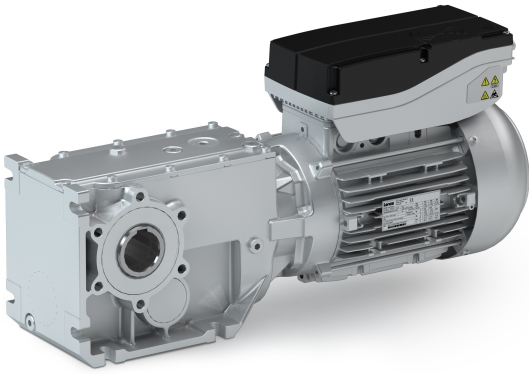




Mains-operated geared motors

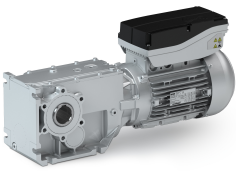
g500-B bevel geared motor / Smart Motor m300-E

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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

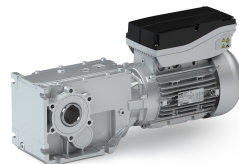


Information and tools with regard to the Lenze products can be found on the Internet:

www.Lenze.com → Downloads

About this document

Notations and conventions



Notations and conventions

Conventions are used in this document to distinguish between different types of information.

Numeric notation		
Decimal separator	Point	Generally shown as a decimal point. Example: 1 234.56
Warnings		
UL Warnings	UL	Are used in English and French.
UR warnings	UR	
Text		
Engineering Tools	" "	Software Example: "Engineer", "EASY Starter"
Icons		
Page reference		Reference to another page with additional information. Example:  16 = see page 16
Documentation reference		Reference to other 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!

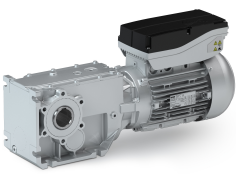
Indicates an extremely hazardous situation. Failure to comply with this instruction may result in severe irreparable injury and even death.

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

The new freedom in motion for engineers. Lenze Smart Products reduce the number of different drives by up to 70 %. Without contactor and starter, with freely adjustable fixed speeds and many integrated functions for technical material-handling applications. The Lenze Smart motor also fulfils the highest requirements regarding energy efficiency and can be conveniently operated by means of a smart phone.

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

The efficient bevel gearboxes are characterized by high permissible radial forces, closely stepped ratios and a low backlash. They are available in a 2-, 3- and 4-stage design with a torque of up to 4300 Nm and a ratio of up to $i = 3167$.

Versions

- High-efficient right-angle gearbox in a compact design for space-saving installation
- Market standard shaft dimensions and standardized flanges for easy machine integration
- Low backlash and high torsional rigidity during positioning provide for exact results

Reduction in the number of variants made easy

Before now, different output speeds (e. g. for different conveying speeds) were enabled by different gearbox ratios or, in the case of very large differences, by means of the number of pole pairs of the motors. This led to a large number of different drive variants..

Things are different with the Lenze Smart Products: Due to the possibility of freely adjusting the motor speed within a fivefold adjustment range at a constant torque, very different speeds can be enabled with one single drive variants. The cost and effort involved in design, selection, procurement and storage are thus reduced considerably.

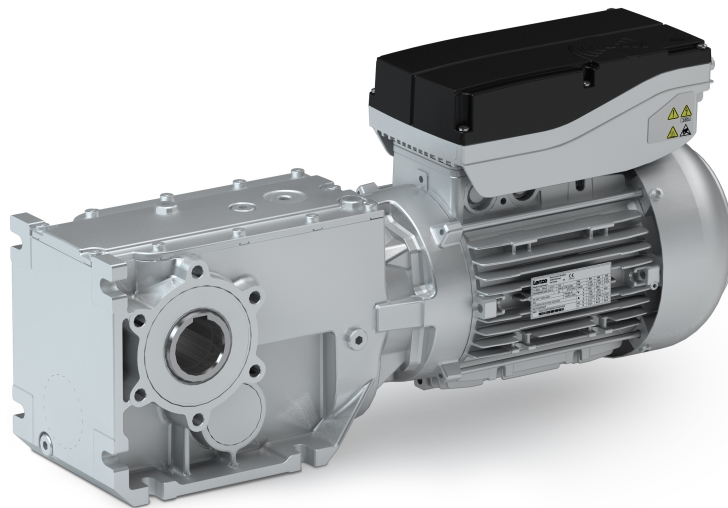


Fig. 1: MSEMXX080-32 Smart Motor - g500-B450 bevel gearbox

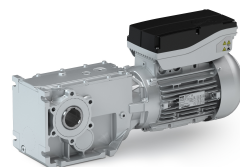
Easy adjustment

NFC technology (NFC = Near Field Communication) is used to adapt the Lenze Smart Products to the application as well as for diagnostics). The drive can be adjusted very easily without opening the terminal box. without voltage supply and without time-consuming addressing.

Only an NFC-capable Android smartphone or the Lenze NFC adapter for PCs is needed as a tool. The data can therefore be read and written when the drive is in a de-energised state – via password protection, of course.

Product information

Product description



Data that can be set

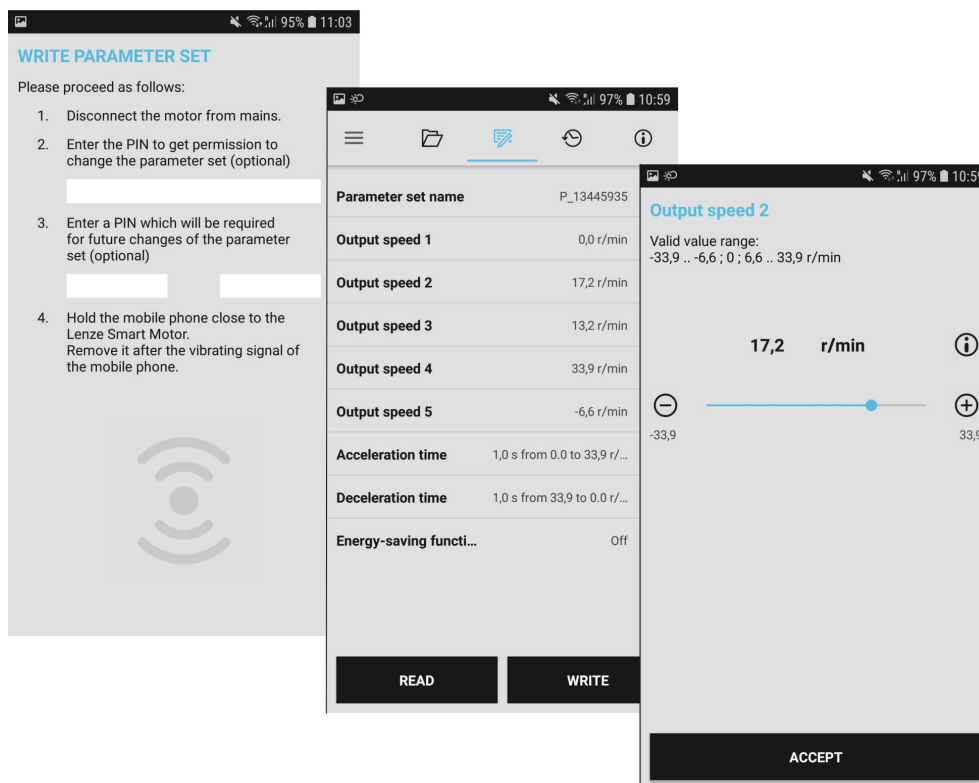
- Name of data record (e. g. the designation of the drive in your documentation)
- Speed and rotating direction 1 (also controllable without digital inputs)
- Speed and rotating direction 2-5 (controllable by means of digital inputs)
- Acceleration time
- Deceleration time
- Energy-saving function

Readable data

- Identification data (Lenze material number and serial number, type designation, software version)
- Error messages
- Operating and power-on hours

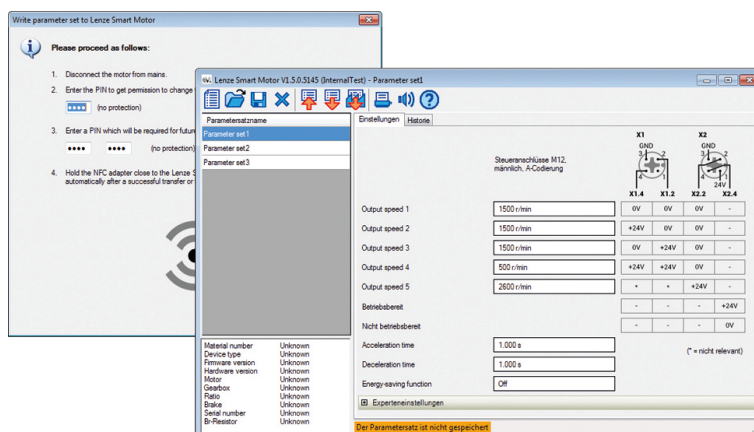
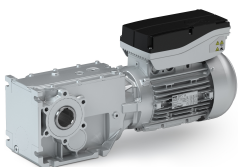
Adjustment by means of a smartphone

The Lenze Smart Products can be adjusted with an Android smartphone. The corresponding app in German and English can be obtained from www.Lenze.com or the Google Store. For convenience, the data records created can be archived on the smartphone and repeatedly transferred to the Lenze Smart Products for different applications.



Setting with the PC

With the »EASY Starter« engineering tool (extended version, software license »EASY Advanced« or »Engineer HighLevel« required) can be used to set the Lenze Smart products. The relevant version be easily downloaded from <http://www.lenze.com>. As the settings are very simple and clear, there is an easy-to-use dialog box which can be opened directly via the navigator. The corresponding button is directly accessible in the navigation bar. Analogously to other product settings, the parameter values. can be archived.



Starting and stopping smoothly and gently

An acceleration ramp and – in contrast to a conventional starter – a deceleration ramp can be set for Lenze Smart Products. This ensures that the conveyed material is handled in a defined and jerk-free manner..

Contactors and motor protection functions integrated

The Lenze Smart Products can be started and stopped by mean of digital inputs. It is also possible to switch between different speeds and rotating directions. Up to 5 different speed modes (e. g. creep speed and normal speed in both directions as well as stopping) can be used for a motor. Reversing-contactor changes and pole changes are thus a thing of the past.

In addition, motor-protections devices are not needed as monitoring of temperature, short circuits, earth faults and phase failures has already been integrated.

Easy installation

Connection takes place completely from the outside by means of connectors.

The Lenze Smart Products come with an especially clever connecting technology – Phoenix Contact QUICKON. Electrical installation is therefore very easy without special tools and requires less than one minute.

In addition to the QUICKON connector, the M15 connection customary on the market is available.

As a standard feature, the digital inputs and outputs are connected at M12 sockets of the type currently available on the market.

Already existing signal cables can often be reused.

Worldwide and efficient

The drive can be used worldwide:

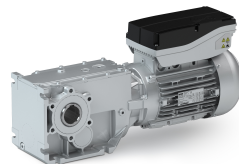
- In all 3-phase networks with 400 ... 480 V supply voltage an a mains frequency of 50 ... 60 Hz
- At ambient temperatures of -30 ... +40 °C
- Is suitable for many approvals

The Lenze Smart Motor fulfils the requirements as described in the highest efficiency requirement for IES2.

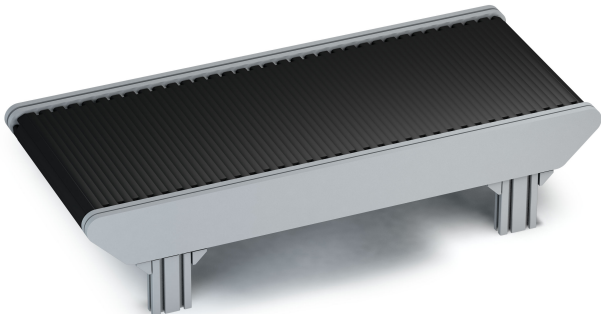
If very little torque is needed in the partial-load operational range, the integrated energy saving function can be used to optimize the energy absorption of the drive.

Product information

Identification of the products



Application examples

Roller conveyors with belt ejector	Belt conveyors
	

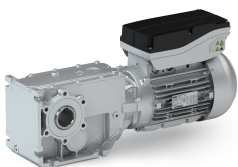
Identification of the products

Gearbox product name

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

Product name of the motor

Product series	Type	Size		Overall length	Number of pole pairs	Motor
MSEMA	XX (without built-on accessories)	063	-	4	2 (4-pole)	MSEMAXX063-42
		080		3		MSEMAXX080-32
	BR (with brake)	063		4		MSEMABR063-42
		080		3		MSEMABR080-32



Features

The following figure provides an overview of the elements and connections on the product. Their position, size and appearance may vary.

Ventilation

(depending on the mounting position)

Oil filler plug

(depending on the mounting position)

Remove oil control plug

(depending on the mounting position)

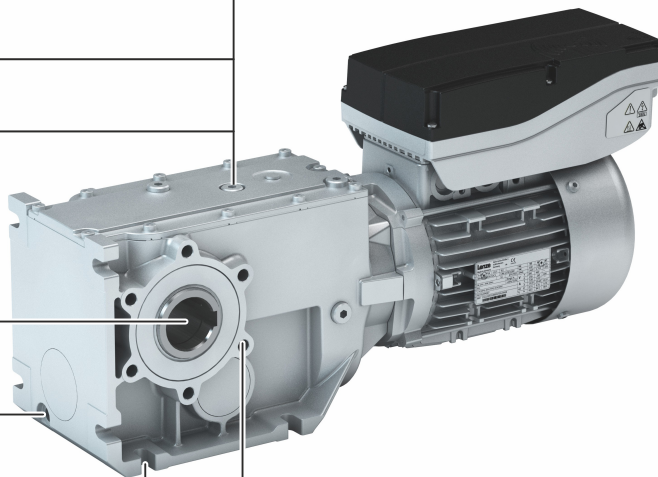
Output shaft

Oil drain plug

(depending on the mounting position)

Housing type

Torque plate mounting



Output flange

Torque plate mounting

X4 Brake resistor connection

External

Internal brake resistor

X1, X2 Control terminal

M12 connector

X3 Mains connection

In the terminal box
QUICKON V2 connector
M15 connector

PE

X5 Connection of spring-applied brake

(prewired upon delivery)

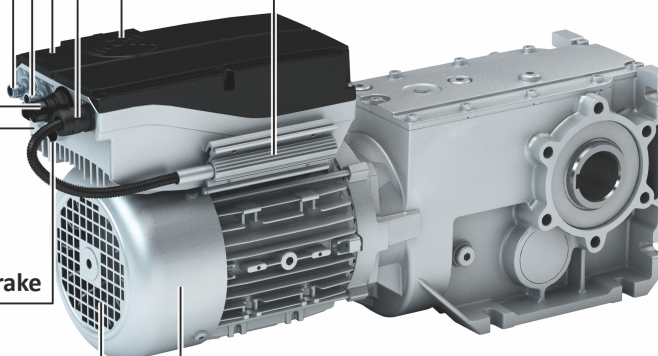
Cooling

Integral fan

Adjustment of speeds

by means of Android smartphone
by means of PC via NFC adapter

External brake resistor

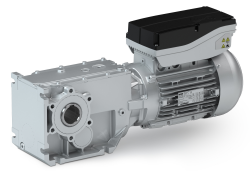


Spring-applied brake

Standard
LongLife
Manual release lever

Product information

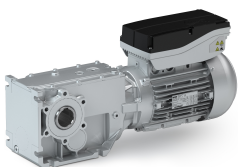
The modular system



The modular system



Values printed in **bold** are standard designs. Values that are not printed in **bold** are potential extensions, some of them including a surcharge.



Product information

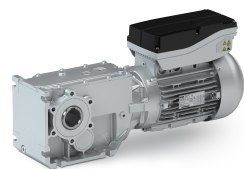
The modular system

Geared motors up to 450 Nm

Gearbox		g500-B45	g500-B110	g500-B240	g500-B450
Min. motor assignment		MSEMA□□			
		063-42	063-42	063-42	063-42
Max. motor assignment		MSEMA□□			
		063-42	080-32	080-32	080-32
Technical data					
Max. output torque	Nm	45	110	240	450
Min. drive torque	Nm	1.75	1.75	1.75	1.75
Max. drive torque	Nm	1.75	5.0	5.0	5.0
Mounting position					
Standard		M1, M2, M3, M4, M5, M6 (ABCDEF)			
Combined		M1-M6 (A-F)	M1/5/6 (AEF)		
Color		Unpainted Primed Painted in RAL colors			
Surface and corrosion protection		OKS-G Different types of surface and corrosion protection			
Output shaft					
Solid shaft with featherkey (V)	mm	20 x 40	20 x 40	30 x 60	30 x 60
Hollow shaft with keyway (H)	mm	18/20	20/25	30/35	35/40
Hollow shaft with shrink disc (S)	mm	20	20	30/35	35
Shaft material		Steel Stainless steel			
Shaft sealing ring material		NBR FKM (Viton)			
Output shaft bearing		Standard Reinforced			
Gearbox design		With foot (HBR)/(VBR/SBR) With foot and centring (HAR/VAR/SAR) With foot and output flange (HAK/VAK/SAK)			
Output flange (K)	mm	110/120	120/160	160/200	200
Lubricant		Mineral oil Synthetic oil Food-compatible oil			
Cooling		Self-ventilated			
Torque plate		At threaded pitch circle Rubber buffers On the housing foot			
Shaft cover		Hollow shaft cover, hoseproof Shrink disc cover			
Motor connection					
Power connection		Terminal box QUICKON V2 connector M15 connector			
Control terminal		M12 connector			
Spring-applied brake					
Type		Without Standard LongLife Without/with manual release lever			
Brake resistor		Without Integrated External			
Feedback		Without			
Temperature monitoring		Internal			

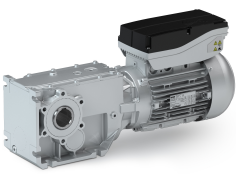
Product information

The modular system



Geared motors from 600 Nm to 4300 Nm

Gearbox		g500-B600	g500-B820	g500-B1500	g500-B2700	g500-B4300
Min. motor assignment		MSEMA□□				
		063-42	063-42	063-42	063-42	063-42
Max. motor assignment		MSEMA□□				
		080-32	080-32	080-32	080-32	080-32
Technical data						
Max. output torque	Nm	600	820	1500	2700	4300
Min. drive torque	Nm	1.75	1.75	1.75	1.75	1.75
Max. drive torque	Nm	5.0	5.0	5.0	5.0	5.0
Mounting position						
Standard		M1, M2, M3, M4, M5, M6 (ABCDEF)				
Combined		-				
Color		Primed Painted in RAL colors				
Surface and corrosion protection		OKS-G Different types of surface and corrosion protection				
Output shaft						
Solid shaft with featherkey (V)	mm	35 x70	40 x 80	50 x 100	60 x 120	70 x 140 80 x160
Hollow shaft with keyway (H)	mm	40/45	40/45	50/55	60/70	70/80
Hollow shaft with shrink disc (S)	mm	40	40	50	65	75/80
Shaft material		Steel Stainless steel				
Shaft sealing ring material		NBR FKM (Viton)				
Output shaft bearing		Standard Reinforced				
Gearbox design		With foot (HBR)/(VBR/SBR) With foot and centring (HAR/VAR/SAR) With foot and output flange (HAK/VAK/SAK)				
Output flange	mm	200/250	200/250	250/300	350	400/450
Lubricant		Mineral oil Synthetic oil Food-compatible oil				
Cooling		Self-ventilated				
Torque plate		At threaded pitch circle On the housing foot				
Shaft covers		Hollow shaft cover, hoseproof Shrink disc cover				
Motor connection						
Power connection		Terminal box QUICKON V2 connector M15 connector				
Control terminal		M12 connector				
Spring-applied brake						
Type		Without Standard LongLife Without/with manual release lever				
Brake resistor		Without Integrated External				
Feedback		Without				
Temperature monitoring		Internal				



Designs

Gearbox designs

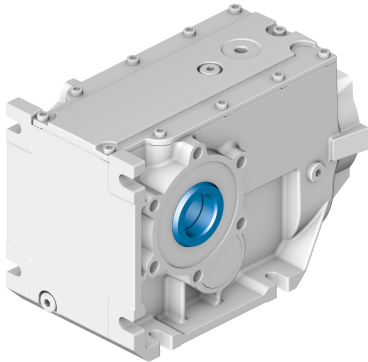


Please observe the available gearbox designs!

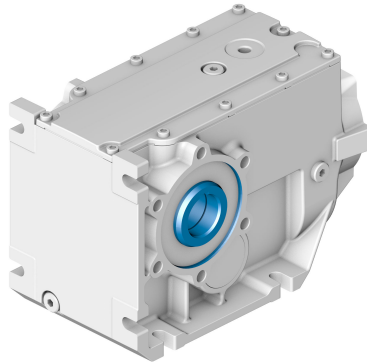
► [The modular system](#) 12

g500-B45 ... B4300

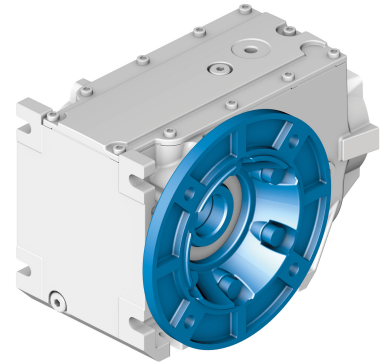
Hollow shaft, with foot



Without centring (HBR)

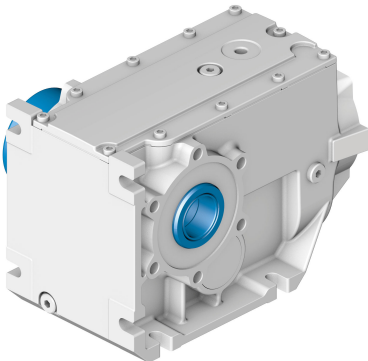


With centring (HAR)

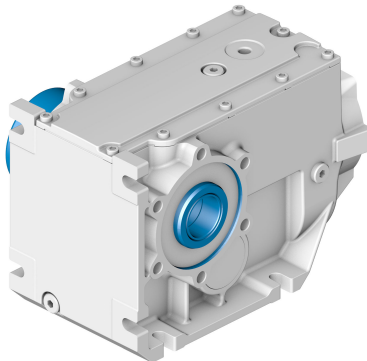


Flange with through holes (HAK)

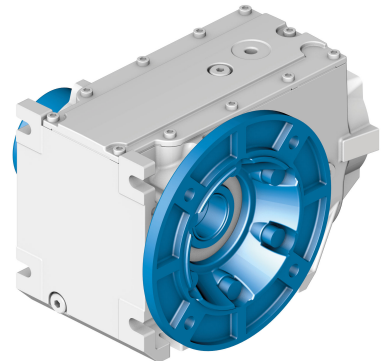
Hollow shaft with shrink disc, with foot



Without centring (SBR)

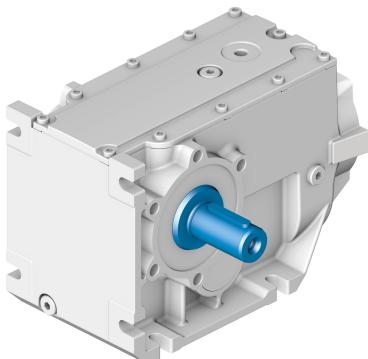


With centring (SAR)

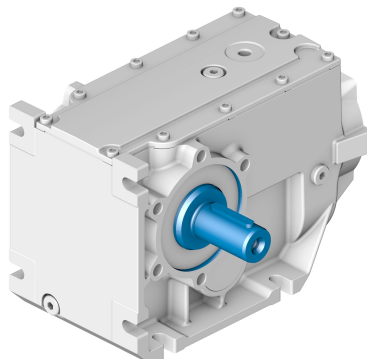


Flange with through holes (SAK)

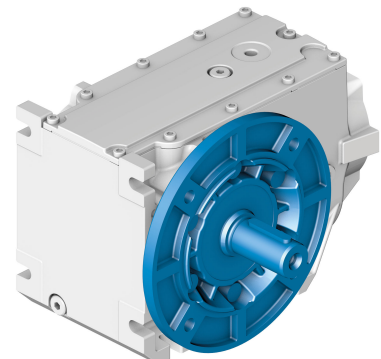
Solid shaft, with foot



Without centring (VBR)



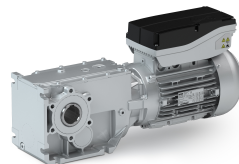
With centring (VAR)



Flange with through holes (VAK)

Product information

The modular system
Mounting positions

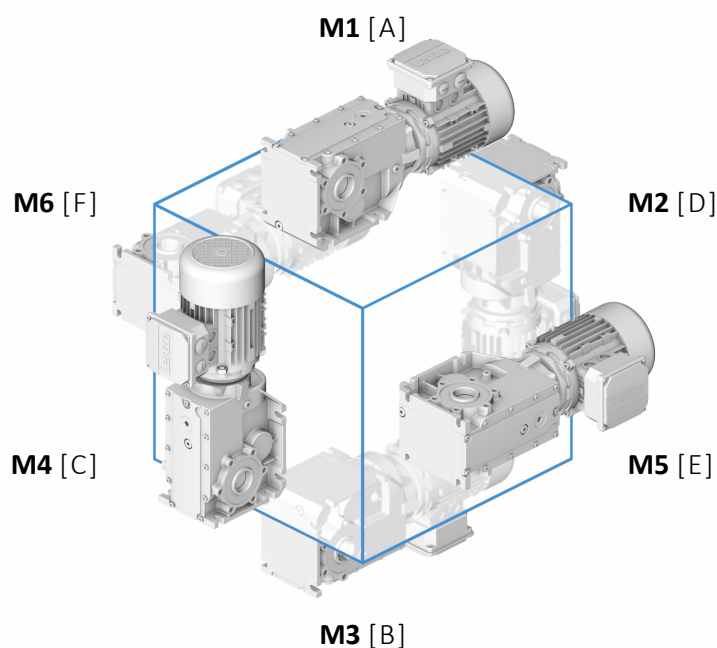


Mounting positions

Details of the mounting position are needed to ensure the corresponding lubricant amount, position of the ventilation, oil checks and oil drain plug on the gearbox.

To reduce the number of different versions, the following gearboxes can also be ordered with combined mounting positions:

- g500-B45 in M1-M6 (A-F) mounting position
- g500-B110 ... B450 in M1/5/6 (AEF) mounting position



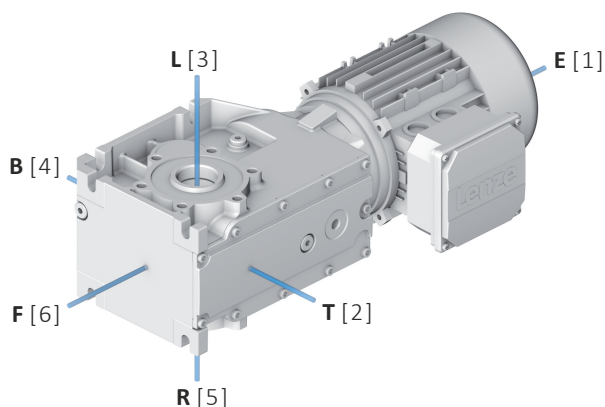
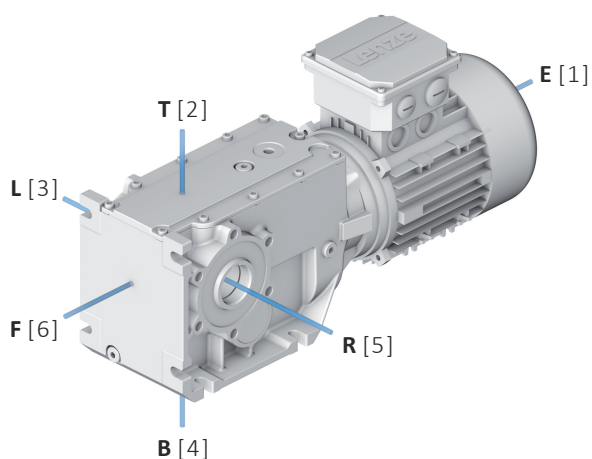
Defined positions on the geared motor

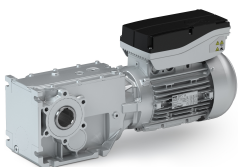
All of the defined positions refer to the areas on the geared motor in mounting position **M1 (A)**.

Position of the built-on accessories with T, L, R, B, F, E (Top, Left, Right, Bottom, Front, and End)

If the geared motor is rotated into a different mounting position M2 ... M6 (B...F), the defined positions on the geared motor are retained.

Example: Mounting position M5 (E)

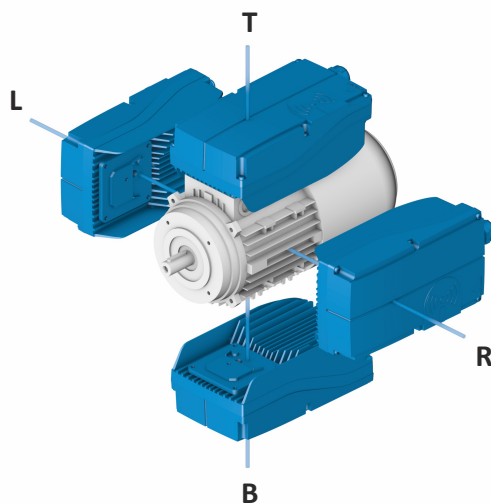




Product information

The modular system
Mounting positions

Position of the terminal boxes



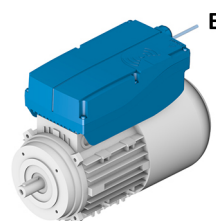
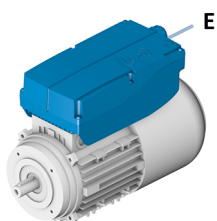
Positions on the terminal box

Mains connection

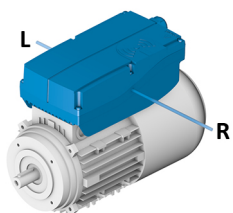
Cable gland for terminal box
QUICKON V2 connector
M15 connectors

Control terminal

M12 connector

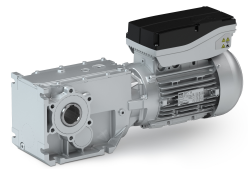


External brake resistor

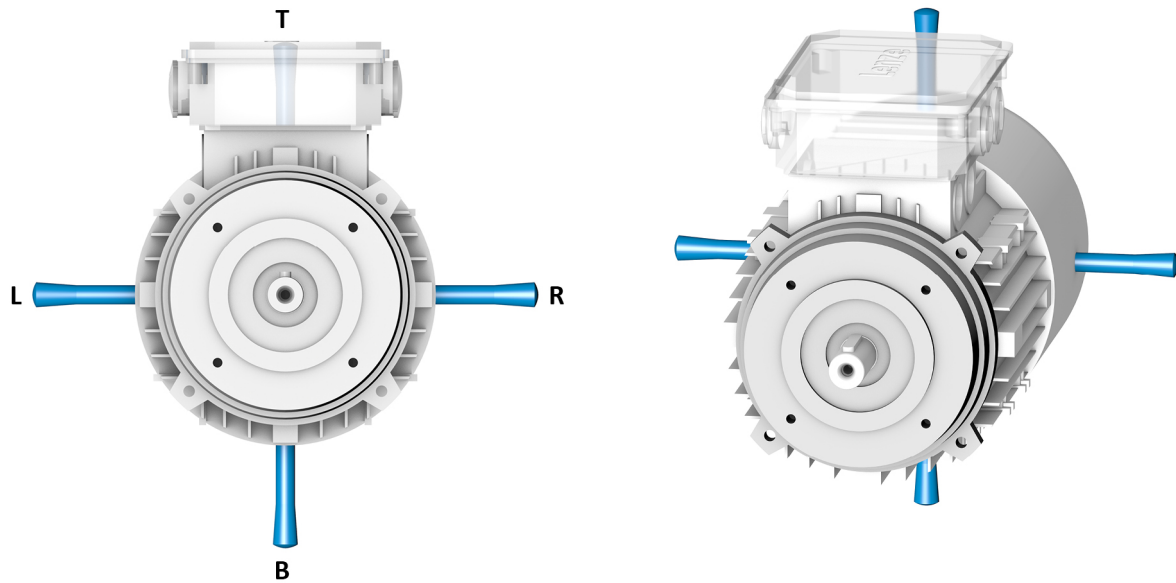


Product information

The modular system
Mounting positions



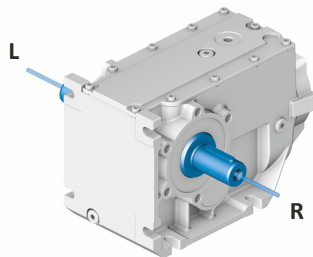
Position of the manual release lever



Position of the solid shaft



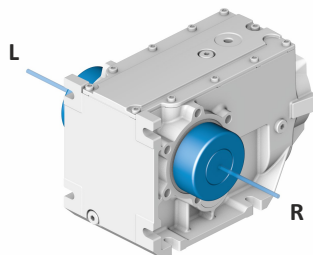
Double-ended output shaft journal "L+R".

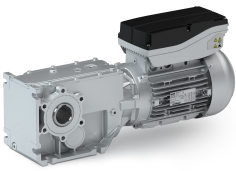


Position of the hollow shaft with shrink disc



Output flange and shrink disc are not possible in the same position.





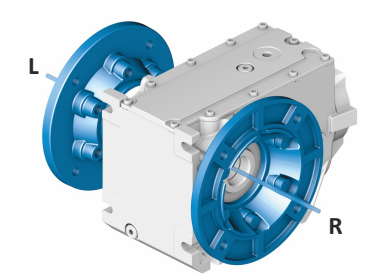
Product information

The modular system
Mounting positions

Position of the output flange

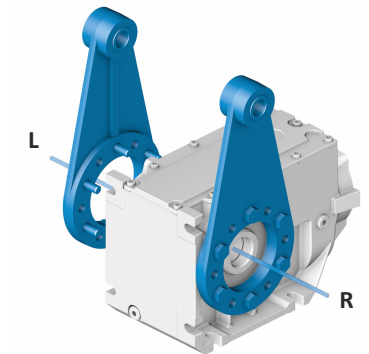


Output flange on both sides "L+R".



