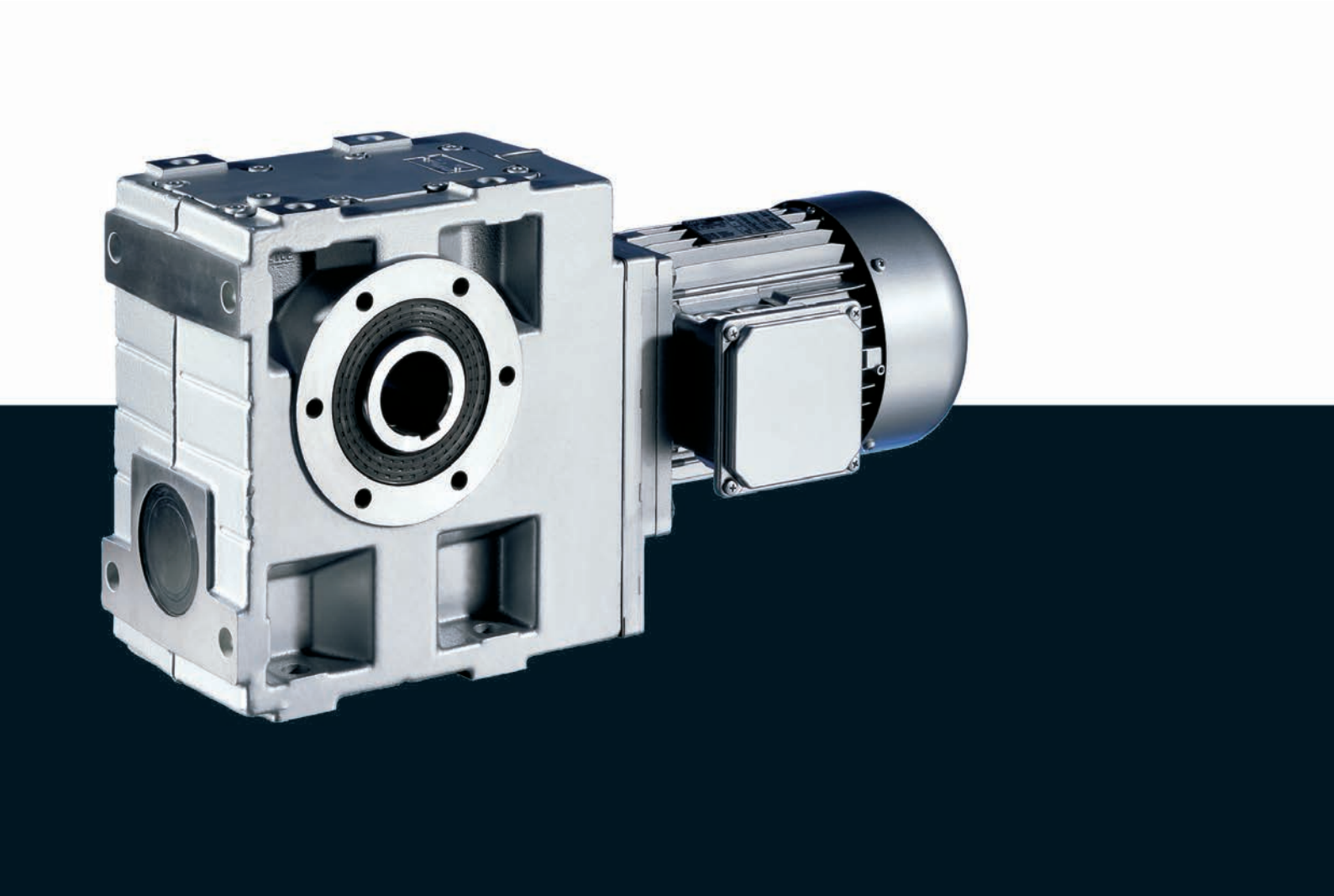
GSS helical-worm gearboxes

0.55 … 15 kW



GSS helical-worm gearboxes

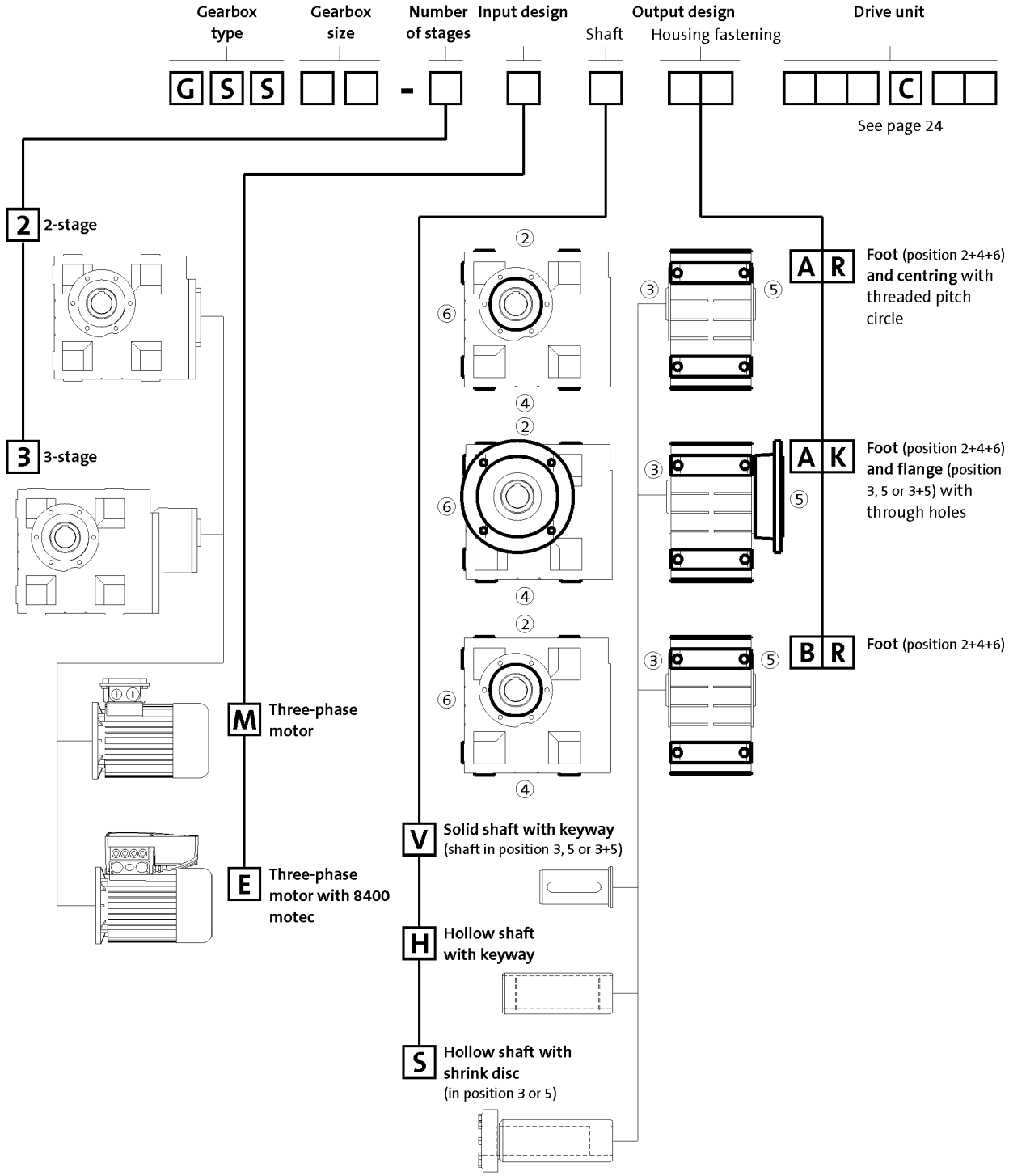
Contents

List of abbreviations

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

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

Product key

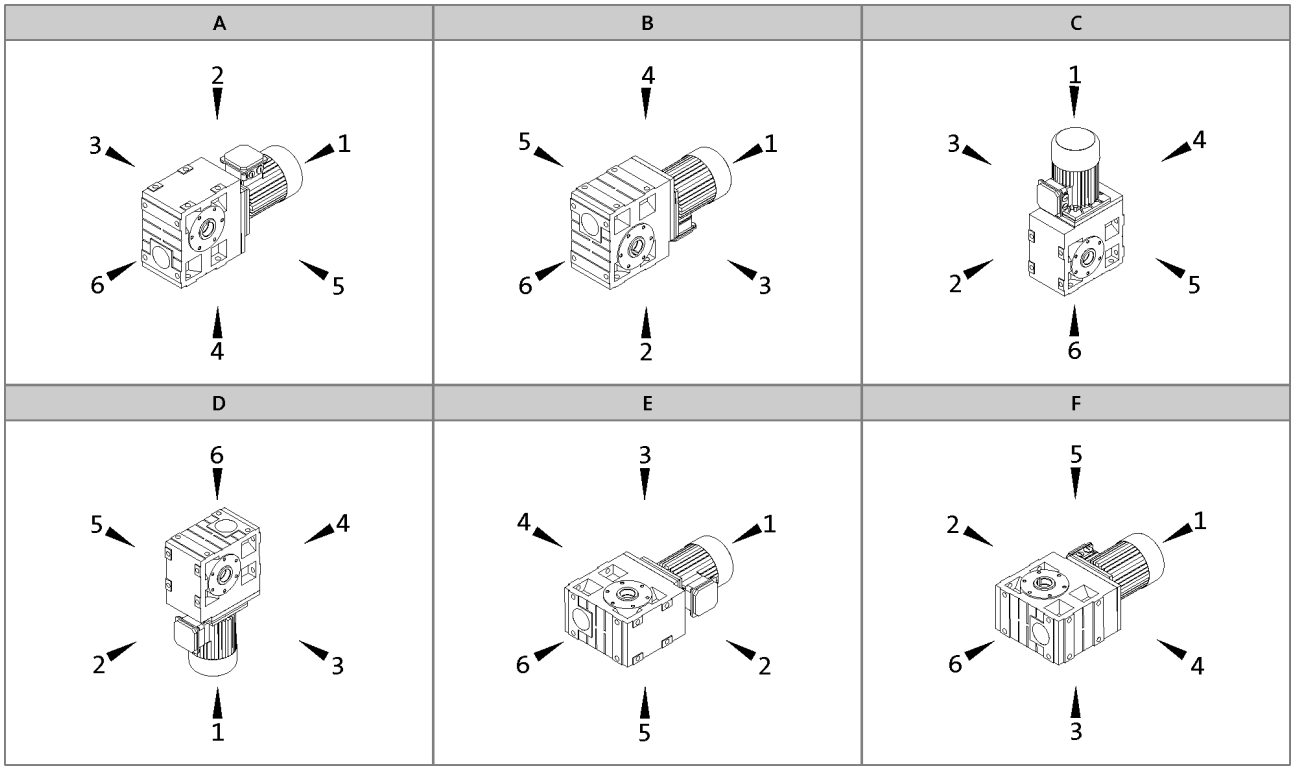


	Output design			
	V	H	S	K
	d x l [mm]	d [mm]	d [mm]	Øa2 [mm]
GSS04-2	25x50	25/30	25/30	160
GSS05-2/3	30x60	30/35	35	200
GSS06-2/3	40x80	40/45	40	200[1)]/250
GSS07-2/3	50x100	50/55	50	250/300

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

Product key

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



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

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

Gearbox designs

Basic versions	
Motor efficiency	Standard efficiency Increased efficiency (IE2)
Surface and corrosion protection	OKS-G (primer: grey) OKS-S (paint: RAL 7012)
Lubricant	CLP PG 460 (synthetic)
Ventilation	Oil control plugs for GSS05 ... 07 Breather elements for GSS05 ... 07

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

Product information

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

A low noise solution

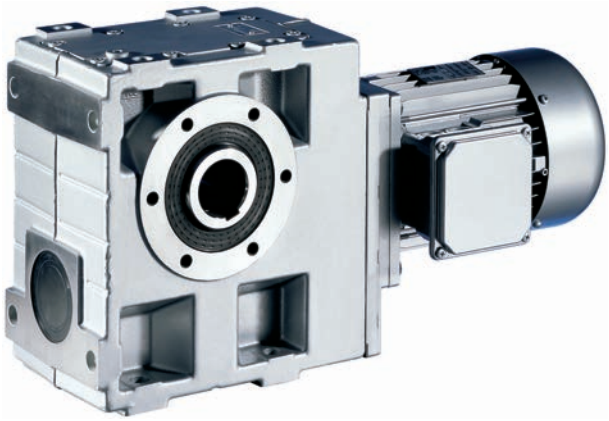
Helical worm gearboxes are particularly low-noise drive components. They create a compact drive unit in combination with our servo motors. The helical worm gearboxes are designed in 2- and 3-stage versions and can reach a torque of up to 1,250 Nm and a ratio of up to i=1847.

Inverters for motor-proximity installation

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

Designs

- 2-stage and 3-stage gearboxes
- Hollow shaft with keyway or shrink disc
- Solid shaft with keyway
- Foot or flange mounting
- Torque plate, including rubber buffer
- With MF three-phase AC motors (inverter-optimised) power range 0.55 ... 15 kW



Helical-bevel geared motor GSS07-2M HBR 100-32

Functions and features

Gearbox type	GSS
Housing	
Design	Cuboid
Material	Aluminium / cast iron
Solid shaft	
Design	with keyway to DIN 6885
Tolerance	m6 (d > 50 mm) k6 (d ≤ 50 mm)
Material	Tempered steel C45 or 42CrMo4
Hollow shaft	
Design	H: with keyway S: smooth
Tolerance	Bore H7
Material	Tempered steel C45
Toothed parts	
Design	Optimised tooth flanks and profile geometry Ground tooth flanks
Material	Case-hardened steel, bronze (worm gear only)
Shaft-hub joint	1st stage/prestage/helical (bevel) gearbox: Friction-type connection Output stage (= 2nd, 3rd or 4th stage): Friction-type or positive-fit connection
Shaft sealing rings	
Design	With dust lip
Material	NB / FP
Bearing	
Design	Ball bearing / tapered-roller bearing depending on size and design
Lubricants	
Standard	DIN 51502
Quantities	corresponding to mounting position (see operating instructions)
Mechanical efficiency	
1-stage gearboxes [$\eta_{c=1}$]	
2-stage gearboxes [$\eta_{c=1}$]	0.62 ... 0.92 [1)]
3-stage gearboxes [$\eta_{c=1}$]	0.64 ... 0.92 [1)]
4-stage gearboxes [$\eta_{c=1}$]	
Notes	Dependent on transmission ratio Housing at operating temperature and teeth run in

[1)] 30 - Efficiencies depending on ratio

Functions and features

Lubricants

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

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

Lubricant table

Mode	CLP PG 460	CLP HC 220 USDA H1
Ambient temperature [°C]	-20 ... +40	
Specification	Synthetic-based oil (polyglycol)	Synthetic-based oil (synthetic hydrocarbon / poly-alpha-olefin oil)
Note	Cannot be mixed with other oil types.	For food processing industry
Changing interval	25000 operating hours not later than after three years (oil temperature 70...80 °C)	16000 operating hours not later than after three years (oil temperature 70...80 °C)
Fuchs		bremer & leguil Cassida Fluid GL 220
Klüber	Klübersynth GH 6-460	Klüberoil 4 UH1-220 N
Shell	Shell Tivela S 460	

- ► Please contact your Lenze office if you are operating at ambient temperatures in areas up to < -20 °C > or up to +40°C.
- ► Caution: when using the lubricant CLP HC 220 with the GSS helical-worm gearbox, the load capacity c is reduced to 80 % of the values stated in the catalogue.

Functions and features

Surface and corrosion protection

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

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

Surface and corrosion protection system	Applications	Measures
	Catalogue text	Catalogue text
OKS-G (primed)	• Dependent on subsequent top coat applied	• 1K priming coat (grey) • Zinc-coated screws • Rust-free breather elements Optional measures • Stainless steel nameplate
OKS-S (small)	• Standard applications • Internal installation in heated buildings • Air humidity up to 90%	• Surface coating as per corrosivity category C1 (in line with EN 12944-2) • Zinc-coated screws • Rust-free breather elements Optional measures • Stainless steel nameplate
OKS-M (medium)	• Internal installation in non-heated buildings • Covered, protected external installation • Air humidity up to 95%	• Surface coating as per corrosivity category C2 (in line with EN 12944-2) • Zinc-coated screws • Rust-free breather elements Optional measures • Stainless steel shaft • Stainless steel nameplate • Rust-free shrink disc (on request)
OKS-L (high)	• External installation • Air humidity above 95% • Chemical industry plants • Food industry	• Surface coating as per corrosivity category C3 (in line with EN 12944-2) • Blower cover and B end shield additionally primed • Cable glands with gaskets • Corrosion-resistant brake with cover ring, stainless friction plate, and chrome-plated armature plate (on request) • All screws/screw plugs zinc-coated • Stainless breather elements • Threaded holes that are not used are closed by means of plastic plugs Optional measures • Sealed recesses on motor (on request) • Stainless steel shaft • Stainless steel nameplate • Rust-free shrink disc (on request) • Additional priming coat on cast iron fan • Oil expansion tank and torque plates painted separately and supplied loose

Functions and features

Structure of surface coating

Surface and corrosion protection system	Corrosivity category	Surface coating	Colour
	DIN EN ISO 12944-2	Structure	
Without OKS (uncoated)		Dipping primed gearbox	
OKS-G (primed)		Dipping primed gearbox 1K priming coat	
OKS-S (small)	C1	Dipping primed gearbox 2K-PUR top coat	Standard: RAL 7012 Optional: RAL Classic
OKS-M (medium)	C2	Dipping primed gearbox 1K priming coat 2K-PUR top coat	Standard: RAL 7012 Optional: RAL Classic
OKS-L (high)	C3	Dipping primed gearbox 2K-EP priming coat 2K-PUR top coat	Standard: RAL 7012 Optional: RAL Classic

Functions and features

Ventilation

Gearboxes without ventilation
No ventilation is required for gearbox GSS04.

Gearboxes with ventilation
Gearboxes GSS05 ... 07 are supplied with breather elements as standard.

Dimensioning

General information about the data provided in this catalogue

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

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

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

Dimensioning

Thermal power limit

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

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

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

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

- if the following input speeds n_1 are exceeded:

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

Possible ways of extending the application area

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

Dimensioning

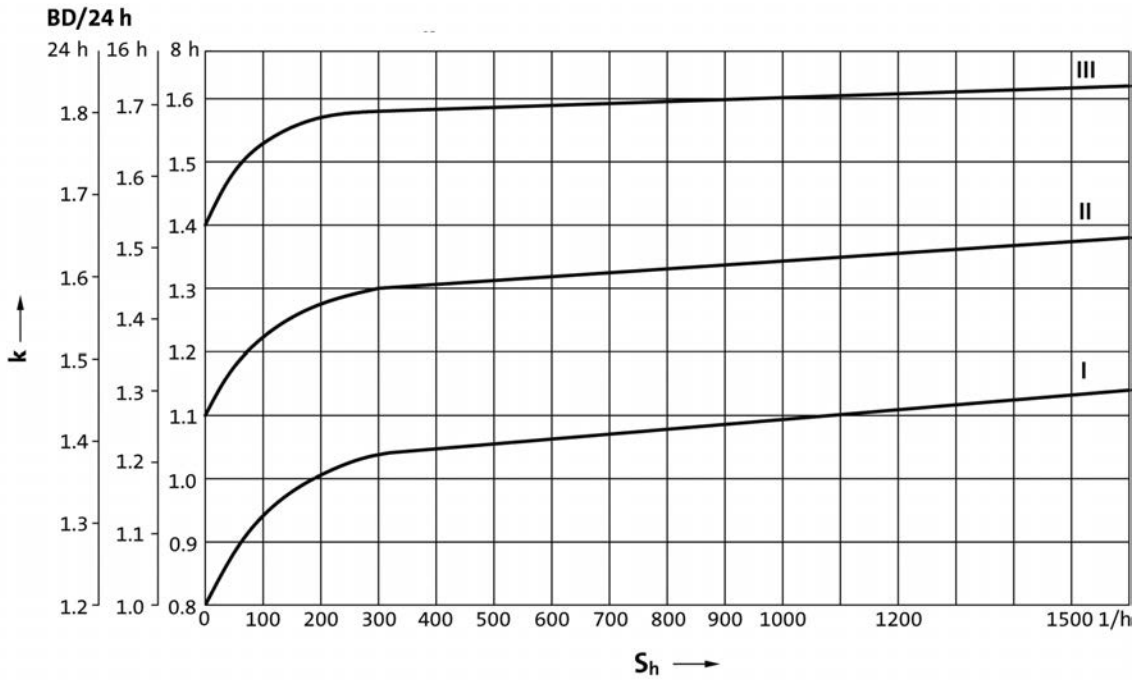
Load capacity and application factor

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

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

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

Application factor k

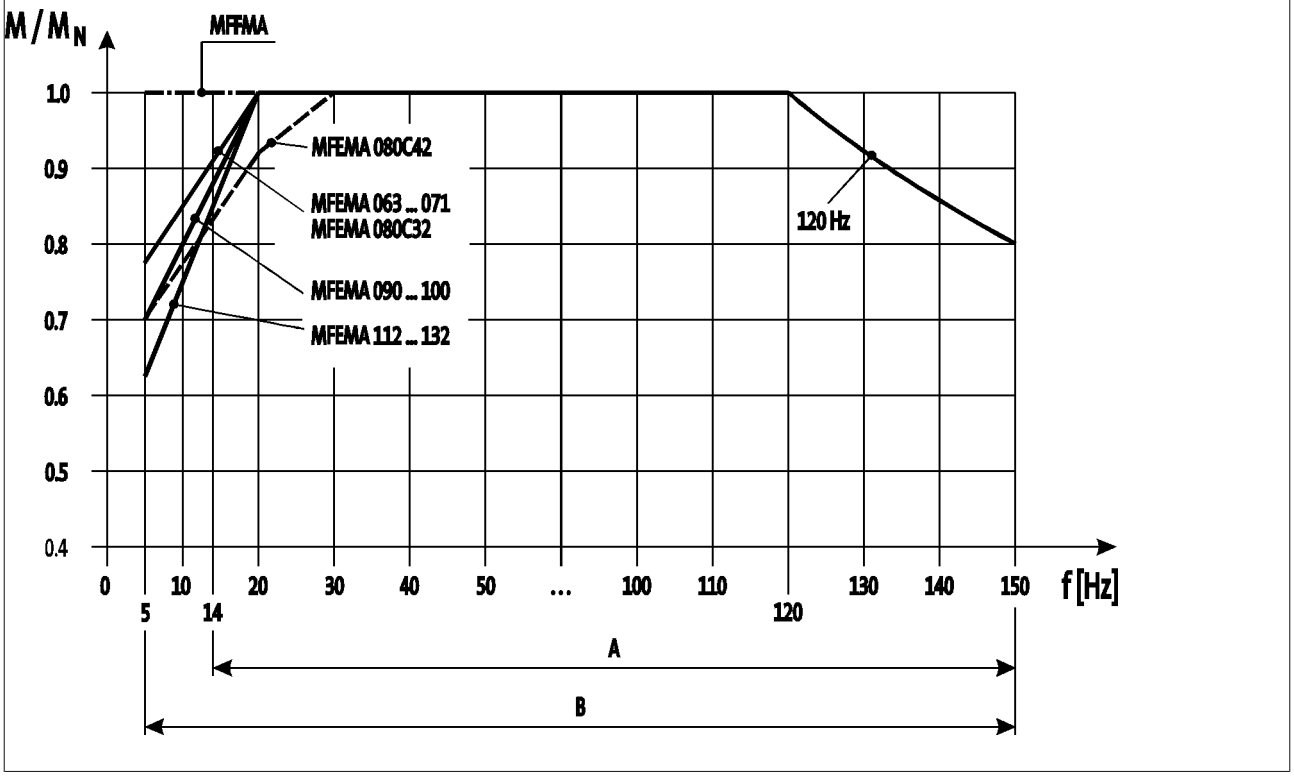


Dimensioning

Torque derating at low motor frequencies

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

Torque characteristics



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

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

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

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

Please contact your Lenze sales office.

Dimensioning

Notes on the selection tables

The selection tables show the available combinations of gearbox type, number of stages, ratio and motor. The following legend indicates the structure of the selection tables.

Gearbox type

GST helical gearbox

Technical data

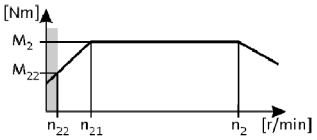
Rated power P_N of the drive motor in relation to the rated frequency

Selection tables

► 120 Hz: P_N = 0.55 kW

Speed setting range → n_{22}/n_2 = 1 ... 24.0

Speed range of the drive motor → n_1 = 143.3 ... 3440 r/min



n_{22} [r/min]	n_{21} [r/min]		n_2 [r/min]	M_{22} [Nm]	M_2 [Nm]	c	i			
70	293	-	1680	2.3	3.0	4.5	2.048	GST04-1M□□□063C32	E84AV□□□5514□□0	79
64	268	-	1536	2.6	3.0	3.9	2.240	GST05-1M□□□063C32	E84AV□□□5514□□0	79

Product key of geared motor

Product key of inverter

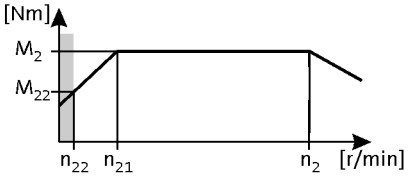
Speed and torque information

Ratio i

Page number for dimensions

Speed and torque information

The speed and torque information applies to self-ventilated and forced-ventilated drives. Externally cooled drives can always output the torque M_2 in all the setting ranges. In the case of self-ventilated drives, a reduction to M_{22} is necessary in the lower speed range.



The following applies to self-ventilated geared motors: n_{22} is the minimum speed at which the torque M_{22} is permissible. From n_{21} to n_2, the maximum torque is M_2. The following applies to forced-ventilated geared motors: From the minimum speed n_{22} to n_2, the maximum torque is M_2

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

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

6.10

Notes on ordering

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

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

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

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

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

Ordering details checklist

☐ **Offer**

Page __ of __

☐ **Order**

Customer No.

Job No.

Fax No. _____

Sender

Company _____ Made out by (name) _____

Street/P.O. Box _____ Department _____

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

Date _____ Signature _____

Delivery address (if different)

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

P.O. Box, City _____ Dispatching notes _____

Invoice recipient (if different)

Street/P.O. Box _____

Postal code, City _____

Ordering details checklist

Customer No.

Job No.

Page __

Quantity

Efficiency class ☐ Standard efficiency ☐ High efficiency (IE2)

Rated frequency ☐ 50 Hz ☐ 60 Hz ☐ 87 Hz

Ratio i

GSS ☐☐ – ☐2 ☐3 ☐M ☐E ☐V ☐H ☐S ☐A ☐B ☐R ☐K Motor frame size ☐☐☐C☐☐

Hollow shaft d = ☐ mm

Flange a_2 = ☐ mm

Mounting position A ☐ B ☐ C ☐ D ☐ E ☐ F ☐

Position of system blocks

Shaft/shrink disc: 0 ☐ 3 ☐ 4 ☐ 8 ☐

Flange: 0 ☐ 3 ☐ 5 ☐ 8 ☐

Terminal box: 2 ☐ 3 ☐ 4 ☐ 5 ☐

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

Options

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

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

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

Shaft sealing rings ☐ Viton

Breathing ☐ Breather elements for GSS05

6.10

Ordering details checklist

Three-phase AC motors options

Customer No. ☐☐☐☐☐☐☐☐

Job No. ☐☐☐☐☐☐☐☐☐☐

Page __

Motor connection

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

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

Blower

☐ 1~ ☐ 3~

☐ Terminal box with plug-in connector ICN

Terminal box position 2 ☐ 3 ☐ 4 ☐ 5 ☐

Spring-applied brake

Brake version ☐ Standard ☐ Longlife

Brake size ☐

Characteristic torque ☐ Nm

Rated voltage AC ☐ DC ☐ ☐ V

Rectifier
Only in the case of AC supply voltage

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

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

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

6.10

Ordering details checklist

Three-phase AC motors options

Customer No. ☐☐☐☐☐☐☐☐

Job No. ☐☐☐☐☐☐☐☐☐☐

Page __

Speed/position encoder

Resolver ☐ RS1

Incremental encoder HTL ☐ IG128-24V-H ☐ IG512-24V-H ☐ IG1024-24V-H ☐ IG2048-24V-H

Incremental encoder TTL ☐ IG512-5V-T ☐ IG1024-5V-T ☐ IG2048-5V-T

Feedback with ICN connector ☐ IG128-24V-H not possible with plug-in connector!

Motor protection ☐ PTC ☐ KTY 83-110 ☐ KTY 84-130

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

Further options

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

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

☐ Protection cover

☐ 2nd shaft end

☐ Handwheel

☐ Increased centrifugal mass

☐ 2nd nameplate (adhesive nameplate/metal nameplate)

6.10

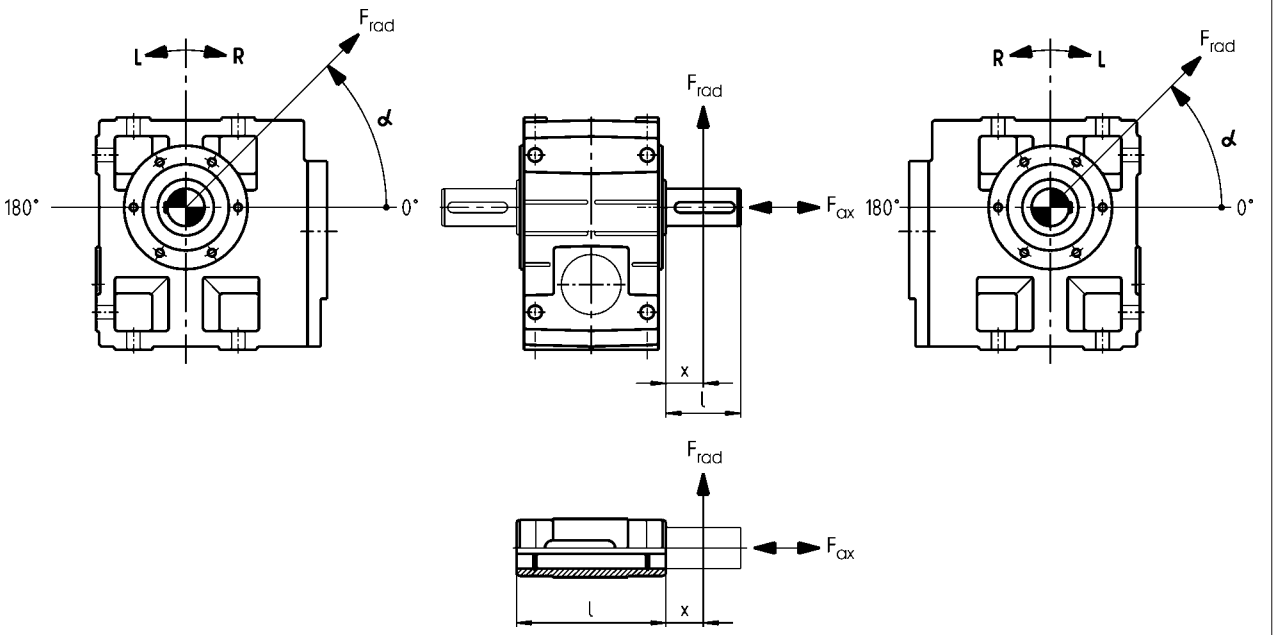
Permissible radial and axial forces at output

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

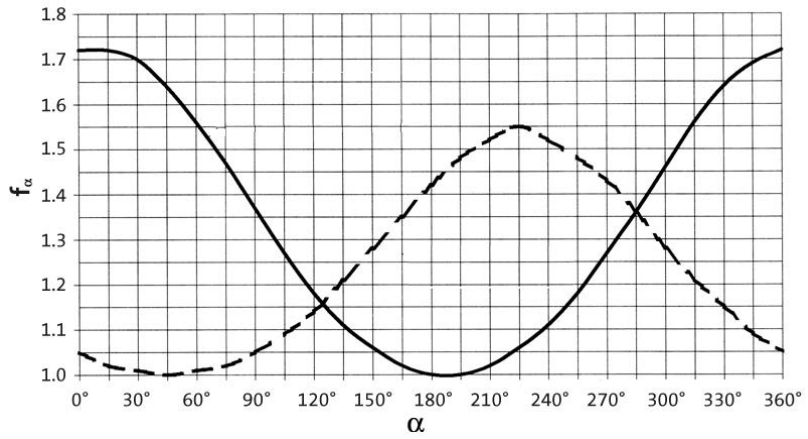
Permissible axial force
$F_{ax,per} = F_{ax,max}$ if $F_{rad} = 0$

If F_{rad} **and** $F_{ax} \neq 0$; please contact Lenze.

