

Automation systems Drive solutions

Controls
Inverters

Motors

Gearboxes

Engineering Tools

Motors: MCA asynchronous servo motors

Gearboxes: g500-H helical gearbox

Contents of the L-force catalogue

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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.

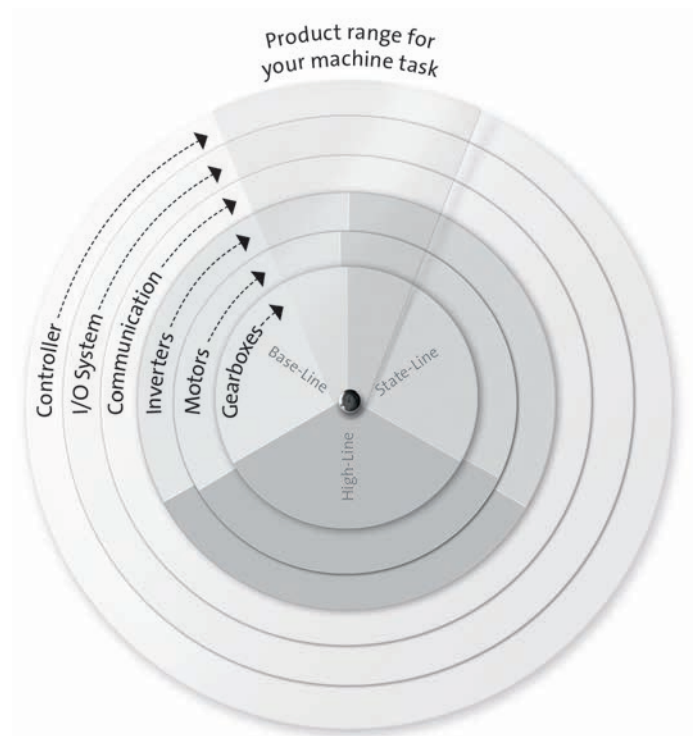
Lenze's extensive L-force product portfolio follows a very simple principle. The functions of our finely scaled products are assigned to the three lines Base-Line, State-Line or High-Line.

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:

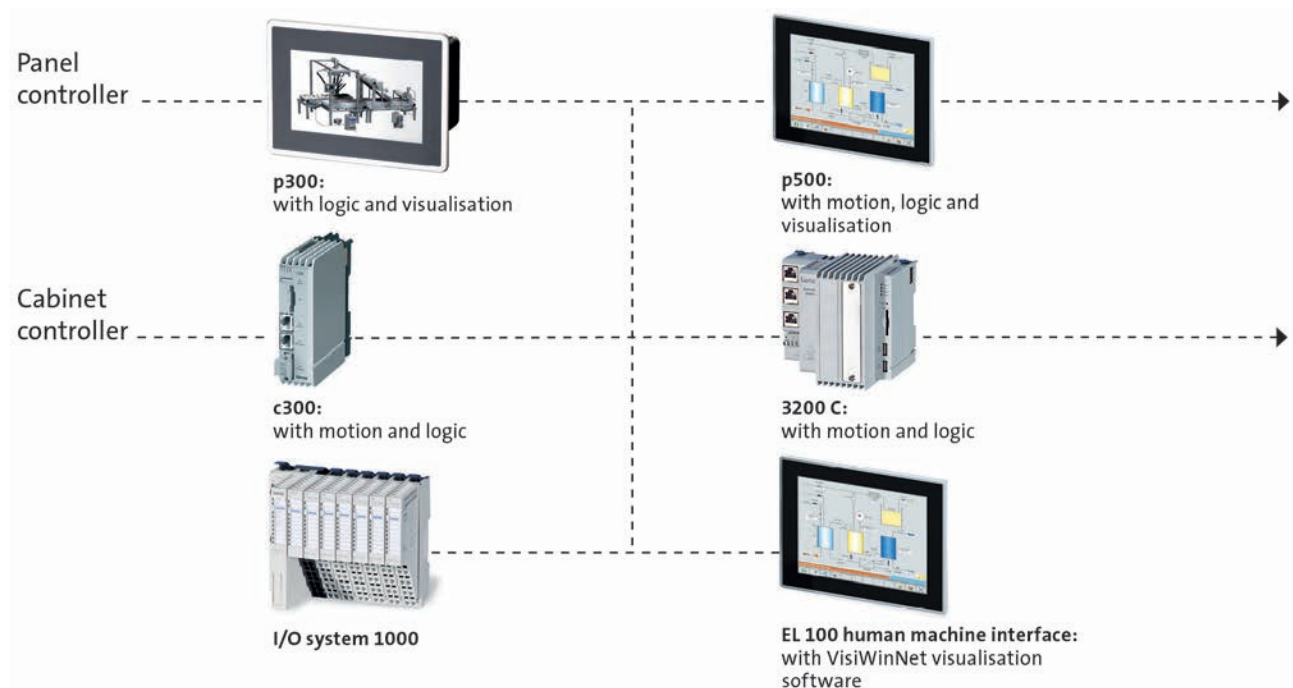
- Easy handling
- High quality and durability
- Reliable technologies in tune with the latest developments

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!

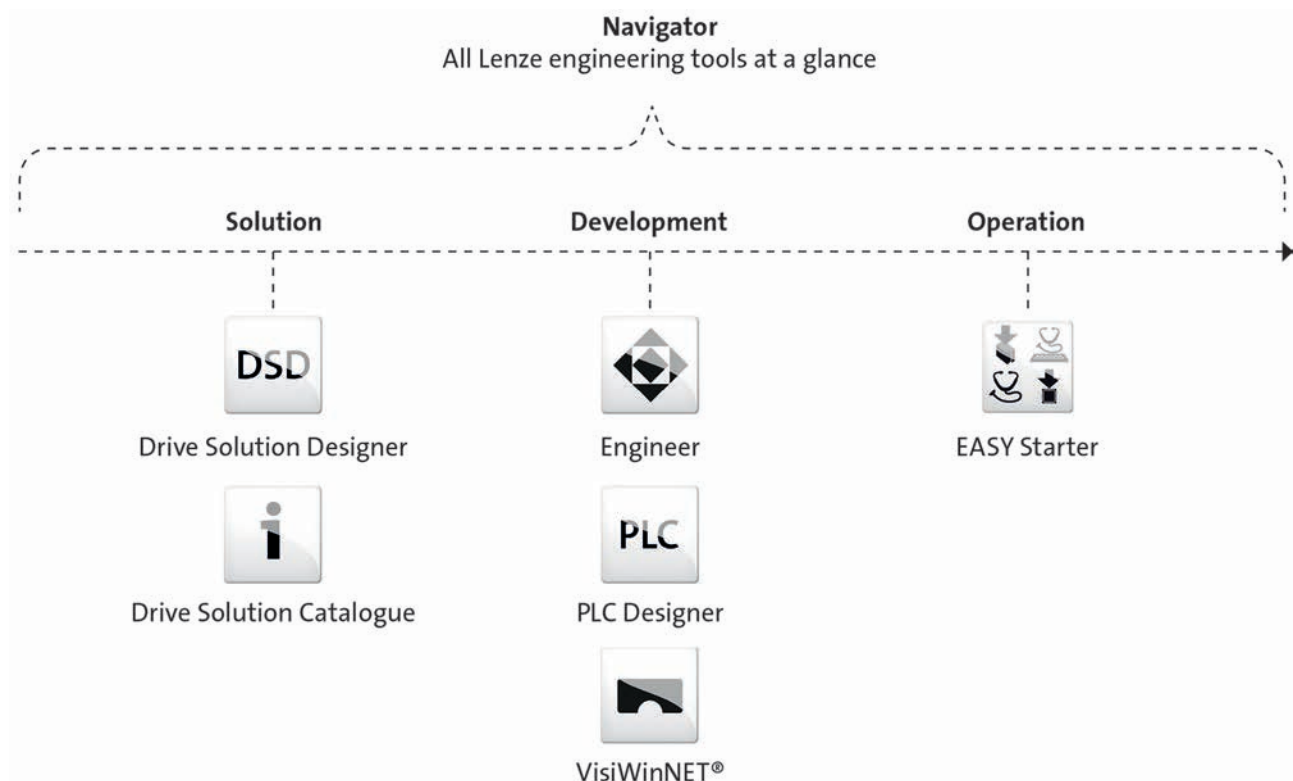


L-force product portfolio

Controls

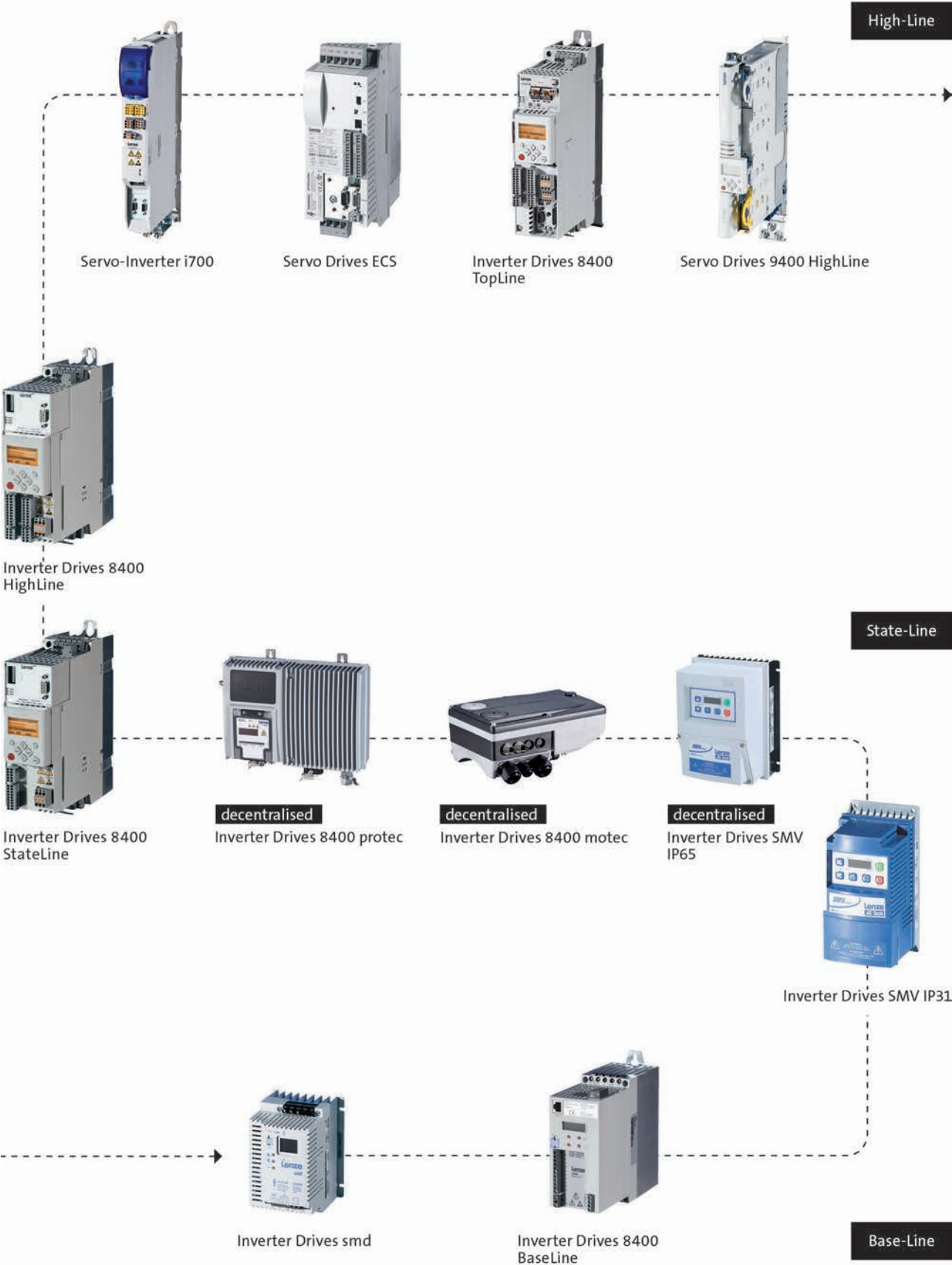


Engineering Tools



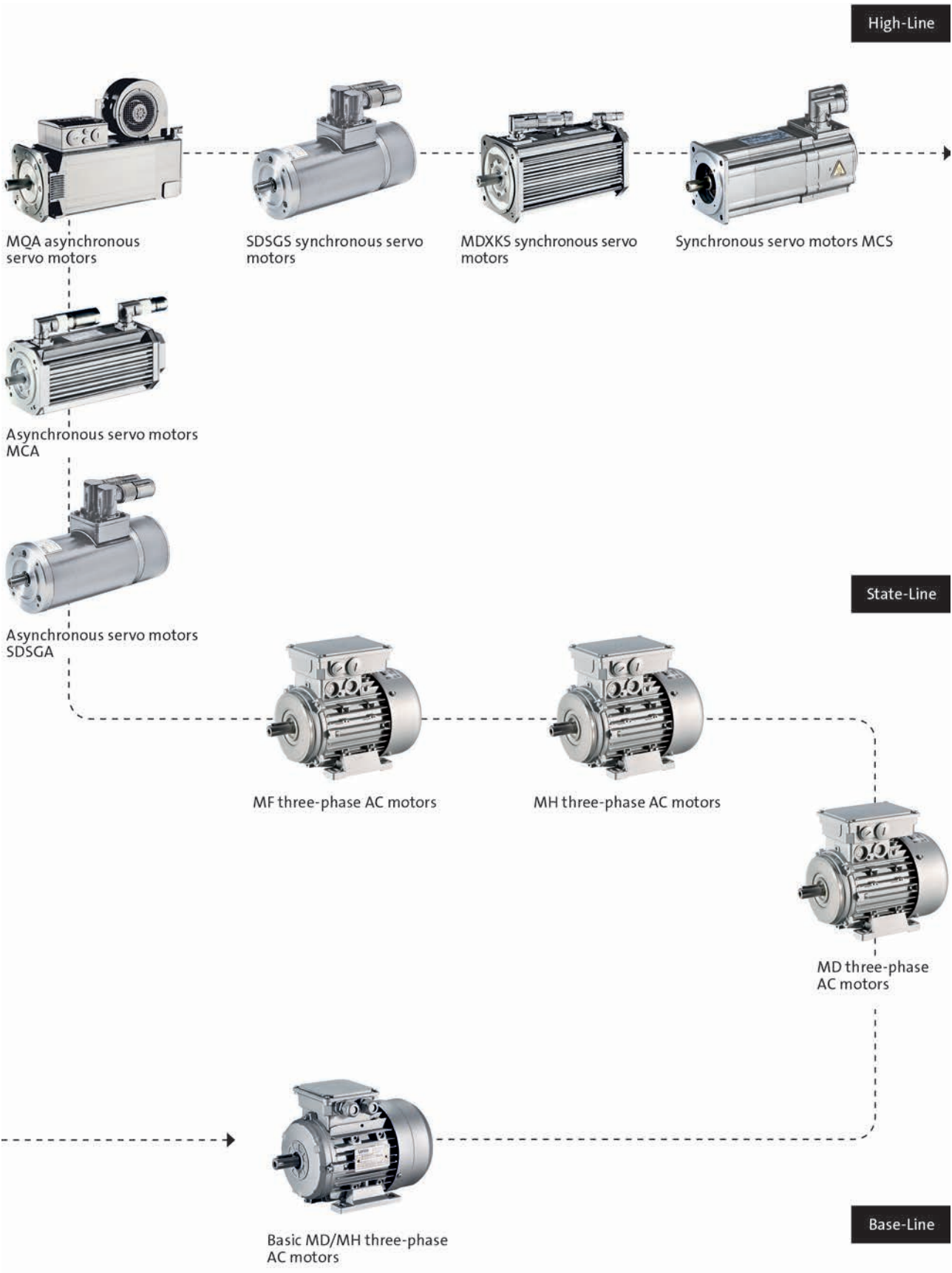
L-force product portfolio

Inverters



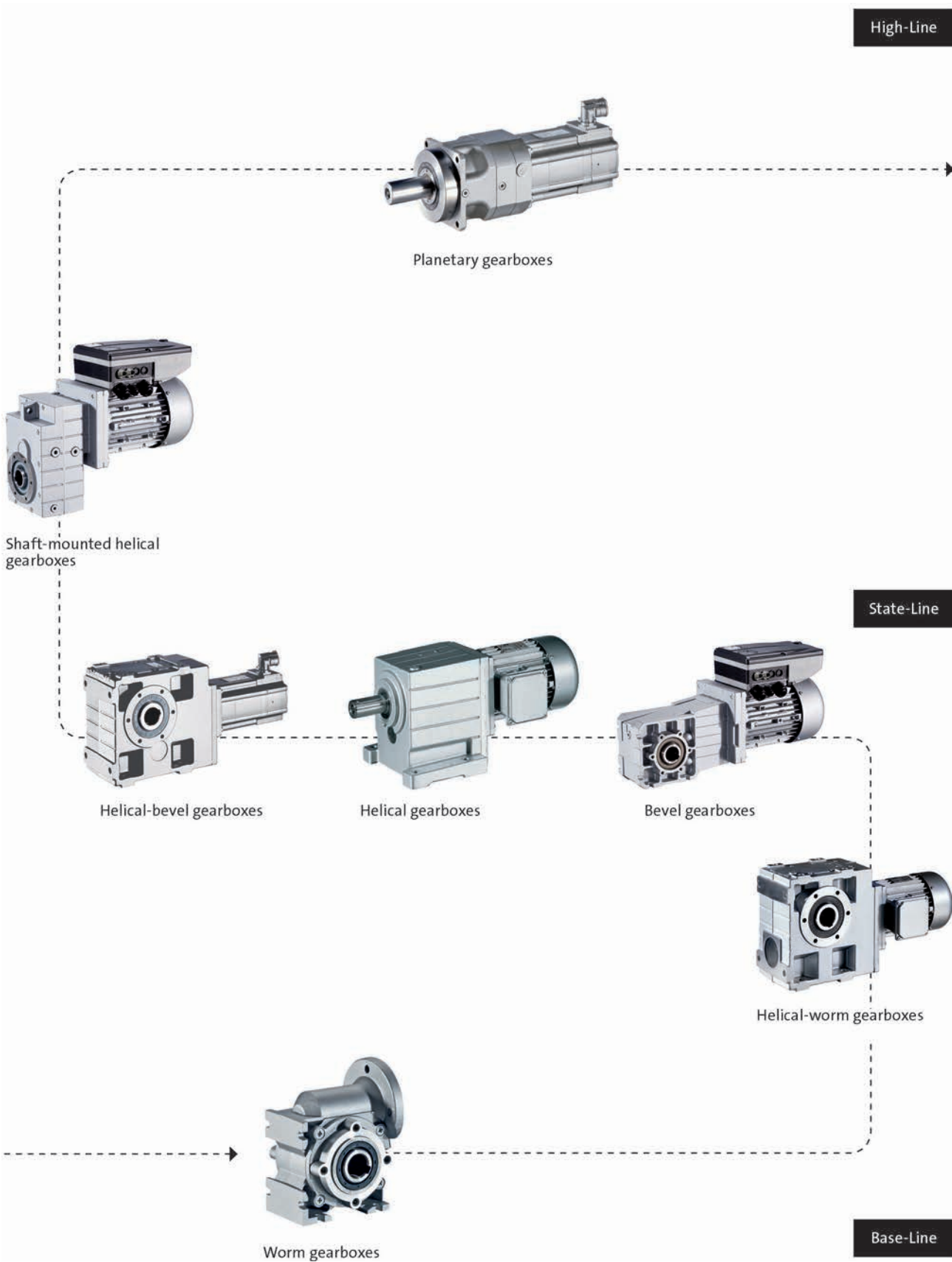
L-force product portfolio

Motors



L-force product portfolio

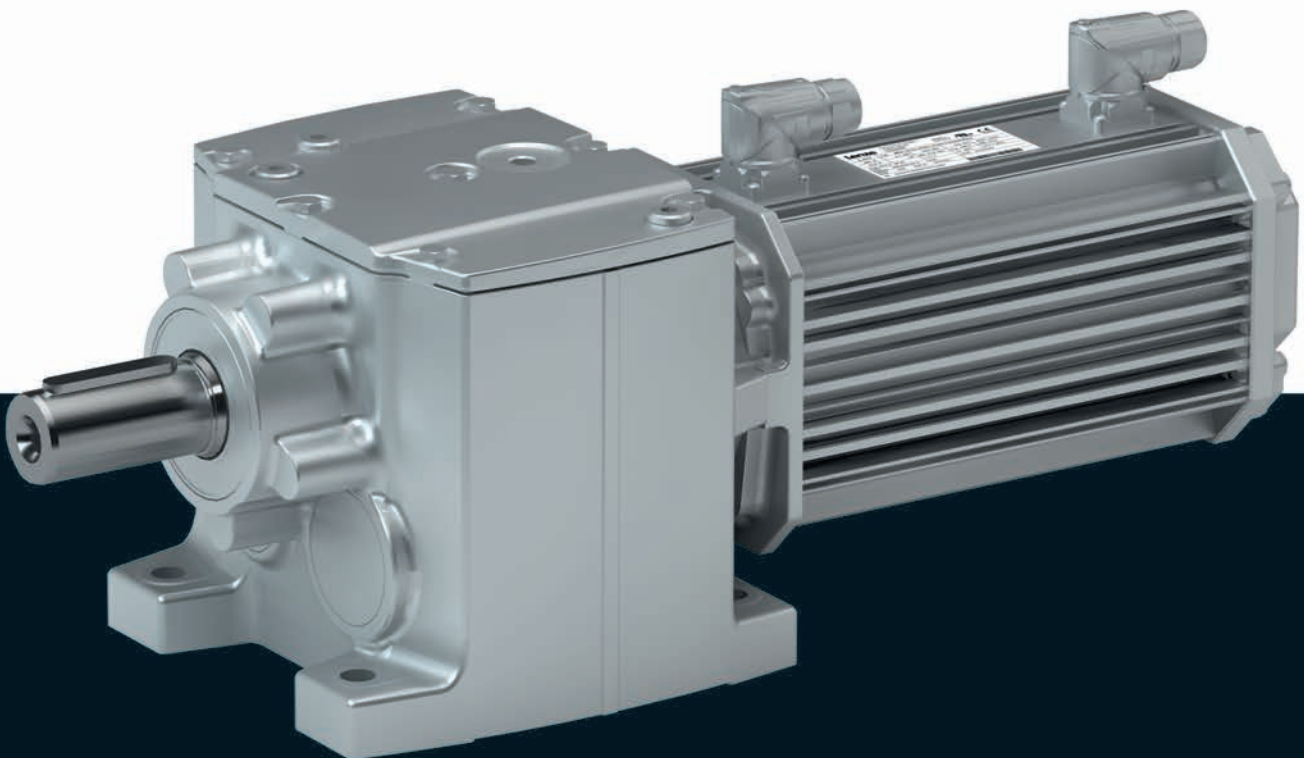
Gearboxes



Gearboxes

g500-H helical geared motors

11 ... 370 Nm (asynchronous servo motors)



g500-H helical geared motors

Contents



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g500-H helical geared motors

Contents



g500-H helical geared motors

General information



List of abbreviations

c		Load capacity
i		Ratio
J	[kgcm ²]	Moment of inertia
m	[kg]	Mass
M ₂	[Nm]	Output torque
M _{2, max}	[Nm]	Max. output torque
n _{2, eto}	[r/min]	Transition speed
n _{2, th}	[r/min]	Thermal limit 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)

g500-H helical geared motors

General information



Product information

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

The robust helical gearboxes feature high permissible radial forces, closely stepped ratios and a low backlash. They are available in 2-pole and 3-pole design with a torque up to 450 Nm and a ratio of up to $i = 370$.

Versions

- Fine-scaling of size / torque provides for an optimum machine adaptation
- Standardised shaft and flange dimensions for an easy machine integration
- High efficiency
- With MCA asynchronous servo motors, rated torque: 2 Nm ... 61.4 Nm

The product name

Gearbox type	Product range		Design	Rated torque [Nm]	Product
Helical gearbox	g500	-	H	45	g500-H45
				100	g500-H100
				140	g500-H140
				210	g500-H210
				320	g500-H320
				450	g500-H450

g500-H helical geared motors

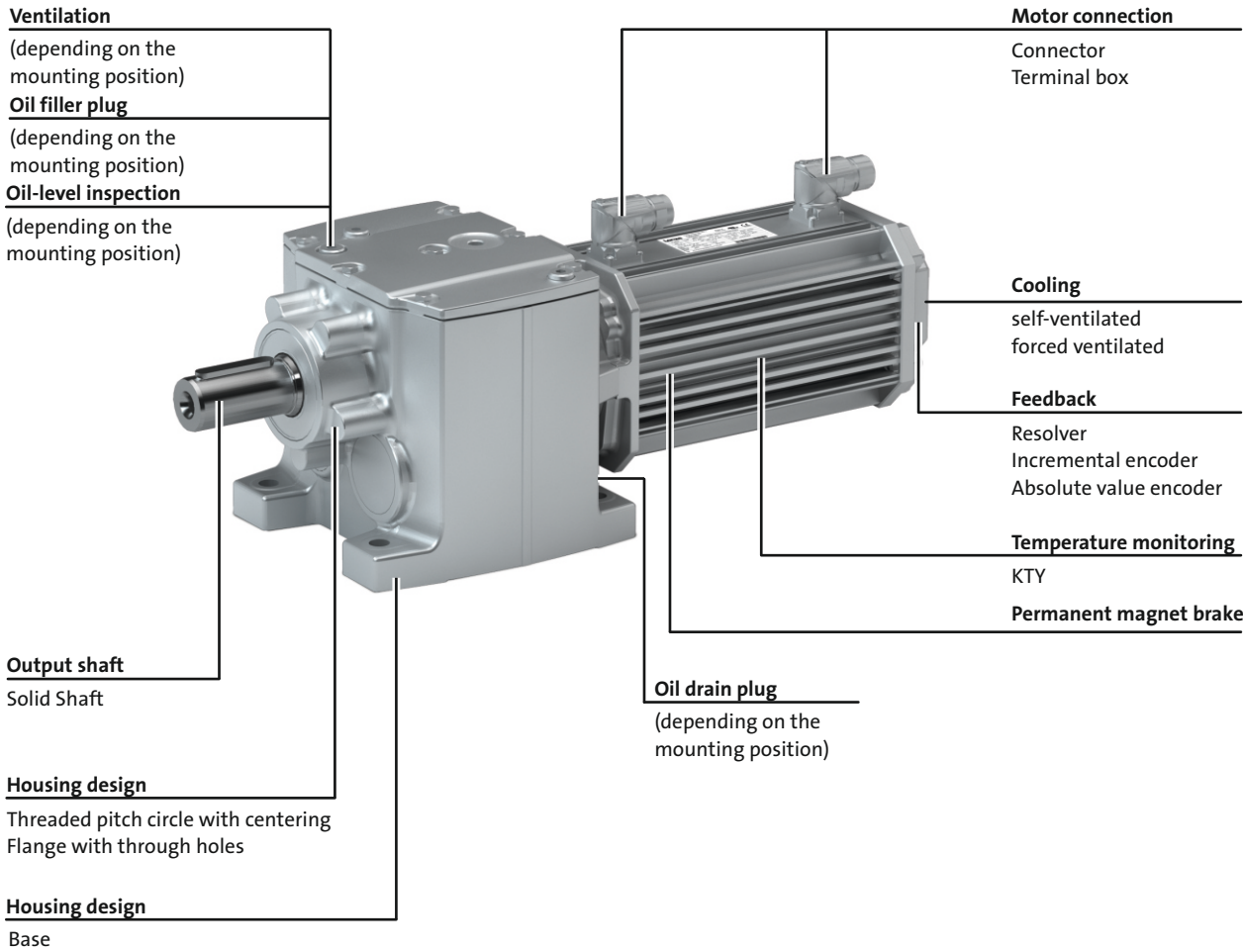
General information



Equipment

Overview

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



g500-H helical geared motors

General information



The gearbox kit

Geared motor

Product	g500-H100	g500-H140	g500-H210	g500-H320	g500-H450
Motor type	Asynchronous servo motor				
Servo motor					
2.0 Nm	MCA10				
4.0 - 6.3 Nm	MCA13				
5.4 - 12 Nm	MCA14				
9.5 - 21 Nm	MCA17				
Technical data					
Output torque	See selection table				
Output speed	See selection table				
Ratio	See selection table				
Load capacity	See selection table				
Moment of inertia	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)				

g500-H helical geared motors

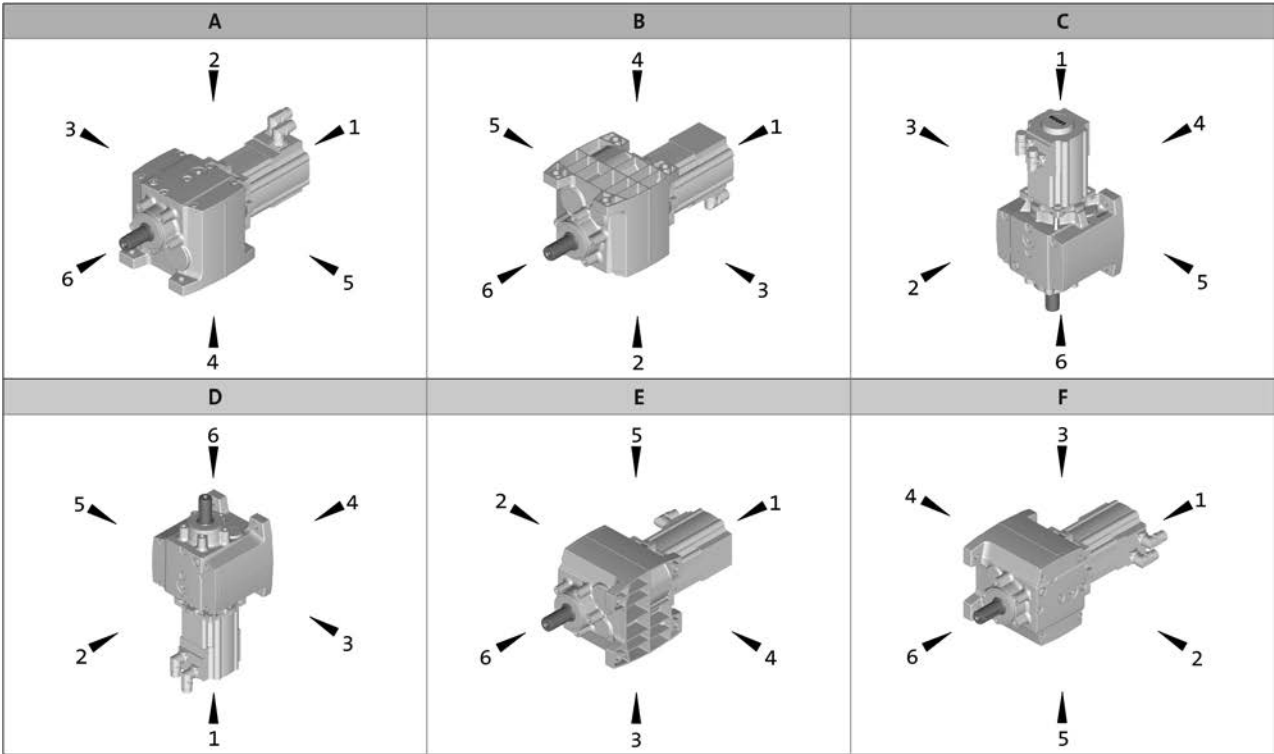
General information



The gearbox kit

Mounting positions

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



Connector / terminal box: 2, 3, 4, 5

g500-H helical geared motors

General information



The gearbox kit

Motor details

Product						
	MCA					
	10I40	13I34 13I41	14L16 14L20 14L35 14L41	17N17 17N23 17N35 17N41	19S17 19S23 19S35 19S42	21X17 21X25 21X35 21X42
Connection type	Plug connectors Terminal box					
Permanent magnet holding brake						
Rated torque [Nm]	3.3	12	15	24	46	88
Brake voltage [V]	DC 24 AC 230					
Feedback	With absolute value encoder With incremental encoder With resolver					
Cooling	Self-ventilated Forced-ventilated					
	Self-ventilated					
Temperature monitoring	KTY83-110 thermal detector					
Approval	cURus GOST_R UkrSepro					
Degree of protection	IP54 IP65					

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

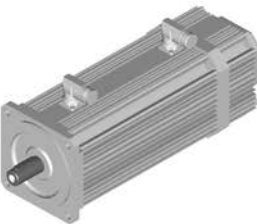
g500-H helical geared motors

General information



The gearbox kit

Motor details

Connection type		
		
Plug connectors	Terminal box	
Cooling: self-ventilated		
		
With resolver	With permanent magnet brake	With feedback With feedback and permanent magnet brake
Cooling: forced ventilated		
		
With resolver	With permanent magnet brake	With feedback With feedback and permanent magnet brake

g500-H helical geared motors

General information



The gearbox kit

Gearbox details

Product						
	g500-H45	g500-H100	g500-H140	g500-H210	g500-H320	g500-H450
Driven shaft						
Solid shaft without keyway [mm]		20x40	25x50		30x60	35x70
Solid shaft with featherkey [mm]	14x28 20x40	20x40	25x50		30x60	30x60 35x70
Design	Standard stainless steel					
Gasket	Standard FPM (Viton)					
Bearing	Standard	Standard Reinforced				
Fitting grease	Not enclosed Enclosed					
Housing						
Housing version	With foot Without foot with centering	With foot With foot and centering Without foot with centering				
Output flange						
flange diameter [mm]	120/140/160			120/140/160/200	160/200	160/200/250
Lubricant						
Type	CLP 460 ¹⁾ 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					

¹⁾ Not suitable for geared servo motors.

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

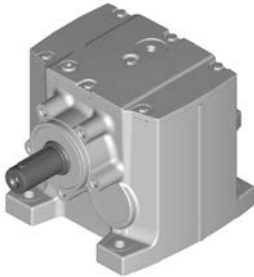
g500-H helical geared motors

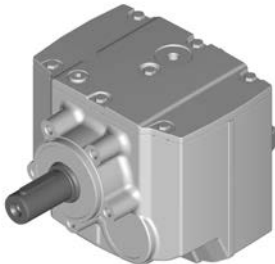
General information



The gearbox kit

Gearbox details

Solid shaft		
		
Foot mounting	Foot mounting With centering	Foot mounting Flange with through holes

Solid shaft	
	
With centering	Flange with through holes

g500-H helical geared motors

General information



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
- $T_{amb} = 20\text{ °C}$ for gearboxes,
 $T_{amb} = 40\text{ °C}$ for motors (in accordance with EN 60034)
- Site altitude $< = 1000\text{ m amsl}$
- 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.

g500-H helical geared motors

General information



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
MCA10 ... 14	4000 r/min	3000 r/min
MCA17	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

- 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

g500-H helical geared motors

General information



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.

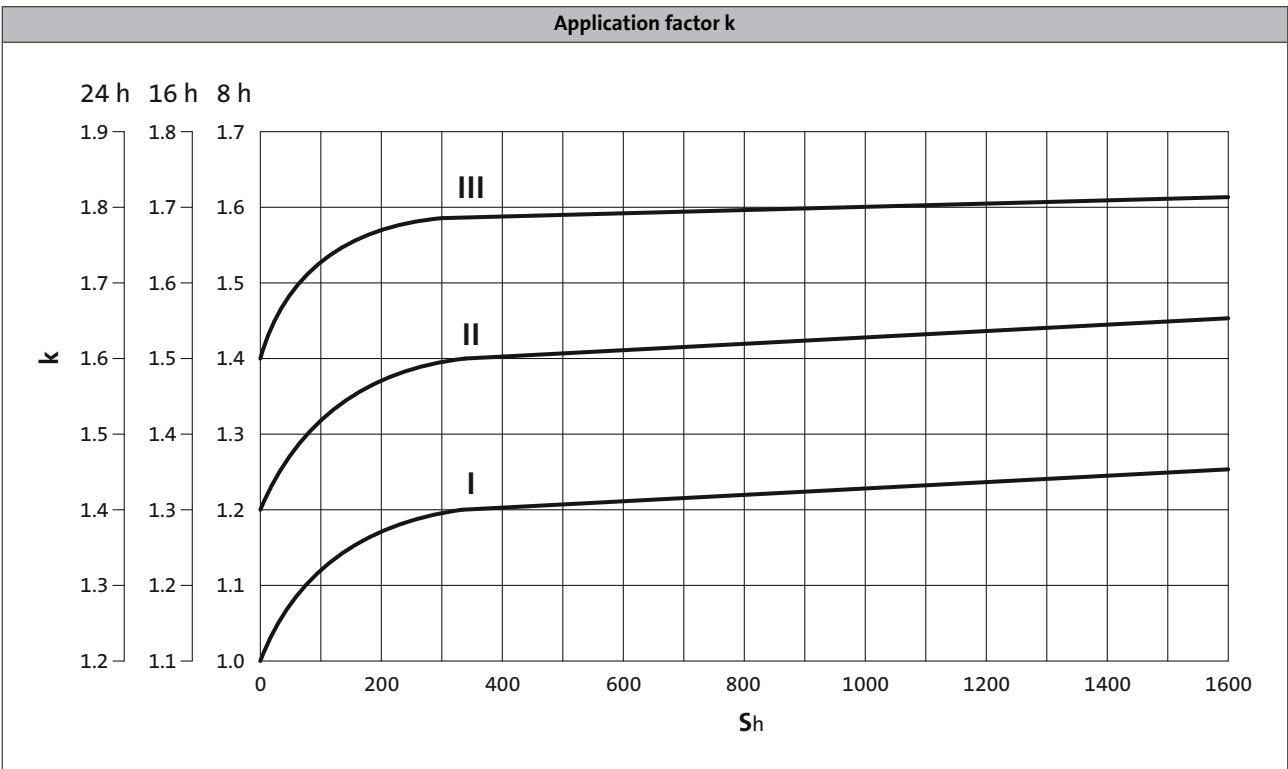
Application factor k (according to DIN 3990)

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



► S_h = switchings/h

g500-H helical geared motors

General information



Dimensioning

Weights

The values given in the tables consider the following gearbox/motor combination:

- Gearbox with solid shaft including lubricant amount
- Motor with feedback

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

The respective values can be found for:

- Geared motors with feedback
 - > Chapter: Geared motors/Technical data
- Motor options: Brake
 - > 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 geared motors and the brake have to be added.

The respective values can be found for:

- Geared motors with feedback
 - > Chapter: Geared motors/Technical data/Selection tables
- Motor options: Brake
 - > Chapter: Motors/Accessories

g500-H helical geared motors

General information





Selection tables, notes

Notes on the selection tables

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

The following legend indicates the structure of the selection tables.

Number of the gear stage of the gearbox



2-stage gearboxes

Inverter operation						i	Product		Cooling	
M _{2, max} [Nm]	n _{2, th} [r/min]	M ₂ [Nm]	n _{2, eto} [r/min]	c	J [kgcm ²]		g500	MCS		
23	1559	3	1559	4.3	0.500	2.597	-H45	06F41	Selbst	34
23	1559	4	1559	3.4	0.600	2.597	-H45	06I41	Selbst	34
24	1187	4	1187	3.4	0.400	3.413	-H45	06F41	Selbst	34
24	1187	5	1187	2.8	0.500	3.413	-H45	06I41	Selbst	34

For operating mode S2, S3 und S6
Max. permissible acceleration torque of geared motor **M_{2, max}** and output speed **n_{2, eto}**

For operating mode S1
Torque **M₂** and thermal output speed **n_{2, th}**

Load capacity 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**.

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

Moment of inertia of geared motor

Ratio **i**

Product Gearbox

Product Motor

Type of motor cooling

Page number for dimensions

g500-H helical geared motors

Technical data



Selection tables

2-stage gearboxes

Inverter operation						i	Product		Cooling	
M _{2, max} [Nm]	n _{2, th} [r/min]	M ₂ [Nm]	n _{2, eto} [r/min]	c	J [kgcm ²]		g500	MCA		
45	859	9	859	5.8	2.700	4.600	-H100	10I40	natural	29
57	671	11	671	5.1	2.600	5.887	-H100	10I40	natural	29
62	613	12	613	4.8	2.600	6.440	-H100	10I40	natural	29
80	481	16	481	4.2	2.500	8.214	-H100	10I40	natural	29
81	688	23	688	2.5	8.500	5.887	-H100	13I41	natural	29
81	579	36	579	1.7	8.500	5.887	-H100	13I34	forced	44
82	1013	20	1013	3.1	9.200	3.267	-H140	13I34	forced	47
83	629	25	629	2.4	8.500	6.440	-H100	13I41	natural	29
83	530	39	530	1.6	8.500	6.440	-H100	13I34	forced	44
88	436	18	436	4.0	2.600	9.068	-H100	10I40	natural	29
92	493	32	493	2.1	8.400	8.214	-H100	13I41	natural	29
92	415	50	415	1.4	8.400	8.214	-H100	13I34	forced	44
94	761	27	761	2.6	8.800	4.480	-H140	13I34	forced	47
98	393	20	393	3.7	2.500	10.063	-H100	10I40	natural	29
99	403	39	403	1.8	8.400	10.063	-H100	13I41	natural	29
99	339	62	339	1.2	8.400	10.063	-H100	13I34	forced	44
100	348	22	348	3.3	2.600	11.360	-H100	10I40	natural	29
100	320	49	320	1.5	8.400	12.653	-H100	13I41	natural	29
100	312	25	312	3.0	2.500	12.653	-H100	10I40	natural	29
100	273	28	273	2.6	2.500	14.490	-H100	10I40	natural	29
100	261	60	261	1.2	8.400	15.500	-H100	13I41	natural	29
100	255	30	255	2.4	2.500	15.500	-H100	10I40	natural	29
100	228	69	228	1.0	8.400	17.750	-H100	13I41	natural	29
100	223	34	223	2.1	2.500	17.750	-H100	10I40	natural	29
100	203	38	203	1.9	2.500	19.486	-H100	10I40	natural	29
100	177	43	177	1.7	2.500	22.314	-H100	10I40	natural	29
100	157	49	157	1.5	2.400	25.095	-H100	10I40	natural	29
100	137	56	137	1.5	2.400	28.738	-H100	10I40	natural	29
103	706	22	706	3.3	8.700	5.733	-H140	13I41	natural	32
103	595	35	595	2.2	8.700	5.733	-H140	13I34	forced	47
105	646	24	646	3.1	8.600	6.272	-H140	13I41	natural	32
105	544	38	544	2.1	8.600	6.272	-H140	13I34	forced	47
112	342	22	342	4.1	2.600	11.554	-H140	10I40	natural	32
117	506	31	506	2.7	8.500	8.000	-H140	13I41	natural	32
117	426	49	426	1.8	8.500	8.000	-H140	13I34	forced	47
123	313	25	313	3.9	2.600	12.640	-H140	10I40	natural	32
125	413	38	413	2.4	8.500	9.800	-H140	13I41	natural	32
125	348	60	348	1.6	8.500	9.800	-H140	13I34	forced	47
126	590	22	590	5.2	21.000	3.389	-H210	14L20	natural	35
126	483	39	483	3.1	21.000	3.389	-H210	14L16	forced	50

6.3

g500-H helical geared motors

Technical data



Selection tables

2-stage gearboxes

Inverter operation						i	Product		Cooling	
M _{2, max} [Nm]	n _{2, th} [r/min]	M ₂ [Nm]	n _{2, eto} [r/min]	c	J [kgcm ²]		g500	MCA		
132	320	49	320	1.9	8.500	12.640	-H140	13I41	natural	32
135	283	27	283	3.6	2.600	13.957	-H140	10I40	natural	32
140	251	63	251	1.6	8.400	16.122	-H140	13I41	natural	32
140	245	31	245	3.2	2.500	16.122	-H140	10I40	natural	32
140	228	69	228	1.5	8.400	17.802	-H140	13I41	natural	32
140	222	35	222	2.9	2.500	17.802	-H140	10I40	natural	32
140	212	99	212	1.1	8.400	16.122	-H140	13I34	forced	47
140	205	77	205	1.3	8.400	19.750	-H140	13I41	natural	32
140	200	38	200	2.6	2.500	19.750	-H140	10I40	natural	32
140	186	85	186	1.2	8.400	21.808	-H140	13I41	natural	32
140	181	42	181	2.4	2.500	21.808	-H140	10I40	natural	32
140	159	48	159	2.1	2.500	24.829	-H140	10I40	natural	32
140	144	53	144	2.2	2.500	27.415	-H140	10I40	natural	32
140	124	62	124	1.9	2.500	31.976	-H140	10I40	natural	32
140	112	69	112	1.7	2.500	35.308	-H140	10I40	natural	32
143	430	30	430	4.3	20.000	4.648	-H210	14L20	natural	35
143	352	54	352	2.6	20.000	4.648	-H210	14L16	forced	50
158	320	41	320	3.5	20.000	6.250	-H210	14L20	natural	35
158	262	73	262	2.1	20.000	6.250	-H210	14L16	forced	50
159	358	36	358	4.0	20.000	5.583	-H210	14L20	natural	35
159	293	65	293	2.4	20.000	5.583	-H210	14L16	forced	50
165	679	36	679	4.0	37.000	3.389	-H320	17N23	natural	38
165	496	71	496	2.3	37.000	3.389	-H320	17N17	forced	53
165	483	39	483	4.1	20.000	3.389	-H320	14L16	forced	53
171	233	56	233	2.8	20.000	8.571	-H210	14L20	natural	35
171	191	100	191	1.7	20.000	8.571	-H210	14L16	forced	50
172	261	50	261	3.1	20.000	7.657	-H210	14L20	natural	35
172	214	89	214	1.9	20.000	7.657	-H210	14L16	forced	50
182	211	36	211	4.2	2.700	18.750	-H210	10I40	natural	35
182	204	64	204	2.6	20.000	9.799	-H210	14L20	natural	35
182	167	114	167	1.6	20.000	9.799	-H210	14L16	forced	50
183	93	83	93	2.0	2.500	42.593	-H210	10I40	natural	35
186	167	78	167	2.2	20.000	12.000	-H210	14L20	natural	35
186	136	140	136	1.3	20.000	12.000	-H210	14L16	forced	50
189	495	49	495	3.4	37.000	4.648	-H320	17N23	natural	38
189	362	97	362	1.9	37.000	4.648	-H320	17N17	forced	53
189	352	54	352	3.4	20.000	4.648	-H320	14L16	forced	53
189	318	66	318	2.2	8.800	10.720	-H210	13I34	forced	50
189	187	70	187	2.5	20.000	10.720	-H210	14L20	natural	35
189	153	125	153	1.5	20.000	10.720	-H210	14L16	forced	50

g500-H helical geared motors

Technical data



Selection tables

2-stage gearboxes

Inverter operation						i	Product		Cooling	
M _{2, max} [Nm]	n _{2, th} [r/min]	M ₂ [Nm]	n _{2, eto} [r/min]	c	J [kgcm ²]		g500	MCA		
200	265	59	265	2.4	8.700	15.306	-H210	13I41	natural	35
200	223	94	223	1.6	8.700	15.306	-H210	13I34	forced	50
200	131	99	131	1.8	20.000	15.306	-H210	14L20	natural	35
200	107	178	107	1.1	20.000	15.306	-H210	14L16	forced	50
201	296	53	296	2.7	8.700	13.673	-H210	13I41	natural	35
201	249	84	249	1.8	8.700	13.673	-H210	13I34	forced	50
201	146	89	146	2.0	20.000	13.673	-H210	14L20	natural	35
201	120	159	120	1.2	20.000	13.673	-H210	14L16	forced	50
206	83	93	83	2.0	2.500	47.679	-H210	10I40	natural	35
210	242	65	242	2.3	8.600	16.750	-H210	13I41	natural	35
210	216	73	216	2.1	8.600	18.750	-H210	13I41	natural	35
210	204	102	204	1.6	8.600	16.750	-H210	13I34	forced	50
210	186	85	186	1.8	8.500	21.802	-H210	13I41	natural	35
210	182	115	182	1.4	8.600	18.750	-H210	13I34	forced	50
210	181	42	181	3.6	2.600	21.802	-H210	10I40	natural	35
210	166	95	166	1.6	8.500	24.405	-H210	13I41	natural	35
210	162	47	162	3.2	2.600	24.405	-H210	10I40	natural	35
210	156	133	156	1.2	8.500	21.802	-H210	13I34	forced	50
210	149	105	149	1.6	8.400	27.119	-H210	13I41	natural	35
210	146	53	146	3.3	2.500	27.119	-H210	10I40	natural	35
210	140	149	140	1.1	8.500	24.405	-H210	13I34	forced	50
210	133	118	133	1.4	8.400	30.357	-H210	13I41	natural	35
210	130	59	130	2.9	2.500	30.357	-H210	10I40	natural	35
210	126	166	126	1.1	8.400	27.119	-H210	13I34	forced	50
210	119	109	119	1.8	19.000	16.750	-H210	14L20	natural	35
210	113	68	113	2.5	2.500	35.095	-H210	10I40	natural	35
210	107	122	107	1.6	19.000	18.750	-H210	14L20	natural	35
210	101	76	101	2.3	2.500	39.286	-H210	10I40	natural	35
210	98	195	98	1.1	19.000	16.750	-H210	14L16	forced	50
218	333	72	333	2.6	38.000	6.910	-H320	17N23	natural	38
218	289	45	289	4.4	21.000	6.910	-H320	14L20	natural	38
218	243	144	243	1.5	38.000	6.910	-H320	17N17	forced	53
218	237	80	237	2.6	21.000	6.910	-H320	14L16	forced	53
218	85	90	85	2.2	2.500	46.407	-H320	10I40	natural	38
227	378	64	378	3.1	38.000	6.083	-H320	17N23	natural	38
227	276	127	276	1.7	38.000	6.083	-H320	17N17	forced	53
227	269	71	269	3.1	21.000	6.083	-H320	14L16	forced	53
238	243	99	243	2.1	37.000	9.477	-H320	17N23	natural	38
238	211	62	211	3.5	20.000	9.477	-H320	14L20	natural	38
238	177	198	177	1.2	37.000	9.477	-H320	17N17	forced	53

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g500-H helical geared motors

Technical data



Selection tables

2-stage gearboxes

Inverter operation						i	Product		Cooling	
M _{2, max} [Nm]	n _{2, th} [r/min]	M ₂ [Nm]	n _{2, eto} [r/min]	c	J [kgcm ²]		g500	MCA		
238	173	110	173	2.1	20.000	9.477	-H320	14L16	forced	53
248	75	102	75	2.2	2.500	52.715	-H320	10I40	natural	38
249	276	87	276	2.5	37.000	8.343	-H320	17N23	natural	38
249	240	54	240	4.2	20.000	8.343	-H320	14L20	natural	38
249	201	174	201	1.4	37.000	8.343	-H320	17N17	forced	53
249	196	97	196	2.5	20.000	8.343	-H320	14L16	forced	53
251	103	74	103	2.8	2.500	38.238	-H320	10I40	natural	38
254	281	74	281	2.6	9.000	12.128	-H320	13I34	forced	53
254	190	127	190	1.7	37.000	12.128	-H320	17N23	natural	38
254	165	79	165	2.9	20.000	12.128	-H320	14L20	natural	38
254	135	141	135	1.7	20.000	12.128	-H320	14L16	forced	53
256	488	72	488	3.4	41.000	3.444	-H450	17N17	forced	56
262	257	81	257	2.5	8.900	13.268	-H320	13I34	forced	53
262	173	139	173	1.6	37.000	13.268	-H320	17N23	natural	38
262	151	86	151	2.8	20.000	13.268	-H320	14L20	natural	38
262	123	154	123	1.6	20.000	13.268	-H320	14L16	forced	53
265	319	65	319	3.1	9.000	10.677	-H320	13I34	forced	53
265	215	112	215	2.0	37.000	10.677	-H320	17N23	natural	38
265	187	69	187	3.5	20.000	10.677	-H320	14L20	natural	38
265	157	223	157	1.1	37.000	10.677	-H320	17N17	forced	53
265	153	124	153	2.1	20.000	10.677	-H320	14L16	forced	53
271	292	71	292	2.9	8.900	11.680	-H320	13I34	forced	53
271	197	122	197	1.9	37.000	11.680	-H320	17N23	natural	38
271	171	76	171	3.2	20.000	11.680	-H320	14L20	natural	38
271	144	244	144	1.1	37.000	11.680	-H320	17N17	forced	53
271	140	136	140	1.9	20.000	11.680	-H320	14L16	forced	53
273	72	106	72	2.3	2.500	54.750	-H450	10I40	natural	41
281	239	66	239	3.1	8.700	16.923	-H320	13I41	natural	38
281	202	103	202	2.1	8.700	16.923	-H320	13I34	forced	53
281	136	177	136	1.4	36.000	16.923	-H320	17N23	natural	38
281	118	110	118	2.3	20.000	16.923	-H320	14L20	natural	38
281	97	197	97	1.4	20.000	16.923	-H320	14L16	forced	53
285	91	84	91	3.1	2.500	43.436	-H320	10I40	natural	38
293	356	99	356	2.9	39.000	4.724	-H450	17N17	forced	56
294	272	58	272	3.6	8.700	14.898	-H320	13I41	natural	38
294	229	91	229	2.5	8.700	14.898	-H320	13I34	forced	53
294	154	156	154	1.6	36.000	14.898	-H320	17N23	natural	38
294	134	97	134	2.8	20.000	14.898	-H320	14L20	natural	38
294	110	173	110	1.6	20.000	14.898	-H320	14L16	forced	53
299	195	80	195	2.7	8.600	20.731	-H320	13I41	natural	38

g500-H helical geared motors

Technical data



Selection tables

2-stage gearboxes

Inverter operation						i	Product		Cooling	
M _{2, max} [Nm]	n _{2, th} [r/min]	M ₂ [Nm]	n _{2, eto} [r/min]	c	J [kgcm ²]		g500	MCA		
299	165	127	165	1.8	8.600	20.731	-H320	13I34	forced	53
299	97	135	97	2.0	20.000	20.731	-H320	14L20	natural	38
299	79	241	79	1.2	20.000	20.731	-H320	14L16	forced	53
307	64	120	64	2.3	2.500	61.875	-H450	10I40	natural	41
313	222	71	222	3.2	8.600	18.250	-H320	13I41	natural	38
313	189	191	189	1.2	20.000	18.250	-H320	14L35	forced	53
313	187	112	187	2.1	8.600	18.250	-H320	13I34	forced	53
313	110	119	110	2.4	20.000	18.250	-H320	14L20	natural	38
313	90	212	90	1.4	20.000	18.250	-H320	14L16	forced	53
315	405	59	405	4.6	40.000	5.678	-H450	17N23	natural	41
315	296	118	296	2.6	40.000	5.678	-H450	17N17	forced	56
320	171	92	171	2.5	8.500	23.754	-H320	13I41	natural	38
320	150	105	150	2.5	8.500	26.983	-H320	13I41	natural	38
320	144	145	144	1.7	8.500	23.754	-H320	13I34	forced	53
320	137	115	137	2.3	8.500	29.548	-H320	13I41	natural	38
320	126	165	126	1.7	8.500	26.983	-H320	13I34	forced	53
320	121	130	121	2.0	8.400	33.564	-H320	13I41	natural	38
320	118	65	118	4.0	2.500	33.564	-H320	10I40	natural	38
320	115	181	115	1.5	8.500	29.548	-H320	13I34	forced	53
320	102	205	102	1.4	8.400	33.564	-H320	13I34	forced	53
322	94	168	94	1.7	8.500	43.313	-H450	13I41	natural	41
322	91	84	91	3.5	2.600	43.313	-H450	10I40	natural	41
322	79	265	79	1.2	8.500	43.313	-H450	13I34	forced	56
323	381	63	381	4.4	38.000	6.045	-H450	17N23	natural	41
323	278	126	278	2.5	38.000	6.045	-H450	17N17	forced	56
323	271	70	271	4.5	21.000	6.045	-H450	14L16	forced	56
334	348	69	348	4.2	38.000	6.613	-H450	17N23	natural	41
334	254	138	254	2.3	38.000	6.613	-H450	17N17	forced	56
334	247	77	247	4.2	21.000	6.613	-H450	14L16	forced	56
354	295	82	295	3.8	39.000	7.787	-H450	17N23	natural	41
354	216	162	216	2.1	39.000	7.787	-H450	17N17	forced	56
354	210	91	210	3.8	22.000	7.787	-H450	14L16	forced	56
366	83	190	83	1.7	8.500	48.950	-H450	13I41	natural	41
366	81	95	81	3.5	2.600	48.950	-H450	10I40	natural	41
366	70	299	70	1.2	8.500	48.950	-H450	13I34	forced	56
370	261	92	261	3.5	38.000	8.800	-H450	17N23	natural	41
370	191	184	191	1.9	38.000	8.800	-H450	17N17	forced	56
370	186	102	186	3.5	22.000	8.800	-H450	14L16	forced	56
383	277	75	277	4.2	9.900	12.320	-H450	13I34	forced	56
384	231	104	231	3.2	38.000	9.965	-H450	17N23	natural	41

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g500-H helical geared motors