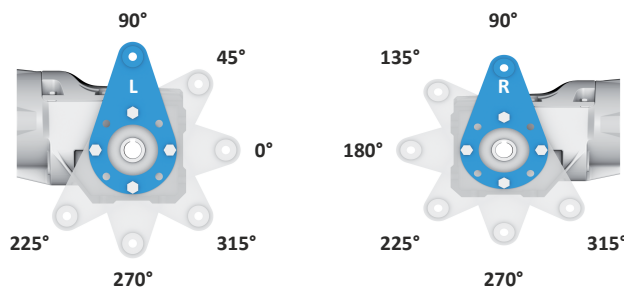
Position of the torque plate on the threaded pitch circle

Position of the torque plate

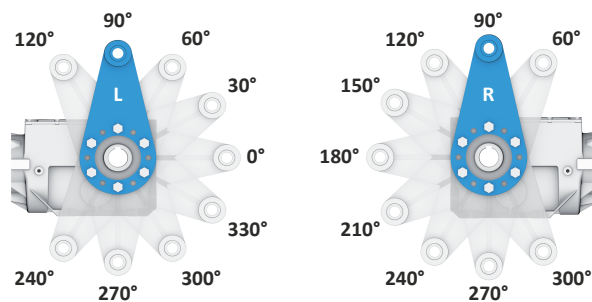


Angle of the torque plate

g500-B45 ... B110

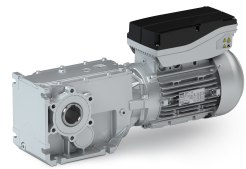


g500-B240 ... B1500



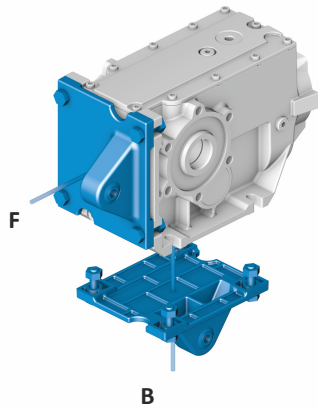
Product information

The modular system
Mounting positions

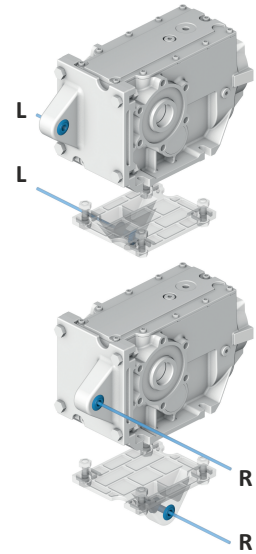


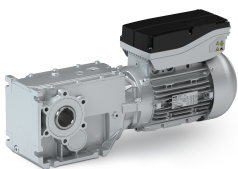
Position of the torque plate on the housing foot

Position of the torque plate



Position of the rubber buffer on the torque plate





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!

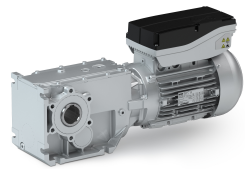
- Only use the product as directed.
- Never commission the product in the event of visible damage.
- Never modify the product technically.
- Never commission the product before assembly has been completed.
- Never operate the product without the required covers.
- Connect/disconnect all pluggable connections 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 is suitable for horizontal conveying only.
- The product may only be operated from the mains.
- 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.

Information on project planning

Safety instructions
Residual hazards



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:

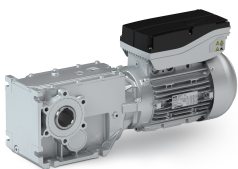
Use personal protective equipment or wait until the device has cooled down!

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.



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.

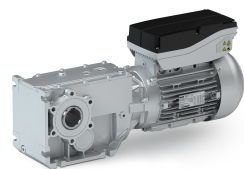
General information

NOTICE

For gearboxes with hollow shaft and shrink disk

observe the following requirements for the machine shaft:

- ▶ Fit tolerance h6
 - ▶ Material yield strength $R_e \geq 360 \text{ MPa}$
 - ▶ Modulus of elasticity approx. 210000 MPa
 - ▶ Surface roughness $R_z \leq 15 \text{ }\mu\text{m}$
 - ▶ No radial, axial forces and forces due to stress/rotation permissible
-

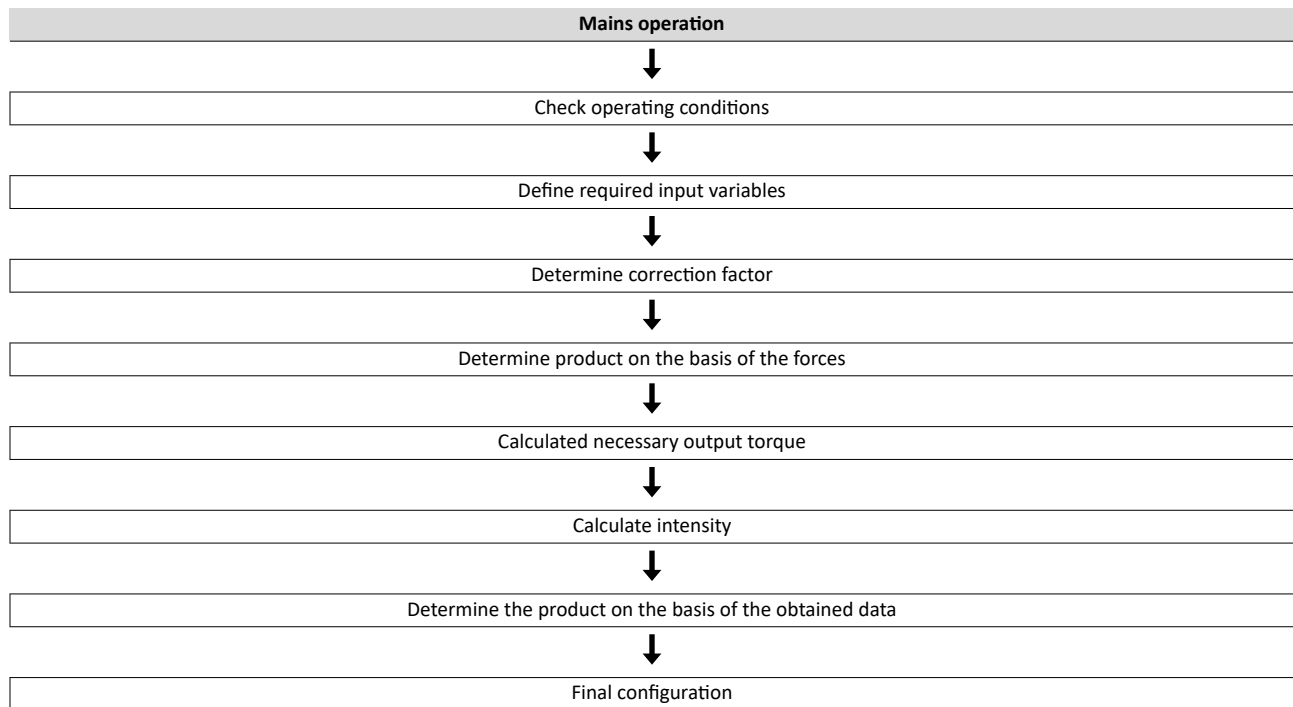


Drive dimensioning

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.



Check operating conditions

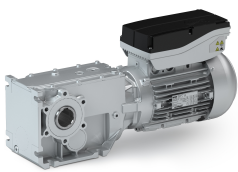
Check
Approvals Conformities Supply voltage Degree of protection Ambient temperature Surface protection

► [Standards and operating conditions](#) 48

► [Surface and corrosion protection](#) 27

Define required input variables

Necessary input variables	Note	Symbol	Unit
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		$M_{L,max}$	Nm
Load speed		$n_{L,max}$	rpm



Determine correction factor

Ambient temperature	T_U	°C	≤ 40
Correction factor	k_{TU}		1

Installation height amsl			
≤ 1000 m	≤ 2000 m	≤ 3000 m	≤ 4000 m
Correction factor			
k_H	k_H	k_H	k_H
1	0.95	.90	.85

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	$F_{rad} = 2000 \times \frac{M_{L,max} \times f_z}{dw}$		$F_{rad} \leq f_w \times F_{rad,max}$	
Axial force	F _{ax}	N			$F_{ax} \leq F_{rad,max} \times 0.5$	

dw Effective diameter of transmission element in mm

f_w Additional load factor

► [Radial forces and axial forces](#) 60

Calculate output torque

			Calculation
Necessary output torque	M_2	N m	$M_2 \geq \frac{M_{L,max}}{k_H \times k_{TU}}$

Calculate intensity

		Calculation	
Intensity	F_I	$F_I = \frac{\frac{J_L}{i^2} + J_M + J_B + J_Z}{J_M + J_B + J_Z} \leq 1.25$	

i Ratio of gearbox

J_B Moment of inertia of brake

J_L Moment of inertia of the load

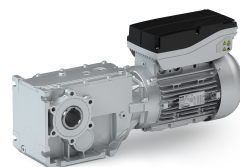
J_Z Additional moment of inertia (handwheel, 2nd shaft end ...)

J_M Moment of inertia of motor

Determine the product on the basis of the data obtained from the selection tables

Selection table		Check
Output speed n_2	rpm	$n_{L,max} \approx n_2$
Output torque M_2	Nm	$M_{L,max} \leq M_2$

[Selection tables](#) 62



Final configuration

	Check
Connection dimensions	Output shaft Output flange/foot
Mounting position	Geared motor Terminal box Driven shaft/output flange
Select product extensions and accessories	Torque support Shaft cover Connectors Brake NFC adapter QUICKON connector M15 connector

More information about the final configuration:

► [The modular system](#) 12

► [Product extensions](#) 97

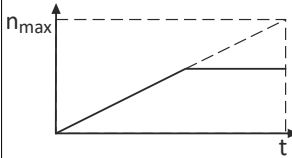
► [Accessories](#) 114

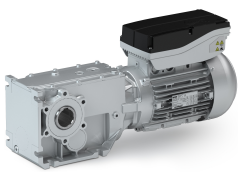
Parameters that can be preset by Lenze



The parameters marked with "order-dependent" in the standard setting can be preset order-related by Lenze.

Standard settings

Parameter	Value		Comment
Name	Delivery	Setting range	
Parameter set name	---	[text]	File name of the parameter set without file extension *.lsm
Output speed 1	depending on the order	[-2600/i ... -500/i] rpm [0] rpm [500/i ... 2600/i] rpm	CCW rotation: < 0 rpm STOP: 0 rpm CW rotation: > 0 rpm Lenze Smart Motor with gearbox: The ratio i is taken into account when calculating the output speed.
Output speed 2			
Output speed 3			
Output speed 4			
Output speed 5			
Acceleration time		[0.0 ... 20.0] s 	Acceleration time t_1 of the ramp generator from 0 rpm to n_{max} [2600/i] rpm
Deceleration time			Deceleration time t_2 of the ramp generator from n_{max} [2600/i] rpm to 0 rpm
Energy-saving function		[Off]	Optimized for: • High dynamic performance • Maximum starting torque and torque • High speed accuracy
		[On]	Reduced energy absorption in partial load operational range. Approx. 50 % of the maximum starting torque is available.



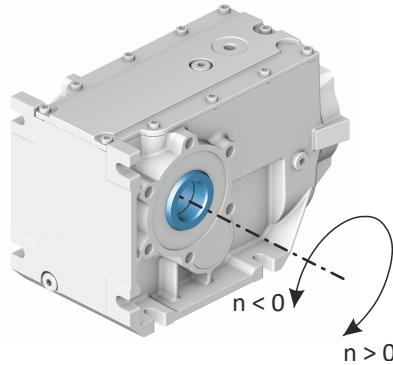
Information on project planning

Final configuration
Surface and corrosion protection

Direction of rotation of the output shaft

The direction of rotation of the output shaft is defined by the setpoint of the output speed.

The direction of rotation is changed when a positive ($n > 0$) or negative ($n < 0$) speed is specified.



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 reliable functioning even at high air humidity, in outdoor installations, or in the presence of atmospheric contamination. Any color from the "RAL Classic" collection can be chosen for the top coat.

For indoor installation in buildings and if no special corrosion protection is required, the products are also available unpainted (without surface and corrosion protection system).



Without OKS (unpainted):

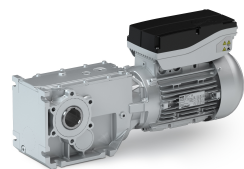
The aluminium parts are not coated and grey cast iron parts are primed with grey paint. Slight colour differences of the components are possible.

Surface and corrosion protection	Applications	Product	
		g500-H45 ... H450 g500-S130 ... S660 g500-B45 ... B450	g500-H600 ... H1500 g500-S950 ... S4500 g500-B600 ... B1500
without OKS (unpainted)	- Indoor installation, no special corrosion protection necessary - Painting by customer	Standard	
OKS-G (primed)	Dependent on subsequent top coat applied	Optional	Optional
OKS-S (small)	- Standard applications - Internal installation in heated buildings - Air humidity up to 90%		Standard
OKS-M (medium)	- Internal installation in non-heated buildings - Covered, protected external installation - Air humidity up to 95 %		Optional

Surface and corrosion protection	Corrosivity category	Surface coating	Color	Coating thickness
	DIN EN ISO 12944-2	Design		
Without OKS (uncoated)				
OKS-G (primed)		2K PUR priming coat		60 ... 90 µm
OKS-S (small)	Comparable to C1	2K-PUR top coat	- Standard: RAL 7012 - Optional: RAL Classic	80 ... 120 µm
OKS-M (medium)	Comparable to C2	2K PUR priming coat 2K-PUR top coat		110 ... 160 µm

Information on project planning

Final configuration
Lubricants



Lubricants

The following gearboxes are lubricated for life:

- g500-B45
- g500-B110
- g500-B240

Recommended lubricants:

Lubricant	CLP 220	CLP 460	CLP HC 220	CLP HC 320
Ambient temperature	0 ... +40 °C		-30 ... +40 °C	-20 ... +50 °C
Specification	Mineral oil with EP additives		Synthetic oil (polyalfaolefins basis)	
Changing interval				
Operating hours	16000		25000	
Not later than after	3 years		4 years	
At an oil temperature of	70 °C		70 °C	
FUCHS	Renolin CLP 220	Renolin CLP 460	Renolin Unisyn XT 220	Renolin Unisyn XT 320
KLÜBER	Klüberoil GEM 1-220 N	Klüberoil GEM 1-460 N	Klübersynth GEM 4-220 N	Klübersynth GEM 4-320 N
SHELL	Shell Omala S2 GX 220	Shell Omala S2 GX 460	Shell Omala S4 GXV 220	Shell Omala S4 GXV 320

Lubricant	CLP HC 46 USDA H1	CLP PG 100 USDA H1	CLP HC 220 USDA H1	CLP PG 460 USDA H1
Ambient temperature	-30 ... +10 °C		-20 ... +40 °C	
Specification	Synthetic oil (polyalfaolefins basis)	Synthetic oil (polyglycol basis)	Synthetic oil (polyalfaolefins basis)	Synthetic oil (polyglycol basis)
Changing interval				
Operating hours	16000			
Not later than after	3 years			
At an oil temperature of	70 °C			
FUCHS			Cassida Fluid GL 220	Cassida Fluid WG 460
KLÜBER	Klüberoil Summit HYSYN FG-46	Klübersynth UH1 6-100	Klüberoil 4 UH1-220 N	Klübersynth UH1 6-460
Castrol				Optileb GT 1800/460

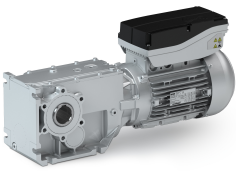
Lubricant amounts for stocking

All lubricant amounts are reference values for a change of lubricant. They serve stocking purposes, for example.

The exact values can be found on the nameplate.

Mounting position		M1 (A)	M2 (D)	M3 (B)	M4 (C)	M5 (E)	M6 (F)	M1-M6 (A-F)	M1, M5, M6 (AEF)
Gearboxes									
g500-B45	I	0.4	0.4	0.4	0.4	0.4	0.4	0.4	-
g500-B110	I	.3	0.6	0.7	.9	0.5	0.4	-	0.5
g500-B240	I	.9	1.2	1.3	1.8	1.4	1.0	-	1.4
g500-B450	I	.9	1.6	1.9	2.3	1.8	1.7	-	1.8
g500-B600	I	1.4	2.3	2.7	3.2	2.6	2.6	-	-
g500-B820	I	1.9	2.8	3.4	4.2	3.2	2.7	-	-
g500-B1500	I	3.8	5.7	6.4	8.4	5.9	3.9	-	-
g500-B2700	I	6.0	9.0	10.0	12.7	8.5	9.5	-	-
g500-B4300	I	9.5	11.5	16.5	21.0	14.0	16.0	-	-
Pre-stage	I	0.4							

► Gearbox with pre-stage 95



Ventilation



No venting measures are required for the g500-B45 ... B240 gearboxes.

The g500-B240 gearbox can optionally be equipped with breather elements.

From g500-B450 onwards, the gearboxes are supplied with breather elements as standard.

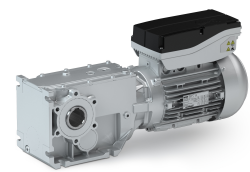
To reduce the number of different versions, the following gearboxes can also be ordered with combined mounting positions:

- g500-B45 in M1-M6 (A-F) mounting position
- g500-B110 ... B450 in M1/5/6 (AEF) mounting position



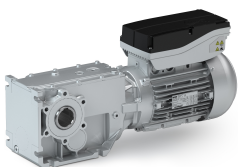
In these gearboxes, the lubricant amount has been optimised for the use in different mounting positions. If required, the breather elements are loosely enclosed and must be mounted before commissioning depending on the mounting position.

► [The modular system](#)  12



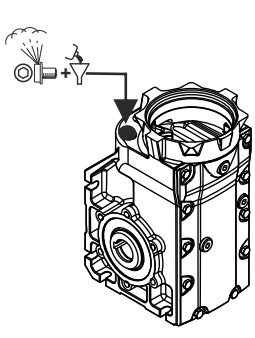
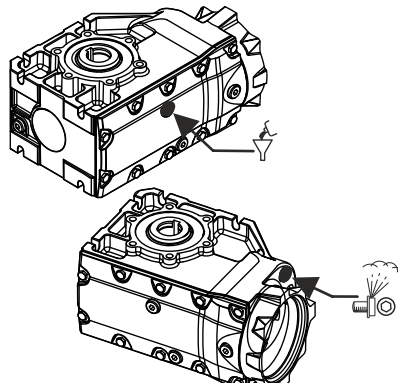
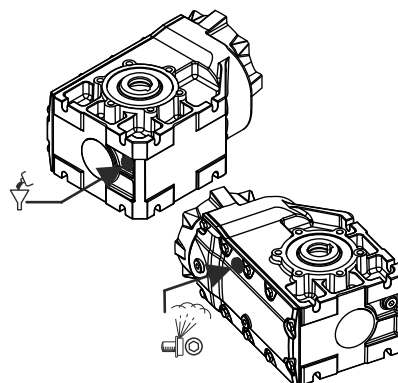
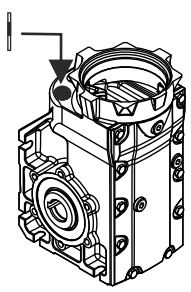
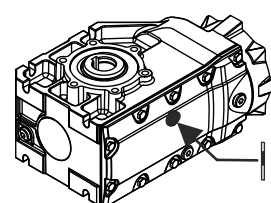
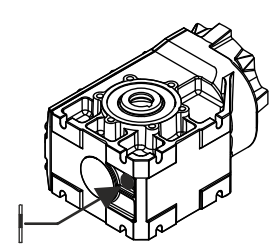
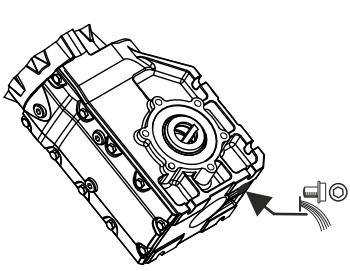
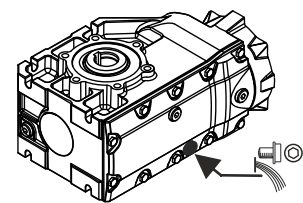
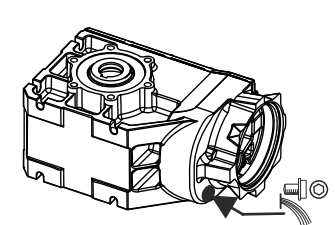
g500-B240

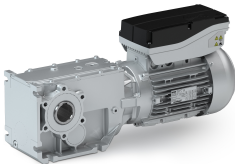
Mounting position M1 (A)	Mounting position M2 (D)	Mounting position M3 (B)
Filling and ventilation		
Check		
Drain		



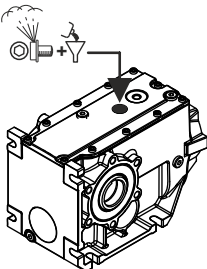
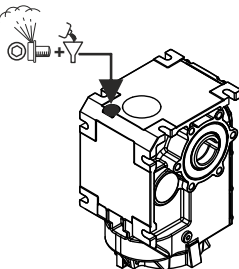
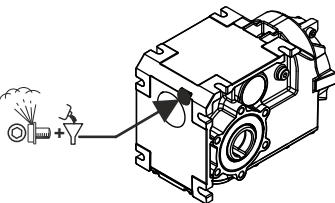
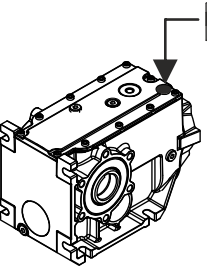
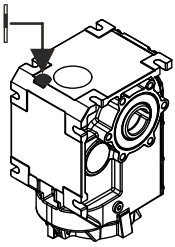
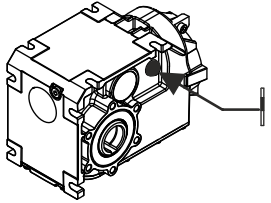
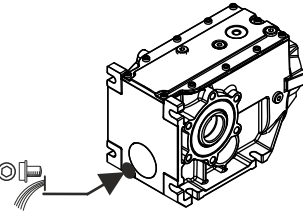
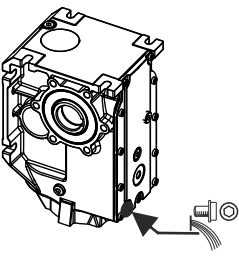
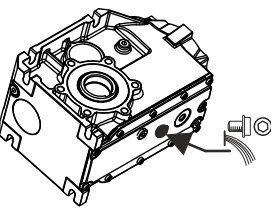
Information on project planning

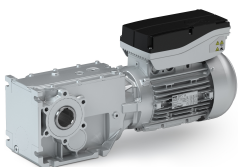
Final configuration
Ventilation

Mounting position M4 (C)	Mounting position M5 (E)	Mounting position M6 (F)
Filling and ventilation		
		
Control		
		
Drain		
		



g500-B450

Mounting position M1 (A)	Mounting position M2 (D)	Mounting position M3 (B)
Filling and ventilation		
		
Check		
		
Drain		
		



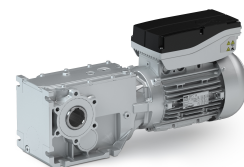
Information on project planning

Final configuration
Ventilation

Mounting position M4 (C)	Mounting position M5 (E)	Mounting position M6 (F)
Filling and ventilation		
Control		
Drain		

Information on project planning

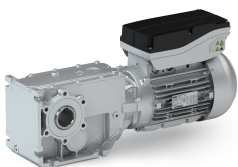
Final configuration
Ventilation



g500-B600 ... B4300

Mounting position M1 (A)	Mounting position M2 (D)	Mounting position M3 (B)
Filling and ventilation		
Check		
Drain		

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



Information on project planning

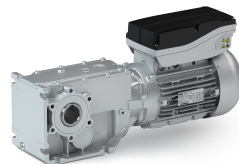
Final configuration
Ventilation

Mounting position M4 (C)	Mounting position M5 (E)	Mounting position M6 (F)
Filling and ventilation		
Check		
Drain		

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

Information on project planning

Final configuration
Ventilation



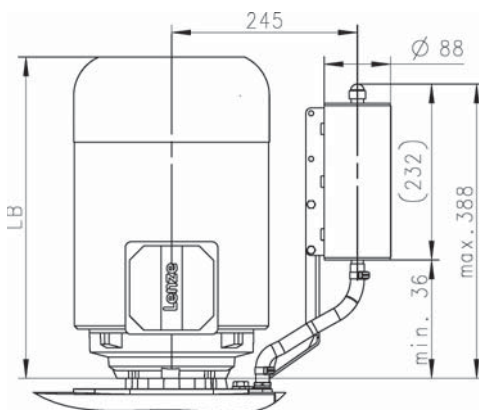
Gearbox with oil compensation reservoir for mounting position M4 (C)

In order to guarantee a reliable lubrication of the toothed parts in mounting position M4 (C) (motor is on the gearbox vertical from the top), a high filling level is required in the gearbox. As a result of the reduced volume of air in the gearbox, this may lead to oil escaping from the ventilation at higher input speeds. The oil compensation reservoir increases the expansion space for the lubricant.

The oil compensation reservoir can be ordered as a mounting set for fastening to the gearbox.

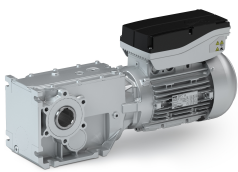
If insufficient space is available, the oil compensation reservoir can also be mounted over the gearbox hose connection on nearby system parts.

Dimensions of the oil compensation reservoir



8800783-00

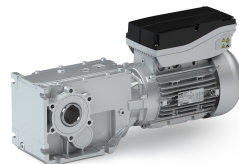
For the following gearboxes in mounting position M4 (C), which exceed the specified min. input speed, an oil expansion reservoir is required depending on the specified gear ratio:



Information on project planning

Final configuration
Ventilation

g500-B1500		g500-B2700		g500-B4300	
Gearbox ratio	Min. input speed	Gearbox ratio	Min. input speed	Gearbox ratio	Min. input speed
	rpm		rpm		rpm
6.866	2000	6.918	2000	5.488	2000
9.516	2000	8.793	2000	6.976	2000
10.902	2000	11.713	2000	9.156	2000
11.985	2000	12.863	2000	10.137	2000
13.118	2000	14.888	2000	11.080	2000
15.111	2000	16.351	2000	12.885	2000
16.611	2000	19.542	2000	14.084	2000
18.598	2000	22.269	2000	16.913	2000
20.444	2000	24.456	2000	18.486	2000
22.898	2000	26.814	3000	21.065	2000
23.973	3000	29.447	3000	23.206	3000
26.353	2000	32.873	3000	25.365	3000
29.206	3000	36.102	3000	28.013	2000
32.547	3000	42.772	2000	31.097	3000
35.778	3000	46.973	2000	35.607	2000
36.526	2000	48.912	3000	38.546	3000
40.895	2000	54.082	3000	42.760	2000
44.955	2000	59.393	3000	46.737	2000
46.568	3000	64.452	3000	53.258	2000
51.920	3000	71.951	3000	58.671	3000
57.074	3000	76.862	4000	64.127	3000
58.422	3000	84.940	4000	71.930	3000
64.221	3000	93.283	4000	78.619	3000
71.566	3000	97.481	3000	97.453	3000
74.963	4000	107.056	3000	106.517	3000
82.762	4000	118.370	3000	118.336	3000
90.978	4000	129.996	3000	129.342	3000
93.150	3000	153.185	4000	153.141	4000
102.396	3000	168.230	4000	167.383	4000
114.166	3000	185.911	4000	185.857	4000
125.498	3000	204.170	4000	203.143	4000
149.949	4000	235.000	4000	234.932	4000
164.833	4000	258.080	4000	256.781	4000
181.983	4000				
200.048	4000				
230.035	4000				
252.869	4000				



Mechanical installation

Important notes

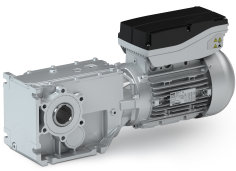
- Install the product according to the information in the chapter "Standards and operating conditions".
 - ▶ [Standards and operating conditions](#) 48
- The technical data and the data regarding the supply conditions can be found on the nameplate and in this documentation.
- Ambient media – especially 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

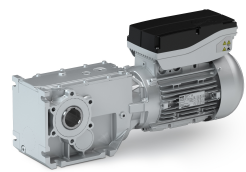
Important notes

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.



Connection according to EN



The following data is valid for a three-phase mains connection with 400 V.

Mains connection with QUICKON connector				
Motor		MSEMA□□063-42		MSEMA□□080-32
Connection		X3		
Laying system		B2		
Connection type		QUICKON connector		
Cable type		Flexible		
Cable cross-section				
Typ.	mm ²	1.5	2.5	
Min.	mm ²	1.5	1.5	
Max.	mm ²	2.5	2.5	

Mains connection M15 connector				
Motor		MSEMA□□063-42		MSEMA□□080-32
Connection		X3		
Laying system		B2		
Connection type		M15 connector		
Cable type		Flexible		
Cable cross-section				
Typ.	mm ²	1.5	2.5	
Min.	mm ²	1.5	1.5	
Max.	mm ²	2.5	2.5	

Mains connection cable L1, L2, L3, PE				
Motor		MSEMA□□063-42		MSEMA□□080-32
Connection		X3		
Installation method		B2		
Connection type		Cable		
Cable type		rigid/flexible		
Cable cross-section				
Typ.	mm ²	1.0	1.5	
Min.	mm ²	0.75	0.75	
Max.	mm ²	1.5	1.5	
Stripping length	mm	10	10	

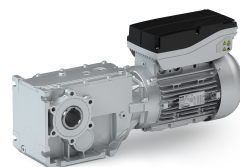
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Fuse data (F1 ... F3)			
Motor		MSEMA□□063-42	MSEMA□□080-32
Cable installation in accordance with		EN 60204-1	
Laying system		B2	
Fuse			
Characteristic		gG/gL	
Typ. Rated current	A	6	10
Max. rated current	A	16	16
Semiconductor fuse			
Characteristic		gRL	
Typ. Rated current	A	6	10
Max. rated current	A	16	16
Circuit breaker			
Characteristic		C	
Typ. Rated current		6	10
Max. rated current	A	16	16

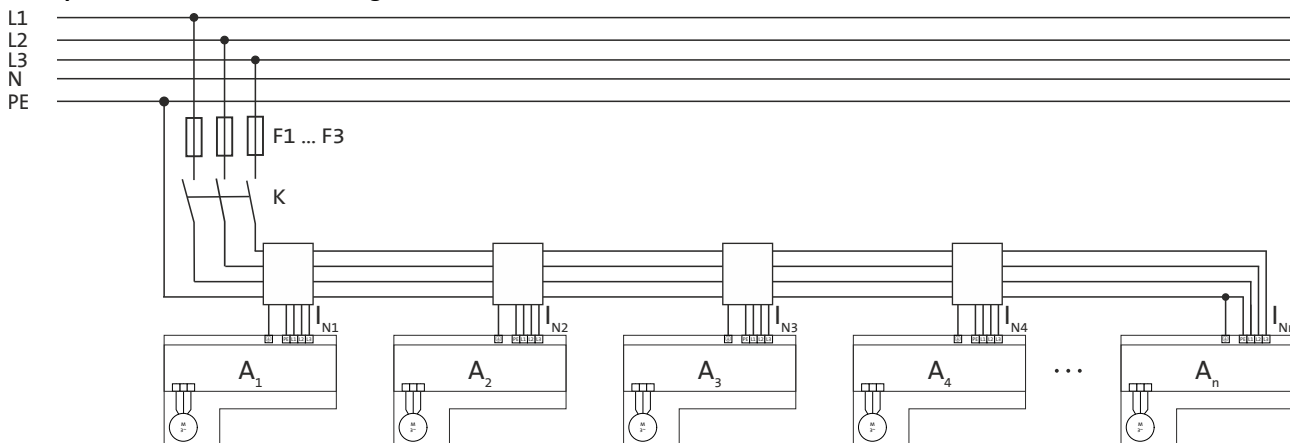
- 41

Electrical installation

Connection according to EN



Group drive connection according to EN 60204-1



Max. total rated mains currents at 40 °C for different cable cross-sections

Cable installation in accordance with		EN 60204-1		
Main cable				
Laying system		B2		
Cable cross-section	mm ²	1.5	2.5	4.0
Stub				
Laying system		C		
Cable cross-section	mm ²	1.5	2.5	2.5
Max. current load of the cable	A	13.1	17.4	21.0
Fuse				
Characteristic		gG/gL		
Typ. Rated current	A	-	-	-
Max. rated current	A	10	16	20
Circuit breaker				
Characteristic		gRL		
Typ. Rated current	A	-	-	-
Max. rated current	A	10	16	20
$I_{\max} \geq I_{N1} + I_{N2} + I_{N3} + I_{N...}$	A	7.6	12.2	17.6

► Rated data [119](#)

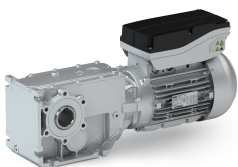
- Use of copper cables insulated with PVC
 - Conductor temperature $\leq 70\text{ °C}$, ambient temperature $\leq 40\text{ °C}$
- No bundling of cables or wires, three wires under load
- Typical utilization 80 % of the respective cable cross-section taken into account

Group drive sizing

Example:

Verification of the maximum permissible rated mains current taking into account the specified data and a simultaneity factor of 100 %.

MSEMAXX063-42	7 drives	12 drives	17 drives
Mains voltage	400 V		
Rated current per motor	1 A		
Max. rated mains current	$I_{N1} + I_{N2} + I_{N3} + I_{N...} \leq I_{\max}$		
	$7 \times 1\text{ A} = 7\text{ A} \leq 7.6\text{ A}$	$12 \times 1\text{ A} = 12\text{ A} \leq 12.2\text{ A}$	$17 \times 1\text{ A} = 17\text{ A} \leq 17.6\text{ A}$



Connection according to cULus

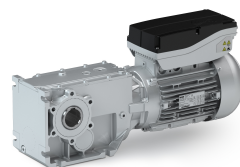


The following data is valid for a three-phase mains connection with 480 V.

Mains connection with QUICKON connector			
Motor		MSEMA□□063-42	MSEMA□□080-32
Connection		X3	
Connection type		QUICKON connector	
Cable cross-section			
Typ.	AWG	16	14
Min.	AWG	16	16
Max.	AWG	14	14

Mains connection M15 connector			
Motor		MSEMA□□063-42	MSEMA□□080-32
Connection		X3	
Connection type		M15 connector	
Cable cross-section			
Typ.	AWG	16	14
Min.	AWG	16	16
Max.	AWG	14	14

Mains connection cable L1, L2, L3, PE			
Motor		MSEMA□□063-42	MSEMA□□080-32
Connection		X3	
Connection type		Cable	
Cable type		rigid/flexible	
Cable cross-section			
Typ.	AWG	18	16
Min.	AWG	18	18
Max.	AWG	16	16
Stripping length	mm	10	10



⚠ WARNING!

