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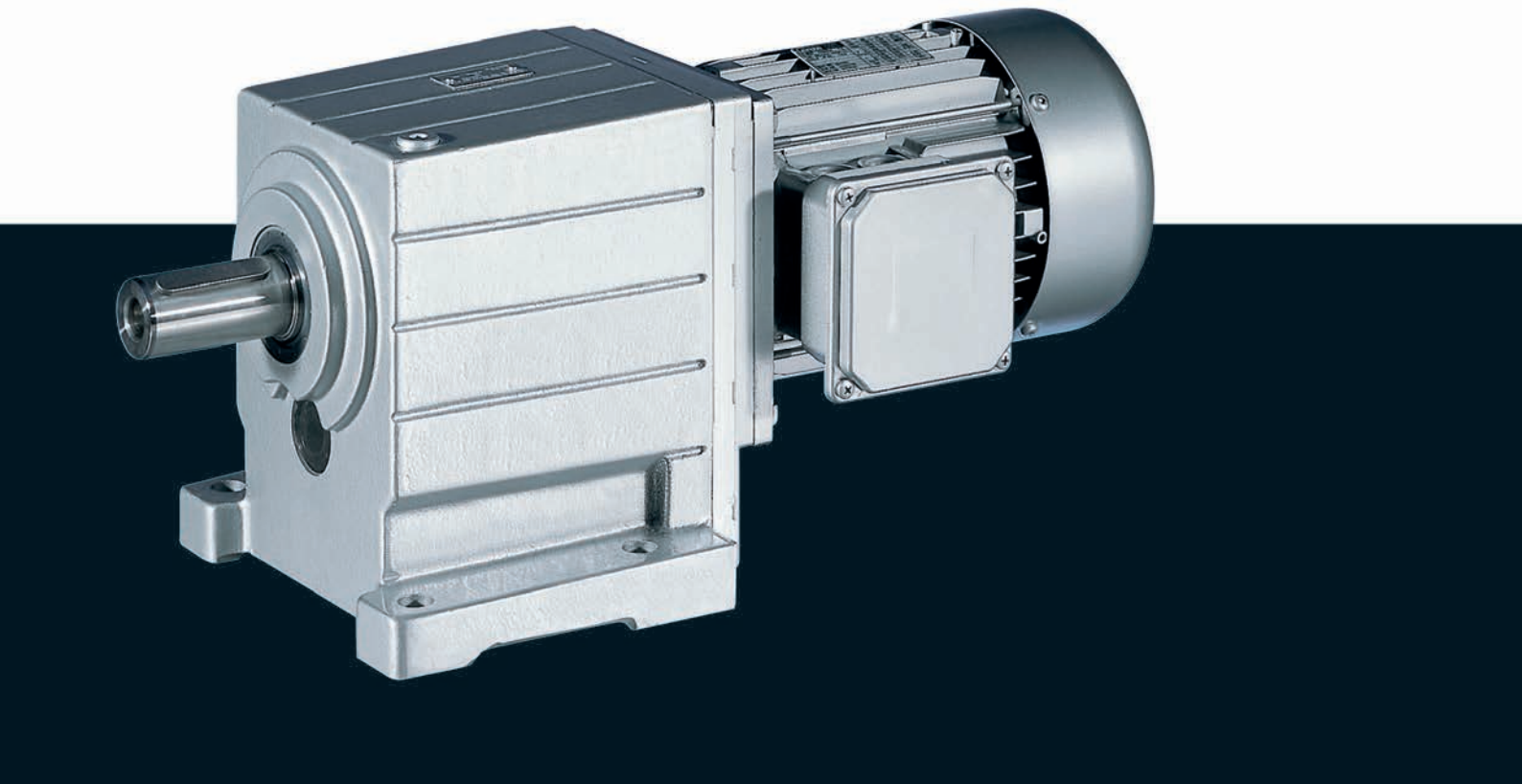
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Find the *Lenze GST04-2M VBR071C32* at our website: *Click HERE*

GST helical gear-boxes

Inverter operation
5.5 ... 45 kW (efficiency class IE3)



GST helical gearboxes

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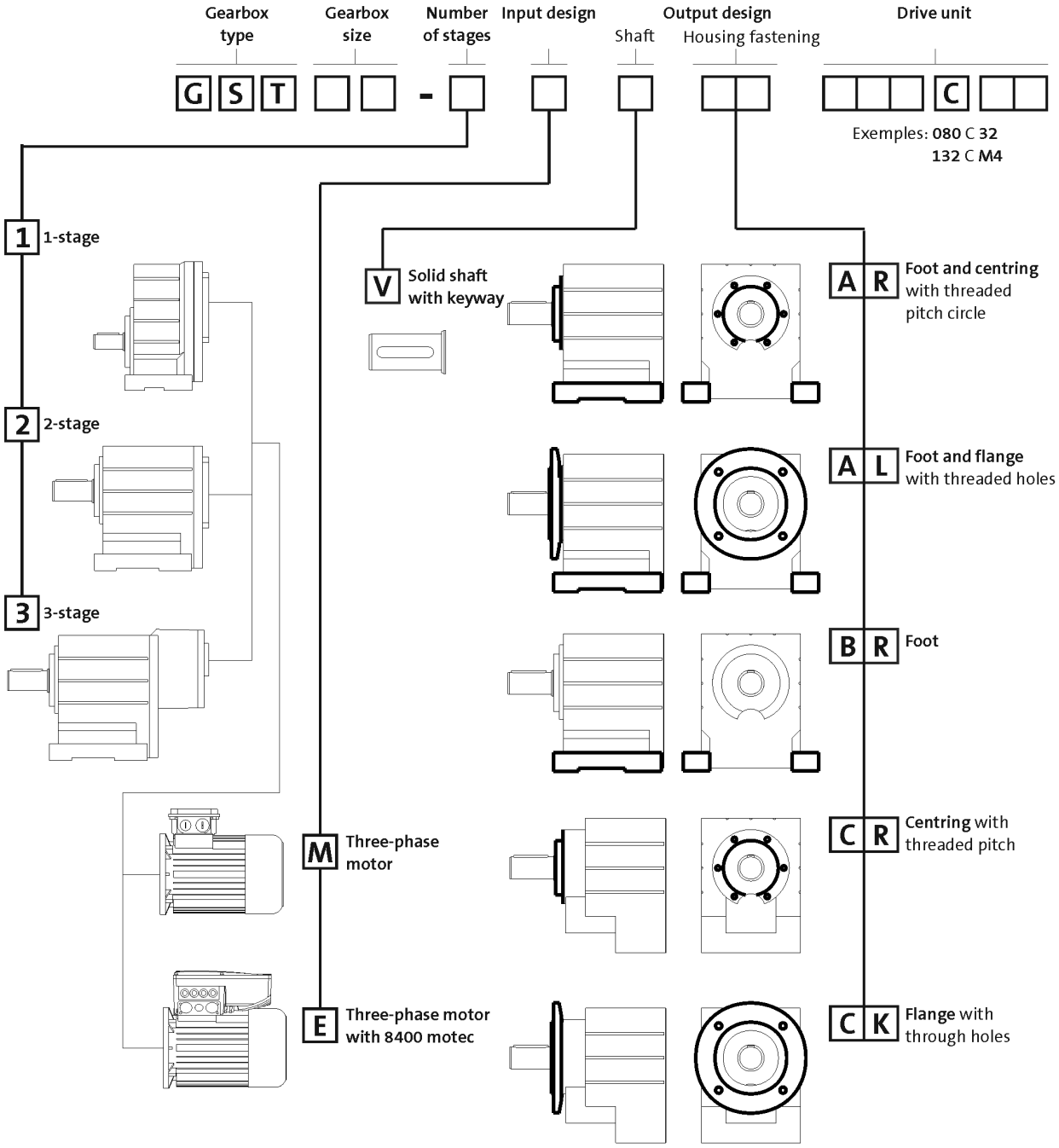
List of abbreviations

$\eta_{c=1}$		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



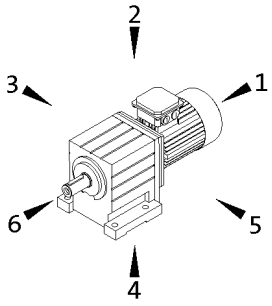
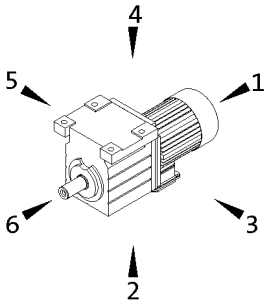
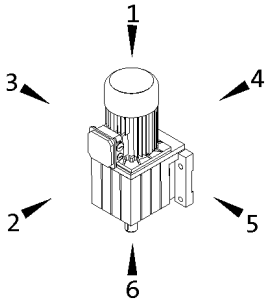
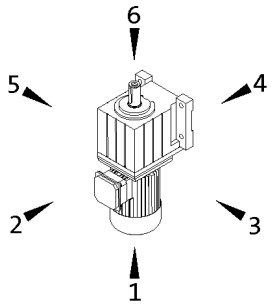
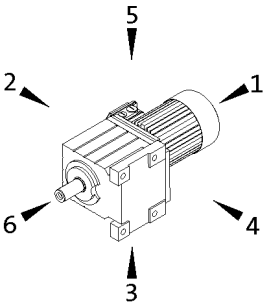
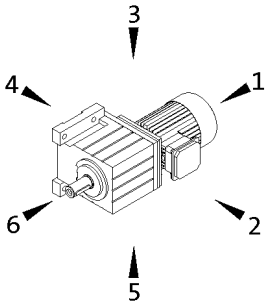
	Output design		
	V	K	L
	d x l [mm]	Øa2 [mm]	Øa2 [mm]
GST03-2	14x28	120/140/160	
	20x40	120/140/160	
GST04-1	16x32	120/140/160	
GST04-2	20x40	120/140/160	120/140
GST05-1	20x40	120/140/160/200	
GST05-2/3	25x50	120/140/160/200	120/140/160
GST06-1	25x50	160/200	

	Output design		
	V	K	L
	d x l [mm]	Øa2 [mm]	Øa2 [mm]
GST06-2/3	30x60	160/200	160/200
GST07-1	30x60	200/250	
GST07-2/3	40x80	200/250	200/250
GST09-1	40x80	250/300	
GST09-2/3	50x100	250/300	250/300
GST11-2/3	60x120	300/350	300/350
GST14-2/3	80x160	350/400	350/400



Product key

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

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

Terminal box / motec: 2, 3, 4, 5

Gearbox designs

Basic versions	
Motor efficiency	Standard efficiency Increased efficiency (IE2) Premium efficiency (IE3)
Surface and corrosion protection	No OKS (unpainted, aluminium housing) for GST03 OKS-G (primer: grey) OKS-S (paint: RAL 7012)
Lubricant	CLP 460 (mineral)
Ventilation	Oil control plugs for GST05 to 14 Breather elements for GST06 ... 14

Options	
Surface and corrosion protection	OKS-G (primer: grey) for GST03-2 OKS-S (special paint according to RAL) OKS-M (special paint according to RAL) OKS-L (special paint according to RAL)
Lubricant	CLP HC 320 (synthetic) CLP HC 220 USDA H1 (synthetic)
Shaft sealing rings	Driven shaft: Viton
Bearings	Driven shaft: reinforced for GST04 to 09-2/3
Ventilation	Breather elements for GST05 Compensation reservoir for GST09 to 14-2 in mounting position C
Nameplate	Metal nameplate (supplied loose) Adhesive nameplate (supplied loose)



Product information

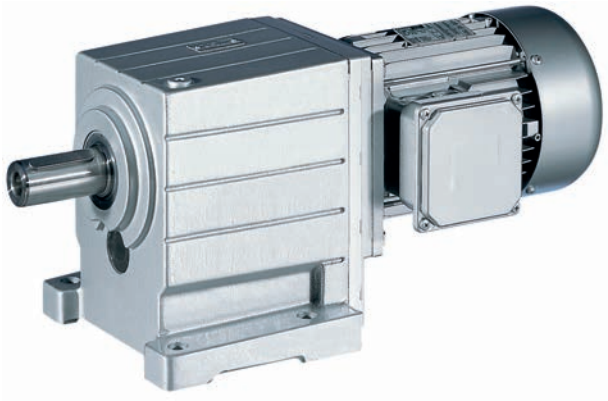
Lenze provides a geared motor construction kit, which covers a wide range of requirements. Numerous drive-side and output-side options enable precise adaptation of the drive to the specific application. This is the basis for versatile applications and functional scalability of our gearboxes and geared 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.

Robust design with high efficiency

Together with three-phase AC motors, our helical gearboxes form a compact and powerful drive unit. They are rugged in design and feature high permissible radial forces, closely stepped speed reduction ratios and minimum backlash. The gearboxes are available as 1 and 2 and 3-stage versions with a torque of up to 5,920 Nm and a ratio of up to i= 435.

Types

- 1-, 2- and 3-stage gearboxes
- Solid shaft with keyway
- Foot or flange mounting
- With m500 three-phase AC motors (efficiency classes IE3) in the power range 5.5 ... 45 kW





Functions and features

Gearbox type	GST
Housing	
Design	Cuboid
Material	Aluminium / cast iron
Solid shaft	
Design	with keyway to DIN 6885
Tolerance	k6 (d ≤ 50 mm) m6 (d > 50 mm)
Material	Tempered steel C45 or 42CrMo4
Hollow shaft	
Design	
Tolerance	
Material	
Toothed parts	
Design	Ground tooth flanks Optimised tooth flank geometry
Material	Case-hardened steel
Shaft-hub joint	
	1st stage/prestage/helical (bevel) gearbox: Friction-type connection Output stage (= 2nd, 3rd or 4th stage): Friction-type or positive-fit connection
Shaft sealing rings	
Design	With dust lip
Material	NB / FP
Bearing	
Design	Ball bearing / tapered-roller bearing depending on size and design
Lubricants	
Standard	DIN 51502
Quantities	corresponding to mounting position (see operating instructions)
Mechanical efficiency	
1-stage gearboxes [$\eta_{c=1}$]	0.98
2-stage gearboxes [$\eta_{c=1}$]	0.97
3-stage gearboxes [$\eta_{c=1}$]	0.95
4-stage gearboxes [$\eta_{c=1}$]	
Notes	



Functions and features

Lubricants

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

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

Lubricant table

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

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



Functions and features

Surface and corrosion protection

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

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

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



Functions and features

Structure of surface coating

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

► The gearboxes GST 03 have an aluminium housing, therefore a dipping primer is dispensed with in the case of these gearboxes.



Functions and features

Ventilation

Non-ventilated gearboxes
No ventilation is required for gearboxes GST03 to 04.

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

Ventilated gearboxes
Gearboxes GST06 to 14 are supplied with breather elements as standard.

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

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



Dimensioning

General information about the data provided in this catalogue

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 gears;
- the load and the speed
- the ambient conditions: temperature, air circulation, input or dissipation via shafts and the foundation

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

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

- if the following input speeds n_1 are exceeded:

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

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

Gearbox type	Gearbox size	Ratio i
GST helical gearboxes	07, 09, 11, 14	≤ 10

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.

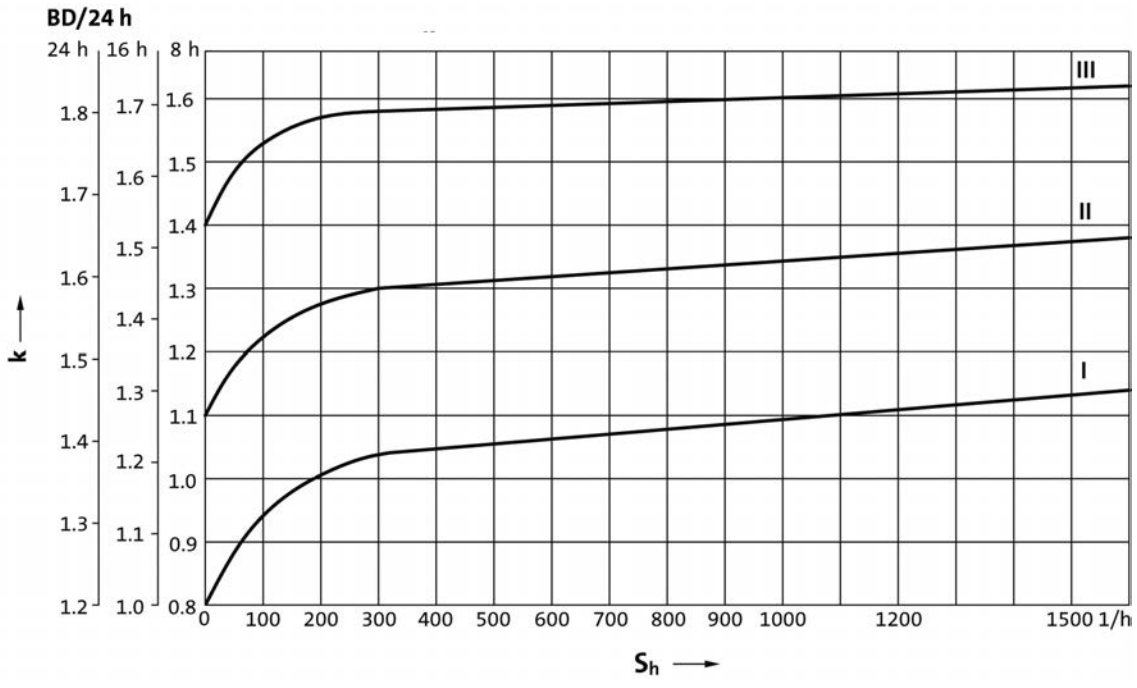
Requierement: c ≥ k

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	Intensity	
I	Smooth operation, small or light jolts	$F_I \leq 1.25$	$F_I = \frac{\frac{J_L}{i^2} + J_M + J_B + J_Z}{J_M + J_B + J_Z}$
II	Uneven operation, average jolts	$1.25 < F_I \leq 4$	
III	Uneven operation, severe jolts and/or alternating load	$F_I > 4$	

J_L= moment of inertia of the load
i = gearbox ratio
J_M= moment of inertia of the motor
J_B= moment of inertia of the motor brake
J_Z= moment of inertia of additional built-on motor accessories

Application factor (inverter operation)



S_h= switching operations/hour



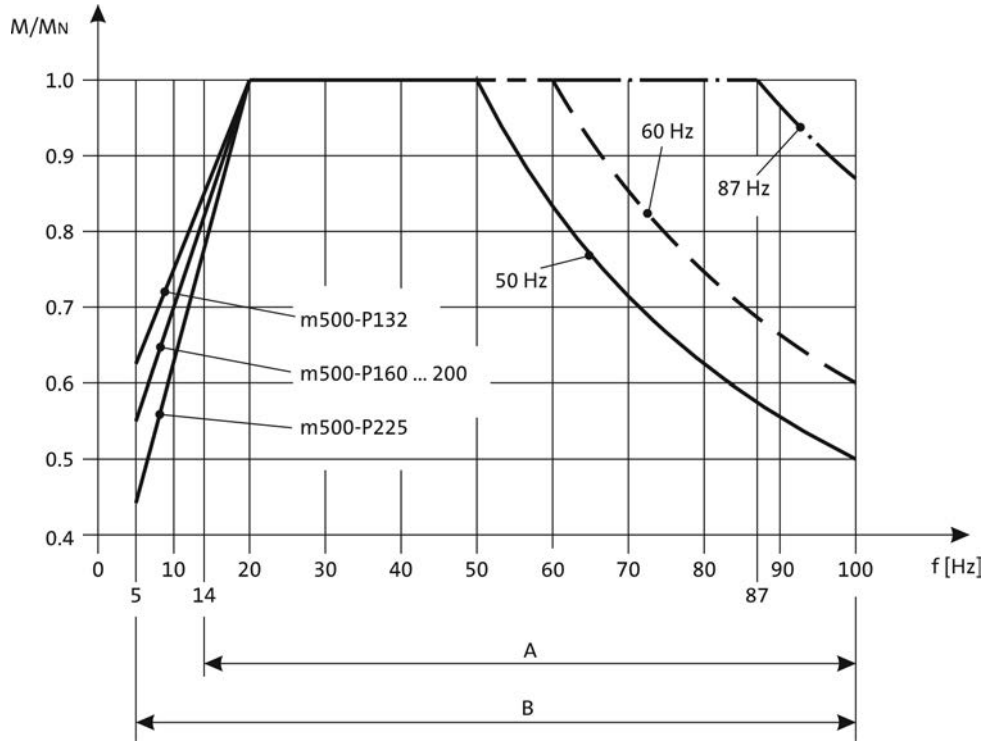
Dimensioning

Torque derating at low motor frequencies

During operation with the rated torque at low speeds (< 20 Hz), the integral fan does not rotate fast enough anymore to ensure sufficient cooling of the motor. In order to prevent overheating, operation without a blower requires a torque reduction of the motor.
The blower cools the motor steadily and irrespective of the motor speed. A torque reduction is not required and the motor can be actuated with its rated torque from 5 Hz to the rated frequency.

The diagram shows the motor frame size-dependent torque reduction for self-ventilated motors, taking the thermal behaviour during actuation of the inverter into consideration.

Torque characteristics



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

6.1

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

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

Please contact your Lenze sales office.



Dimensioning

Notes on the selection tables

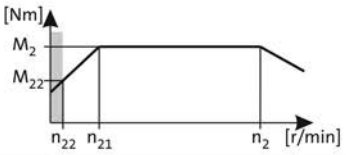
The selection tables show the available combinations of gearbox type, number of stages, ratio and motor. They are used only to provide basic orientation.
The following legend indicates the structure of the selection tables.

Rated power Prated of the drive motor depending on the rated frequency

50 Hz: P_N = 5.5 kW
87 Hz: P_N = 9.6 kW

2-stufige Getriebe ← **Number of the gear stage of the gearbox**

Torque diagram



Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
118	432	2.9	12	268	49	432	118	432	2.9				12.362	GST09	-P132M4	69
116	439	1.4	12	272	48	439	116	439	1.4				12.571	GST07	-P132M4	63

Product Gearbox
Product Motor
Ratio i
Page number for dimensions

Load capacity c of the gearbox
c is the ratio between the permissible rated torque of the gearbox and the rated torque of the three-phase AC motor (converted to the driven shaft).
c must be always higher than the service factor **k** determined for the application **k**.

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

Mains operation
Output speed **n2**
Output torque **M2**

Inverter operation
The speed and torque data are valid for self-ventilated and forced ventilated drives. Forced ventilated drives can always output the torque **M2** in the entire setting ranges. In the case of self-ventilated drives, a reduction to **M22** is required in the lower speed range.

The following applies to self-ventilated geared motors:
n22 is the minimum speed where the torque **M22** is permissible, from **n21** to **n2**, the maximum torque is **M2**
The following applies to forced ventilated geared motors:
From the minimum speed **n22** to **n2**, the maximum torque is **M2**

Motor voltages

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



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 ☐ High efficiency (IE3)

Rated frequency ☐ 50 Hz ☐ 60 Hz ☐ 87 Hz

Ratio i ☐☐☐☐

GST ☐☐ – ☐ 1 / 2 / 3 ☐ M / E ☐ V ☐ A / B / C ☐ R / K / L

Motor frame size ☐☐☐C☐☐

Solid shaft d = ☐ mm (only with GST03)

Flange a_2 = ☐ mm

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

Position of system blocks Terminal box 2 ☐ 3 ☐ 4 ☐ 5 ☐

Surface and corrosion protection

GST03: ☐ Without OKS (unpainted)

GST04 ... 14: ☐ OKS-S colour: RAL 7012 ☐ OKS-G (primed)

Options

Special lubricants

☐ CLP HC 320 (synthetic)

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

Surface and corrosion protection

☐ OKS-S (small)

☐ OKS-M (medium) RAL ☐☐☐☐

☐ OKS-L (high)

☐ OKS-G (primed) only with GST03

Output shaft bearing

☐ Reinforced bearing for GST04 ... 09-2

Shaft sealing rings

☐ Viton

Breathing

☐ Breather elements for GST05

☐ Compensation reservoir in mounting position for GST 09 ... 14-2

6.1



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 — 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

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)

6.1



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

☐ TKO ☐ KTY 83-110 ☐ KTY 84-130

☐ PTC

Further options

☐ 2nd nameplate (adhesive nameplate/metal nameplate)

6.1



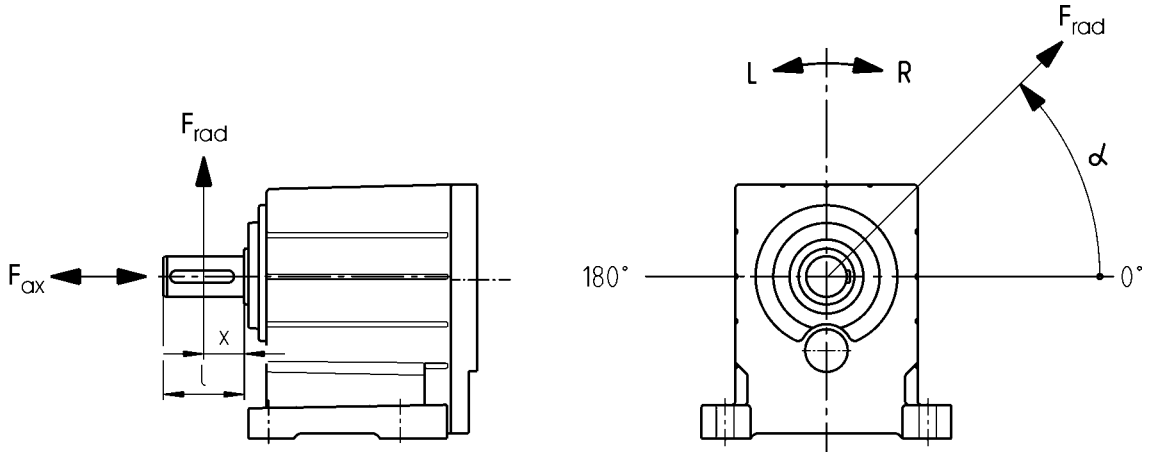
Permissible radial and axial forces at output

Permissible radial force
$F_{rad,per} = \min(f_w \times f_\alpha \times F_{rad,max}\ ;\ f_w \times F_{rad,max}$ at $n_2 \leq 50$ r/min)

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

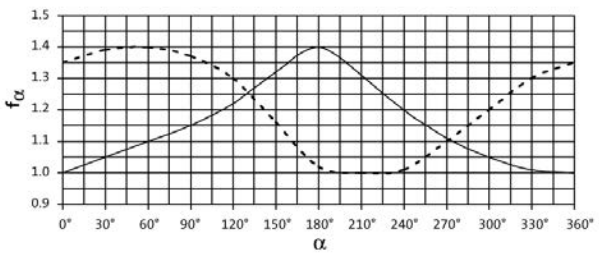
If F_{rad} **and** $F_{ax} \neq 0$, please contact your Lenze sales office.

