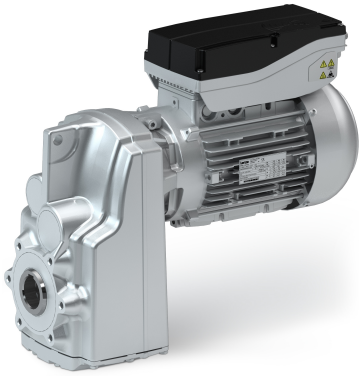




Mains-operated geared motors

g500-S shaft-mounted helical geared motor / Smart Motor m300-E

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About this document

Document description

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

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

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

Further documents

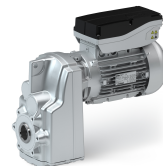


Information and tools with regard to the Lenze products can be found on the Internet:

www.Lenze.com → Downloads

About this document

Notations and conventions



Notations and conventions

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

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

Layout of the safety instructions

DANGER!

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

WARNING!

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

CAUTION!

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

NOTICE

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



Product information

Product description

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

In combination with three-phase AC motors, our shaft-mounted helical gearbox forms a compact, powerful drive unit. Numerous options at the input and output end allow the drive to be precisely adapted to your application.

The slim, shaft-mounted helical gearboxes feature high permissible radial forces, closely stepped ratios and a low backlash. They are available in a 2-stage, 3-stage and 4-stage design with a torque of up to 4500 Nm and a ratio of up to $i = 5849$.

Types

- Slimline design saves installation space of the machine
- Shaft dimensions in accordance with market standards and standardized flanges for easy machine integration
- High accuracy with axial output provide for the highest 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.

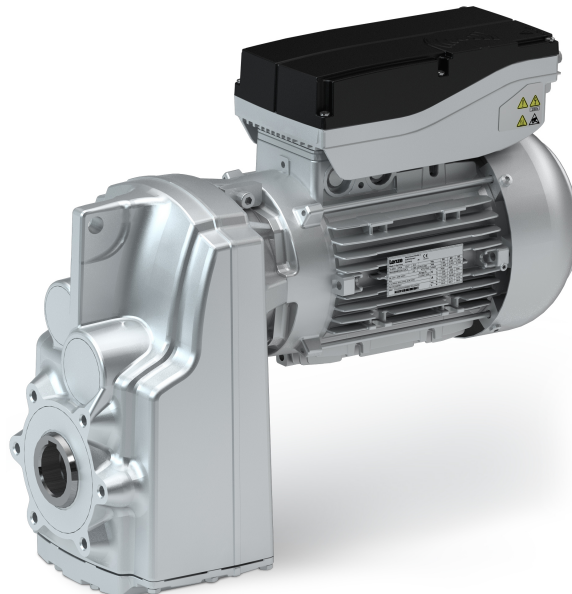
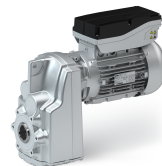


Fig. 1: MSEMAXX080-32 Smart Motor - g500-S660 shaft-mounted helical gearbox

Product information

Product description



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.