Technical data



Selection tables

2-stage gearboxes

Inverter operation						i	Product		Cooling	
M _{2, max} [Nm]	n _{2, th} [r/min]	M ₂ [Nm]	n _{2, eto} [r/min]	c	J [kgcm ²]		g500	MCA		
384	169	208	169	1.8	38.000	9.965	-H450	17N17	forced	56
384	164	116	164	3.2	21.000	9.965	-H450	14L16	forced	56
400	204	118	204	2.9	38.000	11.262	-H450	17N23	natural	41
400	149	235	149	1.6	38.000	11.262	-H450	17N17	forced	56
400	145	131	145	3.0	21.000	11.262	-H450	14L16	forced	56
411	187	129	187	2.8	38.000	12.320	-H450	17N23	natural	41
411	136	257	136	1.5	38.000	12.320	-H450	17N17	forced	56
411	133	143	133	2.8	21.000	12.320	-H450	14L16	forced	56
426	245	85	245	3.8	9.500	13.905	-H450	13I34	forced	56
426	165	146	165	2.5	37.000	13.905	-H450	17N23	natural	41
426	144	90	144	4.3	20.000	13.905	-H450	14L20	natural	41
426	121	290	121	1.4	37.000	13.905	-H450	17N17	forced	56
426	118	162	118	2.6	20.000	13.905	-H450	14L16	forced	56
441	217	96	217	3.5	9.500	15.714	-H450	13I34	forced	56
441	146	165	146	2.3	37.000	15.714	-H450	17N23	natural	41
441	127	102	127	3.9	20.000	15.714	-H450	14L20	natural	41
441	107	328	107	1.3	37.000	15.714	-H450	17N17	forced	56
441	104	183	104	2.3	20.000	15.714	-H450	14L16	forced	56
448	210	75	210	4.3	9.200	19.250	-H450	13I41	natural	41
448	180	202	180	1.7	20.000	19.250	-H450	14L35	forced	56
448	177	118	177	2.9	9.200	19.250	-H450	13I34	forced	56
448	120	202	120	1.9	37.000	19.250	-H450	17N23	natural	41
448	104	125	104	3.3	20.000	19.250	-H450	14L20	natural	41
448	87	402	87	1.1	37.000	19.250	-H450	17N17	forced	56
448	85	224	85	1.9	20.000	19.250	-H450	14L16	forced	56
450	203	178	203	1.9	20.000	17.033	-H450	14L35	forced	56
450	200	104	200	3.3	9.200	17.033	-H450	13I34	forced	56
450	183	86	183	3.8	8.800	22.170	-H450	13I41	natural	41
450	162	97	162	3.3	8.800	25.056	-H450	13I41	natural	41
450	156	232	156	1.5	20.000	22.170	-H450	14L35	forced	56
450	154	136	154	2.5	8.800	22.170	-H450	13I34	forced	56
450	147	107	147	3.4	8.700	27.578	-H450	13I41	natural	41
450	138	263	138	1.3	20.000	25.056	-H450	14L35	forced	56
450	136	153	136	2.2	8.800	25.056	-H450	13I34	forced	56
450	135	178	135	2.2	37.000	17.033	-H450	17N23	natural	41
450	130	121	130	3.0	8.700	31.167	-H450	13I41	natural	41
450	125	289	125	1.3	20.000	27.578	-H450	14L35	forced	56
450	124	169	124	2.3	8.700	27.578	-H450	13I34	forced	56
450	117	111	117	3.7	20.000	17.033	-H450	14L20	natural	41
450	114	139	114	2.6	8.500	35.689	-H450	13I41	natural	41

g500-H helical geared motors

Technical data



Selection tables

2-stage gearboxes

Inverter operation						i	Product		Cooling	
$M_{2, \max}$ [Nm]	$n_{2, th}$ [r/min]	M_2 [Nm]	$n_{2, eto}$ [r/min]	c	J [kgcm ²]		g500	MCA		
450	111	327	111	1.2	20.000	31.167	-H450	14L35	forced	56
450	109	191	109	2.0	8.700	31.167	-H450	13I34	forced	56
450	104	232	104	1.7	37.000	22.170	-H450	17N23	natural	41
450	100	157	100	2.6	8.500	40.333	-H450	13I41	natural	41
450	99	355	99	1.2	37.000	17.033	-H450	17N17	forced	56
450	96	198	96	2.2	20.000	17.033	-H450	14L16	forced	56
450	96	218	96	1.8	8.500	35.689	-H450	13I34	forced	56
450	92	263	92	1.5	37.000	25.056	-H450	17N23	natural	41
450	90	144	90	2.8	20.000	22.170	-H450	14L20	natural	41
450	85	247	85	1.8	8.500	40.333	-H450	13I34	forced	56
450	80	163	80	2.5	20.000	25.056	-H450	14L20	natural	41
450	74	258	74	1.7	20.000	22.170	-H450	14L16	forced	56
450	73	179	73	2.5	20.000	27.578	-H450	14L20	natural	41
450	65	292	65	1.5	20.000	25.056	-H450	14L16	forced	56
450	64	203	64	2.2	20.000	31.167	-H450	14L20	natural	41
450	59	321	59	1.4	20.000	27.578	-H450	14L16	forced	56
450	53	363	53	1.2	20.000	31.167	-H450	14L16	forced	56

g500-H helical geared motors

Technical data



Selection tables

3-stage gearboxes

Inverter operation						i	Product		Cooling	
M _{2, max} [Nm]	n _{2, th} [r/min]	M ₂ [Nm]	n _{2, eto} [r/min]	c	J [kgcm ²]		g500	MCA		
210	91	83	91	1.8	2.500	43.390	-H210	10I40	natural	35
210	81	93	81	1.9	2.500	48.571	-H210	10I40	natural	35
210	71	106	71	1.6	2.500	55.529	-H210	10I40	natural	35
210	64	119	64	1.4	2.500	62.160	-H210	10I40	natural	35
210	56	136	56	1.3	2.500	71.026	-H210	10I40	natural	35
210	50	152	50	1.1	2.500	79.507	-H210	10I40	natural	35
210	43	176	43	1.1	2.400	92.205	-H210	10I40	natural	35
320	84	90	84	2.9	2.500	47.276	-H320	10I40	natural	38
320	74	103	74	2.6	2.500	53.703	-H320	10I40	natural	38
320	65	116	65	2.3	2.500	60.502	-H320	10I40	natural	38
320	58	131	58	2.0	2.500	68.726	-H320	10I40	natural	38
320	51	148	51	1.8	2.500	77.387	-H320	10I40	natural	38
320	45	168	45	1.7	2.500	87.906	-H320	10I40	natural	38
320	39	192	39	1.5	2.400	100.462	-H320	10I40	natural	38
320	35	218	35	1.3	2.400	114.118	-H320	10I40	natural	38
422	90	84	90	3.9	2.800	44.124	-H450	10I40	natural	41
450	92	169	92	1.9	8.700	44.124	-H450	13I41	natural	41
450	81	191	81	1.9	8.700	49.867	-H450	13I41	natural	41
450	79	95	79	3.9	2.800	49.867	-H450	10I40	natural	41
450	77	266	77	1.3	8.700	44.124	-H450	13I34	forced	56
450	72	216	72	1.7	8.600	56.469	-H450	13I41	natural	41
450	70	108	70	3.4	2.700	56.469	-H450	10I40	natural	41
450	68	300	68	1.3	8.700	49.867	-H450	13I34	forced	56
450	66	236	66	1.6	8.500	61.774	-H450	13I41	natural	41
450	64	118	64	3.1	2.600	61.774	-H450	10I40	natural	41
450	60	340	60	1.1	8.600	56.469	-H450	13I34	forced	56
450	58	267	58	1.4	8.500	69.813	-H450	13I41	natural	41
450	57	133	57	2.8	2.600	69.813	-H450	10I40	natural	41
450	55	372	55	1.1	8.500	61.774	-H450	13I34	forced	56
450	51	301	51	1.2	8.500	78.794	-H450	13I41	natural	41
450	50	151	50	2.5	2.600	78.794	-H450	10I40	natural	41
450	46	340	46	1.2	8.500	89.048	-H450	13I41	natural	41
450	44	170	44	2.4	2.600	89.048	-H450	10I40	natural	41
450	42	369	42	1.1	8.400	96.522	-H450	13I41	natural	41
450	41	184	41	2.2	2.500	96.522	-H450	10I40	natural	41
450	36	208	36	2.0	2.500	109.083	-H450	10I40	natural	41
450	33	232	33	1.8	2.500	121.342	-H450	10I40	natural	41
450	29	262	29	1.6	2.500	137.133	-H450	10I40	natural	41
450	25	299	25	1.4	2.500	156.274	-H450	10I40	natural	41
450	22	338	22	1.2	2.500	176.611	-H450	10I40	natural	41

g500-H helical geared motors

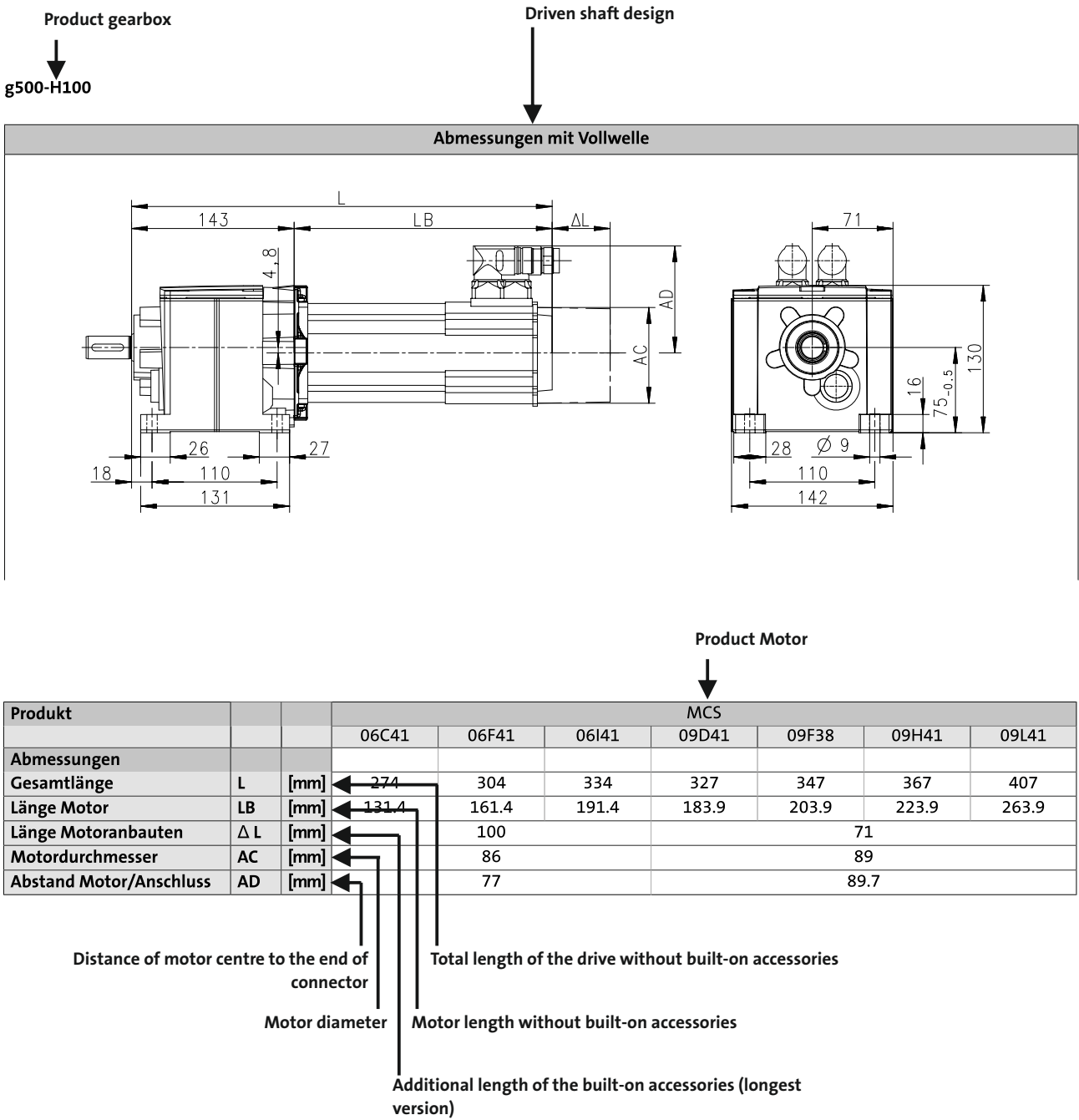
Technical data



Dimensions, notes

Notes on the dimensions

The following legend shows the layout of the dimension sheets.



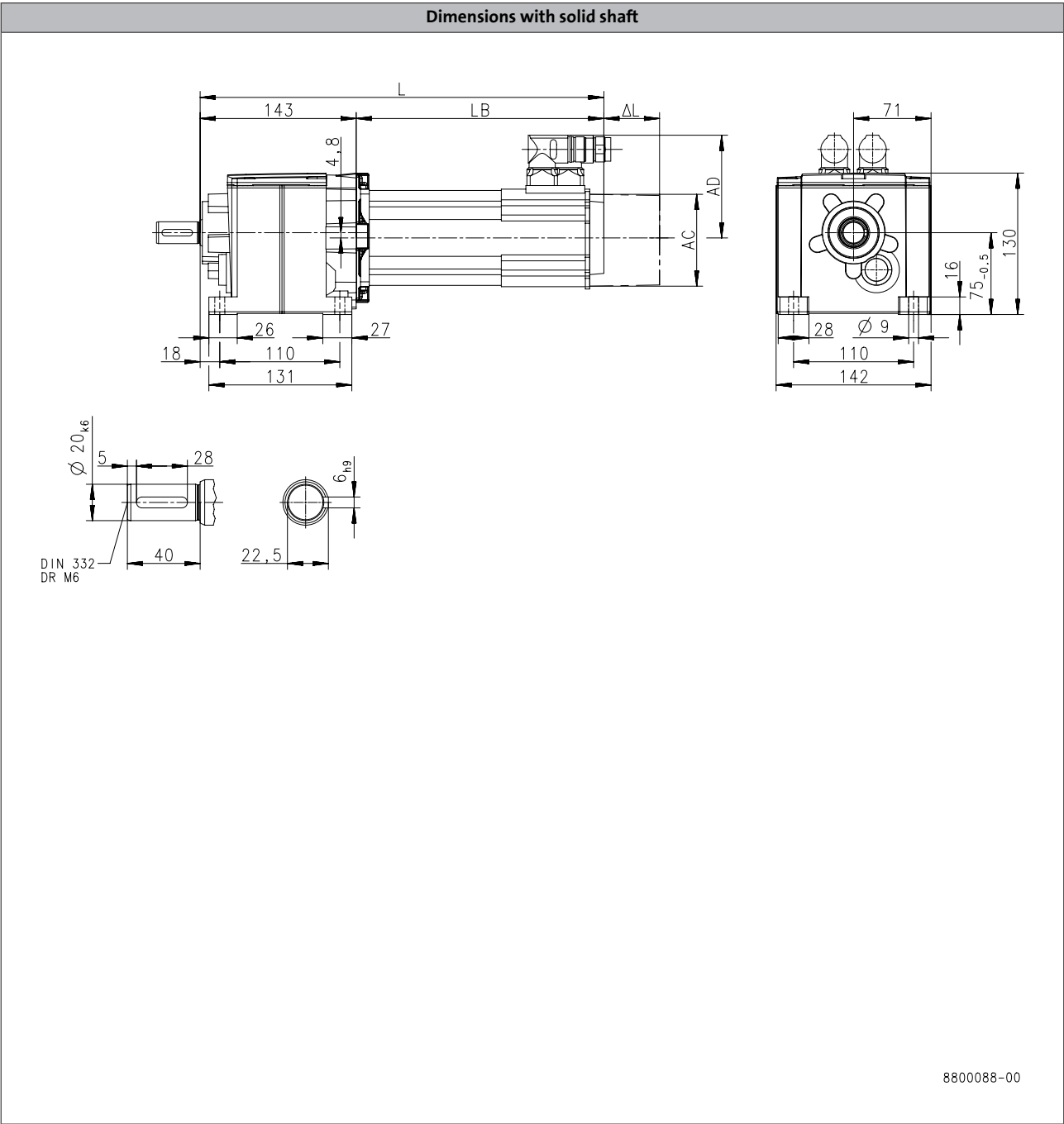
g500-H helical geared motors

Technical data



Dimensions, self-ventilated motors

g500-H100



Product			MCA	
			10I40	13I41
Dimensions				
Total length	L	[mm]	402	411
Motor length	LB	[mm]	259	267.5
Length of motor options	Δ L	[mm]	78.5	89
Motor diameter	AC	[mm]	102	130
Distance motor/connection	AD	[mm]	90	102

Dimensions, self-ventilated motors

g500-H100

[illegible]

6.3

6.3 - 30

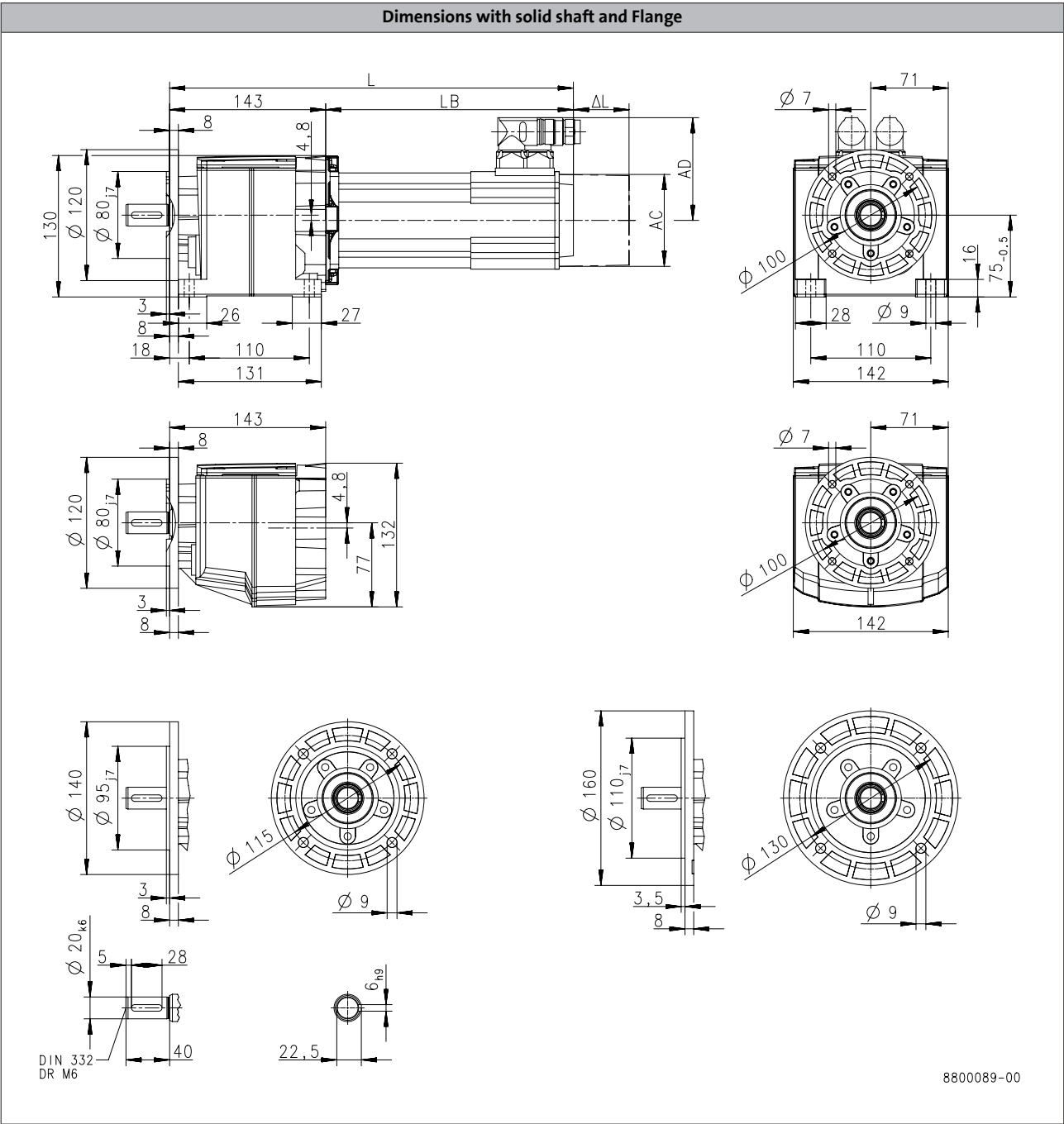
g500-H helical geared motors

Technical data



Dimensions, self-ventilated motors

g500-H100



Product			MCA	
			10I40	13I41
Dimensions				
Total length	L	[mm]	402	411
Motor length	LB	[mm]	259	267.5
Length of motor options	Δ L	[mm]	78.5	89
Motor diameter	AC	[mm]	102	130
Distance motor/connection	AD	[mm]	90	102

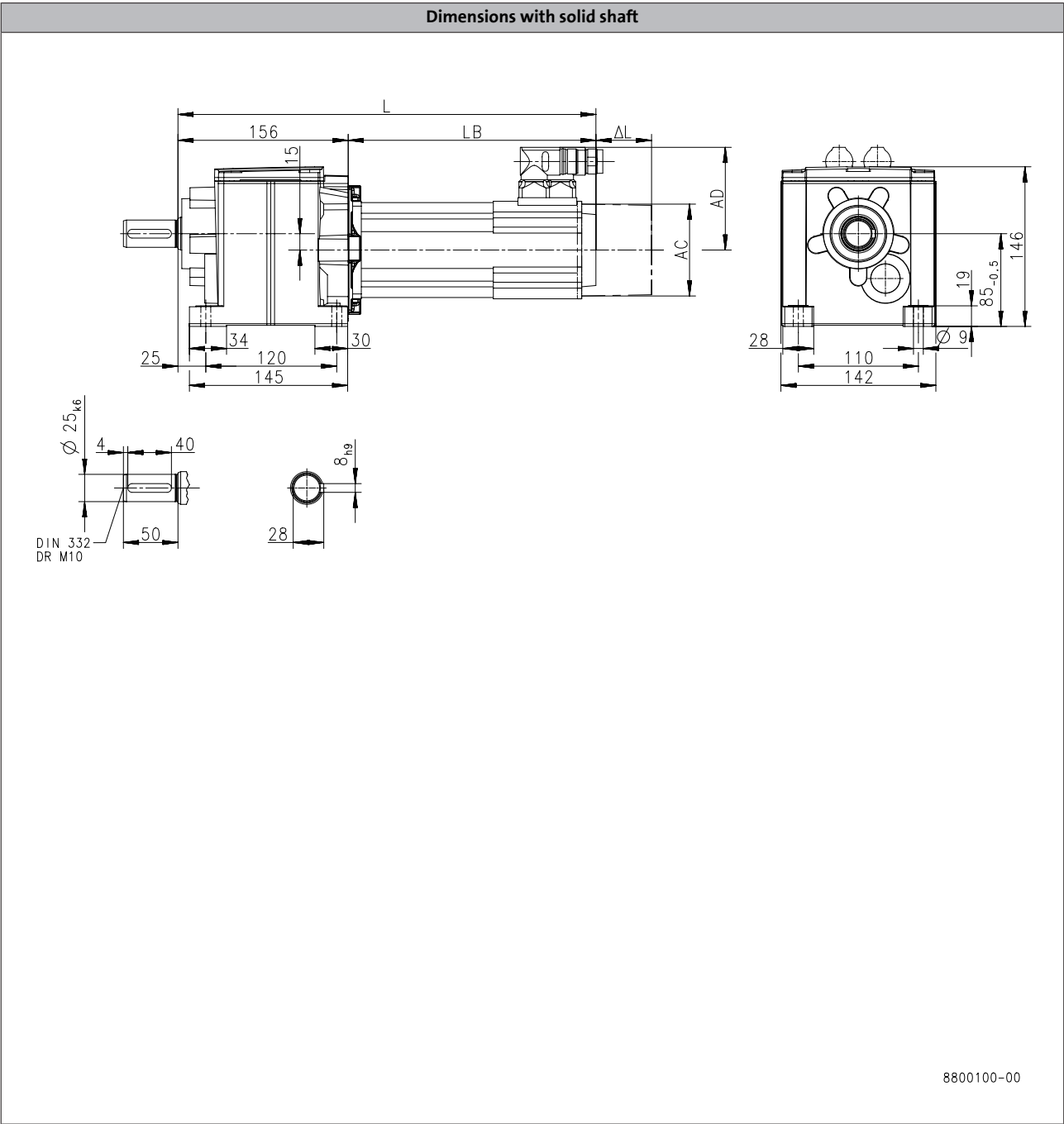
g500-H helical geared motors

Technical data



Dimensions, self-ventilated motors

g500-H140



Product			MCA	
			10I40	13I41
Dimensions				
Total length	L	[mm]	415	424
Motor length	LB	[mm]	259	267.5
Length of motor options	Δ L	[mm]	78.5	89
Motor diameter	AC	[mm]	102	130
Distance motor/connection	AD	[mm]	90	102

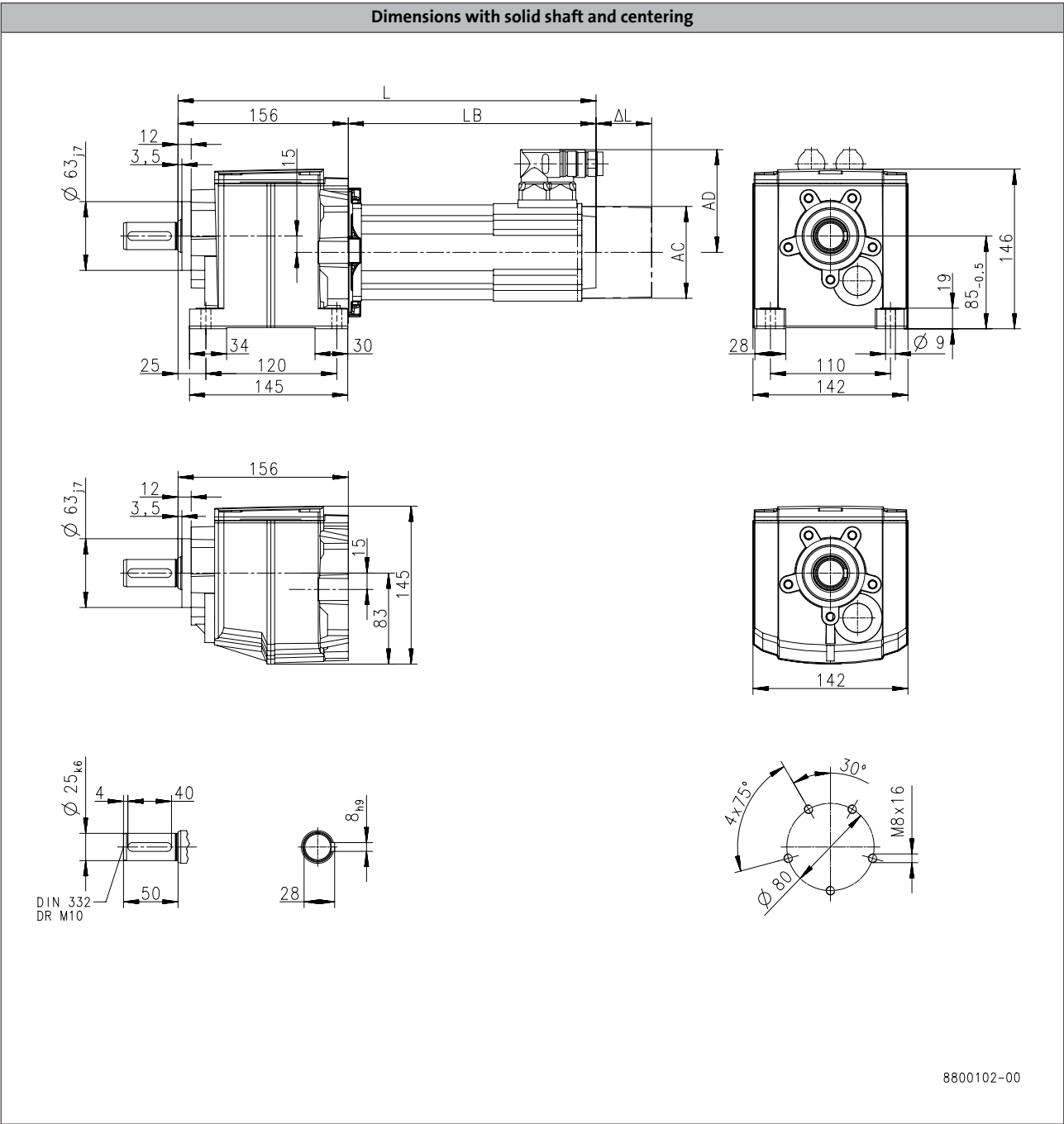
g500-H helical geared motors

Technical data



Dimensions, self-ventilated motors

g500-H140



Product			MCA	
			10I40	13I41
Dimensions				
Total length	L	[mm]	415	424
Motor length	LB	[mm]	259	267.5
Length of motor options	Δ L	[mm]	78.5	89
Motor diameter	AC	[mm]	102	130
Distance motor/connection	AD	[mm]	90	102

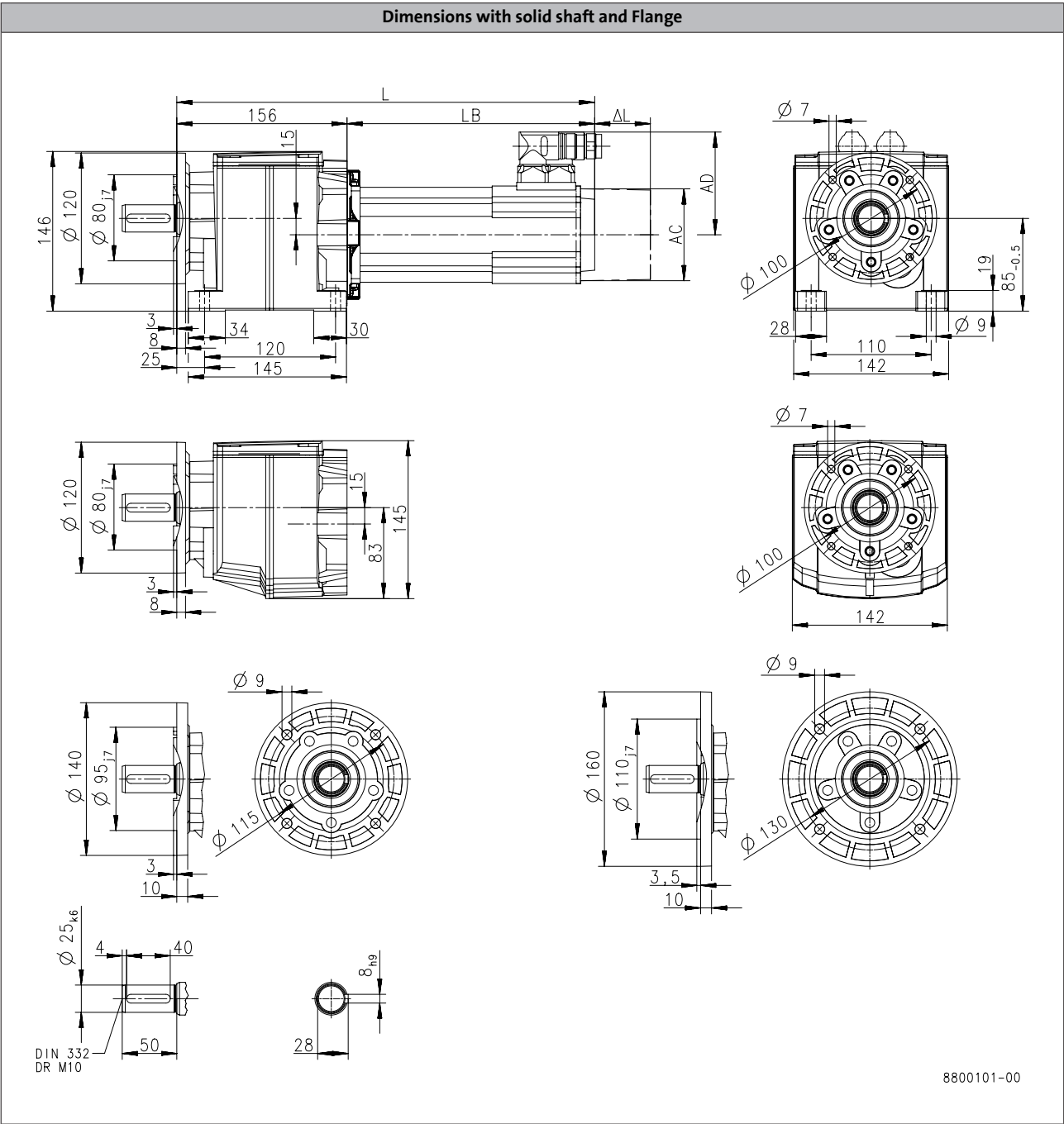
g500-H helical geared motors

Technical data



Dimensions, self-ventilated motors

g500-H140



Product			MCA	
			10I40	13I41
Dimensions				
Total length	L	[mm]	415	424
Motor length	LB	[mm]	259	267.5
Length of motor options	ΔL	[mm]	78.5	89
Motor diameter	AC	[mm]	102	130
Distance motor/connection	AD	[mm]	90	102

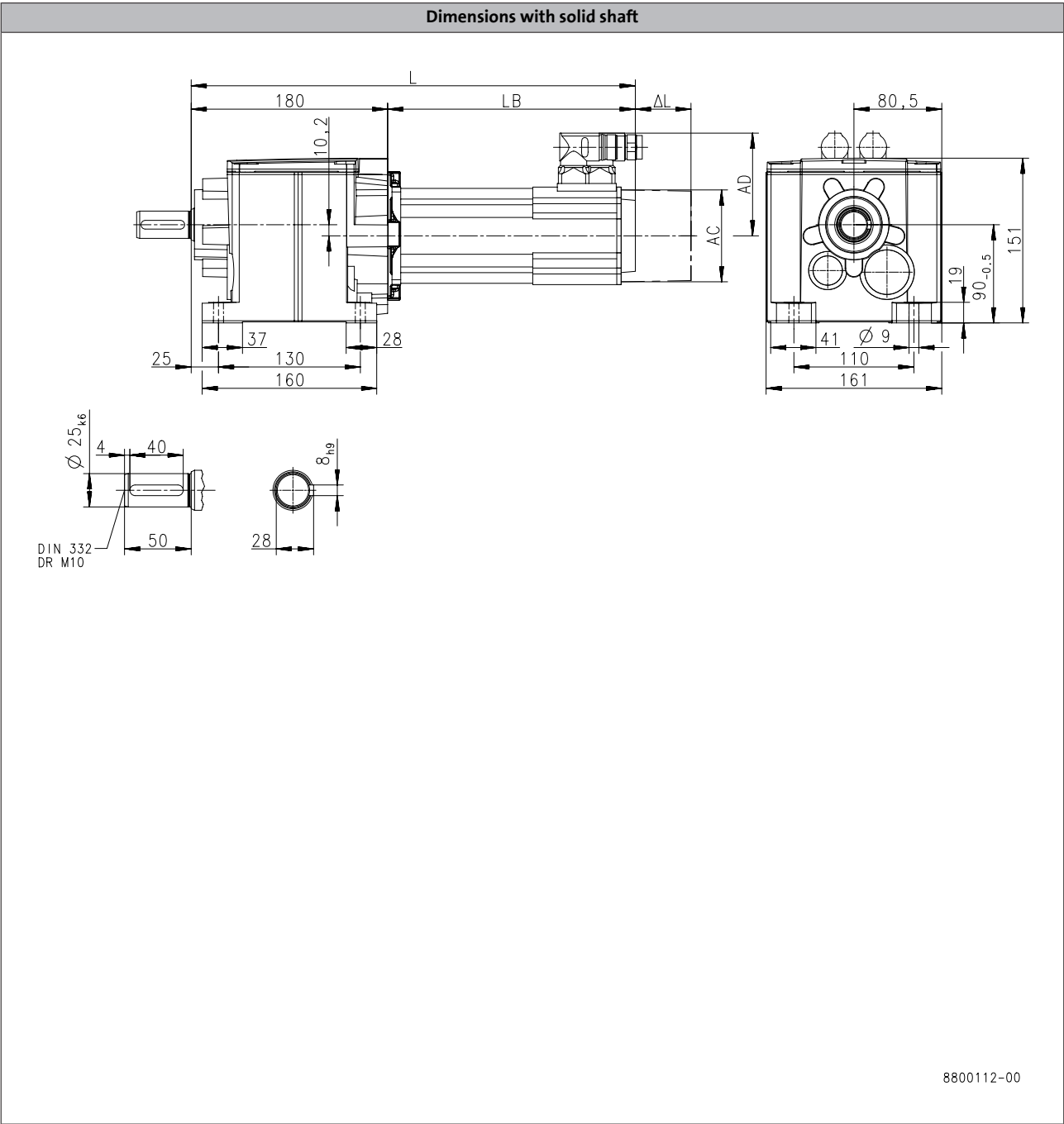
g500-H helical geared motors

Technical data



Dimensions, self-ventilated motors

g500-H210

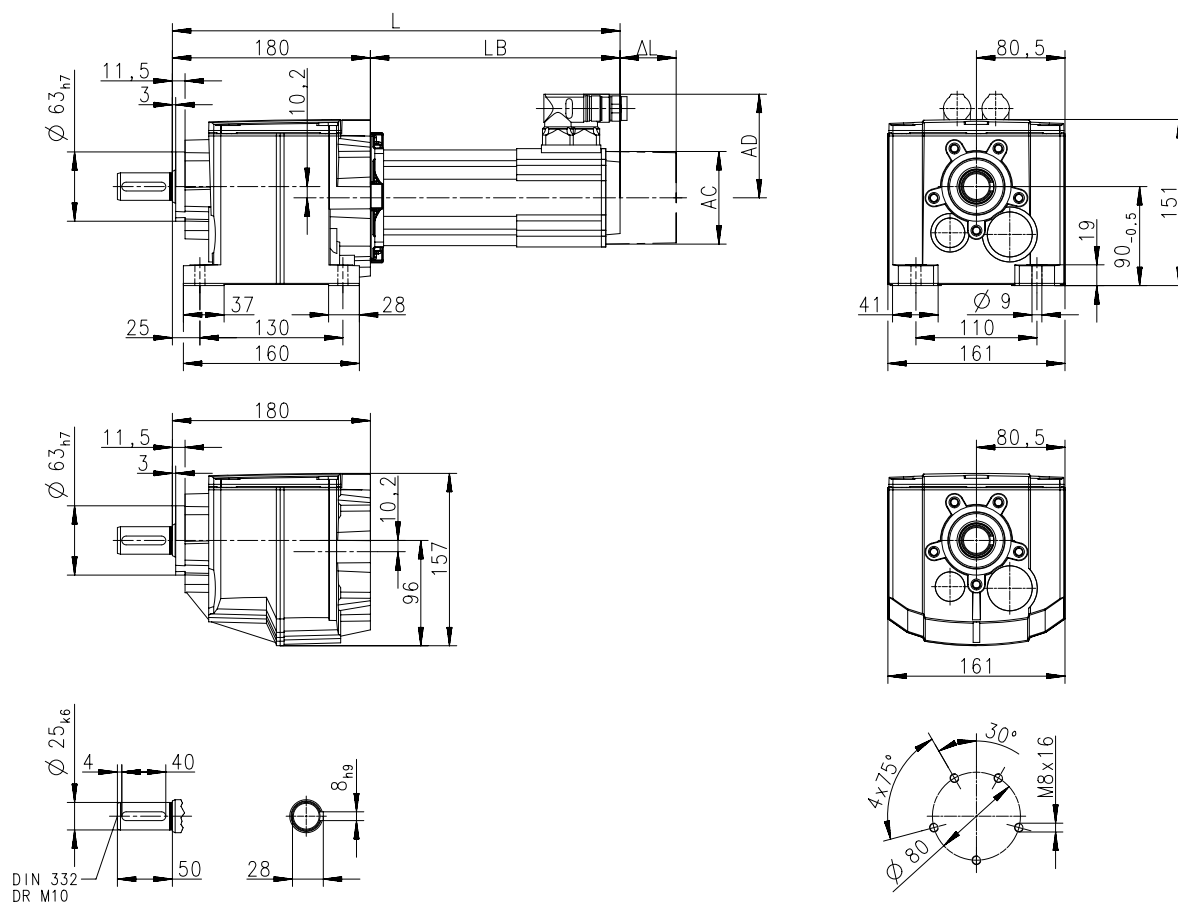


Product			MCA		
			10I40	13I41	14L20
Dimensions					
Total length	L	[mm]	439	448	498
Motor length	LB	[mm]	259	267.5	317.5
Length of motor options	Δ L	[mm]	78.5	89	88.5
Motor diameter	AC	[mm]	102	130	142
Distance motor/connection	AD	[mm]	90	102	109

Dimensions, self-ventilated motors

g500-H210

Dimensions with solid shaft and centering



8800114-00

Product			MCA		
			10I40	13I41	14L20
Dimensions					
Total length	L	[mm]	439	448	498
Motor length	LB	[mm]	259	267.5	317.5
Length of motor options	Δ L	[mm]	78.5	89	88.5
Motor diameter	AC	[mm]	102	130	142
Distance motor/connection	AD	[mm]	90	102	109

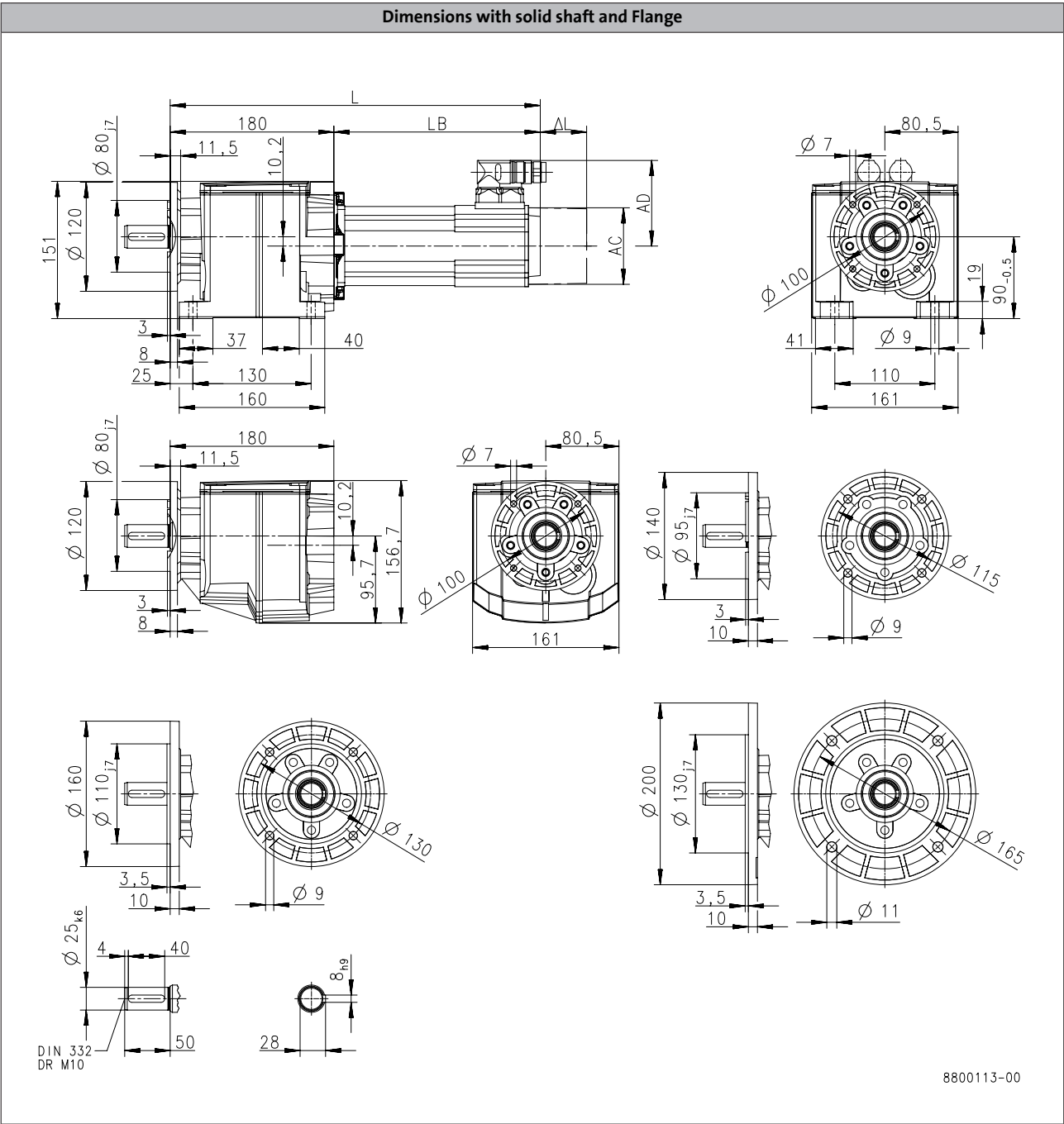
g500-H helical geared motors

Technical data



Dimensions, self-ventilated motors

g500-H210



Product			MCA		
			10I40	13I41	14L20
Dimensions					
Total length	L	[mm]	439	448	498
Motor length	LB	[mm]	259	267.5	317.5
Length of motor options	Δ L	[mm]	78.5	89	88.5
Motor diameter	AC	[mm]	102	130	142
Distance motor/connection	AD	[mm]	90	102	109

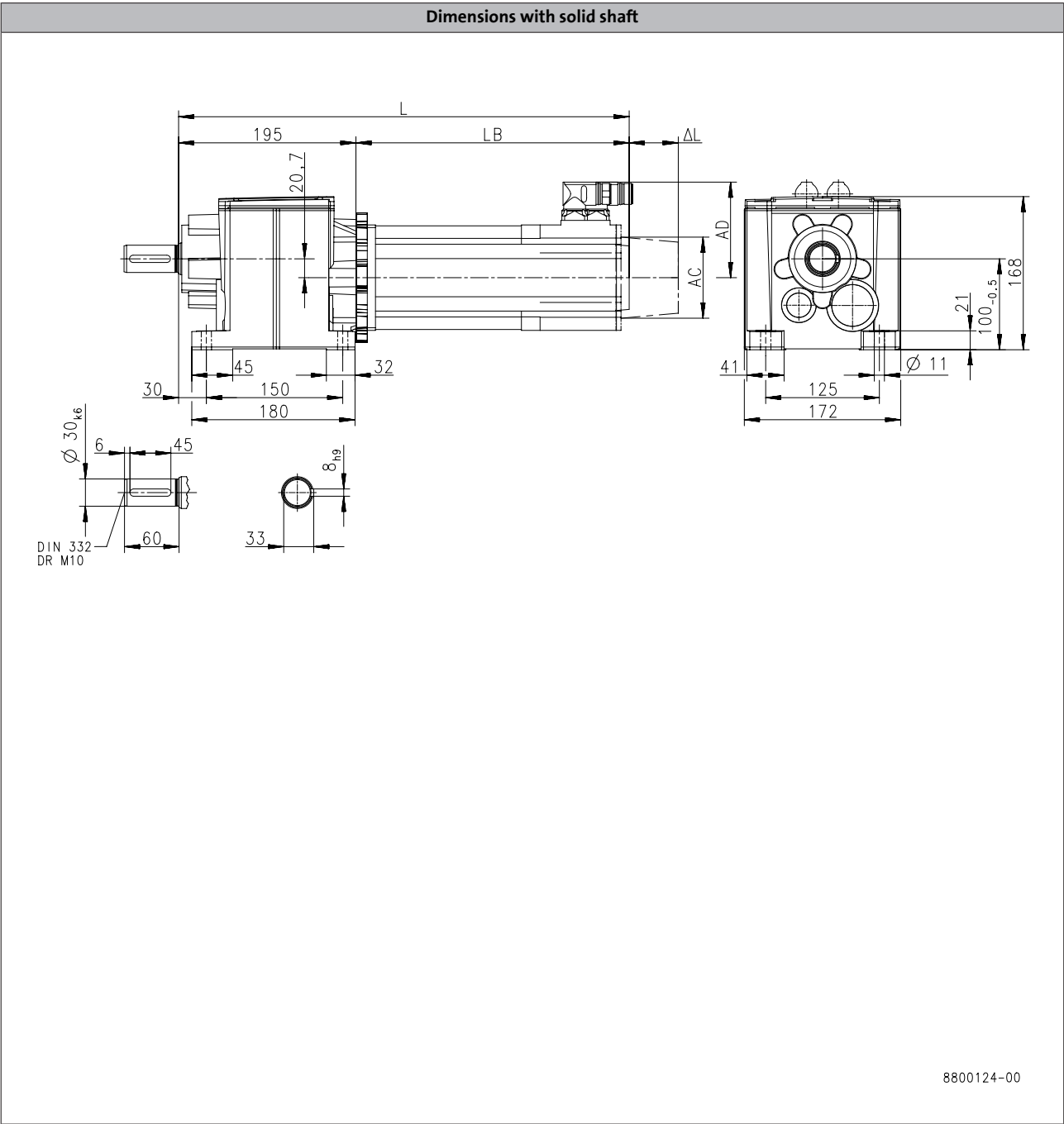
g500-H helical geared motors

Technical data



Dimensions, self-ventilated motors

g500-H320



Product			MCA			
			10I40	13I41	14L20	17N23
Dimensions						
Total length	L	[mm]	459	468	518	557
Motor length	LB	[mm]	259	267.5	317.5	356.5
Length of motor options	Δ L	[mm]	78.5	89	88.5	89.2
Motor diameter	AC	[mm]	102	130	142	165
Distance motor/connection	AD	[mm]	90	102	109	117.5

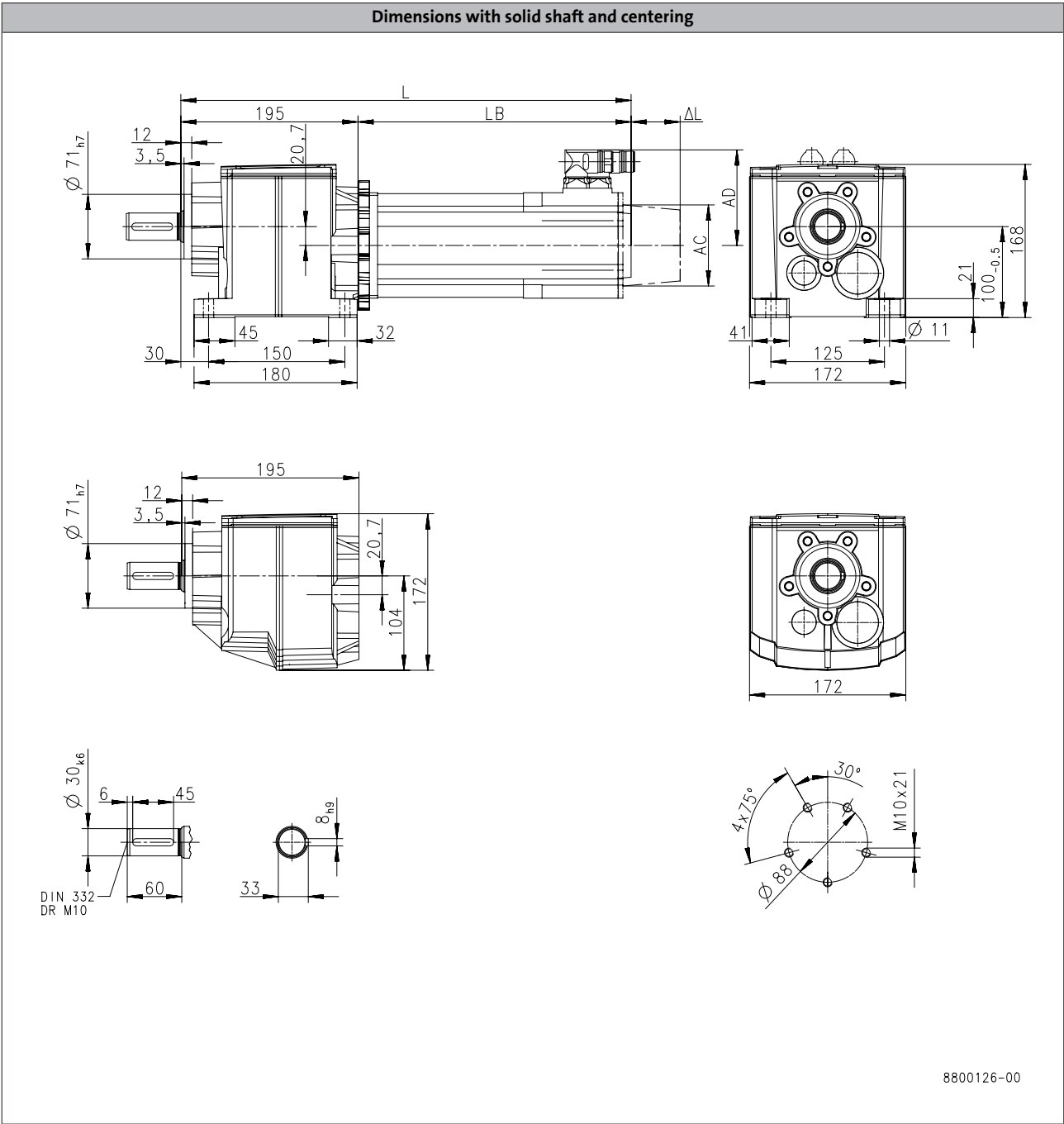
g500-H helical geared motors

Technical data



Dimensions, self-ventilated motors

g500-H320



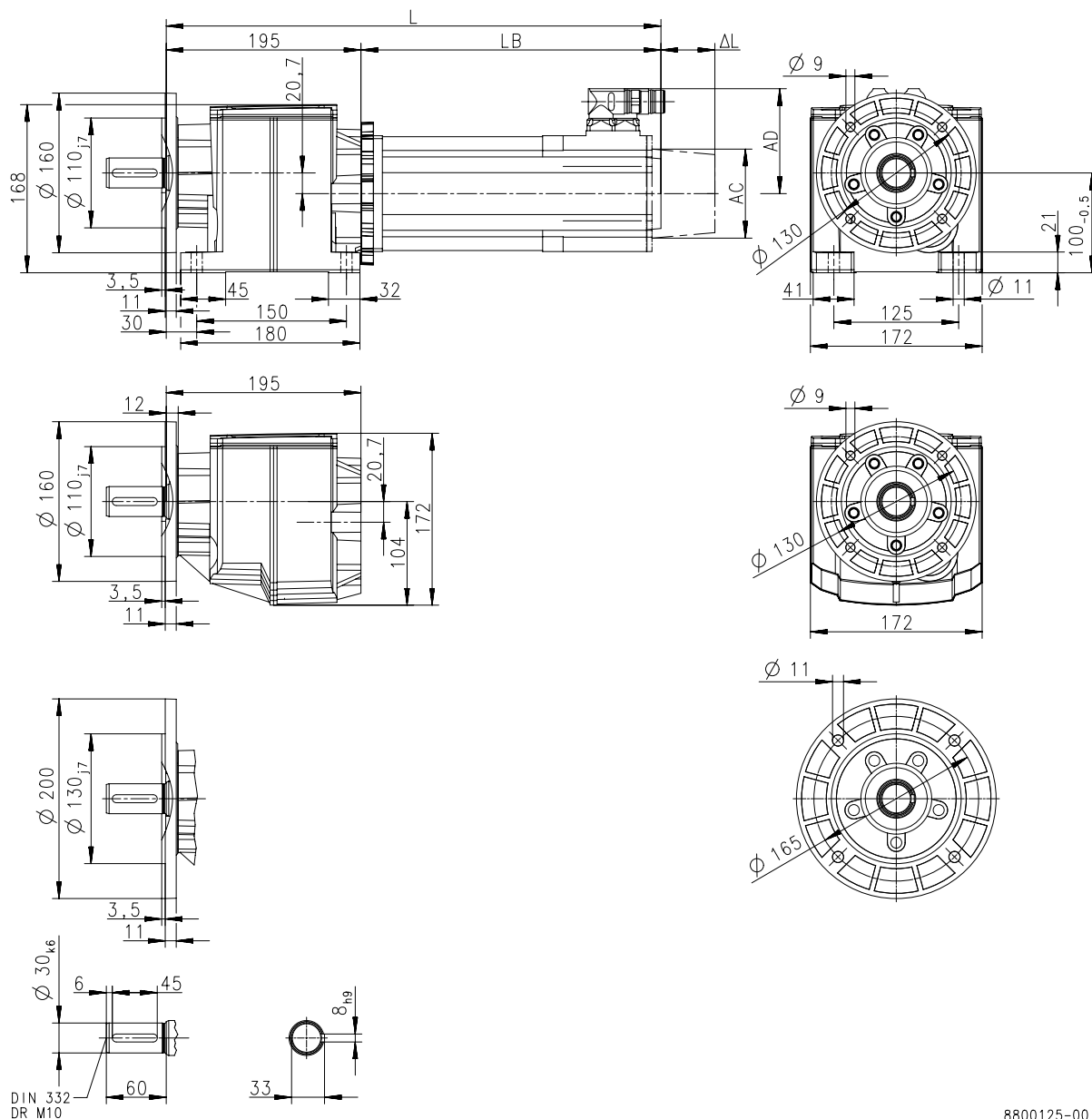
6.3

Product			MCA			
			10I40	13I41	14L20	17N23
Dimensions						
Total length	L	[mm]	459	468	518	557
Motor length	LB	[mm]	259	267.5	317.5	356.5
Length of motor options	Δ L	[mm]	78.5	89	88.5	89.2
Motor diameter	AC	[mm]	102	130	142	165
Distance motor/connection	AD	[mm]	90	102	109	117.5

Dimensions, self-ventilated motors

g500-H320

Dimensions with solid shaft and Flange



8800125-00

Product			MCA			
			10I40	13I41	14L20	17N23
Dimensions						
Total length	L	[mm]	459	468	518	557
Motor length	LB	[mm]	259	267.5	317.5	356.5
Length of motor options	Δ L	[mm]	78.5	89	88.5	89.2
Motor diameter	AC	[mm]	102	130	142	165
Distance motor/connection	AD	[mm]	90	102	109	117.5

