

Bevel geared motors with clutch *for monorail overhead conveyor systems*



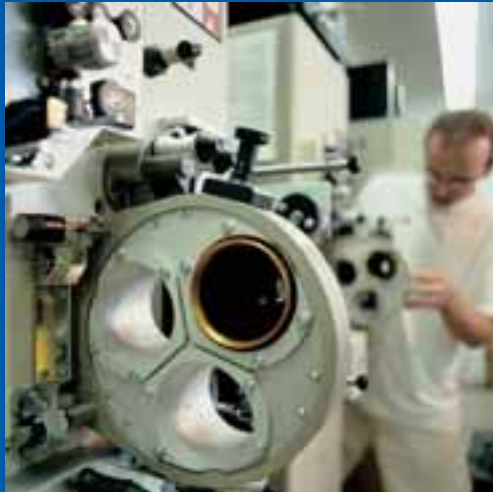
G-motion EHB



No matter which drive solution you imagine, we make your dreams come true.

True to our slogan (one stop shopping) we offer you a complete program of electronic and mechanical drive systems which is distinguished by reliability and efficiency.

The scope of our program includes frequency inverters, servo controllers, variable-speed drives, speed reduction gearboxes, motors, brakes, clutches, decentralised I/O and operator and display units.

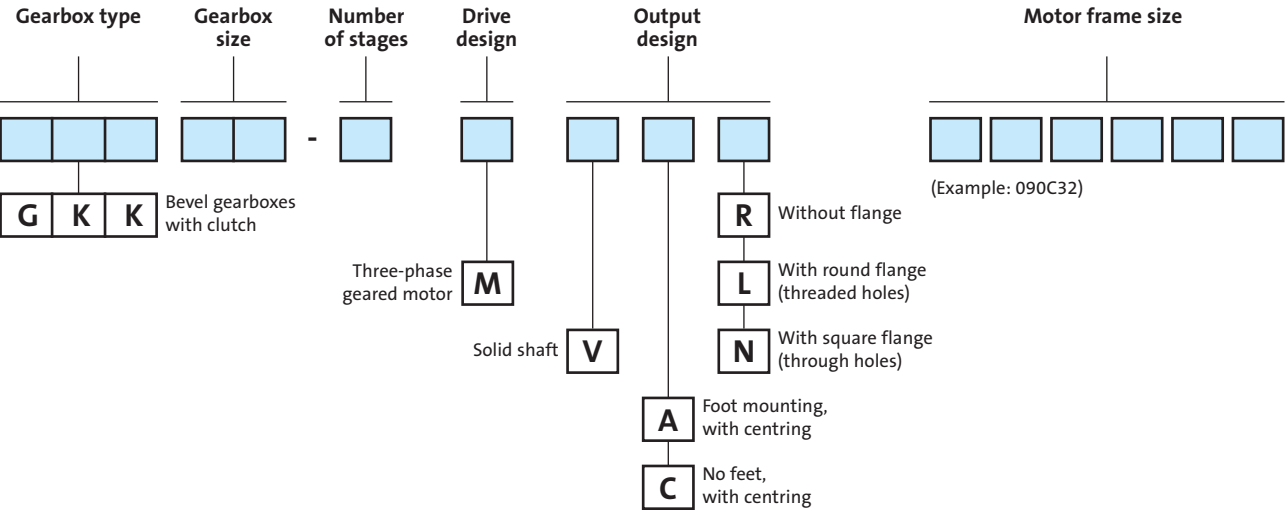


Many well-known companies use Lenze products in various applications.

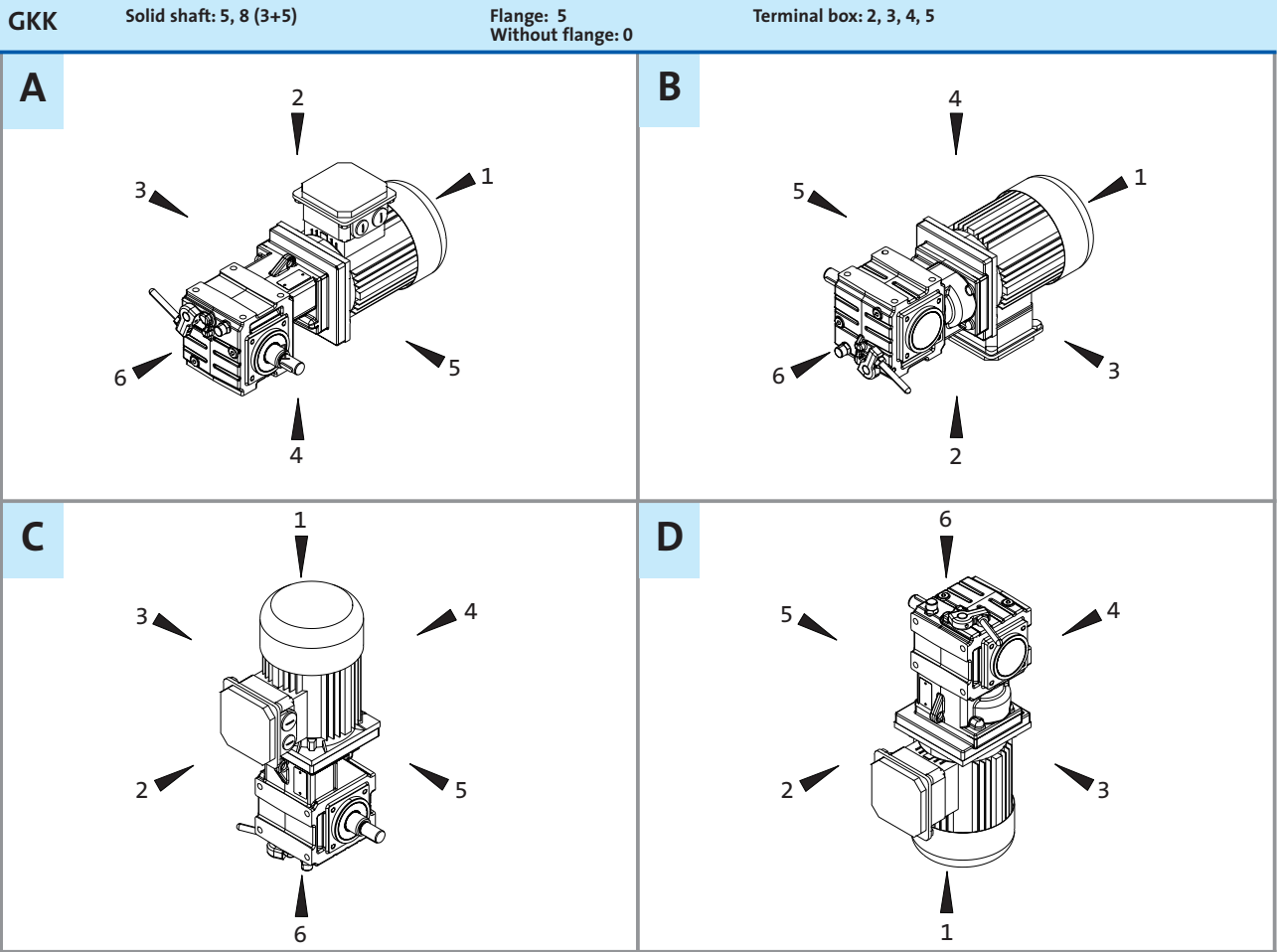
Product key

G-motion EHB

Type designation



Mounting position (A-D) and position of system blocks (1-6)



Product information

G-motion EHB

Monorail overhead conveyors (EHB systems) are used in many areas of factory materials handling, and create a flexible and efficient means of transportation – particularly in the automotive industry – through their high level of automation. Together with decentralised motor control units they form a complete solution for a variety of applications.

With its geared motors and decentralised motor control units, Lenze offers a complete drive system for monorail overhead conveyors based on harmonised components.

The compact dimensions and high radial load capacity of Lenze geared motors make them absolutely ideal for use with monorail overhead conveyors.

- ▶ Torques of up to 900 Nm
- ▶ Radial loads of up to 36000 N
- ▶ Mechanical disconnect clutch for disconnection of magnetic flux
- ▶ Bevel teeth ensure operation with a high degree of efficiency

- ▶ Compact housing design
- ▶ Flexible mounting options in terms of carriage design thanks to flange mounting and threaded holes on the top/bottom of the gearbox
- ▶ Low noise thanks to the optimum geometry of the gear teeth and internally-ribbed cast iron housing
- ▶ Smooth running for vibration-free operation
- ▶ Co-ordinated decentralised motor control units with all the options of automated motion control

Wide application potential

The monorail overhead conveyor geared motors for light load applications meet the requirements of VDI directive 3643 (C1 standard). They incorporate a reliable mechanical disconnect clutch which can be used to interrupt the torque transmission between the driven shaft of the gearbox and the drive shaft of the motor. This makes it possible to move the carriage by hand if required.

The clutch lever is located on the opposite side to the motor. This layout also allows the geared motor to be used in ground-level conveyors. In addition to the flange-mounted design, the gearboxes are also available with threaded bores on the top and bottom, providing flexible mounting options.

The drive can be disassembled quickly for service purposes, without removing the running gear. This reduces downtime and thus costs.



Lenze

An introduction

Lenze is the competent partner for your application. Lenze is not only a supplier for single components but also offers solutions for complete drive systems including planning, execution and commissioning.

Furthermore, a worldwide service and distribution network lets you engage a qualified customer advisory service and an after sales service that is fast and extensive.

Our quality assurance system for design, production, sales and service is certified according to DIN ISO 9001 : 2000. Our environmental management system is also certified to DIN EN ISO 14001.

Our customers set the standards for measuring the quality of our products. Our task is to meet your requirements, since customer orientation is a Lenze principle demanding the best quality.

See for yourself.



A worldwide service –

Our team of experts provides reliable and professional assistance.

Geared motors

The range

The G-motion range - a tried-and-tested and versatile range of geared motors covering all standard gearbox designs

The G-motion range of geared motors already comes with broad functionality as standard and is available with many useful options at the input and output ends, giving the user great versatility.

Gearbox types

The gearboxes are available as

- ▶ Helical gearboxes
- ▶ Shaft-mounted helical gearboxes
- ▶ Helical-bevel gearboxes
- ▶ Helical-worm gearboxes
- ▶ Servo planetary gearboxes

Speeds

The large range of gearbox ratios with close spacing makes it possible to closely match the actual drive features to the required process parameters.

Integrated three-phase AC motors

- ▶ 4-pole 0.06 to 45 kW
- ▶ 2-pole 0.18 to 9 kW
- ▶ 6-pole 0.18 to 0.55 kW
- ▶ Synchronous servo motors 0.25 to 10 kW
- ▶ Asynchronous servo motors 0.8 to 20.3 kW

G-motion const/G-motion atex Geared motors and gearboxes with constant output speeds

- ▶ Power range 0.06 to 45 kW
- ▶ Torque range ≤ 12000 Nm



G-motion motec Geared motors with integrated 8200 motec frequency inverter

- ▶ Power range 0.12 to 7.5 kW
- ▶ Torque range ≤ 12000 Nm



G-motion servo MC/MD

Dynamic geared motors

- ▶ Power range 0.25 to 20.3 kW
- ▶ Torque range ≤ 12000 Nm



G-motion m-var

Geared motors with mechanical speed control

- ▶ Power range 0.25 to 45 kW
- ▶ Torque range ≤ 12000 Nm

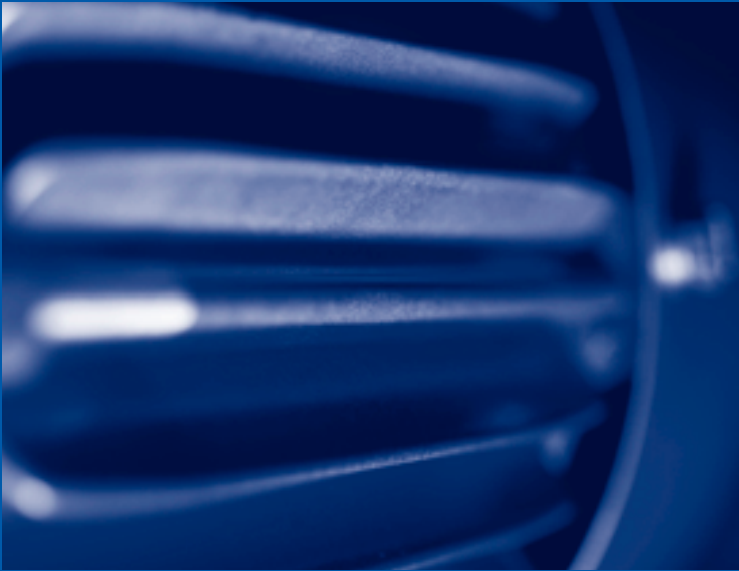
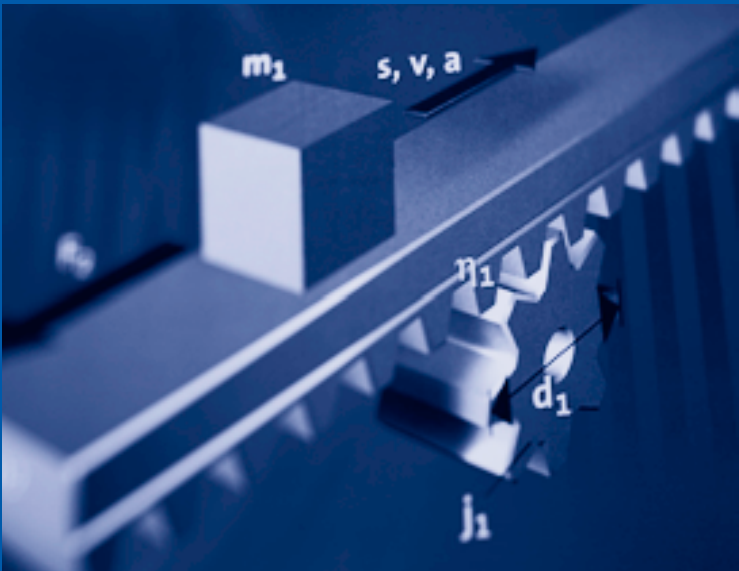
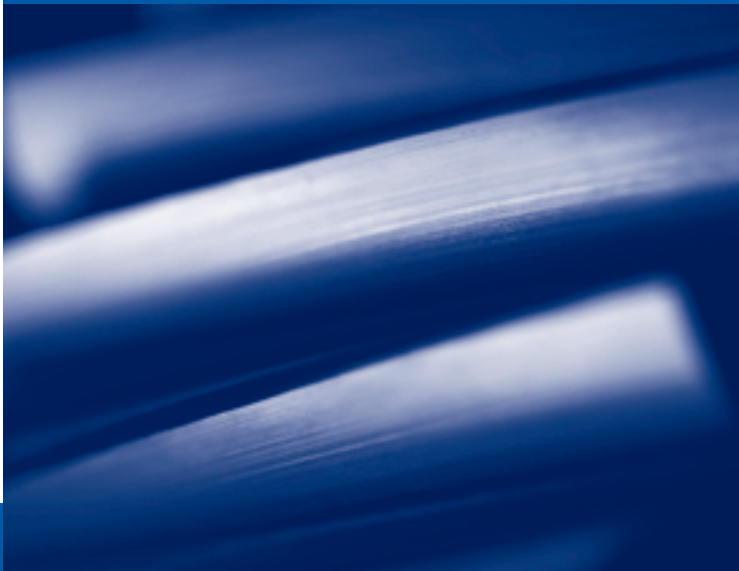


G-motion EHB

Monorail overhead conveyor geared motors for light and heavy loads

- ▶ Power range 0.12 to 5.5 kW
- ▶ Torque range ≤ 900 Nm





Contents | G-motion EHB

Product key

Mounting positions

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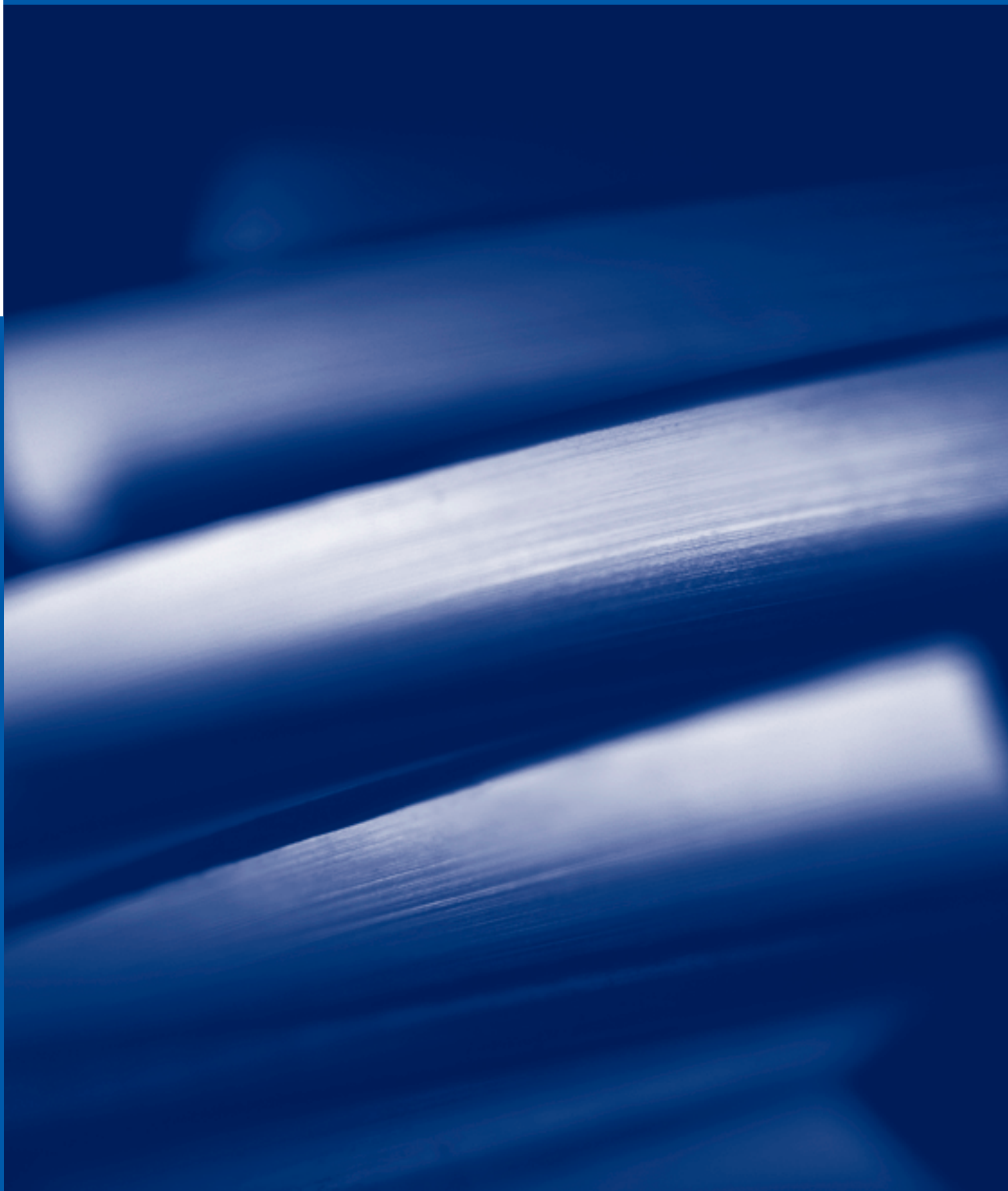
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Abbreviations used in this catalogue

α	[°]	Angle of action of radial force	m_G	[kg]	Mass acting on the driven shaft of the gearbox
α_s	[°]	Angle of greatest upward slope	M_a	[Nm]	Acceleration torque
η	[%]	Mechanical efficiency	M_A	[Nm]	Motor starting torque
a	[m/s ²]	Maximum acceleration	M_B	[Nm]	Brake holding torque
AC		Maximum deceleration	M_I		Maximum torque factor
		Alternating current/voltage	M_{stall}	[Nm]	Stall torque of motor
c		Load capacity of geared motors	M_L	[Nm]	Load torque
cosφ		Power factor of the motor	M_{Lmax}	[Nm]	Short-time maximum torque
d	[m]	Running gear diameter	M_r	[Nm]	Rated torque
DC		Direct current/voltage	M_s	[Nm]	Torque from height difference (upward slope)
f$_{\alpha}$		Effective direction factor at driven shaft	M_{roll}	[Nm]	Rolling frictional torque
f$_r$	[Hz]	Rated frequency	M_{add}	[Nm]	Additional torque
f$_{roll}$	[N/kg]	Rolling friction resistance	M_2	[Nm]	Output torque
f$_w$		Additional load factor at driven shaft	n$_L$	[rpm]	Load speed
F$_I$		Mass acceleration factor	n$_r$	[rpm]	Rated speed
F$_m$	[N]	Radial force resulting from mass acting on the driven shaft of the gearbox	n$_1$	[rpm]	Input speed
F$_L$	[N]	Radial force resulting from load torque	n$_2$	[rpm]	Output speed
F$_r$	[N]	Applied radial force	OT		Operating time
F$_{rTab}$	[N]	Table value of radial force	P	[kW]	Required power
F$_{rperm}$	[N]	Permissible radial force	P$_r$	[kW]	Rated power
F$_{add1}$	[N]	Additional radial forces	P$_1$	[kW]	Drive power
F$_{add2}$	[N]	Additional radial forces	t	[s]	Acceleration time
g	[m/s ²]	Gravitational acceleration	t$_L$	[%]	Runtime at maximum torque
h	[m]	Installation height	T$_{amb}$	[°C]	Ambient temperature
i		Transmission ratio	U$_r$	[V]	Rated voltage
I$_A$	[A]	Motor starting current	v	[m/s]	Maximum travelling velocity
I$_B$	[A]	Rated current of brake	v$_1$	[m/s]	Horizontal travelling velocity
I$_r$	[A]	Rated current	v$_2$	[m/s]	Horizontal cam travelling velocity
J$_B$	[kgm ²]	Moment of inertia of brake	v$_3$	[m/s]	Travelling velocity on upward/downward slope
J$_{ext}$	[kgm ²]	Moment of inertia of the load reduced to the motor shaft	CCC		Certificate for China compulsory product certification
J$_{load}$	[kgm ²]	Moment of inertia of load on gearbox driven shaft	CE		Communauté Européenne
J$_{mot}$	[kgm ²]	Moment of inertia of the motor	CSA		Canadian Standards Association
k		Application factor (according to DIN 3990)	DIN		Deutsches Institut für Normung
k$_h$		Power correction factor, depending on installation height	EMC		Electromagnetic compatibility
k$_L$		Power correction factor, depending on operating mode	EN		European standard
k$_u$		Power correction factor, depending on ambient temperature	IEC		International Electrotechnical Commission
m	[kg]	Mass	IM		International Mounting Code
m$_T$	[kg]	Maximum transport load	IP		International protection code
m$_F$	[kg]	Overall weight, carriage	NEMA		National Electrical Manufacturers Association
m$_b$	[kg]	Overall weight of mass in motion	UL		Underwriters Laboratory listed component
			UR		Underwriters Laboratory recognised component
			USDA		United States Department of Agriculture
			VDE		Verband deutscher Elektrotechniker

General information about the data provided in this catalogue

Power ratings, torques and speeds

The power ratings, torques and speeds specified in this catalogue are rounded values and are valid under the following conditions:

- ▶ Running time/day = 8h (100% duty cycle)
- ▶ Duty class I for up to 10 switching operations/h
- ▶ Mounting positions and models in this catalogue
- ▶ Standard lubricant
 - $T_{amb} = 20\text{ °C}$ for gearboxes
 - 40 °C for motors (to EN 60034)
- ▶ Installation height $< = 1000\text{ m}$ above mean sea level

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.

Load capacity c of gearboxes

Characteristic value for the load capacity of Lenze gearboxes and geared motors.

- ▶ c is the ratio of the permissible rated torque of the gearbox to the rated torque of the drive components as supplied (e.g. the integrated Lenze motor).
- ▶ c must always be greater than the application factor k determined for the application.

Application factor k (corresponding to DIN 3990)

Accounts for the effect of transient loads that will actually be present when the gearboxes and geared motors are due to be operated.

k depends on

- ▶ The type of load
- ▶ The load intensity
- ▶ Temporal factors

We want to be sure that you receive the correct products in good time. In order to help us to do this, please make sure you provide complete ordering data. Use the checklist below and the order information to help you.

Checklist

In order to receive the correct products in good time, please provide the following information:

- ▶ Your address and ordering data
- ▶ Our product key for the individual products in this catalogue
- ▶ Your delivery data, i.e. delivery date and delivery address

How to order

Please use the following step-by-step guide and fax form to ensure that you provide all the necessary information in the correct format. It makes ordering your tailor-made drive extremely easy:

- ▶ Make a copy of the fax order form.
See Chapter 1.
- ▶ Enter the order data.
- ▶ Post or fax the form to your Lenze sales office.
A list of Lenze sales offices can be found at the end of this catalogue.

