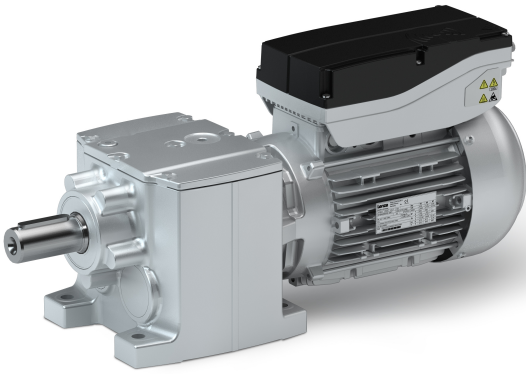




Mains-operated geared motors

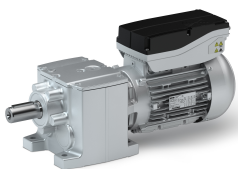
g500-H helical geared motor / Smart Motor m300-E

Contents

About this document	5
Document description	5
Further documents	5
Notations and conventions	6
Product information	7
Product description	7
Identification of the products	10
Features	11
The modular system	12
Designs	15
Mounting positions	16
Information on project planning	19
Safety instructions	19
Basic safety instructions	19
Application as directed	19
Residual hazards	20
Drive dimensioning	22
Final configuration	24
Surface and corrosion protection	25
Lubricants	26
Ventilation	27
Mechanical installation	33
Important notes	33
Transport	33
Installation	33
Electrical installation	34
Important notes	34
Connection according to EN	35
Connection according to cULus	38
Technical data	42
Notes regarding the given data	42
Standards and operating conditions	43
Conformities and approvals	43
Protection of persons and device protection	44
EMC data	44
Environmental conditions	45
Electrical supply conditions	45
Data overview	46
Radial forces and axial forces	56
Selection tables	61
Dimensions	67
Basic dimensions	68
Gearbox with pre-stage	103
Additional lengths	103
Weights	104
Basic weights	104
Additional weights	104

Contents

Product extensions	105
Motor connection	105
Connection via terminal box	105
Connection via QUICKON V2 connector	105
Connection via M15 connector	106
Connection via M12 connector	107
Brakes	108
Spring-applied holding brake	109
Brake resistors	111
Accessories	112
NFC adapter	112
QUICKON connector	113
UMCLN_SGG_100181	114
Product codes	115
Motor data	117
Rated data	117
Ecodesign Directive	117
Environmental notes and recycling	118
Appendix	119
Good to know	119
Operating modes of the motor	119
Enclosures	120



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

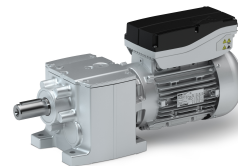


Information and tools with regard to the Lenze products can be found on the Internet:

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!

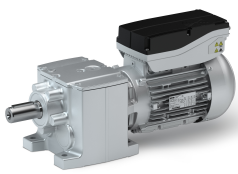
Indicates an extremely hazardous situation. Failure to comply with this instruction may result in severe irreparable injury and even death.

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 helical 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 robust helical 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 an output torque of up to 3000 Nm and a ratio of up to $i = 3529$.

Versions

- Fine-scaling of size/torque provides for an optimum machine adaptation
- Market standard shaft dimensions and standardized flanges for easy machine integration
- High efficiency

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.

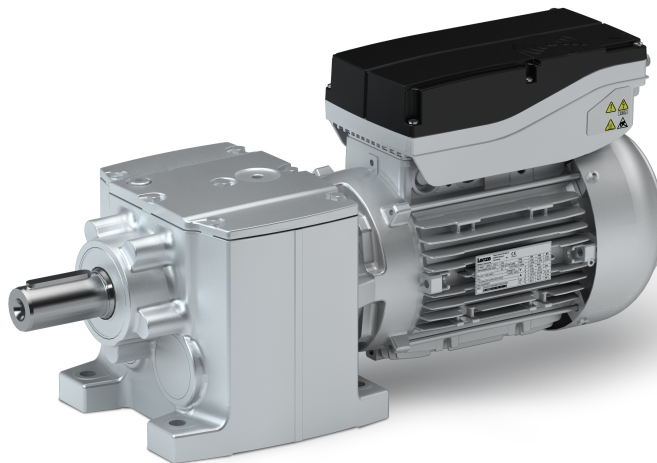


Fig. 1: Smart Motor MSEMXX080-32 - helical gearbox g500-H450

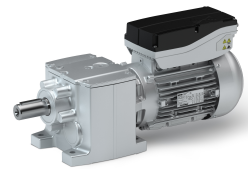
Easy adjustment

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

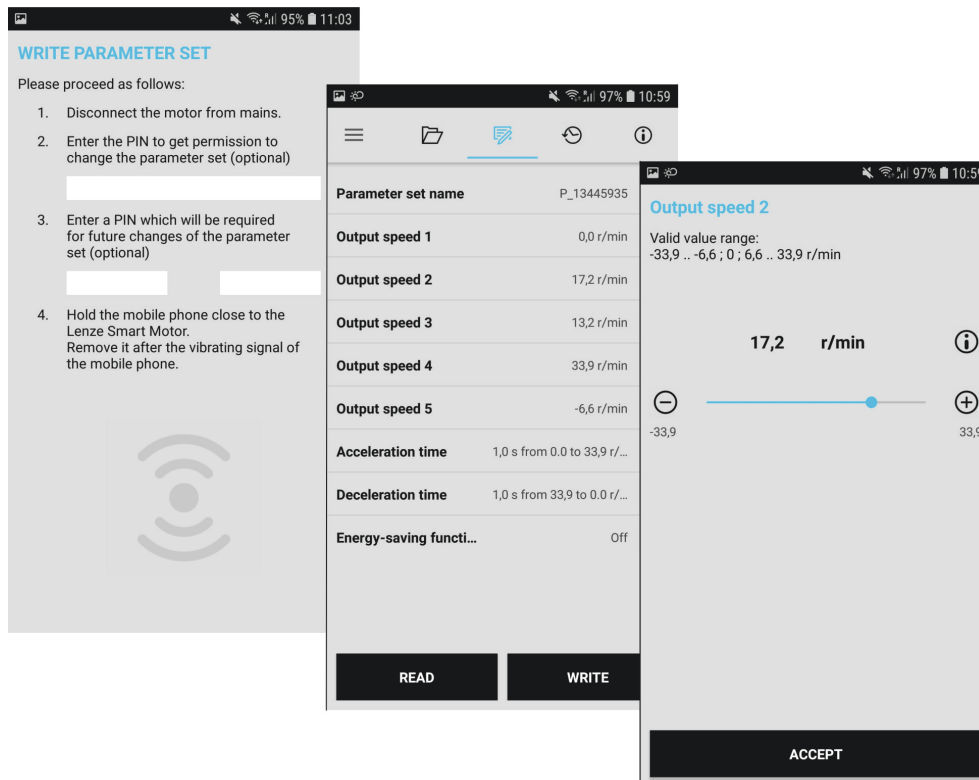
- Name of data record (e. g. the designation of the drive in your documentation)
- Speed and rotating direction 1 (also controllable without digital inputs)
- Speed and rotating direction 2-5 (controllable by means of digital inputs)
- Acceleration time
- Deceleration time
- Energy-saving function

Readable data

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

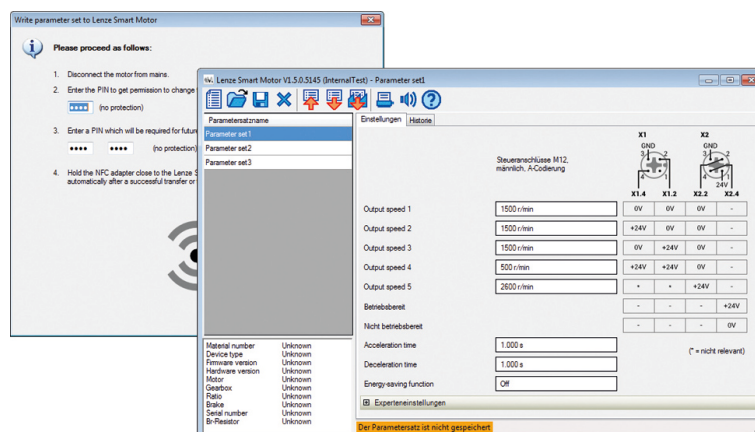
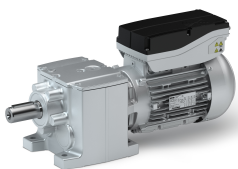
Adjustment by means of a smartphone

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:

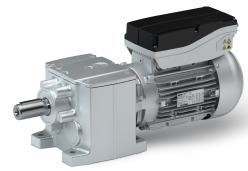
- In all 3-phase networks with 400 ... 480 V supply voltage an a mains frequency of 50 ... 60 Hz
- At ambient temperatures of -30 ... +40 °C
- Is suitable for many approvals

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

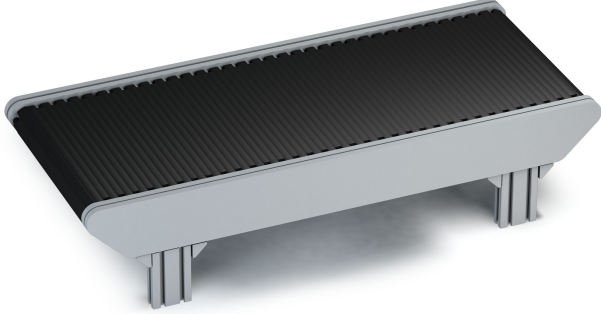
If very little torque is needed in the partial-load operational range, the integrated energy saving function can be used to optimize the energy absorption of the drive.

Product information

Identification of the products



Application examples

Roller conveyors with belt ejector	Belt conveyors
	

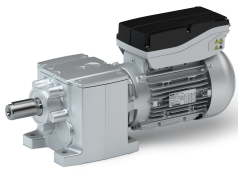
Identification of the products

Gearbox product name

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

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)

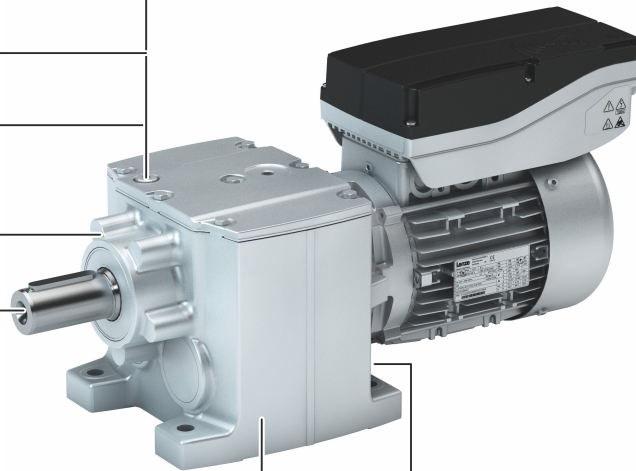
Remove oil control plug

(depending on the mounting position)

Output flange

Output shaft

Housing type



Oil drain plug

(depending on the mounting position)

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)

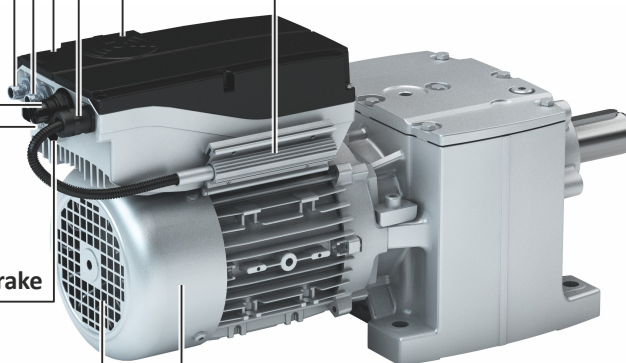
Cooling

Integral fan

Adjustment of speeds

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

External brake resistor

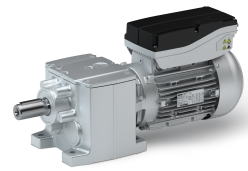


Spring-applied brake

Standard
LongLife
Manual release lever

Product information

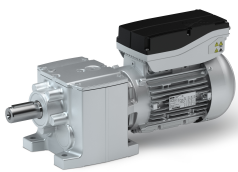
The modular system



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

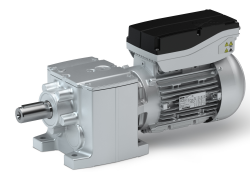
The modular system

Geared motors up to 450 Nm

Gearboxes		g500-H45	g500-H100	g500-H140	g500-H210	g500-H320	g500-H450
Min. motor assignment		MSEMA□□					
		063-42	063-42	063-42	063-42	063-42	063-42
Max. motor assignment		MSEMA□□					
		063-42	080-32	080-32	080-32	080-32	080-32
Technical data							
Max. output torque	Nm	45	100	140	210	320	450
Min. drive torque	Nm	1.75	1.75	1.75	1.75	1.75	1.75
Max. drive torque	Nm	1.75	5.0	5.0	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 OKS					
Output shaft							
Solid shaft with featherkey	mm	14 x 28 20 x 40	20 x 40	25 x 50	25 x 50	30 x 60	30 x 60 35 x 70
Solid shaft without keyway	mm	20 x 40	20 x 40	25 x 50	25 x 50	30 x 60	35 x 70
Shaft material		Steel Stainless steel					
Shaft sealing ring material		NBR FKM (Viton)					
Output shaft bearing		Standard Reinforced					
Gearbox design		With foot (VBR) With foot and centering (VAR) With foot and output flange (VAK) With centering (VCR) With output flange (VCK) With output flange (VCP)					
Output flange	mm	120/140/160	120/140/160	120/140/160	120/140 160/200	160/200	160/200/250
Lubricant		Mineral oil Synthetic oil Food-compatible oil					
Cooling		Self-ventilated					
Motor connection							
Power connection		Terminal box QUICKON V2 connector M15 connector					
Control terminal		M12 connector					
Spring-applied brake							
Version		Without Standard LongLife Without/with manual release lever					
Brake resistor		Without Integrated External					
Feedback		Without					
Temperature monitoring		Internal					

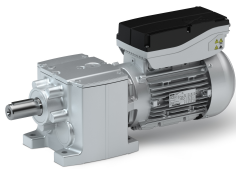
Product information

The modular system



Geared motors 600 Nm to 3000 Nm

Gearboxes		g500-H600	g500-H850	g500-H1500	g500-H3000
Min. motor assignment		MSEMA□□			
		063-42	063-42	063-42	063-42
Max. motor assignment		MSEMA□□			
		080-32	080-32	080-32	080-32
Technical data					
Max. output torque	Nm	600	850	1500	3000
Min. drive torque	Nm	1.75	1.75	1.75	1.75
Max. drive torque	Nm	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 OKS			
Output shaft					
Solid shaft with featherkey	mm	35 x 70 40 x 80	40 x 80	50 x 100	60 x 120
Solid shaft without keyway	mm	35 x 70	40 x 80	50 x 100	60 x 120
Shaft material		Steel Stainless steel			
Shaft sealing ring material		NBR FKM (Viton)			
Output shaft bearing		Standard Reinforced			
Gearbox design		With foot (VBR) With foot and centering (VAR) With foot and output flange (VAK) With centering (VCR) With output flange (VCK)			
Output flange	mm	200/250	250/300	250/300/350	300/350/450
Lubricant		Mineral oil Synthetic oil Food-compatible oil			
Cooling		Self-ventilated			
Motor connection					
Power connection		Terminal box QUICKON V2 connector M15 connector			
Control terminal		M12 connector			
Spring-applied brake					
Version		Without Standard LongLife Without/with manual release lever			
Brake resistor		Without Integrated External			
Feedback		Without			
Temperature monitoring		Internal			



Designs

Gearbox designs

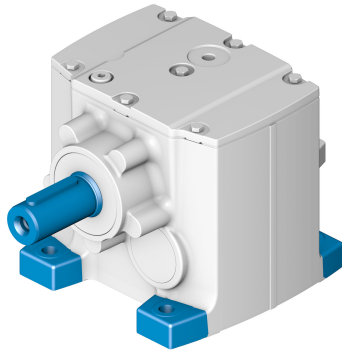


Observe the available gearbox designs!

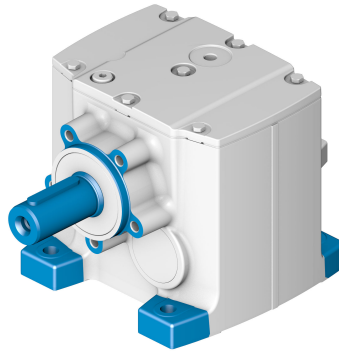
► [The modular system](#)  12

The VCP design (reinforced flange) is suitable for absorbing high radial and axial forces  56 .

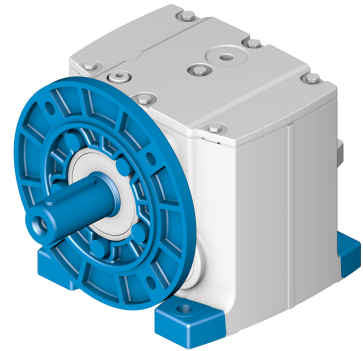
Solid shaft, with foot



Without centring (VBR)

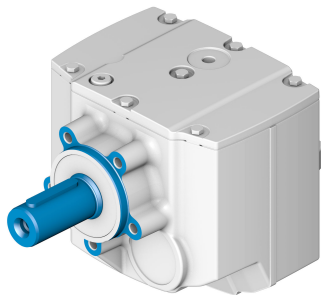


With centring (VAR)

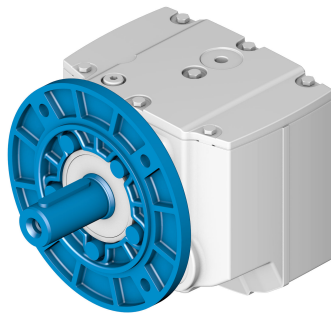


Flange with through holes (VAK)

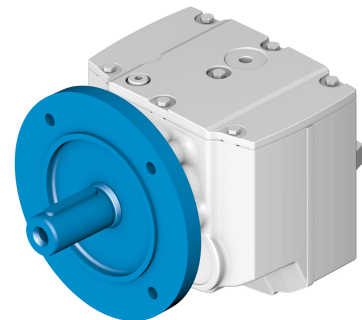
Solid shaft, without foot



With centering (VCR)



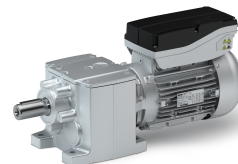
Flange with through holes (VCK)



Reinforced flange with through holes (VCP)

Product information

The modular system
Mounting positions

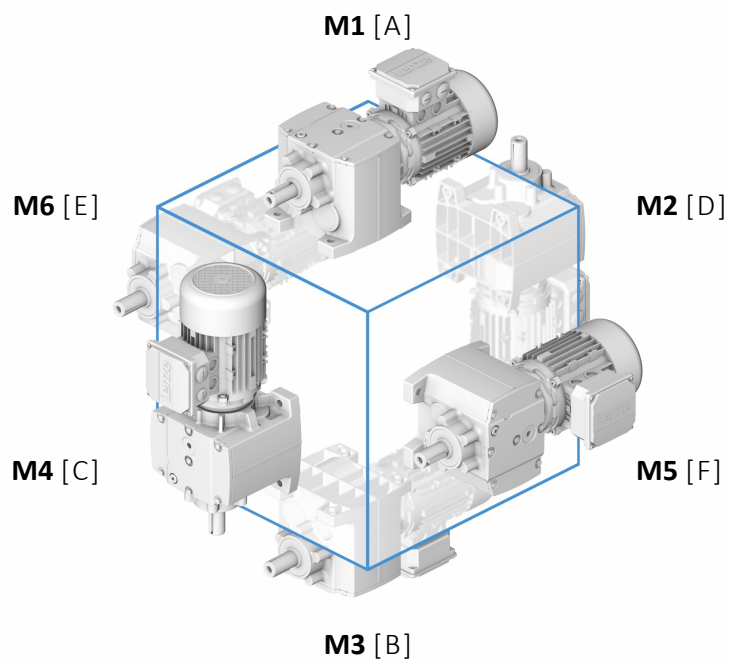


Mounting positions

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:

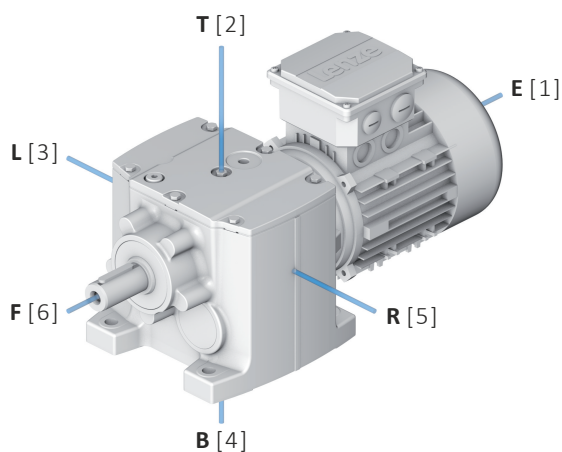
- g500-H45 in mounting position M1-M6 (A-F)
- g500-H100 ... H450 in mounting position M1/5/6 (AEF)



Defined positions on the geared motor

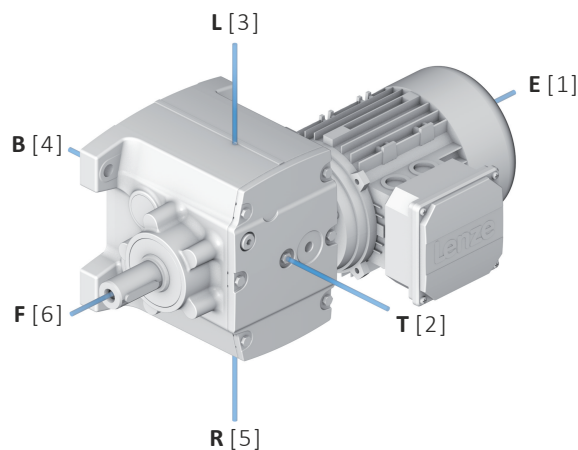
All of the defined positions refer to the areas on the geared motor in mounting position **M1 (A)**.

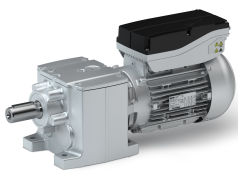
Position of the built-on accessories with T, L, R, B, F, E (Top, Left, Right, Bottom, Front and End)



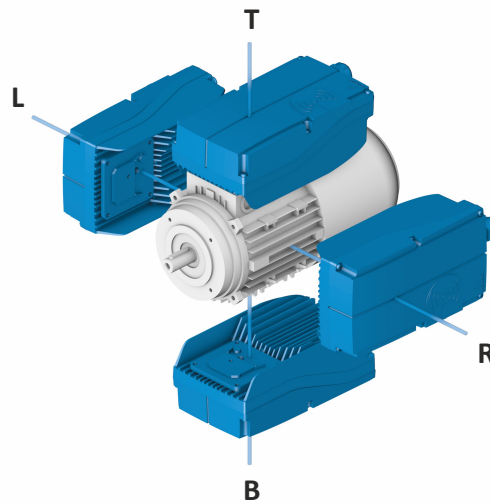
If the geared motor is rotated into a different mounting position M2 ... M6 (B...F), the defined positions on the geared motor are retained.

Example: Mounting position M5 (F)





Position of the terminal boxes



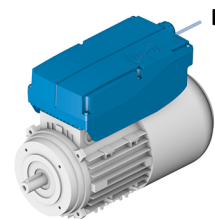
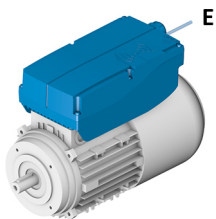
Positions on the terminal box

Mains connection

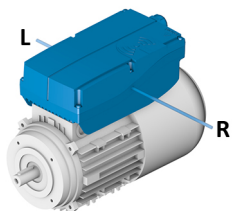
Cable gland for terminal box
QUICKON V2 connector
M15 connectors

Control terminal

M12 connector

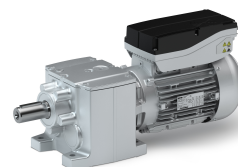


External brake resistor

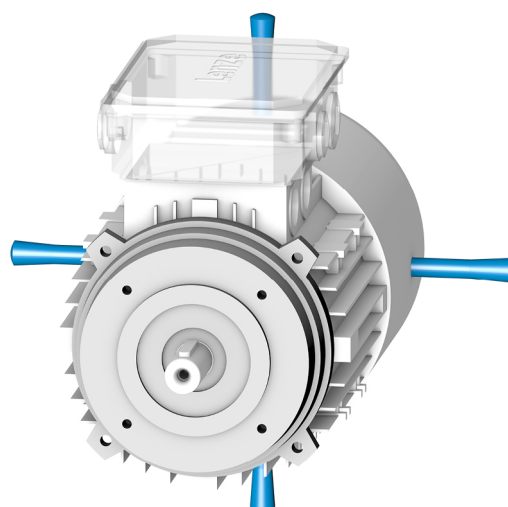
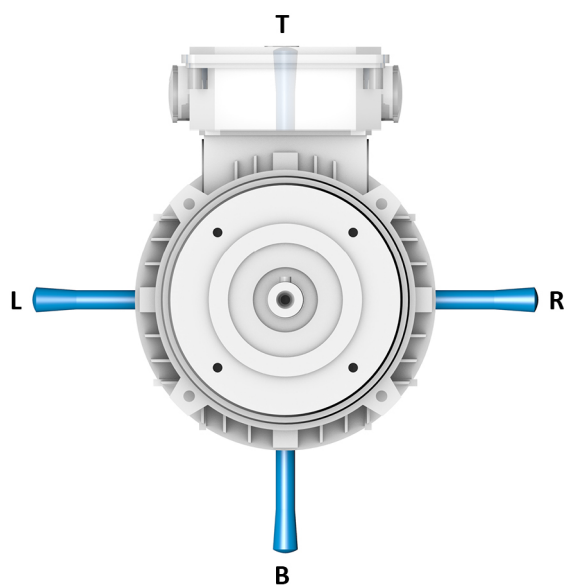


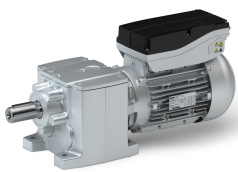
Product information

The modular system
Mounting positions



Position of the manual release lever





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!

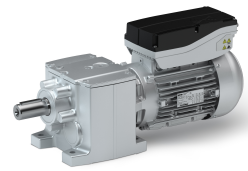
- Only use the product as directed.
- Never commission the product in the event of visible damage.
- Never modify the product technically.
- Never commission the product before assembly has been completed.
- Never operate the product without the required covers.
- Connect/disconnect all pluggable connections 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:

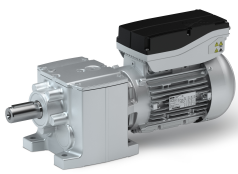
Use personal protective equipment or wait until the device has cooled down!

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.

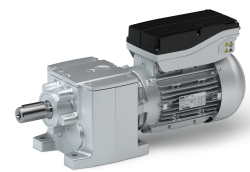
Motor protection

- 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.

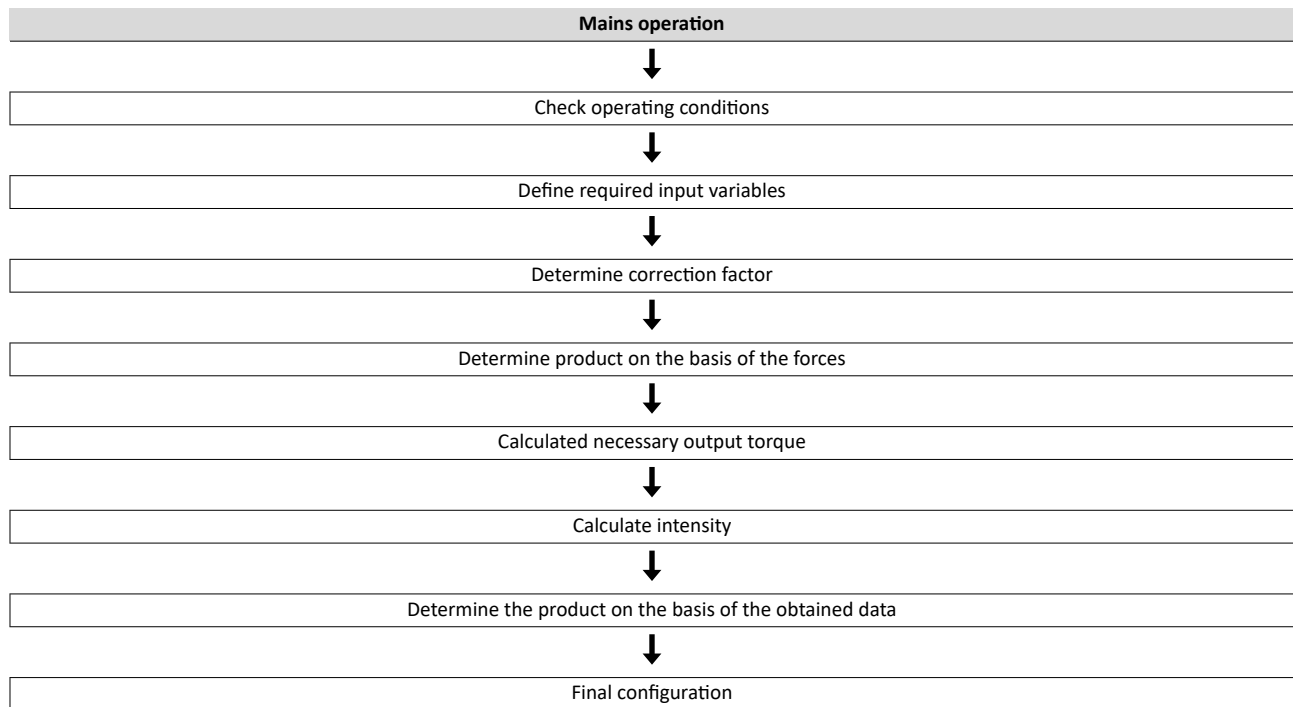


Drive dimensioning

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

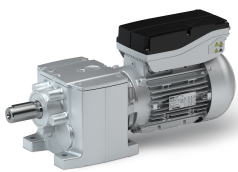
Check
Approvals Conformities Supply voltage Degree of protection Ambient temperature Surface protection

► [Standards and operating conditions](#) 43

► [Surface and corrosion protection](#) 25

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](#) 56

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

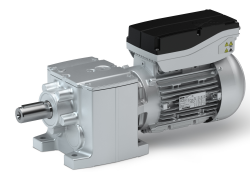
J_Z Additional moment of inertia (handwheel, 2nd shaft end ...)

