L-force catalogue

Automation systems
Drive solutions

Controls
Inverter
Motors
Gearboxes
Engineering Tools

Motors: Inverter opt. three-phase AC motors MF

Gearboxes: g500-H helical gearboxes, g500-S shaft-mounted helical gearbox, g500-B bevel gearbox

Lenze
As easy as that.

Contents of the L-force catalogue

Selected portfolio

Additional portfolio

Lenze makes many things easy for you.

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

1

Developing ideas

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

2

Drafting concepts

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

3

Implementing solutions

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

4

Manufacturing machines

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

5

Ensuring productivity

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

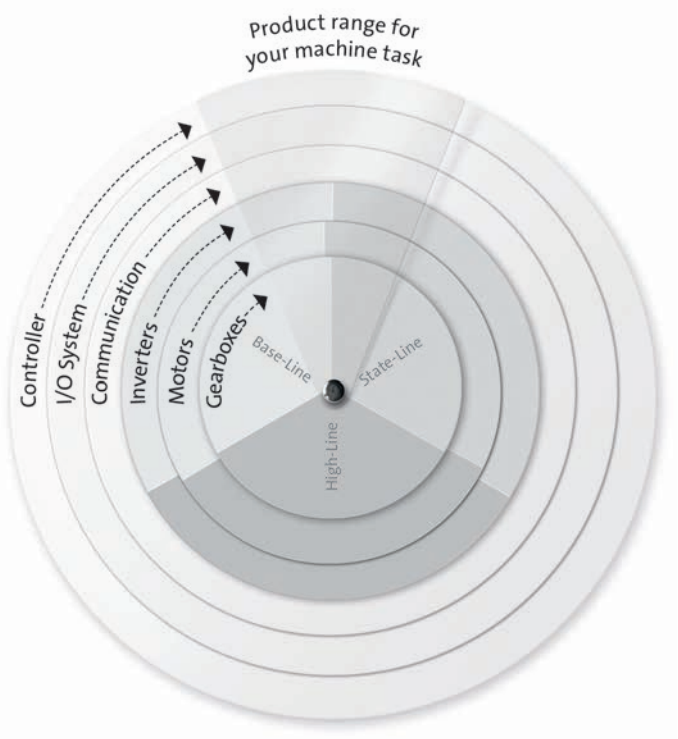
A matter of principle: the right products for every application.

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

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

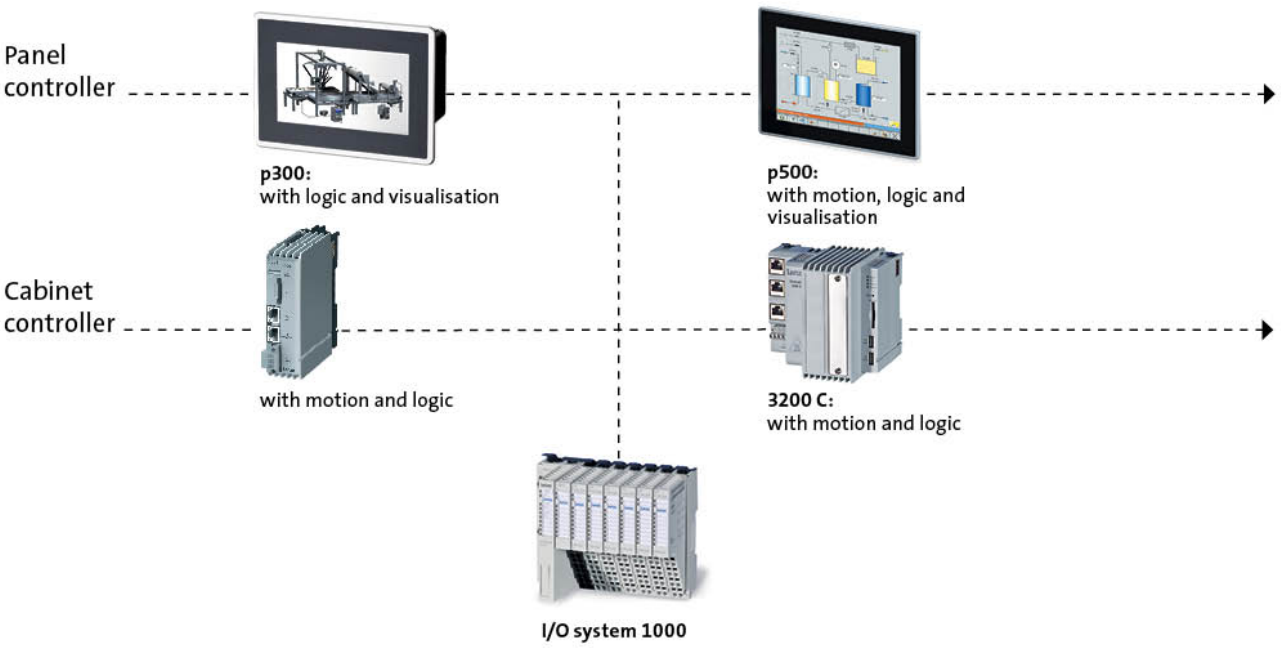
Powerful products with a major impact:
- Easy handling
- High quality and durability
- Reliable technologies in tune with the latest developments

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

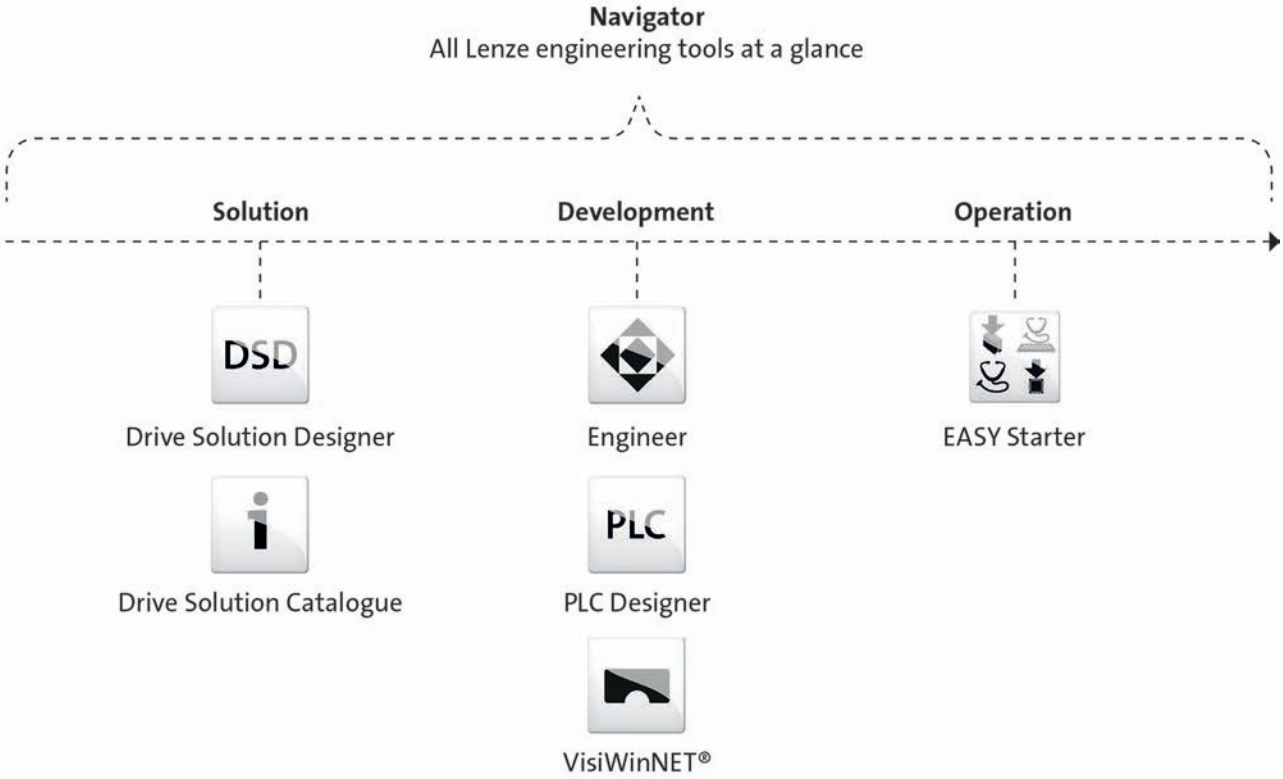


L-force product portfolio

Controls

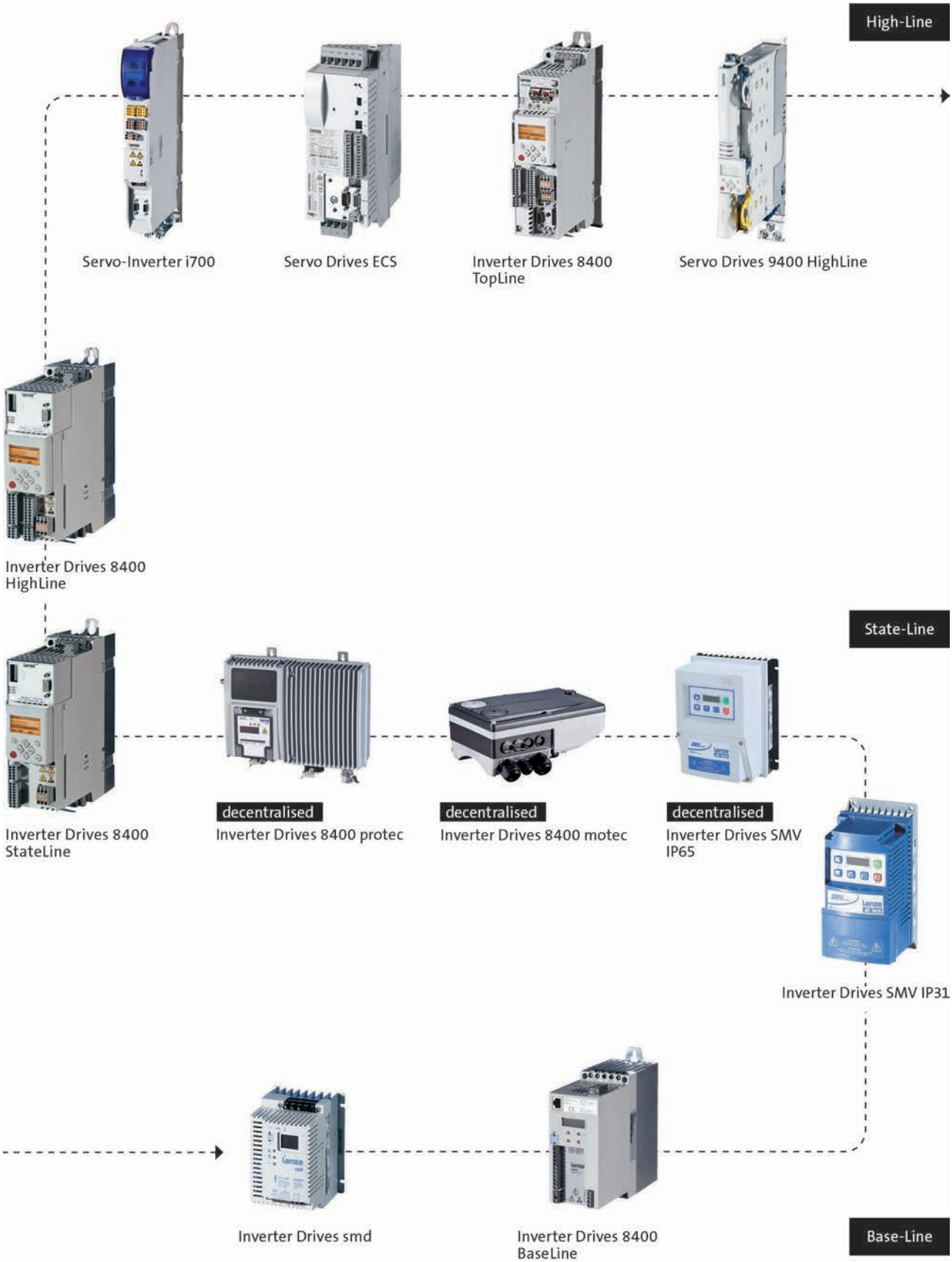


Engineering Tools



L-force product portfolio

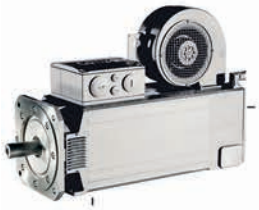
Inverter



L-force product portfolio

Motors

High-Line



MQA asynchronous servo motors

SDSGS synchronous servo motors

MDXKS synchronous servo motors

Synchronous servo motors MCS

Asynchronous servo motors MCA

Asynchronous servo motors SDSGA

State-Line

MF three-phase AC motors

MH three-phase AC motors

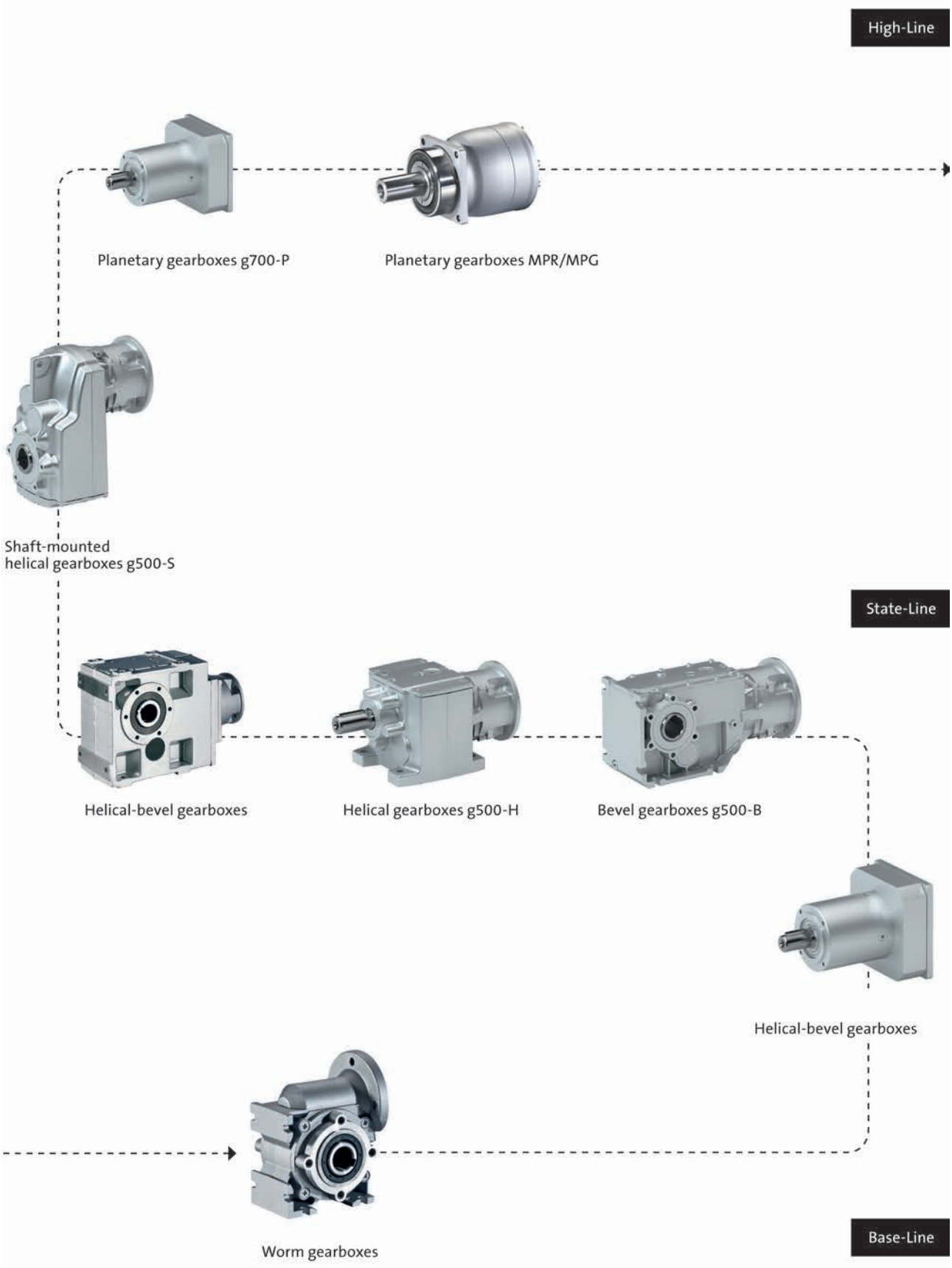
MD three-phase AC motors

Basic MD/MH three-phase AC motors

Base-Line

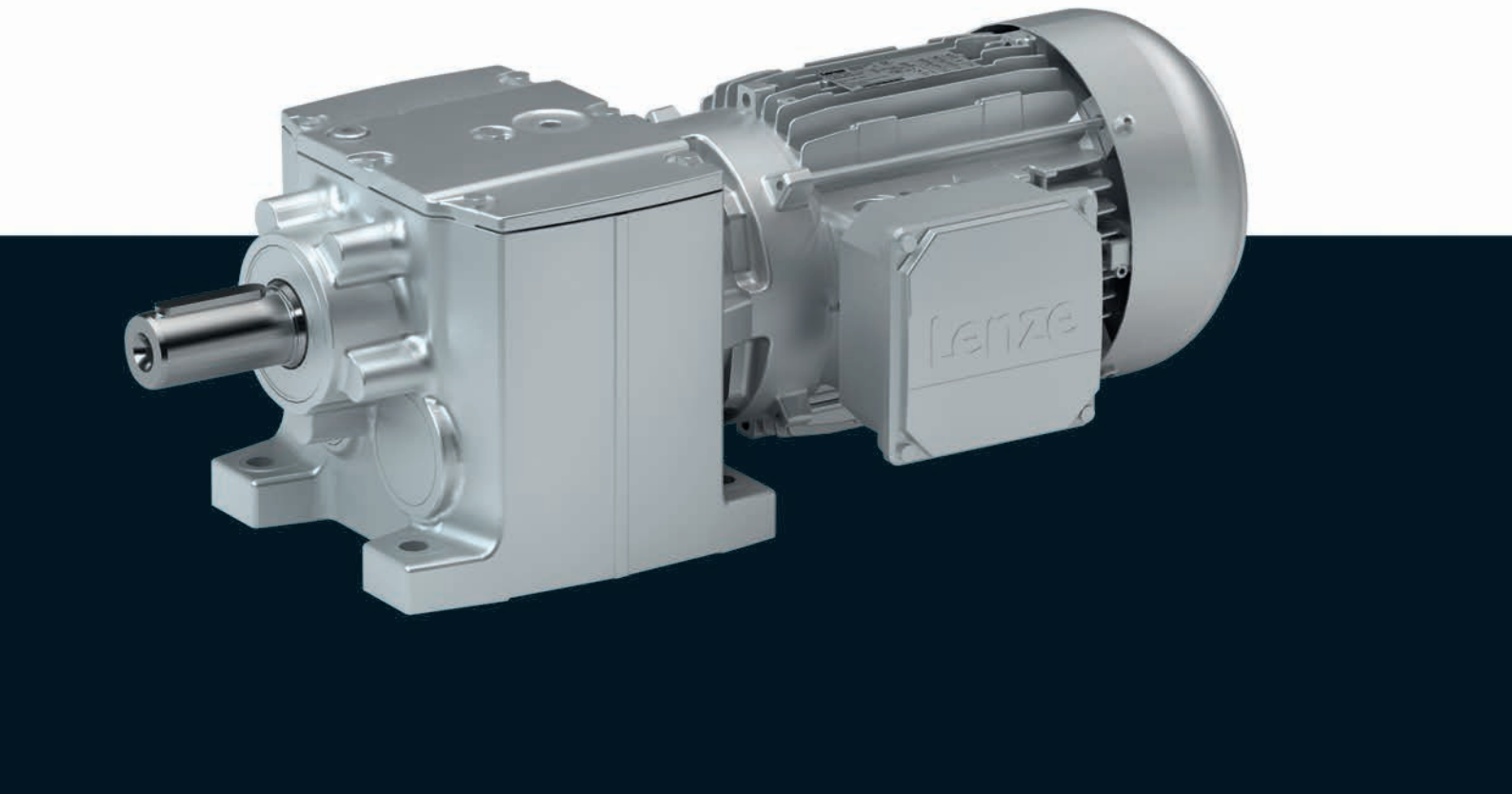
L-force product portfolio

Gearboxes



g500-H helical geared motors

Inverter operation
0.55 ... 11 kW (inverter-optimised, 120 Hz)



g500-H helical geared motors

Contents

List of abbreviations

c		Load capacity
i		Ratio
m	[kg]	Mass
M_2	[Nm]	Output torque
M_{22}	[Nm]	Output torque
$M_{a\_,1}$	[Nm]	Starting torque
$M_{a\_,2}$	[Nm]	Starting torque
n_2	[r/min]	Output speed
n_{21}	[r/min]	Output speed
n_{22}	[r/min]	Output speed

CCC	China Compulsory Certificate
CE	Communauté Européenne
CEL	China Energy Label
CSA	Canadian Standards Association
CSAULE	Energy Verified Certificate
cURus	Combined certification marks of UL for the USA and Canada
DIN	Deutsches Institut für Normung e.V.
EAC	Customs union Russia / Belarus / Kazakhstan certificate
EMC	Electromagnetic compatibility
EN	European standard
IM	International Mounting Code
IP	International Protection Code
NEMA	National Electrical Manufacturers Association
UkrSEPRO	Certificate for Ukraine
UL	Underwriters Laboratory Listed Product
UR	Underwriters Laboratory Recognized Product
VDE	Verband deutscher Elektrotechniker (Association of German Electrical Engineers)

Product information

In combination with three-phase AC motors, our helical gearboxes form a compact and powerful drive unit. Numerous options at the input and output end provide for the drive to be exactly adapted to your application.

The robust helical gearboxes feature high permissible radial forces, closely stepped ratios and a low backlash. They are available in 2-stage and 3-stage design with a output torque up to 3000 Nm and a ratio of up to i= 370.

Versions

- Fine-scaling of size / torque - provides for an optimum machine adaptation
- Standardised shaft and flange dimensions for an easy machine integration
- High efficiency

Three-phase AC motors as a basis for geared motors

In a power range of 0.55 to 11 kW, Lenze offers inverter-optimised three-phase AC motors for comprehensive tasks.
These drives can be used for the types required for open-loop and closed-loop controlled inverter operation.

Customer benefit:

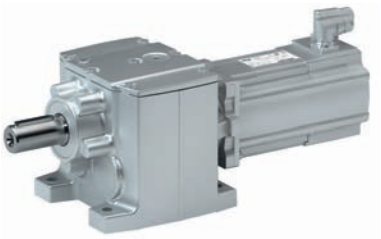
- Space-saving thanks to compact direct attachment to Lenze gearboxes
- Can be used universally for a wide range of machine tasks due to the market-oriented modular system
- Wide speed setting range
- More compact than conventional three-phase AC motors with the same power
- Dynamic
- Can be used worldwide

The product name

Gearbox type	Product range		Type	Rated torque [Nm]	Product
Helical gearbox	g500	-	H	45	g500-H45
				100	g500-H100
				140	g500-H140
				210	g500-H210
				320	g500-H320
				450	g500-H450
				600	g500-H600
				850	g500-H850
				1500	g500-H1500
				3000	g500-H3000

g500-H helical gearbox with three-phase AC motor

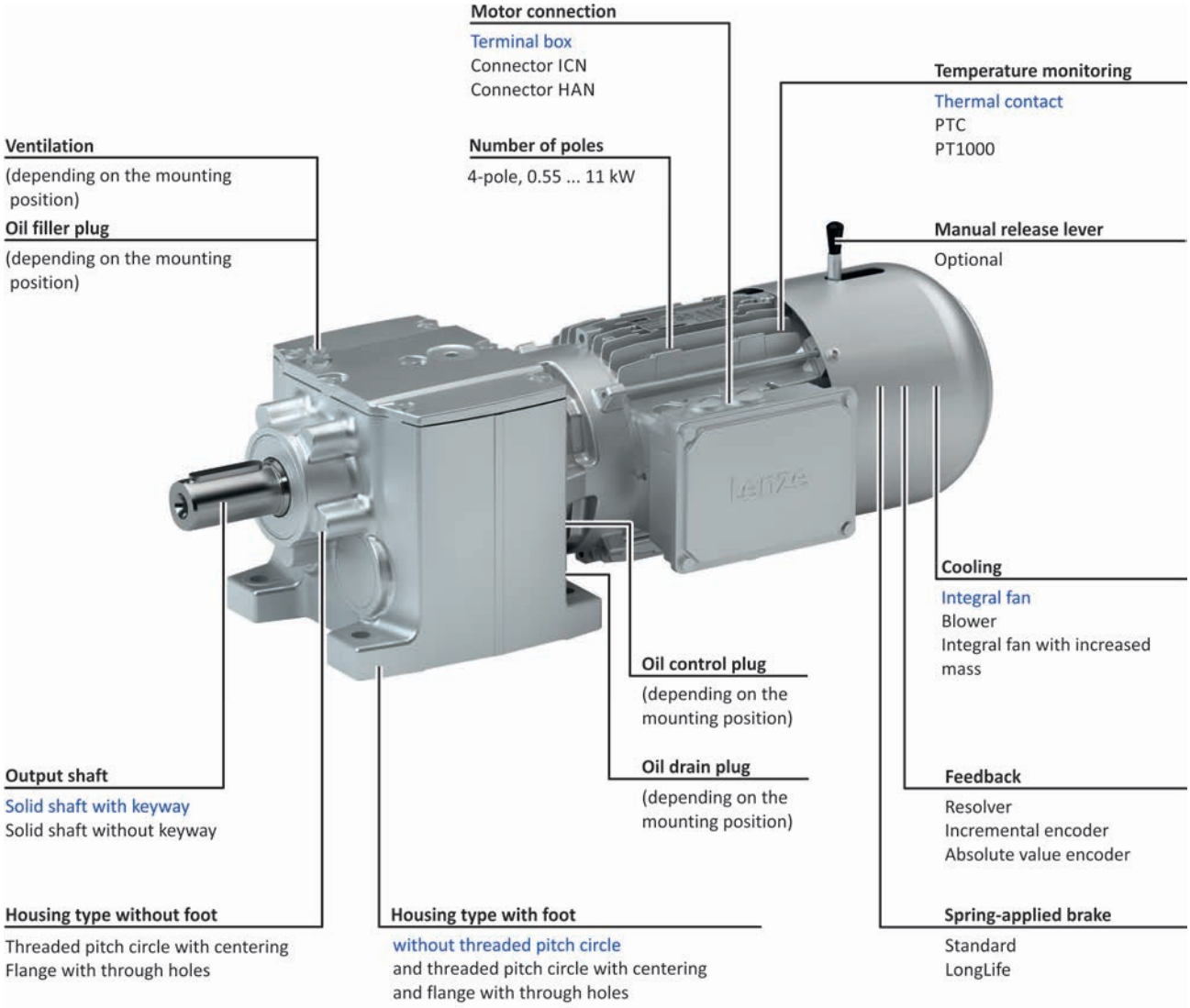
g500-H helical gearbox with three-phase AC motor and 8400 motec inverter



g500-H helical gearbox with servo motor

Equipment

Overview



Standard design

6.3

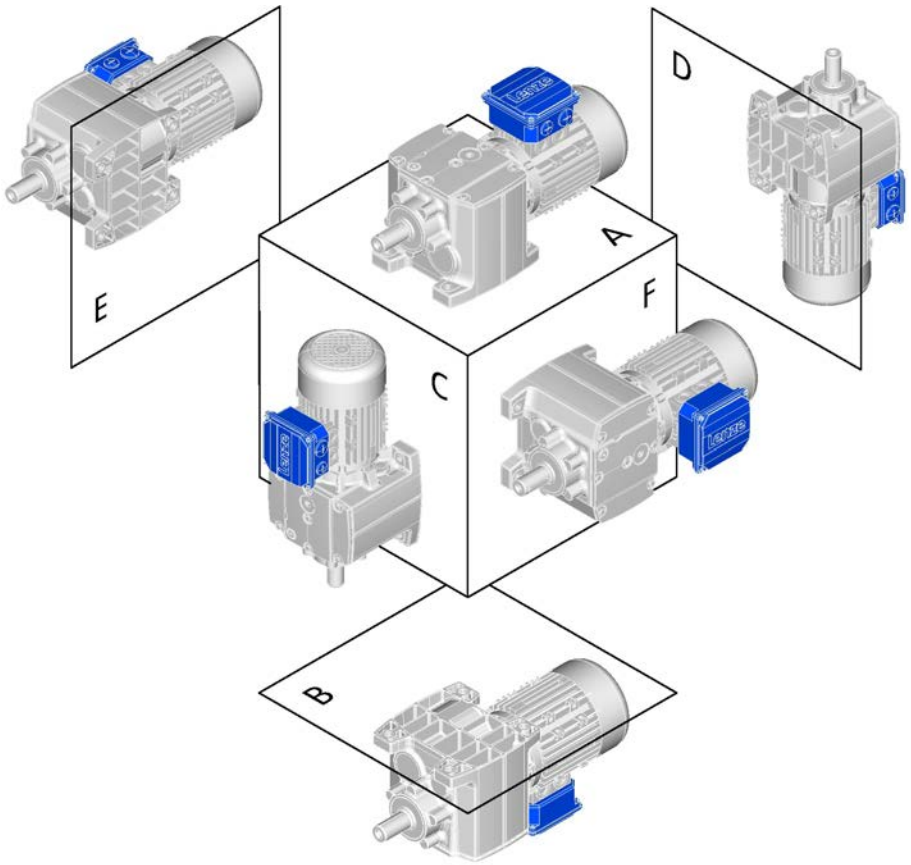
9 - Detailed information on housing type.

Equipment

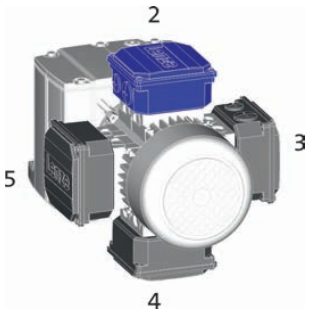
Mounting position, position of system components

- In the following graphics, the terminal box in position 2 is colour-coded.
  If the mounting position (A ... F) changes, the terminal box positions 2 ... 5 are rotated accordingly.
- To reduce the number of different versions, the gearboxes can also be ordered with combined mounting positions:
  - g500-H45 in mounting position ABCDEF
  - g500-H100 ... H450 in mounting position AEF

Mounting positions A ... F



Terminal box positions 2 ... 5



Cable entry positions 1 ... 5

- For details regarding the cable entry see motor chapter/product extensions.

The geared motor kit

g500-H45 ... H450

Product						
Gearbox	g500-H45	g500-H100	g500-H140	g500-H210	g500-H320	g500-H450
Motor assignment min.	MF□MA□□-063	MF□MA□□-063	MF□MA□□-063	MF□MA□□-063	MF□MA□□-063	MF□MA□□-063
Motor assignment max.	MF□MA□□-063	MF□MA□□-090	MF□MA□□-090	MF□MA□□-090	MF□MA□□-100	MF□MA□□-100
Technical data						
Output torque max.	45 Nm	100 Nm	140 Nm	210 Nm	320 Nm	450 Nm
Drive power min.	0.55 kW	0.55 kW	0.55 kW	0.55 kW	0.55 kW	0.55 kW
Drive power max.	0.75 kW	4.0 kW	4.0 kW	4.0 kW	5.5 kW	7.5 kW
Dimensions [mm]						
Solid shaft with featherkey	14 x 28 20 x 40	20 x 40	25 x 50	25 x 50	30 x 60	30 x 60 35 x 70
Solid shaft without keyway	20 x 40	20 x 40	25 x 50	25 x 50	30 x 60	35 x 70
Output flange	120/140/160	120/140/160	120/140/160	120/140/160/200	160/200	160/200/250

- The designs are only available for the gearboxes displayed above in the table.
- Values printed in bold are standard versions.
  Values not printed in bold are possible extensions, some for an additional charge.

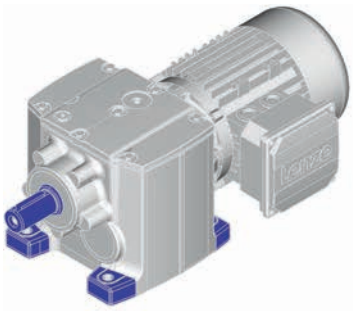
Type	
Conformity	**CE** EAC
Approval	**Without** CCC/CSA/cURus
Degree of protection	**IP55**
Surface and corrosion protection	**Without** Different types of OKS
Colour	**Not coated** Primed/RAL colours
Solid shaft	**With featherkey (V□□)** Without keyway
Shaft material	**Steel** stainless steel
Shaft sealing ring material	**NBR** FKM (Viton)
Driven shaft bearing	**Normal** Reinforced
Paste for shaft mounting	**Without** Enclosed
Gearbox type	**With foot (VBR)** **With centering (VCR)** With output flange (VCK) With output flange (VCP) With foot and centering (VAR) With foot and output flange (VAK)
Lubricant	**Mineral oil** Synthetic oil Food-compatible oil

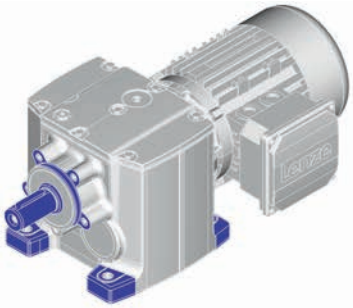
Type	
Mounting position	**A/B/C/D/E/F** Combined
Power connection	**Terminal box** Plug connectors
Spring-applied brake	**Without** Brake design: Standard/Longlife Brake version: Standard/Overexcited/Cold Brake
Feedback	**Without** Resolver Absolute value encoder Incremental encoder
Cooling	**Integral fan** Blower
Temperature monitoring	**TKO thermal contact** PTC thermistor PT1000 thermal detector

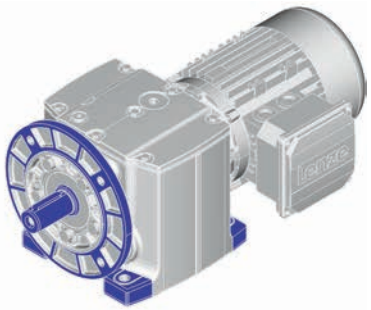
The geared motor kit

g500-H45 ... H450

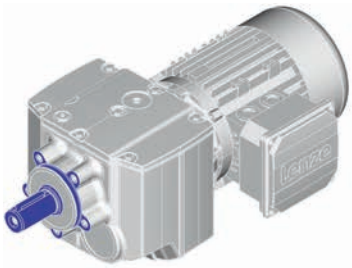
Gearbox design: solid shaft, with foot

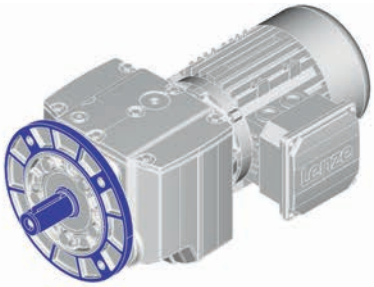

Without centring (VBR)

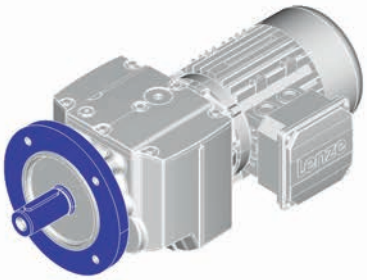

With centering (VAR)


Flange with through holes (VAK)

Gearbox design: solid shaft, without foot


With centering (VCR)


Flange with through holes (VCK)


Flange with through holes (VCP)

► VCP (reinforced flange) for transmitting particularly high radial and axial forces.

The geared motor kit

g500-H600 ... H3000

Product				
Gearbox	g500-H600	g500-H850	g500-H1500	g500-H3000
Motor assignment min.	MF□MA□□-063	MF□MA□□-063	MF□MA□□-071	MF□MA□□-080
Motor assignment max.	MF□MA□□-100	MF□MA□□-112	MF□MA□□-112	MF□MA□□-112
Technical data				
Output torque max.	600 Nm	850 Nm	1500 Nm	3000 Nm
Drive power min.	0.55 kW	0.55 kW	1.1 kW	2.2 kW
Drive power max.	7.5 kW	11 kW	11 kW	11 kW
Dimensions [mm]				
Solid shaft with featherkey	35 x 70 40 x 80	40 x 80	50 x 100	60 x 120
Solid shaft without keyway	35 x 70	40 x 80	50 x 100	60 x 120
Output flange	200/250	250/300	250/300/350	300/350/450

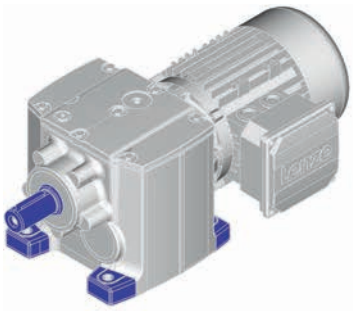
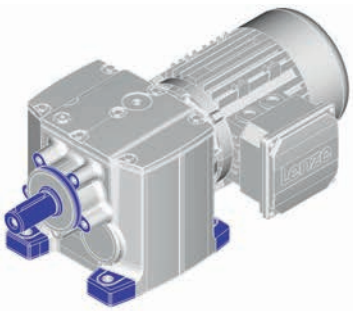
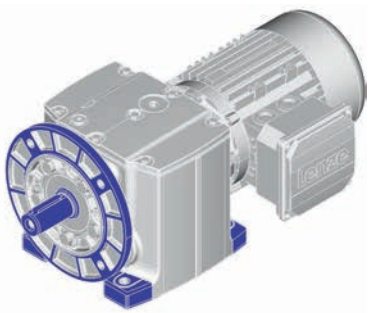
- ► The designs are only available for the gearboxes displayed above in the table.
- ► Values printed in bold are standard versions.
  Values not printed in bold are possible extensions, some for an additional charge.

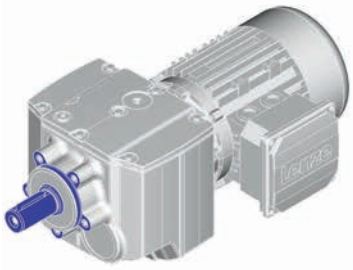
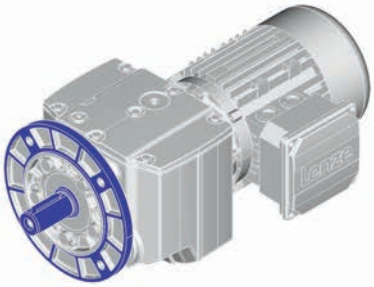
Type	
Conformity	**CE** EAC
Approval	**Without** CCC/CSA/cURus
Degree of protection	**IP55**
Surface and corrosion protection	**OKS-S** Different types of OKS
Colour	**Painted in RAL colours** Primed
Solid shaft	**With featherkey (V□□)** Without keyway
Shaft material	**Steel** stainless steel
Shaft sealing ring material	**NBR** FKM (Viton)
Driven shaft bearing	**Normal** Reinforced
Paste for shaft mounting	**Without** Enclosed
Gearbox type	**With foot (VBR)** **With centering (VCR)** With output flange (VCK) With foot and centering (VAR) With foot and output flange (VAK)
Lubricant	**Mineral oil** Synthetic oil Food-compatible oil

Type	
Mounting position	**A/B/C/D/E/F**
Power connection	**Terminal box** Plug connectors
Spring-applied brake	**Without** Brake design: Standard/Longlife Brake version: Standard/Overexcited/Cold Brake
Feedback	**Without** Resolver Absolute value encoder Incremental encoder
Cooling	**Integral fan** Blower
Temperature monitoring	**TKO thermal contact** PTC thermistor PT1000 thermal detector

The geared motor kit

g500-H600 ... H3000

Gearbox design: solid shaft, with foot		
 Without centring (VBR)	 With centering (VAR)	 Flange with through holes (VAK)

Gearbox design: solid shaft, without foot	
 With centering (VCR)	 Flange with through holes (VCK)

6.3

General information about the data provided in this catalogue

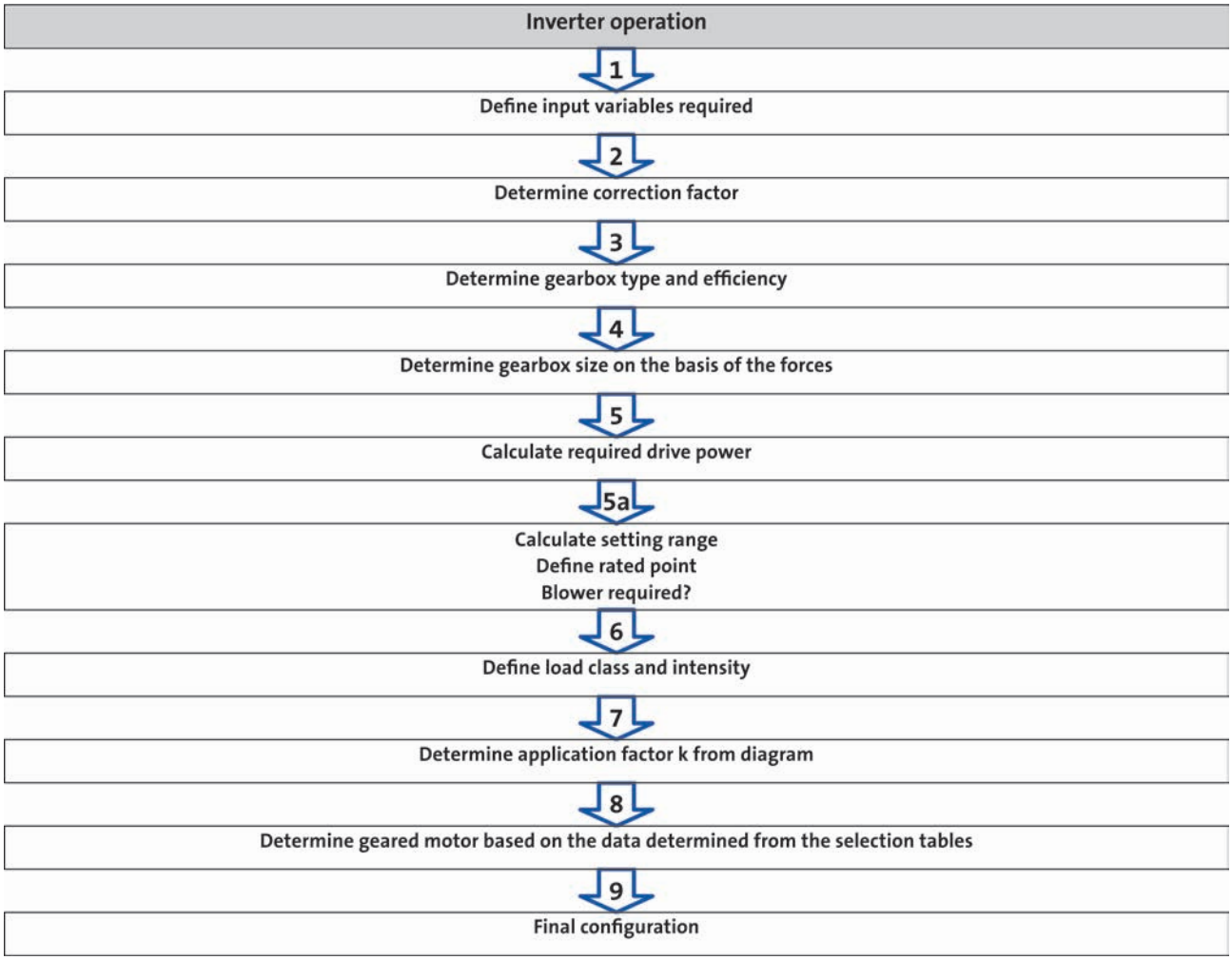
The powers, torques and speeds specified in this catalogue are rounded values and are valid under the following conditions:

- 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.

Procedure of a configuration process

Workflow



You can use our configuring software 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.

Procedure of a configuration process

1 required input variables

Load torque		$M_{L,max}$=	[Nm]
	In inverter operation	$M_{L,min}$=	[Nm]
Load speed		$n_{L,max}$=	[r/min]
	In inverter operation	$n_{L,min}$=	[r/min]
External moments of inertia		J_{ext}=	[kgcm^2]
Operating time / day		BD =	[h]
Switching operations per h		S_h=	[1/h]
Runtime for $M_{L,max}$	In inverter operation		[%]

2 determine correction factor

Operating modes and operating time						
S1	ED	[%]	100			
	k_L =		1.0			
S2	ED	[%]	10	30	60	90
	k_L =		1.4 - 1.5	1.15 - 1.2	1.07 - 1.1	1.0 - 1.05
S3	ED	[%]	15	25	40	60
	k_L =		1.4 - 1.5	1.3 - 1.4	1.15 - 1.2	1.05 - 1.1
S6	ED	[%]	15	25	40	60
	k_L =		1.5 - 1.6	1.4 - 1.5	1.3 - 1.4	1.15 - 1.2
Site altitude						
	H	[m]	≤ 1000	≤ 2000	≤ 3000	≤ 4000
	k_H =		1	0.95	0.9	0.85
Ambient temperature						
	T_U =	[°C]	≤ 40	≤ 45	≤ 50	≤ 55
	k_{TU} =		1	0.95	0.9	0.8

20 - Operating modes

Procedure of a configuration process

3 determine gearbox type and efficiency

Gearbox type			Axial gearboxes		Right-angle gearboxes
			Helical gearbox	Shaft-mounted	Bevel gearbox
Product			g500-H	g500-S	g500-B
Gearbox efficiency	2-stage gearboxes	η_G	0.96	0.96	0.96
	3-stage gearboxes	η_G	0.95	0.95	0.95

4 determine gearbox size based on the forces on the output

Transmission element		Gear wheels	Sprockets	Toothed belt pulleys (depending on the initial stress)	Narrow V-belt (depending on the initial stress)
Additional radial force factor	f_z =	≥ 17 teeth = 1.0 < 17 teeth = 1.15	≥ 20 teeth = 1.0 < 20 teeth = 1.25 < 13 teeth = 1.4	With belt tightener = 2.0 - 2.5 Without belt tightener = 2.5 - 3.0	1.5 - 2.0
		Calculation		**Check**	
Radial force	[N]	$F_{rad} = 2000 \times \frac{M_{L,max} \times f_z}{dw}$		$F_{rad} \le f_w \times F_{rad,max}$	
Axial force	[N]			$F_{ax} \le F_{rad,max} \times 0.5$	

d_w= effective diameter [mm] transmission element
f_w= additional load factor

► For permissible radial and axial forces and additional load factor see the "Technical data" chapter

5 calculate drive power

		Calculation	
Drive power required	[kW]	$P_1 = \frac{M_{L,max} \times n_{L,max}}{9549 \times k_L \times k_H \times k_{Tu} \times n_g}$	

k_L= Correction factor - operating mode
k_H= correction factor - installation height
k_{TU}= correction factor - ambient temperature

Procedure of a configuration process - inverter operation

5a calculate range of adjustment and determine rated point

		Calculation	
Setting range		$V = \frac{n_{L,max}}{n_{L,min}}$	
Setting range	Motor with integral fan	≤ 6 (20 ... 120 Hz)	
	Motor with blower	≤ 20 (5 ... 120 Hz)	
Rated point at		120 Hz	

6 calculate intensity and determine duty class

	Calculation		
Intensity	$M_I = \frac{M_{L,max}}{M_{L,min}}$	**For alternating load, select load class III!**	
Load class	Load type		Intensity
I	Smooth operation, small or light jolts		$M_I \leq 1.5$
II	Uneven operation, average jolts		$1.5 < M_I \leq 2$
III	Uneven operation, severe jolts and/or alternating load		$2 < M_I \leq 2.5$

7 determine application factor k from diagram

24 - Load capacity and application factor

Procedure of a configuration process - inverter operation

8 determine geared motor based on the data determined from the selection tables

Selection table			Check	
Drive power P_N		[kW]	$P_1 \leq P_N$	
Max. output speed n_2		[r/min]	$n_{L,max} \approx n_2$	
Min. output speed n_{21}	Self-ventilated	[r/min]	$n_{L,min} \approx n_{21}$	Setting range 6 (120 Hz)
Min. output speed n_{22}	Forced-ventilated	[r/min]	$n_{L,min} \approx n_{22}$	Setting range ≤ 20 (120 Hz)
	Self-ventilated (Reduced output torque)	[r/min]	$n_{L,min} \approx n_{22}$	
Output torque M_2		[Nm]	$M_{L,max} \leq M_2$	
Load factor c			$k \leq c$	

Order information	Example
Number of stages	2
Ratio i	4.368
Product gearbox	g500-H45
Product motor	MFxMAxx063-32

24 - Load capacity and application factor

26 - Torque derating at low motor frequencies

Example: structure of a selection table

120 Hz: P_N = 0.55 kW ← Rated power P_N

2-stage gearboxes ← Number of the gear stage

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
33	4.9	137	6.0	788	6.0	2.5	4.368	-H45	063-32	39
25	6.6	102	9.0	584	9.0	4.5	5.887	-H100	063-32	42

Min. Output speed **n_{22}**
Min. Output torque **M_{22}**
Min. Output speed **n_{21}**
Max. Output speed **n_2**
Max. Output torque **M_2**
Load capacity **c**
Ratio i
Product Gearbox
Product Motor

Procedure of a configuration process

9 Final configuration

More information regarding the final configuration can be found under: **- The modular geared motor system** **- Product extensions for gearboxes, motors**	
Check operating conditions	- Operating temperature (observe lubricant, material of shaft sealing ring) - Degree of protection - Supply voltage - Surface protection required - Approvals - Conformity
Check and define connection dimensions	- Driven shaft - Foot, output flange, centering with threaded pitch circle
Determine mounting position and position of the system blocks	- Mounting position A/B/C/D/E/F or combined - Terminal box position, shaft position, flange position
Select product extensions at the gearbox (differing depending on the gearbox type)	- Torque plate at the base, threaded pitch circle, rubber buffer - Hollow shaft cover, shrink disc cover
Select product extensions at the motor	- Connection type (terminal box, connector) - Brake - Blower (inverter operation) - Feedback - Temperature monitoring

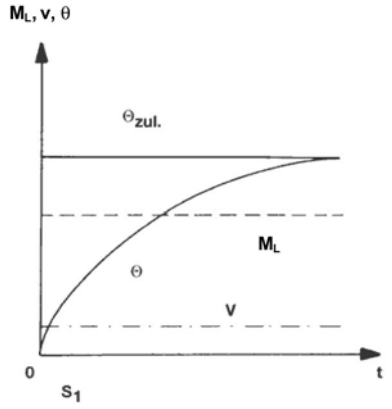
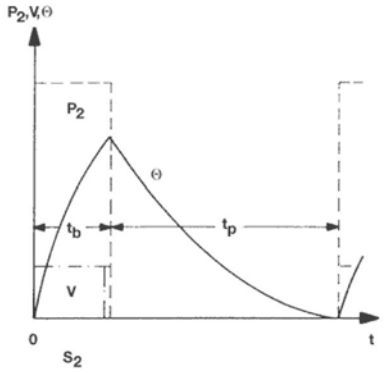
Standards

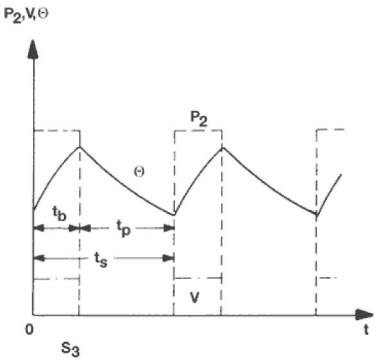
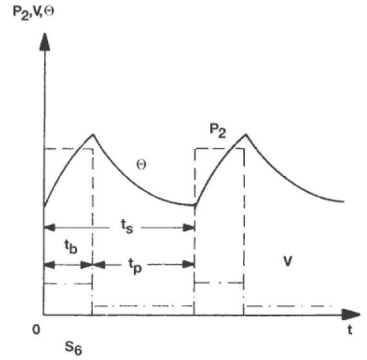
Operating modes

Operating modes S1 ... S10 as specified by EN 60034-1 describe the basic stress of an electrical machine.

In continuous operation a motor reaches its permissible temperature limit if it outputs the rated power dimensioned for continuous operation. However, if the motor is only subjected to load for a short time, the power output by the motor may be greater without the motor reaching its permissible temperature limit. This behaviour is referred to as overload capacity.
Depending on the duration of the load and the resulting temperature rise, the required motor can be selected reduced by the overload capacity.

The most important operating modes

Continuous operation S1	Short-time operation S2
	
Operation with a constant load until the motor reaches the thermal steady state. The motor may be actuated continuously with its rated power.	Operation with constant load; however, the motor does not reach the thermal steady state. During the following standstill, the motor winding cools down to the ambient temperature again. The increase in power depends on the load duration.

Intermittent operation S3	Non-intermittent periodic operation S6
	
-	-

Standards

Duty classes

Depending on the load type, the duty classes or impacts are divided as follows:

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

In order to support you in classifying your driven machine regarding the right duty class, the following shows sample applications with the corresponding duty class. Depending on, for instance, the operating frequency, driven machines can also have a higher impact.
In case of uncertainties, please contact your Lenze sales office.

Drive	Duty class
Construction machines	II
Chemical industry	II
Conveyors	II
Fans	II
Plastics industry	II
Wood working	III
Hoists	III
Metal working	III
Food	II
Paper industry	III
Stones	III
Textile industry	II

Standards

Degrees of protection

The degree of protection indicates the suitability of a motor for specific ambient conditions with regard to humidity as well as the protection against contact and the ingress of foreign particles. The degrees of protectionare classified by EN 60529.

The first code number after the code letters IP indicates the protection against the ingress of foreign particles and dust.
The second code number refers to the protection against the ingress of humidity.

Code number 1	Degree of protection	Code number 2	Degree of protection
0	No protection	0	No protection
1	Protection against the ingress of foreign particles d > 50 mm. No protection in the case of deliberate access	1	Protection against vertically dripping water (dripping water).
2	Protection against medium-sized foreign particles, d > 12 mm, keeping away fingers or similar	2	Protection against diagonally falling water (dripping water), 15 ° compared to normal service position.
3	Protection against small foreign particles d > 2.5 mm. Keeping away tools, wires and the like	3	Protection against spraying water, up to 60 ° to the vertical
4	Protection against granular foreign particles, d > 1 mm, keeping away tools, wires and the like	4	Protection against spraying water from all directions.
5	Protection against dust deposits (dust-protected), complete protection against contact.	5	Protection against water jets from all directions.
6	Protection against the ingress of dust (dust-proof), complete protection against contact.	6	Protection against choppy seas or heavy water jets (flood protection).

Thermal power limit

The thermal power limit, defined by the heat balance, limits the permissible permanent gearbox power.
It 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 of heat via shafts and the foundations.

We ask you to make a thermal check with the Drive Solution Designer (DSD) or contact the Lenze office responsible for you

- If the drive speeds mentioned in the following will be exceeded as a function of the mounting position:

g500 thermal power limit			
Product	Mounting position A	Mounting position A, B, E, F	Mounting position C, D
MF□MA□□063 ... 100	4000 r/min	3500 r/min	3000 r/min
M□FMA□□112	3000 r/min	2600 r/min	1500 r/min

► For a short period of time up to 5 min, 30 % higher speeds are permissible

Possible ways of extending the application area

- Synthetic lubricant (option)
- Shaft sealing rings made from FKM material/Viton (option)
- Reduction in lubricant quantity (after consultation with Lenze)
- Cooling of the geared motor by means of air convection on the machine/system

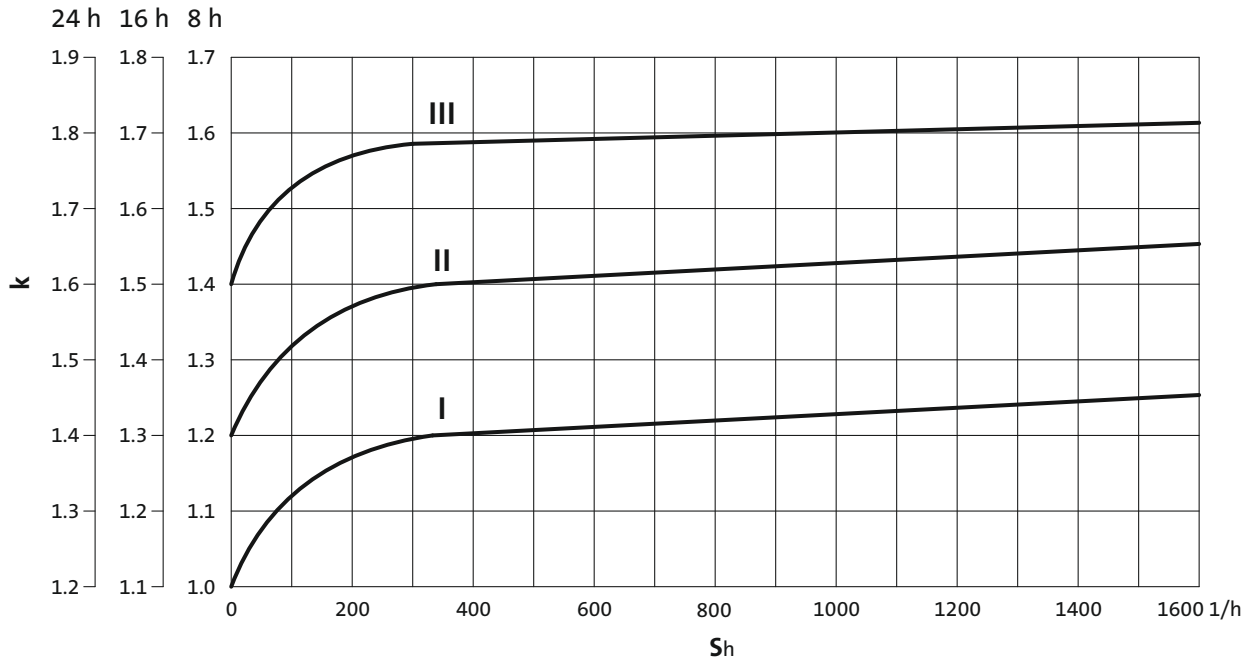
Load capacity and application factor

Load capacity c of gearboxes
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.

Required: 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

Application factor k



► S_h= switchings/h

6.3

Operational performance of three-phase AC geared motors

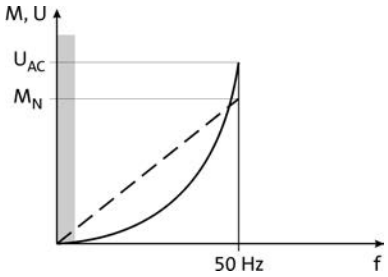
Operation on the inverter

An inverter enables energy-efficient operation of a system in virtually all application cases. The various operating modes, which can be created by making just a few simple settings, facilitate this. The following characteristics and corresponding specifications listed on the following pages can be used to calculate the optimum operating mode during the project planning phase.

Standard setting

In its initial state when delivered, the inverter is set up for basic operation with a three-phase AC motor with vector control. When operated in this mode, the rated torque of the motor is available in a setting range up to 50 Hz.

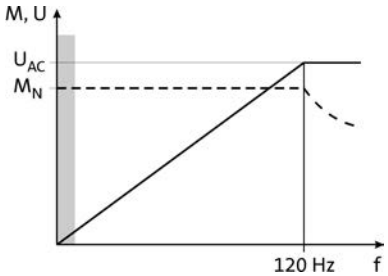
V/f at 50 Hz



Operation with inverter-optimised MF motors

Large setting ranges and optimum operation at the rated torque: these are the strengths of the MF motor when used in combination with an inverter. The motors are optimised for a setting range up to 120 Hz. Compared to conventional 50Hz operation, the setting range increases by 250 %. It is quite simply not possible for a drive to be operated any more efficiently in a machine.

V/f at 120 Hz

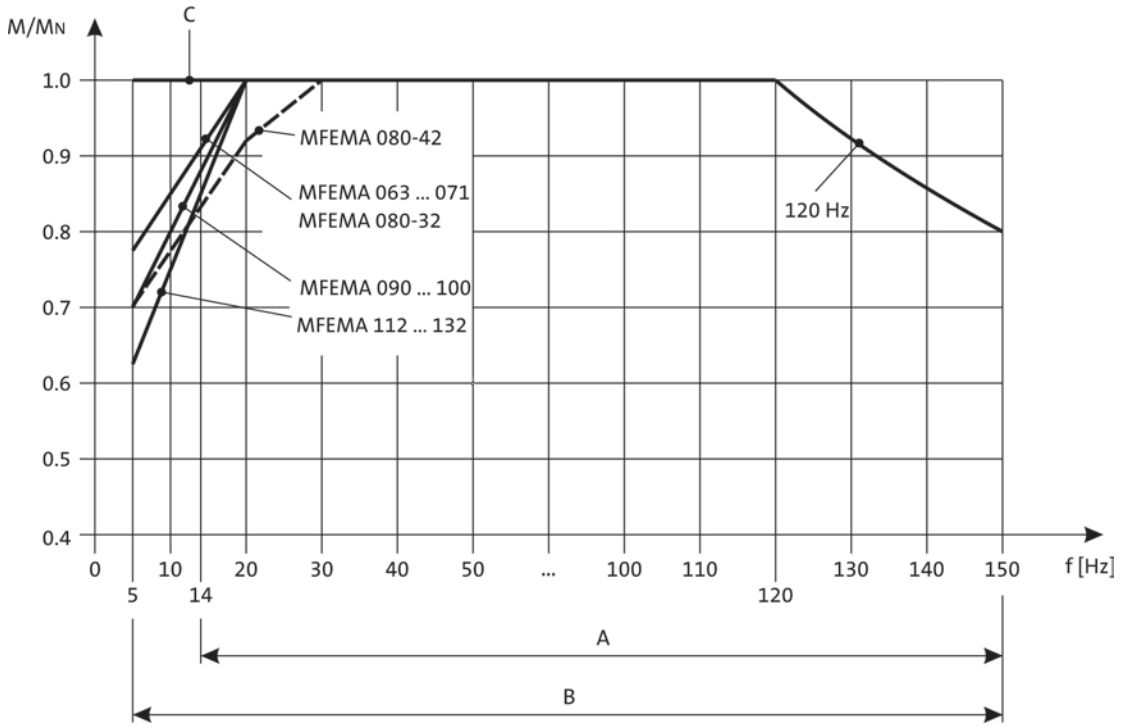


Operational performance of three-phase AC geared motors

Torque derating at low motor frequencies

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"
C= operation with blower

Technical data at a glance

The following tables contain the most important data of the gearbox with the motors that can be attached for an approximate dimensioning process of a geared motor. Detailed information can be found in the following chapters.

The data given in the tables apply to
- input speed n_1= 1400 r/min
- application factor c= 1.0

The data for the max. radial force refer to
- foot mounting (VBR)
- normal storage
- application factor c= 1.3

For further designs see the "Technical data" chapter.

► The rated torque can be gathered from the last digits of the product name e.g. g500-H45 (45 Nm).

In order to calculate the exact ratio, the number of teeth z_g (driven) can be divided by the number of teeth z_t (driving). These are rounded values.

g500-H45, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
541	18	1.05	2.597	896	345	470	41	0.18	0.55
412	19	0.84	3.413	256	75	620	39	0.18	0.55
322	21	0.73	4.368	1376	315	670	39	0.18	0.55
264	27	0.77	5.312	1344	253	700	29	0.18	0.55
236	29	0.74	5.965	686	115	720	28	0.18	0.55
201	30	0.65	6.982	384	55	760	28	0.12	0.55
179	32	0.62	7.840	196	25	780	27	0.12	0.55
157	33	0.56	8.935	688	77	810	27	0.12	0.55
140	35	0.53	10.033	301	30	840	27	0.09	0.55
123	35	0.46	11.429	80	7	870	27	0.09	0.55
110	38	0.45	12.833	77	6	900	26	0.09	0.55
95.0	39	0.40	14.836	816	55	950	26	0.09	0.37
85.0	41	0.37	16.660	833	50	1000	26	0.09	0.37
74.0	42	0.34	19.013	1464	77	1050	26	0.06	0.37
66.0	44	0.31	21.350	427	20	1090	26	0.06	0.37
56.0	45	0.27	24.595	2976	121	1170	26	0.06	0.25
50.0	45	0.24	27.618	1519	55	1250	25	0.06	0.25
43.0	45	0.21	32.000	32	1	1340	26	0.06	0.25
38.0	45	0.18	35.933	539	15	1400	25	0.06	0.18
33.0	45	0.16	41.455	456	11	1450	26	0.06	0.18
31.0	45	0.15	46.550	931	20	1470	25	0.06	0.12
27.0	45	0.13	52.909	582	11	1500	26	0.06	0.12
24.0	45	0.12	59.413	4753	80	1500	25	0.06	0.12

Technical data at a glance

g500-H100, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
430	62	2.88	3.354	161	48	1180	29	0.25	1.50
314	72	2.44	4.600	23	5	1340	28	0.25	1.50
279	75	2.26	5.167	31	6	1410	25	0.25	1.50
245	81	2.14	5.887	989	168	1480	27	0.25	1.50
224	83	2.01	6.440	161	25	1540	27	0.18	1.50
204	86	1.89	7.086	248	35	1600	24	0.25	1.50
176	92	1.74	8.214	115	14	1700	27	0.18	1.50
159	96	1.65	9.068	1333	147	1770	24	0.25	1.50
143	99	1.53	10.063	161	16	1850	27	0.25	1.50
127	100	1.37	11.360	284	25	1940	22	0.18	1.50
114	100	1.23	12.653	620	49	2030	24	0.18	1.50
100	100	1.08	14.490	710	49	2150	22	0.18	1.10
93.0	100	1.01	15.500	31	2	2210	23	0.25	1.10
82.0	100	0.88	17.750	71	4	2330	22	0.25	0.75
74.0	100	0.80	19.486	682	35	2430	23	0.12	0.75
65.0	100	0.70	22.314	781	35	2560	22	0.12	0.75
58.0	100	0.62	25.095	527	21	2590	23	0.12	0.75
49.0	100	0.53	28.738	1207	42	2620	22	0.12	0.55
44.0	100	0.48	31.805	2449	77	2640	22	0.12	0.37
39.0	100	0.42	36.422	5609	154	2650	21	0.12	0.37
35.0	100	0.38	39.857	279	7	2650	22	0.12	0.37
31.0	100	0.33	45.643	639	14	2650	21	0.12	0.37
26.0	70	0.20	52.510	2573	49	2650	22	0.12	0.18
23.0	80	0.20	60.133	5893	98	2650	21	0.12	0.18

Technical data at a glance

g500-H140, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
441	82	3.91	3.267	49	15	1750	25	0.25	1.50
322	94	3.27	4.480	112	25	2000	24	0.25	1.50
252	103	2.80	5.733	86	15	2180	24	0.25	1.50
230	105	2.61	6.272	784	125	2260	23	0.18	1.50
198	106	2.27	7.269	189	26	2370	18	0.25	1.50
180	117	2.28	8.000	8	1	2430	24	0.18	1.50
160	117	2.02	9.029	316	35	2540	19	0.25	1.50
147	125	1.98	9.800	49	5	2630	23	0.25	1.50
125	128	1.72	11.554	3397	294	2800	18	0.25	1.50
114	132	1.63	12.640	316	25	2880	18	0.18	1.50
103	136	1.52	13.957	4536	325	2950	17	0.18	1.50
89.0	140	1.35	16.122	790	49	3050	18	0.18	1.50
81.0	140	1.22	17.802	1620	91	3150	18	0.18	1.50
73.0	140	1.10	19.750	79	4	3210	18	0.25	1.10
66.0	140	1.00	21.808	567	26	3300	17	0.25	1.10
58.0	140	0.88	24.829	869	35	3400	18	0.12	0.75
53.0	140	0.80	27.415	1782	65	3520	17	0.12	0.75
45.0	140	0.68	31.976	1343	42	3630	18	0.12	0.75
41.0	140	0.62	35.308	459	13	3700	17	0.12	0.75
35.0	140	0.53	40.526	6241	154	3850	17	0.12	0.37
32.0	140	0.48	44.748	6399	143	3920	17	0.12	0.37
28.0	129	0.39	50.786	711	14	4000	17	0.12	0.37
25.0	140	0.38	56.077	729	13	4050	17	0.12	0.37
20.0	89	0.20	66.908	6557	98	4100	17	0.12	0.18
18.0	98	0.20	73.879	6723	91	4150	17	0.12	0.18

Technical data at a glance

g500-H210, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
428	126	5.82	3.389	61	18	1980	23	0.55	3.00
312	143	4.81	4.648	488	105	2250	23	1.10	3.00
260	159	4.45	5.583	67	12	2400	19	0.55	3.00
232	158	3.95	6.250	25	4	2500	18	0.55	3.00
189	172	3.51	7.657	268	35	2680	19	1.10	3.00
169	171	3.12	8.571	60	7	2780	18	1.10	3.00
148	182	2.91	9.799	2881	294	2960	18	0.55	3.00
135	189	2.76	10.720	268	25	3030	18	0.25	3.00
121	186	2.43	12.000	12	1	3200	17	0.25	3.00
106	201	2.30	13.673	670	49	3350	18	0.25	2.20
95.0	200	2.05	15.306	750	49	3470	17	0.25	2.20
87.0	210	1.97	16.750	67	4	3590	18	0.55	2.20
77.0	210	1.74	18.750	75	4	3720	17	0.55	1.50
66.0	210	1.50	21.802	2747	126	3870	18	0.25	1.50
59.0	210	1.34	24.405	1025	42	3900	17	0.25	1.50
53.0	210	1.21	27.119	1139	42	3900	17	0.25	1.50
48.0	210	1.08	30.357	425	14	3900	17	0.25	1.10
41.0	210	0.94	35.095	737	21	3900	17	0.12	0.75
37.0	210	0.84	39.286	275	7	4020	16	0.12	0.75
33.0	183	0.65	42.593	5963	140	4100	17	0.12	0.55
30.0	206	0.66	47.679	1335	28	4220	16	0.12	0.55
26.0	137	0.38	54.438	871	16	4350	17	0.12	0.37
23.0	155	0.39	60.938	975	16	4450	16	0.12	0.37

Technical data at a glance

g500-H210, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
33.0	210	0.77	43.390	4556	105	4120	17	0.18	0.75
30.0	210	0.69	48.571	340	7	4240	16	0.12	0.75
26.0	210	0.60	55.529	48977	882	4350	17	0.12	0.75
23.0	210	0.52	62.160	18275	294	4470	16	0.12	0.55
20.0	210	0.46	71.026	62645	882	4620	17	0.12	0.55
18.0	210	0.41	79.507	23375	294	4740	16	0.12	0.37
15.0	210	0.35	92.205	19363	210	4800	17	0.12	0.37
14.0	210	0.32	103.214	1445	14	4800	16	0.12	0.37
12.0	210	0.27	118.162	69479	588	4800	17	0.12	0.25
10.0	210	0.24	132.270	25925	196	4800	16	0.12	0.25
9.00	210	0.21	152.853	35309	231	4800	17	0.12	0.25
8.00	210	0.18	171.104	13175	77	4800	16	0.12	0.18
7.00	210	0.16	198.873	12529	63	4800	17	0.12	0.18
6.00	210	0.15	222.619	4675	21	4800	16	0.12	0.12
6.00	210	0.13	257.631	21641	84	4800	17	0.12	0.12
5.00	210	0.11	288.393	8075	28	4800	16	0.12	0.12

Technical data at a glance

g500-H320, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
429	165	7.65	3.389	61	18	2180	20	0.55	4.00
313	189	6.38	4.648	488	105	2460	20	1.10	4.00
239	227	5.86	6.083	73	12	2670	16	0.55	4.00
210	218	4.95	6.910	539	78	2800	15	0.55	4.00
174	249	4.69	8.343	292	35	2950	16	1.10	4.00
153	238	3.94	9.477	616	65	3100	15	1.10	4.00
136	265	3.89	10.677	3139	294	3250	16	0.55	4.00
124	271	3.64	11.680	292	25	3330	16	0.25	4.00
120	254	3.28	12.128	473	39	3360	15	0.55	4.00
109	262	3.09	13.268	4312	325	3440	15	0.25	3.00
97.0	294	3.08	14.898	730	49	3600	15	0.25	3.00
86.0	281	2.60	16.923	220	13	3760	15	0.25	3.00
79.0	313	2.68	18.250	73	4	3870	15	0.55	3.00
70.0	299	2.26	20.731	539	26	4020	15	0.55	2.20
61.0	320	2.10	23.754	2993	126	4210	15	0.25	1.50
53.0	320	1.84	26.983	3157	117	4420	15	0.25	1.50
49.0	320	1.69	29.548	1241	42	4540	15	0.25	1.50
43.0	320	1.49	33.564	1309	39	4750	15	0.25	1.50
38.0	251	1.03	38.238	803	21	4970	15	0.12	0.75
33.0	285	1.03	43.436	1694	39	5190	14	0.12	0.75
30.0	218	0.71	46.407	6497	140	5310	15	0.12	0.55
27.0	248	0.71	52.715	6853	130	5550	14	0.12	0.55

Technical data at a glance

g500-H320, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
31.0	320	1.08	47.276	4964	105	5350	15	0.18	0.75
27.0	320	0.95	53.703	10472	195	5570	15	0.18	0.75
24.0	320	0.84	60.502	53363	882	5600	15	0.18	0.75
21.0	320	0.74	68.726	8041	117	5670	15	0.18	0.75
19.0	320	0.66	77.387	68255	882	5680	15	0.12	0.75
16.0	320	0.56	87.906	10285	117	5700	15	0.12	0.55
14.0	320	0.49	100.462	21097	210	5700	15	0.12	0.55
12.0	320	0.43	114.118	22253	195	5700	15	0.12	0.37
11.0	320	0.39	128.743	75701	588	5700	15	0.12	0.37
10.0	320	0.34	146.244	11407	78	5700	15	0.12	0.37
8.00	320	0.30	166.541	38471	231	5700	15	0.12	0.37
6.00	315	0.22	216.683	13651	63	5700	15	0.12	0.25
6.00	320	0.19	246.137	28798	117	5700	14	0.12	0.18
5.00	269	0.15	280.702	23579	84	5700	15	0.12	0.12
4.00	305	0.15	318.859	24871	78	5700	14	0.12	0.12

Technical data at a glance

g500-H450, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
429	256	11.8	3.444	31	9	2550	19	2.20	7.50
313	293	9.89	4.724	496	105	2850	18	2.20	7.50
260	315	8.85	5.678	511	90	3010	15	2.20	7.50
244	323	8.52	6.045	2666	441	3070	17	1.10	7.50
223	334	8.05	6.613	496	75	3160	17	1.10	7.50
190	354	7.25	7.787	584	75	3350	14	2.20	7.50
168	370	6.69	8.800	44	5	3470	14	2.20	7.50
148	385	6.15	9.965	3139	315	3650	14	1.10	7.50
130	400	5.59	11.262	473	42	3800	14	1.10	5.50
118	411	5.26	12.320	308	25	3900	13	1.10	5.50
105	426	4.83	13.905	292	21	4030	14	0.55	5.50
93.0	441	4.42	15.714	110	7	4240	13	0.55	5.50
85.0	450	4.14	17.033	511	30	4360	14	1.10	4.00
76.0	448	3.65	19.250	77	4	4520	13	1.10	4.00
65.0	450	3.18	22.170	2993	135	4720	14	0.55	3.00
58.0	450	2.81	25.056	451	18	4920	13	0.55	3.00
52.0	450	2.55	27.578	1241	45	5090	13	0.55	3.00
47.0	450	2.26	31.167	187	6	5280	13	0.55	2.20
40.0	450	1.96	35.689	1606	45	5490	13	0.25	1.50
36.0	450	1.74	40.333	121	3	5880	13	0.25	1.50
33.0	322	1.16	43.313	6497	150	6000	13	0.25	1.10
30.0	366	1.16	48.950	979	20	6300	13	0.25	1.10
26.0	270	0.75	54.750	219	4	6500	13	0.25	0.55
23.0	305	0.75	61.875	495	8	6700	13	0.25	0.55

Technical data at a glance

g500-H450, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
33.0	450	1.61	44.124	9928	225	6050	14	0.25	1.50
29.0	450	1.43	49.867	748	15	6320	13	0.25	1.50
26.0	450	1.26	56.469	53363	945	6550	14	0.25	1.50
23.0	450	1.15	61.774	69496	1125	6700	14	0.18	1.10
21.0	450	1.02	69.813	5236	75	6860	13	0.18	1.10
18.0	450	0.90	78.794	4964	63	7000	14	0.18	1.10
16.0	450	0.80	89.048	1870	21	7100	13	0.18	0.75
15.0	450	0.74	96.522	8687	90	7100	14	0.25	0.75
13.0	450	0.66	109.083	1309	12	7100	13	0.25	0.75
12.0	450	0.57	121.342	27302	225	7100	14	0.12	0.55
10.0	450	0.50	137.133	2057	15	7100	13	0.12	0.55
9.00	450	0.44	156.274	21097	135	7100	14	0.12	0.55
8.00	450	0.39	176.611	3179	18	7100	13	0.12	0.37
7.00	450	0.35	198.059	98039	495	7100	14	0.12	0.37
6.00	450	0.31	223.833	1343	6	7100	13	0.12	0.37
6.00	450	0.27	248.200	1241	5	7100	14	0.12	0.25
5.00	450	0.24	280.500	561	2	7100	13	0.12	0.25
4.00	428	0.20	326.994	103003	315	7100	14	0.12	0.18
4.00	450	0.18	369.548	15521	42	7100	13	0.12	0.18

Technical data at a glance

g500-H600, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
452	240	11.7	3.267	49	15	4680	17	2.20	7.50
330	297	10.6	4.480	112	25	5080	15	2.20	7.50
258	339	9.42	5.733	86	15	5420	15	1.10	7.50
229	404	9.97	6.456	581	90	5600	14	2.20	7.50
204	435	9.56	7.250	29	4	5770	13	2.20	7.50
167	487	8.77	8.853	664	75	6080	13	2.20	7.50
148	510	8.17	9.943	348	35	6270	12	2.20	7.50
130	537	7.55	11.330	3569	315	6490	13	1.10	7.50
119	553	7.12	12.395	4648	375	6640	12	1.10	7.50
106	578	6.62	13.920	348	25	6850	12	1.10	7.50
93.0	600	6.05	15.810	332	21	7080	12	0.55	7.50
82.0	600	5.32	17.755	870	49	7300	12	0.55	5.50
75.0	600	4.88	19.367	581	30	7470	12	1.10	5.50
67.0	600	4.33	21.750	87	4	7700	12	1.10	4.00
58.0	600	3.73	25.207	3403	135	8000	12	0.55	4.00
51.0	600	3.32	28.310	1189	42	8260	12	0.55	4.00
46.0	600	2.99	31.356	1411	45	8480	12	0.55	3.00
41.0	600	2.66	35.214	493	14	8500	12	0.55	3.00
36.0	558	2.14	40.578	1826	45	8500	12	0.25	1.50
32.0	600	2.05	45.571	319	7	8500	12	0.25	1.50
29.0	456	1.44	49.247	7387	150	8500	12	0.25	1.10
26.0	513	1.44	55.307	7743	140	8500	12	0.25	1.10
23.0	307	0.75	62.250	249	4	8500	12	0.25	0.55
20.0	345	0.75	69.911	3915	56	8500	11	0.25	0.55

Technical data at a glance

g500-H600, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
46.0	600	3.05	31.197	49136	1575	8470	13	1.10	3.00
41.0	600	2.72	35.037	8584	245	8500	13	1.10	3.00
36.0	600	2.39	39.925	264106	6615	8500	13	0.55	2.20
33.0	600	2.18	43.676	49136	1125	8500	13	0.25	2.20
30.0	600	1.95	49.051	8584	175	8500	12	0.25	2.20
26.0	600	1.70	55.710	24568	441	8500	13	0.25	1.50
23.0	600	1.51	62.566	21460	343	8500	12	0.25	1.50
21.0	600	1.39	68.244	3071	45	8500	13	0.55	1.50
19.0	600	1.24	76.643	1073	14	8500	12	0.55	1.50
16.0	600	1.07	88.826	251822	2835	8500	13	0.25	1.10
14.0	600	0.95	99.757	43993	441	8500	12	0.25	1.10
13.0	600	0.86	110.491	104414	945	8500	13	0.25	0.75
12.0	600	0.77	124.088	18241	147	8500	12	0.25	0.75
10.0	600	0.66	142.988	135124	945	8500	13	0.12	0.75
9.00	600	0.57	160.585	23606	147	8500	12	0.12	0.55
8.00	600	0.53	173.536	273319	1575	8500	13	0.12	0.55
7.00	600	0.47	194.892	95497	490	8500	12	0.12	0.55
6.00	600	0.42	221.794	39923	180	8500	13	0.12	0.37
6.00	600	0.37	249.089	13949	56	8500	12	0.12	0.37

Technical data at a glance

g500-H850, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
469	306	15.5	3.147	1734	551	5070	16	4.00	7.50
339	379	13.8	4.362	663	152	5610	15	4.00	7.50
275	430	12.8	5.368	102	19	5980	14	2.20	7.50
248	551	14.8	5.946	1207	203	6170	13	4.00	7.50
222	578	13.9	6.644	578	87	6390	13	4.00	7.50
179	615	11.9	8.241	923	112	6830	13	4.00	7.50
160	649	11.2	9.208	221	24	7070	12	4.00	7.50
146	667	10.5	10.143	71	7	7280	12	2.20	7.50
130	696	9.77	11.360	284	25	7550	12	2.20	7.50
116	725	9.10	12.693	952	75	7810	12	2.20	7.50
102	758	8.34	14.490	710	49	8140	12	1.10	7.50
91.0	792	7.79	16.190	340	21	8420	12	1.10	7.50
83.0	814	7.31	17.750	71	4	8660	12	2.20	7.50
74.0	833	6.70	19.833	119	6	8970	12	2.20	7.50
63.0	850	5.80	23.103	2911	126	9400	12	1.10	5.50
57.0	850	5.19	25.815	697	27	9730	11	1.10	5.50
51.0	850	4.71	28.315	4757	168	10000	11	1.10	4.00
46.0	850	4.21	31.639	1139	36	10400	11	1.10	4.00
39.0	850	3.58	37.190	781	21	10900	11	0.55	3.00
35.0	850	3.20	41.556	374	9	11000	11	0.55	3.00
32.0	850	2.95	45.136	6319	140	11000	11	0.55	2.20
29.0	850	2.64	50.433	1513	30	11000	11	0.55	2.20

Technical data at a glance

g500-H850, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
49.0	850	4.60	29.536	3692	125	10100	13	2.20	5.50
44.0	850	4.10	33.003	12376	375	10500	12	2.20	4.00
38.0	850	3.58	37.799	39689	1050	10900	13	1.10	4.00
35.0	850	3.27	41.350	25844	625	11000	13	1.10	4.00
31.0	850	2.92	46.204	86632	1875	11000	12	1.10	3.00
28.0	850	2.56	52.743	1846	35	11000	13	0.55	3.00
25.0	850	2.29	58.933	884	15	11000	12	0.55	2.20
22.0	850	2.10	64.610	6461	100	11000	13	1.10	2.20
20.0	850	1.87	72.193	10829	150	11000	12	1.10	2.20
17.0	850	1.59	84.096	37843	450	11000	13	0.55	1.50
15.0	850	1.43	93.966	63427	675	11000	12	0.55	1.50
14.0	850	1.29	104.607	15691	150	11000	12	0.55	1.50
12.0	850	1.15	116.884	26299	225	11000	12	0.55	1.10
11.0	850	1.00	135.373	10153	75	11000	12	0.25	1.10
10.0	850	0.88	151.262	34034	225	11000	12	0.25	1.10
9.00	850	0.82	164.294	82147	500	11000	12	0.25	0.75
8.00	850	0.74	183.577	137683	750	11000	12	0.25	0.75
7.00	850	0.63	207.675	8307	40	11000	12	0.25	0.55
6.00	850	0.57	232.050	4641	20	11000	12	0.25	0.55

Technical data at a glance

g500-H1500, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
395	775	33.0	3.743	1647	440	8500	14	5.50	30.00
311	924	31.0	4.758	2379	500	8900	13	5.50	30.00
274	1021	30.2	5.400	27	5	9200	11	5.50	30.00
237	1098	28.1	6.245	2623	420	9440	13	4.00	30.00
215	1157	26.9	6.864	858	125	9690	11	5.50	30.00
195	1217	25.6	7.592	949	125	9970	10	5.50	30.00
164	1320	23.4	9.010	946	105	10500	10	4.00	22.00
144	1380	21.5	10.267	154	15	10900	10	4.00	22.00
130	1400	19.7	11.356	511	45	11200	10	4.00	22.00
120	1420	18.4	12.362	1298	105	11400	10	2.20	22.00
108	1430	16.8	13.673	4307	315	11800	10	2.20	18.50
98.0	1440	15.2	15.156	682	45	12100	10	4.00	18.50
88.0	1450	13.7	16.763	2263	135	12500	10	4.00	15.00
72.0	1500	11.6	20.533	308	15	13200	10	2.20	7.50
65.0	1500	10.5	22.711	1022	45	13600	10	2.20	7.50
59.0	1500	9.58	24.933	374	15	13900	10	2.20	7.50
54.0	1500	8.68	27.578	1241	45	14300	9	2.20	7.50
45.0	1440	7.00	32.267	484	15	15000	10	1.10	4.00
41.0	1500	6.59	35.689	1606	45	15400	9	1.10	4.00
37.0	1463	5.86	39.160	979	25	15800	10	1.10	4.00
34.0	1500	5.42	43.313	6497	150	16300	9	1.10	4.00
29.0	1250	3.95	49.500	99	2	16900	10	1.10	2.20
26.0	1382	3.95	54.750	219	4	17000	9	1.10	2.20

Technical data at a glance

g500-H1500, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
36.0	1500	5.92	40.517	2431	60	16000	11	4.00	5.50
33.0	1500	5.36	44.814	16133	360	16400	10	4.00	5.50
29.0	1500	4.82	49.867	748	15	17000	10	2.20	5.50
26.0	1500	4.27	55.851	20944	375	17000	10	2.20	4.00
24.0	1500	3.86	61.774	69496	1125	17000	10	2.20	4.00
20.0	1500	3.35	71.238	1496	21	17000	10	1.10	4.00
18.0	1500	3.02	78.794	4964	63	17000	10	1.10	3.00
17.0	1500	2.73	87.267	1309	15	17000	10	2.20	3.00
15.0	1500	2.47	96.522	8687	90	17000	10	2.20	3.00
13.0	1500	2.10	113.585	15334	135	17000	10	1.10	2.20
12.0	1500	1.91	125.632	50881	405	17000	10	1.10	2.20
10.0	1500	1.71	139.211	12529	90	17000	10	1.10	1.50
9.00	1500	1.55	153.976	83147	540	17000	10	1.10	1.50
8.00	1500	1.30	182.844	8228	45	17000	10	0.55	1.50
7.00	1500	1.17	202.237	27302	135	17000	10	0.55	1.10
6.00	1500	1.07	221.907	16643	75	17000	10	0.55	1.10
6.00	1500	0.97	245.442	110449	450	17000	10	0.55	1.10
5.00	1500	0.85	280.500	561	2	17000	10	0.55	0.75
5.00	1500	0.77	310.250	1241	4	17000	10	0.55	0.75

Technical data at a glance

g500-H3000, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
329	1360	48.3	4.496	1911	425	9600	12	11.00	30.00
250	1610	43.5	5.902	301	51	10200	12	11.00	30.00
233	1910	48.0	6.344	793	125	10500	10	11.00	30.00
212	2025	46.4	6.968	871	125	11000	9	11.00	30.00
178	2155	41.3	8.327	2623	315	11400	9	11.00	30.00
162	2225	38.8	9.146	2881	315	11600	9	11.00	30.00
148	2300	36.7	10.005	3752	375	12000	9	7.50	30.00
127	2400	33.0	11.619	244	21	12600	9	4.00	30.00
116	2475	30.9	12.762	268	21	13000	9	4.00	30.00
104	2530	28.4	14.233	427	30	13400	9	5.50	22.00
95.0	2610	26.7	15.633	469	30	13800	9	5.50	22.00
79.0	2750	23.4	18.752	5063	270	14600	9	4.00	22.00
72.0	2815	21.9	20.596	5561	270	15100	9	4.00	22.00
64.0	2900	20.1	23.044	1037	45	15600	9	4.00	22.00
58.0	2965	18.7	25.311	1139	45	16000	8	4.00	22.00
50.0	3000	16.0	29.822	1342	45	16900	9	2.20	7.50
45.0	3000	14.6	32.756	1474	45	17400	8	2.20	7.50
41.0	3000	13.2	36.193	5429	150	17900	9	2.20	7.50
37.0	3000	12.1	39.753	5963	150	18500	8	2.20	7.50
32.0	1712	5.88	45.750	183	4	19300	9	2.20	4.00
29.0	1880	5.87	50.250	201	4	19800	8	2.20	4.00

Technical data at a glance

g500-H3000, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
31.0	2830	9.71	47.186	44591	945	19500	9	4.00	11.00
28.0	2910	9.09	51.828	48977	945	20000	9	4.00	11.00
28.0	2950	8.89	53.770	7259	135	20000	9	4.00	11.00
25.0	3000	8.22	59.059	7973	135	20000	9	4.00	7.50
23.0	3000	7.50	64.744	61183	945	20000	9	2.20	7.50
21.0	3000	6.84	71.112	67201	945	20000	9	2.20	7.50
19.0	3000	6.11	79.375	32147	405	20000	9	4.00	7.50
17.0	3000	5.49	87.183	35309	405	20000	9	4.00	5.50
14.0	3000	4.47	107.541	14518	135	20000	9	2.20	5.50
12.0	3000	4.04	118.119	15946	135	20000	9	2.20	4.00
11.0	3000	3.65	130.585	17629	135	20000	9	2.20	4.00
10.0	3000	3.32	143.430	19363	135	20000	9	2.20	4.00
9.00	3000	2.83	168.993	22814	135	20000	9	1.10	3.00
8.00	3000	2.56	185.615	25058	135	20000	9	1.10	3.00
7.00	3000	2.33	205.096	92293	450	20000	9	1.10	2.20
6.00	3000	2.10	225.269	101371	450	20000	9	1.10	2.20
6.00	3000	1.84	259.250	1037	4	20000	9	1.10	2.20
5.00	3000	1.68	284.750	1139	4	20000	9	1.10	1.50

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	Applications	Product	
		g500-H45 ... H450 g500-S130 ... S660 g500-B45 ... B450	g500-H600 ... H3000 g500-S950 ... S4500 g500-B600 ... B4300
Without OKS(uncoated) [1]	• Indoor installation, no special corrosion protection necessary • Paint provided by the customer	Standard	
OKS-G (primed)	• Dependent on subsequent top coat applied	Optional	Optional
OKS-S (small)	• Standard applications • Internal installation in heated buildings • Air humidity up to 90%		Standard
OKS-M (medium)	• Internal installation in non-heated buildings • Covered, protected external installation • Air humidity up to 95%		
OKS-L (large)	• External installation • Air humidity above 95% • Chemical industry plants • Food industry		Optional
OKS-XL (extra Large) [2]	• External installation • Air humidity above 95 % • Chemical industry plants • Food industry • Coastal areas with moderate salinity		

[1] Aluminium parts are uncoated, fan covers are zinc-coated or primed in grey, cast iron parts primed in grey.
Light colour deviations of the components are possible.
[2] On request

Surface and corrosion protection

Structure of surface coating

Surface and corrosion protection	Corrosivity category	Surface coating	Colour	Coating thickness
	DIN EN ISO 12944-2	Structure		
Without OKS(uncoated)		• Dipping primer of the grey iron parts		30 ... 50 µm
OKS-G (primed)		• Dipping primer of the grey iron parts • 2K PUR priming coat		60 ... 90 µm
OKS-S (small)	Comparable to C1	• Dipping primer of the grey iron parts • 2K-PUR top coat	• Standard: RAL 7012 • Optional: RAL Classic	80 ... 120 µm
OKS-M (medium)	Comparable to C2	• Dipping primer of the grey iron parts • 2K PUR priming coat • 2K-PUR top coat		110 ... 160 µm
OKS-L (large)	Comparable to C3			140 ... 200 µm
OKS-XL (extra Large) [1)]	Comparable to C4	• Dipping primer of the grey iron parts • 2K-EP priming coat (two times) • 2K-PUR top coat		160 ... 240 µm

[1)] On request

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 amount and type of lubricant contained in the gearbox are given on the nameplate.

The following gearboxes are lubricated for life:
- helical gearboxes g500-H45 ... 210

Lubricant table

The following lubricants are recommended:

Mode	CLP 220	CLP 460	CLP HC 220
Ambient temperature [°C]	0 ... +40		-25 ... +50
Specification	Mineral oil with EP additives		Synthetic oil (polyalfaolefins basis)
Changing interval	16000 operating hours After 3 years at the latest Oil temperature 70 °C		25000 operating hours After 4 years at the latest Oil temperature 70 °C
Fuchs	Renolin CLP 220 CLP Plus 220	Renolin CLP 460 CLP Plus 460	Renolin Unisyn CLP 220 XT220
Klüber	Klüberoil GEM 1-220 N	Klüberoil GEM 1-460 N	Klübersynth GEM 4-220 N
Shell	Shell Omala S2 G 220 S2 GX 220	Shell Omala S2 G 460 S2 GX 460	Shell Omala S4 GX HD 220

Mode	CLP HC 320	CLP HC 220 USDA H1	CLP PG 460 USDA H1
Ambient temperature [°C]	-25 ... +50	-20 ... +40	
Specification	Synthetic oil (polyalfaolefins basis)		Synthetic oil (polyglycol basis)
Changing interval	25000 operating hours After 4 years at the latest Oil temperature 70 °C	16000 operating hours After 3 years at the latest Oil temperature 70 °C	
Fuchs	Renolin Unisyn CLP 320 XT 320	Cassida Fluid GL 220	Cassida Fluid WG 460
Klüber	Klübersynth GEM 4-320 N	Klüberoil 4 UH1-220 N	Klüberoil UH1 6-460
Shell	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.

6.3

Shaft sealing rings

By default, the gearboxes come with NBR shaft sealing rings at the output end. At high speed and unfavourable ambient conditions such as high temperature, reduced circulation of air etc., Lenze recommends the use of FKM (Viton) shaft sealing rings.

Please consider this in your order.

Ventilation

Non-ventilated gearboxes

No ventilation is required for the gearboxes g500-H45 ...H210.

Ventilated gearboxes

The gearbox g500-H210 can be optionally ordered with breather elements.
From g500-H320 onwards, the gearboxes are supplied with a breather element as standard.

Gearbox in combined mounting position

For reducing the number of versions, the gearboxes can also be ordered in a combined mounting position:

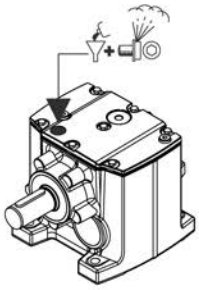
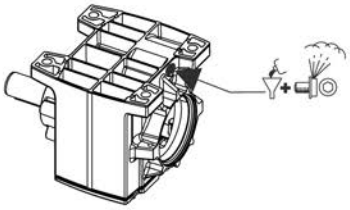
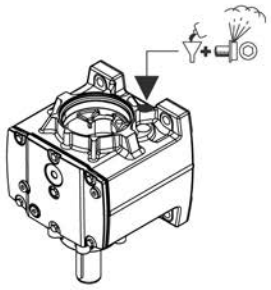
- g500-H45 in mounting position ABCDEF
- g500-H100 ... H450 in mounting position AEF

In these gearboxes, the lubricant amount has been optimised for the use in different mounting positions. If required, the breather elements are loosely enclosed and have to be mounted before commissioning depending on the mounting position.
A gearbox can be used for several mounting positions.

Ventilation

Position of ventilation, sealing elements and oil level check

g500-H210 ... H450

Mounting position A	Mounting position B	Mounting position C
Filling and ventilation		
		
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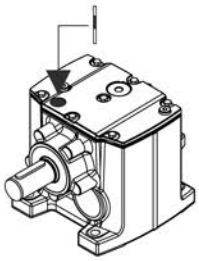	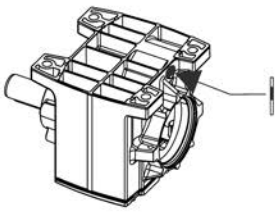	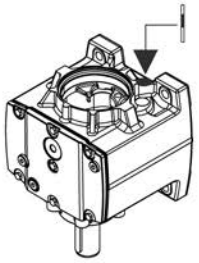
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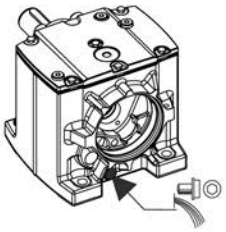
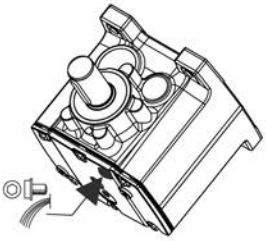
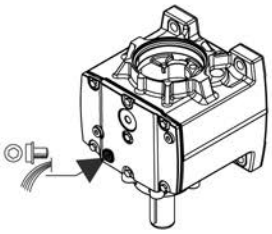
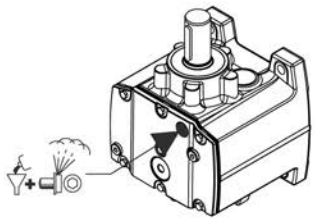
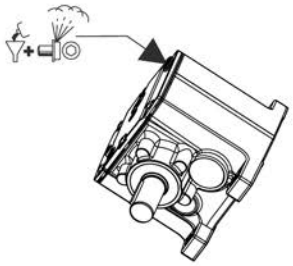
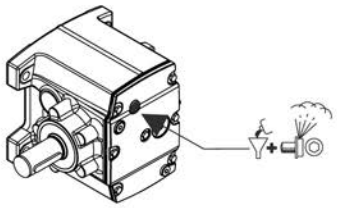
		

Ventilation

Position of ventilation, sealing elements and oil level check

g500-H210 ... H450

Mounting position D	Mounting position E	Mounting position F
Filling and ventilation		
		
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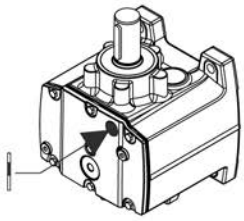	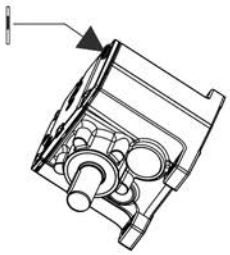	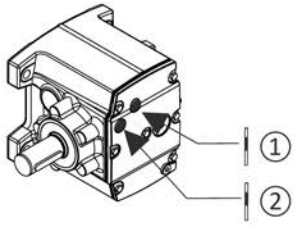
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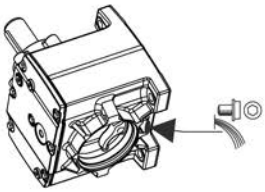
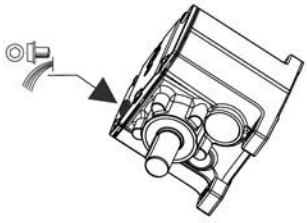
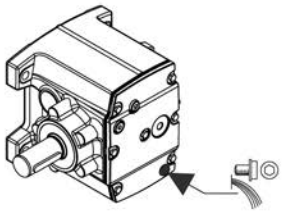
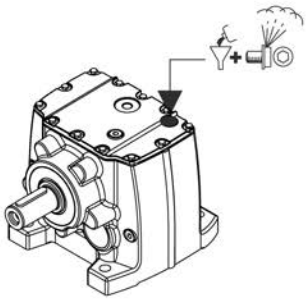
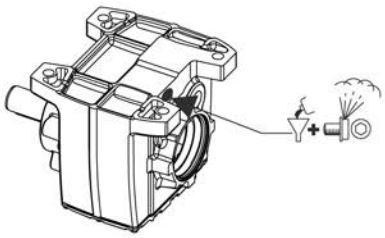
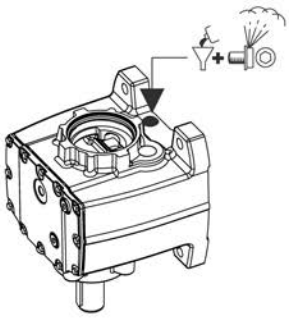
		

① g500-H210
② g500-H320
g500-H450

Ventilation

Position of ventilation, sealing elements and oil level check

g500-H600 ... H3000

Mounting position A	Mounting position B	Mounting position C
Filling and ventilation		
		
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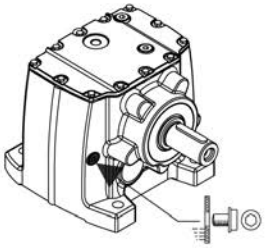	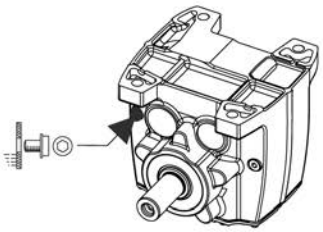	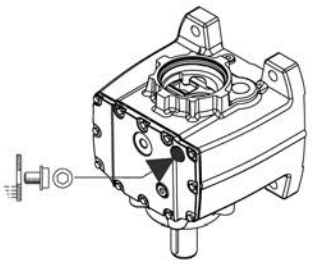
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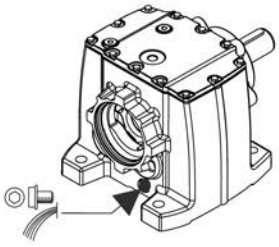
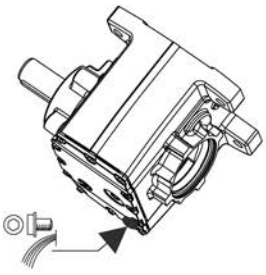
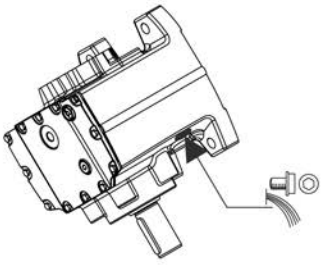
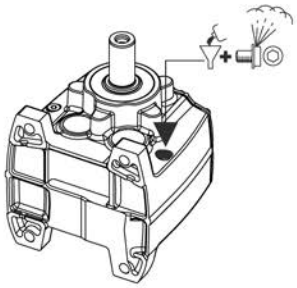
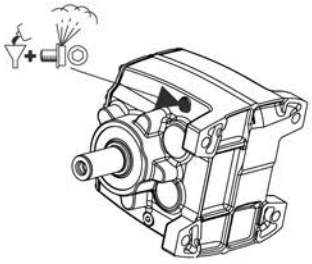
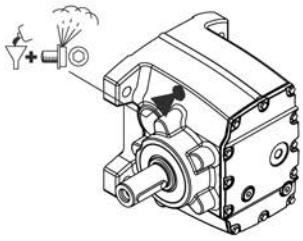
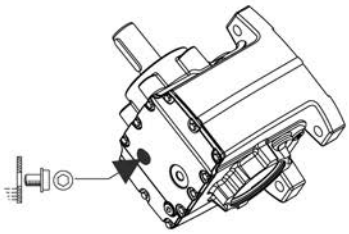
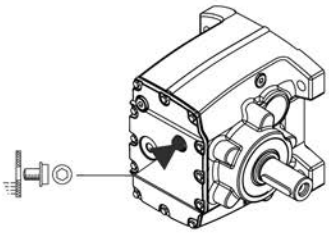
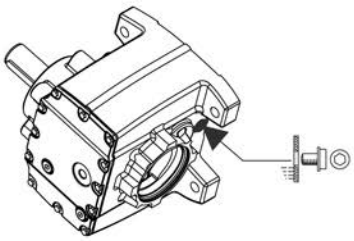
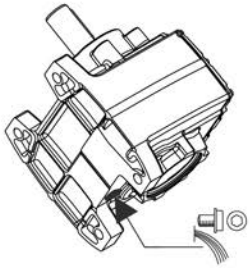
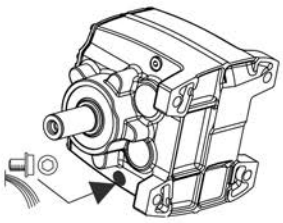
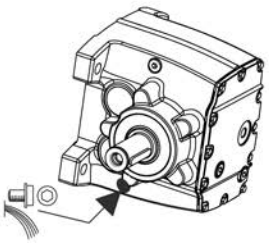
		

Ventilation

Position of ventilation, sealing elements and oil level check

g500-H600 ... H3000

Mounting position D	Mounting position E	Mounting position F
Filling and ventilation		
		
Check		
		
Drain		
		

Standards and operating conditions

Geared motor data

Product			
Motor			MF□MA□□
Enclosure			
EN 60529			IP55 [1] IP65 [1] IP66 [1]
Energy efficiency class			
IEC 60034-30			Better than IE2
IEC 60034-2-1			Methodology for measuring efficiency
10 CFR Part 431 (U.S. Integral hp Rule)			
GB18613-2012 (China Energy Label optional)			
Conformity			
CE			Low-Voltage Directive
			2006/95/EC
EAC			TP TC 004/2011 (TR CU 004/2011)
Approval			
CCC			GB Standard 12350-2009
CSA			CSA 22.2 No. 100
cURus			UL 1004-1 UL 1004-8 File-No. E210321
Temperature class			
IEC/EN 60034-1; utilisation			B
IEC/EN 60034-1; insulation system (enamel-insulated wire)			F
Min. ambient operating temperature			
	$T_{opr,min}$	[°C]	-20
Max. ambient operating temperature			
	$T_{opr,max}$	[°C]	40
With power reduction	$T_{opr,max}$	[°C]	60 [2]
Site altitude			
Current derating at over 1000 m		[%/1000 m]	5.00
Amsl	H_{max}	[m]	4000

[1] Designs with different degrees of protection:
IP55 with brake (IP54 with manual release lever).
IP54 with resolver RS1.
IP54 with HTL incremental encoder IG128-24V-H.
[2] In case of cURus max. 40 °C are permissible.

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

Permissible radial and axial forces at output

Permissible radial force

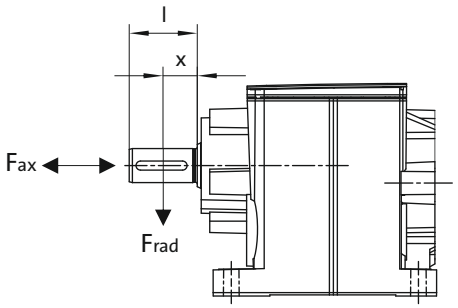
$F_{rad,perm} = f_w \times F_{rad,max}$

Permissible axial force

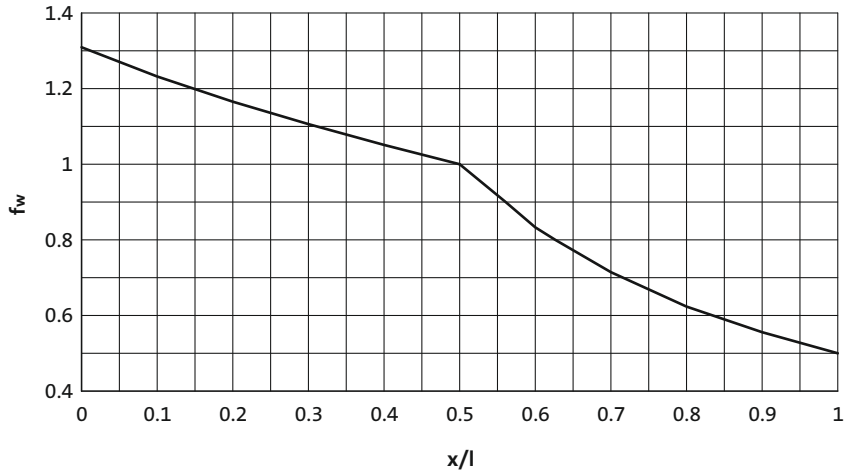
If there is no radial force, the maximum permissible axial force is 50 % of the table value $F_{rad,max}$

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

Application of forces



Additional load factor f_w at output shaft



6.3

Permissible radial and axial forces at output

The values given in the table refer to the center shaft end force application point and are minimum values calculated according to the most unfavourable conditions (force application angle, mounting position, direction of rotation). The values were calculated for the motor/gearbox combination with a load capacity of c= 1.3 and an input speed of 1400 r/min.

In case of different operating conditions, considerably higher forces can be transmitted. Please contact Lenze.

Gearbox with foot with threaded pitch circle (VBR)

Product	n_2 [r/min]						
	250	160	100	63	40	25	≤16
	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]
g500-H45	700	800	900	1100	1400	1500	1500
g500-H100	1500	1800	2100	2600	2700	2700	2700
g500-H140	2200	2500	3000	3300	3700	4100	4200
g500-H210	2400	2800	3400	3900	3900	4400	4800
g500-H320	2600	3000	3500	4100	4800	5600	5700
g500-H450	3000	3500	4100	4700	5500	6600	7100
g500-H600	5400	6090	6920	7850	8500	8500	8500
g500-H850	6500	7500	8500	9500	10700	11000	11000
g500-H1500	9200	10400	12000	13700	15600	17000	17000
g500-H3000	10000	11500	13500	15600	18000	20000	20000

Reinforced bearings

	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]
g500-H100	1800	2200	2700	3200	3300	3300	3300
g500-H140	2700	3100	3700	4100	4600	5100	5300
g500-H210	3000	3500	4200	4900	4900	5500	6000
g500-H320	3300	3800	4400	5100	6000	7000	7100
g500-H450	3800	4300	5100	5900	6900	8300	8900
g500-H600	8900	9700	10400	10900	11300	11700	12000
g500-H850	11500	12600	13500	14200	14800	15200	15600
g500-H1500	13000	17000	18200	19100	19800	20500	21000
g500-H3000	15000	21000	22100	23200	24000	25000	25000

Permissible radial and axial forces at output

Gearbox with/without foot with threaded pitch circle (VAR/VCR)
Gearbox with/without foot with flange (VAK/VCK)

Product	n_2 [r/min]						
	250	160	100	63	40	25	≤16
	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]
g500-H45	700	800	900	1100	1400	1500	1500
g500-H100	1500	1700	1700	1700	1700	1700	1700
g500-H140	2200	2500	2600	2600	2600	2600	2600
g500-H210	2400	2800	3000	3000	3000	3000	3000
g500-H320	2600	3000	3500	3600	3600	3600	3600
g500-H450	3000	3500	4100	4400	4400	4400	4400
g500-H600	5400	6000	6000	6000	6000	6000	6000
g500-H850	6050	6950	7800	7800	7800	7800	7800
g500-H1500	9200	10400	10500	10500	10500	10500	10500
g500-H3000	10000	11500	12500	12500	12500	12500	12500

Reinforced bearings

	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]
g500-H100	1700	1700	1700	1700	1700	1700	1700
g500-H140	2600	2600	2600	2600	2600	2600	2600
g500-H210	3000	3000	3000	3000	3000	3000	3000
g500-H320	3300	3600	3600	3600	3600	3600	3600
g500-H450	3800	4300	4400	4400	4400	4400	4400
g500-H600	6000	6000	6000	6000	6000	6000	6000
g500-H850	7800	7800	7800	7800	7800	7800	7800
g500-H1500	10500	10500	10500	10500	10500	10500	10500
g500-H3000	12500	12500	12500	12500	12500	12500	12500

Permissible radial and axial forces at output

Gearbox without foot with reinforced flange (VCP)

For transmitting particularly high radial and axial forces

Product	n_2 [r/min]						
	250	160	100	63	40	25	≤16
	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]	$F_{rad,max}$ [N]
g500-H100	3330	3650	3890	4060	4160	4240	4280
g500-H140	5510	5950	6270	6480	6620	6710	6770
g500-H210	6170	6670	7060	7330	7500	7620	7700
g500-H320	7040	7690	8210	8570	8810	8970	9080
g500-H450	7810	8550	9160	9590	9880	10100	10200

Selection tables, notes

Notes on the selection tables with 4-pole motors

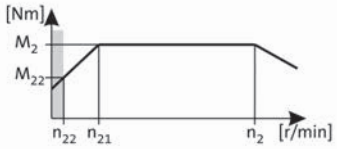
The selection tables show the available combinations of gearbox type, number of stages, ratio and motor. They are used only to provide basic orientation.
The following legend indicates the structure of the selection tables.

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

120 Hz: P_N = 0.55 kW

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

Torque diagram



Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
33	4.9	137	6.0	788	6.0	2.5	4.368	-H45	063-32	39
25	6.6	102	9.0	584	9.0	4.5	5.887	-H100	063-32	42

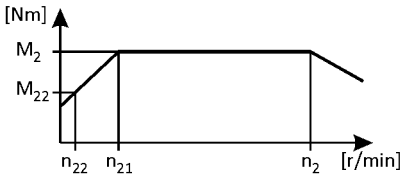
Inverter operation
The speed and torque data are valid for self-ventilated and forced ventilated drives. Forced ventilated drives can always output the torque **M2** in the entire setting ranges. In the case of self-ventilated drives, a reduction to **M22** is required in the lower speed range.

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**.

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

Product Gearbox
Product Motor
Ratio i
Page number for dimensions

Selection tables, 4-pole motors

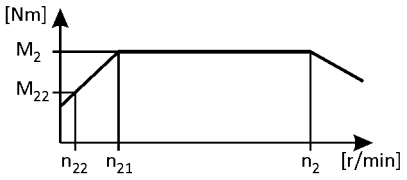


120 Hz: P_N = 0.55 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
56	2.9	231	4.0	1325	4.0	3.6	2.597	-H45	063-32	98
44	3.7	184	5.0	1053	5.0	4.8	3.267	-H140	063-32	105
43	3.8	179	5.0	1026	5.0	4.8	3.354	-H100	063-32	101
43	3.8	176	5.0	1008	5.0	2.9	3.413	-H45	063-32	98
33	4.9	137	6.0	788	6.0	2.5	4.368	-H45	063-32	98
32	5.0	134	7.0	768	7.0	4.8	4.480	-H140	063-32	105
32	5.2	130	7.0	748	7.0	4.8	4.600	-H100	063-32	101
28	5.8	116	8.0	666	8.0	4.8	5.167	-H100	063-32	101
27	6.0	113	8.0	648	8.0	2.6	5.312	-H45	063-32	98
25	6.4	105	8.0	600	8.0	4.5	5.733	-H140	063-32	105
25	6.6	102	9.0	584	9.0	4.5	5.887	-H100	063-32	101
24	6.7	101	9.0	577	9.0	2.5	5.965	-H45	063-32	98
23	7.0	96	9.0	549	9.0	4.5	6.272	-H140	063-32	105
23	7.2	93	10	534	10	4.5	6.440	-H100	063-32	101
21	7.8	86	10	493	10	2.2	6.982	-H45	063-32	98
21	7.9	85	10	486	10	4.8	7.086	-H100	063-32	101
20	8.1	83	11	473	11	4.8	7.269	-H140	063-32	105
19	8.8	77	12	439	12	2.1	7.840	-H45	063-32	98
18	9.0	75	12	430	12	4.2	8.000	-H140	063-32	105
18	9.2	73	12	419	12	4.2	8.214	-H100	063-32	101
16	10	67	13	385	13	1.9	8.935	-H45	063-32	98
16	10	67	13	381	13	4.8	9.029	-H140	063-32	105
16	10	66	13	379	13	4.5	9.068	-H100	063-32	101
15	11	61	15	351	15	3.7	9.800	-H140	063-32	105
15	11	60	15	343	15	1.8	10.033	-H45	063-32	98
14	11	60	15	342	15	3.7	10.063	-H100	063-32	101
14	12	56	16	321	16	4.8	10.720	-H210	063-32	109
13	13	53	17	303	17	4.5	11.360	-H100	063-32	101
13	13	53	17	301	17	1.6	11.429	-H45	063-32	98
13	13	52	17	298	17	4.5	11.554	-H140	063-32	105
12	13	51	17	295	17	4.8	11.680	-H320	063-32	113
12	14	50	18	287	18	4.8	12.000	-H210	063-32	109
12	14	48	19	272	19	4.5	12.640	-H140	063-32	105
12	14	47	19	272	19	4.1	12.653	-H100	063-32	101
11	14	47	19	268	19	1.5	12.833	-H45	063-32	98

Selection tables, 4-pole motors

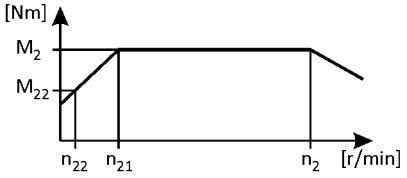


120 Hz: P_N = 0.55 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
11	15	45	20	259	20	4.8	13.268	-H320	063-32	113
11	15	44	20	252	20	4.5	13.673	-H210	063-32	109
10	16	43	21	247	21	4.5	13.957	-H140	063-32	105
10	16	41	21	237	21	3.5	14.490	-H100	063-32	101
9.8	17	40	22	232	22	1.4	14.836	-H45	063-32	98
9.7	17	40	22	231	22	4.5	14.898	-H320	063-32	113
9.5	17	39	23	225	23	4.5	15.306	-H210	063-32	109
9.4	17	39	23	222	23	3.3	15.500	-H100	063-32	101
9.0	18	37	24	213	24	4.2	16.122	-H140	063-32	105
8.7	19	36	25	207	25	1.4	16.660	-H45	063-32	98
8.6	19	36	25	203	25	4.5	16.923	-H320	063-32	113
8.2	20	34	26	194	26	2.9	17.750	-H100	063-32	101
8.1	20	34	26	193	26	4.0	17.802	-H140	063-32	105
7.6	21	32	28	181	28	1.3	19.013	-H45	063-32	98
7.4	22	31	29	177	29	2.6	19.486	-H100	063-32	101
7.3	22	30	29	174	29	3.6	19.750	-H140	063-32	105
6.8	24	28	32	161	32	1.2	21.350	-H45	063-32	98
6.7	24	28	32	158	32	3.7	21.802	-H210	063-32	109
6.6	24	28	32	158	32	3.3	21.808	-H140	063-32	105
6.5	25	27	33	154	33	2.3	22.314	-H100	063-32	101
6.1	27	25	35	145	35	3.7	23.754	-H320	063-32	113
5.9	27	25	36	141	36	3.7	24.405	-H210	063-32	109
5.9	28	24	36	140	36	1.1	24.595	-H45	063-32	98
5.8	28	24	37	139	37	2.9	24.829	-H140	063-32	105
5.8	28	24	37	137	37	2.0	25.095	-H100	063-32	101
5.4	30	22	40	128	40	4.2	26.983	-H320	063-32	113
5.3	30	22	40	127	40	3.6	27.119	-H210	063-32	109
5.3	31	22	41	126	41	3.0	27.415	-H140	063-32	105
5.3	31	22	41	125	41	1.0	27.618	-H45	063-32	98
5.0	32	21	43	120	43	2.0	28.738	-H100	063-32	101
4.9	33	20	44	116	44	3.6	29.548	-H320	063-32	113
4.8	34	20	45	113	45	3.6	30.357	-H210	063-32	109
4.6	36	19	47	108	47	1.8	31.805	-H100	063-32	101
4.5	36	19	47	108	47	2.6	31.976	-H140	063-32	105
4.5	36	19	47	108	47	0.8	32.000	-H45	063-32	98

Selection tables, 4-pole motors



120 Hz: P_N = 0.55 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
4.3	38	18	50	103	50	3.6	33.564	-H320	063-32	113
4.1	39	17	52	98	52	3.2	35.095	-H210	063-32	109
4.1	40	17	52	97	52	2.3	35.308	-H140	063-32	105
4.1	40	17	53	96	53	3.6	35.689	-H450	063-32	117
4.0	41	17	54	94	54	1.6	36.422	-H100	063-32	101
3.8	43	16	57	90	57	3.2	38.238	-H320	063-32	113
3.7	44	15	58	88	58	3.1	39.286	-H210	063-32	109
3.6	45	15	59	86	59	1.2	39.857	-H100	063-32	101
3.6	45	15	60	85	60	4.0	40.333	-H450	063-32	117
3.6	45	15	60	85	60	2.2	40.526	-H140	063-32	105
3.6	46	15	60	85	60	4.0	40.578	-H600	063-32	121
3.4	48	14	63	81	63	2.8	42.593	-H210	063-32	109
3.3	49	14	64	79	64	3.5	43.313	-H450	063-32	117
3.3	49	14	64	79	64	3.6	43.436	-H320	063-32	113
3.2	50	13	66	77	66	2.0	44.748	-H140	063-32	105
3.2	51	13	68	76	68	4.0	45.571	-H600	063-32	121
3.2	51	13	68	75	68	1.3	45.643	-H100	063-32	101
3.1	52	13	69	74	69	3.0	46.407	-H320	063-32	113
3.0	54	13	71	72	71	2.8	47.679	-H210	063-32	109
3.0	55	12	73	70	73	3.5	48.950	-H450	063-32	117
2.9	55	12	73	70	73	3.5	49.247	-H600	063-32	121
2.9	57	12	75	68	75	1.3	50.786	-H140	063-32	105
2.8	59	11	78	65	78	3.0	52.715	-H320	063-32	113
2.7	61	11	81	63	81	1.5	54.438	-H210	063-32	109
2.6	61	11	81	63	81	2.8	54.750	-H450	063-32	117
2.6	62	11	82	62	82	3.5	55.307	-H600	063-32	121
2.6	63	11	83	61	83	1.3	56.077	-H140	063-32	105
2.4	68	9.8	90	57	90	1.5	60.938	-H210	063-32	109
2.3	69	9.7	92	56	92	2.8	61.875	-H450	063-32	117
2.3	70	9.6	92	55	92	2.8	62.250	-H600	063-32	121
2.1	78	8.6	104	49	104	2.8	69.911	-H600	063-32	121

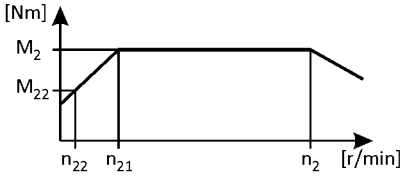
3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
3.3	48	14	63	79	63	2.5	43.390	-H210	063-32	109
3.3	48	14	64	79	64	4.8	43.676	-H600	063-32	121
3.3	49	14	64	78	64	4.8	44.124	-H450	063-32	117
3.1	52	13	69	73	69	4.0	47.276	-H320	063-32	113

Selection tables, 4-pole motors

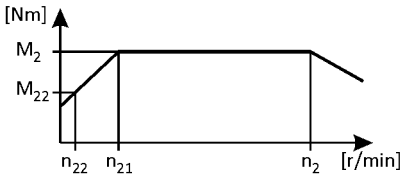
120 Hz: P_N = 0.55 kW

3-stage gearboxes



Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
3.0	54	12	71	71	71	2.6	48.571	-H210	063-32	109
3.0	54	12	72	70	72	5.5	49.051	-H600	063-32	121
2.9	55	12	73	69	73	5.3	49.867	-H450	063-32	117
2.7	59	11	78	64	78	3.5	53.703	-H320	063-32	113
2.6	61	11	81	62	81	2.2	55.529	-H210	063-32	109
2.6	62	11	81	62	81	5.1	55.710	-H600	063-32	121
2.6	62	11	82	61	82	4.7	56.469	-H450	063-32	117
2.4	67	9.9	88	57	88	3.1	60.502	-H320	063-32	113
2.3	68	9.7	90	56	90	4.3	61.774	-H450	063-32	117
2.3	69	9.7	91	55	91	2.0	62.160	-H210	063-32	109
2.3	69	9.6	91	55	91	5.1	62.566	-H600	063-32	121
2.1	76	8.7	100	50	100	2.8	68.726	-H320	063-32	113
2.1	77	8.6	102	49	102	3.8	69.813	-H450	063-32	117
2.0	78	8.4	104	48	104	1.8	71.026	-H210	063-32	109
1.9	86	7.8	113	45	113	2.4	77.387	-H320	063-32	113
1.8	87	7.6	115	44	115	3.4	78.794	-H450	063-32	117
1.8	88	7.5	116	43	116	1.6	79.507	-H210	063-32	109
1.6	97	6.8	128	39	128	2.4	87.906	-H320	063-32	113
1.6	98	6.8	130	39	130	4.4	88.826	-H600	063-32	121
1.6	98	6.7	130	39	130	3.3	89.048	-H450	063-32	117
1.6	102	6.5	135	37	135	1.5	92.205	-H210	063-32	109
1.5	107	6.2	141	36	141	3.1	96.522	-H450	063-32	117
1.5	110	6.0	146	35	146	3.9	99.757	-H600	063-32	121
1.4	111	6.0	147	34	147	2.1	100.462	-H320	063-32	113
1.4	114	5.8	151	33	151	1.3	103.214	-H210	063-32	109
1.3	121	5.5	159	32	159	2.7	109.083	-H450	063-32	117
1.3	122	5.4	161	31	161	3.6	110.491	-H600	063-32	121
1.3	126	5.3	167	30	167	1.8	114.118	-H320	063-32	113
1.2	131	5.1	172	29	172	1.2	118.162	-H210	063-32	109
1.2	134	4.9	177	28	177	2.4	121.342	-H450	063-32	117
1.2	137	4.8	181	28	181	3.2	124.088	-H600	063-32	121
1.1	142	4.7	188	27	188	1.6	128.743	-H320	063-32	113
1.1	146	4.5	193	26	193	1.0	132.270	-H210	063-32	109
1.1	150	4.4	198	25	198	4.0	135.373	-H850	063-32	124
1.1	151	4.4	200	25	200	2.2	137.133	-H450	063-32	117

Selection tables, 4-pole motors

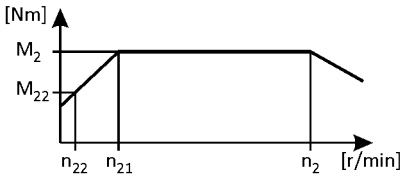


120 Hz: P_N = 0.55 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
1.0	158	4.2	209	24	209	2.8	142.988	-H600	063-32	121
1.0	162	4.1	213	24	213	1.4	146.244	-H320	063-32	113
1.0	167	4.0	221	23	221	3.7	151.262	-H850	063-32	124
0.9	169	3.9	223	23	223	0.9	152.853	-H210	063-32	109
0.9	173	3.8	228	22	228	1.9	156.274	-H450	063-32	117
0.9	177	3.7	234	21	234	2.5	160.585	-H600	063-32	121
0.9	181	3.7	240	21	240	3.4	164.294	-H850	063-32	124
0.9	184	3.6	243	21	243	1.3	166.541	-H320	063-32	113
0.8	192	3.5	253	20	253	2.3	173.536	-H600	063-32	121
0.8	195	3.4	258	20	258	1.7	176.611	-H450	063-32	117
0.8	203	3.3	268	19	268	3.0	183.577	-H850	063-32	124
0.8	209	3.2	276	18	276	1.1	189.179	-H320	063-32	113
0.7	215	3.1	284	18	284	2.0	194.892	-H600	063-32	121
0.7	219	3.0	289	17	289	1.5	198.059	-H450	063-32	117
0.7	229	2.9	303	17	303	2.7	207.675	-H850	063-32	124
0.7	239	2.8	316	16	316	1.0	216.683	-H320	063-32	113
0.7	245	2.7	324	16	324	1.5	221.794	-H600	063-32	121
0.6	247	2.7	327	15	327	1.3	223.833	-H450	063-32	117
0.6	256	2.6	339	15	339	2.4	232.050	-H850	063-32	124
0.6	272	2.4	359	14	359	0.9	246.137	-H320	063-32	113
0.6	274	2.4	362	14	362	1.2	248.200	-H450	063-32	117
0.6	275	2.4	363	14	363	1.5	249.089	-H600	063-32	121
0.5	310	2.1	409	12	409	1.1	280.500	-H450	063-32	117

Selection tables, 4-pole motors

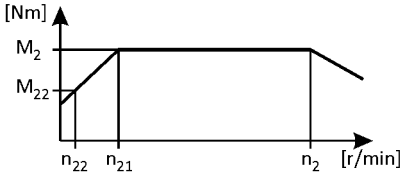


120 Hz: P_N = 0.75 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
56	4.0	231	5.0	1309	5.0	2.6	2.597	-H45	063-42	98
44	5.0	184	7.0	1041	7.0	3.5	3.267	-H140	063-42	105
43	5.1	179	7.0	1014	7.0	3.5	3.354	-H100	063-42	101
43	5.2	176	7.0	996	7.0	2.1	3.413	-H45	063-42	98
33	6.7	137	9.0	778	9.0	1.8	4.368	-H45	063-42	98
32	6.8	134	9.0	759	9.0	3.5	4.480	-H140	063-42	105
32	7.0	130	9.0	739	9.0	3.5	4.600	-H100	063-42	101
28	7.9	116	11	658	11	3.5	5.167	-H100	063-42	101
27	8.1	113	11	640	11	1.9	5.312	-H45	063-42	98
25	8.8	105	12	593	12	3.3	5.733	-H140	063-42	105
25	9.0	102	12	578	12	3.3	5.887	-H100	063-42	101
24	9.1	101	12	570	12	1.8	5.965	-H45	063-42	98
23	9.6	96	13	542	13	3.3	6.272	-H140	063-42	105
23	9.8	93	13	528	13	3.3	6.440	-H100	063-42	101
21	11	86	14	487	14	1.6	6.982	-H45	063-42	98
21	11	85	14	480	14	3.5	7.086	-H100	063-42	101
20	11	83	15	468	15	3.5	7.269	-H140	063-42	105
19	12	77	16	434	16	1.5	7.840	-H45	063-42	98
18	12	75	16	425	16	3.0	8.000	-H140	063-42	105
18	13	73	17	414	17	3.0	8.214	-H100	063-42	101
16	14	67	18	381	18	1.4	8.935	-H45	063-42	98
16	14	67	18	377	18	3.5	9.029	-H140	063-42	105
16	14	66	19	375	19	3.3	9.068	-H100	063-42	101
15	15	61	20	347	20	2.7	9.800	-H140	063-42	105
15	15	60	21	339	21	1.3	10.033	-H45	063-42	98
14	15	60	21	338	21	2.7	10.063	-H100	063-42	101
14	16	56	22	317	22	3.5	10.720	-H210	063-42	109
13	17	53	23	299	23	3.3	11.360	-H100	063-42	101
13	18	53	23	298	23	1.1	11.429	-H45	063-42	98
13	18	52	24	294	24	3.3	11.554	-H140	063-42	105
12	18	51	24	291	24	3.5	11.680	-H320	063-42	113
12	18	50	25	283	25	3.5	12.000	-H210	063-42	109
12	19	48	26	269	26	3.3	12.640	-H140	063-42	105
12	19	47	26	269	26	2.9	12.653	-H100	063-42	101
11	20	47	26	265	26	1.1	12.833	-H45	063-42	98

Selection tables, 4-pole motors

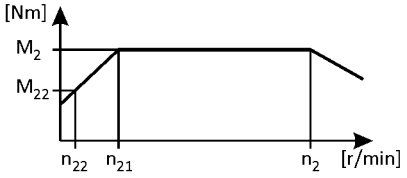


120 Hz: P_N = 0.75 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
11	20	45	27	256	27	3.5	13.268	-H320	063-42	113
11	21	44	28	249	28	3.3	13.673	-H210	063-42	109
10	21	43	29	244	29	3.3	13.957	-H140	063-42	105
10	22	41	30	235	30	2.6	14.490	-H100	063-42	101
9.8	23	40	30	229	30	1.0	14.836	-H45	063-42	98
9.7	23	40	30	228	30	3.3	14.898	-H320	063-42	113
9.5	23	39	31	222	31	3.3	15.306	-H210	063-42	109
9.4	24	39	32	219	32	2.4	15.500	-H100	063-42	101
9.0	25	37	33	211	33	3.0	16.122	-H140	063-42	105
8.7	26	36	34	204	34	1.0	16.660	-H45	063-42	98
8.6	26	36	35	201	35	3.3	16.923	-H320	063-42	113
8.2	27	34	36	192	36	2.1	17.750	-H100	063-42	101
8.1	27	34	36	191	36	2.9	17.802	-H140	063-42	105
7.6	29	32	39	179	39	0.9	19.013	-H45	063-42	98
7.4	30	31	40	175	40	1.9	19.486	-H100	063-42	101
7.3	30	30	40	172	40	2.6	19.750	-H140	063-42	105
6.8	33	28	44	159	44	0.9	21.350	-H45	063-42	98
6.7	33	28	45	156	45	2.7	21.802	-H210	063-42	109
6.6	33	28	45	156	45	2.4	21.808	-H140	063-42	105
6.5	34	27	46	152	46	1.7	22.314	-H100	063-42	101
6.1	36	25	49	143	49	2.7	23.754	-H320	063-42	113
5.9	37	25	50	139	50	2.7	24.405	-H210	063-42	109
5.8	38	24	51	137	51	2.1	24.829	-H140	063-42	105
5.8	38	24	51	136	51	1.5	25.095	-H100	063-42	101
5.4	41	22	55	126	55	3.1	26.983	-H320	063-42	113
5.3	42	22	55	125	55	2.6	27.119	-H210	063-42	109
5.3	42	22	56	124	56	2.2	27.415	-H140	063-42	105
5.0	44	21	59	118	59	1.5	28.738	-H100	063-42	101
4.9	45	20	60	115	60	2.6	29.548	-H320	063-42	113
4.8	46	20	62	112	62	2.6	30.357	-H210	063-42	109
4.6	49	19	65	107	65	1.3	31.805	-H100	063-42	101
4.5	49	19	65	106	65	1.9	31.976	-H140	063-42	105
4.3	51	18	69	101	69	2.6	33.564	-H320	063-42	113
4.1	54	17	72	97	72	2.3	35.095	-H210	063-42	109
4.1	54	17	72	96	72	1.7	35.308	-H140	063-42	105