Data that can be set

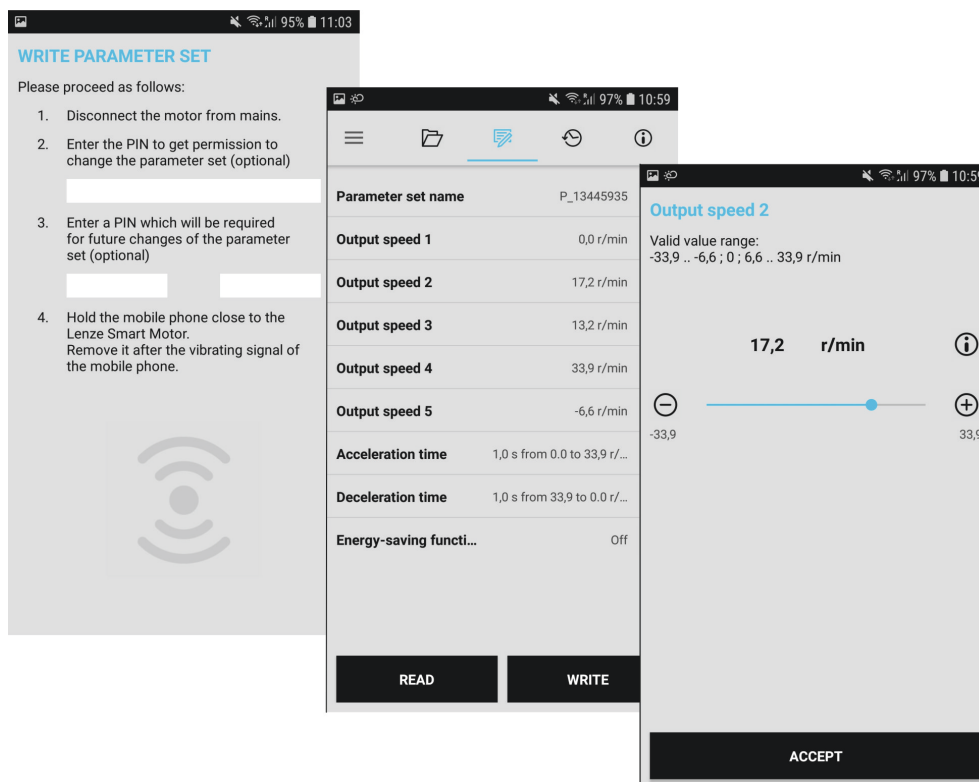
- Name of data record (e. g. the designation of the drive in your documentation)
- Speed and rotating direction 1 (also controllable without digital inputs)
- Speed and rotating direction 2-5 (controllable by means of digital inputs)
- Acceleration time
- Deceleration time
- Energy-saving function

Readable data

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

Adjustment by means of a smartphone

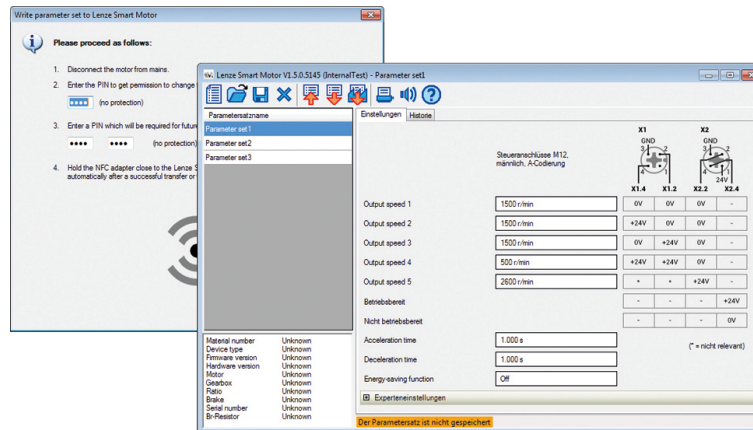
The Lenze Smart Products can be adjusted with an Android smartphone. The corresponding app in German and English can be obtained from www.Lenze.com or the Google Store. For convenience, the data records created can be archived on the smartphone and repeatedly transferred to the Lenze Smart Products for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





Setting with the PC

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



Starting and stopping smoothly and gently

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

Contactors and motor protection functions integrated

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

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

Easy installation

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

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

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

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

Already existing signal cables can often be reused.

Worldwide and efficient

The drive can be used worldwide:

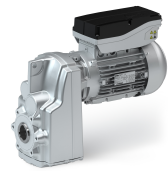
- In all 3-phase networks with 400 ... 480 V supply voltage an a mains frequency of 50 ... 60 Hz
- At ambient temperatures of -30 ... +40 °C
- Is suitable for many approvals

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

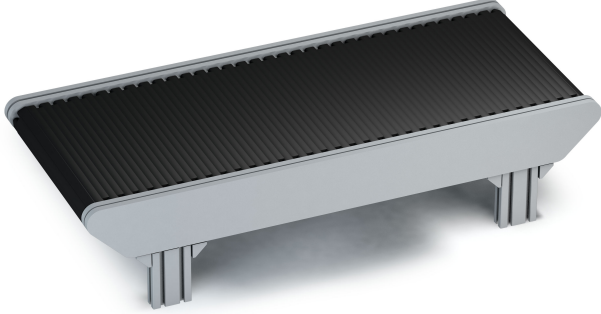
If very little torque is needed in the partial-load operational range, the integrated energy saving function can be used to optimize the energy absorption of the drive.

