



Geared motors

g7xx-B and g8xx-B / MCA bevel planetary geared servo motor

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About this document

Document description



About this document

Document description

This document addresses to all persons who want to carry out any configurations with the products described.

The data and information compiled in this document serve to support you in the dimensioning and selection processes and in carrying out the electrical and mechanical installation. You will receive information regarding product extensions and accessories.

- The document includes safety instructions which must be observed.
- All persons working on and with the drives must have the documentation at hand during work and observe the information and notes relevant for it.
- The documentation must always be complete and in a perfectly readable state.

Further documents



Information and tools with regard to the Lenze products can be found on the Internet:

www.Lenze.com → Downloads



Notations and conventions

This document uses the following conventions to distinguish different types of information.

Numeric notation		
Decimal separator	Point	Generally shown as a decimal point. Example: 1 234.56
Warning		
UL warning	UL	Are used in English and French.
UR warning	UR	
Text		
Engineering tools	» «	Software, Example: »Engineer«, »EASY Starter«
Icons		
Page reference		Refers to another page with additional information. Example:  16 = see page 16
Documentation reference		Refers to another documentation with additional information. Example:  EDKxxx = see documentation EDKxxx

Layout of the safety instructions

DANGER!

Indicates an extremely hazardous situation. Failure to comply with this instruction will result in severe irreparable injury and even death.

WARNING!

Indicates an extremely hazardous situation. Failure to comply with this instruction may result in severe irreparable injury and even death.

CAUTION!

Indicates a hazardous situation. Failure to comply with this instruction may result in slight to medium injury.

NOTICE

Indicates a material hazard. Failure to comply with this instruction may result in material damage.

Product information

Product description



Product information

Product description

When used in combination with servo motors, our bevel planetary gearboxes form a compact, powerful drive unit. Numerous options at the input and output ends ensure that the drive can be easily and precisely adjusted to suit your application.

The bevel planetary gearboxes are the ideal solution for demanding, dynamic tasks. With their high reliability, long service life and outstanding scalability, they provide everything you need to manage demanding machine tasks.

The bevel planetary gearboxes are available as standard and precision gearboxes.

General differences between precision gearboxes and standard gearboxes:

- Reduced backlash
- Higher radial and axial forces
- Higher degree of protection

Asynchronous servo motors as a basis for geared motors

In a power range of 0.8 to 20.3 kW, Lenze offers servo motors with a scalable modular design.

The drives are designed for the open-loop or closed-loop controlled servo inverter operation.

These motors feature a high dynamic performance and a wide speed setting range.

Customer benefit

- Easy assembly and easy servicing by connectors with bayonet lock and swivel connector boxes
- Optimum controllability and high dynamic performance thanks to low moments of inertia
- Space-saving thanks to compact direct attachment
- High efficiency
- Suitable for any mounting position
- Field weakening operation usable
- Wide speed setting range
- Can be used universally for a wide range of machine tasks due to the market-oriented modular system



g730-B97 bevel planetary gearbox with MCA10 asynchronous servo motor



Identification of the products

When listing the technical data of the various variants, the easily legible product names are used. This also applies to the assignment of product extensions.

Product name g7x0 standard gearbox

Gearbox type	Product range		Version	Rated torque [Nm]	Product
Bevel planetary gearbox	g700	-	B	44	g700-B44
				130	g700-B130
				260	g700-B260
	g720	-	B	44	g720-B44
				130	g720-B130
				260	g720-B260
	g730	-	B	33	g730-B33
				97	g730-B97
				195	g730-B195
	g780	-	B	44	g780-B44
				130	g780-B130
				260	g780-B260

Product name g8x0 precision gearbox

Gearbox type	Product range		Version	Rated torque [Nm]	Product
Bevel planetary gearbox	g850	-	B	77	g850-B77
				150	g850-B150
				300	g850-B300
				800	g850-B800
	g860	-	B	45	g870-B45
				70	g870-B70
				140	g870-B140
				320	g870-B320
	g880	-	B	62	g880-B62
				130	g880-B130
				310	g880-B310
				625	g880-B625

Product name: MCA asynchronous servo motor

Meaning	Variant					
Product family		MCA				
Size			10 13 14 17 19 20 21 22 26			
Overall length				I ... X		
Rated speed	rpm x 100				05 ... 42	
Inverter mains connection	3 x 400 V Degree of protection: IP54 / IP65					-
	3 x 400 V Degree of protection: IP23s					H

Product information

Designs



Designs

Standard gearboxes



g700-B

- Basic gearboxes
- Good price/performance ratio
- Permanently high speeds



g720-B

- Reinforced deep-groove ball bearings
- Flange at the output end
- Broad ratio range



g730-B

- Reinforced deep-groove ball bearings
- Reinforced housing



g780-B

- Robust taper roller bearings
- Protection against dust and water jets
- Degree of protection IP65

Gearbox		g700-B	g720-B	g730-B	g780-B
Rated torque	Nm	5 ... 260	14 ... 260	5 ... 195	14 ... 260
Max. backlash	'	11 ... 28	11 ... 21	11 ... 25	11 ... 18
Static radial force	rated	200 ... 2000	1500 ... 4000	1300 ... 4000	900 ... 3800
Static axial force	rated	240 ... 3800	1950 ... 3800	1000 ... 5900	1200 ... 5200
Tooth system		straight toothed			
Output flange		FT	FF	FT	FF

Precision gearbox



g850-B

- Spiral arc toothing
- 2-stage gearbox with additional planetary stage
- Very low backlash



g860-B

- Spiral arc toothing
- Hollow shaft version with shrink disc
- Very low backlash



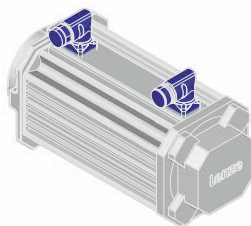
g880-B

- Spiral arc toothing
- 2-stage gearbox with additional planetary stage
- Flange output shaft

Gearbox		g850-B	g860-B	g880-B
Rated torque	Nm	22 ... 800	22 ... 320	22 ... 625
Max. backlash	'	3 ... 5	5	3 ... 5
Static radial force	rated	3200 ... 12500	2700 ... 10000	2400 ... 12000
Static axial force	rated	4300 ... 15000	4300 ... 14500	4200 ... 9500
Tooth system		Spiral-arc toothed		
Output flange		FF		



Models at the output
Motor connection

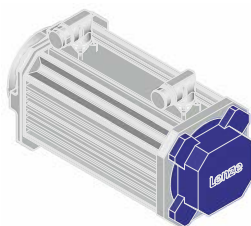


Connectors

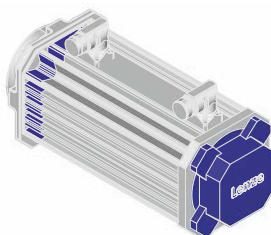


Terminal box

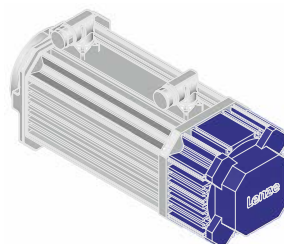
Cooling: self-ventilated



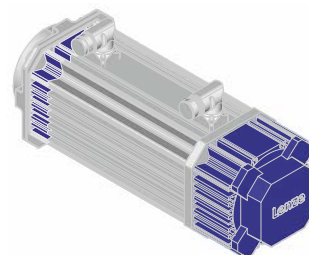
Resolver



Resolver and brake

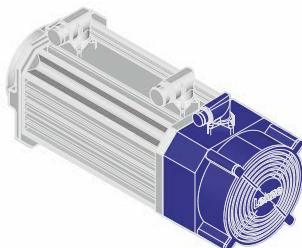


Absolute value/incremental
encoder

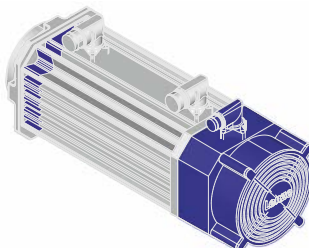


Absolute value/incremental
encoder and brake

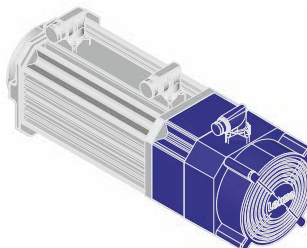
Cooling: forced ventilated



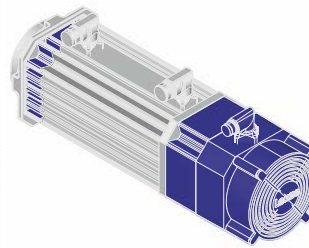
Resolver



Resolver and brake



Absolute value/incremental
encoder



Absolute value/incremental
encoder and brake



Information on project planning

Safety instructions

Basic safety instructions

Disregarding the following basic safety instructions and safety information may lead to severe personal injury and damage to property!

- Only use the product as directed.
- Never commission the product in the event of visible damage.
- Never modify the product technically.
- Never commission the product before assembly has been completed.
- Never operate the product without the required covers.
- Connect/disconnect all pluggable connections only in deenergized condition!
- Only remove the product from the installation in the deenergized state.
- The product can – depending on their degree of protection – have live, movable or rotating parts during or after operation. Surfaces can be hot.
- Observe all specifications of the corresponding documentation supplied. This is the condition for safe and trouble-free operation and the achievement of the specified product features.
- The procedural notes and circuit details given in the associated documentation are suggestions and their transferability to the respective application has to be checked. The manufacturer of the product does not take responsibility for the suitability of the process and circuit proposals.
- All work with and on the product may only be carried out by qualified personnel. IEC 60364 and CENELEC HD 384 define the qualifications of these persons:
 - They are familiar with installing, mounting, commissioning, and operating the product.
 - They have the corresponding qualifications for their work.
 - They know and can apply all regulations for the prevention of accidents, directives, and laws applicable at the place of use.

Application as directed

- The product is a professional equipment intended for use by trades, specific professions or industry and not for sale to the general public. IEC 60050 [IEV 161-05-05]
- To prevent personal injury and damage to property, higher-level safety and protection systems must be used!
- All transport locks must be removed.
- Mounted eye bolts on the motor are not suitable for transporting geared motors.
- The product may only be operated under the specified operating conditions and in the specified mounting positions.
- The product may only be operated on the inverter.
- Built-in brakes must not be used as safety brakes.
- The product must not be operated in private areas, in potentially explosive atmospheres and in areas with harmful gases, oils, acids and radiation.



Residual hazards

Even if notes given are taken into consideration and protective measures are implemented, the occurrence of residual risks cannot be fully prevented.

The user must take the residual hazards mentioned into consideration in the risk assessment for his/her machine/system.

If the above is disregarded, this can lead to severe injuries to persons and damage to property!

Product

Observe the warning labels on the product!



Dangerous electrical voltage:

Before working on the product, make sure there is no voltage applied to the power terminals! After mains disconnection, the power terminals will still carry the hazardous electrical voltage for the time given next to the symbol!



Electrostatic sensitive devices:

Before working on the product, the staff must ensure to be free of electrostatic charge!



High leakage current:

Carry out fixed installation and PE connection in compliance with:
EN 61800-5-1 / EN 60204-1



Hot surface:

Use personal protective equipment or wait until the device has cooled down!

Protection of persons

- The power terminals may carry voltage in the switched-off state or when the motor is stopped.
 - Before working, check whether all power terminals are deenergized.
- Voltages may occur on the drive components (e.g. capacitive, caused by inverter supply).
 - Careful earthing in the marked positions of the components must be carried out.
- There is a risk of burns from hot surfaces.
 - Provide protection against accidental contact.
 - Use personal protective equipment or wait until the device has cooled down.
 - Prevent contact with flammable substances.
- There is a risk of injury due to rotating parts.
 - Before working on the drive system, ensure that the motor is at a standstill.
- There is a risk of accidental start-up or electric shock.

Motor protection

- Installed temperature sensors are no full protection for the machine.
 - If necessary, limit the maximum current. Parameterize the inverter so that it will be switched off after some seconds of operation with $I > I_{rated}$, especially if there is a risk of blocking.
 - Integrated overload protection does not prevent overloading under all conditions.
- The fuses are no motor protection.
 - Use a current-dependent motor protection switch.
 - Use the built-in temperature sensors.

Information on project planning

Safety instructions
Residual hazards



Gearbox protection

- Excessive vibration accelerations and resonances will damage the gearbox.
 - Do not operate the gearbox at vibration accelerations $> 2 \text{ g}$ (20 m/s^2) of the machine.
 - Do not operate the gearbox in the resonance range of the machine.
- Excessive torques will damage the gearboxes.
 - Do not exceed the output torques specified on the nameplate.
- Excessive input speeds lead to increased temperatures.
 - Do not exceed the input speeds specified on the nameplate.
- Avoid excessive lateral forces on the gearbox shaft.
 - Align the shafts of the gearbox and driven machine exactly with each other.
- Machine elements can be damaged by a lack of lubricant.
 - Mount the gearbox only in the mounting position indicated on the nameplate.
 - When changing the lubricant, use the lubricant type and quantity specified on the nameplate.



Drive dimensioning

In order to carry out an accurate drive dimensioning process, you can use our configuring software, the »Drive Solution Designer«.

With the »Drive Solution Designer«, you can design the drive both quickly and to a high quality. The software contains profound and proven expertise with regard to drive applications and mechatronic drive components.

Please get in touch with your Lenze representative.

Workflow

S1 operation		S2, S3 and S6 operation	
1	Check operating conditions	1	Check operating conditions
2	Define required input variables	2	Define required input variables
3	Determine correction factor	3	Determine correction factor
4	Determine gearbox on the basis of the acting forces	4	Determine gearbox on the basis of the acting forces
5	Determine required gearbox load capacity	5	Determine gearbox efficiency
6	Calculate required drive power	6	Determine required gearbox load capacity
7	Check and select geared motor	7	Calculate required drive power
8	Final configuration	8	Check and select geared motor
		9	Check servo motor based on the motor torque characteristic
		10	Final configuration

Check operating conditions

Check
Approvals
Conformities
Supply voltage
Degree of protection
Ambient temperature
Surface protection

► [Standards and operating conditions](#) 25

► [Surface and corrosion protection](#) 20

Define required input variables

Necessary input variables	Note	Symbol	Unit
Operating time/day		BD	h
Mean speed utilization of the geared motor	Relating to the load speed n_L		%
Ambient temperature		T_V	°C
Site altitude Amsl		H	m
Radial force		F_{rad}	rated
Axial force		F_{ax}	rated
Transmission element at the output	Gear wheels, sprockets ...		
Effective diameter of the transmission element		d_w	mm
Load torque	Only with S1, S2, S3, and S6 operating modes	M_L	Nm
Load speed	Only with S1, S2, S3, and S6 operating modes	n_L	rpm
Short-time maximum torque	Emergency off, quick stop, occasional high starting duty	$M_{L,max}$	Nm
Runtime with maximum torque		t_L	%



Determine correction factor

Operating modes S1, S2, S3, S6, and operating time							
Operating mode S1		Operating mode S2		Operating mode S3		Operating mode S6	
ED	k_L	ED	k_L	ED	k_L	ED	k_L
%		min		%		%	
100	1.0	10	1.4 - 1.5	15	1.4 - 1.5	15	1.5 - 1.6
		30	1.15 - 1.2	25	1.3 - 1.4	25	1.4 - 1.5
		60	1.07 - 1.1	40	1.15 - 1.2	40	1.3 - 1.4
		90	1.0 - 1.05	60	1.05 - 1.1	60	1.15 - 1.2

► Operating modes of the motor [171](#)

Ambient temperature and installation height				
Ambient temperature	Installation height amsl			
	≤ 1000 m	≤ 2000 m	≤ 3000 m	≤ 4000 m
	Correction factor			
T_U	k_H	k_H	k_H	k_H
≤ 20 °C	1.15	1.06	0.97	0.89
30 °C	1.07	0.99	0.90	0.83
40 °C	1.00	0.92	0.83	0.77
50 °C	0.92	0.85	0.76	0.71
60 °C	0.83	0.77	0.70	0.65

Mean speed utilisation					
Daily operating time	Mean speed utilisation relating to the load speed n_L				
	100 %	80 %	60 %	50 %	25 %
	Correction factor				
	k_N	k_N	k_N	k_N	k_N
1.0 h	1.29	1.33	1.38	1.42	1.55
2.0 h	1.15	1.20	1.25	1.29	1.42
3.0 h	1.08	1.12	1.17	1.21	1.34
4.0 h	1.02	1.06	1.12	1.15	1.29
5.5 h	0.96	1.00	1.06	1.09	1.22
8.0 h	0.89	0.93	0.99	1.02	1.15
12.0 h	0.81	0.85	0.91	0.94	1.08
16.0 h	0.76	0.80	0.85	0.89	1.02
22.0 h	0.71	0.76	0.81	0.85	0.98
24.0 h	0.68	0.72	0.78	0.81	0.94

Mean speed					
Operating mode S2		Operating mode S3		Operating mode S6	
ED	k_M	ED	k_M	ED	k_M
min		%		%]	
10	0.16	15	0.15	15	1.00
30	0.50	25	0.25	25	
60	1.00	40	0.40	40	
90		60	0.60	60	



Determine product on the basis of the forces

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

dw Effective diameter of transmission element in mm

f_w Additional load factor

► [Radial forces and axial forces](#) 28

Determine gearbox efficiency

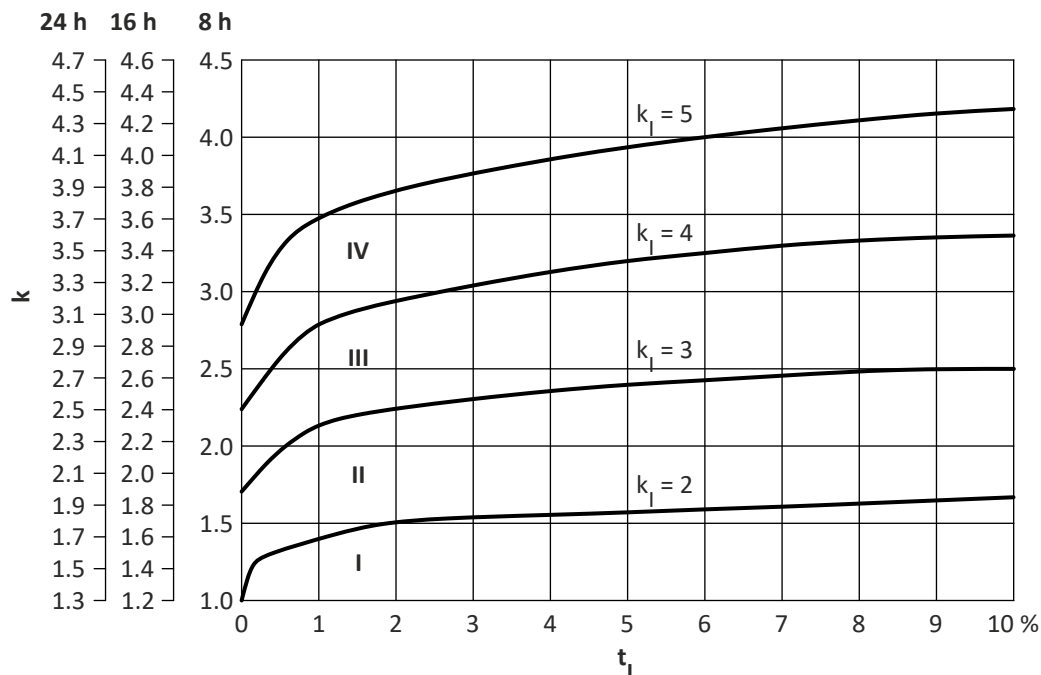
Gearboxes	Gearbox stages		
	1-stage	2-stage	3-stage
	Gearbox efficiency		
	η_{c1}	η_{c1}	η_{c1}
g700-B	0.95	0.94	0.88
g720-B	0.95	0.94	0.88
g730-B	0.95	0.94	-
g780-B	0.94	0.93	-
g850-B	0.95	0.94	-
g860-B	0.95	-	-
g880-B	0.94	0.93	-



Determination of the required gearbox load capacity

Define the required load factor at runtime t_L		
Runtime $t_L \leq 10\%$	Take the load factor k from diagram into account	
Runtime $t_L > 10\%$	Take intensity k_I from calculation into account	
Calculate intensity		
no alternating load	$k_I = M_{L,max} / M_L$	$k_I =$
at alternating load	$k_I = M_{L,max} / M_L \times 1.4$	$k_I =$

Load factor k



Operating mode S1

Calculation of the required drive power			
	Calculation	Result	Unit
Output torque	$M_R \geq M_L / (k_L \times k_H)$	$M_R =$	Nm
Output speed	$n_R \geq n_L / k_E$	$n_R =$	rpm
Drive power	$P_R \geq M_R \times n_R / 9549$	$P_R =$	kW

Check geared servo motor and determine from the selection table			
	Check	Selection	Unit
Drive power	$P_1 \geq P_R$	$P_1 =$	kW
Output torque	$M_2 \geq M_L$	$M_2 =$	Nm
Output speed	$n_{2,th} \geq n_L$	$n_{2,th} =$	rpm
Load capacity of the geared motor	$c \geq k$ $c \geq k_I$	$c =$	
Short-time maximum torque			
no alternating load	$M_{2,max} \geq M_{L,max}$	$M_{2,max} =$	Nm
at alternating load	$M_{2,max} \times 1.5 \geq M_{L,max}$	$M_{2,max} =$	Nm
Ratio		$i =$	

► Selection tables [29](#)



Operating modes S2, S3, and S6

Calculation of the required drive power			
	Calculation	Result	Unit
Output torque	$M_R \geq M_L / (k_L \times k_H)$	$M_R =$	Nm
Output speed	$n_R \geq (n_L \times k_M) / (k_E \times k_{rated})$	$n_R =$	rpm
Drive power	$P_R \geq M_R \times n_R / 9549$	$p_R =$	kW

Check geared servo motor and determine from the selection table			
	Check	Selection	Unit
Drive power	$P_1 \geq P_R$	$p_1 =$	kW
Output torque	$M_2 \geq M_L$	$M_2 =$	Nm
Output speed	$n_2 \geq n_L$	$n_2 =$	rpm
Load capacity of the geared motor	$c \geq k$ $c \geq k_I$	$c =$	
Short-time maximum torque			
no alternating load	$M_{2,max} \geq M_{L,max}$	$M_{2,max} =$	Nm
at alternating load	$M_{2,max} \times 1.5 \geq M_{L,max}$	$M_{2,max} =$	Nm
Ratio		$i =$	

► Selection tables [29](#)

Check servo motor based on the motor torque characteristic		
Gearbox efficiency	$\eta_G = \eta_{c1} - (c - 1) \times 0.01$	$\eta_G =$
All operating points (●)		$i \times n_L$
below the maximum torque characteristic of the servo motor/ inverter combination here, $M_{L,max}$ must be considered		$M_L / (i \times \eta_G)$
Thermally effective operating point (○)		$(i \times n_L \times k_M) / (k_E \times k_{rated})$
below the S1 torque characteristic of the servo motor		$M_L / (k_L \times k_H \times i \times \eta_G)$

► Torque characteristics [159](#)

Information on project planning

Final configuration
Surface and corrosion protection



Final configuration

	Check
Connection dimensions	Output shaft Output flange
Product extensions	Connector/terminal box Brake Feedback Temperature monitoring

More information about the final configuration:

► [The modular system](#) 27

► [Product extensions](#) 127

Surface and corrosion protection

Depending on the ambient conditions, the surface and corrosion protection system (called OKS) offers tailor-made solutions for optimum protection.

Various surface coatings ensure that the motors operate reliably even at high air humidity, in outdoor installation or in the presence of atmospheric impurities. Any color from the "RAL Classic" collection can be chosen for the top coat.



The OKS-XL (extra Large) version requires a check by your responsible Lenze subsidiary.

Surface and corrosion protection (called OKS)	Applications	Type
without OKS (unpainted)	- Indoor installation, no special corrosion protection necessary - Painting by customer	Standard
OKS-G (primed)	Dependent on subsequent top coat applied	Optional
OKS-S (small)	- Standard applications - Internal installation in heated buildings - Air humidity up to 90 %	
OKS-M (medium)	- Internal installation in non-heated buildings - Covered, protected external installation - Air humidity up to 95 %	
OKS-L (large)	- External installation - Air humidity above 95 % - Chemical industrial plants - Food industry	

Surface and corrosion protection	Corrosivity category	Surface coating	Color	Coating thickness
	DIN EN ISO 12944-2	Design		
OKS-G (primed)		2K PUR priming coat	- Standard: RAL 7012 - Optional: RAL Classic	60 ... 90 µm
OKS-S (small)	Comparable to C1	2K-PUR top coat		80 ... 120 µm
OKS-M (medium)	Comparable to C2	2K PUR priming coat		110 ... 160 µm
OKS-L (large)	Comparable to C3	2K-PUR top coat		140 ... 200 µm
OKS-XL (extra large)	Comparable to C4	2K-EP priming coat (two times) 2K-PUR top coat		160 ... 240 µm

Lubricants



The g7x0 and g8x0 planetary gearbox series are lubricated for life.



Mechanical installation

Important notes

- Install the product according to the information in the chapter "Standards and operating conditions".
 - ▶ [Standards and operating conditions](#) 25
- The technical data and the data regarding the supply conditions can be found on the nameplate and in this documentation.
- Ambient media – especially chemically aggressive ones – may damage shaft sealing rings, lacquers and plastics.
- Lenze offers special surface and corrosion protection in this case.

Transport

- Ensure appropriate handling.
- Make sure that all component parts are securely mounted. Secure or remove loose component parts.
- Only use safely fixed transport aids (e.g., eye bolts or support plates).
- Do not damage any components during transport.
- Avoid electrostatic discharges on electronic components and contacts.
- Avoid impacts.
- Check the carrying capacity of the hoists and load handling devices. The weights can be found in the shipping documents.
- Secure the load against tipping and falling down.
- Standing beneath suspended loads is prohibited.

Installation

- The mounting surfaces must be plane, torsionally rigid and free from vibrations.
- The mounting areas must be suited to absorb the forces and torques generated during operation.
- Ensure an unhindered ventilation.
- For versions with a fan, keep a minimum distance of 10 % from the outside diameter of the fan cover in intake direction.



Electrical installation

Important notes

DANGER!

Risk of injury and risk of burns from dangerous voltage

Power terminals may also carry voltage in the switched-off state or when the motor is stopped and may cause life-threatening cardiac arrhythmia and serious burns.

- ▶ Disconnect the product from the mains.
- ▶ Check that the power terminals are deenergized before starting work.

- When working on energized products, comply with the applicable national accident prevention regulations.
- The electrical installation must be carried out according to the appropriate regulations (e.g. cable cross-sections, fuses, PE connection).
- The manufacturer of the system or machine is responsible for adherence to the limits required in connection with EMC legislation.

Operation on an external inverter

A max. pulse voltage amplitude of $U_{pk} = 1560 \text{ V}$ at the motor terminals must not be exceeded. Here, the minimum pulse rise time must be $t_R = 0.1 \text{ } \mu\text{s}$.

If it cannot be ruled out that the permissible voltage peaks will be exceeded or that the minimum pulse rise time will not be reached, the following measures must be initiated:

- Reduction of the DC-bus voltage (threshold for brake chopper voltage)
- Use of filters, chokes
- Use of special motor cables

Preparation



The notes for the electrical connection can be found in the enclosed mounting instructions.

EMC-compliant wiring



The EMC-compliant wiring is described in detail in the documentation of the Lenze inverters.



Technical data

Notes regarding the given data

The power values, torques and speeds specified in the configuration are rounded values and apply to

- Operating time per day = 8 hrs (100 % ED)
- Duty class up to 10 switching operations per hour
- Ambient temperature T_V and max. permissible thermal output speed $n_{2,th}$
 - $T_V = -20 \dots +40 \text{ }^\circ\text{C}$
 - $n_{2,th}$ is valid for $T_V = +20 \text{ }^\circ\text{C}$
- Site altitude ≤ 1000 m above mean sea level
- The selection tables indicate the mechanically permissible power levels and torques.
- The ratings apply to the operating mode S1 (acc. to EN 60034).

Selection tables

The selection tables represent the available combinations of gearbox, number of stages, ratio and motor. They only serve as a rough overview.

The following legend shows an example of the layout of the selection tables:

Example

Inverter mains connection 400 V, self-ventilated motors
0.25 kW

Explanation

Voltage of inverter mains connection, motor cooling type
Rated motor power

Inverter operation							Geared motor		Number of stages	Mass
M ₂	n ₂	c	M _{2,max}	n _{2,th}	J	i	g700-	MCS	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
1.7	1350	2.4	11.0	124	0.213	3.000	P20	06C41-	1	2.7
2.5	810	4.8	14.0	124	0.205	5.000	P20	06C41-	1	2.7
3.5	579	5.0	25.0	124	0.209	7.000	P44	06C41-	1	3.2
4.0	579	2.1	8.5	124	0.203	7.000	P20	06C41-	1	2.7

									Mass
									Number of gear stages
									Motor product name
									Gearbox product name
									Ratio
									Moment of inertia
									With feedback, without brake
									Max. permissible output speed in S1 operation
									Max. permissible acceleration torque
									Dependent on inverter
									Load capacity of the gearbox
									c is the ratio of permissible rated torque of the gearbox to the rated torque of the motor (converted to the driven shaft). c must always be higher than the application factor detected for the application k.
									$c = \frac{M_{2,zul}}{M_{1,N} \times i \times \eta_{Getr}} > k$
									Output speed
									Output torque

Technical data

Notes regarding the given data



Basic dimensions

In the basic dimensions, the total lengths (L) of the drive with resolver are given.

Note the extra length (ΔL) of the product extensions.

► [Additional lengths](#)  125



Standards and operating conditions

Conformities and approvals

More information and certificates of approval can be found under
[g7x0-B/g8x0-B + MCA bevel planetary geared motors \(Lenze.com\)](https://www.lenze.com/g7x0-B/g8x0-B-MCA-bevel-planetary-geared-motors)

Europe					
Country	Conformity/ approval	Law/standard	Description	Special feature	Product representation
European Union	CE	2006/42/EC	Machinery Directive	Only for safety- relevant components	CE mark
		2014/35/EU	Low-Voltage Directive		
		2014/30/EU	EMC Directive		
		2011/65/EU	RoHS		
				-	
Great Britain	UKCA	S.I. 2008/1597	The Supply of Machinery (Safety) Regulations 2008	Only for safety- relevant components	UKCA mark
		S.I. 2016/1091	The Electromagnetic Compatibility Regulations 2016	-	
		S.I. 2016/1101	The Electrical Equipment (Safety) Regulations 2016		
		S.I. 2012/3032	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012		

America					
Country	Conformity/ approval	Law/standard	Description	Special feature	Product representation
Canada	CSA	CSA 22.1 No. 100	CSA Standard for Motors and Generators	-	cURus mark
USA	UL	UL 1004-1	UL Standard for Rotating Electrical Machines		

Asia					
Country	Conformity/ approval	Law/standard	Description	Special feature	Product representation
China	-	GB/T 26572	Requirements on concentration limits for certain restricted substances in electrical and electronic products	-	EFUP mark

Protection of persons and device protection

Degree of protection			
-	EN IEC 60529, EN IEC 60034-5	IP23S	Forced ventilated: MCA20, MCA22, MCA26
		IP54	Self-ventilated: MCA10 ... MCA19, MCA21
			Forced ventilated: MCA13 ... MCA19, MCA21 ... MCA26
		IP65	Self-ventilated: MCA10 ... MCA19, MCA21
Temperature class			
-	EN IEC 60034-1	F (155 °C)	Insulation system
Permissible voltage			
-	IEC 60034-18-41	IVIC C	At 500 V
	IEC/TS 60034-25:2007	Limit curve A	Of the pulse voltage

Technical data

Standards and operating conditions
EMC data



EMC data

Noise emission		
-	EN IEC 60034-1	A final overall assessment of the drive system is indispensable
Noise immunity		
-	EN IEC 60034-1	A final overall assessment of the drive system is indispensable

Environmental conditions

Climate			
Storage	EN 60721-3-1:1997	1K3 (-20 ... +40 °C)	>3 months
		1K3 (-20 ... +60 °C)	<3 months
Transport	EN 60721-3-2:1997	2K3 (-20 ... +70 °C)	
Operation	EN 60721-3-3:1995 + A2:1997	3K3 (-10 ... +40 °C)	Operation, without brake
		3K3 (-15 ...+40 °C)	Operation without brake, forced ventilated
		3K3 (-20 ...+40 °C)	Operation without brake, self-ventilated
Site altitude			
0 ... 1000 m amsl	-	Without current derating	
1000 ... 4000 m amsl		Reduce rated output current by 5 %/1000 m	
Air humidity			
-	-	Average relative humidity 85 %	Without condensation



Technical data

Bevel gearbox g700-B
The modular system

Bevel gearbox g700-B

The modular system

g700-B bevel planetary gearbox with MCA asynchronous servo motor

Gearboxes		g700-B260
Min. motor assignment		MCA10
Max. motor assignment		MCA13
Technical data		
Max. output torque	Nm	260
Min. drive torque	Nm	0.8
Max. drive torque	Nm	6.3
Mounting position		Any
Color		Primed Painted in RAL colors
Surface and corrosion protection		OKS-G Different types of OKS
Output shaft		
Solid shaft with featherkey	mm	25 x 50
Smooth solid shaft	mm	25 x 50
Shaft material		Steel
Shaft sealing ring material		NBR
Gearbox design		Without foot with centering
Gearbox stages		1/2/3
Output flange	mm	120
Lubricant		Standard Food-compatible
Cooling		Self-ventilated Forced-ventilated
Motor connection		ICN connector Terminal box
Holding brake		Without Permanent magnet brake
Feedback		
Without functional safety		Resolver Absolute value encoder Incremental encoder
With functional safety		Resolver Incremental encoder
Temperature monitoring		PT1000 temperature sensor

Technical data

Bevel gearbox g700-B
Data overview



Data overview

g700-B260, 1-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/°
3	80.0	11	10
4	105	11	14
5	130	11	16
7	135	11	17
8	120	11	18
10	95.0	11	17

g700-B260, 2-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/°
9	210	13	18
12	260	13	20
15	230	13	20
16	260	13	21
20	260	13	21
25	230	13	20
32	260	13	21
40	230	13	20
64	120	13	18

g700-B260, 3-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/°
60	260	15	21
80	260	15	21
100	260	15	21
120	230	15	20
160	260	15	21

Radial forces and axial forces

Gearbox			g700-B260	g700-B260	g700-B260
Number of stages	z		1	2	3
Bearing service life 20000 h					
Speed		rpm	100	100	100
Radial force	F_{rad}	rated	1750	1750	1750
Axial force	F_{ax}	rated	2500	2500	2500
Bearing service life 30000 h					
Speed		rpm	100	100	100
Radial force	F_{rad}	rated	1500	1500	1500
Axial force	F_{ax}	rated	2100	2100	2100
Max. radial force	$F_{\text{rad, max}}$	rated	2000	2000	2000
Max. axial force	$F_{\text{ax, max}}$	rated	3800	3800	3800



Technical data

Bevel gearbox g700-B
Selection tables

Selection tables

Inverter power supply 400 V, self-ventilated motors

0.8 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g700-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
17.0	395	5.1	95.0	198	4.220	10	B260	10I40-	1	18
37.0	158	5.0	230	79.0	4.407	25	B260	10I40-	2	20
49.0	123	4.4	260	62.0	4.261	32	B260	10I40-	2	20
69.0	98.8	3.2	230	49.0	4.258	40	B260	10I40-	2	20
102	65.8	2.5	260	33.0	5.081	60	B260	10I40-	3	22
108	61.7	1.1	120	31.0	4.255	64	B260	10I40-	2	20
139	49.4	1.9	260	25.0	4.411	80	B260	10I40-	3	22
170	39.5	1.5	260	20.0	4.405	100	B260	10I40-	3	22
197	32.9	1.2	230	16.0	5.063	120	B260	10I40-	3	22
259	24.7	1.0	260	12.0	4.257	160	B260	10I40-	3	22

1.7 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g700-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
10.0	1350	4.6	80.0	675	11.146	3	B260	13I41-	1	22
13.0	1013	5.0	105	506	10.576	4	B260	13I41-	1	22
16.0	810	5.4	130	405	10.374	5	B260	13I41-	1	22
23.0	579	5.1	135	289	10.205	7	B260	13I41-	1	22
28.0	506	4.0	120	253	10.173	8	B260	13I41-	1	22
28.0	450	4.5	210	225	11.073	9	B260	13I41-	2	24
32.0	338	5.8	260	169	11.008	12	B260	13I41-	2	24
38.0	405	2.5	95.0	203	10.120	10	B260	13I41-	1	22
48.0	270	4.1	230	135	10.987	15	B260	13I41-	2	24
50.0	253	4.3	260	127	10.488	16	B260	13I41-	2	24
67.0	203	3.5	260	101	10.315	20	B260	13I41-	2	24
91.0	162	2.5	230	81.0	10.307	25	B260	13I41-	2	24
118	127	2.2	260	63.0	10.161	32	B260	13I41-	2	24
146	101	1.6	230	51.0	10.158	40	B260	13I41-	2	24
211	67.5	1.2	260	34.0	10.981	60	B260	13I41-	3	26

Technical data

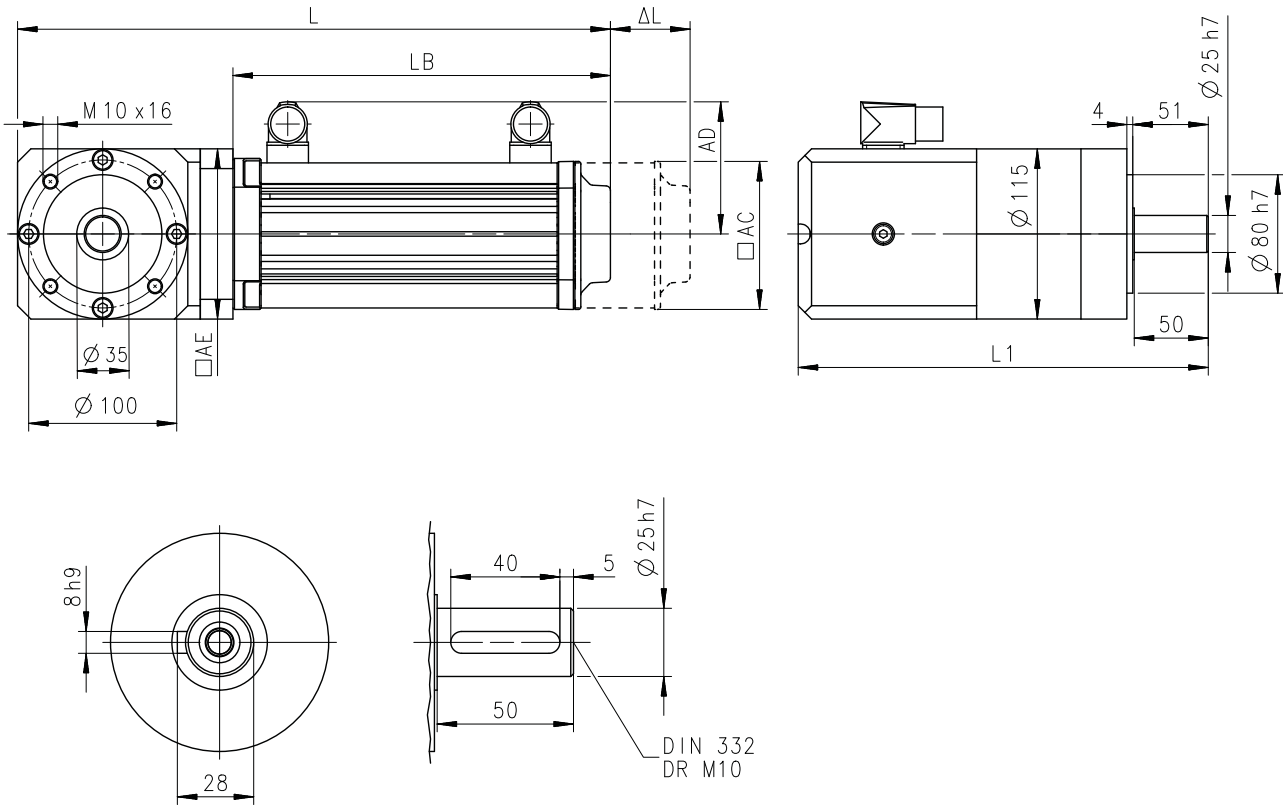
Bevel gearbox g700-B
Basic dimensions



Basic dimensions

g700-B260 with MCA10

Gearbox design: Solid shaft, without foot with centering, 1-stage



8800876-00

Motor			MCA 10
			I40-
Total length	L	mm	407.5
Gearbox length	L1	mm	249.5
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	115

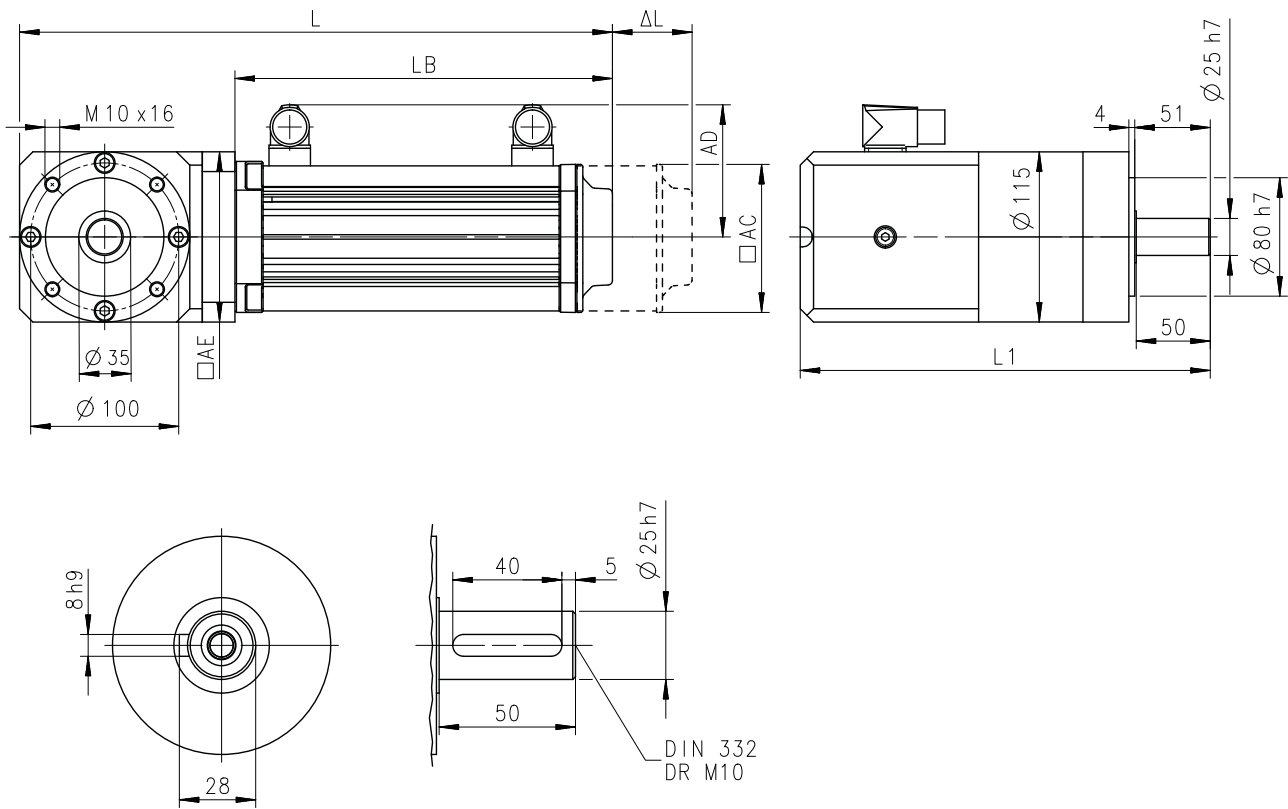


Technical data

Bevel gearbox g700-B
Basic dimensions

g700-B260 with MCA10

Gearbox design: Solid shaft, without foot with centering, 2-stage



8800876-00

Motor			MCA 10
			I40-
Total length	L	mm	407.5
Gearbox length	L1	mm	277
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	115

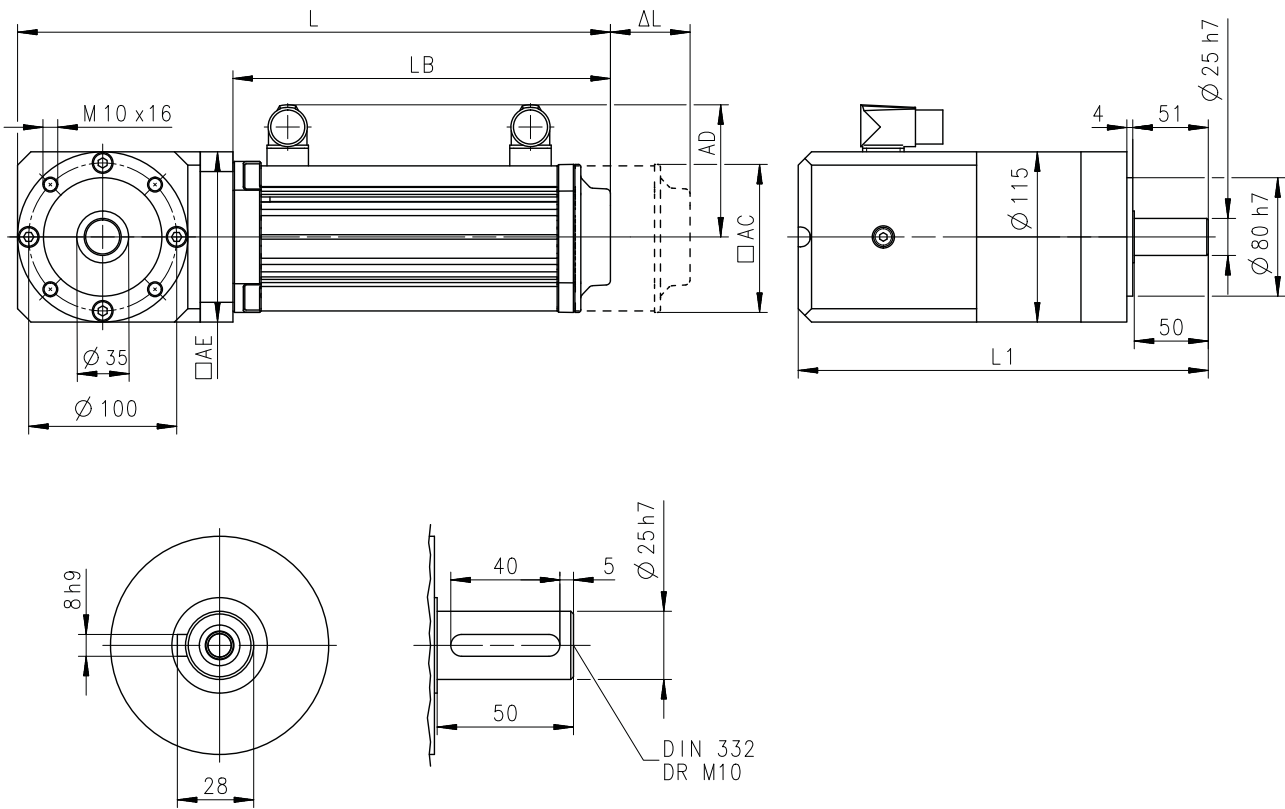
Technical data

Bevel gearbox g700-B
Basic dimensions



g700-B260 with MCA10

Gearbox design: Solid shaft, without foot with centering, 3-stage



8800876-00

Motor			MCA 10
			I40-
Total length	L	mm	407.5
Gearbox length	L1	mm	304.5
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	115

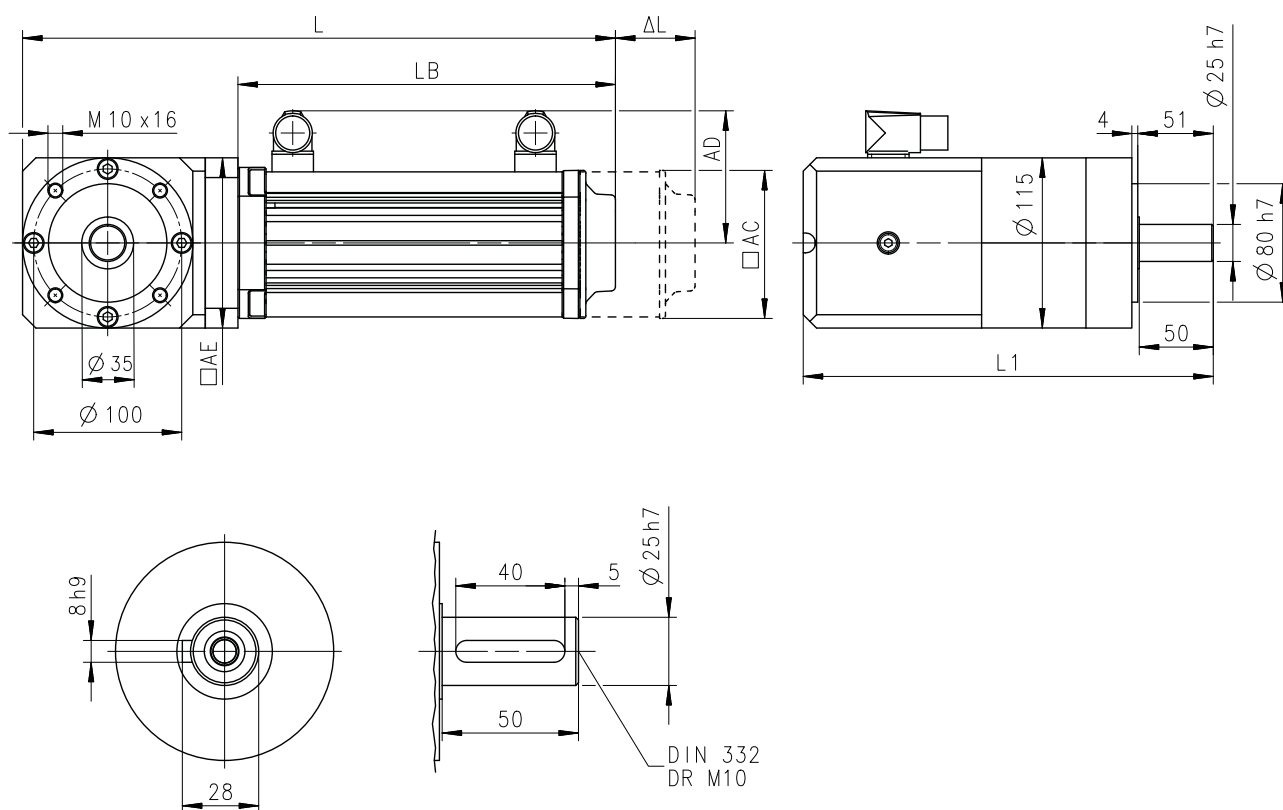


Technical data

Bevel gearbox g700-B
Basic dimensions

g700-B260 with MCA13

Gearbox design: Solid shaft, without foot with centering, 1-stage



8800876-00

Motor			MCA 13
			I41-
Total length	L	mm	416.5
Gearbox length	L1	mm	249.5
Motor length	LB	mm	271
Motor diameter	AC	mm	130
Motor/connection distance	AD	mm	102
Gearbox diameter	AE	mm	115

