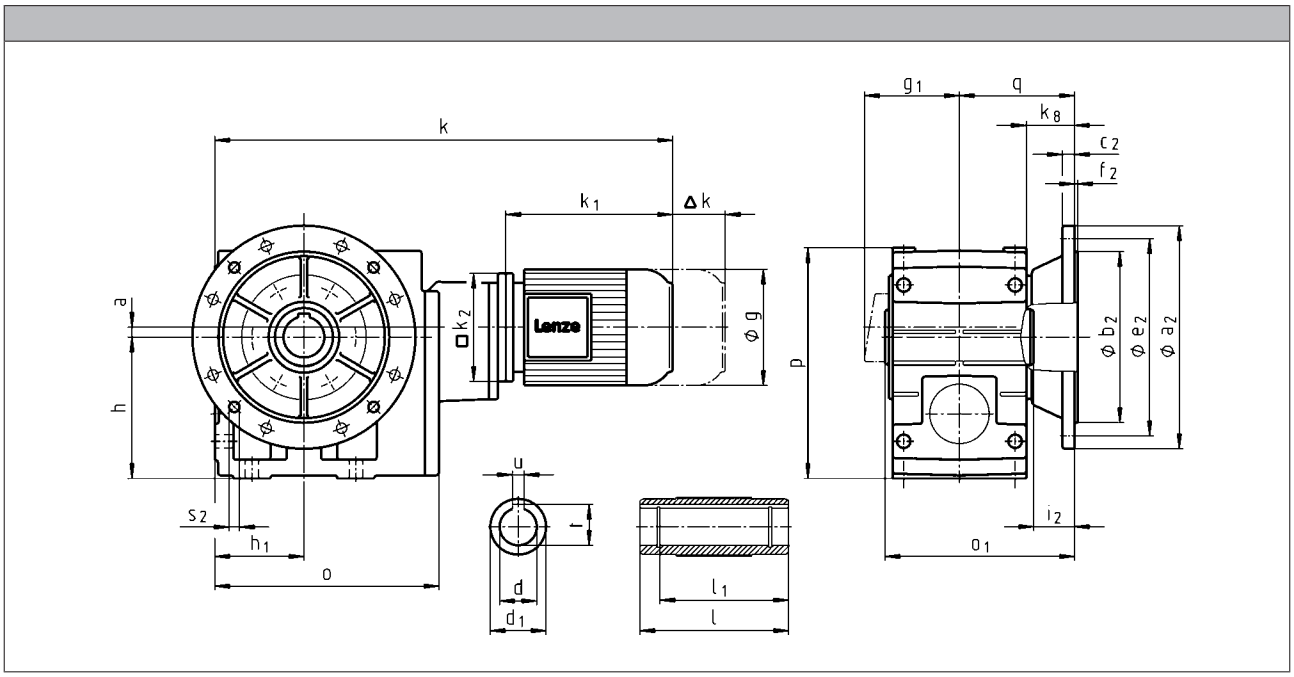
	a	h	h_1	o	p
GKS06	8	150	100	288	250
GKS07	11	190	120	350.5	310
GKS09	15	236	150	426	386
GKS11	16	300	185	523	485
GKS14	22	375	230	632	605

	d H7	d_1	l	l_1	u JS9	t +0,2	i_1	a_1	b_1 H7	e_1	f_1	s_1
GKS06	40 45	65 65	160 160	140 140	12 14	43.3 48.8	5 5	140	100	120	4	M10x16
GKS07	50 55	75 75	200 200	175 175	14 16	53.8 59.3	5 5	165	115	140	5	M12x18
GKS09	60 70	95 95	240 240	210 210	18 20	64.4 74.9	5 5	205	145	175	6	M16x24
GKS11	70 80	108 108	290 290	250 250	20 22	74.9 85.4	6 6	240	170	205	4	M20x32
GKS14	100	135	350	305	28	106.4	7	290	170	250	6	M24x35

	a_5	a_6	b_5	b_6	b_7	c_5	e_5	f_5	f_6	m	n	s_5
GKS06	60	60	155	170	120	20	145	191	206	23	36	14
GKS07	70	70	190	210	150	25	180	235	255	28	45	18
GKS09	90	90	240	266	185	30	222	300	326	37	60	22
GKS11	105	105	290	325	225	40	270	363	398	43	73	26
GKS14	135	135	360	415	275	50	328	442	497	52	82	33

Dimensions

GKS□□-4M HAK



		080C32	090C12	090C32	100C12	100C32
g		156	176		194	
g_1	MHEMAXX	150	152	157	166	
	MHEMABR	132	137		147	
k_1	MHEMAXX	224.5	274		309	324
k_2		145	180			
Δ k	MHEMABR	73	68		76	
	MHFMAXX	128			109	
	MHFMABR	183	181		170	
		k				
GKS06		611	670			
GKS07		678	737		772	
GKS09		767	826		861	876
GKS11		877	936		971	986
GKS14			1069		1104	1119

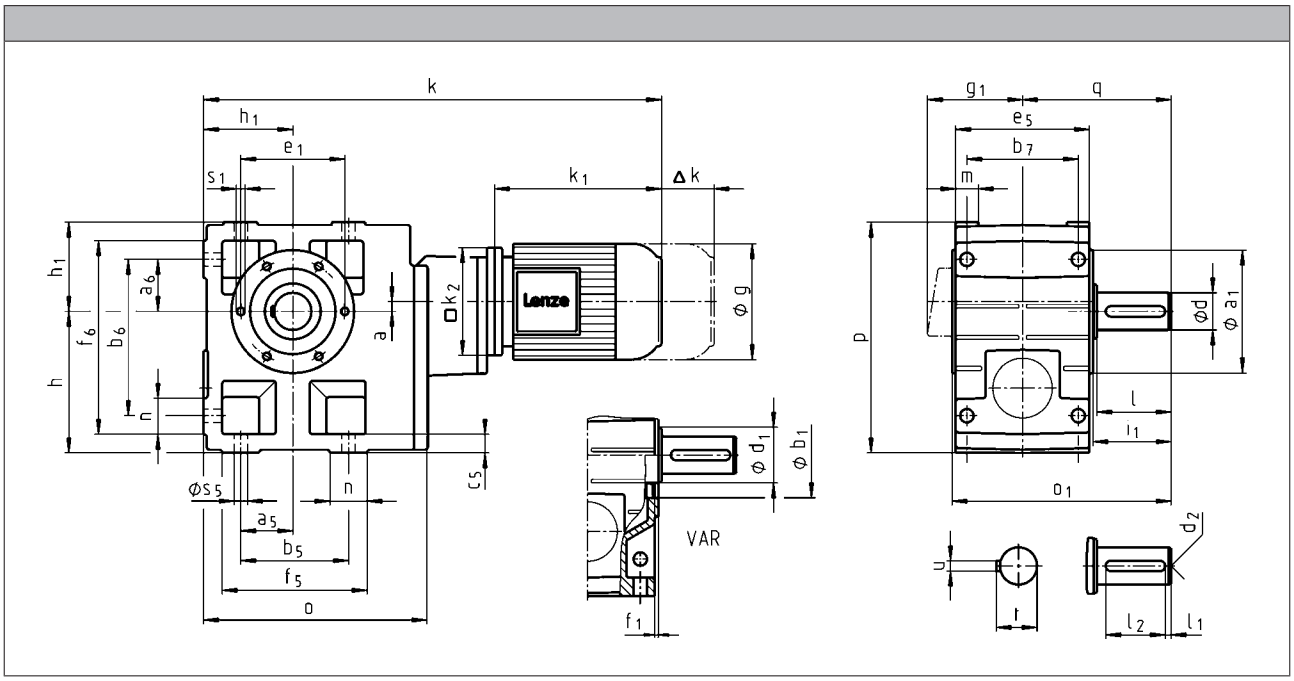
		112C22	132C12 132C22	160C22	160C32	180C12
g		218	258	310		348
g_1	MHEMAXX	176	195	210		230
	MHEMABR	158	187	210		230
k_1	MHEMAXX	363	403	457.5	501.5	561
k_2		222	265	300		
Δ k	MHEMABR	90	109.5	105		113
	MHFMAXX	102	115	149		
	MHFMABR	183	201.5	179		215
		k				
	GKS09	921				
	GKS11	1031	1079			
	GKS14	1164	1212	1272	1316	1375

	a	h	h_1	k_8	o	p	q
GKS06	8	150	100	49	288	250	121.5
GKS07	11	190	120	65.5	350.5	310	155.5
GKS09	15	236	150	69.5	426	386	180.5
GKS11	16	300	185	70.5	523	485	205.5
GKS14	22	375	230	71.5	632	605	235.5

	d	d_1	l	l_1	u	t	i_2	o_1	a_2	b_2	c_2	e_2	f_2	s_2
	H7				JS9	+0,2				j7				
GKS06	40 45	65 65	160 160	140 140	12 14	43.3 48.8	42 41	201.5 201.5	200 250	180 130	12 15	165 215	3.5 4	4 x 11 4 x 14
GKS07	50 55	75 75	200 200	175 175	14 16	53.8 59.3	55 55	255.5 255.5	250 300	180 230	15 17	215 265	4 4	4 x 14 4 x 14
GKS09	60 70	95 95	240 240	210 210	18 20	64.4 74.9	60 60	300.5 300.5	350	250	18	300	4	4 x 17.5
GKS11	70 80	108 108	290 290	250 250	20 22	74.9 85.4	60 60	350.5 350.5	400 450	300 350	20 22	350 400	5 5	4 x 17.5 8 x 17.5
GKS14	100	135	350	305	28	106.4	60	410.5	450	350	22	400	5	8 x 17.5

Dimensions

GKS□□-4M V□R



		080C32	090C12	090C32	100C12	100C32
g		156	176		194	
g_1	MHEMAXX	150	152	157	166	
	MHEMABR	132	137		147	
k_1	MHEMAXX	224.5	274		309	324
k_2		145	180			
Δ k	MHEMABR	73	68		76	
	MHFMAXX	128			109	
	MHFMABR	183	181		170	
		k				
GKS06		611	670			
GKS07		678	737		772	
GKS09		767	826		861	876
GKS11		877	936		971	986
GKS14			1069		1104	1119

		112C22	132C12 132C22	160C22	160C32	180C12
g		218	258	310		348
g_1	MHEMAXX	176	195	210		230
	MHEMABR	158	187	210		230
k_1	MHEMAXX	363	403	457.5	501.5	561
k_2		222	265	300		
Δ k	MHEMABR	90	109.5	105		113
	MHFMAXX	102	115	149		
	MHFMABR	183	201.5	179		215
		k				
GKS09		921				
GKS11		1031	1079			
GKS14		1164	1212	1272	1316	1375

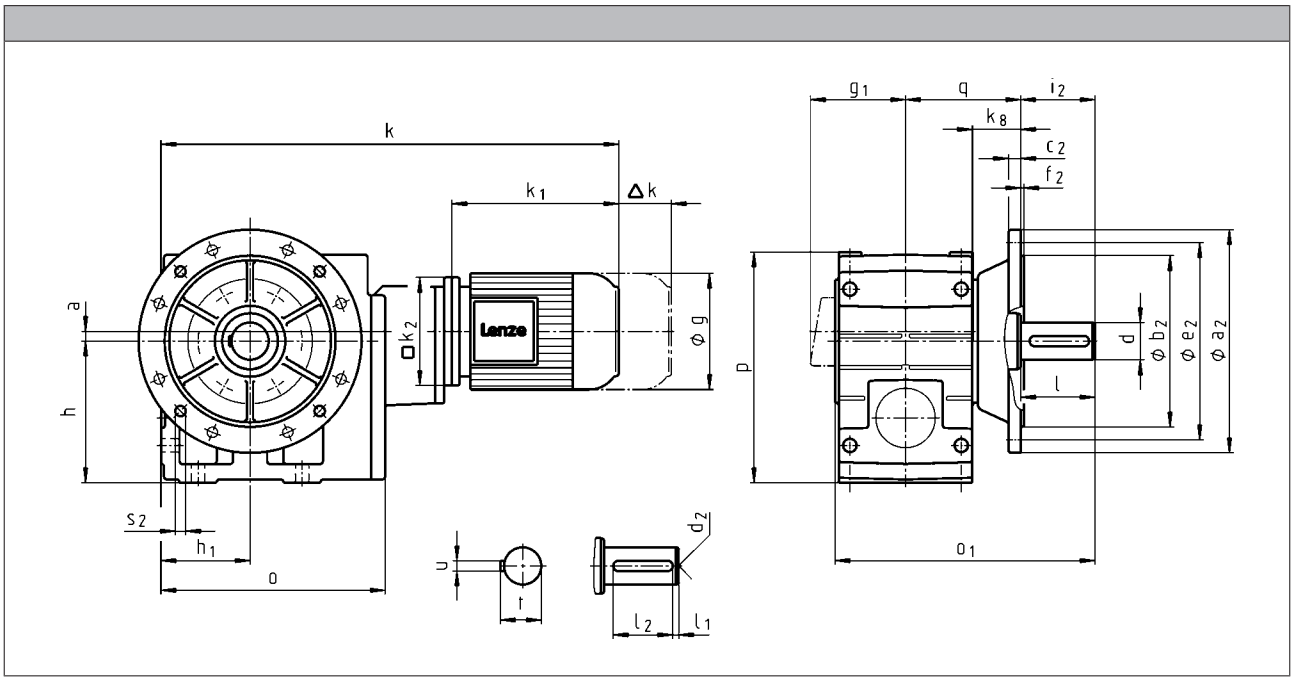
	a	h	h_1	o	p	q
GKS06	8	150	100	288	250	160
GKS07	11	190	120	350.5	310	200
GKS09	15	236	150	426	386	240
GKS11	16	300	185	523	485	305
GKS14	22	375	230	632	605	375

	d	d	d_1	d_2	l	l_1	l_2	u	t	i_1	o_1	a_1	b_1	e_1	f_1	s_1
	k6	m6											H7			
GKS06	40		65	M16	80	7	63	12	43	85	235.5	140	100	120	4	M10x16
GKS07	50		75	M16	100	8	80	14	53.5	105	295.5	165	115	140	5	M12x18
GKS09		60	95	M20	120	8	100	18	64	125	355.5	205	145	175	6	M16x24
GKS11		80	108	M20	160	15	125	22	85	166	444.5	240	170	205	4	M20x32
GKS14		100	135	M24	200	18	160	28	106	207	543.5	290	170	250	6	M24x35

	a_5	a_6	b_5	b_6	b_7	c_5	e_5	f_5	f_6	m	n	s_5
GKS06	60	60	155	170	120	20	145	191	206	23	36	14
GKS07	70	70	190	210	150	25	180	235	255	28	45	18
GKS09	90	90	240	266	185	30	222	300	326	37	60	22
GKS11	105	105	290	325	225	40	270	363	398	43	73	26
GKS14	135	135	360	415	275	50	328	442	497	52	82	33

Dimensions

GKS□□-4M VAK



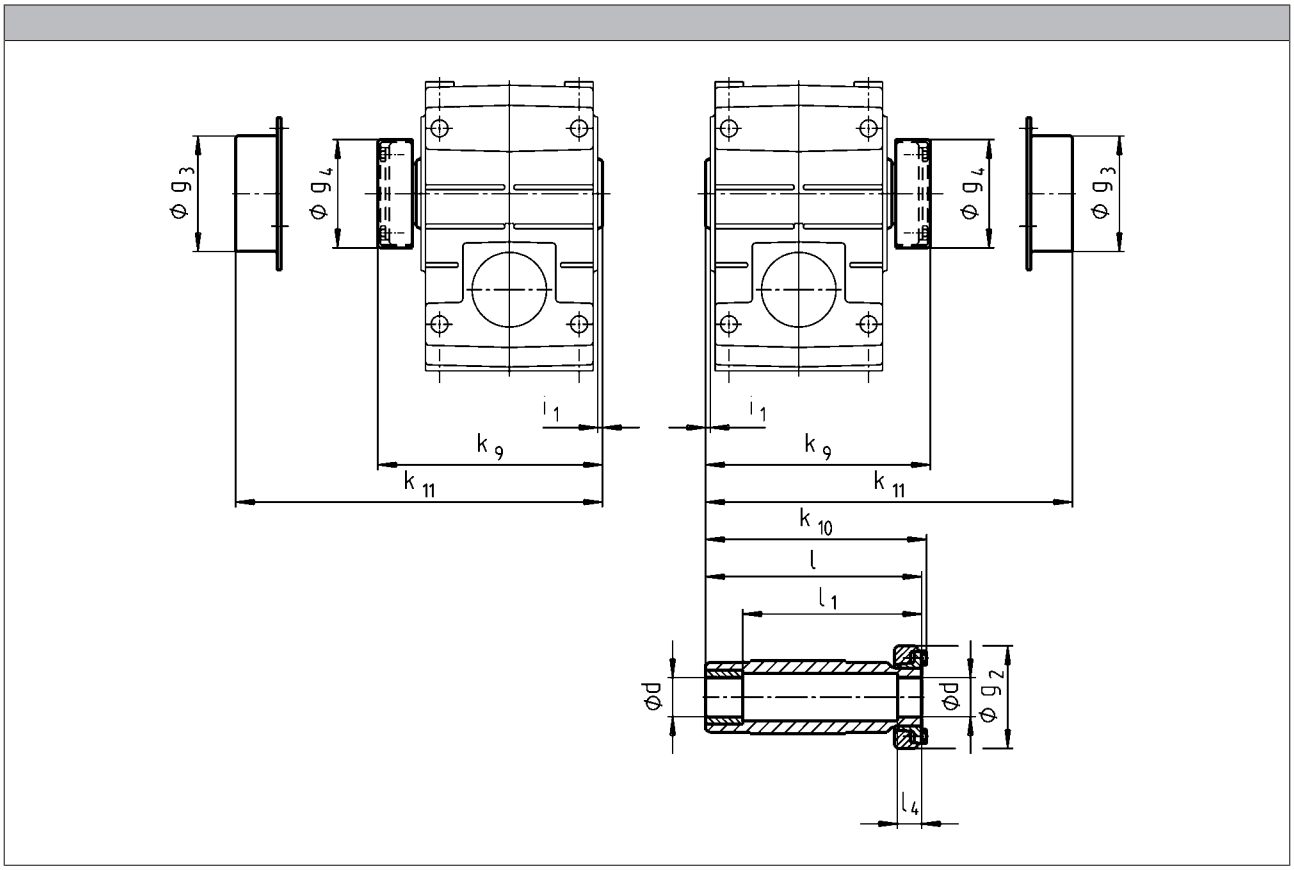
		080C32	090C12	090C32	100C12	100C32
g		156	176		194	
g_1	MHEMAXX	150	152	157	166	
	MHEMABR	132	137		147	
k_1	MHEMAXX	224.5	274		309	324
k_2		145	180			
Δ k	MHEMABR	73	68		76	
	MHFMAXX	128			109	
	MHFMABR	183	181		170	
		k				
GKS06		611	670			
GKS07		678	737		772	
GKS09		767	826		861	876
GKS11		877	936		971	986
GKS14			1069		1104	1119

		112C22	132C12 132C22	160C22	160C32	180C12
g		218	258	310		348
g_1	MHEMAXX	176	195	210		230
	MHEMABR	158	187	210		230
k_1	MHEMAXX	363	403	457.5	501.5	561
k_2		222	265	300		
Δ k	MHEMABR	90	109.5	105		113
	MHFMAXX	102	115	149		
	MHFMABR	183	201.5	179		215
		k				
	GKS09	921				
	GKS11	1031	1079			
	GKS14	1164	1212	1272	1316	1375

	a	h	h_1	k_8	o	p	q
GKS06	8	150	100	49	288	250	121.5
GKS07	11	190	120	65.5	350.5	310	155.5
GKS09	15	236	150	69.5	426	386	180.5
GKS11	16	300	185	70.5	523	485	205.5
GKS14	22	375	230	71.5	632	605	235.5

	d	d	d_2	l	l_1	l_2	u	t	i_2	o_1	a_2	b_2	c_2	e_2	f_2	s_2
	k6	m6										j7				
GKS06	40		M16	80	7	63	12	43	80	276.5	250	180	15	215	4	4 x 14
GKS07	50		M16	100	8	80	14	53.5	100	350.5	250 300	180 230	15 17	215 265	4 4	4 x 14 4 x 14
GKS09		60	M20	120	8	100	18	64	120	415.5	350	250	18	300	4	4 x 17.5
GKS11		80	M20	160	15	125	22	85	160	504.5	400 450	300 350	20 22	350 400	5 5	4 x 17.5 8 x 17.5
GKS14		100	M24	200	18	160	28	106	200	603.5	450	350	22	400	5	8 x 17.5

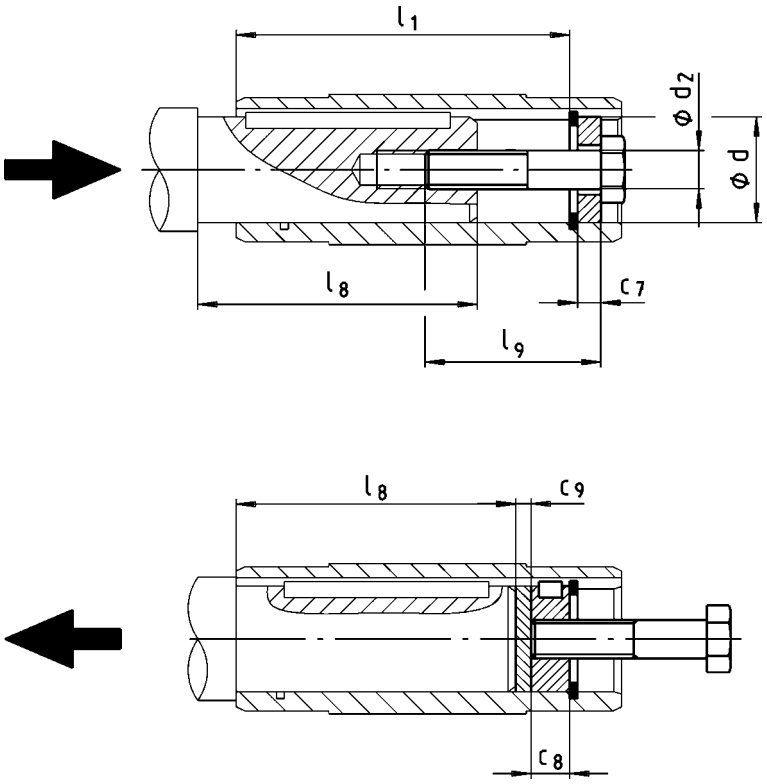
Hollow shaft with shrink disc



	d	g2	g3	g4	i1	k9	k10	k11	l	l1	l4
	h6										
GKS04	25 30	72	79	76	2.5	150	148	154	142	122	26
GKS05	35	80	90	84	4.0	176	174	179	168	148	28
GKS06	40	90	100	94		202	200	204	194	164	30
GKS07	50	110	124	116	5.0	241	238	244	232	192	26
GKS09	65	141	159	147		288	285	287	278	228	30
GKS11	80	170	191	176	6.0	347	344	349	338	238	42
GKS14	100	215	253	221	7.0	418	415	421	407	307	55

- ► Output flange and hollow shaft with shrink disc (output version SAK) are not possible in the same location. For additional dimensions see output version H□□.
- ► Ensure that the strength of the machine shaft material is adequate in shrink disc designs.
  When using typical steels, e.g. C45, 42CrMo4, the torques listed in the selection tables can be used without restriction.
  Please consult us if you wish to use material that is considerably weaker. Medium surface roughness Rz must not exceed 15 µm (turning is sufficient).

