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Bevel geared motors with clutch

for monorail overhead conveyor systems

G-motion EHB

Lenze

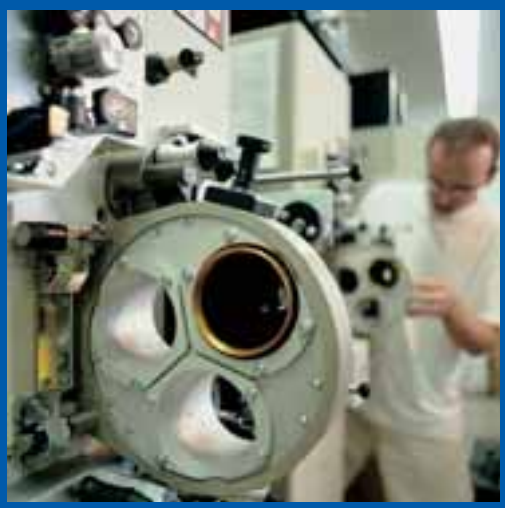
No matter which drive solution you imagine, we make your dreams come true.

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.







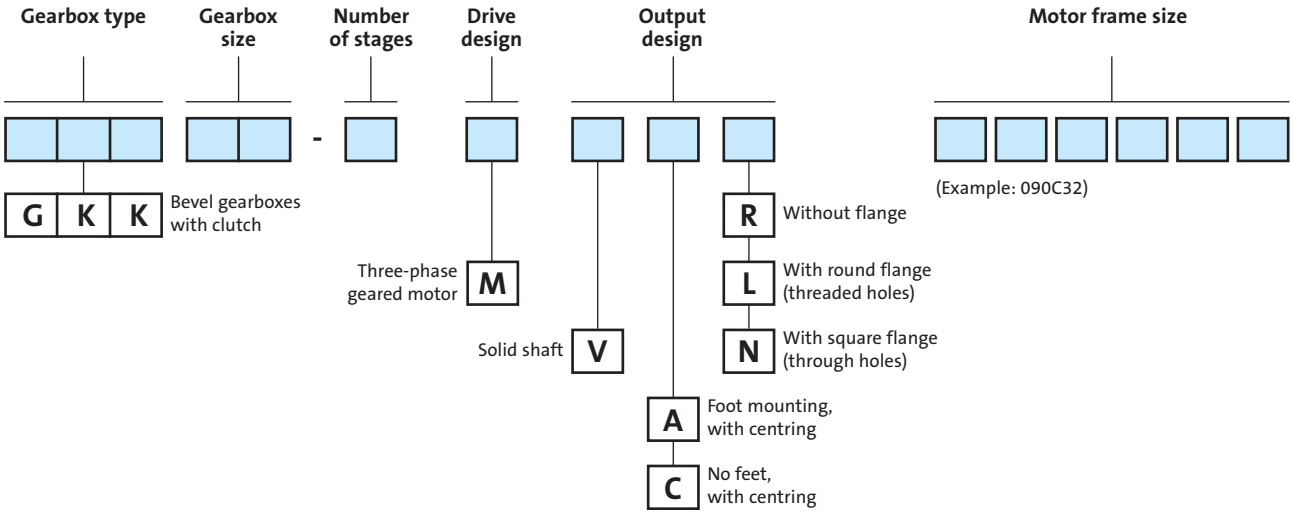




Many well-known companies use Lenze products in various applications.

Product key | G-motion EHB

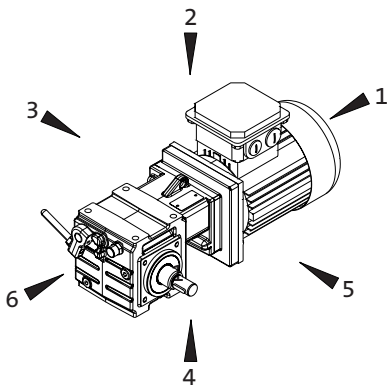
Type designation



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

GKK	Solid shaft: 5, 8 (3+5)	Flange: 5 Without flange: 0	Terminal box: 2, 3, 4, 5

A



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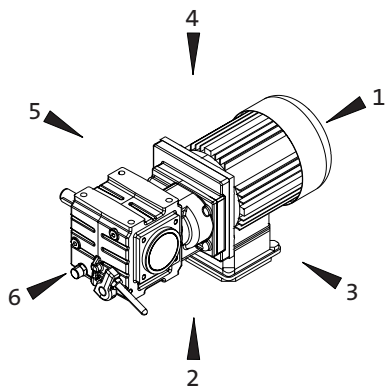

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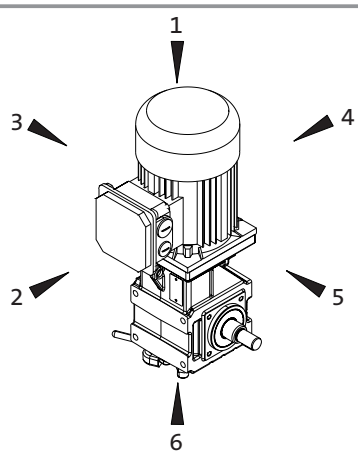
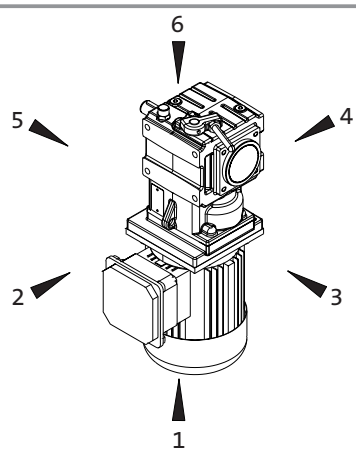


D



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

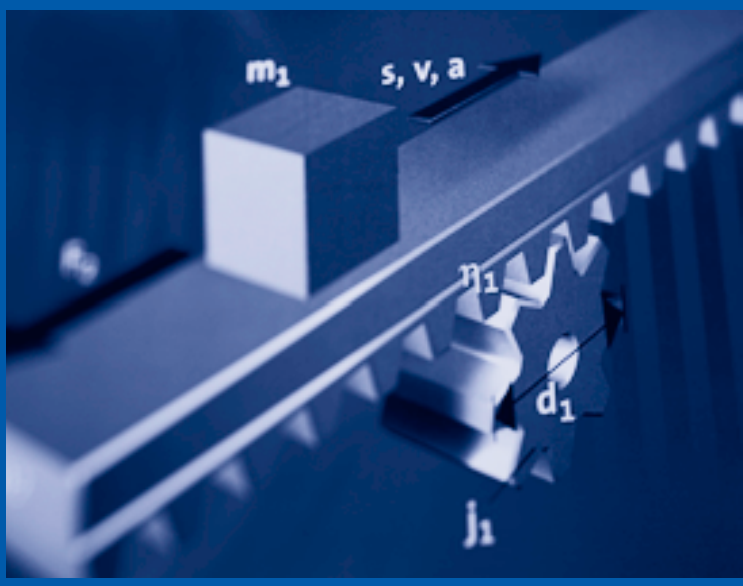
Geared motors with mechanical speed control

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

G-motion EHB

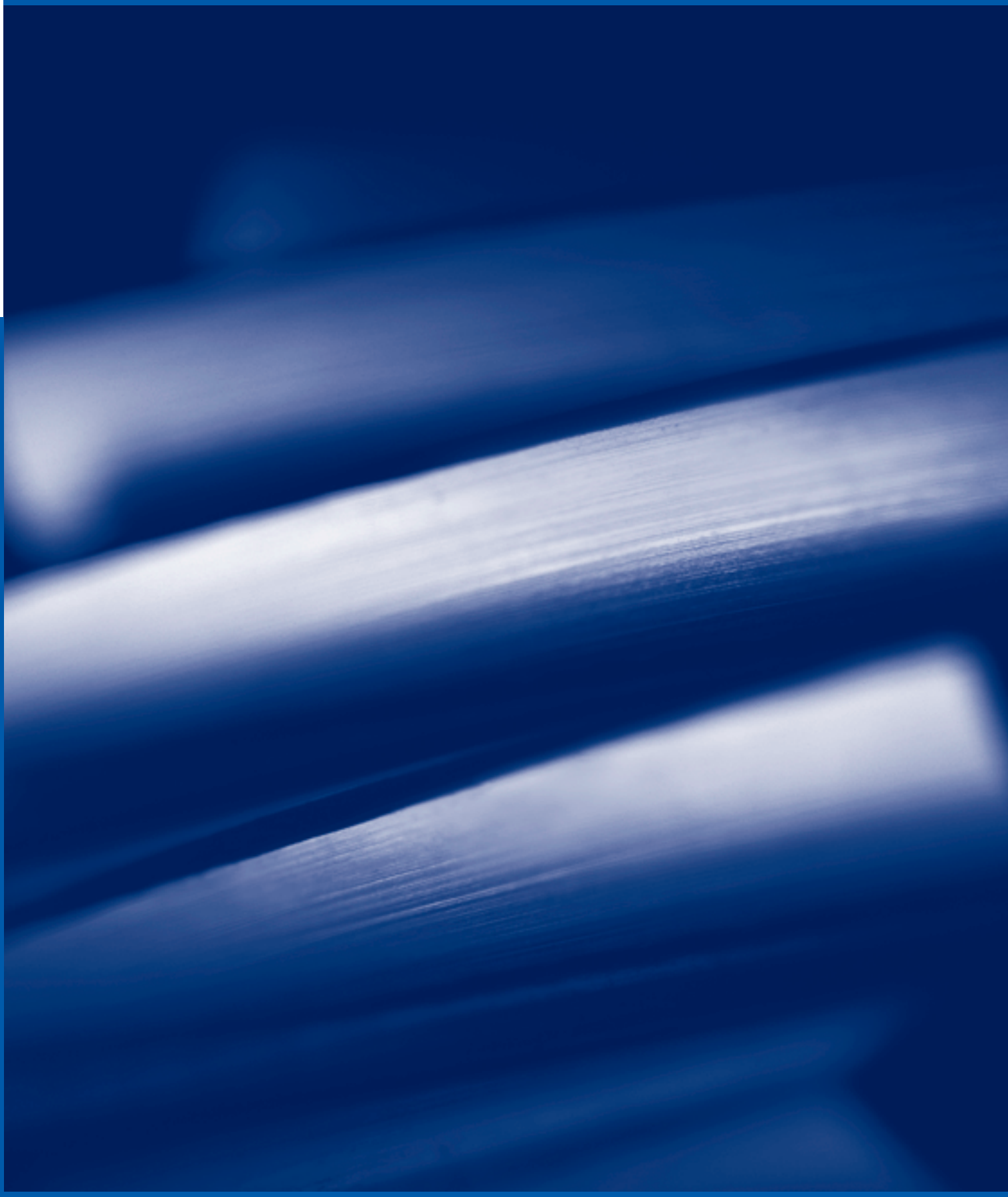
Monorail overhead conveyor geared motors for light and heavy loads

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


m1
s, v, a
n1
d1
j1


Lenze

Contents | G-motion EHB



General information | G-motion EHB

Abbreviations used in this catalogue

α	[°]	Angle of action of radial force
α_s	[°]	Angle of greatest upward slope
η	[%]	Mechanical efficiency
a	[m/s²]	Maximum acceleration Maximum deceleration
AC		Alternating current/voltage
c		Load capacity of geared motors
cos$_\varphi$		Power factor of the motor
d	[m]	Running gear diameter
DC		Direct current/voltage
f_α		Effective direction factor at driven shaft
f_r	[Hz]	Rated frequency
f_{roll}	[N/kg]	Rolling friction resistance
f_w		Additional load factor at driven shaft
F_I		Mass acceleration factor
F_m	[N]	Radial force resulting from mass acting on the driven shaft of the gearbox
F_L	[N]	Radial force resulting from load torque
F_r	[N]	Applied radial force
$F_{r\,Tab}$	[N]	Table value of radial force
$F_{r\,perm}$	[N]	Permissible radial force
F_{add1}	[N]	Additional radial forces
F_{add2}	[N]	Additional radial forces
g	[m/s_]	Gravitational acceleration
h	[m]	Installation height
i		Transmission ratio
I_A	[A]	Motor starting current
I_B	[A]	Rated current of brake
I_r	[A]	Rated current
J_B	[kgm²]	Moment of inertia of brake
J_{ext}	[kgm²]	Moment of inertia of the load reduced to the motor shaft
J_{load}	[kgm²]	Moment of inertia of load on gearbox driven shaft
J_{mot}	[kgm²]	Moment of inertia of the motor
k		Application factor (according to DIN 3990)
k_h		Power correction factor, depending on installation height
k_L		Power correction factor, depending on operating mode
k_u		Power correction factor, depending on ambient temperature
m	[kg]	Mass
m_T	[kg]	Maximum transport load
m_F	[kg]	Overall weight, carriage
m_b	[kg]	Overall weight of mass in motion
m_G	[kg]	Mass acting on the driven shaft of the gearbox
M_a	[Nm]	Acceleration torque
M_A	[Nm]	Motor starting torque
M_B	[Nm]	Brake holding torque
M_I		Maximum torque factor
M_{stall}	[Nm]	Stall torque of motor
M_L	[Nm]	Load torque
M_{Lmax}	[Nm]	Short-time maximum torque
M_r	[Nm]	Rated torque
M_s	[Nm]	Torque from height difference (upward slope)
M_{roll}	[Nm]	Rolling frictional torque
M_{add}	[Nm]	Additional torque
M_2	[Nm]	Output torque
n_L	[rpm]	Load speed
n_r	[rpm]	Rated speed
n_1	[rpm]	Input speed
n_2	[rpm]	Output speed
OT		Operating time
P	[kW]	Required power
P_r	[kW]	Rated power
P_1	[kW]	Drive power
t	[s]	Acceleration time
t_L	[%]	Runtime at maximum torque
T_{amb}	[°C]	Ambient temperature
U_r	[V]	Rated voltage
v	[m/s]	Maximum travelling velocity
v_1	[m/s]	Horizontal travelling velocity
v_2	[m/s]	Horizontal cam travelling velocity
v_3	[m/s]	Travelling velocity on upward/downward slope

CCC	Certificate for China compulsory product certification
CE	Communauté Européenne
CSA	Canadian Standards Association
DIN	Deutsches Institut für Normung
EMC	Electromagnetic compatibility
EN	European standard
IEC	International Electrotechnical Commission
IM	International Mounting Code
IP	International protection code
NEMA	National Electrical Manufacturers Association
UL	Underwriters Laboratory listed 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 °C for gearboxes
  40 °C for motors (to EN 60034)
- Installation height < = 1000 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**

G	K	K	0	7	-	2	M	V	A: [ ] / C: [X]	R: [ ] / L: [X] / N: [ ]	Motor frame size: 0 9 0	C	3	2

Flange **250** mm

Additional ordering data

Mounting position

A	B	C	D
X			

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

Shaft		Flange		Terminal box			
5	8	0	5	2	3	4	5
X			X		X		

Colour

- [X] 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

☐ **Order**

☐ **Quotation**

Fax no. _____

From

_____
Company

_____
Street/PO box

_____
Town/Postcode

_____
Date Signature

Customer no.

_____
Order no.

_____
Contact name

_____
Department

_____
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 _____

_____

Customer no.