Selection tables, 4-pole motors



120 Hz: P_N = 0.75 kW

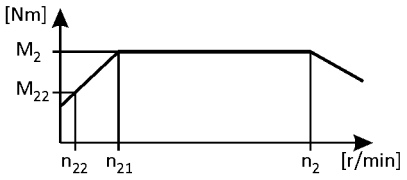
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
4.1	55	17	73	95	73	2.6	35.689	-H450	063-42	117
4.0	56	17	74	93	74	1.2	36.422	-H100	063-42	101
3.8	59	16	78	89	78	2.3	38.238	-H320	063-42	113
3.7	60	15	80	87	80	2.3	39.286	-H210	063-42	109
3.6	61	15	81	85	81	0.9	39.857	-H100	063-42	101
3.6	62	15	82	84	82	2.9	40.333	-H450	063-42	117
3.6	62	15	83	84	83	1.6	40.526	-H140	063-42	105
3.6	62	15	83	84	83	2.9	40.578	-H600	063-42	121
3.4	65	14	87	80	87	2.0	42.593	-H210	063-42	109
3.3	66	14	89	79	89	2.5	43.313	-H450	063-42	117
3.3	66	14	89	78	89	2.6	43.436	-H320	063-42	113
3.2	68	13	91	76	91	1.5	44.748	-H140	063-42	105
3.2	70	13	93	75	93	2.9	45.571	-H600	063-42	121
3.2	70	13	93	75	93	1.0	45.643	-H100	063-42	101
3.1	71	13	95	73	95	2.2	46.407	-H320	063-42	113
3.0	73	13	97	71	97	2.0	47.679	-H210	063-42	109
3.0	75	12	100	70	100	2.5	48.950	-H450	063-42	117
2.9	75	12	101	69	101	2.5	49.247	-H600	063-42	121
2.9	78	12	104	67	104	1.0	50.786	-H140	063-42	105
2.8	81	11	108	65	108	2.2	52.715	-H320	063-42	113
2.7	83	11	111	63	111	1.1	54.438	-H210	063-42	109
2.6	84	11	112	62	112	2.1	54.750	-H450	063-42	117
2.6	85	11	113	62	113	2.5	55.307	-H600	063-42	121
2.6	86	11	115	61	115	1.0	56.077	-H140	063-42	105
2.4	93	9.8	125	56	125	1.1	60.938	-H210	063-42	109
2.3	95	9.7	126	55	126	2.1	61.875	-H450	063-42	117
2.3	95	9.6	127	55	127	2.1	62.250	-H600	063-42	121
2.1	107	8.6	143	49	143	2.1	69.911	-H600	063-42	121

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
3.3	65	14	87	78	87	1.8	43.390	-H210	063-42	109
3.3	66	14	88	78	88	3.5	43.676	-H600	063-42	121
3.3	66	14	89	77	89	3.5	44.124	-H450	063-42	117
3.1	71	13	95	72	95	2.9	47.276	-H320	063-42	113
3.0	73	12	98	70	98	1.9	48.571	-H210	063-42	109
3.0	74	12	99	69	99	4.0	49.051	-H600	063-42	121
2.9	75	12	100	68	100	3.9	49.867	-H450	063-42	117

Selection tables, 4-pole motors

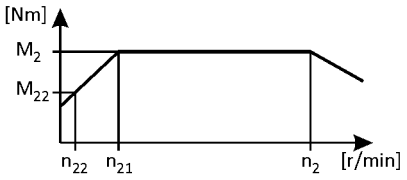


120 Hz: P_N = 0.75 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
2.7	81	11	108	63	108	2.6	53.703	-H320	063-42	113
2.6	84	11	112	61	112	1.6	55.529	-H210	063-42	109
2.6	84	11	112	61	112	3.7	55.710	-H600	063-42	121
2.6	85	11	114	60	114	3.4	56.469	-H450	063-42	117
2.4	91	9.9	122	56	122	2.3	60.502	-H320	063-42	113
2.3	93	9.7	124	55	124	3.1	61.774	-H450	063-42	117
2.3	94	9.7	125	55	125	1.5	62.160	-H210	063-42	109
2.3	94	9.6	126	54	126	3.7	62.566	-H600	063-42	121
2.1	104	8.7	138	50	138	2.0	68.726	-H320	063-42	113
2.1	105	8.6	141	49	141	2.8	69.813	-H450	063-42	117
2.0	107	8.4	143	48	143	1.3	71.026	-H210	063-42	109
1.9	117	7.8	156	44	156	1.8	77.387	-H320	063-42	113
1.8	119	7.6	159	43	159	2.5	78.794	-H450	063-42	117
1.8	120	7.5	160	43	160	1.1	79.507	-H210	063-42	109
1.6	132	6.8	177	39	177	1.7	87.906	-H320	063-42	113
1.6	134	6.8	179	38	179	3.2	88.826	-H600	063-42	121
1.6	134	6.7	179	38	179	2.4	89.048	-H450	063-42	117
1.6	139	6.5	186	37	186	1.1	92.205	-H210	063-42	109
1.5	145	6.2	194	35	194	2.2	96.522	-H450	063-42	117
1.5	150	6.0	201	34	201	2.9	99.757	-H600	063-42	121
1.4	151	6.0	202	34	202	1.5	100.462	-H320	063-42	113
1.4	155	5.8	208	33	208	1.0	103.214	-H210	063-42	109
1.3	164	5.5	220	31	220	2.0	109.083	-H450	063-42	117
1.3	166	5.4	222	31	222	2.6	110.491	-H600	063-42	121
1.3	172	5.3	230	30	230	1.3	114.118	-H320	063-42	113
1.2	178	5.1	238	29	238	0.9	118.162	-H210	063-42	109
1.2	183	4.9	244	28	244	1.8	121.342	-H450	063-42	117
1.2	187	4.8	250	27	250	2.3	124.088	-H600	063-42	121
1.1	194	4.7	259	26	259	1.2	128.743	-H320	063-42	113
1.1	204	4.4	273	25	273	2.9	135.373	-H850	063-42	124
1.1	207	4.4	276	25	276	1.6	137.133	-H450	063-42	117
1.0	215	4.2	288	24	288	2.0	142.988	-H600	063-42	121
1.0	220	4.1	294	23	294	1.0	146.244	-H320	063-42	113
1.0	228	4.0	305	23	305	2.7	151.262	-H850	063-42	124
0.9	235	3.8	315	22	315	1.4	156.274	-H450	063-42	117

Selection tables, 4-pole motors

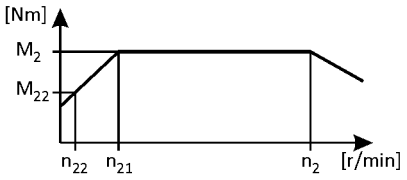


120 Hz: P_N = 0.75 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
0.9	242	3.7	323	21	323	1.8	160.585	-H600	063-42	121
0.9	247	3.7	331	21	331	2.5	164.294	-H850	063-42	124
0.9	251	3.6	335	20	335	0.9	166.541	-H320	063-42	113
0.8	261	3.5	349	20	349	1.7	173.536	-H600	063-42	121
0.8	266	3.4	356	19	356	1.2	176.611	-H450	063-42	117
0.8	276	3.3	370	19	370	2.2	183.577	-H850	063-42	124
0.8	285	3.2	381	18	381	0.8	189.179	-H320	063-42	113
0.7	294	3.1	392	17	392	1.5	194.892	-H600	063-42	121
0.7	298	3.0	399	17	399	1.1	198.059	-H450	063-42	117
0.7	313	2.9	418	16	418	2.0	207.675	-H850	063-42	124
0.7	334	2.7	446	15	446	1.1	221.794	-H600	063-42	121
0.6	337	2.7	451	15	451	1.0	223.833	-H450	063-42	117
0.6	349	2.6	467	15	467	1.8	232.050	-H850	063-42	124
0.6	374	2.4	500	14	500	0.9	248.200	-H450	063-42	117
0.6	375	2.4	501	14	501	1.1	249.089	-H600	063-42	121

Selection tables, 4-pole motors

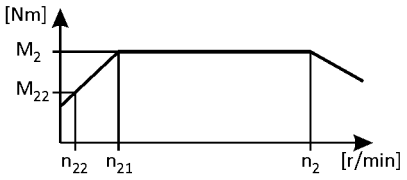


120 Hz: P_N = 1.1 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
44	7.3	184	10	1068	10	4.2	3.267	-H140	071-32	105
43	7.5	179	10	1041	10	4.2	3.354	-H100	071-32	101
43	7.6	177	10	1030	10	4.8	3.389	-H210	071-32	109
43	7.6	177	10	1030	10	4.8	3.389	-H320	071-32	113
32	10	134	13	779	13	4.2	4.480	-H140	071-32	105
32	10	130	13	759	13	4.1	4.600	-H100	071-32	101
28	12	116	15	676	15	3.8	5.167	-H100	071-32	101
26	13	108	16	625	16	4.8	5.583	-H210	071-32	109
25	13	105	17	609	17	3.9	5.733	-H140	071-32	105
25	13	102	17	593	17	3.6	5.887	-H100	071-32	101
24	14	99	18	574	18	4.8	6.083	-H320	071-32	113
23	14	96	18	558	18	4.8	6.250	-H210	071-32	109
23	14	96	18	556	18	3.9	6.272	-H140	071-32	105
23	14	93	19	542	19	3.3	6.440	-H100	071-32	101
21	16	87	20	505	20	4.8	6.910	-H320	071-32	113
21	16	85	21	493	21	3.1	7.086	-H100	071-32	101
20	16	83	21	480	21	3.8	7.269	-H140	071-32	105
18	18	75	23	436	23	3.6	8.000	-H140	071-32	105
18	18	73	24	425	24	2.9	8.214	-H100	071-32	101
16	20	67	26	387	26	3.4	9.029	-H140	071-32	105
16	20	66	26	385	26	2.7	9.068	-H100	071-32	101
15	22	61	29	356	29	4.2	9.799	-H210	071-32	109
15	22	61	29	356	29	3.2	9.800	-H140	071-32	105
14	23	60	29	347	29	2.5	10.063	-H100	071-32	101
14	24	56	31	327	31	4.2	10.677	-H320	071-32	113
14	24	56	31	326	31	4.2	10.720	-H210	071-32	109
13	26	53	33	307	33	2.3	11.360	-H100	071-32	101
13	26	52	34	302	34	2.9	11.554	-H140	071-32	105
12	26	51	34	299	34	4.2	11.680	-H320	071-32	113
12	27	50	35	291	35	4.0	12.000	-H210	071-32	109
12	27	50	35	288	35	4.2	12.128	-H320	071-32	113
12	28	48	37	276	37	2.7	12.640	-H140	071-32	105
12	28	47	37	276	37	2.0	12.653	-H100	071-32	101
11	30	45	39	263	39	4.2	13.268	-H320	071-32	113
11	31	44	40	255	40	3.8	13.673	-H210	071-32	109

Selection tables, 4-pole motors

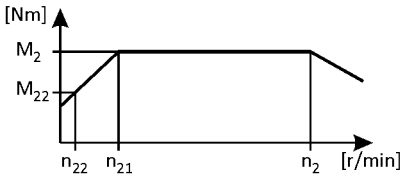


120 Hz: P_N = 1.1 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
10	31	43	41	251	41	4.2	13.905	-H450	071-32	117
10	31	43	41	250	41	2.5	13.957	-H140	071-32	105
10	33	41	42	241	42	1.8	14.490	-H100	071-32	101
9.7	33	40	44	234	44	3.9	14.898	-H320	071-32	113
9.5	34	39	45	228	45	3.4	15.306	-H210	071-32	109
9.4	35	39	45	225	45	1.7	15.500	-H100	071-32	101
9.2	35	38	46	222	46	4.2	15.714	-H450	071-32	117
9.2	35	38	46	221	46	4.2	15.810	-H600	071-32	121
9.0	36	37	47	217	47	2.2	16.122	-H140	071-32	105
8.7	38	36	49	208	49	3.2	16.750	-H210	071-32	109
8.6	38	36	49	206	49	3.9	16.923	-H320	071-32	113
8.2	40	34	52	197	52	1.5	17.750	-H100	071-32	101
8.2	40	34	52	197	52	4.2	17.755	-H600	071-32	121
8.1	40	34	52	196	52	2.0	17.802	-H140	071-32	105
7.9	41	33	53	191	53	3.5	18.250	-H320	071-32	113
7.7	42	32	55	186	55	2.9	18.750	-H210	071-32	109
7.4	44	31	57	179	57	1.3	19.486	-H100	071-32	101
7.3	44	30	58	177	58	1.8	19.750	-H140	071-32	105
7.0	47	29	61	168	61	3.5	20.731	-H320	071-32	113
6.7	49	28	64	160	64	2.5	21.802	-H210	071-32	109
6.6	49	28	64	160	64	1.7	21.808	-H140	071-32	105
6.5	50	27	65	157	65	3.5	22.170	-H450	071-32	117
6.5	50	27	65	156	65	1.2	22.314	-H100	071-32	101
6.1	53	25	69	147	69	3.2	23.754	-H320	071-32	113
5.9	55	25	71	143	71	2.2	24.405	-H210	071-32	109
5.8	56	24	73	141	73	1.5	24.829	-H140	071-32	105
5.8	56	24	73	139	73	3.5	25.056	-H450	071-32	117
5.8	56	24	73	139	73	1.0	25.095	-H100	071-32	101
5.8	57	24	74	139	74	3.5	25.207	-H600	071-32	121
5.4	61	22	79	129	79	3.5	26.983	-H320	071-32	113
5.3	61	22	79	129	79	2.3	27.119	-H210	071-32	109
5.3	62	22	80	127	80	1.5	27.415	-H140	071-32	105
5.3	62	22	81	127	81	3.4	27.578	-H450	071-32	117
5.1	64	21	83	123	83	4.0	28.310	-H600	071-32	121
5.0	64	21	84	121	84	1.0	28.738	-H100	071-32	101

Selection tables, 4-pole motors



120 Hz: P_N = 1.1 kW

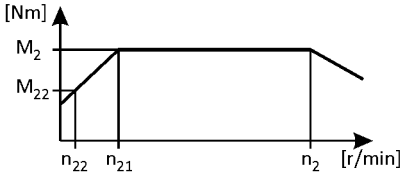
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
4.9	66	20	86	118	86	3.1	29.548	-H320	071-32	113
4.8	68	20	89	115	89	2.0	30.357	-H210	071-32	109
4.7	70	19	91	112	91	3.4	31.167	-H450	071-32	117
4.6	70	19	92	111	92	3.4	31.356	-H600	071-32	121
4.5	72	19	93	109	93	1.3	31.976	-H140	071-32	105
4.3	75	18	98	104	98	2.8	33.564	-H320	071-32	113
4.1	79	17	102	99	102	1.8	35.095	-H210	071-32	109
4.1	79	17	103	99	103	3.4	35.214	-H600	071-32	121
4.1	79	17	103	99	103	1.2	35.308	-H140	071-32	105
4.1	80	17	104	98	104	3.1	35.689	-H450	071-32	117
3.9	83	16	109	94	109	3.4	37.190	-H850	071-32	124
3.8	86	16	112	91	112	1.9	38.238	-H320	071-32	113
3.7	88	15	115	89	115	1.6	39.286	-H210	071-32	109
3.6	90	15	118	87	118	3.4	40.333	-H450	071-32	117
3.6	91	15	118	86	118	3.4	40.578	-H600	071-32	121
3.5	93	14	121	84	121	3.7	41.556	-H850	071-32	124
3.4	96	14	124	82	124	1.4	42.593	-H210	071-32	109
3.3	97	14	126	81	126	2.4	43.313	-H450	071-32	117
3.3	97	14	127	80	127	2.1	43.436	-H320	071-32	113
3.2	101	13	132	77	132	3.3	45.136	-H850	071-32	124
3.2	102	13	133	77	133	3.4	45.571	-H600	071-32	121
3.1	104	13	136	75	136	1.5	46.407	-H320	071-32	113
3.0	107	13	139	73	139	1.4	47.679	-H210	071-32	109
3.0	110	12	143	71	143	2.4	48.950	-H450	071-32	117
2.9	110	12	144	71	144	2.8	49.247	-H600	071-32	121
2.9	113	12	147	69	147	3.3	50.433	-H850	071-32	124
2.8	118	11	154	66	154	1.5	52.715	-H320	071-32	113
2.6	123	11	160	64	160	1.6	54.750	-H450	071-32	117
2.6	124	11	162	63	162	2.8	55.307	-H600	071-32	121
2.3	139	9.7	181	56	181	1.6	61.875	-H450	071-32	117
2.3	140	9.6	182	56	182	1.6	62.250	-H600	071-32	121
2.1	157	8.6	204	50	204	1.6	69.911	-H600	071-32	121

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
3.6	88	15	115	87	115	3.9	39.925	-H600	071-32	121
3.3	96	14	125	80	125	1.3	43.390	-H210	071-32	109
3.3	97	14	126	80	126	3.6	43.676	-H600	071-32	121

Selection tables, 4-pole motors

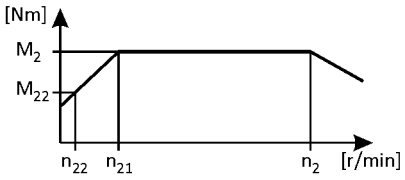


120 Hz: P_N = 1.1 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
3.3	98	14	127	79	127	2.7	44.124	-H450	071-32	117
3.1	104	13	136	74	136	2.0	47.276	-H320	071-32	113
3.0	107	12	140	72	140	1.3	48.571	-H210	071-32	109
3.0	108	12	141	71	141	3.7	49.051	-H600	071-32	121
2.9	110	12	143	70	143	2.7	49.867	-H450	071-32	117
2.7	117	11	152	66	152	4.8	52.743	-H850	071-32	124
2.7	119	11	154	65	154	1.8	53.703	-H320	071-32	113
2.6	123	11	160	63	160	1.1	55.529	-H210	071-32	109
2.6	123	11	160	63	160	3.2	55.710	-H600	071-32	121
2.6	125	11	162	62	162	2.4	56.469	-H450	071-32	117
2.5	130	10	170	59	170	4.3	58.933	-H850	071-32	124
2.4	134	9.9	174	58	174	1.6	60.502	-H320	071-32	113
2.3	136	9.7	178	57	178	2.2	61.774	-H450	071-32	117
2.3	137	9.7	179	56	179	1.0	62.160	-H210	071-32	109
2.3	138	9.6	180	56	180	2.9	62.566	-H600	071-32	121
2.1	151	8.8	196	51	196	2.6	68.244	-H600	071-32	121
2.1	152	8.7	198	51	198	1.4	68.726	-H320	071-32	113
2.1	154	8.6	201	50	201	1.9	69.813	-H450	071-32	117
2.0	157	8.4	204	49	204	0.9	71.026	-H210	071-32	109
1.9	169	7.8	220	46	220	2.3	76.643	-H600	071-32	121
1.9	171	7.8	223	45	223	1.2	77.387	-H320	071-32	113
1.8	174	7.6	227	44	227	1.7	78.794	-H450	071-32	117
1.7	186	7.1	242	42	242	3.3	84.096	-H850	071-32	124
1.6	194	6.8	253	40	253	1.2	87.906	-H320	071-32	113
1.6	196	6.8	255	39	255	2.2	88.826	-H600	071-32	121
1.6	197	6.7	256	39	256	1.7	89.048	-H450	071-32	117
1.5	208	6.4	270	37	270	3.0	93.966	-H850	071-32	124
1.5	213	6.2	278	36	278	1.5	96.522	-H450	071-32	117
1.5	220	6.0	287	35	287	2.0	99.757	-H600	071-32	121
1.4	222	6.0	289	35	289	1.1	100.462	-H320	071-32	113
1.4	231	5.7	301	33	301	2.7	104.607	-H850	071-32	124
1.3	241	5.5	314	32	314	1.4	109.083	-H450	071-32	117
1.3	244	5.4	318	32	318	1.8	110.491	-H600	071-32	121
1.3	252	5.3	328	31	328	0.9	114.118	-H320	071-32	113
1.2	258	5.1	336	30	336	2.4	116.884	-H850	071-32	124

Selection tables, 4-pole motors

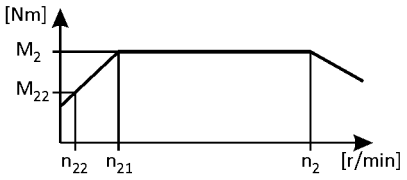


120 Hz: P_N = 1.1 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
1.2	268	4.9	349	29	349	1.2	121.342	-H450	071-32	117
1.2	274	4.8	357	28	357	1.6	124.088	-H600	071-32	121
1.1	299	4.4	389	26	389	2.1	135.373	-H850	071-32	124
1.1	303	4.4	394	25	394	1.1	137.133	-H450	071-32	117
1.0	316	4.2	411	24	411	1.4	142.988	-H600	071-32	121
1.0	334	4.0	435	23	435	1.9	151.262	-H850	071-32	124
0.9	345	3.8	450	22	450	1.0	156.274	-H450	071-32	117
0.9	355	3.7	462	22	462	1.2	160.585	-H600	071-32	121
0.9	363	3.7	473	21	473	1.7	164.294	-H850	071-32	124
0.8	383	3.5	499	20	499	1.1	173.536	-H600	071-32	121
0.8	390	3.4	508	20	508	0.8	176.611	-H450	071-32	117
0.8	404	3.3	526	19	526	2.7	182.844	-H1500	071-32	127
0.8	406	3.3	528	19	528	1.5	183.577	-H850	071-32	124
0.7	430	3.1	561	18	561	1.0	194.892	-H600	071-32	121
0.7	447	3.0	582	17	582	2.5	202.237	-H1500	071-32	127
0.7	459	2.9	597	17	597	1.4	207.675	-H850	071-32	124
0.7	490	2.7	638	16	638	2.2	221.907	-H1500	071-32	127
0.6	513	2.6	667	15	667	1.2	232.050	-H850	071-32	124
0.6	542	2.4	706	14	706	2.0	245.442	-H1500	071-32	127
0.5	620	2.1	807	12	807	1.8	280.500	-H1500	071-32	127
0.5	685	1.9	892	11	892	1.6	310.250	-H1500	071-32	127

Selection tables, 4-pole motors

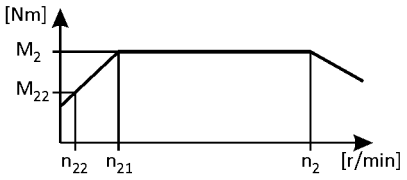


120 Hz: P_N = 1.5 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
44	10	184	13	1056	13	3.1	3.267	-H140	071-42	105
43	10	179	14	1029	14	3.1	3.354	-H100	071-42	101
43	10	177	14	1018	14	3.5	3.389	-H210	071-42	109
43	10	177	14	1018	14	3.5	3.389	-H320	071-42	113
32	14	134	18	770	18	3.1	4.480	-H140	071-42	105
32	14	130	19	750	19	2.9	4.600	-H100	071-42	101
28	16	116	21	668	21	2.7	5.167	-H100	071-42	101
26	17	108	22	618	22	3.5	5.583	-H210	071-42	109
25	18	105	23	602	23	2.9	5.733	-H140	071-42	105
25	18	102	24	586	24	2.6	5.887	-H100	071-42	101
24	19	99	25	567	25	3.5	6.083	-H320	071-42	113
23	19	96	25	552	25	3.5	6.250	-H210	071-42	109
23	19	96	25	550	25	2.8	6.272	-H140	071-42	105
23	20	93	26	536	26	2.4	6.440	-H100	071-42	101
21	21	87	28	499	28	3.5	6.910	-H320	071-42	113
21	22	85	29	487	29	2.3	7.086	-H100	071-42	101
20	22	83	29	475	29	2.7	7.269	-H140	071-42	105
18	25	75	32	431	32	2.6	8.000	-H140	071-42	105
18	25	73	33	420	33	2.1	8.214	-H100	071-42	101
16	28	67	36	382	36	2.4	9.029	-H140	071-42	105
16	28	66	37	381	37	2.0	9.068	-H100	071-42	101
15	30	61	39	352	39	3.1	9.799	-H210	071-42	109
15	30	61	39	352	39	2.3	9.800	-H140	071-42	105
14	31	60	41	343	41	1.9	10.063	-H100	071-42	101
14	33	56	43	323	43	3.1	10.677	-H320	071-42	113
14	33	56	43	322	43	3.1	10.720	-H210	071-42	109
13	35	53	46	304	46	1.7	11.360	-H100	071-42	101
13	35	52	47	299	47	2.1	11.554	-H140	071-42	105
12	36	51	47	295	47	3.1	11.680	-H320	071-42	113
12	37	50	48	288	48	2.9	12.000	-H210	071-42	109
12	37	50	49	285	49	3.1	12.128	-H320	071-42	113
12	39	48	51	273	51	2.0	12.640	-H140	071-42	105
12	39	47	51	273	51	1.5	12.653	-H100	071-42	101
11	41	45	53	260	53	3.1	13.268	-H320	071-42	113
11	42	44	55	252	55	2.8	13.673	-H210	071-42	109

Selection tables, 4-pole motors

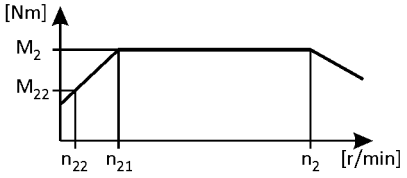


120 Hz: P_N = 1.5 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
10	43	43	56	248	56	3.1	13.905	-H450	071-42	117
10	43	43	56	247	56	1.8	13.957	-H140	071-42	105
10	44	41	58	238	58	1.3	14.490	-H100	071-42	101
9.7	46	40	60	232	60	2.9	14.898	-H320	071-42	113
9.5	47	39	62	225	62	2.5	15.306	-H210	071-42	109
9.4	47	39	62	223	62	1.2	15.500	-H100	071-42	101
9.2	48	38	63	220	63	3.1	15.714	-H450	071-42	117
9.2	48	38	64	218	64	3.1	15.810	-H600	071-42	121
9.0	49	37	65	214	65	1.6	16.122	-H140	071-42	105
8.7	51	36	67	206	67	2.4	16.750	-H210	071-42	109
8.6	52	36	68	204	68	2.9	16.923	-H320	071-42	113
8.2	54	34	72	194	72	1.1	17.750	-H100	071-42	101
8.2	54	34	72	194	72	3.1	17.755	-H600	071-42	121
8.1	54	34	72	194	72	1.5	17.802	-H140	071-42	105
7.9	56	33	74	189	74	2.6	18.250	-H320	071-42	113
7.7	57	32	76	184	76	2.1	18.750	-H210	071-42	109
7.4	60	31	78	177	78	1.0	19.486	-H100	071-42	101
7.3	60	30	80	175	80	1.3	19.750	-H140	071-42	105
7.0	63	29	84	166	84	2.6	20.731	-H320	071-42	113
6.7	67	28	88	158	88	1.8	21.802	-H210	071-42	109
6.6	67	28	88	158	88	1.2	21.808	-H140	071-42	105
6.5	68	27	89	156	89	2.6	22.170	-H450	071-42	117
6.5	68	27	90	155	90	0.8	22.314	-H100	071-42	101
6.1	73	25	96	145	96	2.3	23.754	-H320	071-42	113
5.9	75	25	98	141	98	1.6	24.405	-H210	071-42	109
5.8	76	24	100	139	100	1.1	24.829	-H140	071-42	105
5.8	77	24	101	138	101	2.6	25.056	-H450	071-42	117
5.8	77	24	102	137	102	2.6	25.207	-H600	071-42	121
5.4	83	22	109	128	109	2.5	26.983	-H320	071-42	113
5.3	83	22	109	127	109	1.7	27.119	-H210	071-42	109
5.3	84	22	110	126	110	1.1	27.415	-H140	071-42	105
5.3	84	22	111	125	111	2.4	27.578	-H450	071-42	117
5.1	87	21	114	122	114	2.9	28.310	-H600	071-42	121
4.9	90	20	119	117	119	2.2	29.548	-H320	071-42	113
4.8	93	20	122	114	122	1.5	30.357	-H210	071-42	109

Selection tables, 4-pole motors



120 Hz: P_N = 1.5 kW

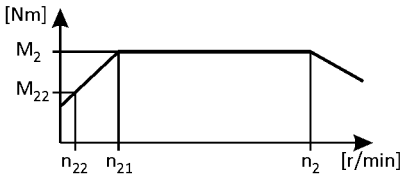
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
4.7	95	19	126	111	126	2.4	31.167	-H450	071-42	117
4.6	96	19	126	110	126	2.4	31.356	-H600	071-42	121
4.5	98	19	129	108	129	0.9	31.976	-H140	071-42	105
4.3	103	18	135	103	135	2.0	33.564	-H320	071-42	113
4.1	107	17	141	98	141	1.3	35.095	-H210	071-42	109
4.1	108	17	142	98	142	2.4	35.214	-H600	071-42	121
4.1	108	17	142	98	142	0.9	35.308	-H140	071-42	105
4.1	109	17	144	97	144	2.2	35.689	-H450	071-42	117
3.9	114	16	150	93	150	2.4	37.190	-H850	071-42	124
3.8	117	16	154	90	154	1.4	38.238	-H320	071-42	113
3.7	120	15	158	88	158	1.1	39.286	-H210	071-42	109
3.6	123	15	162	86	162	2.5	40.333	-H450	071-42	117
3.6	124	15	163	85	163	2.5	40.578	-H600	071-42	121
3.5	127	14	167	83	167	2.7	41.556	-H850	071-42	124
3.4	130	14	172	81	172	1.0	42.593	-H210	071-42	109
3.3	132	14	174	80	174	1.8	43.313	-H450	071-42	117
3.3	133	14	175	79	175	1.6	43.436	-H320	071-42	113
3.2	138	13	182	76	182	2.4	45.136	-H850	071-42	124
3.2	139	13	184	76	184	2.5	45.571	-H600	071-42	121
3.1	142	13	187	74	187	1.1	46.407	-H320	071-42	113
3.0	146	13	192	72	192	1.0	47.679	-H210	071-42	109
3.0	150	12	197	71	197	1.8	48.950	-H450	071-42	117
2.9	151	12	198	70	198	2.1	49.247	-H600	071-42	121
2.9	154	12	203	68	203	2.4	50.433	-H850	071-42	124
2.8	161	11	212	65	212	1.1	52.715	-H320	071-42	113
2.6	167	11	221	63	221	1.2	54.750	-H450	071-42	117
2.6	169	11	223	62	223	2.1	55.307	-H600	071-42	121
2.3	189	9.7	249	56	249	1.2	61.875	-H450	071-42	117
2.3	190	9.6	251	55	251	1.2	62.250	-H600	071-42	121
2.1	214	8.6	282	49	282	1.2	69.911	-H600	071-42	121

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
3.6	120	15	158	86	158	2.9	39.925	-H600	071-42	121
3.3	131	14	172	80	172	0.9	43.390	-H210	071-42	109
3.3	132	14	173	79	173	2.6	43.676	-H600	071-42	121
3.3	133	14	175	78	175	2.0	44.124	-H450	071-42	117
3.1	142	13	188	73	188	1.5	47.276	-H320	071-42	113

Selection tables, 4-pole motors

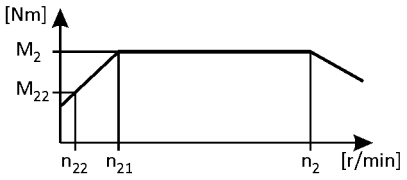


120 Hz: P_N = 1.5 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
3.0	146	12	193	71	193	0.9	48.571	-H210	071-42	109
3.0	148	12	195	70	195	2.7	49.051	-H600	071-42	121
2.9	150	12	198	69	198	2.0	49.867	-H450	071-42	117
2.7	159	11	209	65	209	3.5	52.743	-H850	071-42	124
2.7	162	11	213	64	213	1.3	53.703	-H320	071-42	113
2.6	167	11	220	62	220	0.8	55.529	-H210	071-42	109
2.6	168	11	221	62	221	2.3	55.710	-H600	071-42	121
2.6	170	11	224	61	224	1.7	56.469	-H450	071-42	117
2.5	178	10	234	59	234	3.1	58.933	-H850	071-42	124
2.4	182	9.9	240	57	240	1.2	60.502	-H320	071-42	113
2.3	186	9.7	245	56	245	1.6	61.774	-H450	071-42	117
2.3	188	9.6	248	55	248	2.1	62.566	-H600	071-42	121
2.1	206	8.8	271	51	271	1.9	68.244	-H600	071-42	121
2.1	207	8.7	273	50	273	1.0	68.726	-H320	071-42	113
2.1	210	8.6	277	49	277	1.4	69.813	-H450	071-42	117
1.9	231	7.8	304	45	304	1.7	76.643	-H600	071-42	121
1.9	233	7.8	307	45	307	0.9	77.387	-H320	071-42	113
1.8	237	7.6	313	44	313	1.2	78.794	-H450	071-42	117
1.7	253	7.1	334	41	334	2.4	84.096	-H850	071-42	124
1.6	265	6.8	349	39	349	0.9	87.906	-H320	071-42	113
1.6	268	6.8	352	39	352	1.6	88.826	-H600	071-42	121
1.6	268	6.7	353	39	353	1.2	89.048	-H450	071-42	117
1.5	283	6.4	373	37	373	2.2	93.966	-H850	071-42	124
1.5	291	6.2	383	36	383	1.1	96.522	-H450	071-42	117
1.5	300	6.0	396	35	396	1.5	99.757	-H600	071-42	121
1.4	315	5.7	415	33	415	2.0	104.607	-H850	071-42	124
1.3	329	5.5	433	32	433	1.0	109.083	-H450	071-42	117
1.3	333	5.4	438	31	438	1.3	110.491	-H600	071-42	121
1.2	352	5.1	464	30	464	1.8	116.884	-H850	071-42	124
1.2	366	4.9	481	28	481	0.9	121.342	-H450	071-42	117
1.2	374	4.8	492	28	492	1.2	124.088	-H600	071-42	121
1.1	408	4.4	537	26	537	1.5	135.373	-H850	071-42	124
1.0	431	4.2	567	24	567	1.0	142.988	-H600	071-42	121
1.0	456	4.0	600	23	600	1.4	151.262	-H850	071-42	124
0.9	484	3.7	637	22	637	0.9	160.585	-H600	071-42	121

Selection tables, 4-pole motors

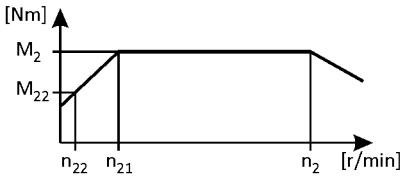


120 Hz: P_N = 1.5 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
0.9	495	3.7	652	21	652	1.2	164.294	-H850	071-42	124
0.8	523	3.5	689	20	689	0.8	173.536	-H600	071-42	121
0.8	551	3.3	725	19	725	2.0	182.844	-H1500	071-42	127
0.8	553	3.3	728	19	728	1.1	183.577	-H850	071-42	124
0.7	609	3.0	802	17	802	1.8	202.237	-H1500	071-42	127
0.7	626	2.9	824	17	824	1.0	207.675	-H850	071-42	124
0.7	668	2.7	880	16	880	1.6	221.907	-H1500	071-42	127
0.6	699	2.6	921	15	921	0.9	232.050	-H850	071-42	124
0.6	739	2.4	974	14	974	1.5	245.442	-H1500	071-42	127
0.5	845	2.1	1113	12	1113	1.3	280.500	-H1500	071-42	127
0.5	934	1.9	1231	11	1231	1.2	310.250	-H1500	071-42	127

Selection tables, 4-pole motors

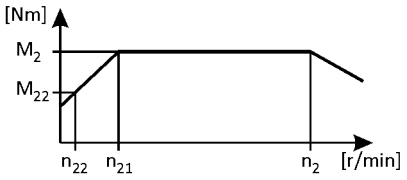


120 Hz: P_N = 2.2 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
44	14	184	19	1071	19	3.3	3.267	-H140	080-32	105
43	15	179	20	1044	20	2.4	3.354	-H100	080-32	101
43	15	177	20	1033	20	4.3	3.389	-H210	080-32	109
43	15	177	20	1033	20	4.3	3.389	-H320	080-32	113
32	20	134	26	781	26	2.7	4.480	-H140	080-32	105
32	20	130	27	761	27	2.0	4.600	-H100	080-32	101
31	20	129	27	753	27	4.0	4.648	-H210	080-32	109
31	20	129	27	753	27	4.3	4.648	-H320	080-32	113
28	23	116	30	677	30	1.9	5.167	-H100	080-32	101
26	24	108	33	627	33	3.7	5.583	-H210	080-32	109
25	25	105	33	611	33	2.3	5.733	-H140	080-32	105
25	25	105	33	611	33	4.2	5.733	-H600	080-32	121
25	26	102	34	595	34	1.8	5.887	-H100	080-32	101
24	26	99	35	579	35	4.2	6.045	-H450	080-32	117
24	27	99	35	575	35	4.3	6.083	-H320	080-32	113
23	27	96	37	558	37	2.2	6.272	-H140	080-32	105
23	28	93	38	544	38	1.7	6.440	-H100	080-32	101
22	29	91	39	529	39	4.3	6.613	-H450	080-32	117
21	30	87	40	507	40	4.1	6.910	-H320	080-32	113
21	31	85	41	494	41	1.6	7.086	-H100	080-32	101
20	32	83	42	482	42	1.9	7.269	-H140	080-32	105
19	33	78	45	457	45	2.9	7.657	-H210	080-32	109
18	35	75	47	438	47	1.9	8.000	-H140	080-32	105
18	36	73	48	426	48	1.5	8.214	-H100	080-32	101
17	36	72	49	420	49	3.9	8.343	-H320	080-32	113
17	37	70	50	408	50	2.6	8.571	-H210	080-32	109
16	39	67	53	388	53	1.7	9.029	-H140	080-32	105
16	40	66	53	386	53	1.4	9.068	-H100	080-32	101
15	41	63	55	369	55	3.3	9.477	-H320	080-32	113
15	43	61	57	357	57	2.4	9.799	-H210	080-32	109
15	43	61	57	357	57	1.7	9.800	-H140	080-32	105
15	44	60	58	351	58	4.2	9.965	-H450	080-32	117
14	44	60	59	348	59	1.3	10.063	-H100	080-32	101
14	47	56	62	328	62	3.2	10.677	-H320	080-32	113
14	47	56	62	327	62	2.3	10.720	-H210	080-32	109

Selection tables, 4-pole motors

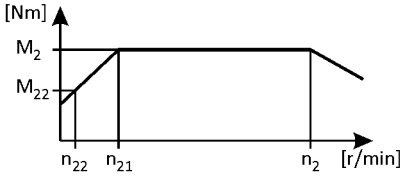


120 Hz: P_N = 2.2 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
13	49	53	66	311	66	4.2	11.262	-H450	080-32	117
13	50	53	66	309	66	4.2	11.330	-H600	080-32	121
13	50	53	66	308	66	1.1	11.360	-H100	080-32	101
13	50	52	67	303	67	1.4	11.554	-H140	080-32	105
12	51	51	68	300	68	3.0	11.680	-H320	080-32	113
12	52	50	70	292	70	2.0	12.000	-H210	080-32	109
12	53	50	71	289	71	2.7	12.128	-H320	080-32	113
12	54	49	72	284	72	4.3	12.320	-H450	080-32	117
12	54	48	72	282	72	4.3	12.395	-H600	080-32	121
12	55	48	74	277	74	1.4	12.640	-H140	080-32	105
12	55	47	74	277	74	1.0	12.653	-H100	080-32	101
11	58	45	77	264	77	2.6	13.268	-H320	080-32	113
11	60	44	80	256	80	1.9	13.673	-H210	080-32	109
10	61	43	81	252	81	4.0	13.905	-H450	080-32	117
10	61	43	81	251	81	4.3	13.920	-H600	080-32	121
10	61	43	81	251	81	1.3	13.957	-H140	080-32	105
10	63	41	84	242	84	0.9	14.490	-H100	080-32	101
10	63	41	84	242	84	4.2	14.490	-H850	080-32	124
9.7	65	40	87	235	87	2.6	14.898	-H320	080-32	113
9.5	67	39	89	229	89	1.7	15.306	-H210	080-32	109
9.4	68	39	90	226	90	0.8	15.500	-H100	080-32	101
9.2	69	38	92	223	92	3.6	15.714	-H450	080-32	117
9.2	69	38	92	221	92	4.0	15.810	-H600	080-32	121
9.0	70	37	94	217	94	1.1	16.122	-H140	080-32	105
9.0	71	37	94	216	94	4.2	16.190	-H850	080-32	124
8.7	73	36	98	209	98	1.6	16.750	-H210	080-32	109
8.6	74	36	99	207	99	2.2	16.923	-H320	080-32	113
8.5	74	35	99	206	99	3.4	17.033	-H450	080-32	117
8.2	78	34	103	197	103	4.0	17.755	-H600	080-32	121
8.1	78	34	104	197	104	1.0	17.802	-H140	080-32	105
7.9	80	33	106	192	106	2.2	18.250	-H320	080-32	113
7.7	82	32	109	187	109	1.5	18.750	-H210	080-32	109
7.5	84	31	112	182	112	3.0	19.250	-H450	080-32	117
7.5	85	31	113	181	113	3.5	19.367	-H600	080-32	121
7.3	86	30	115	177	115	0.9	19.750	-H140	080-32	105

Selection tables, 4-pole motors

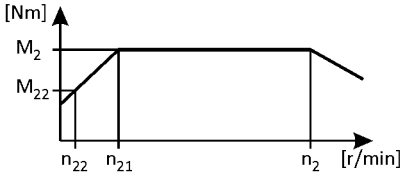


120 Hz: P_N = 2.2 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
7.0	91	29	121	169	121	1.9	20.731	-H320	080-32	113
6.7	95	28	127	161	127	3.5	21.750	-H600	080-32	121
6.7	95	28	127	161	127	1.3	21.802	-H210	080-32	109
6.6	95	28	127	161	127	0.8	21.808	-H140	080-32	105
6.5	97	27	129	158	129	2.6	22.170	-H450	080-32	117
6.3	101	26	135	152	135	3.5	23.103	-H850	080-32	124
6.1	104	25	138	147	138	1.7	23.754	-H320	080-32	113
5.9	107	25	142	143	142	1.1	24.405	-H210	080-32	109
5.8	109	24	146	140	146	2.3	25.056	-H450	080-32	117
5.8	110	24	147	139	147	3.1	25.207	-H600	080-32	121
5.6	113	23	150	136	150	3.5	25.815	-H850	080-32	124
5.4	118	22	157	130	157	1.7	26.983	-H320	080-32	113
5.3	118	22	158	129	158	1.1	27.119	-H210	080-32	109
5.3	120	22	161	127	161	2.4	27.578	-H450	080-32	117
5.1	124	21	165	124	165	3.1	28.310	-H600	080-32	121
5.1	124	21	165	124	165	3.3	28.315	-H850	080-32	124
4.9	129	20	172	119	172	1.6	29.548	-H320	080-32	113
4.8	133	20	177	115	177	1.0	30.357	-H210	080-32	109
4.7	136	19	182	112	182	2.1	31.167	-H450	080-32	117
4.6	137	19	183	112	183	2.8	31.356	-H600	080-32	121
4.6	138	19	184	111	184	3.3	31.639	-H850	080-32	124
4.5	141	19	188	109	188	3.3	32.267	-H1500	080-32	127
4.3	147	18	195	104	195	1.4	33.564	-H320	080-32	113
4.1	154	17	205	99	205	2.5	35.214	-H600	080-32	121
4.1	156	17	208	98	208	3.3	35.689	-H1500	080-32	127
4.1	156	17	208	98	208	1.9	35.689	-H450	080-32	117
3.9	162	16	217	94	217	3.1	37.190	-H850	080-32	124
3.7	171	15	228	89	228	2.9	39.160	-H1500	080-32	127
3.6	176	15	235	87	235	1.8	40.333	-H450	080-32	117
3.6	177	15	236	86	236	2.2	40.578	-H600	080-32	121
3.5	181	14	242	84	242	3.3	41.556	-H850	080-32	124
3.3	189	14	252	81	252	3.2	43.313	-H1500	080-32	127
3.3	189	14	252	81	252	1.2	43.313	-H450	080-32	117
3.2	197	13	263	78	263	2.7	45.136	-H850	080-32	124
3.2	199	13	265	77	265	2.2	45.571	-H600	080-32	121

Selection tables, 4-pole motors



120 Hz: P_N = 2.2 kW

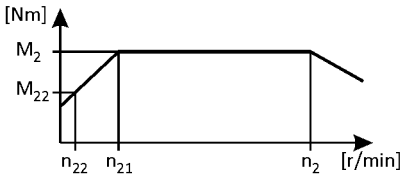
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
3.0	214	12	285	72	285	1.2	48.950	-H450	080-32	117
2.9	215	12	287	71	287	1.5	49.247	-H600	080-32	121
2.9	216	12	288	71	288	2.5	49.500	-H1500	080-32	127
2.9	220	12	294	69	294	2.7	50.433	-H850	080-32	124
2.6	239	11	319	64	319	2.5	54.750	-H1500	080-32	127
2.6	242	11	322	63	322	1.5	55.307	-H600	080-32	121

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
4.6	134	19	179	112	179	2.5	31.197	-H600	080-32	121
4.1	151	17	201	100	201	2.3	35.037	-H600	080-32	121
3.8	163	16	217	93	217	3.0	37.799	-H850	080-32	124
3.6	172	15	229	88	229	2.0	39.925	-H600	080-32	121
3.5	178	15	237	85	237	2.7	41.350	-H850	080-32	124
3.3	188	14	251	80	251	1.8	43.676	-H600	080-32	121
3.3	190	14	253	79	253	1.3	44.124	-H450	080-32	117
3.1	199	13	265	76	265	2.8	46.204	-H850	080-32	124
3.1	203	13	271	74	271	1.0	47.276	-H320	080-32	113
3.0	211	12	281	71	281	1.8	49.051	-H600	080-32	121
2.9	215	12	286	70	286	1.4	49.867	-H450	080-32	117
2.7	227	11	303	66	303	2.4	52.743	-H850	080-32	124
2.7	231	11	308	65	308	0.9	53.703	-H320	080-32	113
2.6	240	11	320	63	320	1.6	55.710	-H600	080-32	121
2.6	243	11	324	62	324	1.2	56.469	-H450	080-32	117
2.5	253	10	338	59	338	2.2	58.933	-H850	080-32	124
2.3	266	9.7	354	57	354	1.1	61.774	-H450	080-32	117
2.3	269	9.6	359	56	359	1.4	62.566	-H600	080-32	121
2.2	278	9.3	371	54	371	2.0	64.610	-H850	080-32	124
2.1	294	8.8	391	51	391	1.3	68.244	-H600	080-32	121
2.1	300	8.6	400	50	400	1.0	69.813	-H450	080-32	117
2.0	306	8.4	409	49	409	3.1	71.238	-H1500	080-32	127
2.0	311	8.3	414	49	414	1.8	72.193	-H850	080-32	124
1.9	330	7.8	440	46	440	1.2	76.643	-H600	080-32	121
1.8	339	7.6	452	44	452	0.9	78.794	-H450	080-32	117
1.8	339	7.6	452	44	452	2.8	78.794	-H1500	080-32	127
1.7	362	7.1	482	42	482	1.7	84.096	-H850	080-32	124
1.6	382	6.8	510	39	510	1.1	88.826	-H600	080-32	121
1.6	383	6.7	511	39	511	0.8	89.048	-H450	080-32	117

Selection tables, 4-pole motors

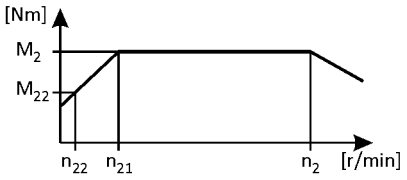


120 Hz: P_N = 2.2 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
1.5	404	6.4	539	37	539	1.5	93.966	-H850	080-32	124
1.5	429	6.0	572	35	572	1.0	99.757	-H600	080-32	121
1.4	450	5.7	600	34	600	1.4	104.607	-H850	080-32	124
1.3	475	5.4	634	32	634	0.9	110.491	-H600	080-32	121
1.3	489	5.3	652	31	652	2.2	113.585	-H1500	080-32	127
1.2	503	5.1	670	30	670	1.2	116.884	-H850	080-32	124
1.2	540	4.8	721	28	721	2.0	125.632	-H1500	080-32	127
1.1	582	4.4	777	26	777	1.0	135.373	-H850	080-32	124
1.0	599	4.3	799	25	799	1.8	139.211	-H1500	080-32	127
1.0	651	4.0	868	23	868	0.9	151.262	-H850	080-32	124
0.9	662	3.9	883	23	883	1.6	153.976	-H1500	080-32	127
0.9	707	3.7	942	21	942	0.9	164.294	-H850	080-32	124
0.9	727	3.6	969	21	969	2.9	168.993	-H3000	080-32	130
0.8	786	3.3	1049	19	1049	1.4	182.844	-H1500	080-32	127
0.8	798	3.2	1065	19	1065	2.7	185.615	-H3000	080-32	130
0.7	870	3.0	1160	17	1160	1.2	202.237	-H1500	080-32	127
0.7	882	2.9	1176	17	1176	2.4	205.096	-H3000	080-32	130
0.7	954	2.7	1273	16	1273	1.1	221.907	-H1500	080-32	127
0.6	969	2.7	1292	16	1292	2.2	225.269	-H3000	080-32	130
0.6	1056	2.4	1408	14	1408	1.0	245.442	-H1500	080-32	127
0.6	1115	2.3	1487	14	1487	1.9	259.250	-H3000	080-32	130
0.5	1206	2.1	1609	13	1609	0.9	280.500	-H1500	080-32	127
0.5	1225	2.1	1633	12	1633	1.7	284.750	-H3000	080-32	130

Selection tables, 4-pole motors

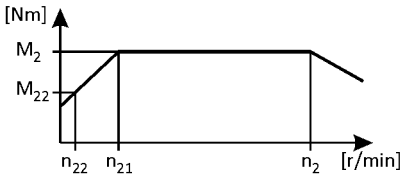


120 Hz: P_N = 3.0 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 30 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
44	20	276	26	1065	26	2.4	3.267	-H140	080-42	105
43	20	268	27	1038	27	1.8	3.354	-H100	080-42	101
32	27	201	36	777	36	2.0	4.480	-H140	080-42	105
32	28	196	37	757	37	1.5	4.600	-H100	080-42	101
31	28	194	37	749	37	2.9	4.648	-H210	080-42	109
31	28	194	37	749	37	3.1	4.648	-H320	080-42	113
25	34	157	46	607	46	1.7	5.733	-H140	080-42	105
25	34	157	46	607	46	3.1	5.733	-H600	080-42	121
25	35	153	47	591	47	1.3	5.887	-H100	080-42	101
24	36	149	48	576	48	3.1	6.045	-H450	080-42	117
23	38	144	50	555	50	1.6	6.272	-H140	080-42	105
23	39	140	51	540	51	1.2	6.440	-H100	080-42	101
22	40	136	53	526	53	3.1	6.613	-H450	080-42	117
19	46	118	61	455	61	2.1	7.657	-H210	080-42	109
18	48	113	64	435	64	1.4	8.000	-H140	080-42	105
18	49	110	66	424	66	1.1	8.214	-H100	080-42	101
17	50	108	67	417	67	2.8	8.343	-H320	080-42	113
17	51	105	68	406	68	1.9	8.571	-H210	080-42	109
16	54	99	72	384	72	1.0	9.068	-H100	080-42	101
15	57	95	76	367	76	2.4	9.477	-H320	080-42	113
15	59	92	78	355	78	1.8	9.799	-H210	080-42	109
15	59	92	78	355	78	1.2	9.800	-H140	080-42	105
15	60	90	80	349	80	3.1	9.965	-H450	080-42	117
14	60	89	80	346	80	0.9	10.063	-H100	080-42	101
14	64	84	85	326	85	2.4	10.677	-H320	080-42	113
14	64	84	86	325	86	1.7	10.720	-H210	080-42	109
13	68	80	90	309	90	3.1	11.262	-H450	080-42	117
13	68	79	90	307	90	3.1	11.330	-H600	080-42	121
13	69	78	92	301	92	1.1	11.554	-H140	080-42	105
12	70	77	93	298	93	2.2	11.680	-H320	080-42	113
12	72	75	96	290	96	1.5	12.000	-H210	080-42	109
12	73	74	97	287	97	2.0	12.128	-H320	080-42	113
12	74	73	98	283	98	3.1	12.320	-H450	080-42	117
12	74	73	99	281	99	3.1	12.395	-H600	080-42	121
12	76	71	101	275	101	1.0	12.640	-H140	080-42	105

Selection tables, 4-pole motors

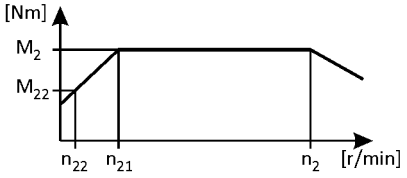


120 Hz: P_N = 3.0 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 30 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
11	80	68	106	262	106	1.9	13.268	-H320	080-42	113
11	82	66	109	255	109	1.4	13.673	-H210	080-42	109
10	83	65	111	250	111	2.9	13.905	-H450	080-42	117
10	83	65	111	250	111	3.1	13.920	-H600	080-42	121
10	84	65	111	249	111	0.9	13.957	-H140	080-42	105
10	87	62	116	240	116	3.1	14.490	-H850	080-42	124
9.7	89	60	119	234	119	1.9	14.898	-H320	080-42	113
9.5	92	59	122	227	122	1.2	15.306	-H210	080-42	109
9.2	94	57	126	222	126	2.7	15.714	-H450	080-42	117
9.2	95	57	126	220	126	2.9	15.810	-H600	080-42	121
9.0	97	56	129	216	129	0.8	16.122	-H140	080-42	105
9.0	97	56	129	215	129	3.1	16.190	-H850	080-42	124
8.7	100	54	134	208	134	1.2	16.750	-H210	080-42	109
8.6	101	53	135	206	135	1.6	16.923	-H320	080-42	113
8.5	102	53	136	204	136	2.5	17.033	-H450	080-42	117
8.2	106	51	142	196	142	2.9	17.755	-H600	080-42	121
7.9	109	49	146	191	146	1.6	18.250	-H320	080-42	113
7.7	112	48	150	186	150	1.1	18.750	-H210	080-42	109
7.5	115	47	154	181	154	2.2	19.250	-H450	080-42	117
7.5	116	47	155	180	155	2.6	19.367	-H600	080-42	121
7.0	124	43	166	168	166	1.4	20.731	-H320	080-42	113
6.7	130	41	174	160	174	2.6	21.750	-H600	080-42	121
6.7	131	41	174	160	174	0.9	21.802	-H210	080-42	109
6.5	133	41	177	157	177	1.9	22.170	-H450	080-42	117
6.3	138	39	185	151	185	2.6	23.103	-H850	080-42	124
6.1	142	38	190	147	190	1.3	23.754	-H320	080-42	113
5.9	146	37	195	143	195	0.8	24.405	-H210	080-42	109
5.8	150	36	200	139	200	1.7	25.056	-H450	080-42	117
5.8	151	36	201	138	201	2.3	25.207	-H600	080-42	121
5.6	155	35	206	135	206	2.6	25.815	-H850	080-42	124
5.4	162	33	216	129	216	1.3	26.983	-H320	080-42	113
5.3	163	33	217	128	217	0.8	27.119	-H210	080-42	109
5.3	165	33	220	126	220	1.8	27.578	-H450	080-42	117
5.1	170	32	226	123	226	2.3	28.310	-H600	080-42	121
5.1	170	32	226	123	226	2.4	28.315	-H850	080-42	124

Selection tables, 4-pole motors



120 Hz: P_N = 3.0 kW

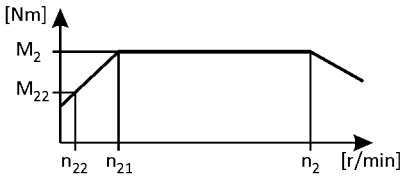
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 30 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
4.9	177	31	236	118	236	1.2	29.548	-H320	080-42	113
4.7	187	29	249	112	249	1.6	31.167	-H450	080-42	117
4.6	188	29	250	111	250	2.1	31.356	-H600	080-42	121
4.6	190	28	253	110	253	2.4	31.639	-H850	080-42	124
4.5	193	28	258	108	258	2.4	32.267	-H1500	080-42	127
4.3	201	27	268	104	268	1.0	33.564	-H320	080-42	113
4.1	211	26	281	99	281	1.8	35.214	-H600	080-42	121
4.1	214	25	285	98	285	2.4	35.689	-H1500	080-42	127
4.1	214	25	285	98	285	1.4	35.689	-H450	080-42	117
3.9	223	24	297	94	297	2.3	37.190	-H850	080-42	124
3.7	235	23	313	89	313	2.1	39.160	-H1500	080-42	127
3.6	242	22	322	86	322	1.3	40.333	-H450	080-42	117
3.6	243	22	324	86	324	1.6	40.578	-H600	080-42	121
3.5	249	22	332	84	332	2.4	41.556	-H850	080-42	124
3.3	260	21	346	80	346	2.4	43.313	-H1500	080-42	127
3.3	260	21	346	80	346	0.9	43.313	-H450	080-42	117
3.2	270	20	361	77	361	2.0	45.136	-H850	080-42	124
3.2	273	20	364	76	364	1.6	45.571	-H600	080-42	121
3.0	293	18	391	71	391	0.9	48.950	-H450	080-42	117
2.9	295	18	393	71	393	1.1	49.247	-H600	080-42	121
2.9	297	18	395	70	395	1.8	49.500	-H1500	080-42	127
2.9	302	18	403	69	403	2.0	50.433	-H850	080-42	124
2.6	328	16	437	64	437	1.8	54.750	-H1500	080-42	127
2.6	331	16	442	63	442	1.1	55.307	-H600	080-42	121

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 30 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
4.6	184	29	245	112	245	1.9	31.197	-H600	080-42	121
4.1	207	26	276	99	276	1.6	35.037	-H600	080-42	121
3.8	223	24	297	92	297	2.2	37.799	-H850	080-42	124
3.6	236	23	314	87	314	1.4	39.925	-H600	080-42	121
3.5	244	22	325	84	325	2.0	41.350	-H850	080-42	124
3.3	258	21	344	80	344	1.3	43.676	-H600	080-42	121
3.3	260	20	347	79	347	1.0	44.124	-H450	080-42	117
3.1	273	20	363	75	363	2.0	46.204	-H850	080-42	124
3.0	289	18	386	71	386	1.3	49.051	-H600	080-42	121
2.9	294	18	392	70	392	1.0	49.867	-H450	080-42	117
2.7	311	17	415	66	415	1.8	52.743	-H850	080-42	124

Selection tables, 4-pole motors

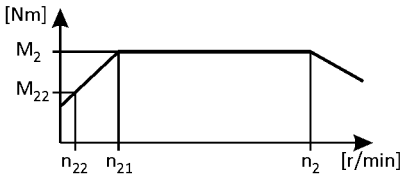


120 Hz: P_N = 3.0 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 30 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
2.6	329	16	438	63	438	1.2	55.710	-H600	080-42	121
2.6	333	16	444	62	444	0.9	56.469	-H450	080-42	117
2.5	348	15	464	59	464	1.6	58.933	-H850	080-42	124
2.3	369	14	492	56	492	1.1	62.566	-H600	080-42	121
2.2	381	14	508	54	508	1.4	64.610	-H850	080-42	124
2.1	403	13	537	51	537	1.0	68.244	-H600	080-42	121
2.0	420	13	560	49	560	2.3	71.238	-H1500	080-42	127
2.0	426	13	568	48	568	1.3	72.193	-H850	080-42	124
1.9	452	12	603	45	603	0.9	76.643	-H600	080-42	121
1.8	465	11	620	44	620	2.1	78.794	-H1500	080-42	127
1.7	496	11	662	41	662	1.2	84.096	-H850	080-42	124
1.6	524	10	699	39	699	0.8	88.826	-H600	080-42	121
1.5	554	9.6	739	37	739	1.1	93.966	-H850	080-42	124
1.4	617	8.6	823	33	823	1.0	104.607	-H850	080-42	124
1.3	670	7.9	894	31	894	1.6	113.585	-H1500	080-42	127
1.2	690	7.7	920	30	920	0.9	116.884	-H850	080-42	124
1.2	741	7.2	988	28	988	1.4	125.632	-H1500	080-42	127
1.0	821	6.5	1095	25	1095	1.3	139.211	-H1500	080-42	127
0.9	909	5.8	1211	23	1211	1.2	153.976	-H1500	080-42	127
0.9	997	5.3	1330	21	1330	2.2	168.993	-H3000	080-42	130
0.8	1079	4.9	1438	19	1438	1.0	182.844	-H1500	080-42	127
0.8	1095	4.8	1460	19	1460	2.0	185.615	-H3000	080-42	130
0.7	1193	4.5	1591	17	1591	0.9	202.237	-H1500	080-42	127
0.7	1210	4.4	1614	17	1614	1.8	205.096	-H3000	080-42	130
0.7	1309	4.1	1746	16	1746	0.8	221.907	-H1500	080-42	127
0.6	1329	4.0	1772	15	1772	1.6	225.269	-H3000	080-42	130
0.6	1530	3.5	2040	13	2040	1.4	259.250	-H3000	080-42	130
0.5	1680	3.2	2240	12	2240	1.3	284.750	-H3000	080-42	130

Selection tables, 4-pole motors

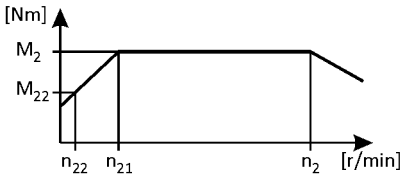


120 Hz: P_N = 4.0 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
44	24	184	35	1065	35	1.8	3.267	-H140	090-32	105
32	33	134	48	777	48	1.5	4.480	-H140	090-32	105
31	35	129	49	749	49	2.2	4.648	-H210	090-32	109
31	35	129	49	749	49	2.9	4.648	-H320	090-32	113
25	43	105	61	607	61	1.3	5.733	-H140	090-32	105
25	43	105	61	607	61	2.9	5.733	-H600	090-32	121
25	44	102	63	591	63	1.0	5.887	-H100	090-32	101
24	45	99	64	576	64	2.9	6.045	-H450	090-32	117
23	47	96	67	555	67	1.2	6.272	-H140	090-32	105
23	48	93	69	540	69	0.9	6.440	-H100	090-32	101
22	49	91	70	526	70	2.9	6.613	-H450	090-32	117
18	60	75	85	435	85	1.0	8.000	-H140	090-32	105
17	62	72	89	417	89	2.1	8.343	-H320	090-32	113
15	73	61	104	355	104	0.9	9.800	-H140	090-32	105
15	74	60	106	349	106	2.7	9.965	-H450	090-32	117
14	80	56	114	326	114	1.8	10.677	-H320	090-32	113
13	84	53	120	309	120	2.5	11.262	-H450	090-32	117
13	85	53	121	307	121	2.9	11.330	-H600	090-32	121
12	87	51	124	298	124	1.7	11.680	-H320	090-32	113
12	90	50	129	287	129	1.5	12.128	-H320	090-32	113
12	92	49	131	283	131	2.4	12.320	-H450	090-32	117
12	92	48	132	281	132	2.9	12.395	-H600	090-32	121
11	99	45	141	262	141	1.4	13.268	-H320	090-32	113
11	102	44	146	255	146	1.0	13.673	-H210	090-32	109
10	104	43	148	250	148	2.2	13.905	-H450	090-32	117
10	104	43	148	250	148	2.9	13.920	-H600	090-32	121
10	108	41	154	240	154	2.9	14.490	-H850	090-32	124
9.7	111	40	159	234	159	1.4	14.898	-H320	090-32	113
9.2	117	38	167	222	167	2.0	15.714	-H450	090-32	117
9.2	118	38	168	220	168	2.7	15.810	-H600	090-32	121
9.0	121	37	172	215	172	2.9	16.190	-H850	090-32	124
8.7	125	36	178	208	178	0.9	16.750	-H210	090-32	109
8.6	126	36	180	206	180	1.2	16.923	-H320	090-32	113
8.5	127	35	181	204	181	1.9	17.033	-H450	090-32	117
8.2	132	34	189	196	189	2.4	17.755	-H600	090-32	121

Selection tables, 4-pole motors

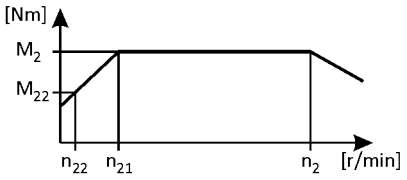


120 Hz: P_N = 4.0 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
7.9	136	33	194	191	194	1.2	18.250	-H320	090-32	113
7.5	144	31	205	181	205	1.7	19.250	-H450	090-32	117
7.5	144	31	206	180	206	2.2	19.367	-H600	090-32	121
7.0	155	29	221	168	221	1.0	20.731	-H320	090-32	113
6.7	162	28	232	160	232	2.0	21.750	-H600	090-32	121
6.5	165	27	236	157	236	1.4	22.170	-H450	090-32	117
6.3	172	26	246	151	246	2.4	23.103	-H850	090-32	124
6.1	177	25	253	147	253	1.0	23.754	-H320	090-32	113
5.8	187	24	267	139	267	1.3	25.056	-H450	090-32	117
5.8	188	24	268	138	268	1.7	25.207	-H600	090-32	121
5.6	192	23	275	135	275	2.3	25.815	-H850	090-32	124
5.4	201	22	287	129	287	1.0	26.983	-H320	090-32	113
5.3	206	22	294	126	294	1.3	27.578	-H450	090-32	117
5.1	211	21	301	123	301	1.7	28.310	-H600	090-32	121
5.1	211	21	302	123	302	2.3	28.315	-H850	090-32	124
4.9	220	20	315	118	315	0.9	29.548	-H320	090-32	113
4.7	232	19	332	112	332	1.2	31.167	-H450	090-32	117
4.6	234	19	334	111	334	1.5	31.356	-H600	090-32	121
4.6	236	19	337	110	337	2.2	31.639	-H850	090-32	124
4.5	241	19	344	108	344	2.3	32.267	-H1500	090-32	127
4.1	263	17	375	99	375	1.4	35.214	-H600	090-32	121
4.1	266	17	380	98	380	1.0	35.689	-H450	090-32	117
4.1	266	17	380	98	380	2.3	35.689	-H1500	090-32	127
3.9	277	16	396	94	396	1.8	37.190	-H850	090-32	124
3.7	292	15	417	89	417	2.0	39.160	-H1500	090-32	127
3.6	301	15	430	86	430	1.0	40.333	-H450	090-32	117
3.6	303	15	432	86	432	1.2	40.578	-H600	090-32	121
3.5	310	14	443	84	443	1.8	41.556	-H850	090-32	124
3.3	323	14	461	80	461	2.2	43.313	-H1500	090-32	127
3.2	337	13	481	77	481	1.7	45.136	-H850	090-32	124
3.2	340	13	485	76	485	1.2	45.571	-H600	090-32	121
2.9	367	12	524	71	524	0.8	49.247	-H600	090-32	121
2.9	369	12	527	70	527	1.7	49.500	-H1500	090-32	127
2.9	376	12	537	69	537	1.5	50.433	-H850	090-32	124
2.6	408	11	583	64	583	1.7	54.750	-H1500	090-32	127

Selection tables, 4-pole motors



120 Hz: P_N = 4.0 kW

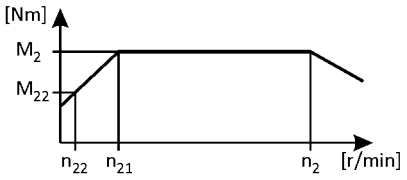
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
2.6	412	11	589	63	589	0.8	55.307	-H600	090-32	121

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
4.6	229	19	327	112	327	1.4	31.197	-H600	090-32	121
4.1	257	17	368	99	368	1.2	35.037	-H600	090-32	121
3.8	278	16	396	92	396	1.6	37.799	-H850	090-32	124
3.6	293	15	419	87	419	1.1	39.925	-H600	090-32	121
3.5	304	15	434	84	434	1.5	41.350	-H850	090-32	124
3.3	321	14	458	80	458	1.0	43.676	-H600	090-32	121
3.1	339	13	485	75	485	1.5	46.204	-H850	090-32	124
3.0	360	12	515	71	515	1.0	49.051	-H600	090-32	121
2.7	387	11	553	66	553	1.3	52.743	-H850	090-32	124
2.6	409	11	584	63	584	0.9	55.710	-H600	090-32	121
2.5	433	10	618	59	618	1.2	58.933	-H850	090-32	124
2.2	474	9.3	678	54	678	1.1	64.610	-H850	090-32	124
2.0	523	8.4	747	49	747	1.7	71.238	-H1500	090-32	127
2.0	530	8.3	757	48	757	1.0	72.193	-H850	090-32	124
1.8	579	7.6	827	44	827	1.6	78.794	-H1500	090-32	127
1.7	618	7.1	882	41	882	0.9	84.096	-H850	090-32	124
1.5	690	6.4	986	37	986	0.8	93.966	-H850	090-32	124
1.3	834	5.3	1191	31	1191	1.2	113.585	-H1500	090-32	127
1.2	923	4.8	1318	28	1318	1.1	125.632	-H1500	090-32	127
1.0	1022	4.3	1460	25	1460	1.0	139.211	-H1500	090-32	127
0.9	1131	3.9	1615	23	1615	0.9	153.976	-H1500	090-32	127
0.9	1241	3.6	1773	21	1773	1.6	168.993	-H3000	090-32	130
0.8	1363	3.2	1947	19	1947	1.5	185.615	-H3000	090-32	130
0.7	1506	2.9	2151	17	2151	1.3	205.096	-H3000	090-32	130
0.6	1654	2.7	2363	15	2363	1.2	225.269	-H3000	090-32	130
0.6	1904	2.3	2719	13	2719	1.1	259.250	-H3000	090-32	130
0.5	2091	2.1	2987	12	2987	1.0	284.750	-H3000	090-32	130

Selection tables, 4-pole motors

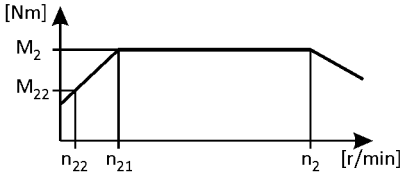


120 Hz: P_N = 5.5 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
31	47	129	67	759	67	2.1	4.648	-H320	100-12	113
25	58	105	83	615	83	3.1	5.733	-H600	100-12	121
24	61	99	87	583	87	2.8	6.045	-H450	100-12	117
22	67	91	96	533	96	2.6	6.613	-H450	100-12	117
15	101	60	144	354	144	2.0	9.965	-H450	100-12	117
13	115	53	164	311	164	2.5	11.330	-H600	100-12	121
12	125	48	179	284	179	2.3	12.395	-H600	100-12	121
10	141	43	201	254	201	1.6	13.905	-H450	100-12	117
10	141	43	201	253	201	2.2	13.920	-H600	100-12	121
10	147	41	209	243	209	2.7	14.490	-H850	100-12	124
9.7	151	40	215	237	215	1.0	14.898	-H320	100-12	113
9.2	159	38	227	224	227	1.5	15.714	-H450	100-12	117
9.2	160	38	229	223	229	2.0	15.810	-H600	100-12	121
9.0	164	37	234	218	234	2.5	16.190	-H850	100-12	124
8.5	172	35	246	207	246	1.4	17.033	-H450	100-12	117
8.2	180	34	257	199	257	2.4	17.750	-H850	100-12	124
8.2	180	34	257	199	257	1.8	17.755	-H600	100-12	121
7.9	185	33	264	193	264	0.9	18.250	-H320	100-12	113
7.5	195	31	278	183	278	1.2	19.250	-H450	100-12	117
7.5	196	31	280	182	280	1.6	19.367	-H600	100-12	121
7.3	201	30	287	178	287	2.2	19.833	-H850	100-12	124
7.1	208	29	297	172	297	3.0	20.533	-H1500	100-12	127
6.7	220	28	314	162	314	1.4	21.750	-H600	100-12	121
6.5	224	27	320	159	320	1.1	22.170	-H450	100-12	117
6.4	230	26	328	155	328	3.0	22.711	-H1500	100-12	127
6.3	234	26	334	153	334	1.9	23.103	-H850	100-12	124
5.8	252	24	360	141	360	2.5	24.933	-H1500	100-12	127
5.8	254	24	362	141	362	0.9	25.056	-H450	100-12	117
5.8	255	24	364	140	364	1.2	25.207	-H600	100-12	121
5.6	261	23	373	137	373	1.7	25.815	-H850	100-12	124
5.3	279	22	399	128	399	2.9	27.578	-H1500	100-12	127
5.3	279	22	399	128	399	1.0	27.578	-H450	100-12	117
5.1	287	21	409	125	409	1.3	28.310	-H600	100-12	121
5.1	287	21	409	125	409	1.8	28.315	-H850	100-12	124
4.9	302	20	431	118	431	2.9	29.822	-H3000	100-12	130

Selection tables, 4-pole motors



120 Hz: P_N = 5.5 kW

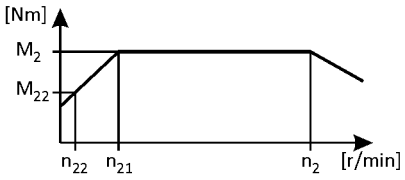
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
4.7	315	19	451	113	451	0.9	31.167	-H450	100-12	117
4.6	317	19	453	112	453	1.1	31.356	-H600	100-12	121
4.6	320	19	457	111	457	1.6	31.639	-H850	100-12	124
4.5	327	19	466	109	466	2.3	32.267	-H1500	100-12	127
4.4	332	18	474	108	474	2.9	32.756	-H3000	100-12	130
4.1	356	17	509	100	509	1.0	35.214	-H600	100-12	121
4.1	361	17	516	99	516	2.3	35.689	-H1500	100-12	127
4.0	366	17	523	97	523	2.4	36.193	-H3000	100-12	130
3.9	376	16	538	95	538	1.4	37.190	-H850	100-12	124
3.7	396	15	566	90	566	1.9	39.160	-H1500	100-12	127
3.6	402	15	575	89	575	2.4	39.753	-H3000	100-12	130
3.5	421	14	601	85	601	1.3	41.556	-H850	100-12	124
3.3	438	14	626	81	626	2.2	43.313	-H1500	100-12	127
3.2	457	13	652	78	652	1.2	45.136	-H850	100-12	124
3.2	463	13	661	77	661	2.2	45.750	-H3000	100-12	130
2.9	501	12	716	71	716	1.7	49.500	-H1500	100-12	127
2.9	509	12	726	70	726	2.2	50.250	-H3000	100-12	130
2.9	510	12	729	70	729	1.1	50.433	-H850	100-12	124
2.6	554	11	791	64	791	1.7	54.750	-H1500	100-12	127

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
3.1	461	13	658	76	658	1.1	46.204	-H850	100-12	124
2.9	497	12	710	71	710	1.8	49.867	-H1500	100-12	127
2.7	526	11	751	67	751	1.0	52.743	-H850	100-12	124
2.2	645	9.3	922	54	922	2.8	64.744	-H3000	100-12	130
2.0	709	8.4	1013	50	1013	2.5	71.112	-H3000	100-12	130
2.0	710	8.4	1014	50	1014	1.3	71.238	-H1500	100-12	127
1.7	870	6.9	1243	40	1243	1.1	87.267	-H1500	100-12	127
1.5	962	6.2	1374	37	1374	1.0	96.522	-H1500	100-12	127
1.3	1072	5.6	1531	33	1531	1.9	107.541	-H3000	100-12	130
1.3	1132	5.3	1617	31	1617	0.9	113.585	-H1500	100-12	127
1.2	1177	5.1	1682	30	1682	1.7	118.119	-H3000	100-12	130
1.1	1302	4.6	1859	27	1859	1.5	130.585	-H3000	100-12	130
1.0	1430	4.2	2042	25	2042	1.4	143.430	-H3000	100-12	130
0.9	1684	3.6	2406	21	2406	1.2	168.993	-H3000	100-12	130
0.8	1850	3.2	2643	19	2643	1.1	185.615	-H3000	100-12	130
0.7	2044	2.9	2920	17	2920	1.0	205.096	-H3000	100-12	130

Selection tables, 4-pole motors

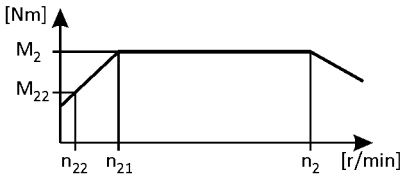


120 Hz: P_N = 5.5 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
0.6	2245	2.7	3208	16	3208	0.9	225.269	-H3000	100-12	130

Selection tables, 4-pole motors

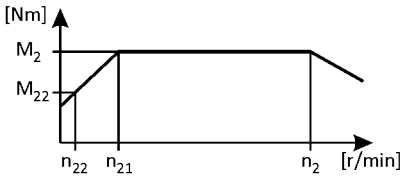


120 Hz: P_N = 7.5 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
25	79	105	113	613	113	2.3	5.733	-H600	100-32	121
24	84	99	120	581	120	2.0	6.045	-H450	100-32	117
22	92	91	131	532	131	1.9	6.613	-H450	100-32	117
10	201	41	286	243	286	2.0	14.490	-H850	100-32	124
9.2	219	38	313	222	313	1.5	15.810	-H600	100-32	121
8.2	246	34	351	198	351	1.8	17.750	-H850	100-32	124
7.5	268	31	383	182	383	1.2	19.367	-H600	100-32	121
7.3	275	30	392	177	392	1.6	19.833	-H850	100-32	124
7.1	284	29	406	171	406	2.2	20.533	-H1500	100-32	127
6.7	301	28	430	162	430	1.1	21.750	-H600	100-32	121
6.4	314	26	449	155	449	2.2	22.711	-H1500	100-32	127
6.3	320	26	457	152	457	1.4	23.103	-H850	100-32	124
5.8	345	24	493	141	493	1.9	24.933	-H1500	100-32	127
5.8	349	24	498	139	498	0.9	25.207	-H600	100-32	121
5.6	357	23	510	136	510	1.3	25.815	-H850	100-32	124
5.3	382	22	545	128	545	2.1	27.578	-H1500	100-32	127
5.1	392	21	560	124	560	0.9	28.310	-H600	100-32	121
5.1	392	21	560	124	560	1.3	28.315	-H850	100-32	124
4.9	413	20	590	118	590	2.1	29.822	-H3000	100-32	130
4.6	434	19	620	112	620	0.8	31.356	-H600	100-32	121
4.6	438	19	625	111	625	1.2	31.639	-H850	100-32	124
4.5	447	19	638	109	638	1.7	32.267	-H1500	100-32	127
4.4	453	18	648	107	648	2.1	32.756	-H3000	100-32	130
4.1	494	17	706	99	706	1.7	35.689	-H1500	100-32	127
4.0	501	17	715	97	715	1.8	36.193	-H3000	100-32	130
3.9	515	16	735	95	735	1.0	37.190	-H850	100-32	124
3.7	542	15	774	90	774	1.4	39.160	-H1500	100-32	127
3.6	550	15	786	88	786	1.8	39.753	-H3000	100-32	130
3.5	575	14	822	85	822	1.0	41.556	-H850	100-32	124
3.3	599	14	856	81	856	1.6	43.313	-H1500	100-32	127
3.2	625	13	892	78	892	0.9	45.136	-H850	100-32	124
3.2	633	13	904	77	904	1.6	45.750	-H3000	100-32	130
2.9	685	12	979	71	979	1.2	49.500	-H1500	100-32	127
2.9	695	12	993	70	993	1.6	50.250	-H3000	100-32	130
2.9	698	12	997	70	997	0.8	50.433	-H850	100-32	124

Selection tables, 4-pole motors



120 Hz: P_N = 7.5 kW

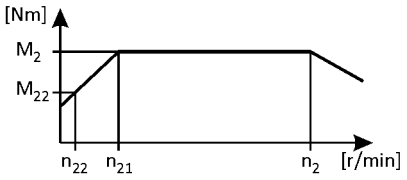
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
2.6	758	11	1082	64	1082	1.2	54.750	-H1500	100-32	127

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
2.2	883	9.3	1261	54	1261	2.0	64.744	-H3000	100-32	130
2.0	969	8.4	1385	49	1385	1.9	71.112	-H3000	100-32	130
1.3	1466	5.6	2094	33	2094	1.4	107.541	-H3000	100-32	130
1.2	1610	5.1	2300	30	2300	1.2	118.119	-H3000	100-32	130
1.1	1780	4.6	2543	27	2543	1.1	130.585	-H3000	100-32	130
1.0	1955	4.2	2793	25	2793	1.0	143.430	-H3000	100-32	130
0.9	2304	3.6	3291	21	3291	0.9	168.993	-H3000	100-32	130

Selection tables, 4-pole motors



120 Hz: P_N = 11.0 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
7.1	379	29	593	172	593	1.7	20.533	-H1500	112-22	127
6.4	420	26	656	155	656	1.7	22.711	-H1500	112-22	127
6.3	426	26	665	153	665	1.8	23.044	-H3000	112-22	130
5.8	461	24	720	142	720	1.5	24.933	-H1500	112-22	127
5.7	468	24	731	140	731	1.8	25.311	-H3000	112-22	130
5.3	510	22	796	128	796	1.6	27.578	-H1500	112-22	127
5.1	523	21	817	125	817	0.9	28.315	-H850	112-22	124
4.9	551	20	861	118	861	1.7	29.822	-H3000	112-22	130
4.5	596	19	932	109	932	1.3	32.267	-H1500	112-22	127
4.4	605	18	946	108	946	1.7	32.756	-H3000	112-22	130
4.1	659	17	1030	99	1030	1.2	35.689	-H1500	112-22	127
4.0	669	17	1045	98	1045	1.4	36.193	-H3000	112-22	130
3.7	724	15	1131	90	1131	1.1	39.160	-H1500	112-22	127
3.6	735	15	1148	89	1148	1.4	39.753	-H3000	112-22	130
3.3	800	14	1250	82	1250	1.1	43.313	-H1500	112-22	127
3.2	845	13	1321	77	1321	1.2	45.750	-H3000	112-22	130
2.9	929	12	1451	70	1451	1.2	50.250	-H3000	112-22	130

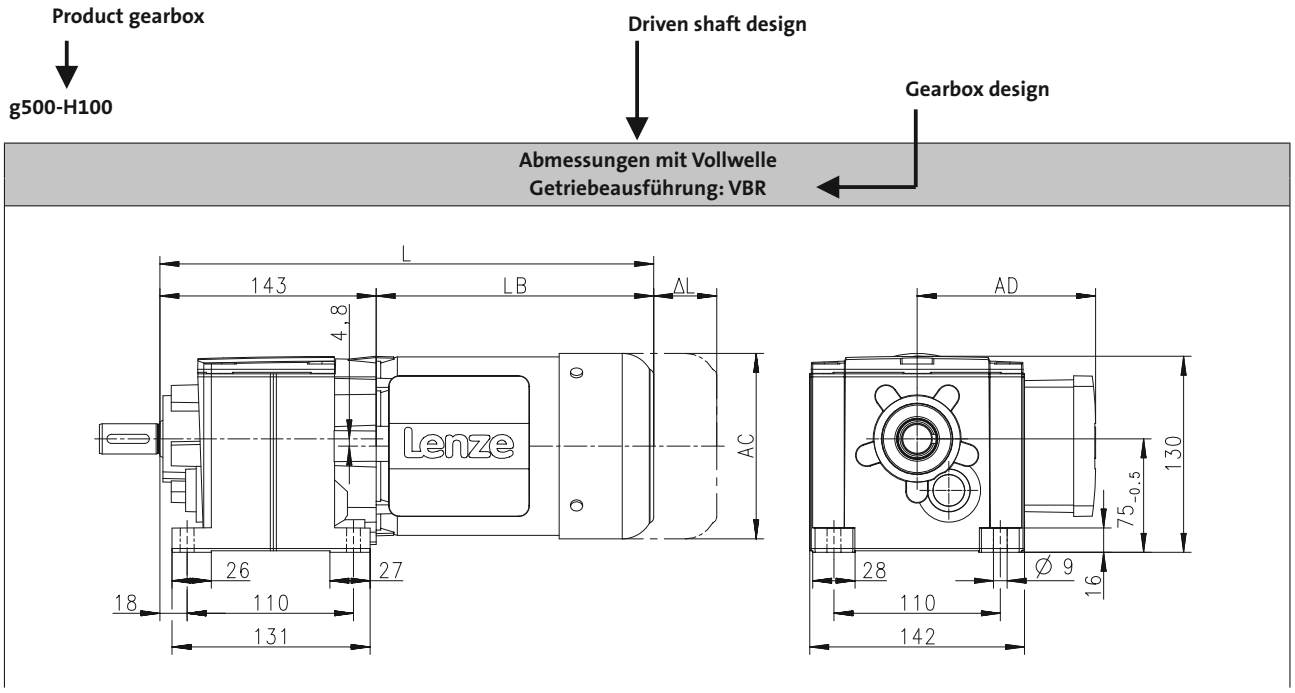
3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
1.3	1957	5.6	3058	33	3058	0.9	107.541	-H3000	112-22	130
1.2	2150	5.1	3359	30	3359	0.9	118.119	-H3000	112-22	130

Dimensions, notes

Notes on the dimensions

The following legend shows the layout of the dimension sheets.



Product Motor

Produkt			MD□MA□□							
			063-12	063-32	063-42	071-32	071-42	080-32	080-42	090-32
Abmessungen										
Gesamtlänge	**L**	**[mm]**		326		346		369		402
Länge Motor	**LB**	**[mm]**		183		203		226		259
Länge Motoranbauten	**Δ L**	**[mm]**		170		165		183		181
Motordurchmesser	**AC**	**[mm]**		123		139		156		176
Abstand Motor/Anschluss	**AD**	**[mm]**		100		109		150		157

Distance of motor centre to the end of terminal box

Total length of the drive without built-on accessories

Motor diameter

Motor length without built-on accessories

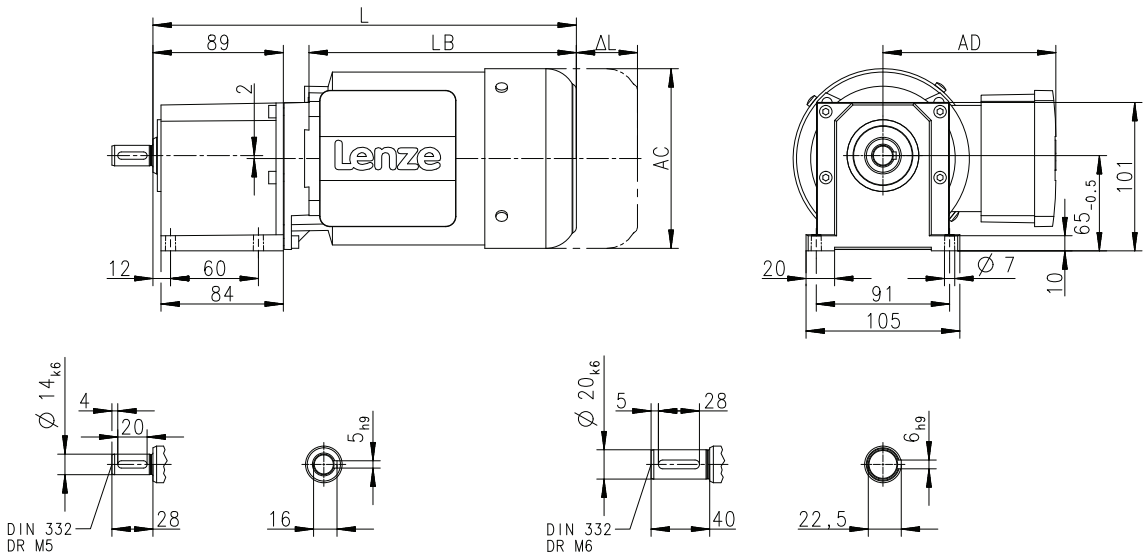
Additional length of the built-on accessories (longest version)

► If the mounting area (foot support) towards the motor is longer than the gearbox foot, some motors collide with the mounting area!

Dimensions, 4-pole motors

g500-H45

Dimensions with solid shaft
Gearbox design: VBR

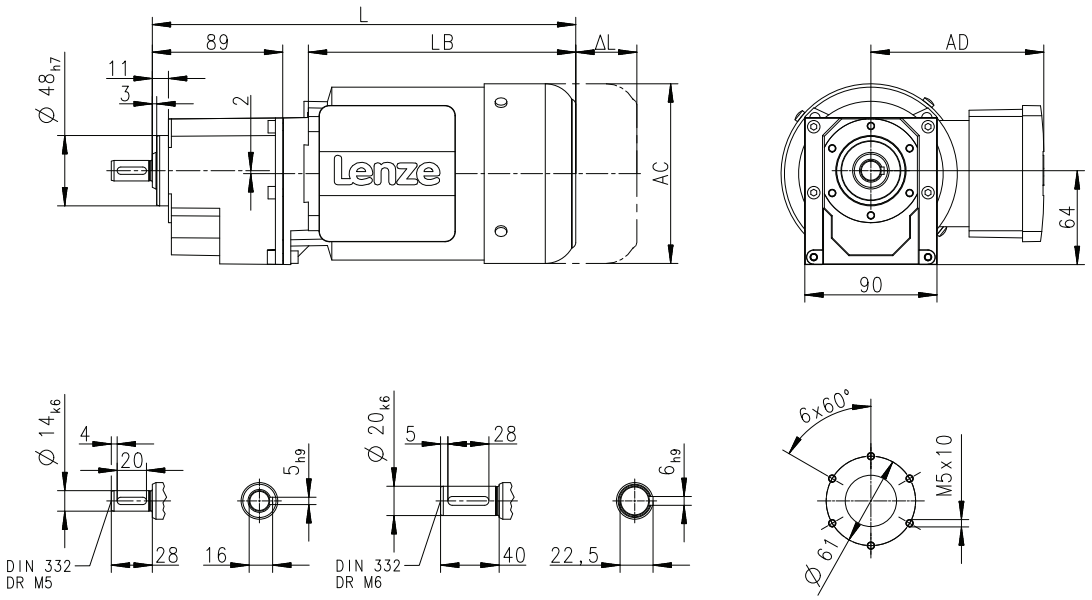


Product			MF□MA□□	
			063-32	063-42
Dimensions				
Total length	**L**	**[mm]**	288	
Motor length	**LB**	**[mm]**	183	
Length of motor options	**Δ L**	**[mm]**	170	
Motor diameter	**AC**	**[mm]**	123	
Distance motor/connection	**AD**	**[mm]**	100	

Dimensions, 4-pole motors

g500-H45

Dimensions with solid shaft and centering
Gearbox design: VAR, VCR

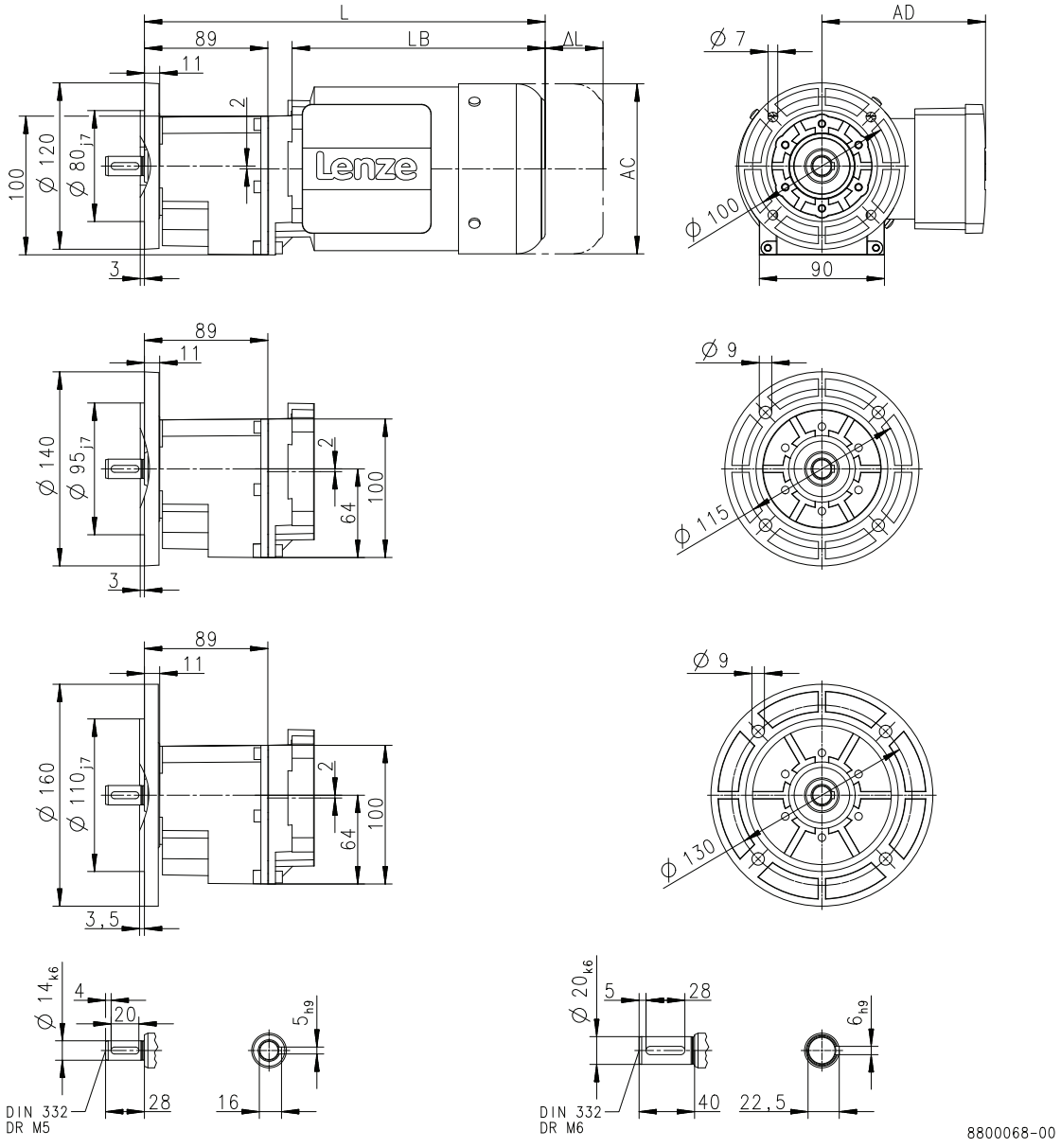


Product			MF□MA□□	
			063-32	063-42
Dimensions				
Total length	**L**	**[mm]**	288	
Motor length	**LB**	**[mm]**	183	
Length of motor options	**Δ L**	**[mm]**	170	
Motor diameter	**AC**	**[mm]**	123	
Distance motor/connection	**AD**	**[mm]**	100	

Dimensions, 4-pole motors

g500-H45

Dimensions with solid shaft and flange
Gearbox design: VAK, VCK

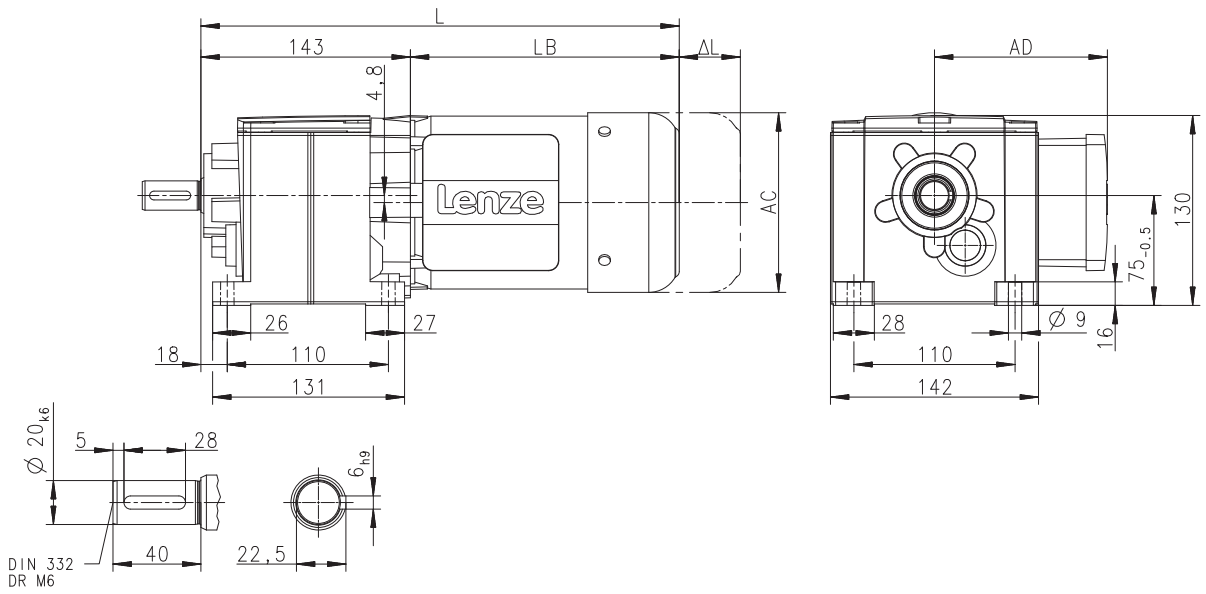


Product			MF□MA□□	
			063-32	063-42
Dimensions				
Total length	**L**	**[mm]**	288	
Motor length	**LB**	**[mm]**	183	
Length of motor options	**Δ L**	**[mm]**	170	
Motor diameter	**AC**	**[mm]**	123	
Distance motor/connection	**AD**	**[mm]**	100	

Dimensions, 4-pole motors

g500-H100

Dimensions with solid shaft
Gearbox design: VBR

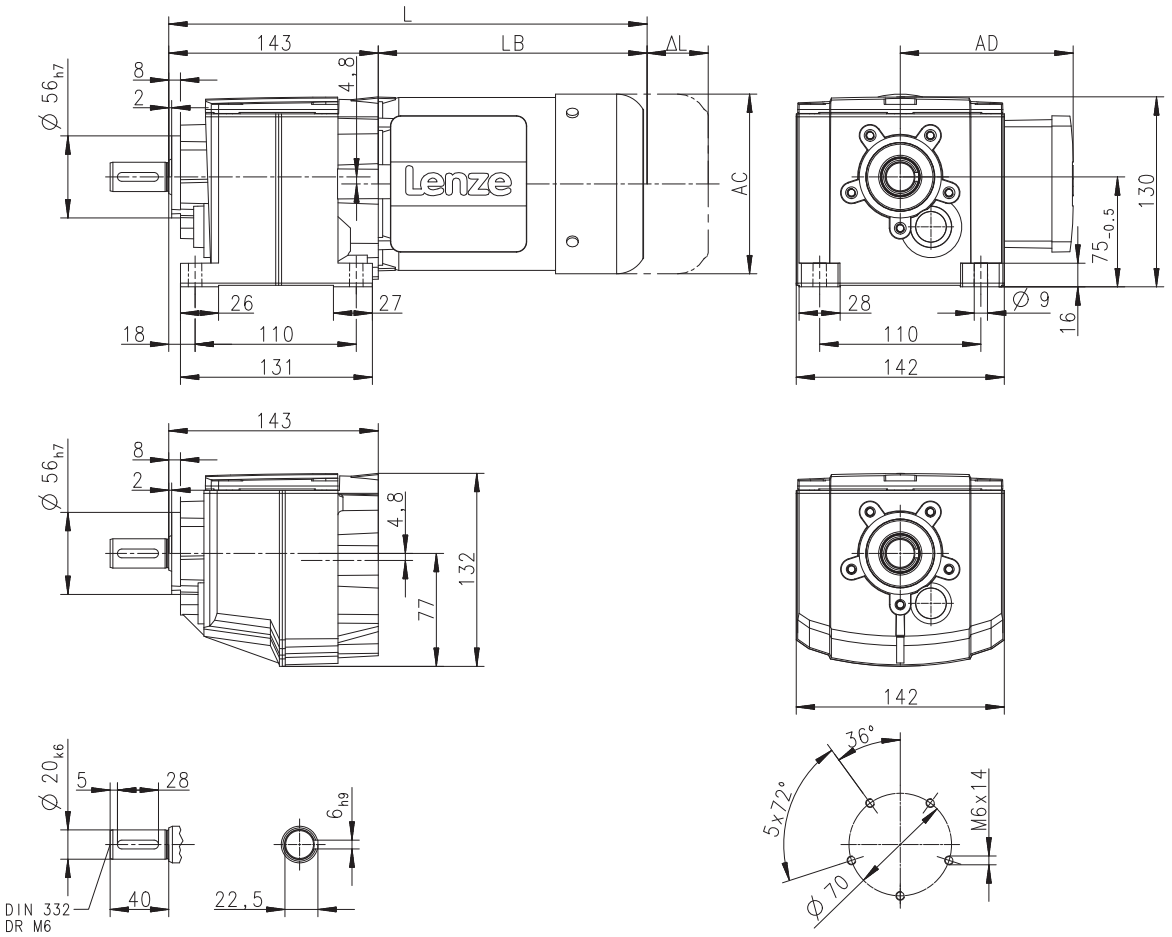


Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	326		347		369		429
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-H100

Dimensions with solid shaft and centering
Gearbox design: VAR, VCR

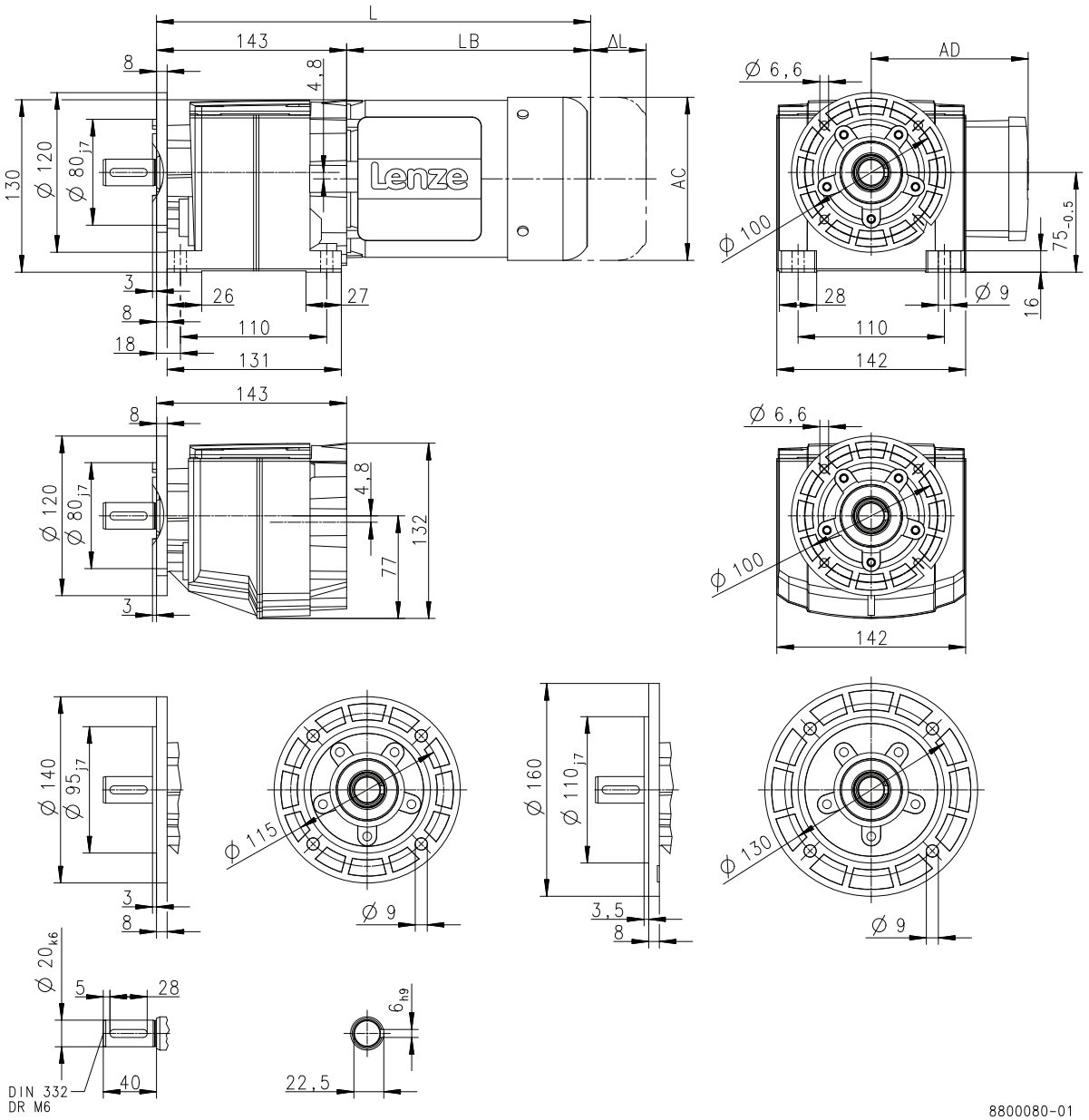


Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	326		347		369		429
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-H100

Dimensions with solid shaft and flange
Gearbox design: VAK, VCK

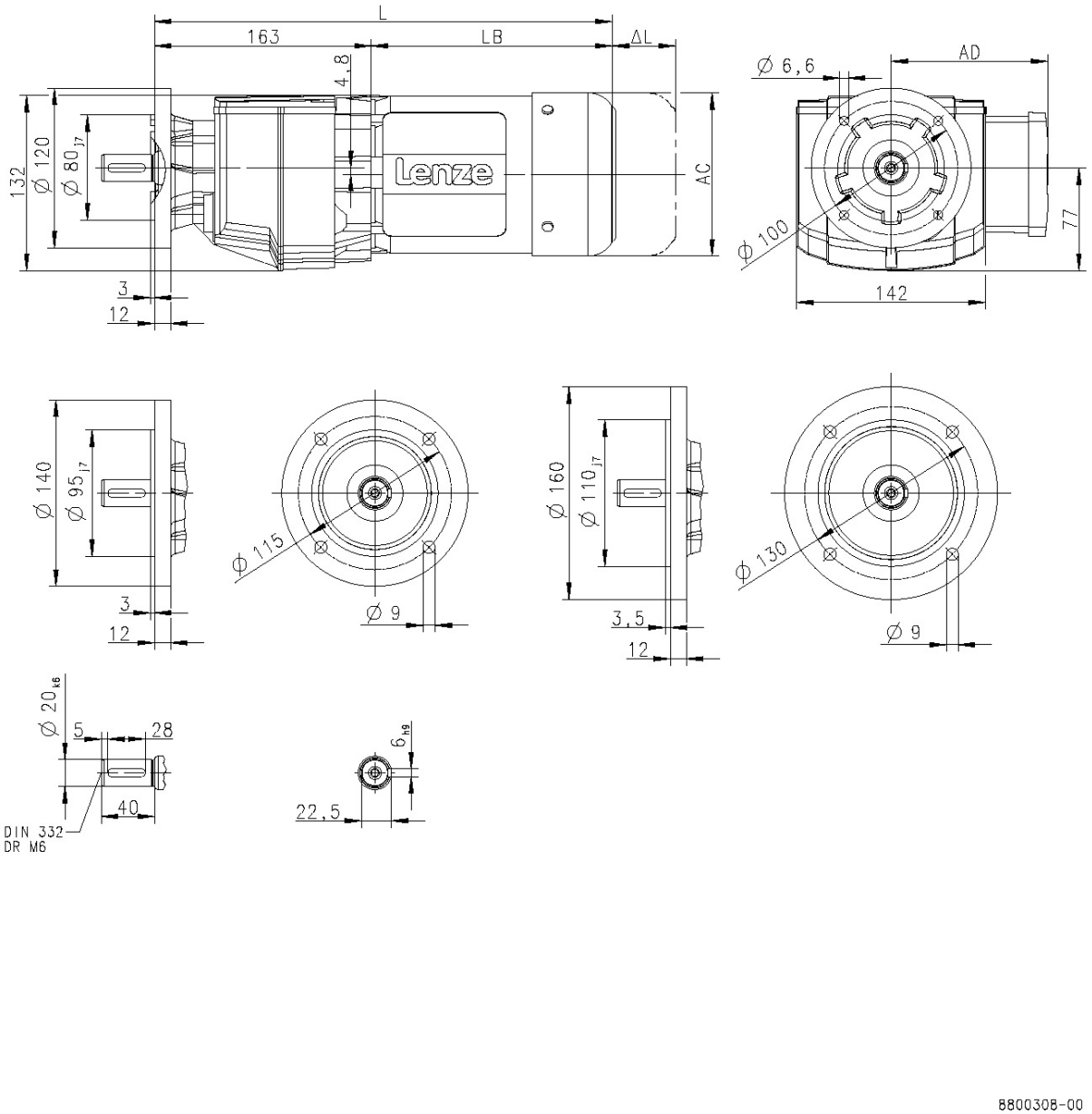


Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	326		347		369		429
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-H100

Dimensions with solid shaft and flange
Gearbox design: VCP

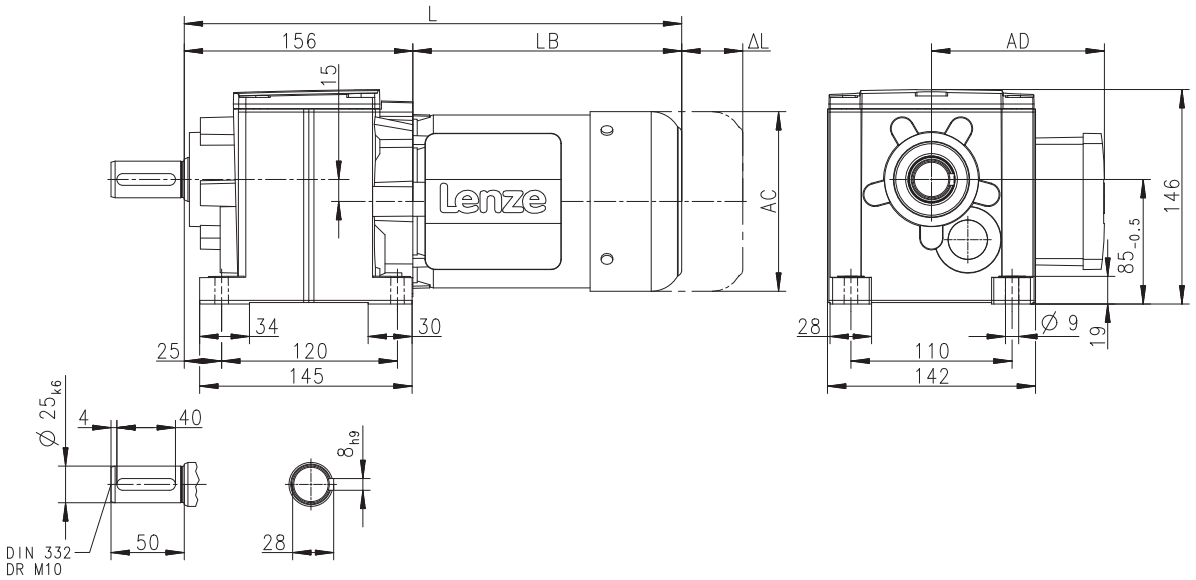


Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	346		367		389		449
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-H140

Dimensions with solid shaft
Gearbox design: VBR



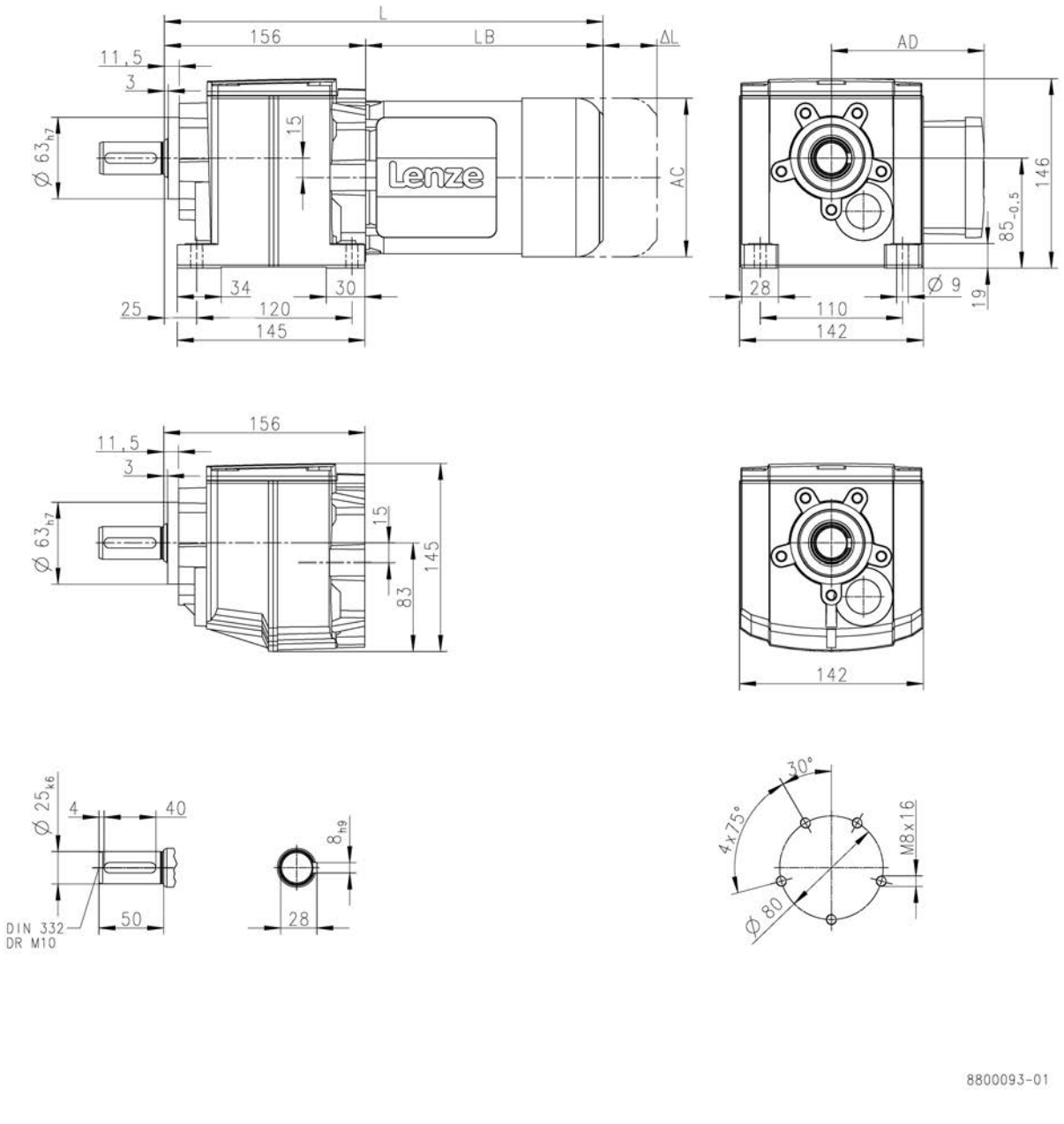
8800091-00

Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	339		360		382		442
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-H140

Dimensions with solid shaft and centering
Gearbox design: VAR, VCR

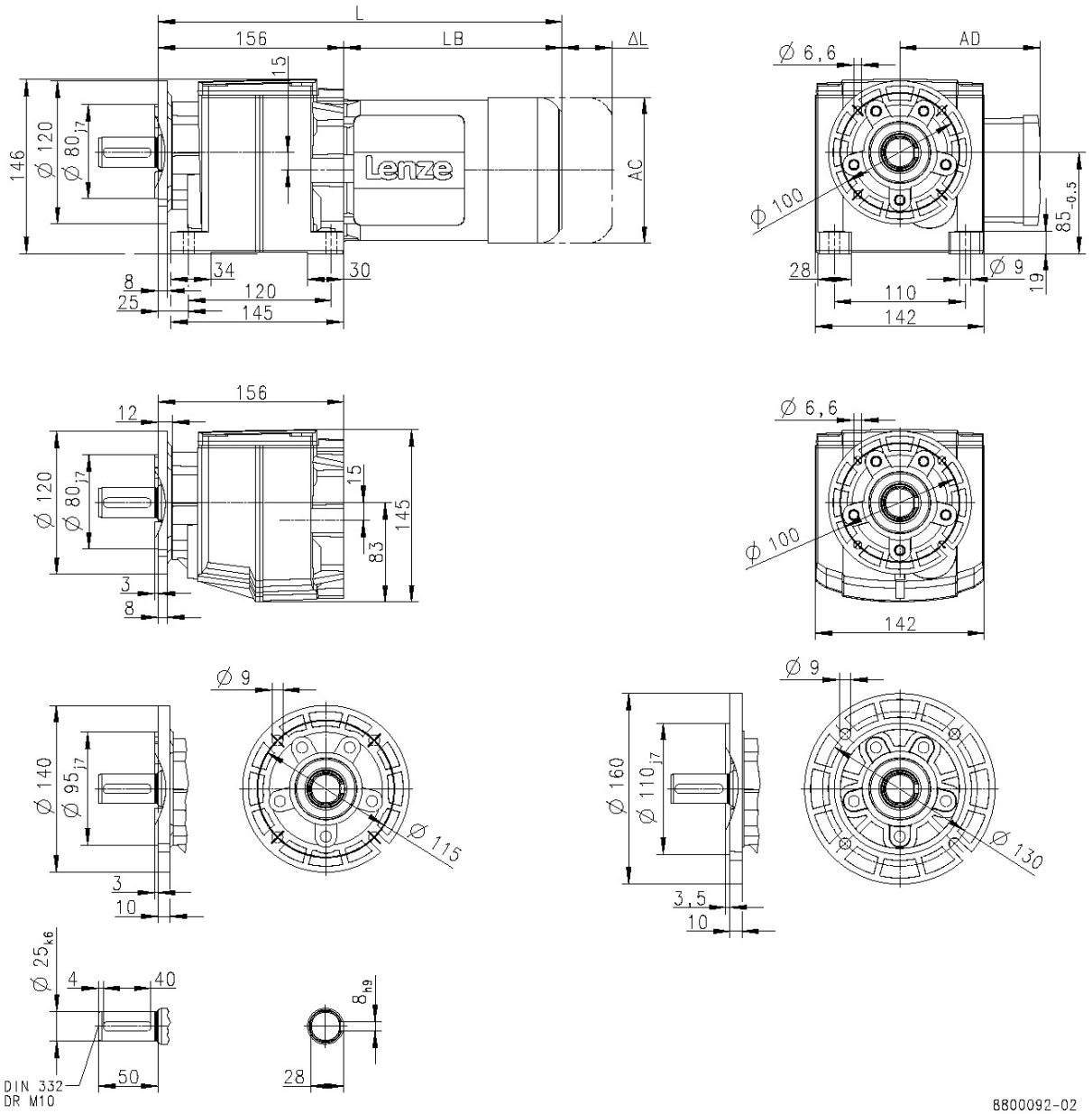


Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	339		360		382		442
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-H140

Dimensions with solid shaft and flange
Gearbox design: VAK, VCK

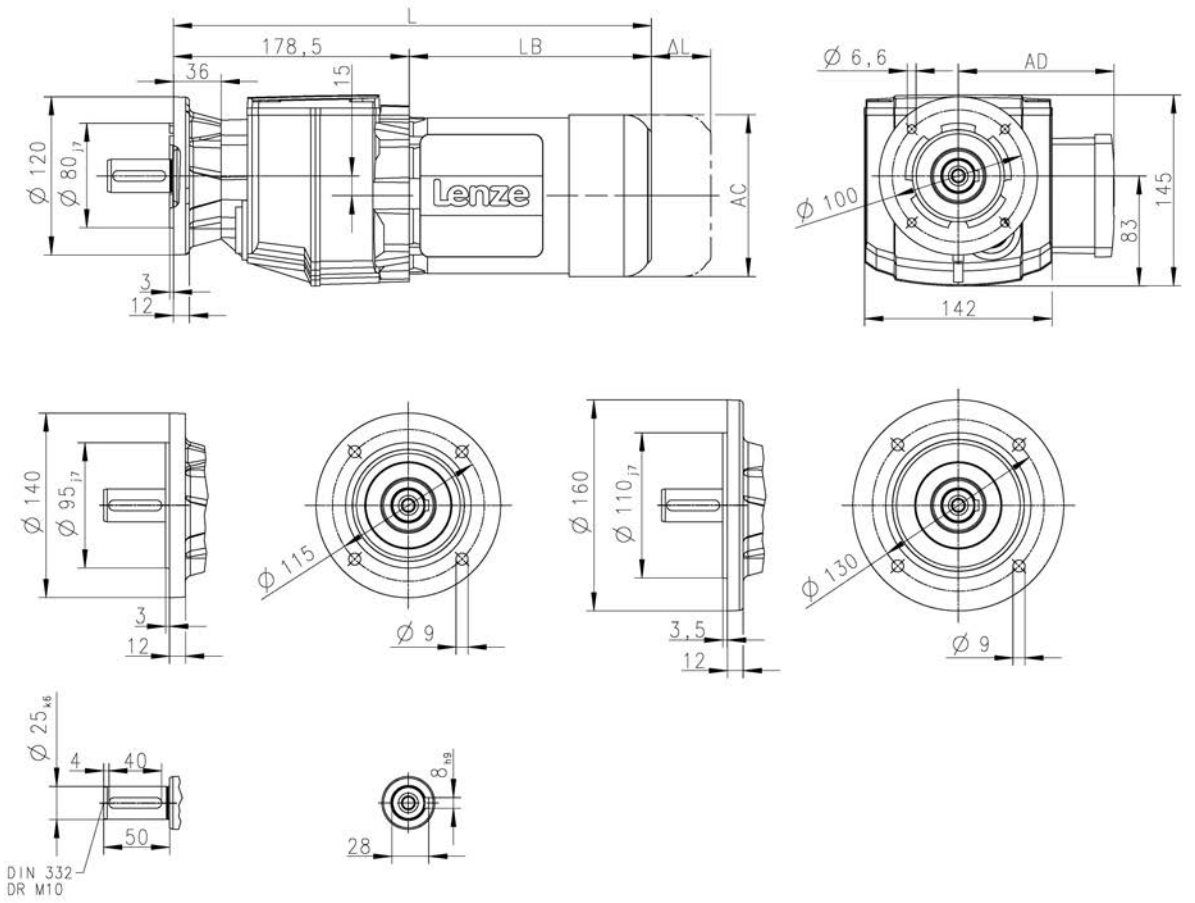


Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	339		360		382		442
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-H140

Dimensions with solid shaft and flange
Gearbox design: VCP

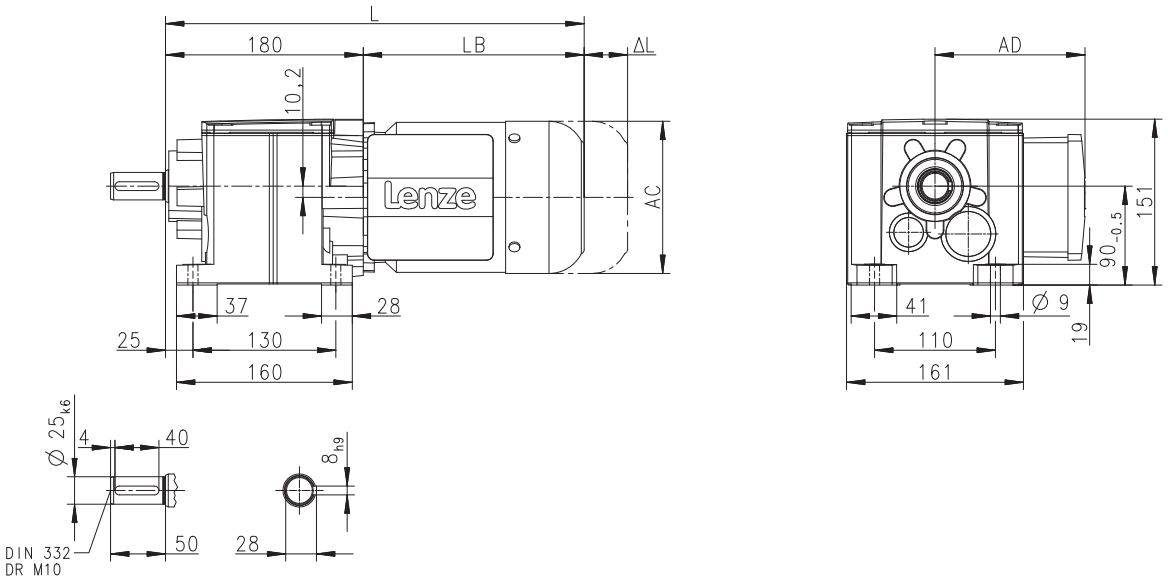


Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	362		383		405		465
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-H210

Dimensions with solid shaft
Gearbox design: VBR

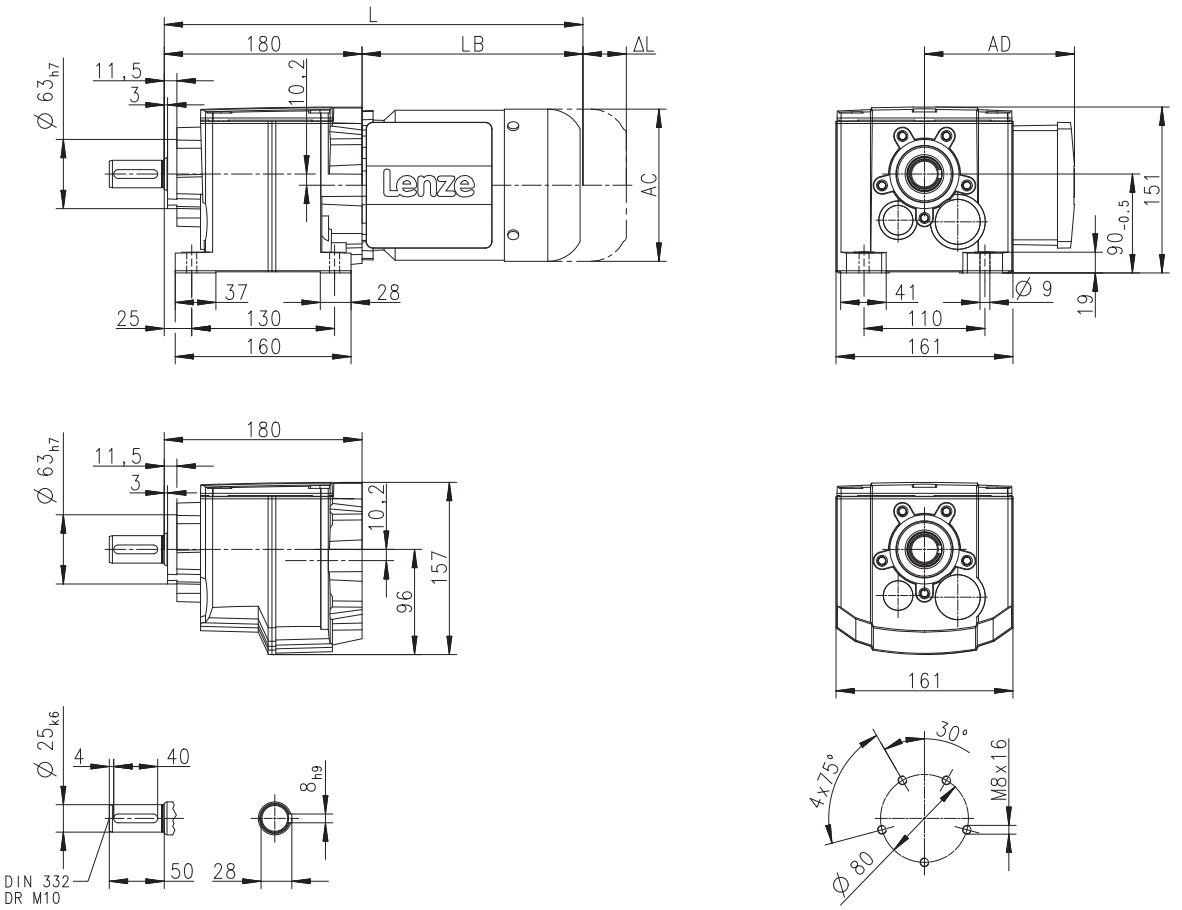


Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	363		384		406		466
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-H210

Dimensions with solid shaft and centering
Gearbox design: VAR, VCR



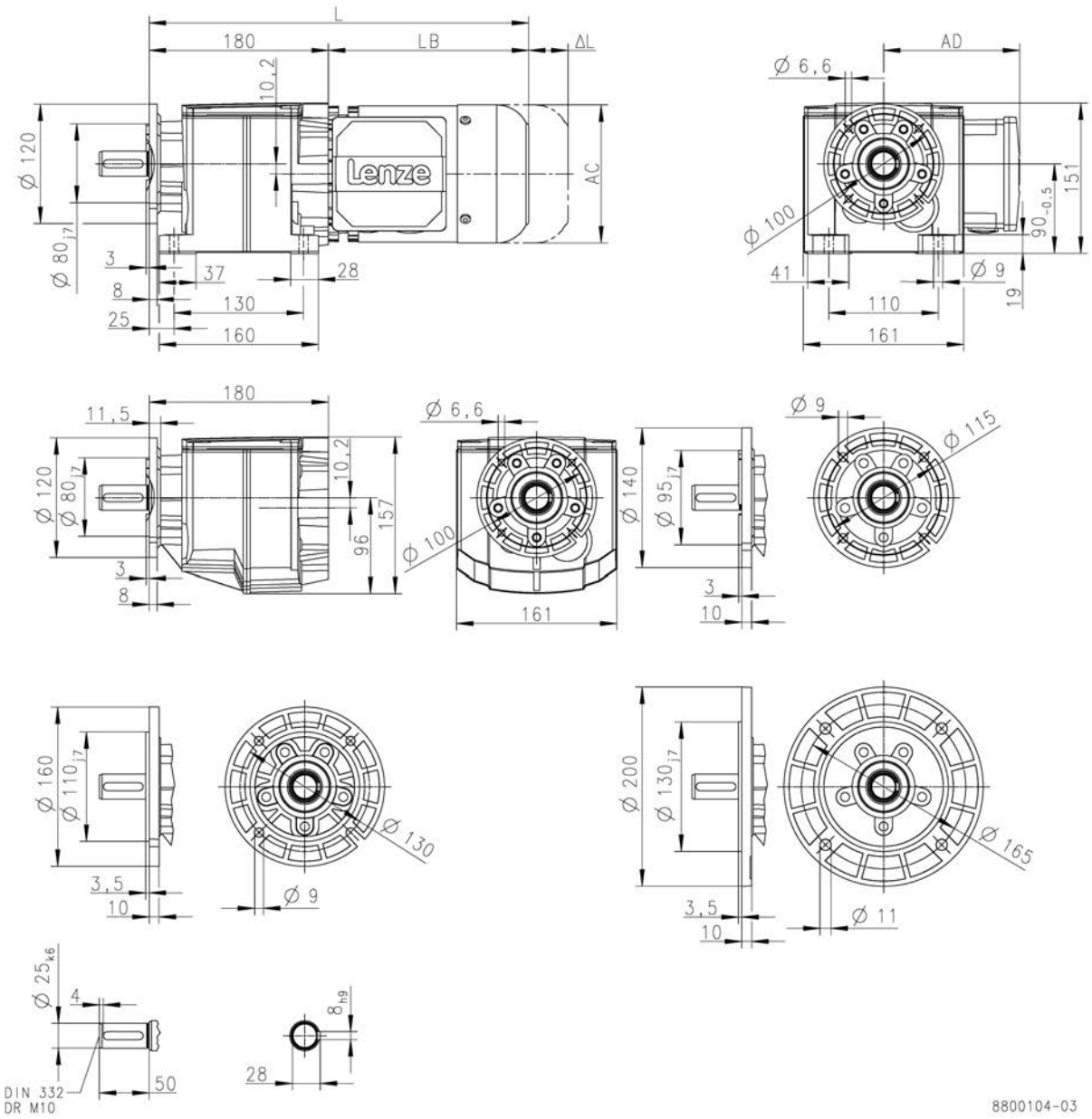
8800105-00

Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	363		384		406		466
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-H210