Product information

Identification of the products



Application examples

Roller conveyors with belt ejector	Belt conveyors
	

Identification of the products

Gearbox product name

Gearbox type	Product series		Type	Rated torque Nm	Product
Shaft-mounted helical gearbox	g500	-	S	130	g500-S130
				220	g500-S220
				400	g500-S400
				660	g500-S660
				950	g500-S950
				2100	g500-S2100
				3100	g500-S3100
				4500	g500-S4500

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)

Torque support

Output flange

Output shaft

Oil drain plug

(depending on the mounting position)

Housing type

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

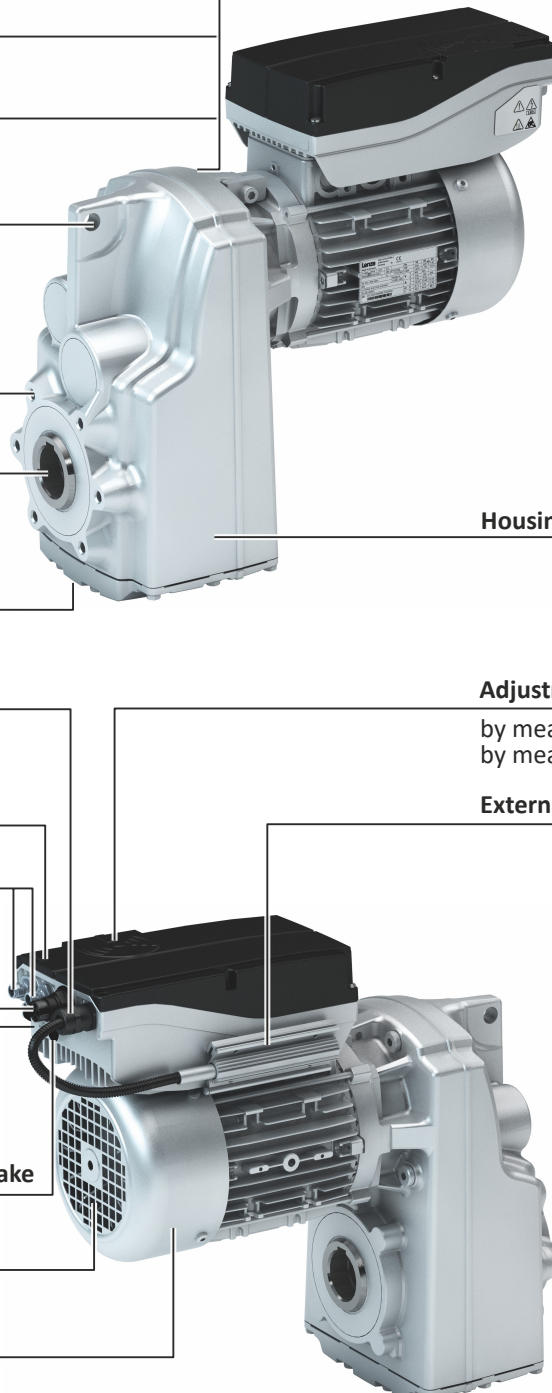
Spring-applied brake

Standard
LongLife
Manual release lever

Adjustment of speeds

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

External brake resistor



Product information

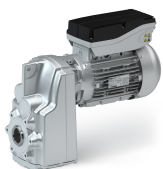
The modular system



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

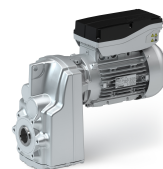
The modular system

Geared motors up to 660 Nm

Gearbox		g500-S130	g500-S220	g500-S400	g500-S660
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	130	220	400	660
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		M1/5/6 (AEF)			
Color		Unpainted Primed Painted in RAL colors			
Surface and corrosion protection		OKS-G Different types of surface and corrosion protection			
Output shaft					
Solid shaft with featherkey (V)	mm	25 x 50	25 x 50	30 x 60	35 x 70 40 x 80
Hollow shaft with keyway (H)	mm	25	25/30	30/35	40/45
Hollow shaft with shrink disc (S)	mm	25	25/30	35	40
Shaft material		Steel Stainless steel			
Shaft sealing ring material		NBR FKM (Viton)			
Output shaft bearing		Standard			
Gearbox design		With foot (HBR/VBR) Without foot and centring (HCR)/(VCR/SCR) With centring (HCR/VCR/SCR) With output flange (HCK/VCK/SCK)			
Output flange (K)	mm	160	160	200	200/250
Lubricant		Mineral oil Synthetic oil Food-compatible oil			
Cooling		Self-ventilated			
Torque plate		Rubber buffers			
Shaft cover		Shrink disc cover			
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 from 950 Nm to 4500 Nm