A step-by-step guide to ordering your drive

- Cross-reference
- Result

1. Dimension the drive system

- Drive dimensioning, dimensioning (Chapter 2)

2. Specify the type designation, ratio

- Product key (fold-out page), selection table (Chapter 3)

→ Gearbox type, gearbox size, number of stages,
Example: **GKK 07-2**

Drive design, motor frame size, drive size, ratio

Example: **M, 090C32, i = 43.071**

3. Specify the output design

- Product key (fold-out page),

Drive dimensioning, gearbox designs (Chapter 2)

- Solid shaft with keyway, without foot with centring ring,
with 250 mm round flange (**V, C, L**)

4. Specify the mounting position and the position of the system blocks

- Product key (fold-out page)

Example: **Mounting position A**

Shaft in position 5

Flange in position 5

Terminal box in position 3

5. Specify the colour

- Drive dimensioning, gearbox designs (Chapter 2)

Example: **Paint RAL 7012 (basalt grey)**

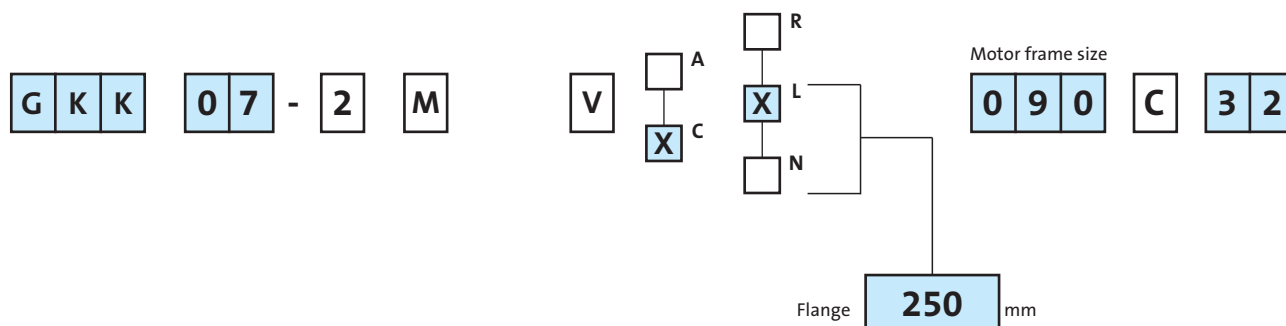
6. Specify the gearbox options

- Drive dimensioning, gearbox designs (Chapter 2)

- Drive dimensioning, motor designs (Chapter 2)

i =

43.071



1

Additional ordering data

Mounting position

A	B	C	D
☒	☐	☐	☐

Position of system blocks (mark non-fixed positions with 0)

Shaft		Flange		Terminal box			
5	8	0	5	2	3	4	5
☒	☐	☐	☒	☐	☒	☐	☐

Colour

☒ Paint RAL 7012 (basalt grey)

☐ Grey primer

Options

Shaft sealing rings

☐ Viton

Special lubricant

☐ CLP HC 220
(lubricant approved for use in the food industry)

Special lacquer

RAL

Ventilation

☐ Breather elements for
size 04...07

For order data concerning motor options, please refer to the motor options on the fax order form

To the Lenze sales office

Page __ of __

☐ Order

☐ Quotation

Fax no. _____

From

Customer no.

Company

--	--	--	--	--	--	--	--

Street/PO box

Order no.

Town/Postcode

Contact name

Department

Date Signature

Tel. no.

Delivery address (if different from above)

Street

Town/Postcode

Invoice address (if different from above)

Street/PO box

Town/Postcode

Requested delivery date _____

Delivery instructions _____

--	--	--	--	--	--	--	--

Quantity

 $i =$

G	K	K
---	---	---

--	--

-

2

M

V

□ R
□ L
□ N

Motor frame size

--	--	--

C

--	--

Flange		mm
--------	--	----

A B C D

Shaft Flange Terminal box

5 8	0 5	2 3 4 5
☐ ☐	☐ ☐	☐ ☐ ☐ ☐

☐ Paint RAL 7012 (basalt grey)

☐ Grey primer

 Viton

☐ CLP HC 220
(lubricant approved for use in the food industry)

RAL

☐ Breather elements for size 04...07

General

Fax order form complete with motor options

Customer no.

--	--	--	--	--	--	--	--

Order no.

Type of connection

Terminal box

☐ with HAN 10E connector

Cable entry

(only with terminal box KK1 in position and HAN connector)

1	2	3	4	5
☐	☐	☐	☐	☐

Blower

1~ ☐ 3~ ☐

Terminal box for blower in position

2	3	4	5
☐	☐	☐	☐

Spring-operated brake

Brake size

Supply voltage V (AC/DC)

2	3	4	5
☐	☐	☐	☐

Brake options

☐ Low noise design (standard for brake with tachogenerator/position encoder)
☐ Rectifier 4-pole ☐ Rectifier 6-pole

Motor protection

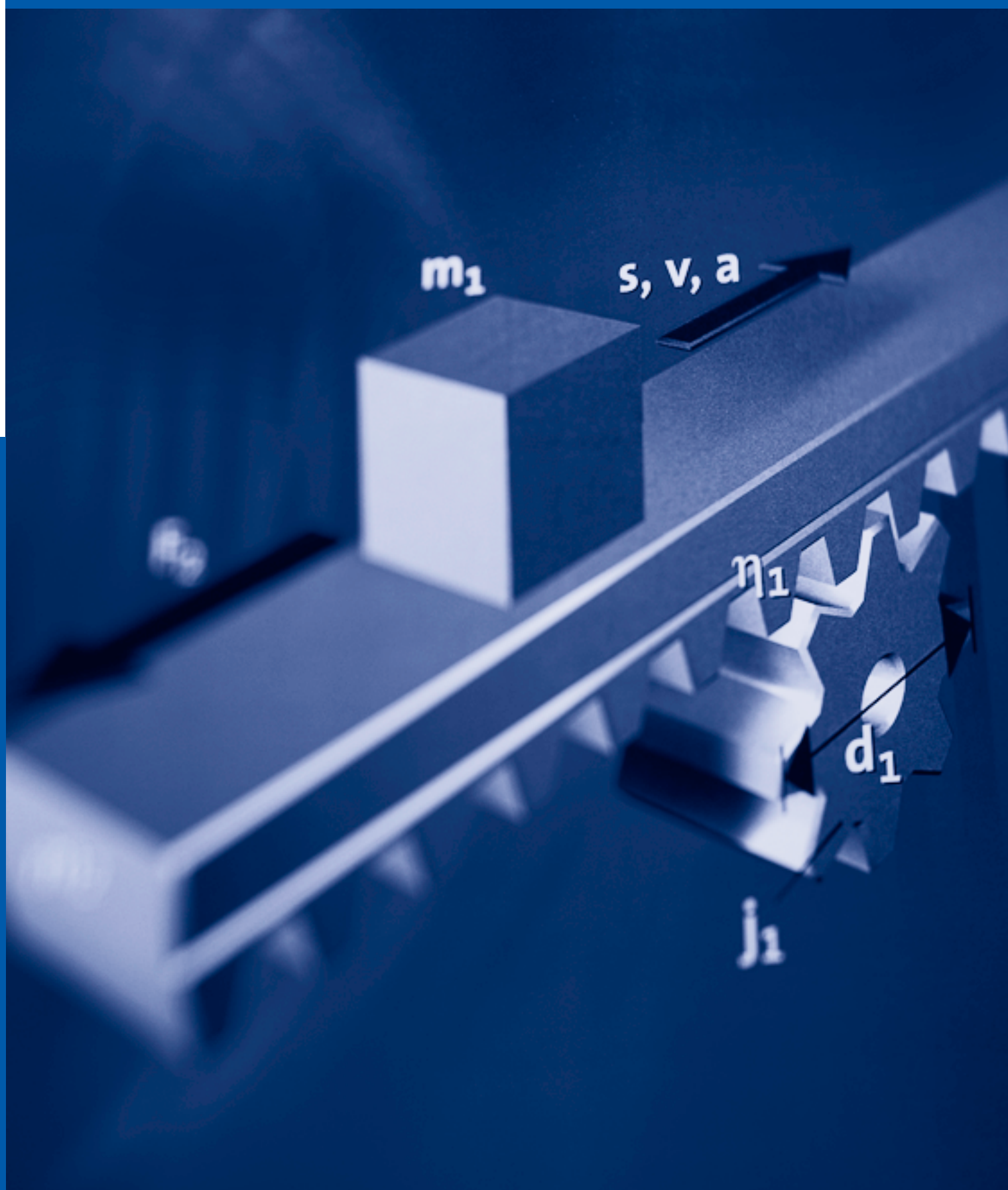
☐ PTC ☐ KTY

Additional options

Only specify supply voltage in the case of motor frame size **112C32**

☐ Δ; 400 V - 50 Hz (480 V - 60 Hz) ☐ Y/Δ; 400/230 V - 50 Hz (480/277 V - 60 Hz)
(at 87 Hz - must be operated with frequency inverter)
☐ UL approval cURus ☐ CCC approval





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Thermal power limit

The permissible gearbox permanent power is restricted by:

- ▶ The mechanical power, defined by the material strength of the individual components or
- ▶ The thermal power limit, defined by the heat balance

The thermal power limit may be lower than the mechanical power rating indicated in the selection tables.

The thermal power limit is affected by:

- ▶ The churning losses associated with the lubricant. These are determined by the mounting position and circumferential speed of the gear.
- ▶ The load and the speed
- ▶ The ambient conditions: Temperature, air circulation, heat input or dissipation via shafts and the substructure.

Please consult the Lenze sales office

- ▶ If you are using the following gearbox type, size and ratio combinations at input speed $n_1 > 1500$ rpm

Gearbox type	Gearbox size	Ratios $i <$
GKK	06	17.5
	07	

...or if the input speeds n_1 listed are exceeded:

Mounting position	Motor frame size	
	063...100	112
A, B	4000 rpm	3000 rpm
C, D	3000 rpm	1500 rpm

Possible ways of extending the application area

What to do	
Increase the permissible temperature range of the gearbox	▶ Synthetic lubricant (option) ▶ Shaft sealing rings made from FP material/Viton (option)
Reduce the power loss	▶ Synthetic lubricant (option) ▶ Reduce the amount of lubricant used
Increase in heat dissipation	▶ Possibility of air convection on the machine/system ▶ Fan cooling (for example, motor blower) ▶ Oil cooling

When selecting a motor, the operating mode plays a significant role. For example, a motor will not heat up as much during short-time duty as it will during continuous duty and so a smaller motor size can be selected. Operating modes S1 to S8 to EN 60034 apply. The motor can be operated in operating modes other than S1 subject to increased power.

Continuous operation S1

The operating time at rated power is long enough for the machine to reach steady-state temperature. The motor operates continuously at rated power.

Short-term operation S2

In comparison with the subsequent pause, the operating time is too short for the machine to reach steady-state temperature. During the subsequent lengthy pause, the motor cools down to the initial temperature.

Intermittent operation S3, S4, S5

Cycles of the same type combine to form a sequence.

The cycle time is usually 10 minutes.

- ▶ S3: The starting current is not significant for the temperature rise of the motor.
- ▶ S4: The starting current contributes to the temperature rise of the motor
- ▶ S5: The starting current and braking current contribute to the temperature rise of the motor

Continuous operation periodic duty S6

With S6 continuous operation periodic duty, the motor continues to be ventilated during idle phases and cools down as a result.

Uninterrupted operation with acceleration and braking S7

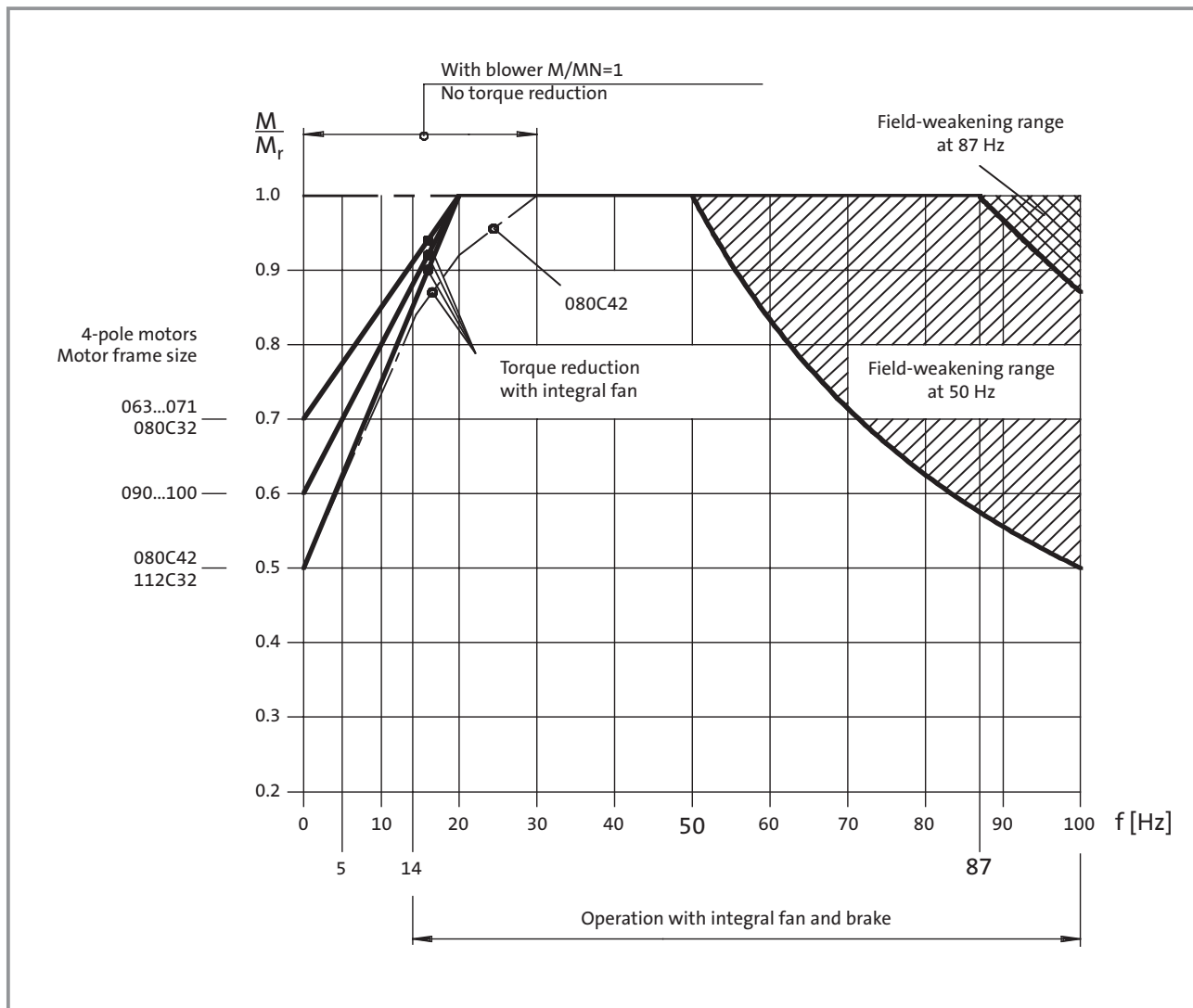
The motor runs almost without pauses.

Uninterrupted operation S8 with pole-changing

The machine runs constantly under load but with frequent speed variation.



Torque reduction depending on motor frame size taking into account the thermal behaviour when operated with a frequency inverter.

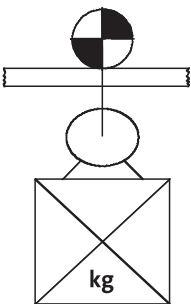
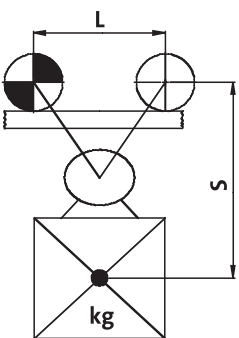
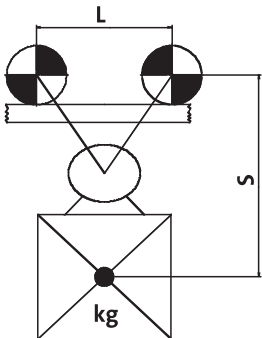
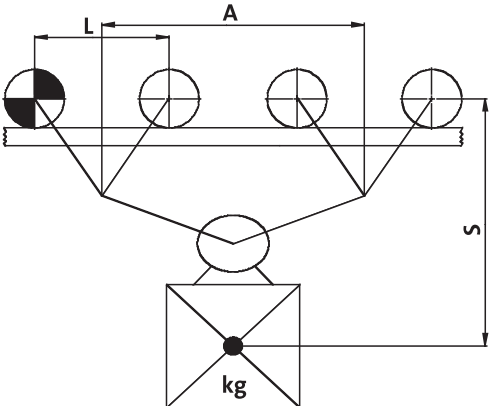
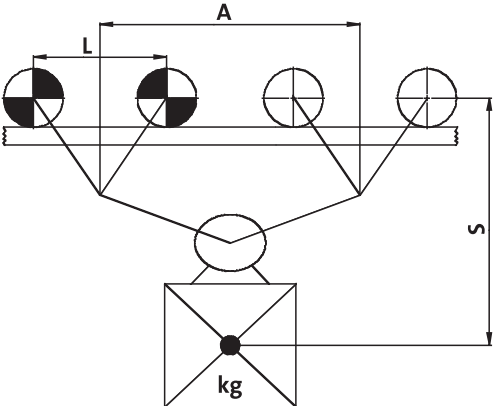


Our service

Lenze is happy to help you with the drive dimensioning process. If required, your local Lenze sales office will dimension an optimum monorail overhead conveyor on your behalf.

In order to carry out the drive dimensioning process, we need the following data in respect of the required input variables.

Carriage designs

1 running gear unit - 1 driven wheel	
	
2 running gear units - 1 driven wheel	2 running gear units - 2 driven wheels ¹⁾
	
4 running gear units - 1 driven wheel	4 running gear units - 2 driven wheels ¹⁾
	

¹⁾ With these carriage designs, the drive wheels may be subject to different speeds during a cornering phase. This can lead to higher torque requirements in respect of the drives.



General data			
Operating time/day		=	_____ [h]
Ambient temperature		T_{amb} =	_____ [°C]
Operating mode	(S1), S2, S3, S6	S	_____
	S3, S6	OT =	_____ [%]
	S2	OT =	_____ [min]
Installation height above mean sea level		h =	_____ [m]
Air humidity		=	_____ [%]
Carriage designs			
☐ 1 running gear unit - 1 driven wheel ☐ 2 running gear units - 1 driven wheel ☐ 2 running gear units - 2 driven wheels			
☐ 4 running gear units - 1 driven wheel ☐ 4 running gear units - 2 driven wheels			
Carriage dimensions			
Distance S	load centre of gravity – centre of running gear	=	_____ [m]
Distance L	running gear units	=	_____ [m]
Distance A	swivel joint (only with 4 running wheels)	=	_____ [m]
Running track data			
Minimum curve radius		=	_____ [m]
Angle of smallest curve		=	_____ [°]
Angle of largest upward slope		α_s =	_____ [°]
	Height difference involved	=	_____ [m]
Angle of largest downward slope		=	_____ [°]
	Height difference involved	=	_____ [m]
Running gear			
Running gear diameter	(Preferred sizes: 125, 150, 160, 200, 220, 250, 300 mm)	d =	_____ [m]
Material (Material used for contact with running track)	☐ Steel ☐ Vulkolan ($f_{roll} = 0.2 \text{ N/kg}$) ☐ Miscellaneous _____		
Rolling friction resistance		f_{roll} =	_____ [N/kg]

Drive dimensioning

Required input variables

Masses		
Maximum transport load		$m_T =$ _____ [kg]
Overall weight, carriage		$m_F =$ _____ [kg]
Overall weight of mass in motion	$m_b = m_T + m_F$	$m_b =$ _____ [kg]
Mass acting on the driven shaft of the gearbox		$m_G =$ _____ [kg]
Travelling velocities (on load/off load)		
Horizontal travelling velocity		$v_1 =$ _____ [m/s]
Horizontal cam travelling velocity		$v_2 =$ _____ [m/s]
Travelling velocity on upward/downward slope		$v_3 =$ _____ [m/s]
Maximum travelling velocity	$v = \max(v_1; v_2; v_3)$	$v =$ _____ [m/s]
Acceleration/deceleration values		
Gravitational acceleration		$g = 9.81$ [m/s ²]
Maximum acceleration	(if necessary, specify individually for different travel ranges)	$a =$ _____ [m/s ²]
Maximum deceleration	(if necessary, specify individually for different travel ranges)	$=$ _____ [m/s ²]
Acceleration time		$t =$ _____ [s]
Brakes		
Maximum deceleration with operation of a frequency inverter	(if necessary, specify individually for different travel ranges)	$=$ _____ [m/s ²]
Positioning accuracy		$=$ _____ [mm]
Maximum braking distance for emergency stop		$=$ _____ [mm]



Radial forces	
Additional radial forces for torque calculation	
Example: Traction mode	$F_{add1} = \text{_____} [\text{N}]$
Example: Pressure on running gear exerted by tensioning unit	$F_{add2} = \text{_____} [\text{N}]$
Frequency-controlled geared motor Maximum torques/runtime	
Short-time maximum torque	Emergency-off, quick stop, occasional high starting duty $M_{L\max} = \text{_____} [\text{Nm}]$
Runtime at maximum torque	$t_L = \text{_____} [\%]$
Mains-operated geared motor Moments of inertia/switching operations	
Moment of inertia of load on driven shaft of the gearbox	$J_L = \text{_____} [\text{kgm}^2]$
Switching operations per hour	$= \text{_____}$
Mechanical clutch operation	
☐ Manual	☐ Via actuators similar mechanical devices
Number of switching operations per hour	$= \text{_____}$
Special designs	
Products supplied according to standards/regulation: _____ _____	
Geared motor designs and options	
As far as you are able, please specify the designs and options you require. The "fax order form" pages (see under General information) should help in this respect.	