Quantity

Order no.

i =

G K K - 2 M V A C R L N Motor frame size C

Flange mm

Additional ordering data

Mounting position

A B C D

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

Shaft: 5 8
Flange: 0 5
Terminal box: 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

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 and HAN connector) in position

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 tacho generator/position encoder)

☐ Rectifier **4-pole** ☐ Rectifier **6-pole**

Motor protection

☐ PTC ☐ KTY

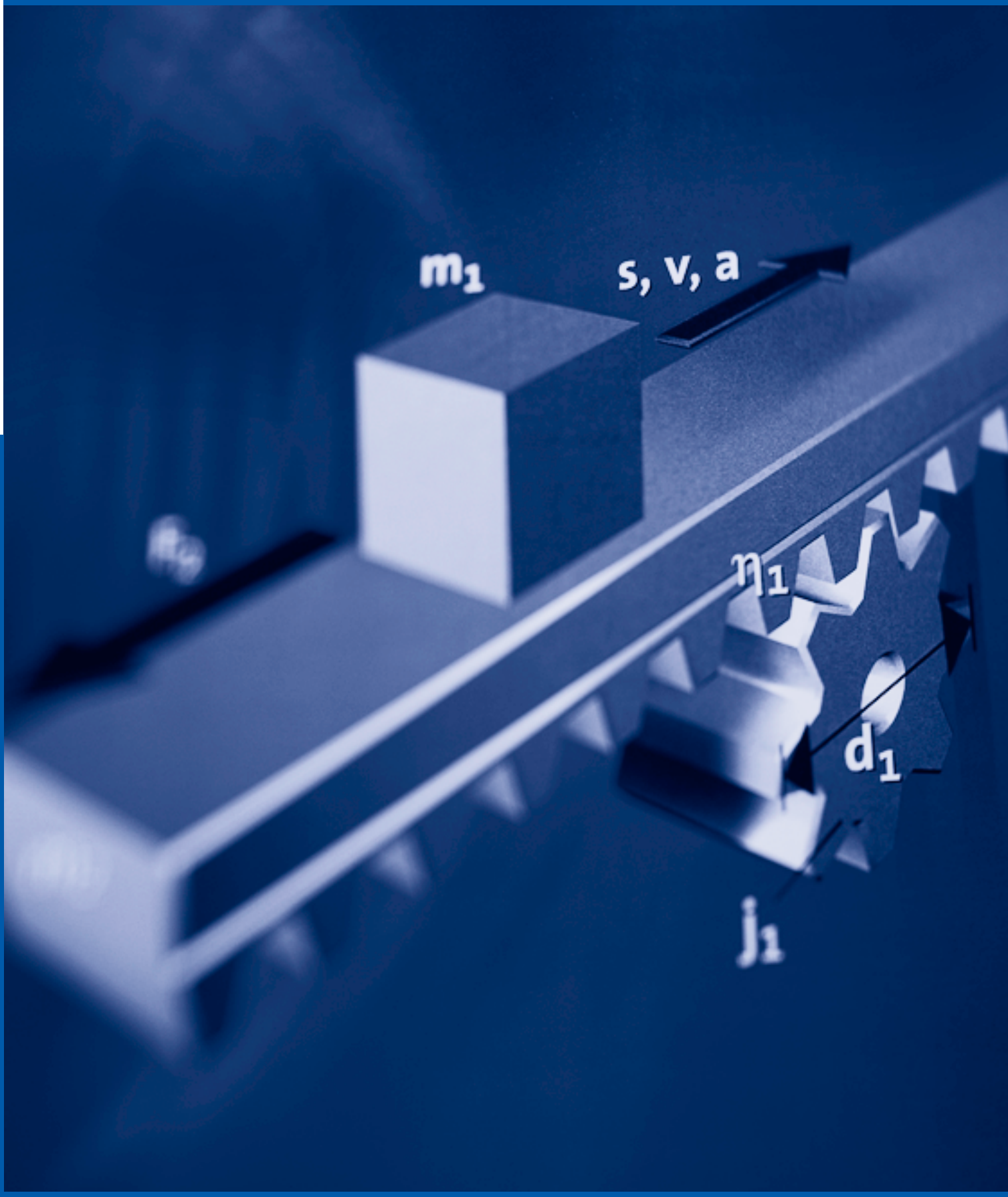
Additional options

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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s, v, a
n1
d1
j1

Drive dimensioning | G-motion EHB

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 n1 > 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.

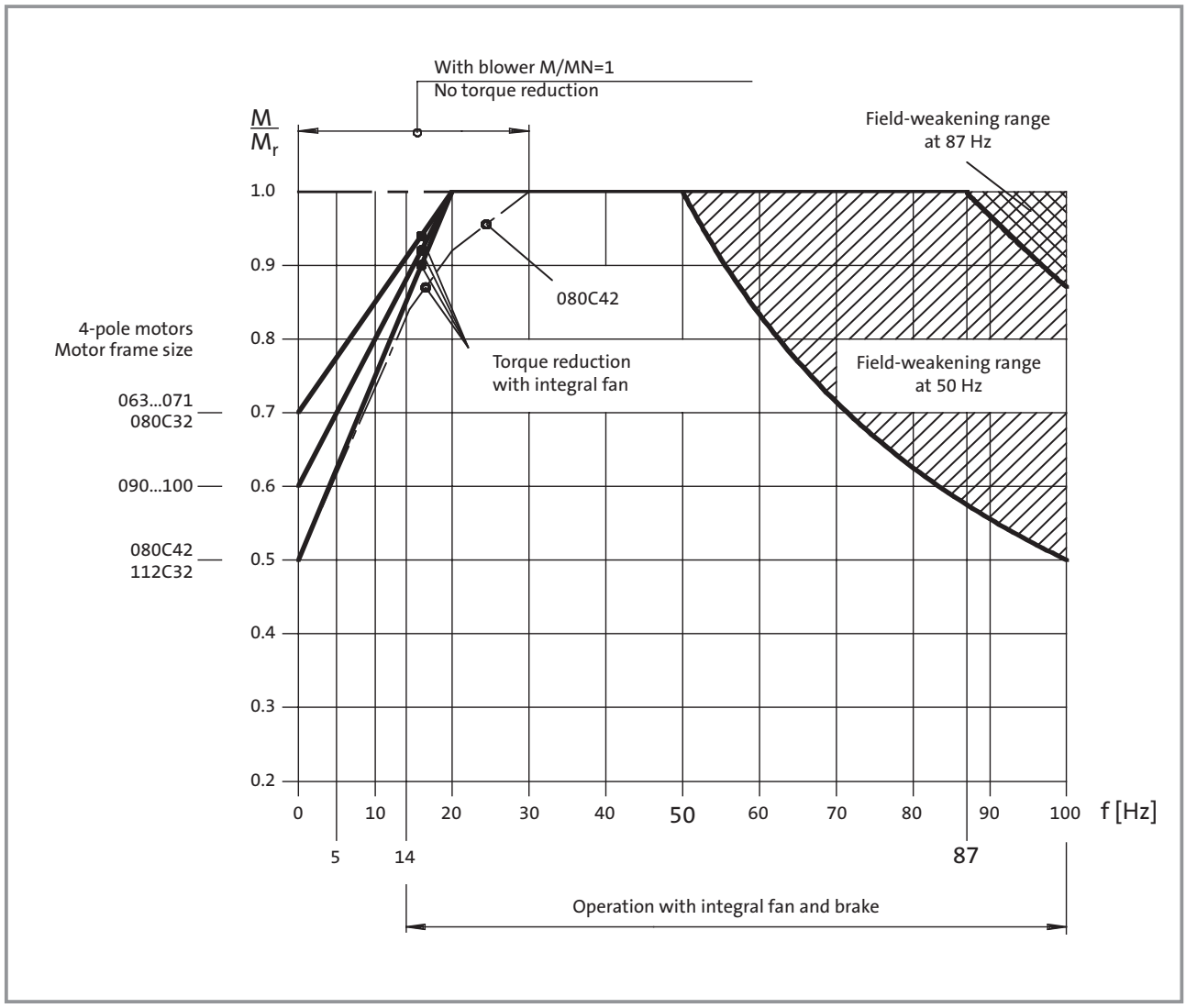
Intermittent operation S3, S4, S5
Cycles of the same type combine to form a sequence.
The cycle time is usually 10 minutes.
- S3: The starting current is not significant for the temperature rise of the motor.
- S4: The starting current contributes to the temperature rise of the motor
- S5: The starting 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.



Drive dimensioning
Required input variables

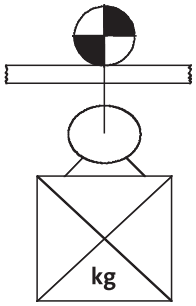
Our service

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.

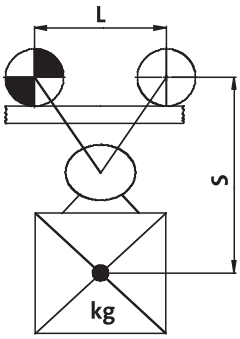
In order to carry out the drive dimensioning process, we need the following data in respect of the required input variables.

Carriage designs

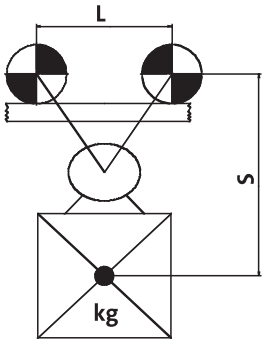
1 running gear unit - 1 driven wheel



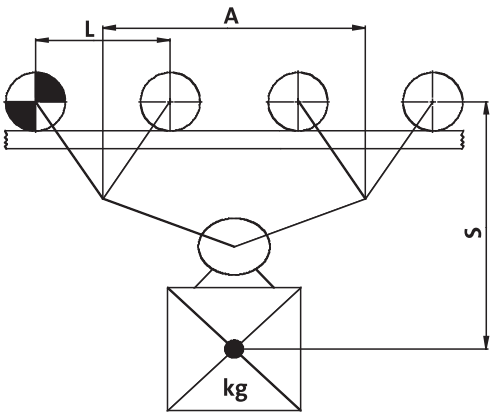
2 running gear units - 1 driven wheel



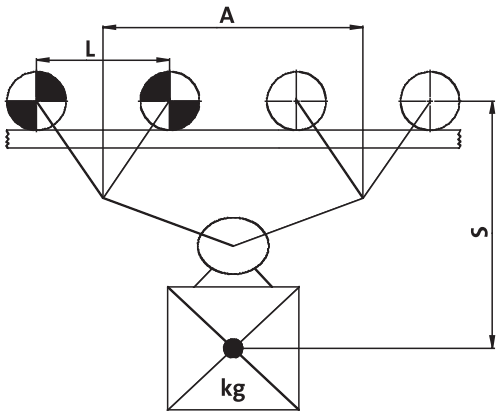
2 running gear units - 2 driven wheels [1)]



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 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/s²]
Maximum acceleration	(if necessary, specify individually for different travel ranges)	**a** =_____ [m/s²]
Maximum deceleration	(if necessary, specify individually for different travel ranges)	=_____ [m/s²]
Acceleration time		t =_____ [s]
Brakes		
Maximum deceleration with operation of a frequency inverter	(if necessary, specify individually for different travel ranges)	=_____ [m/s²]
Positioning accuracy		=_____ [mm]
Maximum braking distance for emergency stop		=_____ [mm]

Radial forces		
Additional radial forces for torque calculation		
	Example: Traction mode	F_{add1} = _____ [N]
	Example: Pressure on running gear exerted by tensioning unit	F_{add2} = _____ [N]
Frequency-controlled geared motor Maximum torques/runtime		
Short-time maximum torque	Emergency-off, quick stop, occasional high starting duty	$M_{L\,max}$ = _____ [Nm]
Runtime at maximum torque		t_L = _____ [%]
Mains-operated geared motor Moments of inertia/switching operations		
Moment of inertia of load on driven shaft of the gearbox		J_L = _____ [kgm^2]
Switching operations per hour		= _____
Mechanical clutch operation		
☐ Manual	☐ Via actuators similar mechanical devices	
Number of switching operations per hour		= _____
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 = _____ [Nm]
Rolling frictional torque	$M_{roll} = m_b \cdot f_{roll} \cdot \frac{d}{2}$	M_{roll} = _____ [Nm]
Additional torque (Example: Traction mode)	$M_{add} = F_{add1} \cdot \frac{d}{2}$	M_{add} = _____ [Nm]
Acceleration	$\mathbf{a} = \frac{v}{T}$	**a** = _____ [m/s²]
Acceleration torque	$M_{\mathbf{a}} = m_b \cdot \mathbf{a} \cdot \frac{d}{2}$	$M_{\mathbf{a}}$ = _____ [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	= _____ [Nm]
Load speed	$n_L = \frac{v}{h \cdot d}$	n_L = _____ [rpm]
Required power	$P = \frac{M_L \cdot n_L}{9550 \cdot h}$	P = _____ [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 = _____ [Nm]
As a result of load torque	$F_L = \frac{M_L \cdot 2}{d}$	F_L = _____ [Nm]
Radial force	$F_r = F_m + F_L + F_{add1} + F_{add2}$	F_r = _____ [m/s²]

Define gearbox design		
Gearbox type		= GKK
Mounting position	A, B, C, D	= _____
Output design	VAR, VAL, VAN	
	VCR, VCL, VCN	= _____
Drive design		= M
Cooling type	Naturally ventilated/forced-ventilated	= _____

▶ 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	S2 OT [min]	S2 k_L	S3 OT [%]	S3 k_L	S6 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	60
k_{amb}	1	0.95		0.90	0.85	0.80
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	$F_r \leq F_{r\,perm} = \min(f_w \cdot f_\alpha \cdot F_{r\,Tab} \cdot f_w \cdot F_{r\,max})$	

▶ P_1, M_2, n_2, c, i → Selection tables

▶ f_w, f_α, $F_{r\,Tab}$, $F_{r\,max}$ → Technical data → Permissible radial forces

Determining the required gearbox load capacity for mains operation

Moment of inertia of the load reduced to the motor shaft $J_{ext} = \frac{J_L}{i_2}$ J_{ext} = _____ [kgm²]

↓

Intensity $F_I = \frac{J_{ext} + J_{mot}}{J_{mot}}$ F_I = _____

↓

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

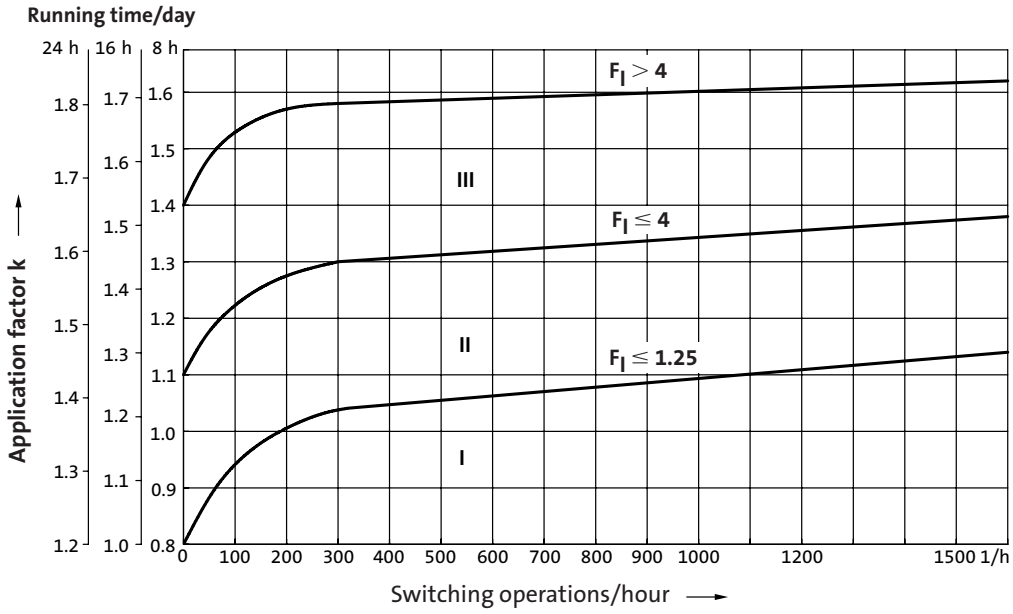
↓

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

↓



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Application factor		k = _____
	Check	
Load capacity	$c \geq k$	