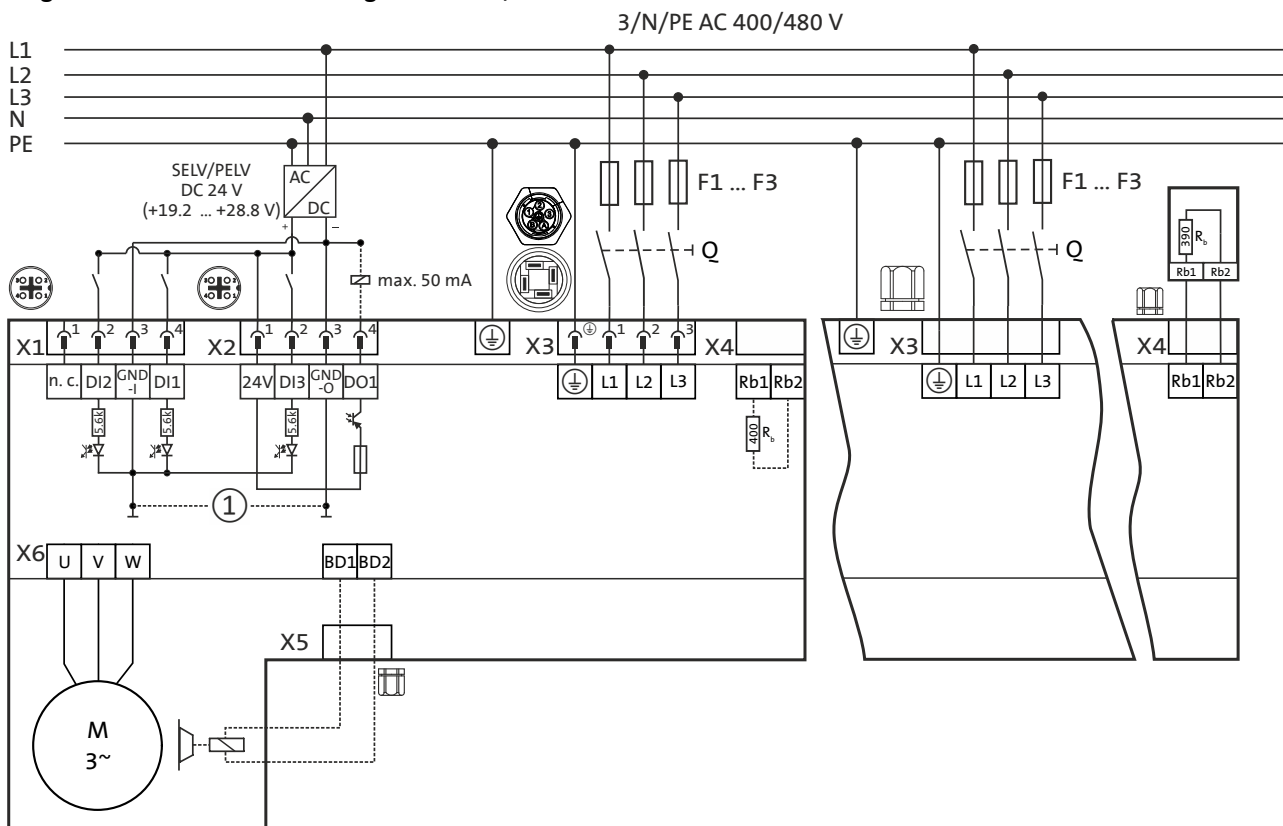
► UL marking

- Use 75 °C copper wire only, except for control circuits.
- Maximum conductor size is AWG14.
- Cord connected drives are for use only in NFPA 79 applications.
- Overload protection: 125 % of rated FLA
- Integral solid state short circuit protection does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the National Electrical Code and any additional local codes.
- CAUTION - Risk of electric shock. Do not disconnect under load.

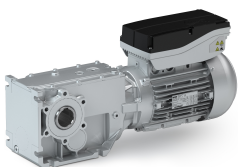
► Marquage UL

- Utiliser exclusivement des conducteurs en cuivre 75 °C, sauf pour la partie commande.
- Taille de conducteur maximale : AWG14.
- Les entraînements avec câble d'alimentation sont destinés exclusivement à des applications conformes à la norme NFPA 79.
- Protection contre les surcharges : homologuée pour 125 % du courant assigné à pleine charge.
- La protection statique intégrée n'offre pas la même protection qu'un disjoncteur. Une protection par disjoncteur externe doit être fournie, conformément au National Electrical Code et aux réglementations locales applicables.
- ATTENTION ! Risque de choc électrique. Ne pas débrancher l'équipement sous charge.

Single drive connection according to NFPA 70, NFPA 79



① GND is bridged if the "DI/DO-GND bridged" version is specified on the nameplate.



Electrical installation

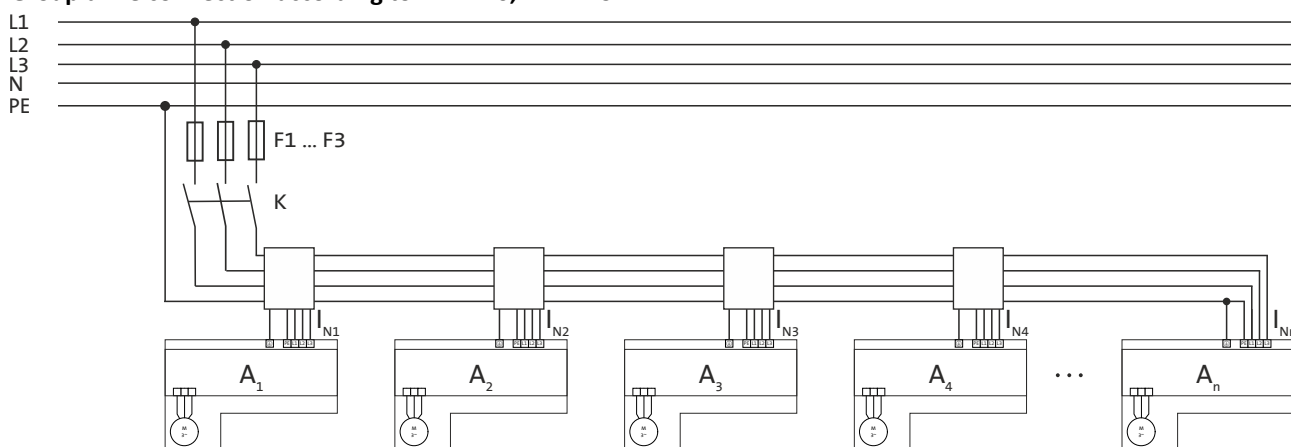
Connection according to cULus

Fuse data (F1 ... F3)				
Motor		MSEMA□□063-42		MSEMA□□080-32
Cable installation in accordance with		NFPA 70, NFPA 79		
Fuse				
Standard		UL 248		
Typ. Rated current	A	3		6
Max. rated current	A	3		10
Semiconductor fuse				
Standard		UL 248		
Typ. Rated current	A	3		6
Max. rated current	A	3		10
Circuit breaker				
Standard		UL 489		
Typ. Rated current	A	15		15
Max. rated current	A	15		15

⚠ WARNING!

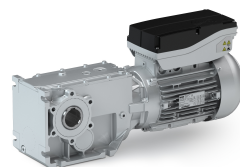
- **UL marking**
- Suitable for use on a circuit capable of delivering not more than 5k rms symmetrical amperes, 480 V maximum.
- When protected by fuses rated, see table above.
- When protected by a circuit breaker having an interrupting rating not less than 5k rms symmetrical amperes, 480 Maximum, see table above.
- **Marquage UL**
- Convient à une utilisation sur un circuit non susceptible de délivrer plus de 5k ampères symétriques eff, maximum 480 V.
- Avec une protection par des fusibles du calibre indiqué dans le tableau ci-dessous,
- Avec une protection par un disjoncteur à courant de coupure assigné d'au moins 5k ampères symétriques eff, maximum 480 V, voir tableau ci-dessous.

Group drive connection according to NFPA 70, NFPA 79



Electrical installation

Connection according to cULus



Max. total rated mains currents at 40 °C for different cable cross-sections			
Cable installation in accordance with		NFPA 70, NFPA 79	
Main cable			
Cable cross-section	AWG	16	14
Stub			
Cable cross-section	AWG	16	14
Fuse			
Typ. Rated current	A	---	---
Max. rated current	A	10	15
Circuit breaker			
Typ. Rated current	A	---	---
Max. rated current	A	10	15
$I_{\max} \geq I_{N1} + I_{N2} + I_{N3} + I_{N...}$	A	8.0	12.0

► Rated data 119

- Use of copper cables insulated with PVC
 - Conductor temperature $\leq 70\text{ °C}$, ambient temperature $\leq 40\text{ °C}$
- No bundling of cables or wires, three wires under load
- Typical utilization 80 % of the respective cable cross-section taken into account

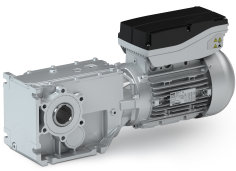
WARNING!

► UL marking

- Suitable for motor group installation on a circuit capable of delivering not more than 5k rms symmetrical amperes, 480 V maximum.
- When protected by fuses rated, see table above.
- When protected by a circuit breaker having an interrupting rating not less than 5k rms symmetrical amperes, 480/277 V Maximum, see table above.

► Marquage UL

- Convient aux circuits de groupes moteur non susceptibles de délivrer plus de 5k ampères symétriques eff, maximum 480 V.
- Avec une protection par des fusibles du calibre indiqué dans le tableau ci-dessous,
- Avec une protection par un disjoncteur à courant de coupure assigné d'au moins 5k ampères symétriques eff, maximum 480/277 V, voir tableau ci-dessous.



Technical data

Notes regarding the given data

Catalog 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 = 40 °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 60034-1).

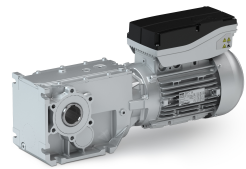
NOTICE

In case of other operating conditions, the achievable values can differ for those mentioned.

► In case of extreme operating conditions, please get in touch with your Lenze representative.

Technical data

Standards and operating conditions
Conformities and approvals



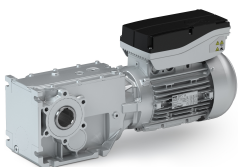
Standards and operating conditions

Conformities and approvals

More information and certificates of approval can be found under

[g500 + m300 bevel geared motors \(Lenze.com\)](https://www.lenze.com/g500+m300-bevel-geared-motors)

Europe					
Country	Conformity/ approval	Law/standard	Description	Special feature	Product representation
European Union	CE	(EU) 2019/1781	Regulation laying down ecodesign requirements for electric motors and speed control	-	CE mark
		2006/42/EC	Machinery Directive	Only for safety-relevant components	
		2014/35/EU	Low-Voltage Directive		
		2014/30/EU	EMC Directive		
		2011/65/EU	RoHS		
		2009/125/EC	Ecodesign Directive		
Eurasian Economic Union (EAC)	EAC	TP TC 004/2011	Eurasian conformity: safety of low voltage equipment	-	EAC mark
		TP TC 020/2011	Eurasian conformity: electromagnetic compatibility		
Great Britain	UKCA	S.I. 2021/745	The Ecodesign for Energy-Related Products and Energy Information Regulations 2021	Only for safety-relevant components	UKCA mark
		S.I. 2008/1597	The Supply of Machinery (Safety) Regulations 2008		
		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 22.2 No. 14	CSA Standard for Industrial control equipment	-	cULus mark
USA	UL	UL 61800-5-1	UL Standard for Adjustable Speed Electrical Power Drive Systems: Safety Requirements - Electrical, Thermal and Energy		
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
	CCC	GB 12350	Safety requirements of small power motors		CCC mark



Technical data

Standards and operating conditions
Protection of persons and device protection

Protection of persons and device protection

Degree of protection			
-	EN IEC 60529, EN IEC 60034-5	IP55	Information applies to the mounted and ready-for-use state
NEMA	NEMA 250	Type 12	
		Type 4 indoor only	Depending on the configuration

Insulation resistance			
Overvoltage category	EN IEC 61800-5-1	II	>2000 m amsl
		III	0 ... 2000 m amsl

Isolation of control circuits			
-	EN IEC 61800-5-1	Safe mains isolation	Double/reinforced insulation
		Connect overvoltage device upstream	Site altitude above 200 m amsl: Additional external separation measures are required to maintain safe separation.

Protective measures			
Earth fault strength	-	To a limited extent, error acknowledgement required	
Motor stalling protection		Yes	
Short-circuit strength		To a limited extent, error acknowledgement required	
Overvoltage resistance		Yes	
Motor overtemperature		I ² t monitoring	

Leakage current			
AC	EN IEC 61800-5-1	> 3.5 mA	Please observe regulations and safety instructions!
Equipotential bonding	-	Additional M5 thread with terminal on the terminal box for connection of a 6mm ² PE cable	

Total fault current		
Earth-leakage circuit breaker	-	In TN systems

Cyclic mains switching		
3 times per minute, max. 20 times per hour	-	After switching the mains 3 times in one minute, there must be a switching pause of 9 minutes.

Starting current		
-	-	5.6 A mains power-on current

EMC data

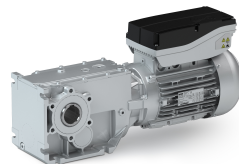
Operation on public supply systems			
-	-	The machine or system manufacturer is responsible for compliance with the requirements for the machine/system!	
< 1 kW	EN IEC 61000-3-2	With mains choke	
> 1 kW, mains current ≤ 16 A		No additional measures	
Mains current > 16 A ... ≤ 75 A	EN IEC 61000-3-12	With mains choke or mains filter	When designed for rated power.

Noise emission		
-	EN IEC 60034-1	A final overall assessment of the drive system is indispensable
Category C2	EN IEC 61800-3	see rated data

Noise immunity		
-	EN IEC 61800-3	Requirements for industrial environment are met

Technical data

Standards and operating conditions
Environmental conditions



Environmental conditions

Climate			
Storage	EN 60721-3-1:1997	1K3 (-30 ... +60°C)	<3 months
		1K3 (-30 ... +40 °C)	>3 months
Transport	EN 60721-3-2:1997	2K3 (-30 ...+70 °C)	
Operation	EN 60721-3-3:1995 + A2:1997	3K3 (-30 ...+40 °C)	Operation
Site altitude			
0 ... 1000 m amsl	-	Without current derating	
1000 ... 4000 m amsl		Reduce rated output current by 5 %/1000 m	
Pollution			
-	EN IEC 61800-5-1	Degree of pollution 2	

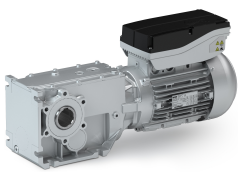
Electrical supply conditions

Possibility of connection to different types of mains power supply enables worldwide use.

The following is supported:

- 3-phase mains connection 400 V
- 3-phase mains connection 480 V

Type of mains power supply		
TT		Mains power supplies with earthed start point Voltage against earth: max. 300 V
TN		



Data overview

The data given for speed, torque and power are valid if the

- input speed $n_1 = 1400$ rpm
- Application factor $c = 1.0$

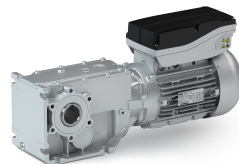
In order to calculate the exact ratio, the number of teeth z_g (driven) can be divided by the number of teeth z_t (driving). These are rounded values.



The rated torque can be gathered from the last digits of the product name e.g. g500-B110 (110 Nm).

g500-B45, 2-stage gearboxes

Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
n_2	$M_{2, \max}$	i	z_g	z_t	Standard
rpm	Nm				
259	30.2	5.411	1120	207	26
225	34.8	6.222	56	9	25
197	37.9	7.111	64	9	25
171	43.6	8.178	368	45	24
154	45.0	9.101	1720	189	25
134	45.0	10.466	1978	189	24
120	45.0	11.640	2200	189	24
105	45.0	13.386	2530	189	23
92.6	45.0	15.111	136	9	24
80.6	45.0	17.378	782	45	23
72.3	45.0	19.365	1220	63	23
62.9	45.0	22.270	1403	63	23
55.9	45.0	25.051	2480	99	23
48.6	45.0	28.808	2852	99	22
43.0	45.0	32.593	880	27	23
37.4	45.0	37.481	1012	27	22
33.2	45.0	42.222	380	9	23
28.8	45.0	48.556	437	9	22
26.0	45.0	53.889	485	9	23
22.6	45.0	61.972	2231	36	22



g500-B110, 2-stage gearboxes

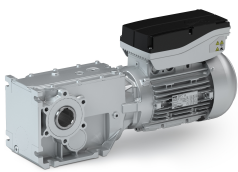
Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n ₂	M _{2, max}	i	z _g	z _t	
rpm	Nm				'
270	60.0	5.185	140	27	21
197	77.0	7.111	64	9	20
154	84.0	9.101	1720	189	20
110	62.9	12.698	800	63	20
90.0	92.0	15.556	140	9	19
71.6	81.9	19.556	176	9	19
55.6	88.3	25.185	680	27	19
43.9	97.9	31.919	3160	99	18
37.4	106	37.400	187	5	18
35.0	99.6	40.000	40	1	18
29.1	110	48.167	289	6	18
26.6	68.6	52.698	3320	63	18
22.9	110	61.045	1343	22	18
18.3	110	76.500	153	2	18
13.9	110	100.786	1411	14	18

g500-B110, 3-stage gearboxes

Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
12.3	108	114.074	3080	27	19
9.8	108	143.407	3872	27	19
7.9	110	178.095	3740	21	19
6.2	108	224.148	6052	27	19
4.9	108	284.081	28124	99	19
3.9	101	356.000	356	1	19
3.1	110	447.667	1343	3	18
2.5	110	561.000	561	1	18
2.1	110	680.850	13617	20	18
1.6	110	870.188	13923	16	18

g500-B240, 2-stage gearboxes

Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
393	81.1	3.565	385	108	17
286	147	4.889	44	9	17
224	125	6.257	2365	378	17
179	178	7.817	469	60	12
131	204	10.720	268	25	12
102	217	13.719	2881	210	12
93.3	174	15.008	1876	125	12
73.1	207	19.143	134	7	12
59.7	240	23.450	469	20	12
45.9	240	30.522	2747	90	12
36.9	240	37.967	1139	30	12
28.5	172	49.133	737	15	12
23.5	182	59.630	5963	100	11
18.4	180	76.213	6097	80	11



g500-B240, 3-stage gearboxes

Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
18.0	240	77.741	48977	630	12
14.1	240	99.437	12529	126	12
10.8	240	129.087	19363	150	12
8.5	240	165.426	69479	420	12
6.5	240	213.994	35309	165	12
5.0	240	278.422	12529	45	12
3.9	240	360.683	21641	60	12

g500-B240, 4-stage gearboxes

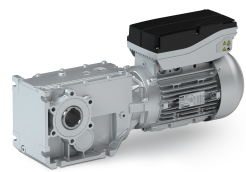
Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
3.1	240	445.476	100232	225	13
2.5	240	570.103	538747	945	13
1.9	240	729.201	137819	189	13
1.5	240	946.636	212993	225	13
1.2	240	1213.125	764269	630	13
0.9	240	1569.289	70618	45	13
0.7	240	2041.763	275638	135	12
0.6	240	2477.958	1115081	450	12
0.4	240	3167.053	1140139	360	12

g500-B450, 3-stage gearboxes

Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n ₂	M _{2, max}	i	z _g	z _t	
rpm	Nm				'
280	114	5.002	2401	480	21
204	278	6.860	343	50	21
136	235	10.328	2107	204	14
98.8	422	14.165	1204	85	14
70.6	229	19.831	8428	425	13
55.3	273	25.294	430	17	13
45.2	450	30.985	2107	68	13
34.7	359	40.330	12341	306	13
27.9	379	50.167	301	6	13
22.5	450	62.262	13760	221	12
18.4	450	76.271	16856	221	12
14.1	450	99.274	197456	1989	12
11.3	450	123.487	4816	39	12
8.8	450	159.807	105952	663	12
7.2	450	193.948	214312	1105	12
5.6	450	247.882	4214	17	12

Technical data

Data overview

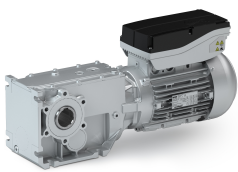


g500-B450, 4-stage gearboxes

Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
5.5	450	255.691	847616	3315	12
3.9	450	357.968	5933312	16575	12
3.1	450	456.591	302720	663	12
2.5	450	559.324	370832	663	12
1.9	450	728.009	4344032	5967	12
1.5	450	905.573	105952	117	12
1.2	450	1171.918	2330944	1989	12
1.0	450	1422.282	4714864	3315	12
0.8	450	1726.133	9536884	5525	12
0.6	450	2206.153	187523	85	12
0.5	450	2819.662	191737	68	12

g500-B600, 3-stage gearboxes

Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
276	376	5.067	6293	1242	20
202	398	6.949	7192	1035	19
130	542	10.741	290	27	14
95.0	600	14.730	928	63	14
74.3	600	18.851	24940	1323	14
67.9	600	20.622	928	45	14
53.7	600	26.061	860	33	12
39.2	600	35.740	2752	77	12
33.4	600	41.940	23780	567	13
30.6	600	45.739	73960	1617	12
28.0	600	50.036	2752	55	12
21.9	600	63.822	34400	539	12
20.7	510	67.513	12760	189	13
17.9	600	78.182	860	11	12
17.1	541	81.937	5162	63	13
13.8	600	101.760	70520	693	12
11.1	600	126.580	29240	231	12
8.5	600	163.810	3440	21	12
7.0	600	198.805	15308	77	12
5.6	600	251.299	19350	77	12



g500-B600, 4-stage gearboxes

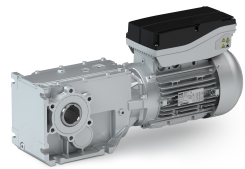
Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n ₂	M _{2, max}	i	z _g	z _t	
rpm	Nm				'
6.1	600	227.943	112832	495	12
4.9	600	283.539	46784	165	12
3.8	600	366.933	5504	15	12
3.0	600	468.027	68800	147	12
2.4	600	573.333	1720	3	12
2.0	600	695.818	7654	11	12
1.9	600	746.243	141040	189	12
1.5	600	928.254	58480	63	12
1.2	600	1126.563	260236	231	12
1.0	600	1457.905	30616	21	12
0.8	600	1769.366	681206	385	12
0.6	600	2261.409	49751	22	12
0.5	600	2858.523	125775	44	12

g500-B820, 3-stage gearboxes

Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n ₂	M _{2, max}	i	z _g	z _t	
rpm	Nm				'
282	312	4.958	119	24	21
206	391	6.800	34	5	20
164	459	8.517	511	60	15
147	385	9.520	238	25	19
120	569	11.680	292	25	15
115	242	12.143	85	7	19
85.6	662	16.352	2044	125	15
67.1	416	20.857	146	7	15
54.8	820	25.550	511	20	14
53.2	820	26.324	8687	330	12
38.8	820	36.102	9928	275	14
27.7	820	50.543	69496	1375	12
21.7	820	64.468	4964	77	12
17.7	820	78.973	8687	110	12
13.6	820	102.790	50881	495	12
10.9	820	127.861	21097	165	12
8.5	820	165.467	2482	15	12
7.0	820	200.816	110449	550	12
5.5	820	253.841	11169	44	11

Technical data

Data overview

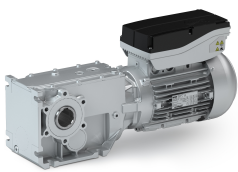


g500-B820, 4-stage gearboxes

Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
6.2	820	225.636	2482	11	12
4.9	820	286.408	1181432	4125	12
3.9	820	359.765	356167	990	12
3.0	820	468.265	2086121	4455	12
2.4	820	579.133	8687	15	12
1.9	820	753.793	101762	135	12
1.5	820	937.644	42194	45	12
1.2	820	1213.422	54604	45	12
1.0	820	1472.653	110449	75	12
0.8	820	1787.266	9829961	5500	12
0.6	820	2284.286	10050859	4400	12
0.5	820	2887.440	1016379	352	12

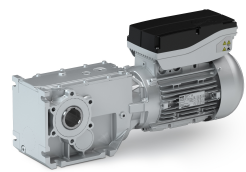
g500-B1500, 3-stage gearboxes

Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
204	837	6.866	1792	261	15
147	1006	9.516	1456	153	15
117	1461	11.985	3128	261	11
107	1054	13.118	50176	3825	14
84.3	1500	16.611	299	18	11
68.5	1500	20.444	184	9	11
61.1	1500	22.898	5152	225	11
53.1	1500	26.353	16813	638	10
47.9	1167	29.206	1840	63	11
39.1	1500	35.778	322	9	11
38.3	1500	36.526	12857	352	10
31.1	1500	44.955	989	22	10
30.1	1500	46.568	3772	81	11
24.5	1500	57.074	1541	27	11
21.8	1500	64.221	4945	77	10
18.7	1050	74.963	2024	27	11
15.4	1117	90.978	4094	45	10
13.7	1500	102.396	40549	396	10
11.2	1500	125.498	66263	528	10
8.5	1500	164.833	989	6	10
7.0	1500	200.048	88021	440	10
5.5	1500	252.869	44505	176	10



g500-B1500, 4-stage gearboxes

Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
6.2	1500	224.773	4945	22	10
5.1	1500	275.347	48461	176	10
3.9	1500	358.388	283843	792	10
3.1	1500	445.799	117691	264	10
2.4	1500	571.714	2716783	4752	10
2.0	1500	711.156	1126471	1584	10
1.5	1500	911.329	3608861	3960	10
1.3	1500	1116.933	5897407	5280	10
1.2	1500	1208.778	10879	9	10
1.0	1500	1467.017	88021	60	10
0.8	1500	1780.425	7833869	4400	10
0.6	1500	2275.543	8009911	3520	10
0.5	1500	2876.388	4049955	1408	10

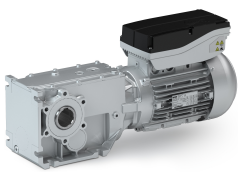


g500-B2700, 3-stage gearboxes

Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	'
rpm	Nm				
202	1446	6.918	28917	4180	14
159	1528	8.793	41769	4750	14
120	2212	11.713	2448	209	10
109	2262	12.863	18819	1463	9
94.0	2380	14.888	7072	475	10
85.6	2429	16.351	54366	3325	9
71.6	2373	19.542	23392	1197	9
62.9	2684	22.269	3808	171	9
57.2	2700	24.456	1394	57	9
52.2	2111	26.814	32096	1197	9
47.5	2319	29.447	82246	2793	9
42.6	2700	32.873	16864	513	9
38.8	2700	36.102	43214	1197	9
32.7	2700	42.772	8084	189	9
29.8	2700	46.973	82861	1764	8
28.6	2700	48.912	2788	57	9
25.9	2700	54.082	9248	171	9
23.6	2700	59.393	23698	399	9
21.7	2700	64.452	113693	1764	8
19.5	2700	71.951	5828	81	8
18.2	2128	76.862	30668	399	9
16.5	2061	84.940	24208	285	9
15.0	2263	93.283	62033	665	9
14.4	2700	97.481	2632	27	8
13.1	2700	107.056	1927	18	8
11.8	2700	118.370	3196	27	8
10.8	2700	129.996	32759	252	8
9.1	2700	153.185	4136	27	8
8.3	2700	168.230	21197	126	8
7.5	2700	185.911	8366	45	8
6.9	2700	204.170	171503	840	8
6.0	2700	235.000	235	1	8
5.4	2700	258.080	28905	112	8

g500-B2700, 4-stage gearboxes

Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
6.2	2700	225.581	113693	504	8
4.8	2700	291.191	65518	225	8
3.8	2700	365.227	1932781	5292	8
3.1	2700	454.986	32759	72	8
2.9	2700	487.698	79007	162	8
2.3	2700	606.648	32759	54	8
1.8	2700	785.074	21197	27	8
1.5	2700	953.304	360349	378	8
1.1	2700	1233.688	233167	189	8
0.8	2700	1817.115	15263767	8400	8
0.6	2700	2322.436	2229539	960	8
0.5	2700	2935.664	375765	128	8



Technical data

Data overview

g500-B4300, 3-stage gearboxes

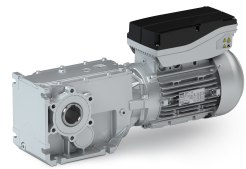
Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	'
rpm	Nm				
255	1409	5.488	1147	209	14
201	1653	6.976	29822	4275	13
153	1112	9.156	98642	10773	13
126	2845	11.080	23157	2090	9
99.4	3338	14.084	33449	2375	8
75.7	2245	18.486	110639	5985	8
66.5	2570	21.065	18011	855	8
55.2	1997	25.365	151807	5985	8
50.0	4300	28.013	2241	80	8
45.0	3174	31.097	79763	2565	8
39.3	4300	35.607	35607	1000	8
30.0	4300	46.737	39259	840	8
26.3	4300	53.258	6391	120	8
21.8	4300	64.127	53867	840	8
17.8	4300	78.619	28303	360	8
13.1	4300	106.517	6391	60	7
10.8	4300	129.342	15521	120	7
8.4	4300	167.383	10043	60	7
6.9	4300	203.143	81257	400	7
5.5	4300	256.781	8217	32	7

g500-B4300, 4-stage gearboxes

Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
6.2	3665	224.446	53867	240	8
4.6	3234	304.333	913	3	8
3.8	3927	369.548	15521	42	8
3.1	4300	452.696	108647	240	8
2.9	4245	485.243	262031	540	8
2.3	4300	603.594	108647	180	8
1.8	4300	762.524	411763	540	8
1.5	4300	948.506	170731	180	8
1.1	4229	1227.478	110473	90	8
0.8	4300	1807.968	7231873	4000	8
0.6	4300	2310.746	7394387	3200	8
0.5	4300	2920.887	747747	256	8

Technical data

Radial forces and axial forces



Radial forces and axial forces

Permissible radial force

The calculation of the permissible radial force must take account of the additional load factor f_w .

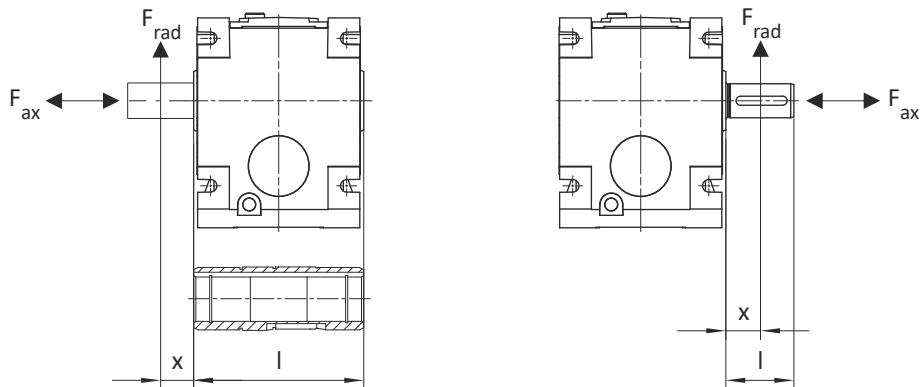
$$F_{\text{rad, perm}} = f_w \times F_{\text{rad, max}}$$

Permissible axial force

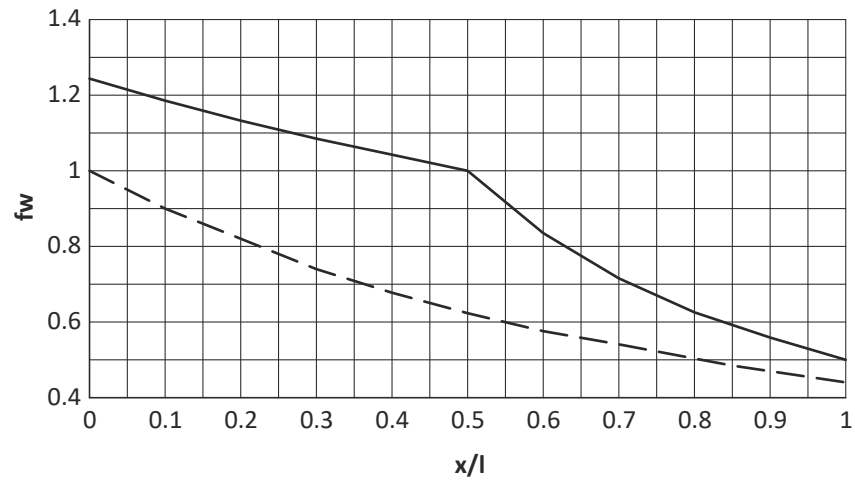
If there is no radial force, the maximum axial force is 50% of the value in the table $F_{\text{rad, max}}$

$$F_{\text{ax, zul}} = 0.5 \times F_{\text{rad, max}}$$

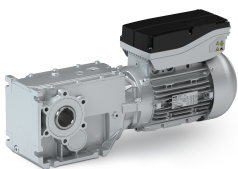
Application of forces



Additional load factor f_w on the drive shaft



— Solid shaft
 - - - Hollow shaft



Technical data

Radial forces and axial forces

The values given in the tables refer to the centre shaft end force application point and are minimum values calculated according to the most unfavourable conditions (force application angle, mounting position, direction of rotation). The values were calculated with a load capacity of $c = 1.3$ and an input speed of 1400 rpm.



In case of different operating conditions, considerably higher forces can be transmitted. Please get in touch with your Lenze representative



A hollow shaft with shrink disc (SAR/SBR/SCR/SDR/SAK/SCK) requires a check by Lenze.

Max. radial force, gearbox with hollow shaft (H□□)

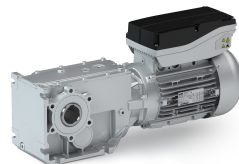
Getriebe	Output speed n_2 [rpm]									
	1000	630	400	250	160	100	63	40	25	16
	Max. radial force $F_{rad,max}$ [rated]									
g500-B45	900	1200	2200	2500	2800	3000	3000	3000	3000	3000
g500-B110	1000	2200	2600	3000	3300	3600	3600	3600	3600	3600
g500-B240	1500	2300	3800	4500	5100	6200	7400	7800	7800	7800
g500-B450	3000	3800	4500	5200	5200	5500	7000	9000	9000	9000
g500-B600	3500	4000	4700	5400	5600	6000	8000	9400	9500	9500
g500-B820	4000	4200	5400	5800	6000	7000	9000	9800	10200	10200
g500-B1500	3700	5000	6000	7000	8000	9000	10500	13000	16000	16000
g500-B2700	4400	5700	7000	8200	9400	10600	12200	15000	18000	21900
g500-B4300	5000	6600	8000	9000	10500	12000	15500	21000	27900	35100

Max. radial force, gearbox with solid shaft, without flange (V□R)

Getriebe	Output speed n_2 [rpm]									
	1000	630	400	250	160	100	63	40	25	16
	Max. radial force $F_{rad,max}$ [rated]									
g500-B45	900	1200	1800	2100	2400	2800	3000	3000	3000	3000
g500-B110	1000	1800	2100	2500	2700	3000	3000	3000	3000	3000
g500-B240	1500	2400	3000	3600	4500	5000	6000	6500	6500	6500
g500-B450	2000	2800	3600	3900	4300	5000	6000	7600	7800	7800
g500-B600	2500	3200	4000	4700	5400	6700	8300	9000	9000	9000
g500-B820	5200	6000	8200	9800	11000	11000	11000	11000	11000	11000
g500-B1500	6300	8200	10000	11500	13000	16000	16000	16000	16000	16000
g500-B2700	6600	8500	10400	12000	14000	16500	20100	22700	25500	27500
g500-B4300	7300	9500	11600	13300	14900	17300	20800	25700	32200	40000

Max. radial force, gearbox with solid shaft and flange (V□K)

Getriebe	Output speed n_2 [rpm]									
	1000	630	400	250	160	100	63	40	25	16
	Max. radial force $F_{rad,max}$ [rated]									
g500-B45	900	1200	1800	2100	2400	2800	3000	3000	3000	3000
g500-B110	1000	1800	2100	2500	2700	3000	3000	3000	3000	3000
g500-B240	2400	3600	5200	6000	6500	6500	6500	6500	6500	6500
g500-B450	3000	4000	4700	5100	5600	6400	7700	7800	7800	7800
g500-B600	3400	4100	5000	5300	6000	7300	9000	9000	9000	9000
g500-B820	6000	7000	8900	10200	11000	11000	11000	11000	11000	11000
g500-B1500	7000	9000	11000	12000	13000	15000	16000	16000	16000	16000
g500-B2700	8400	10900	13300	14400	15800	17700	20100	22700	25500	27500
g500-B4300	9200	11700	14300	15800	17800	20800	24800	29500	35100	40000



Selection tables

Notes on the selection tables

The selection tables represent the available combinations of gearbox, number of stages, ratio and motor for the mounting position M1. They only serve as a rough overview.