Application of forces

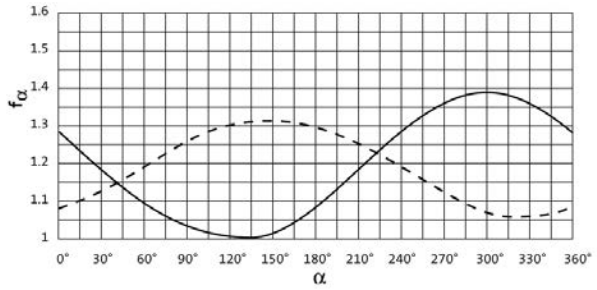


Effective direction factor f_α at output shaft

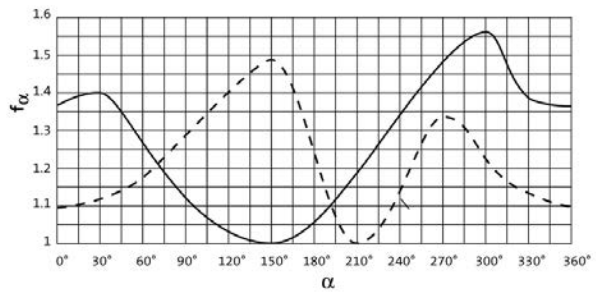
GST03-2



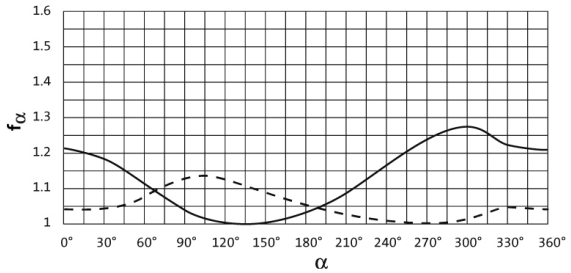
GST04 to 09-1



GST04 to 09-2, 3



GST11 to 14-2, 3



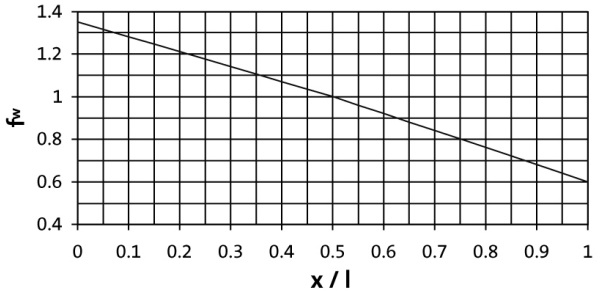
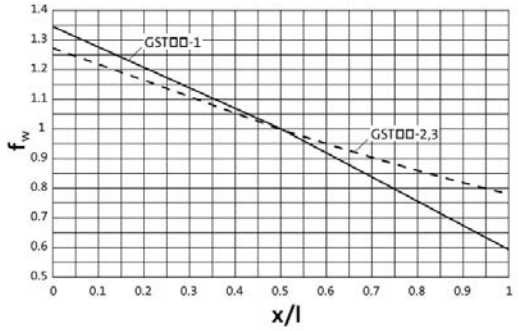
——— Direction of rotation R
— — — Direction of rotation L

6.1



Permissible radial and axial forces at output

Additional load factor f_w at output shaft

GST03-2	GST04 to 09-1, 2, 3
	

GST□□-1

Size	n_2 [r/min]								
Gearbox	2500	1600	1000	600	400	200	125	80	≤50

	Max. radial force, Solid 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]
GST04	100	180	440	600	850	1050	1050	1050	1050
GST05	100	250	550	750	1400	2000	2300	2300	2300
GST06	200	600	800	800	1100	2200	2900	3500	3500
GST07	700	1000	1200	1300	1900	3000	3900	4700	5300
GST09	1750	2200	2500	2500	3500	6200	7900	9000	9500

	Max. axial force, Solid 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]
GST04	600	800	1000	1300	1400	1400	1400	1400	1400
GST05	800	1100	1400	2000	2000	2000	2000	2000	2000
GST06	900	1200	1500	2000	2500	2500	2500	2500	2500
GST07	1200	1600	2000	2700	3300	3700	3700	3700	3700
GST09	2500	3400	4300	5700	6800	7000	7000	7000	7000

6.1

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



Permissible radial and axial forces at output

GST□□-2 / 3 with standard bearings

Size	n_2 [r/min]									
Gearbox	1000	630	400	250	160	100	63	40	25	≤16

	Max. radial force, Solid shaft									
	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
GST03	100	300	630	710	800	920	1100	1400	1500	1500
GST04	730	950	1250	1450	1700	2100	2500	2650	2650	2650
GST05	1150	1500	1950	2200	2600	3000	3500	3800	3900	3900
GST06	140	750	2350	2600	3100	3600	4300	4350	4350	4350
GST07	140	2050	3400	3800	4500	5400	6400	7600	9100	9500
GST09	1500	1950	6800	7600	9400	11500	11500	11500	11500	11500
GST11	11500	14400	17000	19000	21000	21000	21000	21000	21000	21000
GST14	16600	20700	24000	27000	31000	36000	39000	40000	40000	40000

	Max. axial force, Solid shaft									
	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
GST03	300	400	600	700	800	900	1000	1000	1000	1000
GST04	600	800	1100	1300	1650	2000	2000	2000	2000	2000
GST05	1200	1600	2000	2300	2650	3100	3600	3600	3600	3600
GST06	500	600	850	900	1250	1800	2600	3600	4800	4800
GST07	1100	1500	1900	2200	2900	3900	5300	7000	7000	7000
GST09	1300	1800	2300	2800	4000	5600	8100	11000	12000	12000
GST11	5700	7600	9500	10000	11000	14000	16000	16000	16000	16000
GST14	9000	12000	15000	16000	18000	20000	20000	20000	20000	20000

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



Permissible radial and axial forces at output

GST□□-2 / 3 with reinforced bearing

Size	n_2 [r/min]									
Gearbox	1000	630	400	250	160	100	63	40	25	≤16

	Max. radial force, Solid shaft (reinforced bearings))									
	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
GST04	1900	2350	2850	3150	3550	3750	3750	3750	3750	3750
GST05	3350	3950	4900	5400	5400	5400	5400	5400	5400	5400
GST06	4250	5100	6300	7000	7700	7700	7700	7700	7700	7700
GST07	5650	6850	8500	9500	10500	12500	13000	13000	13000	13000
GST09	11300	14000	16500	17000	17000	17000	17000	17000	17000	17000

	Max. axial force, Solid shaft (reinforced bearings))									
	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$	$F_{ax,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
GST04	1000	1300	1700	1900	2200	2500	2500	2500	2500	2500
GST05	2100	2800	3600	3900	4300	4500	4500	4500	4500	4500
GST06	2100	2800	3500	3600	4200	4900	5700	5700	5700	5700
GST07	3300	4400	5500	6100	7100	8300	9000	9000	9000	9000
GST09	4800	6400	8000	9000	10500	12500	14000	14000	14000	14000

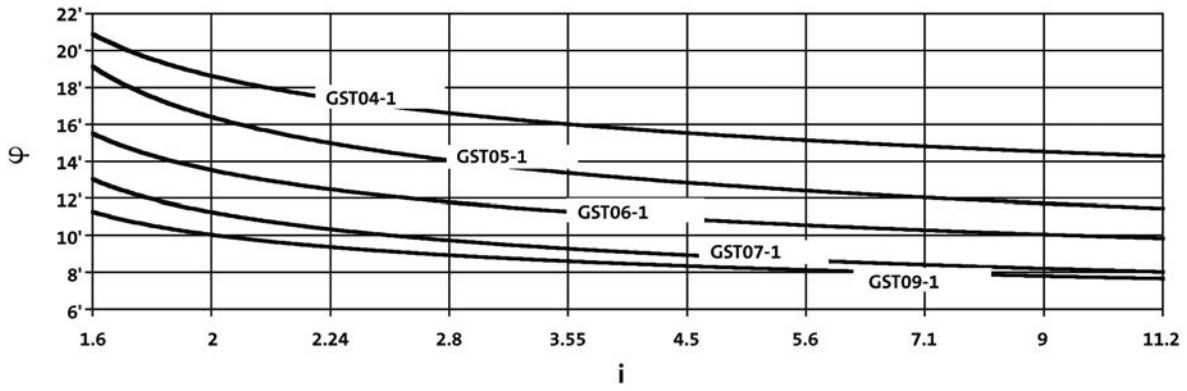
- Application of force F_{rad}: centre of shaft journal (x = l/2)
- $F_{ax,max}$ only valid with F_{rad} = 0



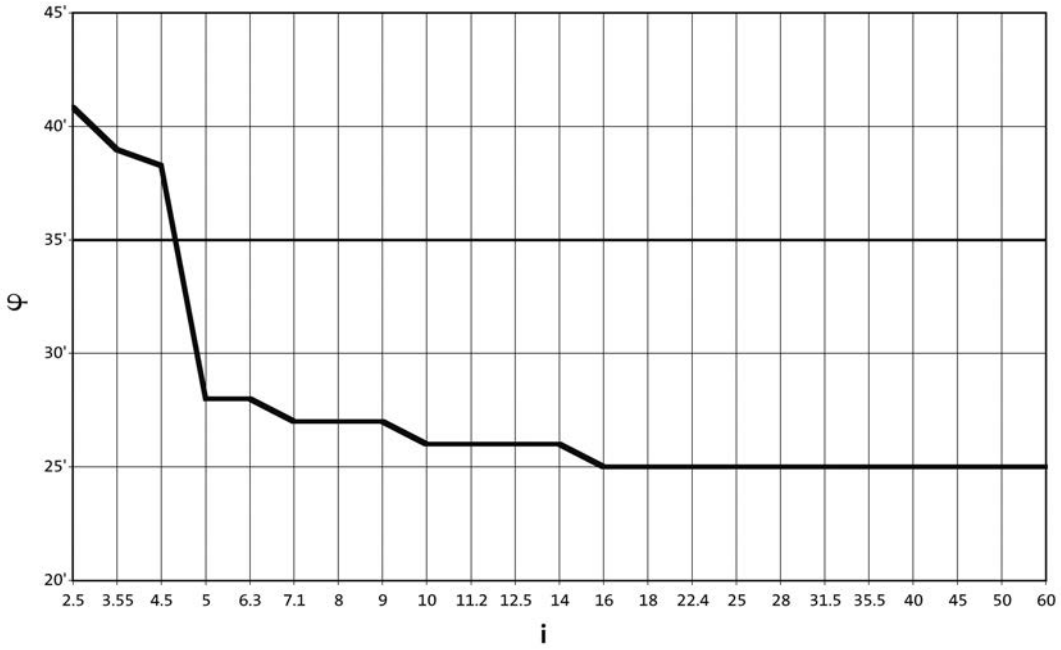
Output backlash in angular minutes

► Backlash ϕ depending on ratio i

GST04 to 09-1



GST03-2



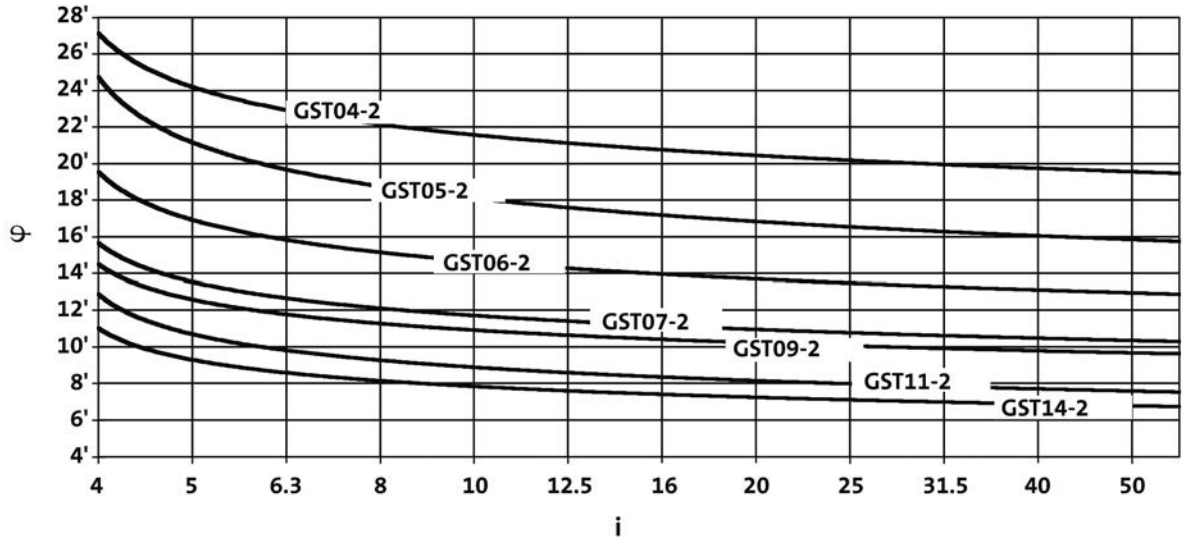
6.1



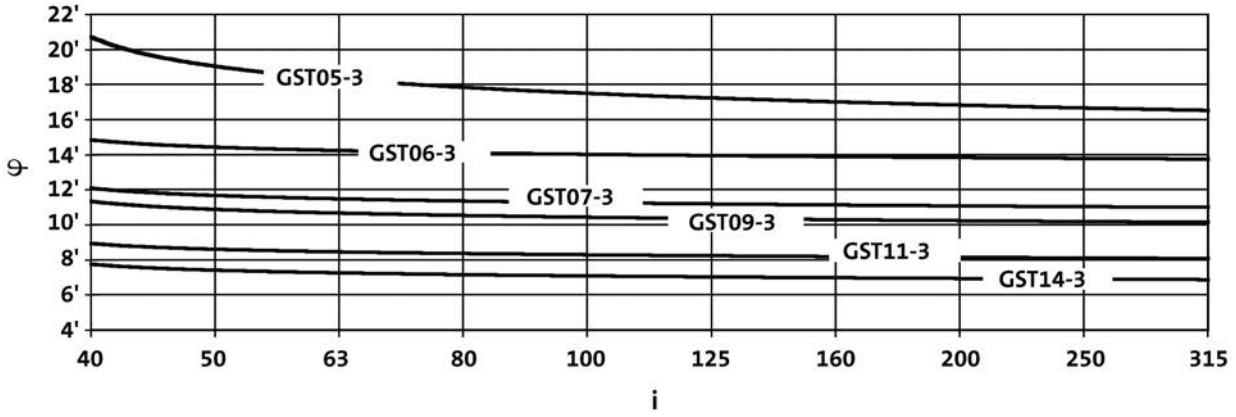
Output backlash in angular minutes

► Backlash ϕ depending on ratio i

GST04 to 14-2



GST05 to 14-3



6.1



Moments of inertia

GST□□-1

► Moment of inertia (J) depending on ratio i

Gearbox			GST04
1.600	J	[kgcm²]	0.267
2.048	J	[kgcm²]	0.194
2.240	J	[kgcm²]	0.172
2.857	J	[kgcm²]	0.126
3.500	J	[kgcm²]	0.099
4.400	J	[kgcm²]	0.067
5.667	J	[kgcm²]	0.047
7.182	J	[kgcm²]	0.031
9.000	J	[kgcm²]	0.022
11.857	J	[kgcm²]	0.013

Gearbox			GST05
1.600	J	[kgcm²]	0.760
2.048	J	[kgcm²]	0.549
2.240	J	[kgcm²]	0.480
2.857	J	[kgcm²]	0.354
3.500	J	[kgcm²]	0.272
4.556	J	[kgcm²]	0.175
5.667	J	[kgcm²]	0.129
7.333	J	[kgcm²]	0.062
8.900	J	[kgcm²]	0.060
11.375	J	[kgcm²]	0.039

Gearbox			GST06
1.600	J	[kgcm²]	2.010
2.048	J	[kgcm²]	1.460
2.240	J	[kgcm²]	1.270
2.857	J	[kgcm²]	0.969
3.500	J	[kgcm²]	0.736
4.556	J	[kgcm²]	0.481
5.667	J	[kgcm²]	0.359
7.333	J	[kgcm²]	0.226
8.900	J	[kgcm²]	0.167
11.250	J	[kgcm²]	0.109

Gearbox			GST07
1.625	J	[kgcm²]	6.120
2.000	J	[kgcm²]	4.780
2.240	J	[kgcm²]	4.020
2.857	J	[kgcm²]	2.690
3.500	J	[kgcm²]	2.150
4.556	J	[kgcm²]	1.370
5.583	J	[kgcm²]	1.050
7.333	J	[kgcm²]	0.664
8.900	J	[kgcm²]	0.494
11.250	J	[kgcm²]	0.320

Gearbox			GST09
1.560	J	[kgcm²]	22.200
2.048	J	[kgcm²]	15.600
2.333	J	[kgcm²]	12.200
2.810	J	[kgcm²]	9.580
3.444	J	[kgcm²]	7.300
4.667	J	[kgcm²]	4.600
5.667	J	[kgcm²]	3.510
7.333	J	[kgcm²]	2.260
8.900	J	[kgcm²]	1.660
11.250	J	[kgcm²]	1.110

► 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

GST□□-2

► Moment of inertia (J) depending on ratio i

Gearbox			GST03
2.597	J	[kgcm²]	0.260
3.413	J	[kgcm²]	0.169
4.368	J	[kgcm²]	0.117
5.312	J	[kgcm²]	0.179
5.965	J	[kgcm²]	0.173
6.982	J	[kgcm²]	0.122
7.840	J	[kgcm²]	0.119
8.935	J	[kgcm²]	0.089
10.033	J	[kgcm²]	0.086
11.429	J	[kgcm²]	0.059
12.833	J	[kgcm²]	0.057
14.836	J	[kgcm²]	0.041
16.660	J	[kgcm²]	0.040
19.013	J	[kgcm²]	0.028
21.350	J	[kgcm²]	0.027
24.595	J	[kgcm²]	0.019
27.618	J	[kgcm²]	0.019
32.000	J	[kgcm²]	0.012
35.933	J	[kgcm²]	0.012
41.455	J	[kgcm²]	0.008
46.550	J	[kgcm²]	0.008
52.909	J	[kgcm²]	0.005
59.413	J	[kgcm²]	0.005

Gearbox			GST04
2.956	J	[kgcm²]	0.337
3.333	J	[kgcm²]	0.324
4.053	J	[kgcm²]	0.312
4.571	J	[kgcm²]	0.300
5.187	J	[kgcm²]	0.222
5.850	J	[kgcm²]	0.215
6.400	J	[kgcm²]	0.189
7.040	J	[kgcm²]	0.264
8.000	J	[kgcm²]	0.257
9.010	J	[kgcm²]	0.193
9.856	J	[kgcm²]	0.170
11.200	J	[kgcm²]	0.166
12.571	J	[kgcm²]	0.126
14.286	J	[kgcm²]	0.123
15.400	J	[kgcm²]	0.098
17.500	J	[kgcm²]	0.097
19.360	J	[kgcm²]	0.063
22.000	J	[kgcm²]	0.062
24.933	J	[kgcm²]	0.044
28.333	J	[kgcm²]	0.043
31.600	J	[kgcm²]	0.030
35.909	J	[kgcm²]	0.030
39.600	J	[kgcm²]	0.021
45.000	J	[kgcm²]	0.021
52.171	J	[kgcm²]	0.013
59.286	J	[kgcm²]	0.013

► 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

GST□□-2

► Moment of inertia (J) depending on ratio i

Gearbox			GST05
2.956	J	[kgcm²]	0.986
3.333	J	[kgcm²]	0.944
4.053	J	[kgcm²]	0.903
4.571	J	[kgcm²]	0.864
5.187	J	[kgcm²]	0.637
5.850	J	[kgcm²]	0.613
6.400	J	[kgcm²]	0.533
7.238	J	[kgcm²]	0.400
8.163	J	[kgcm²]	0.388
9.010	J	[kgcm²]	0.543
10.000	J	[kgcm²]	0.300
11.200	J	[kgcm²]	0.462
13.016	J	[kgcm²]	0.178
14.356	J	[kgcm²]	0.131
16.190	J	[kgcm²]	0.128
17.500	J	[kgcm²]	0.271
20.044	J	[kgcm²]	0.164
22.778	J	[kgcm²]	0.161
24.933	J	[kgcm²]	0.119
28.333	J	[kgcm²]	0.117
32.267	J	[kgcm²]	0.079
36.667	J	[kgcm²]	0.078
39.160	J	[kgcm²]	0.058
44.500	J	[kgcm²]	0.057
50.050	J	[kgcm²]	0.039
56.875	J	[kgcm²]	0.038

Gearbox			GST06
3.033	J	[kgcm²]	2.720
3.333	J	[kgcm²]	2.610
4.160	J	[kgcm²]	2.510
4.571	J	[kgcm²]	2.410
5.324	J	[kgcm²]	1.760
5.850	J	[kgcm²]	1.710
6.400	J	[kgcm²]	1.470
7.040	J	[kgcm²]	2.070
8.163	J	[kgcm²]	1.060
9.010	J	[kgcm²]	1.500
10.000	J	[kgcm²]	0.820
11.200	J	[kgcm²]	1.260
12.571	J	[kgcm²]	0.955
14.286	J	[kgcm²]	0.932
15.400	J	[kgcm²]	0.748
17.500	J	[kgcm²]	0.733
20.044	J	[kgcm²]	0.457
22.778	J	[kgcm²]	0.450
24.933	J	[kgcm²]	0.332
28.333	J	[kgcm²]	0.326
32.267	J	[kgcm²]	0.221
36.667	J	[kgcm²]	0.218
39.160	J	[kgcm²]	0.162
44.500	J	[kgcm²]	0.160
49.500	J	[kgcm²]	0.110
56.250	J	[kgcm²]	0.108

► 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

GST□□-2

► Moment of inertia (J) depending on ratio i

Gearbox			GST07
3.048	J	[kgcm²]	8.200
3.350	J	[kgcm²]	7.920
4.225	J	[kgcm²]	7.650
4.643	J	[kgcm²]	7.390
5.200	J	[kgcm²]	5.640
5.714	J	[kgcm²]	5.460
6.400	J	[kgcm²]	4.490
7.150	J	[kgcm²]	6.270
8.125	J	[kgcm²]	6.040
8.800	J	[kgcm²]	4.730
9.856	J	[kgcm²]	3.900
11.200	J	[kgcm²]	3.780
12.571	J	[kgcm²]	2.860
14.286	J	[kgcm²]	2.790
15.400	J	[kgcm²]	2.260
17.500	J	[kgcm²]	2.210
20.044	J	[kgcm²]	1.380
22.778	J	[kgcm²]	1.350
24.567	J	[kgcm²]	1.020
27.917	J	[kgcm²]	1.010
32.267	J	[kgcm²]	0.664
36.667	J	[kgcm²]	0.653
39.160	J	[kgcm²]	0.487
44.500	J	[kgcm²]	0.479
49.500	J	[kgcm²]	0.330
56.250	J	[kgcm²]	0.325

Gearbox			GST09
4.056	J	[kgcm²]	27.000
4.457	J	[kgcm²]	25.900
5.324	J	[kgcm²]	18.100
5.850	J	[kgcm²]	17.500
6.667	J	[kgcm²]	14.200
7.305	J	[kgcm²]	11.300
8.027	J	[kgcm²]	11.000
9.010	J	[kgcm²]	15.200
10.267	J	[kgcm²]	12.400
11.667	J	[kgcm²]	12.100
12.362	J	[kgcm²]	9.790
14.048	J	[kgcm²]	9.530
15.156	J	[kgcm²]	7.650
17.222	J	[kgcm²]	7.490
20.533	J	[kgcm²]	4.500
23.333	J	[kgcm²]	4.410
24.933	J	[kgcm²]	3.380
28.333	J	[kgcm²]	3.320
32.267	J	[kgcm²]	2.250
36.667	J	[kgcm²]	2.210
39.160	J	[kgcm²]	1.640
44.500	J	[kgcm²]	1.620
49.500	J	[kgcm²]	1.120
56.250	J	[kgcm²]	1.100