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](#) 61



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](#) 105

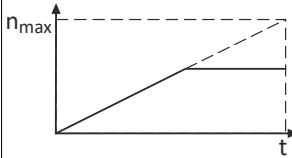
► [Accessories](#) 112

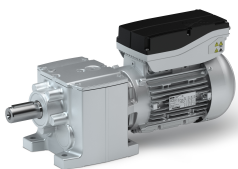
Parameters that can be preset by Lenze



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.



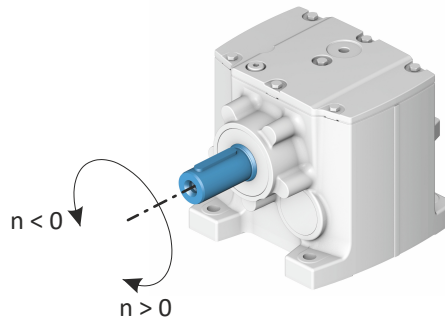
Information on project planning

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):

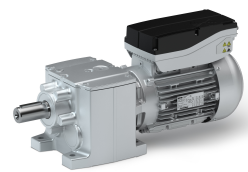
The aluminium parts are not coated and grey cast iron parts are primed with grey paint. Slight colour differences of the components are possible.

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-H45
- g500-H100
- g500-H140

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

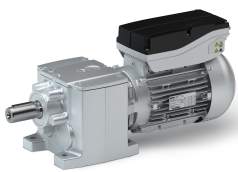
Lubricant amounts for stocking

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 (F)	M6 (E)	M1-M6 (A-F)	M1, M5, M6 (AEF)
Gearbox									
g500-H45	I	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-
g500-H100	I	0.5	0.7	0.8	0.7	0.5	0.7	-	0.7
g500-H140	I	0.5	0.8	0.9	0.7	0.5	0.8	-	0.8
g500-H210	I	0.8	1.1	1.2	1.3	0.9	1.2	-	1.2
g500-H320	I	0.8	1.2	1.3	1.3	1.0	1.2	-	1.2
g500-H450	I	1.1	1.6	1.7	1.8	1.4	1.6	-	1.6
g500-H600	I	1.7	2.6	2.4	3.0	1.9	2.3	-	-
g500-H850	I	2.3	3.5	3.0	4.0	2.5	3.2	-	-
g500-H1500	I	4.6	7.0	6.0	7.7	5.0	6.0	-	-
g500-H3000	I	8.0	12.6	10.0	13.2	9.5	9.8	-	-
Pre-stage	I	0.4							

► Gearbox with pre-stage 103



Ventilation



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

The gearbox g500-H210 can optionally be fitted with ventilation units.

From g500-H320 onwards, the gearboxes are supplied with ventilation units as standard.

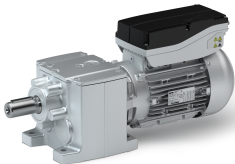
To reduce the number of different versions, the following gearboxes can also be ordered with combined mounting positions:

- g500-H45 in mounting position M1-M6 (A-F)
- g500-H100 ... H450 in mounting position M1/5/6 (AEF)



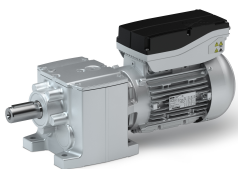
In these gearboxes, the lubricant amount has been optimised for the use in different mounting positions. If required, the breather elements are loosely enclosed and must be mounted before commissioning depending on the mounting position.

► [The modular system](#)  12



g500-H210 ... H450

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

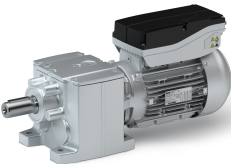


Information on project planning

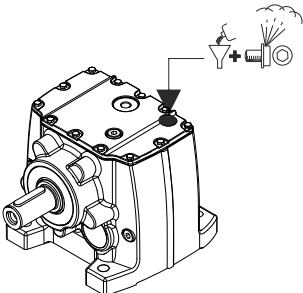
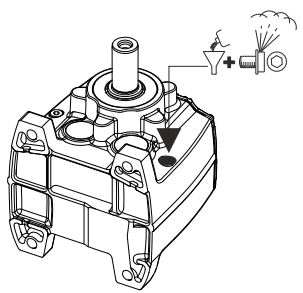
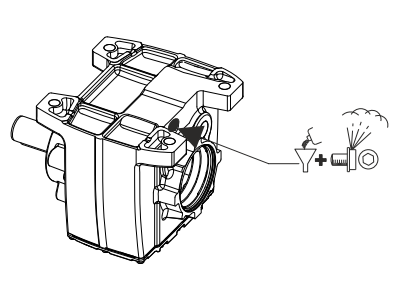
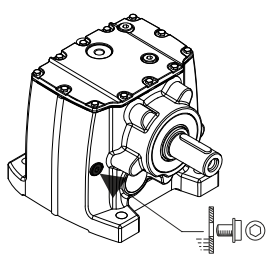
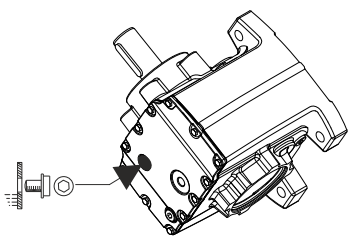
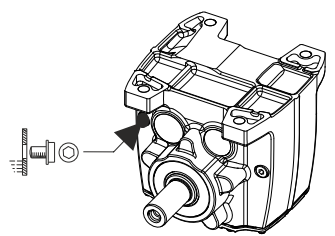
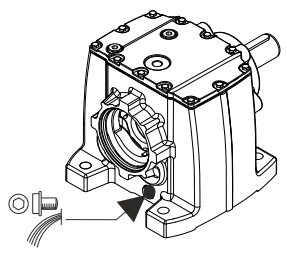
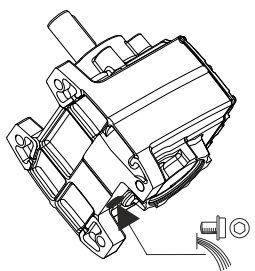
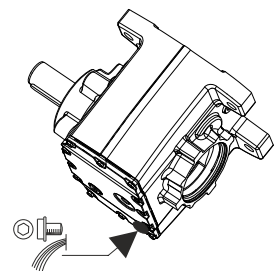
Final configuration
Ventilation

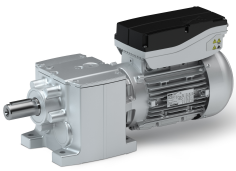
Mounting position M4 (C)	Mounting position M5 (F)	Mounting position M6 (E)
Filling and ventilation		
Control		
Drain		

- ① g500-H210
- ② g500-H320
g500-H450



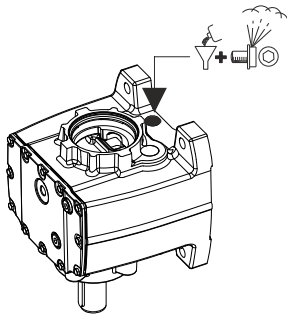
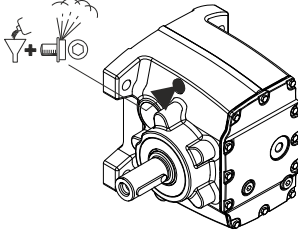
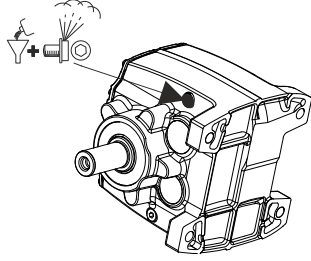
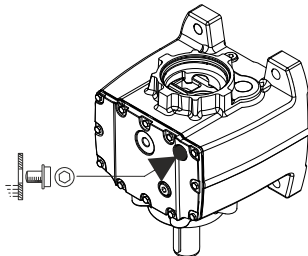
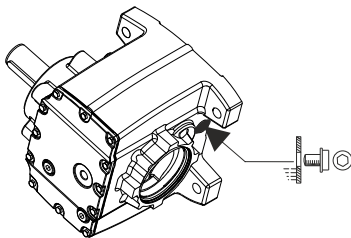
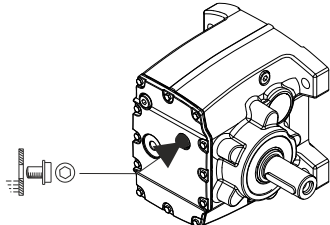
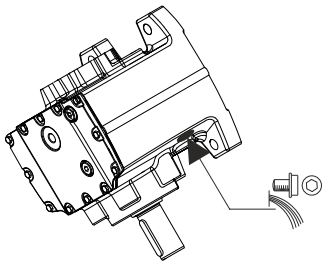
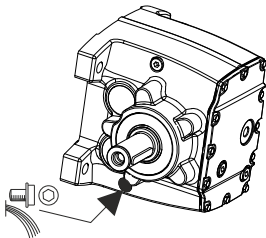
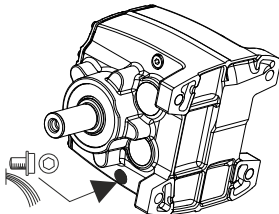
g500-H600 ... H3000

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

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

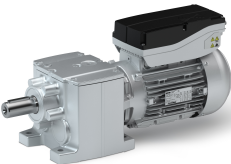
In order to guarantee a reliable lubrication of the toothed parts in mounting position M4 (C) (motor is on the gearbox vertical from the top), a high filling level is required in the gearbox. As a result of the reduced volume of air in the gearbox, this may lead to oil escaping from the ventilation at 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.

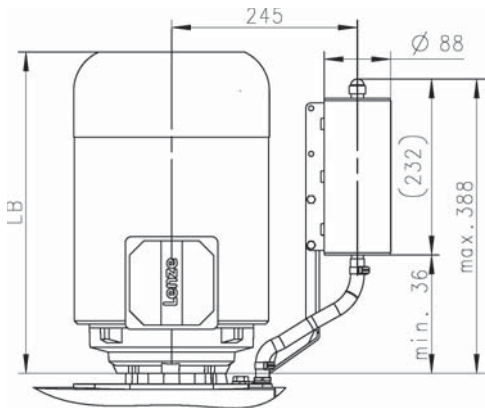
If insufficient space is available, the oil compensation reservoir can also be mounted over the gearbox hose connection on nearby system parts.

Information on project planning

Final configuration
Ventilation



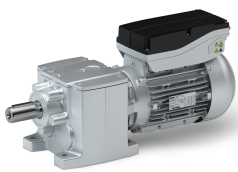
Dimensions of the oil compensation reservoir



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:

g500-H1500		g500-H3000	
Gearbox ratio	Min. input speed	Gearbox ratio	Min. input speed
	rpm		rpm
3.743	2000	4.496	2000
4.758	2000	5.902	2000
5.400	2000	6.344	2000
6.245	2000	6.968	2000
6.864	2000	8.327	2000
7.592	2000	9.146	2000
9.010	2000	10.005	2000
10.267	2000	11.619	2000
11.356	2000	12.762	2000
12.362	3000	14.233	2000
13.673	3000	15.633	2000
15.156	3000	18.752	3000
16.763	3000	20.596	3000
20.533	3000	23.044	3000
22.711	3000	25.311	3000
24.933	3000	29.822	3000
27.578	3000	32.756	3000
32.267	4000	36.193	4000
35.689	4000	39.753	4000
39.160	4000	45.750	4000
43.313	4000	50.250	4000
49.500	4000		
54.750	4000		



Mechanical installation

Important notes

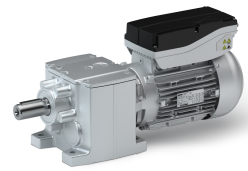
- Install the product according to the information in the chapter "Standards and operating conditions".
 - ▶ [Standards and operating conditions](#) 43
- The technical data and the data regarding the supply conditions can be found on the nameplate and in this documentation.
- Ambient media – especially 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

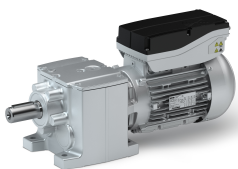
Important notes

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.

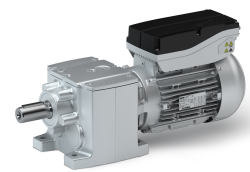
Mains connection with QUICKON connector			
Motor		MSEMA□□063-42	MSEMA□□080-32
Connection		X3	
Laying system		B2	
Connection type		QUICKON connector	
Cable type		Flexible	
Cable cross-section			
Typ.	mm ²	1.5	2.5
Min.	mm ²	1.5	1.5
Max.	mm ²	2.5	2.5

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

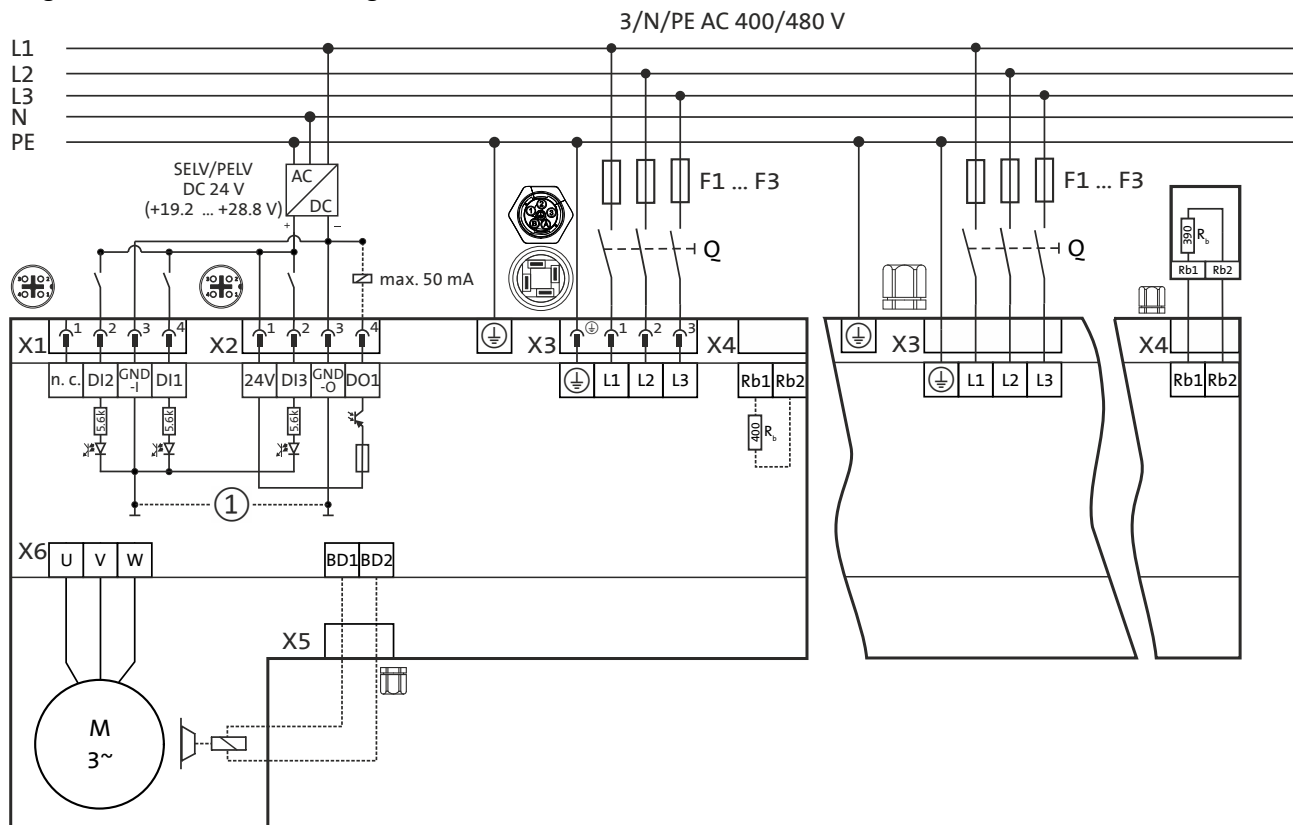
Mains connection cable L1, L2, L3, PE			
Motor		MSEMA□□063-42	MSEMA□□080-32
Connection		X3	
Installation method		B2	
Connection type		Cable	
Cable type		rigid/flexible	
Cable cross-section			
Typ.	mm ²	1.0	1.5
Min.	mm ²	0.75	0.75
Max.	mm ²	1.5	1.5
Stripping length	mm	10	10

Electrical installation

Connection according to EN



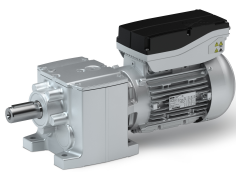
Single drive connection according to EN 60204-1



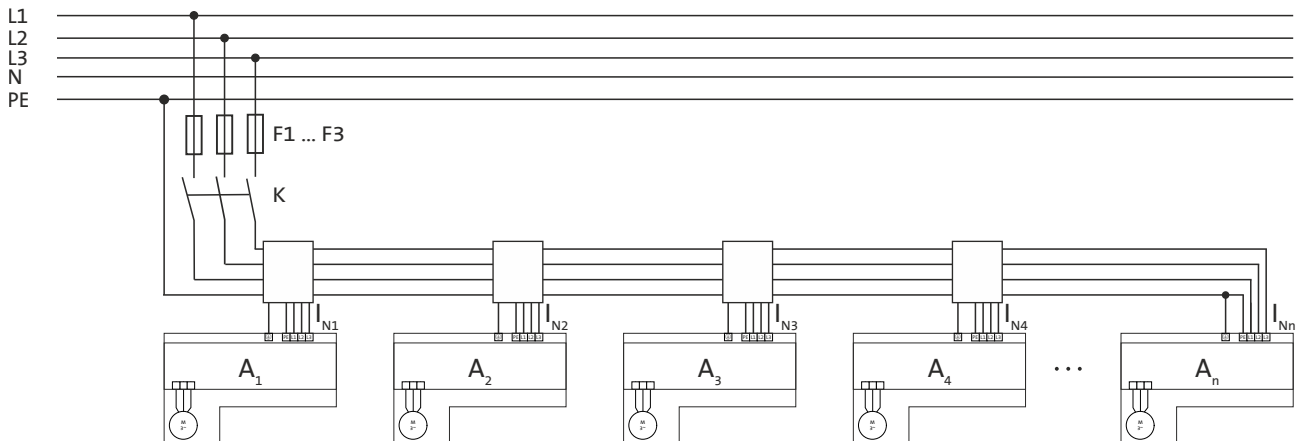
① GND is bridged if the "DI/DO-GND bridged" version is specified on the nameplate.

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

- Use of copper cables insulated with PVC
 - Conductor temperature < 70 °C, ambient temperature < 40 °C
- No bundling of cables or wires, three wires under load



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 [117](#)

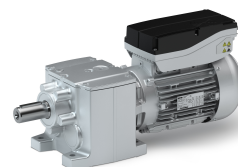
- Use of copper cables insulated with PVC
 - Conductor temperature ≤ 70 °C, ambient temperature ≤ 40 °C
- No bundling of cables or wires, three wires under load
- Typical utilization 80 % of the respective cable cross-section taken into account

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 x 1 A = 7 A ≤ 7.6 A	12 x 1 A = 12 A ≤ 12.2 A	17 x 1 A = 17 A ≤ 17.6 A



Connection according to cULus

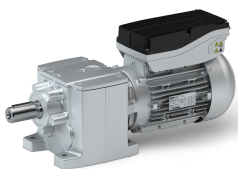


The following data is valid for a three-phase mains connection with 480 V.

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

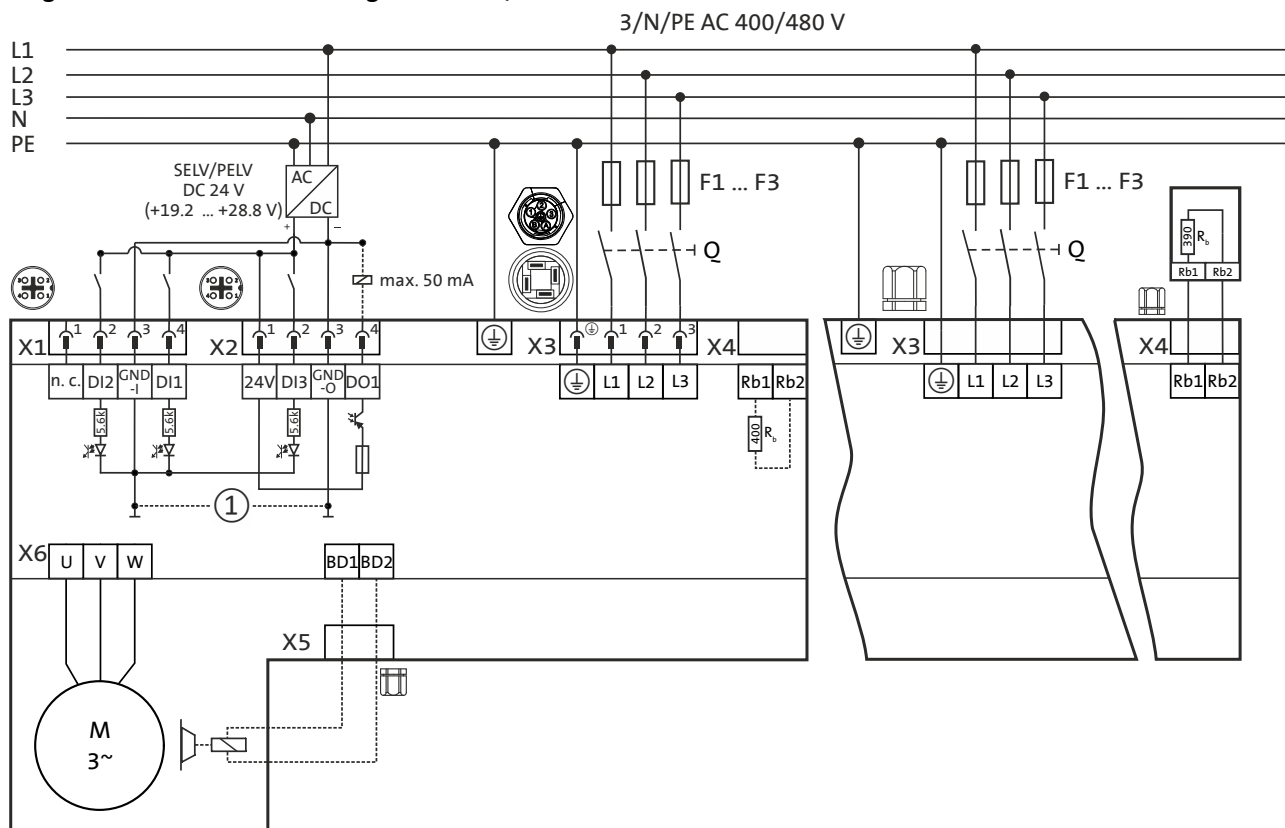
Mains connection cable L1, L2, L3, PE			
Motor		MSEMA□□063-42	MSEMA□□080-32
Connection		X3	
Connection type		Cable	
Cable type		rigid/flexible	
Cable cross-section			
Typ.	AWG	18	16
Min.	AWG	18	18
Max.	AWG	16	16
Stripping length	mm	10	10



⚠ 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.

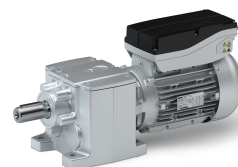
Single drive connection according to NFPA 70, NFPA 79



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

Electrical installation

Connection according to cULus

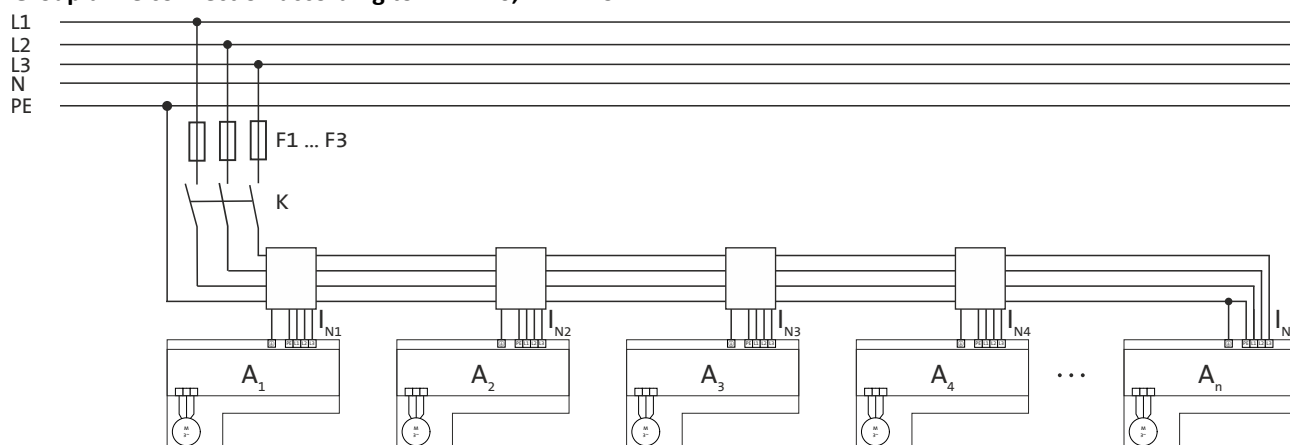


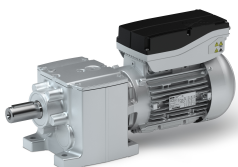
Fuse data (F1 ... F3)				
Motor		MSEMA□□063-42		MSEMA□□080-32
Cable installation in accordance with		NFPA 70, NFPA 79		
Fuse				
Standard		UL 248		
Typ. Rated current	A	3		6
Max. rated current	A	3		10
Semiconductor fuse				
Standard		UL 248		
Typ. Rated current	A	3		6
Max. rated current	A	3		10
Circuit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





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 117

- 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

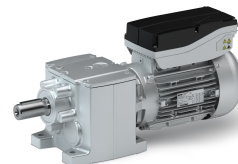
- ▶ Suitable for motor group installation on a circuit capable of delivering not more than 5k rms symmetrical amperes, 480 V maximum.
- ▶ When protected by fuses rated, see table above.
- ▶ When protected by a circuit breaker having an interrupting rating not less than 5k rms symmetrical amperes, 480/277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



Technical data

Notes regarding the given data

Catalog data

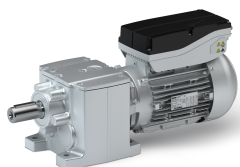
The power values, torques and speeds specified in the configuration are rounded values and apply to:

- 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.



Standards and operating conditions

Conformities and approvals

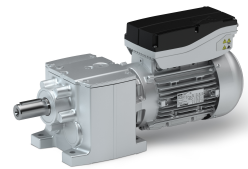
More information and certificates of approval can be found under

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

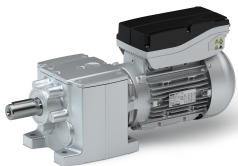


Protection of persons and device protection

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		I²xt 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 6mm² 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.

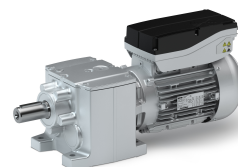
The following is supported:

- 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		

Technical data

Data overview



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.