Dimensions with solid shaft and flange
Gearbox design: VAK, VCK

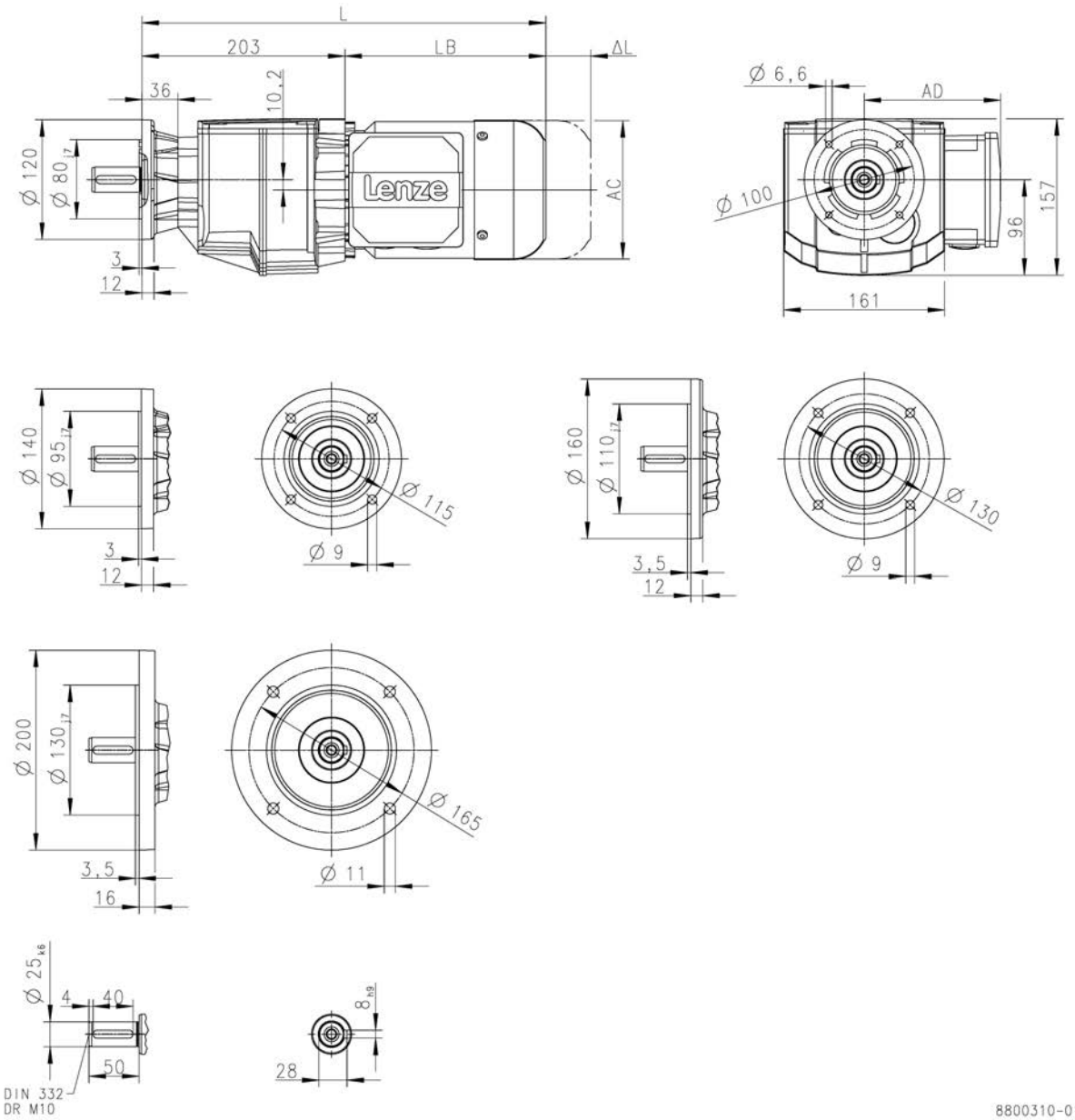


Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	363		384		406		466
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-H210

Dimensions with solid shaft and flange
Gearbox design: VCP

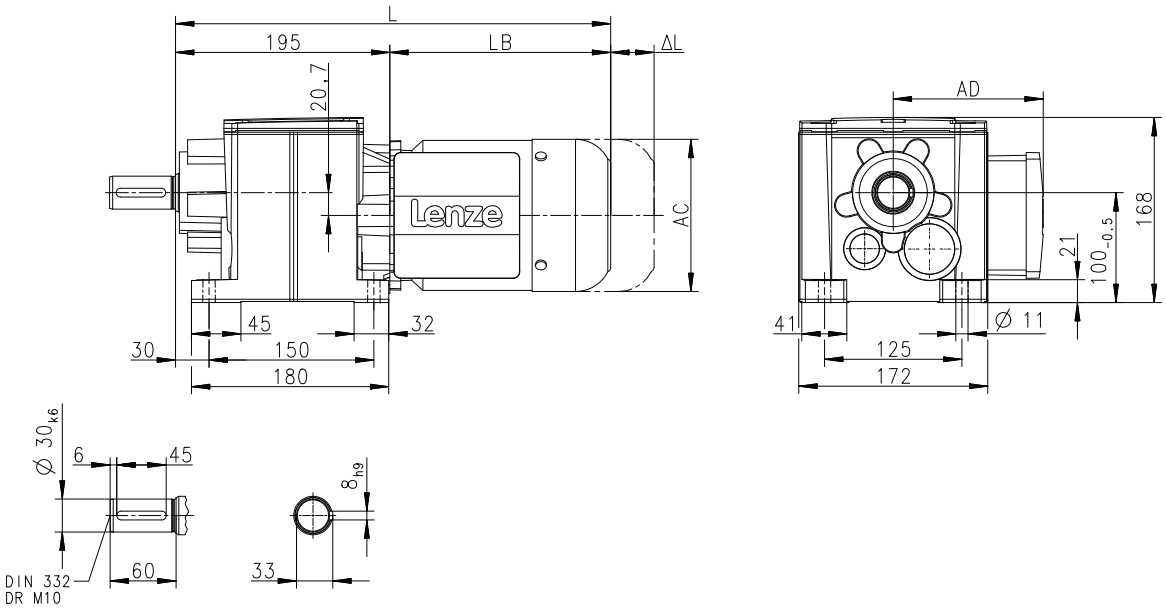


Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	386		407		429		489
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-H320

Dimensions with solid shaft
Gearbox design: VBR

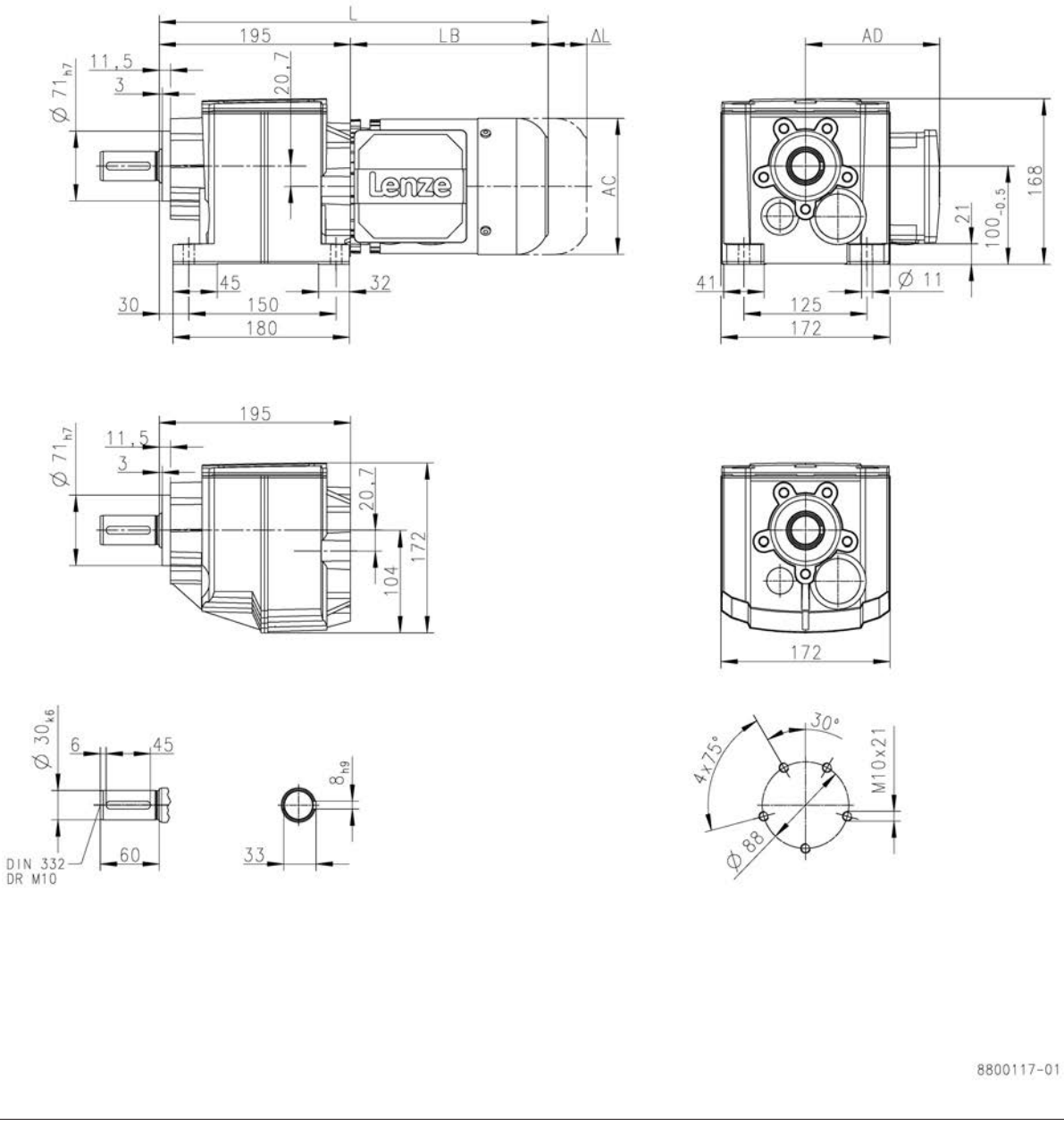


Product			MF□MA□□							
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12
Dimensions										
Total length	**L**	**[mm]**	378		399		421		481	530
Motor length	**LB**	**[mm]**	183		204		226		286	335
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170
Motor diameter	**AC**	**[mm]**	123		139		156		176	194
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166

Dimensions, 4-pole motors

g500-H320

Dimensions with solid shaft and centering
Gearbox design: VAR, VCR

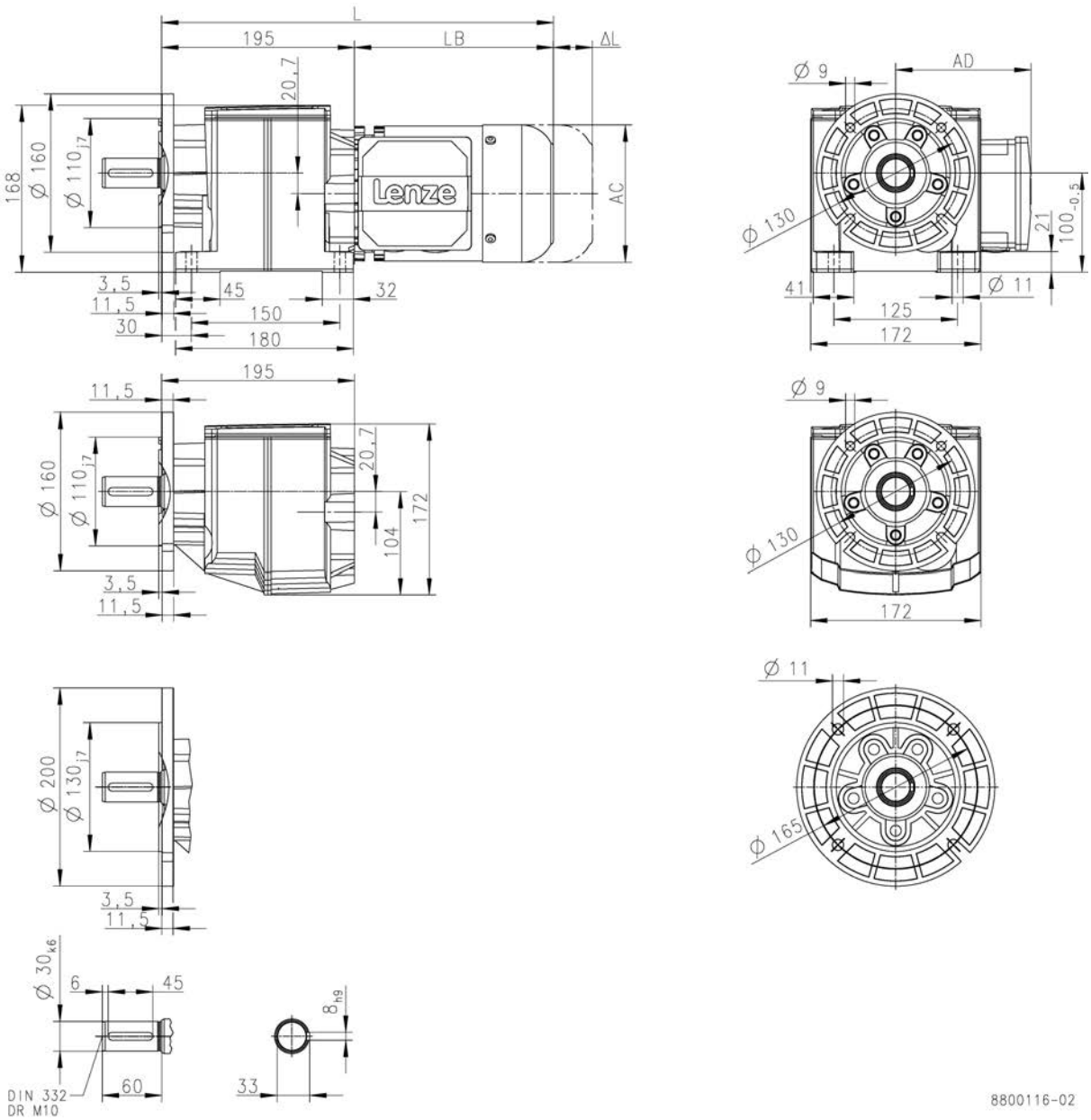


Product			MF□MA□□							
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12
Dimensions										
Total length	**L**	**[mm]**	378		399		421		481	530
Motor length	**LB**	**[mm]**	183		204		226		286	335
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170
Motor diameter	**AC**	**[mm]**	123		139		156		176	194
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166

Dimensions, 4-pole motors

g500-H320

Dimensions with solid shaft and flange
Gearbox design: VAK, VCK

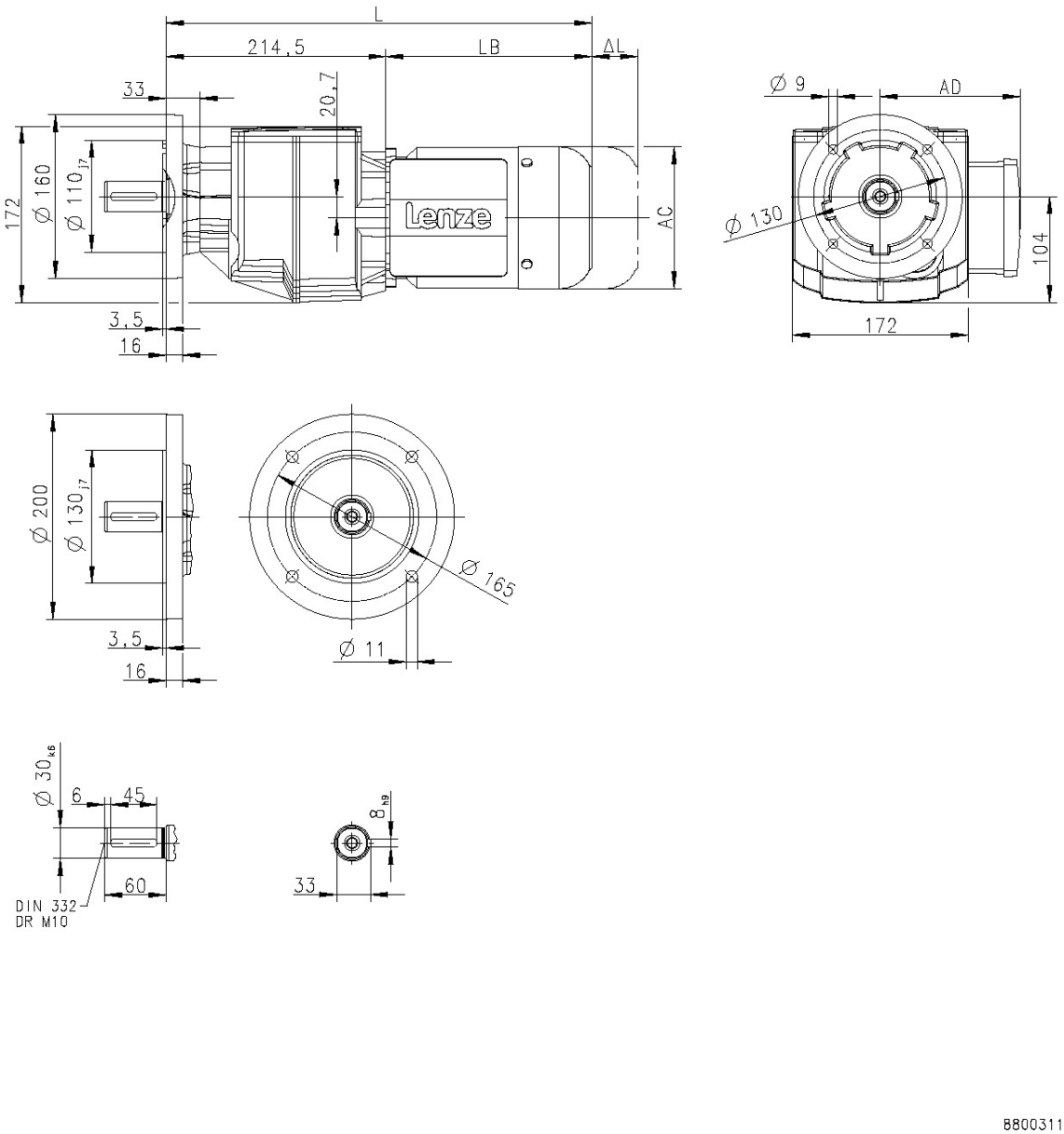


Product			MF□MA□□							
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12
Dimensions										
Total length	**L**	**[mm]**	378		399		421		481	530
Motor length	**LB**	**[mm]**	183		204		226		286	335
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170
Motor diameter	**AC**	**[mm]**	123		139		156		176	194
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166

Dimensions, 4-pole motors

g500-H320

Dimensions with solid shaft and flange
Gearbox design: VCP

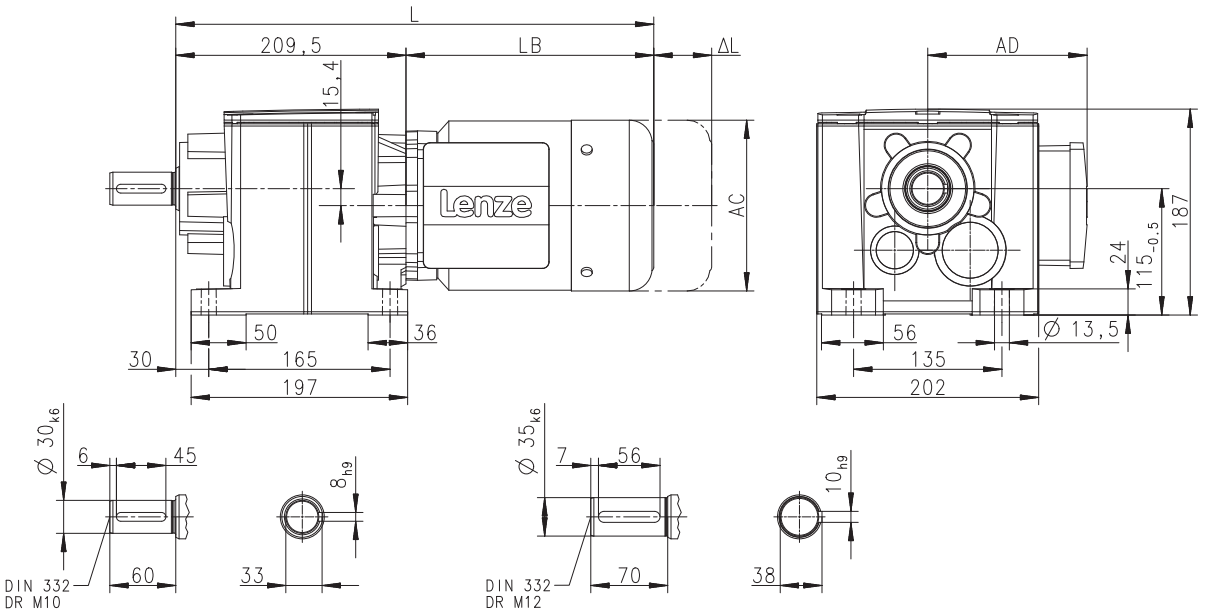


Product			MF□MA□□							
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12
Dimensions										
Total length	**L**	**[mm]**	398		419		441		501	550
Motor length	**LB**	**[mm]**	183		204		226		286	335
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170
Motor diameter	**AC**	**[mm]**	123		139		156		176	194
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166

Dimensions, 4-pole motors

g500-H450

Dimensions with solid shaft
Gearbox design: VBR



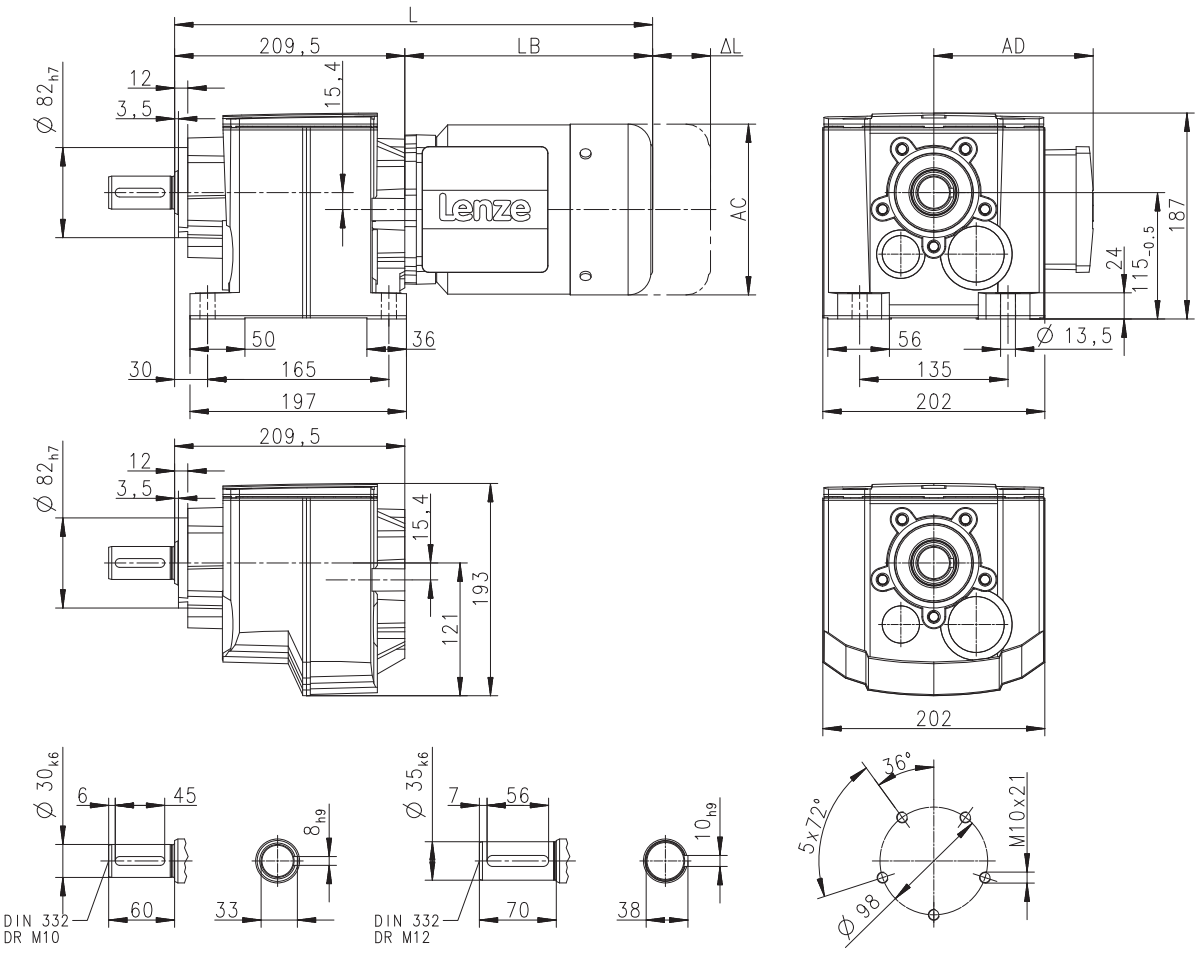
8800127-00

Product			MF□MA□□								
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions											
Total length	**L**	**[mm]**	393		414		436		496	545	
Motor length	**LB**	**[mm]**	183		204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170	
Motor diameter	**AC**	**[mm]**	123		139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166	

Dimensions, 4-pole motors

g500-H450

Dimensions with solid shaft and centering
Gearbox design: VAR, VCR

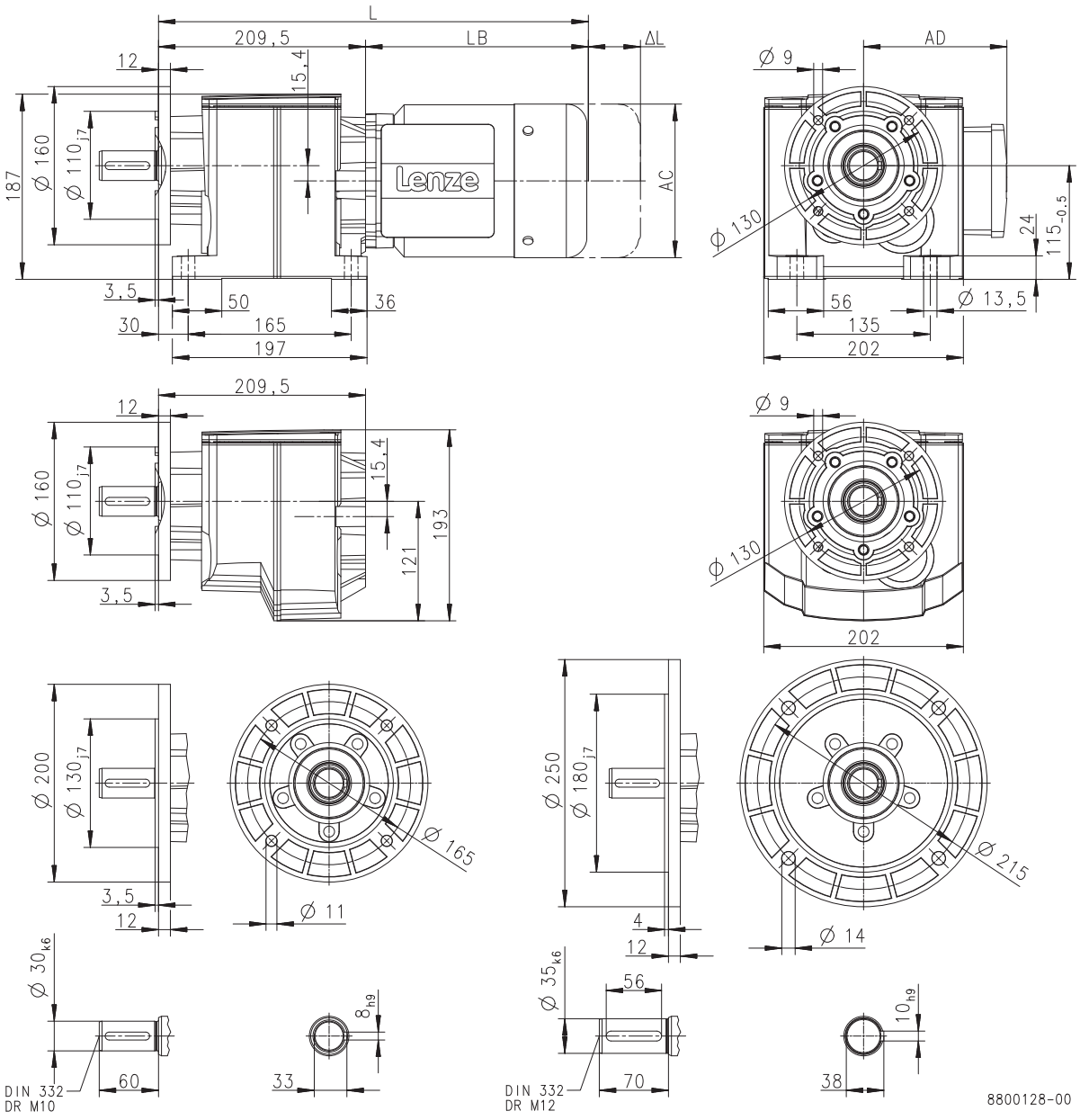


Product			MF□MA□□								
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions											
Total length	**L**	**[mm]**	393		414		436		496	545	
Motor length	**LB**	**[mm]**	183		204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170	
Motor diameter	**AC**	**[mm]**	123		139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166	

Dimensions, 4-pole motors

g500-H450

Dimensions with solid shaft and flange
Gearbox design: VAK, VCK

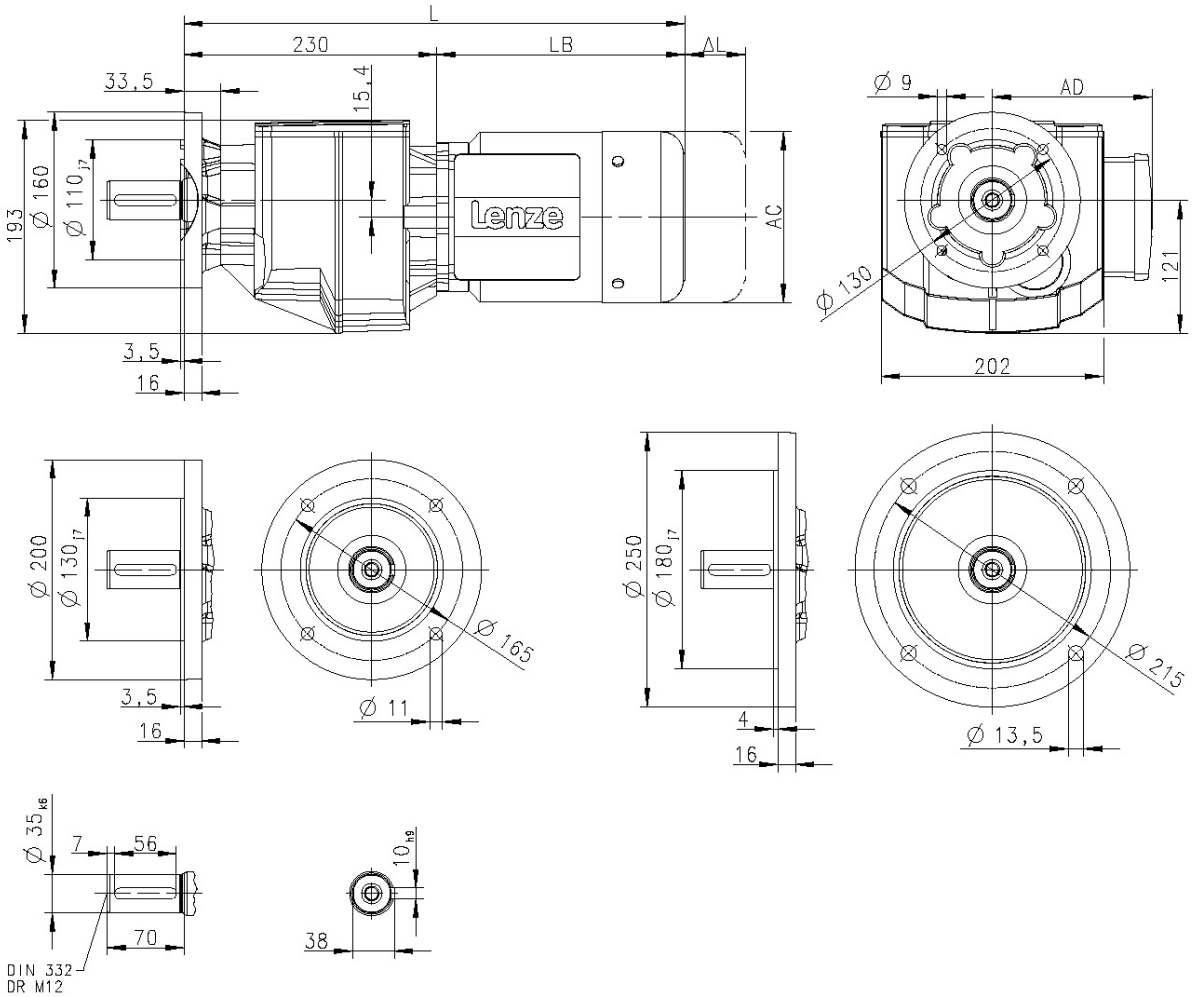


Product			MF□MA□□								
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions											
Total length	**L**	**[mm]**	393		414		436		496	545	
Motor length	**LB**	**[mm]**	183		204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170	
Motor diameter	**AC**	**[mm]**	123		139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166	

Dimensions, 4-pole motors

g500-H450

Dimensions with solid shaft and flange
Gearbox design: VCP

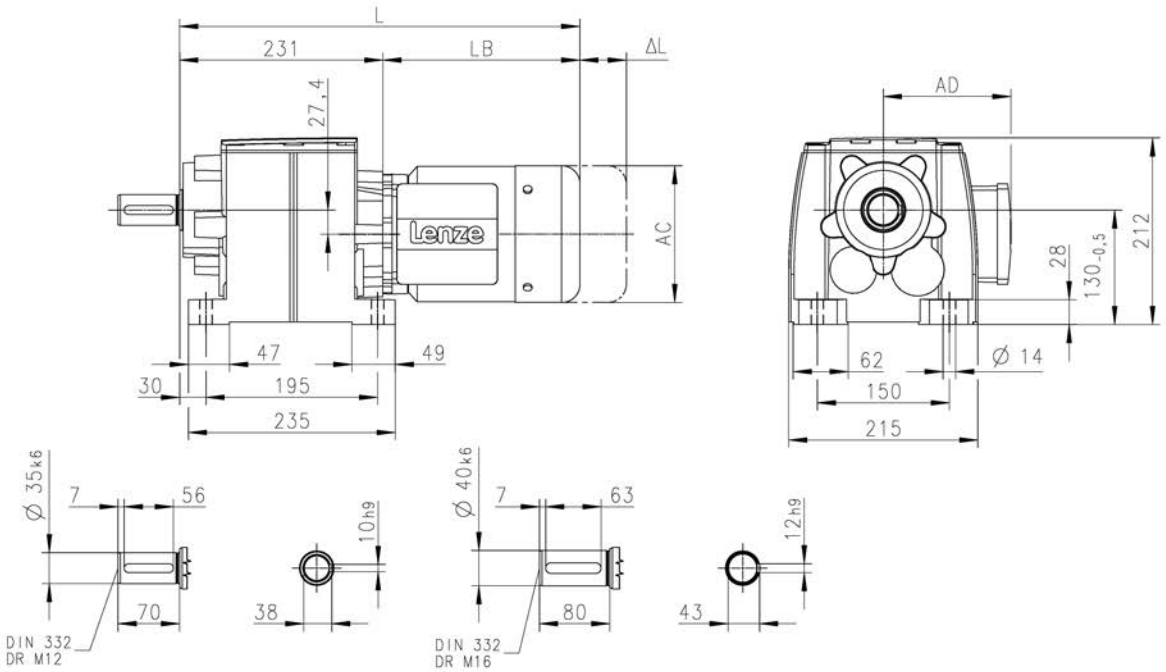


Product			MF□MA□□								
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions											
Total length	**L**	**[mm]**	413		434		456		516	565	
Motor length	**LB**	**[mm]**	183		204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170	
Motor diameter	**AC**	**[mm]**	123		139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166	

Dimensions, 4-pole motors

g500-H600

Dimensions with solid shaft
Gearbox design: VBR

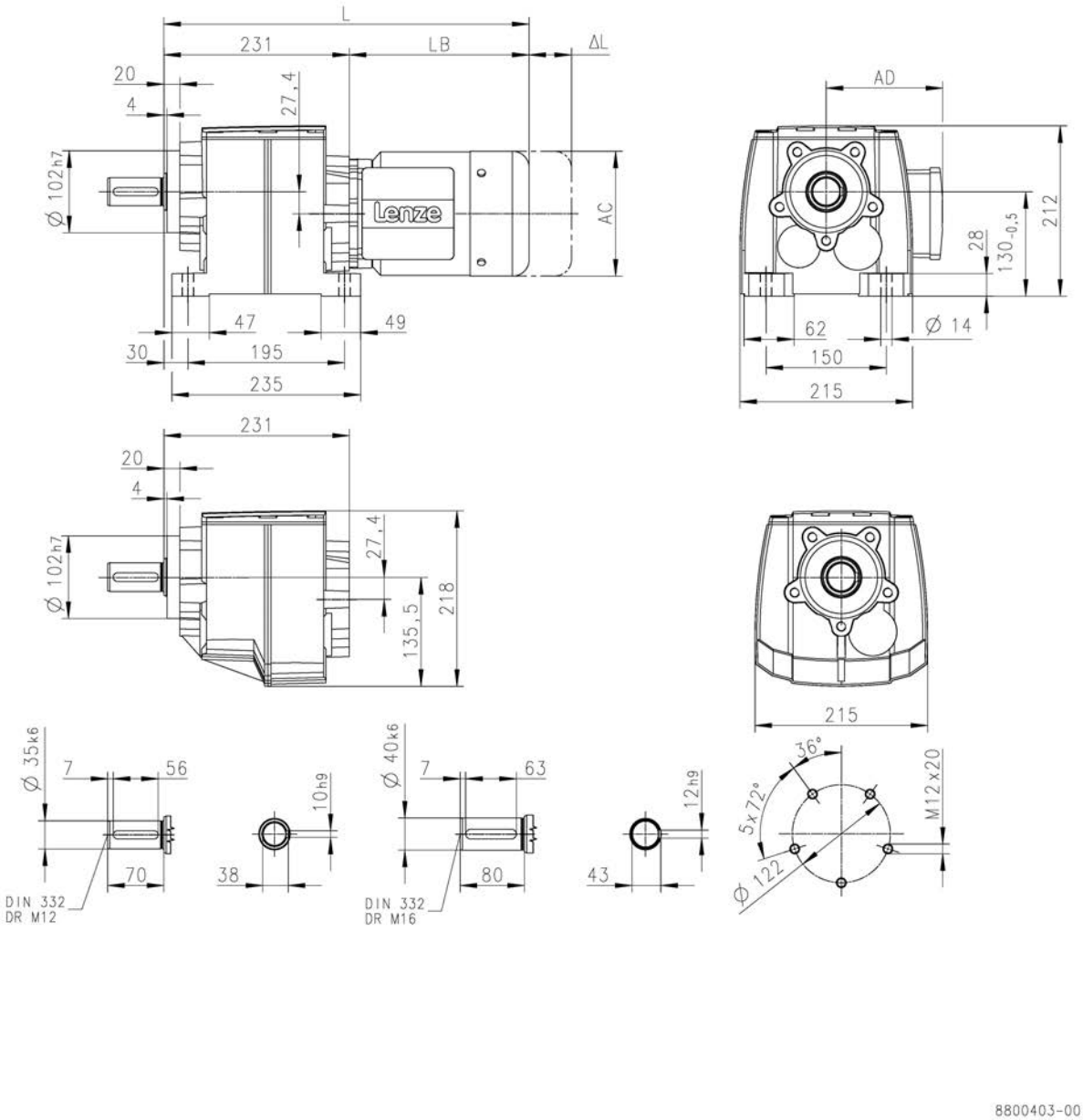


Product			MF□MA□□								
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions											
Total length	**L**	**[mm]**	414		435		457		517	566	
Motor length	**LB**	**[mm]**	183		204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170	
Motor diameter	**AC**	**[mm]**	123		139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166	

Dimensions, 4-pole motors

g500-H600

Dimensions with solid shaft and centering
Gearbox design: VAR, VCR

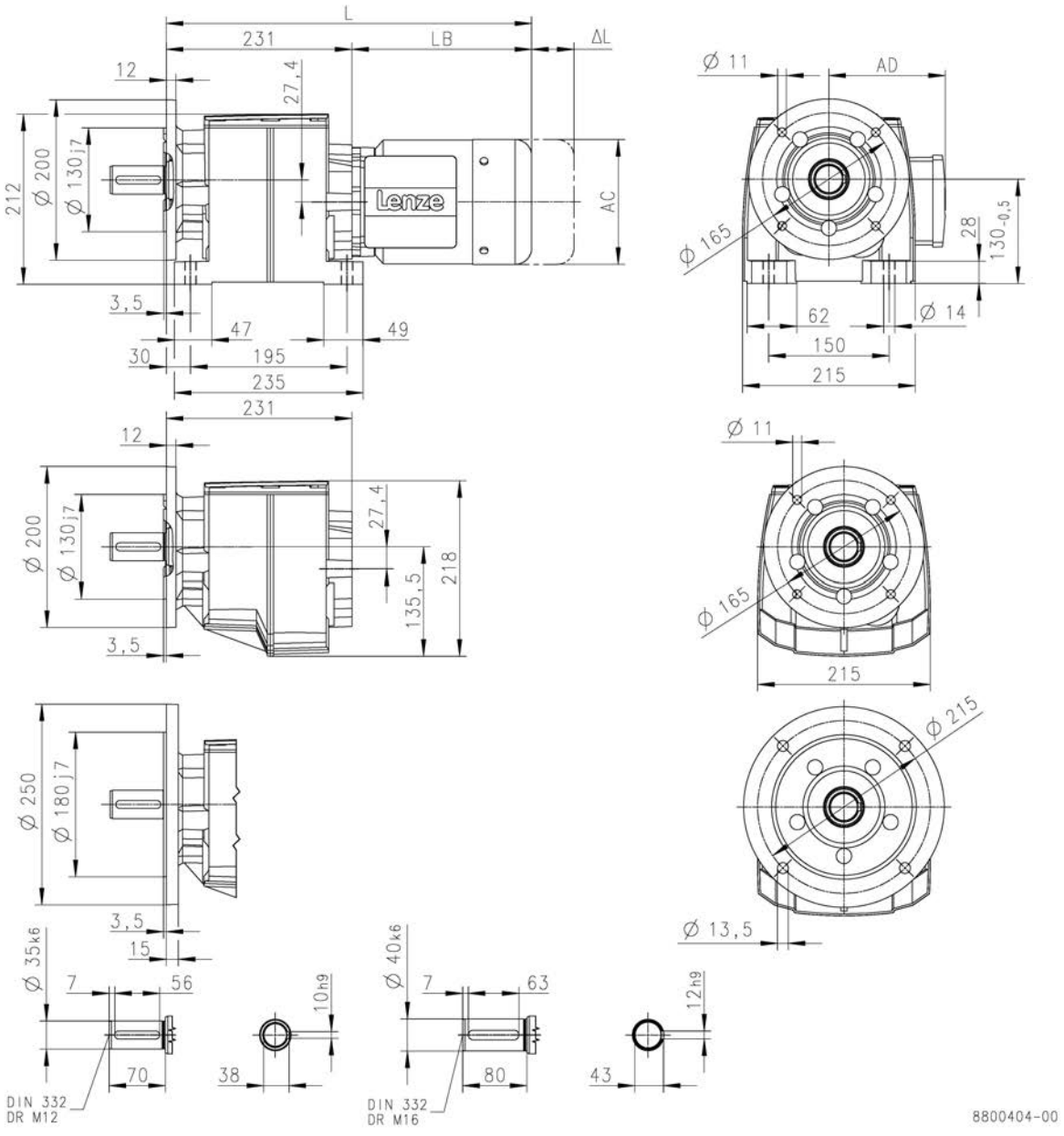


Product			MF□MA□□								
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions											
Total length	**L**	**[mm]**	414		435		457		517	566	
Motor length	**LB**	**[mm]**	183		204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170	
Motor diameter	**AC**	**[mm]**	123		139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166	

Dimensions, 4-pole motors

g500-H600

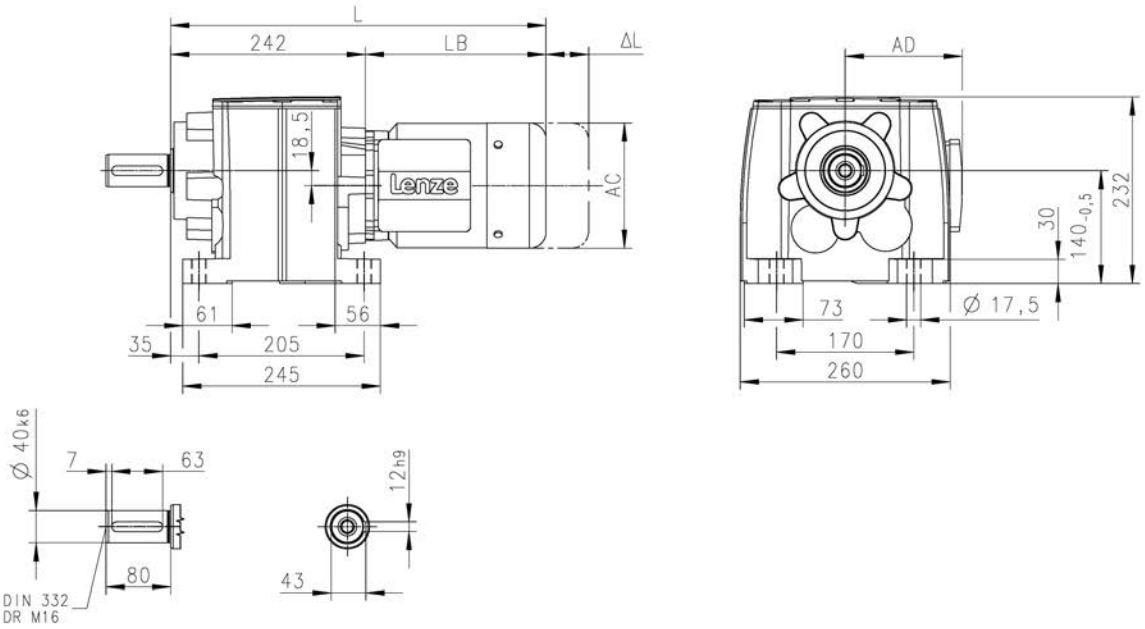
Dimensions with solid shaft and flange
Gearbox design: VAK, VCK



Product			MF□MA□□								
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions											
Total length	**L**	**[mm]**	414		435		457		517	566	
Motor length	**LB**	**[mm]**	183		204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170	
Motor diameter	**AC**	**[mm]**	123		139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166	

Dimensions, 4-pole motors

g500-H850

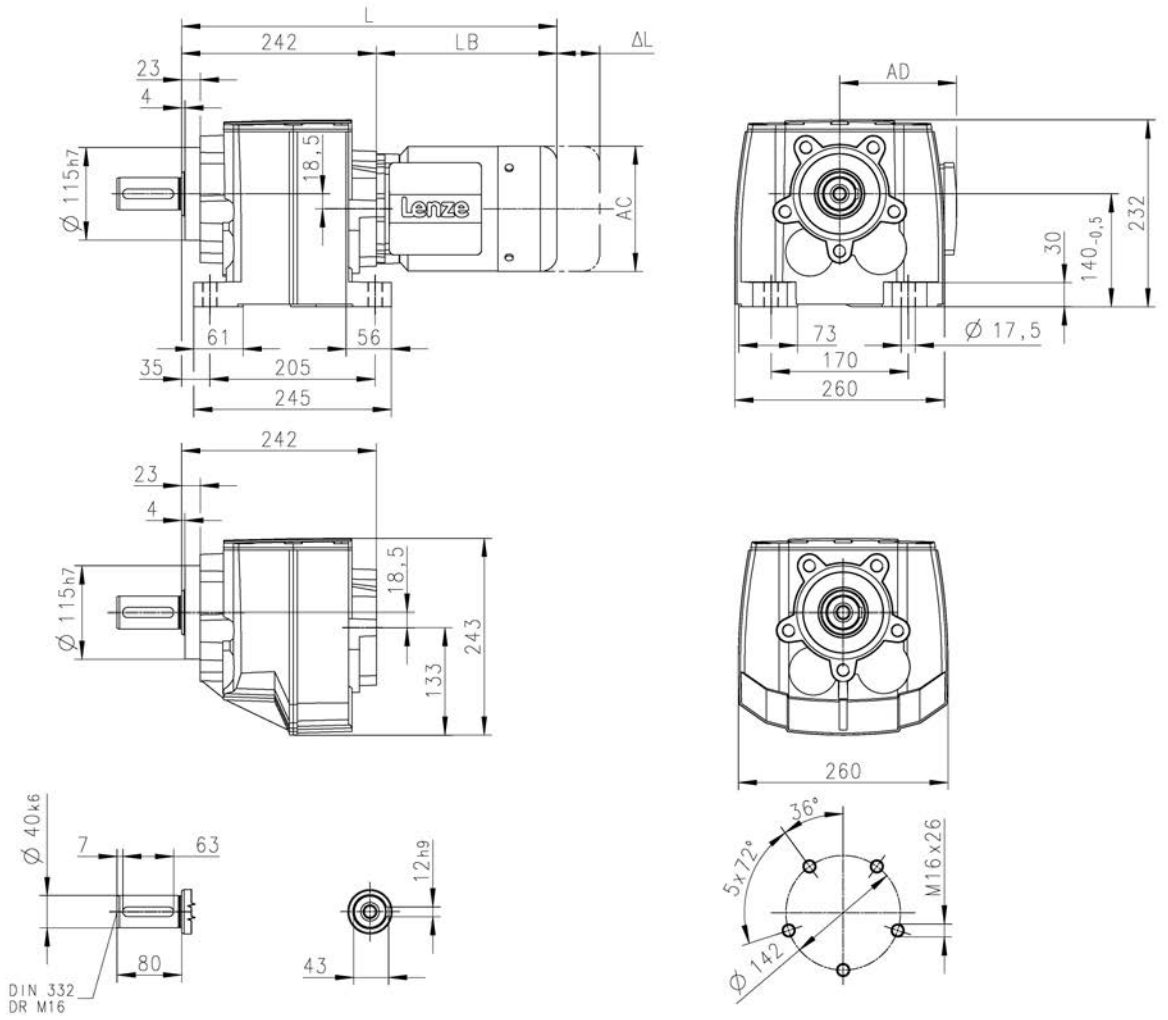


Product			MF□MA□□									
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22
Dimensions												
Total length	**L**	**[mm]**	425		446		468		528	577		578
Motor length	**LB**	**[mm]**	183		204		226		286	335		336
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170		183
Motor diameter	**AC**	**[mm]**	123		139		156		176	194		218
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166		176

Dimensions, 4-pole motors

g500-H850

Dimensions with solid shaft and centering
Gearbox design: VAR, VCR

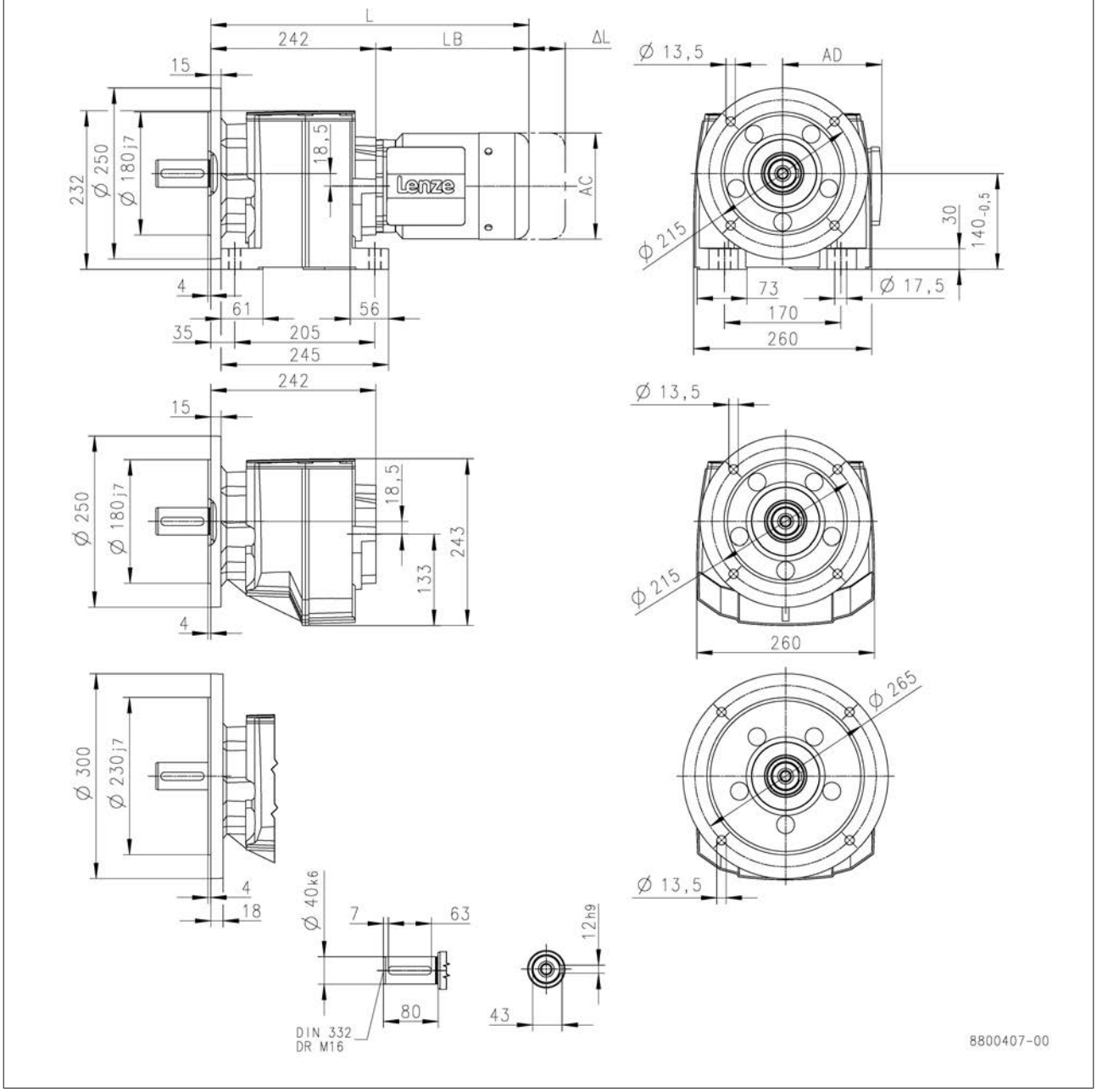


Product			MF□MA□□									
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22
Dimensions												
Total length	**L**	**[mm]**	425		446		468		528	577		578
Motor length	**LB**	**[mm]**	183		204		226		286	335		336
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170		183
Motor diameter	**AC**	**[mm]**	123		139		156		176	194		218
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166		176

Dimensions, 4-pole motors

g500-H850

Dimensions with solid shaft and flange
Gearbox design: VAK, VCK

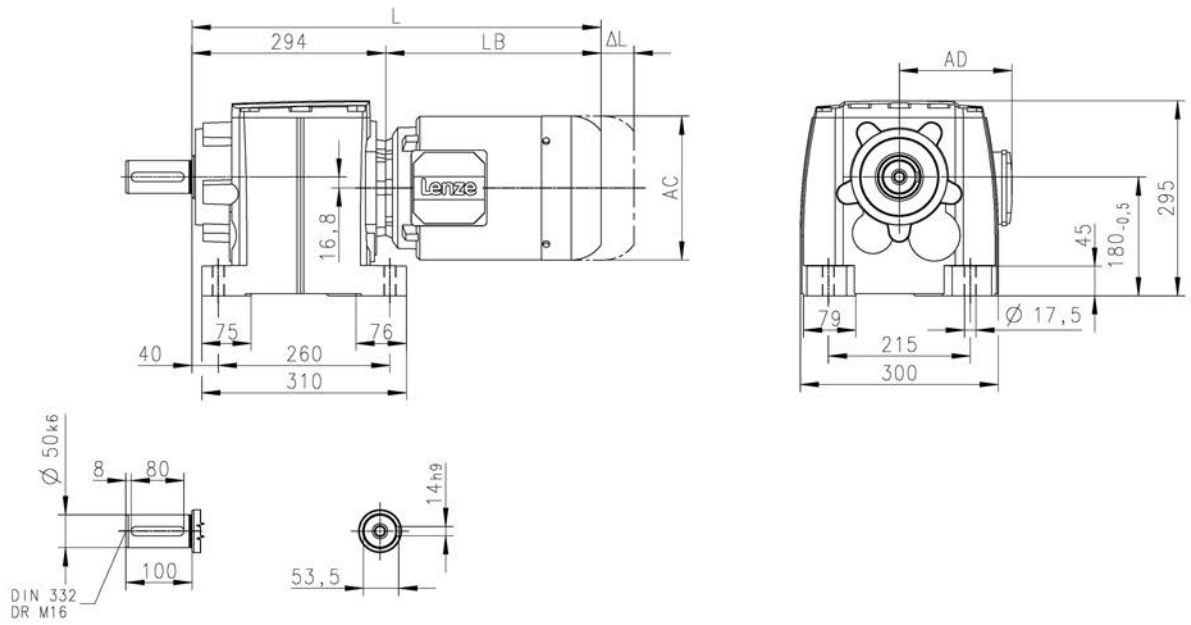


Product			MF□MA□□									
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22
Dimensions												
Total length	**L**	**[mm]**	425		446		468		528	577		578
Motor length	**LB**	**[mm]**	183		204		226		286	335		336
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170		183
Motor diameter	**AC**	**[mm]**	123		139		156		176	194		218
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166		176

Dimensions, 4-pole motors

g500-H1500

Dimensions with solid shaft
Gearbox design: VBR

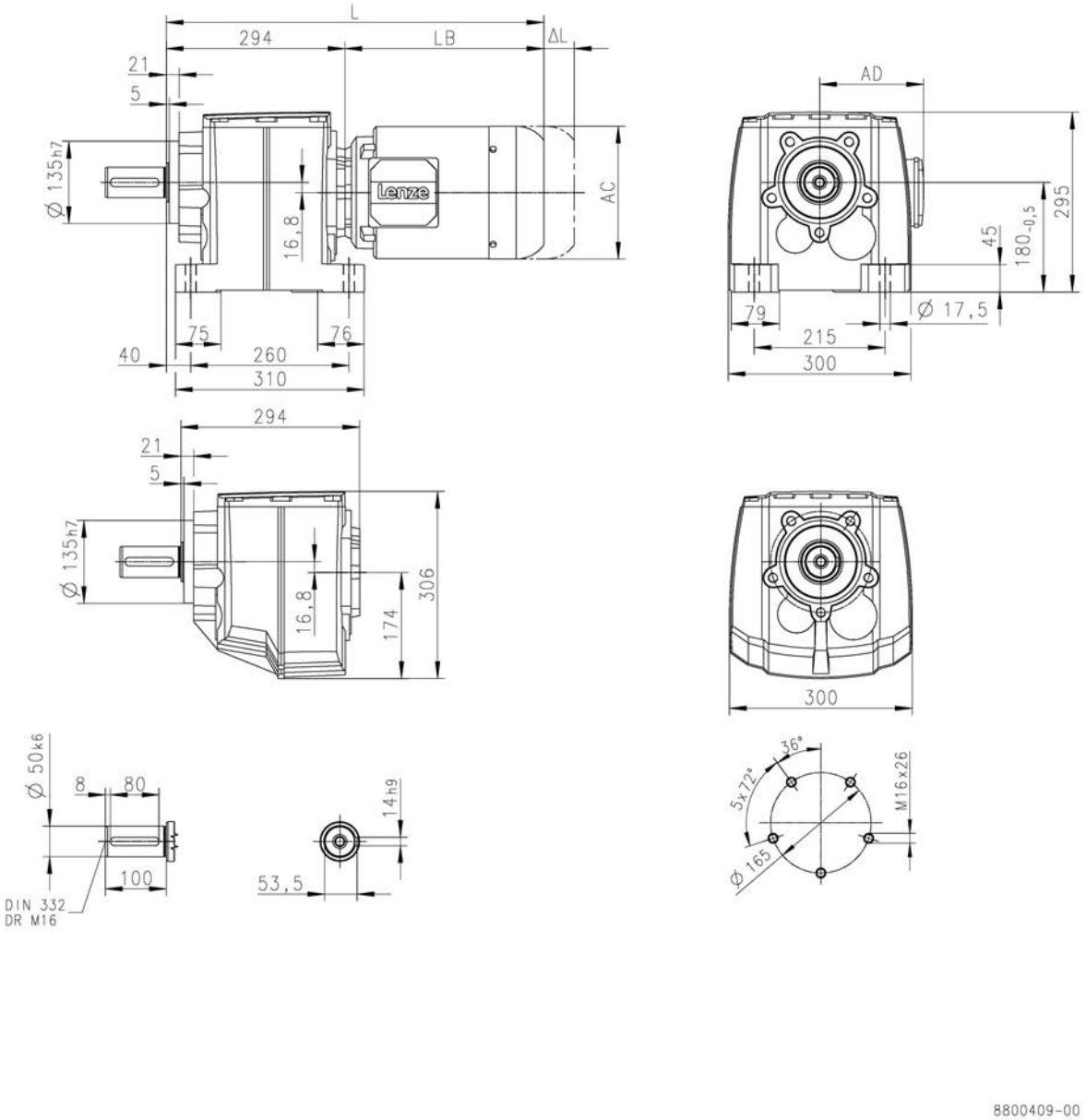


Product			MF□MA□□							
			071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22
Dimensions										
Total length	**L**	**[mm]**	498		520		580	629		630
Motor length	**LB**	**[mm]**	204		226		286	335		336
Length of motor options	**Δ L**	**[mm]**	165		183		181	170		183
Motor diameter	**AC**	**[mm]**	139		156		176	194		218
Distance motor/connection	**AD**	**[mm]**	109		150		157	166		176

Dimensions, 4-pole motors

g500-H1500

Dimensions with solid shaft and centering
Gearbox design: VAR, VCR

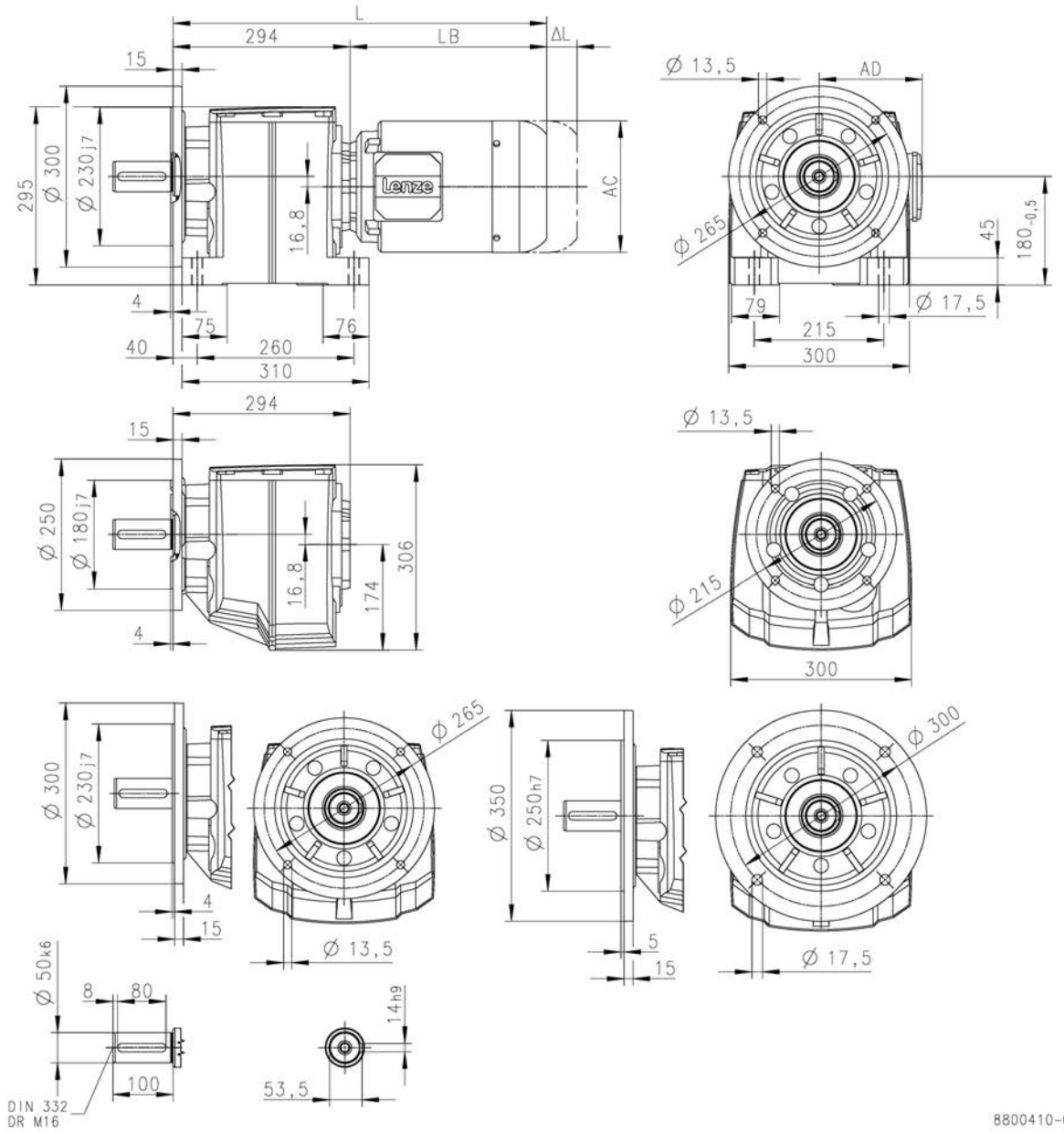


Product			MF□MA□□							
			071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22
Dimensions										
Total length	**L**	**[mm]**	498		520		580	629		630
Motor length	**LB**	**[mm]**	204		226		286	335		336
Length of motor options	**Δ L**	**[mm]**	165		183		181	170		183
Motor diameter	**AC**	**[mm]**	139		156		176	194		218
Distance motor/connection	**AD**	**[mm]**	109		150		157	166		176

Dimensions, 4-pole motors

g500-H1500

Dimensions with solid shaft and flange
Gearbox design: VAK, VCK

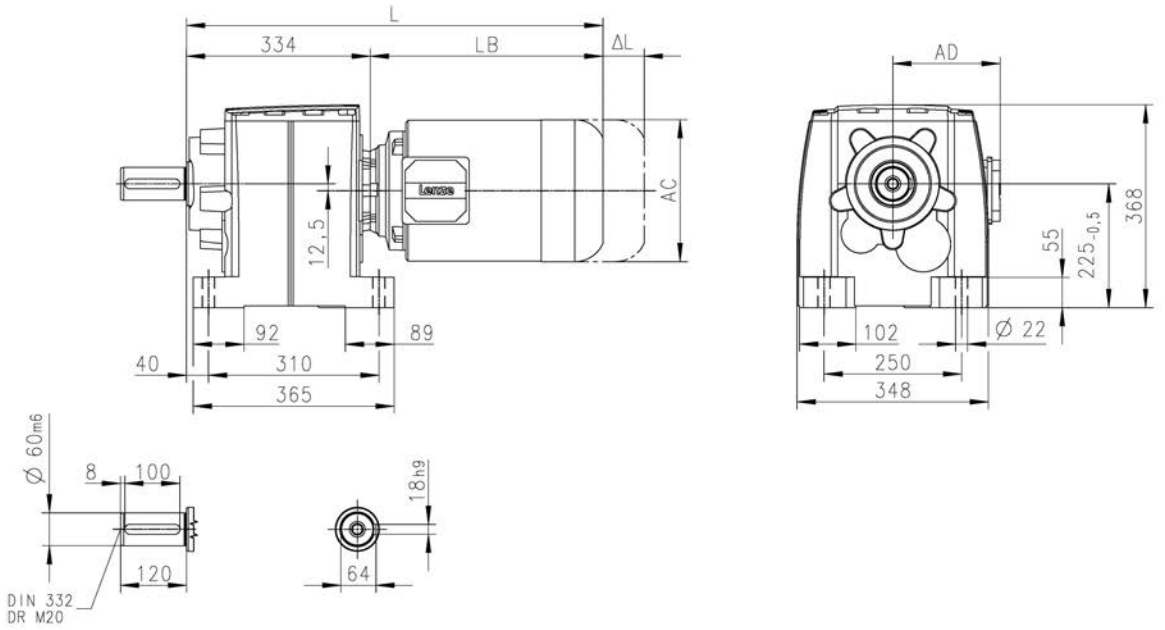


Product			MF□MA□□							
			071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22
Dimensions										
Total length	**L**	**[mm]**	498		520		580	629		630
Motor length	**LB**	**[mm]**	204		226		286	335		336
Length of motor options	**Δ L**	**[mm]**	165		183		181	170		183
Motor diameter	**AC**	**[mm]**	139		156		176	194		218
Distance motor/connection	**AD**	**[mm]**	109		150		157	166		176

Dimensions, 4-pole motors

g500-H3000

Dimensions with solid shaft
Gearbox design: VBR

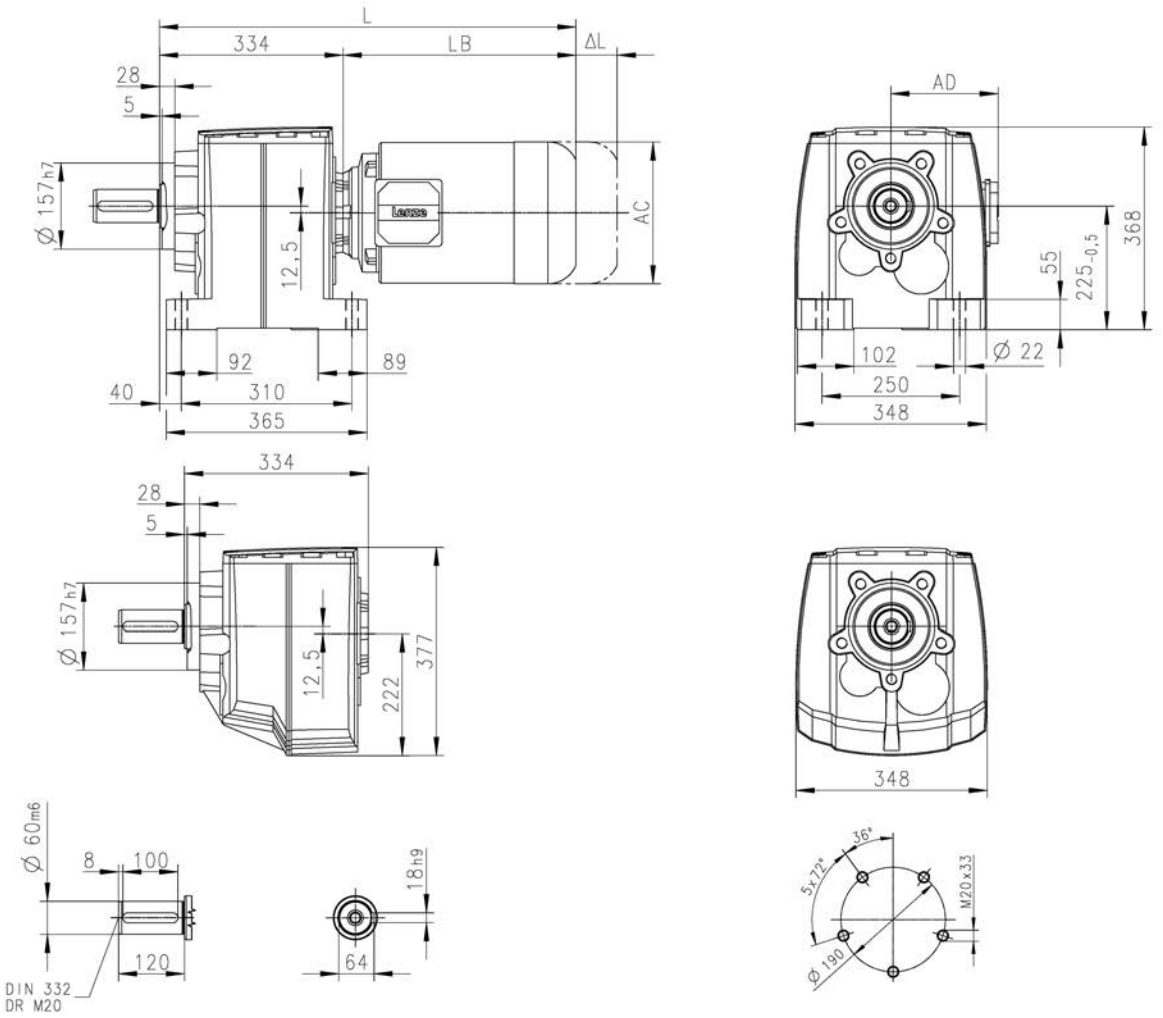


Product			MF□MA□□					
			080-32	080-42	090-32	100-12	100-32	112-22
Dimensions								
Total length	**L**	**[mm]**	560		620	669		670
Motor length	**LB**	**[mm]**	226		286	335		336
Length of motor options	**Δ L**	**[mm]**	183		181	170		183
Motor diameter	**AC**	**[mm]**	156		176	194		218
Distance motor/connection	**AD**	**[mm]**	150		157	166		176

Dimensions, 4-pole motors

g500-H3000

Dimensions with solid shaft and centering
Gearbox design: VAR, VCR

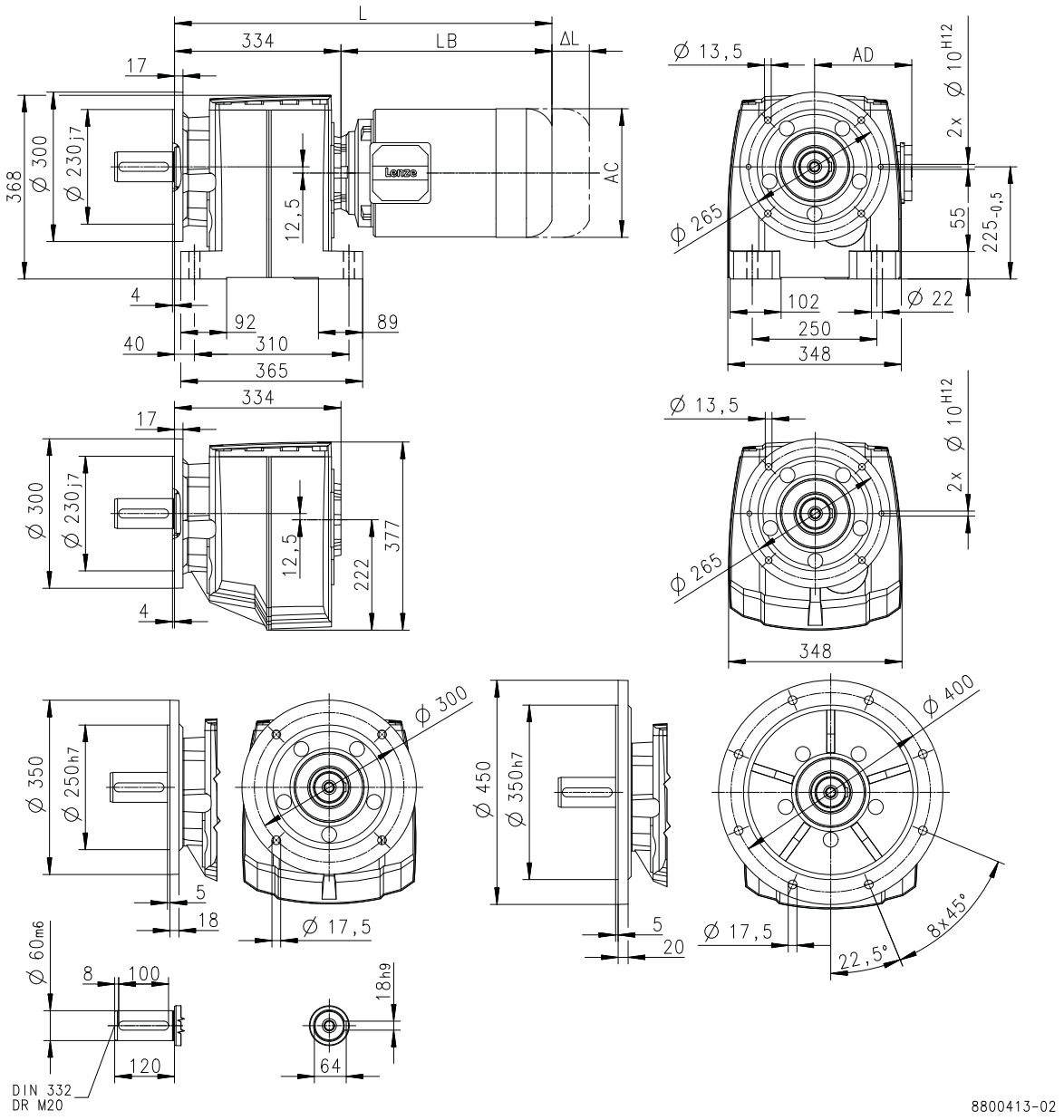


Product			MF□MA□□					
			080-32	080-42	090-32	100-12	100-32	112-22
Dimensions								
Total length	**L**	**[mm]**	560		620	669		670
Motor length	**LB**	**[mm]**	226		286	335		336
Length of motor options	**Δ L**	**[mm]**	183		181	170		183
Motor diameter	**AC**	**[mm]**	156		176	194		218
Distance motor/connection	**AD**	**[mm]**	150		157	166		176

Dimensions, 4-pole motors

g500-H3000

Dimensions with solid shaft and flange
Gearbox design: VAK, VCK



			MF□MA□□					
			080-32	080-42	090-32	100-12	100-32	112-22
Total length	L	[mm]	560		620	669		670
Motor length	LB	[mm]	226		286	335		336
Length of motor options	Δ L	[mm]	183		181	170		183
Motor diameter	AC	[mm]	156		176	194		218
Distance motor/connection	AD	[mm]	150		157	166		176

Caution: If the flange has an external Ø 300, the flange connection provided by the customer must be reinforced by additional coiled spring pins (ISO 8750-10x22-St).

Additional length of the built-on accessories

Dimensions, self-ventilated (4-pole)

Product			MF□MA□□					
			063-32 063-42	071-32 071-42	080-32 080-42	090-32	100-12 100-32	112-22
Brake								
	Δ L	[mm]	40.0	52.0	73.0	68.0	76.0	90.0
Feedback								
	Δ L	[mm]	56.0	51.0	111	87.0	81.0	80.0
Brake + Feedback								
	Δ L	[mm]	103	96.0	111	105	101	120

Dimensions, forced ventilated (4-pole)

Product			MF□MA□□					
			063-32 063-42	071-32 071-42	080-32 080-42	090-32	100-12 100-32	112-22
Blower								
	Δ L	[mm]	128				109	102
Brake								
	Δ L	[mm]	170	165	183	181	170	183
Feedback								
	Δ L	[mm]	128				109	183
Brake + Feedback								
	Δ L	[mm]	170	165	183	181	170	183

Weights, 4-pole motors

2-stage gearboxes

				MF□MA□□						
				063-32 063-42	071-32 071-42	080-32 080-42	090-32	100-12	100-32	112-22
g500	-H45	m	[kg]	6.0						
	-H100	m	[kg]	8.0	10	14	21			
	-H140	m	[kg]	9.1	11	16	22			
	-H210	m	[kg]	10	12	17	24			
	-H320	m	[kg]	12	14	19	26	34		
	-H450	m	[kg]	16	18	22	29	38		
	-H600	m	[kg]	27	29	34	40	49		
	-H850	m	[kg]		38	42	49	58		69
	-H1500	m	[kg]			72	79	88		100
	-H3000	m	[kg]					130		141

3-stage gearboxes

				MF□MA□□							
				063-32 063-42	071-32 071-42	080-32	080-42	090-32	100-12	100-32	112-22
g500	-H210	m	[kg]	11	13						
	-H320	m	[kg]	13	15	19					
	-H450	m	[kg]	16	18	23					
	-H600	m	[kg]	28	30	34		41			
	-H850	m	[kg]	37	39	44		50	59		
	-H1500	m	[kg]		70	74		81	89		
	-H3000	m	[kg]			119		126	134		146

► Weights with oil capacity for mounting position A, all given as approximate values.
The weights refer to the basic version, observe additional weights!

Additional weights for gearboxes

Product			g500-H45	g500-H100	g500-H140	g500-H210	g500-H320
Foot	m	[kg]	0.1	0.1	0.2	0.1	0.1
Flange	m	[kg]	0.3	0.4	0.6	0.6	0.8

Product			g500-H450	g500-H600	g500-H850	g500-H1500	g500-H3000
Foot	m	[kg]	0.2	2.0	2.8	4.3	5.8
Flange	m	[kg]	0.9	4.3	7.6	8.3	20.1

VCP gearbox version

Product			g500-H100	g500-H140	g500-H210	g500-H320	g500-H450
Flange	m	[kg]	2.0	3.9	3.9	4.1	6.1

Additional weights for motors

4-pole motors

Product			MF□MA□□					
			063-32 063-42	071-32 071-42	080-32 080-42	090-32	100-12 100-32	112-22
Brake			06	06 08	08 10		10 12	12 14
	m	[kg]	0.9	0.9 1.5	1.5 2.6		2.6 4.2	4.2 5.8
Blower								
	m	[kg]	2.0	2.1	2.3	2.7	3.0	3.1

Gearbox code

Example	G	50	A	H	045	M	V	B	R	2	C	1A

Meaning	Variant												
Product family		G	50										
Generation				A									
				B									
Gearbox type	Helical gearbox				H								
Output torque	45 Nm					045							
	100 Nm					110							
	140 Nm					114							
	210 Nm					121							
	320 Nm					132							
	450 Nm					145							
	600 Nm					160							
	850 Nm					185							
	1500 Nm					215							
	3000 Nm					230							
	5000 Nm					250							
	8000 Nm					280							
	14000 Nm					314							
Type of construction	Geared motor						M						
	Gearboxes						N						
Shaft type	Solid shaft with feather key							V					
	Solid shaft without keyway							G					
Housing type	Foot mounting + centering								A				
	Foot mounting								B				
	Centering								C				
Flange mounting	Without flange									R			
	Flange with through holes									k			
										P			
Number of stages	2-stage										2		
	3-stage										3		
Motor mounting	Integrated											C	
	IEC motor											N	
	NEMA motor											A	
	Servo motor											S	
Drive size													1A ... □H

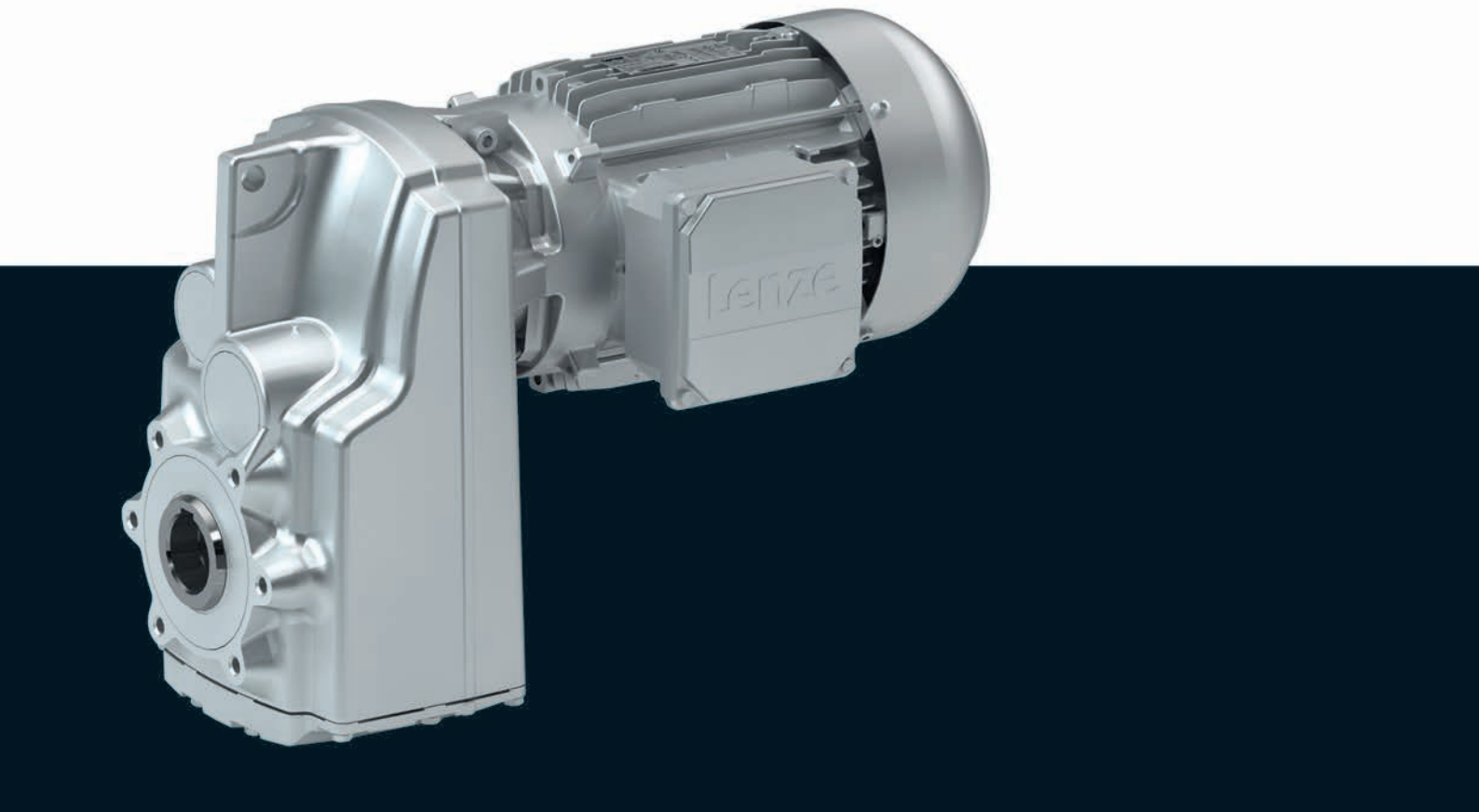
Motor code

Example	M	F	E	MA	XX	063	-	4	2	C1	C

Meaning	Variant	Motor code
Product family		M
Efficiency class	Better than IE2	F
Cooling	Integral fan	E
	Blower	F
Internal key		MA
Built-on accessories	Without built-on accessories	XX
	Brake	BR
	Brake + resolver	BS
	Brake + incremental encoder	BI
	Brake + SinCos absolute value encoder	BA
	Resolver	RS
	Incremental encoder	IG
	SinCos absolute value encoder	AG
Size		063
		071
		080
		090
		100
		112
Overall length		-
		1
		2
		3
		4
Number of pole pairs	4-pole motors	2
Internal key		C1
Approval	CE	C
	cURus	U
	CCC	3

g500-S shaft-mounted helical geared motors

Inverter operation
0.55 ... 11 kW (inverter-optimised, 120 Hz)



g500-S shaft-mounted helical geared motors

Contents

List of abbreviations

c		Load capacity
i		Ratio
m	[kg]	Mass
M_2	[Nm]	Output torque
M_{22}	[Nm]	Output torque
$M_{a\_,1}$	[Nm]	Starting torque
$M_{a\_,2}$	[Nm]	Starting torque
n_2	[r/min]	Output speed
n_{21}	[r/min]	Output speed
n_{22}	[r/min]	Output speed

CCC	China Compulsory Certificate
CE	Communauté Européenne
CEL	China Energy Label
CSA	Canadian Standards Association
CSAULE	Energy Verified Certificate
cURus	Combined certification marks of UL for the USA and Canada
DIN	Deutsches Institut für Normung e.V.
EAC	Customs union Russia / Belarus / Kazakhstan certificate
EMC	Electromagnetic compatibility
EN	European standard
IM	International Mounting Code
IP	International Protection Code
NEMA	National Electrical Manufacturers Association
UkrSEPRO	Certificate for Ukraine
UL	Underwriters Laboratory Listed Product
UR	Underwriters Laboratory Recognized Product
VDE	Verband deutscher Elektrotechniker (Association of German Electrical Engineers)

g500-S shaft-mounted helical geared motors

General information

Product information

In combination with three-phase AC motors, our shaft-mounted helical gearboxes form a compact and powerful drive unit. Numerous options at the input and output end provide for the drive to be exactly adapted to your application.

The slim shaft-mounted helical gearboxes feature high reliable radial forces, closely stepped gear reductions and a low backlash. They are available in 2-stage and 3-stage design with a torque up to 4500 Nm and a ratio of up to i= 430.

Versions

- Slimline design saves installation space of the machine
- Solid shaft, hollow shaft and shrink disc for direct integration into the machine
- High accuracy with axial output provide for the highest efficiency

Three-phase AC motors as a basis for geared motors

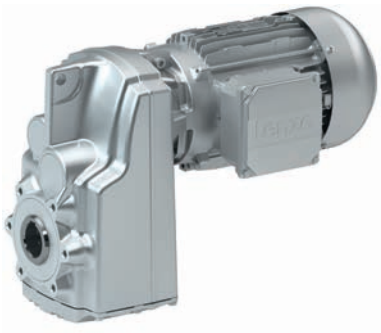
In a power range of 0.55 to 11 kW, Lenze offers inverter-optimised three-phase AC motors for comprehensive tasks.
These drives can be used for the types required for open-loop and closed-loop controlled inverter operation.

Customer benefit:

- Space-saving thanks to compact direct attachment to Lenze gearboxes
- Can be used universally for a wide range of machine tasks due to the market-oriented modular system
- Wide speed setting range
- More compact than conventional three-phase AC motors with the same power
- Dynamic
- Can be used worldwide

The product name

Gearbox type	Product range		Type	Rated torque [Nm]	Product
Shaft-mounted helical gearbox	g500	-	S	130	g500-S130
				220	g500-S220
				400	g500-S400
				660	g500-S660
				950	g500-S950
				2100	g500-S2100
				3100	g500-S3100
				4500	g500-S4500



g500-S shaft-mounted helical gearbox with m240-P three-phase AC motor

g500-S shaft-mounted helical gearbox with m550-P three-phase AC motor and motec

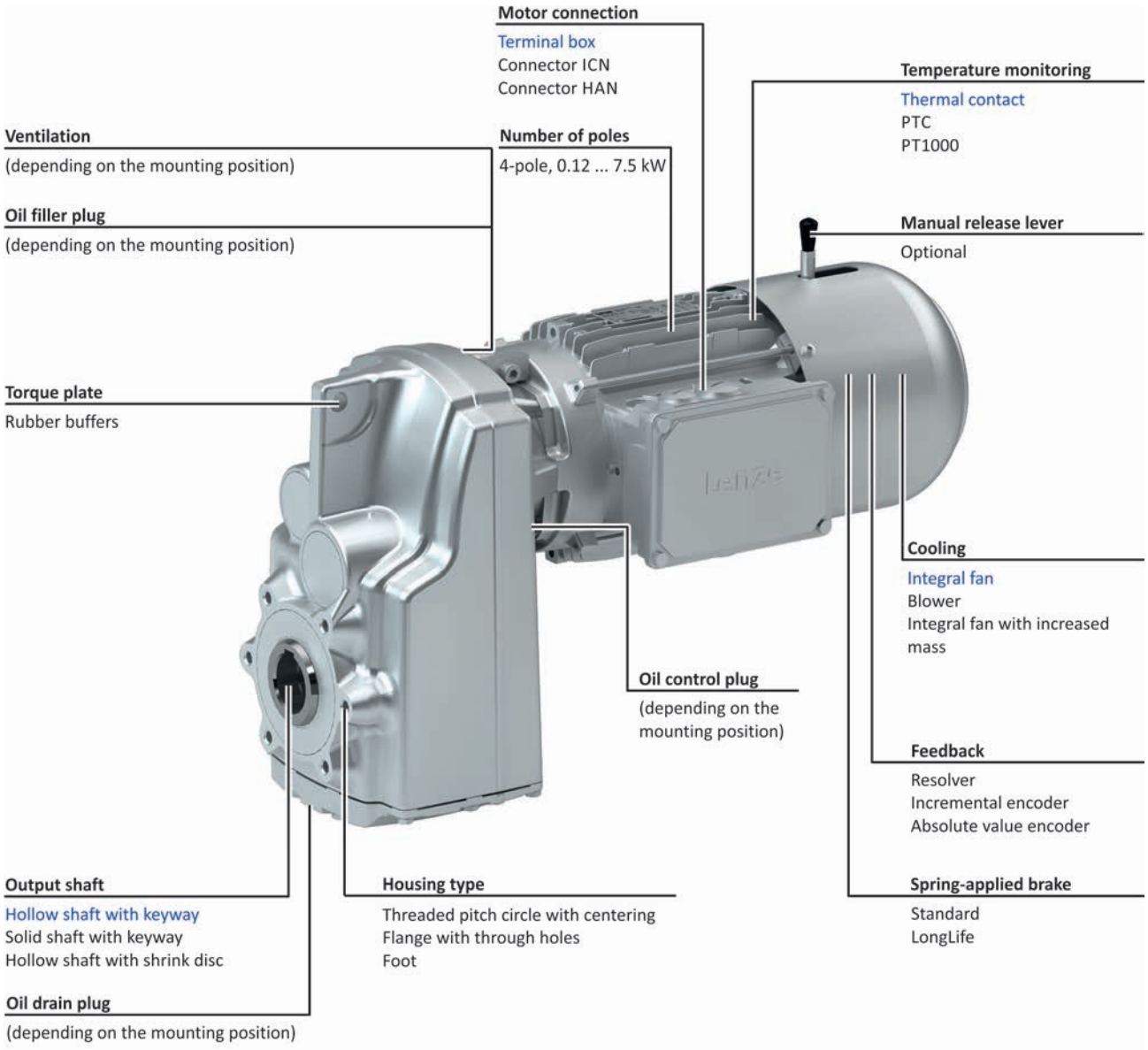
g500-S shaft-mounted helical gearbox with MCS servo motor

6.4

Equipment

Overview

The equipment includes all the options available as standard and all the built-on accessories of the product.



Standard design

► The gearboxes g500-S950 ... S4500 comes with a housing that is always designed with foot.

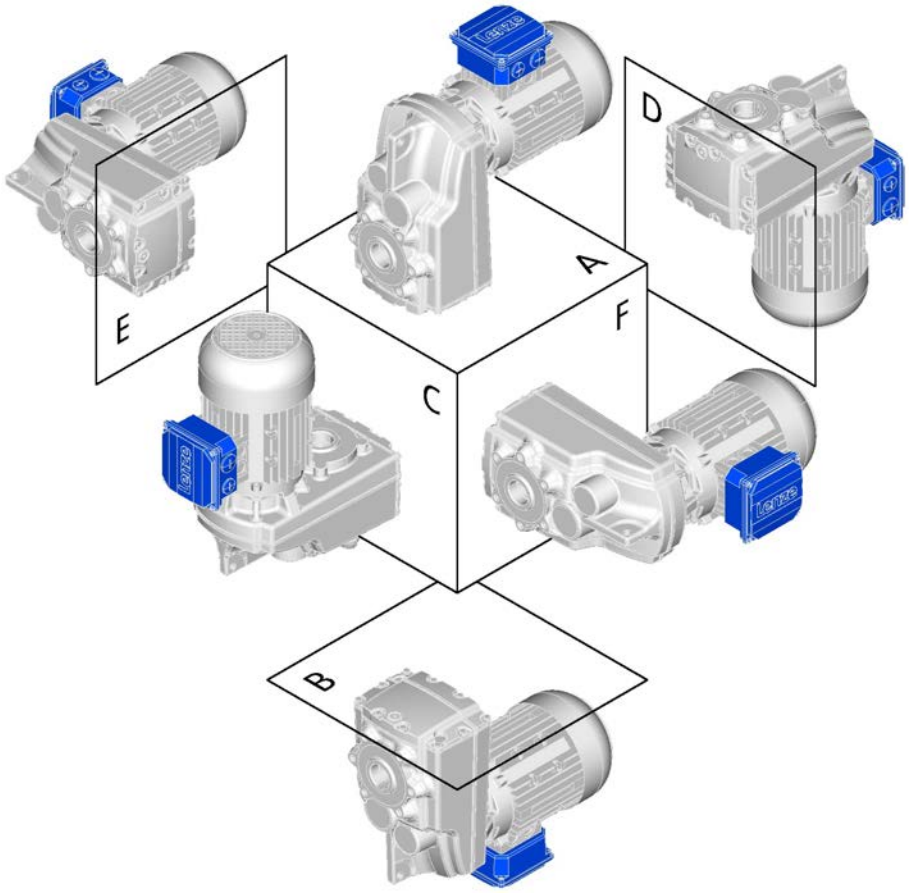
10 - Detailed information on housing type.

Equipment

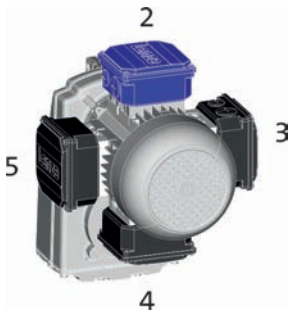
Mounting position, position of system components

- In the following graphics, the terminal box in position 2 is colour-coded.
  If the mounting position (A ... F) changes, the terminal box positions 2 ... 5 are rotated accordingly.
- To reduce the number of different versions, the gearboxes can also be ordered with combined mounting positions:
  - g500-S130 ... S660 in mounting position AEF

Mounting positions A ... F



Terminal box positions 2 ... 5

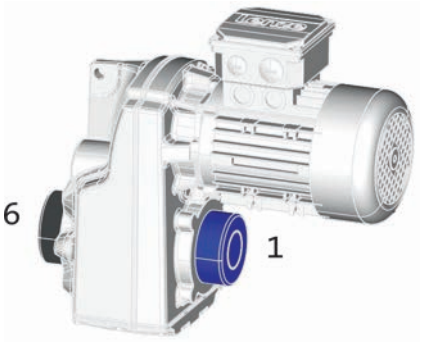


Cable entry positions 1 ... 5

- For details regarding the cable entry see motor chapter/product extensions.

Equipment

Mounting position, position of system components

Shrink disc position 1 or 6


► Solid shaft and flange are only possible in position 6.

The geared motor kit

g500-S130 ... S660

Product				
Gearbox	g500-S130	g500-S220	g500-S400	g500-S660
Motor assignment min.	MF□MA□□-063	MF□MA□□-063	MF□MA□□-063	MF□MA□□-063
Motor assignment max.	MF□MA□□-090	MF□MA□□-090	MF□MA□□-100	MF□MA□□-100
Technical data				
Output torque max.	130 Nm	220 Nm	400 Nm	660 Nm
Drive power min.	0.55 kW	0.55 kW	0.55 kW	0.55 kW
Drive power max.	4.0 kW	4.0 kW	5.5 kW	7.5 kW
Dimensions [mm]				
Solid shaft with featherkey	25 x 50	25 x 50	30 x 60	35 x 70 40 x 80
Hollow shaft with keyway	25	25/30	30/35	40/45
Hollow shaft with shrink disc	25	25/30	35	40
Output flange	160	160	200	200/250

- The designs are only available for the gearboxes displayed above in the table.
- Values printed in bold are standard versions.
  Values not printed in bold are possible extensions, some for an additional charge.

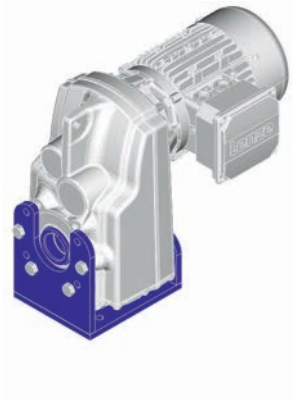
Type	
Conformity	**CE** EAC
Approval	**Without** CCC/CSA/cURus
Degree of protection	**IP55**
Surface and corrosion protection	**Without** Different types of OKS
Colour	**Not coated** Primed/RAL colours
Hollow shaft	**With keyway (H□□)**
Hollow shaft with shrink disc	Without keyway (S□□)
Solid shaft	With featherkey (V□□)
Shaft material	**Steel** stainless steel
Shaft sealing ring material	**NBR** FKM (Viton)
Driven shaft bearing	**Normal**
Paste for shaft mounting	**Without** Enclosed
Gearbox type	**Without foot and centering (□DR)** With centering (□CR) With output flange (□CK) With foot (HBR/VBR)
Lubricant	**Mineral oil** Synthetic oil Food-compatible oil

Type	
Mounting position	**A/B/C/D/E/F** Combined
Power connection	**Terminal box** Plug connectors
Spring-applied brake	**Without** Brake design: Standard/Longlife Brake version: Standard/Overexcited/Cold Brake
Feedback	**Without** Resolver Absolute value encoder Incremental encoder
Cooling	**Integral fan** Blower
Temperature monitoring	**TKO thermal contact** PTC thermistor PT1000 thermal detector

The geared motor kit

g500-S130 ... S660

Gearbox design: hollow shaft, without foot		
		
Without centring (HDR)	With centering (HCR)	Flange with through holes (HCK)

Gearbox design: hollow shaft, with foot

Without centring (HBR)

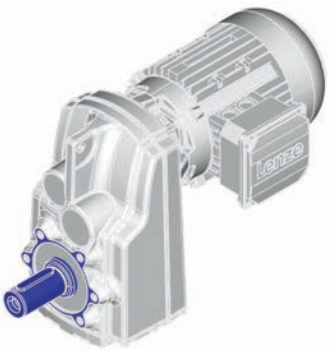
The geared motor kit

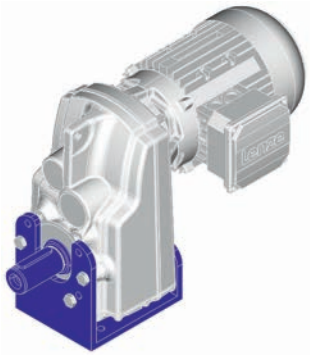
g500-S130 ... S660

Gearbox design: hollow shaft with shrink disc, without foot		
		
Without centring (SDR)	With centering (SCR)	Flange with through holes (SCK)

The geared motor kit

g500-S130 ... S660

Gearbox design: solid shaft, without foot
 Without centring (VDR)
 With centering (VCR)
 Flange with through holes (VCK)

Gearbox design: solid shaft, with foot
 Without centring (VBR)

The geared motor kit

g500-S950 ... S4500

Product				
Gearbox	g500-S950	g500-S2100	g500-S3100	g500-S4500
Motor assignment min.	MF□MA□□-063	MF□MA□□-063	MF□MA□□-063	MF□MA□□-071
Motor assignment max.	MF□MA□□-112	MF□MA□□-112	MF□MA□□-112	MF□MA□□-112
Technical data				
Output torque max.	950 Nm	2100 Nm	3100 Nm	4500 Nm
Drive power min.	0.55 kW	0.55 kW	0.55 kW	1.1 kW
Drive power max.	11 kW	11 kW	11 kW	11 kW
Dimensions [mm]				
Solid shaft with featherkey	40 x 80	50 x 100	60 x 120	70 x 140 80 x 160 [1)]
Hollow shaft with keyway	40	50/55	60/70	70/80
Hollow shaft with shrink disc	40	50	65	75/80
Output flange	250	250/300	350	400/450

[1)] Only steel shaft material is available.

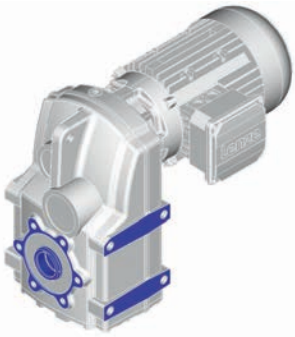
- ► The designs are only available for the gearboxes displayed above in the table.
- ► Values printed in bold are standard versions.
  Values not printed in bold are possible extensions, some for an additional charge.

Type	
Conformity	**CE** EAC
Approval	**Without** CCC/CSA/cURus
Degree of protection	**IP55**
Surface and corrosion protection	**OKS-S** Different types of OKS
Colour	**Painted in RAL colours** Primed
Hollow shaft	**With keyway (H□□)**
Hollow shaft with shrink disc	Without keyway (S□□)
Solid shaft	With featherkey (V□□)
Shaft material	**Steel** stainless steel
Shaft sealing ring material	**NBR** FKM (Viton)
Driven shaft bearing	**Normal**
Paste for shaft mounting	**Without** Enclosed
Gearbox type	**With foot (□BR)** With foot and centering (□AR) With foot and output flange (□AK)
Lubricant	**Mineral oil** Synthetic oil Food-compatible oil

Type	
Mounting position	**A/B/C/D/E/F**
Power connection	**Terminal box** Plug connectors
Spring-applied brake	**Without** Brake design: Standard/Longlife Brake version: Standard/Overexcited/Cold Brake
Feedback	**Without** Resolver Absolute value encoder Incremental encoder
Cooling	**Integral fan** Blower
Temperature monitoring	**TKO thermal contact** PTC thermistor PT1000 thermal detector

The geared motor kit

g500-S950 ... S4500

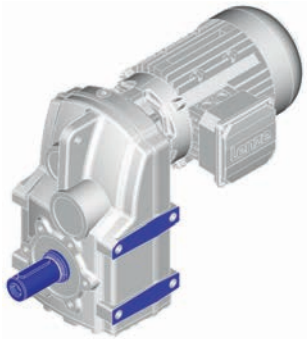
Gearbox design: hollow shaft, with foot		
		
Without centring (HBR)	With centering (HAR)	Flange with through holes (HAK)

Gearbox design: hollow shaft with shrink disc, with foot		
		
Without centring (SBR)	With centering (SAR)	Flange with through holes (SAK)

6.4

The geared motor kit

g500-S950 ... S4500

Gearbox design: solid shaft, with foot		
		
Without centring (VBR)	With centering (VAR)	Flange with through holes (VAK)

General information about the data provided in this catalogue

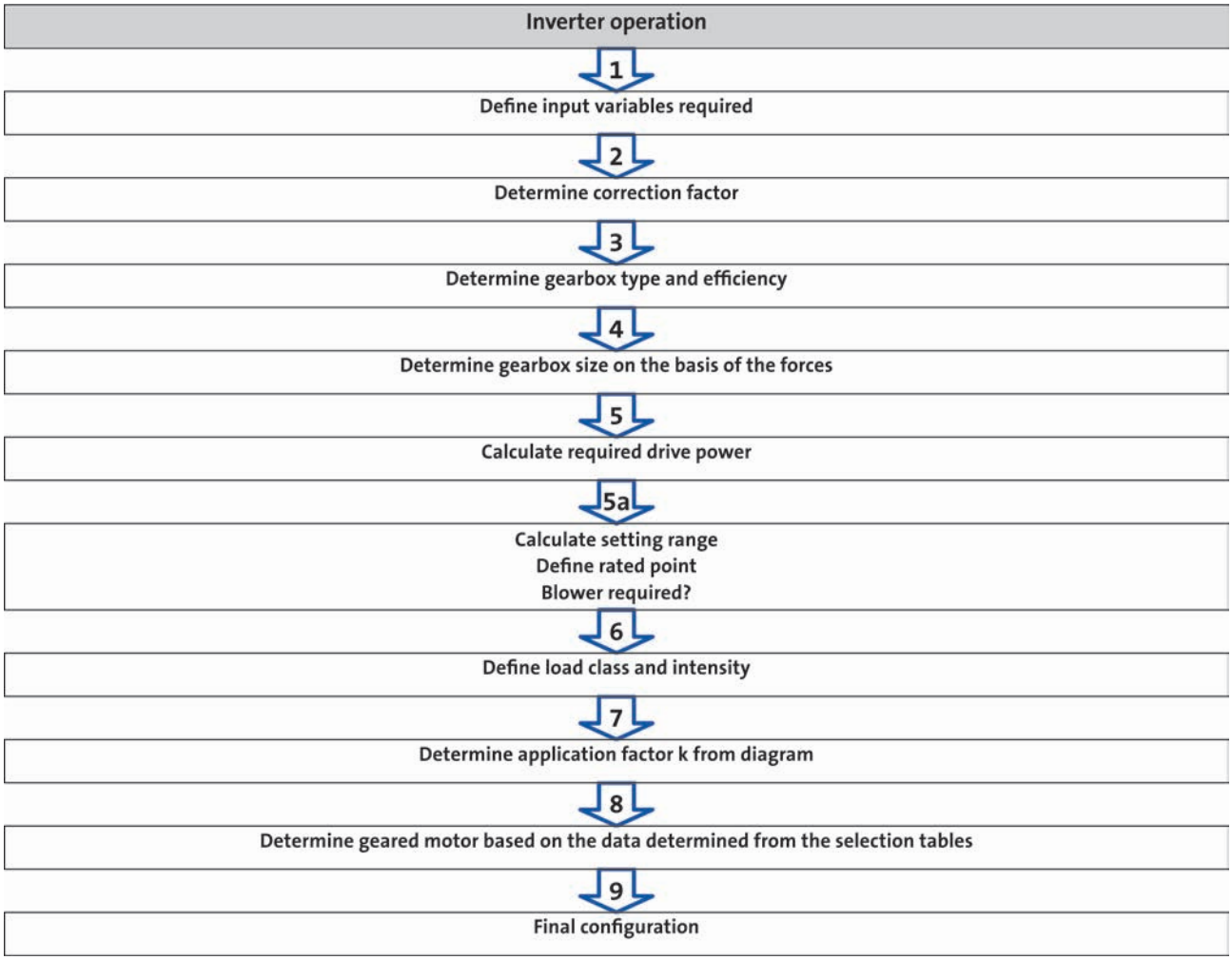
The powers, torques and speeds specified in this catalogue are rounded values and are valid under the following conditions:

- 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.

Procedure of a configuration process

Workflow



You can use our configuring software 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.

Procedure of a configuration process

1 required input variables

Load torque		$M_{L,max}$=	[Nm]
	In inverter operation	$M_{L,min}$=	[Nm]
Load speed		$n_{L,max}$=	[r/min]
	In inverter operation	$n_{L,min}$=	[r/min]
External moments of inertia		J_{ext}=	[kgcm^2]
Operating time / day		BD =	[h]
Switching operations per h		S_h=	[1/h]
Runtime for $M_{L,max}$	In inverter operation		[%]

2 determine correction factor

Operating modes and operating time						
S1	ED	[%]	100			
	k_L =		1.0			
S2	ED	[%]	10	30	60	90
	k_L =		1.4 - 1.5	1.15 - 1.2	1.07 - 1.1	1.0 - 1.05
S3	ED	[%]	15	25	40	60
	k_L =		1.4 - 1.5	1.3 - 1.4	1.15 - 1.2	1.05 - 1.1
S6	ED	[%]	15	25	40	60
	k_L =		1.5 - 1.6	1.4 - 1.5	1.3 - 1.4	1.15 - 1.2
Site altitude						
	H	[m]	≤ 1000	≤ 2000	≤ 3000	≤ 4000
	k_H =		1	0.95	0.9	0.85
Ambient temperature						
	T_U =	[°C]	≤ 40	≤ 45	≤ 50	≤ 55
	k_{TU} =		1	0.95	0.9	0.8

24 - Operating modes

Procedure of a configuration process

3 determine gearbox type and efficiency

Gearbox type			Axial gearboxes		Right-angle gearboxes
			Helical gearbox	Shaft-mounted	Bevel gearbox
Product			g500-H	g500-S	g500-B
Gearbox efficiency	2-stage gearboxes	η_G	0.96	0.96	0.96
	3-stage gearboxes	η_G	0.95	0.95	0.95

4 determine gearbox size based on the forces on the output

Transmission element		Gear wheels	Sprockets	Toothed belt pulleys (depending on the initial stress)	Narrow V-belt (depending on the initial stress)
Additional radial force factor	f_z =	≥ 17 teeth = 1.0 < 17 teeth = 1.15	≥ 20 teeth = 1.0 < 20 teeth = 1.25 < 13 teeth = 1.4	With belt tightener = 2.0 - 2.5 Without belt tightener = 2.5 - 3.0	1.5 - 2.0
		Calculation		**Check**	
Radial force	[N]	$F_{rad} = 2000 \times \frac{M_{L,max} \times f_z}{dw}$		$F_{rad} \le f_w \times F_{rad,max}$	
Axial force	[N]			$F_{ax} \le F_{rad,max} \times 0.5$	

d_w= effective diameter [mm] transmission element
f_w= additional load factor

► For permissible radial and axial forces and additional load factor see the "Technical data" chapter

5 calculate drive power

		Calculation	
Drive power required	[kW]	$P_1 = \frac{M_{L,max} \times n_{L,max}}{9549 \times k_L \times k_H \times k_{Tu} \times n_g}$	

k_L= Correction factor - operating mode
k_H= correction factor - installation height
k_{TU}= correction factor - ambient temperature

Procedure of a configuration process - inverter operation

5a calculate range of adjustment and determine rated point

		Calculation	
Setting range		$V = \frac{n_{L,max}}{n_{L,min}}$	
Setting range	Motor with integral fan	≤ 6 (20 ... 120 Hz)	
	Motor with blower	≤ 20 (5 ... 120 Hz)	
Rated point at		120 Hz	

6 calculate intensity and determine duty class

	Calculation		
Intensity	$M_I = \frac{M_{L,max}}{M_{L,min}}$	**For alternating load, select load class III!**	
Load class	Load type		Intensity
I	Smooth operation, small or light jolts		$M_I \leq 1.5$
II	Uneven operation, average jolts		$1.5 < M_I \leq 2$
III	Uneven operation, severe jolts and/or alternating load		$2 < M_I \leq 2.5$

7 determine application factor k from diagram

28 - Load capacity and application factor

Procedure of a configuration process - inverter operation

8 determine geared motor based on the data determined from the selection tables

Selection table			Check	
Drive power P_N		[kW]	$P_1 \leq P_N$	
Max. output speed n_2		[r/min]	$n_{L,max} \approx n_2$	
Min. output speed n_{21}	Self-ventilated	[r/min]	$n_{L,min} \approx n_{21}$	Setting range 6 (120 Hz)
Min. output speed n_{22}	Forced-ventilated	[r/min]	$n_{L,min} \approx n_{22}$	Setting range ≤ 20 (120 Hz)
	Self-ventilated (Reduced output torque)	[r/min]	$n_{L,min} \approx n_{22}$	
Output torque M_2		[Nm]	$M_{L,max} \leq M_2$	
Load factor c			$k \leq c$	

Order information	Example
Number of stages	2
Ratio i	4.368
Product gearbox	g500-H45
Product motor	MFxMAxx063-32

28 - Load capacity and application factor

30 - Torque derating at low motor frequencies

Example: structure of a selection table

120 Hz: P_N = 0.55 kW ← Rated power P_N

2-stage gearboxes ← Number of the gear stage

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
33	4.9	137	6.0	788	6.0	2.5	4.368	-H45	063-32	39
25	6.6	102	9.0	584	9.0	4.5	5.887	-H100	063-32	42

Min. Output speed **n_{22}**
Min. Output torque **M_{22}**
Min. Output speed **n_{21}**
Max. Output speed **n_2**
Max. Output torque **M_2**
Load capacity **c**
Ratio i
Product Gearbox
Product Motor

Procedure of a configuration process

9 Final configuration

More information regarding the final configuration can be found under: **- The modular geared motor system** **- Product extensions for gearboxes, motors**	
Check operating conditions	- Operating temperature (observe lubricant, material of shaft sealing ring) - Degree of protection - Supply voltage - Surface protection required - Approvals - Conformity
Check and define connection dimensions	- Driven shaft - Foot, output flange, centering with threaded pitch circle
Determine mounting position and position of the system blocks	- Mounting position A/B/C/D/E/F or combined - Terminal box position, shaft position, flange position
Select product extensions at the gearbox (differing depending on the gearbox type)	- Torque plate at the base, threaded pitch circle, rubber buffer - Hollow shaft cover, shrink disc cover
Select product extensions at the motor	- Connection type (terminal box, connector) - Brake - Blower (inverter operation) - Feedback - Temperature monitoring

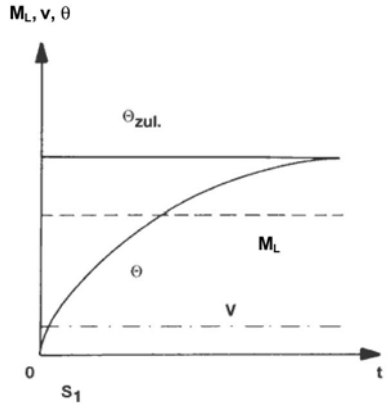
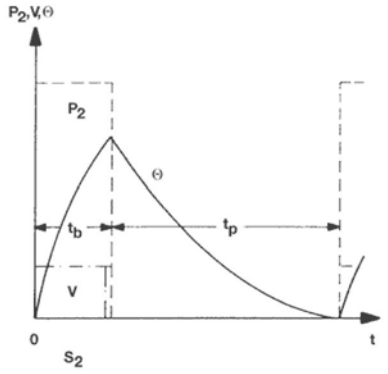
Standards

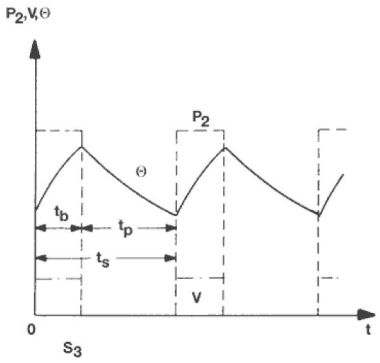
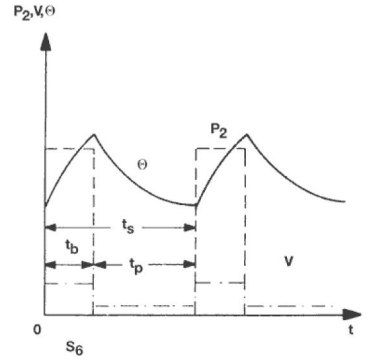
Operating modes

Operating modes S1 ... S10 as specified by EN 60034-1 describe the basic stress of an electrical machine.

In continuous operation a motor reaches its permissible temperature limit if it outputs the rated power dimensioned for continuous operation. However, if the motor is only subjected to load for a short time, the power output by the motor may be greater without the motor reaching its permissible temperature limit. This behaviour is referred to as overload capacity.
Depending on the duration of the load and the resulting temperature rise, the required motor can be selected reduced by the overload capacity.

The most important operating modes

Continuous operation S1	Short-time operation S2
	
Operation with a constant load until the motor reaches the thermal steady state. The motor may be actuated continuously with its rated power.	Operation with constant load; however, the motor does not reach the thermal steady state. During the following standstill, the motor winding cools down to the ambient temperature again. The increase in power depends on the load duration.

Intermittent operation S3	Non-intermittent periodic operation S6
	
-	-

Standards

Duty classes

Depending on the load type, the duty classes or impacts are divided as follows:

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

In order to support you in classifying your driven machine regarding the right duty class, the following shows sample applications with the corresponding duty class. Depending on, for instance, the operating frequency, driven machines can also have a higher impact.
In case of uncertainties, please contact your Lenze sales office.

Drive	Duty class
Construction machines	II
Chemical industry	II
Conveyors	II
Fans	II
Plastics industry	II
Wood working	III
Hoists	III
Metal working	III
Food	II
Paper industry	III
Stones	III
Textile industry	II

Standards

Degrees of protection

The degree of protection indicates the suitability of a motor for specific ambient conditions with regard to humidity as well as the protection against contact and the ingress of foreign particles. The degrees of protectionare classified by EN 60529.

The first code number after the code letters IP indicates the protection against the ingress of foreign particles and dust.
The second code number refers to the protection against the ingress of humidity.

Code number 1	Degree of protection	Code number 2	Degree of protection
0	No protection	0	No protection
1	Protection against the ingress of foreign particles d > 50 mm. No protection in the case of deliberate access	1	Protection against vertically dripping water (dripping water).
2	Protection against medium-sized foreign particles, d > 12 mm, keeping away fingers or similar	2	Protection against diagonally falling water (dripping water), 15 ° compared to normal service position.
3	Protection against small foreign particles d > 2.5 mm. Keeping away tools, wires and the like	3	Protection against spraying water, up to 60 ° to the vertical
4	Protection against granular foreign particles, d > 1 mm, keeping away tools, wires and the like	4	Protection against spraying water from all directions.
5	Protection against dust deposits (dust-protected), complete protection against contact.	5	Protection against water jets from all directions.
6	Protection against the ingress of dust (dust-proof), complete protection against contact.	6	Protection against choppy seas or heavy water jets (flood protection).

Thermal power limit

The thermal power limit, defined by the heat balance, limits the permissible permanent gearbox power.
It 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 of heat via shafts and the foundations.

We ask you to make a thermal check with the Drive Solution Designer (DSD) or contact the Lenze office responsible for you

- If the drive speeds mentioned in the following will be exceeded as a function of the mounting position:

g500 thermal power limit			
Product	Mounting position A	Mounting position A, B, E, F	Mounting position C, D
MF□MA□□063 ... 100	4000 r/min	3500 r/min	3000 r/min
M□FMA□□112	3000 r/min	2600 r/min	1500 r/min

► For a short period of time up to 5 min, 30 % higher speeds are permissible

Possible ways of extending the application area

- Synthetic lubricant (option)
- Shaft sealing rings made from FKM material/Viton (option)
- Reduction in lubricant quantity (after consultation with Lenze)
- Cooling of the geared motor by means of air convection on the machine/system

Load capacity and application factor

Load capacity c of gearboxes
Rated value for the load capacity of Lenze geared motors.

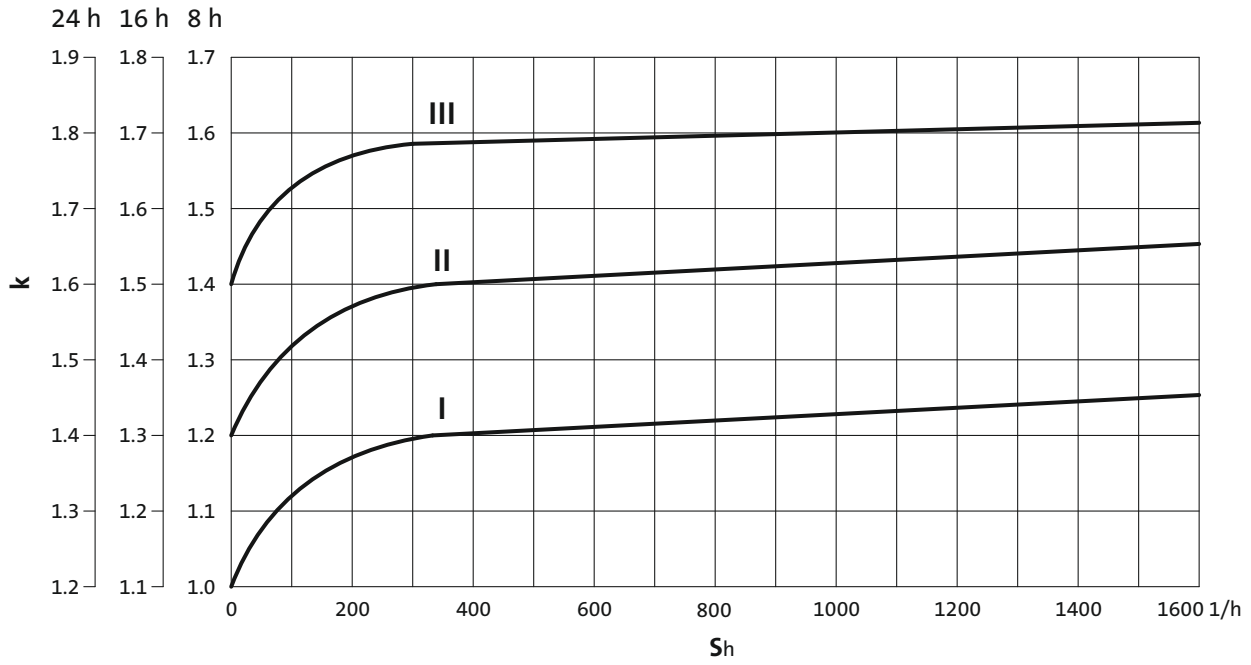
- c is the ratio of the permissible rated torque of the gearbox to the rated torque supplied by the drive component (e.g. the built-in Lenze motor).
- The value of c must always be greater than the value of the application factor k calculated for the application.

Required: 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

Application factor k



► S_h= switchings/h

Operational performance of three-phase AC geared motors

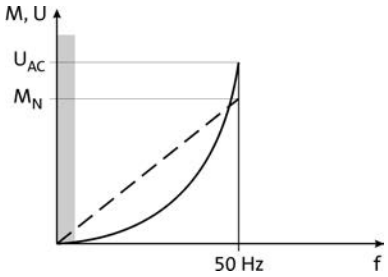
Operation on the inverter

An inverter enables energy-efficient operation of a system in virtually all application cases. The various operating modes, which can be created by making just a few simple settings, facilitate this. The following characteristics and corresponding specifications listed on the following pages can be used to calculate the optimum operating mode during the project planning phase.

Standard setting

In its initial state when delivered, the inverter is set up for basic operation with a three-phase AC motor with vector control. When operated in this mode, the rated torque of the motor is available in a setting range up to 50 Hz.

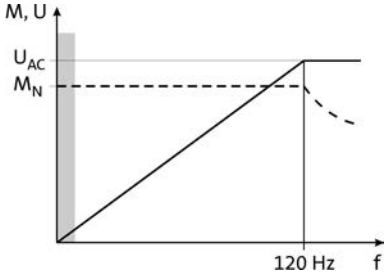
V/f at 50 Hz



Operation with inverter-optimised MF motors

Large setting ranges and optimum operation at the rated torque: these are the strengths of the MF motor when used in combination with an inverter. The motors are optimised for a setting range up to 120 Hz. Compared to conventional 50Hz operation, the setting range increases by 250 %. It is quite simply not possible for a drive to be operated any more efficiently in a machine.

V/f at 120 Hz

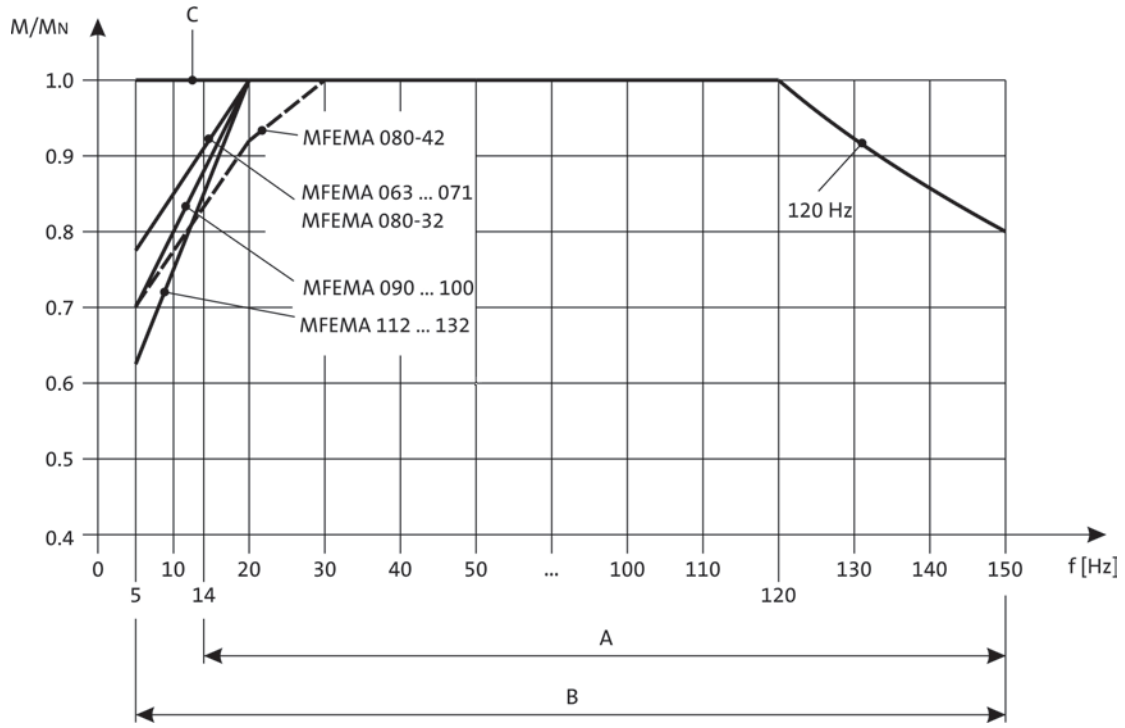


Operational performance of three-phase AC geared motors

Torque derating at low motor frequencies

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"
C= operation with blower

Technical data at a glance

The following tables contain the most important data of the gearbox with the motors that can be attached for an approximate dimensioning process of a geared motor. Detailed information can be found in the following chapters.

The data given in the tables apply to
- input speed n_1= 1400 r/min
- application factor c= 1.0

The data for the max. radial force refer to
- solid shaft without flange
- normal storage
- application factor c= 1.3

For further designs see the "Technical data" chapter.

► The rated torque can be gathered from the last digits of the product name e.g. g500-S130 (130 Nm).