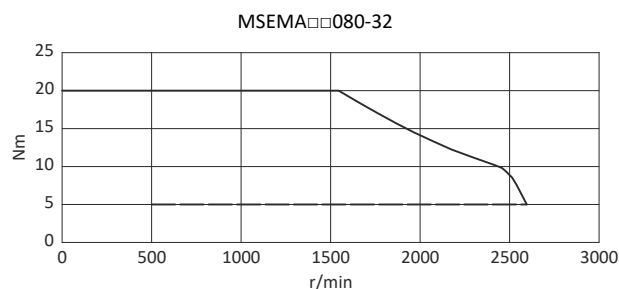
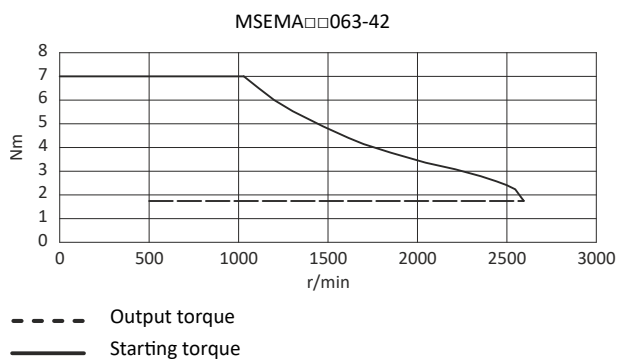
The following legend shows the layout of the selection tables:

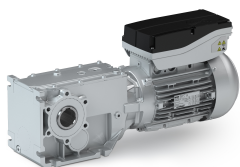
Example	Explanation
$M_{\max} = 7.0 \text{ Nm}$	Max. torque of the drive motor

Mains operation								Geared motor			
Min. output speed		Max. output speed		Starting torque							
n_{21}	M_2	n_2	M_2	$M_{a,1}$	$M_{a,2}$	J	i			z	m
r/min	Nm	r/min	Nm	Nm	Nm	kgcm ²					kg
92.5	9.0	481	9.0	36.0	36.0	4.007	5.411	g500-B45	MSEMA□□063-42	2	9.0
80.4	10.0	418	10.0	41.0	41.4	3.976	6.222	g500-B45	MSEMA□□063-42	2	9.0
70.4	12.0	366	12.0	43.0	47.3	3.896	7.111	g500-B45	MSEMA□□063-42	2	9.0
61.2	14.0	318	14.0	44.0	54.4	3.878	8.178	g500-B45	MSEMA□□063-42	2	9.0

[illegible]

Torque characteristic at the motor





Technical data

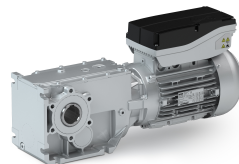
Selection tables

7 Nm

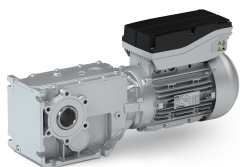
Mains operation								Geared motor			
Min. output speed		Max. output speed		Starting torque							
n ₂₁	M ₂	n ₂	M ₂	M _{a,1}	M _{a,2}	J	i			z	m
rpm	Nm	rpm	Nm	Nm	Nm	kgcm ²					kg
96.5	9.0	501	9.0	34.0	34.5	4.493	5.185	g500-B110	MSEMA□□063-42	2	11
92.5	9.0	481	9.0	36.0	36.0	4.007	5.411	g500-B45	MSEMA□□063-42	2	9.0
80.4	10.0	418	10.0	41.0	41.4	3.976	6.222	g500-B45	MSEMA□□063-42	2	9.0
70.4	12.0	366	12.0	43.0	47.3	3.896	7.111	g500-B45	MSEMA□□063-42	2	9.0
70.4	12.0	366	12.0	47.0	47.3	4.178	7.111	g500-B110	MSEMA□□063-42	2	11
61.2	14.0	318	14.0	44.0	54.4	3.878	8.178	g500-B45	MSEMA□□063-42	2	9.0
55.0	15.0	286	15.0	45.0	56.3	3.834	9.101	g500-B45	MSEMA□□063-42	2	9.0
55.0	15.0	286	15.0	61.0	60.5	4.023	9.101	g500-B110	MSEMA□□063-42	2	11
47.8	17.0	248	17.0	45.0	56.3	3.823	10.466	g500-B45	MSEMA□□063-42	2	9.0
43.0	19.0	223	19.0	45.0	56.2	3.786	11.640	g500-B45	MSEMA□□063-42	2	9.0
39.4	21.0	205	21.0	84.0	84.4	3.893	12.698	g500-B110	MSEMA□□063-42	2	11
37.4	22.0	194	22.0	45.0	56.2	3.779	13.386	g500-B45	MSEMA□□063-42	2	9.0
33.4	25.0	173	25.0	100	99.8	4.286	15.008	g500-B240	MSEMA□□063-42	2	15
33.1	25.0	172	25.0	45.0	56.3	3.759	15.111	g500-B45	MSEMA□□063-42	2	9.0
32.2	26.0	167	26.0	92.0	103	3.843	15.556	g500-B110	MSEMA□□063-42	2	11
28.8	29.0	150	29.0	45.0	56.2	3.755	17.378	g500-B45	MSEMA□□063-42	2	9.0
26.2	32.0	136	32.0	127	127	4.120	19.143	g500-B240	MSEMA□□063-42	2	15
25.9	32.0	134	32.0	45.0	56.3	3.738	19.365	g500-B45	MSEMA□□063-42	2	9.0
25.6	33.0	133	33.0	100	125	3.795	19.556	g500-B110	MSEMA□□063-42	2	11
25.3	33.0	131	33.0	132	132	4.706	19.831	g500-B450	MSEMA□□063-42	3	18
22.5	37.0	117	37.0	45.0	56.2	3.754	22.270	g500-B45	MSEMA□□063-42	2	9.0
20.0	42.0	104	42.0	45.0	49.5	3.725	25.051	g500-B45	MSEMA□□063-42	2	9.0
19.9	42.0	103	42.0	108	119	3.763	25.185	g500-B110	MSEMA□□063-42	2	11
19.8	42.0	103	42.0	168	168	4.378	25.294	g500-B450	MSEMA□□063-42	3	18
17.4	48.0	90.2	48.0	45.0	49.5	3.723	28.808	g500-B45	MSEMA□□063-42	2	9.0
16.4	51.0	85.1	51.0	203	203	3.900	30.522	g500-B240	MSEMA□□063-42	2	15
15.7	53.0	81.4	53.0	108	119	3.741	31.919	g500-B110	MSEMA□□063-42	2	11
13.4	62.0	69.5	62.0	106	133	3.772	37.400	g500-B110	MSEMA□□063-42	2	11
13.2	63.0	68.4	63.0	229	252	3.846	37.967	g500-B240	MSEMA□□063-42	2	15
12.6	67.0	65.0	67.0	80.0	87.6	3.728	40.000	g500-B110	MSEMA□□063-42	2	11
12.4	67.0	64.4	67.0	268	268	4.002	40.330	g500-B450	MSEMA□□063-42	3	18
10.4	80.0	53.9	80.0	110	121	3.750	48.167	g500-B110	MSEMA□□063-42	2	11
10.2	82.0	52.9	82.0	240	264	3.792	49.133	g500-B240	MSEMA□□063-42	2	15
10.0	83.0	51.8	83.0	303	333	3.911	50.167	g500-B450	MSEMA□□063-42	3	18
8.4	99.0	43.6	99.0	240	264	3.767	59.630	g500-B240	MSEMA□□063-42	2	15
8.2	101	42.5	101	110	121	3.733	61.045	g500-B110	MSEMA□□063-42	2	11
8.1	103	41.7	103	414	414	4.171	62.262	g500-B450	MSEMA□□063-42	3	18
7.5	112	38.5	112	408	449	3.981	67.513	g500-B600	MSEMA□□063-42	3	36
6.5	126	33.4	126	240	300	3.791	77.741	g500-B240	MSEMA□□063-42	3	15
6.6	127	34.1	127	172	189	3.743	76.213	g500-B240	MSEMA□□063-42	2	15
6.6	127	33.9	127	110	121	3.723	76.500	g500-B110	MSEMA□□063-42	2	11
6.2	136	31.7	136	433	476	3.905	81.937	g500-B600	MSEMA□□063-42	3	36
5.1	161	26.1	161	240	300	3.761	99.437	g500-B240	MSEMA□□063-42	3	15
5.1	165	26.1	165	450	563	3.920	99.274	g500-B450	MSEMA□□063-42	3	18
4.1	205	21.0	205	450	495	3.859	123.487	g500-B450	MSEMA□□063-42	3	18
3.9	209	20.1	209	240	300	3.743	129.087	g500-B240	MSEMA□□063-42	3	15
3.2	266	16.2	266	450	495	3.799	159.807	g500-B450	MSEMA□□063-42	3	18
3.1	268	15.7	268	240	300	3.730	165.426	g500-B240	MSEMA□□063-42	3	15
3.1	272	15.8	272	600	660	3.924	163.810	g500-B600	MSEMA□□063-42	3	36
3.1	275	15.7	275	820	902	3.929	165.467	g500-B820	MSEMA□□063-42	3	41
2.6	322	13.4	322	450	495	3.772	193.948	g500-B450	MSEMA□□063-42	3	18

Technical data

Selection tables



Mains operation								Geared motor			
Min. output speed		Max. output speed		Starting torque							
n_{21}	M_2	n_2	M_2	$M_{a,1}$	$M_{a,2}$	J	i			z	m
rpm	Nm	rpm	Nm	Nm	Nm	kgcm ²					kg
2.6	330	13.0	330	600	660	3.866	198.805	g500-B600	MSEMA□□063-42	3	36
2.5	334	12.9	334	820	902	3.869	200.816	g500-B820	MSEMA□□063-42	3	41
2.3	369	11.5	369	820	1025	4.187	225.636	g500-B820	MSEMA□□063-42	4	44
2.2	372	11.4	372	600	750	3.950	227.943	g500-B600	MSEMA□□063-42	4	39
2.1	412	10.4	412	450	495	3.746	247.882	g500-B450	MSEMA□□063-42	3	18
2.0	418	10.3	418	600	660	3.808	251.299	g500-B600	MSEMA□□063-42	3	36
2.0	418	10.1	418	450	495	3.810	255.691	g500-B450	MSEMA□□063-42	4	21
2.0	422	10.2	422	820	902	3.810	253.841	g500-B820	MSEMA□□063-42	3	41
1.8	463	9.1	463	600	660	3.878	283.539	g500-B600	MSEMA□□063-42	4	39
1.8	468	9.0	468	820	902	3.880	286.408	g500-B820	MSEMA□□063-42	4	44
1.4	586	7.2	586	1500	1875	3.995	358.388	g500-B1500	MSEMA□□063-42	4	75
1.4	588	7.2	588	820	1025	3.926	359.765	g500-B820	MSEMA□□063-42	4	44
1.4	597	7.1	597	2169	2386	4.110	365.227	g500-B2700	MSEMA□□063-42	4	116
1.4	600	7.0	600	600	660	3.811	366.933	g500-B600	MSEMA□□063-42	4	39
1.2	728	5.8	728	1500	1650	3.907	445.799	g500-B1500	MSEMA□□063-42	4	75
1.1	765	5.5	765	820	1025	3.915	468.265	g500-B820	MSEMA□□063-42	4	44
1.1	793	5.3	793	3172	3172	4.123	485.243	g500-B4300	MSEMA□□063-42	4	178
1.1	797	5.3	797	2700	3188	4.098	487.698	g500-B2700	MSEMA□□063-42	4	116
0.9	934	4.5	934	1500	1875	3.943	571.714	g500-B1500	MSEMA□□063-42	4	75
0.9	946	4.4	946	820	902	3.802	579.133	g500-B820	MSEMA□□063-42	4	44
0.9	986	4.3	986	3584	3943	3.990	603.594	g500-B4300	MSEMA□□063-42	4	178
0.9	991	4.2	991	2700	2970	3.973	606.648	g500-B2700	MSEMA□□063-42	4	116
0.8	1162	3.6	1162	1500	1650	3.874	711.156	g500-B1500	MSEMA□□063-42	4	75
0.7	1246	3.4	1246	4300	4984	4.006	762.524	g500-B4300	MSEMA□□063-42	4	178
0.7	1283	3.3	1283	2700	2970	3.868	785.074	g500-B2700	MSEMA□□063-42	4	116
0.6	1489	2.8	1489	1500	1650	3.783	911.329	g500-B1500	MSEMA□□063-42	4	75
0.6	1550	2.7	1550	4300	4730	3.914	948.506	g500-B4300	MSEMA□□063-42	4	178
0.6	1558	2.7	1558	2700	2970	3.849	953.304	g500-B2700	MSEMA□□063-42	4	116
0.5	1825	2.3	1825	1500	1650	3.778	1116.933	g500-B1500	MSEMA□□063-42	4	75
0.5	2006	2.1	2006	4300	4730	3.832	1227.478	g500-B4300	MSEMA□□063-42	4	178
0.5	2016	2.1	2016	2700	2970	3.829	1233.688	g500-B2700	MSEMA□□063-42	4	116
0.3	2954	1.4	2954	4300	4730	3.787	1807.968	g500-B4300	MSEMA□□063-42	4	178
0.3	2969	1.4	2969	2700	2970	3.785	1817.115	g500-B2700	MSEMA□□063-42	4	116
0.3	3776	1.1	3776	4300	4730	3.755	2310.746	g500-B4300	MSEMA□□063-42	4	178
0.2	4773	0.8	4773	4300	4730	3.751	2920.887	g500-B4300	MSEMA□□063-42	4	178



Technical data

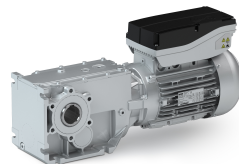
Selection tables

20 Nm

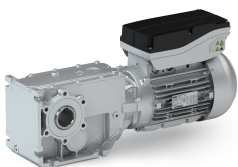
Mains operation								Geared motor			
Min. output speed		Max. output speed		Starting torque							
n ₂₁	M ₂	n ₂	M ₂	M _{a,1}	M _{a,2}	J	i			z	m
rpm	Nm	rpm	Nm	Nm	Nm	kgcm ²					kg
140	17.0	729	17.0	68.0	67.7	28.972	3.565	g500-B240	MSEMA□□080-32	2	22
100	24.0	520	24.0	95.0	95.0	30.360	5.002	g500-B450	MSEMA□□080-32	3	25
96.5	25.0	501	25.0	69.0	86.3	26.793	5.185	g500-B110	MSEMA□□080-32	2	17
80.0	30.0	416	30.0	119	119	27.151	6.257	g500-B240	MSEMA□□080-32	2	22
70.4	34.0	366	34.0	77.0	96.3	26.478	7.111	g500-B110	MSEMA□□080-32	2	17
64.0	37.0	333	37.0	149	149	27.513	7.817	g500-B240	MSEMA□□080-32	2	22
55.0	43.0	286	43.0	84.0	105	26.323	9.101	g500-B110	MSEMA□□080-32	2	17
48.5	49.0	252	49.0	196	196	29.060	10.328	g500-B450	MSEMA□□080-32	3	25
41.2	58.0	214	58.0	231	231	28.520	12.143	g500-B820	MSEMA□□080-32	3	48
39.4	60.0	205	60.0	90.0	113	26.193	12.698	g500-B110	MSEMA□□080-32	2	17
36.5	65.0	190	65.0	217	261	26.677	13.719	g500-B240	MSEMA□□080-32	2	22
33.4	71.0	173	71.0	223	279	26.586	15.008	g500-B240	MSEMA□□080-32	2	22
32.2	74.0	167	74.0	92.0	115	26.143	15.556	g500-B110	MSEMA□□080-32	2	17
26.2	91.0	136	91.0	240	300	26.420	19.143	g500-B240	MSEMA□□080-32	2	22
25.6	93.0	133	93.0	100	125	26.095	19.556	g500-B110	MSEMA□□080-32	2	17
25.3	94.0	131	94.0	377	377	27.006	19.831	g500-B450	MSEMA□□080-32	3	25
24.0	99.0	125	99.0	396	396	28.111	20.857	g500-B820	MSEMA□□080-32	3	48
21.4	111	111	111	240	300	26.322	23.450	g500-B240	MSEMA□□080-32	2	22
19.8	120	103	120	450	481	26.678	25.294	g500-B450	MSEMA□□080-32	3	25
16.4	145	85.1	145	240	300	26.200	30.522	g500-B240	MSEMA□□080-32	2	22
16.2	147	83.9	147	450	563	26.494	30.985	g500-B450	MSEMA□□080-32	3	25
13.2	180	68.4	180	240	264	26.146	37.967	g500-B240	MSEMA□□080-32	2	22
12.4	192	64.4	192	450	563	26.302	40.330	g500-B450	MSEMA□□080-32	3	25
12.0	199	61.9	199	600	750	26.676	41.940	g500-B600	MSEMA□□080-32	3	43
10.2	233	52.9	233	240	264	26.092	49.133	g500-B240	MSEMA□□080-32	2	22
10.0	238	51.8	238	450	495	26.211	50.167	g500-B450	MSEMA□□080-32	3	25
8.4	283	43.6	283	240	264	26.067	59.630	g500-B240	MSEMA□□080-32	2	22
8.1	296	41.7	296	450	563	26.471	62.262	g500-B450	MSEMA□□080-32	3	25
7.9	303	40.7	303	600	750	27.079	63.822	g500-B600	MSEMA□□080-32	3	43
7.8	306	40.3	306	820	1025	27.112	64.468	g500-B820	MSEMA□□080-32	3	48
7.5	321	38.5	321	600	660	26.281	67.513	g500-B600	MSEMA□□080-32	3	43
6.7	356	34.6	356	1050	1155	26.906	74.963	g500-B1500	MSEMA□□080-32	3	78
6.6	362	34.0	362	450	563	26.356	76.271	g500-B450	MSEMA□□080-32	3	25
6.2	389	31.7	389	600	660	26.205	81.937	g500-B600	MSEMA□□080-32	3	43
5.5	432	28.5	432	1117	1229	26.658	90.978	g500-B1500	MSEMA□□080-32	3	78
5.1	471	26.1	471	450	563	26.220	99.274	g500-B450	MSEMA□□080-32	3	25
5.0	483	25.5	483	600	750	26.529	101.760	g500-B600	MSEMA□□080-32	3	43
4.9	488	25.2	488	820	1025	26.489	102.790	g500-B820	MSEMA□□080-32	3	48
4.0	601	20.5	601	600	660	26.356	126.580	g500-B600	MSEMA□□080-32	3	43
4.0	607	20.3	607	820	902	26.365	127.861	g500-B820	MSEMA□□080-32	3	48
3.1	783	15.7	783	1500	1650	26.700	164.833	g500-B1500	MSEMA□□080-32	3	78
3.1	786	15.7	786	820	902	26.229	165.467	g500-B820	MSEMA□□080-32	3	48
2.5	950	12.9	950	1500	1650	26.519	200.048	g500-B1500	MSEMA□□080-32	3	78
2.5	954	12.9	954	820	902	26.169	200.816	g500-B820	MSEMA□□080-32	3	48
2.3	1048	11.5	1048	3665	4191	27.131	224.446	g500-B4300	MSEMA□□080-32	4	185
2.3	1049	11.5	1049	1500	1875	26.535	224.773	g500-B1500	MSEMA□□080-32	4	81
2.3	1053	11.5	1053	2700	3375	27.014	225.581	g500-B2700	MSEMA□□080-32	4	123
2.0	1201	10.2	1201	1500	1650	26.335	252.869	g500-B1500	MSEMA□□080-32	3	78
1.9	1285	9.4	1285	1500	1875	26.482	275.347	g500-B1500	MSEMA□□080-32	4	81
1.8	1359	8.9	1359	2700	3375	27.196	291.191	g500-B2700	MSEMA□□080-32	4	123
1.7	1421	8.5	1421	4300	5375	26.986	304.333	g500-B4300	MSEMA□□080-32	4	185

Technical data

Selection tables



Mains operation								Geared motor			
Min. output speed		Max. output speed		Starting torque							
n_{21}	M_2	n_2	M_2	$M_{a,1}$	$M_{a,2}$	J	i			z	m
rpm	Nm	rpm	Nm	Nm	Nm	kgcm ²					kg
1.4	1673	7.2	1673	1500	1875	26.295	358.388	g500-B1500	MSEMA□□080-32	4	81
1.4	1705	7.1	1705	2700	2970	26.410	365.227	g500-B2700	MSEMA□□080-32	4	123
1.4	1725	7.0	1725	4300	5375	26.838	369.548	g500-B4300	MSEMA□□080-32	4	185
1.2	2113	5.7	2113	4300	5375	26.600	452.696	g500-B4300	MSEMA□□080-32	4	185
1.1	2124	5.7	2124	2700	3375	26.571	454.986	g500-B2700	MSEMA□□080-32	4	123
1.1	2265	5.3	2265	4300	5375	26.423	485.243	g500-B4300	MSEMA□□080-32	4	185
1.1	2277	5.3	2277	2700	3375	26.398	487.698	g500-B2700	MSEMA□□080-32	4	123
0.9	2818	4.3	2818	4300	4730	26.290	603.594	g500-B4300	MSEMA□□080-32	4	185
0.9	2832	4.2	2832	2700	2970	26.273	606.648	g500-B2700	MSEMA□□080-32	4	123
0.7	3560	3.4	3560	4300	5375	26.306	762.524	g500-B4300	MSEMA□□080-32	4	185
0.6	4428	2.7	4428	4300	4730	26.214	948.506	g500-B4300	MSEMA□□080-32	4	185



Dimensions

Notes on the basic dimensions

Gearboxes	Without pre-stage	With pre-stage
g500-B45	2-stufig	-
g500-B110	2-stage	3-stage
g500-B240	2-/3-stage	4-stage
g500-B450 ... B4300	3-stage	4-stage

The ratio range of gearboxes with pre-stage is extended via an additional housing with gear stage between the gearbox and motor.

The basic dimensions are shown without pre-stage and are valid up to the following deviating dimensions for gearbox with pre-stage valid:

- Total length "L"
- Center distance "a" (gearbox output shaft – motor shaft)

Deviating dimensions: ▶ [Gearbox with pre-stage](#) 95

Motor	MSEMA ☐ ☐	
	063-42	080-32

Table content		Explanation
Total length	L	Total length of the drive without brake
Motor length	LB	Length of the motor without brake
Length of motor options	Δ L	Additional length (with brake)
Motor diameter	AC	Motor diameter
Motor/connection distance	AD	Distance from motor center to connector end

NOTICE

For gearboxes with hollow shaft and keyway (H□□), the hole fitting H7 is interrupted in the middle area of the hollow shaft length by a free rotation.

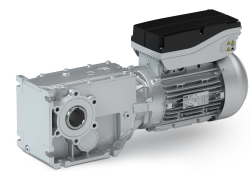
Ensure the double-ended control of the machine shaft in the hollow shaft.

- ▶ The specified min. length of the machine shaft must be reached.

Gearboxes	Min. length of the machine shaft
	mm
g500-B45	85
g500-B110	105
g500-B240	127
g500-B450	100
g500-B600	110
g500-B820	120
g500-B1500	135
g500-B2700	155
g500-B4300	190

Technical data

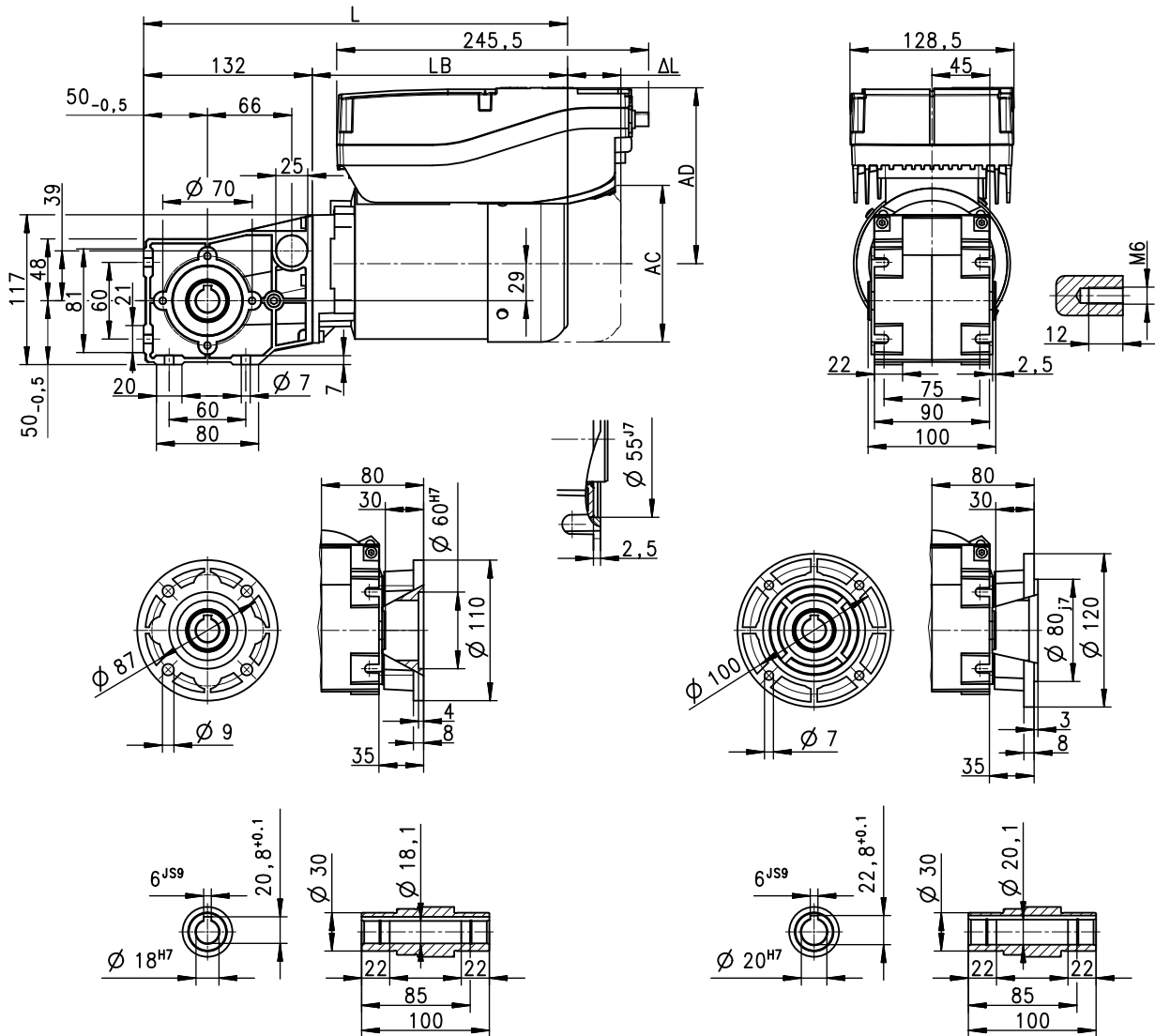
Dimensions
Basic dimensions



Basic dimensions

g500-B45, 2-stage

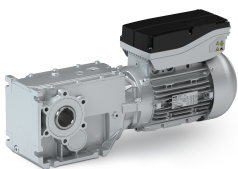
Gearbox design: Hollow shaft with foot (HAR/HBR/HAK)



8800206-01

Motor series			MSEMA
Motor			063-42
Total length	L	mm	331
Motor length	LB	mm	196
Motor diameter	AC	mm	123
Motor/connection distance	AD	mm	141

ΔL ▶ Additional lengths 95

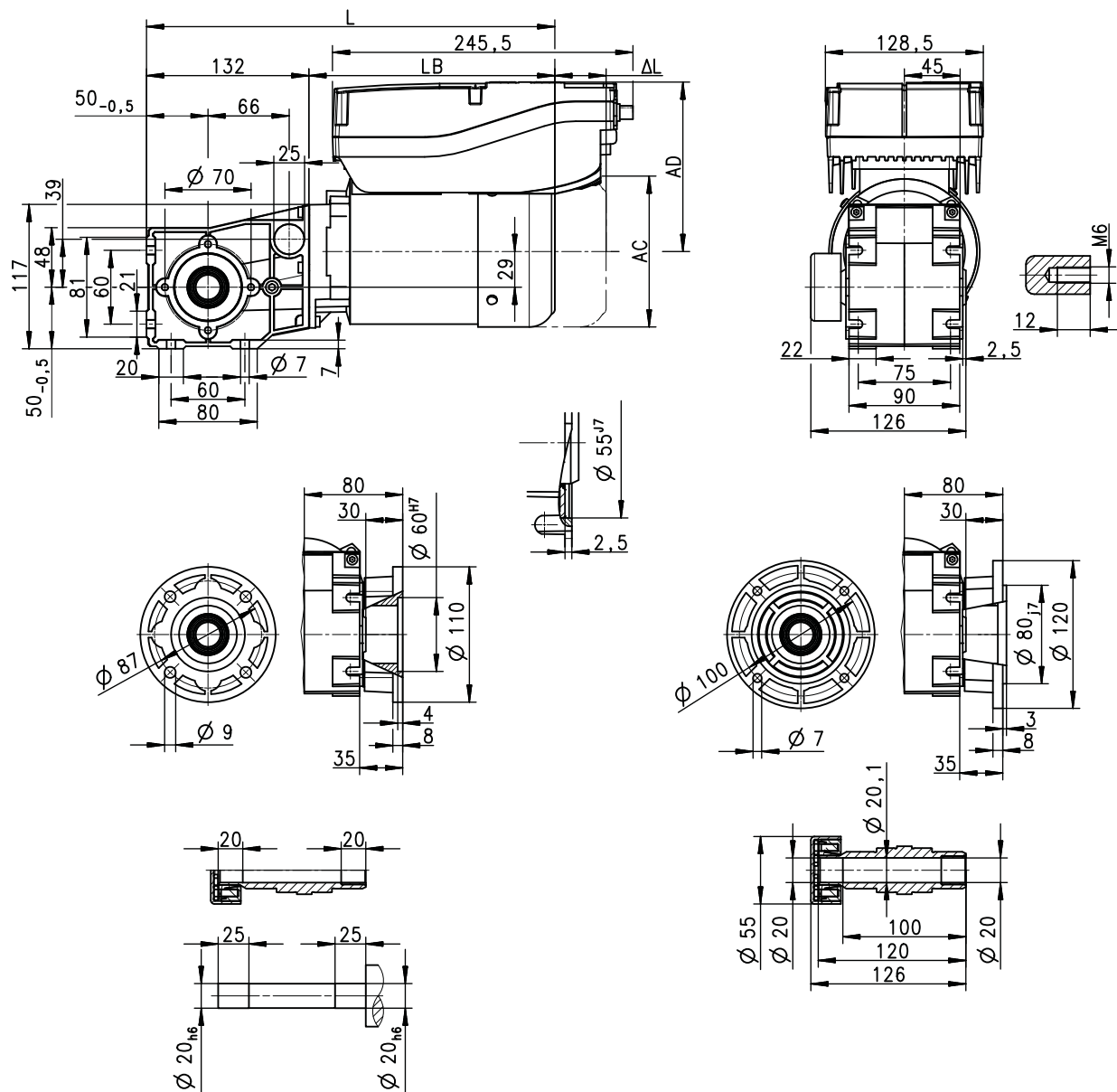


Technical data

Dimensions
Basic dimensions

g500-B45, 2-stage

Gearbox design: Hollow shaft with shrink disc, with foot (SAR/SBR/SAK)



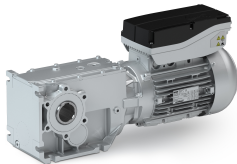
8800218-01

Motor series			MSEMA
Motor			063-42
Total length	L	mm	331
Motor length	LB	mm	196
Motor diameter	AC	mm	123
Motor/connection distance	AD	mm	141