Application of forces



Effective direction factor f_α at output shaft

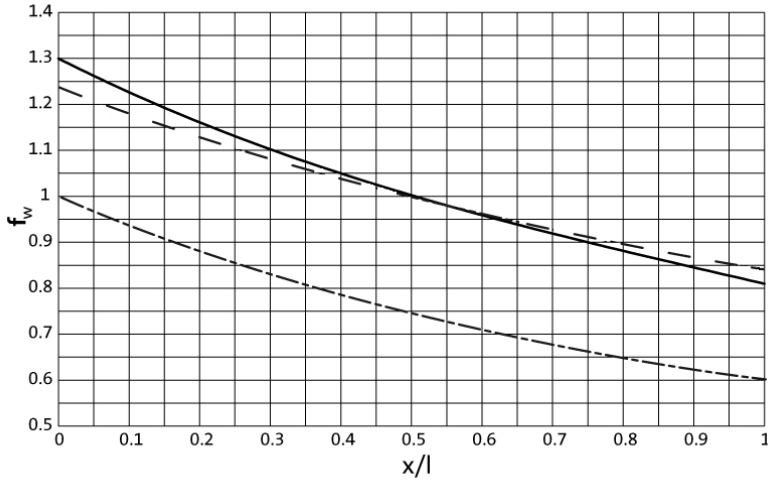


——— Direction of rotation R
— — — Direction of rotation L

6.10

Permissible radial and axial forces at output

Additional load factor f_w at output shaft



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

GSS□□-2/3□ H□□

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

	Max. radial force, Hollow shaft								
	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
GSS04	2800	3000	3800	4500	5300	6000	6000	6000	6000
GSS05	3000	3200	3600	4300	5100	6000	7000	7500	7500
GSS06	4400	4600	4800	5600	6600	7700	9100	10700	11500
GSS07	4600	5100	5600	6700	8200	10000	12100	14800	16000

	Max. axial force, Hollow shaft								
	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
GSS04	2200	2900	3700	4200	4900	5500	5500	5500	5500
GSS05	1600	2200	2800	3500	4400	5500	6000	6000	6000
GSS06	1900	2500	3200	4100	5200	6500	8200	9000	9000
GSS07	1800	2400	3100	4100	5500	7200	9500	12500	12500

6.10

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

Permissible radial and axial forces at output

GSS□□-2/3□ V□R

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

	Max. radial force, Solid shaft without flange								
	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
GSS04	2200	2400	3000	3500	4100	4200	4200	4200	4200
GSS05	2300	2500	2900	3400	4000	4300	4300	4300	4300
GSS06	3400	3500	3600	4200	5000	5900	6900	8200	8500
GSS07	3700	4000	4200	5100	6300	7700	9300	11300	12000

	Max. axial force, Solid shaft without flange								
	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
GSS04	2200	2900	3700	4200	4900	5500	5500	5500	5500
GSS05	1600	2200	2800	3500	4400	5500	6000	6000	6000
GSS06	1900	2500	3200	4100	5200	6500	8200	9000	9000
GSS07	1800	2400	3100	4100	5500	7200	9500	12500	12500

GSS□□-2/3□ V□K

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

	Max. radial force, Solid shaft with flange								
	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
GSS04	2750	3000	4100	4400	4700	4700	4700	4700	4700
GSS05	3450	3750	4900	4900	4900	4900	4900	4900	4900
GSS06	5100	5250	7000	8100	9400	9400	9400	9400	9400
GSS07	5500	6000	7900	9100	10600	12400	14000	14000	14000

	Max. axial force, Solid shaft with flange								
	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
GSS04	2100	2800	3500	4000	4200	4200	4200	4200	4200
GSS05	1500	2000	2500	3100	4000	4900	5500	5500	5500
GSS06	1600	2200	2800	3500	4500	5700	7300	8800	8800
GSS07	1400	1900	2400	3200	4300	5900	8000	10000	10000

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

Moments of inertia

GSS□□-2

► Moment of inertia (J) depending on ratio i

Gearbox			GSS04
5.639	J	[kgcm²]	1.120
7.733	J	[kgcm²]	0.652
9.042	J	[kgcm²]	0.809
9.897	J	[kgcm²]	0.430
10.827	J	[kgcm²]	0.368
12.400	J	[kgcm²]	0.487
13.810	J	[kgcm²]	0.247
15.869	J	[kgcm²]	0.329
17.360	J	[kgcm²]	0.284
20.417	J	[kgcm²]	0.673
22.143	J	[kgcm²]	0.195
24.800	J	[kgcm²]	0.420
27.125	J	[kgcm²]	0.145
31.738	J	[kgcm²]	0.288
34.100	J	[kgcm²]	0.096
39.200	J	[kgcm²]	0.247
43.917	J	[kgcm²]	0.064
50.000	J	[kgcm²]	0.173
54.250	J	[kgcm²]	0.131
61.250	J	[kgcm²]	0.130
68.200	J	[kgcm²]	0.087
77.000	J	[kgcm²]	0.086
87.833	J	[kgcm²]	0.059
99.167	J	[kgcm²]	0.058
111.318	J	[kgcm²]	0.039
125.682	J	[kgcm²]	0.038
139.500	J	[kgcm²]	0.027
157.500	J	[kgcm²]	0.026
183.786	J	[kgcm²]	0.016
207.500	J	[kgcm²]	0.016

Gearbox			GSS05
5.639	J	[kgcm²]	2.821
7.733	J	[kgcm²]	1.664
9.042	J	[kgcm²]	2.014
9.897	J	[kgcm²]	1.102
10.827	J	[kgcm²]	0.941
12.400	J	[kgcm²]	1.235
13.810	J	[kgcm²]	0.638
15.869	J	[kgcm²]	0.840
17.360	J	[kgcm²]	0.722
20.417	J	[kgcm²]	1.601
22.143	J	[kgcm²]	0.504
24.800	J	[kgcm²]	1.059
27.125	J	[kgcm²]	0.377
31.738	J	[kgcm²]	0.733
35.306	J	[kgcm²]	0.233
39.200	J	[kgcm²]	0.610
43.917	J	[kgcm²]	0.167
50.000	J	[kgcm²]	0.435
54.250	J	[kgcm²]	0.341
61.250	J	[kgcm²]	0.332
70.611	J	[kgcm²]	0.211
79.722	J	[kgcm²]	0.206
87.833	J	[kgcm²]	0.153
99.167	J	[kgcm²]	0.149
113.667	J	[kgcm²]	0.096
128.333	J	[kgcm²]	0.094
137.950	J	[kgcm²]	0.070
155.750	J	[kgcm²]	0.069
176.313	J	[kgcm²]	0.045
199.063	J	[kgcm²]	0.044

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

Moments of inertia

GSS□□-2

► Moment of inertia (J) depending on ratio i

Gearbox			GSS06
5.833	J	[kgcm²]	6.966
8.000	J	[kgcm²]	4.219
9.042	J	[kgcm²]	5.541
10.238	J	[kgcm²]	2.811
11.200	J	[kgcm²]	2.393
12.400	J	[kgcm²]	3.461
14.286	J	[kgcm²]	1.630
15.869	J	[kgcm²]	2.348
17.360	J	[kgcm²]	2.006
20.417	J	[kgcm²]	4.172
22.143	J	[kgcm²]	1.392
24.800	J	[kgcm²]	3.056
27.125	J	[kgcm²]	1.039
31.738	J	[kgcm²]	2.101
35.306	J	[kgcm²]	0.660
39.200	J	[kgcm²]	1.635
43.917	J	[kgcm²]	0.475
50.000	J	[kgcm²]	1.164
54.250	J	[kgcm²]	0.955
61.250	J	[kgcm²]	0.887
70.611	J	[kgcm²]	0.610
79.722	J	[kgcm²]	0.570
87.833	J	[kgcm²]	0.443
99.167	J	[kgcm²]	0.417
113.667	J	[kgcm²]	0.276
128.333	J	[kgcm²]	0.260
137.950	J	[kgcm²]	0.201
155.750	J	[kgcm²]	0.191
174.375	J	[kgcm²]	0.130
196.875	J	[kgcm²]	0.123

Gearbox			GSS07
5.862	J	[kgcm²]	21.357
8.125	J	[kgcm²]	12.754
9.086	J	[kgcm²]	17.436
10.000	J	[kgcm²]	9.140
11.200	J	[kgcm²]	7.498
12.594	J	[kgcm²]	10.713
14.286	J	[kgcm²]	4.837
15.500	J	[kgcm²]	7.792
17.360	J	[kgcm²]	6.424
20.517	J	[kgcm²]	13.579
22.143	J	[kgcm²]	4.177
25.188	J	[kgcm²]	9.590
27.125	J	[kgcm²]	3.130
31.000	J	[kgcm²]	7.051
35.306	J	[kgcm²]	1.955
39.200	J	[kgcm²]	5.368
43.271	J	[kgcm²]	1.433
50.000	J	[kgcm²]	3.527
54.250	J	[kgcm²]	2.888
61.250	J	[kgcm²]	2.698
70.611	J	[kgcm²]	1.812
79.722	J	[kgcm²]	1.700
86.542	J	[kgcm²]	1.338
97.708	J	[kgcm²]	1.263
113.667	J	[kgcm²]	0.833
128.333	J	[kgcm²]	0.789
137.950	J	[kgcm²]	0.609
155.750	J	[kgcm²]	0.579
174.375	J	[kgcm²]	0.391
196.875	J	[kgcm²]	0.373

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

Moments of inertia

GSS□□-3

► Moment of inertia (J) depending on ratio i

Gearbox			GSS05
125.476	J	[kgcm²]	0.154
153.708	J	[kgcm²]	0.117
193.233	J	[kgcm²]	0.078
222.133	J	[kgcm²]	0.206
250.952	J	[kgcm²]	0.151
283.333	J	[kgcm²]	0.148
307.417	J	[kgcm²]	0.115
347.083	J	[kgcm²]	0.113
386.467	J	[kgcm²]	0.077
436.333	J	[kgcm²]	0.076
497.722	J	[kgcm²]	0.053
561.944	J	[kgcm²]	0.052
630.803	J	[kgcm²]	0.035
712.197	J	[kgcm²]	0.034
790.500	J	[kgcm²]	0.024
892.500	J	[kgcm²]	0.024
1041.452	J	[kgcm²]	0.015
1175.833	J	[kgcm²]	0.015

Gearbox			GSS06
126.531	J	[kgcm²]	0.310
142.857	J	[kgcm²]	0.298
155.000	J	[kgcm²]	0.271
175.000	J	[kgcm²]	0.263
194.857	J	[kgcm²]	0.144
220.000	J	[kgcm²]	0.139
238.700	J	[kgcm²]	0.128
269.500	J	[kgcm²]	0.124
310.689	J	[kgcm²]	0.112
350.778	J	[kgcm²]	0.110
386.467	J	[kgcm²]	0.103
436.333	J	[kgcm²]	0.102
497.722	J	[kgcm²]	0.069
561.944	J	[kgcm²]	0.068
630.803	J	[kgcm²]	0.045
712.197	J	[kgcm²]	0.044
816.333	J	[kgcm²]	0.042
921.667	J	[kgcm²]	0.042
1023.000	J	[kgcm²]	0.029
1155.000	J	[kgcm²]	0.029
1241.550	J	[kgcm²]	0.028
1401.750	J	[kgcm²]	0.028
1635.693	J	[kgcm²]	0.017
1846.750	J	[kgcm²]	0.017

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

Moments of inertia

GSS□□-3

► Moment of inertia (J) depending on ratio i

Gearbox			GSS07
126.531	J	[kgcm²]	0.857
142.857	J	[kgcm²]	0.822
155.000	J	[kgcm²]	0.742
175.000	J	[kgcm²]	0.719
201.746	J	[kgcm²]	0.372
227.778	J	[kgcm²]	0.358
247.139	J	[kgcm²]	0.327
279.028	J	[kgcm²]	0.317
321.673	J	[kgcm²]	0.281
363.179	J	[kgcm²]	0.276
394.245	J	[kgcm²]	0.258
445.116	J	[kgcm²]	0.255
490.403	J	[kgcm²]	0.183
553.681	J	[kgcm²]	0.181
634.639	J	[kgcm²]	0.114
716.528	J	[kgcm²]	0.113
833.556	J	[kgcm²]	0.105
941.111	J	[kgcm²]	0.105
1011.633	J	[kgcm²]	0.076
1142.167	J	[kgcm²]	0.076
1227.755	J	[kgcm²]	0.074
1386.175	J	[kgcm²]	0.073
1569.181	J	[kgcm²]	0.047
1771.656	J	[kgcm²]	0.047

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

Efficiencies

► During start-up, the start-up efficiency η_a of a helical-worm gearbox is lower than its operative efficiency at rated speed.
The start-up efficiency η_a must therefore always be considered when starting under load.

GSS04-2

				n_2 [r/min]											
				10	16	25	32	40	63	100	160	250	400	630	800
5.639	η_a	0.71	$\eta_{c=1}$	0.83	0.86	0.88	0.89	0.89	0.90	0.90	0.90	0.90	0.90	0.89	0.89
7.733	η_a	0.71	$\eta_{c=1}$	0.83	0.86	0.88	0.89	0.89	0.90	0.90	0.90	0.90	0.90	0.89	0.89
9.042	η_a	0.67	$\eta_{c=1}$	0.81	0.84	0.86	0.87	0.87	0.88	0.88	0.87	0.87	0.87	0.87	
9.897	η_a	0.71	$\eta_{c=1}$	0.83	0.86	0.88	0.89	0.89	0.90	0.90	0.90	0.90	0.90	0.89	0.89
10.827	η_a	0.71	$\eta_{c=1}$	0.83	0.86	0.88	0.89	0.89	0.90	0.90	0.90	0.90	0.90	0.89	0.89
12.400	η_a	0.67	$\eta_{c=1}$	0.81	0.84	0.86	0.87	0.87	0.88	0.88	0.87	0.87	0.87	0.87	
13.810	η_a	0.71	$\eta_{c=1}$	0.83	0.86	0.88	0.89	0.89	0.90	0.90	0.90	0.90	0.90	0.89	0.89
15.869	η_a	0.67	$\eta_{c=1}$	0.81	0.84	0.86	0.87	0.87	0.88	0.88	0.87	0.87	0.87	0.87	
17.360	η_a	0.67	$\eta_{c=1}$	0.81	0.84	0.86	0.87	0.87	0.88	0.88	0.87	0.87	0.87	0.87	
20.417	η_a	0.55	$\eta_{c=1}$	0.76	0.78	0.79	0.79	0.79	0.79	0.79	0.78	0.78			
22.143	η_a	0.67	$\eta_{c=1}$	0.81	0.84	0.86	0.87	0.87	0.88	0.88	0.87	0.87	0.87	0.87	
24.800	η_a	0.56	$\eta_{c=1}$	0.77	0.79	0.80	0.81	0.81	0.81	0.80	0.80	0.79			
27.125	η_a	0.67	$\eta_{c=1}$	0.81	0.84	0.86	0.87	0.87	0.88	0.88	0.87	0.87	0.87	0.87	
31.738	η_a	0.56	$\eta_{c=1}$	0.77	0.79	0.80	0.81	0.81	0.81	0.80	0.80	0.79			
34.100	η_a	0.67	$\eta_{c=1}$	0.81	0.84	0.86	0.87	0.87	0.88	0.88	0.87	0.87	0.87	0.87	
39.200	η_a	0.55	$\eta_{c=1}$	0.76	0.78	0.79	0.79	0.79	0.79	0.79	0.78	0.78			
43.917	η_a	0.67	$\eta_{c=1}$	0.81	0.84	0.86	0.87	0.87	0.88	0.88	0.87	0.87	0.87	0.87	
50.000	η_a	0.55	$\eta_{c=1}$	0.76	0.78	0.79	0.79	0.79	0.79	0.79	0.78	0.78			
54.250	η_a	0.56	$\eta_{c=1}$	0.77	0.79	0.80	0.81	0.81	0.81	0.80	0.80	0.79			
61.250	η_a	0.55	$\eta_{c=1}$	0.76	0.78	0.79	0.79	0.79	0.79	0.79	0.78	0.78			
68.200	η_a	0.56	$\eta_{c=1}$	0.77	0.79	0.80	0.81	0.81	0.81	0.80	0.80	0.79			
77.000	η_a	0.55	$\eta_{c=1}$	0.76	0.78	0.79	0.79	0.79	0.79	0.79	0.78	0.78			
87.833	η_a	0.56	$\eta_{c=1}$	0.77	0.79	0.80	0.81	0.81	0.81	0.80	0.80	0.79			
99.167	η_a	0.55	$\eta_{c=1}$	0.76	0.78	0.79	0.79	0.79	0.79	0.79	0.78	0.78			
111.318	η_a	0.56	$\eta_{c=1}$	0.77	0.79	0.80	0.81	0.81	0.81	0.80	0.80	0.79			
125.682	η_a	0.55	$\eta_{c=1}$	0.76	0.78	0.79	0.79	0.79	0.79	0.79	0.78	0.78			
139.500	η_a	0.56	$\eta_{c=1}$	0.77	0.79	0.80	0.81	0.81	0.81	0.80	0.80	0.79			
157.500	η_a	0.55	$\eta_{c=1}$	0.76	0.78	0.79	0.79	0.79	0.79	0.79	0.78	0.78			
183.786	η_a	0.56	$\eta_{c=1}$	0.77	0.79	0.80	0.81	0.81	0.81	0.80	0.80	0.79			
207.500	η_a	0.55	$\eta_{c=1}$	0.76	0.78	0.79	0.79	0.79	0.79	0.79	0.78	0.78			

Efficiencies

► During start-up, the start-up efficiency η_a of a helical-worm gearbox is lower than its operative efficiency at rated speed. **The start-up efficiency η_a must therefore always be considered when starting under load.**

GSS05-2

				n_2 [r/min]											
				10	16	25	32	40	63	100	160	250	400	630	800
5.639	η_a	0.71	$\eta_{c=1}$	0.85	0.87	0.89	0.90	0.90	0.91	0.91	0.91	0.91	0.90	0.90	0.90
7.733	η_a	0.71	$\eta_{c=1}$	0.85	0.87	0.89	0.90	0.90	0.91	0.91	0.91	0.91	0.90	0.90	0.90
9.042	η_a	0.67	$\eta_{c=1}$	0.83	0.86	0.87	0.88	0.88	0.89	0.89	0.88	0.88	0.88	0.88	
9.897	η_a	0.71	$\eta_{c=1}$	0.85	0.87	0.89	0.90	0.90	0.91	0.91	0.91	0.91	0.90	0.90	0.90
10.827	η_a	0.71	$\eta_{c=1}$	0.85	0.87	0.89	0.90	0.90	0.91	0.91	0.91	0.91	0.90	0.90	0.90
12.400	η_a	0.67	$\eta_{c=1}$	0.83	0.86	0.87	0.88	0.88	0.89	0.89	0.88	0.88	0.88	0.88	
13.810	η_a	0.71	$\eta_{c=1}$	0.85	0.87	0.89	0.90	0.90	0.91	0.91	0.91	0.91	0.90	0.90	0.90
15.869	η_a	0.67	$\eta_{c=1}$	0.83	0.86	0.87	0.88	0.88	0.89	0.89	0.88	0.88	0.88	0.88	
17.360	η_a	0.67	$\eta_{c=1}$	0.83	0.86	0.87	0.88	0.88	0.89	0.89	0.88	0.88	0.88	0.88	
20.417	η_a	0.55	$\eta_{c=1}$	0.79	0.80	0.81	0.81	0.81	0.81	0.81	0.81	0.81			
22.143	η_a	0.67	$\eta_{c=1}$	0.83	0.86	0.87	0.88	0.88	0.89	0.89	0.88	0.88	0.88	0.88	
24.800	η_a	0.57	$\eta_{c=1}$	0.79	0.81	0.82	0.82	0.83	0.83	0.82	0.82	0.82			
27.125	η_a	0.67	$\eta_{c=1}$	0.83	0.86	0.87	0.88	0.88	0.89	0.89	0.88	0.88	0.88	0.88	
31.738	η_a	0.57	$\eta_{c=1}$	0.79	0.81	0.82	0.82	0.83	0.83	0.82	0.82	0.82			
35.306	η_a	0.67	$\eta_{c=1}$	0.83	0.86	0.87	0.88	0.88	0.89	0.89	0.88	0.88	0.88	0.88	
39.200	η_a	0.55	$\eta_{c=1}$	0.79	0.80	0.81	0.81	0.81	0.81	0.81	0.81	0.81			
43.917	η_a	0.67	$\eta_{c=1}$	0.83	0.86	0.87	0.88	0.88	0.89	0.89	0.88	0.88	0.88	0.88	
50.000	η_a	0.55	$\eta_{c=1}$	0.79	0.80	0.81	0.81	0.81	0.81	0.81	0.81	0.81			
54.250	η_a	0.57	$\eta_{c=1}$	0.79	0.81	0.82	0.82	0.83	0.83	0.82	0.82	0.82			
61.250	η_a	0.55	$\eta_{c=1}$	0.79	0.80	0.81	0.81	0.81	0.81	0.81	0.81	0.81			
70.611	η_a	0.57	$\eta_{c=1}$	0.79	0.81	0.82	0.82	0.83	0.83	0.82	0.82	0.82			
79.722	η_a	0.55	$\eta_{c=1}$	0.79	0.80	0.81	0.81	0.81	0.81	0.81	0.81	0.81			
87.833	η_a	0.57	$\eta_{c=1}$	0.79	0.81	0.82	0.82	0.83	0.83	0.82	0.82	0.82			
99.167	η_a	0.55	$\eta_{c=1}$	0.79	0.80	0.81	0.81	0.81	0.81	0.81	0.81	0.81			
113.667	η_a	0.57	$\eta_{c=1}$	0.79	0.81	0.82	0.82	0.83	0.83	0.82	0.82	0.82			
128.333	η_a	0.55	$\eta_{c=1}$	0.79	0.80	0.81	0.81	0.81	0.81	0.81	0.81	0.81			
137.950	η_a	0.57	$\eta_{c=1}$	0.79	0.81	0.82	0.82	0.83	0.83	0.82	0.82	0.82			
155.750	η_a	0.55	$\eta_{c=1}$	0.79	0.80	0.81	0.81	0.81	0.81	0.81	0.81	0.81			
176.313	η_a	0.57	$\eta_{c=1}$	0.79	0.81	0.82	0.82	0.83	0.83	0.82	0.82	0.82			
199.063	η_a	0.55	$\eta_{c=1}$	0.79	0.80	0.81	0.81	0.81	0.81	0.81	0.81	0.81			

Efficiencies

► During start-up, the start-up efficiency η_a of a helical-worm gearbox is lower than its operative efficiency at rated speed.
The start-up efficiency η_a must therefore always be considered when starting under load.

GSS05-3

				n_2 [r/min]										
				10	16	25	32	40	63	100	160	250	400	630
125.476	η_a	0.67	$\eta_{c=1}$	0.83	0.86	0.87	0.88	0.88	0.89	0.89	0.88	0.88	0.88	0.88
153.708	η_a	0.67	$\eta_{c=1}$	0.83	0.86	0.87	0.88	0.88	0.89	0.89	0.88	0.88	0.88	0.88
193.233	η_a	0.67	$\eta_{c=1}$	0.83	0.86	0.87	0.88	0.88	0.89	0.89	0.88	0.88	0.88	0.88
222.133	η_a	0.55	$\eta_{c=1}$	0.79	0.80	0.81	0.81	0.81	0.81	0.81	0.81	0.81		
250.952	η_a	0.57	$\eta_{c=1}$	0.79	0.81	0.82	0.82	0.83	0.83	0.82	0.82	0.82		
283.333	η_a	0.55	$\eta_{c=1}$	0.79	0.80	0.81	0.81	0.81	0.81	0.81	0.81	0.81		
307.417	η_a	0.57	$\eta_{c=1}$	0.79	0.81	0.82	0.82	0.83	0.83	0.82	0.82	0.82		
347.083	η_a	0.55	$\eta_{c=1}$	0.79	0.80	0.81	0.81	0.81	0.81	0.81	0.81	0.81		
386.467	η_a	0.57	$\eta_{c=1}$	0.79	0.81	0.82	0.82	0.83	0.83	0.82	0.82	0.82		
436.333	η_a	0.55	$\eta_{c=1}$	0.79	0.80	0.81	0.81	0.81	0.81	0.81	0.81	0.81		
497.722	η_a	0.57	$\eta_{c=1}$	0.79	0.81	0.82	0.82	0.83	0.83	0.82	0.82	0.82		
561.945	η_a	0.55	$\eta_{c=1}$	0.79	0.80	0.81	0.81	0.81	0.81	0.81	0.81	0.81		
630.803	η_a	0.57	$\eta_{c=1}$	0.79	0.81	0.82	0.82	0.83	0.83	0.82	0.82	0.82		
712.197	η_a	0.55	$\eta_{c=1}$	0.79	0.80	0.81	0.81	0.81	0.81	0.81	0.81	0.81		

Efficiencies

► During start-up, the start-up efficiency η_a of a helical-worm gearbox is lower than its operative efficiency at rated speed.
The start-up efficiency η_a must therefore always be considered when starting under load.

GSS06-2

				n_2 [r/min]											
				10	16	25	32	40	63	100	160	250	400	630	800
5.833	η_a	0.72	$\eta_{c=1}$	0.87	0.89	0.90	0.91	0.91	0.91	0.92	0.92	0.92	0.91	0.91	0.91
8.000	η_a	0.72	$\eta_{c=1}$	0.87	0.89	0.90	0.91	0.91	0.91	0.92	0.92	0.92	0.91	0.91	0.91
9.042	η_a	0.67	$\eta_{c=1}$	0.85	0.87	0.88	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	
10.238	η_a	0.72	$\eta_{c=1}$	0.87	0.89	0.90	0.91	0.91	0.91	0.92	0.92	0.92	0.91	0.91	0.91
11.200	η_a	0.72	$\eta_{c=1}$	0.87	0.89	0.90	0.91	0.91	0.91	0.92	0.92	0.92	0.91	0.91	0.91
12.400	η_a	0.67	$\eta_{c=1}$	0.85	0.87	0.88	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.80
14.286	η_a	0.72	$\eta_{c=1}$	0.89	0.90	0.91	0.91	0.91	0.92	0.92	0.92	0.91	0.91	0.91	
15.869	η_a	0.67	$\eta_{c=1}$	0.85	0.87	0.88	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	
17.360	η_a	0.67	$\eta_{c=1}$	0.85	0.87	0.88	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	
20.417	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
22.143	η_a	0.67	$\eta_{c=1}$	0.85	0.87	0.88	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	
24.800	η_a	0.57	$\eta_{c=1}$	0.81	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
27.125	η_a	0.67	$\eta_{c=1}$	0.85	0.87	0.88	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	
31.738	η_a	0.57	$\eta_{c=1}$	0.81	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
35.306	η_a	0.67	$\eta_{c=1}$	0.85	0.87	0.88	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	
39.200	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
43.917	η_a	0.67	$\eta_{c=1}$	0.85	0.87	0.88	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	
50.000	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
54.250	η_a	0.57	$\eta_{c=1}$	0.81	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
61.250	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
70.611	η_a	0.57	$\eta_{c=1}$	0.81	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
79.722	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
87.833	η_a	0.57	$\eta_{c=1}$	0.81	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
99.167	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
113.667	η_a	0.57	$\eta_{c=1}$	0.81	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
128.333	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
137.950	η_a	0.57	$\eta_{c=1}$	0.81	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
155.750	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
174.375	η_a	0.57	$\eta_{c=1}$	0.81	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
196.875	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			

Efficiencies

► During start-up, the start-up efficiency η_a of a helical-worm gearbox is lower than its operative efficiency at rated speed.
The start-up efficiency η_a must therefore always be considered when starting under load.

GSS06-3

				n_2 [r/min]											
				10	16	25	32	40	63	100	160	250	400	630	800
126.531	η_a	0.57	$\eta_{c=1}$	0.81	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.91	0.91	0.91
142.857	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
155.000	η_a	0.57	$\eta_{c=1}$	0.81	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
175.000	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
194.857	η_a	0.57	$\eta_{c=1}$	0.81	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
220.000	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
238.700	η_a	0.57	$\eta_{c=1}$	0.81	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
269.500	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
310.689	η_a	0.57	$\eta_{c=1}$	0.81	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
350.778	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
386.467	η_a	0.57	$\eta_{c=1}$	0.81	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
436.333	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
497.722	η_a	0.57	$\eta_{c=1}$	0.81	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
561.945	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
630.803	η_a	0.57	$\eta_{c=1}$	0.81	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
712.197	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
816.333	η_a	0.57	$\eta_{c=1}$	0.81	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
921.667	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
1023.000	η_a	0.57	$\eta_{c=1}$	0.81	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
1155.000	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
1241.550	η_a	0.57	$\eta_{c=1}$	0.81	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
1401.750	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
1635.693	η_a	0.57	$\eta_{c=1}$	0.81	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83			
1846.750	η_a	0.57	$\eta_{c=1}$	0.81	0.82	0.83	0.83	0.83	0.83	0.83	0.83	0.83			

Efficiencies

► During start-up, the start-up efficiency η_a of a helical-worm gearbox is lower than its operative efficiency at rated speed.
The start-up efficiency η_a must therefore always be considered when starting under load.

GSS07-2

				n_2 [r/min]											
				10	16	25	32	40	63	100	160	250	400	630	800
5.862	η_a	0.74	$\eta_{c=1}$	0.89	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
8.125	η_a	0.74	$\eta_{c=1}$	0.89	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
9.086	η_a	0.69	$\eta_{c=1}$	0.88	0.89	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
10.000	η_a	0.74	$\eta_{c=1}$	0.89	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
11.200	η_a	0.74	$\eta_{c=1}$	0.89	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
12.594	η_a	0.69	$\eta_{c=1}$	0.88	0.89	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
14.286	η_a	0.74	$\eta_{c=1}$	0.89	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
15.500	η_a	0.69	$\eta_{c=1}$	0.88	0.89	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
17.360	η_a	0.69	$\eta_{c=1}$	0.88	0.89	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
20.517	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
22.143	η_a	0.69	$\eta_{c=1}$	0.88	0.89	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
25.188	η_a	0.60	$\eta_{c=1}$	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
27.125	η_a	0.69	$\eta_{c=1}$	0.88	0.89	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
31.000	η_a	0.60	$\eta_{c=1}$	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
35.306	η_a	0.69	$\eta_{c=1}$	0.88	0.89	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
39.200	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
43.271	η_a	0.69	$\eta_{c=1}$	0.88	0.89	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
50.000	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
54.250	η_a	0.60	$\eta_{c=1}$	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
61.250	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
70.611	η_a	0.60	$\eta_{c=1}$	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
79.722	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
86.542	η_a	0.60	$\eta_{c=1}$	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
97.708	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
113.667	η_a	0.60	$\eta_{c=1}$	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
128.333	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
137.950	η_a	0.60	$\eta_{c=1}$	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
155.750	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
174.375	η_a	0.60	$\eta_{c=1}$	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
196.875	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85			

Efficiencies

► During start-up, the start-up efficiency η_a of a helical-worm gearbox is lower than its operative efficiency at rated speed.
The start-up efficiency η_a must therefore always be considered when starting under load.

GSS07-3

				n_2 [r/min]								
				10	16	25	32	40	63	100	160	250
126.531	η_a	0.60	$\eta_{c=1}$	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
142.857	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85
155.000	η_a	0.60	$\eta_{c=1}$	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
175.000	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85
201.746	η_a	0.60	$\eta_{c=1}$	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
227.778	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85
247.139	η_a	0.60	$\eta_{c=1}$	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
279.028	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85
321.673	η_a	0.60	$\eta_{c=1}$	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
363.179	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85
394.245	η_a	0.60	$\eta_{c=1}$	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
445.116	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85
490.403	η_a	0.60	$\eta_{c=1}$	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
553.681	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85
634.639	η_a	0.60	$\eta_{c=1}$	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
716.528	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85
833.556	η_a	0.60	$\eta_{c=1}$	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
941.111	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85
1011.633	η_a	0.60	$\eta_{c=1}$	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
1142.167	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85
1227.755	η_a	0.60	$\eta_{c=1}$	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
1386.175	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85
1569.181	η_a	0.60	$\eta_{c=1}$	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
1771.656	η_a	0.60	$\eta_{c=1}$	0.84	0.84	0.85	0.85	0.85	0.85	0.85	0.85	0.85

Weights

GSS□□-2M HAR / HBR

			063C32 063C42	071C32 071C42	080C32 080C42	090C32	100C12 100C32	112C22	132C12 132C22
GSS04	m	[kg]	16	18	23	31			
GSS05	m	[kg]	26	28	32	40	49		
GSS06	m	[kg]	38	40	45	53	61	74	
GSS07	m	[kg]			70	78	86	99	129

GSS□□-2M HAK

			063C32 063C42	071C32 071C42	080C32 080C42	090C32	100C12 100C32	112C22	132C12 132C22
GSS04	m	[kg]	19	21	26	33			
GSS05	m	[kg]	30	32	36	44	53		
GSS06	m	[kg]	45	47	52	60	68	81	
GSS07	m	[kg]			81	89	97	110	140

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

Weights

GSS□□-2M VAR / VBR

			063C32 063C42	071C32 071C42	080C32 080C42	090C32	100C12 100C32	112C22	132C12 132C22
GSS04	m	[kg]	17	19	24	31			
GSS05	m	[kg]	27	29	33	41	50		
GSS06	m	[kg]	40	42	47	55	64	77	
GSS07	m	[kg]			75	83	91	104	134

GSS□□-2M VAK

			063C32 063C42	071C32 071C42	080C32 080C42	090C32	100C12 100C32	112C22	132C12 132C22
GSS04	m	[kg]	19	21	26	34			
GSS05	m	[kg]	31	33	37	45	54		
GSS06	m	[kg]	47	49	54	62	71	84	
GSS07	m	[kg]			86	94	102	115	145

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

Weights

GSS□□-2M SAR / SBR

			063C32 063C42	071C32 071C42	080C32 080C42	090C32	100C12 100C32	112C22	132C12 132C22
GSS04	m	[kg]	17	19	24	31			
GSS05	m	[kg]	26	29	33	41	50		
GSS06	m	[kg]	39	41	46	54	62	75	
GSS07	m	[kg]			71	79	88	101	130

GSS□□-2M SAK

			063C32 063C42	071C32 071C42	080C32 080C42	090C32	100C12 100C32	112C22	132C12 132C22
GSS04	m	[kg]	19	21	26	34			
GSS05	m	[kg]	30	33	37	45	54		
GSS06	m	[kg]	46	48	53	61	69	82	
GSS07	m	[kg]			82	90	99	112	141

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

Weights

GSS□□-3M HAR / HBR

			063C32 063C42	071C32 071C42	080C32	080C42	090C32
GSS05	m	[kg]	26				
GSS06	m	[kg]	42	44	49		
GSS07	m	[kg]	71	73	78		85

GSS□□-3M HAK

			063C32 063C42	071C32 071C42	080C32	080C42	090C32
GSS05	m	[kg]	30				
GSS06	m	[kg]	49	51	56		
GSS07	m	[kg]	82	84	89		96

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

Weights

GSS□□-3M VAR / VBR

			063C32 063C42	071C32 071C42	080C32	080C42	090C32
GSS05	m	[kg]	27				
GSS06	m	[kg]	44	46	51		
GSS07	m	[kg]	76	78	83		90

GSS□□-3M VAK

			063C32 063C42	071C32 071C42	080C32	080C42	090C32
GSS05	m	[kg]	31				
GSS06	m	[kg]	51	53	58		
GSS07	m	[kg]	87	89	94		101

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

Weights

GSS□□-3M SAR / SBR

			063C32 063C42	071C32 071C42	080C32	080C42	090C32
GSS05	m	[kg]	27				
GSS06	m	[kg]	43	45	50		
GSS07	m	[kg]	72	74	79		87

GSS□□-3M SAK

			063C32 063C42	071C32 071C42	080C32	080C42	090C32
GSS05	m	[kg]	31				
GSS06	m	[kg]	50	52	57		
GSS07	m	[kg]	83	85	90		98

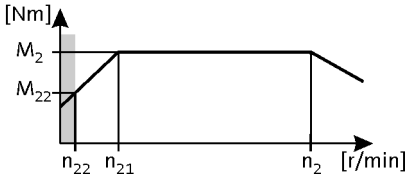
► Weights with oil filling for mounting position A; all values are approximate.
The weights relate to the basic version. Bear in mind that additional weights may be needed, e.g. for motor options.