► 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

GST□□-2

► Moment of inertia (J) depending on ratio i

Gearbox			GST11
4.056	J	[kgcm²]	82.200
4.457	J	[kgcm²]	79.000
5.324	J	[kgcm²]	55.400
5.850	J	[kgcm²]	53.500
6.400	J	[kgcm²]	45.700
6.864	J	[kgcm²]	67.500
7.800	J	[kgcm²]	65.100
9.010	J	[kgcm²]	46.800
9.856	J	[kgcm²]	40.200
11.200	J	[kgcm²]	39.000
12.571	J	[kgcm²]	29.400
14.286	J	[kgcm²]	28.700
15.400	J	[kgcm²]	23.000
17.500	J	[kgcm²]	22.500
20.289	J	[kgcm²]	14.300
23.056	J	[kgcm²]	14.100
24.933	J	[kgcm²]	10.600
28.333	J	[kgcm²]	10.400
32.267	J	[kgcm²]	7.040
36.667	J	[kgcm²]	6.930
39.160	J	[kgcm²]	5.150
44.500	J	[kgcm²]	5.080
49.500	J	[kgcm²]	3.520
56.250	J	[kgcm²]	3.440

Gearbox			GST14
4.225	J	[kgcm²]	226.000
4.643	J	[kgcm²]	216.000
5.200	J	[kgcm²]	168.000
5.714	J	[kgcm²]	161.000
6.286	J	[kgcm²]	141.000
7.150	J	[kgcm²]	183.000
8.027	J	[kgcm²]	100.000
8.800	J	[kgcm²]	139.000
9.841	J	[kgcm²]	75.100
11.000	J	[kgcm²]	119.000
12.362	J	[kgcm²]	89.000
14.048	J	[kgcm²]	86.600
15.156	J	[kgcm²]	67.600
17.222	J	[kgcm²]	66.000
20.044	J	[kgcm²]	45.800
22.778	J	[kgcm²]	44.900
24.567	J	[kgcm²]	33.200
27.917	J	[kgcm²]	32.600
32.267	J	[kgcm²]	21.500
36.667	J	[kgcm²]	21.200
39.160	J	[kgcm²]	15.700
44.500	J	[kgcm²]	15.500
49.500	J	[kgcm²]	10.600
56.250	J	[kgcm²]	10.500

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



Moments of inertia

GST□□-3

► Moment of inertia (J) depending on ratio i

Gearbox			GST05
36.267	J	[kgcm²]	0.195
46.259	J	[kgcm²]	0.141
56.667	J	[kgcm²]	0.108
63.467	J	[kgcm²]	0.192
71.238	J	[kgcm²]	0.073
80.952	J	[kgcm²]	0.139
91.746	J	[kgcm²]	0.050
99.167	J	[kgcm²]	0.107
116.277	J	[kgcm²]	0.033
124.667	J	[kgcm²]	0.072
145.714	J	[kgcm²]	0.023
160.556	J	[kgcm²]	0.050
179.067	J	[kgcm²]	0.033
191.973	J	[kgcm²]	0.014
224.400	J	[kgcm²]	0.023
255.000	J	[kgcm²]	0.023
295.638	J	[kgcm²]	0.014
335.952	J	[kgcm²]	0.014

Gearbox			GST06
39.200	J	[kgcm²]	0.362
44.000	J	[kgcm²]	0.195
51.022	J	[kgcm²]	0.320
53.900	J	[kgcm²]	0.178
67.760	J	[kgcm²]	0.114
70.156	J	[kgcm²]	0.160
80.952	J	[kgcm²]	0.203
87.267	J	[kgcm²]	0.150
99.167	J	[kgcm²]	0.150
109.707	J	[kgcm²]	0.096
124.667	J	[kgcm²]	0.096
141.289	J	[kgcm²]	0.063
160.556	J	[kgcm²]	0.063
179.067	J	[kgcm²]	0.043
203.485	J	[kgcm²]	0.042
231.733	J	[kgcm²]	0.040
255.000	J	[kgcm²]	0.029
290.400	J	[kgcm²]	0.027
330.000	J	[kgcm²]	0.027
382.590	J	[kgcm²]	0.026
434.762	J	[kgcm²]	0.025

Gearbox			GST07
39.200	J	[kgcm²]	0.974
44.000	J	[kgcm²]	0.534
51.022	J	[kgcm²]	0.843
53.900	J	[kgcm²]	0.484
65.079	J	[kgcm²]	0.313
70.156	J	[kgcm²]	0.431
79.762	J	[kgcm²]	0.536
85.983	J	[kgcm²]	0.400
97.708	J	[kgcm²]	0.399
111.915	J	[kgcm²]	0.238
127.176	J	[kgcm²]	0.237
139.211	J	[kgcm²]	0.166
158.194	J	[kgcm²]	0.166
180.156	J	[kgcm²]	0.108
204.722	J	[kgcm²]	0.107
236.622	J	[kgcm²]	0.101
248.458	J	[kgcm²]	0.077
268.889	J	[kgcm²]	0.101
326.333	J	[kgcm²]	0.073
367.033	J	[kgcm²]	0.094
417.083	J	[kgcm²]	0.067

Gearbox			GST09
40.136	J	[kgcm²]	2.140
43.267	J	[kgcm²]	1.550
49.167	J	[kgcm²]	1.530
53.044	J	[kgcm²]	1.380
60.278	J	[kgcm²]	1.370
71.867	J	[kgcm²]	1.170
81.667	J	[kgcm²]	1.160
93.541	J	[kgcm²]	0.706
99.167	J	[kgcm²]	1.070
113.585	J	[kgcm²]	0.652
129.074	J	[kgcm²]	0.649
141.289	J	[kgcm²]	0.458
160.556	J	[kgcm²]	0.456
182.844	J	[kgcm²]	0.297
207.778	J	[kgcm²]	0.295
236.622	J	[kgcm²]	0.275
252.167	J	[kgcm²]	0.212
268.889	J	[kgcm²]	0.275
326.333	J	[kgcm²]	0.198
363.000	J	[kgcm²]	0.255
412.500	J	[kgcm²]	0.183

► 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

GST□□-3

► Moment of inertia (J) depending on ratio i

Gearbox			GST11
40.816	J	[kgcm²]	6.360
44.000	J	[kgcm²]	5.660
50.000	J	[kgcm²]	5.600
57.968	J	[kgcm²]	4.770
61.250	J	[kgcm²]	4.080
71.011	J	[kgcm²]	3.520
80.694	J	[kgcm²]	3.500
87.267	J	[kgcm²]	3.220
99.167	J	[kgcm²]	3.200
112.933	J	[kgcm²]	2.930
129.074	J	[kgcm²]	1.940
146.993	J	[kgcm²]	1.770
158.194	J	[kgcm²]	1.400
180.156	J	[kgcm²]	1.290
207.778	J	[kgcm²]	0.880
236.622	J	[kgcm²]	0.818
252.167	J	[kgcm²]	0.633
268.889	J	[kgcm²]	0.816
326.333	J	[kgcm²]	0.589
363.000	J	[kgcm²]	0.756
412.500	J	[kgcm²]	0.545

Gearbox			GST14
40.185	J	[kgcm²]	24.400
42.580	J	[kgcm²]	18.300
48.386	J	[kgcm²]	18.100
53.148	J	[kgcm²]	20.500
59.321	J	[kgcm²]	13.200
69.042	J	[kgcm²]	11.500
78.457	J	[kgcm²]	11.400
93.541	J	[kgcm²]	6.570
96.157	J	[kgcm²]	10.400
106.296	J	[kgcm²]	6.520
130.278	J	[kgcm²]	6.000
139.211	J	[kgcm²]	4.420
158.194	J	[kgcm²]	4.400
171.111	J	[kgcm²]	5.490
204.722	J	[kgcm²]	2.860
236.622	J	[kgcm²]	2.650
248.458	J	[kgcm²]	2.060
268.889	J	[kgcm²]	2.650
326.333	J	[kgcm²]	1.920
363.000	J	[kgcm²]	2.450
412.500	J	[kgcm²]	1.780

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



Weights, 4-pole motors

1-stage gearboxes

				m500				
				-P132L4	-P132M4	-P160L4	-P160M4	-P180L4 -P180M4
GST	GST06	m	[kg]		71			
	GST07	m	[kg]	92	80			
	GST09	m	[kg]	105	93	155	144	193

2-stage gearboxes

				m500						
				-P132L4	-P132M4	-P160L4	-P160M4	-P180L4 -P180M4	-P180V4	-P225M4
GST	GST06	m	[kg]	89	77					
	GST07	m	[kg]	102	90		142			
	GST09	m	[kg]	126	114	176	165	214		
	GST11	m	[kg]	164	152	214	203	252		
	GST14	m	[kg]	240	228	290	279	328	356	454

3-stage gearboxes

				m500				
				-P132L4	-P132M4	-P160L4	-P160M4	-P180M4
GST	GST09	m	[kg]		126			
	GST11	m	[kg]	186	174			
	GST14	m	[kg]	280	268	330	319	368

► 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.

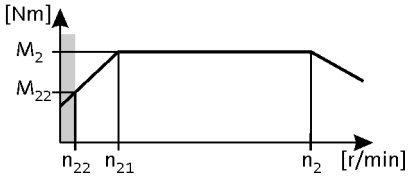


Additional weights for gearboxes

Product	Mass	
	Foot	Flange
	m	m
	[kg]	[kg]
GST06	2.70	3.00
GST07	4.40	4.00
GST09	8.50	7.00
GST11	14.9	10.5
GST14	28.0	15.5



Selection tables, 4-pole motors



50 Hz: P_N = 5.5 kW
87 Hz: P_N = 9.6 kW

1-stage gearboxes

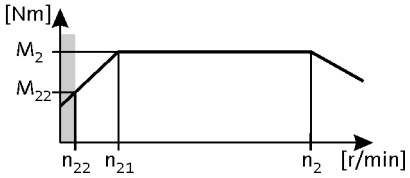
Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
913	57	1.1	91	35	375	57	913	57	1.1	1606	56	0.9	1.600	GST06	-P132M4	51
899	58	1.8	89	36	369	58	899	58	1.8				1.625	GST07	-P132M4	57
730	71	1.8	73	44	300	71	730	71	1.8				2.000	GST07	-P132M4	57
713	73	1.0	71	45	293	73	713	73	1.0				2.048	GST06	-P132M4	51
652	79	1.7	65	49	268	79	652	79	1.7				2.240	GST07	-P132M4	57
511	101	1.6	51	63	210	101	511	101	1.6				2.857	GST07	-P132M4	57
417	124	1.4	41	77	171	124	417	124	1.4				3.500	GST07	-P132M4	57
321	161	1.2	32	100	132	161	321	161	1.2				4.556	GST07	-P132M4	57
313	165	2.3	31	103	129	165	313	165	2.3				4.667	GST09	-P132M4	63
258	201	2.3	26	125	106	201	258	201	2.3				5.667	GST09	-P132M4	63

2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
481	106	1.6	48	66	198	106	481	106	1.6				3.033	GST06	-P132M4	54
438	116	1.5	44	72	180	116	438	116	1.5				3.333	GST06	-P132M4	54
436	117	3.1	43	73	179	117	436	117	3.1				3.350	GST07	-P132M4	60
351	145	1.3	35	90	144	145	351	145	1.3				4.160	GST06	-P132M4	54
346	147	2.7	34	92	142	147	346	147	2.7				4.225	GST07	-P132M4	60
319	160	1.3	32	99	131	160	319	160	1.3				4.571	GST06	-P132M4	54
315	162	2.6	31	101	129	162	315	162	2.6				4.643	GST07	-P132M4	60
281	181	2.4	28	113	115	181	281	181	2.4				5.200	GST07	-P132M4	60
274	186	1.1	27	115	113	186	274	186	1.1				5.324	GST06	-P132M4	54
256	199	2.3	25	124	105	199	256	199	2.3				5.714	GST07	-P132M4	60
250	204	1.1	25	127	103	204	250	204	1.1				5.850	GST06	-P132M4	54
228	223	1.0	23	139	94	223	228	223	1.0				6.400	GST06	-P132M4	54
228	223	2.1	23	139	94	223	228	223	2.1				6.400	GST07	-P132M4	60
204	250	2.0	20	155	84	250	204	250	2.0				7.150	GST07	-P132M4	60
180	284	1.9	18	176	74	284	180	284	1.9				8.125	GST07	-P132M4	60
166	307	1.7	17	191	68	307	166	307	1.7				8.800	GST07	-P132M4	60
148	344	1.6	15	213	61	344	148	344	1.6				9.856	GST07	-P132M4	60
130	391	1.5	13	243	54	391	130	391	1.5				11.200	GST07	-P132M4	60
125	407	3.0	12	253	51	407	125	407	3.0				11.667	GST09	-P132M4	66
118	431	2.9	12	268	49	431	118	431	2.9				12.362	GST09	-P132M4	66
116	439	1.4	12	272	48	439	116	439	1.4				12.571	GST07	-P132M4	60
104	490	2.6	10	304	43	490	104	490	2.6				14.048	GST09	-P132M4	66
102	499	1.3	10	309	42	499	102	499	1.3				14.286	GST07	-P132M4	60
96	529	2.5	9.6	328	40	529	96	529	2.5				15.156	GST09	-P132M4	66
95	537	1.2	9.4	333	39	537	95	537	1.2				15.400	GST07	-P132M4	60



Selection tables, 4-pole motors



50 Hz: P_N = 5.5 kW
87 Hz: P_N = 9.6 kW

2-stage gearboxes

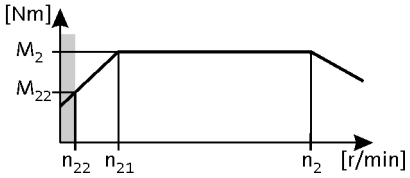
Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
85	601	2.3	8.4	373	35	601	85	601	2.3				17.222	GST09	-P132M4	66
83	611	1.1	8.3	379	34	611	83	611	1.1				17.500	GST07	-P132M4	60
71	717	2.1	7.1	445	29	717	71	717	2.1				20.533	GST09	-P132M4	66
63	814	1.9	6.2	505	26	814	63	814	1.9				23.333	GST09	-P132M4	66
59	870	3.2	5.8	540	24	870	59	870	3.2				24.933	GST11	-P132M4	72
59	870	1.8	5.8	540	24	870	59	870	1.8				24.933	GST09	-P132M4	66
52	989	3.0	5.1	613	21	989	52	989	3.0				28.333	GST11	-P132M4	72
52	989	1.5	5.1	613	21	989	52	989	1.5				28.333	GST09	-P132M4	66
45	1126	2.5	4.5	699	19	1126	45	1126	2.5				32.267	GST11	-P132M4	72
40	1280	2.3	4.0	794	16	1280	40	1280	2.3				36.667	GST11	-P132M4	72
37	1367	2.1	3.7	848	15	1367	37	1367	2.1				39.160	GST11	-P132M4	72
33	1553	1.9	3.3	963	14	1553	33	1553	1.9				44.500	GST11	-P132M4	72
30	1728	2.5	2.9	1072	12	1728	30	1728	2.5				49.500	GST14	-P132M4	78
26	1963	2.5	2.6	1218	11	1963	26	1963	2.5				56.250	GST14	-P132M4	78

3-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
36	1382	3.2	3.6	857	15	1382	36	1382	3.2				40.185	GST14	-P132M4	81
36	1403	1.8	3.6	870	15	1403	36	1403	1.8				40.816	GST11	-P132M4	75
34	1464	2.9	3.4	908	14	1464	34	1464	2.9				42.580	GST14	-P132M4	81
33	1513	1.6	3.3	938	14	1513	33	1513	1.6				44.000	GST11	-P132M4	75
30	1663	2.9	3.0	1032	12	1663	30	1663	2.9				48.386	GST14	-P132M4	81
29	1719	1.6	2.9	1066	12	1719	29	1719	1.6				50.000	GST11	-P132M4	75
28	1827	2.6	2.7	1133	11	1827	28	1827	2.6				53.148	GST14	-P132M4	81
25	1993	1.3	2.5	1236	10	1993	25	1993	1.3				57.968	GST11	-P132M4	75
25	2039	2.6	2.4	1265	10	2039	25	2039	2.6				59.321	GST14	-P132M4	81
24	2106	1.3	2.4	1306	9.8	2106	24	2106	1.3				61.250	GST11	-P132M4	75
21	2374	2.1	2.1	1472	8.7	2374	21	2374	2.1				69.042	GST14	-P132M4	81
21	2441	1.1	2.0	1514	8.4	2441	21	2441	1.1				71.011	GST11	-P132M4	75
19	2697	2.1	1.8	1673	7.6	2697	19	2697	2.1				78.457	GST14	-P132M4	81
18	2774	1.0	1.8	1721	7.4	2774	18	2774	1.0				80.694	GST11	-P132M4	75
16	3216	1.7	1.6	1995	6.4	3216	16	3216	1.7				93.541	GST14	-P132M4	81
15	3306	1.8	1.5	2050	6.2	3306	15	3306	1.8				96.157	GST14	-P132M4	81
14	3654	1.6	1.4	2267	5.6	3654	14	3654	1.6				106.296	GST14	-P132M4	81
11	4479	1.3	1.1	2778	4.6	4479	11	4479	1.3				130.278	GST14	-P132M4	81
11	4786	1.2	1.0	2969	4.3	4786	11	4786	1.2				139.211	GST14	-P132M4	81
9.2	5439	1.1	0.9	3373	3.8	5439	9.2	5439	1.1				158.194	GST14	-P132M4	81
8.5	5883	1.0	0.8	3649	3.5	5883	8.5	5883	1.0				171.111	GST14	-P132M4	81



Selection tables, 4-pole motors



50 Hz: P_N = 7.5 kW
87 Hz: P_N = 13.1 kW

1-stage gearboxes

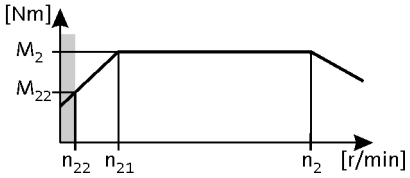
Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
909	78	1.4	89	49	369	78	909	78	1.4				1.625	GST07	-P132L4	57
739	96	1.3	73	61	300	96	739	96	1.3				2.000	GST07	-P132L4	57
659	107	1.3	65	68	268	107	659	107	1.3				2.240	GST07	-P132L4	57
526	134	3.1	52	85	214	134	526	134	3.1				2.810	GST09	-P132L4	63
517	136	1.2	51	86	210	136	517	136	1.2				2.857	GST07	-P132L4	57
429	165	2.7	42	104	174	165	429	165	2.7				3.444	GST09	-P132L4	63
422	167	1.0	41	106	171	167	422	167	1.0				3.500	GST07	-P132L4	57
317	223	1.7	31	141	129	223	317	223	1.7				4.667	GST09	-P132L4	63
261	271	1.7	26	171	106	271	261	271	1.7				5.667	GST09	-P132L4	63

2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
487	143	1.2	48	90	198	143	487	143	1.2				3.033	GST06	-P132L4	54
485	143	2.5	48	91	197	143	485	143	2.5				3.048	GST07	-P132L4	60
443	157	1.1	44	99	180	157	443	157	1.1				3.333	GST06	-P132L4	54
441	158	2.3	43	100	179	158	441	158	2.3				3.350	GST07	-P132L4	60
350	199	2.0	34	126	142	199	350	199	2.0				4.225	GST07	-P132L4	60
318	218	1.9	31	138	129	218	318	218	1.9				4.643	GST07	-P132L4	60
284	245	1.8	28	155	115	245	284	245	1.8				5.200	GST07	-P132L4	60
259	269	1.7	25	170	105	269	259	269	1.7				5.714	GST07	-P132L4	60
231	301	1.5	23	191	94	301	231	301	1.5				6.400	GST07	-P132L4	60
207	336	1.5	20	213	84	336	207	336	1.5				7.150	GST07	-P132L4	60
202	344	3.2	20	218	82	344	202	344	3.2				7.305	GST09	-P132L4	66
184	378	3.0	18	239	75	378	184	378	3.0				8.027	GST09	-P132L4	66
182	382	1.4	18	242	74	382	182	382	1.4				8.125	GST07	-P132L4	60
168	414	1.3	17	262	68	414	168	414	1.3				8.800	GST07	-P132L4	60
164	424	2.7	16	268	67	424	164	424	2.7				9.010	GST09	-P132L4	66
150	464	1.2	15	294	61	464	150	464	1.2				9.856	GST07	-P132L4	60
144	483	2.4	14	306	58	483	144	483	2.4				10.267	GST09	-P132L4	66
132	527	1.1	13	334	54	527	132	527	1.1				11.200	GST07	-P132L4	60
127	549	2.2	12	347	51	549	127	549	2.2				11.667	GST09	-P132L4	66
120	582	2.2	12	368	49	582	120	582	2.2				12.362	GST09	-P132L4	66
118	591	1.0	12	374	48	591	118	591	1.0				12.571	GST07	-P132L4	60
105	661	1.9	10	418	43	661	105	661	1.9				14.048	GST09	-P132L4	66
98	713	1.9	9.6	451	40	713	98	713	1.9				15.156	GST09	-P132L4	66
86	810	1.7	8.4	513	35	810	86	810	1.7				17.222	GST09	-P132L4	66
73	955	2.9	7.1	604	30	955	73	955	2.9				20.289	GST11	-P132L4	72
72	966	1.5	7.1	611	29	966	72	966	1.5				20.533	GST09	-P132L4	66



Selection tables, 4-pole motors



50 Hz: P_N = 7.5 kW
87 Hz: P_N = 13.1 kW

2-stage gearboxes

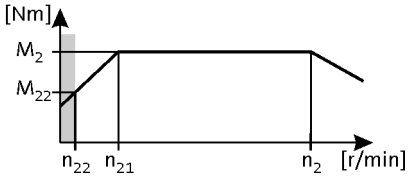
Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
64	1085	2.7	6.3	687	26	1085	64	1085	2.7				23.056	GST11	-P132L4	72
63	1098	1.4	6.2	695	26	1098	63	1098	1.4				23.333	GST09	-P132L4	66
59	1173	2.4	5.8	742	24	1173	59	1173	2.4				24.933	GST11	-P132L4	72
59	1173	1.4	5.8	742	24	1173	59	1173	1.4				24.933	GST09	-P132L4	66
52	1333	2.2	5.1	844	21	1333	52	1333	2.2				28.333	GST11	-P132L4	72
52	1333	1.1	5.1	844	21	1333	52	1333	1.1				28.333	GST09	-P132L4	66
46	1518	1.9	4.5	961	19	1518	46	1518	1.9				32.267	GST11	-P132L4	72
46	1518	3.1	4.5	961	19	1518	46	1518	3.1				32.267	GST14	-P132L4	78
40	1725	1.7	4.0	1092	16	1725	40	1725	1.7				36.667	GST11	-P132L4	72
40	1725	3.1	4.0	1092	16	1725	40	1725	3.1				36.667	GST14	-P132L4	78
38	1842	1.5	3.7	1166	15	1842	38	1842	1.5				39.160	GST11	-P132L4	72
38	1842	2.6	3.7	1166	15	1842	38	1842	2.6				39.160	GST14	-P132L4	78
33	2094	1.4	3.3	1325	14	2094	33	2094	1.4				44.500	GST11	-P132L4	72
33	2094	2.6	3.3	1325	14	2094	33	2094	2.6				44.500	GST14	-P132L4	78

3-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
37	1862	2.4	3.6	1179	15	1862	37	1862	2.4				40.185	GST14	-P132L4	81
36	1891	1.4	3.6	1197	15	1891	36	1891	1.4				40.816	GST11	-P132L4	75
35	1973	2.2	3.4	1249	14	1973	35	1973	2.2				42.580	GST14	-P132L4	81
34	2039	1.2	3.3	1290	14	2039	34	2039	1.2				44.000	GST11	-P132L4	75
31	2242	2.2	3.0	1419	12	2242	31	2242	2.2				48.386	GST14	-P132L4	81
30	2317	1.2	2.9	1466	12	2317	30	2317	1.2				50.000	GST11	-P132L4	75
28	2463	1.9	2.7	1559	11	2463	28	2463	1.9				53.148	GST14	-P132L4	81
25	2749	1.9	2.4	1740	10	2749	25	2749	1.9				59.321	GST14	-P132L4	81
21	3199	1.5	2.1	2025	8.7	3199	21	3199	1.5				69.042	GST14	-P132L4	81
21	3291	0.8	2.0	2083	8.4	3291	21	3291	0.8				71.011	GST11	-P132L4	75
19	3636	1.5	1.8	2301	7.6	3636	19	3636	1.5				78.457	GST14	-P132L4	81
16	4335	1.3	1.6	2743	6.4	4335	16	4335	1.3				93.541	GST14	-P132L4	81
15	4456	1.3	1.5	2820	6.2	4456	15	4456	1.3				96.157	GST14	-P132L4	81
14	4926	1.2	1.4	3117	5.6	4926	14	4926	1.2				106.296	GST14	-P132L4	81