ΔL ▶ Additional lengths 95

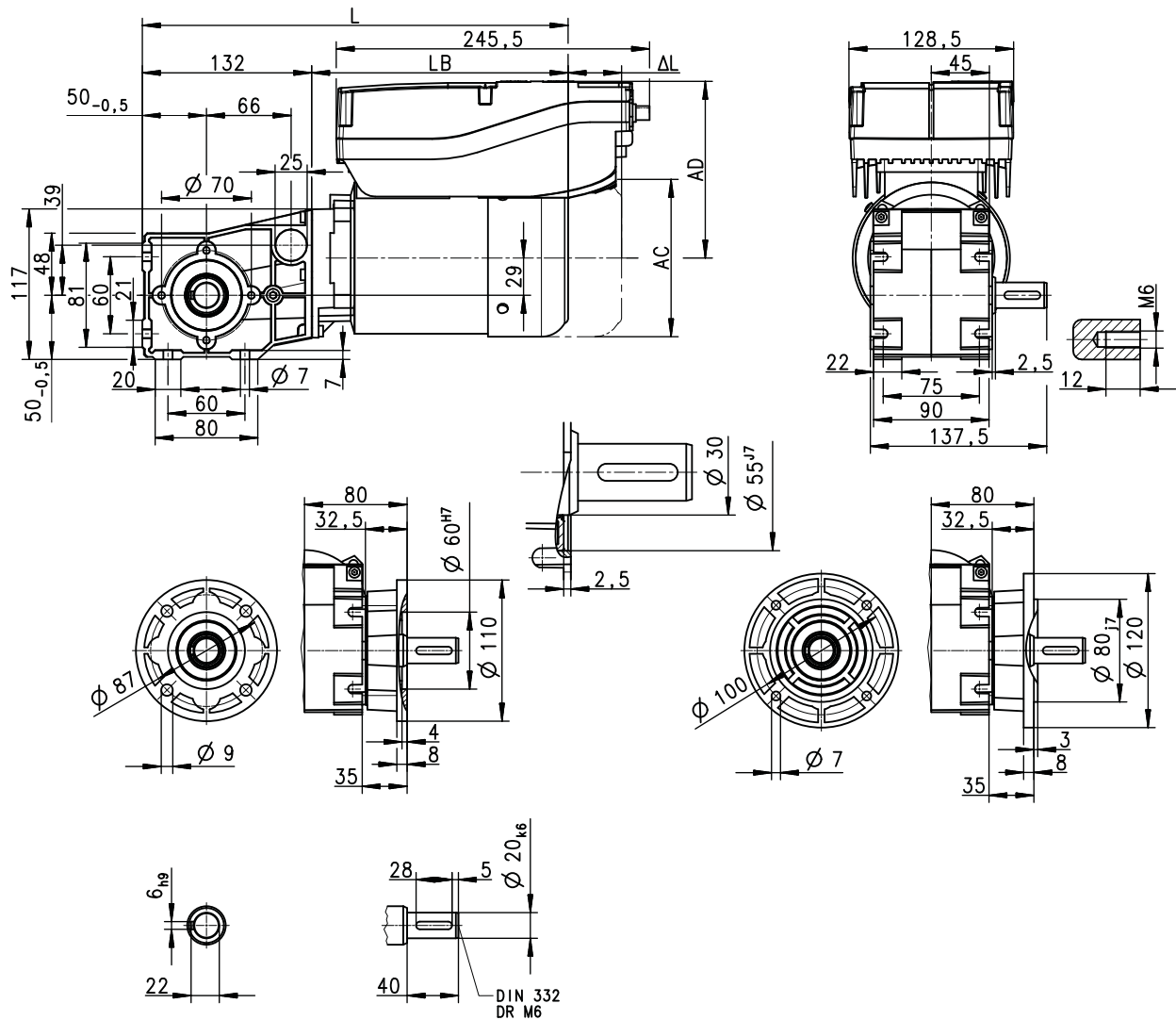
Technical data

Dimensions
Basic dimensions



g500-B45, 2-stage

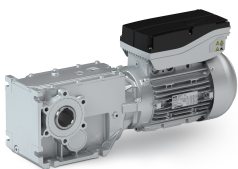
Gearbox design: Solid shaft with foot (VAR/VBR/VAK)



8800207-01

Motor series			MSEMA
Motor			063-42
Total length	L	mm	331
Motor length	LB	mm	196
Motor diameter	AC	mm	123
Motor/connection distance	AD	mm	141

ΔL ▶ Additional lengths 95

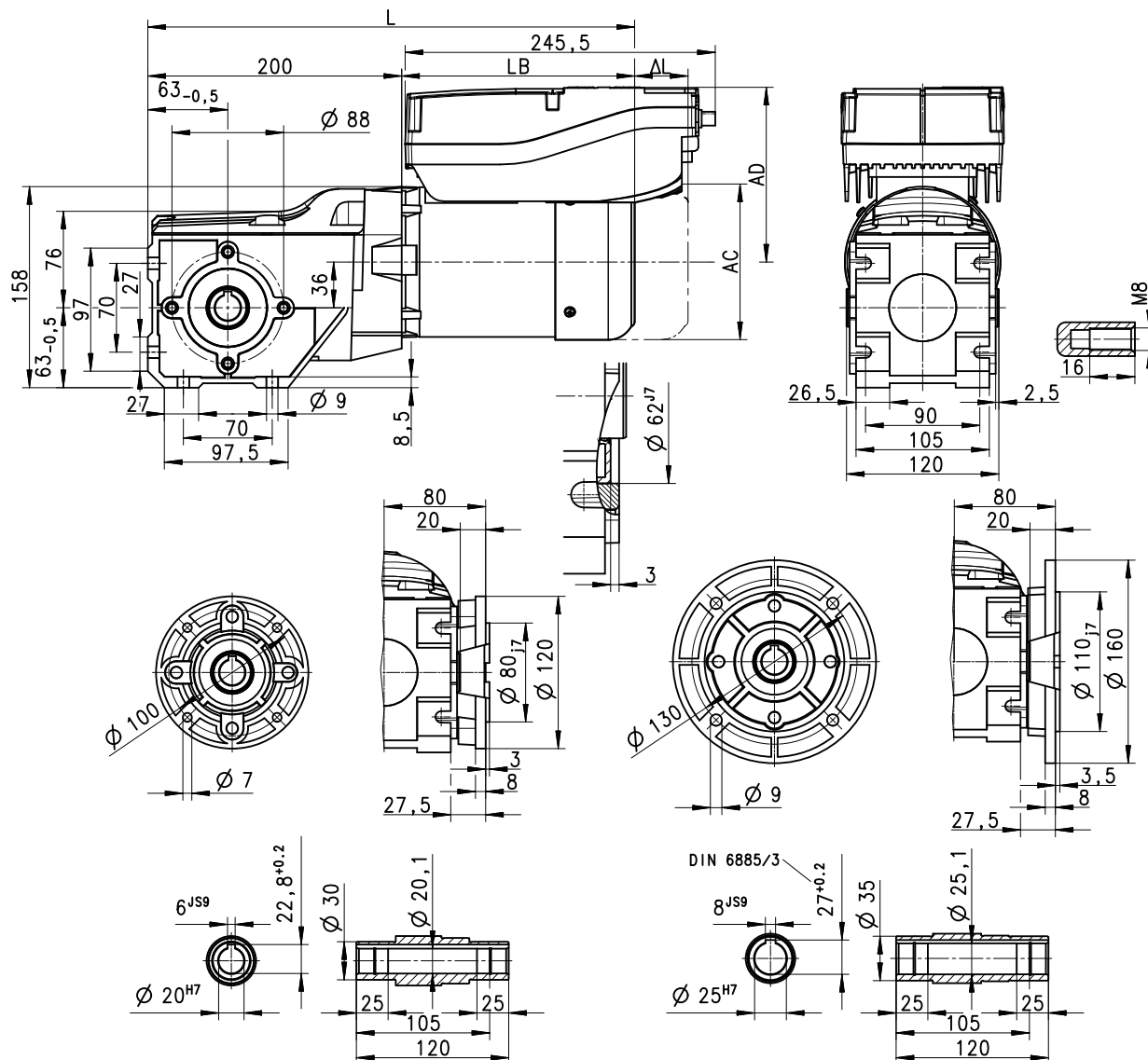


Technical data

Dimensions
Basic dimensions

g500-B110, 2-stage

Gearbox design: Hollow shaft with foot (HAR/HBR/HAK)



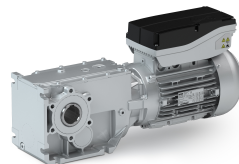
8800208-02

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	383	426
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 95

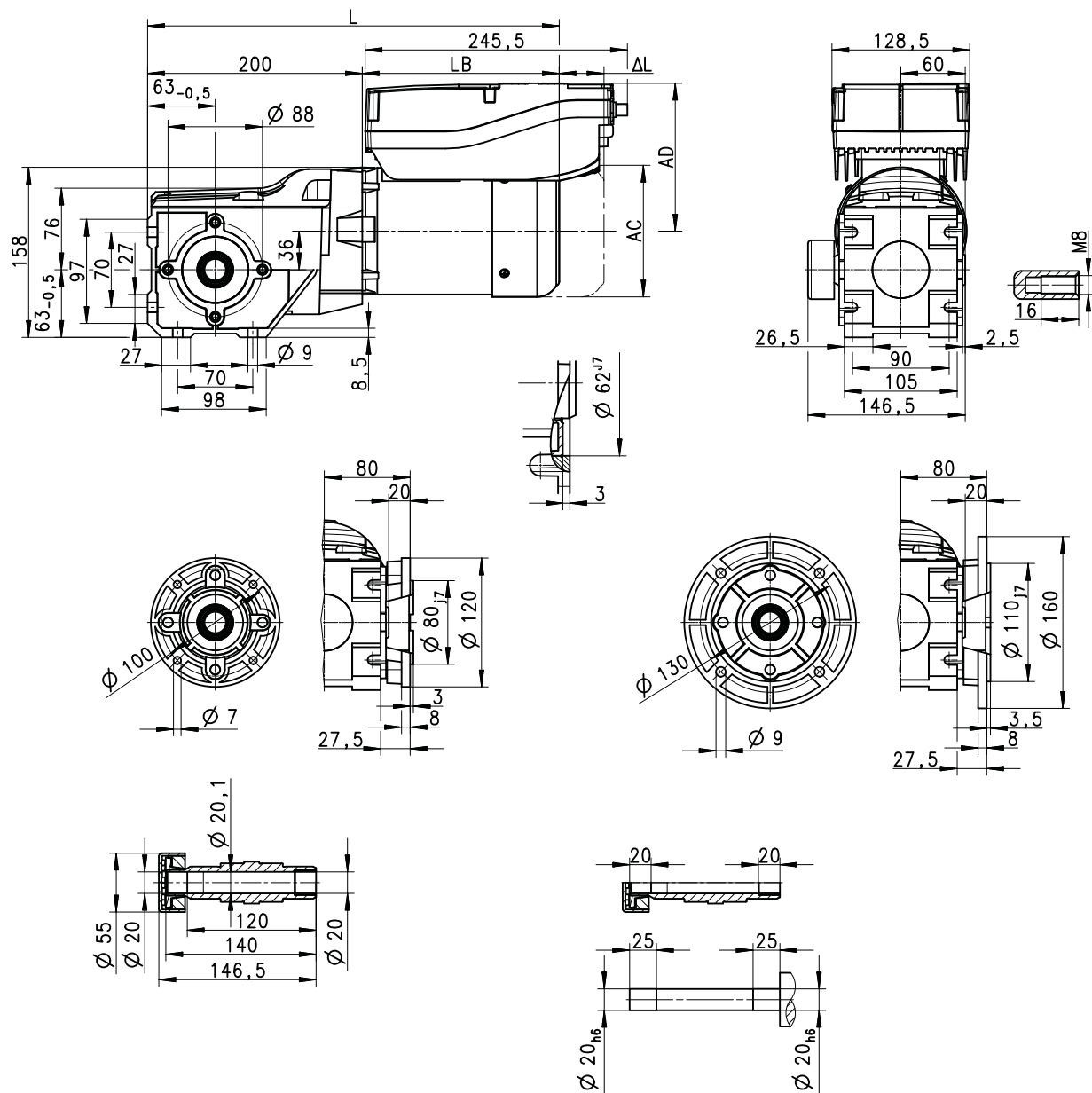
Technical data

Dimensions
Basic dimensions



g500-B110, 2-stage

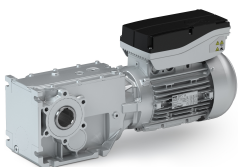
Gearbox design: Hollow shaft with shrink disc, with foot (SAR/SBR/SAK)



8800222-01

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	383	426
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 95

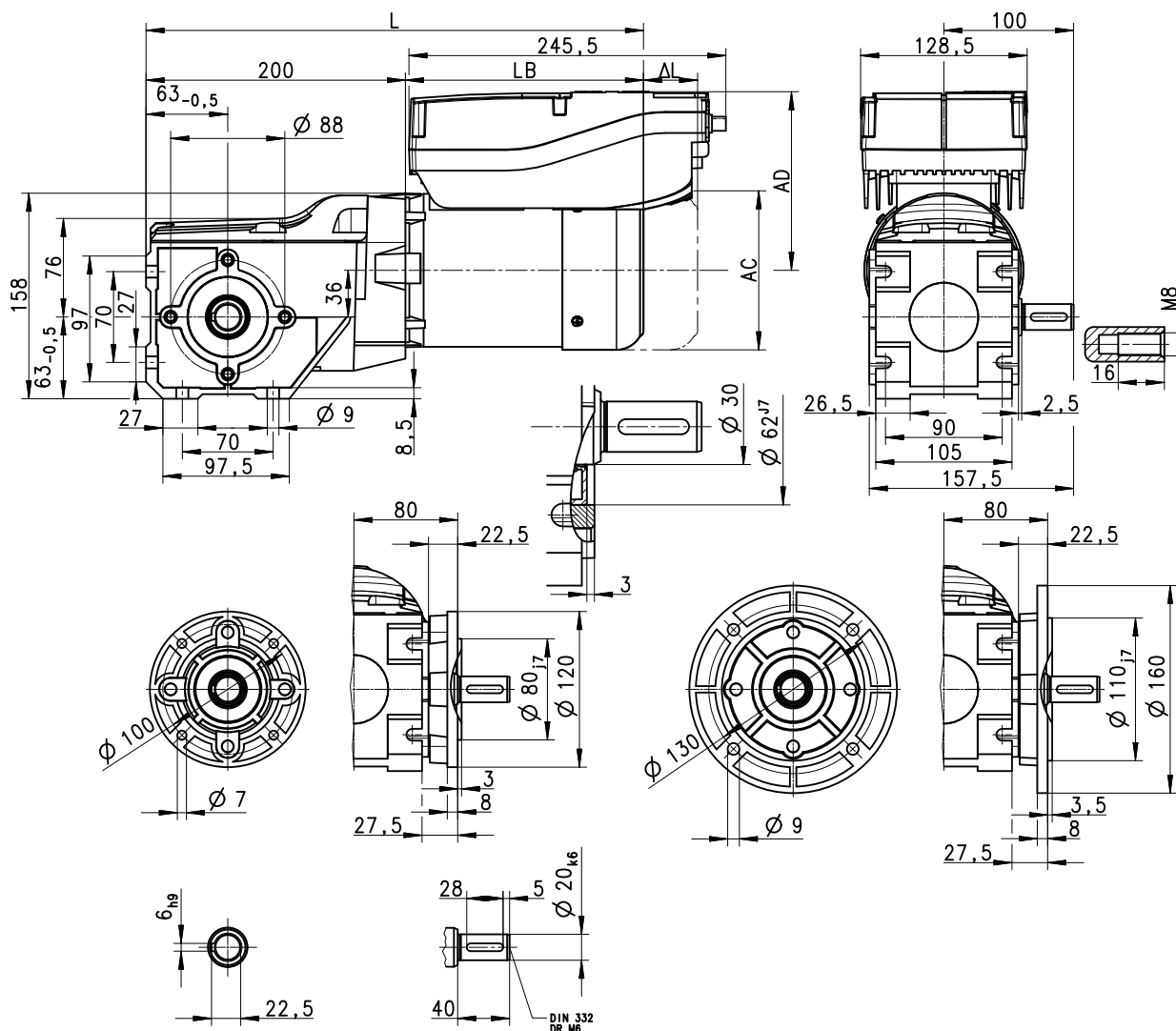


Technical data

Dimensions
Basic dimensions

g500-B110, 2-stage

Gearbox design: Solid shaft with foot (VAR/VBR/VAK)



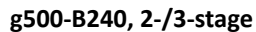
8800209-01

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	383	426
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 95

Dimensions

Basic dimensions



Technical drawing of a 100 mm diameter centrifugal pump assembly, showing front, side, and detail views with dimensions in mm.

Front View (Top Left): Shows the pump housing with dimensions: total width 259.5, inlet diameter $\varnothing 100$, inlet flange diameter 80-0.5, inlet flange thickness 87, inlet flange width 135, inlet flange hole diameter 100, inlet flange hole spacing 45.5, inlet flange hole diameter $\varnothing 9$, inlet flange hole spacing 100, inlet flange hole diameter 136, inlet flange hole diameter 11, inlet flange hole diameter 40, inlet flange hole diameter 180.

Side View (Top Right): Shows the pump housing with dimensions: total width 245.5, inlet diameter $\varnothing 100$, inlet flange diameter 80-0.5, inlet flange thickness 87, inlet flange width 135, inlet flange hole diameter 100, inlet flange hole spacing 45.5, inlet flange hole diameter $\varnothing 9$, inlet flange hole spacing 100, inlet flange hole diameter 136, inlet flange hole diameter 11, inlet flange hole diameter 40, inlet flange hole diameter 180.

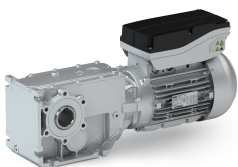
Top View (Middle Left): Shows the pump housing with dimensions: total width 105, inlet diameter $\varnothing 130$, inlet flange diameter 80-0.5, inlet flange thickness 87, inlet flange width 135, inlet flange hole diameter 100, inlet flange hole spacing 45.5, inlet flange hole diameter $\varnothing 9$, inlet flange hole spacing 100, inlet flange hole diameter 136, inlet flange hole diameter 11, inlet flange hole diameter 40, inlet flange hole diameter 180.

Bottom View (Middle Right): Shows the pump housing with dimensions: total width 105, inlet diameter $\varnothing 165$, inlet flange diameter 80-0.5, inlet flange thickness 87, inlet flange width 135, inlet flange hole diameter 100, inlet flange hole spacing 45.5, inlet flange hole diameter $\varnothing 11$, inlet flange hole spacing 100, inlet flange hole diameter 136, inlet flange hole diameter 11, inlet flange hole diameter 40, inlet flange hole diameter 180.

Detail Views (Bottom): Shows the pump housing with dimensions: total width 105, inlet diameter $\varnothing 30$, inlet flange diameter 80-0.5, inlet flange thickness 87, inlet flange width 135, inlet flange hole diameter 100, inlet flange hole spacing 45.5, inlet flange hole diameter $\varnothing 9$, inlet flange hole spacing 100, inlet flange hole diameter 136, inlet flange hole diameter 11, inlet flange hole diameter 40, inlet flange hole diameter 180.

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	443	486
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

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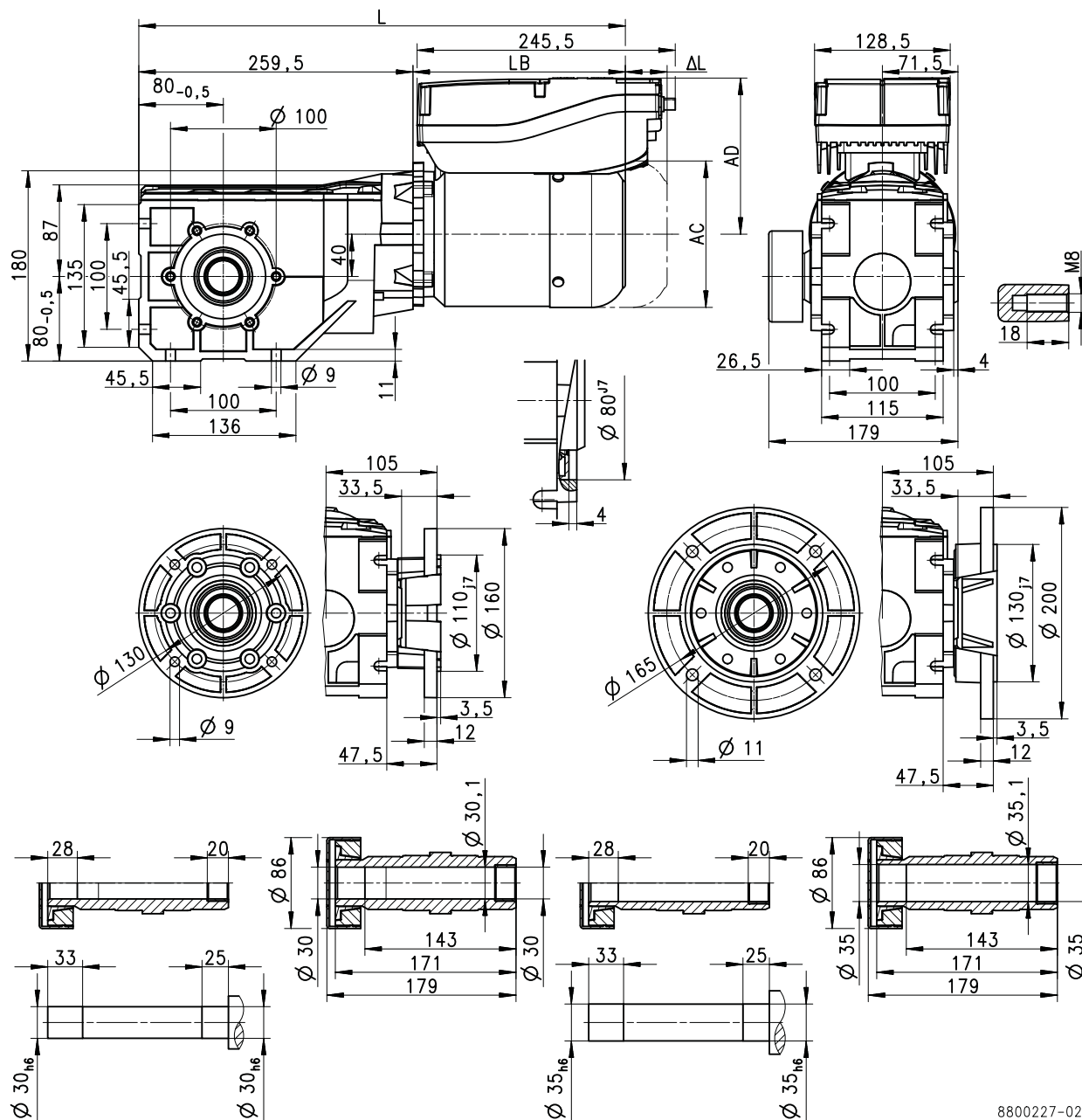


Technical data

Dimensions
Basic dimensions

g500-B240, 2-/3-stage

Gearbox design: Hollow shaft with shrink disc, with foot (SAR/SBR/SAK)



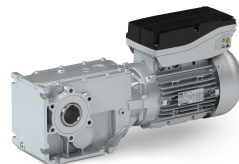
8800227-02

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	443	486
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

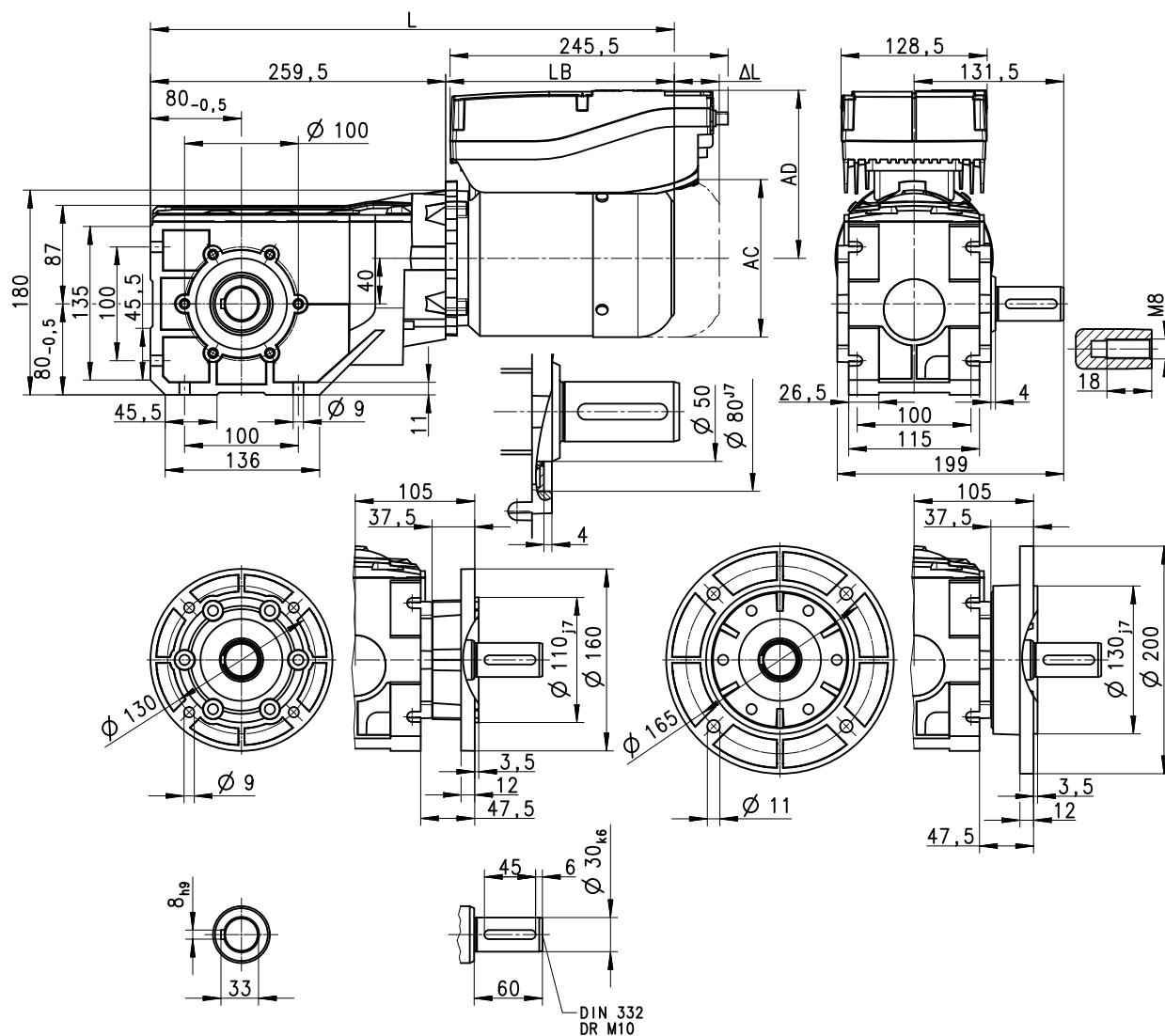
ΔL ▶ Additional lengths 95

Dimensions

Basic dimensions



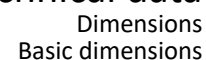
Gearbox design: Solid shaft with foot (VAR/VBR/VAK)



8800211-02

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	443	486
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 95



Gearbox design: Hollow shaft with foot (HAR/HBR/HAK)

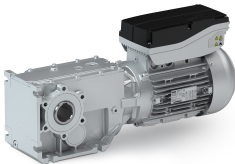
8800212-02

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	450	493
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 95

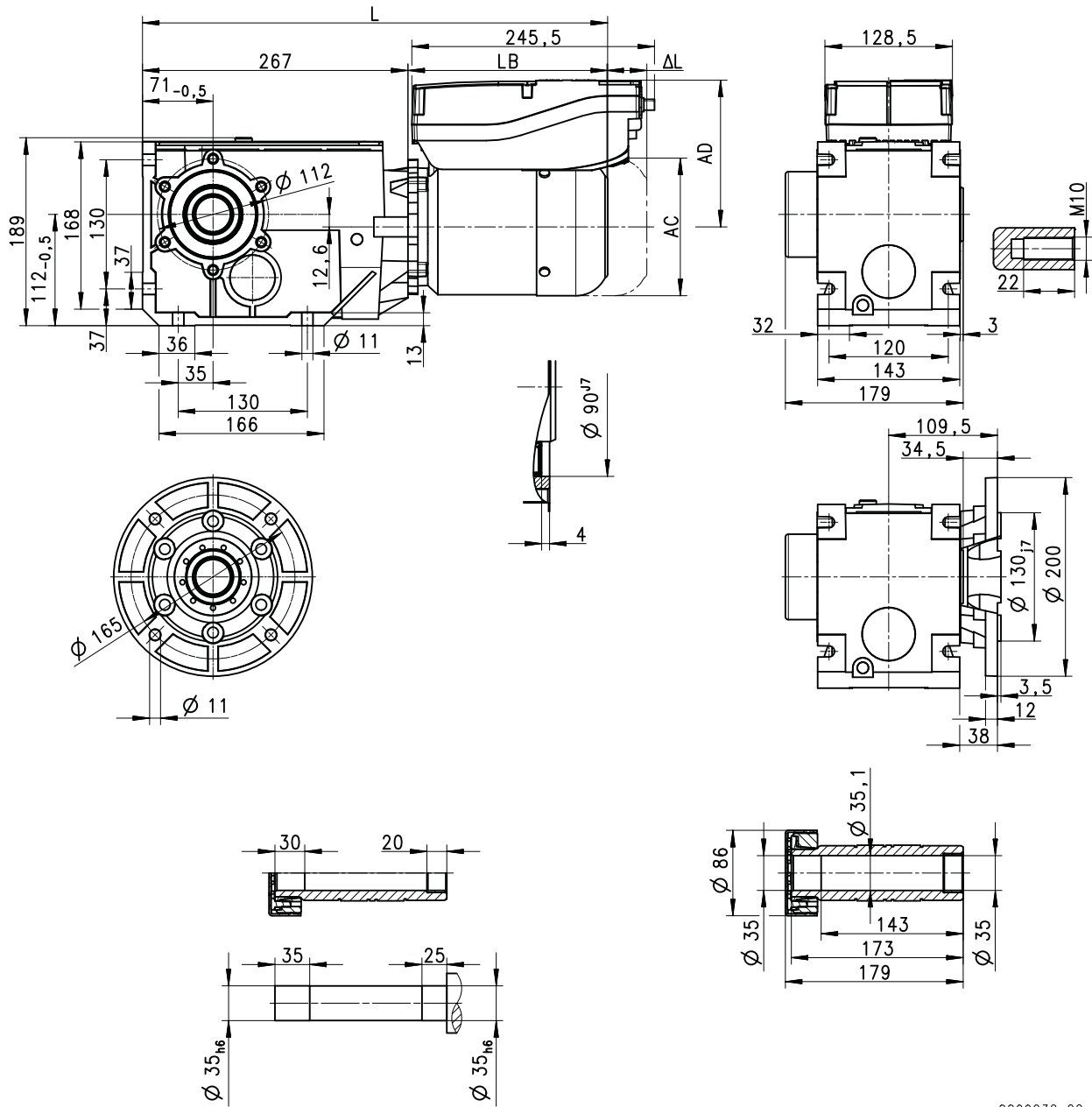
Technical data

Dimensions
Basic dimensions



g500-B450, 3-stage

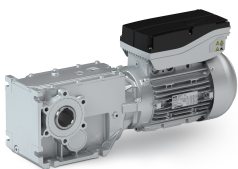
Gearbox design: Hollow shaft with shrink disc, with foot (SAR/SBR/SAK)



8800232-02

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	450	493
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 95

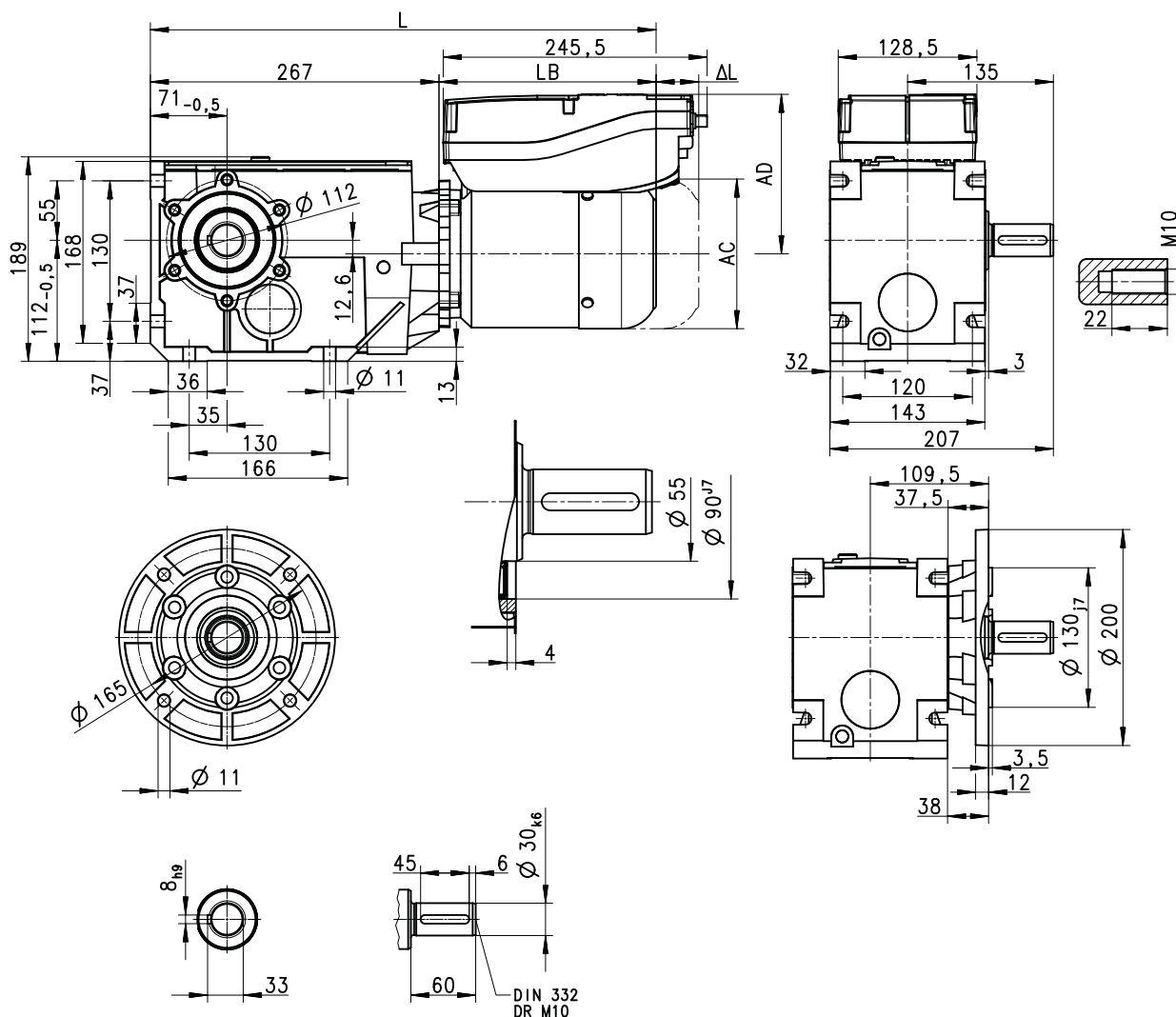


Technical data

Dimensions
Basic dimensions

g500-B450, 3-stage

Gearbox design: Solid shaft with foot (VAR/VBR/VAK)



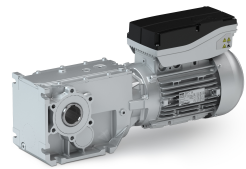
8800213-01

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	450	493
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 95