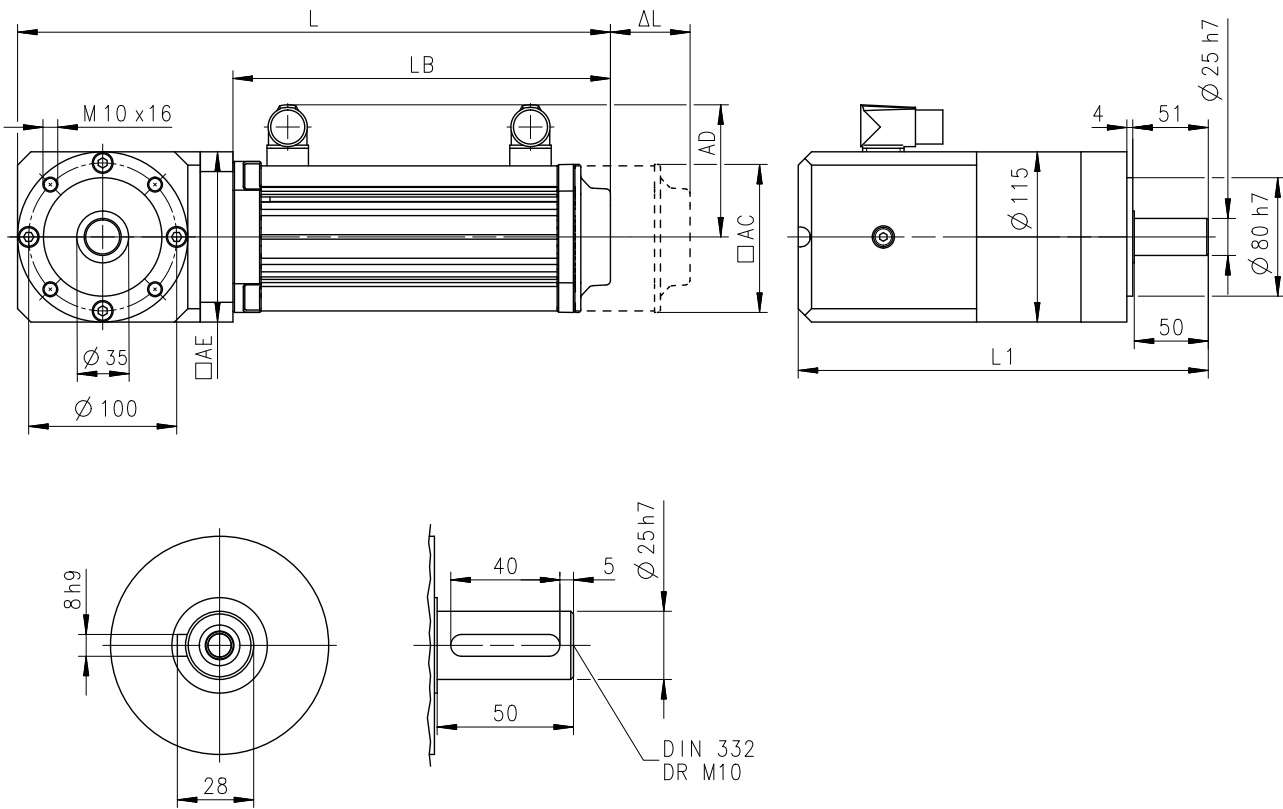
Technical data

Bevel gearbox g700-B
Basic dimensions



g700-B260 with MCA13

Gearbox design: Solid shaft, without foot with centering, 2-stage



8800876-00

Motor			MCA 13
			I41-
Total length	L	mm	416.5
Gearbox length	L1	mm	277
Motor length	LB	mm	271
Motor diameter	AC	mm	130
Motor/connection distance	AD	mm	102
Gearbox diameter	AE	mm	115

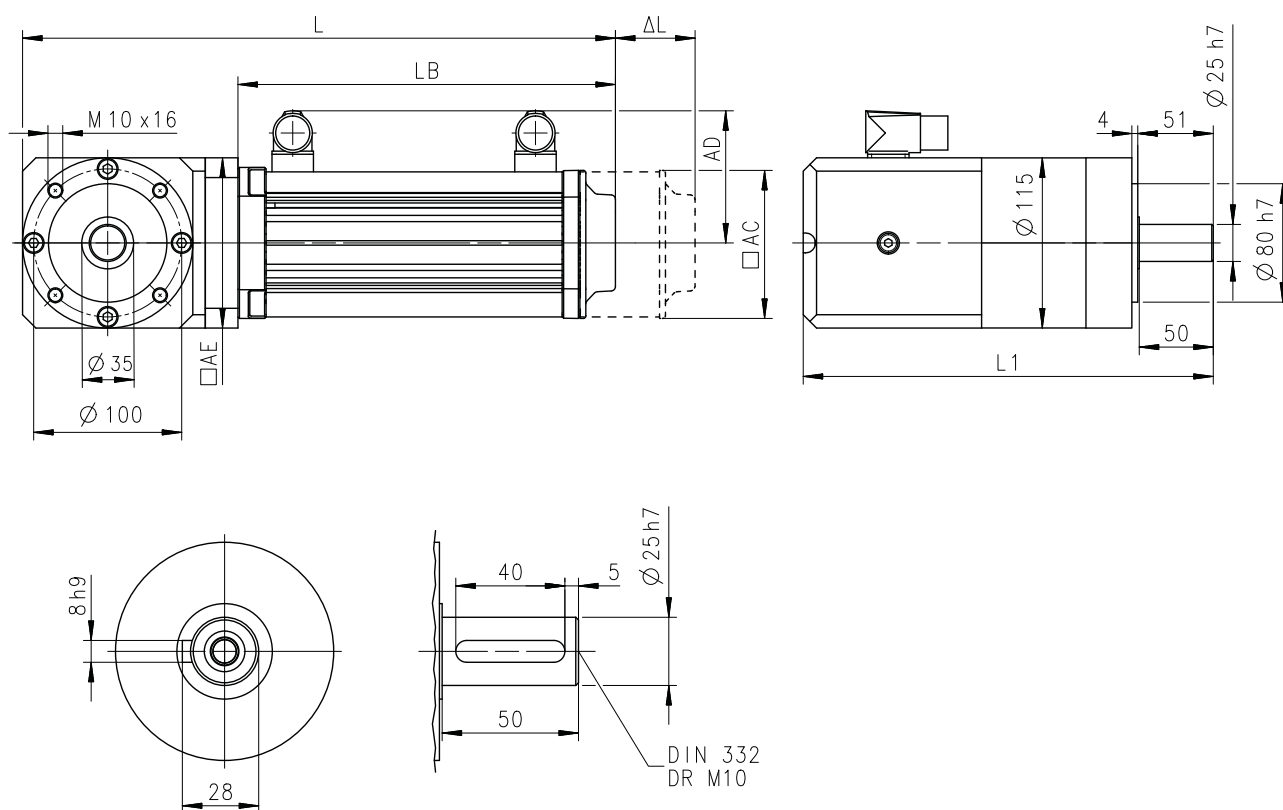


Technical data

Bevel gearbox g700-B
Basic dimensions

g700-B260 with MCA13

Gearbox design: Solid shaft, without foot with centering, 3-stage



8800876-00

Motor			MCA 13
			I41-
Total length	L	mm	416.5
Gearbox length	L1	mm	304.5
Motor length	LB	mm	271
Motor diameter	AC	mm	130
Motor/connection distance	AD	mm	102
Gearbox diameter	AE	mm	115

Technical data

Bevel gearbox g720-B
The modular system



Bevel gearbox g720-B

The modular system

g720-B bevel planetary gearbox with MCA asynchronous servo motor

Gearboxes		g720-B260
Min. motor assignment		MCA10
Max. motor assignment		MCA13
Technical data		
Max. output torque	Nm	260
Min. drive torque	Nm	0.8
Max. drive torque	Nm	6.3
Mounting position		Any
Color		Primed Painted in RAL colors
Surface and corrosion protection		OKS-G Different types of OKS
Output shaft		
Solid shaft with featherkey	mm	25 x 50
Smooth solid shaft	mm	25 x 50
Shaft material		Steel
Shaft sealing ring material		NBR
Gearbox design		Without foot with centering
Gearbox stages		1/2/3
Output flange	mm	120
Lubricant		Standard Food-compatible
Cooling		Self-ventilated Forced-ventilated
Motor connection		ICN connector Terminal box
Holding brake		Without Permanent magnet brake
Feedback		
Without functional safety		Resolver Absolute value encoder Incremental encoder
With functional safety		Resolver Incremental encoder
Temperature monitoring		PT1000 temperature sensor



Technical data

Bevel gearbox g720-B
Data overview

Data overview

g720-B260, 1-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/°
3	80.0	11	10
4	105	11	13
5	130	11	14
7	135	11	15
8	120	11	15
10	95.0	11	15

g720-B260, 2-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/°
9	210	13	16
12	260	13	18
15	230	13	18
16	260	13	18
20	260	13	18
25	230	13	18
32	260	13	18
40	230	13	18
64	120	13	16

g720-B260, 3-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/°
60	260	15	19
80	260	15	19
100	260	15	19
120	230	15	18
160	260	15	19

Radial forces and axial forces

Gearbox			g720-B260	g720-B260	g720-B260
Number of stages	z		1	2	3
Bearing service life 20000 h					
Speed		rpm	100	100	100
Radial force	F_{rad}	rated	2950	2950	2950
Axial force	F_{ax}	rated	2500	2500	2500
Bearing service life 30000 h					
Speed		rpm	100	100	100
Radial force	F_{rad}	rated	2400	2400	2400
Axial force	F_{ax}	rated	2100	2100	2100
Max. radial force	$F_{\text{rad, max}}$	rated	4000	4000	4000
Max. axial force	$F_{\text{ax, max}}$	rated	3800	3800	3800

Technical data

Bevel gearbox g720-B
Selection tables



Selection tables

Inverter power supply 400 V, self-ventilated motors

0.8 kW

Inverter operation							Geared motor		Number of stages	Mass
M ₂	n ₂	c	M _{2, max}	n _{2, th}	J	i	g720-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
17.0	395	5.1	95.0	198	4.223	10	B260	10I40-	1	19
37.0	158	5.0	230	79.0	4.407	25	B260	10I40-	2	21
49.0	123	4.4	260	62.0	4.261	32	B260	10I40-	2	21
69.0	98.8	3.2	230	49.0	4.258	40	B260	10I40-	2	21
102	65.8	2.5	260	33.0	5.081	60	B260	10I40-	3	23
108	61.7	1.1	120	31.0	4.255	64	B260	10I40-	2	21
139	49.4	1.9	260	25.0	4.412	80	B260	10I40-	3	23
170	39.5	1.5	260	20.0	4.405	100	B260	10I40-	3	23
197	32.9	1.2	230	16.0	5.063	120	B260	10I40-	3	23
259	24.7	1.0	260	12.0	4.257	160	B260	10I40-	3	23

1.7 kW

Inverter operation							Geared motor		Number of stages	Mass
M ₂	n ₂	c	M _{2, max}	n _{2, th}	J	i	g720-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
10.0	1350	4.6	80.0	675	11.178	3	B260	13I41-	1	23
13.0	1013	5.0	105	506	10.594	4	B260	13I41-	1	23
16.0	810	5.4	130	405	10.386	5	B260	13I41-	1	23
23.0	579	5.1	135	289	10.211	7	B260	13I41-	1	23
28.0	506	4.0	120	253	10.177	8	B260	13I41-	1	23
28.0	450	4.5	210	225	11.076	9	B260	13I41-	2	25
32.0	338	5.8	260	169	11.010	12	B260	13I41-	2	25
38.0	405	2.5	95.0	203	10.123	10	B260	13I41-	1	23
48.0	270	4.1	230	135	10.988	15	B260	13I41-	2	25
50.0	253	4.3	260	127	10.489	16	B260	13I41-	2	25
67.0	203	3.5	260	101	10.315	20	B260	13I41-	2	25
91.0	162	2.5	230	81.0	10.307	25	B260	13I41-	2	25
118	127	2.2	260	63.0	10.161	32	B260	13I41-	2	25
146	101	1.6	230	51.0	10.158	40	B260	13I41-	2	25
211	67.5	1.2	260	34.0	10.981	60	B260	13I41-	3	27



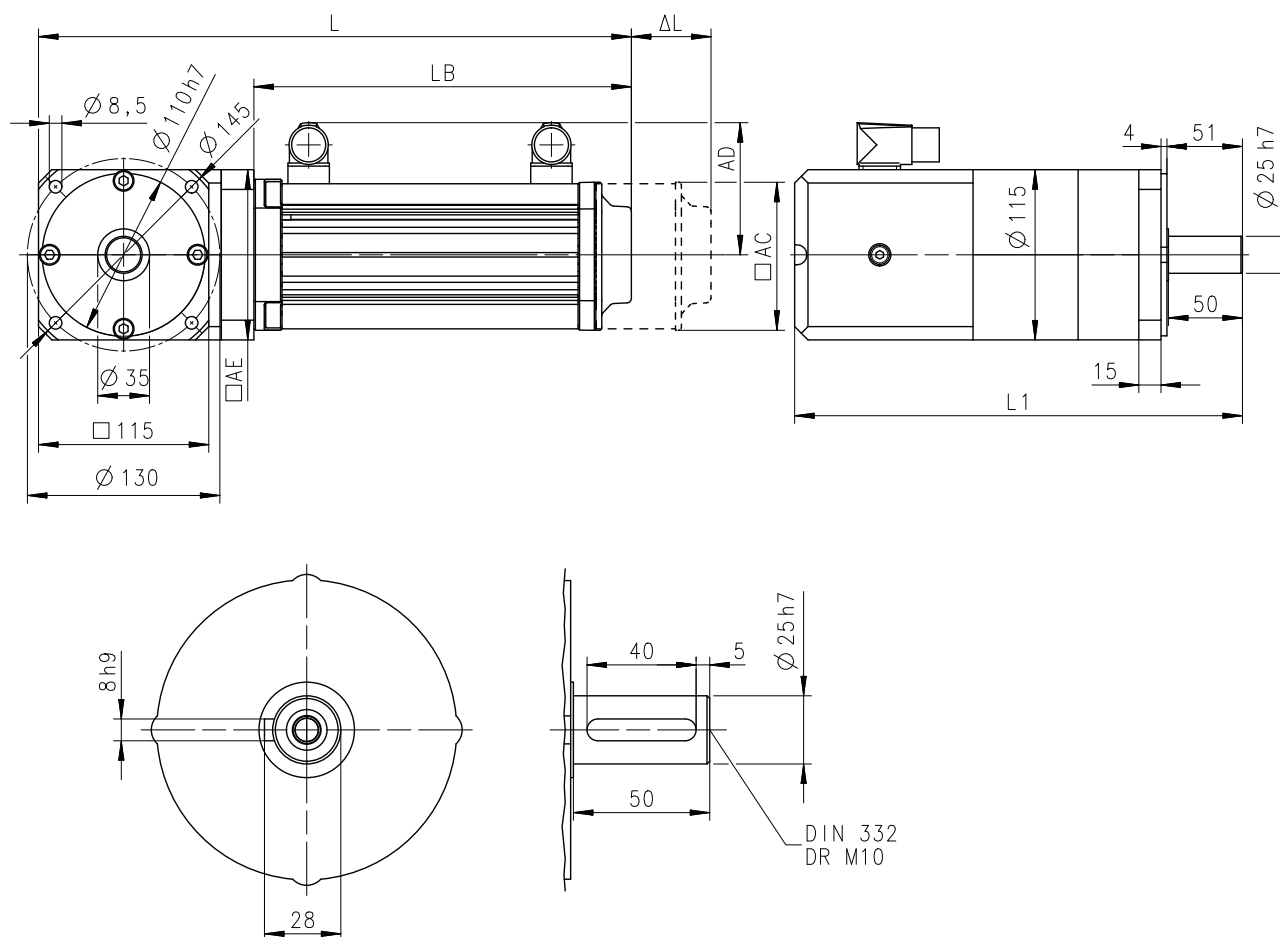
Technical data

Bevel gearbox g720-B
Basic dimensions

Basic dimensions

g720-B260 with MCA10

Gearbox design: Solid shaft, without foot with centering, 1-stage



8800877-00

Motor			MCA 10
			I40-
Total length	L	mm	407.5
Gearbox length	L1	mm	274.5
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	115

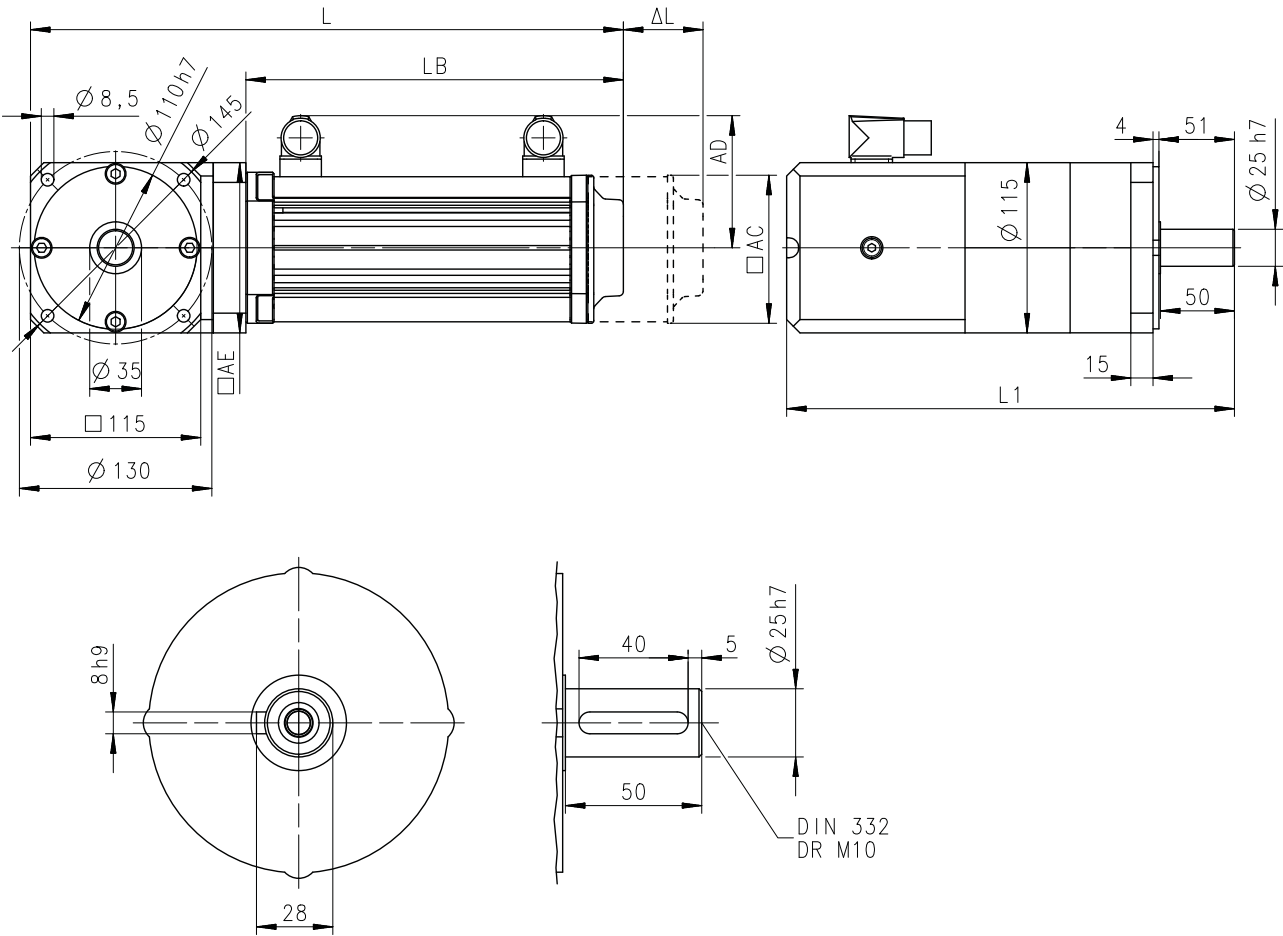
Technical data

Bevel gearbox g720-B
Basic dimensions



g720-B260 with MCA10

Gearbox design: Solid shaft, without foot with centering, 2-stage

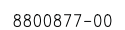


8800877-00

Motor			MCA 10
			I40-
Total length	L	mm	407.5
Gearbox length	L1	mm	302.5
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	115



Gearbox design: Solid shaft, without foot with centering, 3-stage

41

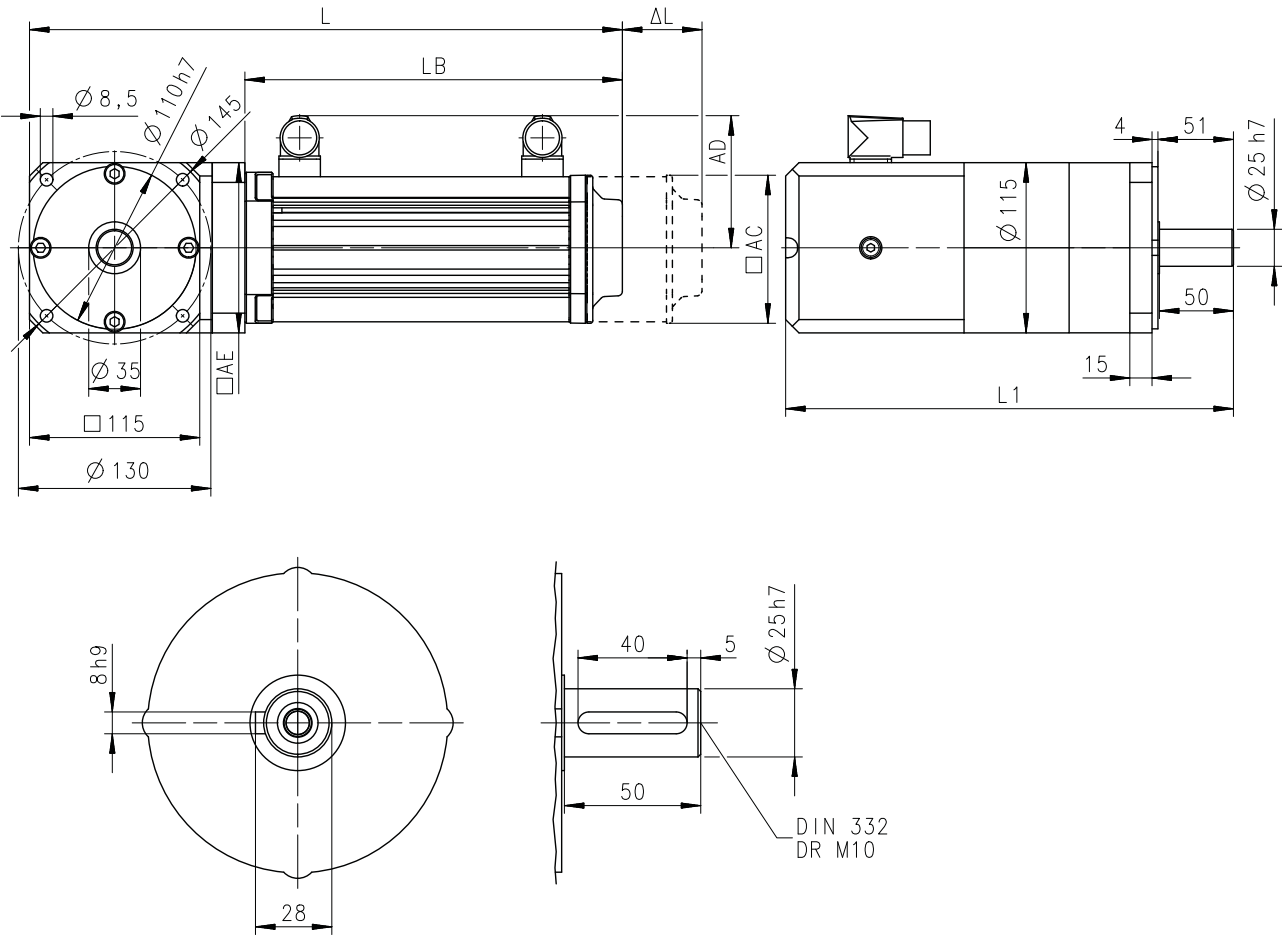
Technical data

Bevel gearbox g720-B
Basic dimensions



g720-B260 with MCA13

Gearbox design: Solid shaft, without foot with centering, 1-stage

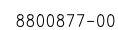


8800877-00

Motor			MCA 13
			I41-
Total length	L	mm	416.5
Gearbox length	L1	mm	274.5
Motor length	LB	mm	271
Motor diameter	AC	mm	130
Motor/connection distance	AD	mm	102
Gearbox diameter	AE	mm	115



Gearbox design: Solid shaft, without foot with centering, 2-stage

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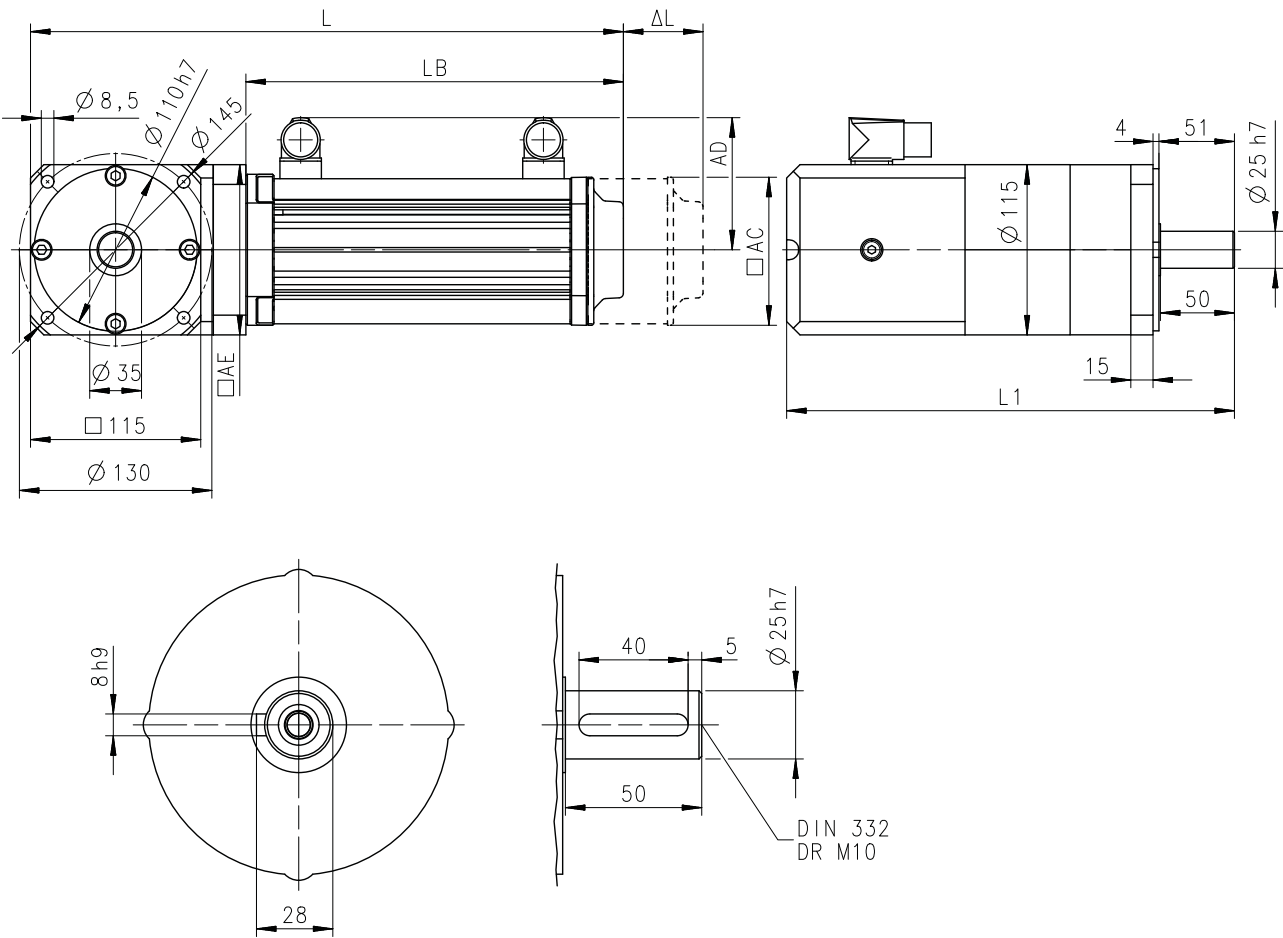
Technical data

Bevel gearbox g720-B
Basic dimensions



g720-B260 with MCA13

Gearbox design: Solid shaft, without foot with centering, 3-stage



8800877-00

Motor			MCA 13
			I41-
Total length	L	mm	416.5
Gearbox length	L1	mm	330
Motor length	LB	mm	271
Motor diameter	AC	mm	130
Motor/connection distance	AD	mm	102
Gearbox diameter	AE	mm	115



Technical data

Bevel gearbox g730-B
The modular system

Bevel gearbox g730-B

The modular system

g730-B bevel planetary gearbox with MCA asynchronous servo motor

Gearboxes		g730-B195
Min. motor assignment		MCA10
Max. motor assignment		MCA13
Technical data		
Max. output torque	Nm	195
Min. drive torque	Nm	0.8
Max. drive torque	Nm	6.3
Mounting position		Any
Color		Primed Painted in RAL colors
Surface and corrosion protection		OKS-G Different types of OKS
Output shaft		
Solid shaft with featherkey	mm	32 x 58
Smooth solid shaft	mm	32 x 58
Shaft material		Steel
Shaft sealing ring material		NBR
Gearbox design		Without foot with centering
Gearbox stages		1/2
Output flange	mm	120
Lubricant		Standard Food-compatible
Cooling		Self-ventilated Forced-ventilated
Motor connection		ICN connector Terminal box
Holding brake		Without Permanent magnet brake
Feedback		
Without functional safety		Resolver Absolute value encoder Incremental encoder
With functional safety		Resolver Incremental encoder
Temperature monitoring		PT1000 temperature sensor

Technical data

Bevel gearbox g730-B
Data overview



Data overview

g730-B195, 1-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/'
3	80.0	11	13
4	105	11	20
5	130	11	25
7	135	11	28
8	120	11	28
10	95.0	11	26

g730-B195, 2-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/'
9	157	13	31
12	195	13	37
15	172	13	36
16	195	13	38
20	195	13	39
25	172	13	37
32	195	13	38
40	172	13	36
64	120	13	28

Radial forces and axial forces

Gearbox			g730-B195	g730-B195
Number of stages	z		1	2
Bearing service life 20000 h				
Speed		rpm	100	100
Radial force	F_{rad}	rated	2500	2500
Axial force	F_{ax}	rated	4000	4000
Bearing service life 30000 h				
Speed		rpm	100	100
Radial force	F_{rad}	rated	2150	2150
Axial force	F_{ax}	rated	3000	3000
Max. radial force	$F_{\text{rad, max}}$	rated	4000	4000
Max. axial force	$F_{\text{ax, max}}$	rated	5900	5900



Technical data

Bevel gearbox g730-B
Selection tables

Selection tables

Inverter power supply 400 V, self-ventilated motors

0.8 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g730-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
17.0	395	5.1	95.0	198	4.261	10	B195	10I40-	1	20
29.0	198	5.2	195	99.0	4.423	20	B195	10I40-	2	22
41.0	158	3.8	172	79.0	4.412	25	B195	10I40-	2	22
54.0	123	3.4	195	62.0	4.264	32	B195	10I40-	2	22
72.0	98.8	2.4	172	49.0	4.260	40	B195	10I40-	2	22
108	61.7	1.1	120	31.0	4.256	64	B195	10I40-	2	22

1.7 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g730-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
10.0	1350	4.6	80.0	675	11.548	3	B195	13I41-	1	24
13.0	1013	5.0	105	506	10.792	4	B195	13I41-	1	24
16.0	810	5.4	130	405	10.509	5	B195	13I41-	1	24
23.0	579	5.1	135	289	10.289	7	B195	13I41-	1	24
28.0	506	4.0	120	253	10.236	8	B195	13I41-	1	24
30.0	450	3.4	157	225	11.118	9	B195	13I41-	2	26
37.0	338	4.3	195	169	11.033	12	B195	13I41-	2	26
38.0	405	2.5	95.0	203	10.161	10	B195	13I41-	1	24
52.0	270	3.1	172	135	11.002	15	B195	13I41-	2	26
54.0	253	3.3	195	127	10.501	16	B195	13I41-	2	26
72.0	203	2.6	195	101	10.323	20	B195	13I41-	2	26
91.0	162	1.9	172	81.0	10.312	25	B195	13I41-	2	26
116	127	1.7	195	63.0	10.164	32	B195	13I41-	2	26
144	101	1.2	172	51.0	10.160	40	B195	13I41-	2	26

Technical data

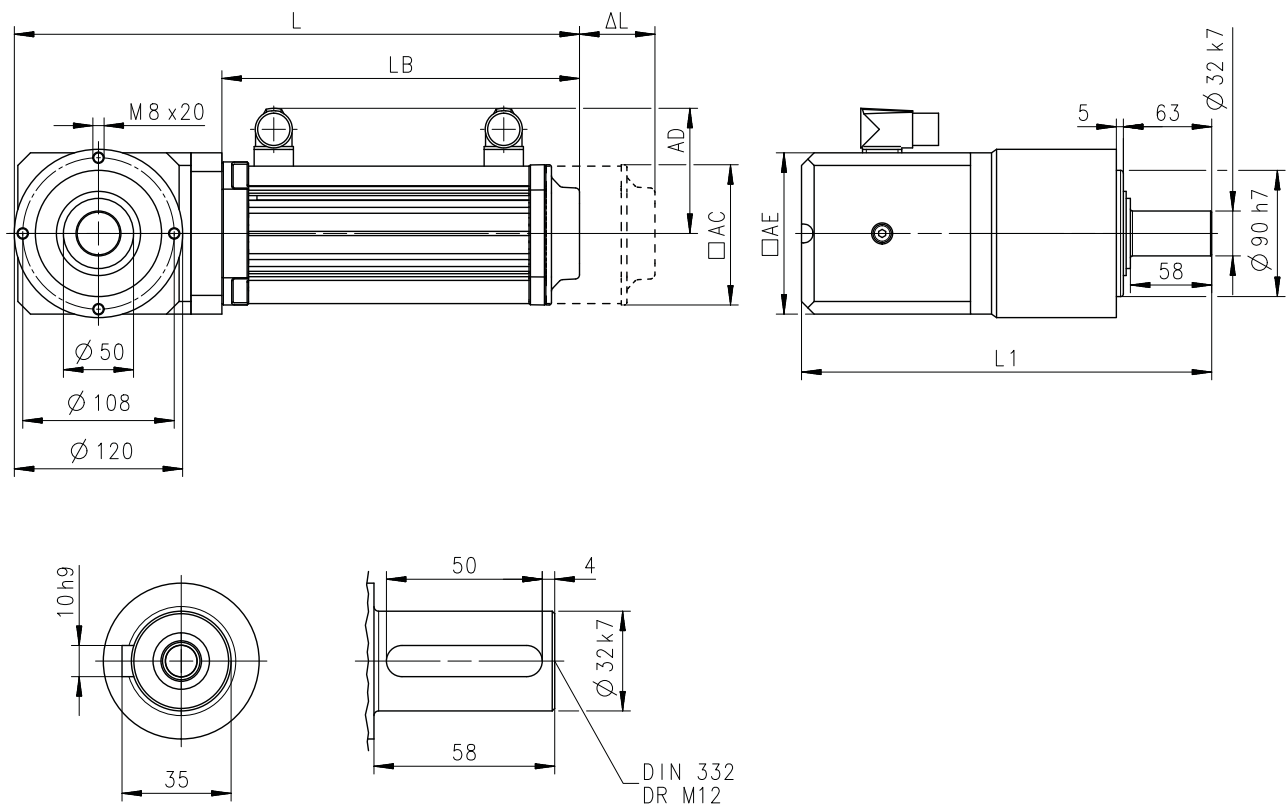
Bevel gearbox g730-B
Basic dimensions



Basic dimensions

g730-B195 with MCA10

Gearbox design: Solid shaft, without foot with centering, 1-stage



8800878-00

Motor			MCA 10
			I40-
Total length	L	mm	407.5
Gearbox length	L1	mm	265
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	115

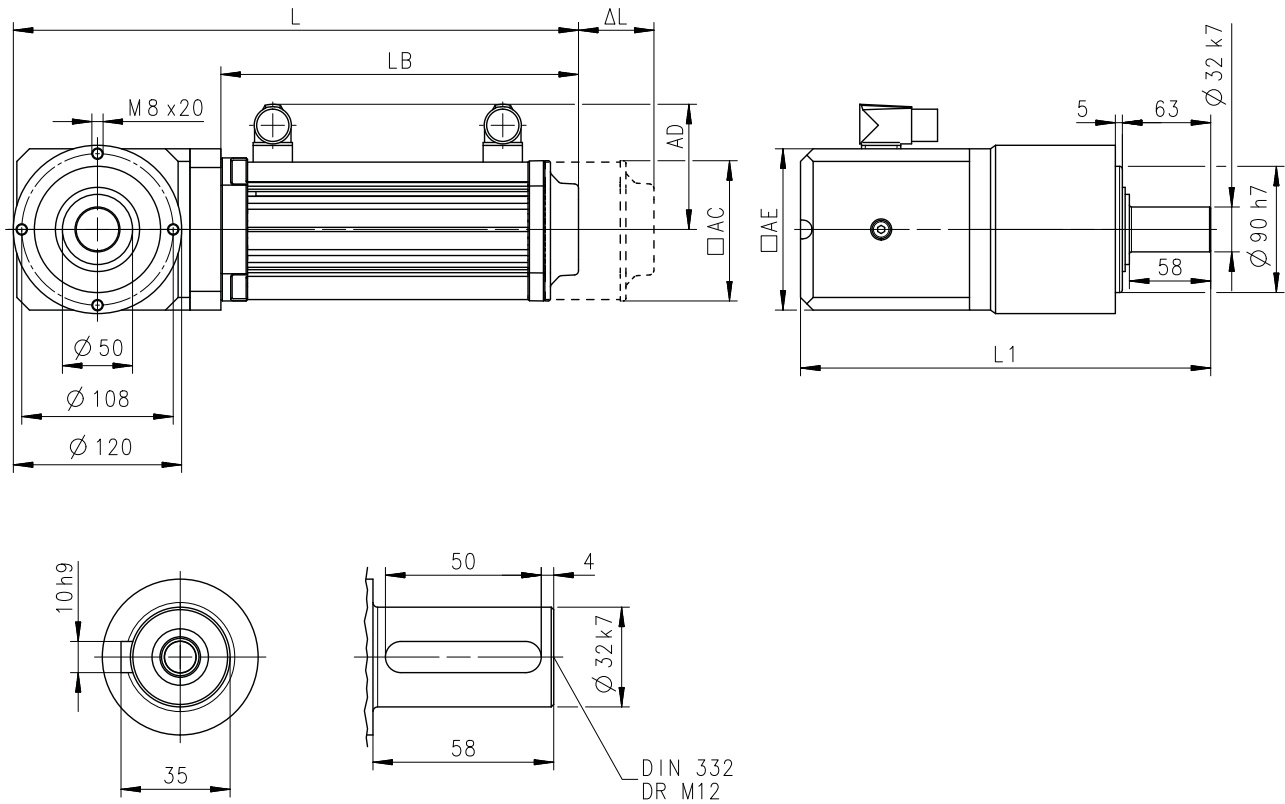


Technical data

Bevel gearbox g730-B
Basic dimensions

g730-B195 with MCA10

Gearbox design: Solid shaft, without foot with centering, 2-stage



8800878-00

Motor			MCA 10
			I40-
Total length	L	mm	407.5
Gearbox length	L1	mm	292.5
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	115

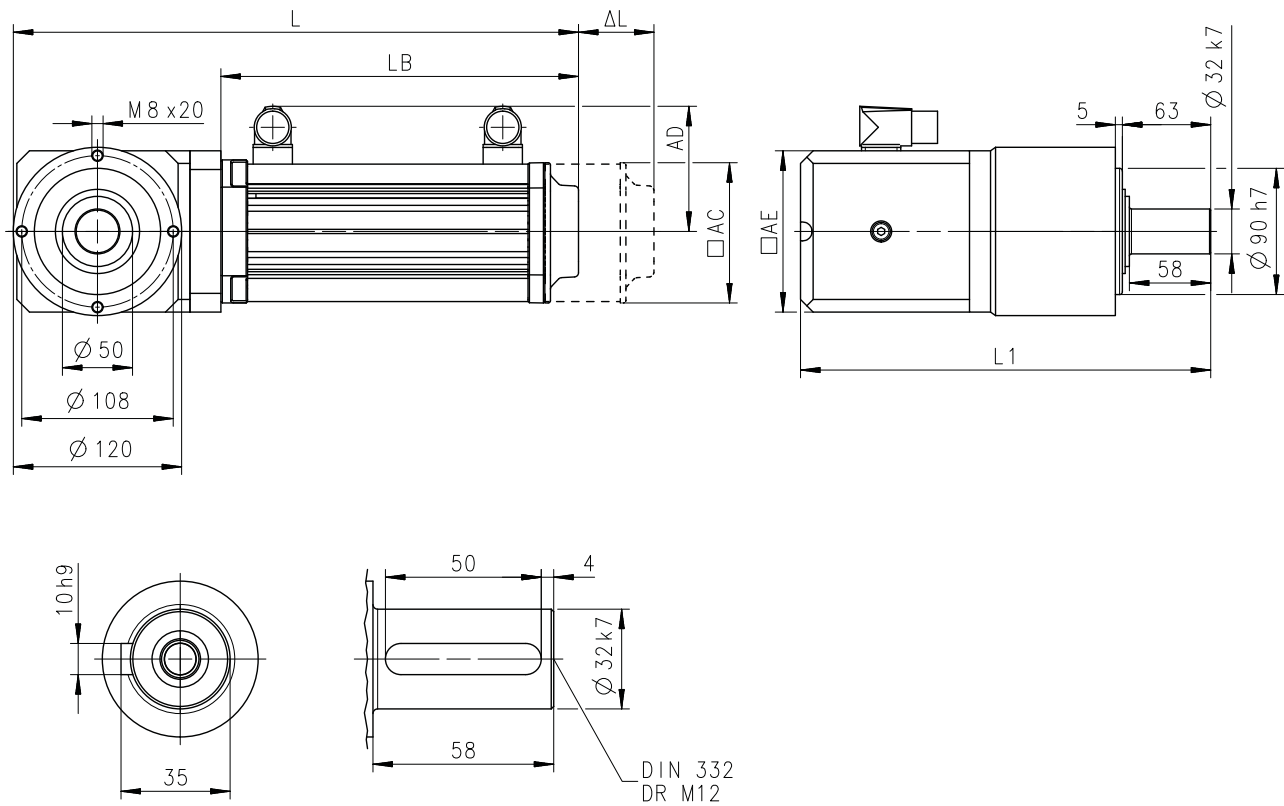
Technical data

Bevel gearbox g730-B
Basic dimensions



g730-B195 with MCA13

Gearbox design: Solid shaft, without foot with centering, 1-stage



8800878-00

Motor			MCA 13
			I41-
Total length	L	mm	416.5
Gearbox length	L1	mm	265
Motor length	LB	mm	271
Motor diameter	AC	mm	130
Motor/connection distance	AD	mm	102
Gearbox diameter	AE	mm	115

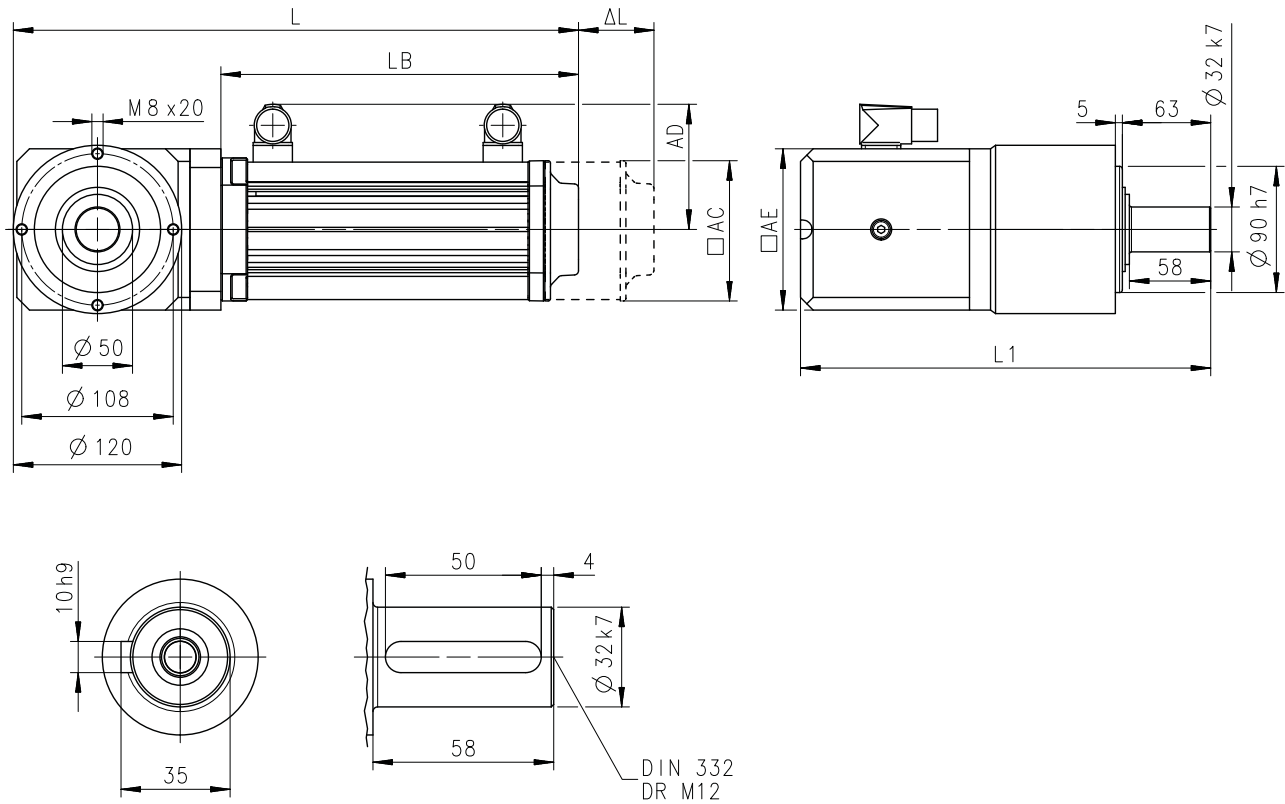


Technical data

Bevel gearbox g730-B
Basic dimensions

g730-B195 with MCA13

Gearbox design: Solid shaft, without foot with centering, 2-stage



8800878-00

Motor			MCA 13
			I41-
Total length	L	mm	416.5
Gearbox length	L1	mm	292.5
Motor length	LB	mm	271
Motor diameter	AC	mm	130
Motor/connection distance	AD	mm	102
Gearbox diameter	AE	mm	115

Technical data

Bevel gearbox g780-B
The modular system



Bevel gearbox g780-B

The modular system

g780-B bevel planetary gearbox with MCA asynchronous servo motor

Gearboxes		g780-B260
Min. motor assignment		MCA10
Max. motor assignment		MCA13
Technical data		
Max. output torque	Nm	260
Min. drive torque	Nm	0.8
Max. drive torque	Nm	6.3
Mounting position		Any
Color		Primed Painted in RAL colors
Surface and corrosion protection		OKS-G Different types of OKS
Output shaft		
Solid shaft with featherkey	mm	25 x 50
Smooth solid shaft	mm	25 x 50
Shaft material		Steel
Shaft sealing ring material		NBR
Gearbox design		Without foot with centering
Gearbox stages		1/2
Output flange	mm	120
Lubricant		Synthetic oil Food-compatible oil Low temperature compatible oil
Cooling		Self-ventilated Forced-ventilated
Motor connection		ICN connector Terminal box
Holding brake		Without Permanent magnet brake
Feedback		
Without functional safety		Resolver Absolute value encoder Incremental encoder
With functional safety		Resolver Incremental encoder
Temperature monitoring		PT1000 temperature sensor



Technical data

Bevel gearbox g780-B
Data overview

Data overview

g780-B260, 1-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/°
3	80.0	11	16
4	105	11	26
5	130	11	34
7	135	11	40
8	120	11	41
10	95.0	11	36

g780-B260, 2-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/°
9	210	13	47
12	260	13	65
15	230	13	62
16	260	13	68
20	260	13	69
25	230	13	63
32	260	13	67
40	230	13	61
64	120	13	42

Radial forces and axial forces

Gearbox			g780-B260	g780-B260
Number of stages	z		1	2
Bearing service life 20000 h				
Speed		rpm	100	100
Radial force	F_{rad}	rated	2400	2400
Axial force	F_{ax}	rated	3300	3300
Bearing service life 30000 h				
Speed		rpm	100	100
Radial force	F_{rad}	rated	2100	2100
Axial force	F_{ax}	rated	3300	3300
Max. radial force	$F_{\text{rad, max}}$	rated	3800	3800
Max. axial force	$F_{\text{ax, max}}$	rated	5200	5200

Technical data

Bevel gearbox g780-B
Selection tables



Selection tables

Inverter power supply 400 V, self-ventilated motors

0.8 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g780-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
17.0	395	5.1	95.0	198	4.326	10	B260	10I40-	1	19
36.0	158	5.1	230	79.0	4.422	25	B260	10I40-	2	21
49.0	123	4.5	260	62.0	4.270	32	B260	10I40-	2	21
69.0	98.8	3.2	230	49.0	4.264	40	B260	10I40-	2	21
106	61.7	1.1	120	31.0	4.257	64	B260	10I40-	2	21

1.7 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g780-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
10.0	1350	4.6	80.0	675	12.214	3	B260	13I41-	1	23
13.0	1013	5.1	105	506	11.169	4	B260	13I41-	1	23
16.0	810	5.5	130	405	10.758	5	B260	13I41-	1	23
23.0	579	5.1	135	289	10.401	7	B260	13I41-	1	23
28.0	506	4.0	120	253	10.323	8	B260	13I41-	1	23
28.0	450	4.5	210	225	11.192	9	B260	13I41-	2	25
32.0	338	5.8	260	169	11.074	12	B260	13I41-	2	25
37.0	405	2.6	95.0	203	10.226	10	B260	13I41-	1	23
47.0	270	4.1	230	135	11.030	15	B260	13I41-	2	25
50.0	253	4.4	260	127	10.525	16	B260	13I41-	2	25
67.0	203	3.5	260	101	10.338	20	B260	13I41-	2	25
90.0	162	2.5	230	81.0	10.322	25	B260	13I41-	2	25
116	127	2.2	260	63.0	10.170	32	B260	13I41-	2	25
144	101	1.6	230	51.0	10.164	40	B260	13I41-	2	25