Selection tables

► 120 Hz: P_N = 0.55 kW

n_{22}/n_2 = 1 ... 24.0

n_1 = 143.3 ... 3440 r/min



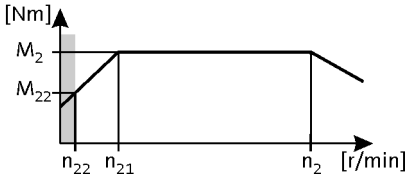
n_{22}	n_{21}		n_2	M_{22}	M_2	c	i			
[r/min]	[r/min]		[r/min]	[Nm]	[Nm]					
15	61	-	348	9.1	13	6.0	9.897	GSS04-2M□□□063C32	E84AV□□□5514□□0	62
13	55	-	318	10	14	5.2	10.827	GSS05-2M□□□063C32	E84AV□□□5514□□0	62
10	43	-	249	12	18	5.5	13.810	GSS04-2M□□□063C32	E84AV□□□5514□□0	62
9.0	38	-	217	14	20	6.0	15.869	GSS04-2M□□□063C32	E84AV□□□5514□□0	62
8.3	35	-	198	16	22	5.2	17.360	GSS05-2M□□□063C32	E84AV□□□5514□□0	62
6.5	27	-	155	19	29	5.1	22.143	GSS04-2M□□□063C32	E84AV□□□5514□□0	62
5.3	22	-	127	23	35	4.5	27.125	GSS04-2M□□□063C32	E84AV□□□5514□□0	62
4.5	19	-	108	24	39	3.4	31.738	GSS04-2M□□□063C32	E84AV□□□5514□□0	62
4.2	18	-	101	28	44	3.8	34.100	GSS04-2M□□□063C32	E84AV□□□5514□□0	62
3.7	15	-	88	29	47	2.9	39.200	GSS04-2M□□□063C32	E84AV□□□5514□□0	62
3.3	14	-	78	36	57	3.1	43.917	GSS04-2M□□□063C32	E84AV□□□5514□□0	62
2.9	12	-	69	36	60	2.5	50.000	GSS04-2M□□□063C32	E84AV□□□5514□□0	62
2.6	11	-	63	40	66	2.4	54.250	GSS04-2M□□□063C32	E84AV□□□5514□□0	62
2.3	9.8	-	56	44	73	2.2	61.250	GSS04-2M□□□063C32	E84AV□□□5514□□0	62
2.1	8.8	-	50	49	83	2.1	68.200	GSS04-2M□□□063C32	E84AV□□□5514□□0	62
1.9	7.8	-	45	53	91	1.9	77.000	GSS04-2M□□□063C32	E84AV□□□5514□□0	62
1.8	7.5	-	43	56	96	3.1	79.722	GSS05-2M□□□063C32	E84AV□□□5514□□0	62
1.6	6.8	-	39	62	106	1.7	87.833	GSS04-2M□□□063C32	E84AV□□□5514□□0	62
1.6	6.8	-	39	62	108	2.9	87.833	GSS05-2M□□□063C32	E84AV□□□5514□□0	62
1.5	6.1	-	35	68	117	1.5	99.167	GSS04-2M□□□063C32	E84AV□□□5514□□0	62
1.5	6.1	-	35	68	120	2.7	99.167	GSS05-2M□□□063C32	E84AV□□□5514□□0	62
1.3	5.4	-	31	80	134	1.3	111.318	GSS04-2M□□□063C32	E84AV□□□5514□□0	62
1.3	5.3	-	30	81	141	2.5	113.667	GSS05-2M□□□063C32	E84AV□□□5514□□0	62
1.1	4.8	-	27	86	147	1.2	125.682	GSS04-2M□□□063C32	E84AV□□□5514□□0	62
1.1	4.8	-	27	86	165	1.6	125.476	GSS05-3M□□□063C32	E84AV□□□5514□□0	70
1.1	4.7	-	27	89	156	2.3	128.333	GSS05-2M□□□063C32	E84AV□□□5514□□0	62
1.0	4.3	-	25	100	167	1.1	139.500	GSS04-2M□□□063C32	E84AV□□□5514□□0	62
1.0	4.4	-	25	99	172	2.1	137.950	GSS05-2M□□□063C32	E84AV□□□5514□□0	62
0.9	3.8	-	22	109	183	1.0	157.500	GSS04-2M□□□063C32	E84AV□□□5514□□0	62
0.9	3.9	-	22	106	202	1.4	153.708	GSS05-3M□□□063C32	E84AV□□□5514□□0	70
0.9	3.9	-	22	109	191	1.9	155.750	GSS05-2M□□□063C32	E84AV□□□5514□□0	62
0.8	3.4	-	20	128	220	1.6	176.313	GSS05-2M□□□063C32	E84AV□□□5514□□0	62
0.8	3.4	-	20	124	210	2.9	174.375	GSS06-2M□□□063C32	E84AV□□□5514□□0	62
0.7	3.1	-	18	134	251	1.2	193.233	GSS05-3M□□□063C32	E84AV□□□5514□□0	70
0.7	3.1	-	18	141	234	2.9	196.875	GSS06-2M□□□063C32	E84AV□□□5514□□0	62
0.7	3.1	-	18	135	222	3.2	194.857	GSS06-3M□□□063C32	E84AV□□□5514□□0	70
0.7	3.0	-	17	140	245	1.5	199.063	GSS05-2M□□□063C32	E84AV□□□5514□□0	62
0.7	2.7	-	16	154	268	1.3	222.133	GSS05-3M□□□063C32	E84AV□□□5514□□0	70
0.7	2.7	-	16	154	248	2.8	220.000	GSS06-3M□□□063C32	E84AV□□□5514□□0	70
0.6	2.4	-	14	175	306	1.2	250.952	GSS05-3M□□□063C32	E84AV□□□5514□□0	70
0.6	2.5	-	14	167	271	2.6	238.700	GSS06-3M□□□063C32	E84AV□□□5514□□0	70

Selection tables

► 120 Hz: P_N = 0.55 kW

n_{22}/n_2 = 1 ... 24.0

n_1 = 143.3 ... 3440 r/min



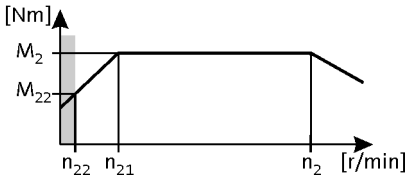
n_{22}	n_{21}		n_2	M_{22}	M_2	c	i			
[r/min]	[r/min]		[r/min]	[Nm]	[Nm]					
0.5	2.2	-	13	190	302	2.3	269.500	GSS06-3M□□□063C32	E84AV□□□5514□□0	70
0.5	2.1	-	12	198	338	1.1	283.333	GSS05-3M□□□063C32	E84AV□□□5514□□0	70
0.5	2.0	-	11	215	371	1.0	307.417	GSS05-3M□□□063C32	E84AV□□□5514□□0	70
0.5	1.9	-	11	220	350	2.0	310.689	GSS06-3M□□□063C32	E84AV□□□5514□□0	70
0.4	1.7	-	9.8	250	388	1.8	350.778	GSS06-3M□□□063C32	E84AV□□□5514□□0	70
0.4	1.7	-	9.5	263	412	3.0	363.179	GSS07-3M□□□063C32	E84AV□□□5514□□0	70
0.4	1.6	-	8.9	276	431	1.7	386.467	GSS06-3M□□□063C32	E84AV□□□5514□□0	70
0.4	1.5	-	8.7	287	453	2.7	394.245	GSS07-3M□□□063C32	E84AV□□□5514□□0	70
0.3	1.4	-	7.9	313	480	1.5	436.333	GSS06-3M□□□063C32	E84AV□□□5514□□0	70
0.3	1.4	-	7.7	326	503	2.4	445.116	GSS07-3M□□□063C32	E84AV□□□5514□□0	70
0.3	1.2	-	7.0	361	556	2.2	490.403	GSS07-3M□□□063C32	E84AV□□□5514□□0	70
0.3	1.2	-	6.9	359	550	1.3	497.722	GSS06-3M□□□063C32	E84AV□□□5514□□0	70
0.3	1.1	-	6.2	409	620	2.0	553.681	GSS07-3M□□□063C32	E84AV□□□5514□□0	70
0.3	1.1	-	6.1	406	612	1.2	561.944	GSS06-3M□□□063C32	E84AV□□□5514□□0	70
0.2	1.0	-	5.5	457	689	1.0	630.803	GSS06-3M□□□063C32	E84AV□□□5514□□0	70
0.2	1.0	-	5.4	472	715	1.7	634.639	GSS07-3M□□□063C32	E84AV□□□5514□□0	70
0.2	0.8	-	4.8	518	763	0.9	712.197	GSS06-3M□□□063C32	E84AV□□□5514□□0	70
0.2	0.8	-	4.8	535	795	1.6	716.528	GSS07-3M□□□063C32	E84AV□□□5514□□0	70
0.2	0.7	-	4.1	625	928	1.3	833.556	GSS07-3M□□□063C32	E84AV□□□5514□□0	70
0.2	0.6	-	3.7	708	1030	1.2	941.111	GSS07-3M□□□063C32	E84AV□□□5514□□0	70
0.1	0.6	-	3.4	762	1112	1.1	1011.633	GSS07-3M□□□063C32	E84AV□□□5514□□0	70
0.1	0.5	-	3.0	863	1232	1.0	1142.167	GSS07-3M□□□063C32	E84AV□□□5514□□0	70
0.1	0.5	-	2.8	929	1329	0.9	1227.755	GSS07-3M□□□063C32	E84AV□□□5514□□0	70

Selection tables

► 120 Hz: P_N = 0.75 kW

n_{22}/n_2 = 1 ... 24.0

n_1 = 141.7 ... 3400 r/min



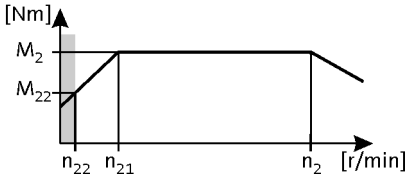
n_{22}	n_{21}		n_2	M_{22}	M_2	c	i			
[r/min]	[r/min]		[r/min]	[Nm]	[Nm]					
14	61	-	344	13	18	4.3	9.897	GSS04-2M□□□063C42	E84AV□□□7514□□0	62
13	55	-	314	14	20	3.8	10.827	GSS05-2M□□□063C42	E84AV□□□7514□□0	62
10	43	-	246	17	26	4.0	13.810	GSS04-2M□□□063C42	E84AV□□□7514□□0	62
8.9	38	-	214	19	29	4.3	15.869	GSS04-2M□□□063C42	E84AV□□□7514□□0	62
8.2	35	-	196	22	31	3.8	17.360	GSS05-2M□□□063C42	E84AV□□□7514□□0	62
6.4	27	-	154	26	40	3.7	22.143	GSS04-2M□□□063C42	E84AV□□□7514□□0	62
5.2	22	-	125	32	49	3.2	27.125	GSS04-2M□□□063C42	E84AV□□□7514□□0	62
4.5	19	-	107	34	54	2.5	31.738	GSS04-2M□□□063C42	E84AV□□□7514□□0	62
4.2	18	-	100	39	62	2.8	34.100	GSS04-2M□□□063C42	E84AV□□□7514□□0	62
3.6	15	-	87	41	65	2.1	39.200	GSS04-2M□□□063C42	E84AV□□□7514□□0	62
3.2	14	-	77	50	80	2.2	43.917	GSS04-2M□□□063C42	E84AV□□□7514□□0	62
3.2	14	-	77	51	80	3.0	43.917	GSS05-2M□□□063C42	E84AV□□□7514□□0	62
2.8	12	-	68	50	83	1.8	50.000	GSS04-2M□□□063C42	E84AV□□□7514□□0	62
2.8	12	-	68	51	83	3.0	50.000	GSS05-2M□□□063C42	E84AV□□□7514□□0	62
2.6	11	-	63	55	92	1.8	54.250	GSS04-2M□□□063C42	E84AV□□□7514□□0	62
2.3	9.8	-	56	60	101	1.6	61.250	GSS04-2M□□□063C42	E84AV□□□7514□□0	62
2.1	8.8	-	50	68	115	1.5	68.200	GSS04-2M□□□063C42	E84AV□□□7514□□0	62
2.0	8.5	-	48	71	121	2.4	70.611	GSS05-2M□□□063C42	E84AV□□□7514□□0	62
1.8	7.8	-	44	73	127	1.4	77.000	GSS04-2M□□□063C42	E84AV□□□7514□□0	62
1.8	7.5	-	43	78	134	2.2	79.722	GSS05-2M□□□063C42	E84AV□□□7514□□0	62
1.6	6.8	-	39	86	147	1.2	87.833	GSS04-2M□□□063C42	E84AV□□□7514□□0	62
1.6	6.8	-	39	86	151	2.1	87.833	GSS05-2M□□□063C42	E84AV□□□7514□□0	62
1.4	6.1	-	34	93	163	1.1	99.167	GSS04-2M□□□063C42	E84AV□□□7514□□0	62
1.4	6.1	-	34	94	167	1.9	99.167	GSS05-2M□□□063C42	E84AV□□□7514□□0	62
1.3	5.4	-	31	109	186	1.0	111.318	GSS04-2M□□□063C42	E84AV□□□7514□□0	62
1.3	5.3	-	30	112	196	1.8	113.667	GSS05-2M□□□063C42	E84AV□□□7514□□0	62
1.3	5.3	-	30	112	192	3.0	113.667	GSS06-2M□□□063C42	E84AV□□□7514□□0	62
1.1	4.8	-	27	119	229	1.2	125.476	GSS05-3M□□□063C42	E84AV□□□7514□□0	70
1.1	4.7	-	27	123	217	1.6	128.333	GSS05-2M□□□063C42	E84AV□□□7514□□0	62
1.1	4.7	-	27	126	214	3.0	128.333	GSS06-2M□□□063C42	E84AV□□□7514□□0	62
1.0	4.4	-	25	137	238	1.5	137.950	GSS05-2M□□□063C42	E84AV□□□7514□□0	62
1.0	4.4	-	25	136	232	2.6	137.950	GSS06-2M□□□063C42	E84AV□□□7514□□0	62
1.0	4.2	-	24	137	226	3.0	142.857	GSS06-3M□□□063C42	E84AV□□□7514□□0	70
0.9	3.9	-	22	146	279	1.0	153.708	GSS05-3M□□□063C42	E84AV□□□7514□□0	70
0.9	3.9	-	22	150	265	1.4	155.750	GSS05-2M□□□063C42	E84AV□□□7514□□0	62
0.9	3.9	-	22	153	259	2.6	155.750	GSS06-2M□□□063C42	E84AV□□□7514□□0	62
0.9	3.9	-	22	149	247	2.8	155.000	GSS06-3M□□□063C42	E84AV□□□7514□□0	70
0.8	3.4	-	20	172	292	2.1	174.375	GSS06-2M□□□063C42	E84AV□□□7514□□0	62
0.8	3.4	-	19	176	305	1.1	176.313	GSS05-2M□□□063C42	E84AV□□□7514□□0	62
0.8	3.4	-	19	169	276	2.6	175.000	GSS06-3M□□□063C42	E84AV□□□7514□□0	70
0.7	3.0	-	17	193	339	1.1	199.063	GSS05-2M□□□063C42	E84AV□□□7514□□0	62

Selection tables

► 120 Hz: P_N = 0.75 kW

n_{22}/n_2 = 1 ... 24.0

n_1 = 141.7 ... 3400 r/min



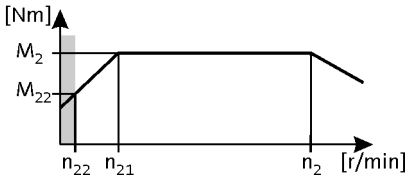
n_{22}	n_{21}		n_2	M_{22}	M_2	c	i			
[r/min]	[r/min]		[r/min]	[Nm]	[Nm]					
0.7	3.1	-	17	195	326	2.1	196.875	GSS06-2M□□□063C42	E84AV□□□7514□□0	62
0.7	3.1	-	17	188	310	2.3	194.857	GSS06-3M□□□063C42	E84AV□□□7514□□0	70
0.6	2.7	-	16	213	345	2.1	220.000	GSS06-3M□□□063C42	E84AV□□□7514□□0	70
0.6	2.7	-	15	212	372	1.0	222.133	GSS05-3M□□□063C42	E84AV□□□7514□□0	70
0.6	2.5	-	14	232	377	1.9	238.700	GSS06-3M□□□063C42	E84AV□□□7514□□0	70
0.6	2.4	-	14	244	397	3.1	247.139	GSS07-3M□□□063C42	E84AV□□□7514□□0	70
0.5	2.2	-	13	262	420	1.7	269.500	GSS06-3M□□□063C42	E84AV□□□7514□□0	70
0.5	2.2	-	12	277	444	2.8	279.028	GSS07-3M□□□063C42	E84AV□□□7514□□0	70
0.5	1.9	-	11	304	486	1.5	310.689	GSS06-3M□□□063C42	E84AV□□□7514□□0	70
0.4	1.9	-	11	321	516	2.4	321.673	GSS07-3M□□□063C42	E84AV□□□7514□□0	70
0.4	1.7	-	9.7	345	539	1.3	350.778	GSS06-3M□□□063C42	E84AV□□□7514□□0	70
0.4	1.7	-	9.4	365	574	2.1	363.179	GSS07-3M□□□063C42	E84AV□□□7514□□0	70
0.4	1.6	-	8.8	381	598	1.2	386.467	GSS06-3M□□□063C42	E84AV□□□7514□□0	70
0.4	1.5	-	8.6	397	631	2.0	394.245	GSS07-3M□□□063C42	E84AV□□□7514□□0	70
0.3	1.4	-	7.8	431	666	1.1	436.333	GSS06-3M□□□063C42	E84AV□□□7514□□0	70
0.3	1.4	-	7.6	451	700	1.8	445.116	GSS07-3M□□□063C42	E84AV□□□7514□□0	70
0.3	1.2	-	6.9	498	773	1.6	490.403	GSS07-3M□□□063C42	E84AV□□□7514□□0	70
0.3	1.2	-	6.8	493	762	0.9	497.722	GSS06-3M□□□063C42	E84AV□□□7514□□0	70
0.3	1.1	-	6.1	565	862	1.4	553.681	GSS07-3M□□□063C42	E84AV□□□7514□□0	70
0.2	1.0	-	5.4	650	993	1.3	634.639	GSS07-3M□□□063C42	E84AV□□□7514□□0	70
0.2	0.8	-	4.8	736	1104	1.1	716.528	GSS07-3M□□□063C42	E84AV□□□7514□□0	70
0.2	0.7	-	4.1	859	1287	1.0	833.556	GSS07-3M□□□063C42	E84AV□□□7514□□0	70

Selection tables

► 120 Hz: P_N = 1.10 kW

n_{22}/n_2 = 1 ... 24.0

n_1 = 145.4 ... 3490 r/min



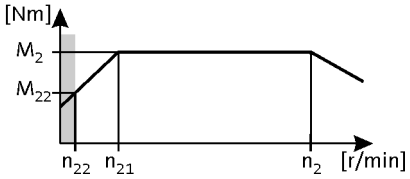
n_{22} [r/min]	n_{21} [r/min]		n_2 [r/min]	M_{22} [Nm]	M_2 [Nm]	c	i			
15	61	-	353	18	26	4.3	9.897	GSS04-2M□□□071C32	E84AV□□□1124□□0	62
13	55	-	322	20	28	4.3	10.827	GSS04-2M□□□071C32	E84AV□□□1124□□0	62
11	43	-	253	25	36	4.0	13.810	GSS04-2M□□□071C32	E84AV□□□1124□□0	62
9.2	38	-	220	28	41	3.2	15.869	GSS04-2M□□□071C32	E84AV□□□1124□□0	62
8.4	35	-	201	31	45	3.1	17.360	GSS04-2M□□□071C32	E84AV□□□1124□□0	62
6.6	27	-	158	39	58	2.6	22.143	GSS04-2M□□□071C32	E84AV□□□1124□□0	62
5.4	22	-	129	47	71	2.3	27.125	GSS04-2M□□□071C32	E84AV□□□1124□□0	62
4.6	19	-	110	51	78	1.7	31.738	GSS04-2M□□□071C32	E84AV□□□1124□□0	62
4.6	19	-	110	51	76	2.8	31.738	GSS05-2M□□□071C32	E84AV□□□1124□□0	62
4.3	18	-	102	59	89	1.9	34.100	GSS04-2M□□□071C32	E84AV□□□1124□□0	62
4.1	17	-	99	60	92	3.1	35.306	GSS05-2M□□□071C32	E84AV□□□1124□□0	62
3.7	15	-	89	61	94	1.5	39.200	GSS04-2M□□□071C32	E84AV□□□1124□□0	62
3.7	15	-	89	62	93	2.4	39.200	GSS05-2M□□□071C32	E84AV□□□1124□□0	62
3.3	14	-	80	75	115	1.6	43.917	GSS04-2M□□□071C32	E84AV□□□1124□□0	62
3.3	14	-	80	74	115	2.7	43.917	GSS05-2M□□□071C32	E84AV□□□1124□□0	62
2.9	12	-	70	75	120	1.3	50.000	GSS04-2M□□□071C32	E84AV□□□1124□□0	62
2.9	12	-	70	77	120	2.1	50.000	GSS05-2M□□□071C32	E84AV□□□1124□□0	62
2.7	11	-	64	82	132	1.2	54.250	GSS04-2M□□□071C32	E84AV□□□1124□□0	62
2.7	11	-	64	84	133	2.0	54.250	GSS05-2M□□□071C32	E84AV□□□1124□□0	62
2.4	9.8	-	57	90	146	1.1	61.250	GSS04-2M□□□071C32	E84AV□□□1124□□0	62
2.4	9.8	-	57	92	147	1.8	61.250	GSS05-2M□□□071C32	E84AV□□□1124□□0	62
2.1	8.8	-	51	101	165	1.1	68.200	GSS04-2M□□□071C32	E84AV□□□1124□□0	62
2.1	8.5	-	49	106	174	1.7	70.611	GSS05-2M□□□071C32	E84AV□□□1124□□0	62
1.9	7.8	-	45	109	182	1.0	77.000	GSS04-2M□□□071C32	E84AV□□□1124□□0	62
1.8	7.5	-	44	116	193	1.6	79.722	GSS05-2M□□□071C32	E84AV□□□1124□□0	62
1.8	7.5	-	44	119	192	3.0	79.722	GSS06-2M□□□071C32	E84AV□□□1124□□0	62
1.7	6.8	-	40	129	217	1.5	87.833	GSS05-2M□□□071C32	E84AV□□□1124□□0	62
1.7	6.8	-	40	129	213	2.9	87.833	GSS06-2M□□□071C32	E84AV□□□1124□□0	62
1.5	6.1	-	35	141	241	1.4	99.167	GSS05-2M□□□071C32	E84AV□□□1124□□0	62
1.5	6.1	-	35	145	239	2.6	99.167	GSS06-2M□□□071C32	E84AV□□□1124□□0	62
1.3	5.3	-	31	166	281	1.2	113.667	GSS05-2M□□□071C32	E84AV□□□1124□□0	62
1.3	5.3	-	31	166	276	2.5	113.667	GSS06-2M□□□071C32	E84AV□□□1124□□0	62
1.2	4.7	-	28	182	293	2.3	126.531	GSS06-3M□□□071C32	E84AV□□□1124□□0	70
1.1	4.7	-	27	182	312	1.2	128.333	GSS05-2M□□□071C32	E84AV□□□1124□□0	62
1.1	4.7	-	27	187	309	2.2	128.333	GSS06-2M□□□071C32	E84AV□□□1124□□0	62
1.1	4.4	-	25	203	342	1.1	137.950	GSS05-2M□□□071C32	E84AV□□□1124□□0	62
1.1	4.4	-	25	201	334	2.1	137.950	GSS06-2M□□□071C32	E84AV□□□1124□□0	62
1.0	4.2	-	24	205	327	2.1	142.857	GSS06-3M□□□071C32	E84AV□□□1124□□0	70
0.9	3.9	-	23	223	357	2.0	155.000	GSS06-3M□□□071C32	E84AV□□□1124□□0	70
0.9	3.9	-	22	222	380	0.9	155.750	GSS05-2M□□□071C32	E84AV□□□1124□□0	62
0.9	3.9	-	22	228	374	1.9	155.750	GSS06-2M□□□071C32	E84AV□□□1124□□0	62

Selection tables

► 120 Hz: P_N = 1.10 kW

n_{22}/n_2 = 1 ... 24.0

n_1 = 145.4 ... 3490 r/min



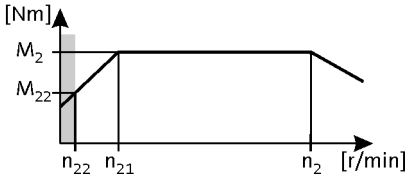
n_{22}	n_{21}		n_2	M_{22}	M_2	c	i			
[r/min]	[r/min]		[r/min]	[Nm]	[Nm]					
0.8	3.4	-	20	255	420	1.7	174.375	GSS06-2M□□□071C32	E84AV□□□1124□□0	62
0.8	3.4	-	20	252	399	1.8	175.000	GSS06-3M□□□071C32	E84AV□□□1124□□0	70
0.8	3.4	-	20	258	406	3.0	175.000	GSS07-3M□□□071C32	E84AV□□□1124□□0	70
0.7	3.1	-	18	289	469	1.5	196.875	GSS06-2M□□□071C32	E84AV□□□1124□□0	62
0.8	3.1	-	18	281	446	1.6	194.857	GSS06-3M□□□071C32	E84AV□□□1124□□0	70
0.7	3.0	-	17	298	470	2.6	201.746	GSS07-3M□□□071C32	E84AV□□□1124□□0	70
0.7	2.7	-	16	318	497	1.4	220.000	GSS06-3M□□□071C32	E84AV□□□1124□□0	70
0.6	2.5	-	15	345	543	1.3	238.700	GSS06-3M□□□071C32	E84AV□□□1124□□0	70
0.6	2.6	-	15	337	526	2.3	227.778	GSS07-3M□□□071C32	E84AV□□□1124□□0	70
0.6	2.4	-	14	366	574	2.1	247.139	GSS07-3M□□□071C32	E84AV□□□1124□□0	70
0.5	2.2	-	13	390	605	1.2	269.500	GSS06-3M□□□071C32	E84AV□□□1124□□0	70
0.5	2.2	-	13	414	641	1.9	279.028	GSS07-3M□□□071C32	E84AV□□□1124□□0	70
0.5	1.9	-	11	451	699	1.0	310.689	GSS06-3M□□□071C32	E84AV□□□1124□□0	70
0.5	1.9	-	11	479	744	1.7	321.673	GSS07-3M□□□071C32	E84AV□□□1124□□0	70
0.4	1.7	-	10	510	775	0.9	350.778	GSS06-3M□□□071C32	E84AV□□□1124□□0	70
0.4	1.7	-	9.6	543	827	1.5	363.179	GSS07-3M□□□071C32	E84AV□□□1124□□0	70
0.4	1.5	-	8.9	591	908	1.4	394.245	GSS07-3M□□□071C32	E84AV□□□1124□□0	70
0.3	1.4	-	7.8	669	1006	1.2	445.116	GSS07-3M□□□071C32	E84AV□□□1124□□0	70
0.3	1.2	-	7.1	739	1112	1.1	490.403	GSS07-3M□□□071C32	E84AV□□□1124□□0	70
0.3	1.1	-	6.3	837	1238	1.0	553.681	GSS07-3M□□□071C32	E84AV□□□1124□□0	70

Selection tables

► 120 Hz: P_N = 1.50 kW

n_{22}/n_2 = 1 ... 24.0

n_1 = 143.8 ... 3450 r/min



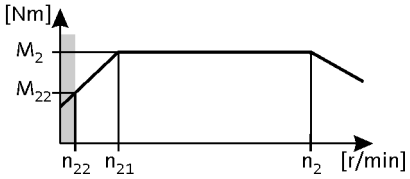
n_{22} [r/min]	n_{21} [r/min]		n_2 [r/min]	M_{22} [Nm]	M_2 [Nm]	c	i			
15	61	-	349	26	36	3.1	9.897	GSS04-2M□□□071C42	E84AV□□□1524□□0	62
13	55	-	319	28	40	3.1	10.827	GSS04-2M□□□071C42	E84AV□□□1524□□0	62
10	43	-	250	35	51	2.9	13.810	GSS04-2M□□□071C42	E84AV□□□1524□□0	62
9.1	38	-	217	39	58	2.3	15.869	GSS04-2M□□□071C42	E84AV□□□1524□□0	62
8.3	35	-	199	43	63	2.2	17.360	GSS04-2M□□□071C42	E84AV□□□1524□□0	62
6.5	27	-	156	54	80	1.9	22.143	GSS04-2M□□□071C42	E84AV□□□1524□□0	62
6.5	27	-	156	54	80	3.1	22.143	GSS05-2M□□□071C42	E84AV□□□1524□□0	62
5.3	22	-	127	65	99	1.6	27.125	GSS04-2M□□□071C42	E84AV□□□1524□□0	62
5.3	22	-	127	65	98	2.7	27.125	GSS05-2M□□□071C42	E84AV□□□1524□□0	62
4.5	19	-	109	70	108	1.3	31.738	GSS04-2M□□□071C42	E84AV□□□1524□□0	62
4.5	19	-	109	71	106	2.0	31.738	GSS05-2M□□□071C42	E84AV□□□1524□□0	62
4.2	18	-	101	81	124	1.4	34.100	GSS04-2M□□□071C42	E84AV□□□1524□□0	62
4.1	17	-	98	84	128	2.2	35.306	GSS05-2M□□□071C42	E84AV□□□1524□□0	62
3.7	15	-	88	84	130	1.1	39.200	GSS04-2M□□□071C42	E84AV□□□1524□□0	62
3.7	15	-	88	85	129	1.8	39.200	GSS05-2M□□□071C42	E84AV□□□1524□□0	62
3.3	14	-	79	102	159	1.1	43.917	GSS04-2M□□□071C42	E84AV□□□1524□□0	62
3.3	14	-	79	103	160	1.9	43.917	GSS05-2M□□□071C42	E84AV□□□1524□□0	62
3.3	14	-	79	105	159	2.8	43.917	GSS06-2M□□□071C42	E84AV□□□1524□□0	62
2.9	12	-	69	103	166	0.9	50.000	GSS04-2M□□□071C42	E84AV□□□1524□□0	62
2.9	12	-	69	106	166	1.5	50.000	GSS05-2M□□□071C42	E84AV□□□1524□□0	62
2.9	12	-	69	108	168	2.9	50.000	GSS06-2M□□□071C42	E84AV□□□1524□□0	62
2.7	11	-	64	116	184	1.4	54.250	GSS05-2M□□□071C42	E84AV□□□1524□□0	62
2.4	9.8	-	56	127	205	1.3	61.250	GSS05-2M□□□071C42	E84AV□□□1524□□0	62
2.0	8.5	-	49	146	241	1.2	70.611	GSS05-2M□□□071C42	E84AV□□□1524□□0	62
2.0	8.5	-	49	147	239	2.4	70.611	GSS06-2M□□□071C42	E84AV□□□1524□□0	62
1.8	7.5	-	43	160	267	1.1	79.722	GSS05-2M□□□071C42	E84AV□□□1524□□0	62
1.8	7.5	-	43	165	268	2.2	79.722	GSS06-2M□□□071C42	E84AV□□□1524□□0	62
1.6	6.8	-	39	177	300	1.1	87.833	GSS05-2M□□□071C42	E84AV□□□1524□□0	62
1.6	6.8	-	39	179	297	2.1	87.833	GSS06-2M□□□071C42	E84AV□□□1524□□0	62
1.5	6.1	-	35	193	333	1.0	99.167	GSS05-2M□□□071C42	E84AV□□□1524□□0	62
1.5	6.1	-	35	201	333	1.9	99.167	GSS06-2M□□□071C42	E84AV□□□1524□□0	62
1.3	5.3	-	30	229	390	0.9	113.667	GSS05-2M□□□071C42	E84AV□□□1524□□0	62
1.3	5.3	-	30	230	384	1.8	113.667	GSS06-2M□□□071C42	E84AV□□□1524□□0	62
1.1	4.7	-	27	259	429	1.6	128.333	GSS06-2M□□□071C42	E84AV□□□1524□□0	62
1.1	4.7	-	27	251	407	1.7	126.531	GSS06-3M□□□071C42	E84AV□□□1524□□0	70
1.1	4.7	-	27	260	412	3.0	126.531	GSS07-3M□□□071C42	E84AV□□□1524□□0	70
1.0	4.4	-	25	278	464	1.5	137.950	GSS06-2M□□□071C42	E84AV□□□1524□□0	62
1.0	4.2	-	24	283	455	1.5	142.857	GSS06-3M□□□071C42	E84AV□□□1524□□0	70
1.0	4.2	-	24	293	462	2.7	142.857	GSS07-3M□□□071C42	E84AV□□□1524□□0	70
0.9	3.9	-	22	308	497	1.4	155.000	GSS06-3M□□□071C42	E84AV□□□1524□□0	70
0.9	3.9	-	22	314	519	1.4	155.750	GSS06-2M□□□071C42	E84AV□□□1524□□0	62