In order to calculate the exact ratio, the number of teeth z_g (driven) can be divided by the number of teeth z_t (driving). These are rounded values.

g500-S130, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
394	63	2.68	3.661	637	174	1350	20	0.25	1.50
287	76	2.36	5.021	728	145	1420	19	0.25	1.50
205	92	2.04	7.029	5096	725	1530	18	0.18	1.50
173	116	2.17	8.322	749	90	1600	13	0.25	1.50
153	125	2.07	9.411	847	90	1660	13	0.25	1.50
224	87	2.11	6.425	559	87	1500	18	0.25	1.50
126	130	1.77	11.413	856	75	1990	13	0.25	1.50
112	130	1.57	12.907	968	75	2100	12	0.25	1.50
99.0	130	1.38	14.606	4601	315	2220	13	0.25	1.50
90.0	130	1.27	15.979	5992	375	2320	13	0.18	1.50
80.0	130	1.12	18.069	6776	375	2460	12	0.18	1.10
71.0	130	0.99	20.381	428	21	2610	13	0.18	1.10
63.0	130	0.88	23.048	484	21	2780	12	0.18	0.75
58.0	130	0.82	24.967	749	30	2890	13	0.25	0.75
51.0	130	0.72	28.233	847	30	3070	12	0.25	0.75
46.0	130	0.65	31.387	2354	75	3240	13	0.12	0.75
40.0	130	0.56	35.493	2662	75	3440	12	0.12	0.55
35.0	130	0.49	40.422	1819	45	3660	13	0.12	0.55
31.0	130	0.43	45.711	2057	45	3860	12	0.12	0.37
28.0	130	0.39	51.230	8453	165	4040	12	0.12	0.37
24.0	130	0.34	57.933	869	15	4230	12	0.12	0.37
22.0	130	0.31	64.200	321	5	4360	12	0.12	0.37
19.0	130	0.27	72.600	363	5	4500	12	0.12	0.25
16.0	102	0.18	84.581	8881	105	4500	12	0.12	0.18
14.0	115	0.18	95.648	10043	105	4500	12	0.12	0.18

Technical data at a glance

g500-S220, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
377	178	7.25	3.840	553	144	2360	16	0.55	3.00
275	181	5.37	5.267	79	15	2650	16	1.10	3.00
214	220	5.08	6.767	203	30	2900	13	0.55	3.00
189	217	4.43	7.667	23	3	3050	12	0.55	3.00
156	220	3.71	9.280	232	25	3250	13	1.10	3.00
138	220	3.27	10.514	368	35	3400	12	1.10	3.00
122	220	2.90	11.876	1247	105	3500	13	0.55	3.00
112	220	2.65	12.992	1624	125	3550	13	0.25	3.00
108	220	2.56	13.456	1978	147	3600	12	0.55	3.00
99.0	220	2.34	14.720	368	25	3600	12	0.25	2.20
88.0	220	2.08	16.571	116	7	3600	12	0.25	2.20
77.0	220	1.84	18.776	920	49	3600	12	0.25	2.20
71.0	220	1.69	20.300	203	10	3600	12	0.55	1.50
63.0	220	1.49	23.000	23	1	3600	12	0.55	1.50
55.0	220	1.30	26.422	1189	45	3600	12	0.25	1.50
48.0	220	1.14	29.937	1886	63	3600	12	0.25	1.10
44.0	220	1.04	32.867	493	15	3600	12	0.25	1.10
39.0	220	0.92	37.238	782	21	3600	12	0.25	1.10
34.0	220	0.81	42.533	638	15	3600	12	0.12	0.75
30.0	220	0.71	48.190	1012	21	3600	12	0.12	0.75
27.0	220	0.65	51.620	2581	50	3600	12	0.12	0.55
24.0	220	0.57	58.486	2047	35	3600	11	0.12	0.55
21.0	171	0.39	65.975	2639	40	3600	12	0.12	0.37
19.0	194	0.40	74.750	299	4	3600	11	0.12	0.37

Technical data at a glance

g500-S220, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
35.0	220	0.85	40.012	13804	345	3600	13	0.18	0.37
31.0	220	0.75	45.333	136	3	3600	12	0.18	0.37
28.0	220	0.67	52.587	3944	75	3600	13	0.12	0.75
24.0	220	0.57	59.581	6256	105	3600	12	0.12	0.55
21.0	220	0.50	67.298	21199	315	3600	13	0.12	0.55
18.0	220	0.44	76.249	33626	441	3600	12	0.12	0.55
16.0	220	0.40	86.079	5423	63	3600	13	0.12	0.37
14.0	220	0.35	97.528	43010	441	3600	12	0.12	0.37
13.0	220	0.30	111.747	8381	75	3600	13	0.12	0.37
11.0	220	0.26	126.610	13294	105	3600	12	0.12	0.25
10.0	220	0.23	143.205	30073	210	3600	13	0.12	0.25
8.00	220	0.20	162.252	23851	147	3600	12	0.12	0.25
6.00	220	0.14	241.022	10846	45	3600	13	0.12	0.12
5.00	220	0.13	273.079	17204	63	3600	12	0.12	0.12
5.00	220	0.11	312.233	9367	30	3600	13	0.12	0.12
4.00	220	0.10	353.762	7429	21	3600	12	0.12	0.12

Technical data at a glance

g500-S400, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
435	203	9.54	3.339	581	174	2360	16	0.55	4.00
317	243	8.33	4.579	664	145	2560	16	1.10	4.00
248	258	6.89	5.860	3569	609	2750	13	0.55	4.00
227	261	6.39	6.411	4648	725	2820	12	0.25	4.00
195	365	7.66	7.467	112	15	2980	13	0.55	4.00
172	380	7.06	8.436	329	39	3150	12	0.55	4.00
142	400	6.13	10.240	256	25	3450	13	1.10	4.00
126	400	5.42	11.569	752	65	3650	13	1.10	4.00
111	400	4.79	13.105	1376	105	3900	12	0.55	4.00
101	400	4.38	14.336	1792	125	4000	12	0.25	4.00
98.0	400	4.24	14.806	4042	273	4100	12	0.55	4.00
90.0	400	3.87	16.197	5264	325	4200	12	0.25	4.00
80.0	400	3.43	18.286	128	7	4400	12	0.25	4.00
70.0	400	3.03	20.659	1880	91	4650	12	0.25	3.00
65.0	400	2.79	22.400	112	5	4800	12	0.55	3.00
57.0	400	2.47	25.308	329	13	5100	12	0.55	3.00
50.0	400	2.14	29.156	1312	45	5500	12	0.25	1.50
44.0	400	1.89	32.940	3854	117	5750	12	0.25	1.50
40.0	400	1.72	36.267	544	15	5850	12	0.25	1.50
35.0	400	1.52	40.974	1598	39	5980	12	0.25	1.50
31.0	314	1.05	46.933	704	15	6100	12	0.12	0.75
27.0	348	1.03	53.026	2068	39	6200	11	0.12	0.75
25.0	268	0.71	56.960	1424	25	6200	12	0.12	0.55
22.0	303	0.71	64.354	4183	65	6200	11	0.12	0.55

Technical data at a glance

g500-S400, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
25.0	400	1.09	58.027	4352	75	6200	11	0.18	0.75
22.0	400	0.97	65.559	12784	195	6200	11	0.18	0.75
20.0	400	0.85	74.260	23392	315	6200	11	0.18	0.75
17.0	400	0.76	83.900	68714	819	6200	11	0.18	0.75
15.0	400	0.67	94.984	5984	63	6200	11	0.12	0.75
13.0	399	0.57	107.314	87890	819	6200	11	0.12	0.55
11.0	400	0.50	123.307	9248	75	6200	11	0.12	0.55
10.0	399	0.44	139.313	27166	195	6200	11	0.12	0.55
9.00	400	0.39	158.019	16592	105	6200	11	0.12	0.37
8.00	400	0.35	178.531	48739	273	6200	11	0.12	0.37
7.00	400	0.30	204.412	33728	165	6200	11	0.12	0.37
6.00	396	0.26	230.946	99076	429	6200	11	0.12	0.25
5.00	388	0.22	265.956	11968	45	6200	11	0.12	0.25
4.00	400	0.20	300.479	35156	117	6200	11	0.12	0.18
4.00	330	0.15	344.533	5168	15	6200	11	0.12	0.12
4.00	373	0.15	389.256	15181	39	6200	11	0.12	0.12

Technical data at a glance

g500-S660, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
377	419	17.0	3.920	98	25	3320	14	2.20	7.50
275	492	14.6	5.376	672	125	3580	13	2.20	7.50
230	601	14.9	6.417	77	12	3660	11	2.20	7.50
215	496	11.5	6.880	172	25	3690	13	1.10	7.50
202	593	12.9	7.311	329	45	3720	11	2.20	7.50
168	638	11.6	8.800	44	5	3900	11	2.20	7.50
147	625	9.94	10.027	752	75	4200	10	2.20	7.50
131	660	9.35	11.262	473	42	4500	11	1.10	7.50
120	660	8.54	12.320	308	25	4750	10	1.10	7.50
115	660	8.20	12.832	4042	315	4850	10	1.10	7.50
105	660	7.49	14.037	5264	375	5100	10	1.10	7.50
94.0	660	6.70	15.714	110	7	5450	10	0.55	7.50
82.0	660	5.81	17.905	376	21	5800	10	0.55	5.50
76.0	660	5.40	19.250	77	4	6000	10	1.10	5.50
67.0	660	4.74	21.933	329	15	6450	10	1.10	5.50
58.0	578	3.62	25.056	451	18	7050	10	0.55	4.00
51.0	660	3.63	28.548	3854	135	7700	10	0.55	4.00
46.0	660	3.31	31.167	187	6	8100	10	0.55	3.00
41.0	660	2.91	35.511	1598	45	8500	10	0.55	3.00
36.0	545	2.11	40.333	121	3	8750	10	0.25	1.50
31.0	620	2.10	45.956	2068	45	8850	10	0.25	1.50
30.0	446	1.42	48.950	979	20	8900	10	0.25	1.10
26.0	508	1.42	55.773	4183	75	9000	10	0.25	1.10

Technical data at a glance

g500-S660, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
29.0	625	1.98	49.867	748	15	9000	11	0.25	1.50
25.0	650	1.81	56.818	12784	225	9000	10	0.25	1.50
23.0	660	1.63	63.817	8041	126	9000	11	0.25	1.50
21.0	660	1.50	69.813	5236	75	9000	11	0.18	1.50
20.0	660	1.43	72.713	68714	945	9000	10	0.25	1.50
18.0	660	1.31	79.545	89488	1125	9000	10	0.18	1.50
16.0	660	1.17	89.048	1870	21	9000	11	0.18	1.10
14.0	660	1.03	101.460	6392	63	9000	10	0.18	1.10
13.0	660	0.95	109.083	1309	12	9000	11	0.25	1.10
12.0	660	0.85	124.289	5593	45	9000	10	0.25	0.75
11.0	660	0.77	137.133	2057	15	9000	11	0.12	0.75
9.00	660	0.67	156.249	35156	225	9000	10	0.12	0.75
8.00	660	0.58	176.611	3179	18	9000	11	0.12	0.55
7.00	660	0.51	201.230	27166	135	9000	10	0.12	0.55
6.00	660	0.46	223.833	1343	6	9000	11	0.12	0.37
6.00	660	0.40	255.034	126242	495	9000	10	0.12	0.37
5.00	603	0.33	280.500	561	2	9000	11	0.12	0.37
4.00	660	0.32	319.600	1598	5	9000	10	0.12	0.37
4.00	447	0.18	369.548	15521	42	9000	11	0.12	0.18
3.00	511	0.18	421.060	132634	315	9000	10	0.12	0.18

Technical data at a glance

g500-S950, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
337	621	22.6	4.380	403	92	8430	16	4.00	7.50
274	691	20.4	5.391	124	23	9100	15	2.20	7.50
245	732	19.3	6.038	3472	575	9490	15	2.20	7.50
192	783	16.2	7.702	1240	161	10300	14	1.10	7.50
162	950	16.6	9.100	91	10	10300	10	4.00	7.50
145	950	14.9	10.183	611	60	10300	10	4.00	7.50
132	950	13.5	11.200	56	5	10300	10	2.20	7.50
118	950	12.1	12.544	1568	125	10300	10	2.20	7.50
105	950	10.8	14.037	5264	375	10300	10	2.20	7.50
92.0	950	9.46	16.000	16	1	10300	10	1.10	7.50
82.0	950	8.46	17.905	376	21	10300	10	1.10	7.50
75.0	950	7.73	19.600	98	5	10300	10	2.20	7.50
67.0	950	6.90	21.933	329	15	10300	9	2.20	7.50
57.0	950	5.87	25.511	1148	45	10300	10	1.10	5.50
51.0	950	5.24	28.548	3854	135	10300	9	1.10	5.50
46.0	950	4.77	31.267	469	15	10300	9	1.10	4.00
42.0	950	4.26	34.989	3149	90	10300	9	1.10	4.00
35.0	950	3.62	41.067	616	15	10300	9	0.55	3.00
32.0	950	3.23	45.956	2068	45	10300	9	0.55	3.00
29.0	924	2.90	49.840	1246	25	10300	9	0.55	2.20
26.0	950	2.67	55.773	4183	75	10300	9	0.55	2.20
23.0	668	1.65	63.000	63	1	10300	9	0.55	1.10
20.0	736	1.63	70.500	141	2	10300	9	0.55	1.10

Technical data at a glance

g500-S950, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
29.0	950	3.02	50.027	3752	75	10300	10	1.10	3.00
26.0	950	2.70	55.982	12596	225	10300	10	1.10	3.00
23.0	950	2.36	64.022	2881	45	10300	10	0.55	2.20
21.0	950	2.15	70.037	26264	375	10300	10	0.25	2.20
20.0	950	2.11	71.644	135407	1890	10300	10	0.55	2.20
18.0	950	1.93	78.375	88172	1125	10300	10	0.25	2.20
16.0	950	1.68	89.333	268	3	10300	10	0.25	1.50
14.0	950	1.50	99.968	6298	63	10300	10	0.25	1.50
13.0	950	1.37	109.433	3283	30	10300	10	0.55	1.50
12.0	950	1.23	122.461	22043	180	10300	10	0.55	1.50
10.0	950	1.05	142.437	19229	135	10300	10	0.25	1.10
9.00	950	0.95	159.394	129109	810	10300	10	0.25	1.10
8.00	950	0.85	177.178	7973	45	10300	10	0.25	0.75
7.00	950	0.76	198.270	53533	270	10300	10	0.25	0.75
6.00	950	0.66	229.289	10318	45	10300	10	0.12	0.75
6.00	950	0.57	256.585	34639	135	10300	10	0.12	0.55
5.00	950	0.52	278.273	41741	150	10300	10	0.12	0.55
4.00	950	0.47	311.401	280261	900	10300	10	0.12	0.55
4.00	950	0.42	355.658	42679	120	10300	10	0.12	0.37
4.00	950	0.36	397.999	286559	720	10300	10	0.12	0.37

Technical data at a glance

g500-S2100, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
322	1331	46.2	4.593	689	150	10430	12	7.50	30.00
245	1487	39.3	6.029	2279	378	11540	12	4.00	30.00
215	1487	34.5	6.870	371	54	12110	11	4.00	30.00
179	1487	28.7	8.272	3127	378	12980	11	2.20	22.00
156	1866	31.5	9.452	4017	425	13630	8	5.50	30.00
141	1872	28.4	10.504	1313	125	14180	8	5.50	30.00
119	2030	26.1	12.406	4429	357	15080	8	4.00	30.00
107	2047	23.7	13.787	4343	315	15680	8	4.00	22.00
105	2050	23.2	14.137	721	51	15700	8	4.00	22.00
94.0	2050	20.8	15.711	707	45	15700	8	4.00	22.00
87.0	2050	19.2	17.022	6077	357	15700	7	2.20	22.00
78.0	2050	17.4	18.917	5959	315	15700	7	2.20	18.50
71.0	2050	15.7	20.869	3193	153	15700	7	4.00	18.50
63.0	2050	14.0	23.193	3131	135	15700	7	4.00	15.00
52.0	2050	11.6	28.275	1442	51	15700	8	2.20	7.50
47.0	2050	10.4	31.422	1414	45	15700	8	2.20	7.50
43.0	2050	9.51	34.333	103	3	15700	8	2.20	7.50
39.0	2050	8.56	38.156	1717	45	15700	8	2.20	7.50
33.0	1983	7.00	44.431	2266	51	15700	8	1.10	4.00
29.0	2050	6.51	49.378	2222	45	15700	7	1.10	4.00
27.0	1957	5.68	53.924	9167	170	15700	7	1.10	4.00
24.0	2050	5.35	59.927	8989	150	15700	7	1.10	4.00
21.0	1454	3.34	68.162	4635	68	15700	7	1.10	2.20
19.0	1576	3.27	75.750	303	4	15700	7	1.10	2.20

Technical data at a glance

g500-S2100, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
37.0	1945	7.86	40.056	721	18	15700	8	2.20	7.50
33.0	2050	7.46	44.515	12019	270	15700	8	2.20	7.50
27.0	2050	6.04	54.933	824	15	15700	8	2.20	7.50
24.0	2050	5.37	61.049	13736	225	15700	8	2.20	5.50
21.0	2050	4.67	70.302	4429	63	15700	8	1.10	5.50
19.0	2050	4.25	76.907	5768	75	15700	8	1.10	4.00
19.0	2050	4.18	78.128	73831	945	15700	8	1.10	4.00
17.0	2050	3.82	85.468	96152	1125	15700	8	1.10	4.00
15.0	2050	3.32	98.095	2060	21	15700	8	0.55	4.00
13.0	2050	2.99	109.016	6868	63	15700	8	0.55	3.00
12.0	2050	2.72	120.167	721	6	15700	8	1.10	3.00
11.0	2050	2.45	133.544	12019	90	15700	8	1.10	3.00
9.00	2050	2.09	156.407	4223	27	15700	8	0.55	2.20
8.00	2050	1.89	173.820	70397	405	15700	8	0.55	2.20
7.00	2050	1.66	194.556	1751	9	15700	8	0.55	1.50
7.00	2050	1.51	216.215	29189	135	15700	8	0.55	1.50
6.00	2050	1.28	251.778	2266	9	15700	8	0.25	1.50
5.00	2050	1.17	279.807	37774	135	15700	8	0.25	1.10
5.00	2050	1.06	305.567	9167	30	15700	8	0.25	1.10
4.00	2050	0.97	339.584	152813	450	15700	8	0.25	1.10
4.00	1878	0.74	386.250	1545	4	15700	8	0.25	0.55
3.00	2050	0.74	429.250	1717	4	15700	8	0.25	0.55

Technical data at a glance

g500-S3100, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
298	1842	59.4	4.951	2847	575	14000	10	7.50	30.00
227	2110	51.8	6.499	3139	483	15000	10	4.00	30.00
200	2235	48.2	7.406	511	69	16000	10	4.00	30.00
166	2264	40.6	8.917	4307	483	16500	10	2.20	22.00
135	2275	33.2	10.932	2263	207	16800	10	4.00	22.00
133	3022	43.3	11.128	1391	125	17000	7	7.50	30.00
118	2965	37.6	12.584	1573	125	17500	7	7.50	30.00
101	3100	33.9	14.606	4601	315	18000	6	4.00	30.00
90.0	3100	29.9	16.517	5203	315	18200	6	4.00	30.00
89.0	3100	29.7	16.644	749	45	18600	6	4.00	30.00
78.0	3100	26.3	18.822	847	45	19000	6	4.00	30.00
74.0	3100	24.7	20.041	6313	315	19400	6	2.20	22.00
65.0	3100	21.9	22.663	7139	315	19800	6	2.20	22.00
60.0	3100	20.1	24.570	3317	135	19800	6	4.00	22.00
53.0	3100	17.8	27.785	3751	135	19800	6	4.00	22.00
44.0	3100	14.9	33.289	1498	45	19800	6	2.20	7.50
39.0	3100	13.1	37.644	1694	45	19800	6	2.20	7.50
36.0	3100	12.2	40.422	1819	45	19800	6	2.20	7.50
32.0	3100	10.8	45.711	2057	45	19800	6	2.20	7.50
28.0	2335	7.01	52.311	2354	45	19800	6	1.10	4.00
25.0	2641	7.01	59.156	2662	45	19800	6	1.10	4.00
23.0	2250	5.56	63.487	9523	150	19800	6	1.10	4.00
20.0	2408	5.25	71.793	10769	150	19800	6	1.10	4.00

Technical data at a glance

g500-S3100, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
31.0	2958	10.2	47.159	12733	270	19800	7	2.20	7.50
28.0	3054	9.27	53.330	14399	270	19800	7	2.20	7.50
23.0	3100	7.74	64.676	14552	225	19800	7	2.20	7.50
20.0	3100	6.86	73.138	16456	225	19800	7	2.20	7.50
18.0	3100	6.05	82.769	78217	945	19800	7	1.10	7.50
16.0	3100	5.47	90.546	101864	1125	19800	7	1.10	5.50
16.0	3100	5.30	93.599	88451	945	19800	7	1.10	5.50
14.0	3100	4.86	102.393	115192	1125	19800	6	1.10	5.50
13.0	3100	4.28	115.492	7276	63	19800	7	0.55	4.00
11.0	3100	3.77	130.603	8228	63	19800	6	0.55	4.00
10.0	3100	3.50	141.478	12733	90	19800	6	1.10	4.00
9.00	3100	3.09	159.989	14399	90	19800	6	1.10	3.00
8.00	3100	2.68	184.146	74579	405	19800	6	0.55	3.00
7.00	3100	2.38	208.240	84337	405	19800	6	0.55	2.20
6.00	3100	2.14	229.059	30923	135	19800	6	0.55	2.20
6.00	3100	1.90	259.030	34969	135	19800	6	0.55	2.20
5.00	3100	1.66	296.430	40018	135	19800	6	0.25	1.50
4.00	3100	1.46	335.215	45254	135	19800	6	0.25	1.50
4.00	3100	1.36	359.758	161891	450	19800	6	0.25	1.10
4.00	3100	1.19	406.829	183073	450	19800	6	0.25	1.10

Technical data at a glance

g500-S4500, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
301	2113	68.6	4.914	2457	500	16500	9	15.00	30.00
229	2451	60.6	6.450	129	20	18500	9	11.00	30.00
210	2535	57.3	7.056	882	125	19000	9	7.50	30.00
165	3845	68.6	8.944	1118	125	14000	6	15.00	30.00
148	4163	66.5	9.984	1248	125	16000	5	15.00	30.00
126	4451	60.5	11.740	3698	315	17000	6	11.00	30.00
115	4500	55.9	12.843	4816	375	18000	5	7.50	30.00
113	4500	54.8	13.105	1376	105	18500	5	11.00	30.00
103	4500	50.1	14.336	1792	125	19000	5	7.50	30.00
90.0	4500	43.8	16.381	344	21	21000	5	4.00	30.00
81.0	4500	39.2	18.286	128	7	22000	5	4.00	30.00
74.0	4500	35.8	20.067	301	15	23500	5	5.50	22.00
66.0	4500	32.1	22.400	112	5	25000	4	5.50	22.00
56.0	4500	27.2	26.437	3569	135	27000	5	4.00	22.00
50.0	4500	24.4	29.511	1328	45	29000	4	4.00	22.00
46.0	4500	22.1	32.489	1462	45	30000	5	4.00	22.00
41.0	4500	19.8	36.267	544	15	30000	4	4.00	22.00
35.0	4101	15.5	42.044	1892	45	30000	5	2.20	7.50
32.0	4394	14.9	46.933	704	15	30000	4	2.20	7.50
29.0	3653	11.4	51.027	3827	75	30000	5	2.20	7.50
26.0	3946	11.0	56.960	1424	25	30000	4	2.20	7.50
22.0	2414	5.86	64.500	129	2	30000	5	2.20	4.00
20.0	2586	5.64	72.000	72	1	30000	4	2.20	4.00

Technical data at a glance

g500-S4500, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
39.0	4150	17.7	38.090	49708	1305	30000	6	4.00	22.00
35.0	4291	16.4	42.520	18496	435	30000	5	4.00	18.50
28.0	4500	13.7	52.794	9503	180	30000	5	4.00	15.00
25.0	4500	12.3	58.933	884	15	30000	5	4.00	15.00
23.0	4500	11.2	64.978	2924	45	30000	5	2.20	11.00
20.0	4500	10.1	72.533	1088	15	30000	5	2.20	11.00
20.0	4500	10.0	72.775	81872	1125	30000	5	2.20	11.00
18.0	4500	8.97	81.237	30464	375	30000	5	2.20	11.00
16.0	4500	7.84	92.825	5848	63	30000	5	1.10	7.50
14.0	4500	7.05	103.619	2176	21	30000	5	1.10	7.50
13.0	4500	6.41	113.711	5117	45	30000	5	2.20	7.50
12.0	4500	5.67	126.933	1904	15	30000	5	2.20	5.50
10.0	4500	4.88	148.005	59942	405	30000	5	1.10	5.50
9.00	4500	4.34	165.215	22304	135	30000	5	1.10	4.00
8.00	4500	3.94	181.396	48977	270	30000	5	1.10	4.00
7.00	4500	3.55	202.489	9112	45	30000	5	1.10	4.00
6.00	4500	3.01	238.252	32164	135	30000	5	0.55	3.00
5.00	4500	2.66	265.956	11968	45	30000	5	0.55	3.00
5.00	4500	2.47	289.151	65059	225	30000	5	0.55	2.20
4.00	4500	2.22	322.773	24208	75	30000	5	0.55	2.20
4.00	3962	1.74	365.500	731	2	30000	5	0.55	1.10
4.00	4410	1.69	408.000	408	1	30000	5	0.55	1.10

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	Applications	Product	
		g500-H45 ... H450 g500-S130 ... S660 g500-B45 ... B450	g500-H600 ... H3000 g500-S950 ... S4500 g500-B600 ... B4300
Without OKS(uncoated) [1]	• Indoor installation, no special corrosion protection necessary • Paint provided by the customer	Standard	
OKS-G (primed)	• Dependent on subsequent top coat applied	Optional	Optional
OKS-S (small)	• Standard applications • Internal installation in heated buildings • Air humidity up to 90%		Standard
OKS-M (medium)	• Internal installation in non-heated buildings • Covered, protected external installation • Air humidity up to 95%		
OKS-L (large)	• External installation • Air humidity above 95% • Chemical industry plants • Food industry		Optional
OKS-XL (extra Large) [2]	• External installation • Air humidity above 95 % • Chemical industry plants • Food industry • Coastal areas with moderate salinity		

[1] Aluminium parts are uncoated, fan covers are zinc-coated or primed in grey, cast iron parts primed in grey.
Light colour deviations of the components are possible.

[2] On request

Surface and corrosion protection

Structure of surface coating

Surface and corrosion protection	Corrosivity category	Surface coating	Colour	Coating thickness
	DIN EN ISO 12944-2	Structure		
Without OKS(uncoated)		• Dipping primer of the grey iron parts		30 ... 50 µm
OKS-G (primed)		• Dipping primer of the grey iron parts • 2K PUR priming coat		60 ... 90 µm
OKS-S (small)	Comparable to C1	• Dipping primer of the grey iron parts • 2K-PUR top coat	• Standard: RAL 7012 • Optional: RAL Classic	80 ... 120 µm
OKS-M (medium)	Comparable to C2	• Dipping primer of the grey iron parts • 2K PUR priming coat • 2K-PUR top coat		110 ... 160 µm
OKS-L (large)	Comparable to C3			140 ... 200 µm
OKS-XL (extra Large) [1)]	Comparable to C4	• Dipping primer of the grey iron parts • 2K-EP priming coat (two times) • 2K-PUR top coat		160 ... 240 µm

[1)] On request

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 amount and type of lubricant contained in the gearbox are given on the nameplate.

The following gearboxes are lubricated for life:
- shaft-mounted helical gearboxes g500-S130 ... 220

Lubricant table

The following lubricants are recommended:

Mode	CLP 220	CLP 460	CLP HC 220
Ambient temperature [°C]	0 ... +40		-25 ... +50
Specification	Mineral oil with EP additives		Synthetic oil (polyalfaolefins basis)
Changing interval	16000 operating hours After 3 years at the latest Oil temperature 70 °C		25000 operating hours After 4 years at the latest Oil temperature 70 °C
Fuchs	Renolin CLP 220 CLP Plus 220	Renolin CLP 460 CLP Plus 460	Renolin Unisyn CLP 220 XT220
Klüber	Klüberoil GEM 1-220 N	Klüberoil GEM 1-460 N	Klübersynth GEM 4-220 N
Shell	Shell Omala S2 G 220 S2 GX 220	Shell Omala S2 G 460 S2 GX 460	Shell Omala S4 GX HD 220

Mode	CLP HC 320	CLP HC 220 USDA H1	CLP PG 460 USDA H1
Ambient temperature [°C]	-25 ... +50	-20 ... +40	
Specification	Synthetic oil (polyalfaolefins basis)		Synthetic oil (polyglycol basis)
Changing interval	25000 operating hours After 4 years at the latest Oil temperature 70 °C	16000 operating hours After 3 years at the latest Oil temperature 70 °C	
Fuchs	Renolin Unisyn CLP 320 XT 320	Cassida Fluid GL 220	Cassida Fluid WG 460
Klüber	Klübersynth GEM 4-320 N	Klüberoil 4 UH1-220 N	Klüberoil UH1 6-460
Shell	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.

Shaft sealing rings

By default, the gearboxes come with NBR shaft sealing rings at the output end. At high speed and unfavourable ambient conditions such as high temperature, reduced circulation of air etc., Lenze recommends the use of FKM (Viton) shaft sealing rings.

Please consider this in your order.

Ventilation

Non-ventilated gearboxes

No ventilation is required for the gearboxes g500-S130 ... S220

Ventilated gearboxes

The gearbox g500-S220 can be optionally ordered with breather elements.
From g500-S400 onwards, the gearboxes are supplied with a breather element as standard.

Gearbox in combined mounting position

For reducing the number of versions, the gearboxes can also be ordered in a combined mounting position:

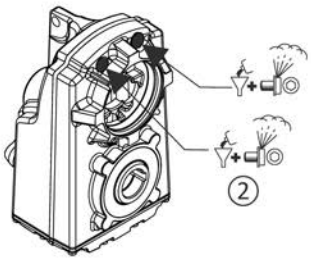
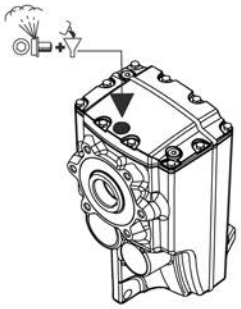
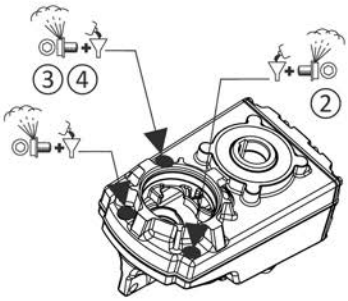
- g500-S130 ... S660 in mounting position AEF

In these gearboxes, the lubricant amount has been optimised for the use in different mounting positions. -H45 in mounting position ABCDEFg500-H100 ... H450 in mounting position AEF In these gearboxes, the lubricant amount has been optimised for the use in different mounting positions. If required, the breather elements are loosely enclosed and have to be mounted before commissioning depending on the mounting position.
A gearbox can be used for several mounting positions.

Ventilation

Position of ventilation, sealing elements and oil level check

g500-S220 ... S660

Mounting position A	Mounting position B	Mounting position C
Filling and ventilation		
		
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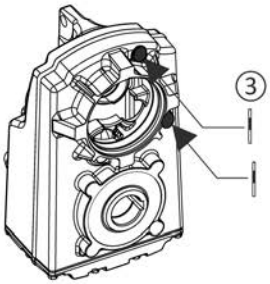	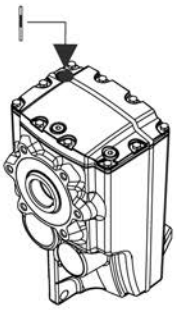	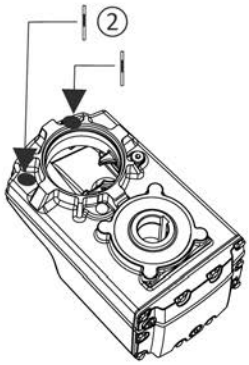
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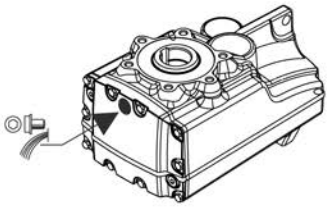
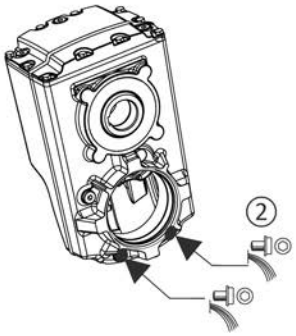
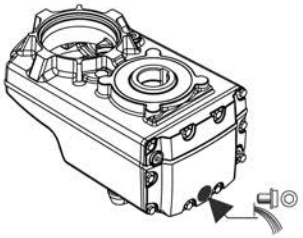
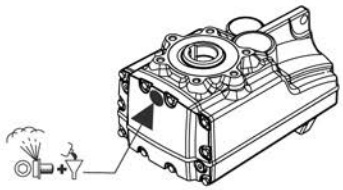
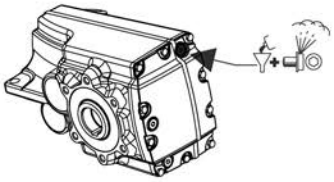
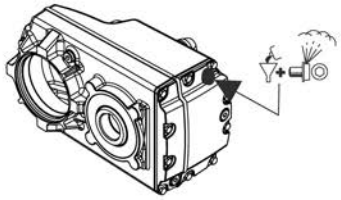
		

② g500-S220
③ g500-S400
④ g500-S660

Ventilation

Position of ventilation, sealing elements and oil level check

g500-S220 ... S660

Mounting position D	Mounting position E	Mounting position F
Filling and ventilation		
		
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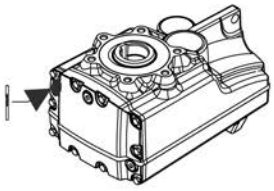	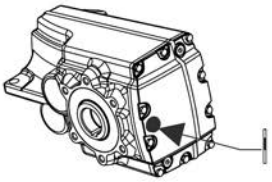	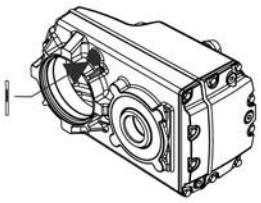
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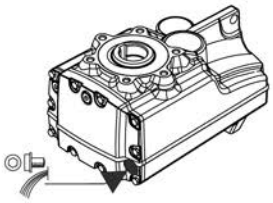
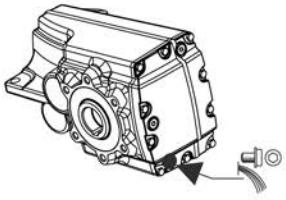
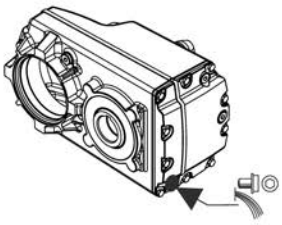
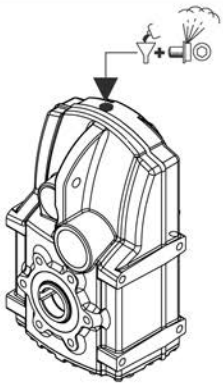
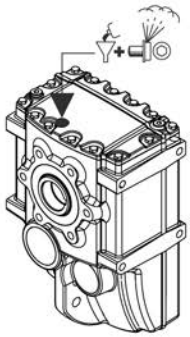
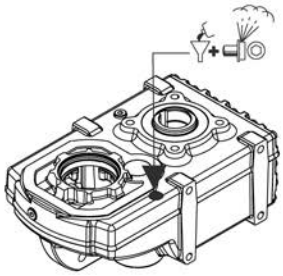
		

Ventilation

Position of ventilation, sealing elements and oil level check

g500-S950 ... S4500

Mounting position A	Mounting position B	Mounting position C
Filling and ventilation		
		
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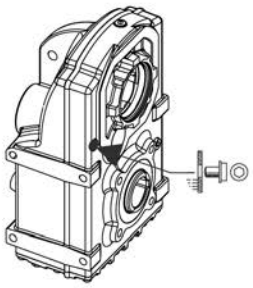
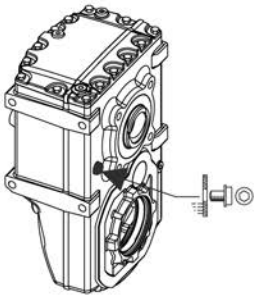
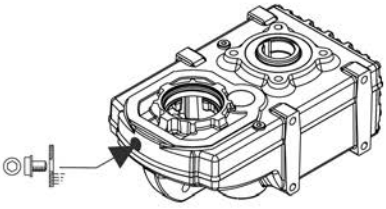
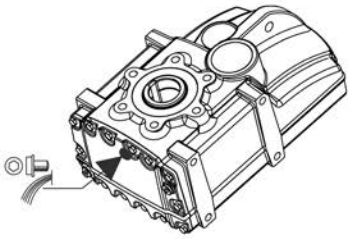
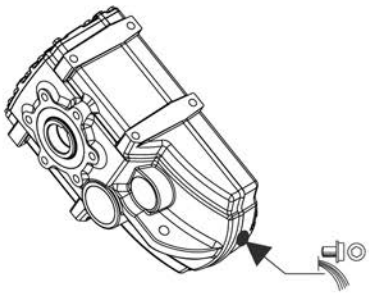
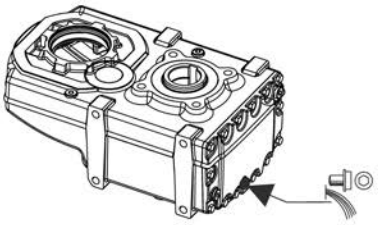
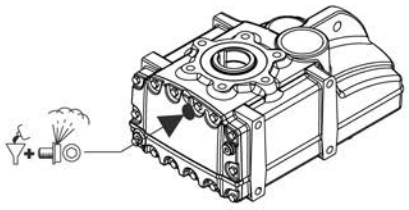
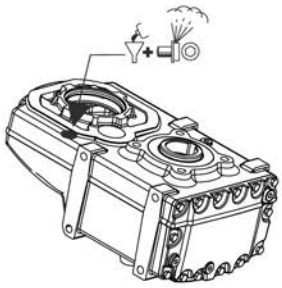
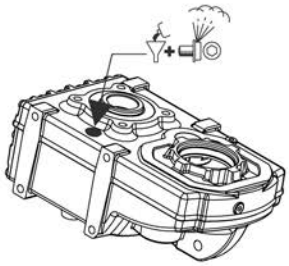
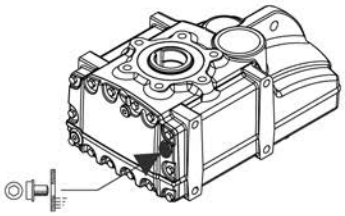
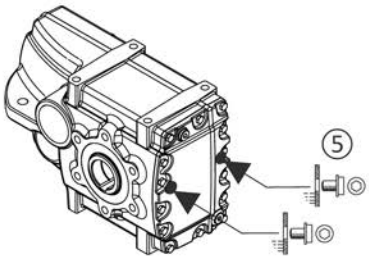
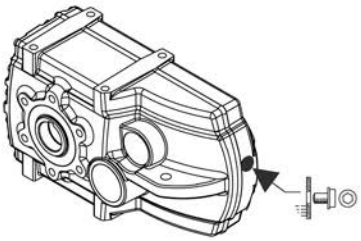
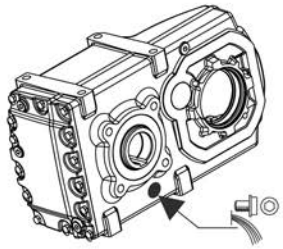
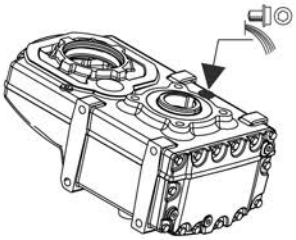
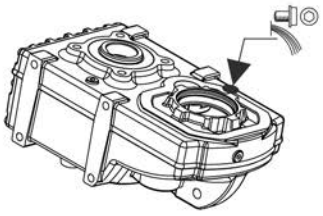
		
Drain		
		

Ventilation

Position of ventilation, sealing elements and oil level check

g500-S950 ... S4500

Mounting position D	Mounting position E	Mounting position F
Filling and ventilation		
		
Check		
		
Drain		
		

⑤ g500-S3100

6.4

Standards and operating conditions

Geared motor data

Product			
Motor			MF□MA□□
Enclosure			
EN 60529			IP55 [1] IP65 [1] IP66 [1]
Energy efficiency class			
IEC 60034-30			Better than IE2
IEC 60034-2-1			Methodology for measuring efficiency
10 CFR Part 431 (U.S. Integral hp Rule)			
GB18613-2012 (China Energy Label optional)			
Conformity			
CE			Low-Voltage Directive
			2006/95/EC
EAC			TP TC 004/2011 (TR CU 004/2011)
Approval			
CCC			GB Standard 12350-2009
CSA			CSA 22.2 No. 100
cURus			UL 1004-1 UL 1004-8 File-No. E210321
Temperature class			
IEC/EN 60034-1; utilisation			B
IEC/EN 60034-1; insulation system (enamel-insulated wire)			F
Min. ambient operating temperature			
	$T_{opr,min}$	[°C]	-20
Max. ambient operating temperature			
	$T_{opr,max}$	[°C]	40
With power reduction	$T_{opr,max}$	[°C]	60 [2]
Site altitude			
Current derating at over 1000 m		[%/1000 m]	5.00
Amsl	H_{max}	[m]	4000

[1] Designs with different degrees of protection:
IP55 with brake (IP54 with manual release lever).
IP54 with resolver RS1.
IP54 with HTL incremental encoder IG128-24V-H.
[2] In case of cURus max. 40 °C are permissible.

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

Permissible radial and axial forces at output

Permissible radial force

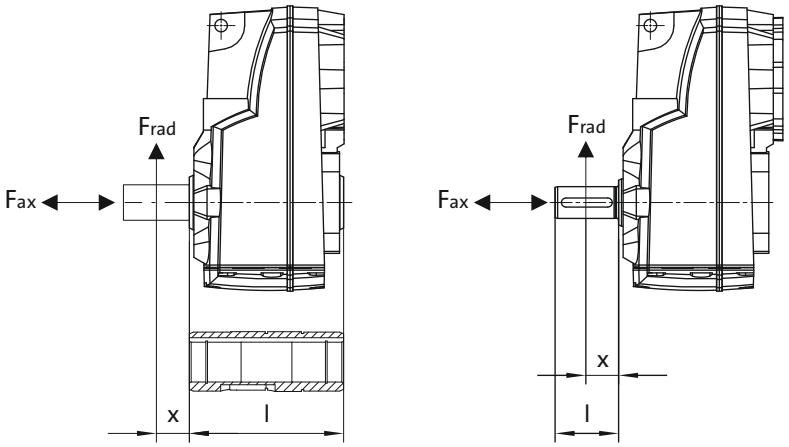
$F_{rad,perm} = f_w \times F_{rad,max}$

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

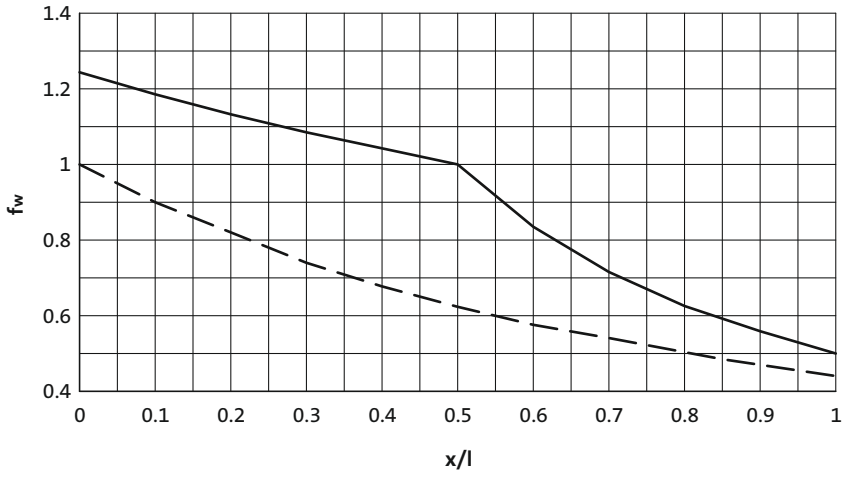
Permissible axial force

If there is no radial force, the maximum permissible axial force is 50 % of the table value $F_{rad,max}$

Application of forces



Additional load factor f_w at output shaft



6.4

——— Solid shaft
— — — Hollow shaft

Permissible radial and axial forces at output

The values given in the table refer to the center shaft end force application point and are minimum values calculated according to the most unfavourable conditions (force application angle, mounting position, direction of rotation). The values were calculated for the motor/gearbox combination with a load capacity of c= 1.3 and an input speed of 1400 r/min.

In case of different operating conditions, considerably higher forces can be transmitted. Please contact Lenze.

► A hollow shaft with shrink disc requires a check by Lenze.

Product	n_2 [r/min]						
	250	160	100	63	40	25	≤16
	Max. radial force, Hollow shaft						
	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]
g500-S130	1500	1650	2200	2750	3450	4200	4500
g500-S220	3200	3800	4600	5500	6300	7000	7000
g500-S400	3400	4100	5000	6000	7100	8000	8000
g500-S660	4000	5000	6600	8500	10800	12000	12000
g500-S950	5000	6000	8000	10300	11500	12500	13000
g500-S2100	6500	7500	10000	12000	15700	15700	16000
g500-S3100	8000	9000	12500	15000	17000	19800	19800
g500-S4500	17500	19000	20000	23000	30000	30000	30000
	Max. radial force, Solid shaft without flange						
	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]
g500-S130	1500	1650	2200	2750	3450	4200	4500
g500-S220	2700	3200	3600	3600	3600	3600	3600
g500-S400	2700	3200	4000	4800	5800	6200	6200
g500-S660	3600	3900	5100	6500	8400	9000	9000
g500-S950	9500	10300	10300	10300	10300	10300	10300
g500-S2100	11500	13600	15700	15700	15700	15700	15700
g500-S3100	14500	16500	18000	19800	19800	19800	19800
g500-S4500	18500	20000	22000	25000	30000	30000	30000
	Max. radial force, Solid shaft with flange						
	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]
g500-S130	1500	1650	2200	2750	3450	4200	4500
g500-S220	3700	4400	4600	4600	4600	4600	4600
g500-S400	5100	5900	6800	7000	7000	7000	7000
g500-S660	7000	7800	9600	10000	10000	10000	10000
g500-S950	7500	8500	10300	10300	10300	10300	10300
g500-S2100	11500	13600	15700	15700	15700	15700	15700
g500-S3100	19800	19800	19800	19800	19800	19800	19800
g500-S4500	27000	28000	30000	30000	30000	30000	30000

Selection tables, notes

Notes on the selection tables with 4-pole motors

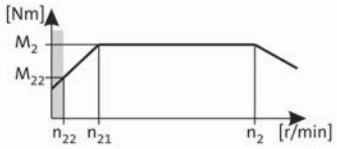
The selection tables show the available combinations of gearbox type, number of stages, ratio and motor. They are used only to provide basic orientation.
The following legend indicates the structure of the selection tables.

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

120 Hz: P_N = 0.55 kW

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

Torque diagram



Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
23	7.2	93	10	535	10	4.5	6.425	-S130	063-32	36
21	7.9	85	10	489	10	4.5	7.029	-S130	063-32	36

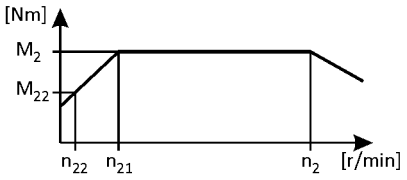
Product Gearbox
Product Motor
Ratio i
Page number for dimensions

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.

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**.

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

Selection tables, 4-pole motors

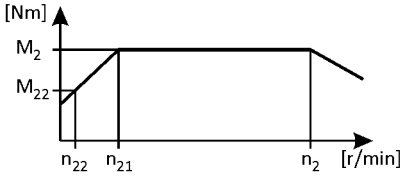


120 Hz: P_N = 0.55 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
40	4.1	164	5.0	940	5.0	4.8	3.661	-S130	063-32	99
29	5.6	120	7.0	685	7.0	4.8	5.021	-S130	063-32	99
23	7.2	94	9.0	537	9.0	4.8	6.411	-S400	063-32	109
23	7.2	93	10	535	10	4.5	6.425	-S130	063-32	99
21	7.9	85	10	489	10	4.5	7.029	-S130	063-32	99
17	9.3	72	12	413	12	4.8	8.322	-S130	063-32	99
15	11	64	14	366	14	4.8	9.411	-S130	063-32	99
13	13	53	17	301	17	4.8	11.413	-S130	063-32	99
11	15	47	19	267	19	4.8	12.907	-S130	063-32	99
11	15	46	19	265	19	4.8	12.992	-S220	063-32	104
10	16	42	21	240	21	4.8	14.336	-S400	063-32	109
9.9	16	41	22	236	22	4.5	14.606	-S130	063-32	99
9.9	17	41	22	234	22	4.8	14.720	-S220	063-32	104
9.1	18	38	24	215	24	4.2	15.979	-S130	063-32	99
9.0	18	37	24	212	24	4.8	16.197	-S400	063-32	109
8.8	19	36	25	208	25	4.5	16.571	-S220	063-32	104
8.0	20	33	27	190	27	4.2	18.069	-S130	063-32	99
7.9	21	33	27	188	27	5.1	18.286	-S400	063-32	109
7.7	21	32	28	183	28	5.1	18.776	-S220	063-32	104
7.1	23	29	30	169	30	3.7	20.381	-S130	063-32	99
7.0	23	29	31	167	31	5.1	20.659	-S400	063-32	109
6.3	26	26	34	149	34	3.3	23.048	-S130	063-32	99
5.8	28	24	37	138	37	3.0	24.967	-S130	063-32	99
5.5	30	23	39	130	39	4.2	26.422	-S220	063-32	104
5.1	32	21	42	122	42	2.7	28.233	-S130	063-32	99
5.0	33	21	43	118	43	4.2	29.156	-S400	063-32	109
4.8	34	20	44	115	44	4.2	29.937	-S220	063-32	104
4.6	35	19	46	110	46	2.7	31.387	-S130	063-32	99
4.4	37	18	49	105	49	4.0	32.867	-S220	063-32	104
4.4	37	18	49	104	49	4.7	32.940	-S400	063-32	109
4.1	40	17	53	97	53	2.4	35.493	-S130	063-32	99
4.0	41	17	54	95	54	4.0	36.267	-S400	063-32	109
3.9	42	16	55	92	55	3.8	37.238	-S220	063-32	104
3.6	45	15	60	85	60	4.0	40.333	-S660	063-32	114
3.6	45	15	60	85	60	2.1	40.422	-S130	063-32	99

Selection tables, 4-pole motors



120 Hz: P_N = 0.55 kW

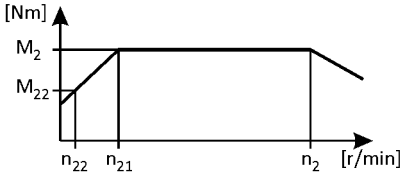
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
3.5	46	15	61	84	61	4.0	40.974	-S400	063-32	109
3.4	48	14	63	81	63	3.3	42.533	-S220	063-32	104
3.2	51	13	68	75	68	1.8	45.711	-S130	063-32	99
3.2	52	13	68	75	68	4.0	45.956	-S660	063-32	114
3.1	53	13	70	73	70	3.6	46.933	-S400	063-32	109
3.0	54	13	71	71	71	2.9	48.190	-S220	063-32	104
3.0	55	12	73	70	73	3.5	48.950	-S660	063-32	114
2.8	57	12	76	67	76	1.6	51.230	-S130	063-32	99
2.8	58	12	76	67	76	2.8	51.620	-S220	063-32	104
2.7	59	11	79	65	79	3.6	53.026	-S400	063-32	109
2.6	63	11	83	62	83	3.5	55.773	-S660	063-32	114
2.5	64	11	84	60	84	3.0	56.960	-S400	063-32	109
2.5	65	10	86	59	86	1.5	57.933	-S130	063-32	99
2.5	66	10	87	59	87	2.4	58.486	-S220	063-32	104
2.3	72	9.3	95	54	95	1.3	64.200	-S130	063-32	99
2.3	72	9.3	95	54	95	3.0	64.354	-S400	063-32	109
2.2	74	9.1	98	52	98	1.5	65.975	-S220	063-32	104
2.0	81	8.3	108	47	108	1.2	72.600	-S130	063-32	99
1.9	84	8.0	111	46	111	1.5	74.750	-S220	063-32	104

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
3.6	44	15	58	86	58	2.9	40.012	-S220	063-32	104
3.2	50	13	66	76	66	2.5	45.333	-S220	063-32	104
2.9	55	12	73	69	73	5.5	49.867	-S660	063-32	114
2.8	58	11	77	65	77	2.5	52.587	-S220	063-32	104
2.6	63	11	83	61	83	5.5	56.818	-S660	063-32	114
2.5	64	10	85	59	85	4.1	58.027	-S400	063-32	109
2.4	66	10	87	58	87	2.2	59.581	-S220	063-32	104
2.3	71	9.4	93	54	93	5.1	63.817	-S660	063-32	114
2.2	72	9.2	96	53	96	3.6	65.559	-S400	063-32	109
2.2	74	8.9	98	51	98	1.9	67.298	-S220	063-32	104
2.1	77	8.6	102	49	102	5.1	69.813	-S660	063-32	114
2.0	80	8.3	106	47	106	5.7	72.713	-S660	063-32	114
2.0	82	8.1	108	46	108	3.5	74.260	-S400	063-32	109
1.9	84	7.9	111	45	111	1.9	76.249	-S220	063-32	104
1.8	88	7.5	116	43	116	5.4	79.545	-S660	063-32	114
1.7	93	7.2	122	41	122	3.1	83.900	-S400	063-32	109

Selection tables, 4-pole motors

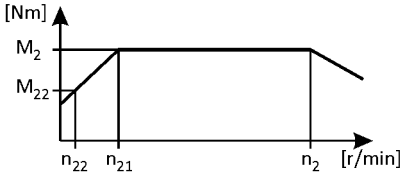


120 Hz: P_N = 0.55 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
1.7	95	7.0	126	40	126	1.7	86.079	-S220	063-32	104
1.6	98	6.7	130	39	130	4.9	89.048	-S660	063-32	114
1.6	99	6.7	130	39	130	5.7	89.333	-S950	063-32	119
1.5	105	6.3	139	36	139	2.8	94.984	-S400	063-32	109
1.5	108	6.2	142	35	142	1.5	97.528	-S220	063-32	104
1.5	110	6.0	146	34	146	5.7	99.968	-S950	063-32	119
1.4	112	5.9	148	34	148	4.3	101.460	-S660	063-32	114
1.4	119	5.6	157	32	157	2.4	107.314	-S400	063-32	109
1.3	121	5.5	159	32	159	4.0	109.083	-S660	063-32	114
1.3	123	5.4	163	31	163	1.3	111.747	-S220	063-32	104
1.2	136	4.9	180	28	180	2.1	123.307	-S400	063-32	109
1.2	137	4.8	181	28	181	3.5	124.289	-S660	063-32	114
1.1	140	4.7	185	27	185	1.1	126.610	-S220	063-32	104
1.1	151	4.4	200	25	200	3.2	137.133	-S660	063-32	114
1.0	154	4.3	203	25	203	1.9	139.313	-S400	063-32	109
1.0	157	4.2	208	24	208	4.4	142.437	-S950	063-32	119
1.0	158	4.2	209	24	209	1.0	143.205	-S220	063-32	104
0.9	173	3.8	228	22	228	2.8	156.249	-S660	063-32	114
0.9	175	3.8	231	22	231	1.7	158.019	-S400	063-32	109
0.9	176	3.8	233	22	233	3.9	159.394	-S950	063-32	119
0.9	179	3.7	237	21	237	0.9	162.252	-S220	063-32	104
0.8	195	3.4	258	20	258	2.5	176.611	-S660	063-32	114
0.8	196	3.4	259	19	259	3.5	177.178	-S950	063-32	119
0.8	197	3.4	260	19	260	1.5	178.531	-S400	063-32	109
0.7	219	3.0	289	17	289	3.1	198.270	-S950	063-32	119
0.7	222	3.0	294	17	294	2.2	201.230	-S660	063-32	114
0.7	226	2.9	298	17	298	1.3	204.412	-S400	063-32	109
0.6	247	2.7	327	15	327	1.9	223.833	-S660	063-32	114
0.6	253	2.6	335	15	335	2.7	229.289	-S950	063-32	119
0.6	255	2.6	337	15	337	1.1	230.946	-S400	063-32	109
0.6	278	2.4	367	14	367	4.0	251.778	-S2100	063-32	122
0.6	282	2.4	372	14	372	1.7	255.034	-S660	063-32	114
0.6	283	2.3	374	13	374	2.4	256.585	-S950	063-32	119
0.5	294	2.3	388	13	388	1.0	265.956	-S400	063-32	109
0.5	307	2.2	406	12	406	2.2	278.273	-S950	063-32	119

Selection tables, 4-pole motors

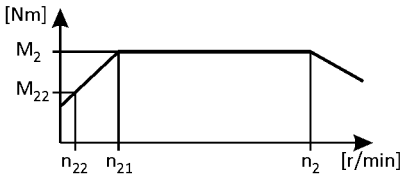


120 Hz: P_N = 0.55 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
0.5	309	2.1	408	12	408	4.0	279.807	-S2100	063-32	122
0.5	310	2.1	409	12	409	1.3	280.500	-S660	063-32	114
0.5	327	2.0	433	12	433	4.0	296.430	-S3100	063-32	125
0.5	332	2.0	438	11	438	0.9	300.479	-S400	063-32	109
0.5	337	2.0	446	11	446	3.5	305.567	-S2100	063-32	122
0.5	344	1.9	454	11	454	2.0	311.401	-S950	063-32	119
0.5	353	1.9	466	11	466	1.3	319.600	-S660	063-32	114
0.4	370	1.8	489	10	489	4.0	335.215	-S3100	063-32	125
0.4	375	1.8	495	10	495	3.5	339.584	-S2100	063-32	122
0.4	393	1.7	519	9.7	519	1.5	355.658	-S950	063-32	119
0.4	397	1.7	525	9.6	525	3.5	359.758	-S3100	063-32	125
0.4	427	1.6	564	8.9	564	2.8	386.250	-S2100	063-32	122
0.4	440	1.5	581	8.6	581	1.5	397.999	-S950	063-32	119
0.4	449	1.5	594	8.5	594	3.5	406.829	-S3100	063-32	125
0.3	474	1.4	626	8.0	626	2.8	429.250	-S2100	063-32	122

Selection tables, 4-pole motors

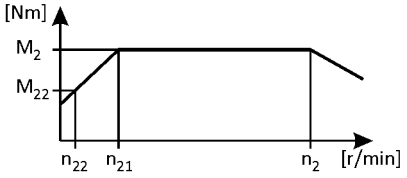


120 Hz: P_N = 0.75 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
40	5.6	164	7.0	929	7.0	3.5	3.661	-S130	063-42	99
29	7.7	120	10	677	10	3.5	5.021	-S130	063-42	99
23	9.8	94	13	530	13	3.5	6.411	-S400	063-42	109
23	9.8	93	13	529	13	3.3	6.425	-S130	063-42	99
21	11	85	14	484	14	3.3	7.029	-S130	063-42	99
17	13	72	17	409	17	3.5	8.322	-S130	063-42	99
15	14	64	19	361	19	3.5	9.411	-S130	063-42	99
13	17	53	23	298	23	3.5	11.413	-S130	063-42	99
11	20	47	26	263	26	3.5	12.907	-S130	063-42	99
11	20	46	27	262	27	3.5	12.992	-S220	063-42	104
10	22	42	29	237	29	3.5	14.336	-S400	063-42	109
9.9	22	41	30	233	30	3.3	14.606	-S130	063-42	99
9.9	23	41	30	231	30	3.5	14.720	-S220	063-42	104
9.1	24	38	33	213	33	3.0	15.979	-S130	063-42	99
9.0	25	37	33	210	33	3.5	16.197	-S400	063-42	109
8.8	25	36	34	205	34	3.3	16.571	-S220	063-42	104
8.0	28	33	37	188	37	3.0	18.069	-S130	063-42	99
7.9	28	33	37	186	37	3.7	18.286	-S400	063-42	109
7.7	29	32	38	181	38	3.7	18.776	-S220	063-42	104
7.1	31	29	42	167	42	2.7	20.381	-S130	063-42	99
7.0	32	29	42	165	42	3.7	20.659	-S400	063-42	109
6.3	35	26	47	148	47	2.4	23.048	-S130	063-42	99
5.8	38	24	51	136	51	2.2	24.967	-S130	063-42	99
5.5	40	23	54	129	54	3.1	26.422	-S220	063-42	104
5.1	43	21	58	120	58	2.0	28.233	-S130	063-42	99
5.0	45	21	60	117	60	3.1	29.156	-S400	063-42	109
4.8	46	20	61	114	61	3.1	29.937	-S220	063-42	104
4.6	48	19	64	108	64	1.9	31.387	-S130	063-42	99
4.4	50	18	67	103	67	2.9	32.867	-S220	063-42	104
4.4	50	18	67	103	67	3.4	32.940	-S400	063-42	109
4.1	54	17	73	96	73	1.7	35.493	-S130	063-42	99
4.0	55	17	74	94	74	2.9	36.267	-S400	063-42	109
3.9	57	16	76	91	76	2.8	37.238	-S220	063-42	104
3.6	62	15	82	84	82	2.9	40.333	-S660	063-42	114
3.6	62	15	83	84	83	1.5	40.422	-S130	063-42	99

Selection tables, 4-pole motors



120 Hz: P_N = 0.75 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
3.5	63	15	84	83	84	2.9	40.974	-S400	063-42	109
3.4	65	14	87	80	87	2.4	42.533	-S220	063-42	104
3.2	70	13	93	74	93	1.3	45.711	-S130	063-42	99
3.2	70	13	94	74	94	2.9	45.956	-S660	063-42	114
3.1	72	13	96	72	96	2.6	46.933	-S400	063-42	109
3.0	74	13	98	71	98	2.1	48.190	-S220	063-42	104
3.0	75	12	100	70	100	2.5	48.950	-S660	063-42	114
2.8	78	12	105	66	105	1.2	51.230	-S130	063-42	99
2.8	79	12	105	66	105	2.0	51.620	-S220	063-42	104
2.7	81	11	108	64	108	2.6	53.026	-S400	063-42	109
2.6	85	11	114	61	114	2.5	55.773	-S660	063-42	114
2.5	87	11	116	60	116	2.2	56.960	-S400	063-42	109
2.5	89	10	118	59	118	1.1	57.933	-S130	063-42	99
2.5	89	10	120	58	120	1.8	58.486	-S220	063-42	104
2.3	98	9.3	131	53	131	1.0	64.200	-S130	063-42	99
2.3	98	9.3	132	53	132	2.2	64.354	-S400	063-42	109
2.2	101	9.1	135	52	135	1.1	65.975	-S220	063-42	104
2.0	111	8.3	148	47	148	0.8	72.600	-S130	063-42	99
1.9	114	8.0	153	46	153	1.1	74.750	-S220	063-42	104

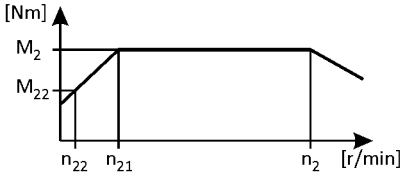
3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
3.6	60	15	81	85	81	2.1	40.012	-S220	063-42	104
3.2	68	13	91	75	91	1.8	45.333	-S220	063-42	104
2.9	75	12	100	68	100	4.0	49.867	-S660	063-42	114
2.8	79	11	106	65	106	1.8	52.587	-S220	063-42	104
2.6	86	11	114	60	114	4.0	56.818	-S660	063-42	114
2.5	87	10	117	59	117	3.0	58.027	-S400	063-42	109
2.4	90	10	120	57	120	1.6	59.581	-S220	063-42	104
2.3	96	9.4	128	53	128	3.7	63.817	-S660	063-42	114
2.2	99	9.2	132	52	132	2.6	65.559	-S400	063-42	109
2.2	101	8.9	135	51	135	1.4	67.298	-S220	063-42	104
2.1	105	8.6	141	49	141	3.7	69.813	-S660	063-42	114
2.1	106	8.6	141	49	141	4.4	70.037	-S950	063-42	119
2.0	110	8.3	146	47	146	4.2	72.713	-S660	063-42	114
2.0	112	8.1	149	46	149	2.6	74.260	-S400	063-42	109
1.9	115	7.9	153	45	153	1.4	76.249	-S220	063-42	104
1.9	118	7.7	158	43	158	4.4	78.375	-S950	063-42	119

Selection tables, 4-pole motors

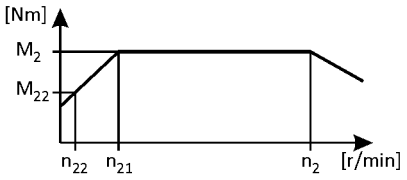
120 Hz: P_N = 0.75 kW

3-stage gearboxes



Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
1.8	120	7.5	160	43	160	4.0	79.545	-S660	063-42	114
1.7	126	7.2	169	41	169	2.3	83.900	-S400	063-42	109
1.7	130	7.0	173	40	173	1.2	86.079	-S220	063-42	104
1.6	134	6.7	179	38	179	3.5	89.048	-S660	063-42	114
1.6	135	6.7	180	38	180	4.2	89.333	-S950	063-42	119
1.5	143	6.3	191	36	191	2.0	94.984	-S400	063-42	109
1.5	147	6.2	196	35	196	1.1	97.528	-S220	063-42	104
1.5	151	6.0	201	34	201	4.2	99.968	-S950	063-42	119
1.4	153	5.9	204	34	204	3.1	101.460	-S660	063-42	114
1.4	162	5.6	216	32	216	1.8	107.314	-S400	063-42	109
1.3	164	5.5	220	31	220	2.9	109.083	-S660	063-42	114
1.3	168	5.4	225	30	225	0.9	111.747	-S220	063-42	104
1.2	186	4.9	248	28	248	1.6	123.307	-S400	063-42	109
1.2	187	4.8	250	27	250	2.5	124.289	-S660	063-42	114
1.1	191	4.7	255	27	255	0.8	126.610	-S220	063-42	104
1.1	207	4.4	276	25	276	2.3	137.133	-S660	063-42	114
1.0	210	4.3	280	24	280	1.4	139.313	-S400	063-42	109
1.0	215	4.2	287	24	287	3.2	142.437	-S950	063-42	119
0.9	235	3.8	315	22	315	2.0	156.249	-S660	063-42	114
0.9	238	3.8	318	22	318	1.2	158.019	-S400	063-42	109
0.9	240	3.8	321	21	321	2.8	159.394	-S950	063-42	119
0.8	266	3.4	356	19	356	1.8	176.611	-S660	063-42	114
0.8	267	3.4	357	19	357	2.6	177.178	-S950	063-42	119
0.8	269	3.4	359	19	359	1.1	178.531	-S400	063-42	109
0.7	299	3.0	399	17	399	2.3	198.270	-S950	063-42	119
0.7	303	3.0	405	17	405	1.6	201.230	-S660	063-42	114
0.7	308	2.9	411	17	411	0.9	204.412	-S400	063-42	109
0.6	337	2.7	451	15	451	1.4	223.833	-S660	063-42	114
0.6	345	2.6	462	15	462	2.0	229.289	-S950	063-42	119
0.6	348	2.6	465	15	465	0.8	230.946	-S400	063-42	109
0.6	379	2.4	507	14	507	2.9	251.778	-S2100	063-42	122
0.6	384	2.4	513	13	513	1.2	255.034	-S660	063-42	114
0.6	386	2.3	517	13	517	1.8	256.585	-S950	063-42	119
0.5	419	2.2	560	12	560	1.6	278.273	-S950	063-42	119
0.5	421	2.1	563	12	563	2.9	279.807	-S2100	063-42	122

Selection tables, 4-pole motors

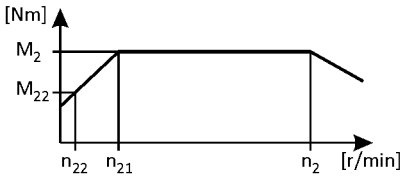


120 Hz: P_N = 0.75 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
0.5	422	2.1	565	12	565	1.0	280.500	-S660	063-42	114
0.5	446	2.0	597	12	597	2.9	296.430	-S3100	063-42	125
0.5	460	2.0	615	11	615	2.5	305.567	-S2100	063-42	122
0.5	469	1.9	627	11	627	1.5	311.401	-S950	063-42	119
0.5	481	1.9	643	11	643	1.0	319.600	-S660	063-42	114
0.4	505	1.8	675	10	675	2.9	335.215	-S3100	063-42	125
0.4	511	1.8	684	10	684	2.5	339.584	-S2100	063-42	122
0.4	536	1.7	716	9.6	716	1.1	355.658	-S950	063-42	119
0.4	542	1.7	724	9.5	724	2.5	359.758	-S3100	063-42	125
0.4	582	1.6	778	8.8	778	2.1	386.250	-S2100	063-42	122
0.4	599	1.5	801	8.5	801	1.1	397.999	-S950	063-42	119
0.4	613	1.5	819	8.4	819	2.5	406.829	-S3100	063-42	125
0.3	646	1.4	864	7.9	864	2.1	429.250	-S2100	063-42	122

Selection tables, 4-pole motors

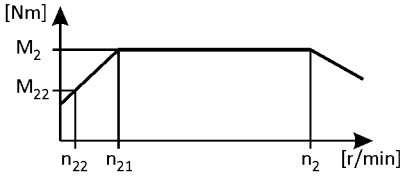


120 Hz: P_N = 1.1 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
43	7.5	180	10	1045	10	4.8	3.339	-S400	071-32	109
40	8.2	164	11	953	11	4.2	3.661	-S130	071-32	99
38	8.6	156	11	909	11	4.8	3.840	-S220	071-32	104
29	11	120	15	695	15	3.9	5.021	-S130	071-32	99
25	13	102	17	596	17	4.2	5.860	-S400	071-32	109
23	14	94	19	544	19	4.2	6.411	-S400	071-32	109
23	14	93	19	543	19	3.5	6.425	-S130	071-32	99
21	15	89	20	516	20	4.8	6.767	-S220	071-32	104
21	16	85	21	497	21	3.4	7.029	-S130	071-32	99
19	17	80	22	467	22	4.8	7.467	-S400	071-32	109
19	17	78	22	455	22	4.8	7.667	-S220	071-32	104
17	19	72	24	419	24	3.6	8.322	-S130	071-32	99
17	19	71	25	414	25	4.8	8.436	-S400	071-32	109
15	21	64	27	371	27	3.4	9.411	-S130	071-32	99
13	26	53	33	306	33	2.9	11.413	-S130	071-32	99
12	27	51	35	294	35	4.2	11.876	-S220	071-32	104
11	29	47	38	270	38	2.6	12.907	-S130	071-32	99
11	29	46	38	269	38	4.2	12.992	-S220	071-32	104
11	29	46	38	266	38	4.2	13.105	-S400	071-32	109
11	30	45	39	259	39	4.2	13.456	-S220	071-32	104
10	32	42	42	243	42	4.2	14.336	-S400	071-32	109
9.9	33	41	43	239	43	2.3	14.606	-S130	071-32	99
9.9	33	41	43	237	43	3.9	14.720	-S220	071-32	104
9.8	33	41	43	236	43	4.2	14.806	-S400	071-32	109
9.2	35	38	46	222	46	4.2	15.714	-S660	071-32	114
9.1	36	38	47	218	47	2.1	15.979	-S130	071-32	99
9.0	36	37	47	216	47	4.2	16.197	-S400	071-32	109
8.8	37	36	48	211	48	3.4	16.571	-S220	071-32	104
8.1	40	34	52	195	52	4.2	17.905	-S660	071-32	114
8.0	41	33	53	193	53	2.1	18.069	-S130	071-32	99
7.9	41	33	53	191	53	4.5	18.286	-S400	071-32	109
7.7	42	32	55	186	55	3.4	18.776	-S220	071-32	104
7.1	46	30	59	172	59	3.2	20.300	-S220	071-32	104
7.1	46	29	60	171	60	1.9	20.381	-S130	071-32	99
7.0	46	29	60	169	60	4.5	20.659	-S400	071-32	109

Selection tables, 4-pole motors

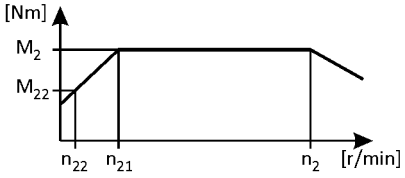


120 Hz: P_N = 1.1 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
6.5	50	27	65	156	65	4.0	22.400	-S400	071-32	109
6.3	52	26	67	152	67	2.8	23.000	-S220	071-32	104
6.3	52	26	67	151	67	1.7	23.048	-S130	071-32	99
5.8	56	24	73	140	73	1.5	24.967	-S130	071-32	99
5.8	56	24	73	139	73	4.0	25.056	-S660	071-32	114
5.7	57	24	74	138	74	4.0	25.308	-S400	071-32	109
5.5	59	23	77	132	77	2.4	26.422	-S220	071-32	104
5.1	63	21	82	124	82	1.4	28.233	-S130	071-32	99
5.1	64	21	83	122	83	4.0	28.548	-S660	071-32	114
5.0	65	21	85	120	85	3.6	29.156	-S400	071-32	109
4.8	67	20	87	117	87	2.2	29.937	-S220	071-32	104
4.7	70	19	91	112	91	3.7	31.167	-S660	071-32	114
4.6	70	19	92	111	92	1.4	31.387	-S130	071-32	99
4.4	74	18	96	106	96	2.2	32.867	-S220	071-32	104
4.4	74	18	96	106	96	4.0	32.940	-S400	071-32	109
4.1	80	17	104	98	104	1.2	35.493	-S130	071-32	99
4.1	80	17	104	98	104	3.7	35.511	-S660	071-32	114
4.0	81	17	106	96	106	3.4	36.267	-S400	071-32	109
3.9	84	16	109	94	109	1.9	37.238	-S220	071-32	104
3.6	90	15	118	87	118	3.4	40.333	-S660	071-32	114
3.6	91	15	118	86	118	1.1	40.422	-S130	071-32	99
3.5	92	15	120	85	120	3.2	40.974	-S400	071-32	109
3.5	92	15	120	85	120	3.7	41.067	-S950	071-32	119
3.4	95	14	124	82	124	1.7	42.533	-S220	071-32	104
3.2	103	13	133	76	133	0.9	45.711	-S130	071-32	99
3.2	103	13	134	76	134	3.7	45.956	-S950	071-32	119
3.2	103	13	134	76	134	3.4	45.956	-S660	071-32	114
3.1	105	13	137	74	137	2.2	46.933	-S400	071-32	109
3.0	108	13	141	72	141	1.5	48.190	-S220	071-32	104
3.0	110	12	143	71	143	2.8	48.950	-S660	071-32	114
2.9	112	12	146	70	146	3.3	49.840	-S950	071-32	119
2.8	116	12	151	68	151	1.4	51.620	-S220	071-32	104
2.7	119	11	155	66	155	2.1	53.026	-S400	071-32	109
2.6	125	11	163	63	163	3.3	55.773	-S950	071-32	119
2.6	125	11	163	63	163	2.8	55.773	-S660	071-32	114

Selection tables, 4-pole motors



120 Hz: P_N = 1.1 kW

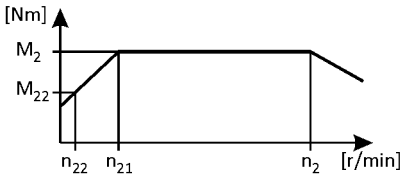
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
2.5	128	11	166	61	166	1.5	56.960	-S400	071-32	109
2.5	131	10	171	60	171	1.2	58.486	-S220	071-32	104
2.3	141	9.5	184	55	184	2.6	63.000	-S950	071-32	119
2.3	144	9.3	188	54	188	1.5	64.354	-S400	071-32	109
2.1	158	8.5	206	50	206	2.6	70.500	-S950	071-32	119

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
2.9	110	12	143	70	143	3.7	49.867	-S660	071-32	114
2.8	116	11	151	66	151	1.3	52.587	-S220	071-32	104
2.6	126	11	163	61	163	3.4	56.818	-S660	071-32	114
2.5	128	10	167	60	167	2.1	58.027	-S400	071-32	109
2.4	132	10	171	59	171	1.1	59.581	-S220	071-32	104
2.3	141	9.4	184	55	184	3.1	63.817	-S660	071-32	114
2.3	141	9.4	184	55	184	4.4	64.022	-S950	071-32	119
2.2	145	9.2	189	53	189	1.8	65.559	-S400	071-32	109
2.2	149	8.9	194	52	194	1.0	67.298	-S220	071-32	104
2.1	154	8.6	201	50	201	2.8	69.813	-S660	071-32	114
2.1	155	8.6	201	50	201	4.5	70.037	-S950	071-32	119
2.0	158	8.4	206	49	206	4.4	71.644	-S950	071-32	119
2.0	161	8.3	209	48	209	3.0	72.713	-S660	071-32	114
2.0	164	8.1	214	47	214	1.8	74.260	-S400	071-32	109
1.9	168	7.9	219	46	219	1.0	76.249	-S220	071-32	104
1.9	173	7.7	225	45	225	4.0	78.375	-S950	071-32	119
1.8	176	7.5	229	44	229	2.7	79.545	-S660	071-32	114
1.7	185	7.2	241	42	241	1.6	83.900	-S400	071-32	109
1.7	190	7.0	248	41	248	0.8	86.079	-S220	071-32	104
1.6	197	6.7	256	39	256	2.5	89.048	-S660	071-32	114
1.6	197	6.7	257	39	257	3.5	89.333	-S950	071-32	119
1.5	210	6.3	273	37	273	1.4	94.984	-S400	071-32	109
1.5	217	6.1	282	36	282	5.3	98.095	-S2100	071-32	122
1.5	221	6.0	288	35	288	3.1	99.968	-S950	071-32	119
1.4	224	5.9	292	34	292	2.2	101.460	-S660	071-32	114
1.4	237	5.6	309	33	309	1.2	107.314	-S400	071-32	109
1.3	241	5.5	314	32	314	5.3	109.016	-S2100	071-32	122
1.3	241	5.5	314	32	314	2.0	109.083	-S660	071-32	114
1.3	242	5.5	315	32	315	2.9	109.433	-S950	071-32	119
1.3	255	5.2	332	30	332	5.3	115.492	-S3100	071-32	125

Selection tables, 4-pole motors

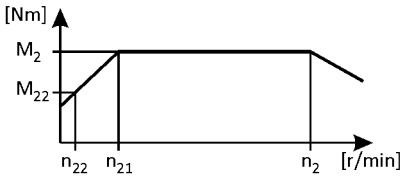


120 Hz: P_N = 1.1 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
1.2	271	4.9	352	29	352	2.6	122.461	-S950	071-32	119
1.2	272	4.9	355	28	355	1.1	123.307	-S400	071-32	109
1.2	275	4.8	358	28	358	1.8	124.289	-S660	071-32	114
1.1	289	4.6	376	27	376	5.3	130.603	-S3100	071-32	125
1.1	303	4.4	394	25	394	1.6	137.133	-S660	071-32	114
1.0	308	4.3	401	25	401	1.0	139.313	-S400	071-32	109
1.0	315	4.2	410	25	410	2.2	142.437	-S950	071-32	119
0.9	345	3.8	449	22	449	1.4	156.249	-S660	071-32	114
0.9	345	3.8	450	22	450	4.3	156.407	-S2100	071-32	122
0.9	352	3.8	458	22	458	2.0	159.394	-S950	071-32	119
0.8	384	3.5	500	20	500	3.9	173.820	-S2100	071-32	122
0.8	390	3.4	508	20	508	1.2	176.611	-S660	071-32	114
0.8	391	3.4	510	20	510	1.8	177.178	-S950	071-32	119
0.8	407	3.3	530	19	530	4.4	184.146	-S3100	071-32	125
0.7	430	3.1	560	18	560	3.5	194.556	-S2100	071-32	122
0.7	438	3.0	570	18	570	1.6	198.270	-S950	071-32	119
0.7	444	3.0	579	17	579	1.1	201.230	-S660	071-32	114
0.7	460	2.9	599	17	599	4.4	208.240	-S3100	071-32	125
0.7	478	2.8	622	16	622	3.1	216.215	-S2100	071-32	122
0.6	506	2.6	659	15	659	3.7	229.059	-S3100	071-32	125
0.6	506	2.6	660	15	660	1.4	229.289	-S950	071-32	119
0.6	526	2.5	685	15	685	3.7	238.252	-S4500	071-32	128
0.6	556	2.4	724	14	724	2.7	251.778	-S2100	071-32	122
0.6	567	2.3	738	14	738	1.2	256.585	-S950	071-32	119
0.6	572	2.3	745	14	745	3.7	259.030	-S3100	071-32	125
0.5	587	2.3	765	13	765	3.7	265.956	-S4500	071-32	128
0.5	615	2.2	800	13	800	1.1	278.273	-S950	071-32	119
0.5	618	2.1	805	13	805	2.4	279.807	-S2100	071-32	122
0.5	639	2.1	832	12	832	3.3	289.151	-S4500	071-32	128
0.5	655	2.0	853	12	853	3.4	296.430	-S3100	071-32	125
0.5	675	2.0	879	11	879	2.2	305.567	-S2100	071-32	122
0.5	688	1.9	896	11	896	1.0	311.401	-S950	071-32	119
0.4	713	1.9	928	11	928	3.3	322.773	-S4500	071-32	128
0.4	740	1.8	964	10	964	3.1	335.215	-S3100	071-32	125
0.4	750	1.8	977	10	977	2.0	339.584	-S2100	071-32	122

Selection tables, 4-pole motors

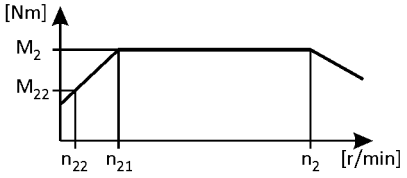


120 Hz: P_N = 1.1 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
0.4	795	1.7	1035	9.7	1035	2.8	359.758	-S3100	071-32	125
0.4	807	1.6	1051	9.5	1051	2.6	365.500	-S4500	071-32	128
0.4	853	1.6	1111	9.0	1111	1.6	386.250	-S2100	071-32	122
0.4	899	1.5	1170	8.6	1170	2.5	406.829	-S3100	071-32	125
0.4	901	1.5	1174	8.6	1174	2.6	408.000	-S4500	071-32	128
0.3	948	1.4	1235	8.1	1235	1.6	429.250	-S2100	071-32	122

Selection tables, 4-pole motors

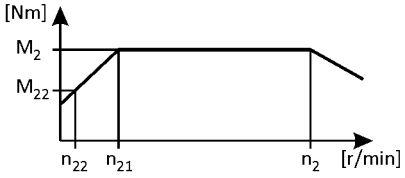


120 Hz: P_N = 1.5 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
43	10	180	13	1033	13	3.5	3.339	-S400	071-42	109
40	11	164	15	942	15	3.1	3.661	-S130	071-42	99
38	12	156	15	898	15	3.5	3.840	-S220	071-42	104
29	15	120	20	687	20	2.9	5.021	-S130	071-42	99
25	18	102	24	589	24	3.1	5.860	-S400	071-42	109
23	20	94	26	538	26	3.1	6.411	-S400	071-42	109
23	20	93	26	537	26	2.6	6.425	-S130	071-42	99
21	21	89	27	510	27	3.5	6.767	-S220	071-42	104
21	22	85	28	491	28	2.5	7.029	-S130	071-42	99
19	23	80	30	462	30	3.5	7.467	-S400	071-42	109
19	23	78	31	450	31	3.5	7.667	-S220	071-42	104
17	25	72	34	415	34	2.6	8.322	-S130	071-42	99
17	26	71	34	409	34	3.5	8.436	-S400	071-42	109
15	29	64	38	367	38	2.5	9.411	-S130	071-42	99
13	35	53	46	302	46	2.1	11.413	-S130	071-42	99
12	36	51	48	291	48	3.1	11.876	-S220	071-42	104
11	40	47	52	267	52	1.9	12.907	-S130	071-42	99
11	40	46	52	266	52	3.1	12.992	-S220	071-42	104
11	40	46	53	263	53	3.1	13.105	-S400	071-42	109
11	41	45	54	256	54	3.1	13.456	-S220	071-42	104
10	44	42	58	241	58	3.1	14.336	-S400	071-42	109
9.9	45	41	59	236	59	1.7	14.606	-S130	071-42	99
9.9	45	41	59	234	59	2.8	14.720	-S220	071-42	104
9.8	45	41	60	233	60	3.1	14.806	-S400	071-42	109
9.2	48	38	63	220	63	3.1	15.714	-S660	071-42	114
9.1	49	38	64	216	64	1.5	15.979	-S130	071-42	99
9.0	50	37	65	213	65	3.1	16.197	-S400	071-42	109
8.8	51	36	67	208	67	2.5	16.571	-S220	071-42	104
8.1	55	34	72	193	72	3.1	17.905	-S660	071-42	114
8.0	55	33	73	191	73	1.5	18.069	-S130	071-42	99
7.9	56	33	74	189	74	3.3	18.286	-S400	071-42	109
7.7	57	32	76	184	76	2.5	18.776	-S220	071-42	104
7.1	62	30	82	170	82	2.3	20.300	-S220	071-42	104
7.1	62	29	82	169	82	1.4	20.381	-S130	071-42	99
7.0	63	29	83	167	83	3.3	20.659	-S400	071-42	109

Selection tables, 4-pole motors

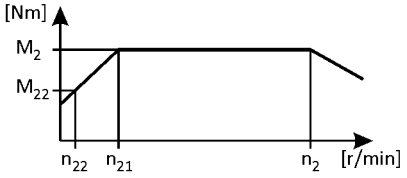


120 Hz: P_N = 1.5 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
6.5	69	27	90	154	90	2.9	22.400	-S400	071-42	109
6.3	70	26	93	150	93	2.0	23.000	-S220	071-42	104
6.3	71	26	93	150	93	1.2	23.048	-S130	071-42	99
5.8	76	24	101	138	101	1.1	24.967	-S130	071-42	99
5.8	77	24	101	138	101	2.9	25.056	-S660	071-42	114
5.7	77	24	102	136	102	2.9	25.308	-S400	071-42	109
5.5	81	23	106	131	106	1.8	26.422	-S220	071-42	104
5.1	86	21	114	122	114	1.0	28.233	-S130	071-42	99
5.1	87	21	115	121	115	2.9	28.548	-S660	071-42	114
5.0	89	21	117	118	117	2.6	29.156	-S400	071-42	109
4.8	92	20	121	115	121	1.6	29.937	-S220	071-42	104
4.7	95	19	126	111	126	2.7	31.167	-S660	071-42	114
4.6	96	19	126	110	126	1.0	31.387	-S130	071-42	99
4.4	101	18	132	105	132	1.6	32.867	-S220	071-42	104
4.4	101	18	133	105	133	2.9	32.940	-S400	071-42	109
4.1	109	17	143	97	143	0.9	35.493	-S130	071-42	99
4.1	109	17	143	97	143	2.7	35.511	-S660	071-42	114
4.0	111	17	146	95	146	2.5	36.267	-S400	071-42	109
3.9	114	16	150	93	150	1.4	37.238	-S220	071-42	104
3.6	123	15	162	86	162	2.5	40.333	-S660	071-42	114
3.5	125	15	165	84	165	2.3	40.974	-S400	071-42	109
3.5	126	15	165	84	165	2.7	41.067	-S950	071-42	119
3.4	130	14	171	81	171	1.2	42.533	-S220	071-42	104
3.2	141	13	185	75	185	2.7	45.956	-S950	071-42	119
3.2	141	13	185	75	185	2.5	45.956	-S660	071-42	114
3.1	144	13	189	74	189	1.6	46.933	-S400	071-42	109
3.0	147	13	194	72	194	1.1	48.190	-S220	071-42	104
3.0	150	12	197	71	197	2.1	48.950	-S660	071-42	114
2.9	152	12	201	69	201	2.4	49.840	-S950	071-42	119
2.8	158	12	208	67	208	1.0	51.620	-S220	071-42	104
2.7	162	11	214	65	214	1.6	53.026	-S400	071-42	109
2.6	171	11	225	62	225	2.4	55.773	-S950	071-42	119
2.6	171	11	225	62	225	2.1	55.773	-S660	071-42	114
2.5	174	11	229	61	229	1.1	56.960	-S400	071-42	109
2.5	179	10	236	59	236	0.9	58.486	-S220	071-42	104

Selection tables, 4-pole motors



120 Hz: P_N = 1.5 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
2.3	193	9.5	254	55	254	1.9	63.000	-S950	071-42	119
2.3	197	9.3	259	54	259	1.1	64.354	-S400	071-42	109
2.1	216	8.5	284	49	284	1.9	70.500	-S950	071-42	119

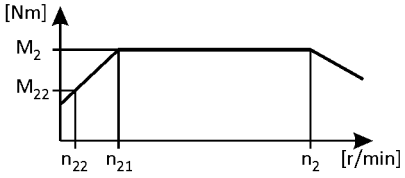
3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
2.9	150	12	198	69	198	2.7	49.867	-S660	071-42	114
2.8	158	11	209	66	209	0.9	52.587	-S220	071-42	104
2.6	171	11	225	61	225	2.5	56.818	-S660	071-42	114
2.5	175	10	230	60	230	1.5	58.027	-S400	071-42	109
2.3	192	9.4	253	54	253	2.2	63.817	-S660	071-42	114
2.3	193	9.4	254	54	254	3.2	64.022	-S950	071-42	119
2.2	198	9.2	260	53	260	1.3	65.559	-S400	071-42	109
2.1	210	8.6	277	49	277	2.1	69.813	-S660	071-42	114
2.1	211	8.6	278	49	278	3.3	70.037	-S950	071-42	119
2.0	216	8.4	284	48	284	3.2	71.644	-S950	071-42	119
2.0	219	8.3	289	47	289	2.2	72.713	-S660	071-42	114
2.0	224	8.1	295	47	295	1.3	74.260	-S400	071-42	109
1.9	236	7.7	311	44	311	2.9	78.375	-S950	071-42	119
1.8	240	7.5	316	43	316	2.0	79.545	-S660	071-42	114
1.7	253	7.2	333	41	333	1.2	83.900	-S400	071-42	109
1.6	268	6.7	353	39	353	1.8	89.048	-S660	071-42	114
1.6	269	6.7	354	39	354	2.6	89.333	-S950	071-42	119
1.5	286	6.3	377	36	377	1.0	94.984	-S400	071-42	109
1.5	295	6.1	389	35	389	3.9	98.095	-S2100	071-42	122
1.5	301	6.0	397	35	397	2.3	99.968	-S950	071-42	119
1.4	306	5.9	403	34	403	1.6	101.460	-S660	071-42	114
1.4	323	5.6	426	32	426	0.9	107.314	-S400	071-42	109
1.3	328	5.5	433	32	433	3.9	109.016	-S2100	071-42	122
1.3	329	5.5	433	32	433	1.5	109.083	-S660	071-42	114
1.3	330	5.5	434	32	434	2.1	109.433	-S950	071-42	119
1.3	348	5.2	458	30	458	3.9	115.492	-S3100	071-42	125
1.2	369	4.9	486	28	486	1.9	122.461	-S950	071-42	119
1.2	374	4.8	493	28	493	1.3	124.289	-S660	071-42	114
1.1	393	4.6	518	26	518	3.9	130.603	-S3100	071-42	125
1.1	413	4.4	544	25	544	1.2	137.133	-S660	071-42	114
1.0	429	4.2	565	24	565	1.6	142.437	-S950	071-42	119
0.9	471	3.8	620	22	620	1.0	156.249	-S660	071-42	114

Selection tables, 4-pole motors

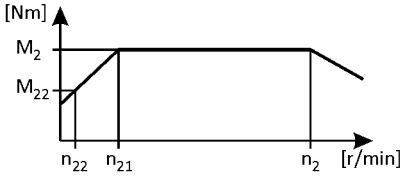
120 Hz: P_N = 1.5 kW

3-stage gearboxes



Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
0.9	471	3.8	621	22	621	3.2	156.407	-S2100	071-42	122
0.9	480	3.8	632	22	632	1.4	159.394	-S950	071-42	119
0.8	524	3.5	690	20	690	2.8	173.820	-S2100	071-42	122
0.8	532	3.4	701	20	701	0.9	176.611	-S660	071-42	114
0.8	534	3.4	703	20	703	1.3	177.178	-S950	071-42	119
0.8	555	3.3	731	19	731	3.2	184.146	-S3100	071-42	125
0.7	586	3.1	772	18	772	2.5	194.556	-S2100	071-42	122
0.7	597	3.0	787	17	787	1.2	198.270	-S950	071-42	119
0.7	627	2.9	826	17	826	3.2	208.240	-S3100	071-42	125
0.7	651	2.8	858	16	858	2.3	216.215	-S2100	071-42	122
0.6	690	2.6	909	15	909	2.7	229.059	-S3100	071-42	125
0.6	691	2.6	910	15	910	1.0	229.289	-S950	071-42	119
0.6	718	2.5	945	15	945	2.7	238.252	-S4500	071-42	128
0.6	758	2.4	999	14	999	2.0	251.778	-S2100	071-42	122
0.6	773	2.3	1018	13	1018	0.9	256.585	-S950	071-42	119
0.6	780	2.3	1028	13	1028	2.7	259.030	-S3100	071-42	125
0.5	801	2.3	1055	13	1055	2.7	265.956	-S4500	071-42	128
0.5	838	2.2	1104	12	1104	0.8	278.273	-S950	071-42	119
0.5	843	2.1	1110	12	1110	1.8	279.807	-S2100	071-42	122
0.5	871	2.1	1147	12	1147	2.4	289.151	-S4500	071-42	128
0.5	893	2.0	1176	12	1176	2.5	296.430	-S3100	071-42	125
0.5	920	2.0	1212	11	1212	1.6	305.567	-S2100	071-42	122
0.4	972	1.9	1281	11	1281	2.4	322.773	-S4500	071-42	128
0.4	1010	1.8	1330	10	1330	2.2	335.215	-S3100	071-42	125
0.4	1023	1.8	1347	10	1347	1.5	339.584	-S2100	071-42	122
0.4	1084	1.7	1427	9.6	1427	2.1	359.758	-S3100	071-42	125
0.4	1101	1.6	1450	9.4	1450	1.9	365.500	-S4500	071-42	128
0.4	1163	1.6	1533	8.9	1533	1.2	386.250	-S2100	071-42	122
0.4	1225	1.5	1614	8.5	1614	1.8	406.829	-S3100	071-42	125
0.4	1229	1.5	1619	8.5	1619	1.9	408.000	-S4500	071-42	128
0.3	1293	1.4	1703	8.0	1703	1.2	429.250	-S2100	071-42	122

Selection tables, 4-pole motors

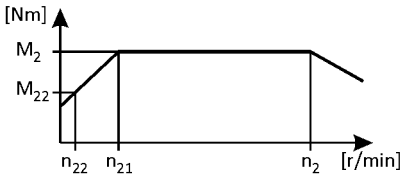


120 Hz: P_N = 2.2 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
43	15	180	19	1048	19	4.3	3.339	-S400	080-32	109
40	16	164	21	956	21	2.2	3.661	-S130	080-32	99
38	17	156	22	911	22	4.3	3.840	-S220	080-32	104
32	20	131	27	764	27	4.3	4.579	-S400	080-32	109
29	22	120	29	697	29	2.0	5.021	-S130	080-32	99
28	23	114	31	665	31	4.3	5.267	-S220	080-32	104
25	26	102	34	597	34	4.0	5.860	-S400	080-32	109
23	28	94	37	546	37	4.0	6.411	-S400	080-32	109
23	28	93	37	545	37	1.8	6.425	-S130	080-32	99
21	30	89	39	517	39	4.2	6.767	-S220	080-32	104
21	30	87	40	509	40	4.2	6.880	-S660	080-32	114
21	31	85	41	498	41	1.7	7.029	-S130	080-32	99
19	33	80	43	469	43	4.3	7.467	-S400	080-32	109
19	34	78	45	457	45	3.7	7.667	-S220	080-32	104
19	34	78	45	454	45	4.2	7.702	-S950	080-32	119
17	36	72	48	421	48	1.8	8.322	-S130	080-32	99
17	37	71	49	415	49	4.3	8.436	-S400	080-32	109
16	41	65	54	377	54	3.1	9.280	-S220	080-32	104
14	45	59	60	342	60	4.3	10.240	-S400	080-32	109
14	46	57	61	333	61	2.7	10.514	-S220	080-32	104
13	49	53	66	311	66	4.2	11.262	-S660	080-32	114
13	50	53	66	307	66	1.5	11.413	-S130	080-32	99
13	51	52	67	303	67	4.3	11.569	-S400	080-32	109
12	52	51	69	295	69	2.4	11.876	-S220	080-32	104
12	54	49	72	284	72	4.3	12.320	-S660	080-32	114
11	56	47	75	273	75	4.2	12.832	-S660	080-32	114
11	57	46	76	269	76	2.2	12.992	-S220	080-32	104
11	57	46	76	267	76	4.0	13.105	-S400	080-32	109
11	59	45	78	260	78	2.1	13.456	-S220	080-32	104
10	61	43	82	249	82	4.3	14.037	-S660	080-32	114
10	63	42	83	244	83	3.6	14.336	-S400	080-32	109
9.9	64	41	85	240	85	1.2	14.606	-S130	080-32	99
9.9	64	41	86	238	86	1.9	14.720	-S220	080-32	104
9.8	65	41	86	236	86	3.5	14.806	-S400	080-32	109
9.2	69	38	92	223	92	4.0	15.714	-S660	080-32	114

Selection tables, 4-pole motors

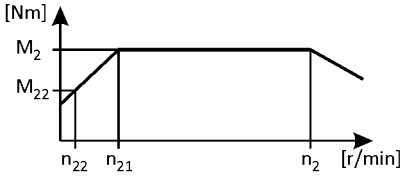


120 Hz: P_N = 2.2 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
9.1	70	38	93	219	93	1.1	15.979	-S130	080-32	99
9.1	70	38	93	219	93	4.2	16.000	-S950	080-32	119
9.0	71	37	94	216	94	3.2	16.197	-S400	080-32	109
8.8	72	36	97	211	97	1.7	16.571	-S220	080-32	104
8.1	78	34	104	196	104	4.2	17.905	-S950	080-32	119
8.1	78	34	104	196	104	4.0	17.905	-S660	080-32	114
8.0	79	33	105	194	105	1.1	18.069	-S130	080-32	99
7.9	80	33	106	191	106	3.2	18.286	-S400	080-32	109
7.7	82	32	109	186	109	1.7	18.776	-S220	080-32	104
7.5	84	31	112	182	112	4.0	19.250	-S660	080-32	114
7.1	89	30	118	172	118	1.6	20.300	-S220	080-32	104
7.1	89	29	119	172	119	0.9	20.381	-S130	080-32	99
7.0	90	29	120	169	120	2.9	20.659	-S400	080-32	109
6.6	96	27	128	160	128	4.0	21.933	-S660	080-32	114
6.5	98	27	130	156	130	2.6	22.400	-S400	080-32	109
6.3	100	26	134	152	134	1.4	23.000	-S220	080-32	104
6.3	101	26	134	152	134	0.8	23.048	-S130	080-32	99
5.8	109	24	146	140	146	3.4	25.056	-S660	080-32	114
5.7	111	24	147	138	147	2.3	25.308	-S400	080-32	109
5.7	111	24	149	137	149	4.0	25.511	-S950	080-32	119
5.5	115	23	154	133	154	1.2	26.422	-S220	080-32	104
5.1	125	21	166	123	166	4.0	28.548	-S950	080-32	119
5.1	125	21	166	123	166	3.4	28.548	-S660	080-32	114
5.0	127	21	170	120	170	2.0	29.156	-S400	080-32	109
4.8	131	20	174	117	174	1.1	29.937	-S220	080-32	104
4.7	136	19	182	112	182	3.4	31.167	-S660	080-32	114
4.6	137	19	182	112	182	3.7	31.267	-S950	080-32	119
4.4	144	18	191	107	191	1.1	32.867	-S220	080-32	104
4.4	144	18	192	106	192	2.0	32.940	-S400	080-32	109
4.1	153	17	204	100	204	3.7	34.989	-S950	080-32	119
4.1	155	17	207	99	207	3.0	35.511	-S660	080-32	114
4.0	158	17	211	97	211	1.8	36.267	-S400	080-32	109
3.9	163	16	217	94	217	1.0	37.238	-S220	080-32	104
3.6	176	15	235	87	235	2.2	40.333	-S660	080-32	114
3.5	179	15	239	85	239	1.6	40.974	-S400	080-32	109

Selection tables, 4-pole motors



120 Hz: P_N = 2.2 kW

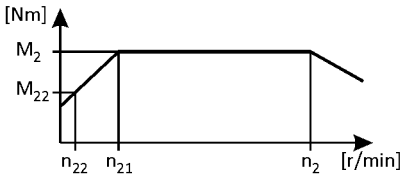
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
3.5	179	15	239	85	239	3.4	41.067	-S950	080-32	119
3.3	194	14	259	79	259	3.7	44.431	-S2100	080-32	122
3.2	201	13	268	76	268	3.4	45.956	-S950	080-32	119
3.2	201	13	268	76	268	2.2	45.956	-S660	080-32	114
3.0	214	12	285	72	285	1.5	48.950	-S660	080-32	114
2.9	216	12	288	71	288	3.7	49.378	-S2100	080-32	122
2.9	218	12	290	70	290	2.7	49.840	-S950	080-32	119
2.8	228	12	305	67	305	3.7	52.311	-S3100	080-32	125
2.7	235	11	314	65	314	3.2	53.924	-S2100	080-32	122
2.6	244	11	325	63	325	2.7	55.773	-S950	080-32	119
2.6	244	11	325	63	325	1.5	55.773	-S660	080-32	114
2.5	258	10	345	59	345	3.7	59.156	-S3100	080-32	125
2.4	262	10	349	58	349	3.2	59.927	-S2100	080-32	122
2.3	275	9.5	367	56	367	1.6	63.000	-S950	080-32	119
2.3	277	9.5	370	55	370	3.2	63.487	-S3100	080-32	125
2.1	298	8.8	397	51	397	2.5	68.162	-S2100	080-32	122
2.1	308	8.5	411	50	411	1.6	70.500	-S950	080-32	119
2.0	314	8.4	418	49	418	3.2	71.793	-S3100	080-32	125
1.9	331	7.9	441	46	441	2.5	75.750	-S2100	080-32	122

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
2.9	215	12	286	70	286	1.9	49.867	-S660	080-32	114
2.9	215	12	287	70	287	2.8	50.027	-S950	080-32	119
2.6	241	11	321	63	321	2.5	55.982	-S950	080-32	119
2.6	244	11	326	62	326	1.7	56.818	-S660	080-32	114
2.5	250	10	333	60	333	1.0	58.027	-S400	080-32	109
2.3	274	9.4	366	55	366	1.5	63.817	-S660	080-32	114
2.3	275	9.4	367	55	367	2.2	64.022	-S950	080-32	119
2.2	282	9.2	376	53	376	0.9	65.559	-S400	080-32	109
2.1	300	8.6	400	50	400	1.4	69.813	-S660	080-32	114
2.1	301	8.6	402	50	402	2.3	70.037	-S950	080-32	119
2.1	302	8.5	403	50	403	4.8	70.302	-S2100	080-32	122
2.0	308	8.4	411	49	411	2.2	71.644	-S950	080-32	119
2.0	313	8.3	417	48	417	1.5	72.713	-S660	080-32	114
2.0	319	8.1	426	47	426	0.9	74.260	-S400	080-32	109
1.9	331	7.8	441	46	441	4.4	76.907	-S2100	080-32	122
1.9	336	7.7	448	45	448	4.4	78.128	-S2100	080-32	122

Selection tables, 4-pole motors



120 Hz: P_N = 2.2 kW

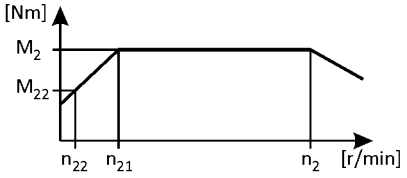
3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
1.9	337	7.7	450	45	450	2.0	78.375	-S950	080-32	119
1.8	342	7.5	456	44	456	1.4	79.545	-S660	080-32	114
1.8	356	7.2	475	42	475	5.3	82.769	-S3100	080-32	125
1.7	368	7.0	490	41	490	4.0	85.468	-S2100	080-32	122
1.6	383	6.7	511	39	511	1.2	89.048	-S660	080-32	114
1.6	384	6.7	512	39	512	1.8	89.333	-S950	080-32	119
1.6	389	6.6	519	39	519	5.4	90.546	-S3100	080-32	125
1.6	399	6.5	532	38	532	5.3	92.825	-S4500	080-32	128
1.5	403	6.4	537	37	537	5.3	93.599	-S3100	080-32	125
1.5	422	6.1	563	36	563	3.5	98.095	-S2100	080-32	122
1.5	430	6.0	573	35	573	1.6	99.968	-S950	080-32	119
1.4	436	5.9	582	35	582	1.1	101.460	-S660	080-32	114
1.4	440	5.9	587	34	587	5.0	102.393	-S3100	080-32	125
1.4	446	5.8	594	34	594	5.3	103.619	-S4500	080-32	128
1.3	469	5.5	625	32	625	3.1	109.016	-S2100	080-32	122
1.3	469	5.5	626	32	626	1.0	109.083	-S660	080-32	114
1.3	471	5.5	628	32	628	1.4	109.433	-S950	080-32	119
1.3	497	5.2	663	30	663	4.4	115.492	-S3100	080-32	125
1.2	517	5.0	689	29	689	2.8	120.167	-S2100	080-32	122
1.2	527	4.9	702	29	702	1.3	122.461	-S950	080-32	119
1.2	535	4.8	713	28	713	0.9	124.289	-S660	080-32	114
1.1	562	4.6	749	27	749	3.9	130.603	-S3100	080-32	125
1.1	574	4.5	766	26	766	2.5	133.544	-S2100	080-32	122
1.0	608	4.2	812	25	812	3.6	141.478	-S3100	080-32	125
1.0	613	4.2	817	25	817	1.1	142.437	-S950	080-32	119
1.0	637	4.1	849	24	849	4.5	148.005	-S4500	080-32	128
0.9	673	3.8	897	22	897	2.2	156.407	-S2100	080-32	122
0.9	686	3.8	914	22	914	1.0	159.394	-S950	080-32	119
0.9	688	3.8	918	22	918	3.2	159.989	-S3100	080-32	125
0.9	711	3.6	948	21	948	4.5	165.215	-S4500	080-32	128
0.8	748	3.5	997	20	997	2.0	173.820	-S2100	080-32	122
0.8	762	3.4	1016	20	1016	0.9	177.178	-S950	080-32	119
0.8	780	3.3	1041	19	1041	3.7	181.396	-S4500	080-32	128
0.8	792	3.3	1056	19	1056	2.8	184.146	-S3100	080-32	125
0.7	837	3.1	1116	18	1116	1.7	194.556	-S2100	080-32	122

Selection tables, 4-pole motors

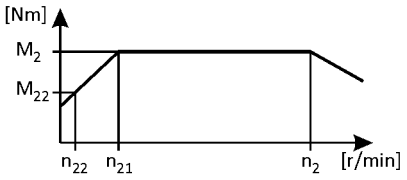
120 Hz: P_N = 2.2 kW

3-stage gearboxes



Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
0.7	871	3.0	1162	17	1162	3.7	202.489	-S4500	080-32	128
0.7	896	2.9	1195	17	1195	2.5	208.240	-S3100	080-32	125
0.7	930	2.8	1240	16	1240	1.6	216.215	-S2100	080-32	122
0.6	985	2.6	1314	15	1314	2.2	229.059	-S3100	080-32	125
0.6	1025	2.5	1367	15	1367	3.1	238.252	-S4500	080-32	128
0.6	1083	2.4	1444	14	1444	1.4	251.778	-S2100	080-32	122
0.6	1114	2.3	1486	14	1486	2.0	259.030	-S3100	080-32	125
0.5	1144	2.3	1526	13	1526	2.8	265.956	-S4500	080-32	128
0.5	1203	2.1	1605	13	1605	1.2	279.807	-S2100	080-32	122
0.5	1244	2.1	1659	12	1659	2.6	289.151	-S4500	080-32	128
0.5	1275	2.0	1700	12	1700	1.7	296.430	-S3100	080-32	125
0.5	1314	2.0	1753	12	1753	1.1	305.567	-S2100	080-32	122
0.4	1388	1.9	1852	11	1852	2.3	322.773	-S4500	080-32	128
0.4	1442	1.8	1923	10	1923	1.5	335.215	-S3100	080-32	125
0.4	1460	1.8	1948	10	1948	1.0	339.584	-S2100	080-32	122
0.4	1547	1.7	2064	9.7	2064	1.4	359.758	-S3100	080-32	125
0.4	1572	1.6	2097	9.6	2097	1.6	365.500	-S4500	080-32	128
0.4	1750	1.5	2334	8.6	2334	1.3	406.829	-S3100	080-32	125
0.4	1755	1.5	2340	8.6	2340	1.6	408.000	-S4500	080-32	128

Selection tables, 4-pole motors

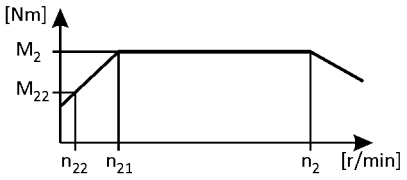


120 Hz: P_N = 3.0 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 30 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
32	27	197	37	760	37	3.1	4.579	-S400	080-42	109
29	30	179	40	693	40	1.4	5.021	-S130	080-42	99
28	32	171	42	661	42	3.1	5.267	-S220	080-42	104
25	35	154	47	594	47	2.9	5.860	-S400	080-42	109
23	38	140	51	543	51	2.9	6.411	-S400	080-42	109
23	39	140	51	542	51	1.3	6.425	-S130	080-42	99
21	41	131	55	506	55	3.1	6.880	-S660	080-42	114
21	42	128	56	495	56	1.2	7.029	-S130	080-42	99
19	46	117	62	452	62	3.1	7.702	-S950	080-42	119
16	56	97	74	375	74	2.2	9.280	-S220	080-42	104
14	61	88	82	340	82	3.1	10.240	-S400	080-42	109
14	63	86	84	331	84	2.0	10.514	-S220	080-42	104
13	68	80	90	309	90	3.1	11.262	-S660	080-42	114
13	69	78	92	301	92	3.1	11.569	-S400	080-42	109
12	71	76	95	293	95	1.8	11.876	-S220	080-42	104
12	74	73	98	283	98	3.1	12.320	-S660	080-42	114
11	77	70	102	271	102	3.1	12.832	-S660	080-42	114
11	78	69	104	268	104	1.6	12.992	-S220	080-42	104
11	79	69	105	266	105	2.9	13.105	-S400	080-42	109
11	81	67	107	259	107	1.6	13.456	-S220	080-42	104
10	84	64	112	248	112	3.1	14.037	-S660	080-42	114
10	86	63	115	243	115	2.6	14.336	-S400	080-42	109
9.9	88	61	118	236	118	1.4	14.720	-S220	080-42	104
9.8	89	61	118	235	118	2.6	14.806	-S400	080-42	109
9.2	94	57	126	222	126	2.9	15.714	-S660	080-42	114
9.1	96	56	128	218	128	3.1	16.000	-S950	080-42	119
9.0	97	56	129	215	129	2.3	16.197	-S400	080-42	109
8.8	99	54	132	210	132	1.3	16.571	-S220	080-42	104
8.1	107	50	143	194	143	3.1	17.905	-S950	080-42	119
8.1	107	50	143	194	143	2.9	17.905	-S660	080-42	114
7.9	110	49	146	190	146	2.4	18.286	-S400	080-42	109
7.7	113	48	150	185	150	1.3	18.776	-S220	080-42	104
7.5	115	47	154	181	154	2.9	19.250	-S660	080-42	114
7.1	122	44	162	171	162	1.2	20.300	-S220	080-42	104
7.0	124	44	165	168	165	2.1	20.659	-S400	080-42	109

Selection tables, 4-pole motors

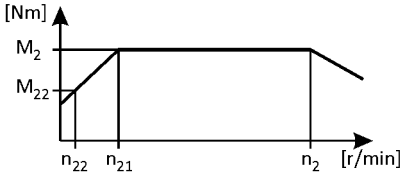


120 Hz: P_N = 3.0 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 30 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
6.6	131	41	175	159	175	2.9	21.933	-S660	080-42	114
6.5	134	40	179	155	179	1.9	22.400	-S400	080-42	109
6.3	138	39	184	151	184	1.0	23.000	-S220	080-42	104
5.8	150	36	200	139	200	2.5	25.056	-S660	080-42	114
5.7	152	36	202	138	202	1.7	25.308	-S400	080-42	109
5.7	153	35	204	136	204	2.9	25.511	-S950	080-42	119
5.5	158	34	211	132	211	0.9	26.422	-S220	080-42	104
5.1	171	32	228	122	228	2.9	28.548	-S950	080-42	119
5.1	171	32	228	122	228	2.5	28.548	-S660	080-42	114
5.0	175	31	233	119	233	1.5	29.156	-S400	080-42	109
4.7	187	29	249	112	249	2.5	31.167	-S660	080-42	114
4.6	187	29	250	111	250	2.7	31.267	-S950	080-42	119
4.4	197	27	263	106	263	1.5	32.940	-S400	080-42	109
4.1	210	26	279	100	279	2.7	34.989	-S950	080-42	119
4.1	213	25	284	98	284	2.2	35.511	-S660	080-42	114
4.0	217	25	290	96	290	1.3	36.267	-S400	080-42	109
3.6	242	22	322	86	322	1.6	40.333	-S660	080-42	114
3.5	245	22	327	85	327	1.2	40.974	-S400	080-42	109
3.5	246	22	328	85	328	2.5	41.067	-S950	080-42	119
3.3	266	20	355	78	355	2.7	44.431	-S2100	080-42	122
3.2	275	20	367	76	367	2.5	45.956	-S950	080-42	119
3.2	275	20	367	76	367	1.6	45.956	-S660	080-42	114
3.0	293	18	391	71	391	1.1	48.950	-S660	080-42	114
2.9	296	18	394	71	394	2.7	49.378	-S2100	080-42	122
2.9	299	18	398	70	398	2.0	49.840	-S950	080-42	119
2.8	313	17	418	67	418	2.7	52.311	-S3100	080-42	125
2.7	323	17	431	65	431	2.4	53.924	-S2100	080-42	122
2.6	334	16	445	62	445	2.0	55.773	-S950	080-42	119
2.6	334	16	445	62	445	1.1	55.773	-S660	080-42	114
2.5	354	15	472	59	472	2.7	59.156	-S3100	080-42	125
2.4	359	15	479	58	479	2.4	59.927	-S2100	080-42	122
2.3	377	14	503	55	503	1.2	63.000	-S950	080-42	119
2.3	380	14	507	55	507	2.4	63.487	-S3100	080-42	125
2.1	408	13	544	51	544	1.8	68.162	-S2100	080-42	122
2.1	422	13	563	49	563	1.2	70.500	-S950	080-42	119

Selection tables, 4-pole motors



120 Hz: P_N = 3.0 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 30 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
2.0	430	13	573	49	573	2.4	71.793	-S3100	080-42	125
1.9	454	12	605	46	605	1.8	75.750	-S2100	080-42	122

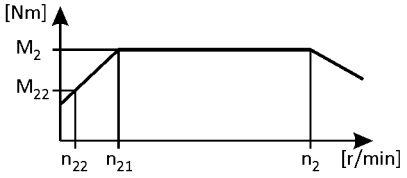
3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 30 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
2.9	294	18	392	70	392	1.4	49.867	-S660	080-42	114
2.9	295	18	394	70	394	2.1	50.027	-S950	080-42	119
2.6	330	16	440	62	440	1.9	55.982	-S950	080-42	119
2.6	335	16	447	61	447	1.3	56.818	-S660	080-42	114
2.3	377	14	502	55	502	1.1	63.817	-S660	080-42	114
2.3	378	14	504	54	504	1.6	64.022	-S950	080-42	119
2.1	412	13	549	50	549	1.0	69.813	-S660	080-42	114
2.1	413	13	551	50	551	1.6	70.037	-S950	080-42	119
2.1	415	13	553	50	553	3.5	70.302	-S2100	080-42	122
2.0	423	13	564	49	564	1.6	71.644	-S950	080-42	119
2.0	429	12	572	48	572	1.1	72.713	-S660	080-42	114
1.9	454	12	605	45	605	3.2	76.907	-S2100	080-42	122
1.9	461	12	615	45	615	3.2	78.128	-S2100	080-42	122
1.9	462	12	617	44	617	1.5	78.375	-S950	080-42	119
1.8	469	11	626	44	626	1.0	79.545	-S660	080-42	114
1.8	488	11	651	42	651	3.9	82.769	-S3100	080-42	125
1.7	504	11	672	41	672	2.9	85.468	-S2100	080-42	122
1.6	525	10	701	39	701	0.9	89.048	-S660	080-42	114
1.6	527	10	703	39	703	1.3	89.333	-S950	080-42	119
1.6	534	9.9	712	38	712	3.9	90.546	-S3100	080-42	125
1.6	548	9.7	730	38	730	3.9	92.825	-S4500	080-42	128
1.5	552	9.6	736	37	736	3.9	93.599	-S3100	080-42	125
1.5	579	9.2	772	36	772	2.5	98.095	-S2100	080-42	122
1.5	590	9.0	786	35	786	1.2	99.968	-S950	080-42	119
1.4	604	8.8	806	34	806	3.7	102.393	-S3100	080-42	125
1.4	611	8.7	815	34	815	3.9	103.619	-S4500	080-42	128
1.3	643	8.3	858	32	858	2.3	109.016	-S2100	080-42	122
1.3	646	8.2	861	32	861	1.1	109.433	-S950	080-42	119
1.3	682	7.8	909	30	909	3.3	115.492	-S3100	080-42	125
1.2	709	7.5	945	29	945	2.1	120.167	-S2100	080-42	122
1.2	723	7.3	963	28	963	0.9	122.461	-S950	080-42	119
1.1	771	6.9	1027	27	1027	2.9	130.603	-S3100	080-42	125
1.1	788	6.7	1051	26	1051	1.9	133.544	-S2100	080-42	122

Selection tables, 4-pole motors

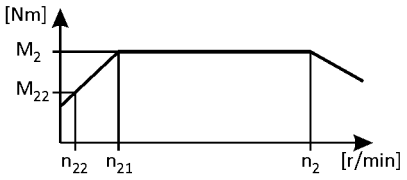
120 Hz: P_N = 3.0 kW

3-stage gearboxes



Inverter operation							i	Product		
5 Hz -		- 30 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
1.0	835	6.4	1113	25	1113	2.7	141.478	-S3100	080-42	125
1.0	840	6.3	1121	24	1121	0.8	142.437	-S950	080-42	119
1.0	873	6.1	1164	24	1164	3.3	148.005	-S4500	080-42	128
0.9	923	5.8	1230	22	1230	1.6	156.407	-S2100	080-42	122
0.9	944	5.6	1259	22	1259	2.3	159.989	-S3100	080-42	125
0.9	975	5.4	1300	21	1300	3.3	165.215	-S4500	080-42	128
0.8	1026	5.2	1367	20	1367	1.4	173.820	-S2100	080-42	122
0.8	1070	5.0	1427	19	1427	2.7	181.396	-S4500	080-42	128
0.8	1087	4.9	1449	19	1449	2.0	184.146	-S3100	080-42	125
0.7	1148	4.6	1531	18	1531	1.3	194.556	-S2100	080-42	122
0.7	1195	4.4	1593	17	1593	2.7	202.489	-S4500	080-42	128
0.7	1229	4.3	1638	17	1638	1.8	208.240	-S3100	080-42	125
0.7	1276	4.2	1701	16	1701	1.2	216.215	-S2100	080-42	122
0.6	1352	3.9	1802	15	1802	1.6	229.059	-S3100	080-42	125
0.6	1406	3.8	1874	15	1874	2.3	238.252	-S4500	080-42	128
0.6	1486	3.6	1981	14	1981	1.0	251.778	-S2100	080-42	122
0.6	1528	3.5	2038	13	2038	1.5	259.030	-S3100	080-42	125
0.5	1569	3.4	2092	13	2092	2.1	265.956	-S4500	080-42	128
0.5	1651	3.2	2201	12	2201	0.9	279.807	-S2100	080-42	122
0.5	1706	3.1	2275	12	2275	1.9	289.151	-S4500	080-42	128
0.5	1749	3.0	2332	12	2332	1.3	296.430	-S3100	080-42	125
0.5	1803	2.9	2404	11	2404	0.8	305.567	-S2100	080-42	122
0.4	1905	2.8	2539	11	2539	1.7	322.773	-S4500	080-42	128
0.4	1978	2.7	2637	10	2637	1.1	335.215	-S3100	080-42	125
0.4	2123	2.5	2830	9.7	2830	1.0	359.758	-S3100	080-42	125
0.4	2157	2.5	2875	9.5	2875	1.2	365.500	-S4500	080-42	128
0.4	2401	2.2	3201	8.6	3201	0.9	406.829	-S3100	080-42	125
0.4	2407	2.2	3210	8.5	3210	1.2	408.000	-S4500	080-42	128

Selection tables, 4-pole motors

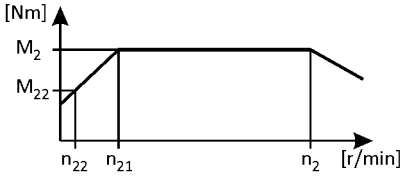


120 Hz: P_N = 4.0 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
32	34	131	49	760	49	2.9	4.579	-S400	090-32	109
28	39	114	56	661	56	2.4	5.267	-S220	090-32	104
25	44	102	62	594	62	2.7	5.860	-S400	090-32	109
23	48	94	68	543	68	2.7	6.411	-S400	090-32	109
23	48	93	68	542	68	1.0	6.425	-S130	090-32	99
21	51	87	73	506	73	2.9	6.880	-S660	090-32	114
21	52	85	75	495	75	0.9	7.029	-S130	090-32	99
19	57	78	82	452	82	2.9	7.702	-S950	090-32	119
14	76	59	109	340	109	2.8	10.240	-S400	090-32	109
13	84	53	120	309	120	2.9	11.262	-S660	090-32	114
13	86	52	123	301	123	2.5	11.569	-S400	090-32	109
12	92	49	131	283	131	2.9	12.320	-S660	090-32	114
11	96	47	137	271	137	2.9	12.832	-S660	090-32	114
11	98	46	140	266	140	2.2	13.105	-S400	090-32	109
10	105	43	149	248	149	2.9	14.037	-S660	090-32	114
10	107	42	153	243	153	2.0	14.336	-S400	090-32	109
9.8	110	41	158	235	158	1.9	14.806	-S400	090-32	109
9.2	117	38	167	222	167	2.7	15.714	-S660	090-32	114
9.1	119	38	170	218	170	2.9	16.000	-S950	090-32	119
9.0	121	37	172	215	172	1.8	16.197	-S400	090-32	109
8.1	134	34	191	194	191	2.9	17.905	-S950	090-32	119
8.1	134	34	191	194	191	2.6	17.905	-S660	090-32	114
7.9	136	33	195	190	195	1.8	18.286	-S400	090-32	109
7.5	144	31	205	181	205	2.8	19.250	-S660	090-32	114
7.1	151	30	216	171	216	0.9	20.300	-S220	090-32	104
7.0	154	29	220	168	220	1.6	20.659	-S400	090-32	109
6.6	164	27	234	159	234	2.4	21.933	-S660	090-32	114
6.5	167	27	239	155	239	1.4	22.400	-S400	090-32	109
5.8	187	24	267	139	267	1.9	25.056	-S660	090-32	114
5.7	189	24	270	138	270	1.3	25.308	-S400	090-32	109
5.7	190	24	272	136	272	2.8	25.511	-S950	090-32	119
5.1	213	21	304	122	304	2.7	28.548	-S950	090-32	119
5.1	213	21	304	122	304	1.9	28.548	-S660	090-32	114
5.0	217	21	310	119	310	1.1	29.156	-S400	090-32	109
4.7	232	19	332	112	332	1.9	31.167	-S660	090-32	114

Selection tables, 4-pole motors



120 Hz: P_N = 4.0 kW

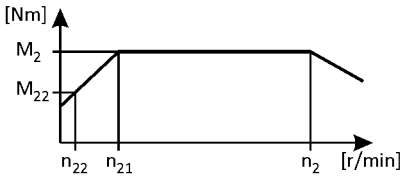
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
4.6	233	19	333	111	333	2.5	31.267	-S950	090-32	119
4.4	246	18	351	106	351	1.1	32.940	-S400	090-32	109
4.1	261	17	373	100	373	2.4	34.989	-S950	090-32	119
4.1	265	17	378	98	378	1.7	35.511	-S660	090-32	114
4.0	270	17	386	96	386	1.0	36.267	-S400	090-32	109
3.6	301	15	430	86	430	1.2	40.333	-S660	090-32	114
3.5	305	15	436	85	436	0.9	40.974	-S400	090-32	109
3.5	306	15	437	85	437	2.1	41.067	-S950	090-32	119
3.3	331	14	473	78	473	2.5	44.431	-S2100	090-32	122
3.2	343	13	489	76	489	1.9	45.956	-S950	090-32	119
3.2	343	13	489	76	489	1.2	45.956	-S660	090-32	114
3.0	365	12	521	71	521	0.8	48.950	-S660	090-32	114
2.9	368	12	526	71	526	2.5	49.378	-S2100	090-32	122
2.9	372	12	531	70	531	1.7	49.840	-S950	090-32	119
2.8	390	12	557	67	557	2.5	52.311	-S3100	090-32	125
2.7	402	11	574	65	574	2.2	53.924	-S2100	090-32	122
2.6	416	11	594	62	594	1.5	55.773	-S950	090-32	119
2.6	416	11	594	62	594	0.8	55.773	-S660	090-32	114
2.5	441	10	630	59	630	2.5	59.156	-S3100	090-32	125
2.4	447	10	638	58	638	2.2	59.927	-S2100	090-32	122
2.3	470	9.5	671	55	671	1.0	63.000	-S950	090-32	119
2.3	473	9.5	676	55	676	2.2	63.487	-S3100	090-32	125
2.1	508	8.8	726	51	726	1.7	68.162	-S2100	090-32	122
2.1	526	8.5	751	49	751	0.9	70.500	-S950	090-32	119
2.0	535	8.4	765	49	765	2.2	71.793	-S3100	090-32	125
1.9	565	7.9	807	46	807	1.7	75.750	-S2100	090-32	122

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
2.9	366	12	523	70	523	1.0	49.867	-S660	090-32	114
2.9	367	12	525	70	525	1.6	50.027	-S950	090-32	119
2.6	411	11	587	62	587	1.4	55.982	-S950	090-32	119
2.6	417	11	596	61	596	0.9	56.818	-S660	090-32	114
2.3	469	9.4	669	55	669	0.9	63.817	-S660	090-32	114
2.3	470	9.4	672	54	672	1.2	64.022	-S950	090-32	119
2.1	514	8.6	735	50	735	1.2	70.037	-S950	090-32	119
2.1	516	8.5	737	50	737	2.7	70.302	-S2100	090-32	122
2.0	526	8.4	752	49	752	1.2	71.644	-S950	090-32	119

Selection tables, 4-pole motors

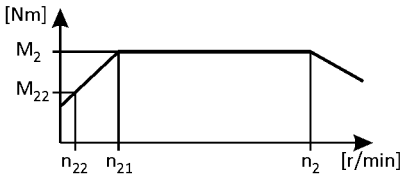


120 Hz: P_N = 4.0 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
2.0	534	8.3	763	48	763	0.8	72.713	-S660	090-32	114
1.9	565	7.8	807	45	807	2.4	76.907	-S2100	090-32	122
1.9	574	7.7	820	45	820	2.4	78.128	-S2100	090-32	122
1.9	576	7.7	822	44	822	1.1	78.375	-S950	090-32	119
1.8	608	7.2	868	42	868	3.4	82.769	-S3100	090-32	125
1.7	628	7.0	897	41	897	2.2	85.468	-S2100	090-32	122
1.6	656	6.7	937	39	937	1.0	89.333	-S950	090-32	119
1.6	665	6.6	950	38	950	3.1	90.546	-S3100	090-32	125
1.6	682	6.5	974	38	974	3.7	92.825	-S4500	090-32	128
1.5	687	6.4	982	37	982	3.0	93.599	-S3100	090-32	125
1.5	720	6.1	1029	36	1029	1.9	98.095	-S2100	090-32	122
1.5	734	6.0	1049	35	1049	0.9	99.968	-S950	090-32	119
1.4	752	5.9	1074	34	1074	2.8	102.393	-S3100	090-32	125
1.4	761	5.8	1087	34	1087	3.7	103.619	-S4500	090-32	128
1.3	801	5.5	1144	32	1144	1.7	109.016	-S2100	090-32	122
1.3	848	5.2	1211	30	1211	2.4	115.492	-S3100	090-32	125
1.2	882	5.0	1261	29	1261	1.6	120.167	-S2100	090-32	122
1.1	959	4.6	1370	27	1370	2.2	130.603	-S3100	090-32	125
1.1	981	4.5	1401	26	1401	1.4	133.544	-S2100	090-32	122
1.0	1039	4.2	1484	25	1484	2.0	141.478	-S3100	090-32	125
1.0	1087	4.1	1553	24	1553	2.8	148.005	-S4500	090-32	128
0.9	1149	3.8	1641	22	1641	1.2	156.407	-S2100	090-32	122
0.9	1175	3.8	1678	22	1678	1.8	159.989	-S3100	090-32	125
0.9	1213	3.6	1733	21	1733	2.5	165.215	-S4500	090-32	128
0.8	1276	3.5	1823	20	1823	1.1	173.820	-S2100	090-32	122
0.8	1332	3.3	1903	19	1903	2.3	181.396	-S4500	090-32	128
0.8	1352	3.3	1932	19	1932	1.5	184.146	-S3100	090-32	125
0.7	1429	3.1	2041	18	2041	1.0	194.556	-S2100	090-32	122
0.7	1487	3.0	2124	17	2124	2.0	202.489	-S4500	090-32	128
0.7	1529	2.9	2184	17	2184	1.4	208.240	-S3100	090-32	125
0.7	1588	2.8	2268	16	2268	0.9	216.215	-S2100	090-32	122
0.6	1682	2.6	2403	15	2403	1.2	229.059	-S3100	090-32	125
0.6	1749	2.5	2499	15	2499	1.7	238.252	-S4500	090-32	128
0.6	1902	2.3	2717	13	2717	1.1	259.030	-S3100	090-32	125
0.5	1953	2.3	2790	13	2790	1.5	265.956	-S4500	090-32	128

Selection tables, 4-pole motors

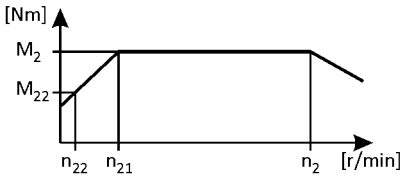


120 Hz: P_N = 4.0 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
0.5	2123	2.1	3033	12	3033	1.4	289.151	-S4500	090-32	128
0.5	2177	2.0	3109	12	3109	1.0	296.430	-S3100	090-32	125
0.4	2370	1.9	3386	11	3386	1.3	322.773	-S4500	090-32	128
0.4	2461	1.8	3516	10	3516	0.8	335.215	-S3100	090-32	125
0.4	2684	1.6	3834	9.5	3834	1.0	365.500	-S4500	090-32	128
0.4	2996	1.5	4280	8.5	4280	1.0	408.000	-S4500	090-32	128

Selection tables, 4-pole motors

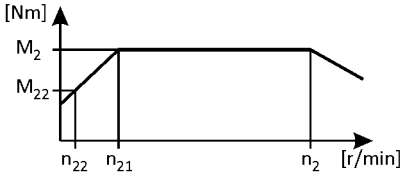


120 Hz: P_N = 5.5 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
32	46	131	66	770	66	2.8	4.579	-S400	100-12	109
27	54	112	78	656	78	4.1	5.376	-S660	100-12	114
25	59	102	85	602	85	2.3	5.860	-S400	100-12	109
24	61	99	87	584	87	4.1	6.038	-S950	100-12	119
23	65	94	93	550	93	2.1	6.411	-S400	100-12	109
21	70	87	99	512	99	3.5	6.880	-S660	100-12	114
19	78	78	111	458	111	3.5	7.702	-S950	100-12	119
14	104	59	148	344	148	2.0	10.240	-S400	100-12	109
13	114	53	163	313	163	3.1	11.262	-S660	100-12	114
12	125	49	178	286	178	2.8	12.320	-S660	100-12	114
12	127	48	181	281	181	3.9	12.544	-S950	100-12	119
11	130	47	185	275	185	2.7	12.832	-S660	100-12	114
11	133	46	189	269	189	1.6	13.105	-S400	100-12	109
10	142	43	203	251	203	2.5	14.037	-S660	100-12	114
10	145	42	207	246	207	1.5	14.336	-S400	100-12	109
9.2	159	38	227	224	227	2.2	15.714	-S660	100-12	114
9.1	162	38	231	220	231	3.1	16.000	-S950	100-12	119
8.1	181	34	259	197	259	2.8	17.905	-S950	100-12	119
8.1	181	34	259	197	259	1.9	17.905	-S660	100-12	114
7.9	185	33	264	193	264	1.3	18.286	-S400	100-12	109
7.5	195	31	278	183	278	2.0	19.250	-S660	100-12	114
7.4	198	31	283	180	283	2.9	19.600	-S950	100-12	119
7.0	209	29	299	171	299	1.1	20.659	-S400	100-12	109
6.6	222	27	317	161	317	2.6	21.933	-S950	100-12	119
6.6	222	27	317	161	317	1.8	21.933	-S660	100-12	114
6.5	227	27	324	157	324	1.1	22.400	-S400	100-12	109
5.8	254	24	362	141	362	1.4	25.056	-S660	100-12	114
5.7	256	24	366	139	366	0.9	25.308	-S400	100-12	109
5.7	258	24	369	138	369	2.2	25.511	-S950	100-12	119
5.1	286	21	409	125	409	3.4	28.275	-S2100	100-12	122
5.1	289	21	413	124	413	2.0	28.548	-S950	100-12	119
5.1	289	21	413	124	413	1.4	28.548	-S660	100-12	114
4.7	315	19	451	113	451	1.4	31.167	-S660	100-12	114
4.6	316	19	452	113	452	2.0	31.267	-S950	100-12	119
4.6	318	19	454	112	454	3.8	31.422	-S2100	100-12	122

Selection tables, 4-pole motors



120 Hz: P_N = 5.5 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
4.4	337	18	481	106	481	3.8	33.289	-S3100	100-12	125
4.2	347	18	496	103	496	3.2	34.333	-S2100	100-12	122
4.1	354	17	506	101	506	1.8	34.989	-S950	100-12	119
4.1	359	17	513	99	513	1.2	35.511	-S660	100-12	114
3.9	381	16	544	94	544	3.8	37.644	-S3100	100-12	125
3.8	386	16	552	92	552	3.2	38.156	-S2100	100-12	122
3.6	409	15	584	87	584	3.2	40.422	-S3100	100-12	125
3.5	416	15	594	86	594	1.5	41.067	-S950	100-12	119
3.4	426	14	608	84	608	3.2	42.044	-S4500	100-12	128
3.3	450	14	642	79	642	2.6	44.431	-S2100	100-12	122
3.2	463	13	661	77	661	3.2	45.711	-S3100	100-12	125
3.2	465	13	664	77	664	1.4	45.956	-S950	100-12	119
3.1	475	13	678	75	678	3.2	46.933	-S4500	100-12	128
2.9	500	12	714	71	714	2.6	49.378	-S2100	100-12	122
2.9	504	12	720	71	720	1.2	49.840	-S950	100-12	119
2.8	516	12	738	69	738	2.7	51.027	-S4500	100-12	128
2.8	529	12	756	67	756	2.6	52.311	-S3100	100-12	125
2.7	546	11	780	65	780	2.2	53.924	-S2100	100-12	122
2.6	564	11	806	63	806	1.1	55.773	-S950	100-12	119
2.5	576	11	823	62	823	2.7	56.960	-S4500	100-12	128
2.5	599	10	855	60	855	2.6	59.156	-S3100	100-12	125
2.4	606	10	866	59	866	2.2	59.927	-S2100	100-12	122
2.3	642	9.5	918	56	918	2.2	63.487	-S3100	100-12	125
2.2	653	9.3	932	55	932	2.2	64.500	-S4500	100-12	128
2.1	690	8.8	985	52	985	1.4	68.162	-S2100	100-12	122
2.0	727	8.4	1038	49	1038	2.2	71.793	-S3100	100-12	125
2.0	729	8.3	1041	49	1041	2.2	72.000	-S4500	100-12	128
1.9	767	7.9	1095	47	1095	1.4	75.750	-S2100	100-12	122

6.4

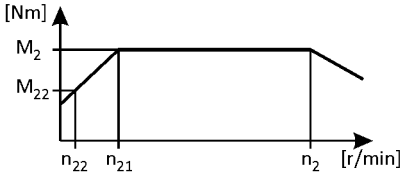
3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
3.6	399	15	570	88	570	2.6	40.056	-S2100	100-12	122
3.3	444	14	634	79	634	2.4	44.515	-S2100	100-12	122
3.1	470	13	672	75	672	3.3	47.159	-S3100	100-12	125
2.9	499	12	712	71	712	1.1	50.027	-S950	100-12	119
2.7	532	11	759	66	759	3.4	53.330	-S3100	100-12	125
2.6	548	11	782	64	782	2.2	54.933	-S2100	100-12	122
2.4	609	9.8	869	58	869	2.0	61.049	-S2100	100-12	122

Selection tables, 4-pole motors

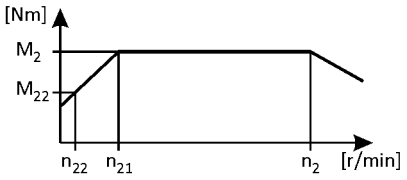
120 Hz: P_N = 5.5 kW

3-stage gearboxes



Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
2.2	645	9.3	921	55	921	2.9	64.676	-S3100	100-12	125
2.2	648	9.2	925	54	925	4.2	64.978	-S4500	100-12	128
2.1	698	8.6	997	50	997	0.9	70.037	-S950	100-12	119
2.1	701	8.5	1001	50	1001	1.9	70.302	-S2100	100-12	122
2.0	723	8.3	1033	49	1033	4.1	72.533	-S4500	100-12	128
2.0	725	8.2	1036	48	1036	4.1	72.775	-S4500	100-12	128
2.0	729	8.2	1041	48	1041	2.8	73.138	-S3100	100-12	125
1.9	767	7.8	1095	46	1095	1.8	76.907	-S2100	100-12	122
1.9	779	7.7	1112	45	1112	1.8	78.128	-S2100	100-12	122
1.8	810	7.4	1157	43	1157	3.7	81.237	-S4500	100-12	128
1.8	825	7.2	1179	43	1179	2.5	82.769	-S3100	100-12	125
1.7	852	7.0	1217	41	1217	1.6	85.468	-S2100	100-12	122
1.6	903	6.6	1289	39	1289	2.3	90.546	-S3100	100-12	125
1.6	925	6.5	1322	38	1322	3.2	92.825	-S4500	100-12	128
1.5	933	6.4	1333	38	1333	2.2	93.599	-S3100	100-12	125
1.5	978	6.1	1397	36	1397	1.4	98.095	-S2100	100-12	122
1.4	1021	5.9	1458	34	1458	2.0	102.393	-S3100	100-12	125
1.4	1033	5.8	1475	34	1475	2.9	103.619	-S4500	100-12	128
1.3	1087	5.5	1552	32	1552	1.3	109.016	-S2100	100-12	122
1.3	1133	5.3	1619	31	1619	2.6	113.711	-S4500	100-12	128
1.3	1151	5.2	1645	31	1645	1.8	115.492	-S3100	100-12	125
1.2	1198	5.0	1711	29	1711	1.1	120.167	-S2100	100-12	122
1.1	1265	4.7	1807	28	1807	2.4	126.933	-S4500	100-12	128
1.1	1302	4.6	1860	27	1860	1.6	130.603	-S3100	100-12	125
1.1	1331	4.5	1902	26	1902	1.0	133.544	-S2100	100-12	122
1.0	1410	4.2	2015	25	2015	1.5	141.478	-S3100	100-12	125
1.0	1475	4.1	2107	24	2107	2.0	148.005	-S4500	100-12	128
0.9	1559	3.8	2227	23	2227	0.9	156.407	-S2100	100-12	122
0.9	1595	3.8	2278	22	2278	1.3	159.989	-S3100	100-12	125
0.9	1647	3.6	2353	21	2353	1.8	165.215	-S4500	100-12	128
0.8	1808	3.3	2583	19	2583	1.7	181.396	-S4500	100-12	128
0.8	1836	3.3	2622	19	2622	1.1	184.146	-S3100	100-12	125
0.7	2018	3.0	2883	17	2883	1.5	202.489	-S4500	100-12	128
0.7	2076	2.9	2965	17	2965	1.0	208.240	-S3100	100-12	125
0.6	2283	2.6	3262	15	3262	0.9	229.059	-S3100	100-12	125

Selection tables, 4-pole motors

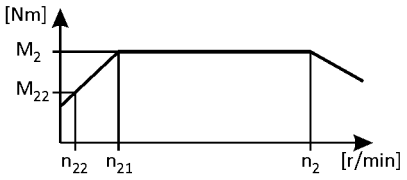


120 Hz: P_N = 5.5 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
0.6	2375	2.5	3393	15	3393	1.3	238.252	-S4500	100-12	128
0.5	2651	2.3	3787	13	3787	1.1	265.956	-S4500	100-12	128
0.5	2882	2.1	4117	12	4117	1.0	289.151	-S4500	100-12	128
0.4	3217	1.9	4596	11	4596	0.9	322.773	-S4500	100-12	128

Selection tables, 4-pole motors

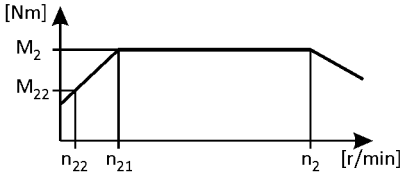


120 Hz: P_N = 7.5 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
32	63	131	91	768	91	2.0	4.579	-S400	100-32	109
25	81	102	116	600	116	1.7	5.860	-S400	100-32	109
23	89	94	127	548	127	1.6	6.411	-S400	100-32	109
21	95	87	136	511	136	2.6	6.880	-S660	100-32	114
19	107	78	152	456	152	2.5	7.702	-S950	100-32	119
13	156	53	223	312	223	2.2	11.262	-S660	100-32	114
12	171	49	244	285	244	2.0	12.320	-S660	100-32	114
11	178	47	254	274	254	2.0	12.832	-S660	100-32	114
9.2	218	38	311	224	311	1.6	15.714	-S660	100-32	114
9.1	221	38	316	220	316	2.3	16.000	-S950	100-32	119
8.1	248	34	354	196	354	2.0	17.905	-S950	100-32	119
7.5	266	31	381	183	381	1.5	19.250	-S660	100-32	114
7.4	271	31	387	179	387	2.1	19.600	-S950	100-32	119
6.6	304	27	434	160	434	1.9	21.933	-S950	100-32	119
6.6	304	27	434	160	434	1.3	21.933	-S660	100-32	114
5.8	347	24	495	140	495	1.0	25.056	-S660	100-32	114
5.7	353	24	504	138	504	1.6	25.511	-S950	100-32	119
5.1	391	21	559	124	559	2.5	28.275	-S2100	100-32	122
5.1	395	21	564	123	564	1.4	28.548	-S950	100-32	119
5.1	395	21	564	123	564	1.0	28.548	-S660	100-32	114
4.7	431	19	616	113	616	1.0	31.167	-S660	100-32	114
4.6	433	19	618	112	618	1.5	31.267	-S950	100-32	119
4.6	435	19	621	112	621	2.8	31.422	-S2100	100-32	122
4.4	461	18	658	106	658	2.8	33.289	-S3100	100-32	125
4.2	475	18	679	102	679	2.4	34.333	-S2100	100-32	122
4.1	484	17	692	101	692	1.3	34.989	-S950	100-32	119
4.1	491	17	702	99	702	0.9	35.511	-S660	100-32	114
3.9	521	16	744	93	744	2.8	37.644	-S3100	100-32	125
3.8	528	16	754	92	754	2.4	38.156	-S2100	100-32	122
3.6	559	15	799	87	799	2.4	40.422	-S3100	100-32	125
3.5	568	15	812	86	812	1.1	41.067	-S950	100-32	119
3.4	582	14	831	84	831	2.3	42.044	-S4500	100-32	128
3.3	615	14	878	79	878	1.9	44.431	-S2100	100-32	122
3.2	633	13	904	77	904	2.4	45.711	-S3100	100-32	125
3.2	636	13	908	77	908	1.0	45.956	-S950	100-32	119

Selection tables, 4-pole motors



120 Hz: P_N = 7.5 kW

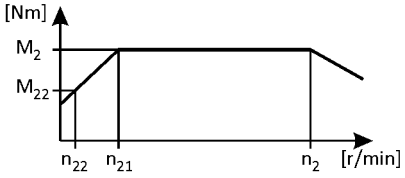
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
3.1	650	13	928	75	928	2.3	46.933	-S4500	100-32	128
2.9	683	12	976	71	976	1.9	49.378	-S2100	100-32	122
2.9	690	12	985	71	985	0.9	49.840	-S950	100-32	119
2.8	706	12	1009	69	1009	2.0	51.027	-S4500	100-32	128
2.8	724	12	1034	67	1034	1.9	52.311	-S3100	100-32	125
2.7	746	11	1066	65	1066	1.6	53.924	-S2100	100-32	122
2.6	772	11	1103	63	1103	0.8	55.773	-S950	100-32	119
2.5	788	11	1126	62	1126	2.0	56.960	-S4500	100-32	128
2.5	819	10	1169	59	1169	1.9	59.156	-S3100	100-32	125
2.4	829	10	1185	59	1185	1.6	59.927	-S2100	100-32	122
2.3	879	9.5	1255	55	1255	1.6	63.487	-S3100	100-32	125
2.2	893	9.3	1275	55	1275	1.6	64.500	-S4500	100-32	128
2.1	943	8.8	1347	52	1347	1.0	68.162	-S2100	100-32	122
2.0	994	8.4	1419	49	1419	1.6	71.793	-S3100	100-32	125
2.0	996	8.3	1423	49	1423	1.6	72.000	-S4500	100-32	128
1.9	1048	7.9	1497	46	1497	1.0	75.750	-S2100	100-32	122

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
3.1	643	13	918	75	918	2.4	47.159	-S3100	100-32	125
2.7	727	11	1038	66	1038	2.5	53.330	-S3100	100-32	125
2.6	749	11	1070	64	1070	1.6	54.933	-S2100	100-32	122
2.2	882	9.3	1259	54	1259	2.1	64.676	-S3100	100-32	125
2.2	886	9.2	1265	54	1265	3.0	64.978	-S4500	100-32	128
2.1	958	8.5	1369	50	1369	1.4	70.302	-S2100	100-32	122
2.0	989	8.3	1412	49	1412	3.0	72.533	-S4500	100-32	128
2.0	992	8.2	1417	48	1417	3.0	72.775	-S4500	100-32	128
2.0	997	8.2	1424	48	1424	2.1	73.138	-S3100	100-32	125
1.9	1048	7.8	1498	46	1498	1.3	76.907	-S2100	100-32	122
1.9	1065	7.7	1521	45	1521	1.3	78.128	-S2100	100-32	122
1.8	1107	7.4	1582	43	1582	2.7	81.237	-S4500	100-32	128
1.8	1128	7.2	1612	43	1612	1.8	82.769	-S3100	100-32	125
1.7	1165	7.0	1664	41	1664	1.2	85.468	-S2100	100-32	122
1.6	1234	6.6	1763	39	1763	1.7	90.546	-S3100	100-32	125
1.6	1265	6.5	1808	38	1808	2.4	92.825	-S4500	100-32	128
1.5	1276	6.4	1823	38	1823	1.6	93.599	-S3100	100-32	125
1.5	1337	6.1	1910	36	1910	1.0	98.095	-S2100	100-32	122
1.4	1396	5.9	1994	34	1994	1.5	102.393	-S3100	100-32	125

Selection tables, 4-pole motors

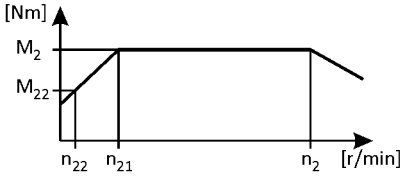


120 Hz: P_N = 7.5 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
1.4	1412	5.8	2018	34	2018	2.1	103.619	-S4500	100-32	128
1.3	1486	5.5	2123	32	2123	0.9	109.016	-S2100	100-32	122
1.3	1550	5.3	2214	31	2214	1.9	113.711	-S4500	100-32	128
1.3	1574	5.2	2249	30	2249	1.3	115.492	-S3100	100-32	125
1.2	1638	5.0	2340	29	2340	0.8	120.167	-S2100	100-32	122
1.1	1730	4.7	2472	28	2472	1.7	126.933	-S4500	100-32	128
1.1	1780	4.6	2543	27	2543	1.2	130.603	-S3100	100-32	125
1.0	1928	4.2	2755	25	2755	1.1	141.478	-S3100	100-32	125
1.0	2017	4.1	2882	24	2882	1.5	148.005	-S4500	100-32	128
0.9	2181	3.8	3115	22	3115	0.9	159.989	-S3100	100-32	125
0.9	2252	3.6	3217	21	3217	1.3	165.215	-S4500	100-32	128
0.8	2473	3.3	3532	19	3532	1.2	181.396	-S4500	100-32	128
0.8	2510	3.3	3586	19	3586	0.8	184.146	-S3100	100-32	125
0.7	2760	3.0	3943	17	3943	1.1	202.489	-S4500	100-32	128
0.6	3248	2.5	4639	15	4639	0.9	238.252	-S4500	100-32	128
0.5	3625	2.3	5179	13	5179	0.8	265.956	-S4500	100-32	128

Selection tables, 4-pole motors



120 Hz: P_N = 11.0 kW

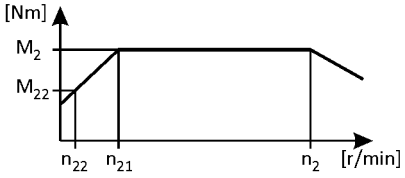
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
5.7	471	24	737	138	737	1.1	25.511	-S950	112-22	119
5.1	522	21	816	125	816	1.9	28.275	-S2100	112-22	122
4.6	578	19	903	113	903	1.0	31.267	-S950	112-22	119
4.6	581	19	907	112	907	2.1	31.422	-S2100	112-22	122
4.5	600	19	938	109	938	2.3	32.489	-S4500	112-22	128
4.4	615	18	961	106	961	2.1	33.289	-S3100	112-22	125
4.2	634	18	991	103	991	1.8	34.333	-S2100	112-22	122
4.1	647	17	1010	101	1010	0.9	34.989	-S950	112-22	119
4.0	670	17	1047	97	1047	2.3	36.267	-S4500	112-22	128
3.9	696	16	1087	94	1087	2.1	37.644	-S3100	112-22	125
3.8	705	16	1102	93	1102	1.8	38.156	-S2100	112-22	122
3.6	747	15	1167	87	1167	1.8	40.422	-S3100	112-22	125
3.4	777	14	1214	84	1214	1.8	42.044	-S4500	112-22	128
3.3	821	14	1283	79	1283	1.5	44.431	-S2100	112-22	122
3.2	845	13	1320	77	1320	1.8	45.711	-S3100	112-22	125
3.1	867	13	1355	75	1355	1.8	46.933	-S4500	112-22	128
2.9	912	12	1426	72	1426	1.4	49.378	-S2100	112-22	122
2.8	943	12	1473	69	1473	1.5	51.027	-S4500	112-22	128
2.8	967	12	1510	68	1510	1.5	52.311	-S3100	112-22	125
2.7	996	11	1557	66	1557	1.2	53.924	-S2100	112-22	122
2.5	1053	11	1644	62	1644	1.5	56.960	-S4500	112-22	128
2.5	1093	10	1708	60	1708	1.5	59.156	-S3100	112-22	125
2.4	1107	10	1730	59	1730	1.1	59.927	-S2100	112-22	122
2.3	1173	9.5	1833	56	1833	1.2	63.487	-S3100	112-22	125
2.2	1192	9.3	1862	55	1862	1.2	64.500	-S4500	112-22	128
2.0	1327	8.4	2073	49	2073	1.1	71.793	-S3100	112-22	125
2.0	1330	8.3	2079	49	2079	1.2	72.000	-S4500	112-22	128

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
2.2	1183	9.2	1848	54	1848	2.1	64.978	-S4500	112-22	128
2.0	1320	8.3	2063	49	2063	2.1	72.533	-S4500	112-22	128
2.0	1325	8.2	2070	49	2070	2.1	72.775	-S4500	112-22	128
1.8	1479	7.4	2310	44	2310	1.9	81.237	-S4500	112-22	128
1.8	1506	7.2	2354	43	2354	1.3	82.769	-S3100	112-22	125
1.6	1648	6.6	2575	39	2575	1.1	90.546	-S3100	112-22	125
1.6	1689	6.5	2640	38	2640	1.6	92.825	-S4500	112-22	128
1.4	1886	5.8	2947	34	2947	1.5	103.619	-S4500	112-22	128

Selection tables, 4-pole motors



120 Hz: P_N = 11.0 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
1.3	2070	5.3	3234	31	3234	1.3	113.711	-S4500	112-22	128
1.1	2310	4.7	3610	28	3610	1.2	126.933	-S4500	112-22	128
1.0	2694	4.1	4209	24	4209	1.0	148.005	-S4500	112-22	128
0.9	3007	3.6	4698	21	4698	0.9	165.215	-S4500	112-22	128
0.8	3302	3.3	5159	20	5159	0.8	181.396	-S4500	112-22	128

Dimensions, notes

Notes on the dimensions

The following legend shows the layout of the dimension sheets.