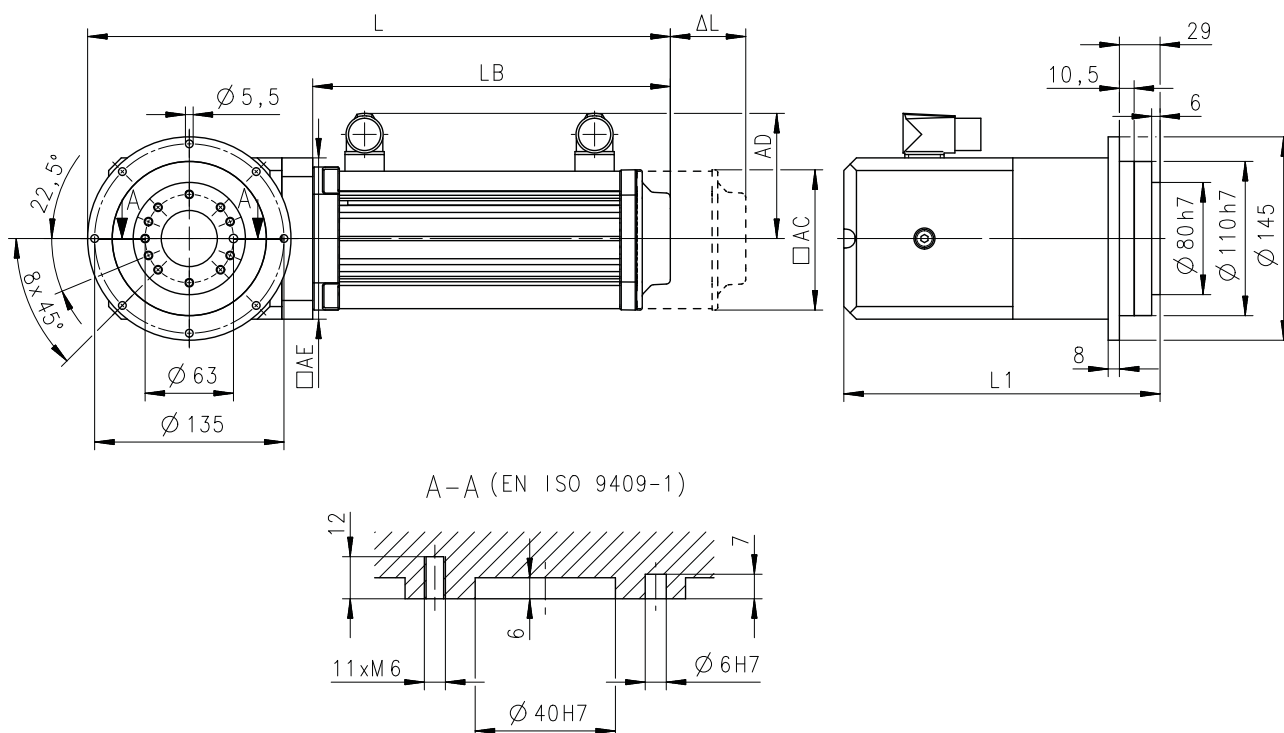
Technical data

Bevel gearbox g780-B
Basic dimensions

Basic dimensions

g780-B260 with MCA10

Gearbox design: Flange output shaft, without foot with centering, 1-stage



8800879-00

Motor			MCA 10
			I40-
Total length	L	mm	407.5
Gearbox length	L1	mm	198.5
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	115

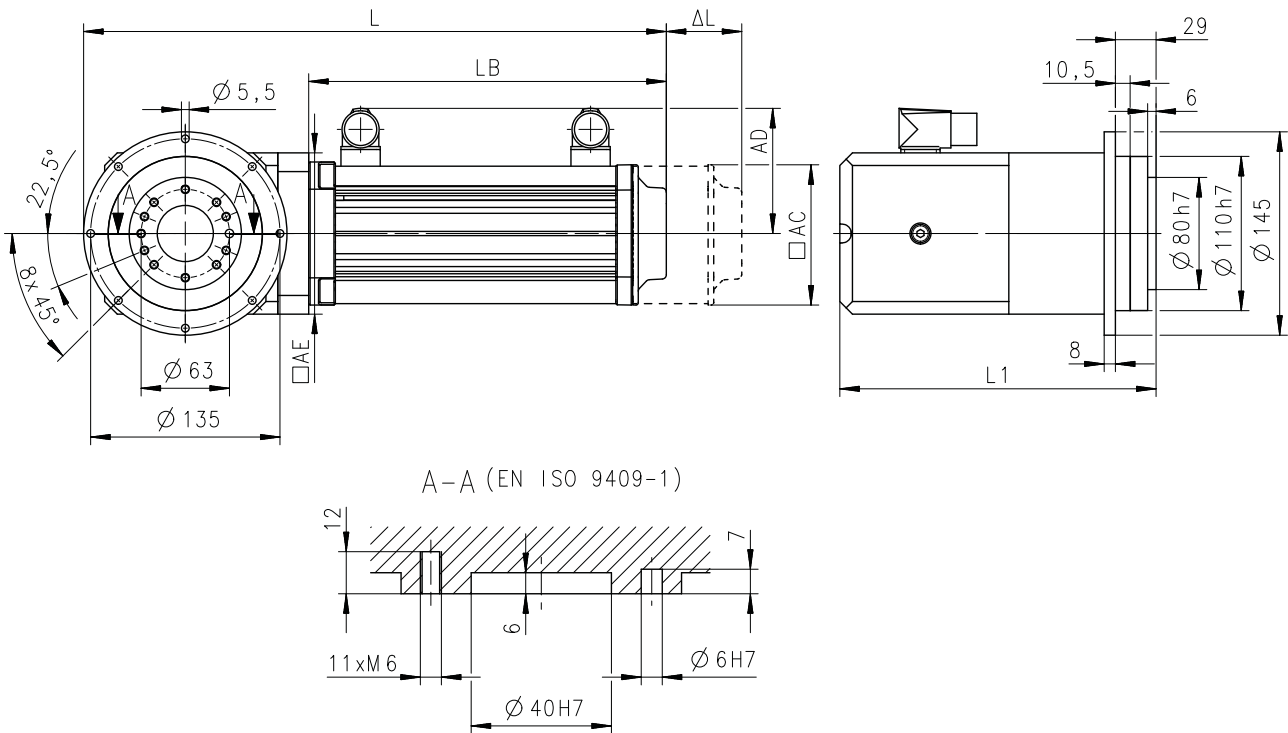
Technical data

Bevel gearbox g780-B
Basic dimensions



g780-B260 with MCA10

Gearbox design: Flange output shaft, without foot with centering, 2-stage

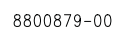


8800879-00

Motor			MCA 10
			I40-
Total length	L	mm	407.5
Gearbox length	L1	mm	225.5
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	115



Gearbox design: Flange output shaft, without foot with centering, 2-stage

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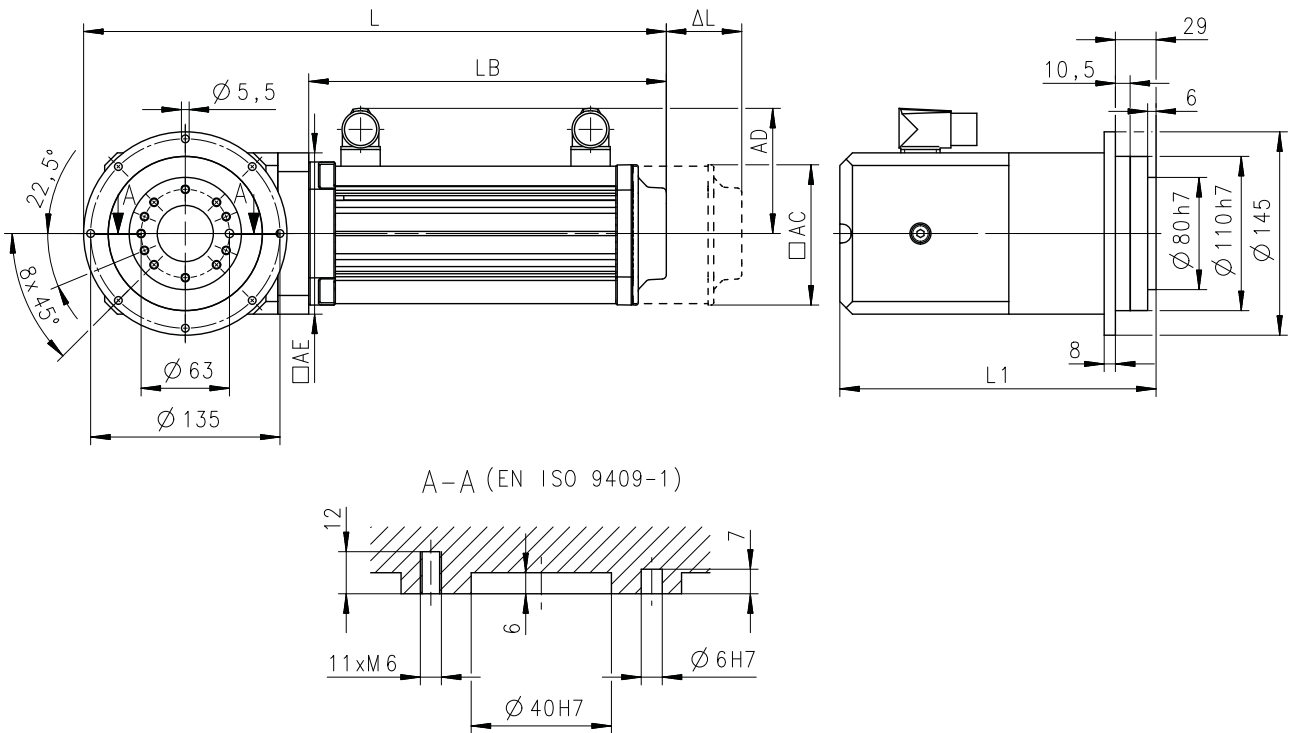
Technical data

Bevel gearbox g780-B
Basic dimensions



g780-B260 with MCA13

Gearbox design: Flange output shaft, without foot with centering, 1-stage



8800879-00

Motor			MCA 13
			I41-
Total length	L	mm	416.5
Gearbox length	L1	mm	225.5
Motor length	LB	mm	271
Motor diameter	AC	mm	130
Motor/connection distance	AD	mm	102
Gearbox diameter	AE	mm	115



Technical data

Bevel gearbox g850-B
The modular system

Bevel gearbox g850-B

The modular system

g850-B bevel planetary gearbox with MCA asynchronous servo motor

Gearboxes		g850-B77	g850-B150	g850-B300	g850-B800
Min. motor assignment		MCA10	MCA10	MCA10	MCA13
Max. motor assignment		MCA10	MCA13	MCA17	MCA19
Technical data					
Max. output torque	Nm	77	150	300	800
Min. drive torque	Nm	0.8	0.8	0.8	6.3
Max. drive torque	Nm	0.8	6.3	21.5	36
Mounting position		Any			
Color		Primed Painted in RAL colors			
Surface and corrosion protection		OKS-G Different types of OKS			
Output shaft					
Solid shaft with featherkey	mm	16 x 28	22 x 36	32 x 58	40 x 80
Smooth solid shaft	mm	16 x 28	22 x 36	32 x 58	40 x 80
Shaft material		Steel			
Shaft sealing ring material		NBR			
Gearbox design		Without foot with centering			
Gearbox stages		1/2	1/2	1/2	1/2
Output flange	mm	70	90	115	142
Lubricant		Standard Food-compatible			
Cooling		Self-ventilated Forced-ventilated			
Motor connection		ICN connector Terminal box			
Holding brake		Without Permanent magnet brake			
Feedback					
Without functional safety		Resolver Absolute value encoder Incremental encoder			
With functional safety		Resolver Incremental encoder			
Temperature monitoring		PT1000 temperature sensor			

Technical data

Bevel gearbox g850-B
Data overview



Data overview

g850-B77, 1-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/°
4	45.0	5	2
5	42.0	5	2
7	28.0	5	2
8	27.0	5	2
10	22.0	5	2

g850-B77, 2-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/°
16	77.0	5	3
20	77.0	5	3
25	65.0	5	3
28	60.0	5	3
32	77.0	5	3
35	65.0	5	3

g850-B150, 1-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/°
4	90.0	5	6
5	75.0	5	6
7	51.0	5	6
8	50.0	5	5
10	40.0	5	5

g850-B150, 2-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/°
16	150	5	8
20	150	5	8
25	140	5	7
28	112	5	7
32	108	5	7
35	140	5	7
40	135	5	7
50	110	5	6



Technical data

Bevel gearbox g850-B
Data overview

g850-B300, 1-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/°
4	160	5	14
5	140	5	13
7	91.0	5	12
8	90.0	5	11
10	75.0	5	10

g850-B300, 2-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/°
16	300	5	17
20	300	5	17
25	260	5	16
28	204	5	15
32	200	5	15
35	255	5	15
40	250	5	14
50	200	5	14
64	150	5	14

g850-B800, 1-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/°
4	320	5	34
5	280	5	33
7	189	5	30
8	180	5	28
10	160	5	26

g850-B800, 2-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/°
16	640	5	43
20	800	5	43
25	700	5	41
28	364	5	39
32	360	5	38
35	455	5	37
40	450	5	36
50	375	5	36
64	450	5	35

Technical data

Bevel gearbox g850-B
Radial forces and axial forces



Radial forces and axial forces

Gearbox			g850-B77	g850-B77	g850-B150	g850-B150	g850-B300	g850-B300	g850-B800	g850-B800
Number of stages	z		1	2	1	2	1	2	1	2
Bearing service life 20000 h										
Speed		rpm	100	100	100	100	100	100	100	100
Radial force	F_{rad}	rated	3200	3200	5200	5500	6000	6000	12500	12500
Axial force	F_{ax}	rated	4300	4400	5900	6400	7000	8000	14500	15000
Bearing service life 30000 h										
Speed		rpm	100	100	100	100	100	100	100	100
Radial force	F_{rad}	rated	3200	3200	5200	4800	6000	5400	10900	11400
Axial force	F_{ax}	rated	3700	3900	5200	5700	6100	7000	12000	13200
Max. radial force	$F_{rad, max}$	rated	3200	3200	5200	5500	6000	6000	12500	12500
Max. axial force	$F_{ax, max}$	rated	4300	4400	5900	6400	7000	8000	14500	15000



Technical data

Bevel gearbox g850-B
Selection tables

Selection tables

Inverter power supply 400 V, self-ventilated motors

0.8 kW

Inverter operation							Geared motor		Number of stages	Mass
M ₂	n ₂	c	M _{2, max}	n _{2, th}	J	i	g850-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
6.9	988	4.5	90.0	477	3.787	4	B150	10I40-	1	11
7.3	988	3.1	45.0	469	3.058	4	B77	10I40-	1	9.4
9.0	790	3.6	75.0	395	3.620	5	B150	10I40-	1	11
9.4	790	2.6	42.0	395	2.995	5	B77	10I40-	1	9.4
12.0	564	2.2	28.0	282	2.932	7	B77	10I40-	1	9.4
13.0	564	2.8	51.0	282	3.487	7	B150	10I40-	1	11
14.0	494	1.9	27.0	247	2.918	8	B77	10I40-	1	9.4
15.0	494	2.4	50.0	247	3.452	8	B150	10I40-	1	11
17.0	395	1.1	22.0	198	2.900	10	B77	10I40-	1	9.4
18.0	395	1.9	40.0	198	3.413	10	B150	10I40-	1	11
24.0	247	4.5	300	123	3.819	16	B300	10I40-	2	16
27.0	247	3.2	150	121	3.049	16	B150	10I40-	2	12
29.0	247	1.9	77.0	109	3.042	16	B77	10I40-	2	10
30.0	198	4.5	300	99.0	3.641	20	B300	10I40-	2	16
34.0	198	3.2	150	99.0	2.990	20	B150	10I40-	2	12
36.0	198	1.6	77.0	92.0	2.989	20	B77	10I40-	2	10
41.0	158	3.7	260	79.0	3.633	25	B300	10I40-	2	16
44.0	158	1.4	65.0	79.0	2.988	25	B77	10I40-	2	10
45.0	158	2.7	140	79.0	2.987	25	B150	10I40-	2	12
47.0	141	1.3	60.0	71.0	2.928	28	B77	10I40-	2	10
49.0	141	2.2	112	71.0	2.929	28	B150	10I40-	2	12
49.0	141	2.8	204	71.0	3.497	28	B300	10I40-	2	16
54.0	123	1.2	77.0	62.0	2.915	32	B77	10I40-	2	10
56.0	123	1.9	108	62.0	2.915	32	B150	10I40-	2	12
58.0	123	2.4	200	62.0	3.460	32	B300	10I40-	2	16
59.0	113	1.1	65.0	56.0	2.928	35	B77	10I40-	2	10
61.0	113	2.2	140	56.0	2.928	35	B150	10I40-	2	12
62.0	113	2.8	255	56.0	3.493	35	B300	10I40-	2	16
67.0	98.8	3.5	250	49.0	3.457	40	B300	10I40-	2	16
69.0	98.8	2.0	135	49.0	2.914	40	B150	10I40-	2	12
85.0	79.0	1.3	110	40.0	2.898	50	B150	10I40-	2	12
87.0	79.0	2.3	200	40.0	3.416	50	B300	10I40-	2	16
109	61.7	1.4	150	31.0	3.453	64	B300	10I40-	2	16

Technical data

Bevel gearbox g850-B
Selection tables



1.4 kW

Inverter operation						i	Geared motor		Number of stages	Mass
M ₂	n ₂	c	M _{2, max}	n _{2, th}	J		g850-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
24.0	500	3.6	160	250	25.075	4	B300	14L20-	1	44
31.0	400	2.9	140	200	24.566	5	B300	14L20-	1	44
42.0	286	2.2	91.0	143	24.151	7	B300	14L20-	1	44
48.0	250	1.9	90.0	125	24.079	8	B300	14L20-	1	44
58.0	200	1.3	75.0	100	23.967	10	B300	14L20-	1	44
88.0	125	3.6	640	63.0	25.587	16	B800	14L20-	2	55
111	100	3.6	800	50.0	25.412	20	B800	14L20-	2	55
146	80.0	3.0	700	40.0	24.782	25	B800	14L20-	2	55
165	71.4	2.2	364	36.0	24.288	28	B800	14L20-	2	55
187	62.5	1.9	360	31.0	24.182	32	B800	14L20-	2	55
206	57.1	2.2	455	29.0	24.262	35	B800	14L20-	2	55
233	50.0	1.9	450	25.0	24.163	40	B800	14L20-	2	55
281	40.0	1.3	375	20.0	24.024	50	B800	14L20-	2	55
369	31.3	1.2	450	16.0	24.147	64	B800	14L20-	2	55

1.7 kW

Inverter operation						i	Geared motor		Number of stages	Mass
M ₂	n ₂	c	M _{2, max}	n _{2, th}	J		g850-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
15.0	1013	2.2	90.0	406	9.687	4	B150	13I41-	1	15
19.0	810	1.8	75.0	353	9.520	5	B150	13I41-	1	15
25.0	579	1.4	51.0	289	9.387	7	B150	13I41-	1	15
29.0	506	1.2	50.0	253	9.352	8	B150	13I41-	1	15
34.0	405	2.2	75.0	147	13.067	10	B300	13I41-	1	21
59.0	253	2.3	300	103	9.719	16	B300	13I41-	2	20
74.0	203	2.3	300	95.0	9.541	20	B300	13I41-	2	20
93.0	162	1.8	260	81.0	9.533	25	B300	13I41-	2	20
102	145	1.4	204	70.0	9.397	28	B300	13I41-	2	20
115	127	1.2	200	61.0	9.360	32	B300	13I41-	2	20
126	116	1.4	255	57.0	9.393	35	B300	13I41-	2	20
144	101	1.7	250	51.0	9.357	40	B300	13I41-	2	20
174	81.0	1.2	200	41.0	9.316	50	B300	13I41-	2	20
220	63.3	2.0	450	27.0	13.247	64	B800	13I41-	2	32



Technical data

Bevel gearbox g850-B
Selection tables

2.3 kW

Inverter operation						i	Geared motor		Number of stages	Mass
M ₂	n ₂	c	M _{2, max}	n _{2, th}	J		g850-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
19.0	1025	3.6	160	314	25.075	4	B300	14L41-	1	44
25.0	820	2.9	140	256	24.566	5	B300	14L41-	1	44
34.0	586	2.3	91.0	201	24.151	7	B300	14L41-	1	44
38.0	513	1.9	90.0	175	24.079	8	B300	14L41-	1	44
46.0	410	1.6	75.0	144	23.967	10	B300	14L41-	1	44
71.0	256	3.6	640	69.0	25.587	16	B800	14L41-	2	55
89.0	205	3.6	800	60.0	25.412	20	B800	14L41-	2	55
118	164	3.0	700	48.0	24.782	25	B800	14L41-	2	55
133	146	2.3	364	49.0	24.288	28	B800	14L41-	2	55
150	128	1.9	360	42.0	24.182	32	B800	14L41-	2	55
166	117	2.3	455	39.0	24.262	35	B800	14L41-	2	55
188	103	2.4	450	35.0	24.163	40	B800	14L41-	2	55
227	82.0	1.7	375	30.0	24.024	50	B800	14L41-	2	55
297	64.1	1.5	450	26.0	24.147	64	B800	14L41-	2	55

2.6 kW

Inverter operation						i	Geared motor		Number of stages	Mass
M ₂	n ₂	c	M _{2, max}	n _{2, th}	J		g850-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
37.0	575	4.7	320	272	56.883	4	B800	17N23-	1	66
41.0	575	2.1	160	277	41.875	4	B300	17N23-	1	51
48.0	460	3.8	280	219	54.307	5	B800	17N23-	1	66
51.0	460	1.7	140	230	41.366	5	B300	17N23-	1	51
67.0	329	1.4	91.0	164	40.951	7	B300	17N23-	1	51
68.0	329	2.8	189	164	51.472	7	B800	17N23-	1	66
77.0	288	1.1	90.0	144	40.879	8	B300	17N23-	1	51
78.0	288	2.3	180	144	51.705	8	B800	17N23-	1	66
93.0	230	1.7	160	115	51.090	10	B800	17N23-	1	66
160	144	2.2	640	60.0	42.387	16	B800	17N23-	2	62
201	115	2.2	800	51.0	42.212	20	B800	17N23-	2	62
248	92.0	1.8	700	42.0	41.582	25	B800	17N23-	2	62
266	82.1	1.4	364	41.0	41.088	28	B800	17N23-	2	62
301	71.9	1.2	360	36.0	40.982	32	B800	17N23-	2	62
333	65.7	1.4	455	33.0	41.062	35	B800	17N23-	2	62
376	57.5	1.2	450	29.0	40.963	40	B800	17N23-	2	62

4 kW

Inverter operation						i	Geared motor		Number of stages	Mass
M ₂	n ₂	c	M _{2, max}	n _{2, th}	J		g850-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
60.0	585	3.1	320	253	92.883	4	B800	19S23-	1	95
77.0	468	2.5	280	204	90.307	5	B800	19S23-	1	95
103	334	1.8	189	165	87.472	7	B800	19S23-	1	95
117	293	1.5	180	144	87.705	8	B800	19S23-	1	95
140	234	1.1	160	117	87.090	10	B800	19S23-	1	95

Technical data

Bevel gearbox g850-B
Selection tables



4.1 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g850-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
36.0	1028	2.0	160	274	41.875	4	B300	17N41-	1	51
45.0	822	1.6	140	232	41.366	5	B300	17N41-	1	51
59.0	587	1.3	91.0	190	40.951	7	B300	17N41-	1	51
68.0	514	1.1	90.0	164	40.879	8	B300	17N41-	1	51
141	257	2.1	640	60.0	42.387	16	B800	17N41-	2	62
177	206	2.1	800	50.0	42.212	20	B800	17N41-	2	62
219	164	1.7	700	42.0	41.582	25	B800	17N41-	2	62
234	147	1.3	364	46.0	41.088	28	B800	17N41-	2	62
264	128	1.1	360	40.0	40.982	32	B800	17N41-	2	62
293	117	1.3	455	37.0	41.062	35	B800	17N41-	2	62
331	103	1.4	450	33.0	40.963	40	B800	17N41-	2	62

5.2 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g850-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
43.0	1038	3.5	320	259	92.883	4	B800	19S42-	1	95
56.0	830	2.8	280	209	90.307	5	B800	19S42-	1	95
76.0	593	2.3	189	168	87.472	7	B800	19S42-	1	95
86.0	519	1.9	180	147	87.705	8	B800	19S42-	1	95
103	415	1.6	160	125	87.090	10	B800	19S42-	1	95



Technical data

Bevel gearbox g850-B
Selection tables

Inverter power supply 400 V, forced ventilated motors

2.1 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g850-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
41.0	409	4.7	320	204	40.083	4	B800	14L16-	1	60
46.0	409	2.1	160	204	25.075	4	B300	14L16-	1	45
53.0	327	3.8	280	164	37.507	5	B800	14L16-	1	60
56.0	327	1.7	140	164	24.566	5	B300	14L16-	1	45
75.0	234	1.2	91.0	117	24.151	7	B300	14L16-	1	45
76.0	234	2.5	189	117	34.672	7	B800	14L16-	1	60
85.0	204	1.1	90.0	102	24.079	8	B300	14L16-	1	45
86.0	204	2.1	180	102	34.905	8	B800	14L16-	1	60
103	164	1.6	160	82.0	34.290	10	B800	14L16-	1	60
178	102	2.2	640	51.0	25.587	16	B800	14L16-	2	56
223	81.8	2.2	800	41.0	25.412	20	B800	14L16-	2	56
276	65.4	1.8	700	33.0	24.782	25	B800	14L16-	2	56
296	58.4	1.2	364	29.0	24.288	28	B800	14L16-	2	56
334	51.1	1.1	360	26.0	24.182	32	B800	14L16-	2	56
370	46.7	1.2	455	23.0	24.262	35	B800	14L16-	2	56
418	40.9	1.1	450	20.0	24.163	40	B800	14L16-	2	56

2.2 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g850-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
23.0	853	3.2	160	307	14.175	4	B300	13I34-	1	23
29.0	682	2.6	140	252	13.666	5	B300	13I34-	1	23
39.0	487	2.1	91.0	199	13.251	7	B300	13I34-	1	23
45.0	426	1.7	90.0	173	13.179	8	B300	13I34-	1	23
54.0	341	1.4	75.0	143	13.067	10	B300	13I34-	1	23
86.0	213	3.3	640	68.0	14.687	16	B800	13I34-	2	34
107	171	3.3	800	58.0	14.512	20	B800	13I34-	2	34
141	136	2.7	700	47.0	13.882	25	B800	13I34-	2	34
155	122	2.1	364	49.0	13.388	28	B800	13I34-	2	34
175	107	1.8	360	42.0	13.282	32	B800	13I34-	2	34
194	97.4	2.1	455	39.0	13.362	35	B800	13I34-	2	34
219	85.3	2.1	450	35.0	13.263	40	B800	13I34-	2	34
265	68.2	1.4	375	29.0	13.124	50	B800	13I34-	2	34
347	53.3	1.3	450	26.0	13.247	64	B800	13I34-	2	34

3.8 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g850-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
81.0	420	2.6	320	210	56.883	4	B800	17N17-	1	69
101	336	2.1	280	168	54.307	5	B800	17N17-	1	69
135	240	1.4	189	120	51.472	7	B800	17N17-	1	69
155	210	1.2	180	105	51.705	8	B800	17N17-	1	69

Technical data

Bevel gearbox g850-B
Selection tables



3.9 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g850-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
38.0	864	4.2	320	266	40.083	4	B800	14L35-	1	60
41.0	864	1.9	160	269	25.075	4	B300	14L35-	1	45
49.0	691	3.3	280	215	37.507	5	B800	14L35-	1	60
51.0	691	1.5	140	228	24.566	5	B300	14L35-	1	45
67.0	494	1.2	91.0	189	24.151	7	B300	14L35-	1	45
68.0	494	2.7	189	170	34.672	7	B800	14L35-	1	60
78.0	432	2.2	180	150	34.905	8	B800	14L35-	1	60
93.0	346	1.7	160	127	34.290	10	B800	14L35-	1	60
161	216	1.9	640	58.0	25.587	16	B800	14L35-	2	56
201	173	1.9	800	49.0	25.412	20	B800	14L35-	2	56
248	138	1.6	700	41.0	24.782	25	B800	14L35-	2	56
266	123	1.2	364	46.0	24.288	28	B800	14L35-	2	56
301	108	1.0	360	39.0	24.182	32	B800	14L35-	2	56
333	98.7	1.2	455	37.0	24.262	35	B800	14L35-	2	56
376	86.4	1.2	450	32.0	24.163	40	B800	14L35-	2	56

6.9 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g850-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
72.0	870	2.4	320	240	56.883	4	B800	17N35-	1	69
89.0	696	1.9	280	194	54.307	5	B800	17N35-	1	69
120	497	1.5	189	163	51.472	7	B800	17N35-	1	69
137	435	1.3	180	141	51.705	8	B800	17N35-	1	69



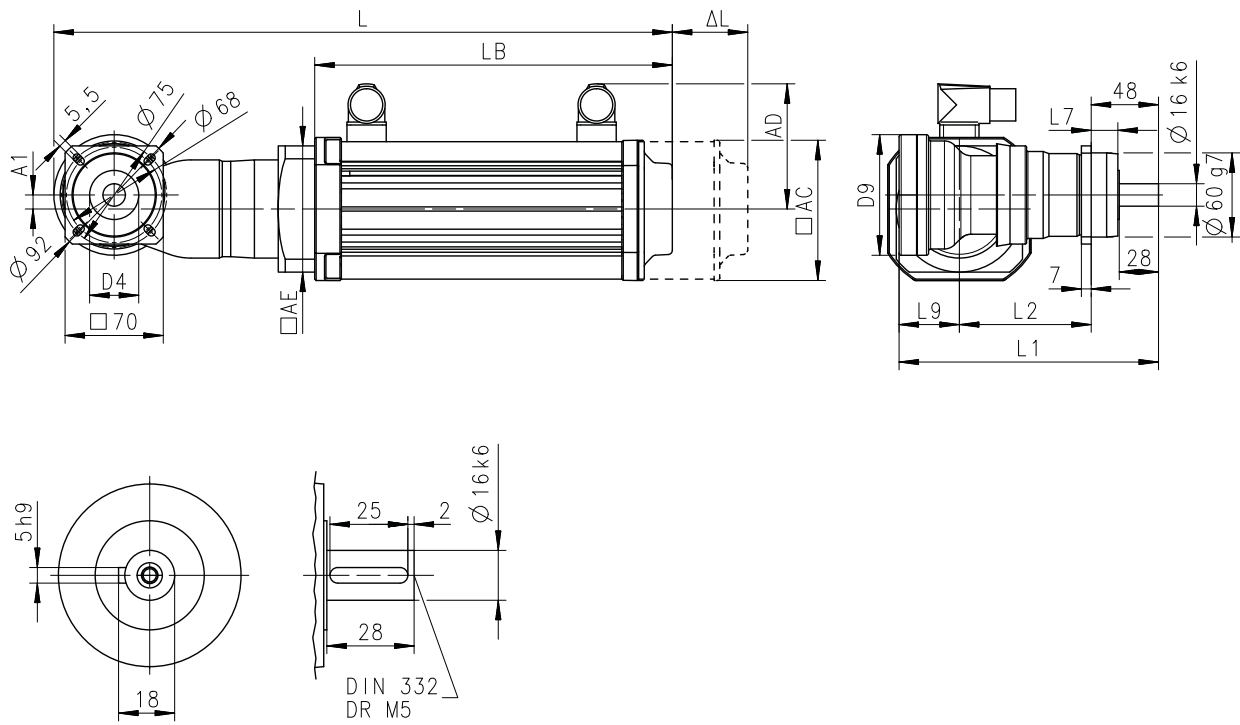
Technical data

Bevel gearbox g850-B
Basic dimensions

Basic dimensions

g850-B77 with MCA10

Gearbox design: Solid shaft, without foot with centering, 1-stage



8800926-00

Motor			MCA 10
			I40-
Total length	L	mm	448
Gearbox length	L1	mm	137.5
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	90

Bevel gearbox g850-B

Basic dimensions



Motor			MCA 10
			I40-
Total length	L	mm	448
Gearbox length	L1	mm	185
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	90

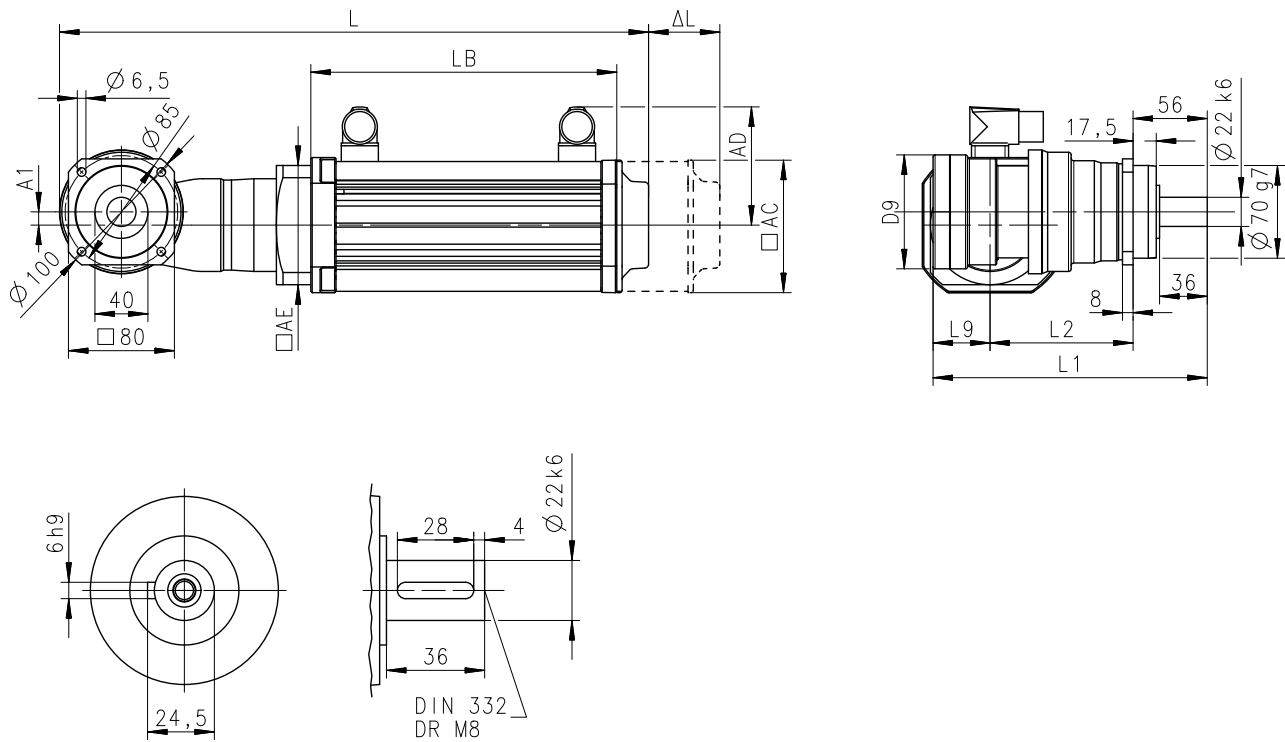


Technical data

Bevel gearbox g850-B
Basic dimensions

g850-B150 with MCA10

Gearbox design: Solid shaft, without foot with centering, 1-stage



8800928-00

Motor			MCA 10
			I40-
Total length	L	mm	465.5
Gearbox length	L1	mm	165
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	90

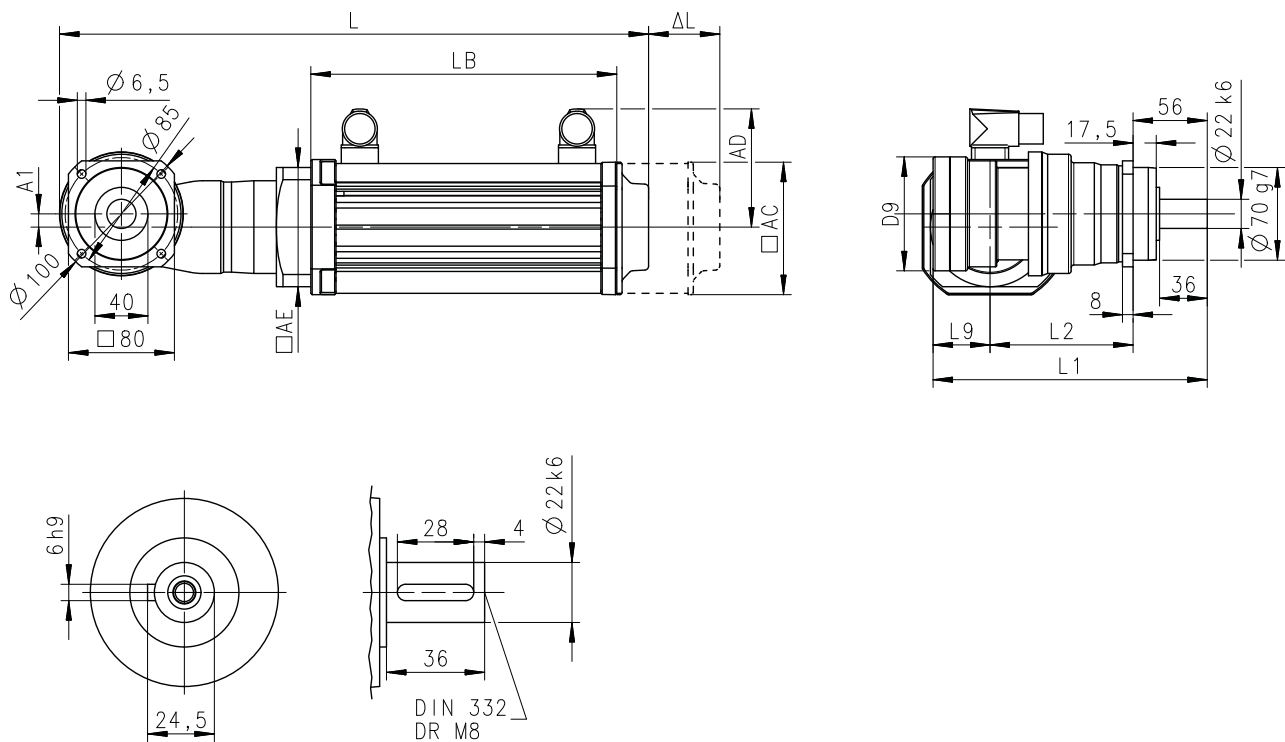
Technical data

Bevel gearbox g850-B
Basic dimensions



g850-B150 with MCA10

Gearbox design: Solid shaft, without foot with centering, 2-stage



8800928-00

Motor			MCA 10
			I40-
Total length	L	mm	451.5
Gearbox length	L1	mm	207
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	90

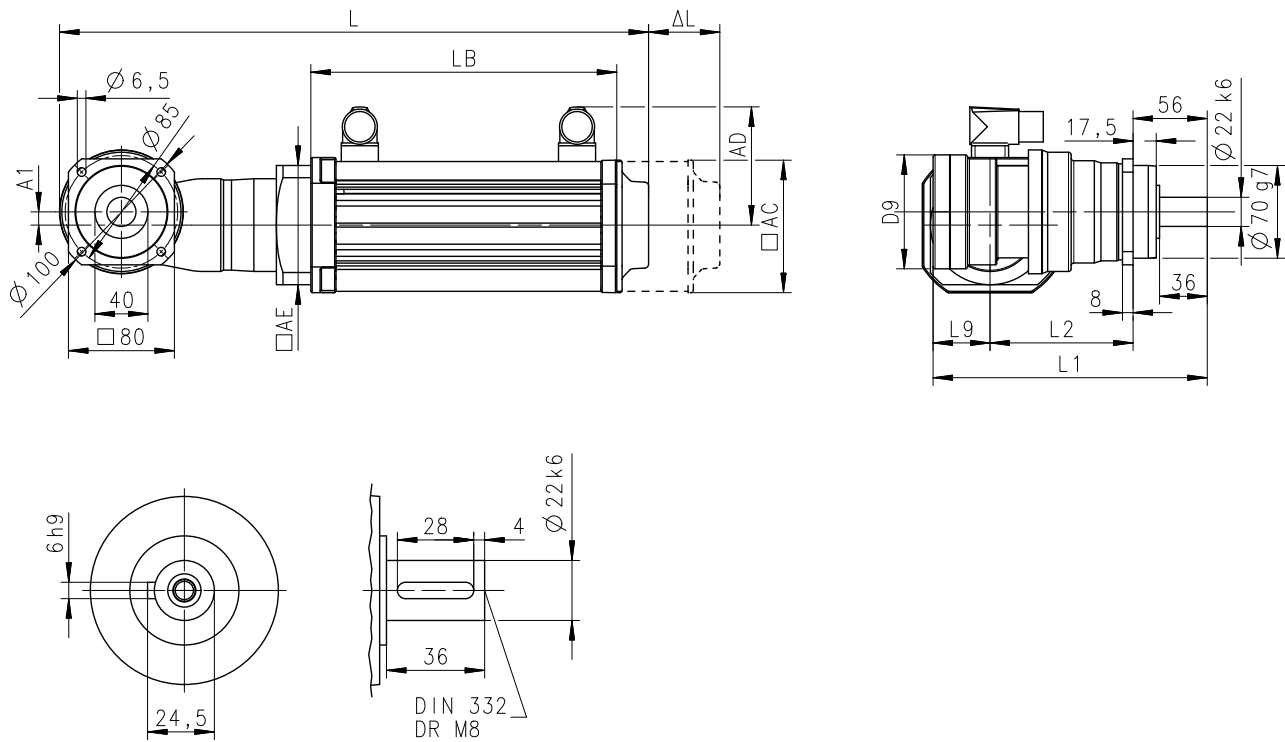


Technical data

Bevel gearbox g850-B
Basic dimensions

g850-B150 with MCA13

Gearbox design: Solid shaft, without foot with centering, 1-stage



8800928-00

Motor			MCA 13
			I41-
Total length	L	mm	484.5
Gearbox length	L1	mm	165
Motor length	LB	mm	271
Motor diameter	AC	mm	130
Motor/connection distance	AD	mm	102
Gearbox diameter	AE	mm	115

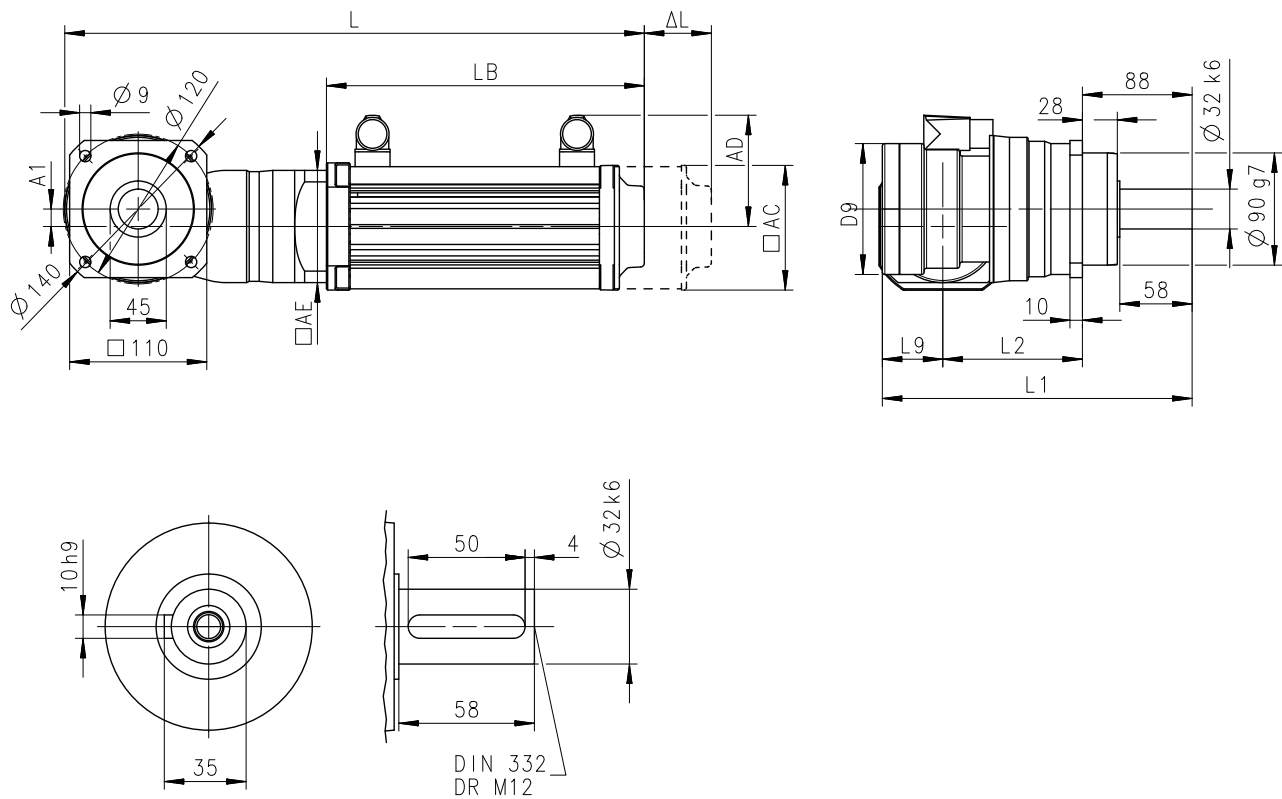
Technical data

Bevel gearbox g850-B
Basic dimensions



g850-B300 with MCA10

Gearbox design: Solid shaft, without foot with centering, 2-stage



8800929-00

Motor			MCA 10
			I40-
Total length	L	mm	471.9
Gearbox length	L1	mm	248.5
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	90

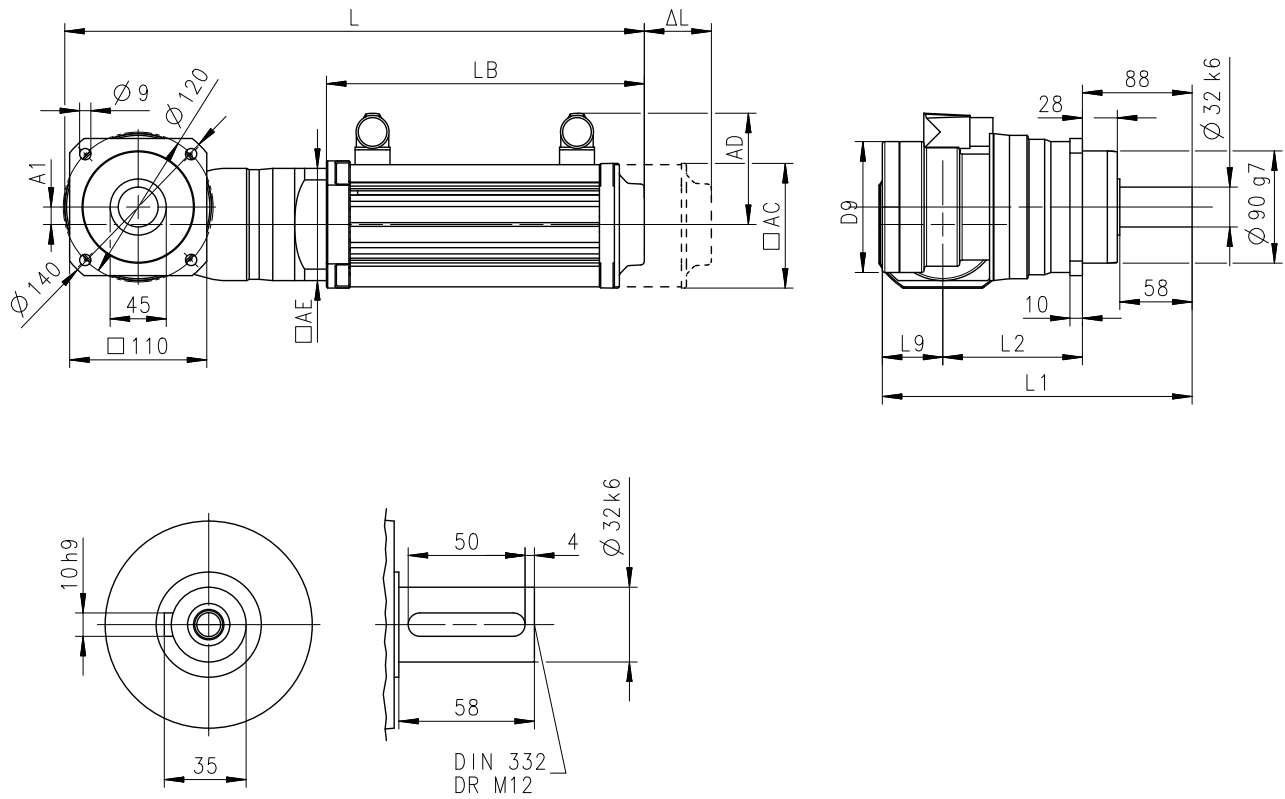


Technical data

Bevel gearbox g850-B
Basic dimensions

g850-B300 with MCA13

Gearbox design: Solid shaft, without foot with centering, 1-stage



8800929-00

Motor			MCA 13	
			I34-	I41-
Total length	L	mm	586.5	518.5
Gearbox length	L1	mm	218	218
Motor length	LB	mm	339	271
Motor diameter	AC	mm	130	130
Motor/connection distance	AD	mm	102	102
Gearbox diameter	AE	mm	120	120

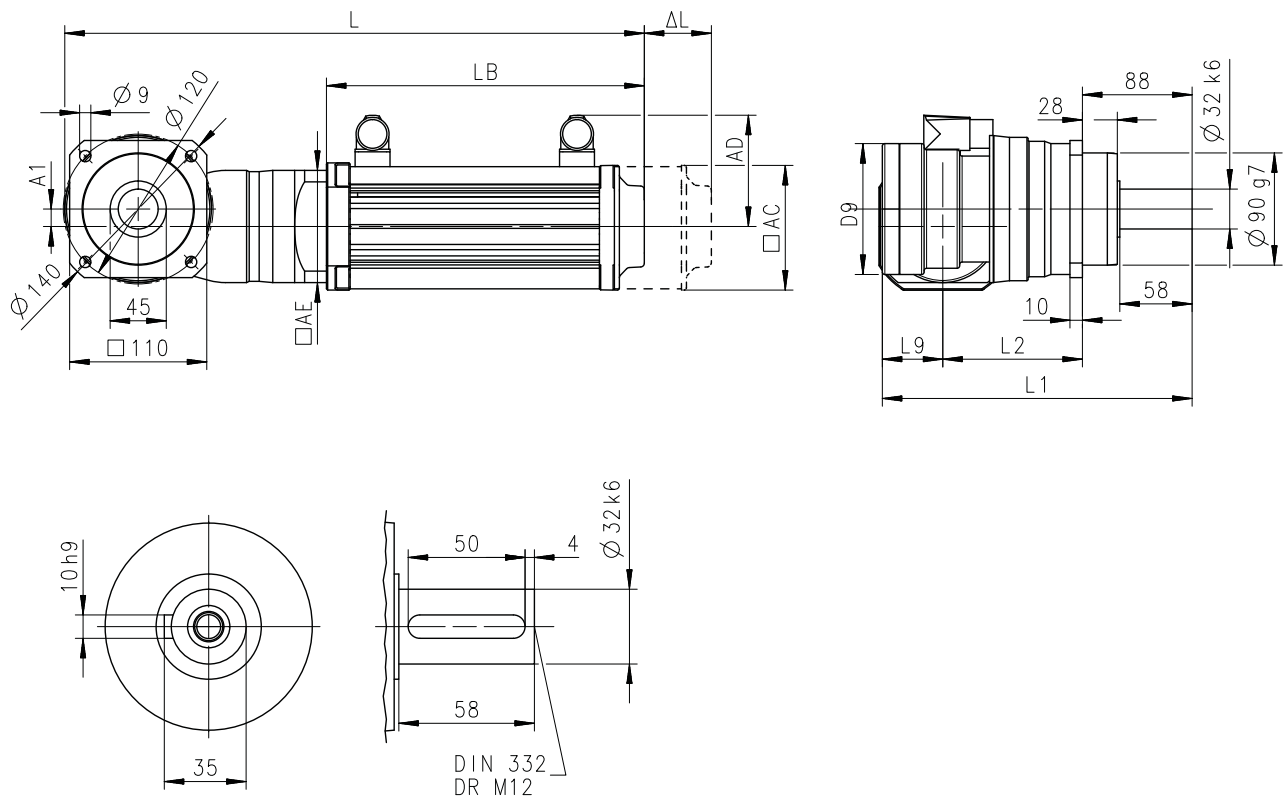
Technical data

Bevel gearbox g850-B
Basic dimensions



g850-B300 with MCA13

Gearbox design: Solid shaft, without foot with centering, 2-stage



8800929-00

Motor			MCA 13
			I41-
Total length	L	mm	490.9
Gearbox length	L1	mm	248.5
Motor length	LB	mm	271
Motor diameter	AC	mm	130
Motor/connection distance	AD	mm	102
Gearbox diameter	AE	mm	115