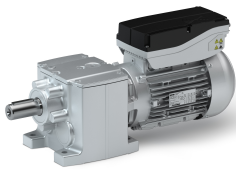
The rated torque can be gathered from the last digits of the product name e.g. g500-B110 (110 Nm).

g500-H45, 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				'
539	14.8	2.597	896	345	41
410	18.6	3.413	256	75	39
321	21.0	4.368	1376	315	38
235	29.0	5.965	686	115	28
179	32.0	7.840	196	25	27
140	35.0	10.033	301	30	26
109	38.0	12.833	77	6	26
84.0	41.0	16.660	833	50	25
65.6	44.0	21.350	427	20	25
50.7	45.0	27.618	1519	55	25
39.0	45.0	35.933	539	15	25
30.1	45.0	46.550	931	20	25
23.6	45.0	59.413	4753	80	25

g500-H100, 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				'
664	49.0	2.108	120	253	30
417	39.6	3.354	161	48	29
304	54.4	4.600	23	5	27
238	65.0	5.887	989	168	27
217	35.1	6.440	161	25	27
170	41.5	8.214	115	14	27
139	91.5	10.063	161	16	27
123	61.8	11.360	284	25	22
96.6	73.2	14.490	710	49	22
78.9	100	17.750	71	4	22
62.7	95.5	22.314	781	35	22
48.7	100	28.738	1207	42	21
38.4	100	36.422	5609	154	21
30.7	100	45.643	639	14	21
23.3	79.9	60.133	5893	98	21



Technical data

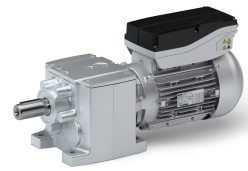
Data overview

g500-H100, 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				'
23.5	100	59.505	6248	105	22
16.8	100	83.307	6248	75	22
13.2	100	106.259	15620	147	22
10.8	100	130.167	781	6	22
8.6	100	163.638	17182	105	21
7.0	100	198.597	69509	350	21
5.5	100	255.769	107423	420	21
4.3	100	324.156	499201	1540	21
3.4	100	406.221	56871	140	21
2.7	100	519.188	8307	16	21

g500-H140, 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				'
682	63.0	2.053	75	154	27
481	83.0	2.912	125	364	26
429	38.6	3.267	49	15	25
313	52.9	4.480	112	25	24
244	63.3	5.733	86	15	23
223	34.1	6.272	784	125	23
175	40.4	8.000	8	1	23
155	107	9.029	316	35	18
143	89.1	9.800	49	5	23
121	128	11.554	3397	294	18
111	68.8	12.640	316	25	18
86.8	81.5	16.122	790	49	18
70.9	140	19.750	79	4	18
56.4	106	24.829	869	35	18
43.8	115	31.976	1343	42	18
34.5	127	40.526	6241	154	17
27.6	129	50.786	711	14	17
20.9	88.9	66.908	6557	98	17



g500-H140, 3-stage gearboxes

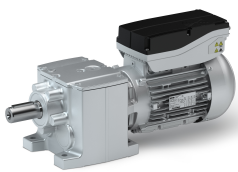
Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
24.3	140	57.582	12956	225	18
19.1	140	73.447	32390	441	18
16.5	140	84.732	37367	441	18
15.1	140	92.693	6952	75	18
11.8	140	118.231	17380	147	18
9.7	140	144.833	869	6	18
7.7	140	182.076	19118	105	18
6.3	140	220.974	77341	350	18
4.9	140	284.588	119527	420	18
3.9	140	360.681	555449	1540	18
3.1	129	451.993	63279	140	18
2.4	129	577.688	9243	16	17

g500-H210, 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				'
413	78.8	3.389	61	18	22
301	143	4.648	488	105	22
224	145	6.250	25	4	17
163	171	8.571	60	7	17
117	142	12.000	12	1	17
91.5	169	15.306	750	49	17
74.7	210	18.750	75	4	16
57.4	210	24.405	1025	42	16
46.1	210	30.357	425	14	16
35.6	141	39.286	275	7	16
29.4	149	47.679	1335	28	16
23.0	147	60.938	975	16	16

g500-H210, 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				'
28.8	210	48.571	340	7	16
22.5	210	62.160	18275	294	16
17.6	210	79.507	23375	294	16
13.6	210	103.214	1445	14	16
10.6	210	132.270	25925	196	15
8.2	210	171.104	13175	77	15
6.3	210	222.619	4675	21	15
4.9	210	288.393	8075	28	15
3.8	210	368.080	41225	112	15



Technical data

Data overview

g500-H210, 4-stage gearboxes

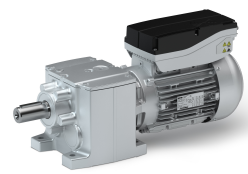
Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
4.4	210	318.197	100232	315	17
3.4	210	407.216	538747	1323	17
2.8	210	494.212	4358953	8820	17
2.2	210	632.132	1115081	1764	17
1.7	210	820.622	1723307	2100	17
1.4	210	969.983	285175	294	16
1.1	210	1254.762	26350	21	16
0.9	210	1522.825	234515	154	16
0.7	210	1946.307	171275	88	16
0.6	210	2532.292	60775	24	16

g500-H320, 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				'
413	78.8	3.389	61	18	20
301	189	4.648	488	105	20
230	141	6.083	73	12	16
168	249	8.343	292	35	16
131	218	10.677	3139	294	15
120	138	11.680	292	25	15
94.0	165	14.898	730	49	15
76.7	310	18.250	73	4	15
58.9	216	23.754	2993	126	15
47.4	228	29.548	1241	42	15
36.6	137	38.238	803	21	15
30.2	145	46.407	6497	140	14

g500-H320, 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				'
29.6	254	47.276	4964	105	15
23.1	301	60.502	53363	882	15
18.1	320	77.387	68255	882	15
13.9	320	100.462	21097	210	15
10.9	320	128.743	75701	588	15
8.4	320	166.541	38471	231	15
6.5	315	216.683	13651	63	15
5.0	269	280.702	23579	84	15



g500-H320, 4-stage gearboxes

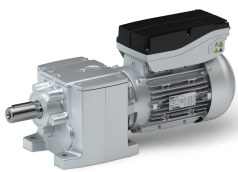
Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
4.0	320	346.692	109208	315	15
3.2	320	443.683	586993	1323	15
2.5	320	567.502	750805	1323	15
1.9	320	736.721	232067	315	15
1.6	320	894.111	1877633	2100	15
1.1	320	1221.302	76942	63	15
0.9	287	1589.005	300322	189	15
0.7	287	1928.475	1214939	630	15
0.6	287	2464.764	177463	72	15

g500-H450, 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				'
407	256	3.444	31	9	19
296	293	4.724	496	105	17
232	247	6.045	2666	441	17
212	273	6.613	496	75	17
159	370	8.800	44	5	13
124	400	11.262	473	42	13
114	411	12.320	308	25	13
89.1	321	15.714	110	7	13
72.7	448	19.250	77	4	13
55.9	425	25.056	451	18	13
44.9	446	31.167	187	6	13
34.7	311	40.333	121	3	12
28.6	330	48.950	979	20	12
22.6	307	61.875	495	8	12

g500-H450, 3-stage gearboxes

Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n ₂	M _{z, max}	i	z _g	z _t	
rpm	Nm				'
28.1	450	49.867	748	15	13
20.1	374	69.813	5236	75	13
15.7	443	89.048	1870	21	13
12.8	450	109.083	1309	12	13
10.2	450	137.133	2057	15	13
7.9	450	176.611	3179	18	13
6.3	450	223.833	1343	6	13
5.0	450	280.500	561	2	13
3.8	450	369.548	15521	42	13



g500-H450, 4-stage gearboxes

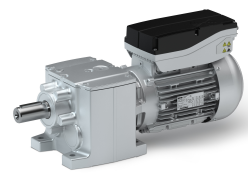
Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
3.8	450	365.689	16456	45	14
2.7	450	511.964	115192	225	13
2.1	450	653.016	41140	63	13
1.8	450	799.944	14399	18	13
1.4	450	1005.644	45254	45	13
1.1	450	1295.148	34969	27	13
0.9	450	1641.444	14773	9	13
0.7	450	1992.117	119527	60	13
0.6	450	2496.450	49929	20	13
0.4	450	3190.688	51051	16	13

g500-H600, 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				'
480	220	2.917	12	35	18
429	240	3.267	49	15	17
313	297	4.480	112	25	15
244	234	5.733	86	15	15
217	404	6.456	581	90	13
158	487	8.853	664	75	12
124	463	11.330	3569	315	12
113	512	12.395	4648	375	12
88.6	322	15.810	332	21	12
72.3	600	19.367	581	30	12
55.5	428	25.207	3403	135	12
44.6	448	31.356	1411	45	12
34.5	313	40.578	1826	45	11
28.4	332	49.247	7387	150	11
22.5	339	62.250	249	4	11

g500-H600, 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				'
44.9	600	31.197	49136	1575	13
35.1	600	39.925	264106	6615	13
32.1	508	43.676	49136	1125	12
25.1	600	55.710	24568	441	12
20.5	600	68.244	3071	45	12
15.8	600	88.826	251822	2835	12
12.7	600	110.491	104414	945	12
9.8	504	142.988	135124	945	12
8.1	534	173.536	273319	1575	12
6.3	528	221.794	39923	180	12



g500-H600, 4-stage gearboxes

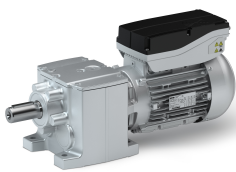
Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
7.0	600	198.970	2014576	10125	13
5.5	600	253.789	1007288	3969	13
4.4	600	320.294	1080992	3375	12
3.4	600	408.538	540496	1323	12
2.8	600	500.459	67562	135	12
2.1	600	651.391	5540084	8505	12
1.7	600	810.267	2297108	2835	12
1.3	600	1048.581	2972728	2835	12
1.1	600	1272.596	6013018	4725	12
0.9	600	1544.469	24325391	15750	12
0.7	600	1973.971	3553147	1800	12
0.6	600	2522.912	3632993	1440	12

g500-H850, 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				'
445	306	3.147	1734	551	15
321	379	4.362	663	152	15
261	430	5.368	102	19	14
236	551	5.946	1207	203	13
170	615	8.241	923	112	12
138	667	10.143	71	7	12
123	696	11.360	284	25	12
96.6	591	14.490	710	49	11
78.9	814	17.750	71	4	11
60.6	789	23.103	2911	126	11
49.4	801	28.315	4757	168	11
37.6	532	37.190	781	21	11
31.0	566	45.136	6319	140	11

g500-H850, 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				'
47.4	850	29.536	3692	125	12
37.0	850	37.799	39689	1050	12
33.9	850	41.350	25844	625	12
26.5	850	52.743	1846	35	12
21.7	850	64.610	6461	100	12
16.6	850	84.096	37843	450	12
13.4	850	104.607	15691	150	12
10.3	850	135.373	10153	75	12
8.5	850	164.294	82147	500	12
6.7	850	207.675	8307	40	12



Technical data

Data overview

g500-H850, 4-stage gearboxes

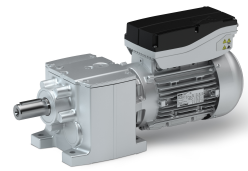
Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
6.0	850	234.319	439348	1875	12
4.8	850	294.334	264901	900	12
3.8	850	368.019	1150058	3125	12
3.0	850	473.807	71071	150	12
2.4	850	575.029	575029	1000	12
2.3	850	616.701	416273	675	12
1.8	850	767.116	172601	225	12
1.4	850	992.738	223366	225	12
1.2	850	1204.823	903617	750	12
1.0	850	1462.217	7311083	5000	12
0.7	850	1868.844	7475377	4000	12
0.6	850	2362.303	755937	320	12

g500-H1500, 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				'
374	775	3.743	1647	440	14
294	924	4.758	2379	500	13
224	775	6.245	2623	420	13
184	1217	7.592	949	125	10
123	1400	11.356	511	45	9
102	1100	13.673	4307	315	9
83.5	1450	16.763	2263	135	9
61.6	1500	22.711	1022	45	9
50.8	1500	27.578	1241	45	9
39.2	1009	35.689	1606	45	9
32.3	1073	43.313	6497	150	9
25.6	1044	54.750	219	4	9

g500-H1500, 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				'
31.2	1500	44.814	16133	360	10
22.7	1500	61.774	69496	1125	10
17.8	1500	78.794	4964	63	10
14.5	1500	96.522	8687	90	10
11.1	1500	125.632	50881	405	10
9.1	1500	153.976	83147	540	10
6.9	1500	202.237	27302	135	10
5.7	1500	245.442	110449	450	10
4.5	1500	310.250	1241	4	10



g500-H1500, 4-stage gearboxes

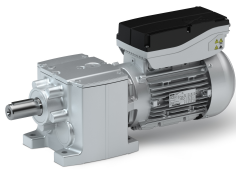
Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
6.2	1500	225.125	99280	441	10
5.0	1500	281.416	2849336	10125	10
4.0	1500	350.054	1181432	3375	10
3.1	1500	446.497	84388	189	10
2.4	1500	572.324	2086121	3645	10
2.0	1500	701.446	3409027	4860	10
1.6	1500	872.530	1413499	1620	10
1.5	1500	921.302	1119382	1215	10
1.2	1500	1129.157	914617	810	10
0.9	1500	1483.072	600644	405	10
0.8	1500	1799.910	1214939	675	10
0.6	1500	2184.436	9829961	4500	10
0.5	1500	2791.905	10050859	3600	10
0.4	1500	3529.094	112931	32	10

g500-H3000, 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				'
311	1360	4.496	1911	425	12
237	1610	5.902	301	51	12
221	1910	6.344	793	125	9
168	2155	8.327	2623	315	9
121	1441	11.619	244	21	9
98.4	2530	14.233	427	30	8
74.7	1955	18.752	5063	270	8
60.8	1969	23.044	1037	45	8
46.9	1664	29.822	1342	45	8
38.7	1770	36.193	5429	150	8
30.6	1671	45.750	183	4	8

g500-H3000, 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				'
29.7	2830	47.186	44591	945	9
26.0	2950	53.770	7259	135	9
21.6	3000	64.744	61183	945	9
17.6	3000	79.375	32147	405	9
13.0	3000	107.541	14518	135	9
10.7	3000	130.585	17629	135	9
8.3	3000	168.993	22814	135	9
6.8	3000	205.096	92293	450	9
5.4	3000	259.250	1037	4	9



Technical data

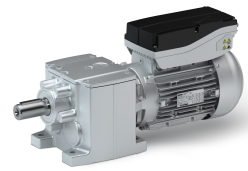
Data overview

g500-H3000, 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	2650	226.604	61183	270	9
4.8	3000	292.511	987224	3375	9
3.7	3000	376.393	50813	135	9
3.1	3000	457.048	123403	270	9
2.9	3000	489.908	595238	1215	9
2.4	3000	594.888	722789	1215	9
1.9	3000	739.983	299693	405	9
1.8	2739	788.632	319396	405	9
1.5	3000	957.625	387838	405	9
1.1	3000	1239.279	501908	405	9
0.9	3000	1504.034	1015223	675	9
0.8	3000	1825.350	8214077	4500	9
0.6	3000	2332.962	8398663	3600	9
0.5	3000	2948.969	94367	32	9

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 .

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

If the direction of action α and the direction of rotation (R/L) at the output shaft are known, the following can be calculated taking into account the direction of action factor f_α (see following diagrams) higher radial forces than the values given in the tables are permissible:

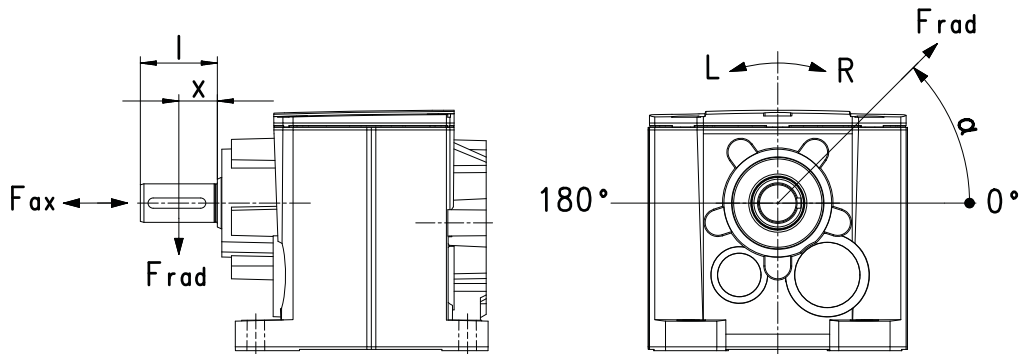
$$F_{\text{rad, perm}} = f_w \times f_\alpha \times F_{\text{rad, max}}$$

Permissible axial force

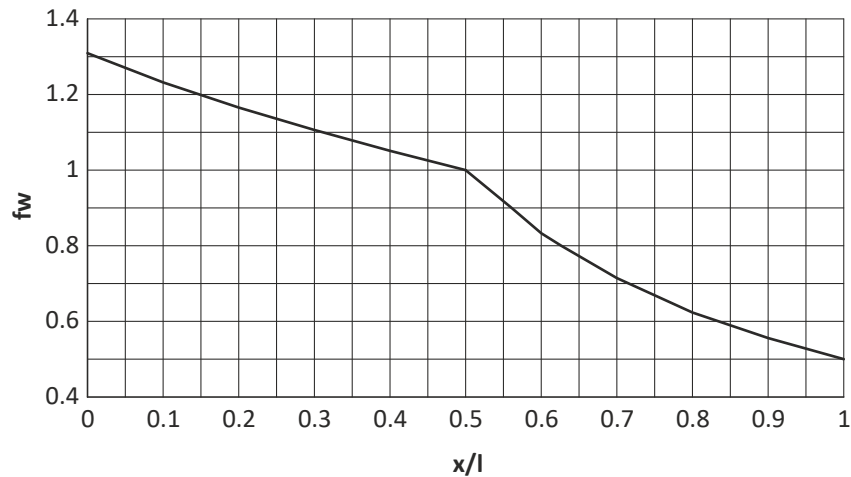
If there is no radial force, the maximum axial force is 50% of the value in the table $F_{\text{rad, max}}$

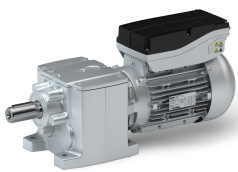
$$F_{\text{ax, zul}} = 0.5 \times F_{\text{rad, max}}$$

Application of forces



Additional load factor f_w on the drive shaft





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

Max. radial force, gearbox with foot (VBR)

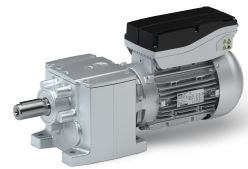
Getriebe	Output speed n_2 [rpm]									
	1000	630	400	250	160	100	63	40	25	16
	Max. radial force $F_{rad,max}$ [rated]									
g500-H45	300	400	600	700	800	900	1100	1400	1500	1500
g500-H100	800	1000	1200	1500	1800	2100	2600	2700	2700	2700
g500-H140	1000	1440	1800	2200	2500	3000	3300	3700	4100	4200
g500-H210	1100	1600	2000	2400	2800	3400	3900	4100	4400	4800
g500-H320	1760	2090	2480	3000	3520	4190	5000	5700	5700	5700
g500-H450	2440	2820	3340	4020	4660	5540	6500	7100	7100	7100
g500-H600	3820	4480	5250	6100	7260	8450	9500	9500	9500	9500
g500-H850	4700	5510	6430	7500	8860	10400	11500	11500	11500	11500
g500-H1500	6300	7440	8790	10300	12200	14500	17000	17000	17000	17000
g500-H3000	7510	8880	10100	12400	14600	17200	20000	20000	20000	20000

Reinforced bearings

Getriebe	Output speed n_2 [rpm]									
	1000	630	400	250	160	100	63	40	25	16
	Max. radial force $F_{rad,max}$ [rated]									
g500-H100	1000	1200	1500	1800	2200	2700	3200	3300	3300	3300
g500-H140	1300	1800	2300	2700	3100	3700	4100	4600	5100	5300
g500-H210	1400	2000	2500	3000	3500	4200	4900	5100	5500	6000
g500-H320	2380	3250	4380	5600	6800	7100	7100	7100	7100	7100
g500-H450	4030	5100	6870	8650	8900	8900	8900	8900	8900	8900
g500-H600	7180	8710	9860	11300	12000	12000	12000	12000	12000	12000
g500-H850	9520	10500	11900	13300	15400	15600	15600	15600	15600	15600
g500-H1500	12600	14600	16500	19100	21000	21000	21000	21000	21000	21000
g500-H3000	16100	18000	20200	23600	25000	25000	25000	25000	25000	25000

Technical data

Radial forces and axial forces



Max. radial force, gearbox with/without foot with threaded pitch circle (V□R/V□K)

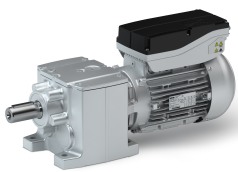
Getriebe	Output speed n_2 [rpm]									
	1000	630	400	250	160	100	63	40	25	16
	Max. radial force $F_{rad,max}$ [rated]									
g500-H45	300	400	600	700	800	900	1100	1400	1500	1500
g500-H100	800	1000	1200	1500	1700	1700	1700	1700	1700	1700
g500-H140	1000	1400	1800	2200	2500	2600	2600	2600	2600	2600
g500-H210	1100	1600	2000	2400	2800	3000	3000	3000	3000	3000
g500-H320	1760	2090	2480	3000	3520	3600	3600	3600	3600	3600
g500-H450	2440	2820	3340	4020	4400	4400	4400	4400	4400	4400
g500-H600	3820	4480	5250	6100	7260	8450	8500	8500	8500	8500
g500-H850	4700	5510	6430	7500	8860	10000	10000	10000	10000	10000
g500-H1500	6300	7440	8790	10300	12200	14000	14000	14000	14000	14000
g500-H3000	7510	8880	10100	12400	14600	17000	17000	17000	17000	17000

Reinforced bearings

Getriebe	Output speed n_2 [rpm]									
	1000	630	400	250	160	100	63	40	25	16
	Max. radial force $F_{rad,max}$ [rated]									
g500-H100	1000	1200	1500	1700	1700	1700	1700	1700	1700	1700
g500-H140	1300	1800	2300	2600	2600	2600	2600	2600	2600	2600
g500-H210	1400	2000	2500	3000	3000	3000	3000	3000	3000	3000
g500-H320	2380	3250	3600	3600	3600	3600	3600	3600	3600	3600
g500-H450	4030	4400	4400	4400	4400	4400	4400	4400	4400	4400
g500-H600	7180	8500	8500	8500	8500	8500	8500	8500	8500	8500
g500-H850	9250	10000	10000	10000	10000	10000	10000	10000	10000	10000
g500-H1500	12600	14000	14000	14000	14000	14000	14000	14000	14000	14000
g500-H3000	16100	17000	17000	17000	17000	17000	17000	17000	17000	17000

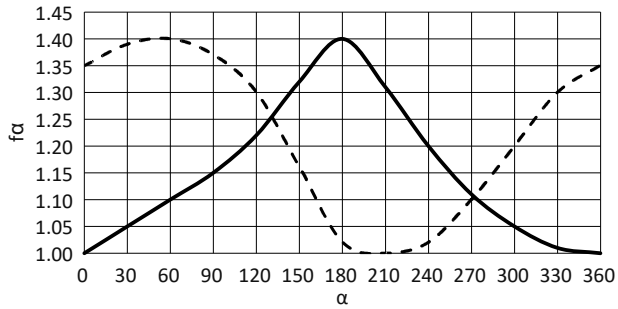
Max. radial force, gearbox with reinforced flange (VCP)

Getriebe	Output speed n_2 [rpm]									
	1000	630	400	250	160	100	63	40	25	16
	Max. radial force $F_{rad,max}$ [rated]									
g500-H100	1900	2400	2900	3330	3650	3890	4060	4160	4240	4280
g500-H140	3000	3500	4000	5510	5950	6270	6480	6620	6710	6770
g500-H210	3400	4000	5000	6170	6670	7060	7330	7500	7620	7700
g500-H320	3900	4500	6000	7040	7690	8210	8570	8810	8970	9080
g500-H450	4300	5200	6400	7810	8550	9160	9590	9880	10100	10200



Effective direction factor f_α on the output shaft

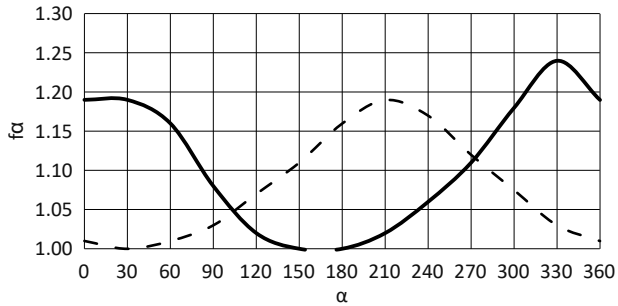
g500-H45



— 2-stage: Direction of rotation R

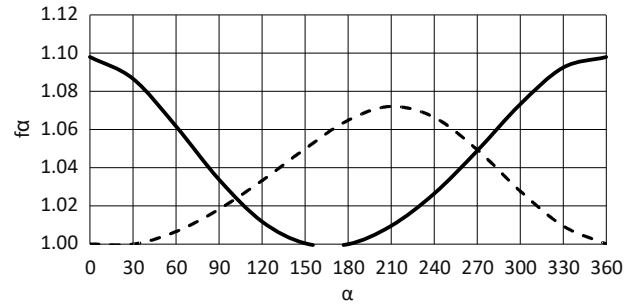
- - - 2-stage: Direction of rotation L

g500-H100



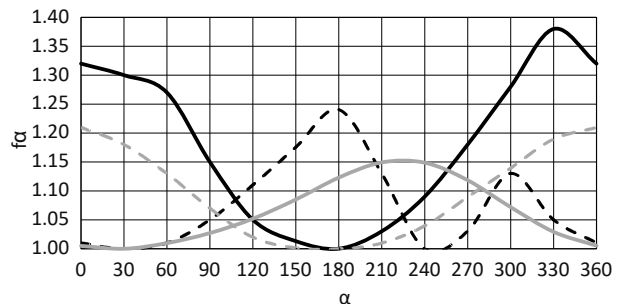
— 2-stage: Direction of rotation R
3-stage: Direction of rotation L

g500-H140



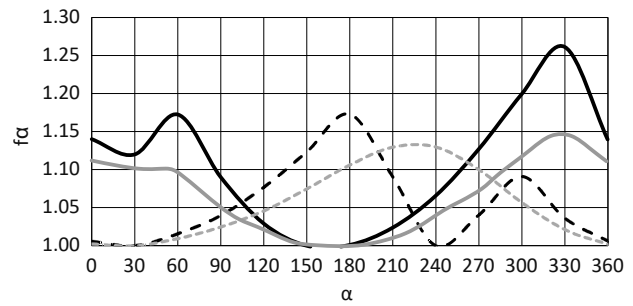
- - - 2-stage: Direction of rotation L
3-stage: Direction of rotation R

g500-H210



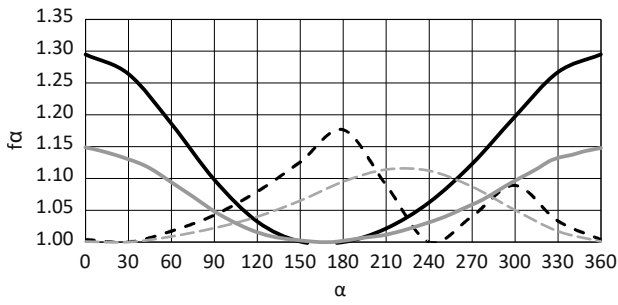
— 2-stage: Direction of rotation R
4-stage: Direction of rotation L
- - - 2-stage: Direction of rotation L
4-stage: Direction of rotation R

g500-H320



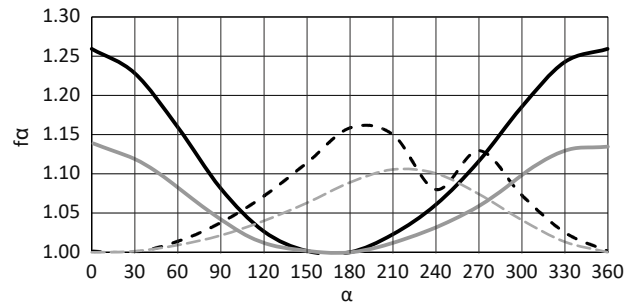
— 3-stage: Direction of rotation R
- - - 3-stage: Direction of rotation L

g500-H450



— 2-stage: Direction of rotation R
4-stage: Direction of rotation L
- - - 2-stage: Direction of rotation L
4-stage: Direction of rotation R

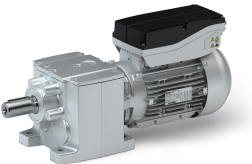
g500-H600



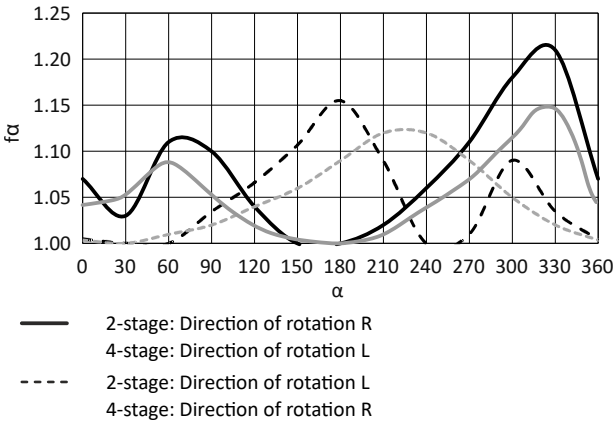
— 3-stage: Direction of rotation R
- - - 3-stage: Direction of rotation L