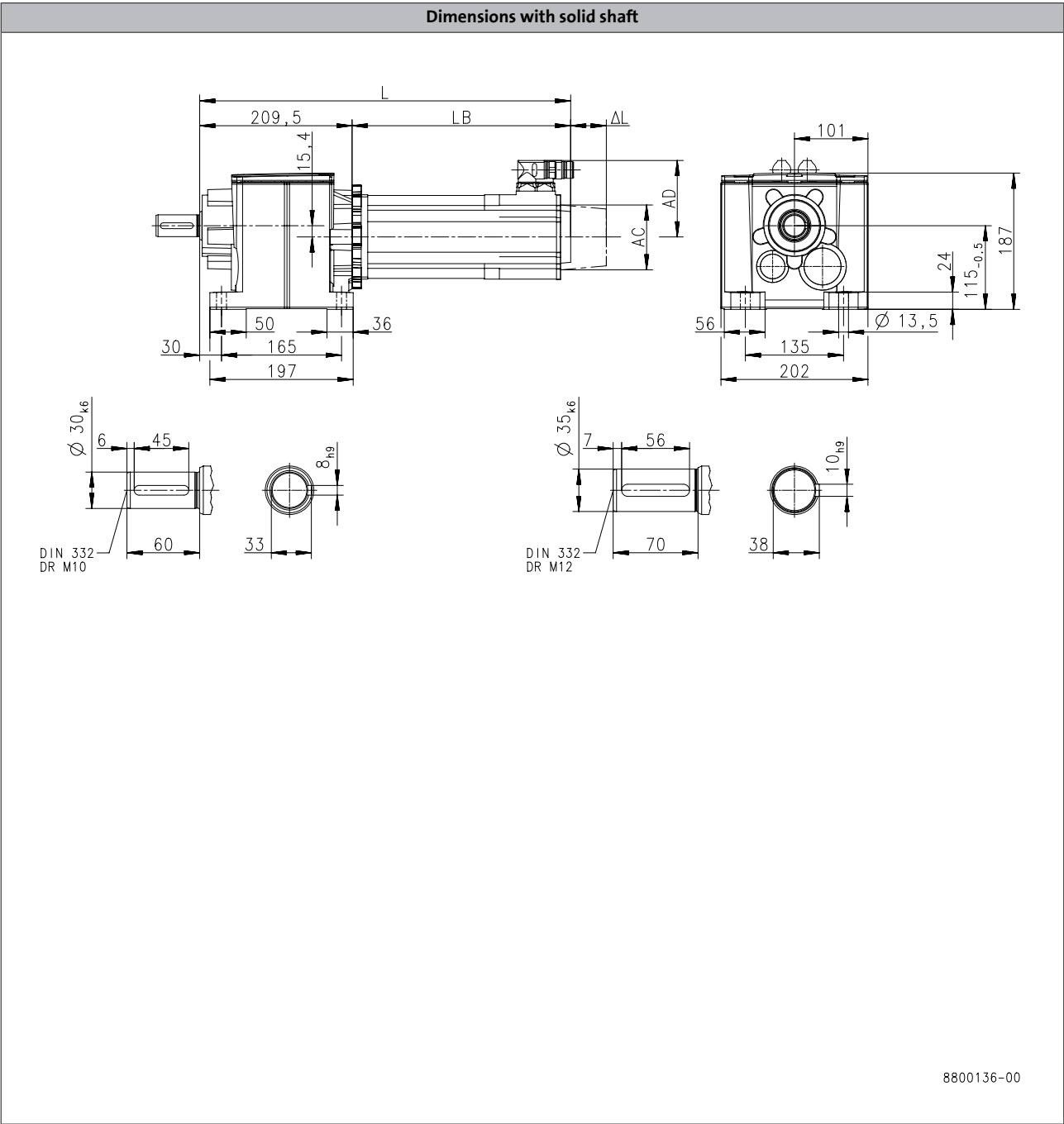
g500-H helical geared motors

Technical data



Dimensions, self-ventilated motors

g500-H450



Product			MCA			
			10I40	13I41	14L20	17N23
Dimensions						
Total length	L	[mm]	469	477	527	566
Motor length	LB	[mm]	259	267.5	317.5	356.5
Length of motor options	Δ L	[mm]	78.5	89	88.5	89.2
Motor diameter	AC	[mm]	102	130	142	165
Distance motor/connection	AD	[mm]	90	102	109	117.5

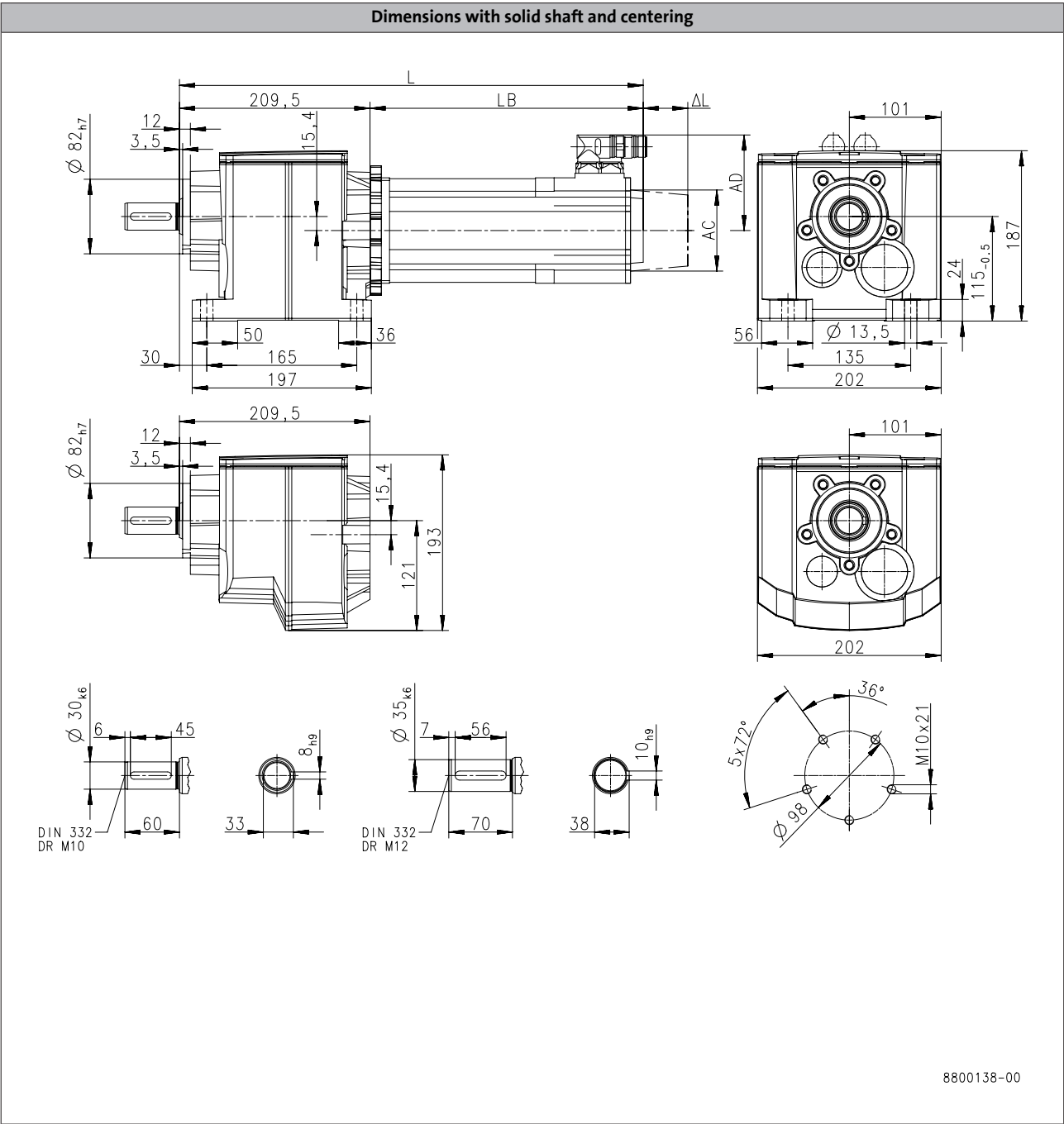
g500-H helical geared motors

Technical data



Dimensions, self-ventilated motors

g500-H450



Product			MCA			
			10I40	13I41	14L20	17N23
Dimensions						
Total length	L	[mm]	469	477	527	566
Motor length	LB	[mm]	259	267.5	317.5	356.5
Length of motor options	ΔL	[mm]	78.5	89	88.5	89.2
Motor diameter	AC	[mm]	102	130	142	165
Distance motor/connection	AD	[mm]	90	102	109	117.5

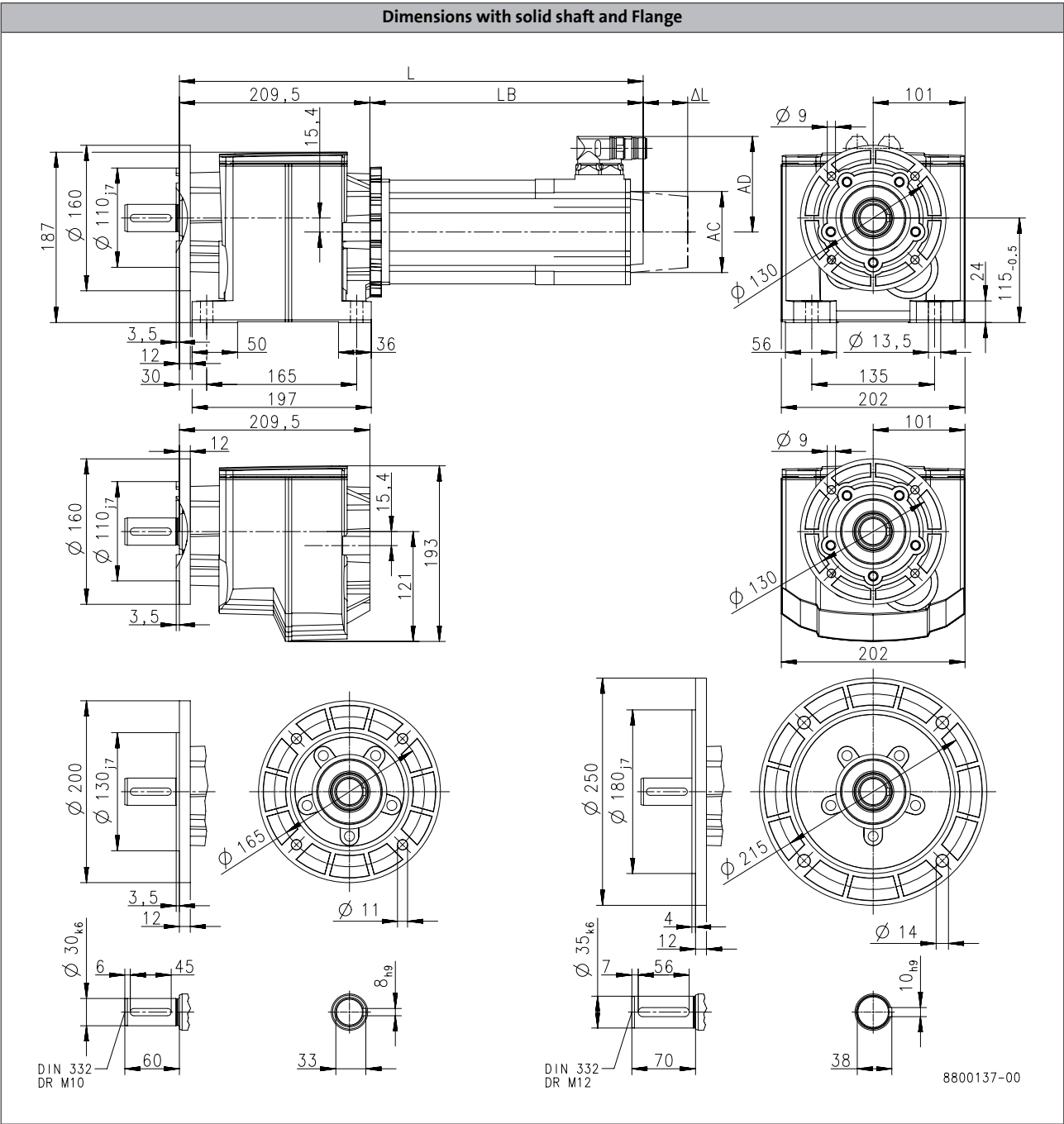
g500-H helical geared motors

Technical data



Dimensions, self-ventilated motors

g500-H450



Product			MCA			
			10I40	13I41	14L20	17N23
Dimensions						
Total length	L	[mm]	469	477	527	566
Motor length	LB	[mm]	259	267.5	317.5	356.5
Length of motor options	ΔL	[mm]	78.5	89	88.5	89.2
Motor diameter	AC	[mm]	102	130	142	165
Distance motor/connection	AD	[mm]	90	102	109	117.5

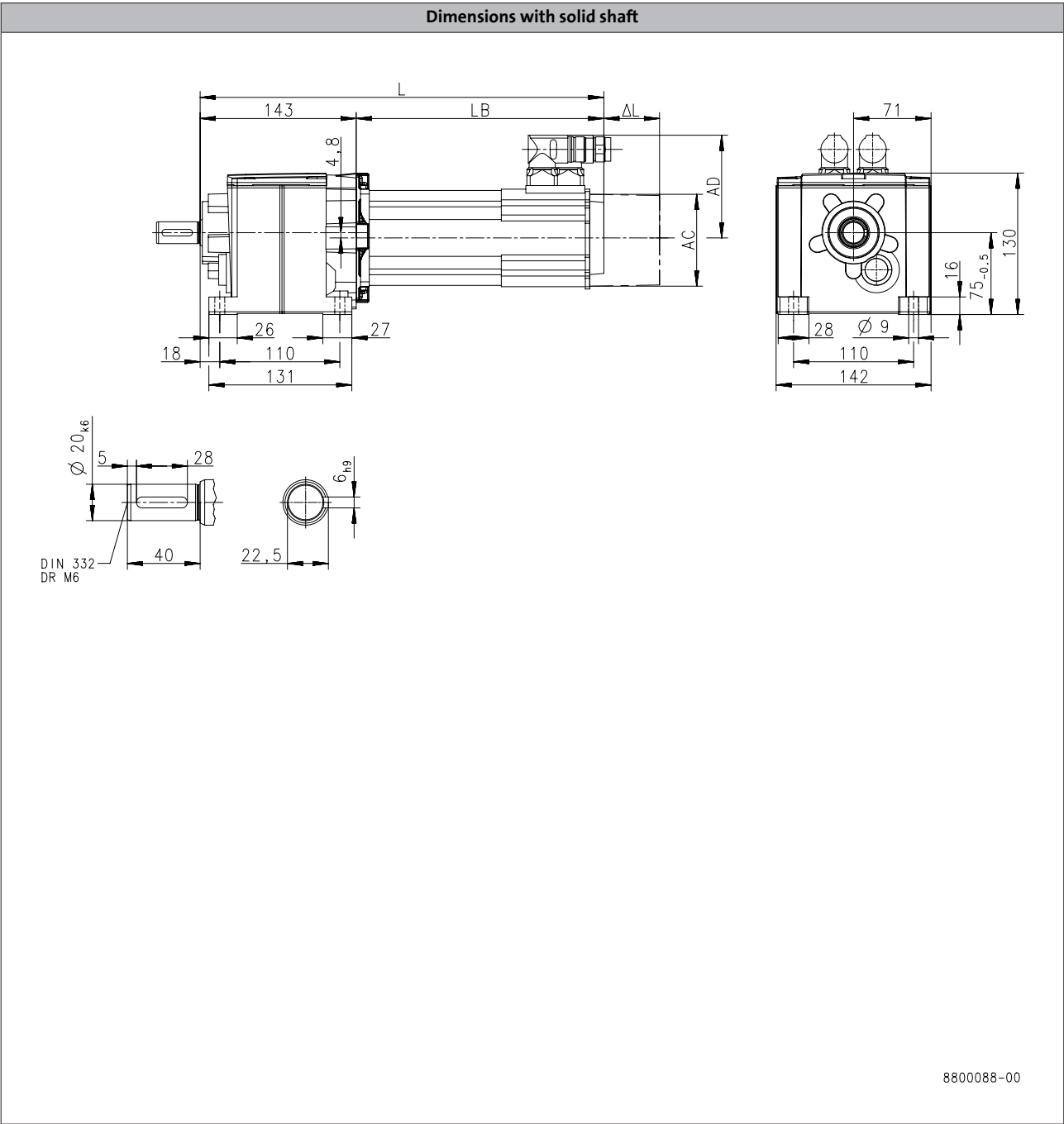
g500-H helical geared motors

Technical data



Dimensions, forced ventilated motors

g500-H100



Product			MCA
			13I34
Dimensions			
Total length	L	[mm]	479
Motor length	LB	[mm]	335.5
Length of motor options	Δ L	[mm]	89.5
Motor diameter	AC	[mm]	130
Distance motor/connection	AD	[mm]	102

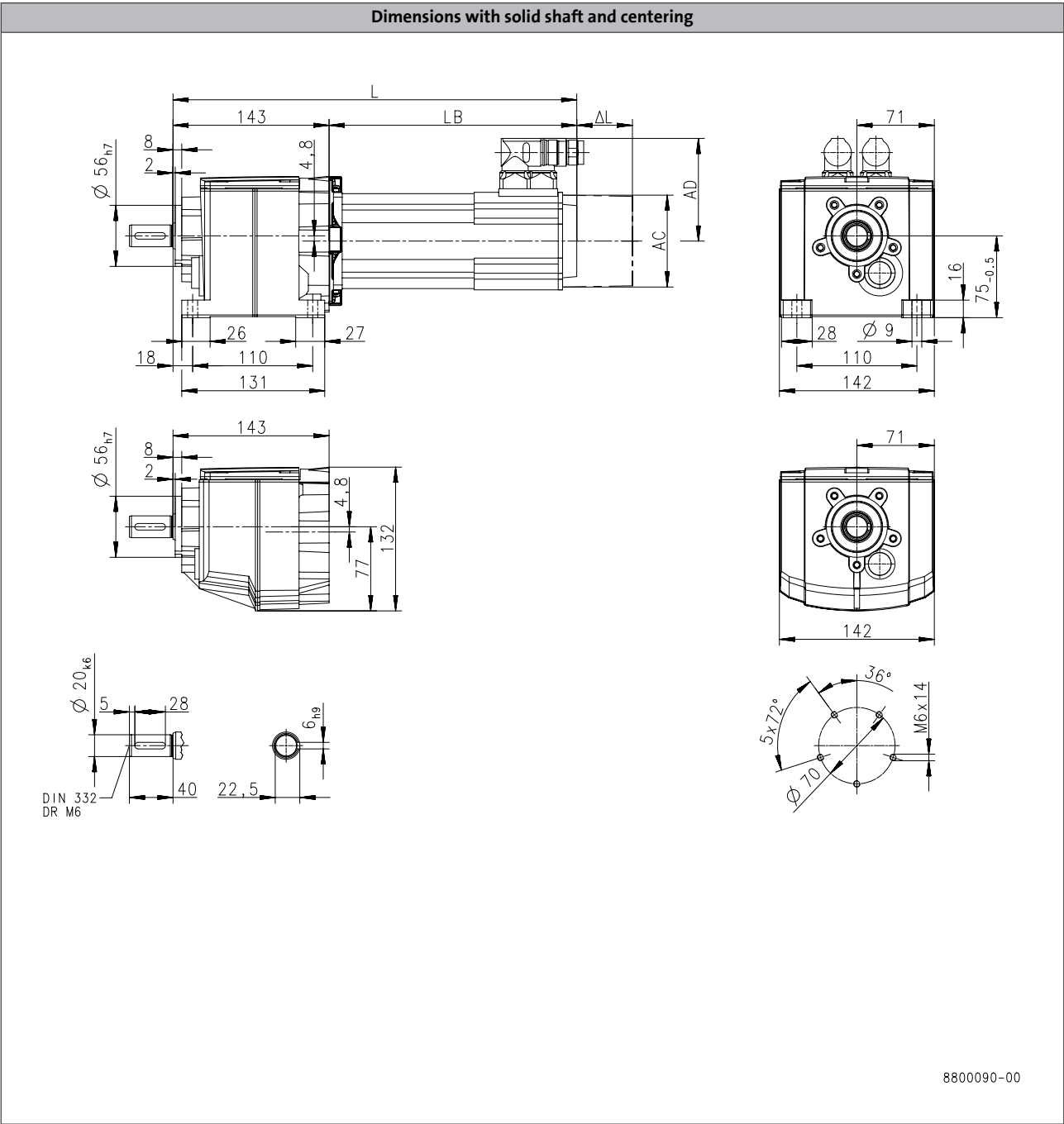
g500-H helical geared motors

Technical data



Dimensions, forced ventilated motors

g500-H100



Product			MCA
Dimensions			13I34
Total length	L	[mm]	479
Motor length	LB	[mm]	335.5
Length of motor options	ΔL	[mm]	89.5
Motor diameter	AC	[mm]	130
Distance motor/connection	AD	[mm]	102

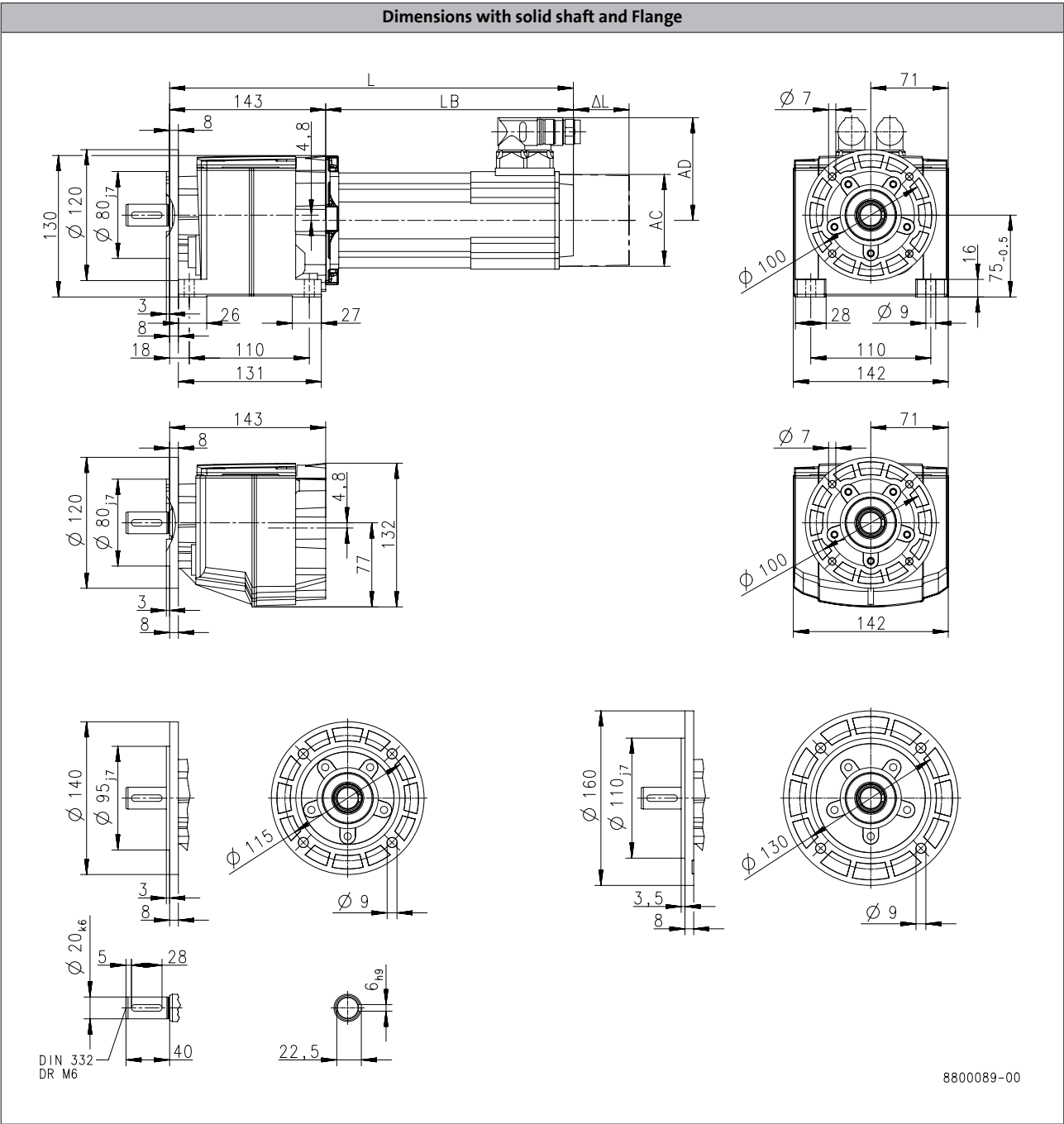
g500-H helical geared motors

Technical data



Dimensions, forced ventilated motors

g500-H100



Product			MCA
			13I34
Dimensions			
Total length	L	[mm]	479
Motor length	LB	[mm]	335.5
Length of motor options	Δ L	[mm]	89.5
Motor diameter	AC	[mm]	130
Distance motor/connection	AD	[mm]	102

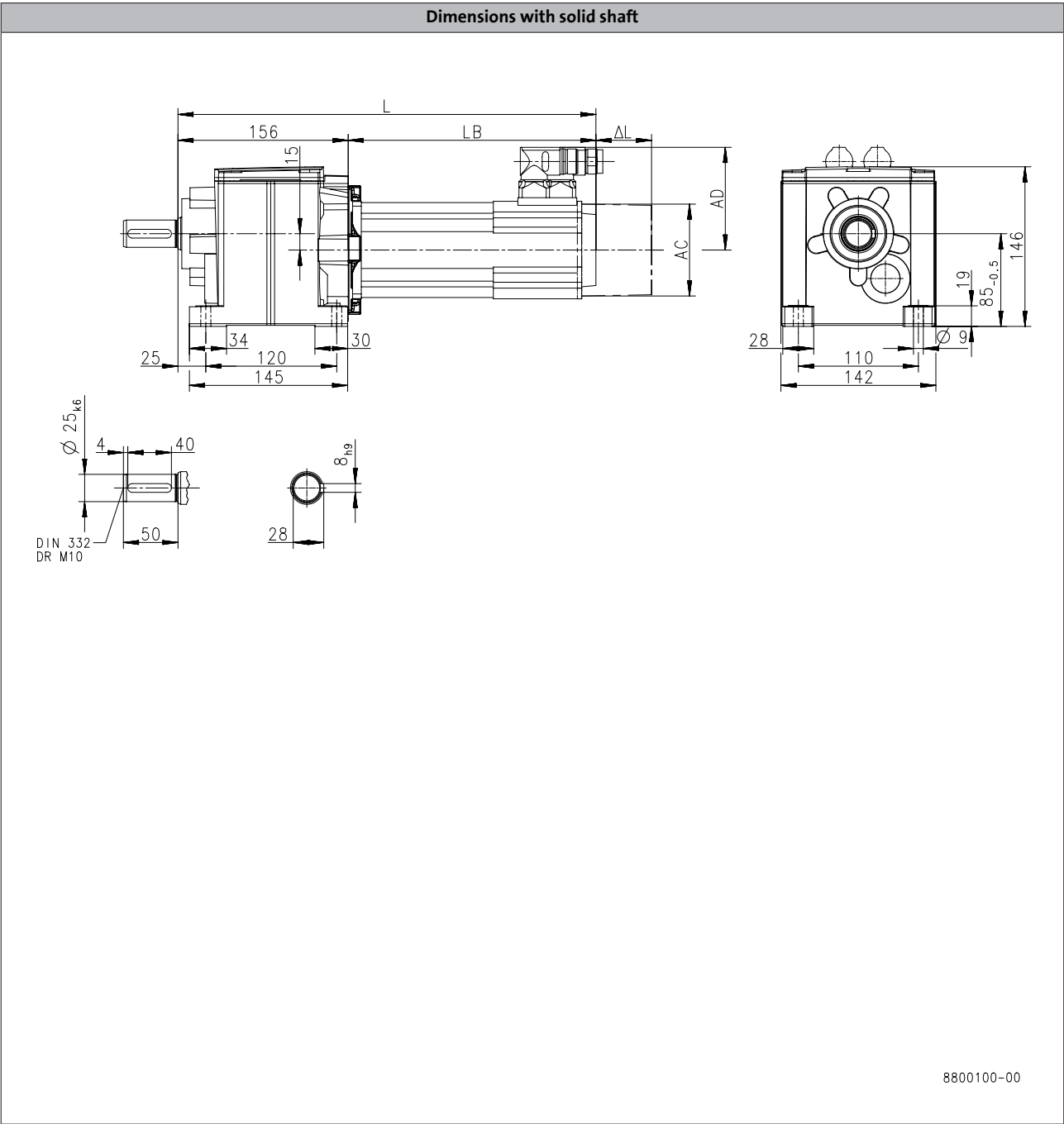
g500-H helical geared motors

Technical data



Dimensions, forced ventilated motors

g500-H140



Product			MCA
			13I34
Dimensions			
Total length	L	[mm]	492
Motor length	LB	[mm]	335.5
Length of motor options	Δ L	[mm]	89.5
Motor diameter	AC	[mm]	130
Distance motor/connection	AD	[mm]	102

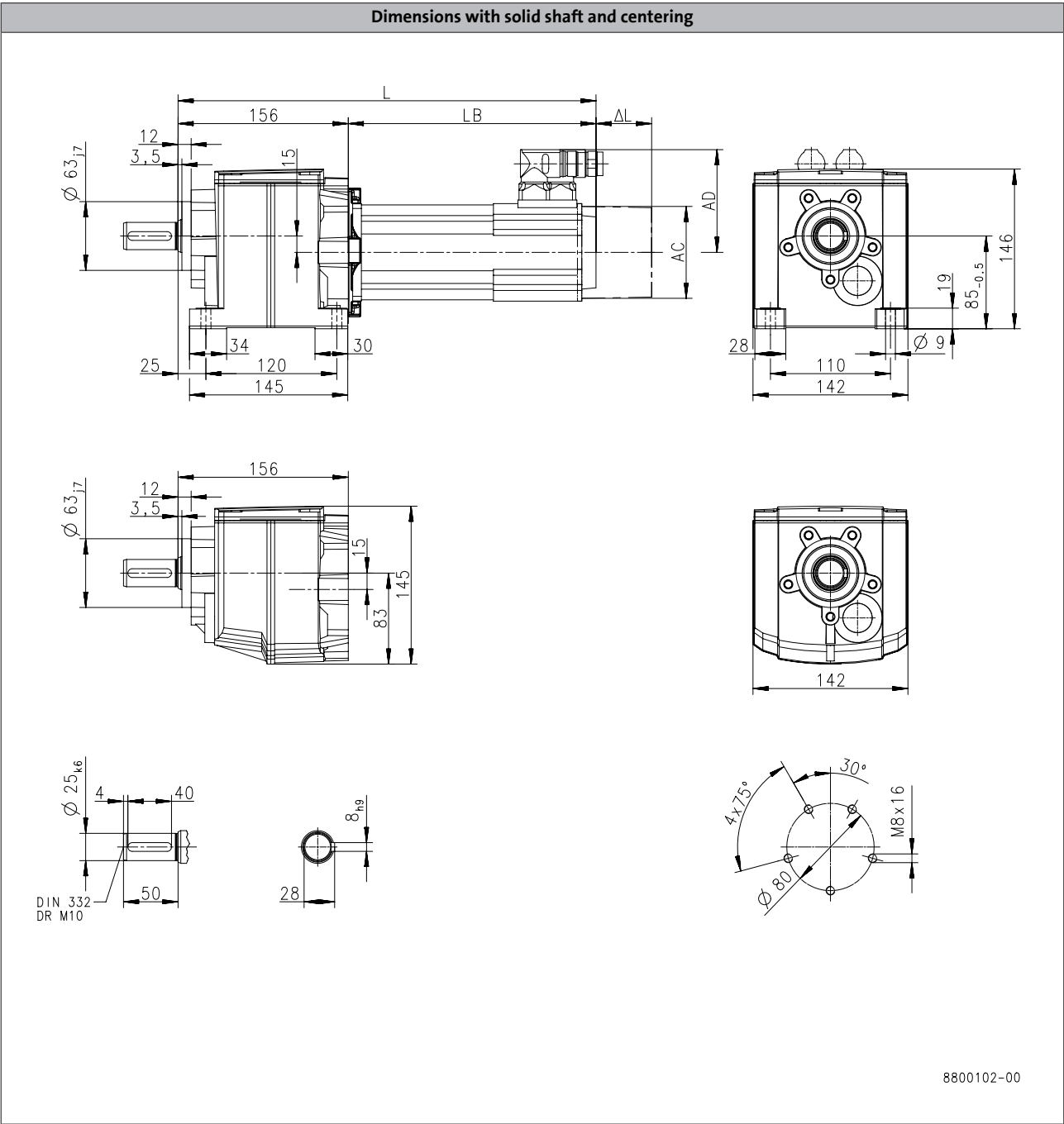
g500-H helical geared motors

Technical data



Dimensions, forced ventilated motors

g500-H140



Product			MCA
			13I34
Dimensions			
Total length	L	[mm]	492
Motor length	LB	[mm]	335.5
Length of motor options	Δ L	[mm]	89.5
Motor diameter	AC	[mm]	130
Distance motor/connection	AD	[mm]	102

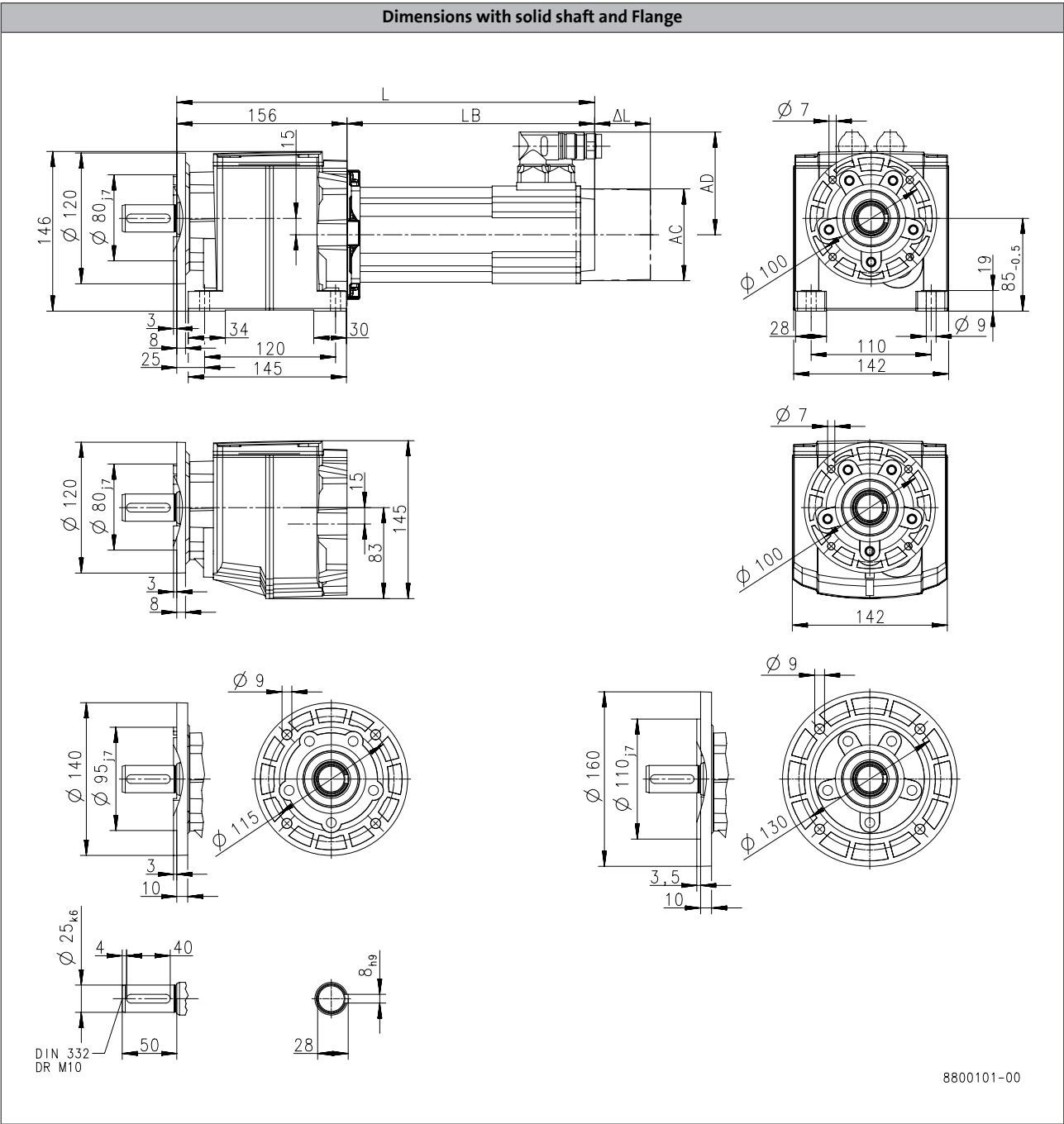
g500-H helical geared motors

Technical data



Dimensions, forced ventilated motors

g500-H140



Product			MCA
			13I34
Dimensions			
Total length	L	[mm]	492
Motor length	LB	[mm]	335.5
Length of motor options	Δ L	[mm]	89.5
Motor diameter	AC	[mm]	130
Distance motor/connection	AD	[mm]	102

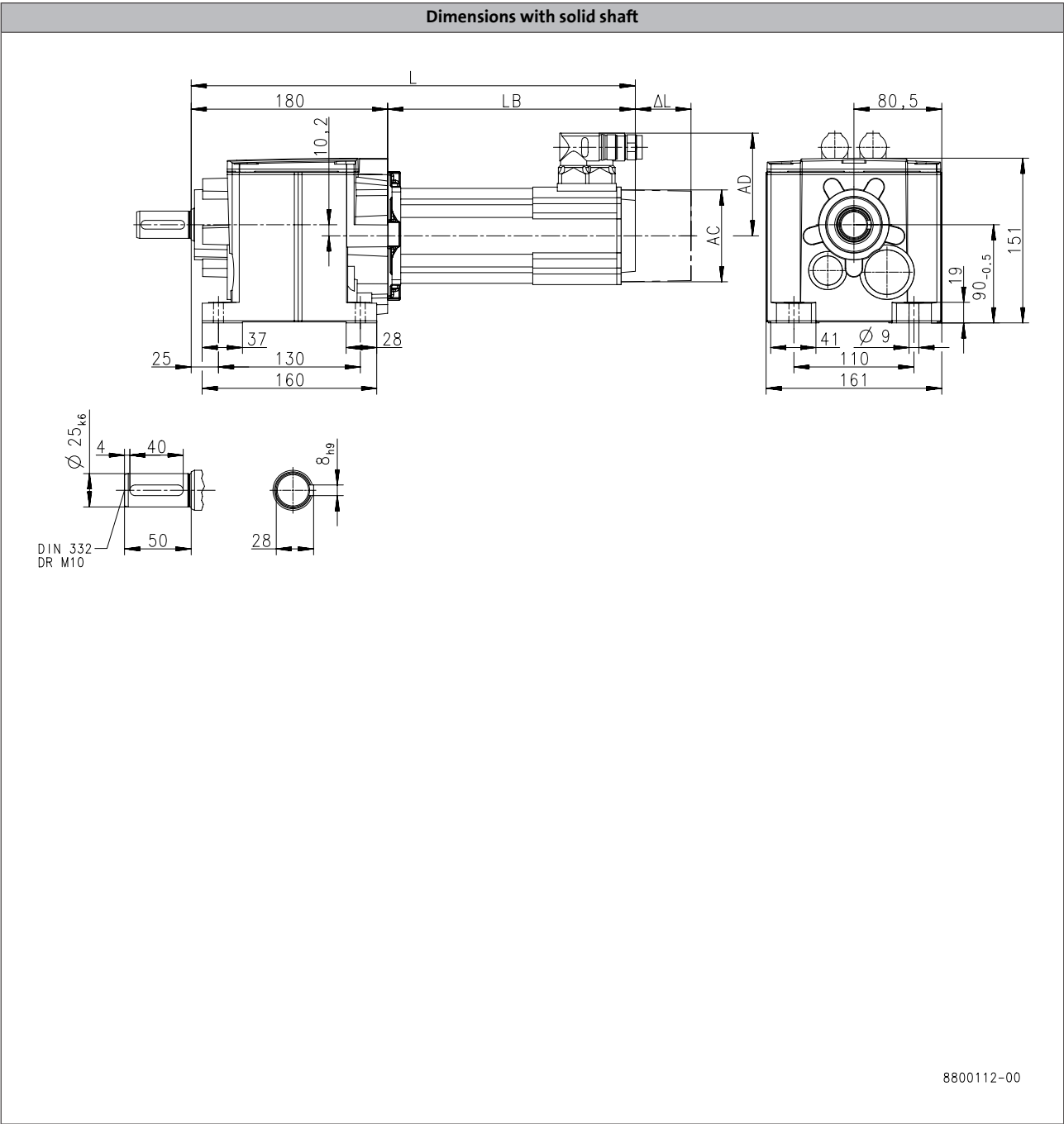
g500-H helical geared motors

Technical data



Dimensions, forced ventilated motors

g500-H210



Product			MCA	
			13I34	14L16
Dimensions				
Total length	L	[mm]	516	560
Motor length	LB	[mm]	335.5	379.5
Length of motor options	Δ L	[mm]	89.5	88.5
Motor diameter	AC	[mm]	130	142
Distance motor/connection	AD	[mm]	102	109

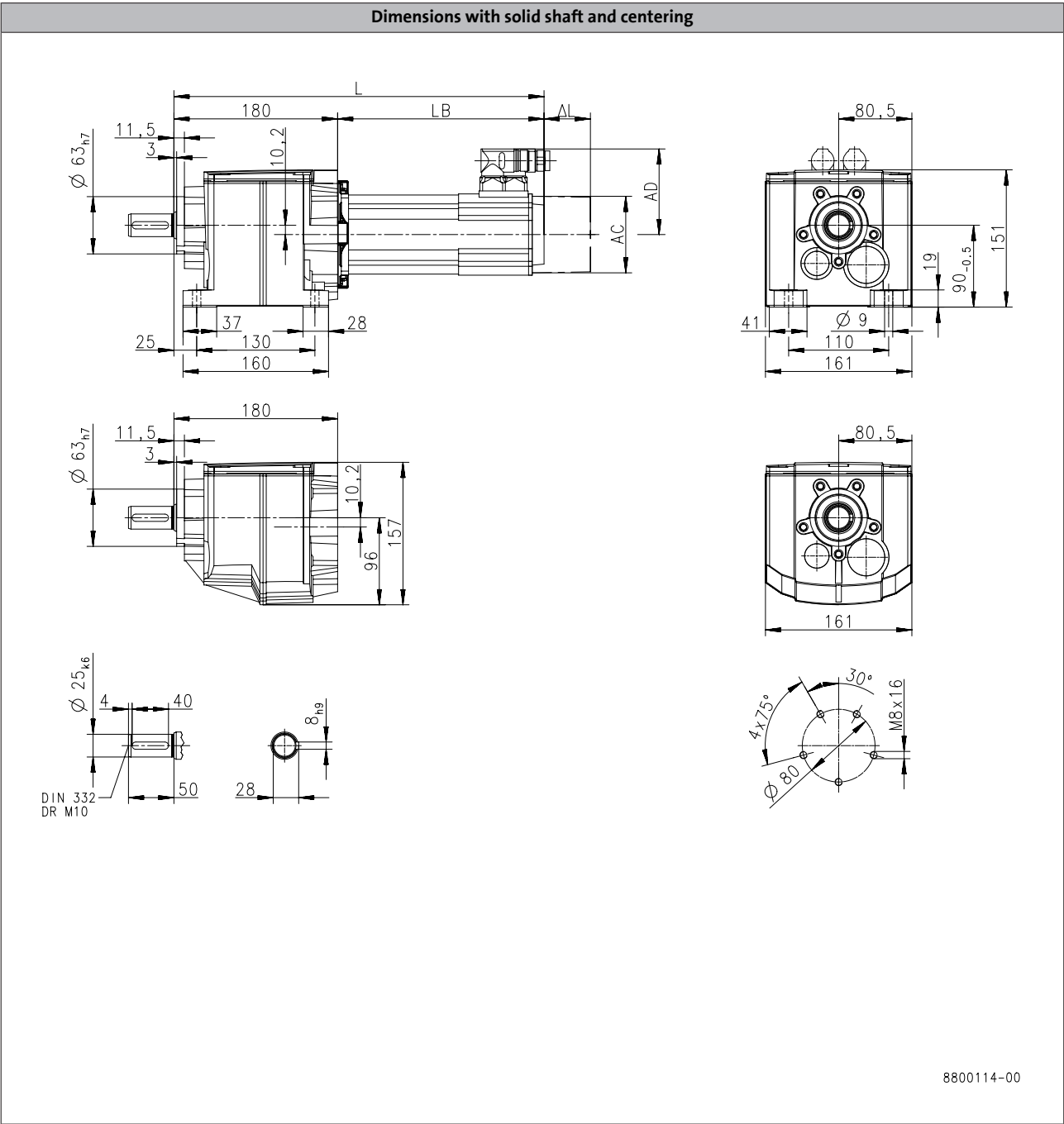
g500-H helical geared motors

Technical data



Dimensions, forced ventilated motors

g500-H210



8800114-00

Product			MCA	
			13I34	14L16
Dimensions				
Total length	L	[mm]	516	560
Motor length	LB	[mm]	335.5	379.5
Length of motor options	Δ L	[mm]	89.5	88.5
Motor diameter	AC	[mm]	130	142
Distance motor/connection	AD	[mm]	102	109

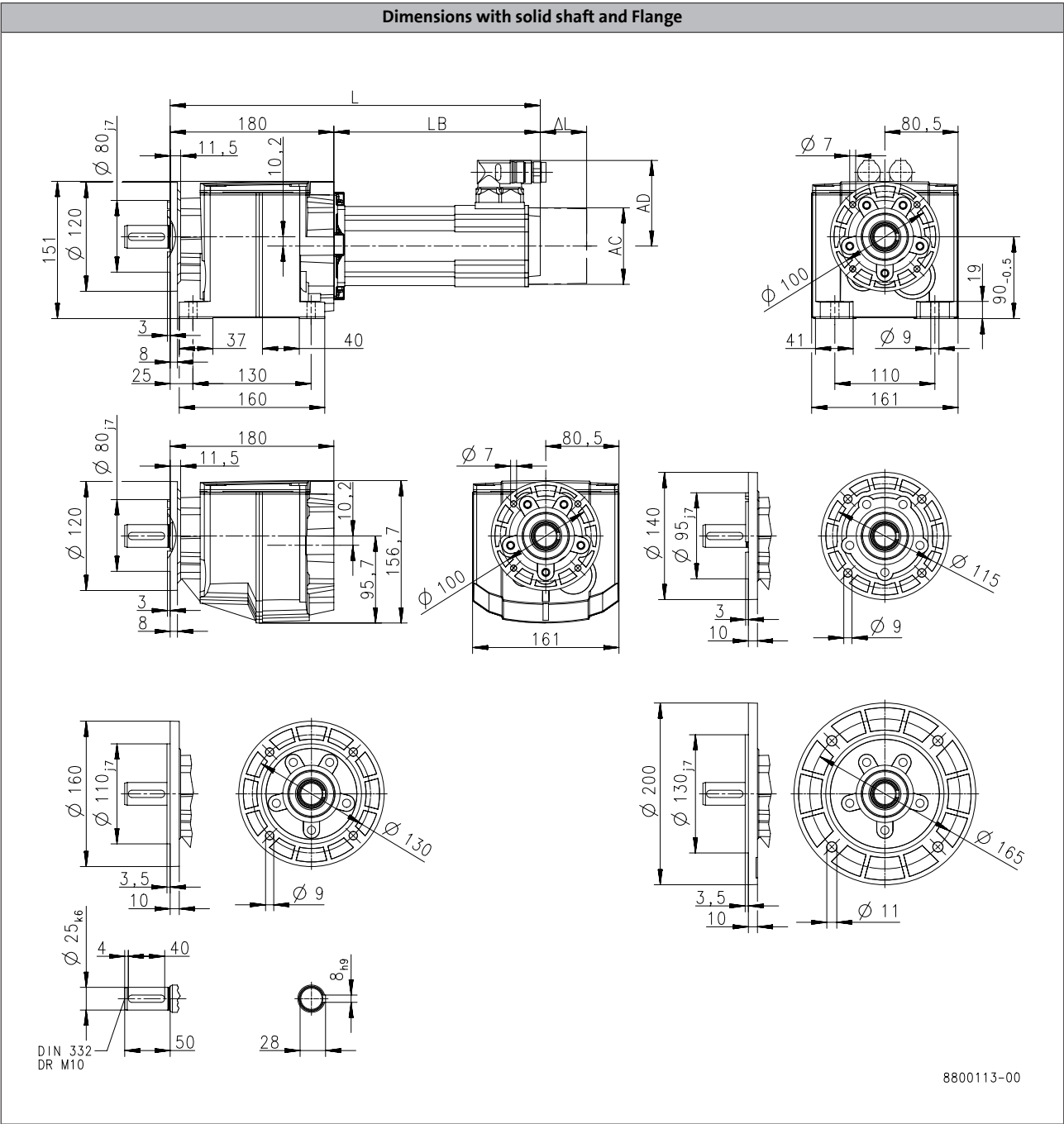
g500-H helical geared motors

Technical data



Dimensions, forced ventilated motors

g500-H210



Product			MCA	
			13I34	14L16
Dimensions				
Total length	L	[mm]	516	560
Motor length	LB	[mm]	335.5	379.5
Length of motor options	Δ L	[mm]	89.5	88.5
Motor diameter	AC	[mm]	130	142
Distance motor/connection	AD	[mm]	102	109

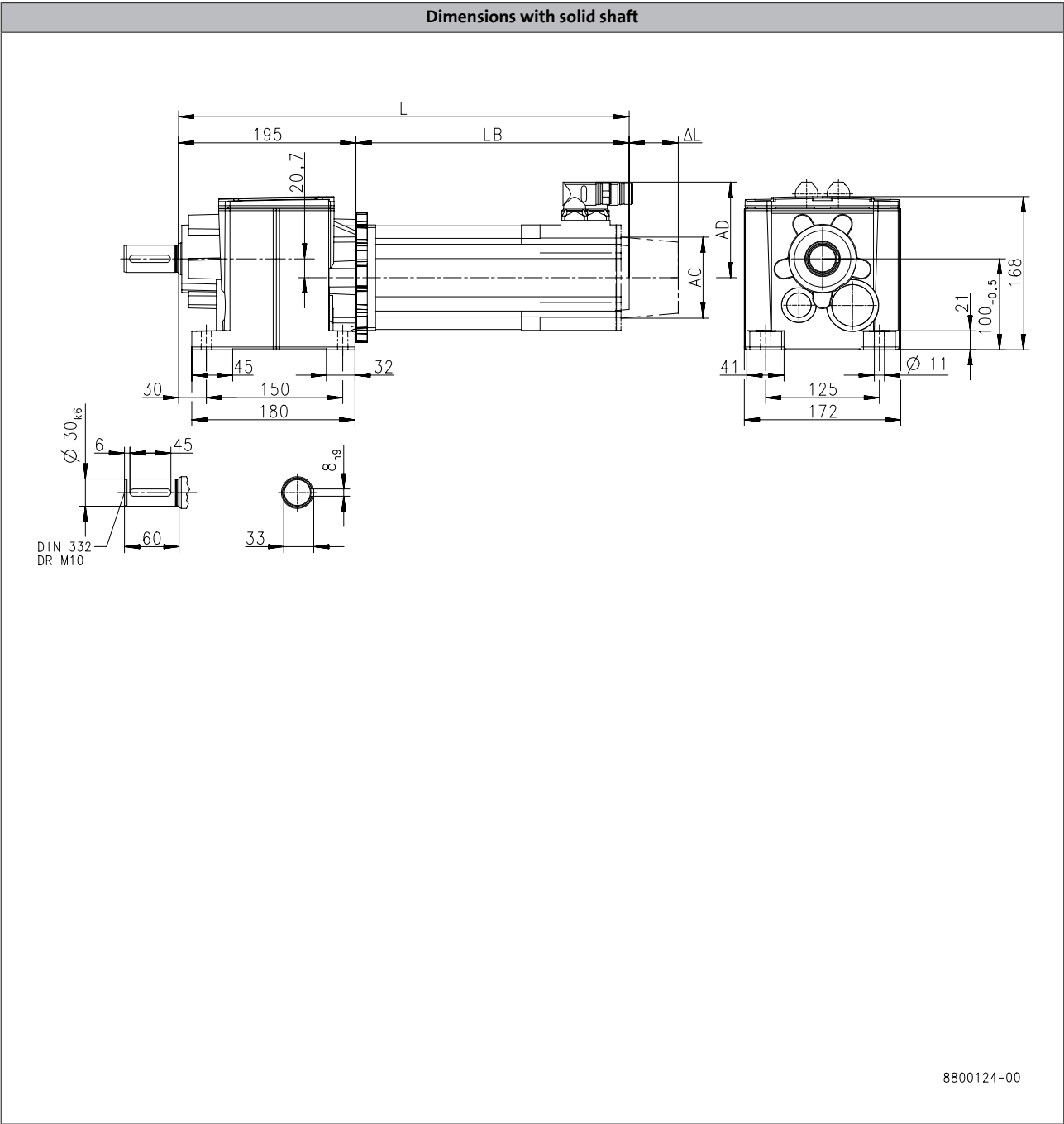
g500-H helical geared motors

Technical data



Dimensions, forced ventilated motors

g500-H320

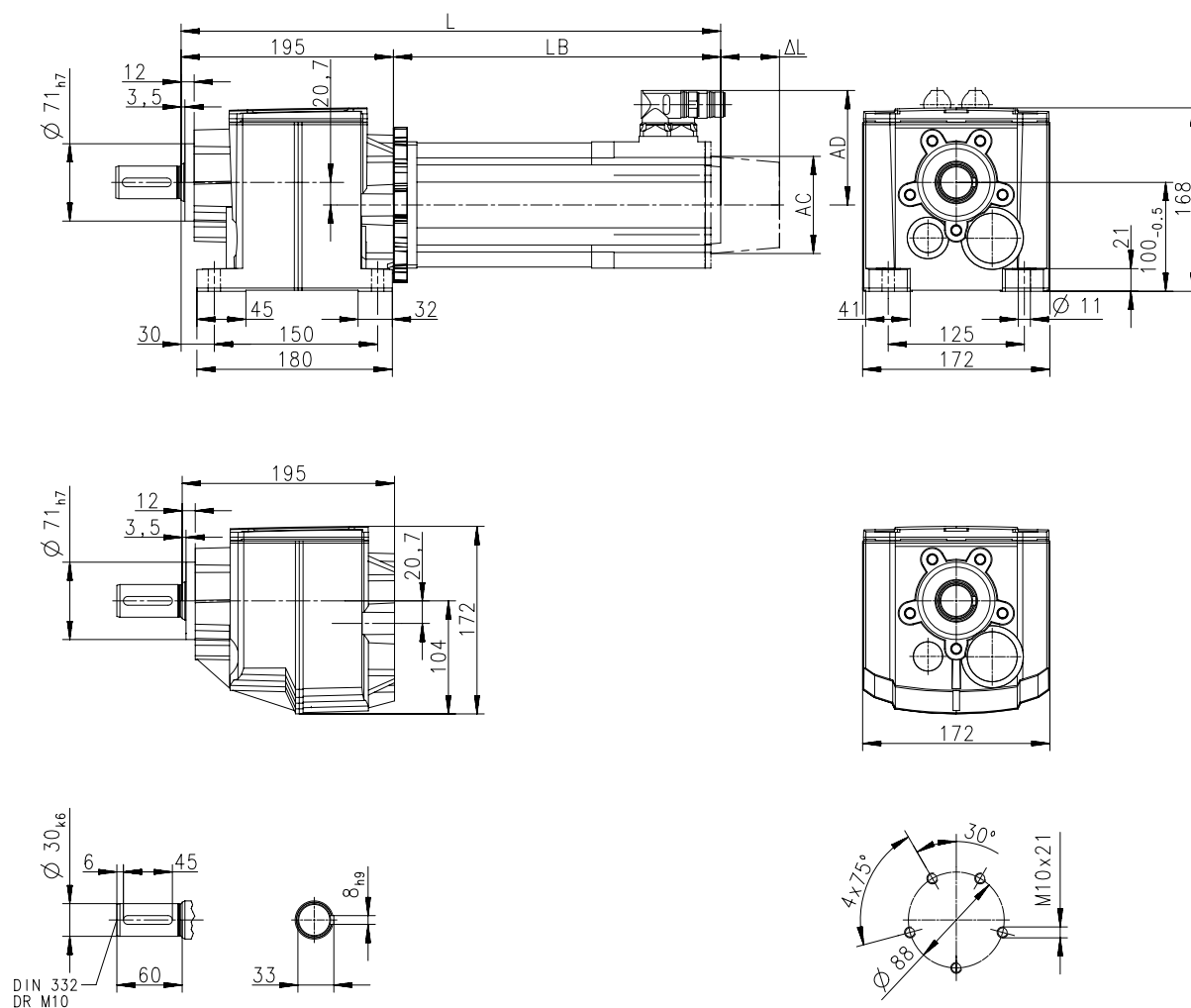


Product			MCA			
			13I34	14L16	14L35	17N17
Dimensions						
Total length	L	[mm]	536	580		643
Motor length	LB	[mm]	335.5	379.5		442.5
Length of motor options	ΔL	[mm]	89.5	88.5		89
Motor diameter	AC	[mm]	130	142		165
Distance motor/connection	AD	[mm]	102	109		117.5

Dimensions, forced ventilated motors

g500-H320

Dimensions with solid shaft and centering



8800126-00

Product			MCA			
			13I34	14I16	14I35	17N17
Dimensions						
Total length	L	[mm]	536	580		643
Motor length	LB	[mm]	335.5	379.5		442.5
Length of motor options	Δ L	[mm]	89.5	88.5		89
Motor diameter	AC	[mm]	130	142		165
Distance motor/connection	AD	[mm]	102	109		117.5