Drive dimensioning

Dimensioning an overhead monorail conveyor drive

Calculation of process requirement values		
Torque resulting from height difference (upward slope)	$M_S = m_b \cdot g \cdot \sin \alpha_s \cdot \frac{d}{2}$	$M_S = \underline{\hspace{2cm}}$ [Nm]
Rolling frictional torque	$M_{roll} = m_b \cdot f_{roll} \cdot \frac{d}{2}$	$M_{roll} = \underline{\hspace{2cm}}$ [Nm]
Additional torque (Example: Traction mode)	$M_{add} = F_{add1} \cdot \frac{d}{2}$	$M_{add} = \underline{\hspace{2cm}}$ [Nm]
Acceleration	$a = \frac{v}{t}$	$a = \underline{\hspace{2cm}}$ [m/s ²]
Acceleration torque	$M_a = m_b \cdot a \cdot \frac{d}{2}$	$M_a = \underline{\hspace{2cm}}$ [Nm]
► Please contact us if special requirements are applicable in respect of the acceleration phase. ► Your local Lenze sales office will be happy to help you with the drive dimensioning process.		
Load torque $M_L = M_S + M_{roll} + M_{add} + M_a$	M_L	$= \underline{\hspace{2cm}}$ [Nm]
Load speed	$n_L = \frac{v}{h \cdot d}$	$n_L = \underline{\hspace{2cm}}$ [rpm]
Required power	$P = \frac{M_L \cdot n_L}{9550 \cdot h}$	$P = \underline{\hspace{2cm}}$ [kW]
Radial forces present		
► Please contact us if axial forces occur		
As a result of mass acting on the driven shaft of the gearbox	$F_M = m_G \cdot g$	$F_M = \underline{\hspace{2cm}}$ [Nm]
As a result of load torque	$F_L = \frac{M_L \cdot 2}{d}$	$F_L = \underline{\hspace{2cm}}$ [Nm]
Radial force	$F_r = F_M + F_L + F_{add1} + F_{add2}$	$F_r = \underline{\hspace{2cm}}$ [m/s ²]
Define gearbox design		
Gearbox type		= GKK
Mounting position	A, B, C, D	= <u> </u>
Output design	VAR, VAL, VAN	
	VCR, VCL, VCN	= <u> </u>
Drive design		= M
Cooling type	Naturally ventilated/forced-ventilated	= <u> </u>
► Product key → Front fold-out page ► Drive dimensioning chapter → Gearbox designs/motor designs		



Specify power correction factors						
Specify the power correction factor k_L (guide values) according to the operating mode						
S1 k_L	OT [min]	S2 k_L	OT [%]	S3 k_L	OT [%]	S6 k_L
1.0	10	1.4 - 1.5	15	1.4 - 1.5	15	1.5 - 1.6
	30	1.15 - 1.2	25	1.3 - 1.4	25	1.4 - 1.5
	60	1.07 - 1.1	40	1.15 - 1.2	40	1.3 - 1.4
	90	1.0 - 1.05	60	1.05 - 1.1	60	1.15 - 1.2
$k_L =$ _____						
Specify the power correction factor k_h (guide values) according to the installation height above sea level						
h [m]	≤ 1000		2000		3000	4000
k_h	1		0.95		0.90	0.85
$k_h =$ _____						
Specify the power correction factor k_{amb} (guide values) according to the ambient temperature						
T_{amb} [°C]	≤ 40		45		50	55
k_{amb}	1		0.95		0.90	0.85
$k_{amb} =$ _____						
Select and check geared motor						
	Check				preselection	
Drive power	$P_1 \geq \frac{P}{k_h \cdot k_L \cdot k_u}$				$P_1 =$ _____ [kW]	
Output torque					$M_2 =$ _____ [Nm]	
Without alternating load	$M_2 \geq M_L$					
With alternating load	$M_2 \geq M_L \cdot 1.4$					
Output speed	$n_2 \geq n_L$				$n_2 =$ _____ [rpm]	
Ratio					$i =$ _____	
Load capacity of the geared motor					$c =$ _____	
Radial force	$F_r \leq F_{rperm} = \min(f_w \cdot f_\alpha \cdot F_{rTab} \cdot f_w \cdot F_{rmax})$					
► $P_1, M_2, n_2, c, i \rightarrow$ Selection tables ► $f_w, f_\alpha, F_{rTab}, F_{rmax} \rightarrow$ Technical data $\rightarrow$ Permissible radial forces						

Determining the required gearbox load capacity for mains operation

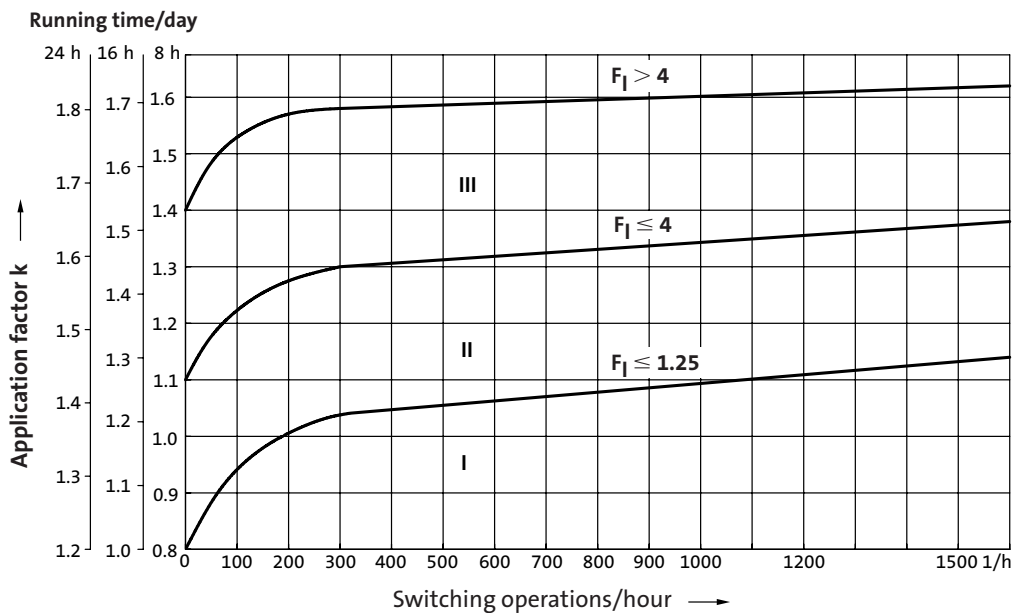
Moment of inertia of the load reduced to the motor shaft $J_{ext} = \frac{J_L}{i_2^2}$ $J_{ext} = \underline{\hspace{2cm}}$ [kgm²]

Intensity $F_I = \frac{J_{ext} + J_{mot}}{J_{mot}}$ $F_I = \underline{\hspace{2cm}}$

→ J_{mot} → Motors, Technical data → Rated data

Duty class	Duty type	Intensity
I	Smooth running, minor or negligible shocks	$F_I \leq 1.25$
II	Irregular running, average shocks	$1.25 < F_I \leq 4$
III	Irregular running, major shocks and/or alternating load	$F_I > 4$

Use the diagram to determine the application factor k of the machine
Interpolation permissible between curves



Application factor

$k = \underline{\hspace{2cm}}$

Load capacity

Check
 $c \geq k$



Determining the required gearbox load capacity when operated with a frequency inverter

Intensity $M_I = \frac{M_{Lmax}}{M_2}$ $M_I =$ _____		
↓		
With runtime $t_L > 10\%$, take intensity M_I from the calculation into account With runtime $t_L \leq 10\%$, take application factor k from the diagram into account		
↓		
Use the diagram to determine the application factor k of the machine Interpolation permissible between curves		
↓		
Application factor k		
↓		
Application factor	$k =$ _____	
Load capacity Check $t_L > 10\% \rightarrow c \geq M_I$ $t_L \leq 10\% \rightarrow c \geq k$ $c =$ _____		
↓		
Specify geared motors		
→ → General information → Fax order form		

General data

		GKK
Housing	Design	Cuboid
	Material	Cast iron
Solid shaft	Design	With keyway to DIN 6885
	Tolerance	k_6
	Material	Tempering steel 42CrMo4
Toothed parts	Design	Optimised tooth flanks and profile geometry Ground tooth flanks
	Material	Case hardened steel 20MnCr5
Shaft/hub connection		1st stage/2nd stage: friction-locked
Shaft sealing rings	Design	With or without dust lip
	Material	NBR/FP (Viton)
Bearings	Design	Ball bearing/tapered-roller bearing depending on size and design
Lubricants	Design	In accordance with DIN 51502
	Quantities	Depending on mounting position, see operating instructions
Mechanical efficiency	At rated-torque	$0.92 \leq \eta \leq 0.97$
Noise		Does not exceed the emission values specified in VDI Guideline 2159



Basic designs

Gearbox type	Gearbox size	No. of stages	Drive design	Output design					Possible combinations Housing and flange	Lubricants		Paint colour		
				Shafts [mm]	Housing		Flange [mm]			Mineral CLP 460	Synthetic CLP PG 460	Paint RAL 7012 (basalt grey)	Grey primer	
				Solid shaft	Foot mounting with centring and threaded pitch circle	With centring and threaded pitch circle	Without flange	With round flange (threaded holes)						With square flange (through holes)
Product key			V	A	C	R	L	N						
GKK	04	2	M	20x35	Feet in position 2+4 Centring + pitch circle in position 3+5	Centring and pitch circle in position 5	●			AR CR	●	●	●	
	05	2		25x35			●			AR CR	●			
	06	2		35x70			●	250	203	AR AL AN CR CL CN	●			
	07	2		45x90 55x110			●	250	203	AR AL AN CR CL CN	●			

Options

				Shafts [mm]			Lubricants	Paint colour
				2nd solid shaft end Shaft in position 8 (3+5)	Shaft sealing rings Viton (FP)			
Product key				V				
GKK	04	2	M	20x35	●	●	●	●
	05	2		25x35				
	06	2		35x70				
	07	2		45x90 55x110			● ¹⁾	

1) Torque reduction required: $M_{2\text{ perm}} = M_2 \cdot 0.8$

Lubricants

Lenze gearboxes and geared motors are supplied ready-filled with lubricant which has been specially selected in accordance with the drive and design.

For ordering purposes, the mounting position and design are the key factors involved in determining the lubricant quantity. The lubricants listed in the lubricant table are approved for use with Lenze drives.

Lubricant table

Manufacturer	Ambient temperature			DIN 51517-3: CLP ISO 12925-1: CKC/CKD		Designation
	-50	0°C	+50			
 Shell	0		+40		CLP VG 460	Omala 460
	-20		+40		CLP PG VG 460	Klübersynth GH 6-460
	-20				+40 CLP HC VG 220	Klüberoil 4 UH1-220 N

CLP = Mineral oil

CLP PG = Polyglycol oil (cannot be mixed with other types of oil)

CLP HC = Synthetic hydrocarbons or poly-alpha-olefin oil. If this type of oil is used with GKK 07, the permissible torques must be reduced to 80% of the catalogue values.



= Oils approved for use in the food processing industry (approval to USDA-H1)

Please contact us if ambient temperatures < -20°C or > 40°C apply



General data

Standards	The motors meet the requirements of applicable DIN and IEC standards. CE conformance with the Low-Voltage Directive Optional UL approval in accordance with cURus
Operating mode	Designed for operating mode S1 (continuous operation with constant loading at rated power)
Enclosure	IP55
Temperature class (EN 60034)	Insulation system to temperature class F Utilisation to temperature class B
Insulation resistance	Maximum voltage amplitude $\hat{U} = 1.5 \text{ kV}$ Maximum rate of voltage rise $du/dt = 5 \text{ kV}/\mu\text{s}$
Temperature monitoring	Thermal detector (NC contact)
Temperature range	-20...+40°C
Installation height	Up to 1000 m above mean sea level without power reduction
Terminal box	Motor connection via terminal board, Rectifier for brake can be integrated into terminal box
Bearing	Deep-groove ball bearing with 2 covers

Basic designs

Designs	063C12 063C32 063C42	071C32 071C42	080C32 080C42	090C32	100C12 100C32	112C22 112C32
Mech. integrated in Lenze gearbox	●	●	●	●	●	●
Cooling Integral fan	●	●	●	●	●	●
Enclosure IP55	●	●	●	●	●	●
Motor protection Temperature class F	●	●	●	●	●	●
Thermal detector: Thermal contact (NC contact)	●	●	●	●	●	●
Motor connection Terminal box	●	●	●	●	●	●

Options

Designs	Motor frame size					
	063C12 063C32 063C42	071C32 071C42	080C32 080C42	090C32	100C12 100C32	112C22 112C32
Cooling Blower	●	●	●	●	●	●
Motor protection PTC thermistor thermal detector	PTC	PTC	PTC	PTC	PTC	PTC
Continuous thermal detector	KTY	KTY	KTY	KTY	KTY	KTY
Motor connection Terminal box with HAN 10E connector ²⁾	● ●	●	●	●	●	●
Spring-operated brake Mains or DC connection	●	●	●	●	●	●
Adjustable/non-adjustable	●	●	●	●	●	●
Low noise	●	●	●	●	●	●
Additional options						
UL/CSA approval: cURus	●	●	●	●	●	●
CCC approval	●	●	●			

²⁾ Observe permissible rated current of connector.

Possible combinations for options

Possible combinations	Motor frame size					
	063C12 063C32 063C42	071C32 071C42	080C32 080C42	090C32	100C12 100C32	112C22 112C32
Integral fan	●	●	●	●	●	●
Integral fan with brake	●	●	●	●	●	●
Blower	●	●	●	●	●	●
Blower with brake	●	●	●	●	●	●



Configuration aid

Option		Function	Possible applications
Cooling	Blower	Enables operation at rated torque at low speeds	► Large setting range for operation at rated torque
Motor protection	Thermal contact NC contact	Protects the motor against thermal overload	► Monitoring of motor temperature pattern ► Switching a motor relay
	Thermal detector PTC thermistor/PTC	Protects the motor against thermal overload	► PTCs operate in conjunction with a tripping unit ► In contrast to thermal contact, rapid restarting is possible
	Continuous thermal detector KTY	Protects the motor against thermal overload	► Measuring the temperature of the motor winding
Motor connection	HAN 10E connector	For connecting the geared motor via a connector	► Quick and easy motor replacement or disassembly
Holding systems	Spring-applied brake	Brakes the motor	► Decelerating and holding loads ► Braking torque available at zero current



Bevel gearbox with clutch | G-motion EHB

Technical data

Permissible radial forces on output side	3-2
Weights	3-5

Selection tables

Key to selection tables	3-7
Geared motors for 50/60 Hz	3-8
Frequency-controlled geared motors (working point at 50 Hz)	3-11
Frequency-controlled geared motors (working point at 87 Hz)	3-15

Dimensions

Geared motors	3-20
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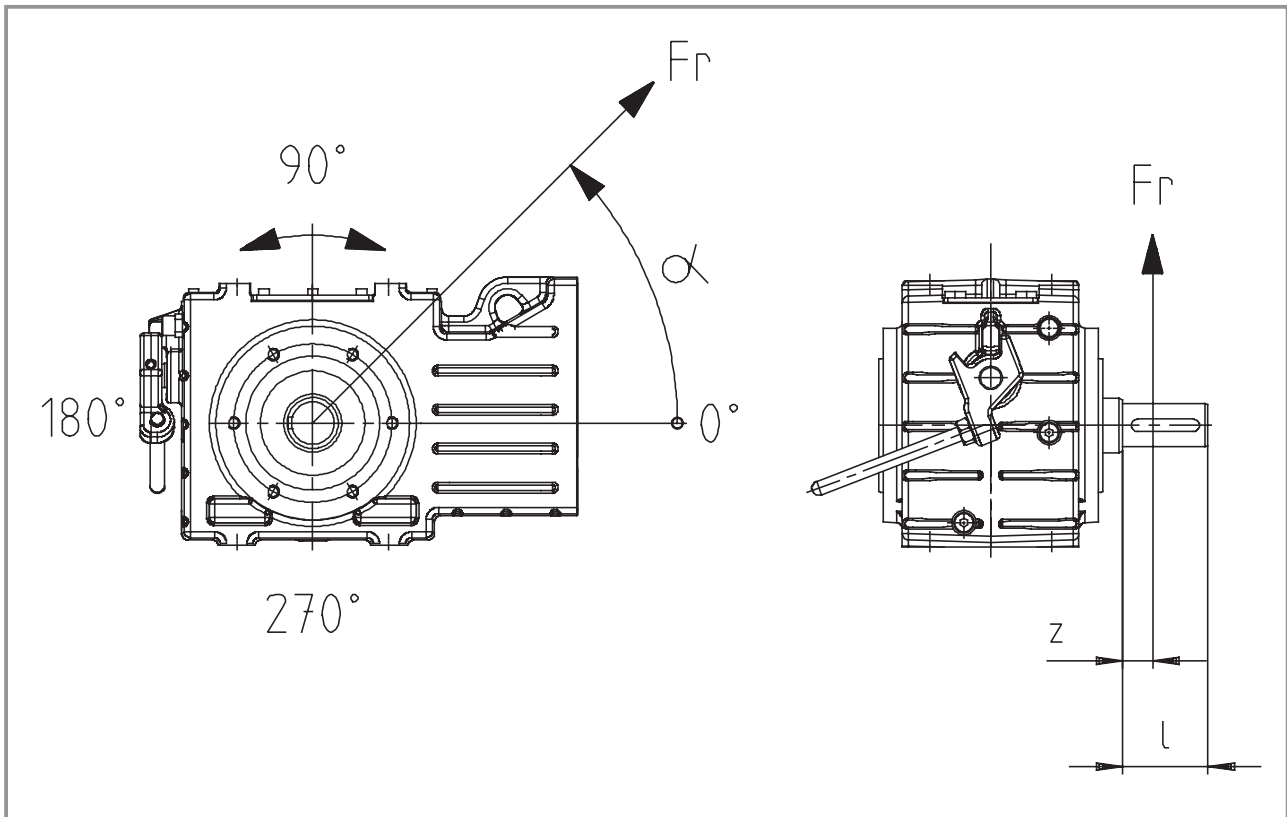


Bevel gearbox with clutch

Technical data

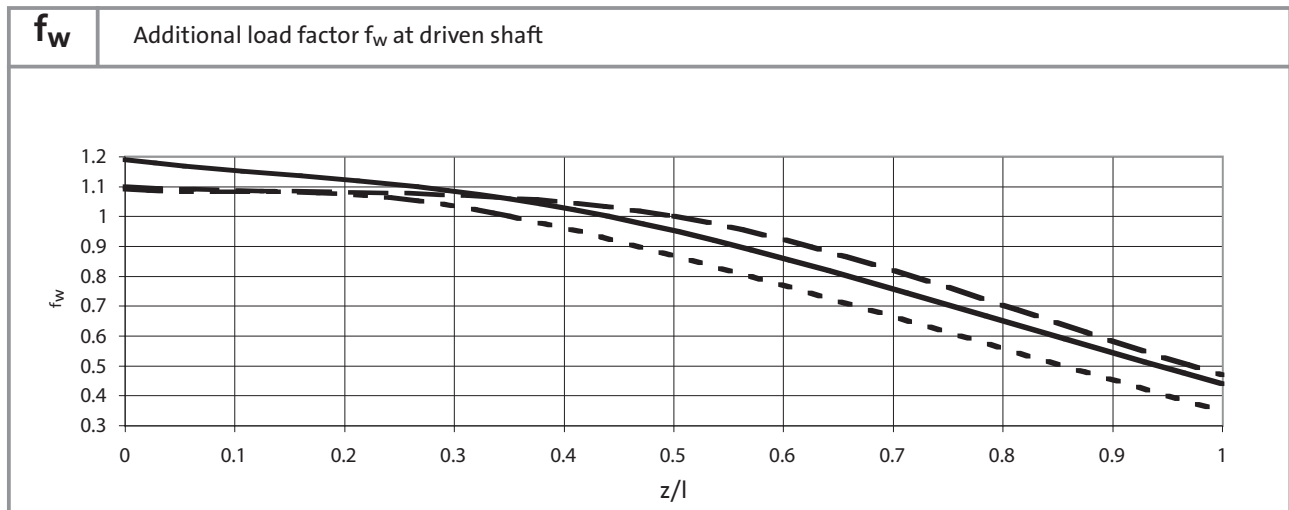
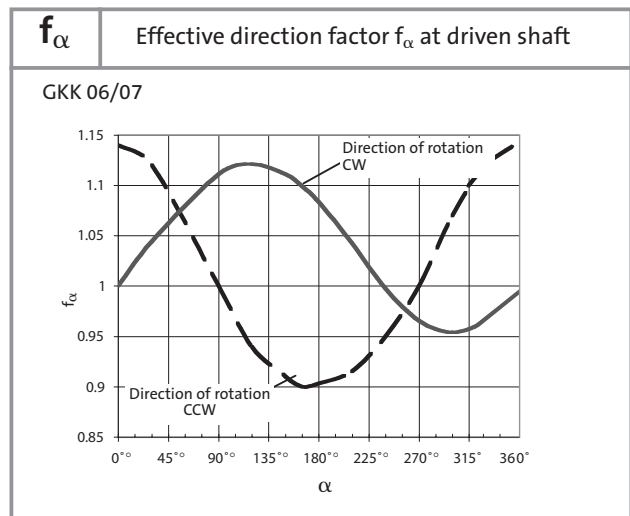
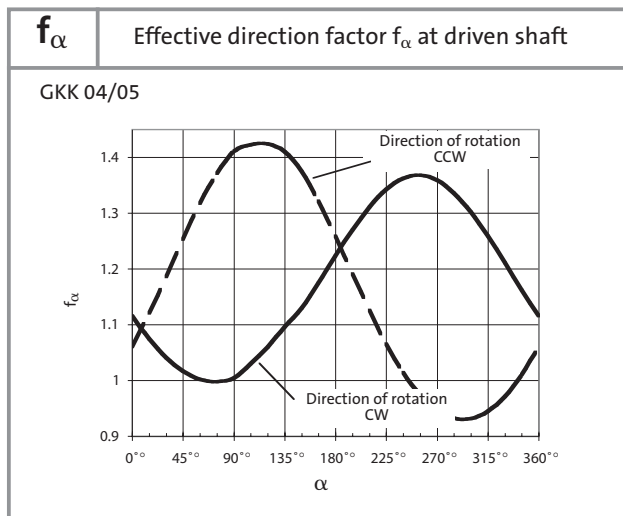
Permissible radial forces on output side

$$F_{r \text{ perm}} \leq \min (f_w \cdot f_\alpha \cdot F_{r \text{ Tab}}; f_w \cdot F_{r \text{ max}})$$





Permissible radial forces on output side



Geared motor	Shaft $\varnothing d$ [mm]	Key
GKK04-2M V□□	20	— — —
GKK05-2M V□□	25	— — —
GKK06-2M V□□	35	— — —
GKK07-2M V□R	45	— — —
	55	— — —
GKK07-2M V□L	45	— — —
	55	— — —
GKK07-2M V□N	45/55	— — —



Bevel gearbox with clutch

Technical data

Permissible radial forces on output side

VOR	Solid shaft without flange				
	GKK 04	GKK 05*	GKK 06**	GKK 07**	
				Shaft Ø 45 mm	Shaft Ø 55 mm
n ₂ [rpm]	Application of force F _r : Distance from flange system to centre of running gear (see dimensional drawings) where α = 90°				
	49.5 mm	49.5 mm	44.5 mm	49.5 mm	64.5 mm
	F _{r Tab} [N]	F _{r Tab} [N]	F _{r Tab} [N]	F _{a Tab} [N]	F _{r Tab} [N]
400	5600	7300	12500	20000	19000
250	5600	8600	14500	23500	22000
160	5600	10000	17000	25000	25500
100	5600	10000	20000	25000	29500
63	5600	10000	20000	25000	34500
40	5600	10000	20000	25000	36000
25	5600	10000	20000	25000	36000
≤ 16	5600	10000	20000	25000	36000
F _{r max}	5600	10000	20000	25000	36000

* Values for VAR design, foot mounting position 4 only.

** Does not apply to VAR design

VCL	Solid shaft with round flange				
	GKK 04	GKK 05	GKK 06	GKK 07	
				Shaft Ø 45 mm	Shaft Ø 55 mm
n ₂ [rpm]	Application of force F _r : Distance from flange system to centre of running gear (see dimensional drawings) where α = 90°				
	49.5 mm	49.5 mm	65.5 mm	75 mm	90 mm
	F _{r Tab} [N]	F _{r Tab} [N]	F _{r Tab} [N]	F _{a Tab} [N]	F _{r Tab} [N]
400			20000	23000	22000
250			20000	25000	25500
160			20000	25000	29000
100			20000	25000	33500
63			20000	25000	36000
40			20000	25000	36000
25			20000	25000	36000
≤ 16			20000	25000	36000
F _{r max}			20000	25000	36000

VCN	Solid shaft with square flange				
	GKK 04	GKK 05	GKK 06	GKK 07	
				Shaft Ø 45 mm	Shaft Ø 55 mm
n ₂ [rpm]	Application of force F _r : Distance from flange system to centre of running gear (see dimensional drawings) where α = 90°				
	49.5 mm	49.5 mm	101.5 mm	108.5 mm	108.5 mm
	F _{r Tab} [N]	F _{r Tab} [N]	F _{r Tab} [N]	F _{a Tab} [N]	F _{r Tab} [N]
400			20000	25000	25000
250			20000	25000	29000
160			20000	25000	33500
100			20000	25000	36000
63			20000	25000	36000
40			20000	25000	36000
25			20000	25000	36000
≤ 16			20000	25000	36000
F _{r max}			20000	25000	36000

Please contact your local Lenze sales office if you require information about a design other than those listed here.



