L-force catalogue

Automation systems
Drive solutions

Controls
Inverters
Motors
Gearboxes
Engineering Tools

Motors: MD three-phase AC motors

Gearboxes: g500-S shaft-mounted helical 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 simple principle to meet the ever more specialised customer requirements in the field of mechanical 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.

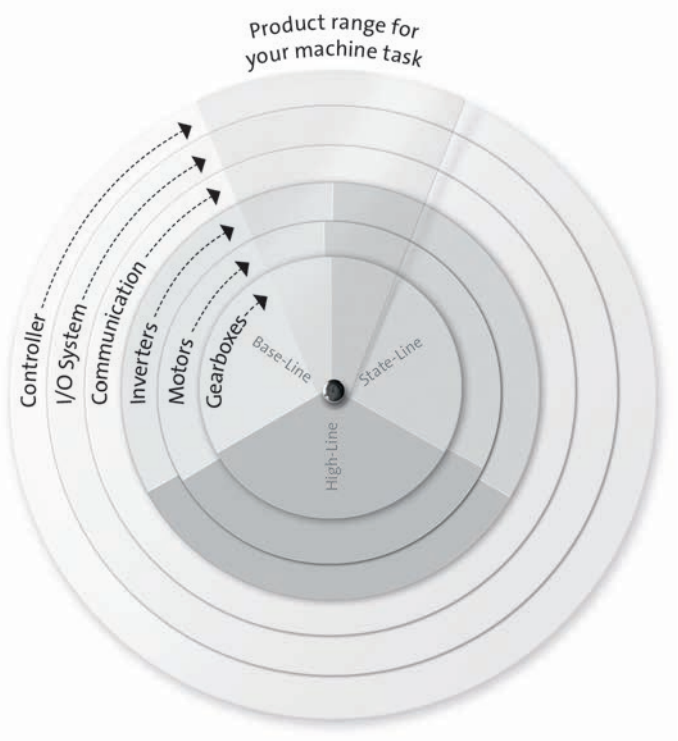
A matter of principle: the right products for every application.

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.

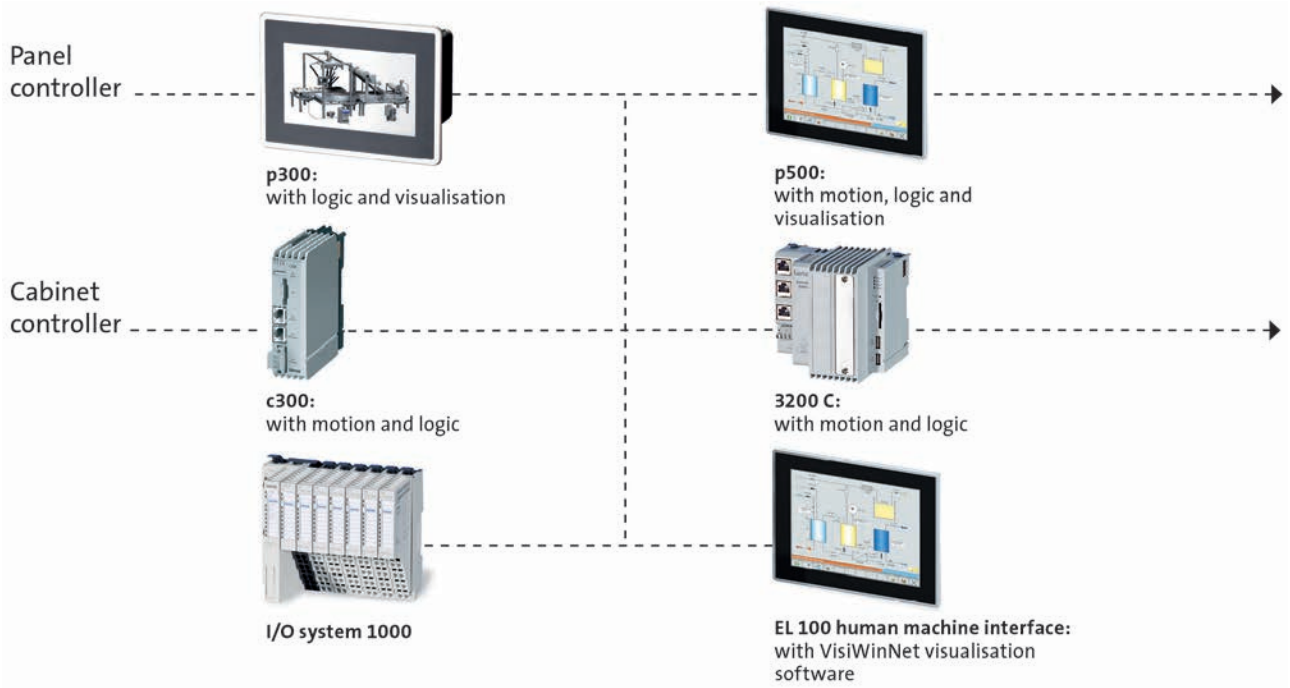
Powerful products with a major impact:
- Easy handling
- High quality and durability
- Reliable technologies in tune with the latest developments

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!

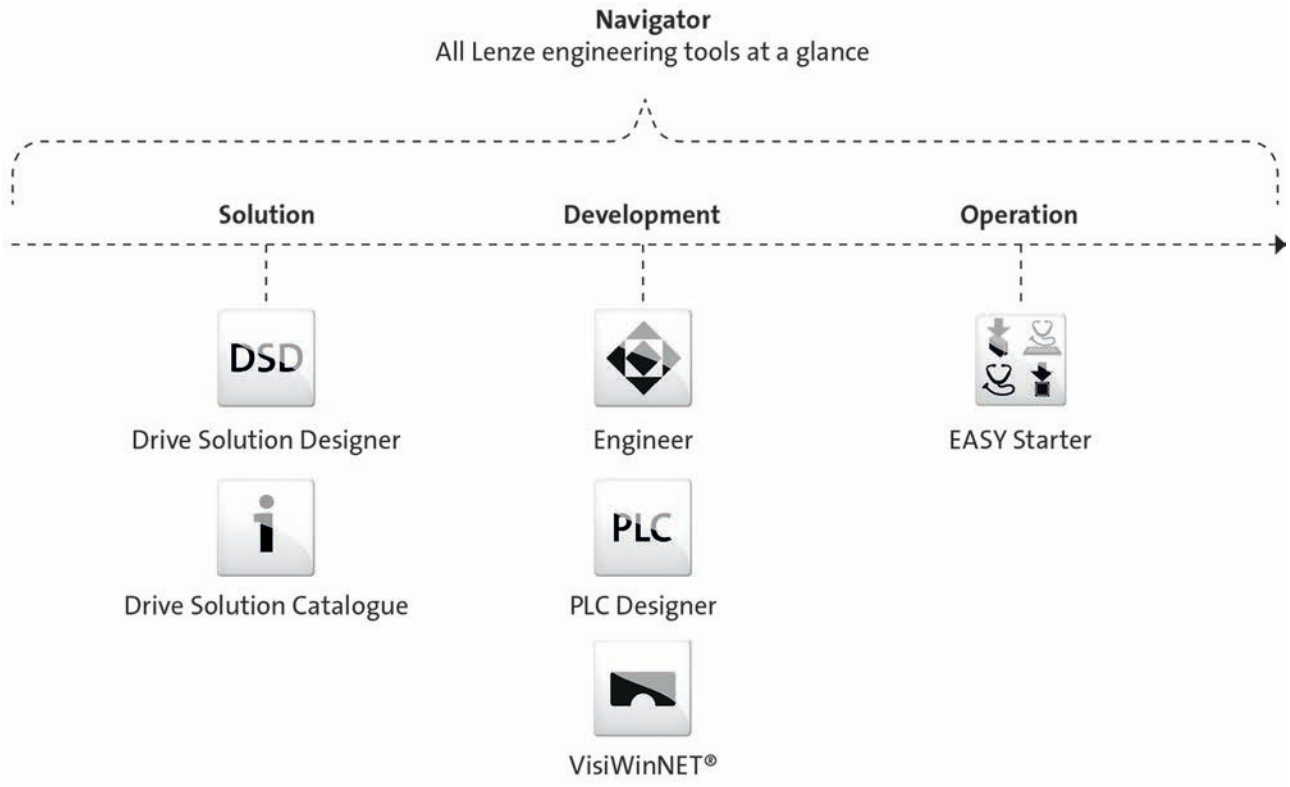


L-force product portfolio

Controls

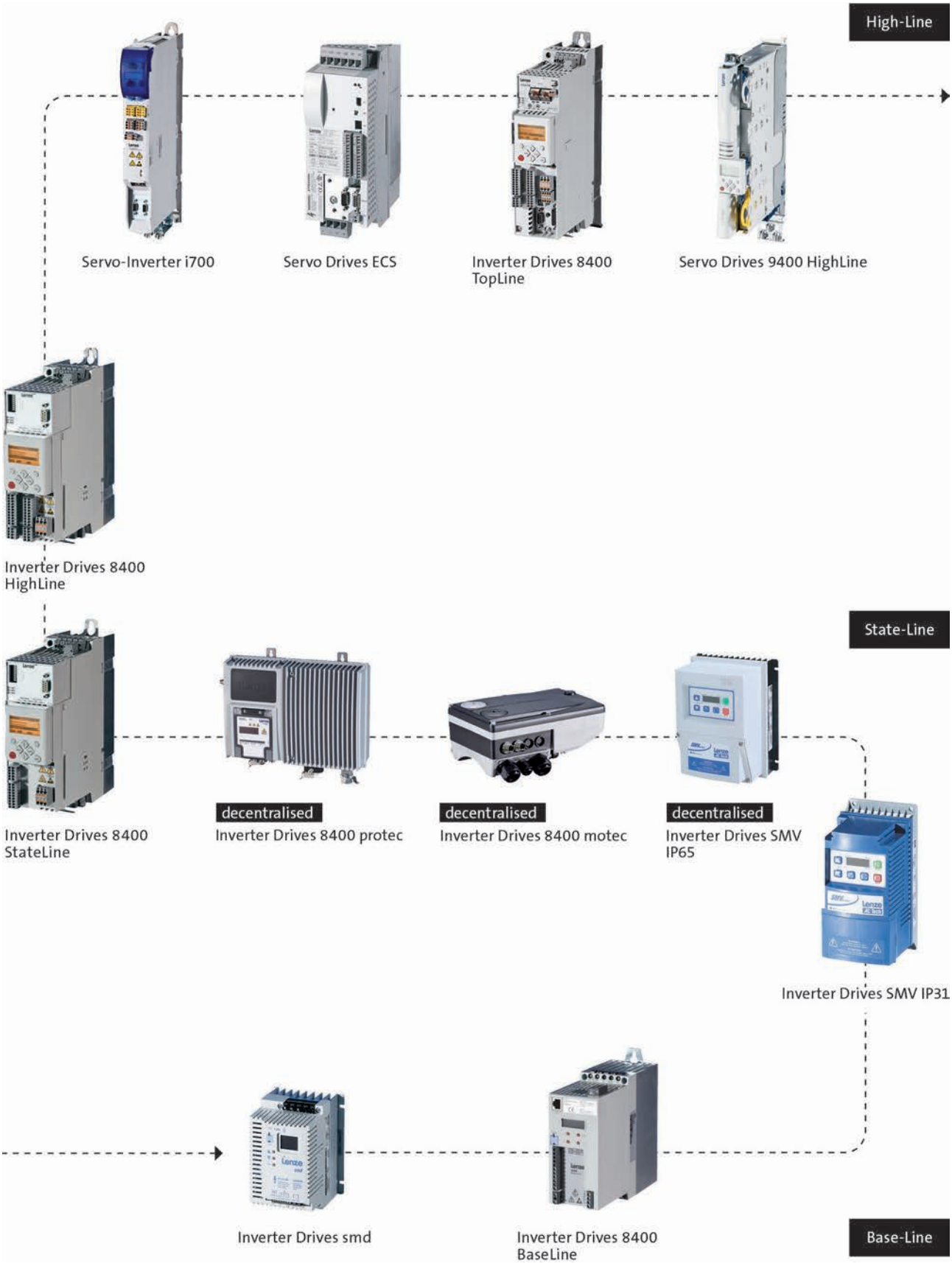


Engineering Tools



L-force product portfolio

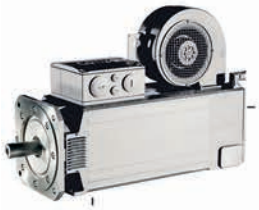
Inverters



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

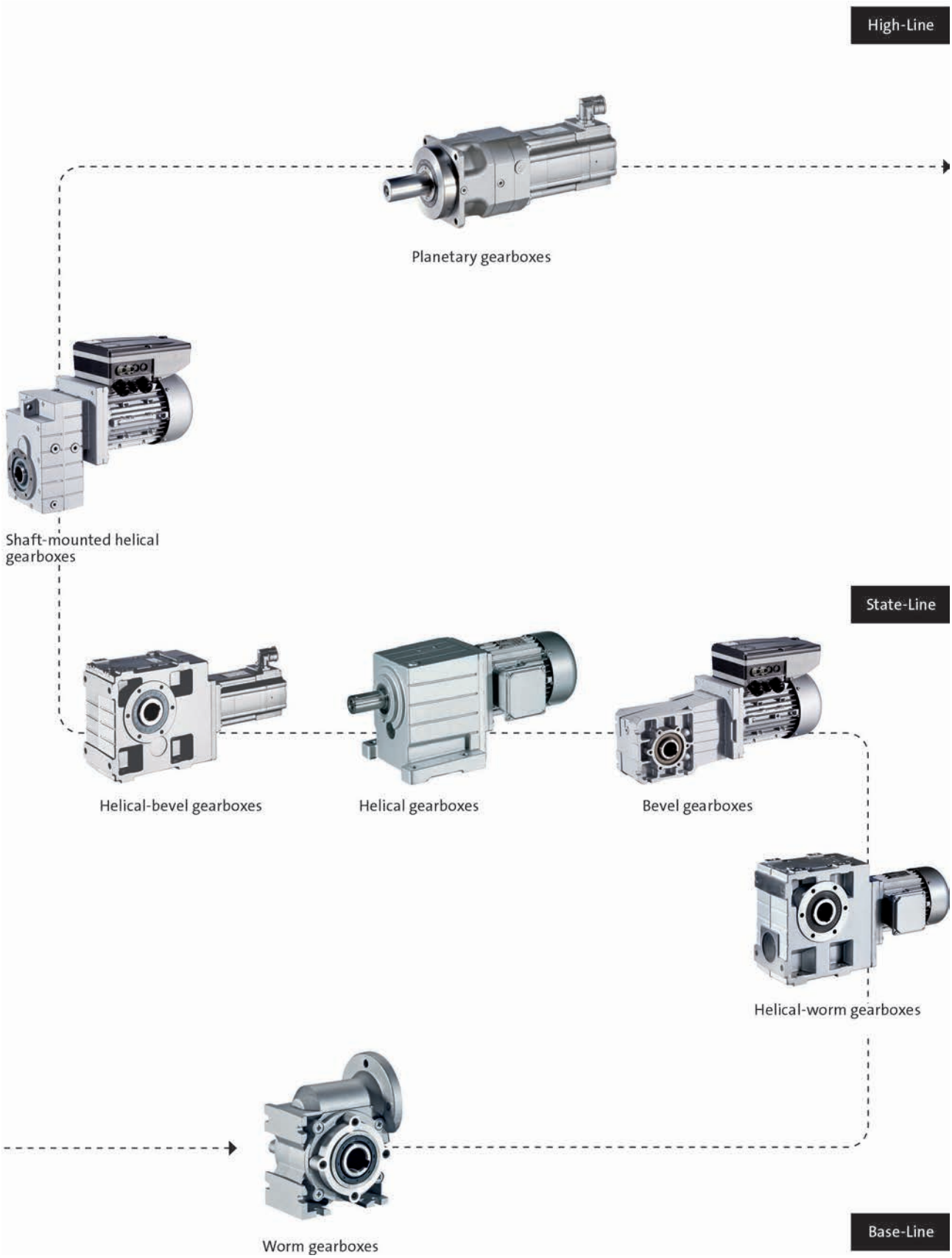
MD three-phase AC motors

Basic MD/MH three-phase AC motors

Base-Line

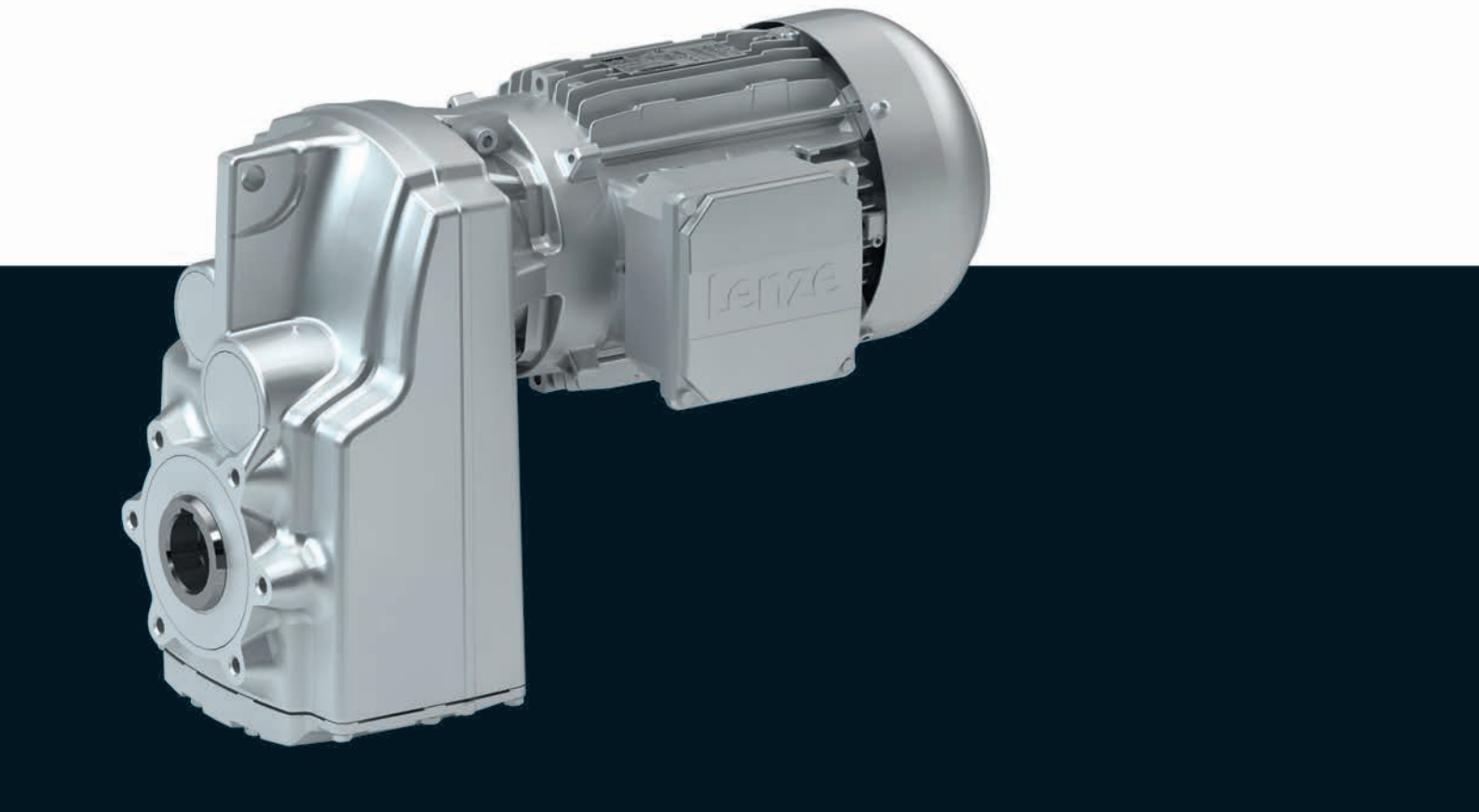
L-force product portfolio

Gearboxes



g500-S shaft-mounted helical geared motors

0.12 to 0.55 kW
0.75 to 9.2 kW (efficiency class IE1)



g500-S shaft-mounted helical geared motors

Contents

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

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-pole and 3-pole design with a torque up to 660 Nm and a ratio of up to i= 495.

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
- With three-phase AC motors in the power range 0.12 ... 0.55 kW
  With IE1 three-phase AC motors in the power range 0.75 ... 9.2 kW

Inverters for motor-proximity installation

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

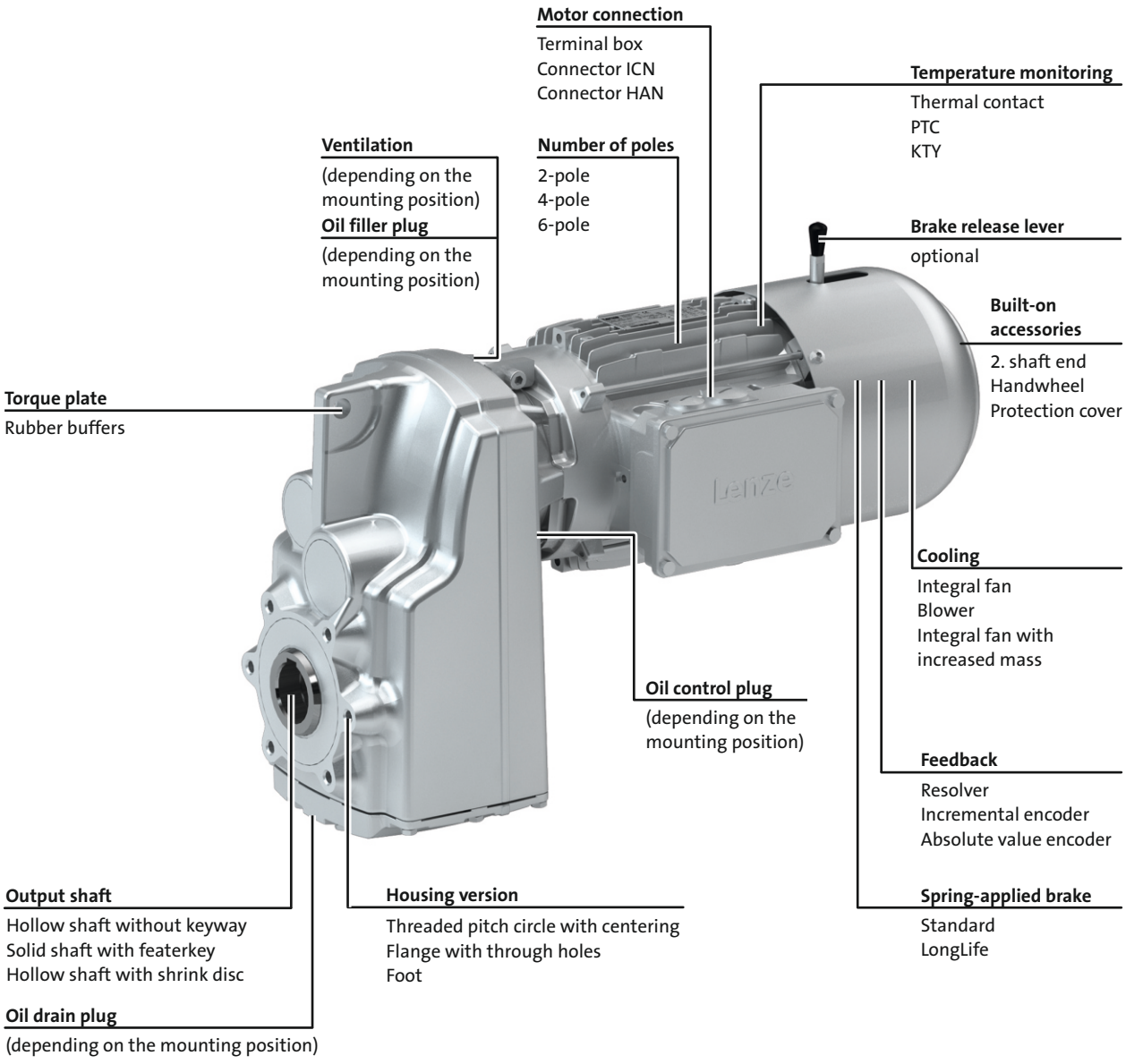
The product name

Gearbox type	Product range		Design	Rated torque [Nm]	Product
Shaft-mounted helical gearbox	g500	-	S	130	g500-S130
				220	g500-S220
				400	g500-S400
				660	g500-S660

Equipment

Overview

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



The gearbox kit

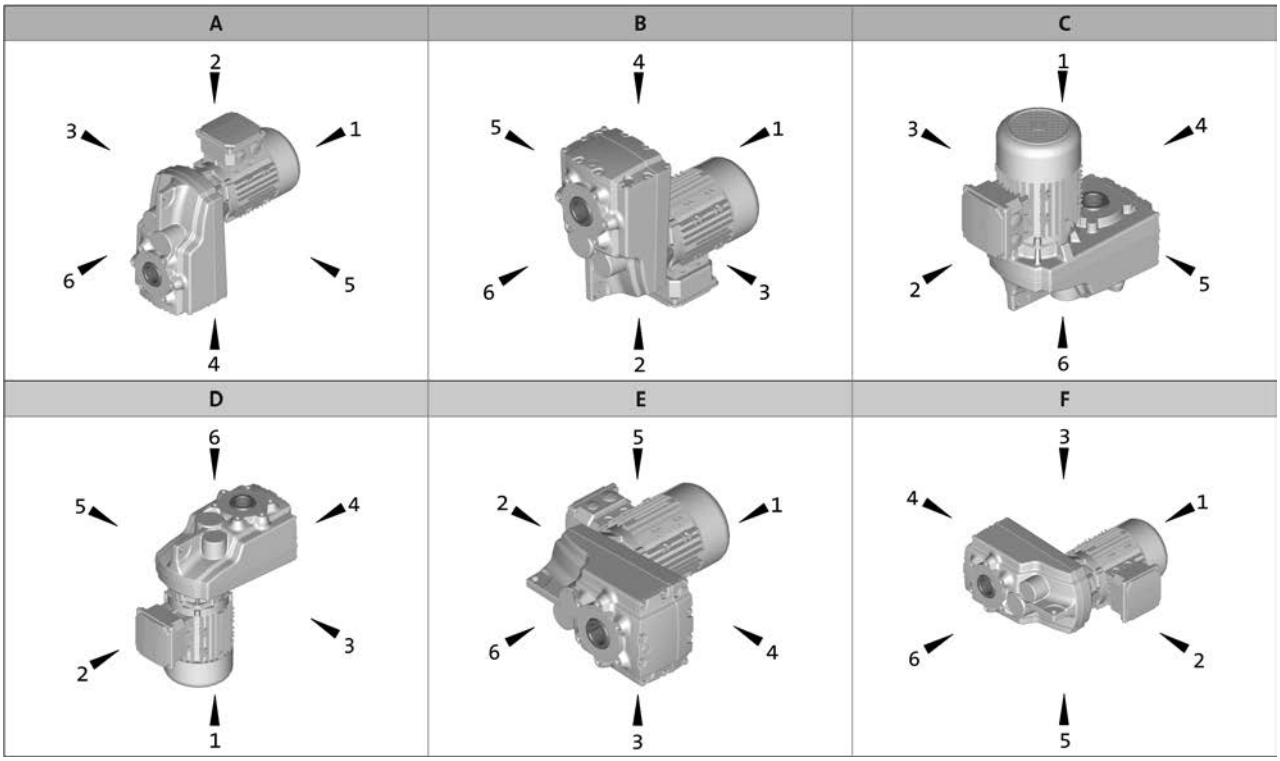
Geared motor

Product	g500-S130	g500-S220	g500-S400	g500-S660
Motor type				
Efficiency class IE1	MD□MA AC motor			
Efficiency class IE2				
4-pole motor				
0.06 - 0.09 kW				
0.12 - 0.25 kW	063			
0.37 - 0.55 kW	071			
0.75 - 1.1 kW	080			
1.5 kW	090			
2.2 - 3.0 kW		100		
4.0 - 5.5 kW			112	
7.5 - 9.2 kW				132
2-pole motor				
0.18 - 0.25 kW	063			
0.37 - 0.55 kW	071			
0.75 - 1.1 kW	080			
1.5 - 2.2 kW	090			
3 - 4 kW		100		
5.5 - 7.5 kW			112	
6-pole motor				
0.18 - 0.25 kW	071			
0.37 - 0.55 kW	080			
Technical data				
Rated power	See selection table			
Mains voltage	230/400 V ; 230 V; 460 V			
Mains frequency	50 Hz; 60 Hz; 60 Hz			
Output torque	See selection table			
Output speed	See selection table			
Ratio	See selection table			
Load capacity	See selection table			
Mounting position				
Standard	A/B/C/D/E/F			
Combined	AEF			
Colour	Not coated Primed Paint in various corrosion-protection designs in accordance with RAL colours			
Surface and corrosion protection	Without OKS(uncoated) OKS-G (primed) OKS-S (small) OKS-M (medium) OKS-L (large)			

The gearbox kit

Mounting positions

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



Hollow shaft: 0
Solid shaft: 6
Hollow shaft with shrink disc: 1, 6

Without foot: 0
Foot: 3, 4
Terminal box / motec: 2, 3, 4, 5

The gearbox kit

Motor details

Product	MD□MA□□								
	063-02 063-22	063-11 063-12 063-31 063-32 063-42	071-11 071-12 071-13 071-31 071-32 071-33	071-42	080-11 080-12 080-13 080-31 080-32 080-33 080-42	090-11 090-12 090-31 090-32	100-12 100-31 100-32 100-41	112-22 112-31 112-32 112-41	132-12 132-21 132-22 132-32
Connection type	Terminal box ICN connector HAN-10E connector HAN-Modular connector								
Spring-applied brake									
Rated torque [Nm]	4			4 8	8 16		16 32	32 60	60 80
Brake voltage [V]	DC 24/180/205 AC 230/400/460								
Brake design	Standard LongLife								
	Standard Overexcited Cold Brake								
Options	Manual release lever Low noise With cover ring								
Feedback	With absolute value encoder With incremental encoder With resolver								
Cooling	Without blower/integral fan Blower Integral fan with increased mass								
Temperature monitoring	TKO thermal contact KTY83-110 thermal detector KTY84-130 thermal detector PTC thermistor								
Approval	cURus CCC								
Degree of protection	IP55								
Further options	Protection cover 2nd shaft end Handwheel								

► Further information and installation feasibilities can be found in the Motors chapter.

The gearbox kit

Motor details

Connection type

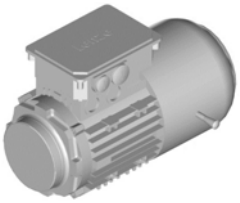
Terminal box

ICN connector

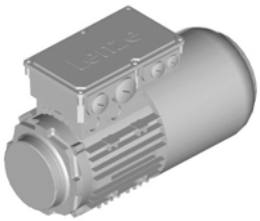
HAN connector

Cooling: integral fan

Without built-on accessories

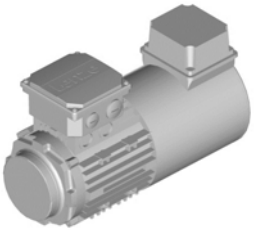


With spring-applied brake
With or without manual release lever

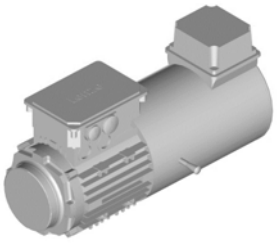


With feedback
With feedback and spring-applied brake

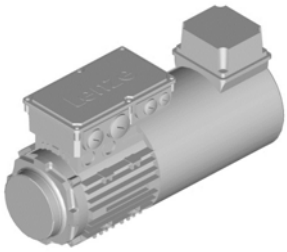
Cooling: blower



Without built-on accessories



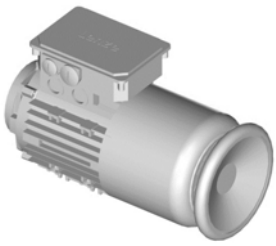
With spring-applied brake
With or without manual release lever



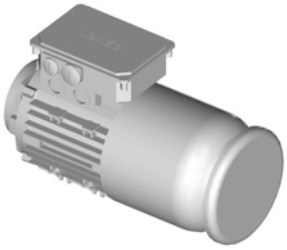
With feedback
With feedback and spring-applied brake

Further options

With 2nd shaft end
Only integral fan



With handwheel
Only integral fan



With protection cover

6.5

The gearbox kit

Gearbox details

Product	g500-S130	g500-S220	g500-S400	g500-S660
Driven shaft				
Solid shaft with featherkey [mm]	25x50		30x60	35x70 40x80
Hollow shaft with keyway [mm]	25	25/30	30/35	40/45
Hollow shaft with shrink disc [mm]	25	25/30	35	40
Design	Standard stainless steel			
Gasket	Standard FPM (Viton)			
Bearing	Standard			
Fitting grease	Not enclosed Enclosed			
Housing				
Housing version	With foot without centring With centering			
Output flange				
flange diameter [mm]	160		200	200/250 [1]
Lubricant				
Type	CLP 460 [2] CLP HC 320 CLP HC 220 CLP HC 220 USDA H1			
Oil-level inspection	Without inspection With inspection			
Breather element	Without		Standard mounting position: Mounted Combined mounting position: loosely enclosed	
Backlash				
Backlash	Standard			
Accessories				
Torque plate	Rubber buffers			
Shaft cover	Shrink disc: Rotating cover Shrink disc: Fixed cover			

[1] 200 mm flange diameter only possible on hollow shaft version.
[2] Not suitable for geared servo motors.

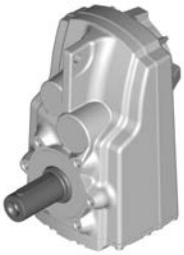
6.5

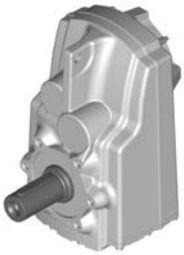
► Further information and installation feasibilities can be found in the Gearboxes chapter.

The gearbox kit

Gearbox details

Solid shaft


without centring


With centering


Flange with through holes

Hollow shaft


without centring


With centering


Flange with through holes

Hollow shaft with shrink disc


without centring

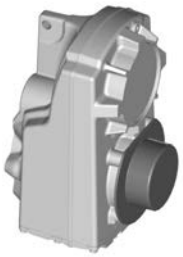

With centering


Flange with through holes

Accessories


Foot mounting


With rubber buffer


Shrink disc cover

6.5

Dimensioning

General information about the data provided in this catalogue

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

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

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

Dimensioning

Thermal power limit

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

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

If the following input speeds n_1 are exceeded, please contact Lenze:

Motor frame size	Mounting position A, B, E, F	Mounting position C, D
063 ... 100	4000 r/min	3000 r/min
112 ... 132	3000 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 FP material/Viton (option)
- reduction in lubricant quantity
- cooling of the geared motor by means of air convection on the machine/system

Dimensioning

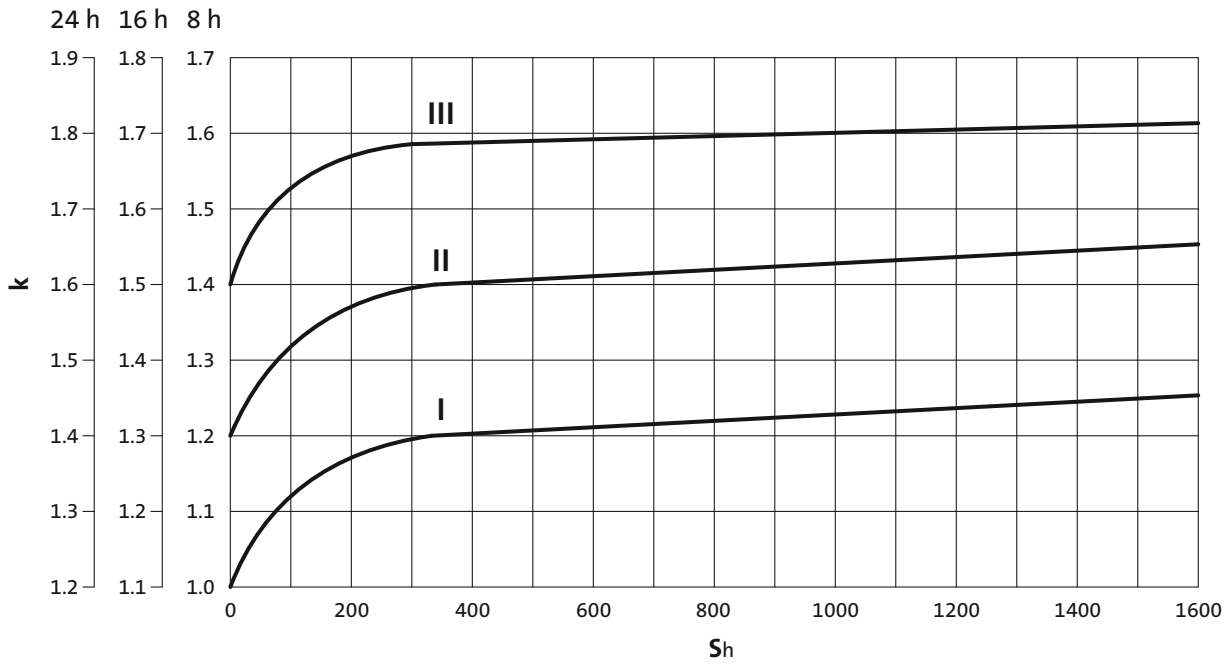
Load capacity and application factor

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

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

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

Application factor k



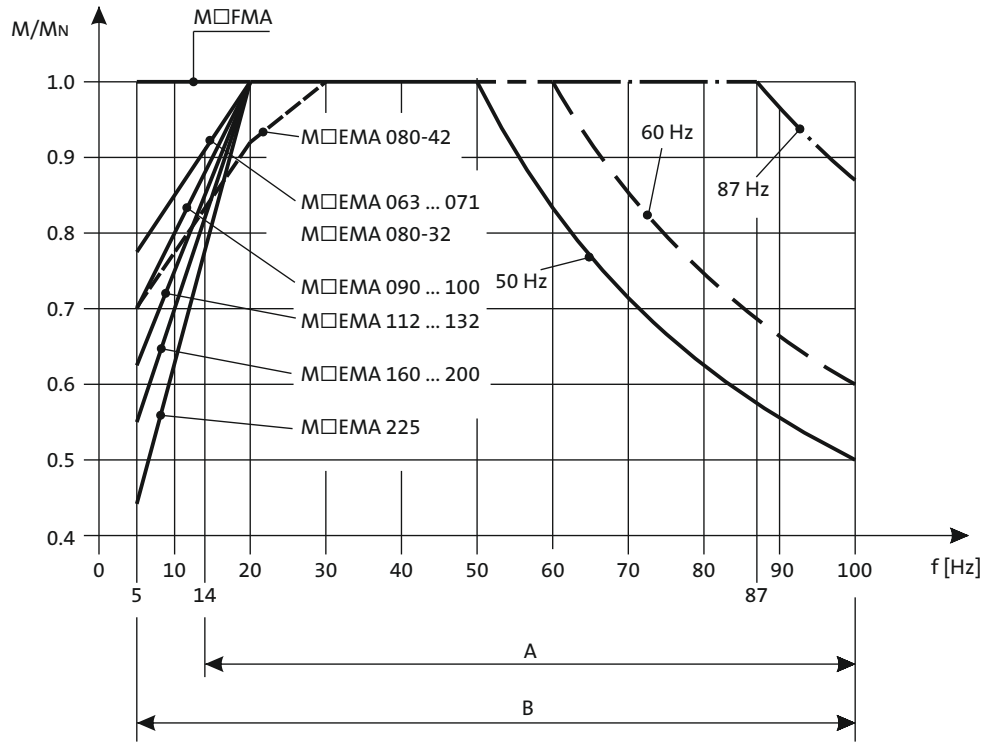
► S_h= switchings/h

Dimensioning

Torque derating at low motor frequencies

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

Torque characteristics



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

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

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

Please contact your Lenze sales office.

Dimensioning

Weights

The values given in the tables consider the following gearbox/motor combination:
- Gearbox with hollow shaft without foot and flange including lubricant amount for mounting position A
- Motor without built-on accessories (with integral fan)

For versions deviating from this, additional weights have to be considered.

The respective values can be found for:
- Geared motors without built-on accessories
  > Chapter: Geared motors/Technical data
- Gearbox options
  > Chapter: Gearboxes/Technical data and accessories
- Motor options: Spring-applied brake, feedback, 2. Shaft end, handwheel and increased centrifugal mass
  > Chapter: Motors/Accessories

Moments of inertia

The given moments of inertia of the gearbox refer to the drive shaft. The influence of the ratio (i^2) has been considered in the data.

When the total moment of inertia of the geared motor is calculated, the values of the gearbox, motor and accessories have to be added.

The respective values can be found for:
- Gearboxes
  > Chapter: Gearbox/Technical data
- Motors without built-on accessories
  > Chapter: Motors/Technical data/Rated data
- Motor options: Spring-applied brake, feedback, 2. Shaft end, handwheel and increased centrifugal mass
  > Chapter: Motors/Accessories

Selection tables, notes

Notes on the selection tables with 4-pole motors

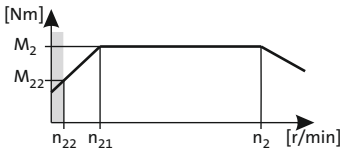
The selection tables show the available combinations of gearbox type, number of stages, ratio and motor. They are used only to provide basic orientation.
The following legend indicates the structure of the selection tables.

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

50 Hz: P_N = 0.12 kW
87 Hz: P_N = 0.21 kW

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

Torque diagram



Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
45	24	5.3	4.6	19	19	24	45	24	5.3	81	24	5.4	31.387	-S130	063-12	65
40	28	4.7	4.1	21	17	27	40	28	4.7	71	27	4.8	35.493	-S130	063-12	65

Product Gearbox

Product Motor

Ratio i

Page number for dimensions

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

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

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

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

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

Motor voltages

The power values and torques indicated in the selection tables relate to the following motor voltages:
- 50 Hz : Δ 230 V / Y 400 V
- 60 Hz : 230 V or 460 V
- 87 Hz : Δ 400 V

Operation at 87 Hz

In 87 Hz operation, the three-phase AC motor (which is designed for a voltage of Δ 230 V / Y 400 V at 50 Hz) is operated on an inverter with 400 V rated voltage in a delta connection. It is important to note here that the inverter must be configured for 87Hz output.
This offers the following advantages over 50 Hz operation:
- the setting range of the motor is increased by a factor of 1.73.
- the motor can then provide around 1.73 times greater output, which in turn allows a smaller and more affordable motor to be selected for the application.
- the efficiency of the motor is also improved.

Selection tables, notes

Notes on the selection tables with 2-pole and 6-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

50 Hz: P_N = 0.18 kW

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

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
68	25	5.3	40.422	-S130	063-11	85
60	28	4.7	45.711	-S130	063-11	85

Mains operation
Output speed **n_2**
Output torque **M_2**

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**.

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

Ratio i

Product Gearbox

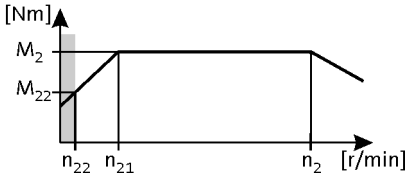
Product Motor

Page number for dimensions

Motor voltages

The power values and torques indicated in the selection tables relate to the following motor voltages:
- 50 Hz : Δ 230 V / Y 400 V
- 60 Hz : 230 V or 460 V

Selection tables, 4-pole motors



50 Hz: P_N = 0.12 kW
87 Hz: P_N = 0.21 kW

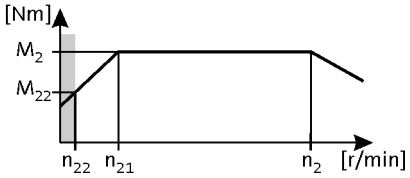
2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
45	24	5.3	4.6	19	19	24	45	24	5.3	81	24	5.4	31.387	-S130	063-12	65
40	28	4.7	4.1	21	17	27	40	28	4.7	71	27	4.8	35.493	-S130	063-12	65
35	32	4.1	3.6	24	15	31	35	32	4.1	63	31	4.2	40.422	-S130	063-12	65
31	36	3.7	3.2	28	13	35	31	36	3.7	56	35	3.7	45.711	-S130	063-12	65
28	40	3.3	2.8	31	12	39	28	40	3.3	50	39	3.3	51.230	-S130	063-12	65
25	45	2.9	2.5	35	10	44	25	45	2.9	44	44	2.9	57.933	-S130	063-12	65
22	50	2.6	2.3	39	9.3	49	22	50	2.6	40	49	2.6	64.200	-S130	063-12	65
22	51	3.1	2.2	40	9.1	51	22	51	3.1	38	51	3.2	65.975	-S220	063-12	69
20	57	2.3	2.0	44	8.3	56	20	57	2.3	35	56	2.3	72.600	-S130	063-12	65
19	58	3.1	1.9	45	8.0	57	19	58	3.1	34	57	3.2	74.750	-S220	063-12	69
17	66	1.6	1.7	51	7.1	65	17	66	1.6	30	65	1.6	84.581	-S130	063-12	65
15	75	1.5	1.5	58	6.3	73	15	75	1.5	27	73	1.6	95.648	-S130	063-12	65

3-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
15	75	2.9	1.5	58	6.2	74	15	75	2.9	26	74	3.0	97.528	-S220	063-12	69
13	86	2.6	1.3	66	5.4	84	13	86	2.6	23	84	2.6	111.747	-S220	063-12	69
11	97	2.3	1.1	75	4.7	96	11	97	2.3	20	96	2.3	126.610	-S220	063-12	69
10	110	2.0	1.0	85	4.2	108	10	110	2.0	18	108	2.0	143.205	-S220	063-12	69
8.8	125	1.8	0.9	96	3.7	123	8.8	125	1.8	16	123	1.8	162.252	-S220	063-12	69
8.0	137	2.9	0.8	106	3.4	135	8.0	137	2.9	14	135	3.0	178.531	-S400	063-12	73
7.7	142	1.6	0.8	110	3.2	140	7.7	142	1.6	14	140	1.6	185.248	-S220	063-12	69
7.0	157	2.6	0.7	121	2.9	155	7.0	157	2.6	12	155	2.6	204.412	-S400	063-12	73
6.8	161	1.4	0.7	124	2.9	159	6.8	161	1.4	12	159	1.4	209.887	-S220	063-12	69
6.2	177	2.2	0.6	137	2.6	175	6.2	177	2.2	11	175	2.3	230.946	-S400	063-12	73
5.9	185	1.2	0.6	143	2.5	182	5.9	185	1.2	11	182	1.2	241.022	-S220	063-12	69
5.4	204	1.9	0.5	157	2.3	201	5.4	204	1.9	9.5	201	1.9	265.956	-S400	063-12	73
5.2	210	1.1	0.5	162	2.2	206	5.2	210	1.1	9.3	206	1.1	273.079	-S220	063-12	69
5.1	216	2.8	0.5	166	2.1	212	5.1	216	2.8	9.0	212	2.8	280.500	-S660	063-12	77
4.7	231	1.7	0.5	178	2.0	227	4.7	231	1.7	8.4	227	1.8	300.479	-S400	063-12	73
4.5	246	2.7	0.5	189	1.9	242	4.5	246	2.7	7.9	242	2.7	319.600	-S660	063-12	77
4.1	265	1.3	0.4	204	1.7	260	4.1	265	1.3	7.4	260	1.3	344.533	-S400	063-12	73
3.9	284	1.6	0.4	219	1.6	279	3.9	284	1.6	6.9	279	1.6	369.548	-S660	063-12	77
3.7	299	1.3	0.4	230	1.5	294	3.7	299	1.3	6.5	294	1.3	389.256	-S400	063-12	73
3.4	324	1.6	0.3	249	1.4	318	3.4	324	1.6	6.0	318	1.6	421.060	-S660	063-12	77

Selection tables, 4-pole motors



50 Hz: P_N = 0.18 kW
87 Hz: P_N = 0.33 kW

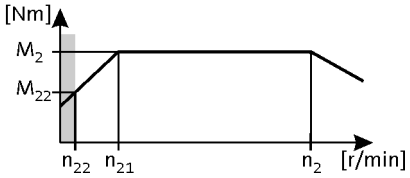
2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
194	9.0	4.5	21	6.6	85	9.0	194	9.0	4.5	352	9.0	3.7	7.029	-S130	063-32	65
85	20	4.5	9.1	15	38	20	85	20	4.5	155	20	3.7	15.979	-S130	063-32	65
76	22	4.5	8.0	17	33	22	76	22	4.5	137	22	4.2	18.069	-S130	063-32	65
67	25	4.1	7.1	19	29	25	67	25	4.1	121	25	3.9	20.381	-S130	063-32	65
59	28	4.1	6.3	22	26	28	59	28	4.1	107	28	3.9	23.048	-S130	063-32	65
44	38	3.4	4.6	30	19	38	44	38	3.4	79	39	3.4	31.387	-S130	063-32	65
39	43	3.0	4.1	33	17	43	39	43	3.0	70	44	3.0	35.493	-S130	063-32	65
34	49	2.6	3.6	38	15	49	34	49	2.6	61	50	2.6	40.422	-S130	063-32	65
32	52	2.9	3.4	40	14	52	32	52	2.9	58	53	2.9	42.533	-S220	063-32	69
30	56	2.3	3.2	43	13	56	30	56	2.3	54	56	2.3	45.711	-S130	063-32	65
29	57	2.9	3.1	44	13	57	29	57	2.9	53	58	2.9	46.933	-S400	063-32	73
28	59	2.9	3.0	45	13	59	28	59	2.9	51	60	2.9	48.190	-S220	063-32	69
27	63	2.1	2.8	48	12	63	27	63	2.1	48	63	2.1	51.230	-S130	063-32	65
26	63	2.6	2.8	49	12	63	26	63	2.6	48	64	2.5	51.620	-S220	063-32	69
26	65	2.9	2.7	50	11	65	26	65	2.9	47	66	2.9	53.026	-S400	063-32	73
24	70	2.6	2.5	54	11	70	24	70	2.6	44	70	2.5	56.960	-S400	063-32	73
24	71	1.8	2.5	55	10	71	24	71	1.8	43	72	1.8	57.933	-S130	063-32	65
23	71	2.6	2.5	55	10	71	23	71	2.6	42	72	2.5	58.486	-S220	063-32	69
21	78	1.7	2.3	60	9.3	78	21	78	1.7	39	79	1.6	64.200	-S130	063-32	65
21	79	2.6	2.3	61	9.3	79	21	79	2.6	39	79	2.5	64.354	-S400	063-32	73
21	81	2.0	2.2	62	9.1	81	21	81	2.0	38	82	2.0	65.975	-S220	063-32	69
19	89	1.5	2.0	68	8.3	89	19	89	1.5	34	90	1.5	72.600	-S130	063-32	65
18	91	2.0	1.9	70	8.0	91	18	91	2.0	33	92	2.0	74.750	-S220	063-32	69

3-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
23	72	3.1	2.4	55	10	72	23	72	3.1	42	72	2.9	59.581	-S220	063-32	69
20	81	2.7	2.2	62	8.9	81	20	81	2.7	37	82	2.6	67.298	-S220	063-32	69
18	92	2.4	1.9	71	7.9	92	18	92	2.4	33	93	2.4	76.249	-S220	063-32	69
16	104	2.1	1.7	80	7.0	104	16	104	2.1	29	105	2.1	86.079	-S220	063-32	69
14	117	1.9	1.5	90	6.2	117	14	117	1.9	25	119	1.9	97.528	-S220	063-32	69
13	129	3.1	1.4	99	5.6	129	13	129	3.1	23	131	3.1	107.314	-S400	063-32	73
12	134	1.6	1.3	104	5.4	134	12	134	1.6	22	136	1.6	111.747	-S220	063-32	69
11	148	2.7	1.2	114	4.9	148	11	148	2.7	20	150	2.7	123.307	-S400	063-32	73
11	152	1.4	1.1	117	4.7	152	11	152	1.4	20	154	1.4	126.610	-S220	063-32	69
9.8	168	2.4	1.0	129	4.3	168	9.8	168	2.4	18	170	2.4	139.313	-S400	063-32	73
9.5	172	1.3	1.0	133	4.2	172	9.5	172	1.3	17	174	1.3	143.205	-S220	063-32	69
8.6	190	2.1	0.9	146	3.8	190	8.6	190	2.1	16	192	2.1	158.019	-S400	063-32	73

Selection tables, 4-pole motors

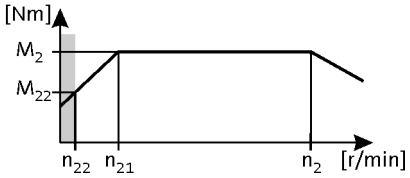


50 Hz: P_N = 0.18 kW
87 Hz: P_N = 0.33 kW

3-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
8.4	195	1.1	0.9	150	3.7	195	8.4	195	1.1	15	197	1.1	162.252	-S220	063-32	69
7.7	213	2.9	0.8	164	3.4	213	7.7	213	2.9	14	215	2.9	176.611	-S660	063-32	77
7.6	215	1.9	0.8	165	3.4	215	7.6	215	1.9	14	217	1.8	178.531	-S400	063-32	73
6.8	242	2.7	0.7	187	3.0	242	6.8	242	2.7	12	245	2.7	201.230	-S660	063-32	77
6.7	246	1.6	0.7	189	2.9	246	6.7	246	1.6	12	249	1.6	204.412	-S400	063-32	73
6.1	269	2.5	0.6	207	2.7	269	6.1	269	2.5	11	272	2.4	223.833	-S660	063-32	77
5.9	278	1.4	0.6	214	2.6	278	5.9	278	1.4	11	281	1.4	230.946	-S400	063-32	73
5.4	307	2.2	0.6	236	2.4	307	5.4	307	2.2	9.7	310	2.1	255.034	-S660	063-32	77
5.1	320	1.2	0.5	246	2.3	320	5.1	320	1.2	9.3	324	1.2	265.956	-S400	063-32	73
4.9	338	1.8	0.5	260	2.1	338	4.9	338	1.8	8.8	341	1.8	280.500	-S660	063-32	77
4.5	362	1.1	0.5	278	2.0	362	4.5	362	1.1	8.2	366	1.1	300.479	-S400	063-32	73
4.3	385	1.7	0.5	296	1.9	385	4.3	385	1.7	7.7	389	1.7	319.600	-S660	063-32	77
3.7	445	1.0	0.4	342	1.6	445	3.7	445	1.0				369.548	-S660	063-32	77
3.2	507	1.0	0.3	390	1.4	507	3.2	507	1.0	5.9	512	1.0	421.060	-S660	063-32	77

Selection tables, 4-pole motors



50 Hz: P_N = 0.25 kW
87 Hz: P_N = 0.45 kW

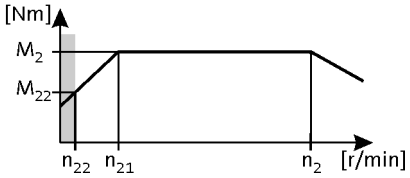
2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
374	6.0	5.6	40	4.8	164	6.0	374	6.0	5.6	677	6.0	4.8	3.661	-S130	063-42	65
273	8.0	5.6	29	6.5	120	8.0	273	8.0	5.6	494	8.0	4.8	5.021	-S130	063-42	65
213	11	5.2	23	8.4	93	11	213	11	5.2	386	11	4.4	6.425	-S130	063-42	65
195	12	5.2	21	9.2	85	12	195	12	5.2	353	12	4.4	7.029	-S130	063-42	65
165	14	5.6	17	11	72	14	165	14	5.6	298	14	4.8	8.322	-S130	063-42	65
146	16	5.6	15	12	64	16	146	16	5.6	264	16	4.8	9.411	-S130	063-42	65
120	19	5.6	13	15	53	19	120	19	5.6	217	19	4.8	11.413	-S130	063-42	65
106	22	5.6	11	17	47	22	106	22	5.6	192	22	4.8	12.907	-S130	063-42	65
94	25	5.2	9.9	19	41	25	94	25	5.2	170	25	4.4	14.606	-S130	063-42	65
86	27	4.8	9.1	21	38	27	86	27	4.8	155	27	4.1	15.979	-S130	063-42	65
76	31	4.3	8.0	24	33	30	76	31	4.3	137	30	4.1	18.069	-S130	063-42	65
67	34	3.8	7.1	27	29	34	67	34	3.8	122	34	3.7	20.381	-S130	063-42	65
59	39	3.3	6.3	30	26	39	59	39	3.3	108	39	3.2	23.048	-S130	063-42	65
55	42	3.1	5.8	33	24	42	55	42	3.1	99	42	3.0	24.967	-S130	063-42	65
49	48	2.7	5.1	37	21	47	49	48	2.7	88	47	2.6	28.233	-S130	063-42	65
44	53	2.5	4.6	41	19	53	44	53	2.5	79	53	2.5	31.387	-S130	063-42	65
39	60	2.2	4.1	46	17	60	39	60	2.2	70	60	2.2	35.493	-S130	063-42	65
34	68	1.9	3.6	53	15	68	34	68	1.9	61	68	1.9	40.422	-S130	063-42	65
32	72	3.1	3.4	55	14	72	32	72	3.1	58	72	3.1	42.533	-S220	063-42	69
30	77	1.7	3.2	60	13	77	30	77	1.7	54	77	1.7	45.711	-S130	063-42	65
28	81	2.7	3.0	63	13	81	28	81	2.7	52	81	2.7	48.190	-S220	063-42	69
28	83	3.2	3.0	64	12	82	28	83	3.2	51	82	3.2	48.950	-S660	063-42	77
27	87	1.5	2.8	67	12	86	27	87	1.5	48	86	1.5	51.230	-S130	063-42	65
27	87	2.5	2.8	67	12	87	27	87	2.5	48	87	2.5	51.620	-S220	063-42	69
25	94	3.2	2.6	73	11	94	25	94	3.2	45	94	3.2	55.773	-S660	063-42	77
24	96	2.8	2.5	74	11	96	24	96	2.8	44	96	2.8	56.960	-S400	063-42	73
24	98	1.3	2.5	75	10	97	24	98	1.3	43	97	1.3	57.933	-S130	063-42	65
23	99	2.2	2.5	76	10	98	23	99	2.2	42	98	2.2	58.486	-S220	063-42	69
21	109	1.2	2.3	84	9.3	108	21	109	1.2	39	108	1.2	64.200	-S130	063-42	65
21	109	2.8	2.3	84	9.3	108	21	109	2.8	39	108	2.8	64.354	-S400	063-42	73
21	112	1.4	2.2	86	9.1	111	21	112	1.4	38	111	1.4	65.975	-S220	063-42	69
19	123	1.1	2.0	95	8.3	122	19	123	1.1	34	122	1.1	72.600	-S130	063-42	65
18	126	1.4	1.9	97	8.0	126	18	126	1.4	33	126	1.4	74.750	-S220	063-42	69

3-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
30	75	2.9	3.2	58	13	75	30	75	2.9	55	75	2.5	45.333	-S220	063-42	69
26	88	2.5	2.8	67	11	87	26	88	2.5	47	87	2.4	52.587	-S220	063-42	69

Selection tables, 4-pole motors

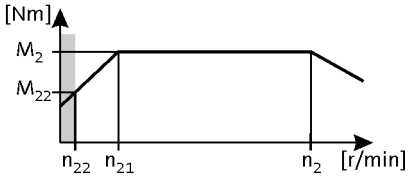


50 Hz: P_N = 0.25 kW
87 Hz: P_N = 0.45 kW

3-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
23	99	2.2	2.4	76	10	99	23	99	2.2	42	99	2.1	59.581	-S220	063-42	69
20	112	2.0	2.2	86	8.9	111	20	112	2.0	37	111	1.9	67.298	-S220	063-42	69
18	124	3.2	2.0	95	8.1	123	18	124	3.2	33	123	3.3	74.260	-S400	063-42	73
18	127	1.7	1.9	98	7.9	126	18	127	1.7	33	126	1.7	76.249	-S220	063-42	69
16	140	2.9	1.7	108	7.2	139	16	140	2.9	30	139	2.9	83.900	-S400	063-42	73
16	143	1.5	1.7	110	7.0	143	16	143	1.5	29	143	1.5	86.079	-S220	063-42	69
14	158	2.5	1.5	122	6.3	157	14	158	2.5	26	157	2.5	94.984	-S400	063-42	73
14	162	1.4	1.5	125	6.2	161	14	162	1.4	25	161	1.4	97.528	-S220	063-42	69
13	179	2.2	1.4	138	5.6	178	13	179	2.2	23	178	2.3	107.314	-S400	063-42	73
12	186	1.2	1.3	143	5.4	185	12	186	1.2	22	185	1.2	111.747	-S220	063-42	69
11	205	2.0	1.2	158	4.9	204	11	205	2.0	20	204	2.0	123.307	-S400	063-42	73
11	207	3.2	1.2	159	4.8	206	11	207	3.2	20	206	3.2	124.289	-S660	063-42	77
11	211	1.0	1.1	162	4.7	210	11	211	1.0	20	210	1.1	126.610	-S220	063-42	69
10	228	2.9	1.1	176	4.4	227	10	228	2.9	18	227	2.9	137.133	-S660	063-42	77
9.8	232	1.7	1.0	179	4.3	231	9.8	232	1.7	18	231	1.7	139.313	-S400	063-42	73
8.8	260	2.5	0.9	200	3.8	259	8.8	260	2.5	16	259	2.6	156.249	-S660	063-42	77
8.7	263	1.5	0.9	203	3.8	262	8.7	263	1.5	16	262	1.5	158.019	-S400	063-42	73
7.8	294	2.2	0.8	227	3.4	292	7.8	294	2.2	14	292	2.3	176.611	-S660	063-42	77
7.7	297	1.3	0.8	229	3.4	296	7.7	297	1.3	14	296	1.4	178.531	-S400	063-42	73
6.8	335	2.0	0.7	258	3.0	333	6.8	335	2.0	12	333	2.0	201.230	-S660	063-42	77
6.7	340	1.2	0.7	262	2.9	338	6.7	340	1.2	12	338	1.2	204.412	-S400	063-42	73
6.1	373	1.8	0.6	287	2.7	371	6.1	373	1.8	11	371	1.8	223.833	-S660	063-42	77
5.9	385	1.0	0.6	296	2.6	382	5.9	385	1.0	11	382	1.0	230.946	-S400	063-42	73
5.4	425	1.6	0.6	327	2.4	422	5.4	425	1.6	9.7	422	1.6	255.034	-S660	063-42	77
4.9	467	1.2	0.5	360	2.1	464	4.9	467	1.2	8.8	464	1.2	280.500	-S660	063-42	77
4.3	532	1.2	0.5	410	1.9	529	4.3	532	1.2	7.8	529	1.2	319.600	-S660	063-42	77