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

Intensity $M_I = \frac{M_{L,max}}{M_2}$ $M_I =$ _____

↓

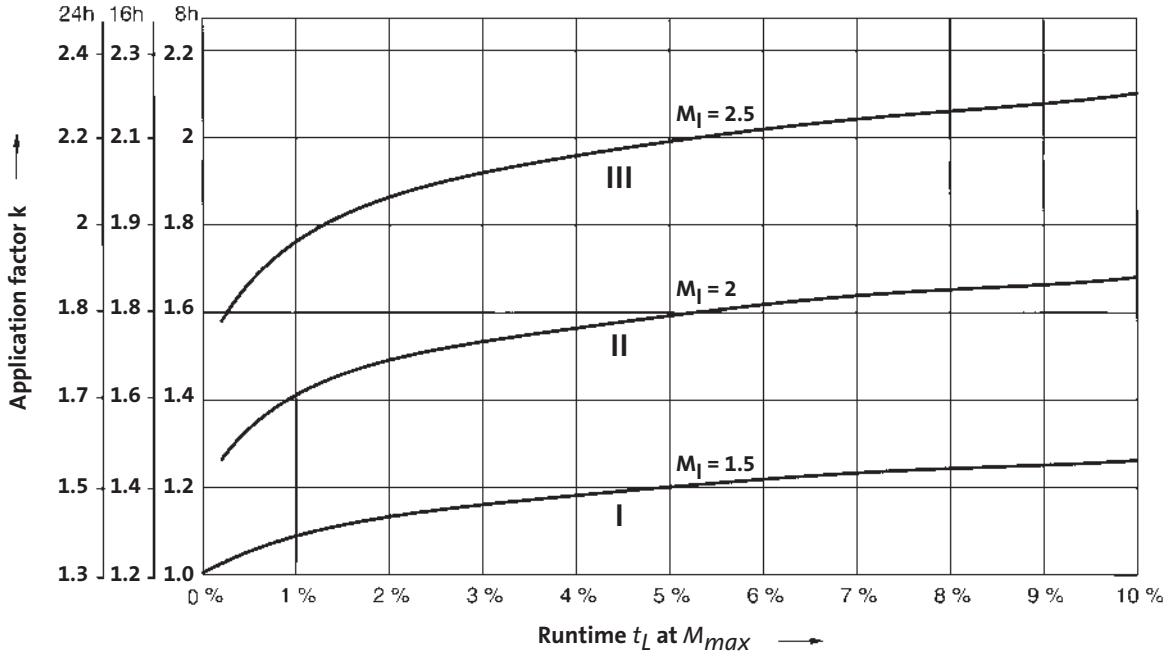
With runtime $t_L > 10\%$, take intensity M_I from the calculation into account
With runtime $t_L \leq 10\%$, take application factor k from the diagram into account

↓

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

↓

Running time/day



↓

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: Shafts [mm] – Solid shaft	Output design: Housing – Foot mounting with centring and threaded pitch circle	Output design: Housing – With centring and threaded pitch circle	Output design: Flange [mm] – Without flange	Output design: Flange [mm] – With round flange (threaded holes)	Output design: Flange [mm] – With square flange (through holes)	Possible combinations Housing and flange	Lubricants – Mineral **CLP 460**	Lubricants – Synthetic **CLP PG 460**	Paint colour – Paint **RAL 7012** (basalt grey)	Paint colour – Grey primer
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] – 2nd solid shaft end Shaft in position 8 (3+5)	Shafts [mm] – Shaft sealing rings **Viton (FP)**	Ventilation units	Lubricants – Approved for use in the food industry **CLP HC 220**	Paint colour – Special paint according to RAL number
Product key			**V**					
GKK	04	2	M	20x35	●	●	●	●
	05	2		25x35				
	06	2		35x70				
	07	2		45x90 55x110			● [1)]	

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

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 -50 / 0°C / +50	DIN 51517-3: CLP ISO 12925-1: CKC/CKD	Designation
Shell	0 / +40	CLP VG 460	Omala 460
Klüber	-20 / +40	CLP PG VG 460	Klübersynth GH 6-460
Klüber	-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 kV Maximum rate of voltage rise du/dt = 5 kV/µs
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

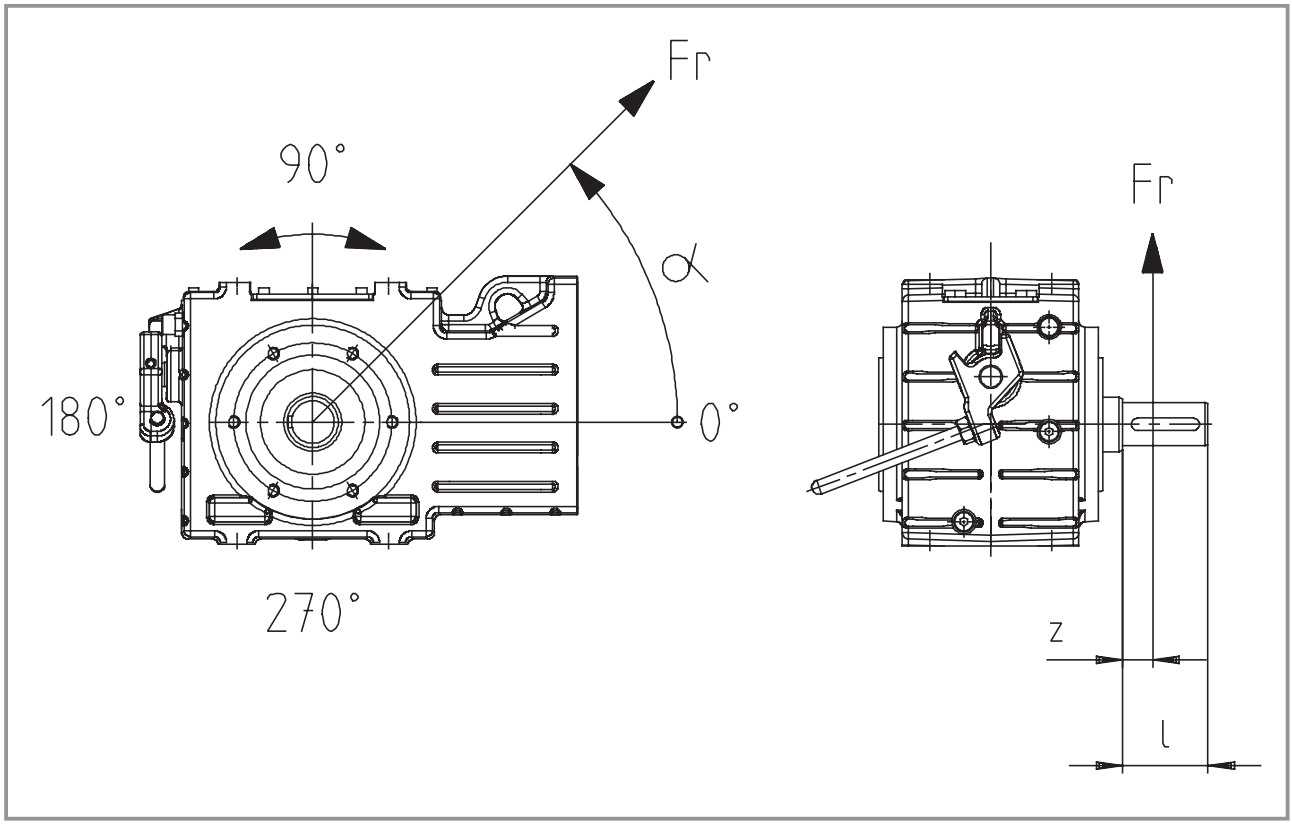
Technical data

Selection tables

Dimensions

Permissible radial forces on output side

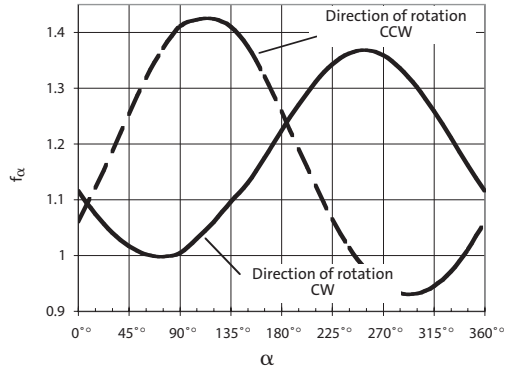
$F_{r\,perm} \leq \min (f_w \cdot f_\alpha \cdot F_{r\,Tab}; f_w \cdot F_{r\,max})$



Permissible radial forces on output side

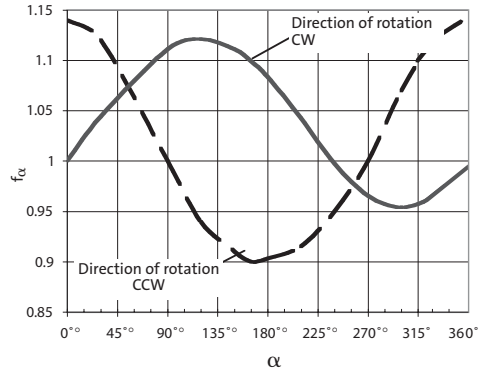
f_α Effective direction factor f_α at driven shaft

GKK 04/05

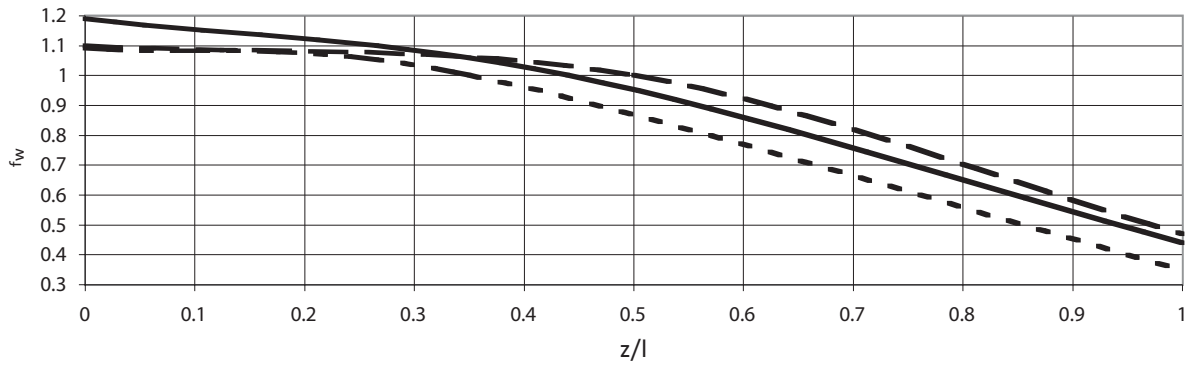


f_α Effective direction factor f_α at driven shaft

GKK 06/07



f_w Additional load factor f_w at driven shaft



Geared motor	Shaft Ø 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	- - - - -

3

Permissible radial forces on output side

V□R	Solid shaft without flange				
	GKK 04	GKK 05*	GKK 06**	GKK 07**	
				Shaft Ø 45 mm	Shaft Ø 55 mm
	Application of force F_r: Distance from flange system to centre of running gear (see dimensional drawings) where $\alpha = 90°$				
	49.5 mm	49.5 mm	44.5 mm	49.5 mm	64.5 mm
n_2 [rpm]	$F_{r\,Tab}$ [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
	Application of force F_r: Distance from flange system to centre of running gear (see dimensional drawings) where $\alpha = 90°$				
	49.5 mm	49.5 mm	65.5 mm	75 mm	90 mm
n_2 [rpm]	$F_{r\,Tab}$ [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
	Application of force F_r: Distance from flange system to centre of running gear (see dimensional drawings) where $\alpha = 90°$				
	49.5 mm	49.5 mm	101.5 mm	108.5 mm	108.5 mm
n_2 [rpm]	$F_{r\,Tab}$ [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

Motor cooling with blower / Motor cooling with integral fan											
5 Hz		14 Hz		20 - 87 Hz				100 Hz		i	Bevel geared motor
n_2 [rpm]	M_2 [Nm]	n_2 [rpm]	M_2 [Nm]	n_2 20 Hz [rpm]	n_2 87 Hz [rpm]	M_2 [Nm]	c 87 Hz	n_2 [rpm]	M_2 [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)

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		**n_1 = 1425 rpm**	**P_1 = 0.145 kW**		**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		**n_1 = 1365 rpm**	**P_1 = 0.22 kW**		**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		**n_1 = 1370 rpm**	**P_1 = 0.31 kW**		**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		**n_1 = 1410 rpm**	**P_1 = 0.45 kW**		**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		**n_1 = 1405 rpm**	**P_1 = 0.68 kW**		**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

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 kW		**n_1 = 1410 rpm**	**P_1 = 0.92 kW**		**n_1 = 1710 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 kW		**n_1 = 1390 rpm**	**P_1 = 1.3 kW**		**n_1 = 1690 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 kW		**n_1 = 1395 rpm**	**P_1 = 1.8 kW**		**n_1 = 1695 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 kW		**n_1 = 1440 rpm**	**P_1 = 2.6 kW**		**n_1 = 1740 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

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 kW		**n_1 = 1430 rpm**	**P_1 = 3.6 kW**		**n_1 = 1730 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 kW		**n_1 = 1450 rpm**	**P_1 = 4.8 kW**		**n_1 = 1750 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 kW		**n_1 = 1445 rpm**	**P_1 = 6.6 kW**		**n_1 = 1745 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											
		Motor cooling with integral fan									
5 Hz		14 Hz		20 - 50 Hz				70 Hz		i	Bevel geared motor
n_2 [rpm]	M_2 [Nm]	n_2 [rpm]	M_2 [Nm]	n_2 20 Hz [rpm]	n_2 50 Hz [rpm]	M_2 [Nm]	c 50 Hz	n_2 [rpm]	M_2 [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

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 20 Hz	n_2 50 Hz	M_2	c 50 Hz	n_2	M_2		
[rpm]	[Nm]	[rpm]	[Nm]	[rpm]	[rpm]	[Nm]		[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											
		Motor cooling with integral fan									
5 Hz		14 Hz		30 - 50 Hz				70 Hz		i	Bevel geared motor
n_2 [rpm]	M_2 [Nm]	n_2 [rpm]	M_2 [Nm]	n_2 30 Hz [rpm]	n_2 50 Hz [rpm]	M_2 [Nm]	c 50 Hz	n_2 [rpm]	M_2 [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)

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 [rpm]	M_2 [Nm]	n_2 [rpm]	M_2 [Nm]	n_2 20 Hz [rpm]	n_2 50 Hz [rpm]	M_2 [Nm]	c 50 Hz	n_2 [rpm]	M_2 [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											
		Motor cooling with integral fan									
5 Hz		14 Hz		20 - 87 Hz				100 Hz		i	Bevel geared motor
n_2 [rpm]	M_2 [Nm]	n_2 [rpm]	M_2 [Nm]	n_2 20 Hz [rpm]	n_2 87 Hz [rpm]	M_2 [Nm]	c 87 Hz	n_2 [rpm]	M_2 [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

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

Motor cooling with blower											
		Motor cooling with integral fan									
5 Hz		14 Hz		20 - 87 Hz				100 Hz		i	Bevel geared motor
n_2 [rpm]	M_2 [Nm]	n_2 [rpm]	M_2 [Nm]	n_2 20 Hz [rpm]	n_2 87 Hz [rpm]	M_2 [Nm]	c 87 Hz	n_2 [rpm]	M_2 [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											
		Motor cooling with integral fan									
5 Hz		14 Hz		30 - 87 Hz				100 Hz		i	Bevel geared motor
n_2 [rpm]	M_2 [Nm]	n_2 [rpm]	M_2 [Nm]	n_2 30 Hz [rpm]	n_2 87 Hz [rpm]	M_2 [Nm]	c 87 Hz	n_2 [rpm]	M_2 [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