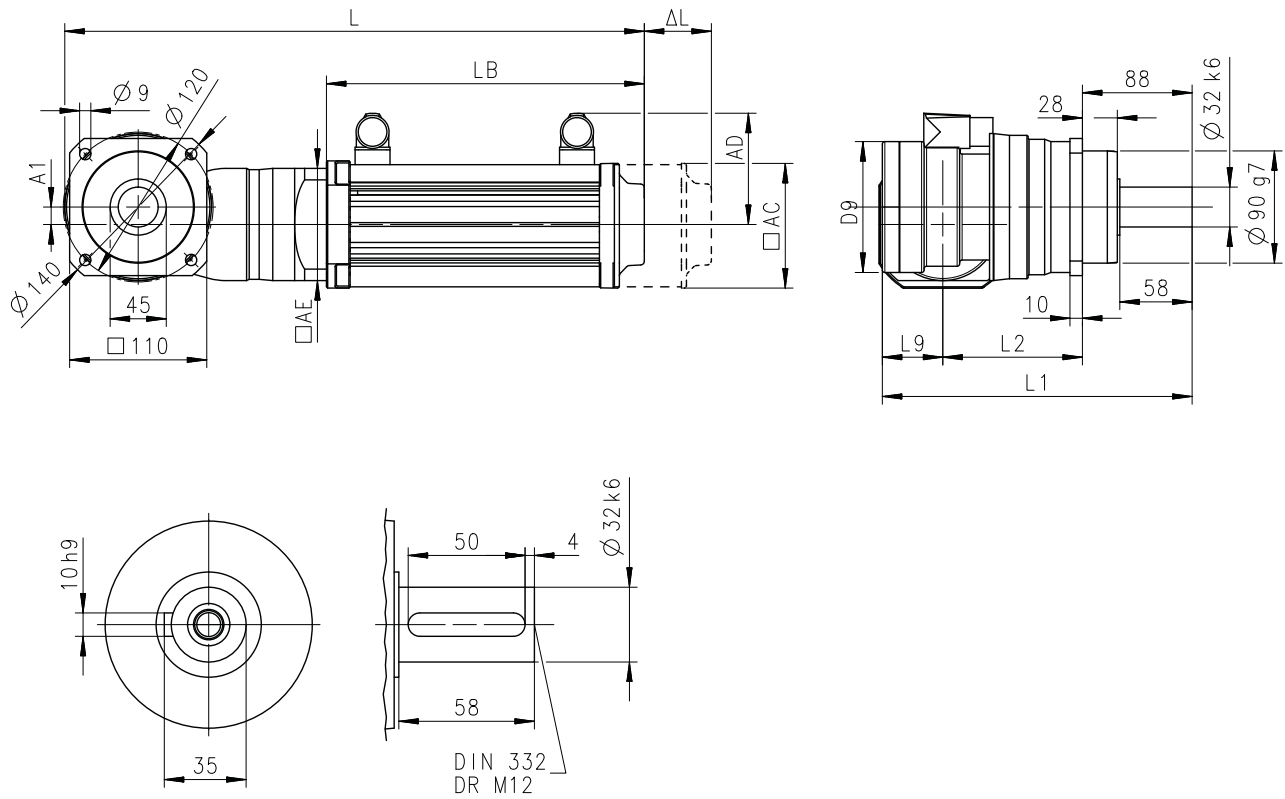


Technical data

Bevel gearbox g850-B
Basic dimensions

g850-B300 with MCA14

Gearbox design: Solid shaft, without foot with centering, 1-stage



8800929-00

Motor			MCA 14			
			L16-	L20-	L35-	L41-
Total length	L	mm	621.5	559.5	621.5	559.5
Gearbox length	L1	mm	218	218	218	218
Motor length	LB	mm	364	302	364	302
Motor diameter	AC	mm	142	142	142	142
Motor/connection distance	AD	mm	109	109	109	109
Gearbox diameter	AE	mm	142	142	142	142

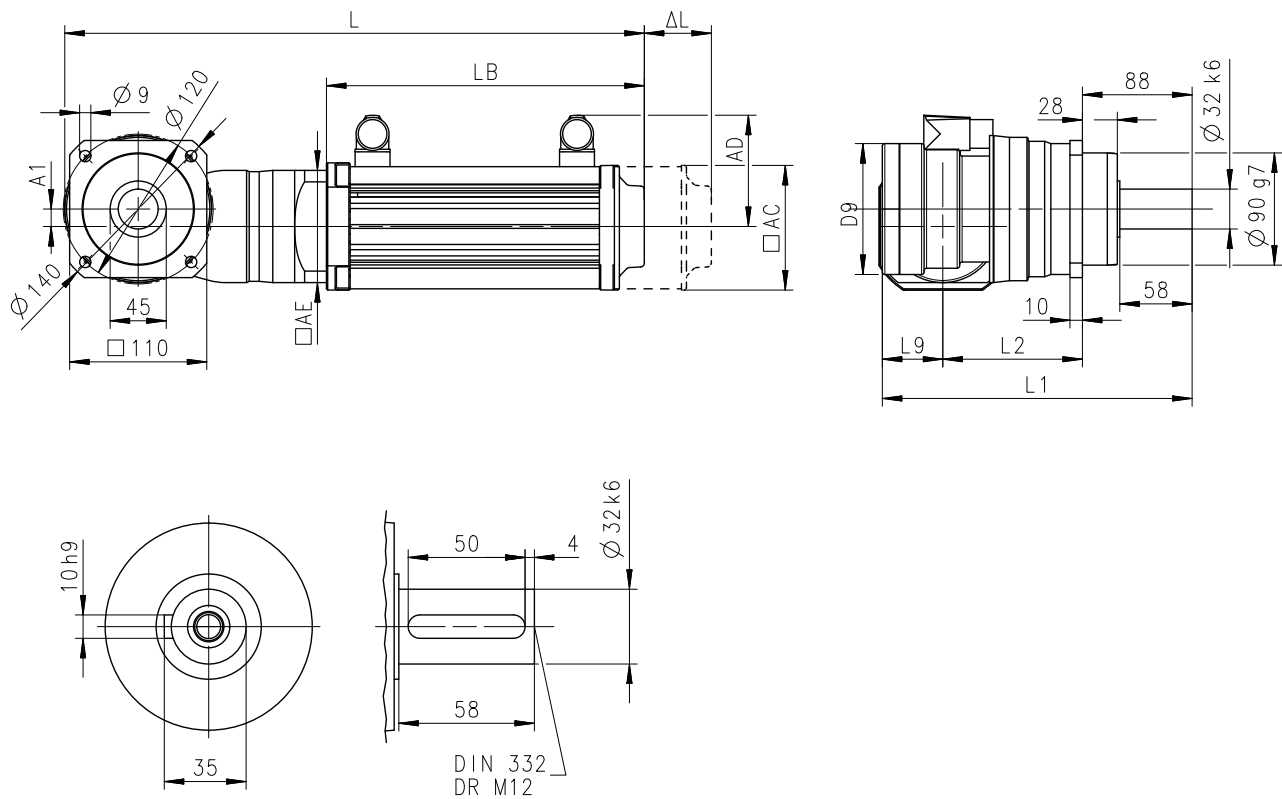
Technical data

Bevel gearbox g850-B
Basic dimensions



g850-B300 with MCA17

Gearbox design: Solid shaft, without foot with centering, 1-stage



8800929-00

Motor			MCA 17	
			N23-	N41-
Total length	L	mm	597.5	597.5
Gearbox length	L1	mm	218	218
Motor length	LB	mm	340	340
Motor diameter	AC	mm	165	165
Motor/connection distance	AD	mm	118	118
Gearbox diameter	AE	mm	142	142

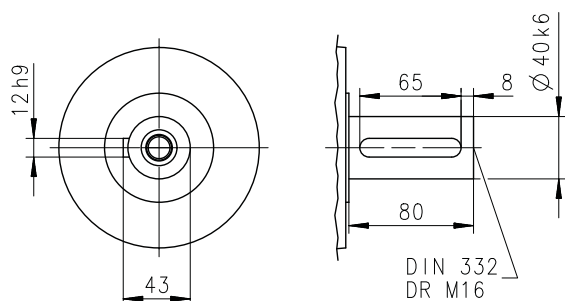
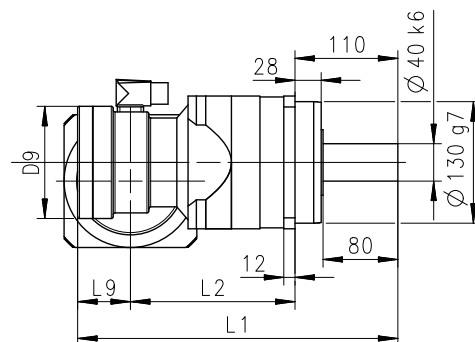
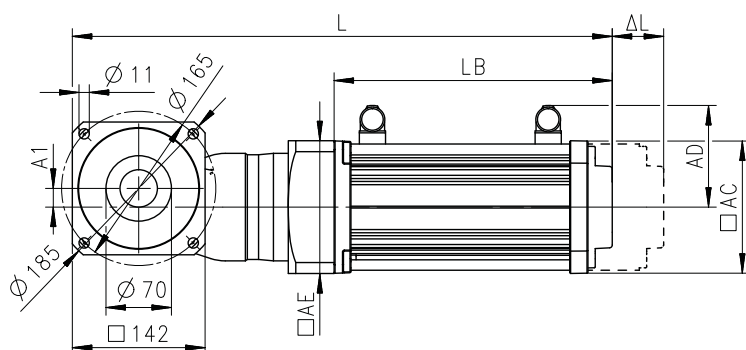


Technical data

Bevel gearbox g850-B
Basic dimensions

g850-B800 with MCA13

Gearbox design: Solid shaft, without foot with centering, 2-stage



8800930-00

Motor			MCA 13	
			I34-	I41-
Total length	L	mm	597.5	529.5
Gearbox length	L1	mm	342.5	342.5
Motor length	LB	mm	339	271
Motor diameter	AC	mm	130	130
Motor/connection distance	AD	mm	102	102
Gearbox diameter	AE	mm	120	120

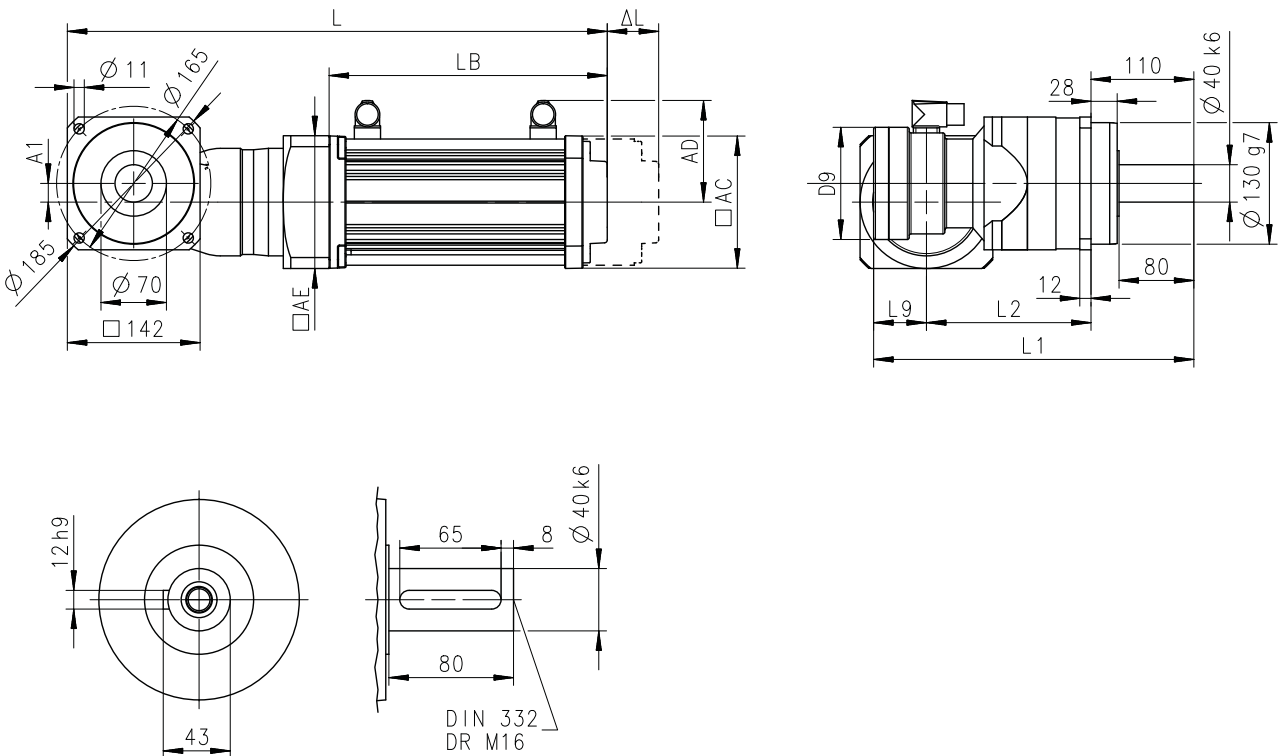
Technical data

Bevel gearbox g850-B
Basic dimensions



g850-B800 with MCA14

Gearbox design: Solid shaft, without foot with centering, 2-stage



8800930-00

Motor			MCA 14			
			L16-	L20-	L35-	L41-
Total length	L	mm	632.5	570.5	632.5	570.5
Gearbox length	L1	mm	342.5	342.5	342.5	342.5
Motor length	LB	mm	364	302	364	302
Motor diameter	AC	mm	142	142	142	142
Motor/connection distance	AD	mm	109	109	109	109
Gearbox diameter	AE	mm	142	142	142	142

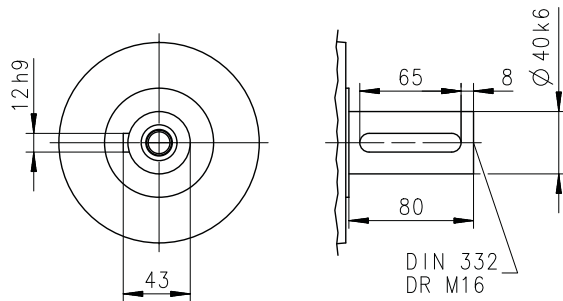
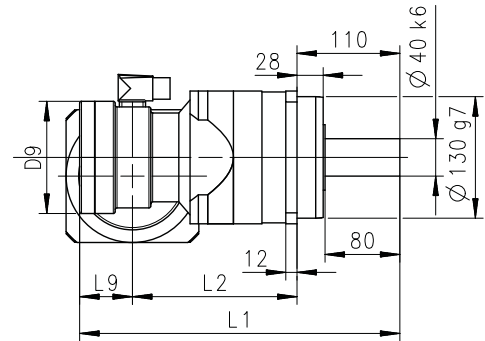
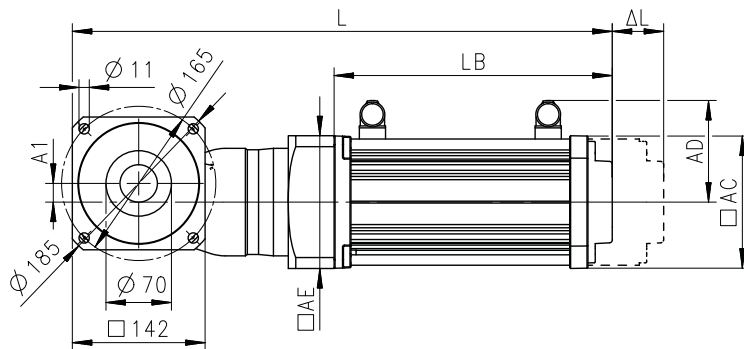


Technical data

Bevel gearbox g850-B
Basic dimensions

g850-B800 with MCA17

Gearbox design: Solid shaft, without foot with centering, 1-stage



8800930-00

Motor			MCA 17		
			N17-	N23-	N35-
Total length	L	mm	744	658	744
Gearbox length	L1	mm	273	273	273
Motor length	LB	mm	426	340	426
Motor diameter	AC	mm	165	165	165
Motor/connection distance	AD	mm	118	118	118
Gearbox diameter	AE	mm	142	142	142

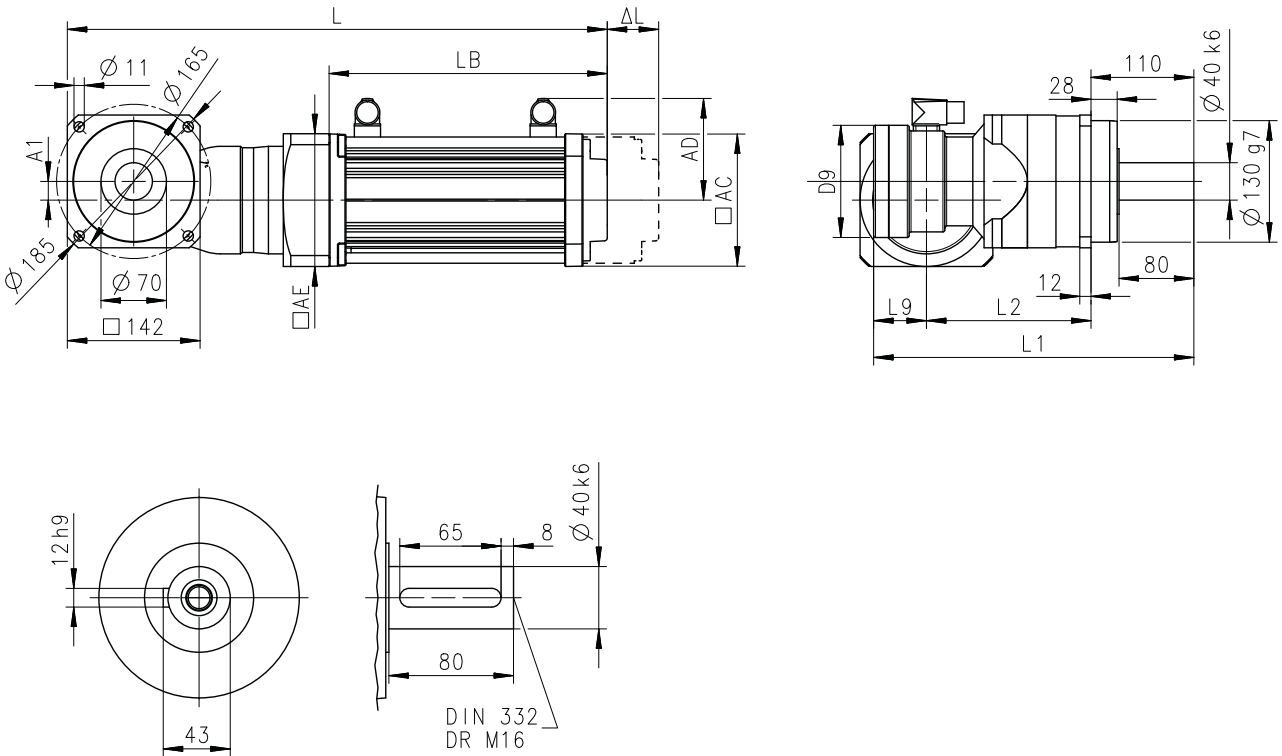
Technical data

Bevel gearbox g850-B
Basic dimensions



g850-B800 with MCA17

Gearbox design: Solid shaft, without foot with centering, 2-stage



8800930-00

Motor			MCA 17	
			N23-	N41-
Total length	L	mm	608.5	608.5
Gearbox length	L1	mm	342.5	342.5
Motor length	LB	mm	340	340
Motor diameter	AC	mm	165	165
Motor/connection distance	AD	mm	118	118
Gearbox diameter	AE	mm	142	142

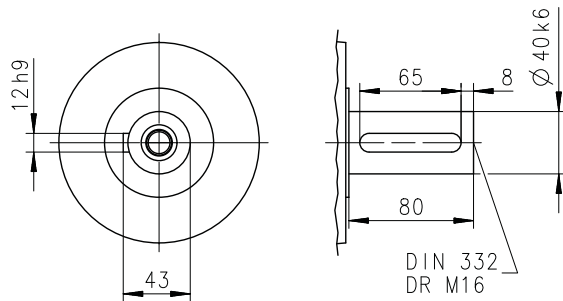
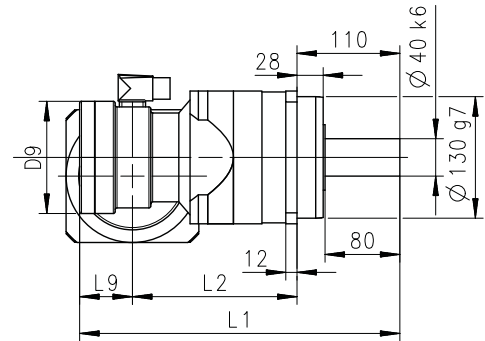
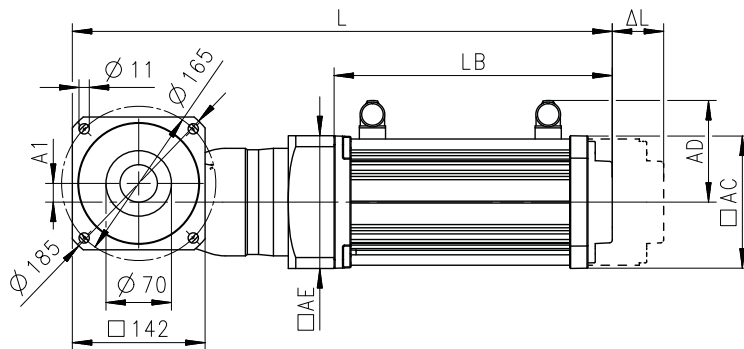


Technical data

Bevel gearbox g850-B
Basic dimensions

g850-B800 with MCA19

Gearbox design: Solid shaft, without foot with centering, 1-stage



8800930-00

Motor			MCA 19	
			S23-	S42-
Total length	L	mm	729	729
Gearbox length	L1	mm	273	273
Motor length	LB	mm	401	401
Motor diameter	AC	mm	192	192
Motor/connection distance	AD	mm	151	151
Gearbox diameter	AE	mm	190	190

Technical data

Bevel gearbox g860-B
The modular system



Bevel gearbox g860-B

The modular system

g860-B bevel planetary gearbox with MCA asynchronous servo motor

Gearboxes		g860-B45	g860-B70	g860-B140	g860-B320
Min. motor assignment		MCA10	MCA10	MCA13	MCA17
Max. motor assignment		MCA10	MCA13	MCA17	MCA19
Technical data					
Max. output torque	Nm	45	70	140	320
Min. drive torque	Nm	0.8	0.8	6.3	21.5
Max. drive torque	Nm	0.8	6.3	21.5	36
Mounting position		Any			
Color		Primed Painted in RAL colors			
Surface and corrosion protection		OKS-G Different types of OKS			
Output shaft					
Hollow shaft on one side at output	mm	15 x 20	20 x 25	30 x 30	40 x 35
Hollow shaft on two sides at output	mm	15 x 20 on both sides	20 x 25 on both sides	30 x 30 on both sides	40 x 35 on both sides
Shaft material		Steel			
Shaft sealing ring material		NBR			
Gearbox design		Without foot with centering			
Gearbox stages		1	1	1	1
Output flange	mm	70	90	115	142
Lubricant		Standard Food-compatible			
Cooling		Self-ventilated Forced-ventilated			
Motor connection		ICN connector Terminal box			
Holding brake		Without Permanent magnet brake			
Feedback					
Without functional safety		Resolver Absolute value encoder Incremental encoder			
With functional safety		Resolver Incremental encoder			
Temperature monitoring		PT1000 temperature sensor			



Technical data

Bevel gearbox g860-B
Data overview

Data overview

g860-B45, 1-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/'
4	45.0	5	2
5	42.0	5	2
7	28.0	5	2
8	27.0	5	2
10	22.0	5	2

g860-B70, 1-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/'
4	70.0	5	6
5	70.0	5	5
7	51.0	5	5
8	50.0	5	5
10	40.0	5	4

g860-B140, 1-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/'
4	140	5	12
5	140	5	12
7	91.0	5	11
8	90.0	5	10
10	75.0	5	9

g860-B320, 1-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/'
4	320	5	32
5	280	5	30
7	189	5	28
8	180	5	26
10	160	5	24

Technical data

Bevel gearbox g860-B
Radial forces and axial forces



Radial forces and axial forces

Gearbox			g860-B45	g860-B70	g860-B140	g860-B320
Number of stages	z		1	1	1	1
Bearing service life 20000 h						
Speed		rpm	100	100	100	100
Radial force	F_{rad}	rated	2700	4000	6500	10000
Axial force	F_{ax}	rated	4300	5900	7000	14500
Bearing service life 30000 h						
Speed		rpm	100	100	100	100
Radial force	F_{rad}	rated	2700	4000	6500	10000
Axial force	F_{ax}	rated	3700	5200	6100	12000
Max. radial force	$F_{rad, max}$	rated	2700	4000	6500	10000
Max. axial force	$F_{ax, max}$	rated	4300	5900	7000	14500



Technical data

Bevel gearbox g860-B
Selection tables

Selection tables

Inverter power supply 400 V, self-ventilated motors

0.8 kW

Inverter operation							Geared motor		Number of stages	Mass
M ₂	n ₂	c	M _{2, max}	n _{2, th}	J	i	g860-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
6.9	988	4.5	70.0	478	3.817	4	B70	10I40-	1	11
7.3	988	3.1	45.0	456	3.234	4	B45	10I40-	1	9.4
8.9	790	3.6	70.0	390	3.640	5	B70	10I40-	1	11
9.3	790	2.6	42.0	385	3.004	5	B45	10I40-	1	9.4
12.0	564	2.2	28.0	282	2.936	7	B45	10I40-	1	9.4
13.0	564	2.8	51.0	282	3.496	7	B70	10I40-	1	11
14.0	494	1.9	27.0	247	2.921	8	B45	10I40-	1	9.4
15.0	494	2.4	50.0	247	3.459	8	B70	10I40-	1	11
17.0	395	1.1	22.0	198	2.902	10	B45	10I40-	1	9.4
18.0	395	1.9	40.0	198	3.418	10	B70	10I40-	1	11

1.4 kW

Inverter operation							Geared motor		Number of stages	Mass
M ₂	n ₂	c	M _{2, max}	n _{2, th}	J	i	g860-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
24.0	500	3.6	140	250	25.311	4	B140	14L20-	1	42
31.0	400	2.9	140	200	24.717	5	B140	14L20-	1	42
42.0	286	2.2	91.0	143	24.228	7	B140	14L20-	1	42
48.0	250	1.9	90.0	125	24.138	8	B140	14L20-	1	42
58.0	200	1.3	75.0	100	24.005	10	B140	14L20-	1	42

1.7 kW

Inverter operation							Geared motor		Number of stages	Mass
M ₂	n ₂	c	M _{2, max}	n _{2, th}	J	i	g860-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
15.0	1013	2.2	70.0	418	9.717	4	B70	13I41-	1	15
19.0	810	1.8	70.0	347	9.540	5	B70	13I41-	1	15
25.0	579	1.4	51.0	289	9.396	7	B70	13I41-	1	15
29.0	506	1.2	50.0	249	9.359	8	B70	13I41-	1	15
34.0	405	2.2	75.0	147	13.105	10	B140	13I41-	1	20

2.3 kW

Inverter operation							Geared motor		Number of stages	Mass
M ₂	n ₂	c	M _{2, max}	n _{2, th}	J	i	g860-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
19.0	1025	3.6	140	307	25.311	4	B140	14L41-	1	42
25.0	820	2.9	140	247	24.717	5	B140	14L41-	1	42
34.0	586	2.3	91.0	201	24.228	7	B140	14L41-	1	42
38.0	513	1.9	90.0	172	24.138	8	B140	14L41-	1	42
46.0	410	1.6	75.0	142	24.005	10	B140	14L41-	1	42

Technical data

Bevel gearbox g860-B
Selection tables



2.6 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g860-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
37.0	575	4.7	320	271	54.905	4	B320	17N23-	1	66
41.0	575	2.1	140	279	42.111	4	B140	17N23-	1	50
48.0	460	3.8	280	209	52.252	5	B320	17N23-	1	66
50.0	460	1.7	140	224	41.517	5	B140	17N23-	1	50
67.0	329	1.4	91.0	164	41.028	7	B140	17N23-	1	50
68.0	329	2.8	189	164	50.025	7	B320	17N23-	1	66
77.0	288	1.1	90.0	144	40.938	8	B140	17N23-	1	50
79.0	288	2.3	180	144	49.568	8	B320	17N23-	1	66
99.0	230	1.6	160	115	48.934	10	B320	17N23-	1	66

4 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g860-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
60.0	585	3.1	320	249	90.905	4	B320	19S23-	1	95
77.0	468	2.5	280	194	88.252	5	B320	19S23-	1	95
103	334	1.8	189	165	86.025	7	B320	19S23-	1	95
120	293	1.5	180	144	85.568	8	B320	19S23-	1	95
150	234	1.1	160	117	84.934	10	B320	19S23-	1	95

4.1 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g860-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
36.0	1028	2.0	140	276	42.111	4	B140	17N41-	1	50
44.0	822	1.7	140	222	41.517	5	B140	17N41-	1	50
59.0	587	1.3	91.0	190	41.028	7	B140	17N41-	1	50
68.0	514	1.1	90.0	164	40.938	8	B140	17N41-	1	50

5.2 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g860-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
43.0	1038	3.5	320	256	90.905	4	B320	19S42-	1	95
56.0	830	2.8	280	199	88.252	5	B320	19S42-	1	95
76.0	593	2.3	189	168	86.025	7	B320	19S42-	1	95
88.0	519	1.9	180	147	85.568	8	B320	19S42-	1	95
110	415	1.5	160	125	84.934	10	B320	19S42-	1	95



Technical data

Bevel gearbox g860-B
Selection tables

Inverter power supply 400 V, forced ventilated motors

2.1 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, \text{th}}$	J	i	g860-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
41.0	409	4.7	320	204	38.105	4	B320	14L16-	1	60
45.0	409	2.1	140	204	25.311	4	B140	14L16-	1	44
53.0	327	3.8	280	164	35.452	5	B320	14L16-	1	60
56.0	327	1.7	140	164	24.717	5	B140	14L16-	1	44
75.0	234	1.2	91.0	117	24.228	7	B140	14L16-	1	44
76.0	234	2.5	189	117	33.225	7	B320	14L16-	1	60
85.0	204	1.1	90.0	102	24.138	8	B140	14L16-	1	44
88.0	204	2.0	180	102	32.768	8	B320	14L16-	1	60
110	164	1.5	160	82.0	32.134	10	B320	14L16-	1	60

2.2 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, \text{th}}$	J	i	g860-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
23.0	853	3.3	140	302	14.411	4	B140	13I34-	1	21
29.0	682	2.6	140	242	13.817	5	B140	13I34-	1	21
39.0	487	2.1	91.0	199	13.328	7	B140	13I34-	1	21
45.0	426	1.7	90.0	171	13.238	8	B140	13I34-	1	21
54.0	341	1.4	75.0	140	13.105	10	B140	13I34-	1	21

3.8 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, \text{th}}$	J	i	g860-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
81.0	420	2.6	320	210	54.905	4	B320	17N17-	1	69
101	336	2.1	280	168	52.252	5	B320	17N17-	1	69
135	240	1.4	189	120	50.025	7	B320	17N17-	1	69
158	210	1.1	180	105	49.568	8	B320	17N17-	1	69

3.9 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, \text{th}}$	J	i	g860-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
38.0	864	4.2	320	265	38.105	4	B320	14L35-	1	60
41.0	864	1.9	140	272	25.311	4	B140	14L35-	1	44
49.0	691	3.3	280	205	35.452	5	B320	14L35-	1	60
50.0	691	1.5	140	219	24.717	5	B140	14L35-	1	44
67.0	494	1.2	91.0	189	24.228	7	B140	14L35-	1	44
68.0	494	2.7	189	170	33.225	7	B320	14L35-	1	60
79.0	432	2.2	180	150	32.768	8	B320	14L35-	1	60
99.0	346	1.6	160	126	32.134	10	B320	14L35-	1	60

Technical data

Bevel gearbox g860-B
Selection tables



6.9 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g860-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
72.0	870	2.4	320	234	54.905	4	B320	17N35-	1	69
89.0	696	1.9	280	184	52.252	5	B320	17N35-	1	69
120	497	1.5	189	163	50.025	7	B320	17N35-	1	69
140	435	1.2	180	141	49.568	8	B320	17N35-	1	69



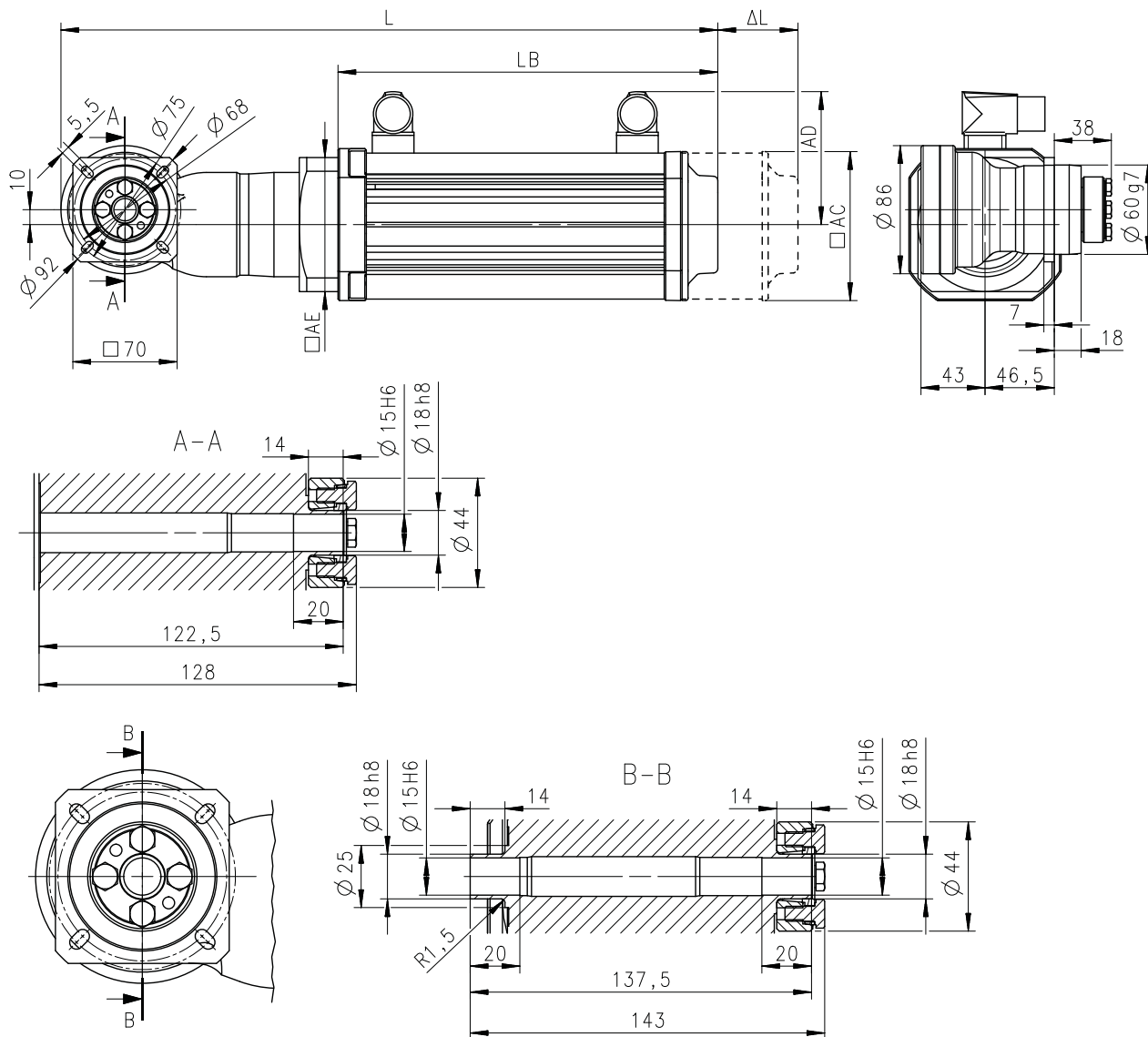
Technical data

Bevel gearbox g860-B
Basic dimensions

Basic dimensions

g860-B45 with MCA10

Gearbox design: Hollow shaft, without foot with centering, 1-stage



8800952-00

Motor			MCA 10
			I40-
Total length	L	mm	448
Gearbox length	L1	mm	122,5
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	90

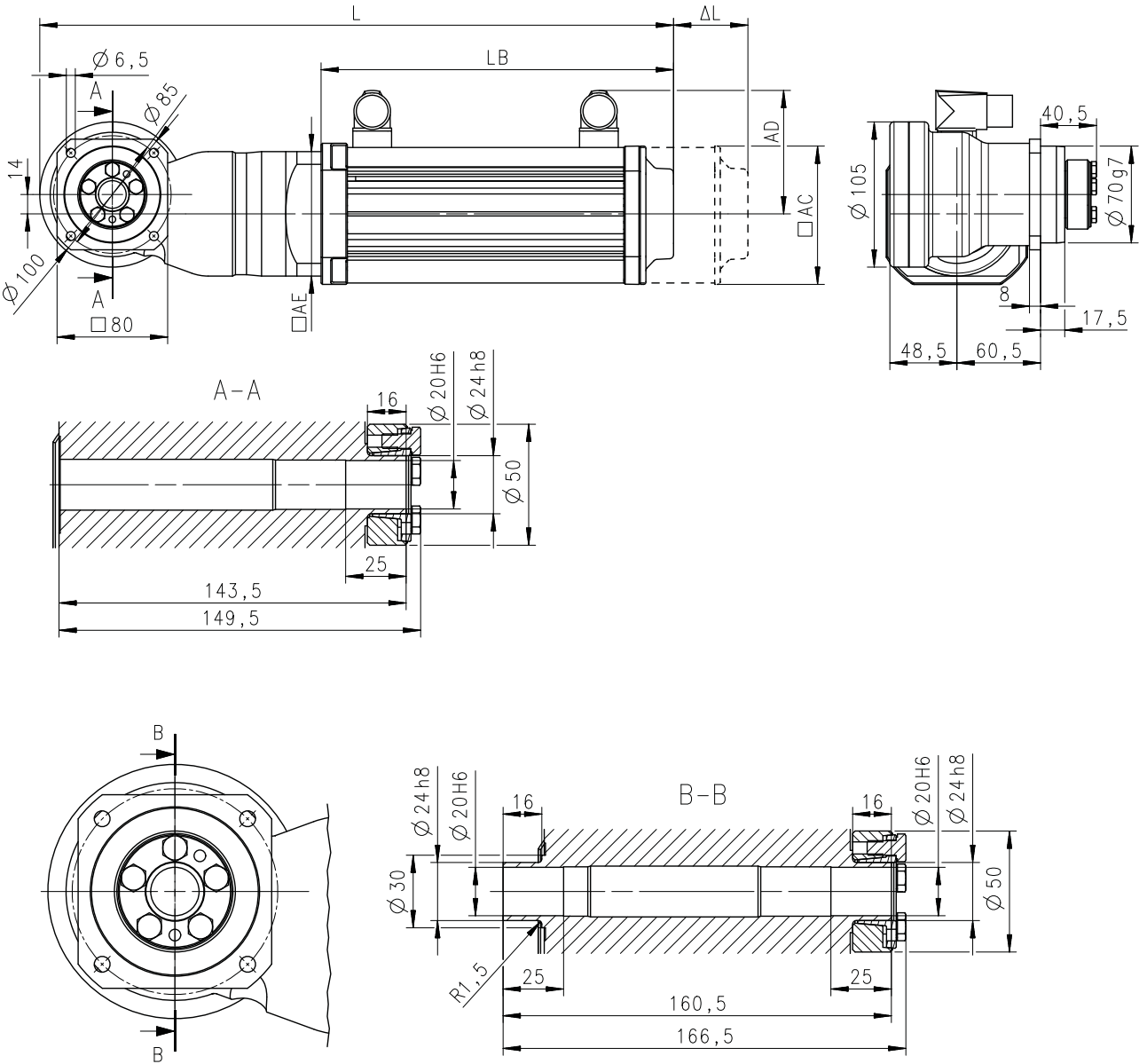
Technical data

Bevel gearbox g860-B
Basic dimensions



g860-B70 with MCA10

Gearbox design: Hollow shaft, without foot with centering, 1-stage



8800953-00

Motor			MCA 10
			I40-
Total length	L	mm	465.5
Gearbox length	L1	mm	143.5
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	90

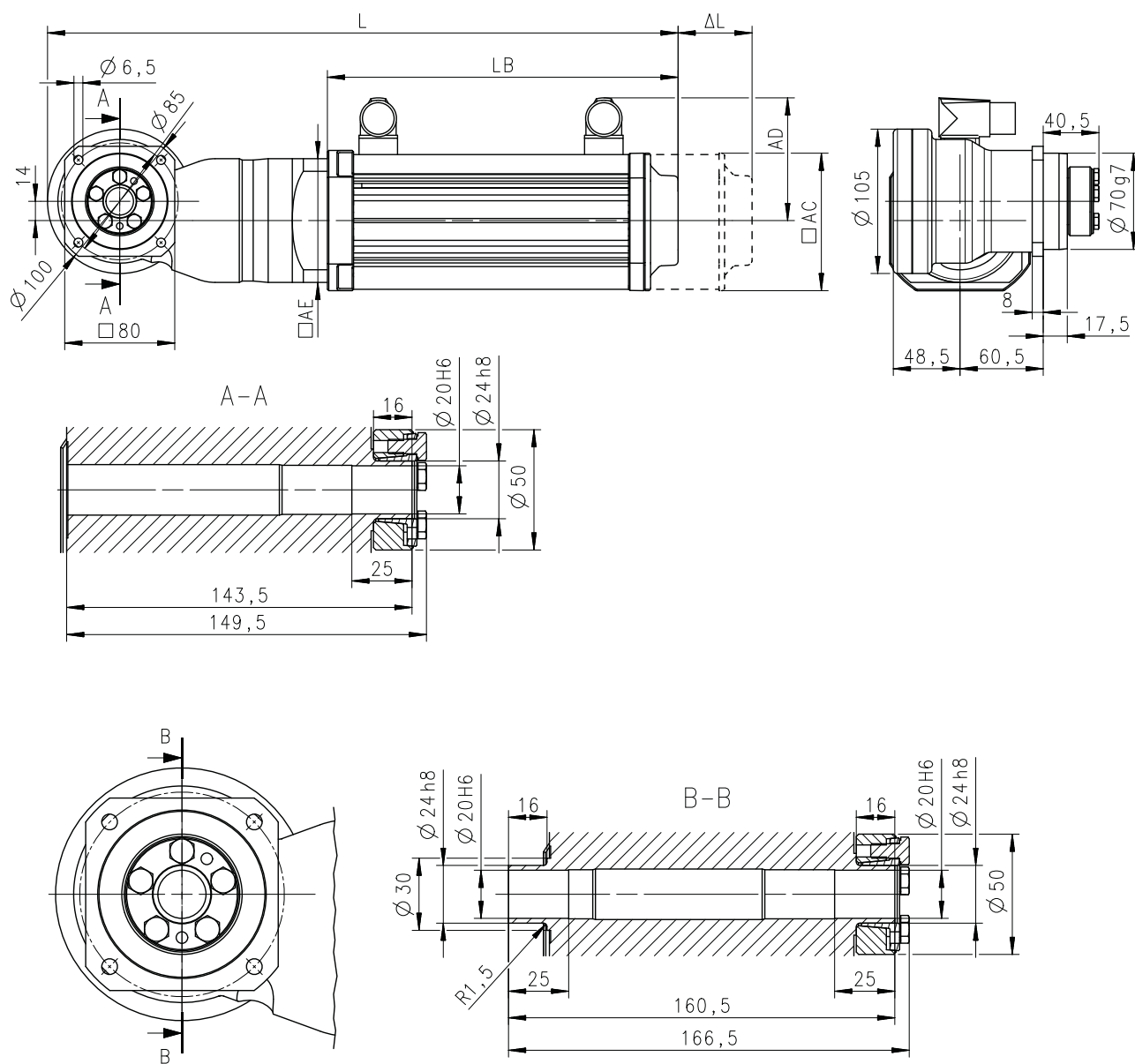


Technical data

Bevel gearbox g860-B
Basic dimensions

g860-B70 with MCA13

Gearbox design: Hollow shaft, without foot with centering, 1-stage



8800953-00

Motor			MCA 13
			I41-
Total length	L	mm	484.5
Gearbox length	L1	mm	143.5
Motor length	LB	mm	271
Motor diameter	AC	mm	130
Motor/connection distance	AD	mm	102
Gearbox diameter	AE	mm	115

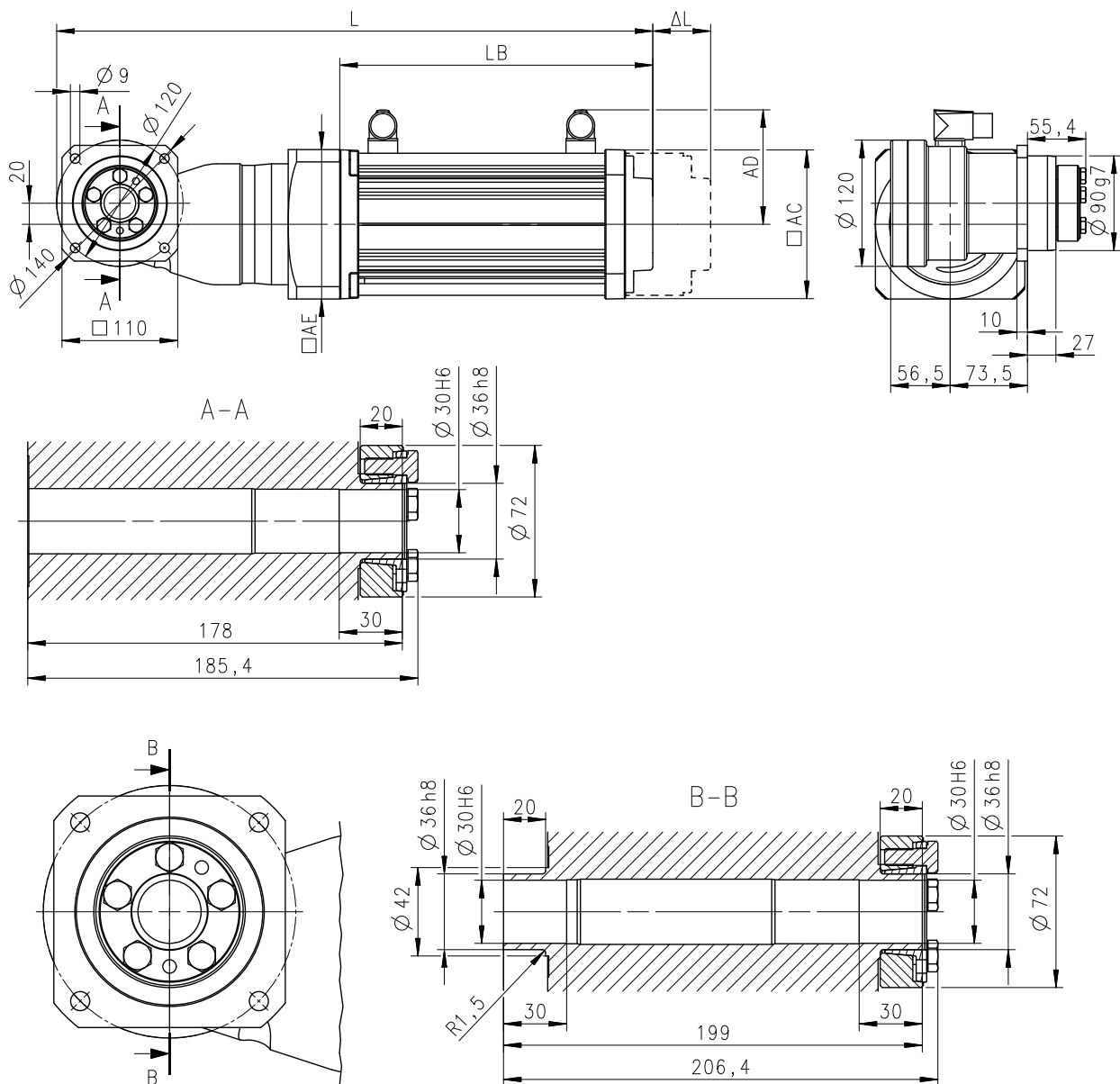
Technical data

Bevel gearbox g860-B
Basic dimensions



g860-B140 with MCA13

Gearbox design: Hollow shaft, without foot with centering, 1-stage



8800954-00

Motor			MCA 13	
			I34-	I41-
Total length	L	mm	586.5	518.5
Gearbox length	L1	mm	178	178
Motor length	LB	mm	339	271
Motor diameter	AC	mm	130	130
Motor/connection distance	AD	mm	102	102
Gearbox diameter	AE	mm	120	120

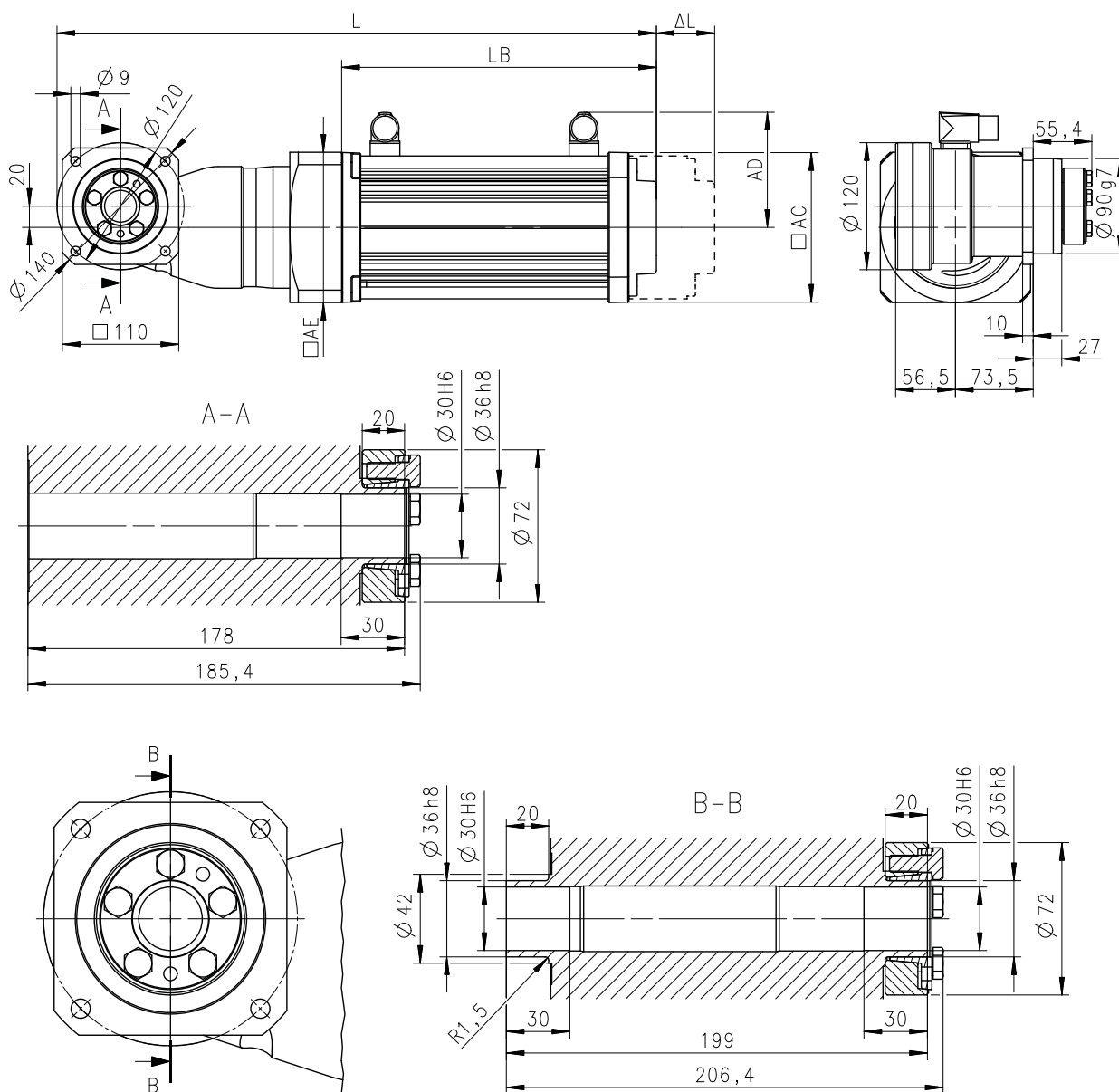


Technical data

Bevel gearbox g860-B
Basic dimensions

g860-B140 with MCA14

Gearbox design: Hollow shaft, without foot with centering, 1-stage



8800954-00

Motor			MCA 14			
			L16-	L20-	L35-	L41-
Total length	L	mm	621.5	559.5	621.5	559.5
Gearbox length	L1	mm	178	178	178	178
Motor length	LB	mm	364	302	364	302
Motor diameter	AC	mm	142	142	142	142
Motor/connection distance	AD	mm	109	109	109	109
Gearbox diameter	AE	mm	142	142	142	142