Selection tables, 4-pole motors

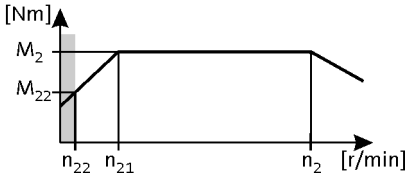


50 Hz: P_N = 0.37 kW
87 Hz: P_N = 0.66 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
385	9.0	4.9	40	6.9	164	9.0	385	9.0	4.9				3.661	-S130	071-32	65
281	12	4.9	29	9.4	120	12	281	12	4.9				5.021	-S130	071-32	65
219	16	4.5	23	12	93	16	219	16	4.5				6.425	-S130	071-32	65
201	17	4.5	21	13	85	17	201	17	4.5				7.029	-S130	071-32	65
169	20	4.9	17	16	72	20	169	20	4.9				8.322	-S130	071-32	65
150	23	4.9	15	18	64	23	150	23	4.9				9.411	-S130	071-32	65
124	28	4.7	13	21	53	28	124	28	4.7				11.413	-S130	071-32	65
109	31	4.1	11	24	47	31	109	31	4.1				12.907	-S130	071-32	65
97	36	3.7	9.9	27	41	36	97	36	3.7				14.606	-S130	071-32	65
88	39	3.4	9.1	30	38	39	88	39	3.4				15.979	-S130	071-32	65
78	44	3.0	8.0	34	33	44	78	44	3.0	140	44	2.8	18.069	-S130	071-32	65
69	50	2.6	7.1	38	29	49	69	50	2.6	124	49	2.5	20.381	-S130	071-32	65
61	56	2.3	6.3	43	26	56	61	56	2.3	109	56	2.2	23.048	-S130	071-32	65
57	61	2.1	5.8	47	24	61	57	61	2.1	101	61	2.1	24.967	-S130	071-32	65
50	69	1.9	5.1	53	21	69	50	69	1.9	89	69	1.8	28.233	-S130	071-32	65
47	73	3.0	4.8	56	20	73	47	73	3.0	84	73	2.9	29.937	-S220	071-32	69
45	76	1.7	4.6	59	19	76	45	76	1.7	80	76	1.7	31.387	-S130	071-32	65
43	80	2.8	4.4	62	18	80	43	80	2.8	77	80	2.8	32.867	-S220	071-32	69
40	86	1.5	4.1	66	17	86	40	86	1.5	71	86	1.5	35.493	-S130	071-32	65
39	88	3.2	4.0	68	17	88	39	88	3.2				36.267	-S400	071-32	73
38	91	2.4	3.9	70	16	90	38	91	2.4	68	90	2.4	37.238	-S220	071-32	69
35	98	3.2	3.6	76	15	98	35	98	3.2				40.333	-S660	071-32	77
35	98	1.3	3.6	76	15	98	35	98	1.3	62	98	1.3	40.422	-S130	071-32	65
34	100	3.2	3.5	77	15	100	34	100	3.2				40.974	-S400	071-32	73
33	103	2.1	3.4	80	14	103	33	103	2.1	59	103	2.1	42.533	-S220	071-32	69
31	111	1.2	3.2	86	13	111	31	111	1.2	55	111	1.2	45.711	-S130	071-32	65
31	112	3.2	3.2	86	13	112	31	112	3.2				45.956	-S660	071-32	77
30	114	2.8	3.1	88	13	114	30	114	2.8	54	114	2.8	46.933	-S400	071-32	73
29	117	1.9	3.0	90	13	117	29	117	1.9	52	117	1.9	48.190	-S220	071-32	69
29	119	2.8	3.0	92	12	119	29	119	2.8	52	119	2.8	48.950	-S660	071-32	77
28	125	1.0	2.8	96	12	124	28	125	1.0	49	124	1.1	51.230	-S130	071-32	65
27	126	1.8	2.8	97	12	125	27	126	1.8	49	125	1.8	51.620	-S220	071-32	69
27	129	2.7	2.7	99	11	129	27	129	2.7	48	129	2.7	53.026	-S400	071-32	73
25	136	2.8	2.6	104	11	135	25	136	2.8	45	135	2.8	55.773	-S660	071-32	77
25	138	1.9	2.5	107	11	138	25	138	1.9	44	138	1.9	56.960	-S400	071-32	73

Selection tables, 4-pole motors



50 Hz: P_N = 0.37 kW
87 Hz: P_N = 0.66 kW

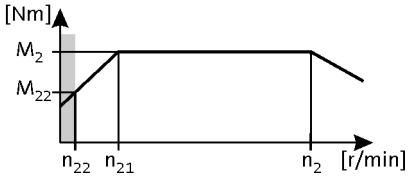
2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
24	142	1.6	2.5	110	10	142	24	142	1.6	43	142	1.6	58.486	-S220	071-32	69
22	156	1.9	2.3	121	9.3	156	22	156	1.9	39	156	1.9	64.354	-S400	071-32	73
21	160	1.1	2.2	124	9.1	160	21	160	1.1	38	160	1.1	65.975	-S220	071-32	69
19	182	1.1	1.9	140	8.0	181	19	182	1.1	34	181	1.1	74.750	-S220	071-32	69

3-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
35	96	2.3	3.6	74	15	96	35	96	2.3	63	96	1.9	40.012	-S220	071-32	69
31	109	2.0	3.2	84	13	108	31	109	2.0	56	108	1.7	45.333	-S220	071-32	69
27	126	1.8	2.8	97	11	126	27	126	1.8	48	126	1.7	52.587	-S220	071-32	69
24	139	2.9	2.5	107	10	139	24	139	2.9	43	139	2.8	58.027	-S400	071-32	73
24	143	1.5	2.4	110	10	142	24	143	1.5	42	142	1.5	59.581	-S220	071-32	69
22	157	2.6	2.2	121	9.2	157	22	157	2.6	38	157	2.4	65.559	-S400	071-32	73
21	161	1.4	2.2	124	8.9	161	21	161	1.4	37	161	1.3	67.298	-S220	071-32	69
19	178	2.3	2.0	137	8.1	177	19	178	2.3	34	177	2.3	74.260	-S400	071-32	73
19	183	1.2	1.9	141	7.9	182	19	183	1.2	33	182	1.2	76.249	-S220	071-32	69
17	201	2.0	1.7	155	7.2	201	17	201	2.0	30	201	2.0	83.900	-S400	071-32	73
16	206	1.1	1.7	159	7.0	206	16	206	1.1	29	206	1.1	86.079	-S220	071-32	69
16	213	3.1	1.6	164	6.7	213	16	213	3.1	28	213	3.1	89.048	-S660	071-32	77
15	227	1.8	1.5	175	6.3	227	15	227	1.8	27	227	1.8	94.984	-S400	071-32	73
14	243	2.7	1.4	187	5.9	243	14	243	2.7	25	243	2.7	101.460	-S660	071-32	77
13	257	1.6	1.4	198	5.6	256	13	257	1.6	24	256	1.6	107.314	-S400	071-32	73
13	261	2.5	1.3	201	5.5	261	13	261	2.5	23	261	2.5	109.083	-S660	071-32	77
11	295	1.4	1.2	227	4.9	295	11	295	1.4	20	295	1.4	123.307	-S400	071-32	73
11	298	2.2	1.2	229	4.8	297	11	298	2.2	20	297	2.2	124.289	-S660	071-32	77
10	328	2.0	1.1	253	4.4	328	10	328	2.0	18	328	2.0	137.133	-S660	071-32	77
10	334	1.2	1.0	257	4.3	333	10	334	1.2	18	333	1.2	139.313	-S400	071-32	73
9.0	374	1.8	0.9	288	3.8	373	9.0	374	1.8	16	373	1.8	156.249	-S660	071-32	77
8.9	378	1.1	0.9	291	3.8	378	8.9	378	1.1	16	378	1.1	158.019	-S400	071-32	73
8.0	423	1.6	0.8	326	3.4	422	8.0	423	1.6	14	422	1.6	176.611	-S660	071-32	77
7.0	482	1.4	0.7	371	3.0	481	7.0	482	1.4	13	481	1.4	201.230	-S660	071-32	77
6.3	536	1.2	0.6	413	2.7	535	6.3	536	1.2	11	535	1.2	223.833	-S660	071-32	77
5.5	611	1.1	0.6	470	2.4	610	5.5	611	1.1	9.9	610	1.1	255.034	-S660	071-32	77

Selection tables, 4-pole motors

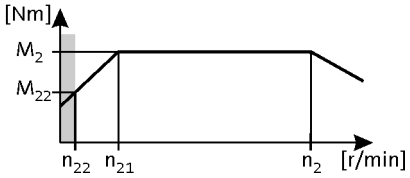


50 Hz: P_N = 0.55 kW
87 Hz: P_N = 1.0 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
384	13	4.5	40	10	164	13	384	13	4.5				3.661	-S130	071-42	65
280	18	4.2	29	14	120	18	280	18	4.2				5.021	-S130	071-42	65
240	21	4.5	25	16	102	21	240	21	4.5				5.860	-S400	071-42	73
219	23	3.7	23	18	93	23	219	23	3.7				6.425	-S130	071-42	65
200	25	3.6	21	20	85	25	200	25	3.6				7.029	-S130	071-42	65
169	30	3.8	17	23	72	30	169	30	3.8				8.322	-S130	071-42	65
149	34	3.7	15	26	64	34	149	34	3.7				9.411	-S130	071-42	65
123	41	3.1	13	32	53	41	123	41	3.1	220	42	2.6	11.413	-S130	071-42	65
109	47	2.8	11	36	47	47	109	47	2.8	195	48	2.3	12.907	-S130	071-42	65
96	53	2.5	9.9	41	41	53	96	53	2.5	172	54	2.0	14.606	-S130	071-42	65
95	54	4.5	9.8	41	41	54	95	54	4.5				14.806	-S400	071-42	73
88	58	2.2	9.1	45	38	58	88	58	2.2	157	59	1.9	15.979	-S130	071-42	65
78	66	2.0	8.0	51	33	66	78	66	2.0	139	67	1.9	18.069	-S130	071-42	65
75	68	3.2	7.7	52	32	68	75	68	3.2	134	69	3.0	18.776	-S220	071-42	69
69	74	3.0	7.1	57	30	74	69	74	3.0	124	75	2.8	20.300	-S220	071-42	69
69	74	1.8	7.1	57	29	74	69	74	1.8	123	75	1.7	20.381	-S130	071-42	65
61	83	2.6	6.3	64	26	83	61	83	2.6	109	85	2.5	23.000	-S220	071-42	69
61	84	1.6	6.3	64	26	84	61	84	1.6	109	85	1.5	23.048	-S130	071-42	65
56	91	1.4	5.8	70	24	91	56	91	1.4	101	92	1.4	24.967	-S130	071-42	65
53	96	2.3	5.5	74	23	96	53	96	2.3	95	97	2.2	26.422	-S220	071-42	69
50	102	1.3	5.1	79	21	102	50	102	1.3	89	104	1.2	28.233	-S130	071-42	65
47	109	2.0	4.8	84	20	109	47	109	2.0	84	110	1.9	29.937	-S220	071-42	69
45	113	3.2	4.7	87	19	113	45	113	3.2	81	115	3.1	31.167	-S660	071-42	77
45	114	1.1	4.6	88	19	114	45	114	1.1	80	116	1.1	31.387	-S130	071-42	65
43	119	1.9	4.4	92	18	119	43	119	1.9	77	121	1.8	32.867	-S220	071-42	69
40	129	1.0	4.1	99	17	129	40	129	1.0				35.493	-S130	071-42	65
40	129	3.2	4.1	99	17	129	40	129	3.2	71	131	3.1	35.511	-S660	071-42	77
39	132	2.9	4.0	101	17	132	39	132	2.9	69	134	2.8	36.267	-S400	071-42	73
38	135	1.6	3.9	104	16	135	38	135	1.6	68	137	1.6	37.238	-S220	071-42	69
35	146	2.9	3.6	113	15	146	35	146	2.9	62	149	2.8	40.333	-S660	071-42	77
34	149	2.7	3.5	114	15	149	34	149	2.7	61	151	2.7	40.974	-S400	071-42	73
33	154	1.4	3.4	119	14	154	33	154	1.4	59	157	1.4	42.533	-S220	071-42	69
31	167	2.9	3.2	128	13	167	31	167	2.9	55	169	2.8	45.956	-S660	071-42	77
30	170	1.9	3.1	131	13	170	30	170	1.9	54	173	1.8	46.933	-S400	071-42	73
29	175	1.3	3.0	135	13	175	29	175	1.3	52	178	1.2	48.190	-S220	071-42	69

Selection tables, 4-pole motors



50 Hz: P_N = 0.55 kW
87 Hz: P_N = 1.0 kW

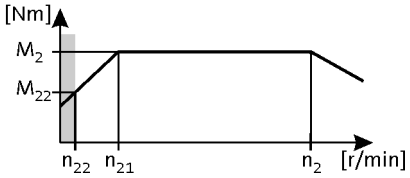
2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
29	178	2.4	3.0	137	12	178	29	178	2.4	51	180	2.4	48.950	-S660	071-42	77
27	187	1.2	2.8	144	12	187	27	187	1.2	49	190	1.2	51.620	-S220	071-42	69
27	192	1.8	2.7	148	11	192	27	192	1.8	47	195	1.8	53.026	-S400	071-42	73
25	202	2.4	2.6	156	11	202	25	202	2.4	45	205	2.4	55.773	-S660	071-42	77
25	207	1.3	2.5	159	11	207	25	207	1.3	44	210	1.3	56.960	-S400	071-42	73
24	212	1.0	2.5	163	10	212	24	212	1.0	43	215	1.0	58.486	-S220	071-42	69
22	233	1.3	2.3	180	9.3	233	22	233	1.3	39	237	1.3	64.354	-S400	071-42	73

3-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
27	188	1.2	2.8	145	11	188	27	188	1.2	48	191	1.1	52.587	-S220	071-42	69
25	203	3.2	2.6	156	11	203	25	203	3.2	44	206	3.0	56.818	-S660	071-42	77
24	207	1.9	2.5	160	10	207	24	207	1.9	43	211	1.8	58.027	-S400	071-42	73
24	213	1.0	2.4	164	10	213	24	213	1.0				59.581	-S220	071-42	69
22	228	2.9	2.3	176	9.4	228	22	228	2.9	39	232	2.7	63.817	-S660	071-42	77
21	234	1.7	2.2	180	9.2	234	21	234	1.7	38	238	1.6	65.559	-S400	071-42	73
20	249	2.7	2.1	192	8.6	249	20	249	2.7	36	253	2.5	69.813	-S660	071-42	77
19	260	2.5	2.0	200	8.3	260	19	260	2.5	35	264	2.5	72.713	-S660	071-42	77
19	265	1.5	2.0	204	8.1	265	19	265	1.5	34	269	1.5	74.260	-S400	071-42	73
18	284	2.3	1.8	219	7.5	284	18	284	2.3	32	289	2.3	79.545	-S660	071-42	77
17	300	1.3	1.7	231	7.2	300	17	300	1.3	30	304	1.3	83.900	-S400	071-42	73
16	318	2.1	1.6	245	6.7	318	16	318	2.1	28	323	2.0	89.048	-S660	071-42	77
15	339	1.2	1.5	261	6.3	339	15	339	1.2	27	345	1.2	94.984	-S400	071-42	73
14	362	1.8	1.4	279	5.9	362	14	362	1.8	25	368	1.8	101.460	-S660	071-42	77
13	383	1.0	1.4	295	5.6	383	13	383	1.0	23	389	1.0	107.314	-S400	071-42	73
13	390	1.7	1.3	300	5.5	390	13	390	1.7	23	396	1.7	109.083	-S660	071-42	77
11	444	1.5	1.2	342	4.8	444	11	444	1.5	20	451	1.5	124.289	-S660	071-42	77
10	490	1.4	1.1	377	4.4	490	10	490	1.4	18	498	1.3	137.133	-S660	071-42	77
9.0	558	1.2	0.9	430	3.8	558	9.0	558	1.2	16	567	1.2	156.249	-S660	071-42	77
8.0	631	1.1	0.8	486	3.4	631	8.0	631	1.1	14	641	1.0	176.611	-S660	071-42	77

Selection tables, 4-pole motors

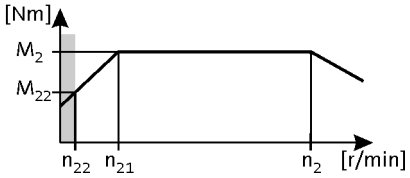


50 Hz: P_N = 0.75 kW
87 Hz: P_N = 1.35 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
385	18	3.5	40	14	164	18	385	18	3.5				3.661	-S130	080-32	65
281	25	3.1	29	19	120	25	281	25	3.1	502	25	2.6	5.021	-S130	080-32	65
241	29	4.1	25	22	102	29	241	29	4.1	430	29	3.5	5.860	-S400	080-32	73
219	32	2.8	23	25	93	32	219	32	2.8	392	32	2.3	6.425	-S130	080-32	65
201	35	2.7	21	27	85	35	201	35	2.7	359	35	2.2	7.029	-S130	080-32	65
169	41	2.8	17	32	72	41	169	41	2.8	303	41	2.4	8.322	-S130	080-32	65
150	46	2.7	15	36	64	46	150	46	2.7	268	47	2.3	9.411	-S130	080-32	65
124	56	2.3	13	44	53	56	124	56	2.3	221	57	1.9	11.413	-S130	080-32	65
109	64	2.0	11	49	47	64	109	64	2.0	195	64	1.7	12.907	-S130	080-32	65
97	72	1.8	9.9	56	41	72	97	72	1.8	173	72	1.5	14.606	-S130	080-32	65
96	73	3.0	9.9	56	41	73	96	73	3.0	171	73	2.5	14.720	-S220	080-32	69
95	73	4.1	9.8	56	41	73	95	73	4.1				14.806	-S400	080-32	73
88	79	1.7	9.1	61	38	79	88	79	1.7	158	79	1.4	15.979	-S130	080-32	65
85	82	2.7	8.8	63	36	82	85	82	2.7	152	82	2.3	16.571	-S220	080-32	69
78	89	1.5	8.0	69	33	89	78	89	1.5	140	90	1.4	18.069	-S130	080-32	65
75	93	2.4	7.7	72	32	93	75	93	2.4	134	93	2.3	18.776	-S220	080-32	69
70	100	2.2	7.1	77	30	100	70	100	2.2	124	101	2.1	20.300	-S220	080-32	69
69	100	1.3	7.1	78	29	100	69	100	1.3	124	101	1.2	20.381	-S130	080-32	65
61	113	1.9	6.3	88	26	113	61	113	1.9	110	114	1.8	23.000	-S220	080-32	69
61	114	1.1	6.3	88	26	114	61	114	1.1	109	114	1.1	23.048	-S130	080-32	65
57	123	1.1	5.8	95	24	123	57	123	1.1	101	124	1.0	24.967	-S130	080-32	65
56	125	3.2	5.7	96	24	125	56	125	3.2	100	126	3.0	25.308	-S400	080-32	73
53	130	1.7	5.5	101	23	130	53	130	1.7	95	131	1.6	26.422	-S220	080-32	69
48	144	2.8	5.0	111	21	144	48	144	2.8	86	145	2.6	29.156	-S400	080-32	73
47	148	1.5	4.8	114	20	148	47	148	1.5	84	149	1.4	29.937	-S220	080-32	69
45	154	2.9	4.7	119	19	154	45	154	2.9				31.167	-S660	080-32	77
43	162	1.4	4.4	125	18	162	43	162	1.4	77	163	1.4	32.867	-S220	080-32	69
43	162	2.5	4.4	126	18	162	43	162	2.5	77	163	2.5	32.940	-S400	080-32	73
40	175	2.9	4.1	135	17	175	40	175	2.9				35.511	-S660	080-32	77
39	179	2.2	4.0	138	17	179	39	179	2.2	70	180	2.2	36.267	-S400	080-32	73
38	184	1.2	3.9	142	16	184	38	184	1.2	68	185	1.2	37.238	-S220	080-32	69
35	199	2.6	3.6	154	15	199	35	199	2.6	63	200	2.6	40.333	-S660	080-32	77
34	202	2.0	3.5	156	15	202	34	202	2.0	62	203	2.0	40.974	-S400	080-32	73
33	210	1.1	3.4	162	14	210	33	210	1.1	59	211	1.0	42.533	-S220	080-32	69
31	226	2.6	3.2	175	13	226	31	226	2.6	55	228	2.6	45.956	-S660	080-32	77

Selection tables, 4-pole motors



50 Hz: P_N = 0.75 kW
87 Hz: P_N = 1.35 kW

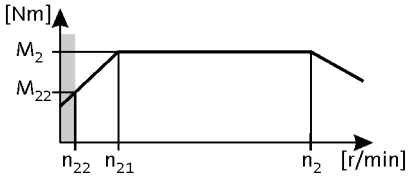
2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
30	231	1.4	3.1	179	13	231	30	231	1.4	54	233	1.4	46.933	-S400	080-32	73
29	241	1.9	3.0	187	12	241	29	241	1.9	52	243	1.8	48.950	-S660	080-32	77
27	261	1.3	2.7	202	11	261	27	261	1.3	48	263	1.3	53.026	-S400	080-32	73
25	275	1.9	2.6	213	11	275	25	275	1.9	45	277	1.8	55.773	-S660	080-32	77

3-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
28	242	2.6	2.9	187	12	242	28	242	2.6	51	244	2.5	49.867	-S660	080-32	77
25	276	2.4	2.6	213	11	276	25	276	2.4	44	278	2.2	56.818	-S660	080-32	77
24	282	1.4	2.5	218	10	282	24	282	1.4	43	284	1.4	58.027	-S400	080-32	73
22	310	2.1	2.3	240	9.4	310	22	310	2.1	40	312	2.0	63.817	-S660	080-32	77
22	318	1.3	2.2	246	9.2	318	22	318	1.3	38	321	1.2	65.559	-S400	080-32	73
20	339	2.0	2.1	262	8.6	339	20	339	2.0	36	341	1.9	69.813	-S660	080-32	77
19	353	1.9	2.0	273	8.3	353	19	353	1.9	35	355	1.9	72.713	-S660	080-32	77
19	360	1.1	2.0	279	8.1	360	19	360	1.1	34	363	1.1	74.260	-S400	080-32	73
18	386	1.7	1.8	299	7.5	386	18	386	1.7	32	389	1.7	79.545	-S660	080-32	77
16	432	1.5	1.6	334	6.7	432	16	432	1.5	28	435	1.5	89.048	-S660	080-32	77
14	493	1.3	1.4	381	5.9	493	14	493	1.3	25	496	1.3	101.460	-S660	080-32	77
13	530	1.3	1.3	409	5.5	530	13	530	1.3	23	533	1.2	109.083	-S660	080-32	77
11	603	1.1	1.2	466	4.8	603	11	603	1.1	20	608	1.1	124.289	-S660	080-32	77

Selection tables, 4-pole motors

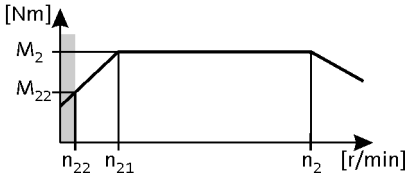


50 Hz: P_N = 1.1 kW
87 Hz: P_N = 2.0 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 30 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
380	27	2.4	40	16	246	27	380	27	2.4	683	27	2.0	3.661	-S130	080-42	65
304	34	4.5	32	19	197	34	304	34	4.5				4.579	-S400	080-42	73
277	37	2.1	29	21	179	37	277	37	2.1	498	37	1.7	5.021	-S130	080-42	65
237	43	4.2	25	25	154	43	237	43	4.2				5.860	-S400	080-42	73
216	47	1.9	23	27	140	47	216	47	1.9	389	48	1.5	6.425	-S130	080-42	65
198	52	1.8	21	30	128	52	198	52	1.8	356	52	1.5	7.029	-S130	080-42	65
167	61	1.9	17	35	108	61	167	61	1.9	300	62	1.6	8.322	-S130	080-42	65
150	68	3.2	16	39	97	68	150	68	3.2	269	69	2.7	9.280	-S220	080-42	69
148	69	1.8	15	40	96	69	148	69	1.8	266	70	1.5	9.411	-S130	080-42	65
132	77	2.9	14	45	86	77	132	77	2.9	238	78	2.4	10.514	-S220	080-42	69
122	84	1.6	13	48	79	84	122	84	1.6	219	85	1.3	11.413	-S130	080-42	65
117	87	2.5	12	50	76	87	117	87	2.5	211	88	2.1	11.876	-S220	080-42	69
108	95	1.4	11	55	70	95	108	95	1.4	194	96	1.2	12.907	-S130	080-42	65
107	95	2.3	11	55	69	95	107	95	2.3	192	96	1.9	12.992	-S220	080-42	69
103	99	2.2	11	57	67	100	103	99	2.2	186	100	1.9	13.456	-S220	080-42	69
95	107	1.2	9.9	62	62	107	95	107	1.2	171	108	1.0	14.606	-S130	080-42	65
94	108	2.0	9.9	62	61	108	94	108	2.0	170	109	1.7	14.720	-S220	080-42	69
94	109	3.7	9.8	63	61	109	94	109	3.7				14.806	-S400	080-42	73
87	117	1.1	9.1	68	56	117	87	117	1.1				15.979	-S130	080-42	65
84	122	1.8	8.8	70	54	122	84	122	1.8	151	123	1.5	16.571	-S220	080-42	69
76	134	3.0	7.9	78	49	134	76	134	3.0	137	136	2.8	18.286	-S400	080-42	73
74	138	1.6	7.7	80	48	138	74	138	1.6	133	139	1.5	18.776	-S220	080-42	69
69	149	1.5	7.1	86	44	149	69	149	1.5	123	150	1.4	20.300	-S220	080-42	69
67	151	2.6	7.0	88	44	151	67	151	2.6	121	153	2.5	20.659	-S400	080-42	73
62	164	2.4	6.5	95	40	164	62	164	2.4	112	166	2.3	22.400	-S400	080-42	73
60	169	1.3	6.3	98	39	169	60	169	1.3	109	170	1.2	23.000	-S220	080-42	69
56	184	3.2	5.8	106	36	184	56	184	3.2	100	186	3.0	25.056	-S660	080-42	77
55	186	2.2	5.7	107	36	186	55	186	2.2	99	188	2.0	25.308	-S400	080-42	73
53	194	1.1	5.5	112	34	194	53	194	1.1	95	196	1.1	26.422	-S220	080-42	69
49	209	3.2	5.1	121	32	209	49	209	3.2	88	212	3.0	28.548	-S660	080-42	77
48	214	1.9	5.0	124	31	214	48	214	1.9	86	216	1.8	29.156	-S400	080-42	73
46	219	1.0	4.8	127	30	219	46	219	1.0				29.937	-S220	080-42	69
45	229	2.9	4.7	132	29	229	45	229	2.9	80	231	2.8	31.167	-S660	080-42	77
42	242	1.7	4.4	140	27	242	42	242	1.7	76	244	1.6	32.940	-S400	080-42	73
39	260	2.5	4.1	151	25	260	39	260	2.5	70	263	2.5	35.511	-S660	080-42	77

Selection tables, 4-pole motors



50 Hz: P_N = 1.1 kW
87 Hz: P_N = 2.0 kW

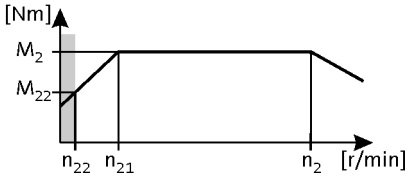
2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 30 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
38	266	1.5	4.0	154	25	266	38	266	1.5	69	269	1.5	36.267	-S400	080-42	73
35	296	1.8	3.6	171	22	296	35	296	1.8	62	299	1.8	40.333	-S660	080-42	77
34	300	1.3	3.5	174	22	300	34	300	1.3	61	304	1.3	40.974	-S400	080-42	73
30	337	1.8	3.2	195	20	337	30	337	1.8	54	341	1.8	45.956	-S660	080-42	77
28	359	1.2	3.0	208	18	359	28	359	1.2	51	363	1.2	48.950	-S660	080-42	77
25	409	1.2	2.6	237	16	409	25	409	1.2	45	413	1.2	55.773	-S660	080-42	77

3-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 30 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
28	360	1.7	2.9	208	18	360	28	360	1.7	50	364	1.7	49.867	-S660	080-42	77
25	410	1.6	2.6	237	16	410	25	410	1.6	44	415	1.5	56.818	-S660	080-42	77
22	461	1.4	2.3	267	14	461	22	461	1.4	39	466	1.4	63.817	-S660	080-42	77
20	504	1.3	2.1	292	13	504	20	504	1.3	36	510	1.2	69.813	-S660	080-42	77
19	525	1.3	2.0	304	12	525	19	525	1.3	34	531	1.2	72.713	-S660	080-42	77
18	574	1.2	1.8	332	11	574	18	574	1.2	31	581	1.1	79.545	-S660	080-42	77
16	643	1.0	1.6	372	10	643	16	643	1.0	28	650	1.0	89.048	-S660	080-42	77

Selection tables, 4-pole motors

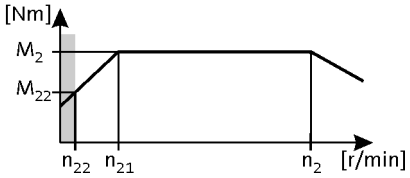


50 Hz: P_N = 1.5 kW
87 Hz: P_N = 2.7 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
385	36	1.8	40	26	164	36	385	36	1.8	688	36	1.5	3.661	-S130	090-32	65
308	45	4.2	32	32	131	45	308	45	4.2				4.579	-S400	090-32	73
281	49	1.5	29	35	120	49	281	49	1.5	502	50	1.3	5.021	-S130	090-32	65
241	58	3.9	25	41	102	58	241	58	3.9	430	58	3.3	5.860	-S400	090-32	73
219	63	1.4	23	45	93	63	219	63	1.4	392	64	1.2	6.425	-S130	090-32	65
201	69	1.3	21	49	85	69	201	69	1.3	359	70	1.1	7.029	-S130	090-32	65
184	76	2.9	19	54	78	76	184	76	2.9	329	76	2.4	7.667	-S220	090-32	69
169	82	1.4	17	58	72	82	169	82	1.4				8.322	-S130	090-32	65
152	91	2.4	16	65	65	91	152	91	2.4	272	92	2.0	9.280	-S220	090-32	69
150	93	1.4	15	66	64	93	150	93	1.4				9.411	-S130	090-32	65
134	104	2.1	14	74	57	104	134	104	2.1	240	104	1.8	10.514	-S220	090-32	69
124	112	1.2	13	80	53	112	124	112	1.2				11.413	-S130	090-32	65
119	117	1.9	12	83	51	117	119	117	1.9	212	118	1.6	11.876	-S220	090-32	69
109	127	1.0	11	90	47	127	109	127	1.0				12.907	-S130	090-32	65
109	128	1.7	11	91	46	128	109	128	1.7	194	129	1.4	12.992	-S220	090-32	69
108	129	3.1	11	92	46	129	108	129	3.1	192	130	2.6	13.105	-S400	090-32	73
105	133	1.7	11	94	45	133	105	133	1.7	187	134	1.4	13.456	-S220	090-32	69
98	141	2.8	10	100	42	141	98	141	2.8	176	142	2.4	14.336	-S400	090-32	73
96	145	1.5	9.9	103	41	145	96	145	1.5	171	146	1.3	14.720	-S220	090-32	69
95	146	2.7	9.8	104	41	146	95	146	2.7	170	147	2.3	14.806	-S400	090-32	73
87	160	2.5	9.0	113	37	160	87	160	2.5	156	161	2.1	16.197	-S400	090-32	73
85	163	1.4	8.8	116	36	163	85	163	1.4	152	165	1.1	16.571	-S220	090-32	69
77	180	2.2	7.9	128	33	180	77	180	2.2	138	182	2.1	18.286	-S400	090-32	73
75	185	1.2	7.7	131	32	185	75	185	1.2	134	186	1.1	18.776	-S220	090-32	69
70	200	1.1	7.1	142	30	200	70	200	1.1	124	202	1.0	20.300	-S220	090-32	69
64	216	3.1	6.6	153	27	216	64	216	3.1	115	218	2.9	21.933	-S660	090-32	77
63	221	1.8	6.5	157	27	221	63	221	1.8	113	222	1.7	22.400	-S400	090-32	73
56	247	2.3	5.8	175	24	247	56	247	2.3	101	249	2.2	25.056	-S660	090-32	77
56	249	1.6	5.7	177	24	249	56	249	1.6	100	251	1.5	25.308	-S400	090-32	73
49	281	2.4	5.1	200	21	281	49	281	2.4	88	283	2.2	28.548	-S660	090-32	77
48	287	1.4	5.0	204	21	287	48	287	1.4	86	289	1.3	29.156	-S400	090-32	73
45	307	2.2	4.7	218	19	307	45	307	2.2	81	309	2.1	31.167	-S660	090-32	77
43	325	1.2	4.4	230	18	325	43	325	1.2	77	327	1.2	32.940	-S400	090-32	73
40	350	1.9	4.1	248	17	350	40	350	1.9	71	353	1.9	35.511	-S660	090-32	77
39	357	1.1	4.0	254	17	357	39	357	1.1	70	360	1.1	36.267	-S400	090-32	73

Selection tables, 4-pole motors



50 Hz: P_N = 1.5 kW
87 Hz: P_N = 2.7 kW

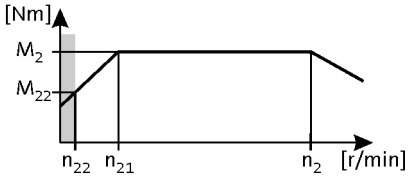
2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
35	398	1.4	3.6	282	15	398	35	398	1.4	63	400	1.4	40.333	-S660	090-32	77
31	453	1.4	3.2	322	13	453	31	453	1.4	55	456	1.4	45.956	-S660	090-32	77

3-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
28	484	1.3	2.9	344	12	484	28	484	1.3	51	488	1.2	49.867	-S660	090-32	77
25	552	1.2	2.6	392	11	552	25	552	1.2	44	556	1.1	56.818	-S660	090-32	77
22	620	1.1	2.3	440	9.4	620	22	620	1.1	40	624	1.0	63.817	-S660	090-32	77

Selection tables, 4-pole motors

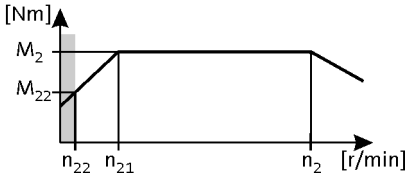


50 Hz: P_N = 2.2 kW
87 Hz: P_N = 3.9 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
375	54	3.3	38	33	156	54	375	54	3.3	664	54	2.7	3.840	-S220	100-12	69
367	55	5.6	37	39	153	55	367	55	5.6				3.920	-S660	100-12	77
315	65	3.8	32	39	131	65	315	65	3.8	557	65	3.1	4.579	-S400	100-12	73
273	75	2.4	28	45	114	75	273	75	2.4	484	75	2.0	5.267	-S220	100-12	69
246	83	3.1	25	50	102	83	246	83	3.1	435	83	2.6	5.860	-S400	100-12	73
225	91	2.9	23	54	94	91	225	91	2.9	398	91	2.4	6.411	-S400	100-12	73
213	96	2.3	21	67	89	96	213	96	2.3				6.767	-S220	100-12	69
193	106	3.5	19	63	80	106	193	106	3.5	342	106	2.9	7.467	-S400	100-12	73
188	109	2.0	19	76	78	109	188	109	2.0				7.667	-S220	100-12	69
171	119	3.2	17	72	71	119	171	119	3.2	302	120	2.7	8.436	-S400	100-12	73
155	131	1.7	16	92	65	131	155	131	1.7				9.280	-S220	100-12	69
141	145	2.8	14	102	59	145	141	145	2.8	249	145	2.3	10.240	-S400	100-12	73
137	149	1.5	14	104	57	149	137	149	1.5				10.514	-S220	100-12	69
125	164	2.4	13	115	52	164	125	164	2.4	220	164	2.0	11.569	-S400	100-12	73
121	168	1.3	12	118	51	168	121	168	1.3				11.876	-S220	100-12	69
111	184	1.2	11	129	46	184	111	184	1.2				12.992	-S220	100-12	69
110	185	2.2	11	111	46	185	110	185	2.2	195	186	1.8	13.105	-S400	100-12	73
107	190	1.2	11	133	45	190	107	190	1.2				13.456	-S220	100-12	69
100	203	2.0	10	122	42	203	100	203	2.0	178	203	1.7	14.336	-S400	100-12	73
98	208	1.1	9.9	146	41	208	98	208	1.1				14.720	-S220	100-12	69
97	210	1.9	9.8	126	41	210	97	210	1.9	172	210	1.6	14.806	-S400	100-12	73
92	222	3.0	9.2	133	38	222	92	222	3.0	162	223	2.5	15.714	-S660	100-12	77
89	229	1.7	9.0	138	37	229	89	229	1.7	157	230	1.5	16.197	-S400	100-12	73
80	253	2.6	8.1	152	34	253	80	253	2.6	142	254	2.2	17.905	-S660	100-12	77
79	259	1.6	7.9	155	33	259	79	259	1.6	140	259	1.5	18.286	-S400	100-12	73
75	272	2.4	7.5	163	31	272	75	272	2.4	133	273	2.3	19.250	-S660	100-12	77
70	292	1.4	7.0	175	29	292	70	292	1.4	123	293	1.3	20.659	-S400	100-12	73
66	310	2.1	6.6	186	27	310	66	310	2.1	116	311	2.0	21.933	-S660	100-12	77
64	317	1.3	6.5	190	27	317	64	317	1.3	114	317	1.2	22.400	-S400	100-12	73
58	355	1.6	5.8	213	24	355	58	355	1.6	102	355	1.6	25.056	-S660	100-12	77
57	358	1.1	5.7	215	24	358	57	358	1.1	101	359	1.1	25.308	-S400	100-12	73
50	404	1.6	5.1	242	21	404	50	404	1.6	89	405	1.6	28.548	-S660	100-12	77
46	441	1.5	4.7	265	19	441	46	441	1.5	82	442	1.5	31.167	-S660	100-12	77
41	503	1.3	4.1	302	17	503	41	503	1.3	72	503	1.3	35.511	-S660	100-12	77

Selection tables, 4-pole motors

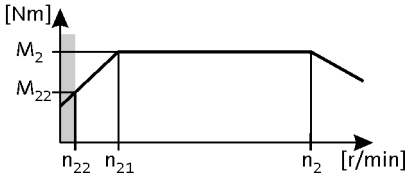


50 Hz: P_N = 3.0 kW
87 Hz: P_N = 5.4 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
428	65	3.1	43	39	180	65	428	65	3.1	761	66	2.6	3.339	-S400	100-32	73
372	75	2.4	38	52	156	75	372	75	2.4				3.840	-S220	100-32	69
365	76	4.1	37	53	153	76	365	76	4.1				3.920	-S660	100-32	77
312	89	2.7	32	53	131	89	312	89	2.7	555	90	2.3	4.579	-S400	100-32	73
272	102	1.8	28	72	114	102	272	102	1.8				5.267	-S220	100-32	69
244	114	2.3	25	68	102	114	244	114	2.3	433	115	1.9	5.860	-S400	100-32	73
223	125	2.1	23	75	94	125	223	125	2.1	396	126	1.7	6.411	-S400	100-32	73
211	132	1.7	21	92	89	132	211	132	1.7				6.767	-S220	100-32	69
192	145	2.5	19	102	80	145	192	145	2.5				7.467	-S400	100-32	73
187	149	1.5	19	104	78	149	187	149	1.5				7.667	-S220	100-32	69
170	164	2.3	17	115	71	164	170	164	2.3				8.436	-S400	100-32	73
154	180	1.2	16	126	65	180	154	180	1.2				9.280	-S220	100-32	69
143	195	3.2	15	117	60	195	143	195	3.2	253	197	2.7	10.027	-S660	100-32	77
140	199	2.0	14	120	59	199	140	199	2.0	248	202	1.7	10.240	-S400	100-32	73
136	204	1.1	14	143	57	204	136	204	1.1				10.514	-S220	100-32	69
127	219	3.0	13	131	53	219	127	219	3.0	226	222	2.5	11.262	-S660	100-32	77
124	225	1.8	13	157	52	225	124	225	1.8				11.569	-S400	100-32	73
116	239	2.8	12	144	49	239	116	239	2.8	206	243	2.3	12.320	-S660	100-32	77
111	249	2.7	11	150	47	249	111	249	2.7	198	253	2.2	12.832	-S660	100-32	77
109	255	1.6	11	153	46	255	109	255	1.6	194	258	1.3	13.105	-S400	100-32	73
102	273	2.4	10	164	43	273	102	273	2.4	181	276	2.0	14.037	-S660	100-32	77
100	279	1.4	10	167	42	279	100	279	1.4	177	282	1.2	14.336	-S400	100-32	73
97	288	1.4	9.8	202	41	288	97	288	1.4				14.806	-S400	100-32	73
91	305	2.2	9.2	183	38	305	91	305	2.2	162	310	1.8	15.714	-S660	100-32	77
88	315	1.3	9.0	189	37	315	88	315	1.3	157	319	1.1	16.197	-S400	100-32	73
80	348	1.9	8.1	209	34	348	80	348	1.9	142	353	1.6	17.905	-S660	100-32	77
78	355	1.1	7.9	213	33	355	78	355	1.1	139		1.1	18.286	-S400	100-32	73
74	374	1.8	7.5	225	31	374	74	374	1.8	132	379	1.7	19.250	-S660	100-32	77
69	402	1.0	7.0	281	29	402	69	402	1.0				20.659	-S400	100-32	73
65	426	1.6	6.6	256	27	426	65	426	1.6	116	432	1.5	21.933	-S660	100-32	77
57	487	1.2	5.8	292	24	487	57	487	1.2	101	494	1.1	25.056	-S660	100-32	77
50	555	1.2	5.1	333	21	555	50	555	1.2	89	562	1.1	28.548	-S660	100-32	77
46	606	1.1	4.7	364	19	606	46	606	1.1	82	614	1.1	31.167	-S660	100-32	77

Selection tables, 4-pole motors

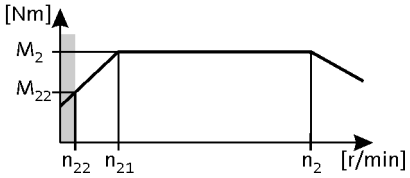


50 Hz: P_N = 4.0 kW
87 Hz: P_N = 7.1 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
434	85	2.4	43	53	180	85	434	85	2.4				3.339	-S400	112-22	73
370	100	3.4	37	63	153	100	370	100	3.4				3.920	-S660	112-22	77
317	117	2.1	32	59	131	117	317	117	2.1	559	118	1.7	4.579	-S400	112-22	73
247	150	1.7	25	75	102	150	247	150	1.7	437	151	1.4	5.860	-S400	112-22	73
226	164	1.6	23	102	94	164	226	164	1.6	399	165	1.3	6.411	-S400	112-22	73
211	176	2.8	21	110	87	176	211	176	2.8	372	177	2.4	6.880	-S660	112-22	77
198	187	3.2	20	117	82	187	198	187	3.2				7.311	-S660	112-22	77
194	191	1.9	19	119	80	191	194	191	1.9				7.467	-S400	112-22	73
172	216	1.8	17	135	71	216	172	216	1.8				8.436	-S400	112-22	73
165	225	2.8	17	141	68	225	165	225	2.8				8.800	-S660	112-22	77
145	256	2.4	15	160	60	256	145	256	2.4				10.027	-S660	112-22	77
142	262	1.5	14	164	59	262	142	262	1.5				10.240	-S400	112-22	73
129	288	2.3	13	144	53	288	129	288	2.3	227	289	1.9	11.262	-S660	112-22	77
125	296	1.4	13	185	52	296	125	296	1.4				11.569	-S400	112-22	73
118	315	2.1	12	157	49	315	118	315	2.1	208	317	1.7	12.320	-S660	112-22	77
113	328	2.0	11	164	47	328	113	328	2.0	200	330	1.7	12.832	-S660	112-22	77
111	335	1.2	11	209	46	335	111	335	1.2				13.105	-S400	112-22	73
103	359	1.8	10	224	43	359	103	359	1.8				14.037	-S660	112-22	77
101	366	1.1	10	229	42	366	101	366	1.1				14.336	-S400	112-22	73
98	378	1.1	9.8	237	41	378	98	378	1.1				14.806	-S400	112-22	73
92	402	1.6	9.2	201	38	402	92	402	1.6	163	404	1.4	15.714	-S660	112-22	77
81	458	1.4	8.1	229	34	458	81	458	1.4	143	460	1.2	17.905	-S660	112-22	77
75	492	1.3	7.5	246	31	492	75	492	1.3	133	495	1.3	19.250	-S660	112-22	77
66	561	1.2	6.6	280	27	561	66	561	1.2	117	564	1.1	21.933	-S660	112-22	77

Selection tables, 4-pole motors

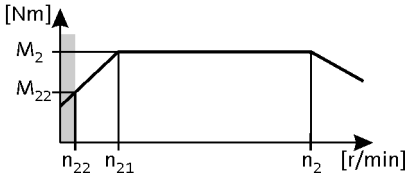


50 Hz: P_N = 5.5 kW
87 Hz: P_N = 9.7 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
433	118	1.7	43	74	180	118	433	118	1.7				3.339	-S400	112-32	73
369	138	2.5	37	86	153	138	369	138	2.5				3.920	-S660	112-32	77
316	161	1.5	32	101	131	161	316	161	1.5				4.579	-S400	112-32	73
269	190	2.5	27	119	112	190	269	190	2.5				5.376	-S660	112-32	77
247	207	1.3	25	129	102	207	247	207	1.3				5.860	-S400	112-32	73
225	226	1.2	23	141	94	226	225	226	1.2				6.411	-S400	112-32	73
225	226	2.5	23	141	94	226	225	226	2.5				6.417	-S660	112-32	77
210	243	2.0	21	121	87	242	210	243	2.0	371	242	1.7	6.880	-S660	112-32	77
198	258	2.3	20	161	82	258	198	258	2.3				7.311	-S660	112-32	77
194	263	1.4	19	165	80	263	194	263	1.4				7.467	-S400	112-32	73
171	297	1.3	17	186	71	297	171	297	1.3				8.436	-S400	112-32	73
164	310	2.1	17	194	68	310	164	310	2.1				8.800	-S660	112-32	77
144	354	1.8	15	221	60	354	144	354	1.8				10.027	-S660	112-32	77
141	361	1.1	14	226	59	361	141	361	1.1				10.240	-S400	112-32	73
128	397	1.7	13	248	53	397	128	397	1.7				11.262	-S660	112-32	77
117	434	1.5	12	272	49	434	117	434	1.5				12.320	-S660	112-32	77
113	453	1.5	11	283	47	453	113	453	1.5				12.832	-S660	112-32	77
103	495	1.3	10	309	43	495	103	495	1.3				14.037	-S660	112-32	77
92	554	1.2	9.2	346	38	554	92	554	1.2				15.714	-S660	112-32	77
81	631	1.1	8.1	395	34	631	81	631	1.1				17.905	-S660	112-32	77

Selection tables, 4-pole motors

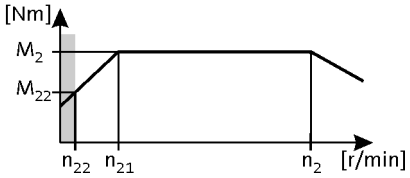


50 Hz: P_N = 9.2 kW
87 Hz: P_N = 16.2 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
370	230	1.8	37	144	153	230	370	230	1.8				3.920	-S660	132-32	77
270	316	1.6	27	198	112	316	270	316	1.6				5.376	-S660	132-32	77
226	377	1.6	23	236	94	377	226	377	1.6				6.417	-S660	132-32	77
211	404	1.2	21	253	87	404	211	404	1.2				6.880	-S660	132-32	77
198	430	1.4	20	269	82	430	198	430	1.4				7.311	-S660	132-32	77
165	517	1.2	17	323	68	517	165	517	1.2				8.800	-S660	132-32	77
145	589	1.1	15	368	60	589	145	589	1.1				10.027	-S660	132-32	77
129	662	1.0	13	414	53	662	129	662	1.0				11.262	-S660	132-32	77

Selection tables, 4-pole motors



50 Hz: P_N = 13.2 kW
87 Hz: P_N = 7.5 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			Inverter operation 5 Hz -		- 20 Hz		- 50 Hz (1:10)			- 87 Hz (1:17.4)			i	Product		
n_2 [r/min]	M_2 [Nm]	c	n_{22} [r/min]	M_{22} [Nm]	n_{21} [r/min]	M_2 [Nm]	n_2 [r/min]	M_2 [Nm]	c	n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
371	187	2.2	37	117	153	187	371	187	2.2				3.920	-S660	132-22	77
271	257	1.9	27	160	112	257	271	257	1.9				5.376	-S660	132-22	77
227	306	2.0	23	191	94	306	227	306	2.0				6.417	-S660	132-22	77
212	329	1.5	21	205	87	329	212	329	1.5				6.880	-S660	132-22	77
199	349	1.7	20	218	82	349	199	349	1.7				7.311	-S660	132-22	77
165	420	1.5	17	263	68	420	165	420	1.5				8.800	-S660	132-22	77
145	479	1.3	15	299	60	479	145	479	1.3				10.027	-S660	132-22	77
129	538	1.2	13	336	53	538	129	538	1.2				11.262	-S660	132-22	77
118	588	1.1	12	368	49	588	118	588	1.1				12.320	-S660	132-22	77
113	613	1.1	11	383	47	613	113	613	1.1				12.832	-S660	132-22	77

Selection tables, 2-pole motors

50 Hz: P_N = 0.18 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
68	25	5.3	40.422	-S130	063-11	85
60	28	4.7	45.711	-S130	063-11	85
54	31	4.2	51.230	-S130	063-11	85
47	35	3.7	57.933	-S130	063-11	85
43	39	3.3	64.200	-S130	063-11	85
38	44	2.9	72.600	-S130	063-11	85
32	51	2.0	84.581	-S130	063-11	85
29	58	2.0	95.648	-S130	063-11	85

Selection tables, 2-pole motors

50 Hz: P_N = 0.25 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
386	6.0	5.2	7.029	-S130	063-31	85
170	14	5.2	15.979	-S130	063-31	85
150	15	5.9	18.069	-S130	063-31	85
133	17	5.5	20.381	-S130	063-31	85
118	20	5.5	23.048	-S130	063-31	85
108	27	4.9	31.387	-S130	063-31	85
76	30	4.3	35.493	-S130	063-31	85
67	35	3.8	40.422	-S130	063-31	85
59	39	3.3	45.711	-S130	063-31	85
53	44	3.0	51.230	-S130	063-31	85
47	50	2.6	57.933	-S130	063-31	85
42	55	2.4	64.200	-S130	063-31	85
41	56	2.8	65.975	-S220	063-31	89
37	62	2.1	72.600	-S130	063-31	85
36	64	2.8	74.750	-S220	063-31	89
32	72	1.4	84.581	-S130	063-31	85
28	82	1.4	95.648	-S130	063-31	85

Selection tables, 2-pole motors

50 Hz: P_N = 0.37 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
186	18	5.8	14.606	-S130	071-11	85
170	20	5.3	15.979	-S130	071-11	85
151	23	5.3	18.069	-S130	071-11	85
134	26	4.7	20.381	-S130	071-11	85
118	29	4.2	23.048	-S130	071-11	85
109	31	3.9	24.967	-S130	071-11	85
119	36	3.4	28.233	-S130	071-11	85
107	40	3.3	31.387	-S130	071-11	85
77	45	2.9	35.493	-S130	071-11	85
67	51	2.6	40.422	-S130	071-11	85
60	58	2.3	45.711	-S130	071-11	85
53	65	2.0	51.230	-S130	071-11	85
47	73	1.8	57.933	-S130	071-11	85
47	74	3.0	58.486	-S220	071-11	89
42	81	1.6	64.200	-S130	071-11	85
41	83	2.1	65.975	-S220	071-11	89
38	91	1.4	72.600	-S130	071-11	85
36	94	2.1	74.750	-S220	071-11	89

Selection tables, 2-pole motors

50 Hz: P_N = 0.55 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
718	7.0	5.1	3.661	-S130	071-31	85
524	10	5.1	5.021	-S130	071-31	85
409	12	4.7	6.425	-S130	071-31	85
374	14	4.7	7.029	-S130	071-31	85
316	16	5.1	8.322	-S130	071-31	85
280	18	5.1	9.411	-S130	071-31	85
230	22	4.9	11.413	-S130	071-31	85
204	25	4.3	12.907	-S130	071-31	85
180	28	3.8	14.606	-S130	071-31	85
165	31	3.5	15.979	-S130	071-31	85
146	35	3.5	18.069	-S130	071-31	85
129	39	3.1	20.381	-S130	071-31	85
114	45	2.7	23.048	-S130	071-31	85
105	48	2.5	24.967	-S130	071-31	85
115	55	2.2	28.233	-S130	071-31	85
103	61	2.1	31.387	-S130	071-31	85
74	69	1.9	35.493	-S130	071-31	85
71	72	3.1	37.238	-S220	071-31	89
65	78	1.7	40.422	-S130	071-31	85
62	82	2.7	42.533	-S220	071-31	89
58	89	1.5	45.711	-S130	071-31	85
55	93	2.4	48.190	-S220	071-31	89
51	99	1.3	51.230	-S130	071-31	85
51	100	2.2	51.620	-S220	071-31	89
46	110	2.4	56.960	-S400	071-31	93
45	112	1.2	57.933	-S130	071-31	85
45	113	1.9	58.486	-S220	071-31	89
41	124	1.1	64.200	-S130	071-31	85
41	125	2.4	64.354	-S400	071-31	93
40	128	1.3	65.975	-S220	071-31	89
35	145	1.3	74.750	-S220	071-31	89

Selection tables, 2-pole motors

50 Hz: P_N = 0.75 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
743	9.0	5.5	3.661	-S130	080-11	85
542	13	4.9	5.021	-S130	080-11	85
423	16	4.4	6.425	-S130	080-11	85
387	18	4.2	7.029	-S130	080-11	85
327	21	4.5	8.322	-S130	080-11	85
289	24	4.3	9.411	-S130	080-11	85
238	29	3.7	11.413	-S130	080-11	85
211	33	3.2	12.907	-S130	080-11	85
186	37	2.9	14.606	-S130	080-11	85
170	41	2.6	15.979	-S130	080-11	85
151	46	2.6	18.069	-S130	080-11	85
134	52	2.3	20.381	-S130	080-11	85
118	59	2.1	23.048	-S130	080-11	85
109	64	1.9	24.967	-S130	080-11	85
103	68	3.0	26.422	-S220	080-11	89
120	72	1.7	28.233	-S130	080-11	85
113	76	2.7	29.937	-S220	080-11	89
108	80	1.6	31.387	-S130	080-11	85
103	84	2.6	32.867	-S220	080-11	89
77	91	1.4	35.493	-S130	080-11	85
73	95	2.3	37.238	-S220	080-11	89
67	103	1.3	40.422	-S130	080-11	85
64	109	2.0	42.533	-S220	080-11	89
60	117	1.1	45.711	-S130	080-11	85
58	120	2.6	46.933	-S400	080-11	93
56	123	1.8	48.190	-S220	080-11	89
53	132	1.7	51.620	-S220	080-11	89
51	135	2.6	53.026	-S400	080-11	93
48	146	1.8	56.960	-S400	080-11	93
47	149	1.5	58.486	-S220	080-11	89
42	164	1.8	64.354	-S400	080-11	93

Selection tables, 2-pole motors

50 Hz: P_N = 1.1 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
743	14	3.8	3.661	-S130	080-31	85
542	19	3.3	5.021	-S130	080-31	85
464	22	4.5	5.860	-S400	080-31	93
423	24	3.0	6.425	-S130	080-31	85
387	26	2.9	7.029	-S130	080-31	85
327	31	3.1	8.322	-S130	080-31	85
289	35	2.9	9.411	-S130	080-31	85
238	43	2.5	11.413	-S130	080-31	85
211	48	2.2	12.907	-S130	080-31	85
186	55	2.0	14.606	-S130	080-31	85
184	55	4.5	14.806	-S400	080-31	93
170	60	1.8	15.979	-S130	080-31	85
164	62	2.9	16.571	-S220	080-31	89
151	68	1.8	18.069	-S130	080-31	85
145	70	2.9	18.776	-S220	080-31	89
134	76	2.7	20.300	-S220	080-31	89
134	76	1.6	20.381	-S130	080-31	85
118	86	2.4	23.000	-S220	080-31	89
118	86	1.4	23.048	-S130	080-31	85
109	94	1.3	24.967	-S130	080-31	85
103	99	2.1	26.422	-S220	080-31	89
119	106	1.1	28.233	-S130	080-31	85
113	112	1.8	29.937	-S220	080-31	89
107	118	1.1	31.387	-S130	080-31	85
103	123	1.8	32.867	-S220	080-31	89
83	123	3.2	32.940	-S400	080-31	93
75	136	2.9	36.267	-S400	080-31	93
73	140	1.6	37.238	-S220	080-31	89
66	154	2.6	40.974	-S400	080-31	93
64	159	1.4	42.533	-S220	080-31	89
58	176	1.8	46.933	-S400	080-31	93
56	181	1.2	48.190	-S220	080-31	89
56	183	2.4	48.950	-S660	080-31	97
53	193	1.1	51.620	-S220	080-31	89
51	199	1.8	53.026	-S400	080-31	93
49	209	2.4	55.773	-S660	080-31	97
48	213	1.3	56.960	-S400	080-31	93

Selection tables, 2-pole motors

50 Hz: P_N = 1.1 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
47	219	1.0	58.486	-S220	080-31	89
42	241	1.3	64.354	-S400	080-31	93

Selection tables, 2-pole motors

50 Hz: P_N = 1.5 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
740	19	2.8	3.661	-S130	090-11	85
540	26	2.4	5.021	-S130	090-11	85
422	33	2.2	6.425	-S130	090-11	85
386	36	2.1	7.029	-S130	090-11	85
326	43	2.2	8.322	-S130	090-11	85
288	48	2.1	9.411	-S130	090-11	85
258	54	3.4	10.514	-S220	090-11	89
237	59	1.8	11.413	-S130	090-11	85
228	61	3.0	11.876	-S220	090-11	89
210	66	1.6	12.907	-S130	090-11	85
209	67	2.7	12.992	-S220	090-11	89
201	69	2.6	13.456	-S220	090-11	89
186	75	1.4	14.606	-S130	090-11	85
184	75	2.4	14.720	-S220	090-11	89
183	76	4.3	14.806	-S400	090-11	93
170	82	1.3	15.979	-S130	090-11	85
164	85	2.1	16.571	-S220	090-11	89
150	93	1.3	18.069	-S130	090-11	85
144	96	2.1	18.776	-S220	090-11	89
134	104	2.0	20.300	-S220	090-11	89
133	105	1.2	20.381	-S130	090-11	85
121	115	3.3	22.400	-S400	090-11	93
118	118	1.7	23.000	-S220	090-11	89
118	118	1.0	23.048	-S130	090-11	85
107	130	2.9	25.308	-S400	090-11	93
103	135	1.5	26.422	-S220	090-11	89
114	150	2.5	29.156	-S400	090-11	93
111	154	1.3	29.937	-S220	090-11	89
101	169	1.3	32.867	-S220	090-11	89
101	169	2.4	32.940	-S400	090-11	93
75	186	2.2	36.267	-S400	090-11	93
73	191	1.2	37.238	-S220	090-11	89
67	207	2.6	40.333	-S660	090-11	97
66	210	1.9	40.974	-S400	090-11	93
59	236	2.6	45.956	-S660	090-11	97
55	251	1.8	48.950	-S660	090-11	97
49	286	1.8	55.773	-S660	090-11	97

Selection tables, 2-pole motors

50 Hz: P_N = 2.2 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
746	27	1.9	3.661	-S130	090-31	85
596	34	4.5	4.579	-S400	090-31	93
544	37	1.7	5.021	-S130	090-31	85
466	44	4.2	5.860	-S400	090-31	93
425	48	1.5	6.425	-S130	090-31	85
388	52	1.4	7.029	-S130	090-31	85
356	57	3.1	7.667	-S220	090-31	89
294	69	2.6	9.280	-S220	090-31	89
260	79	2.3	10.514	-S220	090-31	89
239	85	1.3	11.413	-S130	090-31	85
230	89	2.0	11.876	-S220	090-31	89
210	97	1.9	12.992	-S220	090-31	89
203	100	1.8	13.456	-S220	090-31	89
190	107	3.1	14.336	-S400	090-31	93
186	110	1.6	14.720	-S220	090-31	89
184	111	3.0	14.806	-S400	090-31	93
169	121	2.7	16.197	-S400	090-31	93
165	124	1.5	16.571	-S220	090-31	89
149	137	2.7	18.286	-S400	090-31	93
145	140	1.5	18.776	-S220	090-31	89
135	152	1.4	20.300	-S220	090-31	89
132	154	2.4	20.659	-S400	090-31	93
122	167	2.2	22.400	-S400	090-31	93
119	172	1.2	23.000	-S220	090-31	89
109	187	2.9	25.056	-S660	090-31	97
108	189	2.0	25.308	-S400	090-31	93
103	197	1.0	26.422	-S220	090-31	89
96	213	2.9	28.548	-S660	090-31	97
114	218	1.7	29.156	-S400	090-31	93
88	233	2.8	31.167	-S660	090-31	97
101	246	1.6	32.940	-S400	090-31	93
77	265	2.5	35.511	-S660	090-31	97
75	271	1.5	36.267	-S400	090-31	93
68	301	1.8	40.333	-S660	090-31	97
67	306	1.3	40.974	-S400	090-31	93
59	343	1.8	45.956	-S660	090-31	97
56	365	1.2	48.950	-S660	090-31	97

Selection tables, 2-pole motors

50 Hz: P_N = 2.2 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
49	416	1.2	55.773	-S660	090-31	97

Selection tables, 2-pole motors

50 Hz: P_N = 3.0 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
631	44	4.4	4.579	-S400	100-31	93
549	51	2.9	5.267	-S220	100-31	89
493	56	3.7	5.860	-S400	100-31	93
387	72	4.1	7.467	-S400	100-31	93
311	89	2.0	9.280	-S220	100-31	89
250	111	2.9	11.569	-S400	100-31	93
222	125	1.4	12.992	-S220	100-31	89
221	126	2.6	13.105	-S400	100-31	93
202	138	2.3	14.336	-S400	100-31	93
195	142	2.3	14.806	-S400	100-31	93
178	156	2.1	16.197	-S400	100-31	93
174	159	1.1	16.571	-S220	100-31	89
161	172	3.1	17.905	-S660	100-31	97
158	176	2.1	18.286	-S400	100-31	93
154	181	1.1	18.776	-S220	100-31	89
142	195	1.0	20.300	-S220	100-31	89
140	199	1.8	20.659	-S400	100-31	93
132	211	2.9	21.933	-S660	100-31	97
129	215	1.7	22.400	-S400	100-31	93
115	241	2.2	25.056	-S660	100-31	97
114	243	1.5	25.308	-S400	100-31	93
101	275	2.2	28.548	-S660	100-31	97
113	300	2.2	31.167	-S660	100-31	97
81	342	1.9	35.511	-S660	100-31	97

Selection tables, 2-pole motors

50 Hz: P_N = 4.0 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
620	60	3.3	4.579	-S400	100-41	93
539	69	2.1	5.267	-S220	100-41	89
485	76	2.7	5.860	-S400	100-41	93
443	84	2.5	6.411	-S400	100-41	93
277	134	2.4	10.240	-S400	100-41	93
246	151	2.1	11.569	-S400	100-41	93
221	167	3.2	12.832	-S660	100-41	97
217	171	1.9	13.105	-S400	100-41	93
202	183	2.9	14.037	-S660	100-41	97
198	187	1.7	14.336	-S400	100-41	93
192	193	1.7	14.806	-S400	100-41	93
181	205	2.6	15.714	-S660	100-41	97
175	211	1.5	16.197	-S400	100-41	93
159	234	2.3	17.905	-S660	100-41	97
155	239	1.5	18.286	-S400	100-41	93
148	251	2.4	19.250	-S660	100-41	97
138	270	1.4	20.659	-S400	100-41	93
130	286	2.1	21.933	-S660	100-41	97
127	292	1.3	22.400	-S400	100-41	93
113	327	1.6	25.056	-S660	100-41	97
112	330	1.1	25.308	-S400	100-41	93
121	373	1.6	28.548	-S660	100-41	97
110	407	1.6	31.167	-S660	100-41	97
80	463	1.4	35.511	-S660	100-41	97

Selection tables, 2-pole motors

50 Hz: P_N = 5.5 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
633	80	2.4	4.579	-S400	112-31	93
495	103	2.0	5.860	-S400	112-31	93
452	113	1.9	6.411	-S400	112-31	93
258	198	2.7	11.262	-S660	112-31	97
235	216	2.5	12.320	-S660	112-31	97
226	225	2.4	12.832	-S660	112-31	97
207	247	2.2	14.037	-S660	112-31	97
185	276	1.9	15.714	-S660	112-31	97
162	315	1.7	17.905	-S660	112-31	97
159	321	1.1	18.286	-S400	112-31	93
151	338	1.8	19.250	-S660	112-31	97
140	363	1.0	20.659	-S400	112-31	93
132	385	1.6	21.933	-S660	112-31	97
116	440	1.2	25.056	-S660	112-31	97
102	502	1.2	28.548	-S660	112-31	97