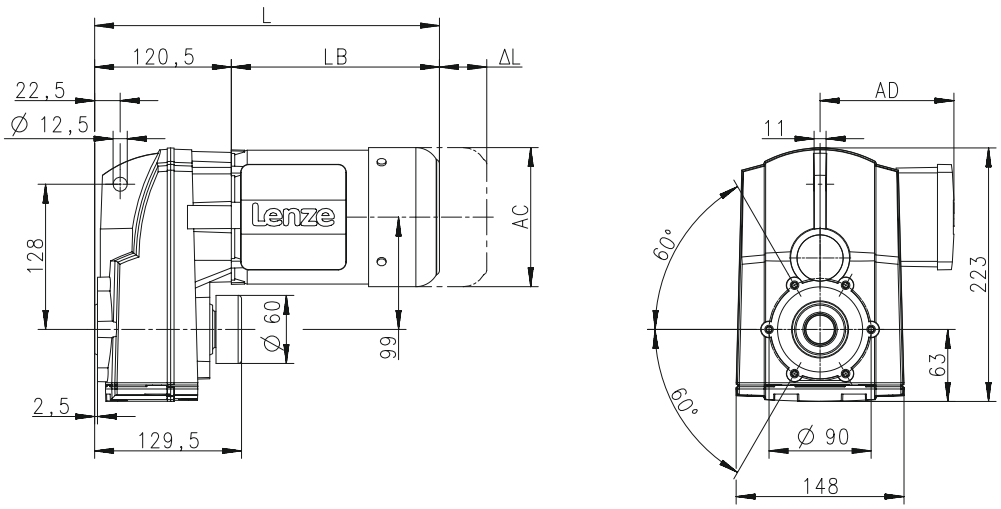
Product gearbox

g500-S130

Driven shaft design

Gearbox design

Abmessungen mit Schrumpfscheibe
Getriebeausführung: SDR, SCR, SCK



Product Motor

Produkt			MD□MA□□							
			063-12	063-32	063-42	071-32	071-42	080-32	080-42	090-32
Abmessungen										
Gesamtlänge	**L**	**[mm]**		304		324		347		380
Länge Motor	**LB**	**[mm]**		183		203		226		259
Länge Motoranbauten	**Δ L**	**[mm]**		170		165		183		181
Motordurchmesser	**AC**	**[mm]**		123		139		156		176
Abstand Motor/Anschluss	**AD**	**[mm]**		100		109		150		157

Distance of motor centre to the end of terminal box

Total length of the drive without built-on accessories

Motor diameter

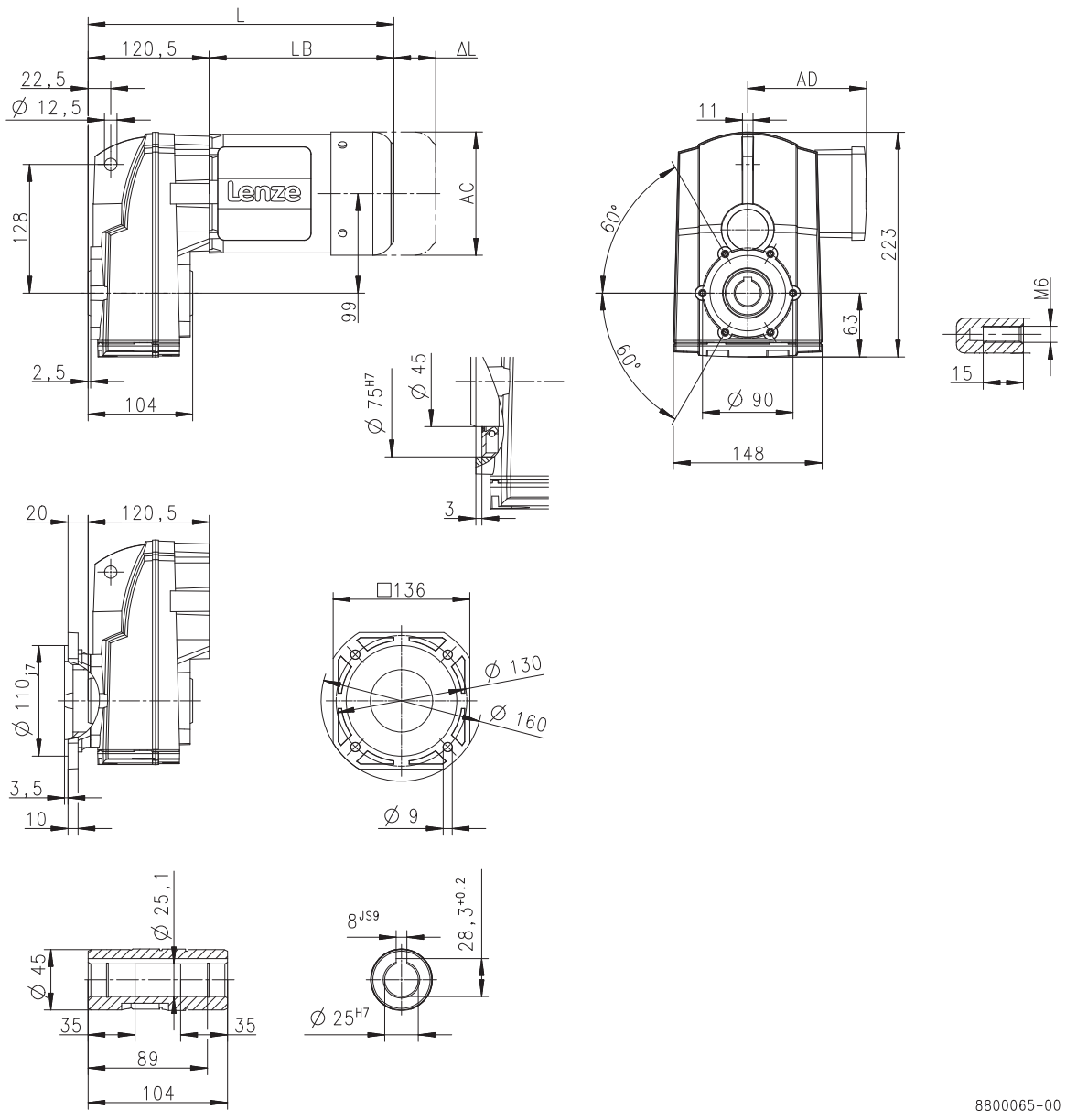
Motor length without built-on accessories

Additional length of the built-on accessories (longest version)

Dimensions, 4-pole motors

g500-S130

Dimensions with hollow shaft
Gearbox design: HDR, HCR, HCK

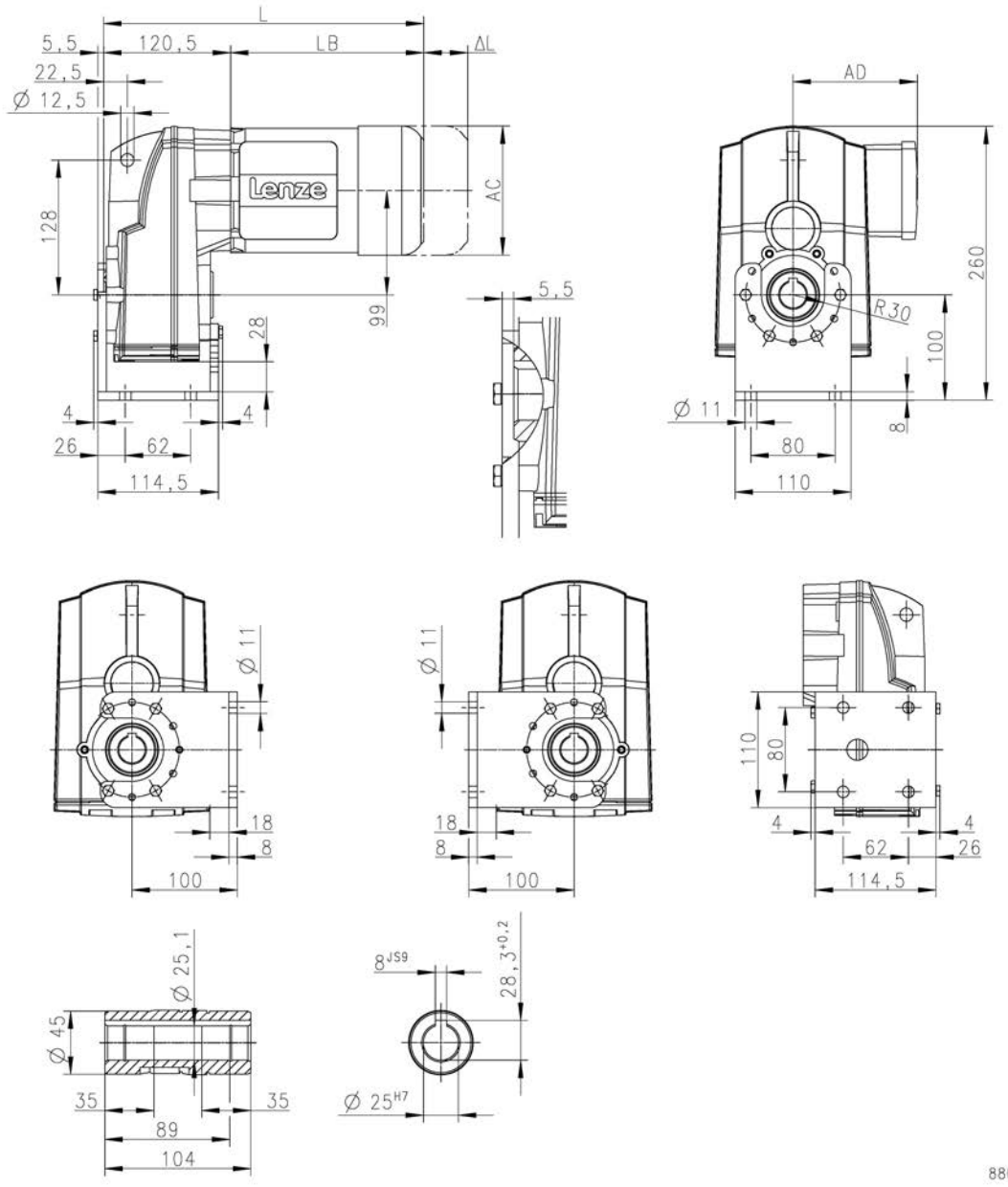


Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	304		325		347		407
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-S130

Dimensions with hollow shaft
Gearbox design: HBR

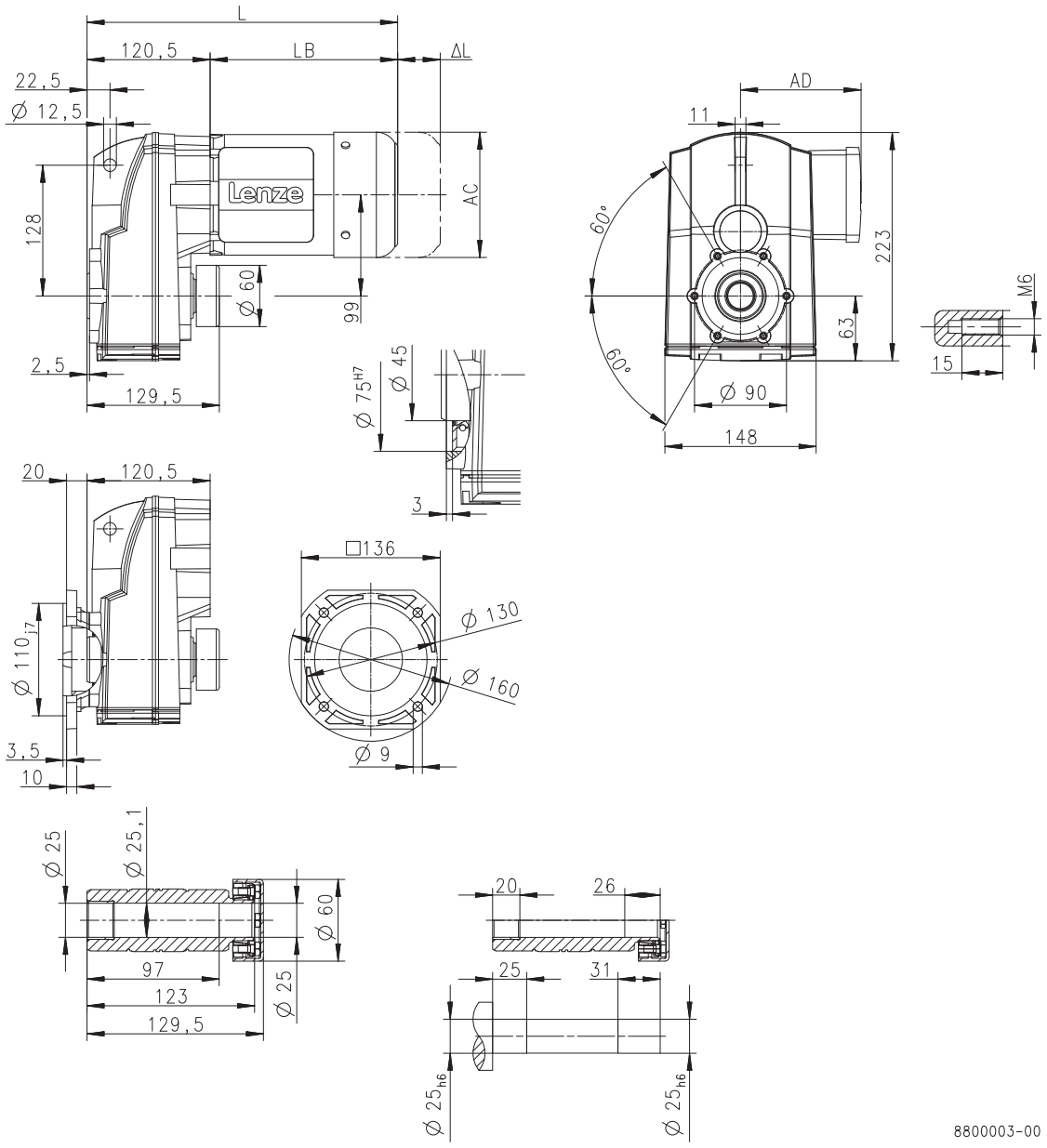


Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	304		325		347		407
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-S130

Dimensions hollow shaft with shrink disc
Gearbox design: SDR, SCR, SCK

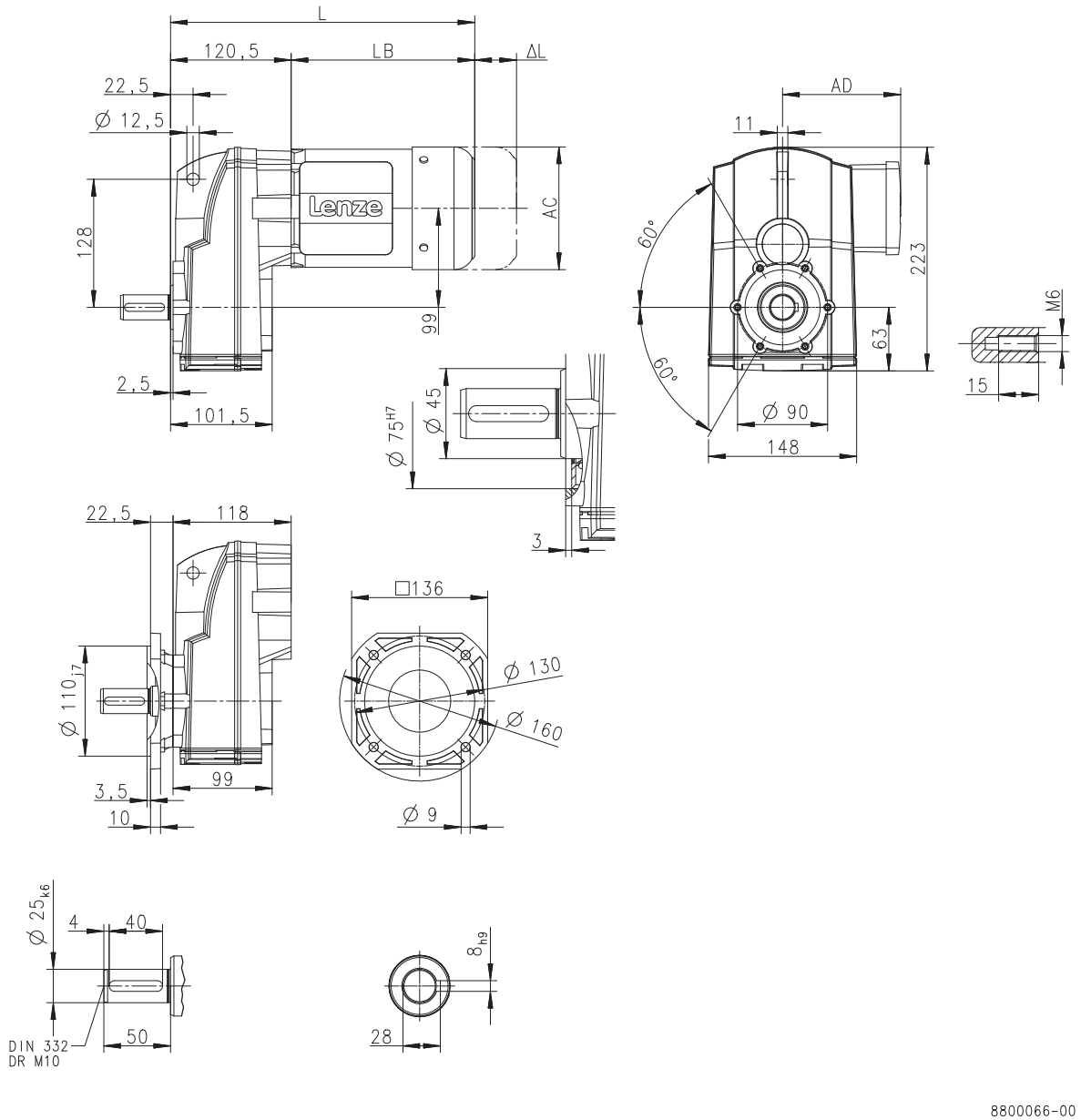


Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	304		325		347		407
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-S130

Dimensions with solid shaft
Gearbox design: VDR, VCR, VCK

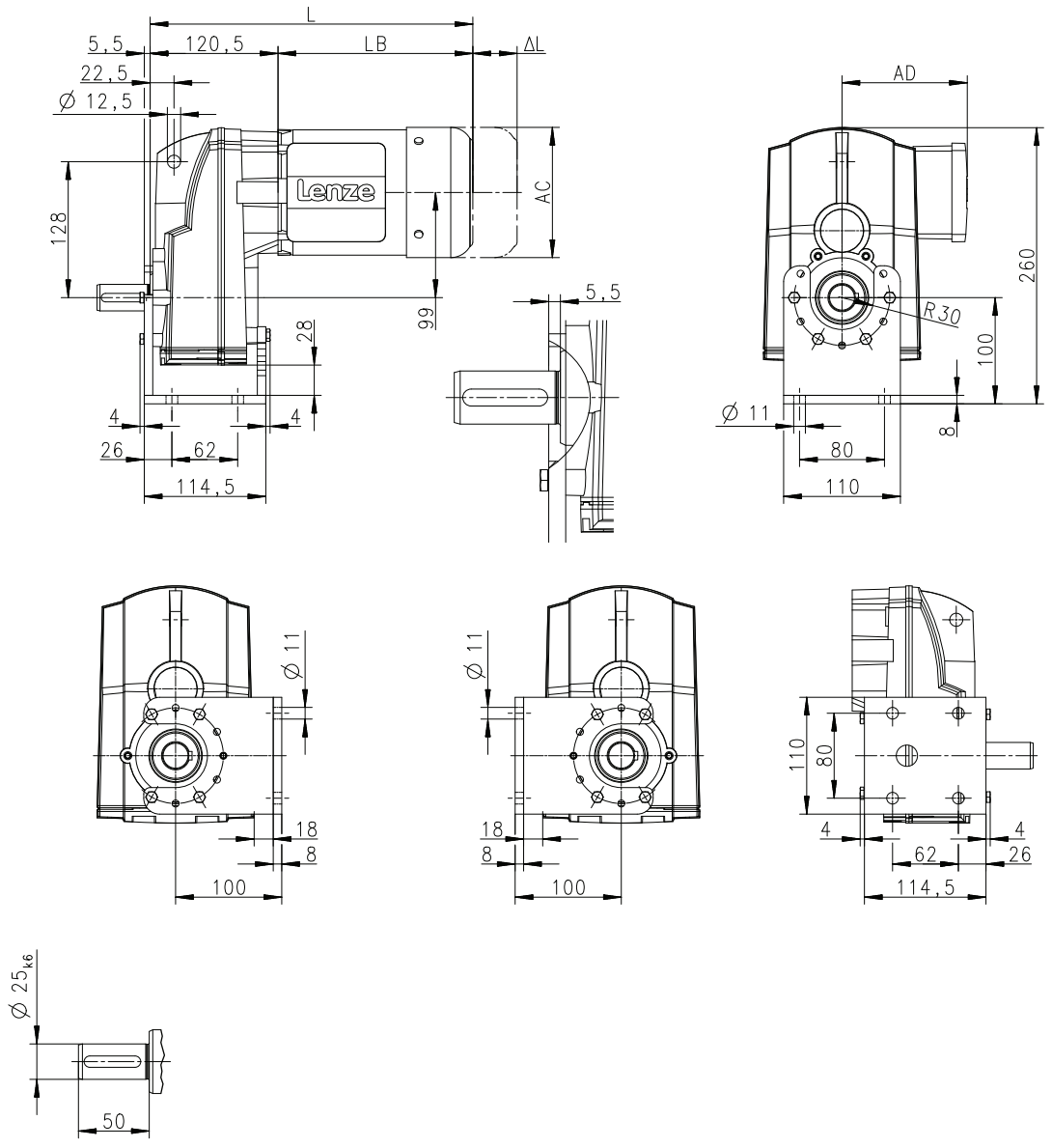


Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	304		325		347		407
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-S130

Dimensions with solid shaft
Gearbox design: VBR

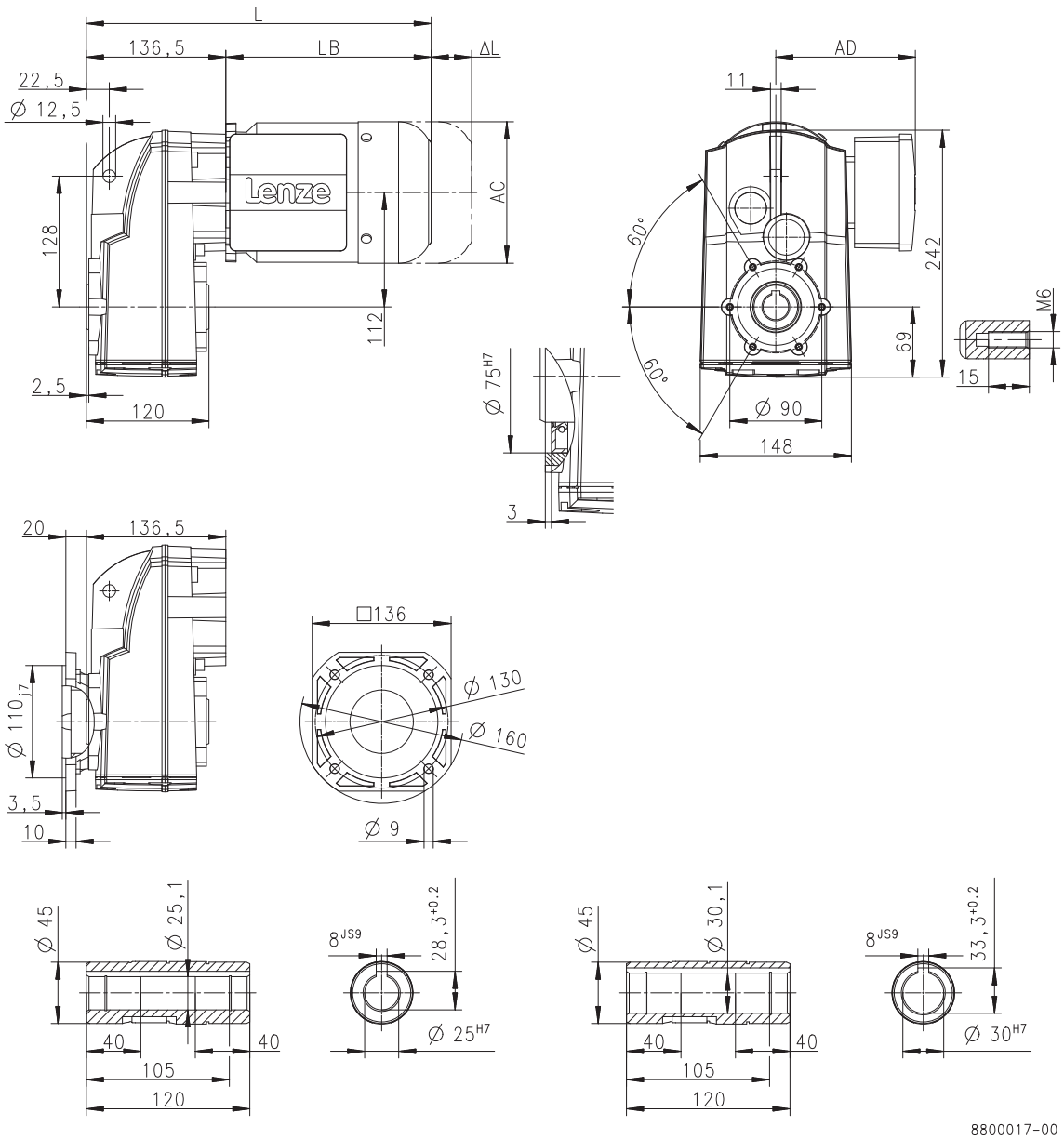


Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	304		325		347		407
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-S220

Dimensions with hollow shaft
Gearbox design: HDR, HCR, HCK

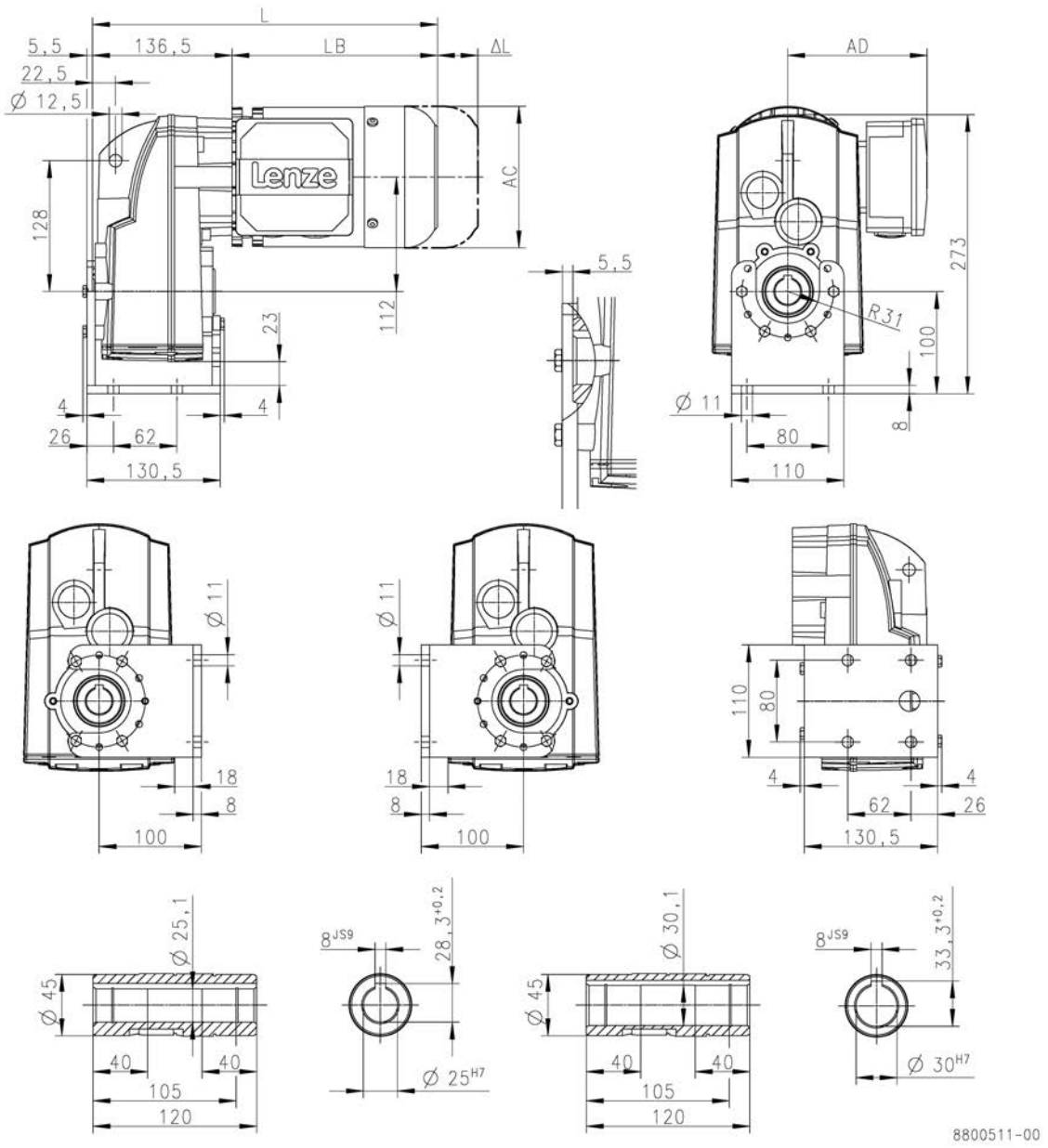


Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	320		341		363		423
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-S220

Dimensions with hollow shaft
Gearbox design: HBR

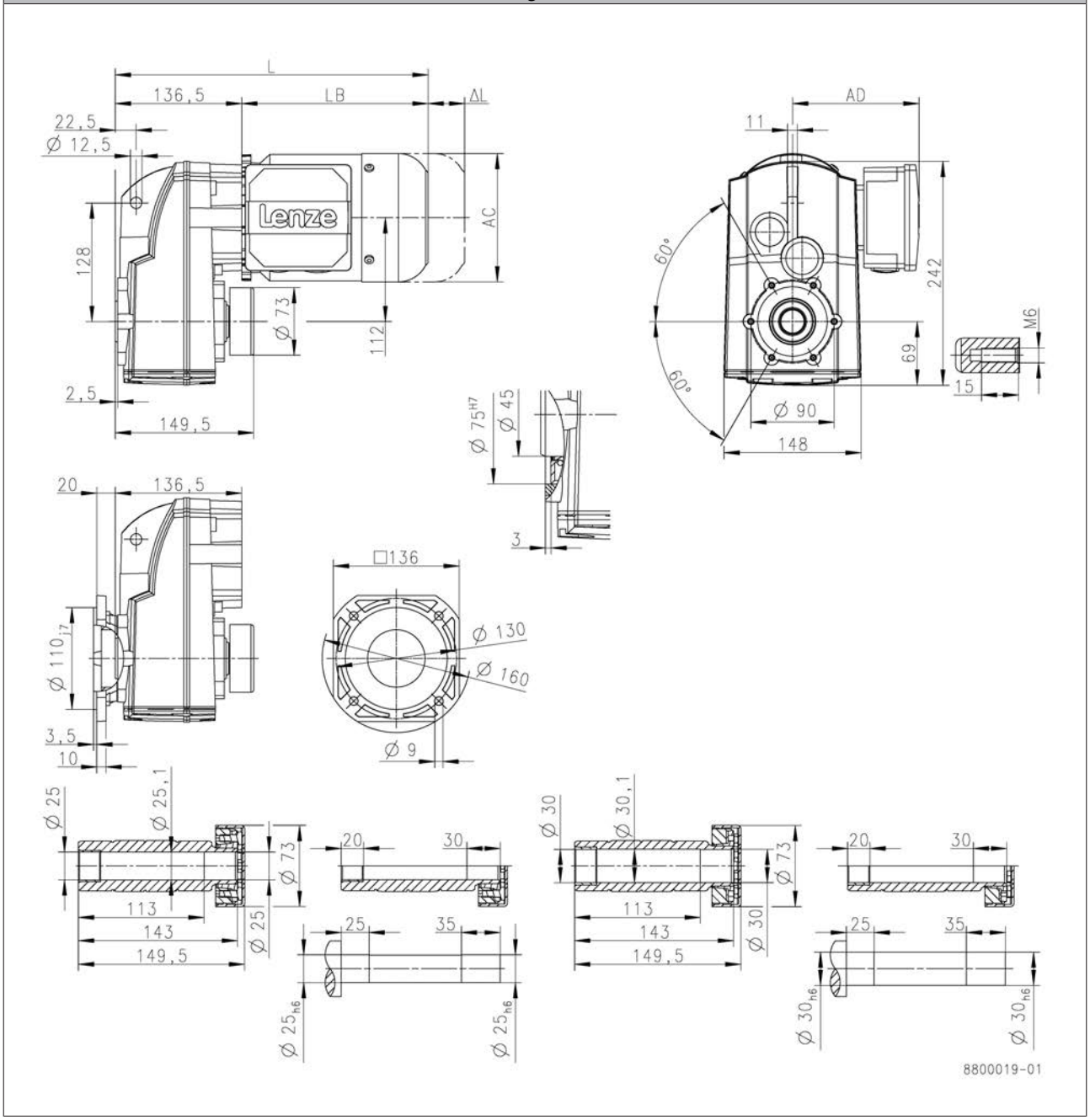


Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	320		341		363		423
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-S220

Dimensions hollow shaft with shrink disc
Gearbox design: SDR, SCR, SCK

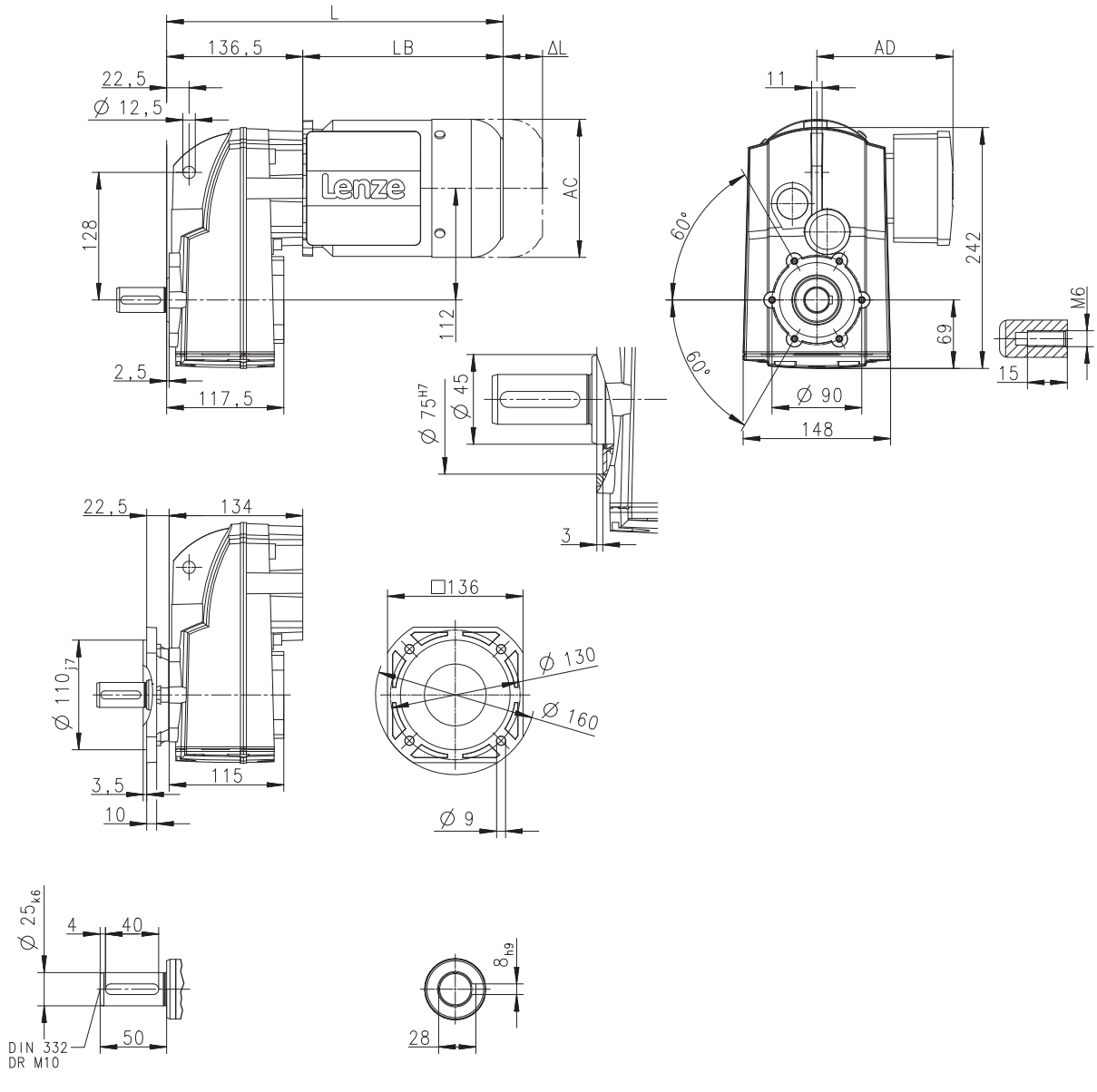


Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	320		341		363		423
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-S220

Dimensions with solid shaft
Gearbox design: VDR, VCR, VCK

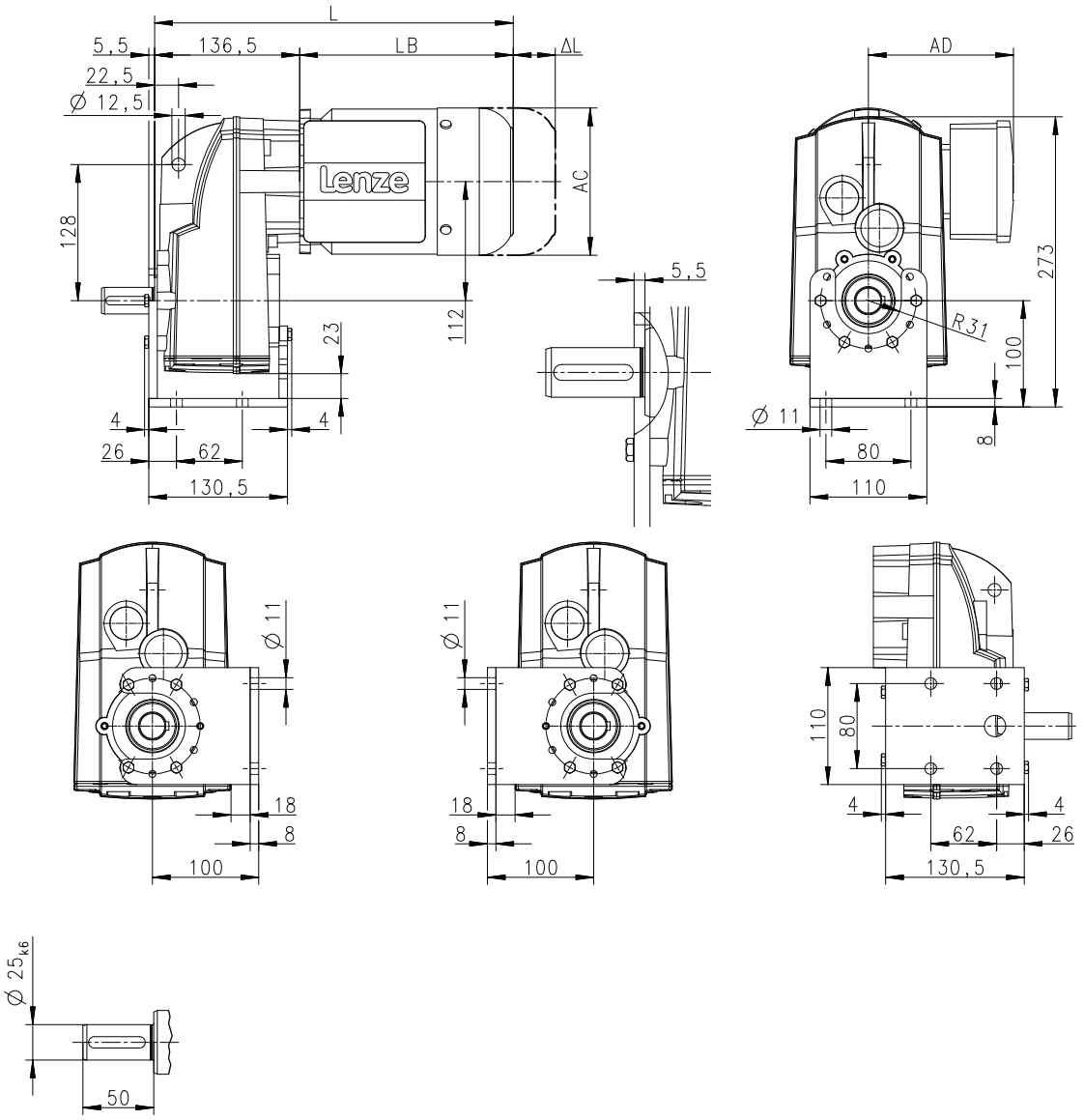


Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	[mm]	320		341		363		423
Motor length	**LB**	[mm]	183		204		226		286
Length of motor options	**Δ L**	[mm]	170		165		183		181
Motor diameter	**AC**	[mm]	123		139		156		176
Distance motor/connection	**AD**	[mm]	100		109		150		157

Dimensions, 4-pole motors

g500-S220

Dimensions with solid shaft
Gearbox design: VBR



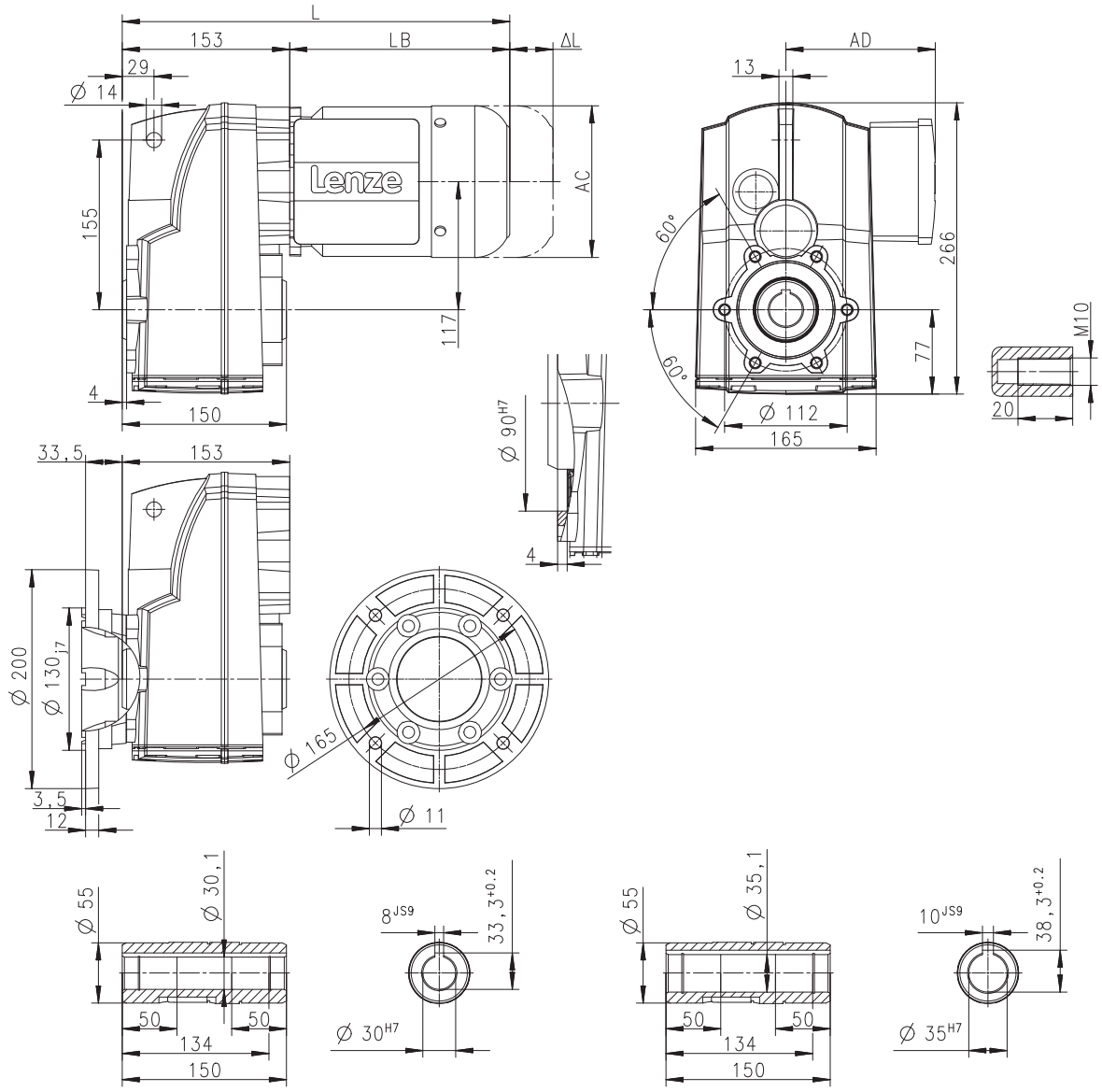
8800020-00

Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	320		341		363		423
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-S400

Dimensions with hollow shaft
Gearbox design: HDR, HCR, HCK

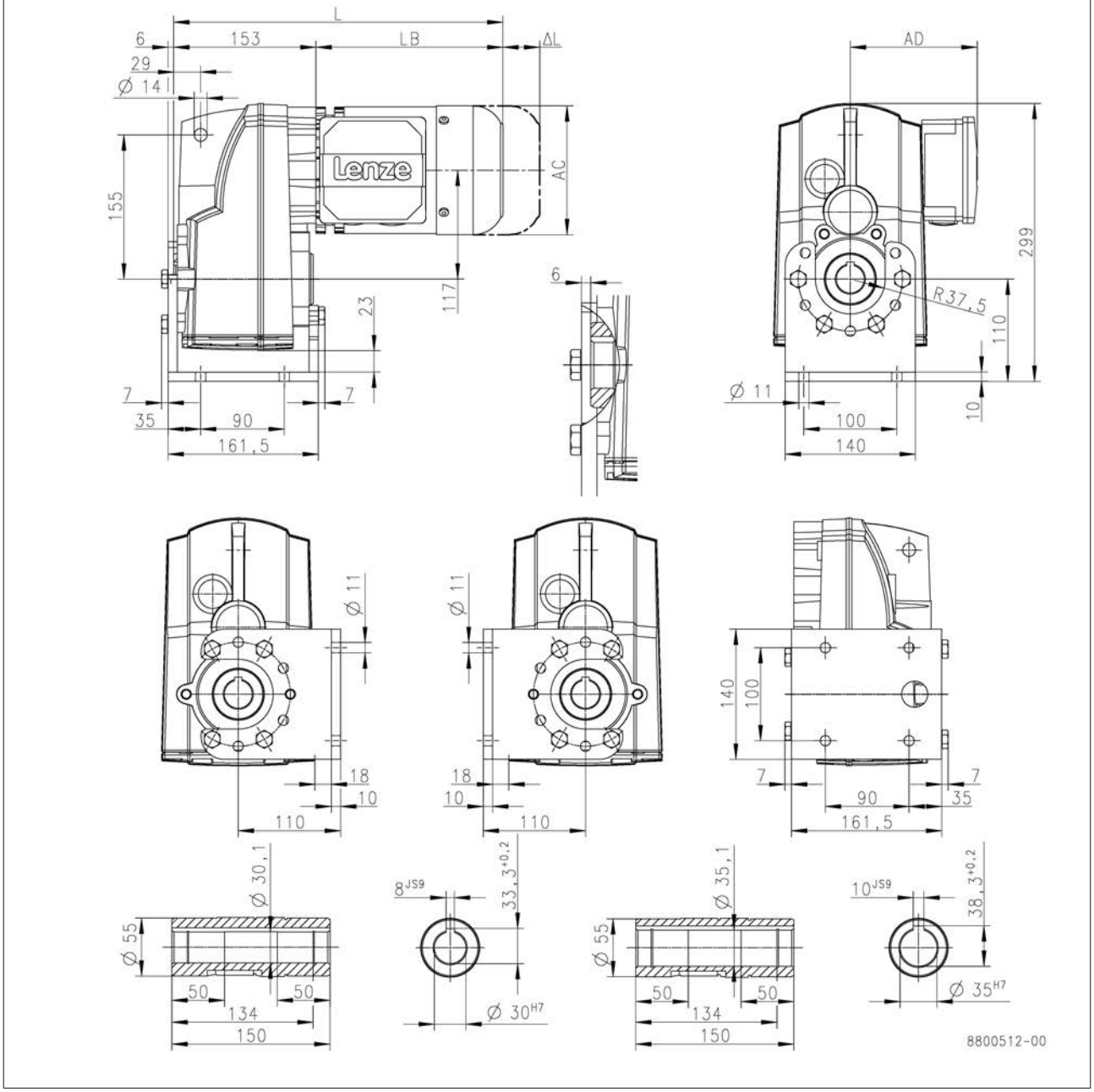


Product			MF□MA□□								
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions											
Total length	**L**	**[mm]**	336		357		379		439	488	
Motor length	**LB**	**[mm]**	183		204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170	
Motor diameter	**AC**	**[mm]**	123		139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166	

Dimensions, 4-pole motors

g500-S400

Dimensions with hollow shaft
Gearbox design: HBR

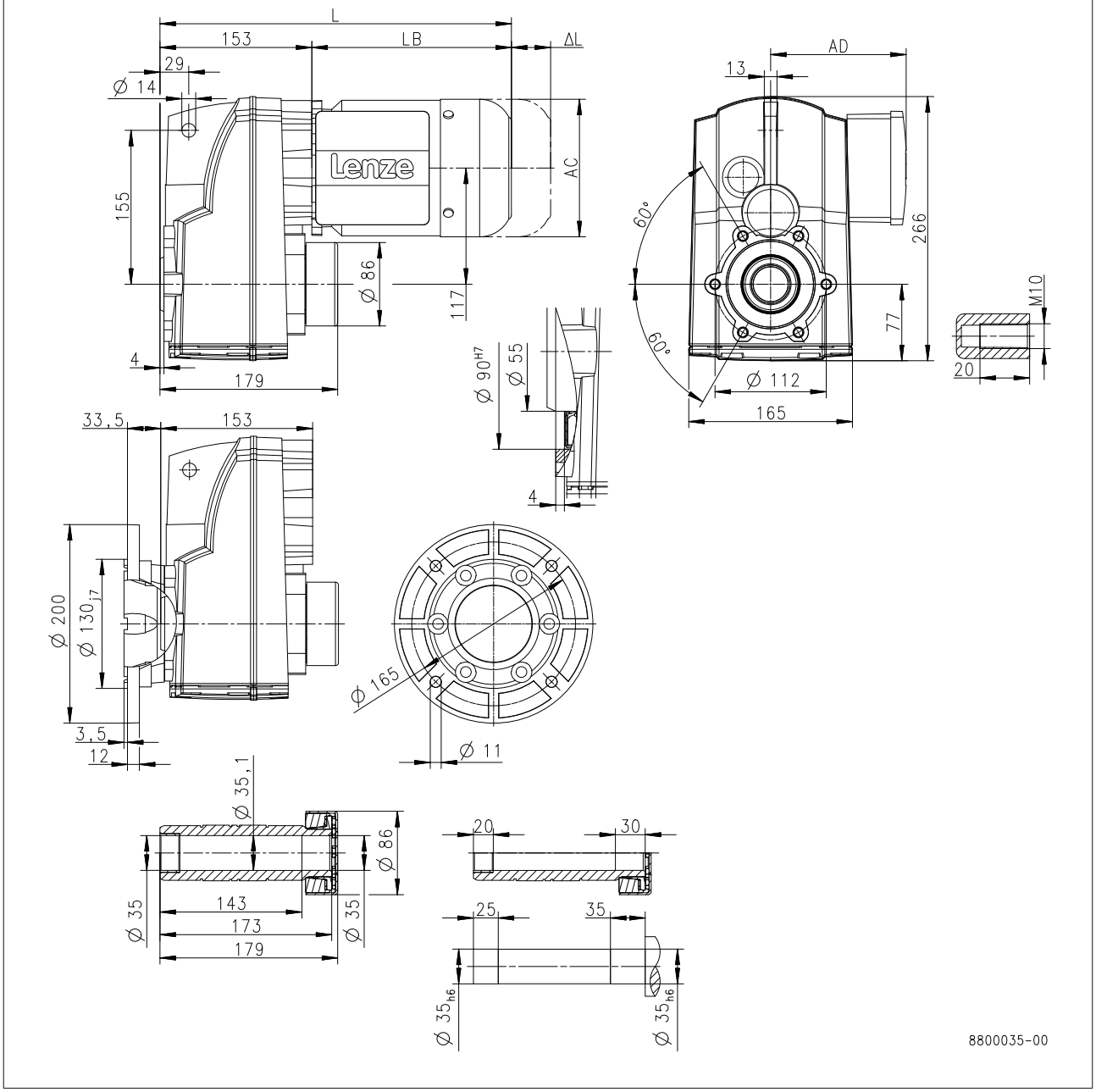


Product			MF□MA□□								
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions											
Total length	**L**	**[mm]**	336		357		379		439	488	
Motor length	**LB**	**[mm]**	183		204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170	
Motor diameter	**AC**	**[mm]**	123		139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166	

Dimensions, 4-pole motors

g500-S400

Dimensions hollow shaft with shrink disc
Gearbox design: SDR, SCR, SCK

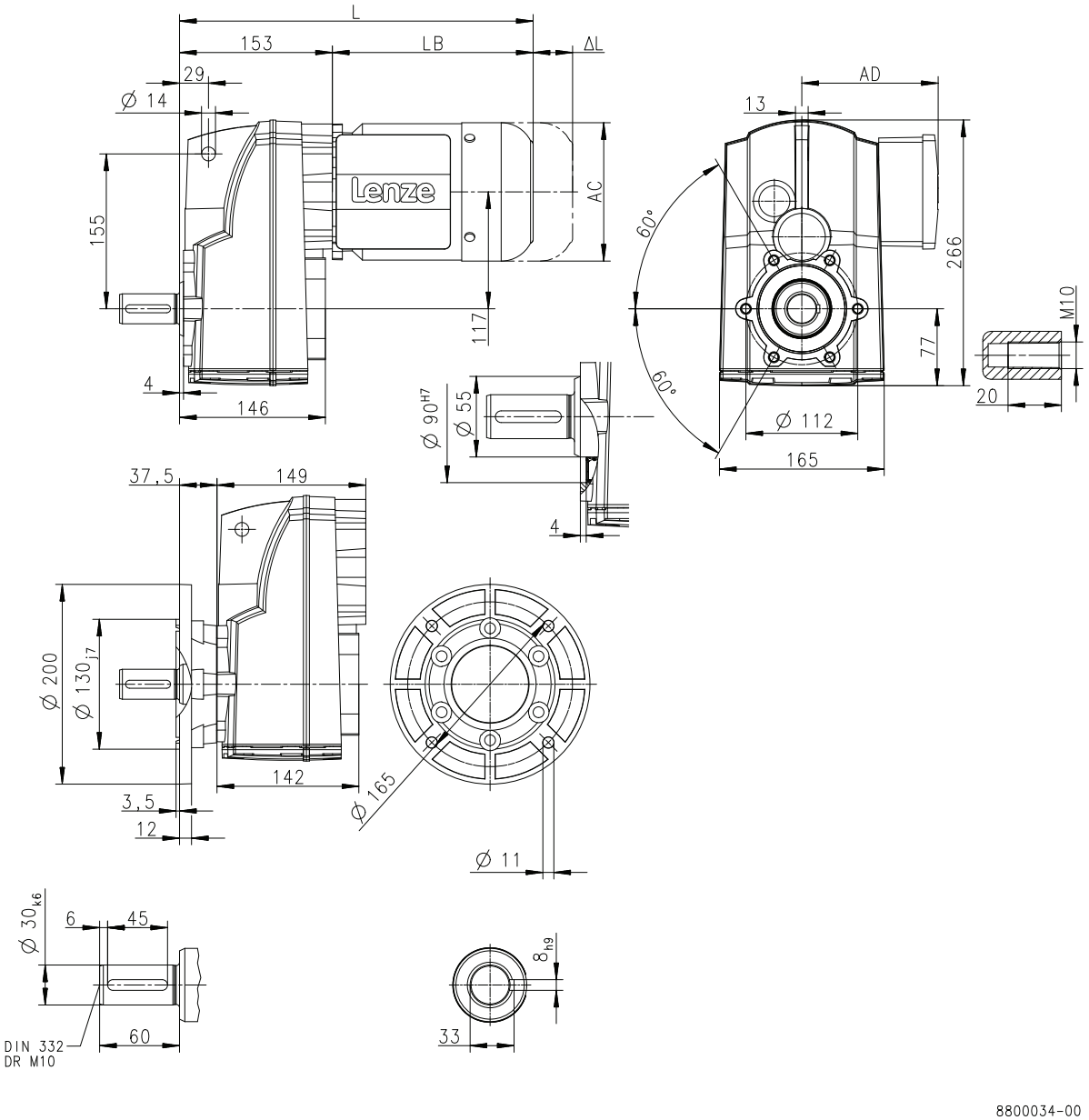


Product			MF□MA□□								
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions											
Total length	**L**	**[mm]**	336		357		379		439	488	
Motor length	**LB**	**[mm]**	183		204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170	
Motor diameter	**AC**	**[mm]**	123		139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166	

Dimensions, 4-pole motors

g500-S400

Dimensions with solid shaft
Gearbox design: VDR, VCR, VCK

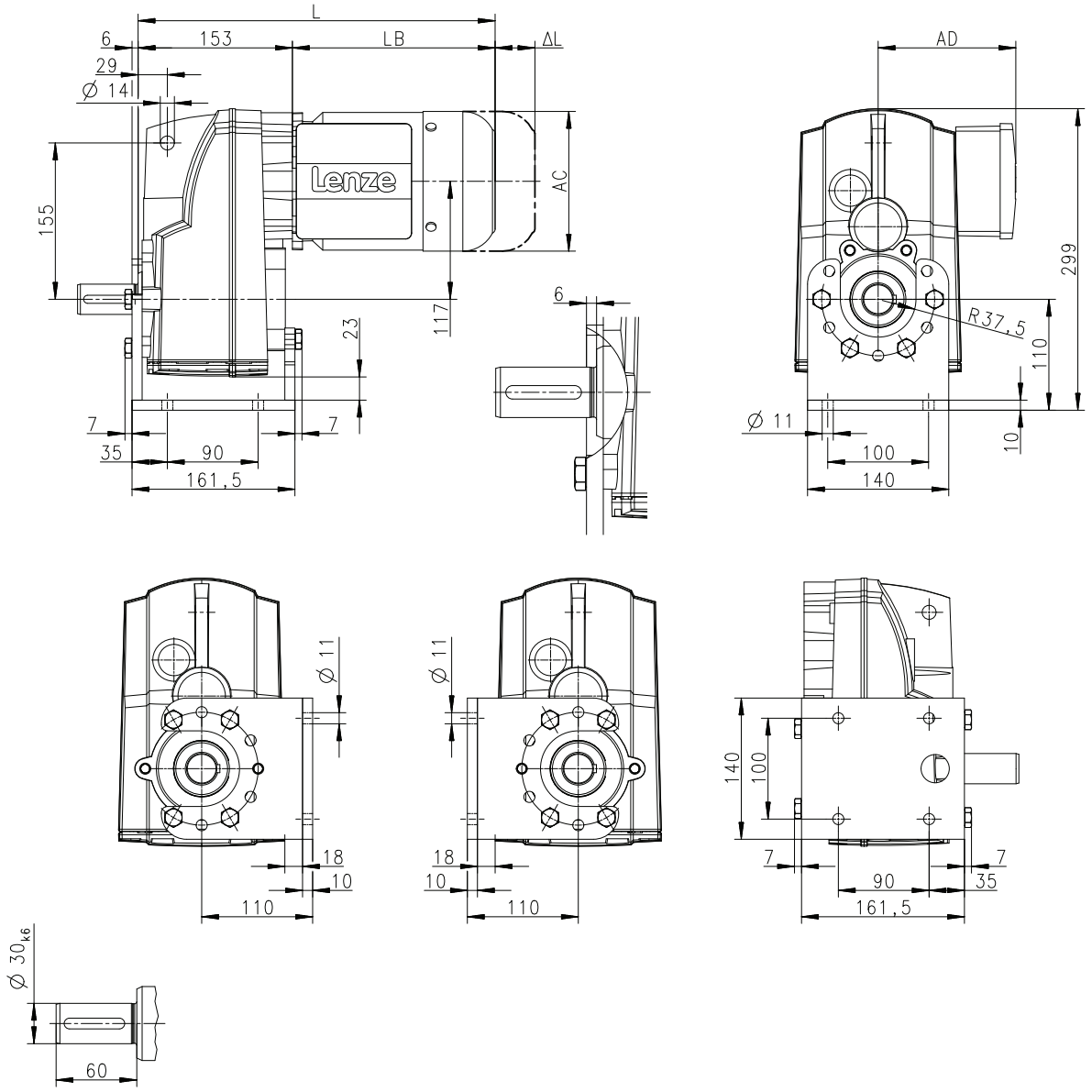


Product			MF□MA□□								
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions											
Total length	**L**	**[mm]**	336		357		379		439	488	
Motor length	**LB**	**[mm]**	183		204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170	
Motor diameter	**AC**	**[mm]**	123		139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166	

Dimensions, 4-pole motors

g500-S400

Dimensions with solid shaft
Gearbox design: VBR

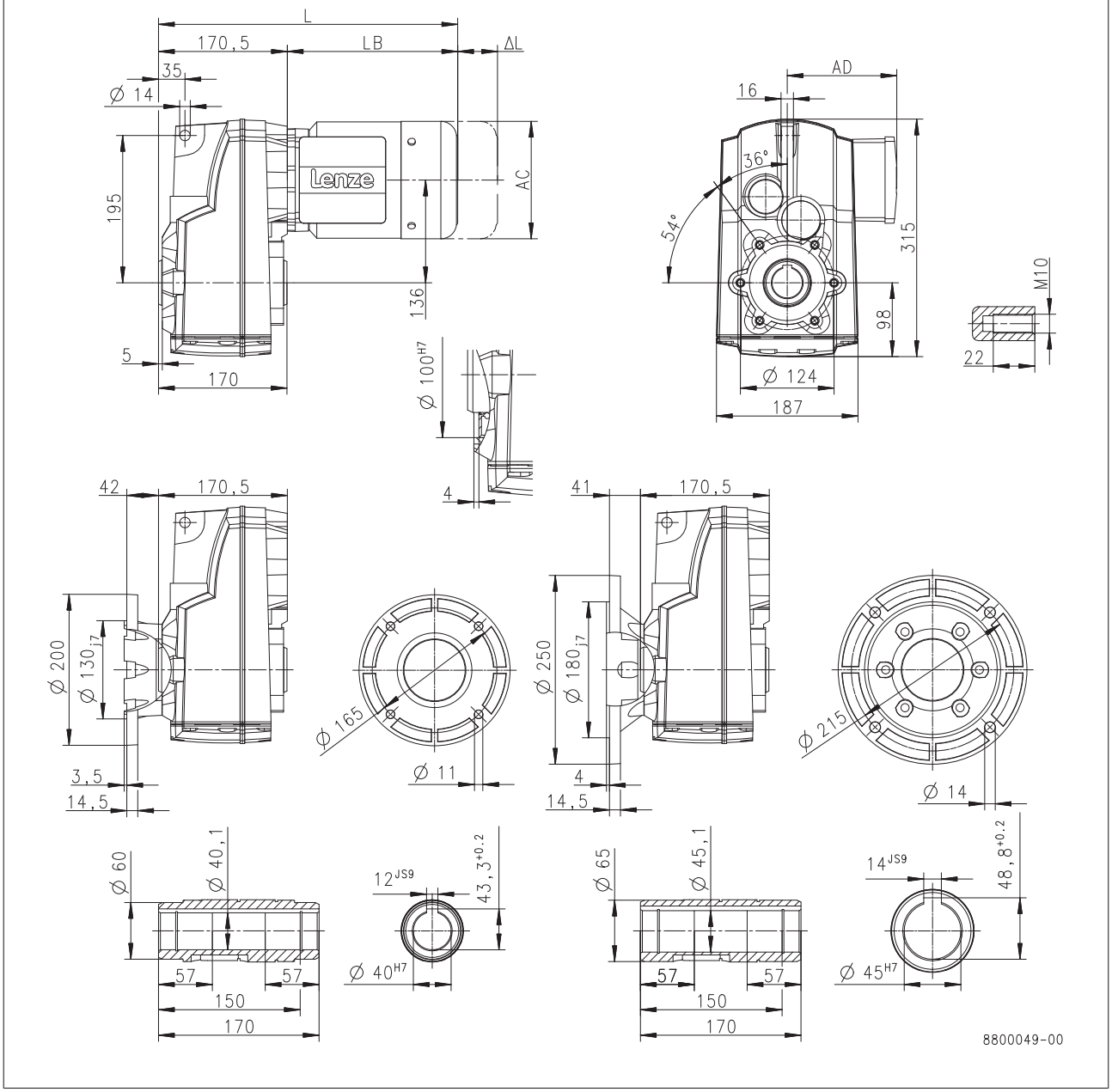


Product			MF□MA□□								
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions											
Total length	**L**	**[mm]**	336		357		379		439	488	
Motor length	**LB**	**[mm]**	183		204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170	
Motor diameter	**AC**	**[mm]**	123		139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166	

Dimensions, 4-pole motors

g500-S660

Dimensions with hollow shaft
Gearbox design: HDR, HCR, HCK

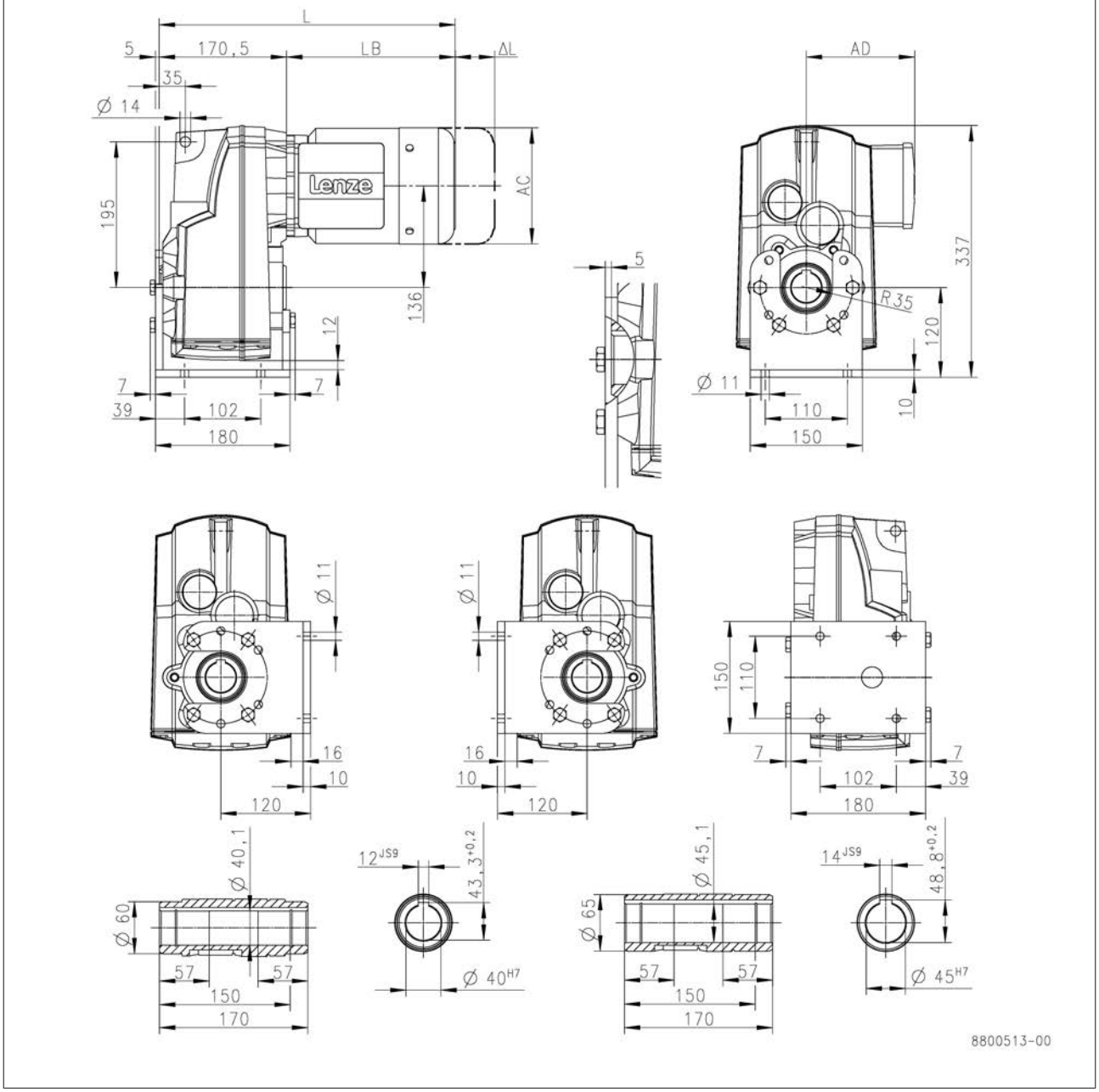


Product			MF□MA□□								
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions											
Total length	**L**	**[mm]**	354		375		397		457	506	
Motor length	**LB**	**[mm]**	183		204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170	
Motor diameter	**AC**	**[mm]**	123		139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166	

Dimensions, 4-pole motors

g500-S660

Dimensions with hollow shaft
Gearbox design: HBR

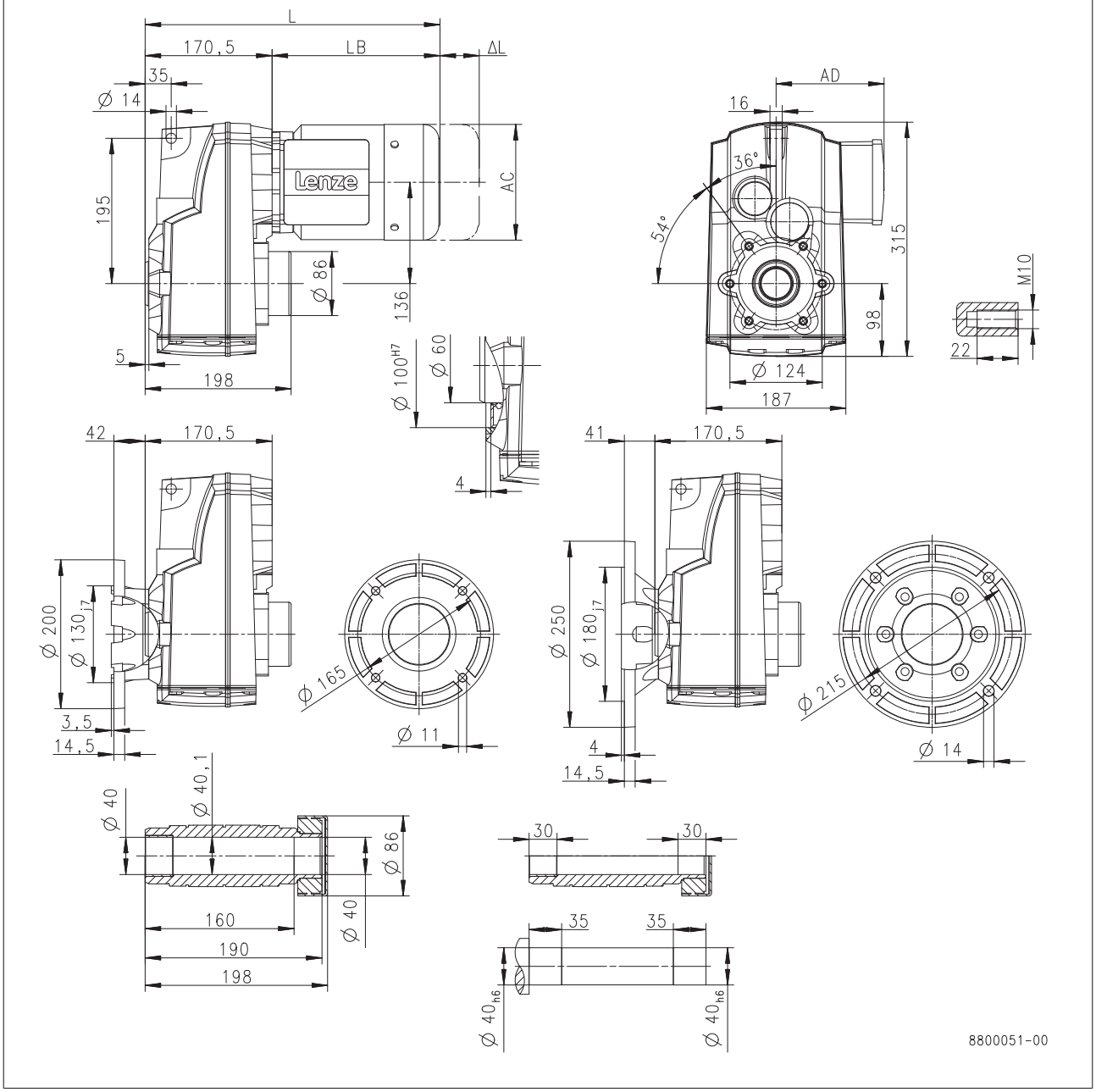


Product			MF□MA□□								
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions											
Total length	**L**	**[mm]**	354		375		397		457	506	
Motor length	**LB**	**[mm]**	183		204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170	
Motor diameter	**AC**	**[mm]**	123		139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166	

Dimensions, 4-pole motors

g500-S660

Dimensions hollow shaft with shrink disc
Gearbox design: SDR, SCR, SCK

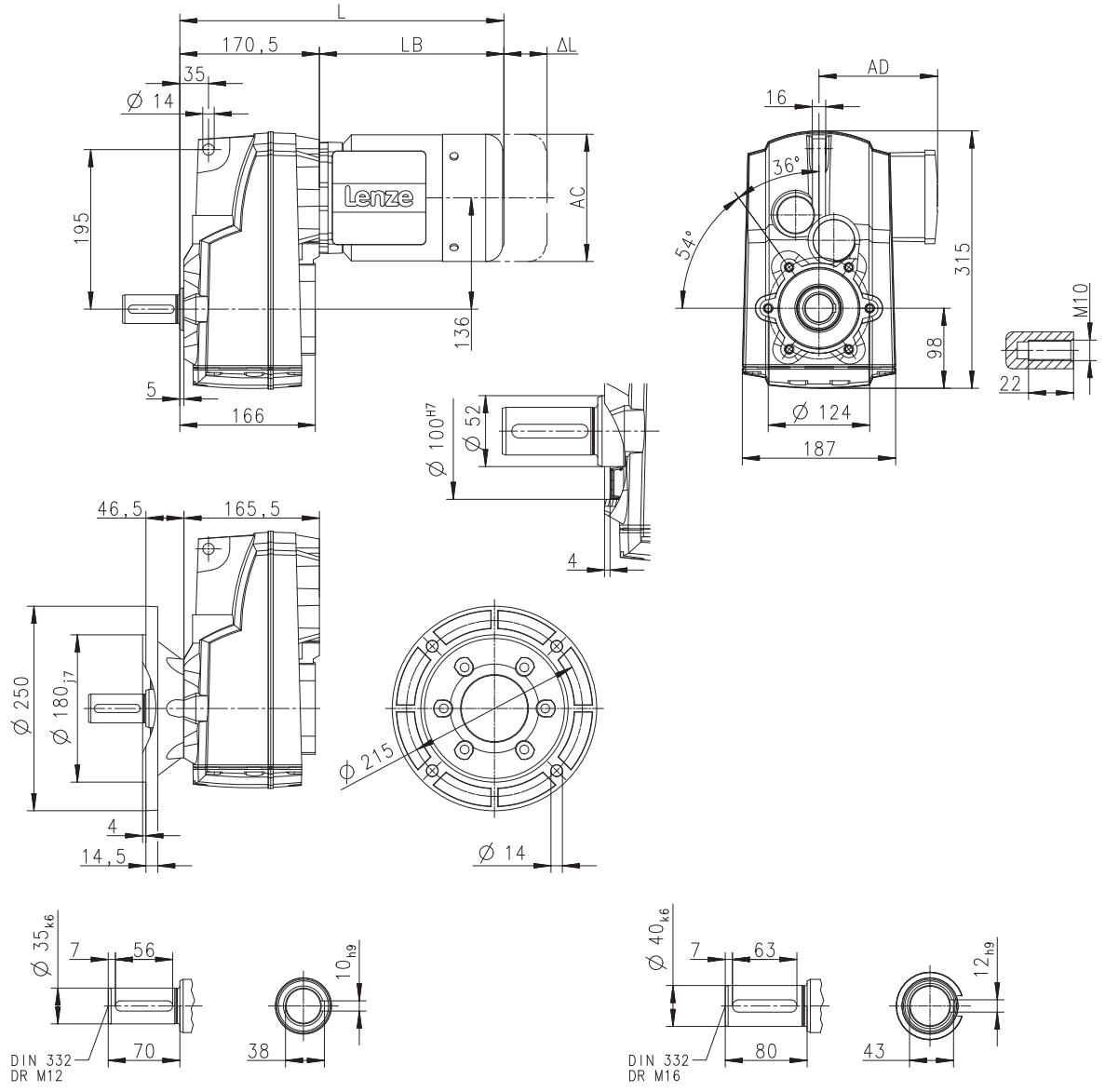


Product			MF□MA□□								
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions											
Total length	**L**	**[mm]**	354		375		397		457	506	
Motor length	**LB**	**[mm]**	183		204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170	
Motor diameter	**AC**	**[mm]**	123		139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166	

Dimensions, 4-pole motors

g500-S660

Dimensions with solid shaft
Gearbox design: VDR, VCR, VCK

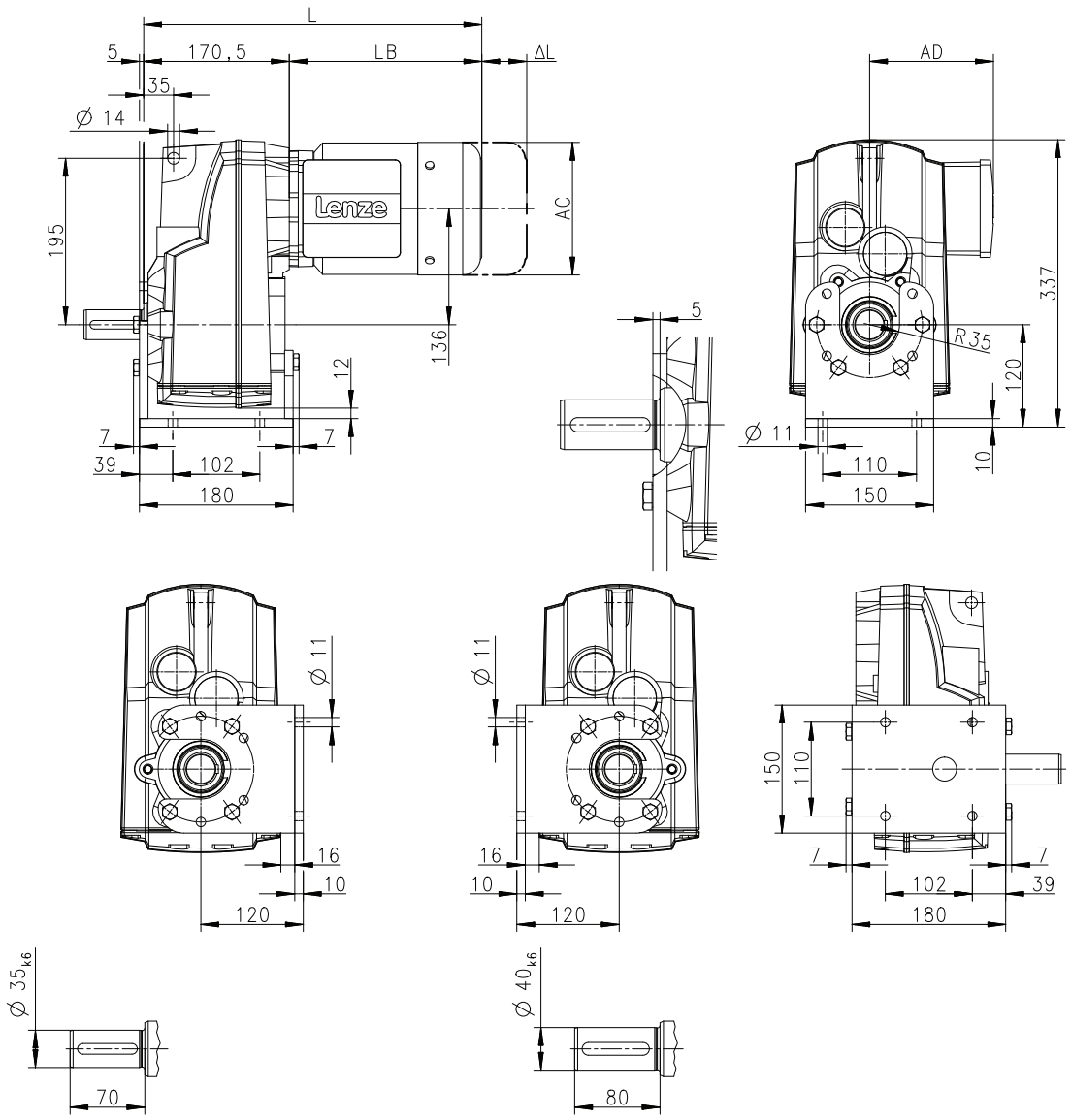


Product			MF□MA□□								
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions											
Total length	**L**	**[mm]**	354		375		397		457	506	
Motor length	**LB**	**[mm]**	183		204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170	
Motor diameter	**AC**	**[mm]**	123		139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166	

Dimensions, 4-pole motors

g500-S660

Dimensions with solid shaft
Gearbox design: VBR



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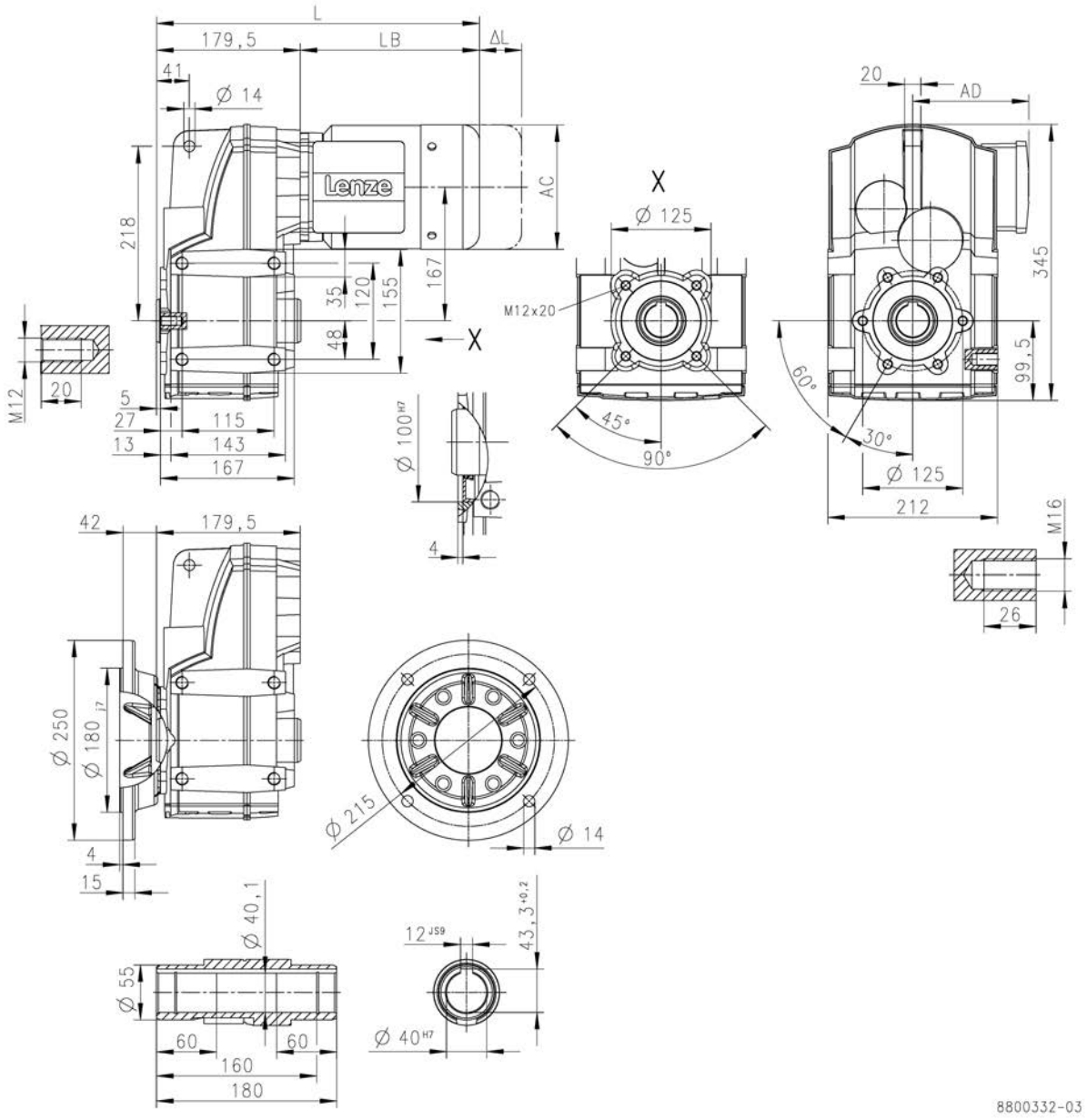
Product			MF□MA□□								
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions											
Total length	**L**	**[mm]**	354		375		397		457	506	
Motor length	**LB**	**[mm]**	183		204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170	
Motor diameter	**AC**	**[mm]**	123		139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166	

Dimensions, 4-pole motors

g500-S950

Dimensions with hollow shaft
Gearbox design: HBR, HAR, HAK

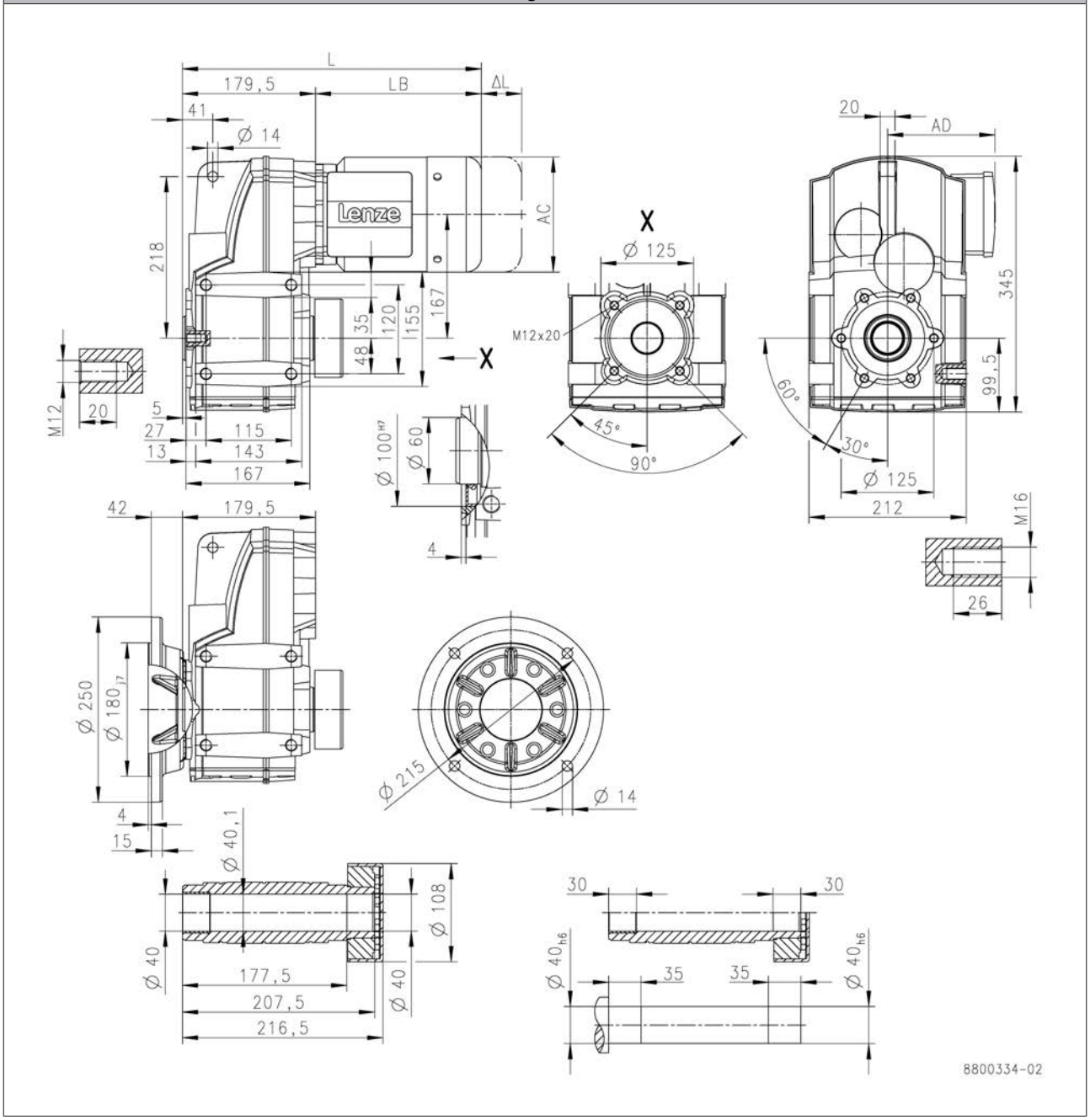


Product			MF□MA□□									
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22
Dimensions												
Total length	**L**	**[mm]**	363		384		406		466	515		516
Motor length	**LB**	**[mm]**	183		204		226		286	335		336
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170		183
Motor diameter	**AC**	**[mm]**	123		139		156		176	194		218
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166		176

Dimensions, 4-pole motors

g500-S950

Dimensions hollow shaft with shrink disc
Gearbox design: SBR, SAR, SAK

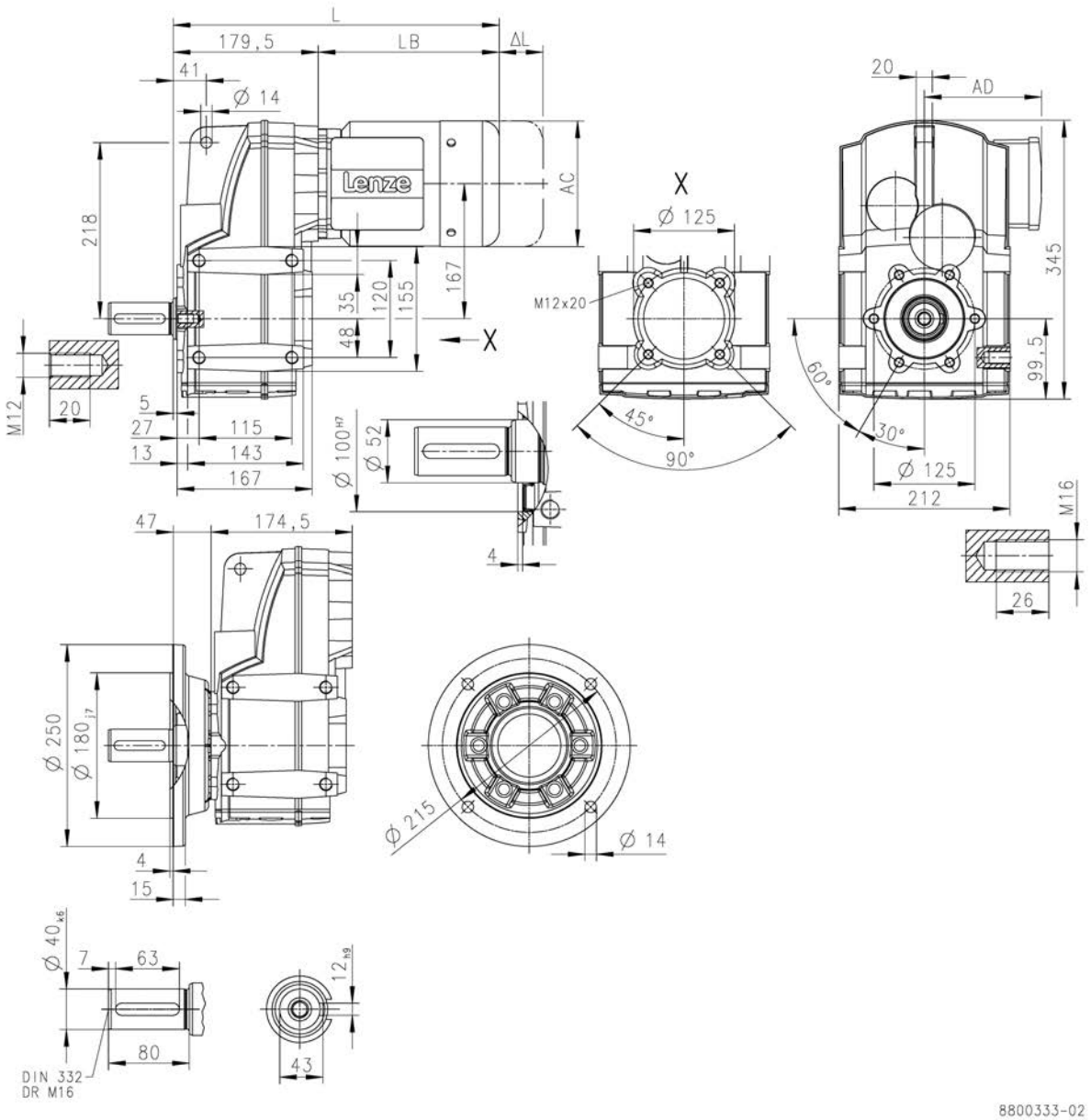


Product			MF□MA□□									
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22
Dimensions												
Total length	**L**	**[mm]**	363		384		406		466	515		516
Motor length	**LB**	**[mm]**	183		204		226		286	335		336
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170		183
Motor diameter	**AC**	**[mm]**	123		139		156		176	194		218
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166		176

Dimensions, 4-pole motors

g500-S950

Dimensions with solid shaft
Gearbox design: VBR, VAR, VAK

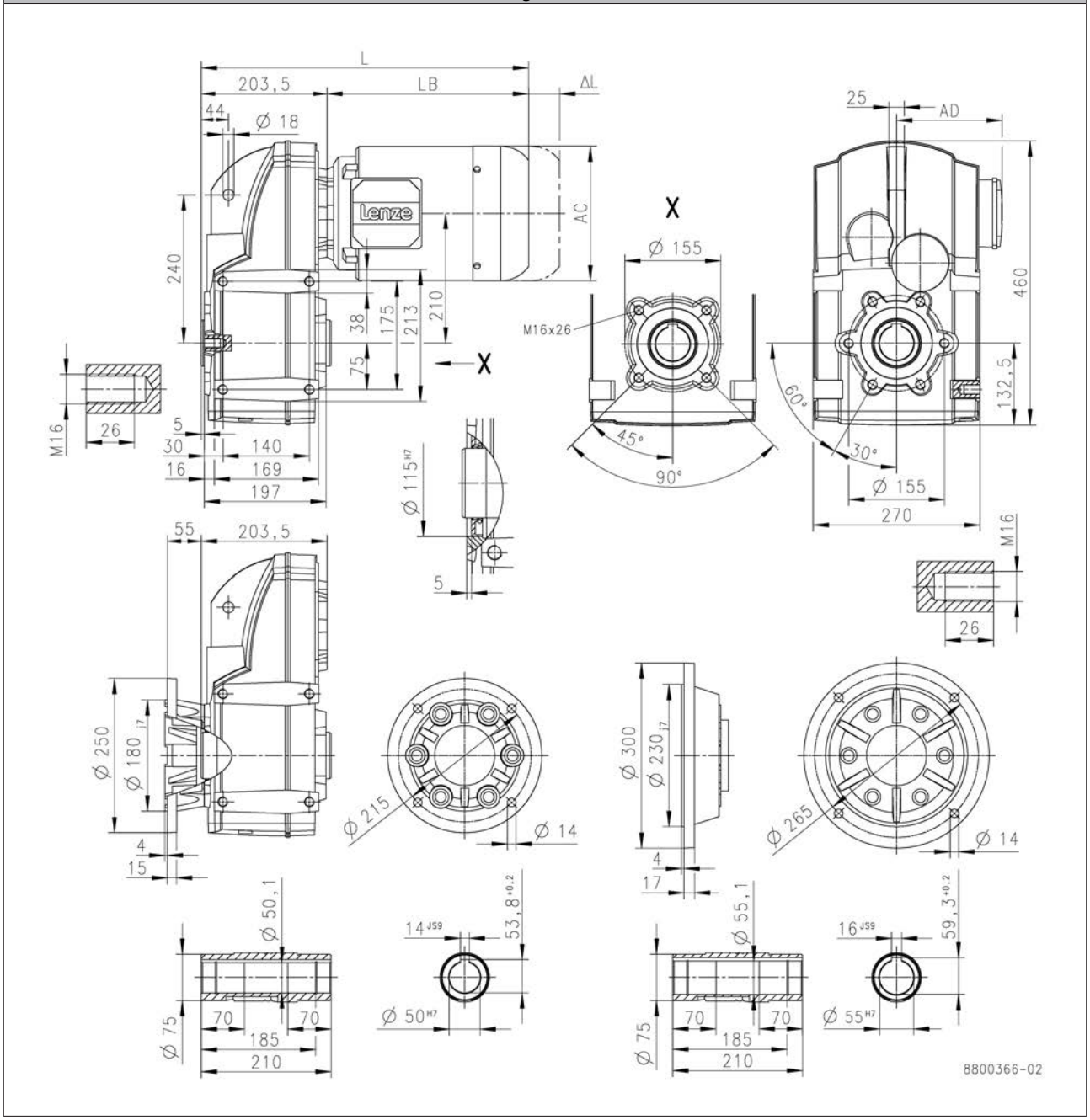


Product			MF□MA□□									
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22
Dimensions												
Total length	**L**	**[mm]**	363		384		406		466	515		516
Motor length	**LB**	**[mm]**	183		204		226		286	335		336
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170		183
Motor diameter	**AC**	**[mm]**	123		139		156		176	194		218
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166		176

Dimensions, 4-pole motors

g500-S2100

Dimensions with hollow shaft
Gearbox design: HBR, HAR, HAK

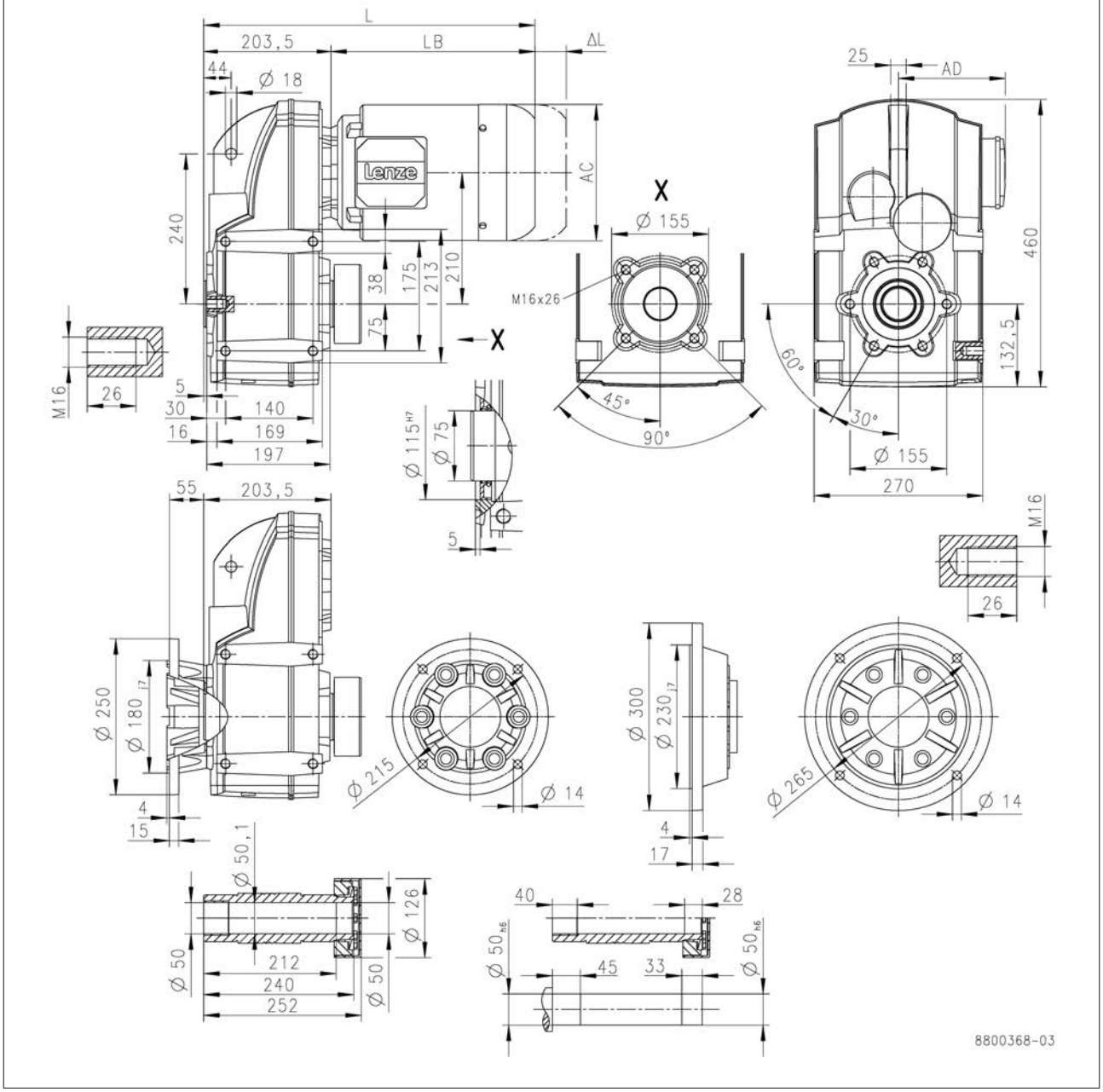


Product			MF□MA□□									
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22
Dimensions												
Total length	**L**	**[mm]**	387		408		430		490	539		540
Motor length	**LB**	**[mm]**	183		204		226		286	335		336
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170		183
Motor diameter	**AC**	**[mm]**	123		139		156		176	194		218
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166		176

Dimensions, 4-pole motors

g500-S2100

Dimensions hollow shaft with shrink disc
Gearbox design: SBR, SAR, SAK

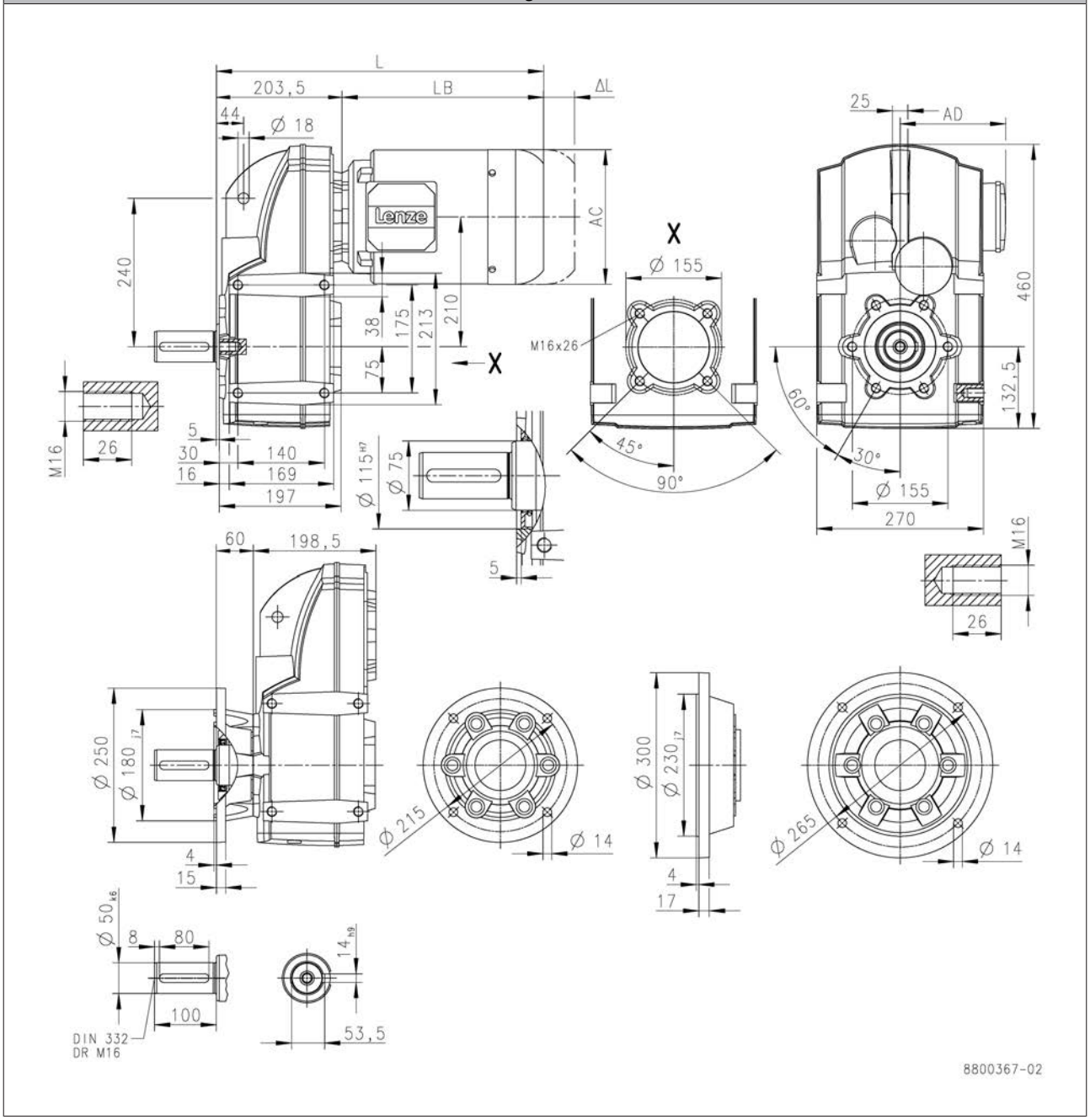


Product			MF□MA□□									
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22
Dimensions												
Total length	**L**	**[mm]**	387		408		430		490	539		540
Motor length	**LB**	**[mm]**	183		204		226		286	335		336
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170		183
Motor diameter	**AC**	**[mm]**	123		139		156		176	194		218
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166		176

Dimensions, 4-pole motors

g500-S2100

Dimensions with solid shaft
Gearbox design: VBR, VAR, VAK

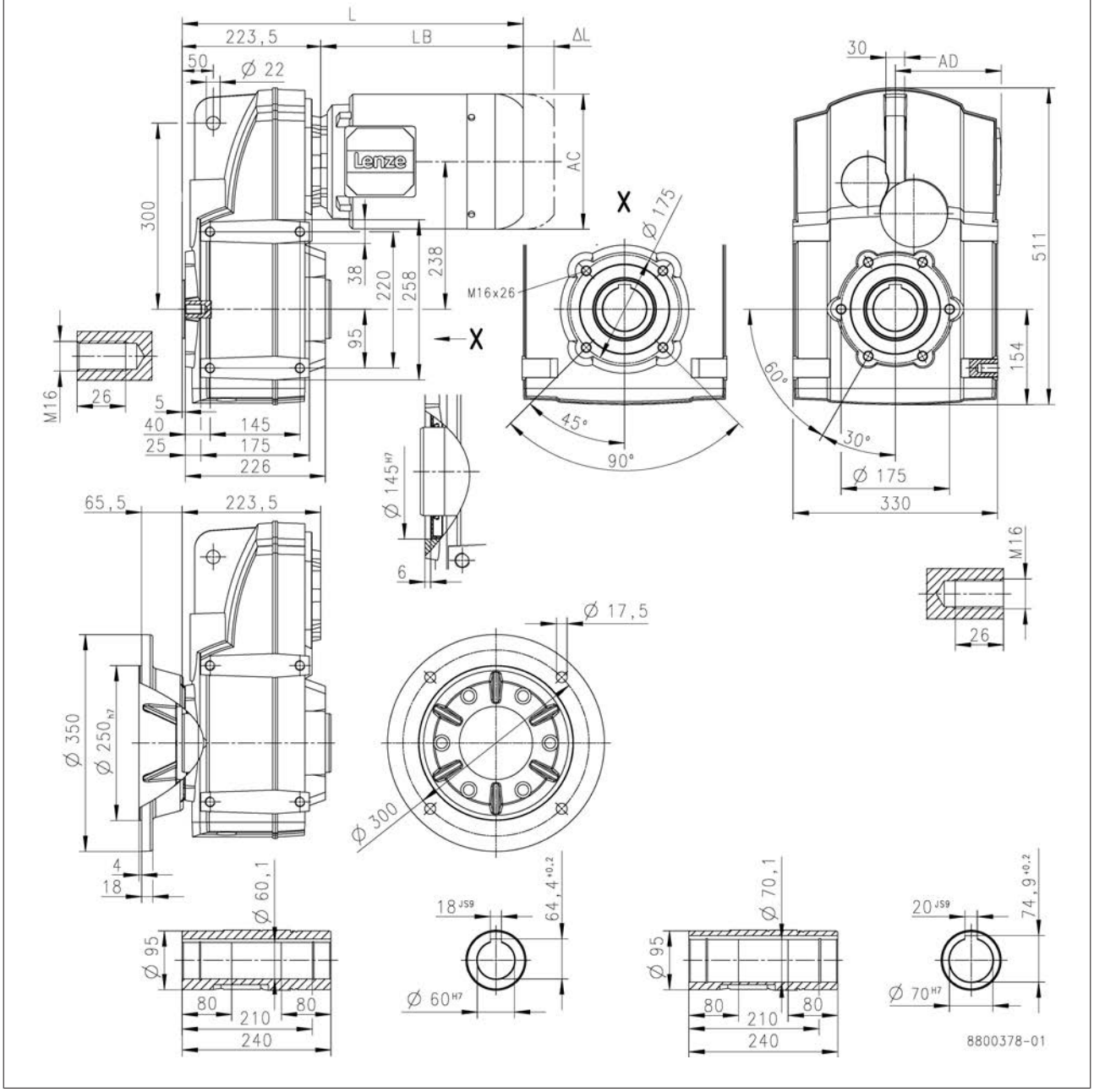


Product			MF□MA□□									
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22
Dimensions												
Total length	**L**	**[mm]**	387		408		430		490	539		540
Motor length	**LB**	**[mm]**	183		204		226		286	335		336
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170		183
Motor diameter	**AC**	**[mm]**	123		139		156		176	194		218
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166		176

Dimensions, 4-pole motors

g500-S3100

Dimensions with hollow shaft
Gearbox design: HBR, HAR, HAK

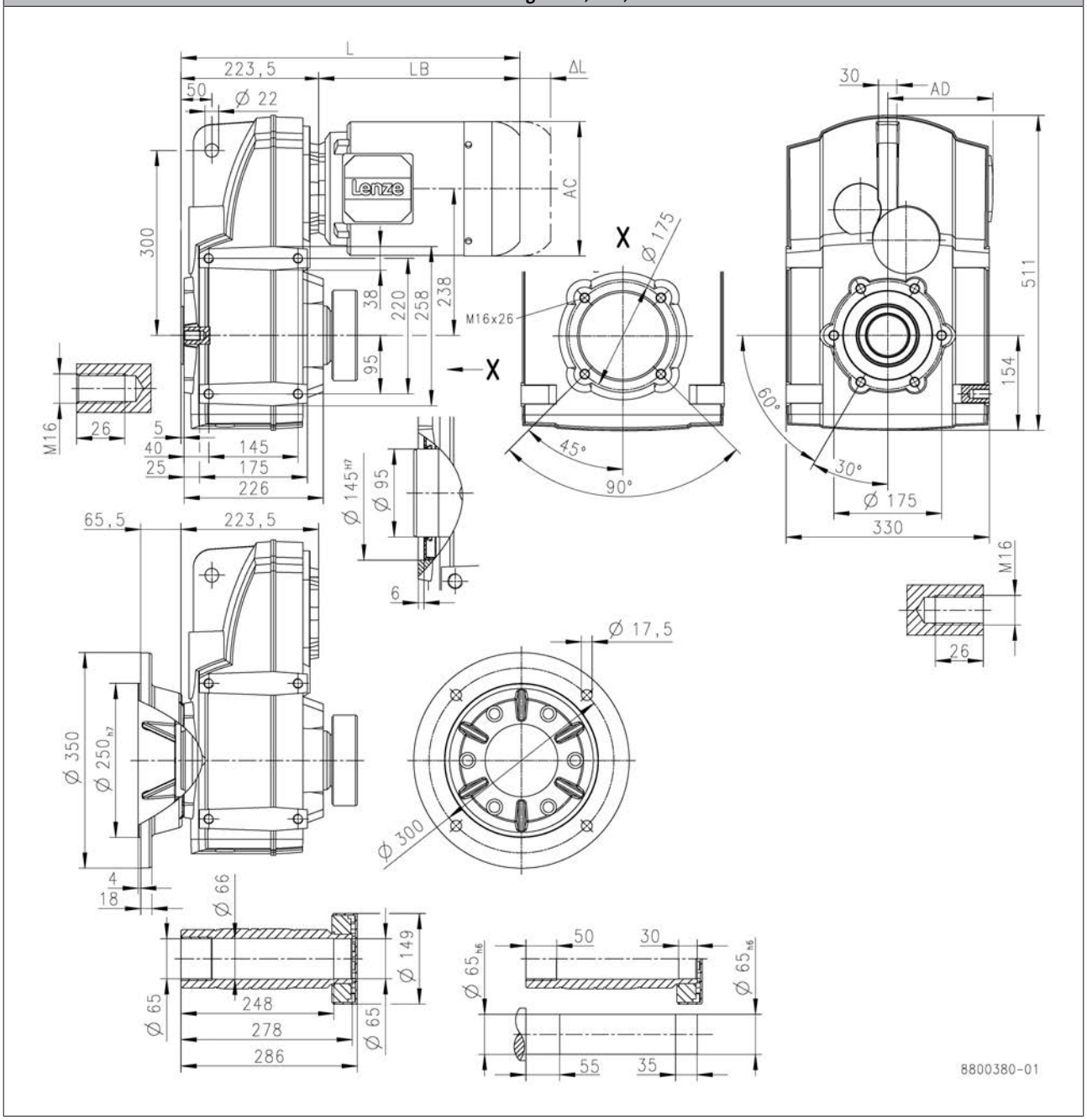


Product			MF□MA□□									
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22
Dimensions												
Total length	**L**	**[mm]**	407		428		450		510	559		560
Motor length	**LB**	**[mm]**	183		204		226		286	335		336
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170		183
Motor diameter	**AC**	**[mm]**	123		139		156		176	194		218
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166		176