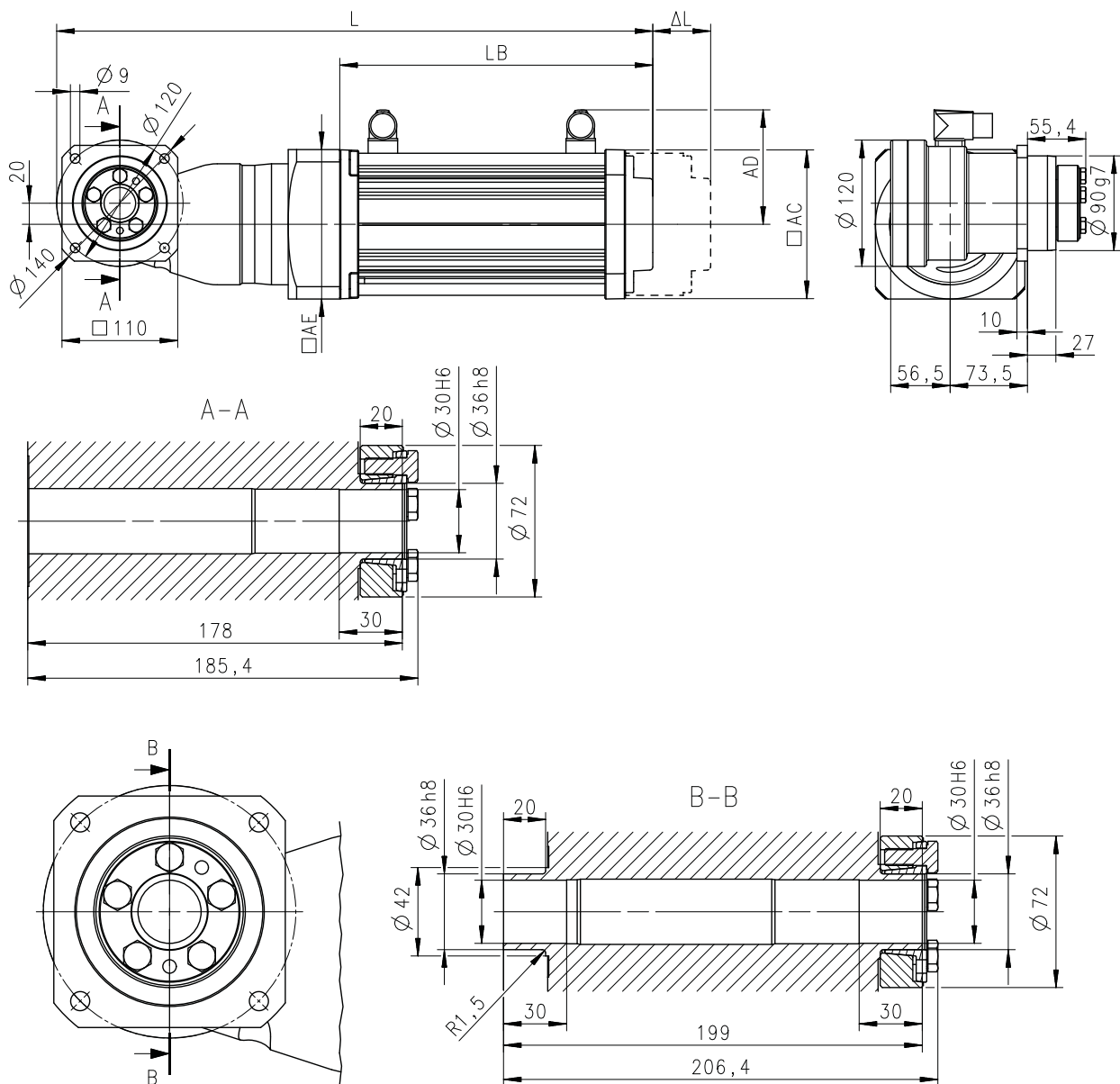
Technical data

Bevel gearbox g860-B
Basic dimensions



g860-B140 with MCA17

Gearbox design: Hollow shaft, without foot with centering, 1-stage



8800954-00

Motor			MCA 17	
			N23-	N41-
Total length	L	mm	597.5	597.5
Gearbox length	L1	mm	178	178
Motor length	LB	mm	340	340
Motor diameter	AC	mm	165	165
Motor/connection distance	AD	mm	118	118
Gearbox diameter	AE	mm	142	142

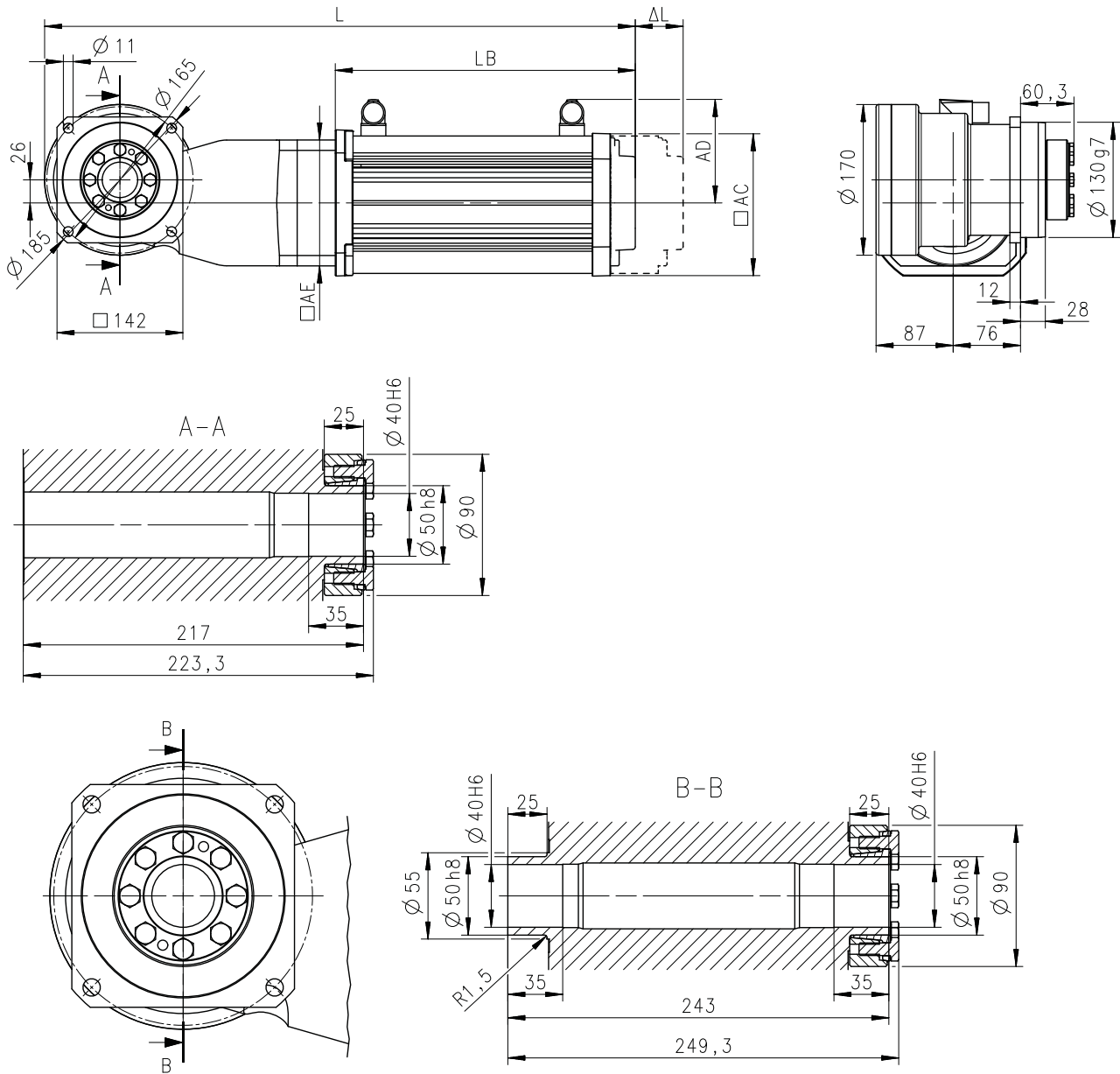


Technical data

Bevel gearbox g860-B
Basic dimensions

g860-B320 with MCA17

Gearbox design: Hollow shaft, without foot with centering, 1-stage



8800955-01

Motor			MCA 17		
			N17-	N23-	N35-
Total length	L	mm	744	658	744
Gearbox length	L1	mm	217	217	217
Motor length	LB	mm	426	340	426
Motor diameter	AC	mm	165	165	165
Motor/connection distance	AD	mm	118	118	118
Gearbox diameter	AE	mm	142	142	142

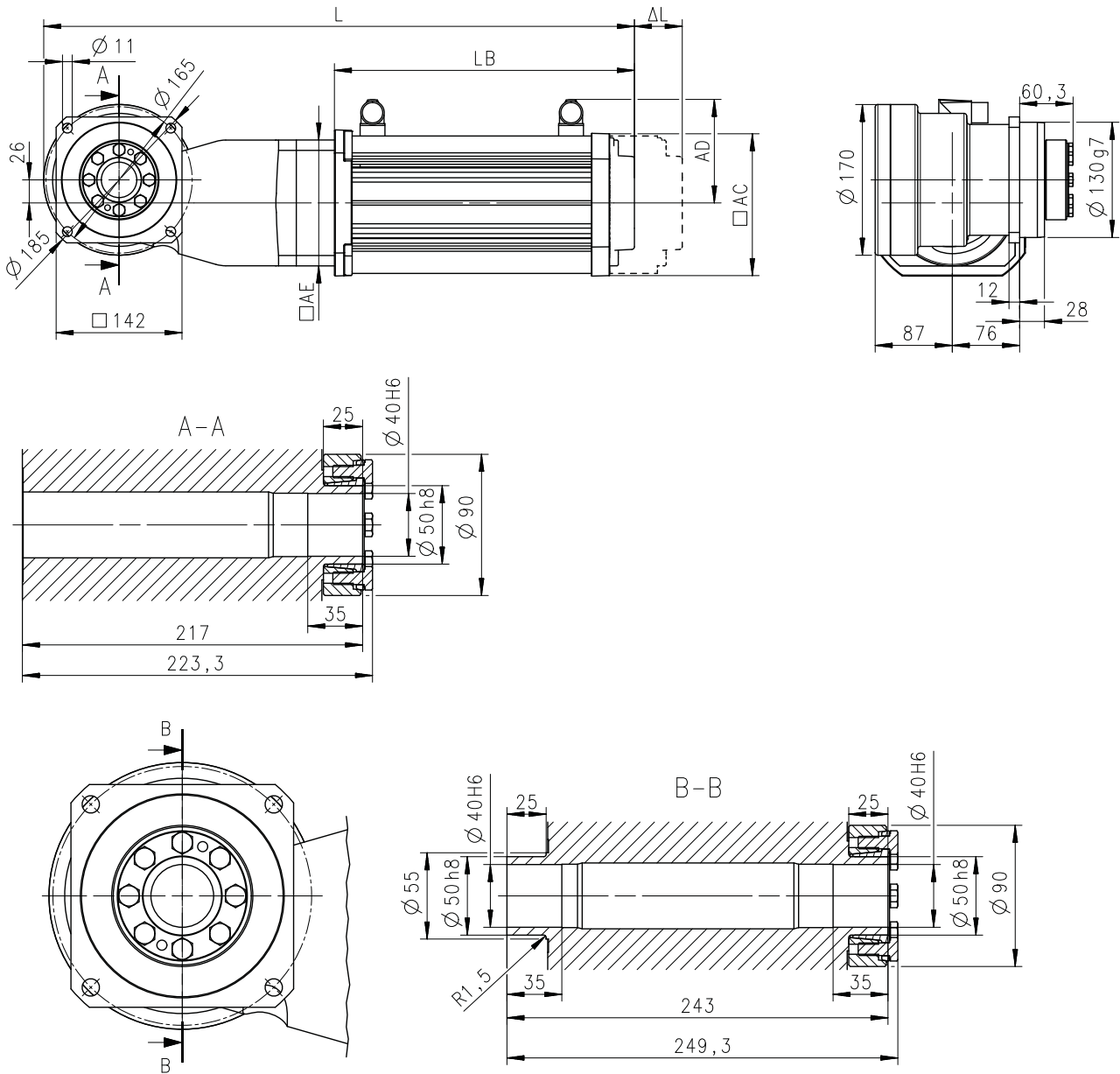
Technical data

Bevel gearbox g860-B
Basic dimensions



g860-B320 with MCA19

Gearbox design: Hollow shaft, without foot with centering, 1-stage



8800955-01

Motor			MCA 19	
			S23-	S42-
Total length	L	mm	729	729
Gearbox length	L1	mm	217	217
Motor length	LB	mm	401	401
Motor diameter	AC	mm	192	192
Motor/connection distance	AD	mm	151	151
Gearbox diameter	AE	mm	190	190



Technical data

Bevel gearbox g880-B
The modular system

Bevel gearbox g880-B

The modular system

g880-B bevel planetary gearbox with MCA asynchronous servo motor

Gearboxes		g880-B62	g880-B130	g880-B310	g880-B625
Min. motor assignment		MCA10	MCA10	MCA10	MCA13
Max. motor assignment		MCA10	MCS13	MCA17	MCS19
Technical data					
Max. output torque	Nm	62	130	310	625
Min. drive torque	Nm	0.8	0.8	0.8	6.3
Max. drive torque	Nm	0.8	6.3	21.5	36
Mounting position		Any			
Color		Primed Painted in RAL colors			
Surface and corrosion protection		OKS-G Different types of OKS			
Output shaft					
Flange output shaft	mm	20 x 4.5	31.5 x 6.5 x 36	40 x 6.5	50 x 6.5
Flange output shaft with dowel hole	mm	20 x 4.5	31.5 x 6.5	40 x 6.5	50 x 6.5
Shaft material		Steel			
Shaft sealing ring material		NBR			
Gearbox design		Without foot with centering			
Gearbox stages		1/2	1/2	1/2	1/2
Output flange	mm	64	90	110	140
Lubricant		Standard Food-compatible			
Cooling		Self-ventilated Forced-ventilated			
Motor connection		ICN connector Terminal box			
Holding brake		Without Permanent magnet brake			
Feedback					
Without functional safety		Resolver Absolute value encoder Incremental encoder			
With functional safety		Resolver Incremental encoder			
Temperature monitoring		PT1000 temperature sensor			

Technical data

Bevel gearbox g880-B
Data overview



Data overview

g880-B62, 1-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/°
4	45.0	5	3
5	42.0	5	3
7	28.0	5	2
8	27.0	5	2
10	22.0	5	2

g880-B62, 2-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/°
16	62.0	5	7
20	62.0	5	7
25	60.0	5	7
28	62.0	5	6
32	62.0	5	6
35	60.0	5	6

g880-B130, 1-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/°
4	90.0	5	6
5	75.0	5	5
7	51.0	5	5
8	50.0	5	5
10	40.0	5	4

g880-B130, 2-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/°
16	130	5	21
20	130	5	21
25	120	5	19
28	112	5	18
32	108	5	18
35	123	5	17
40	123	5	17
50	110	5	17



Technical data

Bevel gearbox g880-B
Data overview

g880-B310, 1-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/'
4	160	5	14
5	140	5	13
7	91.0	5	12
8	90.0	5	11
10	75.0	5	10

g880-B310, 2-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/'
16	310	5	44
20	300	5	44
25	255	5	42
28	204	5	40
32	200	5	39
35	255	5	38
40	250	5	38
50	200	5	37
70	175	5	36
100	140	5	34

g880-B625, 1-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/'
4	320	5	35
5	280	5	33
7	189	5	26
8	180	5	29
10	160	5	26

g880-B625, 2-stage gearboxes

Ratio	Max. output torque	Max. backlash	Torsional stiffness
		Standard	
i	$M_{2, \max}$		
	Nm	'	Nm/'
16	625	5	111
20	560	5	111
25	540	5	106
28	364	5	102
32	360	5	98
35	455	5	96
40	450	5	94
50	375	5	93
70	355	5	90
100	305	5	85

Technical data

Bevel gearbox g880-B
Radial forces and axial forces



Radial forces and axial forces

Gearbox			g880-B62	g880-B62	g880-B130	g880-B130	g880-B310	g880-B310	g880-B625	g880-B625
Number of stages	z		1	2	1	2	1	2	1	2
Bearing service life 20000 h										
Speed		rpm	100	100	100	100	100	100	100	100
Radial force	F_{rad}	rated	2400	2150	4400	3950	5500	4900	12000	12000
Axial force	F_{ax}	rated	4200	4300	7200	8200	9500	9500	8500	8500
Bearing service life 30000 h										
Speed		rpm	100	100	100	100	100	100	100	100
Radial force	F_{rad}	rated	2100	1900	3900	3500	4800	4350	11000	11000
Axial force	F_{ax}	rated	3700	3800	6300	7200	8400	8400	7500	7500
Max. radial force	$F_{rad, max}$	rated	2400	2150	4400	3950	5500	4900	12000	12000
Max. axial force	$F_{ax, max}$	rated	4200	4300	7200	8200	9500	9500	8500	8500



Technical data

Bevel gearbox g880-B
Selection tables

Selection tables

Inverter power supply 400 V, self-ventilated motors

0.8 kW

Inverter operation							Geared motor		Number of stages	Mass
M ₂	n ₂	c	M _{2, max}	n _{2, th}	J	i	g880-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
6.9	988	4.5	90.0	467	3.991	4	B130	10I40-	1	13
7.3	988	3.2	45.0	486	3.072	4	B62	10I40-	1	9.7
8.9	790	3.7	75.0	395	3.751	5	B130	10I40-	1	13
9.2	790	2.6	42.0	395	3.004	5	B62	10I40-	1	9.7
12.0	564	2.2	28.0	282	2.936	7	B62	10I40-	1	9.7
12.0	564	2.9	51.0	282	3.553	7	B130	10I40-	1	13
14.0	494	1.9	27.0	247	2.921	8	B62	10I40-	1	9.7
14.0	494	2.4	50.0	247	3.503	8	B130	10I40-	1	13
16.0	395	1.1	22.0	198	2.902	10	B62	10I40-	1	9.7
17.0	395	2.1	40.0	198	3.446	10	B130	10I40-	1	13
24.0	247	4.6	310	123	3.852	16	B310	10I40-	2	15
27.0	247	3.2	130	123	3.059	16	B130	10I40-	2	12
28.0	247	2.2	62.0	123	3.042	16	B62	10I40-	2	10
33.0	198	3.7	300	99.0	3.662	20	B310	10I40-	2	15
35.0	198	1.8	62.0	99.0	2.985	20	B62	10I40-	2	10
36.0	198	2.7	130	99.0	2.996	20	B130	10I40-	2	12
41.0	158	3.8	255	79.0	3.646	25	B310	10I40-	2	15
42.0	158	1.4	60.0	79.0	2.984	25	B62	10I40-	2	10
45.0	158	2.7	120	79.0	2.991	25	B130	10I40-	2	12
46.0	141	1.3	62.0	71.0	2.927	28	B62	10I40-	2	10
49.0	141	2.2	112	71.0	2.932	28	B130	10I40-	2	12
49.0	141	2.9	204	71.0	3.508	28	B310	10I40-	2	15
52.0	123	1.2	62.0	62.0	2.914	32	B62	10I40-	2	10
54.0	123	2.0	108	62.0	2.918	32	B130	10I40-	2	12
56.0	123	2.4	200	62.0	3.468	32	B310	10I40-	2	15
57.0	113	1.1	60.0	56.0	2.926	35	B62	10I40-	2	10
61.0	113	2.0	123	56.0	2.930	35	B130	10I40-	2	12
62.0	113	2.9	255	56.0	3.500	35	B310	10I40-	2	15
68.0	98.8	1.8	123	49.0	2.916	40	B130	10I40-	2	12
70.0	98.8	2.4	250	49.0	3.462	40	B310	10I40-	2	15
80.0	79.0	1.2	110	40.0	2.899	50	B130	10I40-	2	12
84.0	79.0	2.0	200	40.0	3.419	50	B310	10I40-	2	15
111	56.4	1.6	175	28.0	3.416	70	B310	10I40-	2	15
140	39.5	1.0	140	20.0	3.415	100	B310	10I40-	2	15

Technical data

Bevel gearbox g880-B
Selection tables



1.4 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g880-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
24.0	500	3.6	160	250	25.635	4	B310	14L20-	1	44
31.0	400	2.9	140	200	24.925	5	B310	14L20-	1	44
41.0	286	2.2	91.0	143	24.334	7	B310	14L20-	1	44
47.0	250	1.9	90.0	125	24.219	8	B310	14L20-	1	44
56.0	200	1.4	75.0	100	24.057	10	B310	14L20-	1	44
89.0	125	3.6	625	63.0	25.649	16	B625	14L20-	2	51
117	100	3.0	560	50.0	25.460	20	B625	14L20-	2	51
146	80.0	3.0	540	40.0	24.813	25	B625	14L20-	2	51
163	71.4	2.2	364	36.0	24.305	28	B625	14L20-	2	51
182	62.5	2.0	360	31.0	24.197	32	B625	14L20-	2	51
204	57.1	2.2	455	29.0	24.277	35	B625	14L20-	2	51
228	50.0	2.0	450	25.0	24.176	40	B625	14L20-	2	51
268	40.0	1.4	375	20.0	24.029	50	B625	14L20-	2	51
352	28.6	1.0	355	14.0	24.017	70	B625	14L20-	2	51

1.7 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g880-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
15.0	1013	2.3	90.0	407	9.891	4	B130	13I41-	1	17
19.0	810	1.8	75.0	364	9.651	5	B130	13I41-	1	17
25.0	579	1.4	51.0	289	9.453	7	B130	13I41-	1	17
28.0	506	1.2	50.0	253	9.403	8	B130	13I41-	1	17
33.0	405	1.0	40.0	203	9.346	10	B130	13I41-	1	17
59.0	253	2.3	310	107	9.752	16	B310	13I41-	2	19
74.0	203	1.8	300	92.0	9.562	20	B310	13I41-	2	19
91.0	162	1.9	255	81.0	9.546	25	B310	13I41-	2	19
100	145	1.4	204	72.0	9.408	28	B310	13I41-	2	19
113	127	1.2	200	63.0	9.368	32	B310	13I41-	2	19
125	116	1.4	255	58.0	9.400	35	B310	13I41-	2	19
141	101	1.2	250	51.0	9.362	40	B310	13I41-	2	19
168	81.0	1.0	200	41.0	9.319	50	B310	13I41-	2	19
210	57.9	1.7	355	27.0	13.117	70	B625	13I41-	2	28
268	40.5	1.1	305	20.0	13.110	100	B625	13I41-	2	28



Technical data

Bevel gearbox g880-B
Selection tables

2.3 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g880-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
19.0	1025	3.6	160	292	25.635	4	B310	14L41-	1	44
25.0	820	2.9	140	247	24.925	5	B310	14L41-	1	44
33.0	586	2.3	91.0	204	24.334	7	B310	14L41-	1	44
38.0	513	1.9	90.0	175	24.219	8	B310	14L41-	1	44
45.0	410	1.7	75.0	145	24.057	10	B310	14L41-	1	44
94.0	205	3.0	560	69.0	25.460	20	B625	14L41-	2	51
117	164	3.0	540	58.0	24.813	25	B625	14L41-	2	51
132	146	2.4	364	58.0	24.305	28	B625	14L41-	2	51
147	128	2.0	360	50.0	24.197	32	B625	14L41-	2	51
164	117	2.4	455	47.0	24.277	35	B625	14L41-	2	51
184	103	2.0	450	40.0	24.176	40	B625	14L41-	2	51
216	82.0	1.7	375	34.0	24.029	50	B625	14L41-	2	51
284	58.6	1.3	355	27.0	24.017	70	B625	14L41-	2	51

2.6 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g880-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
37.0	575	4.7	320	285	57.693	4	B625	17N23-	1	65
41.0	575	2.1	160	260	42.435	4	B310	17N23-	1	52
48.0	460	3.8	280	230	54.825	5	B625	17N23-	1	65
50.0	460	1.7	140	224	41.725	5	B310	17N23-	1	52
67.0	329	1.4	91.0	164	41.134	7	B310	17N23-	1	52
67.0	329	2.8	189	164	52.410	7	B625	17N23-	1	65
74.0	288	2.4	180	144	51.907	8	B625	17N23-	1	65
75.0	288	1.2	90.0	144	41.019	8	B310	17N23-	1	52
90.0	230	1.8	160	115	51.220	10	B625	17N23-	1	65
160	144	2.2	625	72.0	42.449	16	B625	17N23-	2	59
199	115	1.8	560	58.0	42.260	20	B625	17N23-	2	59
243	92.0	1.8	540	46.0	41.613	25	B625	17N23-	2	59
263	82.1	1.4	364	41.0	41.105	28	B625	17N23-	2	59
294	71.9	1.2	360	36.0	40.997	32	B625	17N23-	2	59
329	65.7	1.4	455	33.0	41.077	35	B625	17N23-	2	59
367	57.5	1.2	450	29.0	40.976	40	B625	17N23-	2	59

4 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g880-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
60.0	585	3.1	320	266	93.693	4	B625	19S23-	1	94
76.0	468	2.5	280	218	90.825	5	B625	19S23-	1	94
102	334	1.9	189	167	88.410	7	B625	19S23-	1	94
112	293	1.6	180	146	87.907	8	B625	19S23-	1	94
135	234	1.2	160	117	87.220	10	B625	19S23-	1	94

Technical data

Bevel gearbox g880-B
Selection tables



4.1 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g880-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
36.0	1028	2.0	160	257	42.435	4	B310	17N41-	1	52
44.0	822	1.7	140	222	41.725	5	B310	17N41-	1	52
59.0	587	1.3	91.0	192	41.134	7	B310	17N41-	1	52
66.0	514	1.1	90.0	164	41.019	8	B310	17N41-	1	52
79.0	411	2.0	160	137	51.220	10	B625	17N41-	1	65
141	257	2.1	625	85.0	42.449	16	B625	17N41-	2	59
175	206	1.7	560	63.0	42.260	20	B625	17N41-	2	59
214	164	1.7	540	54.0	41.613	25	B625	17N41-	2	59
231	147	1.3	364	55.0	41.105	28	B625	17N41-	2	59
258	128	1.1	360	47.0	40.997	32	B625	17N41-	2	59
289	117	1.3	455	45.0	41.077	35	B625	17N41-	2	59
323	103	1.1	450	38.0	40.976	40	B625	17N41-	2	59

5.2 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g880-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
43.0	1038	3.6	320	272	93.693	4	B625	19S42-	1	94
56.0	830	2.9	280	223	90.825	5	B625	19S42-	1	94
75.0	593	2.3	189	182	88.410	7	B625	19S42-	1	94
83.0	519	2.0	180	158	87.907	8	B625	19S42-	1	94
100	415	1.6	160	134	87.220	10	B625	19S42-	1	94



Technical data

Bevel gearbox g880-B
Selection tables

Inverter power supply 400 V, forced ventilated motors

2.1 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g880-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
41.0	409	4.7	320	204	40.893	4	B625	14L16-	1	59
45.0	409	2.1	160	204	25.635	4	B310	14L16-	1	46
53.0	327	3.8	280	164	38.025	5	B625	14L16-	1	59
56.0	327	1.7	140	164	24.925	5	B310	14L16-	1	46
74.0	234	1.2	91.0	117	24.334	7	B310	14L16-	1	46
75.0	234	2.5	189	117	35.610	7	B625	14L16-	1	59
83.0	204	2.2	180	102	35.107	8	B625	14L16-	1	59
84.0	204	1.1	90.0	102	24.219	8	B310	14L16-	1	46
100	164	1.6	160	82.0	34.420	10	B625	14L16-	1	59
178	102	2.2	625	51.0	25.649	16	B625	14L16-	2	53
221	81.8	1.8	560	41.0	25.460	20	B625	14L16-	2	53
270	65.4	1.8	540	33.0	24.813	25	B625	14L16-	2	53
292	58.4	1.3	364	29.0	24.305	28	B625	14L16-	2	53
326	51.1	1.1	360	26.0	24.197	32	B625	14L16-	2	53
365	46.7	1.3	455	23.0	24.277	35	B625	14L16-	2	53
408	40.9	1.1	450	20.0	24.176	40	B625	14L16-	2	53

2.2 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g880-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
23.0	853	3.3	160	286	14.735	4	B310	13I34-	1	23
29.0	682	2.6	140	242	14.025	5	B310	13I34-	1	23
39.0	487	2.1	91.0	202	13.434	7	B310	13I34-	1	23
44.0	426	1.8	90.0	173	13.319	8	B310	13I34-	1	23
52.0	341	1.4	75.0	143	13.157	10	B310	13I34-	1	23
86.0	213	3.3	625	91.0	14.749	16	B625	13I34-	2	30
113	171	2.7	560	68.0	14.560	20	B625	13I34-	2	30
140	136	2.7	540	57.0	13.913	25	B625	13I34-	2	30
153	122	2.1	364	58.0	13.405	28	B625	13I34-	2	30
171	107	1.8	360	50.0	13.297	32	B625	13I34-	2	30
192	97.4	2.1	455	47.0	13.377	35	B625	13I34-	2	30
214	85.3	1.8	450	40.0	13.276	40	B625	13I34-	2	30
252	68.2	1.5	375	34.0	13.129	50	B625	13I34-	2	30
331	48.7	1.1	355	24.0	13.117	70	B625	13I34-	2	30

3.8 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g880-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
80.0	420	2.6	320	210	57.693	4	B625	17N17-	1	68
100	336	2.1	280	168	54.825	5	B625	17N17-	1	68
134	240	1.4	189	120	52.410	7	B625	17N17-	1	68
148	210	1.2	180	105	51.907	8	B625	17N17-	1	68

Technical data

Bevel gearbox g880-B
Selection tables



3.9 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g880-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
38.0	864	4.2	320	279	40.893	4	B625	14L35-	1	59
41.0	864	1.9	160	252	25.635	4	B310	14L35-	1	46
49.0	691	3.4	280	228	38.025	5	B625	14L35-	1	59
50.0	691	1.5	140	219	24.925	5	B310	14L35-	1	46
67.0	494	1.2	91.0	190	24.334	7	B310	14L35-	1	46
67.0	494	2.7	189	185	35.610	7	B625	14L35-	1	59
74.0	432	2.3	180	160	35.107	8	B625	14L35-	1	59
75.0	432	1.0	90.0	163	24.219	8	B310	14L35-	1	46
90.0	346	1.8	160	135	34.420	10	B625	14L35-	1	59
161	216	1.9	625	84.0	25.649	16	B625	14L35-	2	53
199	173	1.6	560	62.0	25.460	20	B625	14L35-	2	53
243	138	1.6	540	53.0	24.813	25	B625	14L35-	2	53
263	123	1.2	364	55.0	24.305	28	B625	14L35-	2	53
294	108	1.1	360	47.0	24.197	32	B625	14L35-	2	53
329	98.7	1.2	455	45.0	24.277	35	B625	14L35-	2	53
367	86.4	1.1	450	38.0	24.176	40	B625	14L35-	2	53

6.9 kW

Inverter operation							Geared motor		Number of stages	Mass
M_2	n_2	c	$M_{2, \max}$	$n_{2, th}$	J	i	g880-	MCA	z	m
Nm	rpm		Nm	rpm	kgcm ²					kg
71.0	870	2.4	320	253	57.693	4	B625	17N35-	1	68
88.0	696	1.9	280	210	54.825	5	B625	17N35-	1	68
118	497	1.5	189	177	52.410	7	B625	17N35-	1	68
131	435	1.3	180	153	51.907	8	B625	17N35-	1	68
158	348	1.0	160	130	51.220	10	B625	17N35-	1	68



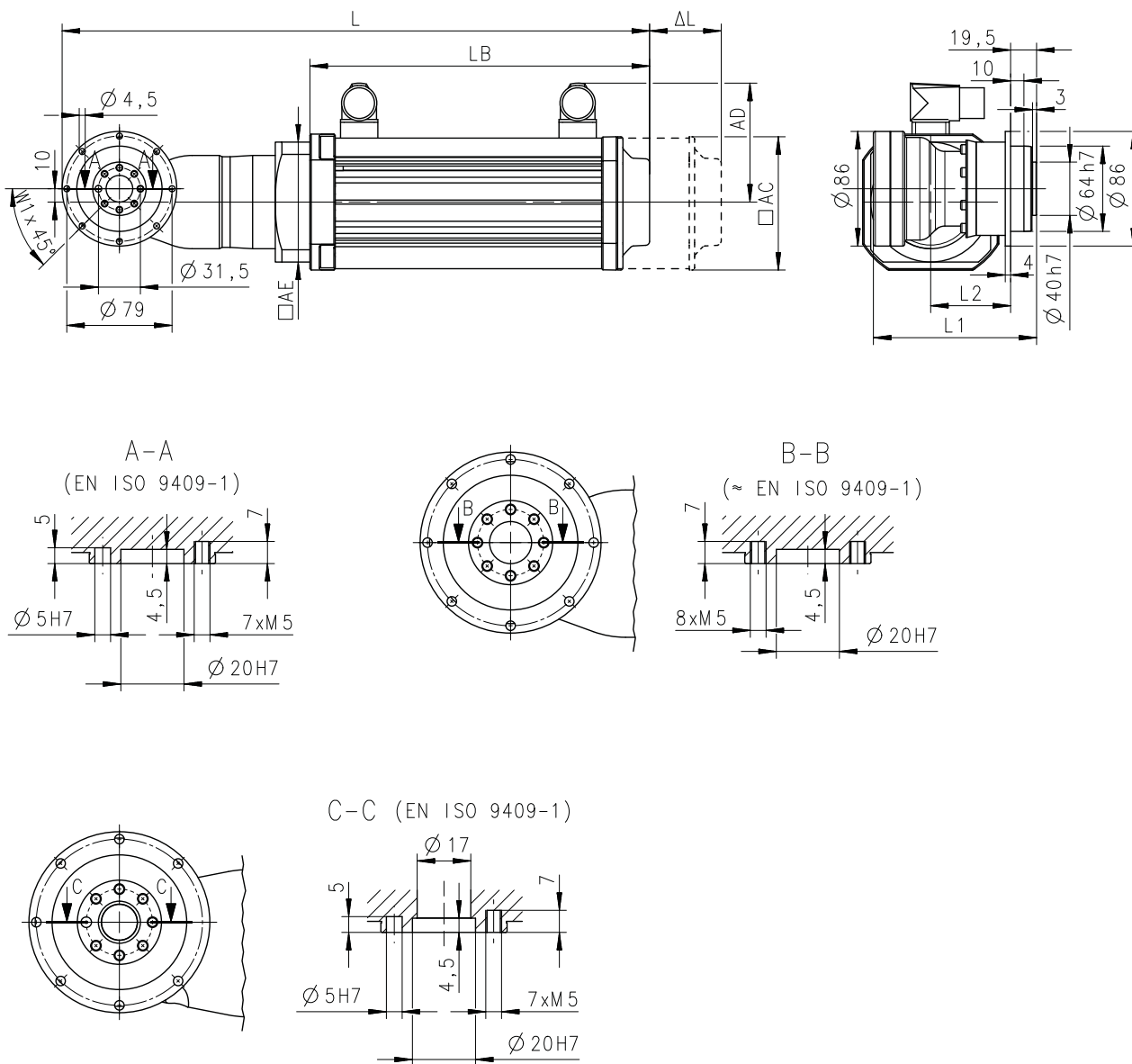
Technical data

Bevel gearbox g880-B
Basic dimensions

Basic dimensions

g880-B62 with MCA10

Gearbox design: Flange output shaft, without foot with centering, 1-stage



8800944-00

Motor			MCA 10
			I40-
Total length	L	mm	448
Gearbox length	L1	mm	104,5
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	90

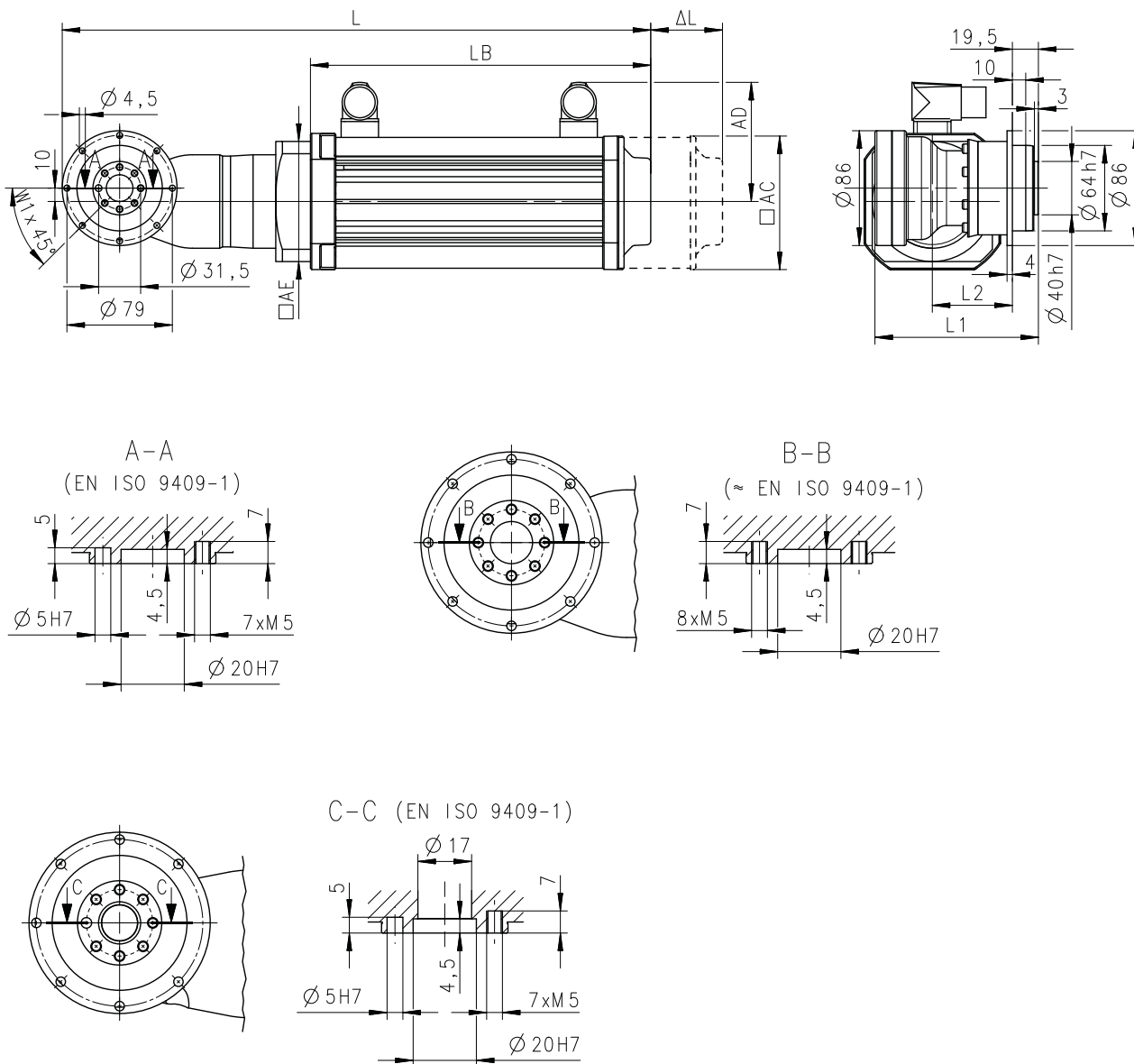
Technical data

Bevel gearbox g880-B
Basic dimensions



g880-B62 with MCA10

Gearbox design: Flange output shaft, without foot with centering, 2-stage



8800944-00

Motor			MCA 10
			I40-
Total length	L	mm	448
Gearbox length	L1	mm	122.5
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	90

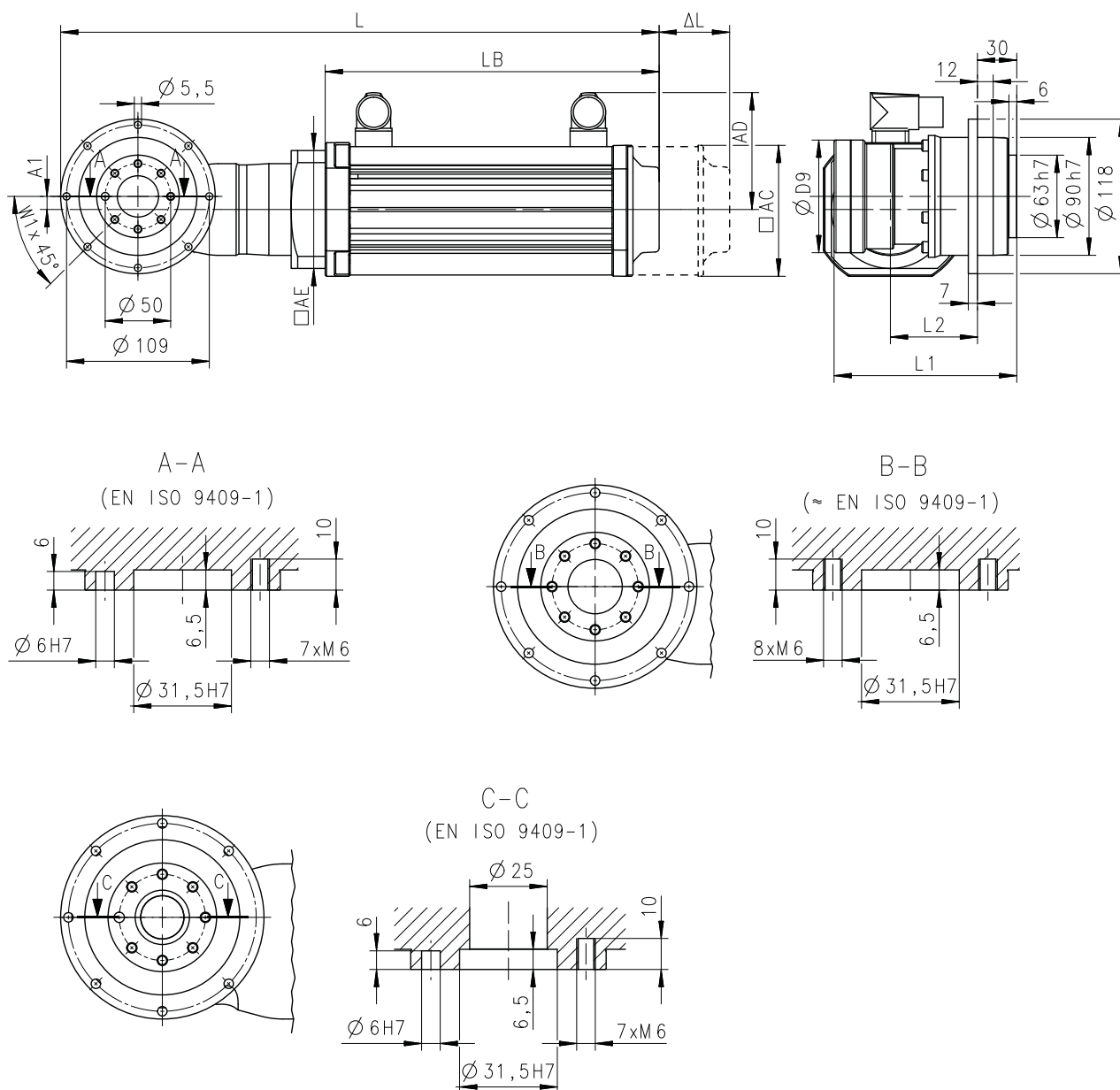


Technical data

Bevel gearbox g880-B
Basic dimensions

g880-B130 with MCA10

Gearbox design: Flange output shaft, without foot with centering, 1-stage



8800945-00

Motor			MCA 10
			I40-
Total length	L	mm	472
Gearbox length	L1	mm	132
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	90

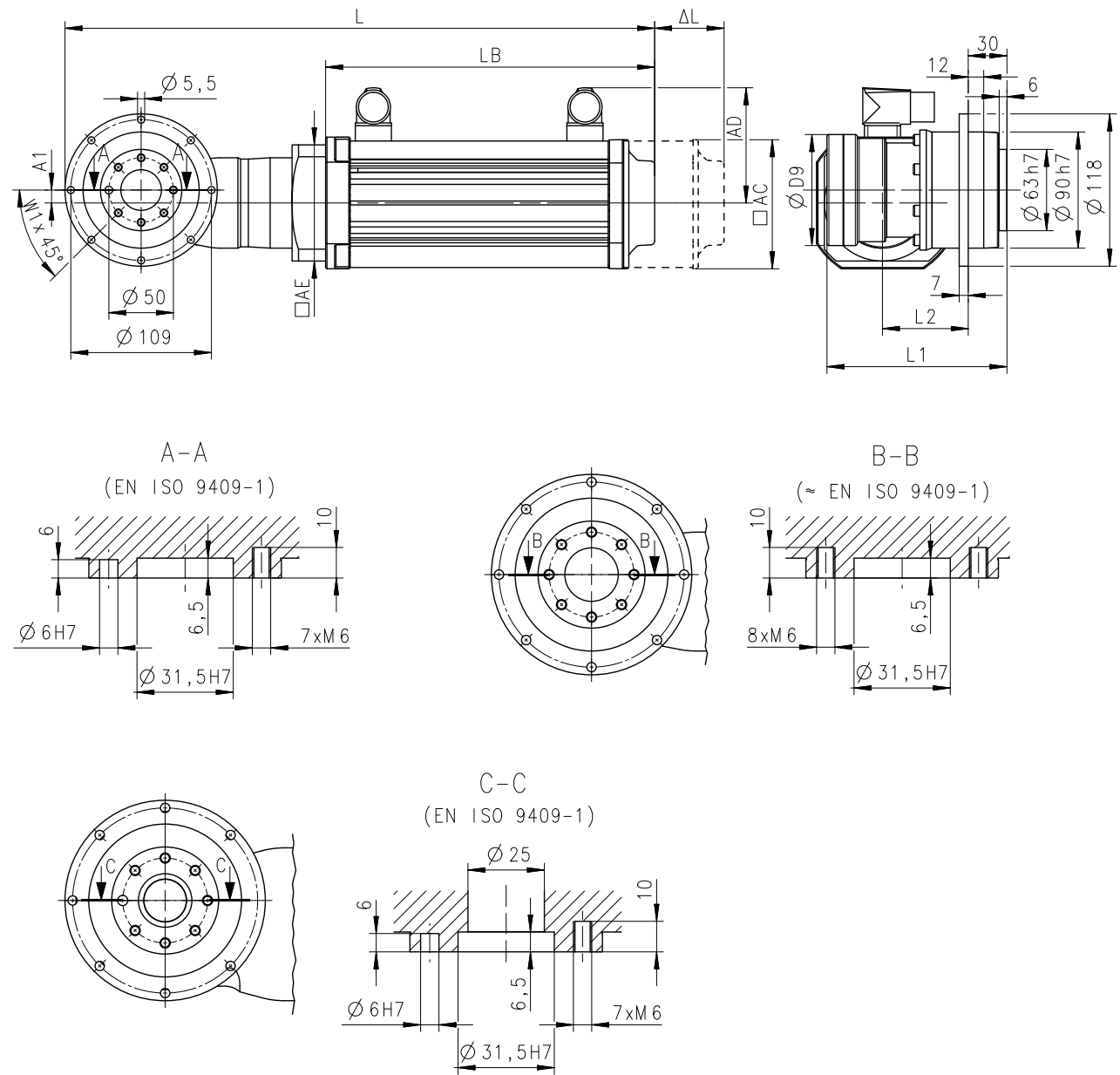
Technical data

Bevel gearbox g880-B
Basic dimensions



g880-B130 with MCA10

Gearbox design: Flange output shaft, without foot with centering, 2-stage



8800945-00

Motor			MCA 10
			I40-
Total length	L	mm	464
Gearbox length	L1	mm	139.5
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	90

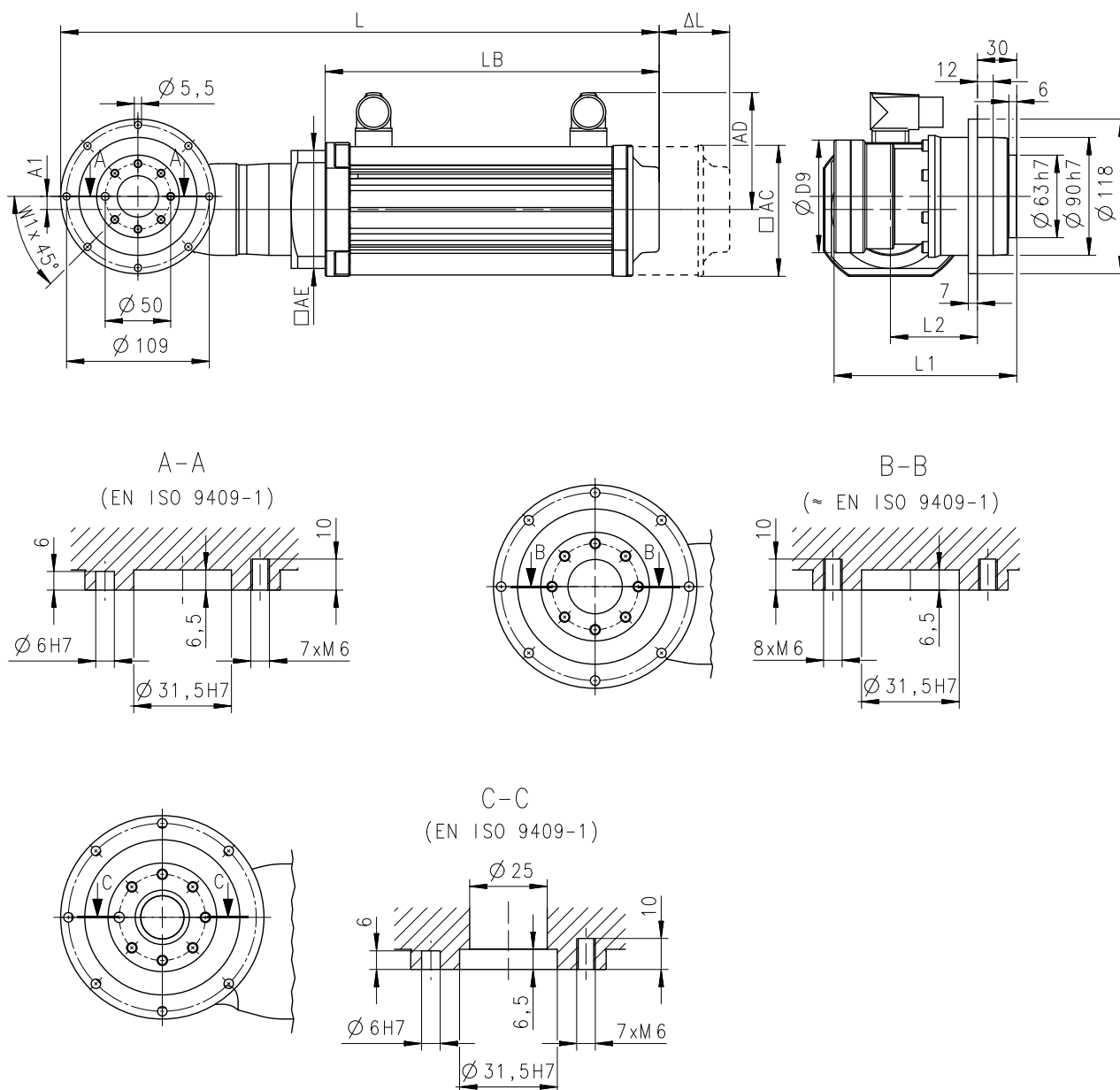


Technical data

Bevel gearbox g880-B
Basic dimensions

g880-B130 with MCA13

Gearbox design: Flange output shaft, without foot with centering, 1-stage



8800945-00

Motor			MCA 13
			I41-
Total length	L	mm	491
Gearbox length	L1	mm	132
Motor length	LB	mm	271
Motor diameter	AC	mm	130
Motor/connection distance	AD	mm	102
Gearbox diameter	AE	mm	115