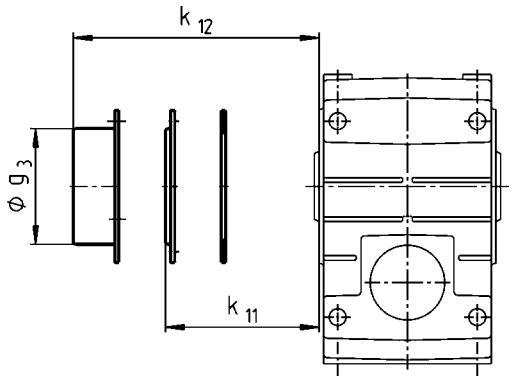
Mounting set for hollow shaft circlip:
Proposed design for auxiliary tools



	d	l_1	d_2	l_9	c_7	c_8	c_9	$l_{8,\,max}$
	H7							
GKS04	25 30	100	M10	40	5	10	3	85
					6			
GKS05	30 35	124						107
			M12	50	7	12		
GKS06	40 45	140	M16	60	8	16	4	118
					9			
GKS07	50 55	175			10		5	148
			M20	80	11	20		
GKS09	60 70	210			13			182
					14			
GKS11	70 80	250					6	221
					16			
GKS14	100	305	M24	100	20	24	8	270

6.9

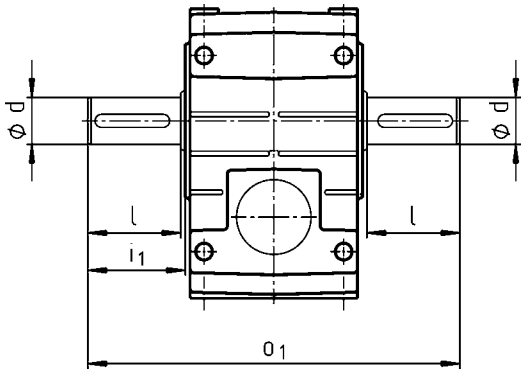
Hoseproof hollow shaft cover



► Cover including gasket

	k_{11}	k_{12}	g_3
GKS04	9		
GKS05	10		
GKS06	11		
GKS07			
GKS09		54	159
GKS11		67	191
GKS14		80	253

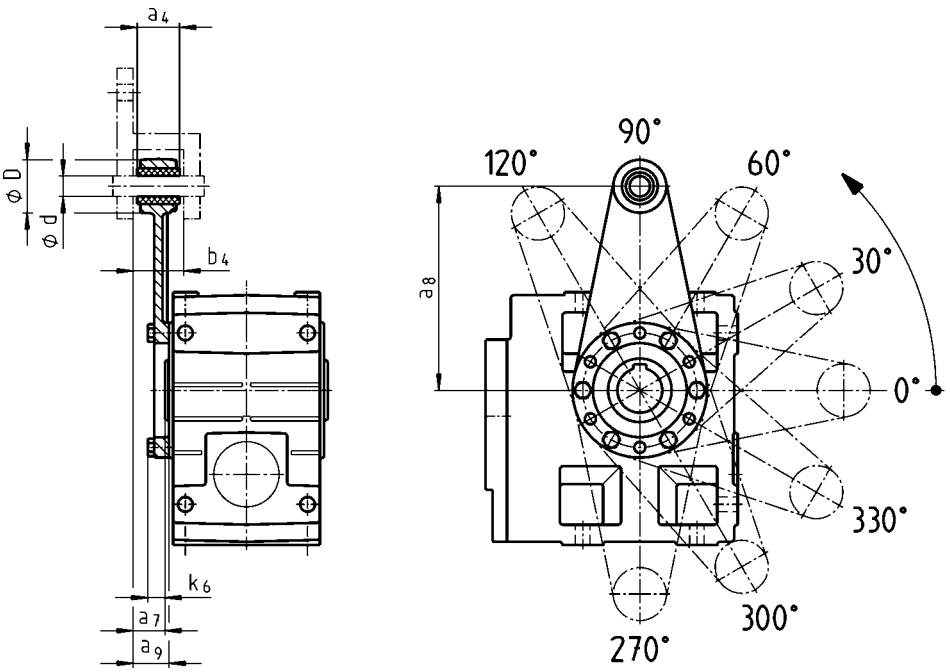
Gearboxes with 2nd output shaft end



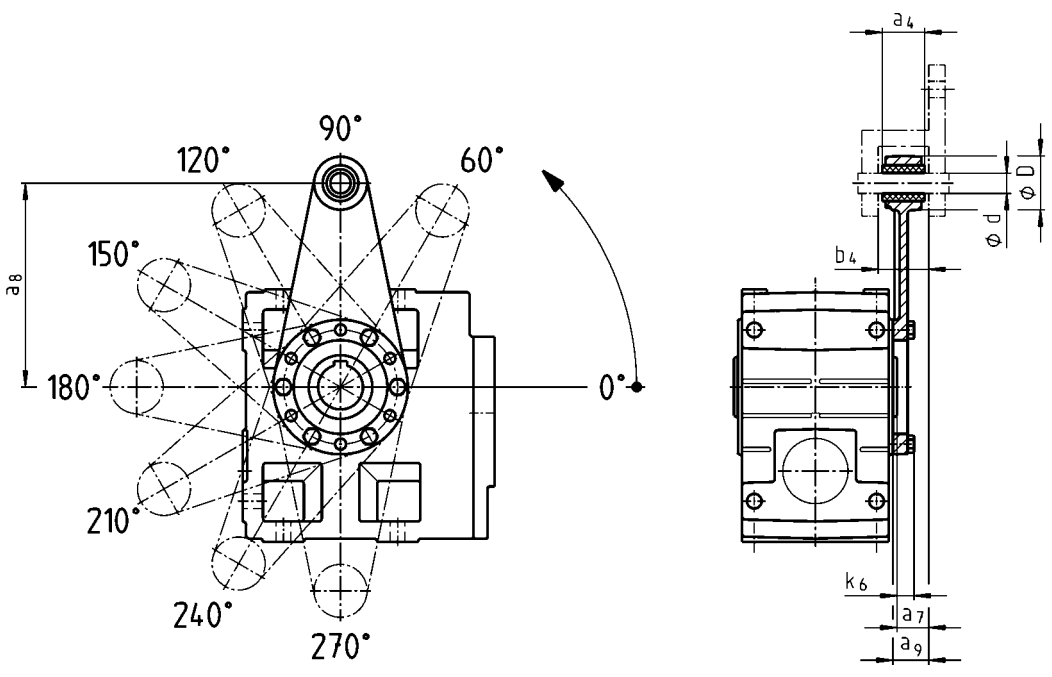
	d	d	l	i_1	o_1
	k6	m6			
GKS04	25		50	52.5	215
GKS05	30		60	64.0	260
GKS06	40		80	85.0	320
GKS07	50		100	105.0	400
GKS09		60	120	125.0	480
GKS11		80	160	166.0	610
GKS14		100	200	207.0	750

Torque plate on threaded pitch circle

In position 3



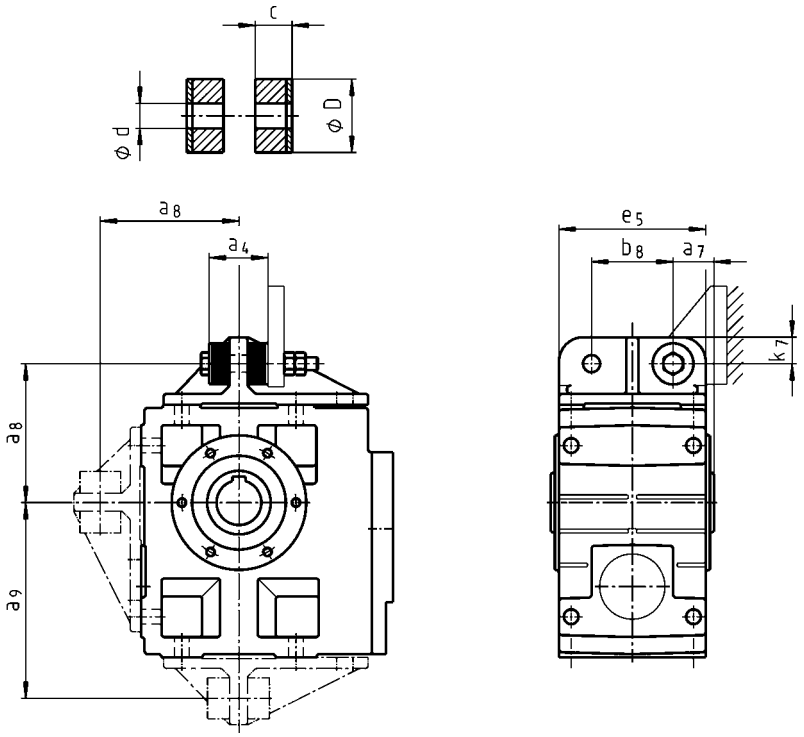
In position 5



	a_4	a_7	a_8	a_9	b_4	d	D	k_6
GKS04	30	24.0	130	26.5	34.5	12	35	16
GKS05	34	23.5	160	27.5	38.5	16	45	15
GKS06	40	28.0	200	33.0	44.5	20	50	18
GKS07	46	32.5	250	37.5	50.5	25	65	21

Torque plate at housing foot

In position 2, 4 or 6

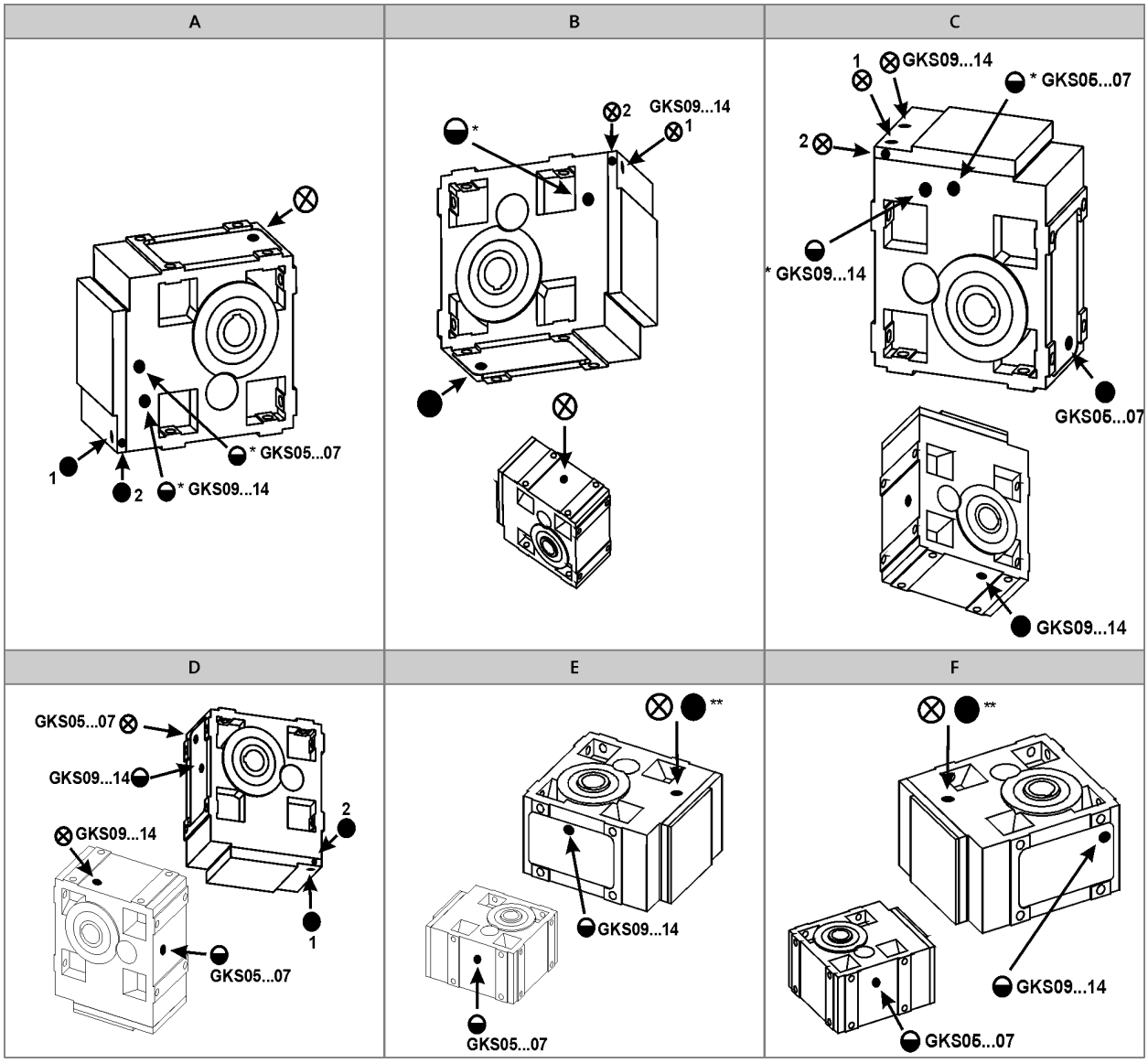


	a_4	a_7	a_8	a_9	b_8	c	d	D	e_5	k_7
GKS04	41	27.5	106	135.0	60	14.5	11	30	100	20
GKS05	45	35.0	115	160.0	70	15.0	13	40	127	25
GKS06	72	40.0	145	195.0	80	27.0	17	50	145	28
GKS07	78	50.0	170	240.0	100	28.0	21	60	180	35
GKS09	86	60.0	214	300.0	120	29.0	26	72	222	46
GKS11	94	72.5	260	375.0	145	30.0	31	92	270	55
GKS14	100	85.0	320	465.0	180		39	110	328	70

Ventilations

Position of ventilation, sealing elements and oil level check

GKS05...14-3



A to F Mounting position
⊗ Ventilation / Oil filler plug
● Oil drain plug
◒ Oil control plug
* On both sides
** On opposite side

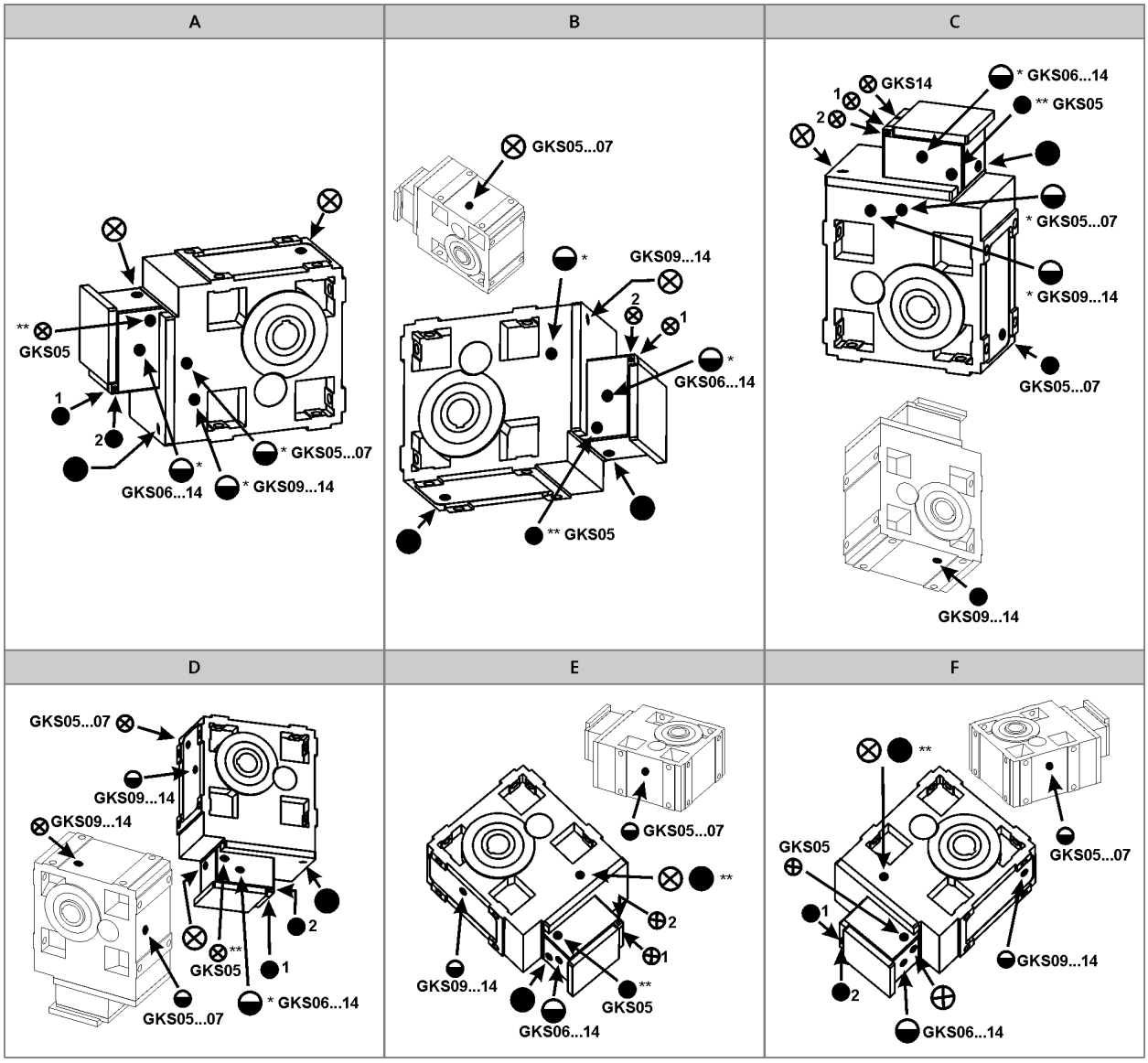
Item 1 standard
Item 2 only with:
- GKS05-3M □□□ 090C□□
- GKS05-3M □□□ 100C□□
- GKS06-3M □□□ 112C□□
- GKS07-3M □□□ 160C□□