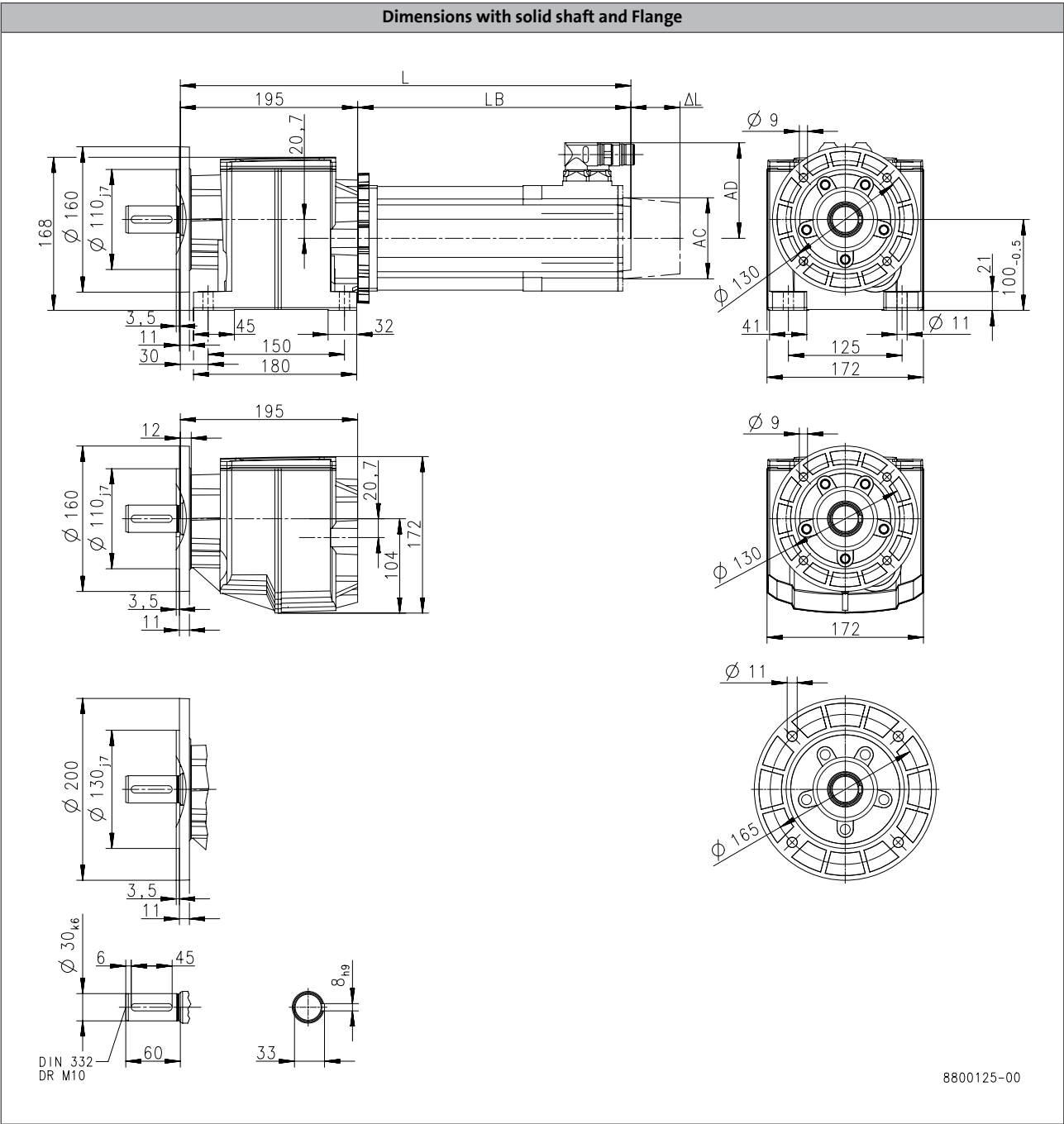
g500-H helical geared motors

Technical data



Dimensions, forced ventilated motors

g500-H320



Product			MCA			
			13I34	14L16	14L35	17N17
Dimensions						
Total length	L	[mm]	536	580		643
Motor length	LB	[mm]	335.5	379.5		442.5
Length of motor options	ΔL	[mm]	89.5	88.5		89
Motor diameter	AC	[mm]	130	142		165
Distance motor/connection	AD	[mm]	102	109		117.5

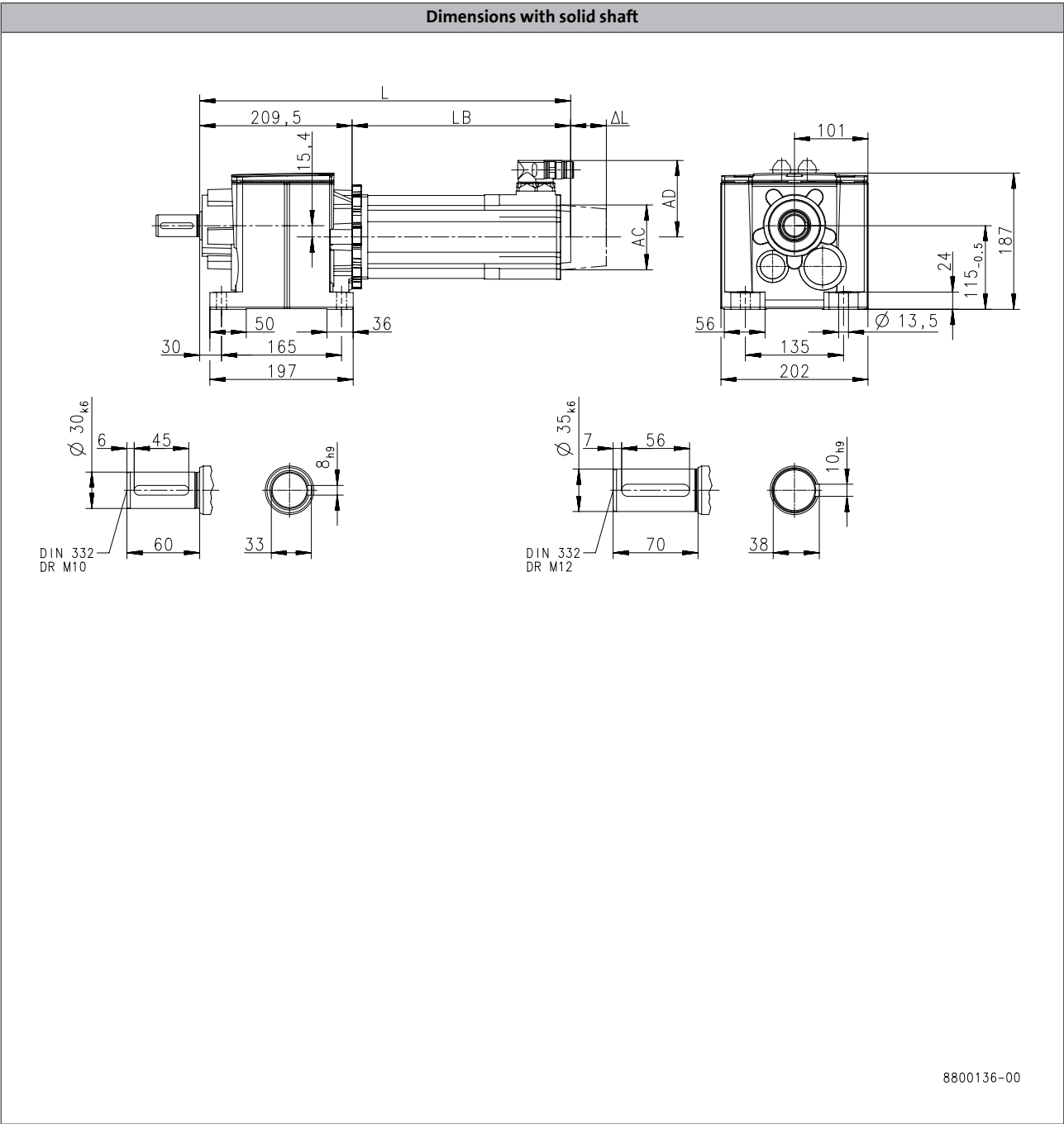
g500-H helical geared motors

Technical data



Dimensions, forced ventilated motors

g500-H450



Product			MCA			
			13I34	14L16	14L35	17N17
Dimensions						
Total length	L	[mm]	545	589		652
Motor length	LB	[mm]	335.5	379.5		442.5
Length of motor options	Δ L	[mm]	89.5	88.5		89
Motor diameter	AC	[mm]	130	142		165
Distance motor/connection	AD	[mm]	102	109		117.5

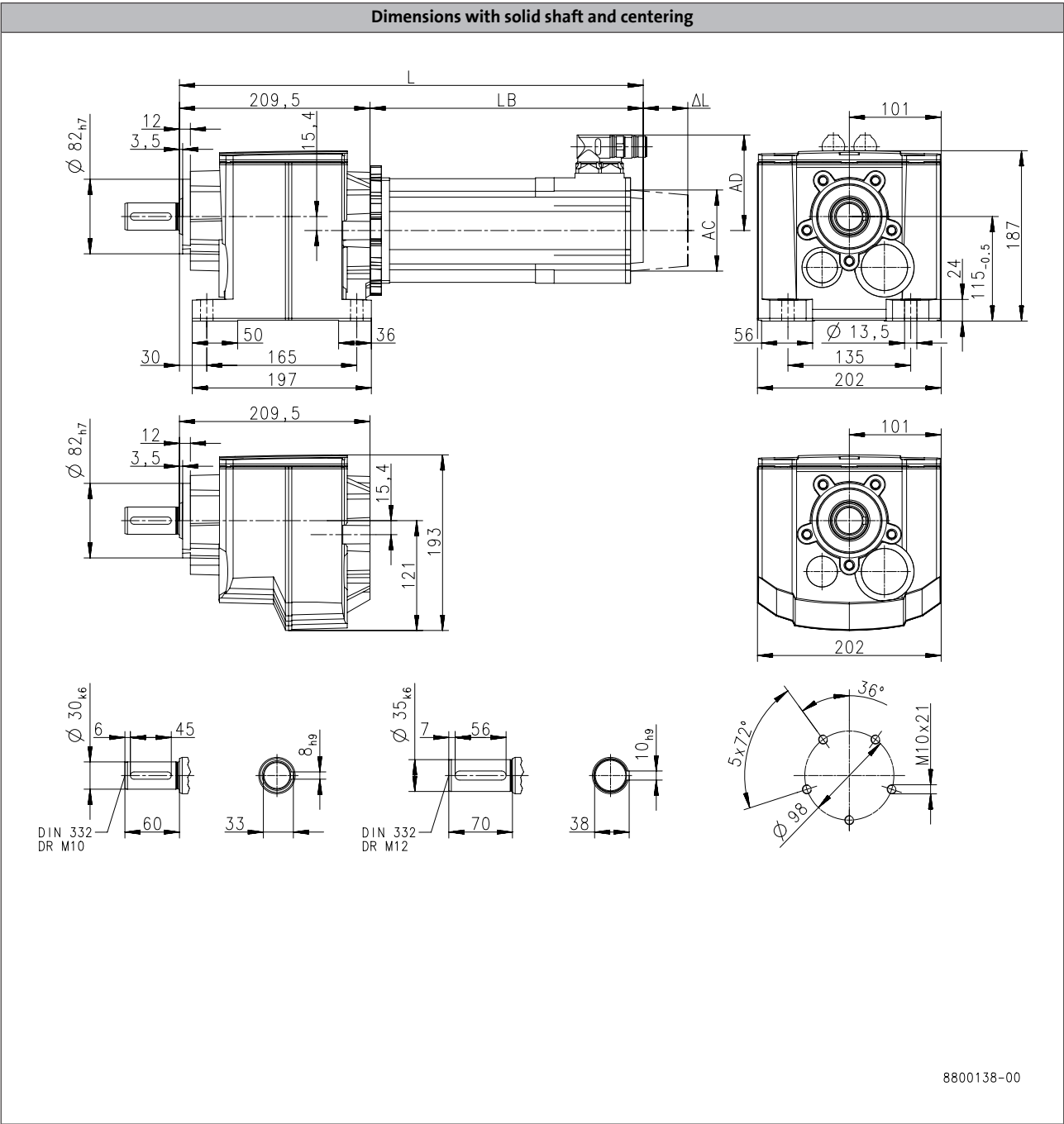
g500-H helical geared motors

Technical data



Dimensions, forced ventilated motors

g500-H450



Product			MCA			
			13I34	14L16	14L35	17N17
Dimensions						
Total length	L	[mm]	545	589		652
Motor length	LB	[mm]	335.5	379.5		442.5
Length of motor options	Δ L	[mm]	89.5	88.5		89
Motor diameter	AC	[mm]	130	142		165
Distance motor/connection	AD	[mm]	102	109		117.5

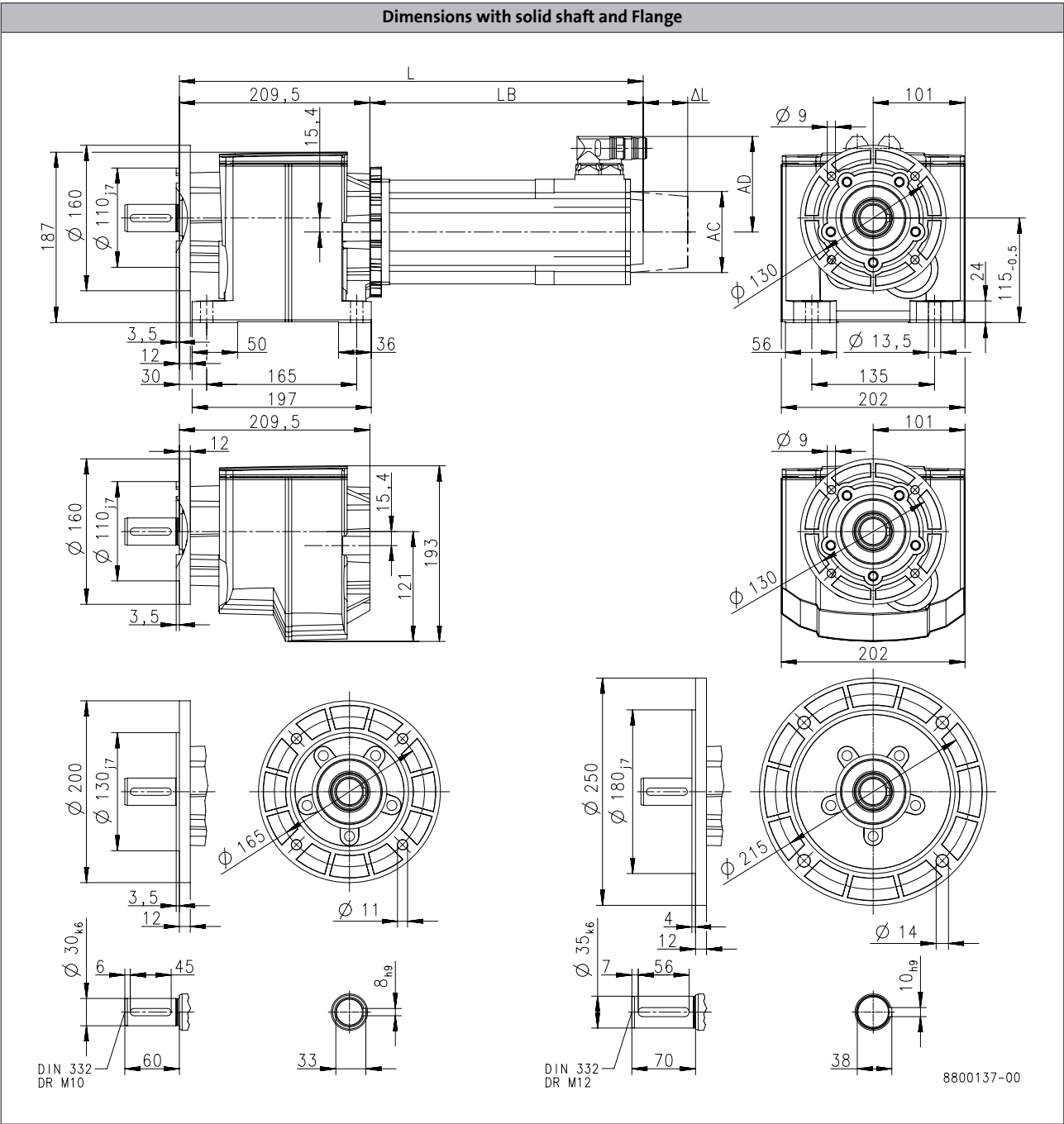
g500-H helical geared motors

Technical data



Dimensions, forced ventilated motors

g500-H450



Product			MCA			
			13I34	14L16	14L35	17N17
Dimensions						
Total length	L	[mm]	545	589		652
Motor length	LB	[mm]	335.5	379.5		442.5
Length of motor options	ΔL	[mm]	89.5	88.5		89
Motor diameter	AC	[mm]	130	142		165
Distance motor/connection	AD	[mm]	102	109		117.5

g500-H helical geared motors

Technical data



Weights, self-ventilated motors

2-stage gearboxes

MCA							
				10I40	13I41	14L20	17N23
g500	-H100	m	[kg]	9.3	14		
	-H140	m	[kg]	10	15		
	-H210	m	[kg]	12	16	20	
	-H320	m	[kg]	14	18	22	30
	-H450	m	[kg]	17	21	26	33

3-stage gearboxes

MCA							
				10I40	13I41		
g500	-H210	m	[kg]	12			
	-H320	m	[kg]	14			
	-H450	m	[kg]	17	21		

g500-H helical geared motors

Technical data



Weights, forced ventilated motors

2-stage gearboxes

				MCA			
				13I34	14L16	14L35	17N17
g500	-H100	m	[kg]	15			
	-H140	m	[kg]	16			
	-H210	m	[kg]	18	22		
	-H320	m	[kg]	19		24	33
	-H450	m	[kg]	22		27	36

3-stage gearboxes

				MCA
				13I34
g500	-H450	m	[kg]	23



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

g500-H helical geared motors

Technical data



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	
OKS-L (large)	C3	2K-PUR top coat	

g500-H helical geared motors

Technical data



g500-H helical geared motors

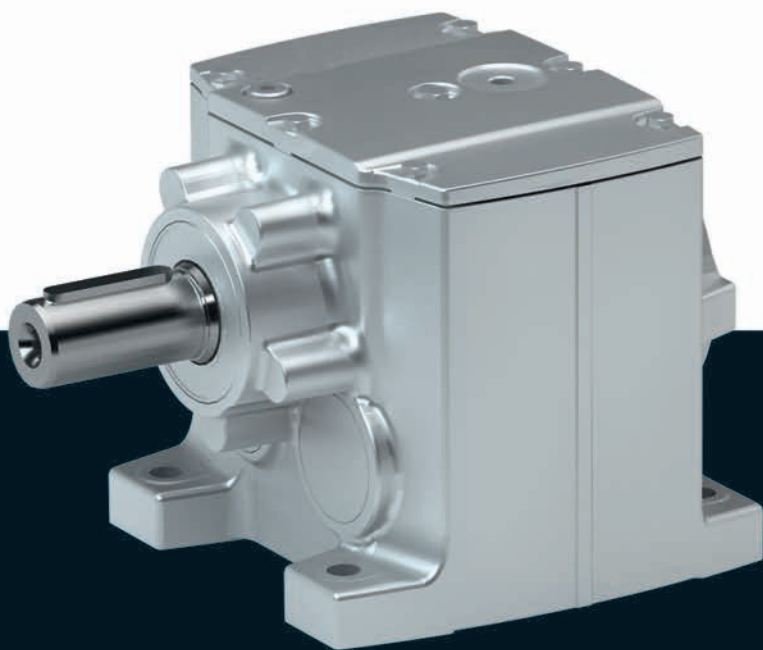
Technical data



Gearboxes

g500-H helical gearbox

45 to 450 Nm



g500-H helical gearbox

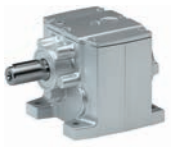
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g500-H helical gearbox

Contents



g500-H helical gearbox

General information



List of abbreviations

$F_{ax,max}$	[N]	Max. axial force
$F_{rad,max}$	[N]	Max. radial force
i		Ratio
J	[kgcm ²]	Moment of inertia
m	[kg]	Mass

g500-H helical gearbox

General information



Product information

The robust helical gearboxes feature high permissible radial forces, closely stepped ratios and a low backlash. They are available in 2-pole and 3-pole design with a torque up to 450 Nm and a ratio of up to $i = 370$.

Versions

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

The product name

Gearbox type	Product range		Design	Rated torque [Nm]	Product
Helical gearbox	g500	-	H	45	g500-H45
				100	g500-H100
				140	g500-H140
				210	g500-H210
				320	g500-H320
				450	g500-H450

g500-H helical gearbox

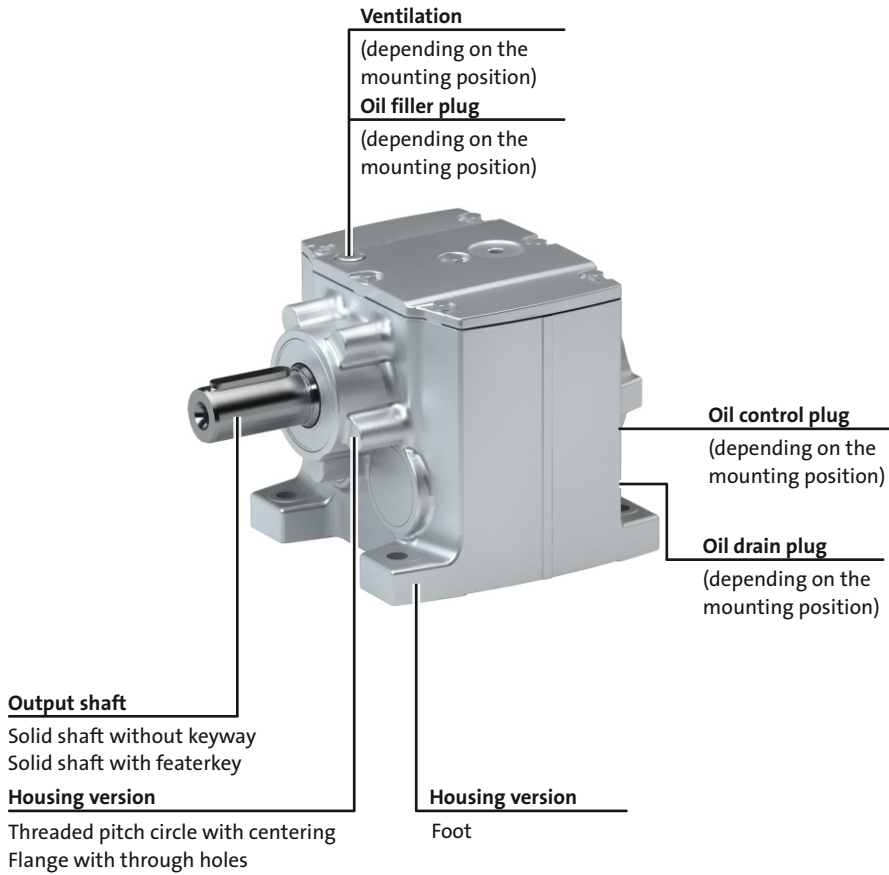
General information



Equipment

Overview

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



g500-H helical gearbox

General information



The gearbox kit

Gearbox details

Product						
	g500-H45	g500-H100	g500-H140	g500-H210	g500-H320	g500-H450
Driven shaft						
Solid shaft without keyway [mm]		20x40	25x50		30x60	35x70
Solid shaft with featherkey [mm]	14x28 20x40	20x40	25x50		30x60	30x60 35x70
Design	Standard stainless steel					
Gasket	Standard FPM (Viton)					
Bearing	Standard	Standard Reinforced				
Fitting grease	Not enclosed Enclosed					
Housing						
Housing version	With foot Without foot with centering	With foot With foot and centering Without foot with centering				
Output flange						
flange diameter [mm]	120/140/160			120/140/160/200	160/200	160/200/250
Lubricant						
Type	CLP 460 ¹⁾ 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					

¹⁾ Not suitable for geared servo motors.

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

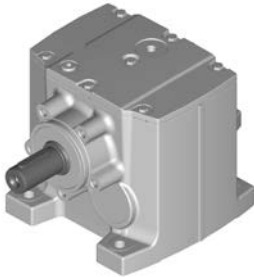
g500-H helical gearbox

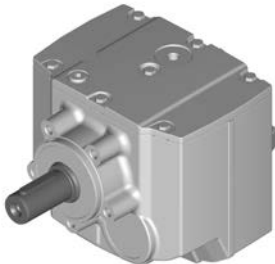
General information



The gearbox kit

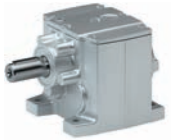
Gearbox details

Solid shaft		
		
Foot mounting	Foot mounting With centering	Foot mounting Flange with through holes

Solid shaft	
	
With centering	Flange with through holes

g500-H helical gearbox

General information

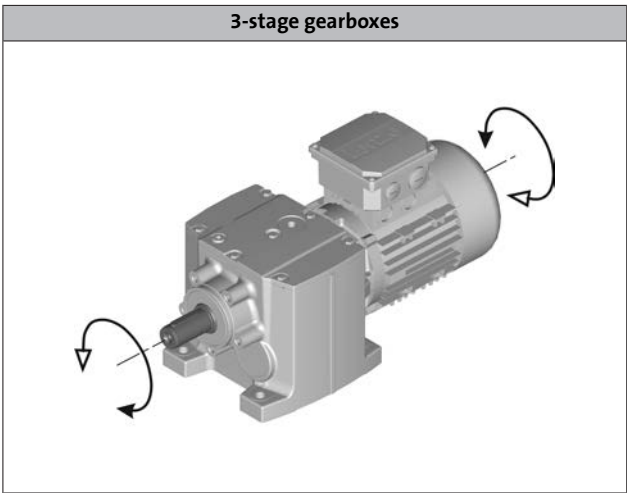
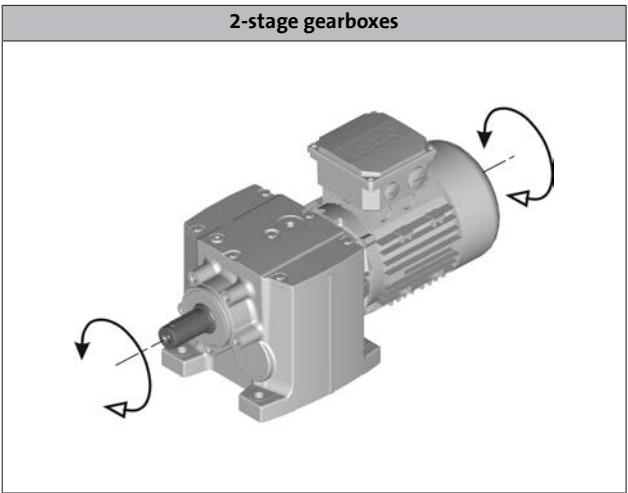


Functions and features

Product	g500-H45		g500-H100	g500-H140	g500-H210	g500-H320	g500-H450
Housing							
Design	Cuboid						
Material	Aluminium						
Solid shaft							
Design	with keyway to DIN 6885	with keyway to DIN 6885 Without keyway					
Tolerance	Shaft diameter ≤ 50 mm: k6 Shaft diameter > 50 mm: m6						
Material	Tempered steel C45 Nirosta X46Cr13						
Toothed parts							
Design	Ground tooth flanks Optimised tooth flank geometry						
Material	Case-hardened steel						
Shaft-hub joint							
	Force-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 [η _{C=1}]	0.96						
3-stage gearboxes [η _{C=1}]					0.95		

¹⁾ Standard for geared servo motors.

Direction of rotation



g500-H helical gearbox

General information



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.

g500-H helical gearbox

General information



Ventilation

Non-ventilated gearboxes

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

Ventilated gearboxes

The g500-H320 H450 gearbox is supplied with a breather element as standard.

Gearboxes in combined mounting position

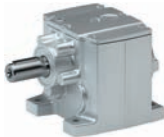
To reduce the number of different versions, the gearboxes can also be ordered with combined mounting positions. Depending on the gearbox in question, the following combinations are available:

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

The breather elements are supplied loose.

g500-H helical gearbox

General information



Ventilation

Position of ventilation, sealing elements and oil level check

► A ... F mounting position

A		B	
C		D	
E		F	
	Filling		Drain
	Ventilation		Check

g500-H helical gearbox

General information





Permissible radial and axial forces at output

Permissible radial force

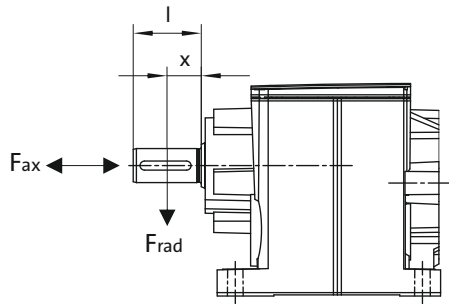
$$F_{rad,perm} = f_w \times F_{rad,max}$$

Permissible axial force

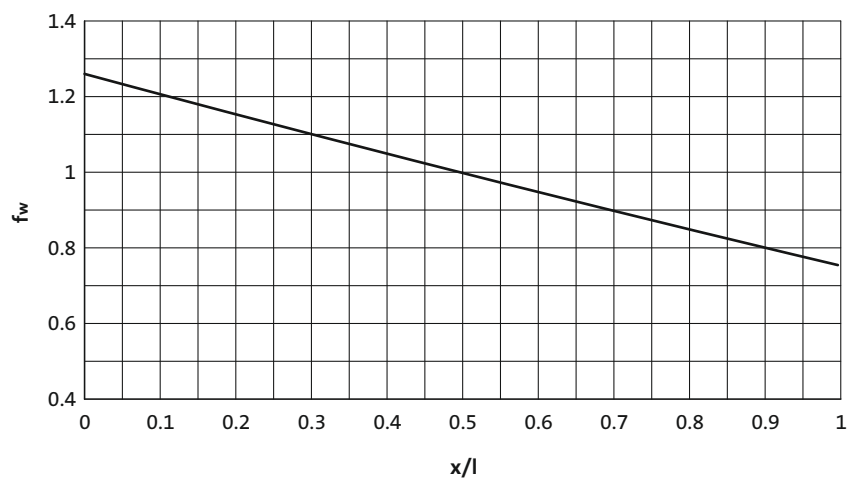
If there is no radial force, the maximum permissible axial force is 50 % of the table value $F_{rad,max}$

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

Application of forces



Additional load factor f_w at output shaft



g500-H helical gearbox

Technical data



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.

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

- If the torque is transmitted via the flange face, max 50 % of the radial force $F_{rad,max}$ are permissible.

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

Max. radial force, Solid shaft										
	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
g500-H45	300	370	630	710	800	920	1100	1400	1500	1500
g500-H100	820	1000	1200	1450	1750	2120	2560	2650	2650	2650
g500-H140	1210	1750	2000	2300	2700	3300	3800	3800	3800	3800
g500-H210	1150	1600	2020	2390	2780	3360	3900	3900	4360	4800
g500-H320	1500	1900	2200	2600	3000	3500	4100	4800	5600	5700
g500-H450	1900	2200	2560	3000	3470	4050	4720	5480	6610	7100

Max. radial force, Solid shaft (reinforced bearings)										
	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$	$F_{rad,max}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
g500-H100	1020	1250	1500	1810	2190	2650	3200	3300	3300	3300
g500-H140	1510	2180	2500	2870	3370	4120	4750	4750	4750	4750
g500-H210	1430	2000	2520	2980	3470	4200	4870	4870	5450	6000
g500-H320	1870	2370	2750	3250	3750	4370	5120	6000	7000	7100
g500-H450	2370	2750	3200	3750	4330	5060	5900	6850	8260	8870

g500-H helical gearbox

Technical data



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.

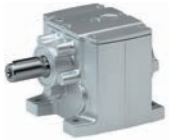
2-stage gearboxes

Product	Ratio	Moment of inertia
	i	J
		[kgcm ²]
g500-H45	2.597	0.26
	3.413	0.17
	4.368	0.12
	5.312	0.18
	5.965	0.17
	6.982	0.12
	7.840	0.12
	8.935	0.089
	10.033	0.086
	11.429	0.059
	12.833	0.057
	14.836	0.041
	16.660	0.040
	19.013	0.028
	21.350	0.027
	24.595	0.019
	27.618	0.019
	32.000	0.012
	35.933	0.012
	41.455	0.008
g500-H100	46.550	0.008
	52.909	0.005
	59.413	0.005
	3.354	0.53
	4.600	0.34
	5.167	0.43
	5.887	0.24
	6.440	0.21
	7.086	0.28
	8.214	0.15
	9.068	0.20
	10.063	0.11
	11.360	0.17
	12.653	0.13
	14.490	0.13
	15.500	0.10
	17.750	0.10
	19.486	0.069
	22.314	0.067
	25.095	0.048
	28.738	0.047
	31.805	0.032
	36.422	0.031
	39.857	0.022
	45.643	0.022
	52.510	0.014
	60.133	0.013

Product	Ratio	Moment of inertia
	i	J
		[kgcm ²]
g500-H140	3.267	0.90
	4.480	0.54
	5.733	0.36
	6.272	0.31
	7.269	0.51
	8.000	0.21
	9.029	0.34
	9.800	0.15
	11.554	0.24
	12.640	0.21
	13.957	0.20
	16.122	0.15
	17.802	0.14
	19.750	0.11
	21.808	0.11
	24.829	0.077
	27.415	0.074
	31.976	0.053
	35.308	0.051
	40.526	0.035
g500-H210	44.748	0.034
	50.786	0.024
	56.077	0.024
	66.908	0.015
	73.879	0.014
	3.389	1.53
	4.648	0.98
	5.583	1.24
	6.250	1.18
	7.657	0.82
	8.571	0.79
	9.799	0.59
	10.720	0.51
	12.000	0.50
	13.673	0.38
	15.306	0.36
	16.750	0.29
	18.750	0.28
	21.802	0.18
	24.405	0.18
	27.119	0.13
	30.357	0.13
	35.095	0.085
	39.286	0.083
	42.593	0.062
	47.679	0.061
	54.438	0.040
	60.938	0.039

g500-H helical gearbox

Technical data



Moments of inertia

2-stage gearboxes

Product	Ratio	Moment of inertia
	i	J
		[kgcm²]
g500-H320	3.389	1.23
	4.648	0.81
	6.083	1.66
	6.910	1.51
	8.343	1.04
	9.477	0.97
	10.677	0.72
	11.680	0.63
	12.128	0.68
	13.268	0.59
	14.898	0.44
	16.923	0.42
	18.250	0.34
	20.731	0.32
	23.754	0.21
	26.983	0.20
	29.548	0.15
	33.564	0.15
	38.238	0.095
	43.436	0.092
	46.407	0.070
	52.715	0.067

Product	Ratio	Moment of inertia
	i	J
		[kgcm²]
g500-H450	3.444	4.94
	4.724	3.21
	5.678	3.64
	6.045	2.23
	6.613	1.98
	7.787	2.52
	8.800	2.40
	9.965	1.81
	11.262	1.74
	12.320	1.56
	13.905	1.21
	15.714	1.17
	17.033	0.95
	19.250	0.93
	22.170	0.53
	25.056	0.51
	27.578	0.39
	31.167	0.38
	35.689	0.24
	40.333	0.24
	43.313	0.18
	48.950	0.17
	54.750	0.12
	61.875	0.11

g500-H helical gearbox

Technical data



Moments of inertia

3-stage gearboxes

Product	Ratio	Moment of inertia
	i	J
		[kgcm ²]
g500-H210	43.390	0.13
	48.571	0.13
	55.529	0.088
	62.160	0.088
	71.026	0.060
	79.507	0.059
	92.205	0.042
	103.214	0.042
	118.162	0.029
	132.270	0.029
	152.853	0.020
	198.873	0.014
	222.619	0.013
	257.631	0.003
	288.393	0.003
	368.080	0.006
g500-H320	47.276	0.13
	53.703	0.13
	60.502	0.093
	68.726	0.091
	77.387	0.062
	87.906	0.061
	100.462	0.044
	114.118	0.043
	128.743	0.030
	146.244	0.030
	166.541	0.021
	216.683	0.014
	246.137	0.014
	280.702	0.003
	318.859	0.003

Product	Ratio	Moment of inertia
	i	J
		[kgcm ²]
g500-H450	44.124	0.36
	49.867	0.36
	56.469	0.25
	61.774	0.22
	69.813	0.22
	78.794	0.16
	89.048	0.15
	96.522	0.12
	109.083	0.12
	121.342	0.079
	137.133	0.078
	156.274	0.054
	176.611	0.054
	198.059	0.036
	223.833	0.035
	248.200	0.025
	280.500	0.025
	326.994	0.015
	369.548	0.015

g500-H helical gearbox

Technical data



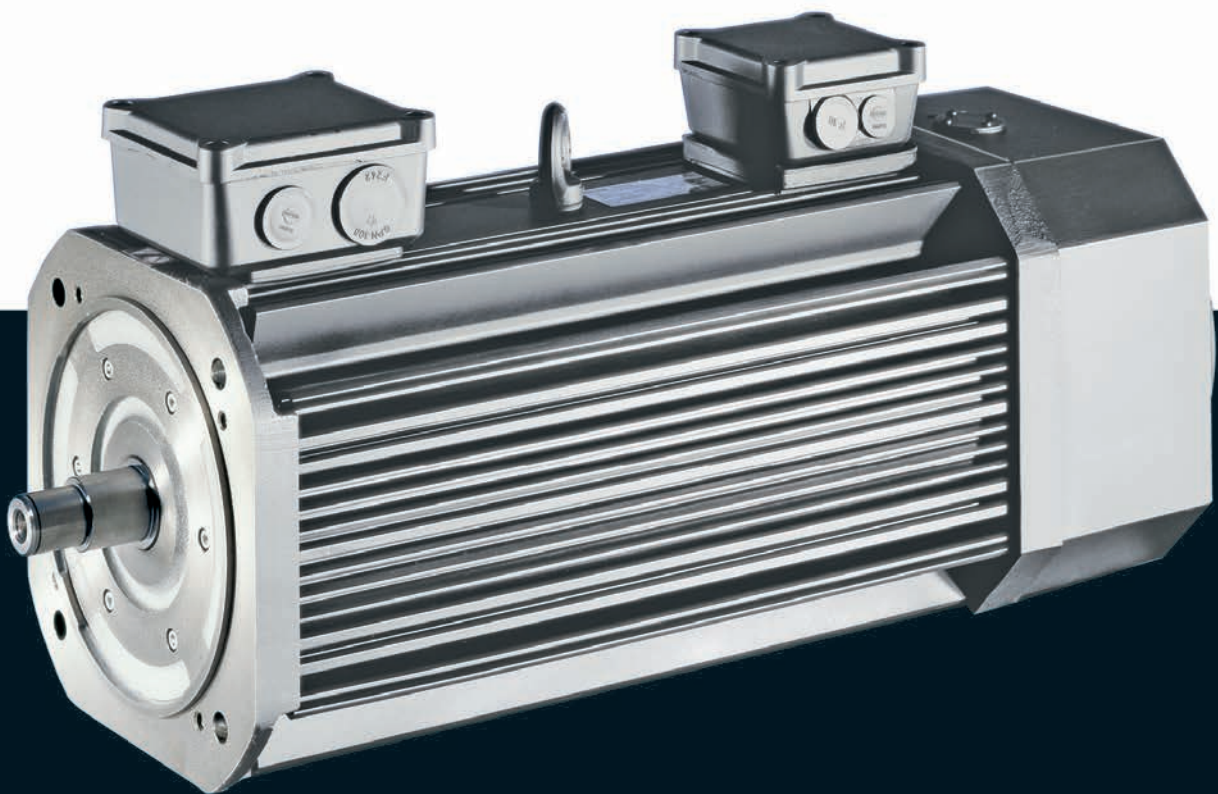
Additional weights for gearboxes

Product			g500-H45	g500-H100	g500-H140	g500-H210	g500-H320	g500-H450
Mass								
Foot	m	[kg]	0.1	0.1	0.2	0.1	0.1	0.2
Flange	m	[kg]	0.3	0.4	0.6	0.6	0.8	0.9

Motors

MCA asynchronous servo motors

2 to 1,100 Nm



MCA asynchronous servo motors

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List of abbreviations

$\eta_{100\%}$	[%]	Efficiency
$\cos \phi$		Power factor
du/dt	[kV/ μ s]	Insulation resistance
$F_{ax,-}$	[N]	Min. axial force
$F_{ax,+}$	[N]	Max. axial force
$f_{in,max}$	[Hz]	Max. input frequency
f_{max}	[kHz]	Limit frequency
f_{max}	[kHz]	Max. switching frequency
f_N	[Hz]	Rated frequency
F_{rad}	[N]	Max. radial force
H_{max}	[m]	Site altitude
I_0	[A]	Standstill current
I_{max}	[A]	Max. short-time DC-bus current
I_{max}	[A]	Max. current
I_{max}	[A]	Max. current consumption
I_{max}	[A]	Max. current
I_{max}	[A]	Max. DC-bus current
I_N	[A]	Rated current
J	[kgcm ²]	Moment of inertia
J_{MB}	[kgcm ²]	Moment of inertia
$KE_{LL\ 150\ ^\circ C}$	[V /1000 rp]	Voltage constant
$Kt_{0\ 150\ ^\circ C}$	[Nm/A]	Torque constant
L	[mH]	Mutual inductance
$L_{1\sigma}$	[mH]	Stator leakage inductance
$L_{2\sigma}$	[mH]	Rotor leakage inductance
L_N	[mH]	Rated inductance
m	[kg]	Mass
M_0	[Nm]	Stall torque
$M_{0,max}$	[Nm]	Max. standstill torque
M_{av}	[Nm]	Average dynamic torque
M_{max}	[Nm]	Max. torque
M_N	[Nm]	Rated torque
n_{eto}	[r/min]	Transition speed
n_k	[r/min]	Speed
n_{max}	[r/min]	Max. speed

n_N	[r/min]	Rated speed
P_N	[kW]	Rated power
Q_E	[J]	Maximum switching energy
R	[Ω]	Insulation resistance
R	[Ω]	Min. insulation resistance
R_1	[Ω]	Stator impedance
R_2	[Ω]	Charging resistor
R_2	[Ω]	Rotor impedance
$R_{UV\ 150\ ^\circ C}$	[Ω]	Stator impedance
$R_{UV\ 20\ ^\circ C}$	[Ω]	Stator impedance
$S_{h\ddot{u}}$	[1/h]	Transition operating frequency
T	[$^\circ$ C]	Operating temperature
T	[$^\circ$ C]	Rated temperature
T	[$^\circ$ C]	Max. ambient temperature of bearing
T	[$^\circ$ C]	Max. surface temperature
T	[$^\circ$ C]	Max. ambient temperature for transport
T	[$^\circ$ C]	Min. ambient storage temperature
T	[$^\circ$ C]	Min. ambient temperature for transport
T	[$^\circ$ C]	Ambient temperature
t_1	[ms]	Engagement time
t_2	[ms]	Disengagement time
$T_{opr,max}$	[$^\circ$ C]	Max. ambient operating temperature
$T_{opr,min}$	[$^\circ$ C]	Min. ambient operating temperature
$U_{in,max}$	[V]	Max. input voltage
$U_{in,min}$	[V]	Min. input voltage
U_{max}	[V]	Max. mains voltage
U_{max}	[V]	Min. input voltage
U_{min}	[V]	Min. mains voltage
$U_{N, AC}$	[V]	Rated voltage
$U_{N, DC}$	[V]	Rated voltage
Z_{ro}	[Ω]	Rotor impedance
Z_{rs}	[Ω]	Impedance
Z_{so}	[Ω]	Stator impedance



List of abbreviations

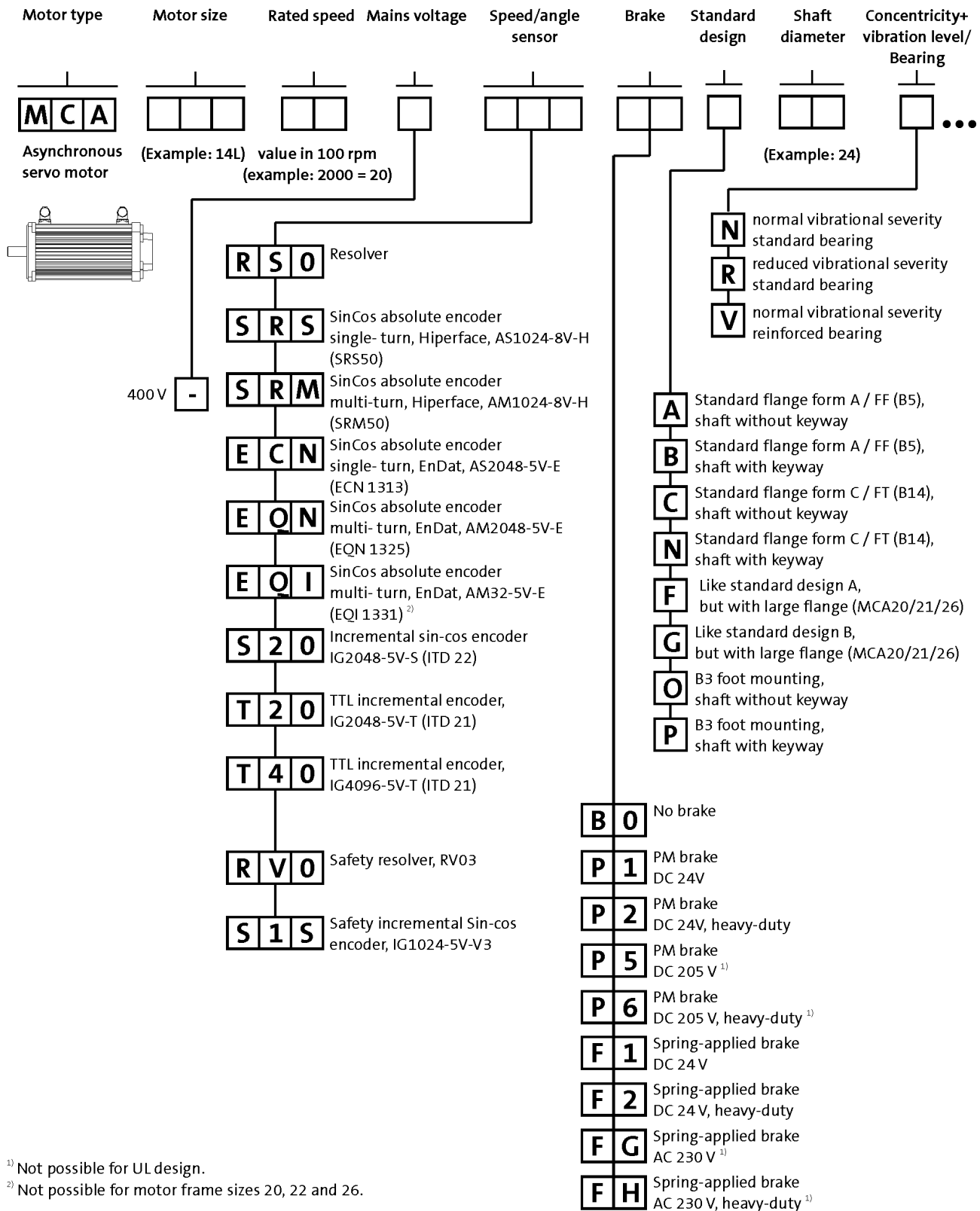
CE	Communauté Européenne
CSA	Canadian Standards Association
DIN	Deutsches Institut für Normung e.V.
EMC	Electromagnetic compatibility
EN	European standard
GOST	Certificate for Russian Federation
IEC	International Electrotechnical Commission
IM	International Mounting Code
IP	International Protection Code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

MCA asynchronous servo motors

General information



Product key



¹⁾ Not possible for UL design.

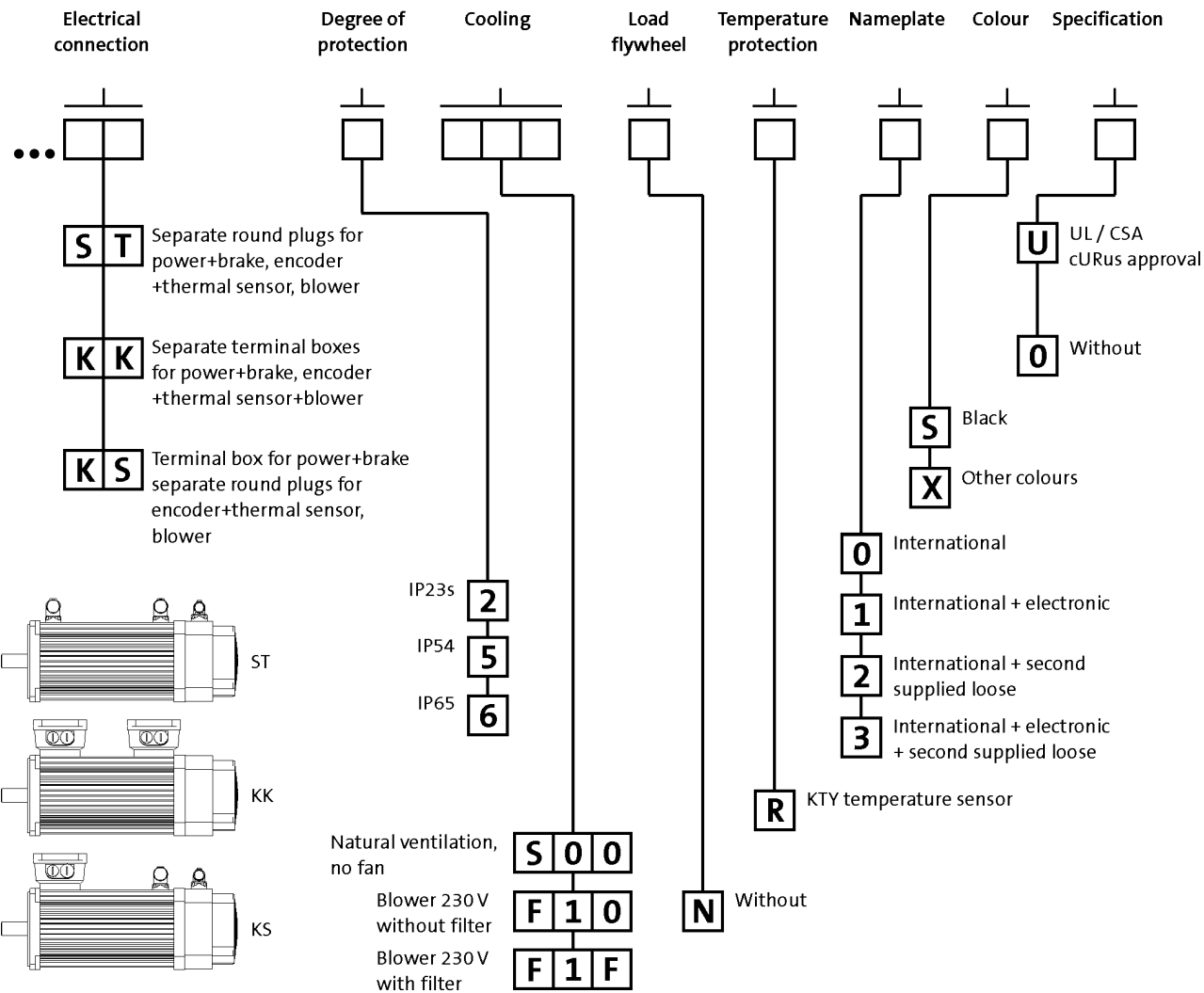
²⁾ Not possible for motor frame sizes 20, 22 and 26.

MCA asynchronous servo motors

General information



Product key



MCA asynchronous servo motors

General information



Product information

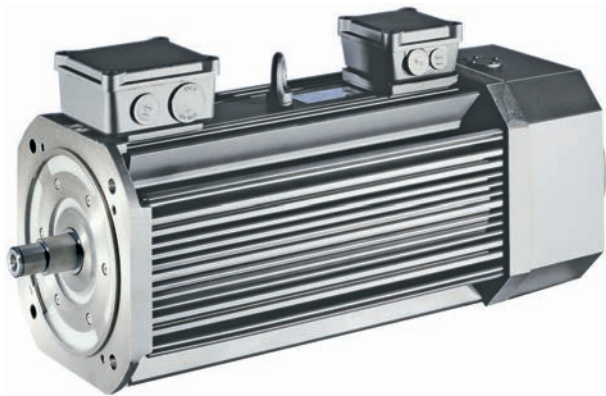
An application-oriented structure, low moments of inertia, compact dimensions and a high degree of intrinsic operational reliability characterise these robust and dynamic motors.

The compact design and the low moment of inertia allow these motors to be used in dynamic applications. If your application calls for a broad speed setting range and a robust construction, then the choice is easy: MCA asynchronous servo motors from Lenze.

Whether as a self-ventilated version or with a blower – with a power range from 0.8 to 53.8 kW, the MCA asynchronous servo motors offer rated torque values of up to 280 Nm and peak torque values of up to 1100 Nm. In comparison to standard three-phase AC motors, these servo motors have the edge in terms of lower moments of inertia, lower weight and higher maximum speeds.

Advantages

- High dynamic performance thanks to low moments of inertia
- Compact size with high power density
- Robust regenerative resolver system – alternatively SinCos and incremental encoder for the highest precision
- Easy to install and service friendly thanks to use of SpeedTec connectors
- Terminal box optional up to MCA21 MCA22 and 26 with three-part terminal box
- Protection: IP23, IP54, IP65 optional for naturally ventilated servo motors
- cURus-approved, GOST-certified, CE, RoHS-compliant
- High maximum speeds
- Wide speed setting range
- Field weakening operation usable
- Electronic nameplate



MCA21 asynchronous servo motor

MCA asynchronous servo motors

General information



Functions and features

	MCA10	MCA13	MCA14	MCA17	MCA19
Design					
	B14-FT85 B5-FF100	B14-FT130 B5-FF130	B14-FT130 B5-FF165		B14-FT130 B5-FF215
Shaft end (with and without keyway)					
	14 x 30	19 x 40	24 x 50		28 x 60
A end shield					
					Oil-tight Not oil-tight
Brake					
Spring-applied brake					
Permanent magnetic brake			DC 24 V AC 230 V ¹⁾ DC 205 V ¹⁾		
Speed and angle encoder					
					Resolver SinCos single-turn/multi-turn Incremental encoder
Cooling					
Without blower					Naturally ventilated
Axial blower, 1 phase					230 V; 50 Hz
Temperature sensor					
Thermal detector			KTY		
Motor connection: plug connector					
					Power + brake Encoder + thermal sensor Blower
Motor connection: terminal box					
	Power + brake Encoder + thermal sensor				Power + brake Encoder + thermal sensor + blower
Motor connection: Terminal box + plug connector					
Terminal box					Power + brake Encoder + thermal sensor
Plug connector					Blower
Shaft bearings					
Bearing type					Deep-groove ball bearing with high-temperature resistant grease, sealing disc or cover plate
Position of the locating bearing					Drive end Standard motors (B3, B5, B14): side B Motors for gearbox direct mounting: side A
Installation of the locating bearing					
Colour					
					RAL9005M

¹⁾ Not possible for UR version.

MCA asynchronous servo motors

General information



Functions and features

	MCA20	MCA21	MCA22	MCA26
Design				
	B3 B35-FF215 B35-FF265	B14-FT130 B5-FF215 B5-FF265	B3 B35-FF265	B3 B35-FF265 B35-FF350
Shaft end (with and without keyway)	38 x 80			55 x 110
A end shield	Oil-tight Not oil-tight			
Brake				
Spring-applied brake	DC 24 V AC 230 V ¹⁾		DC 24 V AC 230 V ¹⁾	
Permanent magnetic brake		DC 24 V AC 230 V ¹⁾ DC 205 V ¹⁾		
Speed and angle encoder	Resolver SinCos single-turn/multi-turn Incremental encoder			
Cooling				
Without blower		Naturally ventilated		
Axial blower, 1 phase	230 V; 50 Hz 230 V; 60 Hz	230 V; 50 Hz	230 V; 50 Hz 230 V; 60 Hz	
Temperature sensor	KTY			
Thermal detector				
Motor connection: plug connector	Power + brake Encoder + thermal sensor Blower			
Motor connection: terminal box	Power + brake Encoder + thermal sensor + blower			
Motor connection: Terminal box + plug connector				
Terminal box	Power + brake	Power + brake Encoder + thermal sensor	Power + brake	
Plug connector	Encoder + thermal sensor Blower	Blower	Encoder + thermal sensor Blower	
Shaft bearings	Deep-groove ball bearing with high-temperature resistant grease, sealing disc or cover plate			
Bearing type				
Position of the locating bearing	Non-drive end	Drive end Standard motors (B3, B5, B14): side B Motors for gearbox direct mounting: side A	Non-drive end	
Installation of the locating bearing	insulation		insulation	
Colour	RAL9005M			

¹⁾ Not possible for UR version.



Dimensioning

Speed-dependent safety functions

Single encoder concepts with resolvers

Servo motors can perform speed-dependent safety functions for safe speed and / or safe relative position monitoring in a drive system with the Servo Drives 9400. The SM301 safety module, which can be integrated in the Servo Drives 9400, is used to implement these functions. When planning systems/installations of this kind, the following must always be observed:

When using just one single feedback system in the environment of these safety applications, the applicable safety engineering standard IEC 61800-5-2 [Adjustable speed electrical power drive systems - Part: 5-2: Safety requirements - Functional] stipulates special requirements for the connection between feedback system and motor shaft. This is due to the fact that two-channel safety systems at this point in the mechanical system are actually designed as single-channel systems. If this mechanical connection is designed with considerable overdimensioning, the standard permits exclusion of the fault "encoder-shaft breakage" or "encoder-shaft slip". As such, acceleration limit values must not be exceeded for the individual drive solutions. You can find the limit values in the corresponding feedback data of the individual motor ranges.