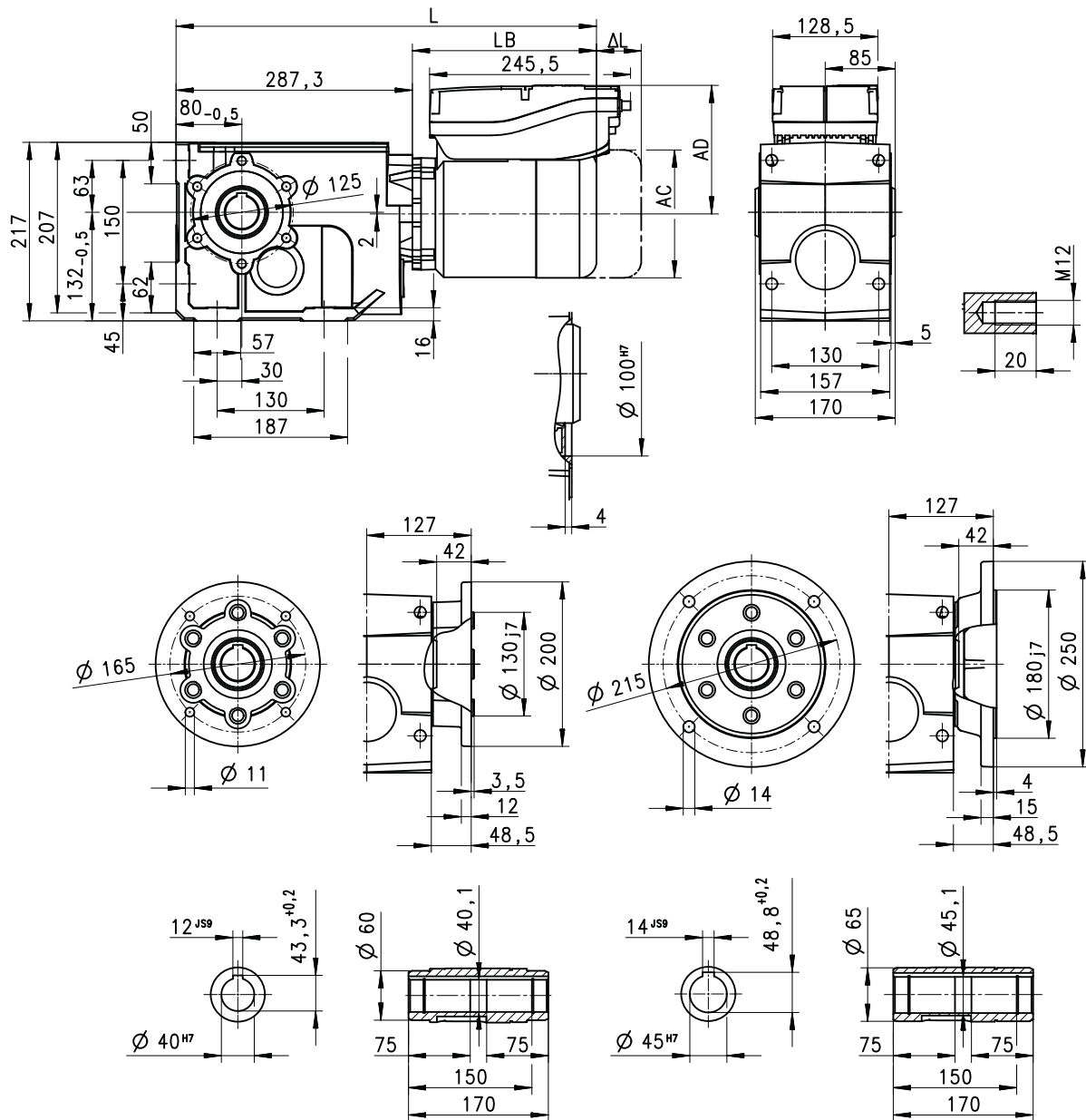
Technical data

Dimensions
Basic dimensions



g500-B600, 3-stage

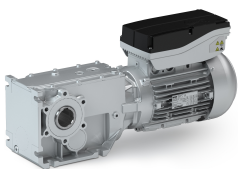
Gearbox design: Hollow shaft with foot (HAR/HBR/HAK)



8800761-01

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	470	513
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 95

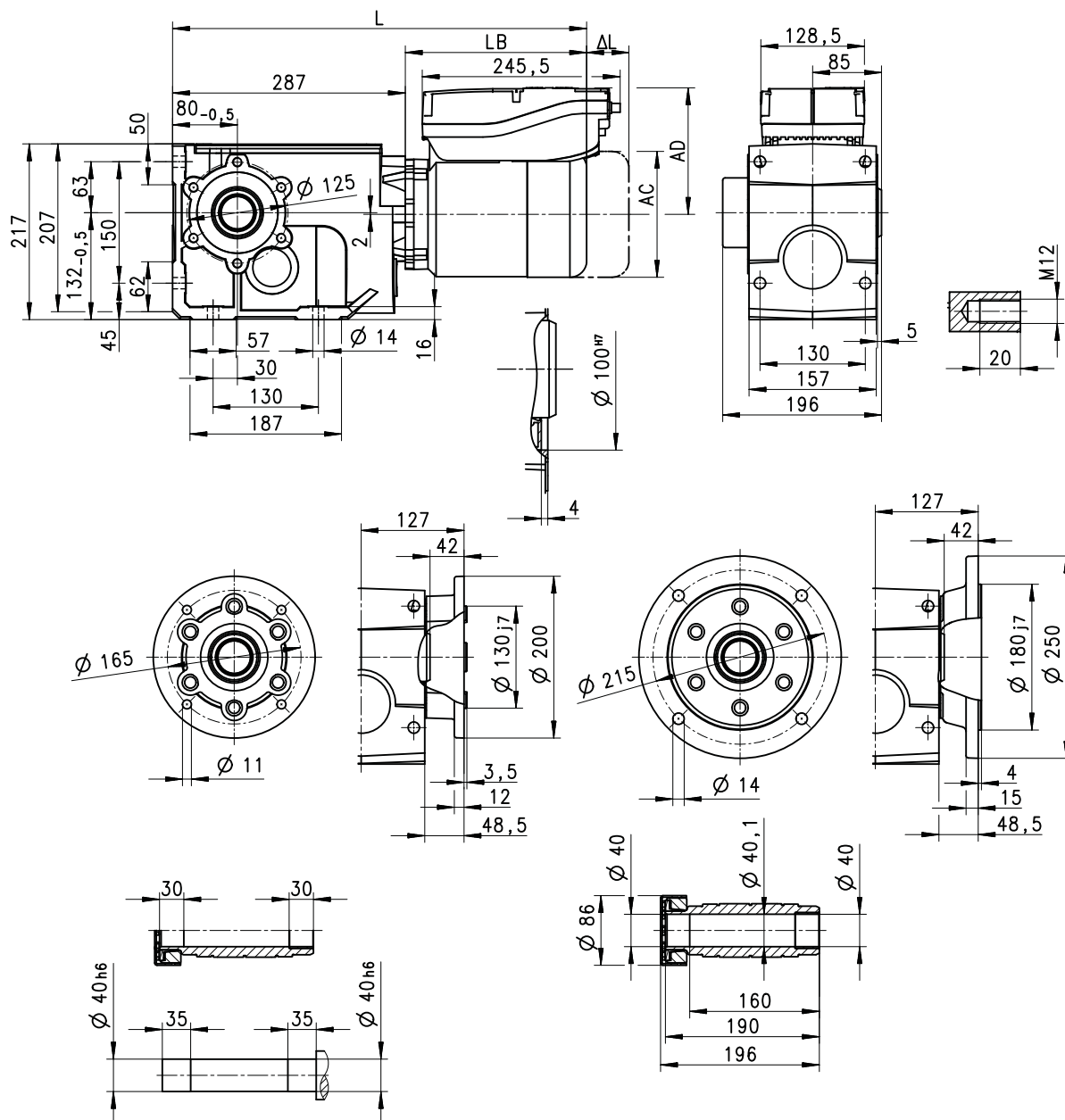


Technical data

Dimensions
Basic dimensions

g500-B600, 3-stage

Gearbox design: Hollow shaft with shrink disc, with foot (SAR/SBR/SAK)



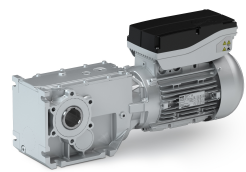
8800763-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	470	513
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 95

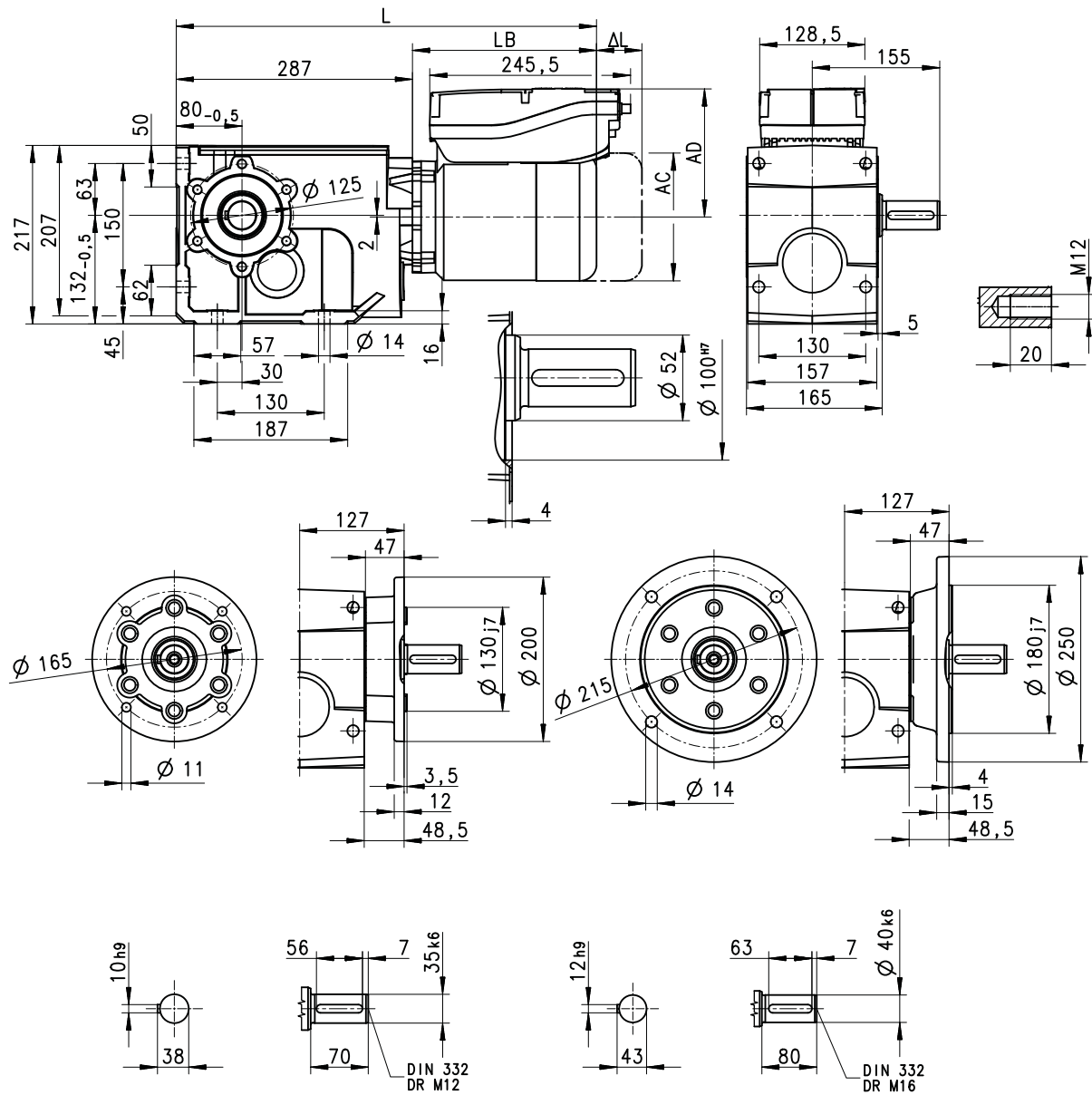
Technical data

Dimensions
Basic dimensions



g500-B600, 3-stage

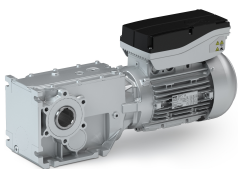
Gearbox design: Solid shaft with foot (VAR/VBR/VAK)



8800762-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	470	513
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 95

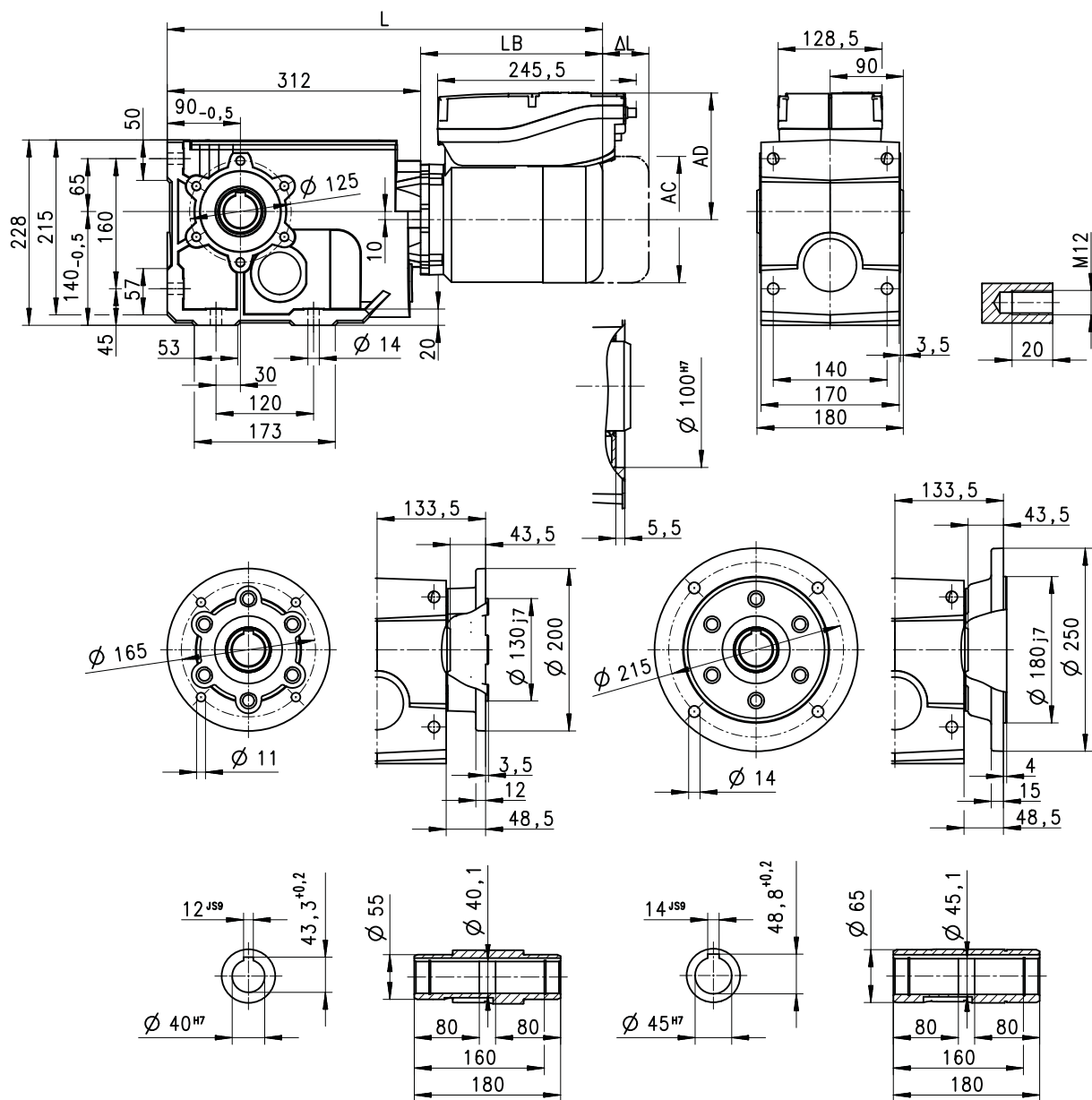


Technical data

Dimensions
Basic dimensions

g500-B820, 3-stage

Gearbox design: Hollow shaft with foot (HAR/HBR/HAK)



8800764-01

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	495	538
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 95

Dimensions

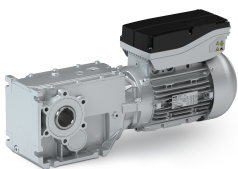
Basic dimensions



Technical drawing of a mechanical component, likely a pump or motor housing, showing multiple views (front, side, top, bottom, and cross-sections) with detailed dimensions in millimeters. The drawing includes a main front view, a side view, a top view, a bottom view, and several cross-sections. Key dimensions include overall length 312, width 216.5, and various internal features like holes and slots. The drawing is labeled with 'L', 'LB', 'AL', 'AD', 'AC', 'M12', and 'Ø' for diameters.

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	495	538
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

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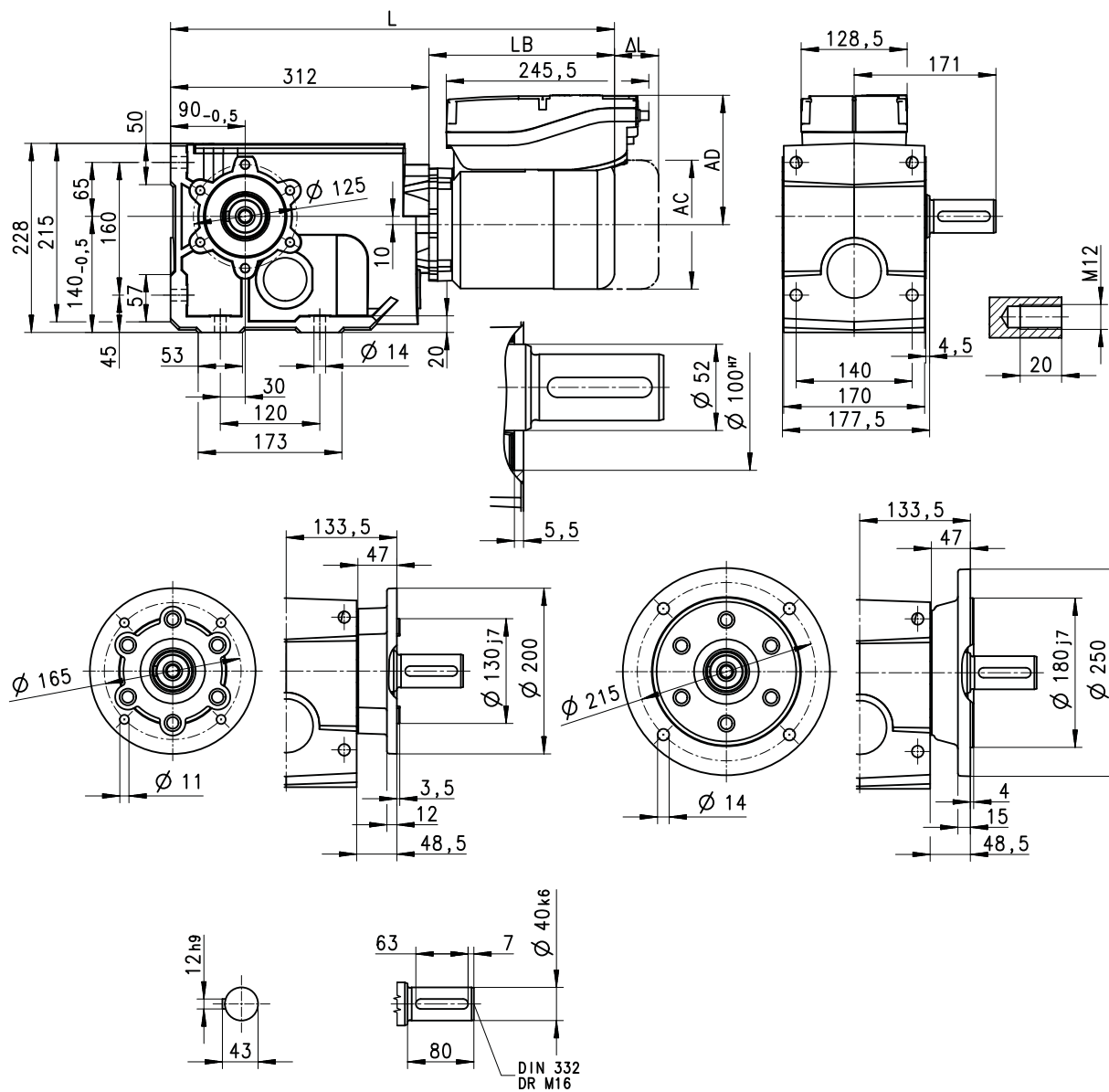


Technical data

Dimensions
Basic dimensions

g500-B820, 3-stage

Gearbox design: Solid shaft with foot (VAR/VBR/VAK)



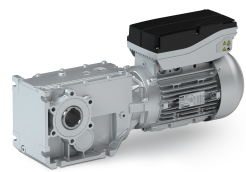
8800765-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	495	538
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 95

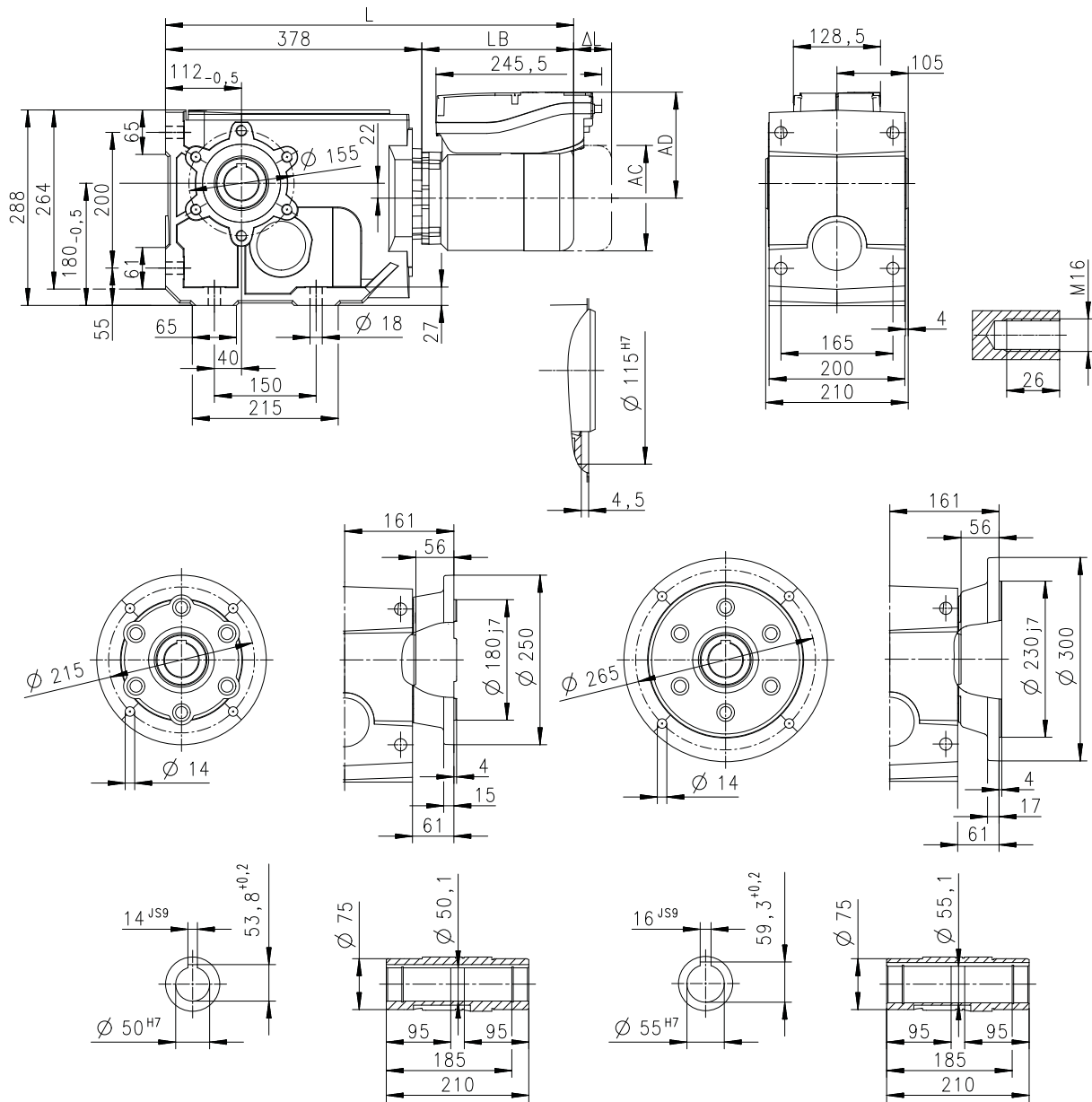
Technical data

Dimensions
Basic dimensions



g500-B1500, 3-stage

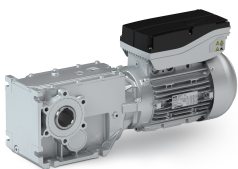
Gearbox design: Hollow shaft with foot (HAR/HBR/HAK)



8800767-01

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	561	604
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 95

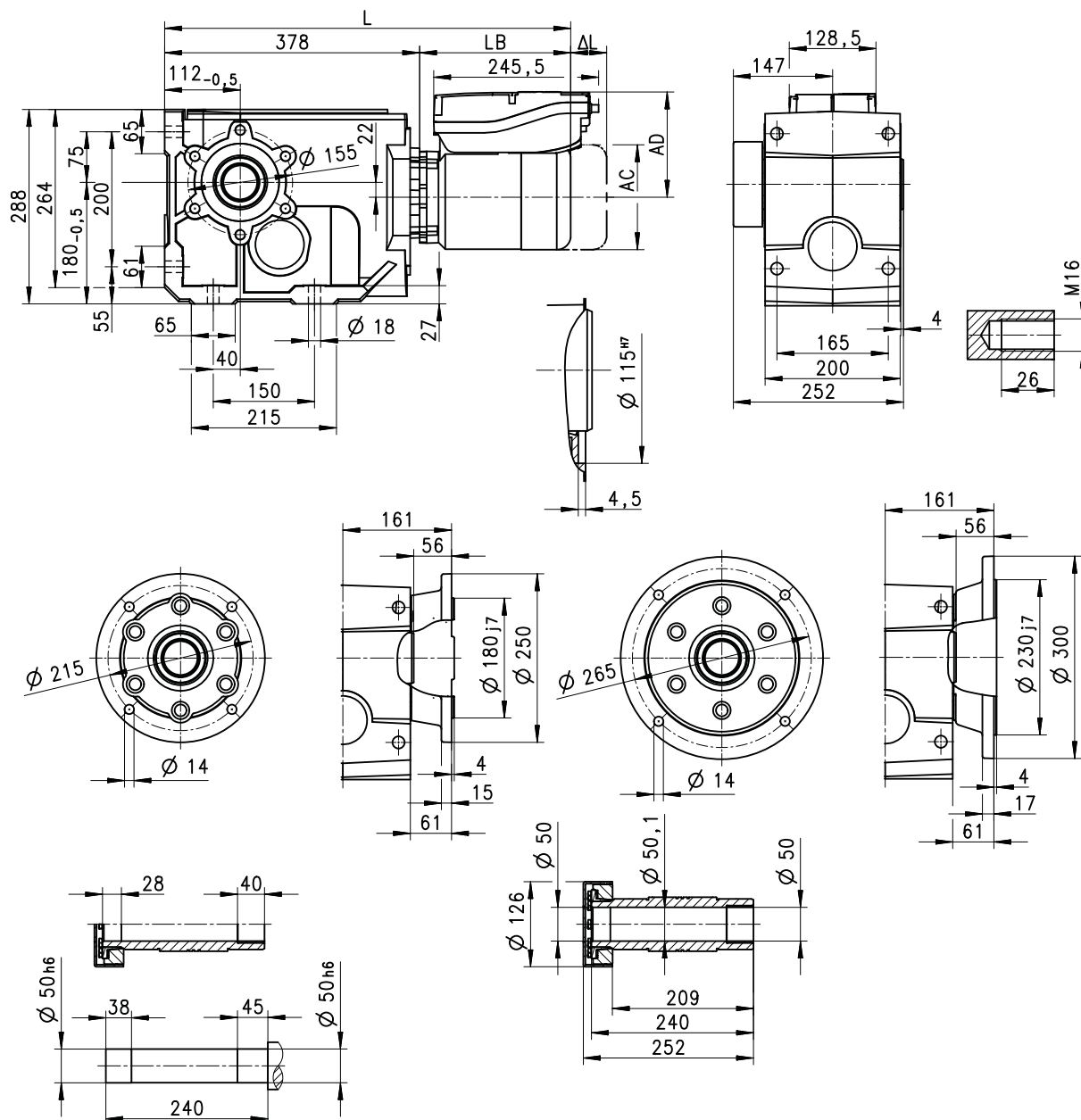


Technical data

Dimensions
Basic dimensions

g500-B1500, 3-stage

Gearbox design: Hollow shaft with shrink disc, with foot (SAR/SBR/SAK)



8800769-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	561	604
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 95

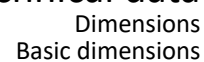
Dimensions

Basic dimensions

[illegible]

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	561	604
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

88



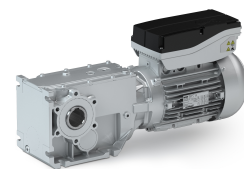
Gearbox design: Hollow shaft with foot (HAR/HBR/HAK)

8801634-00

Δ L ▶ Additional lengths 95

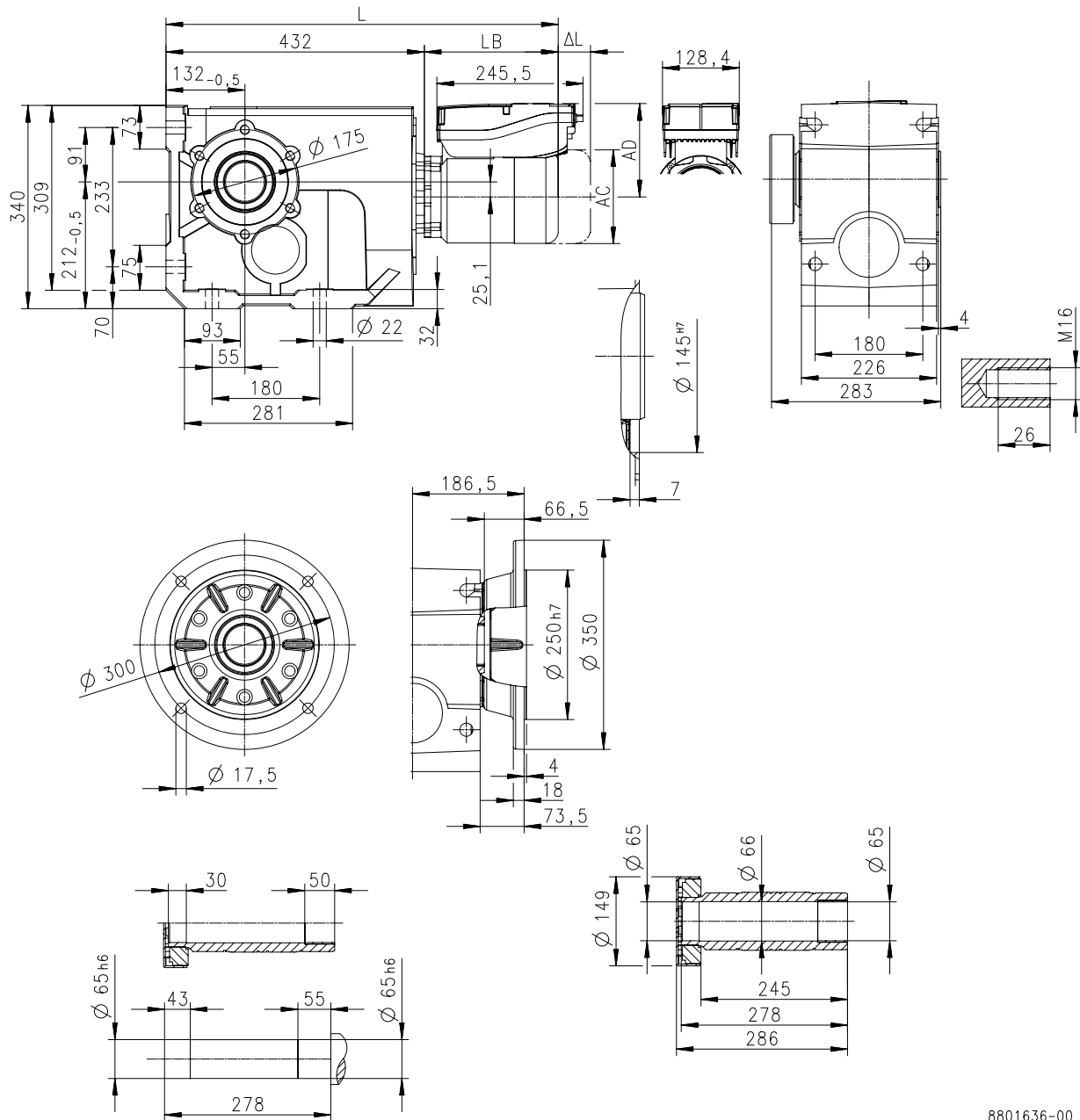
Technical data

Dimensions
Basic dimensions



g500-B2700, 3-stage

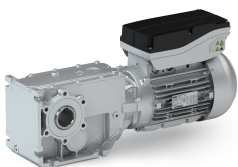
Gearbox design: Hollow shaft with shrink disc, with foot (SAR/SBR/SAK)



8801636-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	615	658
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 95