Weights

Gearbox size	Motor frame size					
	63	71	80	90	100	112
GKK 04	15	17	22			
GKK 05	21	23	28	34		
GKK 06	51	53	58	64	71	
GKK 07			88	94	101	115

Weights in [kg] with oil capacity for mounting position A. All data is approximate



Bevel gearbox with clutch

Key to selection tables



Motor cooling with blower										i	Bevel geared motor
Motor cooling with integral fan											
5 Hz		14 Hz		20 - 87 Hz				100 Hz			
n ₂	M ₂	n ₂	M ₂	n ₂	n ₂	M ₂	c	n ₂	M ₂		
[rpm]	[Nm]	[rpm]	[Nm]	20 Hz [rpm]	87 Hz [rpm]	[Nm]	87 Hz	[rpm]	[Nm]		
P ₁ = 0.21 kW											
10	8	45	5	68	329	8	4.5	379	5	7.716	GKK04 - 2M □□□ 080C12
5	11	23	9.8	35	167	11	4.6	193	10	15.156	GKK04 - 2M □□□ 080C12
4	14	18	12.6	27	130	14	3.9	150	12	19.519	GKK04 - 2M □□□ 080C12
2	30	8	26	13	82	30	1.7	72	26	40.841	GKK04 - 2M □□□ 080C12

Geared motor type

Motor power at nominal working point
(87 Hz – 400 V)

Output torque
(Dependent on U_{min} boost and slip compensation)

Output speed
(Dependent on U_{min} boost and slip compensation)



Bevel gearbox with clutch

Selection tables

Geared motors for 50/60 Hz mains operation

50 Hz			60 Hz			i	Bevel geared motor
n_2 [rpm]	M_2 [Nm]	c	n_2 [rpm]	M_2 [Nm]	c		
$P_1 = 0.12$ kW			$P_1 = 0.145$ kW				
$n_1 = 1425$ rpm			$n_1 = 1725$ rpm				
185	6	5.4	224	6	5.1	7.716	GKK04 - 2M □□□ 063C12
94	11	5.5	114	11	5.5	15.156	GKK04 - 2M □□□ 063C12
73	14	4.6	88	14	4.6	19.519	GKK04 - 2M □□□ 063C12
35	30	1.7	42	30	1.7	40.841	GKK04 - 2M □□□ 063C12
$P_1 = 0.18$ kW			$P_1 = 0.22$ kW				
$n_1 = 1365$ rpm			$n_1 = 1665$ rpm				
177	9	3.4	216	9	3.3	7.716	GKK04 - 2M □□□ 063C32
90	17	3.5	110	17	3.5	15.156	GKK04 - 2M □□□ 063C32
70	22	2.9	85	22	2.9	19.519	GKK04 - 2M □□□ 063C32
33	46	1.1	41	46	1.1	40.841	GKK04 - 2M □□□ 063C32
$P_1 = 0.25$ kW			$P_1 = 0.31$ kW				
$n_1 = 1370$ rpm			$n_1 = 1670$ rpm				
178	12	5.2	216	12	5.0	7.716	GKK04 - 2M □□□ 063C42
111	20	5.2	135	20	5.0	12.381	GKK05 - 2M □□□ 063C42
90	24	2.9	110	24	2.9	15.156	GKK04 - 2M □□□ 063C42
70	31	2.3	86	31	2.3	19.519	GKK04 - 2M □□□ 063C42
69	31	4.3	85	31	4.3	19.741	GKK05 - 2M □□□ 063C42
56	39	3.7	68	39	3.7	24.556	GKK05 - 2M □□□ 063C42
36	61	2.6	43	61	2.6	38.567	GKK05 - 2M □□□ 063C42
25	86	3.2	31	86	3.2	54.513	GKK06 - 2M □□□ 063C42
$P_1 = 0.37$ kW			$P_1 = 0.45$ kW				
$n_1 = 1410$ rpm			$n_1 = 1710$ rpm				
183	17	3.9	222	17	3.8	7.716	GKK04 - 2M □□□ 071C32
114	28	4.5	138	28	4.3	12.381	GKK05 - 2M □□□ 071C32
93	34	2.0	113	34	2.0	15.156	GKK04 - 2M □□□ 071C32
72	44	1.6	88	44	1.6	19.519	GKK04 - 2M □□□ 071C32
71	45	3.7	87	45	3.7	19.741	GKK05 - 2M □□□ 071C32
57	56	3.2	70	56	3.2	24.556	GKK05 - 2M □□□ 071C32
37	87	1.8	44	87	1.8	38.567	GKK05 - 2M □□□ 071C32
26	123	2.8	31	123	2.8	54.513	GKK06 - 2M □□□ 071C32
$P_1 = 0.55$ kW			$P_1 = 0.68$ kW				
$n_1 = 1405$ rpm			$n_1 = 1705$ rpm				
182	26	2.6	221	26	2.5	7.716	GKK04 - 2M □□□ 071C42
114	42	3.8	138	42	3.6	12.381	GKK05 - 2M □□□ 071C42
93	51	1.4	113	51	1.4	15.156	GKK04 - 2M □□□ 071C42
80	59	4.5	97	59	4.5	17.500	GKK06 - 2M □□□ 071C42
72	66	1.1	87	66	1.1	19.519	GKK04 - 2M □□□ 071C42
71	67	2.7	86	67	2.7	19.741	GKK05 - 2M □□□ 071C42
57	83	2.3	69	83	2.3	24.556	GKK05 - 2M □□□ 071C42
50	94	3.7	61	94	3.7	27.903	GKK06 - 2M □□□ 071C42
41	117	3.2	49	117	3.2	34.708	GKK06 - 2M □□□ 071C42
36	130	1.2	44	130	1.2	38.567	GKK05 - 2M □□□ 071C42
26	184	2.4	31	184	2.4	54.513	GKK06 - 2M □□□ 071C42

Bevel gearbox with clutch

Selection tables



Geared motors for 50/60 Hz mains operation

50 Hz			60 Hz			i	Bevel geared motor
n_2 [rpm]	M_2 [Nm]	c	n_2 [rpm]	M_2 [Nm]	c		
$P_1 = 0.75 \text{ kW}$			$P_1 = 0.92 \text{ kW}$				
$n_1 = 1410 \text{ rpm}$			$n_1 = 1710 \text{ rpm}$				
183	35	1.9	222	35	1.9	7.716	GKK04 - 2M □□□ 080C32
114	57	2.8	138	57	2.7	12.381	GKK05 - 2M □□□ 080C32
93	70	1.0	113	70	1.0	15.156	GKK04 - 2M □□□ 080C32
81	80	4.1	98	80	4.1	17.500	GKK06 - 2M □□□ 080C32
72	90	0.8	88	90	0.8	19.519	GKK04 - 2M □□□ 080C32
71	91	2.0	87	91	2.0	19.741	GKK05 - 2M □□□ 080C32
57	113	1.7	70	113	1.7	24.556	GKK05 - 2M □□□ 080C32
51	128	3.4	61	128	3.4	27.903	GKK06 - 2M □□□ 080C32
41	159	2.9	49	159	2.9	34.708	GKK06 - 2M □□□ 080C32
37	177	0.9	44	177	0.9	38.567	GKK05 - 2M □□□ 080C32
26	250	2.0	31	250	2.0	54.513	GKK06 - 2M □□□ 080C32
16	398	2.0	20	398	2.0	86.786	GKK07 - 2M □□□ 080C32
$P_1 = 1.1 \text{ kW}$			$P_1 = 1.3 \text{ kW}$				
$n_1 = 1390 \text{ rpm}$			$n_1 = 1690 \text{ rpm}$				
112	84	1.9	137	84	1.8	12.381	GKK05 - 2M □□□ 080C42
79	119	4.0	97	119	4.0	17.500	GKK06 - 2M □□□ 080C42
70	135	1.3	86	135	1.3	19.741	GKK05 - 2M □□□ 080C42
57	168	1.2	69	168	1.2	24.556	GKK05 - 2M □□□ 080C42
50	190	2.8	61	190	2.8	27.903	GKK06 - 2M □□□ 080C42
40	237	2.3	49	237	2.3	34.708	GKK06 - 2M □□□ 080C42
32	294	3.1	39	294	3.1	43.071	GKK07 - 2M □□□ 080C42
26	372	1.3	31	372	1.3	54.513	GKK06 - 2M □□□ 080C42
16	592	1.4	20	592	1.4	86.786	GKK07 - 2M □□□ 080C42
$P_1 = 1.5 \text{ kW}$			$P_1 = 1.8 \text{ kW}$				
$n_1 = 1395 \text{ rpm}$			$n_1 = 1695 \text{ rpm}$				
112	115	1.4	137	115	1.3	12.381	GKK05 - 2M □□□ 090C32
79	163	2.9	97	163	2.9	17.500	GKK06 - 2M □□□ 090C32
70	184	1.0	86	184	1.0	19.741	GKK05 - 2M □□□ 090C32
57	228	0.9	69	228	0.9	24.556	GKK05 - 2M □□□ 090C32
50	260	2.1	61	260	2.1	27.903	GKK06 - 2M □□□ 090C32
40	323	1.7	49	323	1.7	34.708	GKK06 - 2M □□□ 090C32
32	401	2.4	39	401	2.4	43.071	GKK07 - 2M □□□ 090C32
26	507	1.0	31	507	1.0	54.513	GKK06 - 2M □□□ 090C32
16	807	1.2	20	807	1.2	86.786	GKK07 - 2M □□□ 090C32
$P_1 = 2.2 \text{ kW}$			$P_1 = 2.6 \text{ kW}$				
$n_1 = 1440 \text{ rpm}$			$n_1 = 1740 \text{ rpm}$				
93	203	3.6	113	203	3.6	15.429	GKK07 - 2M □□□ 100C12
82	230	2.1	99	230	2.1	17.500	GKK06 - 2M □□□ 100C12
52	367	1.5	62	367	1.5	27.903	GKK06 - 2M □□□ 100C12
53	356	2.7	64	356	2.7	27.000	GKK07 - 2M □□□ 100C12
42	457	1.2	50	457	1.2	34.708	GKK06 - 2M □□□ 100C12
33	567	1.7	40	567	1.7	43.071	GKK07 - 2M □□□ 100C12



Bevel gearbox with clutch

Selection tables

Geared motors for 50/60 Hz mains operation

50 Hz			60 Hz			i	Bevel geared motor
n_2 [rpm]	M_2 [Nm]	c	n_2 [rpm]	M_2 [Nm]	c		
$P_1 = 3 \text{ kW}$			$P_1 = 3.6 \text{ kW}$				
		$n_1 = 1430 \text{ rpm}$			$n_1 = 1730 \text{ rpm}$		
93	279	2.6	112	279	2.6	15.429	GKK07 - 2M □□□ 100C32
82	316	1.5	99	316	1.5	17.500	GKK06 - 2M □□□ 100C32
51	505	1.1	62	505	1.1	27.903	GKK06 - 2M □□□ 100C32
53	488	2.0	64	488	2.0	27.000	GKK07 - 2M □□□ 100C32
41	628	0.9	50	628	0.9	34.708	GKK06 - 2M □□□ 100C32
33	779	1.2	40	779	1.2	43.071	GKK07 - 2M □□□ 100C32
$P_1 = 4 \text{ kW}$			$P_1 = 4.8 \text{ kW}$				
		$n_1 = 1450 \text{ rpm}$			$n_1 = 1750 \text{ rpm}$		
94	367	2.0	113	367	2.0	15.429	GKK07 - 2M □□□ 112C22
54	642	1.5	65	642	1.5	27.000	GKK07 - 2M □□□ 112C22
34	1024	0.9	41	1024	0.9	43.071	GKK07 - 2M □□□ 112C22
$P_1 = 5.5 \text{ kW}$			$P_1 = 6.6 \text{ kW}$				
		$n_1 = 1445 \text{ rpm}$			$n_1 = 1745 \text{ rpm}$		
94	506	1.4	113	506	1.4	15.429	GKK07 - 2M □□□ 112C32
54	886	1.1	65	886	1.1	27.000	GKK07 - 2M □□□ 112C32



Frequency-controlled geared motors (working point at 50 Hz)

Motor cooling with blower								i	Bevel geared motor		
Motor cooling with integral fan											
5 Hz		14 Hz		20 - 50 Hz						70 Hz	
n ₂	M ₂	n ₂	M ₂	n ₂	n ₂	M ₂	c			n ₂	M ₂
[rpm]	[Nm]	[rpm]	[Nm]	20 Hz [rpm]	50 Hz [rpm]	[Nm]	50 Hz	[rpm]	[Nm]		
P ₁ = 0.12 kW											
18	6	52	5	74	185	6	5.4	262	4	7.716	GKK04 - 2M □□□ 063C12
9	11	26	9.8	38	94	11	5.5	134	8	15.156	GKK04 - 2M □□□ 063C12
7	14	20	12.6	29	73	14	4.6	104	10	19.519	GKK04 - 2M □□□ 063C12
3	30	10	26	14	35	30	1.7	50	21	40.841	GKK04 - 2M □□□ 063C12
P ₁ = 0.18 kW											
18	9	50	7.8	71	177	9	3.4	255	6	7.716	GKK04 - 2M □□□ 063C32
9	17	25	15.3	36	90	17	3.5	130	12	15.156	GKK04 - 2M □□□ 063C32
7	22	20	20	28	70	22	2.9	101	16	19.519	GKK04 - 2M □□□ 063C32
3	46	9	41	13	33	46	1.1	48	33	40.841	GKK04 - 2M □□□ 063C32
P ₁ = 0.25 kW											
18	12	50	10.8	71	178	12	5.2	255	9	7.716	GKK04 - 2M □□□ 063C42
11	20	31	17	44	111	20	5.2	159	14	12.381	GKK05 - 2M □□□ 063C42
9	24	25	21	36	90	24	2.9	130	17	15.156	GKK04 - 2M □□□ 063C42
7	31	20	27	28	70	31	2.3	101	22	19.519	GKK04 - 2M □□□ 063C42
7	31	19	28	28	69	31	4.3	99	22	19.741	GKK05 - 2M □□□ 063C42
6	39	16	34	22	56	39	3.7	80	28	24.556	GKK05 - 2M □□□ 063C42
4	61	10	54	14	36	61	2.6	51	43	38.567	GKK05 - 2M □□□ 063C42
3	86	7	76	10	25	86	3.2	36	61	54.513	GKK06 - 2M □□□ 063C42
P ₁ = 0.37 kW											
18	17	51	16	73	183	17	3.9	260	12	7.716	GKK04 - 2M □□□ 071C32
11	28	32	25	46	114	28	4.5	162	20	12.381	GKK05 - 2M □□□ 071C32
9	34	26	31	37	93	34	2.0	133	24	15.156	GKK04 - 2M □□□ 071C32
7	44	20	39	29	72	44	1.6	103	32	19.519	GKK04 - 2M □□□ 071C32
7	45	20	40	28	71	45	3.7	101	32	19.741	GKK05 - 2M □□□ 071C32
6	56	16	49	23	57	56	3.2	82	40	24.556	GKK05 - 2M □□□ 071C32
4	87	10	78	15	37	87	1.8	52	62	38.567	GKK05 - 2M □□□ 071C32
3	123	7	110	10	26	123	2.8	37	88	54.513	GKK06 - 2M □□□ 071C32
P ₁ = 0.55 kW											
18	26	51	23	73	182	26	2.6	260	19	7.716	GKK04 - 2M □□□ 071C42
11	42	32	37	45	114	42	3.8	162	30	12.381	GKK05 - 2M □□□ 071C42
9	51	26	46	37	93	51	1.4	132	37	15.156	GKK04 - 2M □□□ 071C42
8	59	22	53	32	80	59	4.5	115	42	17.500	GKK06 - 2M □□□ 071C42
7	66	20	59	29	72	66	1.1	103	47	19.519	GKK04 - 2M □□□ 071C42
7	67	20	59	28	71	67	2.7	102	48	19.741	GKK05 - 2M □□□ 071C42
6	83	16	74	23	57	83	2.3	82	59	24.556	GKK05 - 2M □□□ 071C42
5	94	14	84	20	50	94	3.7	72	67	27.903	GKK06 - 2M □□□ 071C42
4	117	11	104	16	41	117	3.2	58	84	34.708	GKK06 - 2M □□□ 071C42
4	130	10	116	15	36	130	1.2	52	93	38.567	GKK05 - 2M □□□ 071C42
3	184	7	164	10	26	184	2.4	37	131	54.513	GKK06 - 2M □□□ 071C42



Bevel gearbox with clutch

Selection tables

Frequency-controlled geared motors (working point at 50 Hz)

Motor cooling with blower								i	Bevel geared motor		
Motor cooling with integral fan											
5 Hz		14 Hz		20 - 50 Hz						70 Hz	
n ₂	M ₂	n ₂	M ₂	n ₂	n ₂	M ₂	c	n ₂	M ₂	i	Bevel geared motor
[rpm]	[Nm]	[rpm]	[Nm]	20 Hz [rpm]	50 Hz [rpm]	[Nm]	50 Hz	[rpm]	[Nm]		
P ₁ = 0.75 kW											
18	35	51	31	73	183	35	1.9	260	25	7.716	GKK04 - 2M □□□ 080C32
11	57	32	51	46	114	57	2.8	162	41	12.381	GKK05 - 2M □□□ 080C32
9	70	26	62	37	93	70	1.0	133	50	15.156	GKK04 - 2M □□□ 080C32
8	80	23	71	32	81	80	4.1	115	57	17.500	GKK06 - 2M □□□ 080C32
7	90	20	80	29	72	90	0.8	103	64	19.519	GKK04 - 2M □□□ 080C32
7	91	20	81	29	71	91	2.0	102	65	19.741	GKK05 - 2M □□□ 080C32
6	113	16	100	23	57	113	1.7	82	80	24.556	GKK05 - 2M □□□ 080C32
5	128	14	114	20	51	128	3.4	72	91	27.903	GKK06 - 2M □□□ 080C32
4	159	11	142	16	41	159	2.9	58	114	34.708	GKK06 - 2M □□□ 080C32
4	177	10	157	15	37	177	0.9	52	126	38.567	GKK05 - 2M □□□ 080C32
3	250	7	222	10	26	250	2.0	37	178	54.513	GKK06 - 2M □□□ 080C32
2	398	5	354	6	16	398	2.0	23	284	86.786	GKK07 - 2M □□□ 080C32



Frequency-controlled geared motors (working point at 50 Hz)

Motor cooling with blower										i	Bevel geared motor
Motor cooling with integral fan											
5 Hz		14 Hz		30 - 50 Hz				70 Hz			
n ₂	M ₂	n ₂	M ₂	n ₂	n ₂	M ₂	c	n ₂	M ₂	i	Bevel geared motor
[rpm]	[Nm]	[rpm]	[Nm]	30 Hz [rpm]	50 Hz [rpm]	[Nm]	50 Hz	[rpm]	[Nm]		
P ₁ = 1.1 kW											
11	84	31	71	67	112	84	1.9	161	60	12.381	GKK05 - 2M □□□ 080C42
8	119	22	100	48	79	119	4.0	114	85	17.500	GKK06 - 2M □□□ 080C42
7	135	20	113	42	70	135	1.3	101	96	19.741	GKK05 - 2M □□□ 080C42
6	168	16	141	34	57	168	1.2	81	120	24.556	GKK05 - 2M □□□ 080C42
5	190	14	160	30	50	190	2.8	71	136	27.903	GKK06 - 2M □□□ 080C42
4	237	11	199	24	40	237	2.3	57	169	34.708	GKK06 - 2M □□□ 080C42
3	294	9	247	19	32	294	3.1	46	210	43.071	GKK07 - 2M □□□ 080C42
3	372	7	312	15	26	372	1.3	37	266	54.513	GKK06 - 2M □□□ 080C42
2	592	4	497	10	16	592	1.4	23	423	86.786	GKK07 - 2M □□□ 080C42

Note: Torque reduction < 30 Hz (see Page 2-5)



Bevel gearbox with clutch

Selection tables

Frequency-controlled geared motors (working point at 50 Hz)

Motor cooling with blower								i	Bevel geared motor		
Motor cooling with integral fan											
5 Hz		14 Hz		20 - 50 Hz						70 Hz	
n ₂	M ₂	n ₂	M ₂	n ₂	n ₂	M ₂	c	n ₂	M ₂	i	Bevel geared motor
[rpm]	[Nm]	[rpm]	[Nm]	20 Hz [rpm]	50 Hz [rpm]	[Nm]	50 Hz	[rpm]	[Nm]		
P ₁ = 1.5 kW											
11	115	31	102	45	112	115	1.4	161	82	12.381	GKK05 - 2M □□□ 090C32
8	163	22	145	32	79	163	2.9	114	116	17.500	GKK06 - 2M □□□ 090C32
7	184	20	163	28	70	184	1.0	101	131	19.741	GKK05 - 2M □□□ 090C32
6	228	16	203	23	57	228	0.9	81	163	24.556	GKK05 - 2M □□□ 090C32
5	260	14	231	20	50	260	2.1	71	185	27.903	GKK06 - 2M □□□ 090C32
4	323	11	287	16	40	323	1.7	57	231	34.708	GKK06 - 2M □□□ 090C32
3	401	9	357	13	32	401	2.4	46	286	43.071	GKK07 - 2M □□□ 090C32
3	507	7	451	10	26	507	1.0	37	362	54.513	GKK06 - 2M □□□ 090C32
2	807	4	718	6	16	807	1.2	23	577	86.786	GKK07 - 2M □□□ 090C32
P ₁ = 2.2 kW											
9	203	26	181	37	93	203	3.6	132	145	15.429	GKK07 - 2M □□□ 100C12
8	230	23	205	33	82	230	2.1	117	165	17.500	GKK06 - 2M □□□ 100C12
5	367	14	327	21	52	367	1.5	73	262	27.903	GKK06 - 2M □□□ 100C12
5	356	15	316	21	53	356	2.7	76	254	27.000	GKK07 - 2M □□□ 100C12
4	457	12	407	17	42	457	1.2	59	326	34.708	GKK06 - 2M □□□ 100C12
3	567	9	505	13	33	567	1.7	47	405	43.071	GKK07 - 2M □□□ 100C12
P ₁ = 3.0 kW											
9	279	26	248	37	93	279	2.6	132	199	15.429	GKK07 - 2M □□□ 100C32
8	316	23	282	33	82	316	1.5	116	226	17.500	GKK06 - 2M □□□ 100C32
5	505	14	449	20	51	505	1.1	73	360	27.903	GKK06 - 2M □□□ 100C32
5	488	15	434	21	53	488	2.0	75	349	27.000	GKK07 - 2M □□□ 100C32
4	628	12	559	16	41	628	0.9	58	448	34.708	GKK06 - 2M □□□ 100C32
3	779	9	693	13	33	779	1.2	47	556	43.071	GKK07 - 2M □□□ 100C32
P ₁ = 4.0 kW											
9	367	26	315	38	94	367	2.0	133	262	15.429	GKK07 - 2M □□□ 112C22
5	642	15	552	21	54	642	1.5	76	459	27.000	GKK07 - 2M □□□ 112C22
3	1024	9	881	13	34	1024	0.9	48	731	43.071	GKK07 - 2M □□□ 112C22
P ₁ = 5.5 kW											
9	506	26	435	37	94	506	1.4	133	362	15.429	GKK07 - 2M □□□ 112C32
5	886	15	762	21	54	886	1.1	76	633	27.000	GKK07 - 2M □□□ 112C32



Frequency-controlled geared motors (working point at 87 Hz)

Motor cooling with blower								i	Bevel geared motor		
Motor cooling with integral fan											
5 Hz		14 Hz		20 - 87 Hz						100 Hz	
n ₂	M ₂	n ₂	M ₂	n ₂	n ₂	M ₂	c			n ₂	M ₂
[rpm]	[Nm]	[rpm]	[Nm]	20 Hz [rpm]	87 Hz [rpm]	[Nm]	87 Hz	[rpm]	[Nm]		
P ₁ = 0.21 kW											
18	6	52	5	74	329	6	4.5	379	5	7.716	GKK04 - 2M □□□ 063C12
9	11	26	9.8	38	167	11	4.6	193	10	15.156	GKK04 - 2M □□□ 063C12
7	14	20	12.6	29	130	14	3.9	150	12	19.519	GKK04 - 2M □□□ 063C12
3	30	10	26	14	62	30	1.7	72	26	40.841	GKK04 - 2M □□□ 063C12
P ₁ = 0.33 kW											
18	9	50	7.8	71	321	9	2.9	371	8	7.716	GKK04 - 2M □□□ 063C32
9	17	25	15.3	36	163	17	3.0	189	15	15.156	GKK04 - 2M □□□ 063C32
7	22	20	20	28	127	22	2.5	147	19	19.519	GKK04 - 2M □□□ 063C32
3	46	9	41	13	61	46	1.1	70	40	40.841	GKK04 - 2M □□□ 063C32
P ₁ = 0.45 kW											
18	12	50	10.8	71	321	12	4.4	372	11	7.716	GKK04 - 2M □□□ 063C42
11	20	31	17	44	200	20	4.4	232	17	12.381	GKK05 - 2M □□□ 063C42
9	24	25	21	36	164	24	2.5	189	21	15.156	GKK04 - 2M □□□ 063C42
7	31	20	27	28	127	31	1.9	147	27	19.519	GKK04 - 2M □□□ 063C42
7	31	19	28	28	126	31	3.6	146	27	19.741	GKK05 - 2M □□□ 063C42
6	39	16	34	22	101	39	3.1	117	33	24.556	GKK05 - 2M □□□ 063C42
4	61	10	54	14	64	61	2.6	74	52	38.567	GKK05 - 2M □□□ 063C42
3	86	7	76	10	46	86	3.2	53	74	54.513	GKK06 - 2M □□□ 063C42
P ₁ = 0.66 kW											
18	17	51	16	73	327	17	3.3	377	15	7.716	GKK04 - 2M □□□ 071C32
11	28	32	25	46	204	28	3.8	235	24	12.381	GKK05 - 2M □□□ 071C32
9	34	26	31	37	166	34	1.7	192	30	15.156	GKK04 - 2M □□□ 071C32
7	44	20	39	29	129	44	1.3	149	38	19.519	GKK04 - 2M □□□ 071C32
7	45	20	40	28	128	45	3.2	148	39	19.741	GKK05 - 2M □□□ 071C32
6	56	16	49	23	103	56	2.7	118	48	24.556	GKK05 - 2M □□□ 071C32
4	87	10	78	15	65	87	1.8	75	76	38.567	GKK05 - 2M □□□ 071C32
3	123	7	110	10	46	123	2.8	53	107	54.513	GKK06 - 2M □□□ 071C32
P ₁ = 1.0 kW											
18	26	51	23	73	326	26	2.2	377	23	7.716	GKK04 - 2M □□□ 071C42
11	42	32	37	45	203	42	3.2	235	36	12.381	GKK05 - 2M □□□ 071C42
9	51	26	46	37	166	51	1.2	192	44	15.156	GKK04 - 2M □□□ 071C42
8	59	22	53	32	144	59	3.8	166	51	17.500	GKK06 - 2M □□□ 071C42
7	66	20	59	29	129	66	0.9	149	57	19.519	GKK04 - 2M □□□ 071C42
7	67	20	59	28	127	67	2.3	147	58	19.741	GKK05 - 2M □□□ 071C42
6	83	16	74	23	102	83	2.0	118	72	24.556	GKK05 - 2M □□□ 071C42
5	94	14	84	20	90	94	3.2	104	82	27.903	GKK06 - 2M □□□ 071C42
4	117	11	104	16	73	117	2.7	84	101	34.708	GKK06 - 2M □□□ 071C42
4	130	10	116	15	65	130	1.2	75	113	38.567	GKK05 - 2M □□□ 071C42
3	184	7	164	10	46	184	2.4	53	159	54.513	GKK06 - 2M □□□ 071C42



Bevel gearbox with clutch

Selection tables

Frequency-controlled geared motors (working point at 87 Hz)