Technical data

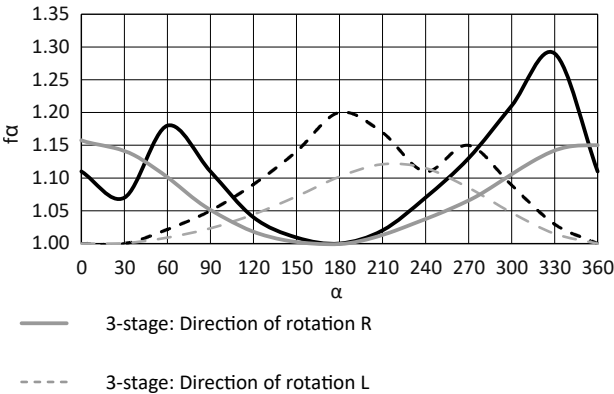
Radial forces and axial forces



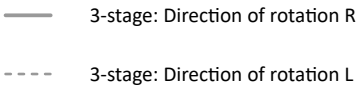
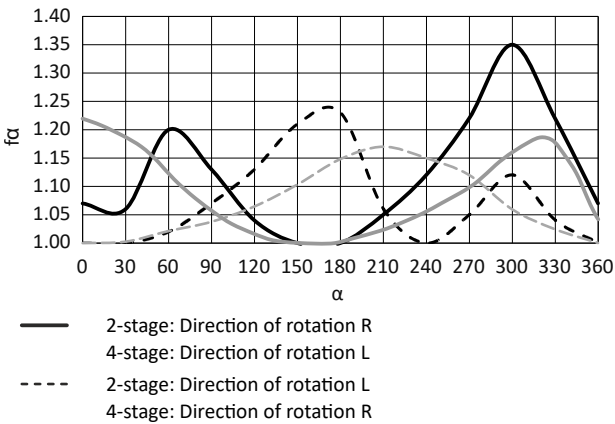
g500-H850



g500-H1500



g500-H3000





Notes on the selection tables

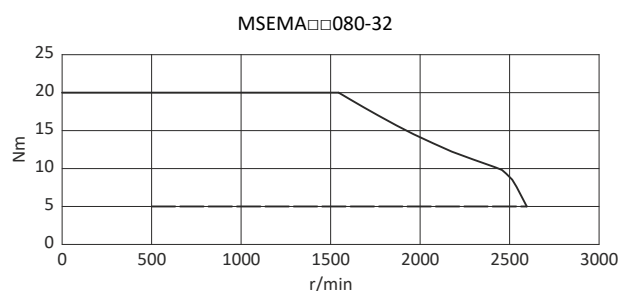
The following legend shows the layout of the selection tables:

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

[illegible]

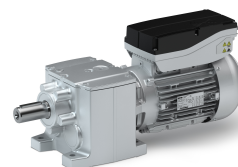
MSEM 063-42

Speed (r/min)	Starting Torque (Nm)	Output Torque (Nm)
0 - 1000	7.0	1.8
1000 - 2600	Decreases linearly from 7.0 to 1.8	1.8
2600	1.8	1.8



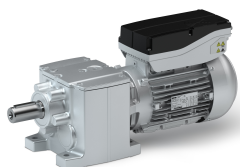
Technical data

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
193	4.0	1001	4.0	18.0	17.6	3.960	2.597	g500-H45	MSEMA□□063-42	2	7.4
153	6.0	796	6.0	22.0	22.2	4.602	3.267	g500-H140	MSEMA□□063-42	2	11
149	6.0	775	6.0	23.0	22.8	4.225	3.354	g500-H100	MSEMA□□063-42	2	9.4
147	6.0	762	6.0	19.0	23.2	3.869	3.413	g500-H45	MSEMA□□063-42	2	7.4
115	7.0	595	7.0	21.0	26.2	3.817	4.368	g500-H45	MSEMA□□063-42	2	7.4
112	8.0	580	8.0	30.0	30.4	4.236	4.480	g500-H140	MSEMA□□063-42	2	11
109	8.0	565	8.0	31.0	31.2	4.035	4.600	g500-H100	MSEMA□□063-42	2	9.4
87.3	10.0	453	10.0	39.0	38.9	4.059	5.733	g500-H140	MSEMA□□063-42	2	11
85.0	10.0	442	10.0	40.0	40.0	3.936	5.887	g500-H100	MSEMA□□063-42	2	9.4
83.9	10.0	436	10.0	29.0	36.3	3.873	5.965	g500-H45	MSEMA□□063-42	2	7.4
79.8	11.0	415	11.0	43.0	42.6	4.009	6.272	g500-H140	MSEMA□□063-42	2	11
77.7	11.0	404	11.0	44.0	43.7	3.907	6.440	g500-H100	MSEMA□□063-42	2	9.4
63.8	13.0	332	13.0	32.0	40.0	3.819	7.840	g500-H45	MSEMA□□063-42	2	7.4
62.6	14.0	325	14.0	54.0	54.3	3.911	8.000	g500-H140	MSEMA□□063-42	2	11
60.9	14.0	317	14.0	56.0	55.8	3.848	8.214	g500-H100	MSEMA□□063-42	2	9.4
55.4	15.0	288	15.0	61.0	61.3	4.042	9.029	g500-H140	MSEMA□□063-42	2	11
51.1	17.0	265	17.0	67.0	66.6	3.855	9.800	g500-H140	MSEMA□□063-42	2	11
49.9	17.0	259	17.0	35.0	43.8	3.786	10.033	g500-H45	MSEMA□□063-42	2	7.4
49.7	17.0	258	17.0	68.0	68.3	3.813	10.063	g500-H100	MSEMA□□063-42	2	9.4
44.1	19.0	229	19.0	77.0	77.2	3.875	11.360	g500-H100	MSEMA□□063-42	2	9.4
43.3	20.0	225	20.0	78.0	78.5	3.940	11.554	g500-H140	MSEMA□□063-42	2	11
42.9	20.0	223	20.0	79.0	79.3	4.325	11.680	g500-H320	MSEMA□□063-42	2	14
41.7	20.0	217	20.0	81.0	81.5	4.197	12.000	g500-H210	MSEMA□□063-42	2	12
39.6	21.0	206	21.0	86.0	85.8	3.910	12.640	g500-H140	MSEMA□□063-42	2	11
39.0	22.0	203	22.0	38.0	47.5	3.757	12.833	g500-H45	MSEMA□□063-42	2	7.4
34.6	25.0	179	25.0	98.0	98.4	3.829	14.490	g500-H100	MSEMA□□063-42	2	9.4
33.6	25.0	175	25.0	101	101	4.144	14.898	g500-H320	MSEMA□□063-42	2	14
32.7	26.0	170	26.0	104	104	4.065	15.306	g500-H210	MSEMA□□063-42	2	12
31.1	27.0	161	27.0	109	110	3.850	16.122	g500-H140	MSEMA□□063-42	2	11
30.1	28.0	156	28.0	41.0	51.3	3.740	16.660	g500-H45	MSEMA□□063-42	2	7.4
28.2	30.0	146	30.0	100	121	3.800	17.750	g500-H100	MSEMA□□063-42	2	9.4
25.4	34.0	132	34.0	134	134	3.814	19.750	g500-H140	MSEMA□□063-42	2	11
23.5	36.0	122	36.0	44.0	55.0	3.727	21.350	g500-H45	MSEMA□□063-42	2	7.4
22.5	38.0	117	38.0	100	125	3.767	22.314	g500-H100	MSEMA□□063-42	2	9.4
21.1	40.0	109	40.0	161	161	3.909	23.754	g500-H320	MSEMA□□063-42	2	14
20.5	41.0	107	41.0	166	166	3.879	24.405	g500-H210	MSEMA□□063-42	2	12
20.2	42.0	105	42.0	140	169	3.777	24.829	g500-H140	MSEMA□□063-42	2	11
18.2	47.0	94.1	47.0	45.0	49.5	3.719	27.618	g500-H45	MSEMA□□063-42	2	7.4
17.4	49.0	90.4	49.0	100	110	3.747	28.738	g500-H100	MSEMA□□063-42	2	9.4
17.0	50.0	87.9	50.0	182	201	3.852	29.548	g500-H320	MSEMA□□063-42	2	14
16.5	52.0	85.6	52.0	187	206	3.832	30.357	g500-H210	MSEMA□□063-42	2	12
15.7	54.0	81.3	54.0	140	154	3.753	31.976	g500-H140	MSEMA□□063-42	2	11
13.8	62.0	71.3	62.0	100	110	3.731	36.422	g500-H100	MSEMA□□063-42	2	9.4
13.1	65.0	67.9	65.0	211	233	3.795	38.238	g500-H320	MSEMA□□063-42	2	14
12.8	67.0	66.1	67.0	210	231	3.783	39.286	g500-H210	MSEMA□□063-42	2	12
12.4	68.0	64.4	68.0	249	274	3.938	40.333	g500-H450	MSEMA□□063-42	2	17
12.4	69.0	64.1	69.0	140	154	3.735	40.526	g500-H140	MSEMA□□063-42	2	11
12.4	69.0	64.0	69.0	250	275	3.964	40.578	g500-H600	MSEMA□□063-42	2	28
11.5	73.0	59.5	73.0	292	292	4.358	43.676	g500-H600	MSEMA□□063-42	3	29
11.0	77.0	56.9	77.0	93.0	102	3.722	45.643	g500-H100	MSEMA□□063-42	2	9.4
10.8	79.0	56.0	79.0	217	239	3.770	46.407	g500-H320	MSEMA□□063-42	2	14



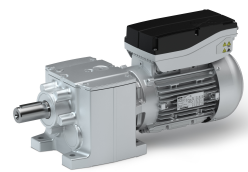
Technical data

Selection tables

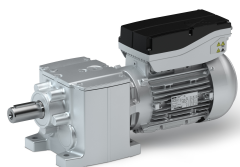
Mains operation								Geared motor			
Min. output speed		Max. output speed		Starting torque							
n ₂₁	M ₂	n ₂	M ₂	M _{a,1}	M _{a,2}	J	i			z	m
rpm	Nm	rpm	Nm	Nm	Nm	kgcm ²					kg
10.6	79.0	54.9	79.0	316	316	3.834	47.276	g500-H320	MSEMA□□063-42	3	14
10.5	81.0	54.5	81.0	206	227	3.761	47.679	g500-H210	MSEMA□□063-42	2	12
10.3	81.0	53.5	81.0	210	263	3.826	48.571	g500-H210	MSEMA□□063-42	3	12
10.3	83.0	53.1	83.0	264	291	3.875	48.950	g500-H450	MSEMA□□063-42	2	17
10.2	84.0	52.7	84.0	266	292	3.893	49.247	g500-H600	MSEMA□□063-42	2	28
9.9	86.0	51.1	86.0	103	114	3.724	50.786	g500-H140	MSEMA□□063-42	2	11
9.0	93.0	46.6	93.0	373	373	4.164	55.710	g500-H600	MSEMA□□063-42	3	29
8.7	96.0	45.1	96.0	140	175	3.902	57.582	g500-H140	MSEMA□□063-42	3	14
8.5	100	43.6	100	100	110	3.793	59.505	g500-H100	MSEMA□□063-42	3	12
8.3	101	42.9	101	320	400	3.793	60.502	g500-H320	MSEMA□□063-42	3	14
8.3	103	42.6	103	140	155	3.739	60.938	g500-H210	MSEMA□□063-42	2	12
8.1	104	41.8	104	210	263	3.788	62.160	g500-H210	MSEMA□□063-42	3	12
8.1	105	42.0	105	270	297	3.814	61.875	g500-H450	MSEMA□□063-42	2	17
8.1	106	41.7	106	272	299	3.825	62.250	g500-H600	MSEMA□□063-42	2	28
7.2	117	37.2	117	450	467	3.917	69.813	g500-H450	MSEMA□□063-42	3	18
6.9	123	35.3	123	140	175	3.899	73.447	g500-H140	MSEMA□□063-42	3	14
6.5	129	33.5	129	320	400	3.762	77.387	g500-H320	MSEMA□□063-42	3	14
6.3	133	32.7	133	210	263	3.759	79.507	g500-H210	MSEMA□□063-42	3	12
6.0	142	30.6	142	140	154	3.793	84.732	g500-H140	MSEMA□□063-42	3	14
5.7	149	29.2	149	594	594	3.917	88.826	g500-H600	MSEMA□□063-42	3	29
5.7	149	29.1	149	450	563	3.855	89.048	g500-H450	MSEMA□□063-42	3	18
5.4	155	28.0	155	140	154	3.792	92.693	g500-H140	MSEMA□□063-42	3	14
5.0	168	25.8	168	320	400	3.744	100.462	g500-H320	MSEMA□□063-42	3	14
4.9	173	25.1	173	210	263	3.742	103.214	g500-H210	MSEMA□□063-42	3	12
4.6	182	23.8	182	450	563	3.817	109.083	g500-H450	MSEMA□□063-42	3	18
4.6	185	23.5	185	600	660	3.857	110.491	g500-H600	MSEMA□□063-42	3	29
3.9	215	20.1	215	320	400	3.730	128.743	g500-H320	MSEMA□□063-42	3	14
3.8	221	19.6	221	210	263	3.729	132.270	g500-H210	MSEMA□□063-42	3	12
3.7	226	19.2	226	823	905	3.953	135.373	g500-H850	MSEMA□□063-42	3	38
3.7	229	18.9	229	450	563	3.778	137.133	g500-H450	MSEMA□□063-42	3	18
3.5	239	18.1	239	600	660	3.798	142.988	g500-H600	MSEMA□□063-42	3	29
3.1	275	15.8	275	850	935	3.886	164.294	g500-H850	MSEMA□□063-42	3	38
3.1	279	15.6	279	320	352	3.721	166.541	g500-H320	MSEMA□□063-42	3	14
2.9	290	14.9	290	600	660	3.772	173.536	g500-H600	MSEMA□□063-42	3	29
2.9	295	14.7	295	450	495	3.754	176.611	g500-H450	MSEMA□□063-42	3	18
2.6	328	13.0	328	600	750	3.924	198.970	g500-H600	MSEMA□□063-42	4	32
2.5	347	12.5	347	850	935	3.820	207.675	g500-H850	MSEMA□□063-42	3	38
2.4	362	11.9	362	315	347	3.714	216.683	g500-H320	MSEMA□□063-42	3	14
2.3	371	11.7	371	504	554	3.746	221.794	g500-H600	MSEMA□□063-42	3	29
2.3	371	11.5	371	1483	1483	4.422	225.125	g500-H1500	MSEMA□□063-42	4	72
2.3	374	11.6	374	450	495	3.735	223.833	g500-H450	MSEMA□□063-42	3	18
2.2	386	11.0	386	850	935	3.888	234.319	g500-H850	MSEMA□□063-42	4	41
2.0	418	10.2	418	600	750	3.914	253.789	g500-H600	MSEMA□□063-42	4	32
1.8	464	9.2	464	1500	1854	4.066	281.416	g500-H1500	MSEMA□□063-42	4	72
1.8	469	9.2	469	450	495	3.725	280.500	g500-H450	MSEMA□□063-42	3	18
1.7	485	8.8	485	850	1063	3.932	294.334	g500-H850	MSEMA□□063-42	4	41
1.6	528	8.1	528	600	660	3.801	320.294	g500-H600	MSEMA□□063-42	4	32
1.5	577	7.4	577	1500	1650	3.953	350.054	g500-H1500	MSEMA□□063-42	4	72
1.4	606	7.0	606	850	935	3.784	368.019	g500-H850	MSEMA□□063-42	4	41
1.3	673	6.3	673	600	660	3.797	408.538	g500-H600	MSEMA□□063-42	4	32
1.2	736	5.8	736	1500	1650	3.922	446.497	g500-H1500	MSEMA□□063-42	4	72

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
1.1	781	5.4	781	850	935	3.804	473.807	g500-H850	MSEMA□□063-42	4	41
1.1	807	5.3	807	3000	3228	4.106	489.908	g500-H3000	MSEMA□□063-42	4	117
0.9	943	4.5	943	1500	1875	3.958	572.324	g500-H1500	MSEMA□□063-42	4	72
0.9	947	4.5	947	850	935	3.775	575.029	g500-H850	MSEMA□□063-42	4	41
0.9	980	4.3	980	3000	3750	4.053	594.888	g500-H3000	MSEMA□□063-42	4	117
0.9	1016	4.2	1016	850	935	3.799	616.701	g500-H850	MSEMA□□063-42	4	41
0.8	1156	3.7	1156	1500	1875	3.941	701.446	g500-H1500	MSEMA□□063-42	4	72
0.7	1219	3.5	1219	3000	3300	3.944	739.983	g500-H3000	MSEMA□□063-42	4	117
0.7	1299	3.2	1299	3000	3300	3.871	788.632	g500-H3000	MSEMA□□063-42	4	117
0.6	1437	2.9	1437	1500	1650	3.872	872.530	g500-H1500	MSEMA□□063-42	4	72
0.6	1518	2.8	1518	1500	1650	3.814	921.302	g500-H1500	MSEMA□□063-42	4	72
0.6	1578	2.7	1578	3000	3300	3.851	957.625	g500-H3000	MSEMA□□063-42	4	117
0.5	1860	2.3	1860	1500	1650	3.808	1129.157	g500-H1500	MSEMA□□063-42	4	72
0.5	2042	2.0	2042	3000	3300	3.830	1239.279	g500-H3000	MSEMA□□063-42	4	117
0.4	2478	1.7	2478	3000	3300	3.793	1504.034	g500-H3000	MSEMA□□063-42	4	117
0.3	3007	1.4	3007	3000	3300	3.785	1825.350	g500-H3000	MSEMA□□063-42	4	117



Technical data

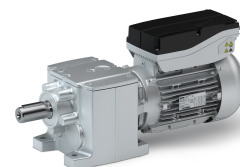
Selection tables

20 Nm

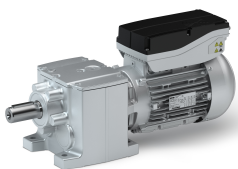
Mains operation								Geared motor			
Min. output speed		Max. output speed		Starting torque							
n ₂₁	M ₂	n ₂	M ₂	M _{a,1}	M _{a,2}	J	i			z	m
rpm	Nm	rpm	Nm	Nm	Nm	kgcm ²					kg
285	10.0	1233	10.0	41.0	40.9	26.600	2.108	g500-H100	MSEMA□□080-32	2	16
153	16.0	796	16.0	63.0	63.4	26.902	3.267	g500-H140	MSEMA□□080-32	2	17
149	16.0	775	16.0	62.0	65.1	26.525	3.354	g500-H100	MSEMA□□080-32	2	16
148	16.0	767	16.0	66.0	65.8	27.530	3.389	g500-H210	MSEMA□□080-32	2	19
148	16.0	767	16.0	66.0	65.8	27.225	3.389	g500-H320	MSEMA□□080-32	2	20
112	22.0	580	22.0	87.0	86.9	26.536	4.480	g500-H140	MSEMA□□080-32	2	17
109	22.0	565	22.0	72.0	89.3	26.335	4.600	g500-H100	MSEMA□□080-32	2	16
87.3	28.0	453	28.0	103	111	26.359	5.733	g500-H140	MSEMA□□080-32	2	17
85.0	29.0	442	29.0	81.0	101	26.236	5.887	g500-H100	MSEMA□□080-32	2	16
82.2	30.0	427	30.0	118	118	27.655	6.083	g500-H320	MSEMA□□080-32	2	20
80.1	30.0	416	30.0	121	121	27.184	6.250	g500-H210	MSEMA□□080-32	2	19
79.8	30.0	415	30.0	105	122	26.309	6.272	g500-H140	MSEMA□□080-32	2	17
77.7	31.0	404	31.0	83.0	104	26.207	6.440	g500-H100	MSEMA□□080-32	2	16
62.6	39.0	325	39.0	117	146	26.211	8.000	g500-H140	MSEMA□□080-32	2	17
60.9	40.0	317	40.0	92.0	115	26.148	8.214	g500-H100	MSEMA□□080-32	2	16
55.4	44.0	288	44.0	117	146	26.342	9.029	g500-H140	MSEMA□□080-32	2	17
51.1	48.0	265	48.0	125	156	26.155	9.800	g500-H140	MSEMA□□080-32	2	17
49.7	49.0	258	49.0	99.0	124	26.113	10.063	g500-H100	MSEMA□□080-32	2	16
46.9	52.0	244	52.0	207	207	26.723	10.677	g500-H320	MSEMA□□080-32	2	20
44.1	55.0	229	55.0	100	125	26.175	11.360	g500-H100	MSEMA□□080-32	2	16
43.3	56.0	225	56.0	128	160	26.240	11.554	g500-H140	MSEMA□□080-32	2	17
42.9	57.0	223	57.0	227	227	26.625	11.680	g500-H320	MSEMA□□080-32	2	20
41.7	58.0	217	58.0	186	233	26.497	12.000	g500-H210	MSEMA□□080-32	2	19
39.6	61.0	206	61.0	132	165	26.210	12.640	g500-H140	MSEMA□□080-32	2	17
34.6	70.0	179	70.0	100	125	26.129	14.490	g500-H100	MSEMA□□080-32	2	16
33.6	72.0	175	72.0	283	289	26.444	14.898	g500-H320	MSEMA□□080-32	2	20
32.7	74.0	170	74.0	200	250	26.365	15.306	g500-H210	MSEMA□□080-32	2	19
31.9	76.0	165	76.0	305	305	27.169	15.714	g500-H450	MSEMA□□080-32	2	24
31.7	77.0	164	77.0	307	307	27.340	15.810	g500-H600	MSEMA□□080-32	2	35
31.1	78.0	161	78.0	140	175	26.150	16.122	g500-H140	MSEMA□□080-32	2	17
28.2	86.0	146	86.0	100	125	26.100	17.750	g500-H100	MSEMA□□080-32	2	16
27.4	89.0	142	89.0	310	354	26.338	18.250	g500-H320	MSEMA□□080-32	2	20
26.7	91.0	139	91.0	210	263	26.285	18.750	g500-H210	MSEMA□□080-32	2	19
25.4	96.0	132	96.0	140	175	26.114	19.750	g500-H140	MSEMA□□080-32	2	17
21.1	115	109	115	320	400	26.209	23.754	g500-H320	MSEMA□□080-32	2	20
20.5	118	107	118	210	263	26.179	24.405	g500-H210	MSEMA□□080-32	2	19
20.2	120	105	120	140	175	26.077	24.829	g500-H140	MSEMA□□080-32	2	17
20.0	122	104	122	425	486	26.512	25.056	g500-H450	MSEMA□□080-32	2	24
19.9	122	103	122	428	489	26.579	25.207	g500-H600	MSEMA□□080-32	2	35
17.0	143	87.9	143	320	352	26.152	29.548	g500-H320	MSEMA□□080-32	2	20
16.5	147	85.6	147	210	231	26.132	30.357	g500-H210	MSEMA□□080-32	2	19
16.1	151	83.4	151	446	490	26.379	31.167	g500-H450	MSEMA□□080-32	2	24
16.0	152	82.9	152	448	493	26.423	31.356	g500-H600	MSEMA□□080-32	2	35
15.7	155	81.3	155	140	154	26.053	31.976	g500-H140	MSEMA□□080-32	2	17
13.5	180	69.9	180	532	585	26.719	37.190	g500-H850	MSEMA□□080-32	2	44
13.1	185	67.9	185	251	276	26.095	38.238	g500-H320	MSEMA□□080-32	2	20
12.8	191	66.1	191	210	231	26.083	39.286	g500-H210	MSEMA□□080-32	2	19
12.6	191	65.1	191	600	750	26.762	39.925	g500-H600	MSEMA□□080-32	3	36
12.4	196	64.4	196	450	495	26.238	40.333	g500-H450	MSEMA□□080-32	2	24
12.4	197	64.0	197	528	581	26.264	40.578	g500-H600	MSEMA□□080-32	2	35
11.5	209	59.5	209	600	750	26.658	43.676	g500-H600	MSEMA□□080-32	3	36

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
11.1	219	57.6	219	566	623	26.531	45.136	g500-H850	MSEMA□□080-32	2	44
10.8	225	56.0	225	218	240	26.070	46.407	g500-H320	MSEMA□□080-32	2	20
10.6	226	54.9	226	320	400	26.134	47.276	g500-H320	MSEMA□□080-32	3	21
10.5	231	54.5	231	206	227	26.061	47.679	g500-H210	MSEMA□□080-32	2	19
10.3	232	53.5	232	210	263	26.126	48.571	g500-H210	MSEMA□□080-32	3	19
10.3	237	53.1	237	366	402	26.175	48.950	g500-H450	MSEMA□□080-32	2	24
10.1	238	52.1	238	450	563	26.356	49.867	g500-H450	MSEMA□□080-32	3	24
10.2	239	52.7	239	456	502	26.193	49.247	g500-H600	MSEMA□□080-32	2	35
9.5	252	49.2	252	850	1008	27.269	52.743	g500-H850	MSEMA□□080-32	3	45
9.0	266	46.6	266	600	750	26.464	55.710	g500-H600	MSEMA□□080-32	3	36
8.3	289	42.9	289	320	400	26.093	60.502	g500-H320	MSEMA□□080-32	3	21
8.1	300	42.0	300	307	338	26.114	61.875	g500-H450	MSEMA□□080-32	2	24
8.1	302	41.7	302	371	408	26.125	62.250	g500-H600	MSEMA□□080-32	2	35
7.4	326	38.0	326	600	750	26.351	68.244	g500-H600	MSEMA□□080-32	3	36
7.2	334	37.2	334	450	563	26.217	69.813	g500-H450	MSEMA□□080-32	3	24
6.5	370	33.5	370	320	400	26.062	77.387	g500-H320	MSEMA□□080-32	3	21
6.0	402	30.9	402	850	1063	26.551	84.096	g500-H850	MSEMA□□080-32	3	45
5.7	424	29.2	424	600	750	26.217	88.826	g500-H600	MSEMA□□080-32	3	36
5.7	426	29.1	426	450	563	26.155	89.048	g500-H450	MSEMA□□080-32	3	24
4.8	500	24.8	500	850	935	26.405	104.607	g500-H850	MSEMA□□080-32	3	45
4.6	521	23.8	521	450	563	26.117	109.083	g500-H450	MSEMA□□080-32	3	24
4.6	528	23.5	528	600	660	26.157	110.491	g500-H600	MSEMA□□080-32	3	36
3.7	647	19.2	647	850	935	26.253	135.373	g500-H850	MSEMA□□080-32	3	45
3.5	683	18.1	683	600	660	26.098	142.988	g500-H600	MSEMA□□080-32	3	36
3.1	785	15.8	785	850	935	26.186	164.294	g500-H850	MSEMA□□080-32	3	45
2.5	966	12.8	966	1500	1650	26.676	202.237	g500-H1500	MSEMA□□080-32	3	76
2.5	992	12.5	992	850	935	26.120	207.675	g500-H850	MSEMA□□080-32	3	45
2.3	1060	11.5	1060	1500	1875	26.722	225.125	g500-H1500	MSEMA□□080-32	4	79
2.3	1067	11.4	1067	2650	3313	27.052	226.604	g500-H3000	MSEMA□□080-32	4	124
2.1	1173	10.5	1173	1500	1650	26.503	245.442	g500-H1500	MSEMA□□080-32	3	76
1.8	1325	9.2	1325	1500	1875	26.366	281.416	g500-H1500	MSEMA□□080-32	4	79
1.8	1377	8.8	1377	3000	3750	27.219	292.511	g500-H3000	MSEMA□□080-32	4	124
1.7	1482	8.3	1482	1500	1650	26.325	310.250	g500-H1500	MSEMA□□080-32	3	76
1.5	1648	7.4	1648	1500	1650	26.253	350.054	g500-H1500	MSEMA□□080-32	4	79
1.4	1772	6.9	1772	3000	3750	26.670	376.393	g500-H3000	MSEMA□□080-32	4	124
1.1	2151	5.6	2151	3000	3750	26.581	457.048	g500-H3000	MSEMA□□080-32	4	124
1.1	2306	5.3	2306	3000	3750	26.406	489.908	g500-H3000	MSEMA□□080-32	4	124
0.9	2800	4.3	2800	3000	3750	26.353	594.888	g500-H3000	MSEMA□□080-32	4	124
0.7	3483	3.5	3483	3000	3300	26.244	739.983	g500-H3000	MSEMA□□080-32	4	124
0.7	3712	3.2	3712	3000	3300	26.171	788.632	g500-H3000	MSEMA□□080-32	4	124



Dimensions

Notes on the basic dimensions

Gearbox	Without pre-stage	With pre-stage
g500-H45	2-stage	-
g500-H100 ... g500-H140	2-stage	3-stage
g500-H210 ... g500-H3000	2-/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](#) 103

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



The dimensions shown in the dimensional drawings for the solid shafts with featherkey (V□□) also apply for solid shafts without a keyway (G□□).

Please observe the available output shaft designs!

▶ [The modular system](#) 12

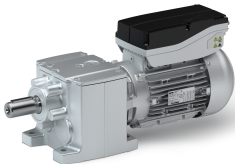


If the mounting area (foot support) towards the motor is longer than the gearbox foot, some motors collide with the mounting area!

For an accurate check of the geometrical data, Lenze recommends the use of the »Product Finder« at www.Lenze.com.