Gearbox		g500-S950	g500-S2100	g500-S3100	g500-S4500
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	950	2100	3100	4500
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 surface and corrosion protection			
Output shaft					
Solid shaft with featherkey (V)	mm	40 x 80	50 x 100	60 x 120	70 x 140 80 x 160
Hollow shaft with keyway (H)	mm	40	50/55	60/70	70/80
Hollow shaft with shrink disc (S)	mm	40	50	65	75/80
Shaft material		Steel Stainless steel			
Shaft sealing ring material		NBR FKM (Viton)			
Output shaft bearing		Standard			
Gearbox design		With foot (HBR)/(VBR/SBR) With foot and centering (HAR/VAR(SAR) With foot and output flange (HAK/VAK/SAK)			
Output flange (K)	mm	250	250/300	350	400/450
Lubricant		Mineral oil Synthetic oil Food-compatible oil			
Cooling		Self-ventilated			
Torque plate		Rubber buffers			
Shaft cover		Shrink disc cover			
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

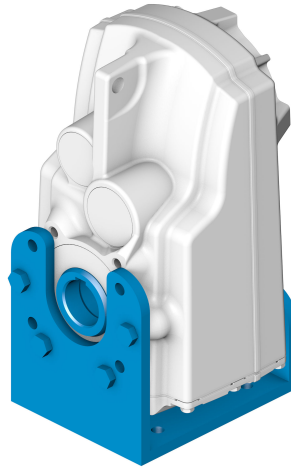


Observe the available gearbox designs!

► [The modular system](#) 12

g500-S130 ... S660

Hollow shaft, with foot



Without centring (HBR)

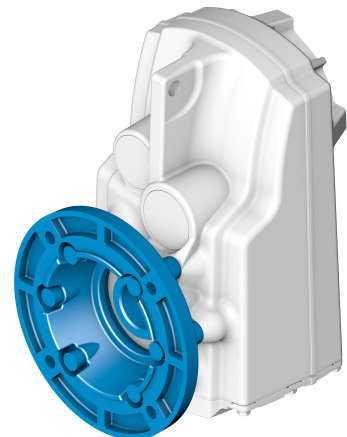
Hollow shaft, without foot



Without centring (HDR)



With centering (HCR)



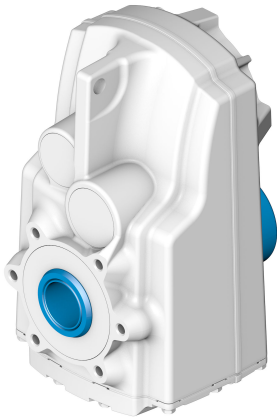
Flange with through holes (HCK)

Product information

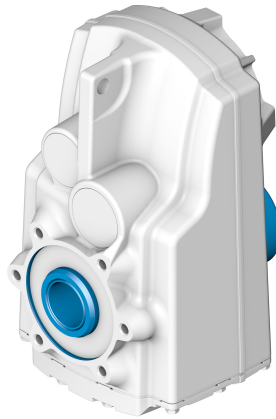
The modular system
Designs



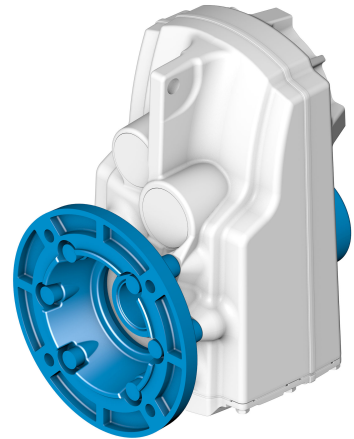
Shrink disc, without foot



Without centring (SDR)

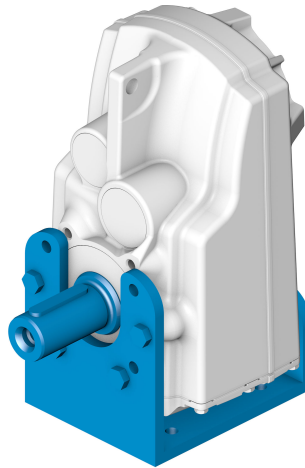


With centring (SCR)