Motor cooling with blower								i	Bevel geared motor		
Motor cooling with integral fan											
5 Hz		14 Hz		20 - 87 Hz						100 Hz	
n ₂	M ₂	n ₂	M ₂	n ₂	n ₂	M ₂	c	n ₂	M ₂	i	Bevel geared motor
[rpm]	[Nm]	[rpm]	[Nm]	20 Hz [rpm]	87 Hz [rpm]	[Nm]	87 Hz	[rpm]	[Nm]		
P ₁ = 1.3 kW											
18	35	51	31	73	327	35	1.6	377	31	7.716	GKK04 - 2M □□□ 080C32
11	57	32	51	46	204	57	2.3	235	49	12.381	GKK05 - 2M □□□ 080C32
9	70	26	62	37	166	70	0.9	192	60	15.156	GKK04 - 2M □□□ 080C32
8	80	23	71	32	144	80	3.5	166	70	17.500	GKK06 - 2M □□□ 080C32
7	90	20	80	29	129	90	0.7	149	78	19.519	GKK04 - 2M □□□ 080C32
7	91	20	81	29	128	91	1.7	147	78	19.741	GKK05 - 2M □□□ 080C32
6	113	16	100	23	103	113	1.5	118	98	24.556	GKK05 - 2M □□□ 080C32
5	128	14	114	20	90	128	2.9	104	111	27.903	GKK06 - 2M □□□ 080C32
4	159	11	142	16	73	159	2.4	84	138	34.708	GKK06 - 2M □□□ 080C32
4	177	10	157	15	65	177	0.9	75	153	38.567	GKK05 - 2M □□□ 080C32
3	250	7	222	10	46	250	2.0	53	216	54.513	GKK06 - 2M □□□ 080C32
2	398	5	354	6	29	398	2.0	33	345	86.786	GKK07 - 2M □□□ 080C32



Frequency-controlled geared motors (working point at 87 Hz)

Motor cooling with blower										i	Bevel geared motor
Motor cooling with integral fan											
5 Hz		14 Hz		30 - 87 Hz							
n ₂	M ₂	n ₂	M ₂	n ₂	n ₂	M ₂	c	n ₂	M ₂		
[rpm]	[Nm]	[rpm]	[Nm]	30 Hz [rpm]	87 Hz [rpm]	[Nm]	87 Hz	[rpm]	[Nm]		
P1 = 2.0 kW											
11	84	31	71	67	202	84	1.6	233	73	12.381	GKK05 - 2M □□□ 080C42
8	119	22	100	48	143	119	3.4	165	103	17.500	GKK06 - 2M □□□ 080C42
7	135	20	113	42	127	135	1.1	146	117	19.741	GKK05 - 2M □□□ 080C42
6	168	16	141	34	102	168	1.0	118	145	24.556	GKK05 - 2M □□□ 080C42
5	190	14	160	30	90	190	2.4	104	165	27.903	GKK06 - 2M □□□ 080C42
4	237	11	199	24	72	237	2.0	83	205	34.708	GKK06 - 2M □□□ 080C42
3	294	9	247	19	58	294	2.6	67	254	43.071	GKK07 - 2M □□□ 080C42
3	372	7	312	15	46	372	1.3	53	322	54.513	GKK06 - 2M □□□ 080C42
2	592	4	497	10	29	592	1.4	33	512	86.786	GKK07 - 2M □□□ 080C42

Note: Torque reduction < 30 Hz (see Page 2-5)



Bevel gearbox with clutch

Selection tables

Frequency-controlled geared motors (working point at 87 Hz)

Motor cooling with blower								i	Bevel geared motor		
Motor cooling with integral fan											
5 Hz		14 Hz		20 - 87 Hz						100 Hz	
n ₂	M ₂	n ₂	M ₂	n ₂	n ₂	M ₂	c	n ₂	M ₂		
[rpm]	[Nm]	[rpm]	[Nm]	20 Hz	87 Hz		87 Hz	[rpm]	[Nm]		
P ₁ = 2.7 kW											
11	115	31	102	45	202	115	1.2	233	100	12.381	GKK05 - 2M □□□ 090C32
8	163	22	145	32	143	163	2.5	165	141	17.500	GKK06 - 2M □□□ 090C32
7	184	20	163	28	127	184	0.8	146	159	19.741	GKK05 - 2M □□□ 090C32
6	228	16	203	23	102	228	0.7	118	198	24.556	GKK05 - 2M □□□ 090C32
5	260	14	231	20	90	260	1.8	104	225	27.903	GKK06 - 2M □□□ 090C32
4	323	11	287	16	72	323	1.4	83	279	34.708	GKK06 - 2M □□□ 090C32
3	401	9	357	13	58	401	2.0	67	347	43.071	GKK07 - 2M □□□ 090C32
3	507	7	451	10	46	507	1.0	53	439	54.513	GKK06 - 2M □□□ 090C32
2	807	4	718	6	29	807	1.2	33	698	86.786	GKK07 - 2M □□□ 090C32
P ₁ = 3.9 kW											
9	203	26	181	37	165	203	3.0	191	176	15.429	GKK07 - 2M □□□ 100C12
8	230	23	205	33	146	230	1.7	168	200	17.500	GKK06 - 2M □□□ 100C12
5	367	14	327	21	91	367	1.2	105	319	27.903	GKK06 - 2M □□□ 100C12
5	356	15	316	21	94	356	2.3	109	308	27.000	GKK07 - 2M □□□ 100C12
4	457	12	407	17	74	457	1.0	85	396	34.708	GKK06 - 2M □□□ 100C12
3	567	9	505	13	59	567	1.4	68	492	43.071	GKK07 - 2M □□□ 100C12
P ₁ = 5.3 kW											
9	279	26	248	37	165	279	2.2	190	242	15.429	GKK07 - 2M □□□ 100C32
8	316	23	282	33	145	316	1.3	167	274	17.500	GKK06 - 2M □□□ 100C32
5	505	14	449	20	91	505	0.9	105	437	27.903	GKK06 - 2M □□□ 100C32
5	488	15	434	21	94	488	1.7	109	423	27.000	GKK07 - 2M □□□ 100C32
4	628	12	559	16	73	628	0.7	84	544	34.708	GKK06 - 2M □□□ 100C32
3	779	9	693	13	59	779	1.0	68	675	43.071	GKK07 - 2M □□□ 100C32
P ₁ = 7.1 kW											
9	367	26	315	38	166	367	1.7	191	318	15.429	GKK07 - 2M □□□ 112C22
5	642	15	552	21	95	642	1.3	109	557	27.000	GKK07 - 2M □□□ 112C22
3	1024	9	881	13	59	1024	0.8	68	889	43.071	GKK07 - 2M □□□ 112C22
P ₁ = 9.7 kW											
9	506	26	435	37	166	506	1.2	191	439	15.429	GKK07 - 2M □□□ 112C32
5	886	15	762	21	95	886	0.9	109	768	27.000	GKK07 - 2M □□□ 112C32

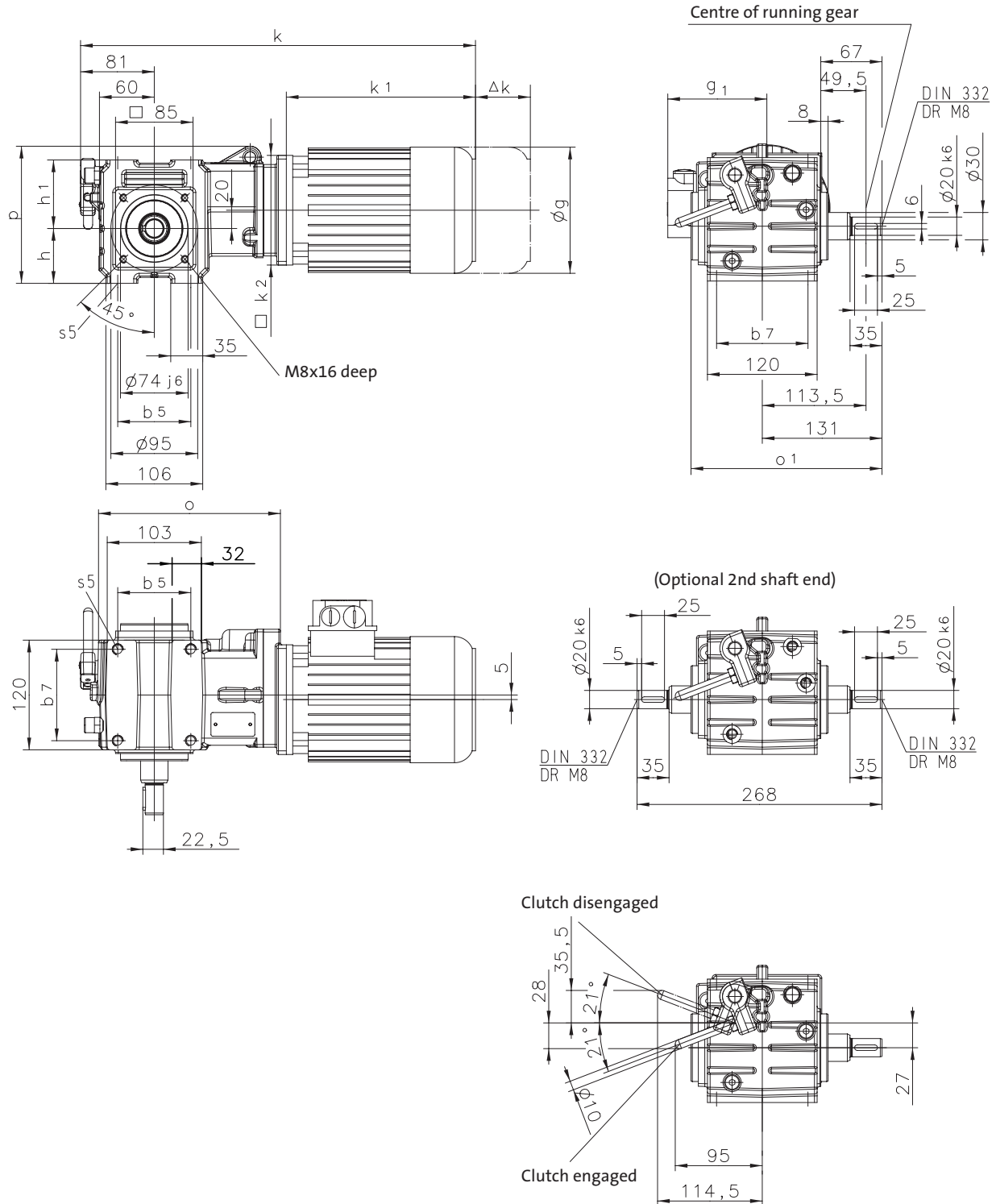


Bevel gearbox with clutch

Dimensions

Geared motors

GKK04 - 2M V□R



Bevel gearbox with clutch

Dimensions



Geared motor		Motor frame size					
GKK04 - 2M V□R		063C12	063C32	063C42	071C32	071C42	080C32
Motor							
g		123			138		156
k ₁	Without options	188			207		225
k ₂		120			120		145
Δ k*	Brake	40			52		73
	Blower	130			128		128
	Brake + blower	170			165		184
Terminal box							
g1	Without options	100			109		141
	Brake motor	107			116		130
	HAN connector	123			132		140
Gearbox							
k		413			432		455
o		198			198		196

Design	Foot					Gearbox	
Output	b ₅	b ₇	h ₁	h	s ₅	o ₁	p
VAR ¹⁾	80	100	75	60	M12x16 deep	209	150
VCR ²⁾			78	63		212	153

* For additional dimensions and options, see Motors Chapter

¹⁾ Threaded pitch circle and centring in position 3+5 (both ends)
2nd shaft end only possible with this design

²⁾ Threaded pitch circle and centring only in position 5 (one end)

Technical drawings of the 2000 series gear motor, showing dimensions in mm.

Front View (Top Left): Shows the motor housing with dimensions: 112, 65, $\phi 113$, 26.7, 23, 118, $\phi 95$, $\phi 74$ j6, b5, 45°, s5, h, h1, k, k_1 , Δk , ϕg , and M8x16 deep.

Side View (Bottom Left): Shows the motor housing with dimensions: 124, 20, 135, 32, b5, 28, 25, and s5.

Detail View (Top Right): Shows the clutch mechanism with dimensions: 91, 67, 49.5, 8, 37, 74, 32°, 17.5°, 14°, 21°, 152, 120, 133.5, 143, 151, o1, 35, 25, 5, 8, $\phi 25$ k6, $\phi 35$, DIN 332 DR M8, and Centre of running gear.

Detail View (Bottom Right): Shows the optional 2nd shaft end with dimensions: 25, 25, 5, 5, $\phi 25$ k6, 35, 302, 35, 5, 5, $\phi 25$ k6, DIN 332 DR M8, and (Optional 2nd shaft end).

Bevel gearbox with clutch

Dimensions



Geared motor		Motor frame size					
GKK05 - 2M V□R		063C42	071C32	071C42	080C32	080C42	090C32
Motor							
g		123	138		156		176
k ₁	Without options	188	207		225		276
k ₂		120	120		145		180
Δ k*	Brake	40	52		73		70
	Blower	130	128		128		127
	Brake + blower	170	165		184		180
Terminal box							
g ₁	Without options	100	109		141		146
	Brake motor	107	116		130		135
	HAN connector	123	132		140		145
Gearbox							
k		464	483		506		567
o		224	224		224		231

Design	Foot					Gearbox	
Output	b ₅	b ₇	h ₁	h	s ₅	o ₁	p
VAR ¹⁾	100	100	75	60	M12x16 deep	243	156
VCR ²⁾			78	63		246	159

* For additional dimensions and options, see Motors Chapter

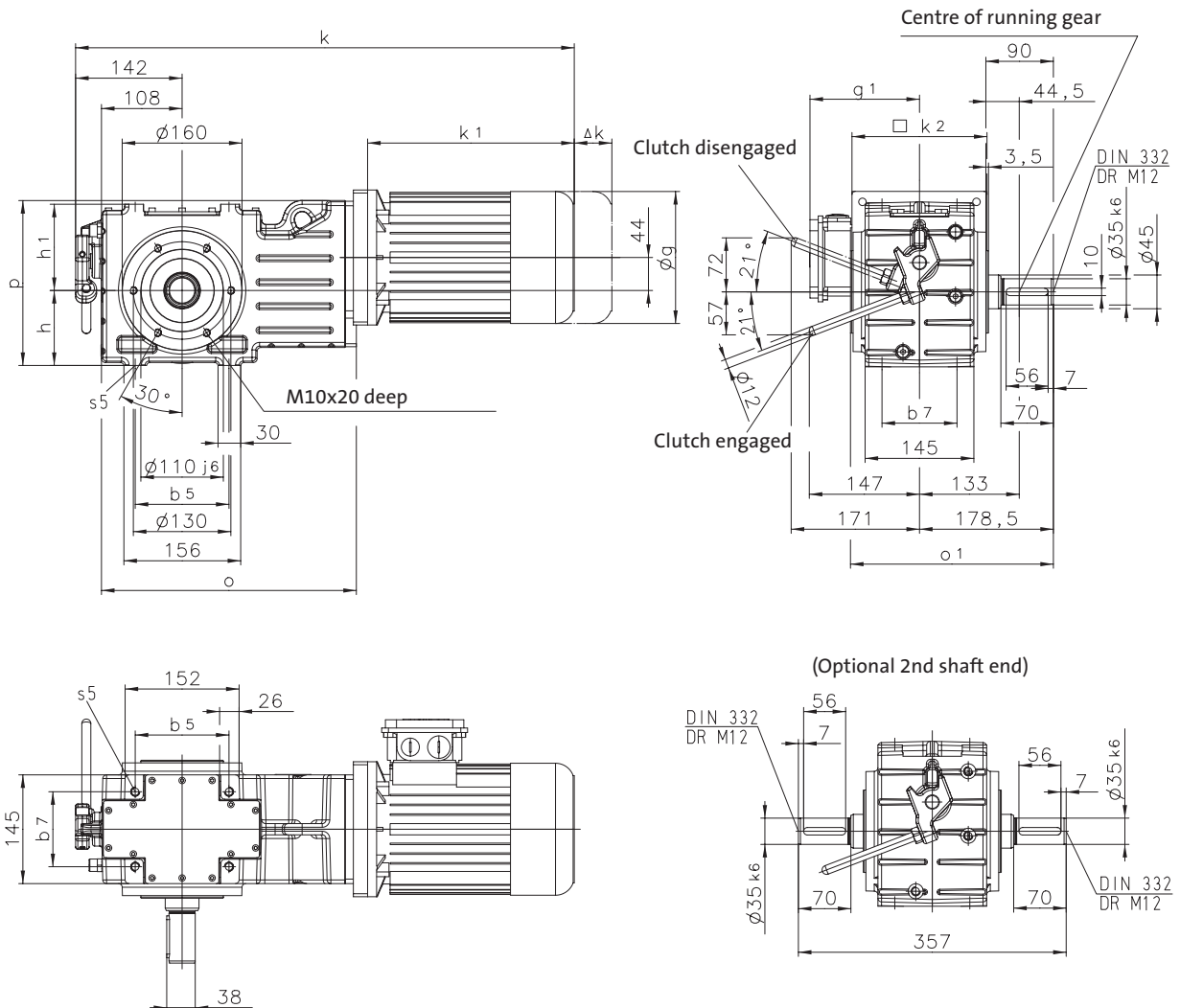
¹⁾ Threaded pitch circle and centring in position 3+5 (both ends)
2nd shaft end only possible with this design

²⁾ Threaded pitch circle and centring only in position 5 (one end)

Bevel gearbox with clutch

Dimensions

GKK06 - 2M V□R



Bevel gearbox with clutch

Dimensions



Geared motor		Motor frame size							
GKK06 - 2M V□R		063C42	071C32	071C42	080C32	080C42	090C32	100C12	100C32
Motor									
g		123	138		156		176	196	
k ₁	Without options	188	207		225		276	309	
k ₂		120	120		145		180	180	
Δ k*	Brake	40	52		73		70	79	
	Blower	130	128		128		127	109	
	Brake + blower	170	165		184		180	170	
Terminal box									
g ¹	Without options	100	109		141		146	157	
	Brake motor	107	116		130		135	146	
	HAN connector	123	132		140		145	156	
Gearbox									
k		562	582		604		665	698	
o		340	340		341		341	341	

Design	Foot					Gearbox	
	b ₅	b ₇	h ₁	h	s ₅	o ₁	p
VAR ¹⁾	125	100	115	100	M12x24 deep	270.5	220
VCR ²⁾			118	103		274	223

* For additional dimensions and options, see Motors Chapter

¹⁾ Threaded pitch circle and centring in position 3+5 (both ends)
2nd shaft end only possible with this design

²⁾ Threaded pitch circle and centring only in position 5 (one end)

[illegible]

Bevel gearbox with clutch

Dimensions



Geared motor		Motor frame size							
GKK06 - 2M V□L		063C42	071C32	071C42	080C32	080C42	090C32	100C12	100C32
Motor									
g		123	138		156		176	196	
k ₁	Without options	188	207		225		276	309	
k ₂		120	120		145		180	180	
Δ k*	Brake	40	52		73		70	79	
	Blower	130	128		128		127	109	
	Brake + blower	170	165		184		180	170	
Terminal box									
g ¹	Without options	100	109		141		146	157	
	Brake motor	107	116		130		135	146	
	HAN connector	123	132		140		145	156	
Gearbox									
k		562	582		604		665	698	
o		340	340		341		341	341	

Design Output	Foot					Gearbox	
	b ₅	b ₇	h ₁	h	s ₅	o ₁	p
VAL	125	100	115	100	M12x24 deep	306.5	220
VCL			118	103		310	223

* For additional dimensions and options, see Motors Chapter



Technical drawings of the R1000 gearbox showing front, side, and clutch engagement/disengagement views with dimensions in mm.

Front View (Top Left):

- Overall width: k
- Mounting flange width: 142
- Flange hole spacing: 108
- Flange hole diameter: $\square 145$
- Shaft diameter: $\phi 17,5$
- Shaft length: k_1
- Shaft diameter: ϕg
- Shaft length: 44
- Shaft diameter: $\phi 160 j_6$
- Shaft length: 156
- Shaft diameter: $\square 203$
- Shaft length: 30
- Shaft diameter: $\phi 160 j_6$
- Shaft length: 156
- Shaft diameter: $\square 203$
- Shaft length: 30
- Shaft diameter: $\phi 160 j_6$
- Shaft length: 156
- Shaft diameter: $\square 203$
- Shaft length: 30

Side View (Top Right):

- Overall width: k
- Mounting flange width: 142
- Flange hole spacing: 108
- Flange hole diameter: $\square 145$
- Shaft diameter: $\phi 17,5$
- Shaft length: k_1
- Shaft diameter: ϕg
- Shaft length: 44
- Shaft diameter: $\phi 160 j_6$
- Shaft length: 156
- Shaft diameter: $\square 203$
- Shaft length: 30
- Shaft diameter: $\phi 160 j_6$
- Shaft length: 156
- Shaft diameter: $\square 203$
- Shaft length: 30
- Shaft diameter: $\phi 160 j_6$
- Shaft length: 156
- Shaft diameter: $\square 203$
- Shaft length: 30

Clutch Engagement/Disengagement View (Bottom):

- Overall width: k
- Mounting flange width: 142
- Flange hole spacing: 108
- Flange hole diameter: $\square 145$
- Shaft diameter: $\phi 17,5$
- Shaft length: k_1
- Shaft diameter: ϕg
- Shaft length: 44
- Shaft diameter: $\phi 160 j_6$
- Shaft length: 156
- Shaft diameter: $\square 203$
- Shaft length: 30
- Shaft diameter: $\phi 160 j_6$
- Shaft length: 156
- Shaft diameter: $\square 203$
- Shaft length: 30
- Shaft diameter: $\phi 160 j_6$
- Shaft length: 156
- Shaft diameter: $\square 203$
- Shaft length: 30

Bevel gearbox with clutch

Dimensions



Geared motor		Motor frame size							
GKK06 - 2M V□N		063C42	071C32	071C42	080C32	080C42	090C32	100C12	100C32
Motor									
g		123	138		156		176	196	
k ₁	Without options	188	207		225		276	309	
k ₂		120	120		145		180	180	
Δ k*	Brake	40	52		73		70	79	
	Blower	130	128		128		127	109	
	Brake + blower	170	165		184		180	170	
Terminal box									
g ¹	Without options	100	109		141		146	157	
	Brake motor	107	116		130		135	146	
	HAN connector	123	132		140		145	156	
Gearbox									
k		562	582		604		665	698	
o		340	340		341		341	341	

Design	Foot					Gearbox	
	b ₅	b ₇	h ₁	h	s ₅	o ₁	p
Output							
VAN	125	100	115	100	M12x24 deep	375	220
VCN			118	103		378	223

* For additional dimensions and options, see Motors Chapter



Bevel gearbox with clutch

Dimensions



Geared motor		Motor frame size						
GKK07 - 2M V□R		080C32	080C42	090C32	100C12	100C32	112C22	112C32
Motor								
g		156	176	196	220			
k ₁ Without options		225	276	309	319	363		
k ₂		145	180	180	222			
Δ k* Brake		73	70	79	90			
Blower		128	127	109	102			
Brake + blower		184	180	170	183			
Terminal box								
g ¹ Without options		141	146	157	167			
Brake motor		130	135	146	156			
HAN connector		140	145	156	166			
Gearbox								
k		634	695	728	744	788		
o		377	380	380	380	380		

Design Output	Solid shaft								Foot					Flange		Gearbox		
	d k ₆	l	l ₁	l ₂	l ₃	t	u	DIN 332 DR M	b ₅	b ₇	h ₁	h	s ₅	i ₁	x	o ₁	o ₂	p
VAR ¹⁾	45	90	5	80	426	48.5	14	16	150	120	120	120	M16x25 deep	99.5	49.5	330	213	243
	55	110	10	90	466	59	16	20						119.5	64.5	350	233	
VCR ²⁾	45	90	5	80	426	48.5	14	16			123	123		99.5	49.5	333	213	246
	55	110	10	90	466	59	16	20						119.5	64.5	353	233	

* For additional dimensions and options, see Motors Chapter

1) Threaded pitch circle and centring in position 3+5 (both ends)

2nd shaft end only possible with this design

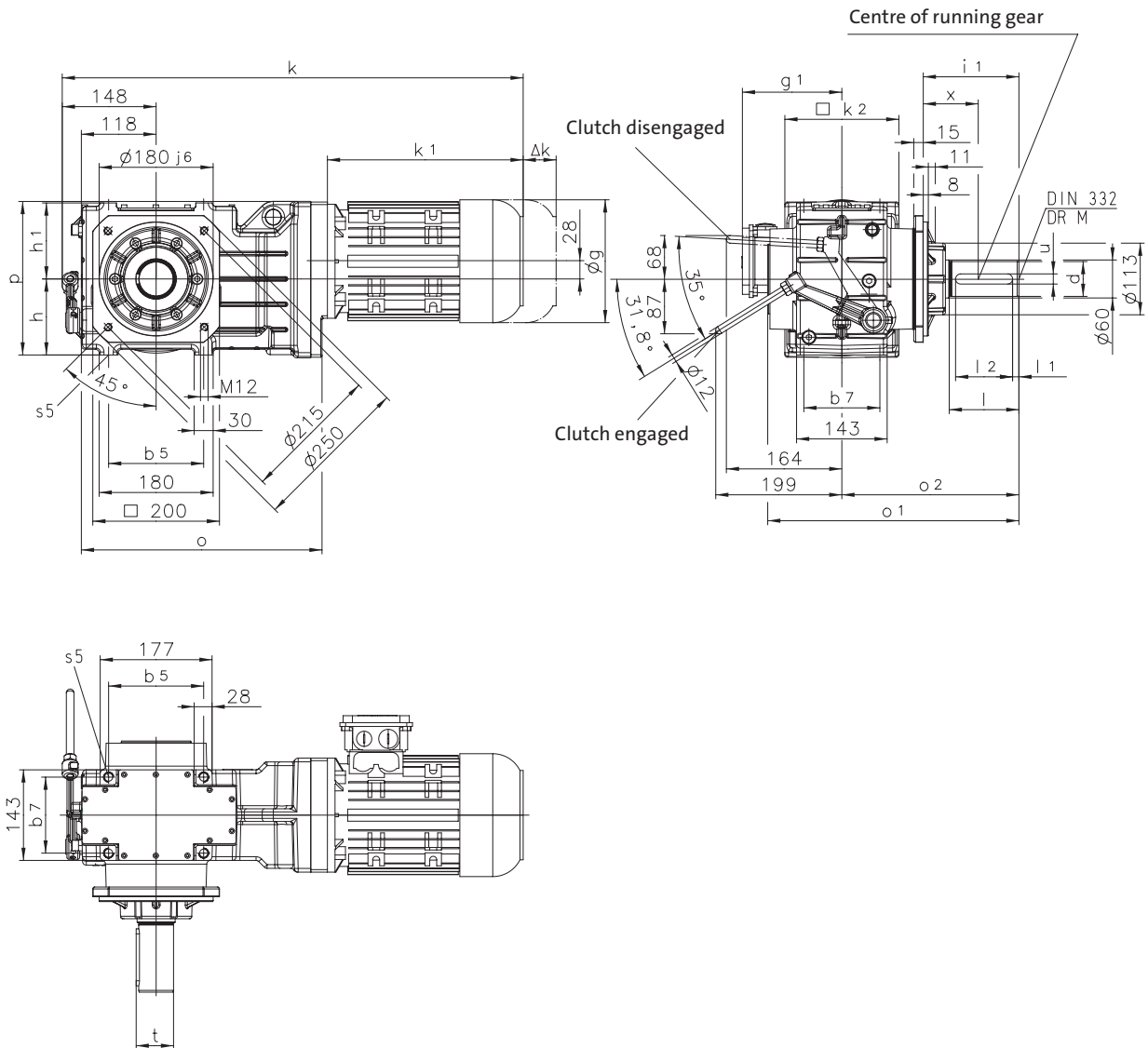
2) Threaded pitch circle and centring only in position 5 (one end)



Bevel gearbox with clutch

Dimensions

GKK07 - 2M V□L



Bevel gearbox with clutch

Dimensions



Geared motor		Motor frame size						
GKK07 - 2M V□L		080C32	080C42	090C32	100C12	100C32	112C22	112C32
Motor								
g		156	176	196	220			
k ₁ Without options		225	276	309	319	363		
k ₂		145	180	180	222			
Δ k* Brake		73	70	79	90			
Blower		128	127	109	102			
Brake + blower		184	180	170	183			
Terminal box								
g ¹ Without options		141	146	157	167			
Brake motor		130	135	146	156			
HAN connector		140	145	156	166			
Gearbox								
k		634	695	728	744	788		
o		377	380	380	380	380		

Design Output	Solid shaft							Foot					Flange		Gearbox		
	d k ₆	l	l ₁	l ₂	t	u	DIN 332 DR M	b ₅	b ₇	h ₁	h	s ₅	i ₁	x	o ₁	o ₂	p
VAL	45	90	5	80	48.5	14	16	150	120	120	120	M16x25 deep	131	75	376.5	259.5	243
	55	110	10	90	59	16	20						151	90	396.5	279.5	
VCL	45	90	5	80	48.5	14	16			123	123		131	75	380	259.5	246
	55	110	10	90	59	16	20						151	90	400	279.5	

* For additional dimensions and options, see Motors Chapter



Technical drawing of a motor with a clutch, showing three views: front, side, and top. The drawing includes detailed dimensions and labels for various components and states.