Selection tables

► 120 Hz: P_N = 1.50 kW

n_{22}/n_2 = 1 ... 24.0

n_1 = 143.8 ... 3450 r/min



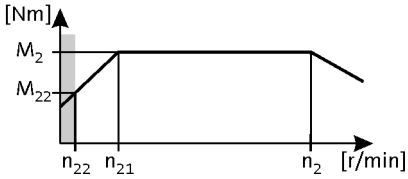
n_{22} [r/min]	n_{21} [r/min]		n_2 [r/min]	M_{22} [Nm]	M_2 [Nm]	c	i			
0.9	3.9	-	22	318	504	2.4	155.000	GSS07-3M□□□071C42	E84AV□□□1524□□0	70
0.8	3.4	-	20	351	583	1.2	174.375	GSS06-2M□□□071C42	E84AV□□□1524□□0	62
0.8	3.4	-	20	347	553	1.3	175.000	GSS06-3M□□□071C42	E84AV□□□1524□□0	70
0.8	3.4	-	20	358	565	2.2	175.000	GSS07-3M□□□071C42	E84AV□□□1524□□0	70
0.7	3.1	-	18	397	650	1.1	196.875	GSS06-2M□□□071C42	E84AV□□□1524□□0	62
0.7	3.1	-	18	387	619	1.2	194.857	GSS06-3M□□□071C42	E84AV□□□1524□□0	70
0.7	3.0	-	17	413	654	1.9	201.746	GSS07-3M□□□071C42	E84AV□□□1524□□0	70
0.7	2.7	-	16	437	690	1.0	220.000	GSS06-3M□□□071C42	E84AV□□□1524□□0	70
0.6	2.5	-	15	474	752	1.0	238.700	GSS06-3M□□□071C42	E84AV□□□1524□□0	70
0.6	2.6	-	15	465	732	1.7	227.778	GSS07-3M□□□071C42	E84AV□□□1524□□0	70
0.6	2.4	-	14	504	798	1.6	247.139	GSS07-3M□□□071C42	E84AV□□□1524□□0	70
0.5	2.2	-	12	570	891	1.4	279.028	GSS07-3M□□□071C42	E84AV□□□1524□□0	70
0.5	1.9	-	11	660	1033	1.2	321.673	GSS07-3M□□□071C42	E84AV□□□1524□□0	70
0.4	1.7	-	9.5	747	1147	1.1	363.179	GSS07-3M□□□071C42	E84AV□□□1524□□0	70
0.4	1.5	-	8.8	813	1259	1.0	394.245	GSS07-3M□□□071C42	E84AV□□□1524□□0	70

Selection tables

► 120 Hz: P_N = 2.20 kW

n_{22}/n_2 = 1 ... 24.0

n_1 = 145.8 ... 3500 r/min



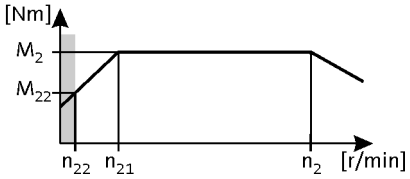
n_{22} [r/min]	n_{21} [r/min]		n_2 [r/min]	M_{22} [Nm]	M_2 [Nm]	c	i			
15	61	-	354	37	53	2.2	9.897	GSS04-2M□□□080C32	E84AV□□□2224□□0	62
14	55	-	323	41	58	2.1	10.827	GSS04-2M□□□080C32	E84AV□□□2224□□0	62
14	55	-	323	40	58	3.2	10.827	GSS05-2M□□□080C32	E84AV□□□2224□□0	62
11	43	-	253	51	74	2.0	13.810	GSS04-2M□□□080C32	E84AV□□□2224□□0	62
11	43	-	253	51	74	3.0	13.810	GSS05-2M□□□080C32	E84AV□□□2224□□0	62
9.2	38	-	221	57	84	1.6	15.869	GSS04-2M□□□080C32	E84AV□□□2224□□0	62
9.2	38	-	221	56	83	2.6	15.869	GSS05-2M□□□080C32	E84AV□□□2224□□0	62
8.4	35	-	202	62	92	1.5	17.360	GSS04-2M□□□080C32	E84AV□□□2224□□0	62
8.4	35	-	202	62	91	2.5	17.360	GSS05-2M□□□080C32	E84AV□□□2224□□0	62
6.6	27	-	158	78	117	1.3	22.143	GSS04-2M□□□080C32	E84AV□□□2224□□0	62
6.6	27	-	158	78	116	2.1	22.143	GSS05-2M□□□080C32	E84AV□□□2224□□0	62
5.4	22	-	129	94	143	1.1	27.125	GSS04-2M□□□080C32	E84AV□□□2224□□0	62
5.4	22	-	129	95	143	1.8	27.125	GSS05-2M□□□080C32	E84AV□□□2224□□0	62
4.6	19	-	110	103	155	1.4	31.738	GSS05-2M□□□080C32	E84AV□□□2224□□0	62
4.6	19	-	110	102	158	2.3	31.738	GSS06-2M□□□080C32	E84AV□□□2224□□0	62
4.1	17	-	99	121	187	1.5	35.306	GSS05-2M□□□080C32	E84AV□□□2224□□0	62
4.1	17	-	99	120	185	3.1	35.306	GSS06-2M□□□080C32	E84AV□□□2224□□0	62
3.7	15	-	89	124	188	1.2	39.200	GSS05-2M□□□080C32	E84AV□□□2224□□0	62
3.7	15	-	89	126	193	2.1	39.200	GSS06-2M□□□080C32	E84AV□□□2224□□0	62
3.3	14	-	80	148	233	1.3	43.917	GSS05-2M□□□080C32	E84AV□□□2224□□0	62
3.3	14	-	80	148	231	2.7	43.917	GSS06-2M□□□080C32	E84AV□□□2224□□0	62
2.9	12	-	70	153	242	1.0	50.000	GSS05-2M□□□080C32	E84AV□□□2224□□0	62
2.9	12	-	70	157	246	2.0	50.000	GSS06-2M□□□080C32	E84AV□□□2224□□0	62
2.9	12	-	70	161	248	3.0	50.000	GSS07-2M□□□080C32	E84AV□□□2224□□0	62
2.7	11	-	65	167	268	1.0	54.250	GSS05-2M□□□080C32	E84AV□□□2224□□0	62
2.7	11	-	65	169	269	2.0	54.250	GSS06-2M□□□080C32	E84AV□□□2224□□0	62
2.4	9.8	-	57	184	297	0.9	61.250	GSS05-2M□□□080C32	E84AV□□□2224□□0	62
2.4	9.8	-	57	190	301	1.8	61.250	GSS06-2M□□□080C32	E84AV□□□2224□□0	62
2.1	8.5	-	50	214	349	1.7	70.611	GSS06-2M□□□080C32	E84AV□□□2224□□0	62
2.1	8.5	-	50	223	352	2.8	70.611	GSS07-2M□□□080C32	E84AV□□□2224□□0	62
1.8	7.5	-	44	240	391	1.5	79.722	GSS06-2M□□□080C32	E84AV□□□2224□□0	62
1.8	7.5	-	44	250	394	2.7	79.722	GSS07-2M□□□080C32	E84AV□□□2224□□0	62
1.7	6.8	-	40	260	433	1.5	87.833	GSS06-2M□□□080C32	E84AV□□□2224□□0	62
1.7	6.9	-	40	269	432	2.7	86.542	GSS07-2M□□□080C32	E84AV□□□2224□□0	62
1.5	6.1	-	36	302	484	2.4	97.708	GSS07-2M□□□080C32	E84AV□□□2224□□0	62
1.5	6.1	-	35	291	485	1.3	99.167	GSS06-2M□□□080C32	E84AV□□□2224□□0	62
1.3	5.3	-	31	332	559	1.2	113.667	GSS06-2M□□□080C32	E84AV□□□2224□□0	62
1.3	5.3	-	31	347	567	2.2	113.667	GSS07-2M□□□080C32	E84AV□□□2224□□0	62
1.2	4.7	-	28	363	593	1.2	126.531	GSS06-3M□□□080C32	E84AV□□□2224□□0	70
1.2	4.7	-	28	379	602	2.1	126.531	GSS07-3M□□□080C32	E84AV□□□2224□□0	70
1.1	4.7	-	27	374	625	1.1	128.333	GSS06-2M□□□080C32	E84AV□□□2224□□0	62

Selection tables

► 120 Hz: P_N = 2.20 kW

n_{22}/n_2 = 1 ... 24.0

n_1 = 145.8 ... 3500 r/min



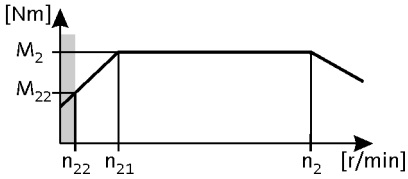
n_{22} [r/min]	n_{21} [r/min]		n_2 [r/min]	M_{22} [Nm]	M_2 [Nm]	c	i			
1.1	4.7	-	27	391	635	1.9	128.333	GSS07-2M□□□080C32	E84AV□□□2224□□0	62
1.1	4.4	-	25	401	675	1.1	137.950	GSS06-2M□□□080C32	E84AV□□□2224□□0	62
1.0	4.2	-	25	409	662	1.1	142.857	GSS06-3M□□□080C32	E84AV□□□2224□□0	70
1.1	4.4	-	25	417	687	1.8	137.950	GSS07-2M□□□080C32	E84AV□□□2224□□0	62
1.0	4.2	-	25	426	674	1.8	142.857	GSS07-3M□□□080C32	E84AV□□□2224□□0	70
0.9	3.9	-	23	453	754	1.0	155.750	GSS06-2M□□□080C32	E84AV□□□2224□□0	62
0.9	3.9	-	23	444	722	1.0	155.000	GSS06-3M□□□080C32	E84AV□□□2224□□0	70
0.9	3.9	-	23	471	770	1.6	155.750	GSS07-2M□□□080C32	E84AV□□□2224□□0	62
0.9	3.9	-	23	461	735	1.7	155.000	GSS07-3M□□□080C32	E84AV□□□2224□□0	70
0.8	3.4	-	20	522	864	1.4	174.375	GSS07-2M□□□080C32	E84AV□□□2224□□0	62
0.8	3.4	-	20	519	824	1.5	175.000	GSS07-3M□□□080C32	E84AV□□□2224□□0	70
0.7	3.1	-	18	592	968	1.3	196.875	GSS07-2M□□□080C32	E84AV□□□2224□□0	62
0.7	3.0	-	17	597	952	1.3	201.746	GSS07-3M□□□080C32	E84AV□□□2224□□0	70
0.6	2.6	-	15	672	1065	1.2	227.778	GSS07-3M□□□080C32	E84AV□□□2224□□0	70
0.6	2.4	-	14	728	1160	1.1	247.139	GSS07-3M□□□080C32	E84AV□□□2224□□0	70
0.5	2.2	-	13	822	1295	1.0	279.028	GSS07-3M□□□080C32	E84AV□□□2224□□0	70

Selection tables

► 120 Hz: P_N = 3.00 kW

n_{22}/n_2 = 1 ... 24.0

n_1 = 145.0 ... 3480 r/min



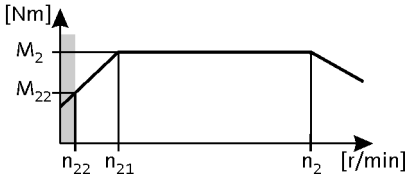
n_{22} [r/min]	n_{21} [r/min]		n_2 [r/min]	M_{22} [Nm]	M_2 [Nm]	c	i			
15	91	-	352	52	73	1.6	9.897	GSS04-2M□□□080C42	E84AV□□□3024□□0	62
15	91	-	352	51	73	2.4	9.897	GSS05-2M□□□080C42	E84AV□□□3024□□0	62
13	83	-	321	56	80	1.6	10.827	GSS04-2M□□□080C42	E84AV□□□3024□□0	62
13	83	-	321	56	80	2.4	10.827	GSS05-2M□□□080C42	E84AV□□□3024□□0	62
11	65	-	252	71	102	1.5	13.810	GSS04-2M□□□080C42	E84AV□□□3024□□0	62
11	65	-	252	71	102	2.2	13.810	GSS05-2M□□□080C42	E84AV□□□3024□□0	62
9.1	57	-	219	79	116	1.2	15.869	GSS04-2M□□□080C42	E84AV□□□3024□□0	62
9.1	57	-	219	79	114	1.9	15.869	GSS05-2M□□□080C42	E84AV□□□3024□□0	62
9.1	57	-	219	79	115	2.8	15.869	GSS06-2M□□□080C42	E84AV□□□3024□□0	62
8.4	52	-	201	86	127	1.1	17.360	GSS04-2M□□□080C42	E84AV□□□3024□□0	62
8.4	52	-	201	86	125	1.8	17.360	GSS05-2M□□□080C42	E84AV□□□3024□□0	62
8.4	52	-	201	86	126	2.8	17.360	GSS06-2M□□□080C42	E84AV□□□3024□□0	62
6.6	41	-	157	108	161	1.0	22.143	GSS04-2M□□□080C42	E84AV□□□3024□□0	62
6.6	41	-	157	108	161	1.5	22.143	GSS05-2M□□□080C42	E84AV□□□3024□□0	62
6.6	41	-	157	108	161	2.6	22.143	GSS06-2M□□□080C42	E84AV□□□3024□□0	62
5.4	33	-	128	131	197	1.3	27.125	GSS05-2M□□□080C42	E84AV□□□3024□□0	62
5.4	33	-	128	131	197	2.4	27.125	GSS06-2M□□□080C42	E84AV□□□3024□□0	62
4.6	28	-	110	143	213	1.0	31.738	GSS05-2M□□□080C42	E84AV□□□3024□□0	62
4.6	28	-	110	144	218	1.7	31.738	GSS06-2M□□□080C42	E84AV□□□3024□□0	62
4.1	26	-	99	168	258	1.1	35.306	GSS05-2M□□□080C42	E84AV□□□3024□□0	62
4.1	26	-	99	168	256	2.3	35.306	GSS06-2M□□□080C42	E84AV□□□3024□□0	62
3.7	23	-	89	176	267	1.6	39.200	GSS06-2M□□□080C42	E84AV□□□3024□□0	62
3.4	21	-	80	212	314	2.8	43.271	GSS07-2M□□□080C42	E84AV□□□3024□□0	62
3.3	21	-	79	205	321	1.0	43.917	GSS05-2M□□□080C42	E84AV□□□3024□□0	62
3.3	21	-	79	207	319	1.9	43.917	GSS06-2M□□□080C42	E84AV□□□3024□□0	62
2.9	18	-	70	219	340	1.5	50.000	GSS06-2M□□□080C42	E84AV□□□3024□□0	62
2.9	18	-	70	226	343	2.2	50.000	GSS07-2M□□□080C42	E84AV□□□3024□□0	62
2.7	17	-	64	235	371	1.4	54.250	GSS06-2M□□□080C42	E84AV□□□3024□□0	62
2.4	15	-	57	263	415	1.3	61.250	GSS06-2M□□□080C42	E84AV□□□3024□□0	62
2.1	13	-	49	297	481	1.2	70.611	GSS06-2M□□□080C42	E84AV□□□3024□□0	62
2.1	13	-	49	311	488	2.1	70.611	GSS07-2M□□□080C42	E84AV□□□3024□□0	62
1.8	11	-	44	333	539	1.1	79.722	GSS06-2M□□□080C42	E84AV□□□3024□□0	62
1.8	11	-	44	349	545	2.0	79.722	GSS07-2M□□□080C42	E84AV□□□3024□□0	62
1.7	10	-	40	360	597	1.1	87.833	GSS06-2M□□□080C42	E84AV□□□3024□□0	62
1.7	10	-	40	374	597	1.9	86.542	GSS07-2M□□□080C42	E84AV□□□3024□□0	62
1.5	9.2	-	36	419	668	1.8	97.708	GSS07-2M□□□080C42	E84AV□□□3024□□0	62
1.5	9.1	-	35	403	668	1.0	99.167	GSS06-2M□□□080C42	E84AV□□□3024□□0	62
1.3	7.9	-	31	459	770	0.9	113.667	GSS06-2M□□□080C42	E84AV□□□3024□□0	62
1.3	7.9	-	31	481	783	1.6	113.667	GSS07-2M□□□080C42	E84AV□□□3024□□0	62
1.2	7.1	-	28	526	831	1.5	126.531	GSS07-3M□□□080C42	E84AV□□□3024□□0	70
1.1	7.0	-	27	542	876	1.4	128.333	GSS07-2M□□□080C42	E84AV□□□3024□□0	62

Selection tables

► 120 Hz: P_N = 3.00 kW

n_{22}/n_2 = 1 ... 24.0

n_1 = 145.0 ... 3480 r/min



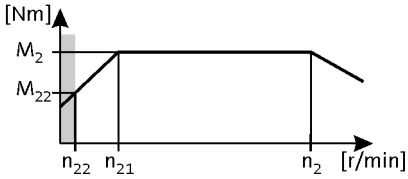
n_{22} [r/min]	n_{21} [r/min]		n_2 [r/min]	M_{22} [Nm]	M_2 [Nm]	c	i			
1.1	6.5	-	25	578	947	1.3	137.950	GSS07-2M□□□080C42	E84AV□□□3024□□0	62
1.0	6.3	-	24	591	930	1.3	142.857	GSS07-3M□□□080C42	E84AV□□□3024□□0	70
0.9	5.8	-	23	639	1014	1.2	155.000	GSS07-3M□□□080C42	E84AV□□□3024□□0	70
0.9	5.8	-	22	652	1061	1.2	155.750	GSS07-2M□□□080C42	E84AV□□□3024□□0	62
0.8	5.2	-	20	722	1191	1.0	174.375	GSS07-2M□□□080C42	E84AV□□□3024□□0	62
0.8	5.1	-	20	718	1136	1.1	175.000	GSS07-3M□□□080C42	E84AV□□□3024□□0	70
0.7	4.6	-	18	818	1333	0.9	196.875	GSS07-2M□□□080C42	E84AV□□□3024□□0	62
0.7	4.5	-	17	825	1311	1.0	201.746	GSS07-3M□□□080C42	E84AV□□□3024□□0	70

Selection tables

► 120 Hz: P_N = 4.00 kW

n_{22}/n_2 = 1 ... 24.0

n_1 = 145.0 ... 3480 r/min



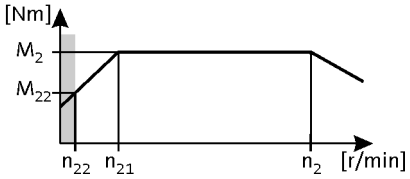
n_{22} [r/min]	n_{21} [r/min]		n_2 [r/min]	M_{22} [Nm]	M_2 [Nm]	c	i			
15	61	-	352	65	98	1.2	9.897	GSS04-2M□□□090C32	E84AV□□□4024□□0	62
15	61	-	352	64	98	1.8	9.897	GSS05-2M□□□090C32	E84AV□□□4024□□0	62
14	59	-	340	67	101	2.8	10.238	GSS06-2M□□□090C32	E84AV□□□4024□□0	62
13	55	-	321	70	107	1.2	10.827	GSS04-2M□□□090C32	E84AV□□□4024□□0	62
13	55	-	321	71	107	1.8	10.827	GSS05-2M□□□090C32	E84AV□□□4024□□0	62
13	54	-	311	73	110	2.7	11.200	GSS06-2M□□□090C32	E84AV□□□4024□□0	62
11	43	-	252	89	137	1.1	13.810	GSS04-2M□□□090C32	E84AV□□□4024□□0	62
11	43	-	252	89	137	1.6	13.810	GSS05-2M□□□090C32	E84AV□□□4024□□0	62
10	42	-	244	91	142	2.5	14.286	GSS06-2M□□□090C32	E84AV□□□4024□□0	62
9.1	38	-	219	99	153	1.4	15.869	GSS05-2M□□□090C32	E84AV□□□4024□□0	62
9.1	38	-	219	99	155	2.1	15.869	GSS06-2M□□□090C32	E84AV□□□4024□□0	62
8.4	35	-	201	108	168	1.4	17.360	GSS05-2M□□□090C32	E84AV□□□4024□□0	62
8.4	35	-	201	107	169	2.1	17.360	GSS06-2M□□□090C32	E84AV□□□4024□□0	62
6.6	27	-	157	136	215	1.2	22.143	GSS05-2M□□□090C32	E84AV□□□4024□□0	62
6.6	27	-	157	135	216	1.9	22.143	GSS06-2M□□□090C32	E84AV□□□4024□□0	62
6.6	27	-	157	139	215	2.9	22.143	GSS07-2M□□□090C32	E84AV□□□4024□□0	62
5.4	22	-	128	164	264	1.0	27.125	GSS05-2M□□□090C32	E84AV□□□4024□□0	62
5.4	22	-	128	165	264	1.8	27.125	GSS06-2M□□□090C32	E84AV□□□4024□□0	62
4.6	19	-	110	181	292	1.3	31.738	GSS06-2M□□□090C32	E84AV□□□4024□□0	62
4.1	17	-	99	211	344	1.7	35.306	GSS06-2M□□□090C32	E84AV□□□4024□□0	62
4.1	17	-	99	217	344	2.6	35.306	GSS07-2M□□□090C32	E84AV□□□4024□□0	62
3.7	15	-	89	221	357	1.2	39.200	GSS06-2M□□□090C32	E84AV□□□4024□□0	62
3.4	14	-	80	263	421	2.4	43.271	GSS07-2M□□□090C32	E84AV□□□4024□□0	62
3.3	14	-	79	259	427	1.5	43.917	GSS06-2M□□□090C32	E84AV□□□4024□□0	62
2.9	12	-	70	275	455	1.1	50.000	GSS06-2M□□□090C32	E84AV□□□4024□□0	62
2.9	12	-	70	285	460	1.7	50.000	GSS07-2M□□□090C32	E84AV□□□4024□□0	62
2.7	11	-	64	295	497	1.1	54.250	GSS06-2M□□□090C32	E84AV□□□4024□□0	62
2.4	9.8	-	57	330	556	1.0	61.250	GSS06-2M□□□090C32	E84AV□□□4024□□0	62
2.1	8.5	-	49	372	644	0.9	70.611	GSS06-2M□□□090C32	E84AV□□□4024□□0	62
2.1	8.5	-	49	391	654	1.6	70.611	GSS07-2M□□□090C32	E84AV□□□4024□□0	62
1.8	7.5	-	44	438	731	1.5	79.722	GSS07-2M□□□090C32	E84AV□□□4024□□0	62
1.7	6.9	-	40	469	801	1.5	86.542	GSS07-2M□□□090C32	E84AV□□□4024□□0	62
1.5	6.1	-	36	526	896	1.3	97.708	GSS07-2M□□□090C32	E84AV□□□4024□□0	62
1.3	5.3	-	31	603	1049	1.2	113.667	GSS07-2M□□□090C32	E84AV□□□4024□□0	62
1.2	4.7	-	28	658	1113	1.1	126.531	GSS07-3M□□□090C32	E84AV□□□4024□□0	70
1.1	4.7	-	27	678	1173	1.1	128.333	GSS07-2M□□□090C32	E84AV□□□4024□□0	62
1.1	4.4	-	25	723	1268	1.0	137.950	GSS07-2M□□□090C32	E84AV□□□4024□□0	62
1.0	4.2	-	24	739	1246	1.0	142.857	GSS07-3M□□□090C32	E84AV□□□4024□□0	70
0.9	3.9	-	23	799	1357	0.9	155.000	GSS07-3M□□□090C32	E84AV□□□4024□□0	70

Selection tables

► 120 Hz: P_N = 5.50 kW

n_{22}/n_2 = 1 ... 24.0

n_1 = 146.9 ... 3525 r/min



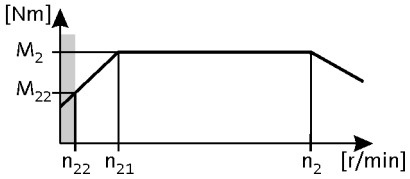
n_{22} [r/min]	n_{21} [r/min]		n_2 [r/min]	M_{22} [Nm]	M_2 [Nm]	c	i			
15	61	-	356	89	133	1.3	9.897	GSS05-2M□□□100C12	E84AV□□□5524□□0	62
15	60	-	353	88	135	3.0	10.000	GSS07-2M□□□100C12	E84AV□□□5524□□0	62
14	59	-	344	91	138	2.0	10.238	GSS06-2M□□□100C12	E84AV□□□5524□□0	62
14	55	-	326	97	146	1.3	10.827	GSS05-2M□□□100C12	E84AV□□□5524□□0	62
13	54	-	315	99	151	2.0	11.200	GSS06-2M□□□100C12	E84AV□□□5524□□0	62
13	54	-	315	98	151	3.0	11.200	GSS07-2M□□□100C12	E84AV□□□5524□□0	62
11	43	-	255	122	187	1.2	13.810	GSS05-2M□□□100C12	E84AV□□□5524□□0	62
10	42	-	247	126	194	1.8	14.286	GSS06-2M□□□100C12	E84AV□□□5524□□0	62
10	42	-	247	125	194	2.8	14.286	GSS07-2M□□□100C12	E84AV□□□5524□□0	62
9.5	39	-	227	131	206	2.4	15.500	GSS07-2M□□□100C12	E84AV□□□5524□□0	62
9.3	38	-	222	136	208	1.1	15.869	GSS05-2M□□□100C12	E84AV□□□5524□□0	62
9.3	38	-	222	135	211	1.6	15.869	GSS06-2M□□□100C12	E84AV□□□5524□□0	62
8.5	35	-	203	148	229	1.0	17.360	GSS05-2M□□□100C12	E84AV□□□5524□□0	62
8.5	35	-	203	148	231	1.5	17.360	GSS06-2M□□□100C12	E84AV□□□5524□□0	62
8.5	35	-	203	146	231	2.3	17.360	GSS07-2M□□□100C12	E84AV□□□5524□□0	62
6.6	27	-	159	187	295	1.4	22.143	GSS06-2M□□□100C12	E84AV□□□5524□□0	62
6.6	27	-	159	187	295	2.1	22.143	GSS07-2M□□□100C12	E84AV□□□5524□□0	62
5.4	22	-	130	227	361	1.4	27.125	GSS06-2M□□□100C12	E84AV□□□5524□□0	62
5.4	22	-	130	229	361	2.0	27.125	GSS07-2M□□□100C12	E84AV□□□5524□□0	62
4.7	19	-	114	249	392	1.4	31.000	GSS07-2M□□□100C12	E84AV□□□5524□□0	62
4.6	19	-	111	249	398	0.9	31.738	GSS06-2M□□□100C12	E84AV□□□5524□□0	62
4.2	17	-	100	290	469	1.2	35.306	GSS06-2M□□□100C12	E84AV□□□5524□□0	62
4.2	17	-	100	297	470	1.9	35.306	GSS07-2M□□□100C12	E84AV□□□5524□□0	62
3.8	15	-	90	313	492	1.3	39.200	GSS07-2M□□□100C12	E84AV□□□5524□□0	62
3.4	14	-	82	360	576	1.8	43.271	GSS07-2M□□□100C12	E84AV□□□5524□□0	62
3.3	14	-	80	355	583	1.1	43.917	GSS06-2M□□□100C12	E84AV□□□5524□□0	62
2.9	12	-	71	393	628	1.2	50.000	GSS07-2M□□□100C12	E84AV□□□5524□□0	62
2.7	11	-	65	422	687	1.2	54.250	GSS07-2M□□□100C12	E84AV□□□5524□□0	62
2.4	9.8	-	58	474	768	1.2	61.250	GSS07-2M□□□100C12	E84AV□□□5524□□0	62
2.1	8.5	-	50	537	892	1.1	70.611	GSS07-2M□□□100C12	E84AV□□□5524□□0	62
1.8	7.5	-	44	601	997	1.1	79.722	GSS07-2M□□□100C12	E84AV□□□5524□□0	62
1.7	6.9	-	41	644	1092	1.1	86.542	GSS07-2M□□□100C12	E84AV□□□5524□□0	62
1.5	6.1	-	36	720	1221	1.0	97.708	GSS07-2M□□□100C12	E84AV□□□5524□□0	62

Selection tables

► 120 Hz: P_N = 7.50 kW

n_{22}/n_2 = 1 ... 24.0

n_1 = 146.5 ... 3515 r/min



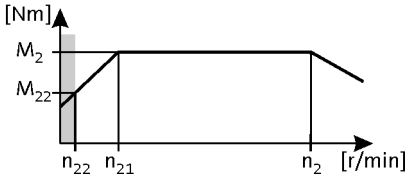
n_{22} [r/min]	n_{21} [r/min]		n_2 [r/min]	M_{22} [Nm]	M_2 [Nm]	c	i			
15	61	-	355	122	183	1.0	9.897	GSS05-2M□□□100C32	E84AV□□□7524□□0	62
15	60	-	352	123	186	2.2	10.000	GSS07-2M□□□100C32	E84AV□□□7524□□0	62
14	59	-	343	126	190	1.5	10.238	GSS06-2M□□□100C32	E84AV□□□7524□□0	62
14	55	-	325	133	201	1.0	10.827	GSS05-2M□□□100C32	E84AV□□□7524□□0	62
13	54	-	314	138	208	1.5	11.200	GSS06-2M□□□100C32	E84AV□□□7524□□0	62
13	54	-	314	137	209	2.2	11.200	GSS07-2M□□□100C32	E84AV□□□7524□□0	62
10	42	-	246	174	266	1.3	14.286	GSS06-2M□□□100C32	E84AV□□□7524□□0	62
10	42	-	246	175	267	2.0	14.286	GSS07-2M□□□100C32	E84AV□□□7524□□0	62
9.5	39	-	227	184	283	1.7	15.500	GSS07-2M□□□100C32	E84AV□□□7524□□0	62
9.2	38	-	222	187	290	1.1	15.869	GSS06-2M□□□100C32	E84AV□□□7524□□0	62
8.4	35	-	203	205	318	1.1	17.360	GSS06-2M□□□100C32	E84AV□□□7524□□0	62
8.4	35	-	203	205	318	1.7	17.360	GSS07-2M□□□100C32	E84AV□□□7524□□0	62
6.6	27	-	159	258	405	1.0	22.143	GSS06-2M□□□100C32	E84AV□□□7524□□0	62
6.6	27	-	159	261	406	1.6	22.143	GSS07-2M□□□100C32	E84AV□□□7524□□0	62
5.4	22	-	130	313	496	1.0	27.125	GSS06-2M□□□100C32	E84AV□□□7524□□0	62
5.4	22	-	130	319	497	1.5	27.125	GSS07-2M□□□100C32	E84AV□□□7524□□0	62
4.7	19	-	113	346	538	1.1	31.000	GSS07-2M□□□100C32	E84AV□□□7524□□0	62
4.2	17	-	100	400	644	0.9	35.306	GSS06-2M□□□100C32	E84AV□□□7524□□0	62
4.2	17	-	100	411	647	1.4	35.306	GSS07-2M□□□100C32	E84AV□□□7524□□0	62
3.7	15	-	90	434	676	1.0	39.200	GSS07-2M□□□100C32	E84AV□□□7524□□0	62
3.4	14	-	81	498	791	1.3	43.271	GSS07-2M□□□100C32	E84AV□□□7524□□0	62

Selection tables

► 120 Hz: P_N = 11.00 kW

n_{22}/n_2 = 1 ... 24.0

n_1 = 147.1 ... 3530 r/min



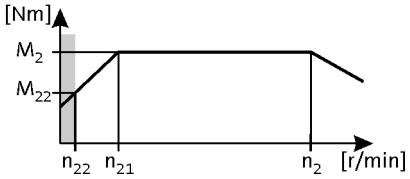
n_{22} [r/min]	n_{21} [r/min]		n_2 [r/min]	M_{22} [Nm]	M_2 [Nm]	c	i			
15	60	-	353	166	274	1.5	10.000	GSS07-2M□□□112C22	E84AV□□□1134□□0	62
14	59	-	345	170	278	1.0	10.238	GSS06-2M□□□112C22	E84AV□□□1134□□0	62
13	54	-	315	186	305	1.0	11.200	GSS06-2M□□□112C22	E84AV□□□1134□□0	62
13	54	-	315	186	307	1.5	11.200	GSS07-2M□□□112C22	E84AV□□□1134□□0	62
10	42	-	247	235	390	0.9	14.286	GSS06-2M□□□112C22	E84AV□□□1134□□0	62
10	42	-	247	237	392	1.4	14.286	GSS07-2M□□□112C22	E84AV□□□1134□□0	62
9.5	39	-	228	249	416	1.2	15.500	GSS07-2M□□□112C22	E84AV□□□1134□□0	62
8.5	35	-	203	279	467	1.1	17.360	GSS07-2M□□□112C22	E84AV□□□1134□□0	62
6.6	27	-	159	354	596	1.1	22.143	GSS07-2M□□□112C22	E84AV□□□1134□□0	62
5.4	22	-	130	430	729	1.0	27.125	GSS07-2M□□□112C22	E84AV□□□1134□□0	62
4.2	17	-	100	553	949	0.9	35.306	GSS07-2M□□□112C22	E84AV□□□1134□□0	62