Dimensions, 4-pole motors

g500-S3100

Dimensions hollow shaft with shrink disc
Gearbox design: SBR, SAR, SAK

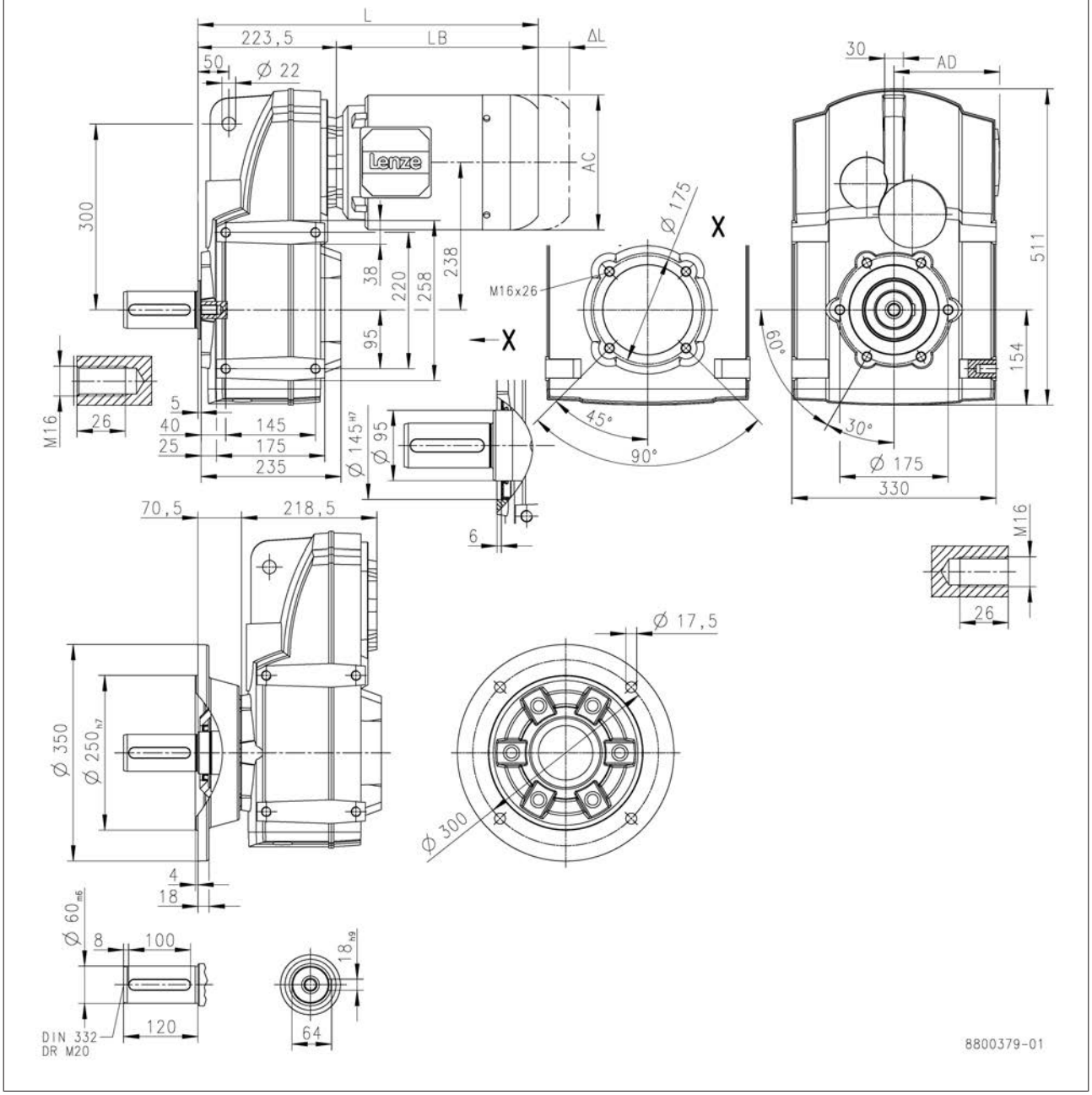


Product			MF□MA□□									
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22
Dimensions												
Total length	**L**	**[mm]**	407		428		450		510	559		560
Motor length	**LB**	**[mm]**	183		204		226		286	335		336
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170		183
Motor diameter	**AC**	**[mm]**	123		139		156		176	194		218
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166		176

Dimensions, 4-pole motors

g500-S3100

Dimensions with solid shaft
Gearbox design: VBR, VAR, VAK

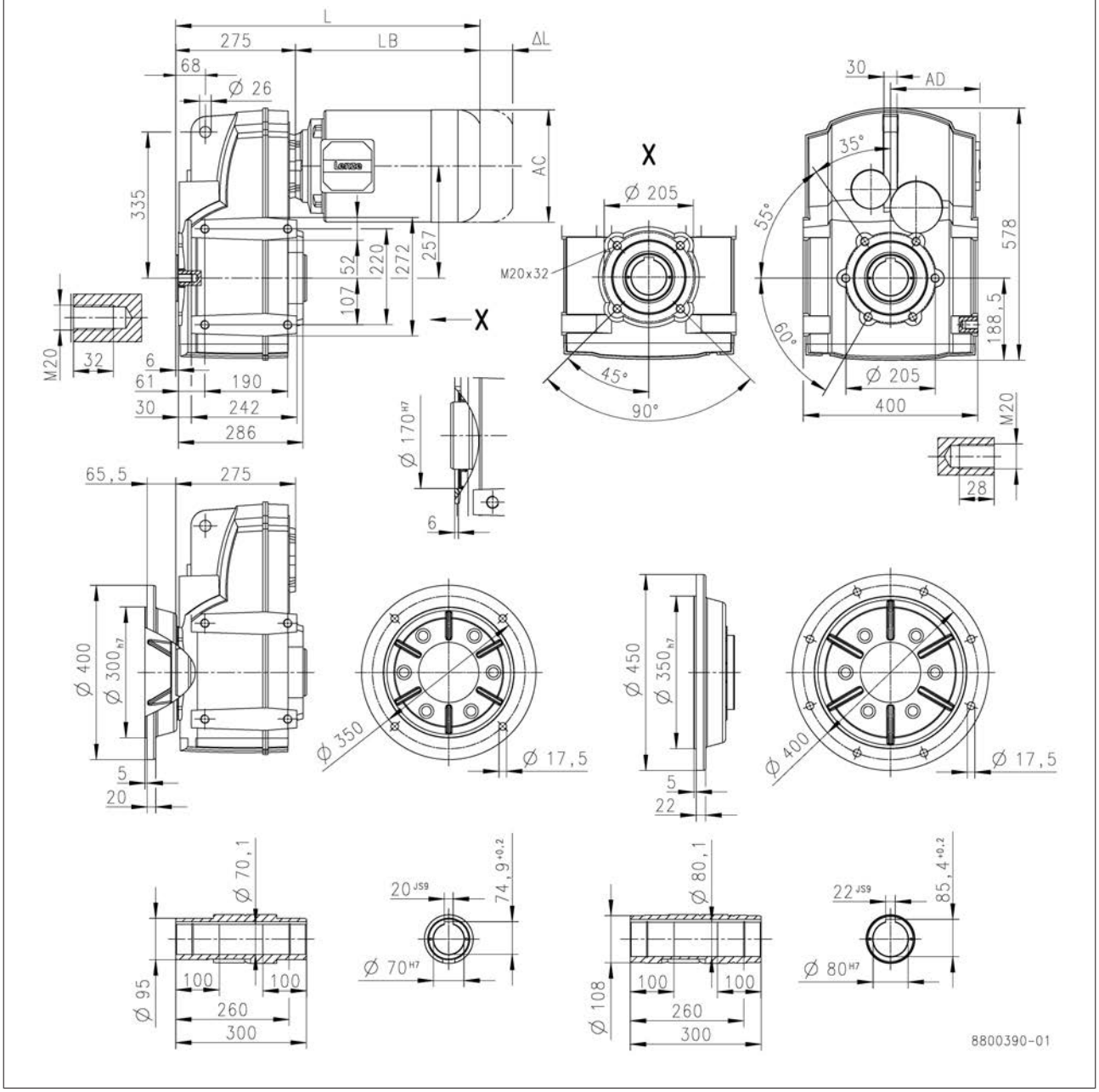


Product			MF□MA□□									
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22
Dimensions												
Total length	**L**	**[mm]**	407		428		450		510	559		560
Motor length	**LB**	**[mm]**	183		204		226		286	335		336
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170		183
Motor diameter	**AC**	**[mm]**	123		139		156		176	194		218
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166		176

Dimensions, 4-pole motors

g500-S4500

Dimensions with hollow shaft
Gearbox design: HBR, HAR, HAK

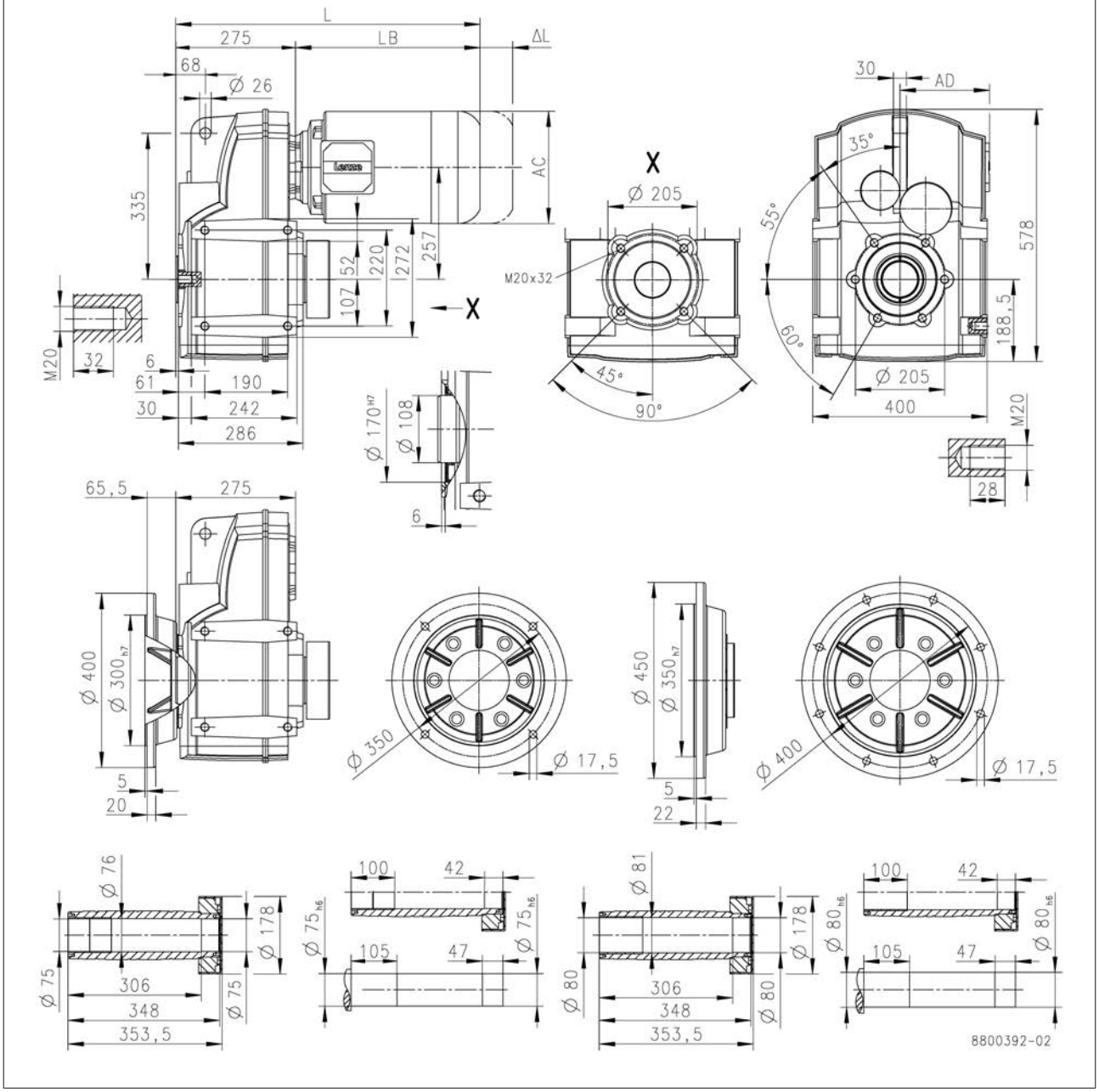


Product			MF□MA□□							
			071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22
Dimensions										
Total length	**L**	**[mm]**	479		501		561	610		611
Motor length	**LB**	**[mm]**	204		226		286	335		336
Length of motor options	**Δ L**	**[mm]**	165		183		181	170		183
Motor diameter	**AC**	**[mm]**	139		156		176	194		218
Distance motor/connection	**AD**	**[mm]**	109		150		157	166		176

Dimensions, 4-pole motors

g500-S4500

Dimensions hollow shaft with shrink disc
Gearbox design: SBR, SAR, SAK

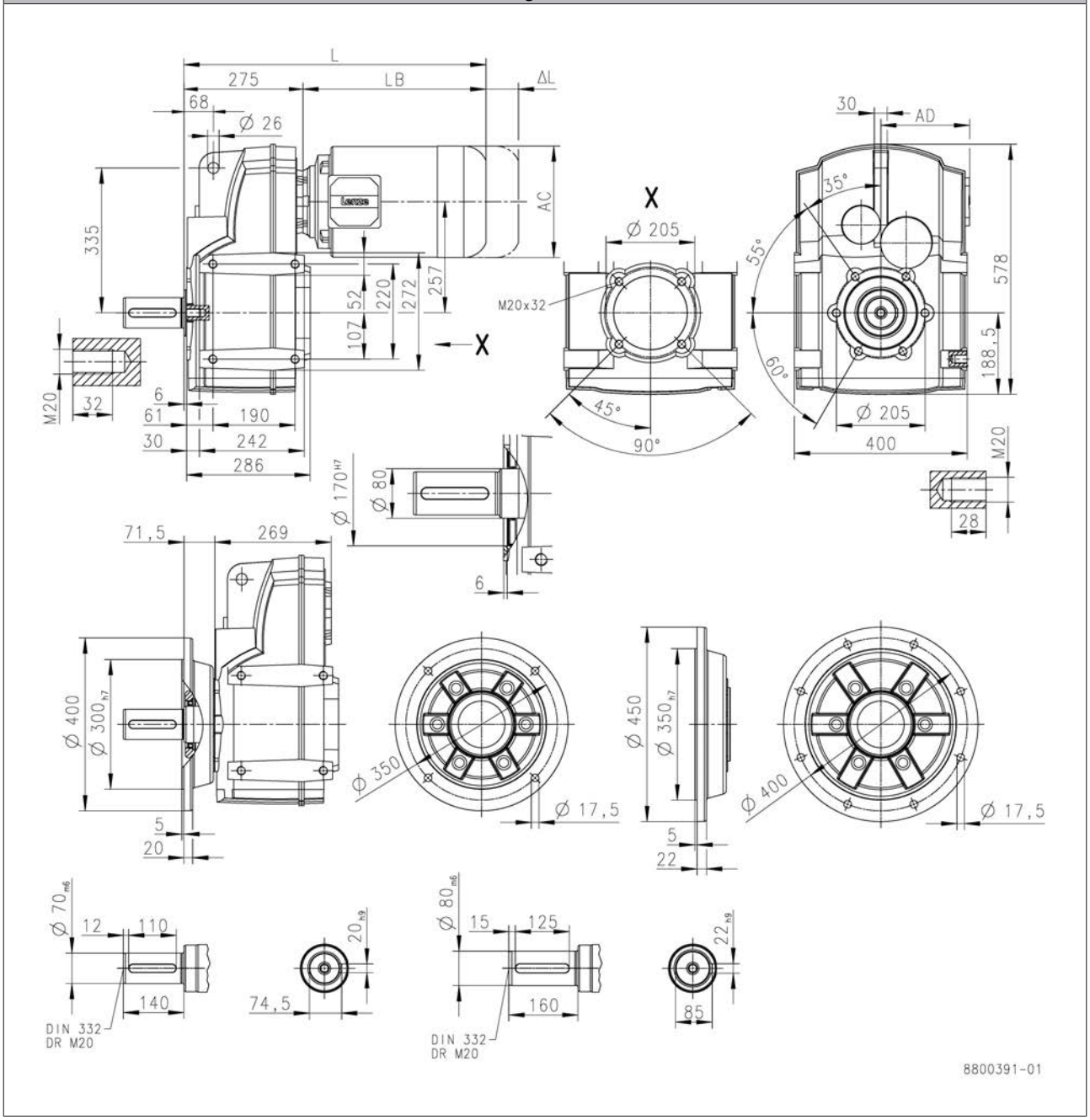


Product			MF□MA□□							
			071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22
Dimensions										
Total length	**L**	**[mm]**	479		501		561	610		611
Motor length	**LB**	**[mm]**	204		226		286	335		336
Length of motor options	**Δ L**	**[mm]**	165		183		181	170		183
Motor diameter	**AC**	**[mm]**	139		156		176	194		218
Distance motor/connection	**AD**	**[mm]**	109		150		157	166		176

Dimensions, 4-pole motors

g500-S4500

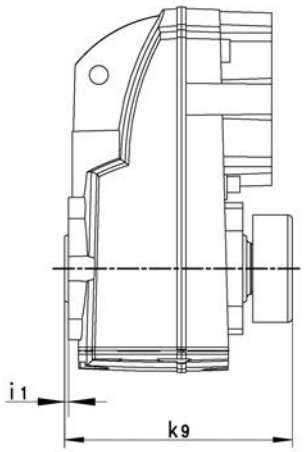
Dimensions with solid shaft
Gearbox design: VBR, VAR, VAK



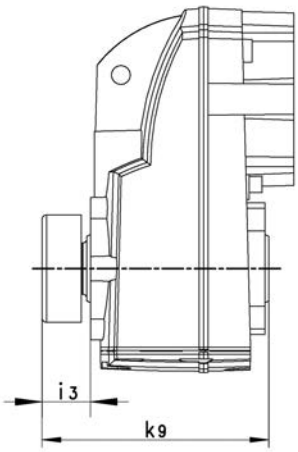
Product			MF□MA□□							
			071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22
Dimensions										
Total length	**L**	**[mm]**	479		501		561	610		611
Motor length	**LB**	**[mm]**	204		226		286	335		336
Length of motor options	**Δ L**	**[mm]**	165		183		181	170		183
Motor diameter	**AC**	**[mm]**	139		156		176	194		218
Distance motor/connection	**AD**	**[mm]**	109		150		157	166		176

Shrink disc dimensions

Shrink disc in position 1



Shrink disc in position 6



Product	Dimensions		
	i_1	i_3	k_9
	[mm]	[mm]	[mm]
g500-S130	2.50	28.0	130
g500-S220	2.50	32.0	150
g500-S400	4.00	33.0	179
g500-S660	5.00	33.0	198
g500-S950	5.00	41.5	217
g500-S2100	5.00	44.0	249
g500-S3100	5.00	48.0	286
g500-S4500	6.00	57.5	354

Additional length of the built-on accessories

Dimensions, self-ventilated (4-pole)

Product			MF□MA□□					
			063-32 063-42	071-32 071-42	080-32 080-42	090-32	100-12 100-32	112-22
Brake								
	Δ L	[mm]	40.0	52.0	73.0	68.0	76.0	90.0
Feedback								
	Δ L	[mm]	56.0	51.0	111	87.0	81.0	80.0
Brake + Feedback								
	Δ L	[mm]	103	96.0	111	105	101	120

Dimensions, forced ventilated (4-pole)

Product			MF□MA□□					
			063-32 063-42	071-32 071-42	080-32 080-42	090-32	100-12 100-32	112-22
Blower								
	Δ L	[mm]	128				109	102
Brake								
	Δ L	[mm]	170	165	183	181	170	183
Feedback								
	Δ L	[mm]	128				109	183
Brake + Feedback								
	Δ L	[mm]	170	165	183	181	170	183

Weights, 4-pole motors

2-stage gearboxes

				MF□MA□□					
				063-32 063-42	071-32 071-42	080-32 080-42	090-32	100-12 100-32	112-22
g500	-S130	m	[kg]	10	12	16	23		
	-S220	m	[kg]	12	14	18	25		
	-S400	m	[kg]	15	17	22	29	37	
	-S660	m	[kg]	20	22	27	34	42	
	-S950	m	[kg]		42	47	54	62	74
	-S2100	m	[kg]			79	86	94	106
	-S3100	m	[kg]			118	125	134	145
	-S4500	m	[kg]					207	218

3-stage gearboxes

				MF□MA□□							
				063-32 063-42	071-32 071-42	080-32	080-42	090-32	100-12	100-32	112-22
g500	-S220	m	[kg]	12	14						
	-S400	m	[kg]	16	18	22					
	-S660	m	[kg]	21	23	27		34			
	-S950	m	[kg]	41	43	47		54	63		
	-S2100	m	[kg]	73	75	79		86	95		
	-S3100	m	[kg]	112	114	119		126	134		146
	-S4500	m	[kg]		190	194		201	210		221

► Weights with oil capacity for mounting position A, all given as approximate values.
The weights refer to the basic version, observe additional weights!

Additional weights for gearboxes

Product			g500-S130	g500-S220	g500-S400	g500-S660
Mass						
Solid shaft	m	[kg]	0.5	0.5	1.7	2.5
Shrink disc	m	[kg]	0.2	0.4	0.6	0.6
Foot	m	[kg]	1.7	1.8	3.3	4.3
Flange	m	[kg]	0.4	0.4	0.9	1.7

Product			g500-S950	g500-S2100	g500-S3100	g500-S4500
Mass						
Solid shaft	m	[kg]	3.0	5.5	8.4	19.0
Shrink disc	m	[kg]	1.2	1.7	2.3	4.3
Foot	m	[kg]				
Flange	m	[kg]	6.0	11.5	15.0	29.0

Additional weights for motors

4-pole motors

Product			MF□MA□□					
			063-32 063-42	071-32 071-42	080-32 080-42	090-32	100-12 100-32	112-22
Brake			06	06 08	08 10		10 12	12 14
	m	[kg]	0.9	0.9 1.5	1.5 2.6		2.6 4.2	4.2 5.8
Blower								
	m	[kg]	2.0	2.1	2.3	2.7	3.0	3.1

Overview

Torque plate

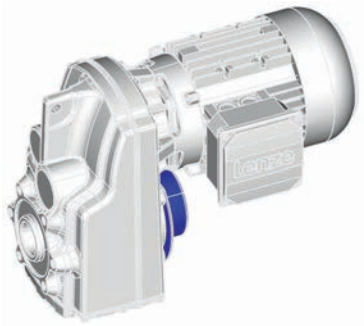
The torque is usually supported via the foot or the flange.
Another simple option is the integrated torque plate at the housing. Here, the torque is supported only via one point and is, among other things, suitable for shaft-mounted gearboxes. Moreover, the suitable rubber buffers provide for a low-tension installation and absorb slight shocks.

The rubber buffers can be ordered optionally.

Rubber buffer for torque plate

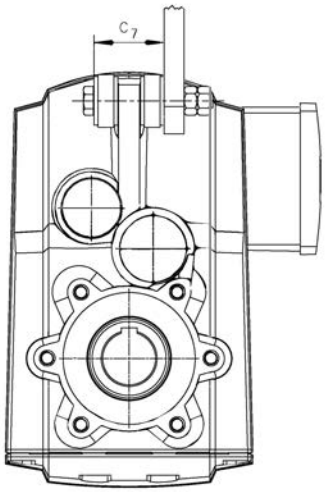

Shaft cover

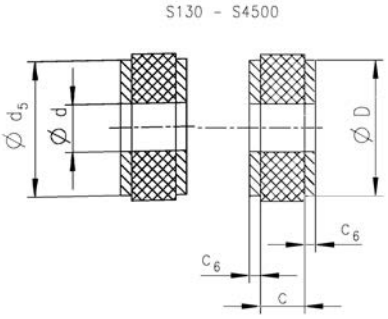
The optional shrink disc cover is provided for the shrink disc to be protected from contact.

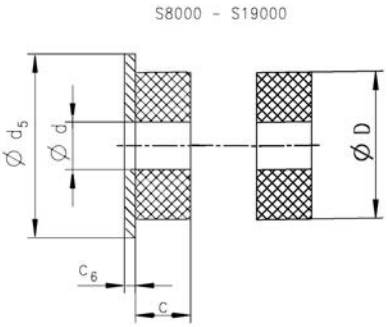
Shrink disc cover


Torque plate

Rubber buffer for torque plate



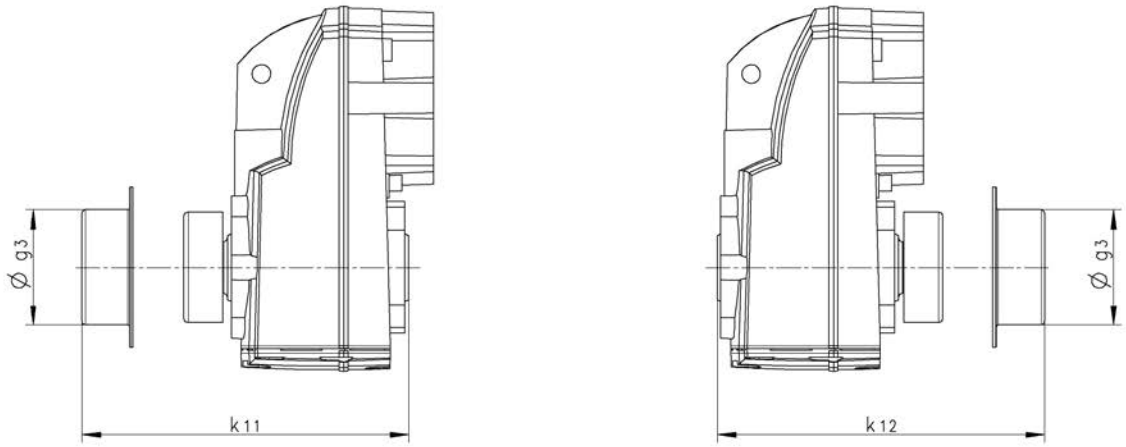




Product	Dimensions						Mass
	d	D	d_5	c	c_6	c_7	m
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
g500-S130	11.0	30.0	30	12.0	2.50	45.0	0.1
g500-S220	11.0	30.0	30	12.0	2.50	45.0	0.1
g500-S400	13.0	40.0	37	12.0	3.00	49.0	0.1
g500-S660	13.0	40.0	37	12.0	3.00	52.0	0.1
g500-S950	13.0	40.0	37	12.0	3.00	56.0	0.1
g500-S2100	17.0	50.0	50	24.0	3.00	85.0	0.5
g500-S3100	21.0	60.0	60	24.0	4.00	94.0	0.5
g500-S4500	26.0	72.0	72	24.0	5.00	98.0	0.5
g500-S8000	25.0	80.0	100	40.0	10.0	128	1.0
g500-S14000	31.0	120	140	50.0	12.0	152	1.0
g500-S19000	31.0	120	140	50.0	12.0	156	1.0

Shaft cover

Shrink disc cover



Product	Dimensions			Mass
	g_3	k_{11}	k_{12}	m
	[mm]	[mm]	[mm]	[kg]
g500-S130	63.0	132	132	0.1
g500-S220	76.0	152	152	0.1
g500-S400	90.0	182	182	0.1
g500-S660	90.0	200	202	0.1
g500-S950	110	219	219	0.1
g500-S2100	127	252	252	0.2
g500-S3100	155	290	290	0.3
g500-S4500	188	355	357	0.4
g500-S8000 [1)]	218		425	0.5
g500-S14000 [1)]	258		520	0.6
g500-S19000 [1)]	310		622	0.9

[1)] Shrink disc only available in position 1 (on the motor end).

Gearbox code

Example	G	50	B	S	113	M	H	D	R	2	C	1B

Meaning	Variant												
Product family		G	50										
Generation				B									
Gearbox type	Shaft-mounted helical gearbox				S								
Output torque	130 Nm					113							
	220 Nm					122							
	400 Nm					140							
	660 Nm					166							
	950 Nm					195							
	2100 Nm					221							
	3100 Nm					231							
	4500 Nm					245							
	8000 Nm					280							
	14000 Nm					314							
	19000 Nm					319							
Type of construction	Geared motor						M						
	Gearboxes						N						
Shaft type	Solid shaft with feather key							V					
	Hollow shaft with keyway							H					
	Hollow shaft with shrink disc							S					
Housing type	Foot mounting + centering								A				
	Foot mounting								B				
	Centering								C				
	Threaded pitch circle								D				
Flange mounting	Without flange									R			
	Flange with through holes									k			
Number of stages	2-stage										2		
	3-stage										3		
Motor mounting	Integrated											C	
	IEC motor											N	
	NEMA motor											A	
	Servo motor											S	
Drive size													1A ... □H

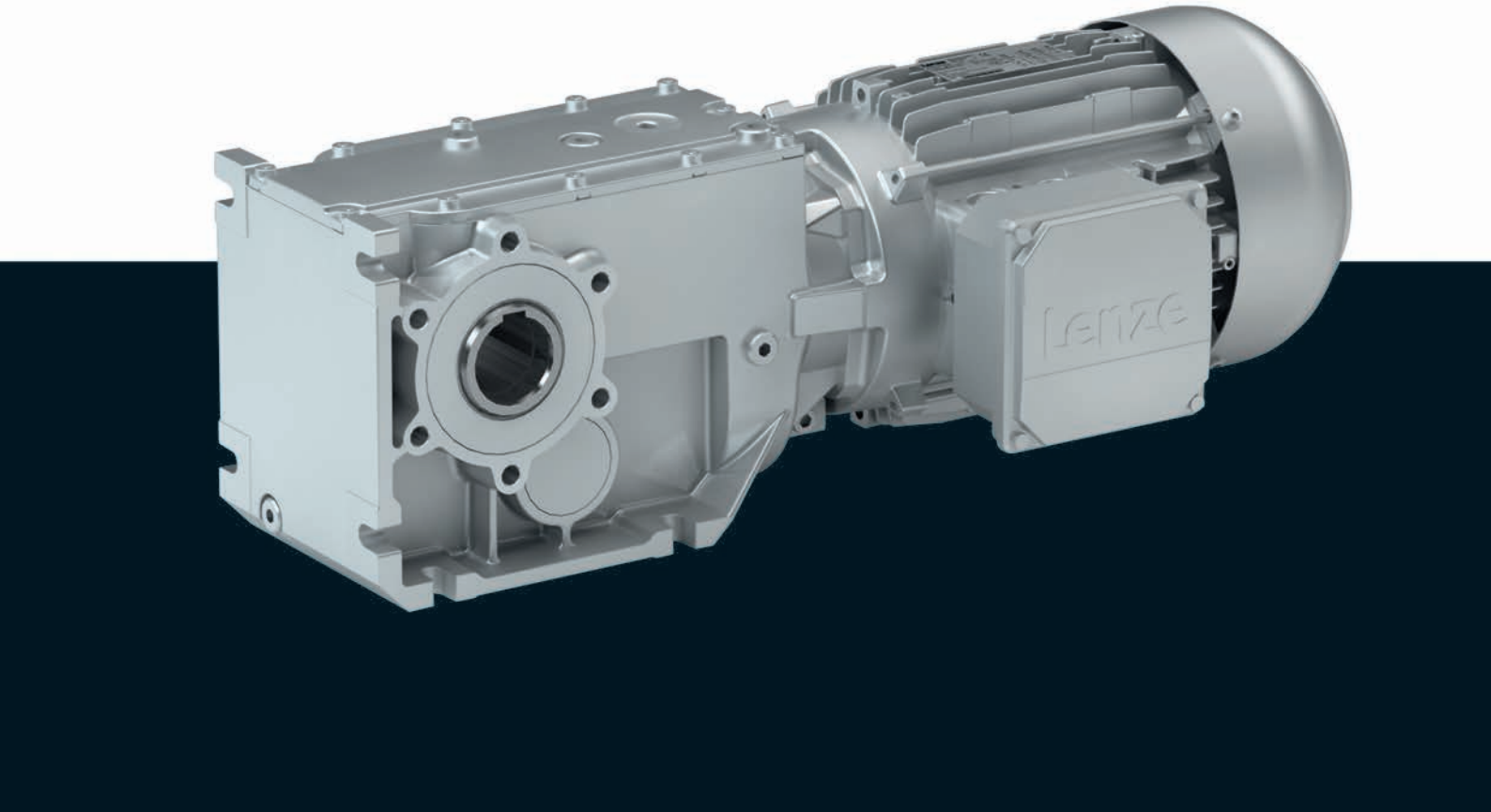
Motor code

Example	M	F	E	MA	XX	063	-	4	2	C1	C

Meaning	Variant	Motor code
Product family		M
Efficiency class	Better than IE2	F
Cooling	Integral fan	E
	Blower	F
Internal key		MA
Built-on accessories	Without built-on accessories	XX
	Brake	BR
	Brake + resolver	BS
	Brake + incremental encoder	BI
	Brake + SinCos absolute value encoder	BA
	Resolver	RS
	Incremental encoder	IG
	SinCos absolute value encoder	AG
Size		063
		071
		080
		090
		100
		112
Overall length		- 1
		- 2
		- 3
		- 4
Number of pole pairs	4-pole motors	2
Internal key		C1
Approval	CE	C
	cURus	U
	CCC	3

g500-B bevel geared motors

Inverter operation
0.55 ... 11 kW (inverter-optimised, 120 Hz)



g500-B bevel geared motors

Contents

List of abbreviations

c		Load capacity
i		Ratio
m	[kg]	Mass
M_2	[Nm]	Output torque
M_{22}	[Nm]	Output torque
$M_{a\_,1}$	[Nm]	Starting torque
$M_{a\_,2}$	[Nm]	Starting torque
n_2	[r/min]	Output speed
n_{21}	[r/min]	Output speed
n_{22}	[r/min]	Output speed

CCC	China Compulsory Certificate
CE	Communauté Européenne
CEL	China Energy Label
CSA	Canadian Standards Association
CSAULE	Energy Verified Certificate
cURus	Combined certification marks of UL for the USA and Canada
DIN	Deutsches Institut für Normung e.V.
EAC	Customs union Russia / Belarus / Kazakhstan certificate
EMC	Electromagnetic compatibility
EN	European standard
IM	International Mounting Code
IP	International Protection Code
NEMA	National Electrical Manufacturers Association
UkrSEPRO	Certificate for Ukraine
UL	Underwriters Laboratory Listed Product
UR	Underwriters Laboratory Recognized Product
VDE	Verband deutscher Elektrotechniker (Association of German Electrical Engineers)

Product information

In combination with three-phase AC motors, our bevel gearboxes form a compact and powerful drive unit. Numerous options at the input and output end provide for the drive to be exactly adapted to your application.

The efficient bevel gearboxes feature high reliable radial forces, closely stepped gear reductions and a low backlash. They are available in 2-stage and 3-stage design with a torque up to 4300 Nm and a ratio of up to i= 360.

Versions

- High-efficient right-angle gearbox in a compact design for space-saving installation
- Standardised shaft and flange dimensions for an easy machine integration
- Low backlash and high torsional stiffness provide for exact results in positioning applications

Three-phase AC motors as a basis for geared motors

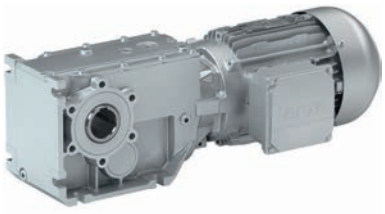
In a power range of 0.55 to 11 kW, Lenze offers inverter-optimised three-phase AC motors for comprehensive tasks.
These drives can be used for the types required for open-loop and closed-loop controlled inverter operation.

Customer benefit:

- Space-saving thanks to compact direct attachment to Lenze gearboxes
- Can be used universally for a wide range of machine tasks due to the market-oriented modular system
- Wide speed setting range
- More compact than conventional three-phase AC motors with the same power
- Dynamic
- Can be used worldwide

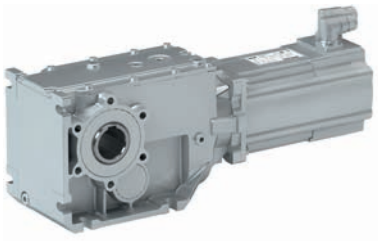
The product name

Gearbox type	Product range		Type	Rated torque [Nm]	Product
Bevel gearbox	g500	-	B	45	g500-B45
				110	g500-B110
				240	g500-B240
				450	g500-B450
				600	g500-B600
				820	g500-B820
				1500	g500-B1500
				2700	g500-B2700
				4300	g500-B4300



g500-B bevel gearbox with m240-P three-phase AC motor

g500-B bevel gearbox with m550-P three-phase AC motor and motec

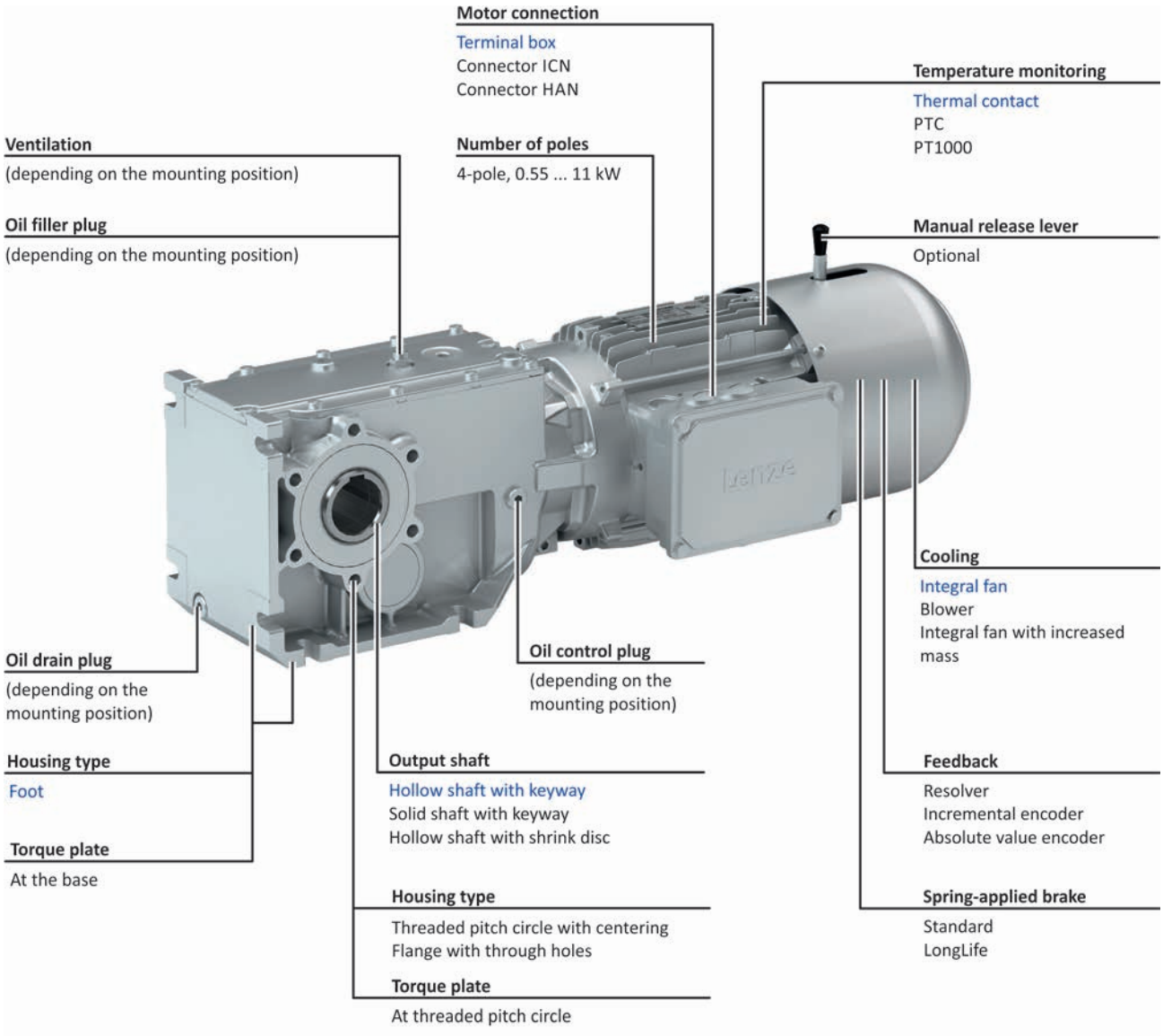


g500-B bevel gearbox with MCS servo motor

Equipment

Overview

The equipment includes all the options available as standard and all the built-on accessories of the product.



Standard design

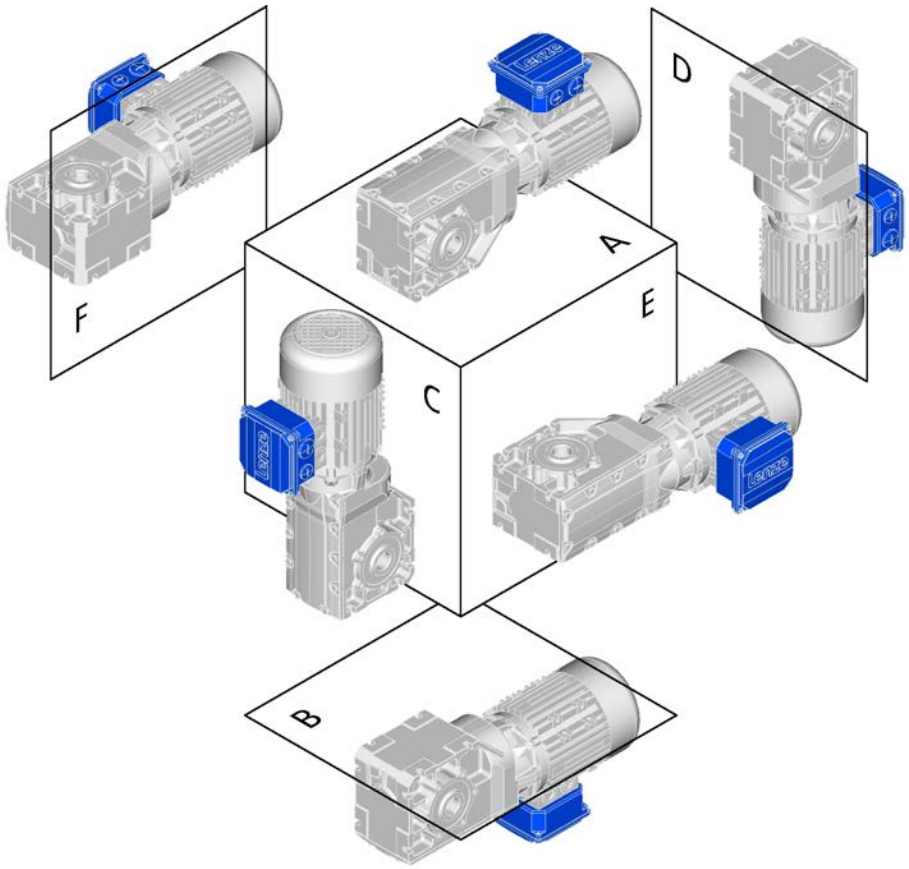
10 - Detailed information on housing type.

Equipment

Mounting position, position of system components

- In the following graphics, the terminal box in position 2 is colour-coded.
  If the mounting position (A ... F) changes, the terminal box positions 2 ... 5 are rotated accordingly.
- To reduce the number of different versions, the gearboxes can also be ordered with combined mounting positions:
  - g500-B45 in mounting position ABCDEF
  - g500-B110 ... B450 in mounting position AEF

Mounting positions A ... F



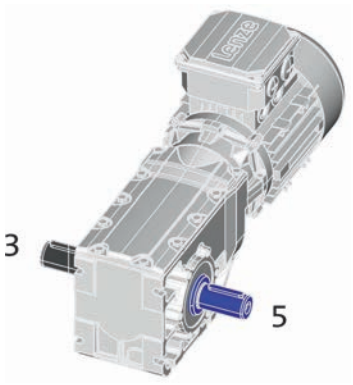
Terminal box positions 2 ... 5

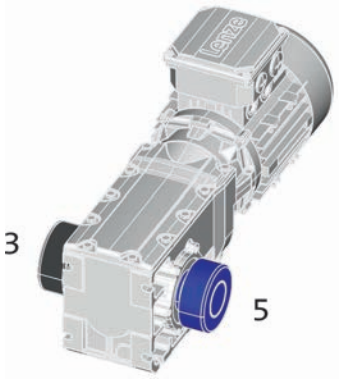
Cable entry positions 1 ... 5

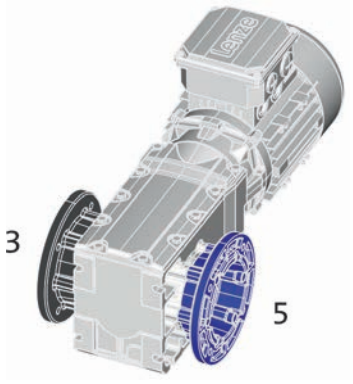
- For details regarding the cable entry see motor chapter/product extensions.

Equipment

Mounting position, position of system components

Solid shaft position 3 or 5


Shrink disc position 3 or 5


Flange position 3 or 5


The geared motor kit

g500-B45 ... B450

Product				
Gearbox	g500-B45	g500-B110	g500-B240	g500-B450
Motor assignment min.	MF□MA□□-063	MF□MA□□-063	MF□MA□□-063	MF□MA□□-063
Motor assignment max.	MF□MA□□-063	MF□MA□□-080	MF□MA□□-090	MF□MA□□-100
Technical data				
Output torque max.	45 Nm	110 Nm	240 Nm	450 Nm
Drive power min.	0.55 kW	0.55 kW	0.55 kW	0.55 kW
Drive power max.	0.75 kW	2.2 kW	4.0 kW	5.5 kW
Dimensions [mm]				
Solid shaft with featherkey	20 x 40	20 x 40	30 x 60	30 x 60
Hollow shaft with keyway	18/20	20/25	30/35	35/40
Hollow shaft with shrink disc	20	20	30/35	35
Output flange	110/120	120/160	160/200	200

- The designs are only available for the gearboxes displayed above in the table.
- Values printed in bold are standard versions.
  Values not printed in bold are possible extensions, some for an additional charge.

Type	
Conformity	**CE** EAC
Approval	**Without** CCC/CSA/cURus
Degree of protection	**IP55**
Surface and corrosion protection	**Without** Different types of OKS
Colour	**Not coated** Primed/RAL colours
Hollow shaft	**With keyway (H□□)**
Hollow shaft with shrink disc	Without keyway (S□□)
Solid shaft	With featherkey (V□□)
Shaft material	**Steel** stainless steel
Shaft sealing ring material	**NBR** FKM (Viton)
Driven shaft bearing	**Normal**
Paste for shaft mounting	**Without** Enclosed
Gearbox type	**With foot (□BR)** With foot and centering (□AR) With foot and output flange (□AK)
Lubricant	**Mineral oil** Synthetic oil Food-compatible oil

Type	
Mounting position	**A/B/C/D/E/F** Combined
Power connection	**Terminal box** Plug connectors
Spring-applied brake	**Without** Brake design: Standard/Longlife Brake version: Standard/Overexcited/Cold Brake
Feedback	**Without** Resolver Absolute value encoder Incremental encoder
Cooling	**Integral fan** Blower
Temperature monitoring	**TKO thermal contact** PTC thermistor PT1000 thermal detector

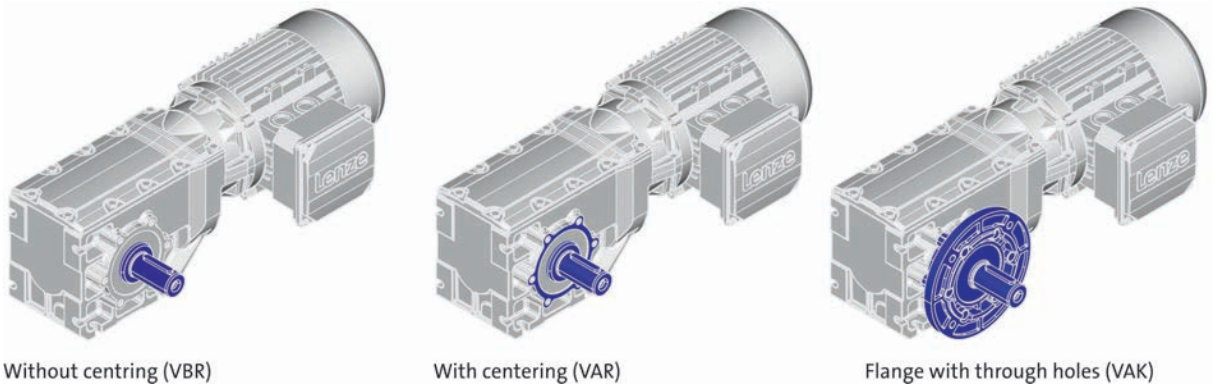
The geared motor kit

g500-B45 ... B450

Gearbox design: hollow shaft, with foot

Gearbox design: hollow shaft with shrink disc, with foot

Gearbox design: solid shaft, with foot



The geared motor kit

g500-B600 ... B4300

Product					
Gearbox	g500-B600	g500-B820	g500-B1500	g500-B2700	g500-B4300
Motor assignment min.	MF□MA□□-063	MF□MA□□-063	MF□MA□□-071	MF□MA□□-080	MF□MA□□-080
Motor assignment max.	MF□MA□□-100	MF□MA□□-100	MF□MA□□-100	MF□MA□□-112	MF□MA□□-112
Technical data					
Output torque max.	600 Nm	820 Nm	1500 Nm	2700 Nm	4300 Nm
Drive power min.	0.55 kW	0.55 kW	1.1 kW	2.2 kW	2.2 kW
Drive power max.	5.5 kW	7.5 kW	7.5 kW	11 kW	11 kW
Dimensions [mm]					
Solid shaft with featherkey	40 x 80	40 x 80	50 x 100	60 x 120	70 x 140
Hollow shaft with keyway	40/45	40/45	50/55	60/70	70/80
Hollow shaft with shrink disc	40	40	50	65	75/80
Output flange	200/250	200/250	250/300	350	400/450

- The designs are only available for the gearboxes displayed above in the table.
- Values printed in bold are standard versions.
  Values not printed in bold are possible extensions, some for an additional charge.

Type	
Conformity	**CE** EAC
Approval	**Without** CCC/CSA/cURus
Degree of protection	**IP55**
Surface and corrosion protection	**OKS-S** Different types of OKS
Colour	**Painted in RAL colours** Primed
Hollow shaft	**With keyway (H□□)**
Hollow shaft with shrink disc	Without keyway (S□□)
Solid shaft	With featherkey (V□□)
Shaft material	**Steel** stainless steel
Shaft sealing ring material	**NBR** FKM (Viton)
Driven shaft bearing	**Normal**
Paste for shaft mounting	**Without** Enclosed
Gearbox type	**With foot (□BR)** With foot and centering (□AR) With foot and output flange (□AK)
Lubricant	**Mineral oil** Synthetic oil Food-compatible oil

Type	
Mounting position	**A/B/C/D/E/F**
Power connection	**Terminal box** Plug connectors
Spring-applied brake	**Without** Brake design: Standard/Longlife Brake version: Standard/Overexcited/Cold Brake
Feedback	**Without** Resolver Absolute value encoder Incremental encoder
Cooling	**Integral fan** Blower
Temperature monitoring	**TKO thermal contact** PTC thermistor PT1000 thermal detector

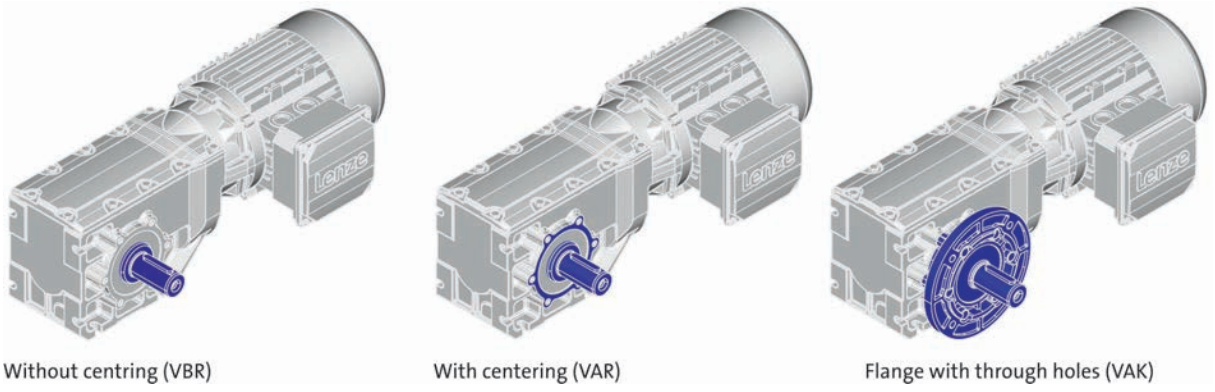
The geared motor kit

g500-B600 ... B4300

Gearbox design: hollow shaft, with foot

Gearbox design: hollow shaft with shrink disc, with foot

Gearbox design: solid shaft, with foot



General information about the data provided in this catalogue

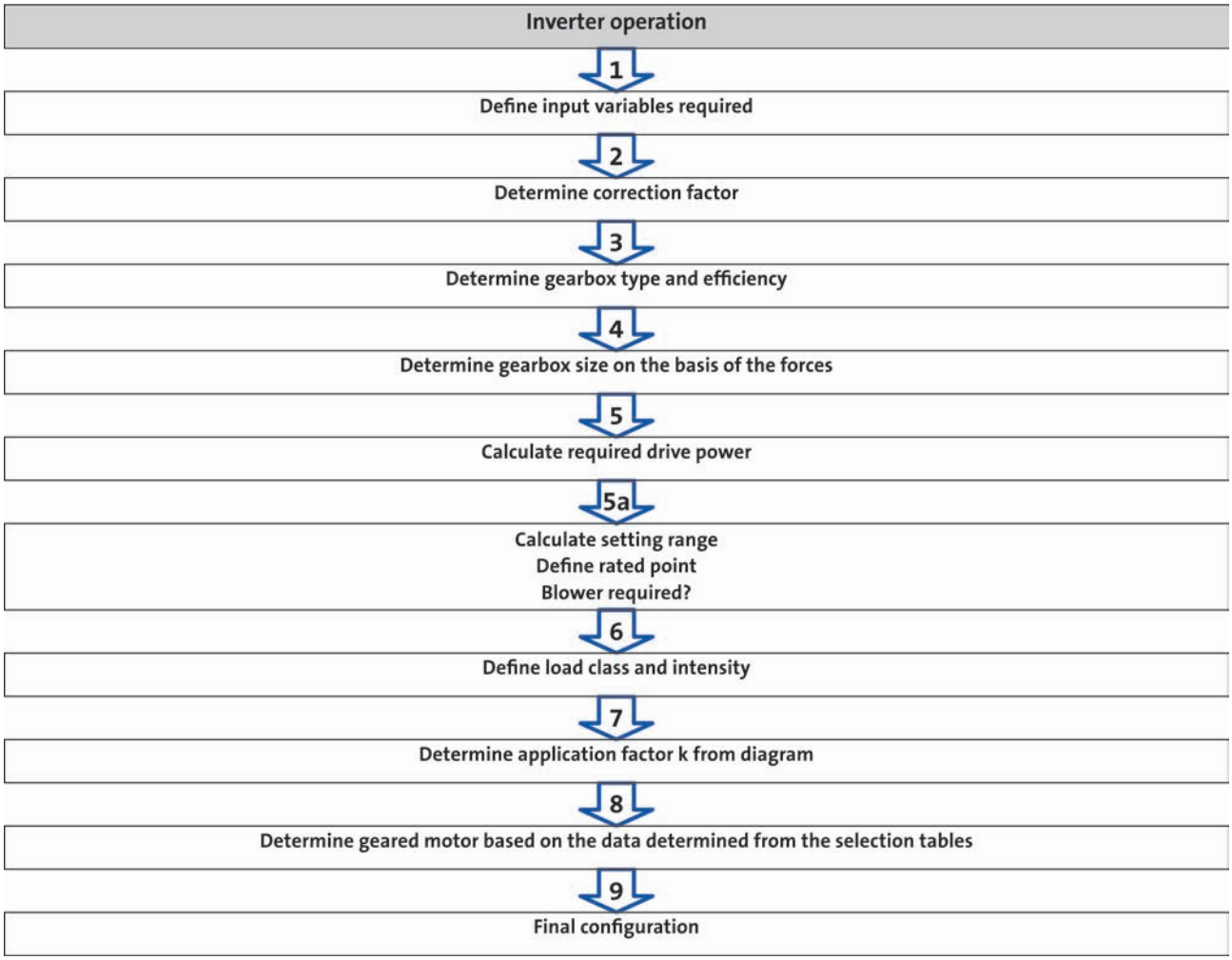
The powers, torques and speeds specified in this catalogue are rounded values and are valid under the following conditions:

- 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.

Procedure of a configuration process

Workflow



You can use our configuring software 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.

Procedure of a configuration process

1 required input variables

Load torque		$M_{L,max}$=	[Nm]
	In inverter operation	$M_{L,min}$=	[Nm]
Load speed		$n_{L,max}$=	[r/min]
	In inverter operation	$n_{L,min}$=	[r/min]
External moments of inertia		J_{ext}=	[kgcm^2]
Operating time / day		BD =	[h]
Switching operations per h		S_h=	[1/h]
Runtime for $M_{L,max}$	In inverter operation		[%]

2 determine correction factor

Operating modes and operating time						
S1	ED	[%]	100			
	k_L =		1.0			
S2	ED	[%]	10	30	60	90
	k_L =		1.4 - 1.5	1.15 - 1.2	1.07 - 1.1	1.0 - 1.05
S3	ED	[%]	15	25	40	60
	k_L =		1.4 - 1.5	1.3 - 1.4	1.15 - 1.2	1.05 - 1.1
S6	ED	[%]	15	25	40	60
	k_L =		1.5 - 1.6	1.4 - 1.5	1.3 - 1.4	1.15 - 1.2
Site altitude						
	H	[m]	≤ 1000	≤ 2000	≤ 3000	≤ 4000
	k_H =		1	0.95	0.9	0.85
Ambient temperature						
	T_U =	[°C]	≤ 40	≤ 45	≤ 50	≤ 55
	k_{TU} =		1	0.95	0.9	0.8

20 - Operating modes

Procedure of a configuration process

3 determine gearbox type and efficiency

Gearbox type			Axial gearboxes		Right-angle gearboxes
			Helical gearbox	Shaft-mounted	Bevel gearbox
Product			g500-H	g500-S	g500-B
Gearbox efficiency	2-stage gearboxes	η_G	0.96	0.96	0.96
	3-stage gearboxes	η_G	0.95	0.95	0.95

4 determine gearbox size based on the forces on the output

Transmission element		Gear wheels	Sprockets	Toothed belt pulleys (depending on the initial stress)	Narrow V-belt (depending on the initial stress)
Additional radial force factor	f_z =	≥ 17 teeth = 1.0 < 17 teeth = 1.15	≥ 20 teeth = 1.0 < 20 teeth = 1.25 < 13 teeth = 1.4	With belt tightener = 2.0 - 2.5 Without belt tightener = 2.5 - 3.0	1.5 - 2.0
		Calculation		**Check**	
Radial force	[N]	$F_{rad} = 2000 \times \frac{M_{L,max} \times f_z}{dw}$		$F_{rad} \le f_w \times F_{rad,max}$	
Axial force	[N]			$F_{ax} \le F_{rad,max} \times 0.5$	

d_w= effective diameter [mm] transmission element
f_w= additional load factor

► For permissible radial and axial forces and additional load factor see the "Technical data" chapter

5 calculate drive power

		Calculation	
Drive power required	[kW]	$P_1 = \frac{M_{L,max} \times n_{L,max}}{9549 \times k_L \times k_H \times k_{Tu} \times \eta_g}$	

k_L= Correction factor - operating mode
k_H= correction factor - installation height
k_{TU}= correction factor - ambient temperature

Procedure of a configuration process - inverter operation

5a calculate range of adjustment and determine rated point

		Calculation	
Setting range		$V = \frac{n_{L,max}}{n_{L,min}}$	
Setting range	Motor with integral fan	≤ 6 (20 ... 120 Hz)	
	Motor with blower	≤ 20 (5 ... 120 Hz)	
Rated point at		120 Hz	

6 calculate intensity and determine duty class

	Calculation		
Intensity	$M_I = \frac{M_{L,max}}{M_{L,min}}$	**For alternating load, select load class III!**	
Load class	Load type		Intensity
I	Smooth operation, small or light jolts		$M_I \leq 1.5$
II	Uneven operation, average jolts		$1.5 < M_I \leq 2$
III	Uneven operation, severe jolts and/or alternating load		$2 < M_I \leq 2.5$

7 determine application factor k from diagram

24 - Load capacity and application factor

Procedure of a configuration process - inverter operation

8 determine geared motor based on the data determined from the selection tables

Selection table			Check	
Drive power P_N		[kW]	$P_1 \leq P_N$	
Max. output speed n_2		[r/min]	$n_{L,max} \approx n_2$	
Min. output speed n_{21}	Self-ventilated	[r/min]	$n_{L,min} \approx n_{21}$	Setting range 6 (120 Hz)
Min. output speed n_{22}	Forced-ventilated	[r/min]	$n_{L,min} \approx n_{22}$	Setting range ≤ 20 (120 Hz)
	Self-ventilated (Reduced output torque)	[r/min]	$n_{L,min} \approx n_{22}$	
Output torque M_2		[Nm]	$M_{L,max} \leq M_2$	
Load factor c			$k \leq c$	
Order information			**Example**	
Number of stages			2	
Ratio i			4.368	
Product gearbox			g500-H45	
Product motor			MFxMAxx063-32	

24 - Load capacity and application factor

26 - Torque derating at low motor frequencies

Example: structure of a selection table

120 Hz: P_N = 0.55 kW ← Rated power P_N

2-stage gearboxes ← Number of the gear stage

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
33	4.9	137	6.0	788	6.0	2.5	4.368	-H45	063-32	39
25	6.6	102	9.0	584	9.0	4.5	5.887	-H100	063-32	42

Min. Output speed **n_{22}**
Min. Output torque **M_{22}**
Min. Output speed **n_{21}**
Max. Output speed **n_2**
Max. Output torque **M_2**
Load capacity **c**
Ratio i
Product Gearbox
Product Motor

Procedure of a configuration process

9 Final configuration

More information regarding the final configuration can be found under: **- The modular geared motor system** **- Product extensions for gearboxes, motors**	
Check operating conditions	- Operating temperature (observe lubricant, material of shaft sealing ring) - Degree of protection - Supply voltage - Surface protection required - Approvals - Conformity
Check and define connection dimensions	- Driven shaft - Foot, output flange, centering with threaded pitch circle
Determine mounting position and position of the system blocks	- Mounting position A/B/C/D/E/F or combined - Terminal box position, shaft position, flange position
Select product extensions at the gearbox (differing depending on the gearbox type)	- Torque plate at the base, threaded pitch circle, rubber buffer - Hollow shaft cover, shrink disc cover
Select product extensions at the motor	- Connection type (terminal box, connector) - Brake - Blower (inverter operation) - Feedback - Temperature monitoring

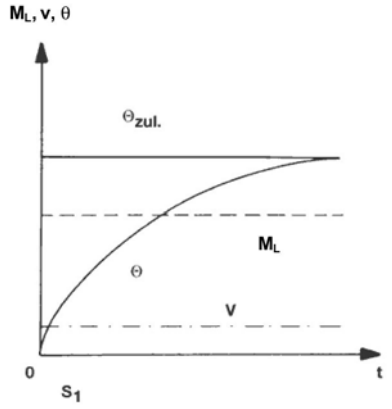
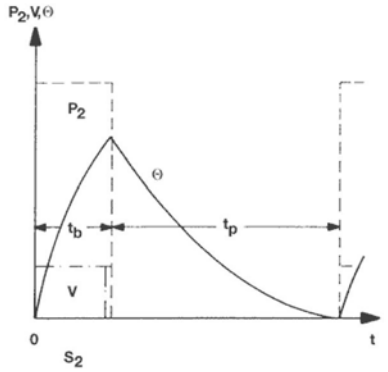
Standards

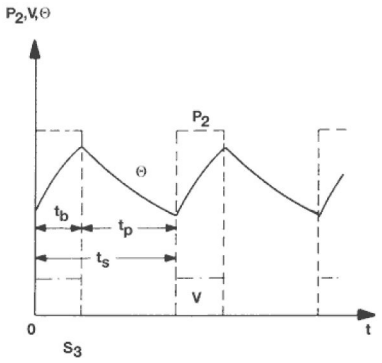
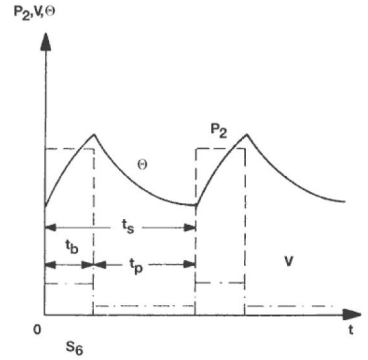
Operating modes

Operating modes S1 ... S10 as specified by EN 60034-1 describe the basic stress of an electrical machine.

In continuous operation a motor reaches its permissible temperature limit if it outputs the rated power dimensioned for continuous operation. However, if the motor is only subjected to load for a short time, the power output by the motor may be greater without the motor reaching its permissible temperature limit. This behaviour is referred to as overload capacity.
Depending on the duration of the load and the resulting temperature rise, the required motor can be selected reduced by the overload capacity.

The most important operating modes

Continuous operation S1	Short-time operation S2
	
Operation with a constant load until the motor reaches the thermal steady state. The motor may be actuated continuously with its rated power.	Operation with constant load; however, the motor does not reach the thermal steady state. During the following standstill, the motor winding cools down to the ambient temperature again. The increase in power depends on the load duration.

Intermittent operation S3	Non-intermittent periodic operation S6
	
-	-

Standards

Duty classes

Depending on the load type, the duty classes or impacts are divided as follows:

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

In order to support you in classifying your driven machine regarding the right duty class, the following shows sample applications with the corresponding duty class. Depending on, for instance, the operating frequency, driven machines can also have a higher impact.
In case of uncertainties, please contact your Lenze sales office.

Drive	Duty class
Construction machines	II
Chemical industry	II
Conveyors	II
Fans	II
Plastics industry	II
Wood working	III
Hoists	III
Metal working	III
Food	II
Paper industry	III
Stones	III
Textile industry	II

Standards

Degrees of protection

The degree of protection indicates the suitability of a motor for specific ambient conditions with regard to humidity as well as the protection against contact and the ingress of foreign particles. The degrees of protectionare classified by EN 60529.

The first code number after the code letters IP indicates the protection against the ingress of foreign particles and dust.
The second code number refers to the protection against the ingress of humidity.

Code number 1	Degree of protection	Code number 2	Degree of protection
0	No protection	0	No protection
1	Protection against the ingress of foreign particles d > 50 mm. No protection in the case of deliberate access	1	Protection against vertically dripping water (dripping water).
2	Protection against medium-sized foreign particles, d > 12 mm, keeping away fingers or similar	2	Protection against diagonally falling water (dripping water), 15 ° compared to normal service position.
3	Protection against small foreign particles d > 2.5 mm. Keeping away tools, wires and the like	3	Protection against spraying water, up to 60 ° to the vertical
4	Protection against granular foreign particles, d > 1 mm, keeping away tools, wires and the like	4	Protection against spraying water from all directions.
5	Protection against dust deposits (dust-protected), complete protection against contact.	5	Protection against water jets from all directions.
6	Protection against the ingress of dust (dust-proof), complete protection against contact.	6	Protection against choppy seas or heavy water jets (flood protection).

Thermal power limit

The thermal power limit, defined by the heat balance, limits the permissible permanent gearbox power.
It 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 of heat via shafts and the foundations.

We ask you to make a thermal check with the Drive Solution Designer (DSD) or contact the Lenze office responsible for you

- If the drive speeds mentioned in the following will be exceeded as a function of the mounting position:

g500 thermal power limit			
Product	Mounting position A	Mounting position A, B, E, F	Mounting position C, D
MF□MA□□063 ... 100	4000 r/min	3500 r/min	3000 r/min
M□FMA□□112	3000 r/min	2600 r/min	1500 r/min

► For a short period of time up to 5 min, 30 % higher speeds are permissible

Possible ways of extending the application area

- Synthetic lubricant (option)
- Shaft sealing rings made from FKM material/Viton (option)
- Reduction in lubricant quantity (after consultation with Lenze)
- Cooling of the geared motor by means of air convection on the machine/system

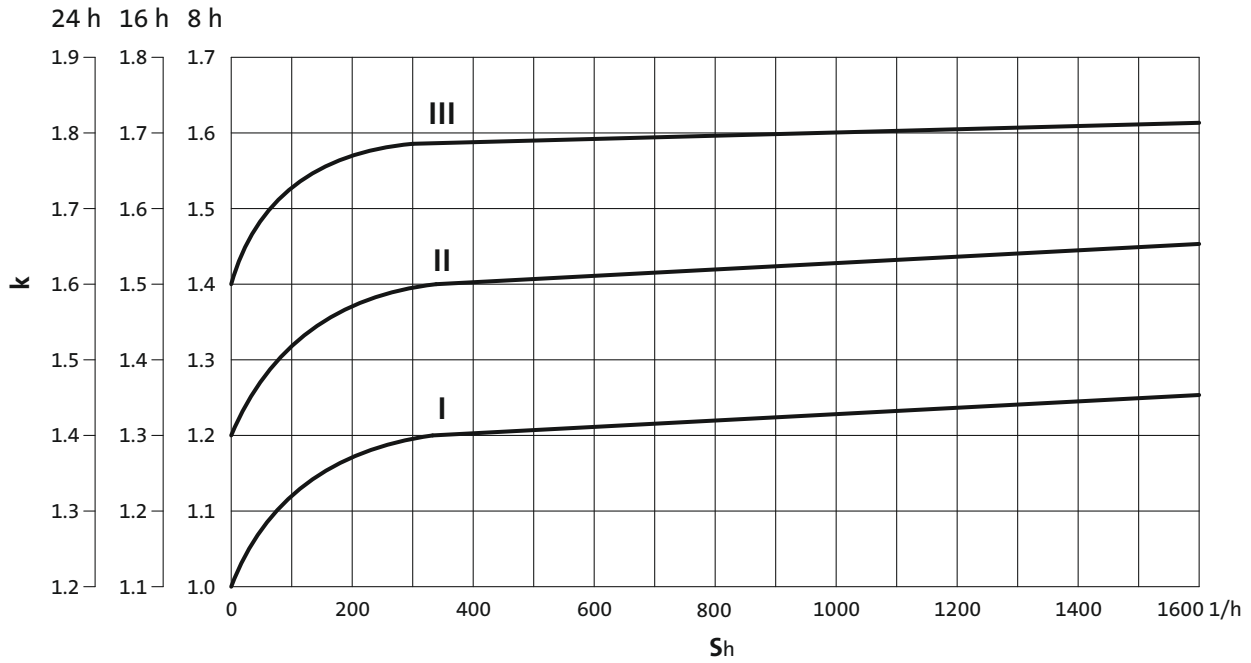
Load capacity and application factor

Load capacity c of gearboxes
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.

Required: 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

Application factor k



► S_h= switchings/h

Operational performance of three-phase AC geared motors

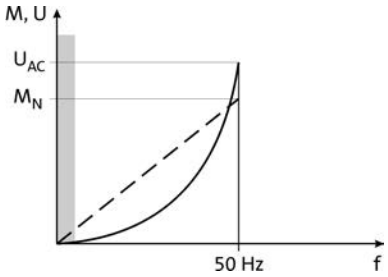
Operation on the inverter

An inverter enables energy-efficient operation of a system in virtually all application cases. The various operating modes, which can be created by making just a few simple settings, facilitate this. The following characteristics and corresponding specifications listed on the following pages can be used to calculate the optimum operating mode during the project planning phase.

Standard setting

In its initial state when delivered, the inverter is set up for basic operation with a three-phase AC motor with vector control. When operated in this mode, the rated torque of the motor is available in a setting range up to 50 Hz.

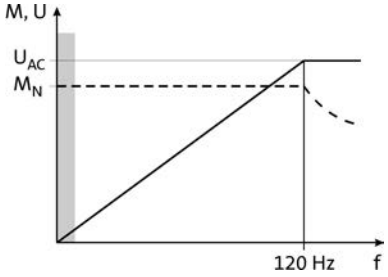
V/f at 50 Hz



Operation with inverter-optimised MF motors

Large setting ranges and optimum operation at the rated torque: these are the strengths of the MF motor when used in combination with an inverter. The motors are optimised for a setting range up to 120 Hz. Compared to conventional 50Hz operation, the setting range increases by 250 %. It is quite simply not possible for a drive to be operated any more efficiently in a machine.

V/f at 120 Hz

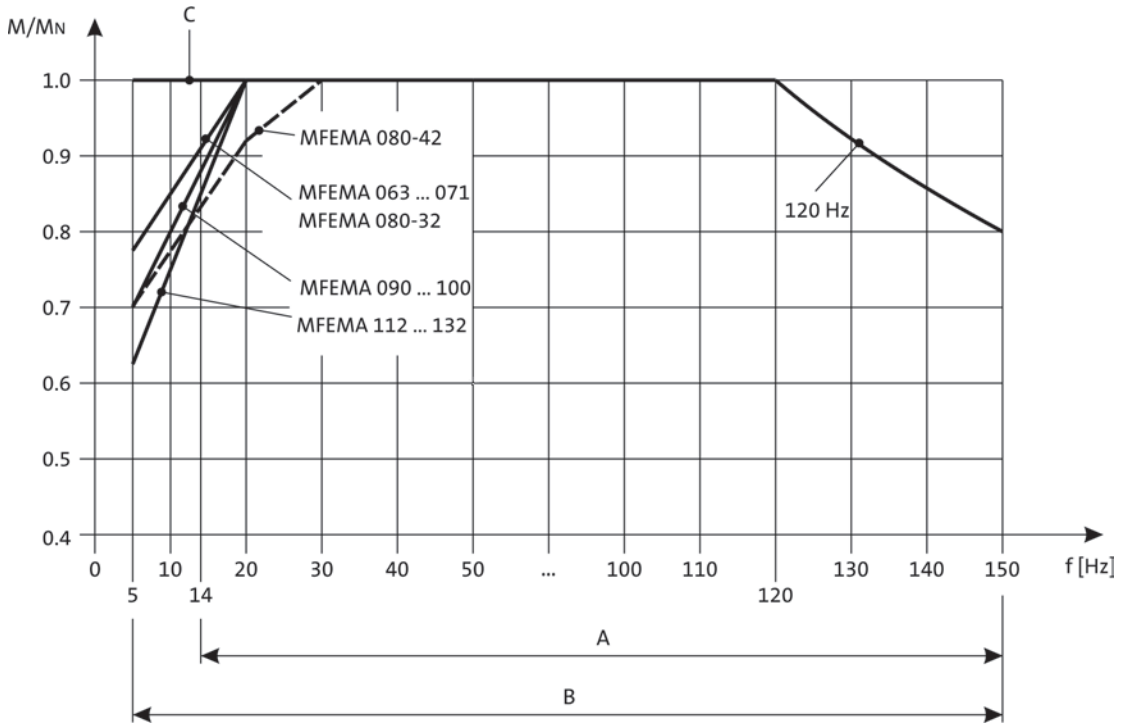


Operational performance of three-phase AC geared motors

Torque derating at low motor frequencies

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"
C= operation with blower

Technical data at a glance

The following tables contain the most important data of the gearbox with the motors that can be attached for an approximate dimensioning process of a geared motor. Detailed information can be found in the following chapters.

The data given in the tables apply to
- input speed n_1= 1400 r/min
- application factor c= 1.0

The data for the max. radial force refer to
- solid shaft without flange
- normal storage
- application factor c= 1.3

For further designs see the "Technical data" chapter.

► The rated torque can be gathered from the last digits of the product name e.g. g500-B45 (45 Nm).

In order to calculate the exact ratio, the number of teeth z_g (driven) can be divided by the number of teeth z_t (driving). These are rounded values.

g500-B45, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
260	39	1.12	5.411	1120	207	2080	27	0.18	0.55
226	41	1.01	6.222	56	9	2180	26	0.18	0.55
198	43	0.94	7.111	64	9	2280	26	0.18	0.55
172	44	0.83	8.178	368	45	2360	25	0.18	0.55
154	45	0.77	9.101	1720	189	2440	25	0.18	0.55
134	45	0.67	10.466	1978	189	2580	24	0.12	0.55
121	45	0.60	11.640	2200	189	2660	24	0.12	0.55
105	45	0.52	13.386	2530	189	2770	23	0.09	0.55
93.0	45	0.46	15.111	136	9	2840	24	0.09	0.55
81.0	45	0.40	17.378	782	45	2900	23	0.09	0.37
73.0	45	0.36	19.365	1220	63	2950	24	0.09	0.37
63.0	45	0.31	22.270	1403	63	3000	23	0.06	0.37
55.0	45	0.27	25.051	2480	99	3000	23	0.06	0.25
48.0	45	0.24	28.808	2852	99	3000	22	0.06	0.25
42.0	45	0.21	32.593	880	27	3000	23	0.06	0.25
36.0	45	0.18	37.481	1012	27	3000	23	0.06	0.18
32.0	45	0.16	42.222	380	9	3000	23	0.06	0.18
29.0	45	0.15	48.556	437	9	3000	22	0.06	0.12
26.0	45	0.13	53.889	485	9	3000	23	0.06	0.12
23.0	45	0.11	61.972	2231	36	3000	22	0.06	0.12

Technical data at a glance

g500-B110, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
278	69	2.12	5.185	140	27	2450	21	0.25	1.50
242	72	1.92	5.963	161	27	2530	21	0.25	1.50
203	77	1.72	7.111	64	9	2620	20	0.25	1.50
176	81	1.57	8.178	368	45	2670	20	0.25	1.50
158	84	1.47	9.101	1720	189	2730	20	0.25	1.50
138	89	1.35	10.466	1978	189	2830	20	0.25	1.50
126	90	1.25	11.449	2576	225	2890	20	0.18	1.50
114	90	1.13	12.698	800	63	2950	20	0.18	1.10
99.0	90	0.98	14.603	920	63	3000	20	0.18	1.10
93.0	92	0.94	15.556	140	9	3000	20	0.25	1.10
81.0	96	0.86	17.889	161	9	3000	20	0.25	0.75
74.0	100	0.82	19.556	176	9	3000	20	0.12	0.75
64.0	104	0.74	22.489	1012	45	3000	19	0.12	0.75
58.0	108	0.69	25.185	680	27	3000	20	0.12	0.75
50.0	110	0.61	28.963	782	27	3000	19	0.12	0.75
44.0	108	0.53	31.919	3160	99	3000	19	0.12	0.37
38.0	110	0.47	36.707	3634	99	3000	19	0.12	0.37
38.0	106	0.44	37.400	187	5	3000	19	0.12	0.37
35.0	100	0.39	40.000	40	1	3000	19	0.12	0.37
31.0	110	0.37	46.000	46	1	3000	19	0.12	0.37
29.0	110	0.36	48.167	289	6	3000	18	0.12	0.37
26.0	69	0.20	52.698	3320	63	3000	19	0.12	0.18
22.0	79	0.20	60.603	3818	63	3000	18	0.12	0.18
22.0	110	0.27	61.045	1343	22	3000	18	0.12	0.25
18.0	110	0.22	76.500	153	2	3000	18	0.12	0.25
14.0	110	0.16	100.786	1411	14	3000	18	0.12	0.18

Technical data at a glance

g500-B240, 2-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
406	138	6.18	3.565	385	108	3030	17	0.55	3.00
296	147	4.80	4.889	44	9	3450	17	1.10	3.00
232	156	3.98	6.257	2365	378	3860	17	0.55	3.00
210	179	4.15	6.883	413	60	4070	13	0.55	3.00
185	187	3.82	7.817	469	60	4300	13	0.55	3.00
154	191	3.23	9.440	236	25	4600	13	1.10	3.00
135	204	3.04	10.720	268	25	4740	13	1.10	3.00
120	208	2.75	12.081	2537	210	4860	13	0.55	3.00
106	217	2.53	13.719	2881	210	4980	13	0.55	3.00
97.0	223	2.38	15.008	1876	125	5180	13	0.25	2.20
86.0	240	2.28	16.857	118	7	5440	13	0.25	2.20
76.0	240	2.01	19.143	134	7	5710	12	0.25	2.20
70.0	240	1.86	20.650	413	20	5860	13	0.55	2.20
62.0	240	1.63	23.450	469	20	6070	12	0.55	1.50
54.0	240	1.42	26.878	2419	90	6230	13	0.25	1.50
47.0	240	1.25	30.522	2747	90	6370	12	0.25	1.50
43.0	240	1.14	33.433	1003	30	6500	13	0.25	1.10
38.0	240	1.01	37.967	1139	30	6500	12	0.25	1.10
34.0	240	0.89	43.267	649	15	6500	12	0.12	0.75
30.0	240	0.78	49.133	737	15	6500	12	0.12	0.75
27.0	233	0.69	52.510	5251	100	6500	12	0.12	0.55
24.0	240	0.62	59.630	5963	100	6500	12	0.12	0.55
21.0	178	0.41	67.113	5369	80	6500	12	0.12	0.37
18.0	202	0.41	76.213	6097	80	6500	12	0.12	0.37

Technical data at a glance

g500-B240, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
20.0	240	0.56	68.459	43129	630	6500	13	0.12	0.55
18.0	240	0.49	77.741	48977	630	6500	13	0.12	0.55
16.0	240	0.44	87.563	11033	126	6500	13	0.12	0.37
14.0	240	0.39	99.437	12529	126	6500	13	0.12	0.37
12.0	240	0.34	113.673	17051	150	6500	13	0.12	0.37
11.0	240	0.30	129.087	19363	150	6500	13	0.12	0.37
9.00	240	0.26	145.674	61183	420	6500	13	0.12	0.25
8.00	240	0.23	165.426	69479	420	6500	13	0.12	0.25
7.00	240	0.20	188.442	31093	165	6500	13	0.12	0.18
6.00	240	0.17	213.994	35309	165	6500	13	0.12	0.18
6.00	240	0.15	245.178	11033	45	6500	13	0.12	0.18
5.00	240	0.14	278.422	12529	45	6500	13	0.12	0.12
4.00	240	0.12	317.617	19057	60	6500	13	0.12	0.12
4.00	240	0.11	360.683	21641	60	6500	13	0.12	0.12

Technical data at a glance

g500-B450, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
295	280	9.12	5.002	2401	480	3760	21	0.55	7.50
215	308	7.31	6.860	343	50	4030	21	1.10	7.50
159	368	6.43	9.315	3577	384	4370	15	0.55	7.50
143	384	6.05	10.328	2107	204	4500	14	0.55	7.50
114	404	5.09	12.775	511	40	4830	15	1.10	5.50
103	422	4.80	14.165	1204	85	5010	14	1.10	5.50
89.0	434	4.25	16.349	3139	192	5280	15	0.55	4.00
81.0	446	3.99	17.885	3577	200	5470	15	0.25	4.00
73.0	450	3.64	19.831	8428	425	5710	14	0.25	4.00
64.0	450	3.15	22.813	365	16	6060	15	0.25	3.00
57.0	450	2.84	25.294	430	17	6340	14	0.25	3.00
52.0	450	2.57	27.945	3577	128	6640	15	0.55	3.00
47.0	450	2.33	30.985	2107	68	6960	14	0.55	2.20
40.0	450	1.96	36.373	20951	576	7520	14	0.25	1.50
36.0	450	1.78	40.330	12341	306	7800	14	0.25	1.50
32.0	450	1.58	45.245	8687	192	7800	14	0.25	1.50
29.0	450	1.42	50.167	301	6	7800	14	0.25	1.50
26.0	450	1.28	56.154	730	13	7800	13	0.25	1.50
23.0	450	1.15	62.262	13760	221	7800	12	0.25	1.10
21.0	450	1.04	68.788	3577	52	7800	13	0.55	1.10
19.0	450	0.94	76.271	16856	221	7800	12	0.55	1.10
16.0	450	0.80	89.534	20951	234	7800	13	0.25	0.75
15.0	450	0.72	99.274	197456	1989	7800	12	0.25	0.75
13.0	450	0.64	111.372	8687	78	7800	13	0.25	0.75
11.0	450	0.57	123.487	4816	39	7800	12	0.25	0.55
10.0	450	0.48	144.128	5621	39	7800	13	0.12	0.55
9.00	450	0.44	159.807	105952	663	7800	12	0.12	0.37
8.00	450	0.40	174.919	45479	260	7800	13	0.12	0.37
7.00	450	0.36	193.948	214312	1105	7800	12	0.12	0.37
6.00	450	0.31	223.563	3577	16	7800	13	0.12	0.37
6.00	450	0.27	247.882	4214	17	7800	12	0.12	0.25

Technical data at a glance

g500-B600, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
292	376	12.1	5.067	6293	1242	4600	21	2.20	7.50
213	398	9.33	6.949	7192	1035	5000	19	2.20	7.50
194	462	9.88	7.617	15631	2052	5100	17	2.20	7.50
138	542	8.21	10.741	290	27	5600	15	2.20	7.50
110	553	6.73	13.369	13717	1026	6500	17	1.10	7.50
100	600	6.63	14.730	928	63	6900	14	2.20	7.50
77.0	600	5.12	18.851	24940	1323	7500	14	1.10	5.50
71.0	600	4.68	20.622	928	45	7800	14	1.10	5.50
64.0	600	4.21	22.852	15631	684	8100	16	1.10	4.00
57.0	600	3.79	25.347	2408	95	8300	14	2.20	4.00
56.0	600	3.69	26.061	860	33	8400	13	2.20	4.00
49.0	600	3.23	29.744	91553	3078	8700	16	0.55	4.00
45.0	600	2.96	32.439	1849	57	8900	14	1.10	3.00
40.0	600	2.68	35.740	2752	77	9000	13	2.20	3.00
39.0	600	2.59	36.999	37961	1026	9000	16	0.55	3.00
35.0	600	2.29	41.940	23780	567	9000	14	0.55	2.20
32.0	600	2.10	45.739	73960	1617	9000	13	1.10	2.20
29.0	600	1.92	50.036	2752	55	9000	13	1.10	2.20
26.0	600	1.72	55.447	2107	38	9000	14	1.10	1.50
23.0	600	1.49	63.822	34400	539	9000	13	0.55	1.50
21.0	600	1.42	67.513	12760	189	9000	14	0.25	1.50
20.0	600	1.32	72.170	12341	171	9000	14	0.55	1.50
18.0	600	1.22	78.182	860	11	9000	13	1.10	1.50
18.0	600	1.16	81.937	5162	63	9000	14	0.25	1.10
16.0	600	1.06	89.772	5117	57	9000	14	0.55	1.10
14.0	600	0.94	101.760	70520	693	9000	13	0.55	1.10
12.0	600	0.83	116.175	6622	57	9000	14	0.25	0.75
12.0	600	0.76	126.580	29240	231	9000	12	0.55	0.75
10.0	600	0.68	140.995	26789	190	9000	14	0.25	0.75
9.00	600	0.57	163.810	3440	21	9000	12	0.25	0.55
8.00	600	0.52	178.224	13545	76	9000	14	0.25	0.55
7.00	600	0.47	198.805	15308	77	9000	12	0.25	0.55
6.00	600	0.37	251.299	19350	77	9000	12	0.25	0.37

Technical data at a glance

g500-B820, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
298	312	10.2	4.958	119	24	9800	21	2.20	7.50
217	391	9.37	6.800	34	5	10200	20	2.20	7.50
194	424	9.07	7.618	259	34	10700	17	2.20	7.50
173	459	8.78	8.517	511	60	11000	16	2.20	7.50
155	496	8.48	9.520	238	25	11000	20	1.10	7.50
141	528	8.24	10.447	888	85	11000	16	2.20	7.50
126	569	7.93	11.680	292	25	11000	15	2.20	7.50
122	544	7.30	12.143	85	7	11000	19	0.55	7.50
110	619	7.54	13.370	1591	119	11000	16	1.10	7.50
101	653	7.27	14.626	6216	425	11000	16	1.10	7.50
90.0	708	7.05	16.352	2044	125	11000	16	1.10	7.50
79.0	747	6.52	18.655	2220	119	11000	16	0.55	7.50
71.0	820	6.40	20.857	146	7	11000	16	0.55	7.50
64.0	820	5.78	22.853	777	34	11000	15	1.10	5.50
57.0	820	5.16	25.550	511	20	11000	15	1.10	5.50
56.0	820	5.02	26.324	8687	330	11000	12	2.20	5.50
49.0	820	4.41	29.745	1517	51	11000	15	0.55	4.00
45.0	820	4.07	32.291	1776	55	11000	13	2.20	4.00
40.0	820	3.63	36.102	9928	275	11000	14	2.20	4.00
39.0	820	3.54	37.000	37	1	11000	12	0.55	3.00
35.0	820	3.17	41.325	3182	77	11000	13	1.10	3.00
32.0	820	2.90	45.207	12432	275	11000	13	1.10	3.00
29.0	820	2.59	50.543	69496	1375	11000	12	1.10	3.00
25.0	820	2.28	57.662	4440	77	11000	13	0.55	2.20
22.0	820	2.03	64.468	4964	77	11000	12	0.55	2.20
21.0	820	1.86	70.636	777	11	11000	13	1.10	2.20
18.0	820	1.65	78.973	8687	110	11000	12	1.10	1.50
16.0	820	1.42	91.939	3034	33	11000	13	0.55	1.50
14.0	820	1.27	102.790	50881	495	11000	12	0.55	1.50
13.0	820	1.14	114.364	1258	11	11000	13	0.55	1.10
11.0	820	1.02	127.861	21097	165	11000	12	0.55	1.10
10.0	820	0.89	148.000	148	1	11000	13	0.25	1.10
9.00	820	0.80	165.467	2482	15	11000	12	0.25	0.75
8.00	820	0.73	179.618	9879	55	11000	13	0.25	0.75
7.00	820	0.65	200.816	110449	550	11000	12	0.25	0.75
6.00	820	0.56	227.045	4995	22	11000	12	0.25	0.55
6.00	820	0.50	253.841	11169	44	11000	12	0.25	0.55

Technical data at a glance

g500-B1500, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
216	837	19.9	6.866	1792	261	12000	16	4.00	22.00
156	1006	17.3	9.516	1456	153	13000	15	4.00	18.50
136	1330	19.9	10.902	36992	3393	14000	12	4.00	22.00
124	1461	19.9	11.985	3128	261	15000	12	4.00	22.00
112	1118	13.8	13.118	50176	3825	15500	15	2.20	15.00
98.0	1500	16.2	15.111	136	9	16000	12	4.00	18.50
88.0	1500	14.6	16.611	299	18	16000	11	4.00	15.00
79.0	1500	13.1	18.598	2176	117	16000	12	2.20	15.00
72.0	1500	12.0	20.444	184	9	16000	11	2.20	11.00
64.0	1500	10.7	22.898	5152	225	16000	11	2.20	11.00
62.0	1500	10.2	23.973	99416	4147	16000	11	4.00	11.00
56.0	1500	9.28	26.353	16813	638	16000	10	4.00	11.00
51.0	1500	8.37	29.206	1840	63	16000	11	1.10	7.50
45.0	1500	7.51	32.547	3808	117	16000	11	2.20	7.50
41.0	1500	6.83	35.778	322	9	16000	11	2.20	7.50
40.0	1500	6.68	36.526	12857	352	16000	10	4.00	7.50
36.0	1500	5.90	40.895	5848	143	16000	11	2.20	5.50
32.0	1500	5.37	44.955	989	22	16000	10	2.20	5.50
31.0	1500	5.19	46.568	3772	81	16000	11	1.10	5.50
28.0	1500	4.63	51.920	18224	351	16000	11	1.10	4.00
26.0	1500	4.22	57.074	1541	27	16000	11	1.10	4.00
25.0	1500	4.12	58.422	58480	1001	16000	10	1.10	4.00
23.0	1500	3.74	64.221	4945	77	16000	10	1.10	4.00
20.0	1500	3.36	71.566	10234	143	16000	10	2.20	4.00
19.0	1500	3.19	74.963	2024	27	16000	11	0.55	3.00
18.0	1500	2.89	82.762	48416	585	16000	11	0.55	2.20
16.0	1500	2.65	90.978	4094	45	16000	11	0.55	2.20
16.0	1500	2.58	93.150	119884	1287	16000	10	1.10	3.00
14.0	1500	2.35	102.396	40549	396	16000	10	1.10	2.20
13.0	1500	2.10	114.166	48977	429	16000	10	1.10	2.20
12.0	1500	1.92	125.498	66263	528	16000	10	1.10	2.20
10.0	1500	1.59	149.949	5848	39	16000	10	0.55	1.50
9.00	1500	1.44	164.833	989	6	16000	10	0.55	1.50
8.00	1500	1.31	181.983	130118	715	16000	10	0.55	1.50
7.00	1500	1.19	200.048	88021	440	16000	10	0.55	1.10
6.00	1500	1.04	230.035	32895	143	16000	10	0.55	1.10
6.00	1500	0.94	252.869	44505	176	16000	10	0.55	1.10

Technical data at a glance

g500-B2700, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
214	1446	34.0	6.918	28917	4180	13000	15	7.50	30.00
168	1528	28.3	8.793	41769	4750	14000	14	5.50	30.00
126	2212	30.8	11.713	2448	209	16000	10	5.50	30.00
115	2262	28.6	12.863	18819	1463	16500	10	5.50	30.00
99.0	2380	26.1	14.888	7072	475	17000	10	5.50	30.00
90.0	2429	24.2	16.351	54366	3325	18000	9	5.50	30.00
76.0	2579	21.5	19.542	23392	1197	19000	10	4.00	22.00
66.0	2684	19.7	22.269	3808	171	20100	10	4.00	22.00
60.0	2700	18.0	24.456	1394	57	20500	9	4.00	22.00
55.0	2700	16.5	26.814	32096	1197	21000	10	2.20	18.50
50.0	2700	15.0	29.447	82246	2793	21500	9	2.20	18.50
45.0	2700	13.3	32.873	16864	513	22000	10	4.00	15.00
41.0	2700	12.1	36.102	43214	1197	22700	9	4.00	15.00
35.0	2700	10.3	42.772	8084	189	23000	9	4.00	11.00
32.0	2700	9.38	46.973	82861	1764	24000	8	4.00	11.00
30.0	2700	8.99	48.912	2788	57	25000	9	2.20	7.50
27.0	2700	8.13	54.082	9248	171	26000	10	2.20	7.50
25.0	2700	7.41	59.393	23698	399	27500	9	2.20	7.50
23.0	2700	6.82	64.452	113693	1764	27500	8	2.20	7.50
20.0	2700	6.10	71.951	5828	81	27500	9	4.00	7.50
19.0	2700	5.63	76.862	30668	399	27500	9	1.10	4.00
17.0	2700	5.09	84.940	24208	285	27500	10	1.10	4.00
16.0	2700	4.64	93.283	62033	665	27500	9	1.10	4.00
15.0	2700	4.47	97.481	2632	27	27500	9	2.20	5.50
14.0	2700	4.05	107.056	1927	18	27500	8	2.20	4.00
12.0	2700	3.66	118.370	3196	27	27500	9	2.20	4.00
11.0	2700	3.33	129.996	32759	252	27500	8	2.20	4.00
10.0	2700	2.83	153.185	4136	27	27500	9	1.10	3.00
9.00	2700	2.56	168.230	21197	126	27500	8	1.10	3.00
8.00	2700	2.32	185.911	8366	45	27500	9	1.10	2.20
7.00	2700	2.11	204.170	171503	840	27500	8	1.10	2.20
6.00	2700	1.85	235.000	235	1	27500	9	1.10	2.20
6.00	2700	1.67	258.080	28905	112	27500	8	1.10	1.50

Technical data at a glance

g500-B4300, 3-stage gearboxes

Output speed	Max. output torque	Max. drive power	Ratio	Number of teeth		Max. radial force	Backlash	Rated power	
							Standard	Motor	
n_2	$M_{2, max}$	$P_{1, max}$	i	z_g	z_t	$F_{rad,max}$		$P_{N, min}$	$P_{N, max}$
							± 20 %		
[r/min]	[Nm]	[kW]				[N]	[arcmin]	[kW]	[kW]
269	2160	64.1	5.488	1147	209	13200	14	7.50	30.00
212	2400	56.1	6.976	29822	4275	14000	14	7.50	30.00
161	2700	48.0	9.156	98642	10773	15100	14	4.00	30.00
146	3950	63.5	10.137	67797	6688	15500	9	7.50	30.00
133	4250	62.5	11.080	23157	2090	16000	9	7.50	30.00
115	4300	54.4	12.885	97929	7600	16800	9	7.50	30.00
105	4300	49.7	14.084	33449	2375	17300	9	7.50	30.00
87.0	4300	41.4	16.913	35991	2128	18600	9	4.00	30.00
80.0	4300	37.9	18.486	110639	5985	19300	9	4.00	30.00
70.0	4300	33.3	21.065	18011	855	20400	9	4.00	30.00
64.0	4300	30.3	23.206	49383	2128	21200	9	2.20	22.00
58.0	4300	27.6	25.365	151807	5985	22100	9	2.20	22.00
53.0	4300	25.0	28.013	2241	80	23100	8	5.50	30.00
48.0	4300	22.6	31.097	79763	2565	24300	9	4.00	22.00
42.0	4300	19.7	35.607	35607	1000	25900	8	5.50	22.00
38.0	4300	18.2	38.546	5859	152	26900	9	2.20	7.50
35.0	4300	16.4	42.760	38313	896	28300	8	4.00	18.50
32.0	4300	15.0	46.737	39259	840	29500	8	4.00	18.50
28.0	4300	13.1	53.258	6391	120	31500	8	4.00	15.00
25.0	4300	11.9	58.671	52569	896	33000	8	2.20	11.00
23.0	4300	10.9	64.127	53867	840	34400	8	2.20	11.00
20.0	4300	9.72	71.930	9207	128	36400	8	4.00	11.00
19.0	4300	8.91	78.619	28303	360	37900	8	4.00	11.00
15.0	4300	7.21	97.453	6237	64	40000	8	2.20	7.50
14.0	4300	6.59	106.517	6391	60	40000	8	2.20	7.50
12.0	4300	5.83	118.336	15147	128	40000	8	2.20	5.50
11.0	4300	5.36	129.342	15521	120	40000	8	2.20	5.50
10.0	4300	4.50	153.141	9801	64	40000	8	1.10	4.00
9.00	4300	4.12	167.383	10043	60	40000	8	1.10	4.00
8.00	4300	3.70	185.857	237897	1280	40000	8	1.10	4.00
7.00	4300	3.41	203.143	81257	400	40000	8	1.10	4.00
6.00	4300	2.94	234.932	120285	512	40000	8	1.10	2.20
6.00	4300	2.70	256.781	8217	32	40000	8	1.10	2.20

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	Applications	Product	
		g500-H45 ... H450 g500-S130 ... S660 g500-B45 ... B450	g500-H600 ... H3000 g500-S950 ... S4500 g500-B600 ... B4300
Without OKS(uncoated) [1]	• Indoor installation, no special corrosion protection necessary • Paint provided by the customer	Standard	
OKS-G (primed)	• Dependent on subsequent top coat applied	Optional	Optional
OKS-S (small)	• Standard applications • Internal installation in heated buildings • Air humidity up to 90%		Standard
OKS-M (medium)	• Internal installation in non-heated buildings • Covered, protected external installation • Air humidity up to 95%	Optional	Optional
OKS-L (large)	• External installation • Air humidity above 95% • Chemical industry plants • Food industry		
OKS-XL (extra Large) [2]	• External installation • Air humidity above 95 % • Chemical industry plants • Food industry • Coastal areas with moderate salinity		

[1] Aluminium parts are uncoated, fan covers are zinc-coated or primed in grey, cast iron parts primed in grey.
Light colour deviations of the components are possible.
[2] On request

Surface and corrosion protection

Structure of surface coating

Surface and corrosion protection	Corrosivity category	Surface coating	Colour	Coating thickness
	DIN EN ISO 12944-2	Structure		
Without OKS(uncoated)		• Dipping primer of the grey iron parts		30 ... 50 µm
OKS-G (primed)		• Dipping primer of the grey iron parts • 2K PUR priming coat		60 ... 90 µm
OKS-S (small)	Comparable to C1	• Dipping primer of the grey iron parts • 2K-PUR top coat	• Standard: RAL 7012 • Optional: RAL Classic	80 ... 120 µm
OKS-M (medium)	Comparable to C2	• Dipping primer of the grey iron parts • 2K PUR priming coat • 2K-PUR top coat		110 ... 160 µm
OKS-L (large)	Comparable to C3			140 ... 200 µm
OKS-XL (extra Large) [1)]	Comparable to C4	• Dipping primer of the grey iron parts • 2K-EP priming coat (two times) • 2K-PUR top coat		160 ... 240 µm

[1)] On request

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 amount and type of lubricant contained in the gearbox are given on the nameplate.

The following gearboxes are lubricated for life:
- bevel gearboxes g500-B45 ... 240

Lubricant table

The following lubricants are recommended:

Mode	CLP 220	CLP 460	CLP HC 220
Ambient temperature [°C]	0 ... +40		-25 ... +50
Specification	Mineral oil with EP additives		Synthetic oil (polyalfaolefins basis)
Changing interval	16000 operating hours After 3 years at the latest Oil temperature 70 °C		25000 operating hours After 4 years at the latest Oil temperature 70 °C
Fuchs	Renolin CLP 220 CLP Plus 220	Renolin CLP 460 CLP Plus 460	Renolin Unisyn CLP 220 XT220
Klüber	Klüberoil GEM 1-220 N	Klüberoil GEM 1-460 N	Klübersynth GEM 4-220 N
Shell	Shell Omala S2 G 220 S2 GX 220	Shell Omala S2 G 460 S2 GX 460	Shell Omala S4 GX HD 220

Mode	CLP HC 320	CLP HC 220 USDA H1	CLP PG 460 USDA H1
Ambient temperature [°C]	-25 ... +50	-20 ... +40	
Specification	Synthetic oil (polyalfaolefins basis)		Synthetic oil (polyglycol basis)
Changing interval	25000 operating hours After 4 years at the latest Oil temperature 70 °C	16000 operating hours After 3 years at the latest Oil temperature 70 °C	
Fuchs	Renolin Unisyn CLP 320 XT 320	Cassida Fluid GL 220	Cassida Fluid WG 460
Klüber	Klübersynth GEM 4-320 N	Klüberoil 4 UH1-220 N	Klüberoil UH1 6-460
Shell	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.

Shaft sealing rings

By default, the gearboxes come with NBR shaft sealing rings at the output end. At high speed and unfavourable ambient conditions such as high temperature, reduced circulation of air etc., Lenze recommends the use of FKM (Viton) shaft sealing rings.

Please consider this in your order.

Ventilation

Non-ventilated gearboxes

No ventilation is required for the gearboxes g500-B45 ... B240.

Ventilated gearboxes

The gearbox g500-B240 can be optionally ordered with breather elements.
From g500-B450 onwards, the gearboxes are supplied with a breather element as standard.

Gearbox in combined mounting position

For reducing the number of versions, the gearboxes can also be ordered in a combined mounting position:

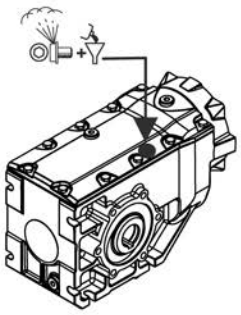
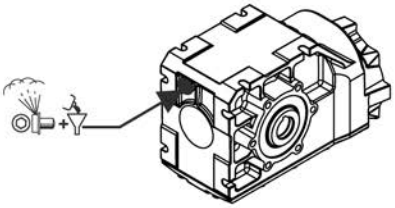
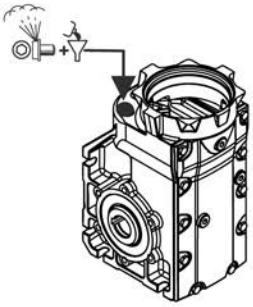
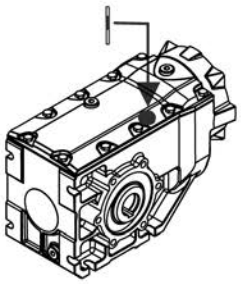
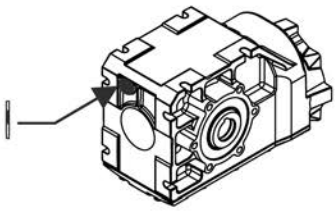
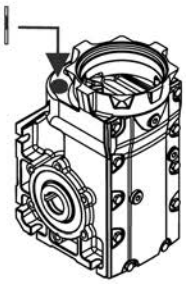
- g500-B45 in mounting position ABCDEF
- g500-B110 ... B450 in mounting position AEF

In these gearboxes, the lubricant amount has been optimised for the use in different mounting positions. If required, the breather elements are loosely enclosed and have to be mounted before commissioning depending on the mounting position.
A gearbox can be used for several mounting positions.

Ventilation

Position of ventilation, sealing elements and oil level check

g500-B240

Mounting position A	Mounting position B	Mounting position C
Filling and ventilation		
		
Check		
		
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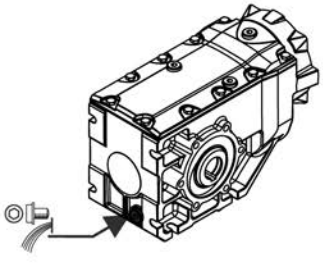
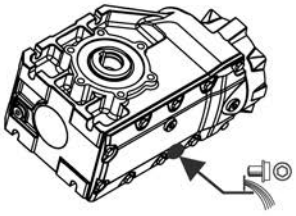
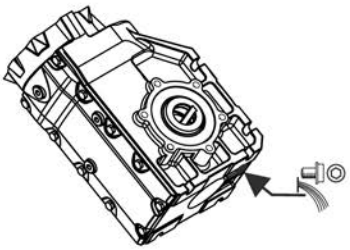
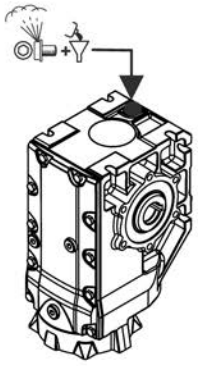
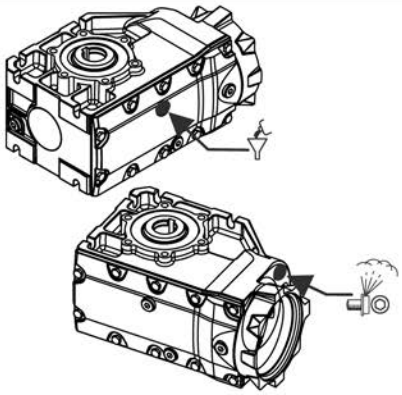
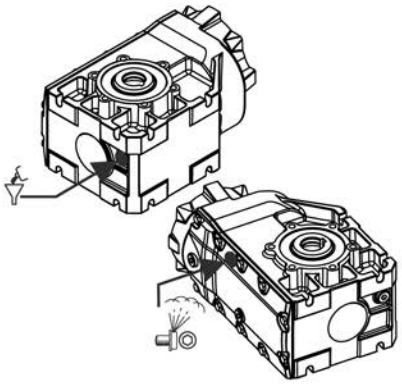
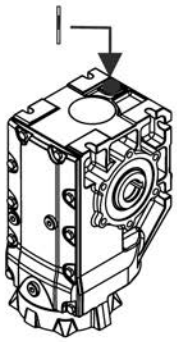
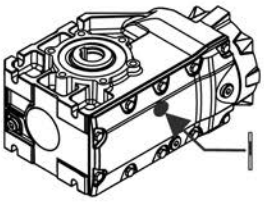
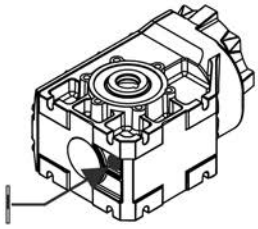
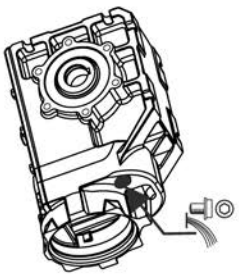
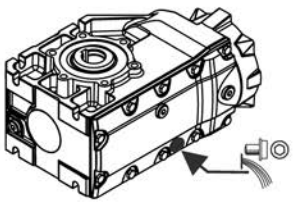
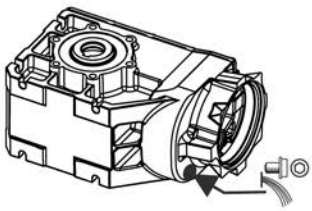
		

Ventilation

Position of ventilation, sealing elements and oil level check

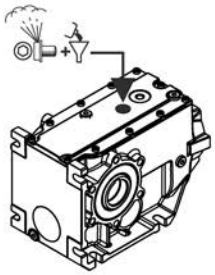
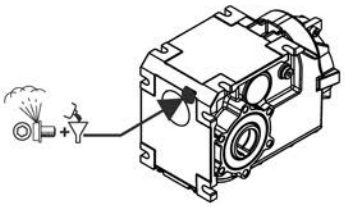
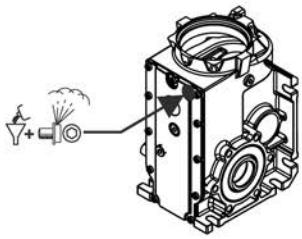
g500-B240

Mounting position D	Mounting position E	Mounting position F
Filling and ventilation		
		
Check		
		
Drain		
		

Ventilation

Position of ventilation, sealing elements and oil level check

g500-B450

Mounting position A	Mounting position B	Mounting position C
Filling and ventilation		
		
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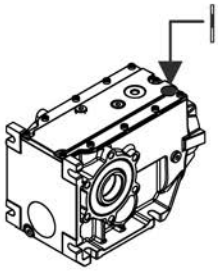
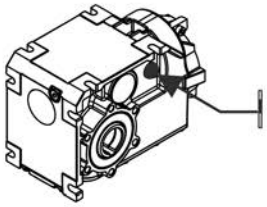
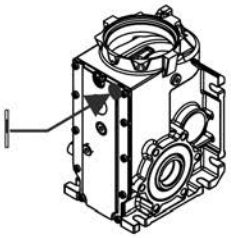
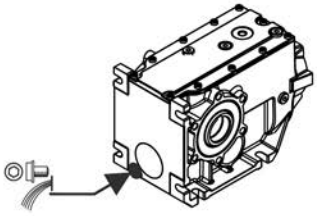
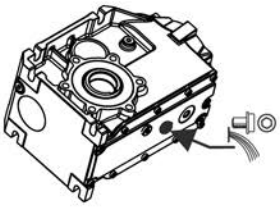
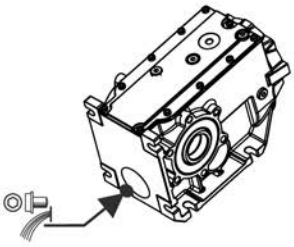
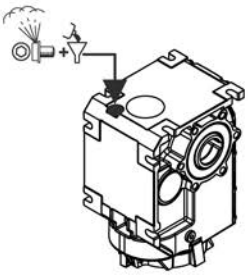
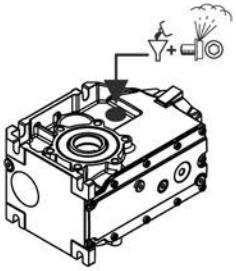
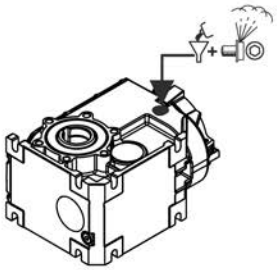
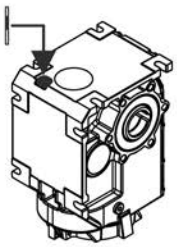
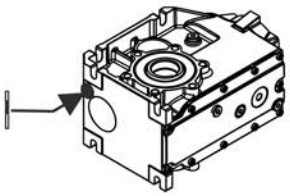
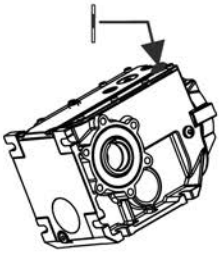
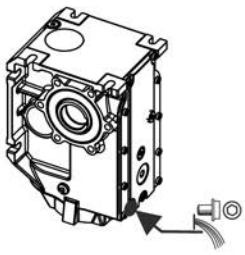
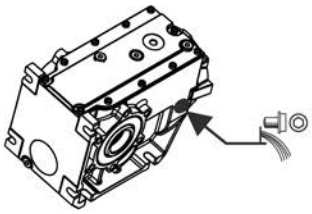
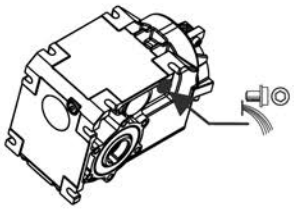
		
Drain		
		

Ventilation

Position of ventilation, sealing elements and oil level check

g500-B450

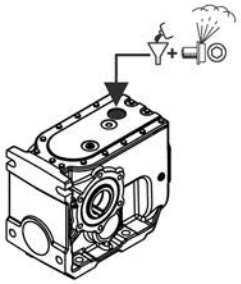
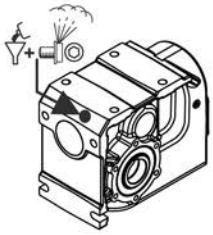
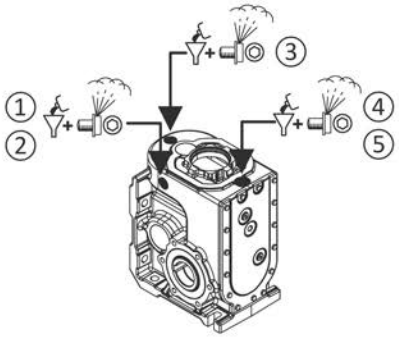
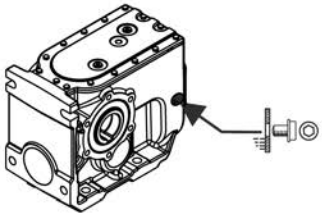
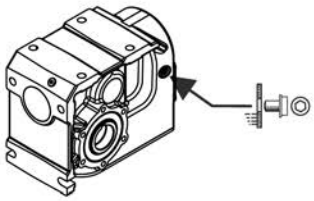
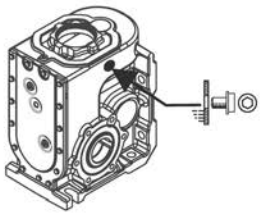
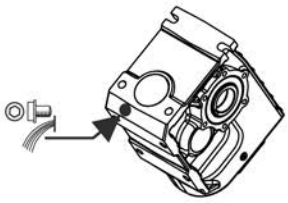
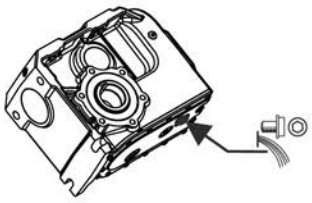
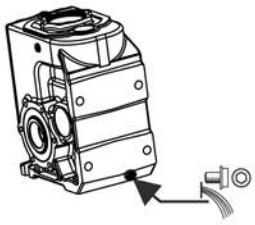
Mounting position D	Mounting position E	Mounting position F
Filling and ventilation		
		
Check		
		
Drain		
		

6.5

Ventilation

Position of ventilation, sealing elements and oil level check

g500-B600 ... B4300

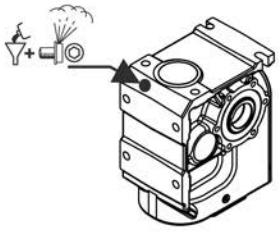
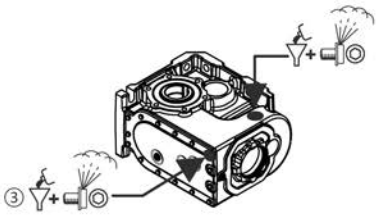
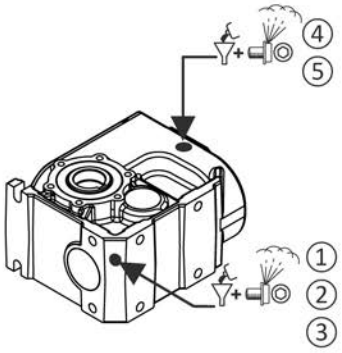
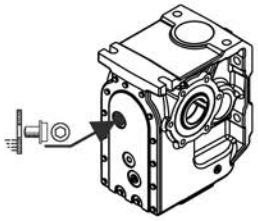
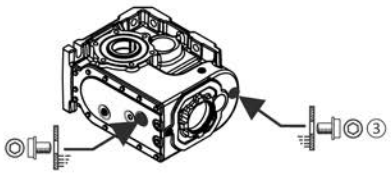
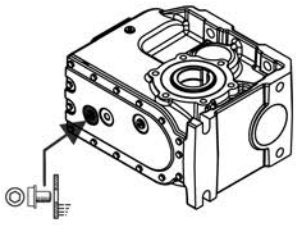
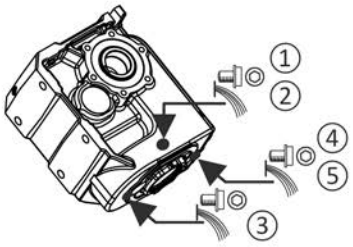
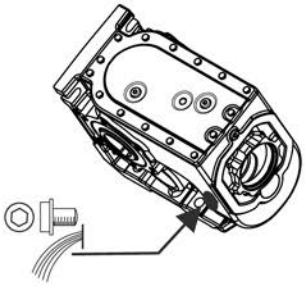
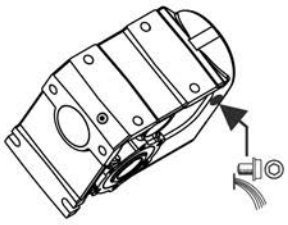
Mounting position A	Mounting position B	Mounting position C
Filling and ventilation		
		
Check		
		
Drain		
		

① g500-B600
② g500-B820
③ g500-B1500
④ g500-B2700
⑤ g500-B4300

Ventilation

Position of ventilation, sealing elements and oil level check

g500-B600 ... B4300

Mounting position D	Mounting position E	Mounting position F
Filling and ventilation		
		
Check		
		
Drain		
		

① g500-B600
② g500-B820
③ g500-B1500
④ g500-B2700
⑤ g500-B4300

6.5

Standards and operating conditions

Geared motor data

Product			
Motor			MF□MA□□
Enclosure			
EN 60529			IP55 [1] IP65 [1] IP66 [1]
Energy efficiency class			
IEC 60034-30			Better than IE2
IEC 60034-2-1			Methodology for measuring efficiency
10 CFR Part 431 (U.S. Integral hp Rule)			
GB18613-2012 (China Energy Label optional)			
Conformity			
CE			Low-Voltage Directive
			2006/95/EC
EAC			TP TC 004/2011 (TR CU 004/2011)
Approval			
CCC			GB Standard 12350-2009
CSA			CSA 22.2 No. 100
cURus			UL 1004-1 UL 1004-8 File-No. E210321
Temperature class			
IEC/EN 60034-1; utilisation			B
IEC/EN 60034-1; insulation system (enamel-insulated wire)			F
Min. ambient operating temperature			
	$T_{opr,min}$	[°C]	-20
Max. ambient operating temperature			
	$T_{opr,max}$	[°C]	40
With power reduction	$T_{opr,max}$	[°C]	60 [2]
Site altitude			
Current derating at over 1000 m		[%/1000 m]	5.00
Amsl	H_{max}	[m]	4000

[1] Designs with different degrees of protection:
IP55 with brake (IP54 with manual release lever).
IP54 with resolver RS1.
IP54 with HTL incremental encoder IG128-24V-H.

[2] In case of cURus max. 40 °C are permissible.

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

Permissible radial and axial forces at output

Permissible radial force

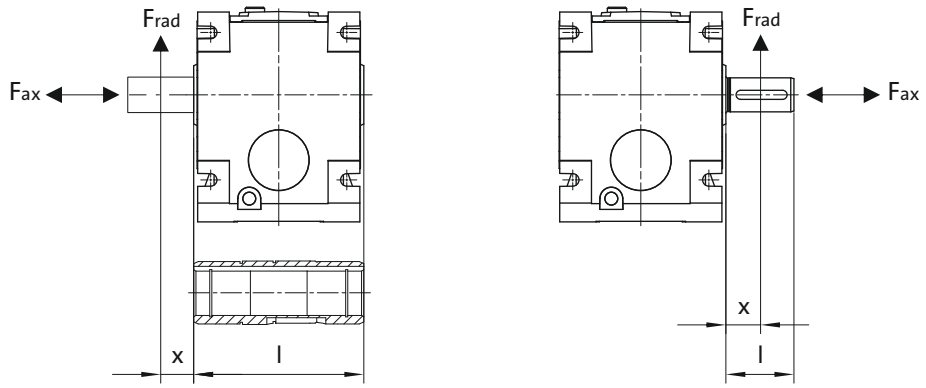
$F_{rad,perm} = f_w \times F_{rad,max}$

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

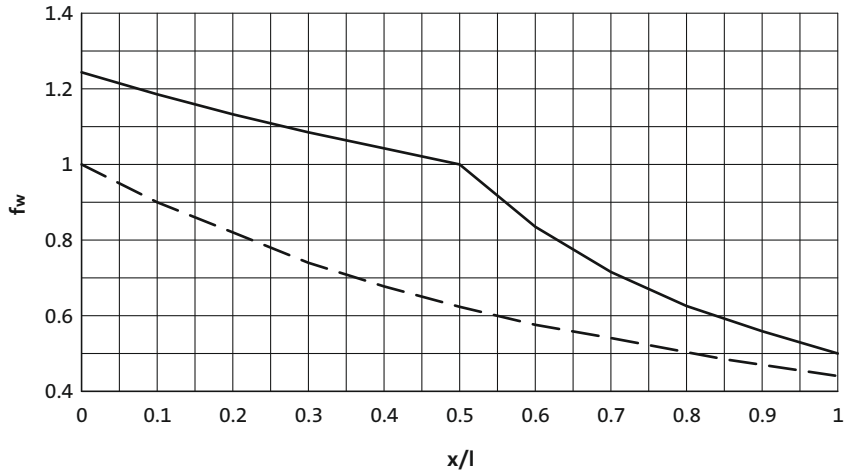
Permissible axial force

If there is no radial force, the maximum permissible axial force is 50 % of the table value $F_{rad,max}$

Application of forces



Additional load factor f_w at output shaft



——— Solid shaft
— — — Hollow shaft

Permissible radial and axial forces at output

The values given in the table refer to the center shaft end force application point and are minimum values calculated according to the most unfavourable conditions (force application angle, mounting position, direction of rotation). The values were calculated for the motor/gearbox combination with a load capacity of c= 1.3 and an input speed of 1400 r/min.

In case of different operating conditions, considerably higher forces can be transmitted. Please contact Lenze.

► A hollow shaft with shrink disc requires a check by Lenze.

Product	n_2 [r/min]						
	250	160	100	63	40	25	≤16

	Max. radial force, Hollow shaft						
	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]
g500-B45	2500	2800	3000	3000	3000	3000	3000
g500-B110	3000	3300	3600	3600	3600	3600	3600
g500-B240	4500	5100	6200	7400	7800	7800	7800
g500-B450	5200	5200	5500	7000	9000	9000	9000
g500-B600	5400	5600	6000	8000	9400	9500	9500
g500-B820	5800	6000	7000	9000	9800	10200	10200
g500-B1500	7000	8000	9000	10500	13000	16000	16000
g500-B2700	8200	9400	10600	12200	15000	18000	21900
g500-B4300	9000	10500	12000	15500	21000	27900	35100

	Max. radial force, Solid shaft without flange						
	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]
g500-B45	2100	2400	2800	3000	3000	3000	3000
g500-B110	2500	2700	3000	3000	3000	3000	3000
g500-B240	3600	4500	5000	6000	6500	6500	6500
g500-B450	3900	4300	5000	6000	7600	7800	7800
g500-B600	4700	5400	6700	8300	9000	9000	9000
g500-B820	9800	11000	11000	11000	11000	11000	11000
g500-B1500	11500	13000	16000	16000	16000	16000	16000
g500-B2700	12000	14000	16500	20100	22700	25500	27500
g500-B4300	13300	14900	17300	20800	25700	32200	40000

Permissible radial and axial forces at output

Product	n_2 [r/min]						
	250	160	100	63	40	25	≤16

	Max. radial force, Solid shaft with flange						
	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]
g500-B45	2100	2400	2800	3000	3000	3000	3000
g500-B110	2500	2700	3000	3000	3000	3000	3000
g500-B240	6000	6500	6500	6500	6500	6500	6500
g500-B450	5100	5600	6400	7700	7800	7800	7800
g500-B600	5300	6000	7300	9000	9000	9000	9000
g500-B820	10200	11000	11000	11000	11000	11000	11000
g500-B1500	12000	13000	15000	16000	16000	16000	16000
g500-B2700	14400	15800	17700	20100	22700	25500	27500
g500-B4300	15800	17800	20800	24800	29500	35100	40000

Selection tables, notes

Notes on the selection tables with 4-pole motors

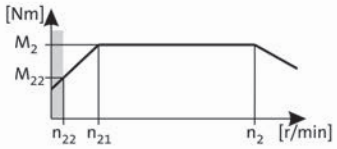
The selection tables show the available combinations of gearbox type, number of stages, ratio and motor. They are used only to provide basic orientation.
The following legend indicates the structure of the selection tables.

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

120 Hz: P_N = 0.55 kW

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

Torque diagram



Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
28	5.7	116	8.0	663	8.0	3.9	5.185	-B110	063-32	37
27	5.9	111	8.0	636	8.0	3.8	5.411	-B45	063-32	22

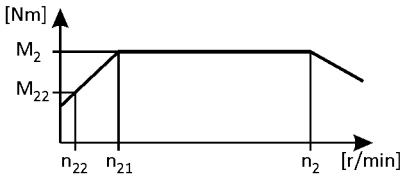
Inverter operation
The speed and torque data are valid for self-ventilated and forced ventilated drives. Forced ventilated drives can always output the torque **M2** in the entire setting ranges. In the case of self-ventilated drives, a reduction to **M22** is required in the lower speed range.

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**.