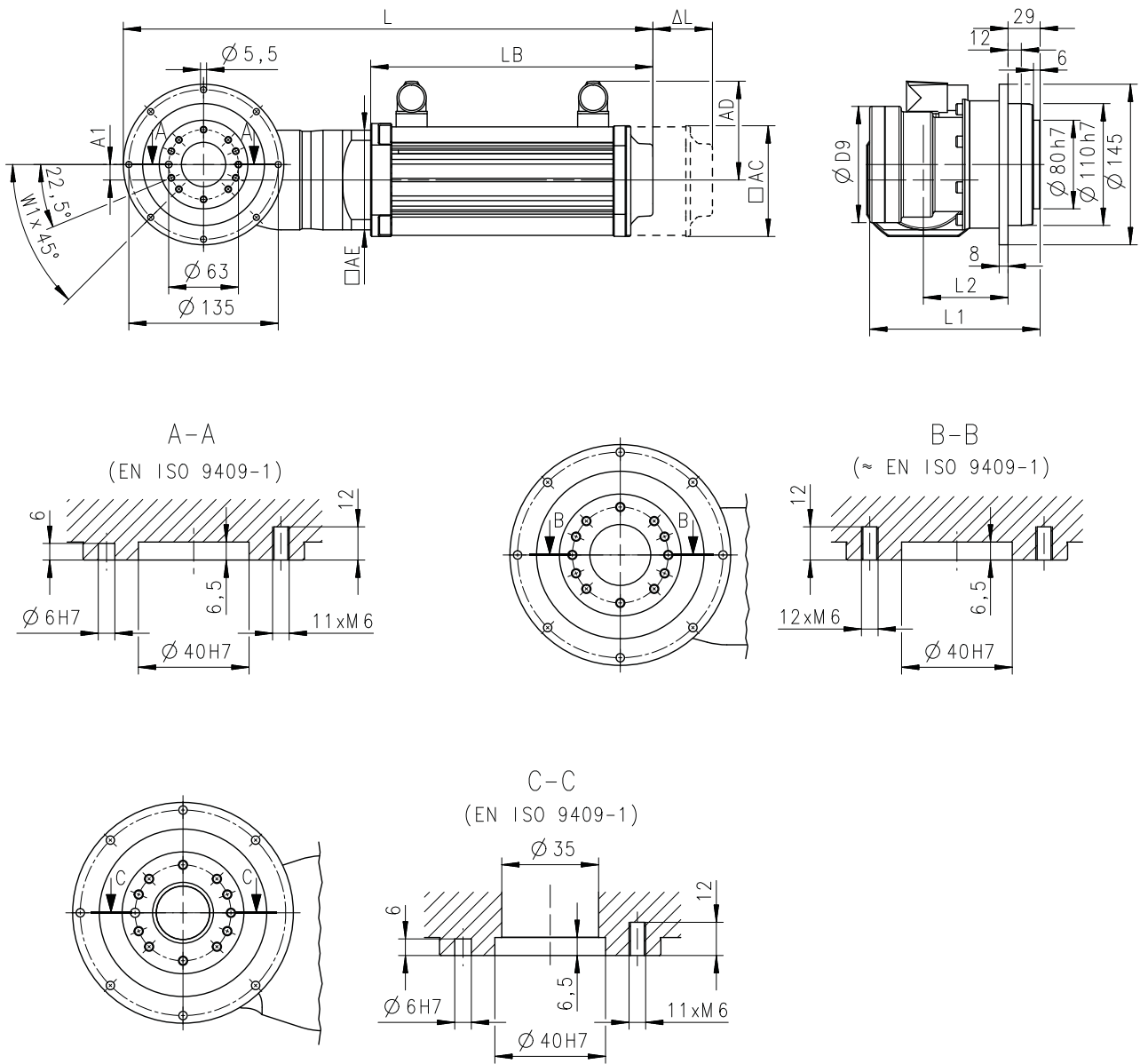
Technical data

Bevel gearbox g880-B
Basic dimensions



g880-B310 with MCA10

Gearbox design: Flange output shaft, without foot with centering, 2-stage



8800946-00

Motor			MCA 10
			I40-
Total length	L	mm	485.5
Gearbox length	L1	mm	154
Motor length	LB	mm	262
Motor diameter	AC	mm	102
Motor/connection distance	AD	mm	90
Gearbox diameter	AE	mm	90



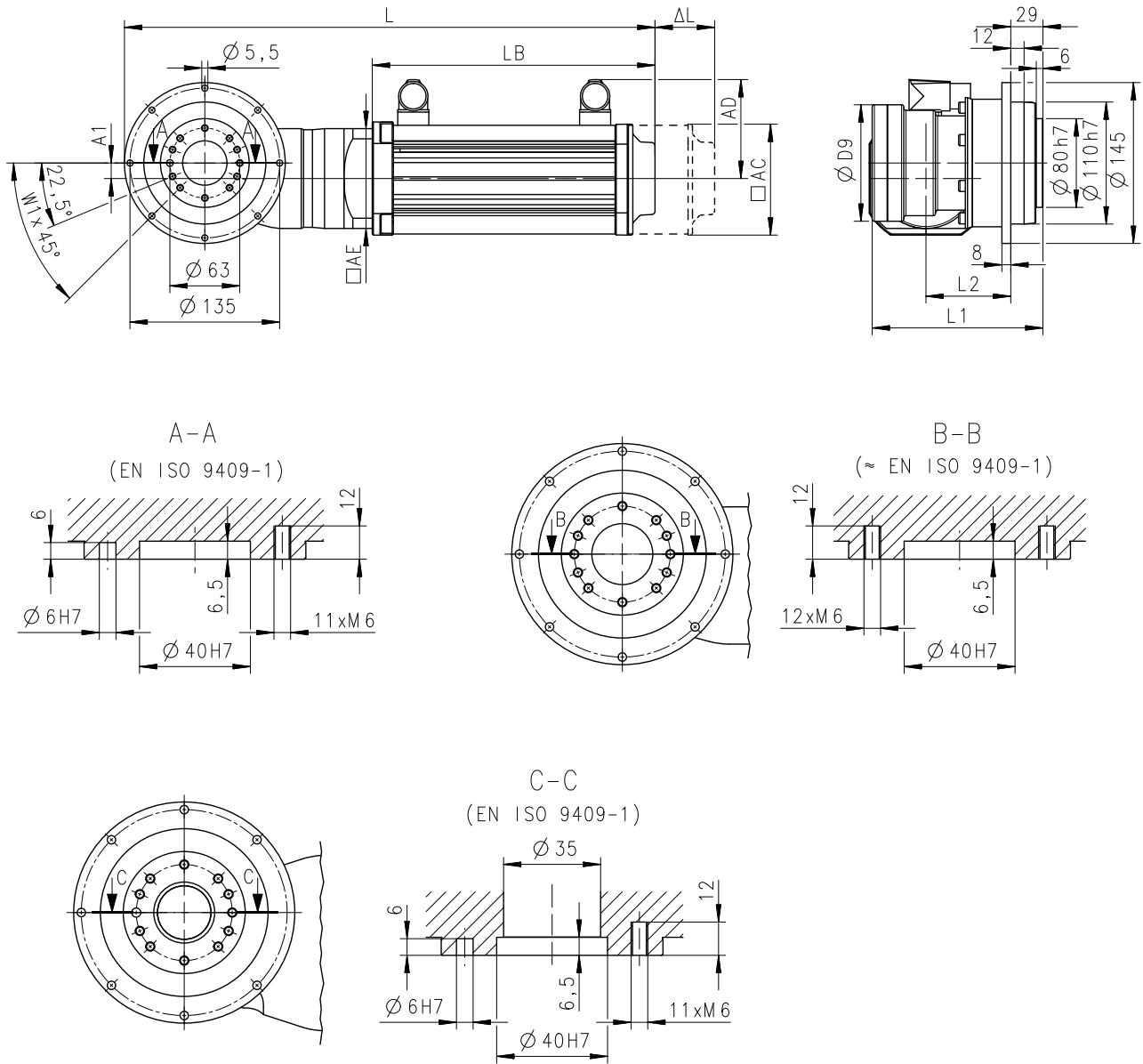
Technical data

Bevel gearbox g880-B
Basic dimensions



g880-B310 with MCA13

Gearbox design: Flange output shaft, without foot with centering, 2-stage



8800946-00

Motor			MCA 13
			I41-
Total length	L	mm	504.5
Gearbox length	L1	mm	154
Motor length	LB	mm	271
Motor diameter	AC	mm	130
Motor/connection distance	AD	mm	102
Gearbox diameter	AE	mm	115

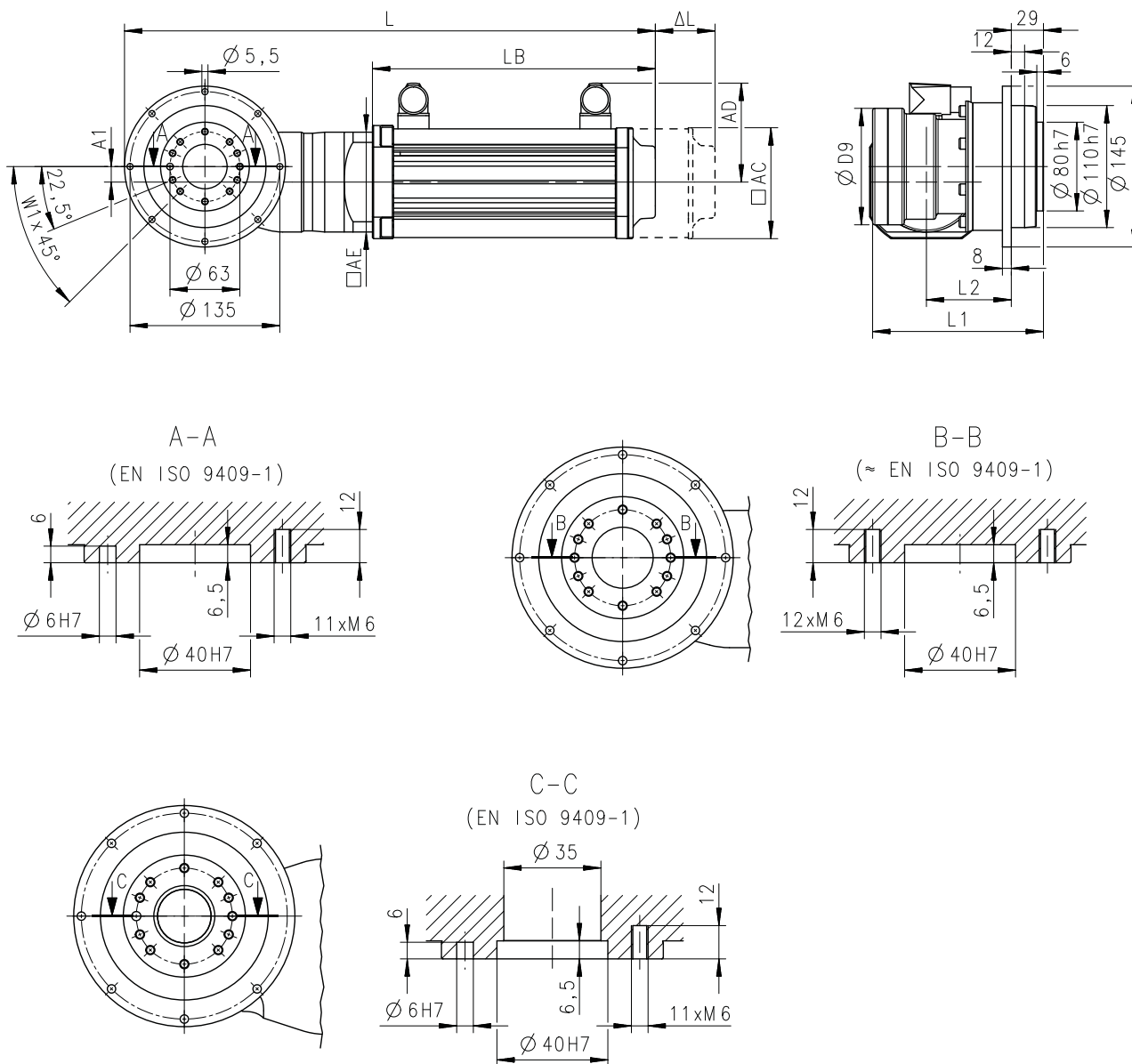


Technical data

Bevel gearbox g880-B
Basic dimensions

g880-B310 with MCA14

Gearbox design: Flange output shaft, without foot with centering, 1-stage



8800946-00

Motor			MCA 14			
			L16-	L20-	L35-	L41-
Total length	L	mm	634	572	634	572
Gearbox length	L1	mm	153.5	153.5	153.5	153.5
Motor length	LB	mm	364	302	364	302
Motor diameter	AC	mm	142	142	142	142
Motor/connection distance	AD	mm	109	109	109	109
Gearbox diameter	AE	mm	142	142	142	142

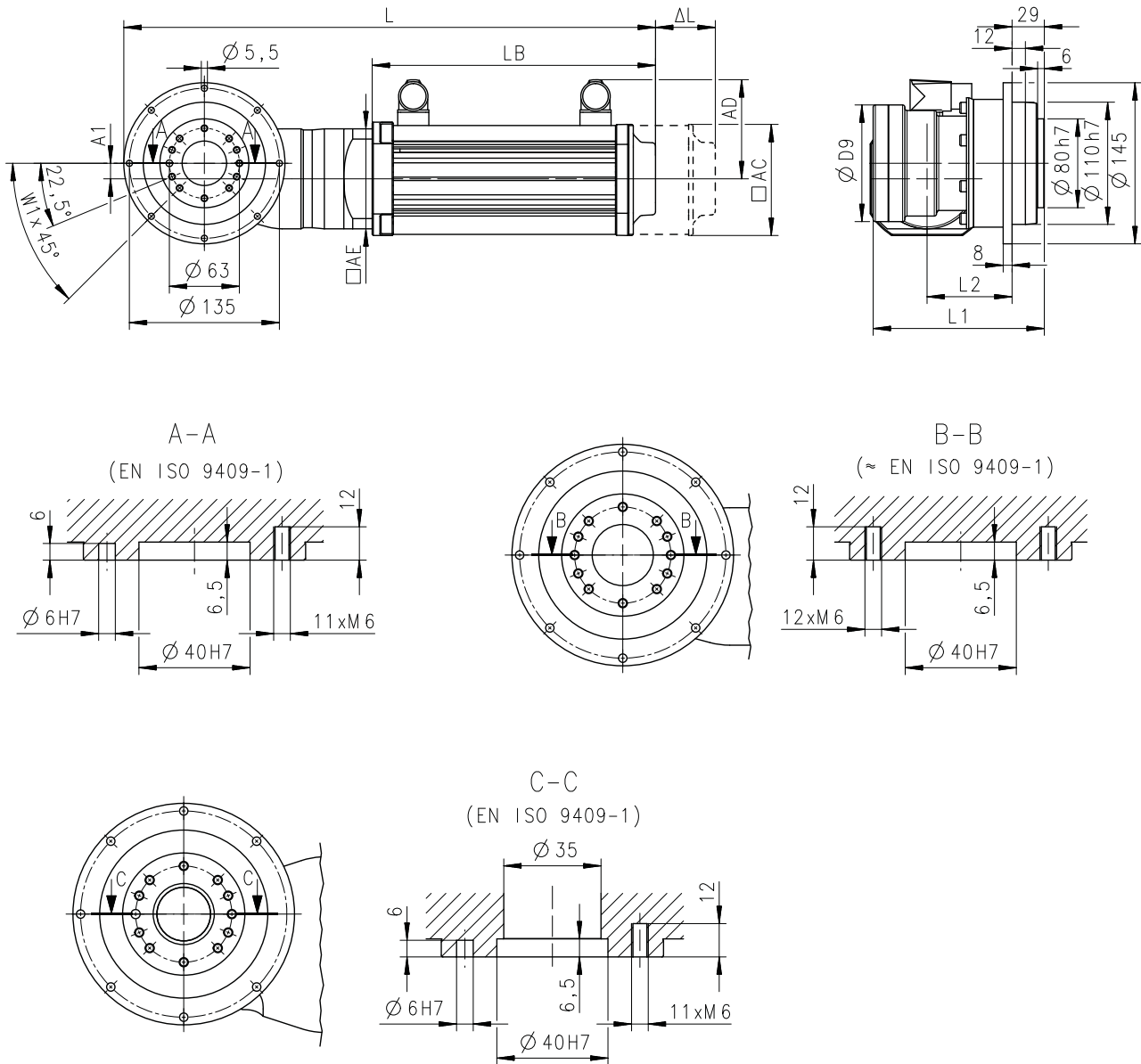
Technical data

Bevel gearbox g880-B
Basic dimensions



g880-B310 with MCA17

Gearbox design: Flange output shaft, without foot with centering, 1-stage



8800946-00

Motor			MCA 17	
			N23-	N41-
Total length	L	mm	610	610
Gearbox length	L1	mm	153.5	153.5
Motor length	LB	mm	340	340
Motor diameter	AC	mm	165	165
Motor/connection distance	AD	mm	118	118
Gearbox diameter	AE	mm	142	142

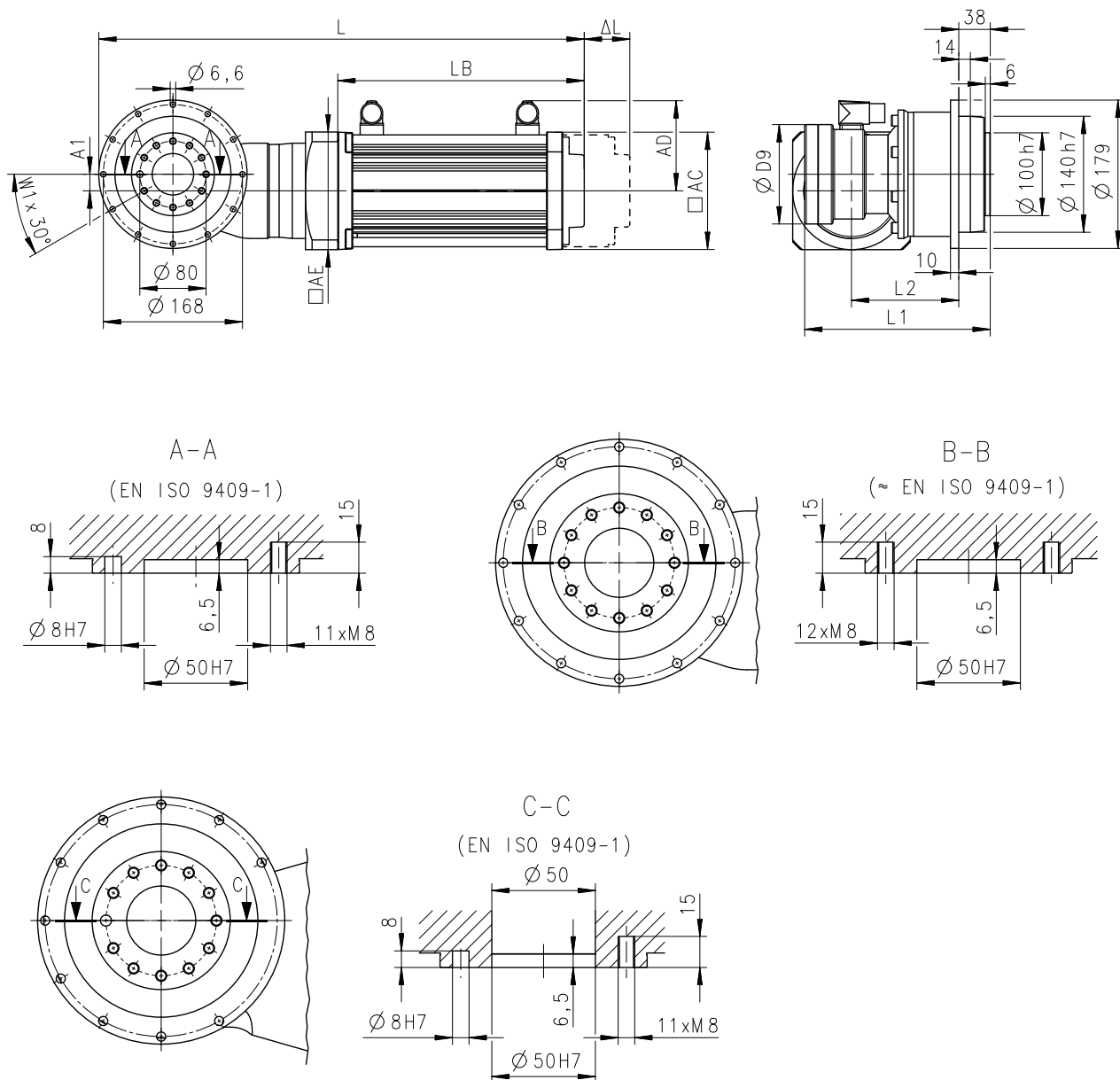


Technical data

Bevel gearbox g880-B
Basic dimensions

g880-B625 with MCA13

Gearbox design: Flange output shaft, without foot with centering, 2-stage



8800947-00

Motor			MCA 13	
			I34-	I41-
Total length	L	mm	616	548
Gearbox length	L1	mm	224	224
Motor length	LB	mm	339	271
Motor diameter	AC	mm	130	130
Motor/connection distance	AD	mm	102	102
Gearbox diameter	AE	mm	120	120

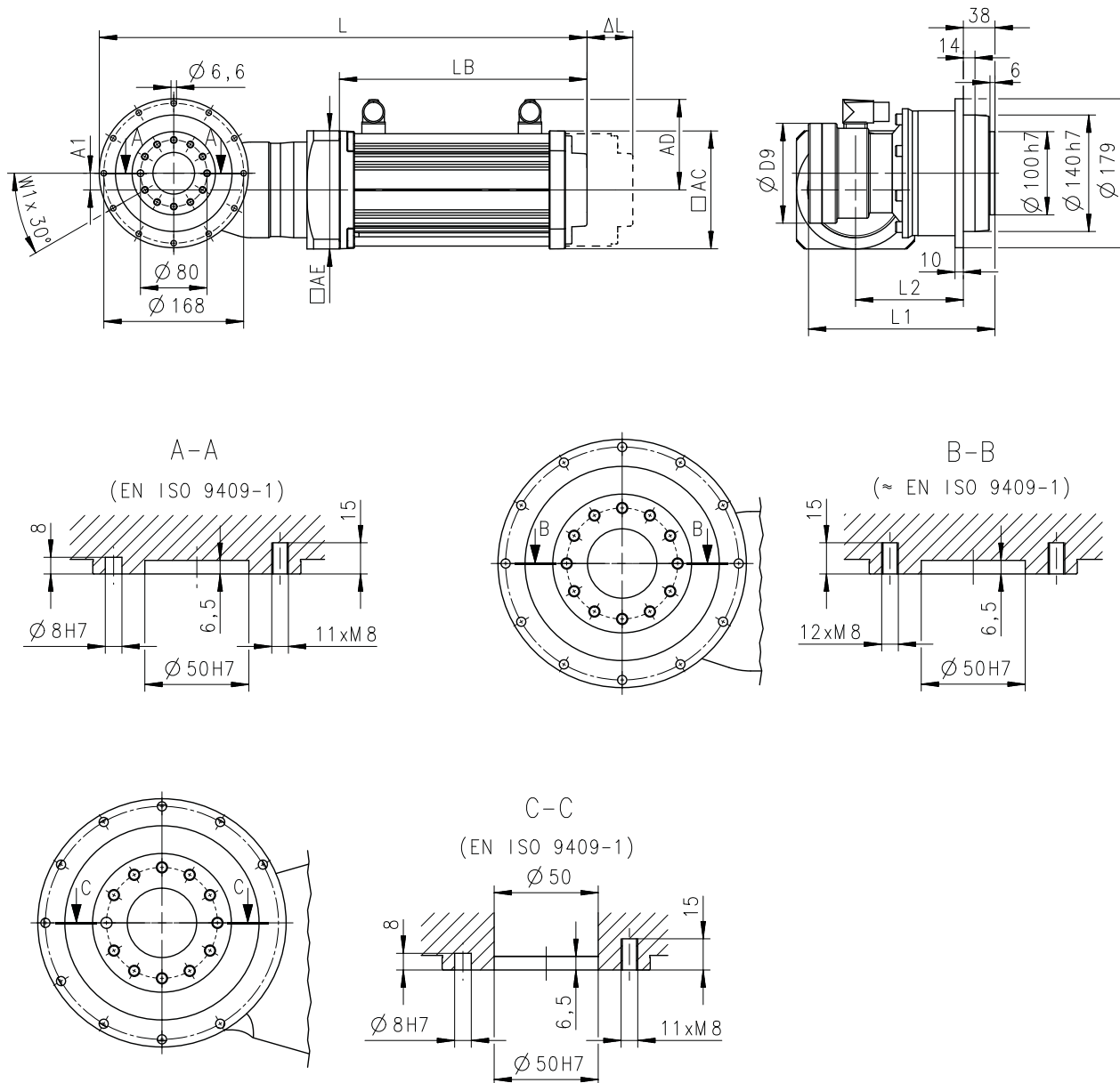
Technical data

Bevel gearbox g880-B
Basic dimensions



g880-B625 with MCA14

Gearbox design: Flange output shaft, without foot with centering, 1-stage



8800947-00

Motor			MCA 14	
			L16-	L35-
Total length	L	mm	686.5	686.5
Gearbox length	L1	mm	201.5	201.5
Motor length	LB	mm	364	364
Motor diameter	AC	mm	142	142
Motor/connection distance	AD	mm	109	109
Gearbox diameter	AE	mm	142	142

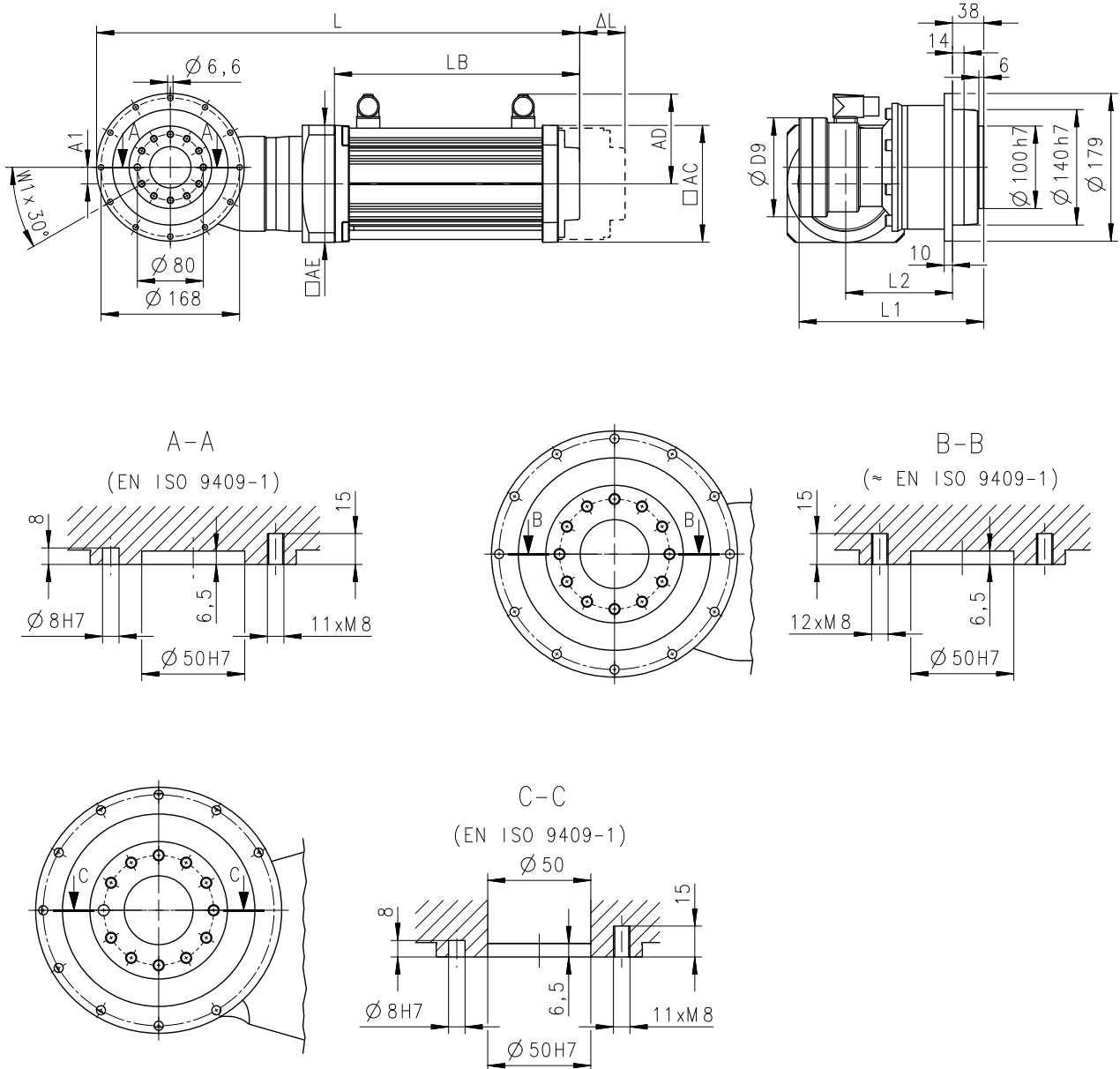


Technical data

Bevel gearbox g880-B
Basic dimensions

g880-B625 with MCA14

Gearbox design: Flange output shaft, without foot with centering, 2-stage



8800947-00

Motor			MCA 14			
			L16-	L20-	L35-	L41-
Total length	L	mm	641	579	641	579
Gearbox length	L1	mm	224	224	224	224
Motor length	LB	mm	364	302	364	302
Motor diameter	AC	mm	142	142	142	142
Motor/connection distance	AD	mm	109	109	109	109
Gearbox diameter	AE	mm	120	120	120	120

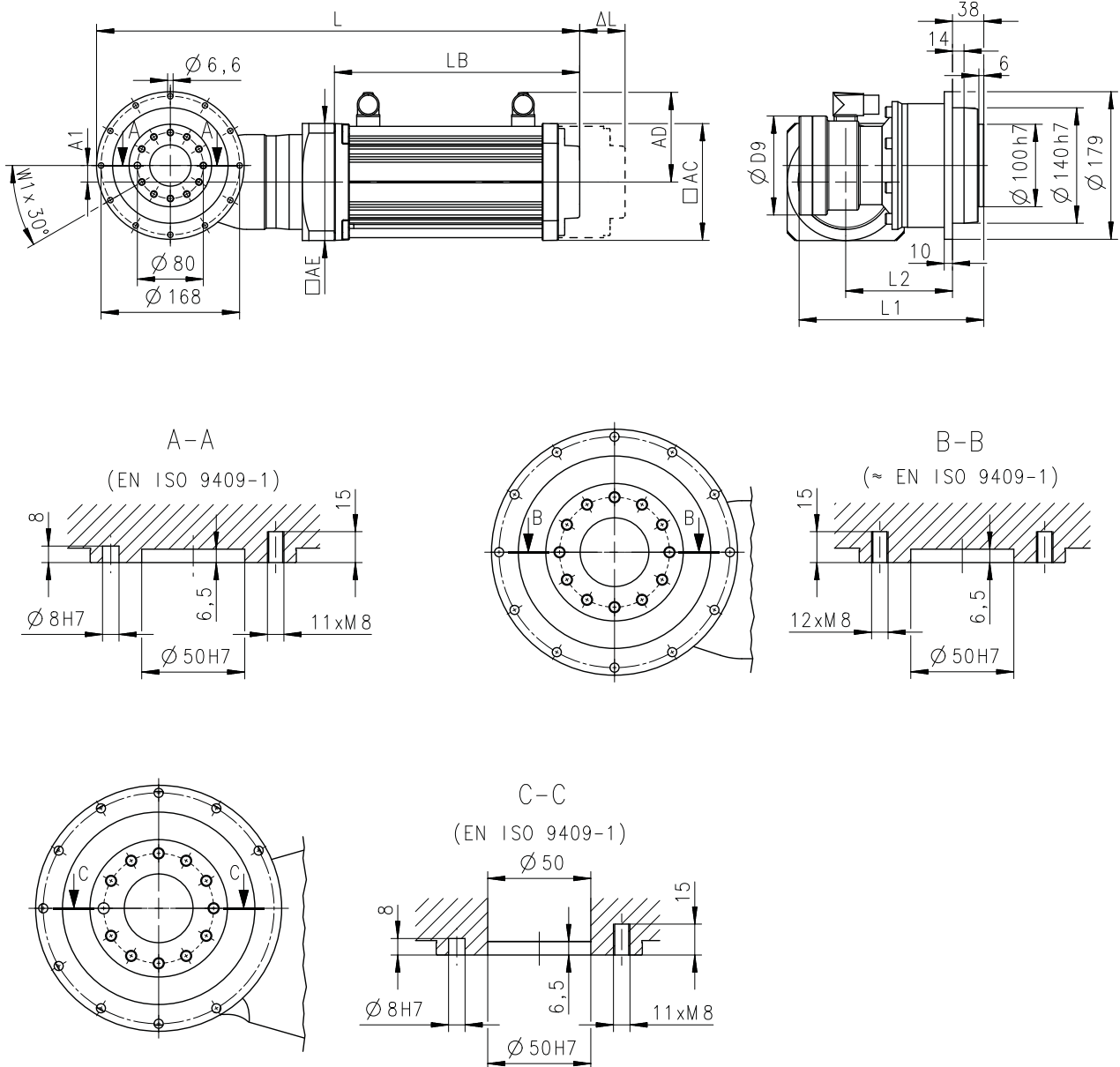
Technical data

Bevel gearbox g880-B
Basic dimensions



g880-B625 with MCA17

Gearbox design: Flange output shaft, without foot with centering, 1-stage



8800947-00

Motor			MCA 17			
			N17-	N23-	N35-	N41-
Total length	L	mm	748.5	662.5	748.5	662.5
Gearbox length	L1	mm	201.5	201.5	201.5	201.5
Motor length	LB	mm	426	340	426	340
Motor diameter	AC	mm	165	165	165	165
Motor/connection distance	AD	mm	118	118	118	118
Gearbox diameter	AE	mm	142	142	142	142

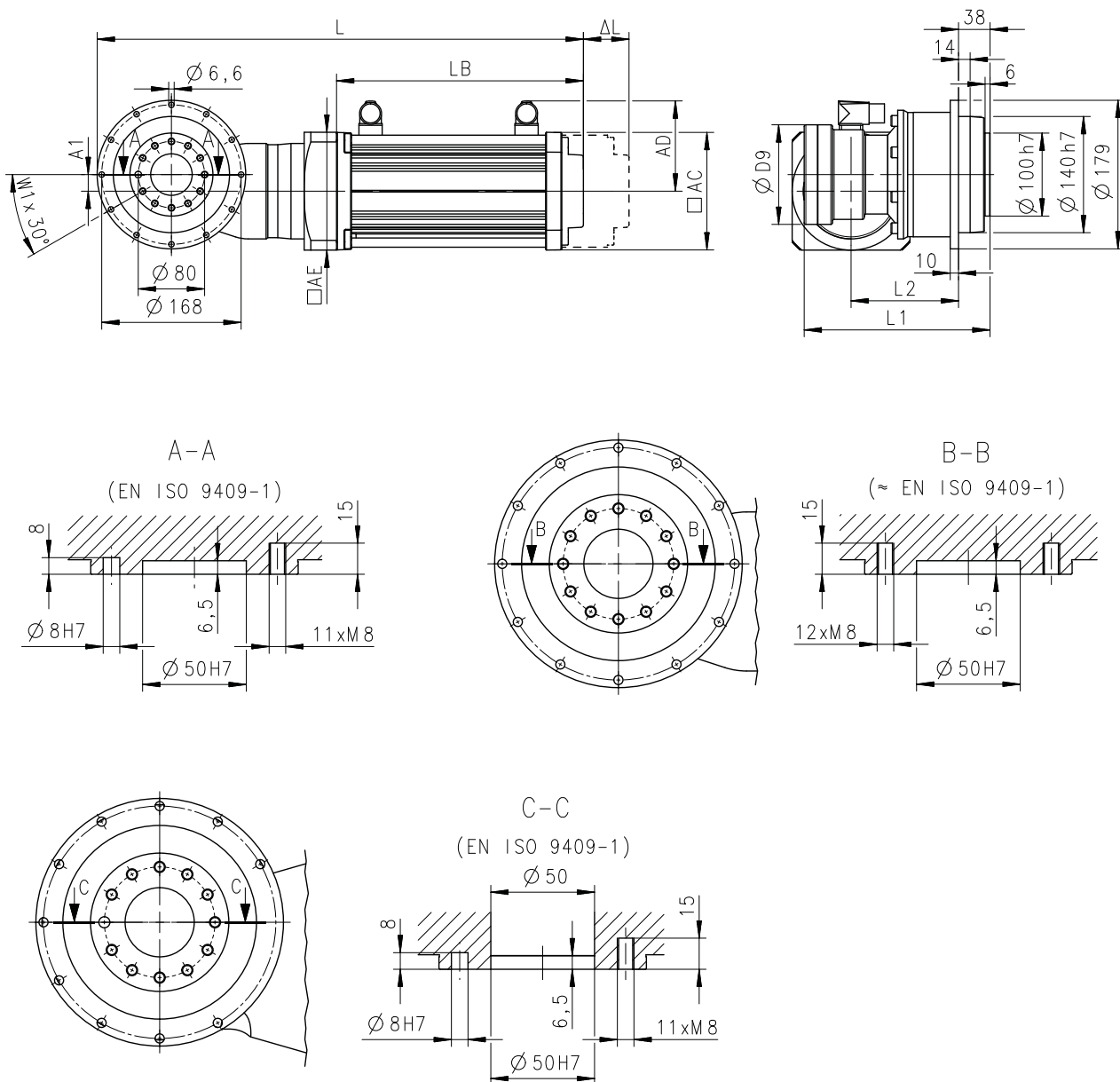


Technical data

Bevel gearbox g880-B
Basic dimensions

g880-B625 with MCA17

Gearbox design: Flange output shaft, without foot with centering, 2-stage



8800947-00

Motor			MCA 17	
			N23-	N41-
Total length	L	mm	617	617
Gearbox length	L1	mm	224	224
Motor length	LB	mm	340	340
Motor diameter	AC	mm	165	165
Motor/connection distance	AD	mm	118	118
Gearbox diameter	AE	mm	120	120

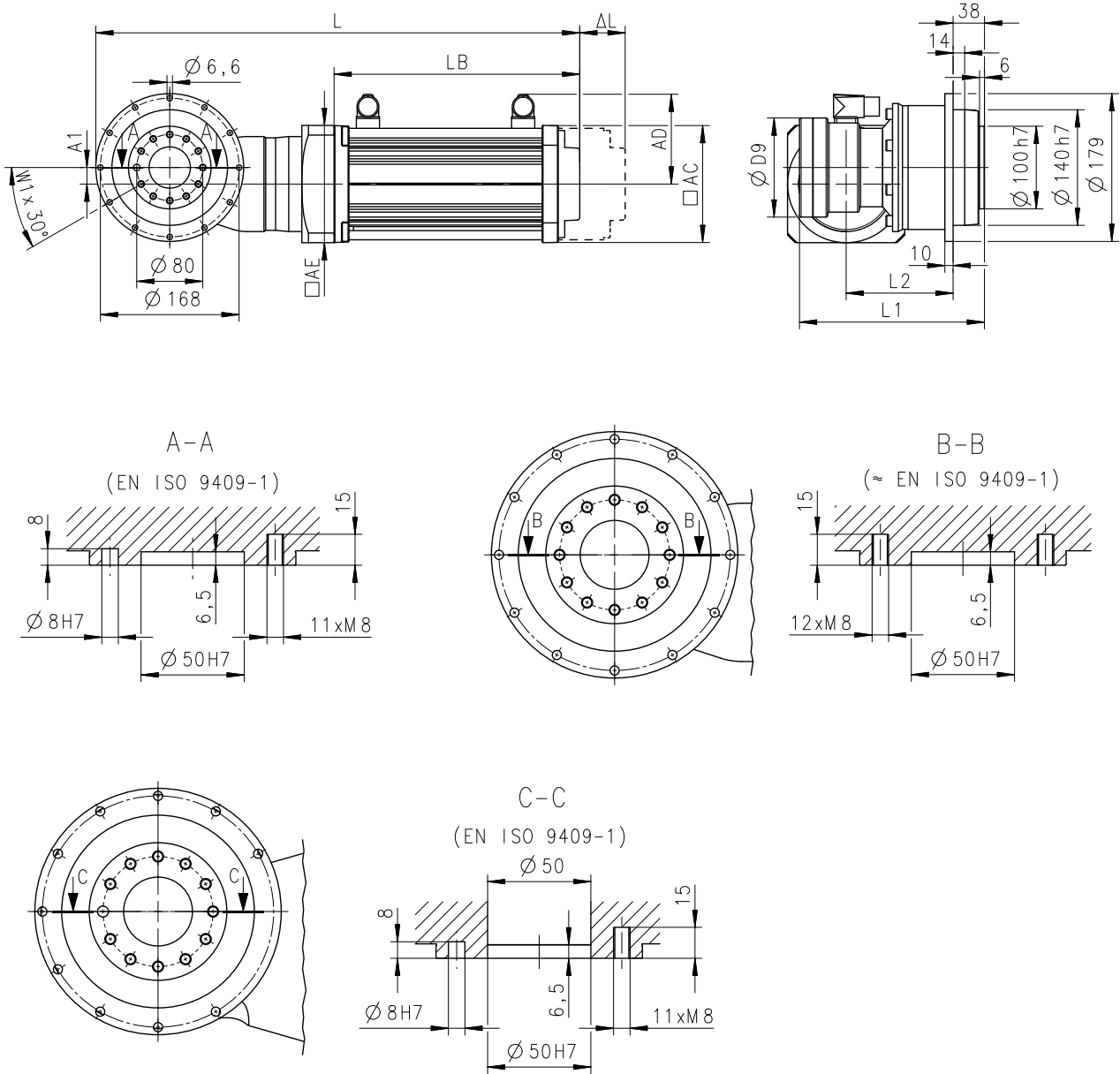
Technical data

Bevel gearbox g880-B
Basic dimensions



g880-B625 with MCA19

Gearbox design: Flange output shaft, without foot with centering, 1-stage



8800947-00

Motor			MCA 19	
			S23-	S42-
Total length	L	mm	733.5	733.5
Gearbox length	L1	mm	201.5	201.5
Motor length	LB	mm	401	401
Motor diameter	AC	mm	192	192
Motor/connection distance	AD	mm	151	151
Gearbox diameter	AE	mm	190	190



Additional lengths



The motor code indicates the short designation of the brake and feedback.
Detailed information can be found for

► [Product codes](#) 149

► [Brakes](#) 137

► [Feedback](#) 143

MCA10

Motor			MCA	
			10I40-	
Cooling type			natural	
Feedback (without brake B0)				
R□0	Δ L	mm	0	
SR□ / T20 / E□□	Δ L	mm	54	
Brake (P□) and feedback				
R□0 / C40	Δ L	mm	25	
SR□ / T20 / E□□	Δ L	mm	78	

MCA13

Motor			MCA	
			13I34-	13I41-
Cooling type			Forced	Natural
Feedback (without brake B0)				
R□0	Δ L	mm	0	0
SR□ / T20 / E□□	Δ L	mm	54	54
Brake (P□) and feedback				
R□0 / C40	Δ L	mm	35	35
SR□ / T20 / E□□	Δ L	mm	90	90

MCA14

Motor			MCA			
			14L16-	14L20-	14L35-	14L41-
Cooling type			Forced	Natural	Forced	Natural
Feedback (without brake B0)						
R□0	Δ L	mm	0	0	0	0
SR□ / T20 / E□□	Δ L	mm	55	55	55	55
Brake (P□) and feedback						
R□0	Δ L	mm	33	33	33	33
SR□ / T20 / E□□	Δ L	mm	89	89	89	89

MCA17

Motor			MCA			
			17N17-	17N23-	17N35-	17N41-
Cooling type			Forced	Natural	Forced	Natural
Feedback (without brake B0)						
R□0	Δ L	mm	0	0	0	0
SR□ / T20 / E□□	Δ L	mm	54	54	54	54
Brake (P□) and feedback						
R□0	Δ L	mm	35	35	35	35
SR□ / T20 / E□□	Δ L	mm	90	90	90	90

Technical data

Additional weights



MCA19

Motor			MCA			
			19S17-	19S23-	19S35-	19S42-
Cooling type			Blower	natural	Blower	natural
Feedback (without brake B0)						
R□0	Δ L	mm	0	0	0	0
SR□ / T20 / E□□	Δ L	mm	50	50	50	50
Brake (P□) and feedback						
R□0	Δ L	mm	38	38	38	38
SR□ / T20 / E□□	Δ L	mm	88	88	88	88

MCA20

Motor			MCA20X14H		MCA20X29H	
			Forced		Forced	
Cooling type			Forced		Forced	
Fan filter			Without	With	Without	With
Feedback (without brake B0)						
R□0	Δ L	mm	0	88	0	88
S□□ / T□□ / E□□	Δ L	mm	0	88	0	88
Brake (F1/FG) and feedback						
R□0	Δ L	mm	87	176	87	176
S□□ / T□□ / E□□	Δ L	mm	131	219	131	219
Brake (F2/FH) and feedback						
R□0	Δ L	mm	156	244	156	244
S□□ / T□□ / E□□	Δ L	mm	156	244	156	244

MCA21

Motor			MCA			
			21X17-	21X25-	21X35-	21X42-
Cooling type			Forced	Natural	Forced	Natural
Feedback (without brake B0)						
R□0	Δ L	mm	0	0	0	0
SR□ / T20 / E□□	Δ L	mm	49	49	49	49
Brake (P□) and feedback						
R□0	Δ L	mm	42	42	42	42
SR□ / T20 / E□□	Δ L	mm	92	92	92	92

Additional weights

Motors

Motor			MCA10	MCA13	MCA14	MCA17	MCA19	MCA20	MCA21
Permanent magnet	m	kg	0.9	0.8	1.5	1.5	2.7	13.0	5.0
holding brake									

Motor			MCA20			
Spring-applied holding brake						
Rated voltage	V _{Rated}	V	24		230	
Standard braking torque	m	kg	13.0		13.0	
Increased braking torque	m	kg	15.4		15.4	



Product extensions

Motor connection
Connection via terminal box

Product extensions

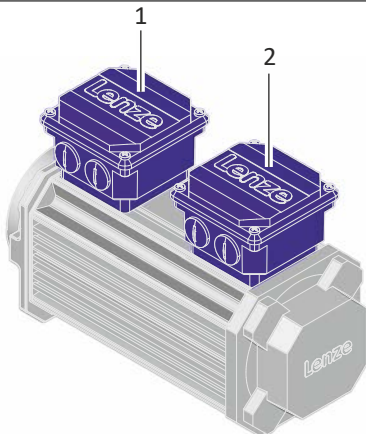
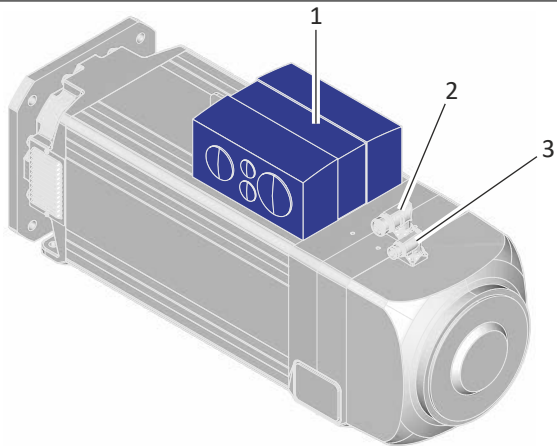
Motor connection

Connection via terminal box

If a 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 terminals are designed as tension spring terminals to ensure here the long-term vibration resistance of the cable contacts with adequate contact pressure required.

Position of the connections

MCA10 ... 19/21		MCA20/22/26	
			
Position	Meaning	Position	Meaning
1	Power connection Brake connection PE connection	1	Power connection Brake connection PE connection
2	Feedback connection Connection of temperature monitoring Blower connection	2	Feedback connection Connection of temperature monitoring
		3	Blower connection

Cable glands MCA10 ... 19/21



The openings for the cable glands are closed with plugs and arranged on one side. If required, the terminal box can be rotated step by step by 90 ° after loosening the screws in the terminal box.

Motor		MCA10 MCA13	MCA14 MCA17	MCA19 MCA21
Screwed connections		2x M20 x 1.5		1x M32 x 1.5 1x M25 x 1.5
cable cross-section	mm ²	0.08 ... 2.5		0.2 ... 10
Stripping length	mm	10 ... 11		
Terminal design		Spring-loaded terminal		

Product extensions

Motor connection
Connection via terminal box



MCA20/22/26 cable glands



The cut-outs for the cable glands are closed with sealing plugs.

The cable glands are arranged on both sides with the MCA20 variant.

The cable glands are arranged on one side with the MCA22 and MCA26 variants.
If required, the terminal box can be rotated by 180 ° after loosening the screws in the terminal box.