6.9

Ventilations

Position of ventilation, sealing elements and oil level check

GKS05...14-4



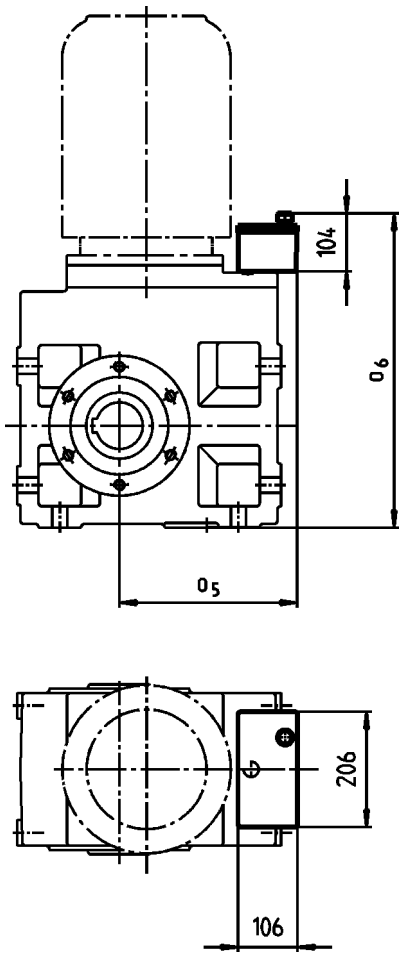
A to F Mounting position
⊗ Ventilation / Oil filler plug
● Oil drain plug
◒ Oil control plug
* On both sides
** On opposite side

Item 1 standard
Item 2 only with:
- GKS07-4M □□□ 090C□□
- GKS07-4M □□□ 100C□□
- GKS09-4M □□□ 112C□□

Ventilations

Compensation reservoir for mounting position C

GKS□□-3

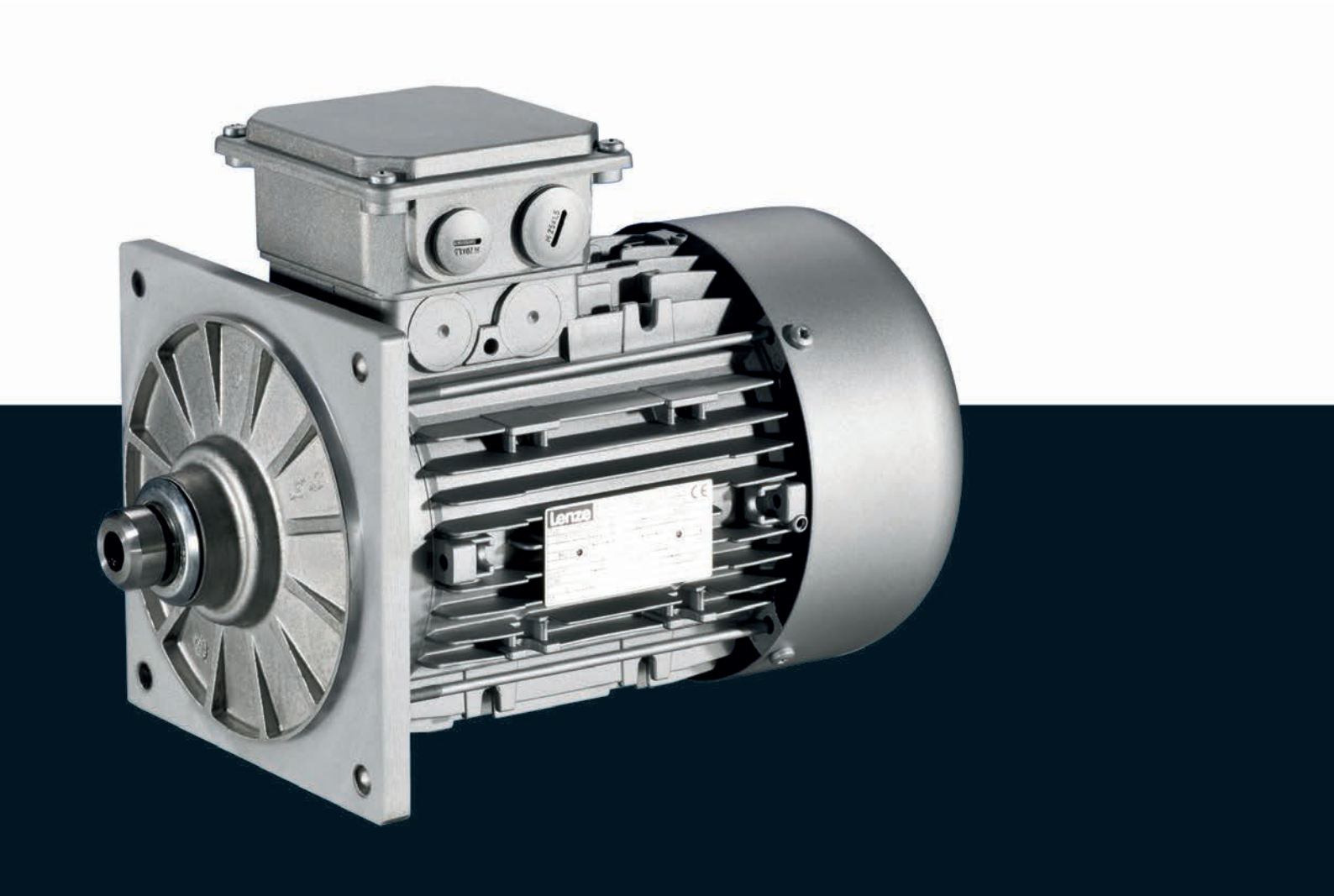


Motor	090 100		112		132		160 180 225	
	o_5 [mm]	o_6 [mm]	o_5 [mm]	o_6 [mm]	o_5 [mm]	o_6 [mm]	o_5 [mm]	o_6 [mm]
GKS09	243	533	265	533	282	533	297	533
GKS11	258	626	280	630	304	630	318	630
GKS14			313	739	343	739	343	739

► Terminal box position 4 not permitted.

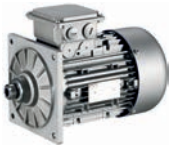
MH three-phase AC motors

0.75 to 45 kW



MH three-phase AC motors

Contents



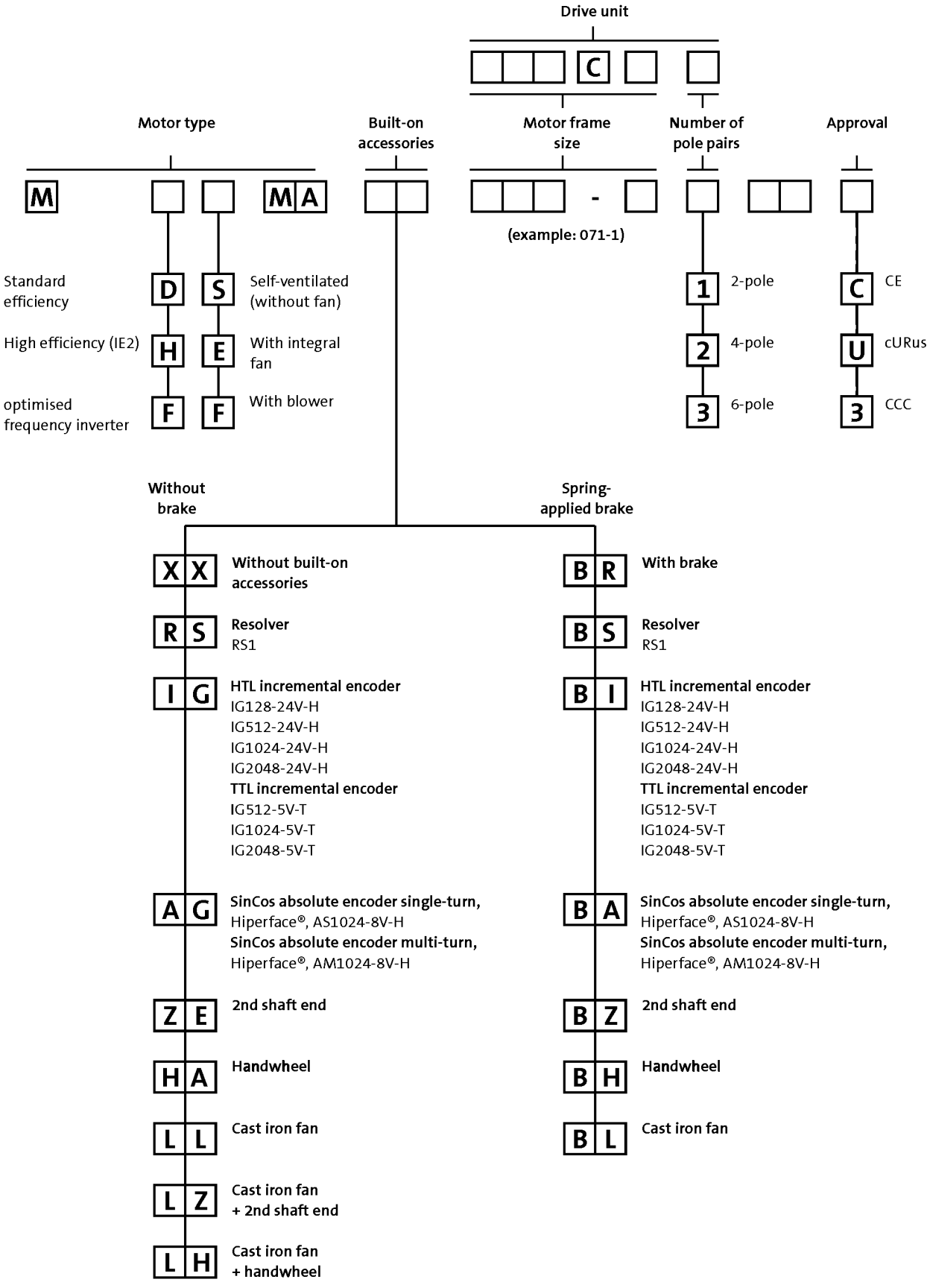
List of abbreviations

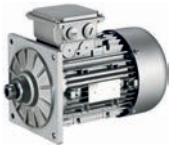
$\eta_{100\,\%}$	[%]	Efficiency
$\eta_{75\,\%}$	[%]	Efficiency
$\eta_{50\,\%}$	[%]	Efficiency
cos ϕ		Power factor
I_N	[A]	Rated current
I_{max}	[A]	Max. current consumption
J	[kgcm²]	Moment of inertia
m	[kg]	Mass
M_a	[Nm]	Starting torque
M_b	[Nm]	Stalling torque
M_{max}	[Nm]	Max. torque
M_N	[Nm]	Rated torque
n_N	[r/min]	Rated speed
P_N	[kW]	Rated power
P_{max}	[kW]	Max. power input

CE	Communauté Européenne
CSA	Canadian Standards Association
DIN	Deutsches Institut für Normung e.V.
EMC	Electromagnetic compatibility
EN	European standard
IEC	International Electrotechnical Commission
IM	International Mounting Code
IP	International Protection Code
NEMA	National Electrical Manufacturers Association
UL	Underwriters Laboratory Listed Product
UR	Underwriters Laboratory Recognized Product
VDE	Verband deutscher Elektrotechniker (Association of German Electrical Engineers)
CCC	China Compulsory Certificate
GOST	Certificate for Russian Federation
cURus	Combined certification marks of UL for the USA and Canada
UkrSEPRO	Certificate for Ukraine

U_{max}	[V]	Max. mains voltage
U_{min}	[V]	Min. mains voltage
$U_{N,\Delta}$	[V]	Rated voltage
$U_{N,Y}$	[V]	Rated voltage

Product key

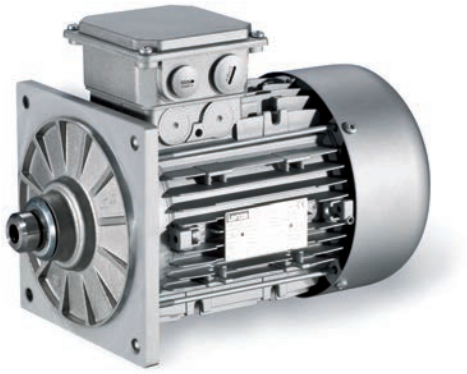

Drive unit
C
Motor type
Built-on accessories
Motor frame size
Number of pole pairs
Approval
M
M A
-
(example: 071-1)
Standard efficiency
D
S
Self-ventilated (without fan)
High efficiency (IE2)
H
E
With integral fan
optimised frequency inverter
F
F
With blower
1
2-pole
2
4-pole
3
6-pole
C
CE
U
cURus
3
CCC
Without brake
Spring-applied brake
X X
Without built-on accessories
R S
Resolver
RS1
I G
HTL incremental encoder
IG128-24V-H
IG512-24V-H
IG1024-24V-H
IG2048-24V-H
TTL incremental encoder
IG512-5V-T
IG1024-5V-T
IG2048-5V-T
A G
SinCos absolute encoder single-turn,
Hiperface®, AS1024-8V-H
SinCos absolute encoder multi-turn,
Hiperface®, AM1024-8V-H
Z E
2nd shaft end
H A
Handwheel
L L
Cast iron fan
L Z
Cast iron fan
+ 2nd shaft end
L H
Cast iron fan
+ handwheel
B R
With brake
B S
Resolver
RS1
B I
HTL incremental encoder
IG128-24V-H
IG512-24V-H
IG1024-24V-H
IG2048-24V-H
TTL incremental encoder
IG512-5V-T
IG1024-5V-T
IG2048-5V-T
B A
SinCos absolute encoder single-turn,
Hiperface®, AS1024-8V-H
SinCos absolute encoder multi-turn,
Hiperface®, AM1024-8V-H
B Z
2nd shaft end
B H
Handwheel
B L
Cast iron fan



Product information

Special motors have been designed for direct attachment to Lenze gearboxes.

These motors are attached to the gearbox without the use of a clutch. Torque transmission between the toothing and the motor shaft is friction-locked via a tapered connection here.
This motor design means that the geared motors only require a small installation space.



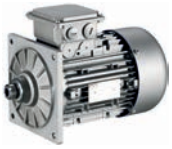
L-force MH three-phase AC motors are available in a power range from 0.75 to 45 kW and comply with efficiency class IE2 (high efficiency) as per IEC 60034-30.
Since almost all IE2 motors are designed with the same dimensions as the standard efficiency motors, it is easy to switch between the two.
The energy efficiency of the L-force MH three-phase AC motors has been approved by Underwriters Laboratories (UL) as an independent third-party.

Basic versions
- The thermal sensors integrated as standard allow for permanent temperature monitoring and are coordinated to the motor winding's temperature class F (155°C).
- The motors of the basic version are adapted to ambient conditions by enclosure IP55.
- In tough operating conditions, the surface and corrosion protection system is provided to reliably protect the motor from corrosive media.

Options
- Various brake sizes – each available with several braking torques – can be combined with the three-phase AC motors.
- The LongLife version of the brake can easily reach 10 x 10^6 switching cycles.
- A resolver and various incremental and absolute value encoders can be fitted for speed and position detection.
- For fast commissioning, the motors are also available with connectors for the power connection, brake, blower and feedback.
- Instead of an integral fan, the motor can optionally be equipped with a blower. No torque reduction is then necessary, even at speeds below 20 Hz.
- For drive tasks in decentralised applications, the motor can be ordered with the motec inverter connected to the terminal box.
- The motors are available with cURus, GOST-R, CCC and UkrSepro approval.
- Smooth start/braking is possible by increasing the motor's centrifugal mass with a cast iron fan.
- The motor can be equipped with a handwheel for manual setup or emergency operations.
- To protect the fan from falling objects, the fan cover can be equipped with a protection cover.
- A 2nd shaft end is available for further modifications.

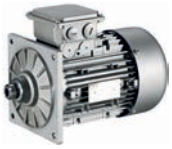
Functions and features

Size			
Motor	080	090	100
Spring-applied brake			
Design	Standard or LongLife design Reduced, standard or increased braking torque With rectifier With manual release lever Low noise		
Feedback			
Design	Resolver Incremental encoder Absolute value encoder (multi-turn)		
Thermal sensor			
Thermal contact	TKO		
Thermal detector	KTY83-110 KTY84-130		
PTC thermistor	PTC		
Motor connection			
Power connection	Terminal box ICN connector HAN10E connector HAN modular connector		
Brake connection	Terminal box ICN connector HAN modular connector HAN10E connector		
Blower connection	Terminal box ICN connector		
Feedback connection	Terminal box ICN connector		
Temperature sensor connection	Terminal box TKO or PTC at connector in the power connection KTY at connector in the feedback connection		
Shaft bearings			
Position of the locating bearing	Standard motors (B3, B5, B14): side B Motors for gearbox direct mounting: side A		
Bearing type	Deep-groove ball bearing with high-temperature resistant grease, 2 sealing discs or cover plates		
Colour			
	Not coated Primed Paint in various corrosion-protection designs in accordance with RAL colours		
Further options			
	Protection cover Increased centrifugal mass Handwheel 2nd shaft end		



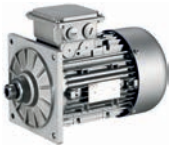
Functions and features

Size			
Motor	112	132	160
Spring-applied brake			
Design	Standard design Reduced, standard or increased braking torque With rectifier With manual release lever Low noise		
Feedback			
Design	Resolver Incremental encoder Absolute value encoder (multi-turn)		
Thermal sensor			
Thermal contact	TKO		
Thermal detector	KTY83-110 KTY84-130		
PTC thermistor	PTC		
Motor connection			
Power connection	Terminal box ICN connector HAN10E connector HAN modular connector	Terminal box ICN connector HAN modular connector	Terminal box HAN modular connector
Brake connection	Terminal box ICN connector HAN modular connector HAN10E connector	Terminal box ICN connector HAN modular connector	Terminal box HAN modular connector
Blower connection	Terminal box ICN connector		
Feedback connection	Terminal box ICN connector		
Temperature sensor connection	Terminal box TKO or PTC at connector in the power connection KTY at connector in the feedback connection		
Shaft bearings			
Position of the locating bearing	Standard motors (B3, B5, B14): side B Motors for gearbox direct mounting: side A		
Bearing type	Deep-groove ball bearing with high-temperature resistant grease, 2 sealing discs or cover plates		
Colour			
	Not coated Primed Paint in various corrosion-protection designs in accordance with RAL colours		
Further options			
	Protection cover Increased centrifugal mass Handwheel 2nd shaft end		Protection cover



Functions and features

Size			
Motor	180	200	225
Spring-applied brake			
Design	Standard design Reduced, standard or increased braking torque With rectifier With manual release lever Low noise		
Feedback			
Design	Resolver Incremental encoder Absolute value encoder (multi-turn)		
Thermal sensor			
Thermal contact	TKO		
Thermal detector	KTY83-110 KTY84-130		
PTC thermistor	PTC		
Motor connection			
Power connection	Terminal box		
Brake connection	Terminal box		
Blower connection	Terminal box ICN connector		
Feedback connection	Terminal box ICN connector		
Temperature sensor connection	Terminal box		
Shaft bearings			
Position of the locating bearing	Standard motors (B3, B5, B14): side B Motors for gearbox direct mounting: side A		Drive end
Bearing type	Deep-groove ball bearing with high-temperature resistant grease, 2 sealing discs or cover plates		
Colour			
	Not coated Primed Paint in various corrosion-protection designs in accordance with RAL colours		
Further options			



Functions and features

Surface and corrosion protection

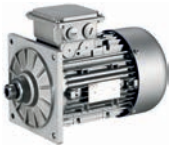
For optimum protection of three-phase AC motors against ambient conditions, the surface and corrosion protection system (OKS) offers tailor-made solutions.

Various surface coatings ensure that the motors operate reliably even at high air humidity, in outdoor installation or in the presence of atmospheric impurities. Any colour from the RAL Classic collection can be chosen for the top coat. The three-phase AC motors are also available unpainted (no surface and corrosion protection).