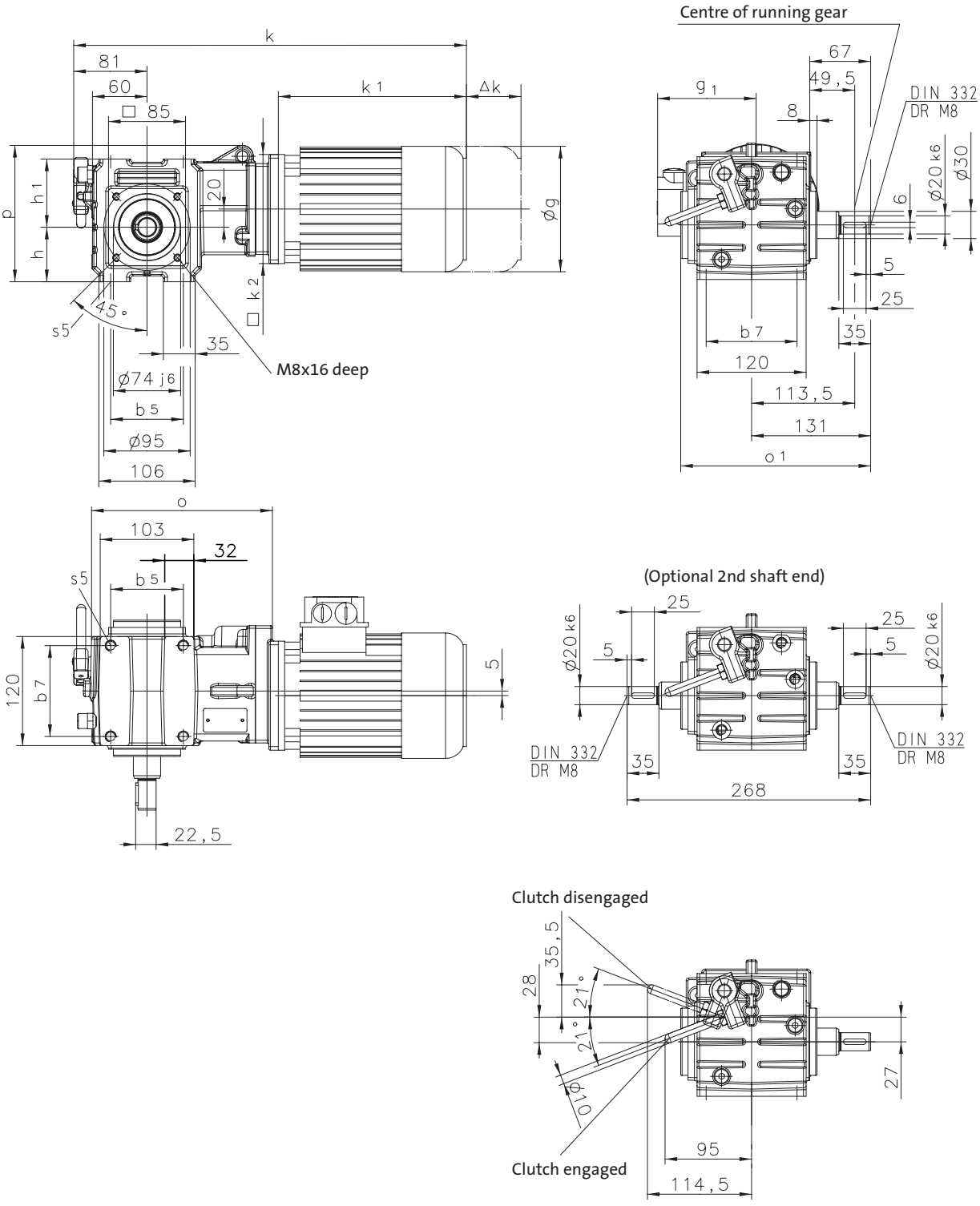
Note: Torque reduction < 30 Hz (see Page 2-5)

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

Motor cooling with blower											
		Motor cooling with integral fan									
5 Hz		14 Hz		20 - 87 Hz				100 Hz			
n_2 [rpm]	M_2 [Nm]	n_2 [rpm]	M_2 [Nm]	n_2 20 Hz [rpm]	n_2 87 Hz [rpm]	M_2 [Nm]	c 87 Hz	n_2 [rpm]	M_2 [Nm]	i	Bevel geared motor
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

Geared motors

GKK04 - 2M V□R



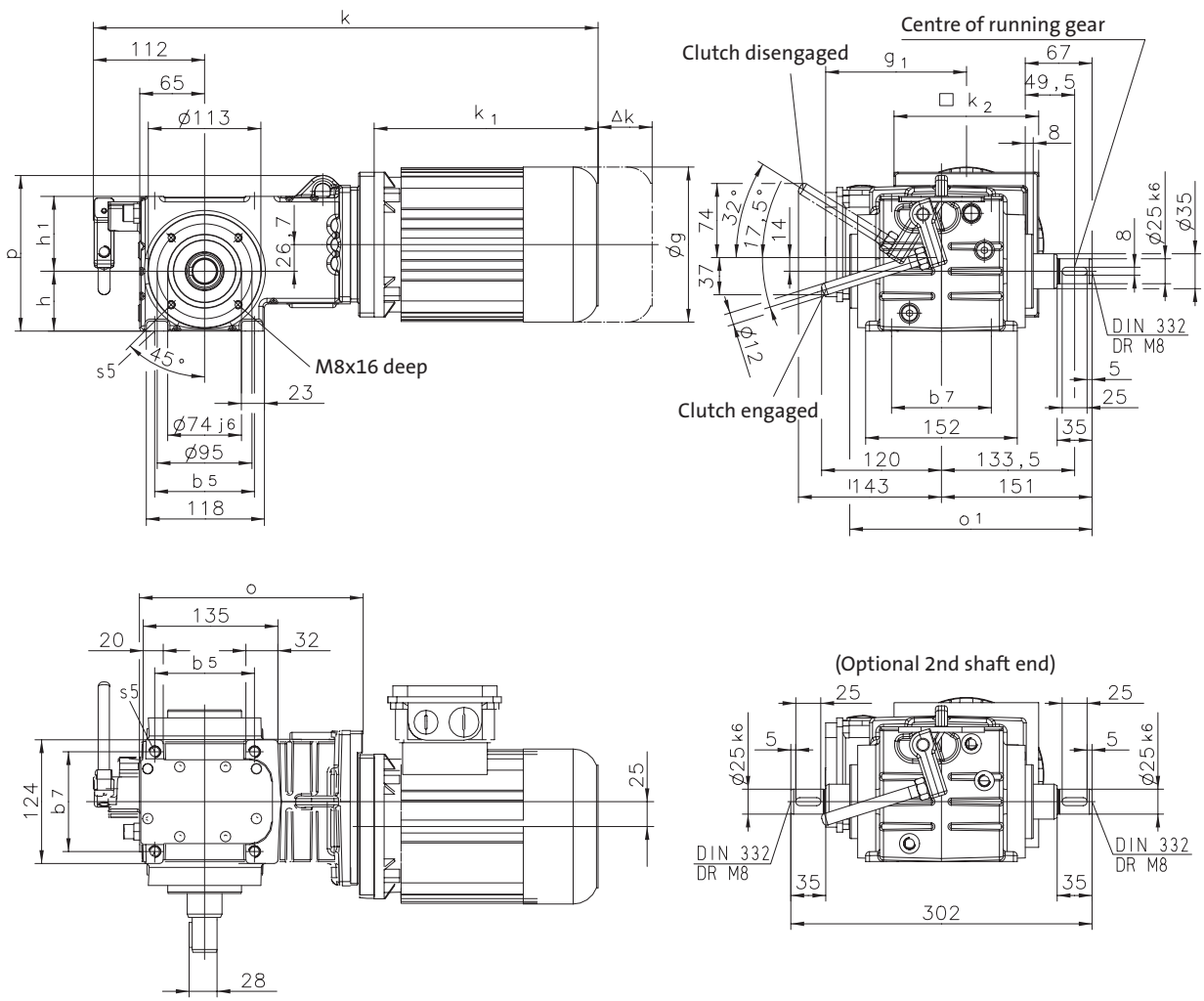
Bevel gearbox with clutch
Dimensions

Geared motor GKK04 - 2M V□R		Motor frame size						
		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)

GKK05 - 2M V□R


k
112
65
ø113
k 1
Δk
p
h 1
h
26,7
ø g
s5
45°
M8x16 deep
23
ø74 j6
ø95
b 5
118
Centre of running gear
Clutch disengaged
g 1
67
49,5
□ k 2
8
74
32°
17,5°
14
37
ø12
Clutch engaged
8
ø25 k6
ø35
DIN 332
DR M8
5
25
b 7
152
35
120
133,5
143
151
o 1
o
135
20
32
b 5
s5
124
b 7
25
28
(Optional 2nd shaft end)
25
5
ø25 k6
DIN 332
DR M8
35
302

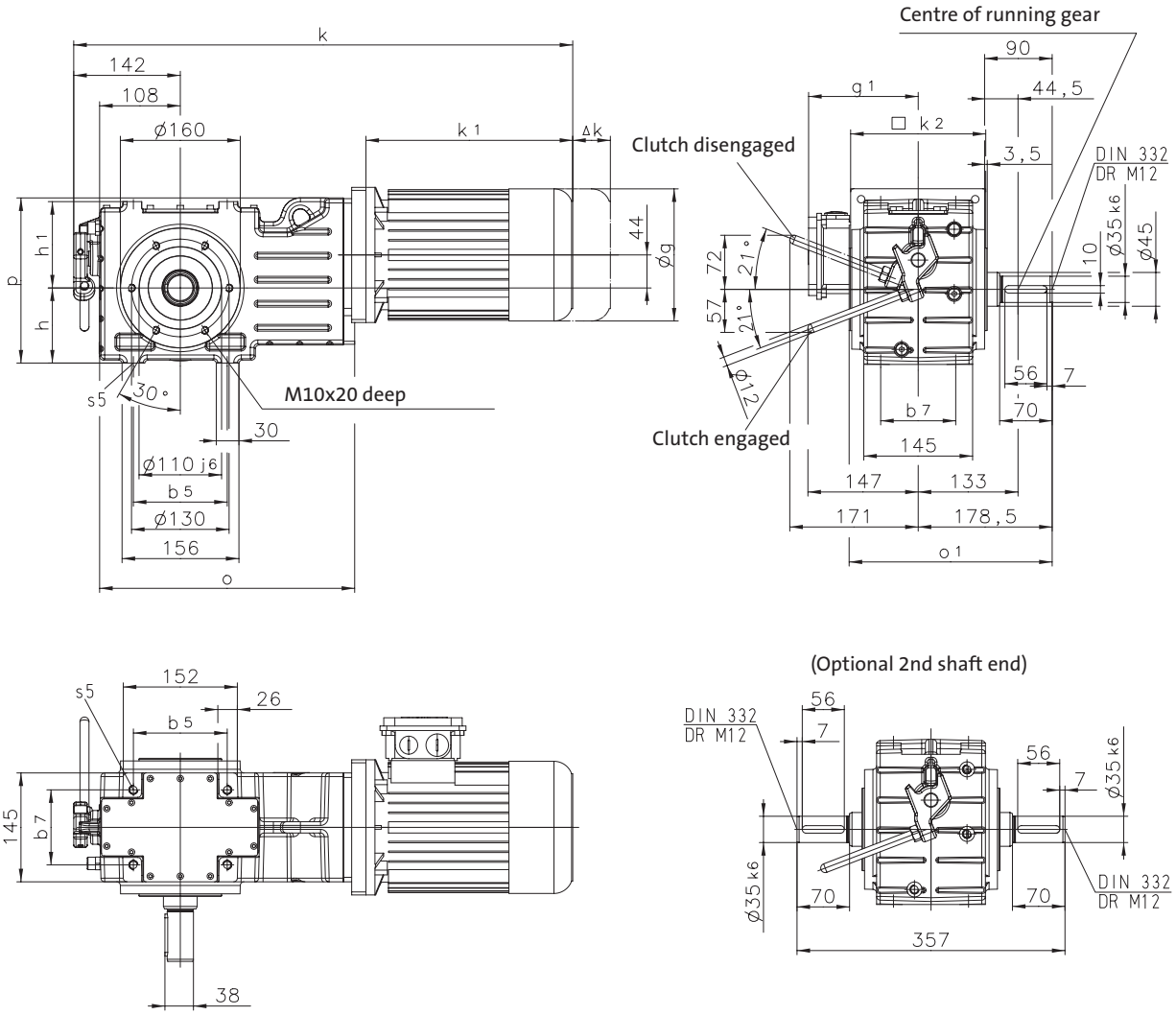
Bevel gearbox with clutch
Dimensions

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)

GKK06 - 2M V□R


k
142
108
ø160
k 1
Δk
44
ø g
p
h 1
h
s5
30°
M10x20 deep
30
ø110 j6
b 5
ø130
156
o
Centre of running gear
90
g 1
44,5
□ k 2
3,5
DIN 332
DR M12
Clutch disengaged
72
21°
57
21°
ø12
Clutch engaged
10
ø35 k6
ø45
56
7
70
b 7
145
147
133
171
178,5
o 1
(Optional 2nd shaft end)
152
s5
26
b 5
145
b 7
38
56
DIN 332
DR M12
7
56
7
ø35 k6
ø35 k6
70
70
DIN 332
DR M12
357

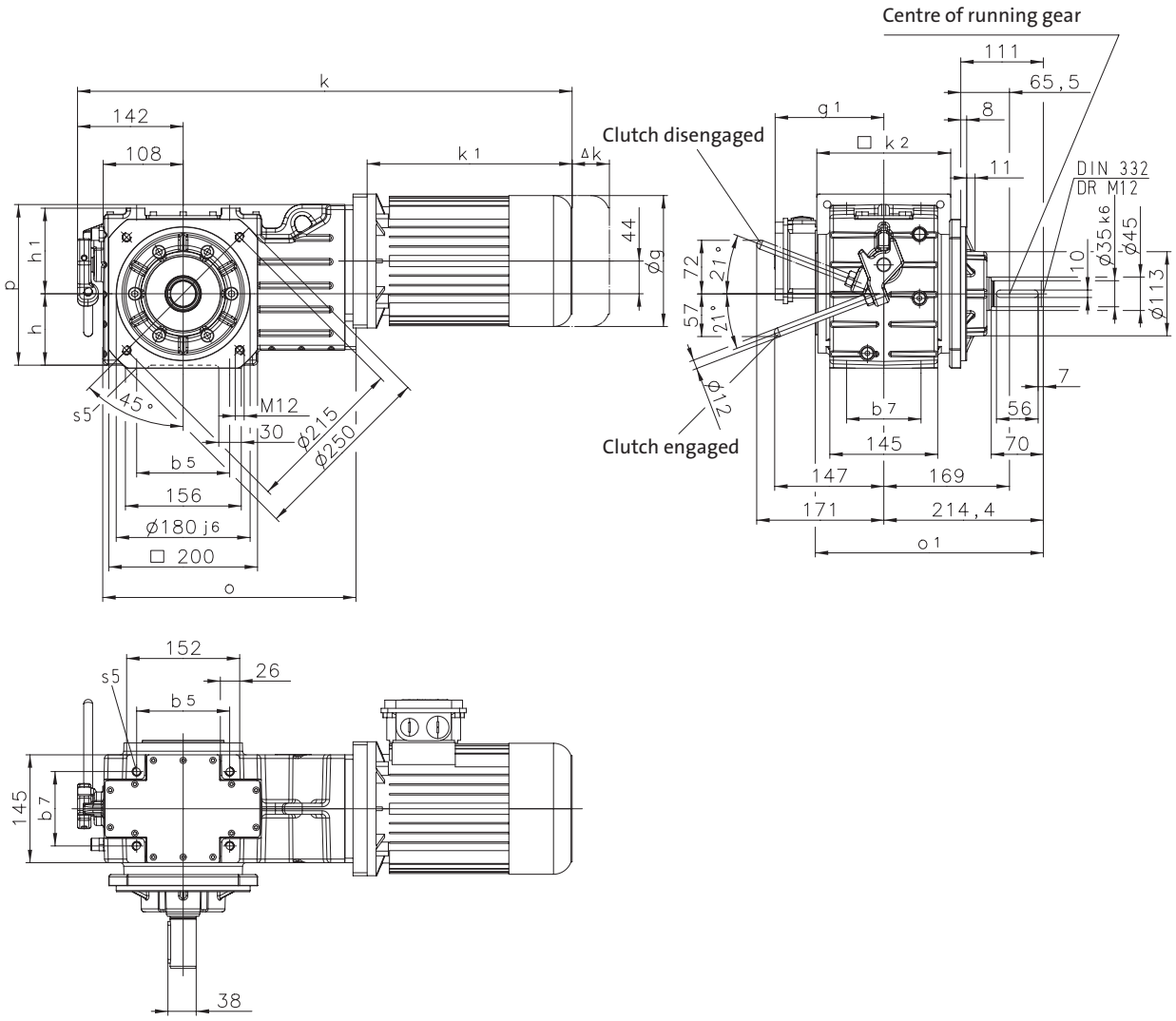
Bevel gearbox with clutch
Dimensions

Geared motor GKK06 - 2M V□R		Motor frame size							
		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	
Output	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)