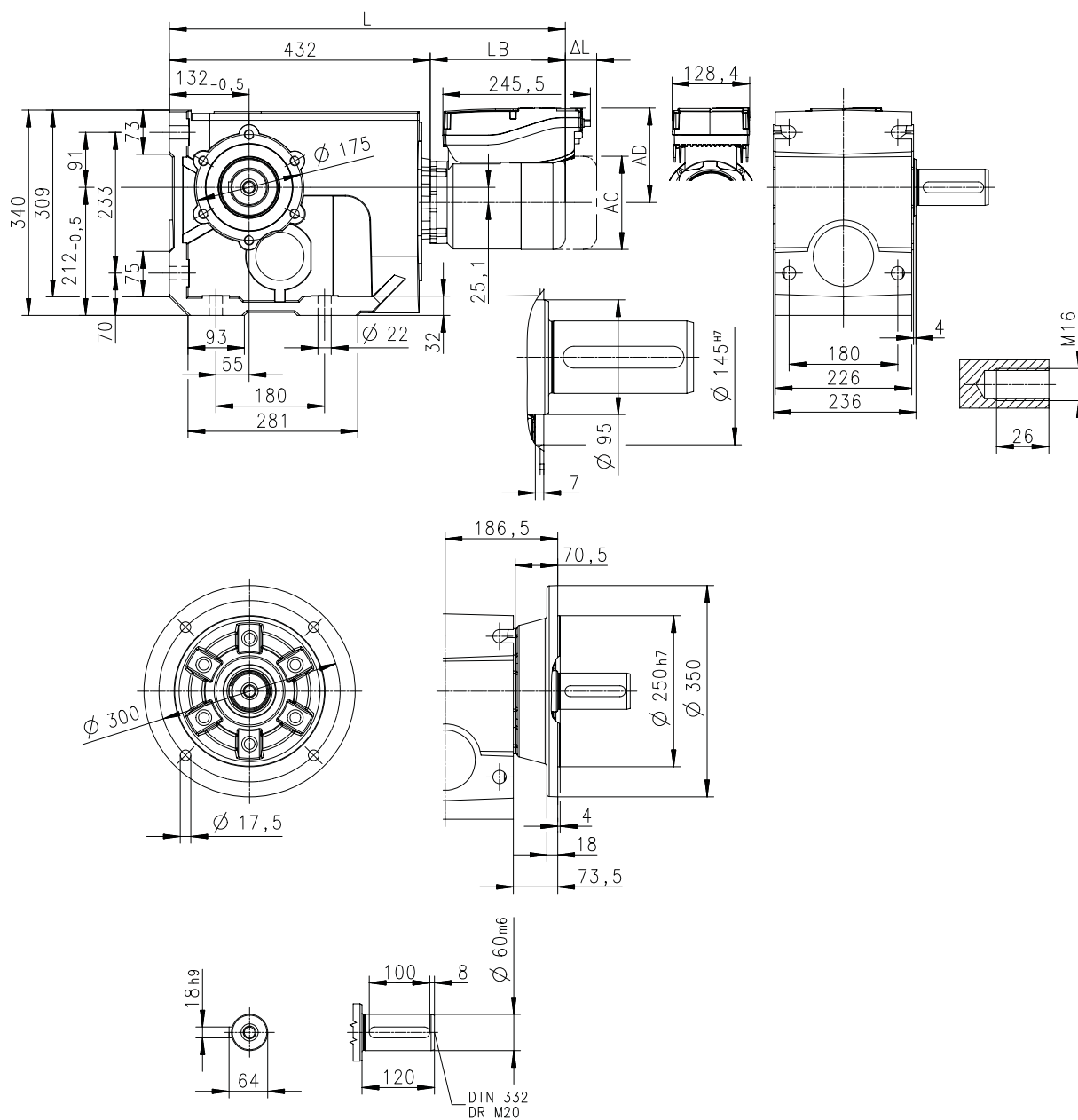


Technical data

Dimensions
Basic dimensions

g500-B2700, 3-stage

Gearbox design: Solid shaft with foot (VAR/VBR/VAK)



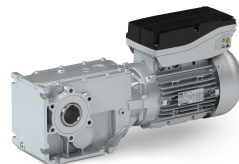
8801635-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	615	658
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

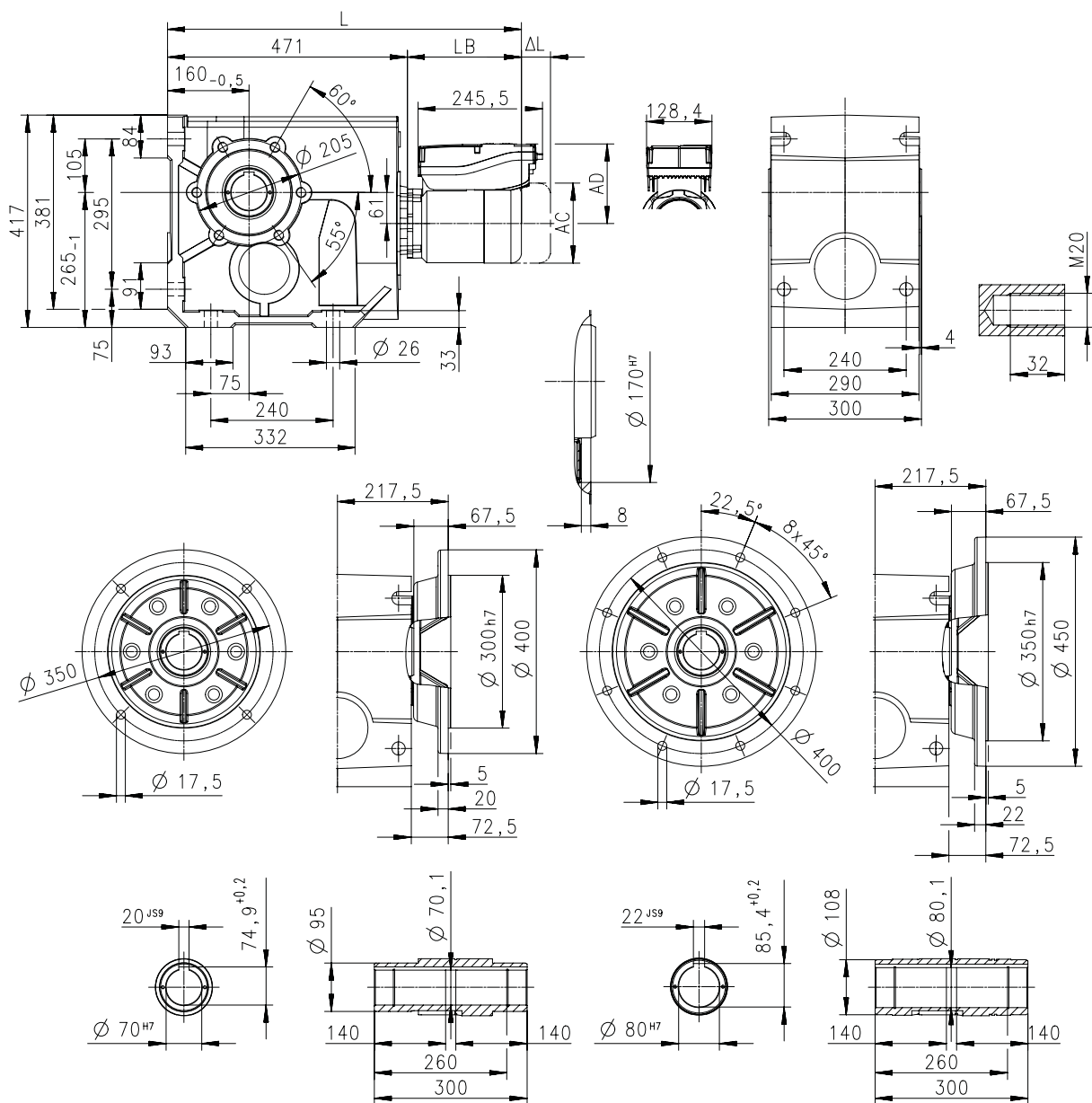
ΔL ▶ Additional lengths 95

Dimensions

Basic dimensions



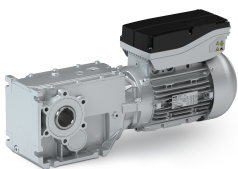
Gearbox design: Hollow shaft with foot (HAR/HBR/HAK)



8801637-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	654	697
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 95

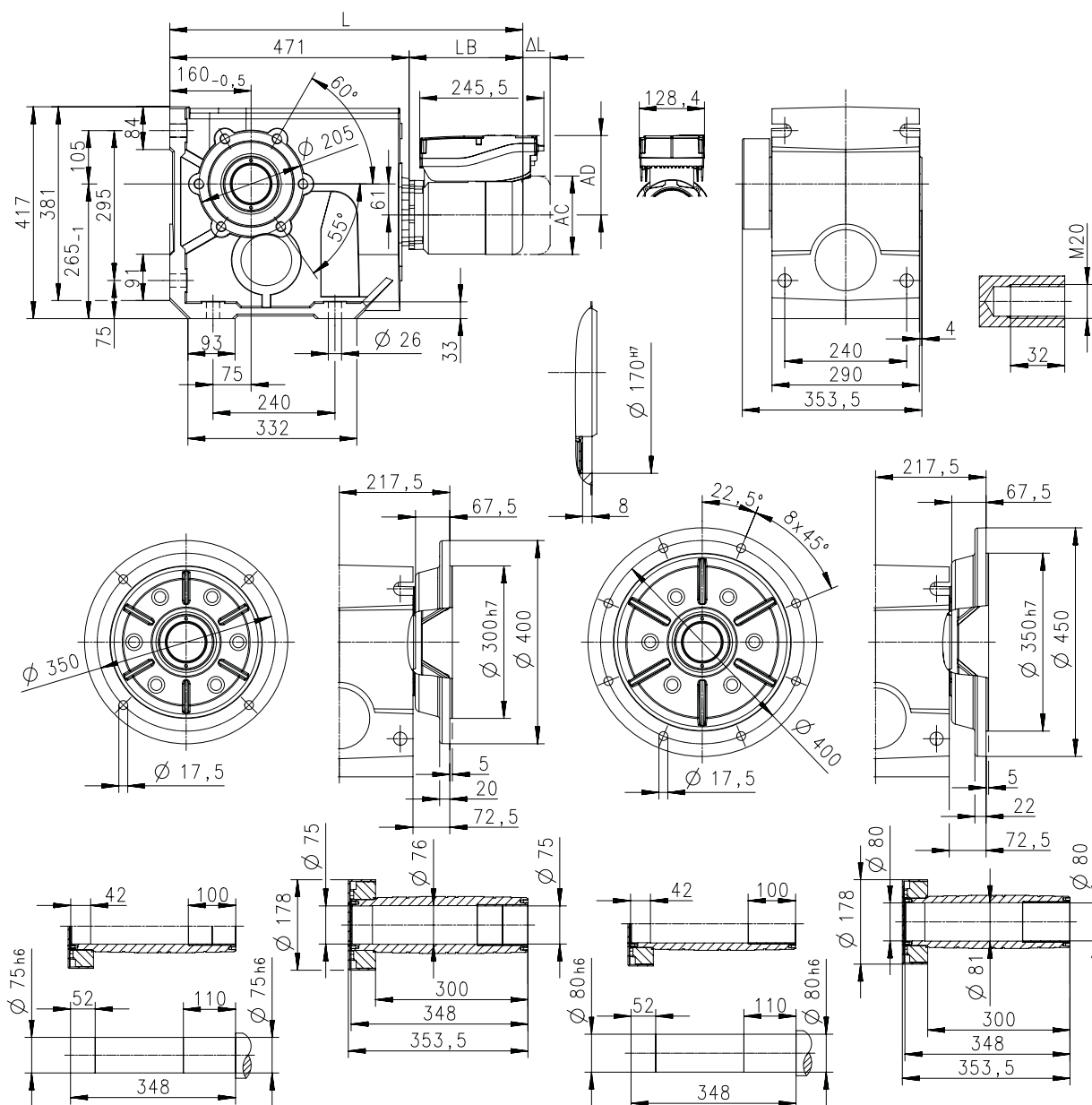


Technical data

Dimensions
Basic dimensions

g500-B4300, 3-stage

Gearbox design: Hollow shaft with shrink disc, with foot (SAR/SBR/SAK)



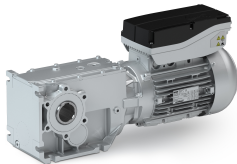
8801639-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	654	697
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 95

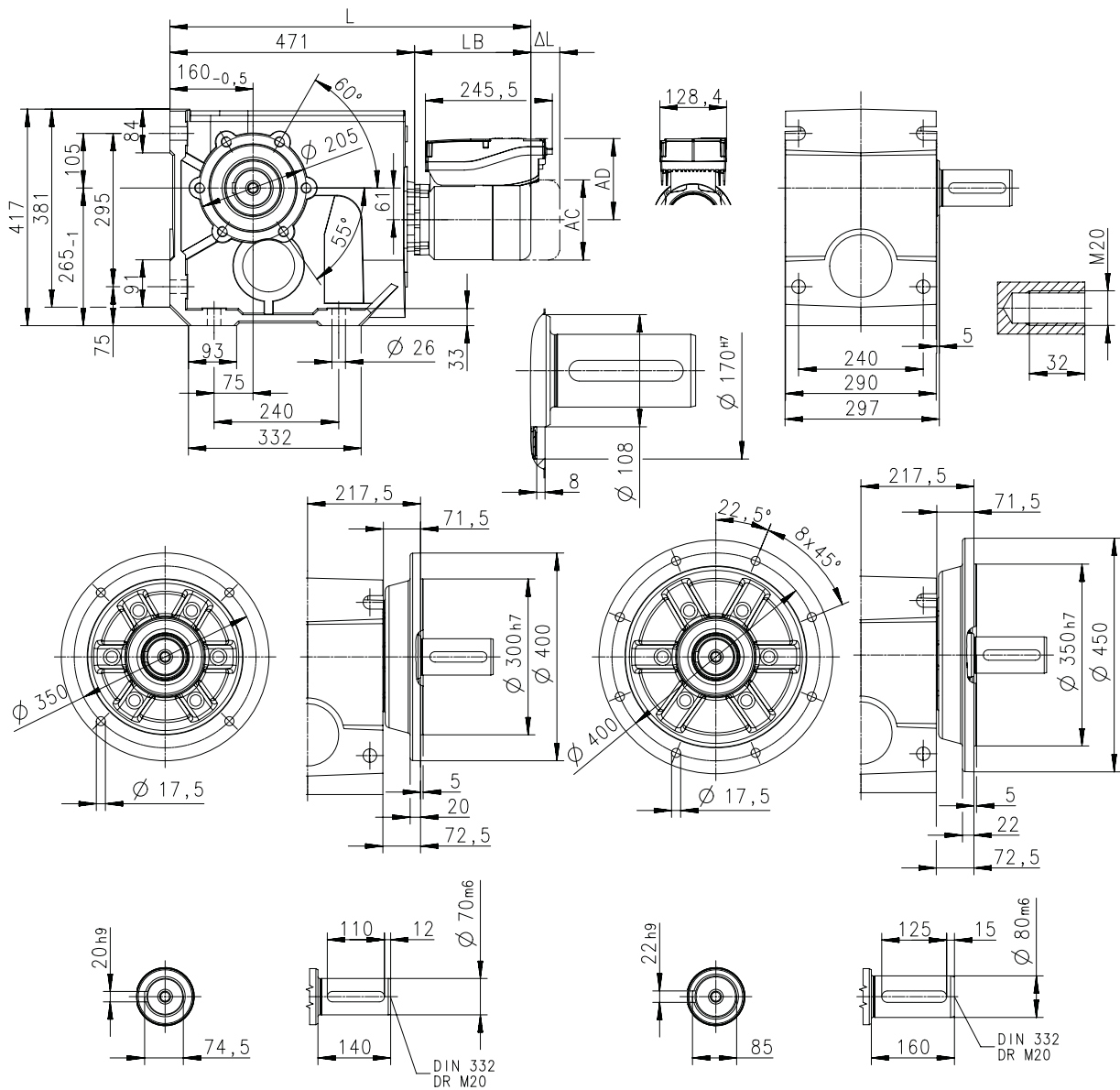
Technical data

Dimensions
Basic dimensions



g500-B4300, 3-stage

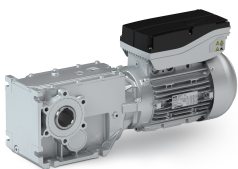
Gearbox design: Solid shaft with foot (VAR/VBR/VAK)



8801638-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	654	697
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 95



Technical data

Dimensions
Gearbox with pre-stage

Gearbox with pre-stage

g500-B110, 3-stage

g500-B240 ... B4300, 4-stage

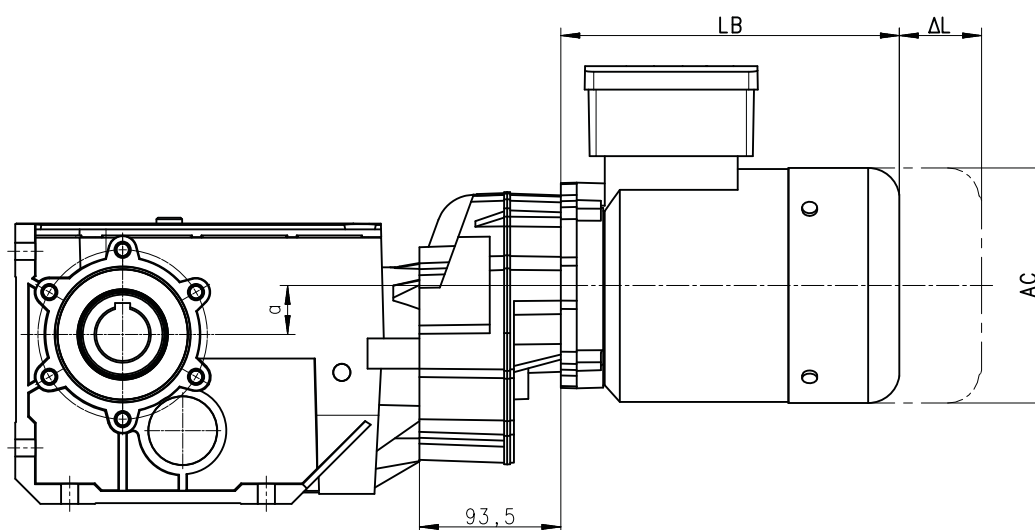


The geared motor dimensions are taken from the basic dimensions except for the overall length "L" and the center distance "a".

► [Basic dimensions](#) 68

The total length "L" of the basic dimensions is extended by the 93.5 mm dimension of the pre-stage.

Note the changed center distance "a" between the gearbox shaft and the motor shaft.



8800900-00

Gearboxes			g500-B110	g500-B240	g500-B450	g500-B600	g500-B820	g500-B1500	g500-B2700	g500-B4300
			3-stage	4-stage						
Center distance	a	mm	81	85	32.4	43	35	23	19.9	16

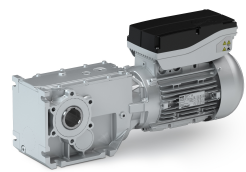
Additional lengths

Self-ventilated motors

Motor			MSEMA ☐ ☐	
			063-42	080-32
Without brake	Δ L	mm	0	0
With spring-applied holding brake	Δ L	mm	40	73

Technical data

Weights
Basic weights



Weights

Basic weights



The basic weights are listed in the selection tables.

Weights with lubricant for mounting position M1, all data approximate values.
The exact values can be found in the delivery documents

► [Selection tables](#)  62

Observe ► [Additional weights](#)  96!

Additional weights

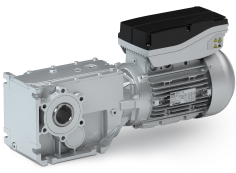
Gearboxes

Gearboxes			g500-B45	g500-B110	g500-B240	g500-B450
Solid shaft	m	kg	0.4	0.5	1.4	1.0
Shrink disc	m	kg	0.2	0.2	0.7	0.6
Flange	m	kg	0.3	0.4	0.7	0.9
Torque plate						
Threaded pitch circle	m	kg	0.3	0.5	1.3	2.5
Housing foot	m	kg	-	-	2.4	1.1
Housing foot, GKS compatible	m	kg	-	-	-	-
Shaft cover						
Shrink disc cover	m	kg	0.1	0.1	0.1	0.1
Hollow shaft cover, hoseproof	m	kg	0.1	0.1	0.1	0.2

Gearboxes			g500-B600	g500-B820	g500-B1500	g500-B2700	g500-B4300
Solid shaft	m	kg	1.5	1.9	3.7	6.0	15.5
Shrink disc	m	kg	0.6	1.2	1.7	2.3	4.3
Flange	m	kg	6.1	6.1	11.5	15.0	29.0
Torque plate							
Threaded pitch circle	m	kg	2.5	2.5	4.5	-	-
Housing foot	m	kg	2.8	3.0	4.3	10	13
Housing foot, GKS compatible	m	kg	5,0	5,0	8.2	16.5	30.5
Shaft cover							
Shrink disc cover	m	kg	0.1	0.1	0.2	0.3	0.4
Hollow shaft cover, hoseproof	m	kg	0.3	0.3	0.6	0.6	0.8

Motors

Motor			MSEMAXX063-42	MSEMAXX080-32
Brake				
Spring pressure - holding brake	m	kg	0,9	1.5
Manual release lever	m	kg	0.03	0.04
Brake resistors				
Internal	m	kg	0.05	0.05
External	m	kg	0.17	0.17



Product extensions

Torque plates

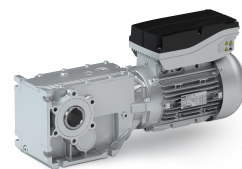
The torque support is usually effected by means of the foot or flange. The torque plates that can be fitted are another possibility. In this case, the torque support is provided only via one point and is suitable for shaft-mounted gearboxes, among other things. Supplied rubber buffers ensure a stress-free installation and absorb slight impacts.

The torque plates are available in two versions, for being installed at the existing threaded pitch circle or for the foot at the gearbox.

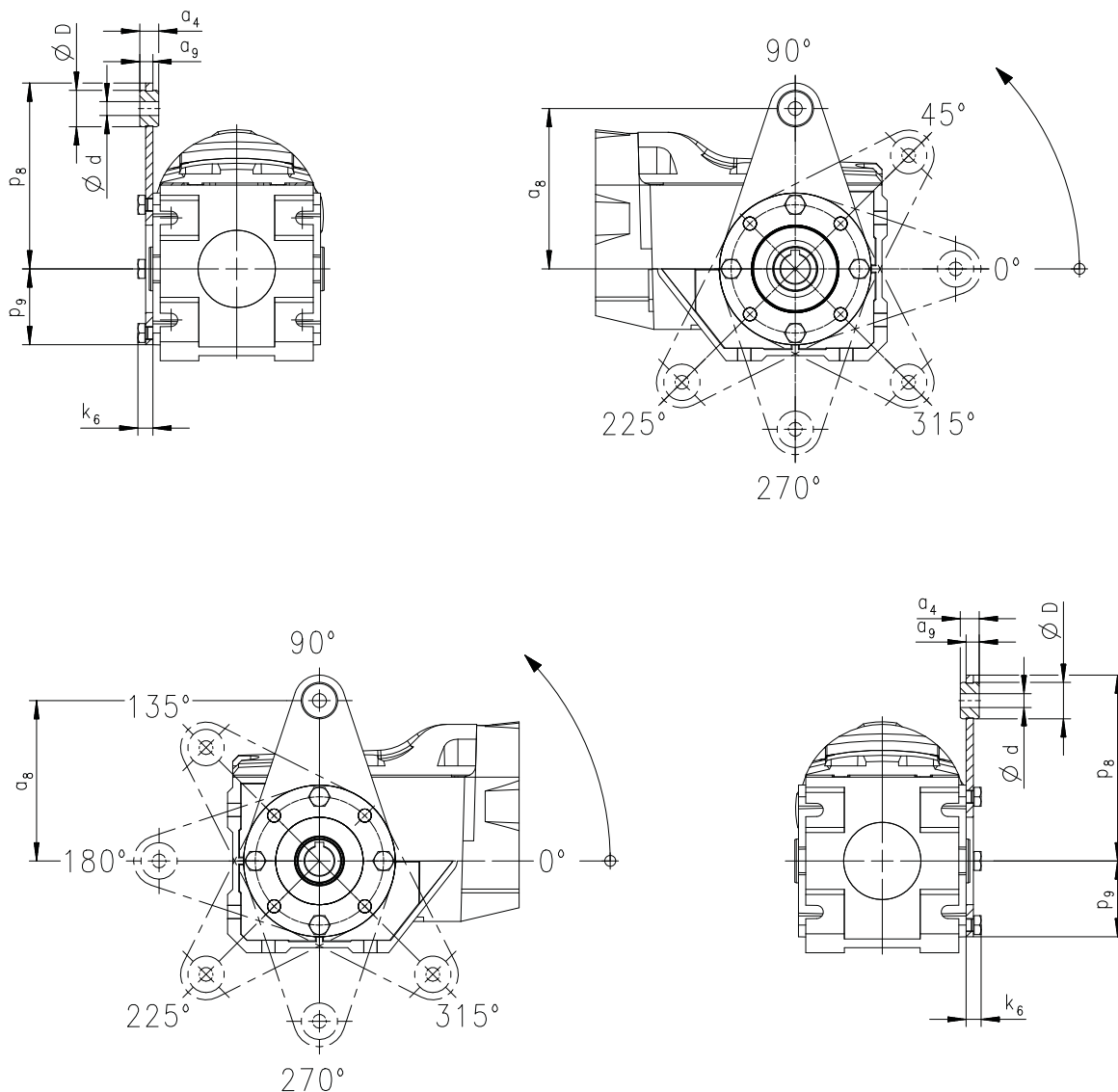
In addition, torque support for the g500-B45 gearbox can be effected via the holding fixture of the housing which is integrated on both sides.

Product extensions

Torque plates

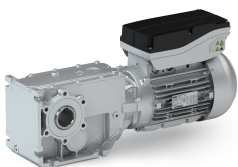


Torque plate on threaded pitch circle g500-B45 ... B110



e4001537-00

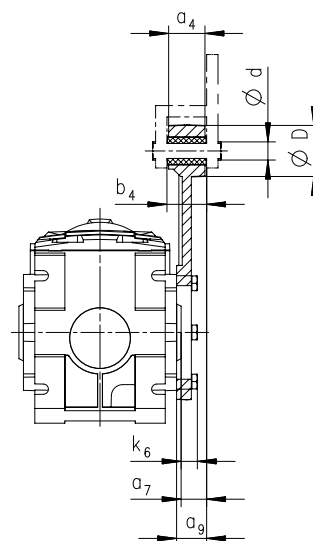
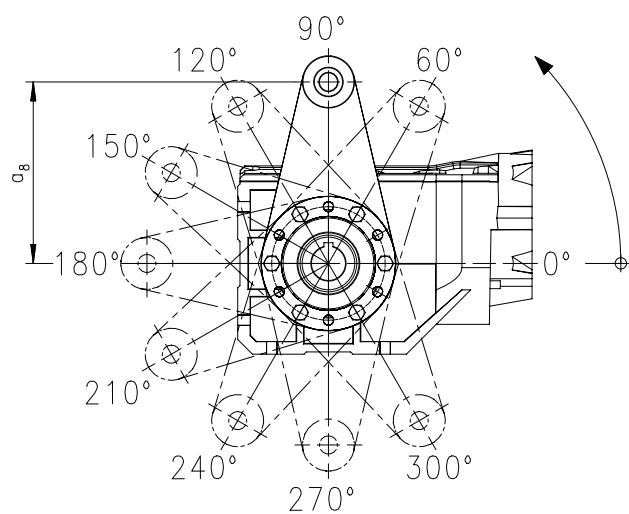
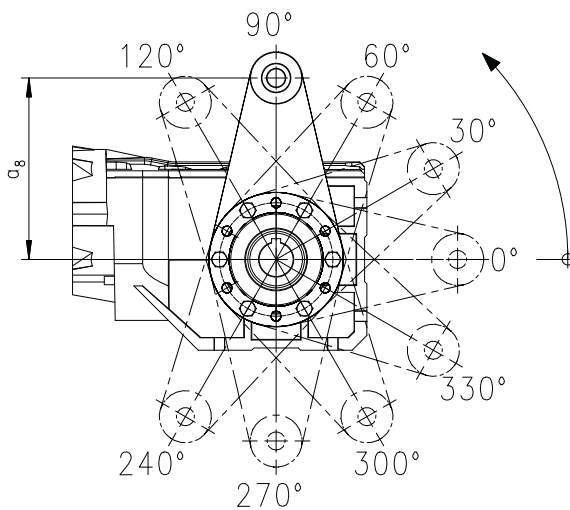
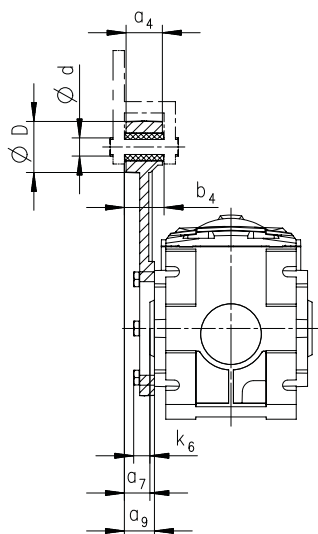
Gearboxes	Dimensions							
	a_4	a_8	a_9	d	D	p_8	p_9	k_6
	mm	mm	mm	mm	mm	mm	mm	mm
g500-B45	12.0	100	8.0	8.0	20,0	115	42.0	9.0
g500-B110	13.0	110	9.0	10.0	25.0	128	54.0	11.0



Product extensions

Torque plates

g500-B240 ... B600

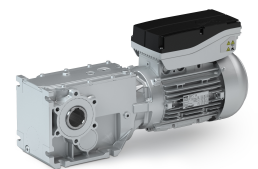


e4001538-00

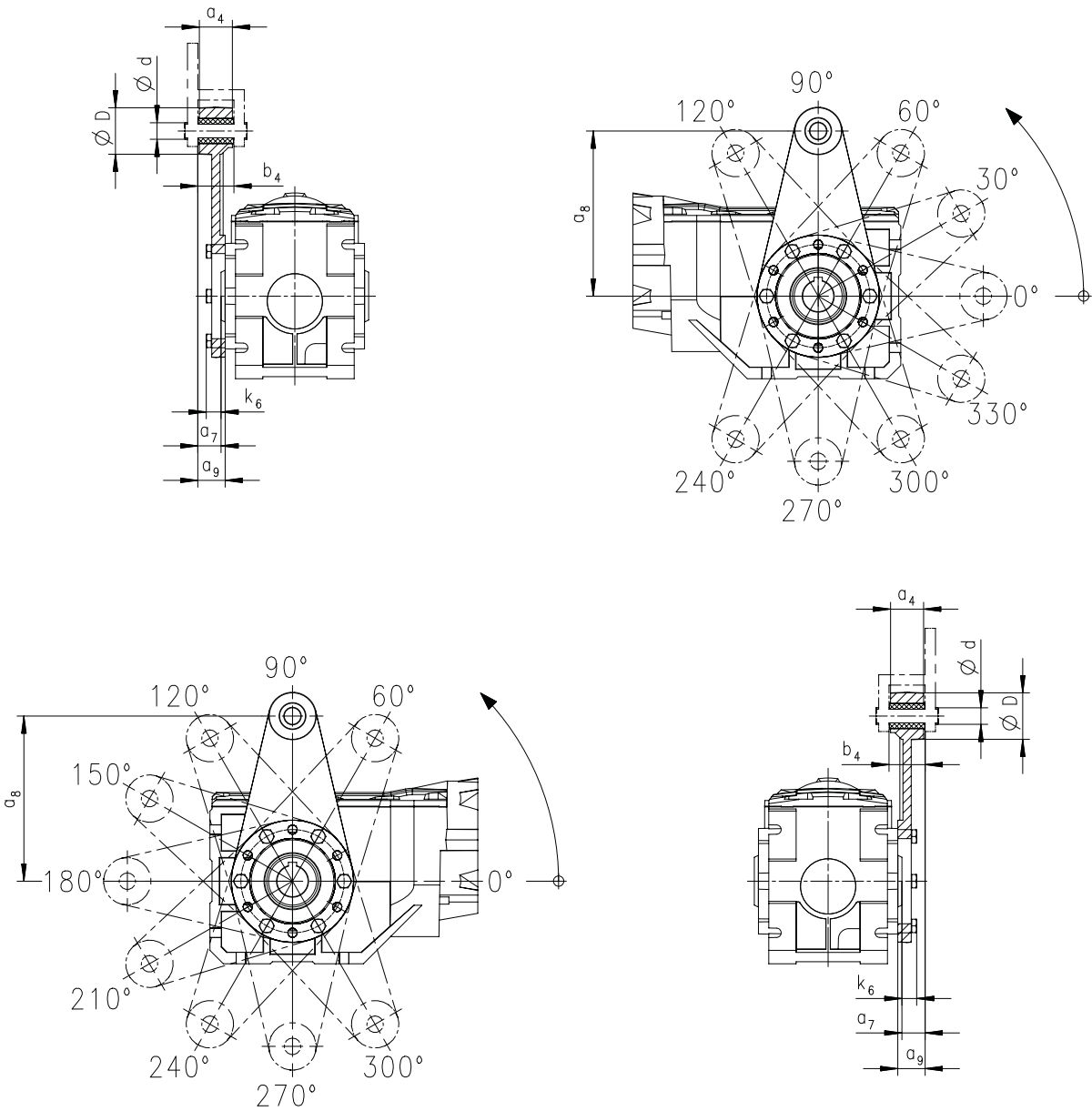
Gearboxes	Dimensions							
	a ₄	a ₇	a ₈	a ₉	b ₄	d	D	k ₆
	mm	mm	mm	mm	mm	mm	mm	mm
g500-B240	34.0	23.5	160	27.5	38.5	16.0	45.0	15.0
g500-B450	40,0	29.0	200	32.0	44.5	20,0	50.0	18.0
g500-B600	38.0	26.5	200	31.5	40,0	20,0	50.0	19.0

Product extensions

Torque plates

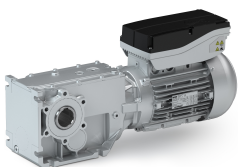


g500-B820 ... B1500

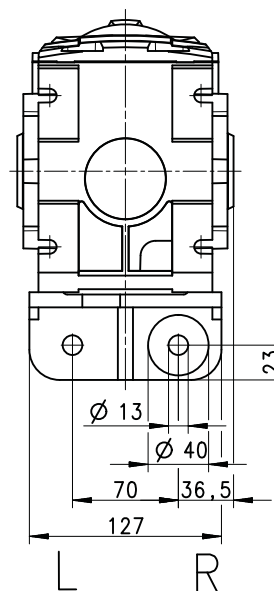
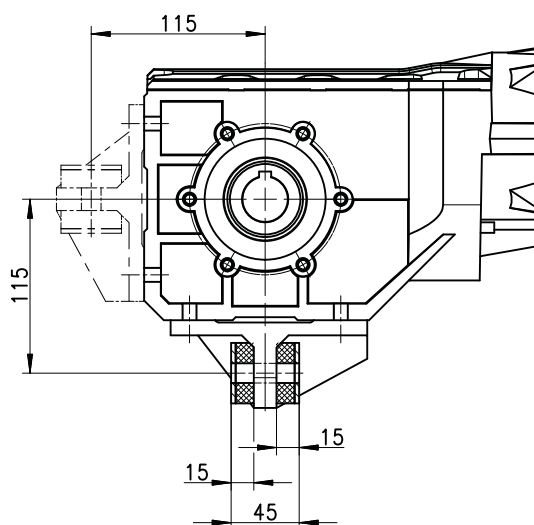


e4001538-00

Gearboxes	Dimensions							
	a ₄	a ₇	a ₈	a ₉	b ₄	d	D	k ₆
	mm	mm	mm	mm	mm	mm	mm	mm
g500-B820	38.0	28.0	200	31.5	40,0	20,0	50.0	20.5
g500-B1500	44.0	32.0	250	36.0	46.0	25.0	65.0	24.0