Surface and corrosion protection system	Applications	Measures
OKS-G (primed)	• Dependent on subsequent top coat applied	• 2K PUR priming coat (grey)
OKS-S (small)	• Standard applications • Internal installation in heated buildings • Air humidity up to 90%	• Surface coating as per corrosivity category C1 (in line with EN 12944-2)
OKS-M (medium)	• Internal installation in non-heated buildings • Covered, protected external installation • Air humidity up to 95%	• Surface coating as per corrosivity category C2 (in line with EN 12944-2)
OKS-L (high)	• External installation • Air humidity above 95% • Chemical industry plants • Food industry	• Surface coating as per corrosivity category C3 (in line with EN 12944-2) • Blower cover and B end shield additionally primed • Screws zinc-coated • Cable glands with gaskets • Corrosion-resistant brake with cover ring, stainless friction plate, and chrome-plated armature plate (on request) Optional measures: • Motor recesses sealed off (on request)

Structure of surface coating

Surface and corrosion protection system	Corrosivity category	Surface coating	Colour
	DIN EN ISO 12944-2	Structure	
Without OKS (uncoated)			
OKS-G (primed)		2K PUR priming coat	
OKS-S (small)	C1	2K-PUR top coat	Standard: RAL 7012 Optional: RAL Classic
OKS-M (medium)	C2	2K PUR priming coat 2K-PUR top coat	
OKS-L (high)	C3		

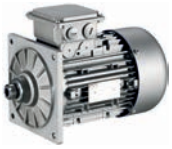


Motor – inverter assignment

Rated frequency 50/60 Hz

- Decentralised inverter 8400 motec (E84DVB)
- Inverter Drives 8400 (E84AV)

Rated power	Product key		
	Motor	Inverter	
P_N			
[kW]			
0.75	MH□□□□□080-32	E84DVB□7514S□□□2□	
1.10	MH□□□□□090-12	E84DVB□1124S□□□2□	
1.50	MH□□□□□090-32	E84DVB□1524S□□□2□	
2.20	MH□□□□□100-12	E84DVB□2224S□□□2□	
3.00	MH□□□□□100-32	E84DVB□3024S□□□2□	
4.00	MH□□□□□112-22	E84DVB□4024S□□□2□	
5.50	MH□□□□□132-12	E84DVB□5524S□□□2□	
7.50	MH□□□□□132-22	E84DVB□7524S□□□2□	
11.0	MH□□□□□160-22		
15.0	MH□□□□□160-32		
18.5	MH□□□□□180-12		
22.0	MH□□□□□180-32		
30.0	MH□□□□□180-42		
37.0	MH□□□□□225-12		
45.0	MH□□□□□225-22		

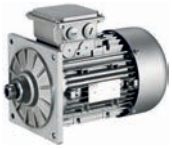


Motor – inverter assignment

Rated frequency 87 Hz

- Decentralised inverter 8400 motec (E84DVB)
- Inverter Drives 8400 (E84AV)

Rated power	Product key		
	Motor	Inverter	
P_N			
[kW]			
1.35	MH□□□□□080-32	E84DVB□1524S□□□2□	
2.00	MH□□□□□090-12	E84DVB□2224S□□□2□	
2.70	MH□□□□□090-32	E84DVB□3024S□□□2□	
3.90	MH□□□□□100-12	E84DVB□4024S□□□2□	
5.40	MH□□□□□100-32	E84DVB□5524S□□□2□	
7.10	MH□□□□□112-22	E84DVB□7524S□□□2□	
9.70	MH□□□□□132-12		
13.2	MH□□□□□132-22		
19.4	MH□□□□□160-22		
26.4	MH□□□□□160-32		
32.5	MH□□□□□180-12		

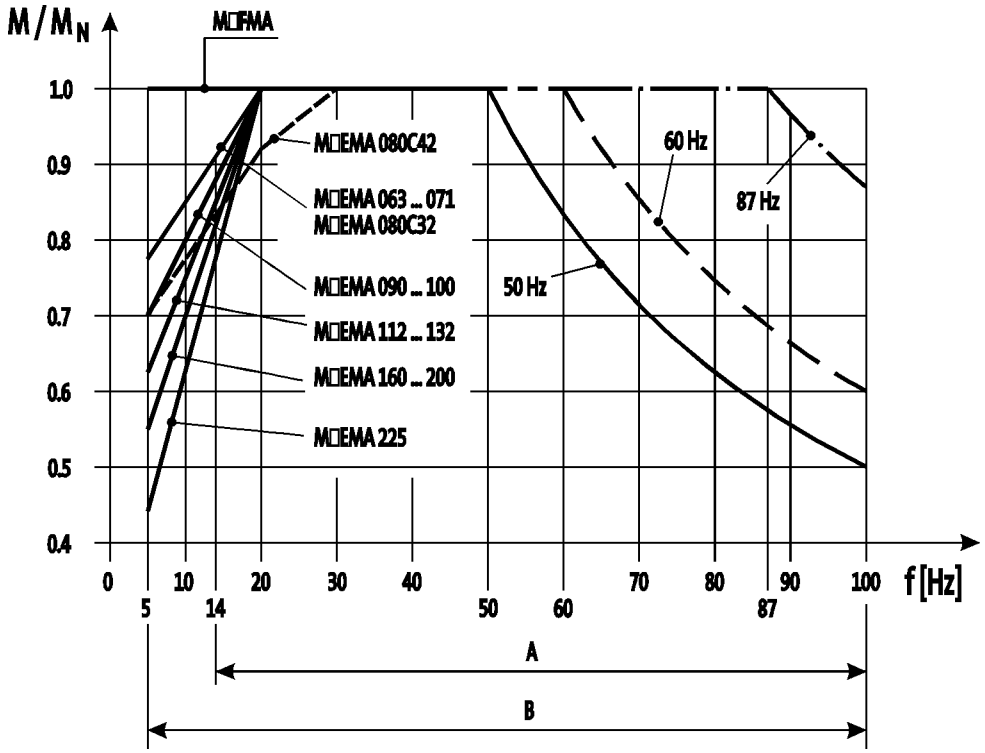


Dimensioning

Torque derating at low motor frequencies

Motor size-dependent torque reduction, taking into account the thermal response during operation on the inverter.

Torque characteristics



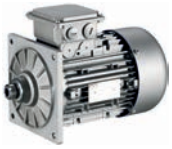
A = Operation with integral fan and brake
B = Operation with integral fan and brake control "Holding current reduction"

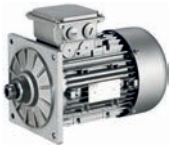
► The motor specifications stated in this catalogue for inverter operation apply to operation with a Lenze inverter. If you are uncertain, get in touch with the manufacturer of the inverter to ask whether the device is capable of driving the motor with the stated specifications (e.g. setting range, base frequency).

You can use the Drive Solution Designer for precise drive dimensioning.

The Drive Solution Designer helps you to carry out a fast and high-quality drive dimensioning.
The software includes well-founded and proven knowledge on drive applications and electro-mechanical drive components.

Please contact your Lenze sales office.





Standards and operating conditions

Enclosure			
EN 60529			IP55
Energy efficiency class			
IEC 60034-30			IE2
IEC 60034-2-1			Methodology for measuring efficiency
Approval			
Class			cURus/UL Energy-verified [1)] CCC GOST-R UkrSepro
Temperature class			
IEC/EN 60034-1; utilisation			B
IEC/EN 60034-1; insulation system (enamel-insulated wire)			F
Min. ambient operating temperature			
	$T_{opr,min}$	[°C]	-20
Max. ambient operating temperature			
	$T_{opr,max}$	[°C]	40
With power reduction	$T_{opr,max}$	[°C]	60
Site altitude			
Amsl	H_{max}	[m]	4000
Max. speed			
	n_{max}	[r/min]	4500

[1)] Motor frame size 225, in preparation.

► In the European Union, the ErP Directive stipulates minimum efficiency levels for three-phase AC motors. Geared three-phase AC motors that do not conform with this Directive do not meet CE requirements and must not be marketed in the European Economic Area. For further information about the ErP Directive and the Lenze products to which it relates, please refer to the brochure entitled "International efficiency directives for three-phase AC motors".

Rated data for 50 Hz

4-pole motors

	P_N	n_N	$U_{N,\Delta}$ [2]	$I_{N,\Delta}$	$U_{N,Y}$	$I_{N,Y}$	I_a/I_N
			± 10 %		± 10 %		
	[kW]	[r/min]	[V]	[A]	[V]	[A]	
MH□□□□□080-32	0.75	1410	230	3.10	400	1.80	5.00
MH□□□□□090-12	1.10	1430	230	4.60	400	2.70	5.40
MH□□□□□090-32	1.50	1435	230	5.80	400	3.30	6.30
MH□□□□□100-12	2.20	1445	230	8.60	400	5.00	6.00
MH□□□□□100-32	3.00	1445	230	12.1	400	7.00	6.50
MH□□□□□112-22	4.00	1455	230	14.5	400	8.40	6.00
MH□□□□□132-12	5.50	1470	230 400 [3]	20.6 11.9	400	11.9	6.10
MH□□□□□132-22	7.50	1460	230 400 [3]	27.0 15.6	400	15.6	8.50
MH□□□□□160-22	11.0	1470	230 400 [3]	37.7 21.8	400	21.8	8.00
MH□□□□□160-32	15.0	1470	230 400 [3]	50.3 29.1	400	29.1	8.20
MH□□□□□180-12	18.5	1475	230 400 [3]	58.8 34.0	400	34.0	8.40
MH□□□□□180-32	22.0	1470	230 400 [3]	68.9 39.8	400	39.8	7.80
MH□□□□□180-42	30.0	1465	230 400 [3]	93.8 53.9	400	53.9	7.00
MH□□□□□225-12	37.0	1483	230 400 [3]	113 65.0	400	65.0	7.50
MH□□□□□225-22	45.0	1480	230 400 [3]	137 79.0	400	79.0	7.60

	M_N	M_a	M_b	cos ϕ	$\eta_{50\,\%}$	$\eta_{75\,\%}$	$\eta_{100\,\%}$	J [1]	m [1]
	[Nm]	[Nm]	[Nm]		[%]	[%]	[%]	[kgcm²]	[kg]
MH□□□□□080-32	5.08	12.0	12.1	0.84	74.9	79.6	79.6	28.0	11.0
MH□□□□□090-12	7.35	20.3	24.2	0.76	77.4	81.6	82.0	32.0	16.0
MH□□□□□090-32	10.0	33.0	34.0	0.76	82.2	83.4	82.8	36.0	18.0
MH□□□□□100-12	14.5	48.0	55.0	0.80	85.4	86.7	86.3	61.0	24.0
MH□□□□□100-32	19.8	67.0	76.0	0.73	83.8	85.6	85.5	66.0	26.5
MH□□□□□112-22	26.3	81.0	100	0.80	86.3	88.2	88.3	135	38.0
MH□□□□□132-12	35.7	90.0	108	0.77	88.2	89.3	89.2	290	59.0
MH□□□□□132-22	49.1	110	175	0.79	87.6	88.9	88.7	336	66.0
MH□□□□□160-22	71.5	164	243	0.82	89.4	90.0	89.8	570	109
MH□□□□□160-32	97.4	224	292	0.82	90.2	90.8	90.6	760	124
MH□□□□□180-12	120	359	371	0.86	90.8	91.4	91.2	1390	175
MH□□□□□180-32	143	400	372	0.87	91.4	92.0	91.6	1440	180
MH□□□□□180-42	196	469	528	0.87	91.9	92.5	92.3	1850	200
MH□□□□□225-12	238	620	620	0.87	94.0	94.6	94.3	4610	395
MH□□□□□225-22	290	698	669	0.88	93.7	94.5	94.3	5300	415

[1] Without accessories
[2] Operation at 87 Hz is possible with 4-pole motors whose rated data at 50 Hz displays the voltage values Δ 230 V.
With motor frame sizes 132-12 to 225-22, the required voltage must also be specified in your order.
[3] Star/delta start-up possible at 400 V.

Rated data for 60 Hz

4-pole motors

- The motors are designed for an operation at 265/460 V but are also able to be operated at 230 V, 60 Hz. The same technical data apply, the starting torque is a bit lower.
- The motors have a service factor of 1.15 at 60 Hz. The service factor indicates the permissible overload during operation within the mains voltage fluctuations.

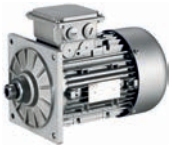
	P_N	n_N	$U_{N,\Delta}$ [2]	$I_{N,\Delta}$	$U_{N,Y}$	$I_{N,Y}$	I_a/I_N
			± 10 %		± 10 %		
	[kW]	[r/min]	[V]	[A]	[V]	[A]	
MH□□□□□080-32	0.75	1720	265	2.80	460	1.60	5.80
MH□□□□□090-12	1.10	1740	265	4.00	460	2.30	6.50
MH□□□□□090-32	1.50	1745	265	5.10	460	3.00	7.20
MH□□□□□100-12	2.20	1750	265	7.70	460	4.40	6.90
MH□□□□□100-32	3.00	1755	265	10.6	460	6.10	7.70
MH□□□□□112-22	4.00	1760	265	12.8	460	7.40	7.00
MH□□□□□132-12	5.50	1775	265 460 [3]	18.0 10.4	460	10.4	7.10
MH□□□□□132-22	7.50	1765	265 460 [3]	24.2 14.0	460	14.0	9.70
MH□□□□□160-22	11.0	1775	265 460 [3]	32.5 18.7	460	18.7	9.40
MH□□□□□160-32	15.0	1775	265 460 [3]	44.1 24.5	460	24.5	9.80
MH□□□□□180-12	18.5	1775	265 460 [3]	51.1 29.4	460	29.4	9.70
MH□□□□□180-32	22.0	1775	265 460 [3]	59.7 34.4	460	34.4	9.00
MH□□□□□180-42	30.0	1770	265 460 [3]	80.7 46.5	460	46.5	8.10
MH□□□□□225-12	37.0	1787	265 460 [3]	92.5 53.4	460	53.4	8.70
MH□□□□□225-22	45.0	1784	265 460 [3]	111 64.2	460	64.2	8.80

	M_N	M_a	M_b	cos ϕ	$\eta_{50\,\%}$	$\eta_{75\,\%}$	$\eta_{100\,\%}$	J [1]	m [1]
	[Nm]	[Nm]	[Nm]		[%]	[%]	[%]	[kgcm²]	[kg]
MH□□□□□080-32	4.16	9.37	9.89	0.82	77.9	81.5	82.5	28.0	11.0
MH□□□□□090-12	6.04	17.0	20.0	0.71	79.3	83.0	84.0	32.0	16.0
MH□□□□□090-32	8.21	27.0	28.0	0.75	79.3	83.0	84.0	36.0	18.0
MH□□□□□100-12	12.0	40.0	47.0	0.78	82.6	86.5	87.5	61.0	24.0
MH□□□□□100-32	16.3	55.0	64.0	0.71	84.2	86.6	87.5	66.0	26.5
MH□□□□□112-22	21.7	69.0	84.0	0.79	84.2	86.6	87.5	135	38.0
MH□□□□□132-12	29.6	74.0	92.0	0.77	86.1	88.6	89.5	290	59.0
MH□□□□□132-22	40.6	92.0	147	0.79	86.1	88.6	89.5	336	66.0
MH□□□□□160-22	59.2	148	231	0.81	89.3	90.9	91.0	570	109
MH□□□□□160-32	80.7	210	274	0.81	89.3	90.9	91.0	760	124
MH□□□□□180-12	99.5	338	348	0.86	90.6	92.3	92.4	1390	175
MH□□□□□180-32	118	379	355	0.87	90.6	92.3	92.4	1440	180
MH□□□□□180-42	162	440	505	0.87	92.0	92.9	93.0	1850	200
MH□□□□□225-12	198	590	590	0.87	92.0	92.9	93.0	4610	395
MH□□□□□225-22	241	660	635	0.88	92.6	93.5	93.6	5300	415

[1] Without accessories

[2] Operation at 87 Hz is possible with 4-pole motors whose rated data at 60 Hz displays the voltage values Δ 265 V.
With motor frame sizes 132-12 to 225-22, the required voltage must also be specified in your order.

[3] Star/delta start-up possible at 460 V.



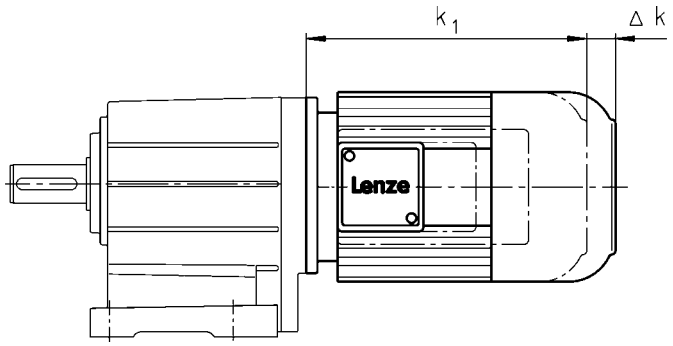
Rated data for 87 Hz

4-pole motors

	P_N	n_N	M_N	M_{max}	$U_{N,\Delta}$	$I_{N,\Delta}$	cos ϕ	$\eta_{50\,\%}$	$\eta_{75\,\%}$	$\eta_{100\,\%}$	J [1]	m [1]
					± 10 %							
	[kW]	[r/min]	[Nm]	[Nm]	[V]	[A]		[%]	[%]	[%]	[kgcm²]	[kg]
MH□□□□□080-32	1.35	2520	5.12	20.0	400	3.10	0.84	77.3	81.6	83.5	28.0	11.0
MH□□□□□090-12	2.00	2540	7.52	30.0	400	4.60	0.78	80.4	84.9	86.5	32.0	16.0
MH□□□□□090-32	2.70	2545	10.1	40.0	400	5.80	0.76	82.3	85.5	86.0	36.0	18.0
MH□□□□□100-12	3.90	2555	14.6	60.0	400	8.60	0.83	85.7	89.6	90.0	61.0	24.0
MH□□□□□100-32	5.40	2555	20.2	80.0	400	12.1	0.76	84.7	87.9	88.5	66.0	26.5
MH□□□□□112-22	7.10	2565	26.4	106	400	14.5	0.83	87.4	90.2	90.9	135	38.0
MH□□□□□132-12	9.70	2580	35.9	144	400	20.6	0.82	88.2	91.4	91.8	290	59.0
MH□□□□□132-22	13.2	2570	49.1	196	400	27.0	0.82	88.2	90.1	90.7	336	66.0
MH□□□□□160-22	19.4	2580	71.8	287	400	37.7	0.81	90.6	91.0	91.6	570	109
MH□□□□□160-32	26.4	2580	97.7	391	400	50.3	0.81	91.4	91.0	91.6	760	124
MH□□□□□180-12	32.5	2585	120	480	400	58.8	0.86	92.0	92.2	92.8	1390	175
MH□□□□□180-32	38.7	2580	143	573	400	68.9	0.87	92.1	92.9	93.4	1440	180
MH□□□□□180-42	52.7	2575	196	782	400	92.6	0.87	92.6	92.7	93.2	1850	200
MH□□□□□225-12	64.0	2593	236	920	400	113	0.87	93.0	94.4	94.8	4610	395
MH□□□□□225-22	78.0	2590	288	1150	400	137	0.85	93.5	94.3	94.7	5300	415

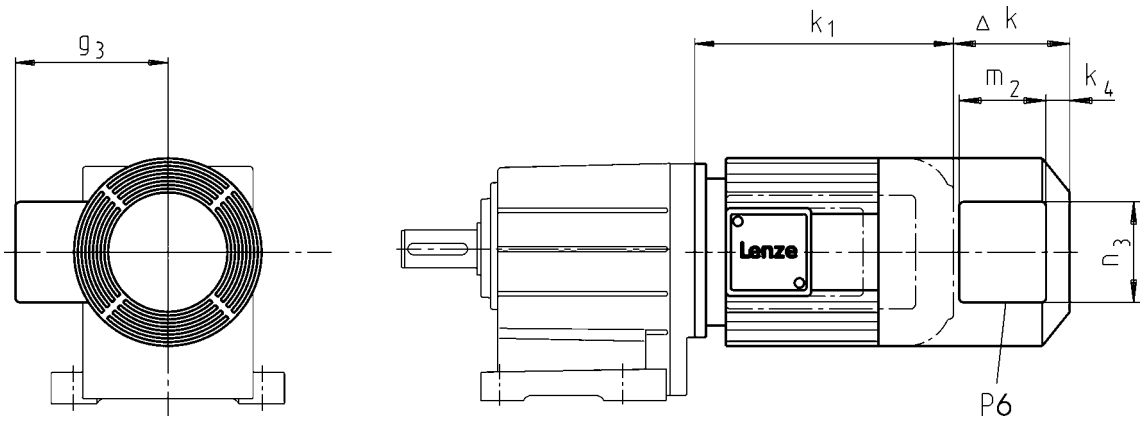
[1] Without accessories

Dimensions, self-ventilated (4-pole)



	Motor type			
	MHEMAXX	MHEMABR	MHEMABS MHEMABI MHEMABA	MHEMALL MHEMARS MHEMAIG MHEMAAG
Motor frame size				
	Δ k	Δ k	Δ k	Δ k
	[mm]	[mm]	[mm]	[mm]
080-32	0	73	111	111
090-12 090-32		68	105	87
100-12 100-32		76	101	81
112-22		90	120	80
132-12 132-22		110	125	103
160-22 160-32		105	191	83
180-12 180-32		113	192	79
180-42				
225-12 225-22			193	80

Dimensions, forced ventilated (4-pole)