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

Product Gearbox
Product Motor
Ratio i
Page number for dimensions

Selection tables, 4-pole motors

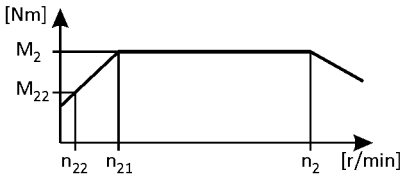


120 Hz: P_N = 0.55 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
28	5.7	116	8.0	663	8.0	4.8	5.185	-B110	063-32	81
27	5.9	111	8.0	636	8.0	3.8	5.411	-B45	063-32	78
24	6.5	101	9.0	577	9.0	4.8	5.963	-B110	063-32	81
23	6.8	96	9.0	553	9.0	3.4	6.222	-B45	063-32	78
20	7.8	84	10	484	10	4.8	7.111	-B110	063-32	81
20	7.8	84	10	484	10	3.2	7.111	-B45	063-32	78
18	9.0	73	12	421	12	4.8	8.178	-B110	063-32	81
18	9.0	73	12	421	12	2.8	8.178	-B45	063-32	78
16	10	66	13	378	13	4.5	9.101	-B110	063-32	81
16	10	66	13	378	13	2.6	9.101	-B45	063-32	78
14	12	57	15	329	15	4.5	10.466	-B110	063-32	81
14	12	57	15	329	15	2.3	10.466	-B45	063-32	78
13	13	52	17	301	17	4.1	11.449	-B110	063-32	81
13	13	52	17	296	17	2.0	11.640	-B45	063-32	78
11	14	47	18	271	18	3.7	12.698	-B110	063-32	81
11	15	45	19	257	19	1.8	13.386	-B45	063-32	78
9.9	16	41	21	236	21	3.2	14.603	-B110	063-32	81
9.7	17	40	22	229	22	4.8	15.008	-B240	063-32	84
9.6	17	40	22	228	22	1.6	15.111	-B45	063-32	78
9.3	17	39	23	221	23	3.1	15.556	-B110	063-32	81
8.6	19	36	24	204	24	4.5	16.857	-B240	063-32	84
8.3	19	35	25	198	25	1.4	17.378	-B45	063-32	78
8.1	20	34	26	192	26	2.8	17.889	-B110	063-32	81
7.6	21	31	28	180	28	4.5	19.143	-B240	063-32	84
7.5	21	31	28	178	28	1.2	19.365	-B45	063-32	78
7.4	22	31	28	176	28	2.7	19.556	-B110	063-32	81
6.5	24	27	32	155	32	1.1	22.270	-B45	063-32	78
6.4	25	27	33	153	33	2.4	22.489	-B110	063-32	81
5.8	28	24	36	137	36	1.1	25.051	-B45	063-32	78
5.8	28	24	37	137	37	2.2	25.185	-B110	063-32	81
5.4	30	22	39	128	39	3.7	26.878	-B240	063-32	84
5.0	32	21	42	119	42	0.9	28.808	-B45	063-32	78
5.0	32	21	42	119	42	2.0	28.963	-B110	063-32	81
4.8	34	20	44	113	44	3.7	30.522	-B240	063-32	84
4.5	35	19	46	108	46	1.8	31.919	-B110	063-32	81

Selection tables, 4-pole motors



120 Hz: P_N = 0.55 kW

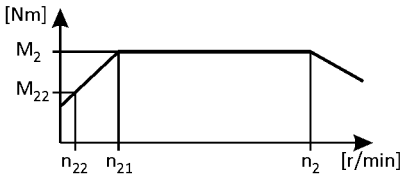
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
4.4	36	18	47	106	47	0.8	32.593	-B45	063-32	78
4.3	37	18	48	103	48	3.2	33.433	-B240	063-32	84
4.0	40	16	53	94	53	1.6	36.707	-B110	063-32	81
3.9	41	16	54	92	54	1.5	37.400	-B110	063-32	81
3.8	42	16	55	91	55	3.2	37.967	-B240	063-32	84
3.6	44	15	58	86	58	1.2	40.000	-B110	063-32	81
3.4	48	14	63	80	63	3.2	43.267	-B240	063-32	84
3.2	51	13	67	75	67	1.2	46.000	-B110	063-32	81
3.0	53	13	70	71	70	1.4	48.167	-B110	063-32	81
3.0	54	12	71	70	71	2.9	49.133	-B240	063-32	84
2.8	58	11	76	66	76	2.6	52.510	-B240	063-32	84
2.4	66	10	86	58	86	2.4	59.630	-B240	063-32	84
2.4	67	9.8	89	56	89	1.2	61.045	-B110	063-32	81
2.2	74	8.9	97	51	97	1.5	67.113	-B240	063-32	84
1.9	84	7.9	111	45	111	1.5	76.213	-B240	063-32	84
1.9	84	7.8	111	45	111	1.0	76.500	-B110	063-32	81

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
8.1	20	34	26	192	26	4.8	17.885	-B450	063-32	87
7.3	22	30	29	174	29	4.8	19.831	-B450	063-32	87
6.4	25	26	33	151	33	4.5	22.813	-B450	063-32	87
5.7	28	24	37	136	37	4.5	25.294	-B450	063-32	87
4.0	40	17	53	95	53	3.7	36.373	-B450	063-32	87
3.6	44	15	58	85	58	4.2	40.330	-B450	063-32	87
3.2	50	13	66	76	66	3.6	45.245	-B450	063-32	87
2.9	55	12	73	69	73	3.6	50.167	-B450	063-32	87
2.6	62	11	81	61	81	4.8	56.154	-B450	063-32	87
2.3	68	9.6	90	55	90	4.3	62.262	-B450	063-32	87
2.1	74	8.9	98	51	98	3.6	67.513	-B600	063-32	90
2.1	73	8.8	97	50	97	2.1	68.459	-B240	063-32	84
1.9	83	7.7	110	44	110	1.9	77.741	-B240	063-32	84
1.8	90	7.3	119	42	119	3.1	81.937	-B600	063-32	90
1.7	94	6.9	124	39	124	1.7	87.563	-B240	063-32	84
1.6	98	6.7	130	38	130	3.0	89.534	-B450	063-32	87
1.5	109	6.0	144	35	144	2.7	99.274	-B450	063-32	87
1.5	106	6.0	141	35	141	1.5	99.437	-B240	063-32	84
1.3	122	5.4	162	31	162	2.7	111.372	-B450	063-32	87

Selection tables, 4-pole motors

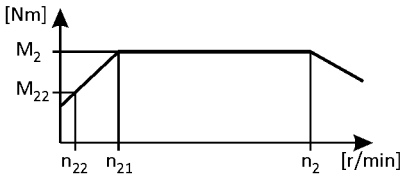


120 Hz: P_N = 0.55 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
1.3	122	5.3	161	30	161	1.4	113.673	-B240	063-32	84
1.2	128	5.2	168	30	168	3.4	116.175	-B600	063-32	90
1.2	136	4.9	179	28	179	2.4	123.487	-B450	063-32	87
1.1	138	4.6	183	27	183	1.3	129.087	-B240	063-32	84
1.0	155	4.3	204	24	204	2.8	140.995	-B600	063-32	90
1.0	158	4.2	209	24	209	2.1	144.128	-B450	063-32	87
1.0	156	4.1	206	24	206	1.1	145.674	-B240	063-32	84
1.0	162	4.1	215	23	215	3.7	148.000	-B820	063-32	93
0.9	175	3.8	232	22	232	1.9	159.807	-B450	063-32	87
0.9	180	3.7	238	21	238	2.4	163.810	-B600	063-32	90
0.9	177	3.6	234	21	234	1.0	165.426	-B240	063-32	84
0.9	182	3.6	240	21	240	3.3	165.467	-B820	063-32	93
0.8	192	3.4	254	20	254	1.7	174.919	-B450	063-32	87
0.8	196	3.4	258	19	258	2.2	178.224	-B600	063-32	90
0.8	197	3.3	260	19	260	3.0	179.618	-B820	063-32	93
0.8	202	3.2	266	18	266	0.9	188.442	-B240	063-32	84
0.7	213	3.1	281	18	281	1.5	193.948	-B450	063-32	87
0.7	218	3.0	288	17	288	2.0	198.805	-B600	063-32	90
0.7	220	3.0	291	17	291	2.7	200.816	-B820	063-32	93
0.6	245	2.7	324	15	324	1.3	223.563	-B450	063-32	87
0.6	249	2.6	329	15	329	2.4	227.045	-B820	063-32	93
0.6	272	2.4	359	14	359	1.2	247.882	-B450	063-32	87
0.6	276	2.4	364	14	364	1.6	251.299	-B600	063-32	90
0.6	279	2.4	368	14	368	2.1	253.841	-B820	063-32	93

Selection tables, 4-pole motors

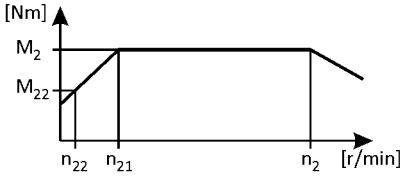


120 Hz: P_N = 0.75 kW

2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
28	7.8	116	10	656	10	3.5	5.185	-B110	063-42	81
27	8.1	111	11	628	11	2.7	5.411	-B45	063-42	78
24	8.9	101	12	570	12	3.5	5.963	-B110	063-42	81
23	9.3	96	12	546	12	2.5	6.222	-B45	063-42	78
20	11	84	14	478	14	3.5	7.111	-B110	063-42	81
20	11	84	14	478	14	2.3	7.111	-B45	063-42	78
18	12	73	16	416	16	3.5	8.178	-B110	063-42	81
18	12	73	16	416	16	2.1	8.178	-B45	063-42	78
16	14	66	18	374	18	3.3	9.101	-B110	063-42	81
16	14	66	18	374	18	1.9	9.101	-B45	063-42	78
14	16	57	21	325	21	3.2	10.466	-B110	063-42	81
14	16	57	21	325	21	1.6	10.466	-B45	063-42	78
13	17	52	23	297	23	3.0	11.449	-B110	063-42	81
13	17	52	23	292	23	1.5	11.640	-B45	063-42	78
11	19	47	25	268	25	2.7	12.698	-B110	063-42	81
11	20	45	27	254	27	1.3	13.386	-B45	063-42	78
9.9	22	41	29	233	29	2.3	14.603	-B110	063-42	81
9.7	23	40	30	227	30	3.5	15.008	-B240	063-42	84
9.6	23	40	30	225	30	1.1	15.111	-B45	063-42	78
9.3	23	39	31	219	31	2.3	15.556	-B110	063-42	81
8.6	25	36	34	202	34	3.3	16.857	-B240	063-42	84
8.3	26	35	35	196	35	1.0	17.378	-B45	063-42	78
8.1	27	34	36	190	36	2.0	17.889	-B110	063-42	81
7.6	29	31	38	178	38	3.3	19.143	-B240	063-42	84
7.5	29	31	39	176	39	0.9	19.365	-B45	063-42	78
7.4	29	31	39	174	39	2.0	19.556	-B110	063-42	81
6.4	34	27	45	151	45	1.8	22.489	-B110	063-42	81
5.8	38	24	50	135	50	1.6	25.185	-B110	063-42	81
5.4	40	22	54	127	54	2.7	26.878	-B240	063-42	84
5.0	43	21	58	117	58	1.4	28.963	-B110	063-42	81
4.8	46	20	61	111	61	2.7	30.522	-B240	063-42	84
4.5	48	19	64	107	64	1.3	31.919	-B110	063-42	81
4.3	50	18	67	102	67	2.3	33.433	-B240	063-42	84
4.0	55	16	73	93	73	1.1	36.707	-B110	063-42	81
3.9	56	16	75	91	75	1.1	37.400	-B110	063-42	81

Selection tables, 4-pole motors



120 Hz: P_N = 0.75 kW

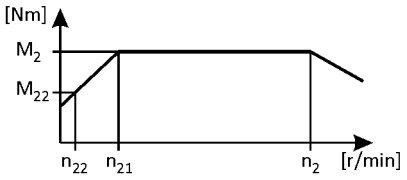
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
3.8	57	16	76	90	76	2.3	37.967	-B240	063-42	84
3.6	60	15	80	85	80	0.9	40.000	-B110	063-42	81
3.4	65	14	87	79	87	2.3	43.267	-B240	063-42	84
3.2	69	13	92	74	92	0.9	46.000	-B110	063-42	81
3.0	72	13	96	71	96	1.0	48.167	-B110	063-42	81
3.0	74	12	98	69	98	2.1	49.133	-B240	063-42	84
2.8	79	11	105	65	105	1.9	52.510	-B240	063-42	84
2.4	89	10	119	57	119	1.7	59.630	-B240	063-42	84
2.4	91	9.8	122	56	122	0.9	61.045	-B110	063-42	81
2.2	101	8.9	134	51	134	1.1	67.113	-B240	063-42	84
1.9	114	7.9	153	45	153	1.1	76.213	-B240	063-42	84

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
8.1	27	34	36	190	36	3.5	17.885	-B450	063-42	87
7.3	30	30	40	172	40	3.5	19.831	-B450	063-42	87
6.4	34	26	46	149	46	3.3	22.813	-B450	063-42	87
5.7	38	24	51	134	51	3.3	25.294	-B450	063-42	87
4.0	54	17	73	94	73	2.7	36.373	-B450	063-42	87
3.6	60	15	81	84	81	3.1	40.330	-B450	063-42	87
3.2	68	13	91	75	91	2.6	45.245	-B450	063-42	87
2.9	75	12	100	68	100	2.6	50.167	-B450	063-42	87
2.6	84	11	112	61	112	3.5	56.154	-B450	063-42	87
2.3	93	9.6	125	55	125	3.1	62.262	-B450	063-42	87
2.1	101	8.9	135	50	135	2.6	67.513	-B600	063-42	90
2.1	100	8.8	134	50	134	1.6	68.459	-B240	063-42	84
1.9	113	7.7	152	44	152	1.4	77.741	-B240	063-42	84
1.8	123	7.3	164	42	164	2.3	81.937	-B600	063-42	90
1.7	128	6.9	171	39	171	1.2	87.563	-B240	063-42	84
1.6	134	6.7	179	38	179	2.2	89.534	-B450	063-42	87
1.5	149	6.0	199	34	199	2.0	99.274	-B450	063-42	87
1.5	145	6.0	194	34	194	1.1	99.437	-B240	063-42	84
1.3	167	5.4	223	31	223	1.9	111.372	-B450	063-42	87
1.3	166	5.3	222	30	222	1.0	113.673	-B240	063-42	84
1.2	174	5.2	232	29	232	2.5	116.175	-B600	063-42	90
1.2	185	4.9	247	28	247	1.8	123.487	-B450	063-42	87
1.1	188	4.6	252	26	252	0.9	129.087	-B240	063-42	84
1.0	211	4.3	282	24	282	2.0	140.995	-B600	063-42	90

Selection tables, 4-pole motors

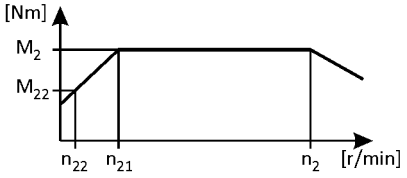


120 Hz: P_N = 0.75 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
1.0	216	4.2	288	24	288	1.5	144.128	-B450	063-42	87
1.0	213	4.1	284	23	284	0.8	145.674	-B240	063-42	84
1.0	222	4.1	296	23	296	2.7	148.000	-B820	063-42	93
0.9	239	3.8	320	21	320	1.4	159.807	-B450	063-42	87
0.9	245	3.7	328	21	328	1.8	163.810	-B600	063-42	90
0.9	248	3.6	331	21	331	2.4	165.467	-B820	063-42	93
0.8	262	3.4	350	19	350	1.2	174.919	-B450	063-42	87
0.8	267	3.4	357	19	357	1.6	178.224	-B600	063-42	90
0.8	269	3.3	359	19	359	2.2	179.618	-B820	063-42	93
0.7	290	3.1	388	18	388	1.1	193.948	-B450	063-42	87
0.7	298	3.0	398	17	398	1.5	198.805	-B600	063-42	90
0.7	301	3.0	402	17	402	2.0	200.816	-B820	063-42	93
0.6	335	2.7	447	15	447	1.0	223.563	-B450	063-42	87
0.6	340	2.6	454	15	454	1.7	227.045	-B820	063-42	93
0.6	371	2.4	496	14	496	0.9	247.882	-B450	063-42	87
0.6	376	2.4	503	14	503	1.1	251.299	-B600	063-42	90
0.6	380	2.4	508	13	508	1.6	253.841	-B820	063-42	93

Selection tables, 4-pole motors



120 Hz: P_N = 1.1 kW

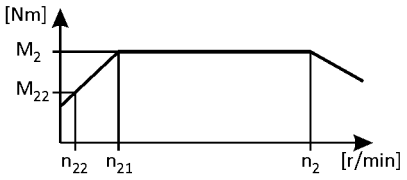
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
41	7.8	168	10	979	10	4.8	3.565	-B240	071-32	84
28	11	116	15	673	15	3.5	5.185	-B110	071-32	81
24	13	101	17	585	17	3.2	5.963	-B110	071-32	81
23	14	96	18	558	18	4.2	6.257	-B240	071-32	84
21	15	87	20	507	20	4.8	6.883	-B240	071-32	84
20	16	84	20	491	20	2.9	7.111	-B110	071-32	81
19	17	77	22	447	22	4.8	7.817	-B240	071-32	84
18	18	73	23	427	23	2.6	8.178	-B110	071-32	81
16	20	66	26	384	26	2.4	9.101	-B110	071-32	81
14	23	57	30	334	30	2.2	10.466	-B110	071-32	81
13	25	52	33	305	33	2.1	11.449	-B110	071-32	81
12	27	50	35	289	35	4.2	12.081	-B240	071-32	84
11	28	47	36	275	36	1.9	12.698	-B110	071-32	81
11	30	44	39	254	39	4.2	13.719	-B240	071-32	84
9.9	32	41	42	239	42	1.6	14.603	-B110	071-32	81
9.7	33	40	43	233	43	3.9	15.008	-B240	071-32	84
9.3	34	39	44	224	44	1.6	15.556	-B110	071-32	81
8.6	37	36	48	207	48	3.8	16.857	-B240	071-32	84
8.1	39	34	51	195	51	1.4	17.889	-B110	071-32	81
7.6	42	31	55	182	55	3.3	19.143	-B240	071-32	84
7.4	43	31	56	179	56	1.4	19.556	-B110	071-32	81
7.0	45	29	59	169	59	3.1	20.650	-B240	071-32	84
6.4	49	27	64	155	64	1.2	22.489	-B110	071-32	81
6.2	52	26	67	149	67	2.7	23.450	-B240	071-32	84
5.8	55	24	72	139	72	1.1	25.185	-B110	071-32	81
5.4	59	22	77	130	77	2.4	26.878	-B240	071-32	84
5.0	64	21	83	121	83	1.0	28.963	-B110	071-32	81
4.8	67	20	87	114	87	2.1	30.522	-B240	071-32	84
4.3	73	18	96	104	96	1.9	33.433	-B240	071-32	84
3.8	83	16	109	92	109	1.7	37.967	-B240	071-32	84
3.4	95	14	124	81	124	1.7	43.267	-B240	071-32	84
3.0	108	12	140	71	140	1.5	49.133	-B240	071-32	84
2.8	115	11	150	67	150	1.3	52.510	-B240	071-32	84
2.4	131	10	171	59	171	1.2	59.630	-B240	071-32	84

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
29	11	120	14	698	14	4.8	5.002	-B450	071-32	87

Selection tables, 4-pole motors

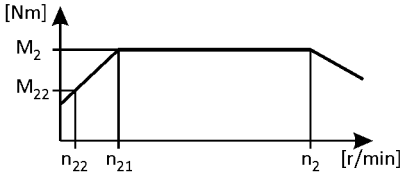


120 Hz: P_N = 1.1 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
16	20	64	27	375	27	4.8	9.315	-B450	071-32	87
14	23	58	30	338	30	4.8	10.328	-B450	071-32	87
12	27	49	35	287	35	4.2	12.143	-B820	071-32	93
8.9	36	37	47	214	47	4.2	16.349	-B450	071-32	87
8.1	39	34	51	195	51	4.2	17.885	-B450	071-32	87
7.8	41	32	53	187	53	4.2	18.655	-B820	071-32	93
7.3	44	30	57	176	57	4.2	19.831	-B450	071-32	87
7.0	46	29	60	167	60	4.2	20.857	-B820	071-32	93
6.4	50	26	65	153	65	3.9	22.813	-B450	071-32	87
5.7	56	24	72	138	72	3.9	25.294	-B450	071-32	87
5.2	61	22	80	125	80	3.5	27.945	-B450	071-32	87
4.9	65	20	85	117	85	3.5	29.744	-B600	071-32	90
4.9	65	20	85	117	85	3.5	29.745	-B820	071-32	93
4.7	68	19	89	113	89	3.5	30.985	-B450	071-32	87
4.0	80	17	104	96	104	3.2	36.373	-B450	071-32	87
3.9	81	16	106	94	106	3.0	36.999	-B600	071-32	90
3.9	81	16	106	94	106	3.0	37.000	-B820	071-32	93
3.6	89	15	115	87	115	3.4	40.330	-B450	071-32	87
3.5	92	14	120	83	120	4.0	41.940	-B600	071-32	90
3.2	99	13	129	77	129	3.0	45.245	-B450	071-32	87
2.9	110	12	143	70	143	2.7	50.167	-B450	071-32	87
2.6	123	11	161	62	161	2.4	56.154	-B450	071-32	87
2.5	127	10	165	61	165	4.3	57.662	-B820	071-32	93
2.3	137	9.6	178	56	178	2.2	62.262	-B450	071-32	87
2.3	140	9.4	182	55	182	2.8	63.822	-B600	071-32	90
2.2	142	9.3	184	54	184	3.8	64.468	-B820	071-32	93
2.1	148	8.9	193	52	193	2.7	67.513	-B600	071-32	90
2.1	147	8.8	191	51	191	1.1	68.459	-B240	071-32	84
2.1	151	8.7	197	51	197	2.0	68.788	-B450	071-32	87
2.0	158	8.3	206	48	206	2.5	72.170	-B600	071-32	90
1.9	165	8.0	214	47	214	3.4	74.963	-B1500	071-32	96
1.9	167	7.9	218	46	218	1.8	76.271	-B450	071-32	87
1.9	166	7.7	217	45	217	1.0	77.741	-B240	071-32	84
1.8	180	7.3	234	43	234	2.2	81.937	-B600	071-32	90
1.8	182	7.2	237	42	237	3.0	82.762	-B1500	071-32	96

Selection tables, 4-pole motors

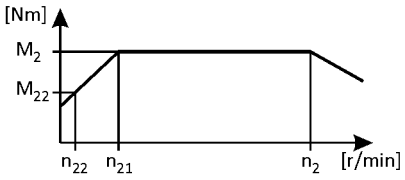


120 Hz: P_N = 1.1 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
1.7	187	6.9	244	40	244	0.8	87.563	-B240	071-32	84
1.6	197	6.7	256	39	256	1.5	89.534	-B450	071-32	87
1.6	197	6.7	257	39	257	2.0	89.772	-B600	071-32	90
1.6	200	6.6	260	38	260	3.0	90.978	-B1500	071-32	96
1.6	202	6.5	263	38	263	2.7	91.939	-B820	071-32	93
1.5	218	6.0	284	35	284	1.4	99.274	-B450	071-32	87
1.4	223	5.9	291	34	291	1.8	101.760	-B600	071-32	90
1.4	226	5.8	294	34	294	2.4	102.790	-B820	071-32	93
1.3	245	5.4	318	31	318	1.3	111.372	-B450	071-32	87
1.3	251	5.2	327	31	327	2.4	114.364	-B820	071-32	93
1.2	255	5.2	332	30	332	1.7	116.175	-B600	071-32	90
1.2	271	4.9	353	28	353	1.2	123.487	-B450	071-32	87
1.1	278	4.7	362	28	362	1.6	126.580	-B600	071-32	90
1.1	281	4.7	366	27	366	2.1	127.861	-B820	071-32	93
1.0	310	4.3	403	25	403	1.4	140.995	-B600	071-32	90
1.0	316	4.2	412	24	412	1.0	144.128	-B450	071-32	87
1.0	325	4.1	423	24	423	1.8	148.000	-B820	071-32	93
1.0	329	4.0	429	23	429	3.3	149.949	-B1500	071-32	96
0.9	351	3.8	457	22	457	0.9	159.807	-B450	071-32	87
0.9	360	3.7	468	21	468	1.2	163.810	-B600	071-32	90
0.9	362	3.6	471	21	471	3.0	164.833	-B1500	071-32	96
0.9	363	3.6	473	21	473	1.7	165.467	-B820	071-32	93
0.8	384	3.4	500	20	500	0.9	174.919	-B450	071-32	87
0.8	391	3.4	510	20	510	1.1	178.224	-B600	071-32	90
0.8	394	3.3	514	19	514	1.5	179.618	-B820	071-32	93
0.8	400	3.3	520	19	520	2.7	181.983	-B1500	071-32	96
0.7	436	3.0	568	18	568	1.0	198.805	-B600	071-32	90
0.7	439	3.0	572	17	572	2.5	200.048	-B1500	071-32	96
0.7	441	3.0	574	17	574	1.4	200.816	-B820	071-32	93
0.6	498	2.6	649	15	649	1.2	227.045	-B820	071-32	93
0.6	505	2.6	658	15	658	2.2	230.035	-B1500	071-32	96
0.6	555	2.4	723	14	723	2.0	252.869	-B1500	071-32	96
0.6	557	2.4	726	14	726	1.1	253.841	-B820	071-32	93

Selection tables, 4-pole motors



120 Hz: P_N = 1.5 kW

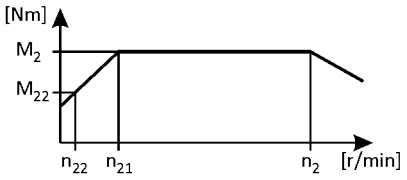
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
41	11	168	14	968	14	3.5	3.565	-B240	071-42	84
28	16	116	20	665	20	2.6	5.185	-B110	071-42	81
24	18	101	24	579	24	2.3	5.963	-B110	071-42	81
23	19	96	25	551	25	3.1	6.257	-B240	071-42	84
21	21	87	27	501	27	3.5	6.883	-B240	071-42	84
20	21	84	28	485	28	2.1	7.111	-B110	071-42	81
19	23	77	31	441	31	3.5	7.817	-B240	071-42	84
18	25	73	32	422	32	1.9	8.178	-B110	071-42	81
16	27	66	36	379	36	1.8	9.101	-B110	071-42	81
14	31	57	41	330	41	1.6	10.466	-B110	071-42	81
13	34	52	45	301	45	1.5	11.449	-B110	071-42	81
12	36	50	48	286	48	3.1	12.081	-B240	071-42	84
11	38	47	50	272	50	1.4	12.698	-B110	071-42	81
11	41	44	54	252	54	3.0	13.719	-B240	071-42	84
9.9	44	41	58	236	58	1.2	14.603	-B110	071-42	81
9.7	45	40	59	230	59	2.9	15.008	-B240	071-42	84
9.3	47	39	61	222	61	1.1	15.556	-B110	071-42	81
8.6	51	36	66	205	66	2.7	16.857	-B240	071-42	84
8.1	54	34	71	193	71	1.0	17.889	-B110	071-42	81
7.6	57	31	76	180	76	2.4	19.143	-B240	071-42	84
7.4	59	31	77	176	77	1.0	19.556	-B110	071-42	81
7.0	62	29	81	167	81	2.2	20.650	-B240	071-42	84
6.4	67	27	89	153	89	0.9	22.489	-B110	071-42	81
6.2	70	26	92	147	92	2.0	23.450	-B240	071-42	84
5.8	75	24	99	137	99	0.8	25.185	-B110	071-42	81
5.4	81	22	106	128	106	1.7	26.878	-B240	071-42	84
4.8	91	20	120	113	120	1.5	30.522	-B240	071-42	84
4.3	100	18	132	103	132	1.4	33.433	-B240	071-42	84
3.8	114	16	150	91	150	1.2	37.967	-B240	071-42	84
3.4	130	14	171	80	171	1.2	43.267	-B240	071-42	84
3.0	147	12	194	70	194	1.1	49.133	-B240	071-42	84
2.8	157	11	207	66	207	1.0	52.510	-B240	071-42	84
2.4	179	10	235	58	235	0.9	59.630	-B240	071-42	84

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
29	15	120	20	690	20	3.5	5.002	-B450	071-42	87
16	28	64	37	370	37	3.5	9.315	-B450	071-42	87

Selection tables, 4-pole motors

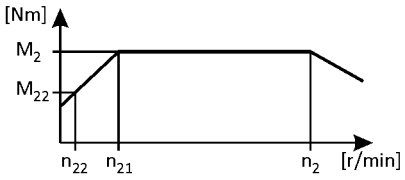


120 Hz: P_N = 1.5 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
14	31	58	41	334	41	3.5	10.328	-B450	071-42	87
12	36	49	48	284	48	3.1	12.143	-B820	071-42	93
8.9	49	37	64	211	64	3.1	16.349	-B450	071-42	87
8.1	54	34	71	193	71	3.1	17.885	-B450	071-42	87
7.8	56	32	74	185	74	3.1	18.655	-B820	071-42	93
7.3	59	30	78	174	78	3.1	19.831	-B450	071-42	87
7.0	62	29	82	165	82	3.1	20.857	-B820	071-42	93
6.4	68	26	90	151	90	2.9	22.813	-B450	071-42	87
5.7	76	24	100	136	100	2.9	25.294	-B450	071-42	87
5.2	84	22	110	124	110	2.6	27.945	-B450	071-42	87
4.9	89	20	117	116	117	2.6	29.744	-B600	071-42	90
4.9	89	20	117	116	117	2.6	29.745	-B820	071-42	93
4.7	93	19	122	111	122	2.6	30.985	-B450	071-42	87
4.0	109	17	143	95	143	2.3	36.373	-B450	071-42	87
3.9	111	16	146	93	146	2.2	36.999	-B600	071-42	90
3.9	111	16	146	93	146	2.2	37.000	-B820	071-42	93
3.6	121	15	159	86	159	2.4	40.330	-B450	071-42	87
3.5	126	14	165	82	165	2.9	41.940	-B600	071-42	90
3.2	135	13	178	76	178	2.2	45.245	-B450	071-42	87
2.9	150	12	198	69	198	2.0	50.167	-B450	071-42	87
2.6	168	11	221	61	221	1.8	56.154	-B450	071-42	87
2.5	173	10	227	60	227	3.1	57.662	-B820	071-42	93
2.3	186	9.6	246	55	246	1.6	62.262	-B450	071-42	87
2.3	191	9.4	252	54	252	2.1	63.822	-B600	071-42	90
2.2	193	9.3	254	54	254	2.8	64.468	-B820	071-42	93
2.1	202	8.9	266	51	266	1.9	67.513	-B600	071-42	90
2.1	206	8.7	271	50	271	1.4	68.788	-B450	071-42	87
2.0	216	8.3	285	48	285	1.8	72.170	-B600	071-42	90
1.9	224	8.0	296	46	296	2.4	74.963	-B1500	071-42	96
1.9	228	7.9	301	45	301	1.3	76.271	-B450	071-42	87
1.8	245	7.3	323	42	323	1.6	81.937	-B600	071-42	90
1.8	248	7.2	326	42	326	2.1	82.762	-B1500	071-42	96
1.6	268	6.7	353	39	353	1.1	89.534	-B450	071-42	87
1.6	269	6.7	354	38	354	1.5	89.772	-B600	071-42	90
1.6	272	6.6	359	38	359	2.1	90.978	-B1500	071-42	96

Selection tables, 4-pole motors

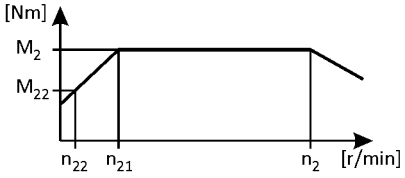


120 Hz: P_N = 1.5 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
1.6	275	6.5	363	38	363	2.0	91.939	-B820	071-42	93
1.5	297	6.0	392	35	392	1.0	99.274	-B450	071-42	87
1.4	305	5.9	401	34	401	1.3	101.760	-B600	071-42	90
1.4	308	5.8	405	34	405	1.7	102.790	-B820	071-42	93
1.3	333	5.4	439	31	439	1.0	111.372	-B450	071-42	87
1.3	342	5.2	451	30	451	1.7	114.364	-B820	071-42	93
1.2	348	5.2	458	30	458	1.3	116.175	-B600	071-42	90
1.2	370	4.9	487	28	487	0.9	123.487	-B450	071-42	87
1.1	379	4.7	499	27	499	1.2	126.580	-B600	071-42	90
1.1	383	4.7	504	27	504	1.6	127.861	-B820	071-42	93
1.0	422	4.3	556	25	556	1.0	140.995	-B600	071-42	90
1.0	443	4.1	584	23	584	1.3	148.000	-B820	071-42	93
1.0	449	4.0	591	23	591	2.4	149.949	-B1500	071-42	96
0.9	490	3.7	646	21	646	0.9	163.810	-B600	071-42	90
0.9	493	3.6	650	21	650	2.2	164.833	-B1500	071-42	96
0.9	495	3.6	653	21	653	1.2	165.467	-B820	071-42	93
0.8	534	3.4	703	19	703	0.8	178.224	-B600	071-42	90
0.8	538	3.3	708	19	708	1.1	179.618	-B820	071-42	93
0.8	545	3.3	718	19	718	2.0	181.983	-B1500	071-42	96
0.7	599	3.0	789	17	789	1.8	200.048	-B1500	071-42	96
0.7	601	3.0	792	17	792	1.0	200.816	-B820	071-42	93
0.6	680	2.6	895	15	895	0.9	227.045	-B820	071-42	93
0.6	689	2.6	907	15	907	1.6	230.035	-B1500	071-42	96
0.6	757	2.4	997	14	997	1.4	252.869	-B1500	071-42	96

Selection tables, 4-pole motors



120 Hz: P_N = 2.2 kW

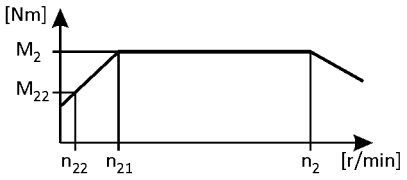
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
41	15	168	20	982	20	4.3	3.565	-B240	080-32	84
30	21	123	28	716	28	4.0	4.889	-B240	080-32	84
28	22	116	30	675	30	1.8	5.185	-B110	080-32	81
23	27	96	36	559	36	3.3	6.257	-B240	080-32	84
21	29	87	39	509	39	3.4	6.883	-B240	080-32	84
20	30	84	41	492	41	1.4	7.111	-B110	080-32	81
18	35	73	47	428	47	1.3	8.178	-B110	080-32	81
16	39	66	52	385	52	1.2	9.101	-B110	080-32	81
15	40	64	54	371	54	2.7	9.440	-B240	080-32	84
14	45	57	60	334	60	1.1	10.466	-B110	080-32	81
14	46	56	61	327	61	2.5	10.720	-B240	080-32	84
13	49	52	65	306	65	1.0	11.449	-B110	080-32	81
12	52	50	69	290	69	2.3	12.081	-B240	080-32	84
11	54	47	72	276	72	0.9	12.698	-B110	080-32	81
11	59	44	78	255	78	2.1	13.719	-B240	080-32	84
9.9	62	41	83	240	83	0.8	14.603	-B110	080-32	81
9.7	64	40	86	233	86	2.0	15.008	-B240	080-32	84
8.6	72	36	96	208	96	1.9	16.857	-B240	080-32	84
7.6	82	31	109	183	109	1.7	19.143	-B240	080-32	84
7.0	88	29	118	170	118	1.5	20.650	-B240	080-32	84
6.2	100	26	134	149	134	1.4	23.450	-B240	080-32	84
5.4	115	22	153	130	153	1.2	26.878	-B240	080-32	84
4.8	131	20	174	115	174	1.0	30.522	-B240	080-32	84
4.3	143	18	191	105	191	1.0	33.433	-B240	080-32	84
3.8	162	16	217	92	217	0.8	37.967	-B240	080-32	84

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
29	21	120	29	700	29	4.3	5.002	-B450	080-32	87
21	29	88	39	510	39	4.3	6.860	-B450	080-32	87
16	40	64	53	376	53	4.3	9.315	-B450	080-32	87
15	41	63	54	368	54	4.3	9.520	-B820	080-32	93
14	44	58	59	339	59	4.3	10.328	-B450	080-32	87
12	52	49	69	288	69	4.0	12.143	-B820	080-32	93
11	55	47	73	274	73	4.2	12.775	-B450	080-32	87
11	57	45	76	262	76	4.2	13.369	-B600	080-32	90
11	57	45	76	262	76	4.2	13.370	-B820	080-32	93
10	61	42	81	247	81	3.9	14.165	-B450	080-32	87

Selection tables, 4-pole motors

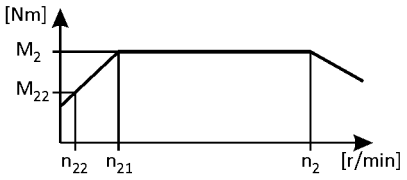


120 Hz: P_N = 2.2 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
9.9	63	41	83	239	83	4.3	14.626	-B820	080-32	93
8.9	70	37	93	214	93	3.5	16.349	-B450	080-32	87
8.9	70	37	93	214	93	4.3	16.352	-B820	080-32	93
8.1	76	34	102	196	102	3.3	17.885	-B450	080-32	87
7.8	80	32	106	188	106	4.0	18.655	-B820	080-32	93
7.7	81	32	107	186	107	4.2	18.851	-B600	080-32	90
7.3	85	30	113	177	113	3.0	19.831	-B450	080-32	87
7.0	88	29	118	170	118	3.9	20.622	-B600	080-32	90
7.0	89	29	119	168	119	4.0	20.857	-B820	080-32	93
6.4	98	26	130	153	130	2.6	22.813	-B450	080-32	87
6.3	98	26	130	153	130	3.5	22.852	-B600	080-32	90
6.3	98	26	130	153	130	3.5	22.853	-B820	080-32	93
5.7	108	24	144	138	144	2.4	25.294	-B450	080-32	87
5.7	109	24	146	137	146	3.5	25.550	-B820	080-32	93
5.2	119	22	159	125	159	2.1	27.945	-B450	080-32	87
5.0	125	21	167	120	167	4.2	29.206	-B1500	080-32	96
4.9	127	20	170	118	170	2.7	29.744	-B600	080-32	90
4.9	127	20	170	118	170	3.3	29.745	-B820	080-32	93
4.7	132	19	177	113	177	1.9	30.985	-B450	080-32	87
4.5	139	19	185	108	185	2.5	32.439	-B600	080-32	90
4.0	156	17	207	96	207	1.6	36.373	-B450	080-32	87
3.9	158	16	211	95	211	2.1	36.999	-B600	080-32	90
3.9	158	16	211	95	211	2.7	37.000	-B820	080-32	93
3.6	172	15	230	87	230	1.7	40.330	-B450	080-32	87
3.5	177	15	236	85	236	3.0	41.325	-B820	080-32	93
3.5	179	14	239	84	239	2.2	41.940	-B600	080-32	90
3.2	193	13	258	77	258	2.7	45.207	-B820	080-32	93
3.2	193	13	258	77	258	1.5	45.245	-B450	080-32	87
3.2	196	13	261	77	261	2.0	45.739	-B600	080-32	90
3.1	199	13	266	75	266	4.0	46.568	-B1500	080-32	96
2.9	214	12	286	70	286	1.4	50.167	-B450	080-32	87
2.9	216	12	288	69	288	2.4	50.543	-B820	080-32	93
2.8	222	12	296	67	296	3.3	51.920	-B1500	080-32	96
2.6	237	11	316	63	316	1.6	55.447	-B600	080-32	90
2.6	240	11	320	62	320	1.2	56.154	-B450	080-32	87

Selection tables, 4-pole motors

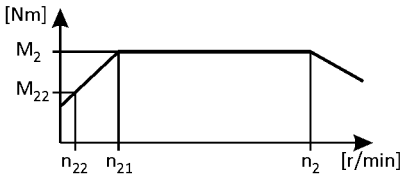


120 Hz: P_N = 2.2 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
2.5	244	11	325	61	325	3.3	57.074	-B1500	080-32	96
2.5	247	10	329	61	329	2.1	57.662	-B820	080-32	93
2.5	250	10	333	60	333	3.9	58.422	-B1500	080-32	96
2.3	266	9.6	355	56	355	1.1	62.262	-B450	080-32	87
2.3	275	9.3	366	55	366	3.5	64.221	-B1500	080-32	96
2.2	276	9.3	368	54	368	1.9	64.468	-B820	080-32	93
2.1	289	8.9	385	52	385	1.3	67.513	-B600	080-32	90
2.1	294	8.7	392	51	392	1.0	68.788	-B450	080-32	87
2.1	302	8.5	403	50	403	1.7	70.636	-B820	080-32	93
2.0	309	8.3	411	49	411	1.3	72.170	-B600	080-32	90
1.9	320	8.0	427	47	427	3.0	74.963	-B1500	080-32	96
1.9	326	7.9	435	46	435	0.9	76.271	-B450	080-32	87
1.9	329	7.8	438	46	438	3.3	76.862	-B2700	080-32	99
1.9	334	7.7	446	45	446	1.2	78.182	-B600	080-32	90
1.8	338	7.6	450	44	450	1.6	78.973	-B820	080-32	93
1.8	350	7.3	467	43	467	1.1	81.937	-B600	080-32	90
1.8	354	7.2	472	42	472	2.5	82.762	-B1500	080-32	96
1.7	363	7.1	484	41	484	2.9	84.940	-B2700	080-32	99
1.6	384	6.7	512	39	512	1.0	89.772	-B600	080-32	90
1.6	389	6.6	519	39	519	2.5	90.978	-B1500	080-32	96
1.6	393	6.5	524	38	524	1.3	91.939	-B820	080-32	93
1.6	398	6.4	531	38	531	2.4	93.150	-B1500	080-32	96
1.6	399	6.4	532	38	532	2.9	93.283	-B2700	080-32	99
1.4	435	5.9	580	34	580	0.9	101.760	-B600	080-32	90
1.4	438	5.9	584	34	584	2.2	102.396	-B1500	080-32	96
1.4	439	5.8	586	34	586	1.2	102.790	-B820	080-32	93
1.3	488	5.3	651	31	651	2.2	114.166	-B1500	080-32	96
1.3	489	5.2	652	31	652	1.2	114.364	-B820	080-32	93
1.2	497	5.2	662	30	662	0.9	116.175	-B600	080-32	90
1.2	536	4.8	716	28	716	2.0	125.498	-B1500	080-32	96
1.1	547	4.7	729	27	729	1.1	127.861	-B820	080-32	93
1.0	633	4.1	844	24	844	0.9	148.000	-B820	080-32	93
1.0	641	4.0	855	23	855	1.7	149.949	-B1500	080-32	96
0.9	655	3.9	873	23	873	3.7	153.141	-B4300	080-32	102
0.9	655	3.9	873	23	873	2.9	153.185	-B2700	080-32	99

Selection tables, 4-pole motors

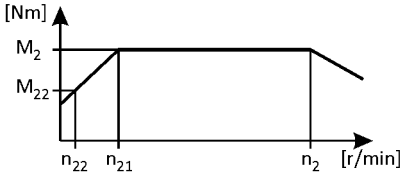


120 Hz: P_N = 2.2 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
0.9	705	3.6	940	21	940	1.5	164.833	-B1500	080-32	96
0.9	707	3.6	943	21	943	0.8	165.467	-B820	080-32	93
0.9	716	3.6	954	21	954	3.7	167.383	-B4300	080-32	102
0.9	719	3.6	959	21	959	2.7	168.230	-B2700	080-32	99
0.8	778	3.3	1038	19	1038	1.4	181.983	-B1500	080-32	96
0.8	794	3.2	1060	19	1060	3.2	185.857	-B4300	080-32	102
0.8	795	3.2	1060	19	1060	2.4	185.911	-B2700	080-32	99
0.7	855	3.0	1141	18	1141	1.3	200.048	-B1500	080-32	96
0.7	868	3.0	1158	17	1158	3.2	203.143	-B4300	080-32	102
0.7	873	2.9	1164	17	1164	2.2	204.170	-B2700	080-32	99
0.6	983	2.6	1312	15	1312	1.1	230.035	-B1500	080-32	96
0.6	1004	2.6	1339	15	1339	2.5	234.932	-B4300	080-32	102
0.6	1005	2.6	1340	15	1340	1.9	235.000	-B2700	080-32	99
0.6	1081	2.4	1442	14	1442	1.0	252.869	-B1500	080-32	96
0.6	1098	2.3	1464	14	1464	2.5	256.781	-B4300	080-32	102
0.6	1103	2.3	1471	14	1471	1.7	258.080	-B2700	080-32	99

Selection tables, 4-pole motors



120 Hz: P_N = 3.0 kW

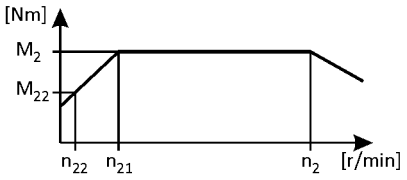
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 30 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
30	29	184	38	712	38	2.9	4.889	-B240	080-42	84
23	37	144	49	556	49	2.4	6.257	-B240	080-42	84
15	55	95	74	369	74	2.0	9.440	-B240	080-42	84
14	63	84	84	325	84	1.8	10.720	-B240	080-42	84
12	71	75	94	288	94	1.7	12.081	-B240	080-42	84
11	81	66	107	254	107	1.5	13.719	-B240	080-42	84
9.7	88	60	117	232	117	1.4	15.008	-B240	080-42	84
8.6	99	53	132	206	132	1.4	16.857	-B240	080-42	84
7.6	112	47	150	182	150	1.2	19.143	-B240	080-42	84
7.0	121	44	162	169	162	1.1	20.650	-B240	080-42	84
6.2	138	38	183	148	183	1.0	23.450	-B240	080-42	84
5.4	158	34	210	130	210	0.9	26.878	-B240	080-42	84

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 30 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
21	40	131	54	507	54	3.1	6.860	-B450	080-42	87
15	56	95	74	366	74	3.1	9.520	-B820	080-42	93
12	71	74	95	287	95	2.9	12.143	-B820	080-42	93
11	75	71	100	272	100	3.1	12.775	-B450	080-42	87
11	78	67	105	260	105	3.1	13.369	-B600	080-42	90
11	78	67	105	260	105	3.1	13.370	-B820	080-42	93
10	83	64	111	246	111	2.9	14.165	-B450	080-42	87
9.9	86	62	114	238	114	3.1	14.626	-B820	080-42	93
8.9	96	55	128	213	128	2.6	16.349	-B450	080-42	87
8.9	96	55	128	213	128	3.1	16.352	-B820	080-42	93
8.1	105	50	140	195	140	2.4	17.885	-B450	080-42	87
7.8	109	48	146	187	146	2.9	18.655	-B820	080-42	93
7.7	111	48	147	185	147	3.1	18.851	-B600	080-42	90
7.3	116	45	155	176	155	2.2	19.831	-B450	080-42	87
7.0	121	44	161	169	161	2.8	20.622	-B600	080-42	90
7.0	122	43	163	167	163	2.9	20.857	-B820	080-42	93
6.4	134	40	178	153	178	1.9	22.813	-B450	080-42	87
6.3	134	39	179	152	179	2.5	22.852	-B600	080-42	90
6.3	134	39	179	152	179	2.6	22.853	-B820	080-42	93
5.7	148	36	198	138	198	1.7	25.294	-B450	080-42	87
5.7	150	35	200	136	200	2.6	25.550	-B820	080-42	93
5.2	164	32	219	125	219	1.6	27.945	-B450	080-42	87
5.0	171	31	228	119	228	3.1	29.206	-B1500	080-42	96

Selection tables, 4-pole motors

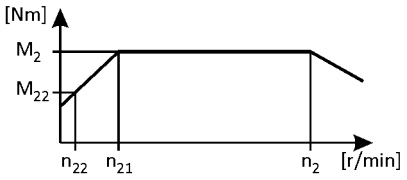


120 Hz: P_N = 3.0 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 30 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
4.9	174	30	233	117	233	2.0	29.744	-B600	080-42	90
4.9	174	30	233	117	233	2.4	29.745	-B820	080-42	93
4.7	182	29	242	112	242	1.4	30.985	-B450	080-42	87
4.0	213	25	284	96	284	1.2	36.373	-B450	080-42	87
3.9	217	24	289	94	289	1.6	36.999	-B600	080-42	90
3.9	217	24	289	94	289	2.0	37.000	-B820	080-42	93
3.6	237	22	315	86	315	1.2	40.330	-B450	080-42	87
3.5	242	22	323	84	323	2.2	41.325	-B820	080-42	93
3.5	246	22	328	83	328	1.6	41.940	-B600	080-42	90
3.2	265	20	353	77	353	2.0	45.207	-B820	080-42	93
3.2	265	20	354	77	354	1.1	45.245	-B450	080-42	87
3.1	273	19	364	75	364	2.9	46.568	-B1500	080-42	96
2.9	294	18	392	69	392	1.0	50.167	-B450	080-42	87
2.8	305	17	406	67	406	2.4	51.920	-B1500	080-42	96
2.6	325	16	434	63	434	1.2	55.447	-B600	080-42	90
2.5	335	16	446	61	446	2.4	57.074	-B1500	080-42	96
2.5	338	16	451	60	451	1.6	57.662	-B820	080-42	93
2.5	343	15	457	60	457	2.8	58.422	-B1500	080-42	96
2.3	377	14	502	54	502	2.6	64.221	-B1500	080-42	96
2.1	396	13	528	52	528	1.0	67.513	-B600	080-42	90
2.1	414	13	552	49	552	1.3	70.636	-B820	080-42	93
2.0	423	13	564	48	564	0.9	72.170	-B600	080-42	90
1.9	440	12	586	46	586	2.2	74.963	-B1500	080-42	96
1.9	451	12	601	45	601	2.4	76.862	-B2700	080-42	99
1.8	463	11	618	44	618	1.1	78.973	-B820	080-42	93
1.8	485	11	647	42	647	1.8	82.762	-B1500	080-42	96
1.7	498	11	664	41	664	2.1	84.940	-B2700	080-42	99
1.6	534	9.9	711	38	711	1.8	90.978	-B1500	080-42	96
1.6	539	9.8	719	38	719	1.0	91.939	-B820	080-42	93
1.6	546	9.7	728	37	728	1.8	93.150	-B1500	080-42	96
1.6	547	9.6	729	37	729	2.1	93.283	-B2700	080-42	99
1.4	601	8.8	801	34	801	1.6	102.396	-B1500	080-42	96
1.4	603	8.8	804	34	804	0.9	102.790	-B820	080-42	93
1.3	670	7.9	893	31	893	1.6	114.166	-B1500	080-42	96
1.3	671	7.9	894	30	894	0.9	114.364	-B820	080-42	93

Selection tables, 4-pole motors

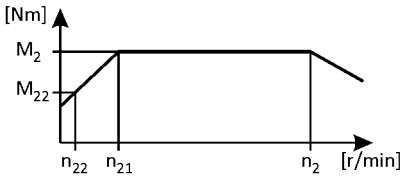


120 Hz: P_N = 3.0 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 30 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
1.2	736	7.2	981	28	981	1.5	125.498	-B1500	080-42	96
1.0	879	6.0	1173	23	1173	1.2	149.949	-B1500	080-42	96
0.9	898	5.9	1197	23	1197	2.7	153.141	-B4300	080-42	102
0.9	898	5.9	1198	23	1198	2.2	153.185	-B2700	080-42	99
0.9	967	5.5	1289	21	1289	1.1	164.833	-B1500	080-42	96
0.9	982	5.4	1309	21	1309	2.7	167.383	-B4300	080-42	102
0.9	987	5.3	1315	21	1315	2.0	168.230	-B2700	080-42	99
0.8	1067	4.9	1423	19	1423	1.0	181.983	-B1500	080-42	96
0.8	1090	4.8	1453	19	1453	2.4	185.857	-B4300	080-42	102
0.8	1090	4.8	1454	19	1454	1.8	185.911	-B2700	080-42	99
0.7	1173	4.5	1564	17	1564	0.9	200.048	-B1500	080-42	96
0.7	1191	4.4	1588	17	1588	2.4	203.143	-B4300	080-42	102
0.7	1197	4.4	1596	17	1596	1.6	204.170	-B2700	080-42	99
0.6	1378	3.8	1837	15	1837	1.8	234.932	-B4300	080-42	102
0.6	1378	3.8	1838	15	1838	1.4	235.000	-B2700	080-42	99
0.6	1506	3.5	2008	14	2008	1.8	256.781	-B4300	080-42	102
0.6	1514	3.5	2018	14	2018	1.3	258.080	-B2700	080-42	99

Selection tables, 4-pole motors



120 Hz: P_N = 4.0 kW

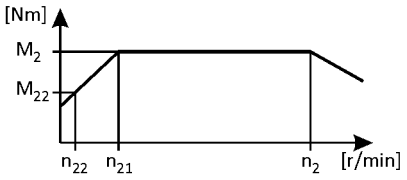
2-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
30	36	123	51	712	51	2.2	4.889	-B240	090-32	84
23	46	96	65	556	65	1.8	6.257	-B240	090-32	84
8.6	123	36	176	206	176	1.0	16.857	-B240	090-32	84
7.0	151	29	215	169	215	0.8	20.650	-B240	090-32	84

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
21	50	88	72	507	72	2.9	6.860	-B450	090-32	87
15	70	63	99	366	99	2.9	9.520	-B820	090-32	93
12	89	49	127	287	127	2.7	12.143	-B820	090-32	93
11	93	47	133	272	133	2.3	12.775	-B450	090-32	87
11	98	45	139	260	139	2.9	13.369	-B600	090-32	90
11	98	45	139	260	139	2.9	13.370	-B820	090-32	93
10	103	42	148	246	148	2.2	14.165	-B450	090-32	87
9.9	107	41	152	238	152	2.9	14.626	-B820	090-32	93
8.9	119	37	170	213	170	1.9	16.349	-B450	090-32	87
8.9	119	37	170	213	170	2.9	16.352	-B820	090-32	93
8.1	131	34	186	195	186	1.8	17.885	-B450	090-32	87
7.8	136	32	194	187	194	2.7	18.655	-B820	090-32	93
7.7	138	32	197	185	197	2.3	18.851	-B600	090-32	90
7.3	145	30	207	176	207	1.6	19.831	-B450	090-32	87
7.0	151	29	215	169	215	2.1	20.622	-B600	090-32	90
7.0	152	29	217	167	217	2.7	20.857	-B820	090-32	93
6.4	167	26	238	153	238	1.4	22.813	-B450	090-32	87
6.3	167	26	238	152	238	1.9	22.852	-B600	090-32	90
6.3	167	26	238	152	238	2.4	22.853	-B820	090-32	93
5.7	185	24	264	138	264	1.3	25.294	-B450	090-32	87
5.7	187	24	266	136	266	2.3	25.550	-B820	090-32	93
5.2	204	22	291	125	291	1.2	27.945	-B450	090-32	87
5.0	213	21	305	119	305	2.9	29.206	-B1500	090-32	96
4.9	217	20	310	117	310	1.5	29.744	-B600	090-32	90
4.9	217	20	310	117	310	2.0	29.745	-B820	090-32	93
4.7	226	19	323	112	323	1.1	30.985	-B450	090-32	87
4.0	266	17	379	96	379	0.9	36.373	-B450	090-32	87
3.9	270	16	386	94	386	1.2	36.999	-B600	090-32	90
3.9	270	16	386	94	386	1.6	37.000	-B820	090-32	93
3.6	294	15	420	86	420	0.9	40.330	-B450	090-32	87
3.5	306	14	437	83	437	1.2	41.940	-B600	090-32	90

Selection tables, 4-pole motors

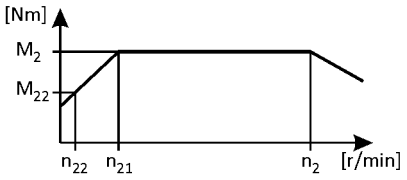


120 Hz: P_N = 4.0 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
3.2	330	13	472	77	472	0.8	45.245	-B450	090-32	87
3.1	340	13	486	75	486	2.7	46.568	-B1500	090-32	96
2.8	379	12	541	67	541	2.3	51.920	-B1500	090-32	96
2.5	417	11	595	61	595	2.2	57.074	-B1500	090-32	96
2.5	426	10	609	60	609	2.1	58.422	-B1500	090-32	96
2.3	469	9.3	670	54	670	1.9	64.221	-B1500	090-32	96
1.9	547	8.0	782	46	782	1.7	74.963	-B1500	090-32	96
1.9	561	7.8	801	45	801	2.3	76.862	-B2700	090-32	99
1.8	604	7.2	863	42	863	1.5	82.762	-B1500	090-32	96
1.7	620	7.1	886	41	886	2.0	84.940	-B2700	090-32	99
1.6	664	6.6	949	38	949	1.4	90.978	-B1500	090-32	96
1.6	680	6.4	971	37	971	1.3	93.150	-B1500	090-32	96
1.6	681	6.4	973	37	973	2.0	93.283	-B2700	090-32	99
1.4	747	5.9	1068	34	1068	1.2	102.396	-B1500	090-32	96
1.3	833	5.3	1190	31	1190	1.2	114.166	-B1500	090-32	96
1.2	916	4.8	1308	28	1308	1.1	125.498	-B1500	090-32	96
1.0	1094	4.0	1563	23	1563	0.9	149.949	-B1500	090-32	96
0.9	1118	3.9	1597	23	1597	2.5	153.141	-B4300	090-32	102
0.9	1118	3.9	1597	23	1597	1.6	153.185	-B2700	090-32	99
0.9	1203	3.6	1719	21	1719	0.8	164.833	-B1500	090-32	96
0.9	1222	3.6	1745	21	1745	2.4	167.383	-B4300	090-32	102
0.9	1228	3.6	1754	21	1754	1.5	168.230	-B2700	090-32	99
0.8	1356	3.2	1938	19	1938	2.1	185.857	-B4300	090-32	102
0.8	1357	3.2	1938	19	1938	1.3	185.911	-B2700	090-32	99
0.7	1483	3.0	2118	17	2118	1.9	203.143	-B4300	090-32	102
0.7	1490	2.9	2129	17	2129	1.2	204.170	-B2700	090-32	99
0.6	1715	2.6	2449	15	2449	1.7	234.932	-B4300	090-32	102
0.6	1715	2.6	2450	15	2450	1.1	235.000	-B2700	090-32	99
0.6	1874	2.3	2677	14	2677	1.5	256.781	-B4300	090-32	102
0.6	1884	2.3	2691	14	2691	1.0	258.080	-B2700	090-32	99

Selection tables, 4-pole motors

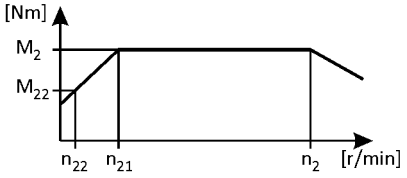


120 Hz: P_N = 5.5 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
21	68	88	97	514	97	2.4	6.860	-B450	100-12	87
15	94	63	135	370	135	2.8	9.520	-B820	100-12	93
12	120	49	172	290	172	2.4	12.143	-B820	100-12	93
11	130	46	186	269	186	4.1	13.118	-B1500	100-12	96
11	132	45	189	264	189	2.2	13.369	-B600	100-12	90
11	133	45	189	264	189	2.5	13.370	-B820	100-12	93
9.9	145	41	207	241	207	2.4	14.626	-B820	100-12	93
8.9	162	37	231	216	231	2.3	16.352	-B820	100-12	93
7.8	185	32	264	189	264	2.1	18.655	-B820	100-12	93
7.0	207	29	295	169	295	2.1	20.857	-B820	100-12	93
6.4	226	26	323	155	323	1.1	22.813	-B450	100-12	87
6.3	226	26	323	154	323	1.4	22.852	-B600	100-12	90
6.3	226	26	323	154	323	1.9	22.853	-B820	100-12	93
5.7	253	24	362	138	362	1.7	25.550	-B820	100-12	93
5.2	277	22	395	126	395	0.9	27.945	-B450	100-12	87
5.0	289	21	413	121	413	2.7	29.206	-B1500	100-12	96
4.9	295	20	421	119	421	1.1	29.744	-B600	100-12	90
4.9	295	20	421	119	421	1.5	29.745	-B820	100-12	93
4.5	322	18	461	108	461	2.5	32.547	-B1500	100-12	96
4.1	354	17	506	99	506	2.2	35.778	-B1500	100-12	96
3.9	367	16	524	95	524	0.9	36.999	-B600	100-12	90
3.9	367	16	524	95	524	1.2	37.000	-B820	100-12	93
3.8	382	16	546	91	546	3.0	38.546	-B4300	100-12	102
3.5	416	14	594	84	594	0.9	41.940	-B600	100-12	90
3.1	461	13	659	76	659	2.0	46.568	-B1500	100-12	96
3.0	485	12	692	72	692	3.3	48.912	-B2700	100-12	99
2.8	514	12	735	68	735	1.7	51.920	-B1500	100-12	96
2.7	536	11	765	65	765	2.9	54.082	-B2700	100-12	99
2.5	565	11	808	62	808	1.6	57.074	-B1500	100-12	96
2.4	588	10	841	59	841	2.8	59.393	-B2700	100-12	99
1.9	743	8.0	1061	47	1061	1.2	74.963	-B1500	100-12	96
1.9	762	7.8	1088	46	1088	2.1	76.862	-B2700	100-12	99
1.8	820	7.2	1171	43	1171	1.1	82.762	-B1500	100-12	96
1.7	842	7.1	1202	42	1202	1.9	84.940	-B2700	100-12	99
1.6	901	6.6	1288	39	1288	1.0	90.978	-B1500	100-12	96

Selection tables, 4-pole motors

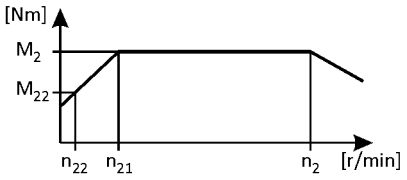


120 Hz: P_N = 5.5 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
1.6	924	6.4	1320	38	1320	1.8	93.283	-B2700	100-12	99
1.5	965	6.2	1379	36	1379	2.7	97.453	-B4300	100-12	102
1.5	966	6.2	1380	36	1380	1.7	97.481	-B2700	100-12	99
1.4	1055	5.6	1507	33	1507	2.4	106.517	-B4300	100-12	102
1.2	1172	5.1	1675	30	1675	2.4	118.336	-B4300	100-12	102
1.2	1173	5.1	1675	30	1675	1.5	118.370	-B2700	100-12	99
1.1	1281	4.6	1831	27	1831	2.2	129.342	-B4300	100-12	102
1.1	1288	4.6	1840	27	1840	1.4	129.996	-B2700	100-12	99
0.9	1517	3.9	2167	23	2167	1.9	153.141	-B4300	100-12	102
0.9	1518	3.9	2168	23	2168	1.2	153.185	-B2700	100-12	99
0.9	1658	3.6	2369	21	2369	1.7	167.383	-B4300	100-12	102
0.9	1667	3.6	2381	21	2381	1.1	168.230	-B2700	100-12	99
0.8	1841	3.2	2630	19	2630	1.6	185.857	-B4300	100-12	102
0.8	1842	3.2	2631	19	2631	1.0	185.911	-B2700	100-12	99
0.7	2013	3.0	2875	17	2875	1.4	203.143	-B4300	100-12	102
0.7	2023	2.9	2890	17	2890	0.9	204.170	-B2700	100-12	99
0.6	2327	2.6	3325	15	3325	1.2	234.932	-B4300	100-12	102
0.6	2544	2.3	3634	14	3634	1.1	256.781	-B4300	100-12	102

Selection tables, 4-pole motors

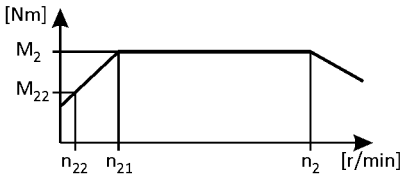


120 Hz: P_N = 7.5 kW

3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
15	129	63	184	369	184	2.0	9.520	-B820	100-32	93
12	165	49	235	290	235	1.7	12.143	-B820	100-32	93
7.8	253	32	361	188	361	1.6	18.655	-B820	100-32	93
7.0	283	29	404	169	404	1.5	20.857	-B820	100-32	93
6.3	310	26	442	154	442	1.4	22.853	-B820	100-32	93
5.7	346	24	494	138	494	1.3	25.550	-B820	100-32	93
5.0	396	21	565	120	565	2.0	29.206	-B1500	100-32	96
4.9	403	20	576	118	576	1.1	29.745	-B820	100-32	93
4.5	441	18	630	108	630	1.8	32.547	-B1500	100-32	96
4.1	485	17	692	98	692	1.6	35.778	-B1500	100-32	96
3.9	501	16	716	95	716	0.9	37.000	-B820	100-32	93
3.8	522	16	746	91	746	2.2	38.546	-B4300	100-32	102
3.1	631	13	901	76	901	1.4	46.568	-B1500	100-32	96
3.0	663	12	947	72	947	2.4	48.912	-B2700	100-32	99
2.8	703	12	1005	68	1005	1.3	51.920	-B1500	100-32	96
2.7	733	11	1047	65	1047	2.1	54.082	-B2700	100-32	99
2.5	773	11	1105	62	1105	1.2	57.074	-B1500	100-32	96
2.4	805	10	1149	59	1149	2.0	59.393	-B2700	100-32	99
1.9	1016	8.0	1451	47	1451	0.9	74.963	-B1500	100-32	96
1.9	1041	7.8	1488	46	1488	1.6	76.862	-B2700	100-32	99
1.7	1151	7.1	1644	41	1644	1.4	84.940	-B2700	100-32	99
1.6	1264	6.4	1805	38	1805	1.3	93.283	-B2700	100-32	99
1.5	1320	6.2	1886	36	1886	2.0	97.453	-B4300	100-32	102
1.4	1443	5.6	2062	33	2062	1.8	106.517	-B4300	100-32	102
1.2	1603	5.1	2290	30	2290	1.8	118.336	-B4300	100-32	102
1.1	1752	4.6	2503	27	2503	1.6	129.342	-B4300	100-32	102
0.9	2075	3.9	2964	23	2964	1.4	153.141	-B4300	100-32	102
0.9	2268	3.6	3240	21	3240	1.3	167.383	-B4300	100-32	102
0.8	2518	3.2	3597	19	3597	1.1	185.857	-B4300	100-32	102
0.7	2752	3.0	3932	17	3932	1.0	203.143	-B4300	100-32	102
0.6	3183	2.6	4547	15	4547	0.9	234.932	-B4300	100-32	102
0.6	3479	2.3	4970	14	4970	0.8	256.781	-B4300	100-32	102

Selection tables, 4-pole motors



120 Hz: P_N = 11.0 kW

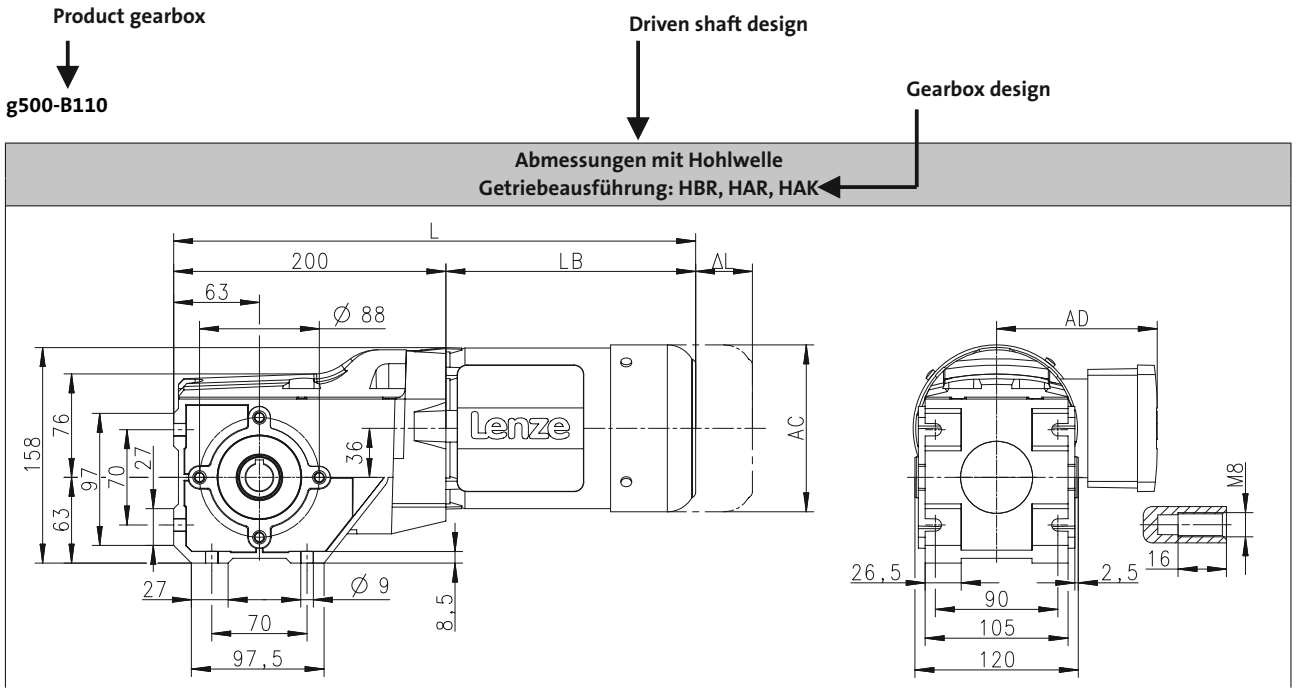
3-stage gearboxes

Inverter operation							i	Product		
5 Hz -		- 20 Hz		- 120 Hz (1:24)						
n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c		g500	MF□MA□□	
3.8	697	16	1090	92	1090	1.7	38.546	-B4300	112-22	102
3.0	885	12	1383	72	1383	1.7	48.912	-B2700	112-22	99
2.7	978	11	1529	65	1529	1.5	54.082	-B2700	112-22	99
2.4	1074	10	1679	59	1679	1.4	59.393	-B2700	112-22	99
1.9	1390	7.8	2173	46	2173	1.1	76.862	-B2700	112-22	99
1.7	1537	7.1	2401	42	2401	1.0	84.940	-B2700	112-22	99
1.6	1688	6.4	2637	38	2637	0.9	93.283	-B2700	112-22	99
1.2	2141	5.1	3345	30	3345	1.2	118.336	-B4300	112-22	102
0.9	2770	3.9	4329	23	4329	0.9	153.141	-B4300	112-22	102

Dimensions, notes

Notes on the dimensions

The following legend shows the layout of the dimension sheets.



Product Motor

Produkt			MD□MA□□							
			063-12	063-32	063-42	071-32	071-42	080-32	080-42	090-32
Abmessungen										
Gesamtlänge	**L**	**[mm]**		358		378		395		419
Länge Motor	**LB**	**[mm]**		187		207		224.5		248
Länge Motoranbauten	**Δ L**	**[mm]**		170		165		183		181
Motordurchmesser	**AC**	**[mm]**		123		139		156		176
Abstand Motor/Anschluss	**AD**	**[mm]**		100		109		150		157

Distance of motor centre to the end of terminal box

Total length of the drive without built-on accessories

Motor diameter

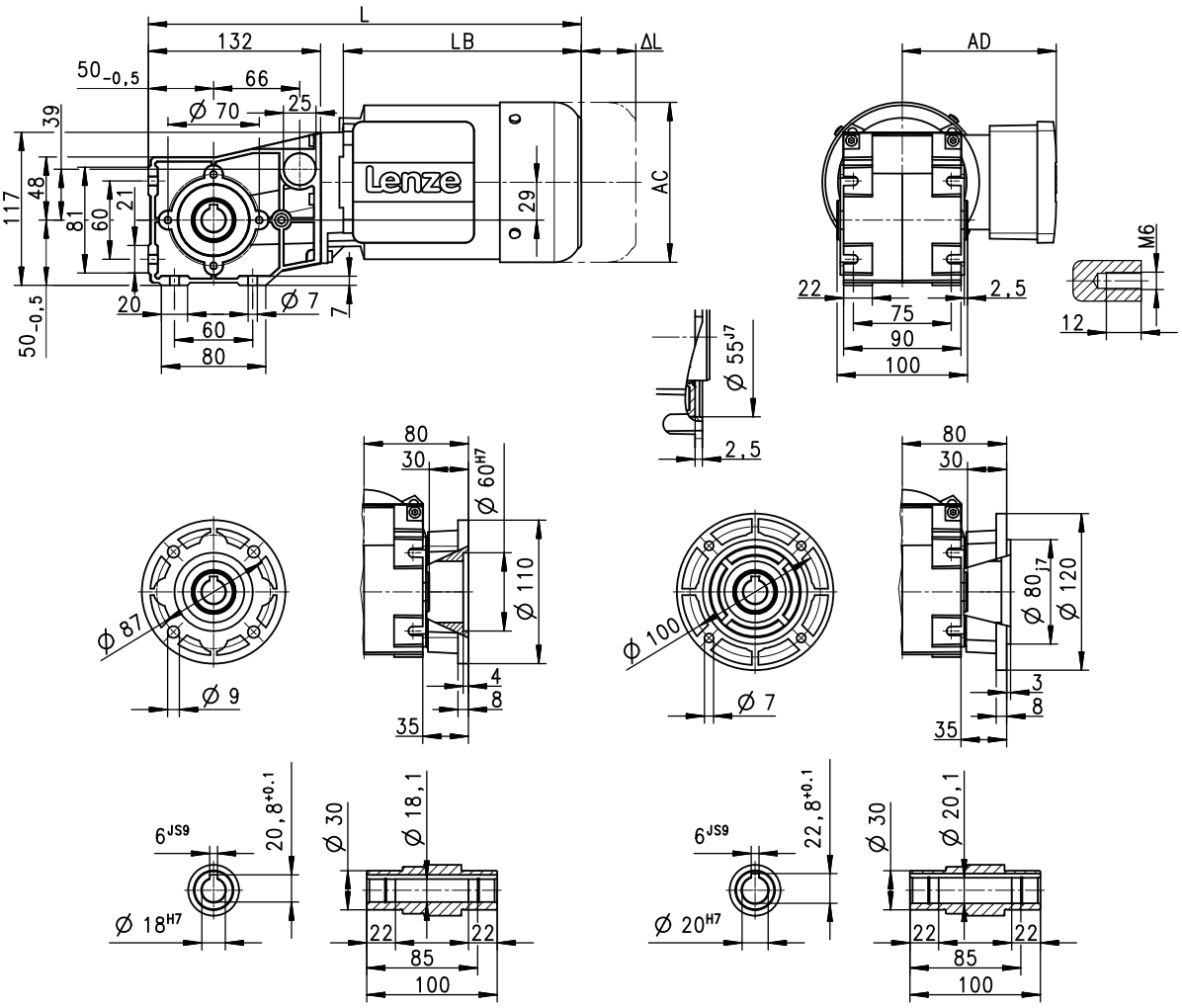
Motor length without built-on accessories

Additional length of the built-on accessories (longest version)

Dimensions, 4-pole motors

g500-B45

Dimensions with hollow shaft
Gearbox design: HBR, HAR, HAK



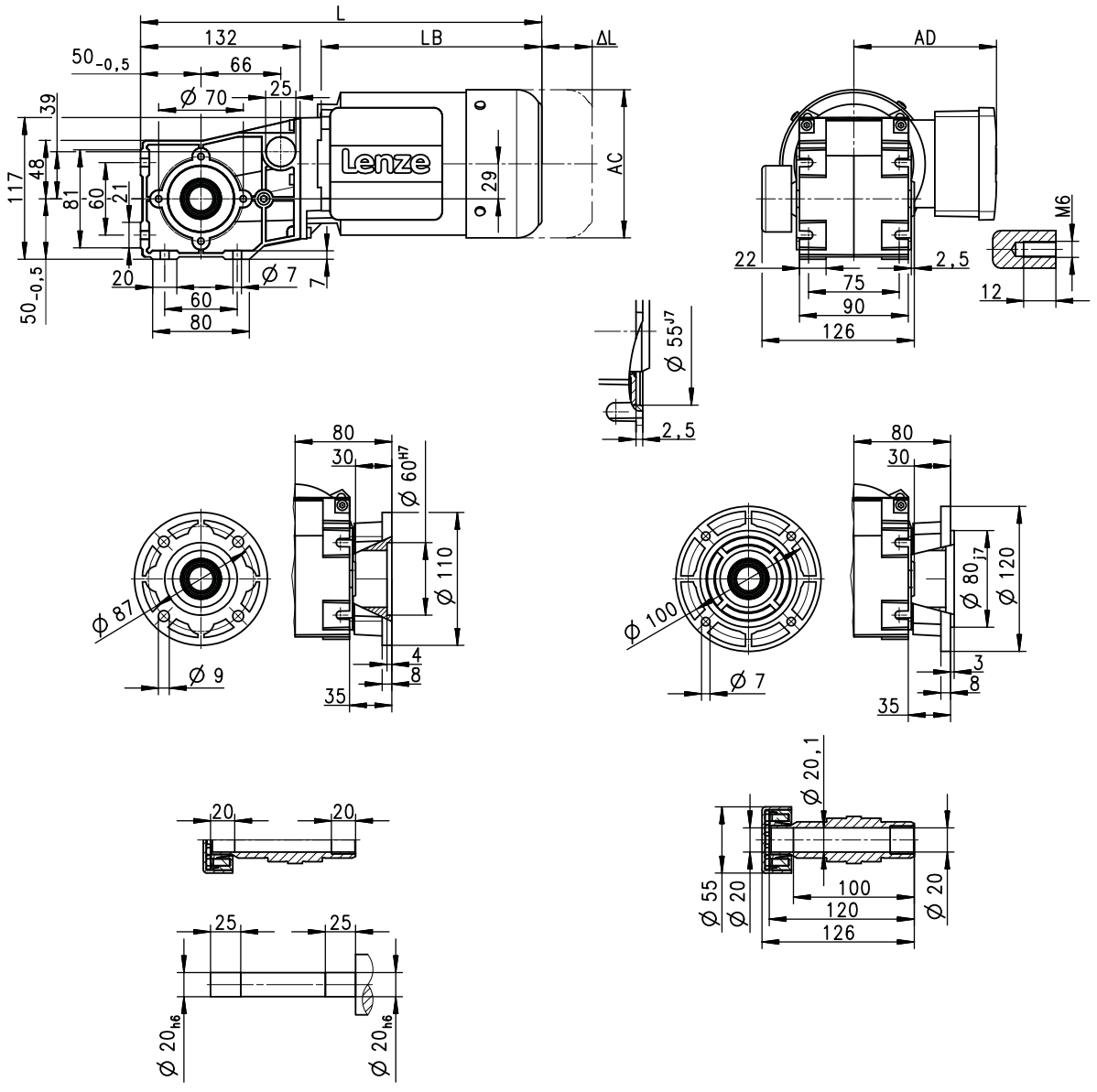
8800139-01

Product			MF□MA□□	
			063-32	063-42
Dimensions				
Total length	**L**	**[mm]**	332	
Motor length	**LB**	**[mm]**	183	
Length of motor options	**Δ L**	**[mm]**	170	
Motor diameter	**AC**	**[mm]**	123	
Distance motor/connection	**AD**	**[mm]**	100	

Dimensions, 4-pole motors

g500-B45

Dimensions hollow shaft with shrink disc
Gearbox design: SBR, SAR, SAK

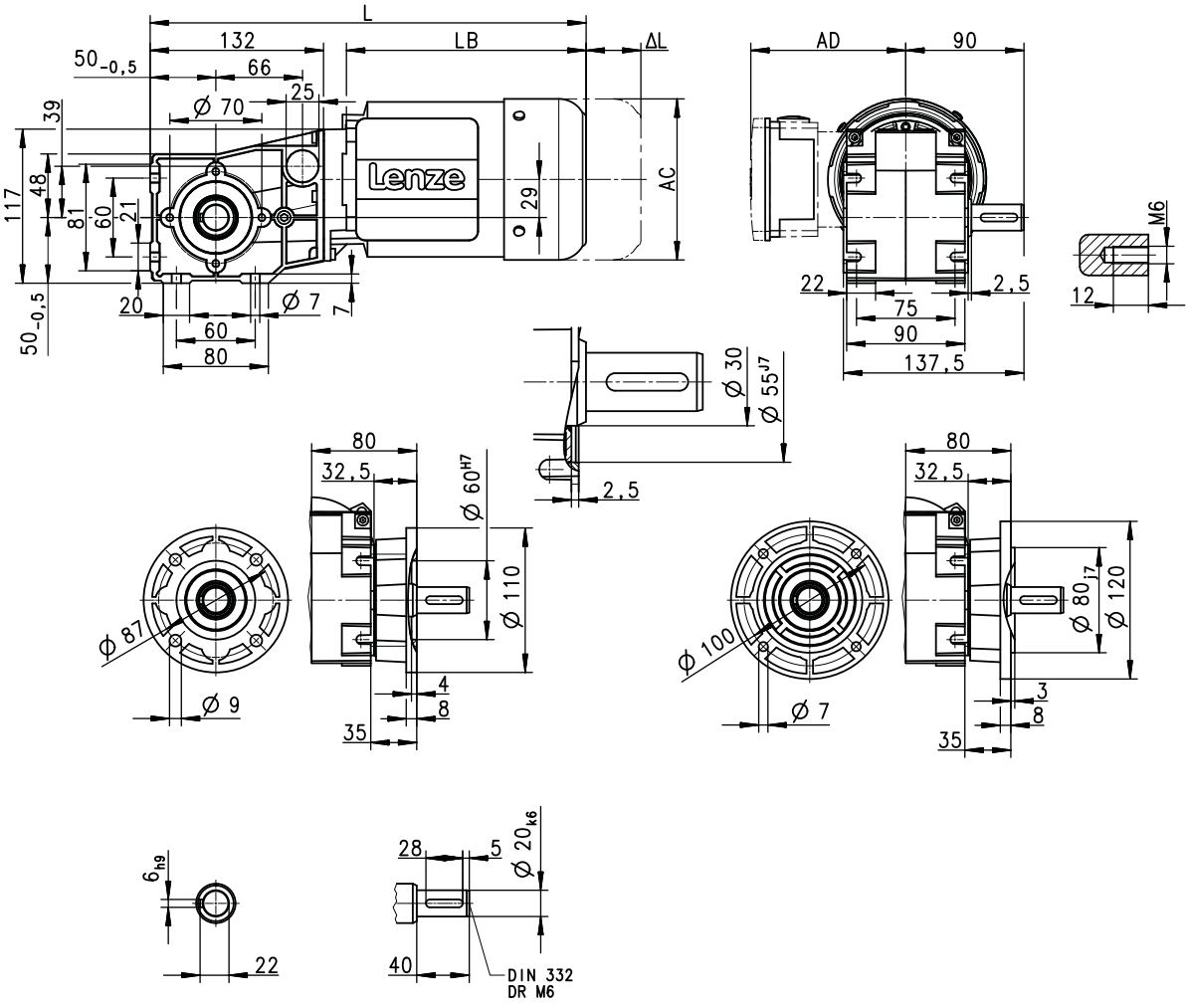


Product			MF□MA□□	
			063-32	063-42
Dimensions				
Total length	**L**	**[mm]**	332	
Motor length	**LB**	**[mm]**	183	
Length of motor options	**Δ L**	**[mm]**	170	
Motor diameter	**AC**	**[mm]**	123	
Distance motor/connection	**AD**	**[mm]**	100	

Dimensions, 4-pole motors

g500-B45

Dimensions with solid shaft
Gearbox design: VBR, VAR, VAK

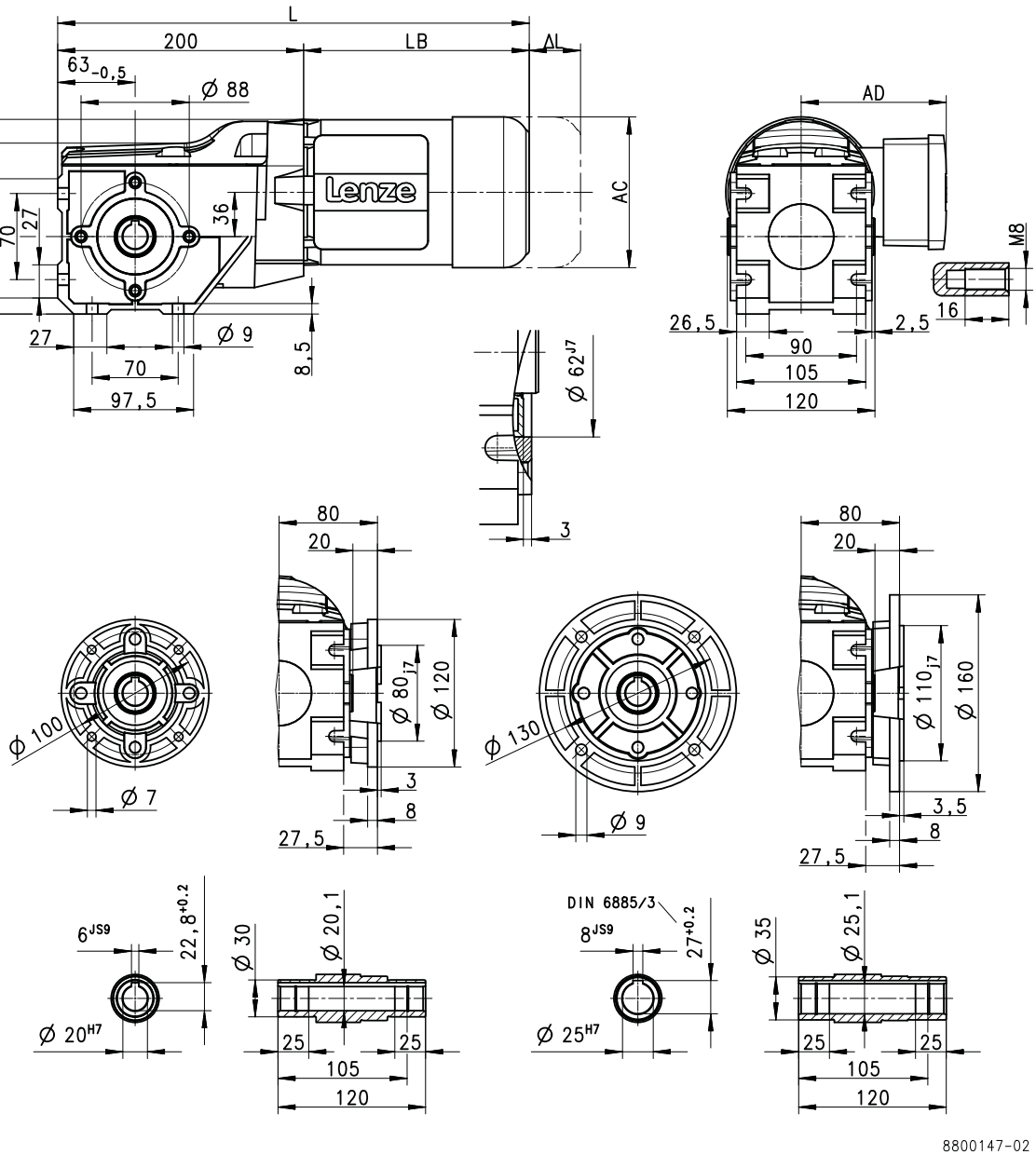


Product			MF□MA□□	
			063-32	063-42
Dimensions				
Total length	**L**	**[mm]**	332	
Motor length	**LB**	**[mm]**	183	
Length of motor options	**Δ L**	**[mm]**	170	
Motor diameter	**AC**	**[mm]**	123	
Distance motor/connection	**AD**	**[mm]**	100	

Dimensions, 4-pole motors

g500-B110

Dimensions with hollow shaft
Gearbox design: HBR, HAR, HAK

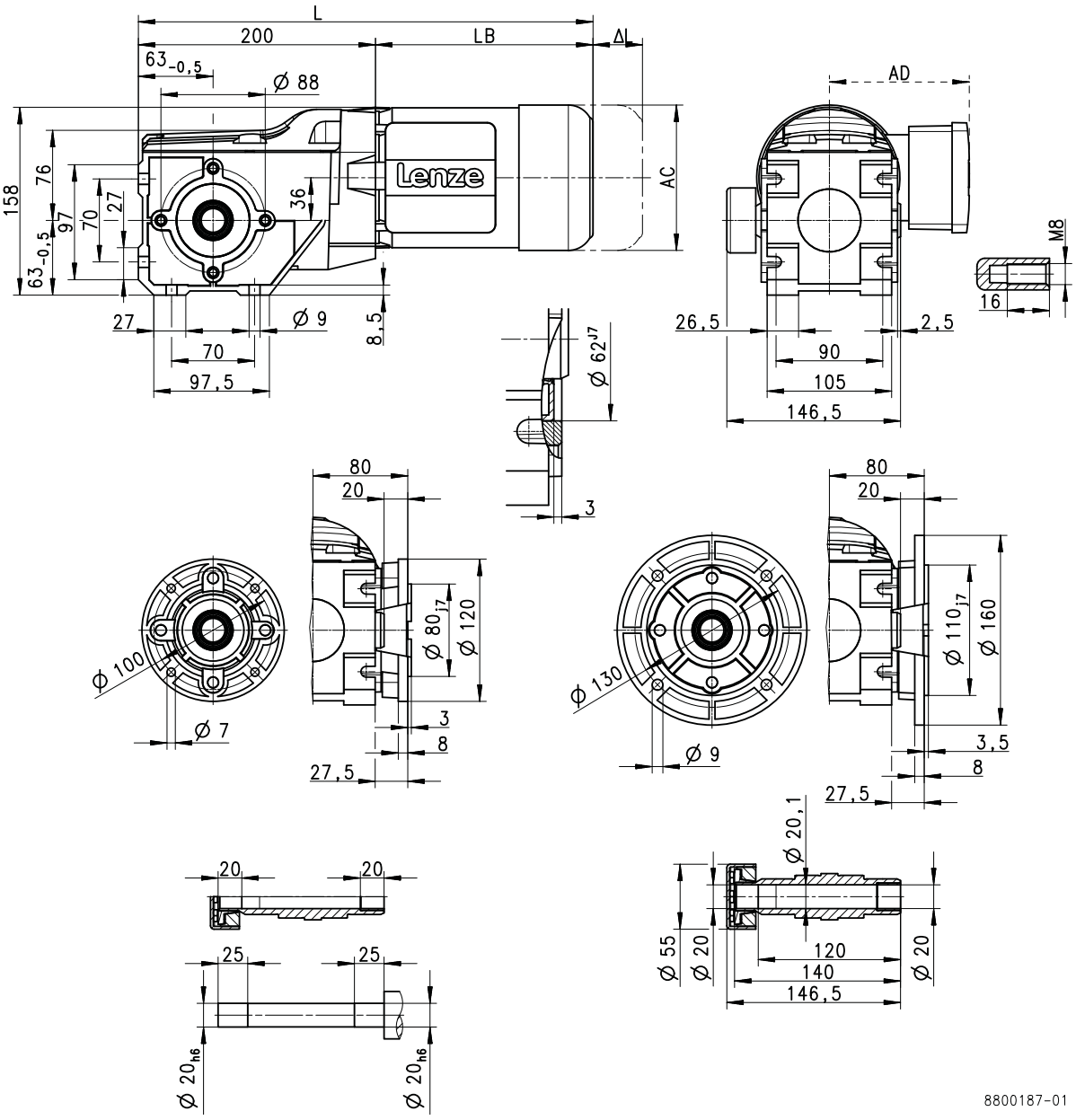


Product			MF□MA□□				
			063-32	063-42	071-32	071-42	080-32
Dimensions							
Total length	**L**	**[mm]**	383		404		426
Motor length	**LB**	**[mm]**	183		204		226
Length of motor options	**Δ L**	**[mm]**	170		165		183
Motor diameter	**AC**	**[mm]**	123		139		156
Distance motor/connection	**AD**	**[mm]**	100		109		150

Dimensions, 4-pole motors

g500-B110

Dimensions hollow shaft with shrink disc
Gearbox design: SBR, SAR, SAK

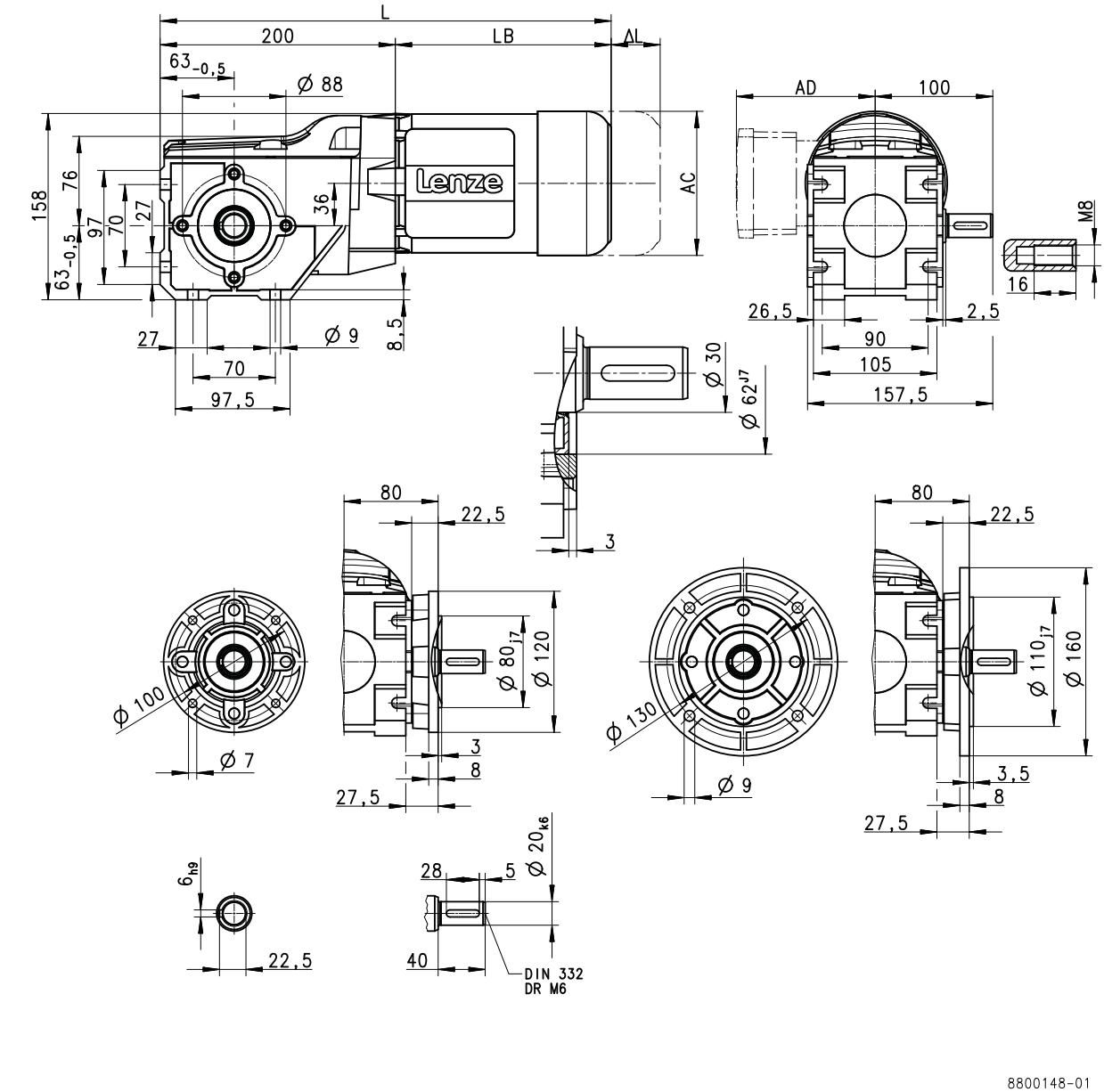


Product			MF□MA□□				
			063-32	063-42	071-32	071-42	080-32
Dimensions							
Total length	**L**	**[mm]**	383		404		426
Motor length	**LB**	**[mm]**	183		204		226
Length of motor options	**Δ L**	**[mm]**	170		165		183
Motor diameter	**AC**	**[mm]**	123		139		156
Distance motor/connection	**AD**	**[mm]**	100		109		150

Dimensions, 4-pole motors

g500-B110

Dimensions with solid shaft
Gearbox design: VBR, VAR, VAK

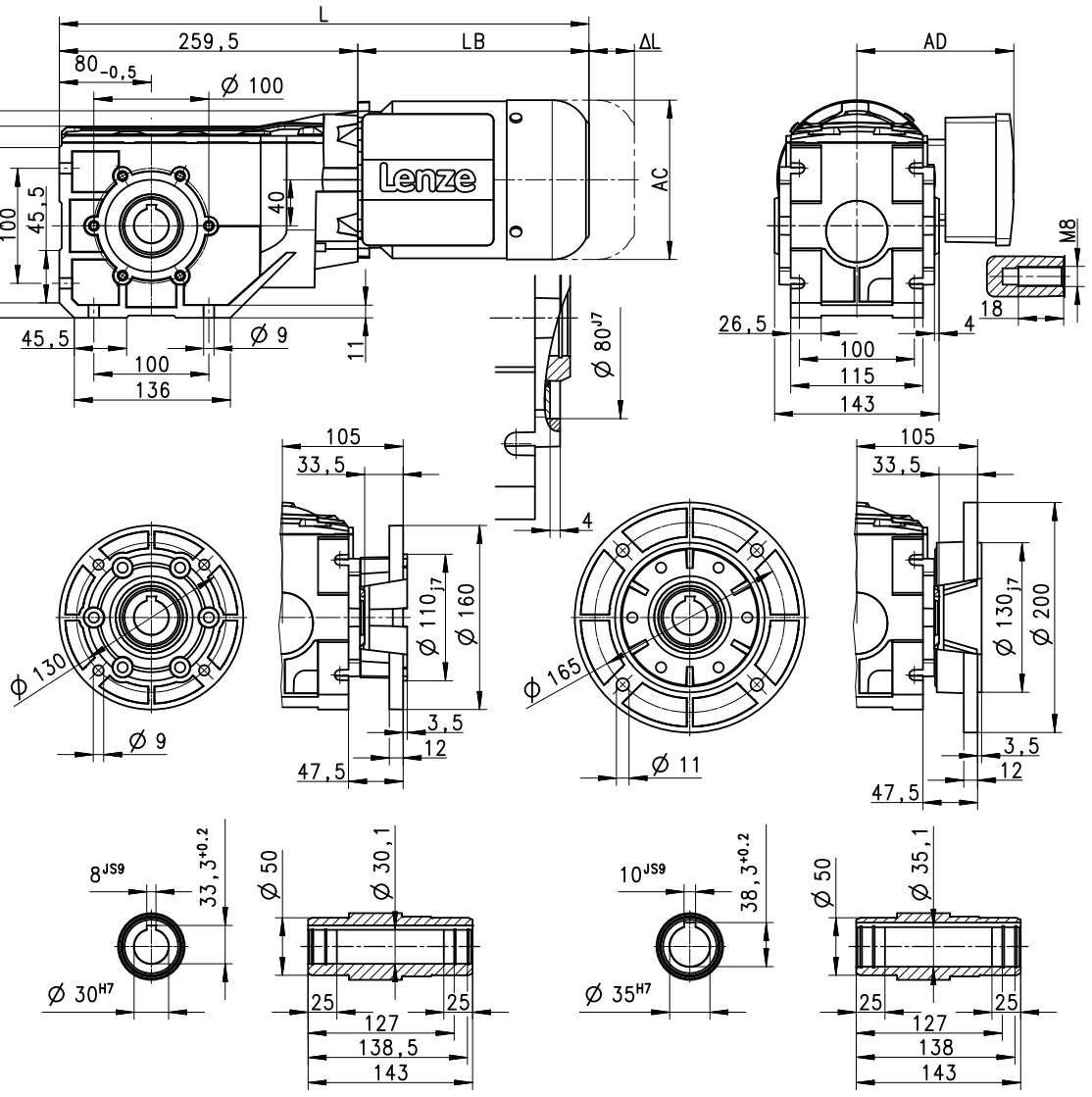


Product			MF□MA□□				
			063-32	063-42	071-32	071-42	080-32
Dimensions							
Total length	**L**	**[mm]**	383		404		426
Motor length	**LB**	**[mm]**	183		204		226
Length of motor options	**Δ L**	**[mm]**	170		165		183
Motor diameter	**AC**	**[mm]**	123		139		156
Distance motor/connection	**AD**	**[mm]**	100		109		150

Dimensions, 4-pole motors

g500-B240

Dimensions with hollow shaft
Gearbox design: HBR, HAR, HAK



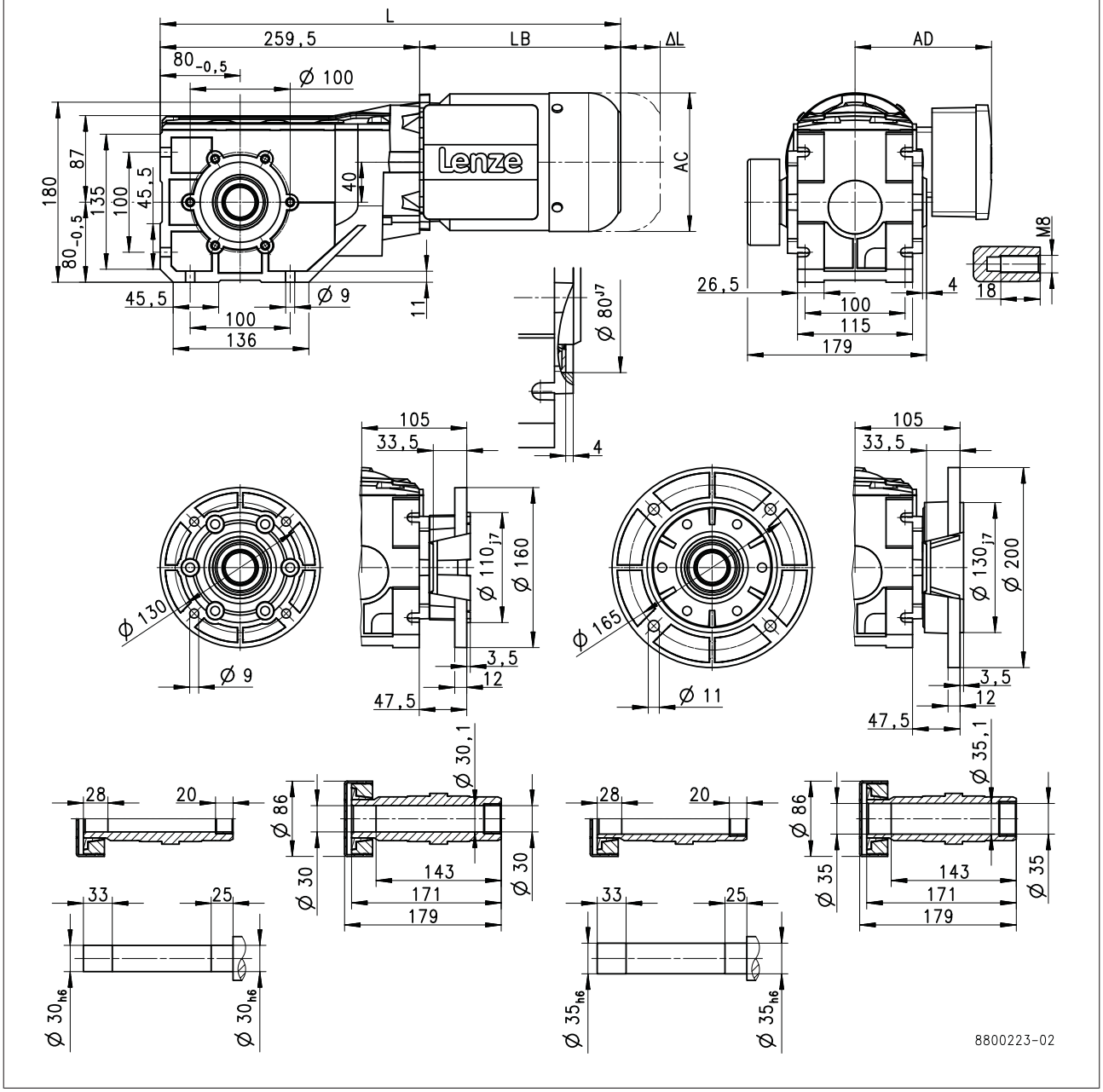
8800155-02

Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	443		464		486		546
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-B240

Dimensions hollow shaft with shrink disc
Gearbox design: SBR, SAR, SAK

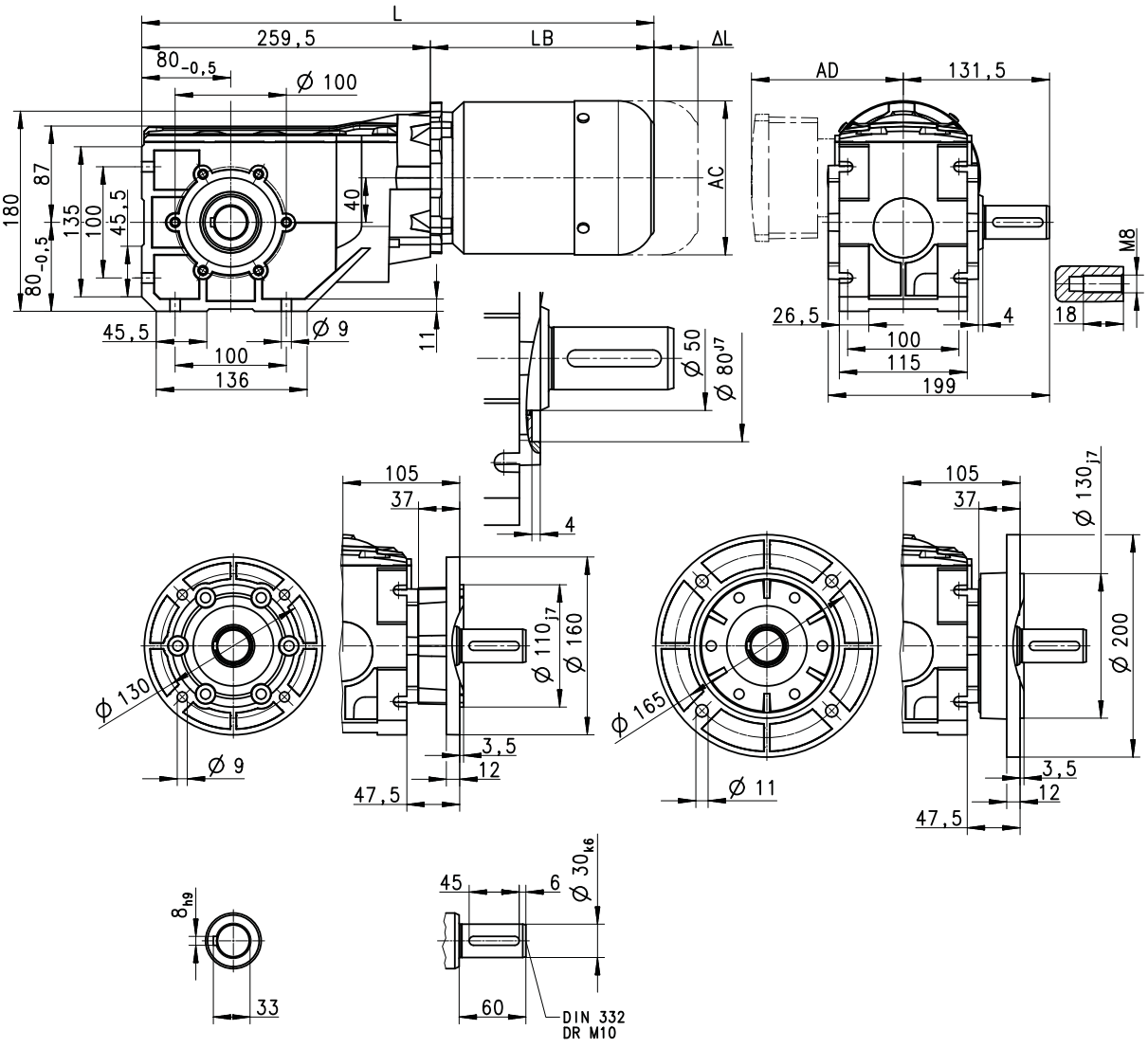


Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	443		464		486		546
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-B240

Dimensions with solid shaft
Gearbox design: VBR, VAR, VAK



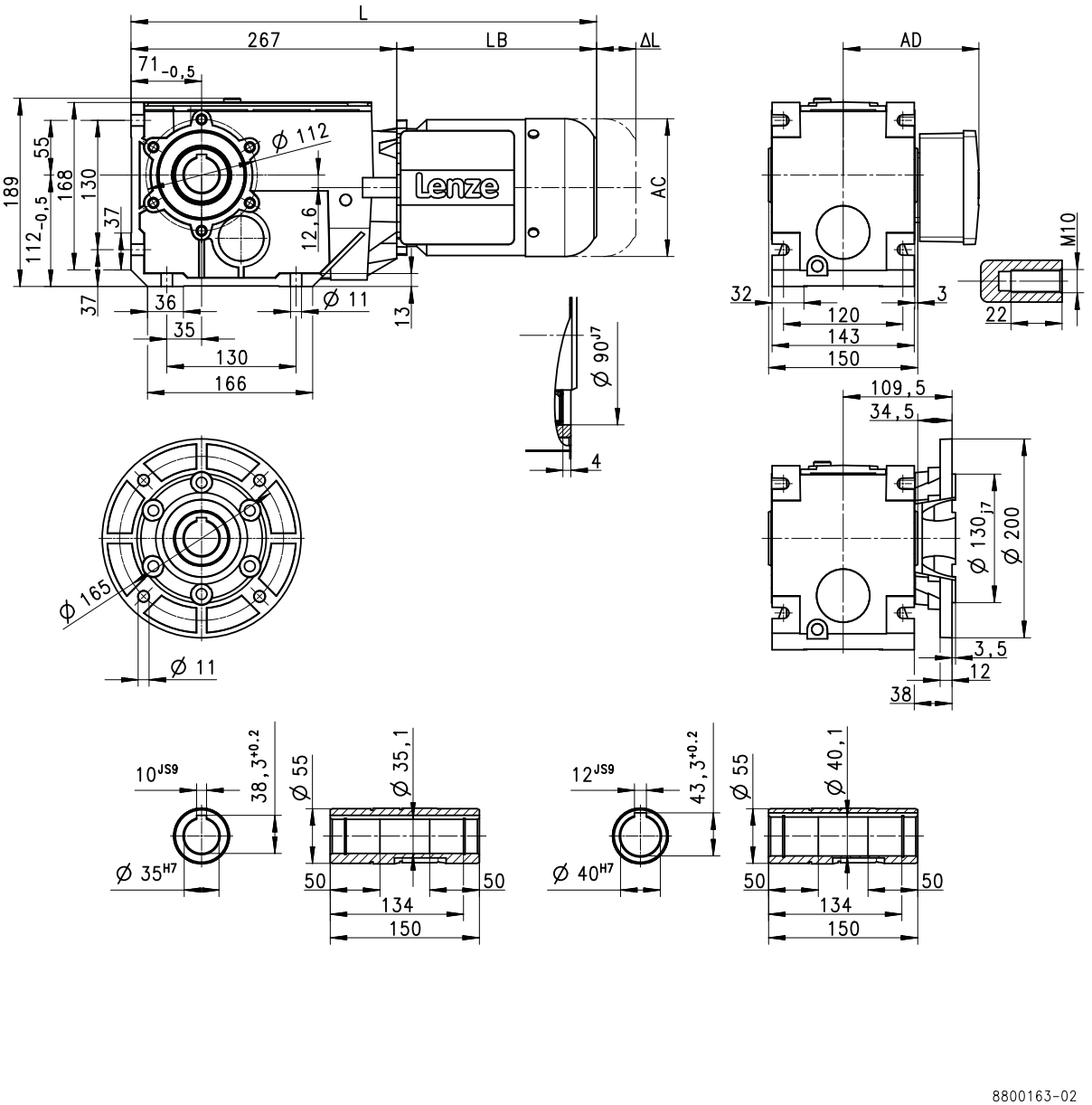
8800156-01

Product			MF□MA□□						
			063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions									
Total length	**L**	**[mm]**	443		464		486		546
Motor length	**LB**	**[mm]**	183		204		226		286
Length of motor options	**Δ L**	**[mm]**	170		165		183		181
Motor diameter	**AC**	**[mm]**	123		139		156		176
Distance motor/connection	**AD**	**[mm]**	100		109		150		157

Dimensions, 4-pole motors

g500-B450

Dimensions with hollow shaft
Gearbox design: HBR, HAR, HAK

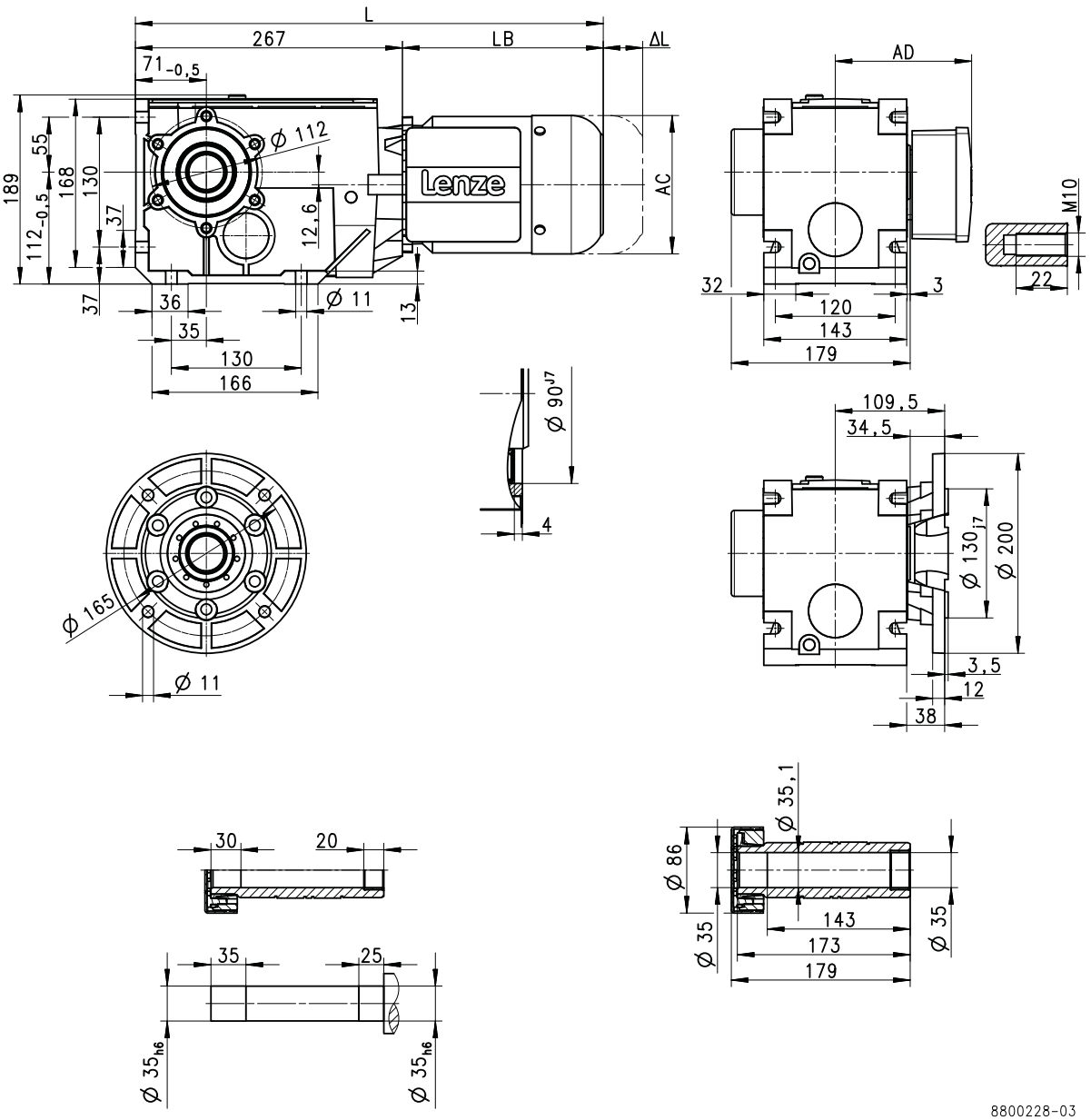


Product			MF□MA□□							
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12
Dimensions										
Total length	**L**	**[mm]**	450		471		493		553	602
Motor length	**LB**	**[mm]**	183		204		226		286	335
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170
Motor diameter	**AC**	**[mm]**	123		139		156		176	194
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166

Dimensions, 4-pole motors

g500-B450

Dimensions hollow shaft with shrink disc
Gearbox design: SBR, SAR, SAK

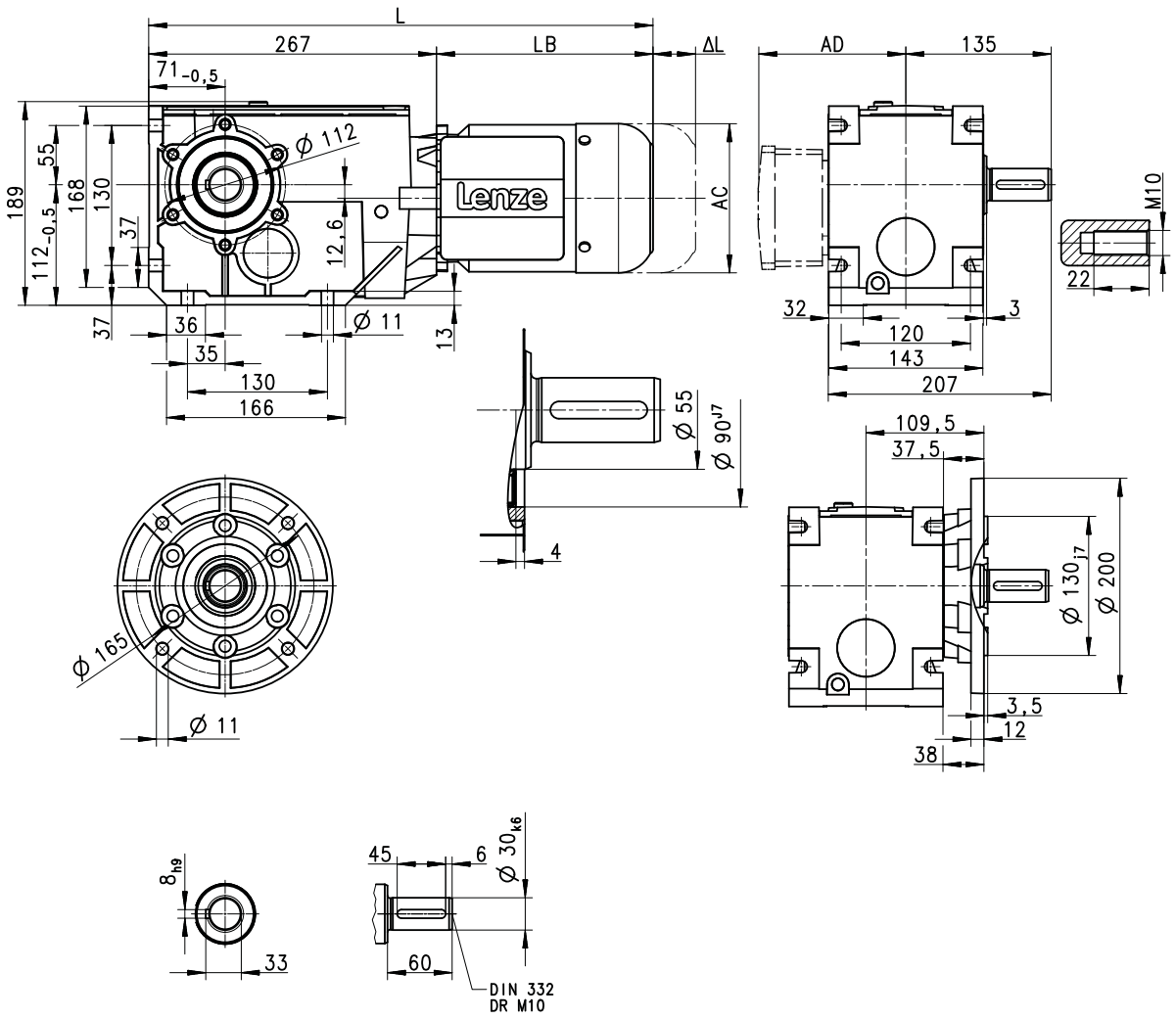


Product			MF□MA□□							
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12
Dimensions										
Total length	**L**	**[mm]**	450		471		493		553	602
Motor length	**LB**	**[mm]**	183		204		226		286	335
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170
Motor diameter	**AC**	**[mm]**	123		139		156		176	194
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166

Dimensions, 4-pole motors

g500-B450

Dimensions with solid shaft
Gearbox design: VBR, VAR, VAK

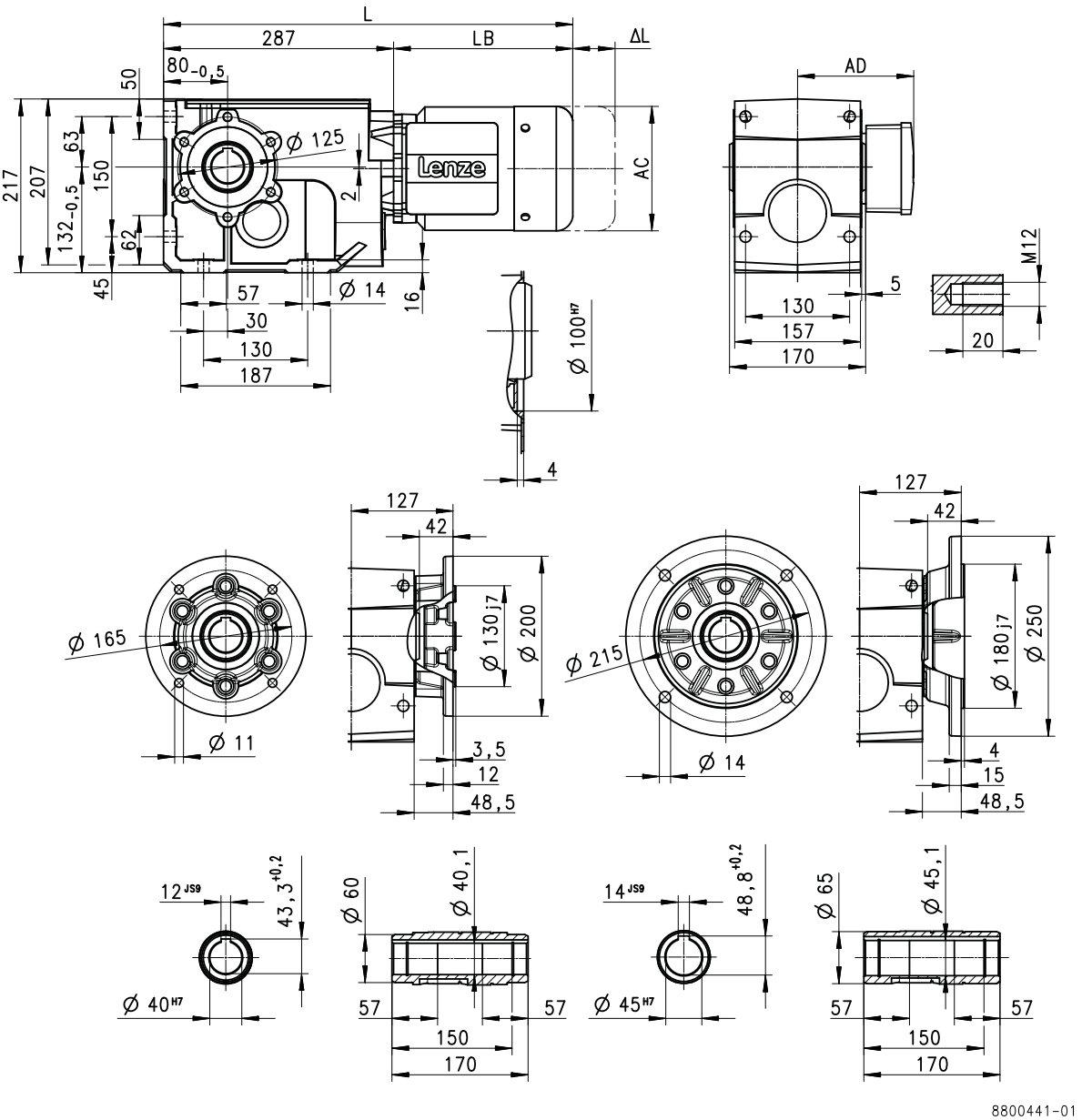


Product			MF□MA□□							
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12
Dimensions										
Total length	**L**	**[mm]**	450		471		493		553	602
Motor length	**LB**	**[mm]**	183		204		226		286	335
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170
Motor diameter	**AC**	**[mm]**	123		139		156		176	194
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166

Dimensions, 4-pole motors

g500-B600

Dimensions with hollow shaft
Gearbox design: HBR, HAR, HAK

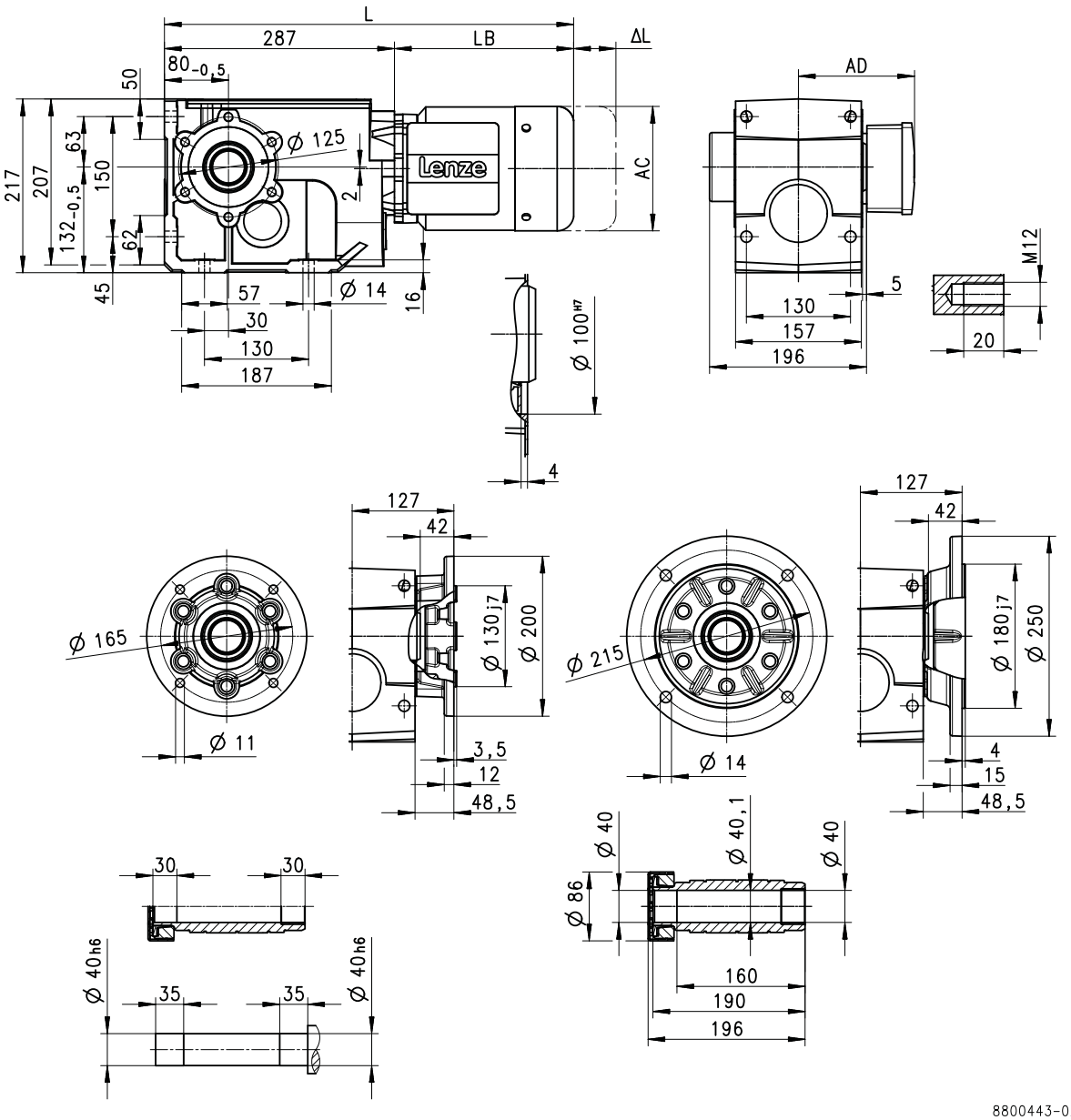


Product			MF□MA□□							
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12
Dimensions										
Total length	**L**	**[mm]**	470		491		513		573	622
Motor length	**LB**	**[mm]**	183		204		226		286	335
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170
Motor diameter	**AC**	**[mm]**	123		139		156		176	194
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166

Dimensions, 4-pole motors

g500-B600

Dimensions hollow shaft with shrink disc
Gearbox design: SBR, SAR, SAK

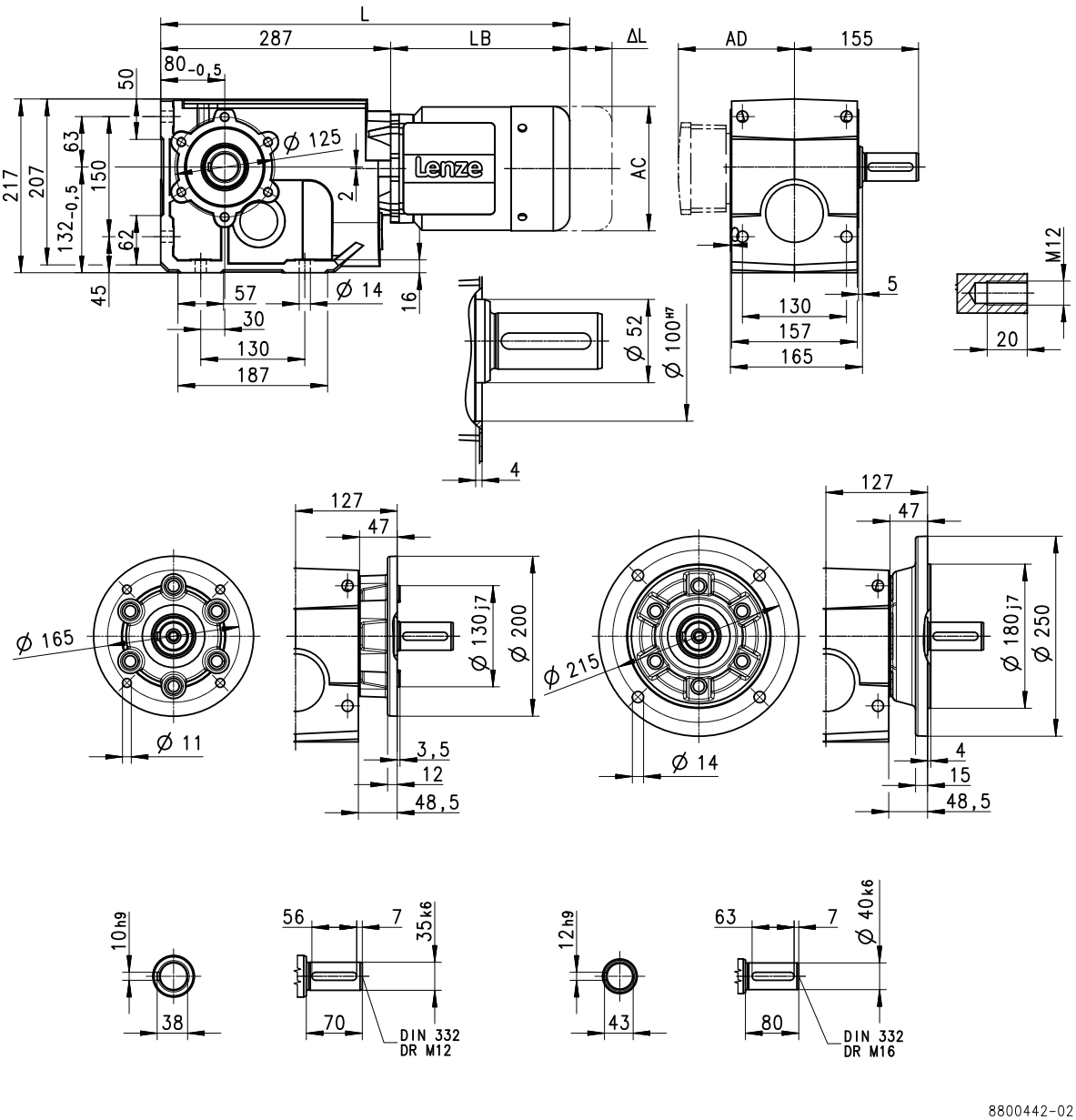


Product			MF□MA□□							
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12
Dimensions										
Total length	**L**	**[mm]**	470		491		513		573	622
Motor length	**LB**	**[mm]**	183		204		226		286	335
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170
Motor diameter	**AC**	**[mm]**	123		139		156		176	194
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166

Dimensions, 4-pole motors

g500-B600

Dimensions with solid shaft
Gearbox design: VBR, VAR, VAK

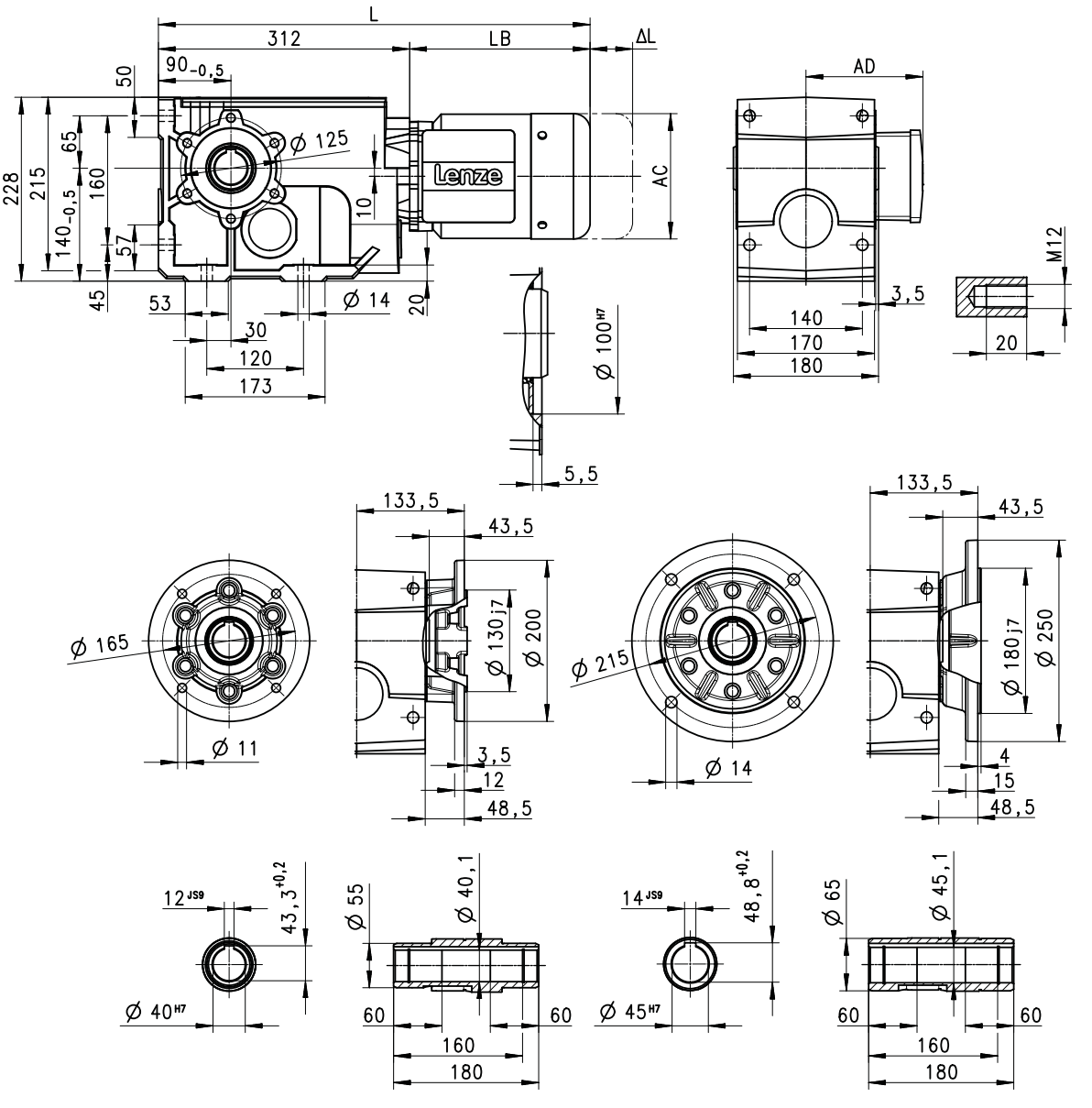


Product			MF□MA□□							
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12
Dimensions										
Total length	**L**	**[mm]**	470		491		513		573	622
Motor length	**LB**	**[mm]**	183		204		226		286	335
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170
Motor diameter	**AC**	**[mm]**	123		139		156		176	194
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166

Dimensions, 4-pole motors

g500-B820

Dimensions with hollow shaft
Gearbox design: HBR, HAR, HAK

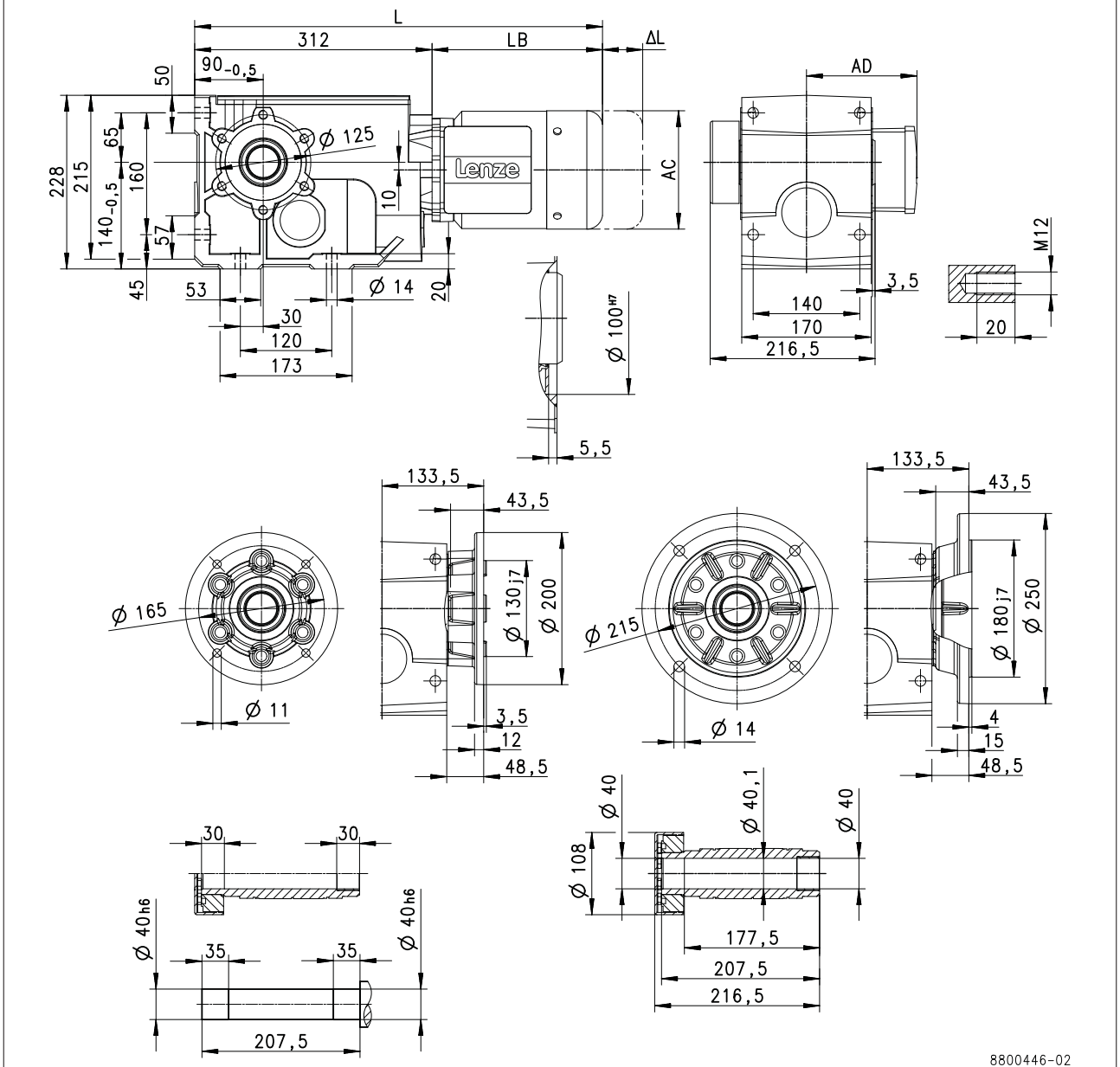


Product			MF□MA□□								
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions											
Total length	**L**	**[mm]**	495		516		538		598	647	
Motor length	**LB**	**[mm]**	183		204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170	
Motor diameter	**AC**	**[mm]**	123		139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166	