Selection tables, 4-pole motors



50 Hz: P_N = 11.0 kW
87 Hz: P_N = 19.2 kW

1-stage gearboxes

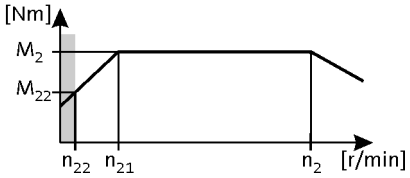
Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
947	109	2.5	93	60	385	109	947	109	2.5				1.560	GST09	-P160M4	63
722	143	2.4	71	79	293	143	722	143	2.4				2.048	GST09	-P160M4	63
633	163	2.3	62	90	257	163	633	163	2.3				2.333	GST09	-P160M4	63
526	197	2.1	52	109	214	197	526	197	2.1				2.810	GST09	-P160M4	63
429	241	1.8	42	133	174	241	429	241	1.8				3.444	GST09	-P160M4	63

2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
485	210	1.7	48	116	197	210	485	210	1.7				3.048	GST07	-P160M4	60
441	231	1.6	43	128	179	231	441	231	1.6				3.350	GST07	-P160M4	60
364	280	3.1	36	155	148	280	364	280	3.1				4.056	GST09	-P160M4	66
350	291	1.4	34	161	142	291	350	291	1.4				4.225	GST07	-P160M4	60
332	307	3.0	33	170	135	307	332	307	3.0				4.457	GST09	-P160M4	66
318	320	1.3	31	177	129	320	318	320	1.3				4.643	GST07	-P160M4	60
284	359	1.2	28	198	115	359	284	359	1.2				5.200	GST07	-P160M4	60
278	367	2.7	27	203	113	367	278	367	2.7				5.324	GST09	-P160M4	66
259	394	1.1	25	218	105	394	259	394	1.1				5.714	GST07	-P160M4	60
253	403	2.5	25	223	103	403	253	403	2.5				5.850	GST09	-P160M4	66
231	441	1.1	23	244	94	441	231	441	1.1				6.400	GST07	-P160M4	60
222	460	2.3	22	254	90	460	222	460	2.3				6.667	GST09	-P160M4	66
202	504	2.2	20	279	82	504	202	504	2.2				7.305	GST09	-P160M4	66
184	554	2.1	18	306	75	554	184	554	2.1				8.027	GST09	-P160M4	66
164	621	1.8	16	344	67	621	164	621	1.8				9.010	GST09	-P160M4	66
144	708	1.7	14	392	58	708	144	708	1.7				10.267	GST09	-P160M4	66
132	772	3.1	13	427	54	772	132	772	3.1				11.200	GST11	-P160M4	72
127	804	1.5	12	445	51	804	127	804	1.5				11.667	GST09	-P160M4	66
120	852	1.5	12	472	49	852	120	852	1.5				12.362	GST09	-P160M4	66
118	867	2.9	12	480	48	867	118	867	2.9				12.571	GST11	-P160M4	72
105	969	1.3	10	536	43	969	105	969	1.3				14.048	GST09	-P160M4	66
104	985	2.6	10	545	42	985	104	985	2.6				14.286	GST11	-P160M4	72
98	1045	1.3	9.6	578	40	1045	98	1045	1.3				15.156	GST09	-P160M4	66
96	1062	2.5	9.4	588	39	1062	96	1062	2.5				15.400	GST11	-P160M4	72
86	1188	1.2	8.4	657	35	1188	86	1188	1.2				17.222	GST09	-P160M4	66
85	1207	2.3	8.3	668	34	1207	85	1207	2.3				17.500	GST11	-P160M4	72
73	1399	2.0	7.1	774	30	1399	73	1399	2.0				20.289	GST11	-P160M4	72
65	1571	3.2	6.4	869	26	1571	65	1571	3.2				22.778	GST14	-P160M4	78
64	1590	1.8	6.3	880	26	1590	64	1590	1.8				23.056	GST11	-P160M4	72
60	1694	3.1	5.9	937	24	1694	60	1694	3.1				24.567	GST14	-P160M4	78



Selection tables, 4-pole motors



50 Hz: P_N = 11.0 kW
87 Hz: P_N = 19.2 kW

2-stage gearboxes

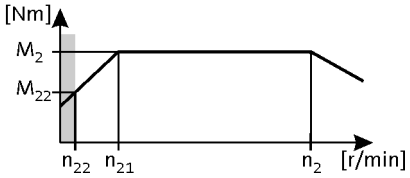
Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
59	1719	1.6	5.8	951	24	1719	59	1719	1.6				24.933	GST11	-P160M4	72
53	1925	2.8	5.2	1065	22	1925	53	1925	2.8				27.917	GST14	-P160M4	78
52	1954	1.5	5.1	1081	21	1954	52	1954	1.5				28.333	GST11	-P160M4	72
46	2225	2.4	4.5	1231	19	2225	46	2225	2.4				32.267	GST14	-P160M4	78
40	2528	2.3	4.0	1399	16	2528	40	2528	2.3				36.667	GST14	-P160M4	78
38	2700	2.0	3.7	1494	15	2700	38	2700	2.0				39.160	GST14	-P160M4	78
33	3068	1.9	3.3	1698	14	3068	33	3068	1.9				44.500	GST14	-P160M4	78

3-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
37	2729	1.6	3.6	1510	15	2729	37	2729	1.6				40.185	GST14	-P160M4	81
35	2892	1.5	3.4	1600	14	2892	35	2892	1.5				42.580	GST14	-P160M4	81
31	3286	1.5	3.0	1818	12	3286	31	3286	1.5				48.386	GST14	-P160M4	81
28	3610	1.3	2.7	1997	11	3610	28	3610	1.3				53.148	GST14	-P160M4	81
25	4029	1.3	2.4	2229	10	4029	25	4029	1.3				59.321	GST14	-P160M4	81
21	4689	1.1	2.1	2595	8.7	4689	21	4689	1.1				69.042	GST14	-P160M4	81
19	5329	1.1	1.8	2949	7.6	5329	19	5329	1.1				78.457	GST14	-P160M4	81



Selection tables, 4-pole motors



50 Hz: P_N = 15.0 kW
87 Hz: P_N = 26.3 kW

1-stage gearboxes

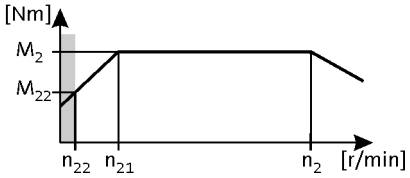
Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product GST	m500	
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c				
942	150	1.9	93	82	385	150	942	150	1.9				1.560	GST09	-P160L4	63
718	197	1.7	71	108	293	197	718	197	1.7				2.048	GST09	-P160L4	63
630	224	1.7	62	123	257	224	630	224	1.7				2.333	GST09	-P160L4	63
523	270	1.6	52	148	214	270	523	270	1.6				2.810	GST09	-P160L4	63
427	331	1.3	42	182	174	331	427	331	1.3				3.444	GST09	-P160L4	63

2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product GST	m500	
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c				
362	383	2.3	36	211	148	383	362	383	2.3				4.056	GST09	-P160L4	66
330	421	2.2	33	232	135	421	330	421	2.2				4.457	GST09	-P160L4	66
276	503	3.2	27	277	113	503	276	503	3.2				5.324	GST11	-P160L4	72
276	503	2.0	27	277	113	503	276	503	2.0				5.324	GST09	-P160L4	66
251	553	3.2	25	304	103	553	251	553	3.2				5.850	GST11	-P160L4	72
251	553	1.8	25	304	103	553	251	553	1.8				5.850	GST09	-P160L4	66
230	605	3.0	23	333	94	605	230	605	3.0				6.400	GST11	-P160L4	72
221	630	1.7	22	347	90	630	221	630	1.7				6.667	GST09	-P160L4	66
214	649	3.2	21	357	87	649	214	649	3.2				6.864	GST11	-P160L4	72
201	691	1.6	20	380	82	691	201	691	1.6				7.305	GST09	-P160L4	66
189	737	2.9	19	405	77	737	189	737	2.9				7.800	GST11	-P160L4	72
183	759	1.5	18	417	75	759	183	759	1.5				8.027	GST09	-P160L4	66
163	852	2.7	16	468	67	852	163	852	2.7				9.010	GST11	-P160L4	72
163	852	1.3	16	468	67	852	163	852	1.3				9.010	GST09	-P160L4	66
149	932	2.5	15	512	61	932	149	932	2.5				9.856	GST11	-P160L4	72
143	971	1.2	14	534	58	971	143	971	1.2				10.267	GST09	-P160L4	66
131	1059	2.3	13	582	54	1059	131	1059	2.3				11.200	GST11	-P160L4	72
126	1103	1.1	12	606	51	1103	126	1103	1.1				11.667	GST09	-P160L4	66
119	1169	1.1	12	643	49	1169	119	1169	1.1				12.362	GST09	-P160L4	66
117	1189	2.1	12	653	48	1189	117	1189	2.1				12.571	GST11	-P160L4	72
105	1328	3.2	10	730	43	1328	105	1328	3.2				14.048	GST14	-P160L4	78
103	1351	1.9	10	743	42	1351	103	1351	1.9				14.286	GST11	-P160L4	72
97	1433	3.1	9.6	788	40	1433	97	1433	3.1				15.156	GST14	-P160L4	78
96	1456	1.9	9.4	800	39	1456	96	1456	1.9				15.400	GST11	-P160L4	72
85	1628	2.8	8.4	895	35	1628	85	1628	2.8				17.222	GST14	-P160L4	78
84	1654	1.7	8.3	910	34	1654	84	1654	1.7				17.500	GST11	-P160L4	72
73	1895	2.6	7.2	1042	30	1895	73	1895	2.6				20.044	GST14	-P160L4	78
73	1918	1.4	7.1	1055	30	1918	73	1918	1.4				20.289	GST11	-P160L4	72
65	2153	2.3	6.4	1184	26	2153	65	2153	2.3				22.778	GST14	-P160L4	78
64	2180	1.3	6.3	1198	26	2180	64	2180	1.3				23.056	GST11	-P160L4	72



Selection tables, 4-pole motors



50 Hz: P_N = 15.0 kW
87 Hz: P_N = 26.3 kW

2-stage gearboxes

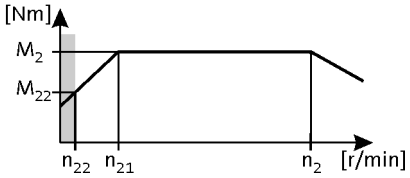
Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
60	2323	2.3	5.9	1277	24	2323	60	2323	2.3				24.567	GST14	-P160L4	78
59	2357	1.2	5.8	1296	24	2357	59	2357	1.2				24.933	GST11	-P160L4	72
53	2639	2.0	5.2	1451	22	2639	53	2639	2.0				27.917	GST14	-P160L4	78
52	2679	1.1	5.1	1473	21	2679	52	2679	1.1				28.333	GST11	-P160L4	72
46	3051	1.8	4.5	1677	19	3051	46	3051	1.8				32.267	GST14	-P160L4	78
40	3466	1.7	4.0	1906	16	3466	40	3466	1.7				36.667	GST14	-P160L4	78

3-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
37	3742	1.2	3.6	2057	15	3742	37	3742	1.2				40.185	GST14	-P160L4	81
35	3965	1.1	3.4	2180	14	3965	35	3965	1.1				42.580	GST14	-P160L4	81
30	4506	1.1	3.0	2477	12	4506	30	4506	1.1				48.386	GST14	-P160L4	81



Selection tables, 4-pole motors



50 Hz: P_N = 18.5 kW
87 Hz: P_N = 32.2 kW

1-stage gearboxes

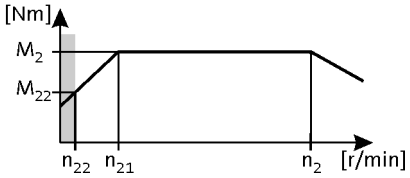
Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
724	240	1.4	71	133	293	240	724	240	1.4				2.048	GST09	-P180M4	63
636	274	1.4	62	151	257	274	636	274	1.4				2.333	GST09	-P180M4	63
528	330	1.3	52	182	214	330	528	330	1.3				2.810	GST09	-P180M4	63
431	404	1.1	42	224	174	404	431	404	1.1				3.444	GST09	-P180M4	63

2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
366	469	3.2	36	259	148	469	366	469	3.2				4.056	GST11	-P180M4	72
366	469	1.9	36	259	148	469	366	469	1.9				4.056	GST09	-P180M4	66
333	515	3.1	33	285	135	515	333	515	3.1				4.457	GST11	-P180M4	72
333	515	1.8	33	285	135	515	333	515	1.8				4.457	GST09	-P180M4	66
279	615	2.6	27	340	113	615	279	615	2.6				5.324	GST11	-P180M4	72
279	615	1.6	27	340	113	615	279	615	1.6				5.324	GST09	-P180M4	66
254	676	2.6	25	374	103	676	254	676	2.6				5.850	GST11	-P180M4	72
254	676	1.5	25	374	103	676	254	676	1.5				5.850	GST09	-P180M4	66
232	740	2.4	23	409	94	740	232	740	2.4				6.400	GST11	-P180M4	72
222	771	1.4	22	426	90	771	222	771	1.4				6.667	GST09	-P180M4	66
203	844	1.3	20	467	82	844	203	844	1.3				7.305	GST09	-P180M4	66
185	928	1.2	18	513	75	928	185	928	1.2				8.027	GST09	-P180M4	66
165	1041	2.2	16	576	67	1041	165	1041	2.2				9.010	GST11	-P180M4	72
151	1137	3.2	15	629	61	1137	151	1137	3.2				9.841	GST14	-P180M4	78
151	1139	2.0	15	630	61	1139	151	1139	2.0				9.856	GST11	-P180M4	72
135	1271	3.1	13	703	55	1271	135	1271	3.1				11.000	GST14	-P180M4	78
132	1294	1.8	13	716	54	1294	132	1294	1.8				11.200	GST11	-P180M4	72
120	1429	2.9	12	790	49	1429	120	1429	2.9				12.362	GST14	-P180M4	78
118	1453	1.7	12	804	48	1453	118	1453	1.7				12.571	GST11	-P180M4	72
106	1624	2.6	10	898	43	1624	106	1624	2.6				14.048	GST14	-P180M4	78
104	1651	1.6	10	913	42	1651	104	1651	1.6				14.286	GST11	-P180M4	72
98	1752	2.6	9.6	969	40	1752	98	1752	2.6				15.156	GST14	-P180M4	78
96	1780	1.5	9.4	985	39	1780	96	1780	1.5				15.400	GST11	-P180M4	72
86	1991	2.3	8.4	1101	35	1991	86	1991	2.3				17.222	GST14	-P180M4	78
85	2023	1.4	8.3	1119	34	2023	85	2023	1.4				17.500	GST11	-P180M4	72
74	2317	2.1	7.2	1281	30	2317	74	2317	2.1				20.044	GST14	-P180M4	78
73	2345	1.2	7.1	1297	30	2345	73	2345	1.2				20.289	GST11	-P180M4	72
65	2633	1.9	6.4	1456	26	2633	65	2633	1.9				22.778	GST14	-P180M4	78
64	2665	1.1	6.3	1474	26	2665	64	2665	1.1				23.056	GST11	-P180M4	72
60	2839	1.8	5.9	1571	24	2839	60	2839	1.8				24.567	GST14	-P180M4	78
53	3227	1.7	5.2	1785	22	3227	53	3227	1.7				27.917	GST14	-P180M4	78



Selection tables, 4-pole motors



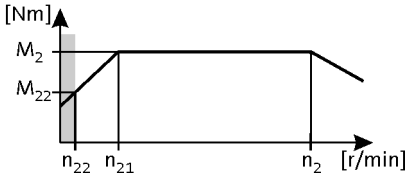
50 Hz: P_N = 18.5 kW
87 Hz: P_N = 32.2 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
46	3729	1.5	4.5	2063	19	3729	46	3729	1.5				32.267	GST14	-P180M4	78
40	4238	1.4	4.0	2344	16	4238	40	4238	1.4				36.667	GST14	-P180M4	78



Selection tables, 4-pole motors



50 Hz: P_N = 22.0 kW
87 Hz: P_N = 38.5 kW

1-stage gearboxes

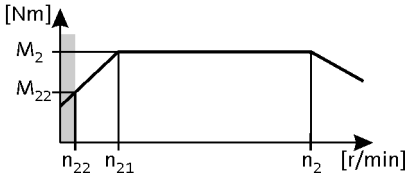
Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
634	326	1.1	62	181	257	326	634	326	1.1				2.333	GST09	-P180L4	63
527	393	1.1	52	218	214	393	527	393	1.1				2.810	GST09	-P180L4	63

2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
278	733	2.2	27	406	113	733	278	733	2.2				5.324	GST11	-P180L4	72
278	733	1.4	27	406	113	733	278	733	1.4				5.324	GST09	-P180L4	66
253	806	2.2	25	446	103	806	253	806	2.2				5.850	GST11	-P180L4	72
236	866	3.1	23	479	96	866	236	866	3.1				6.286	GST14	-P180L4	78
231	881	2.0	23	488	94	881	231	881	2.0				6.400	GST11	-P180L4	72
222	918	1.2	22	508	90	918	222	918	1.2				6.667	GST09	-P180L4	66
203	1006	1.1	20	557	82	1006	203	1006	1.1				7.305	GST09	-P180L4	66
184	1106	2.9	18	612	75	1106	184	1106	2.9				8.027	GST14	-P180L4	78
184	1106	1.0	18	612	75	1106	184	1106	1.0				8.027	GST09	-P180L4	66
164	1241	1.8	16	687	67	1241	164	1241	1.8				9.010	GST11	-P180L4	72
150	1355	2.6	15	750	61	1355	150	1355	2.6				9.841	GST14	-P180L4	78
150	1357	1.7	15	752	61	1357	150	1357	1.7				9.856	GST11	-P180L4	72
120	1703	2.5	12	943	49	1703	120	1703	2.5				12.362	GST14	-P180L4	78
118	1731	1.5	12	959	48	1731	118	1731	1.5				12.571	GST11	-P180L4	72
105	1935	2.2	10	1071	43	1935	105	1935	2.2				14.048	GST14	-P180L4	78
104	1967	1.3	10	1089	42	1967	104	1967	1.3				14.286	GST11	-P180L4	72
98	2087	2.1	9.6	1156	40	2087	98	2087	2.1				15.156	GST14	-P180L4	78
96	2121	1.3	9.4	1174	39	2121	96	2121	1.3				15.400	GST11	-P180L4	72
86	2372	1.9	8.4	1313	35	2372	86	2372	1.9				17.222	GST14	-P180L4	78
85	2410	1.1	8.3	1335	34	2410	85	2410	1.1				17.500	GST11	-P180L4	72
74	2761	1.8	7.2	1529	30	2761	74	2761	1.8				20.044	GST14	-P180L4	78
65	3137	1.6	6.4	1737	26	3137	65	3137	1.6				22.778	GST14	-P180L4	78
60	3383	1.6	5.9	1873	24	3383	60	3383	1.6				24.567	GST14	-P180L4	78
53	3845	1.4	5.2	2129	22	3845	53	3845	1.4				27.917	GST14	-P180L4	78
46	4444	1.2	4.5	2461	19	4444	46	4444	1.2				32.267	GST14	-P180L4	78
40	5050	1.1	4.0	2796	16	5050	40	5050	1.1				36.667	GST14	-P180L4	78



Selection tables, 4-pole motors



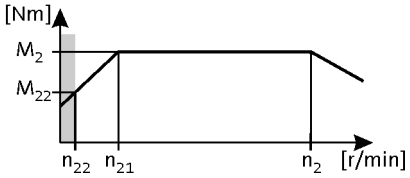
50 Hz: P_N = 30.0 kW
87 Hz: P_N = 52.5 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
184	1510	2.1	18	667	75	1510	184	1510	2.1				8.027	GST14	-P180V4	78
150	1851	1.9	15	817	61	1851	150	1851	1.9				9.841	GST14	-P180V4	78
120	2325	1.8	12	1026	49	2325	120	2325	1.8				12.362	GST14	-P180V4	78
98	2850	1.6	9.6	1258	40	2850	98	2850	1.6				15.156	GST14	-P180V4	78



Selection tables, 4-pole motors



50 Hz: P_N = 37.0 kW
87 Hz: P_N = 64.8 kW

2-stage gearboxes

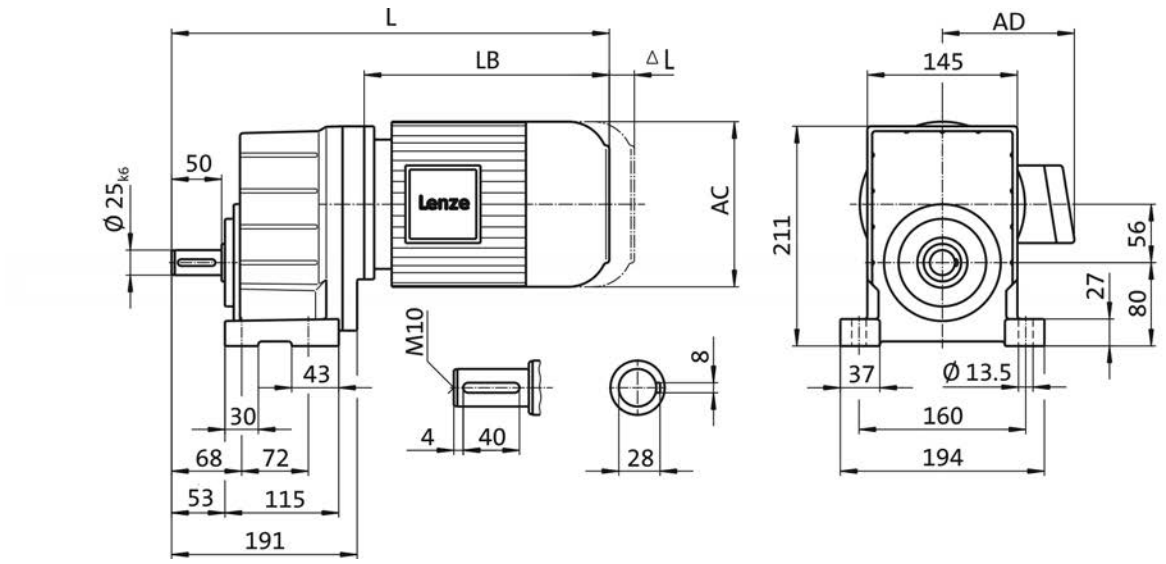
Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		GST	m500	
185	1856	2.0	18	812	75	1856	185	1856	2.0				8.027	GST14	-P225M4	78
151	2275	1.7	15	996	61	2275	151	2275	1.7				9.841	GST14	-P225M4	78
74	4633	1.1	7.2	2028	30	4633	74	4633	1.1				20.044	GST14	-P225M4	78



Dimensions, 4-pole motors

GST06, 1-stage gearboxes

Dimensions with solid shaft and foot (VBR)



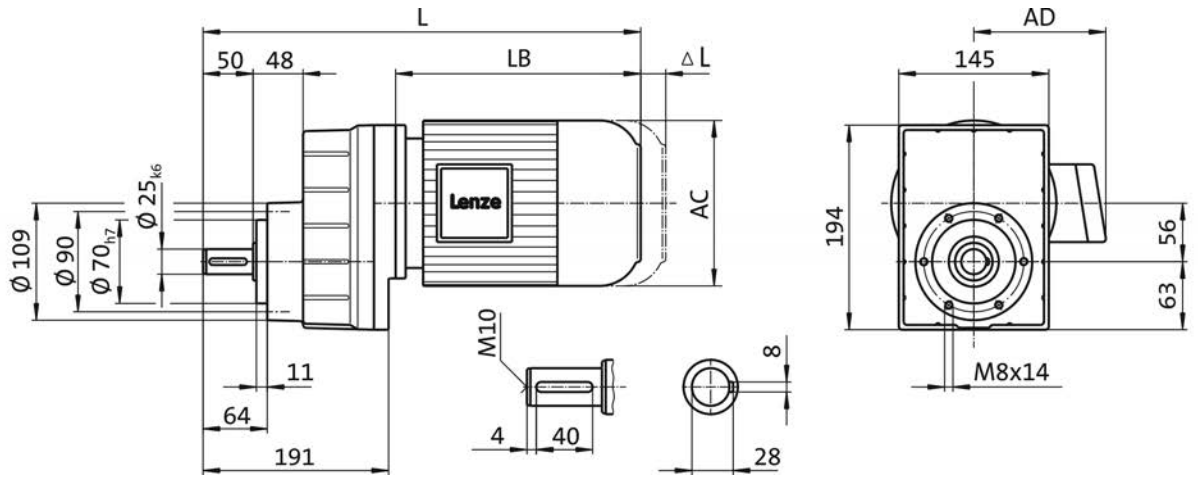
Product			m500
			-P132M4
Dimensions			
Total length	**L**	**[mm]**	650
Motor length	**LB**	**[mm]**	433.5
Length of motor options	**Δ L**	**[mm]**	200.5
Motor diameter	**AC**	**[mm]**	261
Distance motor/connection	**AD**	**[mm]**	182



Dimensions, 4-pole motors

GST06, 1-stage gearboxes

Dimensions with solid shaft and centering (VCR)