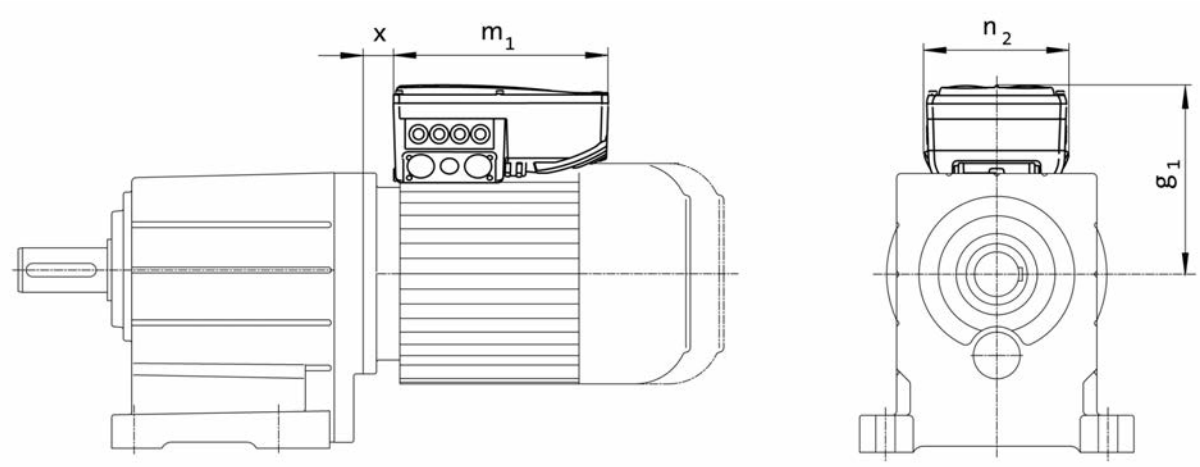


Motor type									
	MHFMAXX	MHFMABR	MHFMABS MHFMABI MHFMABA	MHFMARS MHFMAIG MHFMAAG					

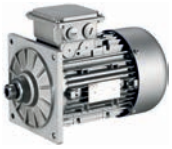
Motor frame size									
	Δ k	Δ k	Δ k	Δ k	k_4	g_3	m_2	n_3	P_6
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
080-32	128	183	183	128	13	132	96	106	1x M16x1.5
090-12 090-32		181	181		22	141	95	105	
100-12 100-32	109	170	170	109		150			
112-22	102	183	183	183		162			
132-12 132-22	115	202	202	202	32	182			
160-22 160-32	149	179	237	224	31	209	96	106	
180-12 180-32		215	275	215					
180-42	155		260						
225-12 225-22	213	213	213	213					

Dimensions, 8400 motec inverter

Rated frequency 50/60 Hz

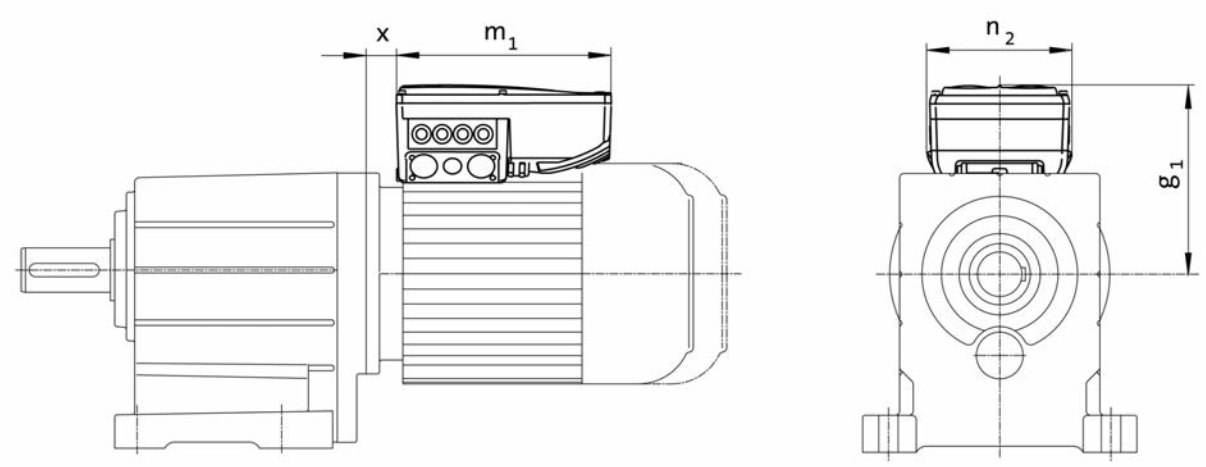


Product key					
Motor	Inverter				
		$g_{1,\ 50Hz}$	$m_{1,\ 50Hz}$	$n_{2,\ 50Hz}$	x_{50Hz}
		[mm]	[mm]	[mm]	[mm]
MH□□□□□080-32	E84DVB□7514S□□□2□	172	241	161	25.5
MH□□□□□090-12	E84DVB□1124S□□□2□	177			28.8
MH□□□□□090-32	E84DVB□1524S□□□2□				
MH□□□□□100-12	E84DVB□2224S□□□2□	217	260	176	29.6
MH□□□□□100-32	E84DVB□3024S□□□2□				
MH□□□□□112-22	E84DVB□4024S□□□2□	282	325	195	19.0
MH□□□□□132-12	E84DVB□5524S□□□2□	301			34.5
MH□□□□□132-22	E84DVB□7524S□□□2□				



Dimensions, 8400 motec inverter

Rated frequency 87 Hz



Product key					
Motor	Inverter				
		$g_{1,\ 87Hz}$	$m_{1,\ 87Hz}$	$n_{2,\ 87Hz}$	x_{87Hz}
		[mm]	[mm]	[mm]	[mm]
MH□□□□□080-32	E84DVB□1524S□□□2□	172	241	161	25.5
MH□□□□□090-12	E84DVB□2224S□□□2□	206	260	176	27.8
MH□□□□□090-32	E84DVB□3024S□□□2□				
MH□□□□□100-12	E84DVB□4024S□□□2□	272	325	195	17.1
MH□□□□□100-32	E84DVB□5524S□□□2□				
MH□□□□□112-22	E84DVB□7524S□□□2□	282			19.0

Spring-applied brake

Three-phase AC motors can be fitted with a spring-applied brake. This is activated after the supply voltage is switched off (closed-circuit principle). For optimum adjustment of the brake motor to the application, a range of braking torques and control modes is available for every motor frame size. For applications with very high operating frequencies the brake is also available in a LongLife version, with reinforced mechanical brake components.

Features

Versions
- **Standard**
  - 1 x 10^6 repeating switching cycles
  - 1 x 10^6 reversing switching cycles
- **LongLife**
  - 10 x 10^6 repeating switching cycles
  - 15 x 10^6 reversing switching cycles

Control
- DC supply
- AC supply via rectifier in the terminal box

Enclosure
- Without manual release IP55
- With manual release IP54

Friction lining
- Non-asbestos, low wearing

Options
- Manual release
- UL/CSA approval
- Noise-reduced

Assignment of 4-pole motors and brakes

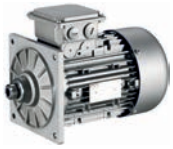
Design	Standard Standard	LongLife LongLife

Motor frame size	Size	Rated torque	Size	Rated torque
	Brake		Brake	
		M_k		M_k
		[Nm]		[Nm]
080-32	08 08 10	3.50 8.00 7.00	08 10	8.00 7.00
090-12 090-32	08 08 10 10 10	3.50 8.00 7.00 16.0 23.0	08 10 10	8.00 7.00 16.0
100-12	10 10 12 12	7.00 16.0 14.0 32.0	10 12 12	16.0 14.0 32.0
100-32	10 10 12 12 12	7.00 16.0 14.0 32.0 46.0		

Spring-applied brake

Assignment of 4-pole motors and brakes

Design	Standard		LongLife	
Motor frame size	**Size**	**Rated torque**	**Size**	**Rated torque**
	Brake		Brake	
		M_k		M_k
		[Nm]		[Nm]
112-22	12 12 14 14	14.0 32.0 35.0 60.0		
132-12	14 14 16 16	35.0 60.0 60.0 80.0		
132-22	14 14 16 16 16	35.0 60.0 60.0 80.0 100		
160-22	16 16 18 18	60.0 80.0 80.0 150		
160-32	18 18 18	80.0 150 200		
180-12	18 18 20 20	80.0 150 145 260		
180-32	18 18 20 20 20	80.0 150 145 260 315		
200-32	18 18 20 20 20 20	80.0 150 145 260 315 400		
225-12	25 25 25	265 400 490		
225-22	25 25 25 25	265 400 490 600		



Spring-applied brake

Direct connection without rectifier

If the brake is activated directly without a rectifier, a freewheeling diode or a spark suppressor is required to protect against induction peaks.

- Supply voltages
  DC 24 V
  DC 180 V
  DC 205 V

Connection via mains voltage with brake rectifier

If the brake is not directly supplied with DC voltage, a rectifier is required. This is included in the scope of supply and is located in the terminal box of the motor. The rectifier converts the AC voltage of the connection into DC voltage. The following rectifiers are available:

Half-wave rectifier, 6-pole

- Ratio of supply voltage to brake coil voltage = 2.22
- Approved by UL/CSA
- Supply voltages
  AC 230 V
  AC 400 V
  AC 460 V

Bridge rectifier, 6-pole

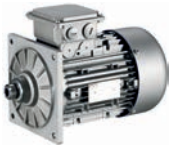
- Ratio of supply voltage to brake coil voltage = 1.11
- Supply voltage
  AC 230 V

Bridge/half-wave rectifier, 6-pole

- Ratio of supply voltage to brake coil voltage
  up to overexcitation time = 1.11
  beyond overexcitation time = 2.22

Supply voltages:

- AC 230 V
- AC 400 V



Spring-applied brake

Connection via mains voltage with brake rectifier

Bridge/half-wave rectifier, 6-pole
- Ratio of supply voltage to brake coil voltage
  up to overexcitation time = 1.11
  beyond overexcitation time = 2.22

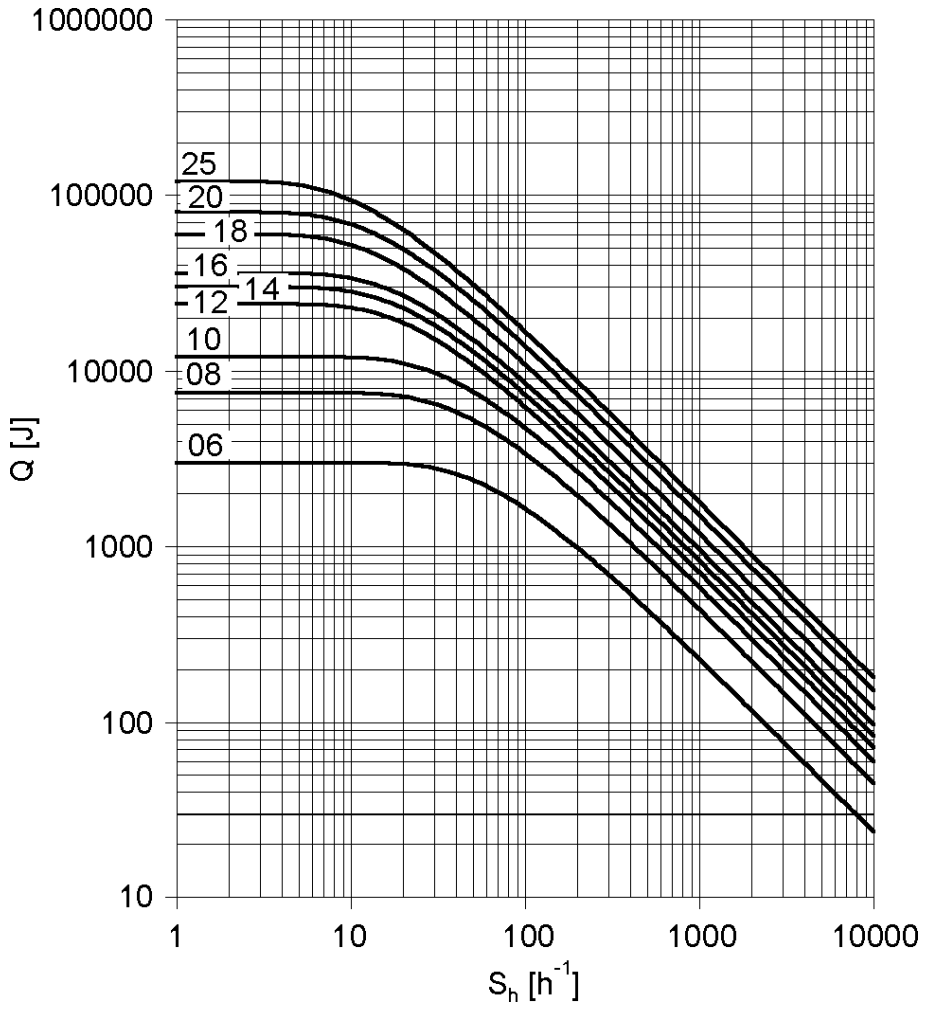
Supply voltages:
- AC 230 V
- AC 400 V

During the switching operation the bridge/half-wave rectifier functions as a bridge rectifier for the overexcitation time $t_{ü}$ and then as a half-wave rectifier. This combination optimises the performance of the brake – depending on the assignment of brake coil voltage and supply voltage:

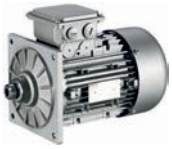
- **Short-time overexcitation of the brake coil**
  Activating the brake coil for the overexcitation time $t_{ü}$ with twice the rated voltage allows the disengagement time to be reduced. The brake opens more quickly and wear on the friction lining is reduced.
  These features make this activation version particularly suitable for lifting applications. It is therefore only available in combination with a brake with increased braking torque.
- **Holding current reduction (cold brake)**
  By reducing the holding current, the bridge/half-wave rectifier is able to reduce the power input to the open brake. As the brake heats up less, this type of activation is known as "cold brake".

Spring-applied brake

Permissible friction energy



Q =Switching energy per switching cycle
S_h =Operating frequency
Brake size = 06 to 25



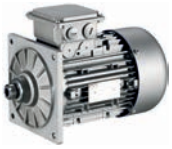
Spring-applied brake

Rated data with reduced braking torque

► Please enquire for braking torques and maximum switching work values not listed here.

Size			06	08	10	12	14	16	18	20	25
Power input											
	P_{in}	[kW]	0.020	0.025	0.030	0.040	0.050	0.055	0.085	0.10	0.11
Braking torque											
100	M_B	[Nm]	2.50	3.50	7.00	14.0	35.0	60.0	80.0	145	265
1000	M_B	[Nm]	2.30	3.10	6.10	12.0	30.0	50.0	65.0	115	203
1200	M_B	[Nm]	2.30	3.10	6.00	12.0	29.0	48.0	63.0	112	199
1500	M_B	[Nm]	2.20	3.00	5.80	11.0	28.0	47.0	61.0	109 [1)]	193 [1)]
1800	M_B	[Nm]	2.10	2.90	5.70	11.0	28.0	46.0	60.0 [1)]		
3000	M_B	[Nm]	2.00	2.80	5.30	10.0	26.0 [1)]	43.0 [1)]			
3600	M_B	[Nm]	2.00	2.70	5.20	10.0 [1)]					
Maximum switching energy											
100	Q_E	[KJ]	3.00	7.50	12.0	24.0	30.0	36.0	60.0	80.0	120
1000	Q_E	[KJ]	3.00	7.50	12.0	24.0	30.0	36.0	60.0	80.0	120
1200	Q_E	[KJ]	3.00	7.50	12.0	24.0	30.0	36.0	60.0	80.0	120
1500	Q_E	[KJ]	3.00	7.50	12.0	24.0	30.0	36.0	60.0	24.0 [1)]	36.0 [1)]
1800	Q_E	[KJ]	3.00	7.50	12.0	24.0	30.0	36.0	36.0 [1)]		
3000	Q_E	[KJ]	3.00	7.50	12.0	24.0	18.0 [1)]	11.0 [1)]			
3600	Q_E	[KJ]	3.00	7.50	12.0	7.00 [1)]					
Transition operating frequency											
	$S_{hü}$	[1/h]	79.0	50.0	40.0	30.0	28.0	27.0	20.0	19.0	15.0
Moment of inertia											
	J	[kgcm²]	0.015	0.061	0.20	0.45	0.63	1.50	2.90	7.30	20.0
Mass											
	m	[kg]	0.90	1.50	2.60	4.20	5.80	8.70	12.6	19.5	31.0

[1)] In the region of the load limit the value for friction energy Q_{BW} can be reduced to 40 %.



Spring-applied brake

Rated data with reduced braking torque

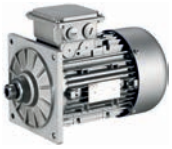
► Activation via half-wave or bridge rectifier

Size										
			06	08	10	12	14	16	18	20	25
Friction energy											
	Q_{BW}	[MJ]	113	210	264	706	761	966	1542	2322	3522
Delay time											
Engaging	t_{11}	[ms]	11.0	14.0	20.0	21.0	37.0	53.0	32.0	47.0	264
Rise time											
Braking torque	t_{12}	[ms]	13.0	10.0	17.0	19.0	22.0	30.0	20.0	100	120
Engagement time											
	t_1	[ms]	24.0		37.0	40.0	59.0	83.0	52.0	147	384
Disengagement time											
	t_2	[ms]	35.0	37.0	57.0	65.0	148	169	230	207	269

► Activation via bridge/half-wave rectifier

Design										
			Holding current reduction (cold brake)								
Size										
			06	08	10	12	14	16	18	20	25
Friction energy											
	Q_{BW}	[MJ]	113	210	264	706	761	966	1542	2322	3522
Overexcitation time											
	$t_ü$	[ms]	300				1300				
Min. rest time											
	t	[ms]	900				3900				
Delay time											
Engaging	t_{11}	[ms]	12.0	22.0	35.0	49.0	61.0	114	83.0	126	304
Rise time											
Braking torque	t_{12}	[ms]	14.0	16.0	30.0	45.0	37.0	65.0	52.0	269	138
Engagement time											
	t_1	[ms]	26.0	38.0	66.0	93.0	97.0	180	134	395	443
Disengagement time											
	t_2	[ms]	35.0	37.0	57.0	65.0	148	169	230	207	269

► The brake response and application times are guide values. The engagement time is 10 times longer with AC-side switching. With the maximum air gap the disengagement time t_2 – depending on the brake and control – is up to 4 times longer than the disengagement time with the rated air gap.



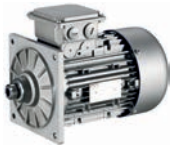
Spring-applied brake

Rated data with standard braking torque

► Please enquire for braking torques and maximum switching work values not listed here.

Size			06	08	10	12	14	16	18	20	25
Power input											
	P_{in}	[kW]	0.020	0.025	0.030	0.040	0.050	0.055	0.085	0.10	0.11
Braking torque											
100	M_B	[Nm]	4.00	8.00	16.0	32.0	60.0	80.0	150	260	400
1000	M_B	[Nm]	3.70	7.20	14.0	27.0	51.0	66.0	121	206	307
1200	M_B	[Nm]	3.60	7.00	14.0	27.0	50.0	65.0	118	201	300
1500	M_B	[Nm]	3.50	6.80	13.0	26.0	48.0	63.0	115	195 [1)]	291 [1)]
1800	M_B	[Nm]	3.40	6.70	13.0	26.0	47.0	61.0	112 [1)]		
3000	M_B	[Nm]	3.20	6.30	12.0	24.0	44.0 [1)]	57.0 [1)]			
3600	M_B	[Nm]	3.20	6.10	12.0	23.0 [1)]					
Maximum switching energy											
100	Q_E	[KJ]	3.00	7.50	12.0	24.0	30.0	36.0	60.0	80.0	120
1000	Q_E	[KJ]	3.00	7.50	12.0	24.0	30.0	36.0	60.0	80.0	120
1200	Q_E	[KJ]	3.00	7.50	12.0	24.0	30.0	36.0	60.0	80.0	120
1500	Q_E	[KJ]	3.00	7.50	12.0	24.0	30.0	36.0	60.0	24.0 [1)]	36.0 [1)]
1800	Q_E	[KJ]	3.00	7.50	12.0	24.0	30.0	36.0	36.0 [1)]		
3000	Q_E	[KJ]	3.00	7.50	12.0	24.0	18.0 [1)]	11.0 [1)]			
3600	Q_E	[KJ]	3.00	7.50	12.0	7.00 [1)]					
Transition operating frequency											
	$S_{hü}$	[1/h]	79.0	50.0	40.0	30.0	28.0	27.0	20.0	19.0	15.0
Moment of inertia											
	J	[kgcm²]	0.015	0.061	0.20	0.45	0.63	1.50	2.90	7.30	20.0
Mass											
	m	[kg]	0.90	1.50	2.60	4.20	5.80	8.70	12.6	19.5	31.0

[1)] In the region of the load limit the value for friction energy Q_{BW} can be reduced to 40 %.