Motor		MCA20	MCA22	MCA26
Screwed connections		2x M20 x 1.5 2x M25 x 1.5 2x M32 x 1.5	1x M40 x 1.5 1x M50 x 1.5 1x M20 x 1.5 1x M16 x 1.5	1x M50 x 1.5 1x M63 x 1.5 1x M20 x 1.5 1x M16 x 1.5
Cable cross-section	mm ²	2.5 ... 16	10 ... 35	-
Terminal design		Spring-loaded terminal	Screw terminal	Threaded bolt
Stripping length	mm	18 ... 20	18	-
Threaded bolt		-	-	M12
Tightening torque	Nm	-	3.2	15.5

Terminal box, power		
Contact	Name	Meaning
U1	L1	Motor winding phase
V1	L2	
W1	L3	
PE	PE	PE conductor

Terminal box, DC brake		
Contact	Name	Meaning
BD1	+	Brake +
BD2	-	Brake -

Terminal box, AC brake		
Contact	Name	Meaning
~	L1	Mains
	N	
+	+	Holding brake (factory-wired)
-	-	
Schalter		Switching contact - DC switching

Terminal box, resolver		
Contact	Name	Meaning
B1	+Ref	Transformer windings (reference windings)
B2	-Ref	
B3	+VCC ETS	Supply: Electronic nameplate (only for variant with electronic nameplate ETS)
B4	+COS	Cosine stator windings
B5	-COS	
B6	+SIN	Sine stator windings
B7	-SIN	
B8		Not assigned



Product extensions

Motor connection
Connection via terminal box

Terminal box, SinCos absolute value encoder with Hiperface

Contact	Name	Meaning
B1	+ UB	Supply +
B2	GND	Mass
B3	A	Track A / + COS
B4	A ⁻	Track A inverse /-COS
B5	B	Track B / +SIN
B6	B ⁻	Track B inverse/-SIN
B7	Z	Zero track / + RS485
B8	Z ⁻	Zero track inverse /-RS485
B10		Incremental encoder shield

Terminal box, SinCos absolute value encoder with EnDat

Contact	Name	Meaning
B1	+ UB	Supply +
B2	GND	Mass
B3	A	Track A / + COS
B4	A ⁻	Track A inverse /-COS
B5	B	Track B / +SIN
B6	B ⁻	Track B inverse/-SIN
B7	Daten	EnDat interface data
B8	Daten ⁻	Data inverse EnDat interface
B20	Takt	EnDat interface cycle
B21	Takt ⁻	Inverse EnDat interface cycle
B22	Up Sensor	Up Sensor
B23	0 V Sensor	0 V sensor
B24	Schirm	Encoder housing shield
B25		Not assigned

Terminal box with temperature monitoring R

Contact	Name	Meaning
R1	+	Temperature sensor +
R2	-	Temperature sensor -

Terminal box, 1-phase separate fan

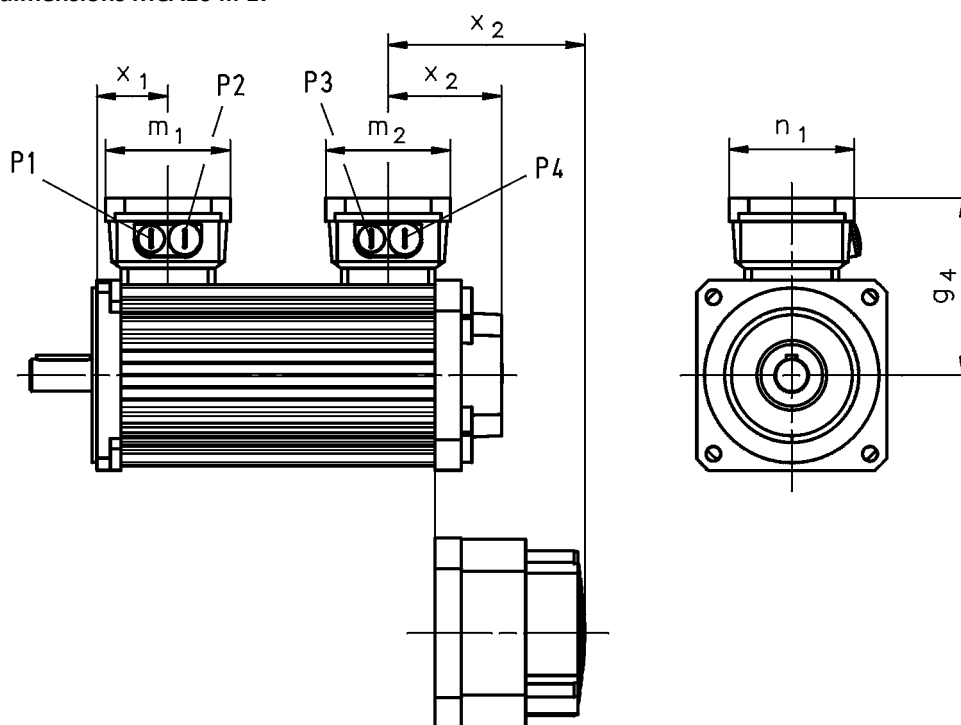
Contact	Name	Meaning
PE	PE	PE conductor
U1	L1	Mains
U2	N	

Product extensions

Motor connection
Connection via terminal box



Terminal box dimensions MCA10 ... 17



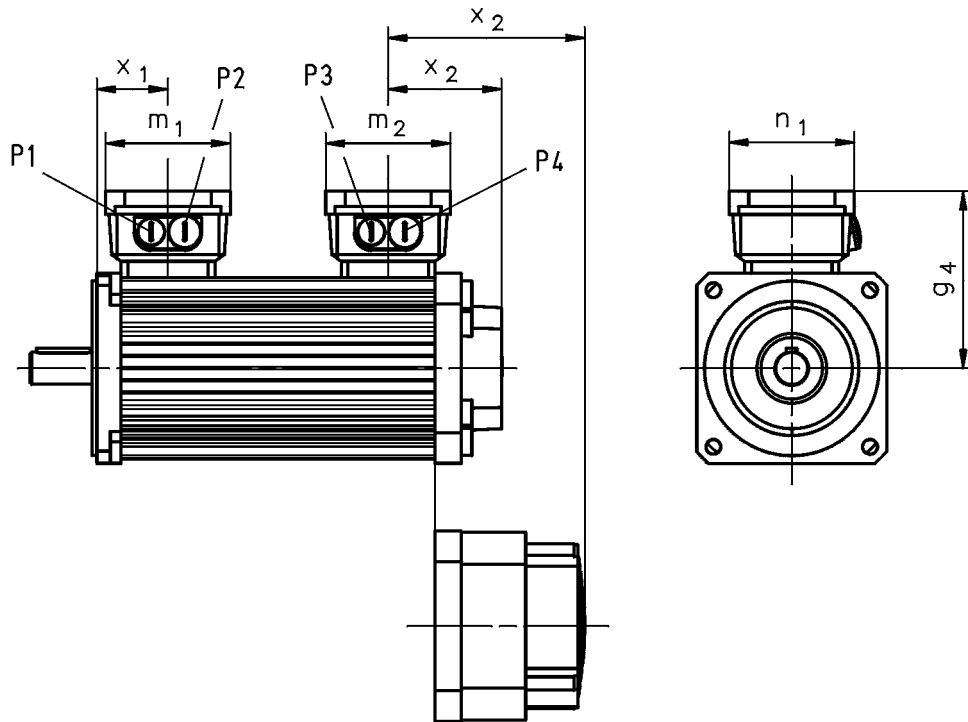
Motor			MCA						
			10I40-	13I34-	13I41-	14L16- 14L35-	14L20- 14L41-	17N17- 17N35-	17N23- 17N41-
Cooling type			Natural	Forced	Natural	Forced	Natural	Forced	Natural
Motor/connection distance	g ₄	mm	113	125		133		141	
Power connection, brake									
Screwed connections	P ₁	mm	M20x1.5						
	P ₂	mm	M20x1.5						
Terminal box	m ₁	mm	93						
	n ₁	mm	93						
	x ₁		54	57		53		55	
Feedback connection, temperature monitoring									
Screwed connections	P ₃	mm	M20x1.5						
	P ₄	mm	M20x1.5						
Terminal box	m ₂	mm	93						
	n ₁	mm	93						
Resolver	x ₂	mm	78	145	77	147	85	171	85
Absolute value encoder/incremental encoder	x ₂	mm	132	199	131	202	140	225	139



Product extensions

Motor connection
Connection via terminal box

Terminal box dimensions MCA19 ... 26



Motor			MCA						
			19S17- 19S35-	19S23- 19S42-	20X14H 20X29H	21X17- 21X35-	21X25- 21X42-	MCA22P	MCA26T
Cooling type			Forced	Natural	Forced	Forced	Natural	Forced	Forced
Motor/connection distance	g ₄	mm	158		171	169		203	256
Power connection, brake									
Screwed connections	P ₁	mm	M25x1.5		M32x1.5 M25x1.5	M25x1.5		M50x1.5 M40x1.5	M63x1.5 M50x1.5
	P ₂	mm	M32x1.5		M20x1.5	M32x1.5		M20x1.5 M16x1.5	M20x1.5 M16x1.5
Terminal box	m ₁	mm	115		154	115		190	234
	n ₁	mm	115		128	115		171	212
	x ₁		64		299	70		380	465
Feedback connection, temperature monitoring									
Screwed connections	P ₃	mm	M20x1.5		-	M20x1.5		-	
	P ₄	mm	M20x1.5		-	M20x1.5		-	
Terminal box	m ₂	mm	115		-	115		-	
	n ₁	mm	115		-	115		-	
Resolver	x ₂	mm	190	93	-	193	97	-	
Absolute value encoder/incremental encoder	x ₂	mm	240	143	-	243	147	-	

Product extensions

Motor connection
Connection via ICN connector



Connection via ICN connector

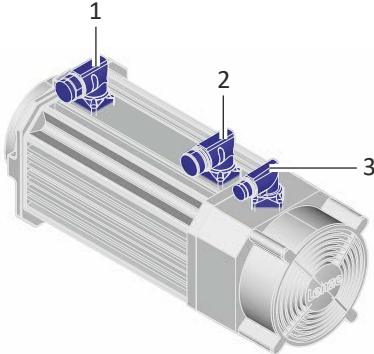
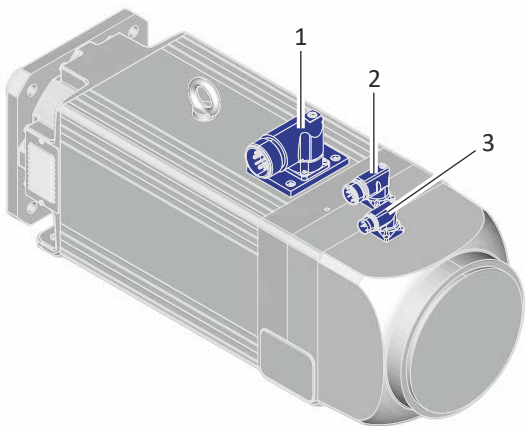
The electrical connection to the servo motors as a standard is established via ICN connectors.

The connectors can be rotated by 270 ° and are provided with a bayonet catch. Since the catch of the connector is also compatible with conventional box nuts, existing mating connectors with a screw plug can continue to be used without any problems.



In order to provide for a quick and error-free connection of Lenze motors to Lenze inverters, we recommend using prefabricated Lenze system cables.

Position of the connections

MCA10 ... 17		MCA20 ... 26	
			
Position	Meaning	Position	Meaning
1	Power connection Brake connection PE connection	1	Only with MCA20: Power connection Brake connection PE connection
2	Feedback connection Connection of temperature monitoring	2	Feedback connection Connection of temperature monitoring
3	Blower connection	3	Blower connection



Product extensions

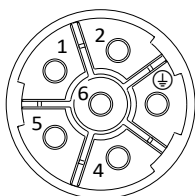
Motor connection
Connection via ICN connector

Power and brake connection

Valid for MCA10 ... 17

ICN-M23 connector assignment

6-pole



ICN M23 6-pole		
Contact	Name	Meaning
PE	PE	PE conductor
1	BD1	DC +/-AC brake
2	BD2	DC -/AC brake
4	U	Power phase U
5	V	Power phase V
6	W	Power phase W

Product extensions

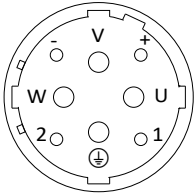
Motor connection
Connection via ICN connector



Valid for MCA19 ... 21

ICN-M40 connector assignment

8-pole



ICN M40 8-pole		
Contact	Name	Meaning
+	BD1	Holding brake +
-	BD2	Holding brake -
PE	PE	PE conductor
U	U	Power phase U
V	V	Power phase V
W	W	Power phase W
1		Not assigned
2		Not assigned



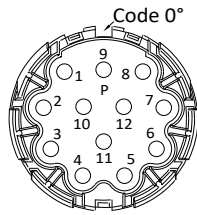
Product extensions

Motor connection
Connection via ICN connector

Feedback and temperature monitoring connection

ICN-M23 connector assignment

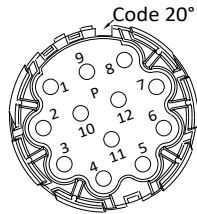
Resolver



ICN M23 for resolvers		
Contact	Name	Meaning
1	+Ref	Transformer windings
2	-Ref	Transformer windings
3	+VCC ETS	Supply: Electronic nameplate (Only for motors and inverters that support this function)
4	+COS	Cosine stator windings
5	-COS	Cosine stator windings
6	+SIN	Sine stator windings
7	-SIN	Sine stator windings
8		Not assigned
9		Not assigned
10	Schirm	Encoder housing shield
11	+	Temperature monitoring: PT1000
12	-	Temperature monitoring: PT1000

ICN-M23 connector assignment

Incremental and SinCos absolute value encoder Hiperface©



ICN M23 for incremental and SinCos absolute value encoder Hiperface		
Contact	Name	Meaning
1	B	Track B / +SIN
2	A ⁻	Track A inverse /-COS
3	A	Track A / + COS
4	+UB	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	Schirm	Encoder housing shield
11	+	Temperature monitoring: PT1000
12	-	Temperature monitoring: PT1000

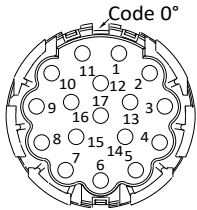
Product extensions

Motor connection
Connection via ICN connector



ICN-M23 connector assignment

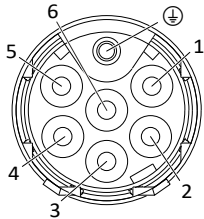
SinCos absolute value encoder with EnDat interface



ICN M23 SinCos absolute value encoder with EnDat		
Contact	Name	Meaning
1	UP Sensor	Up Sensor
2		Not assigned
3		Not assigned
4	0 V Sensor	0 V sensor
5	+	PT1000/KTY temperature sensor
6	-	PT1000/KTY temperature sensor
7	+UB	Supply +
8	Takt	EnDat interface cycle
9	Takt-	Inverse EnDat interface cycle
10	GND	Mass
11	Schirm	Encoder housing shield
12	B	Track B
13	B-	Track B inverse/-SIN
14	Daten	EnDat interface data
15	A	Track A
16	A-	Track A inverse /-COS
17	Daten-	Data inverse EnDat interface

Blower

Pin assignment ICN-M17



ICN M17 for blowers 1-ph		
Contact	Name	Meaning
PE	PE	PE conductor
1	U1	Fan
2	U2	Fan
3		Not assigned
4		Not assigned
5		Not assigned
6		Not assigned



Brakes

Optionally, the MCA10 ... 19 and MCA21 motors can be ordered with a permanent magnet brake as the holding brake.

Spring-applied brakes are available as holding brakes for the MCA20, 22 and 26 motors.

⚠ CAUTION!

They may not be used as safety elements (particularly with hoist axes) without additional measures being implemented.

The brakes used are not fail-safe brakes in the sense that prospective disruptive factors, e.g. oil ingress, can lead to a reduction in torque!

- ▶ The brakes must only be used as holding brakes for holding the axes at a standstill or in the deenergised state.
- ▶ The brake must not be used as a service brake.

⚠ CAUTION!

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.

Motor supply cables

If long motor supply cables are used, pay attention to the ohmic voltage drop along the cable and compensate for it with a higher voltage at the input end of the cable.

The following applies to Lenze system cables:

$U[V] = U_B[V] + 0.08 \frac{[V]}{[A] \times [m]} \times I_{Lg}[m] \times I_B[A]$	U	V	Resulting supply voltage
	U _B	V	Rated voltage of the brake
	I _{Lg}	m	Cable length
	I _B	A	Rated current of the brake

NOTICE

- ▶ The brakes become active when the supply voltage has been switched off (closed-circuit principle).
- ▶ When using the brakes purely as holding brakes, virtually no wear occurs on the friction surfaces.
- ▶ The friction surfaces must always be free from oil and grease because even small amounts of grease or oil will considerably reduce the braking torque.

NOTICE

In case of these permanent magnet brakes, the rated torque applies solely as holding torque at standstill.

- ▶ Emergency stops at higher speeds are possible but high switching energy increases wear on the friction surfaces and the hub.
- ▶ During braking from full motor speed, e.g. in the event of emergency stops, the braking torque is significantly reduced.



NOTICE

In case of travel axes, the compliance of the permissible ratio of mass inertia load/brake motor (J_L/J_{MB}) ensures that the permissible maximum switching energy of the brake will not be exceeded and at least the values given for the emergency stop functions from the given speed (see rated data) are applied.

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

To simplify matters, the friction energy per switching cycle can be calculated using the formula below and must not exceed the limit value for emergency stops, which depends on the switching rate:

$Q = \frac{1}{2} \times J_{ges} \times \left(2\pi \times \frac{\Delta n}{60} \right)^2 \times \frac{M_N}{M_N - M_L}$	Q	J	Friction energy
	J_{total}	kgm ²	Total mass inertia (motor + load)
	Δn	rpm	Differential speed
	M_N	Nm	Rated torque of the brake
	M_L	nM	Load torque



The shortest operating times of the brakes are achieved by DC switching of the voltage and an external suppressor circuit (varistor or spark suppressor).

Without suppressor circuit, the operating times may increase. A varistor/ spark suppressor limits the breaking voltage peaks. It must be ensured that the power limit of the suppressor circuit is not exceeded. This limit depends on the brake current, brake voltage, disengagement time and the switching operations per time unit.

Furthermore the suppressor circuit is necessary for interference suppression and for increasing the service life of the relay contacts (external, is not integrated into the motor).



It is not possible to readjust the brake.



Permanent magnet brakes

Rated data



Engagement and disengagement times apply to rated voltage ($\pm 0\%$) and suppressor circuit of the brakes with a varistor with DC switching. Without a suppressor circuit, the times may be longer.

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.

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

With 205 V DC brake: connection to 230 V AC via external rectifier (no cURus possible).

Maximum switching energy per emergency stop with $n = 3000$ rpm for at least 2000 emergency stops.

Supply voltage DC 24 V

Motor			MCA10I	MCA13I	MCA14L	MCA17N	MCA19S	MCA21X
Motor code			P1	P1	P4	P1	P1	P1
Supply voltage range	V_{in}	V	21.84 ... 25.2					
Supply voltage	V_{rated}	V	24					
Bemessungsdrehmoment								
At 20 °C	M_{rated}	Nm	3.30	12	26	24	46	88
At 120 °C	M_{rated}	Nm	2.50	11	22		40	80
Rated current	I_{rated}	A	0.50	0.67	0.75		0.81	1.46
Engagement time t_1	t_1	ms	10	20	16	25		23
Disengagement time t_2	t_2	ms	20	29	70	50	73	140
Friction energy	Q_E	kJ	0.35	0.40	0.7	1.2	1.90	2.80
Weight	m	kg	0.3	0.80	1.1	1.50	1.9	3.9
Massenträgheitsmoment								
Brake	J	kgcm ²	0.38	1.06	3.60		9.50	31.8
Brake motor	J_{MB}	kgcm ²	2.78	9.36	22.8	39.6	81.5	212
Load/brake motor ratio	J_L/J_{MB}		24.5	7.7	5.2	5.1	3.7	1.7

Product extensions

Brakes

Permanent magnet brakes



Supply voltage DC 205 V

Motor			MCA10I	MCA13I	MCA14L	MCA17N	MCA19S	MCA21X
Motor code			P5	P5	P8	P5	P5	P5
Supply voltage range	V _{in}	V	186.55 ... 215.25					
Supply voltage	V _{rated}	V	205					
Bemessungsdrehmoment								
At 20 °C	M _{rated}	Nm	3.30	12	26	24	46	88
At 120 °C	M _{rated}	Nm	2.50	11	22		40	80
Rated current	I _{rated}	A	0.059	0.08	0.088		0.11	0.18
Engagement time t1	t ₁	ms	10	20	16	25		23
Disengagement time t2	t ₂	ms	20	29	70	50	73	140
Friction energy	Q _E	kJ	0.35	0.40	0.7	1.2	1.90	2.80
Weight	m	kg	0.3	0.80	1.1	1.50	1.9	3.9
Massenträgheitsmoment								
Brake	J	kgcm ²	0.38	1.06	3.60		9.50	31.8
Brake motor	J _{MB}	kgcm ²	2.78	9.36	22.8	39.6	81.5	212
Load/brake motor ratio	J _L /J _{MB}		24.5	7.7	5.2	5.1	3.7	1.7



Spring-applied brakes

Rated data



Engagement and disengagement times apply to rated voltage ($\pm 0\%$) and suppressor circuit of the brakes with a varistor with DC switching. Without a suppressor circuit, the times may be longer.

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.

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

With 230 V AC brake: connection to an integrated rectifier (no cURus possible).

Maximum switching energy for each emergency stop with $n = 3000$ rpm for at least 300, and a maximum of 4 emergency stops per hour.

Supply voltage DC 24 V

Motor			MCA20X		MCA22P		MCA26T
Motor code			F1	F2	F1	F2	F1
Supply voltage range	V_{in}	V	21.6 ... 26.4				
Supply voltage	V_{rated}	V	24				
Bemessungsdrehmoment							
At 20 °C	M_{rated}	Nm	90	150	300		
At 120 °C	M_{rated}	Nm	80	130	260		
Rated current	I_{rated}	A	3.13	2.58	3.75		
Engagement time t_1	t_1	ms	70		50	175	
Disengagement time t_2	t_2	ms	220	240	260	320	
Friction energy	Q_E	kJ	18	31	23	39	51
Weight	m	kg	13	15.4	20.5	26	30.7
Massenträgheitsmoment							
Brake	J	kgcm ²	6.88	14.1	18.1	36.3	70.4
Brake motor	J_{MB}	kgcm ²	177	189	505	523	1405
Load/brake motor ratio	J_L/J_{MB}		19.6	33	8.2	14.1	12.7

Product extensions

Brakes
Spring-applied brakes



Supply voltage AC 230 V

Motor			MCA20X		MCA22P		MCA26T
Motor code			FG	FH	FG	FH	FG
Supply voltage range	V_{in}	V	207 ... 253				
Supply voltage	V_{rated}	V	230				
Bemessungsdrehmoment							
At 20 °C	M_{rated}	Nm	90	150	300		
At 120 °C	M_{rated}	Nm	80	130	260		
Rated current	I_{rated}	A	0.37	0.3	0.44		0.37
Engagement time t1	t_1	ms	70		130		175
Disengagement time t2	t_2	ms	220	240	260	310	360
Friction energy	Q_E	kJ	18	31	23	39	51
Weight	m	kg	13	15.4	20.5	26	30.7
Massenträgheitsmoment							
Brake	J	kgcm ²	6.88	14.1	18.1	36.3	70.4
Brake motor	J_{MB}	kgcm ²	177	189	505	523	1405
Load/brake motor ratio	J_L/J_{MB}		19.6	33	8.2	14.1	12.7



Feedback

For speed control with a servo inverter, the servo motor can be equipped with the following feedback systems:

Inverter	Feedback without functional safety		
	Resolver	Absolute value encoder	Incremental encoder
i950 servo inverter	RS0	AM1024-8V-H AS1024-8V-H	-
i700 servo inverter	RS0	AM1024-8V-H AS1024-8V-H	-
8400 TopLine inverter drives	RS0	AM1024-8V-H AS1024-8V-H	IG2048-5V-S IG2048-5V-T IG4096-5V-T
9400 HighLine servo drives	RS0	AM32-5V-E AM1024-8V-H AM2048-5V-E AS1024-8V-H AS2048-5V-E	IG2048-5V-S IG2048-5V-T IG4096-5V-T

Inverter	Feedback with functional safety		
	Resolver	Absolute value encoder	Incremental encoder
i950 servo inverter	RV03	-	-
9400 HighLine servo drives	RV03	-	-

Feedbacks in the environment of functional safety

Motors can perform speed-dependent safety functions for safe speed and/or safe relative position monitoring in a drive system by Lenze inverters or Controllers. In case of inverters, these functions are implemented by integrable safety modules and in case of Controllers by the additionally required Safety Controller.

When planning systems/installations of this kind, always observe the following:

- When using just one single feedback system in the environment of these safety applications, the applicable safety engineering standard EN 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, the permissible angular 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

Examples of speed-dependent safety functions:

- 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)

Product extensions

Feedback
Resolver



Resolver

The stator-supplied, 2-pole resolver with two stator windings shifted by 90 degrees and a rotor winding with a transformer winding can record both the speed and the rotor position, just like a single-turn absolute value encoder. The rotor position can be determined within one mechanical motor revolution after a voltage failure.

Feedback type			Resolver	
Feedback			RS0	RV03
Speed-dependent safety functions			No	Yes
Design			Mounting	
Resolution - angle		'	0.8	0.8
Min. accuracy		'	-10	-10
Max. accuracy		'	10	10
Absolute positioning			1 revolution	1 revolution
Max. speed	$n_{\max}$	rpm	8000	8000
Max. DC input voltage	$V_{\text{in,max}}$	V	10	10
Max. input frequency	$f_{\text{in,max}}$	kHz	4	4
Ratio stator/rotor			0.3	0.3
Min ratio tolerance		%	-5	-5
Max ratio tolerance		%	5	5
Rotor impedance	Z_{ro}	Ω	51+j90	51+j90
Stator impedance	Z_{so}	Ω	102+j150	102+j150
Impedance	Z_{rs}	Ω	44+j76	44+j76
Min. insulation resistance at DC 500 V	R_{min}	M Ω	10	10
Number of pole pairs			1	1
Max. angle error Min		'	-10	-10
Max. angle error Max		'	10	10

Speed-dependent safety functions

Feedback			RV03
Motor code			RV03
Max. permissible angular acceleration	α	rad/s ²	22000
Functional safety			
IEC 61508			SIL3
EN 13849-1			Up to Performance Level e



Product extensions

Feedback
Incremental encoder

Incremental encoder

Incremental encoders can be used for speed measurement. Homing is required in order to enable positioning later.

Feedback type			SinCos-Inkremental		TTL-Inkremental	
Feedback				IG2048-5V-S	IG2048-5V-T	IG4096-5V-T
Speed-dependent safety functions				No	No	No
Design			Mounting			
Pulses				2048	2048	4096
Output signals				SinCos 1 Vss	TTL	TTL
Interfaces					A, B; N; Ai, Bi; Ni	
Absolute revolution				0	0	0
Min. accuracy		'		-0.8	-2	-2
Max. accuracy		'		0.8	2	2
Min. DC input voltage	$V_{in,min}$	V		4.5	4.75	4.75
Max. DC input voltage	$V_{in,max}$	V		5.5	5.25	5.25
Max. current consumption	I_{max}	A		0.1	0.15	0.15
Limit frequency	f_{max}	kHz		180	300	300

Product extensions

Feedback
Absolute value encoder



Absolute value encoder

Absolute value encoders can detect the speed, the rotor position, and the machine position with a very high resolution. They are used for the positioning of dynamic applications and do not require homing.

Feedback type			SinCos absolute value encoder				
Feedback			AM32-5V-E	AM1024-8V-H	AM2048-5V-E	AS1024-8V-H	AS2048-5V-E
Speed-dependent safety functions			No	No	No	No	No
Design			Mounting	Mounting	Mounting	Mounting	Mounting
Encoder type			Multi-turn	Multi-turn	Multi-turn	Single-turn	Single-turn
Resolution		bit	-	-	-	-	-
Pulses			32	1024	2048	1024	2048
Output signals			SinCos 1 Vss	SinCos 1 Vss	SinCos 1 Vss	SinCos 1 Vss	SinCos 1 Vss
Interfaces			EnDat	Hiperface	EnDat	Hiperface	EnDat
Absolute revolution			4096	4096	4096	1	1
Resolution - angle			0.4	0.4	0.4	0.4	0.4
Min. accuracy		'	-5	-0.8	-0.6	-0.8	-0.6
Max. accuracy		'	5	0.8	0.6	0.8	0.6
Fehlergrenze Positionswert							
System accuracy			-	-	-	-	-
Integral nonlinearity			-	-	-	-	-
Min. DC input voltage	$V_{in,min}$	V	4.75	7	4.75	7	4.75
Max. DC input voltage	$V_{in,max}$	V	5.25	12	5.25	12	5.25
Max. current consumption	I_{max}	A	0.17	0.08	0.25	0.08	0.15
Limit frequency	f_{max}	kHz	600	200	200	200	200



Blower

The forced ventilation motors are cooled as a standard by means of a separate axial fan.

The separate fans for the MCA20, MCA22 and MCA26 motors are optionally available with a dust filter.

Rated data 50 Hz

Motor series			MCA								
Size			13	14	17	19	20	21	22		26
Degree of protection			IP54				IP23	IP54		IP23	IP54
Number of phases			1	1	1	1	1	1	1	1	1
Rated voltage	V_{rated}	V	230	230	230	230	230	230	230	230	230
Rated power	P_{rated}	kW	0.019	0.019	0.05	0.05	0.165	0.055	0.085	0.085	0.1
Rated current	I_{rated}	A	0.115	0.115	0.3	0.3	0.73	0.25	0.75	0.75	0.45

Motor series			MCA								
Size			26								
Degree of protection			IP23								
Number of phases			1								
Rated voltage	V_{rated}	V	230								
Rated power	P_{rated}	kW	0.1								
Rated current	I_{rated}	A	0.45								

Rated data 60 Hz

Motor series			MCA								
Size			13	14	17	19	20	21	22		26
Degree of protection			IP54				IP23	IP54		IP23	IP54
Number of phases			1	1	1	1	1	1	1	1	1
Rated voltage	V_{rated}	V	230	230	230	230	230	230	230	230	230
Rated power	P_{rated}	kW	0.018	0.018	0.039	0.039	0.205	0.065	0.085	0.085	0.138
Rated current	I_{rated}	A	0.105	0.105	0.25	0.25	0.9	0.29	0.75	0.75	0.61

Motor series			MCA								
Size			26								
Degree of protection			IP23								
Number of phases			1								
Rated voltage	V_{rated}	V	230								
Rated power	P_{rated}	kW	0.138								
Rated current	I_{rated}	A	0.61								

Product extensions

Temperature monitoring
Thermal detectors PT1000



Temperature monitoring

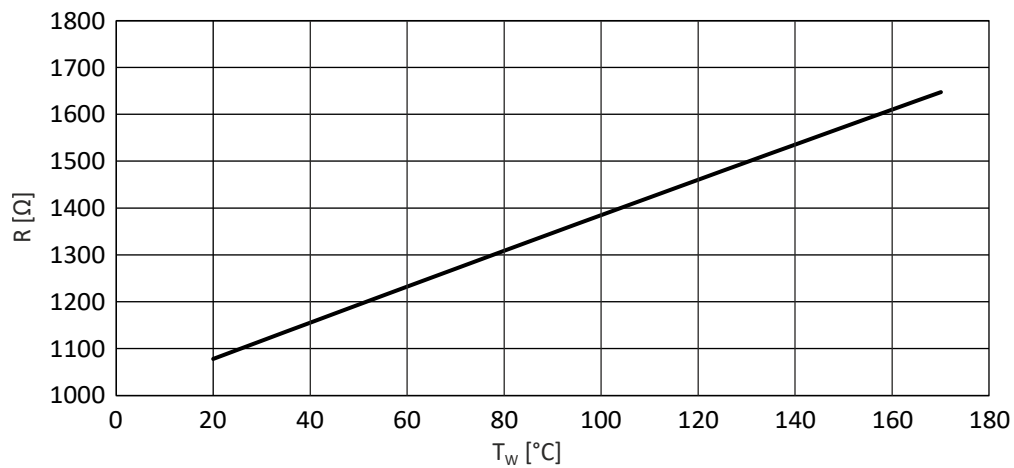
Thermal detectors PT1000

The thermal detector used continuously monitors the motor temperature. The temperature information is transferred to the inverter using the system cable of the feedback system. **This is not a full motor protection!**

This makes it possible to determine the motor temperature in the permissible operating range with great accuracy.



When supplying the thermal sensors with a measurement current of 1 mA, the connection between the temperature and the resistance measured applies.



R Resistance
 T_w Winding temperature



Product codes

Planetary and bevel planetary gearbox product code g7□0

Example		G	7	5	A	P	113	M	V	C	R	1	C00
Portfolio segment	Gearbox	G											
Product	7		7										
Product type	0			0									
	2			2									
	3			3									
	5			5									
	8			8									
Product generation	A				A								
Product type	bevel planetary gearbox					B							
	Planetary gearbox					P							
torque (Examples)	44 Nm						044						
	97 Nm						097						
	130 Nm						113						
	195 Nm						119						
Type of construction	Geared motor							M					
	Gearbox							N					
Output shaft	Output shaft with featherkey								V				
	Smooth output shaft								G				
	Flanged output shaft with dowel hole								E				
Housing type	Without foot with centering									C			
Flange mounting	Without flange										R		
	Flange with through holes										K		
Number of stages	1-stage											1	
	2-stage											2	
	3-stage											3	
Motor mounting	Motor integrated												C00
	IEC adapter with jaw coupling												Nxx Txx
	NEMA adapter with jaw coupling												Axx
	Servo motor-adapter with plug-in hollow shaft												Sxx

Product codes



Planetary and bevel planetary gearbox product code g8□0

Example		G	8	4	A	P	040	M	V	C	R	1	C00
Portfolio segment	Gearbox	G											
Product	8		8										
Product type	2			2									
	4			4									
	5			5									
	6			6									
	7			7									
	8			8									
Product generation	A				A								
Product type	bevel planetary gearbox					B							
	Planetary gearbox					P							
torque (Examples)	40 Nm						040						
	80 Nm						080						
	130 Nm						113						
	300 Nm						130						
	1000 Nm						210						
	1800 Nm						218						
Type of construction	Geared motor							M					
	Gearbox							N					
Output shaft	Output shaft with featherkey								V				
	Smooth output shaft								G				
	Toothed output shaft								Z				
	Flanged output shaft								F				
	Flanged output shaft with dowel hole								E				
	Flanged hollow output shaft with dowel hole								K				
	Shrink disc								S				
	Hollow shaft								H				
Housing type	Without foot with centering									C			
Flange mounting	Without flange										R		
	Flange with through holes										N		
Number of stages	1-stage											1	
	2-stage											2	
Motor mounting	Motor integrated												C00
	IEC adapter with jaw coupling												Nxx Txx
	NEMA adapter with jaw coupling												Axx
	Servo motor-adapter with plug-in hollow shaft												Sxx



Product codes

Product code of MCA asynchronous servo motor

Example		M	C	A	10	C	40	-	RS0	B0
Meaning	Variant	Product code								
Product family	Motor	M								
Type	Compact servo motors		C							
Version	Asynchronous			A						
Motor frame size	Square dimension 102 mm				10					
	Square dimension 130 mm				13					
	Square dimension 142 mm				14					
	Square dimension 165 mm				17					
	Square dimension 192 mm				19					
	Square dimension 200 mm				20					
	Square dimension 214 mm				21					
	Square dimension 220 mm				22					
	Square dimension 260 mm				26					
Overall length						I ... X				
Rated speed	rpm x 100						05 ... 42			
Inverter mains connection	3 x 400 V							-		
Motor protection class	Degree of protection: IP54 / IP65									
	3 x 400 V							H		
	Degree of protection: IP23									
Feedback	SinCos absolute value encoder, single-turn, EnDat AS2048-5V-E									ECN
	SinCos absolute value encoder, multi-turn, EnDat AM32-5V-E									EQI
	SinCos absolute value encoder, multi-turn, EnDat AM2048-5V-E									EQN
	Resolver									RS0
	Safety resolver RV03									RV0
	SinCos incremental encoder, single-turn IG2048-5V-S									S20
	SinCos absolute value encoder, multi-turn, Hiperface® AM1024-8V-H									SRM
	SinCos absolute value encoder, single-turn, Hiperface® AS1024-8V-H									SRS
	TTL incremental encoder IG2048-5V-T									T20
	TTL incremental encoder IG4096-5V-T									T40
Brake	Without brake									B0
	Spring-applied brake DC 24 V									F1
	Spring-applied brake DC 24 V, reinforced									F2
	Spring-applied brake AC 230 V									FG
	Spring-applied brake AC 230 V, reinforced									FH
	Permanent magnet brake DC 24V									P1 ... P4
	Permanent magnet brake DC 205 V									P5 ... P8

Motor data

Rated data

Inverter mains connection 400 V, Self-ventilated motors



Motor data

Rated data

Inverter mains connection 400 V, Self-ventilated motors

Motor			MCA 10I40-	MCA 13I41-	MCA 14L41-	MCA 14L20-	MCA 17N23-	MCA 17N41-
Degree of protection			IPxx	IPxx	IPxx	IPxx	IPxx	IPxx
Standstill torque	M_0	Nm	2.30	4.60	8.00	8.00	12.8	12.8
Rated torque	M_{rated}	Nm	2.00	4.00	5.40	6.70	10.8	9.50
Max. torque	M_{max}	Nm	10.0	32.0	60.0	60.0	100	100
Rated speed	n_{rated}	rpm	3950	4050	4100	2000	2300	4110
Max. speed	n_{max}	rpm	8000	8000	8000	8000	8000	8000
Rated power	P_{rated}	kW	0.8	1.7	2.3	1.4	2.6	4.1
Standstill current	I_0	A	2.55	4.60	7.70	3.85	6.00	12.0
Rated current	I_{rated}	A	2.40	4.40	5.80	3.30	5.50	10.2
Max. current	I_{max}	A	9.60	17.6	23.2	13.2	22.0	40.8
Rated voltage	V_{rated}	V	390	390	390	390	390	350
Rated frequency	f_{rated}	Hz	140	140	140	70	80	140
Moment of inertia	J	kgcm ²	2.40	8.30	19.2	19.2	36.0	36.0
Efficiency	η		0.700	0.750	0.780	0.840	0.860	0.830
Stator terminal resistance	$R_{UV\ 20}$ °C	Ω	9.4	3.4	1.5	6	3.04	0.76
Stator terminal resistance	$R_{UV\ 150}$ °C	Ω	14.166	5.124	2.261	9.042	4.581	1.145
Mutual inductance	L_H	mH	169.15	92.64	65.8	268.7	176.4	43.4
Stator leakage inductance	$L_{1\sigma}$	mH	9.8	5.408	2.493	9.971	6.162	1.536
Rotor leakage inductance	$L_{2\sigma}$	mH	10	4.896	2.503	10.016	6.836	1.703
Stator resistance	$R_{1,\ 20}$	Ω	4.7	1.7	0.75	3	1.52	0.38
Rotor resistance	$R_{2',\ 20}$	Ω	5.2	1.4	0.781	3.13	1.37	0.342
Weight	m	kg	6.40	10.4	15.1	15.1	22.9	22.9



Motor data

Rated data
Inverter mains connection 400 V, Self-ventilated motors

Motor			MCA 19S42-	MCA 19S23-	MCA 21X42-	MCA 21X25-
Degree of protection			IPxx	IPxx	IPxx	IPxx
Standstill torque	M_0	Nm	22.5	22.5	39.0	39.0
Rated torque	M_{rated}	Nm	12.0	16.3	17.0	24.6
Max. torque	M_{max}	Nm	180	180	300	300
Rated speed	n_{rated}	rpm	4150	2340	4160	2490
Max. speed	n_{max}	rpm	8000	8000	8000	8000
Rated power	P_{rated}	kW	5.2	4	7.4	6.4
Standstill current	I_0	A	19.7	9.85	31.8	15.9
Rated current	I_{rated}	A	14.0	8.20	19.8	13.5
Max. current	I_{max}	A	56.0	32.8	79.2	54.0
Rated voltage	V_{rated}	V	330	390	320	390
Rated frequency	f_{rated}	Hz	140	80	140	85
Moment of inertia	J	kgcm ²	72.0	72.0	180	180
Efficiency	η		0.830	0.900	0.840	0.850
Stator terminal resistance	$R_{UV\ 20}$ °C	Ω	0.35	1.38	0.18	0.72
Stator terminal resistance	$R_{UV\ 150}$ °C	Ω	0.527	2.08	0.271	1.085
Mutual inductance	L_H	mH	27.98	110.6	19.5	78.1
Stator leakage inductance	$L_{1\sigma}$	mH	0.822	3.245	0.563	2.263
Rotor leakage inductance	$L_{2\sigma}$	mH	0.99	3.902	0.701	2.819
Stator resistance	$R_{1,\ 20}$	Ω	0.175	0.69	0.09	0.36
Rotor resistance	$R_{2',\ 20}$	Ω	0.154	0.616	0.0894	0.358
Weight	m	kg	44.7	44.7	60.0	60.0

Motor data

Rated data

Inverter mains connection 400 V, Forced ventilated motors



Inverter mains connection 400 V, Forced ventilated motors

Motor			MCA 13I34-	MCA 14L35-	MCA 14L16-	MCA 17N35-	MCA 17N17-	MCA 19S35-
Degree of protection			IP54	IP54	IP54	IP54	IP54	IP54
Standstill torque	M_0	Nm	7.00	13.5	13.5	23.9	23.9	40.0
Rated torque	M_{rated}	Nm	6.30	10.8	12.0	19.0	21.5	36.0
Max. torque	M_{max}	Nm	32.0	60.0	60.0	100	100	180
Rated speed	n_{rated}	rpm	3410	3455	1635	3480	1680	3510
Max. speed	n_{max}	rpm	8000	8000	8000	8000	8000	8000
Rated power	P_{rated}	kW	2.2	3.9	2.1	6.9	3.8	13.2
Standstill current	I_0	A	6.30	10.5	5.25	18.1	9.05	30.8
Rated current	I_{rated}	A	6.00	9.10	4.80	15.8	8.50	28.7
Max. current	I_{max}	A	24.0	36.4	19.2	63.2	34.0	115
Rated voltage	V_{rated}	V	390	390	390	390	390	390
Rated frequency	f_{rated}	Hz	120	120	60	120	60	120
Moment of inertia	J	kgcm ²	8.30	19.2	19.2	36.0	36.0	72.0
Efficiency	η		0.720	0.790	0.800	0.810	0.830	0.850
Stator terminal resistance	$R_{UV\ 20}$ °C	Ω	3.4	1.5	6	0.76	3.04	0.35
Stator terminal resistance	$R_{UV\ 150}$ °C	Ω	5.124	2.261	9.042	1.145	4.581	0.527
Mutual inductance	L_H	mH	76.7	56.7	224.34	36.9	143.66	20.32
Stator leakage inductance	$L_{1\sigma}$	mH	4.949	2.365	9.464	1.396	5.585	0.652
Rotor leakage inductance	$L_{2\sigma}$	mH	4.392	2.324	9.303	1.51	6.042	0.765
Stator resistance	$R_{1,\ 20}$	Ω	1.7	0.75	3	0.38	1.52	0.175
Rotor resistance	$R_{2,\ 20}$	Ω	1.41	0.781	3.13	0.342	1.37	0.154
Weight	m	kg	12.0	16.9	16.9	25.5	25.5	48.2



Motor data

Rated data

Inverter mains connection 400 V, Forced ventilated motors

Motor			MCA 19S17-	MCA 20X29H	MCA 20X14H	MCA 21X35-	MCA 21X17-	MCA 22P29-
Degree of protection			IP54	IP23	IP23	IP54	IP54	IP54
Standstill torque	M_0	Nm	40.0	68.0	68.0	75.0	75.0	120
Rated torque	M_{rated}	Nm	36.3	53.5	61.0	55.0	61.4	100
Max. torque	M_{max}	Nm	180	250	250	300	300	500
Rated speed	n_{rated}	rpm	1700	2930	1420	3520	1710	2935
Max. speed	n_{max}	rpm	8000	6500	6500	8000	8000	6500
Rated power	P_{rated}	kW	6.4	16.4	9.1	20.3	11	30.7
Standstill current	I_0	A	15.4	52.0	26.0	49.5	25.8	80.9
Rated current	I_{rated}	A	13.9	42.4	23.0	42.5	22.5	72.1
Max. current	I_{max}	A	55.6	170	92.0	170	90.0	288
Rated voltage	V_{rated}	V	390	350	350	390	390	360
Rated frequency	f_{rated}	Hz	60	100	50	120	60	100
Moment of inertia	J	kgcm ²	72.0	171	171	180	180	487
Efficiency	η		0.820	0.870	0.820	0.880	0.850	0.870
Stator terminal resistance	$R_{UV\ 20}$ °C	Ω	1.38	0.183	0.731	0.18	0.72	0.089
Stator terminal resistance	$R_{UV\ 150}$ °C	Ω	2.08	0.276	1.102	0.271	1.085	0.134
Mutual inductance	L_H	mH	80.92	14.28	60.16	16.8	68.9	22.93
Stator leakage inductance	$L_{1\sigma}$	mH	2.608	0.5	2.01	0.519	2.076	0.901
Rotor leakage inductance	$L_{2\sigma}$	mH	3.063	0.54	2.14	0.645	2.58	1.213
Stator resistance	$R_{1,\ 20}$	Ω	0.69	0.0915	0.365	0.09	0.36	0.134
Rotor resistance	$R_{2',\ 20}$	Ω	0.616	0.09	0.361	0.0894	0.358	0.12
Weight	m	kg	48.2	64	64	63.5	63.5	105

Motor data

Rated data

Inverter mains connection 400 V, Forced ventilated motors



Motor			MCA 22P17-	MCA 22P14-	MCA 22P08-	MCA 22P29H	MCA 22P17H	MCA 22P14H
Degree of protection			IP54	IP54	IP54	IP23	IP23	IP23
Standstill torque	M_0	Nm	120	120	120	135	135	135
Rated torque	M_{rated}	Nm	106	107	110	110	112	115
Max. torque	M_{max}	Nm	500	500	500	500	500	500
Rated speed	n_{rated}	rpm	1670	1425	760	2935	1670	1425
Max. speed	n_{max}	rpm	6500	6500	6500	6500	6500	6500
Rated power	P_{rated}	kW	18.5	16	8.8	33.8	19.6	17.2
Standstill current	I_0	A	46.7	40.5	23.4	90.2	52.1	45.1
Rated current	I_{rated}	A	42.7	37.7	22.1	77.8	44.5	40.0
Max. current	I_{max}	A	171	151	88.4	311	178	160
Rated voltage	V_{rated}	V	360	350	345	360	360	360
Rated frequency	f_{rated}	Hz	58	50	28	100	58	50
Moment of inertia	J	kgcm ²	487	487	487	487	487	487
Efficiency	η		0.880	0.870	0.800	0.890	0.880	0.860
Stator terminal resistance	$R_{UV\ 20}$ °C	Ω	0.268	0.357	1.072	0.089	0.268	0.357
Stator terminal resistance	$R_{UV\ 150}$ °C	Ω	0.404	0.538	1.616	0.134	0.404	0.538
Mutual inductance	L_H	mH	23.35	94.23	94.89	22.9	23.46	90.94
Stator leakage inductance	$L_{1\sigma}$	mH	0.901	3.601	3.56	0.901	0.902	3.552
Rotor leakage inductance	$L_{2\sigma}$	mH	1.214	4.852	4.802	1.214	1.215	4.794
Stator resistance	$R_{1,\ 20}$	Ω	0.134	0.536	0.536	0.134	0.134	0.536
Rotor resistance	$R_{2',\ 20}$	Ω	0.12	0.477	0.477	0.12	0.12	0.477
Weight	m	kg	105	105	105	105	105	105



Motor data

Rated data

Inverter mains connection 400 V, Forced ventilated motors

Motor			MCA 22P08H	MCA 26T22-	MCA 26T12-	MCA 26T10-	MCA 26T05-	MCA 26T22H
Degree of protection			IP23	IP54	IP54	IP54	IP54	IP23
Standstill torque	M_0	Nm	135	220	220	220	220	290
Rated torque	M_{rated}	Nm	120	195	207	210	216	230
Max. torque	M_{max}	Nm	500	1100	1100	1100	1100	1100
Rated speed	n_{rated}	rpm	760	2235	1200	1030	550	2235
Max. speed	n_{max}	rpm	6500	5500	5500	5500	5500	5500
Rated power	P_{rated}	kW	9.6	45.6	26	22.7	12.4	53.8
Standstill current	I_0	A	26.0	125	78.4	62.9	35.4	160
Rated current	I_{rated}	A	23.5	113	75.1	61.5	34.9	127
Max. current	I_{max}	A	94.0	452	300	246	140	507
Rated voltage	V_{rated}	V	355	340	350	350	350	340
Rated frequency	f_{rated}	Hz	28	76	41	35	19	76
Moment of inertia	J	kgcm ²	487	1340	1340	1340	1340	1340
Efficiency	η		0.800	0.920	0.870	0.880	0.830	0.920
Stator terminal resistance	$R_{UV\ 20}$ °C	Ω	1.072	0.05	0.15	0.196	0.589	0.05
Stator terminal resistance	$R_{UV\ 150}$ °C	Ω	1.616	0.075	0.226	0.295	0.888	0.075
Mutual inductance	L_H	mH	91.93	19.84	18.1	69.24	66.8	20.2
Stator leakage inductance	$L_{1\sigma}$	mH	3.5	0.778	0.74	2.932	2.862	0.78
Rotor leakage inductance	$L_{2\sigma}$	mH	4.738	1.29	1.29	5.117	5.037	1.3
Stator resistance	$R_{1,\ 20}$	Ω	0.536	0.075	0.075	0.294	0.294	0.075
Rotor resistance	$R_{2',\ 20}$	Ω	0.477	0.0621	0.0621	0.25	0.25	0.0621
Weight	m	kg	105	194	194	194	194	194

Motor data

Rated data

Inverter mains connection 400 V, Forced ventilated motors



Motor			MCA 26T12H	MCA 26T10H	MCA 26T05H
Degree of protection			IP23	IP23	IP23
Standstill torque	M_0	Nm	290	290	290
Rated torque	M_{rated}	Nm	255	260	280
Max. torque	M_{max}	Nm	1100	1100	1100
Rated speed	n_{rated}	rpm	1200	1030	550
Max. speed	n_{max}	rpm	5500	5500	5500
Rated power	P_{rated}	kW	32	28	16.1
Standstill current	I_0	A	101	78.0	44.0
Rated current	I_{rated}	A	83.3	69.6	42.4
Max. current	I_{max}	A	333	278	170
Rated voltage	V_{rated}	V	350	350	350
Rated frequency	f_{rated}	Hz	41	36	20
Moment of inertia	J	kgcm ²	1340	1340	1340
Efficiency	η		0.870	0.870	0.810
Stator terminal resistance	$R_{UV\ 20}$ °C	Ω	0.15	0.196	0.589
Stator terminal resistance	$R_{UV\ 150}$ °C	Ω	0.226	0.295	0.888
Mutual inductance	L_H	mH	18.64	71.4	72.1
Stator leakage inductance	$L_{1\sigma}$	mH	0.78	3.165	3.112
Rotor leakage inductance	$L_{2\sigma}$	mH	1.3	5.135	5.08
Stator resistance	$R_{1,\ 20}$	Ω	0.075	0.294	0.294
Rotor resistance	$R_{2',\ 20}$	Ω	0.0621	0.25	0.25
Weight	m	kg	194	194	194



Torque characteristics

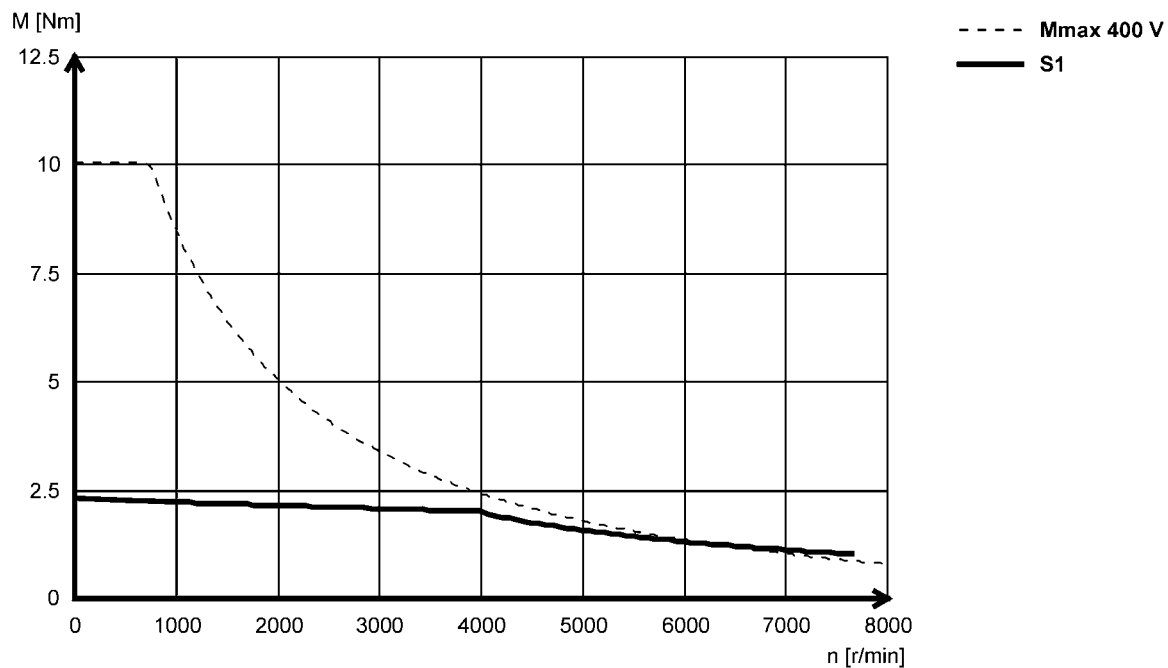


The torque/speed characteristic for your motor/inverter combination can be found on the Internet:
<http://www.lenze.com> → Product Finder → M-n characteristics

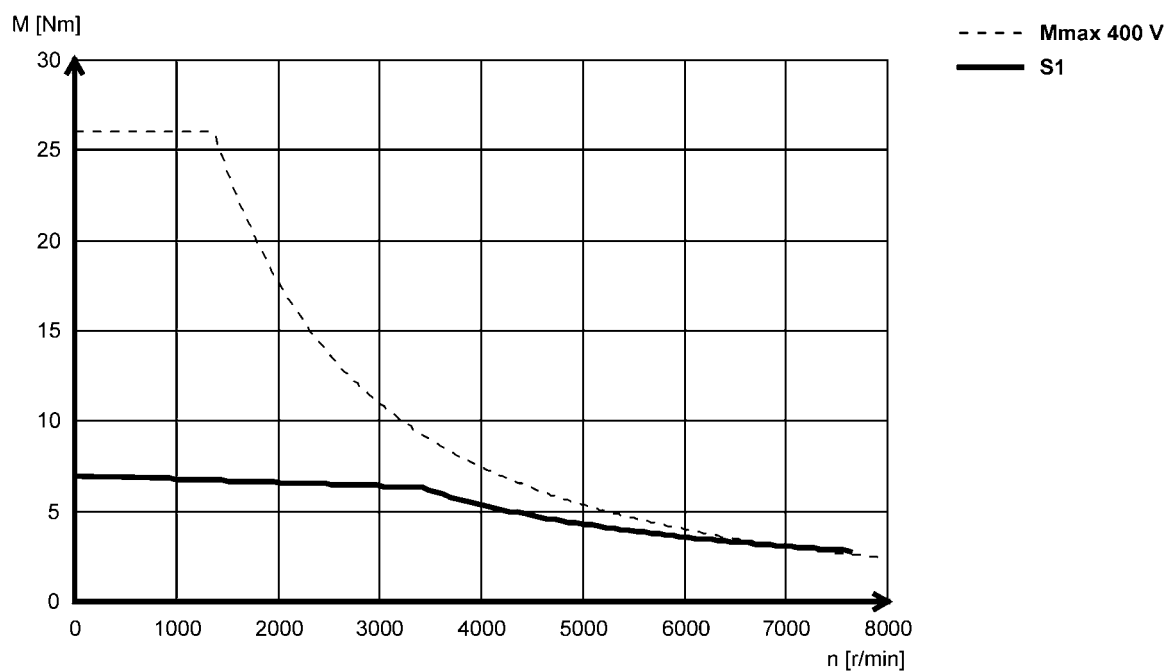


The following data apply to a mains voltage 3 x 400 V of the inverter.