Speed-dependent safety functions in connection with the SM301 safety module

For the following speed-dependent safety functions, the motor-feedback system combinations listed in the following table are available:

- Safe stop 1 (SS1)
- Safe operational stop (SOS)
- Safely Limited Speed (SLS)
- Safe Maximum Speed (SMS)

- Safe direction (SDI)
- Operation mode selector (OMS) with confirmation (ES)
- Safe speed monitor (SSM)
- Safely limited increment (SLI).

Encoder type	Encoder type	Product key	Feedback	Safe speed monitoring
			Design	
SinCos incremental	Single-turn	IG1024-5V-V3	2-encoder concept	PL e/SIL 3
Resolver		RV03		
				up to PL e / SIL 3

MCA asynchronous servo motors

General information



Dimensioning

Cooling effect of mounting flange

Mounting on a thermally conducting / insulating plate or machine chassis has an influence on heating up the motor, particularly when using naturally ventilated motors.

The motor rating data specified in the catalogue applies when mounting on a steel plate with free convection with the following dimensions:

- MCA10 / 13: 270 x 270 mm
- MCA14 / 17: 330 x 330 mm
- MCA19 to 26: 450 x 450 mm

Vibrational severity

		MCA10	MCA13	MCA14	MCA17	MCA19	MCA20	MCA21	MCA22	MCA26
Vibrational severity										
IEC/EN 60034-14		A		B			A	B	A	
Maximum r.m.s. value of the vibration velocity ¹⁾	[mm/s]	1.60		0.70			1.60	0.70	1.60	

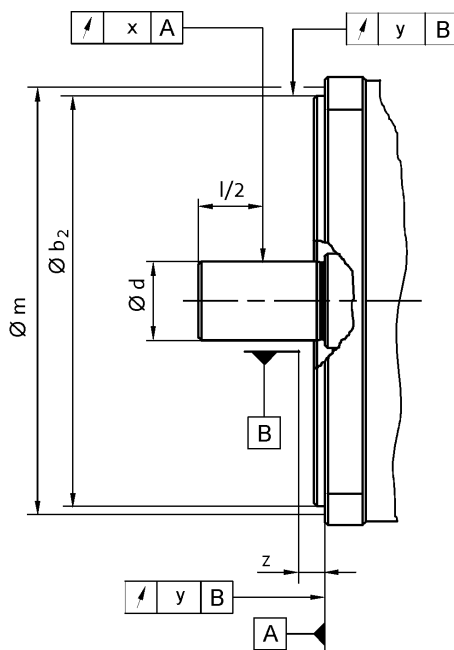
¹⁾ Free suspension

► at n = 600 to 3,600 rpm



Dimensioning

Concentricity and axial run-out of the mounting flanges and smooth running of the shaft ends



				MCA10		MCA13		MCA14		MCA17		MCA19	
Flange size													
				FF100	FT85	FF130	FT130	FF165	FT130	FF165	FT130	FF215	FT130
Dimensions													
	b ₂	j6	[mm]	80	70	110		130	110	130	110	180	110
	b ₂	h6	[mm]										
	d	k6	[mm]	14		19		24				28	
	d	m6	[mm]										
Distance													
Measuring diameter	m		[mm]	113	98.0	149		188	149	188	149	239	149
Dial gauge holder for flange check	z	+/- 1	[mm]	10.0									
Concentricity													
IEC 60072				Normal class					Precision class				
Value	y		[mm]	0.080		0.10		0.050					
Linear movement													
IEC 60072				Normal class					Precision class				
Value	y		[mm]	0.080		0.10		0.050					
Smooth running													
IEC 60072				Normal class					Precision class				
Value	x		[mm]	0.035		0.040		0.021					

- Limit values for checking the smooth running of the shaft ends as well as the concentricity and axial run-out of the mounting flange to IEC 60072

MCA asynchronous servo motors

General information



Dimensioning

Concentricity and axial run-out of the mounting flanges and smooth running of the shaft ends

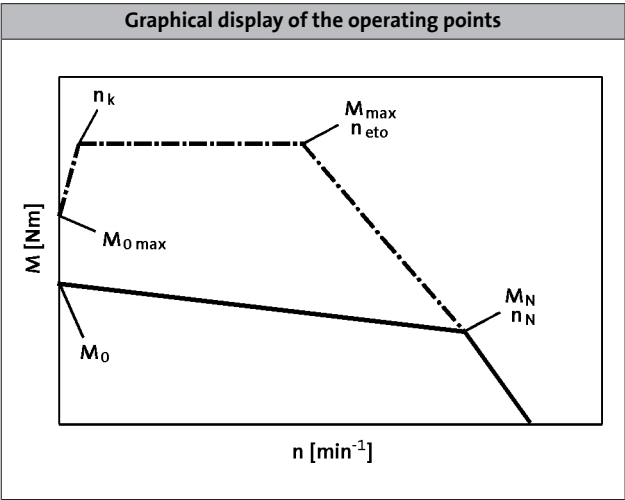
				MCA20		MCA21			MCA22	MCA26	
Flange size				FF215	FF265	FF215	FF265	FT130		FF265	FF350
Dimensions											
	b ₂	j6	[mm]	180	230	180	230	110		230	
	b ₂	h6	[mm]								300
	d	k6	[mm]	38							
	d	m6	[mm]								55
Distance											
Measuring diameter	m		[mm]	239	289	239	289	149		289	384
Dial gauge holder for flange check	z	+/- 1	[mm]	10.0							
Concentricity				Normal class		Precision class			Normal class		
IEC 60072											
Value	y		[mm]	0.10		0.050			0.10		
Linear movement				Normal class		Precision class			Normal class		
IEC 60072											
Value	y		[mm]	0.10		0.050			0.10		
Smooth running				Normal class		Precision class			Normal class		
IEC 60072											
Value	x		[mm]	0.050		0.060			0.050	0.060	

- Limit values for checking the smooth running of the shaft ends as well as the concentricity and axial run-out of the mounting flange to IEC 60072



Dimensioning

Notes on the selection tables



Please note:

- With an active load (e.g. vertical drive axes, hoists, test benches, unwinders), $M_{0\max}$ must be taken into account
- With a passive load (e.g. horizontal drive axes), $M_{\max}$ can generally be used
- At speeds $< n_k$, the inverter-specific torque $M_{0\max}$ that can be achieved is lower than $M_{\max}$
- On the servo inverters, the switching frequency-dependent overload capacity has been taken into account in the factory settings. For further information, please refer to the Servo-Inverters catalogue.

	n_k [r/min]
MCA	150
MQA	

Further selection tables with different switching frequencies are available with the following codes:

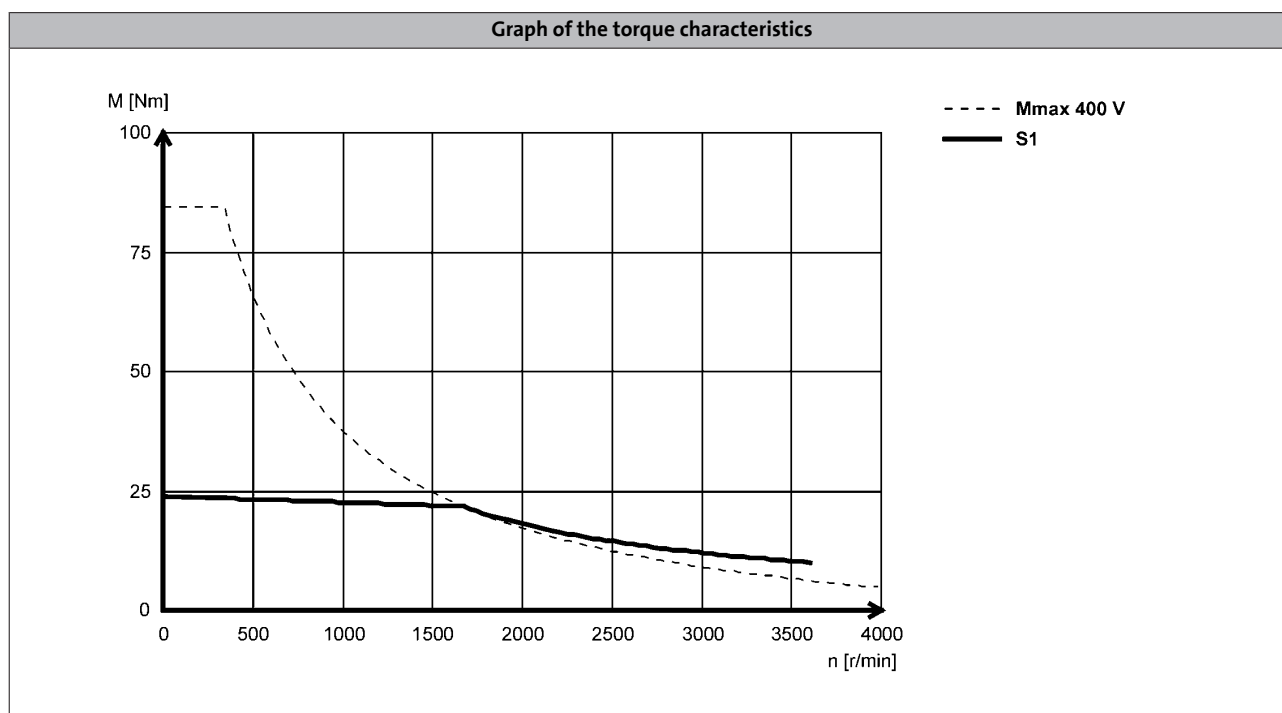
- DS_ZT_MCS_0001
- DS_ZT_MCA_0001
- DS_ZT_MDSKS_0001
- DS_ZT_MDFKS_0001

Simply enter this code (e.g. DS_ZT_MCS_0001) as a search string at www.lenze.de/dsc and you will be given the information immediately in the form of a PDF format.



Dimensioning

Notes on the torque characteristics



With asynchronous servo motors, two characteristics are shown in each case. The characteristics for continuous operation (S1) show the speed-dependent constant torque of the motor when operating with a servo inverter that itself is operated at a constant switching frequency. The limit torque characteristics correspond to those that come about during operation of the motor with the largest possible 9400 Servo Drive in each case (see selection tables). The servo inverter is set to a variable switching frequency here.

Characteristics in the Internet

You can find the torque characteristic for inverter-motor combinations on the Internet at www.lenze.de/dsc. This lists all useful combinations with the servo inverters 9400, 9300, ECS and Inverter Drives 8400 TopLine. These characteristics are each determined using the factory default settings of the inverters:

- 9400 with variable switching frequency.
This means that up to 6-fold overcurrent can be applied in borderline cases.
- 9300 and ECS with fixed switching frequency.
- 8400 TopLine with variable switching frequency.

The continuous operation characteristics (S1) show the inverter-independent motor rating values

Further information on the terms switching frequency and factory default settings can be found in the operating manual of the respective servo inverter.

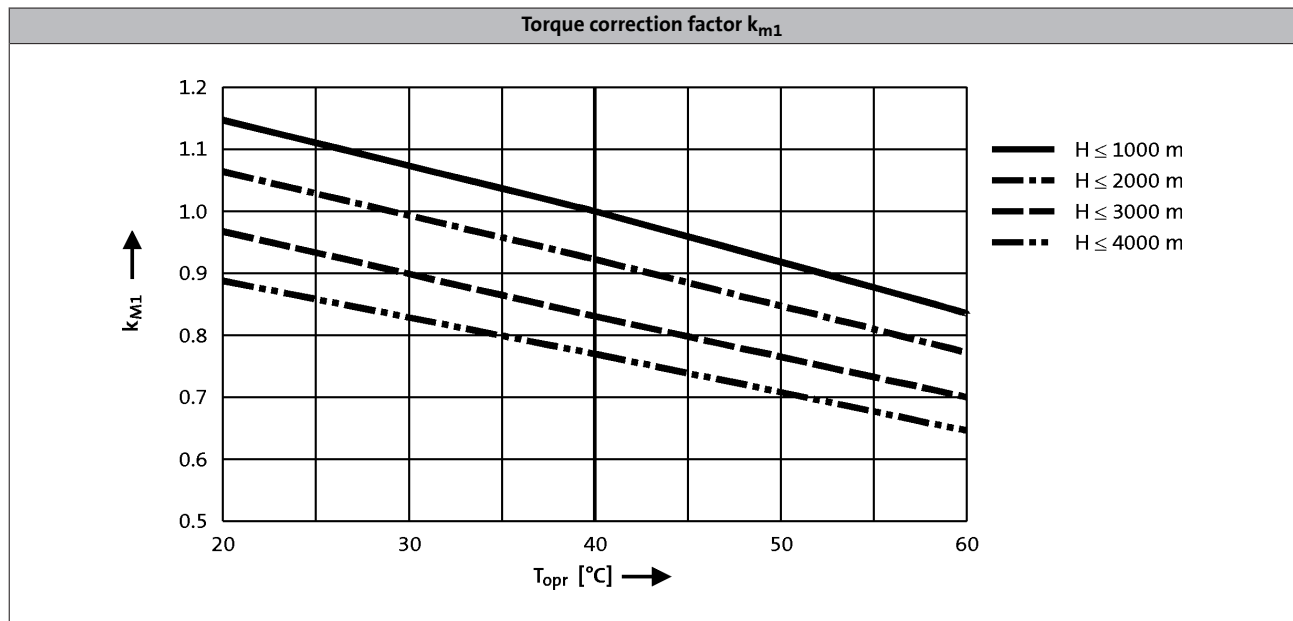


Dimensioning

Influence of ambient temperature and site altitude

The information relating to the servo motors in the tables and graphs is valid for a maximum ambient temperature (T_{opr}) of 40 °C and a site altitude (H) up to 1000 m above sea level. The torque correction factor (k_{M1}) shall be applied to the S1 torque characteristic ($M_0...M_N$) in the event of differing installation conditions.

- The maximum permissible ambient temperature (T_{opr}) for servo motors with blowers is 40 °C



MCA asynchronous servo motors

General information



MCA asynchronous servo motors

Technical data



Standards and operating conditions

MCA			
Cooling type			
		Naturally ventilated	Blower
Degree of protection			
EN 60529		IP54 IP65	IP54 IP23s ²⁾
Temperature class			
IEC/EN 60034-1; utilisation			F
IEC/EN 60034-1; insulation system (enamel-insulated wire)			H
Approval			
Class			cURus ^{4, 5)} GOST-R UkrSepro
Max. voltage load			
IEC/TS 60034-25			Pulse voltage limiting curve A
Smooth running			
IEC 60072			Precision class ¹⁾ Normal class
Linear movement			
IEC 60072			Precision class ¹⁾ Normal class
Concentricity			
IEC 60072			Precision class ¹⁾ Normal class
Mechanical ambient conditions (vibration)			
IEC/EN 60721-3-3			3M6
Min. ambient operating temperature			
Without brake	T _{opr,min}	[°C]	-20
With brake	T _{opr,min}	[°C]	-10
Max. ambient temperature for operation			
	T _{opr,max}	[°C]	40
Max. surface temperature			
	T	[°C]	140
Mechanical tolerance			
Flange centring diameter			b ₂ ≤ 230 mm = j6 b ₂ > 230 mm = h6
Shaft diameter			d ≤ 50 mm = k6 d > 50 mm = m6
Site altitude			
Amsl	H _{max}	[m]	4000

¹⁾ MCA14, 17, 19 and 21.

²⁾ MCA20, 22 and 26.

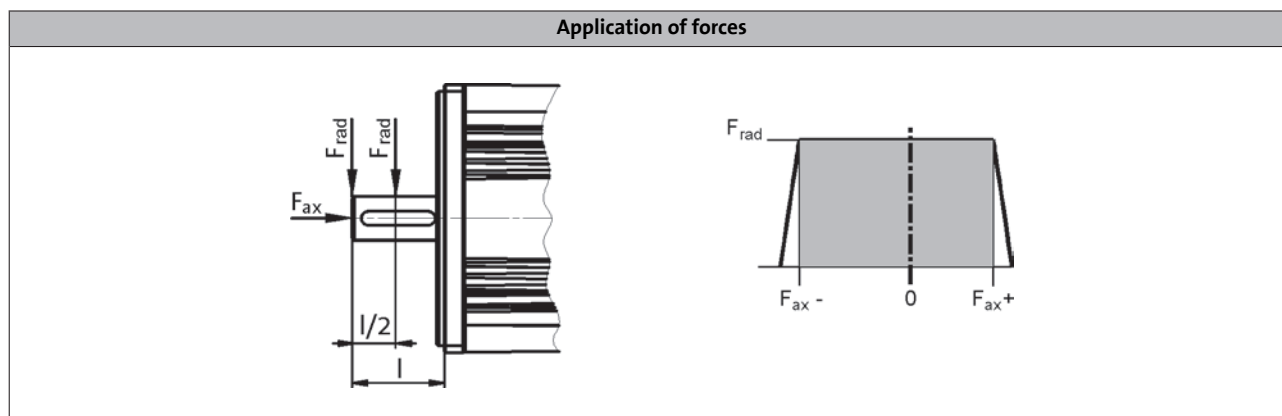
³⁾ Not possible on MCA20.

⁴⁾ Recognized component File No. E 210321.

⁵⁾ MCA20X29, MCA21X35 with circular connector for motor connection only
UR



Permissible radial and axial forces



Application of force at $l/2$

Bearing service life L_{10}															
	5000 h			10000 h			20000 h			30000 h			50000 h		
	F_{rad}	$F_{ax,-}$	$F_{ax,+}$	F_{rad}	$F_{ax,-}$	$F_{ax,+}$	F_{rad}	$F_{ax,-}$	$F_{ax,+}$	F_{rad}	$F_{ax,-}$	$F_{ax,+}$	F_{rad}	$F_{ax,-}$	$F_{ax,+}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
MCA10	630	-130	320	500	-60	250	400	-30	210	330	-10	190	230	0	200
MCA13	850	-110	570	700	-10	450	470	0	450		0	450			
MCA14	1000	-140	500	780	-60	420	550	-30	380	400	-10	360	250	0	350
MCA17	1380	-180	790	1040	-70	680	660	-40	650	440	-20	630	280		610
MCA19	1880	-50	1530	1080	-30	1510	500	-100	1490	160	0	1470			
MCA20	3400	-1330	690	2500	-1020	380	1950	-780	140	1700	-690	40			
MCA21	3200	-260	1740	2360	-70	1550	1470	-20	1504	1030	0	1480			
MCA22	3600	-2370	1700	2800	-1740	1090	2200	-1280	640	1900	-1080	440	1600	-880	240
MCA26	6950	-2500	1580	5400	-1800	880	4300	-1300	380	3700	-1090	160			

Application of force at l

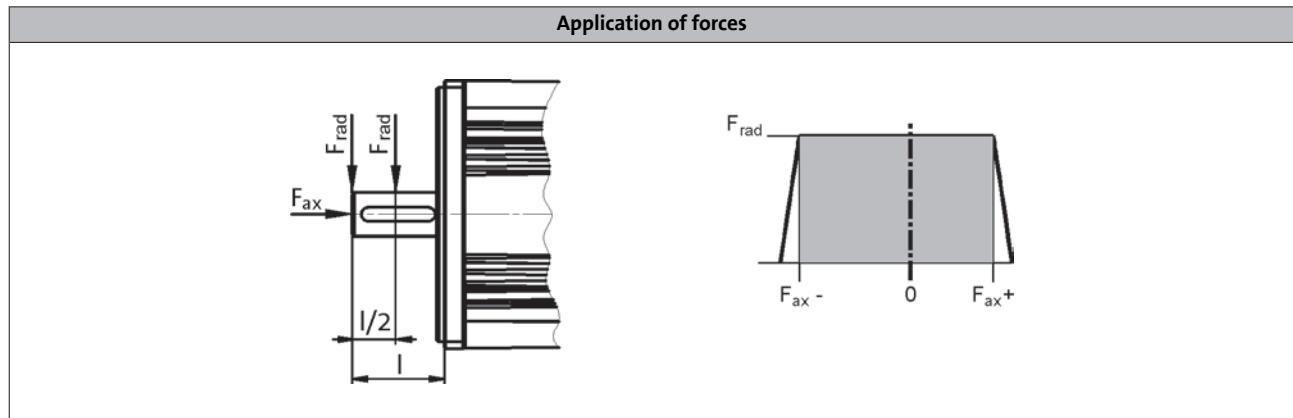
Bearing service life L_{10}															
	5000 h			10000 h			20000 h			30000 h			50000 h		
	F_{rad}	$F_{ax,-}$	$F_{ax,+}$	F_{rad}	$F_{ax,-}$	$F_{ax,+}$	F_{rad}	$F_{ax,-}$	$F_{ax,+}$	F_{rad}	$F_{ax,-}$	$F_{ax,+}$	F_{rad}	$F_{ax,-}$	$F_{ax,+}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
MCA10	590	-130	320	470	-60	250	370	-30	210	310	-10	190	220	0	200
MCA13	780	-110	570	640	-10	450	430	0	450	300	0	450			
MCA14	930	-140	500	710	-60	420	490	-30	380	370	-10	360	230	0	350
MCA17	1270	-180	790	960	-70	680	610	-40	650	400	-20	630	260		610
MCA19	1740	-50	1530	1000	-30	1510	420	-100	1490	140	0	1470			
MCA20	3150	-1170	530	2300	-920	280	1800	-710	70	1400	-650	0			
MCA21	2940	-260	1740	2160	-70	1550	1350	-20	1504	950	0	1480			
MCA22	3500	-2240	1600	2600	-1640	1100	2050	-1200	560	1800	-1020	380	1450	-850	200
MCA26	6400	-2080	1150	5000	-1600	680	4000	-1160	230	3400	-1090	50			

- The values for the bearing service life L_{10} relate to an average speed of 4000 r/min. For MCA20/22/26 the speed is 3000 r/min. Depending on the ambient temperatures, the service life of the bearings is also reduced by the grease lifetime.



Permissible radial and axial forces

► Reinforced bearings



Application of force at $l/2$

Bearing service life L_{10}															
	5000 h			10000 h			20000 h			30000 h			50000 h		
	F_{rad}	$F_{ax,-}$	$F_{ax,+}$	F_{rad}	$F_{ax,-}$	$F_{ax,+}$	F_{rad}	$F_{ax,-}$	$F_{ax,+}$	F_{rad}	$F_{ax,-}$	$F_{ax,+}$	F_{rad}	$F_{ax,-}$	$F_{ax,+}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
MCA20	7100	-970	330	5100	-800	160	3900	-640	0						
MCA22	8500	-1850	1200	7000	-1400	760	5600	-1030	390	4350	-930	290	3200	-800	160
MCA26	10500	-2180	1250	8370	-1530	600	6670	-1130	200	5840	-960	30			

Application of force at l

Bearing service life L_{10}															
	5000 h			10000 h			20000 h			30000 h			50000 h		
	F_{rad}	$F_{ax,-}$	$F_{ax,+}$	F_{rad}	$F_{ax,-}$	$F_{ax,+}$	F_{rad}	$F_{ax,-}$	$F_{ax,+}$	F_{rad}	$F_{ax,-}$	$F_{ax,+}$	F_{rad}	$F_{ax,-}$	$F_{ax,+}$
	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]	[N]
MCA20	6350	-720	80	4100	-680	40	2800	-640	0						
MCA22	7000	-1750	1100	5500	-1300	660	4700	-920	280	3900	-820	180	3000	-700	60
MCA26	9600	-2200	1280	7700	-1280	360	6000	-960	30						

- The values for the bearing service life L_{10} refer to an average speed of 3000 r/min. Depending on the ambient temperatures, the service life of the bearings is also reduced by the grease life-time.

MCA asynchronous servo motors

Technical data



Rated data, non-ventilated

► The data applies to a mains connection voltage of 3 x 400 V.

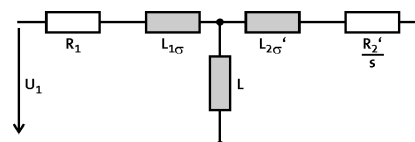
	n_N	M_0	M_N	M_{max}	P_N	I_0	I_N	$U_{N, AC}$	f_N	$J^{1)}$	$\eta_{100\%}$
	[r/min]	[Nm]	[Nm]	[Nm]	[kW]	[A]	[A]	[V]	[Hz]	[kgcm ²]	[%]
MCA10I40	3950	2.30	2.00	10.0	0.80	2.60	2.40	390	140	2.40	0.70
MCA13I41	4050	4.60	4.00	32.0	1.70	4.60	4.40	390	140	8.30	75.0
MCA14L20	2000	8.00	6.70	60.0	1.40	3.90	3.30	390	70	19.2	84.0
MCA14L41	4100	8.00	5.40	60.0	2.30	7.70	5.80	390	140	19.2	78.0
MCA17N23	2300	12.8	10.8	100	2.60	6.00	5.50	390	80	36.0	86.0
MCA17N41	4110	12.8	9.50	100	4.10	12.0	10.2	350	140	36.0	83.0
MCA19S23	2340	22.5	16.3	180	4.00	9.90	8.20	390	80	72.0	90.0
MCA19S42	4150	22.5	12.0	180	5.20	19.7	14.0	330	140	72.0	83.0
MCA21X25	2490	39.0	24.6	300	6.40	15.9	13.5	390	85	180	85.0
MCA21X42	4160	39.0	17.0	300	7.40	31.8	19.8	320	140	180	84.0

	R_1	$R_{UV\ 20\ ^\circ C}$	$R_{UV\ 150\ ^\circ C}$	R_2	$L_{1\sigma}$	L	$L_{2\sigma}$	$n_{max}^{2)}$	$m^{1)}$
	[Ω]	[Ω]	[Ω]	[Ω]	[mH]	[mH]	[mH]	[r/min]	[kg]
MCA10I40	4.70	9.40	12.7	5.20	9.80	169	10.0	8000	6.40
MCA13I41	1.70	3.40	4.60	1.41	5.40	92.6	4.90		10.4
MCA14L20	3.00	6.00	8.10	3.13	10.0	269	10.0		15.1
MCA14L41	0.75	1.50	2.00	0.78	2.50	65.8	2.50		22.9
MCA17N23	1.52	3.04	4.10	1.37	6.20	176	6.80		
MCA17N41	0.38	0.76	1.00	0.34	1.50	43.4	1.70		44.7
MCA19S23	0.69	1.38	1.90	0.62	3.20	111	3.90		
MCA19S42	0.18	0.35	0.50	0.15	0.80	28.0	1.00		60.0
MCA21X25	0.36	0.72	1.00	0.36	2.30	78.1	2.80		
MCA21X42	0.090	0.18	0.20	0.090	0.60	19.5	0.70		

¹⁾ Without brake.

²⁾ Mechanically permissible maximum speed.

The data in the R_1 , $L_{1\sigma}$, L , R_2' and $L_{2\sigma}'$ columns is based on a single-phase equivalent circuit diagram at 20°C.





Rated data, IP54 forced ventilated

► The data applies to a mains connection voltage of 3 x 400 V.

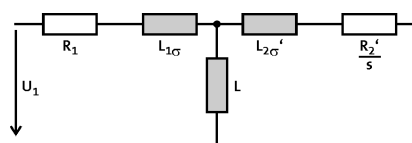
	n_N	M_0	M_N	M_{max}	P_N	I_0	I_N	$U_{N, AC}$	f_N	$J^1)$	$\eta_{100\%}$
	[r/min]	[Nm]	[Nm]	[Nm]	[kW]	[A]	[A]	[V]	[Hz]	[kgcm ²]	[%]
MCA13I34	3410	7.00	6.30	32.0	2.20	6.30	6.00	390	120	8.30	72.0
MCA14L16	1635	13.5	12.0	60.0	2.10	5.30	4.80	390	60	19.2	80.0
MCA14L35	3455	13.5	10.8	60.0	3.90	10.5	9.10	390	120	19.2	79.0
MCA17N17	1680	23.9	21.5	100	3.80	9.10	8.50	390	60	36.0	83.0
MCA17N35	3480	23.9	19.0	100	6.90	18.1	15.8	390	120	36.0	81.0
MCA19S17	1700	40.0	36.3	180	6.40	15.4	13.9	390	60	72.0	82.0
MCA19S35	3510	40.0	36.0	180	13.2	30.8	28.7	390	120	72.0	85.0
MCA21X17	1710	75.0	61.4	300	11.0	25.8	22.5	390	60	180	85.0
MCA21X35	3520	75.0	55.0	300	20.3	49.5	42.5	390	120	180	88.0
MCA22P08...5F□□	760	120	110	500	8.75	23.4	22.1	345	28	487	80.0
MCA22P14...5F□□	1425	120	107	500	16.0	40.5	37.7	350	50	487	87.0
MCA22P17...5F□□	1670	120	106	500	18.5	46.7	42.7	360	58	487	88.0
MCA22P29...5F□□	2935	120	100	500	30.7	80.9	72.1	360	100	487	87.0
MCA26T05...5F□□	550	220	216	1100	12.4	35.4	34.9	350	19	1335	83.0
MCA26T10...5F□□	1030	220	210	1100	22.7	62.9	61.5	350	36	1335	88.0
MCA26T12...5F□□	1200	220	207	1100	26.0	78.4	75.1	350	41	1335	87.0
MCA26T22...5F□□	2235	220	195	1100	45.6	125	113	340	76	1335	92.0

	R ₁	R _{UV 20 °C}	R _{UV 150 °C}	R ₂	L _{1σ}	L	L _{2σ}	n _{max} ²⁾	m ¹⁾
	[Ω]	[Ω]	[Ω]	[Ω]	[mH]	[mH]	[mH]	[r/min]	[kg]
MCA13I34	1.70	3.40	4.60	1.41	4.90	76.7	4.40	8000	12.0
MCA14L16	3.00	6.00	8.10	3.13	9.50	224	9.30		16.9
MCA14L35	0.75	1.50	2.00	0.78	2.40	56.7	2.30		25.5
MCA17N17	1.52	3.04	4.10	1.37	5.60	144	6.00		
MCA17N35	0.38	0.76	1.00	0.34	1.40	36.9	1.50		
MCA19S17	0.69	1.38	1.90	0.62	2.60	80.9	3.10		48.2
MCA19S35	0.18	0.35	0.50	0.15	0.70	20.3	0.80		63.5
MCA21X17	0.36	0.72	1.00	0.36	2.10	68.9	2.60		
MCA21X35	0.090	0.18	0.20	0.090	0.50	16.8	0.60		
MCA22P08...5F□□	0.54	1.07	1.62	0.48	3.56	94.9	4.80	6500	105
MCA22P14...5F□□		0.36	0.54		3.60	94.2	4.85		
MCA22P17...5F□□	0.13	0.27	0.40	0.12	0.90	23.4	1.21		
MCA22P29...5F□□		0.080	0.12		22.9				
MCA26T05...5F□□	0.29	0.59	0.89	0.25	2.86	66.8	5.04		194
MCA26T10...5F□□		0.20	0.30		2.93	69.2	5.12		
MCA26T12...5F□□	0.080	0.15	0.23	0.062	0.74	18.1	1.29		
MCA26T22...5F□□		0.050	0.075		0.78	19.8			

¹⁾ Without brake.

²⁾ Mechanically permissible maximum speed.

The data in the R_1 , $L_{1\sigma}$, L , R_2' and $L_{2\sigma}'$ columns is based on a single-phase equivalent circuit diagram at 20°C.



MCA asynchronous servo motors

Technical data



Rated data, IP23s forced ventilated

► The data applies to a mains connection voltage of 3 x 400 V.

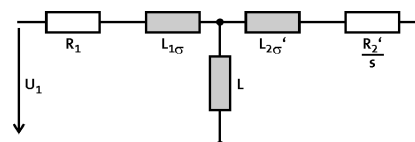
	n_N	M_0	M_N	M_{max}	P_N	I_0	I_N	$U_{N, AC}$	f_N	$J^{1)}$	$\eta_{100\%}$
	[r/min]	[Nm]	[Nm]	[Nm]	[kW]	[A]	[A]	[V]	[Hz]	[kgcm ²]	[%]
MCA20X14...2F□□	1420	68.0	61.0	250	9.07	26.0	23.0	350	50	171	82.0
MCA20X29...2F□□	2930	68.0	53.5	250	16.4	52.0	42.4	350	100	171	87.0
MCA22P08...2F□□	760	135	120	500	9.55	26.0	23.5	355	28	487	80.0
MCA22P14...2F□□	1425	135	115	500	17.2	45.1	40.0	360	50	487	86.0
MCA22P17...2F□□	1670	135	112	500	19.6	52.1	44.5	360	58	487	88.0
MCA22P29...2F□□	2935	135	110	500	33.8	90.2	77.8	360	100	487	89.0
MCA26T05...2F□□	550	290	280	1100	16.1	44.0	42.4	350	20	1335	81.0
MCA26T10...2F□□	1030	290	260	1100	28.0	78.0	69.6	350	36	1335	87.0
MCA26T12...2F□□	1200	290	255	1100	32.0	101	83.3	350	41	1335	87.0
MCA26T22...2F□□	2235	290	230	1100	53.8	160	127	340	76	1335	92.0

	R ₁	R _{UV 20 °C}	R _{UV 150 °C}	R ₂	L _{1σ}	L	L _{2σ}	n _{max} ²⁾	m ¹⁾
	[Ω]	[Ω]	[Ω]	[Ω]	[mH]	[mH]	[mH]	[r/min]	[kg]
MCA20X14...2F□□	0.37	0.73	1.10	0.36	2.01	60.2	2.14	6 500	64.0
MCA20X29...2F□□	0.090	0.18	0.28	0.090	0.50	14.3	0.54		105
MCA22P08...2F□□	0.54	1.07	1.62	0.48	3.50	91.9	4.74		
MCA22P14...2F□□		0.36	0.54		3.55	90.9	4.79		
MCA22P17...2F□□	0.13	0.27	0.40	0.12	0.90	23.5	1.22		
MCA22P29...2F□□		0.080	0.12			22.9	1.21		
MCA26T05...2F□□	0.29	0.59	0.89	0.25	3.11	72.1	5.08		
MCA26T10...2F□□		0.20	0.30			71.4	5.14		
MCA26T12...2F□□	0.080	0.15	0.23	0.062	0.78	18.6	1.30		
MCA26T22...2F□□		0.050	0.077			20.2			

¹⁾ Without brake.

²⁾ Mechanically permissible maximum speed.

The data in the R_1 , $L_{1\sigma}$, L , R_2' and $L_{2\sigma}'$ columns is based on a single-phase equivalent circuit diagram at 20°C.



MCA asynchronous servo motors

Technical data



Selection tables, Servo Drives 9400 HighLine

Non-ventilated motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 4 kHz.

					E94A□□	E0024	E0034	E0044	E0074	E0094	E0134	E0174	E0244	E0324
					I _N	1.9	3.1	5.0	8.8	11.7	16.3	20.6	29.4	38.4
					I _{0,max}	6.0	10.0	16.0	21.0	28.0	39.0	49.5	58.8	76.8
MCA	M _N	n _N	I _N	P _N	I _{max}	6.0	10.0	16.0	21.0	28.0	39.0	49.5	58.8	76.8
10I40	2.0	3950	2.4	0.80	M ₀	1.1	2.3							
					M _N	1.0	2.0							
					M _{0,max}	6.9	10.0							
					M _{max}	6.9	10.0							
					η _{eto}	-	-							
13I41	4.0	4050	4.4	1.70	M ₀			4.6	4.6					
					M _N			4.0	4.0					
					M _{0,max}			18.9	20.8					
					M _{max}			18.9	20.8					
					η _{eto}			-	-					
14L20	6.7	2000	3.3	1.40	M ₀		5.1	8.0						
					M _N		4.4	6.7						
					M _{0,max}		25.0	42.8						
					M _{max}		25.0	42.8						
					η _{eto}		-	-						
14L41	5.4	4100	5.8	2.30	M ₀			3.5	8.0	8.0				
					M _N			3.5	5.4	5.4				
					M _{0,max}			21.5	27.0	31.3				
					M _{max}			21.5	27.0	31.3				
					η _{eto}			-	-	-				
17N23	10.8	2300	5.5	2.60	M ₀			9.5	12.8					
					M _N			9.0	10.8					
					M _{0,max}			38.0	50.0					
					M _{max}			38.0	50.0					
					η _{eto}			-	-					
17N41	9.5	4110	10.2	4.10	M ₀				7.1	11.5	12.8	12.8		
					M _N				6.7	9.5	9.5	9.5		
					M _{0,max}				24.0	33.3	45.8	49.9		
					M _{max}				24.0	33.3	45.8	49.9		
					η _{eto}				-	-	-	-		
19S23	16.3	2340	8.2	4.00	M ₀				18.4	22.5	22.5			
					M _N				15.6	16.3	16.3			
					M _{0,max}				55.0	73.7	86.0			
					M _{max}				55.0	73.7	86.0			
					η _{eto}				-	-	-			
19S42	12.0	4150	14.0	5.20	M ₀						15.0	22.5	22.5	
					M _N						12.0	12.0	12.0	
					M _{0,max}						48.8	62.0	70.0	
					M _{max}						48.8	62.0	70.0	
					η _{eto}						-	-	-	
21X25	24.6	2490	13.5	6.40	M ₀					21.4	39.0	39.0	39.0	
					M _N					19.6	24.6	24.6	24.6	
					M _{0,max}					71.7	96.0	126.0	136.0	
					M _{max}					71.7	96.0	126.0	136.0	
					η _{eto}					-	-	-	-	

- I... [A], M... [Nm], n... [r/min], P... [kW]

MCA asynchronous servo motors

Technical data



Selection tables, Servo Drives 9400 HighLine

Non-ventilated motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 4 kHz.

					E94A□□	E0024	E0034	E0044	E0074	E0094	E0134	E0174	E0244	E0324
					I _N	1.9	3.1	5.0	8.8	11.7	16.3	20.6	29.4	38.4
					I _{0,max}	6.0	10.0	16.0	21.0	28.0	39.0	49.5	58.8	76.8
MCA	M _N	n _N	I _N	P _N	I _{max}	6.0	10.0	16.0	21.0	28.0	39.0	49.5	58.8	76.8
21X42	17.0	4160	19.8	7.40	M ₀								31.3	39.0
					M _N								17.0	17.0
					M _{0,max}								71.7	91.0
					M _{max}								71.7	91.0
					n _{eto}								-	-

- I... [A], M... [Nm], n... [r/min], P... [kW]

MCA asynchronous servo motors

Technical data



Selection tables, Servo Drives 9400 HighLine

Forced ventilated IP54 motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 4 kHz.

					E94A□□	E0044	E0074	E0094	E0134	E0174	E0244	E0324	E0474	E0594	E0864
					I _N	5.0	8.8	11.7	16.3	20.6	29.4	38.4	47.0	59.0	86.0
					I _{0,max}	16.0	21.0	28.0	39.0	49.5	58.8	76.8	94.0	118.0	172.0
MCA	M _N	n _N	I _N	P _N	I _{max}	16.0	21.0	28.0	39.0	49.5	58.8	76.8	94.0	118.0	172.0
13I34	6.3	3410	6.0	2.20	M ₀	4.6	7.0	7.0							
					M _N	4.4	6.3	6.3							
					M _{0,max}	20.8	26.0	29.2							
					M _{max}	20.8	26.0	29.2							
					n _{eto}	-	-	-							
14L16	12.0	1635	4.8	2.10	M ₀	12.0	13.5								
					M _N	12.0	12.0								
					M _{0,max}	45.4	52.6								
					M _{max}	45.4	52.6								
					n _{eto}	-	-								
14L35	10.8	3455	9.1	3.90	M ₀		10.1	13.5	13.5						
					M _N		9.7	10.8	10.8						
					M _{0,max}		32.4	46.0	60.0						
					M _{max}		32.4	46.0	60.0						
					n _{eto}		-	-	-						
17N17	21.5	1680	8.5	3.80	M ₀		21.6	23.9	23.9						
					M _N		21.5	21.5	21.5						
					M _{0,max}		59.4	81.4	84.5						
					M _{max}		59.4	81.4	84.5						
					n _{eto}		-	-	-						
17N35	19.0	3480	15.8	6.90	M ₀				19.4	23.9	23.9				
					M _N				19.0	19.0	19.0				
					M _{0,max}				59.2	75.0	90.0				
					M _{max}				59.2	75.0	90.0				
					n _{eto}				-	-	-				
19S17	36.3	1700	13.9	6.40	M ₀				40.0	40.0	40.0				
					M _N				36.3	36.3	36.3				
					M _{0,max}				105.0	133.0	148.0				
					M _{max}				105.0	133.0	148.0				
					n _{eto}				-	-	-				
19S35	36.0	3510	28.7	13.20	M ₀						36.9	40.0	40.0	40.0	
					M _N						36.0	36.0	36.0	36.0	
					M _{0,max}						82.0	112.0	132.0	160.0	
					M _{max}						82.0	112.0	132.0	160.0	
					n _{eto}						-	-	-	-	
21X17	61.4	1710	22.5	11.00	M ₀					54.4	75.0	75.0	75.0		
					M _N					50.4	61.4	61.4	61.4		
					M _{0,max}					134.0	158.0	215.0	246.0		
					M _{max}					134.0	158.0	215.0	246.0		
					n _{eto}					-	-	-	-		
21X35	55.0	3520	42.5	20.30	M ₀								63.9	75.0	75.0
					M _N								55.0	55.0	55.0
					M _{0,max}								134.0	167.0	232.0
					M _{max}								134.0	167.0	232.0
					n _{eto}								-	-	-

- I... [A], M... [Nm], n... [r/min], P... [kW]

MCA asynchronous servo motors

Technical data



Selection tables, Servo Drives 9400 HighLine

Forced ventilated IP54 motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 8 kHz.

					E94A□□	E0174	E0244	E0324	E0474	E0594	E0864	E1044	E1454	E1724	E2024	E2454
					I _N	16.5	23.5	32.0	41.0	41.0	73.0	78.0	102.0	120.0	131.0	160.0
					I _{0,max}	49.5	58.8	76.8	94.0	118.0	172.0	208.0	261.0	310.0	364.0	441.0
MCA	M _N	n _N	I _N	P _N	I _{max}	49.5	58.8	76.8	94.0	118.0	172.0	208.0	261.0	310.0	364.0	441.0
22P08-...5F□□	110.0	760	22.1	8.80	M ₀	64.0	110.0	120.0								
					M _N	64.0	110.0	110.0								
					M _{0,max}	261.0	313.0	402.0								
					M _{max}	261.0	313.0	402.0								
					η _{eto}	-	-	-								
22P14-...5F□□	107.0	1425	37.7	16.00	M ₀			82.0	120.0	120.0						
					M _N			82.0	107.0	107.0						
					M _{0,max}			242.0	300.0	372.0						
					M _{max}			242.0	300.0	372.0						
					η _{eto}			-	-	-						
22P17-...5F□□	105.0	1670	42.7	18.50	M ₀					99.0	120.0					
					M _N					99.0	106.0					
					M _{0,max}					325.0	463.0					
					M _{max}					325.0	463.0					
					η _{eto}					-	-					
22P29-...5F□□	100.0	2935	72.1	30.70	M ₀							110.0	120.0	120.0		
					M _N							100.0	100.0	100.0		
					M _{0,max}							335.0	416.0	465.0		
					M _{max}							335.0	416.0	465.0		
					η _{eto}							-	-	-		
26T05-...5F□□	216.0	550	34.9	12.40	M ₀			191.0	220.0	220.0	220.0					
					M _N			191.0	216.0	216.0	216.0					
					M _{0,max}			531.0	665.0	826.0	1010.0					
					M _{max}			531.0	665.0	826.0	1010.0					
					η _{eto}			-	-	-	-					
26T10-...5F□□	210.0	1030	61.5	22.70	M ₀					77.0	220.0	220.0	220.0			
					M _N					77.0	210.0	210.0	210.0			
					M _{0,max}					472.0	713.0	855.0	1044.0			
					M _{max}					472.0	713.0	855.0	1044.0			
					η _{eto}					-	-	-	-			
26T12-...5F□□	207.0	1200	75.1	26.00	M ₀						204.0	219.0	220.0	220.0		
					M _N						204.0	207.0	207.0	207.0		
					M _{0,max}						502.0	609.0	739.0	819.0		
					M _{max}						502.0	609.0	739.0	819.0		
					η _{eto}						-	-	-	-		
26T22-...5F□□	195.0	2235	112.9	45.60	M ₀								154.0	211.0	220.0	220.0
					M _N								154.0	195.0	195.0	195.0
					M _{0,max}								523.0	611.0	711.0	843.0
					M _{max}								523.0	611.0	711.0	843.0
					η _{eto}								-	-	-	-

- I... [A], M... [Nm], n... [r/min], P... [kW]
- If the motors are operated at a lower switching frequency, please contact your Lenze sales office!
- When operating at 4 kHz, the motor generates just 95 % of its rated torque with increased noise emissions.

MCA asynchronous servo motors

Technical data



Selection tables, Servo Drives 9400 HighLine

Forced ventilated IP23s motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 8 kHz.

					E94A□□	E0174	E0244	E0324	E0474	E0594	E0864	E1044	E1454	E1724	E2024	E2454	E2924
					I _N	16.5	23.5	32.0	41.0	41.0	73.0	78.0	102.0	120.0	131.0	160.0	191.0
					I _{0,max}	49.5	58.8	76.8	94.0	118.0	172.0	208.0	261.0	310.0	364.0	441.0	526.0
MCA	M _N	n _N	I _N	P _N	I _{max}	49.5	58.8	76.8	94.0	118.0	172.0	208.0	261.0	310.0	364.0	441.0	526.0
20X14-...2F□□	61.0	1420	23.0	9.10	M ₀	32.5	66.0										
					M _N	32.5	61.0										
					M _{0,max}	154.2	190.0										
					M _{max}	154.2	190.0										
					η _{eto}	-	-										
20X29-...2F□□	53.5	2930	42.4	16.40	M ₀			28.0	51.6	51.6							
					M _N			28.0	51.6	51.6							
					M _{0,max}			116.0	148.2	192.8							
					M _{max}			116.0	148.2	192.8							
					η _{eto}			-	-	-							
22P08-...2F□□	120.0	760	23.5	9.60	M ₀		120.0	135.0									
					M _N		120.0	120.0									
					M _{0,max}		313.0	402.0									
					M _{max}		313.0	402.0									
					η _{eto}		-	-									
22P14-...2F□□	115.0	1425	40.0	17.20	M ₀				118.0	118.0							
					M _N				115.0	115.0							
					M _{0,max}				300.0	372.0							
					M _{max}				300.0	372.0							
					η _{eto}				-	-							
22P17-...2F□□	112.0	1670	44.5	19.60	M ₀					99.0	135.0						
					M _N					99.0	112.0						
					M _{0,max}					325.0	463.0						
					M _{max}					325.0	463.0						
					η _{eto}					-	-						
22P29-...2F□□	110.0	2935	77.8	33.80	M ₀							110.0	135.0	135.0			
					M _N							110.0	110.0	110.0			
					M _{0,max}							335.0	416.0	486.0			
					M _{max}							335.0	416.0	486.0			
					η _{eto}							-	-	-			
26T05-...2F□□	280.0	550	42.4	16.10	M ₀				268.0	268.0	290.0						
					M _N				268.0	268.0	280.0						
					M _{0,max}				665.0	826.0	1100.0						
					M _{max}				665.0	826.0	1100.0						
					η _{eto}				-	-	-						
26T10-...2F□□	260.0	1030	69.6	28.00	M ₀						270.0	290.0	290.0				
					M _N						260.0	260.0	260.0				
					M _{0,max}						713.0	855.0	1044.0				
					M _{max}						713.0	855.0	1044.0				
					η _{eto}						-	-	-				

- I... [A], M... [Nm], n... [r/min], P... [kW]
- If the motors are operated at a lower switching frequency, please contact your Lenze sales office!
- When operating at 4 kHz, the motor generates just 95 % of its rated torque with increased noise emissions.

MCA asynchronous servo motors

Technical data



Selection tables, Servo Drives 9400 HighLine

Forced ventilated IP23s motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 8 kHz.

					E94A□□	E0174	E0244	E0324	E0474	E0594	E0864	E1044	E1454	E1724	E2024	E2454	E2924
					I _N	16.5	23.5	32.0	41.0	41.0	73.0	78.0	102.0	120.0	131.0	160.0	191.0
					I _{0,max}	49.5	58.8	76.8	94.0	118.0	172.0	208.0	261.0	310.0	364.0	441.0	526.0
MCA	M _N	n _N	I _N	P _N	I _{max}	49.5	58.8	76.8	94.0	118.0	172.0	208.0	261.0	310.0	364.0	441.0	526.0
26T12- ...2F□□	255.0	1200	83.3	32.00	M ₀						204.0	219.0	290.0	290.0	290.0		
					M _N						204.0	219.0	255.0	255.0	255.0		
					M _{0,max}						502.0	609.0	739.0	840.0	896.0		
					M _{max}						502.0	609.0	739.0	840.0	896.0		
					η _{eto}						-	-	-	-	-		
26T22- ...2F□□	230.0	2235	126.7	53.80	M ₀									211.0	242.0	290.0	290.0
					M _N									211.0	230.0	230.0	230.0
					M _{0,max}									611.0	711.0	843.0	1001.0
					M _{max}									611.0	711.0	843.0	1001.0
					η _{eto}									-	-	-	-

- I... [A], M... [Nm], n... [r/min], P... [kW]
- If the motors are operated at a lower switching frequency, please contact your Lenze sales office!
- When operating at 4 kHz, the motor generates just 95 % of its rated torque with increased noise emissions.

MCA asynchronous servo motors

Technical data



MCA asynchronous servo motors

Technical data



Selection tables, Inverter Drives 8400 TopLine

Non-ventilated motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 8 kHz.

					E84AVTC	□5514	□7514	□1124	□1524	□2224	□3024	□4024	□5524	□7524	□1134	□1534	□1834
					I _N	1.8	2.4	3.2	3.9	5.9	7.3	9.5	13.0	16.5	23.5	32.0	39.0
					I _{0,max}	2.7	3.6	4.8	5.9	8.4	11.0	14.3	19.5	26.4	32.9	43.2	60.0
MCA	M _N	n _N	I _N	P _N	I _{max}	3.6	4.8	6.4	7.8	11.8	14.6	19.0	26.0	33.0	47.0	64.0	78.0
10I40	2.0	3950	2.4	0.80	M ₀	-	2.3	2.3	2.3	2.3							
					M _N	-	1.9	1.9	1.9	1.9							
					M _{0,max}	4.2	5.8	8.0	9.8	10.0							
					M _{max}	4.2	5.8	8.0	9.8	10.0							
					η _{eto}	-	-	-	-	-							
13I41	4.0	4050	4.4	1.70	M ₀			-	-	4.6	4.6	4.6					
					M _N			-	-	4.0	4.0	4.0					
					M _{0,max}			7.6	9.6	14.3	18.9	22.9					
					M _{max}			7.6	9.6	14.3	18.9	22.9					
					η _{eto}			-	-	-	-	-					
14L20	6.7	2000	3.3	1.40	M ₀		-	-	8.0	8.0	8.0						
					M _N		-	-	6.7	6.7	6.7						
					M _{0,max}		11.6	16.2	20.1	29.4	34.7						
					M _{max}		11.6	16.2	20.1	29.4	34.7						
					η _{eto}		-	-	-	-	-						
14L41	5.4	4100	5.8	2.30	M ₀					-	8.0	8.0	8.0				
					M _N					-	5.4	5.4	5.4				
					M _{0,max}					14.1	19.0	25.1	31.0				
					M _{max}					14.1	19.0	25.1	31.0				
					η _{eto}					-	-	-	-				
17N23	10.8	2300	5.5	2.60	M ₀				-	12.8	12.8	12.8	12.8				
					M _N				-	10.8	10.8	10.8	10.8				
					M _{0,max}				17.1	25.3	33.3	43.8	51.1				
					M _{max}				17.1	25.3	33.3	43.8	51.1				
					η _{eto}				-	-	-	-	-				
17N41	9.5	4110	10.2	4.10	M ₀					-	-	12.8	12.8	12.8			
					M _N					-	-	9.5	9.5	9.5			
					M _{0,max}					16.5	22.3	31.1	39.9	49.5			
					M _{max}					16.5	22.3	31.1	39.9	49.5			
					η _{eto}					-	-	-	-	-			
19S23	16.3	2340	8.2	4.00	M ₀					-	22.5	22.5	22.5				
					M _N					-	16.3	16.3	16.3				
					M _{0,max}					32.8	43.6	60.9	77.5				
					M _{max}					32.8	43.7	61.0	77.5				
					η _{eto}					-	-	-	-				
19S42	12.0	4150	14.0	5.20	M ₀							-	22.5	22.5	22.5		
					M _N							-	12.0	12.0	12.0		
					M _{0,max}							28.5	37.0	53.7	64.7		
					M _{max}							28.5	37.0	53.8	64.7		
					η _{eto}							-	-	-	-		
21X25	24.6	2490	13.5	6.40	M ₀							-	-	39.0	39.0	39.0	
					M _N							-	-	24.5	24.5	24.5	
					M _{0,max}							33.6	46.7	59.3	85.9	97.3	
					M _{max}							33.6	46.7	59.3	85.9	97.6	
					η _{eto}							-	-	-	-	-	

- I... [A], M... [Nm], n... [r/min], P... [kW]

MCA asynchronous servo motors

Technical data



Selection tables, Inverter Drives 8400 TopLine

Non-ventilated motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 8 kHz.

					E84AVTC	□5514	□7514	□1124	□1524	□2224	□3024	□4024	□5524	□7524	□1134	□1534	□1834
					I _N	1.8	2.4	3.2	3.9	5.9	7.3	9.5	13.0	16.5	23.5	32.0	39.0
					I _{0,max}	2.7	3.6	4.8	5.9	8.4	11.0	14.3	19.5	26.4	32.9	43.2	60.0
MCA	M _N	n _N	I _N	P _N	I _{max}	3.6	4.8	6.4	7.8	11.8	14.6	19.0	26.0	33.0	47.0	64.0	78.0
21X42	17.0	4160	19.8	7.40	M ₀									-	39.0	39.0	39.0
					M _N									-	17.0	17.0	17.0
					M _{0,max}									35.3	52.2	72.1	88.5
					M _{max}									35.3	52.2	72.1	88.5
					η _{eto}									-	-	-	-

- I... [A], M... [Nm], n... [r/min], P... [kW]

MCA asynchronous servo motors

Technical data



Selection tables, Inverter Drives 8400 TopLine

Forced ventilated IP54 motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 8 kHz.

					E84AVTC	□1524	□2224	□3024	□4024	□5524	□7524
					I _N	3.9	5.9	7.3	9.5	13.0	16.5
					I _{0,max}	5.9	8.4	11.0	14.3	19.5	26.4
MCA	M _N	n _N	I _N	P _N	I _{max}	7.8	11.8	14.6	19.0	26.0	33.0
13I34	6.3	3410	6.0	2.20	M ₀		-	7.0	7.0	7.0	
					M _N		-	6.2	6.2	6.2	
					M _{0,max}		16.0	21.4	28.2	32.0	
					M _{max}		16.0	21.4	28.2	32.0	
					n _{eto}		-	-	-	-	
14L16	12.0	1635	4.8	2.10	M ₀	-	13.5	13.5	13.5		
					M _N	-	12.3	12.3	12.3		
					M _{0,max}	23.4	34.7	45.5	50.8		
					M _{max}	23.4	34.7	45.5	50.8		
					n _{eto}	-	-	-	-		
14L35	10.8	3455	9.1	3.90	M ₀			-	13.5	13.5	13.5
					M _N			-	10.8	10.8	10.8
					M _{0,max}			21.1	28.4	39.8	51.1
					M _{max}			21.1	28.4	39.8	51.1
					n _{eto}			-	-	-	-
17N17	21.5	1680	8.5	3.80	M ₀			-	23.9	23.9	23.9
					M _N			-	21.6	21.6	21.6
					M _{0,max}			42.1	55.9	77.5	93.3
					M _{max}			42.2	56.0	77.5	93.3
					n _{eto}			-	-	-	-
17N35	19.0	3480	15.8	6.90	M ₀					-	23.9
					M _N					-	18.9
					M _{0,max}					38.0	49.5
					M _{max}					38.0	49.5
					n _{eto}					-	-
19S17	36.3	1700	13.9	6.40	M ₀					-	40.0
					M _N					-	36.0
					M _{0,max}					71.6	94.7
					M _{max}					71.6	94.7
					n _{eto}					-	-
19S35	36.0	3510	28.7	13.20	M ₀						
					M _N						
					M _{0,max}						
					M _{max}						
					n _{eto}						
21X17	61.4	1710	22.5	11.00	M ₀						-
					M _N						-
					M _{0,max}						99.0
					M _{max}						99.0
					n _{eto}						-
21X35	55.0	3520	42.5	20.30	M ₀						
					M _N						
					M _{0,max}						
					M _{max}						
					n _{eto}						

- I... [A], M... [Nm], n... [r/min], P... [kW]

MCA asynchronous servo motors

Technical data



Selection tables, Inverter Drives 8400 TopLine

Forced ventilated IP54 motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 8 kHz.