Technical data

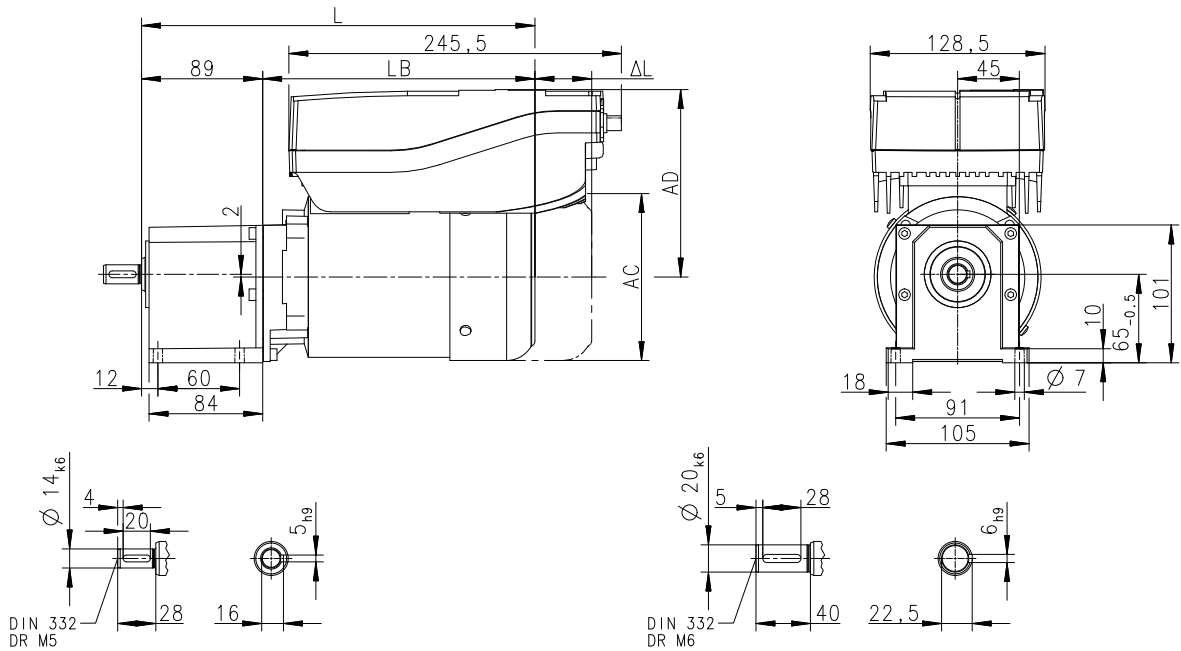
Dimensions
Basic dimensions



Basic dimensions

g500-H45, 2-stage

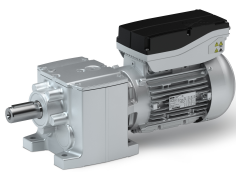
Gearbox design: Solid shaft with foot (VBR)



8800188-00

Motor series			MSEMA
Motor			063-42
Total length	L	mm	288
Motor length	LB	mm	196
Motor diameter	AC	mm	123
Motor/connection distance	AD	mm	141

ΔL ▶ Additional lengths 103

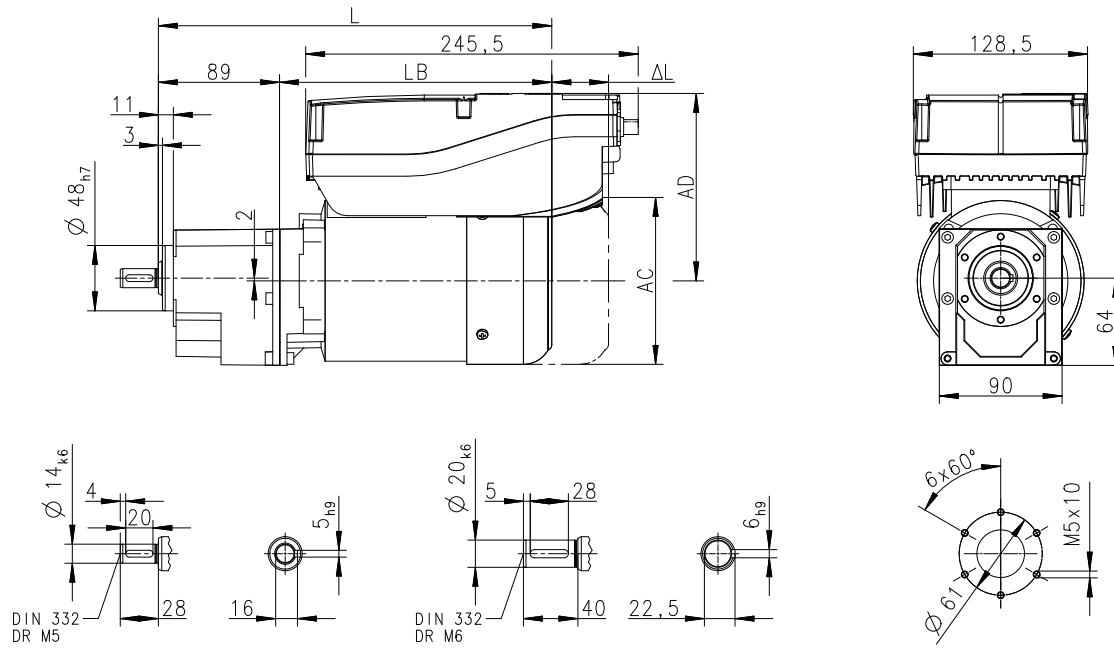


Technical data

Dimensions
Basic dimensions

g500-H45, 2-stage

Gearbox design: Solid shaft and foot/centering (VCR)



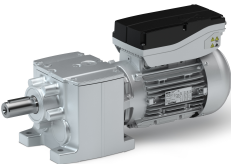
8800190-01

Motor series			MSEMA
Motor			063-42
Total length	L	mm	288
Motor length	LB	mm	196
Motor diameter	AC	mm	123
Motor/connection distance	AD	mm	141

ΔL ▶ Additional lengths [103](#)

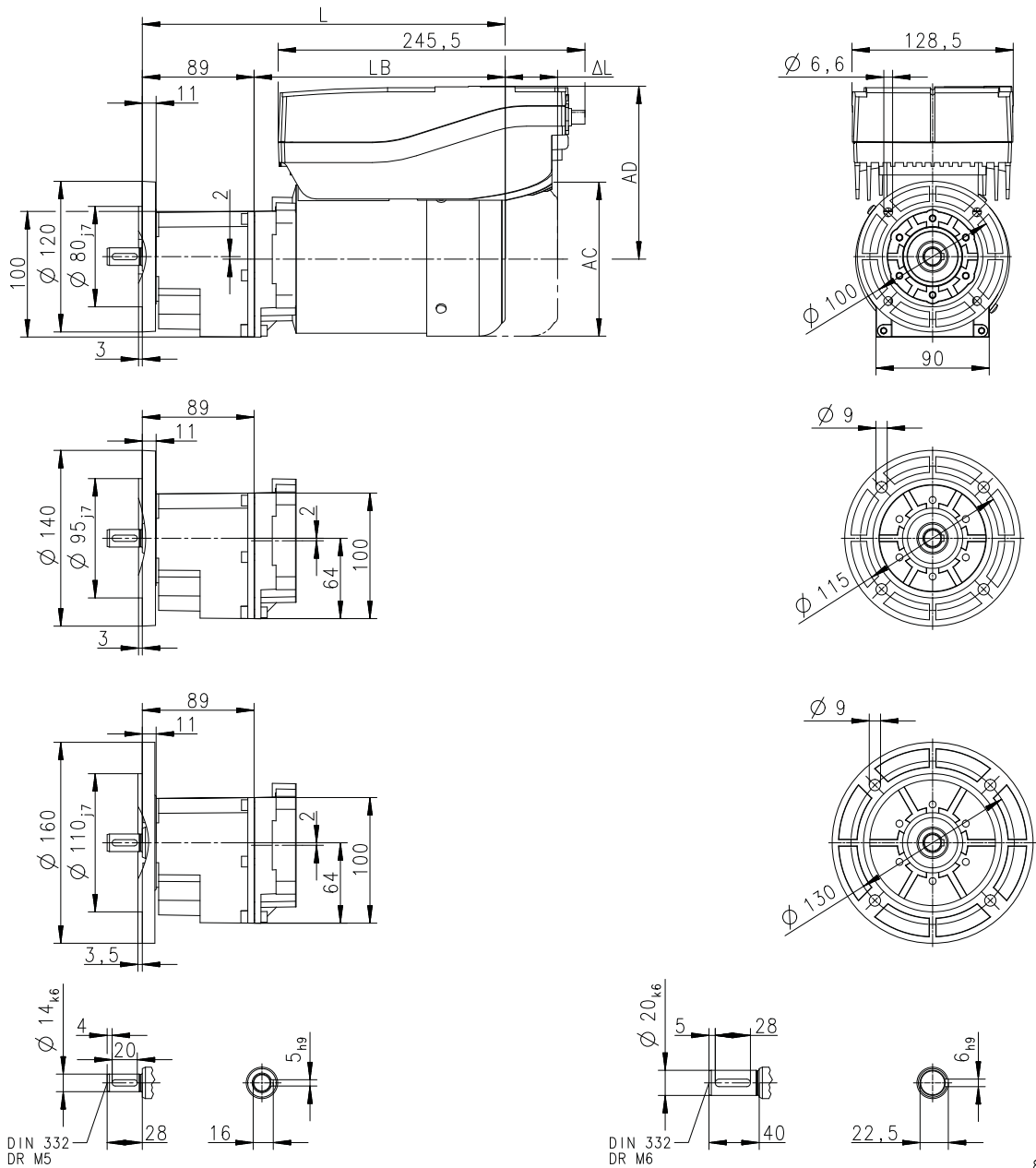
Technical data

Dimensions
Basic dimensions



g500-H45, 2-stage

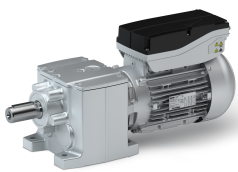
Gearbox design: Solid shaft and foot/flange (VCK)



8800189-00

Motor series			MSEMA
Motor			063-42
Total length	L	mm	288
Motor length	LB	mm	196
Motor diameter	AC	mm	123
Motor/connection distance	AD	mm	141

ΔL ▶ Additional lengths 103

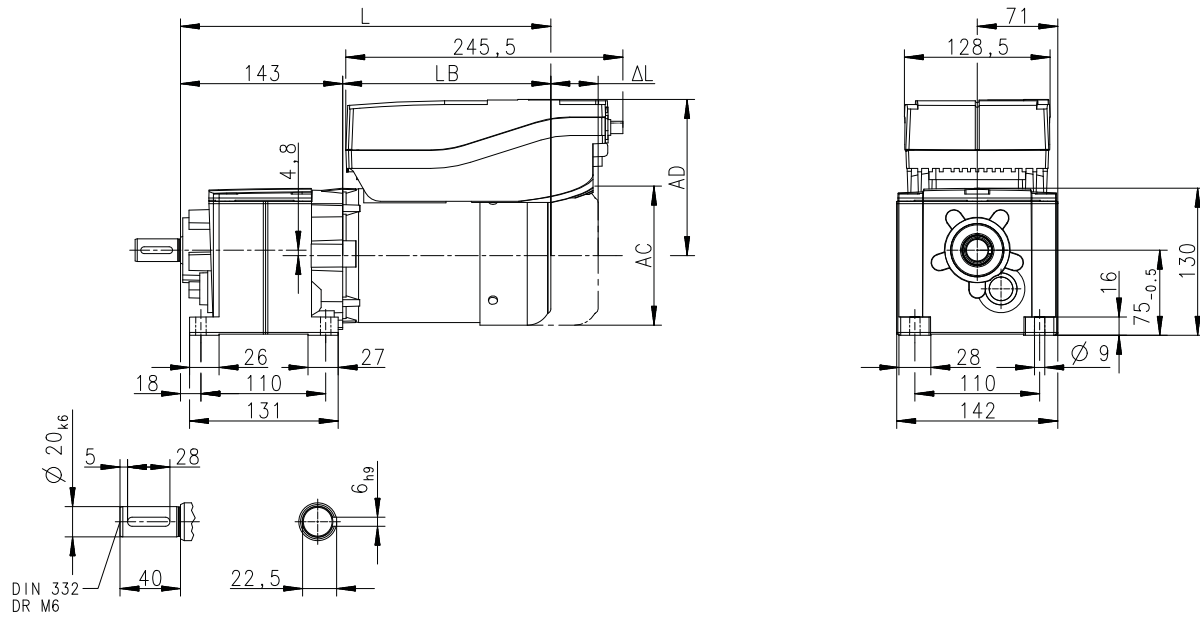


Technical data

Dimensions
Basic dimensions

g500-H100, 2-stage

Gearbox version: Solid shaft with foot (VBR)



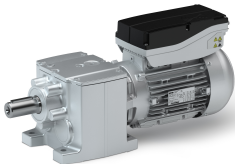
8800191-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	326	369
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 103

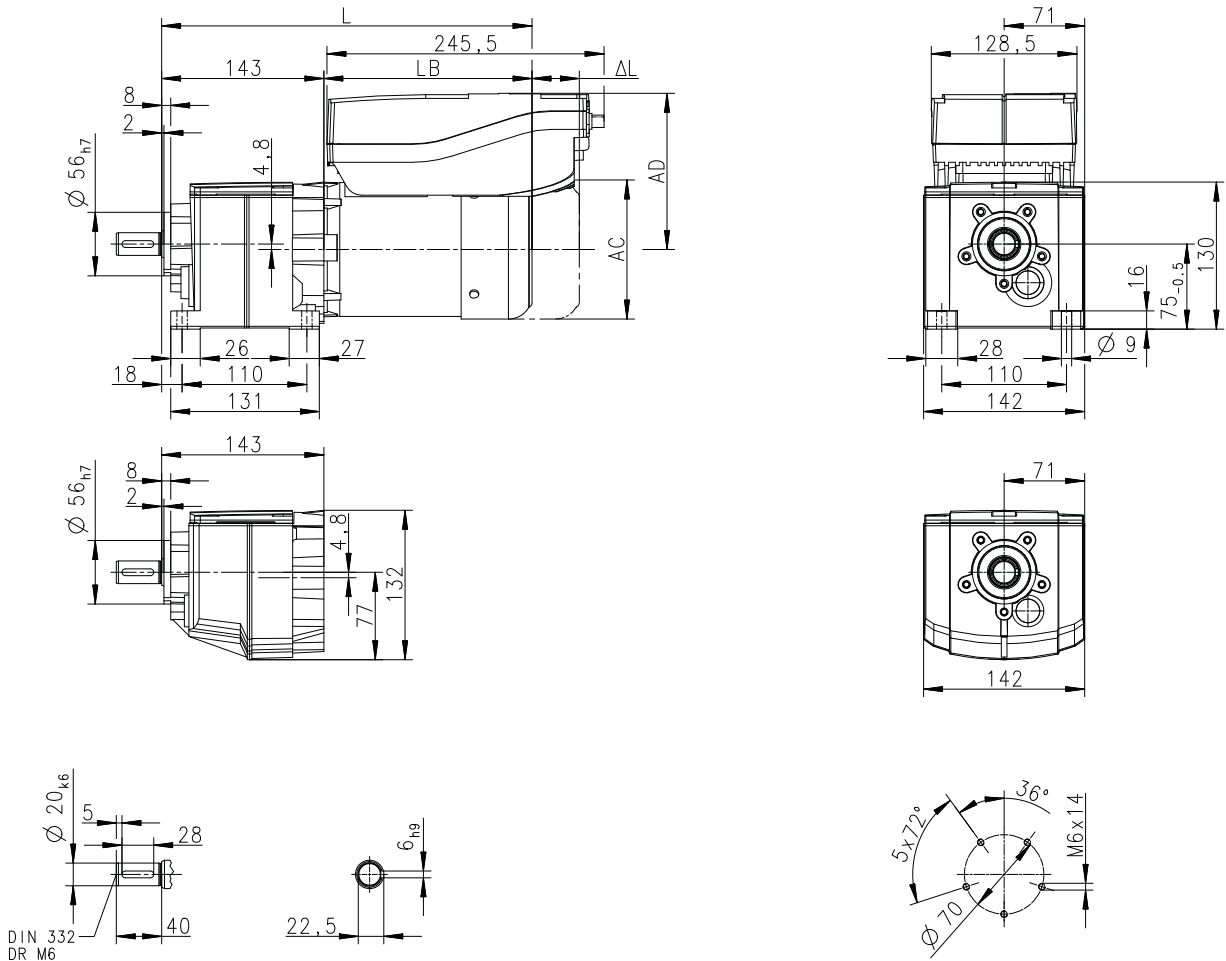
Technical data

Dimensions
Basic dimensions



g500-H100, 2-stage

Gearbox version: Solid shaft with foot/centering (VAR/VCR)



8800193-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	326	369
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 103



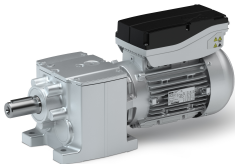
g500-H100, 2-stage

8800192-02

Δ L ▶ Additional lengths  103

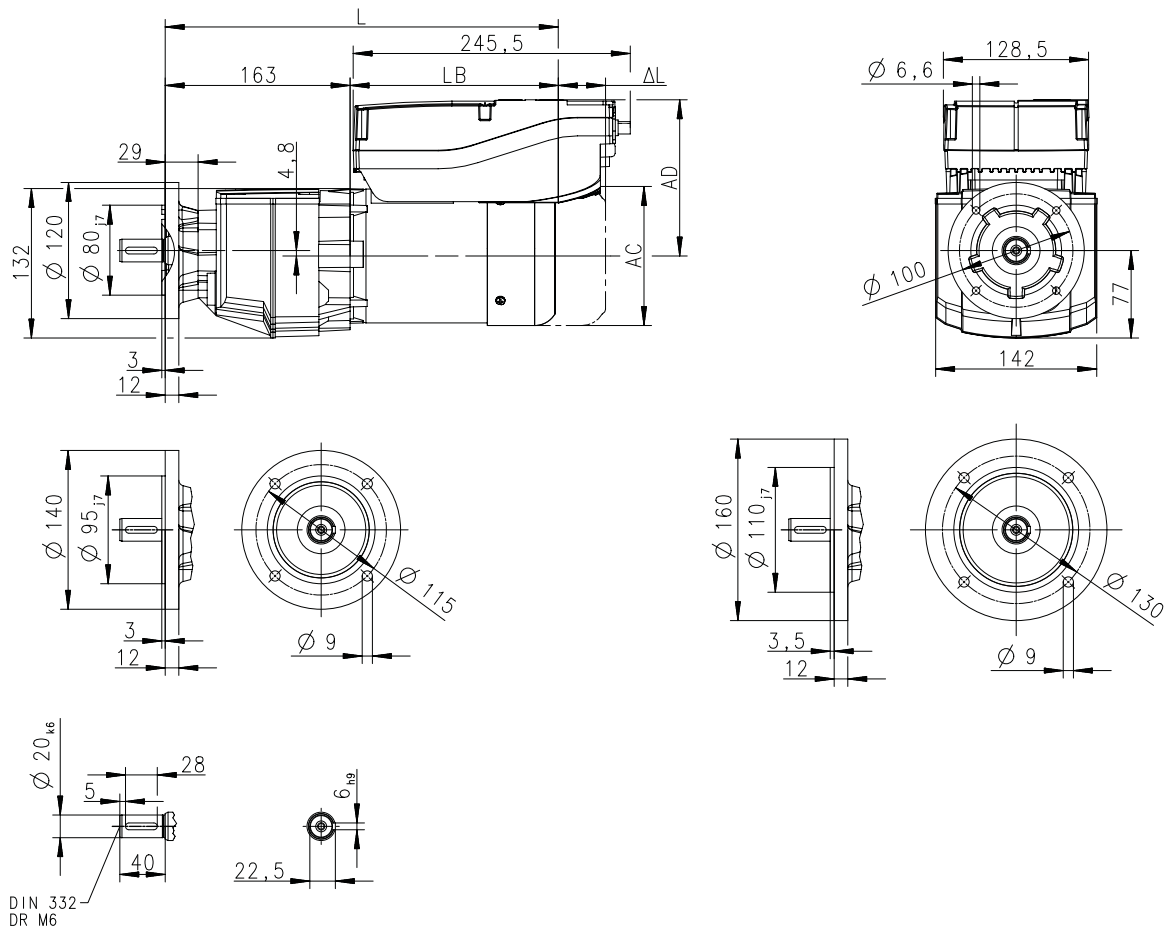
Technical data

Dimensions
Basic dimensions



g500-H100, 2-stage

Gearbox design: Solid shaft and flange (VCP)



8800327-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	346	389
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 103



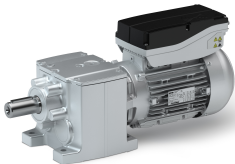
g500-H140, 2-stage

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	339	382
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

75

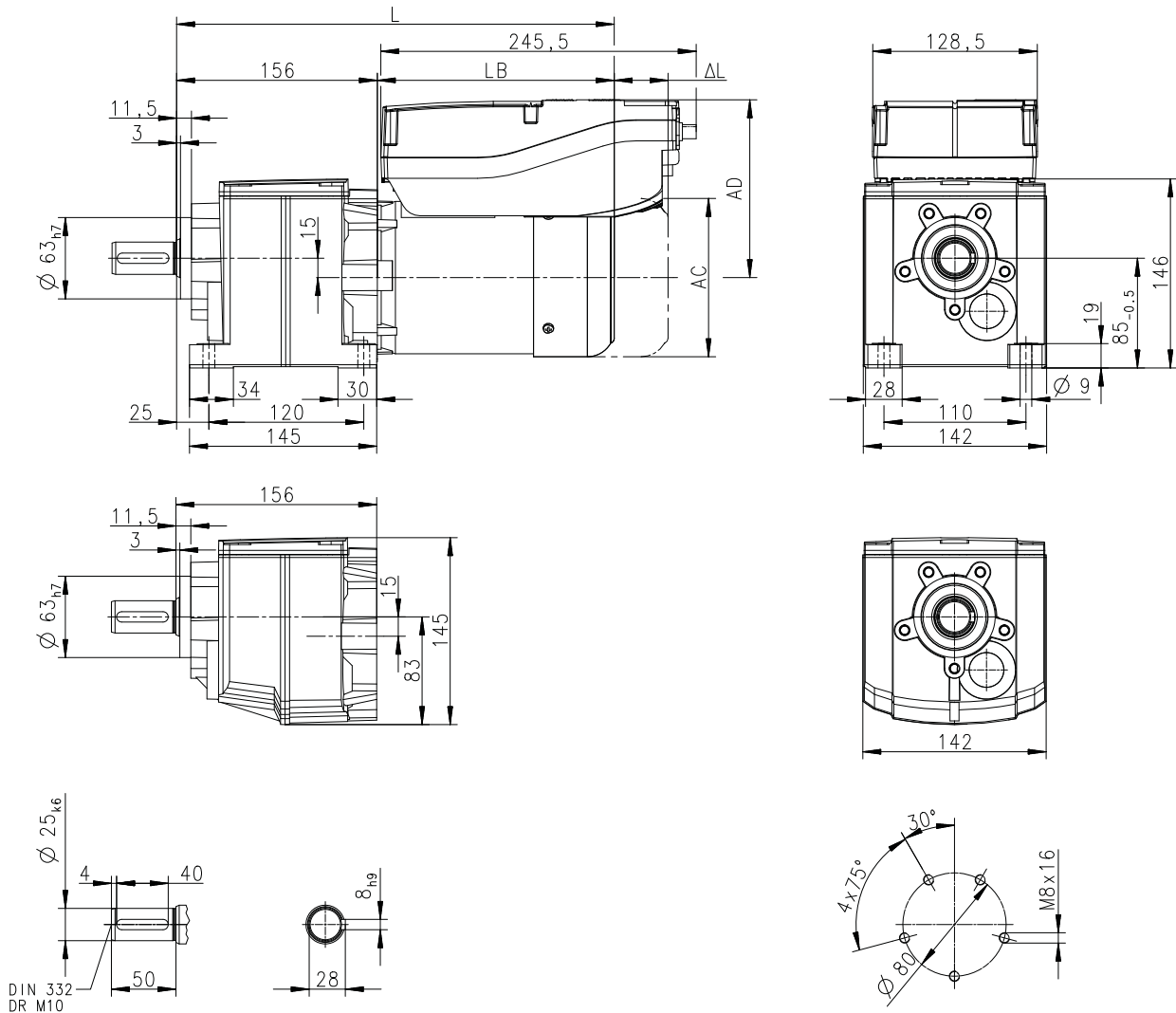
Technical data

Dimensions
Basic dimensions



g500-H140, 2-stage

Gearbox design: Solid shaft with foot/centering (VAR/VCR)



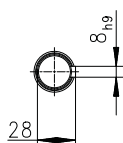
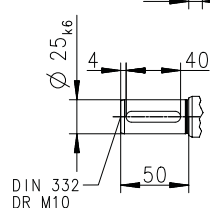
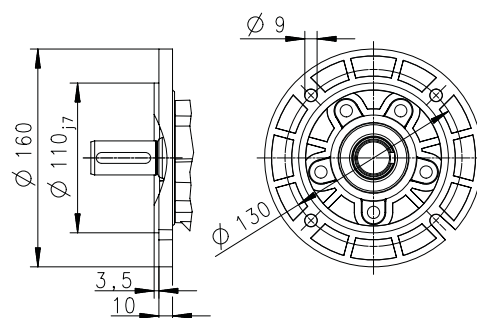
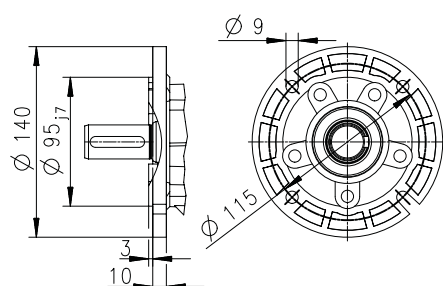
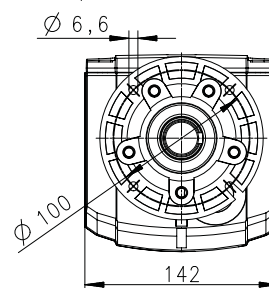
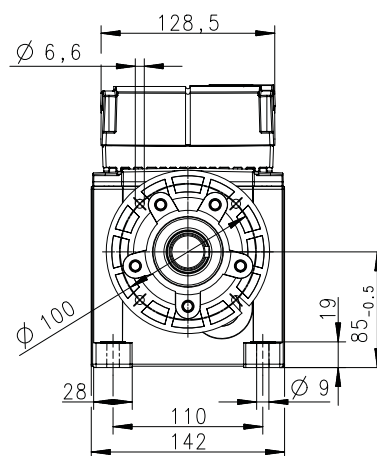
8800196-01

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	339	382
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 103



g500-H140, 2-stage

[illegible]

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	339	382
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

77

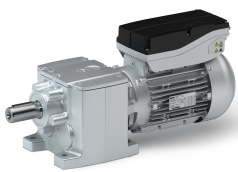
Dimensions

Basic dimensions



Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	362	405
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

78

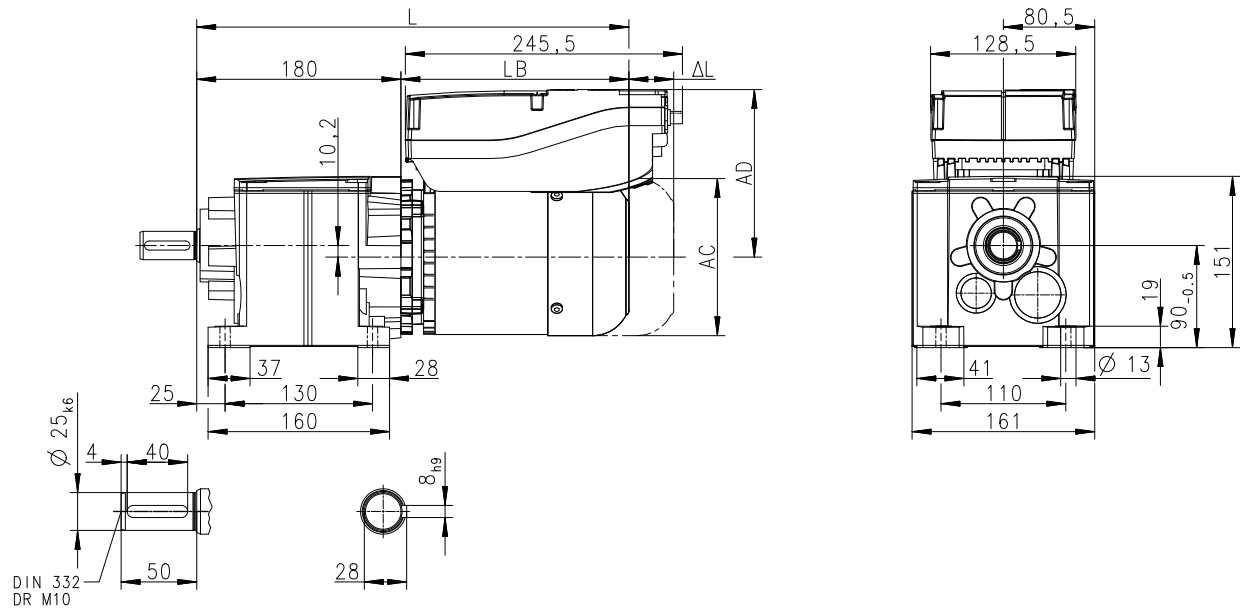


Technical data

Dimensions
Basic dimensions

g500-H210, 2-/3-stage

Gearbox design: Solid shaft with foot (VBR)



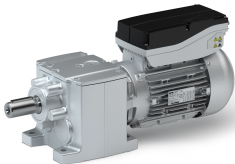
8800197-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	363	406
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ [Additional lengths](#) 103