Selection tables

► 120 Hz: P_N = 15.00 kW

n_{22}/n_2 = 1 ... 24.0

n_1 = 148.3 ... 3560 r/min



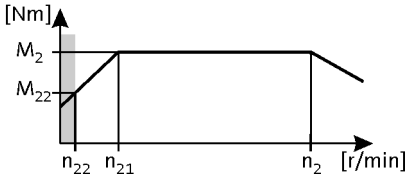
n_{22} [r/min]	n_{21} [r/min]		n_2 [r/min]	M_{22} [Nm]	M_2 [Nm]	c	i			
15	60	-	356	225	371	1.1	10.000	GSS07-2M□□□132C12	E84AV□□□1534□□0	62
13	54	-	318	253	416	1.1	11.200	GSS07-2M□□□132C12	E84AV□□□1534□□0	62
10	42	-	249	322	532	1.0	14.286	GSS07-2M□□□132C12	E84AV□□□1534□□0	62

Selection tables

► 120 Hz: P_N = 18.50 kW

n_{22}/n_2 = 1 ... 24.0

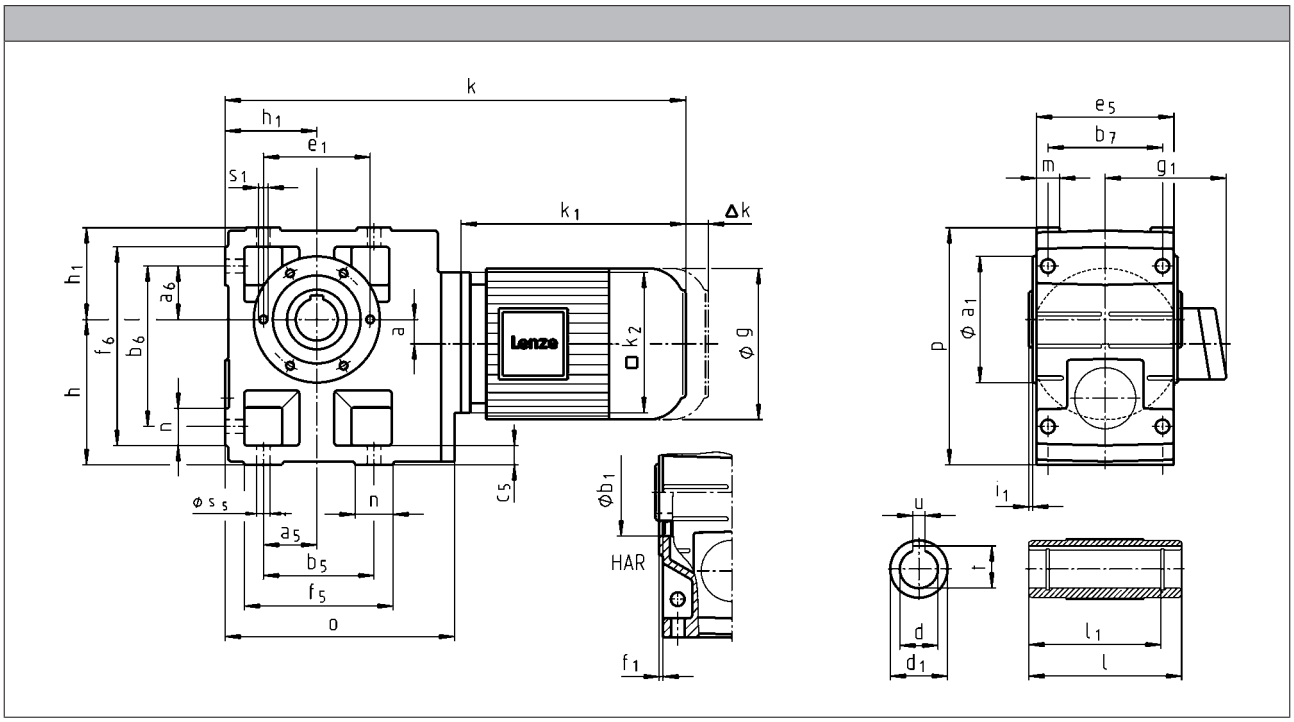
n_1 = 148.3 ... 3560 r/min



n_{22} [r/min]	n_{21} [r/min]		n_2 [r/min]	M_{22} [Nm]	M_2 [Nm]	c	i			
15	60	-	356	280	459	0.9	10.000	GSS07-2M□□□132C22	E84AV□□□1834□□0	62

Dimensions

GSS□□-2M H□R



		063C32 063C42	071C32 071C42	080C32 080C42	090C32	100C12 100C32	112C22	132C12 132C22
g		123	139	156	176	194	218	258
g_1	MFEMAXX	100	109	150	157	166	176	195
	MFEMABR	107	118	132	137	147	158	187
k_1	MFEMAXX	187	207	224.5	274	324	319	403
k_2		120		145	180		222	265
Δ k	MFEMABR	40	52	73	68	76	90	109.5
	MFFMAXX	128				109	102	115
	MFFMABR	170	165	183	181	170	183	201.5
		k						
GSS04		377	397	420	479			
GSS05		399	419	441	501	551		
GSS06		439	459	481	541	591	592	
GSS07				524	584	634	635	727

	a	h[1)]	h_1	o	p[1)]
GSS04	20	100	71	181	171
GSS05	23	125	80	212	205
GSS06	26	150	100	255	250
GSS07	33	190	120	305	310

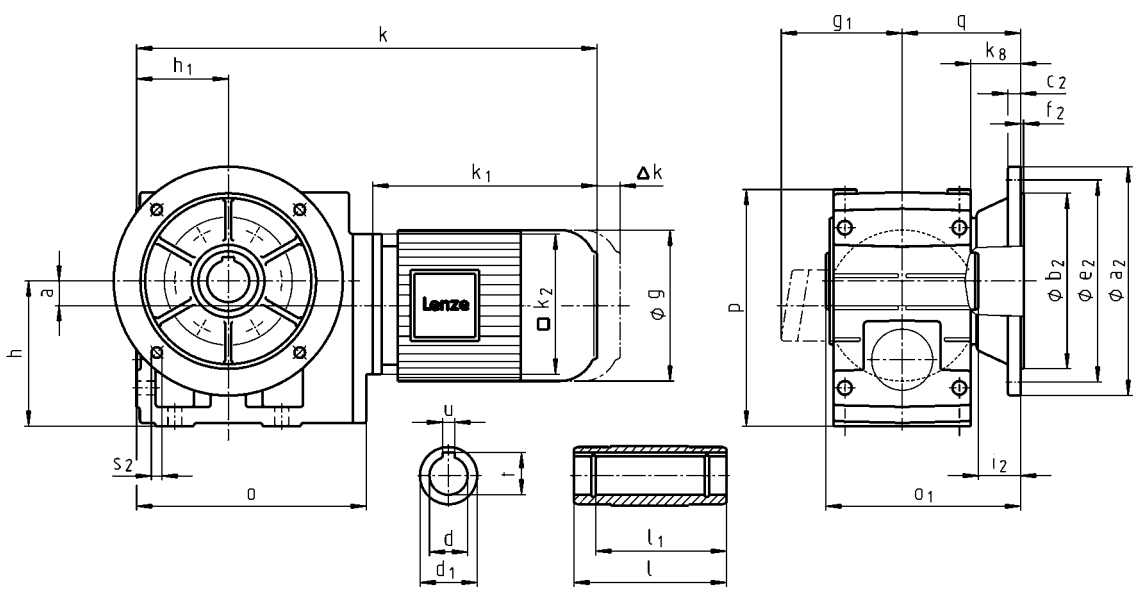
	d	d_1	l[1)]	l_1	u	t	i_1	a_1	b_1	e_1	f_1	s_1
	H7				JS9	+0,2			H7			
GSS04	25 30	45 45	115 115	100 100	8 8	28.3 33.3	2.5 2.5	104	75	90	3	M6x12
GSS05	30 35	50 50	140 140	124 124	8 10	33.3 38.3	4 4	118	80	100	4	M8x15
GSS06	40 45	65 65	160 160	140 140	12 14	43.3 48.8	5 5	140	100	120	4	M10x16
GSS07	50 55	75 75	200 200	175 175	14 16	53.8 59.3	5 5	165	115	140	5	M12x18

	a_5	a_6	b_5	b_6	b_7	c_5	e_5	f_5	f_6	m	n	s_5
GSS04	45	45	90	119	85	14	100	112	141	20	22	9
GSS05	47.5	47.5	95	140	105	17	115	124	169	21	29	11
GSS06	60	60	120	170	120	20	145	156	206	23	36	14
GSS07	70	70	140	210	150	25	180	185	255	28	45	18

[1)] k_2 !

Dimensions

GSS□□-2M HAK



GSS helical-worm gearboxes

Technical data

		063C32 063C42	071C32 071C42	080C32 080C42	090C32	100C12 100C32	112C22	132C12 132C22
g		123	139	156	176	194	218	258
g_1	MFEMAXX	100	109	150	157	166	176	195
	MFEMABR	107	118	132	137	147	158	187
k_1	MFEMAXX	187	207	224.5	274	324	319	403
k_2		120		145	180		222	265
Δ k	MFEMABR	40	52	73	68	76	90	109.5
	MFFMAXX	128				109	102	115
	MFFMABR	170	165	183	181	170	183	201.5
		k						
GSS04		377	397	420	479			
GSS05		399	419	441	501	551		
GSS06		439	459	481	541	591	592	
GSS07				524	584	634	635	727

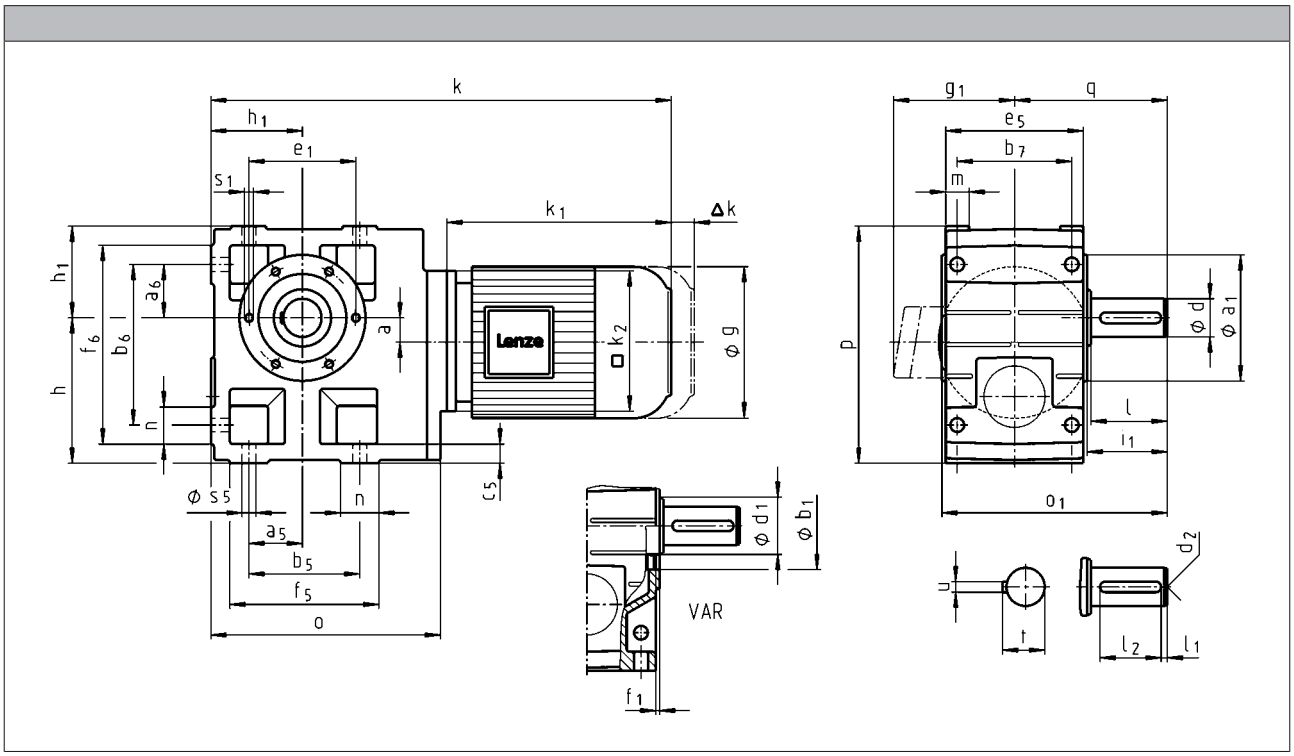
	a	h[1)]	h_1	k_8	o	p[1)]	q
GSS04	20	100	71	41	181	171	91
GSS05	23	125	80	40	212	205	103.5
GSS06	26	150	100	49	255	250	121.5
GSS07	33	190	120	65.5	305	310	155.5

	d	d_1	l	l_1	u	t	i_2	o_1[1)]	a_2	b_2	c_2	e_2	f_2	s_2
	H7				JS9	+0,2				j7				
GSS04	25 30	45 45	115 115	100 100	8 8	28.3 33.3	33.5 33.5	148.5 148.5	160	110	10	130	3.5	4 x 9
GSS05	30 35	50 50	140 140	124 124	8 10	33.3 38.3	33 33	173.5 173.5	200	130	12	165	4	4 x 11
GSS06	40 45	65 65	160 160	140 140	12 14	43.3 48.8	42 41	201.5 201.5	200 250	130 180	12 15	165 215	3.5 4	4 x 11 4 x 14
GSS07	50 55	75 75	200 200	175 175	14 16	53.8 59.3	55 55	255.5 255.5	250 300	180 230	15 17	215 265	4 4	4 x 14 4 x 14

[1)] k_2 !

Dimensions

GSS□□-2M V□R



		063C32 063C42	071C32 071C42	080C32 080C42	090C32	100C12 100C32	112C22	132C12 132C22
g		123	139	156	176	194	218	258
g_1	MFEMAXX	100	109	150	157	166	176	195
	MFEMABR	107	118	132	137	147	158	187
k_1	MFEMAXX	187	207	224.5	274	324	319	403
k_2		120		145	180		222	265
Δ k	MFEMABR	40	52	73	68	76	90	109.5
	MFFMAXX	128				109	102	115
	MFFMABR	170	165	183	181	170	183	201.5
		k						
GSS04		377	397	420	479			
GSS05		399	419	441	501	551		
GSS06		439	459	481	541	591	592	
GSS07				524	584	634	635	727

	a	h[1)]	h_1	o	p[1)]	q
GSS04	20	100	71	181	171	107.5
GSS05	23	125	80	212	205	130
GSS06	26	150	100	255	250	160
GSS07	33	190	120	305	310	200

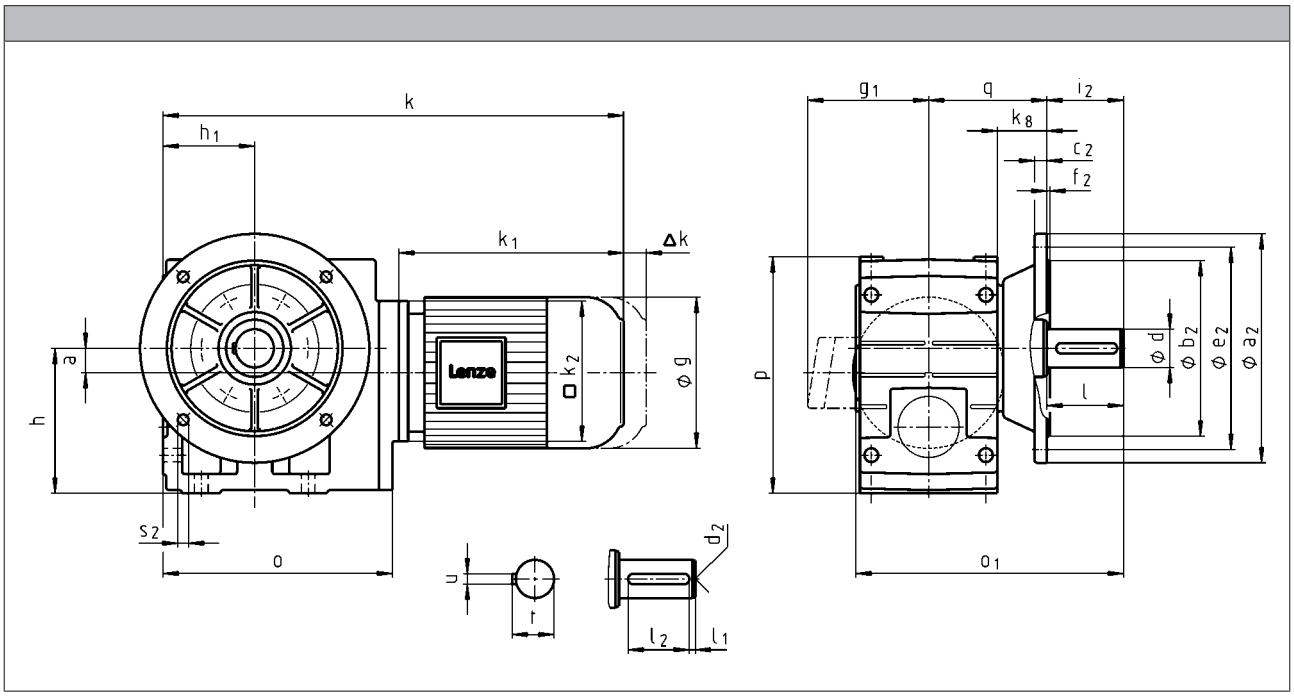
	d	d_1	d_2	l	l_1	l_2	u	t	i_1	o_1[1)]	a_1	b_1	e_1	f_1	s_1
	k6											H7			
GSS04	25	45	M10	50	6	40	8	28	52.5	162.5	104	75	90	3	M6x12
GSS05	30	45	M10	60	6	45	8	33	64	196.5	118	80	100	4	M8x15
GSS06	40	65	M16	80	7	63	12	43	85	235.5	140	100	120	4	M10x16
GSS07	50	75	M16	100	8	80	14	53.5	105	295.5	165	115	140	5	M12x18

	a_5	a_6	b_5	b_6	b_7	c_5	e_5	f_5	f_6	m	n	s_5
GSS04	45	45	90	119	85	14	100	112	141	20	22	9
GSS05	47.5	47.5	95	140	105	17	115	124	169	21	29	11
GSS06	60	60	120	170	120	20	145	156	206	23	36	14
GSS07	70	70	140	210	150	25	180	185	255	28	45	18

[1)] k_2 !

Dimensions

GSS□□-2M VAK



GSS helical-worm gearboxes

Technical data

		063C32 063C42	071C32 071C42	080C32 080C42	090C32	100C12 100C32	112C22	132C12 132C22
g		123	139	156	176	194	218	258
g_1	MFEMAXX	100	109	150	157	166	176	195
	MFEMABR	107	118	132	137	147	158	187
k_1	MFEMAXX	187	207	224.5	274	324	319	403
k_2		120		145	180		222	265
Δ k	MFEMABR	40	52	73	68	76	90	109.5
	MFFMAXX	128				109	102	115
	MFFMABR	170	165	183	181	170	183	201.5
		k						
GSS04		377	397	420	479			
GSS05		399	419	441	501	551		
GSS06		439	459	481	541	591	592	
GSS07				524	584	634	635	727

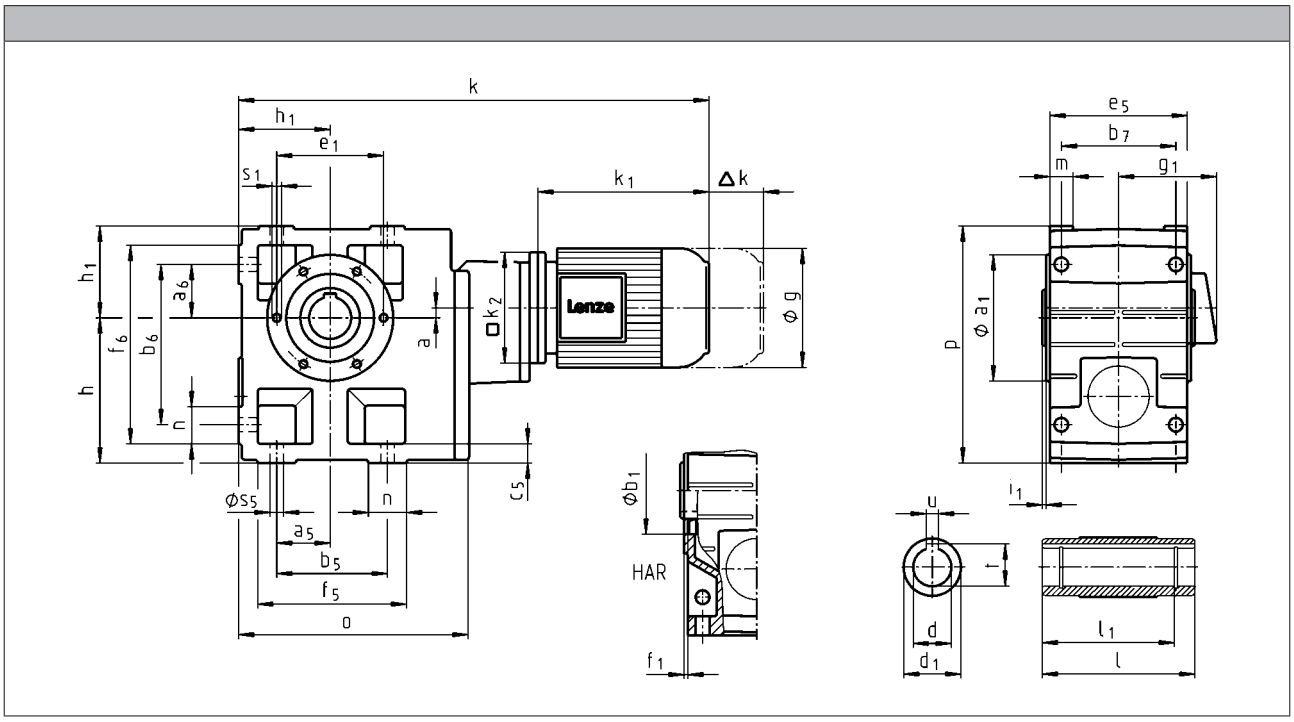
	a	h[1)]	h_1	k_8	o	p[1)]	q
GSS04	20	100	71	41	181	171	91
GSS05	23	125	80	40	212	205	103.5
GSS06	26	150	100	49	255	250	121.5
GSS07	33	190	120	65.5	305	310	155.5

	d	d_2	l	l_1	l_2	u	t	i_2	o_1[1)]	a_2	b_2	c_2	e_2	f_2	s_2
	k6										j7				
GSS04	25	M10	50	6	40	8	28	50	195.5	160	110	10	130	3.5	4 x 9
GSS05	30	M10	60	6	45	8	33	60	229.5	200	130	12	165	4	4 x 11
GSS06	40	M16	80	7	63	12	43	80	276.5	250	180	15	215	4	4 x 14
GSS07	50	M16	100	8	80	14	53.5	100	350.5	250 300	180 230	15 17	215 265	4 4	4 x 14 4 x 14

[1)] k_2 !

Dimensions

GSS□□-3M H□R



		063C32 063C42	071C32 071C42	080C32	080C42	090C32
g		123	139	156		176
g_1	MFEMAXX	100	109	150		157
	MFEMABR	107	118	132		137
k_1	MFEMAXX	187	207	224.5		274
k_2		120		145		180
Δ k	MFEMABR	40	52	73		68
	MFFMAXX	128				
	MFFMABR	170	165	183		181
		k				
GSS05		475				
GSS06		532	552	575		
GSS07		586	606	629		688

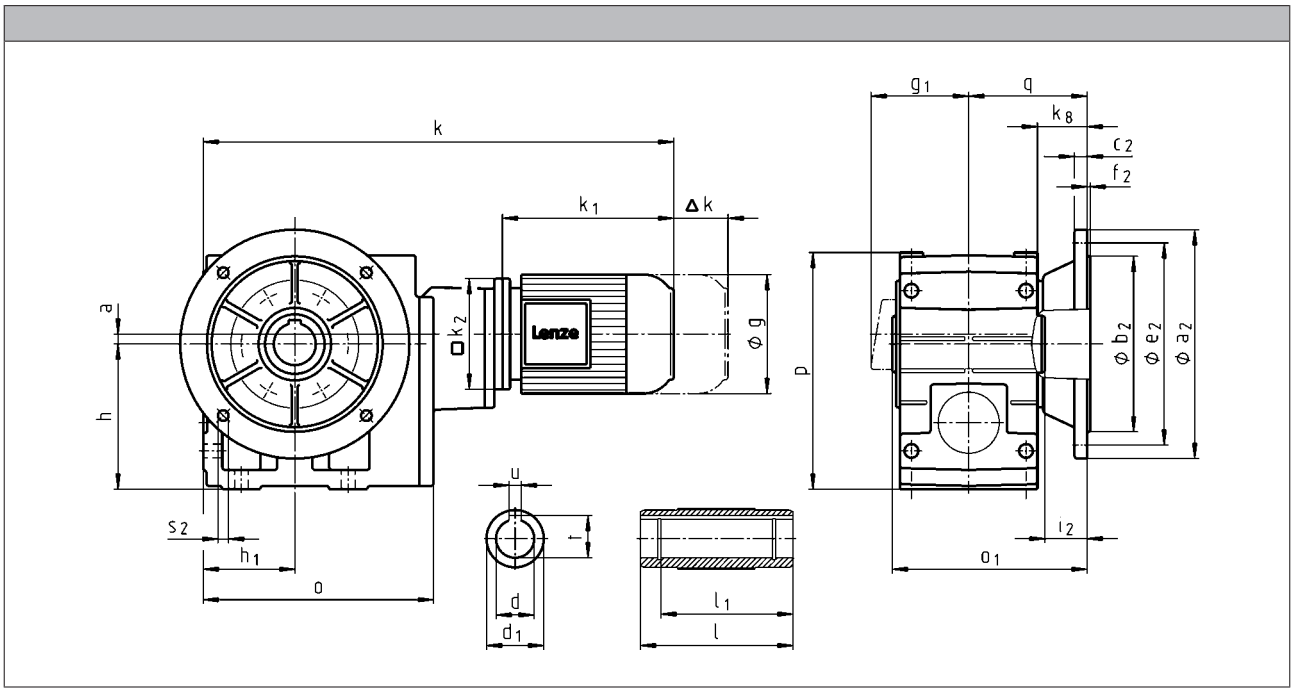
	a	h	h_1	o	p
GSS05	13	125	80	209	205
GSS06	10	150	100	252	250
GSS07	12	190	120	299	310

	d H7	d_1	l	l_1	u JS9	t +0,2	i_1	a_1	b_1 H7	e_1	f_1	s_1
GSS05	30 35	50 50	140 140	124 124	8 10	33.3 38.3	4 4	118	80	100	4	M8x15
GSS06	40 45	65 65	160 160	140 140	12 14	43.3 48.8	5 5	140	100	120	4	M10x16
GSS07	50 55	75 75	200 200	175 175	14 16	53.8 59.3	5 5	165	115	140	5	M12x18

	a_5	a_6	b_5	b_6	b_7	c_5	e_5	f_5	f_6	m	n	s_5
GSS05	47.5	47.5	95	140	105	17	115	124	169	21	29	11
GSS06	60	60	120	170	120	20	145	156	206	23	36	14
GSS07	70	70	140	210	150	25	180	185	255	28	45	18

Dimensions

GSS□□-3M HAK



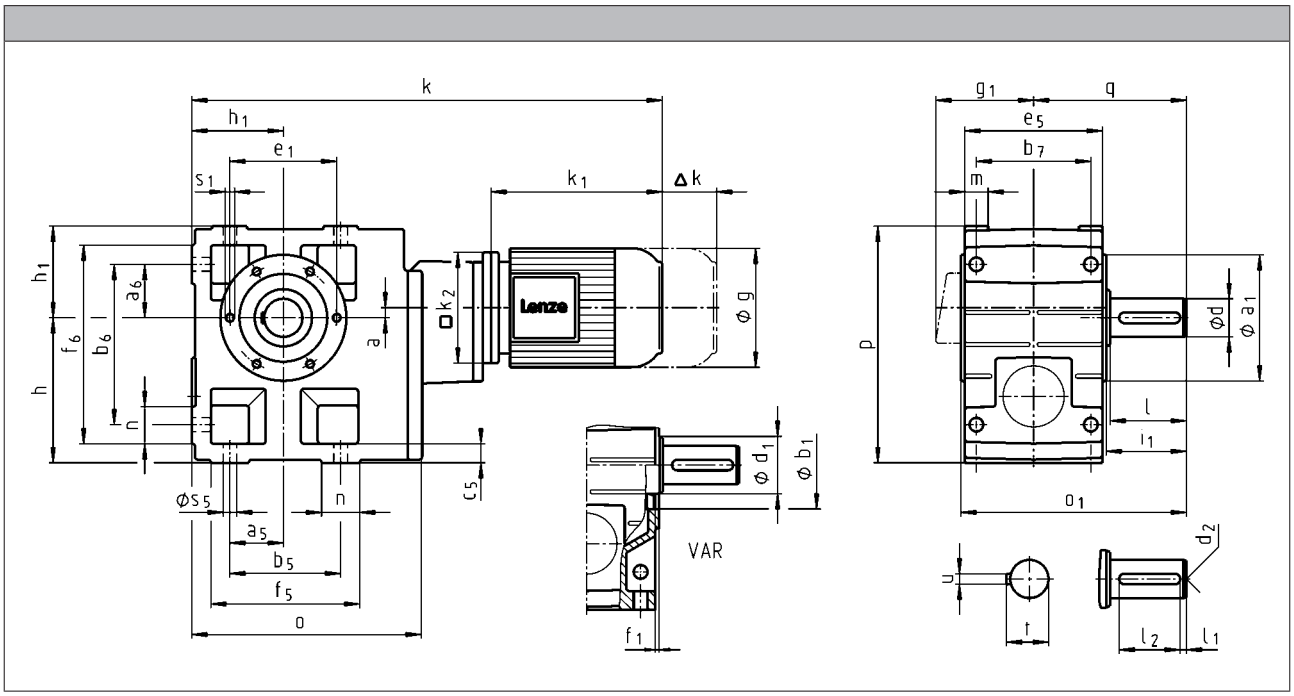
		063C32 063C42	071C32 071C42	080C32	080C42	090C32
g		123	139	156		176
g_1	MFEMAXX	100	109	150		157
	MFEMABR	107	118	132		137
k_1	MFEMAXX	187	207	224.5		274
k_2		120		145		180
Δ k	MFEMABR	40	52	73		68
	MFFMAXX	128				
	MFFMABR	170	165	183		181
		k				
GSS05		475				
GSS06		532	552	575		
GSS07		586	606	629		688

	a	h	h_1	k_8	o	p	q
GSS05	13	125	80	40	209	205	103.5
GSS06	10	150	100	49	252	250	121.5
GSS07	12	190	120	65.5	299	310	155.5

	d	d_1	l	l_1	u	t	i_2	o_1	a_2	b_2	c_2	e_2	f_2	s_2
	H7				JS9	+0,2				j7				
GSS05	30 35	50 50	140 140	124 124	8 10	33.3 38.3	33 33	173.5 173.5	200	130	12	165	4	4 x 11
GSS06	40 45	65 65	160 160	140 140	12 14	43.3 48.8	42 41	201.5 201.5	200 250	130 180	12 15	165 215	3.5 4	4 x 11 4 x 14
GSS07	50 55	75 75	200 200	175 175	14 16	53.8 59.3	55 55	255.5 255.5	250 300	180 230	15 17	215 265	4 4	4 x 14 4 x 14

Dimensions

GSS□□-3M V□R



		063C32 063C42	071C32 071C42	080C32	080C42	090C32
g		123	139	156		176
g_1	MFEMAXX	100	109	150		157
	MFEMABR	107	118	132		137
k_1	MFEMAXX	187	207	224.5		274
k_2		120		145		180
Δ k	MFEMABR	40	52	73		68
	MFFMAXX	128				
	MFFMABR	170	165	183		181
		k				
GSS05		475				
GSS06		532	552	575		
GSS07		586	606	629		688