Selection tables, 2-pole motors

50 Hz: P_N = 7.5 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
420	165	2.4	6.880	-S660	112-41	97
150	463	1.3	19.250	-S660	112-41	97
132	527	1.1	21.933	-S660	112-41	97

Selection tables, 6-pole motors

50 Hz: P_N = 0.18 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
72	23	5.6	12.907	-S130	071-13	101
64	26	5.0	14.606	-S130	071-13	101
58	29	4.5	15.979	-S130	071-13	101
52	32	4.0	18.069	-S130	071-13	101
46	37	3.6	20.381	-S130	071-13	101
40	41	3.2	23.048	-S130	071-13	101
37	45	2.9	24.967	-S130	071-13	101
33	51	2.6	28.233	-S130	071-13	101
30	56	2.3	31.387	-S130	071-13	101
26	64	2.0	35.493	-S130	071-13	101
23	72	1.8	40.422	-S130	071-13	101
22	76	2.9	42.533	-S220	071-13	105
20	82	1.6	45.711	-S130	071-13	101
19	86	2.6	48.190	-S220	071-13	105
18	92	1.4	51.230	-S130	071-13	101
18	93	2.4	51.620	-S220	071-13	105
16	102	2.6	56.960	-S400	071-13	109
16	104	1.3	57.933	-S130	071-13	101
16	105	2.1	58.486	-S220	071-13	105
15	115	1.1	64.200	-S130	071-13	101
15	115	2.6	64.354	-S400	071-13	109
14	118	1.5	65.975	-S220	071-13	105
13	130	1.0	72.600	-S130	071-13	101
12	134	1.5	74.750	-S220	071-13	105

3-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
23	71	3.1	40.012	-S220	071-13	105
21	80	2.8	45.333	-S220	071-13	105
18	93	2.4	52.587	-S220	071-13	105
16	105	2.1	59.581	-S220	071-13	105
14	119	1.9	67.298	-S220	071-13	105
13	131	3.1	74.260	-S400	071-13	109
12	135	1.6	76.249	-S220	071-13	105
11	148	2.7	83.900	-S400	071-13	109
11	152	1.5	86.079	-S220	071-13	105
12	168	2.4	94.984	-S400	071-13	109
12	172	1.3	97.528	-S220	071-13	105
11	190	2.1	107.314	-S400	071-13	109
10	197	1.1	111.747	-S220	071-13	105

Selection tables, 6-pole motors

50 Hz: P_N = 0.18 kW

3-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
7.5	218	1.8	123.307	-S400	071-13	109
7.5	220	3.0	124.289	-S660	071-13	113
6.8	242	2.7	137.133	-S660	071-13	113
6.7	246	1.6	139.313	-S400	071-13	109
6.0	276	2.4	156.249	-S660	071-13	113
5.9	279	1.4	158.019	-S400	071-13	109
5.3	312	2.1	176.611	-S660	071-13	113
5.2	315	1.3	178.531	-S400	071-13	109
4.6	355	1.9	201.230	-S660	071-13	113
4.5	361	1.1	204.412	-S400	071-13	109
4.2	395	1.7	223.833	-S660	071-13	113
3.6	450	1.5	255.034	-S660	071-13	113
3.3	495	1.2	280.500	-S660	071-13	113
2.9	565	1.2	319.600	-S660	071-13	113

Selection tables, 6-pole motors

50 Hz: P_N = 0.25 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
254	9.0	4.7	3.661	-S130	071-33	101
185	13	4.7	5.021	-S130	071-33	101
145	16	4.4	6.425	-S130	071-33	101
132	18	4.4	7.029	-S130	071-33	101
112	21	4.7	8.322	-S130	071-33	101
121	23	4.7	9.411	-S130	071-33	101
82	28	4.6	11.413	-S130	071-33	101
72	32	4.0	12.907	-S130	071-33	101
64	36	3.6	14.606	-S130	071-33	101
58	40	3.3	15.979	-S130	071-33	101
52	45	2.9	18.069	-S130	071-33	101
46	51	2.6	20.381	-S130	071-33	101
40	57	2.3	23.048	-S130	071-33	101
37	62	2.1	24.967	-S130	071-33	101
33	70	1.9	28.233	-S130	071-33	101
31	75	3.0	29.937	-S220	071-33	105
30	78	1.7	31.387	-S130	071-33	101
28	82	2.7	32.867	-S220	071-33	105
26	88	1.5	35.493	-S130	071-33	101
26	90	3.1	36.267	-S400	071-33	109
25	93	2.4	37.238	-S220	071-33	105
23	100	3.1	40.333	-S660	071-33	113
23	101	1.3	40.422	-S130	071-33	101
23	102	3.1	40.974	-S400	071-33	109
22	106	2.1	42.533	-S220	071-33	105
20	114	1.1	45.711	-S130	071-33	101
20	114	3.1	45.956	-S660	071-33	113
20	117	2.7	46.933	-S400	071-33	109
19	120	1.8	48.190	-S220	071-33	105
19	122	2.7	48.950	-S660	071-33	113
18	128	1.0	51.230	-S130	071-33	101
18	129	1.7	51.620	-S220	071-33	105
18	132	2.6	53.026	-S400	071-33	109
17	139	2.7	55.773	-S660	071-33	113
16	142	1.9	56.960	-S400	071-33	109
16	146	1.5	58.486	-S220	071-33	105
15	160	1.9	64.354	-S400	071-33	109

Selection tables, 6-pole motors

50 Hz: P_N = 0.25 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
14	164	1.0	65.975	-S220	071-33	105
12	186	1.0	74.750	-S220	071-33	105

3-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
23	98	2.2	40.012	-S220	071-33	105
21	111	2.0	45.333	-S220	071-33	105
18	129	1.7	52.587	-S220	071-33	105
16	142	2.8	58.027	-S400	071-33	109
16	146	1.5	59.581	-S220	071-33	105
14	161	2.5	65.559	-S400	071-33	109
14	165	1.3	67.298	-S220	071-33	105
13	182	2.2	74.260	-S400	071-33	109
12	187	1.2	76.249	-S220	071-33	105
11	206	1.9	83.900	-S400	071-33	109
11	211	1.0	86.079	-S220	071-33	105
10	218	3.0	89.048	-S660	071-33	113
12	233	1.7	94.984	-S400	071-33	109
11	249	2.7	101.460	-S660	071-33	113
11	263	1.5	107.314	-S400	071-33	109
11	268	2.5	109.083	-S660	071-33	113
7.5	302	1.3	123.307	-S400	071-33	109
7.5	305	2.2	124.289	-S660	071-33	113
6.8	336	2.0	137.133	-S660	071-33	113
6.7	342	1.2	139.313	-S400	071-33	109
6.0	383	1.7	156.249	-S660	071-33	113
5.9	388	1.0	158.019	-S400	071-33	109
5.3	433	1.5	176.611	-S660	071-33	113
4.6	494	1.3	201.230	-S660	071-33	113
4.2	549	1.2	223.833	-S660	071-33	113
3.6	626	1.1	255.034	-S660	071-33	113

Selection tables, 6-pole motors

50 Hz: P_N = 0.37 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
260	13	4.8	3.661	-S130	080-13	101
189	18	4.2	5.021	-S130	080-13	101
162	21	5.7	5.860	-S400	080-13	109
148	23	3.8	6.425	-S130	080-13	101
135	25	3.6	7.029	-S130	080-13	101
114	30	3.9	8.322	-S130	080-13	101
101	34	3.7	9.411	-S130	080-13	101
102	41	3.2	11.413	-S130	080-13	101
74	47	2.8	12.907	-S130	080-13	101
65	53	2.5	14.606	-S130	080-13	101
64	53	5.7	14.806	-S400	080-13	109
60	58	2.3	15.979	-S130	080-13	101
53	65	2.0	18.069	-S130	080-13	101
51	68	3.3	18.776	-S220	080-13	105
47	73	3.0	20.300	-S220	080-13	105
47	74	1.8	20.381	-S130	080-13	101
41	83	2.7	23.000	-S220	080-13	105
41	83	1.6	23.048	-S130	080-13	101
38	90	1.4	24.967	-S130	080-13	101
36	95	2.3	26.422	-S220	080-13	105
34	102	1.3	28.233	-S130	080-13	101
32	108	2.0	29.937	-S220	080-13	105
30	113	1.2	31.387	-S130	080-13	101
29	119	1.9	32.867	-S220	080-13	105
27	128	1.0	35.493	-S130	080-13	101
26	131	3.1	36.267	-S400	080-13	109
26	134	1.6	37.238	-S220	080-13	105
23	148	2.7	40.974	-S400	080-13	109
22	153	1.4	42.533	-S220	080-13	105
20	169	1.9	46.933	-S400	080-13	109
20	174	1.3	48.190	-S220	080-13	105
19	177	2.5	48.950	-S660	080-13	113
18	186	1.2	51.620	-S220	080-13	105
18	191	1.8	53.026	-S400	080-13	109
17	201	2.5	55.773	-S660	080-13	113
17	206	1.3	56.960	-S400	080-13	109
16	211	1.0	58.486	-S220	080-13	105

Selection tables, 6-pole motors

50 Hz: P_N = 0.37 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
15	232	1.3	64.354	-S400	080-13	109

3-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
18	187	1.2	52.587	-S220	080-13	105
17	202	3.2	56.818	-S660	080-13	113
16	206	1.9	58.027	-S400	080-13	109
16	212	1.0	59.581	-S220	080-13	105
15	227	2.9	63.817	-S660	080-13	113
15	233	1.7	65.559	-S400	080-13	109
14	248	2.7	69.813	-S660	080-13	113
13	258	2.6	72.713	-S660	080-13	113
13	264	1.5	74.260	-S400	080-13	109
12	283	2.3	79.545	-S660	080-13	113
11	298	1.3	83.900	-S400	080-13	109
11	317	2.1	89.048	-S660	080-13	113
10	338	1.2	94.984	-S400	080-13	109
11	361	1.8	101.460	-S660	080-13	113
11	381	1.1	107.314	-S400	080-13	109
11	388	1.7	109.083	-S660	080-13	113
7.6	442	1.5	124.289	-S660	080-13	113
6.9	487	1.4	137.133	-S660	080-13	113
6.1	555	1.2	156.249	-S660	080-13	113
5.4	628	1.1	176.611	-S660	080-13	113

Selection tables, 6-pole motors

50 Hz: P_N = 0.55 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
254	20	3.1	3.661	-S130	080-33	101
185	28	2.8	5.021	-S130	080-33	101
159	32	3.7	5.860	-S400	080-33	109
145	35	2.5	6.425	-S130	080-33	101
132	39	2.4	7.029	-S130	080-33	101
112	46	2.5	8.322	-S130	080-33	101
121	52	2.4	9.411	-S130	080-33	101
82	63	2.1	11.413	-S130	080-33	101
72	71	1.8	12.907	-S130	080-33	101
72	71	3.1	12.992	-S220	080-33	105
69	74	3.0	13.456	-S220	080-33	105
64	80	1.6	14.606	-S130	080-33	101
63	81	2.7	14.720	-S220	080-33	105
63	81	3.7	14.806	-S400	080-33	109
58	88	1.5	15.979	-S130	080-33	101
56	91	2.4	16.571	-S220	080-33	105
52	99	1.3	18.069	-S130	080-33	101
50	103	2.1	18.776	-S220	080-33	105
46	111	2.0	20.300	-S220	080-33	105
46	112	1.2	20.381	-S130	080-33	101
42	123	3.1	22.400	-S400	080-33	109
40	126	1.8	23.000	-S220	080-33	105
40	126	1.0	23.048	-S130	080-33	101
37	137	3.1	25.056	-S660	080-33	113
37	139	2.9	25.308	-S400	080-33	109
35	145	1.5	26.422	-S220	080-33	105
33	156	3.1	28.548	-S660	080-33	113
32	160	2.5	29.156	-S400	080-33	109
31	164	1.3	29.937	-S220	080-33	105
30	171	2.6	31.167	-S660	080-33	113
28	180	1.2	32.867	-S220	080-33	105
28	180	2.2	32.940	-S400	080-33	109
26	195	2.6	35.511	-S660	080-33	113
26	199	2.0	36.267	-S400	080-33	109
25	204	1.1	37.238	-S220	080-33	105
23	221	2.4	40.333	-S660	080-33	113
23	225	1.8	40.974	-S400	080-33	109

Selection tables, 6-pole motors

50 Hz: P_N = 0.55 kW

2-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
20	252	2.4	45.956	-S660	080-33	113
20	257	1.2	46.933	-S400	080-33	109
19	268	1.7	48.950	-S660	080-33	113
18	291	1.2	53.026	-S400	080-33	109
17	306	1.7	55.773	-S660	080-33	113

3-stage gearboxes

Mains operation 400 V, 50 Hz			i	Product		
n_2 [r/min]	M_2 [Nm]	c		g500	MD□MA□□	
19	269	2.3	49.867	-S660	080-33	113
16	307	2.1	56.818	-S660	080-33	113
16	313	1.3	58.027	-S400	080-33	109
15	344	1.9	63.817	-S660	080-33	113
14	354	1.1	65.559	-S400	080-33	109
13	377	1.8	69.813	-S660	080-33	113
13	392	1.7	72.713	-S660	080-33	113
13	401	1.0	74.260	-S400	080-33	109
12	429	1.5	79.545	-S660	080-33	113
10	481	1.4	89.048	-S660	080-33	113
11	548	1.2	101.460	-S660	080-33	113
11	589	1.1	109.083	-S660	080-33	113

Dimensions, notes

Notes on the dimensions

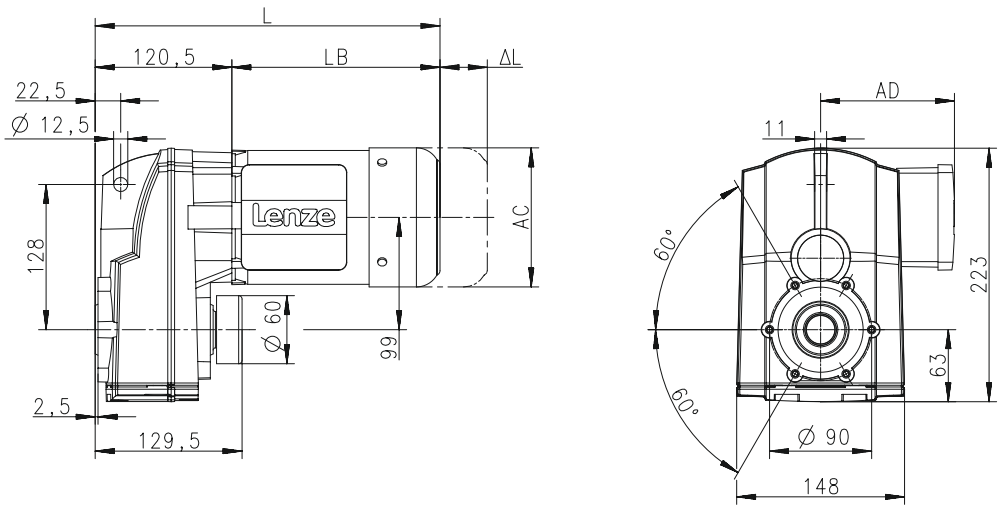
The following legend shows the layout of the dimension sheets.

Product gearbox

g500-S130

Driven shaft design

Abmessungen mit Hohlwelle



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

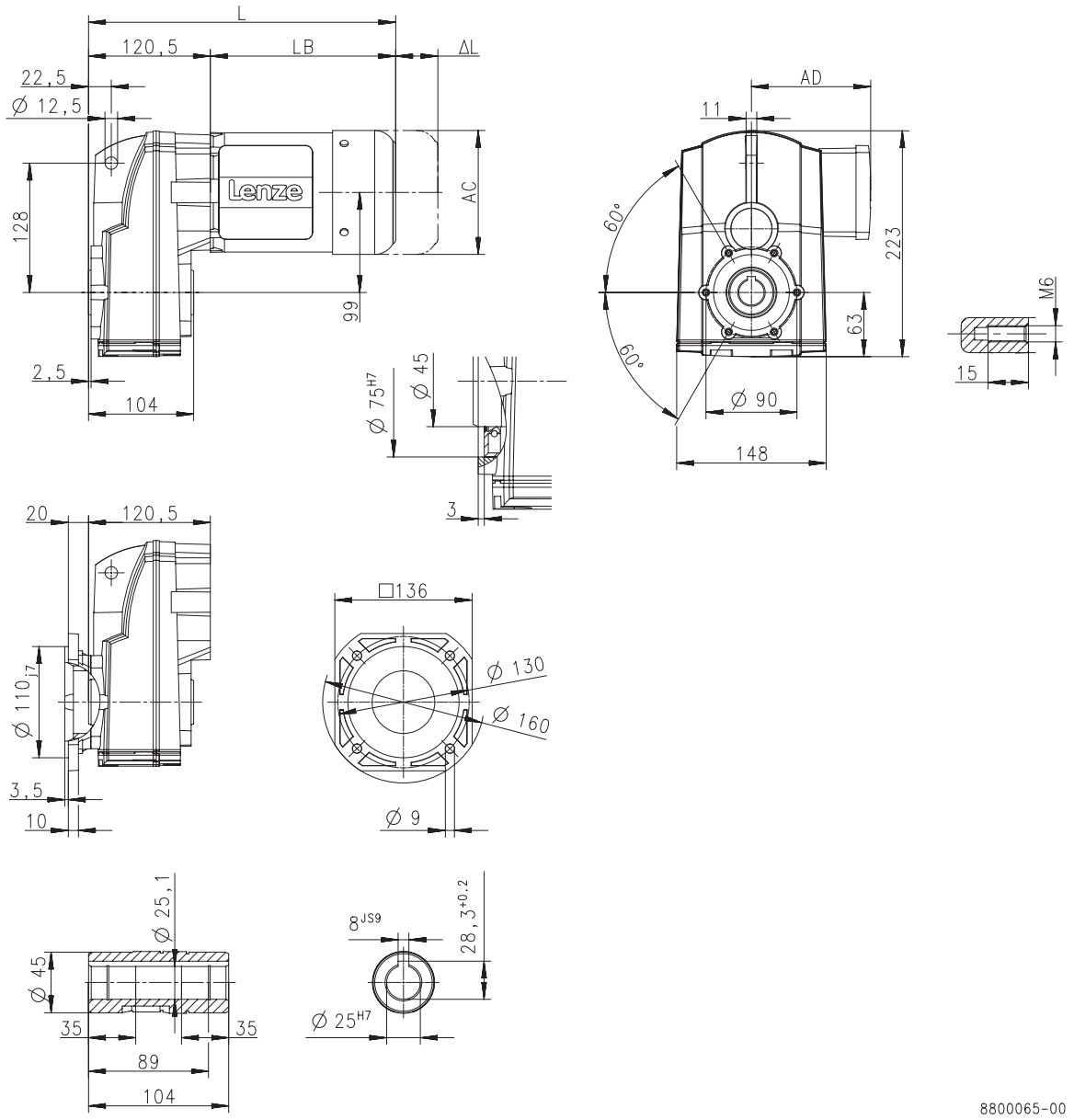
Motor length without built-on accessories

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

Dimensions, 4-pole motors

g500-S130

Dimensions with hollow shaft

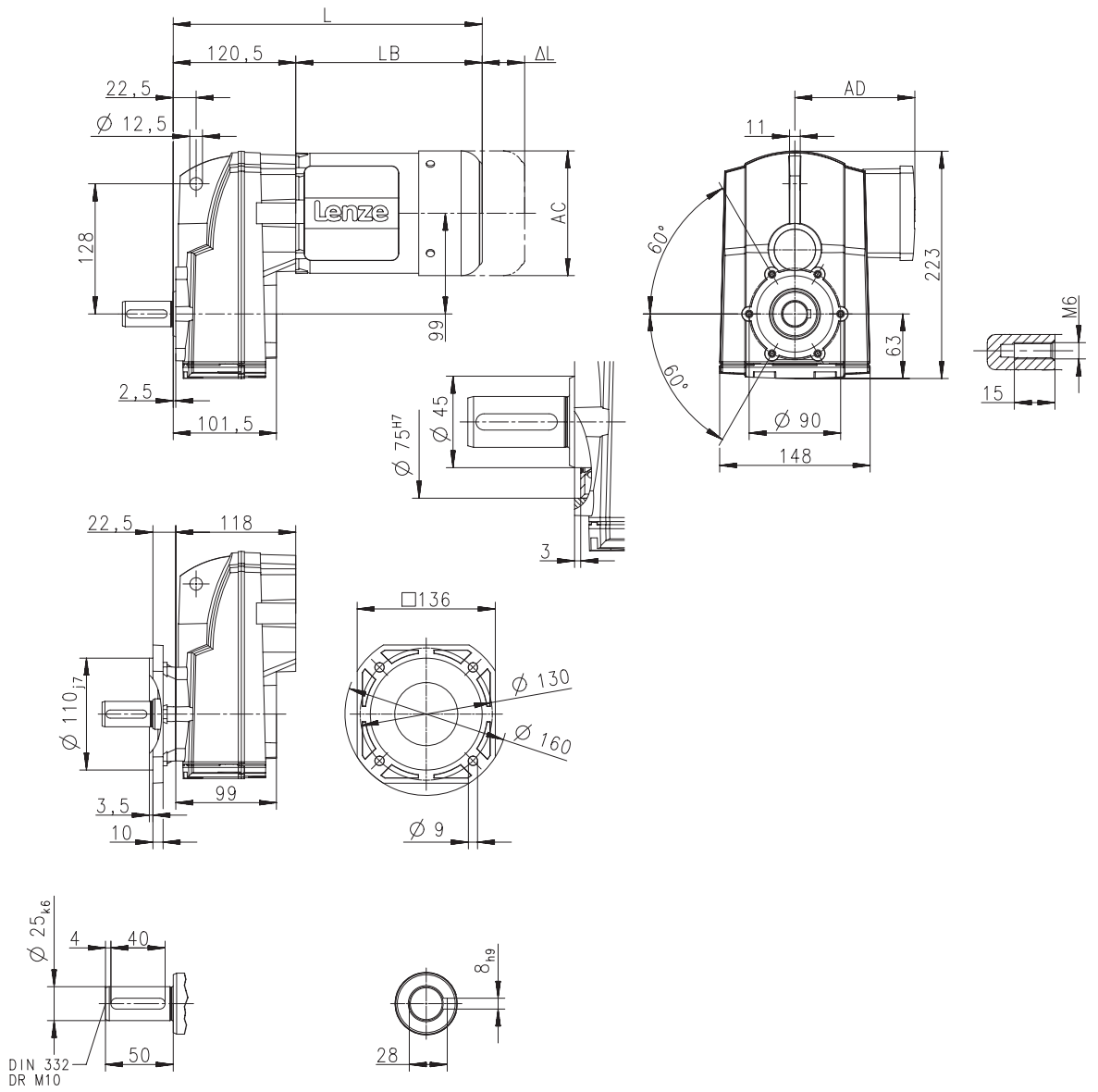


Product			MD□MA□□							
			063-12	063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions										
Total length	**L**	**[mm]**	304			324		347		380
Motor length	**LB**	**[mm]**	183			203		226		259
Length of motor options	**Δ L**	**[mm]**	170			165		183		181
Motor diameter	**AC**	**[mm]**	123			139		156		176
Distance motor/connection	**AD**	**[mm]**	100			109		150		157

Dimensions, 4-pole motors

g500-S130

Dimensions with solid shaft

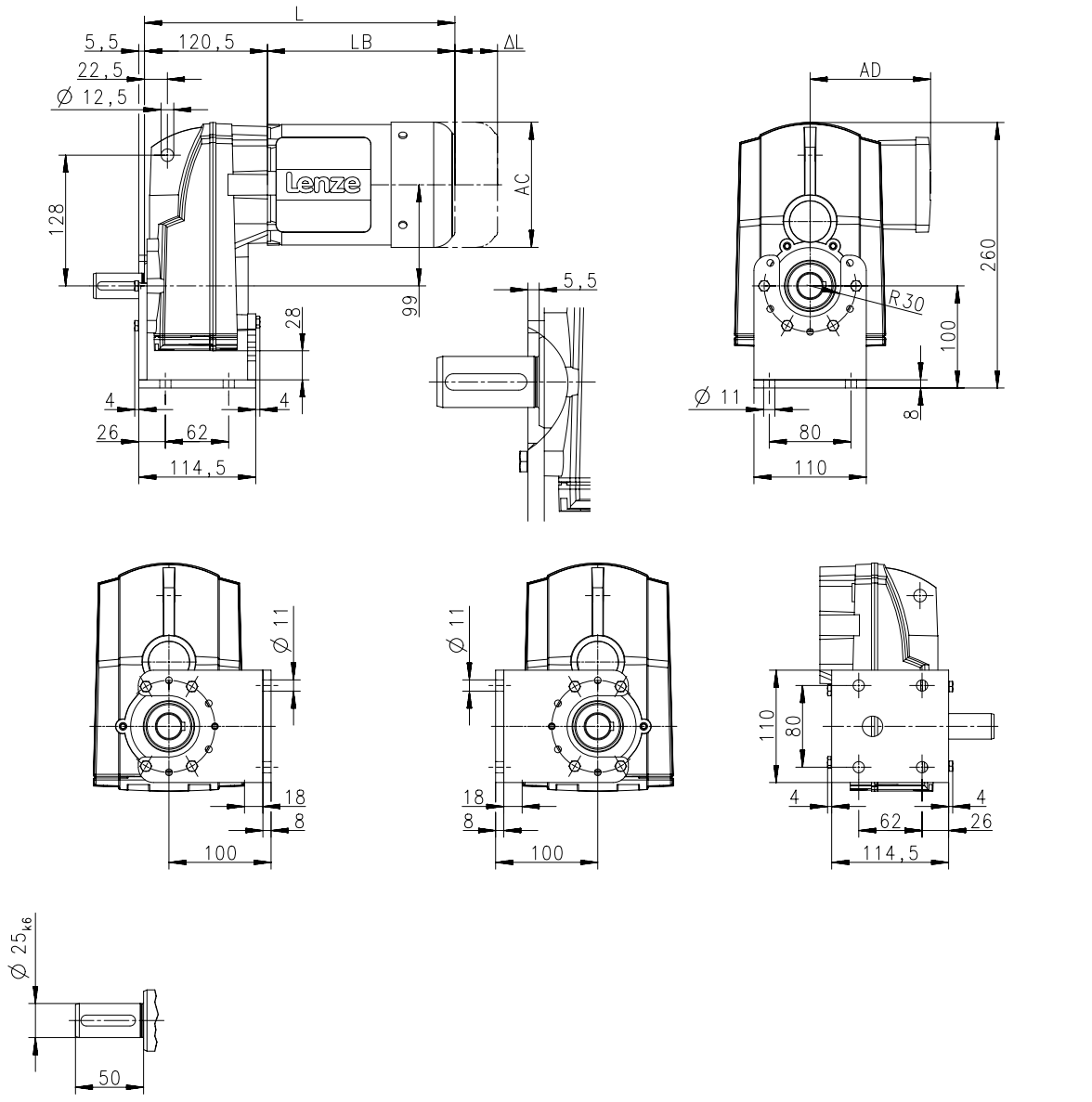


Product			MD□MA□□							
			063-12	063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions										
Total length	**L**	**[mm]**	304			324		347		380
Motor length	**LB**	**[mm]**	183			203		226		259
Length of motor options	**Δ L**	**[mm]**	170			165		183		181
Motor diameter	**AC**	**[mm]**	123			139		156		176
Distance motor/connection	**AD**	**[mm]**	100			109		150		157

Dimensions, 4-pole motors

g500-S130

Dimensions with solid shaft and foot

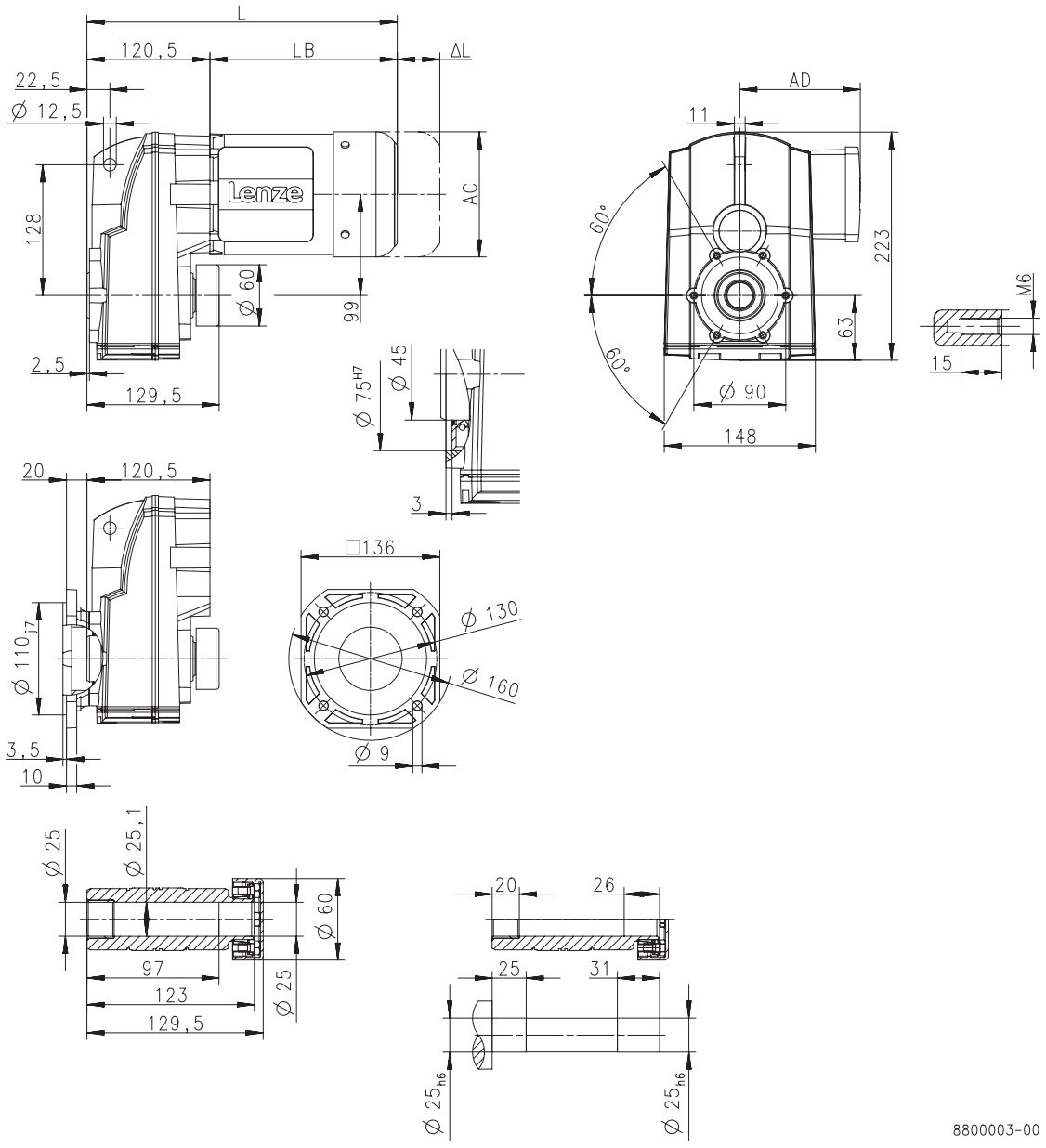


Product			MD□MA□□							
			063-12	063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions										
Total length	**L**	**[mm]**	304			324		347		380
Motor length	**LB**	**[mm]**	183			203		226		259
Length of motor options	**Δ L**	**[mm]**	170			165		183		181
Motor diameter	**AC**	**[mm]**	123			139		156		176
Distance motor/connection	**AD**	**[mm]**	100			109		150		157

Dimensions, 4-pole motors

g500-S130

Dimensions with shrink disc

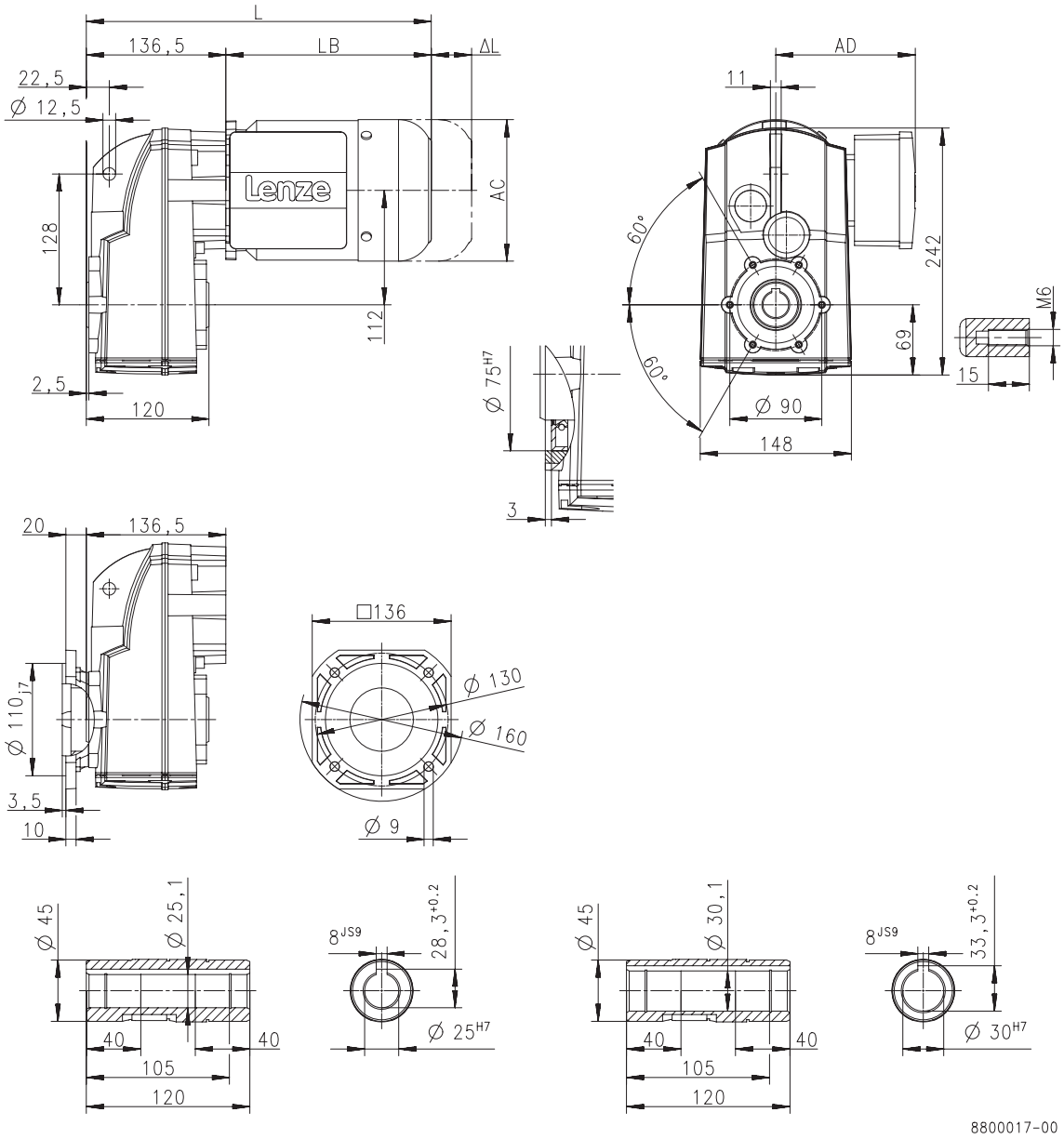


Product			MD□MA□□							
			063-12	063-32	063-42	071-32	071-42	080-32	080-42	090-32
Dimensions										
Total length	**L**	**[mm]**	304			324		347		380
Motor length	**LB**	**[mm]**	183			203		226		259
Length of motor options	**Δ L**	**[mm]**	170			165		183		181
Motor diameter	**AC**	**[mm]**	123			139		156		176
Distance motor/connection	**AD**	**[mm]**	100			109		150		157

Dimensions, 4-pole motors

g500-S220

Dimensions with hollow shaft

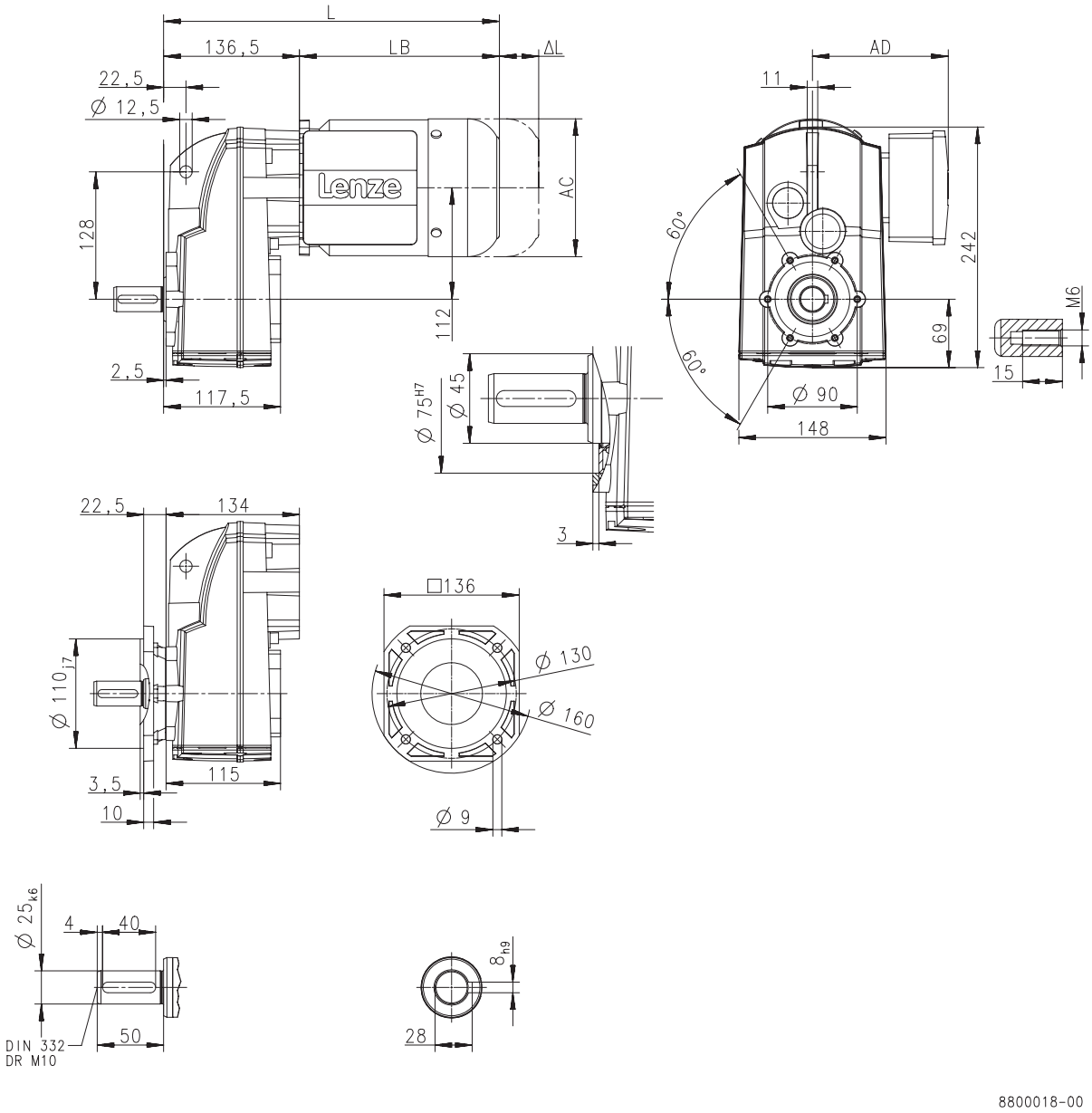


Product			MD□MA□□									
			063-12	063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions												
Total length	**L**	**[mm]**	320			340		363		396	457	
Motor length	**LB**	**[mm]**	183			203		226		259	320	
Length of motor options	**Δ L**	**[mm]**	170			165		183		181	170	
Motor diameter	**AC**	**[mm]**	123			139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100			109		150		157	166	

Dimensions, 4-pole motors

g500-S220

Dimensions with solid shaft

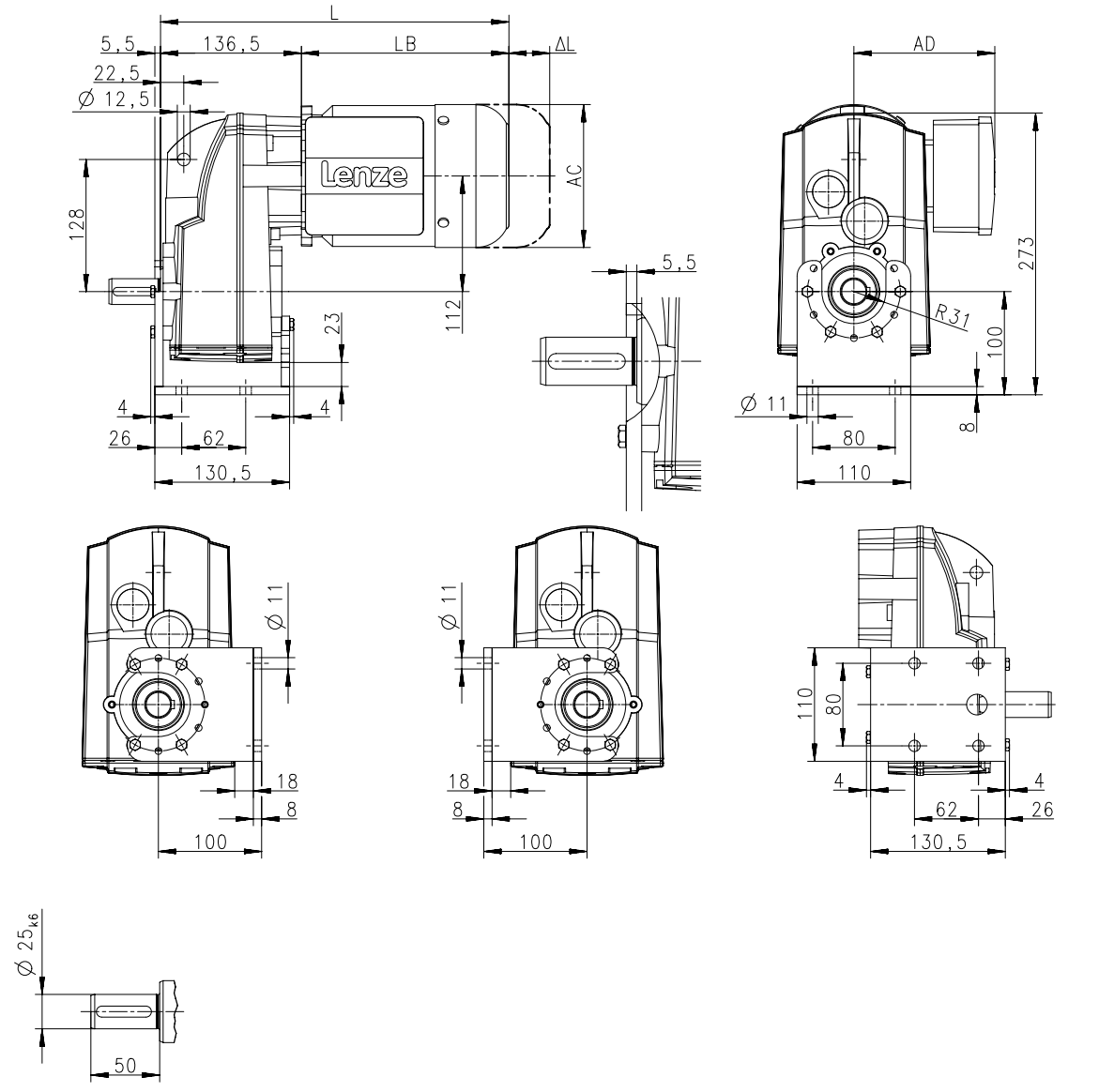


Product			MD□MA□□									
			063-12	063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions												
Total length	**L**	**[mm]**	320			340		363		396	457	
Motor length	**LB**	**[mm]**	183			203		226		259	320	
Length of motor options	**Δ L**	**[mm]**	170			165		183		181	170	
Motor diameter	**AC**	**[mm]**	123			139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100			109		150		157	166	

Dimensions, 4-pole motors

g500-S220

Dimensions with solid shaft and foot

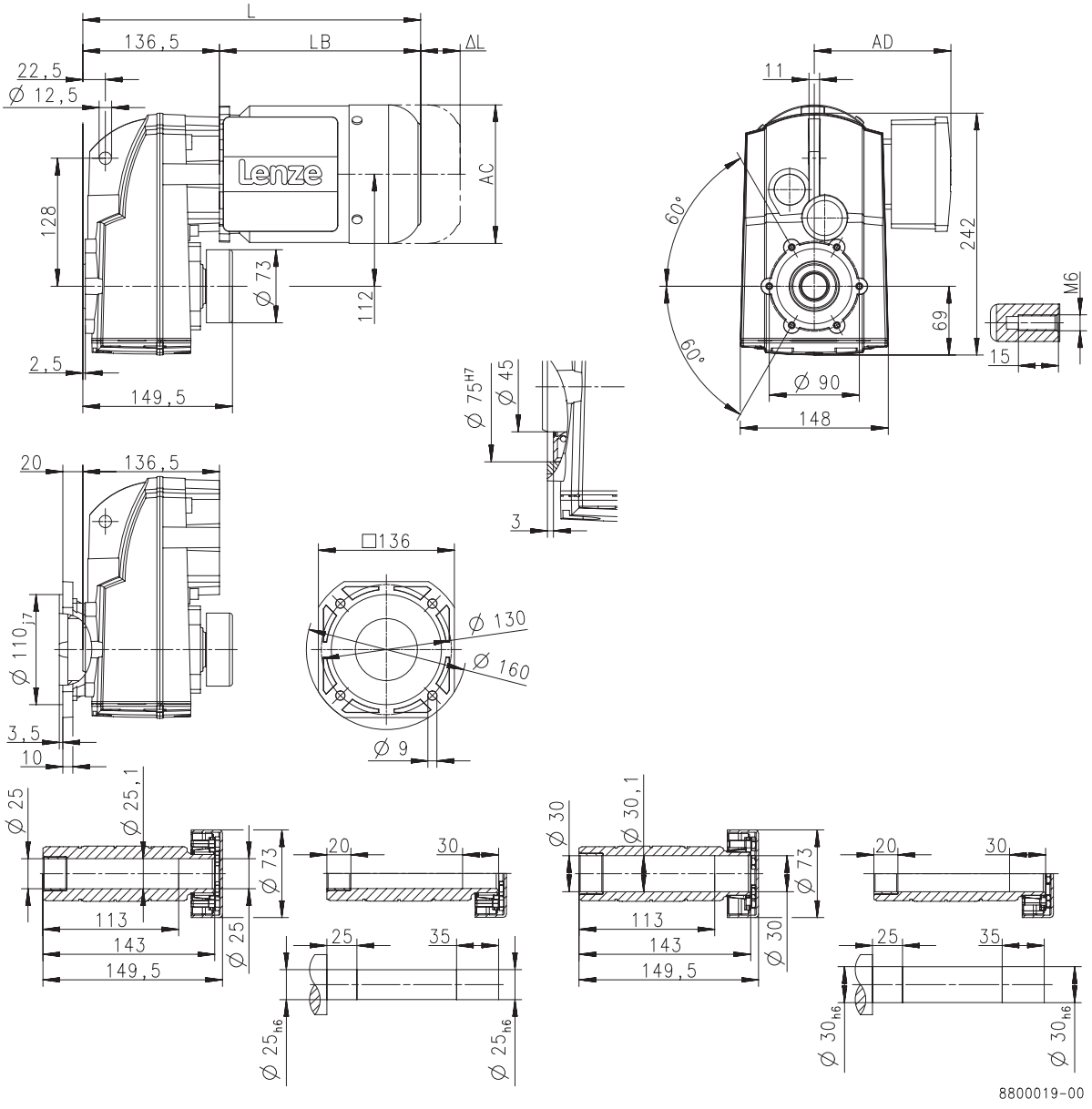


Product			MD□MA□□									
			063-12	063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions												
Total length	**L**	**[mm]**	320			340		363		396	457	
Motor length	**LB**	**[mm]**	183			203		226		259	320	
Length of motor options	**Δ L**	**[mm]**	170			165		183		181	170	
Motor diameter	**AC**	**[mm]**	123			139		156		176	194	
Distance motor/connection	**AD**	**[mm]**	100			109		150		157	166	

Dimensions, 4-pole motors

g500-S220

Dimensions with shrink disc

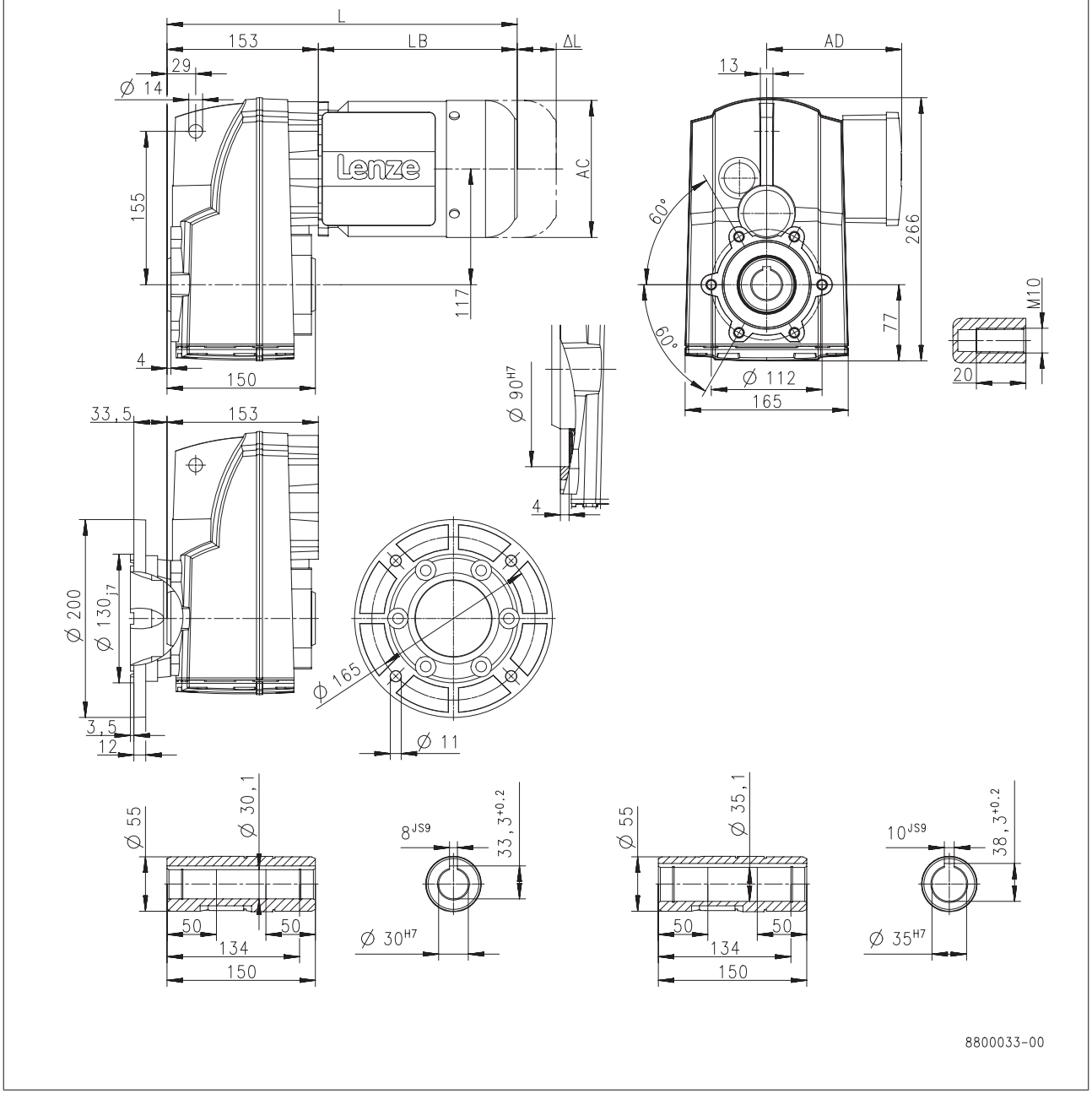


Product			MD□MA□□									
			063-12	063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32
Dimensions												
Total length	**L**	**[mm]**	320			340		363		396	457	
Motor length	**LB**	**[mm]**	183			203		226		259	320	
Length of motor options	**Δ L**	**[mm]**	170			165		183		181	170	
Motor 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

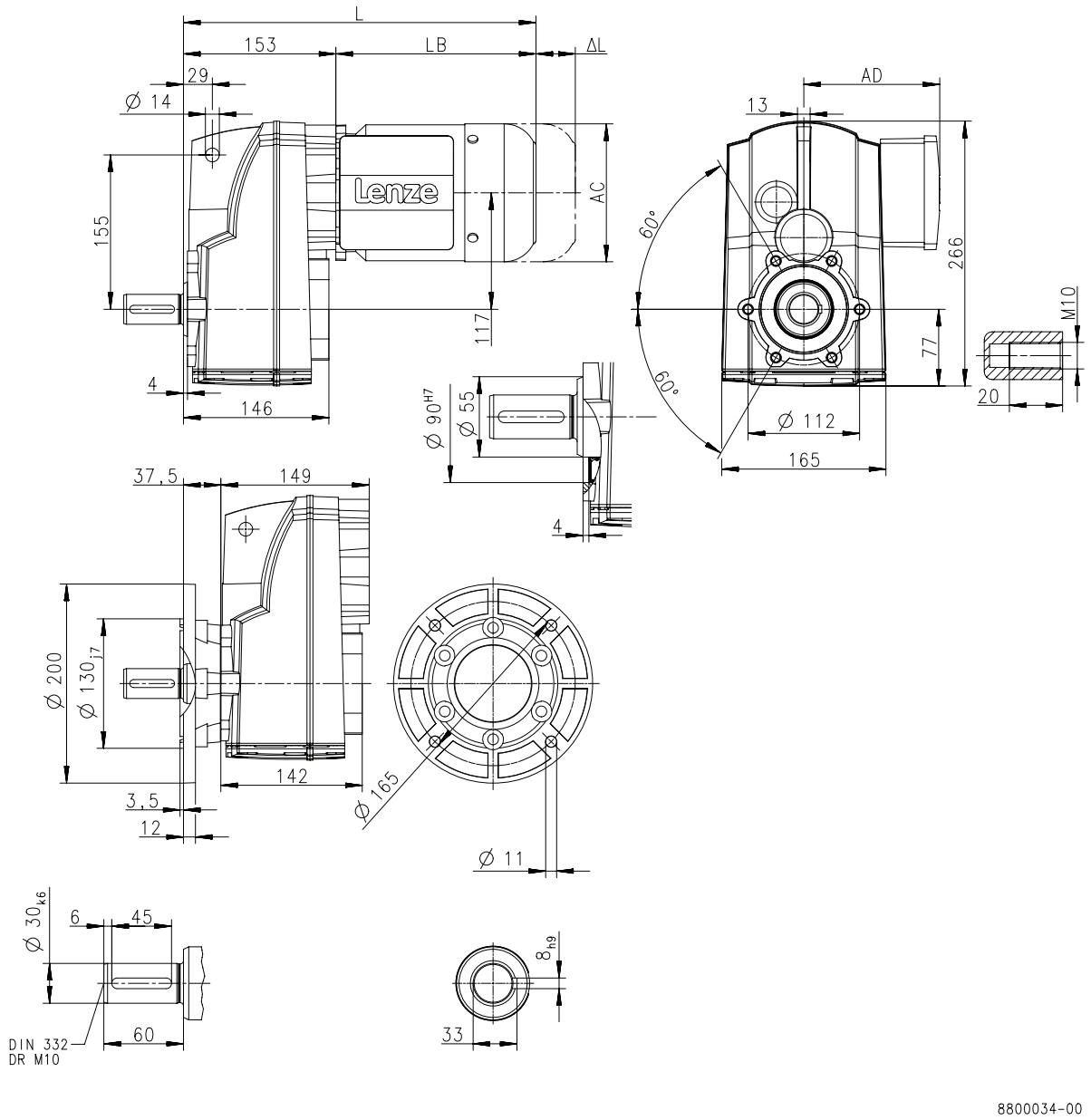


Product			MD□MA□□										
			063-12	063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22	112-32
Dimensions														
Total length	**L**	**[mm]**	336			356		379		412	473		489	533
Motor length	**LB**	**[mm]**	183			203		226		259	320		336	380
Length of motor options	**Δ L**	**[mm]**	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-S400

Dimensions with solid shaft

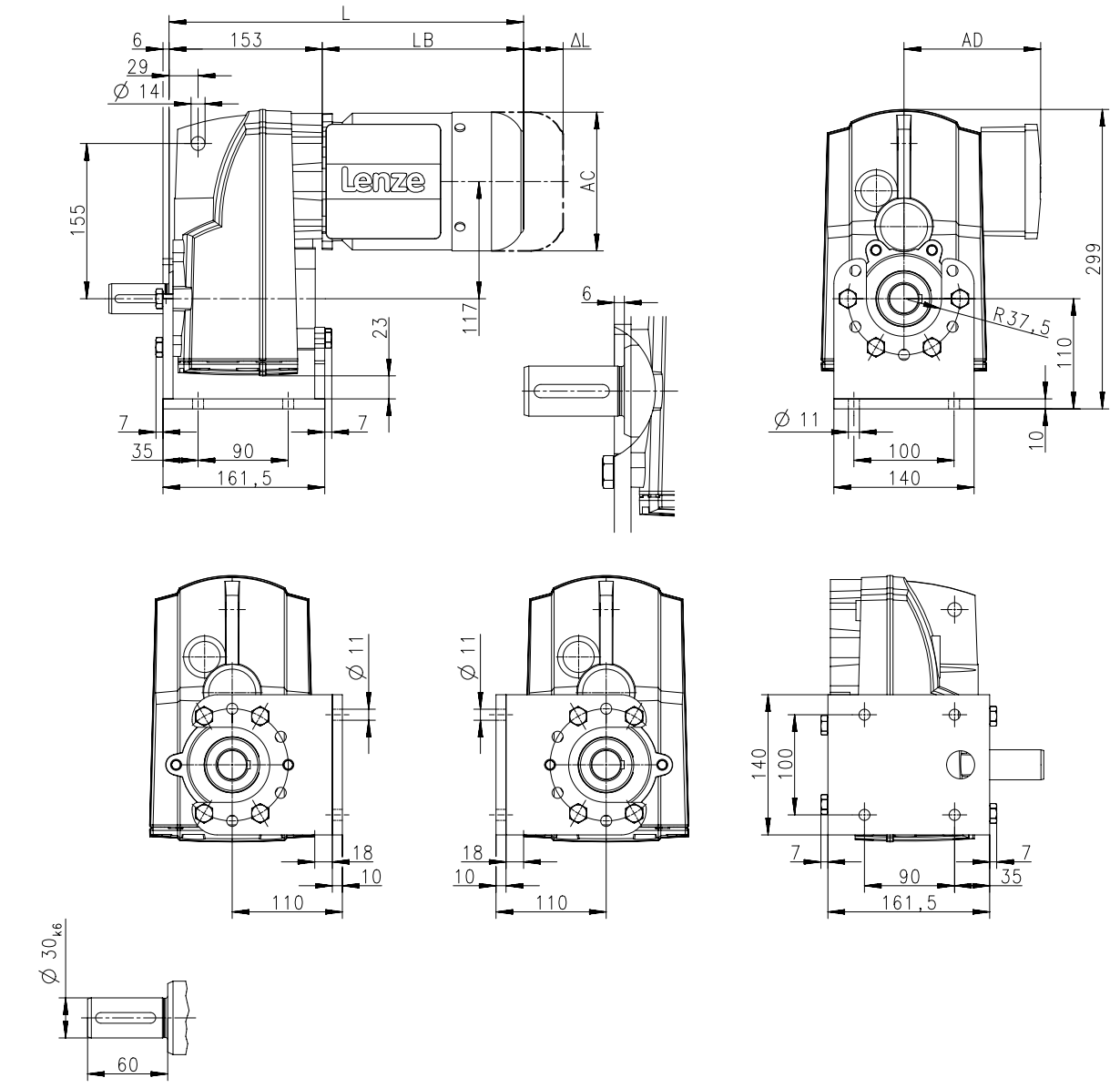


Product			MD□MA□□										
			063-12	063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22	112-32
Dimensions														
Total length	**L**	**[mm]**	336			356		379		412	473		489	533
Motor length	**LB**	**[mm]**	183			203		226		259	320		336	380
Length of motor options	**Δ L**	**[mm]**	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-S400

Dimensions with solid shaft and foot

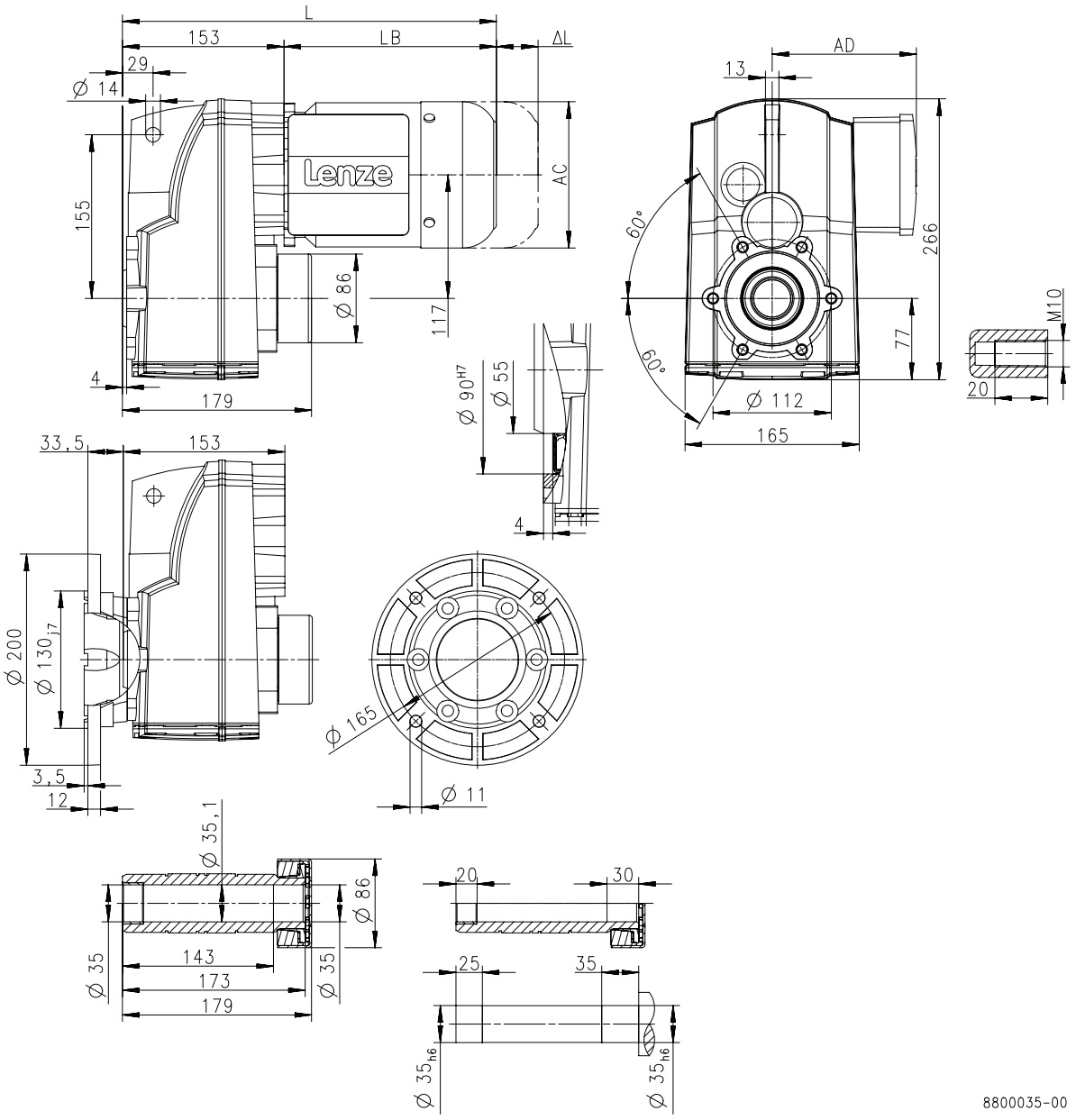


Product			MD□MA□□										
			063-12	063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22	112-32
Dimensions														
Total length	**L**	**[mm]**	336			356		379		412	473		489	533
Motor length	**LB**	**[mm]**	183			203		226		259	320		336	380
Length of motor options	**Δ L**	**[mm]**	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-S400