Spring-applied brake

Rated data with standard braking torque

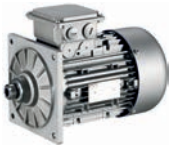
► Activation via half-wave or bridge rectifier

Size			06	08	10	12	14	16	18	20	25
Friction energy											
	Q_{BW}	[MJ]	85.0	158	264	530	571	966	1542	2322	3522
Delay time											
Engaging	t_{11}	[ms]	15.0		28.0		17.0	27.0	33.0	65.0	110
Rise time											
Braking torque	t_{12}	[ms]	13.0	16.0	19.0	25.0		30.0	45.0	100	120
Engagement time											
	t_1	[ms]	28.0	31.0	47.0	53.0	42.0	57.0	78.0	165	230
Disengagement time											
	t_2	[ms]	45.0	57.0	76.0	115	210	220	270	340	390

► Activation via bridge/half-wave rectifier

Design			Holding current reduction (cold brake)								
Size			06	08	10	12	14	16	18	20	25
Friction energy											
	Q_{BW}	[MJ]	85.0	158	264	530	571	966	1542	2322	3522
Overexcitation time											
	$t_{ü}$	[ms]	300				1300				
Min. rest time											
	t	[ms]	900				3900				
Delay time											
Engaging	t_{11}	[ms]	16.0	25.0	31.0	48.0	33.0	58.0	80.0	102	154
Rise time											
Braking torque	t_{12}	[ms]	14.0	27.0	21.0	43.0	49.0	64.0	109	157	168
Engagement time											
	t_1	[ms]	30.0	52.0		90.0	82.0	122	189	259	322
Disengagement time											
	t_2	[ms]	45.0	57.0	76.0	115	210	220	270	340	390

► The brake response and application times are guide values. The engagement time is 10 times longer with AC-side switching. With the maximum air gap the disengagement time t_2 – depending on the brake and control – is up to 4 times longer than the disengagement time with the rated air gap.



Spring-applied brake

Rated data with increased braking torque

► Please enquire for braking torques and maximum switching work values not listed here.

Size			10	12	14	16	16	18	20	20	25	25
Power input												
	P_{in}	[kW]	0.030	0.040	0.050	0.055	0.055	0.085	0.10	0.10	0.11	0.11
Braking torque												
100	M_B	[Nm]	23.0	46.0	75.0	100	125	200	315	400	490	600
1000	M_B	[Nm]	20.0	39.0	64.0	83.0	103	162	249	317	376	461
1200	M_B	[Nm]	20.0	39.0	62.0	81.0	101	158	244	309	367	449
1500	M_B	[Nm]	19.0	38.0	60.0	78.0	98.0	153	237 [1)]	300 [1)]	356 [1)]	436 [1)]
1800	M_B	[Nm]	19.0	37.0	59.0	77.0	96.0	150 [1)]				
3000	M_B	[Nm]	17.0	34.0	55.0 [1)]	71.0 [1)]	89.0 [1)]					
3600	M_B	[Nm]	17.0	33.0 [1)]								
Maximum switching energy												
100	Q_E	[KJ]	12.0	24.0	30.0	36.0	36.0	60.0	80.0	80.0	120	120
1000	Q_E	[KJ]	12.0	24.0	30.0	36.0	36.0	60.0	80.0	80.0	120	120
1200	Q_E	[KJ]	12.0	24.0	30.0	36.0	36.0	60.0	80.0	80.0	120	120
1500	Q_E	[KJ]	12.0	24.0	30.0	36.0	36.0	60.0	24.0 [1)]	24.0 [1)]	36.0 [1)]	36.0 [1)]
1800	Q_E	[KJ]	12.0	24.0	30.0	36.0	36.0	36.0 [1)]				
3000	Q_E	[KJ]	12.0	24.0	18.0 [1)]	11.0 [1)]	11.0 [1)]					
3600	Q_E	[KJ]	12.0	7.00 [1)]								
Transition operating frequency												
	$S_{hü}$	[1/h]	40.0	30.0	28.0	27.0	27.0	20.0	19.0	19.0	15.0	15.0
Moment of inertia												
	J	[kgcm²]	0.20	0.45	0.63	1.50	1.50	2.90	7.30	7.30	20.0	20.0
Mass												
	m	[kg]	2.60	4.20	5.80	8.70	8.70	12.6	19.5	19.5	31.0	31.0

[1)] In the region of the load limit the value for friction energy Q_{BW} can be reduced to 40 %.

► Activation via half-wave or bridge rectifier

Size			10	12	14	16		18	20		25	
Friction energy												
	Q_{BW}	[MJ]	198	353	253	563	241	578	1596	580	2465	1409
Delay time												
Engaging	t_{11}	[ms]	10.0	16.0	11.0	22.0	17.0	24.0	46.0	17.0	77.0	38.0
Rise time												
Braking torque	t_{12}	[ms]	19.0	25.0		30.0		45.0	100		120	
Engagement time												
	t_1	[ms]	29.0	41.0	36.0	52.0	47.0	69.0	146	117	197	158
Disengagement time												
	t_2	[ms]	109	193	308	297	435	356	378	470	451	532

Spring-applied brake

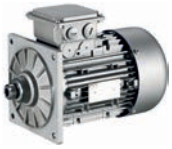
Rated data with increased braking torque

► Activation via bridge/half-wave rectifier

Design			Holding current reduction (cold brake)									
Size			10	12	14	16		18	20		25	
Friction energy												
	Q_{BW}	[MJ]	198	353	253	563	241	578	1596	580	2465	1409
Overexcitation time												
	$t_ü$	[ms]	300			1300						
Min. rest time												
	t	[ms]	900			3900						
Delay time												
Engaging	t_{11}	[ms]	24.0	27.0	17.0	41.0	21.0	60.0	69.0	17.0	123	85.0
Rise time												
Braking torque	t_{12}	[ms]	44.0	43.0	37.0	55.0	37.0	113	148	100	190	270
Engagement time												
	t_1	[ms]	68.0	70.0	54.0	97.0	57.0	173	217	334	313	355
Disengagement time												
	t_2	[ms]	109	193	308	297	435	356	378	470	451	532

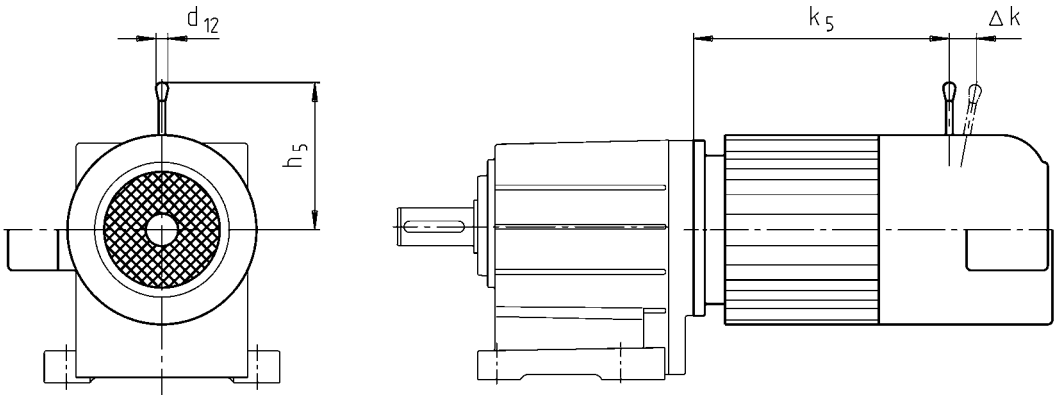
Design			Over-excitation									
Size			10	12	14	16		18	20		25	
Friction energy												
	Q_{BW}	[MJ]	264	706	761	966		1542	2322		3522	
Overexcitation time												
	$t_ü$	[ms]	300			1300						
Min. rest time												
	t	[ms]	900			3900						
Delay time												
Engaging	t_{11}	[ms]	29.0	54.0	31.0	70.0	46.0	86.0	103	55.0	171	135
Rise time												
Braking torque	t_{12}	[ms]	53.0	87.0	68.0	93.0	83.0	160	222	319	266	430
Engagement time												
	t_1	[ms]	82.0	141	99.0	163	129	246	325	374	437	565
Disengagement time												
	t_2	[ms]	53.0	81.0	117	141	168	151	160	167	184	204

► The brake response and application times are guide values. The engagement time is 10 times longer with AC-side switching. With the maximum air gap the disengagement time t_2 – depending on the brake and control – is up to 4 times longer than the disengagement time with the rated air gap.



Spring-applied brake

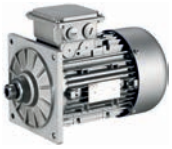
Manual release lever



Motor frame size	Size				
	Brake				
		k_5	Δ k	h_5	d_{12}
		[mm]	[mm]	[mm]	[mm]
080-32	06 08	207 218	29 27	107 116	13.0 13.0
090-12 090-32	08 10	245 256	27 28	116 132	13.0 13.0
100-12	10 12	279 281	28 37	132 161	13.0 13.0
100-32	10 12	294 296	28 37	132 161	13.0 13.0
112-22	12 14	292 296	37 41	161 195	13.0 24.0
132-12 132-22	14 16	373 373	41 55	195 240	24.0 24.0
160-22	16 18	420 423	55 59	240 279	24.0 24.0
160-32	16 18	464 467	55 59	240 279	24.0 24.0
180-12 180-32	18 20	539 546	59 74	279 319	24.0 24.0
180-42	18 20	596 603	59 74	279 319	24.0 24.0
225-12 225-22	25 25	785 785	103 103	445 445	24.0 24.0

The following combinations with manual release lever and motor connection in the same position are not possible:

- HAN connector with connection in position 1
- Inverter motec
- Terminal box of motor sizes 080, 090, for brake and retracting (M□□MA BR/BS/BA/BI)



Resolver

Stator-fed resolver with two stator windings offset by 90° and one rotor winding with transformer winding.

► The three-phase AC motors with resolver cannot be used for speed-dependent safety functions in connection with the SM 301 safety module.

Product key				
				RS1
Accuracy				
			[']	-10 ... 10
Absolute positioning				
				1 revolution
Max. input voltage				
DC	$U_{in,max}$		[V]	10.0
Max. input frequency				
	$f_{in,max}$		[kHz]	4.00
Ratio				
Stator / rotor		± 5 %		0.30
Rotor impedance				
	Z_{ro}		[Ω]	51 + j90
Stator impedance				
	Z_{so}		[Ω]	102 + j150
Impedance				
	Z_{rs}		[Ω]	44 + j76
Min. insulation resistance				
At DC 500 V	R		[MΩ]	10.0
Number of pole pairs				
				1

Incremental encoder and SinCos absolute value encoder

► The three-phase AC motors with incremental encoders or SinCos absolute value encoders cannot be used for speed-dependent safety functions in connection with the SM 301 safety module.

Encoder type			HTL incremental				TTL incremental			SinCos absolute value
Product key			IG128-24V-H	IG512-24V-H	IG1024-24V-H	IG2048-24V-H	IG512-5V-T	IG1024-5V-T	IG2048-5V-T	AM1024-8V-H
Encoder type										Multi-turn
Pulses			128	512	1024	2048	512	1024	2048	1024
Output signals			HTL				TTL			1 Vss
Interfaces			A, B track	A, B, N track and inverted						Hiperface
Absolute revolutions			0							4096
Accuracy		[']	-22.5 ... 22.5	-2 ... 2						-0.8 ... 0.8
Min. input voltage										
DC	$U_{in,min}$	[V]	8.00				4.75			7.00
Max. input voltage										
DC	$U_{in,max}$	[V]	26.0	30.0			5.25			12.0
Max. current consumption										
	I_{max}	[A]	0.040	0.15						0.080
Limit frequency										
	f_{max}	[kHz]	30.0	160			300			200
Inverter assignment			E84AVSC E84AVHC	E84AVHC			E84AVTC E94A ECS EVS93			

Inverters
- Inverter Drives 8400 StateLine (E84AVSC)
- Inverter Drives 8400 HighLine (E84AVHC)
- Inverter Drives 8400 TopLine (E84AVTC)

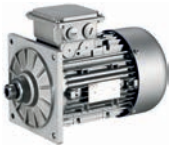
Servo-Inverters
- Servo Drives 9400 (E94A)
- 9300 servo inverters (EVS93)
- Servo Drives ECS

Blowers

► The use of a blower enables operation below 20 Hz without torque derating.

Rated data for 50 Hz

Size	Number of phases	Connection method					
Motor							
			U_{min}	U_{max}	P_{max}	I_{max}	m
			[V]	[V]	[kW]	[A]	[kg]
063	1		230	277	0.027	0.11	2.00
	3	Δ	200	303	0.028	0.12	
		Y	346	525		0.070	
071	1		230	277	0.027	0.10	2.10
	3	Δ	200	303	0.031	0.11	
		Y	346	525		0.060	
080	1		230	277	0.029	0.11	2.30
	3	Δ	200	303	0.031		
		Y	346	525		0.060	
090	1		220	277	0.065	0.29	2.70
	3	Δ	200	303	0.091	0.38	
		Y	346	525		0.22	
100	1		220	277	0.066	0.28	3.00
	3	Δ	200	303	0.091	0.37	
		Y	346	525		0.22	
112	1		220	277	0.071	0.28	3.10
	3	Δ	200	303	0.097	0.35	
		Y	346	525		0.20	
132	1		230	277	0.098	0.40	4.20
	3	Δ	200	303	0.12	0.58	
		Y	346	525		0.33	
160	1		230	277	0.25	0.97	6.20
	3	Δ	200	303		0.87	
		Y	346	525		0.50	
180	1		230	277		0.97	8.00
	3	Δ	200	303		0.87	
		Y	346	525		0.50	



Blowers

Rated data for 50 Hz

Size	Number of phases	Connection method					
Motor							
			U_{min}	U_{max}	P_{max}	I_{max}	m
			[V]	[V]	[kW]	[A]	[kg]
200	1		230	277	0.25	0.97	8.00
	3	Δ	200	303		0.87	
		Y	346	525		0.50	
225		Δ	200	400	0.28	1.10	15.0
		Y	346	525	0.17	0.35	

Rated data for 60 Hz

Size	Number of phases	Connection method					
Motor							
			U_{min}	U_{max}	P_{max}	I_{max}	m
			[V]	[V]	[kW]	[A]	[kg]
063	1		230	277	0.032	0.12	2.00
	3	Δ	220	332	0.028	0.10	
		Y	380	575		0.060	
071	1		230	277	0.033	0.12	2.10
	3	Δ	220	332	0.029	0.10	
		Y	380	575		0.060	
080	1		230	277	0.037	0.14	2.30
	3	Δ	220	332	0.034	0.10	
		Y	380	575		0.060	
090	1		220	277	0.065	0.25	2.70
	3	Δ		332	0.077	0.33	
		Y	380	575		0.19	
100	1		220	277	0.075	0.30	3.00
	3	Δ		332	0.087	0.31	
		Y	380	575		0.18	
112	1		220	277	0.094	0.37	3.10
	3	Δ		332	0.10	0.31	
		Y	380	575		0.18	
132	1		230	277	0.15	0.57	4.20
	3	Δ	220	332		0.44	
		Y	380	575		0.25	
160		Δ	220	332	0.36	0.93	6.20
		Y	380	575		0.56	
180		Δ	220	332		0.93	8.00
		Y	380	575		0.56	
200		Δ	220	332		0.93	
		Y	380	575		0.56	
225		Δ	220	400	0.28	0.76	15.0
		Y	380	575	0.26	0.43	

Temperature monitoring

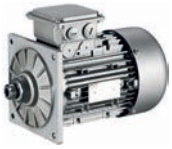
► The thermal sensors are integrated in the windings. The use of an additional motor protection switch is recommended.

TKO thermal contacts

Function	Operating temperature	Min. reset temperature	Max. reset temperature	Max. input current	Max. input voltage
					AC
	T	T_{min}	T_{max}	$I_{in,max}$	$U_{in,max}$
	-5 ... 5				
	[°C]	[°C]	[°C]	[A]	[V]
NC contact	150	90.0	135	2.50	250

PTC thermistor

Function	Operating temperature	Rated resistance			Standard
		155 °C	-20 °C	140 °C	
	T	R_N	R_N	R_N	
	-5 ... 5				
	[°C]	[Ω]	[Ω]	[Ω]	
Sudden change in resistance	150	550	30.0	250	DIN 44080 DIN VDE 0660 Part 303

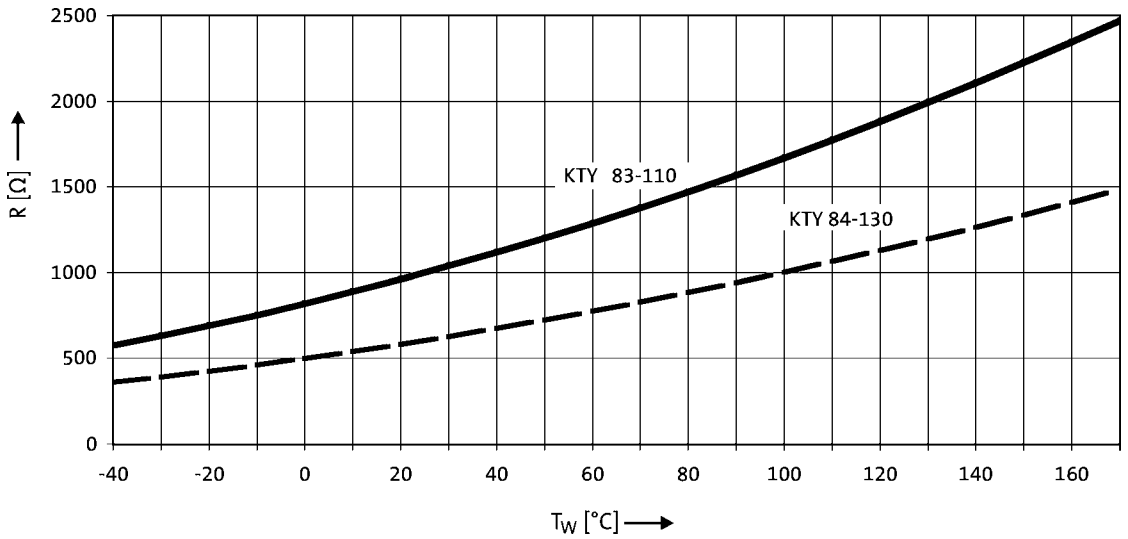


Temperature monitoring

KTY temperature sensor

	Function	Rated resistance			Max. input current	
		25 °C	150 °C	170 °C	25 °C	170 °C
		R_N	R_N	R_N	$I_{in,max}$	$I_{in,max}$
		[Ω]	[Ω]	[Ω]	[A]	[A]
KTY83-110	Continuous resistance change	1000	2225	2471	0.010	0.002
KTY84-130	Continuous resistance change	603	1334	1482	0.010	0.002

Variation of resistance



► If the detector is supplied with a measured current of 1 mA, the above relationship between the temperature and the resistance applies.

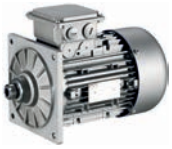
Terminal box

The three-phase AC motors are designed for operation at a constant mains frequency and with an inverter.
For 50 Hz operation, the motors are operated in Δconfiguration at 230 V or in star configuration at 400 V.
For inverter operation, the base frequency has been specified as 87 Hz at a rated voltage of 400 V in Δconfiguration.

In the standard version, the motors are connected in the terminal box. As an option, the motors are also available with the connectors described on the following pages as long as the permissible ratings are not exceeded.

Motor terminal box - built-on accessories assignment: 4-pole / 6-pole motors

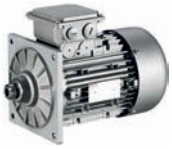
Motor type	M□□MAXX	M□□MARS M□□MAIG M□□MAAG	M□□MAZE M□□MAHA	M□□MALL	M□□MALZ M□□MALH
Motor frame size					
	Terminal box				
063-02 063-22	KK1	KK2			
063-12 063-32 063-42	KK1	KK2			
071-32 071-42 071-13 071-33	KK1	KK2	KK2	KK1	KK1
080-13 080-32 080-33 080-42	KK1	KK2	KK2	KK1	KK1
090-12 090-32	KK1	KK2	KK2	KK1	KK1
100-12 100-32	KK1	KK2	KK2	KK2	KK2
112-22 112-32	KK1	KK2	KK2	KK1	KK1
132-12 132-22 132-32	KK1	KK3	KK3	KK1	KK1
160-22 160-32	KK3	KK3			
180-12 180-32 180-42 180-42	KK3	KK3			
225-12 225-22	KK3	KK3			



Terminal box

Motor terminal box - built-on accessories assignment: 4-pole / 6-pole motors

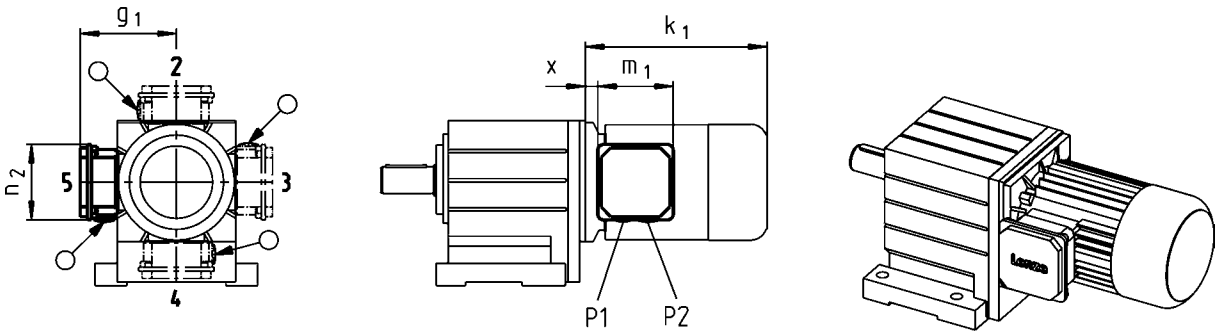
Motor type	M□□MABR	M□□MABS M□□MABI M□□MABA	M□□MABZ M□□MABH	M□□MABL
Motor frame size				
	Terminal box			
063-02 063-22	KK2	KK3		
063-12 063-32 063-42	KK2	KK3		
071-32 071-42 071-13 071-33	KK2	KK3	KK2	KK2
080-13 080-32 080-33 080-42	KK2	KK3	KK2	KK2
090-12 090-32	KK2	KK3	KK2	KK2
100-12 100-32	KK2	KK3	KK2	KK2
112-22 112-32	KK2	KK3	KK2	KK2
132-12 132-22 132-32	KK3	KK3	KK3	KK3
160-22 160-32	KK3	KK3		
180-12 180-32 180-42	KK3	KK3		
225-12 225-22	KK3	KK3		



Terminal box

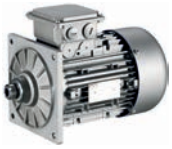
Dimensions of KK1

- ► For motors with motor terminal box KK1, the connector position can be selected in accordance with the terminal box position.
- ► If preferred positions are not specified in the order, the cable entry will be positioned as circled on the diagram below.