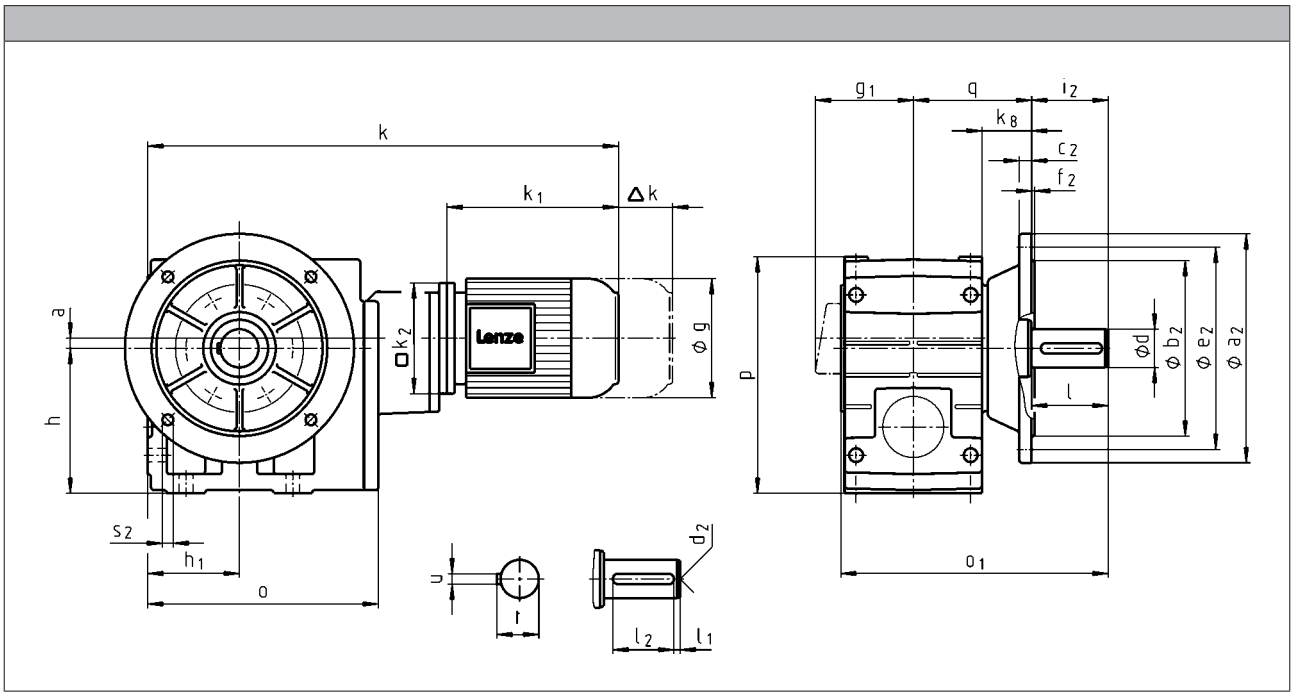
	a	h	h_1	o	p	q
GSS05	13	125	80	209	205	130
GSS06	10	150	100	252	250	160
GSS07	12	190	120	299	310	200

	d	d_1	d_2	l	l_1	l_2	u	t	i_1	o_1	a_1	b_1	e_1	f_1	s_1
	k6											H7			
GSS05	30	45	M10	60	6	45	8	33	64	196.5	118	80	100	4	M8x15
GSS06	40	65	M16	80	7	63	12	43	85	235.5	140	100	120	4	M10x16
GSS07	50	75	M16	100	8	80	14	53.5	105	295.5	165	115	140	5	M12x18

	a_5	a_6	b_5	b_6	b_7	c_5	e_5	f_5	f_6	m	n	s_5
GSS05	47.5	47.5	95	140	105	17	115	124	169	21	29	11
GSS06	60	60	120	170	120	20	145	156	206	23	36	14
GSS07	70	70	140	210	150	25	180	185	255	28	45	18

Dimensions

GSS□□-3M VAK

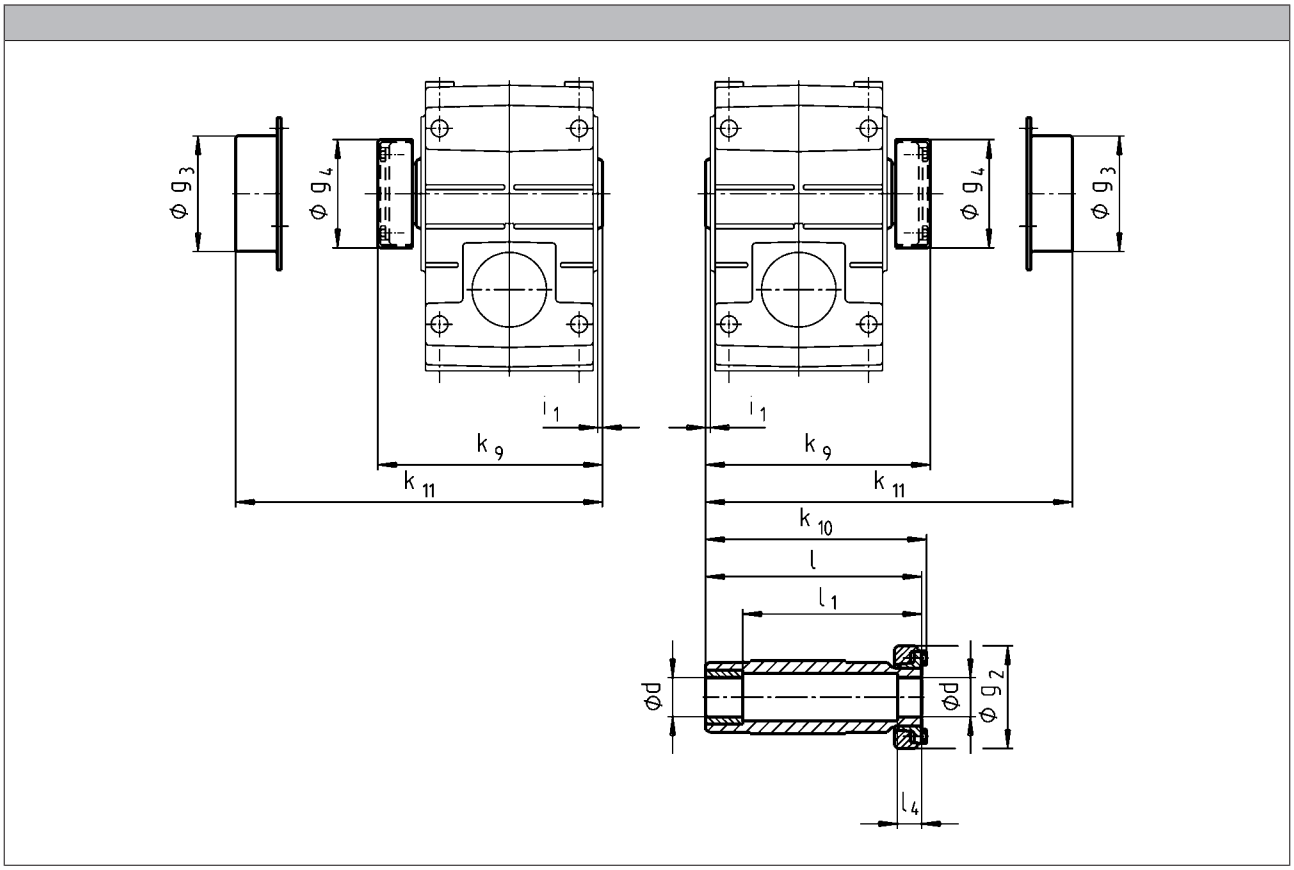


		063C32 063C42	071C32 071C42	080C32	080C42	090C32
g		123	139	156		176
g_1	MFEMAXX	100	109	150		157
	MFEMABR	107	118	132		137
k_1	MFEMAXX	187	207	224.5		274
k_2		120		145		180
Δ k	MFEMABR	40	52	73		68
	MFFMAXX	128				
	MFFMABR	170	165	183		181
		k				
GSS05		475				
GSS06		532	552	575		
GSS07		586	606	629		688

	a	h	h_1	k_8	o	p	q
GSS05	13	125	80	40	209	205	103.5
GSS06	10	150	100	49	252	250	121.5
GSS07	12	190	120	65.5	299	310	155.5

	d	d_2	l	l_1	l_2	u	t	i_2	o_1	a_2	b_2	c_2	e_2	f_2	s_2
	k6										j7				
GSS05	30	M10	60	6	45	8	33	60	229.5	200	130	12	165	4	4 x 11
GSS06	40	M16	80	7	63	12	43	80	276.5	250	180	15	215	4	4 x 14
GSS07	50	M16	100	8	80	14	53.5	100	350.5	250 300	180 230	15 17	215 265	4 4	4 x 14 4 x 14

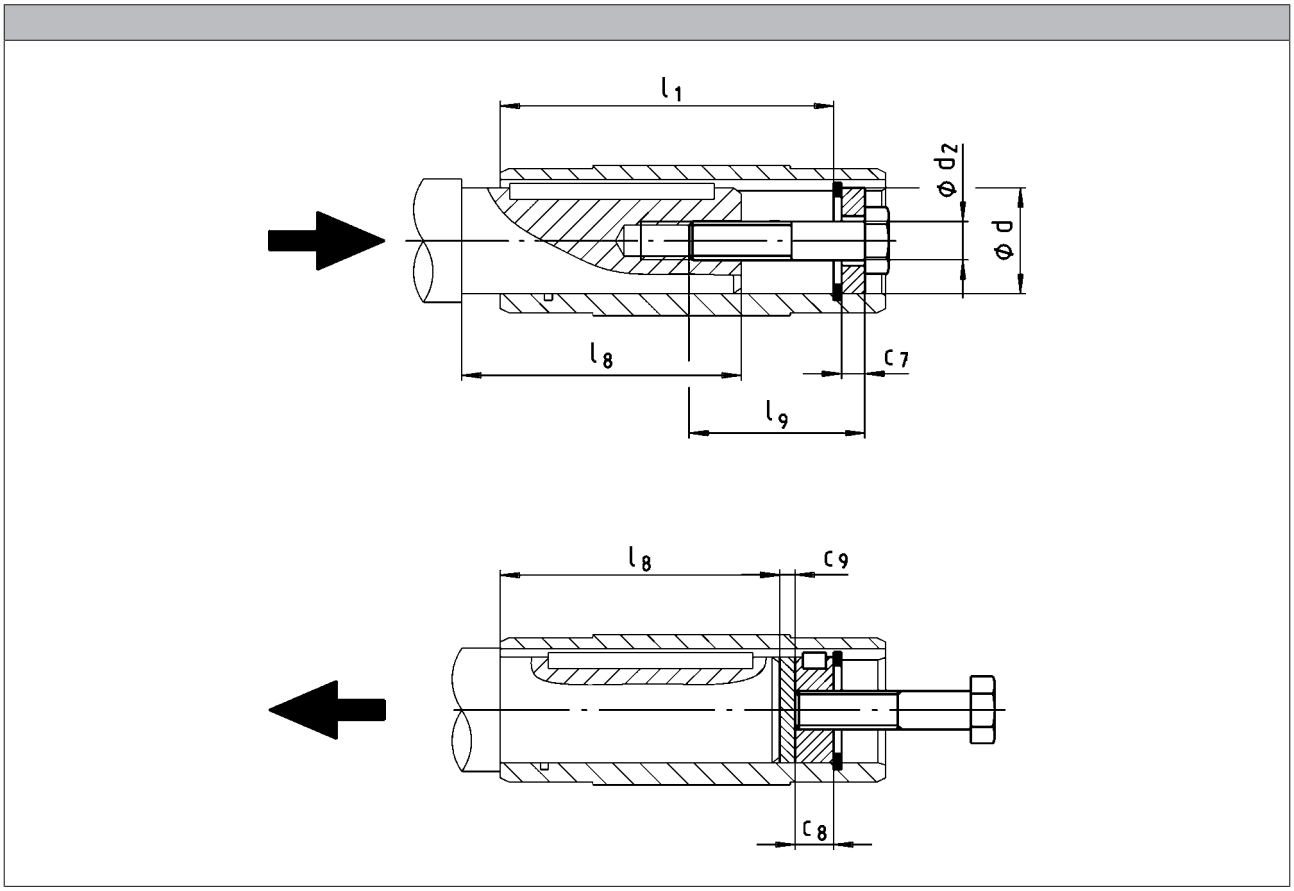
Hollow shaft with shrink disc



	d	g_2	g_3	g_4	i_1	k_9	k_{10}	k_{11}	l	l_1	l_4
	h6										
GSS04	25 30	72	79	76	2.5	150	148	154	142	122	26
GSS05	35	80	90	84	4.0	176	174	179	168	148	28
GSS06	40	90	100	94	5.0	202	200	204	194	164	30
GSS07	50	110	124	116		241	238	244	232	192	26

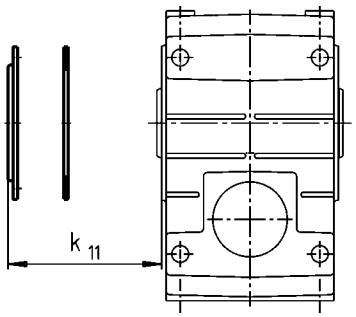
- ► Output flange and hollow shaft with shrink disc (output version SAK) are not possible in the same location. For additional dimensions see output version H□□.
- ► Ensure that the strength of the machine shaft material is adequate in shrink disc designs.
  When using typical steels, e.g. C45, 42CrMo4,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

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



	d	l_1	d_2	l_9	c_7	c_8	c_9	$l_{8,\,max}$
	H7							
GSS04	25 30	100	M10	40	5	10	3	85
					6			
GSS05	30 35	124						107
			M12	50	7	12		
GSS06	40 45	140	M16	60	8	16	4	118
					9			
GSS07	50 55	175			10		5	148
			M20	80	11	20		

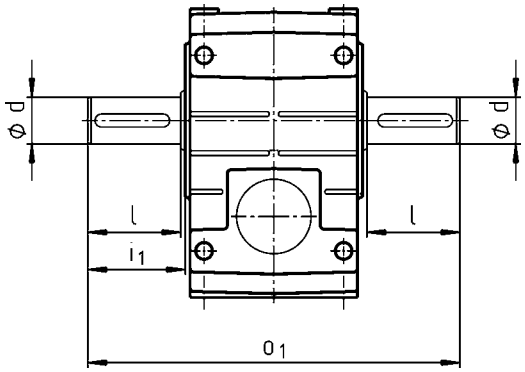
Hoseproof hollow shaft cover



► Cover including gasket

	k_{11}
	[mm]
GSS04	9
GSS05	10
GSS06	11
GSS07	

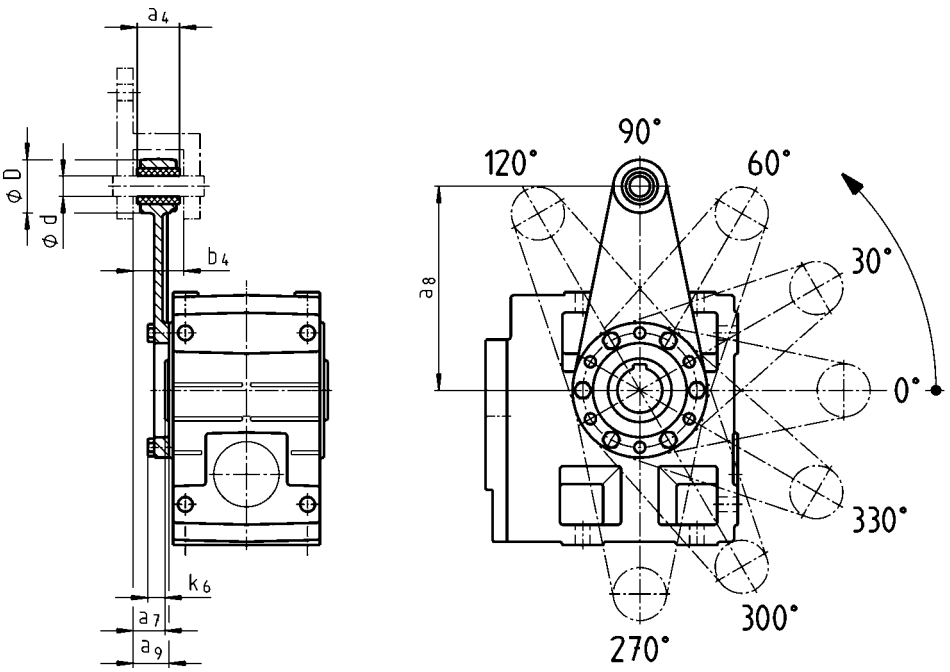
Gearboxes with 2nd output shaft end



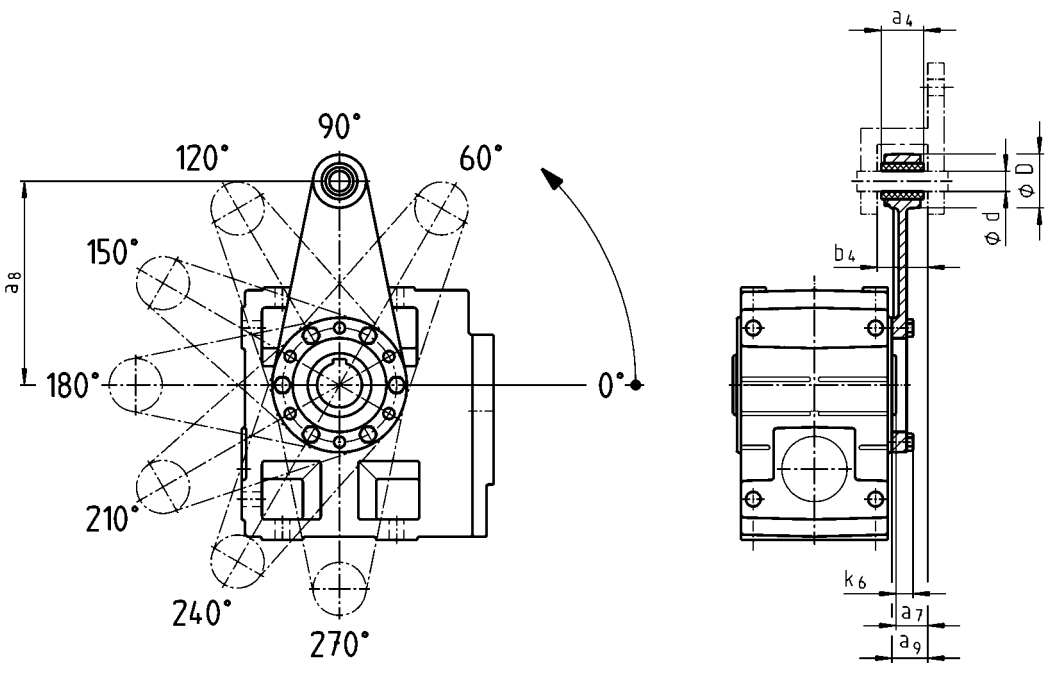
	d	l	i_1	o_1
	k6			
GSS04	25	50	52.5	215
GSS05	30	60	64.0	260
GSS06	40	80	85.0	320
GSS07	50	100	105.0	400

Torque plate on threaded pitch circle

In position 3



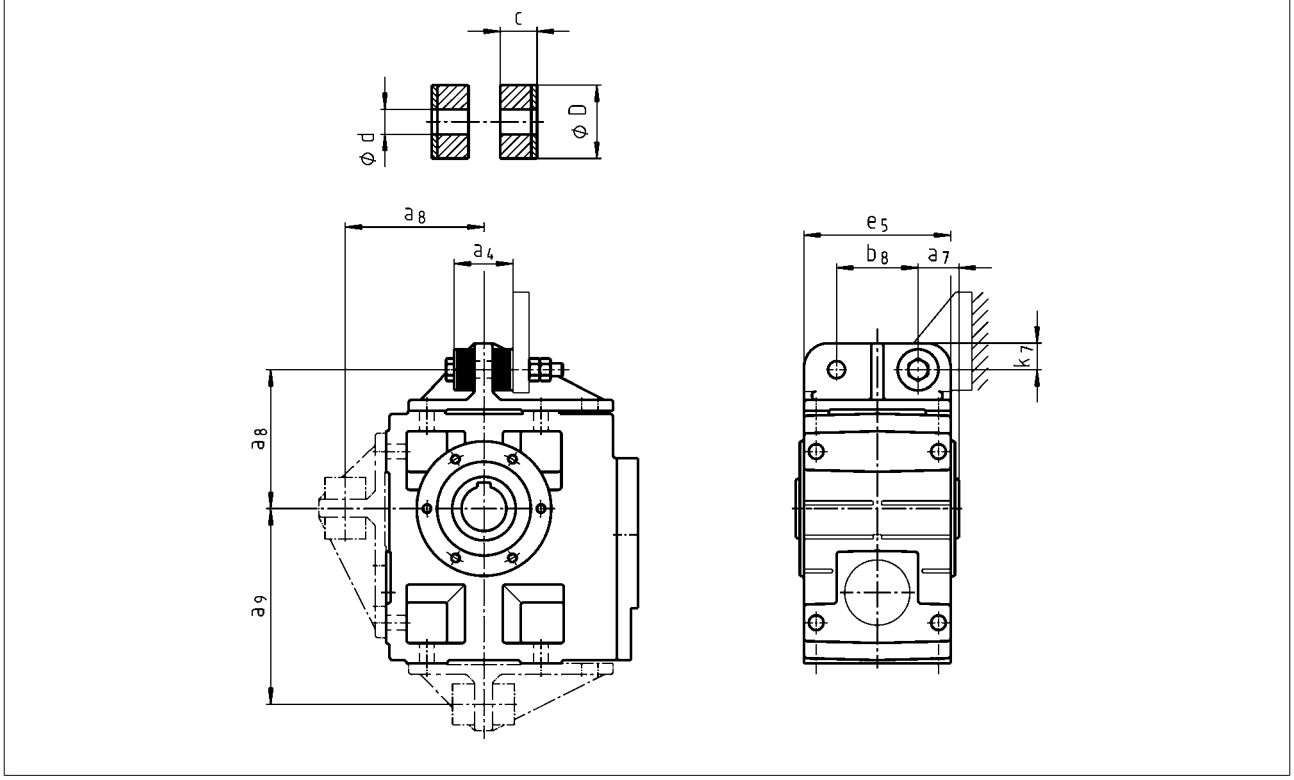
In position 5



	a_4	a_7	a_8	a_9	b_4	d	D	k_6
GSS04	30	24.0	130	26.5	34.5	12	35	16
GSS05	34	23.5	160	27.5	38.5	16	45	15
GSS06	40	28.0	200	33.0	44.5	20	50	18
GSS07	46	32.5	250	37.5	50.5	25	65	21

Torque plate at housing foot

In position 2, 4 or 6

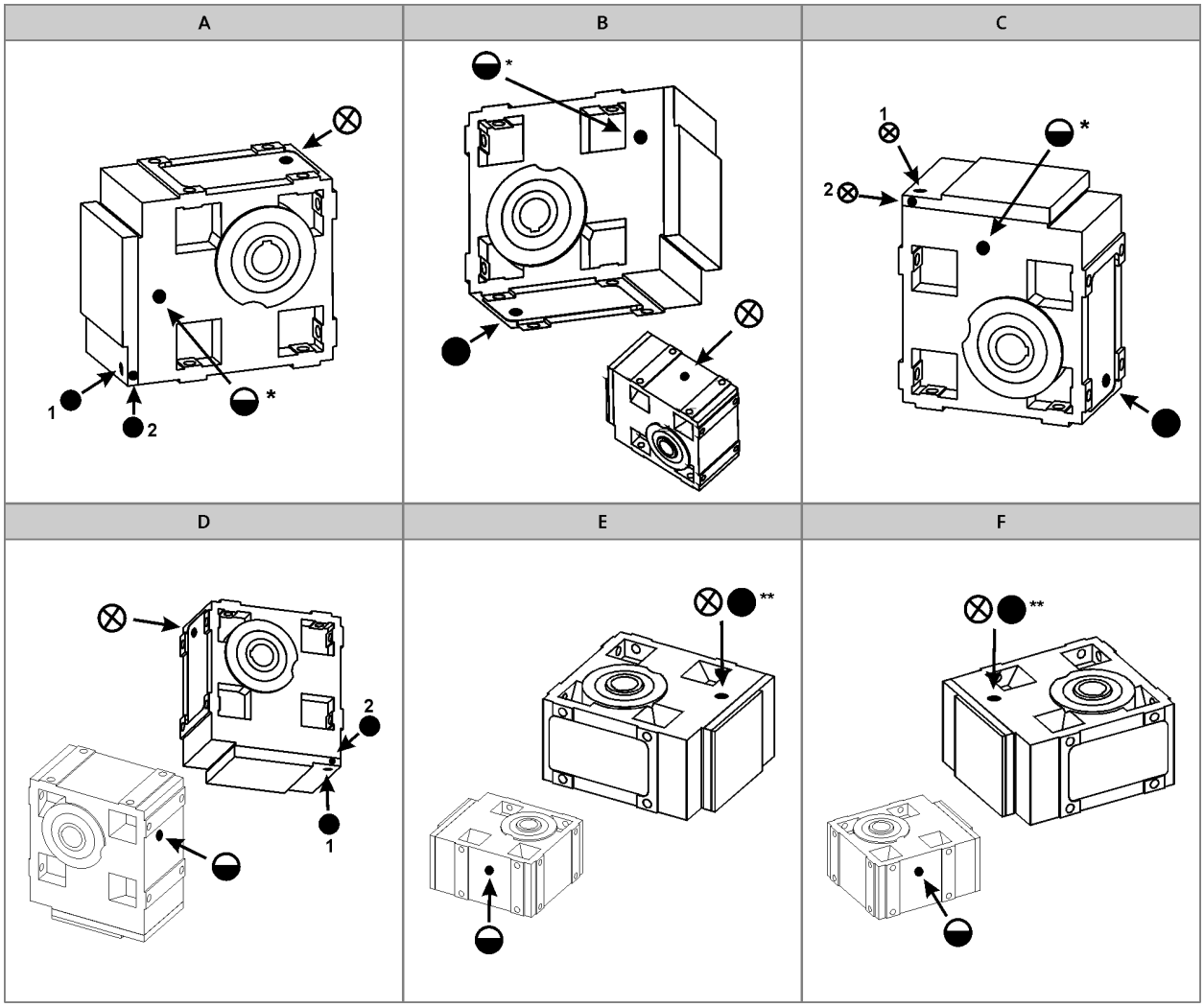


	a_4	a_7	a_8	a_9	b_8	c	d	D	e_5	k_7
GSS04	41	27.5	106	135.0	60	14.5	11	30	100	20
GSS05	45	35.0	115	160.0	70	15.0	13	40	127	25
GSS06	72	40.0	145	195.0	80	27.0	17	50	145	28
GSS07	78	50.0	170	240.0	100	28.0	21	60	180	35

Ventilations

Position of ventilation, sealing elements and oil level check

GSS05...07-2



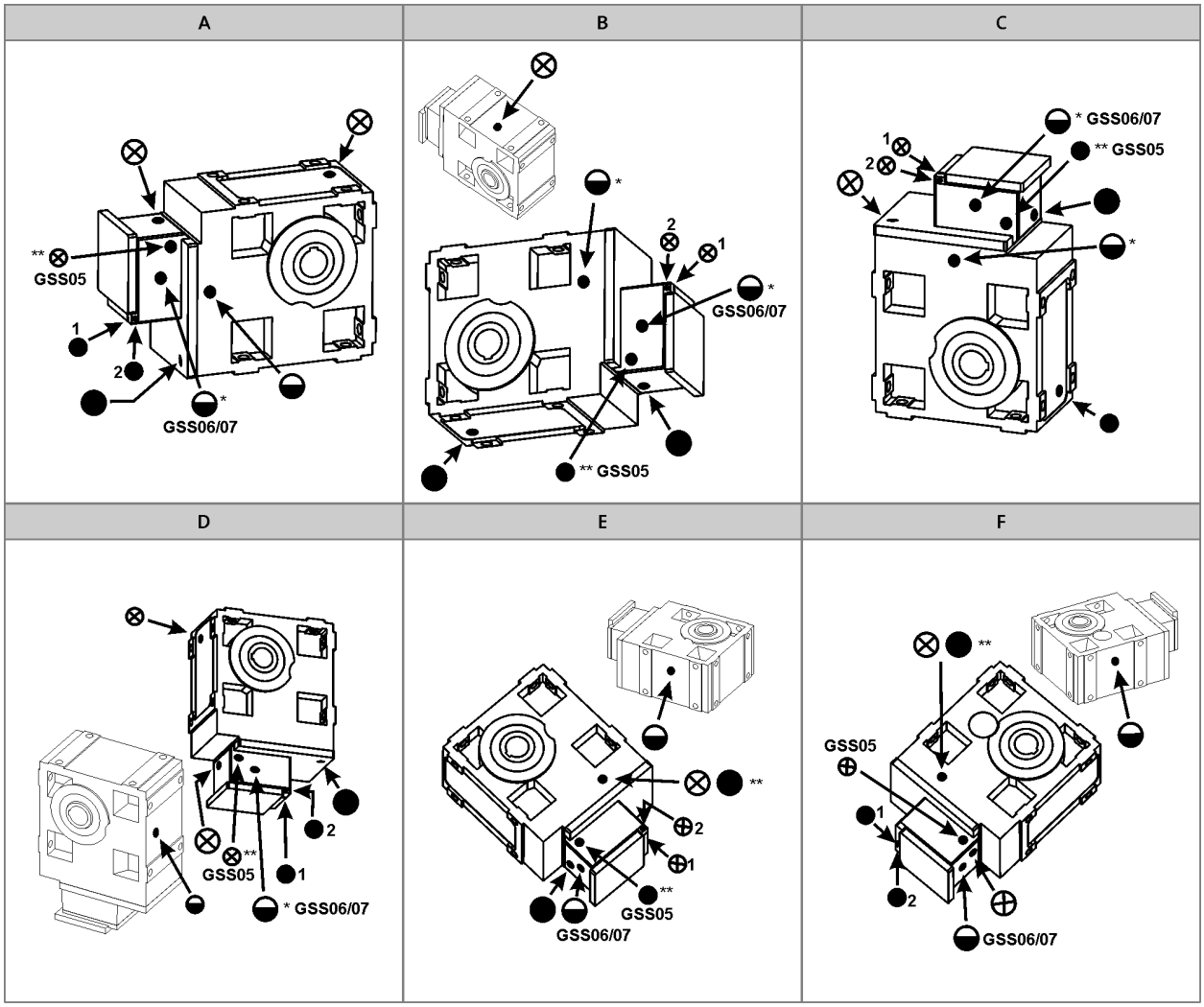
A ... F Mounting position
⊗ Ventilation / Oil filler plug
● Oil drain plug
◒ Oil control plug
* On both sides
** On opposite side

Item 1 standard
Item 2 only with:
- GSS05-2M □□□ 090C□□
- GSS05-2M □□□ 100C□□
- GSS06-2M □□□ 112C□□
- GSS07-2M □□□ 160C□□

Ventilations

Position of ventilation, sealing elements and oil level check

GSS05...07-3

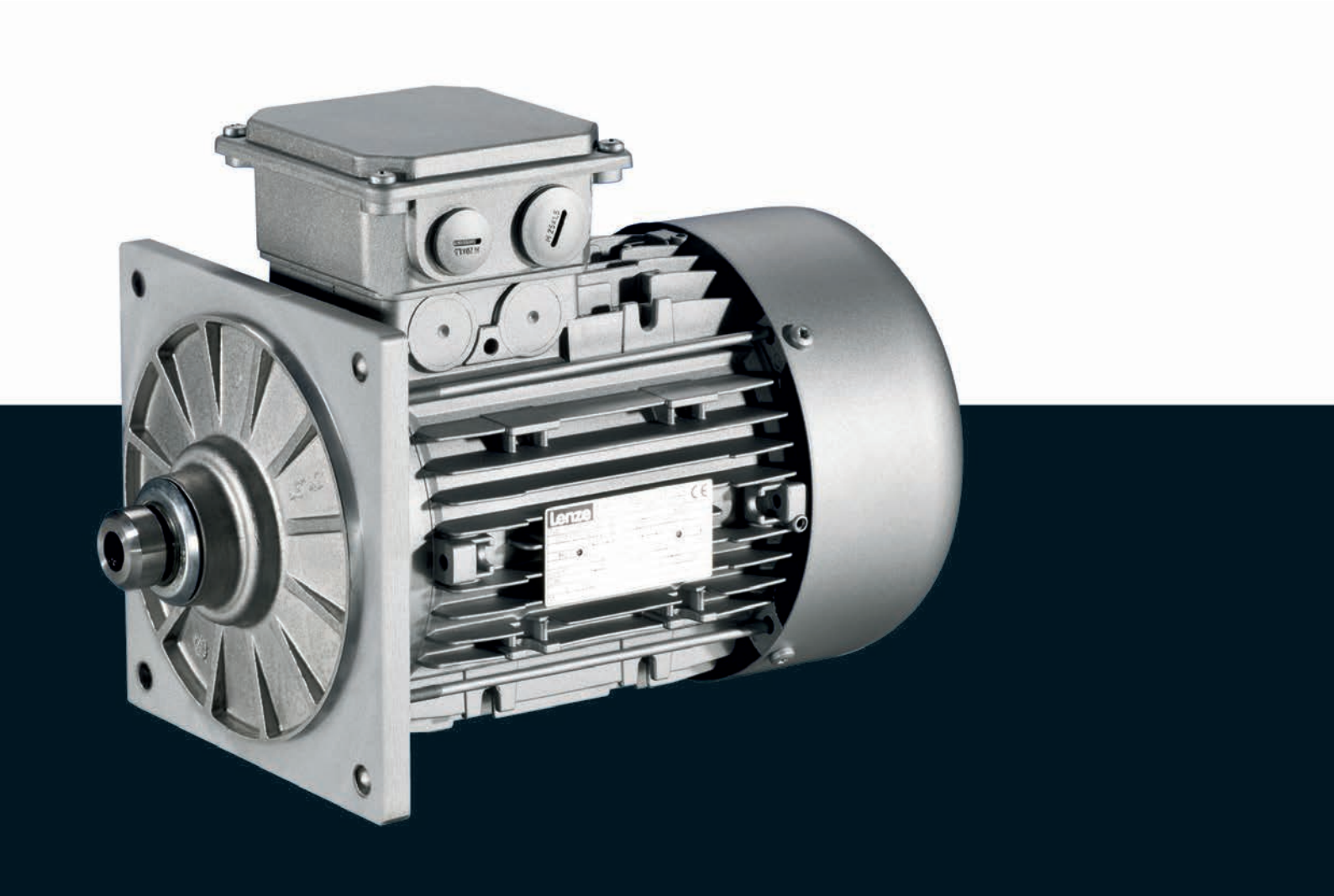


A ... F Mounting position
⊗ Ventilation / Oil filler plug
● Oil drain plug
◒ Oil control plug
* On both sides
** On opposite side