Dimensions with shrink disc

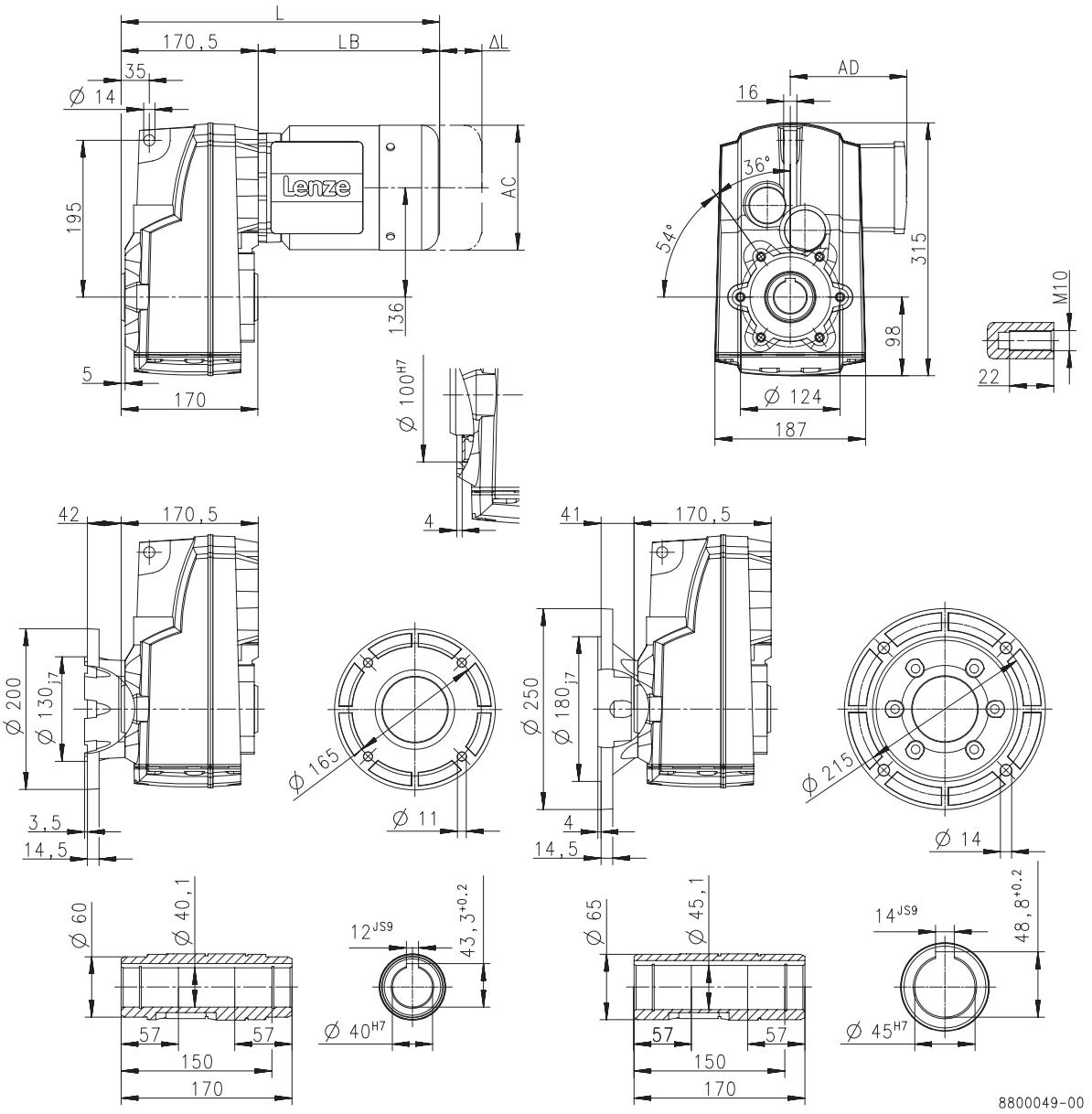


Product			MD□MA□□										
			063-12	063-32	063-42	071-32	071-42	080-32	080-42	090-32	100-12	100-32	112-22	112-32
Dimensions														
Total length	**L**	**[mm]**	336			356		379		412	473		489	533
Motor length	**LB**	**[mm]**	183			203		226		259	320		336	380
Length of motor options	**Δ L**	**[mm]**	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-S660

Dimensions with hollow shaft

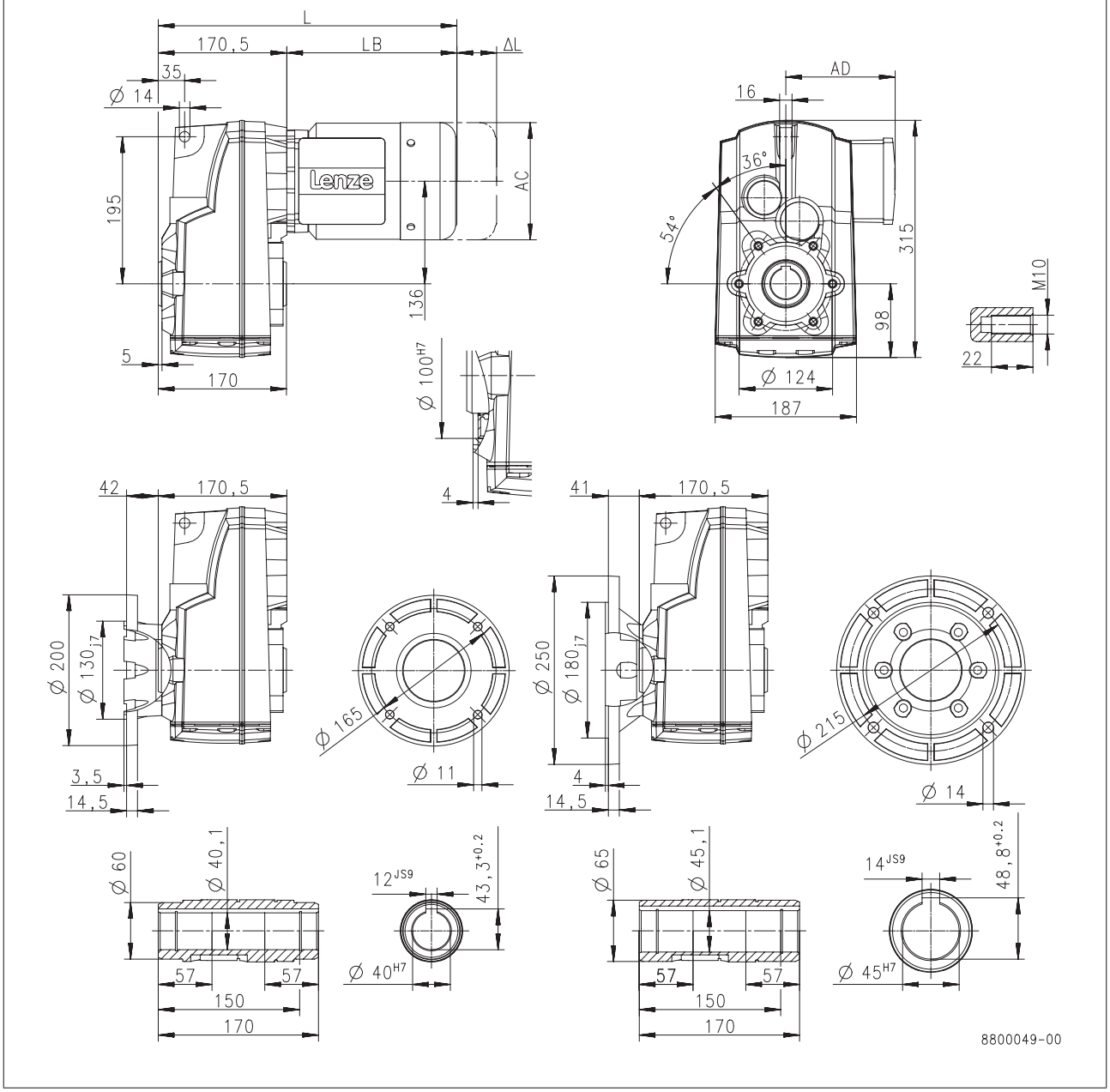


Product			MD□MA□□						
			063-12	063-32	063-42	071-32	071-42	080-32	080-42
Dimensions									
Total length	**L**	**[mm]**	354			374		397	
Motor length	**LB**	**[mm]**	183			203		226	
Length of motor options	**Δ L**	**[mm]**	170			165		183	
Motor diameter	**AC**	**[mm]**	123			139		156	
Distance motor/connection	**AD**	**[mm]**	100			109		150	

Dimensions, 4-pole motors

g500-S660

Dimensions with hollow shaft

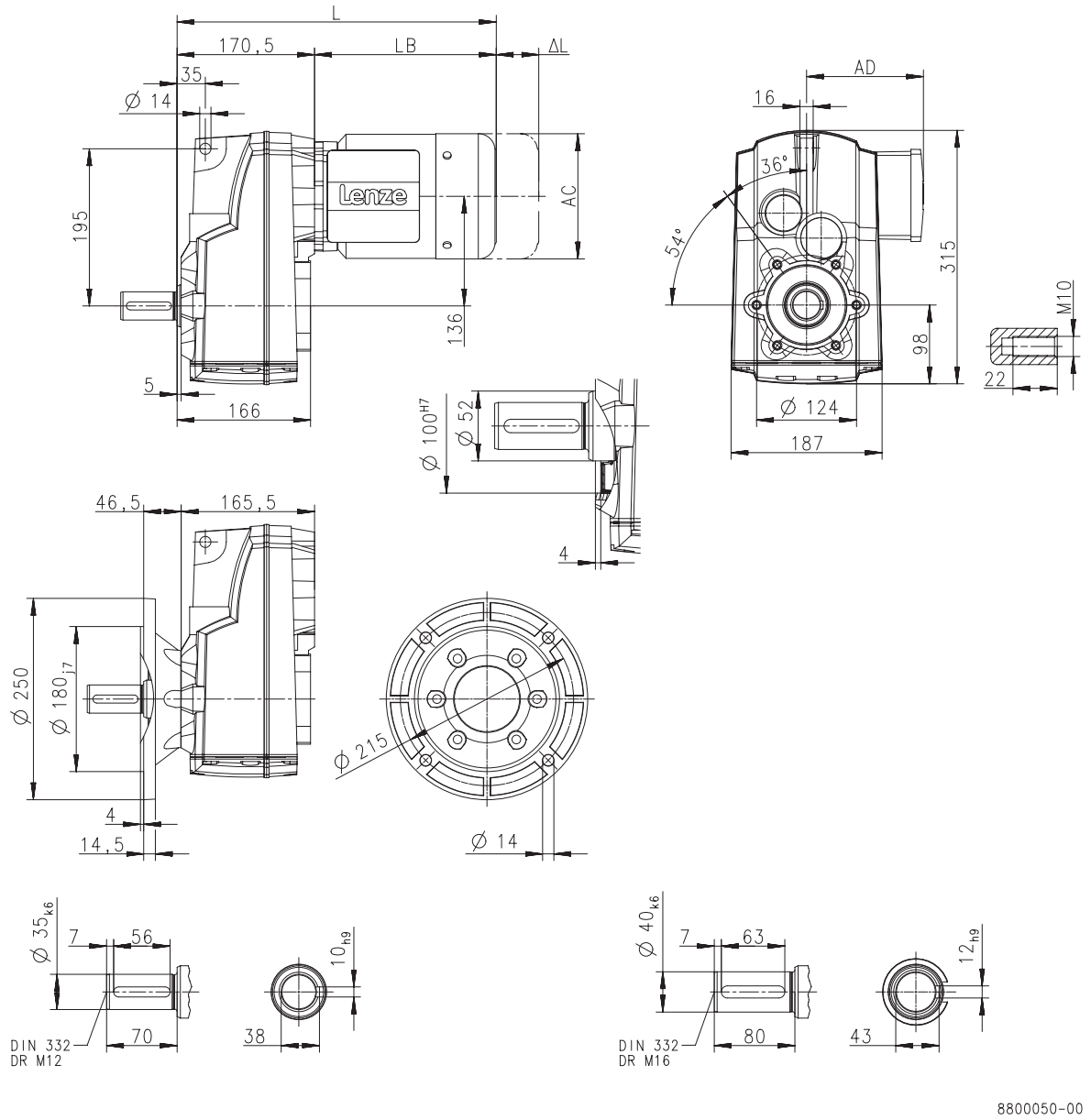


Product			MD□MA□□						
			090-32	100-12	100-32	112-22	112-32	132-22	132-32
Dimensions									
Total length	**L**	**[mm]**	430	491		507	551	599	
Motor length	**LB**	**[mm]**	259	320		336	380	428	
Length of motor options	**Δ L**	**[mm]**	181	170		183		202	
Motor diameter	**AC**	**[mm]**	176	194		218		258	
Distance motor/connection	**AD**	**[mm]**	157	166		176		195	

Dimensions, 4-pole motors

g500-S660

Dimensions with solid shaft

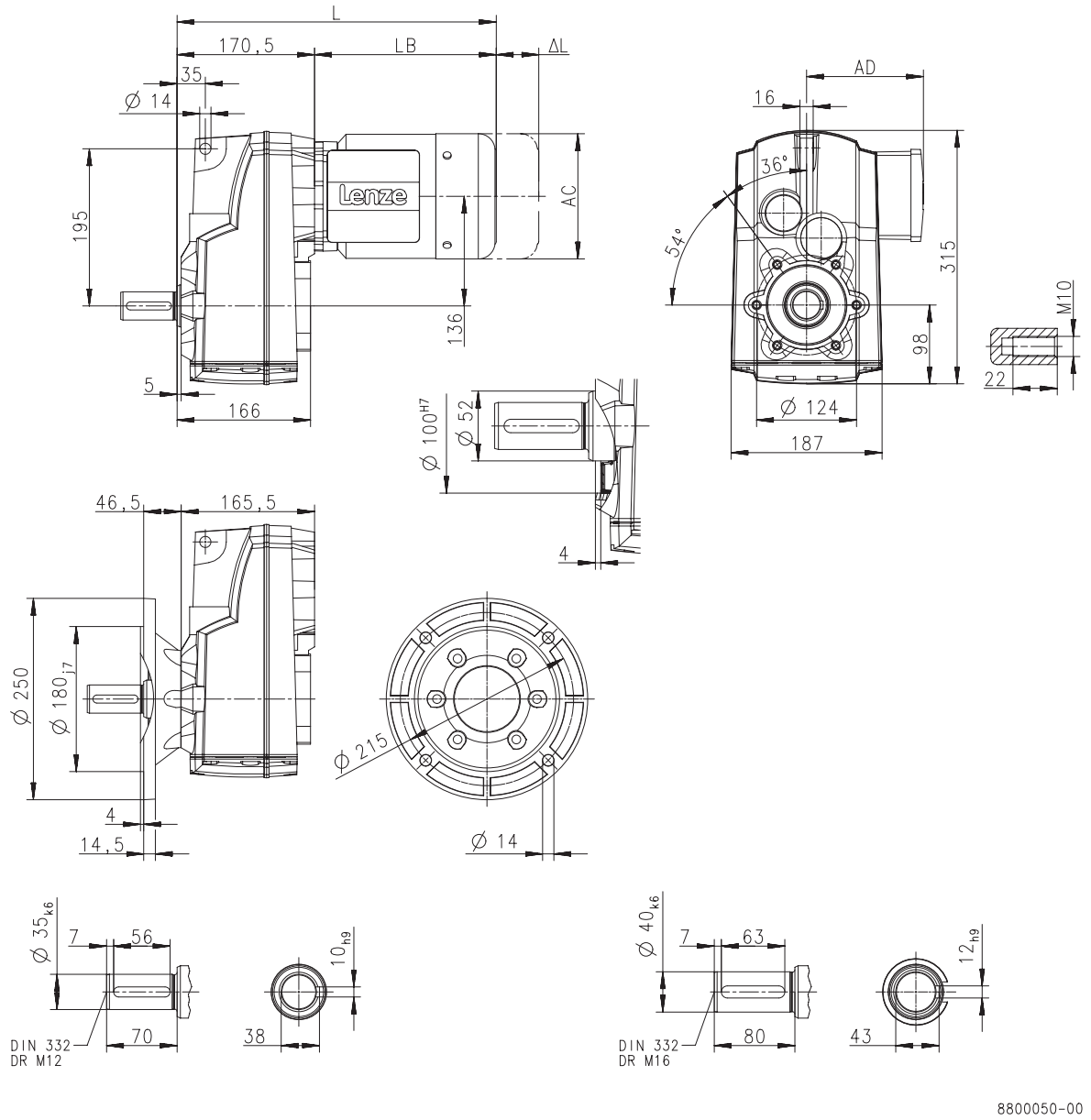


Product			MD□MA□□						
			063-12	063-32	063-42	071-32	071-42	080-32	080-42
Dimensions									
Total length	**L**	**[mm]**	354			374		397	
Motor length	**LB**	**[mm]**	183			203		226	
Length of motor options	**Δ L**	**[mm]**	170			165		183	
Motor diameter	**AC**	**[mm]**	123			139		156	
Distance motor/connection	**AD**	**[mm]**	100			109		150	

Dimensions, 4-pole motors

g500-S660

Dimensions with solid shaft

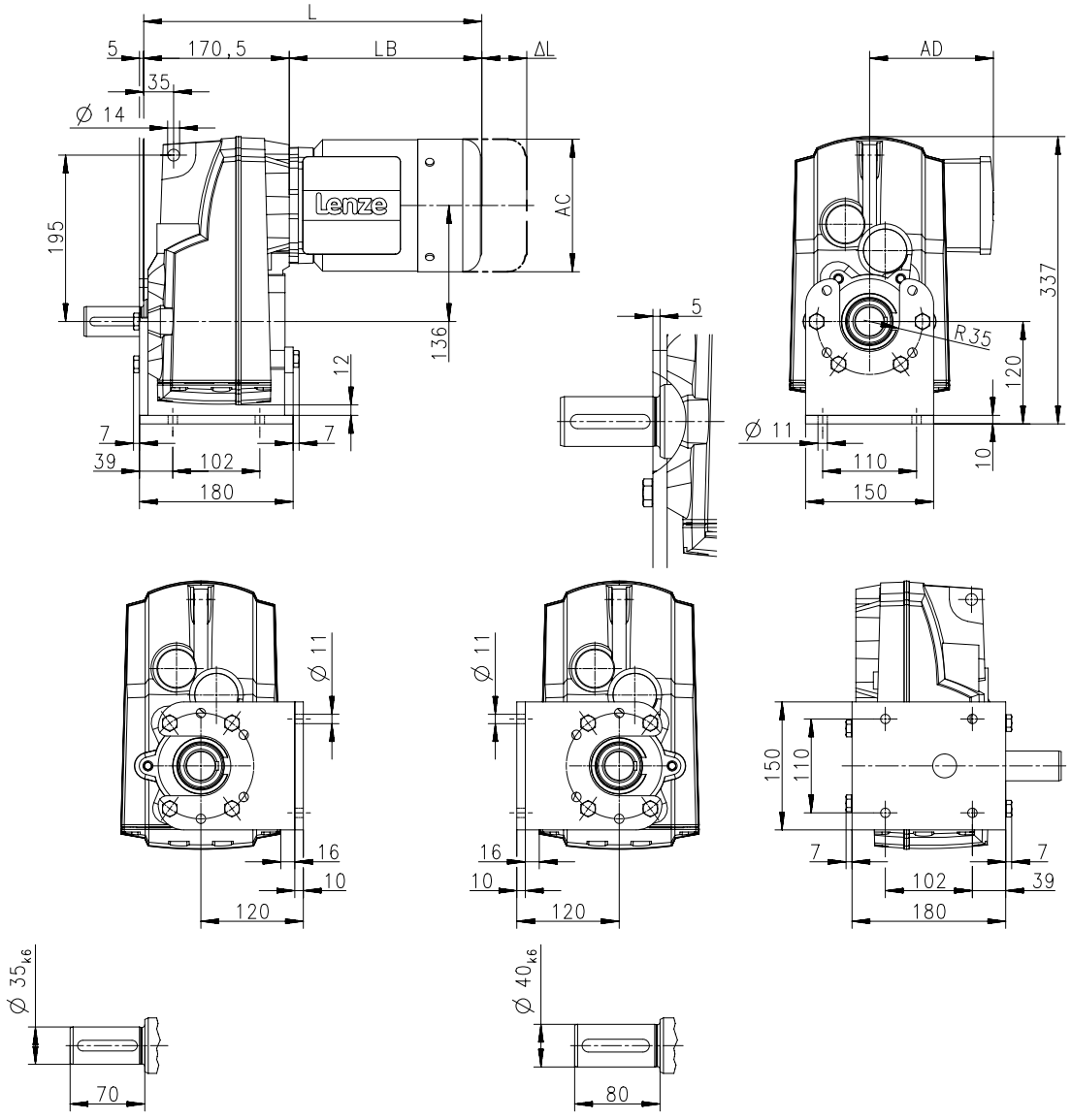


Product			MD□MA□□						
			090-32	100-12	100-32	112-22	112-32	132-22	132-32
Dimensions									
Total length	**L**	**[mm]**	430	491		507	551	599	
Motor length	**LB**	**[mm]**	259	320		336	380	428	
Length of motor options	**Δ L**	**[mm]**	181	170		183		202	
Motor diameter	**AC**	**[mm]**	176	194		218		258	
Distance motor/connection	**AD**	**[mm]**	157	166		176		195	

Dimensions, 4-pole motors

g500-S660

Dimensions with solid shaft and foot

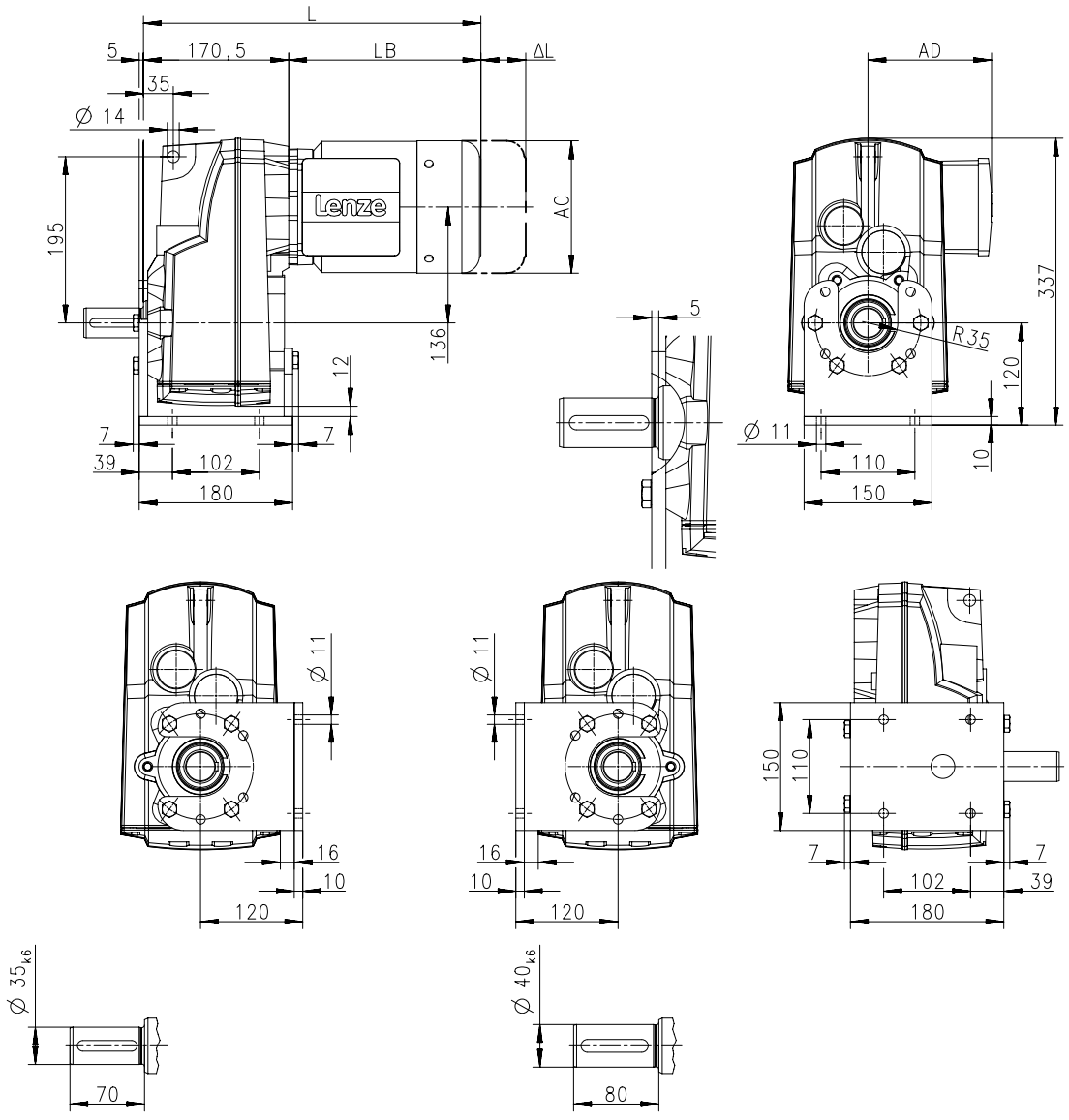


Product			MD□MA□□						
			063-12	063-32	063-42	071-32	071-42	080-32	080-42
Dimensions									
Total length	**L**	**[mm]**	354			374		397	
Motor length	**LB**	**[mm]**	183			203		226	
Length of motor options	**Δ L**	**[mm]**	170			165		183	
Motor diameter	**AC**	**[mm]**	123			139		156	
Distance motor/connection	**AD**	**[mm]**	100			109		150	

Dimensions, 4-pole motors

g500-S660

Dimensions with solid shaft and foot



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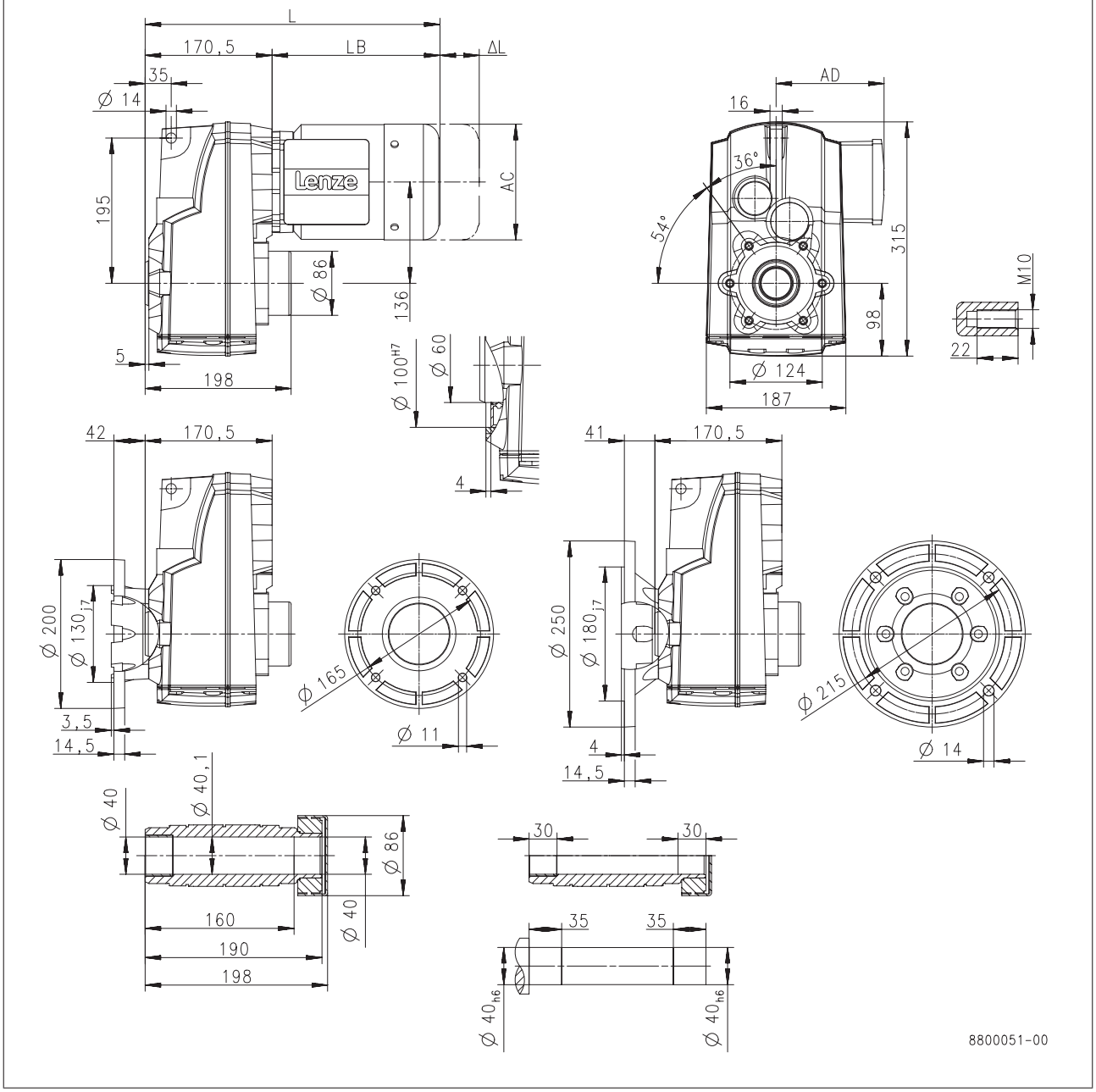
Product			MD□MA□□						
			090-32	100-12	100-32	112-22	112-32	132-22	132-32
Dimensions									
Total length	**L**	**[mm]**	430	491		507	551	599	
Motor length	**LB**	**[mm]**	259	320		336	380	428	
Length of motor options	**Δ L**	**[mm]**	181	170		183		202	
Motor diameter	**AC**	**[mm]**	176	194		218		258	
Distance motor/connection	**AD**	**[mm]**	157	166		176		195	

Dimensions, 4-pole motors

g500-S660

Dimensions with shrink disc

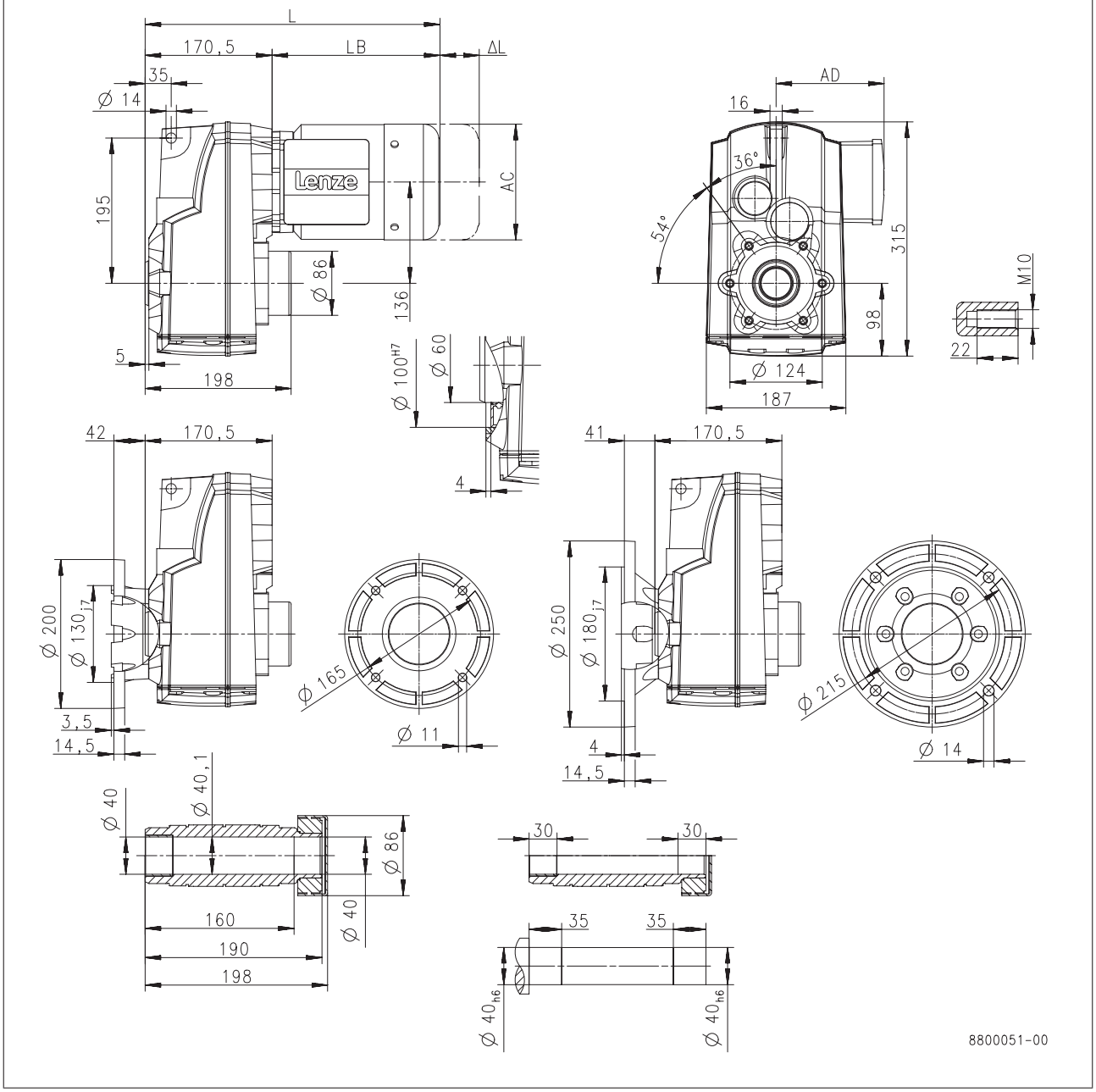


Product			MD□MA□□						
			063-12	063-32	063-42	071-32	071-42	080-32	080-42
Dimensions									
Total length	**L**	**[mm]**	354			374		397	
Motor length	**LB**	**[mm]**	183			203		226	
Length of motor options	**Δ L**	**[mm]**	170			165		183	
Motor diameter	**AC**	**[mm]**	123			139		156	
Distance motor/connection	**AD**	**[mm]**	100			109		150	

Dimensions, 4-pole motors

g500-S660

Dimensions with shrink disc

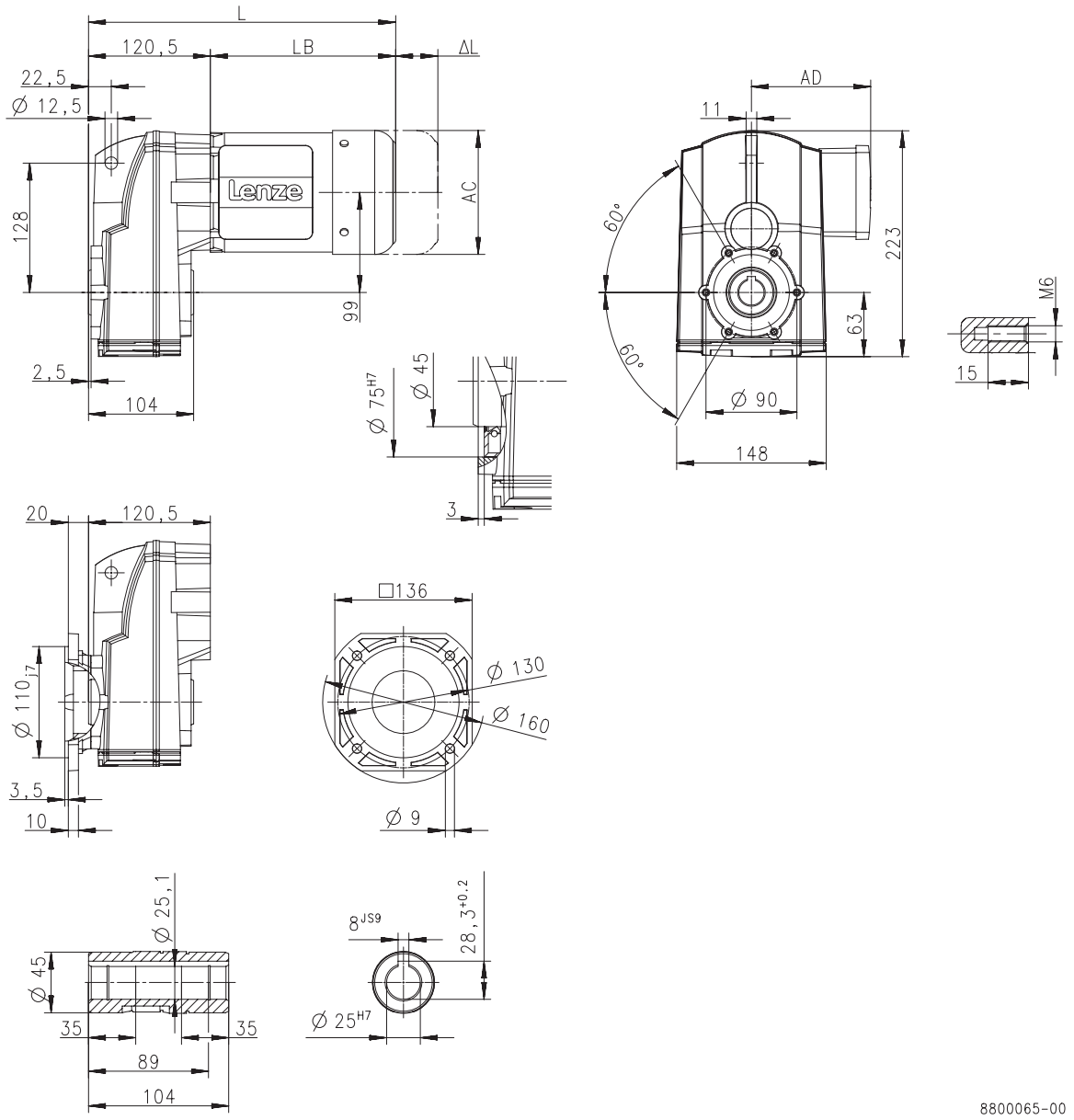


Product			MD□MA□□						
			090-32	100-12	100-32	112-22	112-32	132-22	132-32
Dimensions									
Total length	**L**	**[mm]**	430	491		507	551	599	
Motor length	**LB**	**[mm]**	259	320		336	380	428	
Length of motor options	**Δ L**	**[mm]**	181	170		183		202	
Motor diameter	**AC**	**[mm]**	176	194		218		258	
Distance motor/connection	**AD**	**[mm]**	157	166		176		195	

Dimensions, 2-pole motors

g500-S130

Dimensions with hollow shaft

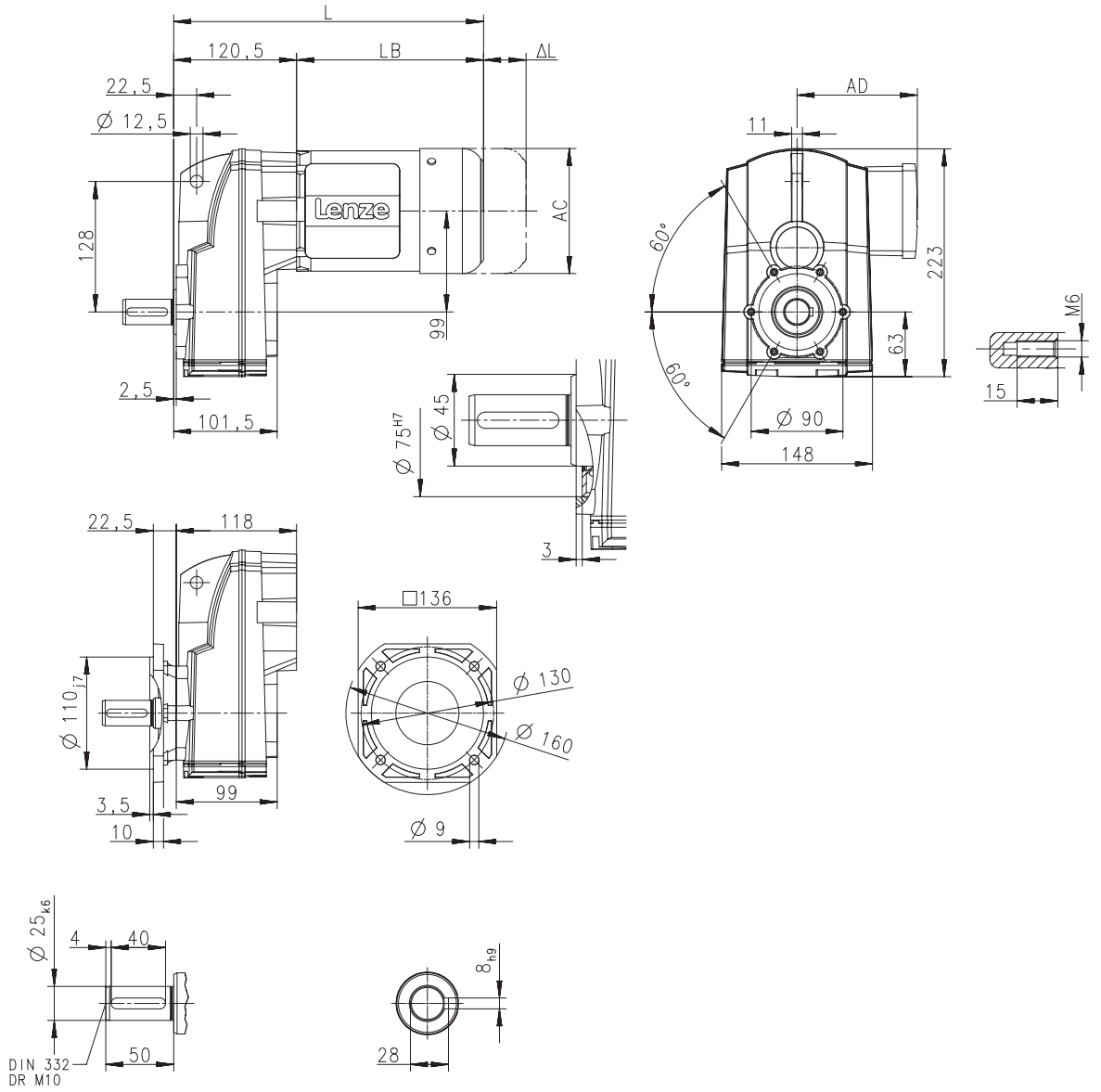


Product			MD□MA□□							
			063-11	063-31	071-11	071-31	080-11	080-31	090-11	090-31
Dimensions										
Total length	**L**	**[mm]**	304		324		347		406	
Motor length	**LB**	**[mm]**	183		203		226		285	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	
Motor diameter	**AC**	**[mm]**	123		139		156		176	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	

Dimensions, 2-pole motors

g500-S130

Dimensions with solid shaft

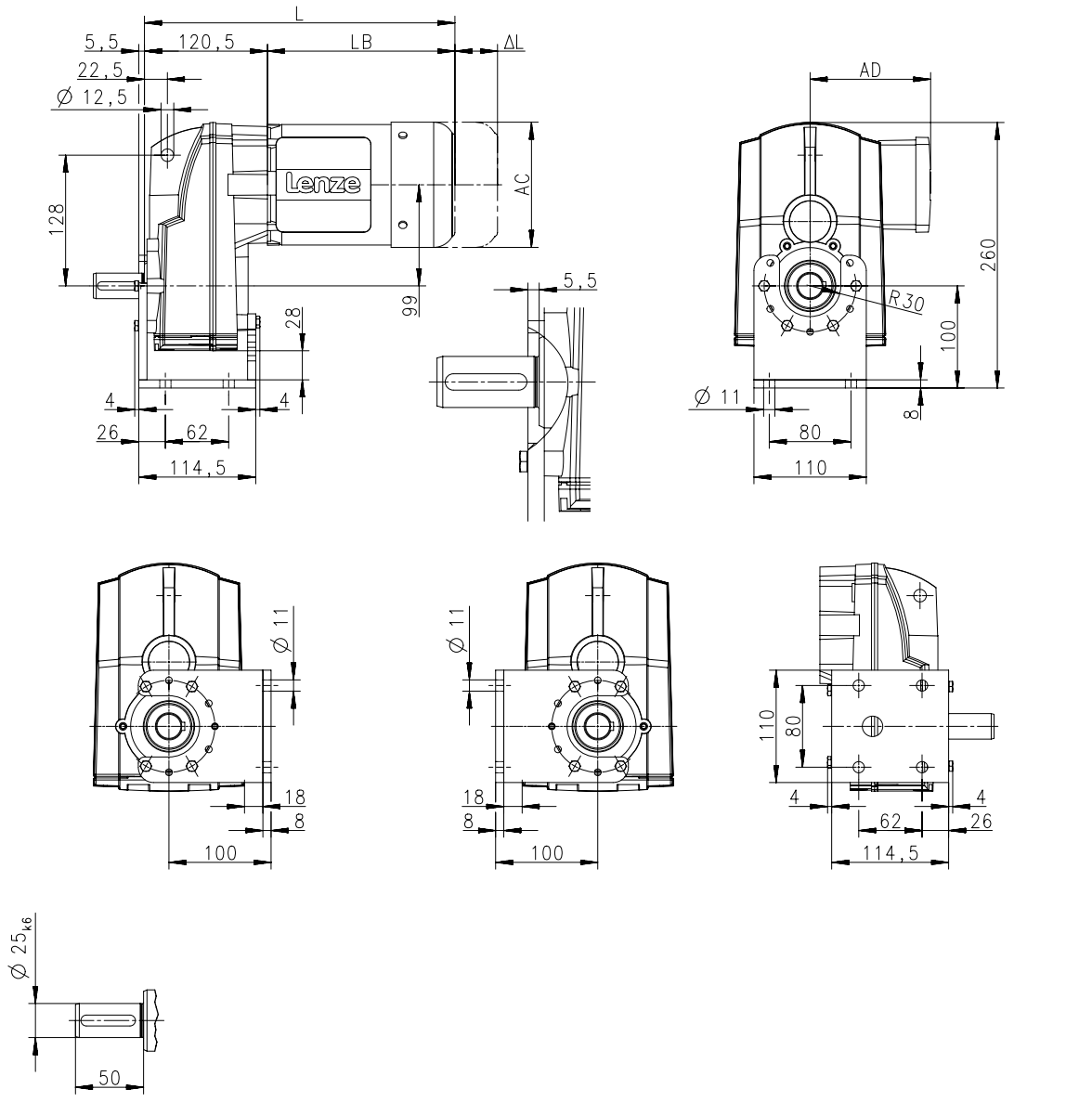


Product			MD□MA□□							
			063-11	063-31	071-11	071-31	080-11	080-31	090-11	090-31
Dimensions										
Total length	**L**	**[mm]**	304		324		347		406	
Motor length	**LB**	**[mm]**	183		203		226		285	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	
Motor diameter	**AC**	**[mm]**	123		139		156		176	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	

Dimensions, 2-pole motors

g500-S130

Dimensions with solid shaft and foot

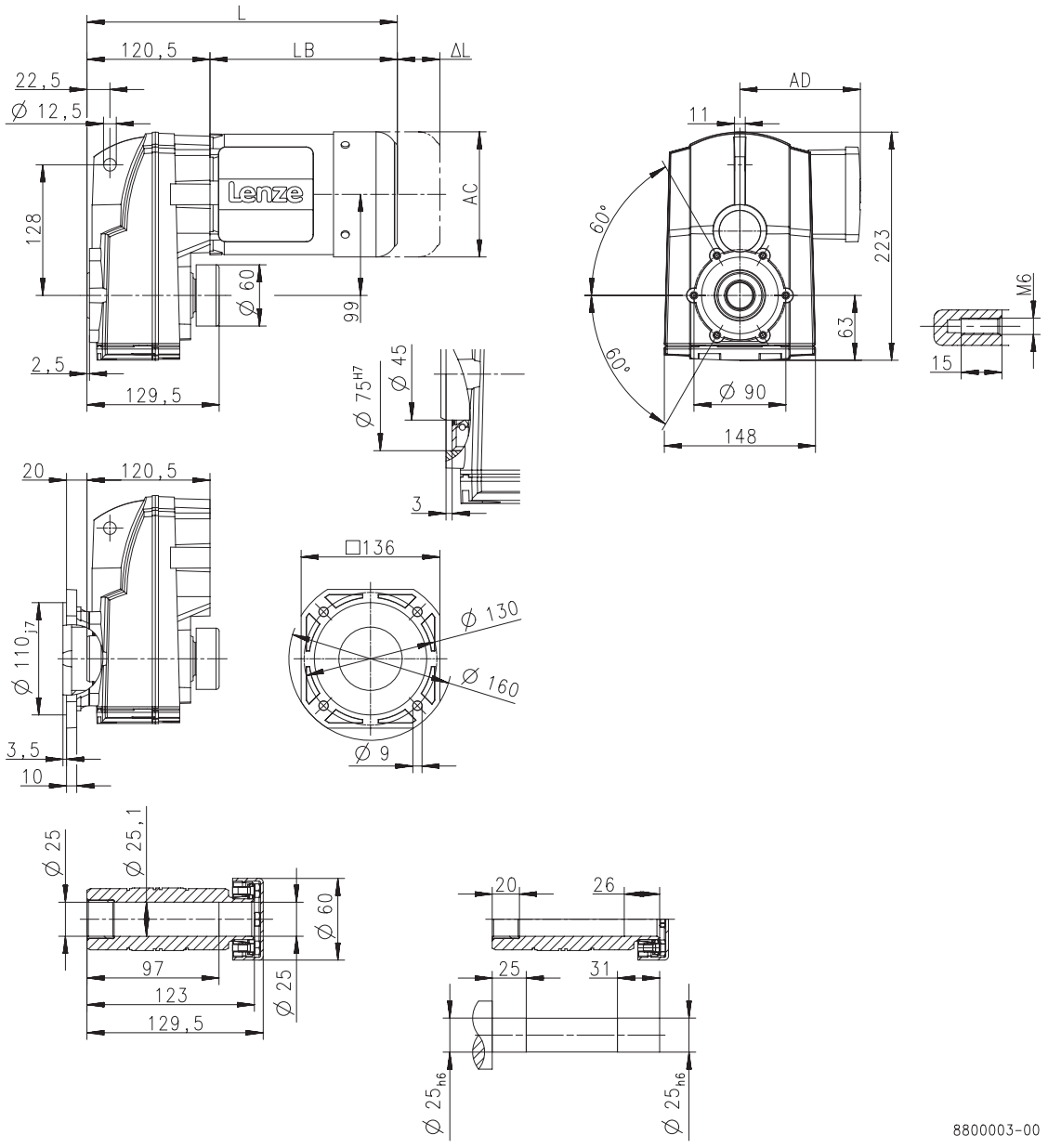


Product			MD□MA□□							
			063-11	063-31	071-11	071-31	080-11	080-31	090-11	090-31
Dimensions										
Total length	**L**	**[mm]**	304		324		347		406	
Motor length	**LB**	**[mm]**	183		203		226		285	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	
Motor diameter	**AC**	**[mm]**	123		139		156		176	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	

Dimensions, 2-pole motors

g500-S130

Dimensions with shrink disc

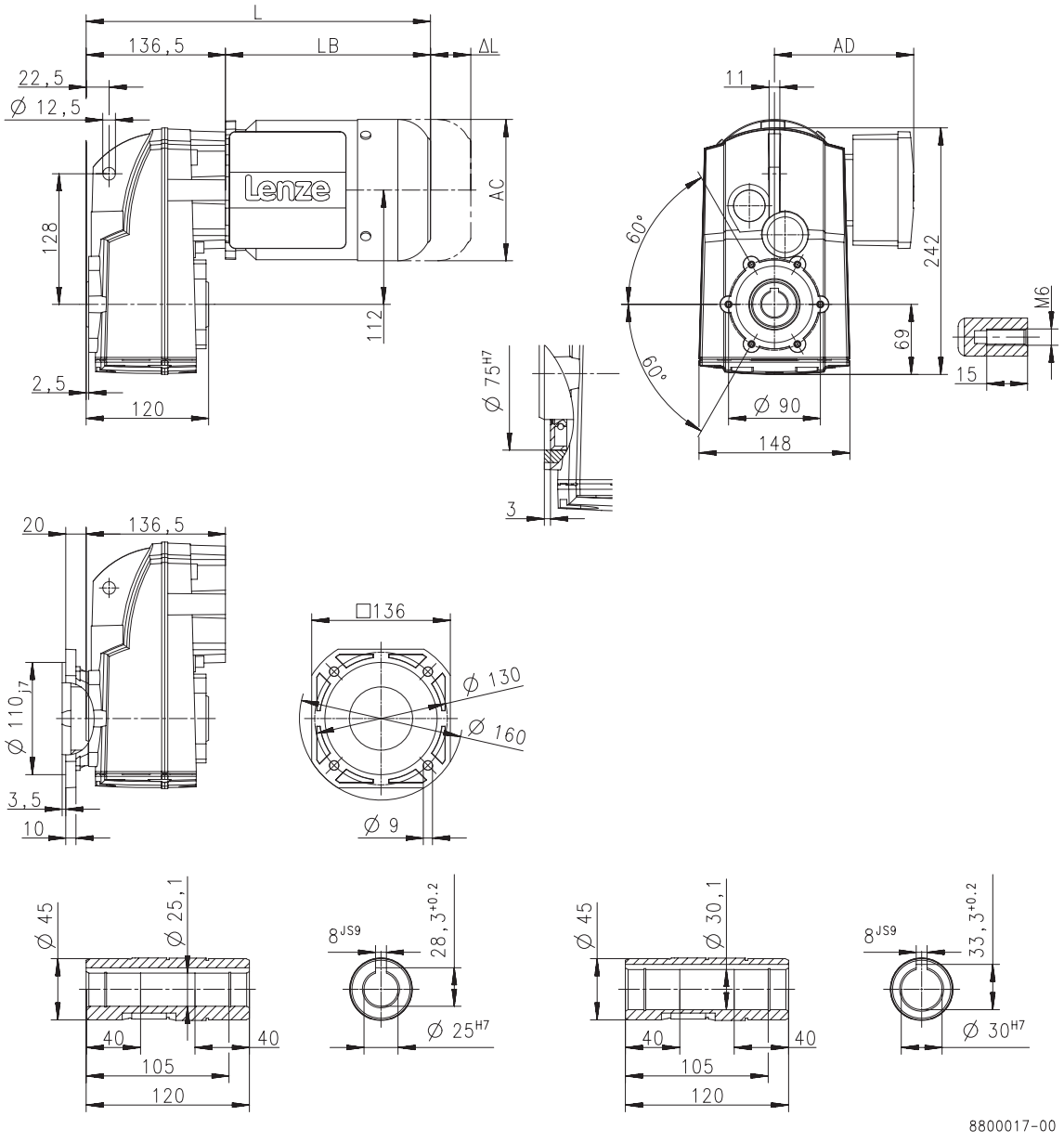


Product			MD□MA□□							
			063-11	063-31	071-11	071-31	080-11	080-31	090-11	090-31
Dimensions										
Total length	**L**	**[mm]**	304		324		347		406	
Motor length	**LB**	**[mm]**	183		203		226		285	
Length of motor options	**Δ L**	**[mm]**	170		165		183		181	
Motor diameter	**AC**	**[mm]**	123		139		156		176	
Distance motor/connection	**AD**	**[mm]**	100		109		150		157	

Dimensions, 2-pole motors

g500-S220

Dimensions with hollow shaft

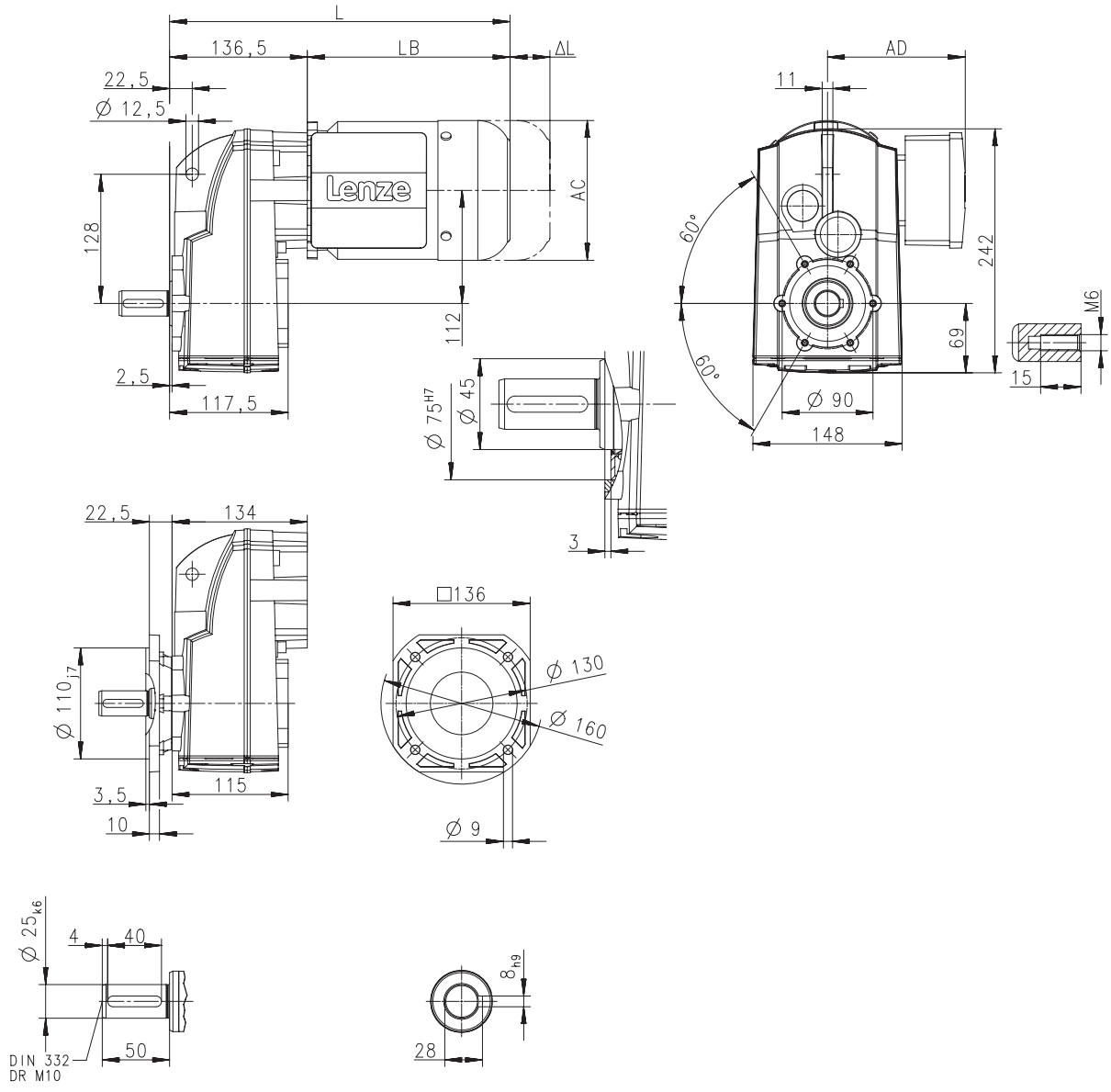


Product			MD□MA□□								
			063-31	071-11	071-31	080-11	080-31	090-11	090-31	100-31	100-41
Dimensions											
Total length	**L**	**[mm]**	320	340		363		422		457	
Motor length	**LB**	**[mm]**	183	203		226		285		320	
Length of motor options	**Δ L**	**[mm]**	170	165		183		181		170	
Motor diameter	**AC**	**[mm]**	123	139		156		176		194	
Distance motor/connection	**AD**	**[mm]**	100	109		150		157		166	

Dimensions, 2-pole motors

g500-S220

Dimensions with solid shaft

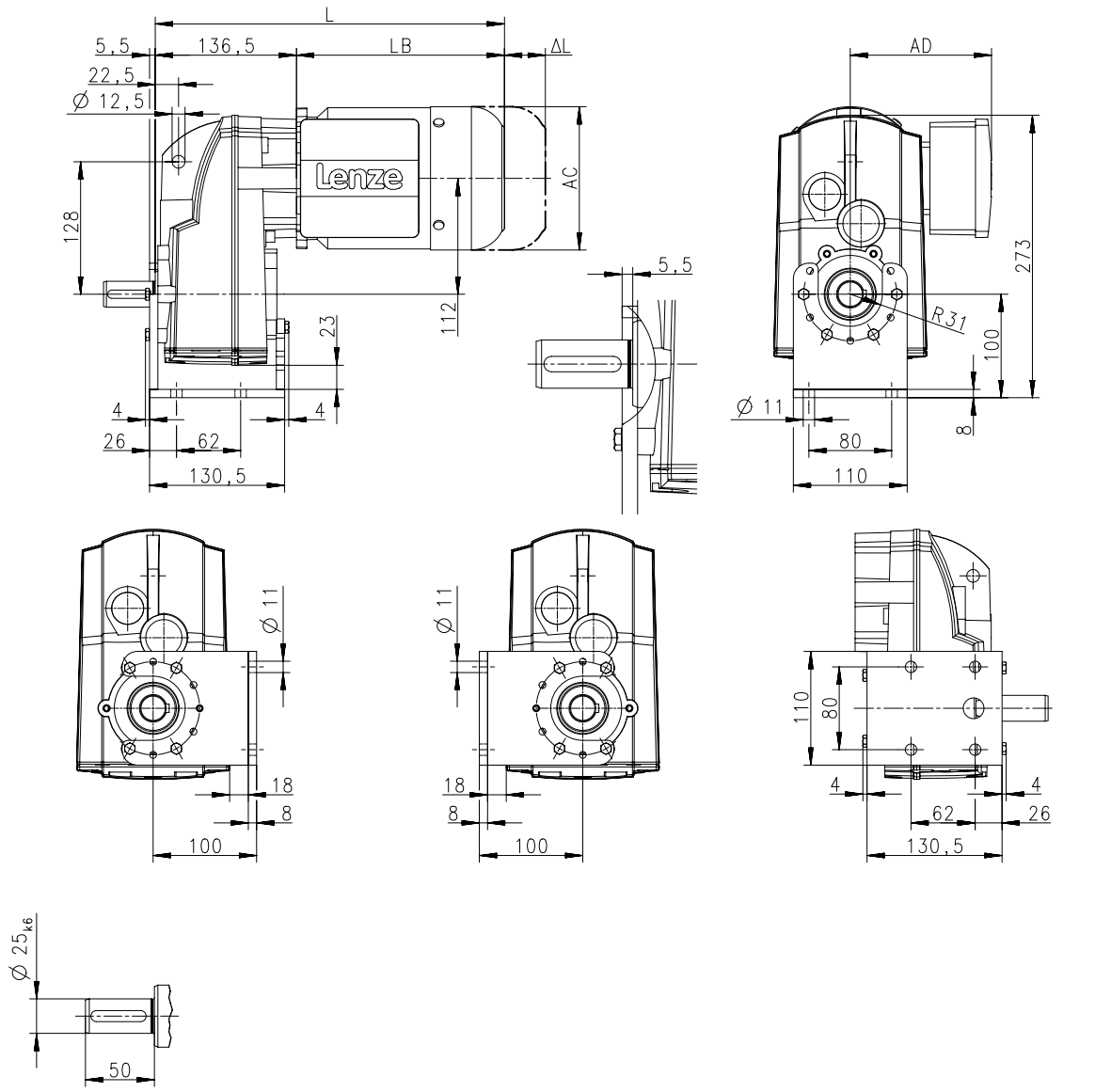


Product			MD□MA□□								
			063-31	071-11	071-31	080-11	080-31	090-11	090-31	100-31	100-41
Dimensions											
Total length	**L**	**[mm]**	320	340		363		422		457	
Motor length	**LB**	**[mm]**	183	203		226		285		320	
Length of motor options	**Δ L**	**[mm]**	170	165		183		181		170	
Motor diameter	**AC**	**[mm]**	123	139		156		176		194	
Distance motor/connection	**AD**	**[mm]**	100	109		150		157		166	