Size						
Motor						
	x	g_1	m_1	n_2	P_1	P_2
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
063	21 12 [1)]	100 117 [1)]	75.0 93.0 [1)]	75.0 93.0 [1)]	M16x1.5 M20x1.5 [1)]	M20x1.5 M20x1.5
071	24 15 [1)]	109 126 [1)]				
080	14	150	115	115	M20x1.5	M25x1.5
090	19	157				
100	20	166				
112	22	176				
132	33	195	122	122	M32x1.5	M32x1.5

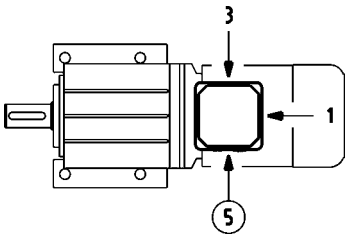
[1)] UL/CSA approval: cURus



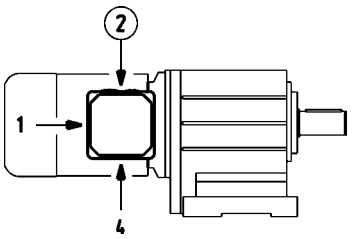
Terminal box

Cable entry position when using KK1

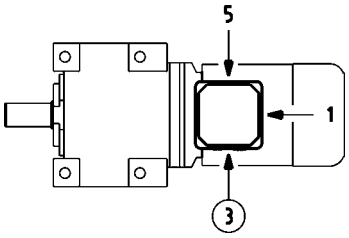
Terminal box in position 2



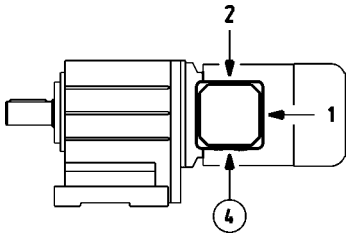
Terminal box in position 3

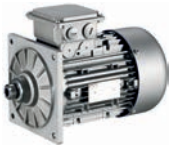


Terminal box in position 4



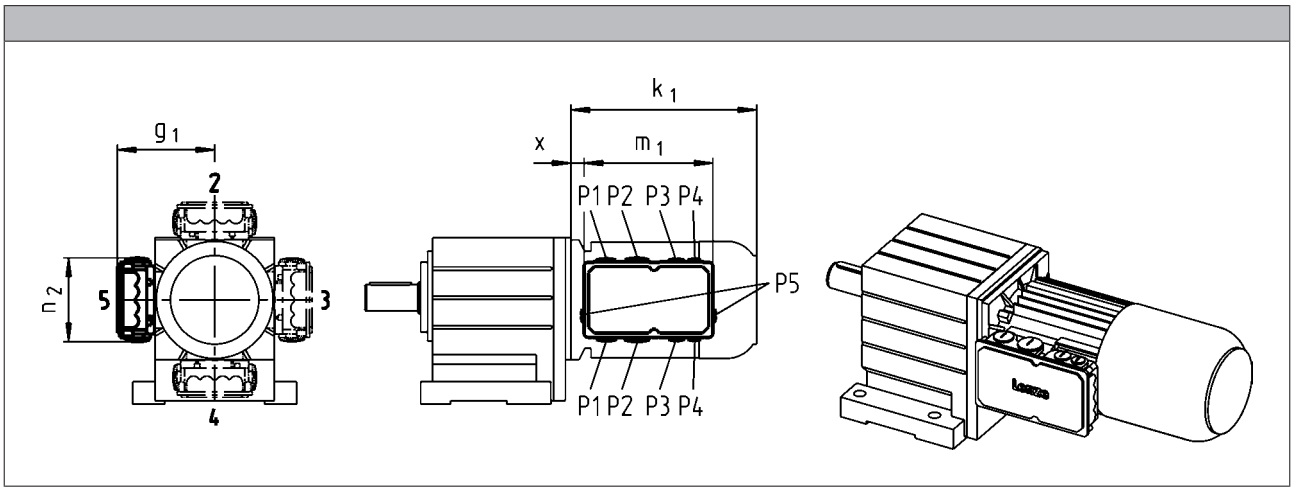
Terminal box in position 5



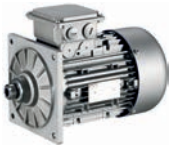


Terminal box

Dimensions of KK2

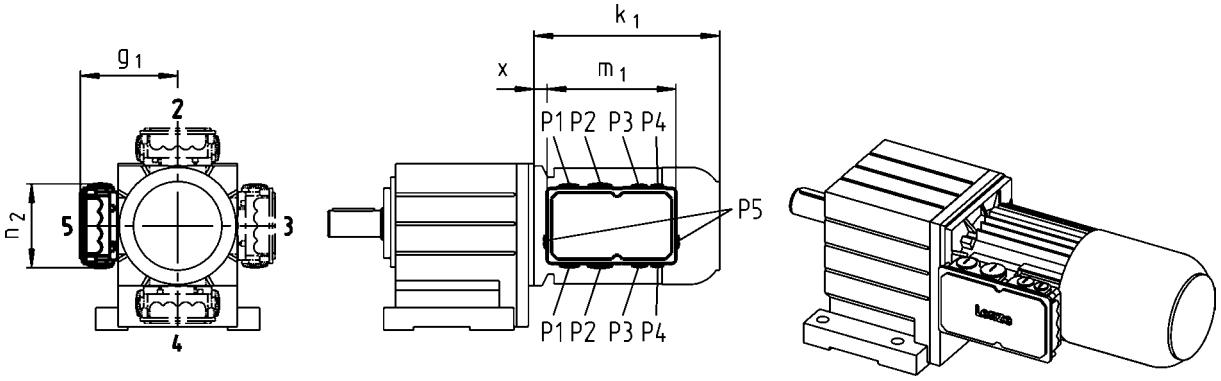


Size						
Motor						
	x	g_1	m_1	n_2	P_1	P_2
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
063	13	107	136	103	M16x1.5	M20x1.5
071	15	118				
080	17	132	152	121	M20x1.5	M25x1.5
090	22	137				
100	23	147				
112	25	158				



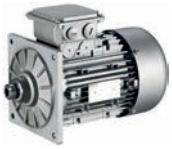
Terminal box

Dimensions of KK3



Size									
Motor									
	x	g_1	m_1	n_2	P_1	P_2	P_3	P_4	P_5
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
063	2	124	195	125	M25x1.5	M32x1.5	M20x1.5	M20x1.5	
071	5	133							
080	15	142							
090	20	147							
100	21	158							
112	23	168							
132	38	187							
160	35	210	226	127	M50x1.5	M16x1.5		M16x1.5	
180	73	230							
225	95	346	354	205		M63x1.5 [1)]	M50x1.5 [1)]		M16x1.5

[1)] Cable entry only possible at one position.
Terminal box position 2: cable entry at position 5.
Terminal box position 3: cable entry at position 2.
Terminal box position 4: cable entry at position 3.
Terminal box position 5: cable entry at position 4.

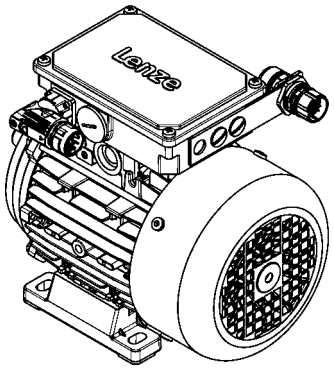


Plug connectors

ICN, HAN and M12 connectors (only for IG128-24V-H incremental encoder) are available for the three-phase AC motors.

ICN connector

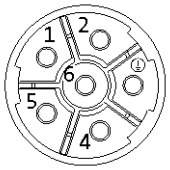
A connector is used for power, brake and temperature monitoring. The connections to the feedback system and the blower each employ a separate connector.



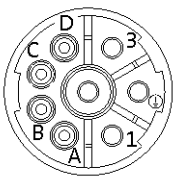
Connection for power, brake and temperature monitoring

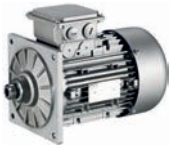
The connectors can be rotated through 270° and are fitted with a bayonet catch for SpeedTec connectors. As this connector is also compatible with conventional union nuts, existing mating connectors can continue to be used without difficulty. The motor connection is determined in the terminal box and must be checked before commissioning.

► ICN 6-pole

Pin assignment			
Contact	Designation	Meaning	
1	BD1 / BA1	Brake +/AC	
2	BD2 / BA2	Brake /AC	
PE	PE	PE conductor	
4	U	Phase U power	
5	V	Phase V power	
6	W	Phase W power	

► ICN 8-pole

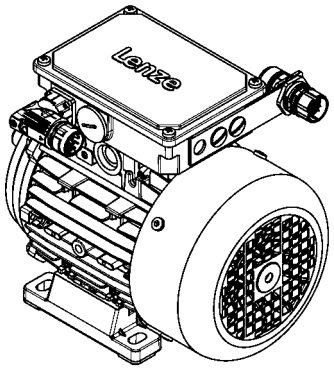
Pin assignment			
Contact	Designation	Meaning	
1	U	Phase U power	
PE	PE	PE conductor	
3	V	Phase V power	
4	W	Phase W power	
A	TB1 / TP1 / R1	Thermal sensor: TKO/PTC/ +KTY	
B	TB2 / TP2 / R2	Thermal sensor: TKO/PTC/-KTY	
C	BD1 / BA1	Brake +/AC	
D	BD2 / BA2	Brake /AC	



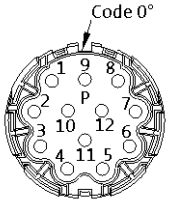
ICN connector

Feedback connection

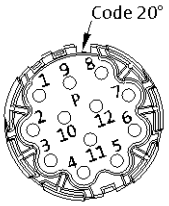
All encoder systems (apart from IG128-24V-H) are also available with an ICN connector fixed to the motor terminal box for exceptionally fast commissioning. The connectors are fitted with a bayonet fixing, which is also compatible with conventional union nuts. Existing mating connectors can therefore continue to be used without difficulty.

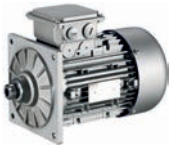


► Resolver

Pin assignment			
Contact	Designation	Meaning	
1	+Ref	Transformer windings	
2	-Ref		
3	+VCC ETS	Supply: Electronic nameplate	
4	+COS	Cosine stator windings	
5	-COS		
6	+SIN	Sine stator windings	
7	-SIN		
8		Not assigned	
9			
10			
11	+KTY	KTY temperature sensor	
12	-KTY		

► Hiperface incremental encoder and SinCos absolute value encoder

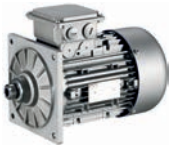
Pin assignment			
Contact	Designation	Meaning	
1	B	Track B/+SIN	
2	A^-	Track A inverse/-COS	
3	A	Track A/+COS	
4	$+U_B$	Supply +	
5	GND	Mass	
6	Z^-	Zero track inverse/-RS485	
7	Z	Zero track/+RS485	
8		Not assigned	
9	B^-	Track B inverse/-SIN	
10		Not assigned	
11	+KTY	KTY temperature sensor	
12	-KTY		



ICN connector

Motor terminal box with ICN connectors - built-on accessories assignment: 4-pole / 6-pole motors

Motor type	M□□MAXX	M□□MARS M□□MAIG M□□MAAG	M□□MAZE M□□MAHA	M□□MALL	M□□MALZ M□□MALH
Motor frame size	Terminal box with ICN connector				
063-02 063-22	KK1	KK2			
063-12 063-32 063-42	KK1	KK2			
071-32 071-42 071-13 071-33	KK1	KK2	KK2	KK1	KK1
080-13 080-32 080-33 080-42	KK1	KK2	KK2	KK1	KK1
090-12 090-32	KK1	KK2	KK2	KK1	KK1
100-12 100-32	KK1	KK2	KK2	KK2	KK2
112-22 112-32	KK1	KK2	KK2	KK1	KK1
132-12 132-22 132-32	KK1	KK3	KK3	KK1	KK1



ICN connector

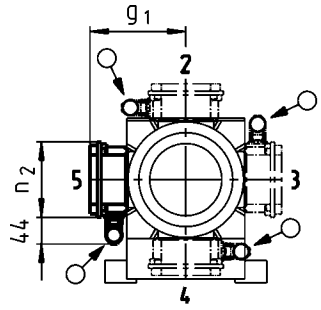
Motor terminal box with ICN connectors - built-on accessories assignment: 4-pole / 6-pole motors

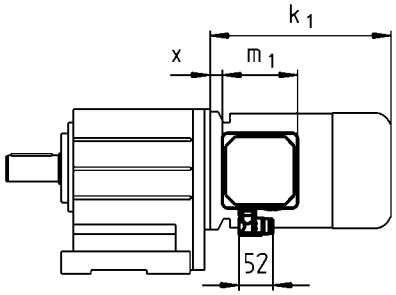
Motor type	M□□MABR	M□□MABS M□□MABI M□□MABA	M□□MABZ M□□MABH	M□□MABL
Motor frame size				
	Terminal box with ICN connector			
063-02 063-22	KK2	KK2		
063-12 063-32 063-42	KK2	KK2		
071-32 071-42 071-13 071-33	KK2	KK2	KK2	KK2
080-13 080-32 080-33 080-42	KK2	KK2	KK2	KK2
090-12 090-32	KK2	KK2	KK2	KK2
100-12 100-32	KK2	KK2	KK2	KK2
112-22 112-32	KK2	KK2	KK2	KK2
132-12 132-22 132-32	KK3	KK3	KK3	KK3

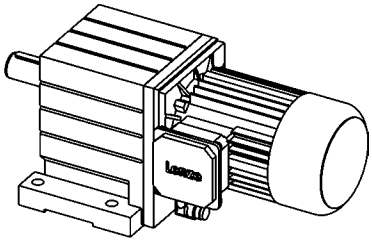
ICN connector

Dimensions of KK1

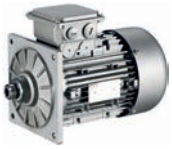
- ► For motors with connectors, the connector position can be selected in accordance with the terminal box position.
- ► If preferred positions are not specified in the order, the connector will be positioned as circled on the diagram below.







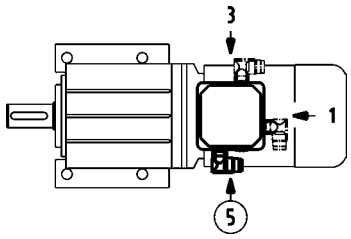
Size				
Motor				
	x	g_1	m_1	n_2
	[mm]	[mm]	[mm]	[mm]
063	12	117	93.0	93.0
071	15	126		
080	14	150	115	115
090	19	157		
100	20	166		
112	22	176		
132	33	195	122	122



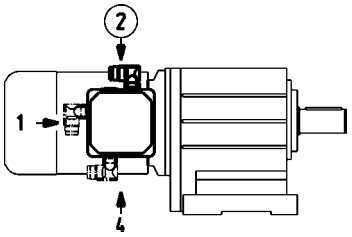
ICN connector

Connector position when using KK1

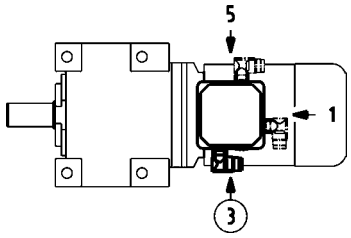
Terminal box in position 2



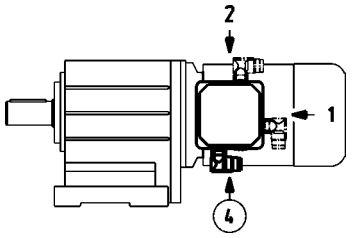
Terminal box in position 3



Terminal box in position 4



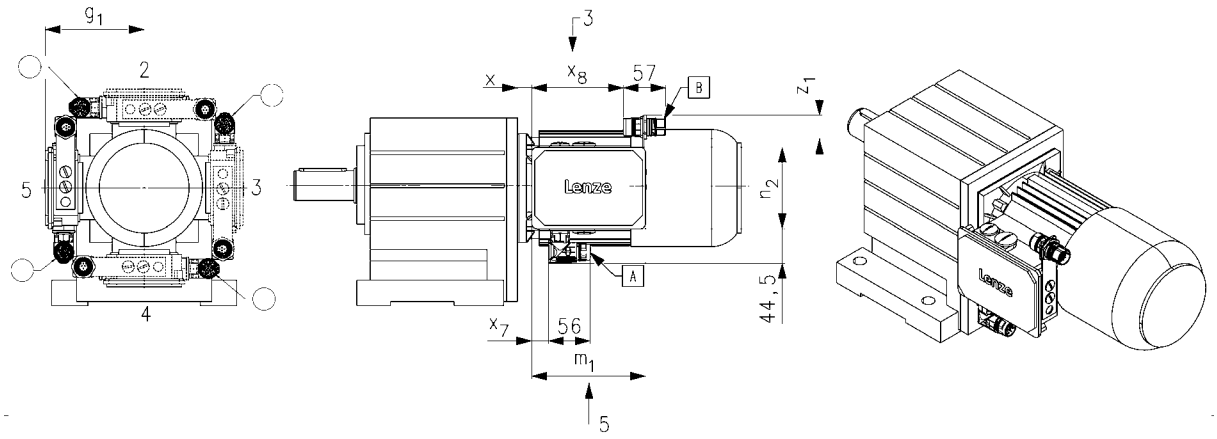
Terminal box in position 5



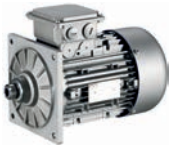
ICN connector

Dimensions of KK2/KK3

- For motors with connectors, the connector position can be selected in accordance with the terminal box position.
- If preferred positions are not specified in the order, the connector will be positioned as circled on the diagram below.



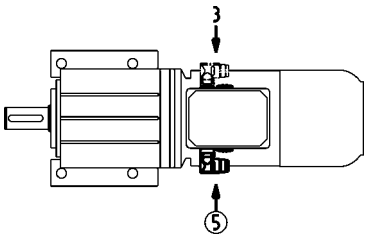
Size							
Motor							
	x	g_1	m_1	n_2	x_7	x_8	$z_{1, max}$
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
063	13	107	136	103	16	109	43
071	15	118					
080	17	132	152	121	23	125	41
090	22	137					
100	23	147					
112	25	158					
132	38	187	195	125	27	166	71



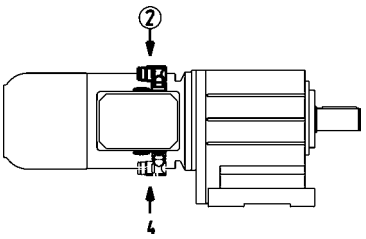
ICN connector

Connector position when using KK2/KK3

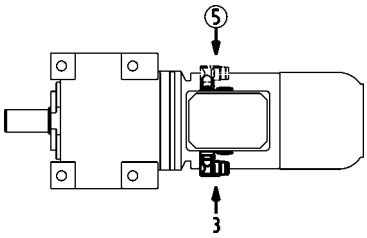
Terminal box in position 2



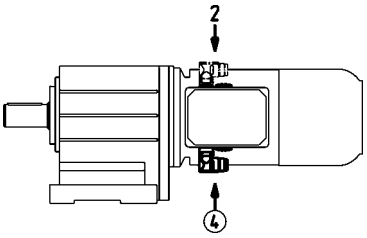
Terminal box in position 3

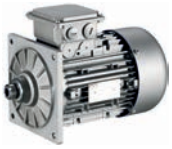


Terminal box in position 4



Terminal box in position 5

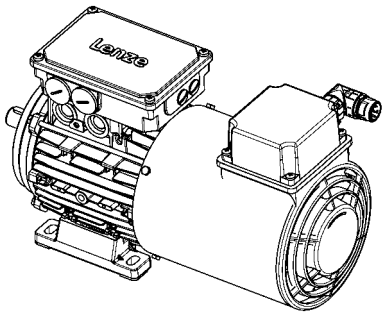




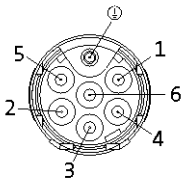
ICN connector

Blower connection

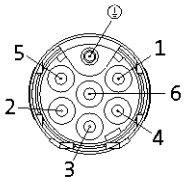
The blower is also optionally available with an ICN connector fixed to the terminal box of the blower for exceptionally fast commissioning. The connectors are fitted with a bayonet fixing, which is also compatible with conventional union nuts. Existing counter plugs can therefore continue to be used without difficulty.