Item 1 standard
Item 2 only on:
- GSS07-3M □□□ 090C□□
- GSS07-3M □□□ 100C□□

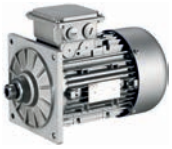
MF three-phase AC motors

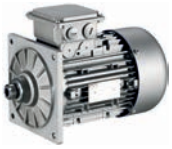
0.55 to 22 kW



MF three-phase AC motors

Contents





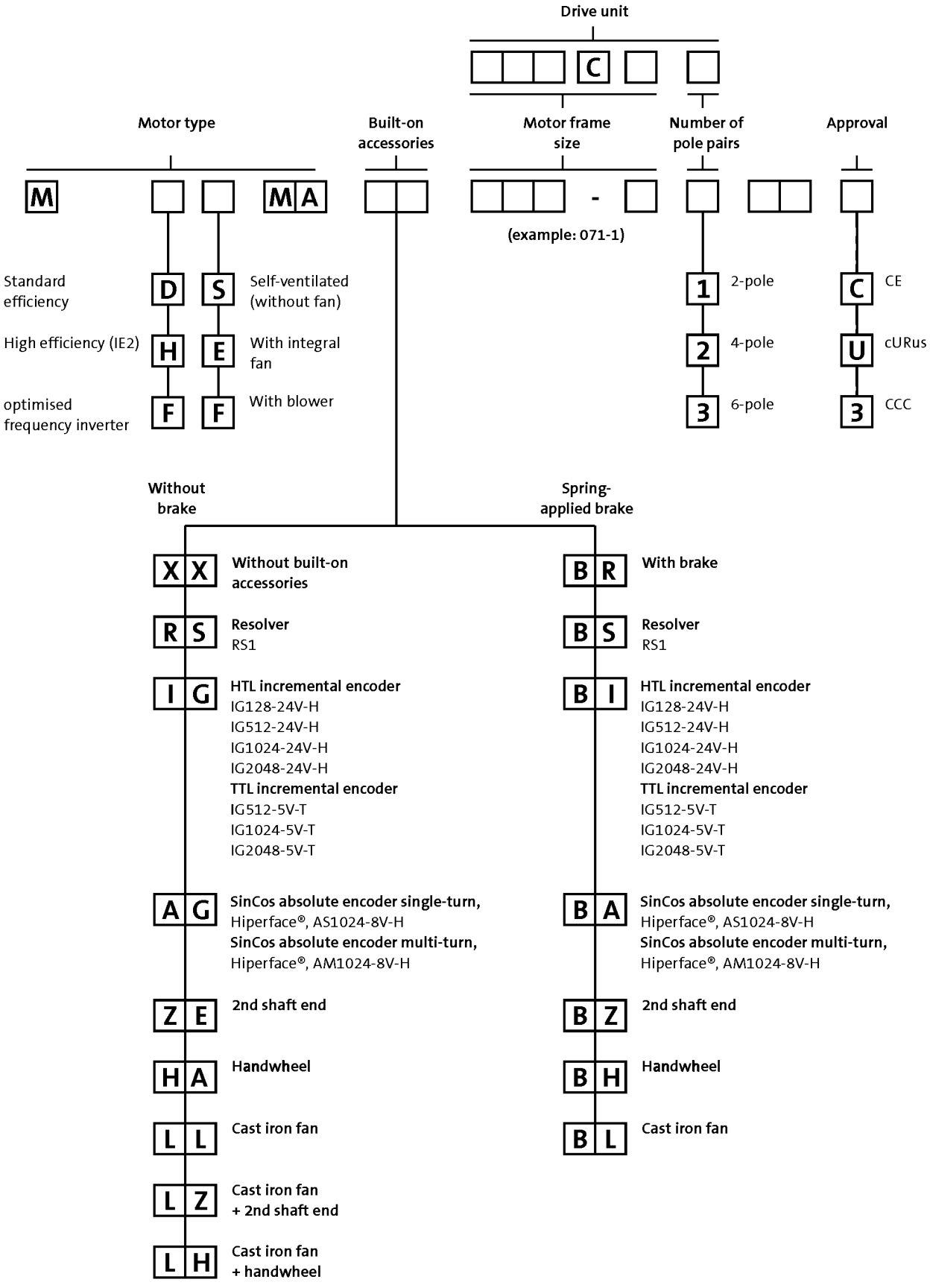
List of abbreviations

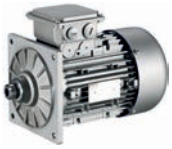
$\eta_{100\,\%}$	[%]	Efficiency
$\eta_{75\,\%}$	[%]	Efficiency
$\eta_{50\,\%}$	[%]	Efficiency
cos ϕ		Power factor
I_N	[A]	Rated current
I_{max}	[A]	Max. current consumption
J	[kgcm²]	Moment of inertia
m	[kg]	Mass
M_a	[Nm]	Starting torque
M_b	[Nm]	Stalling torque
M_{max}	[Nm]	Max. torque
M_N	[Nm]	Rated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

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

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

Product key

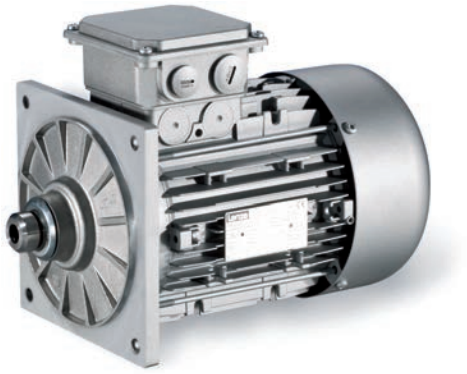

Drive unit
C
Motor type
Built-on accessories
Motor frame size
Number of pole pairs
Approval
M
M A
-
(example: 071-1)
Standard efficiency
D
S
Self-ventilated (without fan)
High efficiency (IE2)
H
E
With integral fan
optimised frequency inverter
F
F
With blower
1
2-pole
2
4-pole
3
6-pole
C
CE
U
cURus
3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



Product information

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

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



L-force MF three-phase AC motors are available in a power range from 0.55 to 22 kW and have been fully optimised for inverter operation.

The benefits for you:
- Up to sizes smaller than standard three-phase AC motors
- The motors exceed the minimum efficiency levels of efficiency class IE2
- Large speed setting range: 1:24 (without field weakening)
- Dynamic thanks to a low moment of inertia

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

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

Functions and features

Size				
Motor	063	071	080	090
Spring-applied brake				
Design	Standard or LongLife design Reduced or standard braking torque With rectifier With manual release lever Low noise		Standard or LongLife design Reduced, standard or increased braking torque With rectifier With manual release lever Low noise	
Feedback				
Design	Resolver Incremental encoder Absolute value encoder (multi-turn)			
Thermal sensor				
Thermal contact	TKO			
Thermal detector	KTY83-110 KTY84-130			
PTC thermistor	PTC			
Motor connection				
Power connection	Terminal box ICN connector HAN10E connector HAN modular connector			
Brake connection	Terminal box ICN connector HAN modular connector HAN10E connector			
Blower connection	Terminal box ICN connector			
Feedback connection	Terminal box ICN connector			
Temperature sensor connection	Terminal box TKO or PTC at connector in the power connection KTY at connector in the feedback connection			
Shaft bearings				
Position of the locating bearing	Standard motors (B3, B5, B14): side B Motors for gearbox direct mounting: side A			
Bearing type	Deep-groove ball bearing with high-temperature resistant grease, 2 sealing discs or cover plates			
Colour				
	Not coated Primed Paint in various corrosion-protection designs in accordance with RAL colours			
Further options				
	Protection cover	Protection cover 2nd shaft end		

Functions and features

Size			
Motor	100	112	132
Spring-applied brake			
Design	Standard or LongLife design Reduced, standard or increased braking torque With rectifier With manual release lever Low noise	Standard design Reduced, standard or increased braking torque With rectifier With manual release lever Low noise	
Feedback			
Design	Resolver Incremental encoder Absolute value encoder (multi-turn)		
Thermal sensor			
Thermal contact	TKO		
Thermal detector	KTY83-110 KTY84-130		
PTC thermistor	PTC		
Motor connection			
Power connection	Terminal box ICN connector HAN10E connector HAN modular connector	Terminal box	Terminal box HAN modular connector
Brake connection	Terminal box ICN connector HAN modular connector HAN10E connector	Terminal box	Terminal box HAN modular connector
Blower connection	Terminal box ICN connector		
Feedback connection	Terminal box ICN connector		
Temperature sensor connection	Terminal box TKO or PTC at connector in the power connection KTY at connector in the feedback connection	Terminal box KTY at connector in the feedback connection	
Shaft bearings			
Position of the locating bearing	Standard motors (B3, B5, B14): side B Motors for gearbox direct mounting: side A		
Bearing type	Deep-groove ball bearing with high-temperature resistant grease, 2 sealing discs or cover plates		
Colour			
	Not coated Primed Paint in various corrosion-protection designs in accordance with RAL colours		
Further options			
	Protection cover 2nd shaft end		

Functions and features

Surface and corrosion protection

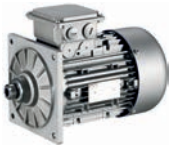
For optimum protection of three-phase AC motors against ambient conditions, the surface and corrosion protection system (OKS) offers tailor-made solutions.

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

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

Structure of surface coating

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

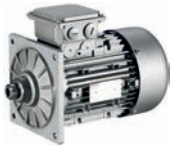


Motor – inverter assignment

Rated frequency 120 Hz

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

Rated power	Product key		
	Motor	Inverter	
P_N			
[kW]			
0.55	MF□□□□□063-32	E84DVB□5514S□□□2□	
0.75	MF□□□□□063-42	E84DVB□7514S□□□2□	
1.10	MF□□□□□071-32	E84DVB□1124S□□□2□	
1.50	MF□□□□□071-42	E84DVB□1524S□□□2□	
2.20	MF□□□□□080-32	E84DVB□2224S□□□2□	
3.00	MF□□□□□080-42	E84DVB□3024S□□□2□	
4.00	MF□□□□□090-32	E84DVB□4024S□□□2□	
5.50	MF□□□□□100-12	E84DVB□5524S□□□2□	
7.50	MF□□□□□100-32	E84DVB□7524S□□□2□	
11.0	MF□□□□□112-22		
15.0	MF□□□□□132-12		
18.5	MF□□□□□132-22		
22.0	MF□□□□□132-32		

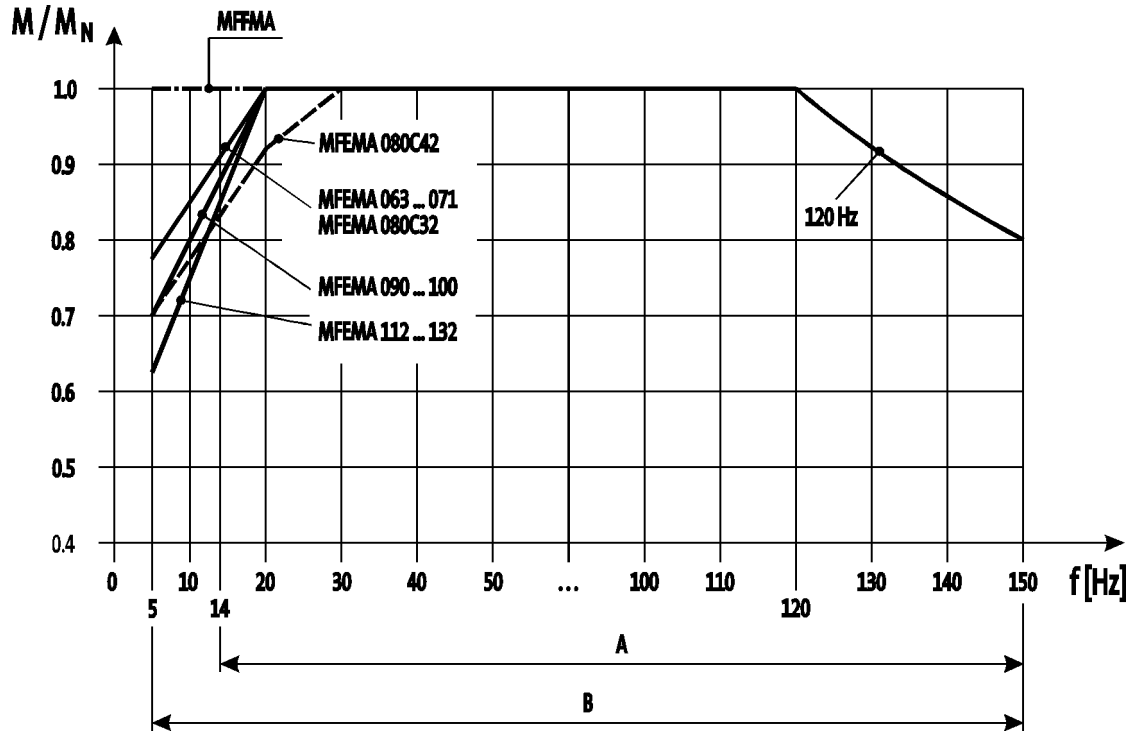


Dimensioning

Torque derating at low motor frequencies

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

Torque characteristics



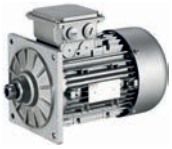
A = Operation with integral fan and brake
B = Operation with integral fan and brake control "Holding current reduction"

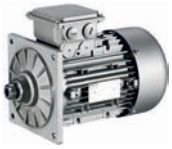
► The motor specifications stated in this catalogue for inverter operation apply to operation with a Lenze inverter. If you are uncertain, get in touch with the manufacturer of the inverter to ask whether the device is capable of driving the motor with the stated specifications (e.g. setting range, base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

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

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

Please contact your Lenze sales office.





Standards and operating conditions

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

Rated data for 120 Hz

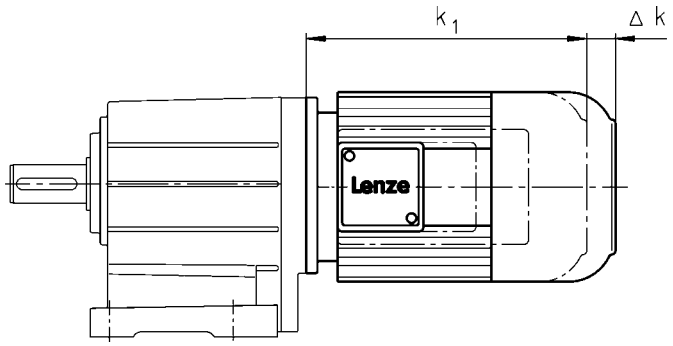
4-pole motors

	P_N	n_N	$U_{N,\Delta}$	$I_{N,\Delta}$	$U_{N,Y}$	$I_{N,Y}$
			± 10 %		± 10 %	
	[kW]	[r/min]	[V]	[A]	[V]	[A]
MF□□□□□063-32	0.55	3440	200	3.20	345	1.80
MF□□□□□063-42	0.75	3400	210	4.00	370	2.30
MF□□□□□071-32	1.10	3490	200	5.50	345	3.20
MF□□□□□071-42	1.50	3450	205	6.80	360	3.90
MF□□□□□080-32	2.20	3500	200	9.10	345	5.30
MF□□□□□080-42	3.00	3480	210	11.4	370	6.60
MF□□□□□090-32	4.00	3480			370	8.50
MF□□□□□100-12	5.50	3525			340	12.9
MF□□□□□100-32	7.50	3515			375	15.9
MF□□□□□112-22	11.0	3530			370	23.5
MF□□□□□132-12	15.0	3560			370	31.2
MF□□□□□132-22	18.5	3560			360	39.0
MF□□□□□132-32	22.0	3550			380	44.5

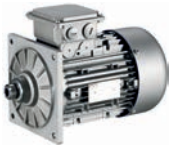
	M_N	M_{max}	cos ϕ	$\eta_{75\,\%}$	$\eta_{100\,\%}$	J [1)]	m [1)]
	[Nm]	[Nm]		[%]	[%]	[kgcm²]	[kg]
MF□□□□□063-32	1.53	6.00	0.68	75.0	75.0	3.70	4.40
MF□□□□□063-42	2.11	8.00	0.69	79.6	79.6	3.70	4.40
MF□□□□□071-32	3.01	12.0	0.77	81.4	81.4	12.8	6.40
MF□□□□□071-42	4.15	16.0	0.80	82.8	82.8	12.8	6.40
MF□□□□□080-32	6.00	24.0	0.86	84.3	84.3	28.0	11.0
MF□□□□□080-42	8.20	32.0	0.86	85.5	85.5	28.0	11.0
MF□□□□□090-32	10.9	44.0	0.85	87.0	86.6	32.0	18.0
MF□□□□□100-12	14.9	60.0	0.81	87.9	87.7	61.0	26.5
MF□□□□□100-32	20.3	80.0	0.81	88.9	88.7	61.0	26.5
MF□□□□□112-22	29.7	120	0.78	89.8	89.8	107	38.0
MF□□□□□132-12	40.3	160	0.84	88.9	90.6	336	66.0
MF□□□□□132-22	49.6	200	0.84	89.9	91.2	336	66.0
MF□□□□□132-32	59.2	240	0.83	90.5	91.6	336	66.0

[1)] Without accessories

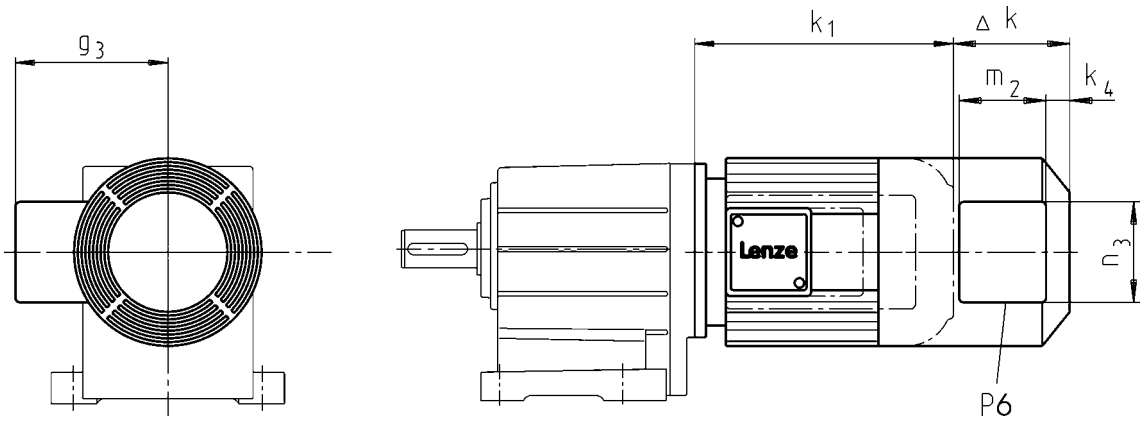
Dimensions, self-ventilated (4-pole)



	Motor type			
	MFEMAXX	MFEMABR	MFEMABS MFEMABI MFEMABA	MFEMARS MFEMAIG MFEMAAG
Motor frame size				
	Δ k	Δ k	Δ k	Δ k
	[mm]	[mm]	[mm]	[mm]
063-32 063-42	0	40	103	56
071-32 071-42		52	96	52
080-32 080-42		73	111	111
090-32		68	105	87
100-12 100-32		76	101	81
112-22		90	120	80
132-12 132-22 132-32		110	125	103



Dimensions, forced ventilated (4-pole)

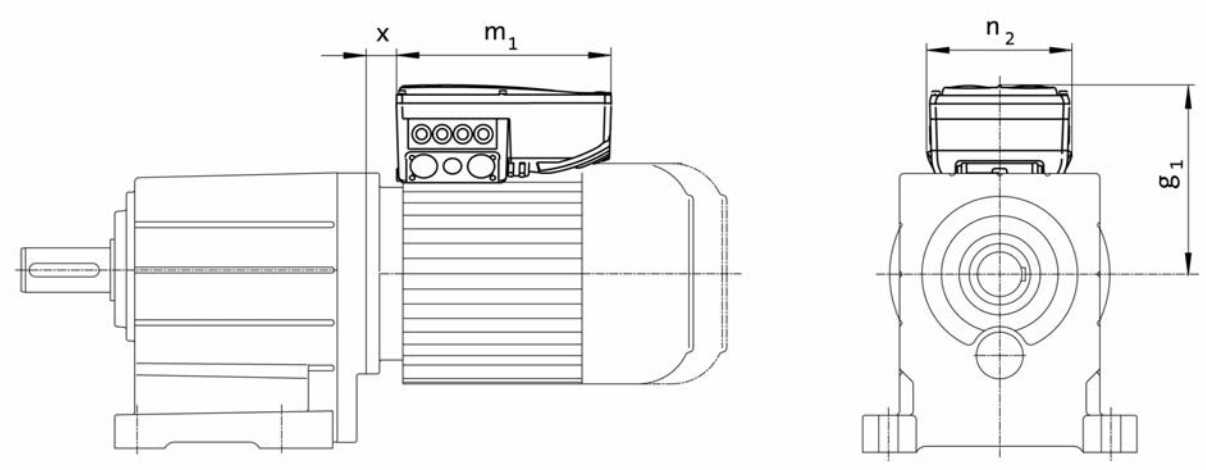


Motor type									
	MFFMAXX	MFFMABR	MFFMABS MFFMABI MFFMABA	MFFMARS MFFMAIG MFFMAAG					

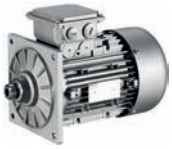
Motor frame size									
	Δ k	Δ k	Δ k	Δ k	k_4	g_3	m_2	n_3	P_6
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
063-32 063-42	128	170	170	128	12	115	95	105	1x M16x1.5
071-32 071-42		165	165			122			
080-32 080-42		183	183		13	132	96	106	
090-32		181	181		22	141	95	105	
100-12 100-32	109	170	170	109		150			
112-22	102	183	183	183		162			
132-12 132-22 132-32	115	202	202	202	32	182			

Dimensions, 8400 motec inverter

Rated frequency 120 Hz



Product key					
Motor	Inverter				
		$g_{1,\ 120Hz}$	$m_{1,\ 120Hz}$	$n_{2,\ 120Hz}$	x_{120Hz}
		[mm]	[mm]	[mm]	[mm]
MF□□□□□063-32	E84DVB□5514S□□□2□	154	241	161	18.8
MF□□□□□063-42	E84DVB□7514S□□□2□				
MF□□□□□071-32	E84DVB□1124S□□□2□	163			21.0
MF□□□□□071-42	E84DVB□1524S□□□2□				
MF□□□□□080-32	E84DVB□2224S□□□2□	201	260	176	24.5
MF□□□□□080-42	E84DVB□3024S□□□2□				
MF□□□□□090-32	E84DVB□4024S□□□2□	261	325	195	16.0
MF□□□□□100-12	E84DVB□5524S□□□2□	272			17.1
MF□□□□□100-32	E84DVB□7524S□□□2□				



Spring-applied brake

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

Features

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

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

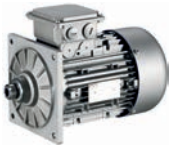
Enclosure
- Without manual release IP55
- With manual release IP54

Friction lining
- Non-asbestos, low wearing

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

Motor – brake assignment

Design	Standard		LongLife	
Motor frame size	**Size**	**Rated torque**	**Size**	**Rated torque**
	Brake		Brake	
		M_k		M_k
		[Nm]		[Nm]
063-32	06	2.50	06	4.00
063-42	06	4.00		
071-32	06	2.50	06	4.00
	06	4.00	08	3.50
	08	3.50		
071-42	06	2.50	06	4.00
	06	4.00	08	3.50
	08	3.50	08	8.00
	08	8.00		
080-32	08	3.50	08	8.00
	08	8.00	10	7.00
	10	7.00		
080-42	08	3.50	08	8.00
	08	8.00	10	7.00
	10	7.00	10	16.0
	10	16.0		

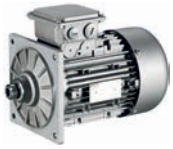


Spring-applied brake

Motor – brake assignment

Design	Standard	LongLife

Motor frame size	Size	Rated torque	Size	Rated torque
	Brake		Brake	
		M_k		M_k
		[Nm]		[Nm]
090-32	08 08 10 10 10	3.50 8.00 7.00 16.0 23.0	08 10 10	8.00 7.00 16.0
100-12	10 10 12 12	7.00 16.0 14.0 32.0	10 12 12	16.0 14.0 32.0
100-32	10 10 12 12 12	7.00 16.0 14.0 32.0 46.0		
112-22	12 12 14 14	14.0 32.0 35.0 60.0		
132-12	14 14 16 16	35.0 60.0 60.0 80.0		
132-22 132-32	14 14 16 16 16	35.0 60.0 60.0 80.0 100		



Spring-applied brake

Direct connection without rectifier

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

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

Connection via mains voltage with brake rectifier

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

Half-wave rectifier, 6-pole

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

Bridge rectifier, 6-pole

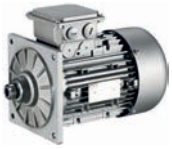
- Ratio of supply voltage to brake coil voltage = 1.11
- Supply voltage
  AC 230 V

Bridge/half-wave rectifier, 6-pole

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

Supply voltages:

- AC 230 V
- AC 400 V



Spring-applied brake

Connection via mains voltage with brake rectifier

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

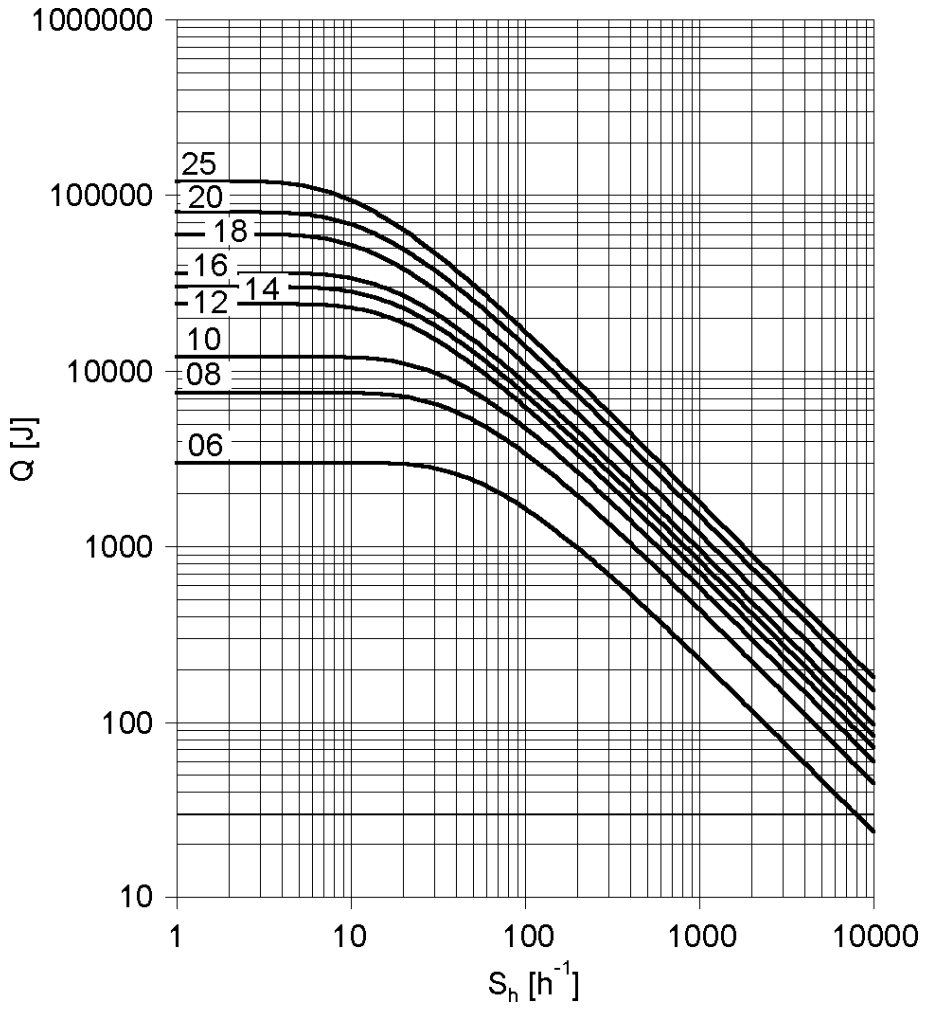
Supply voltages:
- AC 230 V
- AC 400 V

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

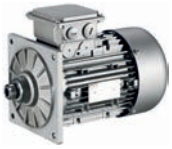
- **Short-time overexcitation of the brake coil**
  Activating the brake coil for the overexcitation time $t_{ü}$ with twice the rated voltage allows the disengagement time to be reduced. The brake opens more quickly and wear on the friction lining is reduced.
  These features make this activation version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

Spring-applied brake

Permissible friction energy



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



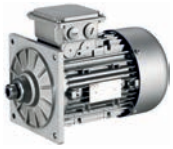
Spring-applied brake

Rated data with reduced braking torque

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

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

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



Spring-applied brake

Rated data with reduced braking torque

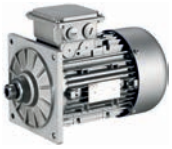
► Activation via half-wave or bridge rectifier

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

► Activation via bridge/half-wave rectifier

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

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



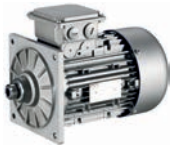
Spring-applied brake

Rated data with standard braking torque

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

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

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



Spring-applied brake

Rated data with standard braking torque

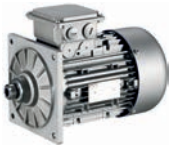
► Activation via half-wave or bridge rectifier

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

► Activation via bridge/half-wave rectifier

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

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



Spring-applied brake

Rated data with increased braking torque

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

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

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

► Activation via half-wave or bridge rectifier

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

Spring-applied brake

Rated data with increased braking torque

► Activation via bridge/half-wave rectifier

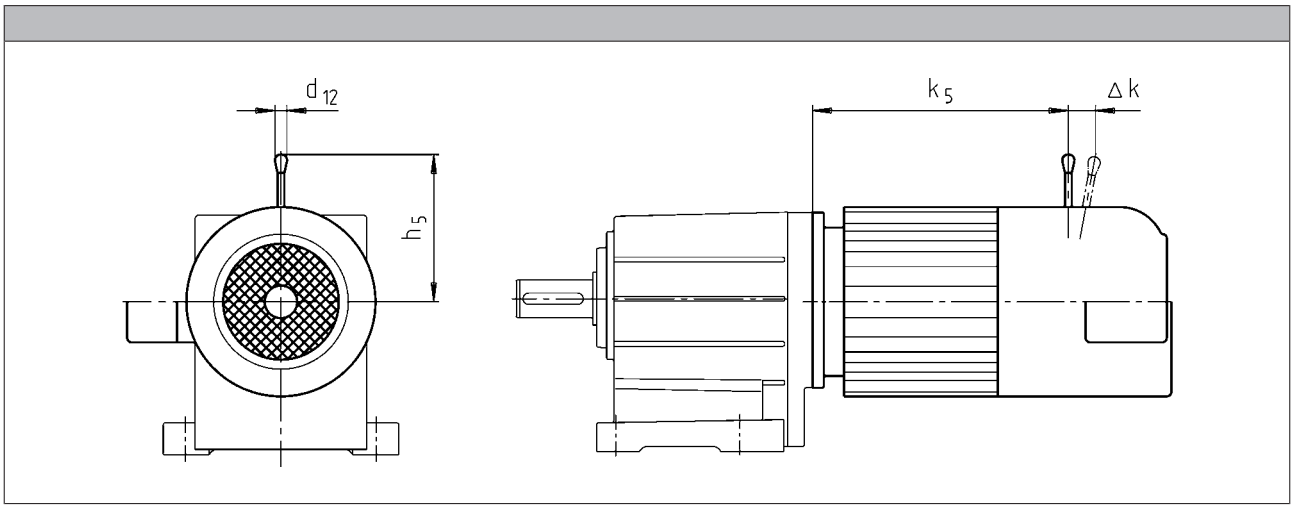
Design			Holding current reduction (cold brake)									
Size			10	12	14	16		18	20		25	
Friction energy												
	Q_{BW}	[MJ]	198	353	253	563	241	578	1596	580	2465	1409
Overexcitation time												
	$t_ü$	[ms]	300			1300						
Min. rest time												
	t	[ms]	900			3900						
Delay time					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

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

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

Spring-applied brake

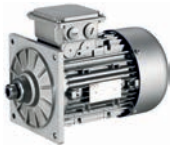
Manual release lever



Motor frame size	Size				
	Brake				
		k_5	Δ k	h_5	d_{12}
		[mm]	[mm]	[mm]	[mm]
063-32 063-42	06	173	29	107	13.0
071-32 071-42	06 08	186 187	29 27	107 116	13.0 13.0
080-32 080-42	06 08	207 218	29 27	107 116	13.0 13.0
090-32	08 10	245 256	27 28	116 132	13.0 13.0
100-12 100-32	10 12	294 296	28 37	132 161	13.0 13.0
112-22	12 14	292 296	37 41	161 195	13.0 24.0
132-12 132-22 132-32	14 16	373 373	41 55	195 240	24.0 24.0

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

- HAN connector with connection in position 1
- Inverter motec
- Terminal box of motor sizes 071, 080, 090 for brake and retracting (M□□MA BR/BS/BA/BI)



Resolver

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

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

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

Incremental encoder and SinCos absolute value encoder

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

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

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

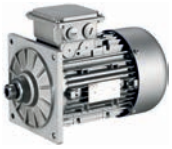
Servo-Inverters
- Servo Drives 9400 (E94A)
- 9300 servo inverters (EVS93)
- Servo Drives ECS

Blowers

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

Rated data for 50 Hz

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



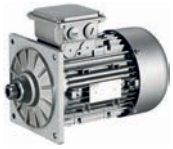
Blowers

Rated data for 50 Hz

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

Rated data for 60 Hz

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



Temperature monitoring

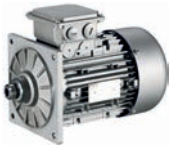
► The thermal sensors are integrated in the windings. The use of an additional motor protection switch is recommended.