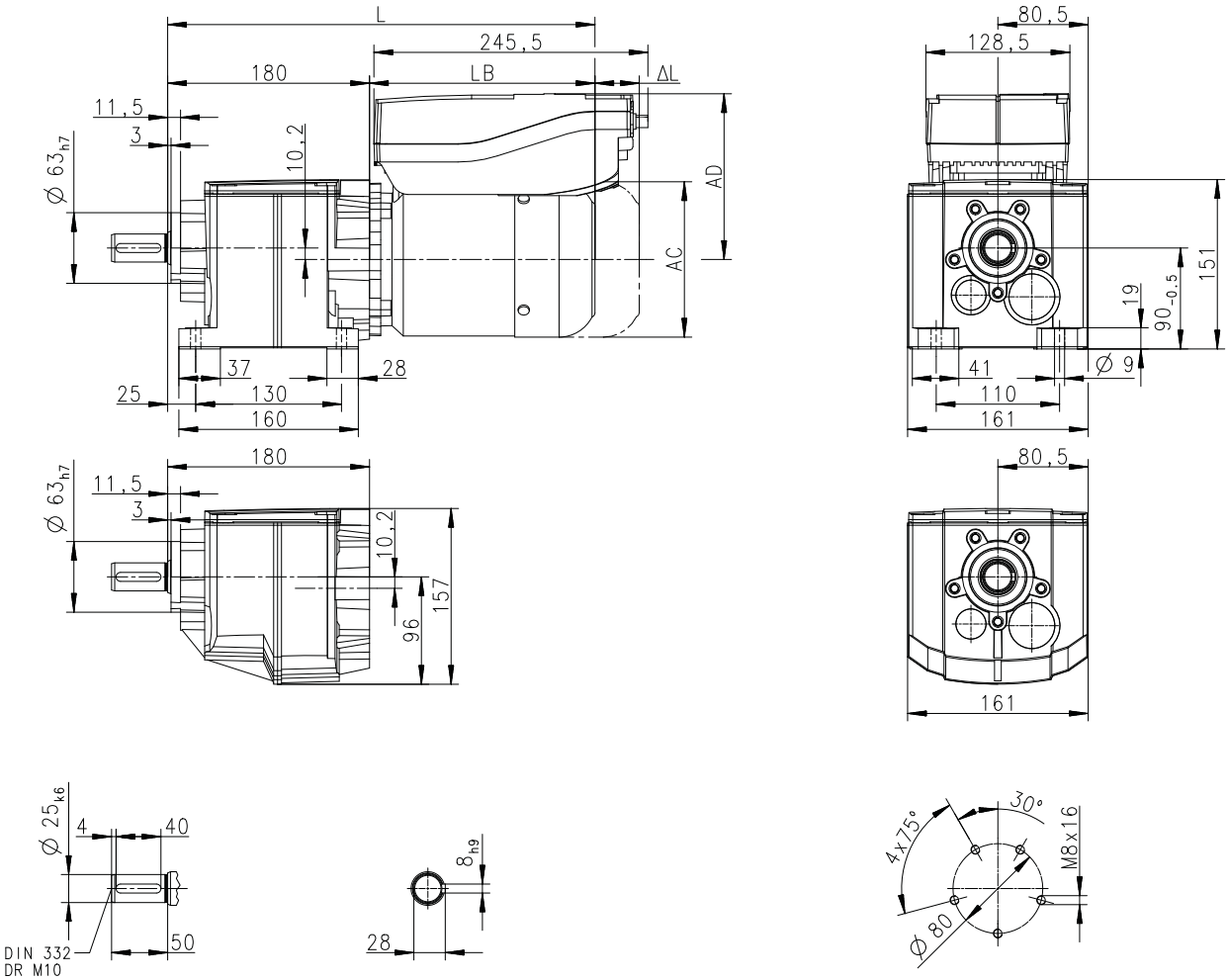
Technical data

Dimensions
Basic dimensions



g500-H210, 2-/3-stage

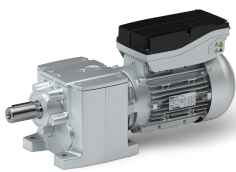
Gearbox version: Solid shaft with foot/centering (VAR/VCR)



8800199-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	363	406
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 103

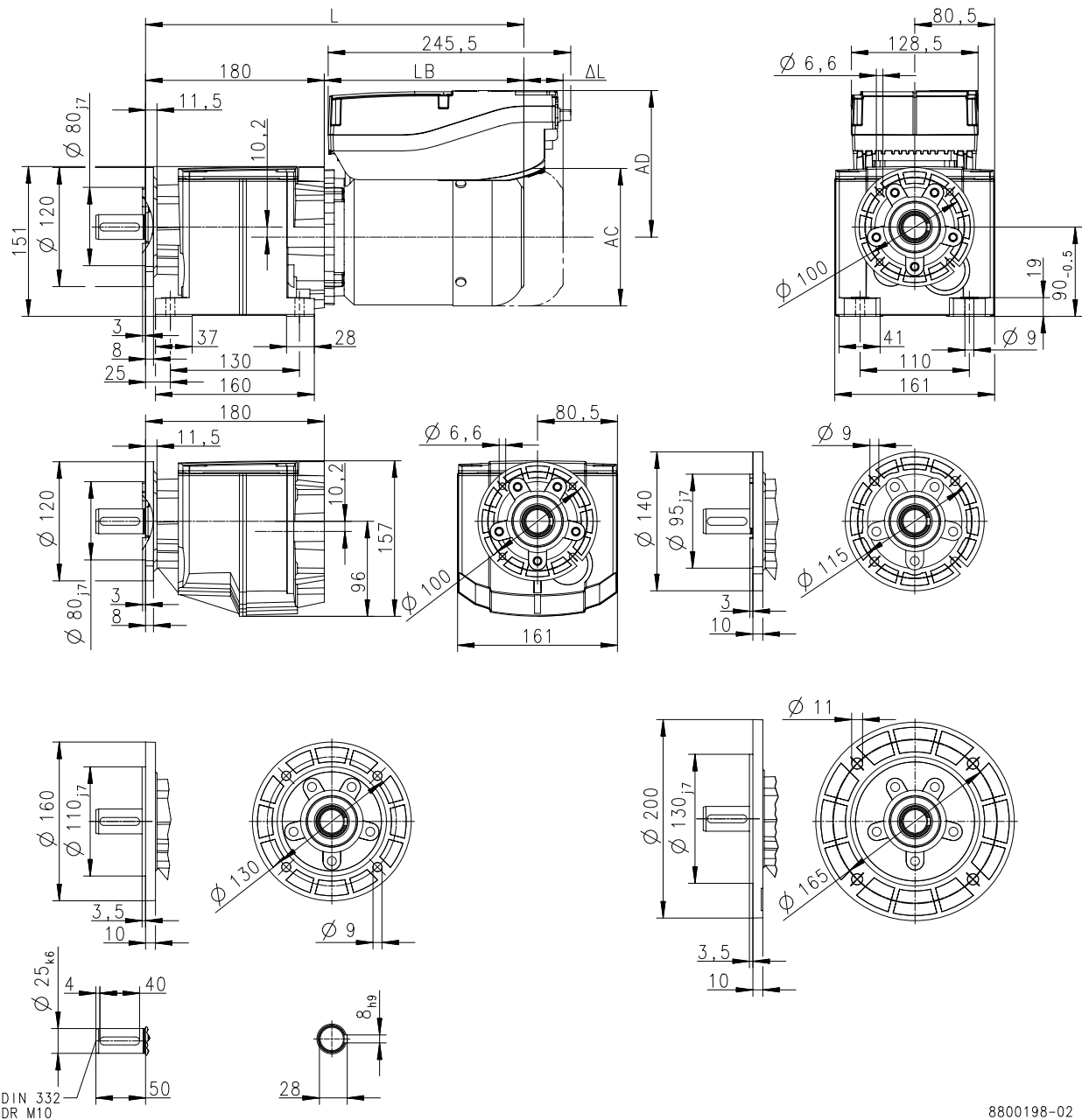


Technical data

Dimensions
Basic dimensions

g500-H210, 2-/3-stage

Gearbox design: Solid shaft and foot/flange (VAK/VCK)



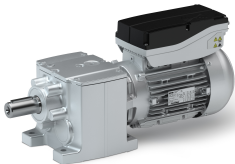
8800198-02

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	363	406
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 103

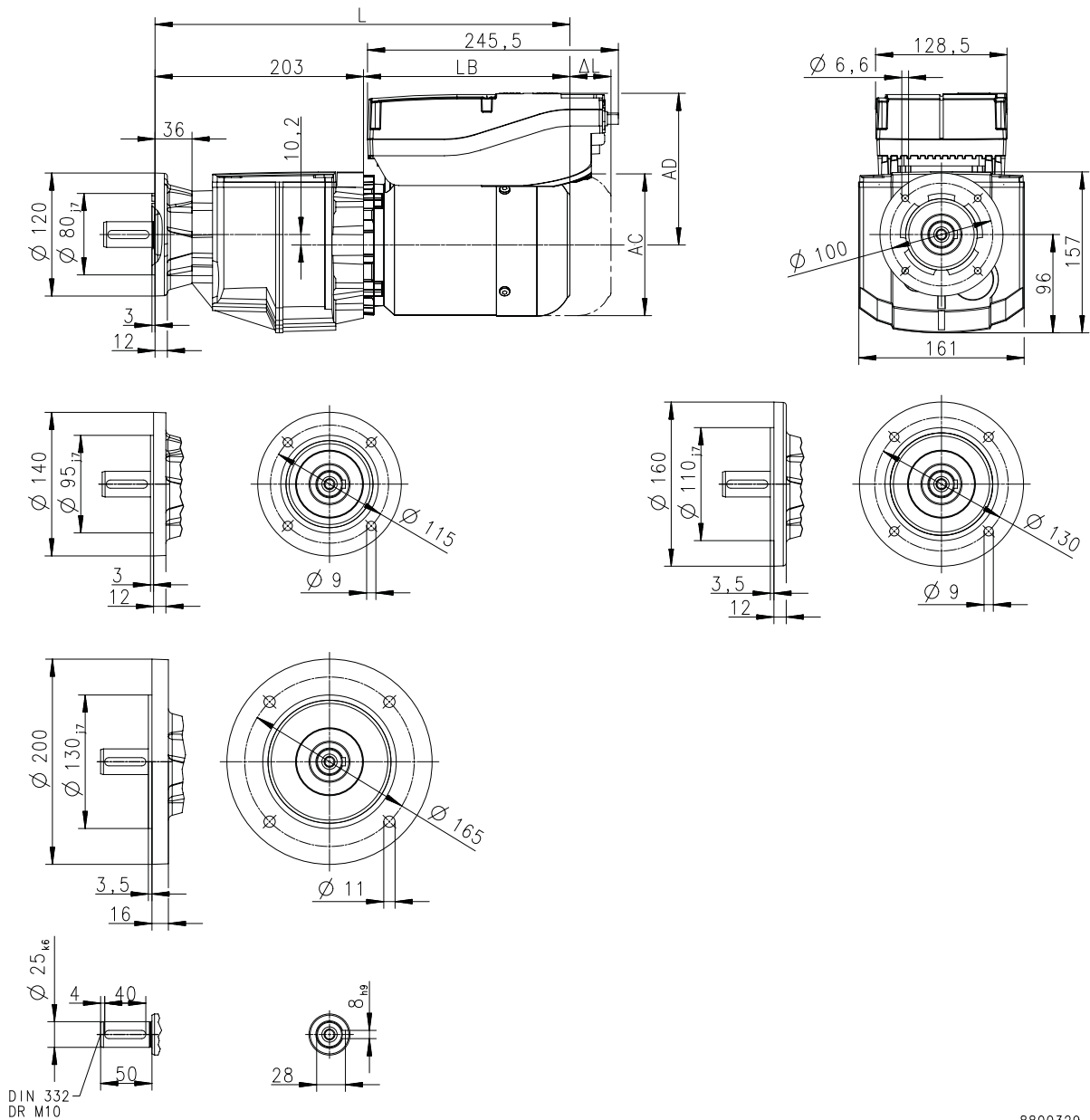
Technical data

Dimensions
Basic dimensions



g500-H210, 2-/3-stage

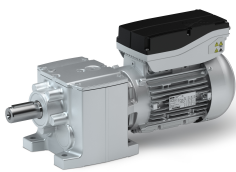
Gearbox design: Solid shaft and flange (VCP)



8800329-01

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	386	429
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 103

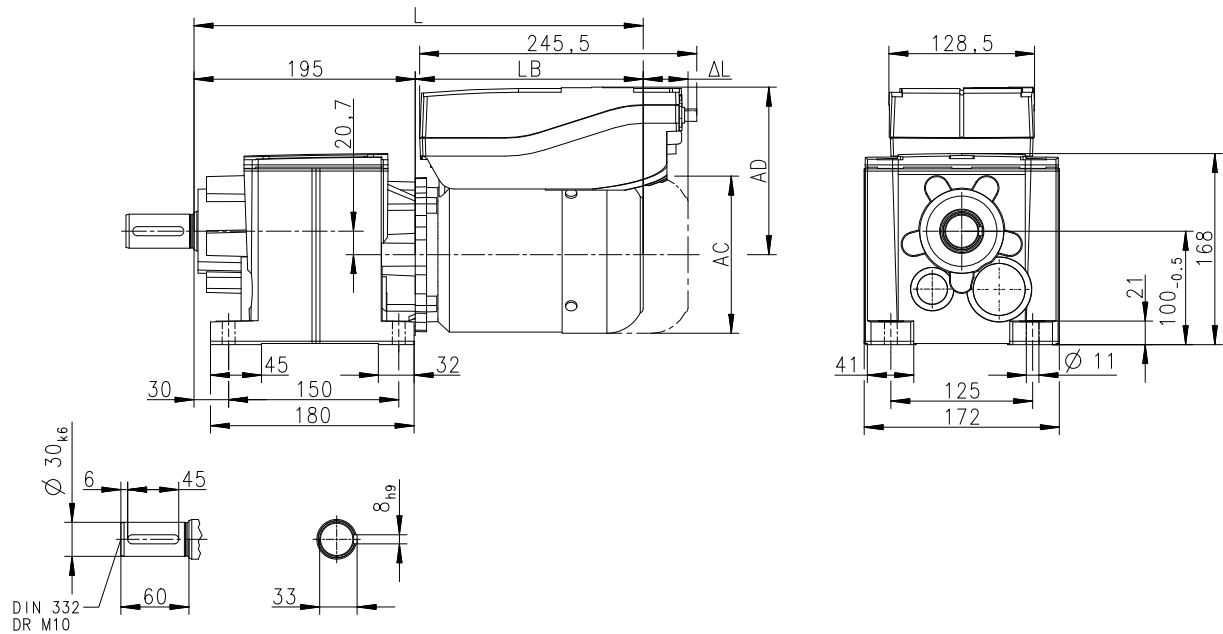


Technical data

Dimensions
Basic dimensions

g500-H320, 2-/3-stage

Gearbox version: Solid shaft with foot (VBR)



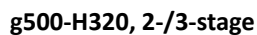
8800200-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	378	421
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths [103](#)

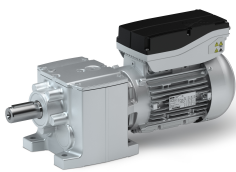
Dimensions

Basic dimensions

[illegible]

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	378	421
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

84

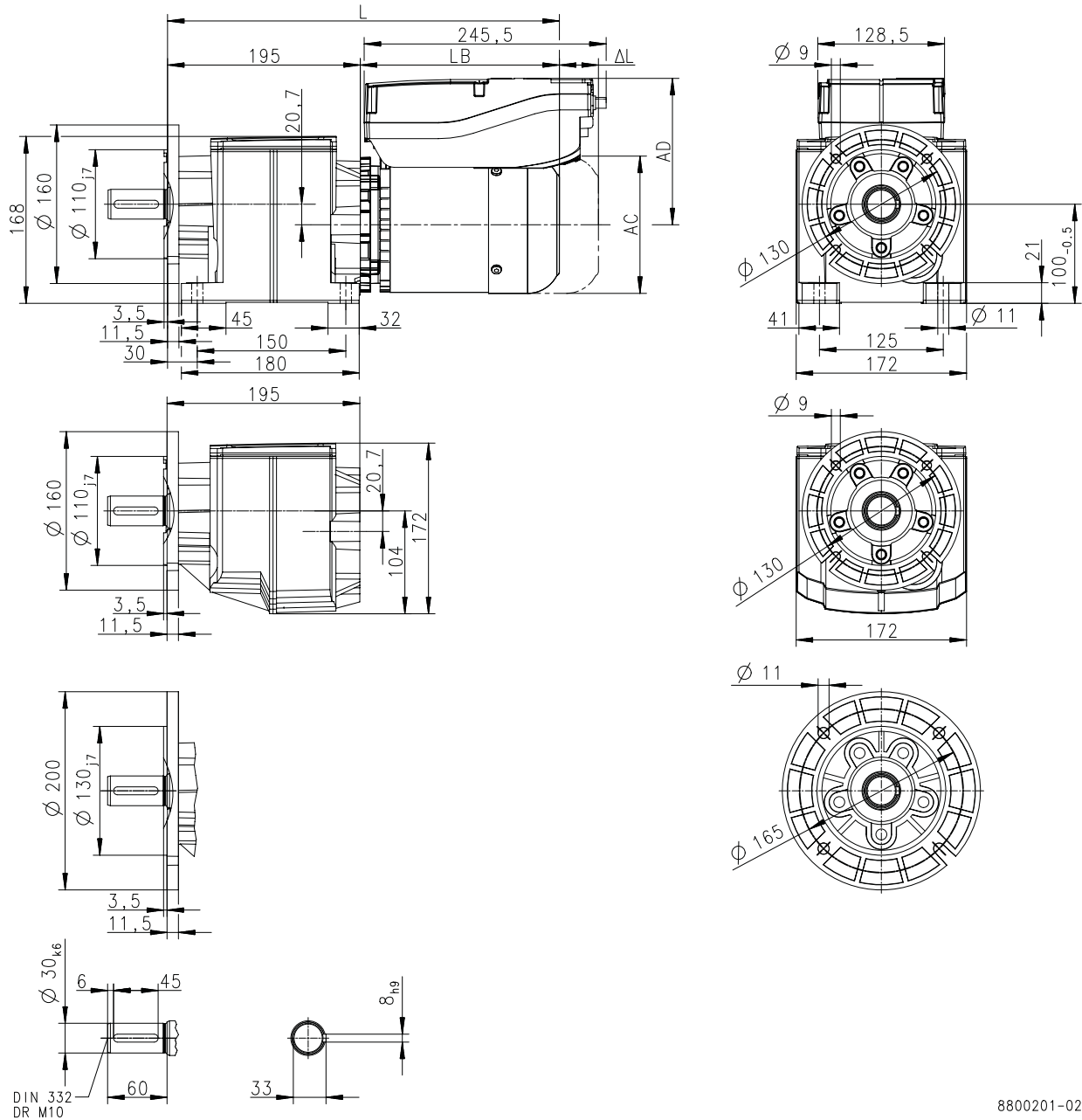


Technical data

Dimensions
Basic dimensions

g500-H320, 2-/3-stage

Gearbox design: Solid shaft and foot/flange (VAK/VCK)



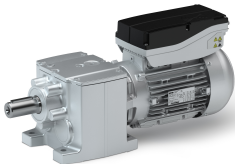
8800201-02

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	378	421
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 103

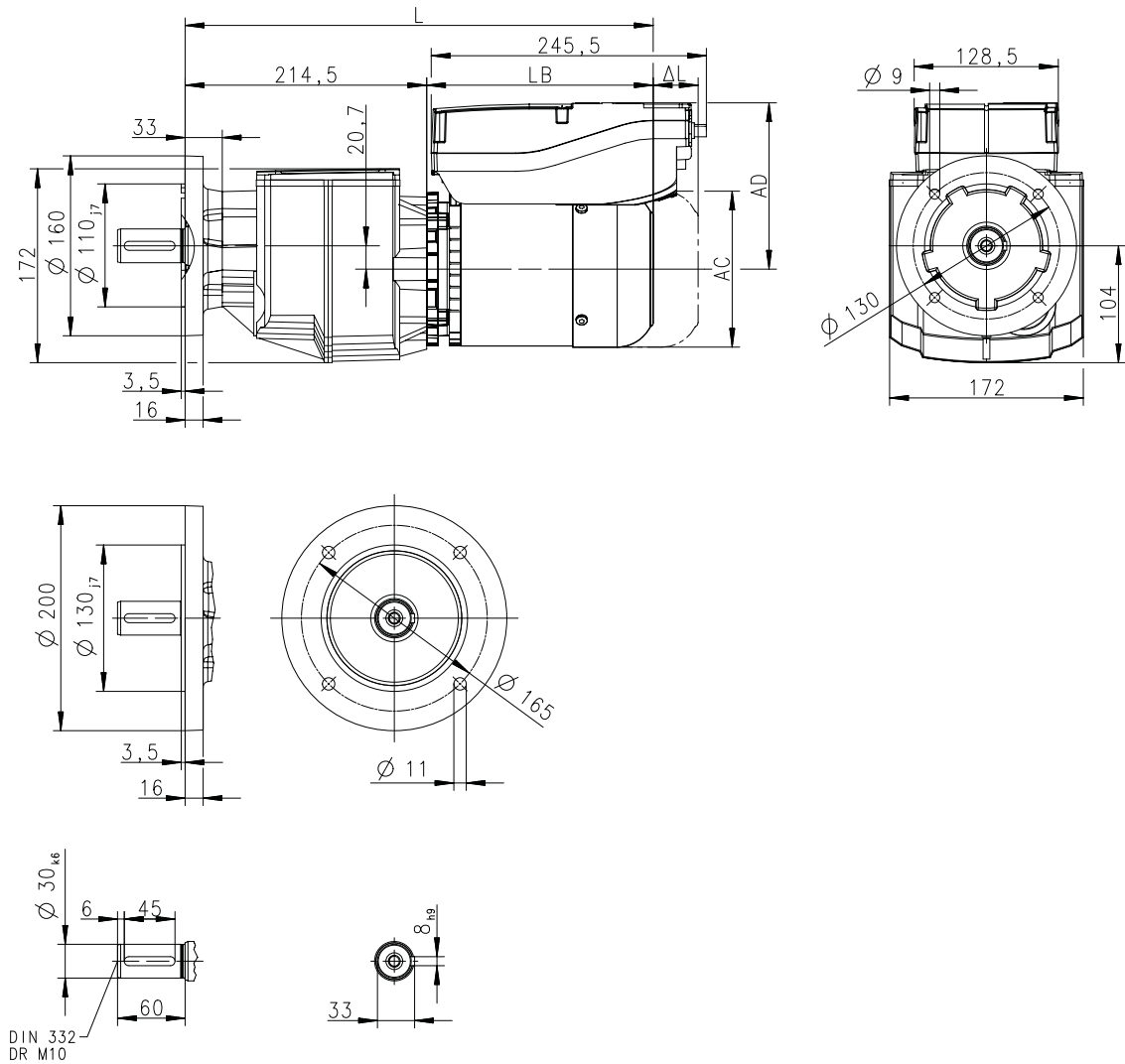
Technical data

Dimensions
Basic dimensions



g500-H320, 2-/3-stage

Gearbox design: Solid shaft and flange (VCP)



8800330-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	398	441
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 103

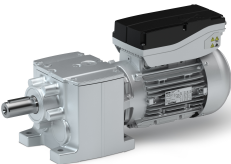


g500-H450, 2-/3-stage

87

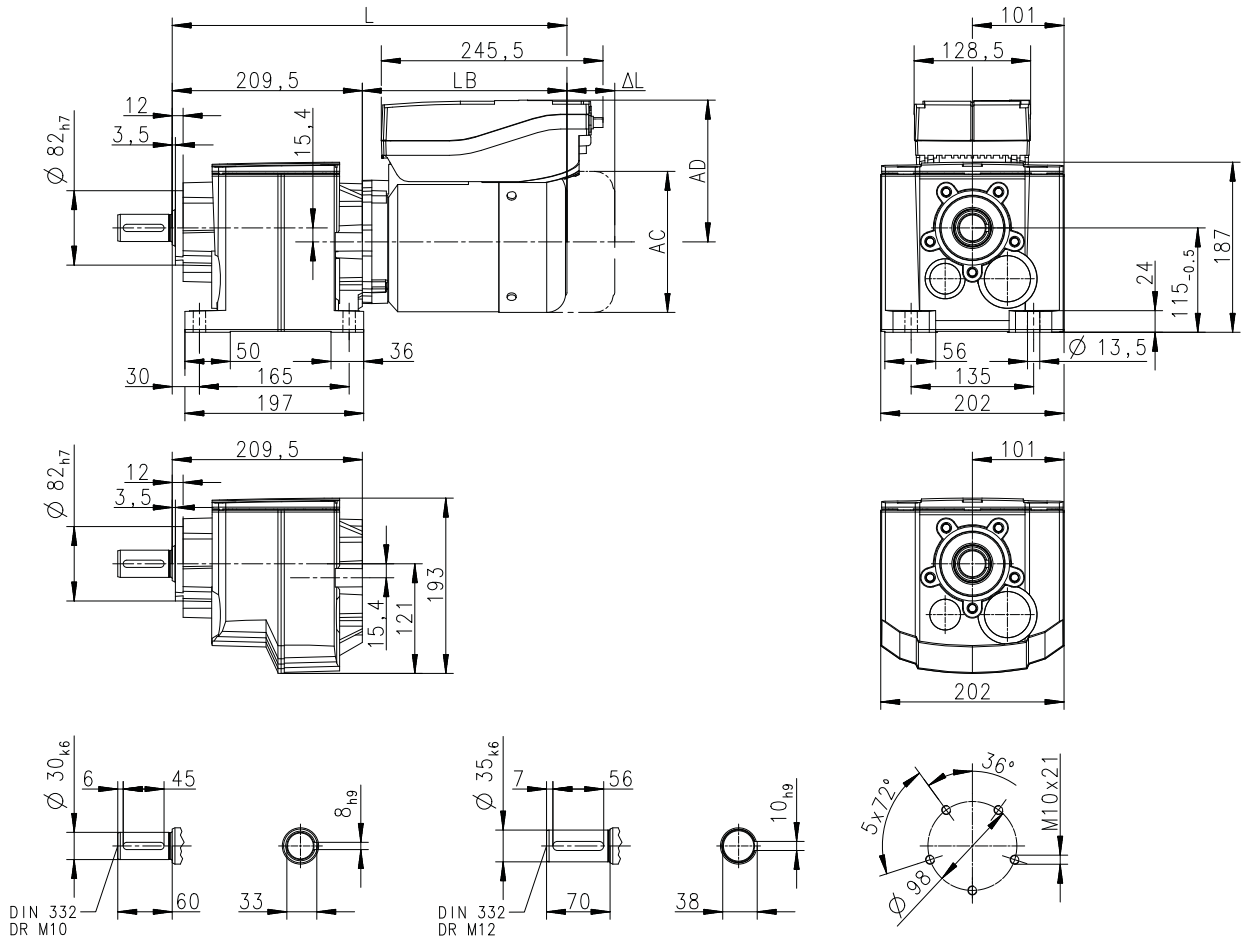
Technical data

Dimensions
Basic dimensions



g500-H450, 2-/3-stage

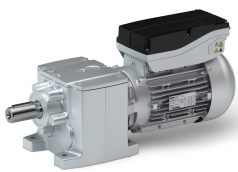
Gearbox design: Solid shaft with foot/centering (VAR/VCR)



8800205-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	393	436
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 103

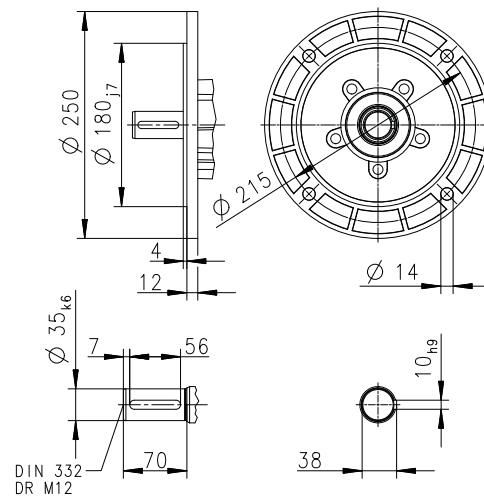
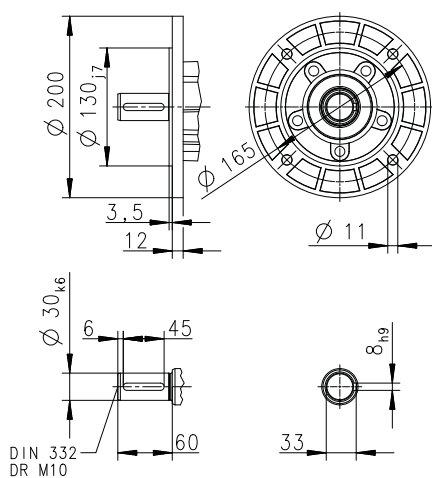
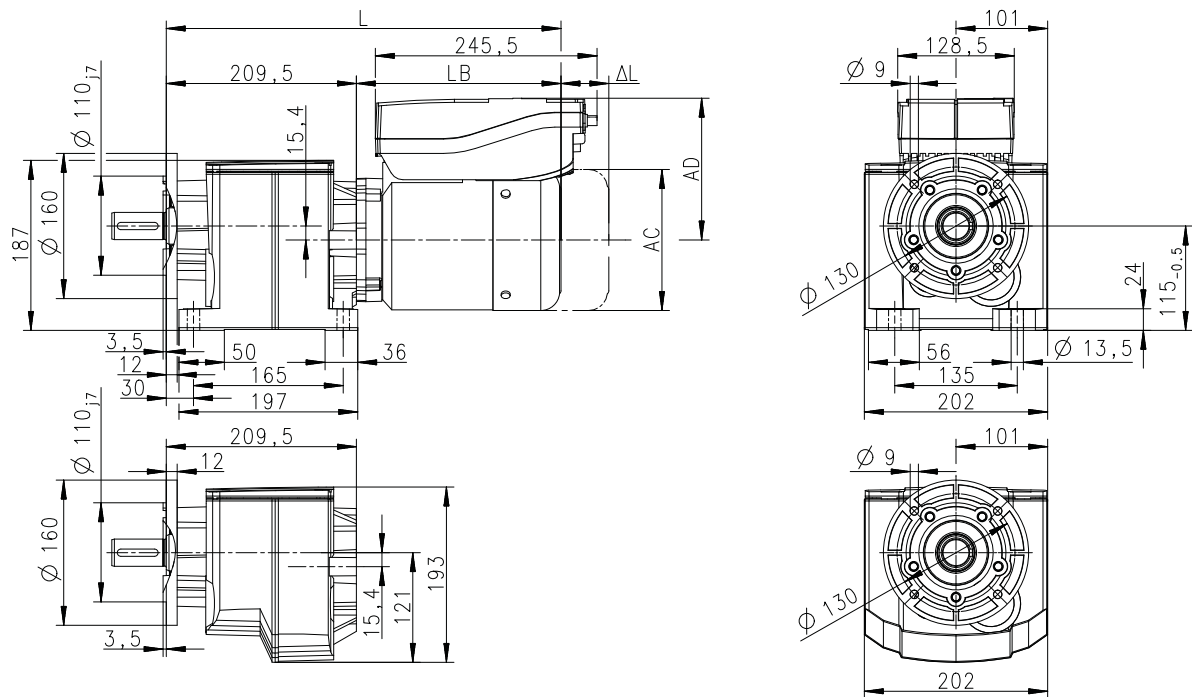