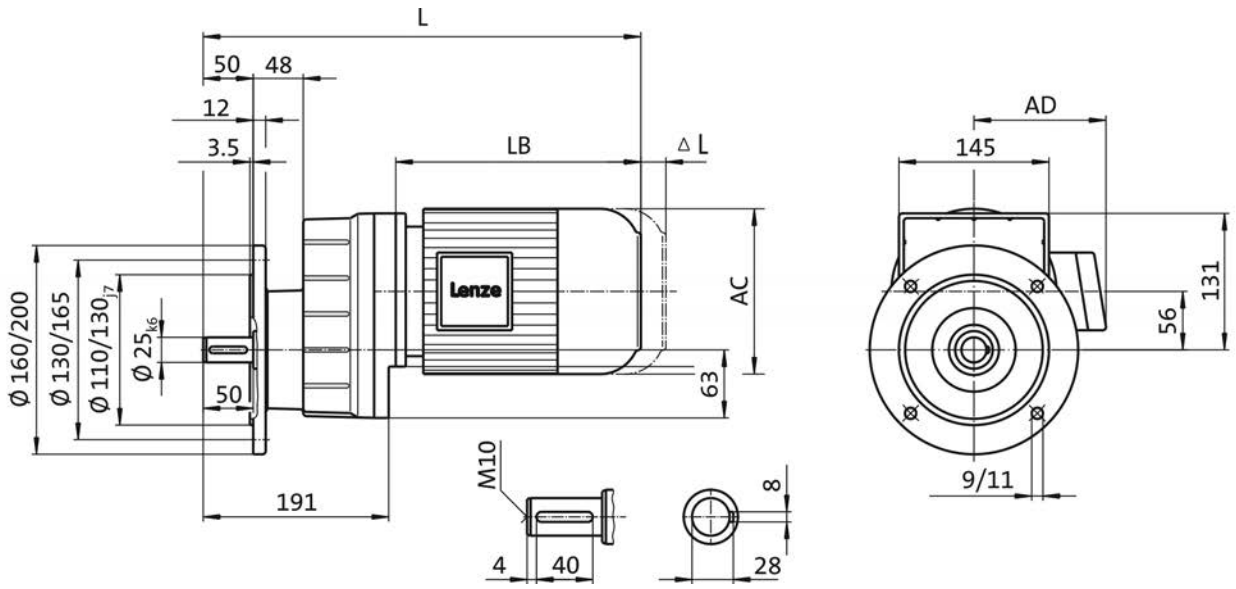
Product			m500
			-P132M4
Dimensions			
Total length	**L**	**[mm]**	650
Motor length	**LB**	**[mm]**	433.5
Length of motor options	**Δ L**	**[mm]**	200.5
Motor diameter	**AC**	**[mm]**	261
Distance motor/connection	**AD**	**[mm]**	182



Dimensions, 4-pole motors

GST06, 1-stage gearboxes

Dimensions with solid shaft and flange (VCK)



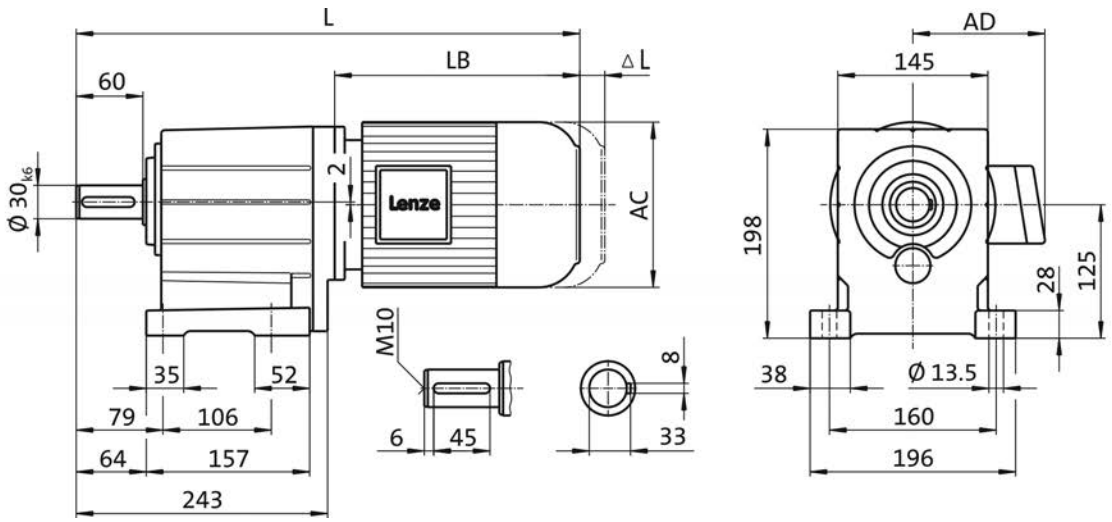
Product			m500
			-P132M4
Dimensions			
Total length	**L**	**[mm]**	650
Motor length	**LB**	**[mm]**	433.5
Length of motor options	**Δ L**	**[mm]**	200.5
Motor diameter	**AC**	**[mm]**	261
Distance motor/connection	**AD**	**[mm]**	182



Dimensions, 4-pole motors

GST06, 2-stage gearboxes

Dimensions with solid shaft and foot (VBR)



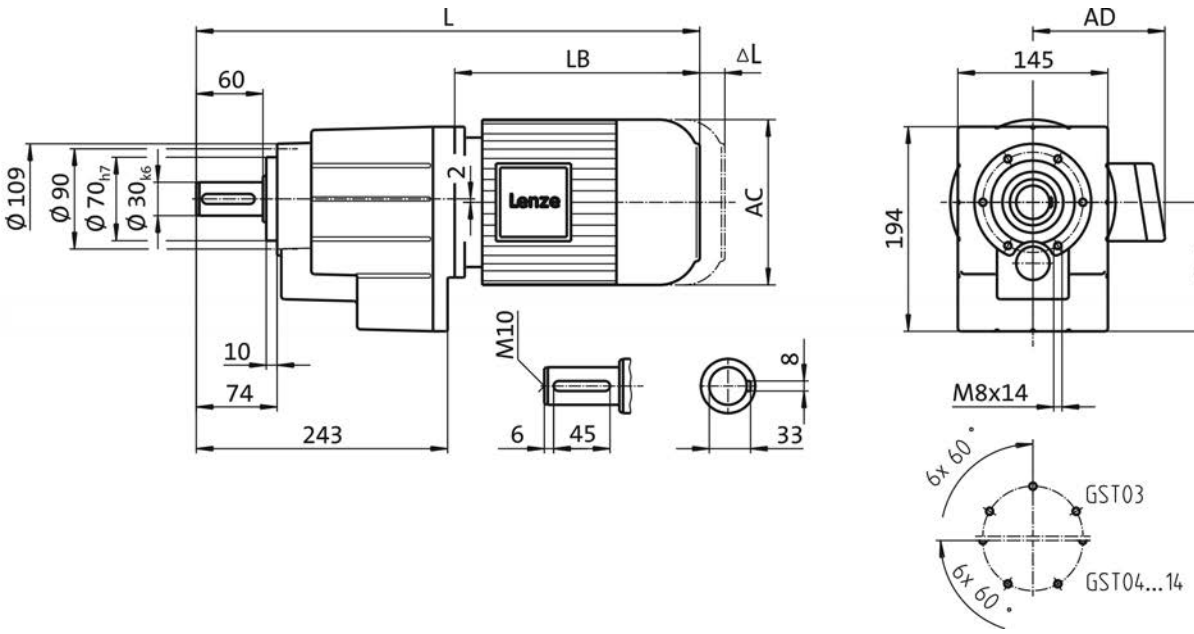
Product			m500	
			-P132L4	-P132M4
Dimensions				
Total length	**L**	**[mm]**	702	
Motor length	**LB**	**[mm]**	433.5	
Length of motor options	**Δ L**	**[mm]**	200.5	
Motor diameter	**AC**	**[mm]**	261	
Distance motor/connection	**AD**	**[mm]**	182	



Dimensions, 4-pole motors

GST06, 2-stage gearboxes

Dimensions with solid shaft and centering (VCR)



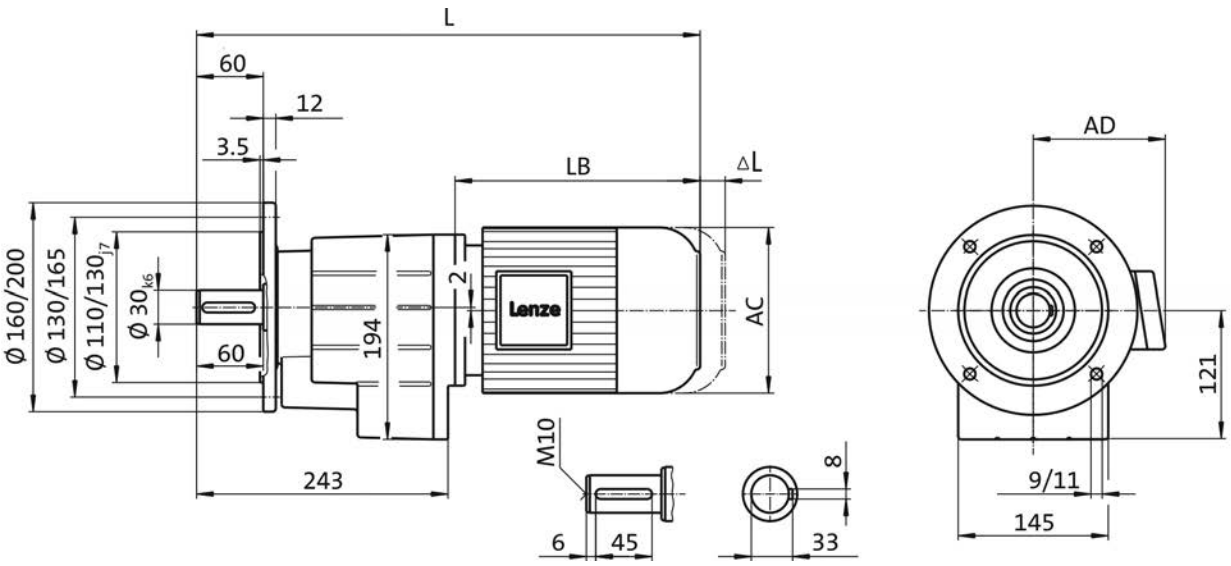
Product			m500	
			-P132L4	-P132M4
Dimensions				
Total length	**L**	**[mm]**	702	
Motor length	**LB**	**[mm]**	433.5	
Length of motor options	**Δ L**	**[mm]**	200.5	
Motor diameter	**AC**	**[mm]**	261	
Distance motor/connection	**AD**	**[mm]**	182	



Dimensions, 4-pole motors

GST06, 2-stage gearboxes

Dimensions with solid shaft and flange (VCK)



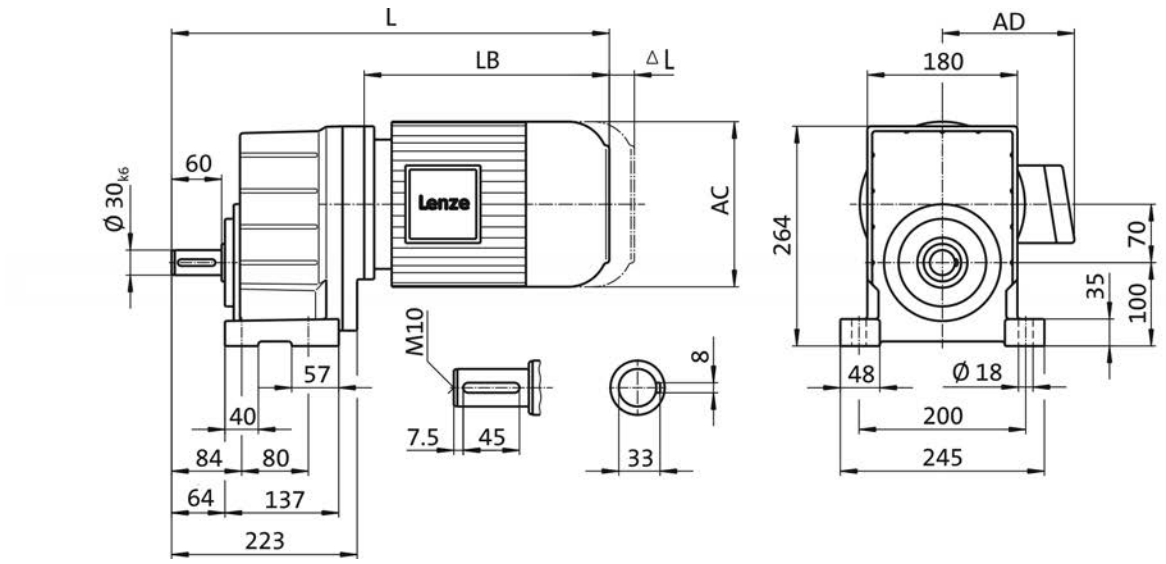
Product			m500	
			-P132L4	-P132M4
Dimensions				
Total length	**L**	**[mm]**	702	
Motor length	**LB**	**[mm]**	433.5	
Length of motor options	**Δ L**	**[mm]**	200.5	
Motor diameter	**AC**	**[mm]**	261	
Distance motor/connection	**AD**	**[mm]**	182	



Dimensions, 4-pole motors

GST07, 1-stage gearboxes

Dimensions with solid shaft and foot (VBR)



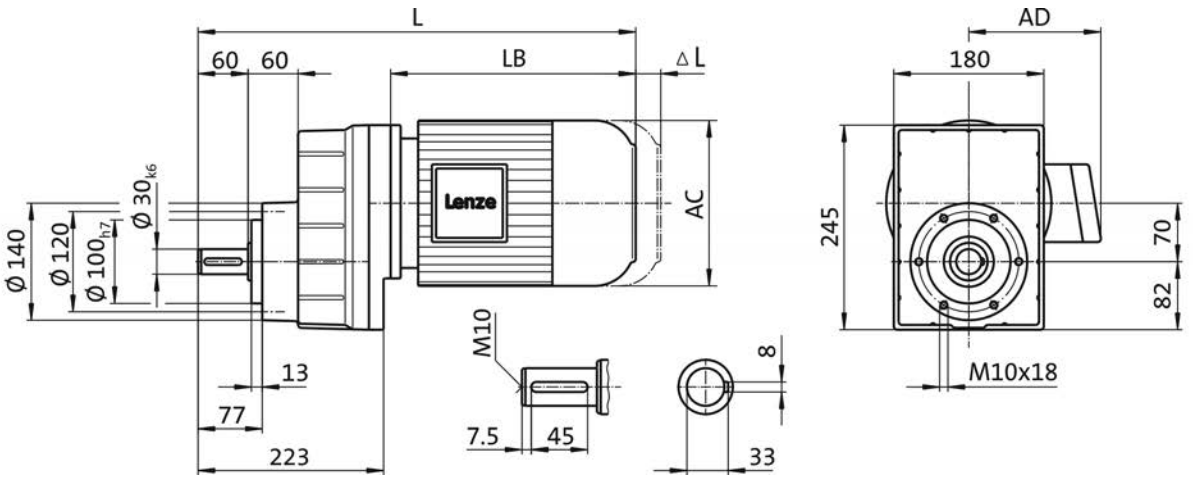
Product			m500	
			-P132L4	-P132M4
Dimensions				
Total length	**L**	**[mm]**	679	
Motor length	**LB**	**[mm]**	433.5	
Length of motor options	**Δ L**	**[mm]**	200.5	
Motor diameter	**AC**	**[mm]**	261	
Distance motor/connection	**AD**	**[mm]**	182	



Dimensions, 4-pole motors

GST07, 1-stage gearboxes

Dimensions with solid shaft and centering (VCR)



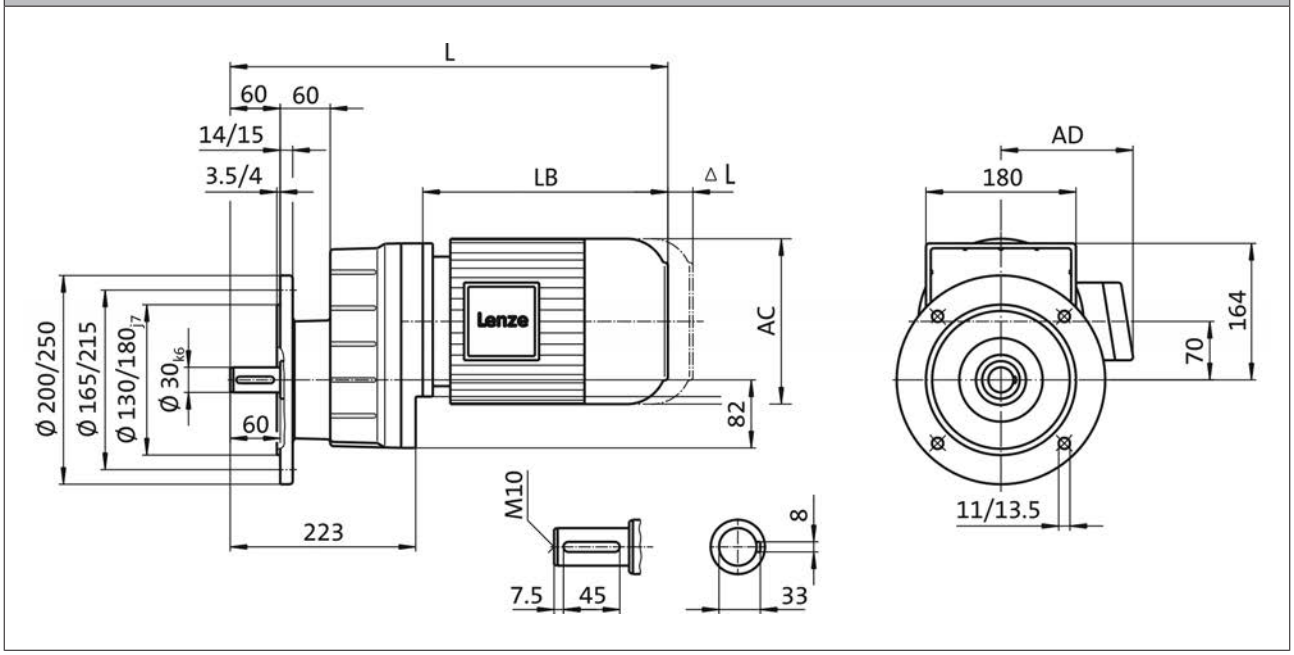
Product			m500	
			-P132L4	-P132M4
Dimensions				
Total length	**L**	**[mm]**	679	
Motor length	**LB**	**[mm]**	433.5	
Length of motor options	**Δ L**	**[mm]**	200.5	
Motor diameter	**AC**	**[mm]**	261	
Distance motor/connection	**AD**	**[mm]**	182	



Dimensions, 4-pole motors

GST07, 1-stage gearboxes

Dimensions with solid shaft and flange (VCK)



Product			m500	
			-P132L4	-P132M4
Dimensions				
Total length	**L**	**[mm]**	679	
Motor length	**LB**	**[mm]**	433.5	
Length of motor options	**Δ L**	**[mm]**	200.5	
Motor diameter	**AC**	**[mm]**	261	
Distance motor/connection	**AD**	**[mm]**	182	

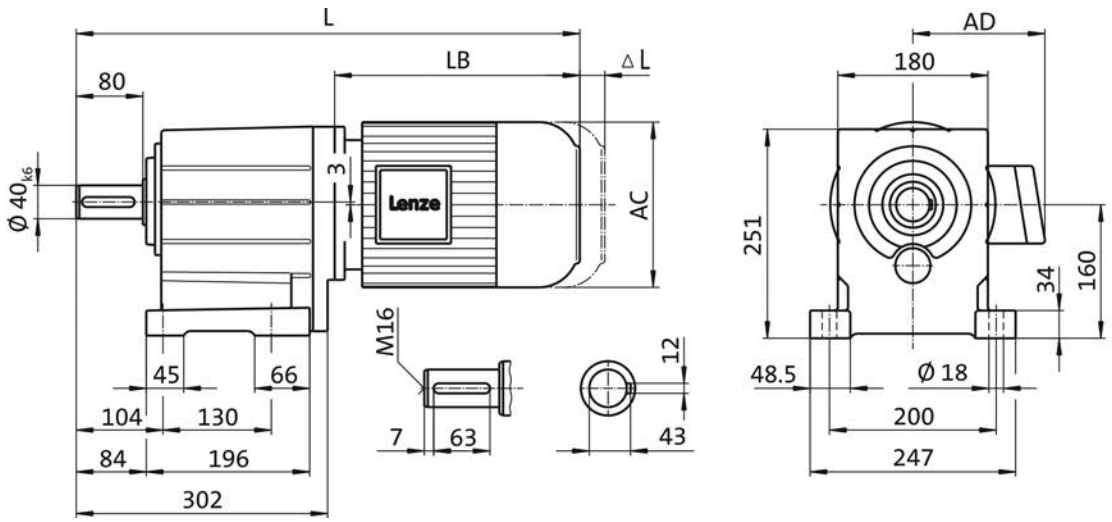
6.1



Dimensions, 4-pole motors

GST07, 2-stage gearboxes

Dimensions with solid shaft and foot (VBR)



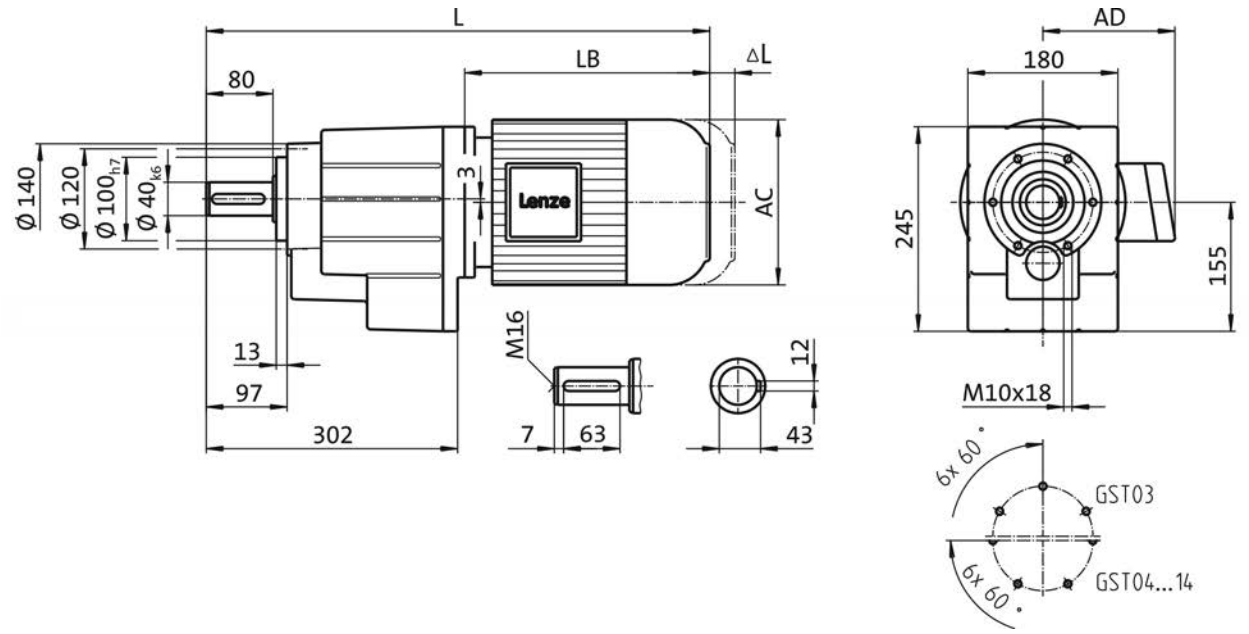
Product			m500		
			-P132L4	-P132M4	-P160M4
Dimensions					
Total length	**L**	**[mm]**	758		869
Motor length	**LB**	**[mm]**	433.5		539
Length of motor options	**Δ L**	**[mm]**	200.5		237
Motor diameter	**AC**	**[mm]**	261		313
Distance motor/connection	**AD**	**[mm]**	182		231



Dimensions, 4-pole motors

GST07, 2-stage gearboxes

Dimensions with solid shaft and centering (VCR)



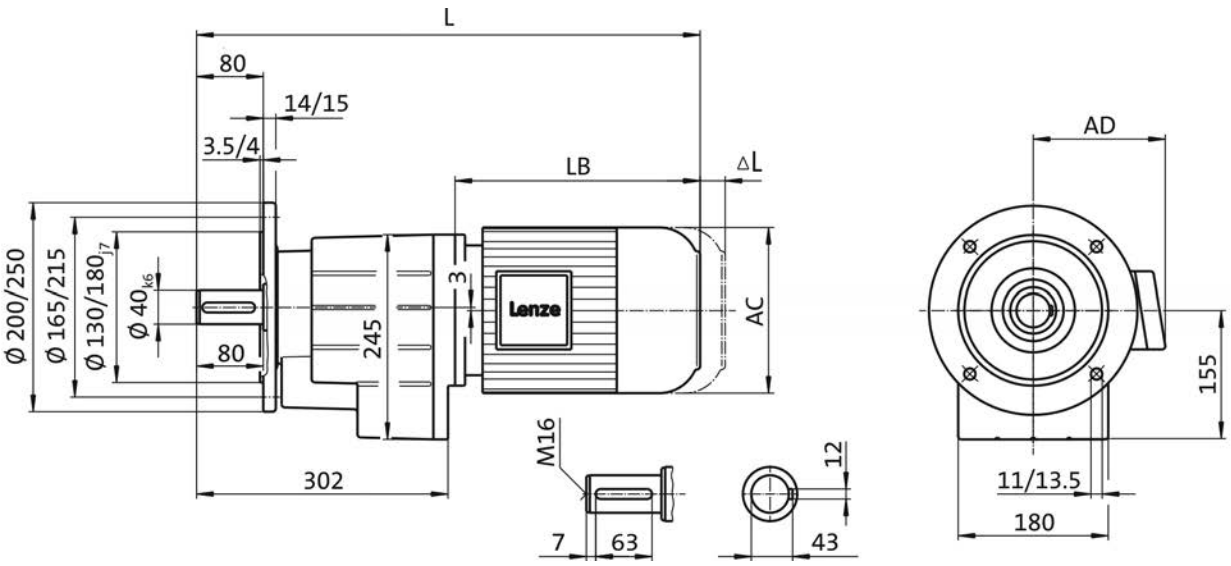
Product			m500		
			-P132L4	-P132M4	-P160M4
Dimensions					
Total length	**L**	**[mm]**	758		869
Motor length	**LB**	**[mm]**	433.5		539
Length of motor options	**Δ L**	**[mm]**	200.5		237
Motor diameter	**AC**	**[mm]**	261		313
Distance motor/connection	**AD**	**[mm]**	182		231