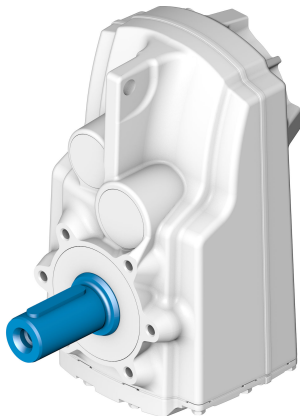
Flange with through holes (SCK)

Solid shaft, with foot

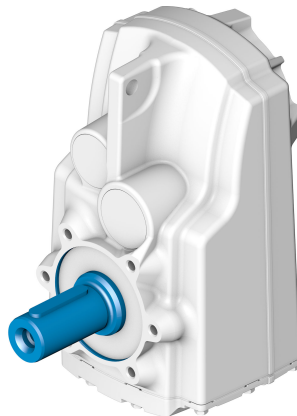


Without centring (VBR)

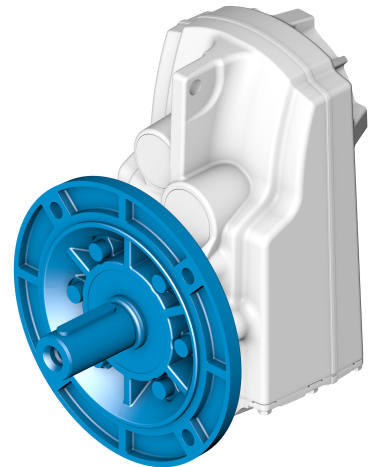
Solid shaft, without foot



Without centring (VDR)



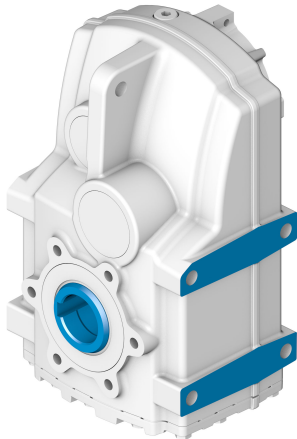
With centering (VCR)



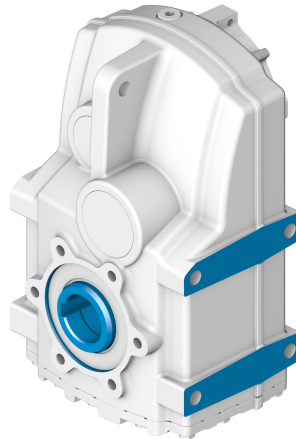
Flange with through holes (VCK)



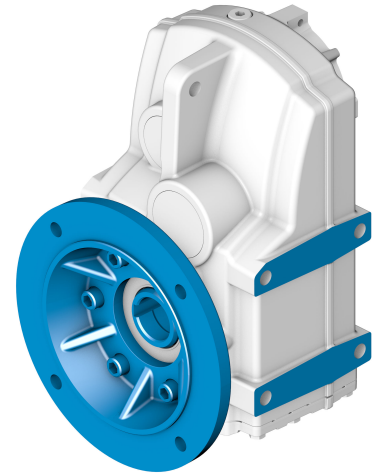
g500-S950 ... S4500
Hollow shaft, with foot



Without centring (HBR)

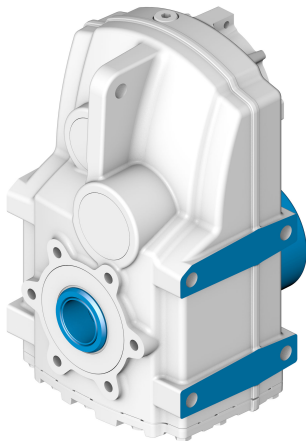


With centring (HAR)

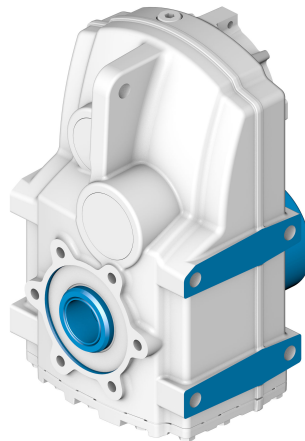


Flange with through holes (HAK)