GKK06 - 2M V□L


Centre of running gear
Clutch disengaged
Clutch engaged
k
142
108
k 1
Δk
44
ø g
h 1
h
p
s5
45°
M12
30
ø215
ø250
b 5
156
ø180 j6
□ 200
o
g 1
□ k 2
111
65,5
8
11
DIN 332
DR M12
ø35 k6
ø45
ø113
10
72
57
21°
21°
ø12
7
56
70
b 7
145
147
169
171
214,4
o 1
152
26
s5
b 5
145
b 7
38

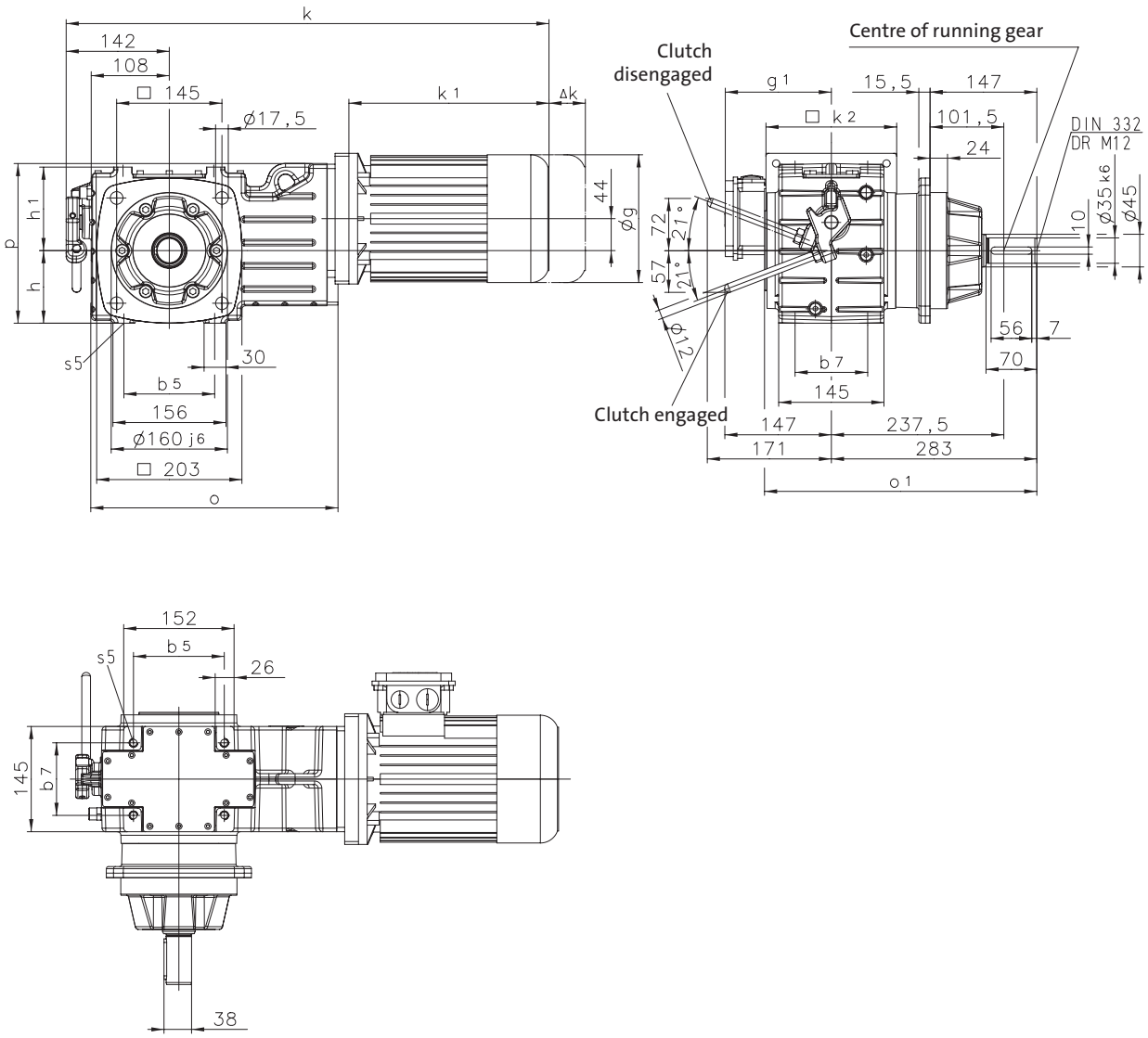
Bevel gearbox with clutch
Dimensions

Geared motor GKK06 - 2M V□L		Motor frame size							
		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	
Output	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

GKK06 - 2M V□N


k
142
108
□ 145
ø17,5
k 1
Δk
44
øg
h 1
p
h
s5
30
b 5
156
ø160 j6
□ 203
o
Clutch disengaged
Centre of running gear
g 1
15,5
147
□ k 2
101,5
24
DIN 332
DR M12
ø35 k6
ø45
10
72
21°
57
21°
ø12
56
7
70
b 7
145
Clutch engaged
147
237,5
171
283
o 1
152
b 5
s5
26
145
b 7
38

3

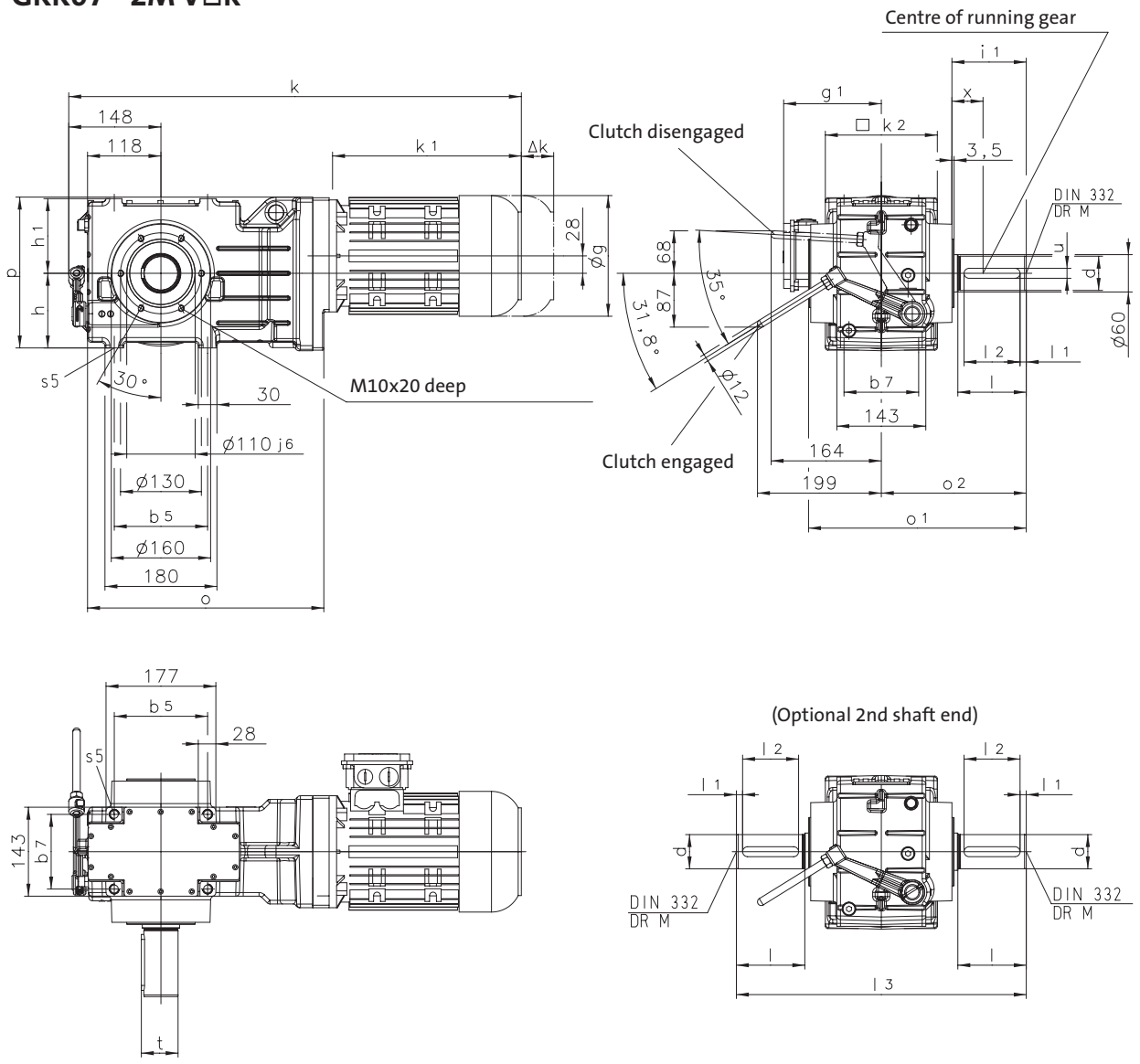
Bevel gearbox with clutch
Dimensions

Geared motor GKK06 - 2M V□N		Motor frame size							
		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	
Output	b_5	b_7	h_1	h	s_5	o_1	p
VAN	125	100	115	100	M12x24 deep	375	220
VCN			118	103		378	223

* For additional dimensions and options, see Motors Chapter

GKK07 - 2M V□R


Centre of running gear
k
148
118
k 1
Δk
Clutch disengaged
i 1
g 1
x
□ k 2
3,5
DIN 332
DR M
28
ø g
p
h 1
h
68
87
35°
31,8°
ø12
u
d
ø90
s5
30°
30
M10x20 deep
ø110 j6
ø130
b 5
ø160
180
o
Clutch engaged
b 7
143
164
199
o 2
o 1
l 2
l 1
l
177
b 5
28
s5
143
b 7
t
(Optional 2nd shaft end)
l 2
l 1
d
DIN 332
DR M
l
l 3

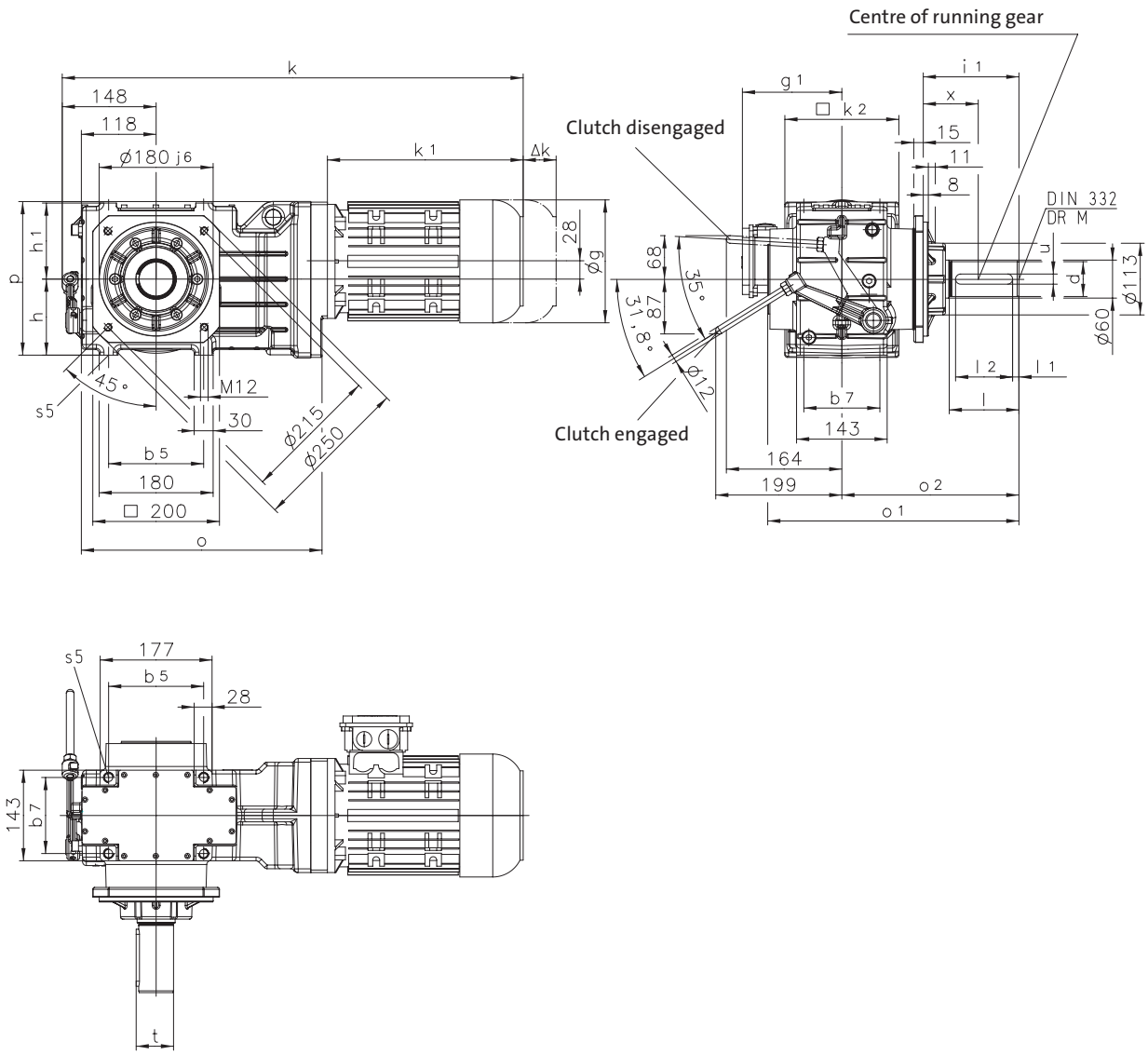
3

Geared motor GKK07 - 2M V□R		Motor frame size						
		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	Solid shaft								Foot					Flange		Gearbox		
Output	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)