Dimensions, 2-pole motors

g500-S220

Dimensions with solid shaft and foot

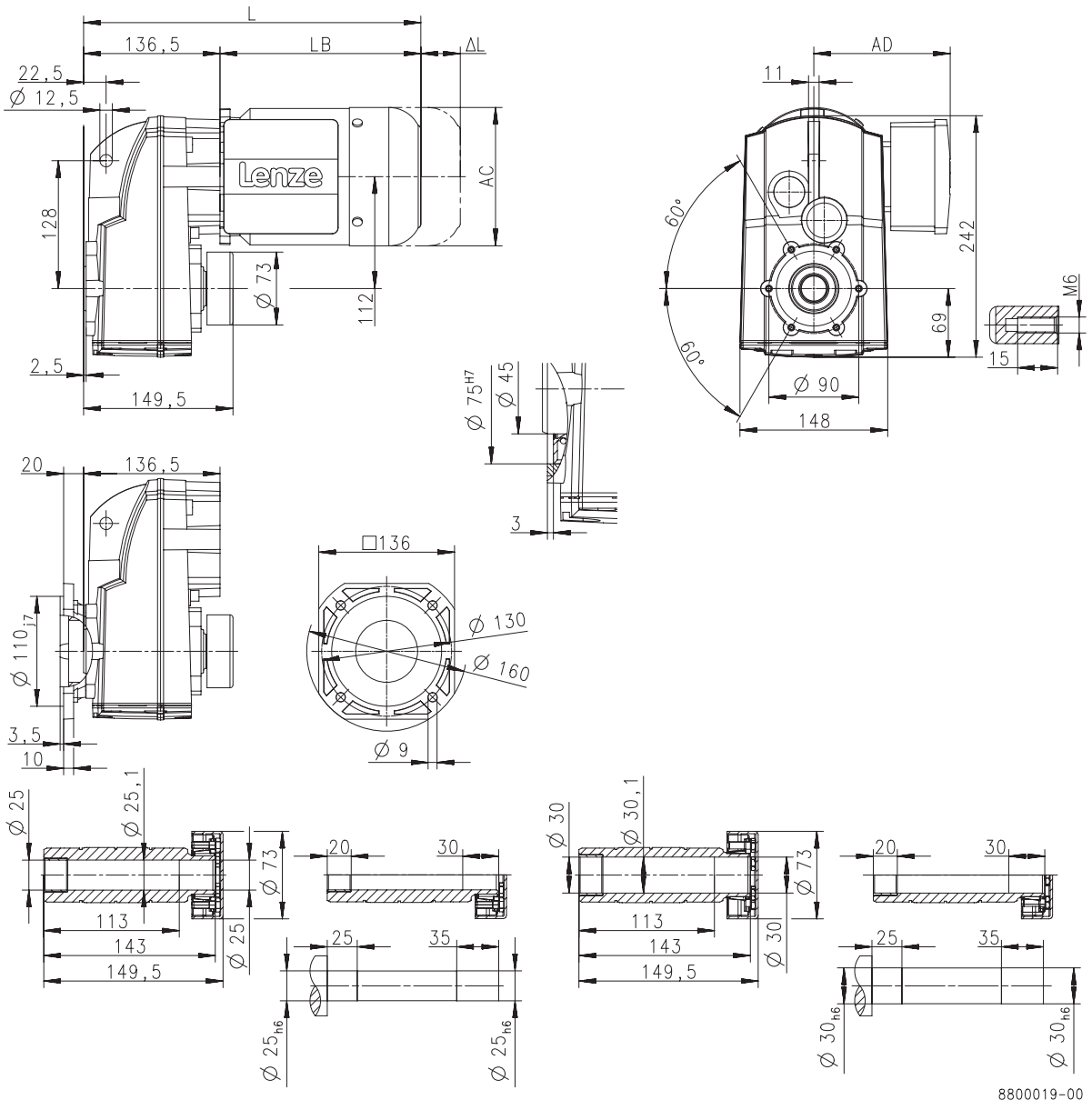


Product			MD□MA□□								
			063-31	071-11	071-31	080-11	080-31	090-11	090-31	100-31	100-41
Dimensions											
Total length	**L**	**[mm]**	320	340		363		422		457	
Motor length	**LB**	**[mm]**	183	203		226		285		320	
Length of motor options	**Δ L**	**[mm]**	170	165		183		181		170	
Motor diameter	**AC**	**[mm]**	123	139		156		176		194	
Distance motor/connection	**AD**	**[mm]**	100	109		150		157		166	

Dimensions, 2-pole motors

g500-S220

Dimensions with shrink disc

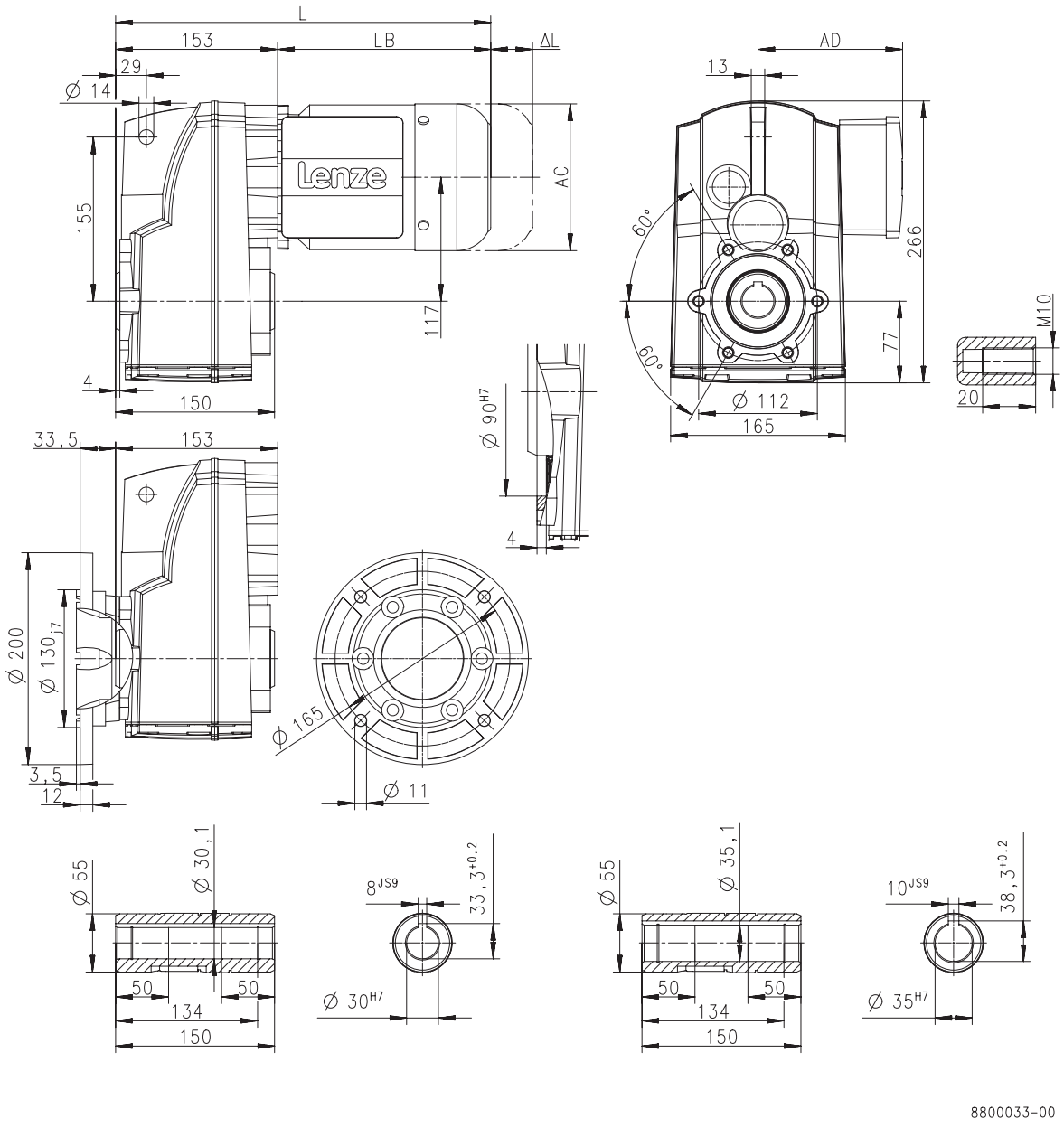


Product			MD□MA□□								
			063-31	071-11	071-31	080-11	080-31	090-11	090-31	100-31	100-41
Dimensions											
Total length	**L**	**[mm]**	320	340		363		422		457	
Motor length	**LB**	**[mm]**	183	203		226		285		320	
Length of motor options	**Δ L**	**[mm]**	170	165		183		181		170	
Motor diameter	**AC**	**[mm]**	123	139		156		176		194	
Distance motor/connection	**AD**	**[mm]**	100	109		150		157		166	

Dimensions, 2-pole motors

g500-S400

Dimensions with hollow shaft

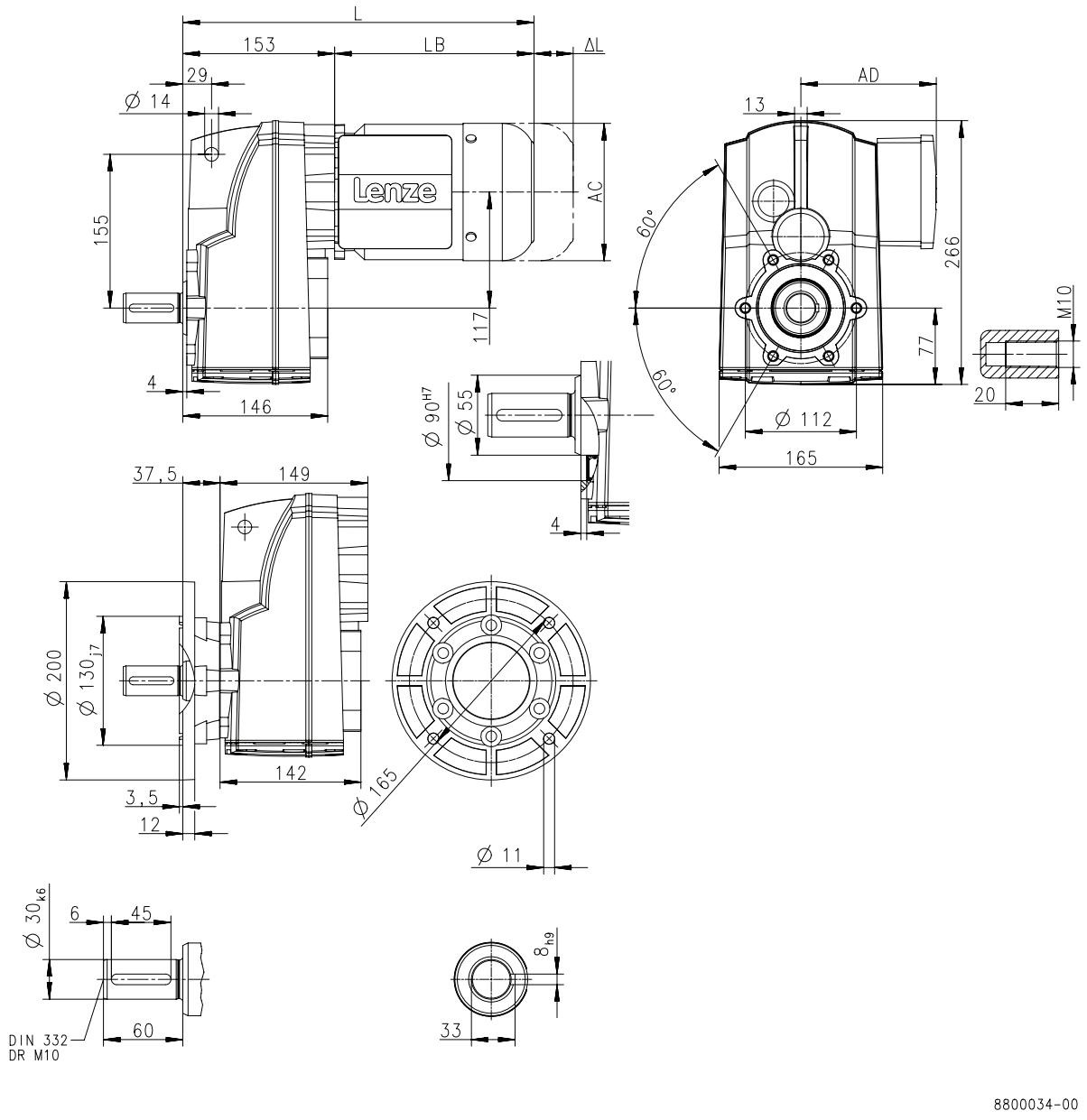


Product			MD□MA□□							
			071-31	080-11	080-31	090-11	090-31	100-31	100-41	112-31
Dimensions										
Total length	**L**	**[mm]**	356	379		438		473		489
Motor length	**LB**	**[mm]**	203	226		285		320		336
Length of motor options	**Δ L**	**[mm]**	165	183		181		170		183
Motor diameter	**AC**	**[mm]**	139	156		176		194		218
Distance motor/connection	**AD**	**[mm]**	109	150		157		166		176

Dimensions, 2-pole motors

g500-S400

Dimensions with solid shaft

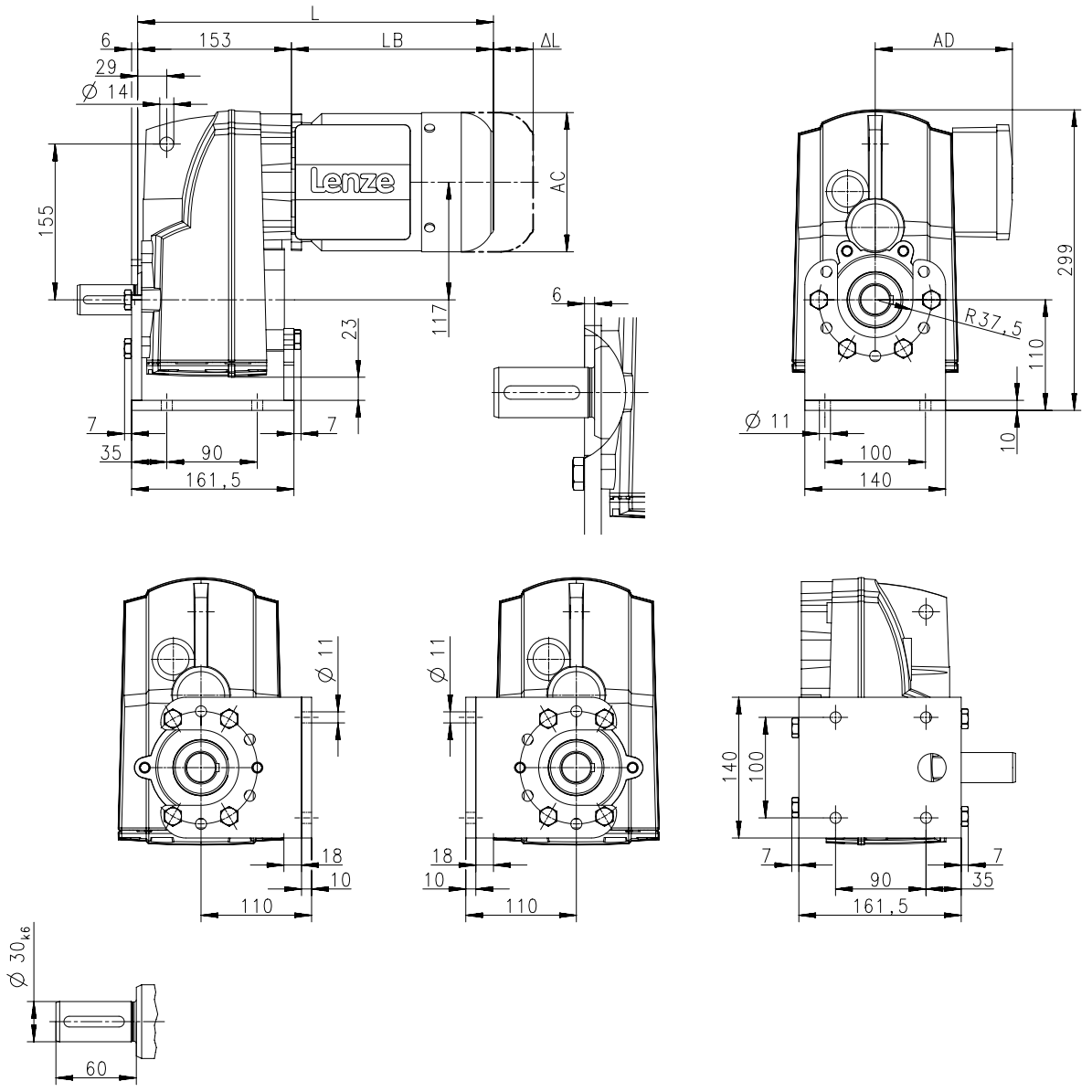


Product			MD□MA□□							
			071-31	080-11	080-31	090-11	090-31	100-31	100-41	112-31
Dimensions										
Total length	**L**	**[mm]**	356	379		438		473		489
Motor length	**LB**	**[mm]**	203	226		285		320		336
Length of motor options	**Δ L**	**[mm]**	165	183		181		170		183
Motor diameter	**AC**	**[mm]**	139	156		176		194		218
Distance motor/connection	**AD**	**[mm]**	109	150		157		166		176

Dimensions, 2-pole motors

g500-S400

Dimensions with solid shaft and foot

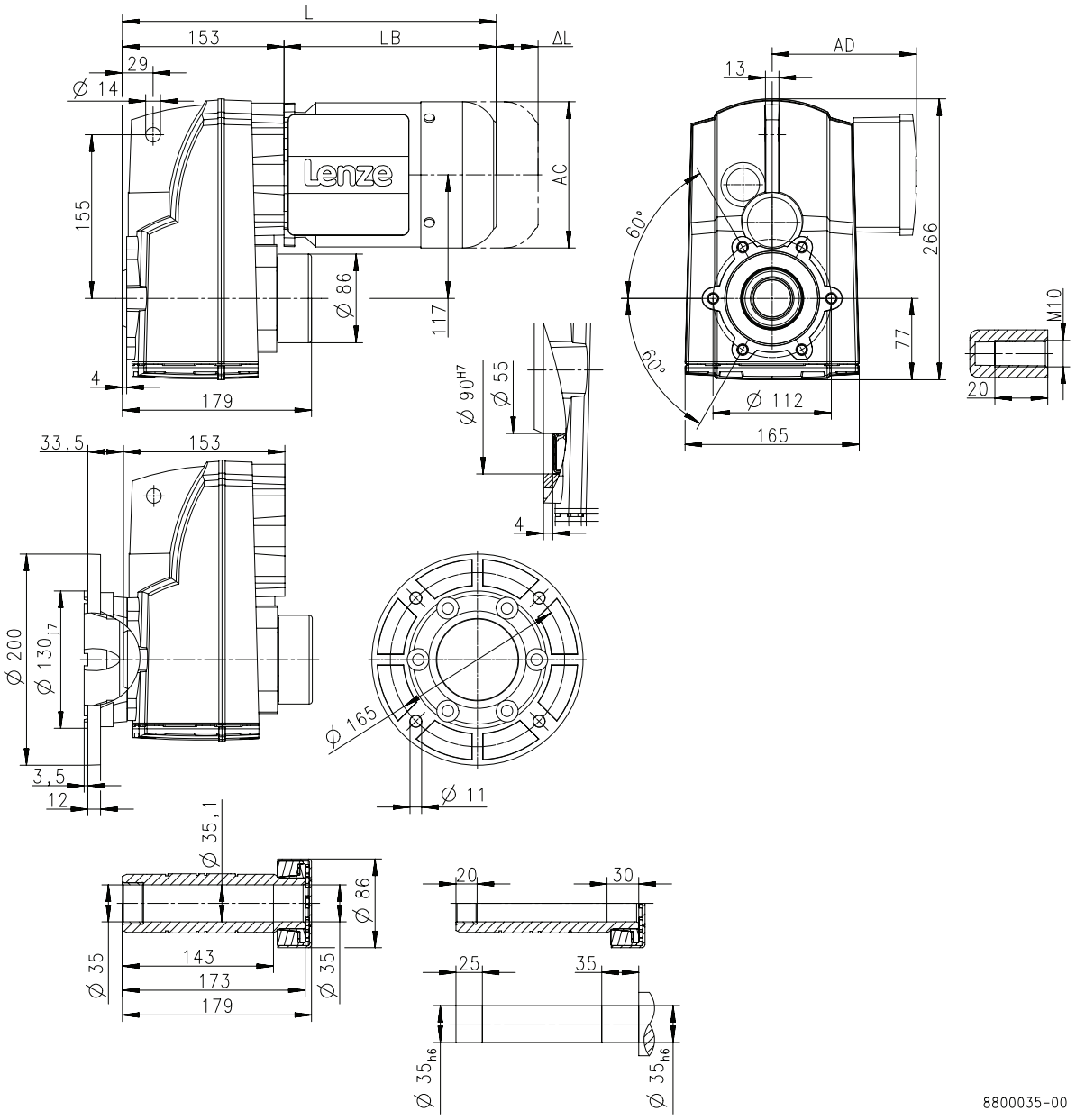


Product			MD□MA□□							
			071-31	080-11	080-31	090-11	090-31	100-31	100-41	112-31
Dimensions										
Total length	**L**	**[mm]**	356	379		438		473		489
Motor length	**LB**	**[mm]**	203	226		285		320		336
Length of motor options	**Δ L**	**[mm]**	165	183		181		170		183
Motor diameter	**AC**	**[mm]**	139	156		176		194		218
Distance motor/connection	**AD**	**[mm]**	109	150		157		166		176

Dimensions, 2-pole motors

g500-S400

Dimensions with shrink disc

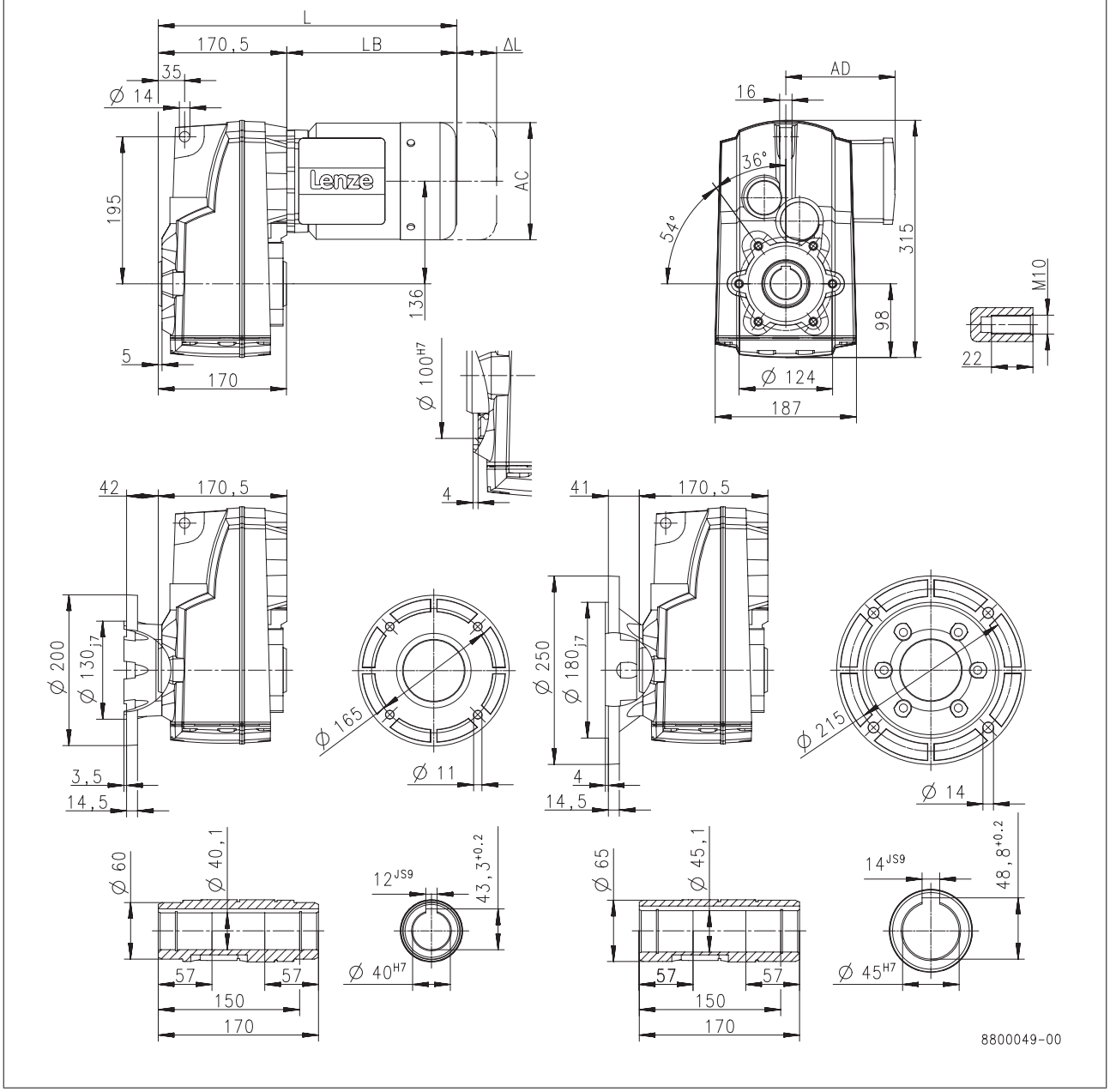


Product			MD□MA□□							
			071-31	080-11	080-31	090-11	090-31	100-31	100-41	112-31
Dimensions										
Total length	**L**	**[mm]**	356	379		438		473		489
Motor length	**LB**	**[mm]**	203	226		285		320		336
Length of motor options	**Δ L**	**[mm]**	165	183		181		170		183
Motor diameter	**AC**	**[mm]**	139	156		176		194		218
Distance motor/connection	**AD**	**[mm]**	109	150		157		166		176

Dimensions, 2-pole motors

g500-S660

Dimensions with hollow shaft

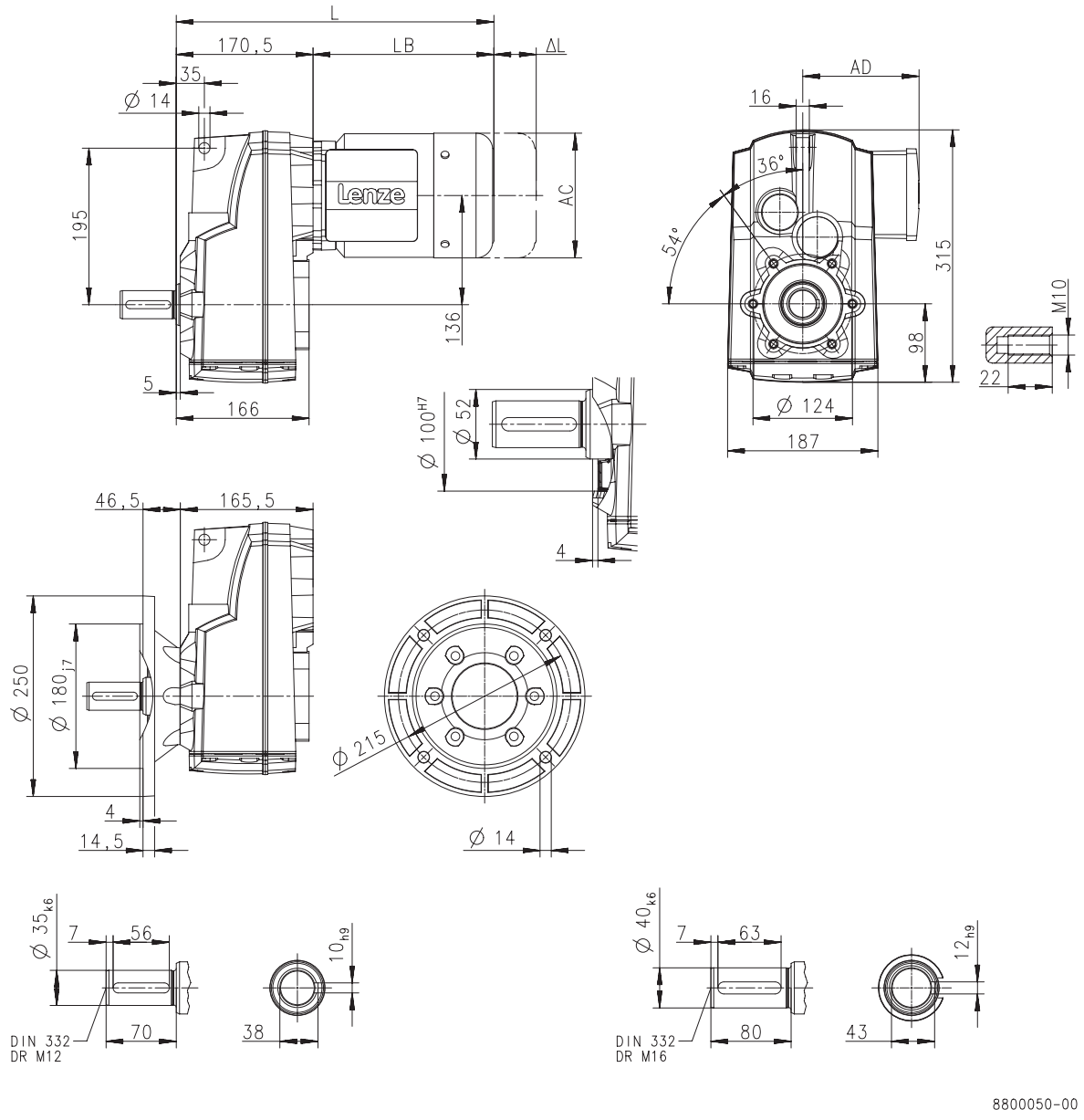


Product			MD□MA□□						
			080-31	090-11	090-31	100-31	100-41	112-31	112-41
Dimensions									
Total length	**L**	**[mm]**	397	456		491		507	551
Motor length	**LB**	**[mm]**	226	285		320		336	380
Length of motor options	**Δ L**	**[mm]**	183	181		170		183	
Motor diameter	**AC**	**[mm]**	156	176		194		218	
Distance motor/connection	**AD**	**[mm]**	150	157		166		176	

Dimensions, 2-pole motors

g500-S660

Dimensions with solid shaft

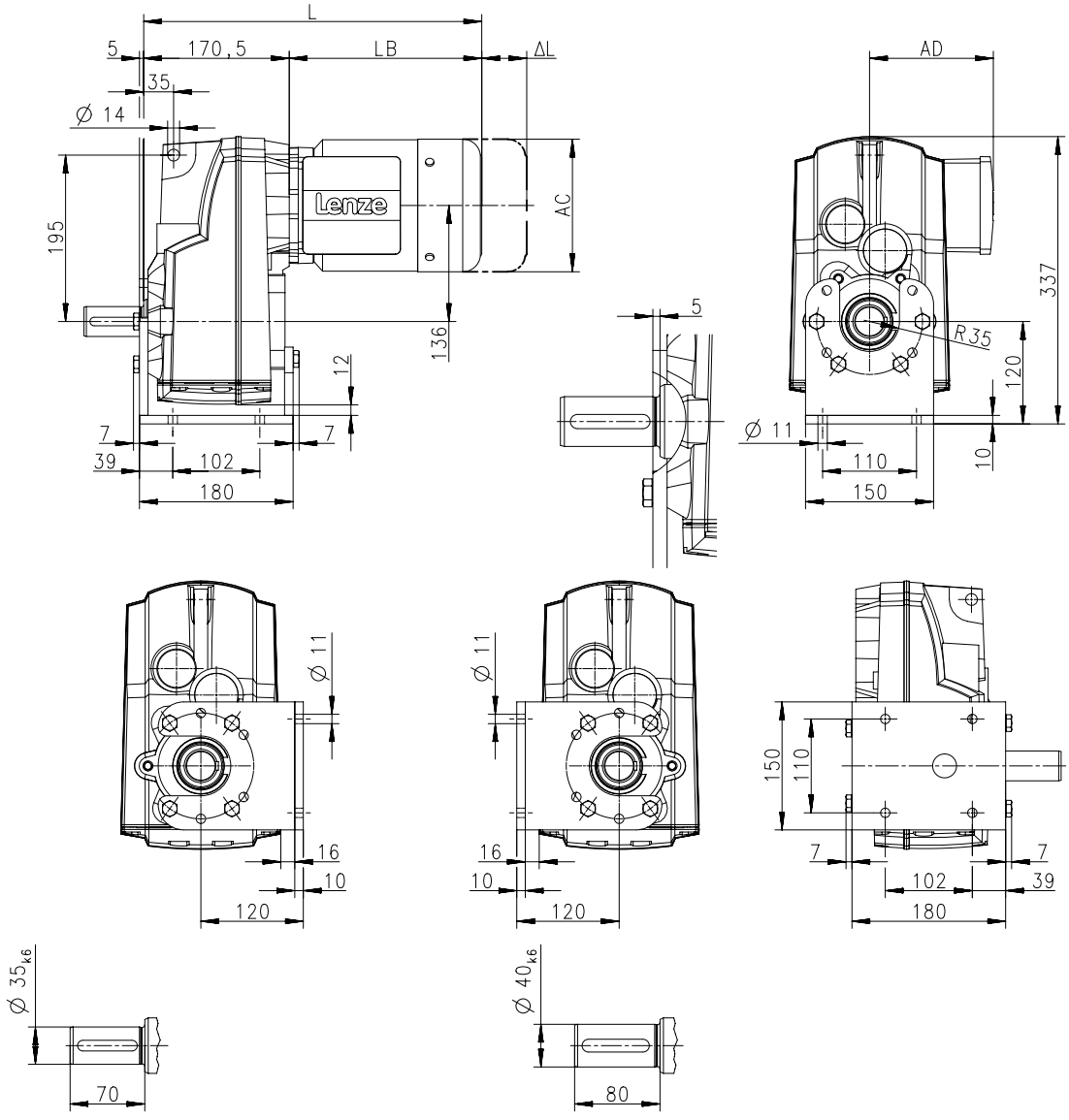


Product			MD□MA□□						
			080-31	090-11	090-31	100-31	100-41	112-31	112-41
Dimensions									
Total length	**L**	**[mm]**	397	456		491		507	551
Motor length	**LB**	**[mm]**	226	285		320		336	380
Length of motor options	**Δ L**	**[mm]**	183	181		170		183	
Motor diameter	**AC**	**[mm]**	156	176		194		218	
Distance motor/connection	**AD**	**[mm]**	150	157		166		176	

Dimensions, 2-pole motors

g500-S660

Dimensions with solid shaft and foot



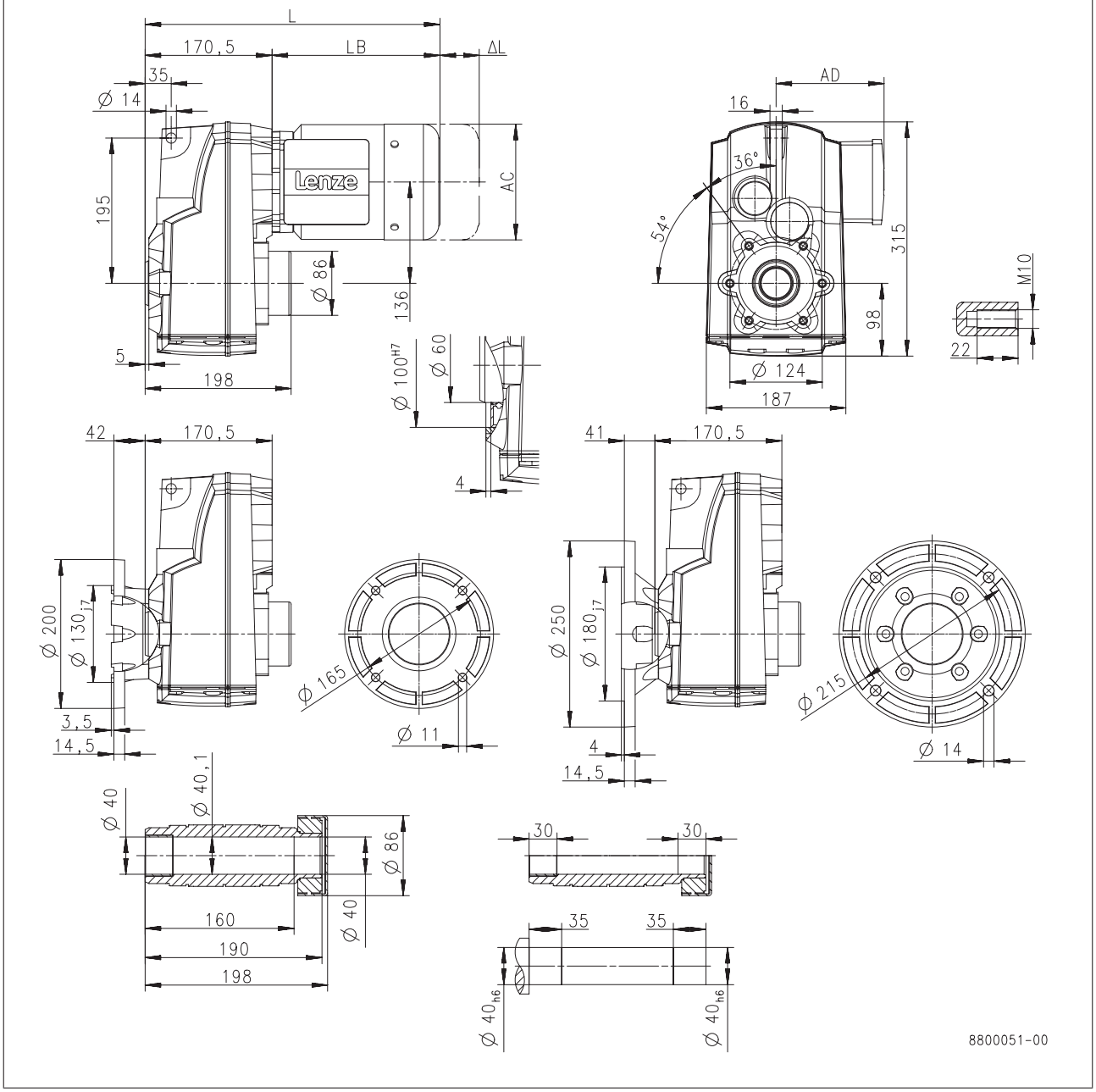
8800052-00

Product			MD□MA□□						
			080-31	090-11	090-31	100-31	100-41	112-31	112-41
Dimensions									
Total length	**L**	**[mm]**	397	456		491		507	551
Motor length	**LB**	**[mm]**	226	285		320		336	380
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, 2-pole motors

g500-S660

Dimensions with shrink disc

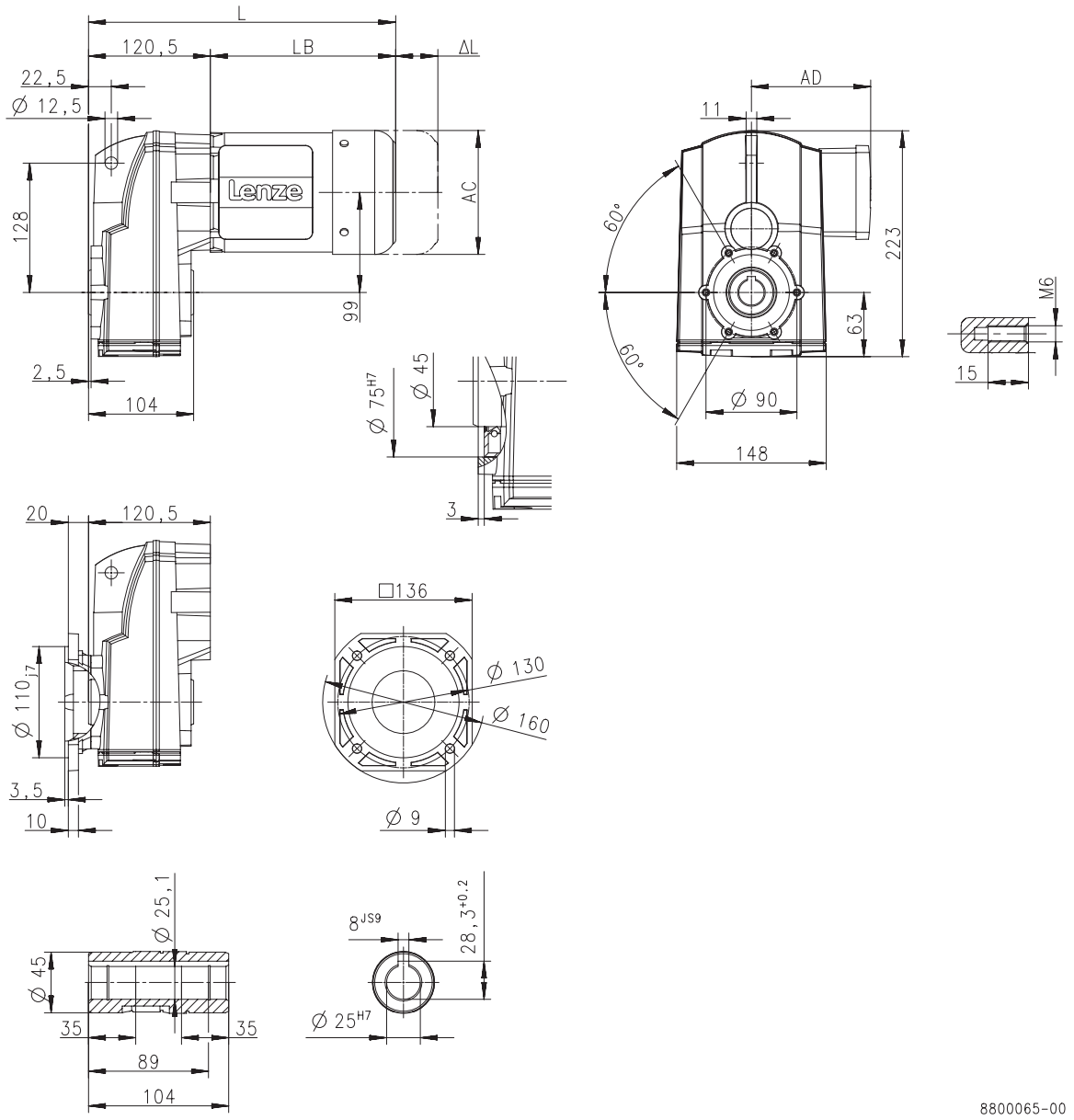


Product			MD□MA□□						
			080-31	090-11	090-31	100-31	100-41	112-31	112-41
Dimensions									
Total length	**L**	**[mm]**	397	456		491		507	551
Motor length	**LB**	**[mm]**	226	285		320		336	380
Length of motor options	**Δ L**	**[mm]**	183	181		170		183	
Motor diameter	**AC**	**[mm]**	156	176		194		218	
Distance motor/connection	**AD**	**[mm]**	150	157		166		176	

Dimensions, 6-pole motors

g500-S130

Dimensions with hollow shaft

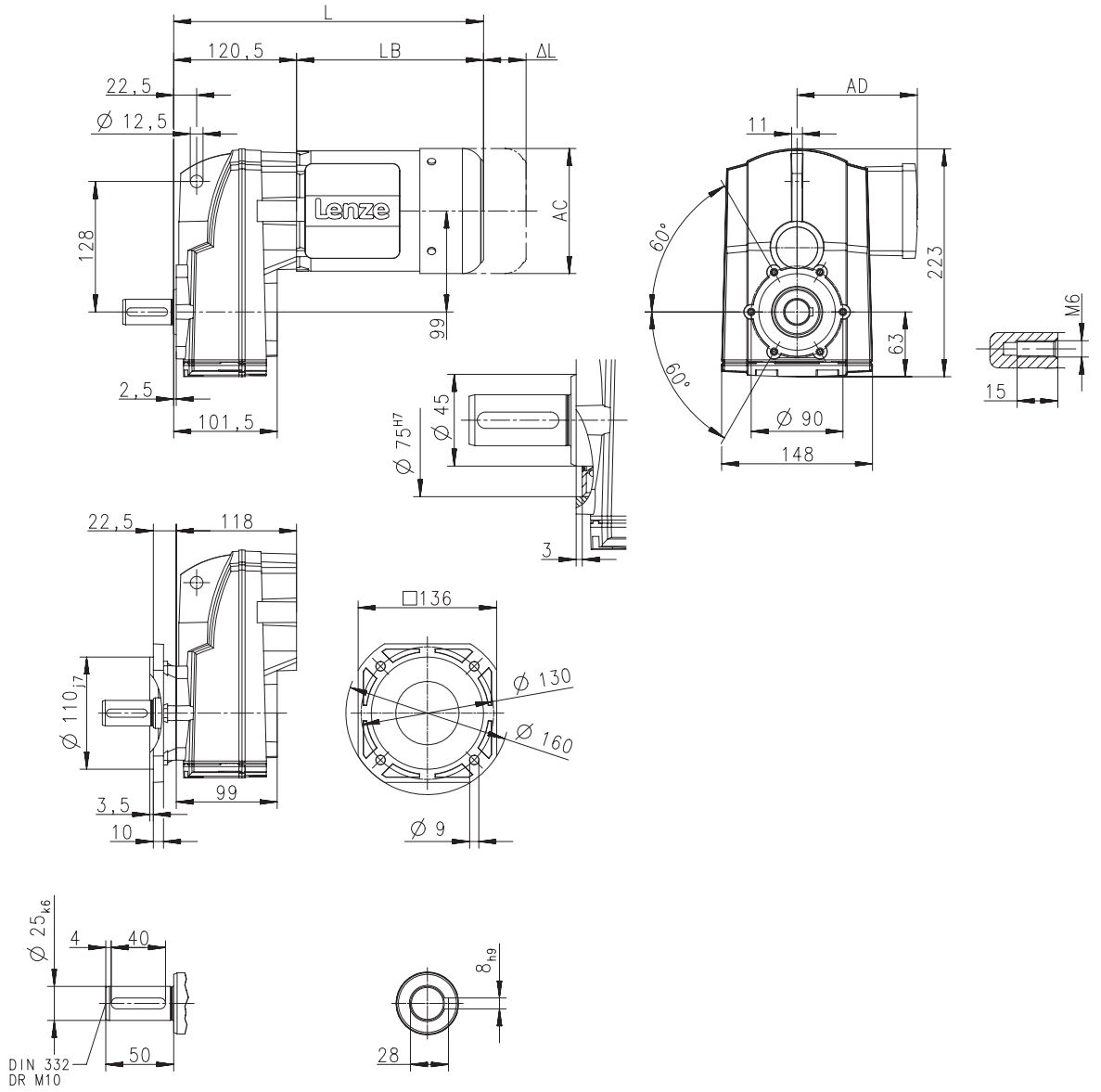


Product			MD□MA□□			
			071-13	071-33	080-13	080-33
Dimensions						
Total length	**L**	**[mm]**	324		347	
Motor length	**LB**	**[mm]**	203		226	
Length of motor options	**Δ L**	**[mm]**	165		183	
Motor diameter	**AC**	**[mm]**	139		156	
Distance motor/connection	**AD**	**[mm]**	109		150	

Dimensions, 6-pole motors

g500-S130

Dimensions with solid shaft

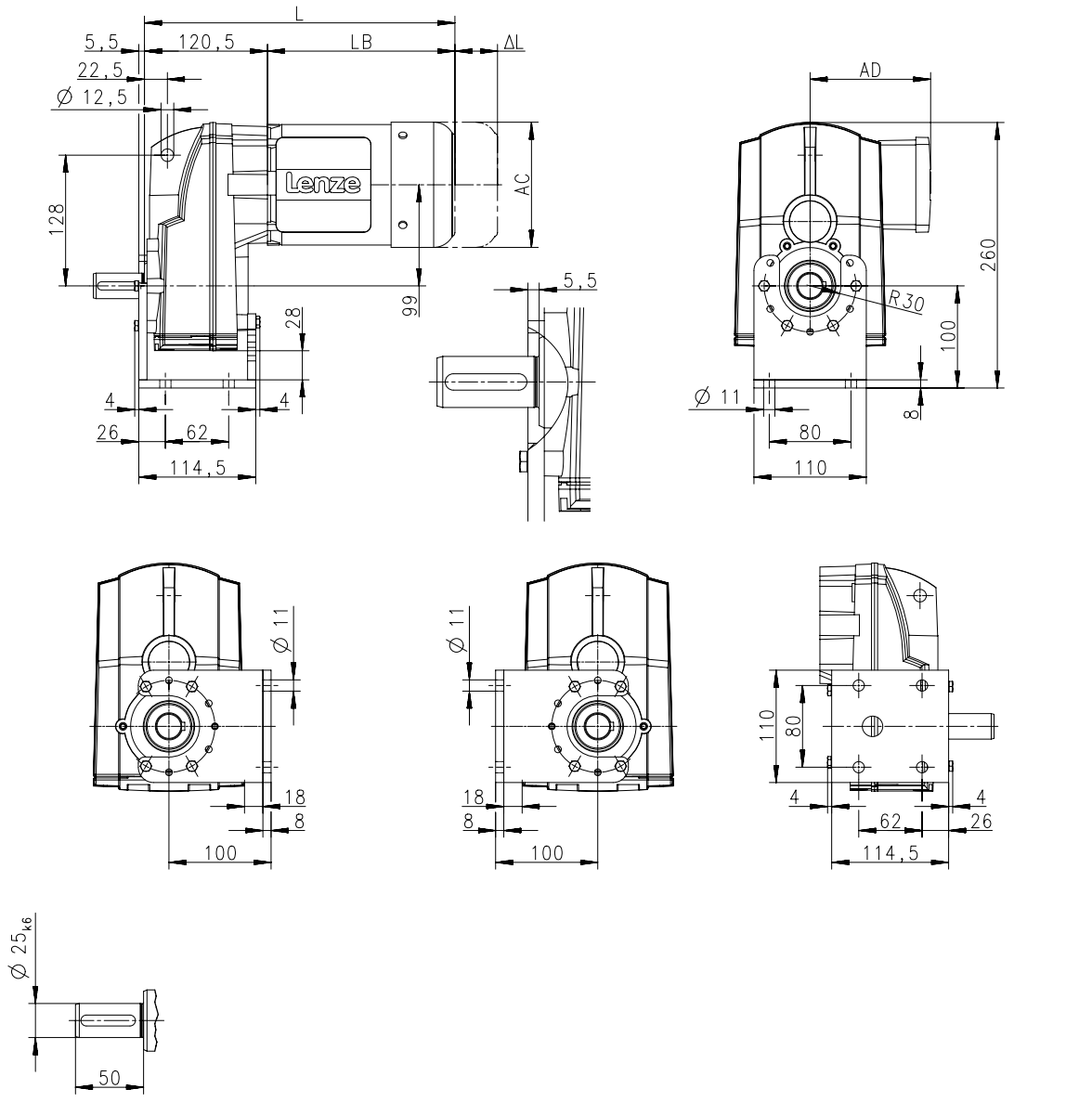


Product			MD□MA□□			
			071-13	071-33	080-13	080-33
Dimensions						
Total length	**L**	**[mm]**	324		347	
Motor length	**LB**	**[mm]**	203		226	
Length of motor options	**Δ L**	**[mm]**	165		183	
Motor diameter	**AC**	**[mm]**	139		156	
Distance motor/connection	**AD**	**[mm]**	109		150	

Dimensions, 6-pole motors

g500-S130

Dimensions with solid shaft and foot

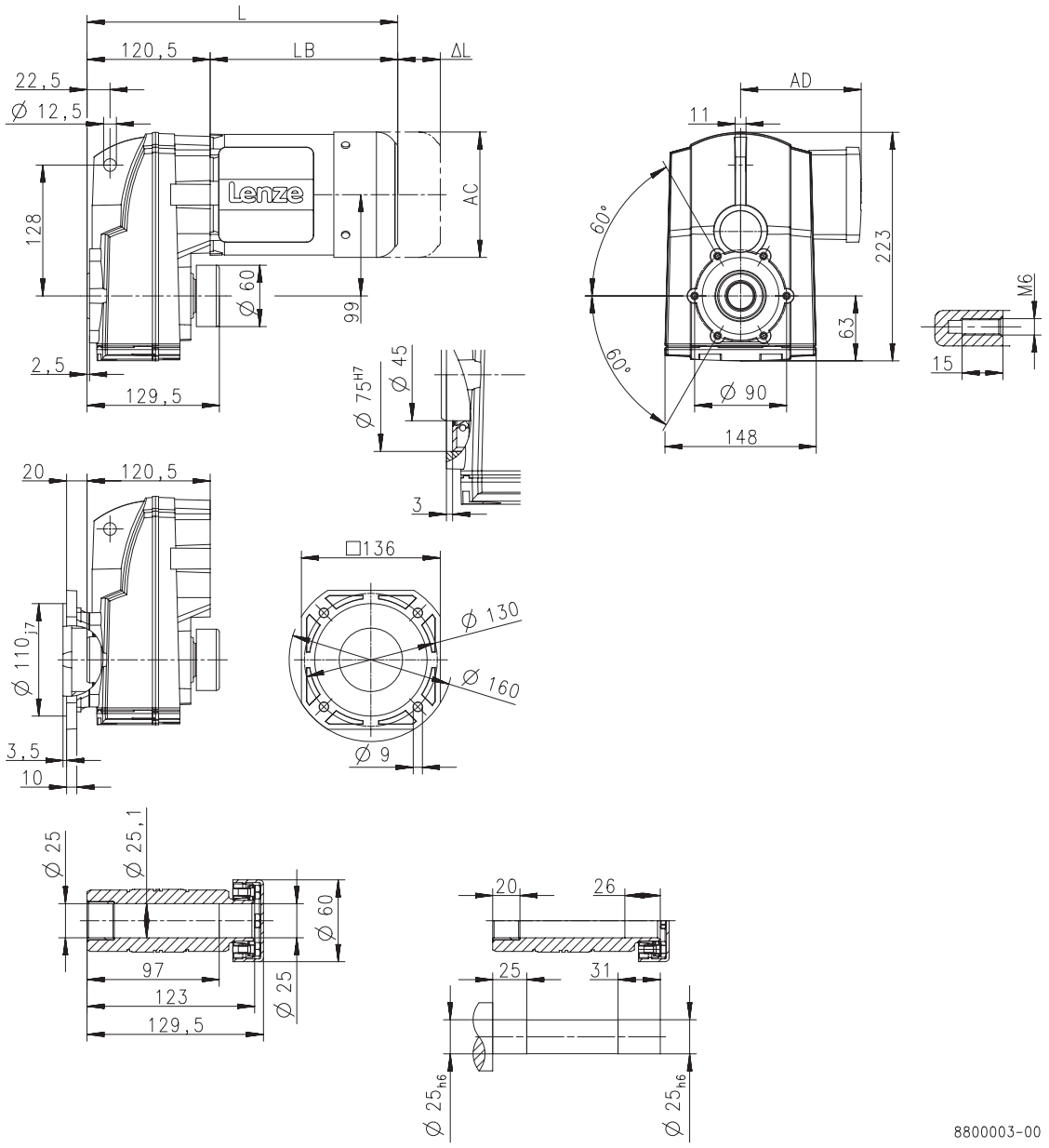


Product			MD□MA□□			
			071-13	071-33	080-13	080-33
Dimensions						
Total length	**L**	**[mm]**	324		347	
Motor length	**LB**	**[mm]**	203		226	
Length of motor options	**Δ L**	**[mm]**	165		183	
Motor diameter	**AC**	**[mm]**	139		156	
Distance motor/connection	**AD**	**[mm]**	109		150	

Dimensions, 6-pole motors

g500-S130

Dimensions with shrink disc

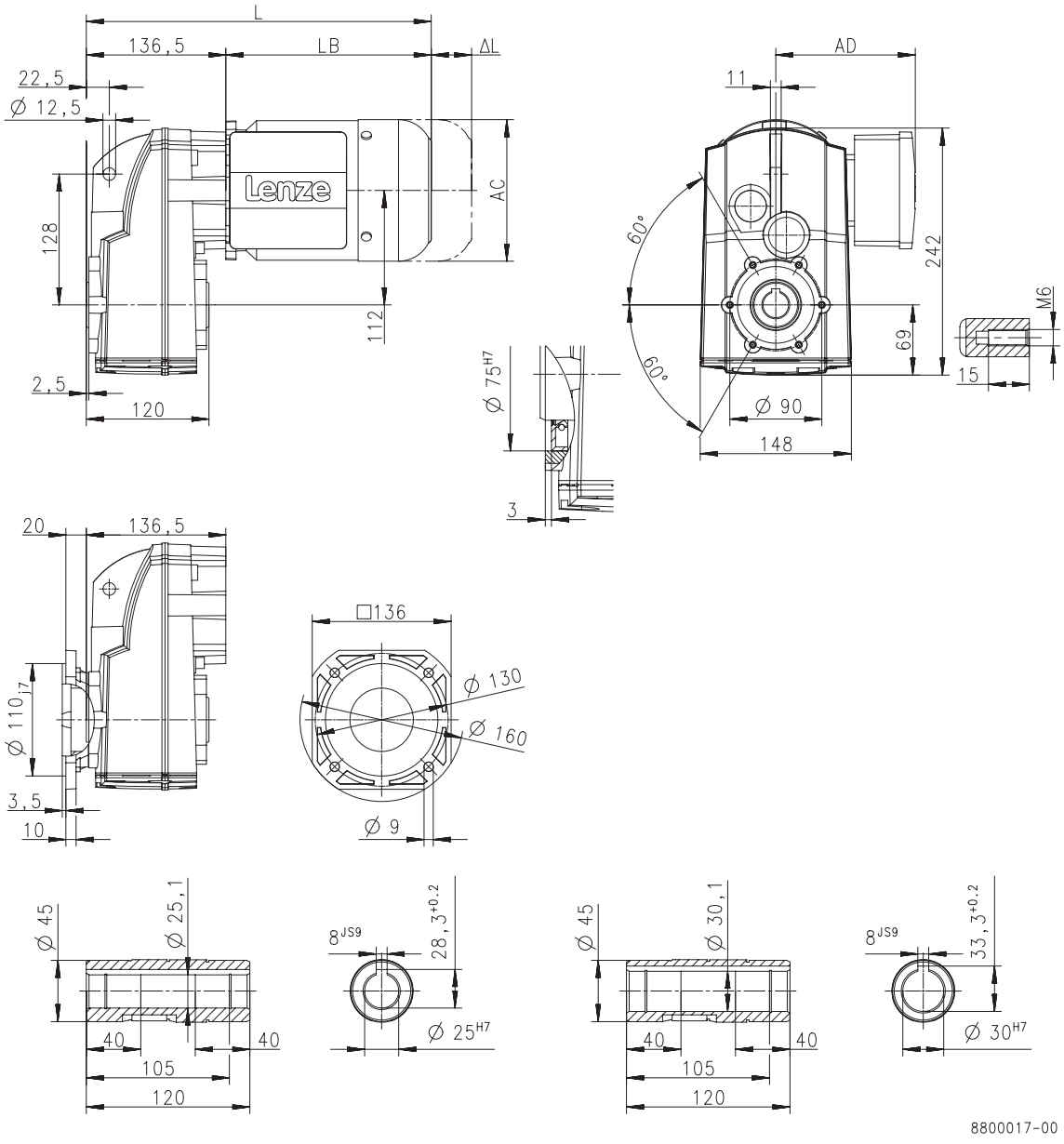


Product			MD□MA□□			
			071-13	071-33	080-13	080-33
Dimensions						
Total length	**L**	**[mm]**	324		347	
Motor length	**LB**	**[mm]**	203		226	
Length of motor options	**Δ L**	**[mm]**	165		183	
Motor diameter	**AC**	**[mm]**	139		156	
Distance motor/connection	**AD**	**[mm]**	109		150	

Dimensions, 6-pole motors

g500-S220

Dimensions with hollow shaft

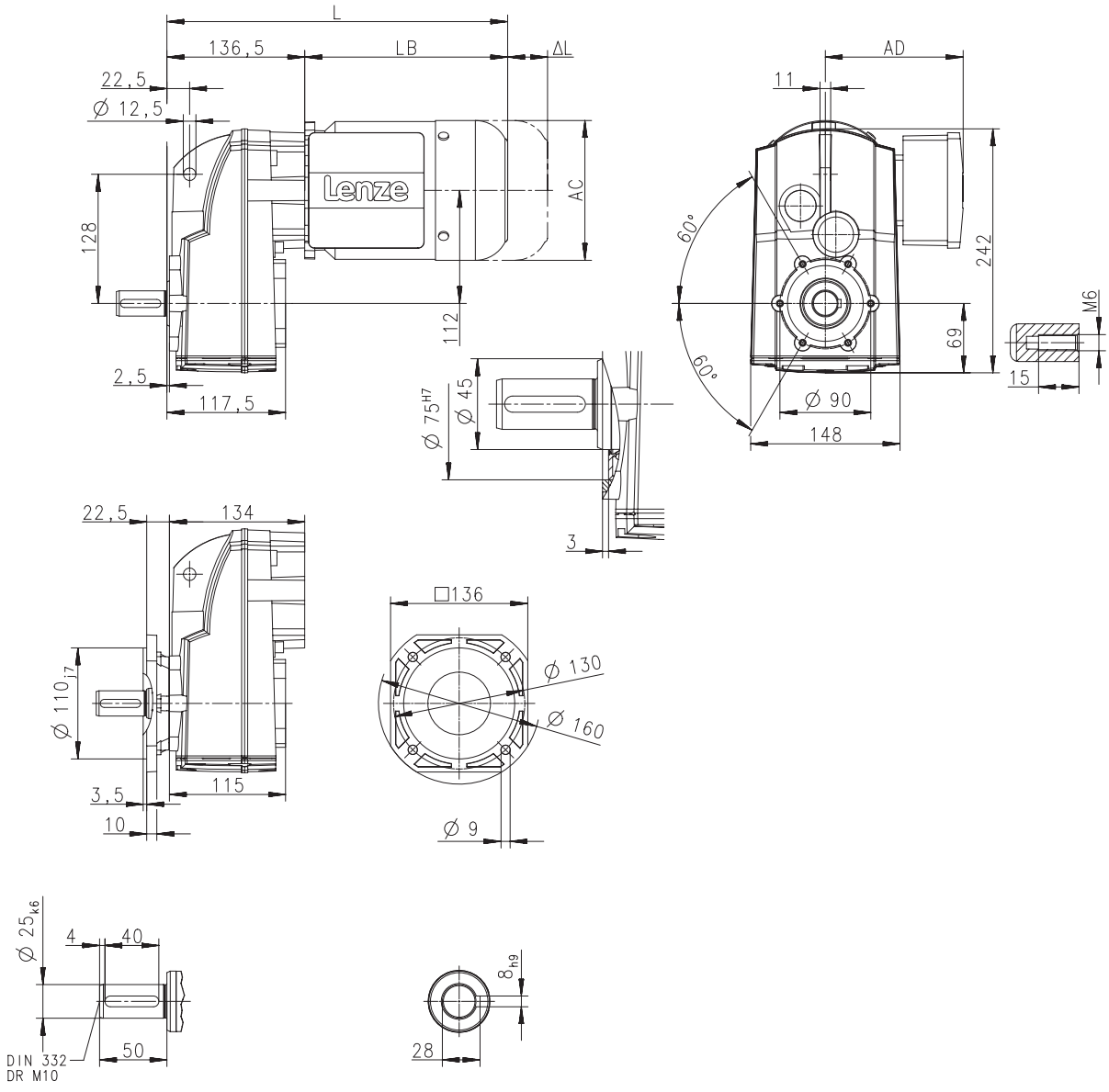


Product			MD□MA□□			
			071-13	071-33	080-13	080-33
Dimensions						
Total length	**L**	**[mm]**	340		363	
Motor length	**LB**	**[mm]**	203		226	
Length of motor options	**Δ L**	**[mm]**	165		183	
Motor diameter	**AC**	**[mm]**	139		156	
Distance motor/connection	**AD**	**[mm]**	109		150	