Dimensions, 4-pole motors

GST07, 2-stage gearboxes

Dimensions with solid shaft and flange (VCK)



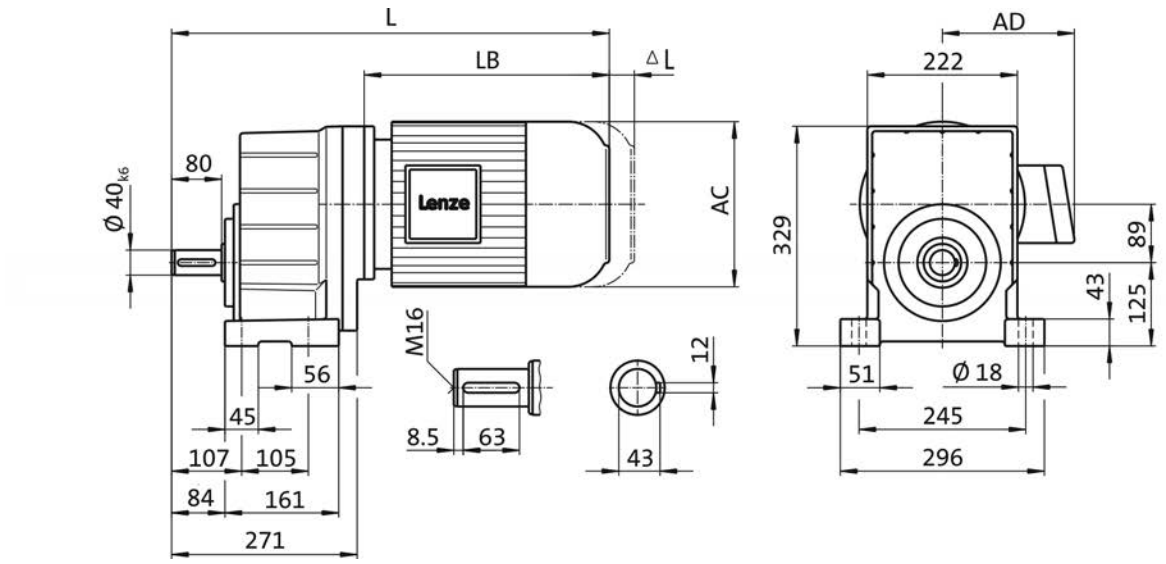
Product			m500		
			-P132L4	-P132M4	-P160M4
Dimensions					
Total length	**L**	**[mm]**	758		869
Motor length	**LB**	**[mm]**	433.5		539
Length of motor options	**Δ L**	**[mm]**	200.5		237
Motor diameter	**AC**	**[mm]**	261		313
Distance motor/connection	**AD**	**[mm]**	182		231



Dimensions, 4-pole motors

GST09, 1-stage gearboxes

Dimensions with solid shaft and foot (VBR)



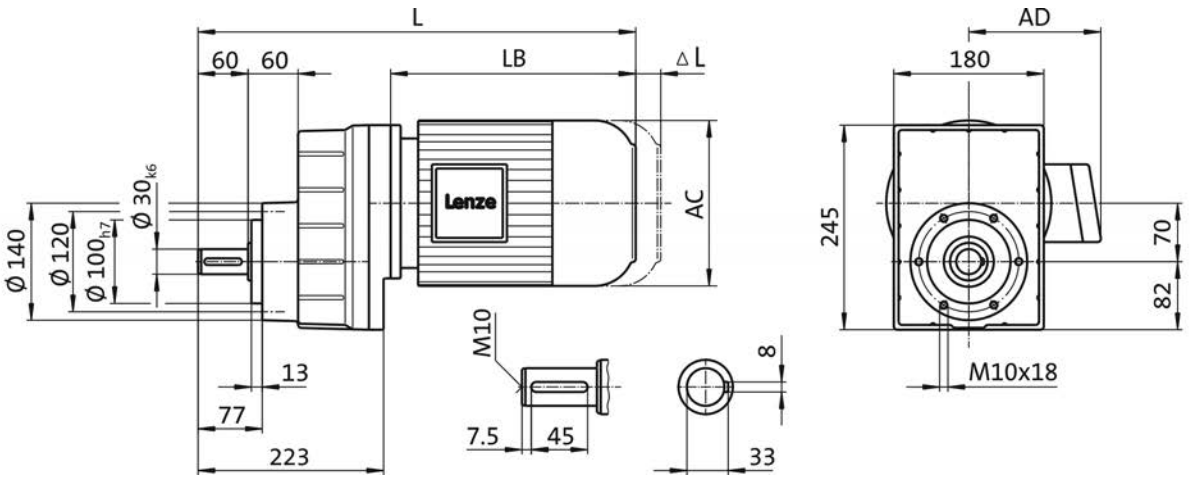
Product			m500					
			-P132L4	-P132M4	-P160L4	-P160M4	-P180L4	-P180M4
Dimensions								
Total length	**L**	**[mm]**	722		833		890	
Motor length	**LB**	**[mm]**	433.5		539		596.5	
Length of motor options	**Δ L**	**[mm]**	200.5		237		267	
Motor diameter	**AC**	**[mm]**	261		313		351	
Distance motor/connection	**AD**	**[mm]**	182		231		282	



Dimensions, 4-pole motors

GST09, 1-stage gearboxes

Dimensions with solid shaft and centering (VCR)



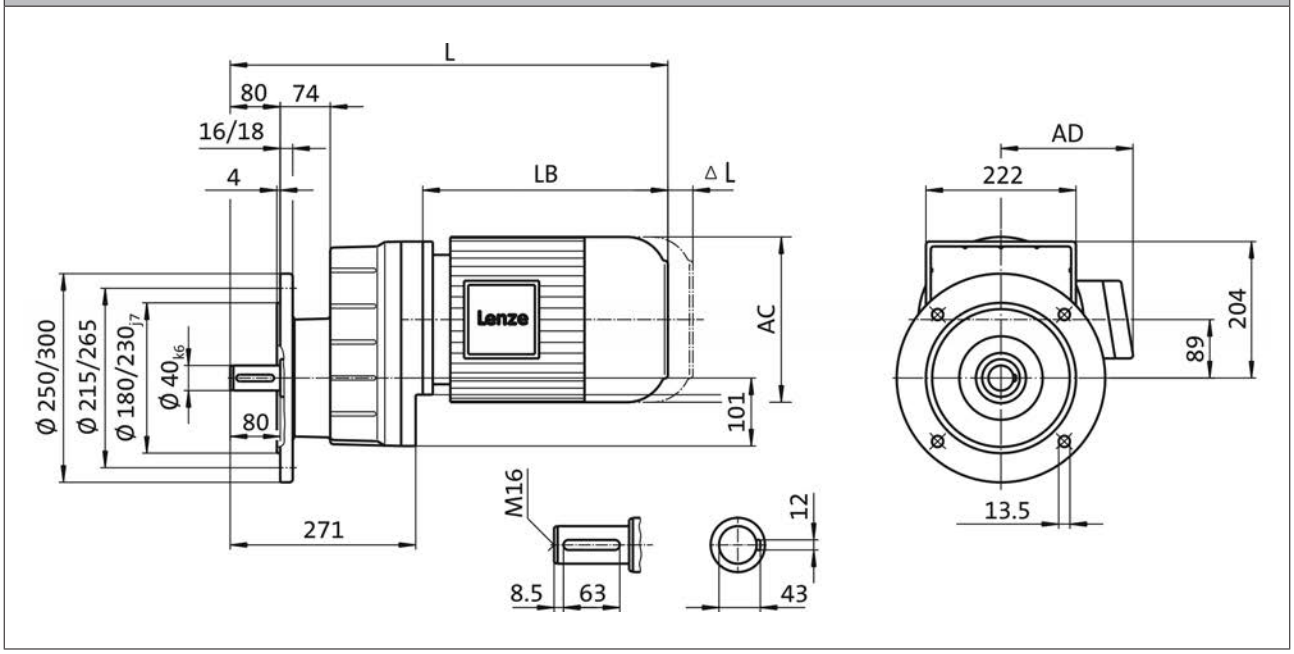
Product			m500					
			-P132L4	-P132M4	-P160L4	-P160M4	-P180L4	-P180M4
Dimensions								
Total length	**L**	**[mm]**	722		833		890	
Motor length	**LB**	**[mm]**	433.5		539		596.5	
Length of motor options	**Δ L**	**[mm]**	200.5		237		267	
Motor diameter	**AC**	**[mm]**	261		313		351	
Distance motor/connection	**AD**	**[mm]**	182		231		282	



Dimensions, 4-pole motors

GST09, 1-stage gearboxes

Dimensions with solid shaft and flange (VCK)



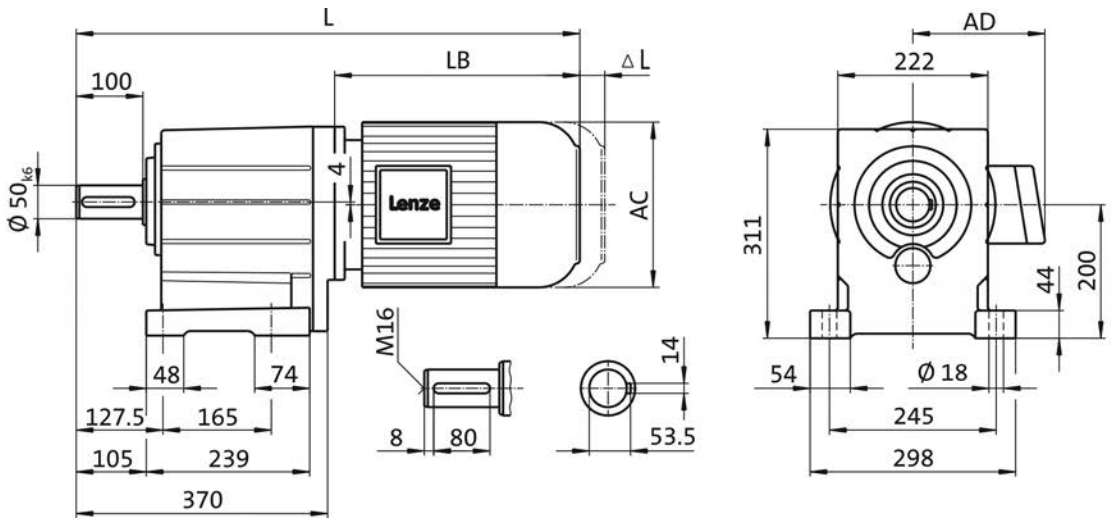
Product			m500					
			-P132L4	-P132M4	-P160L4	-P160M4	-P180L4	-P180M4
Dimensions								
Total length	**L**	**[mm]**	722		833		890	
Motor length	**LB**	**[mm]**	433.5		539		596.5	
Length of motor options	**Δ L**	**[mm]**	200.5		237		267	
Motor diameter	**AC**	**[mm]**	261		313		351	
Distance motor/connection	**AD**	**[mm]**	182		231		282	



Dimensions, 4-pole motors

GST09, 2-stage gearboxes

Dimensions with solid shaft and foot (VBR)



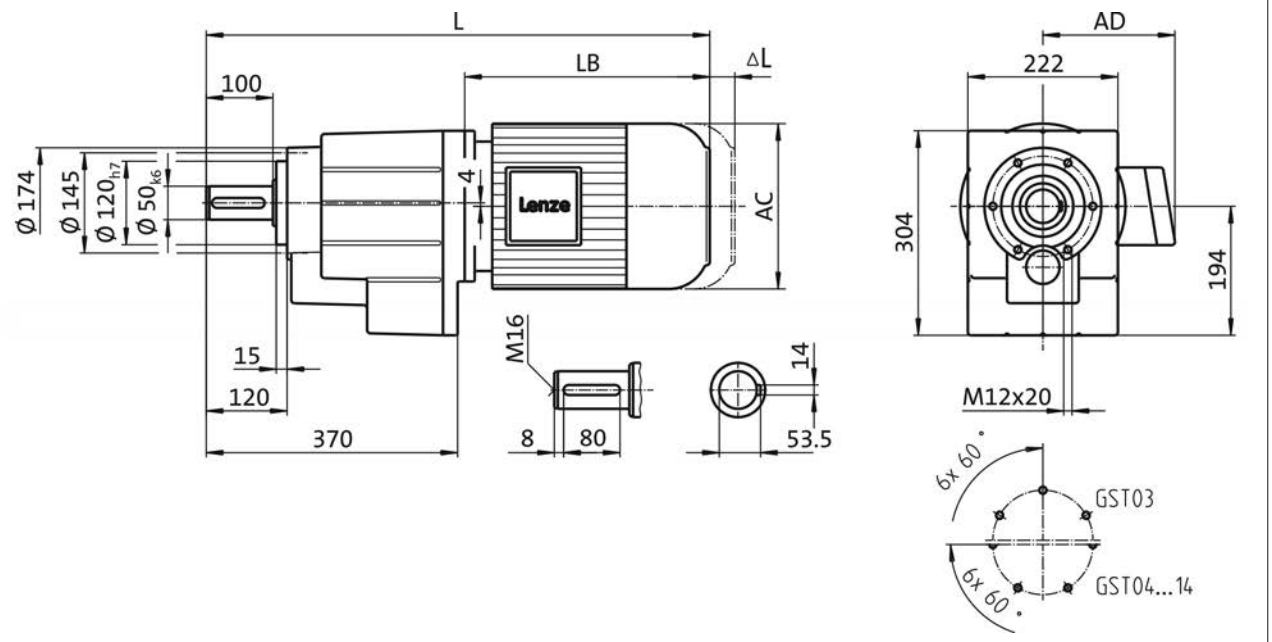
Product			m500					
			-P132L4	-P132M4	-P160L4	-P160M4	-P180L4	-P180M4
Dimensions								
Total length	**L**	**[mm]**	821		932		989	
Motor length	**LB**	**[mm]**	433.5		539		596.5	
Length of motor options	**Δ L**	**[mm]**	200.5		237		267	
Motor diameter	**AC**	**[mm]**	261		313		351	
Distance motor/connection	**AD**	**[mm]**	182		231		282	



Dimensions, 4-pole motors

GST09, 2-stage gearboxes

Dimensions with solid shaft and centering (VCR)



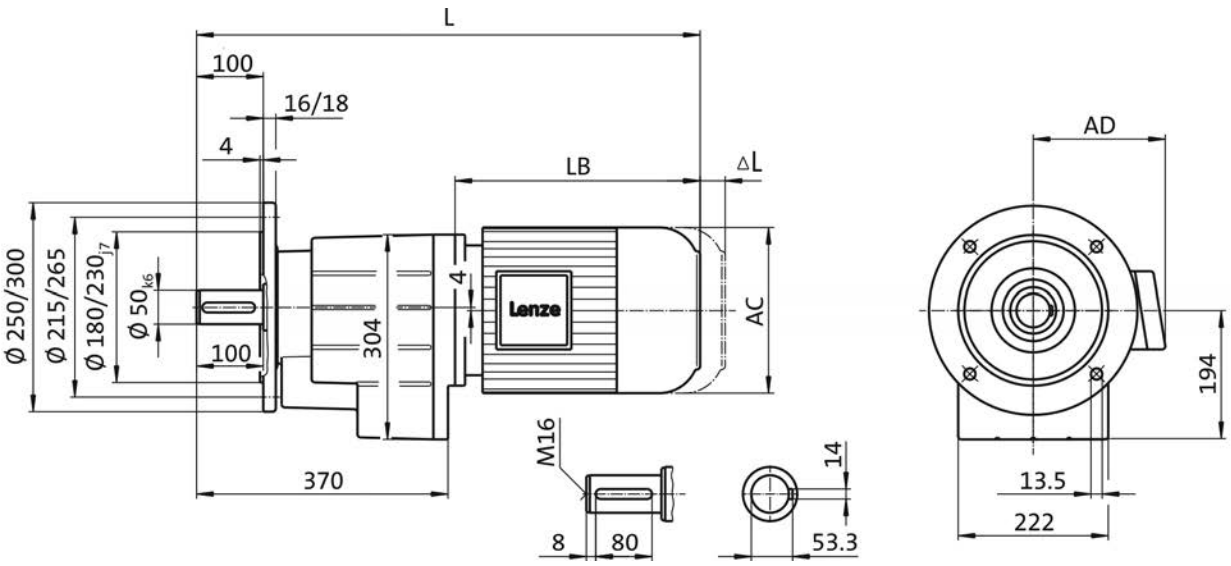
Product			m500					
			-P132L4	-P132M4	-P160L4	-P160M4	-P180L4	-P180M4
Dimensions								
Total length	**L**	**[mm]**	821		932		989	
Motor length	**LB**	**[mm]**	433.5		539		596.5	
Length of motor options	**Δ L**	**[mm]**	200.5		237		267	
Motor diameter	**AC**	**[mm]**	261		313		351	
Distance motor/connection	**AD**	**[mm]**	182		231		282	



Dimensions, 4-pole motors

GST09, 2-stage gearboxes

Dimensions with solid shaft and flange (VCK)



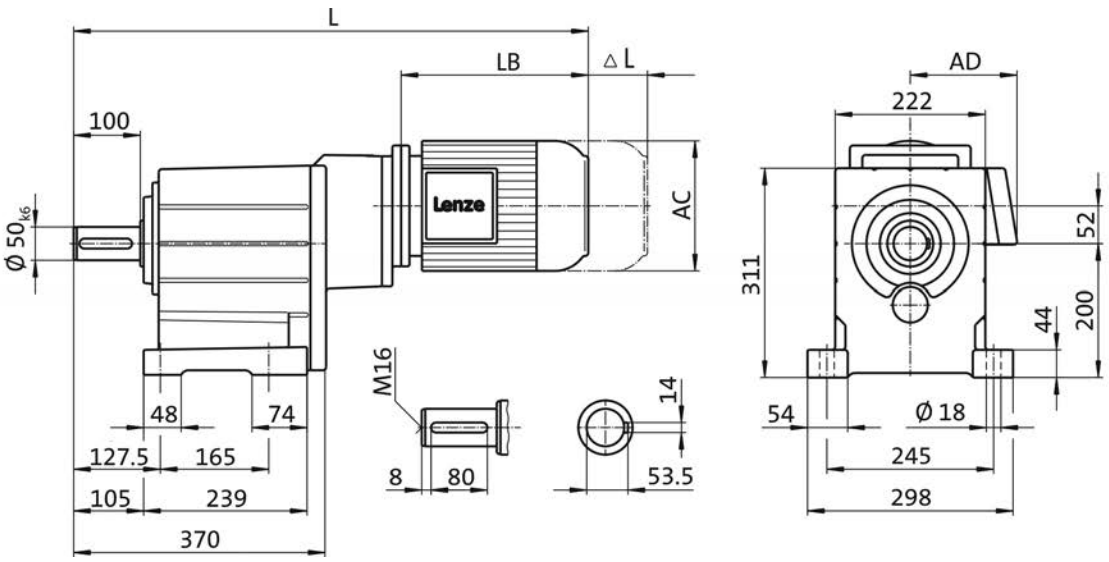
Product			m500					
			-P132L4	-P132M4	-P160L4	-P160M4	-P180L4	-P180M4
Dimensions								
Total length	**L**	**[mm]**	821		932		989	
Motor length	**LB**	**[mm]**	433.5		539		596.5	
Length of motor options	**Δ L**	**[mm]**	200.5		237		267	
Motor diameter	**AC**	**[mm]**	261		313		351	
Distance motor/connection	**AD**	**[mm]**	182		231		282	



Dimensions, 4-pole motors

GST09, 3-stage gearboxes

Dimensions with solid shaft and foot (VBR)



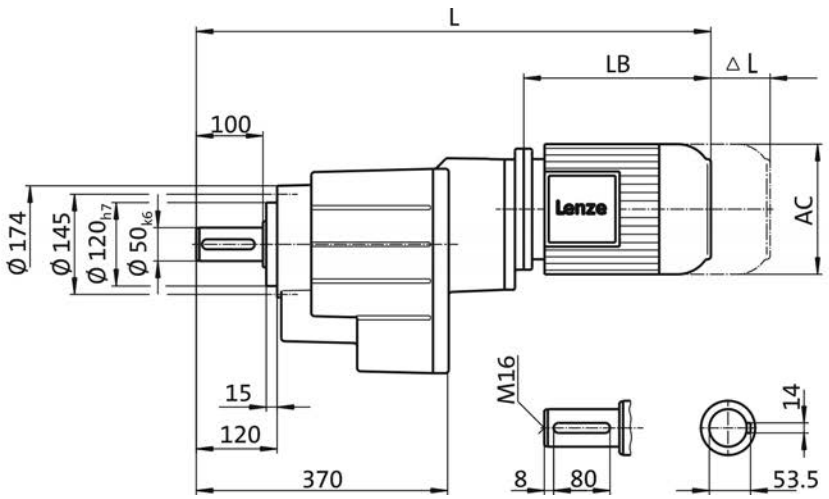
Product			m500
			-P132M4
Dimensions			
Total length	**L**	**[mm]**	944
Motor length	**LB**	**[mm]**	433.5
Length of motor options	**Δ L**	**[mm]**	200.5
Motor diameter	**AC**	**[mm]**	261
Distance motor/connection	**AD**	**[mm]**	182



Dimensions, 4-pole motors

GST09, 3-stage gearboxes

Dimensions with solid shaft and centering (VCR)



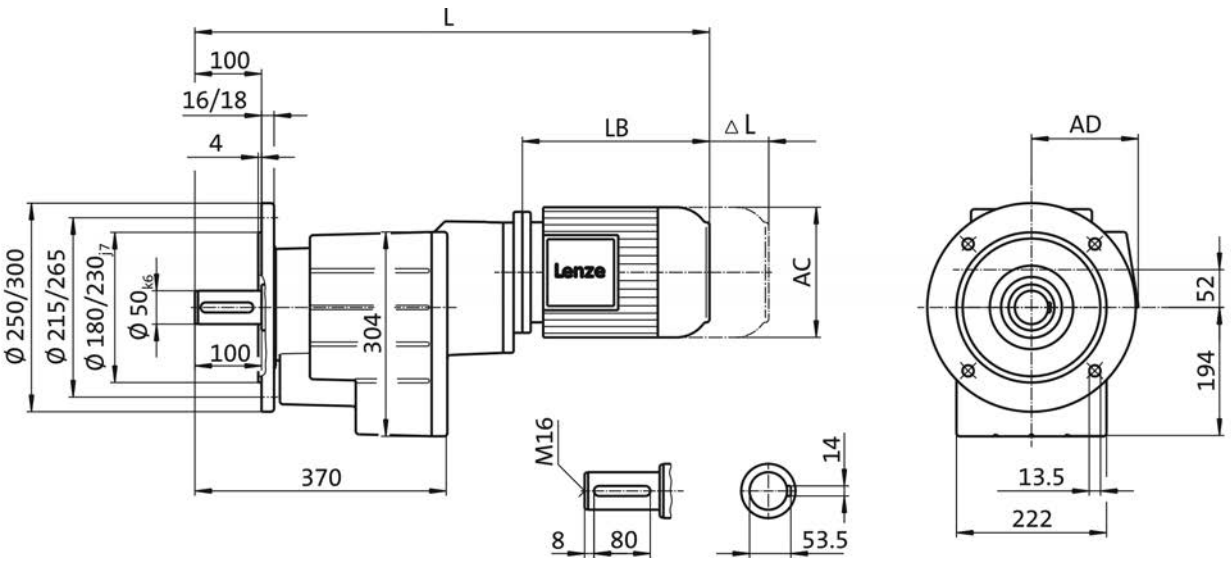
Product			m500
			-P132M4
Dimensions			
Total length	**L**	**[mm]**	944
Motor length	**LB**	**[mm]**	433.5
Length of motor options	**Δ L**	**[mm]**	200.5
Motor diameter	**AC**	**[mm]**	261
Distance motor/connection	**AD**	**[mm]**	182



Dimensions, 4-pole motors

GST09, 3-stage gearboxes

Dimensions with solid shaft and flange (VCK)