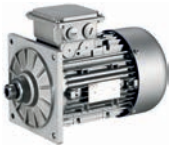


► Blower 1-ph

Pin assignment			
Contact	Designation	Meaning	
PE	PE	PE conductor	
1	U1	Fan	
2	U2		
3		Not assigned	
4			
5			
6			

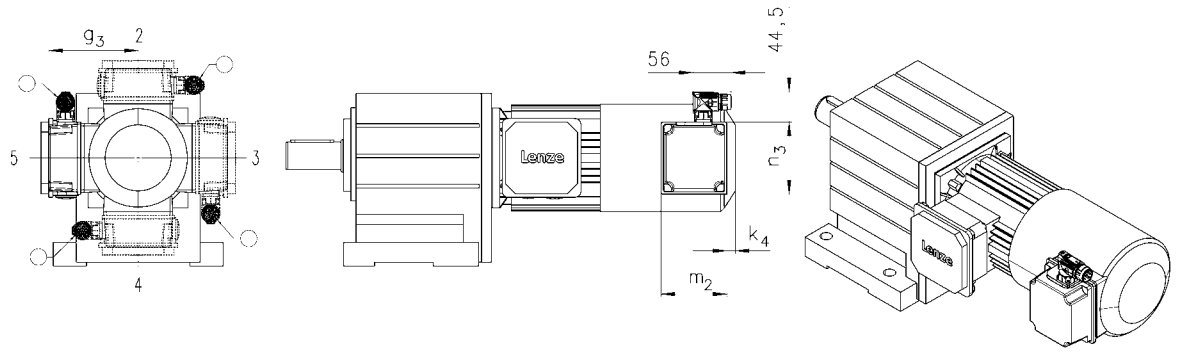
► Blower 3-ph

Pin assignment			
Contact	Designation	Meaning	
PE	PE	PE conductor	
1	U	Phase U power	
2		Not assigned	
3	V	Phase V power	
4		Not assigned	
5			
6	W	Phase W power	



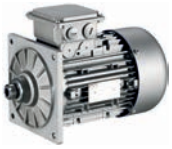
ICN connector

Dimensions of blower



Size				
Motor				
	k_4	g_3	m_2	n_3
	[mm]	[mm]	[mm]	[mm]
063	12	115	95	105
071		122		
080	13	132	96	106
090	22	141	95	105
100		150		
112		162		
132	32	182		
160	31	209	96	106
180				
225				

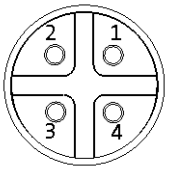
► In addition, the cover of the blower terminal box (including connectors) can be rotated progressively through 90° if necessary.

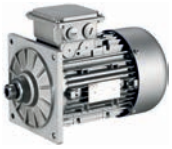


M12 connector

IG128-24V-H incremental encoder connection

As a standard this incremental encoder is equipped with a connection cable of about 0.5 m length and with a common industry standard M12 connector at its end.

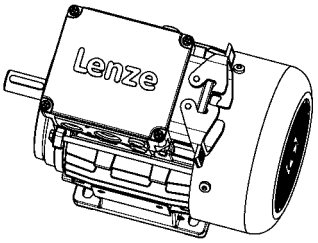
Pin assignment			
Contact	Designation	Meaning	
1	$+U_B$	Supply +	
2	B	Track B	
3	GND	Mass	
4	A	Track A	



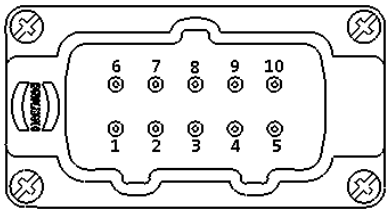
HAN connector

10E

In the case of the rectangular HAN-10E connectors, all six ends of the three winding phases are taken out to the power contacts. The motor circuit is therefore determined in the mating connector.



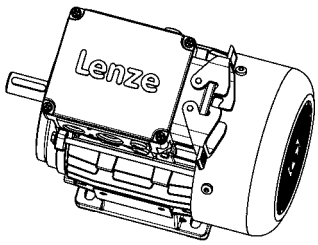
Pin assignment	
Contact	Meaning
1	Terminal board: U1
2	Terminal board: V1
3	Terminal board: W1
4	Brake +/AC
5	Brake -/AC
6	Terminal board: W2
7	Terminal board: U2
8	Terminal board: V2
9	Thermal sensor: +KTY/PTC/TKO
10	Thermal sensor: KTY/PTC/TKO



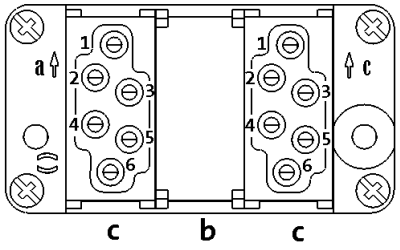
HAN connector

Modular

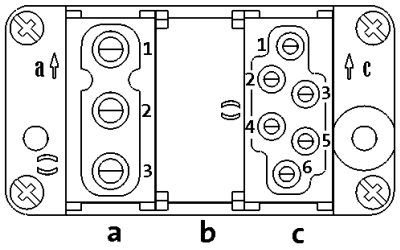
The connector is available with two different power modules (16 A or 40 A), depending on the rated motor current. The motor connection is determined in the terminal box and must be checked before commissioning.

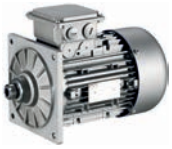


► HAN modular 16 A

Pin assignment			
Module	Contact	Meaning	
B		Dummy module	
C	1	Thermal sensor: +KTY/PTC/TKO	
	2	Brake +/AC	
	3	Brake -/AC	
	4	Rectifier: Switching contact	
	5		
	6	Thermal sensor: KTY/PTC/TKO	

► HAN modular 40 A

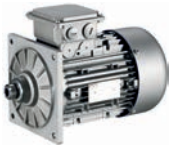
Pin assignment			
Module	Contact	Meaning	
A	1	Terminal board: U1	
	2	Terminal board: V1	
	3	Terminal board: W1	
B		Dummy module	
C	1	Thermal sensor: +KTY/PTC/TKO	
	2	Brake +/AC	
	3	Brake -/AC	
	4	Rectifier: Switching contact	
	5		
	6	Thermal sensor: KTY/PTC/TKO	



HAN connector

Motor terminal box with HAN connectors - built-on accessories assignment: 4-pole / 6-pole motors

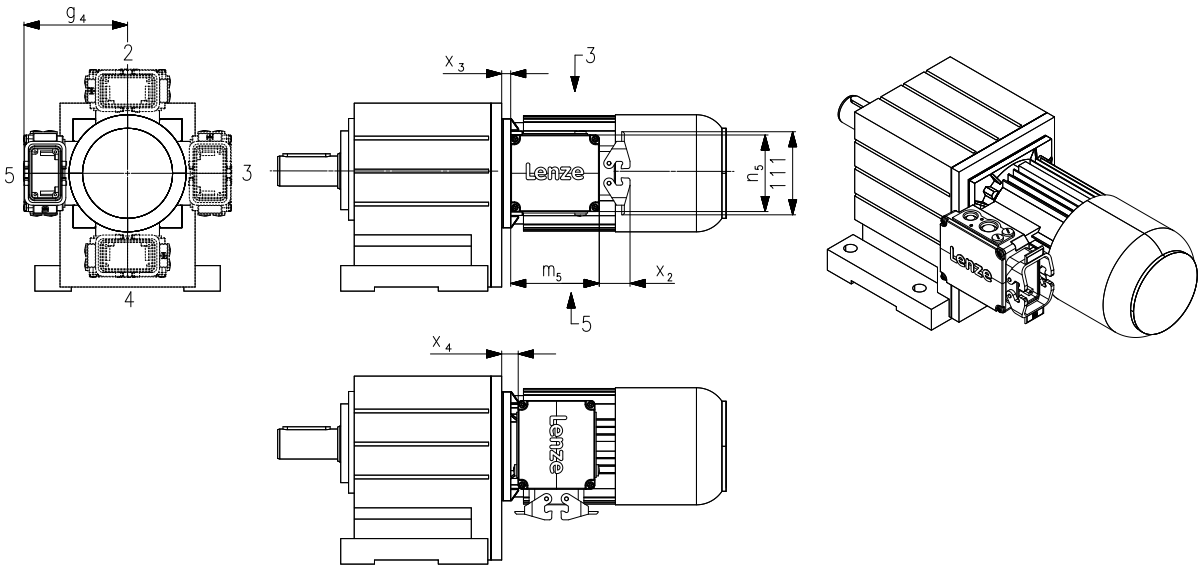
Motor type	M□□MAXX M□□MABR	M□□MAZE M□□MAHA M□□MABZ M□□MABH	M□□MALL M□□MABL	M□□MALZ M□□MALH
Motor frame size				
	Terminal box with HAN connector			
063-02 063-22	HAN-10E HAN modular			
063-12 063-32 063-42	HAN-10E HAN modular			
071-32 071-42 071-13 071-33	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular
080-13 080-32 080-33 080-42	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular
090-12 090-32	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular
100-12 100-32	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular
112-22 112-32	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular
132-12 132-22 132-32	HAN modular	HAN modular	HAN modular	HAN modular
160-22 160-32	HAN modular			



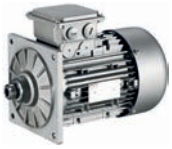
HAN connector

Dimensions

- For motors with connectors, the connector position can be selected in accordance with the terminal box position.
- Unless the connector position is specified, it will be supplied in position 1.

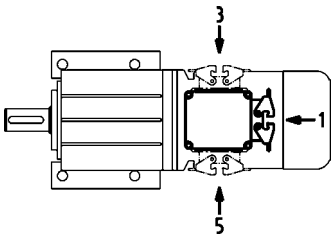
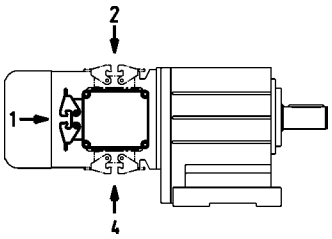


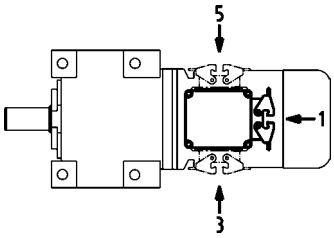
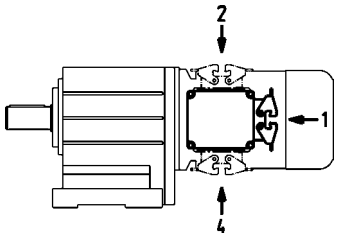
Size			
Motor			
	g_4	x_3	x_4
	[mm]	[mm]	[mm]
063	120	5.00	6.00
071	129	7.00	8.00
080	138	11.0	19.0
090	143	15.0	23.0
100	154	16.0	24.0
112	164	13.5	21.5
132	233	34.5	4.50
160	248	39.0	9.00

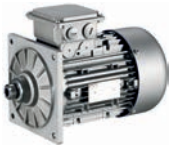


HAN connector

Position of connector

Connector in position 2	Connector in position 3
	

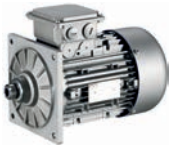
Connector in position 4	Connector in position 5
	



Handwheel

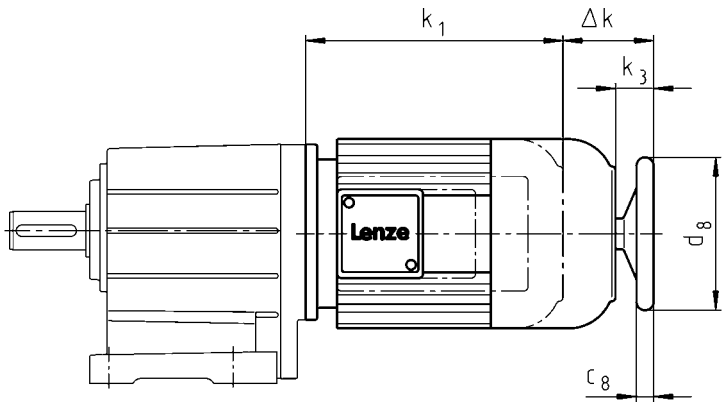
Design	Handwheel made from alloy, smooth wheel surface
Function	Manual operation: • Emergency operation • Setting-up operation for machines/systems
Note	The increased moment of inertia must be taken into account during project planning! For frequent switching operations, in particular if the direction of rotation changes: Please contact Lenze.

Size	Moment of inertia	Mass
Motor	Additional	Additional
	J	m
	[kgcm²]	[kg]
071	16.0	0.60
080	16.0	0.60
090	16.0	0.60
100	16.0	0.60
112	16.0	0.60
132	139	1.80



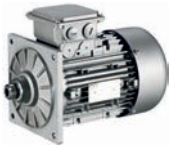
Handwheel

Dimensions, self-ventilated (4/6-pole)



Motor type	
Built-on accessories	M□□MAHA M□□MABH M□□MALH

Motor frame size				
	Δk	k_3	c_8	d_8
	[mm]	[mm]	[mm]	[mm]
071-32 071-42 071-13 071-33	70	34.0	18.0	160
080-32 080-42 080-13 080-33	91	34.0	18.0	160
090-12 090-32	80	32.0	18.0	160
100-12 100-32	94	42.0	18.0	160
112-22 112-32	107	39.0	18.0	160
132-12 132-22 132-32	126	50.0	26.0	250



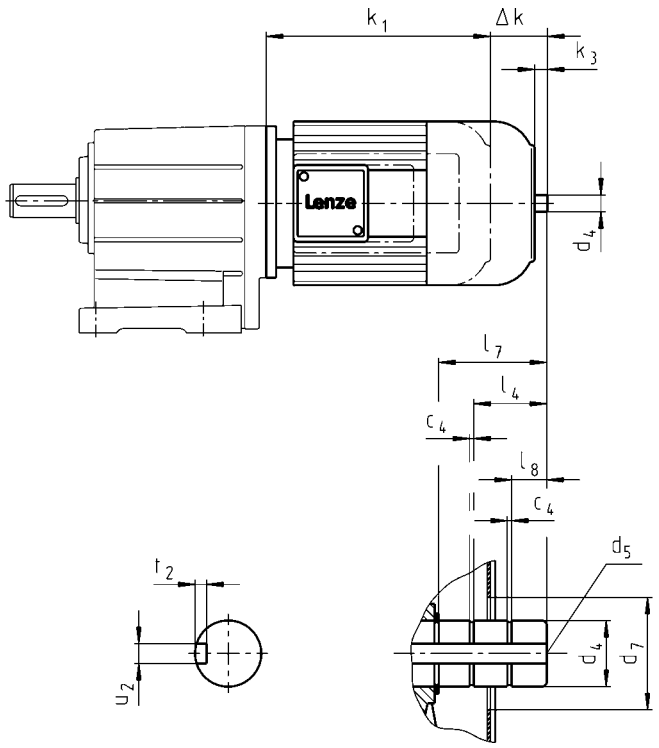
Centrifugal mass

Note	The increased moment of inertia must be taken into account during project planning! For frequent switching operations, in particular if the direction of rotation changes: Please contact Lenze.
Function	Increased motor centrifugal mass for smooth starting/braking
Design	Integral fan made from cast iron

	Moment of inertia	**Mass**
Motor frame size	Additional	Additional
	J	m
	[kgcm²]	[kg]
071	18.0	1.20
080	29.0	1.40
090-□1	83.0	2.80
090-□2	55.0	2.00
100	77.0	2.50
112	153	3.80
132	356	6.00

2nd shaft end

Dimensions, self-ventilated (4/6-pole)



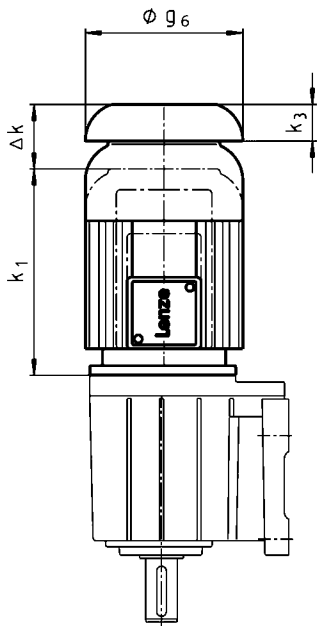
Motor type	
Built-on accessories	M□□MAZE M□□MABZ M□□MALZ

Motor frame size												
	Δk	k_3	c_4	d_4	d_4	d_5	d_7 [1]	l_4	l_7	l_8	u_2	t_2
				h6	j6							
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
071-32 071-42 071-13 071-33	47	11.0	1.10	14.0		M5	34.0		19.0	3.00	5.00	3.00
080-32 080-42 080-13 080-33	68	9.00	1.10	14.0		M5	34.0		19.0	4.50	5.00	3.00
090-12 090-32	57	9.00	1.10	14.0		M5	34.0		19.0	5.00	5.00	3.00
100-12 100-32	71	18.5	1.30		20.0	M6	34.0	17.0	32.5	10.5	6.00	3.50
112-22 112-32	84	16.0	1.30		20.0	M6	34.0	17.0	28.5	7.00	6.00	3.50
132-12 132-22 132-32	101	24.5	1.60		30.0	M10	46.0	24.5	42.0	8.50	8.00	4.00

[1] During operation, appropriate measures must be taken to make fan cover opening safe.

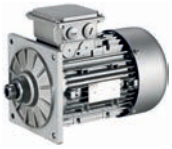
Protection cover

Dimensions, self-ventilated (4/6-pole)



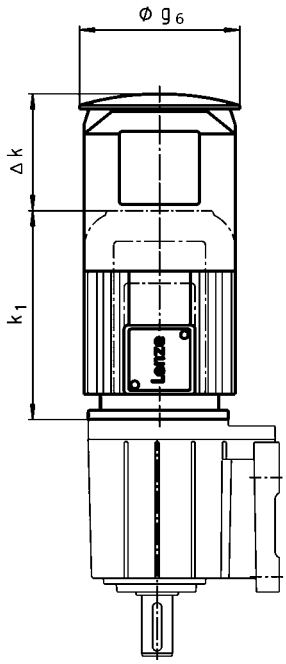
	Motor type							
	M□□MAXX	M□□MABR	M□□MABS M□□MABI M□□MABA	M□□MABL	M□□MARS M□□MAIG M□□MAAG	M□□MALL		

Motor frame size								
	Δ k	Δ k	Δ k	Δ k	Δ k	Δ k	k_3	g_6
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
063-02 063-22		97	160		97		11.0	123
063-12 063-32 063-42	26	66	129		82		11.0	123
071-32 071-42 071-13 071-33	26	78	122	78	78	26	12.0	138
080-32 080-42 080-13 080-33	26	99	137	99	127	30	16.0	156
090-12 090-32	26	94	131	94	113	26	15.0	176
100-12 100-32	31	107	132	107	112	107	17.0	194
112-22 112-32	31	121	151	121	111	31	18.0	218
132-12 132-22 132-32	31	141	156	141	134	31	20.0	257
160-22 160-32	37	142	228		120		25.0	310



Protection cover

Dimensions, forced ventilated (4/6-pole)



	Motor type			
	M□□MAXX	M□□MABR M□□MABS M□□MABI M□□MABA	M□□MARS M□□MAIG M□□MAAG	

Motor frame size				
	Δ k	Δ k	Δ k	g_6
	[mm]	[mm]	[mm]	[mm]
063-12 063-32 063-42	169	209	209	133
071-32 071-42 071-13 071-33	165	202	202	150
080-32 080-42 080-13 080-33	168	224	224	170
090-12 090-32	157	210	210	188
100-12 100-32	137	198	198	210
112-22 112-32	135	216	216	249
132-12 132-22 132-32	140	226	226	300
160-22 160-32	155	267	267	338

Internet version

Lenze SE
Hans-Lenze-Straße 1
D-31855 Aerzen
Phone: +49 (0)5154 82-0
Telefax: +49 (0)5154 82 28 00

www.Lenze.com