TKO thermal contacts

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

PTC thermistor

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

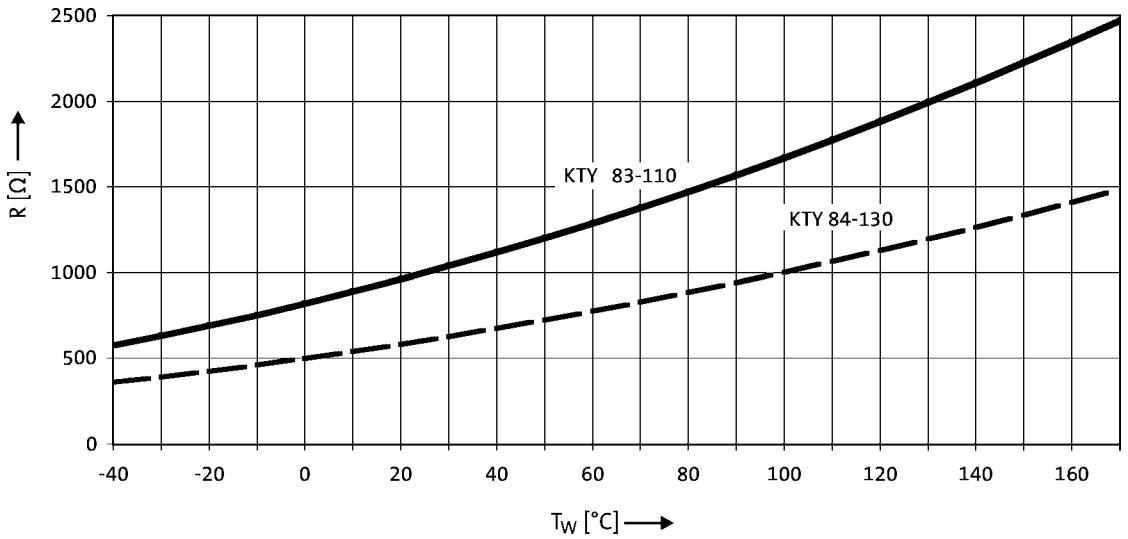


Temperature monitoring

KTY temperature sensor

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

Variation of resistance



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

Terminal box

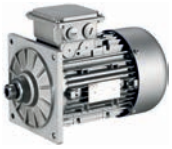
The MF three-phase AC motors are designed specifically for inverter operation. With a base frequency of 120Hz, the rated voltage has been specified at approximately 200 V in delta connection (up to 2.2 kW) and approximately 350V in star configurations.

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

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

Motor type	M□□MAXX	M□□MARS M□□MAIG M□□MAAG	M□□MAZE
Motor frame size			
	Terminal box		
063-32 063-42	KK1	KK2	
071-32 071-42	KK1	KK2	KK2
080-32 080-42	KK1	KK2	KK2
090-32	KK1	KK2	KK2
100-12 100-32	KK1	KK2	KK2
112-22	KK1	KK2	KK2
132-12 132-22 132-32	KK1	KK3	KK3

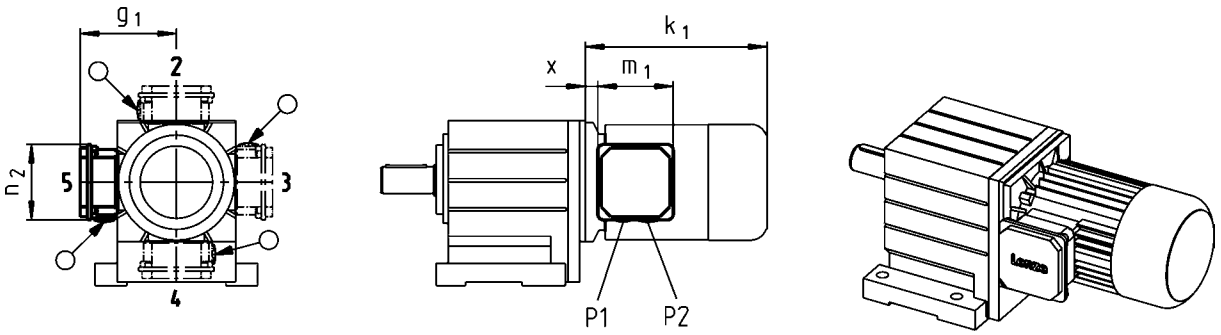
Motor type	M□□MABR	M□□MABS M□□MABI M□□MABA	M□□MABZ
Motor frame size			
	Terminal box		
063-32 063-42	KK2	KK3	
071-32 071-42	KK2	KK3	KK2
080-32 080-42	KK2	KK3	KK2
090-32	KK2	KK3	KK2
100-12 100-32	KK2	KK3	KK2
112-22	KK2	KK3	KK2
132-12 132-22 132-32	KK3	KK3	KK3



Terminal box

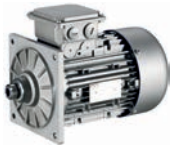
Dimensions of KK1

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



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

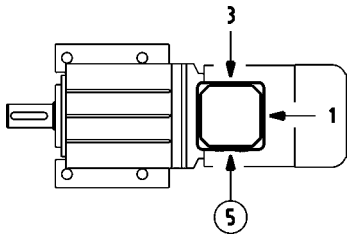
[1)] UL/CSA approval: cURus



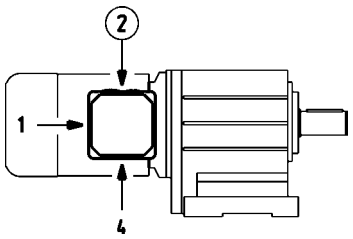
Terminal box

Cable entry position when using KK1

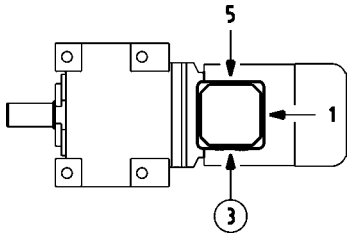
Terminal box in position 2



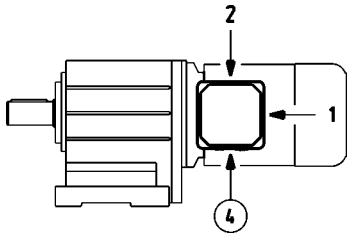
Terminal box in position 3

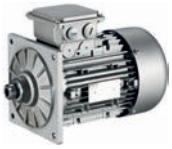


Terminal box in position 4



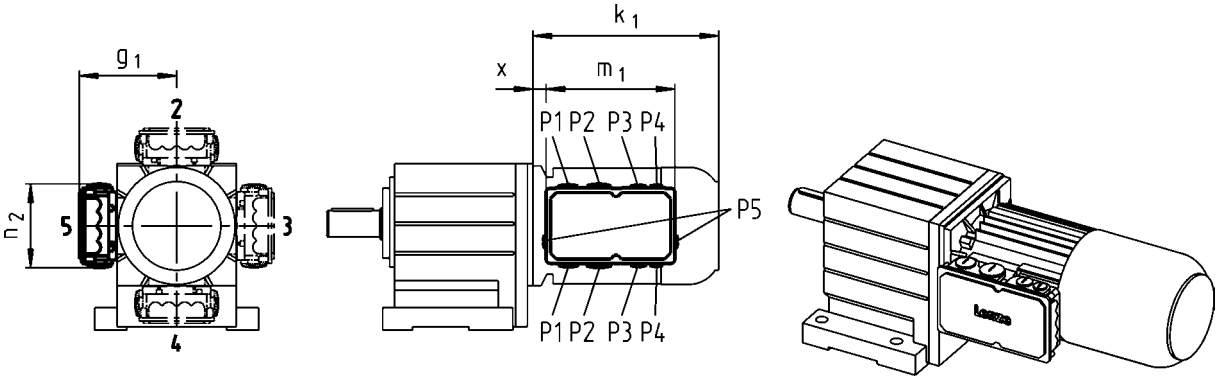
Terminal box in position 5





Terminal box

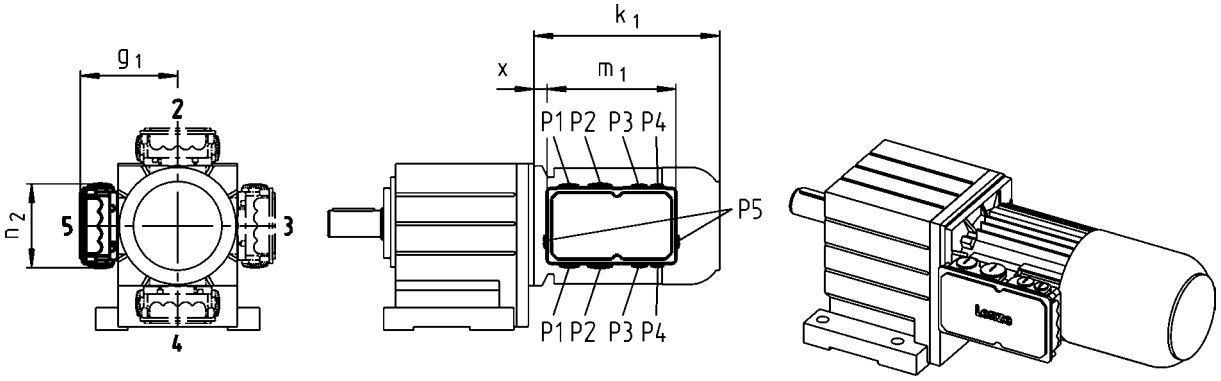
Dimensions of KK2



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

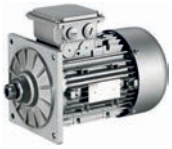
Terminal box

Dimensions of KK3



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

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

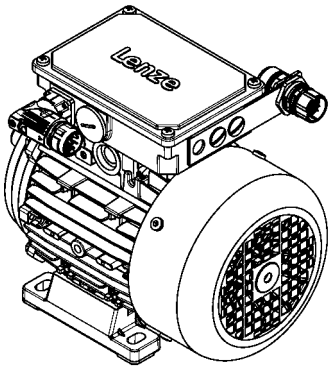


Plug connectors

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

ICN connector

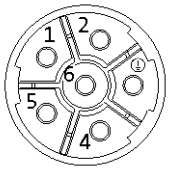
A connector is used for power, brake and temperature monitoring. The connections to the feedback system and the blower each employ a separate connector.



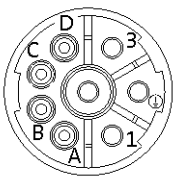
Connection for power, brake and temperature monitoring

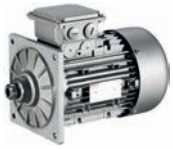
The connectors can be rotated through 270° and are fitted with a bayonet catch for SpeedTec connectors. As this connector is also compatible with conventional union nuts, existing mating connectors can continue to be used without difficulty. The motor connection is determined in the terminal box and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

► ICN 6-pole

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

► ICN 8-pole

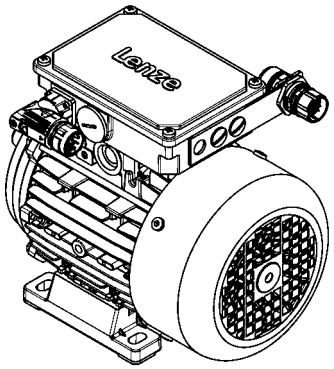
Pin assignment			
Contact	Designation	Meaning	
1	U	Phase U power	
PE	PE	PE conductor	
3	V	Phase V power	
4	W	Phase W power	
A	TB1 / TP1 / R1	Thermal sensor: TKO/PTC/ +KTY	
B	TB2 / TP2 / R2	Thermal sensor: TKO/PTC/-KTY	
C	BD1 / BA1	Brake +/AC	
D	BD2 / BA2	Brake /AC	



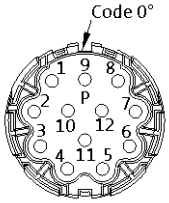
ICN connector

Feedback connection

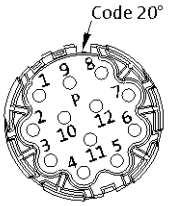
All encoder systems (apart from IG128-24V-H) are also available with an ICN connector fixed to the motor terminal box for exceptionally fast commissioning. The connectors are fitted with a bayonet fixing, which is also compatible with conventional union nuts. Existing mating connectors can therefore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

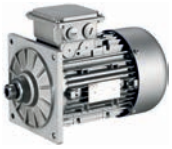


► Resolver

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

► Hiperface incremental encoder and SinCos absolute value encoder

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



ICN connector

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

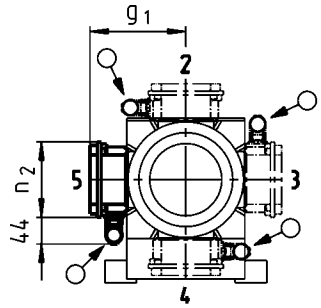
Motor type	M□□MAXX	M□□MARS M□□MAIG M□□MAAG	M□□MAZE
Motor frame size			
	Terminal box		
063-32 063-42	KK1	KK2	
071-32 071-42	KK1	KK2	KK2
080-32 080-42	KK1	KK2	KK2
090-32	KK1	KK2	KK2
100-12 100-32	KK1	KK2	KK2

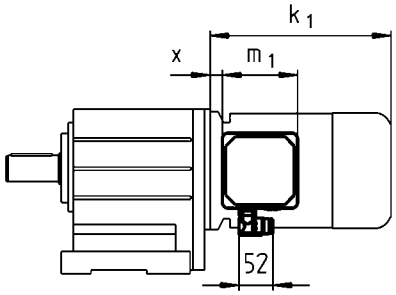
Motor type	M□□MABR	M□□MABS M□□MABI M□□MABA	M□□MABZ
Motor frame size			
	Terminal box		
063-32 063-42	KK2	KK3	
071-32 071-42	KK2	KK3	KK2
080-32 080-42	KK2	KK3	KK2
090-32	KK2	KK3	KK2
100-12 100-32	KK2	KK3	KK2

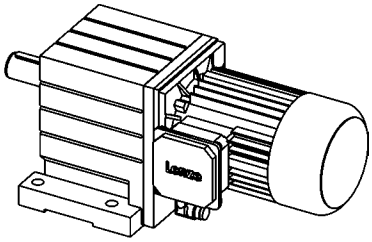
ICN connector

Dimensions of KK1

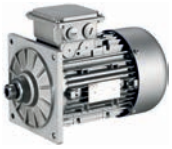
- ► For motors with connectors, the connector position can be selected in accordance with the terminal box position.
- ► If preferred positions are not specified in the order, the connector will be positioned as circled on the diagram below.







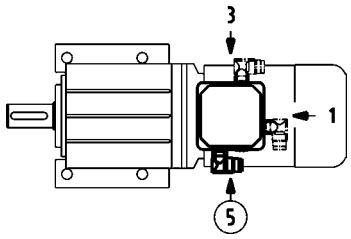
Size				
Motor				
	x	g_1	m_1	n_2
	[mm]	[mm]	[mm]	[mm]
063	12	117	93.0	93.0
071	15	126		
080	14	150	115	115
090	19	157		
100	20	166		
112	22	176		
132	33	195	122	122



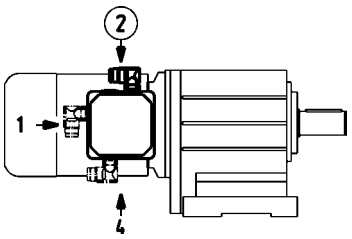
ICN connector

Connector position when using KK1

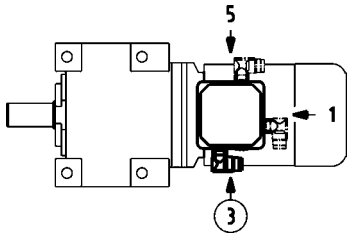
Terminal box in position 2



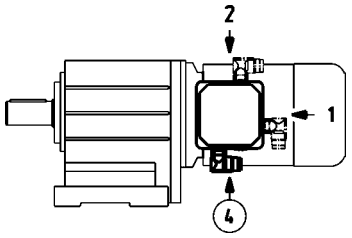
Terminal box in position 3



Terminal box in position 4



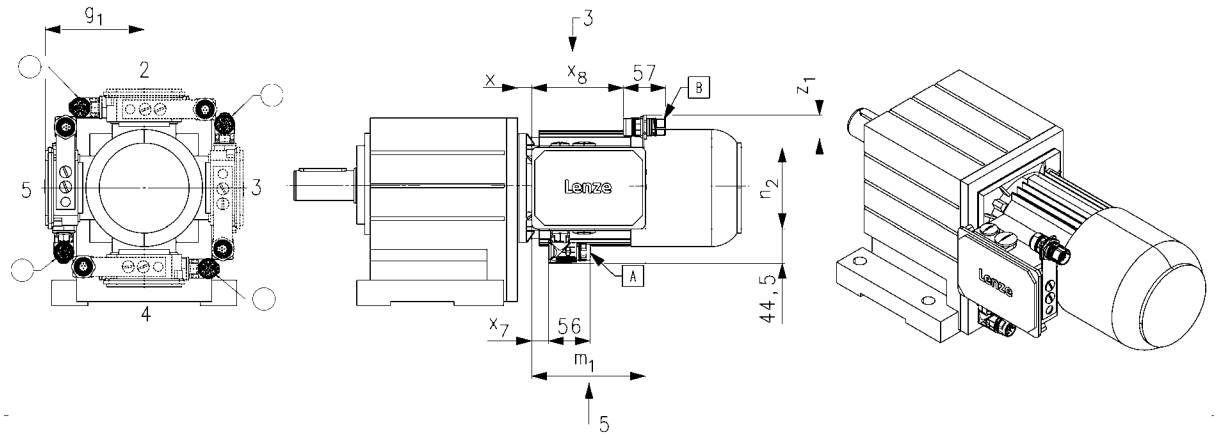
Terminal box in position 5



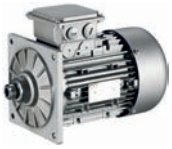
ICN connector

Dimensions of KK2/KK3

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



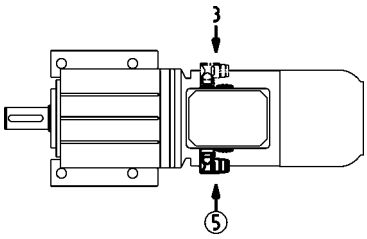
Size							
Motor							
	x	g_1	m_1	n_2	x_7	x_8	$z_{1, max}$
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
063	13	107	136	103	16	109	43
071	15	118					
080	17	132	152	121	23	125	41
090	22	137					
100	23	147					
112	25	158					
132	38	187	195	125	27	166	71



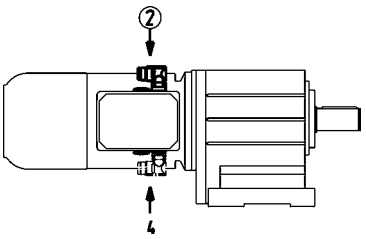
ICN connector

Connector position when using KK2/KK3

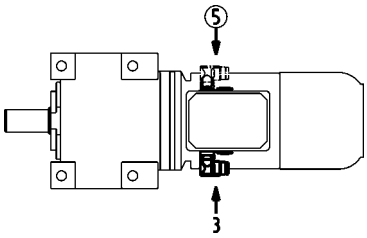
Terminal box in position 2



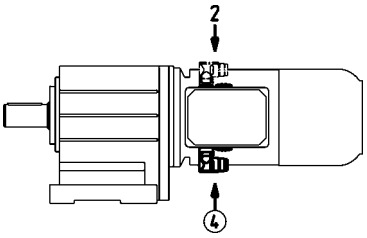
Terminal box in position 3

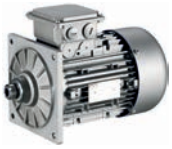


Terminal box in position 4



Terminal box in position 5

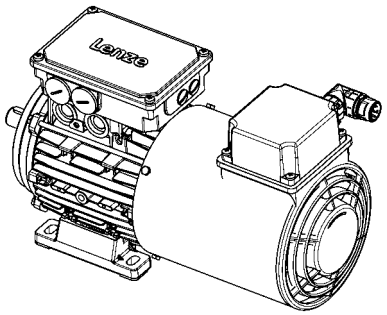




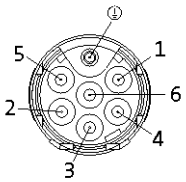
ICN connector

Blower connection

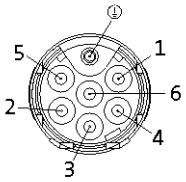
The blower is also optionally available with an ICN connector fixed to the terminal box of the blower for exceptionally fast commissioning. The connectors are fitted with a bayonet fixing, which is also compatible with conventional union nuts. Existing counter plugs can therefore continue to be used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

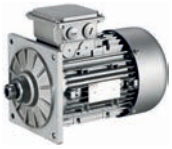


► Blower 1-ph

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

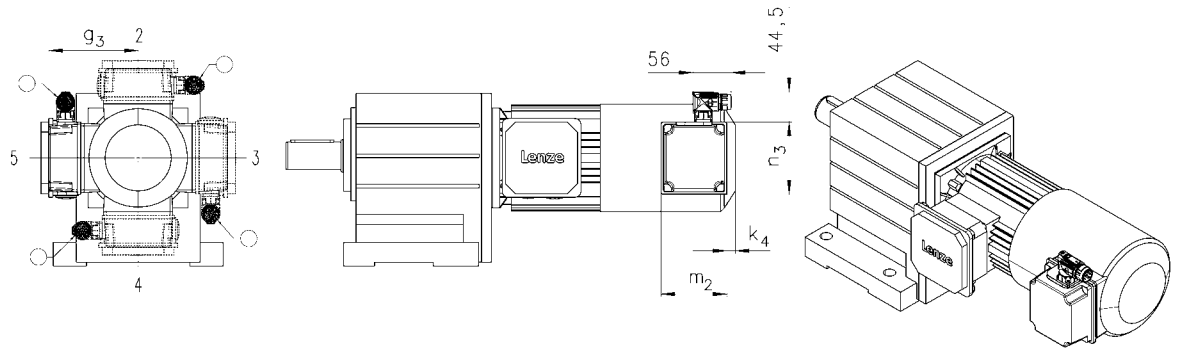
► Blower 3-ph

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



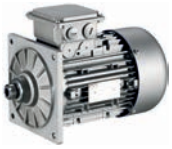
ICN connector

Dimensions of blower



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

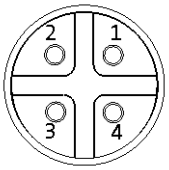
► In addition, the cover of the blower terminal box (including connectors) can be rotated progressively through 90° if necessary.

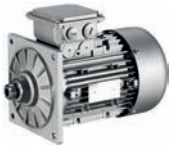


M12 connector

IG128-24V-H incremental encoder connection

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

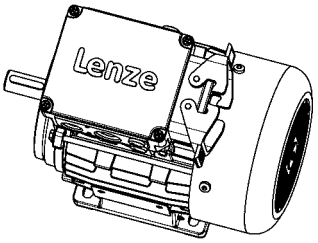
Pin assignment			
Contact	Designation	Meaning	
1	$+U_B$	Supply +	
2	B	Track B	
3	GND	Mass	
4	A	Track A	

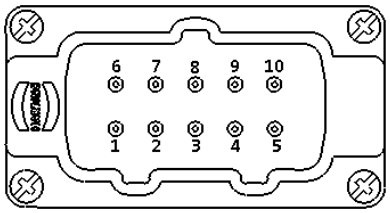


HAN connector

10E

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

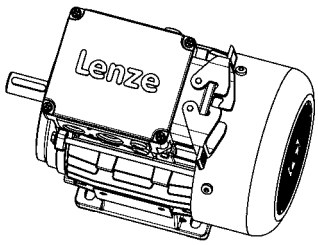


Pin assignment		
Contact	Meaning	
1	Terminal board: U1	
2	Terminal board: V1	
3	Terminal board: W1	
4	Brake +/AC	
5	Brake -/AC	
6	Terminal board: W2	
7	Terminal board: U2	
8	Terminal board: V2	
9	Thermal sensor: +KTY/PTC/TKO	
10	Thermal sensor: KTY/PTC/TKO	

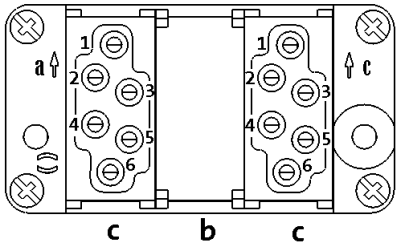
HAN connector

Modular

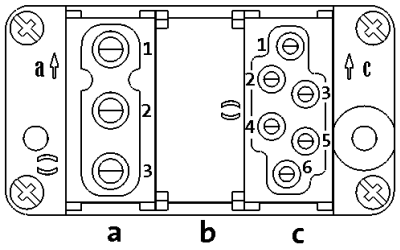
The connector is available with two different power modules (16 A or 40 A), depending on the rated motor current. The motor connection is determined in the terminal box and must be checked before commissioning.

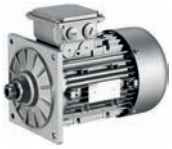


► HAN modular 16 A

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

► HAN modular 40 A

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



HAN connector

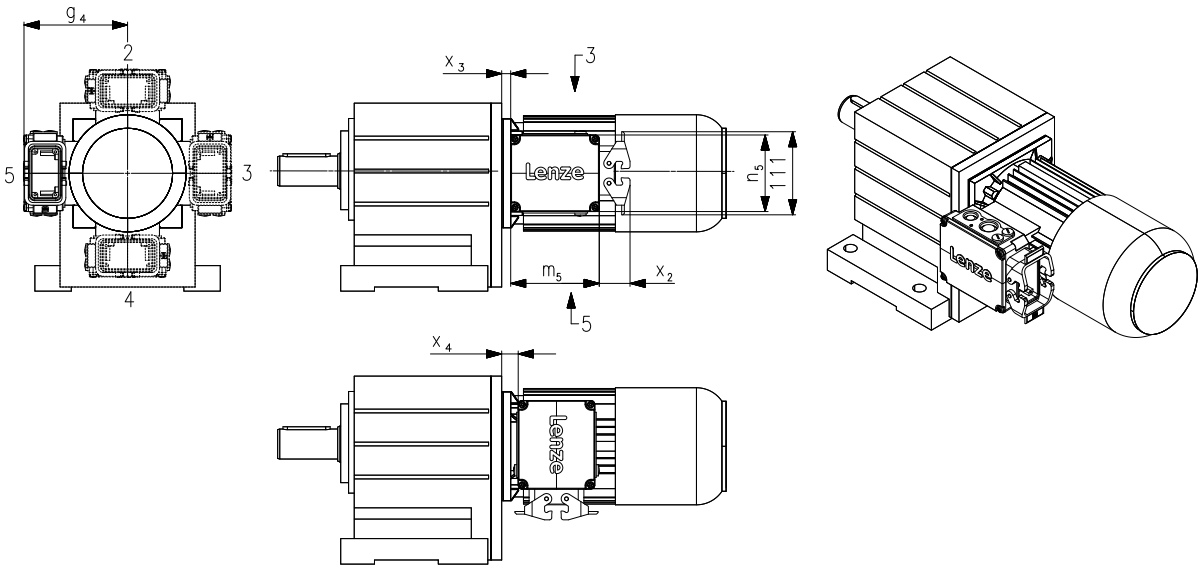
Motor type	M□□MAXX M□□MABR	M□□MAZE M□□MABZ
Motor frame size		
	Terminal box with HAN connector	
063-32 063-42	HAN-10E HAN modular	
071-32 071-42	HAN-10E HAN modular	HAN-10E HAN modular
080-32 080-42	HAN-10E HAN modular	HAN-10E HAN modular
090-32	HAN-10E HAN modular	HAN-10E HAN modular
100-12 100-32	HAN-10E HAN modular	HAN-10E HAN modular
112-22		
132-12 132-22 132-32	HAN modular	HAN modular

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

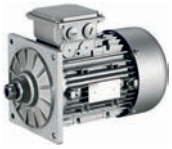
HAN connector

Dimensions

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



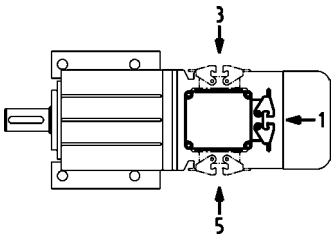
Size			
Motor			
	g_4	x_3	x_4
	[mm]	[mm]	[mm]
063	120	5.00	6.00
071	129	7.00	8.00
080	138	11.0	19.0
090	143	15.0	23.0
100	154	16.0	24.0
112	164	13.5	21.5
132	233	34.5	4.50
160	248	39.0	9.00



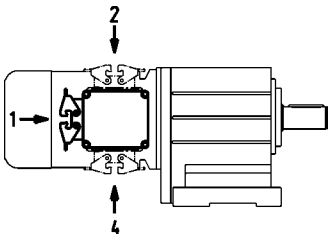
HAN connector

Position of connector

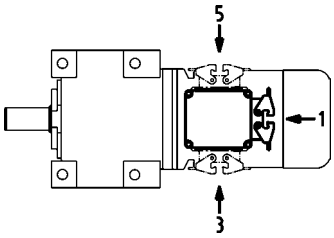
Connector in position 2



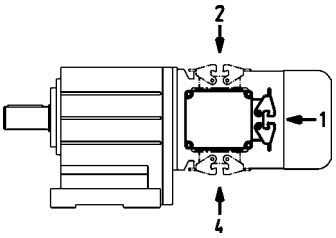
Connector in position 3



Connector in position 4

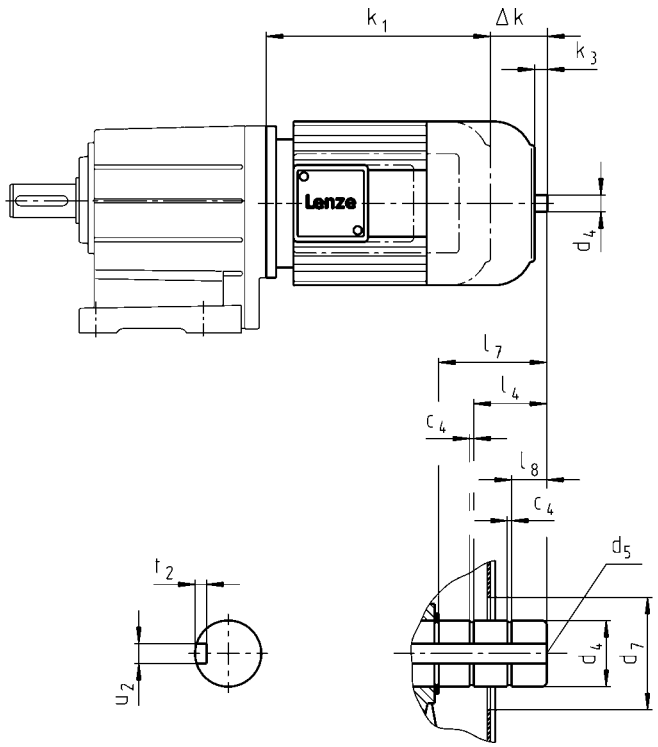


Connector in position 5



2nd shaft end

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



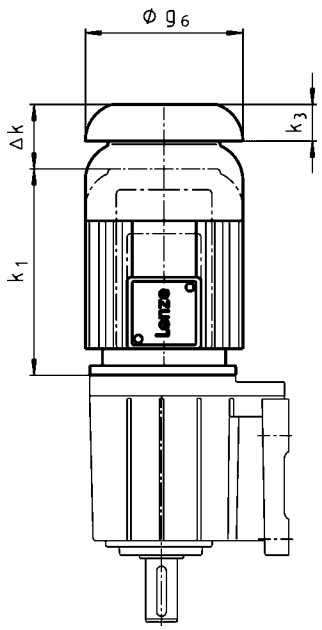
Motor type	
Built-on accessories	M□□MAZE M□□MABZ

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

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

Protection cover

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

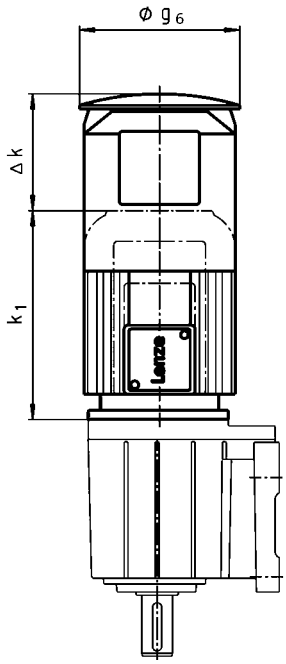


	Motor type					
	M□□MAXX	M□□MABR	M□□MABS M□□MABI M□□MABA	M□□MARS M□□MAIG M□□MAAG		

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

Protection cover

Dimensions, forced ventilated (4/6-pole)



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

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