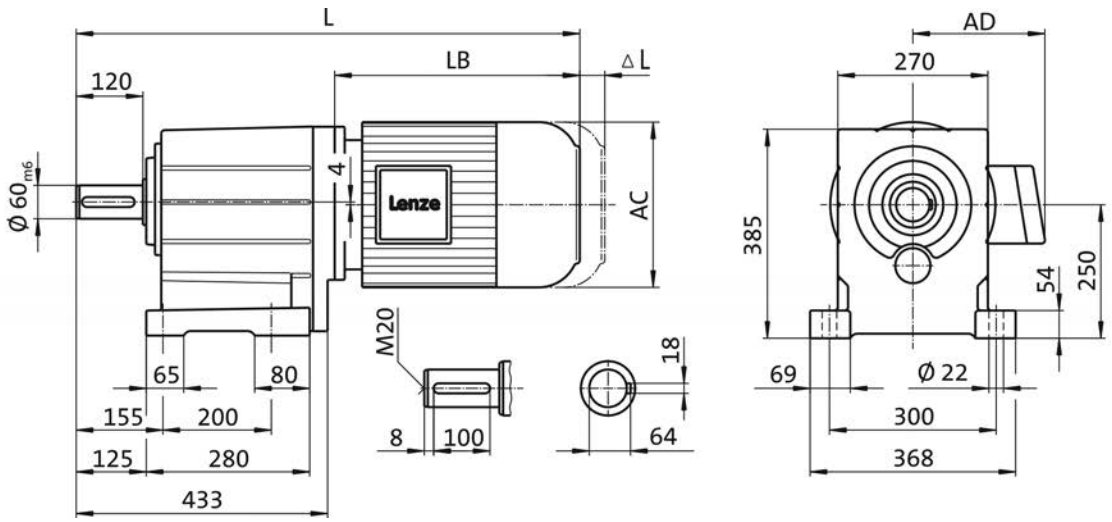
Product			m500
			-P132M4
Dimensions			
Total length	**L**	**[mm]**	944
Motor length	**LB**	**[mm]**	433.5
Length of motor options	**Δ L**	**[mm]**	200.5
Motor diameter	**AC**	**[mm]**	261
Distance motor/connection	**AD**	**[mm]**	182



Dimensions, 4-pole motors

GST11, 2-stage gearboxes

Dimensions with solid shaft and foot (VBR)



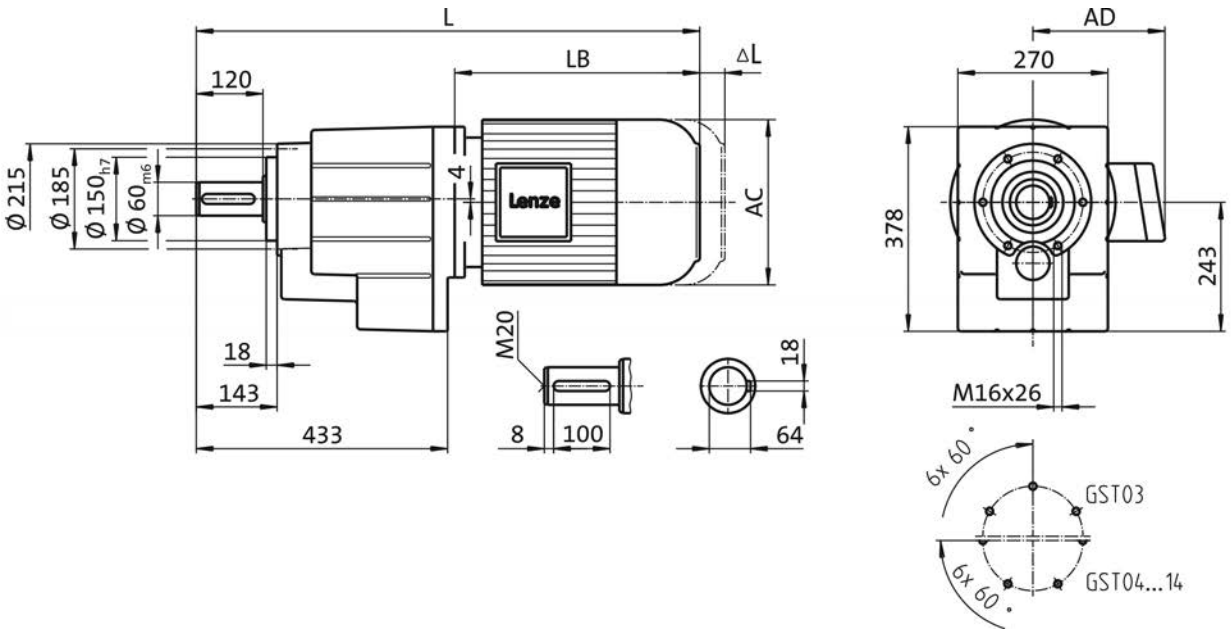
Product			m500					
			-P132L4	-P132M4	-P160L4	-P160M4	-P180L4	-P180M4
Dimensions								
Total length	**L**	**[mm]**	878		989		1046	
Motor length	**LB**	**[mm]**	433.5		539		596.5	
Length of motor options	**Δ L**	**[mm]**	200.5		237		267	
Motor diameter	**AC**	**[mm]**	261		313		351	
Distance motor/connection	**AD**	**[mm]**	182		231		282	



Dimensions, 4-pole motors

GST11, 2-stage gearboxes

Dimensions with solid shaft and centering (VCR)



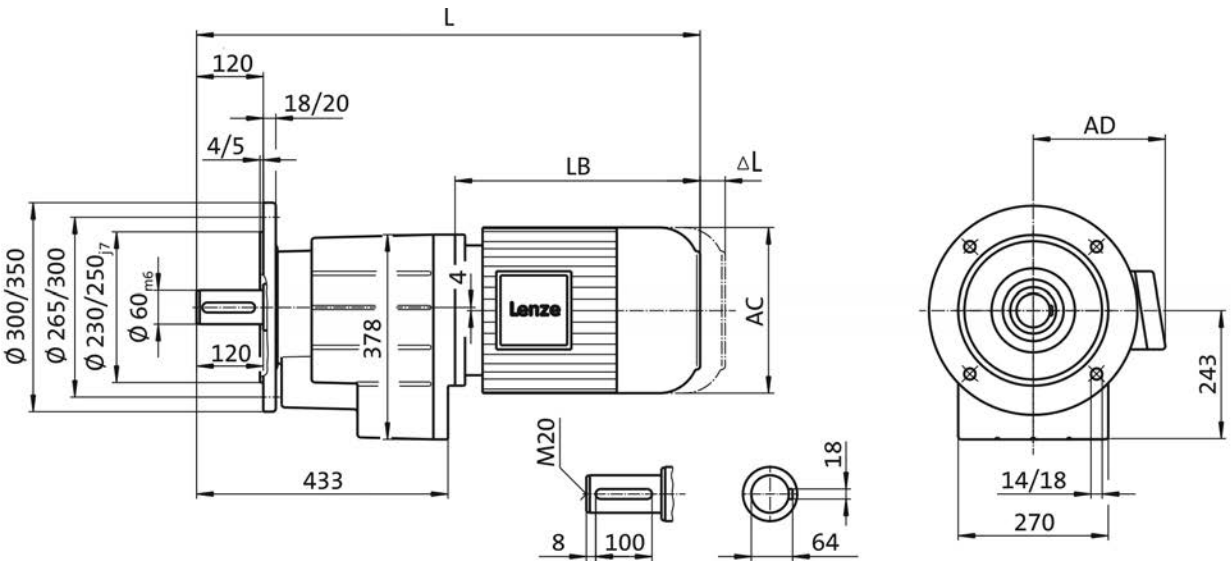
Product			m500					
			-P132L4	-P132M4	-P160L4	-P160M4	-P180L4	-P180M4
Dimensions								
Total length	**L**	**[mm]**	878		989		1046	
Motor length	**LB**	**[mm]**	433.5		539		596.5	
Length of motor options	**Δ L**	**[mm]**	200.5		237		267	
Motor diameter	**AC**	**[mm]**	261		313		351	
Distance motor/connection	**AD**	**[mm]**	182		231		282	



Dimensions, 4-pole motors

GST11, 2-stage gearboxes

Dimensions with solid shaft and flange (VCK)



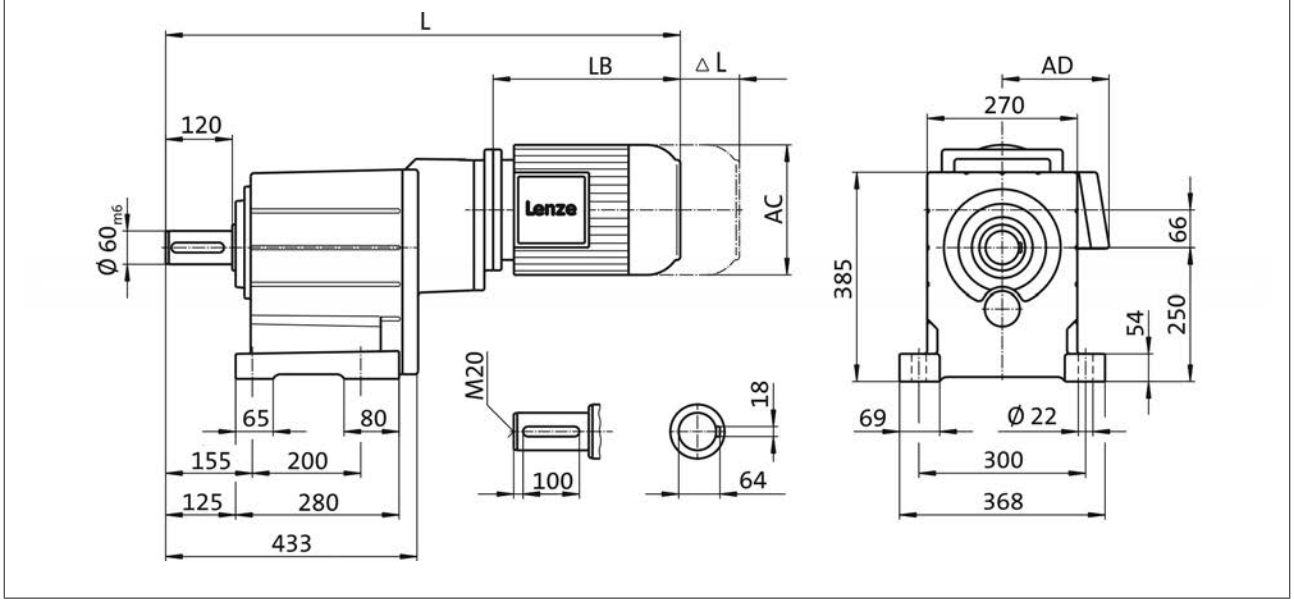
Product			m500					
			-P132L4	-P132M4	-P160L4	-P160M4	-P180L4	-P180M4
Dimensions								
Total length	**L**	**[mm]**	878		989		1046	
Motor length	**LB**	**[mm]**	433.5		539		596.5	
Length of motor options	**Δ L**	**[mm]**	200.5		237		267	
Motor diameter	**AC**	**[mm]**	261		313		351	
Distance motor/connection	**AD**	**[mm]**	182		231		282	



Dimensions, 4-pole motors

GST11, 3-stage gearboxes

Dimensions with solid shaft and foot (VBR)



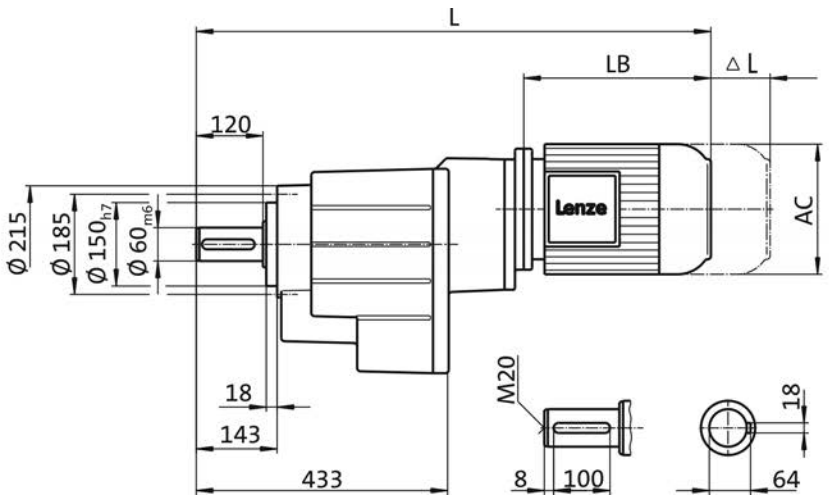
Product			m500	
			-P132L4	-P132M4
Dimensions				
Total length	**L**	**[mm]**	1020	
Motor length	**LB**	**[mm]**	433.5	
Length of motor options	**Δ L**	**[mm]**	200.5	
Motor diameter	**AC**	**[mm]**	261	
Distance motor/connection	**AD**	**[mm]**	182	



Dimensions, 4-pole motors

GST11, 3-stage gearboxes

Dimensions with solid shaft and centering (VCR)



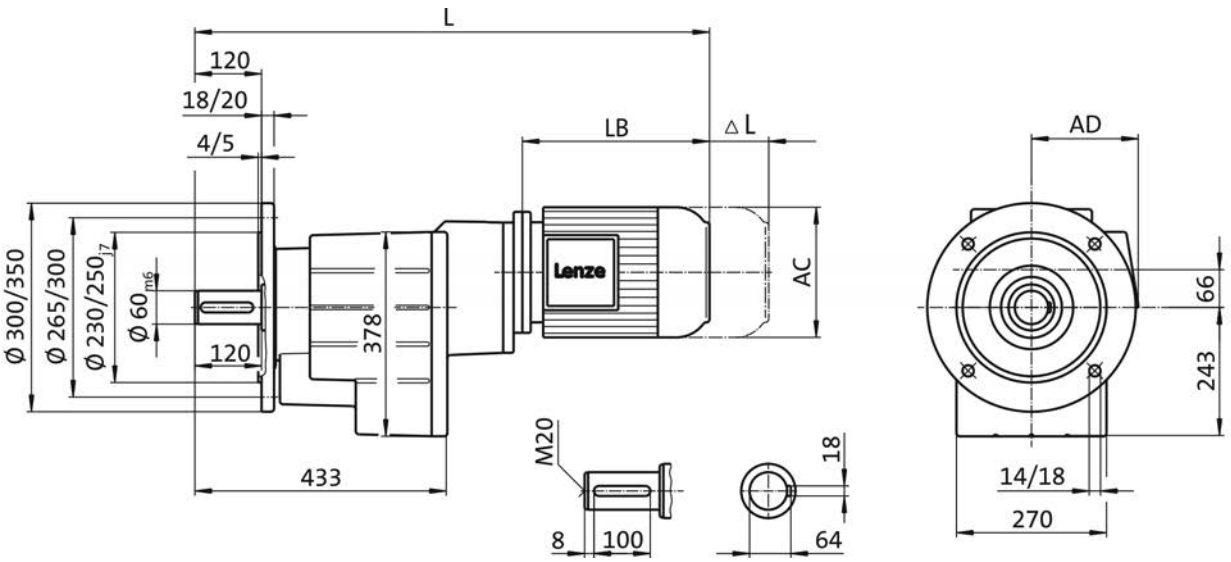
Product			m500	
			-P132L4	-P132M4
Dimensions				
Total length	**L**	**[mm]**	1020	
Motor length	**LB**	**[mm]**	433.5	
Length of motor options	**Δ L**	**[mm]**	200.5	
Motor diameter	**AC**	**[mm]**	261	
Distance motor/connection	**AD**	**[mm]**	182	



Dimensions, 4-pole motors

GST11, 3-stage gearboxes

Dimensions with solid shaft and flange (VCK)



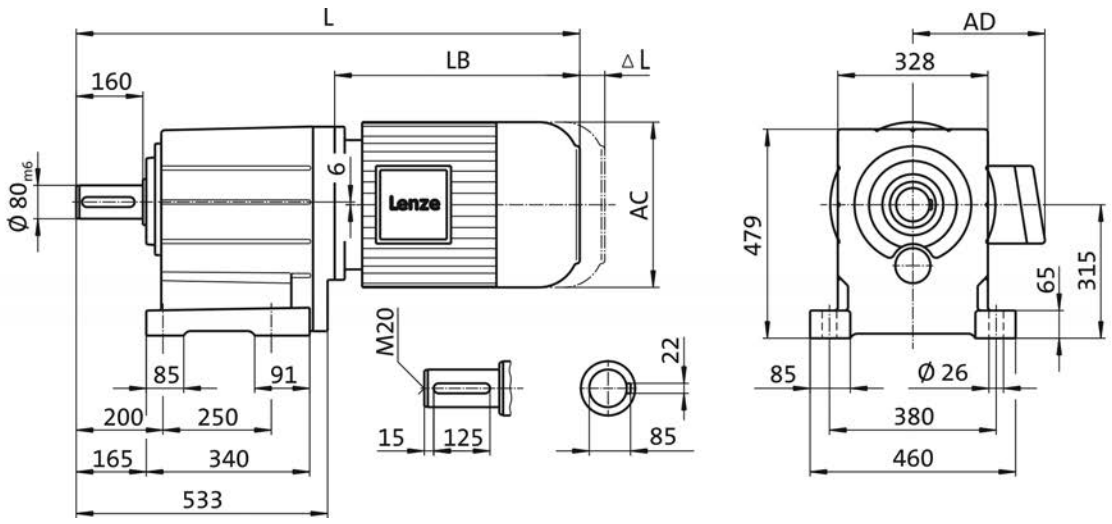
Product			m500	
			-P132L4	-P132M4
Dimensions				
Total length	**L**	**[mm]**	1020	
Motor length	**LB**	**[mm]**	433.5	
Length of motor options	**Δ L**	**[mm]**	200.5	
Motor diameter	**AC**	**[mm]**	261	
Distance motor/connection	**AD**	**[mm]**	182	



Dimensions, 4-pole motors

GST14, 2-stage gearboxes

Dimensions with solid shaft and foot (VBR)



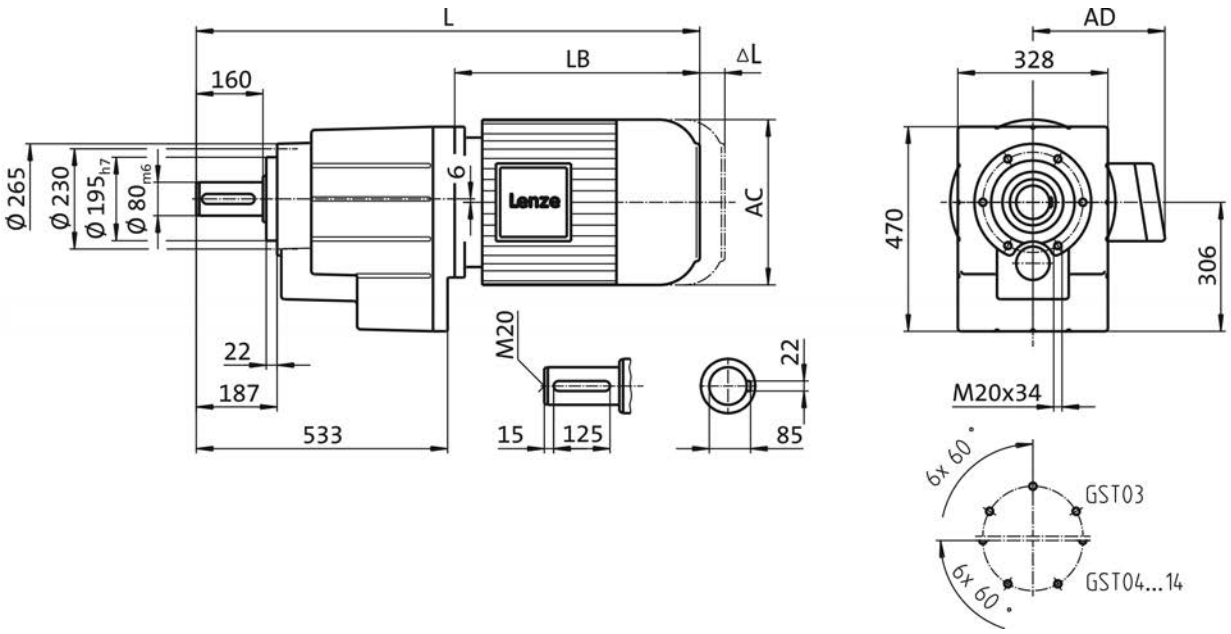
Product			m500							
			-P132L4	-P132M4	-P160L4	-P160M4	-P180L4	-P180M4	-P180V4	-P225M4
Dimensions										
Total length	**L**	**[mm]**	968		1079		1136		1185	1307
Motor length	**LB**	**[mm]**	433.5		539		596.5		645	767
Length of motor options	**Δ L**	**[mm]**	200.5		237		267			213
Motor diameter	**AC**	**[mm]**	261		313		351			456
Distance motor/connection	**AD**	**[mm]**	182		231		282			330



Dimensions, 4-pole motors

GST14, 2-stage gearboxes

Dimensions with solid shaft and centering (VCR)



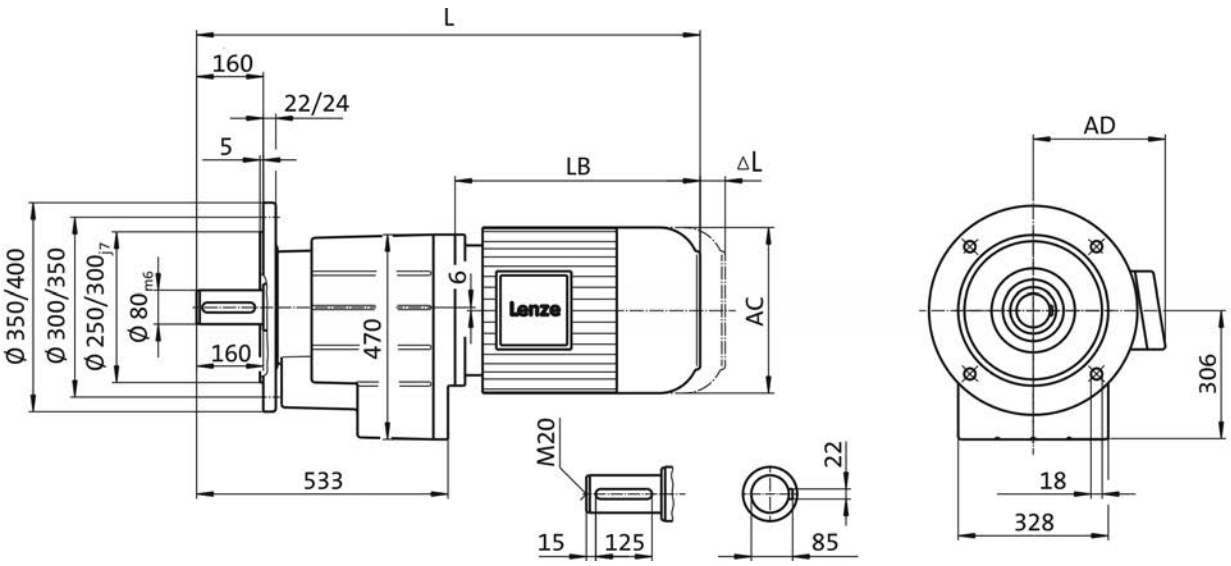
Product			m500							
			-P132L4	-P132M4	-P160L4	-P160M4	-P180L4	-P180M4	-P180V4	-P225M4
Dimensions										
Total length	**L**	**[mm]**	968		1079		1136		1185	1307
Motor length	**LB**	**[mm]**	433.5		539		596.5		645	767
Length of motor options	**Δ L**	**[mm]**	200.5		237		267			213
Motor diameter	**AC**	**[mm]**	261		313		351			456
Distance motor/connection	**AD**	**[mm]**	182		231		282			330



Dimensions, 4-pole motors

GST14, 2-stage gearboxes

Dimensions with solid shaft and flange (VCK)



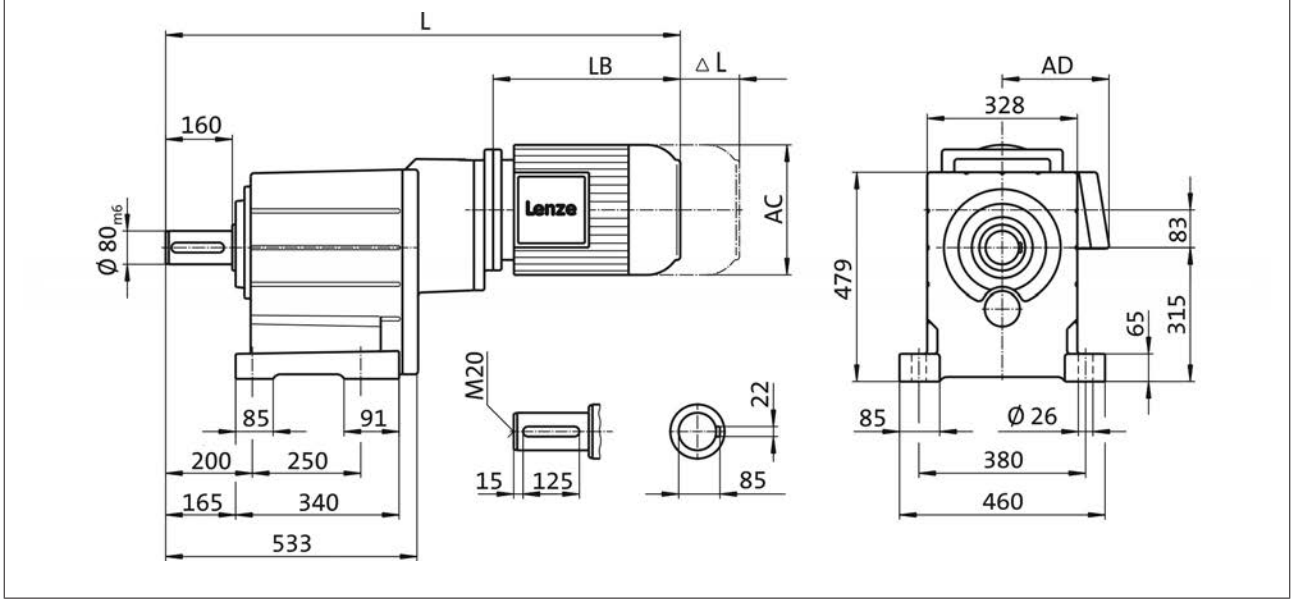
Product			m500							
			-P132L4	-P132M4	-P160L4	-P160M4	-P180L4	-P180M4	-P180V4	-P225M4
Dimensions										
Total length	**L**	**[mm]**	968		1079		1136		1185	1307
Motor length	**LB**	**[mm]**	433.5		539		596.5		645	767
Length of motor options	**Δ L**	**[mm]**	200.5		237		267			213
Motor diameter	**AC**	**[mm]**	261		313		351			456
Distance motor/connection	**AD**	**[mm]**	182		231		282			330