□1134	□1534	□1834	□2234	□3034	□3734	□4534	E84AVTC					
23.5	32.0	39.0	47.0	61.0	76.0	89.0	I _N	P _N	I _N	n _N	M _N	MCA
32.9	43.2	60.0	70.5	91.5	114.0	133.5	I _{0,max}					
47.0	64.0	78.0	94.0	122.0	152.0	178.0	I _{max}					
							M ₀					
							M _N					
							M _{0,max}	2.20	6.0	3410	6.3	13I34
							M _{max}					
							n _{eto}					
							M ₀	2.10	4.8	1635	12.0	14L16
							M _N					
							M _{0,max}					
							M _{max}					
							n _{eto}					
13.5							M ₀	3.90	9.1	3455	10.8	14L35
10.8							M _N					
56.5							M _{0,max}					
56.6							M _{max}					
-							n _{eto}					
							M ₀	3.80	8.5	1680	21.5	17N17
							M _N					
							M _{0,max}					
							M _{max}					
							n _{eto}					
23.9	23.9						M ₀	6.90	15.8	3480	19.0	17N35
18.9	18.9						M _N					
72.5	97.8						M _{0,max}					
72.5	97.8						M _{max}					
-	-						n _{eto}					
40.0	40.0						M ₀	6.40	13.9	1700	36.3	19S17
36.0	36.0						M _N					
138.9	165.2						M _{0,max}					
139.0	165.3						M _{max}					
-	-						n _{eto}					
-	40.0	40.0	40.0	40.0			M ₀	13.20	28.7	3510	36.0	19S35
-	35.9	35.9	35.9	35.9			M _N					
55.1	78.8	97.8	112.8	146.2			M _{0,max}					
55.1	78.8	97.8	112.9	146.2			M _{max}					
-	-	-	-	-			n _{eto}					
75.0	75.0	75.0	75.0				M ₀	11.00	22.5	1710	61.4	21X17
61.4	61.4	61.4	61.4				M _N					
143.7	198.5	242.2	277.2				M _{0,max}					
144.0	198.7	242.3	277.2				M _{max}					
-	-	-	-				n _{eto}					
	-	-	75.0	75.0	75.0	75.0	M ₀	20.30	42.5	3520	55.0	21X35
	-	-	55.1	55.1	55.1	55.1	M _N					
	97.5	120.6	138.5	177.5	216.7	267.8	M _{0,max}					
	97.5	120.6	138.6	178.0	217.5	269.8	M _{max}					
	-	-	-	-	-	-	n _{eto}					

- I... [A], M... [Nm], n... [r/min], P... [kW]

MCA asynchronous servo motors

Technical data



Selection tables, Inverter Drives 8400 TopLine

Forced ventilated IP54 motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 8 kHz.

					E84AVTC	□7524	□1134	□1534	□1834	□2234	□3034	□3734	□4534
					I _N	16.5	23.5	32.0	39.0	47.0	61.0	76.0	89.0
					I _{0,max}	26.4	32.9	43.2	60.0	70.5	91.5	114.0	133.5
					I _{max}	33.0	47.0	64.0	78.0	94.0	122.0	152.0	178.0
MCA	M _N	n _N	I _N	P _N	M ₀ M _N M _{0,max} M _{max} n _{eto}	-	120.0	120.0	120.0	120.0			
22P08-...5F□□	110.0	760	22.1	8.80		-	110.6	110.6	110.6	110.6			
						157.8	233.4	323.3	396.6	394.3			
						157.8	233.5	323.3	396.6	394.3			
						-	-	-	-	-			
22P14-...5F□□	107.0	1425	37.7	16.00	M ₀			-	120.0	120.0	120.0	120.0	120.0
					M _N			-	107.2	107.2	107.2	107.2	107.2
					M _{0,max}			186.5	232.5	268.8	345.7	422.7	458.8
					M _{max}			186.7	232.7	269.0	346.3	423.7	460.9
					n _{eto}			-	-	-	-	-	-
22P17-...5F□□	105.0	1670	42.7	18.50	M ₀			-	-	120.0	120.0	120.0	120.0
					M _N			-	-	105.8	105.8	105.8	105.8
					M _{0,max}			162.7	204.2	236.9	307.8	374.9	461.2
					M _{max}			162.7	204.2	237.1	308.3	377.0	462.4
					n _{eto}			-	-	-	-	-	-
22P29-...5F□□	100.0	2935	72.1	30.70	M ₀						-	120.0	120.0
					M _N						-	99.9	99.9
					M _{0,max}						180.5	224.5	270.5
					M _{max}						180.8	226.0	271.4
					n _{eto}						-	-	-

- I... [A], M... [Nm], n... [r/min], P... [kW]
- If the motors are operated at a lower switching frequency, please contact your Lenze sales office!

MCA asynchronous servo motors

Technical data



Selection tables, Inverter Drives 8400 TopLine

Forced ventilated IP23s motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 8 kHz.

					E84AVTC	□7524	□1134	□1534	□1834	□2234	□3034	□3734	□4534
					I _N	16.5	23.5	32.0	39.0	47.0	61.0	76.0	89.0
					I _{0,max}	26.4	32.9	43.2	60.0	70.5	91.5	114.0	133.5
MCA	M _N	n _N	I _N	P _N	I _{max}	33.0	47.0	64.0	78.0	94.0	122.0	152.0	178.0
20X14-...2F□□	61.0	1420	23.0	9.10	M ₀	-	67.0	68.0	68.0	68.0			
					M _N	-	61.2	61.2	61.2	61.2			
					M _{0,max}	94.8	139.9	192.6	235.5	250.0			
					M _{max}	94.9	139.9	192.8	235.7	250.0			
					η _{eto}	-	-	-	-	-			
20X29-...2F□□	53.5	2930	42.4	16.40	M ₀			-	-	57.0	68.0	68.0	68.0
					M _N			-	-	53.4	53.4	53.4	53.4
					M _{0,max}			96.8	121.2	140.3	182.5	222.1	250.0
					M _{max}			96.8	121.2	140.4	182.6	223.0	250.0
					η _{eto}			-	-	-	-	-	-
22P08-...2F□□	120.0	760	23.5	9.60	M ₀	-	135.0	135.0	135.0	135.0			
					M _N	-	120.6	120.6	120.6	120.6			
					M _{0,max}	157.8	234.2	325.4	401.4	400.9			
					M _{max}	157.8	234.8	325.8	401.4	400.9			
					η _{eto}	-	-	-	-	-			
22P14-...2F□□	115.0	1425	40.0	17.20	M ₀			-	-	135.0	135.0	135.0	135.0
					M _N			-	-	115.3	115.3	115.3	115.3
					M _{0,max}			188.4	235.1	270.8	350.2	425.8	493.6
					M _{max}			188.7	235.1	271.0	350.3	428.1	496.1
					η _{eto}			-	-	-	-	-	-
22P17-...2F□□	112.0	1670	44.5	19.60	M ₀			-	-	135.0	135.0	135.0	135.0
					M _N			-	-	112.1	112.1	112.1	112.1
					M _{0,max}			163.1	204.6	237.9	309.7	376.9	463.1
					M _{max}			163.1	204.6	238.2	310.6	379.0	465.2
					η _{eto}			-	-	-	-	-	-
22P29-...2F□□	110.0	2935	77.8	33.80	M ₀						-	-	135.0
					M _N						-	-	110.0
					M _{0,max}						180.0	224.4	268.2
					M _{max}						180.7	225.0	269.4
					η _{eto}						-	-	-

- I... [A], M... [Nm], n... [r/min], P... [kW]
- If the motors are operated at a lower switching frequency, please contact your Lenze sales office!

MCA asynchronous servo motors

Technical data



Selection tables, Servo Drives ECS

Non-ventilated motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 4 kHz.

					ECS□□	008C□B	016C□B	032C□B	048C□B	064C□B
					I _N	4.0	8.0	12.7	17.0	20.0
					I _{0,max}	4.6	9.1	18.1	27.2	36.3
MCA	M _N	n _N	I _N	P _N	I _{max}	8.0	16.0	32.0	48.0	64.0
10I40	2.0	3950	2.4	0.80	M ₀	2.3				
					M _N	2.0				
					M _{0,max}	5.6				
					M _{max}	8.1				
					η _{eto}	-				
13I41	4.0	4050	4.4	1.70	M ₀	3.0	4.6			
					M _N	3.0	4.0			
					M _{0,max}	4.3	11.0			
					M _{max}	9.4	18.2			
					η _{eto}	-	-			
14L20	6.7	2000	3.3	1.40	M ₀	8.0	8.0			
					M _N	6.7	6.7			
					M _{0,max}	10.7	25.3			
					M _{max}	21.6	42.8			
					η _{eto}	-	-			
14L41	5.4	4100	5.8	2.30	M ₀		8.0	8.0		
					M _N		5.4	5.4		
					M _{0,max}		11.0	24.0		
					M _{max}		20.7	29.1		
					η _{eto}		-	-		
17N23	10.8	2300	5.5	2.60	M ₀		12.8	12.8		
					M _N		10.8	10.8		
					M _{0,max}		20.5	43.5		
					M _{max}		40.2	63.7		
					η _{eto}		-	-		
17N41	9.5	4110	10.2	4.10	M ₀		6.1	12.8	12.8	
					M _N		6.1	9.5	9.5	
					M _{0,max}		7.8	21.5	33.5	
					M _{max}		17.4	29.6	57.7	
					η _{eto}		-	-	-	
19S23	16.3	2340	8.2	4.00	M ₀		15.1	22.5		
					M _N		15.1	16.3		
					M _{0,max}		18.7	43.5		
					M _{max}		38.5	67.9		
					η _{eto}		-	-		
19S42	12.0	4150	14.0	5.20	M ₀			9.8	16.7	
					M _N			9.8	12.0	
					M _{0,max}			18.4	31.9	
					M _{max}			29.9	58.2	
					η _{eto}			-	-	
21X25	24.6	2490	13.5	6.40	M ₀			21.0	39.0	
					M _N			21.0	24.6	
					M _{0,max}			41.0	64.5	
					M _{max}			64.4	120.5	
					η _{eto}			-	-	

- I... [A], M... [Nm], n... [r/min], P... [kW]

MCA asynchronous servo motors

Technical data



Selection tables, Servo Drives ECS

Non-ventilated motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 4 kHz.

					ECS□□	008C□B	016C□B	032C□B	048C□B	064C□B
					I _N	4.0	8.0	12.7	17.0	20.0
					I _{0,max}	4.6	9.1	18.1	27.2	36.3
MCA	M _N	n _N	I _N	P _N	I _{max}	8.0	16.0	32.0	48.0	64.0
21X42	17.0	4160	19.8	7.40	M ₀				13.0	17.0
					M _N				13.0	17.0
					M _{0,max}				30.0	45.0
					M _{max}				59.4	83.0
					η _{eto}				-	-

- I... [A], M... [Nm], n... [r/min], P... [kW]

MCA asynchronous servo motors

Technical data



Selection tables, Servo Drives ECS

Forced ventilated IP54 motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 4 kHz.

					ECS□□	008C□B	016C□B	032C□B	048C□B	064C□B
					I _N	4.0	8.0	12.7	17.0	20.0
					I _{0,max}	4.6	9.1	18.1	27.2	36.3
MCA	M _N	n _N	I _N	P _N	I _{max}	8.0	16.0	32.0	48.0	64.0
13I34	6.3	3410	6.0	2.20	M ₀		7.0			
					M _N		6.3			
					M _{0,max}		10.7			
					M _{max}		20.8			
					n _{eto}		-			
14L16	12.0	1635	4.8	2.10	M ₀	8.9	13.5			
					M _N	8.9	12.0			
					M _{0,max}	11.5	25.4			
					M _{max}	21.6	46.7			
					n _{eto}	-	-			
14L35	10.8	3455	9.1	3.90	M ₀		8.3	13.5	13.5	
					M _N		8.3	10.8	10.8	
					M _{0,max}		11.0	27.0	41.0	
					M _{max}		22.2	42.0	60.0	
					n _{eto}		-	-	-	
17N17	21.5	1680	8.5	3.80	M ₀		19.5	23.9		
					M _N		19.5	21.5		
					M _{0,max}		23.0	53.0		
					M _{max}		44.8	80.0		
					n _{eto}		-	-		
17N35	19.0	3480	15.8	6.90	M ₀			12.7	23.0	
					M _N			12.7	19.0	
					M _{0,max}			23.0	37.5	
					M _{max}			37.7	64.4	
					n _{eto}			-	-	
19S17	36.3	1700	13.9	6.40	M ₀			28.3	40.0	40.0
					M _N			28.3	36.3	36.3
					M _{0,max}			46.5	72.0	98.0
					M _{max}			75.4	130.8	158.9
					n _{eto}			-	-	-
21X17	61.4	1710	22.5	11.00	M ₀					52.5
					M _N					52.5
					M _{0,max}					107.0
					M _{max}					190.0
					n _{eto}					-

- I... [A], M... [Nm], n... [r/min], P... [kW]

MCA asynchronous servo motors

Technical data



Selection tables, Servo Inverter 9300

Non-ventilated motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 8 kHz.

					EVS	9322-E□	9323-E□	9324-E□	9325-E□	9326-E□	9327-E□	9328-E□	9329-E□
					I _N	2.5	3.9	7.0	13.0	23.5	32.0	47.0	59.0
					I _{0,max}	3.8	5.9	10.5	19.5	23.5	32.0	47.0	52.0
MCA	M _N	n _N	I _N	P _N	I _{max}	3.8	5.9	10.5	19.5	35.3	48.0	70.5	88.5
10I40	2.0	3950	2.4	0.80	M ₀	2.2	2.3						
					M _N	2.0	2.0						
					M _{0,max}	4.4	7.3						
					M _{max}	4.4	7.3						
					η _{eto}	-	-						
13I41	4.0	4050	4.4	1.70	M ₀			4.6	4.6				
					M _N			4.0	4.0				
					M _{0,max}			12.6	19.5				
					M _{max}			12.6	19.5				
					η _{eto}			-	-				
14L20	6.7	2000	3.3	1.40	M ₀		8.0	8.0					
					M _N		6.7	6.7					
					M _{0,max}		15.1	29.3					
					M _{max}		15.1	29.3					
					η _{eto}		-	-					
14L41	5.4	4100	5.8	2.30	M ₀			7.0	8.0				
					M _N			5.4	5.4				
					M _{0,max}			13.2	26.0				
					M _{max}			13.2	26.0				
					η _{eto}			-	-				
17N23	10.8	2300	5.5	2.60	M ₀			12.8	12.8				
					M _N			10.8	10.8				
					M _{0,max}			24.4	46.2				
					M _{max}			24.4	46.2				
					η _{eto}			-	-				
17N41	9.5	4110	10.2	4.10	M ₀				12.8	12.8	12.8		
					M _N				9.5	9.5	9.5		
					M _{0,max}				23.4	37.0	54.0		
					M _{max}				23.4	43.7	59.4		
					η _{eto}				-	-	-		
19S23	16.3	2340	8.2	4.00	M ₀				22.5	22.5			
					M _N				16.3	16.3			
					M _{0,max}				47.2	78.0			
					M _{max}				47.2	88.2			
					η _{eto}				-	-			
19S42	12.0	4150	14.0	5.20	M ₀				10.0	22.5	22.5		
					M _N				10.0	12.0	12.0		
					M _{0,max}				20.7	33.5	51.0		
					M _{max}				20.7	43.3	60.7		
					η _{eto}				-	-	-		
21X25	24.6	2490	13.5	6.40	M ₀				23.7	39.0	39.0		
					M _N				23.7	24.6	24.6		
					M _{0,max}				46.2	66.0	84.0		
					M _{max}				46.2	78.0	92.4		
					η _{eto}				-	-	-		

- I... [A], M... [Nm], n... [r/min], P... [kW]

MCA asynchronous servo motors

Technical data



Selection tables, Servo Inverter 9300

Non-ventilated motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 8 kHz.

					EVS	9322-E□	9323-E□	9324-E□	9325-E□	9326-E□	9327-E□	9328-E□	9329-E□
					I _N	2.5	3.9	7.0	13.0	23.5	32.0	47.0	59.0
					I _{0,max}	3.8	5.9	10.5	19.5	23.5	32.0	47.0	52.0
MCA	M _N	n _N	I _N	P _N	I _{max}	3.8	5.9	10.5	19.5	35.3	48.0	70.5	88.5
21X42	17.0	4160	19.8	7.40	M ₀					24.0	39.0	39.0	39.0
					M _N					17.0	17.0	17.0	17.0
					M _{0,max}					24.0	47.0	84.0	94.0
					M _{max}					43.9	63.3	96.8	123.0
					n _{eto}					-	-	-	-

- I... [A], M... [Nm], n... [r/min], P... [kW]

MCA asynchronous servo motors

Technical data



Selection tables, Servo Inverter 9300

Forced ventilated IP54 motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 8 kHz.

					EVS	9324-E□	9325-E□	9326-E□	9327-E□	9328-E□	9329-E□	9330-E□	9331-E□
					I _N	7.0	13.0	23.5	32.0	47.0	59.0	89.0	110.0
					I _{0,max}	10.5	19.5	23.5	32.0	47.0	52.0	80.0	110.0
MCA	M _N	n _N	I _N	P _N	I _{max}	10.5	19.5	35.3	48.0	70.5	88.5	133.5	165.0
13I34	6.3	3410	6.0	2.20	M ₀	7.0	7.0						
					M _N	6.3	6.3						
					M _{0,max}	13.0	25.0						
					M _{max}	13.0	25.0						
					n _{eto}	-	-						
14L16	12.0	1635	4.8	2.10	M ₀	13.5							
					M _N	12.0							
					M _{0,max}	29.6							
					M _{max}	29.6							
					n _{eto}	-							
14L35	10.8	3455	9.1	3.90	M ₀		13.5	13.5					
					M _N		10.8	10.8					
					M _{0,max}		29.3	47.0					
					M _{max}		29.3	53.8					
					n _{eto}		-	-					
17N17	21.5	1680	8.5	3.80	M ₀		23.9						
					M _N		21.5						
					M _{0,max}		57.2						
					M _{max}		57.2						
					n _{eto}		-						
17N35	19.0	3480	15.8	6.90	M ₀			23.9	23.9	23.9			
					M _N			19.0	19.0	19.0			
					M _{0,max}			27.5	57.0	89.0			
					M _{max}			50.7	69.2	100.2			
					n _{eto}			-	-	-			
19S17	36.3	1700	13.9	6.40	M ₀		34.0	40.0	40.0				
					M _N		34.0	36.3	36.3				
					M _{0,max}		50.1	76.0	112.0				
					M _{max}		50.1	95.9	130.8				
					n _{eto}		-	-	-				
19S35	36.0	3510	28.7	13.20	M ₀			21.0	39.0	40.0	40.0	40.0	
					M _N			21.0	36.0	36.0	36.0	36.0	
					M _{0,max}			21.0	39.0	73.0	80.0	161.5	
					M _{max}			45.7	67.6	104.3	132.9	180.0	
					n _{eto}			-	-	-	-	-	
21X17	61.4	1710	22.5	11.00	M ₀			65.5	75.0	75.0	75.0		
					M _N			61.4	61.4	61.4	61.4		
					M _{0,max}			65.5	102.0	178.0	200.0		
					M _{max}			104.1	143.3	210.7	257.3		
					n _{eto}			-	-	-	-		
21X35	55.0	3520	42.5	20.30	M ₀					68.0	75.0	75.0	75.0
					M _N					55.0	55.0	55.0	55.0
					M _{0,max}					68.0	88.0	156.0	219.0
					M _{max}					107.7	135.9	205.0	250.1
					n _{eto}					-	-	-	-

- I... [A], M... [Nm], n... [r/min], P... [kW]

MCA asynchronous servo motors

Technical data



Selection tables, Servo Inverter 9300

Forced ventilated IP54 motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 8 kHz.

					EVS	9326-E□	9327-E□	9328-E□	9329-E□	9330-E□	9331-E□	9332-E□
					I _N	23.5	32.0	47.0	59.0	89.0	110.0	145.0
					I _{0,max}	23.5	32.0	47.0	52.0	80.0	110.0	126.0
					I _{max}	35.3	48.0	70.5	88.5	133.5	165.0	217.5
MCA	M _N	n _N	I _N	P _N								
22P08-...5F□□	110.0	760	22.1	8.80	M ₀	115.0	120.0	120.0	120.0			
					M _N	108.0	110.0	110.0	110.0			
					M _{0,max}	115.0	166.0	242.0	267.0			
					M _{max}	185.0	247.0	338.8	345.8			
					n _{eto}	-	-	-	-			
22P14-...5F□□	107.0	1425	37.7	16.00	M ₀			120.0	120.0	120.0		
					M _N			107.0	107.0	107.0		
					M _{0,max}			146.0	160.0	264.0		
					M _{max}			230.1	292.9	341.8		
					n _{eto}			-	-	-		
22P17-...5F□□	105.0	1670	42.7	18.50	M ₀			120.0	120.0	120.0	120.0	
					M _N			106.0	106.0	106.0	106.0	
					M _{0,max}			124.0	140.0	240.0	335.0	
					M _{max}			180.5	227.7	342.1	378.3	
					n _{eto}			-	-	-	-	
22P29-...5F□□	100.0	2935	72.1	30.70	M ₀					118.0	120.0	120.0
					M _N					100.0	100.0	100.0
					M _{0,max}					122.0	171.0	200.0
					M _{max}					215.6	273.1	355.1
					n _{eto}					-	-	-
26T05-...5F□□	216.0	550	34.9	12.40	M ₀		191.0	220.0	220.0	220.0		
					M _N		191.0	216.0	216.0	216.0		
					M _{0,max}		191.0	303.0	333.0	615.0		
					M _{max}		313.0	482.0	612.0	751.0		
					n _{eto}		-	-	-	-		
26T10-...5F□□	210.0	1030	61.5	22.70	M ₀				159.0	220.0	220.0	
					M _N				197.0	210.0	210.0	
					M _{0,max}				159.0	300.0	440.0	
					M _{max}				343.0	552.0	671.0	
					n _{eto}				-	-	-	
26T12-...5F□□	207.0	1200	75.1	26.00	M ₀					207.0	220.0	220.0
					M _N					255.0	207.0	207.0
					M _{0,max}					258.0	327.0	397.0
					M _{max}					424.0	512.0	663.0
					n _{eto}					-	-	-
26T22-...5F□□	195.0	2235	112.9	45.60	M ₀						177.0	220.0
					M _N						177.0	195.0
					M _{0,max}						203.0	220.0
					M _{max}						315.0	432.0
					n _{eto}						-	-

- I... [A], M... [Nm], n... [r/min], P... [kW]
- If the motors are operated at a lower switching frequency, please contact your Lenze sales office!

MCA asynchronous servo motors

Technical data



Selection tables, Servo Inverter 9300

Forced ventilated IP23s motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 8 kHz.

					EVS	9326-E□	9327-E□	9328-E□	9329-E□	9330-E□	9331-E□	9332-E□
					I _N	23.5	32.0	47.0	59.0	89.0	110.0	145.0
					I _{0,max}	23.5	32.0	47.0	52.0	80.0	110.0	126.0
					I _{max}	35.3	48.0	70.5	88.5	133.5	165.0	217.5
MCA	M _N	n _N	I _N	P _N								
20X14-...2F□□	61.0	1420	23.0	9.10	M ₀	61.0	68.0	68.0				
					M _N	61.0	61.0	61.0				
					M _{0,max}	61.0	93.0	153.0				
					M _{max}	109.3	156.7	232.1				
					n _{eto}	-	-	-				
20X29-...2F□□	53.5	2930	42.4	16.40	M ₀		28.0	66.3	68.0	68.0		
					M _N		28.0	53.5	53.5	53.5		
					M _{0,max}		28.0	66.3	72.0	129.0		
					M _{max}		68.5	112.5	146.4	226.7		
					n _{eto}		-	-	-	-		
22P08-...2F□□	120.0	760	23.5	9.60	M ₀	115.0	135.0	135.0	135.0			
					M _N	115.0	120.0	120.0	120.0			
					M _{0,max}	115.0	166.0	242.0	267.0			
					M _{max}	185.0	247.0	338.8	345.8			
					n _{eto}	-	-	-	-			
22P14-...2F□□	115.0	1425	40.0	17.20	M ₀			135.0	135.0	135.0		
					M _N			115.0	115.0	115.0		
					M _{0,max}			146.0	160.0	264.0		
					M _{max}			230.1	292.9	341.8		
					n _{eto}			-	-	-		
22P17-...2F□□	112.0	1670	44.5	19.60	M ₀			124.0	134.0	135.0	135.0	
					M _N			112.0	112.0	112.0	112.0	
					M _{0,max}			124.0	140.0	240.0	335.0	
					M _{max}			180.5	227.7	342.1	378.3	
					n _{eto}			-	-	-	-	
22P29-...2F□□	110.0	2935	77.8	33.80	M ₀					118.0	135.0	135.0
					M _N					110.0	110.0	110.0
					M _{0,max}					122.0	171.0	200.0
					M _{max}					215.6	273.1	355.1
					n _{eto}					-	-	-
26T05-...2F□□	280.0	550	42.4	16.10	M ₀		191.0	290.0	290.0	290.0		
					M _N		191.0	280.0	280.0	280.0		
					M _{0,max}		191.0	303.0	333.0	615.0		
					M _{max}		313.0	482.0	612.0	751.0		
					n _{eto}		-	-	-	-		
26T10-...2F□□	260.0	1030	69.6	28.00	M ₀				159.0	290.0	290.0	
					M _N				197.0	260.0	260.0	
					M _{0,max}				159.0	300.0	440.0	
					M _{max}				343.0	552.0	671.0	
					n _{eto}				-	-	-	

- I... [A], M... [Nm], n... [r/min], P... [kW]
- If the motors are operated at a lower switching frequency, please contact your Lenze sales office!

MCA asynchronous servo motors

Technical data



Selection tables, Servo Inverter 9300

Forced ventilated IP23s motors

- The data applies to a mains connection voltage of 3 x 400 V and an inverter switching frequency of 8 kHz.

					EVS	9326-E□	9327-E□	9328-E□	9329-E□	9330-E□	9331-E□	9332-E□
					I _N	23.5	32.0	47.0	59.0	89.0	110.0	145.0
					I _{0,max}	23.5	32.0	47.0	52.0	80.0	110.0	126.0
MCA	M _N	n _N	I _N	P _N	I _{max}	35.3	48.0	70.5	88.5	133.5	165.0	217.5
26T12-...2F□□	255.0	1200	83.3	32.00	M ₀					232.0	290.0	290.0
					M _N					255.0	255.0	255.0
					M _{0,max}					258.0	327.0	397.0
					M _{max}					424.0	512.0	663.0
					n _{eto}					-	-	-
26T22-...2F□□	230.0	2235	126.7	53.80	M ₀						177.0	222.0
					M _N						177.0	230.0
					M _{0,max}						203.0	220.0
					M _{max}						315.0	432.0
					n _{eto}						-	-

- I... [A], M... [Nm], n... [r/min], P... [kW]
- If the motors are operated at a lower switching frequency, please contact your Lenze sales office!

MCA asynchronous servo motors

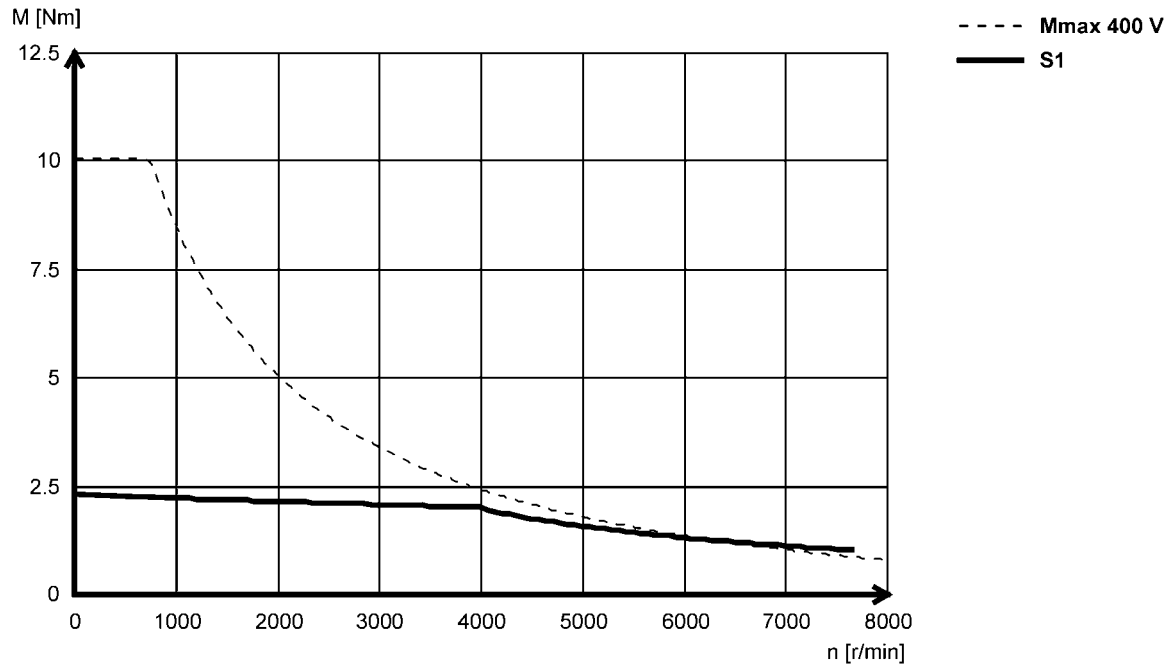
Technical data



Torque characteristics

- The data applies to a mains connection voltage of 3 x 400 V.
- You can find further torque characteristics at www.lenze.de/dsc.

MCA10I40 (non-ventilated)

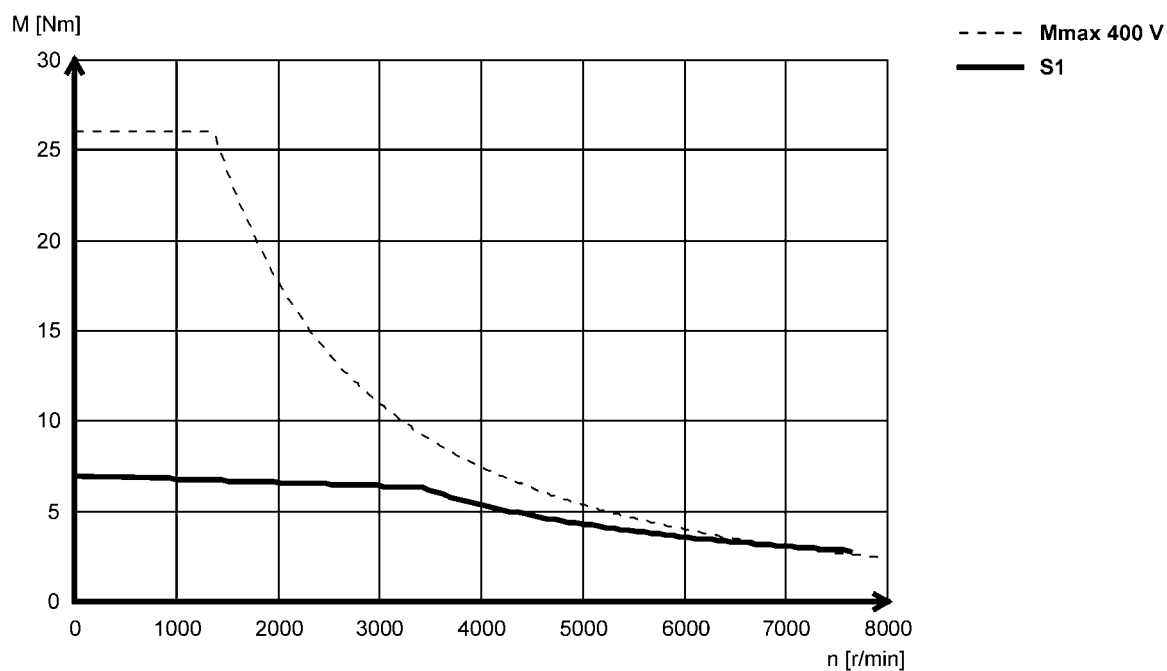




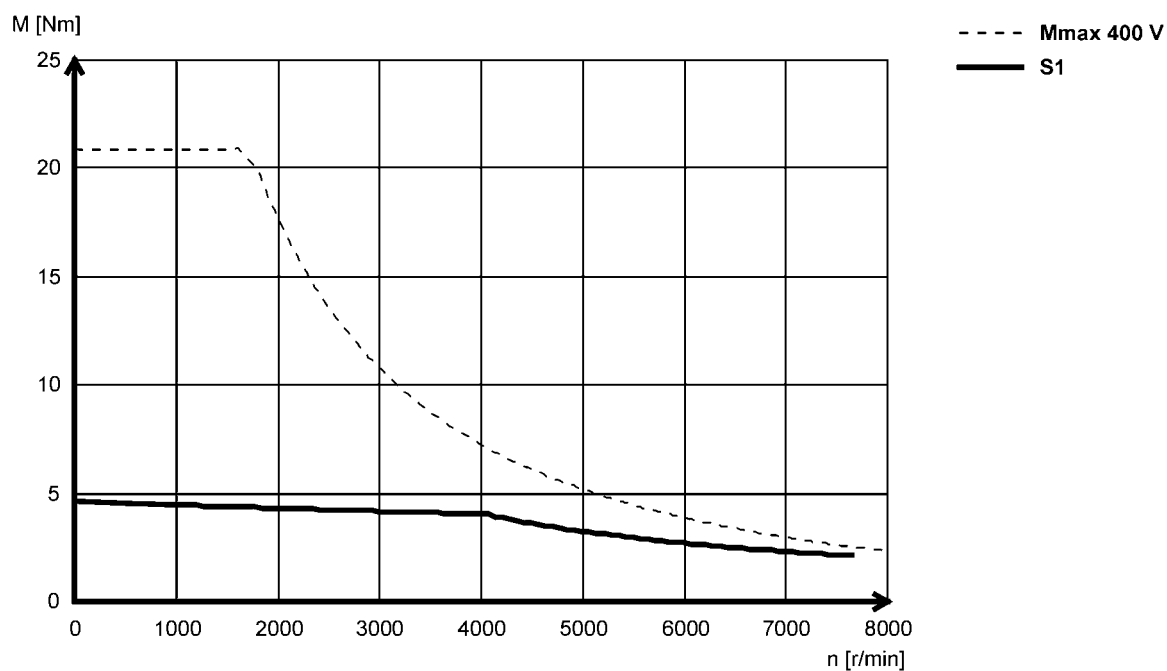
Torque characteristics

- The data applies to a mains connection voltage of 3 x 400 V.
- You can find further torque characteristics at www.lenze.de/dsc.

MCA13I34 (forced ventilated)



MCA13I41 (non-ventilated)

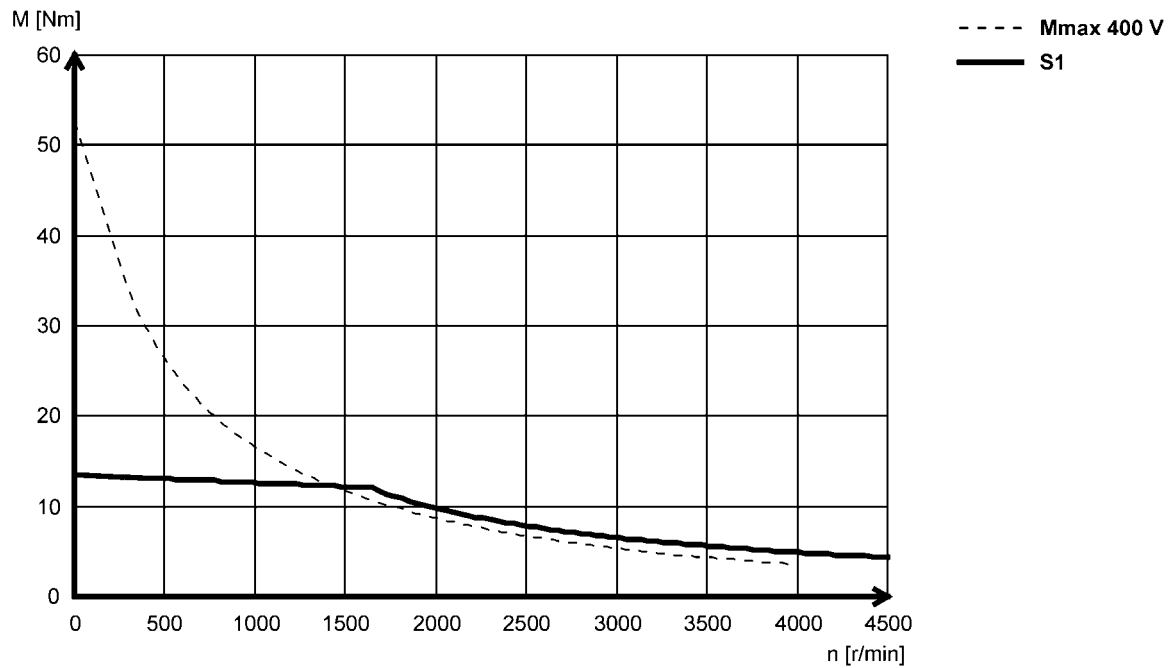




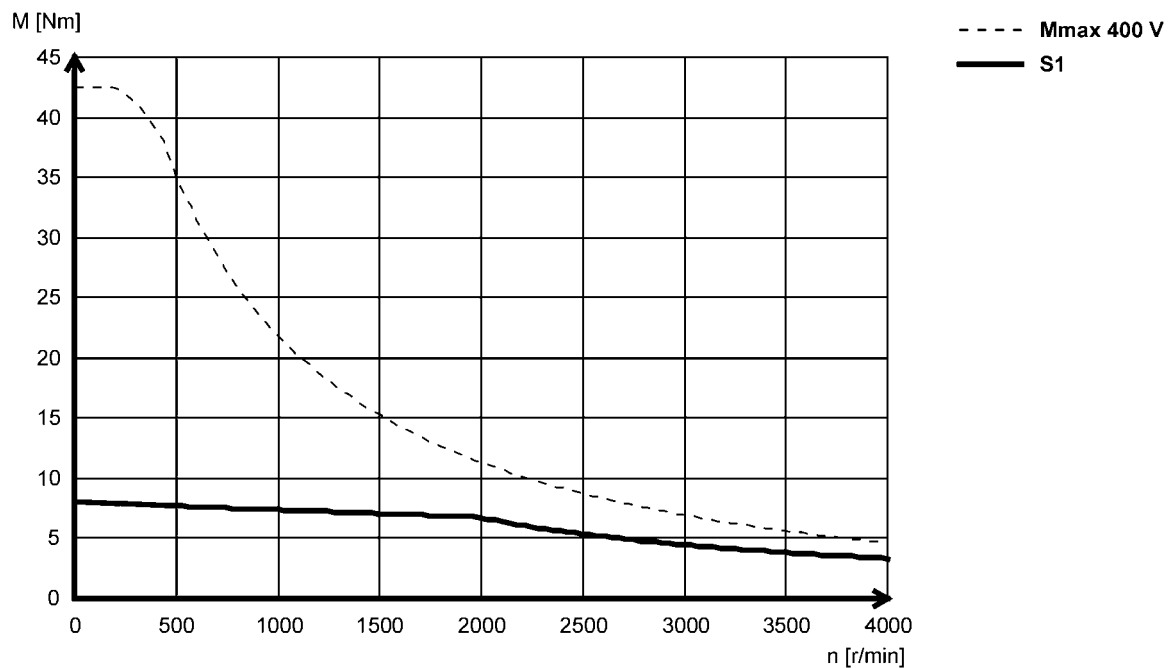
Torque characteristics

- The data applies to a mains connection voltage of 3 x 400 V.
- You can find further torque characteristics at www.lenze.de/dsc.

MCA14L16 (forced ventilated)



MCA14L20 (non-ventilated)

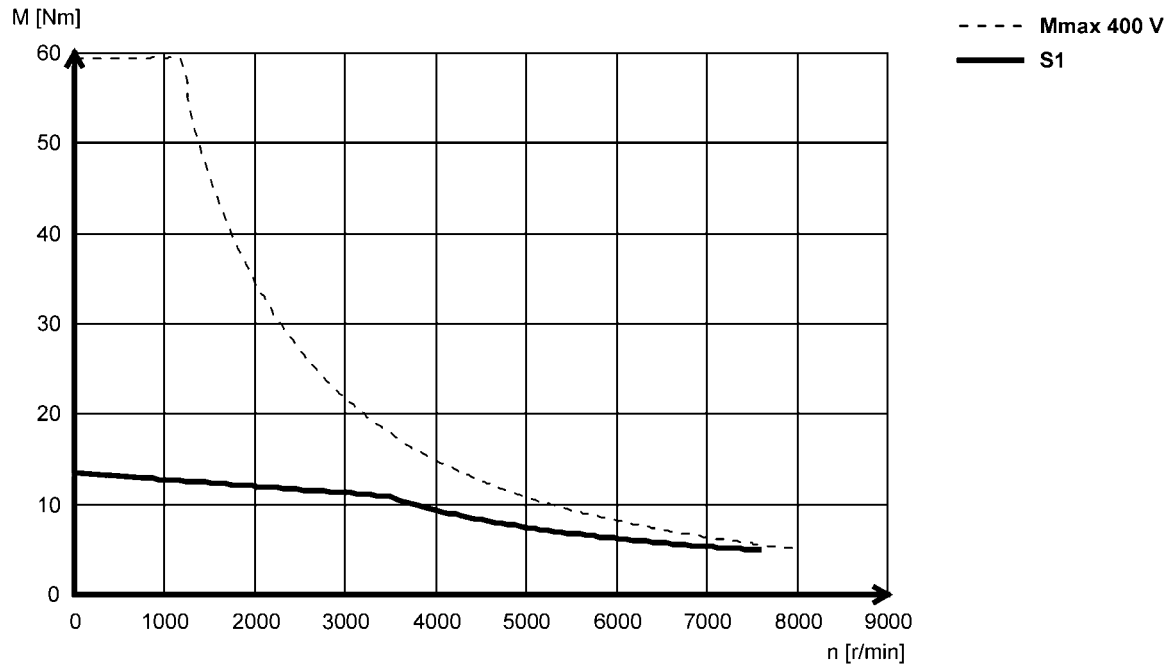




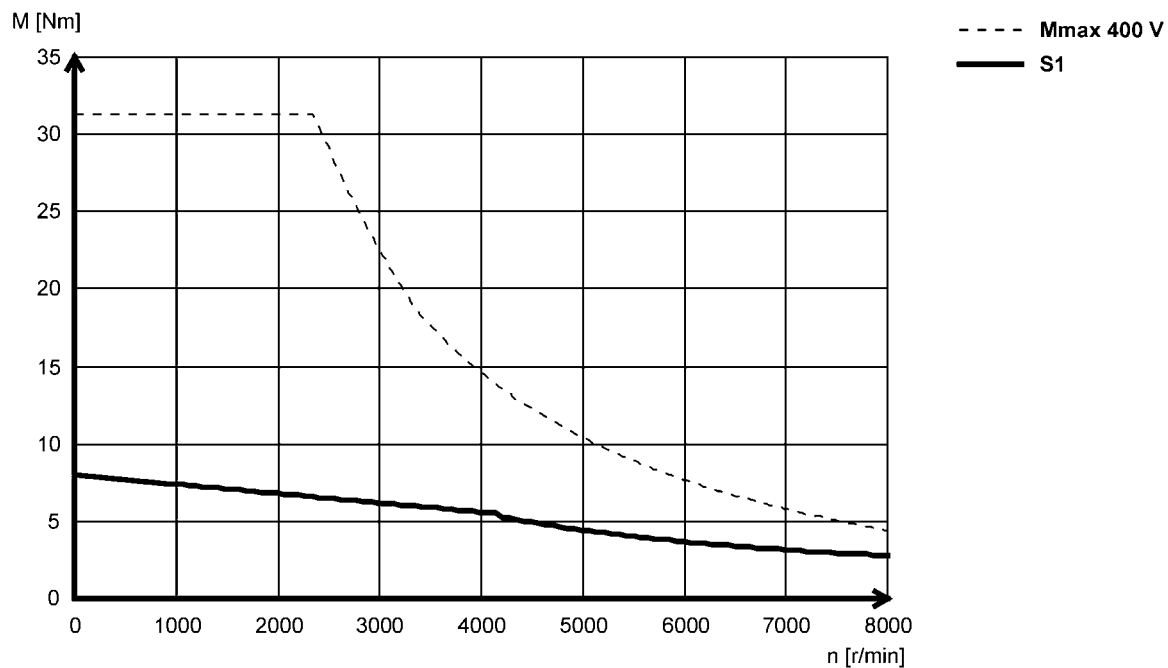
Torque characteristics

- The data applies to a mains connection voltage of 3 x 400 V.
- You can find further torque characteristics at www.lenze.de/dsc.

MCA14L35 (forced ventilated)



MCA14L41 (non-ventilated)

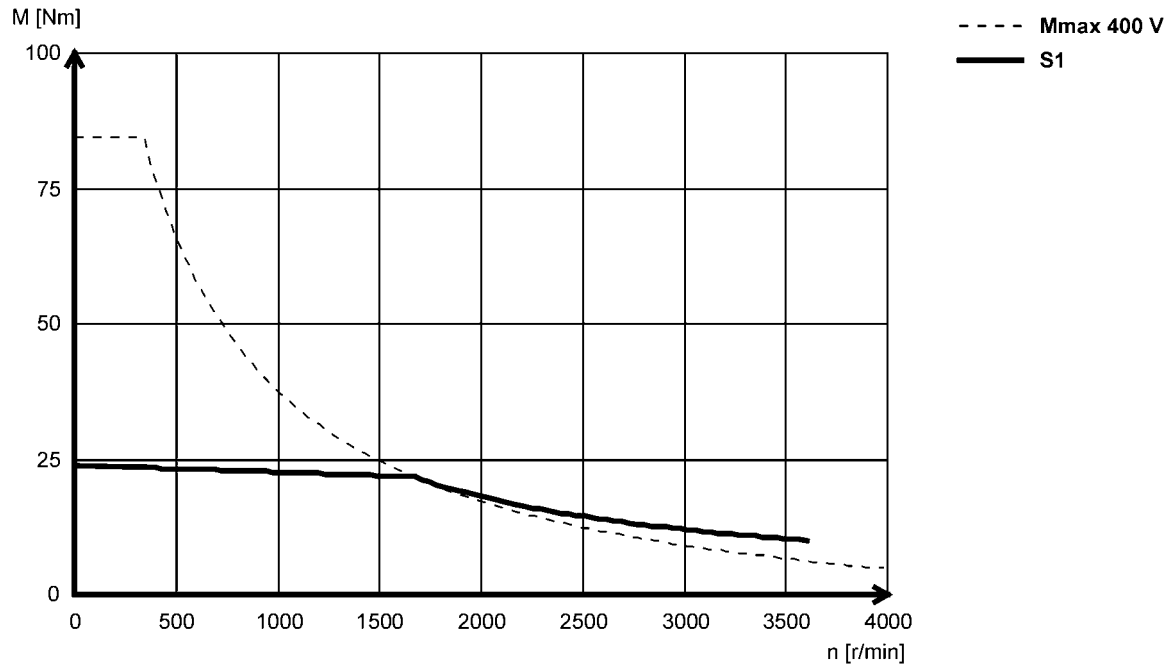




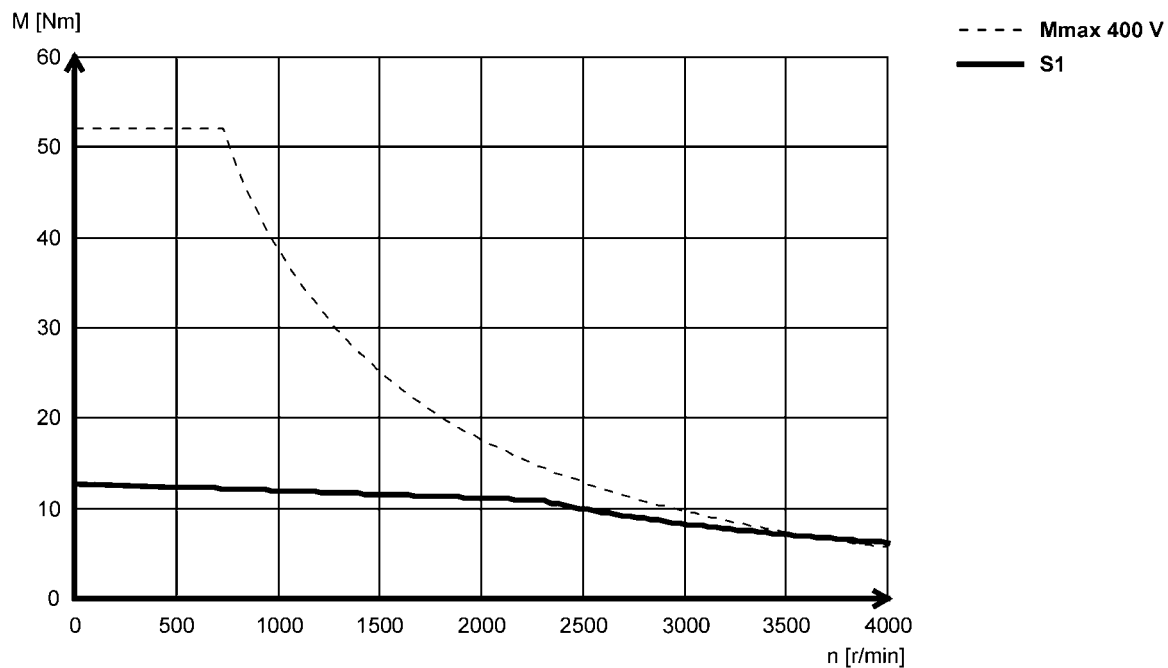
Torque characteristics

- The data applies to a mains connection voltage of 3 x 400 V.
- You can find further torque characteristics at www.lenze.de/dsc.

MCA17N17 (forced ventilated)



MCA17N23 (non-ventilated)

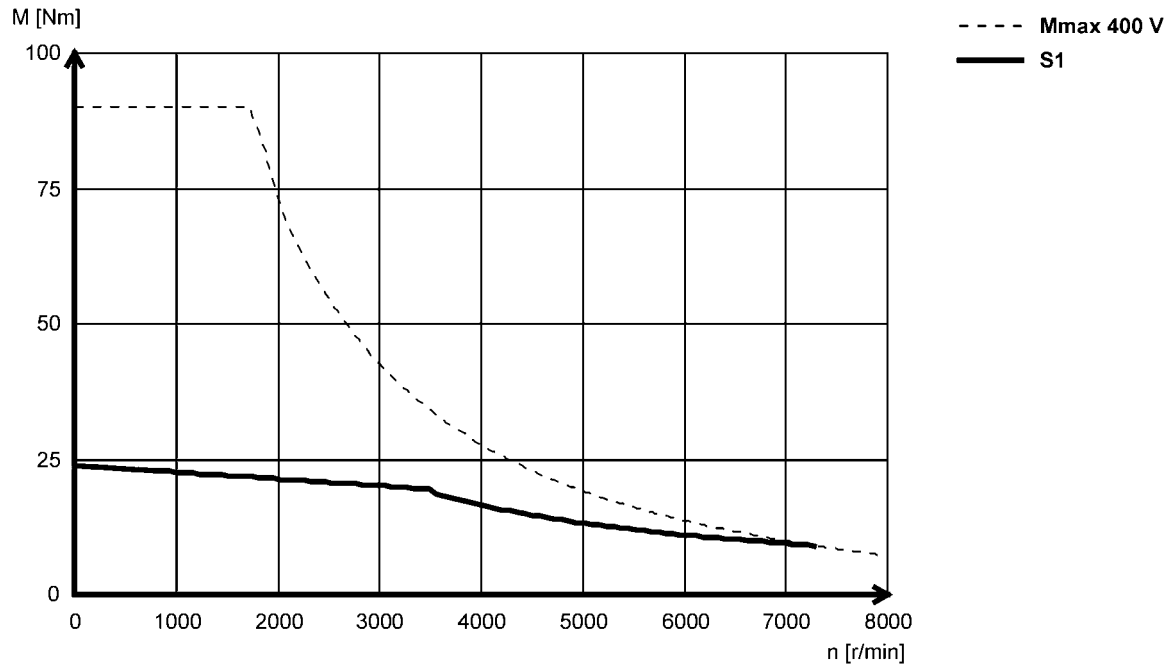




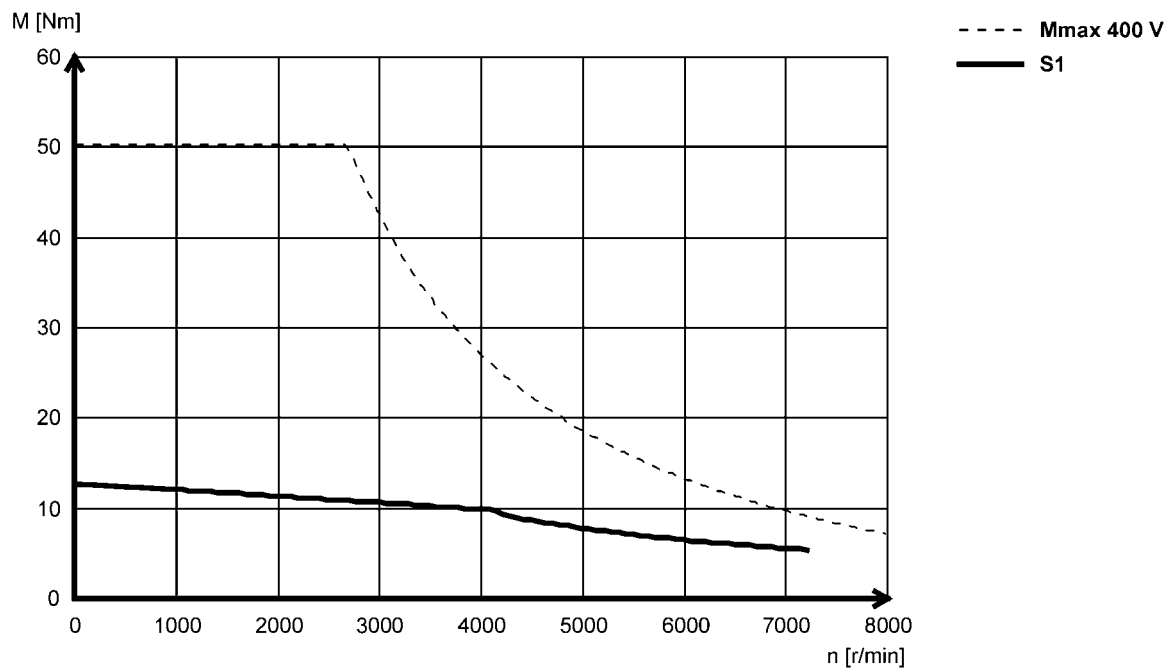
Torque characteristics

- The data applies to a mains connection voltage of 3 x 400 V.
- You can find further torque characteristics at www.lenze.de/dsc.

MCA17N35 (forced ventilated)



MCA17N41 (non-ventilated)

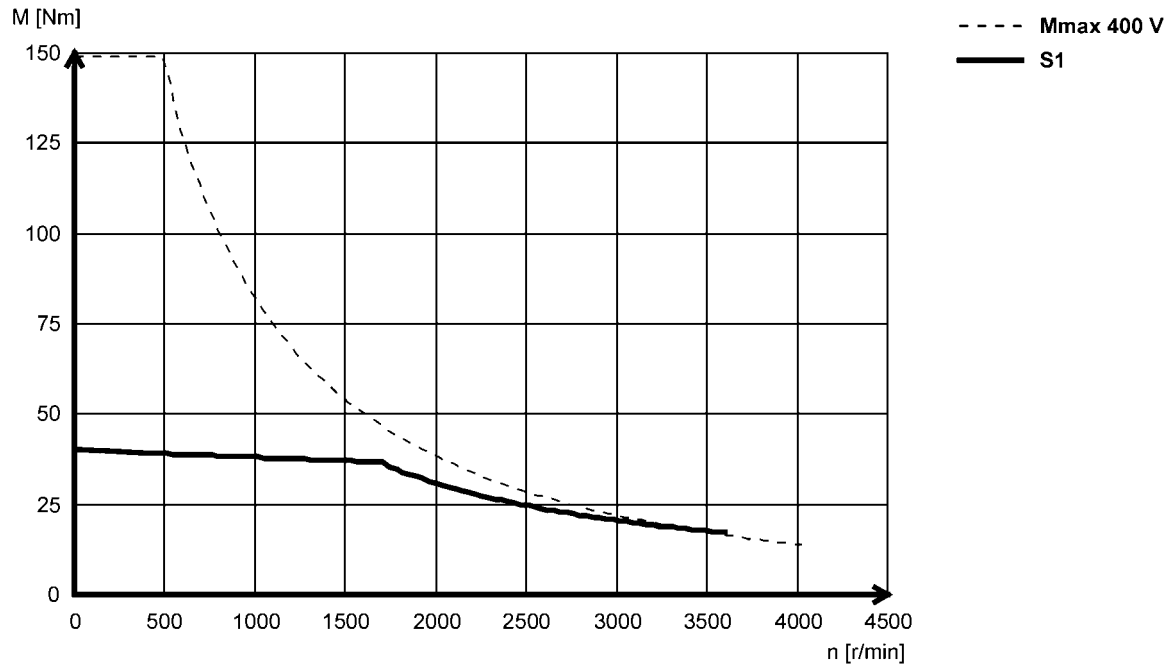




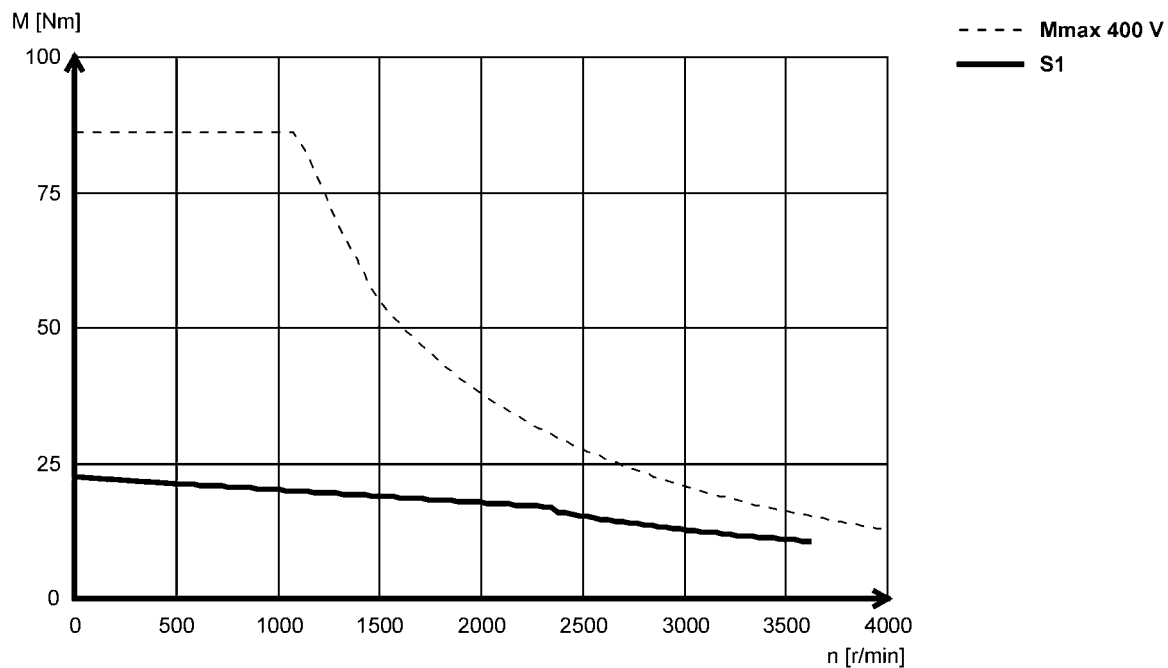
Torque characteristics

- The data applies to a mains connection voltage of 3 x 400 V.
- You can find further torque characteristics at www.lenze.de/dsc.