GKK07 - 2M V□L

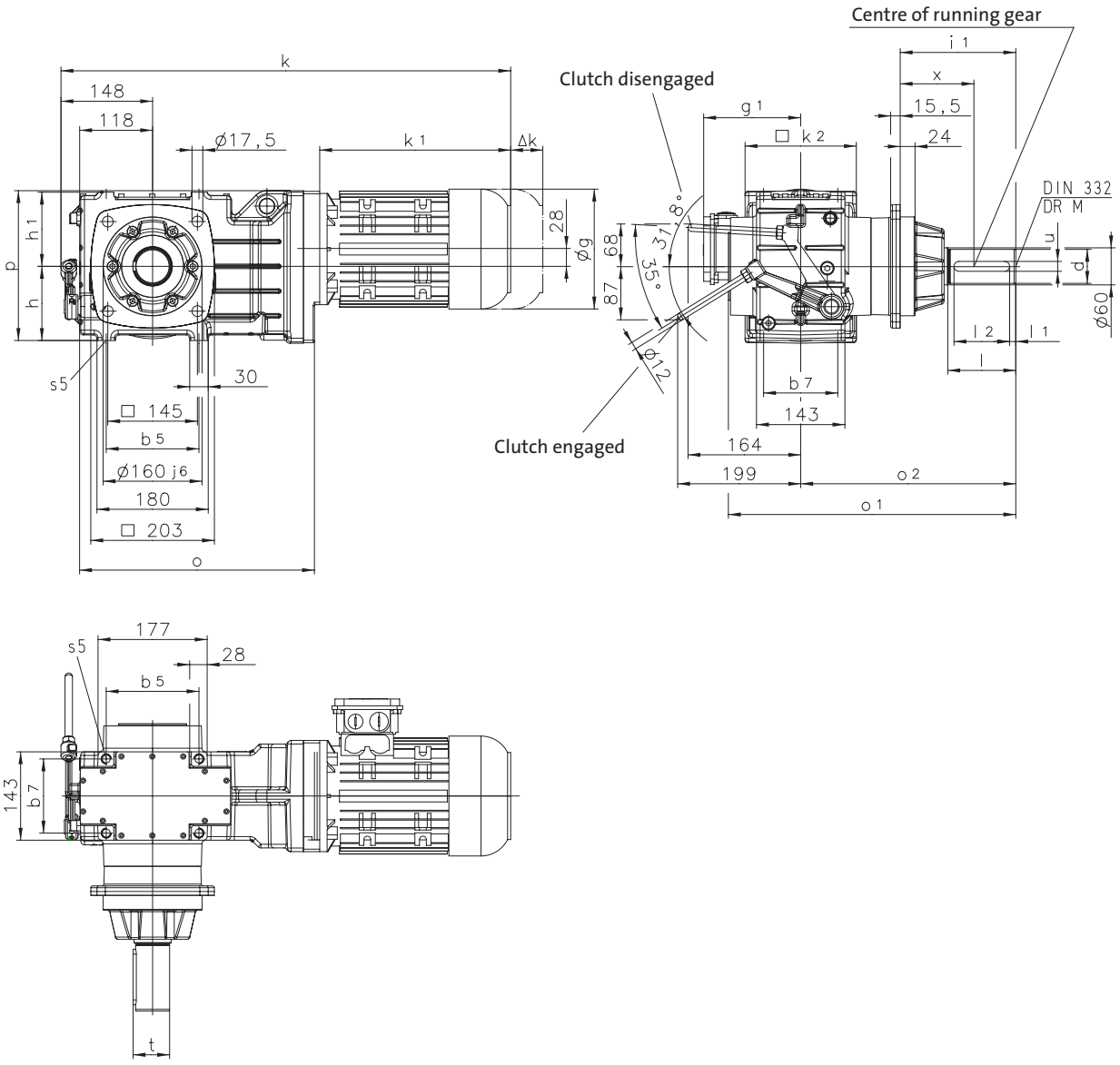

Centre of running gear
Clutch disengaged
Clutch engaged
k
148
118
ø180 j6
k 1
Δk
28
ø g
p
h 1
h
45°
M12
30
s5
b 5
180
□ 200
o
ø215
ø250
g 1
□ k 2
i 1
x
15
11
8
DIN 332
DR M
u
d
ø113
ø60
68
35°
31,8°
87
ø12
b 7
143
164
199
o 2
o 1
l 2
l 1
l
177
28
t

Geared motor GKK07 - 2M V□L		Motor frame size						
		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	Solid shaft							Foot					Flange		Gearbox		
Output	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

GKK07 - 2M V□N


Centre of running gear
Clutch disengaged
Clutch engaged
k
148
118
ø17,5
k 1
Δk
28
ø g
p
h 1
h
s5
30
□ 145
b 5
ø160 j6
180
□ 203
o
g 1
□ k 2
i 1
x
15,5
24
DIN 332
DR M
u
d
ø60
68
87
31
35°
8°
ø12
l 2
l 1
l
b 7
143
164
199
o 2
o 1
177
28
143
t

Bevel gearbox with clutch
Dimensions

Geared motor GKK07 - 2M V□N		Motor frame size						
		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	Solid shaft							Foot					Flange		Gearbox		
Output	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

Motors | G-motion EHB

Technical data

Dimensions

Rated data

At 50 Hz

Motor frame size	P_r [kW]	n_r [rpm]	I Y [A]	I Δ [A]	I_A/I_r	U 1) Y [V]	U 1) Δ [V]	f_r [Hz]	cos $_n$	h %	M_r [Nm]	M_K [Nm]	M_A [Nm]	J_{mot} [10^{-3} kgm²]	m [kg]
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	12.5 21.7	6.1	400	400* 230	50	0.77	86	36.6	120	95	13.5	38

At 60 Hz

Motor frame size	P_r [kW]	n_r [rpm]	I Y [A]	I Δ [A]	I_A/I_r	U 1) Y [V]	U 1) Δ [V]	f_r [Hz]	cos $_n$	η %	M_r [Nm]	M_K [Nm]	M_A [Nm]	J_{mot} [10^{-3} kgm²]	m [kg]
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	12.5 21.7	6.7	480	480 * 277	60	0.76	87	36.6	130	95	13.5	38

At 87 Hz

Motor frame size	P_r [kW]	n_r [rpm]	I [A]	U 1) [V]	f_r [Hz]	cos $_n$	M_r [Nm]	J_{mot} [10^{-3} kgm²]	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 ± 10%	277 V ± 10%
	Y	400 V ± 10%	480 V ± 10%
112C32	Δ	400 V ± 10%	480 V ± 10%
	Δ	230 V ± 10%	277 V ± 10%
	Y	400 V ± 10%	480 V ± 10%

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

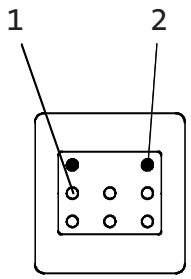
Motor connection

Assignment motor terminal block – built-on accessories

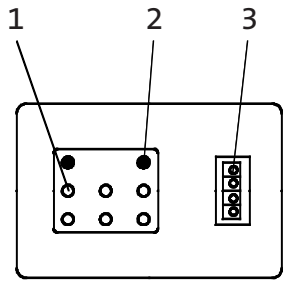
Built-on accessories	Motor frame size					
	063C12 063C32 063C42	071C32 071C42	080C32 080C42	090C32	100C12 100C32	112C22 112C32
	Motor terminal box assignment					
Integral fan	KK1	KK1	KK1			
Integral fan with brake	KK2	KK2	KK2			
Blower	KK1	KK1	KK1			
Blower with brake	KK2	KK2	KK2			

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



Motor terminal box KK2



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)

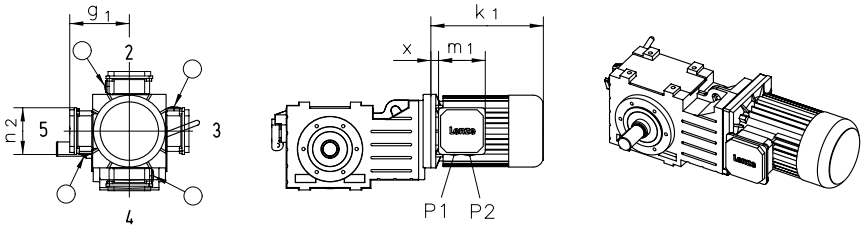
Meaning	Designation	Option
Brake	~	**Bridge rectifier/half-wave rectifier** Connection to L1 mains
	~	**Bridge rectifier** Connection to N mains
	~	**Half-wave rectifier** Connection to L2 or L3 mains
	+	Connection to brake
	–	Connection to brake

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)

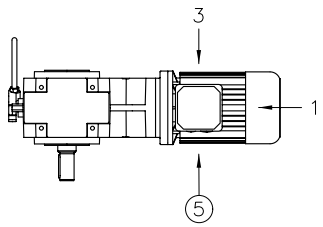


Terminal box KK1	Motor frame size 063	071	080	090	100	112
x	21/8*	24/11*	14	19	20	22
g_1	100/114*	109/123*	141	146	157	167
m_1	75/101*		115			
n_2	75/101*		115			
P1	M16x1.5/M20x1.5*		M20x1.5			
P2	M20x1.5		M25x1.5			

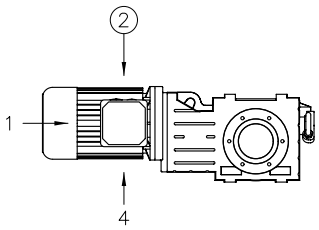
* UL/CSA approval: cURus

For dimension k_1 see Dimensions, Geared motors

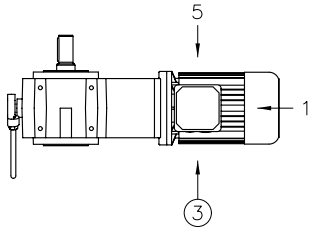
Terminal box position 2
Cable entry position: 1, 3, 5



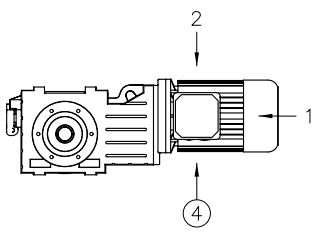
Terminal box position 3
Cable entry position: 1, 2, 4



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



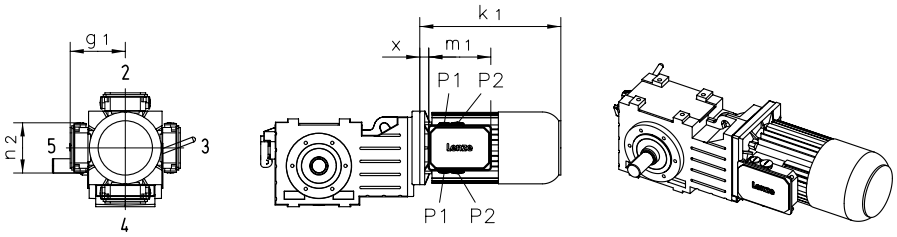
Terminal box position 5
Cable entry position: 1, 2, 4



Motor terminal box KK2

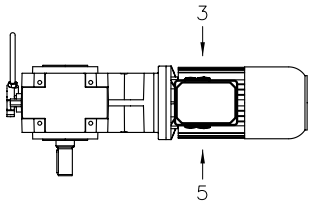
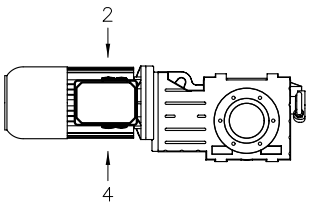
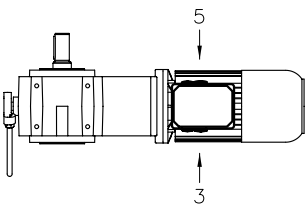
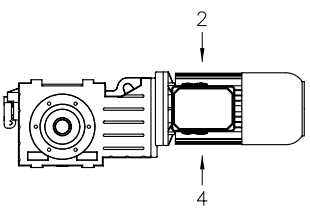
Dimensions and position of cable entries

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



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			

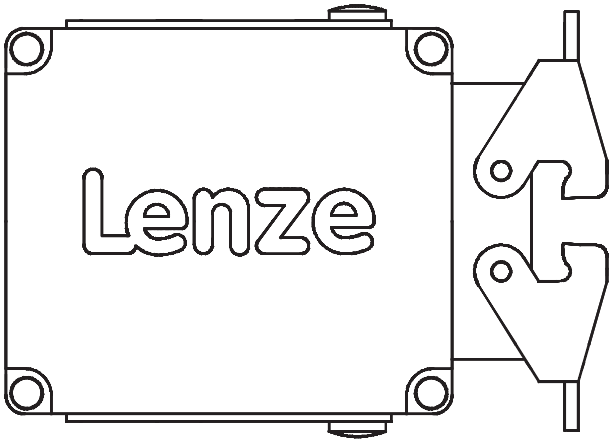
For dimension k_1 see Dimensions, Geared motors

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

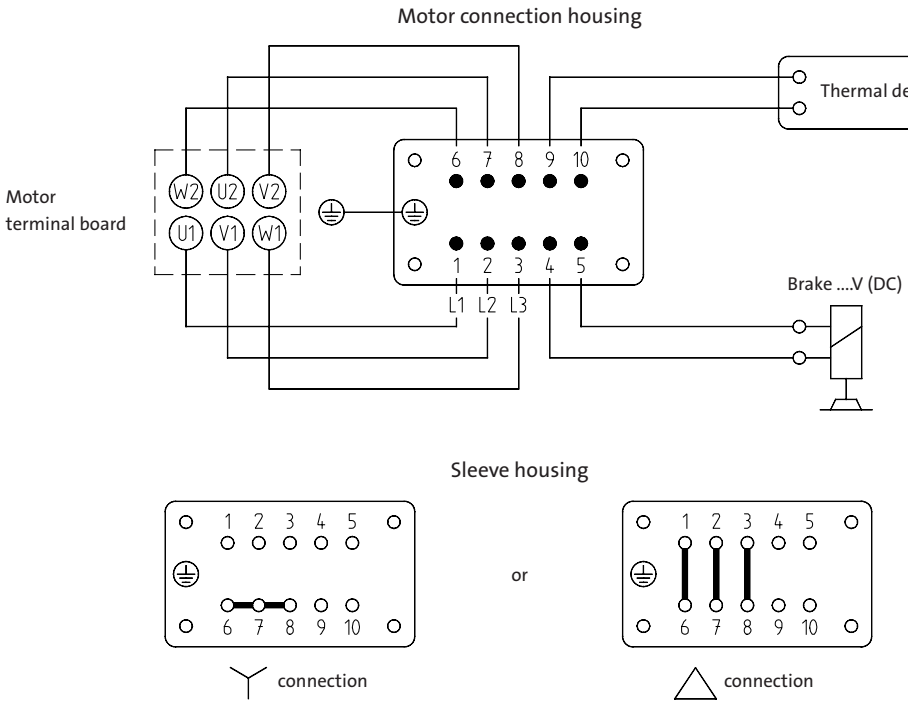
General data

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.

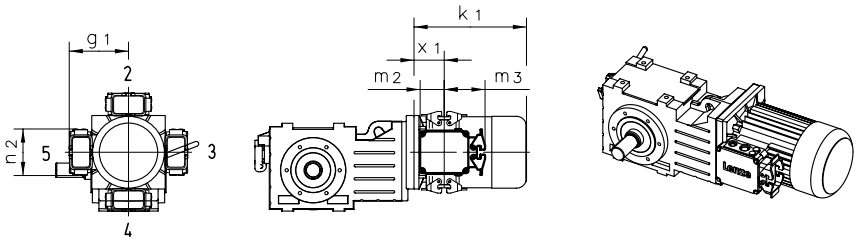
Connector assignments



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.