Dimensions, 6-pole motors

g500-S220

Dimensions with solid shaft

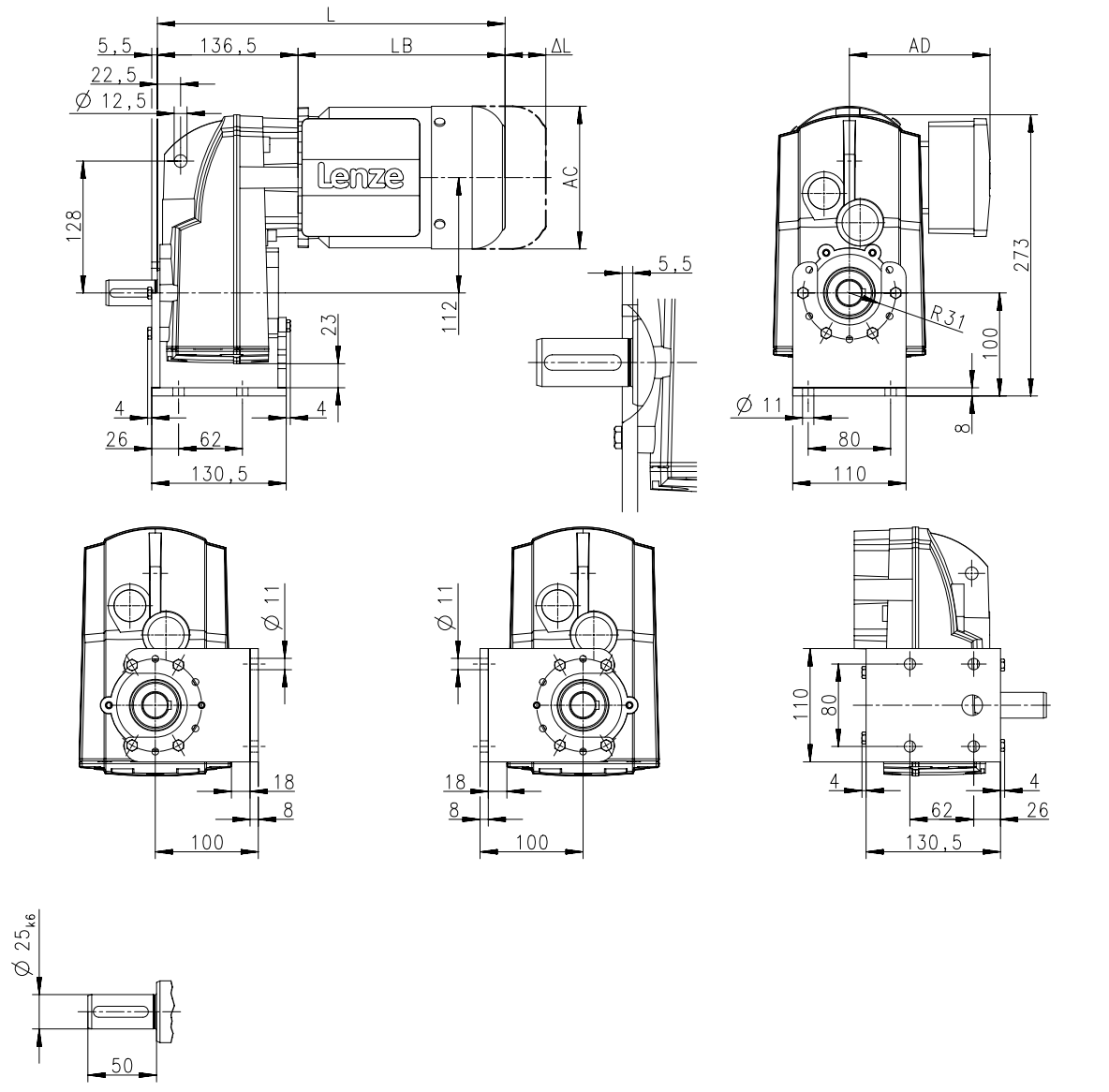


Product			MD□MA□□			
			071-13	071-33	080-13	080-33
Dimensions						
Total length	**L**	**[mm]**	340		363	
Motor length	**LB**	**[mm]**	203		226	
Length of motor options	**Δ L**	**[mm]**	165		183	
Motor diameter	**AC**	**[mm]**	139		156	
Distance motor/connection	**AD**	**[mm]**	109		150	

Dimensions, 6-pole motors

g500-S220

Dimensions with solid shaft and foot

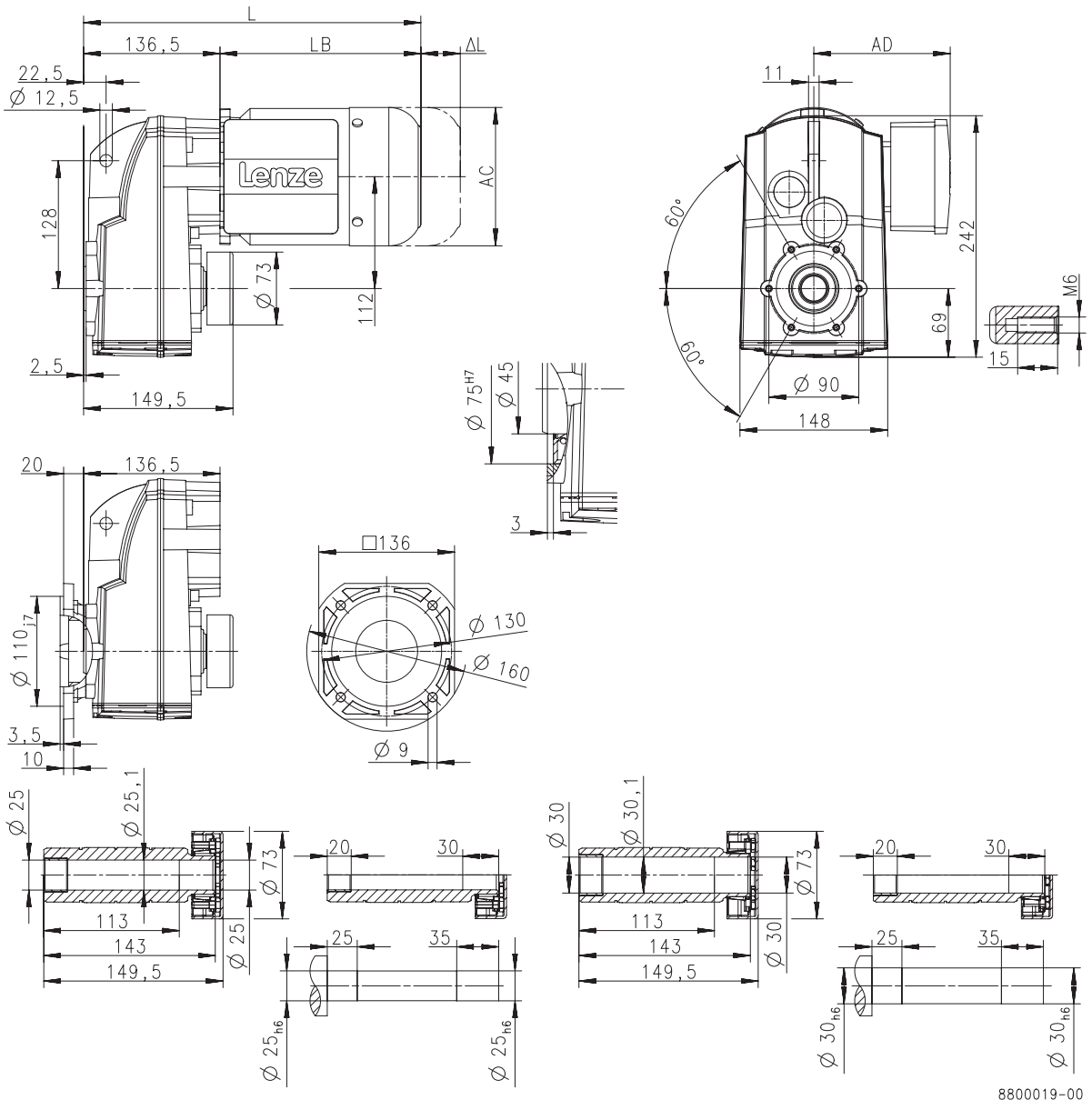


Product			MD□MA□□			
			071-13	071-33	080-13	080-33
Dimensions						
Total length	**L**	**[mm]**	340		363	
Motor length	**LB**	**[mm]**	203		226	
Length of motor options	**Δ L**	**[mm]**	165		183	
Motor diameter	**AC**	**[mm]**	139		156	
Distance motor/connection	**AD**	**[mm]**	109		150	

Dimensions, 6-pole motors

g500-S220

Dimensions with shrink disc

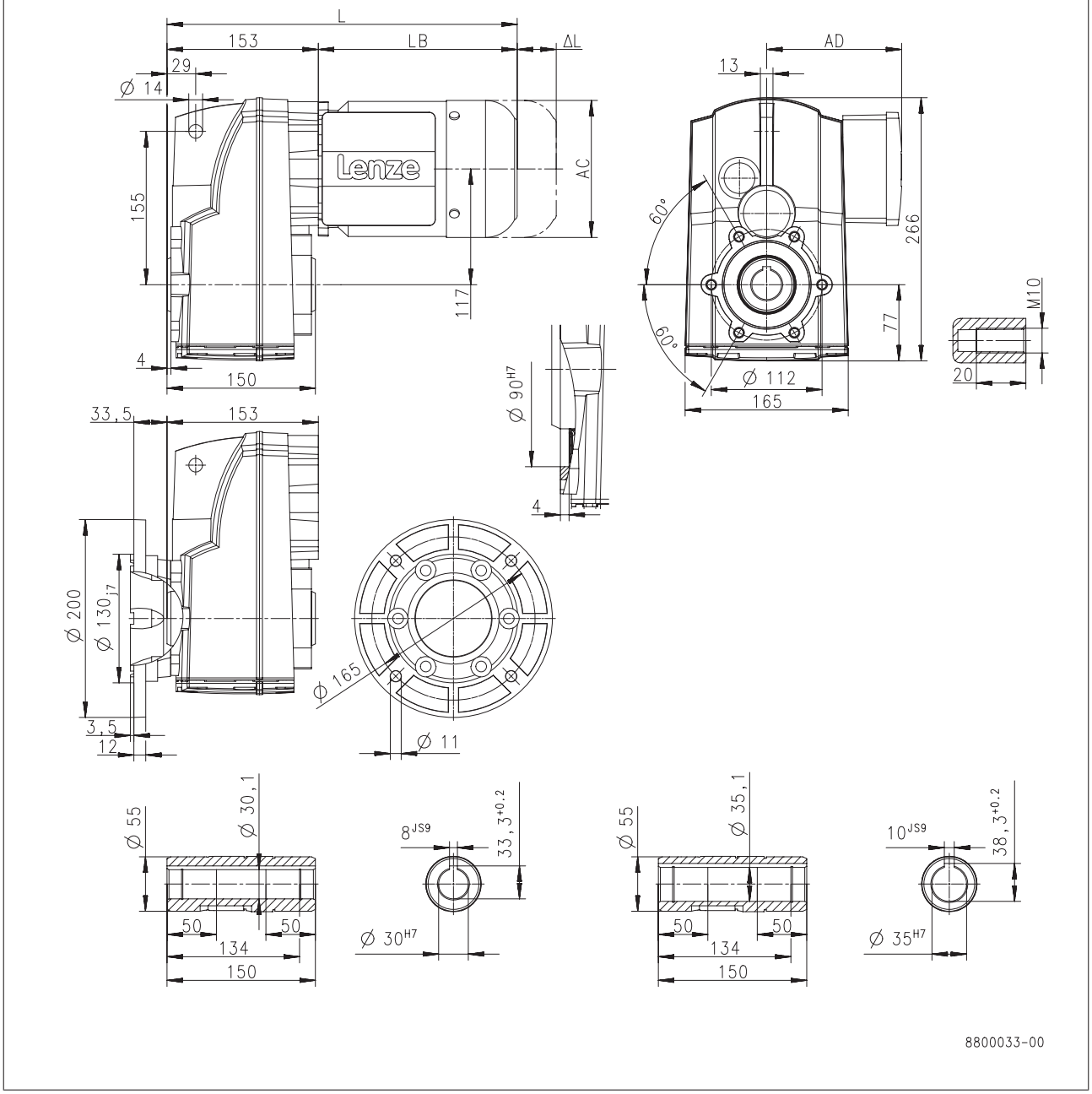


Product			MD□MA□□			
			071-13	071-33	080-13	080-33
Dimensions						
Total length	**L**	**[mm]**	340		363	
Motor length	**LB**	**[mm]**	203		226	
Length of motor options	**Δ L**	**[mm]**	165		183	
Motor diameter	**AC**	**[mm]**	139		156	
Distance motor/connection	**AD**	**[mm]**	109		150	

Dimensions, 6-pole motors

g500-S400

Dimensions with hollow shaft

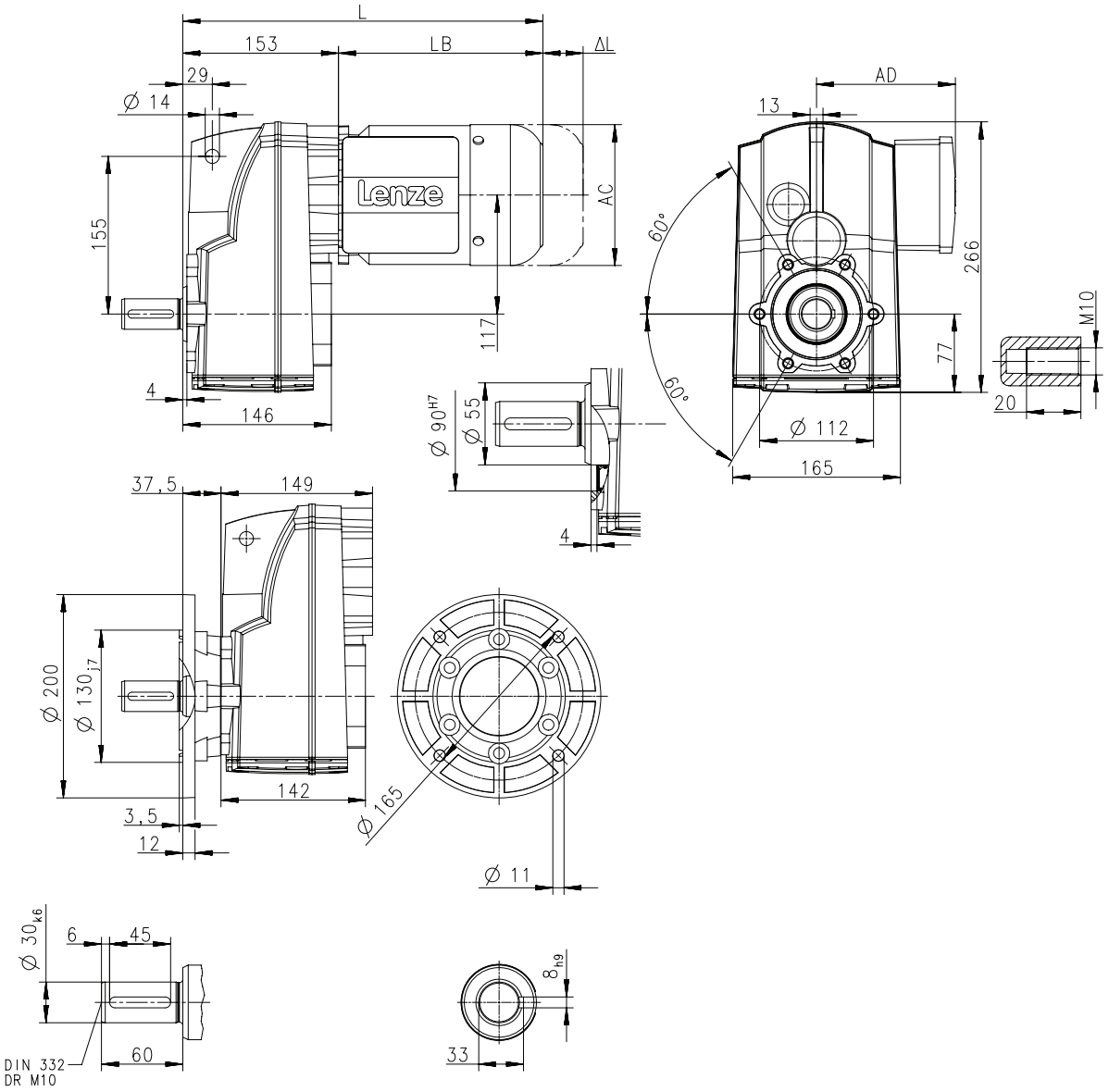


Product			MD□MA□□			
			071-13	071-33	080-13	080-33
Dimensions						
Total length	**L**	**[mm]**	356		379	
Motor length	**LB**	**[mm]**	203		226	
Length of motor options	**Δ L**	**[mm]**	165		183	
Motor diameter	**AC**	**[mm]**	139		156	
Distance motor/connection	**AD**	**[mm]**	109		150	

Dimensions, 6-pole motors

g500-S400

Dimensions with solid shaft

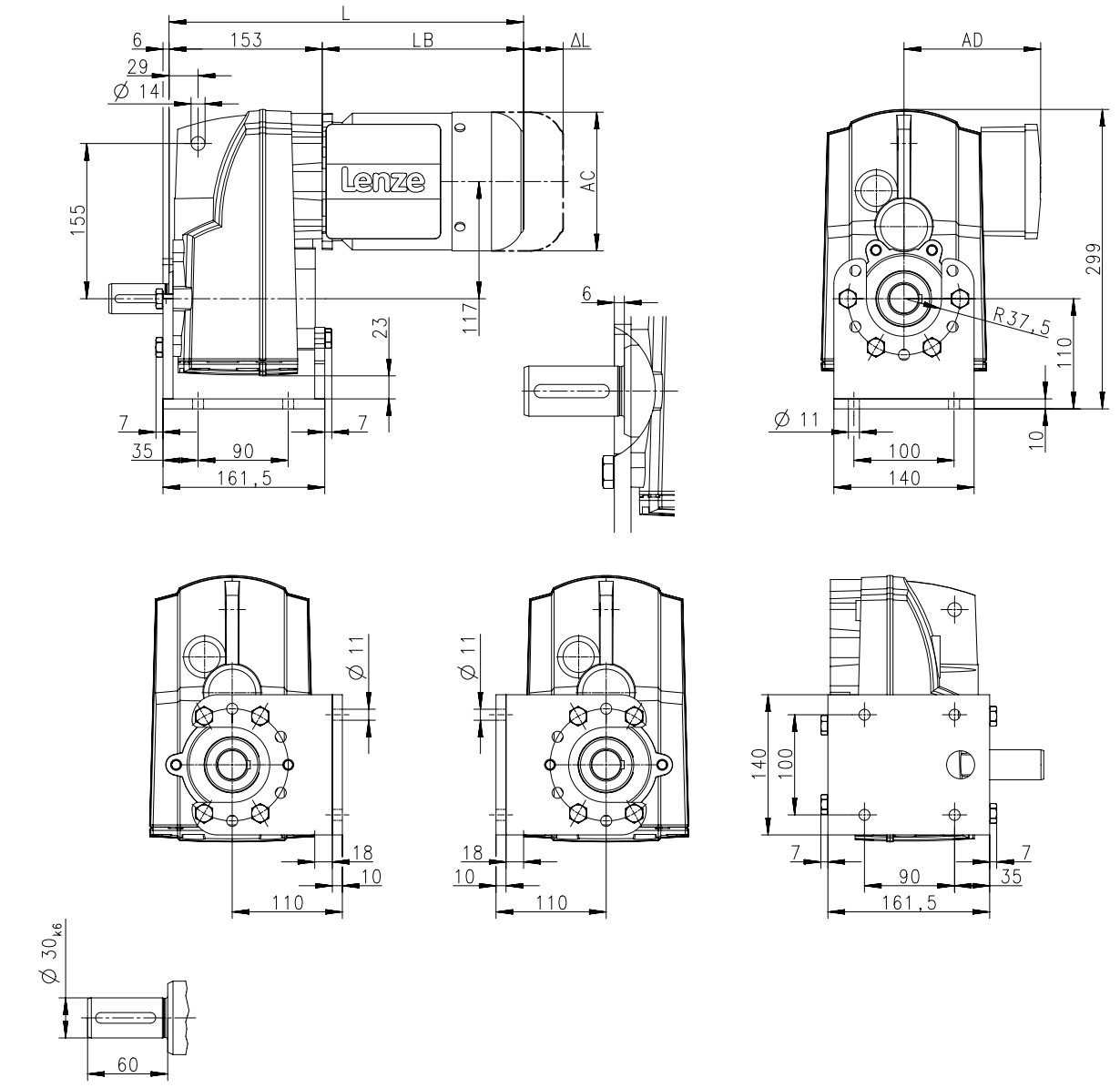


Product			MD□MA□□			
			071-13	071-33	080-13	080-33
Dimensions						
Total length	**L**	**[mm]**	356		379	
Motor length	**LB**	**[mm]**	203		226	
Length of motor options	**Δ L**	**[mm]**	165		183	
Motor diameter	**AC**	**[mm]**	139		156	
Distance motor/connection	**AD**	**[mm]**	109		150	

Dimensions, 6-pole motors

g500-S400

Dimensions with solid shaft and foot

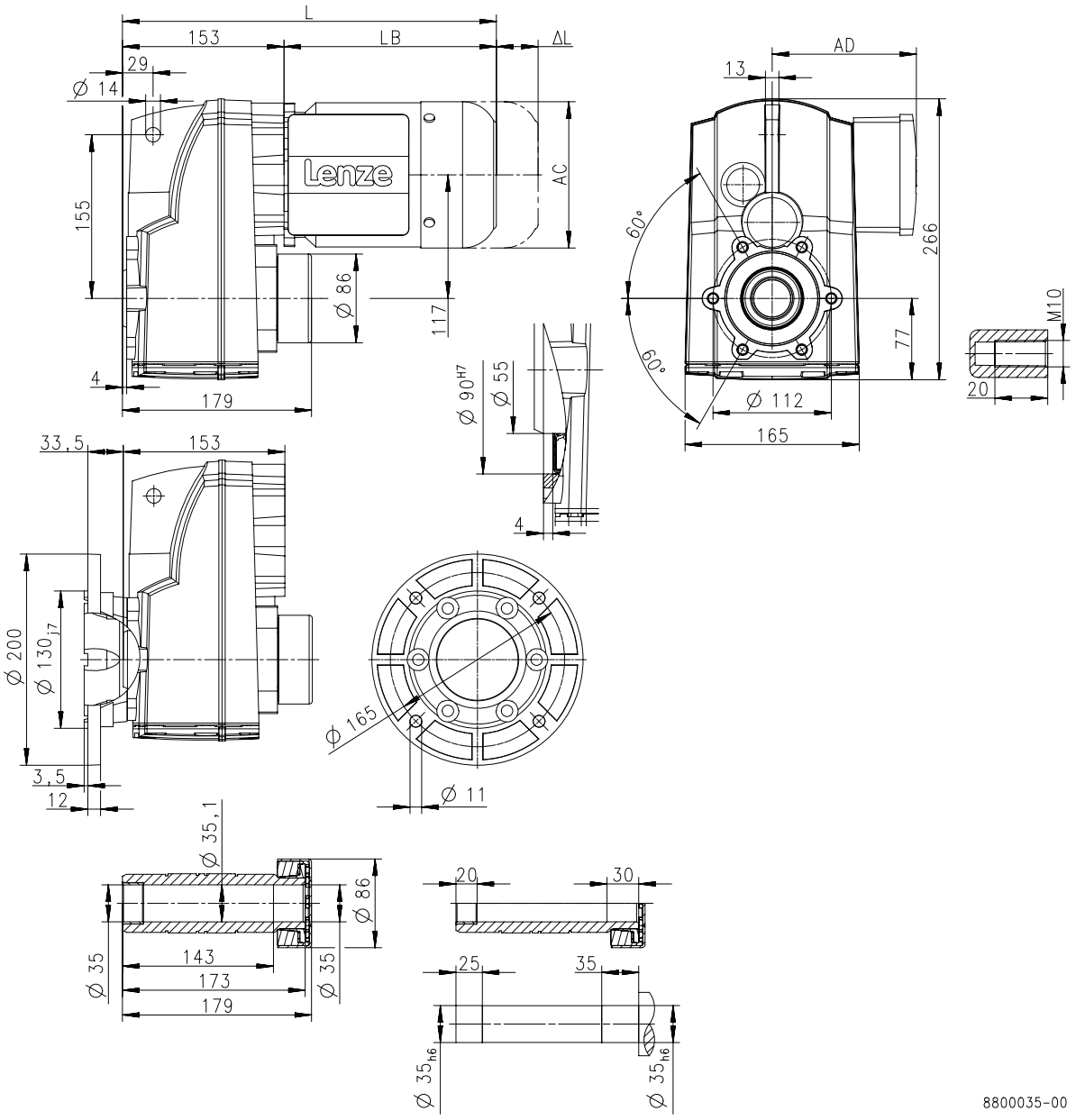


Product			MD□MA□□			
			071-13	071-33	080-13	080-33
Dimensions						
Total length	**L**	**[mm]**	356		379	
Motor length	**LB**	**[mm]**	203		226	
Length of motor options	**Δ L**	**[mm]**	165		183	
Motor diameter	**AC**	**[mm]**	139		156	
Distance motor/connection	**AD**	**[mm]**	109		150	

Dimensions, 6-pole motors

g500-S400

Dimensions with shrink disc

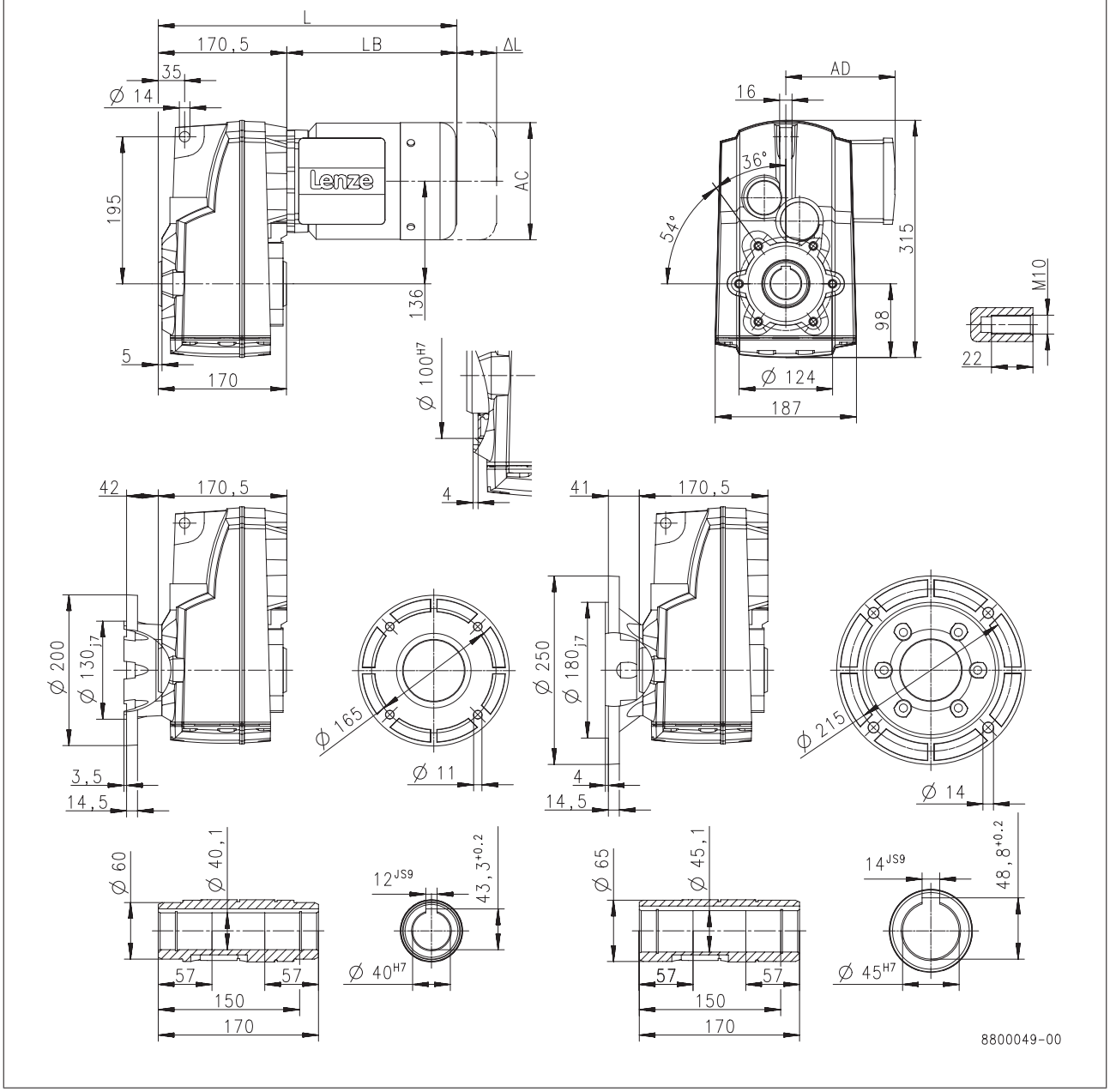


Product			MD□MA□□			
			071-13	071-33	080-13	080-33
Dimensions						
Total length	**L**	**[mm]**	356		379	
Motor length	**LB**	**[mm]**	203		226	
Length of motor options	**Δ L**	**[mm]**	165		183	
Motor diameter	**AC**	**[mm]**	139		156	
Distance motor/connection	**AD**	**[mm]**	109		150	

Dimensions, 6-pole motors

g500-S660

Dimensions with hollow shaft

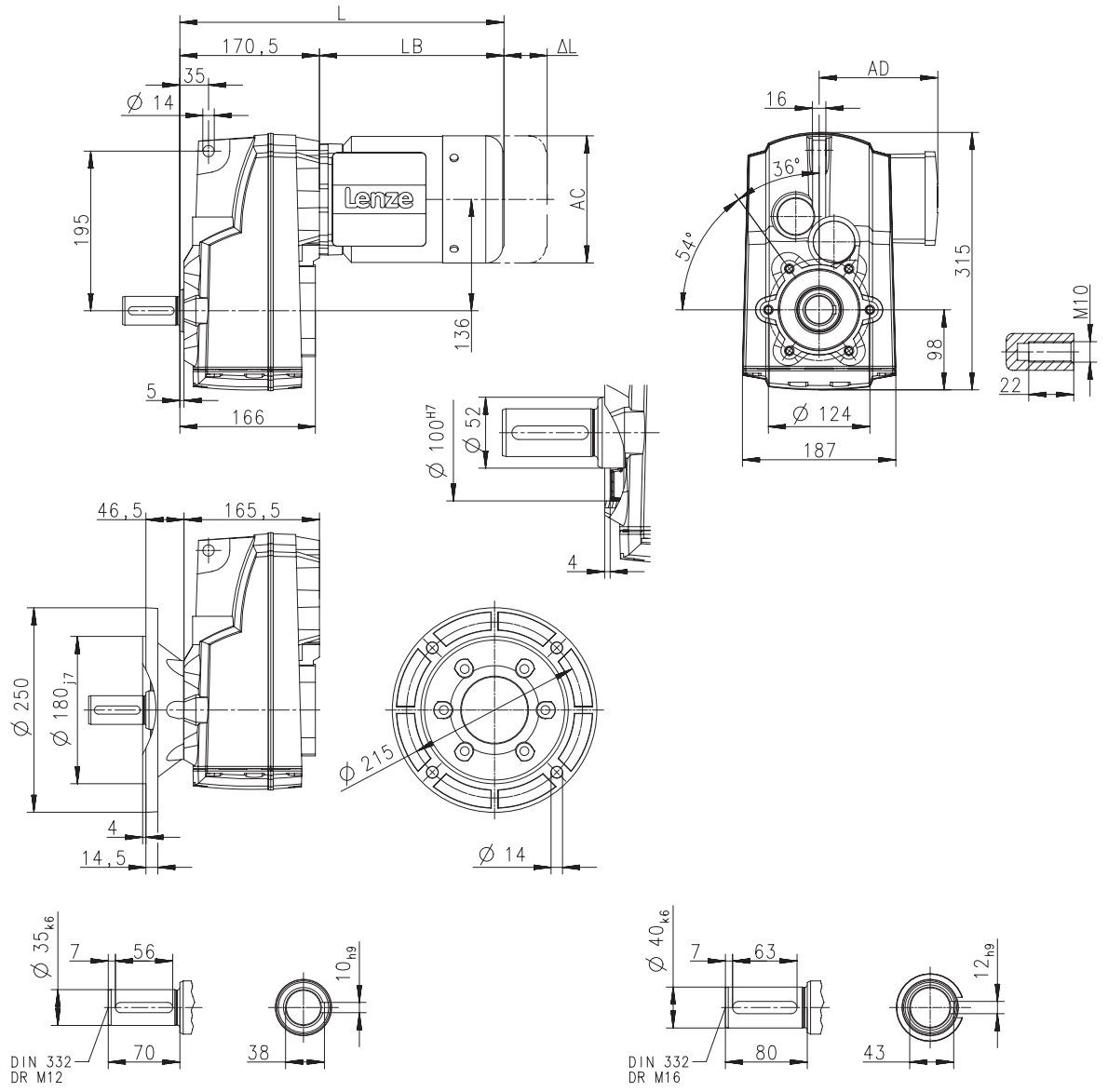


Product			MD□MA□□			
			071-13	071-33	080-13	080-33
Dimensions						
Total length	**L**	**[mm]**	374		397	
Motor length	**LB**	**[mm]**	203		226	
Length of motor options	**Δ L**	**[mm]**	165		183	
Motor diameter	**AC**	**[mm]**	139		156	
Distance motor/connection	**AD**	**[mm]**	109		150	

Dimensions, 6-pole motors

g500-S660

Dimensions with solid shaft

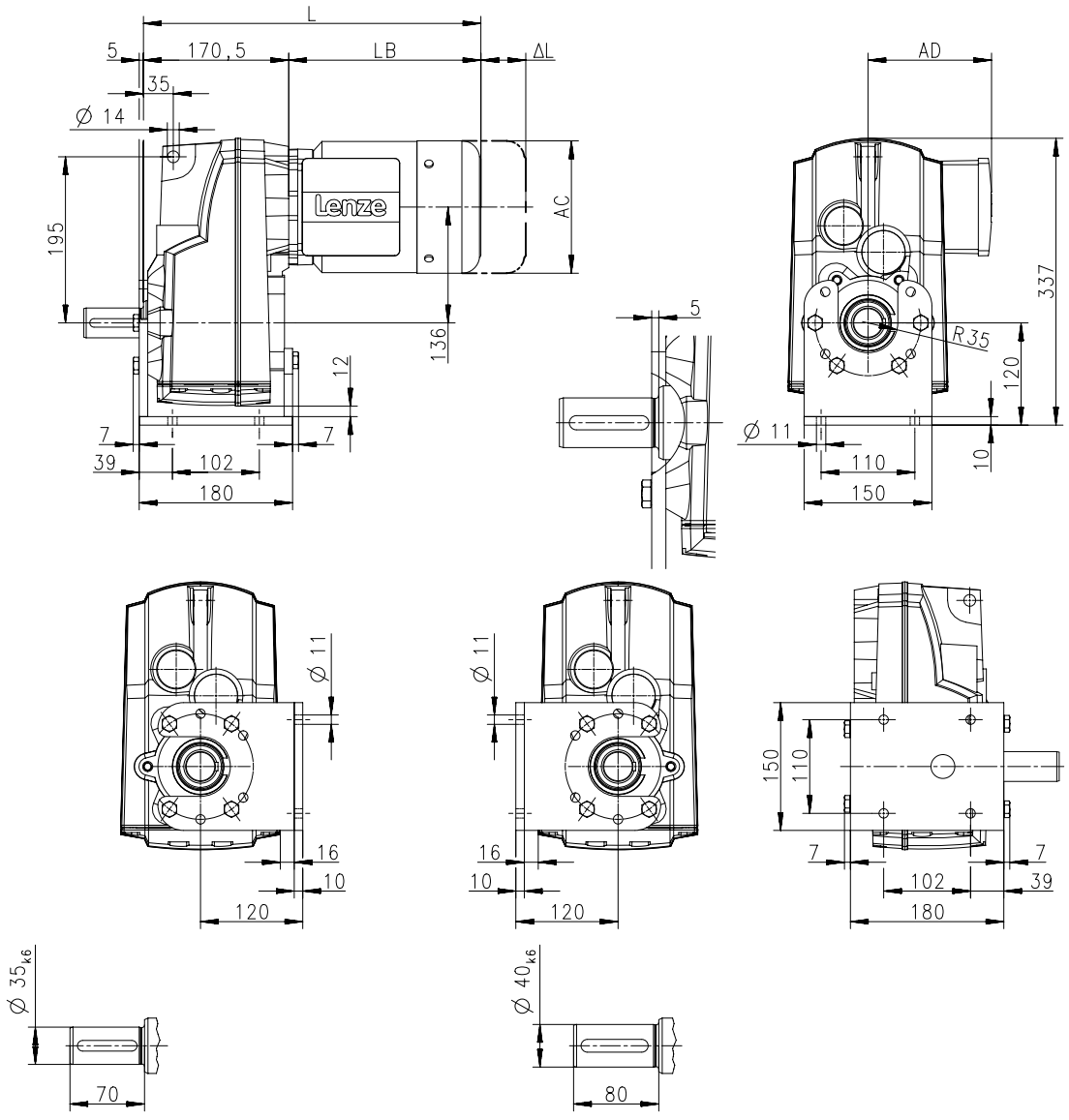


Product			MD□MA□□			
			071-13	071-33	080-13	080-33
Dimensions						
Total length	**L**	**[mm]**	374		397	
Motor length	**LB**	**[mm]**	203		226	
Length of motor options	**Δ L**	**[mm]**	165		183	
Motor diameter	**AC**	**[mm]**	139		156	
Distance motor/connection	**AD**	**[mm]**	109		150	

Dimensions, 6-pole motors

g500-S660

Dimensions with solid shaft and foot

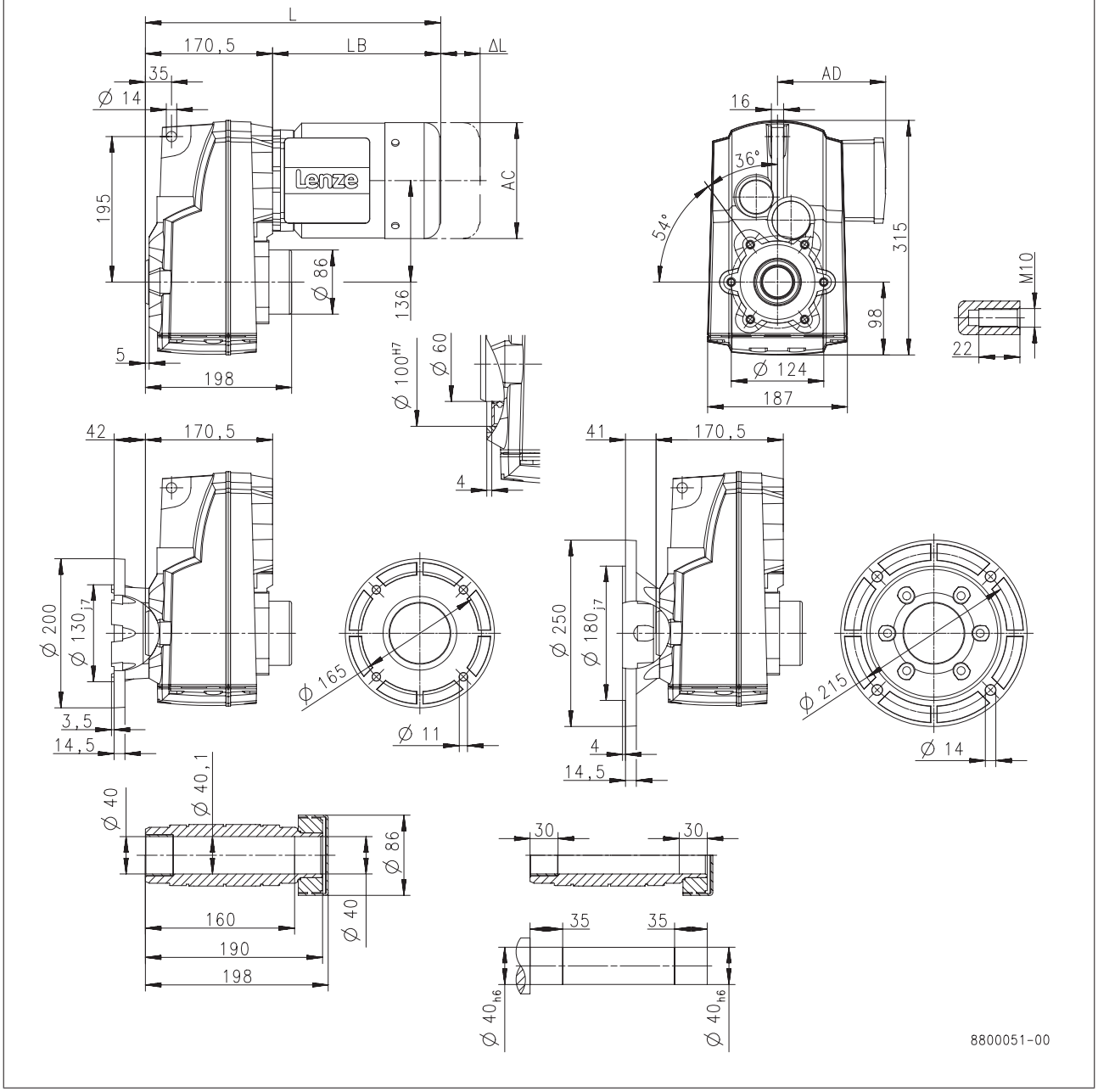


Product			MD□MA□□			
			071-13	071-33	080-13	080-33
Dimensions						
Total length	**L**	**[mm]**	374		397	
Motor length	**LB**	**[mm]**	203		226	
Length of motor options	**Δ L**	**[mm]**	165		183	
Motor diameter	**AC**	**[mm]**	139		156	
Distance motor/connection	**AD**	**[mm]**	109		150	

Dimensions, 6-pole motors

g500-S660

Dimensions with shrink disc



Product			MD□MA□□			
			071-13	071-33	080-13	080-33
Dimensions						
Total length	**L**	**[mm]**	374		397	
Motor length	**LB**	**[mm]**	203		226	
Length of motor options	**Δ L**	**[mm]**	165		183	
Motor diameter	**AC**	**[mm]**	139		156	
Distance motor/connection	**AD**	**[mm]**	109		150	

Weights, 4-pole motors

2-stage gearboxes

				MD□MA□□										
				063-12	063-32	063-42	071-32	071-42	080-32 080-42	090-32	100-12 100-32	112-22	112-32	132-22 132-32
g500	-S130	m	[kg]	9.2		9.5	11	12	16	20				
	-S220	m	[kg]	11			12	13	17	21	30			
	-S400	m	[kg]		14		15	16	20	24	33	40	47	
	-S660	m	[kg]			18	20		25	29	38	44	52	77

3-stage gearboxes

				MD□MA□□						
				063-12 063-32	063-42	071-32	071-42	080-32	080-42	090-32
g500	-S220	m	[kg]	11		12	13	18		
	-S400	m	[kg]	14		16		21		
	-S660	m	[kg]	18	19	20	21	25		29

Weights, 2-pole motors

2-stage gearboxes

				MD□MA□□									
				063-11	063-31	071-11	071-31	080-11	080-31	090-11 090-31	100-31 100-41	112-31	112-41
g500	-S130	m	[kg]	9.0	8.9	11	12	15		22			
	-S220	m	[kg]		10	12	13	16		23	27		
	-S400	m	[kg]				16	20		26	30	37	
	-S660	m	[kg]						24	31	35	42	48

Weights, 6-pole motors

2-stage gearboxes

				MD□MA□□		
				071-13	071-33	080-13 080-33
g500	-S130	m	[kg]	12		16
	-S220	m	[kg]	13		17
	-S400	m	[kg]	16		20
	-S660	m	[kg]		20	25

3-stage gearboxes

				MD□MA□□		
				071-13 071-33	080-13	080-33
g500	-S220	m	[kg]	13	18	
	-S400	m	[kg]	16	21	
	-S660	m	[kg]	21	25	

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

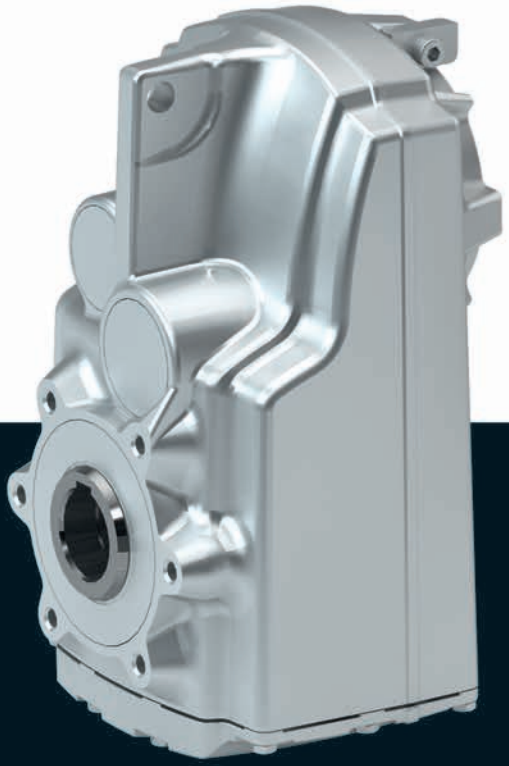
Surface and corrosion protection

Structure of surface coating

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

g500-S shaft-mounted helical gearbox

130 to 660 Nm



g500-S shaft-mounted helical gearbox

Contents

List of abbreviations

$F_{ax,max}$	[N]	Max. axial force
$F_{rad,max}$	[N]	Max. radial force
i		Ratio
J	[kgcm²]	Moment of inertia
m	[kg]	Mass

g500-S shaft-mounted helical gearbox

General information

Product information

The slim shaft-mounted helical gearboxes feature high reliable radial forces, closely stepped gear reductions and a low backlash. They are available in 2-pole and 3-pole design with a torque up to 660 Nm and a ratio of up to i= 495.

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

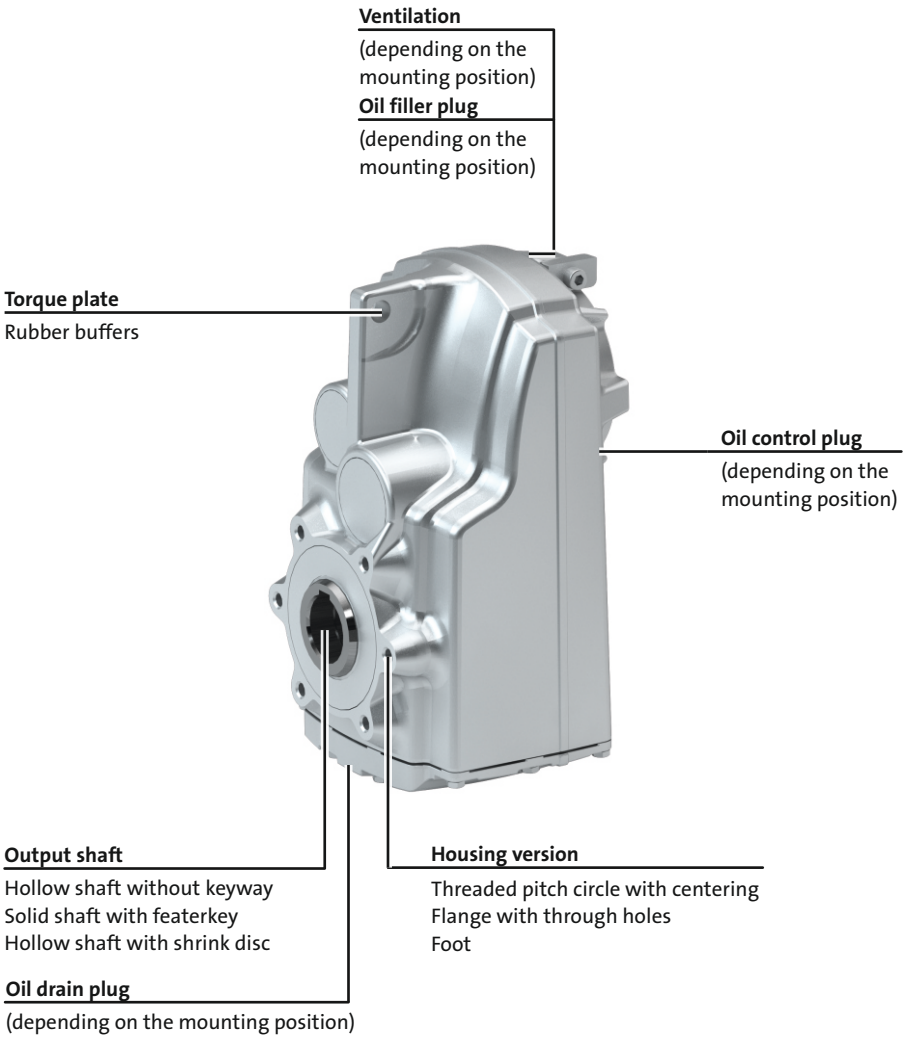
The product name

Gearbox type	Product range		Design	Rated torque [Nm]	Product
Shaft-mounted helical gearbox	g500	-	S	130	g500-S130
				220	g500-S220
				400	g500-S400
				660	g500-S660

Equipment

Overview

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



The gearbox kit

Gearbox details

Product	g500-S130	g500-S220	g500-S400	g500-S660
Driven shaft				
Solid shaft with featherkey [mm]	25x50		30x60	35x70 40x80
Hollow shaft with keyway [mm]	25	25/30	30/35	40/45
Hollow shaft with shrink disc [mm]	25	25/30	35	40
Design	Standard stainless steel			
Gasket	Standard FPM (Viton)			
Bearing	Standard			
Fitting grease	Not enclosed Enclosed			
Housing				
Housing version	With foot without centring With centering			
Output flange				
flange diameter [mm]	160		200	200/250 [1]
Lubricant				
Type	CLP 460 [2] CLP HC 320 CLP HC 220 CLP HC 220 USDA H1			
Oil-level inspection	Without inspection With inspection			
Breather element	Without		Standard mounting position: Mounted Combined mounting position: loosely enclosed	
Backlash				
Backlash	Standard			
Accessories				
Torque plate	Rubber buffers			
Shaft cover	Shrink disc: Rotating cover Shrink disc: Fixed cover			

[1] 200 mm flange diameter only possible on hollow shaft version.
[2] Not suitable for geared servo motors.

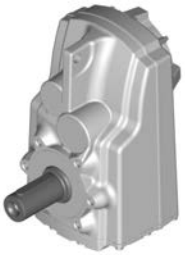
6.5

► Further information and installation feasibilities can be found in the Gearboxes chapter.

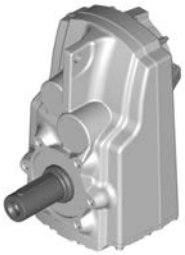
The gearbox kit

Gearbox details

Solid shaft



without centring



With centering

Flange with through holes

Hollow shaft

without centring

With centering

Flange with through holes

Hollow shaft with shrink disc

without centring

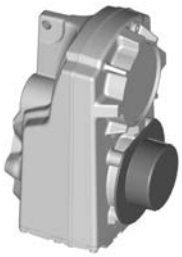
With centering

Flange with through holes

Accessories

Foot mounting

With rubber buffer



Shrink disc cover

6.5

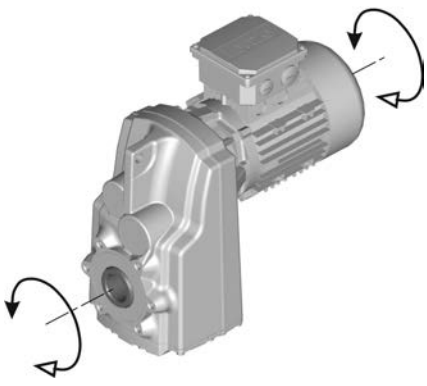
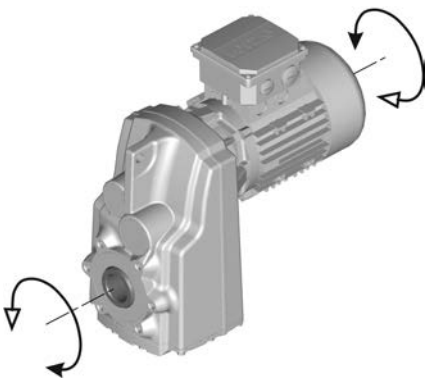
Functions and features

Product	g500-S130	g500-S220	g500-S400	g500-S660
Housing				
Design	Cuboid			
Material	Aluminium			
Solid shaft				
Design	with keyway to DIN 6885			
Tolerance	Shaft diameter ≤ 50 mm: k6 Shaft diameter > 50 mm: m6			
Material	Tempered steel C45 Nirosta X46Cr13			
Hollow shaft				
Design	With keyway Without keyway (for shrink disc)			
Tolerance	Bore H7			
Material	Tempered steel C45 Nirosta X46Cr13			
Toothed parts				
Design	Ground tooth flanks Optimised tooth flank geometry			
Material	Case-hardened steel			
Shaft-hub joint				
	1st and 2nd step: Force-fit 3rd step: positive-fit			
Shaft sealing rings				
Design	With dust lip			
Material	NB / FP			
Bearing				
Design	Ball bearing / tapered-roller bearing depending on size and design			
Lubricants				
	Standard: mineral oil Optional: synthetic oil [1]			
Quantities	Corresponding to mounting position (see nameplate)			
Mechanical efficiency				
2-stage gearboxes [$\eta_{c=1}$]	0.96			
3-stage gearboxes [$\eta_{c=1}$]		0.95		

[1] Standard for geared servo motors.

Direction of rotation

6.5

2-stage gearboxes	3-stage gearboxes
	

Lubricants

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

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

Lubricant table

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

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

Shaft sealing rings

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

Please consider this in your order.

Ventilation

Non-ventilated gearboxes

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

Ventilated gearboxes

The g500-S400 S660 gearbox is supplied with a breather element as standard.

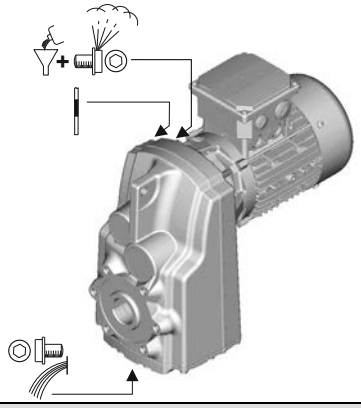
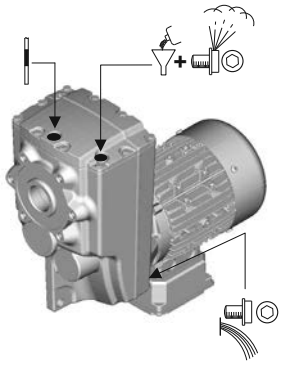
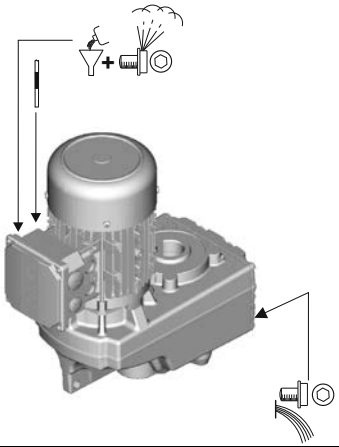
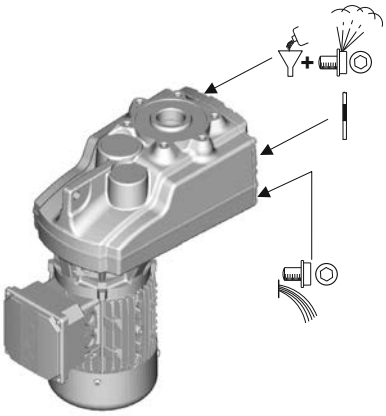
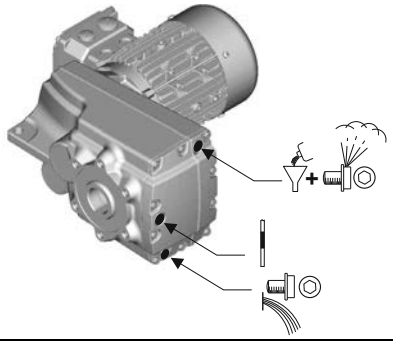
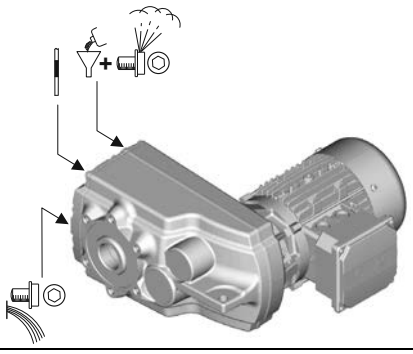
Gearboxes in combined mounting position

To reduce the number of different versions, the gearboxes can also be ordered with combined mounting positions.
Depending on the gearbox in question, the following combinations are available:
g500-S130 to S660 in combined mounting position AEF
The breather elements are supplied loose.

Ventilation

Position of ventilation, sealing elements and oil level check

► **A ... F** mounting position

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

	Filling		Drain
	Ventilation		Check

Permissible radial and axial forces at output

Permissible radial force

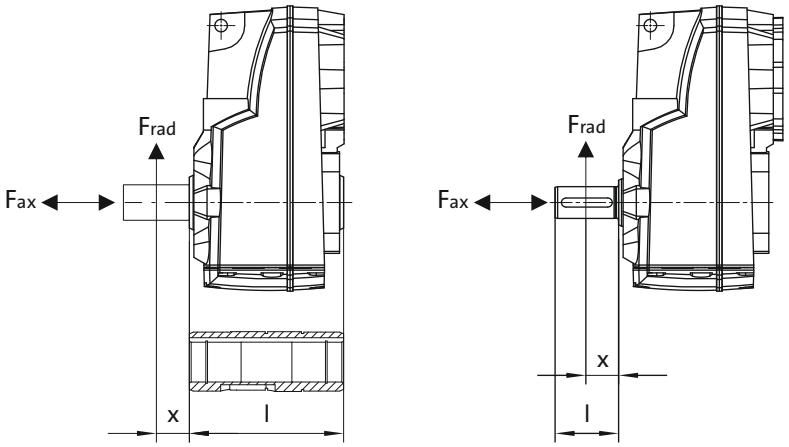
$F_{rad,perm} = f_w \times F_{rad,max}$

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

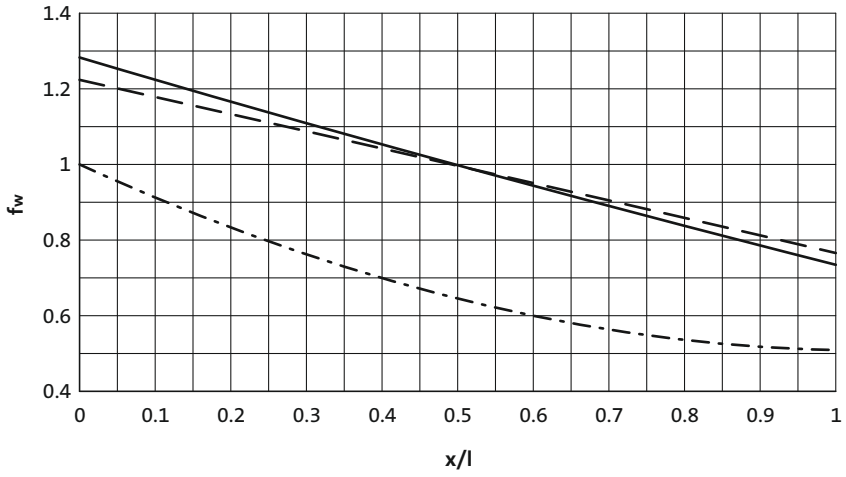
Permissible axial force

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
— — — Solid shaft with flange
— · — 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 rpm.

- ► If the torque is transmitted via the flange face, max 50 % of the radial force $F_{rad,max}$ are permissible.
- ► Neither radial nor axial forces are permissible for the hollow shaft with shrink disc.