MCA19S17 (forced ventilated)



MCA19S23 (non-ventilated)

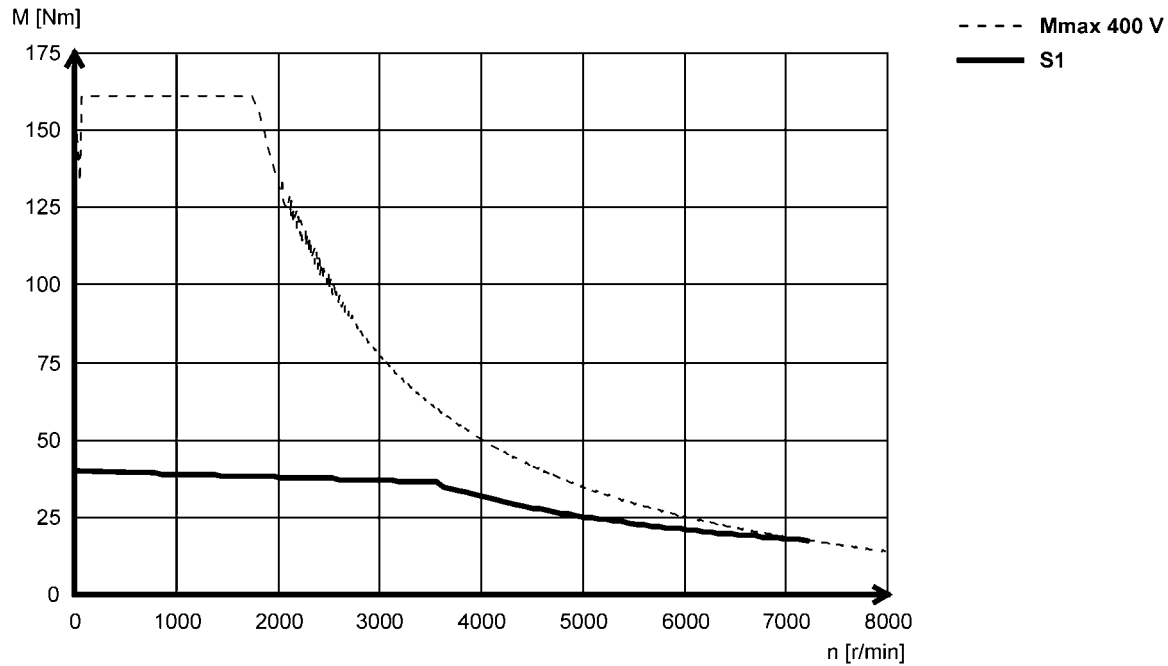




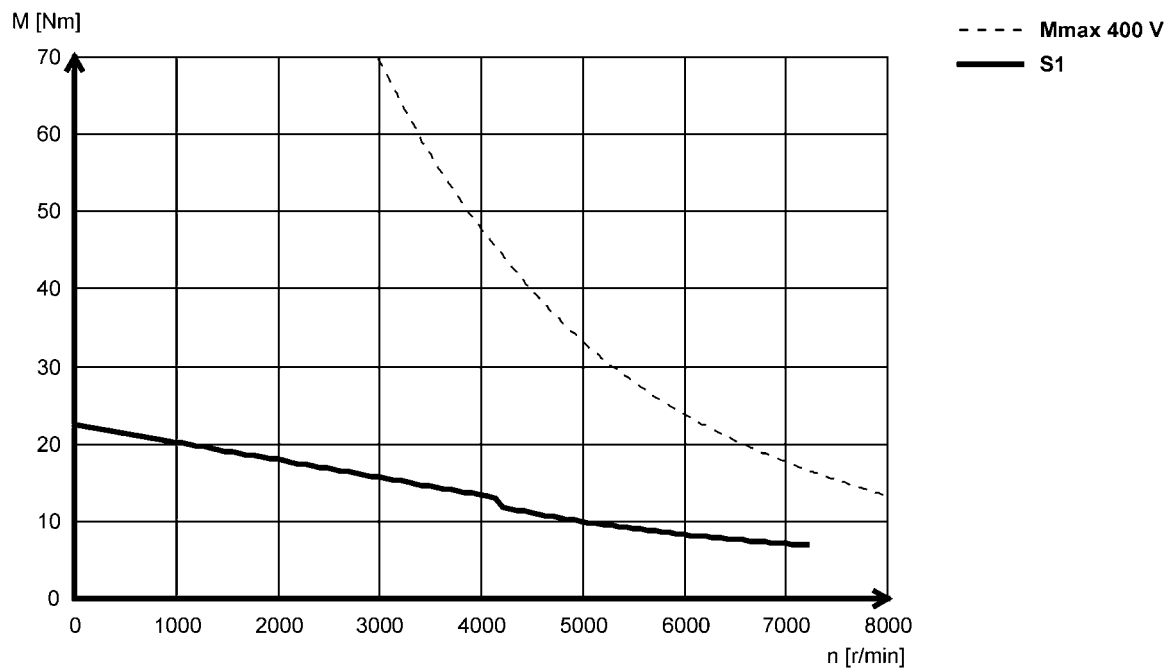
Torque characteristics

- The data applies to a mains connection voltage of 3 x 400 V.
- You can find further torque characteristics at www.lenze.de/dsc.

MCA19S35 (forced ventilated)



MCA19S42 (non-ventilated)

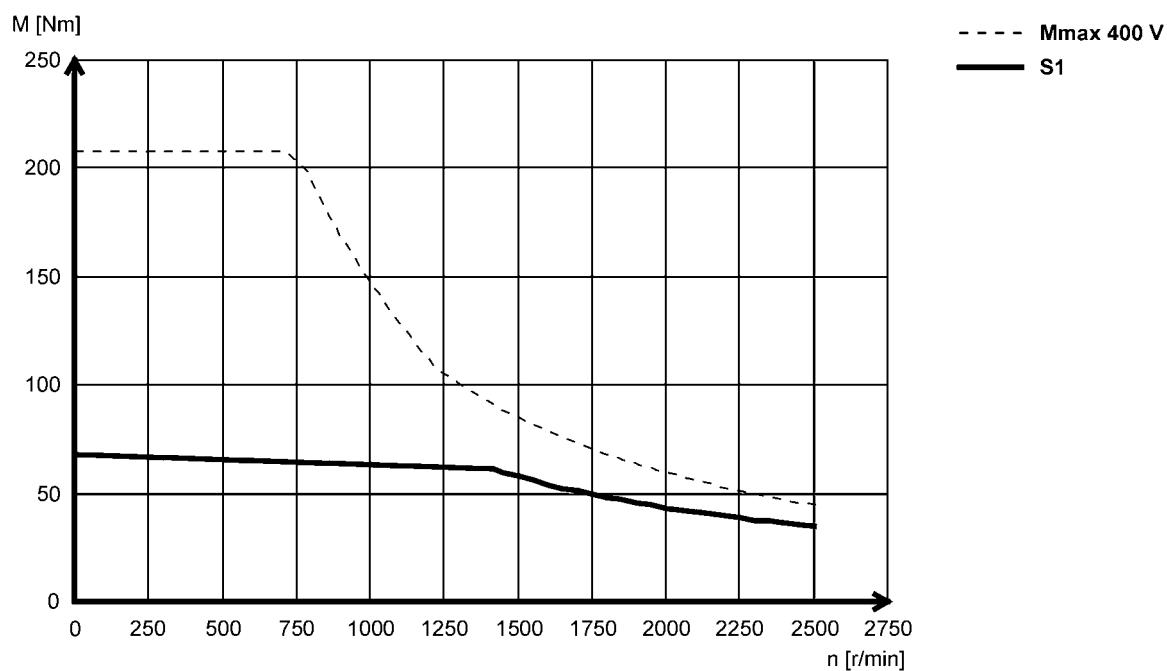




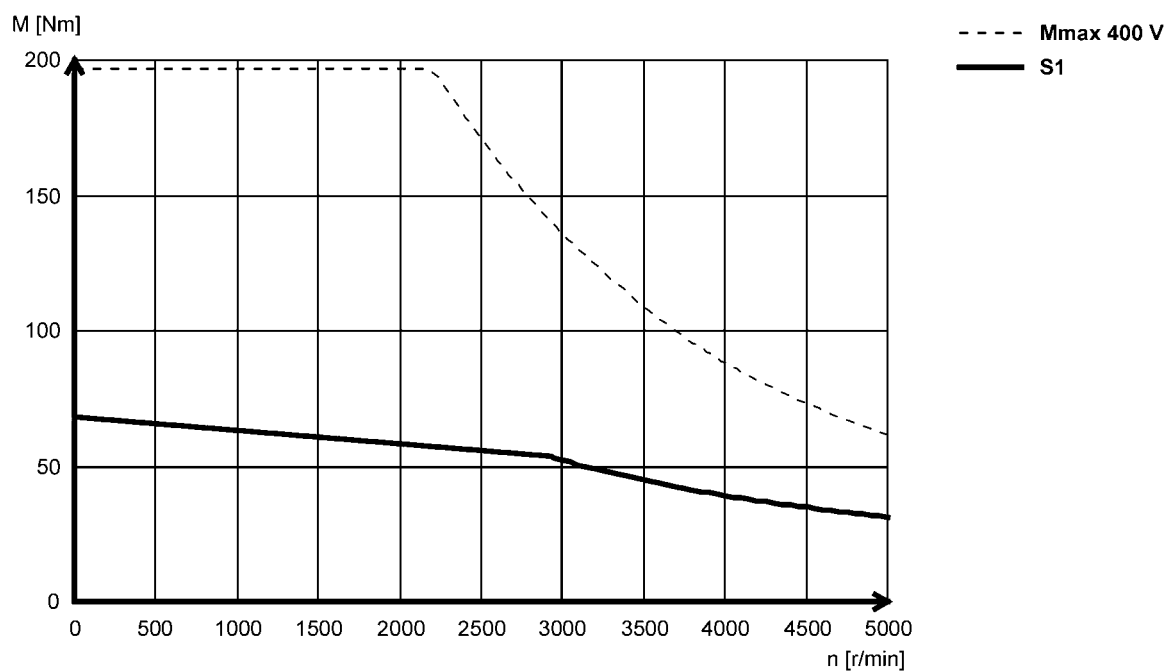
Torque characteristics

- The data applies to a mains connection voltage of 3 x 400 V.
- You can find further torque characteristics at www.lenze.de/dsc.

MCA20X14...2F□□ (forced ventilated)



MCA20X29...2F□□ (forced ventilated)

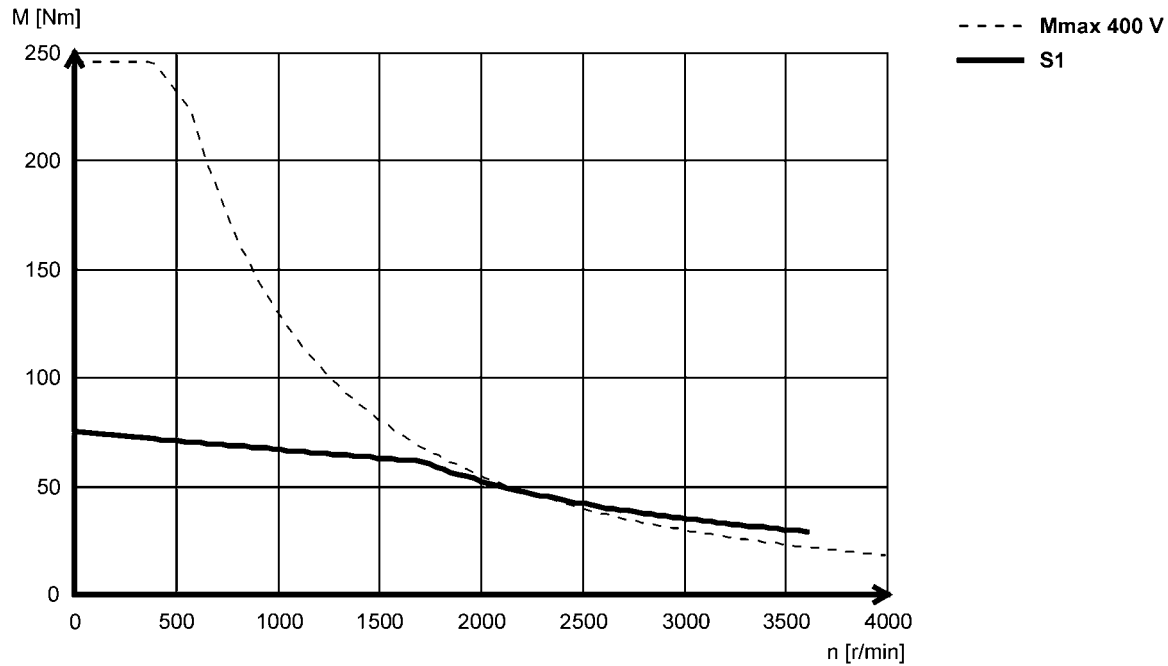




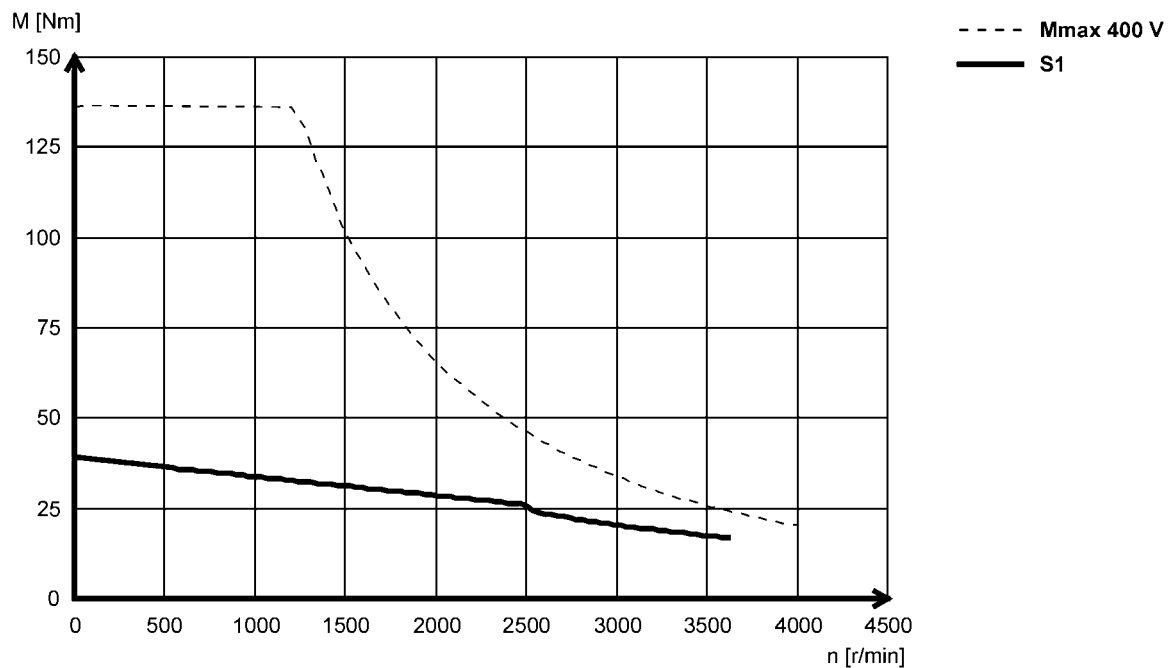
Torque characteristics

- The data applies to a mains connection voltage of 3 x 400 V.
- You can find further torque characteristics at www.lenze.de/dsc.

MCA21X17 (forced ventilated)



MCA21X25 (non-ventilated)



MCA asynchronous servo motors

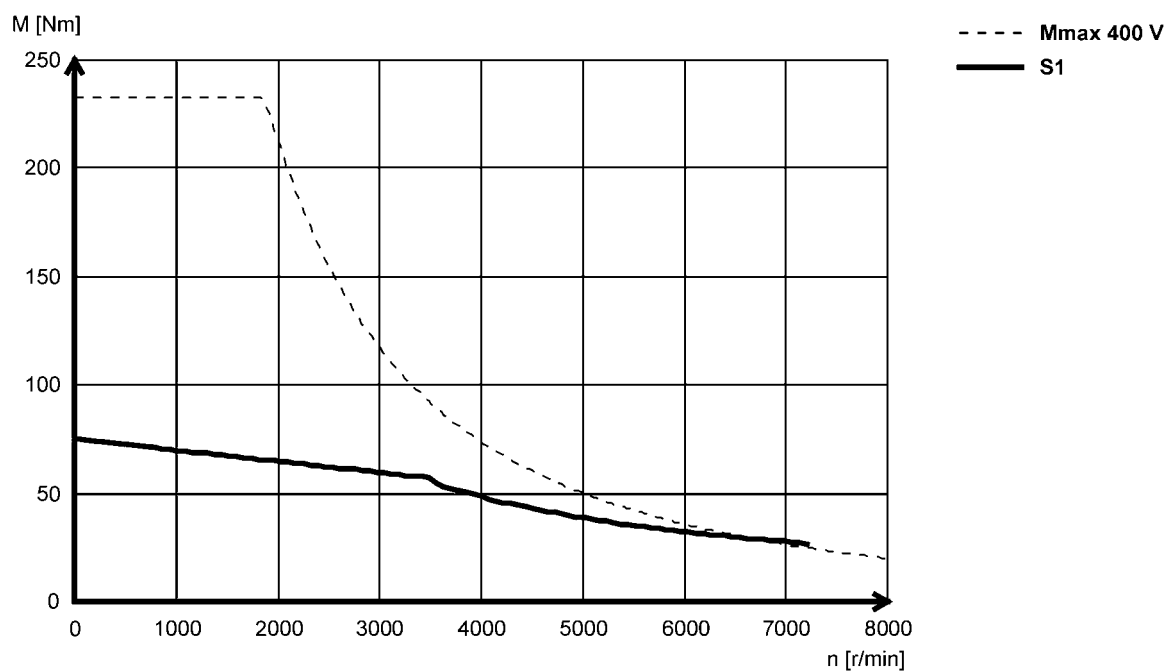
Technical data



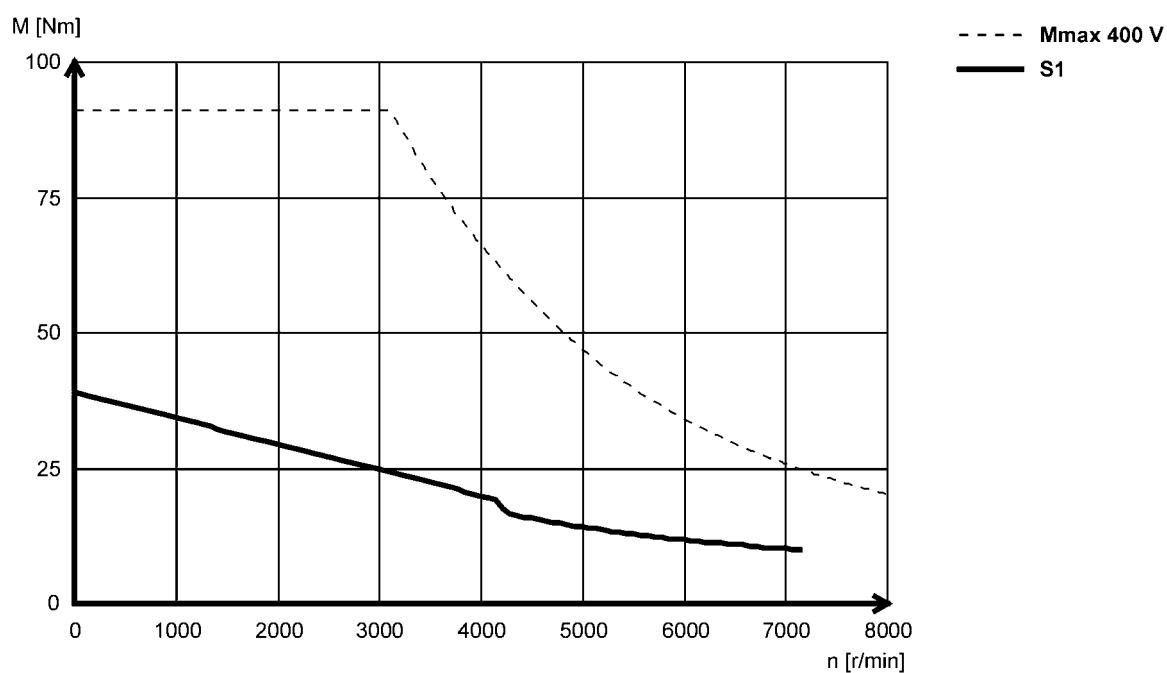
Torque characteristics

- The data applies to a mains connection voltage of 3 x 400 V.
- You can find further torque characteristics at www.lenze.de/dsc.

MCA21X35 (forced ventilated)



MCA21X42 (non-ventilated)

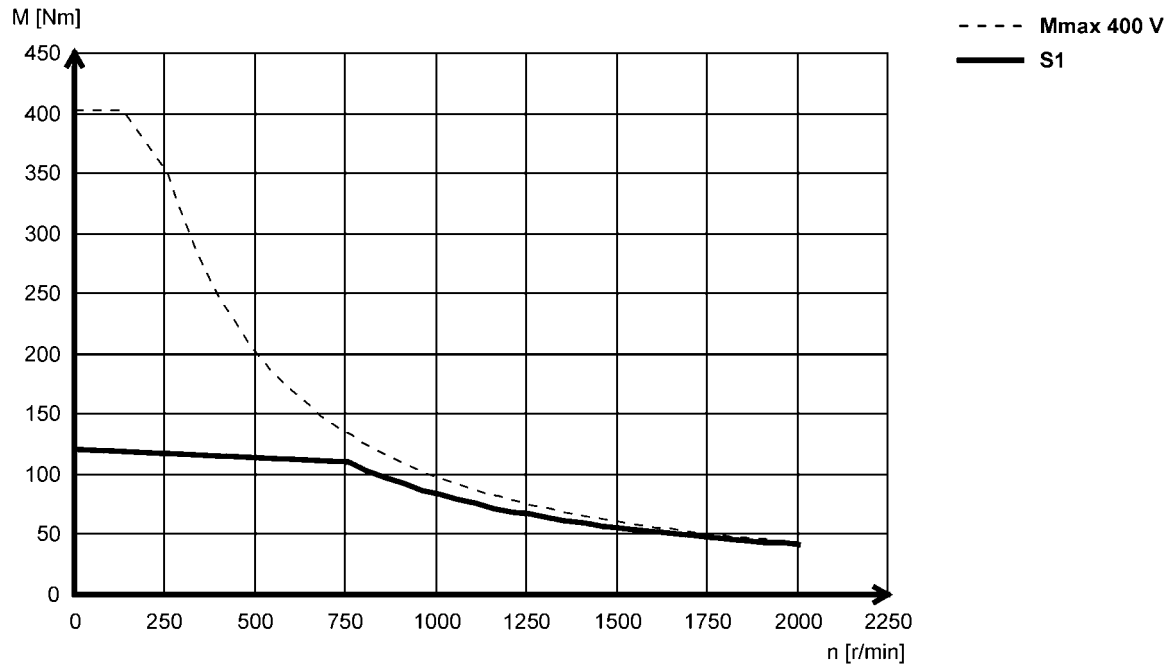




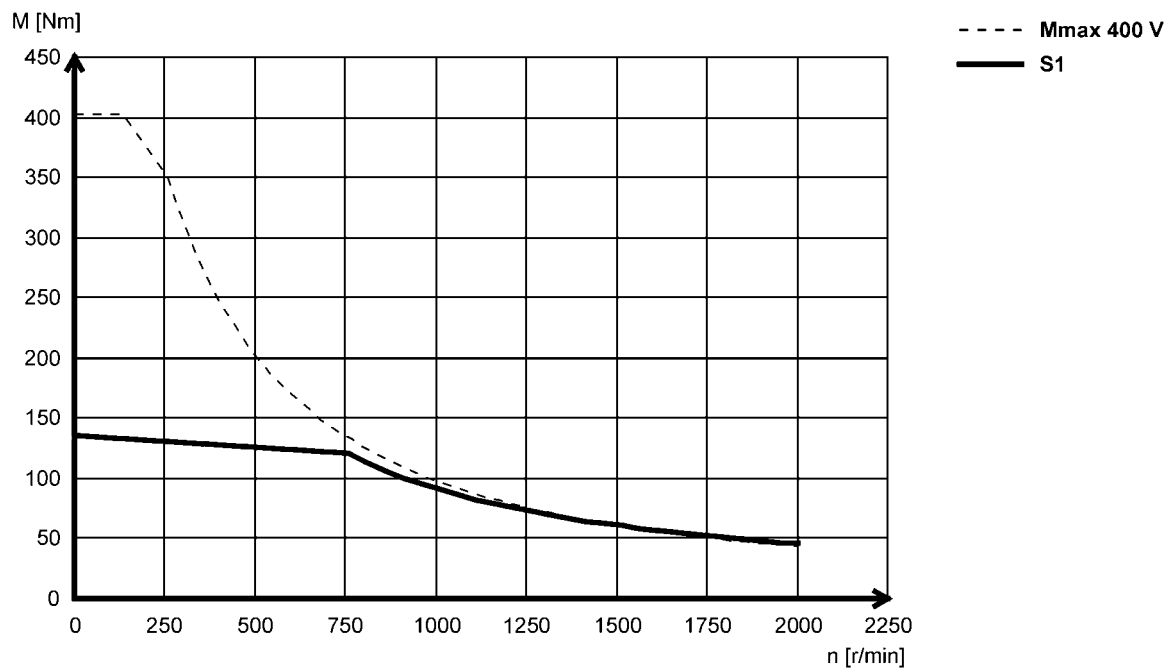
Torque characteristics

- The data applies to a mains connection voltage of 3 x 400 V.
- You can find further torque characteristics at www.lenze.de/dsc.

MCA22P08...5F□□ (forced ventilated)



MCA22P08...2F□□ (forced ventilated)

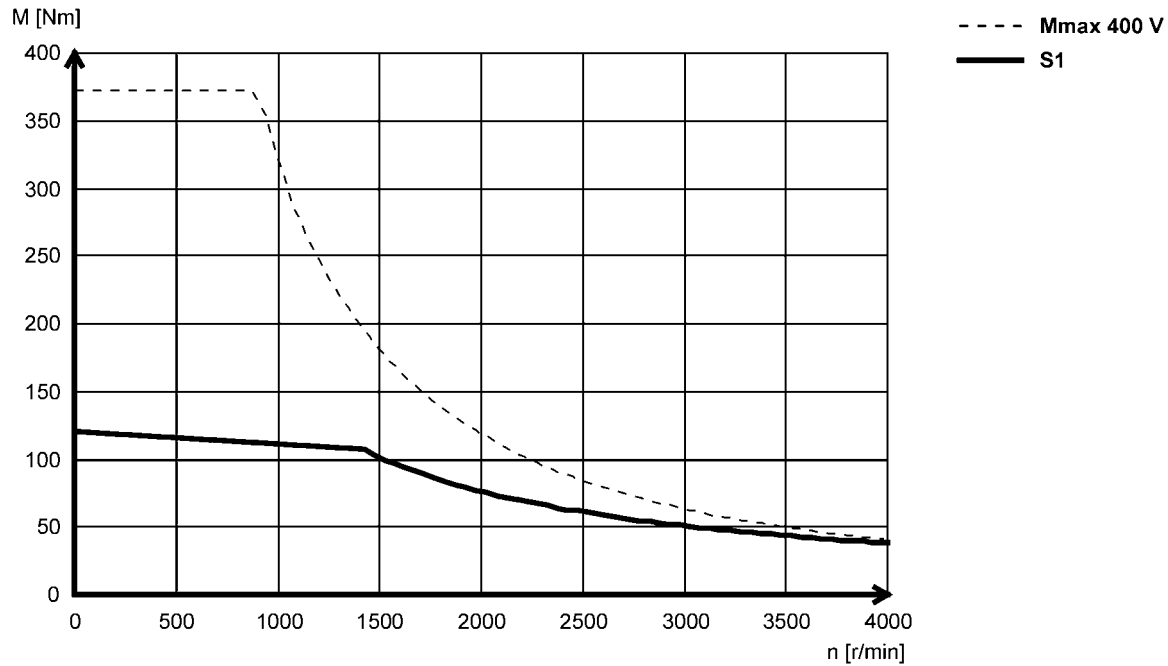




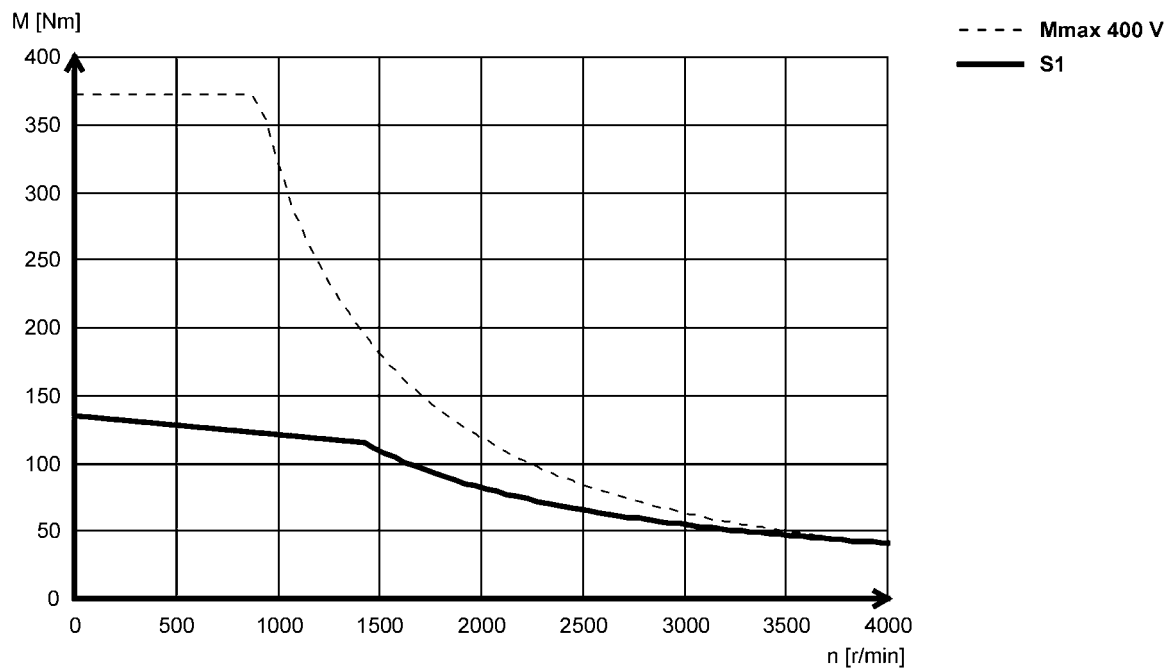
Torque characteristics

- The data applies to a mains connection voltage of 3 x 400 V.
- You can find further torque characteristics at www.lenze.de/dsc.

MCA22P14...5F□□ (forced ventilated)



MCA22P14...2F□□ (forced ventilated)

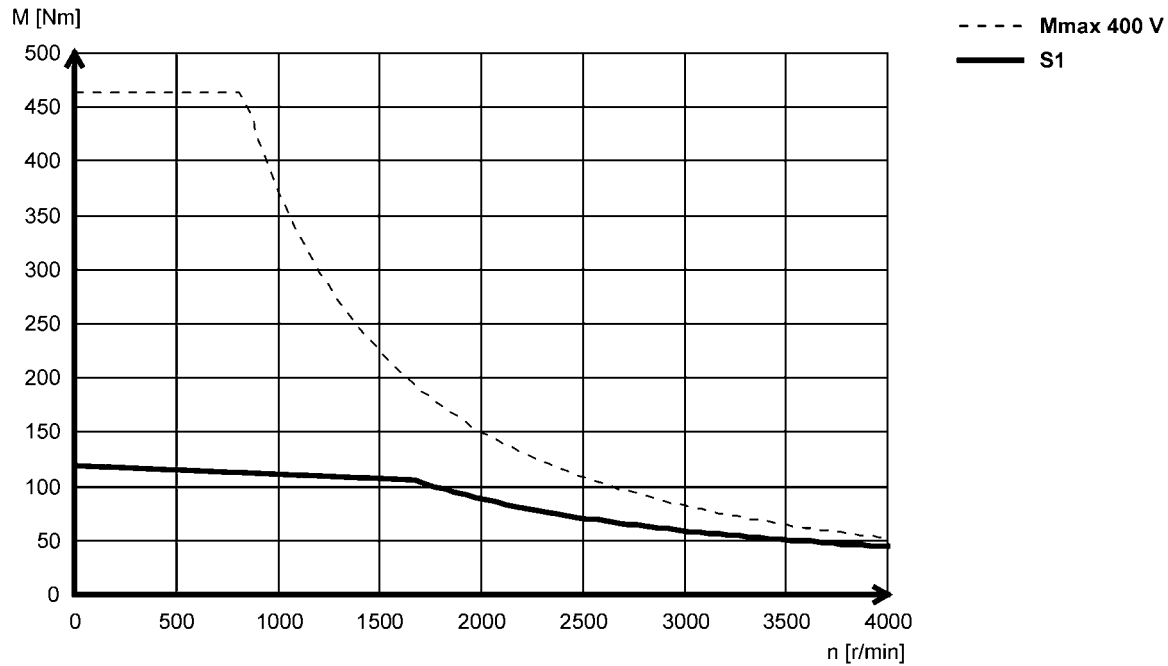




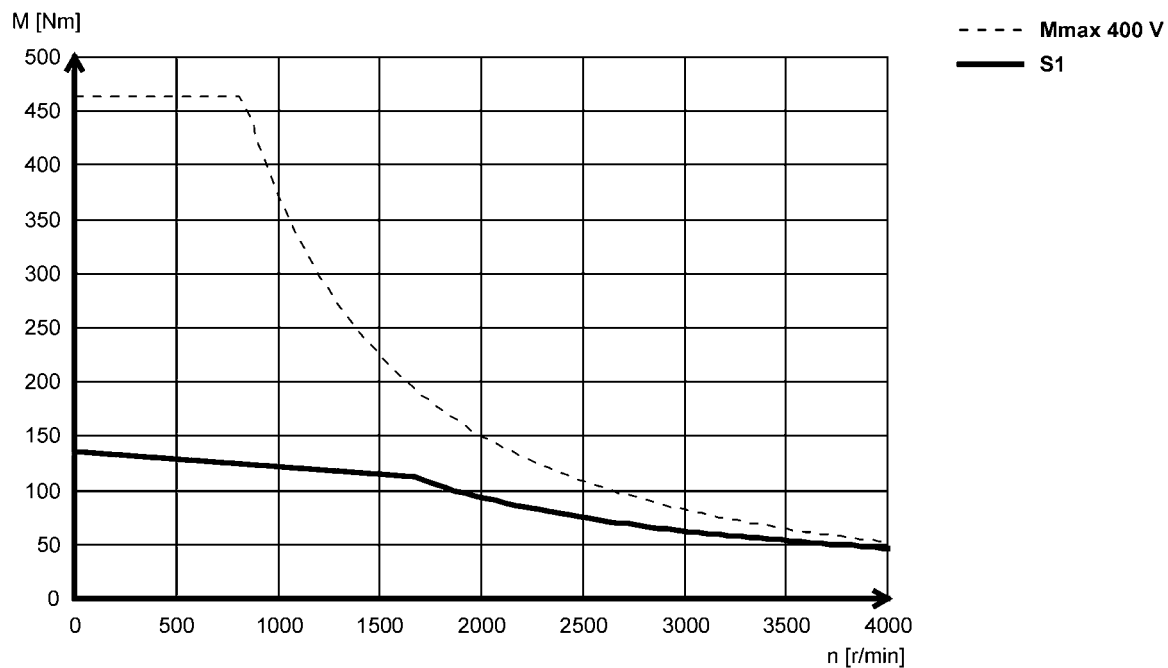
Torque characteristics

- The data applies to a mains connection voltage of 3 x 400 V.
- You can find further torque characteristics at www.lenze.de/dsc.

MCA22P17...5F□□ (forced ventilated)



MCA22P17...2F□□ (forced ventilated)

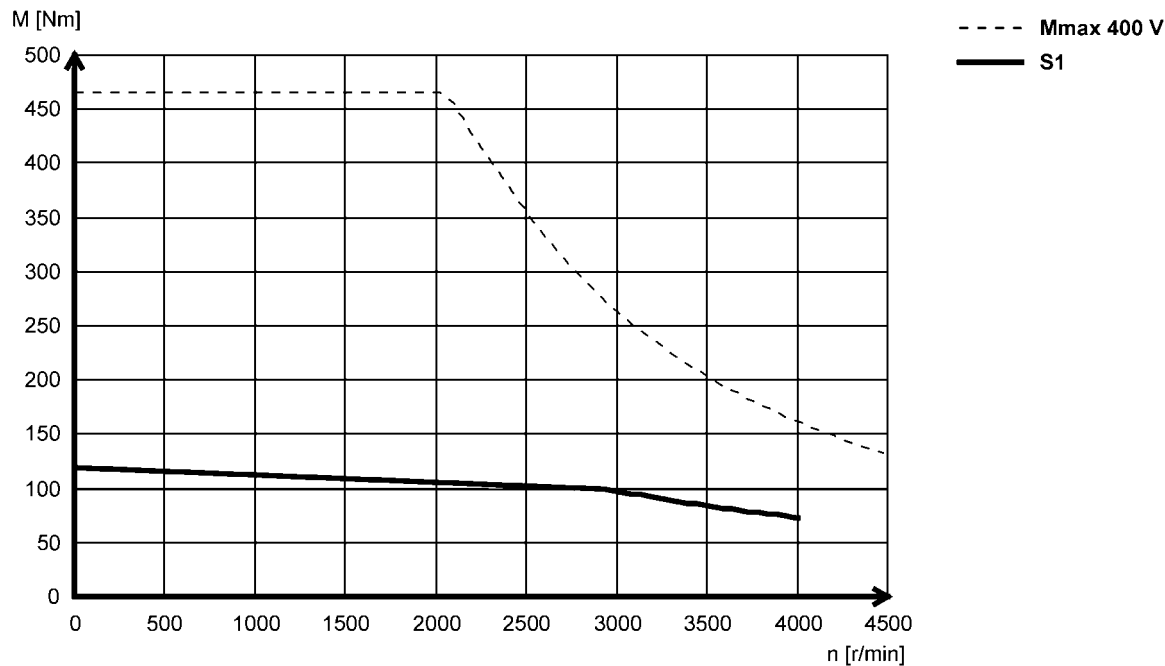




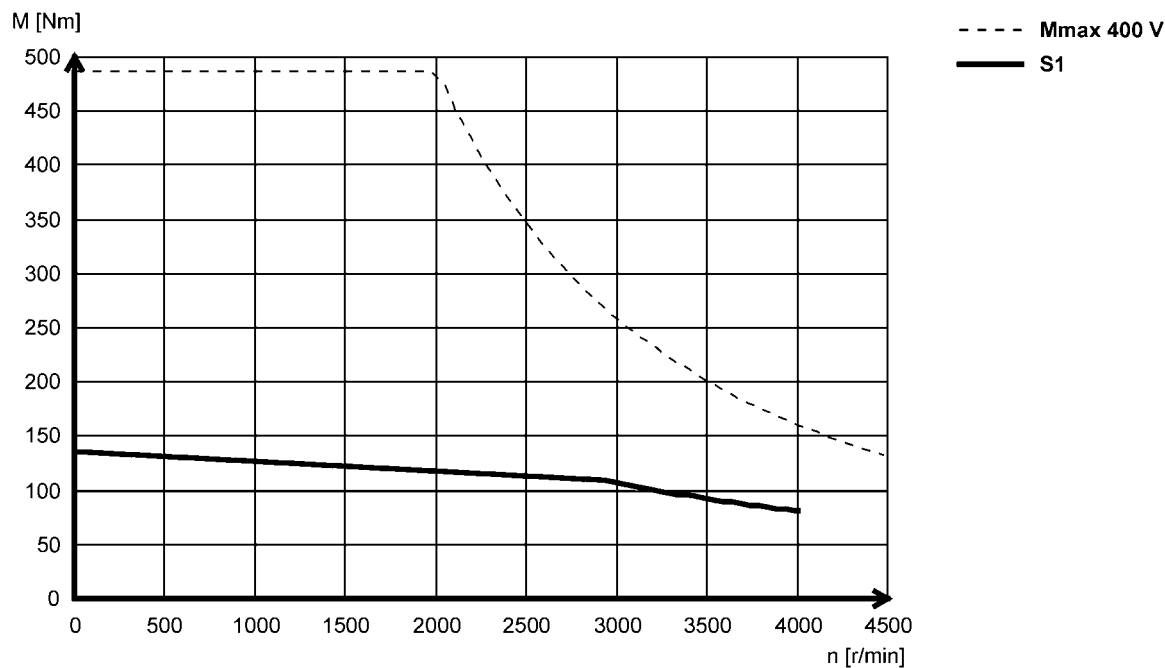
Torque characteristics

- The data applies to a mains connection voltage of 3 x 400 V.
- You can find further torque characteristics at www.lenze.de/dsc.

MCA22P29...5F□□ (forced ventilated)



MCA22P29...2F□□ (forced ventilated)

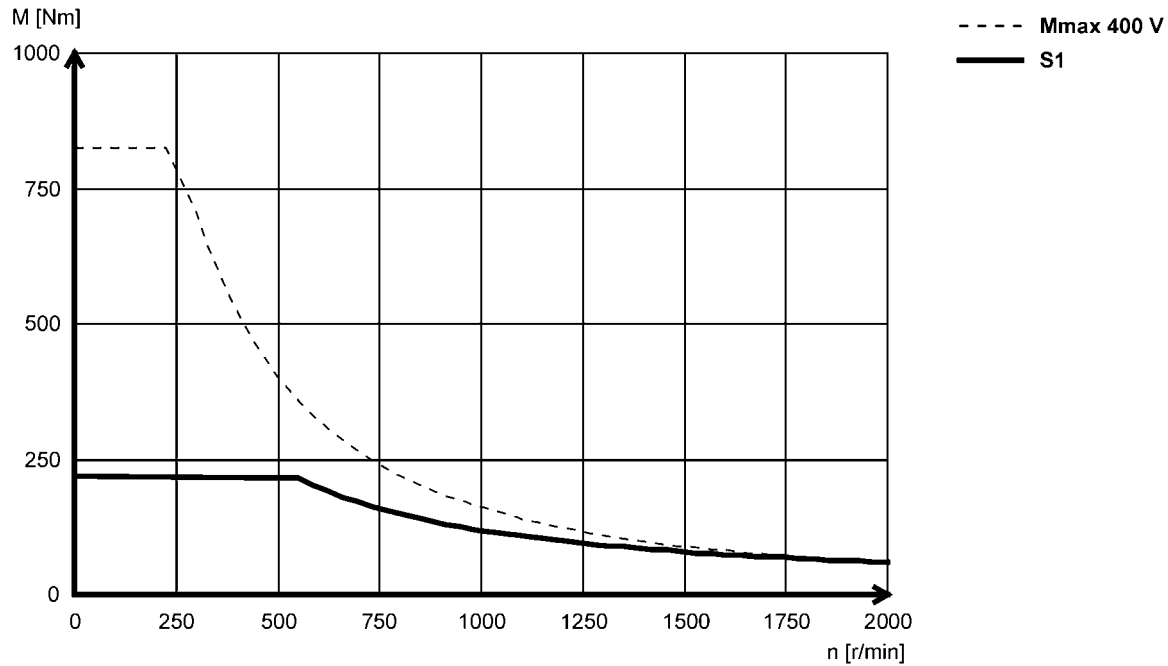




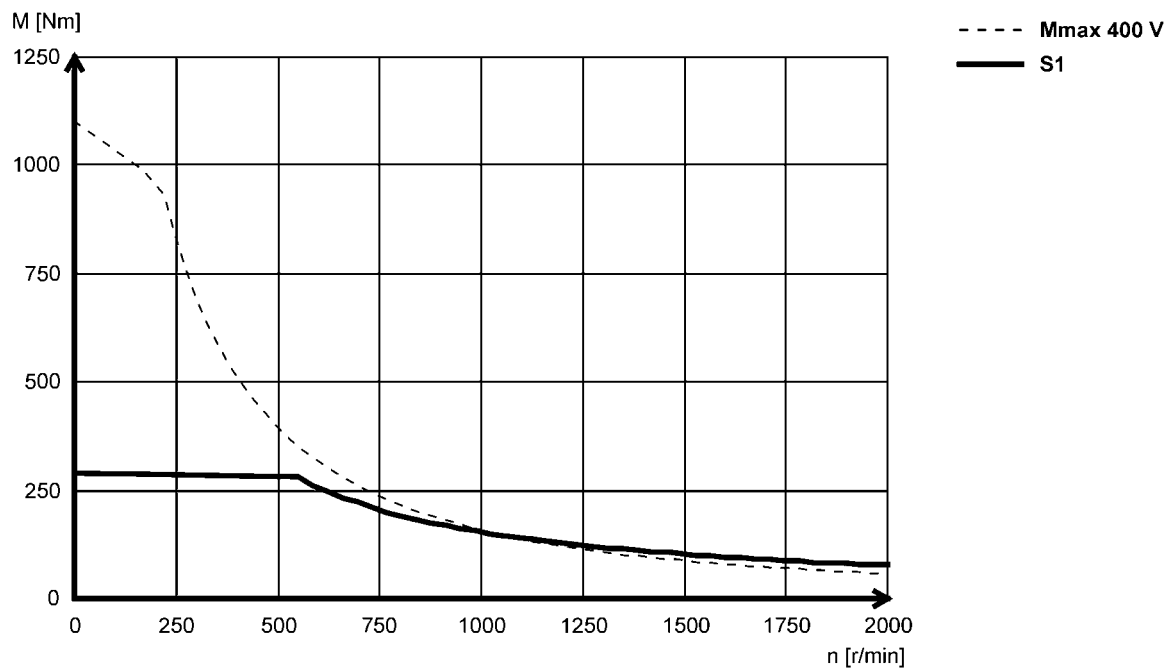
Torque characteristics

- The data applies to a mains connection voltage of 3 x 400 V.
- You can find further torque characteristics at www.lenze.de/dsc.

MCA26T05...5F□□ (forced ventilated)



MCA26T05...2F□□ (forced ventilated)

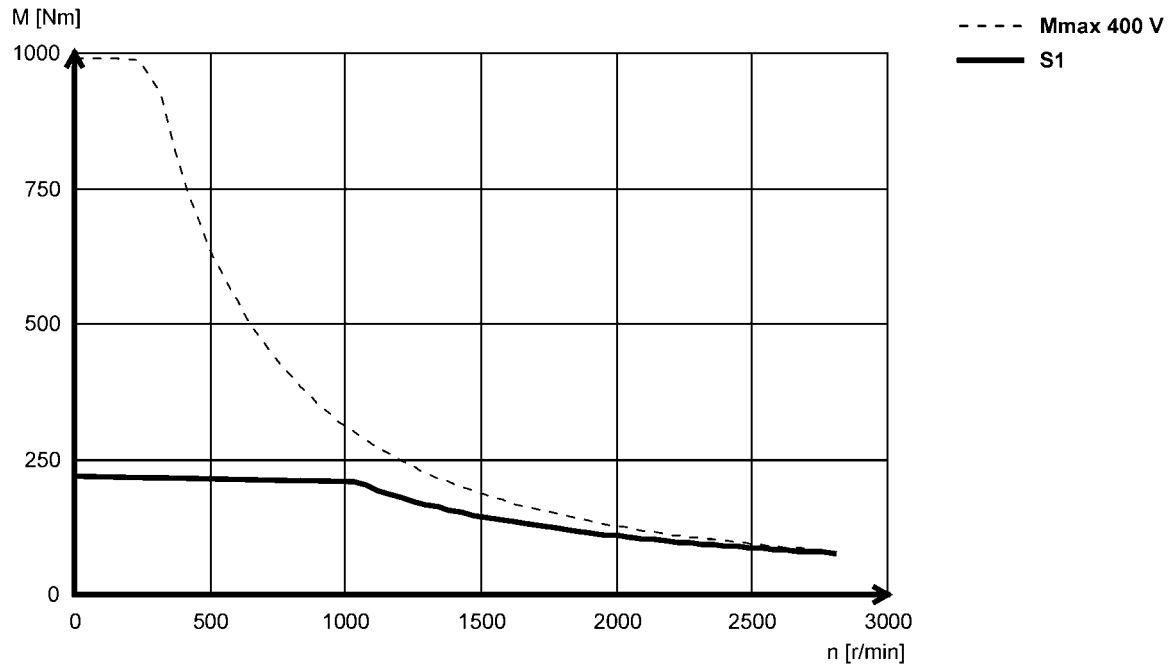




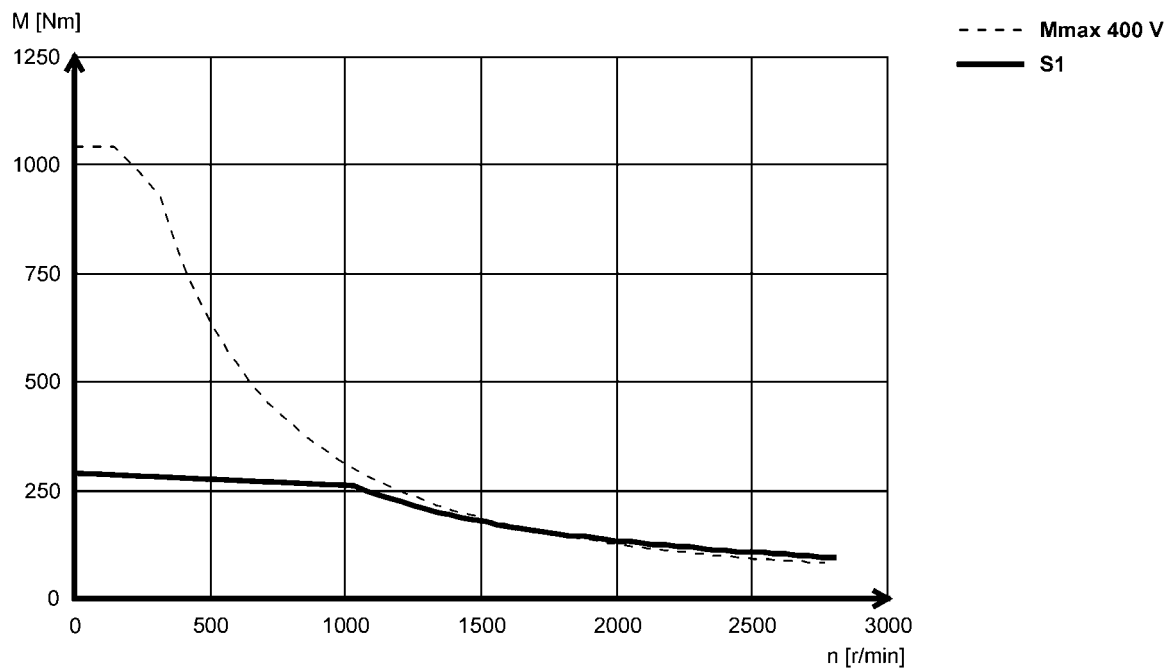
Torque characteristics

- The data applies to a mains connection voltage of 3 x 400 V.
- You can find further torque characteristics at www.lenze.de/dsc.

MCA26T10...5F□□ (forced ventilated)



MCA26T10...2F□□ (forced ventilated)

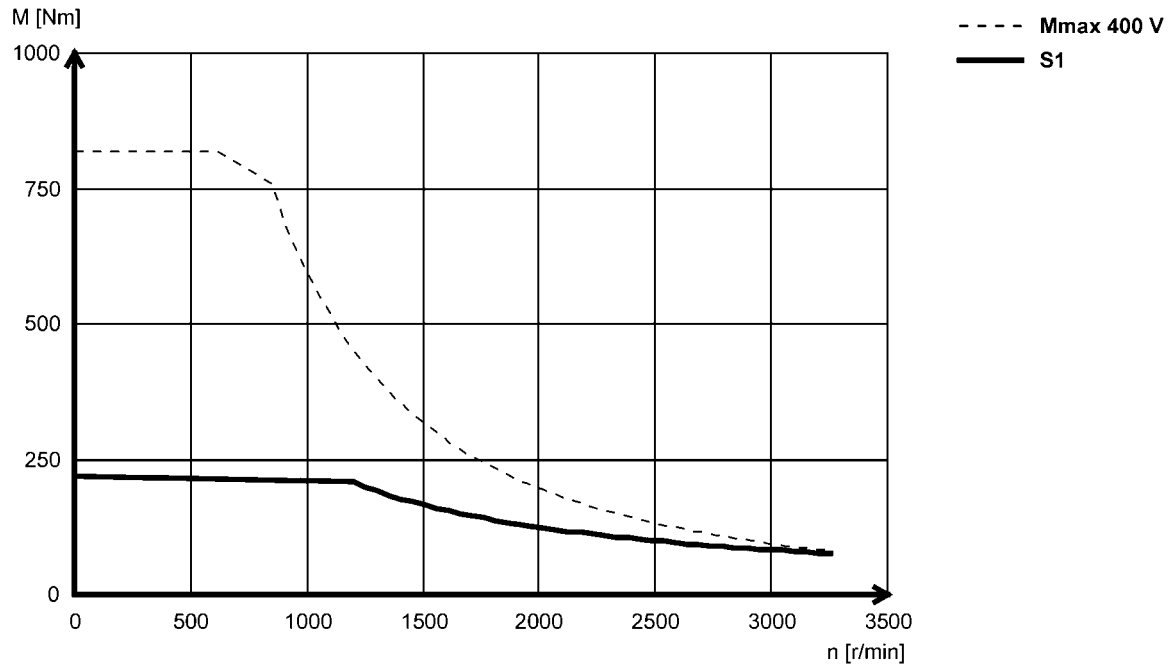




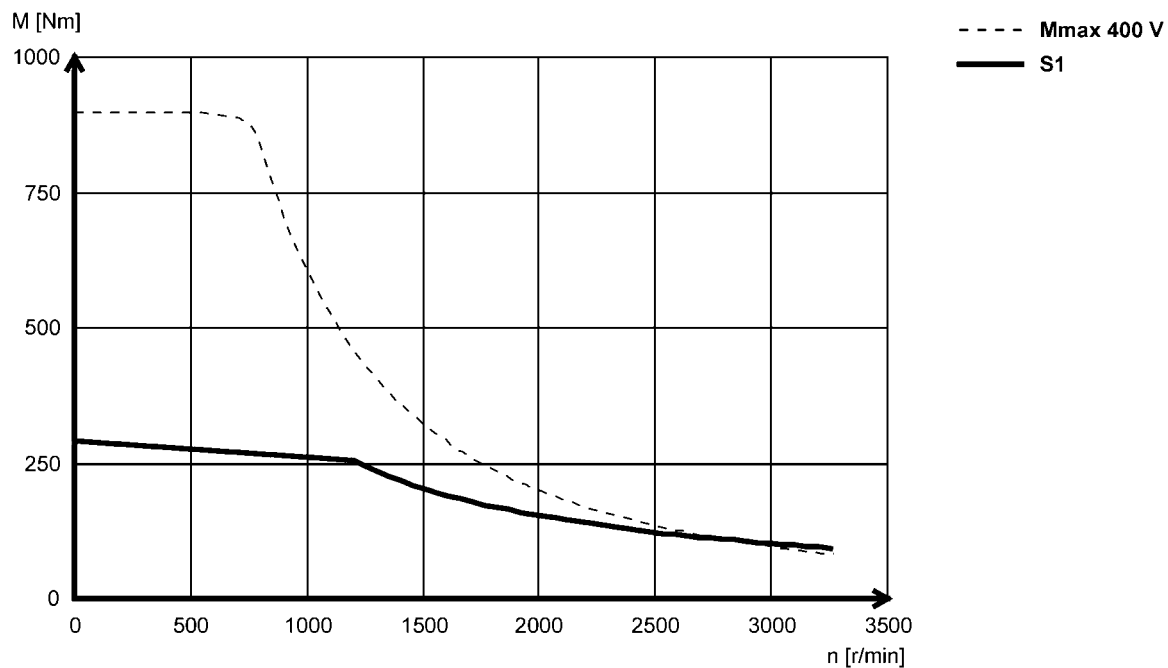
Torque characteristics

- The data applies to a mains connection voltage of 3 x 400 V.
- You can find further torque characteristics at www.lenze.de/dsc.