Technical data

Dimensions
Basic dimensions

g500-H450, 2-/3-stage

Gearbox design: Solid shaft and foot/flange (VAK/VCK)



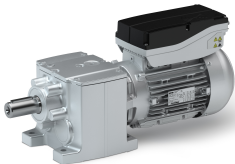
8800204-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	393	436
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 103

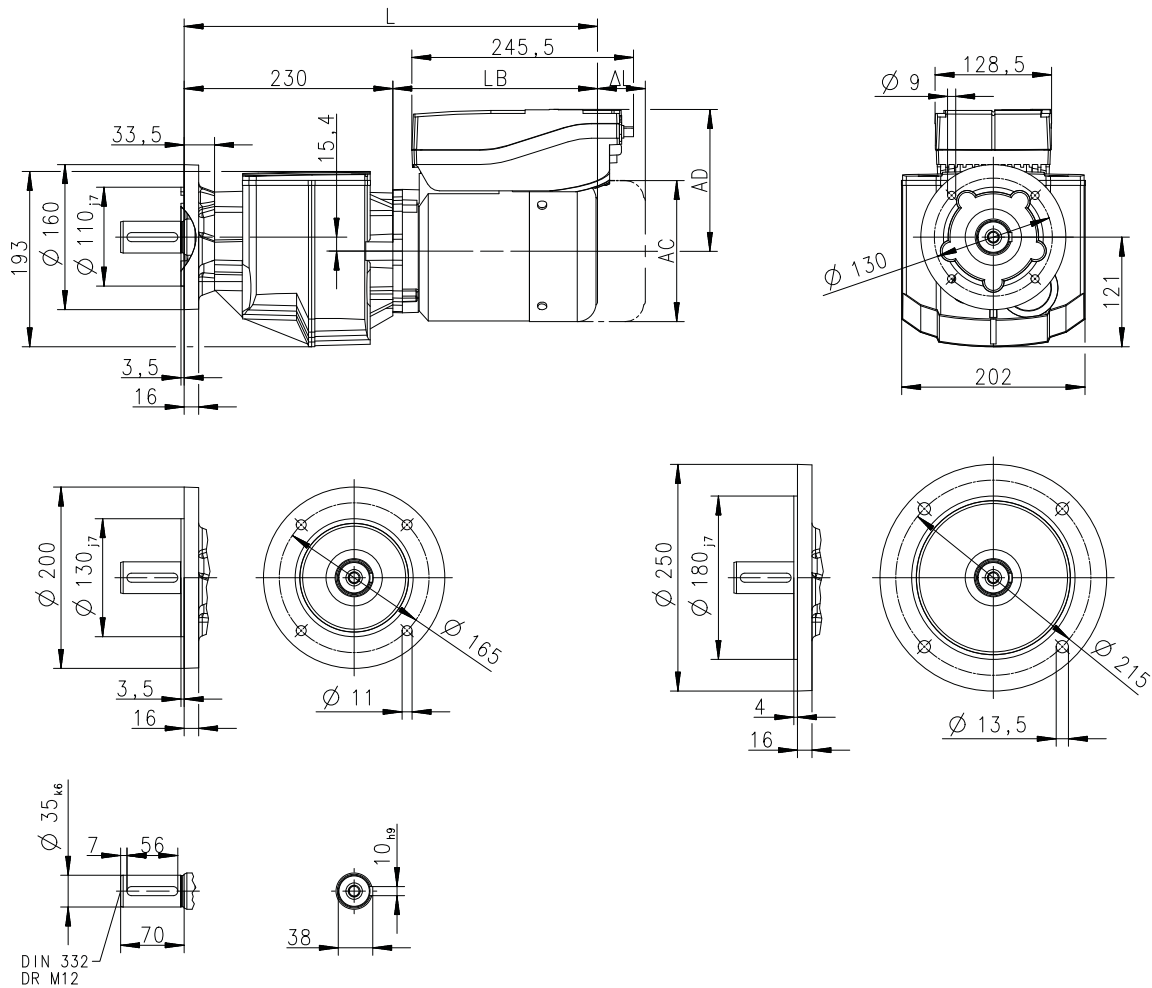
Technical data

Dimensions
Basic dimensions



g500-H450, 2-/3-stage

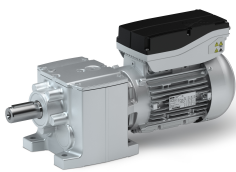
Gearbox design: Solid shaft and flange (VCP)



8800331-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	413	456
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ [Additional lengths](#) 103

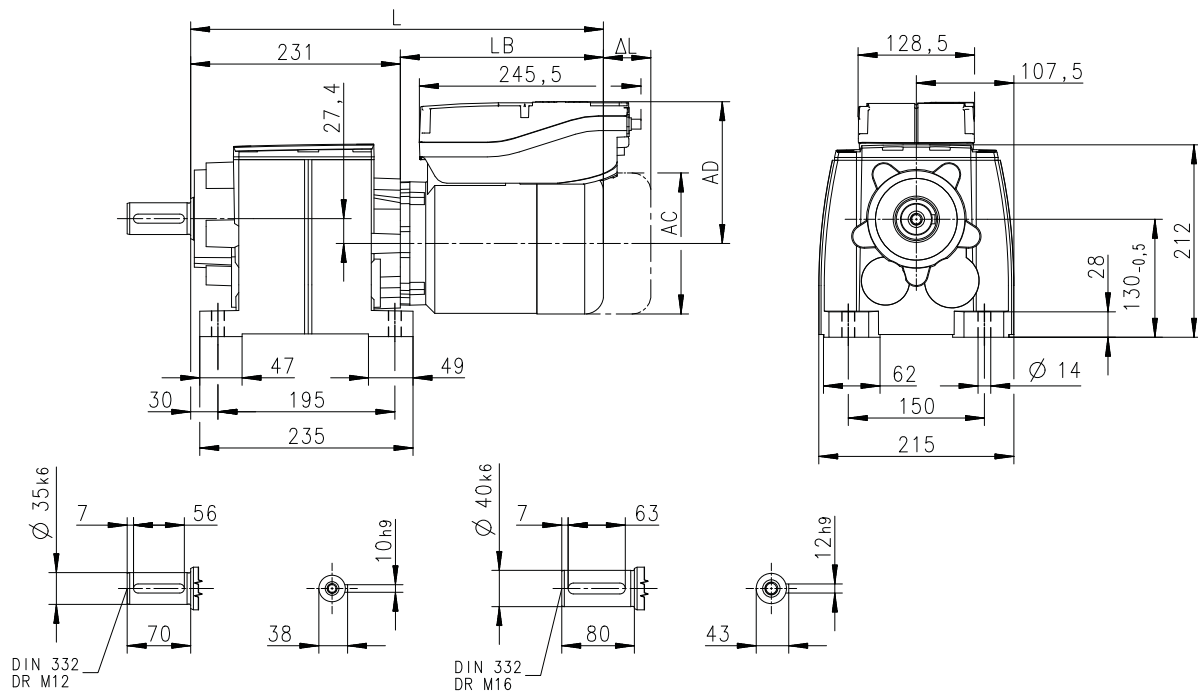


Technical data

Dimensions
Basic dimensions

g500-H600, 2-/3-stage

Gearbox design: Solid shaft with foot (VBR)



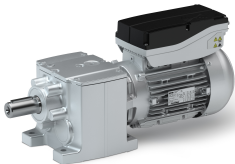
8800770-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	414	457
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths [103](#)

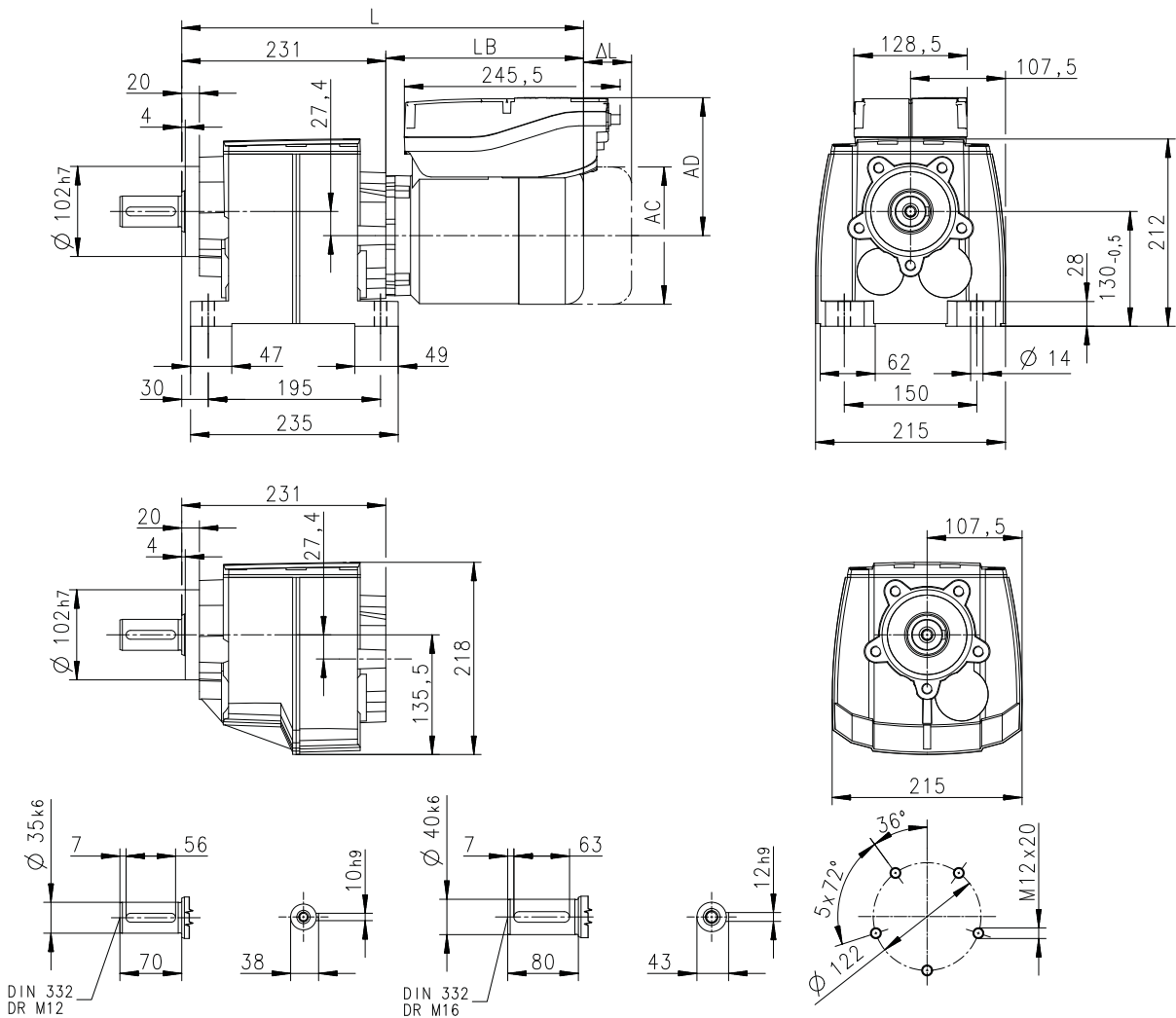
Technical data

Dimensions
Basic dimensions



g500-H600, 2-/3-stage

Gearbox design: Solid shaft with foot/centering (VAR/VCR)



8800771-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	414	457
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

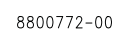
Δ L ▶ Additional lengths 103



Dimensions

Basic dimensions

Gearbox design: Solid shaft and foot/flange (VAK/VCK)

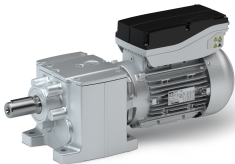


Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	414	457
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths  103

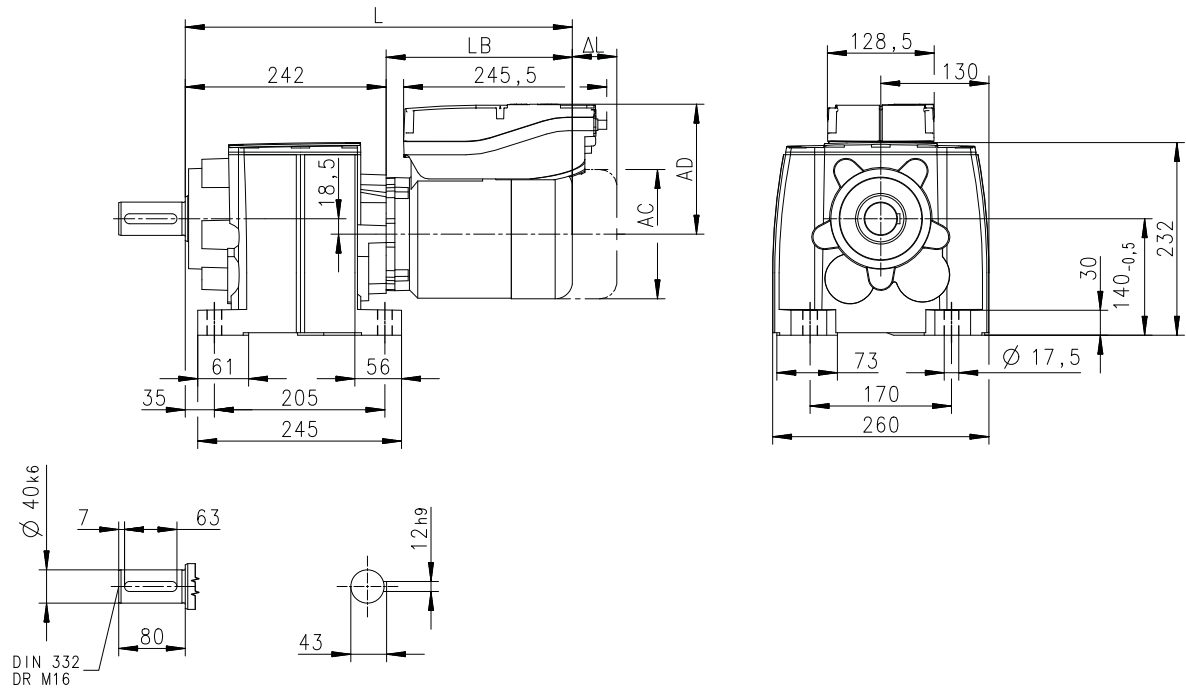
Technical data

Dimensions
Basic dimensions



g500-H850, 2-/3-stage

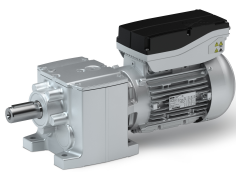
Gearbox design: Solid shaft with foot (VBR)



8800773-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	425	468
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 103

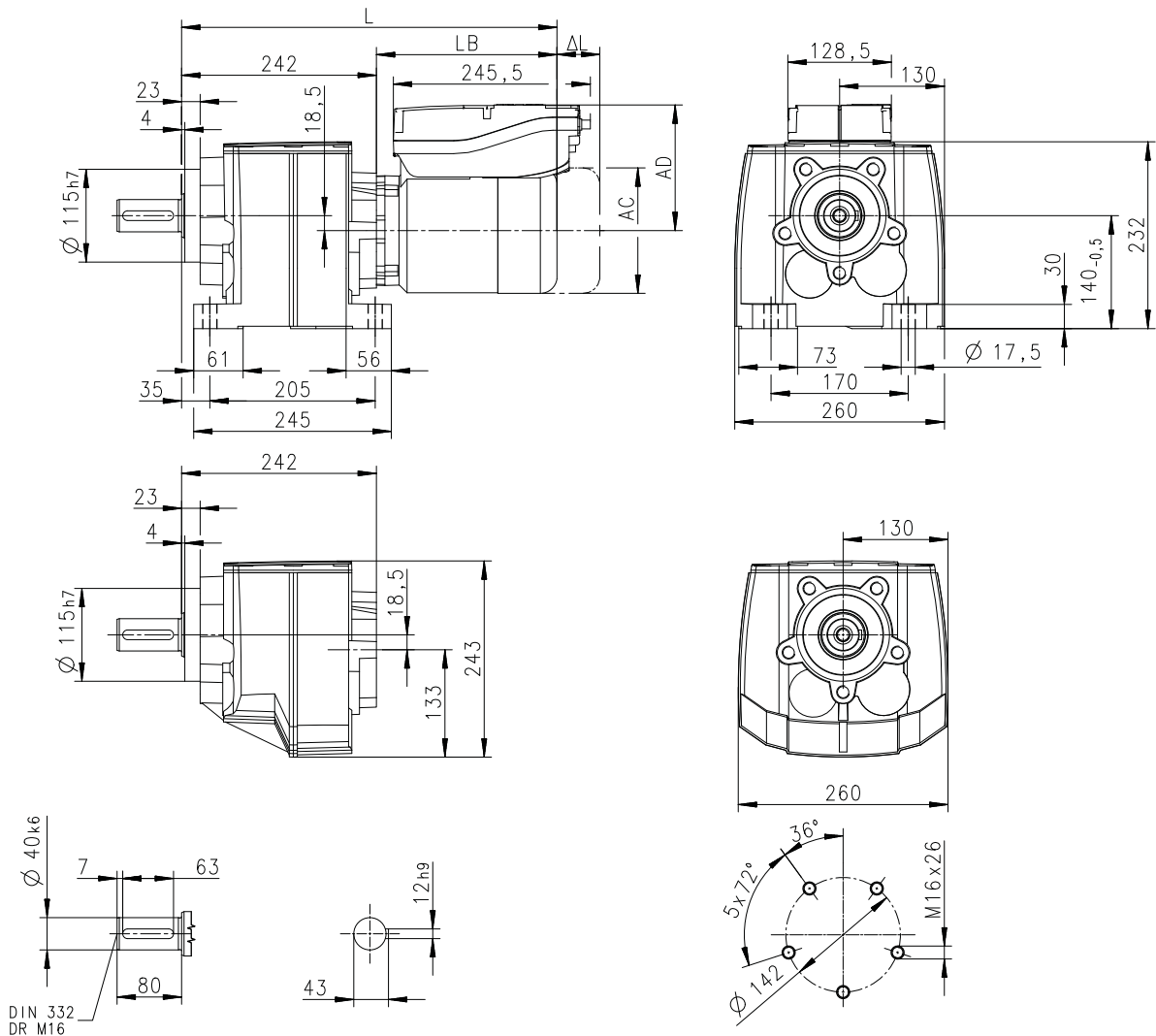


Technical data

Dimensions
Basic dimensions

g500-H850, 2-/3-stage

Gearbox design: Solid shaft with foot/centering (VAR/VCR)



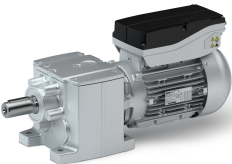
8800774-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	425	468
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 103

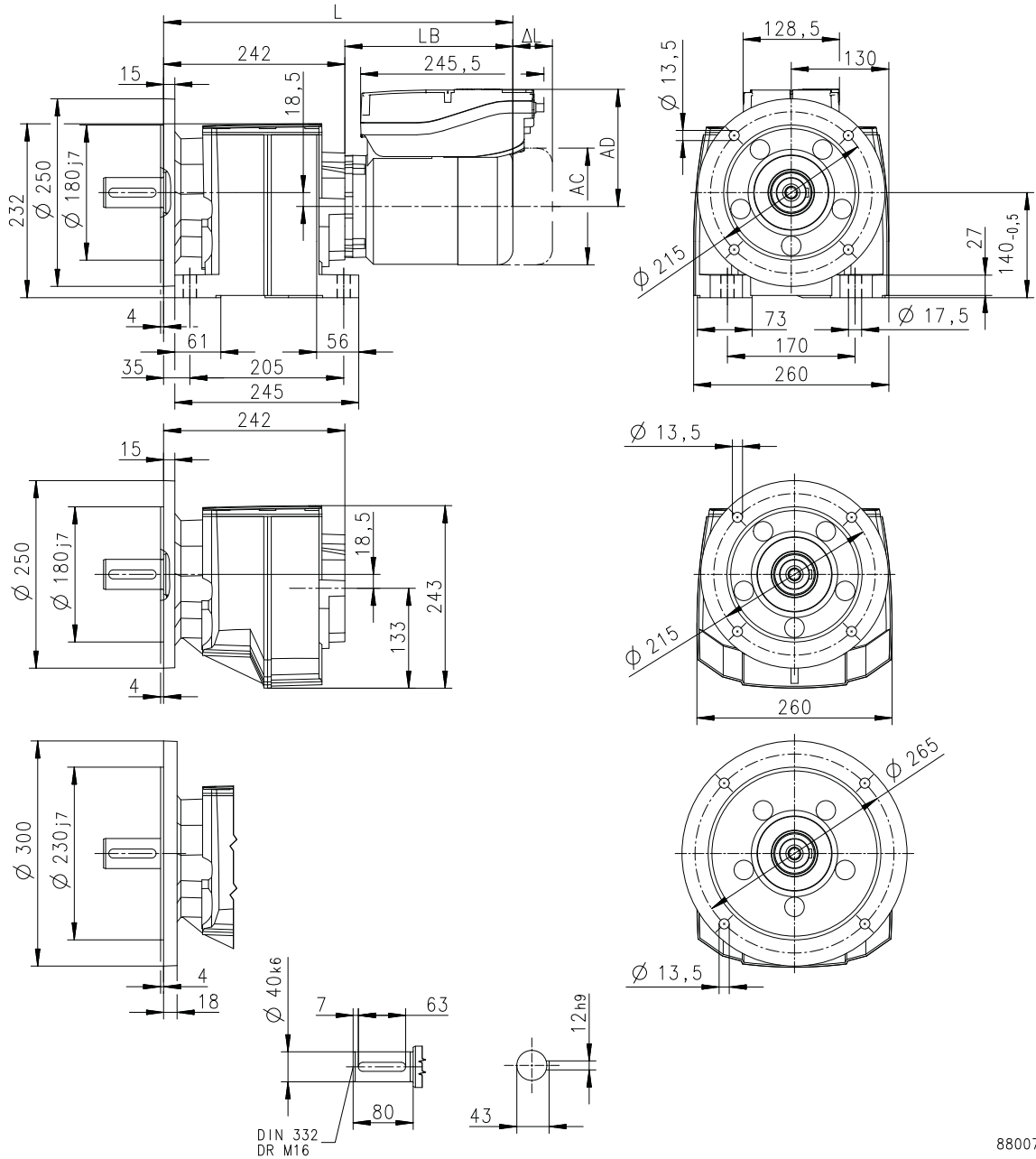
Technical data

Dimensions
Basic dimensions



g500-H850, 2-/3-stage

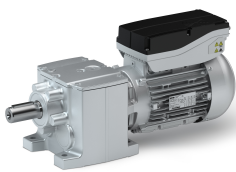
Gearbox design: Solid shaft and foot/flange (VAK/VCK)



8800775-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	425	468
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 103

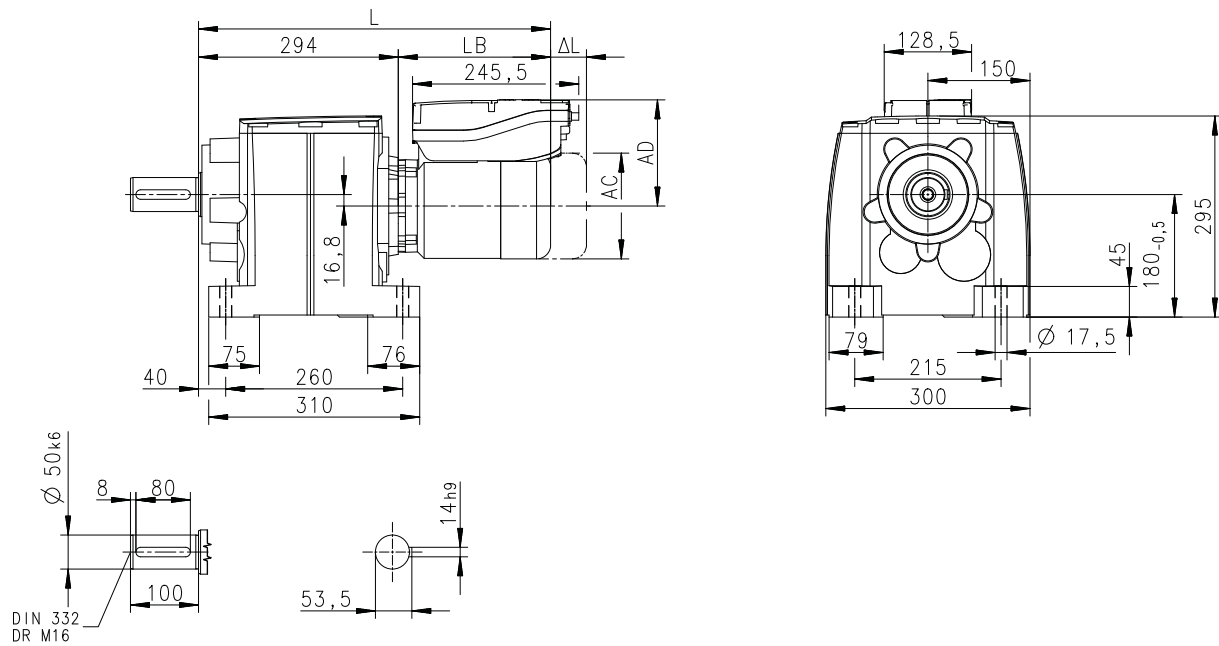


Technical data

Dimensions
Basic dimensions

g500-H1500, 2-/3-stage

Gearbox design: Solid shaft with foot (VBR)



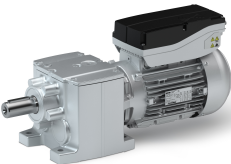
8800776-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	477	520
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ► [Additional lengths](#) 103

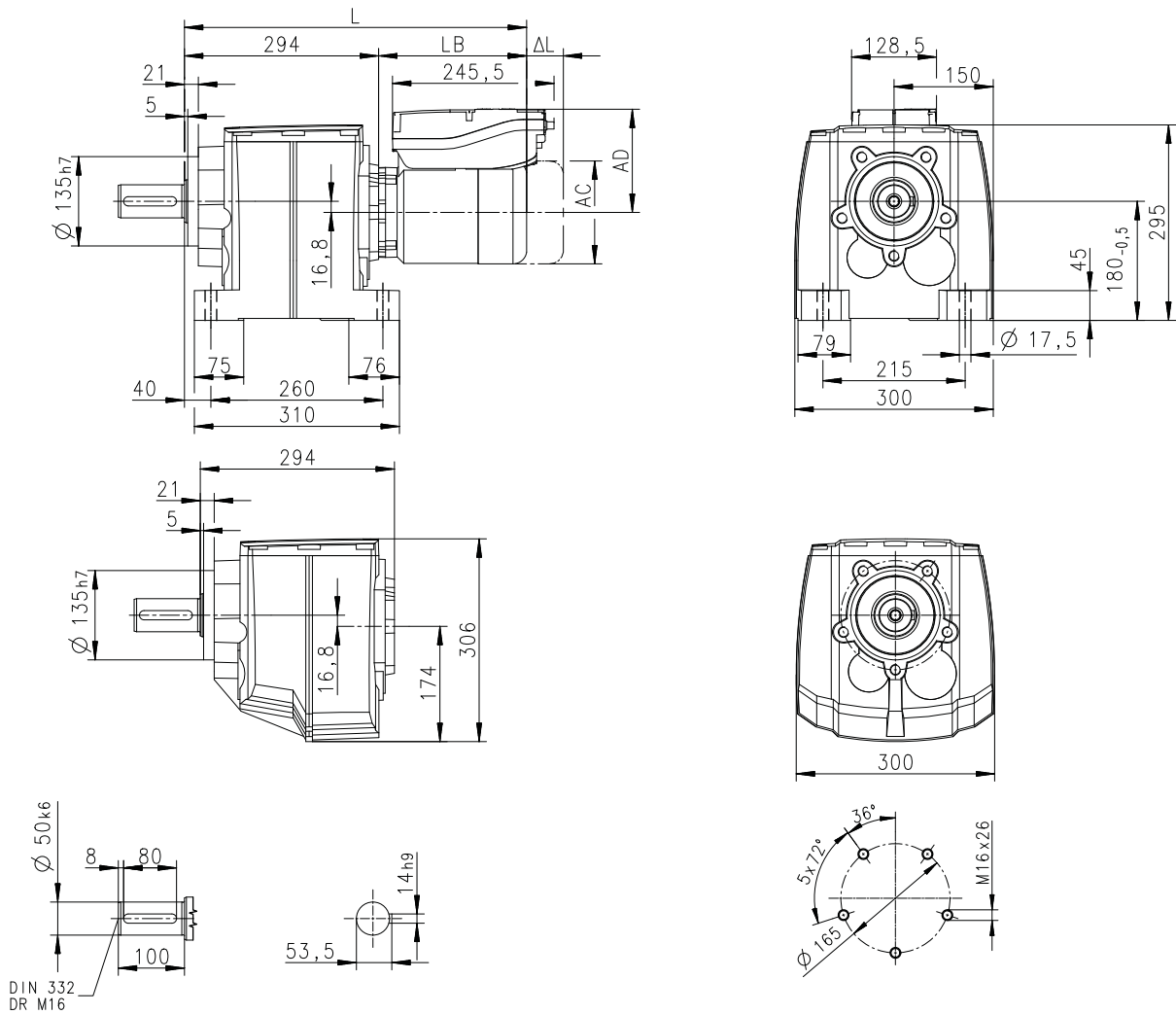
Technical data

Dimensions
Basic dimensions



g500-H1500, 2-/3-stage

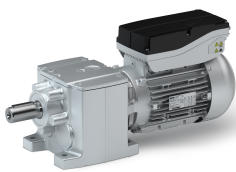
Gearbox version: Solid shaft with foot/centering (VAR/VCR)