Dimensions, 4-pole motors

GST14, 3-stage gearboxes

Dimensions with solid shaft and foot (VBR)



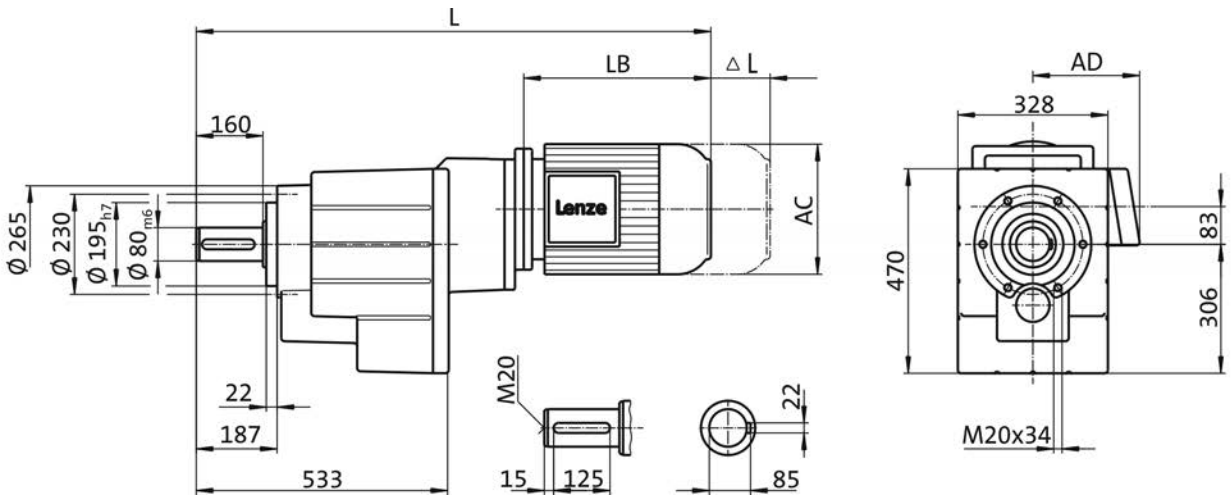
Product			m500				
			-P132L4	-P132M4	-P160L4	-P160M4	-P180M4
Dimensions							
Total length	**L**	**[mm]**	1144		1254		1312
Motor length	**LB**	**[mm]**	433.5		539		596.5
Length of motor options	**Δ L**	**[mm]**	200.5		237		267
Motor diameter	**AC**	**[mm]**	261		313		351
Distance motor/connection	**AD**	**[mm]**	182		231		282



Dimensions, 4-pole motors

GST14, 3-stage gearboxes

Dimensions with solid shaft and centering (VCR)

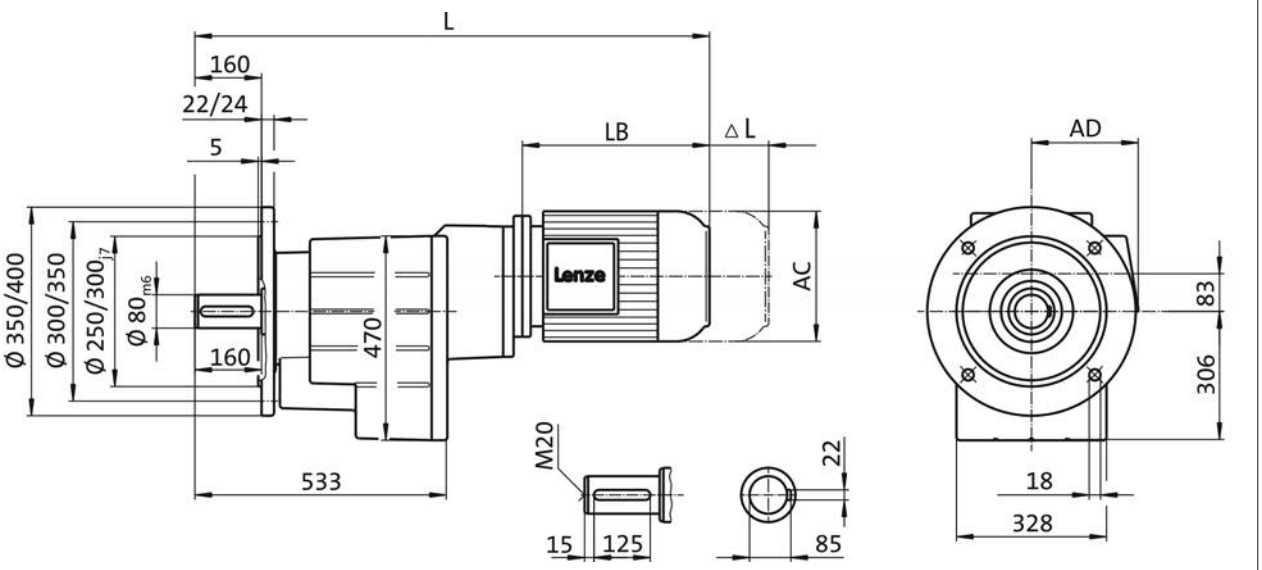


Product			m500				
			-P132L4	-P132M4	-P160L4	-P160M4	-P180M4
Dimensions							
Total length	**L**	**[mm]**	1144		1254		1312
Motor length	**LB**	**[mm]**	433.5		539		596.5
Length of motor options	**Δ L**	**[mm]**	200.5		237		267
Motor diameter	**AC**	**[mm]**	261		313		351
Distance motor/connection	**AD**	**[mm]**	182		231		282

Dimensions, 4-pole motors

GST14, 3-stage gearboxes

Dimensions with solid shaft and flange (VCK)

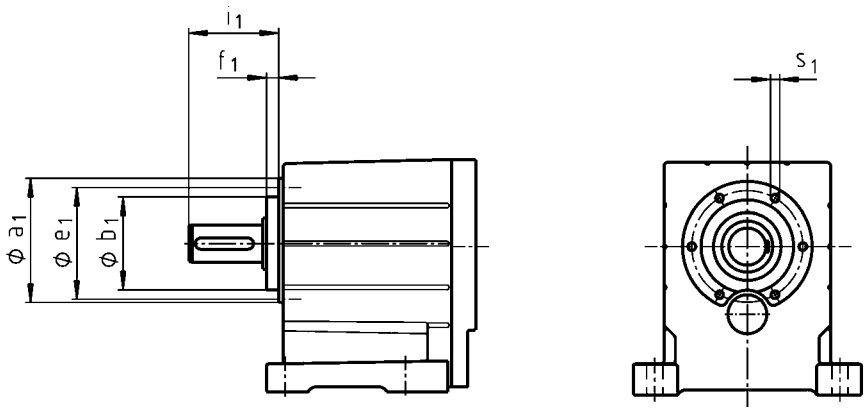


Product			m500				
			-P132L4	-P132M4	-P160L4	-P160M4	-P180M4
Dimensions							
Total length	**L**	**[mm]**	1144		1254		1312
Motor length	**LB**	**[mm]**	433.5		539		596.5
Length of motor options	**Δ L**	**[mm]**	200.5		237		267
Motor diameter	**AC**	**[mm]**	261		313		351
Distance motor/connection	**AD**	**[mm]**	182		231		282





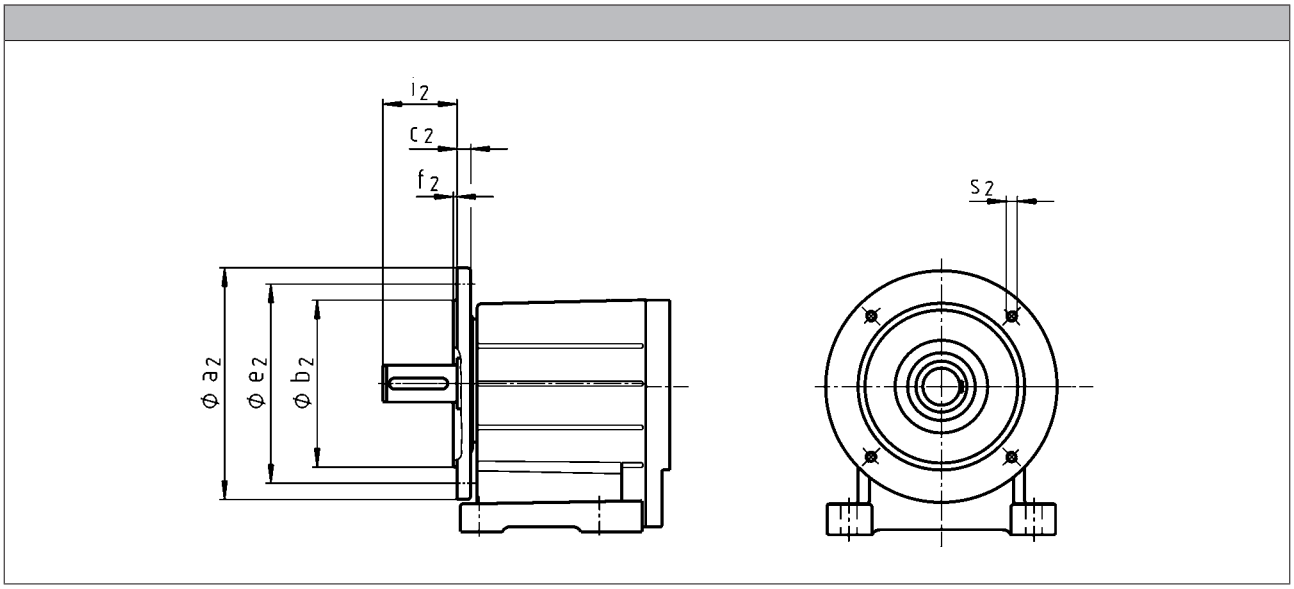
GST□□-2/3M VAR



	a_1	b_1	e_1	f_1	i_1	s_1
		h7				
GST04	72	48	61	8.0	51.0	M5x10
GST05	88	58	74	9.0	62.0	M6x12
GST06	109	70	90	10.0	74.0	M8x14
GST07	140	100	120	13.0	97.0	M10x18
GST09	174	120	145	15.0	120.0	M12x20
GST11	215	150	185	18.0	143.0	M16x26
GST14	265	195	230	22.0	187.0	M20x34



GST□□-2/3M VAL

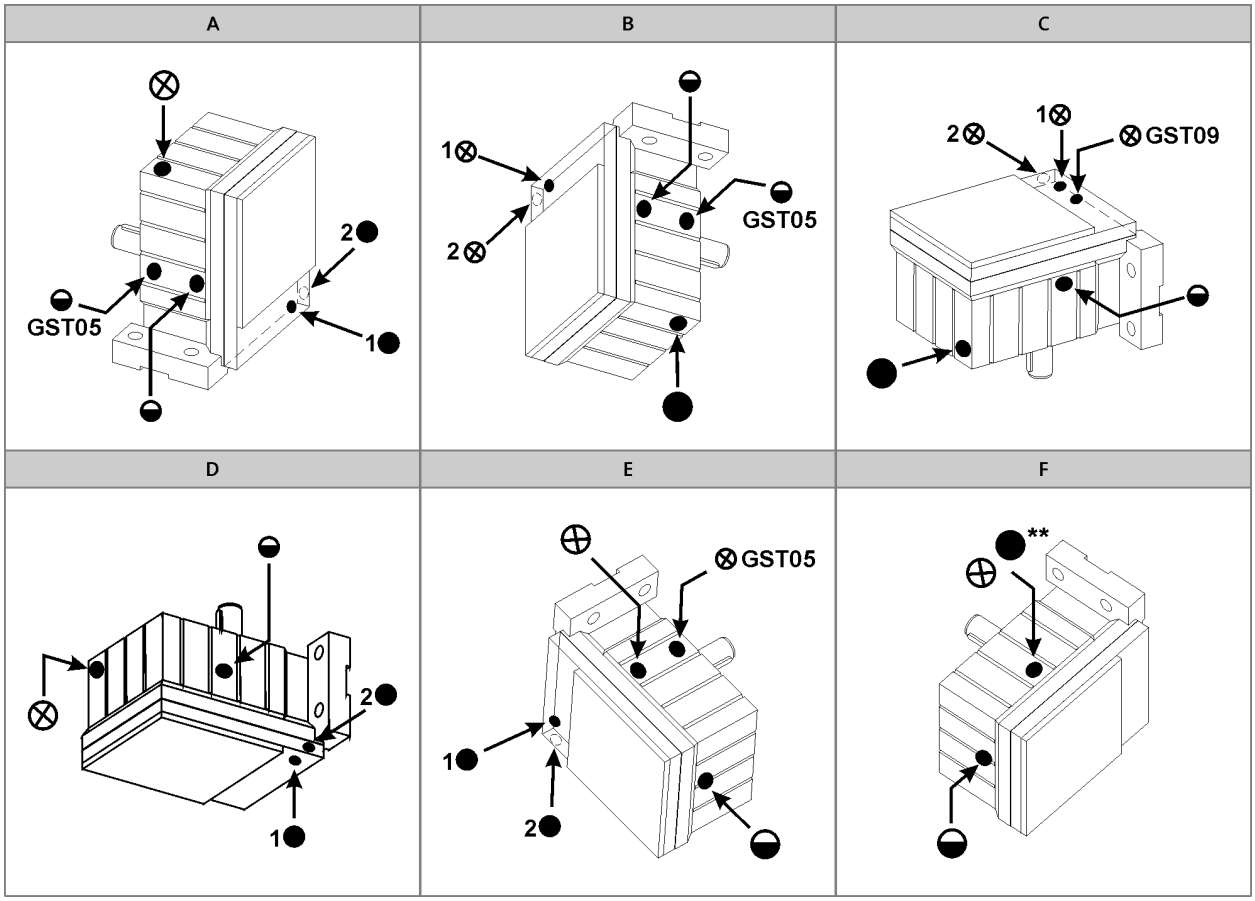


	a_2	b_2	c_2	e_2	f_2	i_2	s_2
		j7					
GST04	120 140	80 95	10 10	100 115	3.0 3.0	40	M6 M8
GST05	120 140 160	80 95 110	10 10 10	100 115 130	3.0 3.0 3.5	50	M6 M8 M8
GST06	160 200	110 130	12 12	130 165	3.5 3.5	60	M8 M10
GST07	200 250	130 180	14 15	165 215	3.5 4.0	80	M10 M12
GST09	250 300	180 230	16 18	215 265	4.0 4.0	100	M12 M12
GST11	300 350	230 250	18 20	265 300	4.0 5.0	120	M12 M16
GST14	350 400	250 300	22 24	300 350	5.0 5.0	160	M16 M16

Ventilations

Position of ventilation, sealing elements and oil level check

GST05...09-1



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

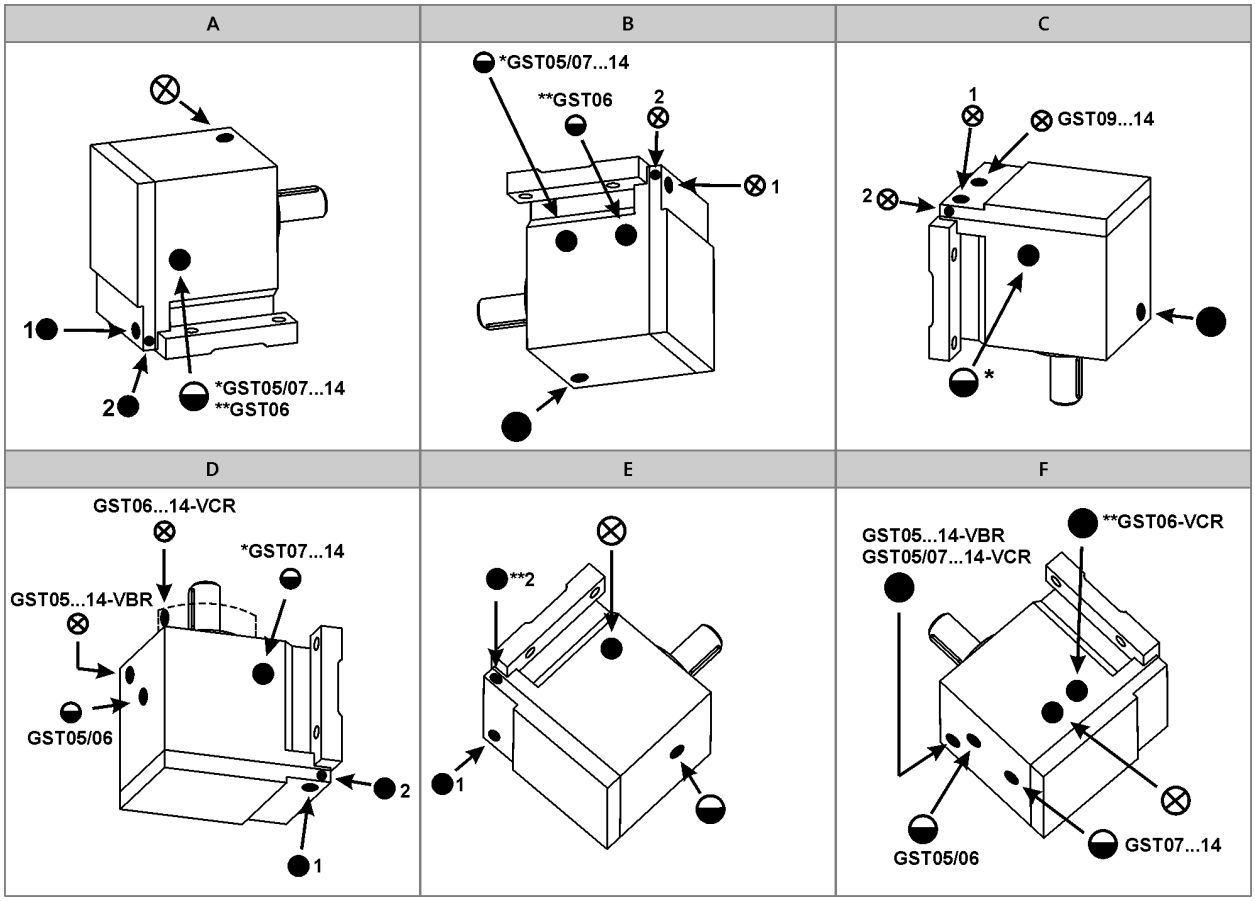
Pos.1 standard
Pos.2 only for:
- GST05-1M V□□ 090□□□
- GST05-1M V□□ 100□□□
- GST06-1M V□□ 112□□□
- GST07-1M V□□ 160□□□



Ventilations

Position of ventilation, sealing elements and oil level check

GST05...14-2



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

Pos.1 standard
Pos.2 only for:
- GST05-2M V□□ 090□□□
- GST05-2M V□□ 100□□□
- GST06-2M V□□ 112□□□
- GST07-2M V□□ 160□□□

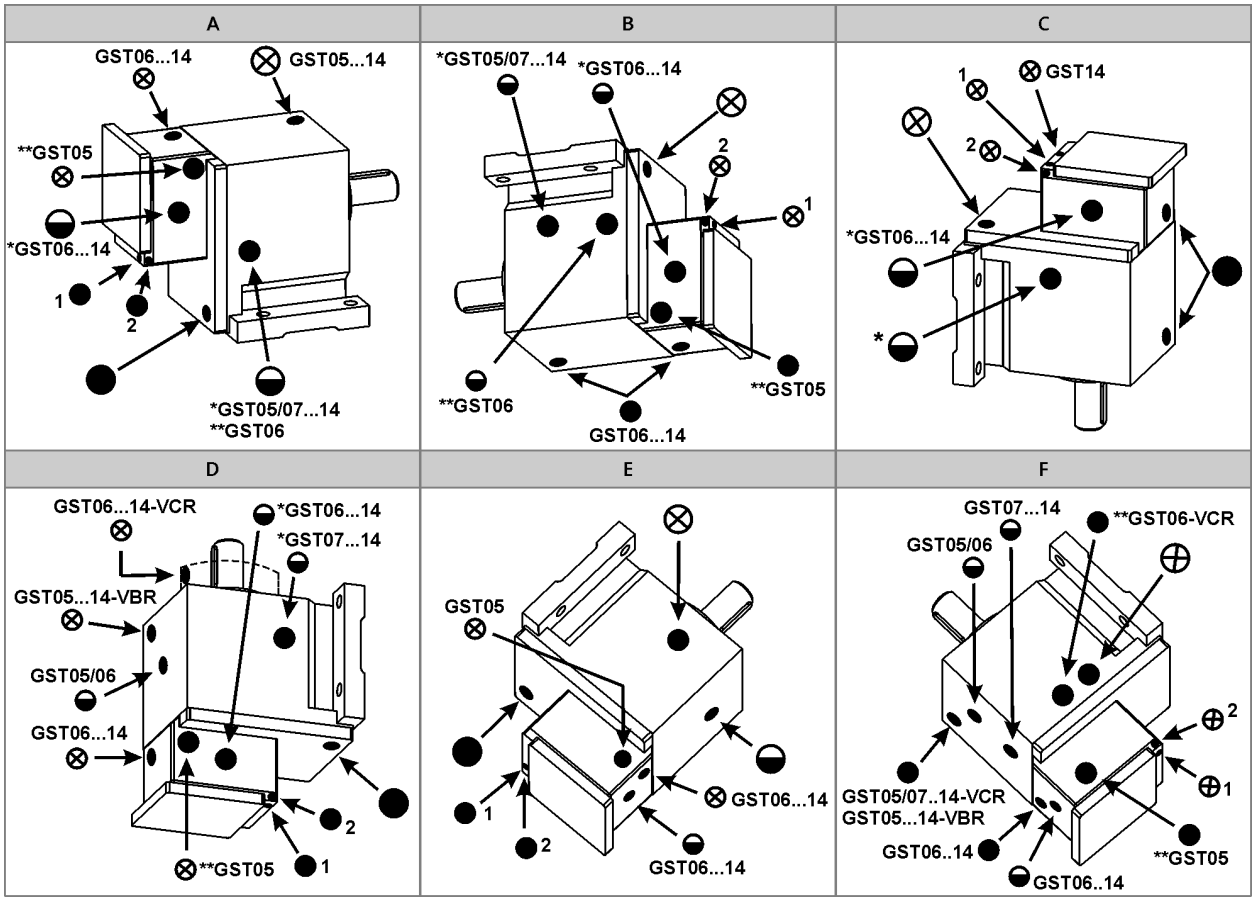
6.1



Ventilations

Position of ventilation, sealing elements and oil level check

GST05...14-3



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

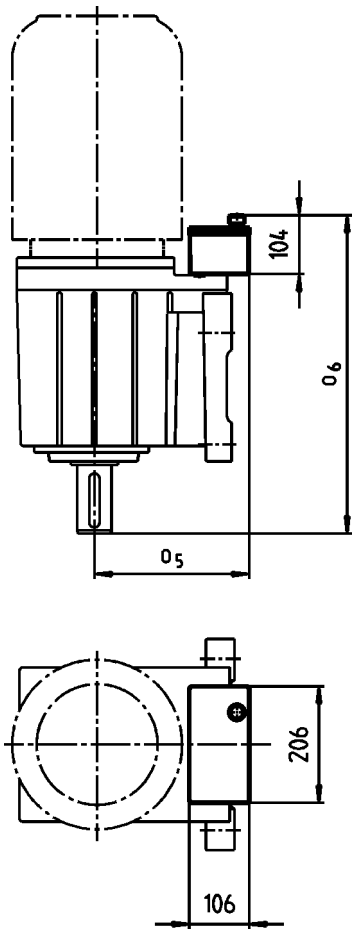
Pos.1 standard
Pos.2 only for:
- GST07-3M V□□ 090□□□
- GST07-3M V□□ 100□□□
- GST09-3M V□□ 112□□□



Ventilations

Compensation reservoir for mounting position C

GST□□-2



Motor	090 100		112		132		160 180 225	
	o_5	o_6	o_5	o_6	o_5	o_6	o_5	o_6
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
GST09	206	477	226	477	245	477	260	477
GST11	208	536	230	540	254	540	268	540
GST14			252	640	282	640	282	640

► Terminal box position 4 not permitted.





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