MCA26T12...5F□□ (forced ventilated)



MCA26T12...2F□□ (forced ventilated)

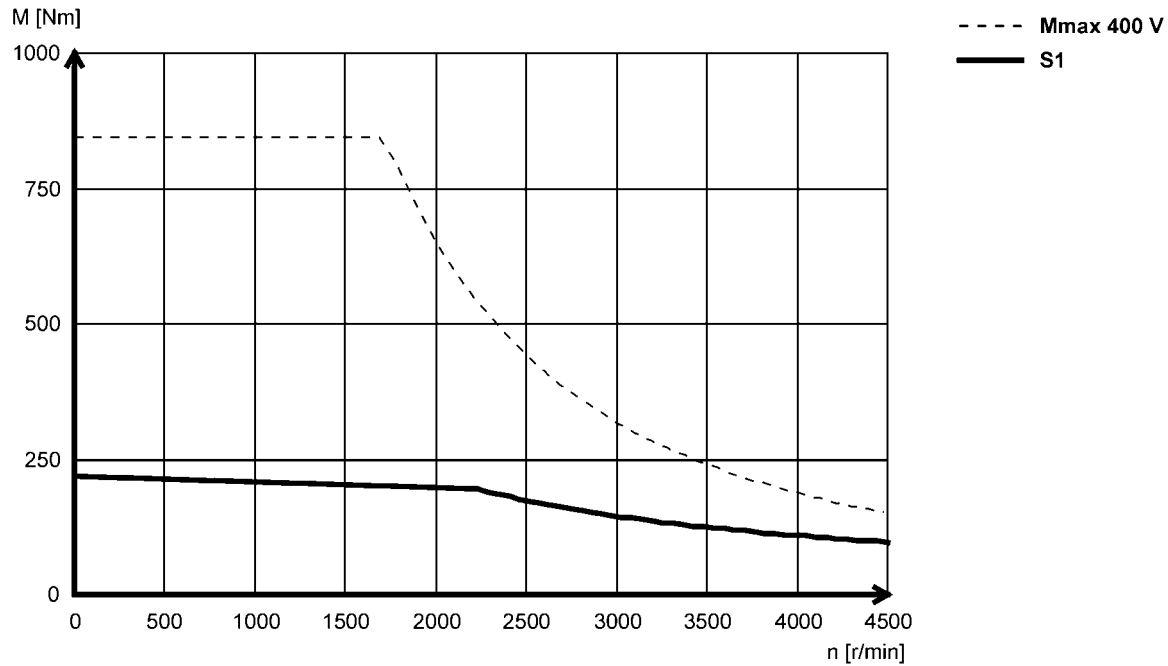




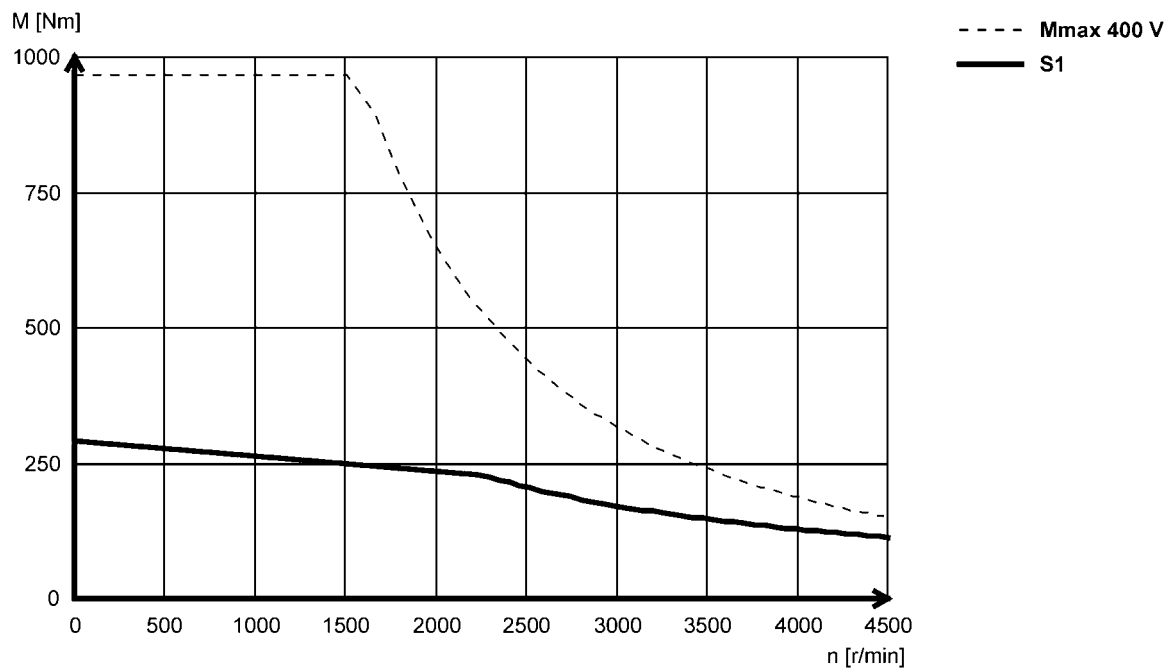
Torque characteristics

- The data applies to a mains connection voltage of 3 x 400 V.
- You can find further torque characteristics at www.lenze.de/dsc.

MCA26T22...5F□□ (forced ventilated)

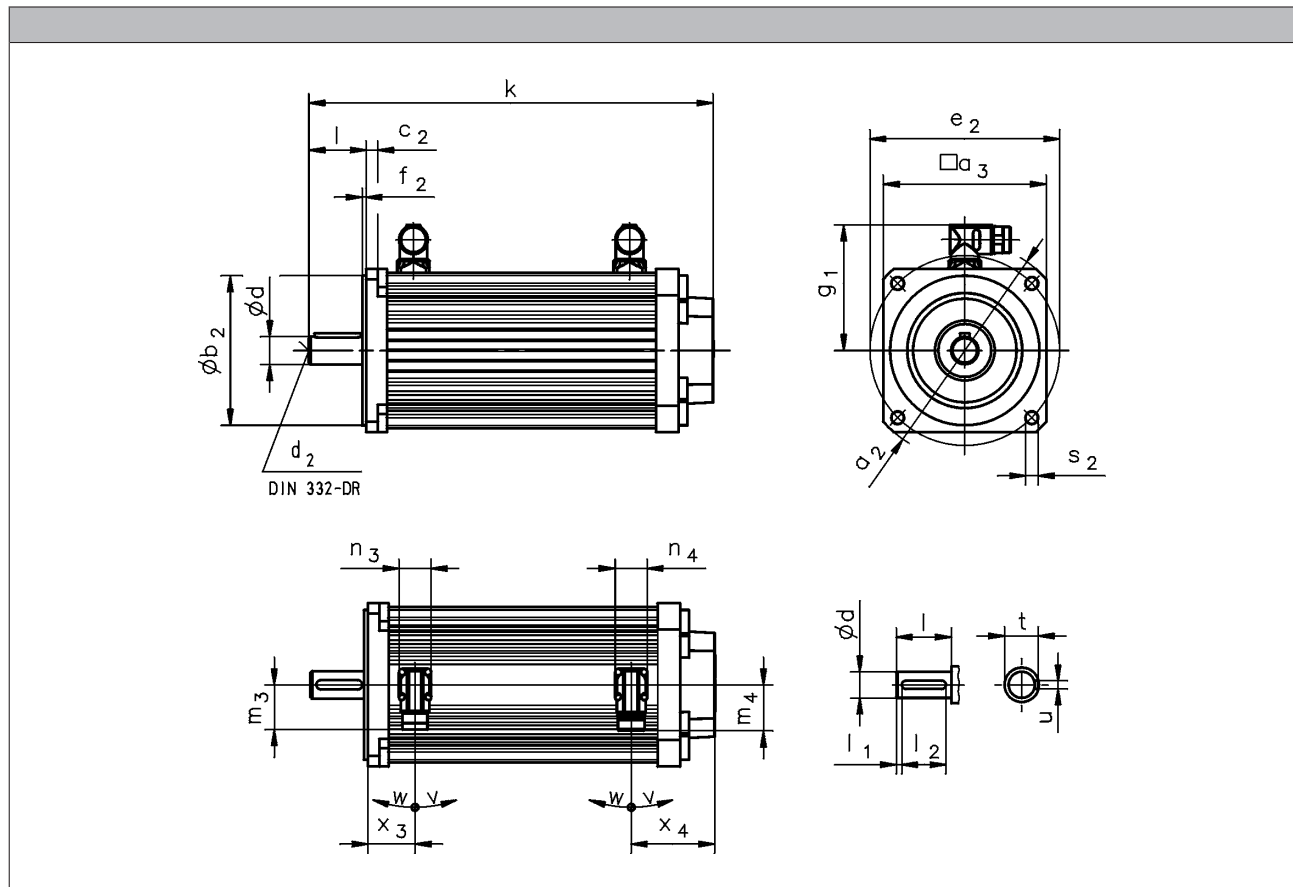


MCA26T22...2F□□ (forced ventilated)





Dimensions, self-ventilated



			MCA10I40	MCA13I41	MCA14L20	MCA17N23	MCA19S23	MCA21X25
					MCA14L41	MCA17N41	MCA19S42	MCA21X42
R□O B0	k	[mm]	292	311	352	390	461	550
	x ₃	[mm]	37	45	41	43	56	62
	x ₄	[mm]	61	65	73			78
R□O P□	k	[mm]	317	346	385	425	499	592
	x ₃	[mm]	59	72	68	75	91	102
	x ₄	[mm]	61	65	73			78
S□□ / E□□ / T20 / B0	k	[mm]	346	365	407	444	511	599
	x ₃	[mm]	37	45	41	43	56	62
	x ₄	[mm]	115	119	128	127	123	127
S□□ / E□□ / T20 / P□	k	[mm]	371	400	440	479	549	641
	x ₃	[mm]	59	72	68	75	91	102
	x ₄	[mm]	115	119	128	127	123	127

- Speed/angle sensor: RS0 / S□□ / E□□ / T20
- Brake: B0 / P□

MCA asynchronous servo motors

Technical data



Dimensions, self-ventilated

	g ₁	n ₃	n ₄	m ₃	m ₄	v	w
	[mm]	[mm]	[mm]	[mm]	[mm]	[°]	[°]
MCA10I40	90	28	28	40	40	195	80
MCA13I41	102						
MCA14L20	109						
MCA14L41							
MCA17N23	118	40	71	71	71	71	
MCA17N41							
MCA19S23	151						
MCA19S42							
MCA21X25	162						
MCA21X42							

	d	d ₂	l	l ₁	l ₂	u	t
	k6						
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
MCA10	14	M5	30	2.5	25	5.0	16.0
MCA13	19	M6	40	2.0	36	6.0	21.5
MCA14	24	M8	50	5.0	40	8.0	27.0
MCA17					50		31.0
MCA19	28	M10	60		70	10.0	41.0
MCA21	38	M12	80				

	a ₂	a ₃	b ₂	c ₂	e ₂	f ₂	s ₂
			j6				
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
MCA10	120	102	80	8	100	3.0	7
			70		85	2.5	M6
MCA13	160	130	110	9	130	3.5	9.0
MCA14	188	142	130	10	165		M8
			110		130		11.0
MCA17	200	165	130	12	165		M8
			110		130		11.0
MCA19	250	192	180	11	215	4.0	M8
			110		130	3.5	13.0
MCA21	300	214	180	12	215	4.0	M8
		250	230		265		13.0
	250	214	110	11	130	3.5	M8

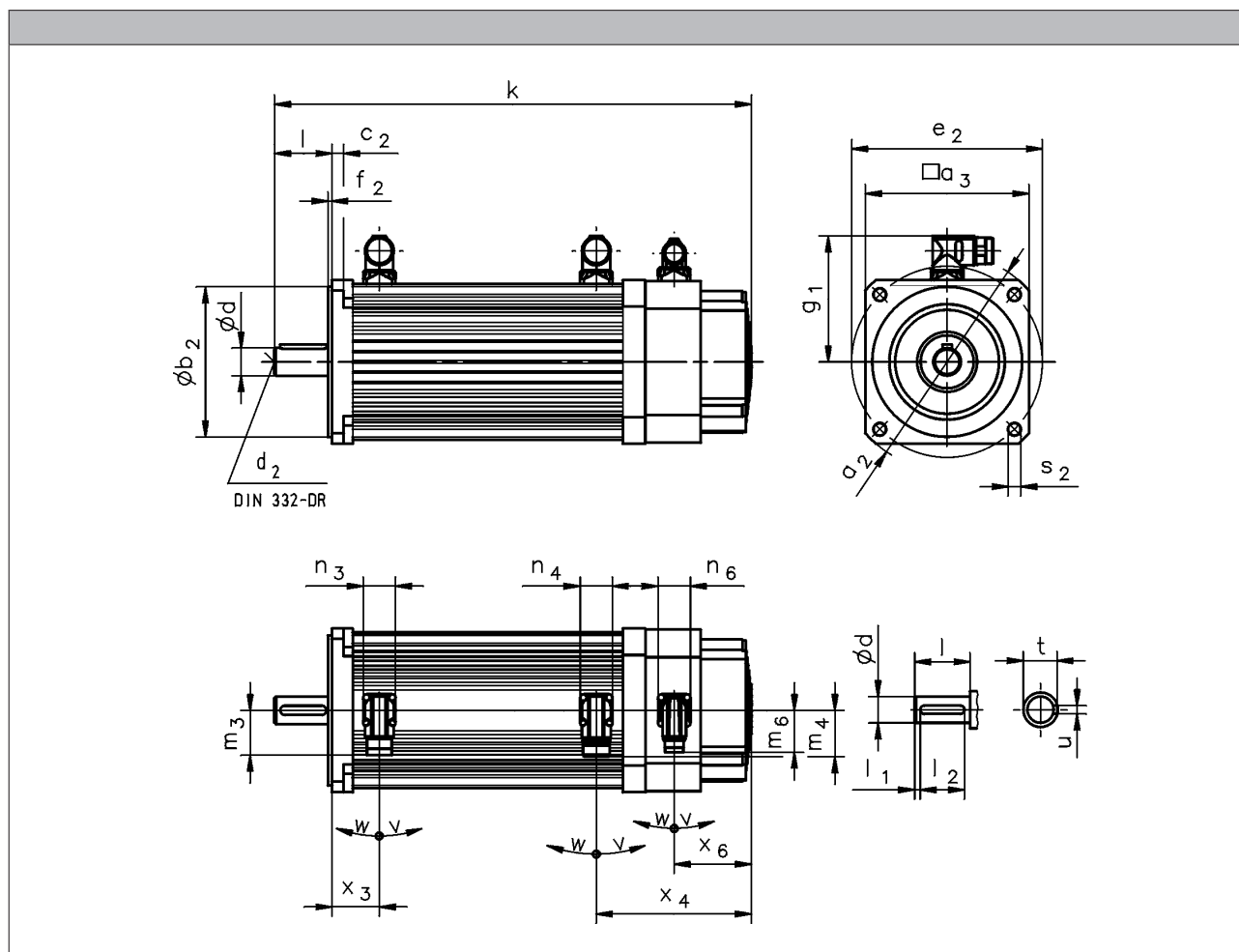
MCA asynchronous servo motors

Technical data



Dimensions, forced ventilated

Motors MCA13 to 19/21



			MCA13I34	MCA14L16	MCA17N17	MCA19S17	MCA21X17
				MCA14L35	MCA17N35	MCA19S35	MCA21X35
R□0 B0	k	[mm]	379	414	476	558	646
	x ₃	[mm]	45	41	43	56	62
	x ₄	[mm]	133	135	159	170	174
R□0 P□	k	[mm]	414	447	511	596	688
	x ₃	[mm]	72	68	75	91	102
	x ₄	[mm]	133	135	159	170	174
S□□ / E□□ / T20 / B0	k	[mm]	433	469	530	608	695
	x ₃	[mm]	45	41	43	56	62
	x ₄	[mm]	187	190	213	220	223
S□□ / E□□ / T20 / P□	k	[mm]	468	502	565	646	737
	x ₃	[mm]	72	68	75	91	102
	x ₄	[mm]	187	190	213	220	223
	x ₆	[mm]	73	67	94	103	96

- Speed/angle sensor: RS0 / S□□ / E□□ / T20
- Brake: B0 / P□

MCA asynchronous servo motors

Technical data



Dimensions, forced ventilated

Motors MCA13 to 19/21

	g ₁	n ₃	n ₄	n ₆	m ₃	m ₄	m ₆	v	w
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[°]	[°]
MCA13I34	102	28	28	28	40	40	37	195	80
MCA14L16	109								
MCA14L35									
MCA17N17	118								
MCA17N35									
MCA19S17	151	40			71				
MCA19S35									
MCA21X17	162								
MCA21X35									

	d	d ₂	l	l ₁	l ₂	u	t
	k6						
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
MCA13	19	M6	40	2.0	36	6.0	21.5
MCA14	24	M8	50	5.0	40	8.0	27.0
MCA17					50		31.0
MCA19	28	M10	60		70	10.0	41.0
MCA21	38	M12	80				

	a ₂	a ₃	b ₂	c ₂	e ₂	f ₂	s ₂
			j6				
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
MCA13	160	130	110	9	130	3.5	9.0
							M8
MCA14	188	142	130	10	165		11.0
			110		130		M8
MCA17	200	165	130	12	165		11.0
			110		130		M8
MCA19	250	192	180	11	215	4.0	13.0
			110		130	3.5	M8
MCA21	300	214	180	12	215	4.0	13.0
		250	230		265		
	250	214	110	11	130	3.5	M8

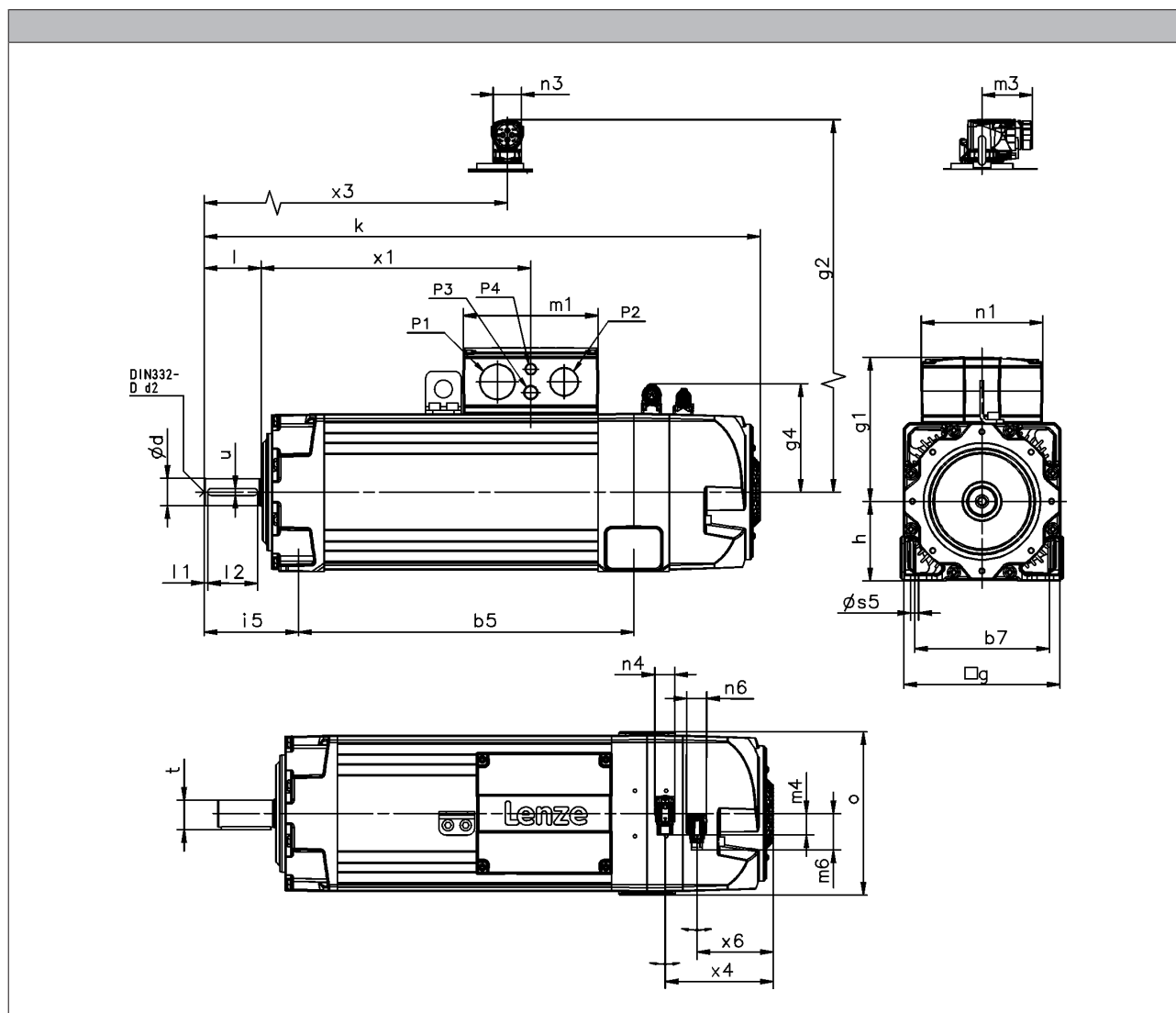
MCA asynchronous servo motors

Technical data



Dimensions, forced ventilated

MCA20/22/26 motors in B3 design



			MCA20	MCA22	MCA26
R□□ / E□□ / T□□ / S□□ / B0...F10	k	[mm]	666	783	970
R□□ / E□□ / T□□ / S□□ / B0...F1F	k	[mm]	754	865	1022
R□□ / E□□ / T□□ / S□□ / B0	x_4	[mm]	146	153	194
	m_4	[mm]	25.0	31.0	25.0
R□□ F1...F10	k	[mm]	753	878	1125
R□□ F1...F1F	k	[mm]	842	959	1177
R□□ F1	x_4	[mm]	151	157	201
	m_4	[mm]		31.0	
E□□ / T□□ / S□□ / F1...F10	k	[mm]	797	916	1163
E□□ / T□□ / S□□ / F1...F1F	k	[mm]	885	998	1215
E□□ / T□□ / S□□ / F1	x_4	[mm]	146	162	200
	m_4	[mm]		31.0	
R□□ / E□□ / T□□ / S□□ / F2...F10	k	[mm]	822	948	1163
R□□ / E□□ / T□□ / S□□ / F2...F1F	k	[mm]	910	1030	1215
R□□ / E□□ / T□□ / S□□ / F2	x_4	[mm]	146	162	200
	m_4	[mm]		31.0	

MCA asynchronous servo motors

Technical data



Dimensions, forced ventilated

MCA20/22/26 motors in B3 design

	g	g ₁	g ₂	g ₄	m ₁	m ₃	m ₆	n ₁	n ₃	n ₄	n ₆
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
MCA20	200	171	168	141	154	72	51	128	40	28	28
MCA22	220	203		153	190			171			
MCA26	260	256		173	234			212			

	o	P ₁	P ₂	P ₃	P ₄	x ₁	x ₃	x ₆
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
MCA20	206	M32x1.5	M25x1.5	M20x1.5	M16x1.5	299	422	101
MCA22	230	M50x1.5	M40x1.5			380		108
MCA26	269	M63x1.5	M50x1.5			465		152

	d	d	d ₂	l	l ₁	l ₂	u	t	
	k6	m6		-0.7 ... 0.3					
	[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[mm]	
MCA20	38		M12	80	5.0	70	10.0	41.0	
MCA22			M20	110		100	16.0	59.0	
MCA26									

	h	b ₅	b ₇	s ₅	i ₅
	[mm]	[mm]	[mm]	[mm]	[mm]
MCA20	100	366	160	11.5	134
MCA22	112	472	190		133
MCA26	132	581	215	14.0	165

- Speed/angle sensor: RS0 / S□□ / E□□ / T□□
- Brake: B0 / F1 / F2
- Blower: F10 / F1F

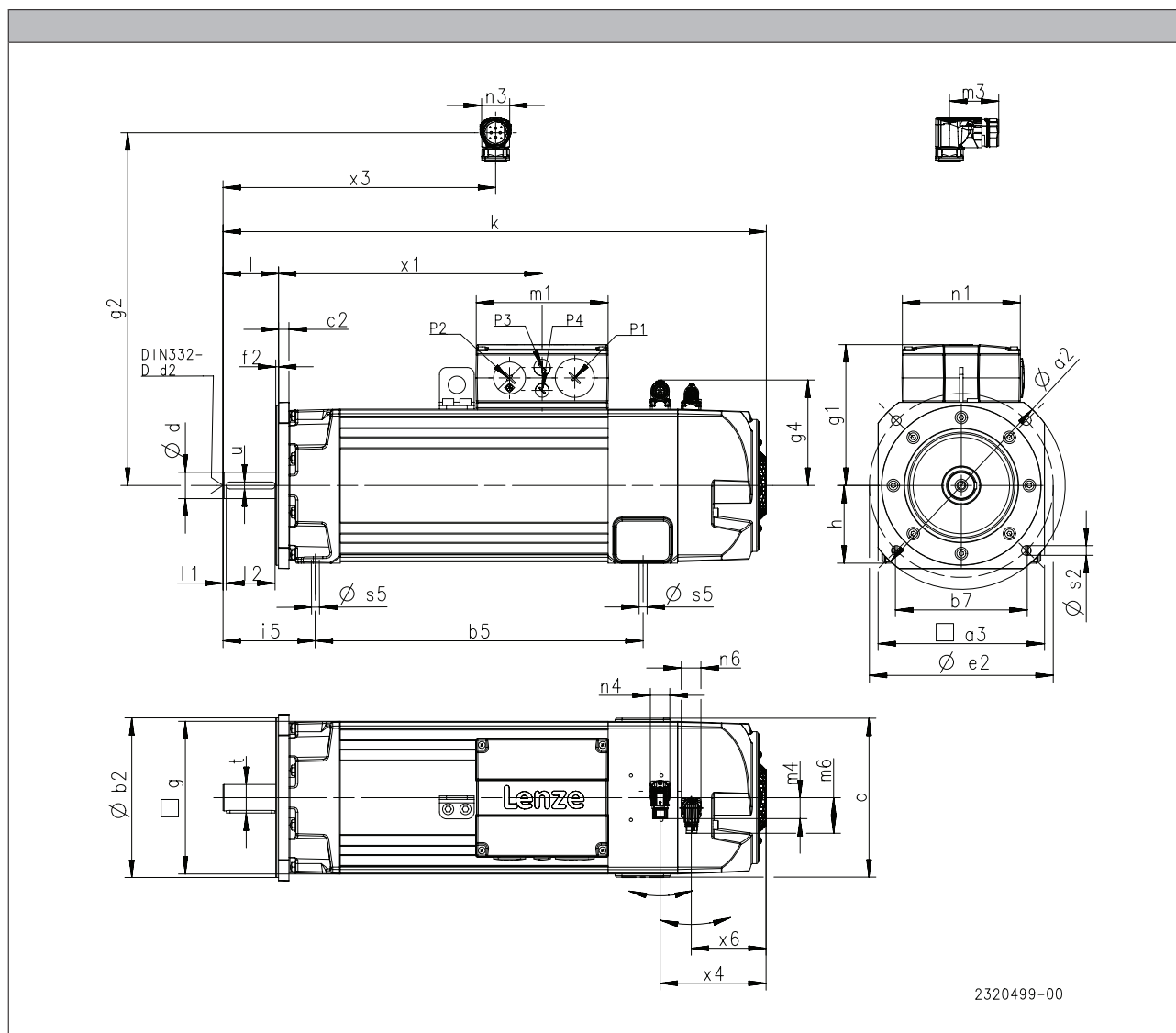
MCA asynchronous servo motors

Technical data



Dimensions, forced ventilated

MCA20/22/26 motors in B35 design



			MCA20	MCA22	MCA26
R□□ / E□□ / T□□ / S□□ / B0...F10	k	[mm]	666	783	970
R□□ / E□□ / T□□ / S□□ / B0...F1F	k	[mm]	754	865	1022
R□□ / E□□ / T□□ / S□□ / B0	x_4	[mm]	146	153	194
	m_4	[mm]	25.0	31.0	25.0
R□□ F1...F10	k	[mm]	753	878	1125
R□□ F1...F1F	k	[mm]	842	959	1177
R□□ F1	x_4	[mm]	151	157	201
	m_4	[mm]		31.0	
E□□ / T□□ / S□□ / F1...F10	k	[mm]	797	916	1163
E□□ / T□□ / S□□ / F1...F1F	k	[mm]	885	998	1215
E□□ / T□□ / S□□ / F1	x_4	[mm]	146	162	200
	m_4	[mm]		31.0	
R□□ / E□□ / T□□ / S□□ / F2...F10	k	[mm]	822	948	1163
R□□ / E□□ / T□□ / S□□ / F2...F1F	k	[mm]	910	1030	1215
R□□ / E□□ / T□□ / S□□ / F2	x_4	[mm]	146	162	200
	m_4	[mm]		31.0	

MCA asynchronous servo motors

Technical data



Dimensions, forced ventilated

MCA20/22/26 motors in B35 design

	g	g ₁	g ₂	g ₄	m ₁	m ₃	m ₆	n ₁	n ₃	n ₄	n ₆
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
MCA20	200	171	168	141	154	72	51	128	40	28	28
MCA22	220	203		153	190			171			
MCA26	260	256		173	234			212			

	o	P ₁	P ₂	P ₃	P ₄	x ₁	x ₃	x ₆
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
MCA20	206	M32x1.5	M25x1.5	M20x1.5	M16x1.5	299	422	101
MCA22	230	M50x1.5	M40x1.5			380		108
MCA26	269	M63x1.5	M50x1.5			465		152

	d	d	d ₂	l	l ₁	l ₂	u	t
	k6	m6		-0.7 ... 0.3				
	[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[mm]
MCA20	38		M12	80	5.0	70	10.0	41.0
MCA22								
MCA26		55	M20	110		100	16.0	59.0

	h	b ₅	b ₇	s ₅	i ₅
	[mm]	[mm]	[mm]	[mm]	[mm]
MCA20	100	366	160	11.5	134
MCA22	112	472	190		133
MCA26	132	581	215	14.0	165

	a ₂	a ₃	b ₂	b ₂	c ₂	e ₂	f ₂	s ₂
			j6	h6				
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
MCA20	250	196	180		15	215	4.0	14
MCA22	300	240	230			265		
MCA26	400	320		300		350	5.0	18

- Speed/angle sensor: RS0 / S□□ / E□□ / T□□
- Brake: B0 / F1 / F2
- Blower: F10 / F1F

MCA asynchronous servo motors

Technical data





Permanent magnet holding brake

The asynchronous servo motors MCA10 to 19 and 21 can be fitted with integral permanent magnet holding brakes. In the case of permanent magnet brakes, the rated torque applies solely as holding torque at standstill. This is due to the nature of their design. During braking from full motor speed, e.g. in the event of emergency stops, the braking torque is significantly reduced. As such, they may not be used as safety elements (particularly with lifting axes) without additional measures being implemented. The brakes are activated when the supply voltage is disconnected (closed-circuit principle). When using the brakes purely as holding brakes, virtually no wear occurs on the friction surfaces.

For traversing axes, adherence to the permissible load/brake motor (J_L / J_{MB}) moment of inertia ensures that the permissible maximum switching rate of the brake will not be exceeded and at least 2,000 emergency stop functions can be performed from a speed of 3,000 rpm.

For lifting axes, the load torque resulting from the weight acts additionally. In this case the specifications for J_L / J_{MB} do not apply.

Caution:

The brakes used are not safety brakes in the sense that a reduction in torque may arise as a result of disruptive factors that cannot be influenced, e.g. oil ingress.

The ohmic voltage drop along the cable must be taken into consideration in long motor supply cables and must be compensated for by a higher voltage at the line input.

The following applies for Lenze system cables:

$$U[V] = U_B[V] + 0.08 \frac{[V]}{[A] \cdot [m]} \cdot l_{lg}[m] \cdot I_B[A]$$

If no suitable voltage (incorrect value, incorrect polarity) is applied to the brake, the brake will be applied and can be overheated and destroyed by the motor continuing to rotate.

The shortest switching times of the brakes are achieved by DC switching of the voltage. A spark suppressor is required to suppress interference and to increase the service life of the relay contacts here.



Permanent magnet holding brake



Permanent magnet holding brake

Rated data with standard braking torque

- The figures stated apply to servo motors. They only apply to geared servo motors when the servo motor is connected via a mounting flange.

	U _{N, DC} ^{3, 4, 7)}	U _{N, AC} ^{5, 7)}	M _N	M _N	M _{av}	I _N ²⁾	J	t ₁ ¹⁾	t ₂ ¹⁾	Q _E ⁶⁾	m	J _{MB}	J _L /J _{MB}
			20 °C	120 °C	120 °C								
	[V]	[V]	[Nm]	[Nm]	[Nm]	[A]	[kgcm ²]	[ms]	[ms]	[J]	[kg]	[kgcm ²]	
MCA10	24		3.30	2.50	1.20	0.50	0.38	10.0	20.0	350	0.90	2.78	24.5
	205					0.060							
MCA13	24		12.0	11.0	5.50	0.67	1.06	20.0	29.0	400	0.80	9.36	7.70
	205					0.080							
MCA14	24		15.0	12.0	6.00	0.75	3.60	13.0	30.0	700	1.50	22.8	5.20
	205					0.090							
MCA17	24		24.0	22.0	11.0	0.75		25.0	50.0	1200		39.6	5.10
	205					0.090							
MCA19	24		46.0	40.0	18.0	1.00	9.50		73.0	1900	2.70	81.5	3.70
	205					0.12							
MCA21	24		88.0	80.0	35.0	1.46	31.8	53.0	97.0	2800	5.00	212	1.70
	205					0.18							

- ¹⁾ Engagement and disengagement times are valid for rated voltage ($\pm 0\%$) and protective circuit for brakes with varistor for DC switching. The times may increase without a protective circuit.
- ²⁾ The currents are the maximum values when the brake is cold (value used for dimensioning the current supply). The values for a motor at operating temperature are considerably lower.
- ³⁾ With 24 V DC brake: smoothed DC voltage, ripple $\leq 1\%$.
With 205 V DC brake: connection to 230 V AC through rectifier.
- ⁴⁾ UR not possible in the case of a brake with a 205 V supply voltage.
- ⁵⁾ UR not possible in the case of a brake with 230 V supply voltage.
- ⁶⁾ Maximum switching energy per emergency stop at $n = 3000$ r/min for at least 2000 emergency stops.
- ⁷⁾ Voltage tolerance: permanent magnet brakes -10% to $+5\%$
spring-applied brakes $\pm 10\%$



Permanent magnet holding brake

Rated data with increased braking torque

- These ratings apply only for geared servo motors with integrated servo motor (without mounting flange).

	U _{N, DC} ^{3, 4, 7)}	M _N	M _N	M _{av}	I _N ²⁾	J	t ₁ ¹⁾	t ₂ ¹⁾	Q _E ⁶⁾	m	J _{MB}	J _L /J _{MB}
		20 °C	120 °C	120 °C								
	[V]	[Nm]	[Nm]	[Nm]	[A]	[kgcm ²]	[ms]	[ms]	[J]	[kg]	[kgcm ²]	
MCA10	24	6.00	5.00	2.50	0.67	1.06	20.0	29.0	400	0.80	3.46	22.4
	205				0.80							
MCA13	24	15.0	12.0	6.00	0.75	3.60	13.0	30.0	700	1.50	11.9	8.40
	205				0.090							
MCA14	24	23.0	20.0	20.0	0.92	9.50	18.0	55.0	1350	2.40	22.8	6.60
	205				0.12							
MCA17	24				0.92						45.5	5.00
	205				0.12							
MCA19	24	48.0	40.0		1.46	31.8	30.0	100	2800	4.80	104	4.50
	205				0.18							
MCA21	24	88.0	80.0	35.0	1.46		53.0	97.0		5.00	212	1.70
	205				0.18							

- ¹⁾ Engagement and disengagement times are valid for rated voltage ($\pm 0\%$) and protective circuit for brakes with varistor for DC switching. The times may increase without a protective circuit.
- ²⁾ The currents are the maximum values when the brake is cold (value used for dimensioning the current supply). The values for a motor at operating temperature are considerably lower.
- ³⁾ With 24 V DC brake: smoothed DC voltage, ripple $\leq 1\%$.
With 205 V DC brake: connection to 230 V AC through rectifier.
- ⁴⁾ UR not possible in the case of a brake with a 205 V supply voltage.
- ⁵⁾ UR not possible in the case of a brake with 230 V supply voltage.
- ⁶⁾ Maximum switching energy per emergency stop at $n = 3000$ r/min for at least 2000 emergency stops.
- ⁷⁾ Voltage tolerance: permanent magnet brakes -10% to +5%
spring-applied brakes $\pm 10\%$



Spring-applied holding brake

Spring-operated holding brakes are available for the asynchronous servo motors MCA20, 22 and 26.

The brakes are activated when the supply voltage is disconnected (closed-circuit principle). When using the brakes purely as holding brakes, virtually no wear occurs on the friction surfaces.

Caution:

The brakes used are not safety brakes in the sense that a reduction in torque may arise as a result of disruptive factors that cannot be influenced, e.g. oil ingress.

The ohmic voltage drop along the cable must be taken into consideration in long motor supply cables and must be compensated for by a higher voltage at the line input.

The following applies for Lenze system cables:

$$U[V] = U_B[V] + 0.08 \frac{[V]}{[A] \cdot [m]} \cdot l_{lg}[m] \cdot I_B[A]$$

If no suitable voltage (incorrect value, incorrect polarity) is applied to the brake, the brake will be applied and can be overheated and destroyed by the motor continuing to rotate.

The shortest switching times of the brakes are achieved by DC switching of the voltage. A spark suppressor is required to suppress interference and to increase the service life of the relay contacts here.



Spring-applied holding brake



Spring-applied holding brake

Rated data with standard braking torque

- The figures stated apply to servo motors. They only apply to geared servo motors when the servo motor is connected via a mounting flange.

	$U_{N, DC}^{3, 4, 7)}$	$U_{N, AC}^{5, 7)}$	M_N	M_N	M_{av}	$I_N^{2)}$	J	$t_1^{1)}$	$t_2^{1)}$	$Q_E^{6)}$	m	J_{MB}	J_L/J_{MB}
			20 °C	120 °C	120 °C								
	[V]	[V]	[Nm]	[Nm]	[Nm]	[A]	[kgcm ²]	[ms]	[ms]	[J]	[kg]	[kgcm ²]	
MCA20	24		90.0	80.0	50.0	3.13	6.88	70.0	220	18000	13.0	177	19.6
		230				0.37							
MCA22	24		150	130	80.0	3.75	18.1	50.0	260	23000	20.5	505	8.20
		230				0.44		130					
MCA26	24		300	260	160	3.75	36.3	175	320	39000	26.0	1405	12.7
		230			200	0.37			360	51000	30.7		

Rated data with increased braking torque

- The figures stated apply to servo motors. They only apply to geared servo motors when the servo motor is connected via a mounting flange.

	$U_{N, DC}^{3, 4, 7)}$	$U_{N, AC}^{5, 7)}$	M_N	M_N	M_{av}	$I_N^{2)}$	J	$t_1^{1)}$	$t_2^{1)}$	$Q_E^{6)}$	m	J_{MB}	J_L/J_{MB}
			20 °C	120 °C	120 °C								
	[V]	[V]	[Nm]	[Nm]	[Nm]	[A]	[kgcm ²]	[ms]	[ms]	[J]	[kg]	[kgcm ²]	
MCA20	24		150	130	100	2.58	14.1	70.0	240	31000	15.4	189	33.0
		230				0.30							
MCA22	24		300	260	160	3.75	36.3	175	320	39000	26.0	523	14.1
		230				0.44		130	310				
MCA26	24		500	430	260	3.75	70.4	175	390	51000	30.8	1405	12.7
		230				0.44							

¹⁾ Engagement and disengagement times are valid for rated voltage ($\pm 0\%$) and protective circuit for brakes with varistor for DC switching. The times may increase without a protective circuit.

²⁾ The currents are the maximum values when the brake is cold (value used for dimensioning the current supply). The values for a motor at operating temperature are considerably lower.

³⁾ With 24 V DC brake: smoothed DC voltage, ripple $\leq 1\%$.

With 205 V DC brake: connection to 230 V AC through rectifier.

⁴⁾ UR not possible in the case of a brake with a 205 V supply voltage.

⁵⁾ UR not possible in the case of a brake with 230 V supply voltage.

⁶⁾ Maximum switching energy per emergency stop at $n = 3000$ r/min for at least 2000 emergency stops.

⁷⁾ Voltage tolerance: permanent magnet brakes -10% to +5%
spring-applied brakes $\pm 10\%$

MCA asynchronous servo motors

Accessories



Resolver

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

Speed/angle sensor				RS0	RV0
	1)			RS0	RV0
Product key				RS0	RV03
				RS0	RV03
Resolution				0.80	
Angle			[°]	0.80	
Accuracy				-10 ... 10	
			[°]	-10 ... 10	
Absolute positioning				1 revolution	
				1 revolution	
Max. speed				8000	
	$n_{\max}$		[r/min]	8000	
Max. input voltage				10.0	
DC	$U_{\text{in,max}}$		[V]	10.0	
Max. input frequency				4.00	
	$f_{\text{in,max}}$		[Hz]	4.00	
Ratio				0.30	
Stator / rotor		$\pm 5 \%$		0.30	
Rotor impedance				51 + j90	
	Z_{ro}		[Ω]	51 + j90	
Stator impedance				102 + j150	
	Z_{so}		[Ω]	102 + j150	
Impedance				44 + j76	
	Z_{rs}		[Ω]	44 + j76	
Min. insulation resistance				10.0	
At DC 500 V	R		[Ω]	10.0	
Number of pole pairs				1	
				1	
Max. angle error				-10 ... 10	
			[°]	-10 ... 10	
Inverter assignment				E84AVTC E94A ECS EVS93	
				E84AVTC E94A ECS EVS93	

1) 6 - Product key > speed/angle sensor

Speed-dependent safety functions

Suitable for safety function				No	Yes
				No	Yes
Max. permissible angular acceleration					22 000
MCA10 ... MCA19 ²⁾	α	[rad/s ²]			22 000
MCA20 ... MCA26 ²⁾	α	[rad/s ²]			22 000
Functional safety					SIL3
IEC 61508					SIL3
EN 13849-1					Up to Performance Level e

2) 1 - Single encoder concepts with resolvers



Encoder type			TTL incremental		SinCos incremental	
Speed/angle sensor			T20	T40	S20	S1S
	1)					
Product key			IG2048-5V-T	IG4096-5V-T	IG2048-5V-S	IG1024-5V-V3
Encoder type			Single-turn			
Pulses			2048			
Output signals			4096		2048	
			1024			
			TTL			
Interfaces			1 Vss			
			A, B, N track and inverted			
Absolute revolutions			0			
Resolution			0.40			
Angle 2)		[°]				
Accuracy			2.60		1.30	
		[°]	-2 ... 2		-0.8 ... 0.8	
Min. input voltage			4.75			
DC	U _{in,min}	[V]				
Max. input voltage			5.25			
DC	U _{in,max}	[V]				
Max. speed			8789			
	n _{max}	[r/min]				
Max. current consumption			0.10			
	I _{max}	[A]				
Limit frequency			300			
	f _{max}	[kHz]				
Inverter assignment			E84AVTC E94A ECS EVS93			
			E94A			

1) 6 - Product key > speed/angle sensor

2) Inverter-dependent.

Suitable for safety function						
			No	No	No	Yes
Max. permissible angular acceleration						
MQA20 ... MQA26	α	[rad/s ²]	73 000			
Functional safety						
IEC 61508			SIL3			
EN 13849-1			Up to Performance Level e			



Incremental encoder and SinCos absolute value encoder

Encoder type			SinCos absolute value				
Speed/angle sensor			EQI	SRS	SRM	ECN	EQN
	1)						
Product key			AM32-5V-E	AS1024-8V-H	AM1024-8V-H	AS2048-5V-E	AM2048-5V-E
Encoder type			Multi-turn	Single-turn	Multi-turn	Single-turn	Multi-turn
Pulses			32	1024	2048		
Output signals			1 Vss				
Interfaces			EnDat	Hiperface	EnDat		
Absolute revolutions			4096	1	4096	1	4096
Resolution			0.40				
Angle		[°]					
Accuracy			-5 ... 5	-0.8 ... 0.8	-0.6 ... 0.6		
Min. input voltage							
DC	$U_{in,min}$	[V]	4.75	7.00	4.75		
Max. input voltage							
DC	$U_{in,max}$	[V]	5.25	12.0	5.25		
Max. speed							
	n_{max}	[r/min]	12000	6000	12000		
Max. current consumption							
	I_{max}	[A]	0.17	0.080	0.15	0.25	
Limit frequency							
	f_{max}	[kHz]	6.00	200			
Inverter assignment			E94A	E84AVTC E94A ECS EVS93	E94A		

1) 6 - Product key > speed/angle sensor

MCA asynchronous servo motors

Accessories



Blowers

Rated data for 50 Hz

		Degree of protection	Number of phases					
				U _{min}	U _{max}	U _{N, AC}	P _N	I _N
				[V]	[V]	[V]	[kW]	[A]
MCA13	F10	IP54	1	210	240	230	0.019	0.12
MCA14							0.040	0.25
MCA17								
MCA19								
MCA20	F10 F1F	IP23s			250			
MCA21	F10	IP54			240		0.060	0.26
MCA22	F10	IP54			250		0.24	1.05
MCA26	F1F	IP23s					0.40	1.75

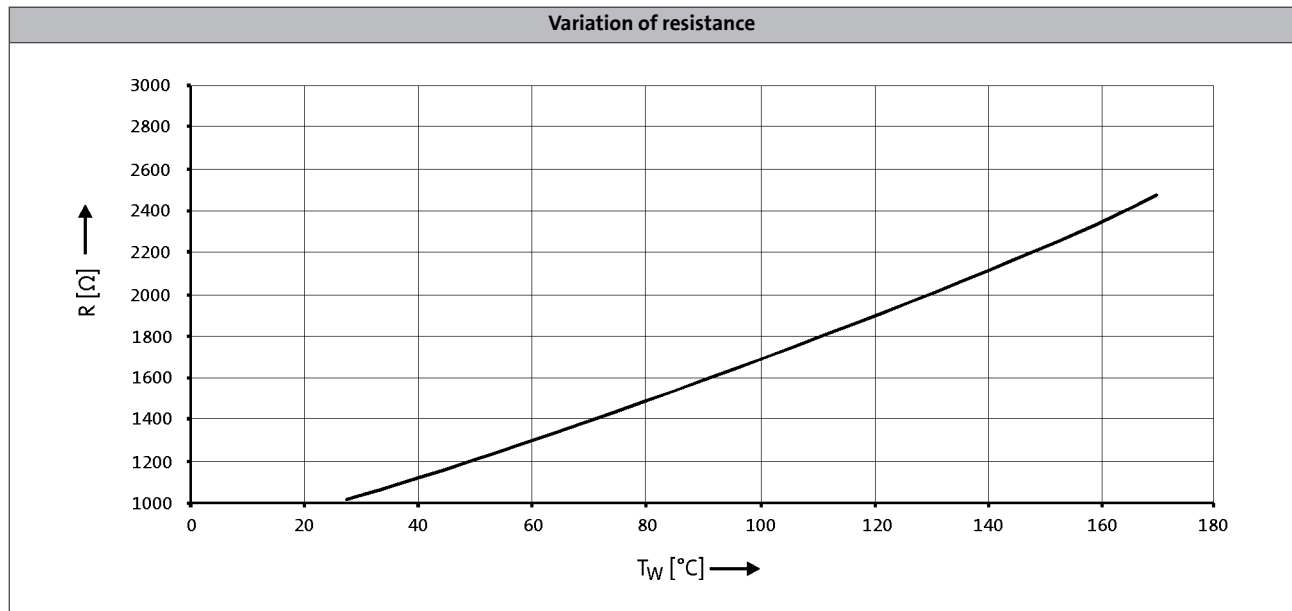
Rated data for 60 Hz

		Degree of protection	Number of phases					
				U _{min}	U _{max}	U _{N, AC}	P _N	I _N
				[V]	[V]	[V]	[kW]	[A]
MCA13	F10	IP54	1	210	240	230	0.019	0.12
MCA14							0.040	0.25
MCA17								
MCA19								
MCA20	F10 F1F	IP23s			250			
MCA21	F10	IP54			240		0.060	0.26
MCA22	F10	IP54			250		0.28	1.23
MCA26	F1F	IP23s					0.41	1.82



Temperature monitoring

The thermal sensors (1x KTY 83-110) used continuously monitor the motor temperature. The temperature signal is transmitted over the system cable of the feedback system to the servo controller. This means that the temperature of the motor is determined with great accuracy in the permitted operating range and at the same time the overtemperature response configured in the controller is executed in the event of overtemperature in one of the winding phases.



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

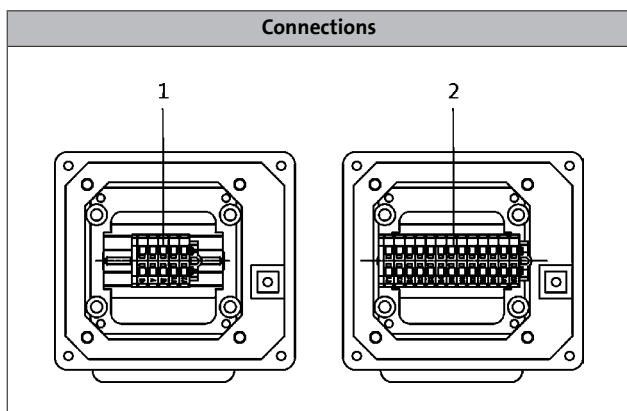


Terminal box

Motors MCA10 to 19/21

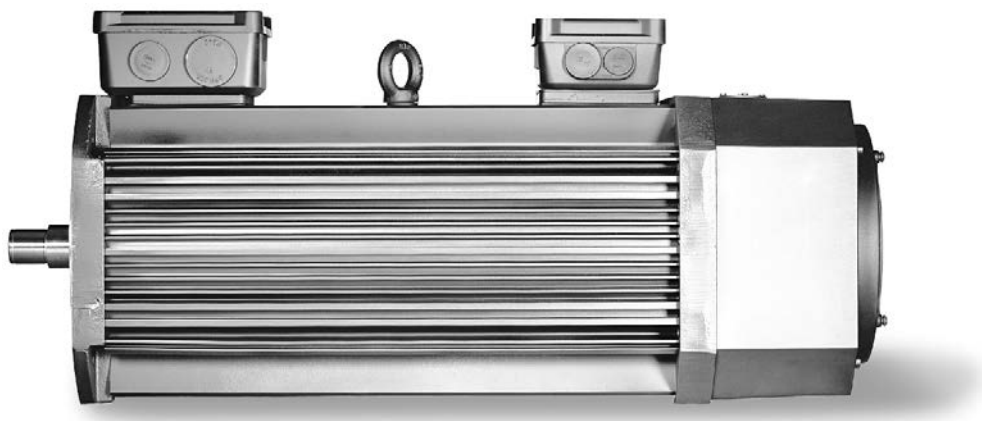
If a servo motor is to be connected to an existing cable or plug connectors are not to be used for other reasons, the connection can also be made via a terminal box.

The motor can either be fitted with a terminal box for the power connection and motor holding brake or a second terminal box provided to connect the motor feedback and blower (if applicable).



1: Power connection + brake connection + PE connection.

2: Angle/speed sensor connection + thermal sensor connection

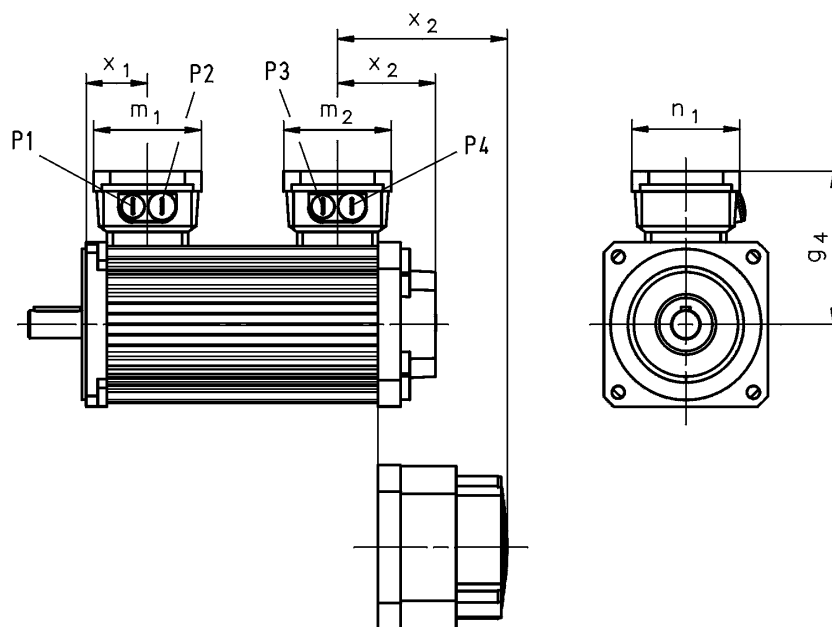


MCA asynchronous servo motors with blower and terminal box



Terminal box

Motors MCA10 to 19/21



			MCA10I40	MCA13I41	MCA14L20 MCA14L41	MCA17N23 MCA17N41	MCA19S23 MCA19S42	MCA21X25 MCA21X42
R□0 B0	x ₂	[mm]	78	77	85		93	97
R□0 P□	x ₂	[mm]	78	77	85		93	97
S□□ / E□□ / T20 / B0	x ₂	[mm]	132	131	140	139	143	147
S□□ / E□□ / T20 / P□	x ₂	[mm]	132	131	140	139	143	147

			MCA13I34	MCA14L16 MCA14L35	MCA17N17 MCA17N35	MCA19S17 MCA19S35	MCA21X17 MCA21X35
R□0 B0	x ₂	[mm]	145	147	171	190	193
R□0 P□	x ₂	[mm]	145	147	171	190	193
S□□ / E□□ / T20 / B0	x ₂	[mm]	199	202	225	240	243
S□□ / E□□ / T20 / P□	x ₂	[mm]	199	202	225	240	243

- Speed/angle sensor: RS0 / S□□ / E□□ / T20
- Brake: B0 / P□

	g ₄	m ₁	m ₂	n ₁	x ₁	P ₁	P ₂	P ₃	P ₄
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
MCA10	113	93	93	93	54	M20x1.5	M20x1.5	M20x1.5	M20x1.5
MCA13	125				57				
MCA14	133				53				
MCA17	141				55				
MCA19	158	115	115	115	64	M25x1.5	M32x1.5		
MCA21	169				70				



ICN connector

Servo motors MCA10 to 21 provide ICN connectors as standard for electrical connection. Servo motors MCA22 and MCA26 provide a terminal box for electrical connection.

A connector is used for the connection of motor and brake. The connections to the feedback system/temperature monitoring and the blower each employ a separate connector.

The connectors can be rotated through 270° and are fitted with a bayonet catch for SpeedTec connectors. As the connector fixing is also compatible with conventional union nuts. Existing mating connectors can therefore still be used without difficulty.

Connection for power and brake

► MCA10 to 17

Pin assignment			
Contact	Designation	Meaning	
1	BD1	Holding brake +	
2	BD2	Holding brake -	
PE	PE	PE conductor	
4	U	Phase U power	
5	V	Phase V power	
6	W	Phase W power	

► MCA19 to 21

Pin assignment			
Contact	Designation	Meaning	
1		Not assigned	
2			
+	BD1	Holding brake +	
-	BD2	Holding brake -	
PE	PE	PE conductor	
U	U	Phase U power	
V	V	Phase V power	
W	W	Phase W power	

Feedback connection

- ▶ 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	

The diagram shows a circular electronic nameplate with 12 pins arranged in a circle. The pins are numbered 1 through 12. Pin 9 is labeled 'Code 0°'. The nameplate also features a central 'P' and a 'Code 0°' label with an arrow pointing to pin 9.

- Hiperface incremental encoder and SinCos absolute value encoder

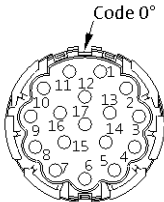
Pin assignment		
Contact	Designation	Meaning
1	B	Track B/+SIN
2	A ⁻	Track A inverse/-COS
3	A	Track A/+COS
4	+U _B	Supply +
5	GND	Mass
6	Z ⁻	Zero track inverse/-RS485
7	Z	Zero track/+RS485
8		Not assigned
9	B ⁻	Track B inverse/-SIN
10		Not assigned
11	+KTY	KTY temperature sensor
12	-KTY	



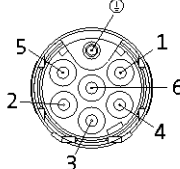
ICN connector

Feedback connection

- SinCos absolute value encoder with EnDat interface

Pin assignment				
Contact	Designation	Meaning		
1	U _p sensor	Supply: UP sensor		
2		Not assigned		
3				
4	0 V sensor	Supply: 0 V sensor		
5	+KTY	KTY temperature sensor		
6	-KTY			
7	+U _B	Supply +		
8	Cycle	EnDat interface cycle		
9	Cycle ⁻	EnDat interface inverse cycle		
10	GND	Mass		
11	Shield	Encoder housing screen		
12	B	Track B		
13	B ⁻	Track B inverse/-SIN		
14	Data	EnDat interface data		
15	A	Track A		
16	A ⁻	Track A inverse		
17	Data ⁻	EnDat interface inverse data		

Blower connection

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

MCA asynchronous servo motors

Technical data



MCA asynchronous servo motors

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Technical data



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