Front View (Top Left):

- Overall width: k
- Distance from center to mounting flange: 148
- Distance from center to mounting flange: 118
- Mounting flange diameter: $\phi 17,5$
- Distance from center to mounting flange: k_1
- Distance from center to mounting flange: Δk
- Mounting flange thickness: 28
- Mounting flange diameter: ϕg
- Mounting flange diameter: 68
- Mounting flange diameter: 87
- Mounting flange diameter: 31,8
- Mounting flange diameter: 35
- Mounting flange diameter: $\phi 12$
- Mounting flange diameter: 143
- Mounting flange diameter: 164
- Mounting flange diameter: 199
- Mounting flange diameter: o_2
- Mounting flange diameter: o_1
- Mounting flange diameter: o
- Mounting flange diameter: 145
- Mounting flange diameter: b_5
- Mounting flange diameter: $\phi 160 j_6$
- Mounting flange diameter: 180
- Mounting flange diameter: 203
- Mounting flange diameter: s_5
- Mounting flange diameter: 30
- Mounting flange diameter: h_1
- Mounting flange diameter: h
- Mounting flange diameter: p

Side View (Top Right):

- Distance from center to mounting flange: i_1
- Distance from center to mounting flange: x
- Distance from center to mounting flange: 15,5
- Distance from center to mounting flange: 24
- Distance from center to mounting flange: g_1
- Distance from center to mounting flange: k_2
- Distance from center to mounting flange: b_7
- Distance from center to mounting flange: 143
- Distance from center to mounting flange: 164
- Distance from center to mounting flange: 199
- Distance from center to mounting flange: o_2
- Distance from center to mounting flange: o_1
- Distance from center to mounting flange: l_2
- Distance from center to mounting flange: l_1
- Distance from center to mounting flange: l
- Distance from center to mounting flange: d
- Distance from center to mounting flange: $\phi 60$
- Distance from center to mounting flange: $DIN 332$
- Distance from center to mounting flange: $DR M$
- Distance from center to mounting flange: u

Top View (Bottom):

- Distance from center to mounting flange: 177
- Distance from center to mounting flange: 28
- Distance from center to mounting flange: b_5
- Distance from center to mounting flange: s_5
- Distance from center to mounting flange: b_7
- Distance from center to mounting flange: 143
- Distance from center to mounting flange: t

Clutch States:

- Clutch disengaged
- Clutch engaged

Bevel gearbox with clutch

Dimensions



Geared motor		Motor frame size						
GKK07 - 2M V□N		080C32	080C42	090C32	100C12	100C32	112C22	112C32
Motor								
g		156	176	196	220			
k ₁ Without options		225	276	309	319	363		
k ₂		145	180	180	222			
Δ k* Brake		73	70	79	90			
Blower		128	127	109	102			
Brake + blower		184	180	170	183			
Terminal box								
g ¹ Without options		141	146	157	167			
Brake motor		130	135	146	156			
HAN connector		140	145	156	166			
Gearbox								
k		634	695	728	744	788		
o		377	380	380	380	380		

Design Output	Solid shaft							Foot					Flange		Gearbox		
	d k ₆	l	l ₁	l ₂	t	u	DIN 332 DR M	b ₅	b ₇	h ₁	h	s ₅	i ₁	x	o ₁	o ₂	p
VAN	45	90	5	80	48.5	14	16	150	120	120	120	M16x25 deep	167	108.5	445	328	243
	55	110	10	90	59	16	20						187	108.5	465	348	
VCN	45	90	5	80	48.5	14	16			123	123		167	108.5	448	328	246
	55	110	10	90	59	16	20						187	108.5	468	348	

* For additional dimensions and options, see Motors Chapter



Technical data

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Rated data

At 50 Hz

Motor frame size	P _r [kW]	n _r [rpm]	I		I _A /I _r	U ¹⁾		f _r [Hz]	cos φ	h %	M _r [Nm]	M _K [Nm]	M _A [Nm]	J _{mot} [10 ⁻³ kgm ²]	m [kg]
			Y [A]	Δ [A]		Y [V]	Δ [V]								
063C12	0.12	1425	0.49	0.85	3.1	400	230	50	0.56	63	0.80	2.64	2.5	0.33	4.1
063C32	0.18	1365	0.58	1	2.7	400	230	50	0.70	64	1.26	2.61	2.5	0.33	4.1
063C42	0.25	1370	0.82	1.4	2.9	400	230	50	0.67	66	1.74	4.10	3.8	0.37	4.4
071C32	0.37	1410	0.95	1.6	3.3	400	230	50	0.77	73	2.51	5.81	4.8	1.07	5.8
071C42	0.55	1405	1.4	2.4	3.5	400	230	50	0.77	74	3.74	9.12	7.9	1.28	6.4
080C32	0.75	1410	1.9	3.3	4.6	400	230	50	0.80	74	5.10	12.1	11.0	2.6	11
080C42	1.1	1390	2.8	4.8	4.4	400	230	50	0.80	77	7.50	18.4	16.5	2.6	11
090C32	1.5	1395	3.6	6.3	4.8	400	230	50	0.79	79	10.3	27.1	23.7	3.5	17
100C12	2.2	1440	5.3	9.2	6.0	400	230	50	0.73	84	15.0	44.0	38.0	6.1	24
100C32	3	1430	7.2	12.5	4.6	400	230	50	0.75	83	20.5	50.0	43.0	6.1	24
112C22	4	1450	9.3	16.1	6.2	400	230	50	0.73	86	26.4	95.0	70.0	10.7	31
112C32	5.5	1445		12.5	6.1		400*	50	0.77	86	36.6	120	95	13.5	38
			12.5	21.7		400	230								

At 60 Hz

Motor frame size	P _r [kW]	n _r [rpm]	I		I _A /I _r	U ¹⁾		f _r [Hz]	cos φ	η %	M _r [Nm]	M _K [Nm]	M _A [Nm]	J _{mot} [10 ⁻³ kgm ²]	m [kg]
			Y [A]	Δ [A]		Y [V]	Δ [V]								
063C12	0.145	1725	0.49	0.85	3.1	480	277	60	0.56	63	0.80	2.60	2.5	0.33	4.1
063C32	0.22	1665	0.58	1	2.7	480	277	60	0.70	64	1.3	2.60	2.5	0.33	4.1
063C42	0.31	1670	0.82	1.4	2.9	480	277	60	0.67	66	1.8	4.20	3.9	0.37	4.4
071C32	0.45	1710	0.95	1.6	3.3	480	277	60	0.77	73	2.5	5.80	4.8	1.07	5.8
071C42	0.68	1705	1.4	2.4	3.5	480	277	60	0.77	74	3.8	9.30	8.0	1.28	6.4
080C32	0.92	1710	1.9	3.3	5.1	480	277	60	0.80	75	5.1	13.3	11.6	2.60	10.8
080C42	1.3	1690	2.8	4.8	5.0	480	277	60	0.80	79	7.5	21.0	17.8	2.60	11
090C32	1.8	1695	3.6	6.3	5.7	480	277	60	0.79	81	10.3	30.0	24.0	3.50	17
100C12	2.6	1740	5.3	9.2	6.6	480	277	60	0.73	85	15.0	47.0	38.0	6.1	24
100C32	3.6	1730	7.2	12.5	5.2	480	277	60	0.75	84	20.5	54.0	43.0	6.1	24
112C22	4.8	1750	9.3	16.1	6.4	480	277	60	0.73	87	26.4	102.0	58.0	10.7	31
112C32	6.6	1745		12.5	6.7		480 *	60	0.76	87	36.6	130	95	13.5	38
			12.5	21.7		480	277								

At 87 Hz

Motor frame size	P _r [kW]	n _r [rpm]	I [A]	U ¹⁾ [V]	f _r [Hz]	cos φ	M _r [Nm]	J _{mot} [10 ⁻³ kgm ²]	m [kg]
063C12	0.21	2535	0.85	400	87	0.52	0.80	0.33	4.1
063C32	0.33	2475	1	400	87	0.65	1.26	0.33	4.1
063C42	0.45	2480	1.4	400	87	0.63	1.74	0.37	4.4
071C32	0.66	2520	1.6	400	87	0.72	2.51	1.07	5.8
071C42	1.0	2515	2.4	400	87	0.74	3.74	1.28	6.4
080C32	1.4	2520	3.3	400	87	0.80	5.10	2.6	11
080C42	2.0	2500	4.8	400	87	0.80	7.50	2.6	11
090C32	2.7	2505	6.3	400	87	0.79	10.3	3.5	17
100C12	3.9	2550	9.2	400	87	0.71	15.0	6.1	24
100C32	5.4	2540	12.5	400	87	0.73	20.5	6.1	24
112C22	7.1	2560	16.1	400	87	0.71	26.4	10.7	31
112C32	9.1	2555	21.7	400	87	0.75	36.6	13.5	38

* Star/delta start-up at 400 V - 50 Hz/480 V - 60 Hz possible

¹⁾ The motors can be used in the voltage range specified in the "Voltages/Frequencies" on the next page.

Operation at 87 Hz is only possible with 4-pole motors with rated data voltage values of Y 400 V/Δ 230 V (Y 480 V/Δ 277 V) at 50 Hz (60 Hz).

For motor frame size 112C32, please also specify the required voltage at 50/60 Hz.

Values are guide values



Voltages/Frequencies

4-pole motors			
Motor frame size	Connection	Voltage	
		50 Hz	60 Hz
063C12...112C22	Δ	230 V $\pm$ 10%	277 V $\pm$ 10%
	Y	400 V $\pm$ 10%	480 V $\pm$ 10%
112C32	Δ	400 V $\pm$ 10%	480 V $\pm$ 10%
	Δ	230 V $\pm$ 10%	277 V $\pm$ 10%
	Y	400 V $\pm$ 10%	480 V $\pm$ 10%

Motors are supplied with multi-range voltage as standard.
The reference point percentages ($\pm$ 10%/ $\pm$ 5%) include the tolerance according to EN 60034.

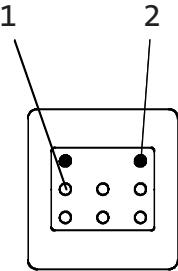
Motor connection

Assignment motor terminal block – built-on accessories

Built-on accessories	Motor frame size					
	063C12 063C32 063C42	071C32 071C42	080C32 080C42	090C32	100C12 100C32	112C22 112C32
	Motor terminal box assignment					
Integral fan	KK1	KK1		KK1		
Integral fan with brake	KK2	KK2		KK2		
Blower	KK1	KK1		KK1		
Blower with brake	KK2	KK2		KK2		

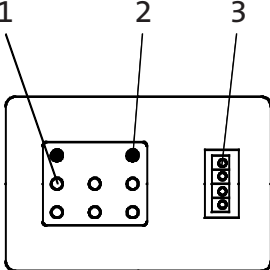
Position	Designation
1	Motor terminal board
2	Thermal detector connection
3	Rectifier/terminal block (24 V/180 V/205 V DC) for spring-applied brake)

Motor terminal box KK1



The diagram shows a square terminal box with two terminals labeled 1 and 2. Terminal 1 is on the left and terminal 2 is on the right. Each terminal has a screw terminal and a corresponding screw terminal below it.

Motor terminal box KK2



The diagram shows a rectangular terminal box with three terminals labeled 1, 2, and 3. Terminal 1 is on the left, terminal 2 is in the middle, and terminal 3 is on the right. Each terminal has a screw terminal and a corresponding screw terminal below it.



Motor terminal block – Assignment plan

Terminal block (Position 3)

Meaning	Designation	To EN 60034-8
Brake +	1/Y1	BD 1
Brake -	2/Y2	BD 2

Rectifier (Position 3)

Meaning	Designation	Option
Brake	~	Bridge rectifier/half-wave rectifier Connection to L1 mains
	~	Bridge rectifier Connection to N mains
	~	Half-wave rectifier Connection to L2 or L3 mains
	+	Connection to brake
	–	Connection to brake

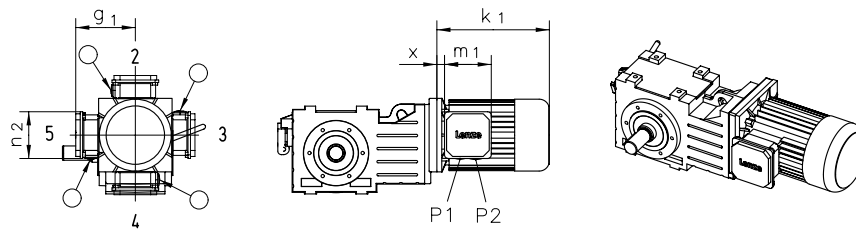
Motor terminal box KK1

Dimensions and position of cable entries

For motors with motor terminal block KK1, the cable entry position can be selected in accordance with the terminal box position.

Unless the cable entry position is specified the position will be the one that is circled.

Terminal box positions 2, 3, 4, 5 (Example: Mounting position A)

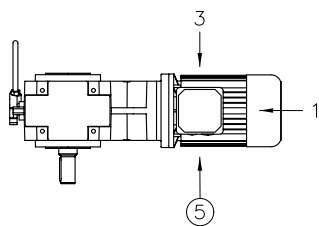


Terminal box KK1	Motor frame size					
	063	071	080	090	100	112
x	21/8*	24/11*	14	19	20	22
g ₁	100/114*	109/123*	141	146	157	167
m ₁	75/101*		115			
n ₂	75/101*		115			
P1	M16x1.5/M20x1.5*		M20x1.5			
P2	M20x1.5		M25x1.5			

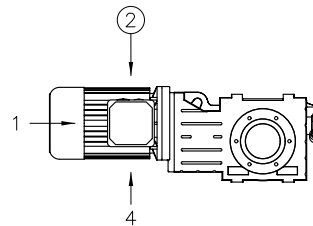
* UL/CSA approval: cURus

For dimension k₁ see Dimensions, Geared motors

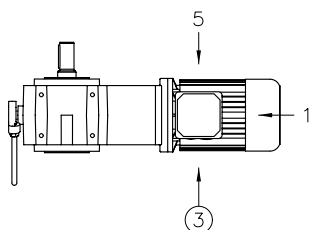
Terminal box position 2
Cable entry position: 1, 3, 5



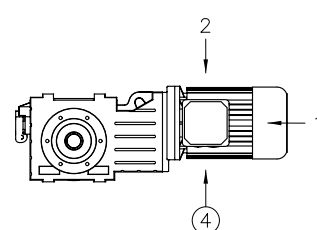
Terminal box position 3
Cable entry position: 1, 2, 4



Terminal box position 4
Cable entry position: 1, 3, 5



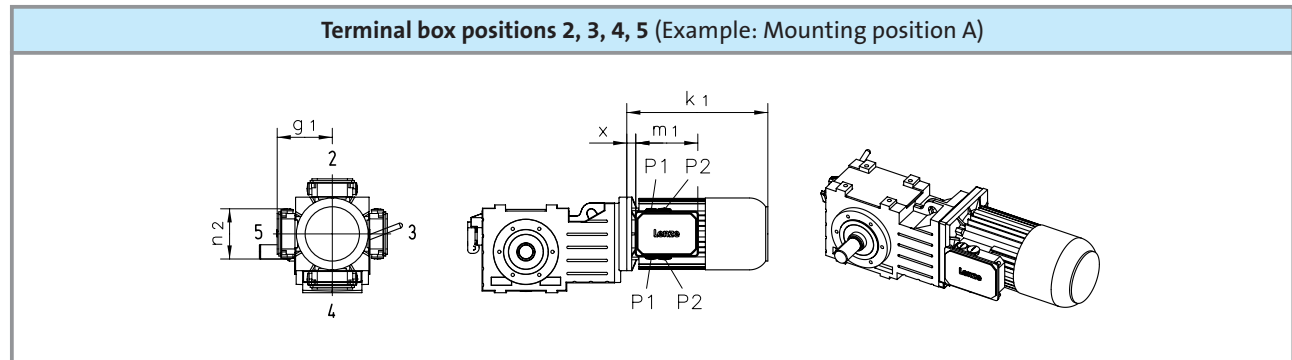
Terminal box position 5
Cable entry position: 1, 2, 4





Motor terminal box KK2

Dimensions and position of cable entries



Terminal box KK2	Motor frame size					
	063	071	080	090	100	112
x	13		15	17	22	23 25
g ₁	107	116	130	135	146	156
m ₁	136		153			
n ₂	94		117			
P1	M16x1.5		M20x1.5			
P2	M20x1.5		M25x1.5			

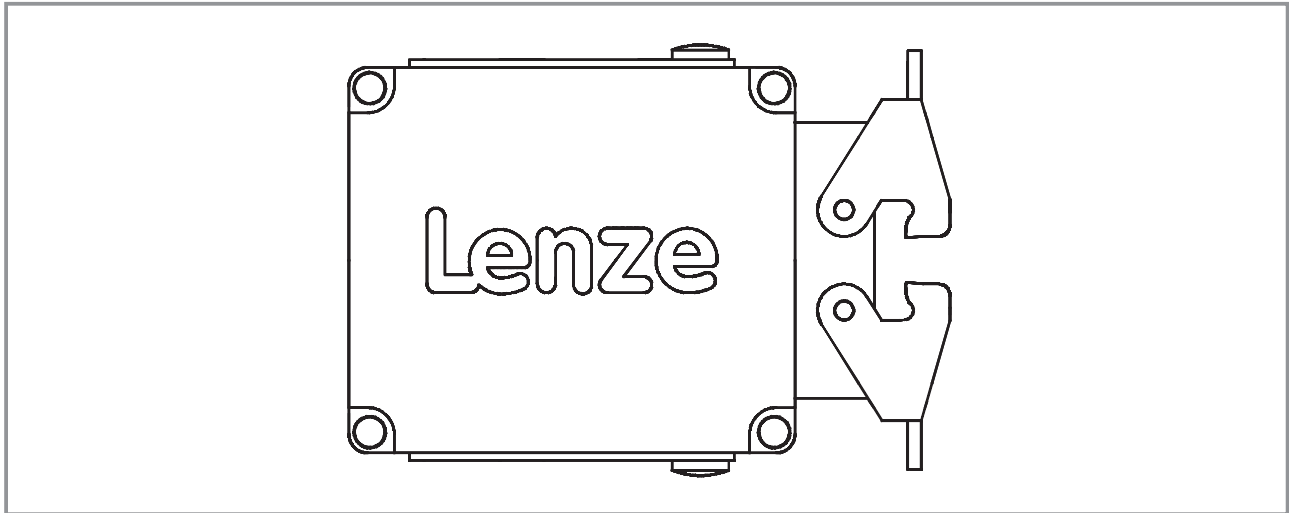
For dimension k_1 see Dimensions, Geared motors

Terminal box position 2 Cable entry position: 3+5	Terminal box position 3 Cable entry position: 2+4
Terminal box position 4 Cable entry position: 3+5	Terminal box position 5 Cable entry position: 2+4

Motor terminal box with HAN 10E connector

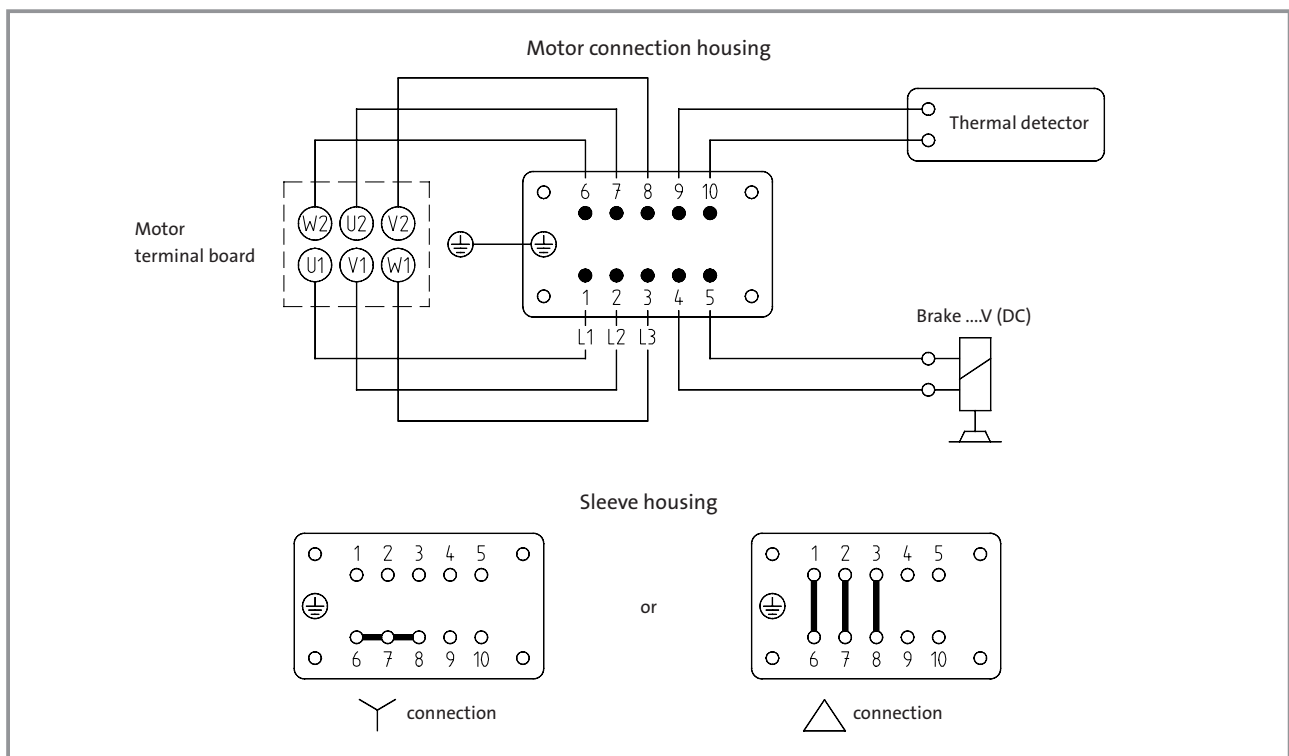
General data

Design	Die-cast aluminium housing Steel locking element (with plastic sheath) NBR housing seal
Enclosure, locked	IP65
Number of contacts	10 + PE
Permissible rated current	16 A
Permissible rated voltage	500 V (AC)



Male plugs are not included in the scope of supply.