8800777-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	477	520
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 103

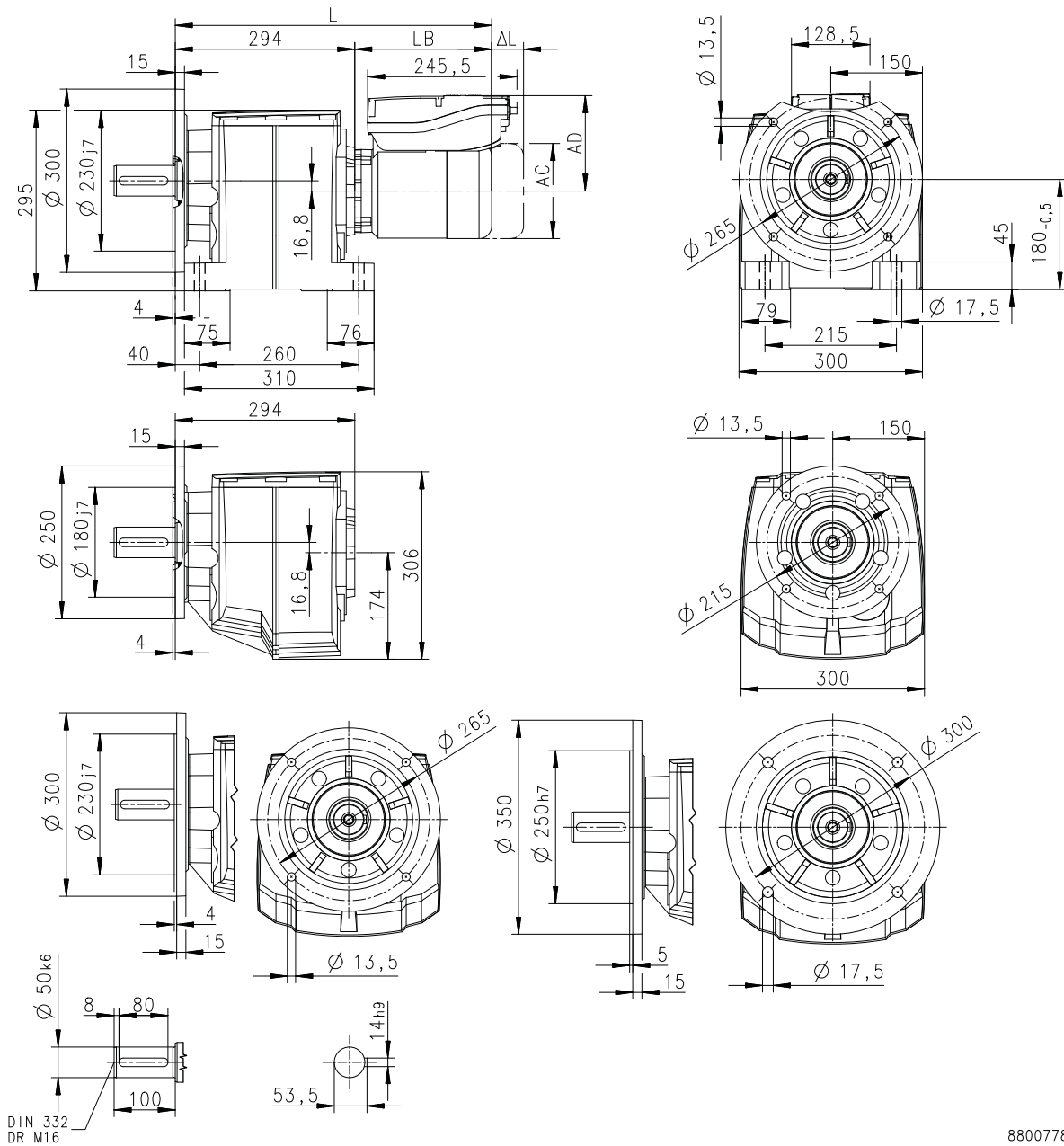


Technical data

Dimensions
Basic dimensions

g500-H1500, 2-/3-stage

Gearbox design: Solid shaft and foot/flange (VAK/VCK)



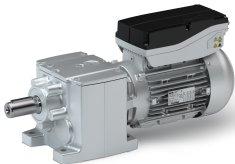
8800778-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	477	520
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths [103](#)

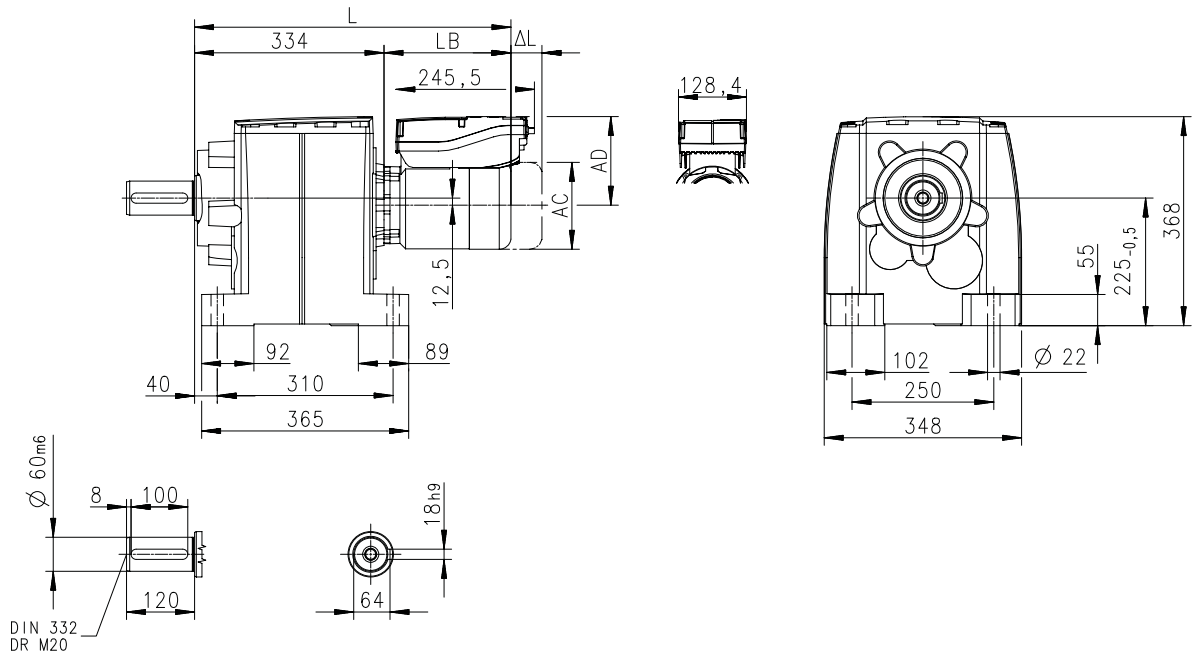
Technical data

Dimensions
Basic dimensions



g500-H3000, 2-/3-stage

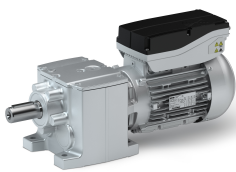
Gearbox version: Solid shaft with foot (VBR)



8801619-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	517	560
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths [103](#)

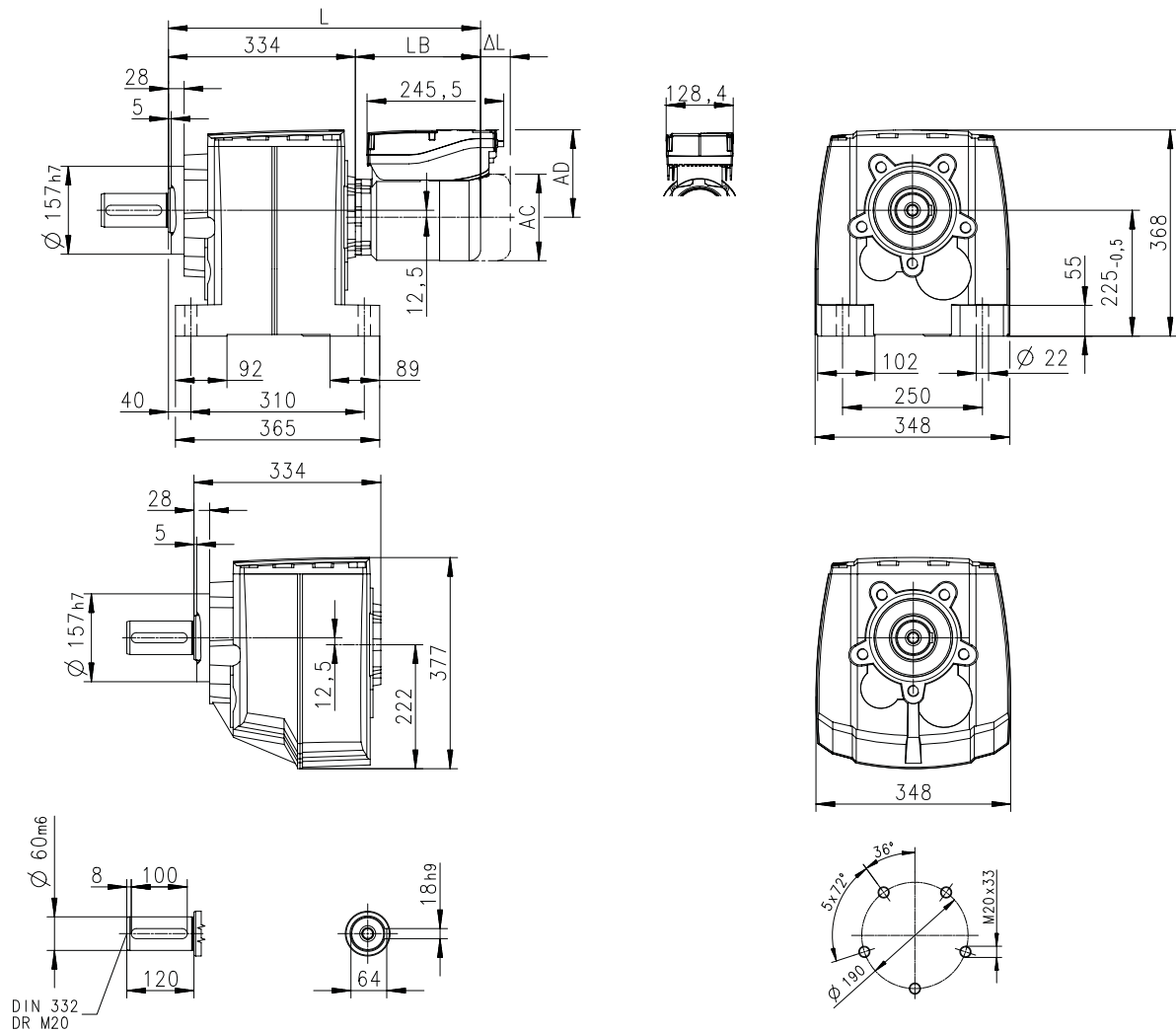


Technical data

Dimensions
Basic dimensions

g500-H3000, 2-/3-stage

Gearbox design: Solid shaft with foot/centering (VAR/VCR)



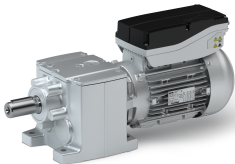
8801632-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	517	560
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 103

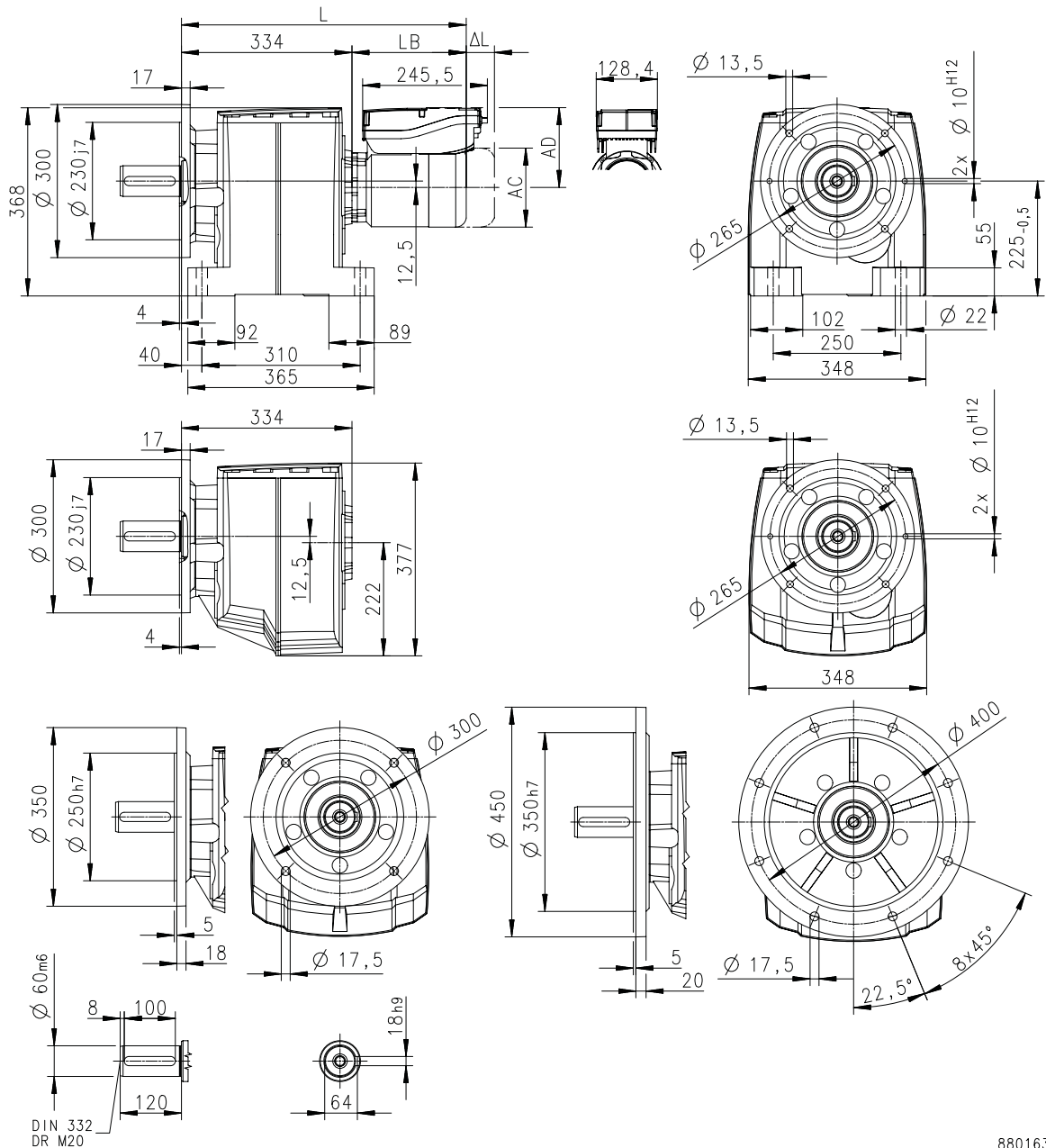
Technical data

Dimensions
Basic dimensions



g500-H3000, 2-/3-stage

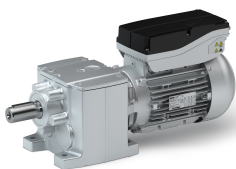
Gearbox design: Solid shaft and foot/flange (VAK/VCK)



8801633-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	517	560
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ [Additional lengths](#)  103



Technical data

Dimensions
Gearbox with pre-stage

Gearbox with pre-stage

g500-H100 ... H140, 3-stage

g500-H210 ... H3000, 4-stage

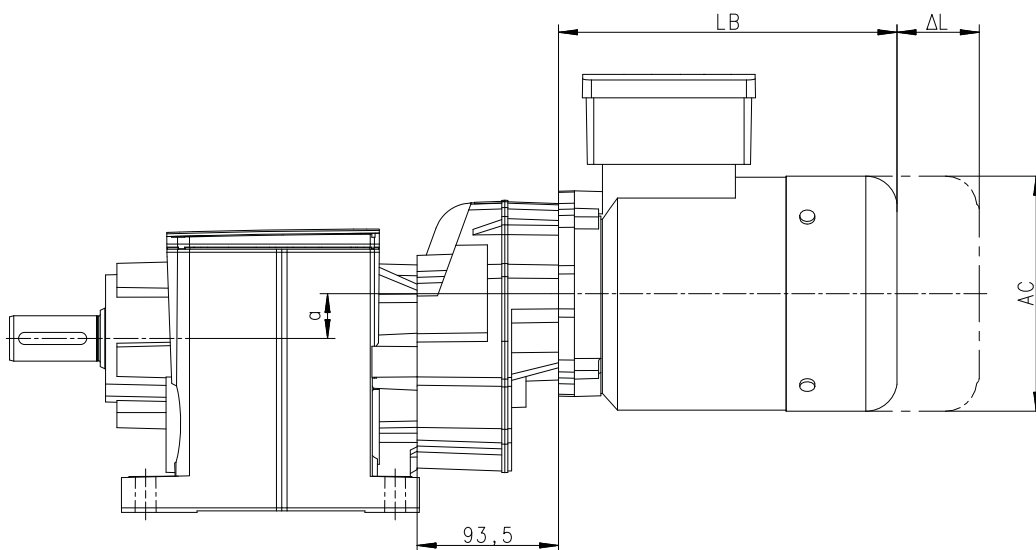


The geared motor dimensions are taken from the basic dimensions except for the overall length "L" and the center distance "a".

► [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.



8800899-00

Gearboxes			g500-H100	g500-H140	g500-H210	g500-H320	g500-H450	g500-H600	g500-H850	g500-H1500	g500-H3000
			3-stage		4-stage						
Center distance	a	mm	40.2	30	34.8	24.3	29.6	17.6	26.5	28.2	32.5

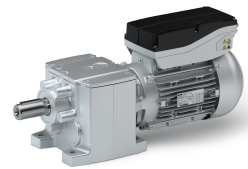
Additional lengths

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](#)  61

Observe ► [Additional weights](#)  104!

Additional weights

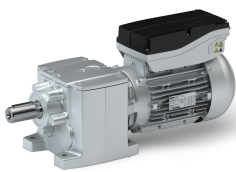
Gearbox

Gearbox			g500-H45	g500-H100	g500-H140	g500-H210	g500-H320	g500-H450
Foot	m	kg	0.1	0.1	0.2	0.1	0.1	0.2
Flange	m	kg	0.3	0.4	0.6	0.6	0.8	0.9
Flange (VCP)	m	kg		2.0	3.9	3.9	4.1	6.1

Gearbox			g500-H600	g500-H850	g500-H1500	g500-H3000
Foot	m	kg	2.0	2.8	4.3	5.8
Flange	m	kg	4.3	7.6	8.3	20
Flange (VCP)	m	kg				

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

Motor connection
Connection via terminal box

Product extensions

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](#) 34

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

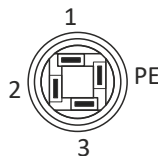
Connection via QUICKON V2 connector

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.

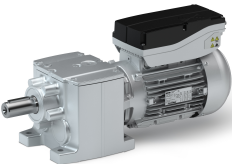
Mains connection X3



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

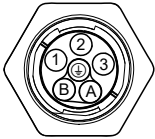
Product extensions

Motor connection
Connection via M15 connector

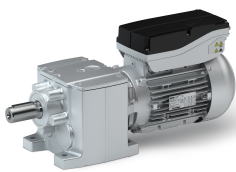


Connection via M15 connector

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

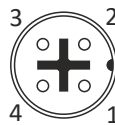
Control connections with M12 connectors

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

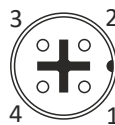
In the "DI/DO-GND bridged" version, the masses of the control terminal X1 and X2 (GND-I and GND-O) are connected to each other. If only one speed is used, the connection to X2 is sufficient.

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



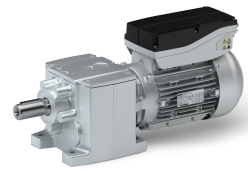
M12 A coded X2		
Contact	Name	Meaning
1	24V	24 V supply (DO1 supply)
2	DI3	Digital input 3 (reference X1;3 = GND-I)
4	DO1	Digital output 1
3	GND-O	Ground of digital output

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		

Product extensions

Brakes



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!

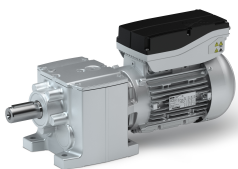
The brake may not be used as a safety element (particularly with hoist axes) without additional measures being implemented.

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

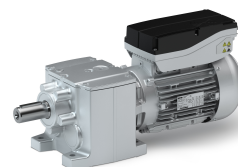
Motor	LongLife design	
	06	08
	Nm	Nm
MSEMA 063-42	4	
MSEMA 080-32		8

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



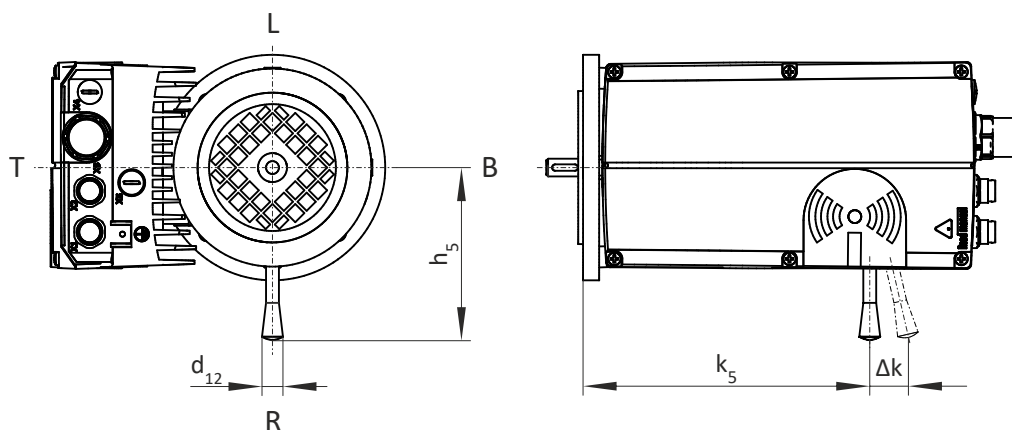
Rated data, LongLife design, IP54/55

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

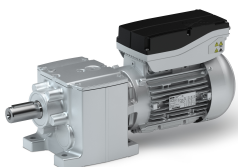
Manual release lever



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.

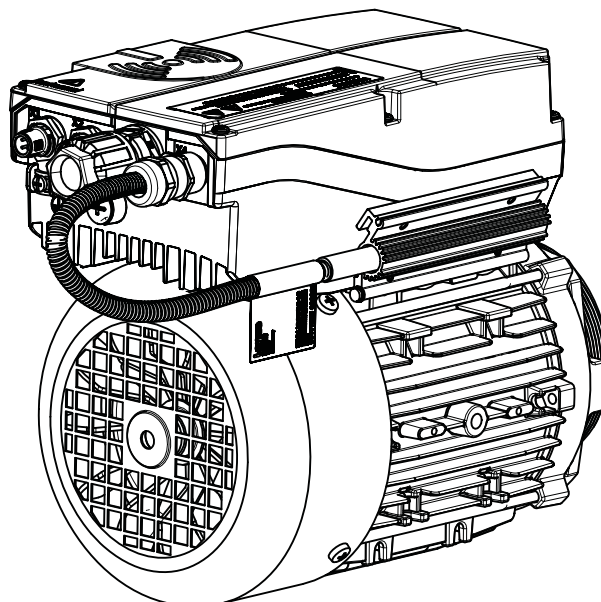
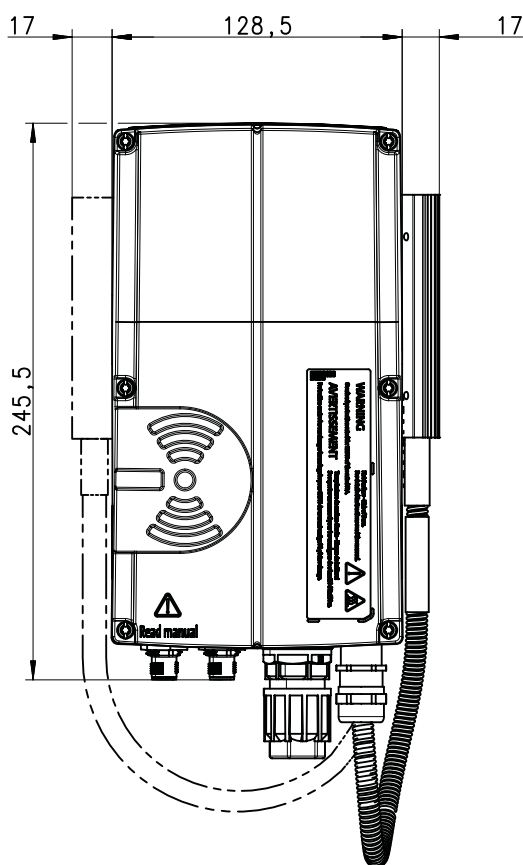
NOTICE

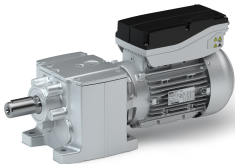
Do not fall below the minimally connectable brake resistance of 180 Ω at the terminal "X4".

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	
		Internal	External
Brake resistor			
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





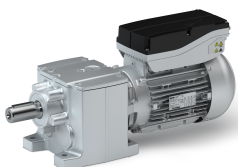
Accessories

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.

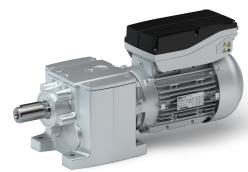
Nuts for QUICKON connection

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



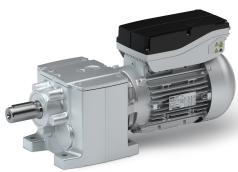
QUICKON V2 components for cable cross-section 2.5 ... 6 mm ²		
Order code	Type	
QUICKON V2 H-distributor		
EWS0114		• Number of poles: 5 • Connection cross-section: 6 mm² • Cable diameter: 9 ... 20 mm • Connection frequency: ≥ 50 • No V2 nuts are included QUICKON in the scope of supply. These need to 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

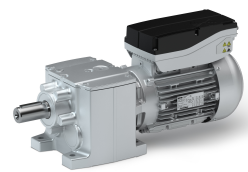


Product codes

Gearbox product code

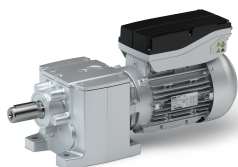
Example		G	50	A	H	045	M	V	C	R	2	C	1A
Product type	Gearboxes	G											
Product family			50										
Generation				A B									
Gearbox type	Helical gearbox				H								
Output torque	45 Nm					045							
	100 Nm					110							
	140 Nm					114							
	210 Nm					121							
	320 Nm					132							
	450 Nm					145							
	600 Nm					160							
	850 Nm					185							
	1500 Nm					215							
	3000 Nm					230							
	5000 Nm					250							
	8000 Nm					280							
	14000 Nm					314							
Type of construction	Geared motor						M						
	Gearboxes						N						
Shaft type	Solid shaft with featherkey							V					
	Solid shaft without featherkey							G					
Housing type	Foot mounting + centering								A				
	Foot mounting								B				
	With centering								C				
Flange mounting	Without flange									R			
	Flange with through holes									K			
	Reinforced flange with through holes									P			
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

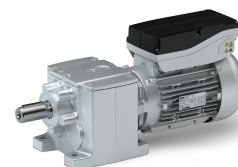
Rated data

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.

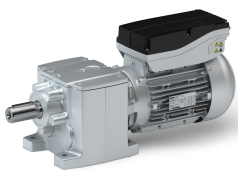
- Coordinate professional disposal with your waste disposal company.
- Separate mechanical and electrical components, packaging, hazardous waste (e.g. gear oils) and batteries/rechargeable batteries wherever possible.
- Dispose of the separated waste in an environmentally sound and proper manner (no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

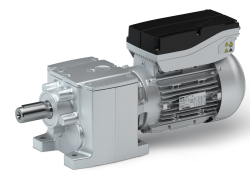
Operating modes S1 ... S10 as specified by EN 60034-1 describe the basic stress of an electrical machine.

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).

Lenze SE
Postfach 101352 · 31763 Hameln
Hans-Lenze-Straße 1 · 31855 Aerzen
GERMANY
Hannover HRB 204803
Phone +49 5154 82-0
Fax +49 5154 82-2800
sales.de@lenze.com
www.Lenze.com