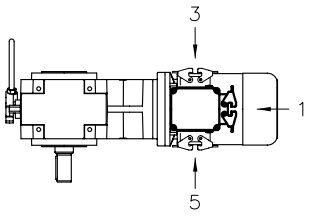
Terminal box positions 2. 3. 4. 5 (Example: Mounting position A)



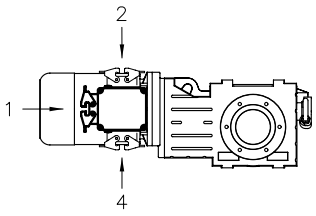
Terminal box with HAN 10E connector	Motor frame size					
	063	071	080	090	100	112
x	58.5	61.5	71.0	76.0	77.0	79.0
g_1	123	132	141	146	157	167
m_2	54		61			
m_3	105		98			
n_2	115					

For dimension k_1 see Dimensions, Geared motors

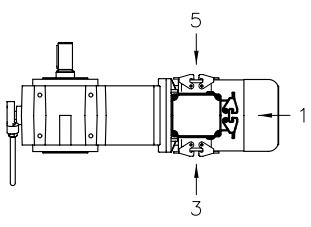
Terminal box position 2
Connector position: 1. 3. 5



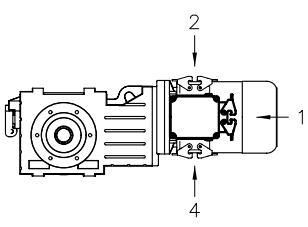
Terminal box position 3
Connector position: 1, 2, 4



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

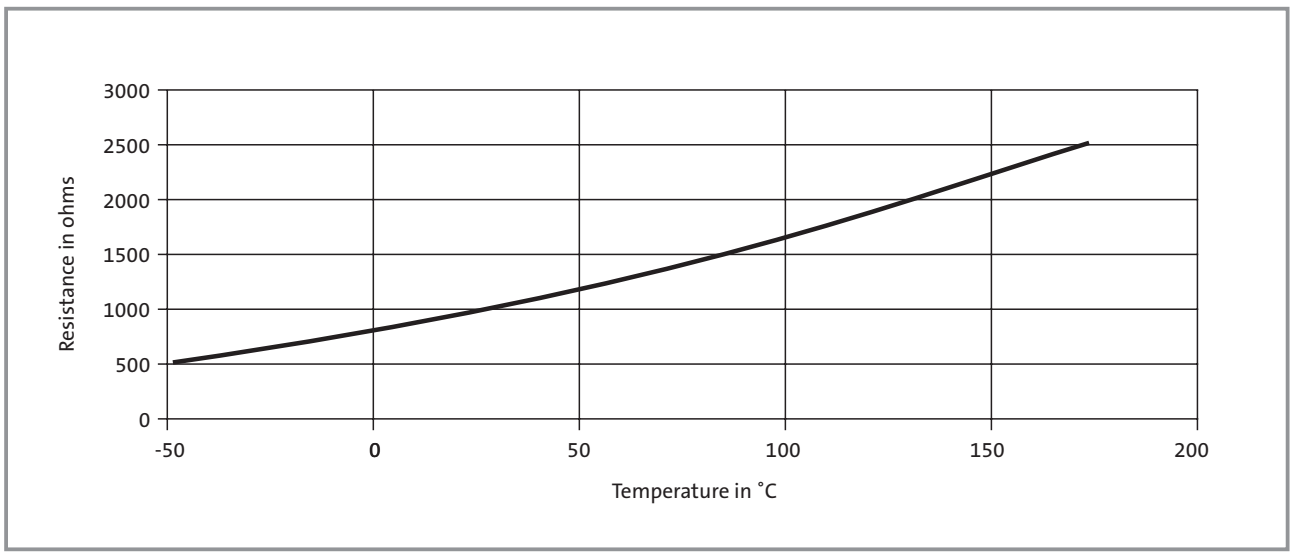
Motor frame size	Function	Operating temperature [°C]	Reset temperature [°C]	Permissible current loading [A]	Permissible voltage loading [V] AC
063 ... 112	NC contact	150 ± 5	90 - 135	2.5	250

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

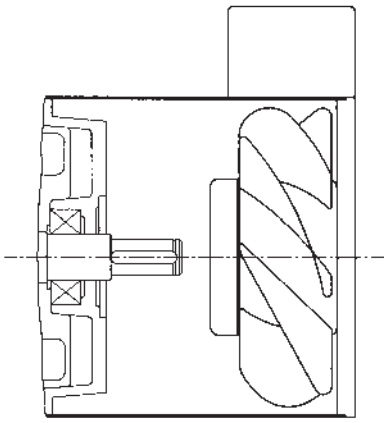


Blower

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	

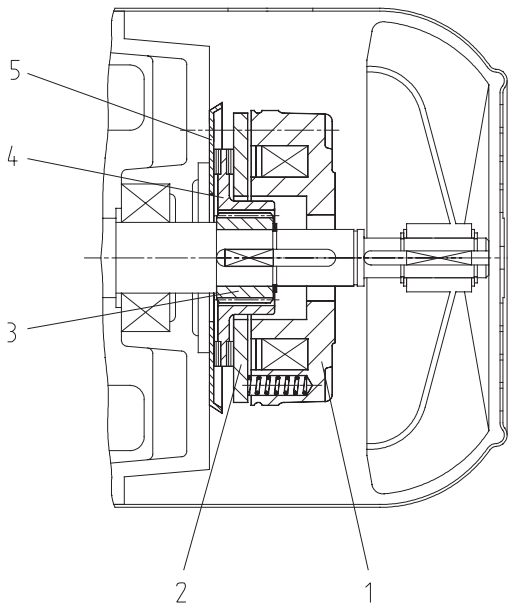
Spring-operated brake

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		



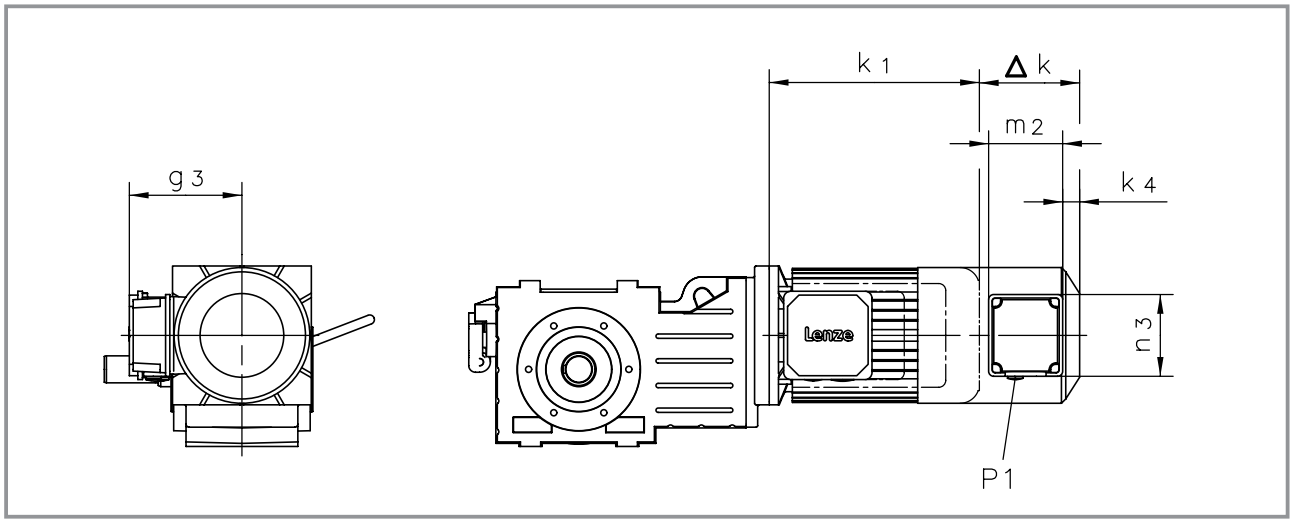
General data

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**
$P_{20°}$ [W]	20	25	30	40	50
M_B [Nm]	4	8	16	32	60
J_B [10^{-3} kgm²]	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
	Δ k					
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]

4

Motor control units | G-motion EHB

General

OCU frequency inverter module

OCU housing

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.

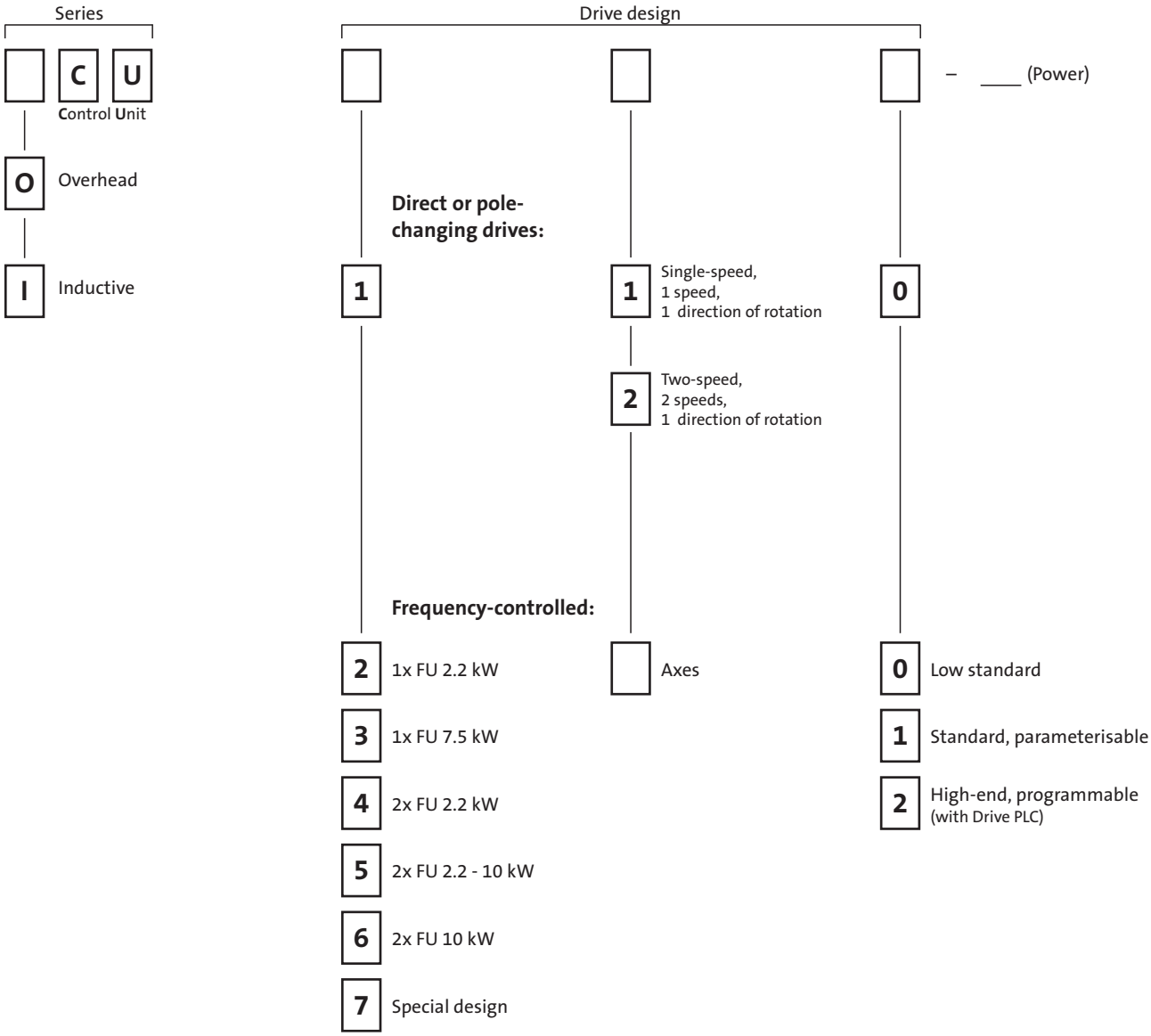
The Lenze DETO Overhead Control Unit (OCU) provides the necessary intelligence and power electronics for these tasks, combining them inside a robust housing. The special system design enables a number of motors to be driven by means of a single unit.

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 enter 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.

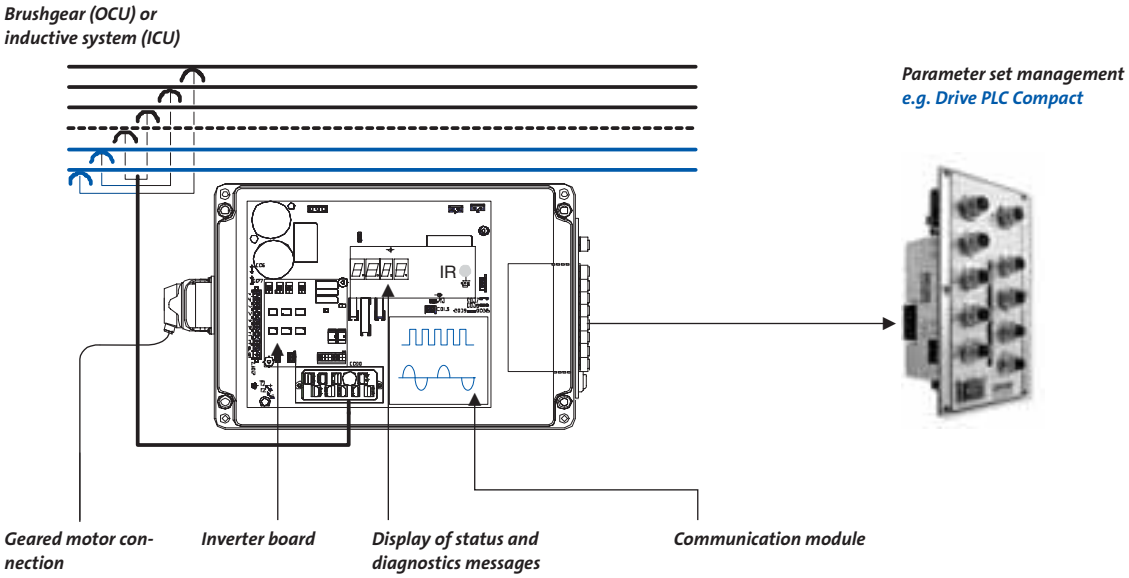
Designs

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

Technical data

Unitec 0.5 - 2.2 kW

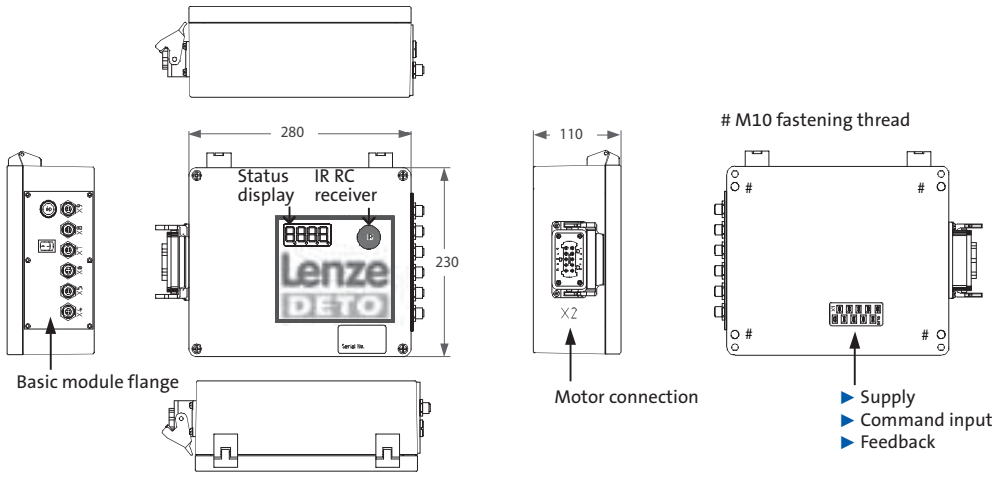
UNITEC rated power	OT = 100%	0.5 kW	1.1 kW	1.5 kW	2.2 kW
(OT = Operating Time, 50% and for 3 minutes max.)	OT = 50%, 3 minutes max.		(1.5 kW)	(2.2 kW)	
Mains voltage, frequency, fusing	UN [V], F[Hz], I [A]	380 - 480 V AC ±10%, 45 - 65 ±0% sine, 10 A-T/500 V AC			
Alternative DC supply, fusing	UDC [V]	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	Sr [kVA]	1.3	2	2.7	3.9
Power loss	PV [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			

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 ±10%, 45 - 65 ±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	Sr [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 ±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/(Upeak: 564 V)/1.5 Aeff ±10% (=> 2 A max. ±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		