Connector assignments



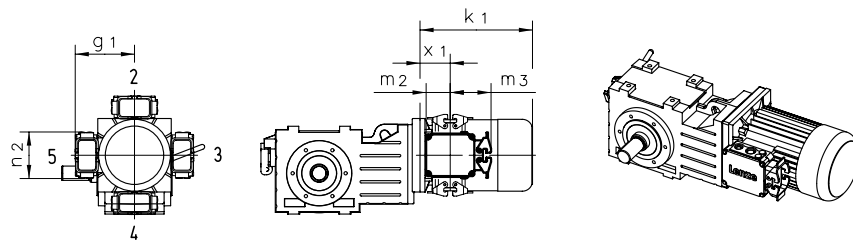


Dimensions and position of connector

For motor terminal blocks with HAN 10E connector, the connector position can be selected in accordance with the terminal box position.

Unless the connector position is specified position 1 will be used by default.

Terminal box positions 2. 3. 4. 5 (Example: Mounting position A)



Terminal box with HAN 10E connector	Motor frame size					
	063	071	080	090	100	112
x	58.5	61.5	71.0	76.0	77.0	79.0
g ₁	123	132	141	146	157	167
m ₂	54		61			
m ₃	105		98			
n ₂	115					

For dimension k₁ see Dimensions, Geared motors

Terminal box position 2 Connector position: 1. 3. 5	Terminal box position 3 Connector position: 1, 2, 4
Terminal box position 4 Connector position: 1, 3, 5	Terminal box position 5 Connector position: 1, 2, 4

Motor protection

The thermal detectors are integrated into the windings.
The use of an additional motor protection switch is recommended for mains operation.

TKO thermal contacts

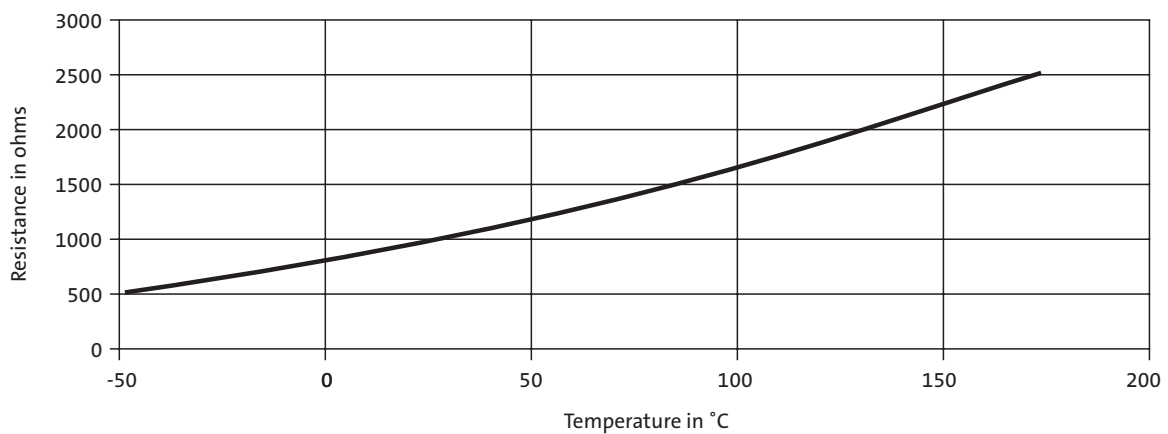
Motor frame size	Function	Operating temperature [°C]	Reset temperature [°C]	Permissible current loading [A]	Permissible voltage loading [V] AC
063 ... 112	NC contact	150 ± 5	90 - 135	2.5	250

PTC thermistor

Motor frame size	Function	Operating temperature [°C]	Resistance at 155°C [Ω]	Resistance at -20...+140°C [Ω]	Standards
063 ... 112	"Abrupt change in resistance"	150 ± 5	550	30...250	DIN 44080 VDE 0660 Part 303

KTY continuous thermal detector

Motor frame size	Function	Resistance at 175°C [Ω]	Resistance at 150°C [Ω]	Resistance at 25°C [Ω]	Permissible current loading at 175°C [mA]	Permissible current loading at 25°C [mA]
063 ... 112	"Continuous change in resistance"	2535	2225	1000	2.0	10



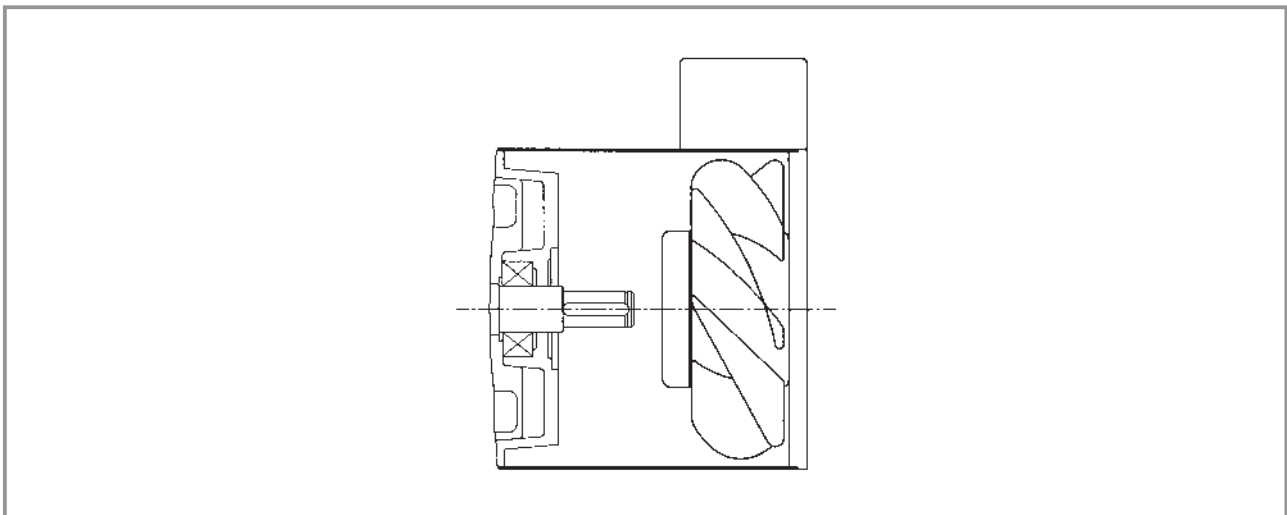


Blower

Geared motors and geared brake motors can be fitted with a separate blower. The blower is assembled in an extended motor fan cover with a separate terminal box.

General data

	Motor frame size 063...112
Design	1~ or 3~
Enclosure	IP66
Thermal class	F
Operating mode	S1



Rated data

Motor frame size	Design	Connection	U _r [V]	f _r [Hz]	I _r [A]	P _r [W]	Weight m [kg]
063	1~		230 - 277	50 (60)	0.10	27	2
	3~	Y	380 - 500		0.05	29	
	3~	Δ	220 - 290		0.10	27	
071	1~		230 - 277	50 (60)	0.10	28	2.1
	3~	Y	380 - 500		0.05	30	
	3~	Δ	220 - 290		0.10	30	
080	1~		230 - 277	50 (60)	0.11	29	2.3
	3~	Y	380 - 500		0.05	29	
	3~	Δ	220 - 290		0.10	29	
090	1~		230 - 277	50 (60)	0.26	72	2.7
	3~	Y	380 - 500		0.16	82	
	3~	Δ	220 - 290		0.28	86	
100	1~		230 - 277	50 (60)	0.25	70	3
	3~	Y	380 - 500		0.16	83	
	3~	Δ	220 - 290		0.27	86	
112	1~		230 - 277	50 (60)	0.26	73	3.1
	3~	Y	380 - 500		0.15	82	
	3~	Δ	220 - 290		0.27	85	

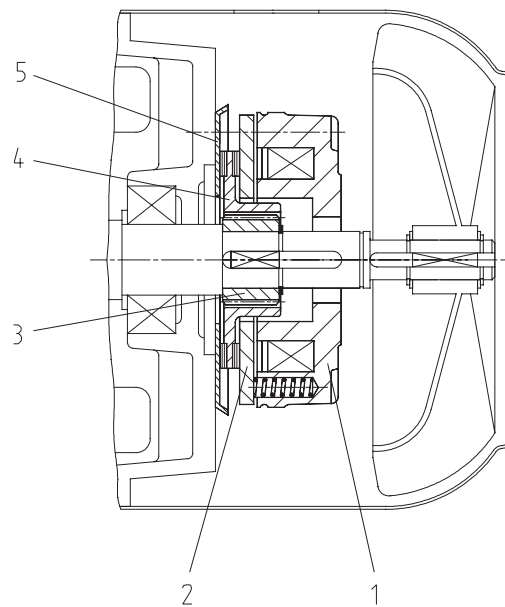
Spring-operated brake

Brake motors are fitted with spring-operated brakes. The rectifier required for mains operation is located in the terminal box and is included in the scope of supply. The connection between the brake coil and rectifier is factory-configured.

The brakes are active after the supply voltage has been disconnected (closed-circuit principle). The specified braking torques apply to quasi-static dimensioning when the brake is to be operated as a holding brake with a low rate of wear. In the case of adjustable brakes, the air gap is factory-set but can be readjusted in the event of wear.

Basic diagram

Position	Designation	Position	Designation
1	Stator	4	Rotor
2	Armature plate	5	Friction plate
3	Hub		





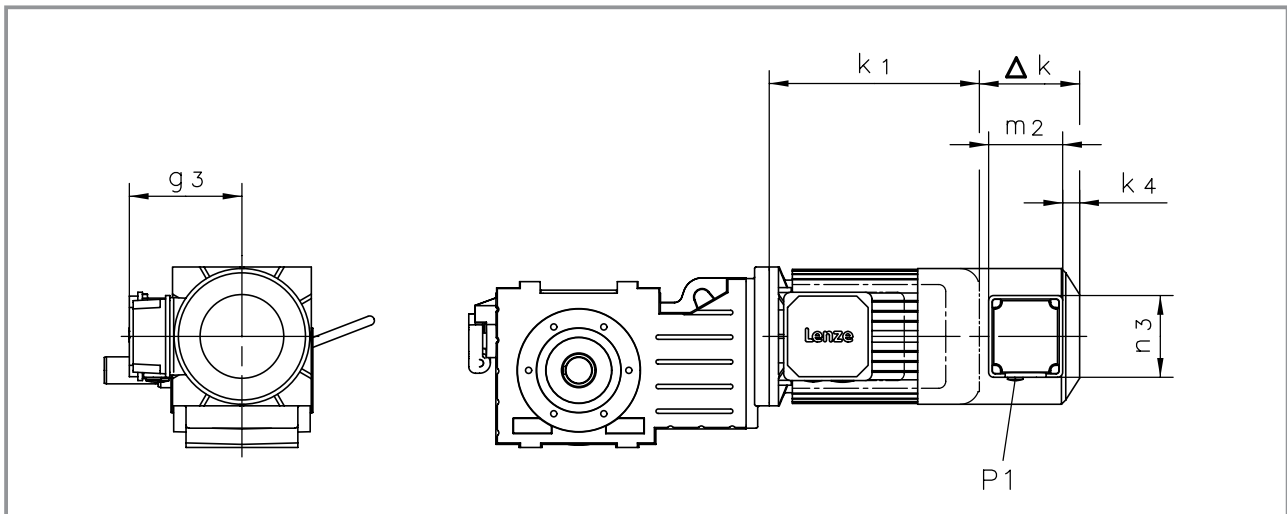
General data

Design	Single-disc spring-applied brake
Operating principle	Braking torque at zero current
Enclosure	IP54
Temperature class	F
Friction linings	asbestos-free, with low rate of wear
Option	► Low noise (mounting of resolver or incremental encoder mandatory for inverter operation) ► Adjustable braking torque

Rated data and possible combinations

Rated data	Brake size				
	06	08	10	12	14
$P_{20^{\circ}}$ [W]	20	25	30	40	50
M_B [Nm]	4	8	16	32	60
J_B [10^{-3} kgm ²]	0.015	0.061	0.20	0.45	0.63
m [kg]	0.9	1.5	2.6	4.2	5.8
Motor frame size	Possible combinations				
063	●				
071	●				
071C42	●	●			
080		●			
080C42		●	●		
090		●	●		
100			●	●	
112				●	●

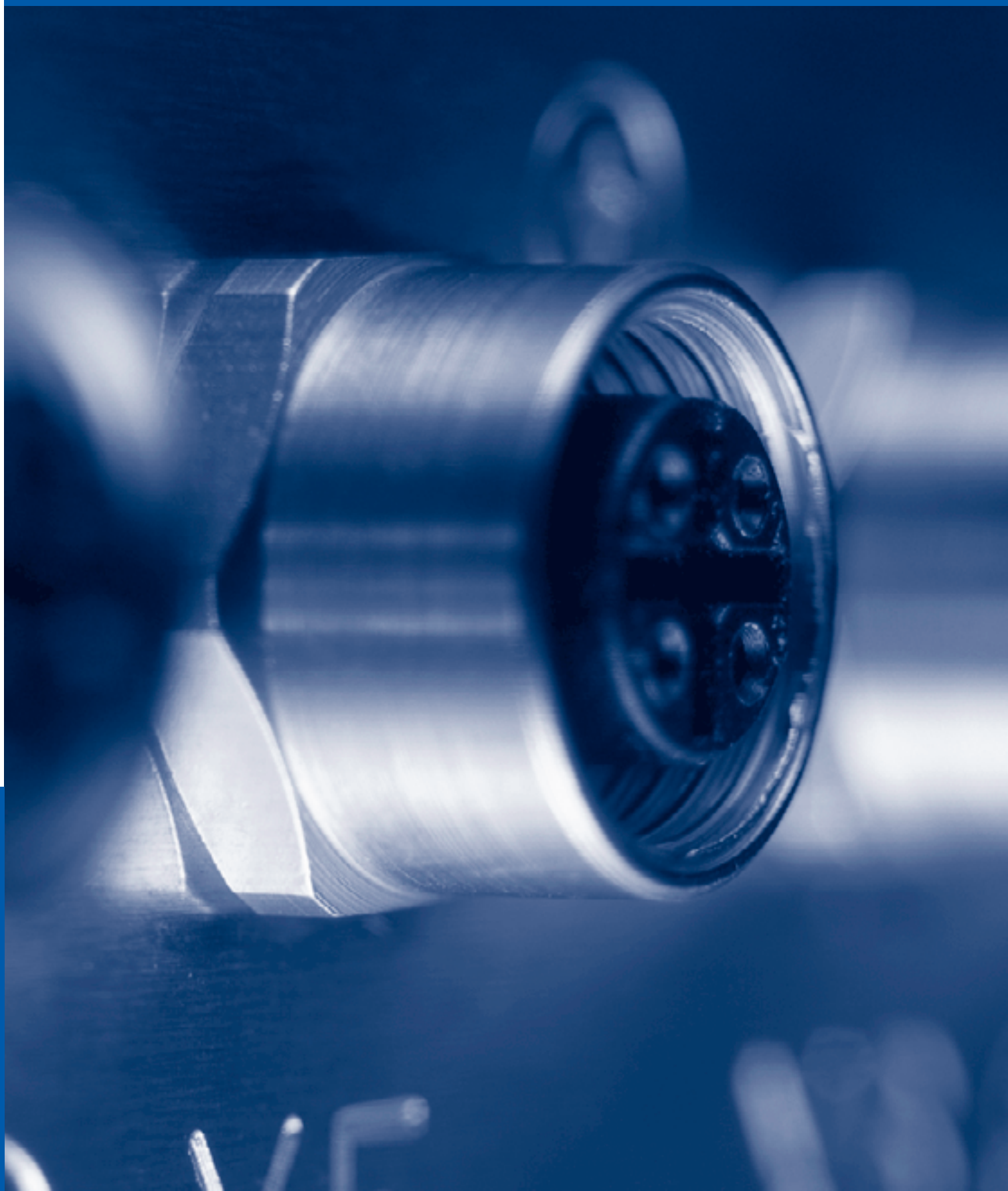
Geared motors with blower



Built-on accessories	Motor frame size					
	063C12 063C32 063C42	071C32 071C42	080C32 080C42	090C32	100C12 100C32	112C22 112C32
	Δk					
Blower	130	128	128	127	109	102
Blower with brake	170	165	184	180	170	183
	Blower terminal box					
k_4	12	12	12	22	22	22
g_3	115	122	131	141	150	162
m_2	96					
n_3	106					
P_1	1x M16x1.5					

For dimension k_1 see Dimensions, Geared motors
Dimensions in [mm]





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OCU frequency inverter module

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Technical data	5-6
Unitec 0.5 - 2.2 kW	5-6
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OCU housing

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SC2 die-cast aluminium	5-9
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SC3 die-cast aluminium	5-10
SC4 die-cast aluminium	5-11
Special SG sheet steel housing	5-11



Motor control units

General

Product information

Because of their high level of automation, monorail overhead conveyors could not function without innovative controls. Within the context of rail transportation systems, these controls are used for speed control and the contactless control of asynchronous motors.

The Lenze DETO Overhead Control Unit (OCU) provides the necessary intelligence and power electronics for these tasks, combining them inside a robust housing. The special system design enables a number of motors to be driven by means of a single unit.

As well as managing the usual system PLC block control process, the OCU controls the distance between vehicles on the monorail overhead conveyor. In addition, users can en-

ter parameters individually. All the data relating to operation (such as destination information) is exchanged directly via the brushgear (amongst other methods). Moreover, the OCU supports inductive data and energy transfer. It can be adapted at any time for future tasks by implementing programming changes using the open IEC 61131-3 standard.

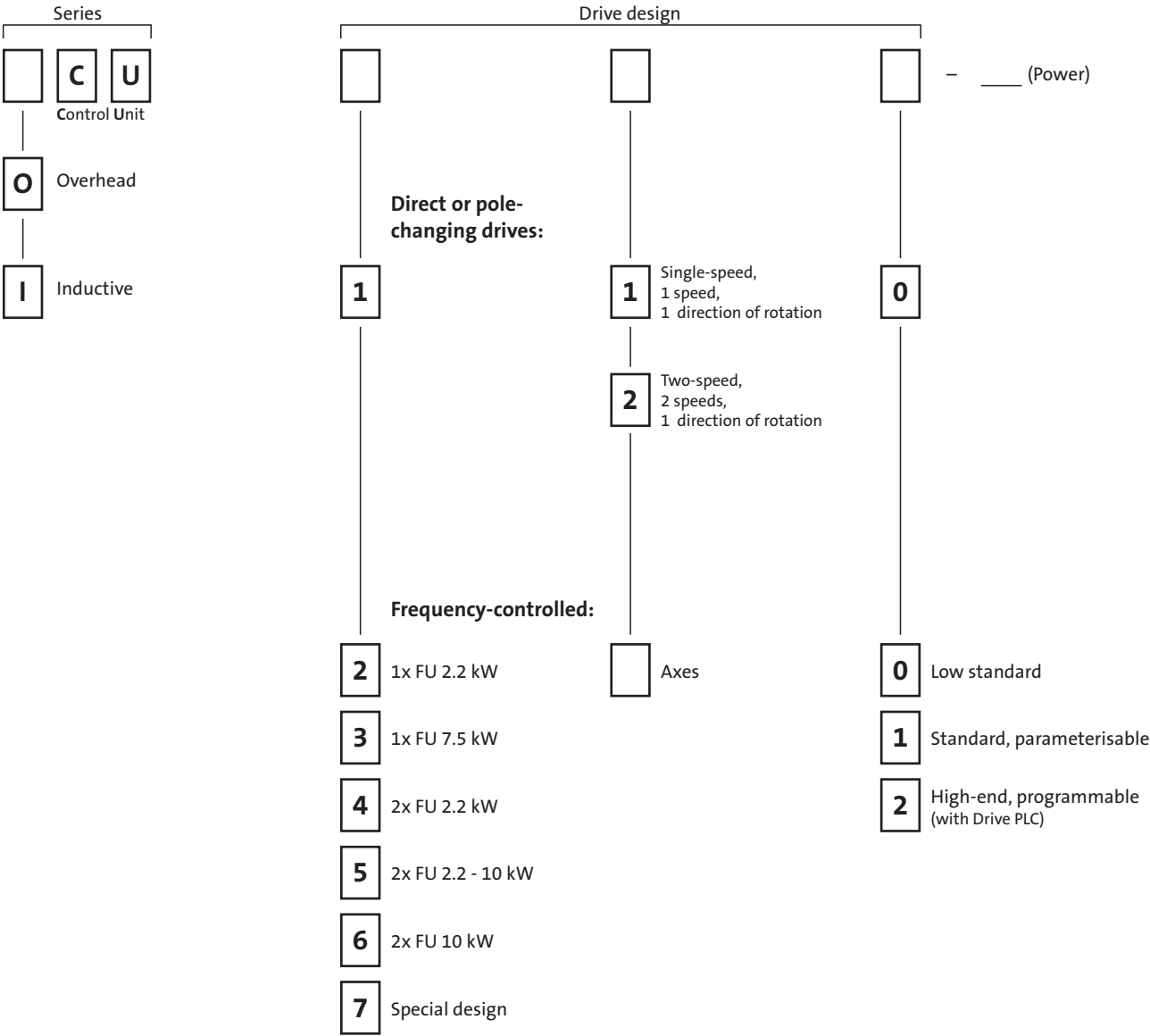
The OCU range enables the speed of vehicles to be precisely controlled thanks to the integration of a frequency inverter. Furthermore, additional versions are available for switched motors. In this case, a motor starter is used to drive motors that operate at constant speed.





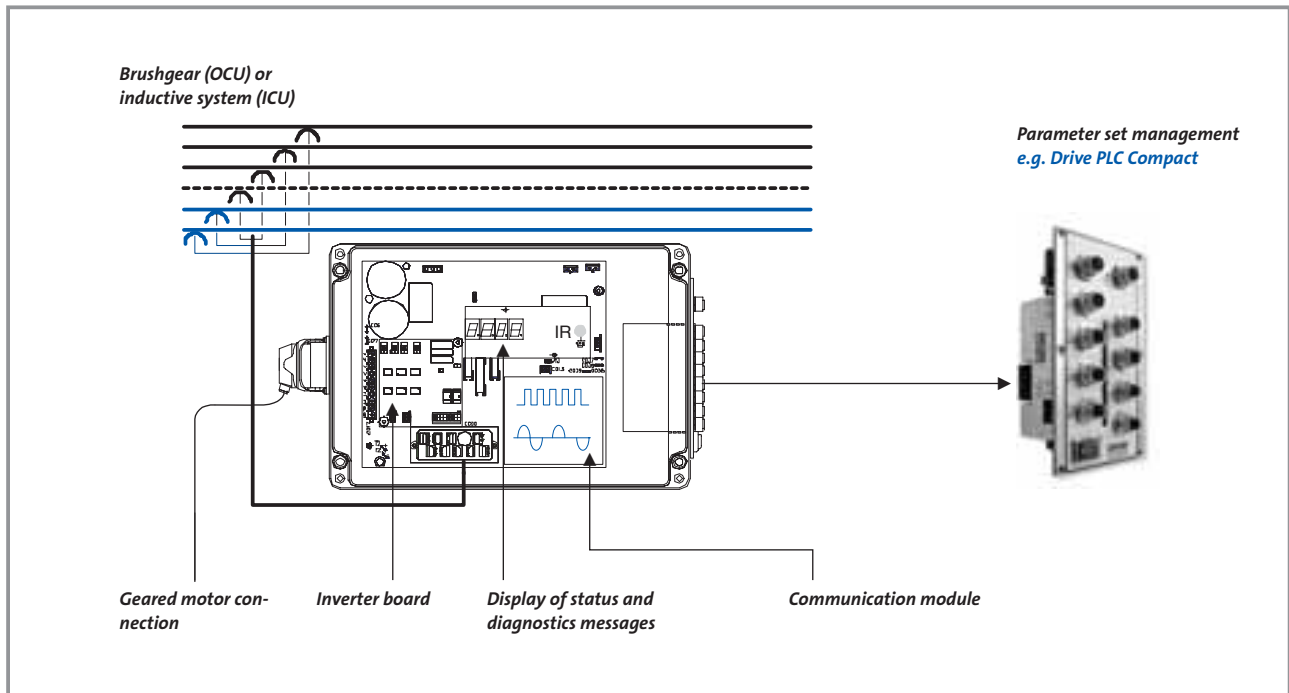
Designs

Lenze Deto motor control units for overhead monorail conveyors are available in the following designs:



For further information, please contact your local Lenze sales office.

System overview





Description

Unitec 0.5 - 10.0 kW

Unitec is a frequency inverter module which is responsible for motor power control. It features a DC bus charging connection and therefore supports unlimited mains switching.