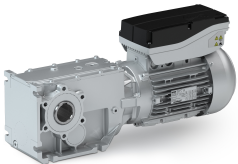
Torque plate on housing foot
g500-B240



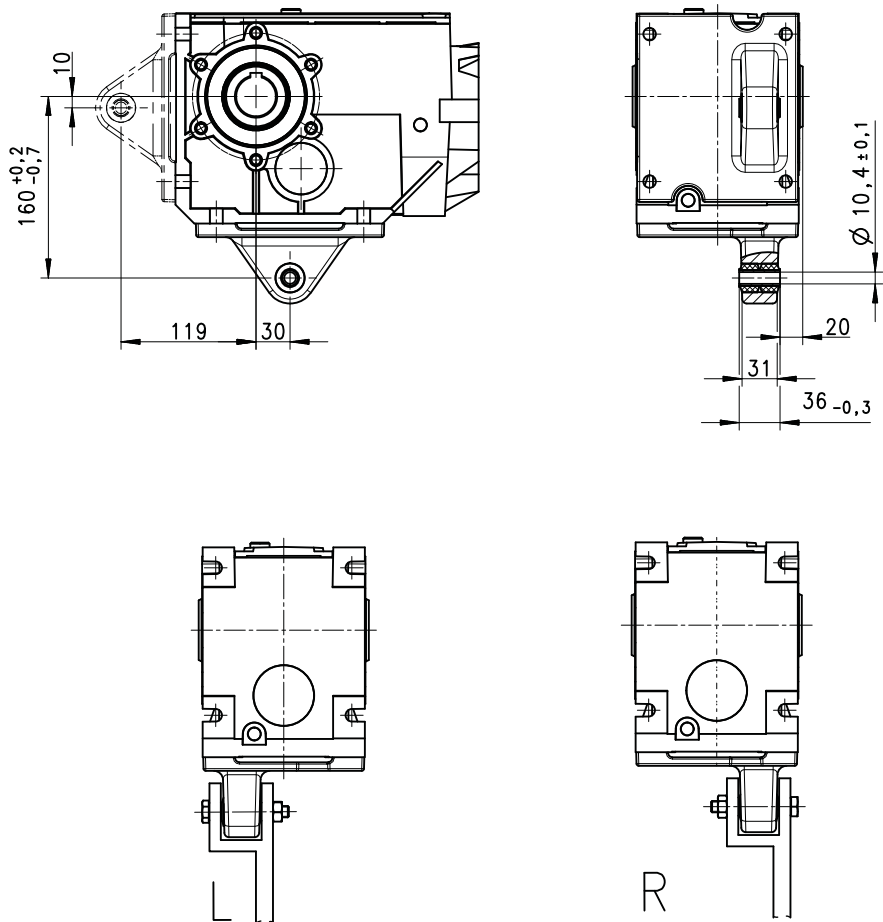
e4001541-01

Product extensions

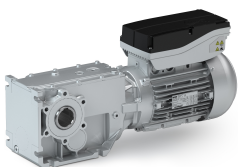
Torque plates



g500-B450



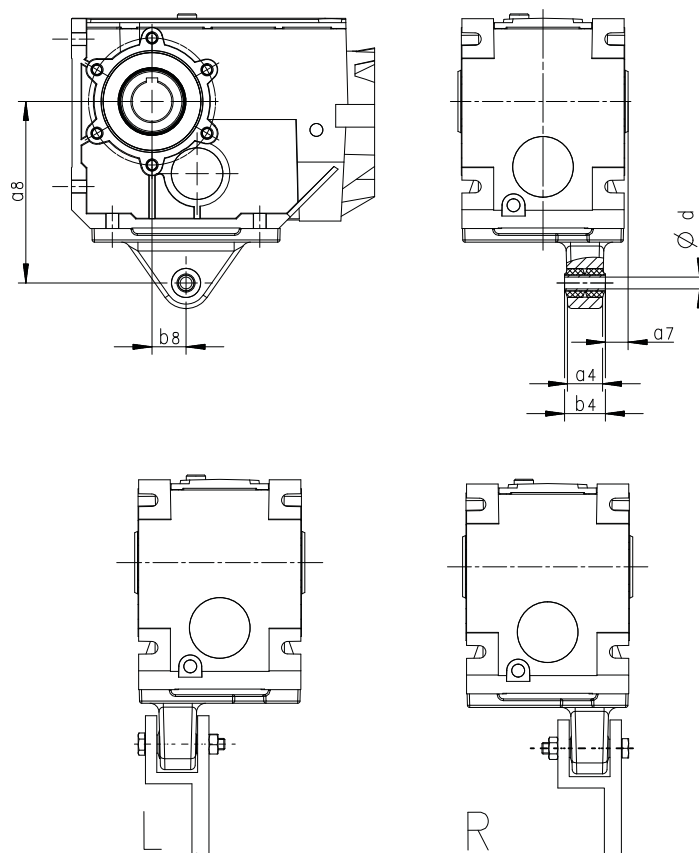
e4001554_01



Product extensions

Torque plates

g500-B600 ... B4300

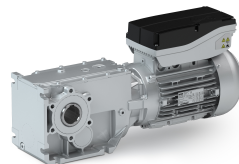


e4002718-01

Gearboxes	Dimensions					
	d	a ₈	b ₈	a ₄	b ₄	a ₇
	mm	mm	mm	mm	mm	mm
g500-B600	16.4	192	40,0	55.0	60.0	18.0
g500-B820	16.4	200	45.0	55.0	60.0	25.0
g500-B1500	16.4	250	52.5	55.0	60.0	25.0
g500-B2700	25.0	300	60.0	72.0	80.0	30.0
g500-B4300	25.0	350	70.0	92.0	100	40,0

Product extensions

Torque plates



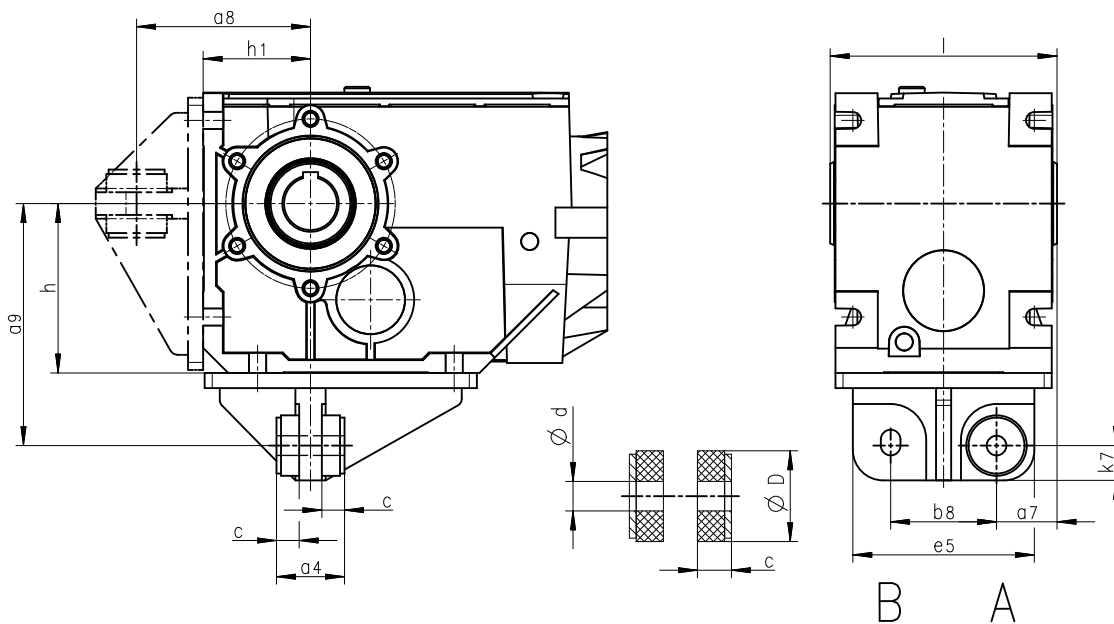
GKS compatible



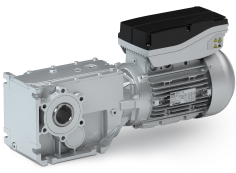
The connection dimensions are identical to the previous product GKS for these torque plates.

The GKS gearbox can be replaced by the gearbox from the g500-B series.

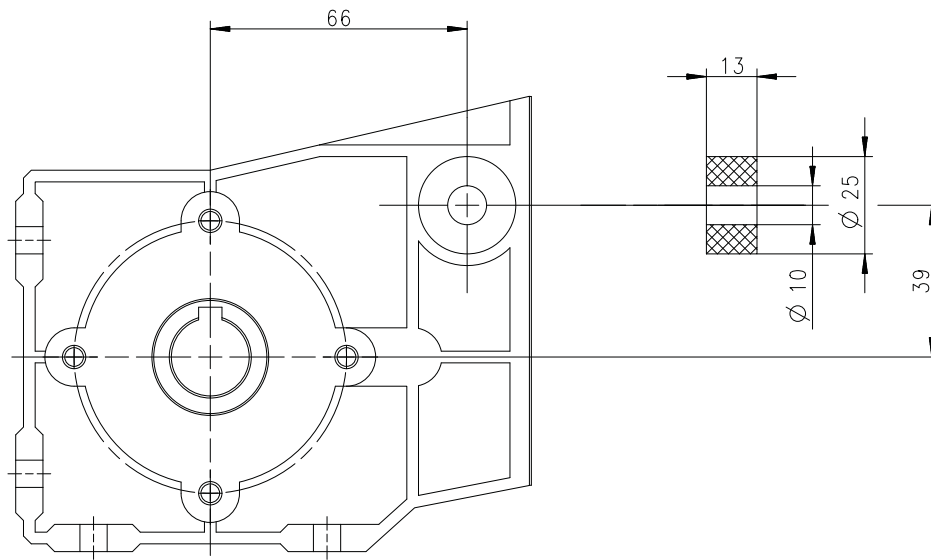
g500-B600 ... B4300



Gearboxes		Dimensions											
	Replacement for	a ₄	a ₇	a ₈	a ₉	b ₄	b ₈	c	Ø d	Ø D	e ₅	k ₇	k ₈
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
g500-B600	GKS06	72	45.0	145	195	72	80	27	17	50	135	28.0	26.0
g500-B820	GKS06	72	50.0	145	195	72	80	27	17	50	140	27.5	27.5
g500-B1500	GKS07	78	55.0	170	240	78	100	28	21	60	180	30.0	32.0
g500-B2700	GKS09	86	60.0	214	300	86	120	29	26	72	205	42.0	48.0
g500-B4300	GKS11	94	77.5	260	375	94	145	30	33	92	255	50.0	60.0

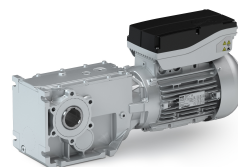


Rubber buffer for torque plate g500-B45



Product extensions

Shaft covers



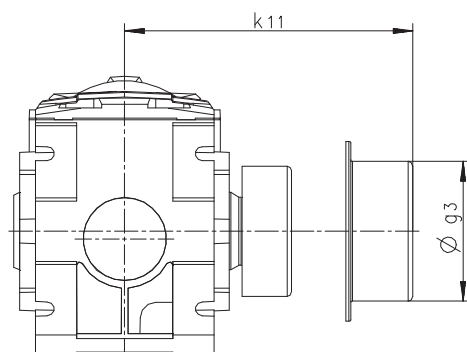
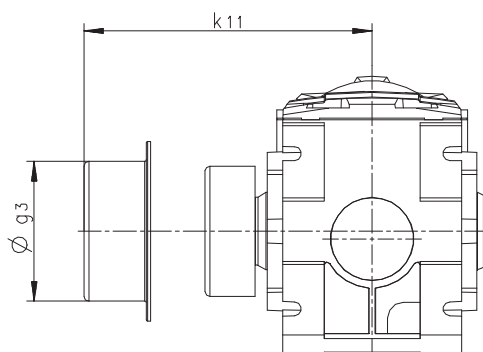
Shaft covers

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

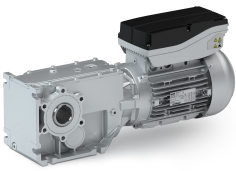
The hoseproof hollow shaft cover protects the hollow shaft from objects falling in. It is sealed by a flat gasket between cover and housing. Thus, the hollow shaft is protected from dust and water jets on this side.

Shrink disc cover

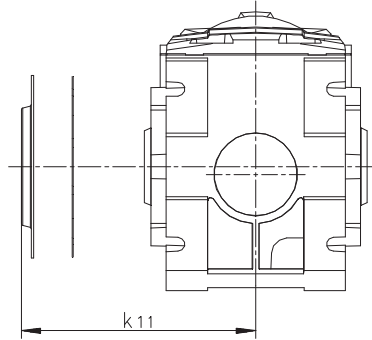
g500-B45 ... B4300



Product	Dimensions	
	g3	k11
	mm	mm
g500-B45	65.0	87.5
g500-B110	79.0	97.5
g500-B240	90.0	111
g500-B450	90.0	108
g500-B600	110	124
g500-B820	110	131
g500-B1500	128	148
g500-B2700	155	171
g500-B4300	188	205



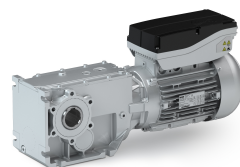
Hollow shaft cover, hoseproof g500-B45 B4300



Product	Dimensions
	k_{11}
	mm
g500-B45	55.0
g500-B110	65.0
g500-B240	75.0
g500-B450	79.5
g500-B600	90.0
g500-B820	97.0
g500-B1500	113
g500-B2700	131
g500-B4300	161

Product extensions

Motor connection
Connection via terminal box



Motor connection

The Lenze Smart Motor can be simply connected via connectors (QUICKON or M15 for power connection, M12 for control terminals).

The power connection can alternatively be established in the terminal box via cable glands using spring terminals.

The connections are kept easily accessible from the fan side.

► [Electrical installation](#) 39

Connection via terminal box

MSEMA terminal box		
Contact	Name	Meaning
1	L1	Mains connection Phase L1
2	L2	Mains connection Phase L2
3	L3	Mains connection Phase L3
PE	PE	PE conductor

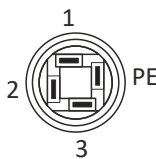
Connection via QUICKON V2 connector

The QUICKON connection enables fast and easy connection of motors. The system is easy to cable by means of a connecting cable with the QUICKON nut.



QUICKON V2 nuts and QUICKON V2 connectors with QUICKON V2 nuts are available as accessories.

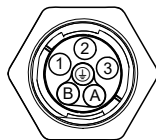
Mains connection X3



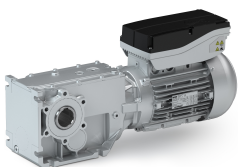
QUICKON V2		
Contact	Name	Meaning
1	L1	Mains connection Phase L1
2	L2	Mains connection Phase L2
3	L3	Mains connection Phase L3
4	PE	PE conductor

Connection via M15 connector

Mains connection X3



M15 power without temperature sensor		
Contact	Name	Meaning
A		Not assigned
B		
1	L1	Mains connection Phase L1
2	L2	Mains connection Phase L2
3	L3	Mains connection Phase L3
PE	PE	PE conductor



Product extensions

Motor connection
Connection via M12 connector

Connection via M12 connector

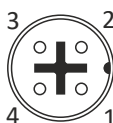
Control connections with M12 connectors

Via the digital inputs of the two M12 control connections, it is possible to switch between different speeds and directions of rotation. Up to 5 different speed settings (e. g. creep speed and normal speed in both directions, as well as stop) can thus be selected. In addition, the operating state is indicated via a digital output.

NOTICE

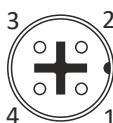
In the "DI/DO-GND bridged" version, the masses of the control terminal X1 and X2 (GND-I and GND-O) are connected to each other. If only one speed is used, the connection to X2 is sufficient.

Control connection X1



M12 A coded X1		
Contact	Name	Meaning
1	n.c.	
2	DI2	Digital input 2
3	GND-I	Ground of digital input
4	DI1	Digital input 1

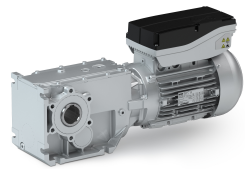
Control connection X2



M12 A coded X2		
Contact	Name	Meaning
1	24V	24 V supply (DO1 supply)
2	DI3	Digital input 3 (reference X1;3 = GND-I)
4	DO1	Digital output 1
3	GND-O	Ground of digital output

Connection data - digital inputs for control connection X1/X2

Name	Supply voltage	Internal resistance
	V_{in}	R_i
	DC V	Ω
DI1	24 (19.2 ... 28.8)	5600
DI2		
DI3		



Brakes

The motors can be ordered with a spring-applied brake to allow stopping or deceleration of the moving masses. The spring-applied brake operates according to the closed-circuit principle. In the deenergized state, the brake is closed, preventing possible movement of the motor shaft or the load after switching off or in the event of a power failure.

CAUTION!

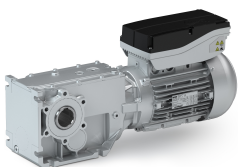
The brake may not be used as a safety element (particularly with hoist axes) without additional measures being implemented.

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 friction surfaces must always be free from oil and grease because even small amounts of grease or oil will considerably reduce the braking torque.

Manual release lever

To make positioning and maintenance work easier, the holding and application brake can be ordered with a manual release lever. By using the manual release lever, the brake can be released manually in deenergized operating state.

A lockable manual release lever can be ordered as an option. This is equipped with a clamping device to hold the brake in the released position.



Product extensions

Brakes
Spring-applied holding brake

Spring-applied holding brake

LongLife version

The application brake is available in a LongLife version for applications with very high switching frequencies. The standard design has a guaranteed service life for the brake mechanism of 1 million switching cycles.

The LongLife version has a reinforced brake mechanism and up to 10 million repeating or 15 million reversing switching cycles possible.

Versions	
Standard	1 x 10 ⁶ switching cycles, repeating 1 x 10 ⁶ switching cycles, repeating
Long-life	10 x 10 ⁶ Switching cycles, repeating 15 x 10 ⁶ Switching cycles, repeating
Control	Via internal electronics Holding brake, active when equipment deenergized
Degree of protection	
Without manual release lever	IP55
With manual release lever	IP54
Friction lining	Low-wear
Brake rotor	Low noise
Brake design	Not adjustable

Braking torque assignment

Motor	Standard design	
	06	08
	Nm	Nm
MSEMA 063-42	4	
MSEMA 080-32		8

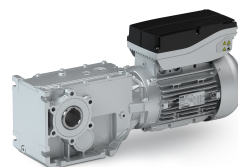
Motor	LongLife design	
	06	08
	Nm	Nm
MSEMA 063-42	4	
MSEMA 080-32		8

Rated data, Standard design, IP54/55

Holding brake		06	08
Power input			
180 V DC	W	20	25
Moment of inertia	kgcm ²	0.15	0.61
Braking torque is static	Nm	4	8
Min. static braking torque tolerance	%	-25	-25
Max. static braking torque tolerance	%	35	35
Reversing cycles		1x 10 ⁶	1x 10 ⁶
Repetitive cycles		1x 10 ⁶	1x 10 ⁶
Maximum switching energy	J	3000	7500

Product extensions

Brakes
Spring-applied holding brake



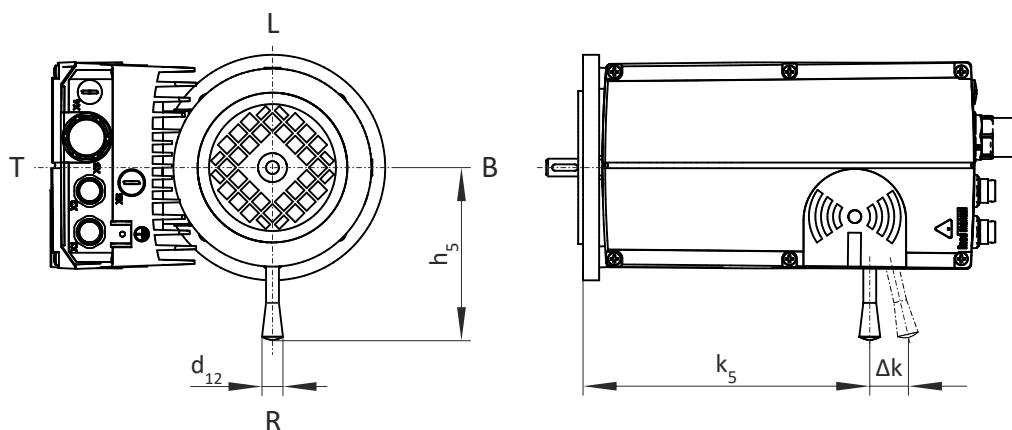
Rated data, LongLife design, IP54/55

Holding brake		06	08
Power input			
180 V DC	W	20	25
Moment of inertia	kgcm ²	0.15	0.61
Braking torque is static	Nm	4	8
Min. static braking torque tolerance	%	-25	-25
Max. static braking torque tolerance	%	35	35
Reversing cycles		15x 10 ⁶	15x 10 ⁶
Repetitive cycles		10x 10 ⁶	10x 10 ⁶
Maximum switching energy	J	3000	7500

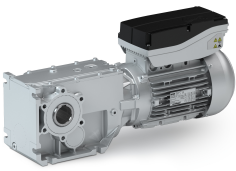
Manual release lever



When ordering, specify the position of the manual release lever (T, L, R or B).
Terminal box and manual release lever are not possible in the same position!



Motor	Brake size	Dimensions			
		k ₅	Δ k	h ₅	d ₁₂
		mm			
MSEMABR063-42	06	178	29	107	13
MSEMABR080-32	08	224	27	116	13



Brake resistors

The Lenze Smart Motor can be braked in a guided manner along a ramp. If large amounts of regenerative energy are produced during braking, they must be absorbed by a brake resistor.

In addition to a brake resistor (10 W) mounted inside the terminal box, another brake resistor (20 W) can also be connected externally alongside the terminal box via the terminal X4.

These brake resistors are mounted and parameterized at the factory.

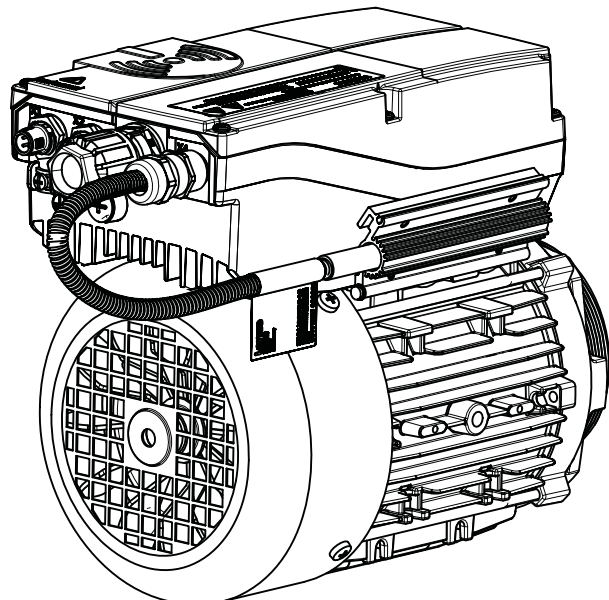
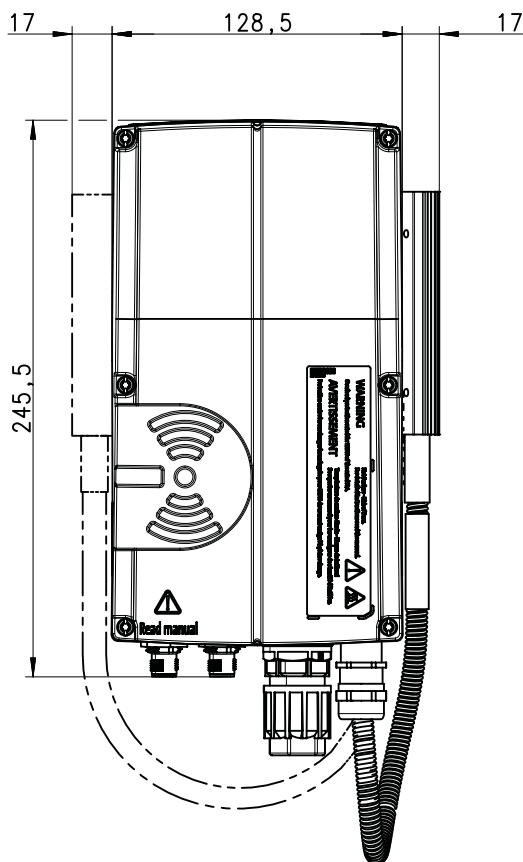
NOTICE

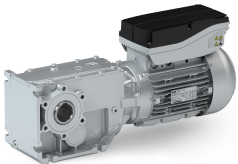
Do not fall below the minimally connectable brake resistance of 180 Ω at the terminal "X4".

If an external brake is used, the power can be increased from 20 W to max. 40 W if the medium speed is > 1000 rpm (arithmetic mean of the process speeds in relation to the motor speed, without standstill).

Motor		MSEMA□□063-42 MSEMA□□080-32	
Brake resistor		Internal	External
Order code			ERBU390R020W
Rated resistance	Ω	400	390
Rated power	W	10	20
Thermal capacity	kWs	0.100	0.250
Mass	kg	0.05	0.17

Terminal box dimensions with external brake resistor





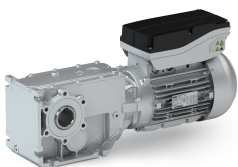
Accessories

NFC adapter



The settings of the Lenze Smart Products can be made with an NFC-capable Android smartphone or a PC. If a PC is used to make the settings, the »EASY Starter« engineering tool must be used to do this (»EASY Advanced« software licence). Communication takes place via the NFC adapter. The adapter is connected to the PC at the USB interface.

NFC adapter		
Type	VPE	Order code
	Piece	
Voltage supply on the input side via USB connection of the PC Diagnostic LEDs supports hot plugging	1	EZAETF001



QUICKON connector

With the QUICKONconnectors, the mains connection is available in a pluggable version with a commonly used standard.

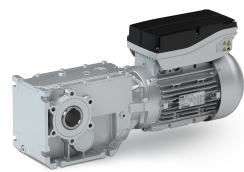
Nuts for QUICKON connection

For fast and easy QUICKON connection, the following nuts (counterparts) can be fitted to the connecting cable. No special tools are needed for installation, only standard tools for stripping the cable.

NOTICE

In case of multiple connection frequency (>10 times), a QUICKON V2 plug with nut must be used instead of a QUICKON V2 nut.

QUICKON V2 components for cable cross-section 1 ... 2.5 mm²		
Order code	Type	
QUICKON V2 nut		
EWS0103/M		• Cable diameter: 6 ... 10 mm • Connection frequency: max. 10 • 5 pieces
EWS0104/M		• Cable diameter: 9 ... 14 mm • Connection frequency: max. 10 • 5 pieces
QUICKON V2 connector with nut		
EWS0105/M		• Cable diameter: 6 ... 10 mm • Connection frequency: ≥ 50 • 5 pieces
EWS0106/M		• Cable diameter: 9 ... 14 mm • Connection frequency: ≥ 50 • 5 pieces
QUICKON V2 H-distributor		
EWS0110		• Number of poles: 4 • Connection cross-section: 2.5 mm² • Cable diameter: 6 ... 14 mm • Connection frequency: ≥ 50 • The scope of supply does not include QUICKON V2 nuts. These must be ordered additionally (EWS0103/M, EWS0104/M).
QUICKON V2 T distributor		
EWS0111		• Number of poles: 4 • Connection cross-section: 2.5 mm² • Cable diameter: 9 ... 14 mm • Connection frequency: ≥ 50 • Two QUICKON V2 nuts are included in the scope of supply. Others must be ordered additionally (EWS0103/M, EWS0104/M).
QUICKON V2 socket wrench		
EWS0112		• Suitable for QUICKON V2 nuts EWS0103/M ... EWS0106/M • Wrench size: 22 mm
QUICKON V2 protection cover		
EWS0113		Suitable for QUICKON V2 distributor EWS0110, EWS0111 • Degree of protection: IP68 • Eyelet for fastening



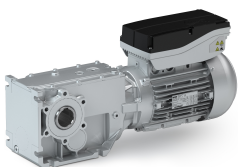
QUICKON V2 components for cable cross-section 2.5 ... 6 mm ²		
Order code	Type	
QUICKON V2 H-distributor		
EWS0114		• Number of poles: 5 • Connection cross-section: 6 mm² • Cable diameter: 9 ... 20 mm • Connection frequency: ≥ 50 • No V2 nuts are included QUICKON in the scope of supply. These need to be ordered separately (EWS0116, EWS0117).
QUICKON V2 T-distributor		
EWS0115		• Number of poles: 5 • Connection cross-section: 6 mm² • Cable diameter: 12 ... 20 mm • Connection frequency: ≥ 50 • Two V2 nuts are included QUICKON in the scope of supply. Any additional nuts will need to be ordered separately (EWS0116, EWS0117).
QUICKON V2 nut		
EWS0116		• Cable diameter: 12 ... 20 mm • Connection cross-section: 6 mm² • Connection frequency: max. 10 • 5 pieces
EWS0117		• Cable diameter: 9 ... 14 mm • Connection cross-section: 6 mm² • Connection frequency: max. 10 • 5 pieces
QUICKON V2 protection cap		
EWS0118		Fits QUICKON V2 distributor EWS0114, EWS0115 • Degree of protection: IP68 • Fastening eyelet

UMCLN_SGG_100181



The following connector can be mounted to the connecting cable for the M15 connection.

M15 connector		
Type	VPE	Order code
	Piece	
Connection cross-section: 2.5 mm ² Can be assembled in the field Plastics without shielding Crimp sockets included in the scope of supply	5	EWS0109/M

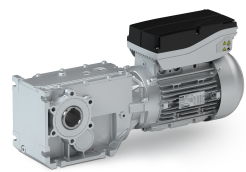


Product codes

Gearbox product code

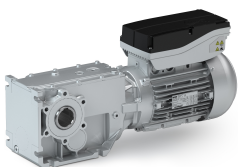
Example		G	50	A	B	045	M	H	B	R	2	C	1A
Product type	Gearboxes	G											
Product family			50										
Generation				A B									
Gearbox type	Bevel gearbox				B								
Output torque	45 Nm					045							
	110 Nm					111							
	240 Nm					124							
	450 Nm					145							
	600 Nm					160							
	820 Nm					182							
	1500 Nm					215							
	2700 Nm					227							
	4300 Nm					243							
	8000 Nm					280							
	13000 Nm					313							
	20000 Nm					320							
Type of construction	Geared motor						M						
	Gearboxes						N						
Shaft type	Solid shaft with featherkey							V					
	Hollow shaft with keyway							H					
	Hollow shaft with shrink disc							S					
Housing type	Foot mounting + centering								A				
	Foot mounting								B				
	With centering								C				
	Threaded pitch circle								D				
Flange mounting	Without flange									R			
	Flange with through holes									K			
Number of stages	2-stage										2		
	3-stage										3		
	4-stage										4		
Motor mounting	Integrated motor											C	
	IEC adapter with jaw coupling											N T	
	IEC adapter with plug-in hollow shaft											H	
	NEMA adapter with jaw coupling											A	
	NEMA adapter with plug-in hollow shaft											B	
	Servomotor adapter with plug-in hollow shaft											S	
	Servomotor adapter with jaw coupling											E D G	
Drive size													1A ... □H 08 ... 82

Product codes



Motor product code

Example		M	S	E	MA	XX	063	-	4	2	C1	C
Meaning	Variant	Product code										
Product family	Motor	M										
Product type	Smart Motor		S									
Cooling	Integral fan			E								
Internal key					MA							
Built-on accessories	Without built-on accessories					XX						
	Brake					BR						
Size							063 080					
Overall length								-	3 4			
Number of pole pairs	4-pole motors									2		
Design types	Internal key										C1	
Approval	CE; UKCA											C
	CE; UKCA; cULus											L
	CE; UKCA; CCC											3
	CE; UKCA; cULus; CCC											5



Motor data

Rated data

Motor data

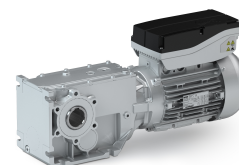
Rated data

Motor			MSEMA			
			063-42		080-32	
Rated mains voltage		V	400	480	400	480
Rated power	P _{rated}	kW	0.476		1.361	
Verstellbereich		rpm	-2600 ... -600 / 0/ 600 ... 2600			
Rated current	I _{rated}	A	1	0.8	2.8	2.3
Rated torque	M _{rated}	Nm	1.75		5.00	
Starting torque	M _a	Nm	7		20	
Power factor	cos φ		0.99			
Efficiency						
at 75 % P _{rated}		%	65		73	
at 100 % P _{rated}		%	66		74	
Moment of inertia	J	kgcm²	3.70		26.0	
Weight	m	kg	5.9		12.5	

Ecodesign Directive

Product information acc. to REGULATION (EU) 2019/1781 (ANNEX I, Section 4)

Rated efficiency at full load	η _{rated}	%	-	-
Efficiency at 75 % rated load	η	%	-	-
Efficiency at 50 % rated load	η	%	-	-
Efficiency level			-	
Name of the manufacturer			Lenze SE · Hans-Lenze-Str. 1 · 31855 Aerzen · GERMANY	
Commercial register number			Hannover HRB 204803	
Model identifier of the product			MSEMA□□063-42	MSEMA□□080-32
Number of poles of the motor			-	
Rated output power	P _{rated}	kW	-	
Rated input frequency	f _{rated}	Hz	-	-
Rated voltage	V _{rated}	V	-	-
Rated speed	n _{rated}	min ⁻¹	-	-
Number of motor phases			-	
Altitudes above sea level		m	...	
Ambient air temperature		°C	...	
Maximum operating temperature		°C	-	
Potentially explosive atmospheres			-	
LMT_EDD_EXCEP_REASON			Die Motoren sind mit einer integrierten Drehzahlregelung ausgestattet (Kompaktantriebe) und die Energieeffizienz der Motoren kann nicht unabhängig von der Drehzahlregelung geprüft werden.	



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.



Lenze products are not subject to 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] , but some 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] . The disposal route, which is separate from household waste, is indicated by corresponding labels with the "crossed-out trash can".
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.

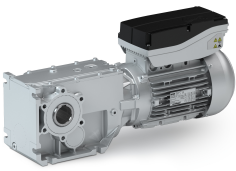
- Coordinate professional disposal with your waste disposal company.
- Separate mechanical and electrical components, packaging, hazardous waste (e.g. gear oils) and batteries/rechargeable batteries wherever possible.
- Dispose of the separated waste in an environmentally sound and proper manner (no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

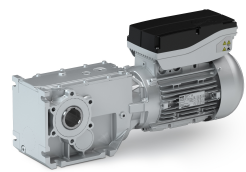
Operating modes S1 ... S10 as specified by EN 60034-1 describe the basic stress of an electrical machine.

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).

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