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

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

	Max. radial force, Hollow shaft									
	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
g500-S130	1000	1150	1350	1500	1650	2200	2750	3450	4200	4500
g500-S220	2100	2700	2800	3200	3800	4600	5500	6300	7000	7000
g500-S400	1800	2400	3000	3400	4100	5000	6000	7100	8000	8000
g500-S660	2400	3300	4300	4700	5000	6600	8500	10800	12000	12000

	Max. radial force, Solid shaft without flange									
	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
g500-S130	1000	1150	1350	1500	1650	2200	2750	3450	4200	4500
g500-S220	1650	2100	2300	2700	3200	3600	3600	3600	3600	3600
g500-S400	1400	1900	2400	2700	3200	4000	4800	5800	6200	6200
g500-S660	1850	2500	3200	3600	3900	5100	6500	8400	9000	9000

	Max. radial force, Solid shaft with flange									
	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
g500-S130	1000	1150	1350	1500	1650	2200	2750	3450	4200	4500
g500-S220	2300	2800	3200	3700	4400	4600	4600	4600	4600	4600
g500-S400	2900	3700	4300	5100	5900	6800	7000	7000	7000	7000
g500-S660	4000	5000	6100	7000	7800	9600	10000	10000	10000	10000

Moments of inertia

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

2-stage gearboxes

Product	Ratio	Moment of inertia
	i	J
		[kgcm²]
g500-S130	3.661	1.56
	5.021	0.89
	6.425	0.57
	7.029	0.49
	8.322	0.69
	9.411	1.03
	11.413	0.42
	12.907	0.60
	14.606	0.29
	15.979	0.25
	18.069	0.34
	20.381	0.17
	23.048	0.23
	24.967	0.13
	28.233	0.17
	31.387	0.087
	35.493	0.11
	40.422	0.059
	45.711	0.074
	51.230	0.039
	57.933	0.048
	64.200	0.027
	72.600	0.032
	84.581	0.016
	95.648	0.019
g500-S220	3.840	2.60
	5.267	1.54
	6.767	1.64
	7.667	1.50
	9.280	1.04
	10.514	0.96
	11.876	0.72
	12.992	0.62
	13.456	0.67
	14.720	0.58
	16.571	0.44
	18.776	0.42
	20.300	0.34
	23.000	0.32
	26.422	0.21
	29.937	0.20
	32.867	0.15
	37.238	0.14
	42.533	0.095
	48.190	0.091
	51.620	0.069
	58.486	0.067
	65.975	0.044
	74.750	0.043

Product	Ratio	Moment of inertia
	i	J
		[kgcm²]
g500-S400	3.339	5.16
	4.579	2.91
	5.860	1.86
	6.411	1.58
	7.467	2.18
	8.436	1.95
	10.240	1.32
	11.569	1.20
	13.105	0.89
	14.336	0.77
	14.806	0.82
	16.197	0.70
	18.286	0.53
	20.659	0.49
	22.400	0.40
	25.308	0.37
	29.156	0.24
	32.940	0.23
	36.267	0.17
	40.974	0.16
	46.933	0.11
	53.026	0.10
	56.960	0.079
	64.354	0.074
g500-S660	3.920	8.80
	5.376	5.26
	6.417	5.48
	6.880	3.48
	7.311	4.90
	8.800	3.50
	10.027	3.19
	11.262	2.41
	12.320	2.12
	12.832	2.22
	14.037	1.96
	15.714	1.51
	17.905	1.42
	19.250	1.15
	21.933	1.09
	25.056	0.65
	28.548	0.61
	31.167	0.47
	35.511	0.44
	40.333	0.29
	45.956	0.28
	48.950	0.21
	55.773	0.20

Moments of inertia

3-stage gearboxes

Product	Ratio	Moment of inertia
	i	J
		[kgcm²]
g500-S220	40.012	0.20
	45.333	0.20
	52.587	0.13
	59.581	0.13
	67.298	0.092
	76.249	0.091
	86.079	0.062
	97.528	0.061
	111.747	0.044
	126.610	0.043
	143.205	0.030
	162.252	0.030
	241.022	0.014
	273.079	0.014
	312.233	0.003
	353.762	0.003
	398.508	0.006
	451.512	0.006
g500-S400	58.027	0.14
	65.559	0.14
	74.260	0.098
	83.900	0.095
	94.984	0.066
	107.314	0.064
	123.307	0.046
	139.313	0.045
	158.019	0.032
	178.531	0.031
	204.412	0.021
	230.946	0.021
	265.956	0.014
	300.479	0.014
	344.533	0.004
	389.256	0.004
	439.733	0.006
	496.814	0.006

Product	Ratio	Moment of inertia
	i	J
		[kgcm²]
g500-S660	49.867	0.39
	56.818	0.38
	63.817	0.27
	69.813	0.23
	72.713	0.26
	79.545	0.23
	89.048	0.17
	101.460	0.16
	109.083	0.13
	124.289	0.12
	137.133	0.083
	156.249	0.082
	176.611	0.056
	201.230	0.056
	223.833	0.037
	255.034	0.037
	280.500	0.026
	319.600	0.025
	369.548	0.016
	421.060	0.015

Additional weights for gearboxes

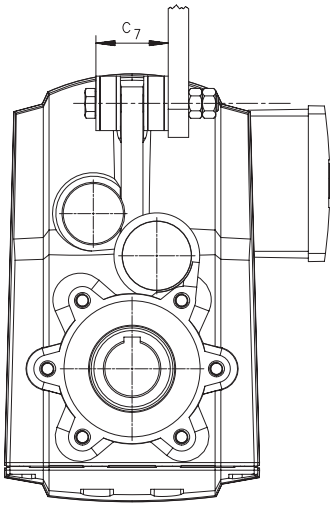
Product			g500-S130	g500-S220	g500-S400	g500-S660
Mass						
Solid shaft	m	[kg]	0.5	0.5	1.7	2.5
Shrink disc	m	[kg]	0.2	0.4	0.6	0.6
Foot	m	[kg]	1.7	1.8	3.3	4.3
Flange	m	[kg]	0.4	0.4	0.9	1.7

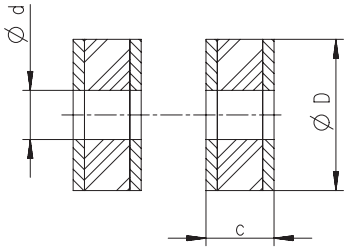
Torque plate

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





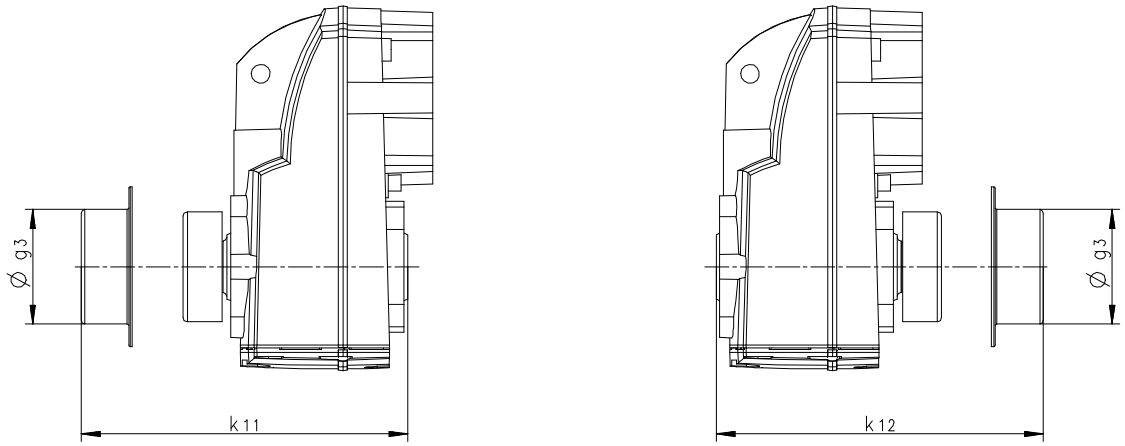
6.5

Product	Dimensions				Mass
	d	D	c	c_7	m
	[mm]	[mm]	[mm]	[mm]	[kg]
g500-S130	11.0	30.0	17.0	45.0	0.050
g500-S220	11.0	30.0	17.0	45.0	0.050
g500-S400	13.0	40.0	18.0	49.0	0.10
g500-S660	13.0	40.0	18.0	52.0	0.10

Shaft cover

Shrink disc cover

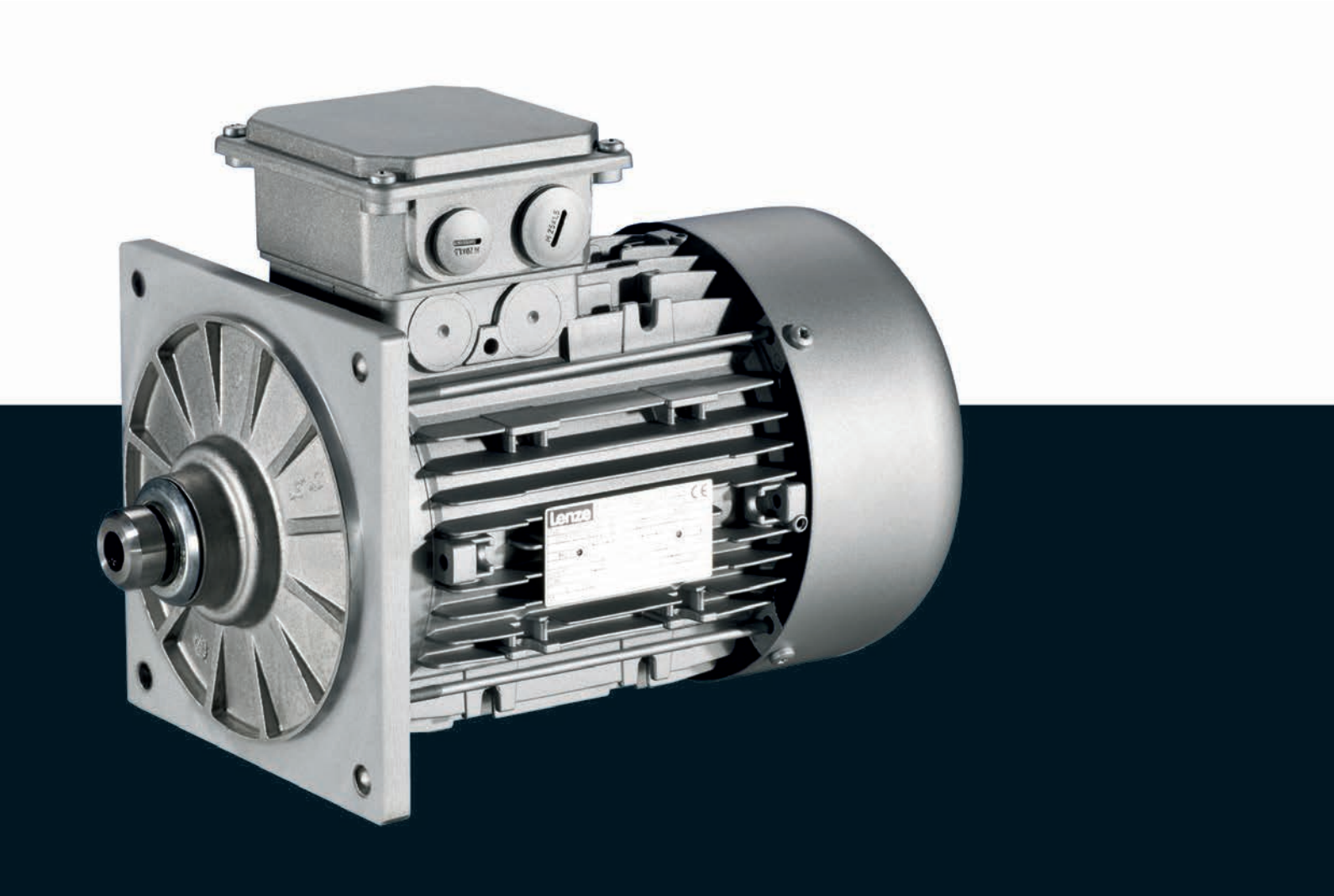
The cover is provided for the shrink disc to be protected from contact.



Product	Dimensions			Mass
	g_3	k_{11}	k_{12}	m
	[mm]	[mm]	[mm]	[kg]
g500-S130	63.0	132	132	0.050
g500-S220	76.0	152	152	0.050
g500-S400	90.0	182	182	0.050
g500-S660	90.0	200	202	0.050

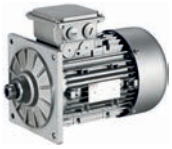
MD three-phase AC motors

0.06 to 45 kW



MD three-phase AC motors

Contents



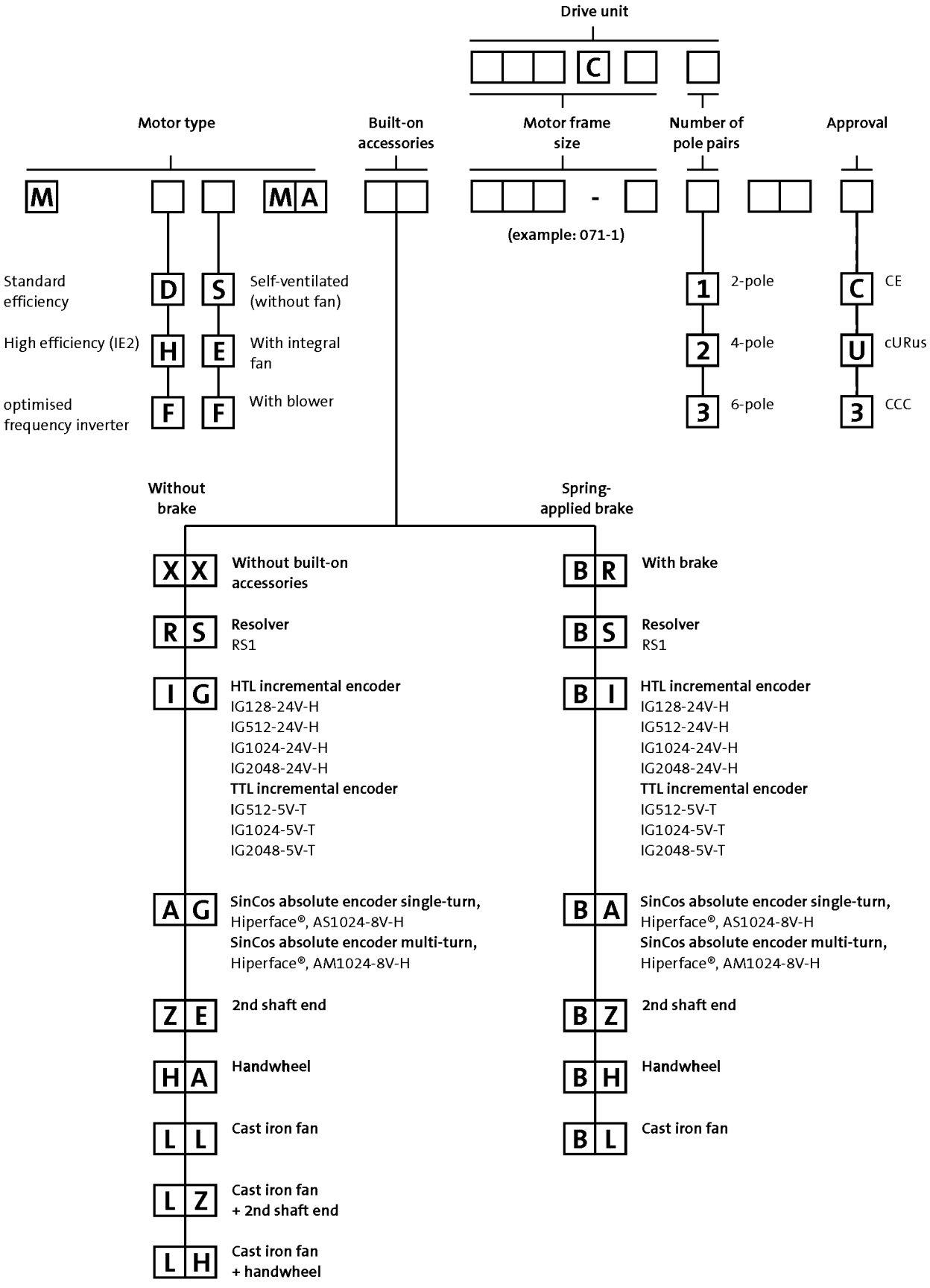
List of abbreviations

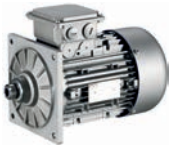
$\eta_{100\,\%}$	[%]	Efficiency
$\eta_{75\,\%}$	[%]	Efficiency
$\eta_{50\,\%}$	[%]	Efficiency
cos ϕ		Power factor
I_N	[A]	Rated current
I_{max}	[A]	Max. current consumption
J	[kgcm²]	Moment of inertia
m	[kg]	Mass
M_a	[Nm]	Starting torque
M_b	[Nm]	Stalling torque
M_{max}	[Nm]	Max. torque
M_N	[Nm]	Rated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

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

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

Product key

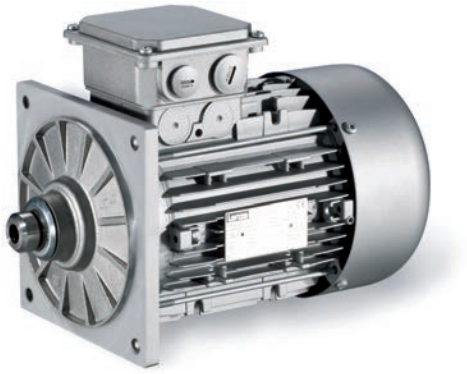

Drive unit
C
Motor type
Built-on accessories
Motor frame size
Number of pole pairs
Approval
M
M A
-
(example: 071-1)
Standard efficiency
D
S
Self-ventilated (without fan)
High efficiency (IE2)
H
E
With integral fan
optimised frequency inverter
F
F
With blower
1
2-pole
2
4-pole
3
6-pole
C
CE
U
cURus
3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



Product information

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

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



L-force MD three-phase AC motors are available in a power range from 0.06 to 45 kW and comply with efficiency class 4IE1 (standard efficiency) as per IEC 60034-30.

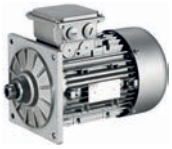
Basic versions
- The thermal sensors integrated as standard allow for permanent temperature monitoring and are coordinated to the motor winding's temperature class F (155°C).
- The motors of the basic version are adapted to ambient conditions by enclosure IP55.
- In tough operating conditions, the surface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

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

Functions and features

Size				
Motor	063	071	080	090
Spring-applied brake				
Design	Standard or LongLife design Reduced or standard braking torque With rectifier With manual release lever Low noise		Standard or LongLife design Reduced, standard or increased braking torque With rectifier With manual release lever Low noise	
Feedback				
Design	Resolver [1] Incremental encoder [1] Absolute value encoder (multi-turn) [1]			
Temperature sensor				
Thermal contact	TKO			
Thermal detector	KTY83-110 KTY84-130			
PTC thermistor	PTC			
Motor connection				
Power connection	Terminal box ICN connector HAN10E connector HAN modular connector			
Brake connection	Terminal box ICN connector HAN modular connector HAN10E connector			
Blower connection	Terminal box ICN connector			
Feedback connection	Terminal box ICN connector			
Temperature sensor connection	Terminal box TKO or PTC at connector in the power connection KTY at connector in the feedback connection			
Shaft bearings				
Position of the locating bearing	Standard motors (B3, B5, B14): side B Motors for gearbox direct mounting: side A			
Bearing type	Deep-groove ball bearing with high-temperature resistant grease, 2 sealing discs or cover plates			
Colour				
	Not coated Primed Paint in various corrosion-protection designs in accordance with RAL colours			
Further options				
	Protection cover	Protection cover Increased centrifugal mass Handwheel [1] 2nd shaft end		

[1] With 2-pole motors not available.



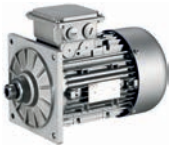
Functions and features

Size			
Motor	100	112	132
Spring-applied brake			
Design	Standard or LongLife design Reduced, standard or increased braking torque With rectifier With manual release lever Low noise	Standard design Reduced, standard or increased braking torque With rectifier With manual release lever Low noise	
Feedback			
Design	Resolver [1)] Incremental encoder [1)] Absolute value encoder (multi-turn) [1)]		
Temperature sensor			
Thermal contact	TKO		
Thermal detector	KTY83-110 KTY84-130		
PTC thermistor	PTC		
Motor connection			
Power connection	Terminal box ICN connector HAN10E connector HAN modular connector		Terminal box ICN connector HAN modular connector
Brake connection	Terminal box ICN connector HAN modular connector HAN10E connector		Terminal box ICN connector HAN modular connector
Blower connection	Terminal box ICN connector		
Feedback connection	Terminal box ICN connector		
Temperature sensor connection	Terminal box TKO or PTC at connector in the power connection KTY at connector in the feedback connection		
Shaft bearings			
Position of the locating bearing	Standard motors (B3, B5, B14): side B Motors for gearbox direct mounting: side A		
Bearing type	Deep-groove ball bearing with high-temperature resistant grease, 2 sealing discs or cover plates		
Colour			
	Not coated Primed Paint in various corrosion-protection designs in accordance with RAL colours		
Further options			
	Protection cover Increased centrifugal mass Handwheel [1)] 2nd shaft end		

[1)] With 2-pole motors not available.

Functions and features

Size			
Motor	160	180	225
Spring-applied brake			
Design	Standard design Reduced, standard or increased braking torque With rectifier With manual release lever Low noise		
Feedback			
Design	Resolver Incremental encoder Absolute value encoder (multi-turn)		
Temperature sensor			
Thermal contact	TKO		
Thermal detector	KTY83-110 KTY84-130		
PTC thermistor	PTC		
Motor connection			
Power connection	Terminal box HAN modular connector	Terminal box	
Brake connection	Terminal box HAN modular connector	Terminal box	
Blower connection	Terminal box ICN connector		
Feedback connection	Terminal box ICN connector		
Temperature sensor connection	Terminal box TKO or PTC at connector in the power connection KTY at connector in the feedback connection	Terminal box	
Shaft bearings			
Position of the locating bearing	Standard motors (B3, B5, B14): side B Motors for gearbox direct mounting: side A		Drive end
Bearing type	Deep-groove ball bearing with high-temperature resistant grease, 2 sealing discs or cover plates		
Colour			
	Not coated Primed Paint in various corrosion-protection designs in accordance with RAL colours		
Further options			
	Protection cover		



Functions and features

Surface and corrosion protection

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

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

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

Structure of surface coating

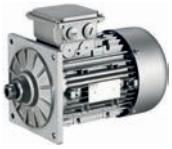
Surface and corrosion protection system	Corrosivity category	Surface coating	Colour
	DIN EN ISO 12944-2	Structure	
Without OKS (uncoated)			
OKS-G (primed)		2K PUR priming coat	
OKS-S (small)	C1	2K-PUR top coat	Standard: RAL 7012 Optional: RAL Classic
OKS-M (medium)	C2	2K PUR priming coat 2K-PUR top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

Motor – inverter assignment

Rated frequency 50/60 Hz

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

Rated power	Product key		
	Motor	Inverter	
P_N			
[kW]			
0.12	MD□□□□□□063-12		
0.18	MD□□□□□□063-32		
0.25	MD□□□□□□063-42		
0.37	MD□□□□□□071-32	E84DVB□3714S□□□2□	
0.55	MD□□□□□□071-42	E84DVB□5514S□□□2□	
0.75	MD□□□□□□080-32	E84DVB□7514S□□□2□	
1.10	MD□□□□□□080-42	E84DVB□1124S□□□2□	
1.50	MD□□□□□□090-32	E84DVB□1524S□□□2□	
2.20	MD□□□□□□100-12	E84DVB□2224S□□□2□	
3.00	MD□□□□□□100-32	E84DVB□3024S□□□2□	
4.00	MD□□□□□□112-22	E84DVB□4024S□□□2□	
5.50	MD□□□□□□112-32	E84DVB□5524S□□□2□	
7.50	MD□□□□□□132-22	E84DVB□7524S□□□2□	
11.0	MD□□□□□□160-22		
15.0	MD□□□□□□160-32		
18.5	MD□□□□□□180-12		
22.0	MD□□□□□□180-32		
30.0	MD□□□□□□180-42		
37.0	MD□□□□□□225-12		
45.0	MD□□□□□□225-22		

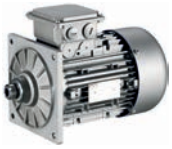


Motor – inverter assignment

Rated frequency 87 Hz

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

Rated power	Product key		
	Motor	Inverter	
P_N			
[kW]			
0.21	MD□□□□□063-12		
0.33	MD□□□□□063-32	E84DVB□5514S□□□2□	
0.45	MD□□□□□063-42		
0.66	MD□□□□□071-32	E84DVB□7514S□□□2□	
1.00	MD□□□□□071-42	E84DVB□1124S□□□2□	
1.35	MD□□□□□080-32	E84DVB□1524S□□□2□	
2.00	MD□□□□□080-42	E84DVB□2224S□□□2□	
2.70	MD□□□□□090-32	E84DVB□3024S□□□2□	
3.90	MD□□□□□100-12	E84DVB□4024S□□□2□	
5.40	MD□□□□□100-32	E84DVB□5524S□□□2□	
7.10	MD□□□□□112-22	E84DVB□7524S□□□2□	
9.70	MD□□□□□112-32		
13.2	MD□□□□□132-22		
19.3	MD□□□□□160-22		
26.4	MD□□□□□160-32		
32.4	MD□□□□□180-12		
38.7	MD□□□□□180-32		

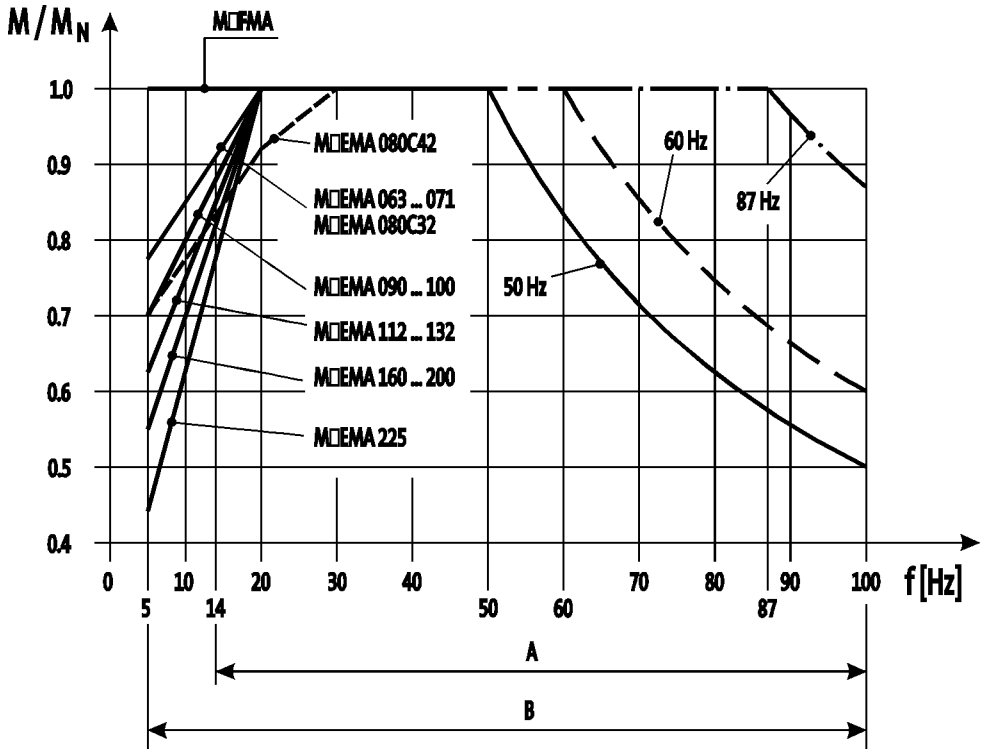


Dimensioning

Torque derating at low motor frequencies

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

Torque characteristics



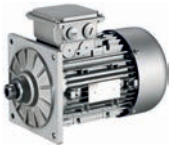
A = Operation with integral fan and brake
B = Operation with integral fan and brake control "Holding current reduction"

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

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

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

Please contact your Lenze sales office.

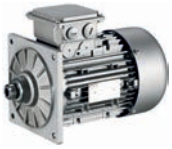


Standards and operating conditions

Degree of protection			
EN 60529			IP55 [1] IP65 [1] IP66 [1]
Energy efficiency class			
IEC 60034-30			IE1 [2]
IEC 60034-2-1			Methodology for measuring efficiency
Approval			
Class			cURus [3] CCC GOST-R UkrSepro
Temperature class			
IEC/EN 60034-1; utilisation			B
IEC/EN 60034-1; insulation system (enamel-insulated wire)			F
Min. ambient operating temperature			
	$T_{opr,min}$	[°C]	-20
Max. ambient temperature for operation			
	$T_{opr,max}$	[°C]	40
With power reduction	$T_{opr,max}$	[°C]	60
Site altitude			
Amsl	H_{max}	[m]	4000
Max. speed			
	n_{max}	[r/min]	4500

[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] Only applies to 4-pole motors.
[3] Motor frame size 225, in preparation.

► 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 and the Lenze products to which it relates, please refer to the brochure entitled "International efficiency directives for three-phase AC motors".



Rated data for 50 Hz

2-pole motors

	P_N	n_N	$U_{N,\Delta}$	$I_{N,\Delta}$	$U_{N,Y}$	$I_{N,Y}$	I_a/I_N
			± 10 %		± 10 %		
	[kW]	[r/min]	[V]	[A]	[V]	[A]	
MD□□□□□063-11	0.18	2740	230	0.80	400	0.46	4.30
MD□□□□□063-31	0.25	2710	230	1.10	400	0.60	3.70
MD□□□□□071-11	0.37	2720	230	1.50	400	0.90	4.40
MD□□□□□071-31	0.55	2630	230	2.40	400	1.40	3.80
MD□□□□□080-11	0.75	2720	230	3.10	400	1.80	4.70
MD□□□□□080-31	1.10	2720	230	4.50	400	2.60	4.70
MD□□□□□090-11	1.50	2710	230	5.50	400	3.20	4.50
MD□□□□□090-31	2.20	2730	230	8.30	400	4.80	3.70
MD□□□□□100-31	3.00	2890	230	10.2	400	5.90	7.00
MD□□□□□100-41	4.00	2840	230	14.2	400	8.30	6.60
MD□□□□□112-31	5.50	2900	400 [2]	11.5			6.00
MD□□□□□112-41	7.50	2890	400 [2]	16.5			6.00
MD□□□□□132-21	9.00	2890	400 [2]	17.0			6.50

	M_N	M_a	M_b	cos ϕ	$\eta_{75\,\%}$	$\eta_{100\,\%}$	J [1]	m [1]
	[Nm]	[Nm]	[Nm]		[%]	[%]	[kgcm²]	[kg]
MD□□□□□063-11	0.63	1.50	1.50	0.88	66.5	66.0	1.70	3.90
MD□□□□□063-31	0.90	1.90	2.00	0.89	67.0	66.0	1.70	3.80
MD□□□□□071-11	1.29	3.10	2.90	0.92	71.0	69.0	5.10	6.00
MD□□□□□071-31	2.00	3.80	4.20	0.93	70.0	63.0	5.10	6.50
MD□□□□□080-11	2.65	5.40	6.50	0.89	70.0	70.0	9.70	10.0
MD□□□□□080-31	3.90	7.50	8.50	0.89	75.0	73.0	9.70	10.0
MD□□□□□090-11	5.20	10.1	10.4	0.95	76.5	75.0	35.0	17.0
MD□□□□□090-31	7.60	16.4	15.5	0.90	77.0	76.0	35.0	17.0
MD□□□□□100-31	9.90	19.0	27.0	0.90	83.0	82.0	32.6	21.0
MD□□□□□100-41	13.6	24.0	29.0	0.91	77.0	78.0	32.6	21.0
MD□□□□□112-31	18.1	46.0	49.0	0.83	86.0	86.0	53.8	28.0
MD□□□□□112-41	24.8	71.0	77.0	0.78	87.0	87.0	70.0	35.0
MD□□□□□132-21	29.8	72.0	72.0	0.92	88.0	88.0	205	68.0

[1] Without accessories
[2] Star/delta start-up possible at 400 V.

Rated data for 50 Hz

4-pole motors

	P_N	n_N	$U_{N,\Delta}$ [2]	$I_{N,\Delta}$	$U_{N,Y}$	$I_{N,Y}$	I_a/I_N
			± 10 %		± 10 %		
	[kW]	[r/min]	[V]	[A]	[V]	[A]	
MD□□□□□063-02	0.060	1425	230	0.42	400	0.24	3.50
MD□□□□□063-22	0.090	1375	230	0.48	400	0.28	2.90
MD□□□□□063-12	0.12	1425	230	0.85	400	0.49	3.10
MD□□□□□063-32	0.18	1365	230	1.00	400	0.58	2.70
MD□□□□□063-42	0.25	1370	230	1.40	400	0.82	2.90
MD□□□□□071-32	0.37	1410	230	1.60	400	0.95	3.30
MD□□□□□071-42	0.55	1405	230	2.40	400	1.40	3.50
MD□□□□□080-32	0.75	1410	230	3.30	400	1.90	4.60
MD□□□□□080-42	1.10	1390	230	4.80	400	2.80	4.40
MD□□□□□090-32	1.50	1410	230	6.60	400	3.80	4.80
MD□□□□□100-12	2.20	1440	230	9.20	400	5.30	6.00
MD□□□□□100-32	3.00	1430	230	12.5	400	7.20	4.60
MD□□□□□112-22	4.00	1450	230	16.1	400	9.30	6.20
MD□□□□□112-32	5.50	1445	230 400 [3]	21.7 12.5	400	12.5	6.10
MD□□□□□132-22	7.50	1455	230 400 [3]	28.6 16.5	400	16.5	5.90
MD□□□□□132-32	9.20	1450	230 400 [3]	34.1 19.7	400	19.7	5.10

	M_N	M_a	M_b	cos ϕ	$\eta_{75\,\%}$	$\eta_{100\,\%}$	J [1]	m [1]
	[Nm]	[Nm]	[Nm]		[%]	[%]	[kgcm²]	[kg]
MD□□□□□063-02	0.40	1.30	1.36	0.57	59.0	63.0	3.30	3.90
MD□□□□□063-22	0.63	1.30	1.39	0.71	63.0	65.0	3.30	3.90
MD□□□□□063-12	0.80	2.50	2.64	0.56	58.0	63.0	3.30	4.10
MD□□□□□063-32	1.26	2.50	2.61	0.70	63.0	64.0	3.30	4.10
MD□□□□□063-42	1.74	3.80	4.10	0.67	65.0	66.0	3.70	4.40
MD□□□□□071-32	2.51	4.76	5.81	0.77	73.0	73.0	10.7	5.80
MD□□□□□071-42	3.74	7.85	9.12	0.77	74.0	74.0	12.8	6.40
MD□□□□□080-32	5.10	11.0	12.1	0.80	73.0	74.0	26.0	11.0
MD□□□□□080-42	7.50	16.5	18.4	0.80	77.0	77.0	26.0	11.0
MD□□□□□090-32	10.1	23.7	27.1	0.76	78.0	79.0	28.4	15.0
MD□□□□□100-12	14.6	38.0	44.0	0.73	83.0	84.0	61.0	24.0
MD□□□□□100-32	20.5	43.0	50.0	0.75	83.0	83.0	61.0	24.0
MD□□□□□112-22	26.3	70.0	95.0	0.73	85.0	86.0	107	31.0
MD□□□□□112-32	36.6	95.0	120	0.77	85.0	86.0	135	38.0
MD□□□□□132-22	49.2	100	150	0.76	87.0	88.0	336	66.0
MD□□□□□132-32	60.6	100	150	0.80	88.0	88.0	336	66.0

[1] Without accessories
[2] Operation at 87 Hz is possible with 4-pole motors whose rated data at 50 Hz displays the voltage values Δ 230 V.
With motor frame sizes 132-12 to 180-32, the required voltage must also be specified in your order.
[3] Star/delta start-up possible at 400 V.

Rated data for 50 Hz

4-pole motors

	P_N	n_N	$U_{N,\Delta}$ [2]	$I_{N,\Delta}$	$U_{N,Y}$	$I_{N,Y}$	I_a/I_N
			± 10 %		± 10 %		
	[kW]	[r/min]	[V]	[A]	[V]	[A]	
MD□□□□□160-22	11.0	1460	230 400 [3]	36.5 21.0	400	21.0	7.00
MD□□□□□160-32	15.0	1460	230 400 [3]	48.4 27.8	400	27.8	7.10
MD□□□□□180-12	18.5	1470	230 400 [3]	57.8 32.8	400	32.8	6.80
MD□□□□□180-32	22.0	1465	230 400 [3]	67.4 38.8	400	38.8	7.30
MD□□□□□180-42	30.0	1465	230 400 [3]	91.1 52.6	400	52.6	7.50
MD□□□□□225-12	37.0	1475	230 400 [3]	114 66.0	400	66.0	6.30
MD□□□□□225-22	45.0	1480	230 400 [3]	137 79.0	400	79.0	7.60

	M_N	M_a	M_b	cos ϕ	$\eta_{75\,\%}$	$\eta_{100\,\%}$	J [1]	m [1]
	[Nm]	[Nm]	[Nm]		[%]	[%]	[kgcm²]	[kg]
MD□□□□□160-22	71.9	150	204	0.85	89.2	89.0	610	110
MD□□□□□160-32	98.1	214	288	0.87	89.7	90.0	750	130
MD□□□□□180-12	120	260	313	0.90	90.7	90.5	1350	165
MD□□□□□180-32	144	330	360	0.90	91.2	91.0	1550	175
MD□□□□□180-42	196	548	547	0.90	91.6	91.0	1850	200
MD□□□□□225-12	240	504	528	0.88	93.0	93.0	4400	320
MD□□□□□225-22	290	698	669	0.88	94.5	94.3	5300	415

[1] Without accessories
[2] Operation at 87 Hz is possible with 4-pole motors whose rated data at 50 Hz displays the voltage values Δ 230 V.
With motor frame sizes 132-12 to 180-32, the required voltage must also be specified in your order.
[3] Star/delta start-up possible at 400 V.

Rated data for 50 Hz

6-pole motors

	P_N	n_N	$U_{N,\Delta}$	$I_{N,\Delta}$	$U_{N,Y}$	$I_{N,Y}$	I_a/I_N
			± 10 %		± 10 %		
	[kW]	[r/min]	[V]	[A]	[V]	[A]	
MD□□□□□071-13	0.18	930	230	1.10	400	0.60	3.90
MD□□□□□071-33	0.25	930	230	1.80	400	1.10	2.80
MD□□□□□080-13	0.37	950	230	2.20	400	1.30	4.00
MD□□□□□080-33	0.55	930	230	2.90	400	1.70	3.50

	M_N	M_a	M_b	cos ϕ	$\eta_{75\,\%}$	$\eta_{100\,\%}$	J [1]	m [1]
	[Nm]	[Nm]	[Nm]		[%]	[%]	[kgcm²]	[kg]
MD□□□□□071-13	1.80	5.00	5.00	0.66	67.0	69.0	12.5	6.50
MD□□□□□071-33	2.50	6.60	6.60	0.66	67.0	68.0	12.5	6.50
MD□□□□□080-13	3.70	10.1	10.7	0.63	68.0	69.0	26.0	11.0
MD□□□□□080-33	5.60	12.2	12.8	0.70	68.0	68.0	26.0	11.0

[1] Without accessories

Rated data for 60 Hz

2-pole motors

- The motors are designed for an operation at 265/460 V but are also able to be operated at 230 V, 60 Hz. The same technical data apply, the starting torque is a bit lower.
- The motors have a service factor of 1.15 at 60 Hz. The service factor indicates the permissible overload during operation within the mains voltage fluctuations.

	P_N	n_N	$U_{N,\Delta}$	$I_{N,\Delta}$	$U_{N,Y}$	$I_{N,Y}$	I_a/I_N
			± 10 %		± 10 %		
	[kW]	[r/min]	[V]	[A]	[V]	[A]	
MD□□□□□063-11	0.18	3370	265	0.72	460	0.41	5.50
MD□□□□□063-31	0.25	3390	265	0.88	460	0.51	4.80
MD□□□□□071-11	0.37	3360	265	1.30	460	0.76	5.50
MD□□□□□071-31	0.55	3240	265	2.10	460	1.20	4.80
MD□□□□□080-11	0.75	3380	265	2.60	460	1.50	5.90
MD□□□□□080-31	1.10	3370	265	3.80	460	2.20	5.90
MD□□□□□090-11	1.50	3310	265	4.80	460	2.80	5.30
MD□□□□□090-31	2.20	3320	265	7.20	460	4.10	4.30
MD□□□□□100-31	3.00	3510	265	8.80	460	5.10	8.10
MD□□□□□100-41	4.00	3440	265	12.4	460	7.10	7.70
MD□□□□□112-31	5.50	3510	460 [2]	9.90			6.90
MD□□□□□112-41	7.50	3500	460 [2]	14.4			6.80
MD□□□□□132-21	9.00	3500	460 [2]	14.8			7.60

	M_N	M_a	M_b	cos ϕ	$\eta_{75\,\%}$	$\eta_{100\,\%}$	J [1]	m [1]
	[Nm]	[Nm]	[Nm]		[%]	[%]	[kgcm²]	[kg]
MD□□□□□063-11	0.51	1.38	1.38	0.84	68.3	67.8	1.70	3.90
MD□□□□□063-31	0.72	1.74	1.84	0.86	71.1	70.0	1.70	3.80
MD□□□□□071-11	1.05	2.85	2.66	0.91	74.4	72.3	5.10	6.00
MD□□□□□071-31	1.62	3.49	3.86	0.90	73.6	66.3	5.10	6.50
MD□□□□□080-11	2.13	4.96	5.97	0.88	74.4	74.4	9.70	10.0
MD□□□□□080-31	3.14	6.89	7.81	0.87	79.2	77.1	9.70	10.0
MD□□□□□090-11	4.31	9.28	9.55	0.94	78.3	76.7	35.0	17.0
MD□□□□□090-31	6.25	15.1	14.2	0.89	78.7	77.7	35.0	17.0
MD□□□□□100-31	8.13	17.4	24.8	0.89	84.5	83.5	32.6	21.0
MD□□□□□100-41	11.3	22.0	26.6	0.90	78.6	79.7	32.6	21.0
MD□□□□□112-31	14.9	42.2	45.0	0.83	87.5	87.5	53.8	28.0
MD□□□□□112-41	20.5	65.2	70.7	0.77	88.5	88.5	70.0	35.0
MD□□□□□132-21	24.7	66.1	66.1	0.91	88.9	88.9	205	68.0

[1] Without accessories
[2] Star/delta start-up possible at 460 V.

Rated data for 60 Hz

4-pole motors

- The motors are designed for an operation at 265/460 V but are also able to be operated at 230 V, 60 Hz. The same technical data apply, the starting torque is a bit lower.
- The motors have a service factor of 1.15 at 60 Hz. The service factor indicates the permissible overload during operation within the mains voltage fluctuations.

	P_N	n_N	$U_{N,\Delta}$ [2]	$I_{N,\Delta}$	$U_{N,Y}$	$I_{N,Y}$	I_a/I_N
			± 10 %		± 10 %		
	[kW]	[r/min]	[V]	[A]	[V]	[A]	
MD□□□□□063-02	0.060	1735	265	0.37	460	0.21	4.40
MD□□□□□063-22	0.090	1695	265	0.43	460	0.25	4.20
MD□□□□□063-12	0.12	1735	265	0.69	460	0.40	4.00
MD□□□□□063-32	0.18	1695	265	0.80	460	0.46	3.60
MD□□□□□063-42	0.25	1680	265	1.30	460	0.75	3.80
MD□□□□□071-32	0.37	1720	265	1.50	460	0.84	3.90
MD□□□□□071-42	0.55	1720	265	2.10	460	1.20	4.10
MD□□□□□080-32	0.75	1720	265	2.90	460	1.70	5.60
MD□□□□□080-42	1.10	1705	265	4.20	460	2.40	5.40
MD□□□□□090-32	1.50	1720	265	5.80	460	3.40	5.70
MD□□□□□100-12	2.20	1745	265	8.10	460	4.70	6.90
MD□□□□□100-32	3.00	1740	265	10.8	460	6.30	5.30
MD□□□□□112-22	4.00	1755	265	14.1	460	8.20	6.90
MD□□□□□112-32	5.50	1750	265 460 [3]	18.9 10.9	460	10.9	6.90
MD□□□□□132-22	7.50	1760	265 460 [3]	25.7 14.8	460	14.8	6.50
MD□□□□□132-32	9.20	1750	265 460 [3]	29.6 17.1	460	17.1	5.70

	M_N	M_a	M_b	cos ϕ	$\eta_{75\,\%}$	$\eta_{100\,\%}$	J [1]	m [1]
	[Nm]	[Nm]	[Nm]		[%]	[%]	[kgcm²]	[kg]
MD□□□□□063-02	0.33	1.10	1.36	0.54	60.0	63.0	3.30	3.90
MD□□□□□063-22	0.51	1.10	1.40	0.67	64.9	67.0	3.30	3.90
MD□□□□□063-12	0.66	2.25	2.64	0.55	58.0	63.0	3.30	4.10
MD□□□□□063-32	1.00	2.21	2.56	0.68	65.0	66.0	3.30	4.10
MD□□□□□063-42	1.40	3.71	4.20	0.60	64.0	66.0	3.70	4.40
MD□□□□□071-32	2.05	4.40	5.80	0.74	74.0	75.0	10.7	5.80
MD□□□□□071-42	3.05	7.00	9.00	0.73	76.0	77.0	12.8	6.40
MD□□□□□080-32	4.16	10.3	12.2	0.78	78.0	78.0	26.0	11.0
MD□□□□□080-42	6.16	15.5	18.5	0.78	79.0	80.0	26.0	11.0
MD□□□□□090-32	8.33	22.0	27.0	0.73	79.0	81.0	28.4	15.0
MD□□□□□100-12	12.0	33.0	43.0	0.71	83.0	85.0	61.0	24.0
MD□□□□□100-32	16.5	38.0	48.0	0.73	84.0	85.0	61.0	24.0
MD□□□□□112-22	21.8	57.0	89.0	0.72	85.0	87.0	107	31.0
MD□□□□□112-32	30.0	79.0	114	0.75	87.0	87.0	135	38.0
MD□□□□□132-22	40.7	83.0	137	0.75	88.0	89.0	336	66.0
MD□□□□□132-32	50.2	83.0	137	0.79	88.0	89.0	336	66.0

[1] Without accessories
[2] Operation at 87 Hz is possible with 4-pole motors whose rated data at 60 Hz displays the voltage values Δ 265 V.
With motor frame sizes 112-32 to 180-42, the required voltage must also be specified in your order.
[3] Star/delta start-up possible at 460 V.

Rated data for 60 Hz

4-pole motors

- The motors are designed for an operation at 265/460 V but are also able to be operated at 230 V, 60 Hz. The same technical data apply, the starting torque is a bit lower.
- The motors have a service factor of 1.15 at 60 Hz. The service factor indicates the permissible overload during operation within the mains voltage fluctuations.

	P_N	n_N	$U_{N,\Delta}$ [2]	$I_{N,\Delta}$	$U_{N,Y}$	$I_{N,Y}$	I_a/I_N
			± 10 %		± 10 %		
	[kW]	[r/min]	[V]	[A]	[V]	[A]	
MD□□□□□160-22	11.0	1770	265 460 [3]	31.7 18.3	460	18.3	7.60
MD□□□□□160-32	15.0	1760	265 460 [3]	40.7 23.5	460	23.5	7.60
MD□□□□□180-12	18.5	1780	265 460 [3]	48.5 28.0	460	28.0	7.20
MD□□□□□180-32	22.0	1760	265 460 [3]	57.2 33.0	460	33.0	7.60
MD□□□□□180-42	30.0	1770	265 460 [3]	78.8 45.5	460	45.5	7.80
MD□□□□□225-12	37.0	1780	265 460 [3]	97.2 56.1	460	56.1	6.50
MD□□□□□225-22	45.0	1784	265 460 [3]	111 64.2	460	64.2	8.80

	M_N	M_a	M_b	cos ϕ	$\eta_{75\,\%}$	$\eta_{100\,\%}$	J [1]	m [1]
	[Nm]	[Nm]	[Nm]		[%]	[%]	[kgcm²]	[kg]
MD□□□□□160-22	59.5	122	187	0.84	91.1	90.0	610	110
MD□□□□□160-32	81.2	171	265	0.87	92.6	92.0	750	130
MD□□□□□180-12	99.3	203	287	0.90	93.0	92.0	1350	165
MD□□□□□180-32	119	248	331	0.90	94.0	93.0	1550	175
MD□□□□□180-42	162	395	502	0.90	91.8	92.0	1850	200
MD□□□□□225-12	199	358	485	0.88	94.0	94.0	4400	320
MD□□□□□225-22	241	660	635	0.88	93.5	93.6	5300	415

[1] Without accessories
[2] Operation at 87 Hz is possible with 4-pole motors whose rated data at 60 Hz displays the voltage values Δ 265 V.
With motor frame sizes 112-32 to 180-42, the required voltage must also be specified in your order.
[3] Star/delta start-up possible at 460 V.

Rated data for 60 Hz

6-pole motors

- The motors are designed for an operation at 265/460 V but are also able to be operated at 230 V, 60 Hz. The same technical data apply, the starting torque is a bit lower.
- The motors have a service factor of 1.15 at 60 Hz. The service factor indicates the permissible overload during operation within the mains voltage fluctuations.

	P_N	n_N	$U_{N,\Delta}$	$I_{N,\Delta}$	$U_{N,Y}$	$I_{N,Y}$	I_a/I_N
			± 10 %		± 10 %		
	[kW]	[r/min]	[V]	[A]	[V]	[A]	
MD□□□□□071-13	0.18	1140	265	0.95	460	0.55	4.60
MD□□□□□071-33	0.25	1140	265	1.70	460	1.00	3.40
MD□□□□□080-13	0.37	1160	265	2.00	460	1.20	4.60
MD□□□□□080-33	0.55	1140	265	2.60	460	1.50	4.10

	M_N	M_a	M_b	cos ϕ	$\eta_{75\,\%}$	$\eta_{100\,\%}$	J [1]	m [1]
	[Nm]	[Nm]	[Nm]		[%]	[%]	[kgcm²]	[kg]
MD□□□□□071-13	1.47	4.59	4.59	0.62	68.4	70.5	12.5	6.50
MD□□□□□071-33	2.04	6.06	6.06	0.61	69.1	70.1	12.5	6.50
MD□□□□□080-13	3.03	9.28	9.83	0.59	69.5	70.5	26.0	11.0
MD□□□□□080-33	4.56	11.2	11.8	0.66	70.7	70.7	26.0	11.0

[1] Without accessories

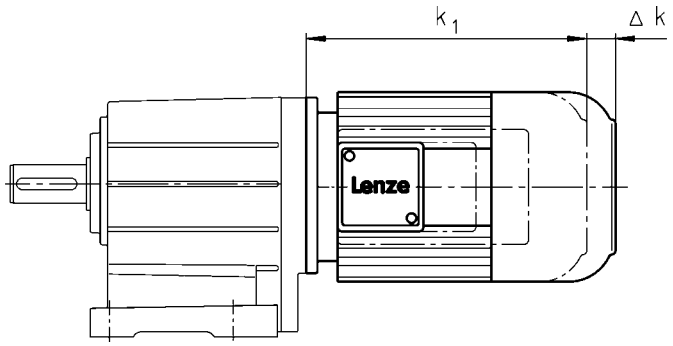
Rated data for 87 Hz

4-pole motors

	P_N	n_N	M_N	M_{max}	$U_{N,\Delta}$	$I_{N,\Delta}$	cos ϕ	$\eta_{75\,\%}$	$\eta_{100\,\%}$	J [1]	m [1]
					± 10 %						
	[kW]	[r/min]	[Nm]	[Nm]	[V]	[A]		[%]	[%]	[kgcm²]	[kg]
MD□□□□□063-02	0.11	2535	0.40	1.60	400	0.42	0.55	62.0	67.0	3.30	3.90
MD□□□□□063-22	0.16	2485	0.63	2.50	400	0.48	0.67	66.0	70.0	3.30	3.90
MD□□□□□063-12	0.21	2535	0.80	3.20	400	0.85	0.52	61.0	66.0	3.30	4.10
MD□□□□□063-32	0.33	2475	1.26	5.00	400	1.00	0.65	68.0	71.0	3.30	4.10
MD□□□□□063-42	0.45	2480	1.74	7.00	400	1.40	0.63	66.0	73.0	3.70	4.40
MD□□□□□071-32	0.66	2520	2.51	10.0	400	1.60	0.72	76.0	78.0	10.7	5.80
MD□□□□□071-42	1.00	2515	3.74	15.0	400	2.40	0.74	79.0	80.0	12.8	6.40
MD□□□□□080-32	1.35	2520	5.10	20.0	400	3.30	0.80	75.0	77.0	26.0	11.0
MD□□□□□080-42	2.00	2500	7.50	30.0	400	4.80	0.80	81.0	82.0	26.0	11.0
MD□□□□□090-32	2.70	2520	10.1	40.0	400	6.70	0.73	83.0	85.0	28.4	15.0
MD□□□□□100-12	3.90	2550	14.6	60.0	400	9.20	0.71	87.0	88.0	61.0	24.0
MD□□□□□100-32	5.40	2540	20.5	80.0	400	12.5	0.73	87.0	88.0	61.0	24.0
MD□□□□□112-22	7.10	2560	26.3	105	400	16.1	0.71	87.0	88.0	107	31.0
MD□□□□□112-32	9.70	2555	36.6	145	400	21.7	0.75	87.0	89.0	135	38.0
MD□□□□□132-22	13.2	2565	49.2	200	400	28.6	0.75	90.0	90.0	336	66.0
MD□□□□□132-32	16.2	2560	60.6	242	400	34.1	0.79	90.0	91.0	336	66.0
MD□□□□□160-22	19.3	2565	71.9	280	400	36.5	0.85	91.7	90.0	610	110
MD□□□□□160-32	26.4	2565	98.1	390	400	48.4	0.86	91.9	92.0	750	130
MD□□□□□180-12	32.4	2575	120	480	400	57.8	0.89	92.8	92.0	1350	165
MD□□□□□180-32	38.7	2560	144	572	400	67.4	0.89	92.8	92.0	1550	175
MD□□□□□180-42	52.7	2565	196	780	400	91.1	0.89	93.0	93.0	1850	200

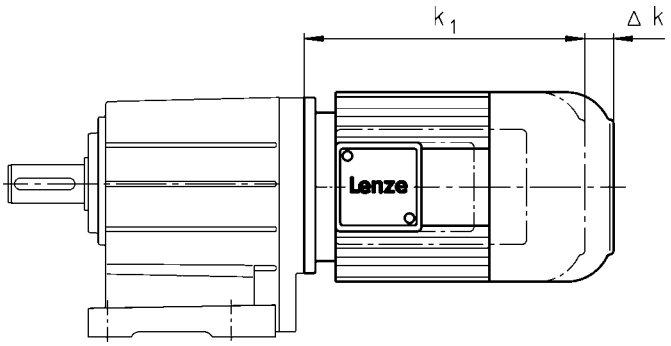
[1] Without accessories

Dimensions, self-ventilated (2-pole)



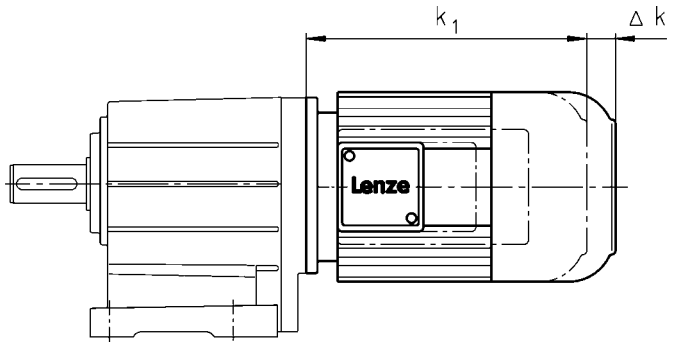
	Motor type			
	MDEMAXX	MDEMABR	MDEMABL	MDEMALL
Motor frame size				
	Δ k	Δ k	Δ k	Δ k
	[mm]	[mm]	[mm]	[mm]
063-11 063-31	0	40		
071-11 071-31		52	52	0
080-11 080-31		73	73	4
090-11 090-31		68	68	0
100-31 100-41		76	76	76
112-31 112-41		90	90	0
132-21		110	110	

Dimensions, self-ventilated (4-pole)

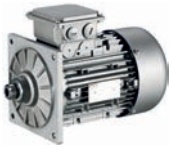


	Motor type					
	MDEMAXX	MDEMABR	MDEMABS MDEMABI MDEMABA	MDEMABL	MDEMARS MDEMAIG MDEMAAG	MDEMALL
Motor frame size						
	Δ k	Δ k	Δ k	Δ k	Δ k	Δ k
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
063-02 063-22	0	71	135		71	
063-12 063-32 063-42		40	103		56	
071-32 071-42		52	96	52	52	0
080-32 080-42		73	111	73	111	4
090-32		68	105	68	87	0
100-12 100-32		76	101	76	81	76
112-22 112-32		90	120	90	80	0
132-22 132-32		110	125	110	103	
160-22 160-32		105	191		83	
180-12 180-32		113	192		79	
180-42						
225-12 225-22			193		80	

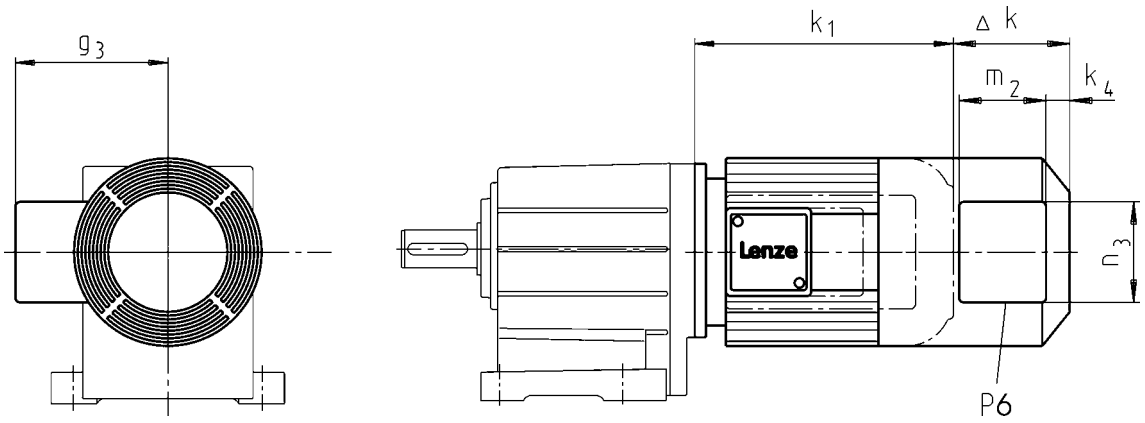
Dimensions, self-ventilated (6-pole)



	Motor type					
	MDEMAXX	MDEMABR	MDEMABS MDEMABI MDEMABA	MDEMABL	MDEMARS MDEMAIG MDEMAAG	MDEMALL
Motor frame size						
	Δ k	Δ k	Δ k	Δ k	Δ k	Δ k
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
071-13 071-33	0	52	96	52	52	0
080-13 080-33		73	111	73	111	4



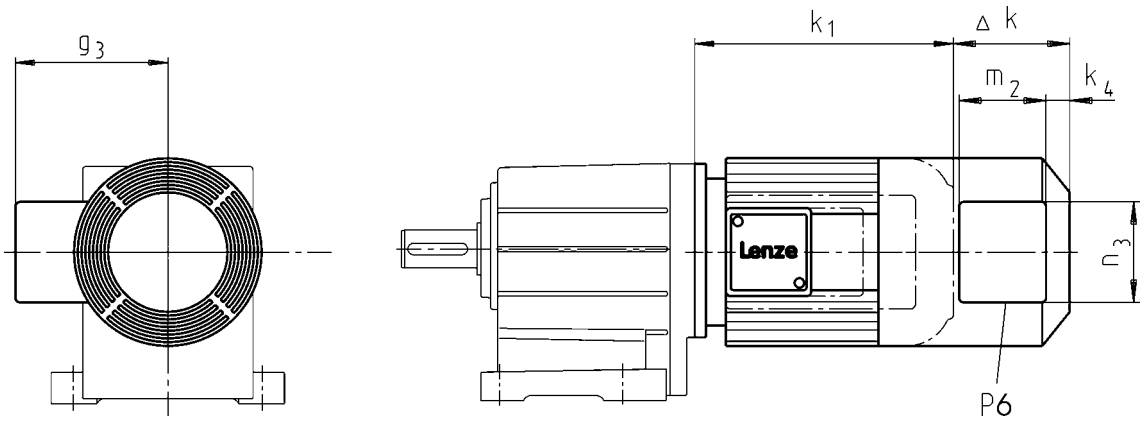
Dimensions, forced ventilated (2-pole)



Motor type							
	MDFMAXX	MDFMABR					

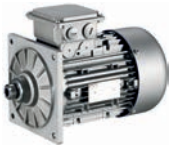
Motor frame size							
	Δ k	Δ k	k_4	g_3	m_2	n_3	P_6
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
063-11 063-31	128	170	12	115	95	105	1x M16x1.5
071-11 071-31		165		122			
080-11 080-31		183	13	132	96	106	
090-11 090-31		181	22	141	95	105	
100-31 100-41	109	170		150			
112-31 112-41	102	183		162			
132-21	115	202	32	182			

Dimensions, forced ventilated (4-pole)

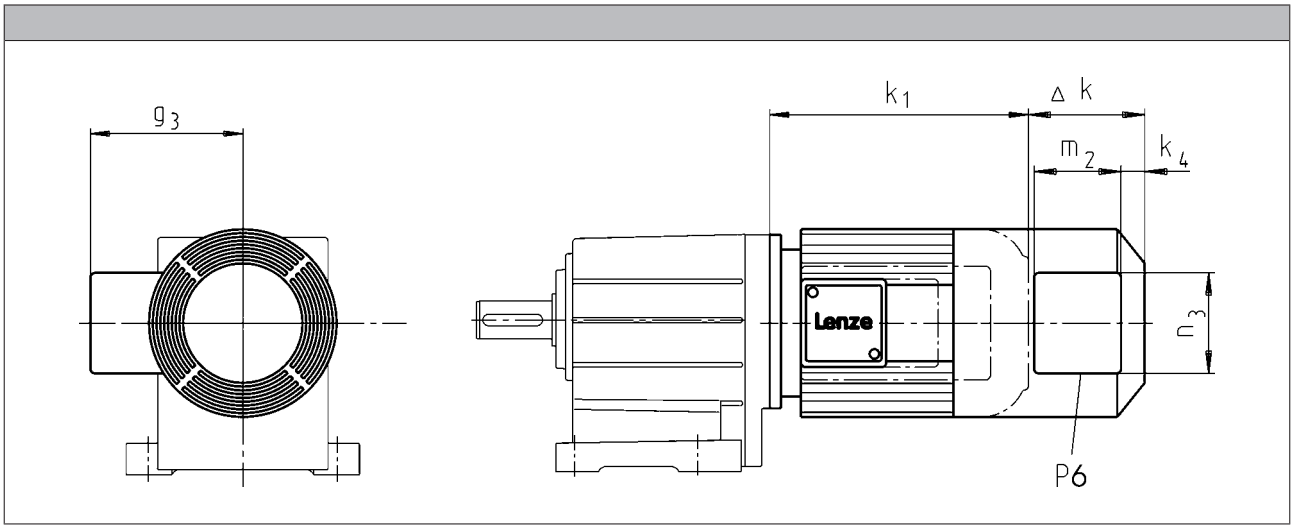


Motor type									
	MDFMAXX	MDFMABR	MDFMABS MDFMABI MDFMABA	MDFMARS MDFMAIG MDFMAAG					

Motor frame size									
	Δ k	Δ k	Δ k	Δ k	k_4	g_3	m_2	n_3	P_6
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
063-12 063-32 063-42	128	170	170	128	12	115	95	105	1x M16x1.5
071-32 071-42		165	165			122			
080-32 080-42		183	183		13	132	96	106	
090-32		181	181		22	141	95	105	
100-12 100-32	109	170	170	109		150			
112-22 112-32	102	183	183	183		162			
132-22 132-32	115	202	202	202	32	182			
160-22 160-32	149	179	237	224	31	209	96	106	
180-12 180-32		215	275	215					
180-42	155		260						
225-12 225-22	213	213	213	213					



Dimensions, forced ventilated (6-pole)

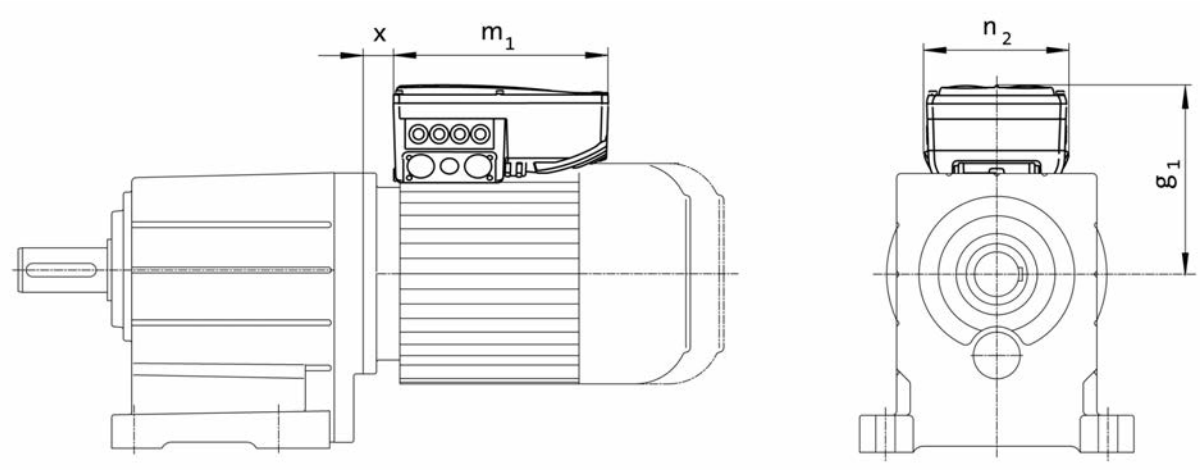


Motor type									
	MDFMAXX	MDFMABR	MDFMABS MDFMABI MDFMABA	MDFMARS MDFMAIG MDFMAAG					

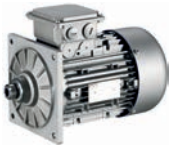
Motor frame size									
	Δ k	Δ k	Δ k	Δ k	k_4	g_3	m_2	n_3	P_6
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
071-13 071-33	128	165	165	128	12	122	95	105	1x M16x1.5
080-13 080-33		183	183		13	132	96	106	

Dimensions, 8400 motec inverter

Rated frequency 50/60 Hz

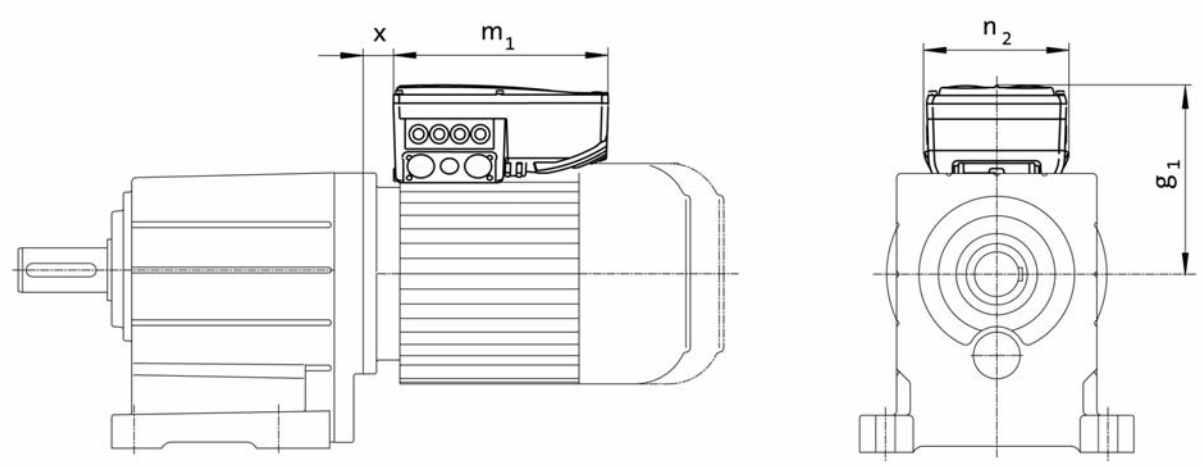


Product key					
Motor	Inverter				
		$g_{1,\ 50Hz}$	$m_{1,\ 50Hz}$	$n_{2,\ 50Hz}$	x_{50Hz}
		[mm]	[mm]	[mm]	[mm]
MD□□□□□071-32	E84DVB□3714S□□□2□	163	241	161	21.0
MD□□□□□071-42	E84DVB□5514S□□□2□				
MD□□□□□080-32	E84DVB□7514S□□□2□	172			25.5
MD□□□□□080-42	E84DVB□1124S□□□2□				
MD□□□□□090-32	E84DVB□1524S□□□2□	177			28.8
MD□□□□□100-12	E84DVB□2224S□□□2□	217	260	176	29.6
MD□□□□□100-32	E84DVB□3024S□□□2□				
MD□□□□□112-22	E84DVB□4024S□□□2□	282	325	195	19.0
MD□□□□□112-32	E84DVB□5524S□□□2□				
MD□□□□□132-22	E84DVB□7524S□□□2□	301			34.5



Dimensions, 8400 motec inverter

Rated frequency 87 Hz



Product key					
Motor	Inverter				
		$g_{1,\ 87Hz}$	$m_{1,\ 87Hz}$	$n_{2,\ 87Hz}$	x_{87Hz}
		[mm]	[mm]	[mm]	[mm]
MD□□□□□□063-32	E84DVB□3714S□□□2□	154	241	161	18.8
MD□□□□□□063-42	E84DVB□5514S□□□2□				
MD□□□□□□071-32	E84DVB□7514S□□□2□	163			21.0
MD□□□□□□071-42	E84DVB□1124S□□□2□				
MD□□□□□□080-32	E84DVB□1524S□□□2□	172			25.5
MD□□□□□□080-42	E84DVB□2224S□□□2□	201	260	176	24.5
MD□□□□□□090-32	E84DVB□3024S□□□2□	206			27.8
MD□□□□□□100-12	E84DVB□4024S□□□2□	272	325	195	17.1
MD□□□□□□100-32	E84DVB□5524S□□□2□				
MD□□□□□□112-22	E84DVB□7524S□□□2□	282			19.0

Spring-applied brakes

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

Features

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

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

Enclosure
- Without manual release IP55
- With manual release IP54

Friction lining
- Non-asbestos, low wearing

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

Assignment of 4-pole motors and brakes

Design	Standard		LongLife	
Motor frame size	**Size**	**Rated torque**	**Size**	**Rated torque**
	Brake		Brake	
		M_k		M_k
		[Nm]		[Nm]
063-02 063-12 063-22 063-32 063-42	06 06	2.50 4.00	06	4.00
071-12 071-32	06 06 08	2.50 4.00 3.50	06 08	4.00 3.50
071-42	06 06 08 08	2.50 4.00 3.50 8.00	06 08 08	4.00 3.50 8.00
080-12 080-32	08 08 10	3.50 8.00 7.00	08 10	8.00 7.00
080-42	08 08 10 10	3.50 8.00 7.00 16.0	08 10 10	8.00 7.00 16.0

Spring-applied brakes

Assignment of 4-pole motors and brakes

Design	Standard		LongLife	
Motor frame size	Size Brake	Rated torque M_k [Nm]	Size Brake	Rated torque M_k [Nm]
090-12	08	3.50	08	8.00
	08	8.00		
090-32	10	7.00	10	7.00
	10	16.0	10	16.0
	10	23.0		
100-12	10	7.00	10	16.0
	10	16.0		
	12	14.0	12	14.0
	12	32.0		
100-32	10	7.00	12	32.0
	10	16.0		
	12	14.0		
	12	32.0		
	12	46.0		
112-22	12	14.0		
	12	32.0		
112-32	14	35.0		
	14	60.0		
132-12	14	35.0		
	14	60.0		
	16	60.0		
	16	80.0		
132-22	14	35.0		
	14	60.0		
132-32	16	60.0		
	16	80.0		
	16	100		
160-22	16	60.0		
	16	80.0		
	18	80.0		
	18	150		
160-32	18	80.0		
	18	150		
	18	200		
180-12	18	80.0		
	18	150		
	20	145		
	20	260		
180-32	18	80.0		
	18	150		
	20	145		
	20	260		
	20	315		
180-42	18	80.0		
	18	150		
	20	145		
	20	260		
	20	315		
	20	400		

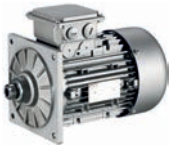
Spring-applied brakes

Assignment of 4-pole motors and brakes

Design	Standard		LongLife	
Motor frame size	**Size**	**Rated torque**	**Size**	**Rated torque**
	Brake		Brake	
		M_k		M_k
		[Nm]		[Nm]
225-12	25 25 25	265 400 490		
225-22	25 25 25 25	265 400 490 600		

Assignment of 2-pole motors and brakes

Design	Standard		LongLife	
Motor frame size	**Size**	**Rated torque**	**Size**	**Rated torque**
	Brake		Brake	
		M_k		M_k
		[Nm]		[Nm]
063-11 063-31	06 06	2.50 4.00	06 06	2.50 4.00
071-11 071-31	06 06 08	2.50 4.00 3.50	06 08	4.00 3.50
080-11 080-31 090-11	08 08 10	3.50 8.00 7.00	08 10	8.00 7.00
090-31	08 08 10 10	3.50 8.00 7.00 16.0	08 10 10	8.00 7.00 16.0
100-31 100-41	12 12	14.0 32.0	12 12	14.0 32.0
112-31 112-41	12 12 14 14	14.0 32.0 35.0 60.0		
132-21	14 16 14 16	35.0 60.0 60.0 80.0		



Spring-applied brakes

Direct connection without rectifier

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

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

Connection via mains voltage with brake rectifier

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

Half-wave rectifier, 6-pole

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

Bridge rectifier, 6-pole

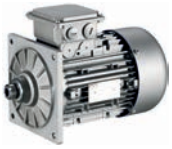
- Ratio of supply voltage to brake coil voltage = 1.11
- Supply voltage
  AC 230 V

Bridge/half-wave rectifier, 6-pole

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

Supply voltages:

- AC 230 V
- AC 400 V



Spring-applied brakes

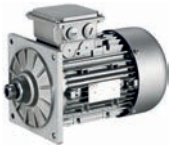
Connection via mains voltage with brake rectifier

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

Supply voltages:
- AC 230 V
- AC 400 V

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

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



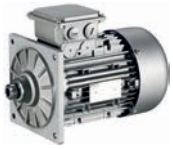
Spring-applied brakes

Rated data with reduced braking torque

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

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

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



Spring-applied brakes

Rated data with reduced braking torque

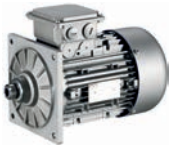
► Activation via half-wave or bridge rectifier

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.