In terms of its design, the Unitec frequency inverter module is based on a modular system of harmonised components. Lenze and Lenze DETO components can be combined to meet the requirements of numerous electronic variable speed drive applications. As a result, cost-effective and

high-performance drive solutions can be achieved using standardised modules. Depending on power, components are installed inside standard and project-specific enclosures using "cold plate" technology.

An external heatsink is used for power ratings of 1.1 kW in the case of die-cast aluminium housings and ratings of 0.5 kW and above in the case of sheet steel housings.

Function	▶ Frequency inverter module U/f operating mode, integrated current and temperature monitoring ▶ Status display, switched-mode power supply 24 V DC/2 A and chopper resistor "on board"
Possible application/combinations	▶ For OCU/ICU series control units ▶ Interface module IM-HW, IM-SE, IM-PW, IM-DC and Drive PLCC 1/2/3

Motor control units

OCU frequency inverter module

Technical data

Unitec 0.5 - 2.2 kW

UNITEC rated power	OT = 100%	0.5 kW	1.1 kW	1.5 kW	2.2 kW
(OT = Operating Time, 50% and for 3 minutes max.)	OT = 50%, 3 minutes max.	(1.5 kW)		(2.2 kW)	
Mains voltage, frequency, fusing	UN [V], F[Hz], I [A]	380 - 480 V AC ±10%, 45 - 65 ±0% sine, 10 A-T/500 V AC			
Alternative DC supply, fusing	UDC [V]	460 V DC ... 620 V DC, 10 A-T/500 V AC			
Data for operation at 400 V AC and 50/60 Hz/asynch./Y-connection Not suitable for continuous operation in generator mode!	Operation only possible with die-cast aluminium housing				
Typical motor power 4-pole, asynch., Y-connection	P _r [kW]	0.5	1.1	1.5	2.2
Output current	I [A]	1.8	2.5	3.9	5.6
Max. output current 60 s	I _{max} [A]	3	5	7	10
Output power	S _r [kVA]	1.3	2	2.7	3.9
Power loss	P _V [W]	22	55	75	100
Switching frequency	f [kHz]	8 ... (thermally monitored, reduced to 4 kHz)			
Default setting	f [kHz]	8	8	8	8
Output frequency	f [Hz]	Variable			
Min./max. output frequency	f [Hz]	5 - 120			
Ambient conditions	T [°C]	Maximum ambient temperature 45°C			
Integrated switched-mode power supply	U [V DC], I [A DC]	24 V DC ±10% / 2 A current limited			
Digital inputs (Only activated for OCU210/211/212)	8x on board	24 V/3 mA load			
Digital outputs (Only activated for OCU212)	2x on board	24 V/700 mA electronically monitored			
Analog inputs (Only activated for OCU212)	1x on board	0...10V			
Digital controller enable inputs	2x on board	High active 24 V/3 mA load			
Display/display unit		4x 7-segment display			
Remote control receiver		Infrared remote control receiver on display unit			
Internal interfaces		1 x IM			
CAN	1x on board	Not isolated from 24V DC			
DC motor brake	U [V DCEff]/I [A DCEff]	185V / (Upeak: 564V) / 1.5Aeff±10% (=> 2 A max. ±10%)			
Brake chopper power/time, peak power/time	Peff [W]/T [sec]	300 W/10 s, 3 kW/1 s	300 W/25 s, 3 kW/1 s	300 W/20 s, 3 kW/1 s	300 W/30 s, 3 kW/1 s
Motor thermistor	2x on board	60 - 1200 ohms, not isolated from 24 V DC			

Motor control units

OCU frequency inverter module

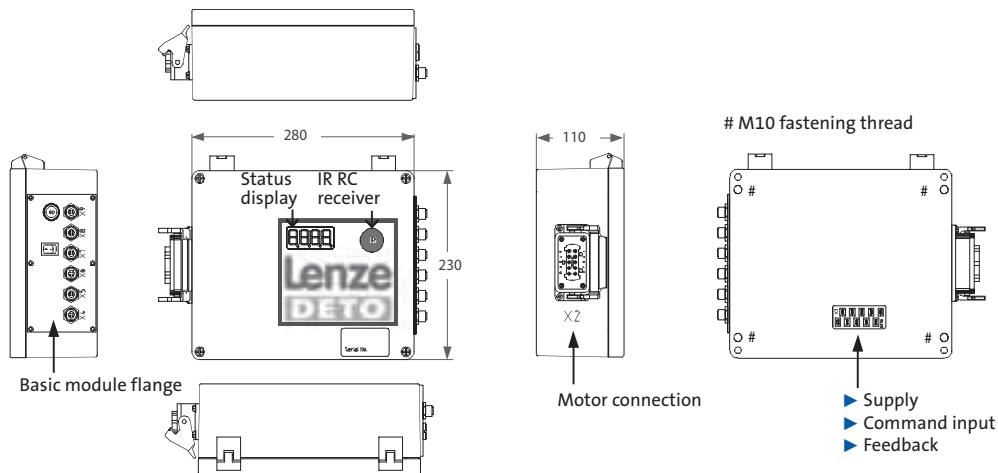


Unitec 4.0 - 10.0 kW

UNITEC rated power	OT = 100%	Unitec 4.0 kW	Unitec 7.5 kW	Unitec 10.0 kW
(OT = Operating Time, 50% and 3 minutes max.)	OT = 50%, 3 minutes max.	(Unitec 7.5 kW) (Unitec 10 kW)		
Mains voltage, frequency	Umains [V], F[Hz], I [A]	380 - 480 V AC $\pm 10\%$, 45 - 65 $\pm 0\%$ sine		
Alternative DC supply	UDC [V]	460 V DC ... 620 V DC		
Fusing, AC and DC supply	I [A], U [V AC]	16 A T/500 V AC	16 A T/500 V AC	None => external
Data for operation at 400 V AC and 50/60 Hz/asynch./Y-connection Not suitable for continuous operation in generator mode!				
Typical motor power 4-pole, asynch., Y-connection	P _r [kW]	4.5 kW	7.5	10
Output current	I [A]	10	16	23
Max. output current 60 s	I _{max} [A]	15	25	35
Output power	S _r [kVA]	6.6	11.4	15.2
Power loss	PV [W]	190	320	405
Switching frequency	f [kHz]	8 ... (thermally monitored, reduced to 4 kHz)		
Default setting	f [kHz]	8	8	8
Output frequency	f [Hz]	Variable		
Min./max. output frequency	f [Hz]	5 - 120		
Ambient conditions	T [°C]	Maximum ambient temperature 45°C		
Integrated switched-mode power supply	U [V DC], I [A DC]	24 V DC $\pm 10\%$ / 2 A current limited		
Digital inputs. (Only activated for OCU310/311/312)	8x on board	24 V/3 mA load		
Digital outputs (Only activated for OCU312)	2x on board	24 V/700 mA electronically monitored		
Analog inputs (Only activated for OCU312)	1x on board	0...10 V		
Digital controller enable inputs	2x on board	High active 24 V/3 mA load		
Display/display unit		4x 7-segment display		
Remote control receiver		Infrared remote control receiver on display unit		
Internal interfaces		1 x IM		
CAN	1x on board	Isolated from 24 V DC		
DC motor brake	U [V DCEff]/I [Aeff]	185 V/(U _{peak} : 564 V)/1.5 Aeff $\pm 10\%$ ($\Rightarrow$ 2 A max. $\pm 10\%$)		
Brake chopper power/time, peak power/time	Peff [W]/T [sec]	1.2 kW/10 s, 12 kW/1 s	1.2 kW/20 s, 12 kW/1 s	1.2 kW/30 s, 12 kW/1 s
Motor thermistor	2x on board	60 - 1200 ohms, not isolated from 24 V DC		

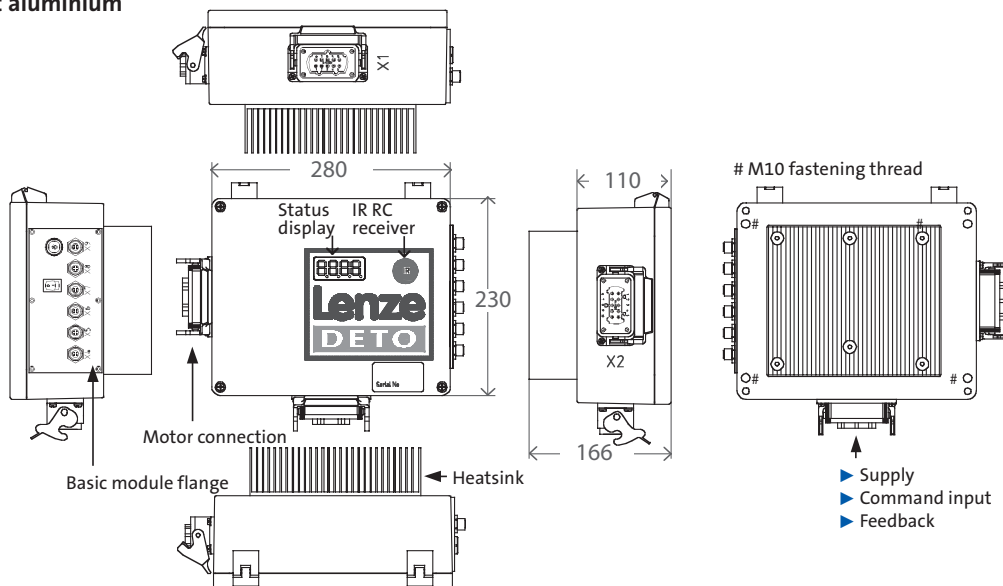
Designs

SC1F die-cast aluminium



Designation	Dimensions H x L x D [mm]	Description
SC1F	280 x 230 x 110	▶ Machined basic housing, incl. internal cable loom, IP54 enclosure when inserted and screwed home ▶ 1 x frequency inverter module max. Unitec 1.1 kW ▶ 1 x flange mounting SM-PIO, SM-SE ▶ 1 x supply connection via 10-pin flat connector (must only be used with Unitec frequency inverter modules with a rating of up to 1.1 kW) ▶ 1 x 10-pin motor connection

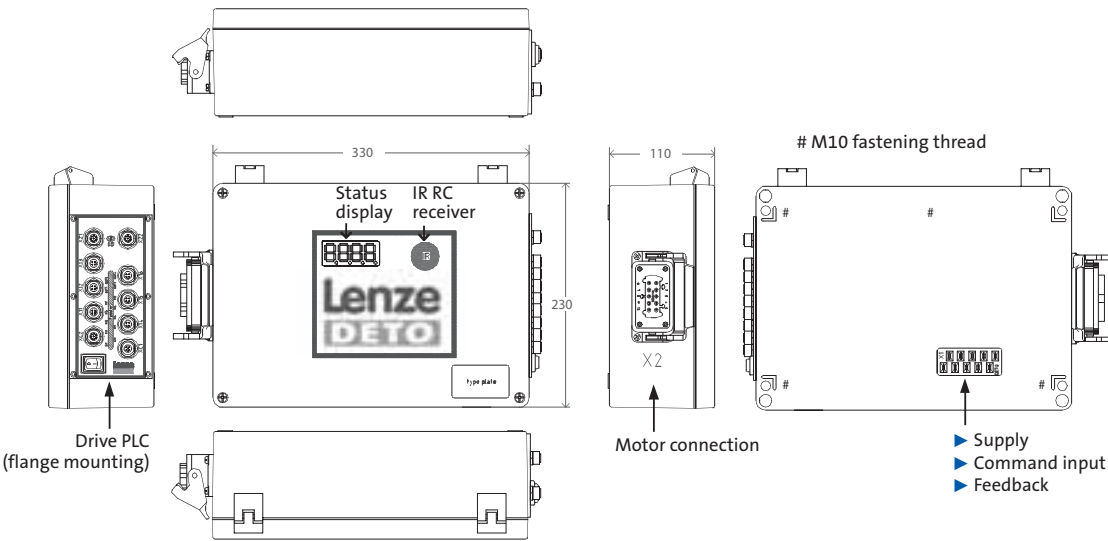
SC1 die-cast aluminium



Designation	Dimensions H x L x D [mm]	Description
SC1	280 x 230 x 110	▶ Machined basic housing, incl. internal cable loom and heatsink, IP54 enclosure when inserted and screwed home ▶ 1 x Unitec frequency inverter module, max. Unitec 2.2 kW ▶ 1 x flange mounting SM-PIO, SM-SE ▶ 1 x supply connection and 10-pin motor connection

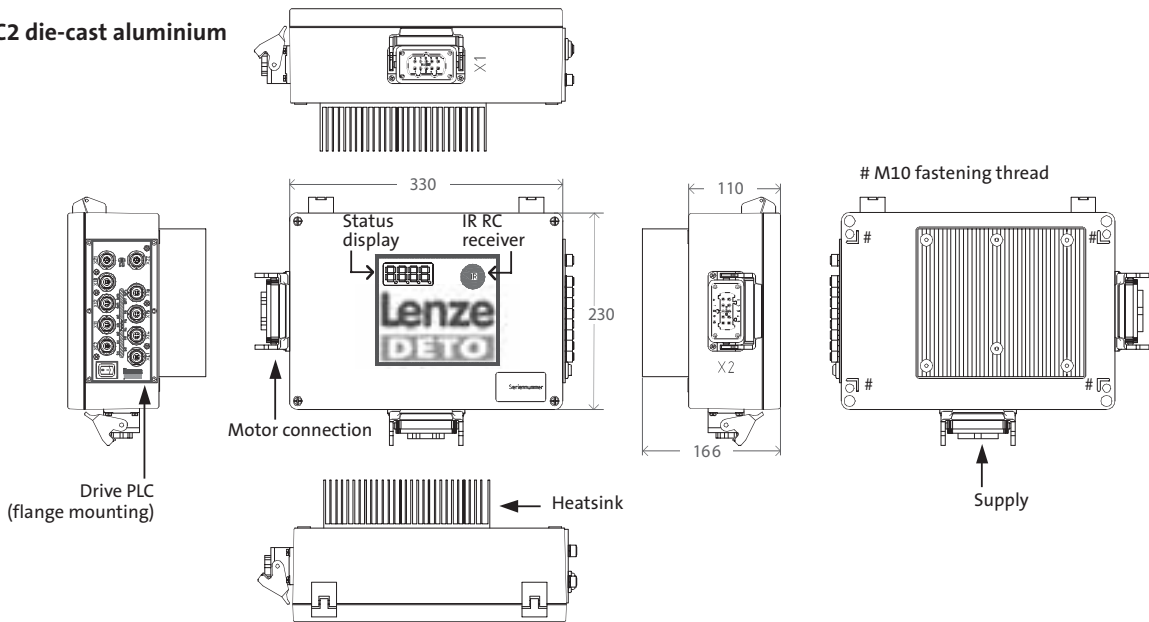


SC2F die-cast aluminium



Designation	Dimensions H x L x D [mm]	Description
SC2F	330 x 230 x 110	▶ Machined basic housing, incl. internal cable loom, IP54 enclosure when inserted and screwed home ▶ 1 x Unitec frequency inverter module, max. Unitec 1.1 kW ▶ 1 x flange mounting SM-PIO, SM-SE alternatively DPLCC 1 ▶ 1 x supply connection and 10-pin motor connection

SC2 die-cast aluminium

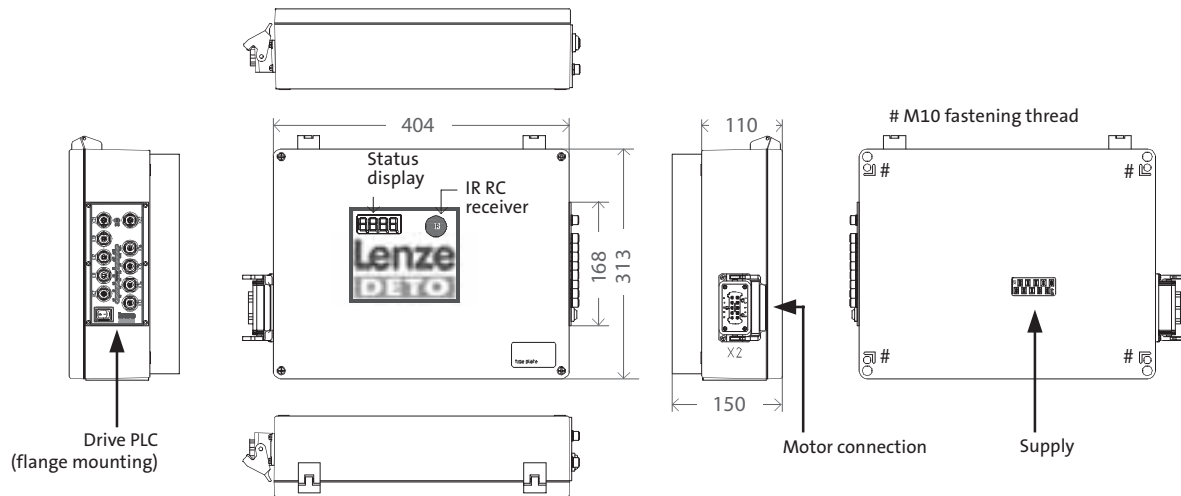


Designation	Dimensions H x L x D [mm]	Description
SC2	330 x 230 x 110	▶ Machined basic housing, incl. internal cable loom and heatsink, IP54 enclosure when inserted and screwed home ▶ 1 x Unitec frequency inverter module, max. Unitec 2.2 kW ▶ 1 x flange mounting SM-PIO, SM-SE alternatively DPLCC 1 ▶ 1 x supply connection and 10-pin motor connection

Motor control units

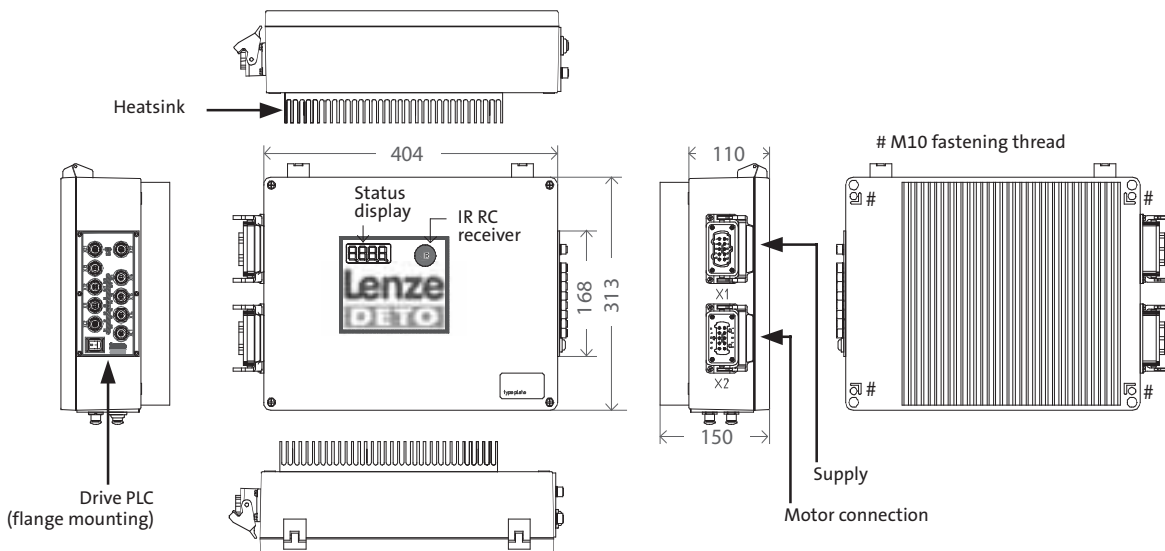
OCU housing

SC3F die-cast aluminium



Designation	Dimensions H x L x D [mm]	Description
SC3F	400 x 310 x 110	▶ Machined basic housing, incl. internal cable loom, IP54 enclosure when inserted and screwed home ▶ 1 x Unitec frequency inverter module, max. Unitec 1.1 kW ▶ 1 x flange mounting SM-PIO, SM-SE alternatively DPLCC 1 ▶ 1 x supply connection and 10-pin motor connection ▶ Option of installing 2 x contactor, terminal extension and additional discrete sensor module, for example

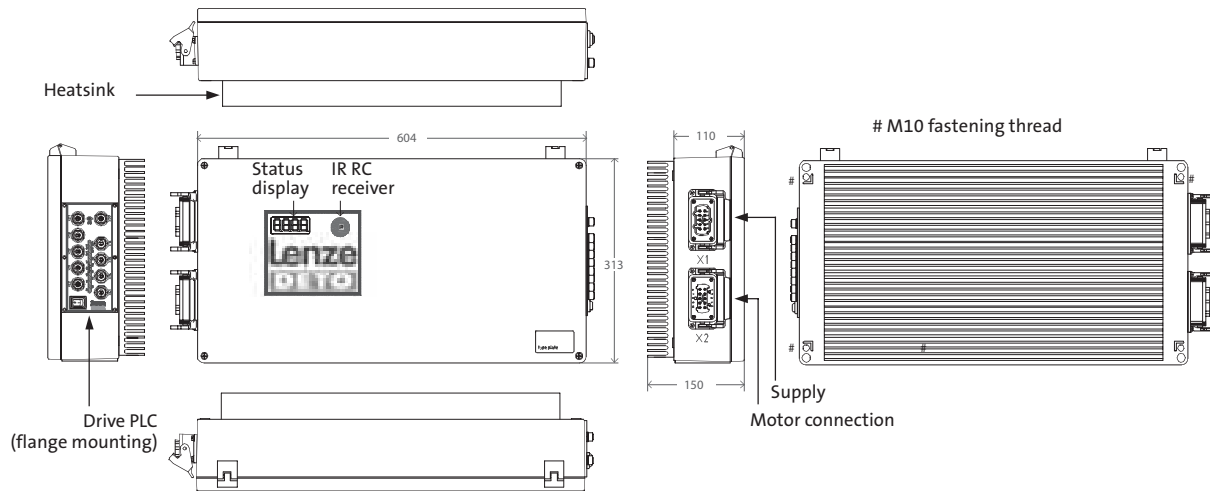
SC3 die-cast aluminium



Designation	Dimensions H x L x D [mm]	Description
SC3	400 x 310 x 110	▶ Machined basic housing, incl. internal cable loom and heatsink, IP54 enclosure when inserted and screwed home ▶ 1 x Unitec frequency inverter module, max. Unitec 10.0 kW ▶ 1 x flange mounting SM-PIO, SM-SE alternatively DPLCC 1 ▶ 1 x supply connection and 10-pin motor connection

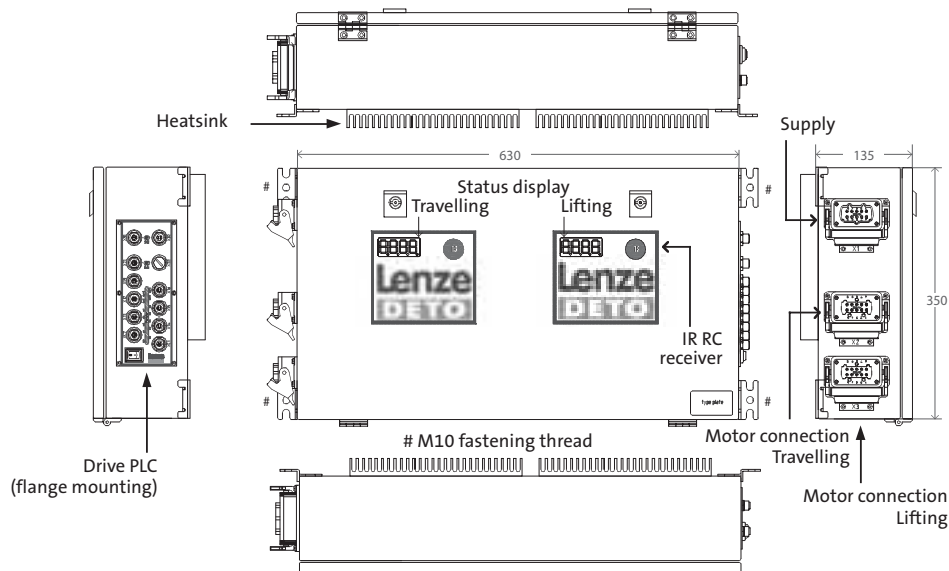


SC4 die-cast aluminium



Designation	Dimensions H x L x D [mm]	Description
SC4	600 x 310 x 110	▶ Machined basic housing, incl. internal cable loom and heatsink, IP54 enclosure when inserted and screwed home ▶ 2 x Unitec frequency inverter modules, Unitec 0.5 - 2.2 kW, or 1 x Unitec 4.0 - 10.0 kW with additional components, e.g. contactor change-over, terminal extension, etc. ▶ 1 x flange mounting DPLCC-1. additional discrete sensor module ▶ 1 x supply connection and 1 (2) x 10-pin motor connection

SG sheet steel special housing – powder-coated (RAL 7035)



Designation	Dimensions H x L x D [mm]	Description
SG	e.g. 630x 350x135	▶ Machined special housing, incl. internal cable loom and heatsink, IP54 enclosure when inserted and screwed home ▶ Customised single and multicolour designs available on request ▶ 2 x xxx Unitec, Unitec 2.2 kW, Unitec 10.0 kW ▶ Additional components, e.g. contactor change-over, Cat. 3 protection of persons safety category, terminal extension ▶ 1 x flange mounting DPLCC-1/2/3. discrete sensor module ▶ 1 x supply connection and 1 (2/3) x 10-pin motor connection



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