MCA10I40- (self-ventilated)

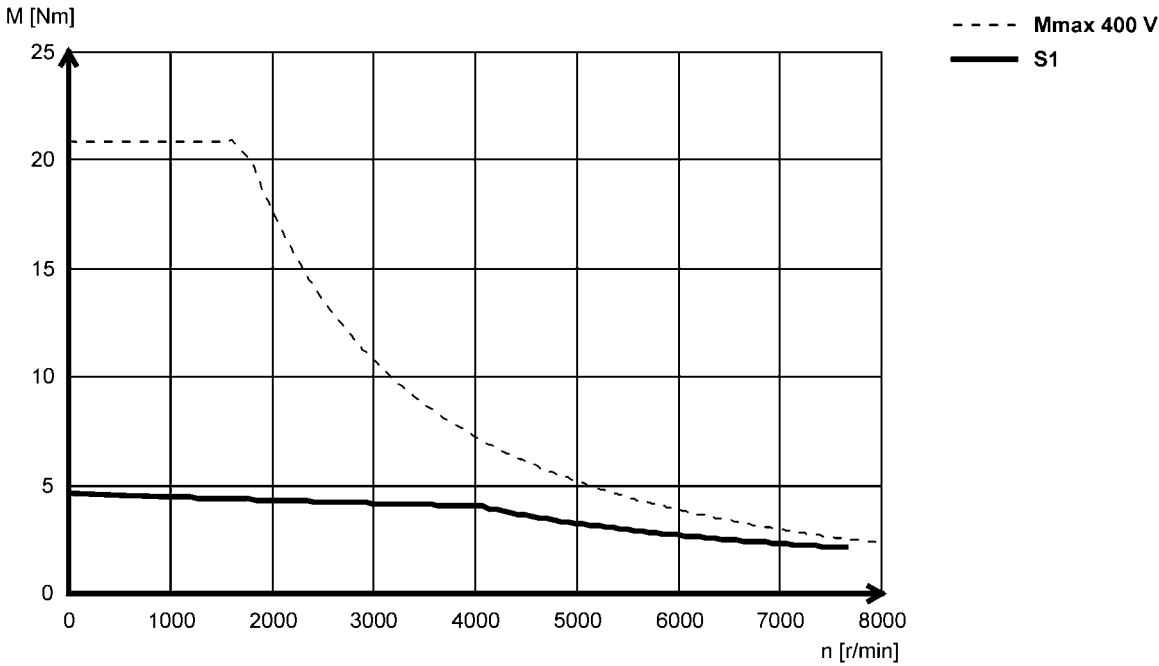


MCA13I34- (forced ventilated)

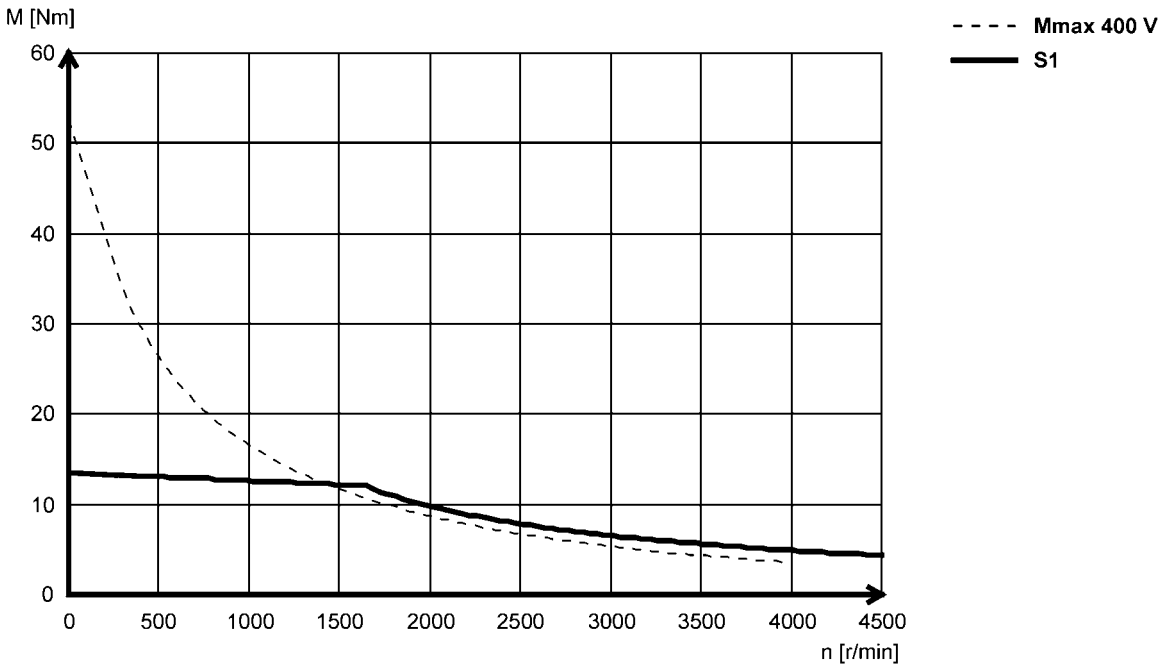




MCA13I41- (self-ventilated)



MCA14L16- (forced ventilated)

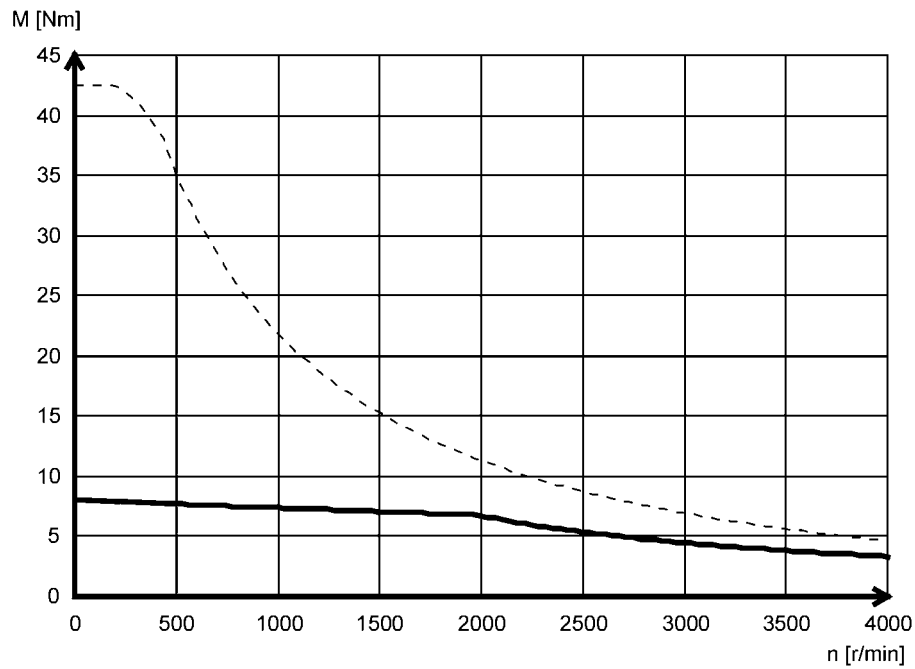




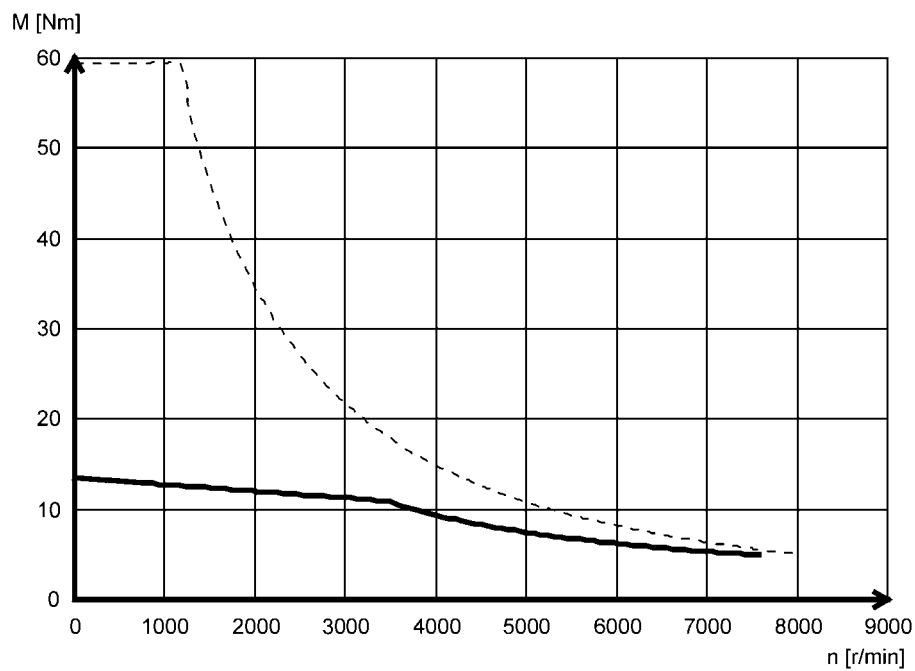
Motor data

Torque characteristics

MCA14L20- (self-ventilated)

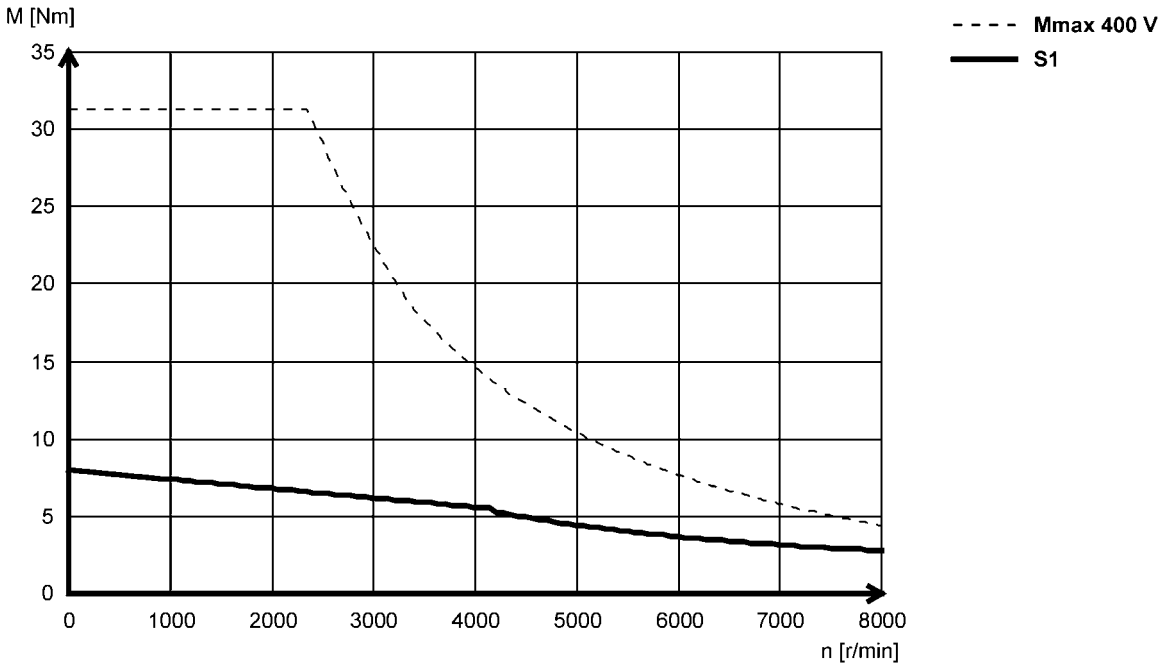


MCA14L35- (forced ventilated)

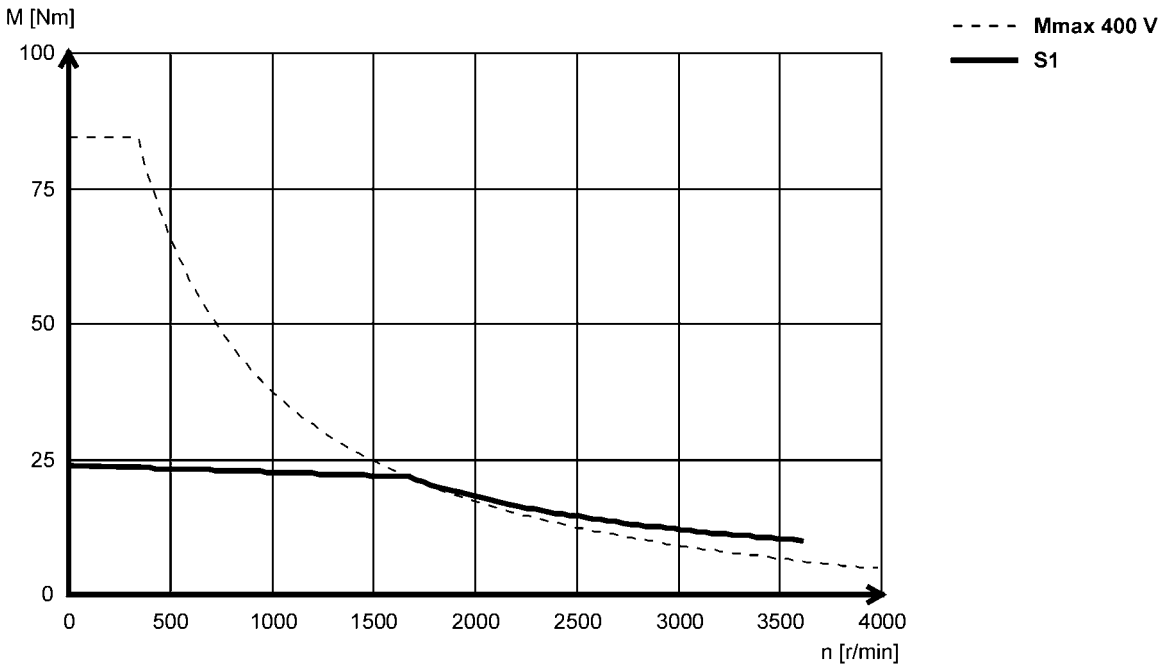




MCA14L41- (self-ventilated)



MCA17N17- (forced ventilated)

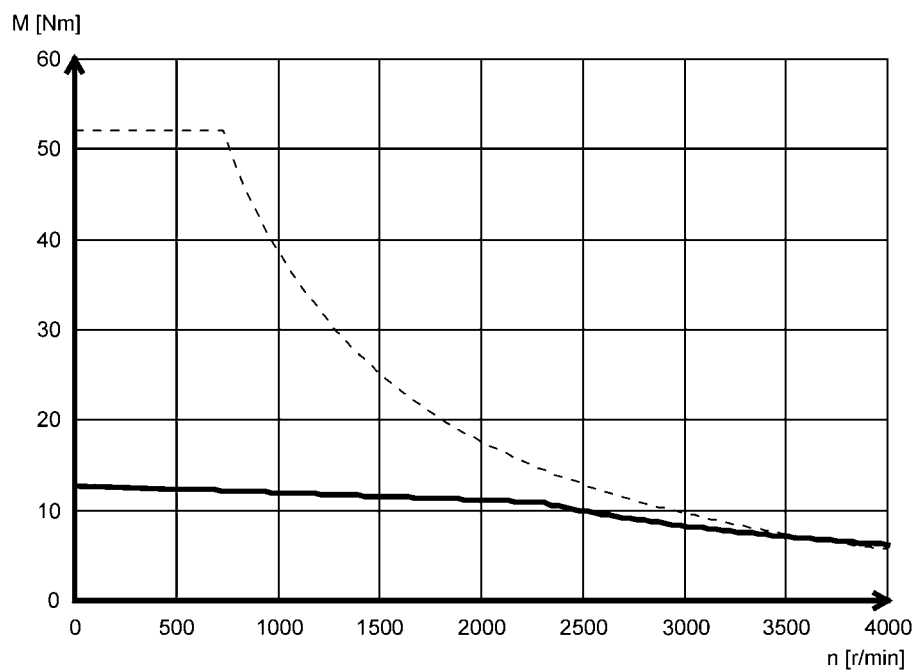




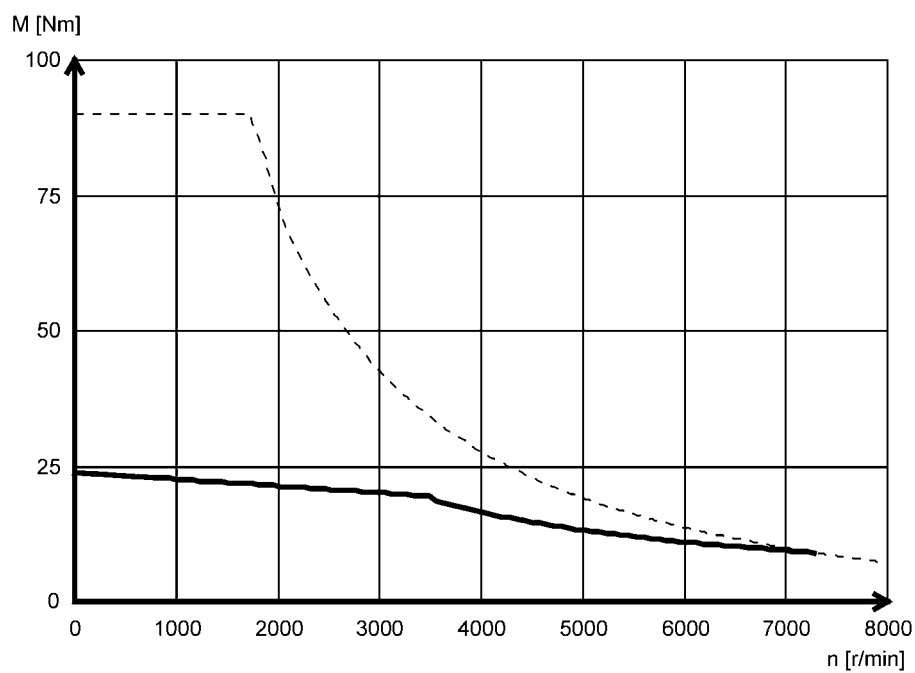
Motor data

Torque characteristics

MCA17N23- (self-ventilated)

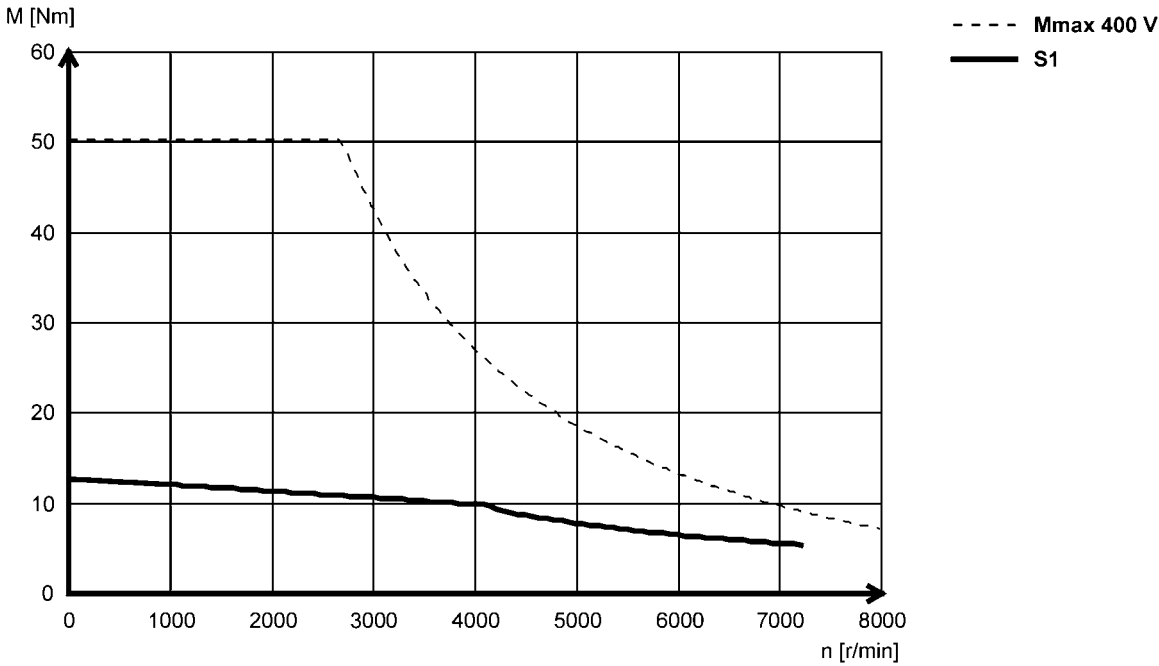


MCA17N35- (forced ventilated)

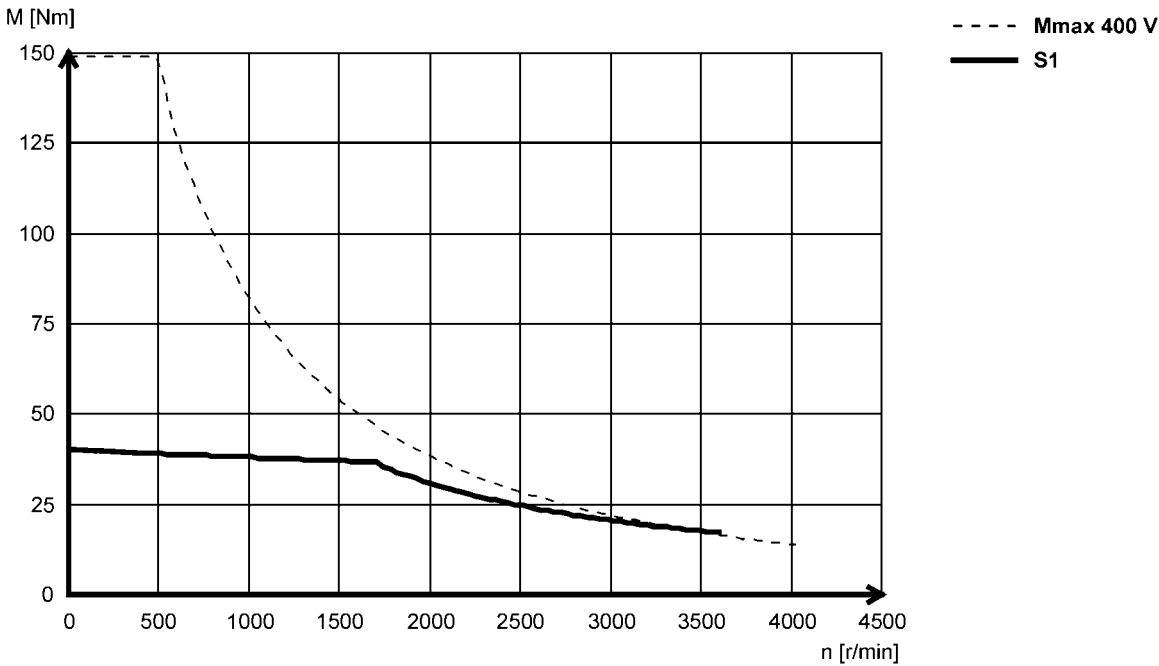




MCA17N41- (self-ventilated)



MCA19S17- (forced ventilated)

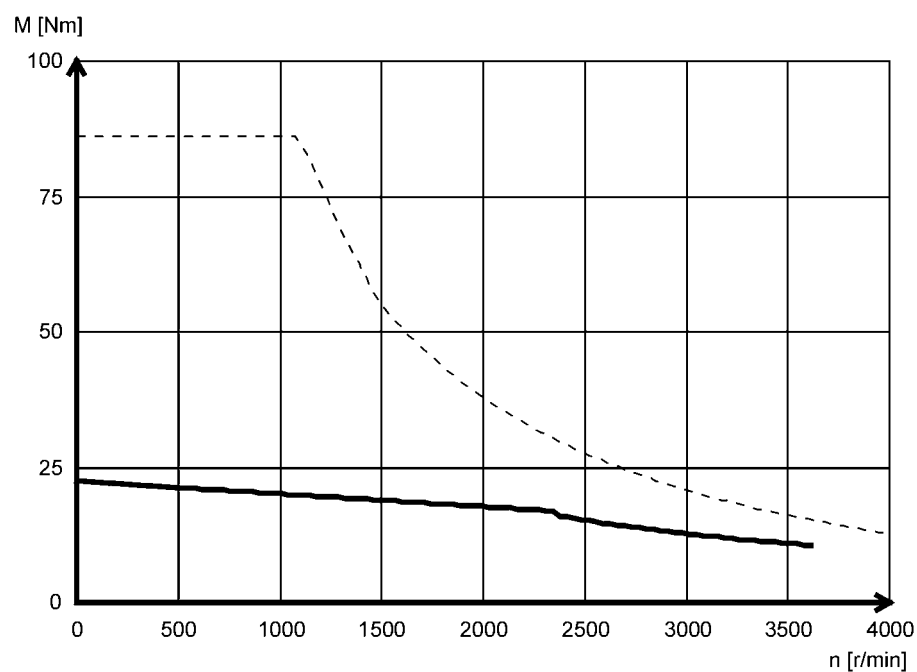




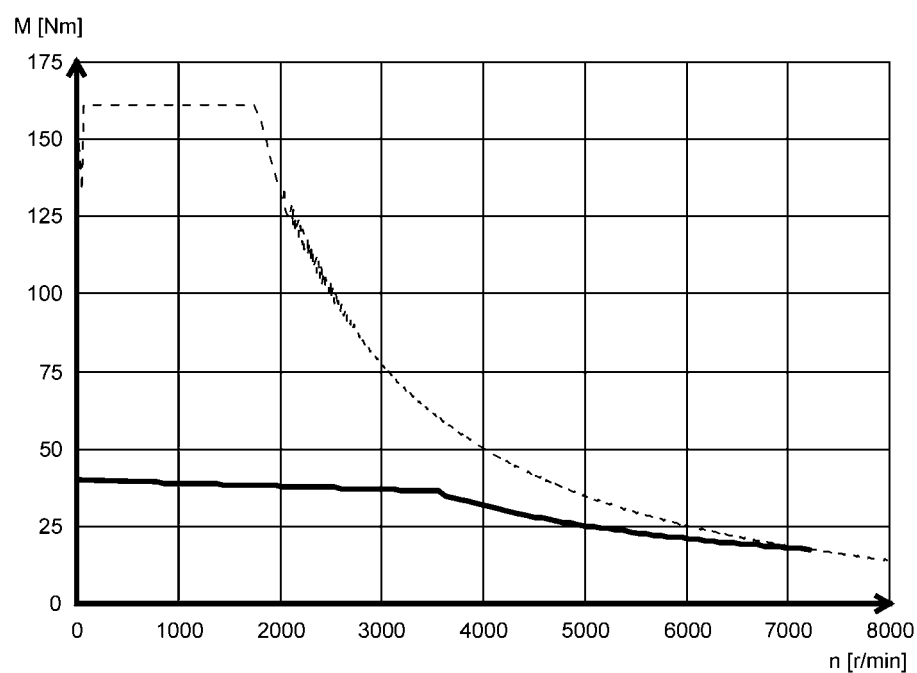
Motor data

Torque characteristics

MCA19S23- (self-ventilated)



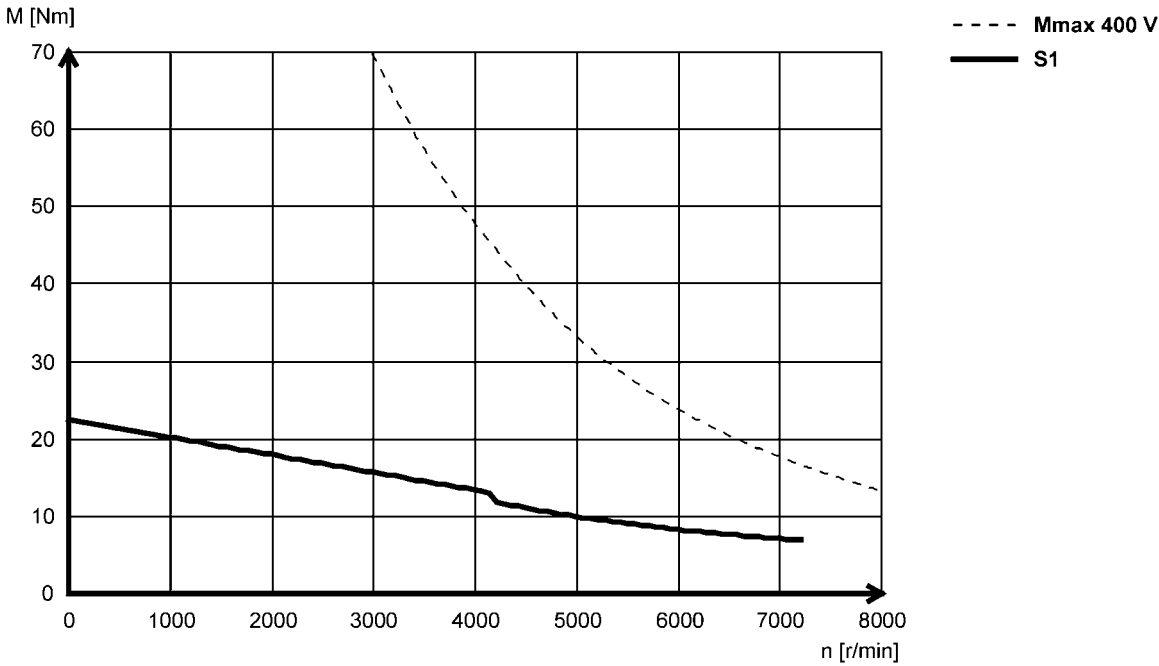
MCA19S35- (forced ventilated)



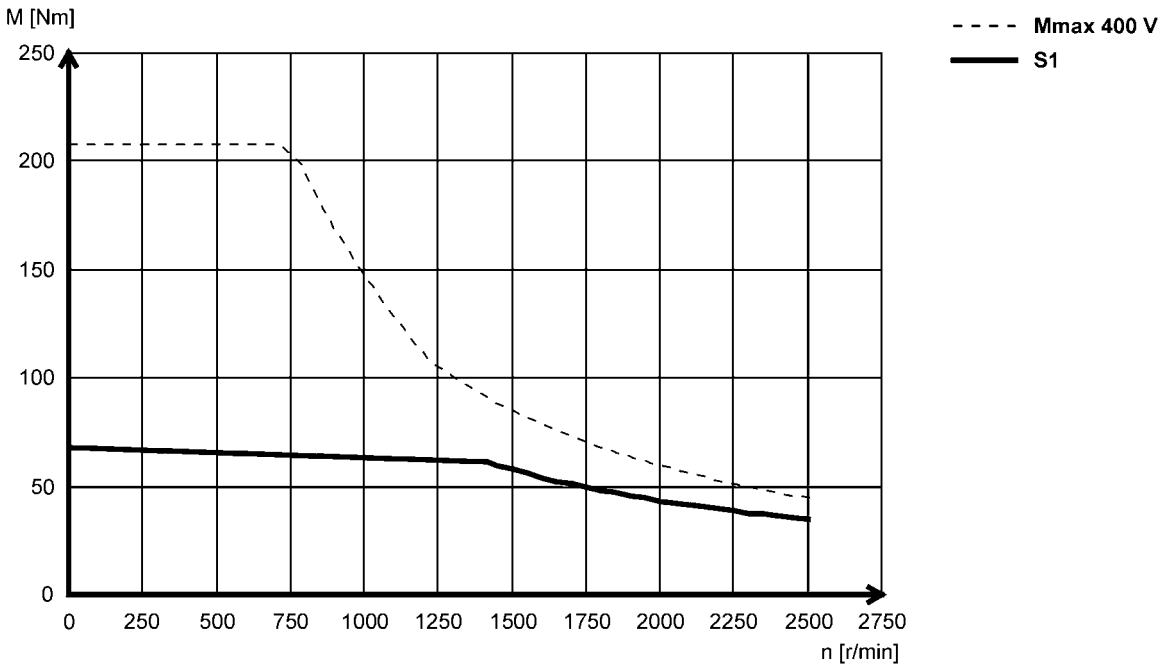
Motor data
Torque characteristics



MCA19S42- (self-ventilated)



MCA20X14H (forced ventilated, IP23s)

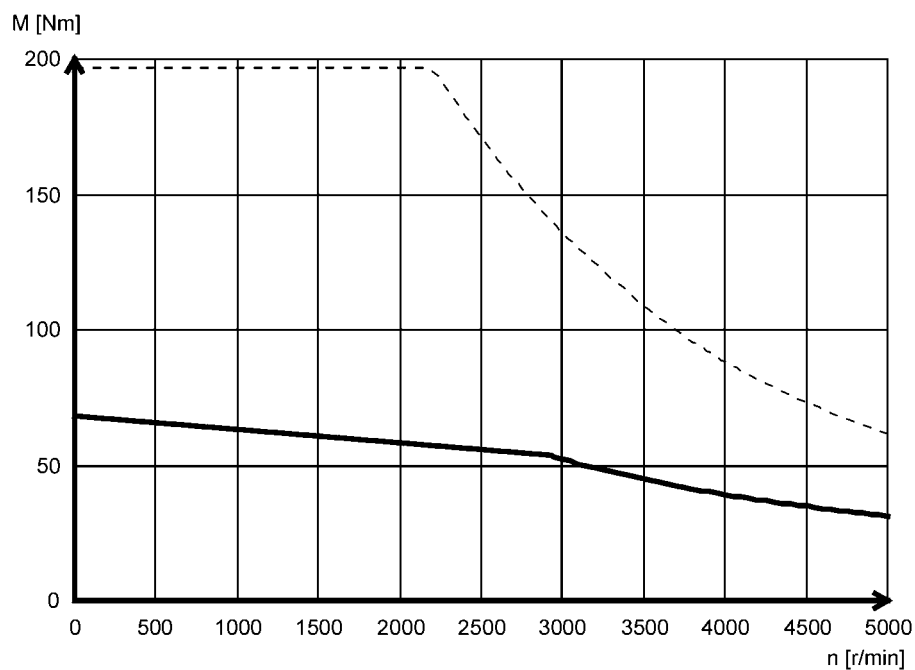




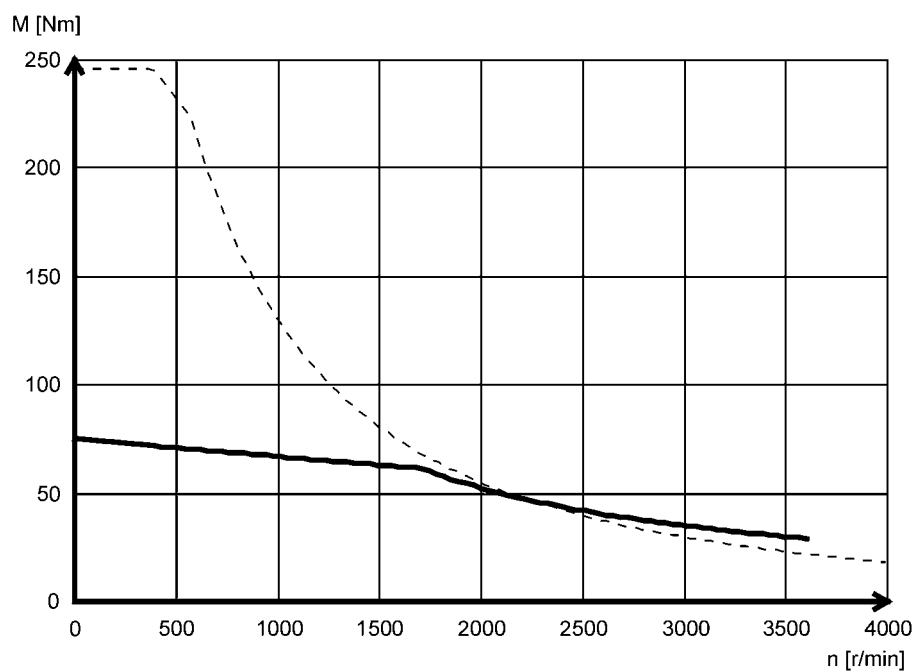
Motor data

Torque characteristics

MCA20X29H (forced ventilated, IP23s)

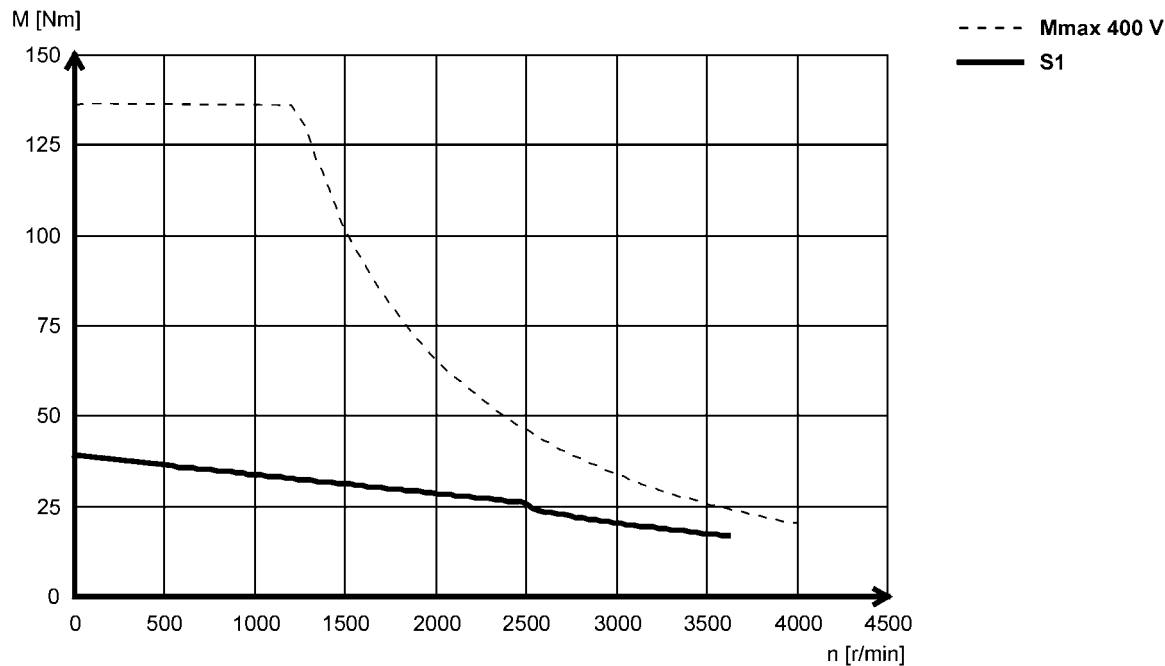


MCA21X17- (forced ventilated)

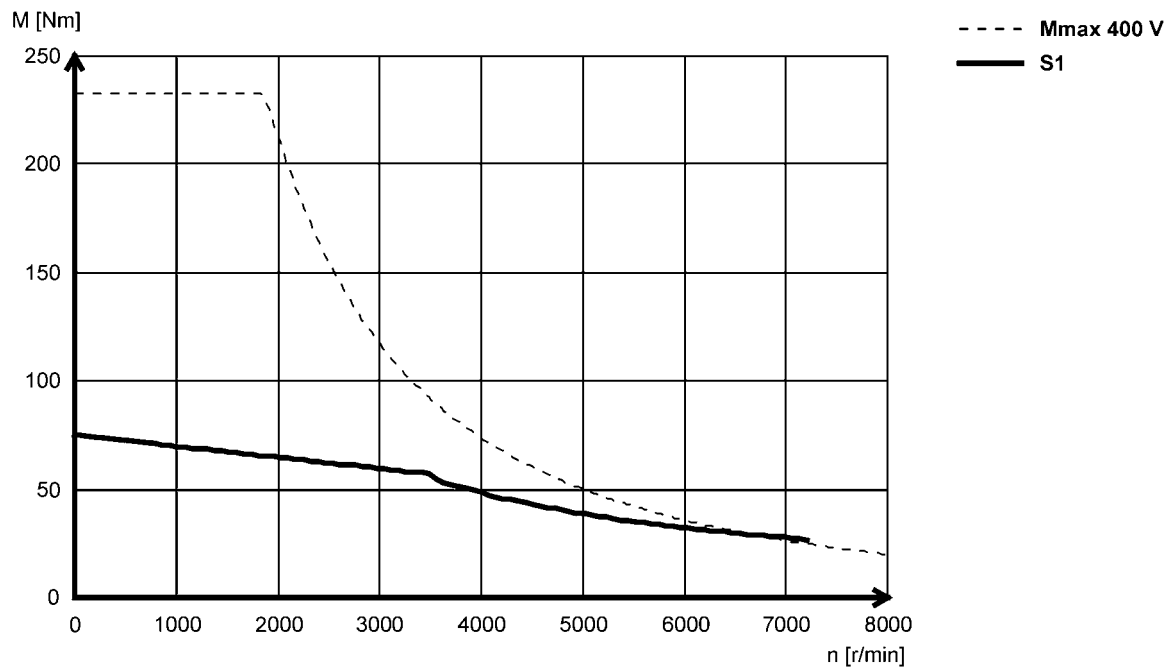




MCA21X25- (self-ventilated)



MCA21X35- (forced ventilated)

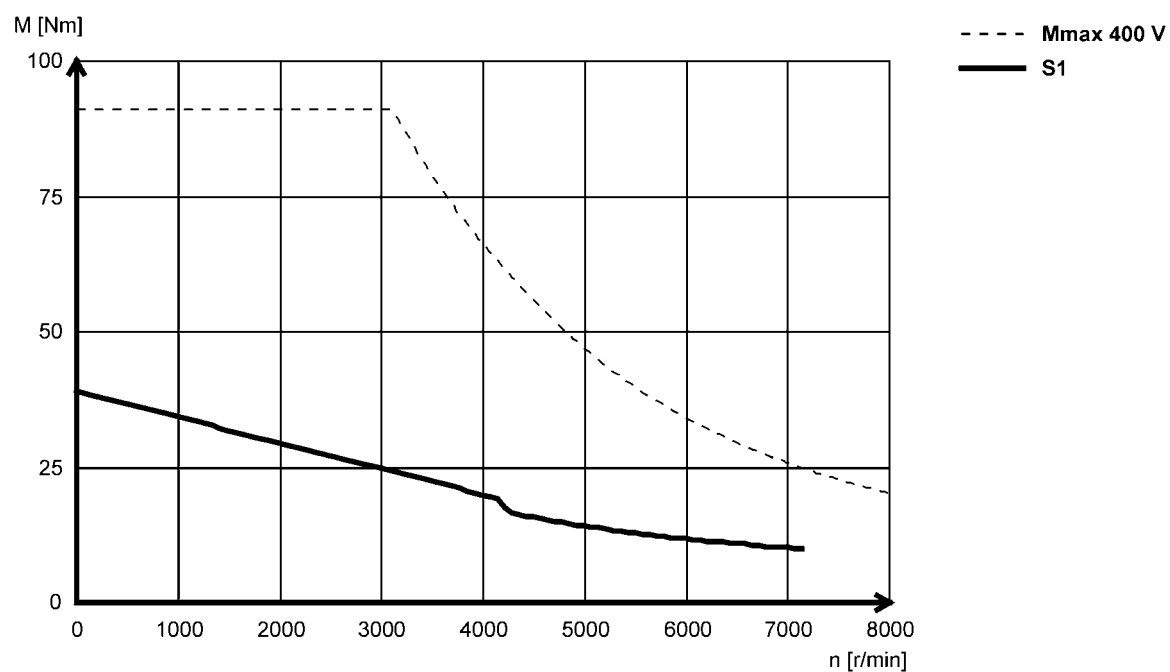




Motor data

Torque characteristics

MCA21X42- (self-ventilated)





Environmental notes and recycling

Lenze has been certified to the worldwide environmental management standard for many years (DIN EN ISO 14001). As part of our environmental policy and the associated climate responsibility, please note the following information on hazardous ingredients and the recycling of Lenze products and their packaging:



Lenze products are partly subject to the EU Directive on the restriction of certain hazardous substances in electrical and electronic equipment 2011/65/EU: RoHS Directive [UKCA: S.I. 2012/3032 - The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012] . This is documented accordingly in the EU declaration of conformity and with the CE mark.



The crossed-out wheeled bin symbol is located on the equipment. This information indicates that used electrical and electronic products must not be disposed of with normal household waste.

The EU Directive 2012/19/EU: Directive on waste electrical and electronic equipment (WEEE) [UKCA: S.I. 2013/3113 - The Waste Electrical and Electronic Equipment Regulations 2013] , which has been transposed into national law by the respective EU member states, applies to the disposal of equipment. As a customer, you have the option of disposing of the electrical and electronic equipment that you have purchased from us and that is subject to WEEE via the Lenze branch in your country.

Lenze addresses in Europe: <https://www.lenze.com/en-de/company/global-presence>

Some Lenze products contain batteries/rechargeable batteries in accordance with EU Directive 2006/66/EC: Battery Directive [UKCA: S.I. 2009/890 - The Waste Batteries and Accumulators Regulations 2009] . Any batteries/rechargeable batteries included are designed to last the life of the product and do not need to be replaced or otherwise removed by the end user.



Lenze products are usually sold with cardboard or plastic packaging. This packaging complies with EU Directive 94/62/EC: Directive on packaging and packaging waste [UKCA: S.I. 1997/648 - The Producer Responsibility Obligations (Packaging Waste) Regulations 1997] . The required disposal route is indicated by material-specific labels with the "recycling triangle". Example: "21 - other cardboard"

REACH

Lenze products are subject to REGULATION (EC) No 1907/2006: REACH Regulation [UKCA: S.I. 2008/2852 - The REACH Enforcement Regulations 2008] . When used as intended, exposure of substances to humans, animals and the environment is excluded.

Lenze products are industrial electrical and electronic products and are disposed of professionally. Both the mechanical and electrical components such as electric motors, gearboxes or inverters contain valuable raw materials that can be recycled and reused. Proper recycling and thus maintaining the highest possible level of recyclability is therefore important and sensible from an economic and ecological point of view.

- Coordinate professional disposal with your waste disposal company.
- Separate mechanical and electrical components, packaging, hazardous waste (e.g. gear oils) and batteries/rechargeable batteries wherever possible.
- Dispose of the separated waste in an environmentally sound and proper manner (no household waste or municipal bulky waste).

What?	Material	Disposal instructions
Pallets	Wood	Return to manufacturers, freight forwarders or reusable materials collection system
Packaging material	Paper, cardboard, pasteboard, plastics	Collect and dispose of separately
Products		
Electronic devices	Metal, plastics, circuit boards, heatsinks	As electronic waste give to professional disposer for recycling
Gearbox	Oil	Drain oil and dispose of separately
	Casting, steel, aluminium	Dispose as metal scrap
Motors	Casting, copper, rotors, magnets, potting compound	As engine scrap give to professional disposer for recycling
Dry-cell batteries/rechargeable batteries		As used batteries give to professional disposer for recycling



Further information on Lenze's environmental and climate responsibility and on the topic of energy efficiency can be found on the Internet:

www.Lenze.com → search word: "Sustainability"



Appendix

Good to know

Operating modes of the motor

In continuous operation a motor reaches its permissible temperature limit if it outputs the rated power dimensioned for continuous operation. However, if the motor is only subjected to load for a short time, the power output by the motor may be greater without the motor reaching its permissible temperature limit. This behaviour is referred to as overload capacity.

Depending on the duration of the load and the resulting temperature rise, the required motor can be selected reduced by the overload capacity.

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

The most important operating modes

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

Appendix

Good to know
Enclosures



Intermittent operation S3	Non-intermittent periodic operation S6
Sequence of identical duty cycles comprising operation with a constant load and subsequent standstill. Start-up and braking processes do not have an impact on the winding temperature. The steady-state is not reached. The guide values apply to a cycle duration of 10 minutes. The power increase depends on the cycle duration and on the load period/downtime ratio.	Sequence of identical duty cycles comprising operation with a constant load and subsequent no-load operation. The motor cools down during the no-load phase. Start-up and braking processes do not have an impact on the winding temperature. The steady-state is not reached. The guide values apply to a cycle duration of 10 minutes. The power increase depends on the cycle duration and on the load period/idle time ratio.

P Power
t Time
 t_L Idle time
 θ Temperature

P_v Power loss
 t_B Load period
 t_S Cycle duration

Enclosures

The protection class indicates the suitability of a product for specific ambient conditions with regard to humidity as well as the protection against contact and the ingress of foreign particles. The protection classes are classified in the EN 60034-5/ EN IEC 60529.

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

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