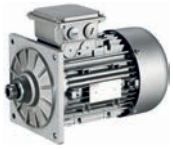
Spring-applied brakes

Rated data with standard braking torque

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

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

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



Spring-applied brakes

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 brakes

Rated data with increased braking torque

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

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

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

► Activation via half-wave or bridge rectifier

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

Spring-applied brakes

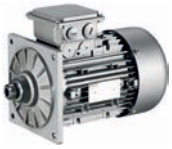
Rated data with increased braking torque

► 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

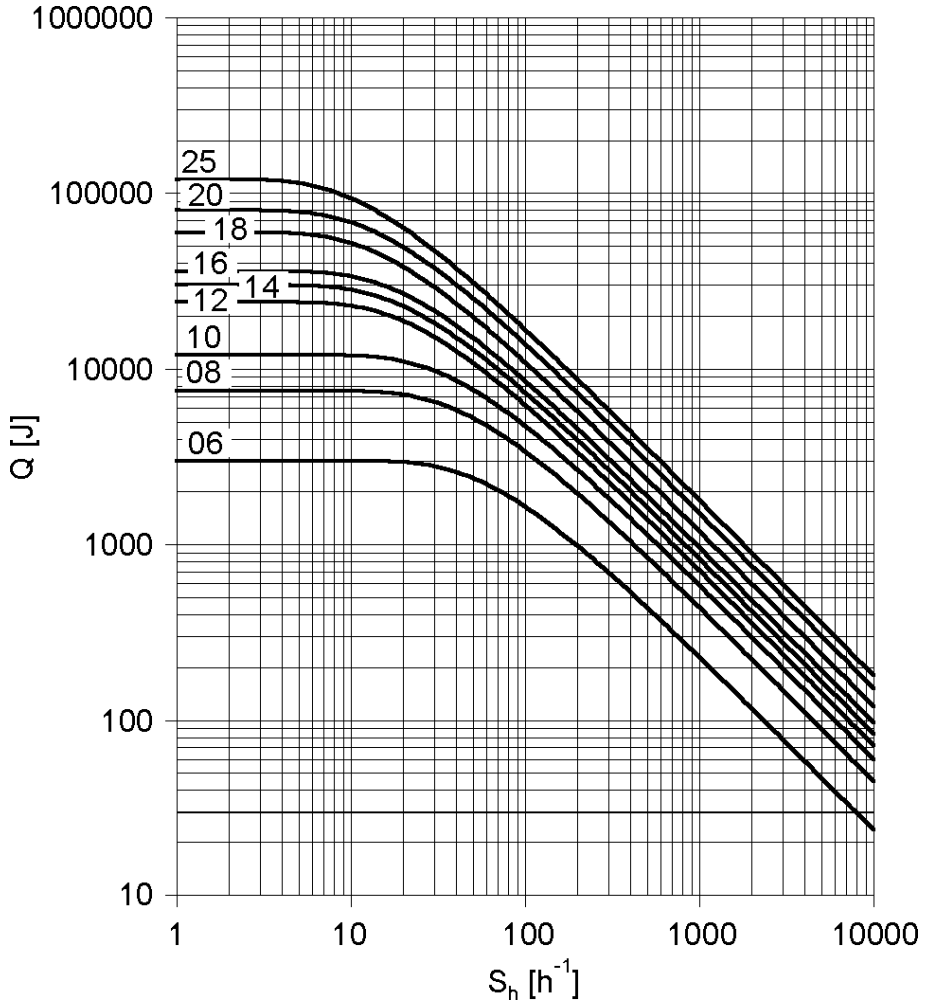
Design			Over-excitation									
Size			10	12	14	16		18	20		25	
Friction energy												
	Q_{BW}	[MJ]	264	706	761	966		1542	2322		3522	
Overexcitation time												
	$t_{ü}$	[ms]	300			1300						
Min. rest time												
	t	[ms]	900			3900						
Delay time												
Engaging	t_{11}	[ms]	29.0	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 brakes

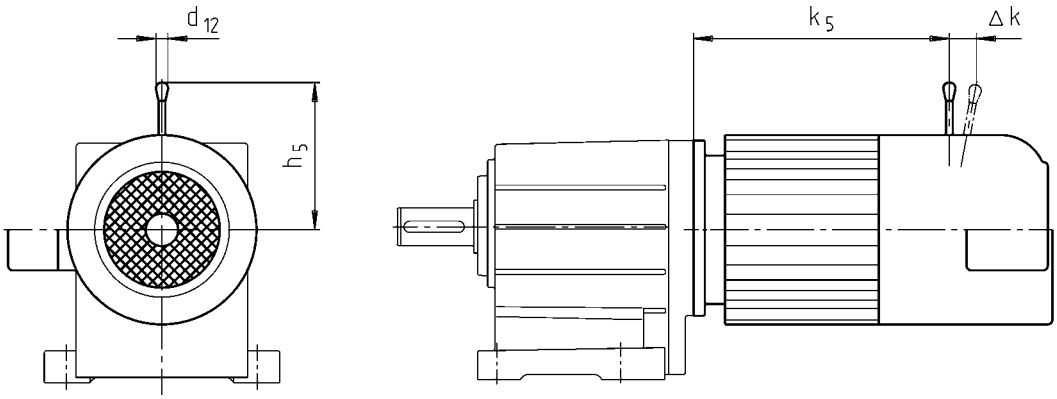
Permissible friction energy



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

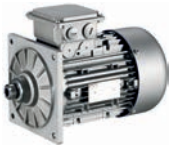
Spring-applied brakes

Manual release lever



Motor frame size			Size				
			Brake				
				k_5	Δ k	h_5	d_{12}
				[mm]	[mm]	[mm]	[mm]
	063-02 063-22		06	185	29	107	13.0
063-11 063-31	063-12 063-32 063-42		06	173	29	107	13.0
071-11 071-31	071-32 071-42	071-13 071-33	06 08	186 187	29 27	107 116	13.0 13.0
080-11 080-31	080-32 080-42	080-13 080-33	06 08	207 218	29 27	107 116	13.0 13.0
090-11 090-31	090-32		08 10	245 256	27 28	116 132	13.0 13.0
100-31 100-41	100-12 100-32		10 12	279 281	28 37	132 161	13.0 13.0
112-31	112-22		12 14	292 296	37 41	161 195	13.0 24.0
112-41	112-32		12 14	336 340	37 41	161 195	13.0 24.0
132-21	132-22 132-32		14 16	373 373	41 55	195 240	24.0 24.0
	160-22		16 18	420 423	59 55	279 240	24.0 24.0
	160-32		16 18	464 467	55 59	240 279	24.0 24.0
	180-12 180-32		18 20	539 546	59 74	279 319	24.0 24.0
	180-42		18 20	596 603	59 74	279 319	24.0 24.0
	225-12 225-22		25 25	785 785	103 103	445 445	24.0 24.0

The following combinations with manual release lever and motor connection in the same position are not possible:
- HAN connector with connection in position 1
- Inverter motec
- Terminal box of motor sizes 071, 080, 090 for brake and retracting (M□□MA BR/BS/BA/BI)



Resolver

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

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

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

Incremental encoder and SinCos absolute value encoder

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

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

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

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

Blowers

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

Rated data for 50 Hz

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

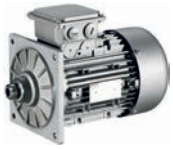
Blowers

Rated data for 50 Hz

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

Rated data for 60 Hz

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



Temperature monitoring

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

TKO thermal contacts

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

PTC thermistor

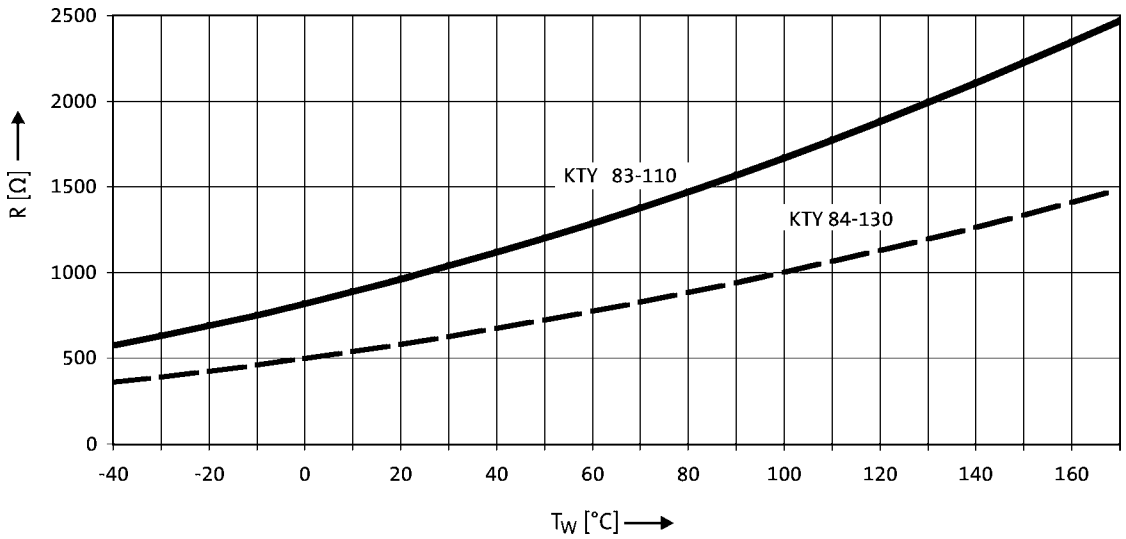
Function	Operating temperature	Rated resistance			Standard
		155 °C	-20 °C	140 °C	
	T	R_N	R_N	R_N	
	-5 ... 5				
	[°C]	[Ω]	[Ω]	[Ω]	
Sudden change in resistance	150	550	30.0	250	DIN 44080 DIN VDE 0660 Part 303

Temperature monitoring

KTY temperature sensor

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

Variation of resistance



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

Terminal box

The three-phase AC motors are designed for operation at a constant mains frequency and with an inverter.
For 50 Hz operation, the motors are operated in Δconfiguration at 230 V or in star configuration at 400 V.
For inverter operation, the base frequency has been specified as 87 Hz at a rated voltage of 400 V in Δconfiguration.

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

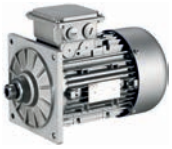
Motor terminal box - built-on accessories assignment: 4-pole / 6-pole motors

Motor type	M□□MAXX	M□□MARS M□□MAIG M□□MAAG	M□□MAZE M□□MAHA	M□□MALL	M□□MALZ M□□MALH
Motor frame size					
	Terminal box				
063-02 063-22	KK1	KK2			
063-12 063-32 063-42	KK1	KK2			
071-32 071-42 071-13 071-33	KK1	KK2	KK2	KK1	KK1
080-13 080-32 080-33 080-42	KK1	KK2	KK2	KK1	KK1
090-12 090-32	KK1	KK2	KK2	KK1	KK1
100-12 100-32	KK1	KK2	KK2	KK2	KK2
112-22 112-32	KK1	KK2	KK2	KK1	KK1
132-12 132-22 132-32	KK1	KK3	KK3	KK1	KK1
160-22 160-32	KK3	KK3			
180-12 180-32 180-42 180-42	KK3	KK3			
225-12 225-22	KK3	KK3			

Terminal box

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

Motor type	M□□MABR	M□□MABS M□□MABI M□□MABA	M□□MABZ M□□MABH	M□□MABL
Motor frame size				
	Terminal box			
063-02 063-22	KK2	KK3		
063-12 063-32 063-42	KK2	KK3		
071-32 071-42 071-13 071-33	KK2	KK3	KK2	KK2
080-13 080-32 080-33 080-42	KK2	KK3	KK2	KK2
090-12 090-32	KK2	KK3	KK2	KK2
100-12 100-32	KK2	KK3	KK2	KK2
112-22 112-32	KK2	KK3	KK2	KK2
132-12 132-22 132-32	KK3	KK3	KK3	KK3
160-22 160-32	KK3	KK3		
180-12 180-32 180-42	KK3	KK3		
225-12 225-22	KK3	KK3		

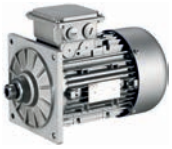


Terminal box

Motor terminal box - built-on accessories assignment: 2-pole motors

Motor type	M□□MAXX	M□□MAZE	M□□MALL	M□□MALZ
Motor frame size				
	Terminal box			
063-11 063-31	KK1			
071-11 071-31	KK1	KK2	KK1	KK2
080-11 080-31	KK1	KK2	KK1	KK2
090-31 090-11	KK1	KK2	KK1	KK2
100-31 100-41	KK1	KK2	KK1	KK2
112-31 112-41	KK1	KK2	KK1	KK2
132-21	KK1	KK3	KK1	KK3

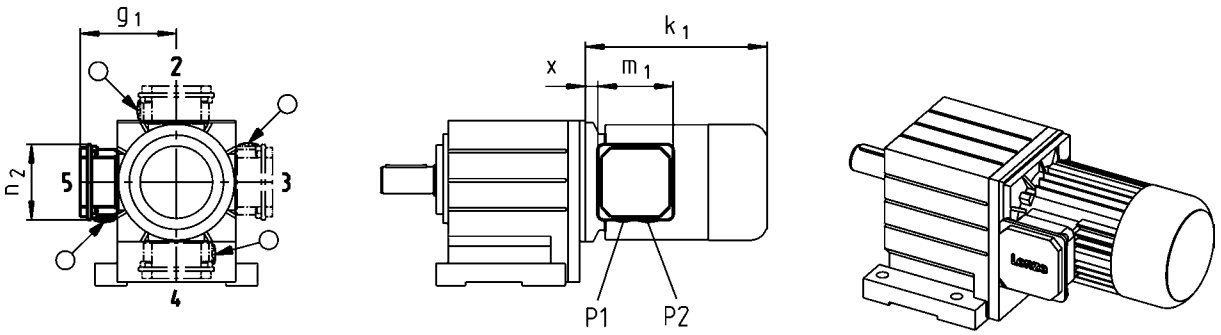
Motor type	MD□MABR	MD□MABZ	MD□MABL
Motor frame size			
	Terminal box		
063-11 063-31	KK2		
071-11 071-31	KK2	KK2	
080-11 080-31	KK2	KK2	KK2
090-31 090-11	KK2	KK2	KK2
100-31 100-41	KK2	KK2	KK2
112-31 112-41	KK2	KK2	KK2
132-21	KK3	KK3	KK3



Terminal box

Dimensions of KK1

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



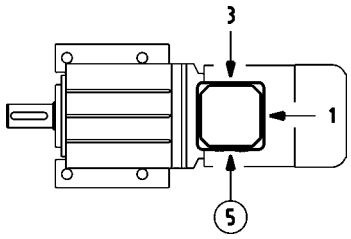
Size						
Motor						
	x	g_1	m_1	n_2	P_1	P_2
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
063	21 12 [1)]	100 117 [1)]	75.0 93.0 [1)]	75.0 93.0 [1)]	M16x1.5 M20x1.5 [1)]	M20x1.5 M20x1.5
071	24 15 [1)]	109 126 [1)]				
080	14	150	115	115	M20x1.5	M25x1.5
090	19	157				
100	20	166				
112	22	176				
132	33	195	122	122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

[1)] UL/CSA approval: cURus

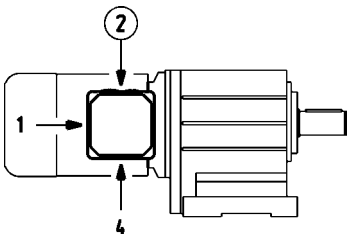
Terminal box

Cable entry position when using KK1

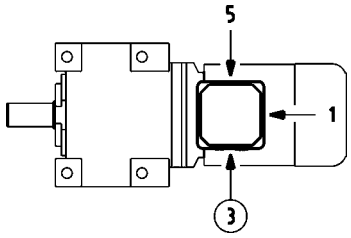
Terminal box in position 2



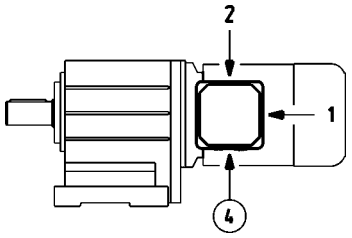
Terminal box in position 3



Terminal box in position 4

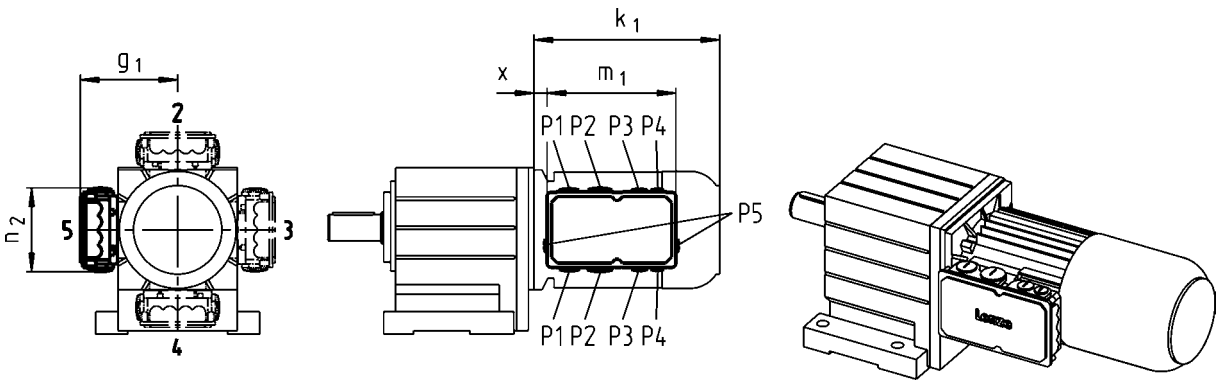


Terminal box in position 5

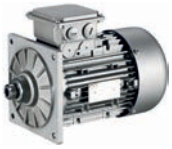


Terminal box

Dimensions of KK2

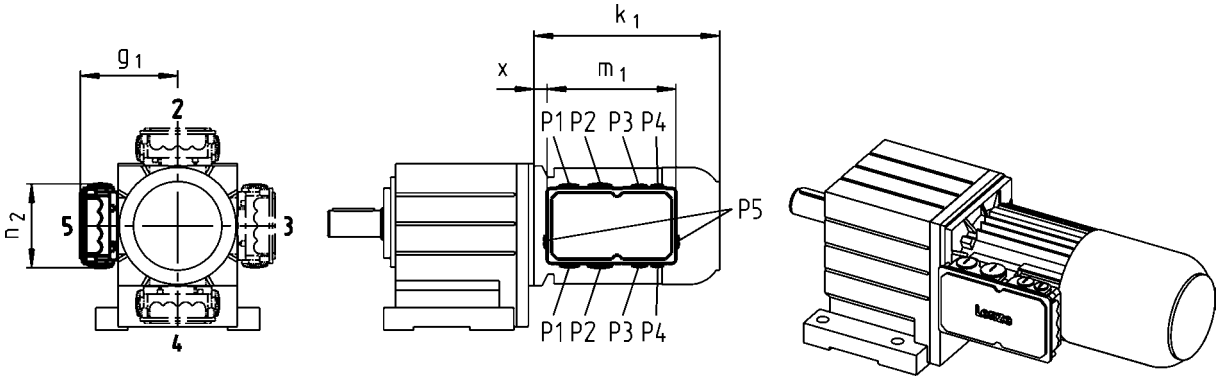


Size						
Motor						
	x	g_1	m_1	n_2	P_1	P_2
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
063	13	107	136	103	M16x1.5	M20x1.5
071	15	118				
080	17	132	152	121	M20x1.5	M25x1.5
090	22	137				
100	23	147				
112	25	158				



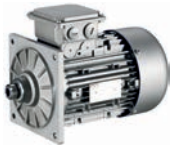
Terminal box

Dimensions of KK3



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

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

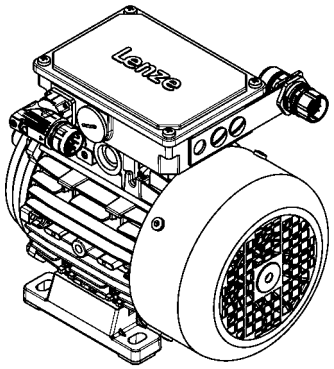


Plug connectors

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

ICN connector

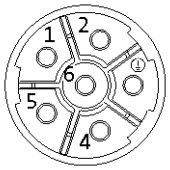
A connector is used for power, brake and temperature monitoring. The connections to the feedback system and the blower each employ a separate connector.



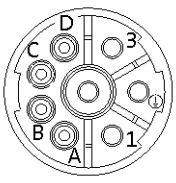
Connection for power, brake and temperature monitoring

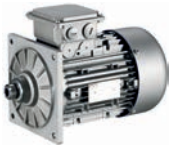
The connectors can be rotated through 270° and are fitted with a bayonet catch for SpeedTec connectors. As this connector is also compatible with conventional union nuts, existing mating connectors can continue to be used without difficulty. The motor connection is determined in the terminal box and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

► ICN 6-pole

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

► ICN 8-pole

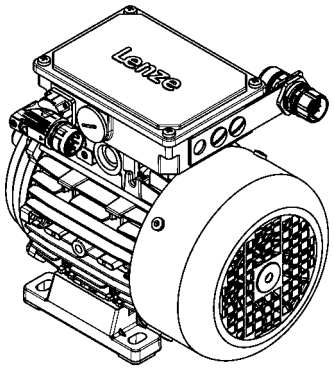
Pin assignment			
Contact	Designation	Meaning	
1	U	Phase U power	
PE	PE	PE conductor	
3	V	Phase V power	
4	W	Phase W power	
A	TB1 / TP1 / R1	Thermal sensor: TKO/PTC/ +KTY	
B	TB2 / TP2 / R2	Thermal sensor: TKO/PTC/-KTY	
C	BD1 / BA1	Brake +/AC	
D	BD2 / BA2	Brake /AC	



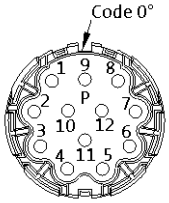
ICN connector

Feedback connection

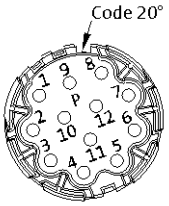
All encoder systems (apart from IG128-24V-H) are also available with an ICN connector fixed to the motor terminal box for exceptionally fast commissioning. The connectors are fitted with a bayonet fixing, which is also compatible with conventional union nuts. Existing mating connectors can therefore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



► Resolver

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

► Hiperface incremental encoder and SinCos absolute value encoder

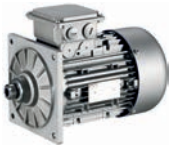
Pin assignment			
Contact	Designation	Meaning	
1	B	Track B/+SIN	
2	A^-	Track A inverse/-COS	
3	A	Track A/+COS	
4	$+U_B$	Supply +	
5	GND	Mass	
6	Z^-	Zero track inverse/-RS485	
7	Z	Zero track/+RS485	
8		Not assigned	
9	B^-	Track B inverse/-SIN	
10		Not assigned	
11	+KTY	KTY temperature sensor	
12	-KTY		

ICN connector

Motor terminal box with ICN connectors - built-on accessories assignment: 2-pole motors

Motor type	M□□MAXX	M□□MAZE	M□□MALL	M□□MALZ
Motor frame size				
	Terminal box with ICN connector			
063-11 063-31	KK1			
071-11 071-31	KK1	KK2	KK1	KK2
080-11 080-31	KK1	KK2	KK1	KK2
090-31 090-11	KK1	KK2	KK1	KK2
100-31 100-41	KK1	KK2	KK1	KK2
112-31 112-41	KK1	KK2	KK1	KK2
132-21	KK1	KK3	KK1	KK3

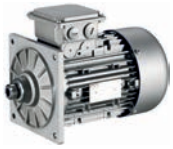
Motor type	M□□MABR	M□□MABZ	M□□MABL
Motor frame size			
	Terminal box with ICN connector		
063-11 063-31	KK2		
071-11 071-31	KK2	KK2	
080-11 080-31	KK2	KK2	KK2
090-31 090-11	KK2	KK2	KK2
100-31 100-41	KK2	KK2	KK2
112-31 112-41	KK2	KK2	KK2
132-21	KK3	KK3	KK3



ICN connector

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

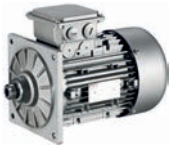
Motor type	M□□MAXX	M□□MARS M□□MAIG M□□MAAG	M□□MAZE M□□MAHA	M□□MALL	M□□MALZ M□□MALH
Motor frame size	Terminal box with ICN connector				
063-02 063-22	KK1	KK2			
063-12 063-32 063-42	KK1	KK2			
071-32 071-42 071-13 071-33	KK1	KK2	KK2	KK1	KK1
080-13 080-32 080-33 080-42	KK1	KK2	KK2	KK1	KK1
090-12 090-32	KK1	KK2	KK2	KK1	KK1
100-12 100-32	KK1	KK2	KK2	KK2	KK2
112-22 112-32	KK1	KK2	KK2	KK1	KK1
132-12 132-22 132-32	KK1	KK3	KK3	KK1	KK1



ICN connector

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

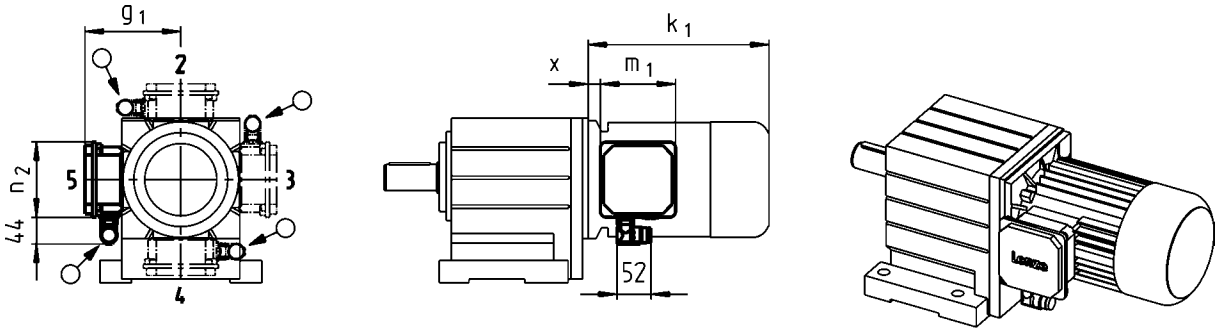
Motor type	M□□MABR	M□□MABS M□□MABI M□□MABA	M□□MABZ M□□MABH	M□□MABL
Motor frame size				
	Terminal box with ICN connector			
063-02 063-22	KK2	KK2		
063-12 063-32 063-42	KK2	KK2		
071-32 071-42 071-13 071-33	KK2	KK2	KK2	KK2
080-13 080-32 080-33 080-42	KK2	KK2	KK2	KK2
090-12 090-32	KK2	KK2	KK2	KK2
100-12 100-32	KK2	KK2	KK2	KK2
112-22 112-32	KK2	KK2	KK2	KK2
132-12 132-22 132-32	KK3	KK3	KK3	KK3



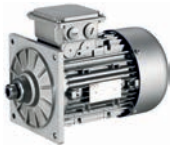
ICN connector

Dimensions of KK1

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



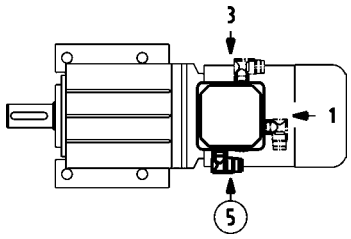
Size				
Motor				
	x	g_1	m_1	n_2
	[mm]	[mm]	[mm]	[mm]
063	12	117	93.0	93.0
071	15	126		
080	14	150	115	115
090	19	157		
100	20	166		
112	22	176		
132	33	195	122	122



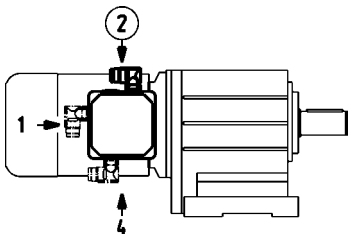
ICN connector

Connector position when using KK1

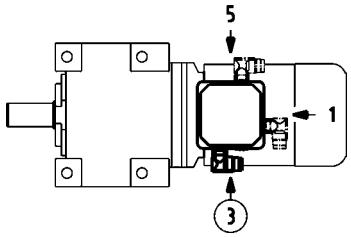
Terminal box in position 2



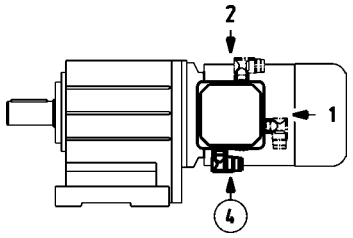
Terminal box in position 3

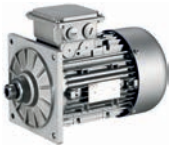


Terminal box in position 4



Terminal box in position 5

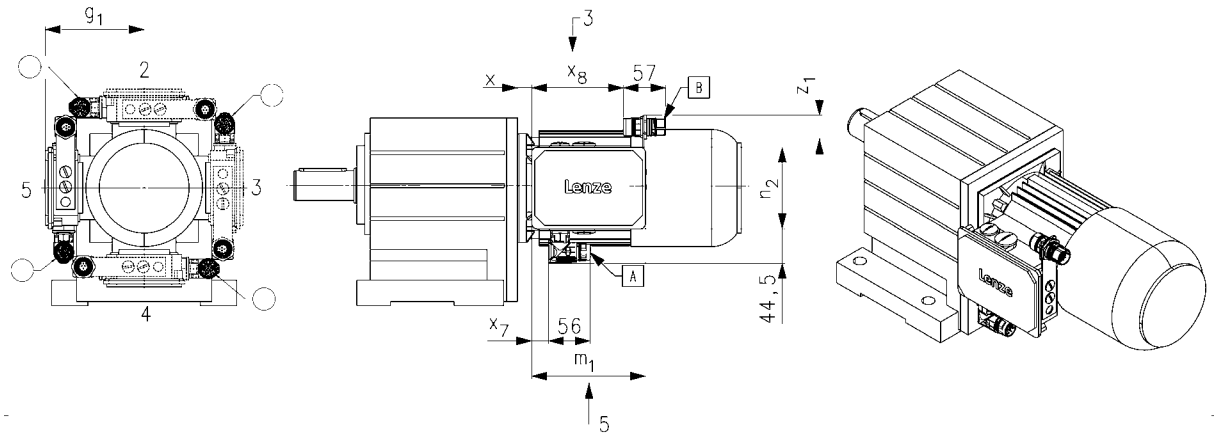




ICN connector

Dimensions of KK2/KK3

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

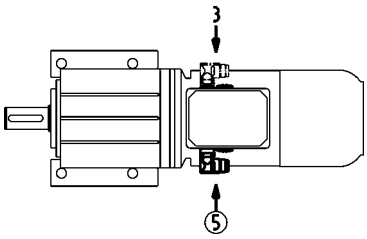


Size							
Motor							
	x	g_1	m_1	n_2	x_7	x_8	$z_{1, max}$
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
063	13	107	136	103	16	109	43
071	15	118					
080	17	132	152	121	23	125	41
090	22	137					
100	23	147					
112	25	158					
132	38	187	195	125	27	166	71

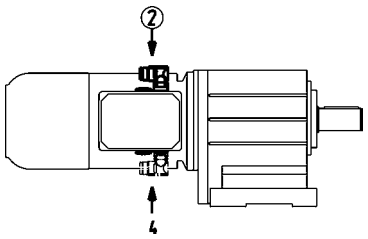
ICN connector

Connector position when using KK2/KK3

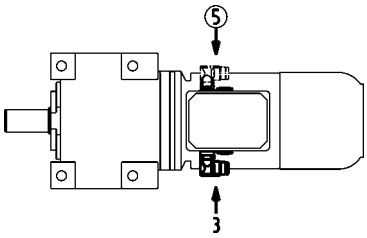
Terminal box in position 2



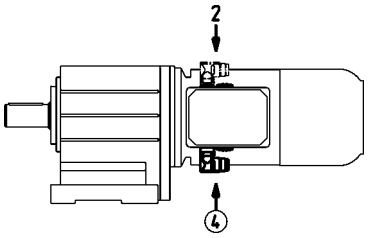
Terminal box in position 3

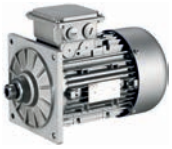


Terminal box in position 4



Terminal box in position 5

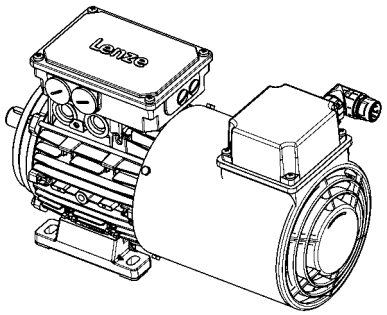




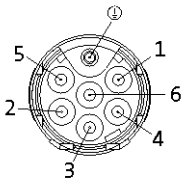
ICN connector

Blower connection

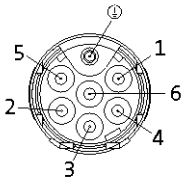
The blower is also optionally available with an ICN connector fixed to the terminal box of the blower for exceptionally fast commissioning. The connectors are fitted with a bayonet fixing, which is also compatible with conventional union nuts. Existing counter plugs can therefore continue to be used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



► Blower 1-ph

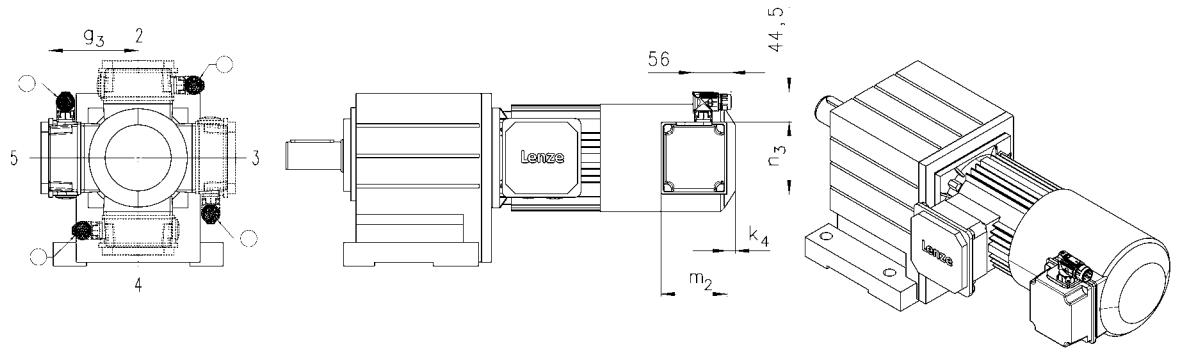
Pin assignment			
Contact	Designation	Meaning	
PE	PE	PE conductor	
1	U1	Fan	
2	U2		
3		Not assigned	
4			
5			
6			

► Blower 3-ph

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

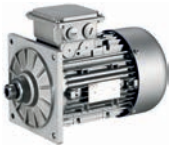
ICN connector

Dimensions of blower



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

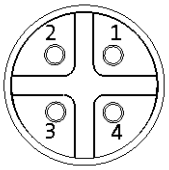
► In addition, the cover of the blower terminal box (including connectors) can be rotated progressively through 90° if necessary.

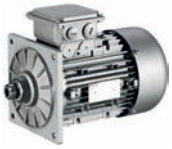


M12 connector

IG128-24V-H incremental encoder connection

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

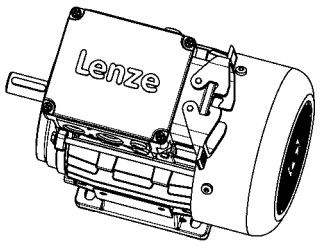
Pin assignment			
Contact	Designation	Meaning	
1	$+U_B$	Supply +	
2	B	Track B	
3	GND	Mass	
4	A	Track A	



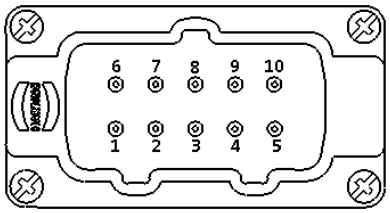
HAN connector

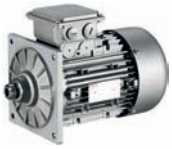
10E

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



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

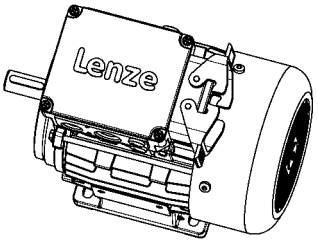




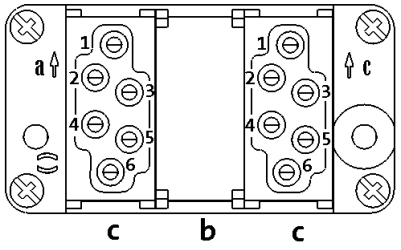
HAN connector

Modular

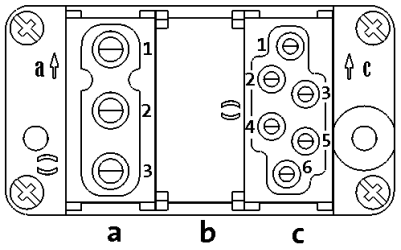
The connector is available with two different power modules (16 A or 40 A), depending on the rated motor current. The motor connection is determined in the terminal box and must be checked before commissioning.



► HAN modular 16 A

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

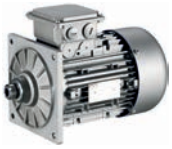
► HAN modular 40 A

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

HAN connector

Motor terminal box with HAN connectors - built-on accessories assignment: 2-pole motors

Motor type	M□□MAXX M□□MABR	M□□MAZE M□□MABZ	M□□MALL M□□MABL	M□□MALZ
Motor frame size				
	Terminal box with HAN connector			
063-11 063-31	HAN-10E HAN modular			
071-11 071-31	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular
080-11 080-31	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular
090-31 090-11	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular
100-31 100-41	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular
112-31 112-41	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular
132-21	HAN modular	HAN modular	HAN modular	HAN modular



HAN connector

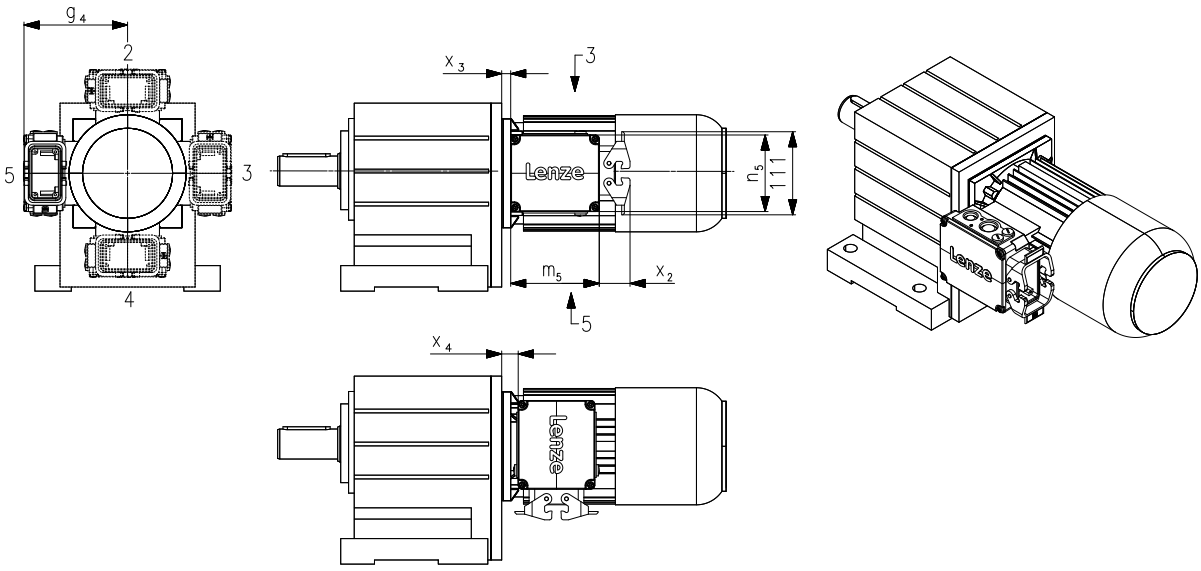
Motor terminal box with HAN connectors - built-on accessories assignment: 4-pole / 6-pole motors

Motor type	M□□MAXX M□□MABR	M□□MAZE M□□MAHA M□□MABZ M□□MABH	M□□MALL M□□MABL	M□□MALZ M□□MALH
Motor frame size				
	Terminal box with HAN connector			
063-02 063-22	HAN-10E HAN modular			
063-12 063-32 063-42	HAN-10E HAN modular			
071-32 071-42 071-13 071-33	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular
080-13 080-32 080-33 080-42	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular
090-12 090-32	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular
100-12 100-32	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular
112-22 112-32	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular	HAN-10E HAN modular
132-12 132-22 132-32	HAN modular	HAN modular	HAN modular	HAN modular
160-22 160-32	HAN modular			

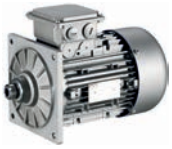
HAN connector

Dimensions

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

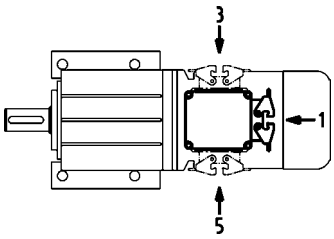
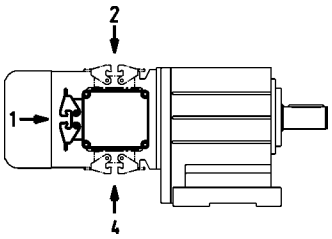


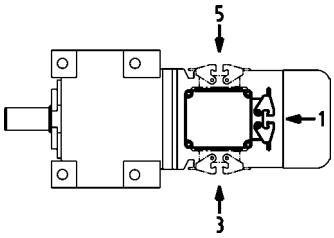
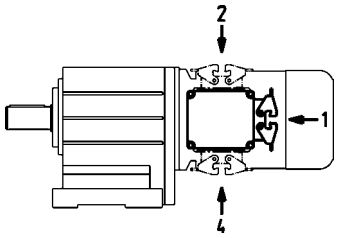
Size			
Motor			
	g_4	x_3	x_4
	[mm]	[mm]	[mm]
063	120	5.00	6.00
071	129	7.00	8.00
080	138	11.0	19.0
090	143	15.0	23.0
100	154	16.0	24.0
112	164	13.5	21.5
132	233	34.5	4.50
160	248	39.0	9.00

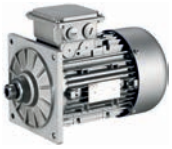


HAN connector

Position of connector

Connector in position 2	Connector in position 3
	

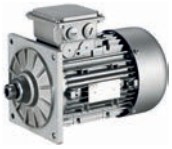
Connector in position 4	Connector in position 5
	



Handwheel

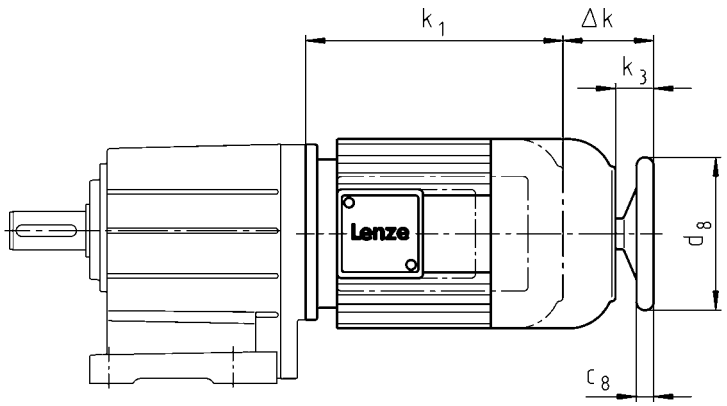
Design	Handwheel made from alloy, smooth wheel surface
Function	Manual operation: • Emergency operation • Setting-up operation for machines/systems
Note	The increased moment of inertia must be taken into account during project planning! For frequent switching operations, in particular if the direction of rotation changes: Please contact Lenze.

Size	Moment of inertia	Mass
Motor	Additional	Additional
	J	m
	[kgcm²]	[kg]
071	16.0	0.60
080	16.0	0.60
090	16.0	0.60
100	16.0	0.60
112	16.0	0.60
132	139	1.80



Handwheel

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



Motor type	
Built-on accessories	M□□MAHA M□□MABH M□□MALH

Motor frame size				
	Δk	k_3	c_8	d_8
	[mm]	[mm]	[mm]	[mm]
071-32 071-42 071-13 071-33	70	34.0	18.0	160
080-32 080-42 080-13 080-33	91	34.0	18.0	160
090-12 090-32	80	32.0	18.0	160
100-12 100-32	94	42.0	18.0	160
112-22 112-32	107	39.0	18.0	160
132-12 132-22 132-32	126	50.0	26.0	250

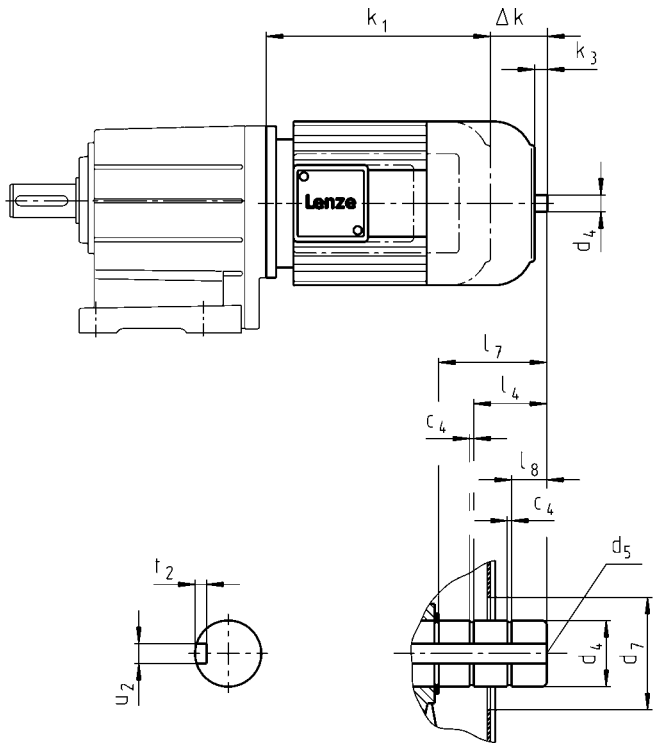
Centrifugal mass

Note	The increased moment of inertia must be taken into account during project planning! For frequent switching operations, in particular if the direction of rotation changes: Please contact Lenze.
Function	Increased motor centrifugal mass for smooth starting/braking
Design	Integral fan made from cast iron

	Moment of inertia	**Mass**
Motor frame size	Additional	Additional
	J	m
	[kgcm²]	[kg]
071	18.0	1.20
080	29.0	1.40
090-□1	83.0	2.80
090-□2	55.0	2.00
100	77.0	2.50
112	153	3.80
132	356	6.00

2nd shaft end

Dimensions, self-ventilated (2-pole)



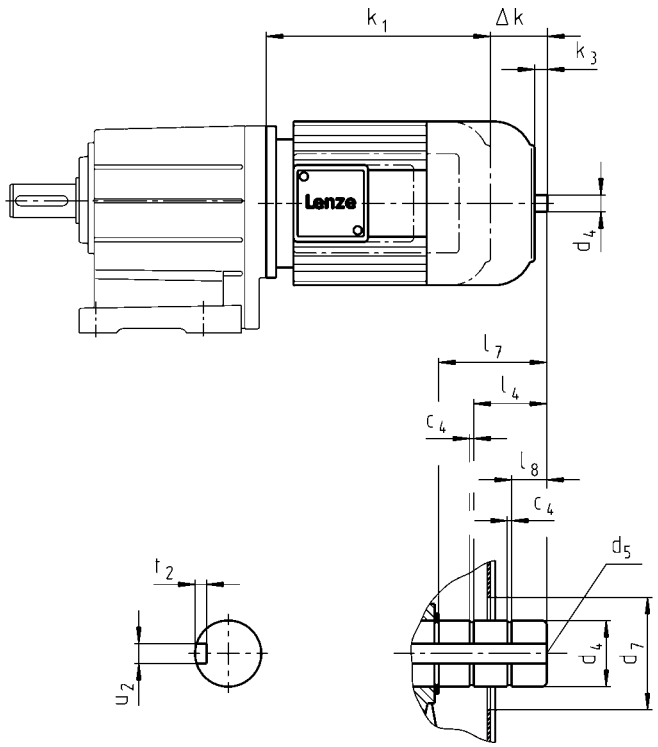
Motor type	
Built-on accessories	M□□MAZE M□□MABZ M□□MALZ

Motor frame size												
	Δ k	k_3	c_4	d_4	d_4	d_5	d_7 [1]	l_4	l_7	l_8	u_2	t_2
				h6	j6							
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
071-11 071-31	47	11.0	1.10	14.0		M5	34.0		19.0	3.00	5.00	3.00
080-11 080-31	68	9.00	1.30	19.0		M6	34.0		19.0	4.50	6.00	3.20
090-11 090-31	57	9.00	1.30		20.0	M6	34.0		19.5	5.50	6.00	3.50
100-31 100-41	71	18.5	1.30		25.0	M10	34.0	17.0	32.5	10.5	8.00	4.00
112-31 112-41	84	16.0	1.30		25.0	M10	34.0	17.0	28.5	7.00	8.00	4.00
132-21	101	24.5	1.60		30.0	M10	48.0	24.5	42.0	8.50	8.00	4.00

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

2nd shaft end

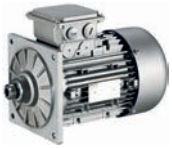
Dimensions, self-ventilated (4/6-pole)



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

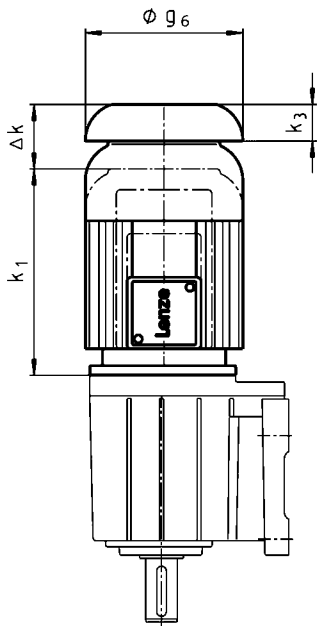
Motor frame size												
	Δk	k_3	c_4	d_4	d_4	d_5	d_7 [1]	l_4	l_7	l_8	u_2	t_2
				h6	j6							
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
071-32 071-42 071-13 071-33	47	11.0	1.10	14.0		M5	34.0		19.0	3.00	5.00	3.00
080-32 080-42 080-13 080-33	68	9.00	1.10	14.0		M5	34.0		19.0	4.50	5.00	3.00
090-12 090-32	57	9.00	1.10	14.0		M5	34.0		19.0	5.00	5.00	3.00
100-12 100-32	71	18.5	1.30		20.0	M6	34.0	17.0	32.5	10.5	6.00	3.50
112-22 112-32	84	16.0	1.30		20.0	M6	34.0	17.0	28.5	7.00	6.00	3.50
132-12 132-22 132-32	101	24.5	1.60		30.0	M10	46.0	24.5	42.0	8.50	8.00	4.00

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



Protection cover

Dimensions, self-ventilated (2-pole)

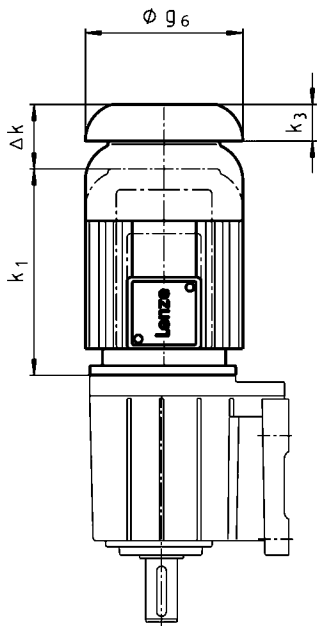


	Motor type					
	M□□MAXX	M□□MABR	M□□MABL	M□□MALL		

Motor frame size						
	Δ k	Δ k	Δ k	Δ k	k_3	g_6
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
063-11 063-31	26	66			11.0	123
071-11 071-31	26	78	78	26	12.0	138
080-11 080-31	26	99	99	30	16.0	156
090-11 090-31	26	94	94	26	15.0	176
100-31 100-41	31	107	107	107	17.0	194
112-31 112-41	31	121	121	31	18.0	218
132-21	31	141	141	31	20.0	257

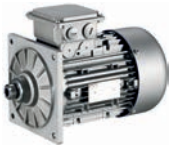
Protection cover

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



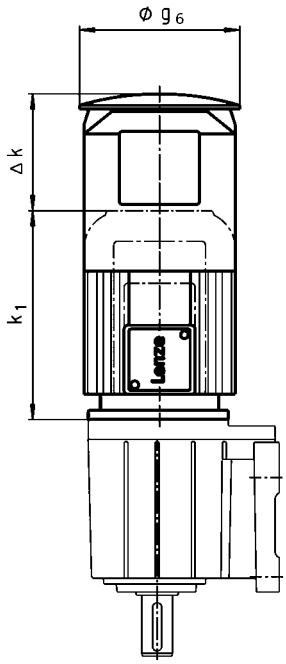
	Motor type							
	M□□MAXX	M□□MABR	M□□MABS M□□MABI M□□MABA	M□□MABL	M□□MARS M□□MAIG M□□MAAG	M□□MALL		

Motor frame size								
	Δ k	Δ k	Δ k	Δ k	Δ k	Δ k	k_3	g_6
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
063-02 063-22		97	160		97		11.0	123
063-12 063-32 063-42	26	66	129		82		11.0	123
071-32 071-42 071-13 071-33	26	78	122	78	78	26	12.0	138
080-32 080-42 080-13 080-33	26	99	137	99	127	30	16.0	156
090-12 090-32	26	94	131	94	113	26	15.0	176
100-12 100-32	31	107	132	107	112	107	17.0	194
112-22 112-32	31	121	151	121	111	31	18.0	218
132-12 132-22 132-32	31	141	156	141	134	31	20.0	257
160-22 160-32	37	142	228		120		25.0	310



Protection cover

Dimensions, forced ventilated (2-pole)

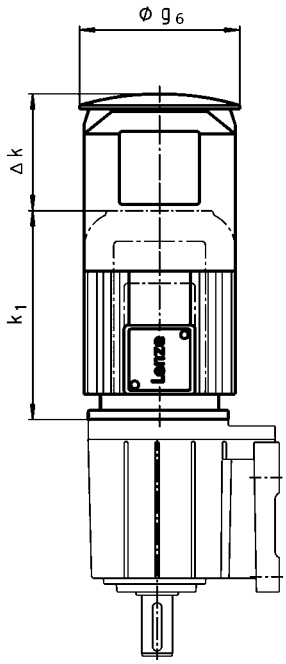


	Motor type		
	M□□MAXX	M□□MABR	

Motor frame size			
	Δ k	Δ k	g_6
	[mm]	[mm]	[mm]
063-11 063-31	169	209	133
071-11 071-31	165	202	150
080-11 080-31	168	224	170
090-11 090-31	157		
100-31 100-41	137	198	210
112-31 112-41	135	216	249
132-21	140	226	300

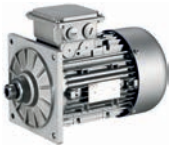
Protection cover

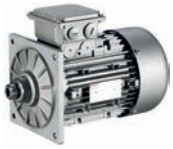
Dimensions, forced ventilated (4/6-pole)

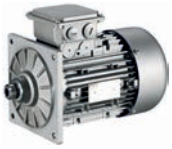


	Motor type			
	M□□MAXX	M□□MABR M□□MABS M□□MABI M□□MABA	M□□MARS M□□MAIG M□□MAAG	

Motor frame size				
	Δ k	Δ k	Δ k	g_6
	[mm]	[mm]	[mm]	[mm]
063-12 063-32 063-42	169	209	209	133
071-32 071-42 071-13 071-33	165	202	202	150
080-32 080-42 080-13 080-33	168	224	224	170
090-12 090-32	157	210	210	188
100-12 100-32	137	198	198	210
112-22 112-32	135	216	216	249
132-12 132-22 132-32	140	226	226	300
160-22 160-32	155	267	267	338







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