Dimensions, 4-pole motors

g500-B820

Dimensions hollow shaft with shrink disc
Gearbox design: SBR, SAR, SAK

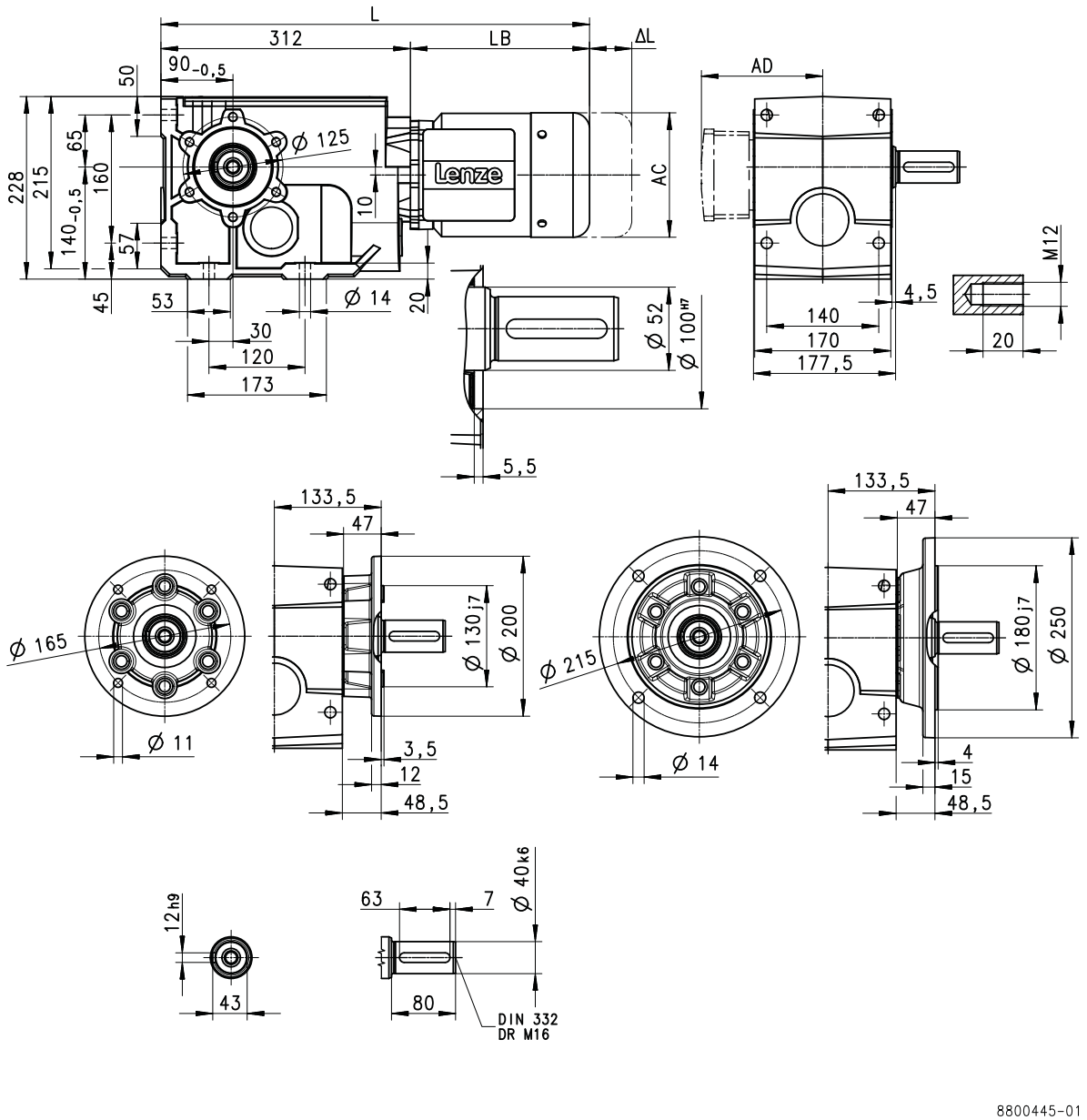


Product			MF□MA□□								
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions											
Total length	**L**	**[mm]**	495		516		538		598	647	
Motor length	**LB**	**[mm]**	183		204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170	
Motor diameter	**AC**	**[mm]**	123		139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166	

Dimensions, 4-pole motors

g500-B820

Dimensions with solid shaft
Gearbox design: VBR, VAR, VAK

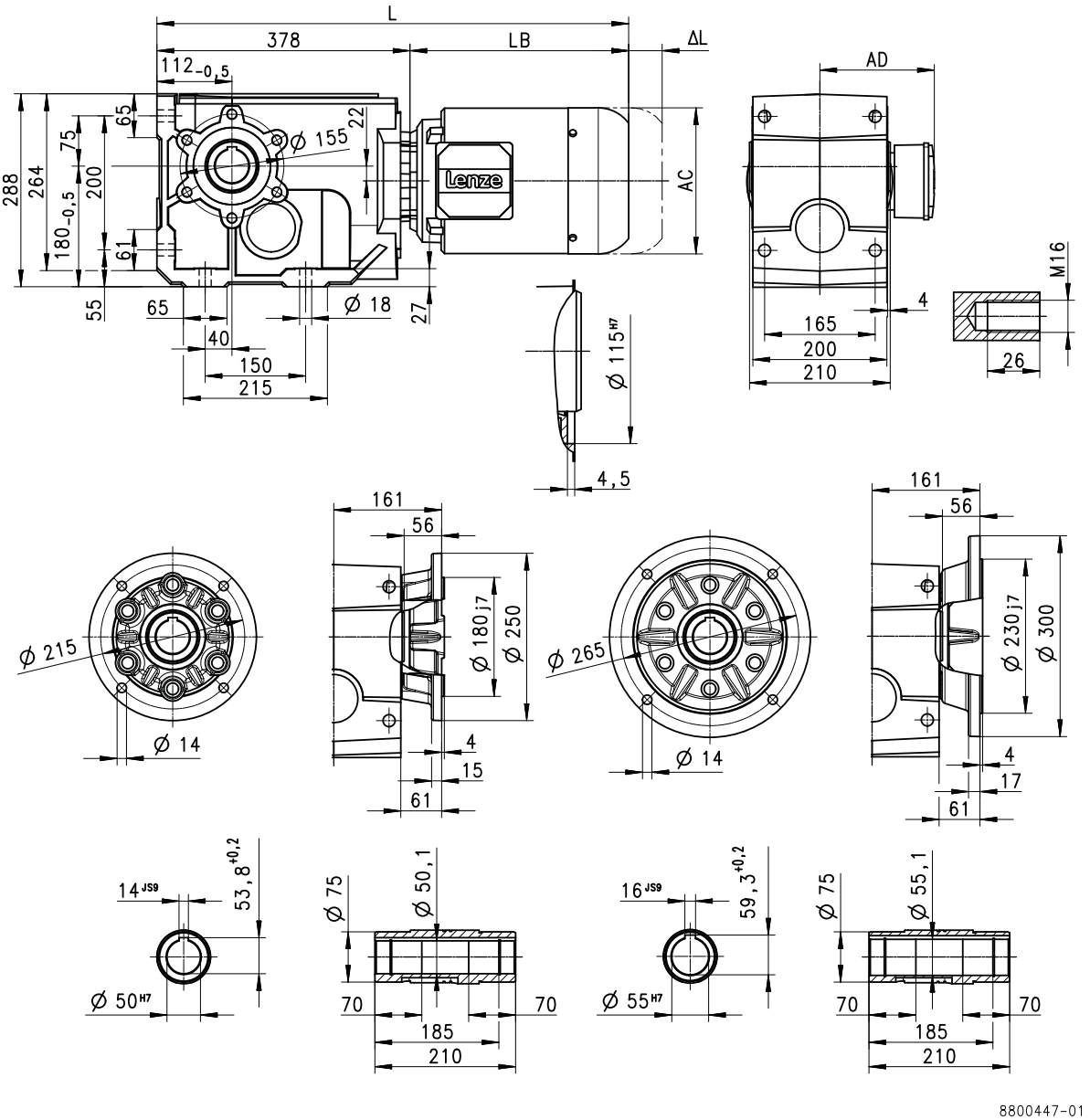


Product			MF□MA□□								
			063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions											
Total length	**L**	**[mm]**	495		516		538		598	647	
Motor length	**LB**	**[mm]**	183		204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	170	
Motor diameter	**AC**	**[mm]**	123		139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	166	

Dimensions, 4-pole motors

g500-B1500

Dimensions with hollow shaft
Gearbox design: HBR, HAR, HAK

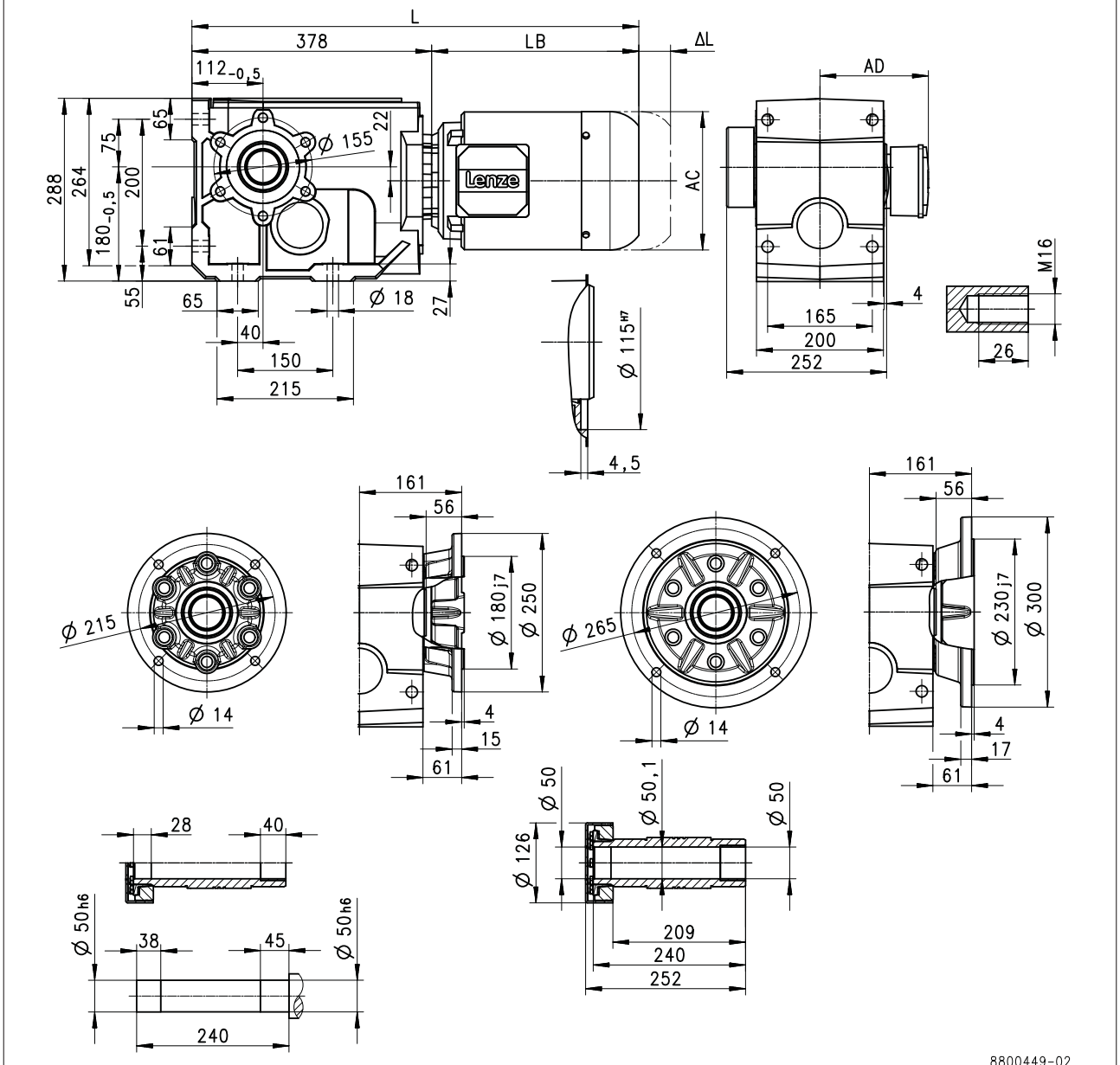


Product			MF□MA□□						
			071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions									
Total length	**L**	**[mm]**	582		604		664	713	
Motor length	**LB**	**[mm]**	204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	165		183		181	170	
Motor diameter	**AC**	**[mm]**	139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	109		150		157	166	

Dimensions, 4-pole motors

g500-B1500

Dimensions hollow shaft with shrink disc
Gearbox design: SBR, SAR, SAK

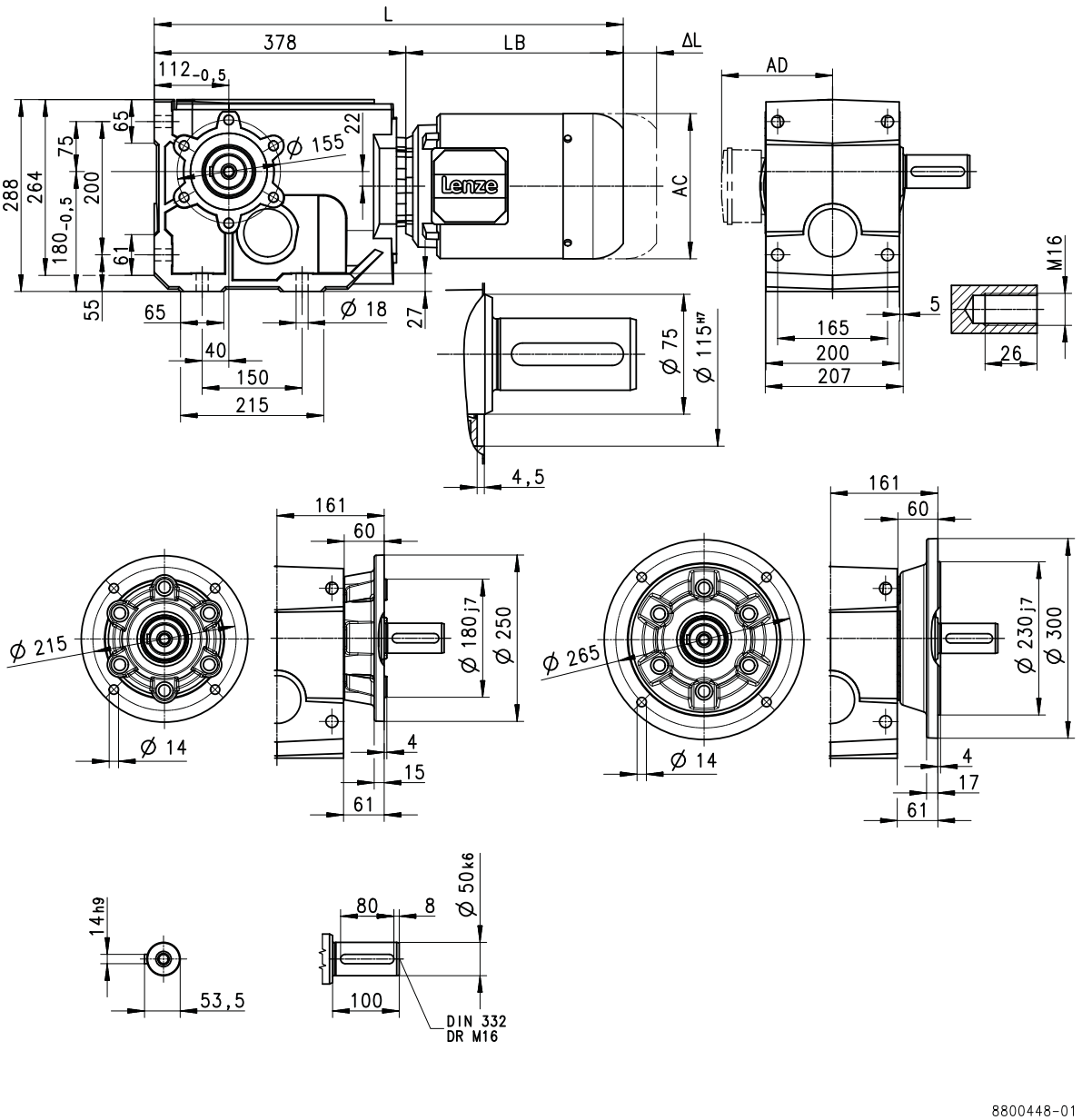


Product			MF□MA□□						
			071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions									
Total length	**L**	**[mm]**	582		604		664	713	
Motor length	**LB**	**[mm]**	204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	165		183		181	170	
Motor diameter	**AC**	**[mm]**	139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	109		150		157	166	

Dimensions, 4-pole motors

g500-B1500

Dimensions with solid shaft
Gearbox design: VBR, VAR, VAK

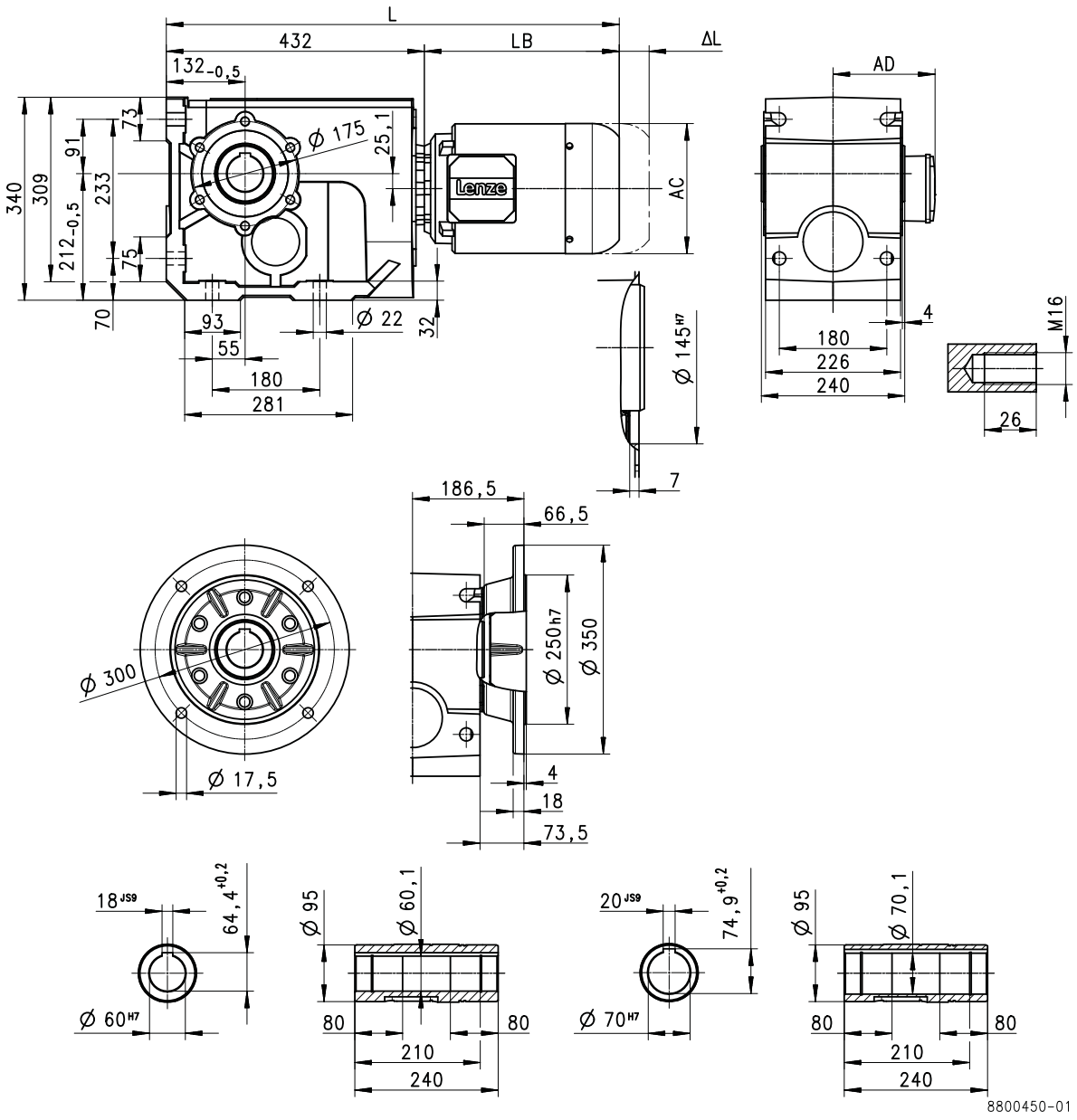


Product			MF□MA□□						
			071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions									
Total length	**L**	**[mm]**	582		604		664	713	
Motor length	**LB**	**[mm]**	204		226		286	335	
Length of motor options	**Δ L**	**[mm]**	165		183		181	170	
Motor diameter	**AC**	**[mm]**	139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	109		150		157	166	

Dimensions, 4-pole motors

g500-B2700

Dimensions with hollow shaft
Gearbox design: HBR, HAR, HAK

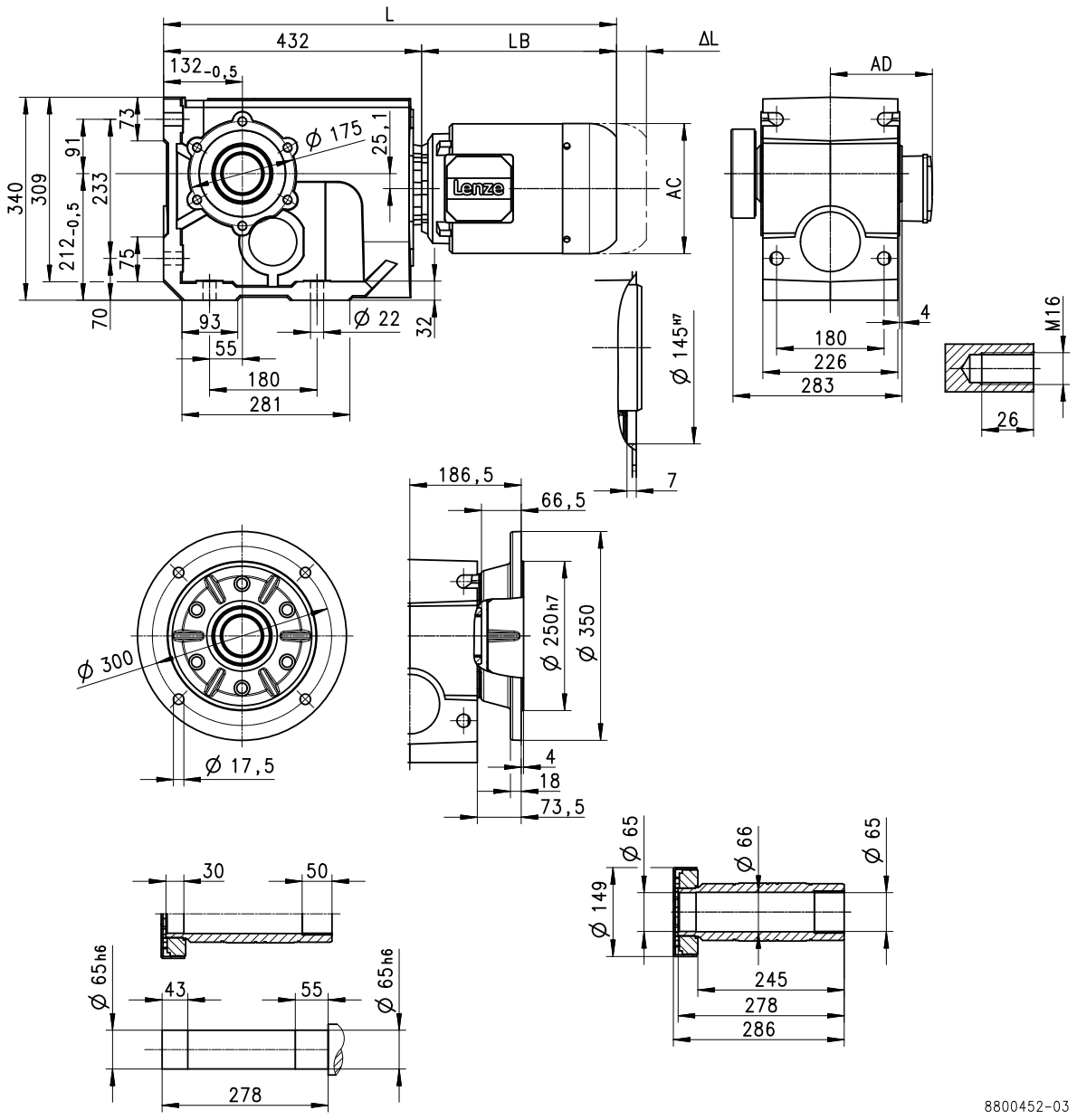


Product			MF□MA□□					
			080-32	080-42	090-32	100-12	100-32	112-22
Dimensions								
Total length	**L**	**[mm]**	658		718	767		768
Motor length	**LB**	**[mm]**	226		286	335		336
Length of motor options	**Δ L**	**[mm]**	183		181	170		183
Motor diameter	**AC**	**[mm]**	156		176	194		218
Distance motor/connection	**AD**	**[mm]**	150		157	166		176

Dimensions, 4-pole motors

g500-B2700

Dimensions hollow shaft with shrink disc
Gearbox design: SBR, SAR, SAK

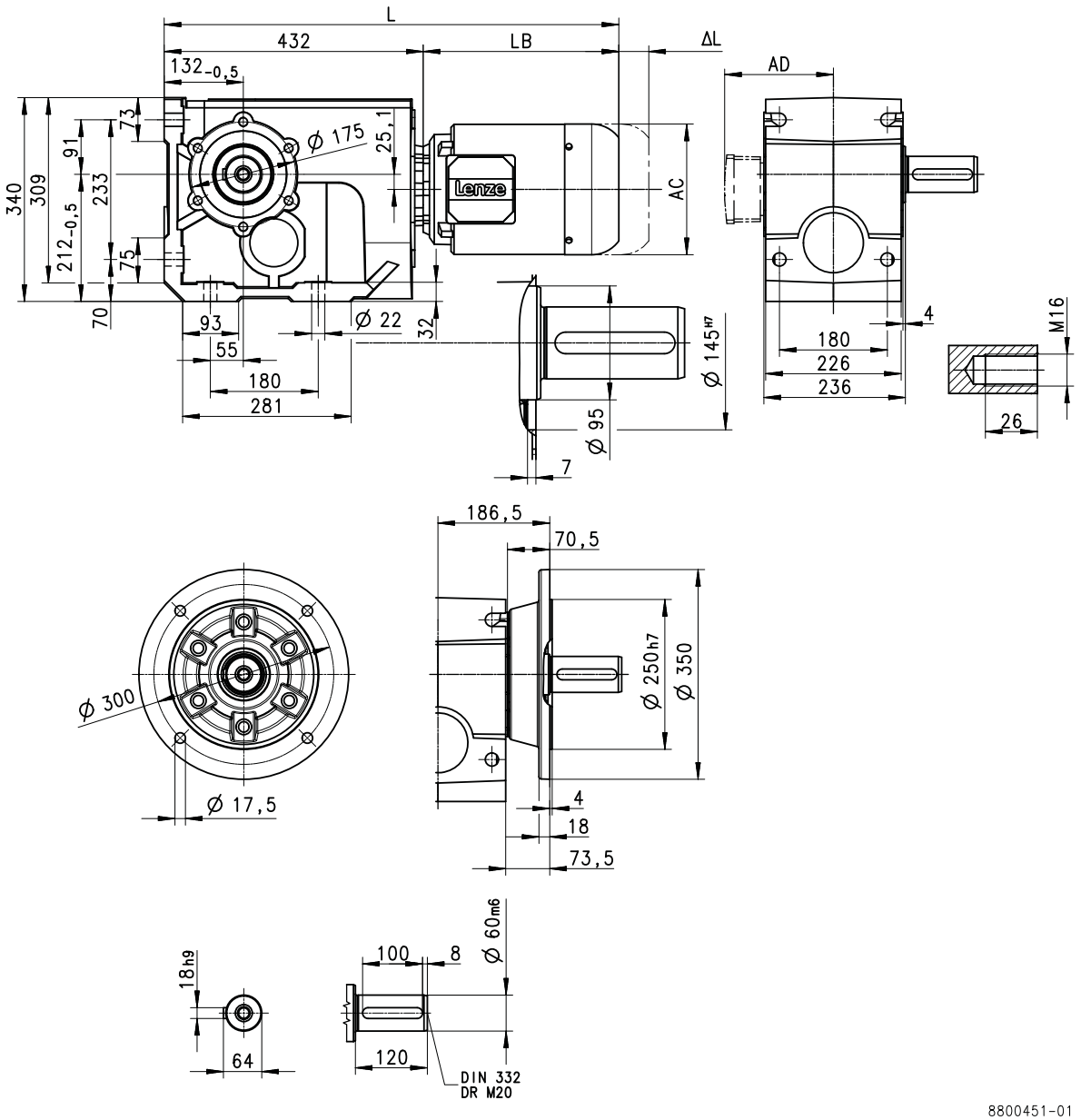


Product			MF□MA□□					
			080-32	080-42	090-32	100-12	100-32	112-22
Dimensions								
Total length	**L**	**[mm]**	658		718	767		768
Motor length	**LB**	**[mm]**	226		286	335		336
Length of motor options	**Δ L**	**[mm]**	183		181	170		183
Motor diameter	**AC**	**[mm]**	156		176	194		218
Distance motor/connection	**AD**	**[mm]**	150		157	166		176

Dimensions, 4-pole motors

g500-B2700

Dimensions with solid shaft
Gearbox design: VBR, VAR, VAK

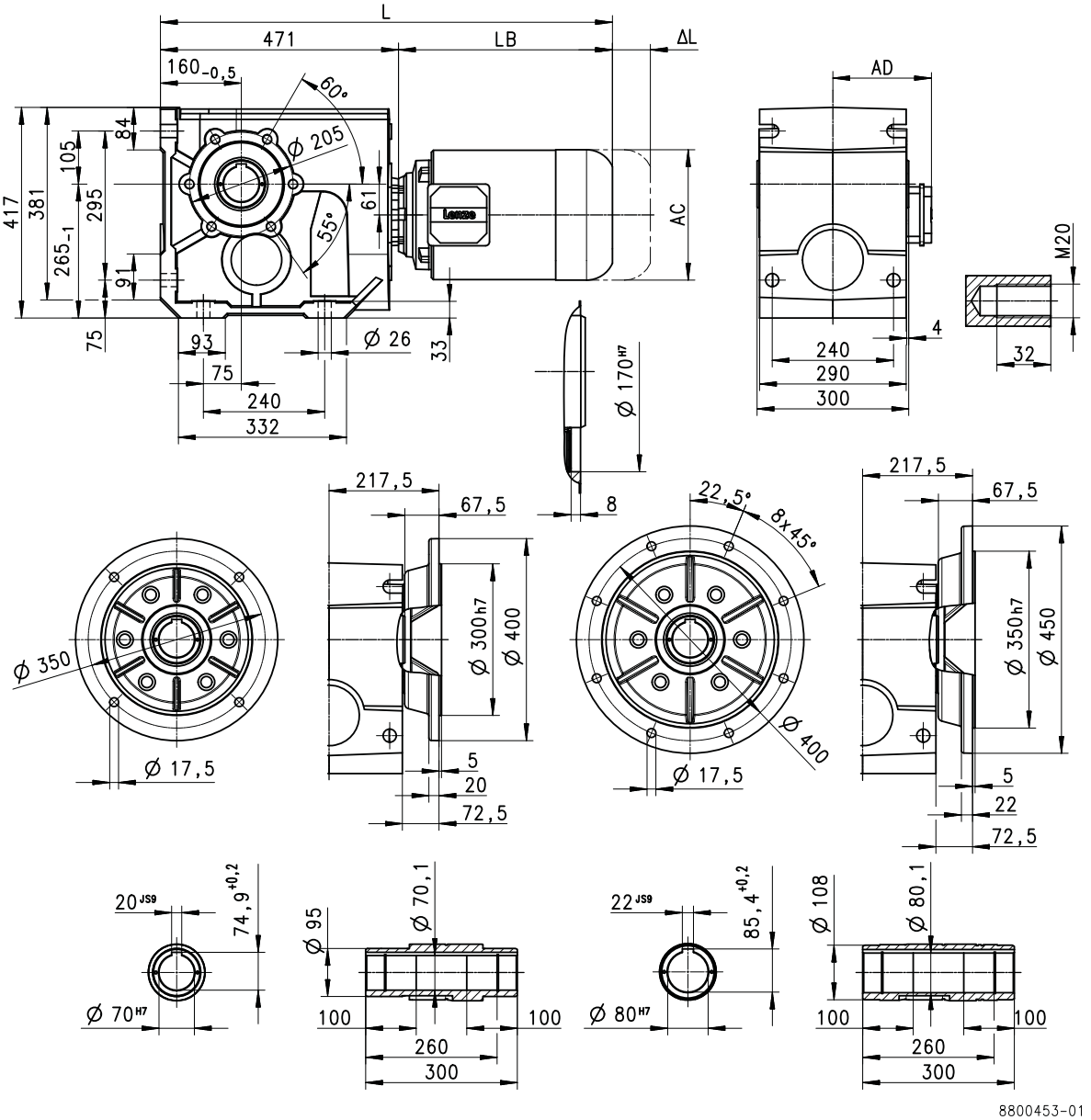


Product			MF□MA□□					
			080-32	080-42	090-32	100-12	100-32	112-22
Dimensions								
Total length	**L**	**[mm]**	658		718	767		768
Motor length	**LB**	**[mm]**	226		286	335		336
Length of motor options	**Δ L**	**[mm]**	183		181	170		183
Motor diameter	**AC**	**[mm]**	156		176	194		218
Distance motor/connection	**AD**	**[mm]**	150		157	166		176

Dimensions, 4-pole motors

g500-B4300

Dimensions with hollow shaft
Gearbox design: HBR, HAR, HAK

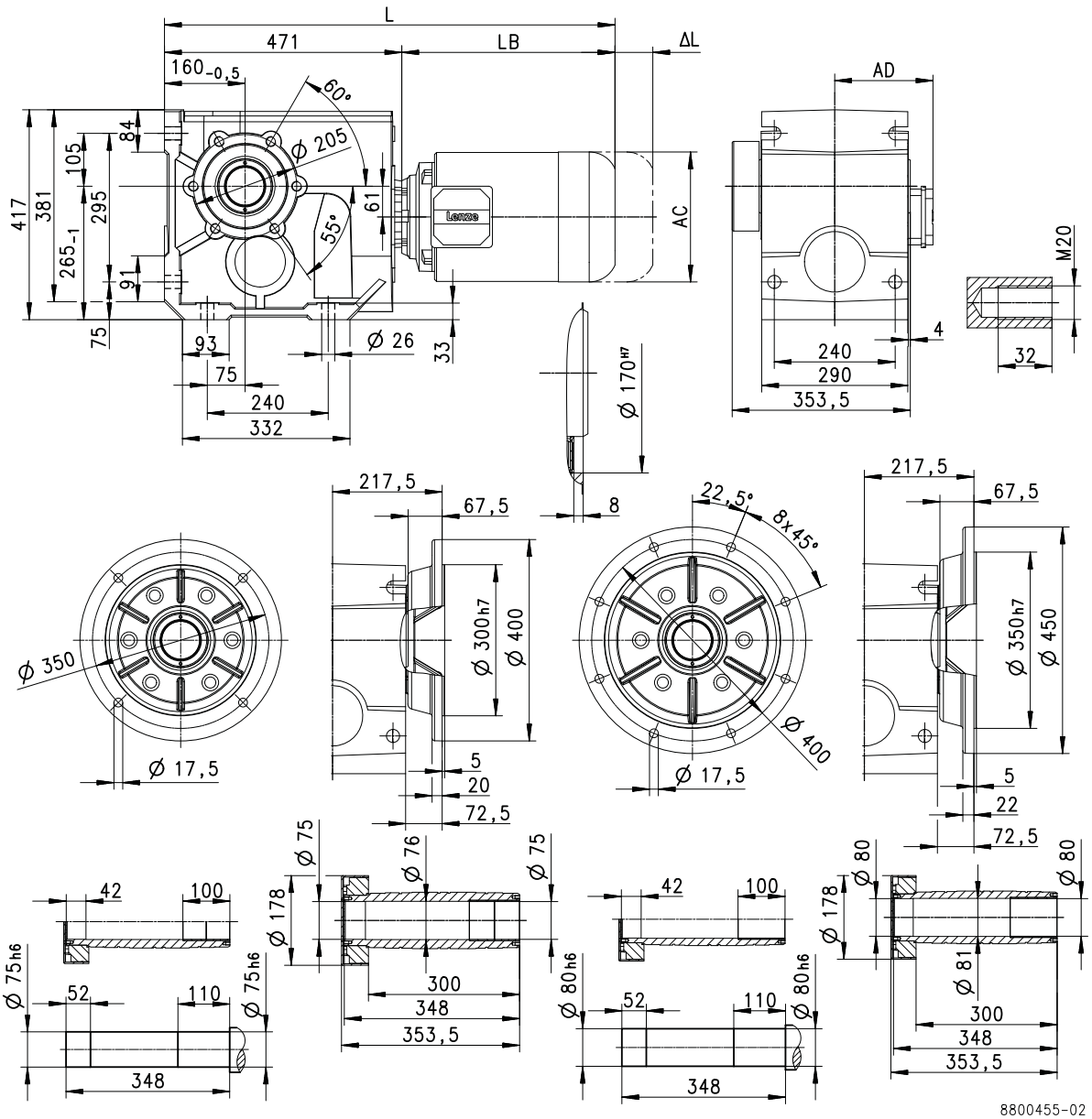


Product			MF□MA□□					
			080-32	080-42	090-32	100-12	100-32	112-22
Dimensions								
Total length	**L**	**[mm]**	697		757	806		807
Motor length	**LB**	**[mm]**	226		286	335		336
Length of motor options	**Δ L**	**[mm]**	183		181	170		183
Motor diameter	**AC**	**[mm]**	156		176	194		218
Distance motor/connection	**AD**	**[mm]**	150		157	166		176

Dimensions, 4-pole motors

g500-B4300

Dimensions hollow shaft with shrink disc
Gearbox design: SBR, SAR, SAK

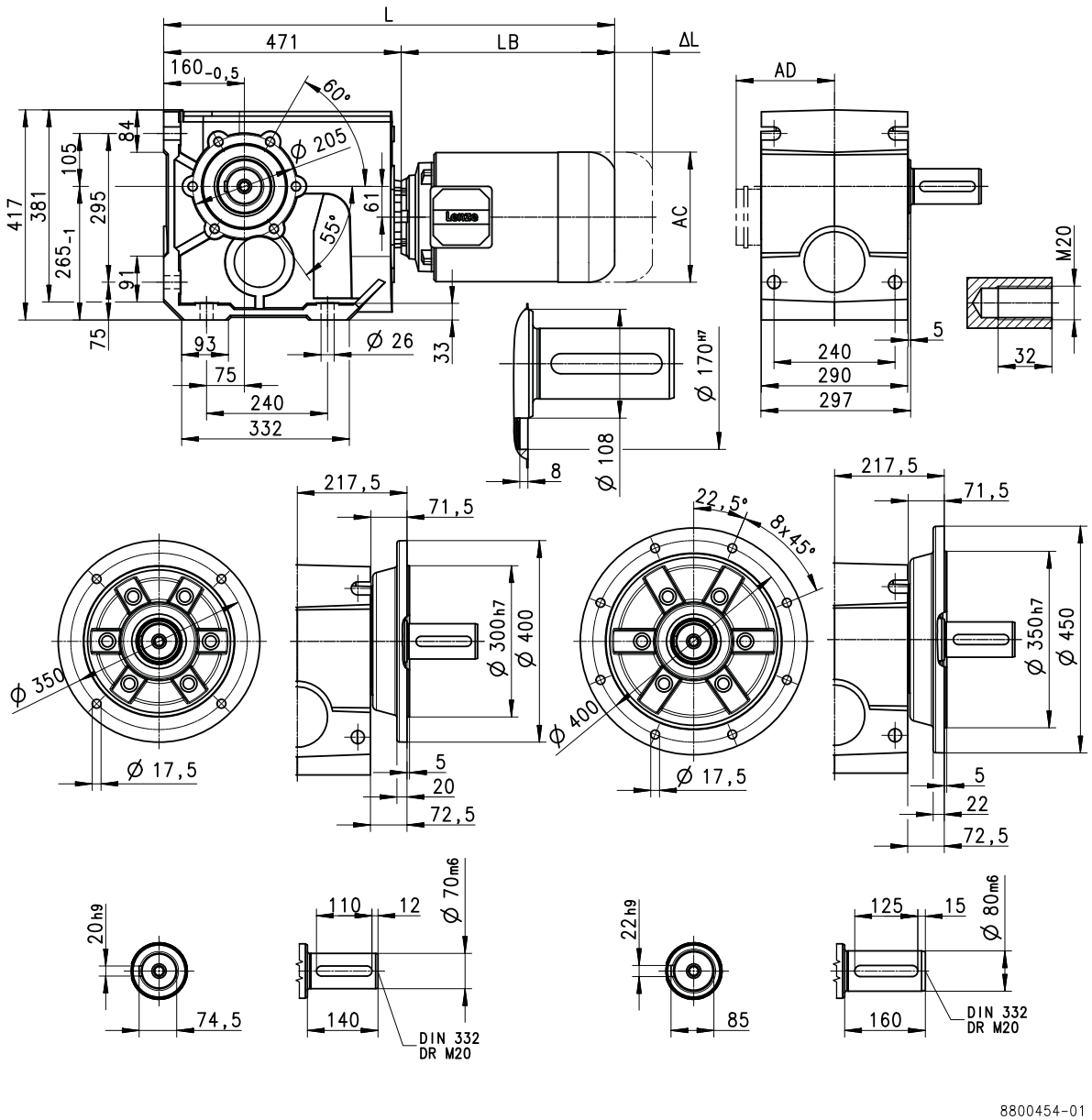


Product			MF□MA□□					
			080-32	080-42	090-32	100-12	100-32	112-22
Dimensions								
Total length	**L**	**[mm]**	697		757	806		807
Motor length	**LB**	**[mm]**	226		286	335		336
Length of motor options	**Δ L**	**[mm]**	183		181	170		183
Motor diameter	**AC**	**[mm]**	156		176	194		218
Distance motor/connection	**AD**	**[mm]**	150		157	166		176

Dimensions, 4-pole motors

g500-B4300

Dimensions with solid shaft
Gearbox design: VBR, VAR, VAK



Product			MF□MA□□					
			080-32	080-42	090-32	100-12	100-32	112-22
Dimensions								
Total length	**L**	**[mm]**	697		757	806		807
Motor length	**LB**	**[mm]**	226		286	335		336
Length of motor options	**Δ L**	**[mm]**	183		181	170		183
Motor diameter	**AC**	**[mm]**	156		176	194		218
Distance motor/connection	**AD**	**[mm]**	150		157	166		176

Additional length of the built-on accessories

Dimensions, self-ventilated (4-pole)

Product			MF□MA□□					
			063-32 063-42	071-32 071-42	080-32 080-42	090-32	100-12 100-32	112-22
Brake								
	Δ L	[mm]	40.0	52.0	73.0	68.0	76.0	90.0
Feedback								
	Δ L	[mm]	56.0	51.0	111	87.0	81.0	80.0
Brake + Feedback								
	Δ L	[mm]	103	96.0	111	105	101	120

Dimensions, forced ventilated (4-pole)

Product			MF□MA□□					
			063-32 063-42	071-32 071-42	080-32 080-42	090-32	100-12 100-32	112-22
Blower								
	Δ L	[mm]	128				109	102
Brake								
	Δ L	[mm]	170	165	183	181	170	183
Feedback								
	Δ L	[mm]	128				109	183
Brake + Feedback								
	Δ L	[mm]	170	165	183	181	170	183

Weights, 4-pole motors

2-stage gearboxes

				MF□MA□□				
				063-32 063-42	071-32 071-42	080-32	080-42	090-32
g500	-B45	m	[kg]	7.6				
	-B110	m	[kg]	9.2	11	16		
	-B240	m	[kg]	14	16	20		27

3-stage gearboxes

				MF□MA□□							
				063-32 063-42	071-32	071-42	080-32 080-42	090-32	100-12	100-32	112-22
g500	-B240	m	[kg]	14	16						
	-B450	m	[kg]	17	19		23	30	39		
	-B600	m	[kg]	35	37		41	48	57		
	-B820	m	[kg]	40	42		46	53	62		
	-B1500	m	[kg]		72		77	84	92		
	-B2700	m	[kg]				118	125	133		145
	-B4300	m	[kg]				180	187	195		207

► Weights with oil capacity for mounting position A, all given as approximate values.
The weights refer to the basic version, observe additional weights!

Additional weights for gearboxes

Product			g500-B45	g500-B110	g500-B240	g500-B450
Mass						
Solid shaft	m	[kg]	0.4	0.5	1.4	1.0
Shrink disc	m	[kg]	0.2	0.2	0.7	0.6
Flange	m	[kg]	0.3	0.4	0.7	0.9

Product			g500-B600	g500-B820	g500-B1500	g500-B2700	g500-B4300
Mass							
Solid shaft	m	[kg]	1.5	1.9	3.7	6.0	15.5
Shrink disc	m	[kg]	0.6	1.2	1.7	2.3	4.3
Flange	m	[kg]	6.1	6.1	11.5	15.0	29.0

Additional weights for motors

4-pole motors

Product			MF□MA□□					
			063-32 063-42	071-32 071-42	080-32 080-42	090-32	100-12 100-32	112-22
Brake			06	06 08	08 10		10 12	12 14
	m	[kg]	0.9	0.9 1.5	1.5 2.6		2.6 4.2	4.2 5.8
Blower								
	m	[kg]	2.0	2.1	2.3	2.7	3.0	3.1

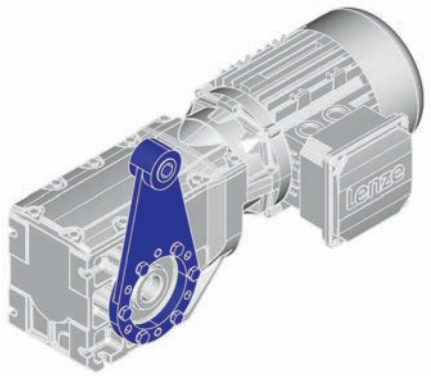
Overview

Torque plate

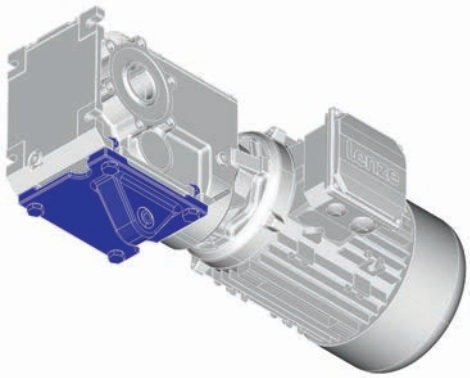
The torque is usually supported via the foot or the flange.
Another simple option are the attachable torque plates. Here, the torque is supported only via one point and is, among other things, suitable for shaft-mounted gearboxes. The supplied rubber buffers provide for a low-tension installation and absorb slight shocks.
The torque plates are available in two versions, for being installed at the existing threaded pitch circle or for the foot at the gearbox.

In addition, torque support for the g500-B45 gearbox can be effected via the holding fixture of the housing, which is integrated on both sides, by means of a rubber buffer.
The rubber buffers can be ordered optionally.

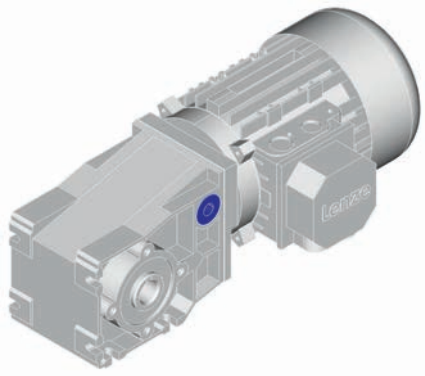
Torque plate on threaded pitch circle



Torque plate at housing foot



Rubber buffer for torque plate



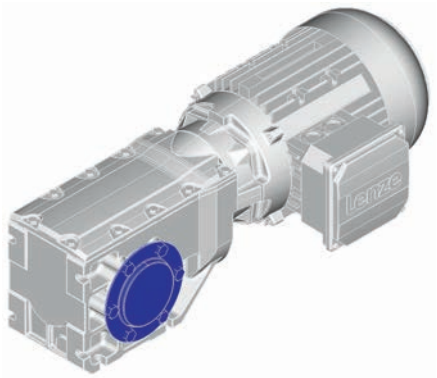
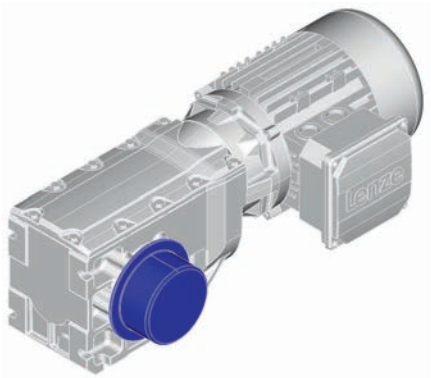
Overview

Shaft cover

The hoseproof hollow shaft cover protects the hollow shaft from objects falling in. It is sealed by a flat gasket between cover and housing. Thus, the hollow shaft is protected from dust and water jets.

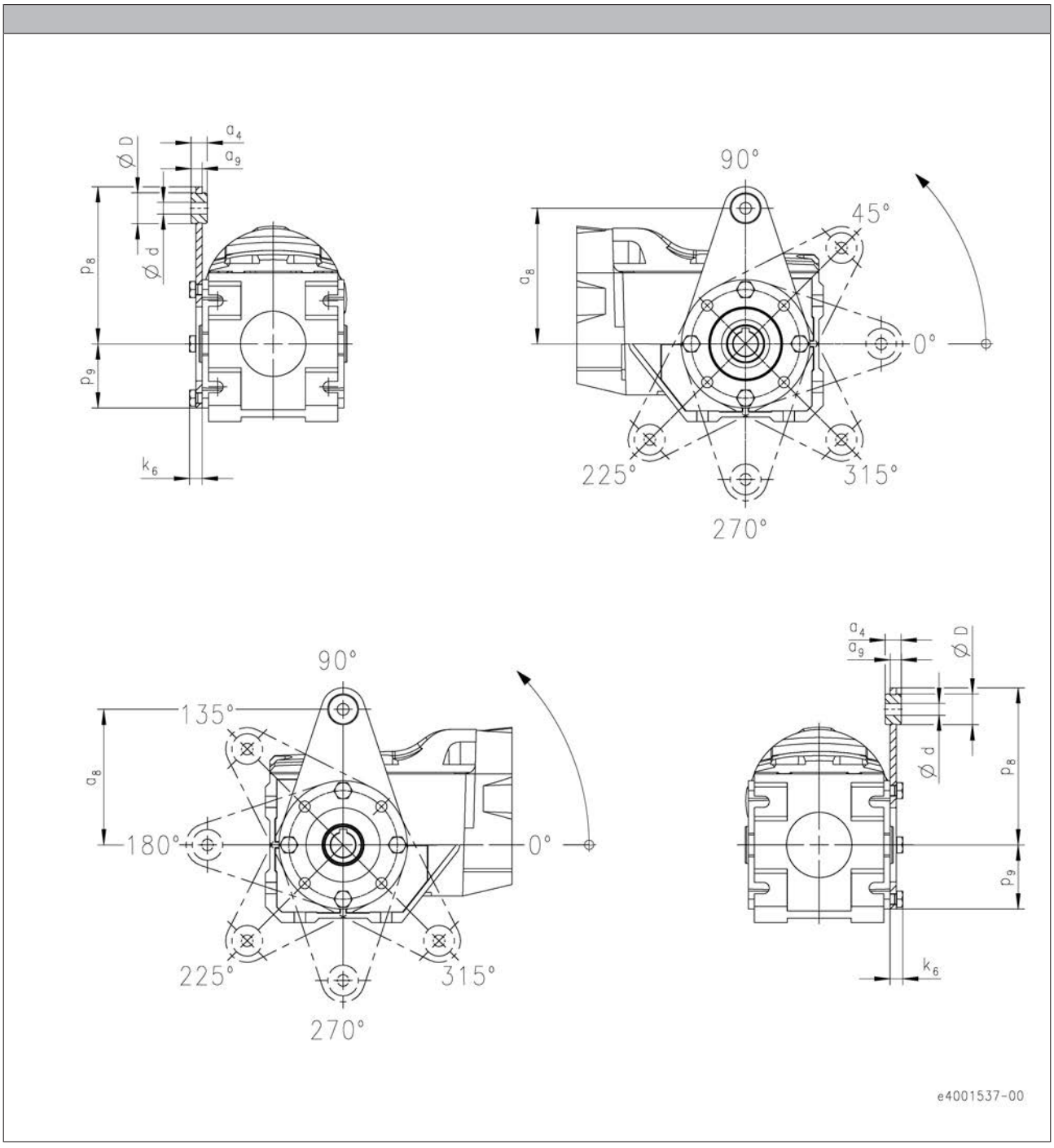
The cover is loosely enclosed and can be mounted on both sides of the hollow shaft bore.

The optional shrink disc cover is provided for the shrink disc to be protected from contact.

Hoseproof hollow shaft cover	Shrink disc cover
	

Torque plate

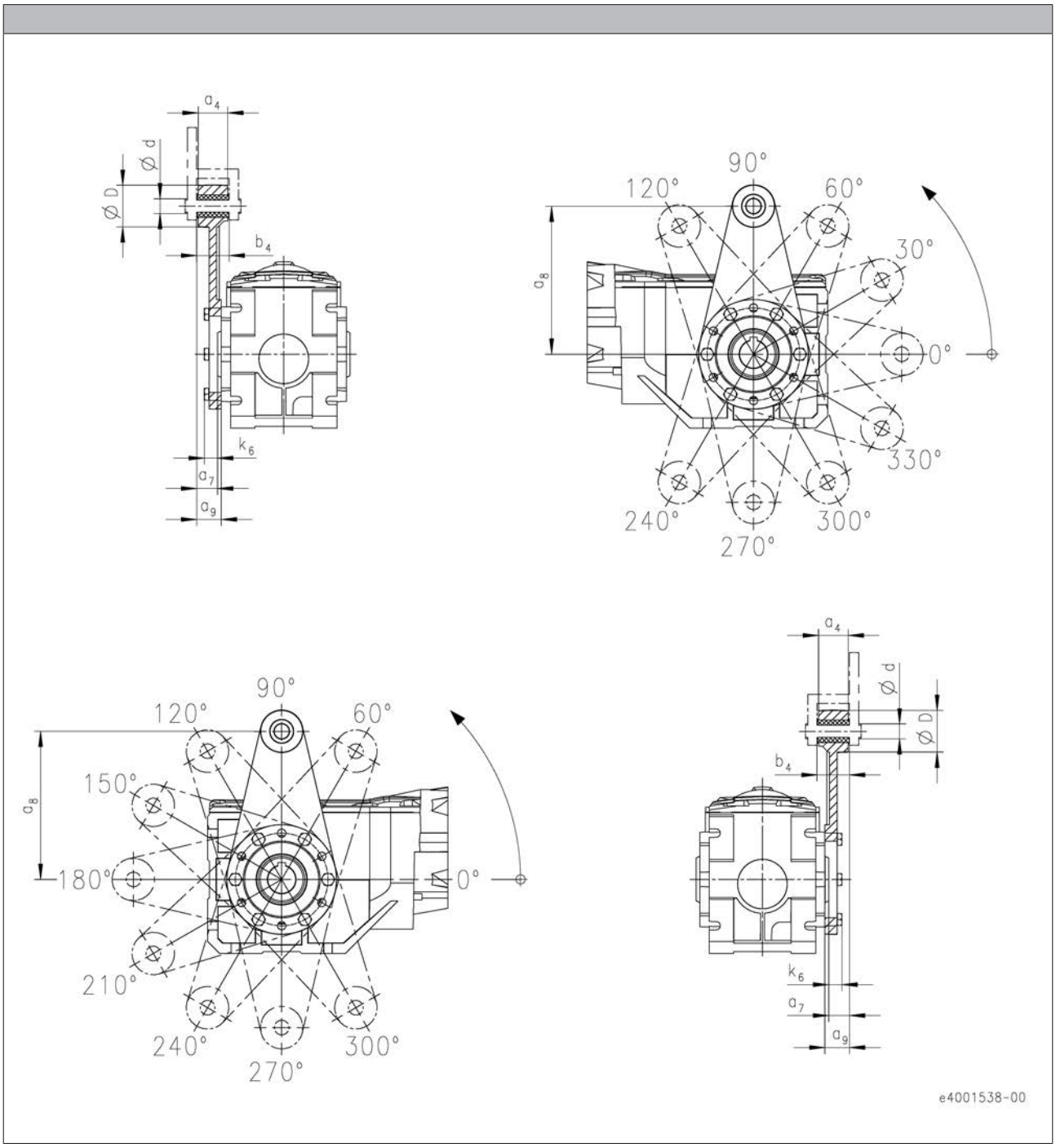
Torque plate on threaded pitch circle



Product	Dimensions								Mass
	a_4	a_8	a_9	d	D	p_8	p_9	k_6	m
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
g500-B45	12.0	100	8.0	8.0	20.0	115	42.0	9.0	0.3
g500-B110	13.0	110	9.0	10.0	25.0	128	54.0	11.0	0.5

Torque plate

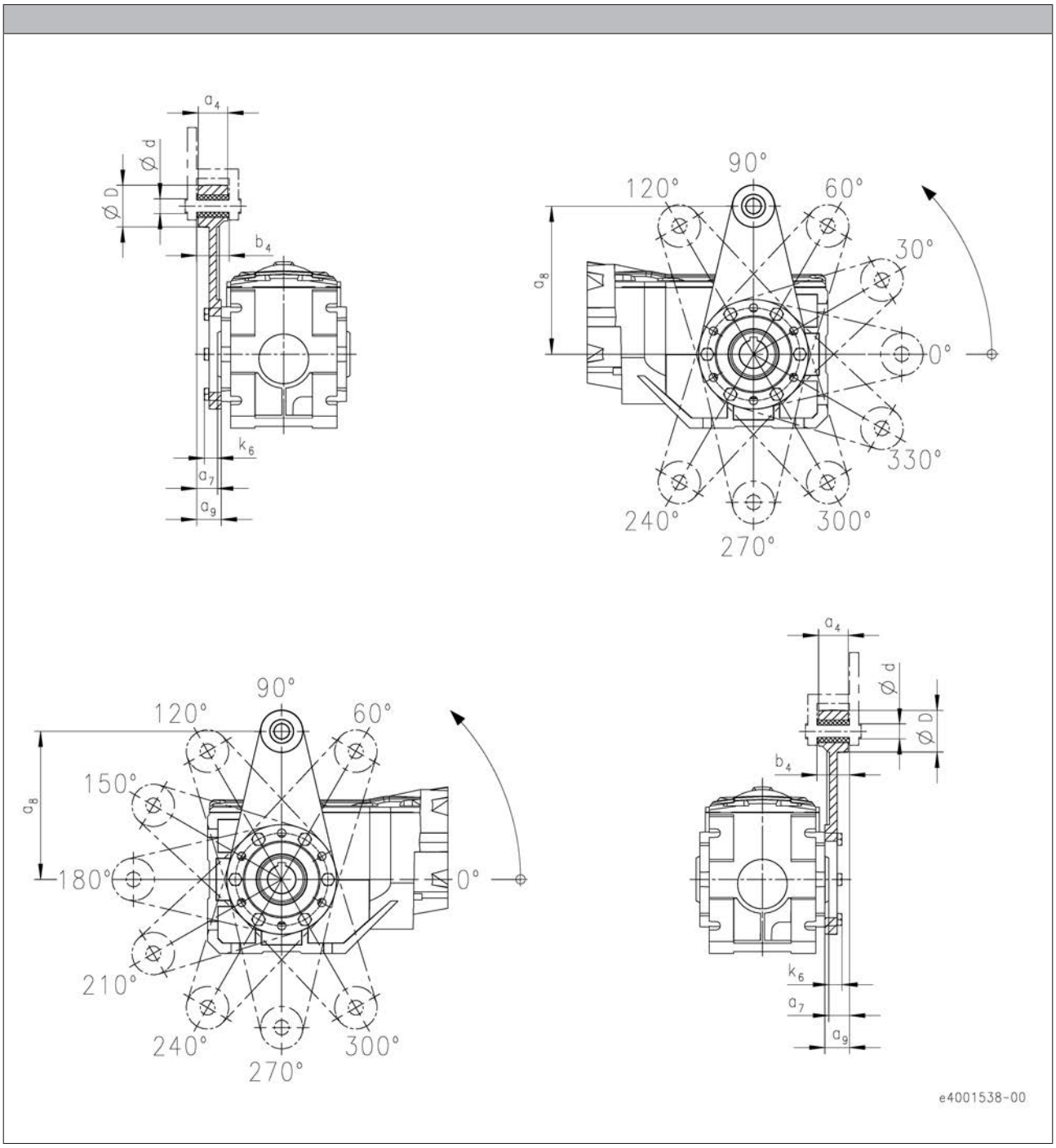
Torque plate on threaded pitch circle



Product	Dimensions								Mass
	a_4	a_7	a_8	a_9	b_4	d	D	k_6	m
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
g500-B240	34.0	23.5	160	27.5	38.5	16.0	45.0	15.0	1.3
g500-B450	40.0	29.0	200	32.0	44.5	20.0	50.0	18.0	2.5
g500-B600	38.0	26.5	200	31.5	40.0	20.0	50.0	19.0	2.5

Torque plate

Torque plate on threaded pitch circle

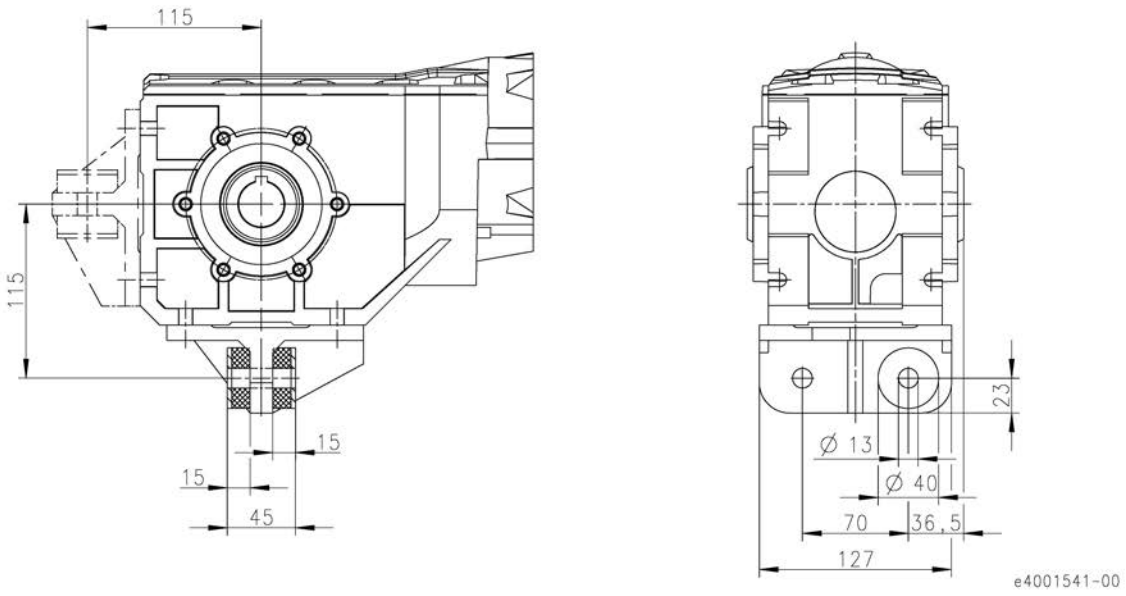


Product	Dimensions								Mass
	a_4	a_7	a_8	a_9	b_4	d	D	k_6	m
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
g500-B820	38.0	28.0	200	31.5	40.0	20.0	50.0	20.5	2.5
g500-B1500	44.0	32.0	250	36.0	46.0	25.0	65.0	24.0	4.5

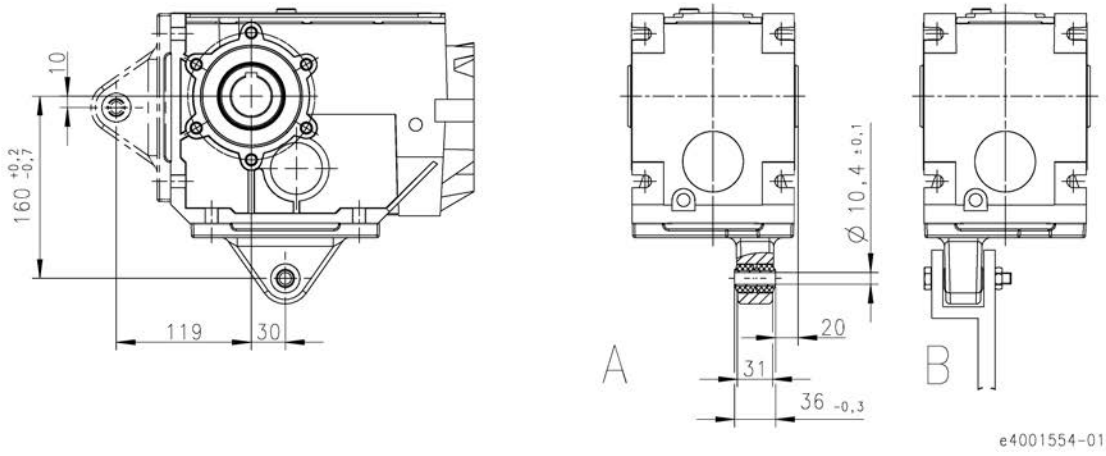
Torque plate

Torque plate at housing foot

g500-B240



g500-B450

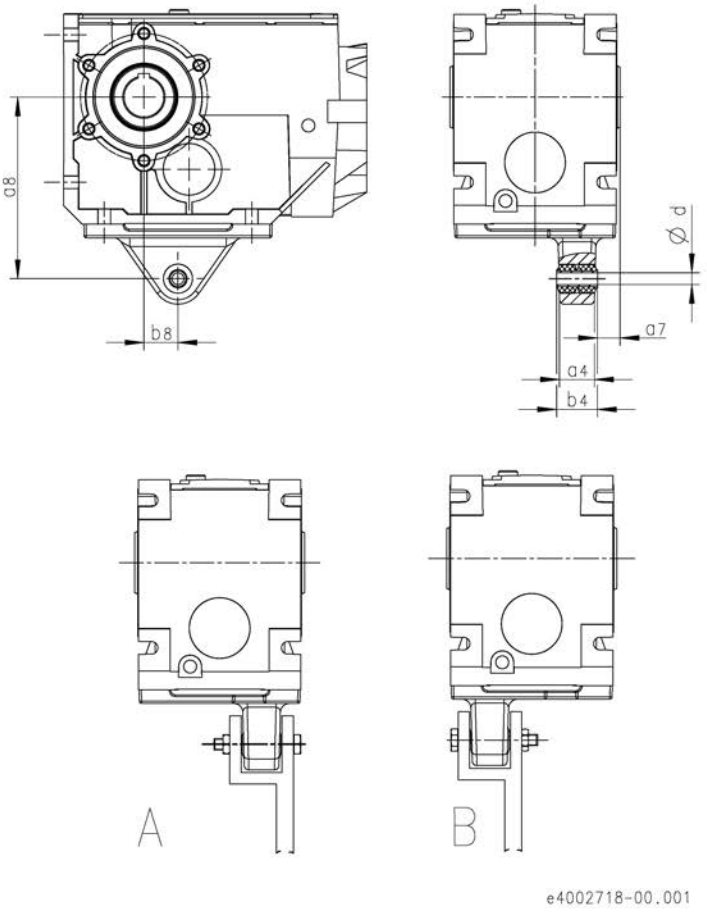


Product	Mass
	m
	[kg]
g500-B240	2.4
g500-B450	1.1

6.5

Torque plate

Torque plate at housing foot

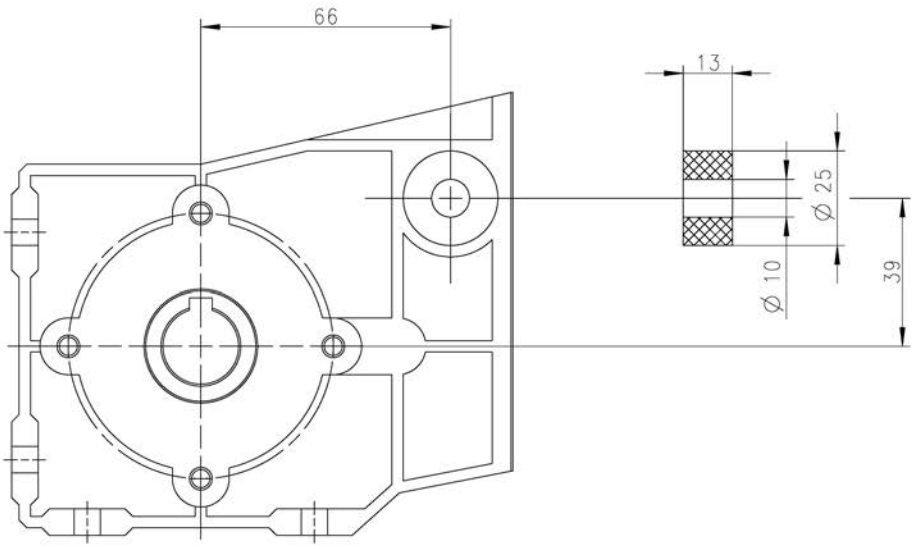


Product	Dimensions						Mass
	d	a_8	b_8	a_4	b_4	a_7	m
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
g500-B600	16.4	192	40.0	55.0	60.0	18.0	2.8
g500-B820	16.4	200	45.0	55.0	60.0	25.0	3.0
g500-B1500	16.4	250	52.5	55.0	60.0	25.0	4.3
g500-B2700	25.0	300	60.0	72.0	80.0	30.0	10.0
g500-B4300	25.0	350	70.0	92.0	100	40.0	13.0
g500-B8000	25.0	450	74.0	50.0	56.0	77.0	15.0
g500-B13000	40.0	550	60.0	80.0	88.0	7.00	25.0
g500-B20000	40.0	700	50.0	80.0	88.0	1.25	64.0

Torque plate

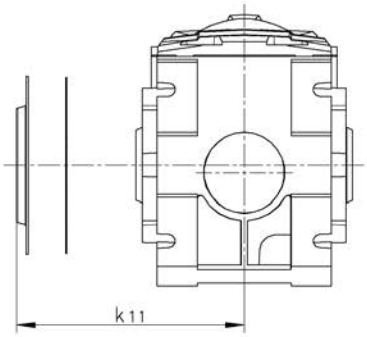
Rubber buffer for torque plate

g500-B45



Shaft cover

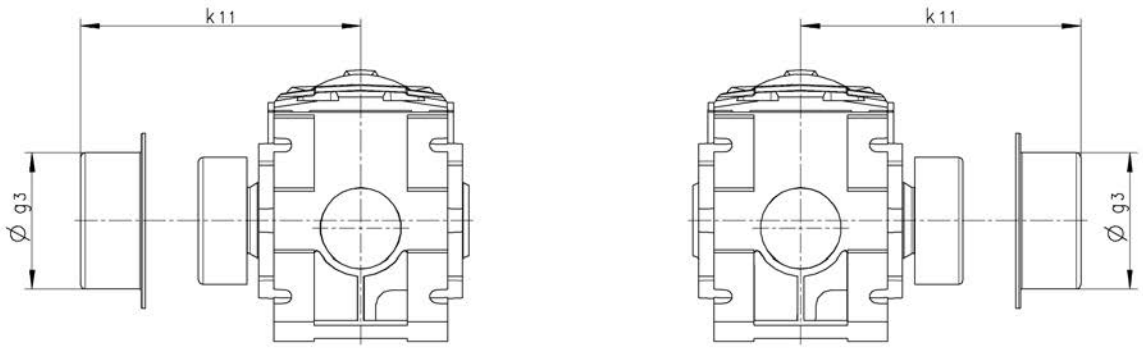
Hoseproof hollow shaft cover



Product	Dimensions	Mass
	k_{11}	m
	[mm]	[kg]
g500-B45	55.0	0.1
g500-B110	65.0	0.1
g500-B240	75.0	0.1
g500-B450	79.5	0.2
g500-B600	90.0	0.3
g500-B820	97.0	0.3
g500-B1500	113	0.6
g500-B2700	131	0.6
g500-B4300	161	0.8
g500-B8000	250	0.5
g500-B13000	313	0.6
g500-B20000	372	0.9

Shaft cover

Shrink disc cover



Product	Dimensions		Mass
	g_3	k_{11}	m
	[mm]	[mm]	[kg]
g500-B45	65.0	87.5	0.1
g500-B110	79.0	97.5	0.1
g500-B240	90.0	111	0.1
g500-B450	90.0	108	0.1
g500-B600	110	124	0.1
g500-B820	110	131	0.1
g500-B1500	128	148	0.2
g500-B2700	155	171	0.3
g500-B4300	188	205	0.4
g500-B8000	218	250	0.5
g500-B13000	258	313	0.6
g500-B20000	310	372	0.9

Gearbox code

Example	G	50	A	B	045	M	H	B	R	2	C	1A

Meaning	Variant												
Product family		G	50										
Generation				A									
				B									
Gearbox type	Bevel gearbox				B								
Output torque	45 Nm					045							
	110 Nm					111							
	240 Nm					124							
	450 Nm					145							
	600 Nm					160							
	820 Nm					182							
	1500 Nm					215							
	2700 Nm					227							
	4300 Nm					243							
	8000 Nm					280							
	13000 Nm					313							
	20000 Nm					320							
Type of construction	Geared motor						M						
	Gearboxes						N						
Shaft type	Solid shaft with feather key							V					
	Hollow shaft with keyway							H					
	Hollow shaft with shrink disc							S					
Housing type	Foot mounting + centering								A				
	Foot mounting								B				
	Centering								C				
Flange mounting	Without flange									R			
	Flange with through holes									k			
Number of stages	2-stage										2		
	3-stage										3		
Motor mounting	Integrated											C	
	IEC motor											N	
	NEMA motor											A	
	Servo motor											S	
Drive size													1A ... □H

Motor code

Example	M	F	E	MA	XX	063	-	4	2	C1	C

Meaning	Variant	Motor code
Product family		M
Efficiency class	Better than IE2	F
Cooling	Integral fan	E
	Blower	F
Internal key		MA
Built-on accessories	Without built-on accessories	XX
	Brake	BR
	Brake + resolver	BS
	Brake + incremental encoder	BI
	Brake + SinCos absolute value encoder	BA
	Resolver	RS
	Incremental encoder	IG
	SinCos absolute value encoder	AG
Size		063
		071
		080
		090
		100
		112
Overall length		-
		1
		2
		3
		4
Number of pole pairs	4-pole motors	2
Internal key		C1
Approval	CE	C
	cURus	U
	CCC	3

Motor data

Motor data

Contents

Rated data for 120 Hz

4-pole motors

Product						
	P_N	n_N	M_N	M_{max}	J [1]	m [1]
	[kW]	[r/min]	[Nm]	[Nm]	[kgcm²]	[kg]
MF□MA□□063-32	0.55	3440	1.53	6.00	3.70	4.40
MF□MA□□063-42	0.75	3400	2.11	8.00	3.70	4.40
MF□MA□□071-32	1.10	3490	3.01	12.0	12.8	6.40
MF□MA□□071-42	1.50	3450	4.15	16.0	12.8	6.40
MF□MA□□080-32	2.20	3500	6.00	24.0	28.0	11.0
MF□MA□□080-42	3.00	3480	8.20	32.0	28.0	11.0
MF□MA□□090-32	4.00	3480	10.9	44.0	32.0	18.0
MF□MA□□100-12	5.50	3525	14.9	60.0	61.0	26.5
MF□MA□□100-32	7.50	3515	20.3	80.0	61.0	26.5
MF□MA□□112-22	11.0	3530	29.7	120	107	38.0

Product							
	$U_{N,\Delta}$	$I_{N,\Delta}$	$U_{N,Y}$	$I_{N,Y}$	cos ϕ	$\eta_{75\,\%}$	$\eta_{100\,\%}$
	± 10 %		± 10 %				
	[V]	[A]	[V]	[A]		[%]	[%]
MF□MA□□063-32	200	3.20	345	1.80	0.68	75.0	75.0
MF□MA□□063-42	210	4.00	370	2.30	0.69	79.6	79.6
MF□MA□□071-32	200	5.50	345	3.20	0.77	81.4	81.4
MF□MA□□071-42	205	6.80	360	3.90	0.80	82.8	82.8
MF□MA□□080-32	200	9.10	345	5.30	0.86	84.3	84.3
MF□MA□□080-42	210	11.4	370	6.60	0.86	85.5	85.5
MF□MA□□090-32			370	8.50	0.85	87.0	86.6
MF□MA□□100-12			340	12.9	0.81	87.9	87.7
MF□MA□□100-32			375	15.9	0.81	88.9	88.7
MF□MA□□112-22			370	23.5	0.78	89.8	89.8

[1] Without accessories

Motor – inverter assignment

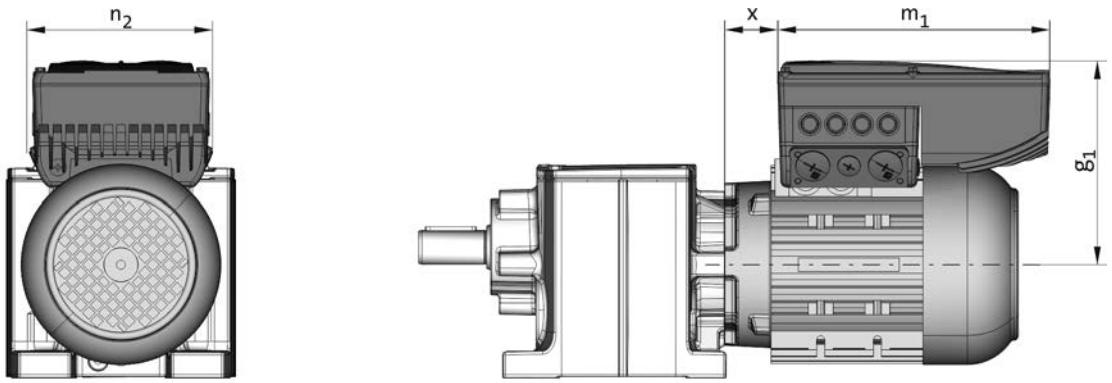
Rated frequency 120 Hz

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

Rated power	Product	Product key	
		Inverter	
P_N			
[kW]			
0.55	MF□MA□□063-32	E84DVB□5514S□□□2□	E84AV□□□5514□□□
0.75	MF□MA□□063-42	E84DVB□7514S□□□2□	E84AV□□□7514□□□
1.10	MF□MA□□071-32	E84DVB□1124S□□□2□	E84AV□□□1124□□□
1.50	MF□MA□□071-42	E84DVB□1524S□□□2□	E84AV□□□1524□□□
2.20	MF□MA□□080-32	E84DVB□2224S□□□2□	E84AV□□□2224□□□
3.00	MF□MA□□080-42	E84DVB□3024S□□□2□	E84AV□□□3024□□□
4.00	MF□MA□□090-32	E84DVB□4024S□□□2□	E84AV□□□4024□□□
5.50	MF□MA□□100-12	E84DVB□5524S□□□2□	E84AV□□□5524□□□
7.50	MF□MA□□100-32	E84DVB□7524S□□□2□	E84AV□□□7524□□□
11.0	MF□MA□□112-22		E84AV□□□1134□□□

Dimensions, 8400 motec inverter

Rated frequency 120 Hz



Product	Product key	Dimensions			
		$g_{1,\ 120Hz}$	$m_{1,\ 120Hz}$	$n_{2,\ 120Hz}$	x_{120Hz}
		[mm]	[mm]	[mm]	[mm]
MF□MA□□063-32	E84DVB□5514S□□□2□	154	241	161	15
MF□MA□□063-42	E84DVB□7514S□□□2□				
MF□MA□□071-32	E84DVB□1124S□□□2□	163			17
MF□MA□□071-42	E84DVB□1524S□□□2□				
MF□MA□□080-32	E84DVB□2224S□□□2□	201	260	176	26
MF□MA□□080-42	E84DVB□3024S□□□2□				
MF□MA□□090-32	E84DVB□4024S□□□2□	261	325	195	27
MF□MA□□100-12	E84DVB□5524S□□□2□	272			28
MF□MA□□100-32	E84DVB□7524S□□□2□				

Motor connection

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

The standard connection is implemented via a terminal box. Furthermore ICN and HAN connectors are provided to quickly carry out commissioning or maintenance operations.

Overview of the connection options

Product	MF□MA□□	MF□MA□□	MF□MA□□	MF□MA□□	MF□MA□□
	063-32 063-42	071-32 071-42	080-32 080-42	090-32	100-12 100-32
Power connection/brake connection					
Terminal box	●	●	●	●	●
ICN connector M23	●	●	●	●	●
HAN 10E connector	●	●	●	●	●
HAN modular connector	●	●	●	●	●
Feedback connection					
Terminal box	●	●	●	●	●
ICN connector M23	●	●	●	●	●
ICN connector M12 [1)]	●	●	●	●	●
Blower connection					
Terminal box	●	●	●	●	●
ICN connector M17	●	●	●	●	●
Temperature sensor connection					
Terminal box	●	●	●	●	●
ICN connector M23 [2)]	●	●	●	●	●
HAN 10E connector	●	●	●	●	●
HAN modular connector	●	●	●	●	●

[1)] Connection for IG128-24V-H incremental encoder
[2)] TCO or PTC connected in the power connection and PT1000 connected in the feedback connection.

Motor connection

Assignment: motor terminal box - built-on accessories

► Depending on the motor version, terminal boxes of different sizes (KK1 ... KK3) are used.

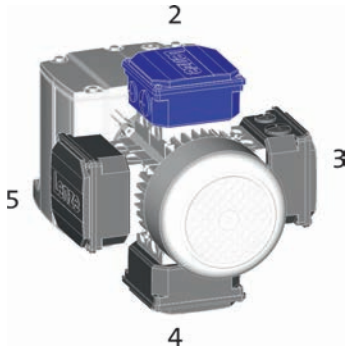
Product	MF□MA□□	MF□MA□□	MF□MA□□	MF□MA□□	MF□MA□□	MF□MA□□
	063-32 063-42	071-32 071-42	080-32 080-42	090-32	100-12 100-32	112-22
Built-on accessories with 1 thermal sensor						
Without	KK1 KK1 + ICN HAN 10 E HAN modular	KK1 KK1 + ICN HAN 10 E HAN modular	KK1 KK1 + ICN HAN 10 E HAN modular	KK1 KK1 + ICN HAN 10 E HAN modular	KK1 KK1 + ICN HAN 10 E HAN modular	KK1
Feedback	KK2 KK2 + ICN	KK2 KK2 + ICN	KK2 KK2 + ICN	KK2 KK2 + ICN	KK2 KK2 + ICN	KK2
Brake	KK2 KK2 + ICN HAN 10 E HAN modular	KK2 KK2 + ICN HAN 10 E HAN modular	KK2 KK2 + ICN HAN 10 E HAN modular	KK2 KK2 + ICN HAN 10 E HAN modular	KK2 KK2 + ICN HAN 10 E HAN modular	KK2
Brake + Feedback	KK3 KK2 + ICN	KK3 KK2 + ICN	KK3 KK2 + ICN	KK3 KK2 + ICN	KK3 KK2 + ICN	KK3
Built-on accessories with 2 thermal sensors						
Without	KK2	KK2	KK2	KK2	KK2	KK2
Feedback	KK2	KK2	KK2	KK2	KK2	KK2
Brake (2-pole terminal)	KK2	KK2	KK2	KK2	KK2	KK2
Brake (rectifier)	KK2	KK2	KK2	KK2	KK2	KK2
Brake + Feedback	KK3	KK3	KK3	KK3	KK3	KK3

Motor connection

Position of cable entry/connector

For geared motors, the position of the cable entry must be selected as a function of the terminal box position.

Terminal box positions 2 ... 5



Cable entry positions 1 ... 5

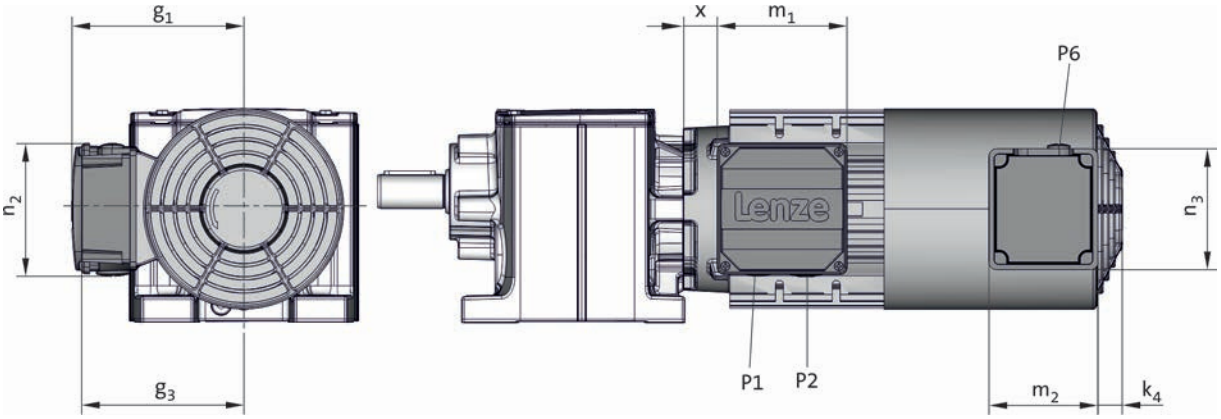
Terminal box position	2	3	4	5
	Cable entry positions			
KK1	1/3/5*	1/2*/4	1/3*/5	1/2/4*
KK2	3+5	2+4	3+5	2+4
KK3	3+5	2+4	3+5	2+4
	Connector position			
HAN	1/3/5	1/2/4	1/3/5	1/2/4
KK1 + ICN	1/3/5*	1/2*/4	1/3*/5	1/2/4*
KK2 + ICN	3/5*	2*/4	3/5*	2/4*

- ► If preferred positions are not specified in the order, the cable entry will be positioned as indicated by * on the diagram below.
- ► If preferred positions are not specified in the order, the connector will be positioned as indicated by * on the diagram below.

Connection via terminal box

Dimensions of KK1

The connection in the terminal box is implemented by means of conventional cable glands.

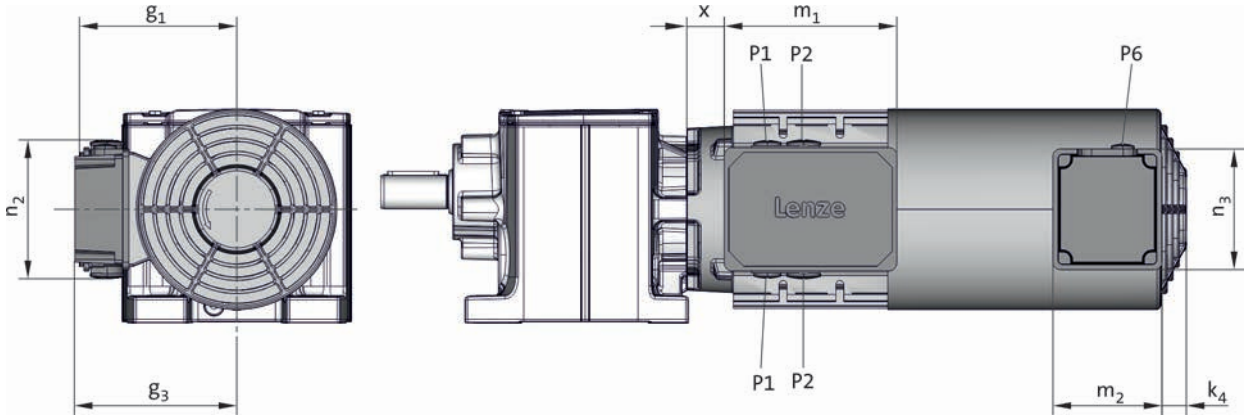


Product			MF□MA□□					
			063-32 063-42	071-32 071-42	080-32 080-42	090-32	100-12 100-32	112-22
Dimensions								
	x	[mm]	17	20	15	30	31	39
	g_1	[mm]	100	109	150	157	166	176
	m_1	[mm]	75.0		115			
	n_2	[mm]	75.0		115			
	P_1	[mm]	M16x1.5		M20x1.5			
	P_2	[mm]	M20x1.5		M25x1.5			
	k_4	[mm]	0					
	g_3	[mm]	115	122	133	141	150	162
	m_2	[mm]	105					
	n_3	[mm]	105					
	P_6	[mm]	1x M16x1.5					

Connection via terminal box

Dimensions of KK2

The connection in the terminal box is implemented by means of conventional cable glands.

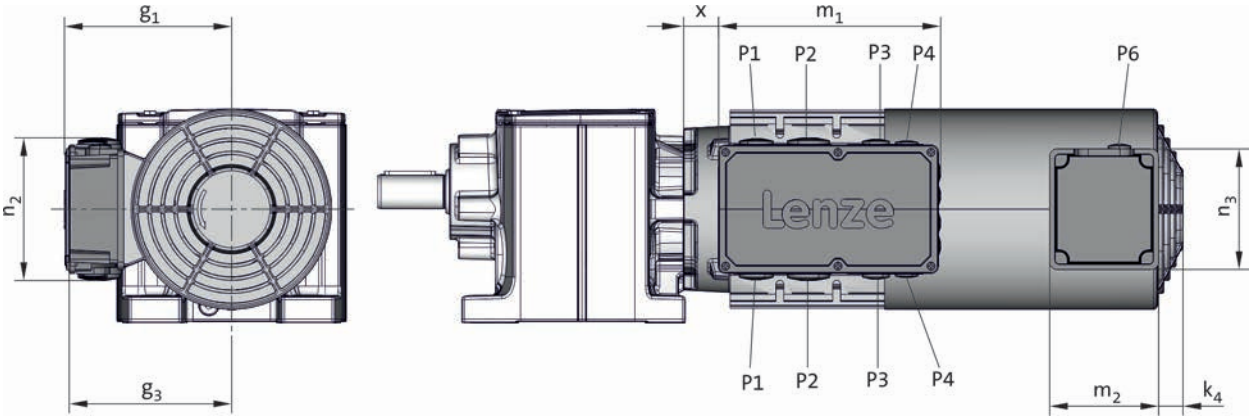


Product			MF□MA□□					
			063-32 063-42	071-32 071-42	080-32 080-42	090-32	100-12 100-32	112-22
Dimensions								
	x	[mm]	9	11	18	33	34	42
	g_1	[mm]	107	118	132	137	147	158
	m_1	[mm]	136		152			
	n_2	[mm]	103		121			
	P_1	[mm]	M16x1.5		M20x1.5			
	P_2	[mm]	M20x1.5		M25x1.5			
	k_4	[mm]	0					
	g_3	[mm]	115	122	133	141	150	162
	m_2	[mm]	105					
	n_3	[mm]	105					
	P_6	[mm]	1x M16x1.5					

Connection via terminal box

Dimensions of KK3

The connection in the terminal box is implemented by means of conventional cable glands.



Product			MF□MA□□					
			063-32 063-42	071-32 071-42	080-32 080-42	090-32	100-12 100-32	112-22
Dimensions								
	x	[mm]	-2	1	16	31	32	40
	g_1	[mm]	124	133	142	147	158	168
	m_1	[mm]	195					
	n_2	[mm]	125					
	P_1	[mm]	M25x1.5					
	P_2	[mm]	M32x1.5					
	P_3	[mm]	M20x1.5					
	P_4	[mm]	M16x1.5					
	k_4	[mm]	0					
	g_3	[mm]	115	122	133	141	150	162
	m_2	[mm]	105					
	n_3	[mm]	105					
	P_6	[mm]	1x M16x1.5					

Connections via ICN connectors

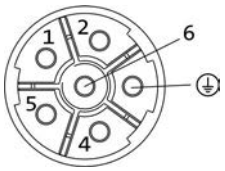
A connector is used for the power connection, connection of the brake, and the temperature monitoring connection.
The feedback and blower connections are implemented via a separate connector in each case.

Connection for power, brake and temperature monitoring

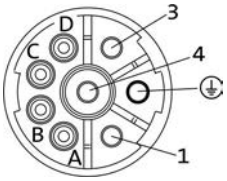
For the power connection of the connector, a max. rated motor current of 16 A is permissible.
The connectors can be rotated by 270° and are equipped with a bayonet catch for SpeedTec connectors. As the connector fixing is also compatible with conventional box nuts, existing mating connectors can still be used without difficulty. The motor connection is determined in the terminal box.

ICN M23 6-pole

► No temperature monitoring connection possible!
If a feedback is used, the PT1000/KTY thermal detector connection can be realised in the separate connection of the feedback (ICN M23 connector).

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

ICN M23 8-pole

Pin assignment			
Contact	Designation	Meaning	
1	U	Phase U power	
PE	PE	PE conductor	
3	W	Phase W power	
4	V	Phase V power	
A	TB1 / TP1 R1	Thermal sensor: TKO/PTC Thermal detector: +PT1000/+KTY	
B	TB2 / TP2 R2	Thermal sensor: TKO/PTC Thermal detector: -PT1000/-KTY	
C	BD1 / BA1	Brake +/AC	
D	BD2 / BA2	Brake -/AC	

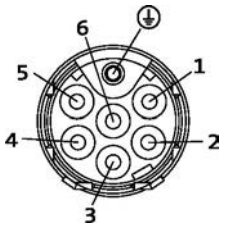
Connections via ICN connectors

Blower connection

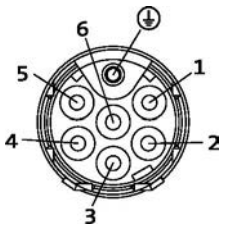
The blower is also optionally available with an ICN connector fixed to the terminal box of the blower for exceptionally fast commissioning. The connectors are fitted with a bayonet fixing, which is also compatible with conventional union nuts. Existing counter plugs can therefore continue to be used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

For the blower, the terminal box cover including the connector can be rotated by 90 ° step by step, if required.

ICN M17 for 1-ph blower

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

ICN M17 for 3-ph blower

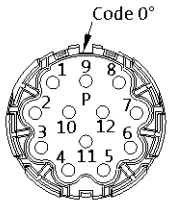
Pin assignment			
Contact	Designation	Meaning	
PE	PE	PE conductor	
1	U	Phase U power	
2		Not assigned	
3	V	Phase V power	
4		Not assigned	
5			
6	W	Phase W power	

Connections via ICN connectors

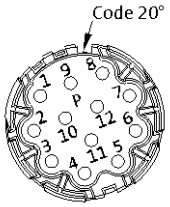
Feedback connection

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

ICN M23 for resolver

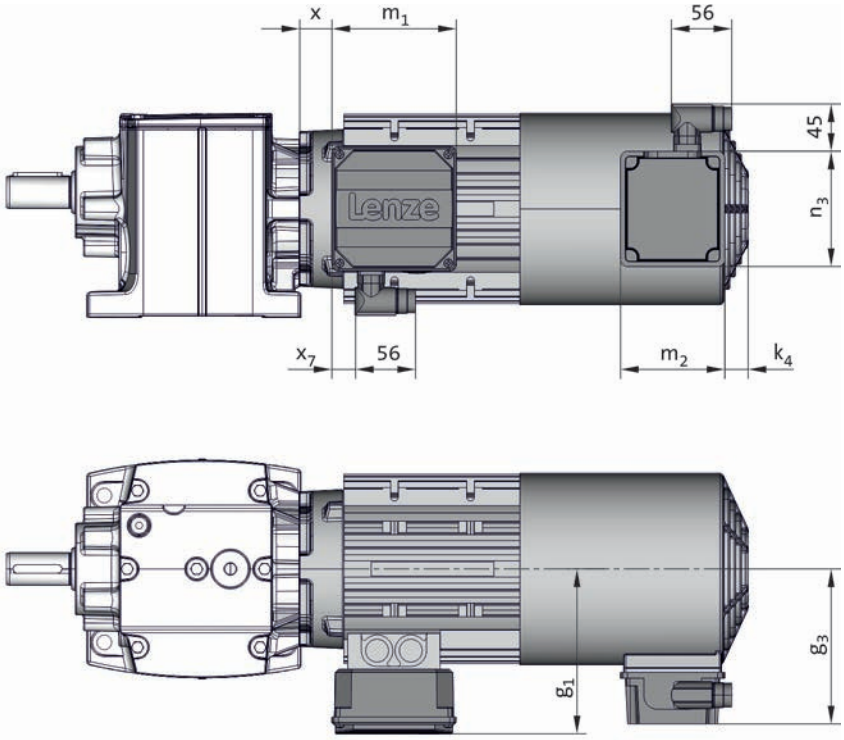
Pin assignment			
Contact	Designation	Meaning	
1	+Ref	Transformer windings	
2	-Ref		
3	+VCC ETS	Supply: Electronic nameplate	
4	+COS	Cosine stator windings	
5	-COS		
6	+SIN	Sine stator windings	
7	-SIN		
8		Not assigned	
9			
10			
11	+PT1000/+KTY	PT1000/KTY thermal detector	
12	-PT1000/-KTY		

ICN M23 for incremental encoder and SinCos absolute value encoder hiperface

Pin assignment			
Contact	Designation	Meaning	
1	B	Track B/+SIN	
2	A^-	Track A inverse/-COS	
3	A	Track A/+COS	
4	$+U_B$	Supply +	
5	GND	Mass	
6	Z^-	Zero track inverse/-RS485	
7	Z	Zero track/+RS485	
8		Not assigned	
9	B^-	Track B inverse/-SIN	
10		Not assigned	
11	+PT1000/+KTY	PT1000/KTY thermal detector	
12	-PT1000/-KTY		

Connections via ICN connectors

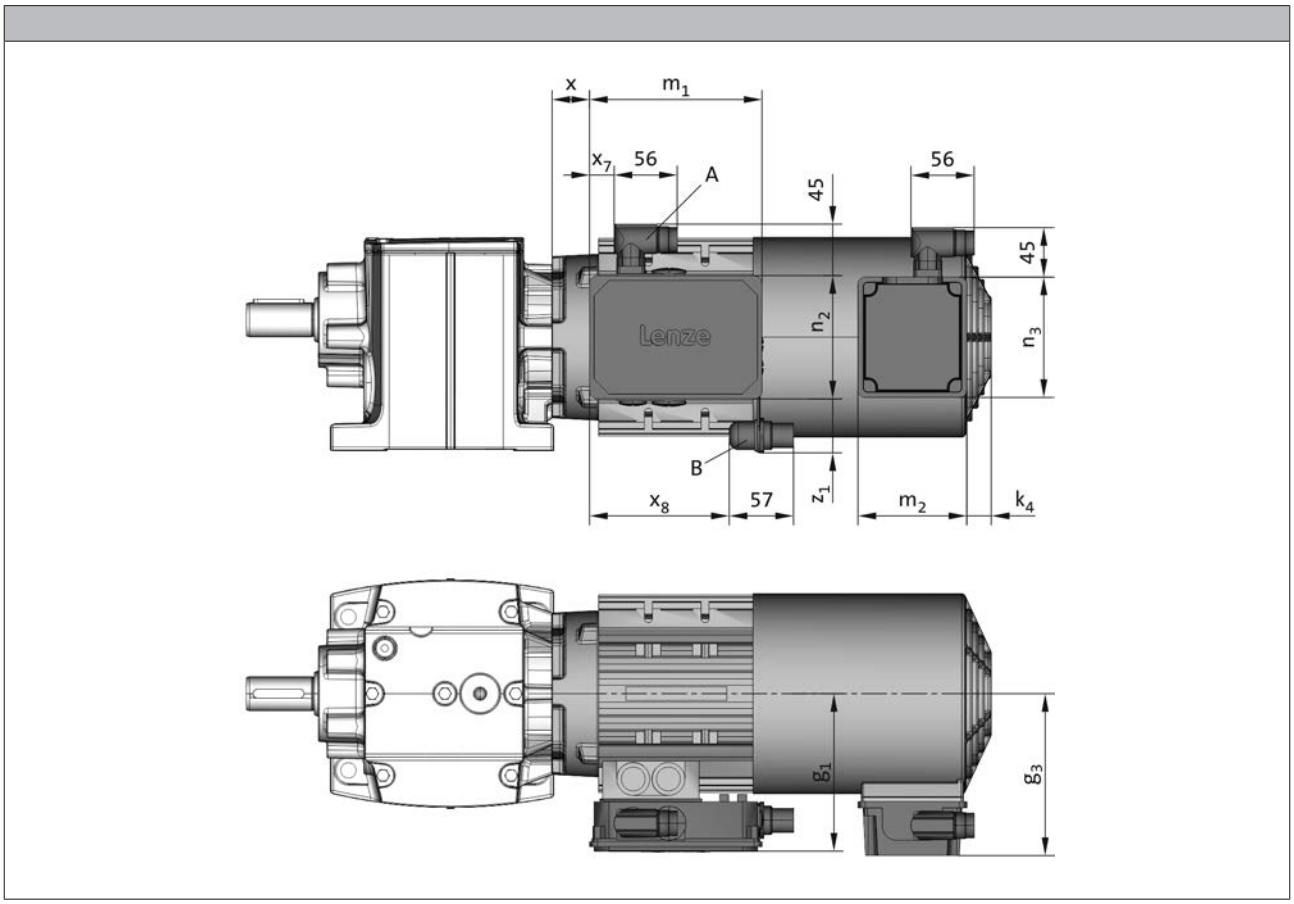
Dimensions KK1+ICN



Product			MF□MA□□				
			063-32 063-42	071-32 071-42	080-32 080-42	090-32	100-12 100-32
Dimensions							
	x	[mm]	17	20	15	30	31
	g_1	[mm]	100	109	150	157	166
	m_1	[mm]	75.0		115		
	n_2	[mm]	75.0		115		
	x_7	[mm]	16		23		
	k_4	[mm]	0				
	g_3	[mm]	115	122	133	141	150
	m_2	[mm]	105				
	n_3	[mm]	105				

Connections via ICN connectors

Dimensions KK2+ICN and KK3+ICN



Product			MF□MA□□				
			063-32 063-42	071-32 071-42	080-32 080-42	090-32	100-12 100-32
Dimensions							
	x	[mm]	9	11	18	33	34
	g_1	[mm]	107	118	132	137	147
	m_1	[mm]	136		152		
	n_2	[mm]	103		121		
	x_7	[mm]	16		23		
	x_8	[mm]	109		125		
	$z_{1, max}$	[mm]	43		41		
	k_4	[mm]	0				
	g_3	[mm]	115	122	133	141	150
	m_2	[mm]	105				
	n_3	[mm]	105				

A= power connection
B= feedback connection (not for KK1)

Connection via ICN M12 connector

IG128-24V-H incremental encoder connection

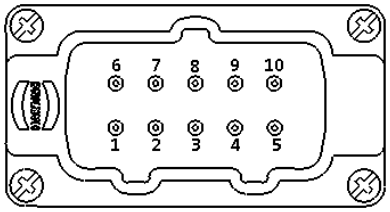
As a standard this incremental encoder is equipped with a connection cable of about 0.5 m length and with a common industry standard M12 connector at its end.

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

Connections via HAN connectors

HAN 10 E

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

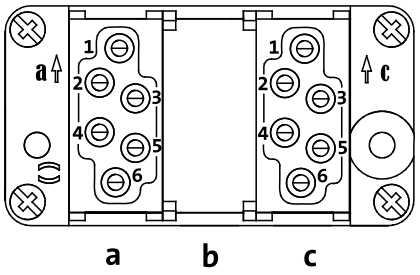
Pin assignment		
Contact	Meaning	
1	Terminal board: U1	
2	Terminal board: V1	
3	Terminal board: W1	
4	Brake +/AC	
5	Brake -/AC	
6	Terminal board: W2	
7	Terminal board: U2	
8	Terminal board: V2	
9	Thermal sensor: TKO/PTC Thermal detector: +PT1000/+KTY	
10	Thermal sensor: TKO/PTC Thermal detector: -PT1000/-KTY	

Connections via HAN connectors

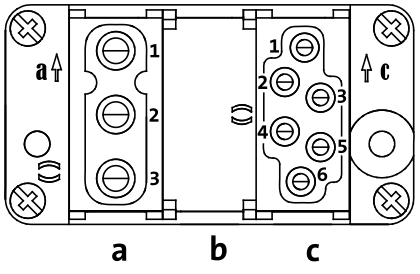
HAN modular

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

► HAN modular 16 A

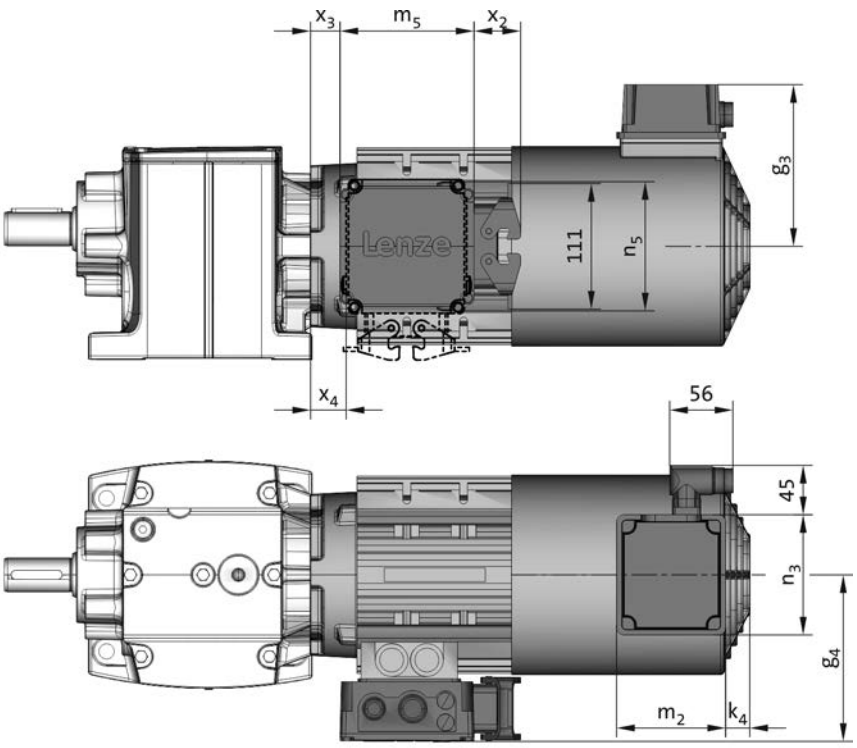
Pin assignment			
Module	Contact	Meaning	
A	1	Terminal board: U1	
	2	Terminal board: V1	
	3	Terminal board: W1	
B		Dummy module	
C	1	Thermal sensor: TKO/PTC Thermal detector: +PT1000/+KTY	
	2	Brake +/AC	
	3	Brake -/AC	
	4	Rectifier: Switching contact	
	5		
	6	Thermal sensor: TKO/PTC Thermal detector: -PT1000/-KTY	

► HAN modular 40 A

Pin assignment			
Module	Contact	Meaning	
A	1	Terminal board: U1	
	2	Terminal board: V1	
	3	Terminal board: W1	
B		Dummy module	
C	1	Thermal sensor: TKO/PTC Thermal detector: +PT1000/+KTY	
	2	Brake +/AC	
	3	Brake -/AC	
	4	Rectifier: Switching contact	
	5		
	6	Thermal sensor: TKO/PTC Thermal detector: -PT1000/-KTY	

Connections via HAN connectors

Dimensions



Product			MF□MA□□				
			063-32 063-42	071-32 071-42	080-32 080-42	090-32	100-12 100-32
Dimensions							
	g_4	[mm]	120	129	138	143	157
	x_3	[mm]	1	3	12	26	27
	x_4	[mm]	2	4	20	34	35
	x_2	[mm]	41				
	m_5	[mm]	118				
	n_5	[mm]	102				
	k_4	[mm]	0				
	g_3	[mm]	115	122	133	141	150
	m_2	[mm]	105				
	n_3	[mm]	105				

Spring-applied brake

The three-phase AC motors can be equipped with a spring-applied brake which is active when the supply voltage has been switched off (closed-circuit principle). In the deenergised state, the brake is applied. This prevents possible movement of the motor shaft with regard to the load after switch-off or in the event of a power failure.
For optimum adaptation of the brake motor to the application, several brake sizes and control variants are provided for each motor.

Versions

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

Braking torques

In addition to the standard braking torque, depending on the brake size, the possibility of choosing between a reduced and an increased braking torque is provided.

- When the braking torque is reduced, great wear reserves can be attained. This is enabled by a reduction of the spring rate.
- In order to obtain a greater braking torque, the spring rate is increased. This is practical, for instance, for hoists, since here the gravity acts as an additional acceleration in the negative direction.

Manual release

By using the manual release lever, the brake can be released manually in deenergised operating state. The manual release makes positioning and maintenance work easier.

Spring-applied brake

Direct connection without rectifier

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

- Supply voltages
  DC 24 V

Connection via mains voltage with brake rectifier

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

Rectifier, 6-pole

- Approval UL / CSA
- Supply voltages
  AC 230 V
  AC 400 V
  AC 460 V

Bridge/half-wave rectifier, 6-pole

- Supply voltage / brake coil voltage ratio
  up to the overexcitation time = 1.11
  From the overexcitation time = 2.22
- Supply voltages
  AC 230 V
  AC 400 V

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

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

Spring-applied brake

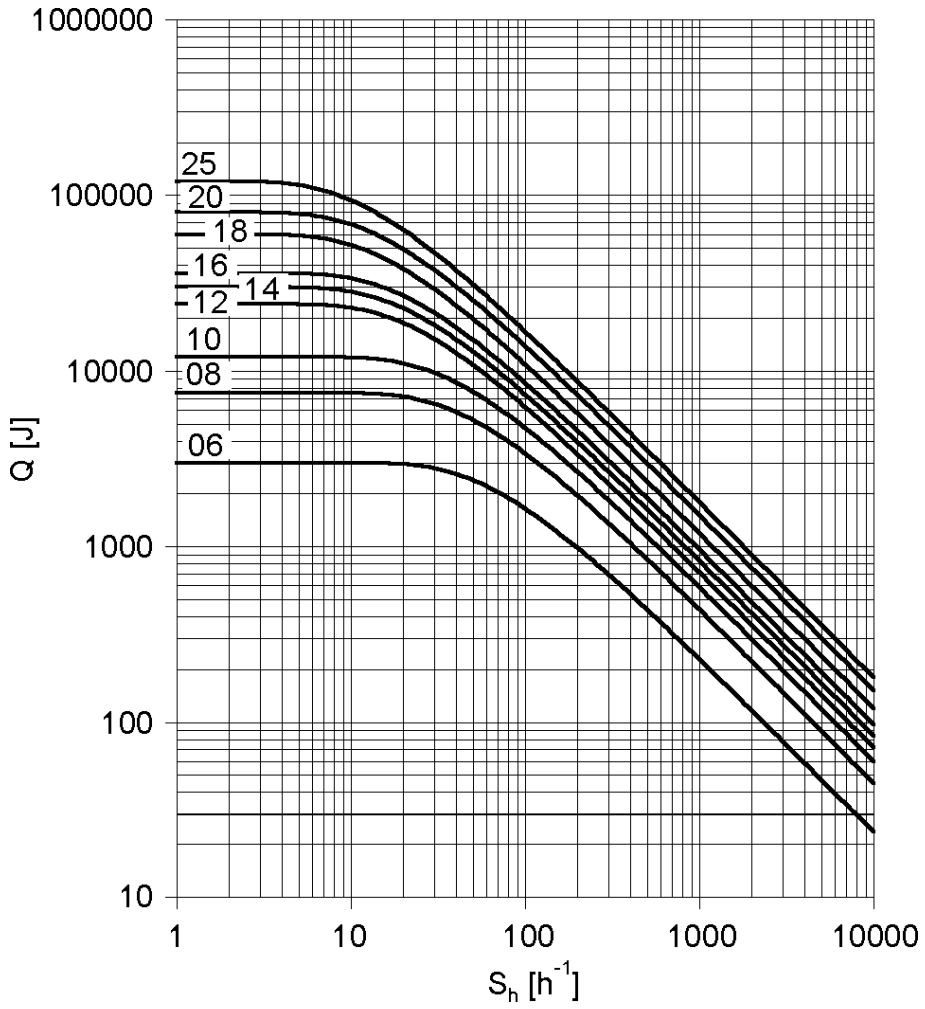
Assignment of 4-pole motors and brakes

Design	Standard	LongLife

Product	Size	Rated torque	Size	Rated torque
	Brake		Brake	
		M_k		M_k
		[Nm]		[Nm]
MF□MA□□063-32 MF□MA□□063-42	06 06	2.50 4.00	06	4.00
MF□MA□□071-32	06 06 08	2.50 4.00 3.50	06 08	4.00 3.50
MF□MA□□071-42	06 06 08 08	2.50 4.00 3.50 8.00	06 08 08	4.00 3.50 8.00
MF□MA□□080-32	08 08 10	3.50 8.00 7.00	08 10	8.00 7.00
MF□MA□□080-42	08 08 10 10	3.50 8.00 16.0 7.00	08 10 10	8.00 7.00 16.0
MF□MA□□090-32	08 08 10 10 10	3.50 8.00 7.00 16.0 23.0		
MF□MA□□100-12	10 10 12 12	7.00 16.0 14.0 32.0	10 12 12	16.0 14.0 32.0
MF□MA□□100-32	10 10 12 12 12	7.00 16.0 14.0 32.0 46.0		
MF□MA□□112-22	12 12 14 14	14.0 32.0 35.0 60.0		

Spring-applied brake

Permissible friction energy



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

Spring-applied brake

Rated data with reduced braking torque

- ► In case of the braking torque and the maximum switching energy, the unit for the values (100 ... 3600) isr/min.
- ► Please enquire for braking torques and maximum switching work values not listed here.

Size			06	08	10	12	14	16	18	20	25
Power input											
	P_{in}	[kW]	0.020	0.025	0.030	0.040	0.050	0.055	0.085	0.10	0.11
Braking torque											
100	M_B	[Nm]	2.50	3.50	7.00	14.0	35.0	60.0	80.0	145	265
1000	M_B	[Nm]	2.30	3.10	6.10	12.0	30.0	50.0	65.0	115	203
1200	M_B	[Nm]	2.30	3.10	6.00	12.0	29.0	48.0	63.0	112	199
1500	M_B	[Nm]	2.20	3.00	5.80	11.0	28.0	47.0	61.0	109 [1)]	193 [1)]
1800	M_B	[Nm]	2.10	2.90	5.70	11.0	28.0	46.0	60.0 [1)]		
3000	M_B	[Nm]	2.00	2.80	5.30	10.0	26.0 [1)]	43.0 [1)]			
3600	M_B	[Nm]	2.00	2.70	5.20	10.0 [1)]					
Maximum switching energy											
100	Q_E	[KJ]	3.00	7.50	12.0	24.0	30.0	36.0	60.0	80.0	120
1000	Q_E	[KJ]	3.00	7.50	12.0	24.0	30.0	36.0	60.0	80.0	120
1200	Q_E	[KJ]	3.00	7.50	12.0	24.0	30.0	36.0	60.0	80.0	120
1500	Q_E	[KJ]	3.00	7.50	12.0	24.0	30.0	36.0	60.0	24.0 [1)]	36.0 [1)]
1800	Q_E	[KJ]	3.00	7.50	12.0	24.0	30.0	36.0	36.0 [1)]		
3000	Q_E	[KJ]	3.00	7.50	12.0	24.0	18.0 [1)]	11.0 [1)]			
3600	Q_E	[KJ]	3.00	7.50	12.0	7.00 [1)]					
Transition operating frequency											
	$S_{hü}$	[1/h]	79.0	50.0	40.0	30.0	28.0	27.0	20.0	19.0	15.0
Moment of inertia											
	J	[kgcm²]	0.15	0.61	2.00	4.50	6.30	15.0	29.0	73.0	200
Mass											
	m	[kg]	0.90	1.50	2.60	4.20	5.80	8.70	12.6	19.5	31.0

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

Spring-applied brake

Rated data with reduced braking torque

► Activation via half-wave or bridge rectifier

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

► Activation via bridge/half-wave rectifier

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

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

Spring-applied brake

Rated data with standard braking torque

- ► In case of the braking torque and the maximum switching energy, the unit for the values (100 ... 3600) isr/min.
- ► Please enquire for braking torques and maximum switching work values not listed here.

Size			06	08	10	12	14	16	18	20	25
Power input											
	P_{in}	[kW]	0.020	0.025	0.030	0.040	0.050	0.055	0.085	0.10	0.11
Braking torque											
100	M_B	[Nm]	4.00	8.00	16.0	32.0	60.0	80.0	150	260	400
1000	M_B	[Nm]	3.70	7.20	14.0	27.0	51.0	66.0	121	206	307
1200	M_B	[Nm]	3.60	7.00	14.0	27.0	50.0	65.0	118	201	300
1500	M_B	[Nm]	3.50	6.80	13.0	26.0	48.0	63.0	115	195 [1)]	291 [1)]
1800	M_B	[Nm]	3.40	6.70	13.0	26.0	47.0	61.0	112 [1)]		
3000	M_B	[Nm]	3.20	6.30	12.0	24.0	44.0 [1)]	57.0 [1)]			
3600	M_B	[Nm]	3.20	6.10	12.0	23.0 [1)]					
Maximum switching energy											
100	Q_E	[KJ]	3.00	7.50	12.0	24.0	30.0	36.0	60.0	80.0	120
1000	Q_E	[KJ]	3.00	7.50	12.0	24.0	30.0	36.0	60.0	80.0	120
1200	Q_E	[KJ]	3.00	7.50	12.0	24.0	30.0	36.0	60.0	80.0	120
1500	Q_E	[KJ]	3.00	7.50	12.0	24.0	30.0	36.0	60.0	24.0 [1)]	36.0 [1)]
1800	Q_E	[KJ]	3.00	7.50	12.0	24.0	30.0	36.0	36.0 [1)]		
3000	Q_E	[KJ]	3.00	7.50	12.0	24.0	18.0 [1)]	11.0 [1)]			
3600	Q_E	[KJ]	3.00	7.50	12.0	7.00 [1)]					
Transition operating frequency											
	$S_{hü}$	[1/h]	79.0	50.0	40.0	30.0	28.0	27.0	20.0	19.0	15.0
Moment of inertia											
	J	[kgcm²]	0.15	0.61	2.00	4.50	6.30	15.0	29.0	73.0	200
Mass											
	m	[kg]	0.90	1.50	2.60	4.20	5.80	8.70	12.6	19.5	31.0

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

Spring-applied brake

Rated data with standard braking torque

► Activation via half-wave or bridge rectifier

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

► Activation via bridge/half-wave rectifier

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

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

Spring-applied brake

Rated data with increased braking torque

- In case of the braking torque and the maximum switching energy, the unit for the values (100 ... 3600) isr/min.
- Please enquire for braking torques and maximum switching work values not listed here.

Size			10	12	14	16	16	18	20	20	25	25
Power input												
	P_{in}	[kW]	0.030	0.040	0.050	0.055	0.055	0.085	0.10	0.10	0.11	0.11
Braking torque												
100	M_B	[Nm]	23.0	46.0	75.0	100	125	200	315	400	490	600
1000	M_B	[Nm]	20.0	39.0	64.0	83.0	103	162	249	317	376	461
1200	M_B	[Nm]	20.0	39.0	62.0	81.0	101	158	244	309	367	449
1500	M_B	[Nm]	19.0	38.0	60.0	78.0	98.0	153	237 [1]	300 [1]	356 [1]	436 [1]
1800	M_B	[Nm]	19.0	37.0	59.0	77.0	96.0	150 [1]				
3000	M_B	[Nm]	17.0	34.0	55.0 [1]	71.0 [1]	89.0 [1]					
3600	M_B	[Nm]	17.0	33.0 [1]								
Maximum switching energy												
100	Q_E	[KJ]	12.0	24.0	30.0	36.0	36.0	60.0	80.0	80.0	120	120
1000	Q_E	[KJ]	12.0	24.0	30.0	36.0	36.0	60.0	80.0	80.0	120	120
1200	Q_E	[KJ]	12.0	24.0	30.0	36.0	36.0	60.0	80.0	80.0	120	120
1500	Q_E	[KJ]	12.0	24.0	30.0	36.0	36.0	60.0	24.0 [1]	24.0 [1]	36.0 [1]	36.0 [1]
1800	Q_E	[KJ]	12.0	24.0	30.0	36.0	36.0	36.0 [1]				
3000	Q_E	[KJ]	12.0	24.0	18.0 [1]	11.0 [1]	11.0 [1]					
3600	Q_E	[KJ]	12.0	7.00 [1]								
Transition operating frequency												
	$S_{hü}$	[1/h]	40.0	30.0	28.0	27.0	27.0	20.0	19.0	19.0	15.0	15.0
Moment of inertia												
	J	[kgcm²]	2.00	4.50	6.30	15.0	15.0	29.0	73.0	73.0	200	200
Mass												
	m	[kg]	2.60	4.20	5.80	8.70	8.70	12.6	19.5	19.5	31.0	31.0

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

- Activation via half-wave or bridge rectifier

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

Spring-applied brake

Rated data with increased braking torque

► Activation via bridge/half-wave rectifier

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

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

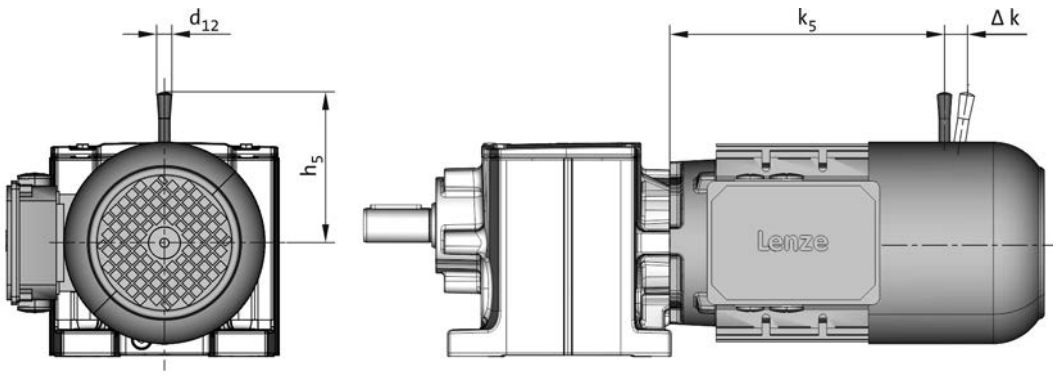
► The brake response and application times are guide values. The engagement time is 10 times longer with AC-side switching. With the maximum air gap the disengagement time t_2 – depending on the brake and control – is up to 4 times longer than the disengagement time with the rated air gap.

Spring-applied brake

Manual release

By using the manual release lever, the brake can be released manually in deenergised operating state. The manual release makes positioning and maintenance work easier.

Manual release lever



Product	Size	Dimensions			
	Brake				
		k_5	Δ k	h_5	d_{12}
		[mm]	[mm]	[mm]	[mm]
MF□MA□□063-32 MF□MA□□063-42	06	169	29	107	13.0
MF□MA□□071-32 MF□MA□□071-42	06 08	185 186	29 27	107 136	13.0 13.0
MF□MA□□080-32 MF□MA□□080-42	06 08	208 219	29 27	107 136	13.0 13.0
MF□MA□□090-32	08 10	256 267	27 28	136 132	13.0 13.0
MF□MA□□100-12 MF□MA□□100-32	10 12	305 307	28 37	132 161	13.0 13.0
MF□MA□□112-22	12 14	309 313	37 41	161 195	13.0 24.0

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

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

Feedback

Depending on the application, the following resolvers, incremental encoders or absolute value encoders are provided for speed and position detection.

Resolver

The stator-supplied resolver with two stator windings shifted by 90° and a rotor winding with transformer winding can detect both the speed and the rotor position. The rotor position is retained in the event of a voltage failure.

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

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

Feedback

Incremental encoder and SinCos absolute value encoder

Incremental encoders can only be used for speed measurement, but not for speed control. Homing is required in order to enable positioning later.

Absolute value encoders can detect the speed, the rotor position, and the machine position with a very high resolution. They are used for the positioning of dynamic applications and do not require homing.

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

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

Blower

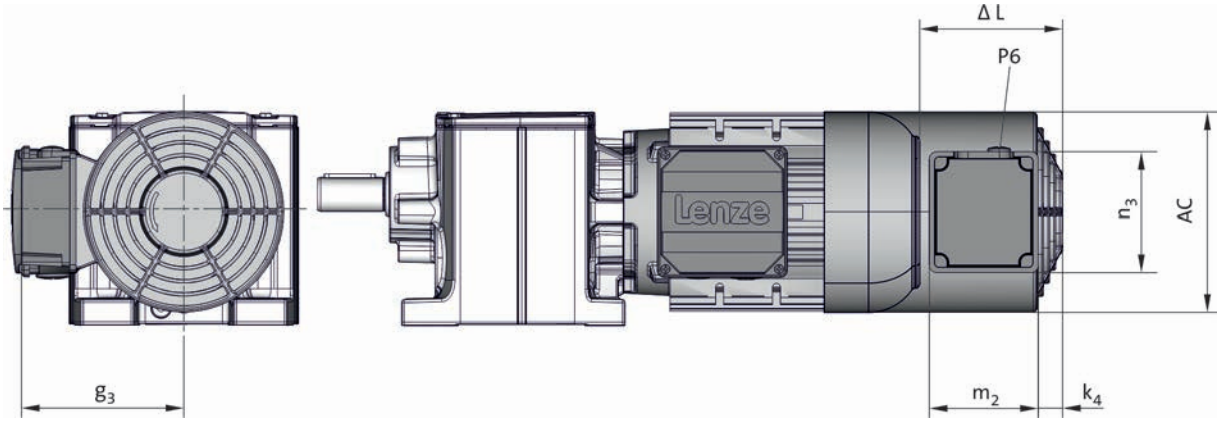
During operation with the rated torque at low speeds (< 20 Hz), the integral fan does not rotate fast enough anymore to ensure sufficient cooling of the motor. In order to prevent overheating, operation without a blower requires a torque reduction of the motor.
The blower cools the motor steadily and 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.

Rated data for 50 Hz

Product	Number of phases	Connection method				
			$U_{N, AC}$	P_N	I_N	m
			[V]	[kW]	[A]	[kg]
MF□MA□□063-32 MF□MA□□063-42	1		230	0.034	0.15	2.00
	3	Δ		0.015	0.083	
		Y	400		0.040	
MF□MA□□071-32 MF□MA□□071-42	1		230	0.041	0.18	2.10
	3	Δ		0.016	0.083	
		Y	400		0.048	
MF□MA□□080-32 MF□MA□□080-42	1		230	0.036	0.16	2.30
	3	Δ		0.020	0.088	
		Y	400		0.051	
MF□MA□□090-32	1		230	0.038	0.19	2.70
	3	Δ		0.036		
		Y	400		0.11	
MF□MA□□100-12 MF□MA□□100-32	1		230	0.044	0.20	3.00
	3	Δ		0.043	0.19	
		Y	400		0.11	
MF□MA□□112-22	1		230	0.050	0.23	3.10
	3	Δ		0.054	0.20	
		Y	400		0.11	

Blower

Dimensions, 4-pole motors



Built-on accessories					
	Without	Brake	Brake + Feedback	Feedback	

Product	Dimensions				
	Δ L	Δ L	Δ L	Δ L	AC
	[mm]	[mm]	[mm]	[mm]	[mm]
MF□MA□□063-32 MF□MA□□063-42	128	170	170	128	123
MF□MA□□071-32 MF□MA□□071-42		165	165		138
MF□MA□□080-32 MF□MA□□080-42		183	183		156
MF□MA□□090-32		181	181		176
MF□MA□□100-12 MF□MA□□100-32	109	170	170	109	194
MF□MA□□112-22	102	183	183	183	218

Product	Dimensions				
	k_4	g_3	m_2	n_3	P_6
	[mm]	[mm]	[mm]	[mm]	[mm]
MF□MA□□063-32 MF□MA□□063-42	0	115	105	105	1x M16x1.5
MF□MA□□071-32 MF□MA□□071-42		122			
MF□MA□□080-32 MF□MA□□080-42		133			
MF□MA□□090-32		141			
MF□MA□□100-12 MF□MA□□100-32		150			
MF□MA□□112-22		162			

Temperature monitoring

To protect the motor against overheating, the following thermal sensors are provided.
The thermal sensors are integrated into the windings. We recommend using an additional motor protection switch.

TKO thermal contacts

The TCO thermal contact (thermal NC contact) is a bimetallic-element switch. The TCO monitors the motor winding temperature; at too high temperatures, the motor relay switches. The motor is disconnected from the mains.

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

PTC thermistor

The PTC thermistor is actuated in connection with a tripping unit. If the motor gets too hot, the motor can be switched off by means of a contactor. In contrast to the thermal contact, quick restart is possible.

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

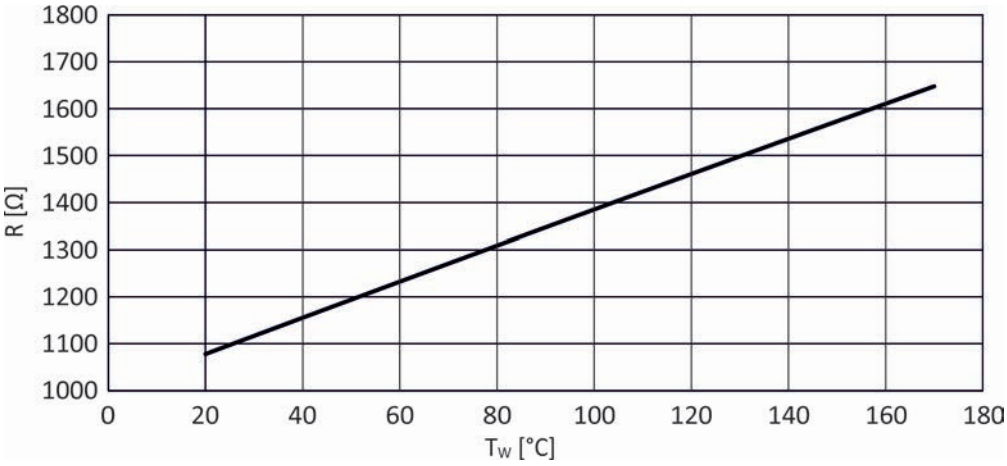
Temperature monitoring

Thermal detectors PT1000

The thermal detectors work as continuously variable resistors, showing a similar tendency as PTC thermistors. However, with an increasing temperature, the resistance only increases comparatively slowly, enabling the controller to determine the temperature at regular intervals and to already perform a process evaluation at an early stage. In this way, the motor can already be switched off before it is overheated.

► If the thermal sensor is supplied with a measurement current of 1 mA, the relationship shown in the diagram between the temperature and the resistance measured applies.

Variation of resistance



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