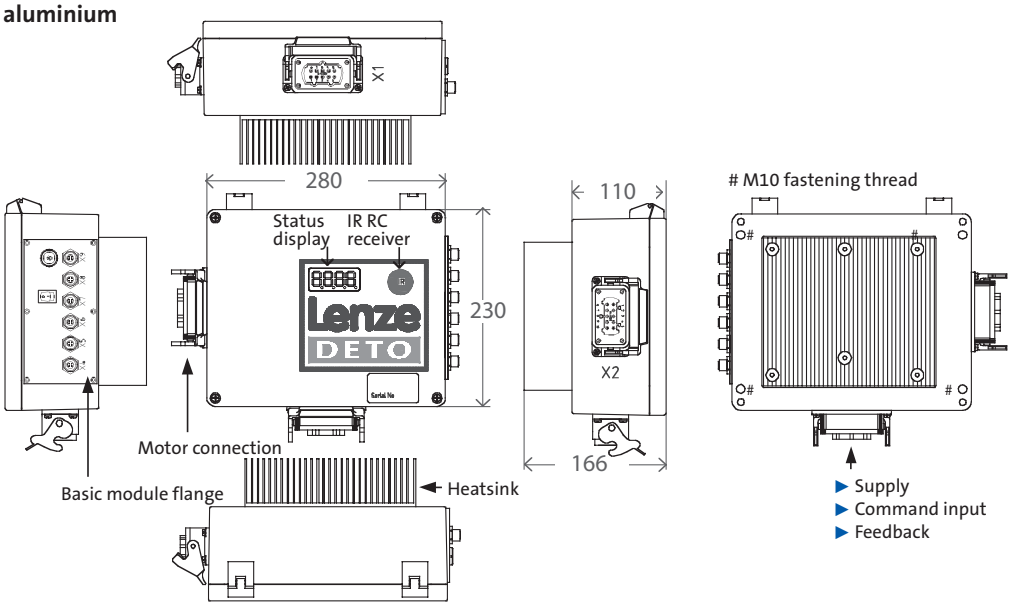
Designs

SC1F die-cast aluminium



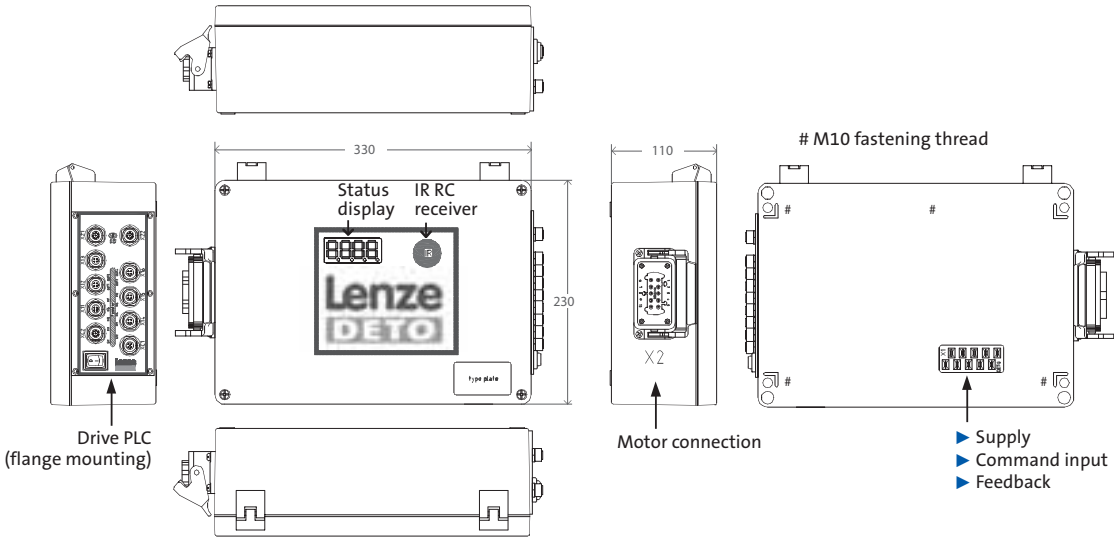
Designation	Dimensions H x L x D [mm]	Description
SC1F	280 x 230 x 110	▶ Machined basic housing, incl. internal cable loom, IP54 enclosure when inserted and screwed home ▶ 1 x frequency inverter module max. Unitec 1.1 kW ▶ 1 x flange mounting SM-PIO, SM-SE ▶ 1 x supply connection via 10-pin flat connector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



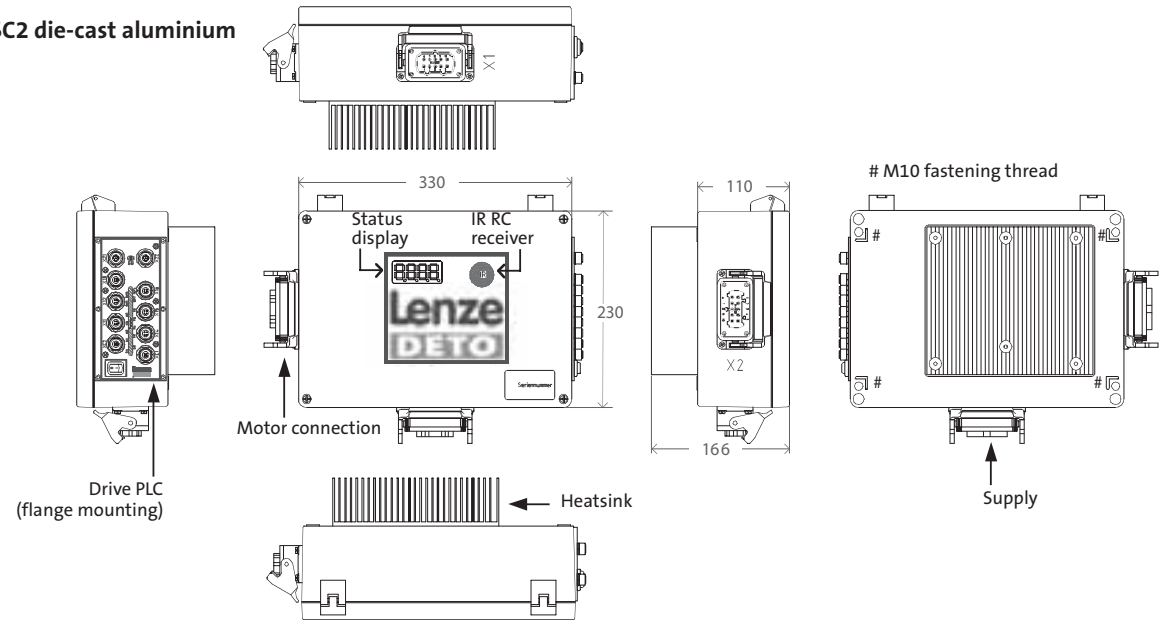
Designation	Dimensions H x L x D [mm]	Description
SC1	280 x 230 x 110	▶ Machined basic housing, incl. internal cable loom and heatsink, IP54 enclosure when inserted and screwed home ▶ 1 x Unitec frequency inverter module, max. Unitec 2.2 kW ▶ 1 x flange mounting SM-PIO, SM-SE ▶ 1 x supply connection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

SC2F die-cast aluminium



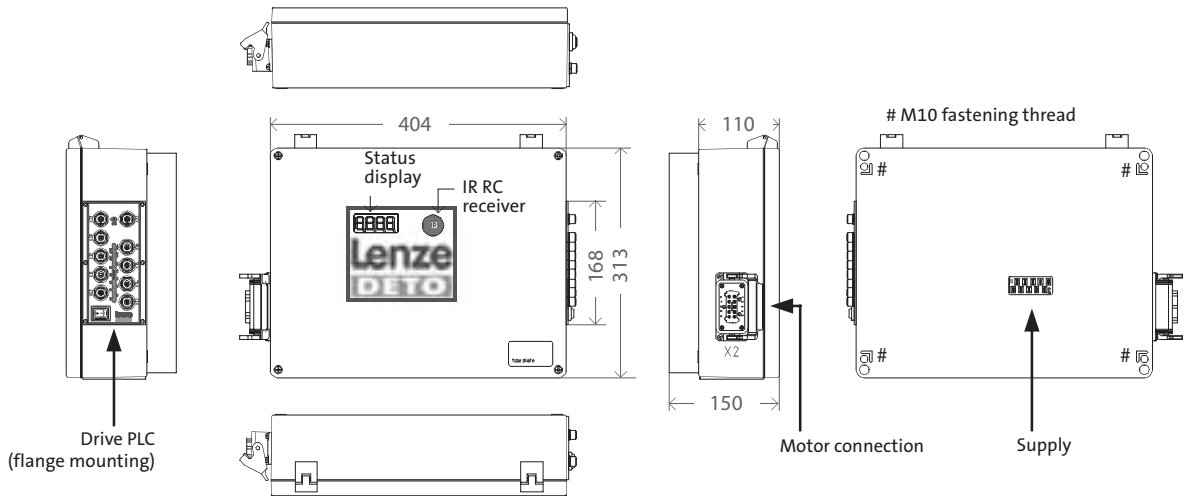
Designation	Dimensions H x L x D [mm]	Description
SC2F	330 x 230 x 110	▶ Machined basic housing, incl. internal cable loom, IP54 enclosure when inserted and screwed home ▶ 1 x Unitec frequency inverter module, max. Unitec 1.1 kW ▶ 1 x flange mounting SM-PIO, SM-SE alternatively DPLCC 1 ▶ 1 x supply connection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

SC2 die-cast aluminium



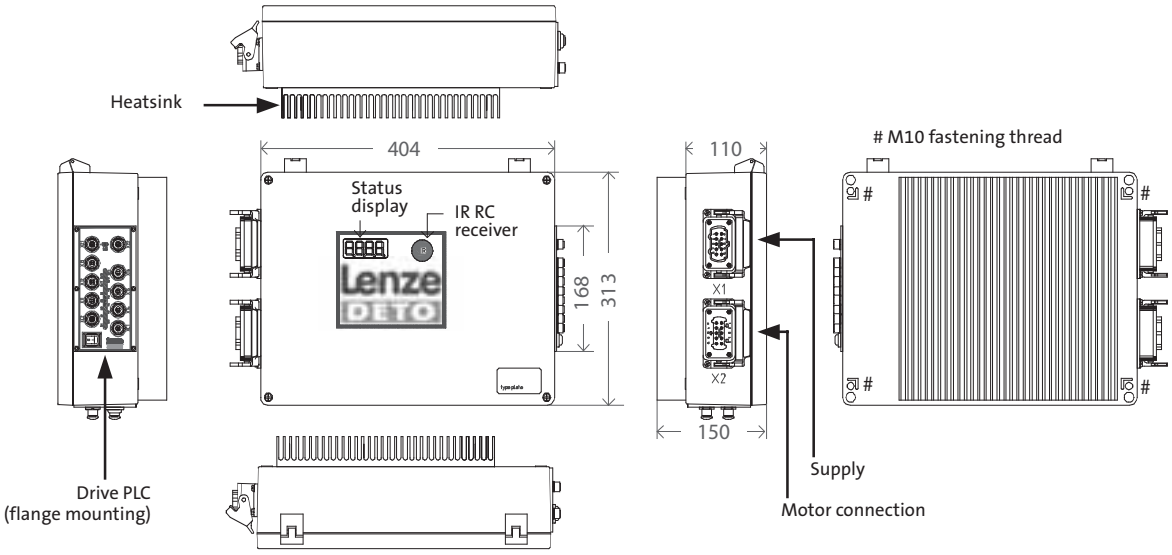
Designation	Dimensions H x L x D [mm]	Description
SC2	330 x 230 x 110	▶ Machined basic housing, incl. internal cable loom and heatsink, IP54 enclosure when inserted and screwed home ▶ 1 x Unitec frequency inverter module, max. Unitec 2.2 kW ▶ 1 x flange mounting SM-PIO, SM-SE alternatively DPLCC 1 ▶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

SC3F die-cast aluminium



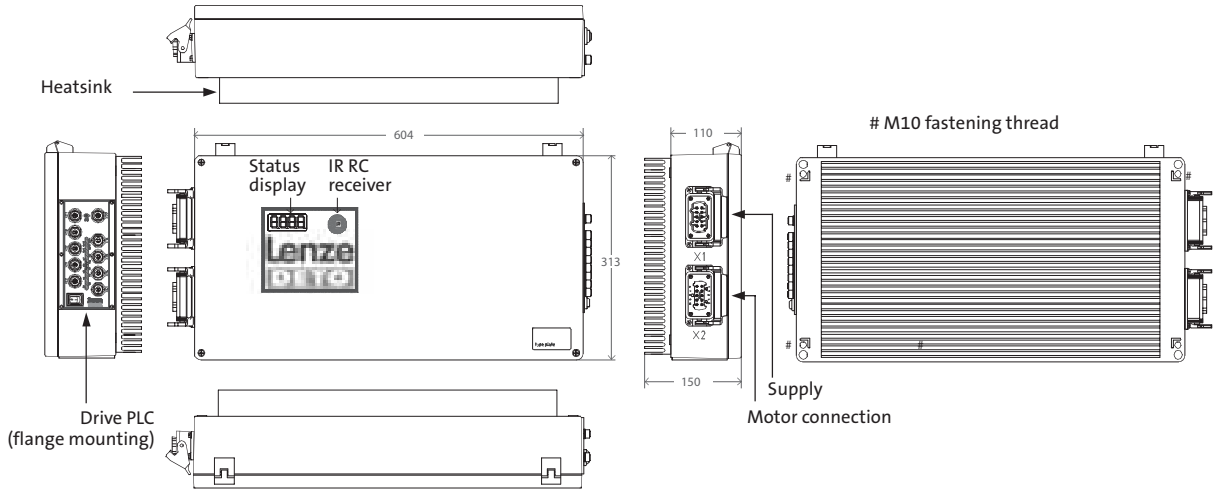
Designation	Dimensions H x L x D [mm]	Description
SC3F	400 x 310 x 110	▶ Machined basic housing, incl. internal cable loom, IP54 enclosure when inserted and screwed home ▶ 1 x Unitec frequency inverter module, max. Unitec 1.1 kW ▶ 1 x flange mounting SM-PIO, SM-SE alternatively DPLCC 1 ▶ 1 x supply connection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

SC3 die-cast aluminium



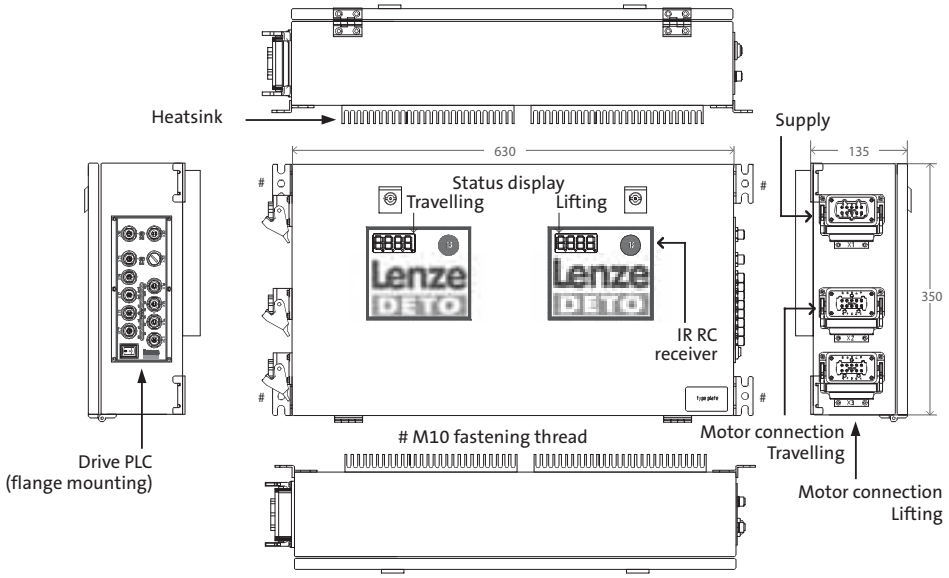
Designation	Dimensions H x L x D [mm]	Description
SC3	400 x 310 x 110	▶ Machined basic housing, incl. internal cable loom and heatsink, IP54 enclosure when inserted and screwed home ▶ 1 x Unitec frequency inverter module, max. Unitec 10.0 kW ▶ 1 x flange mounting SM-PIO, SM-SE alternatively DPLCC 1 ▶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