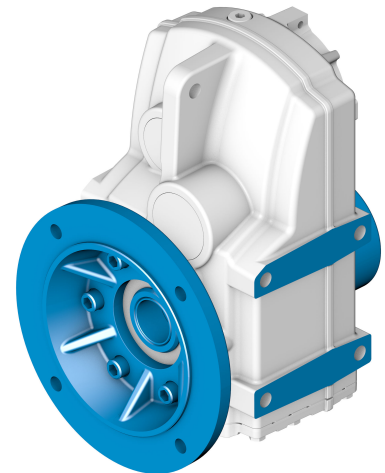
Shrink disc, with foot



Without centring (SBR)

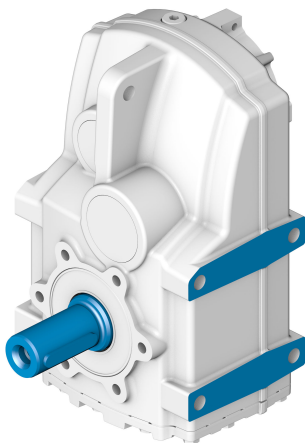


With centring (SAR)

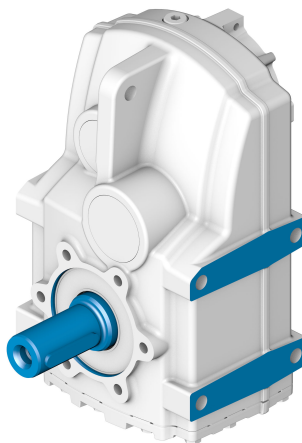


Flange with through holes (SAK)

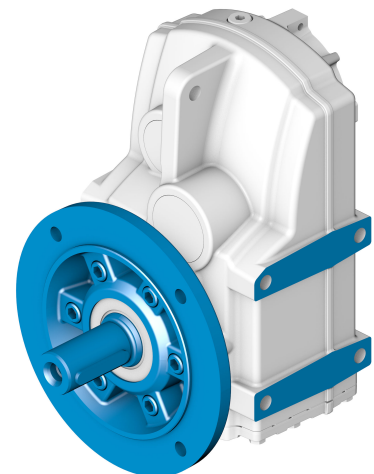
Solid shaft, with foot



Without centring (VBR)



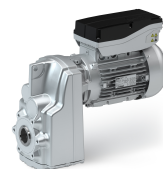
With centring (VAR)



Flange with through holes (VAK)

Product information

The modular system
Mounting positions

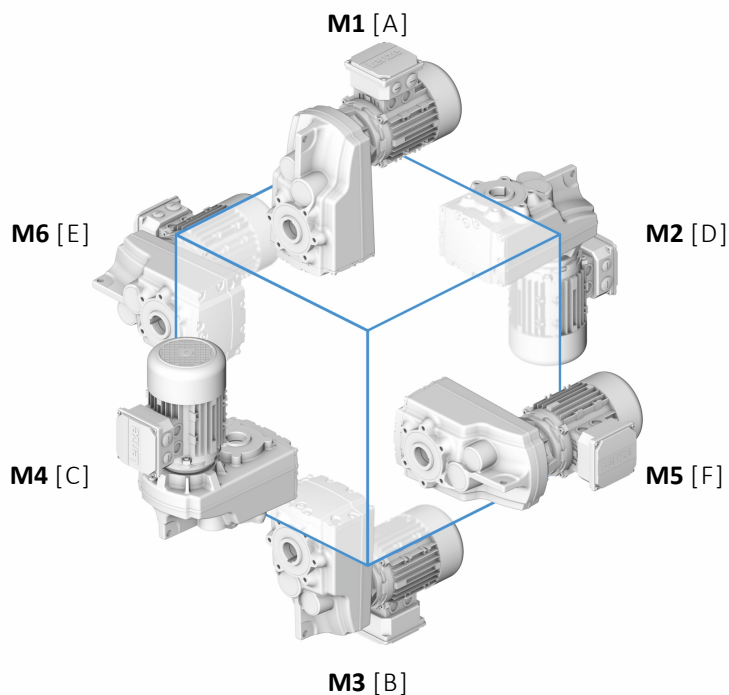


Mounting positions

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

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

- g500-S130 ... S660 in mounting position M1/5/6 (AEF)



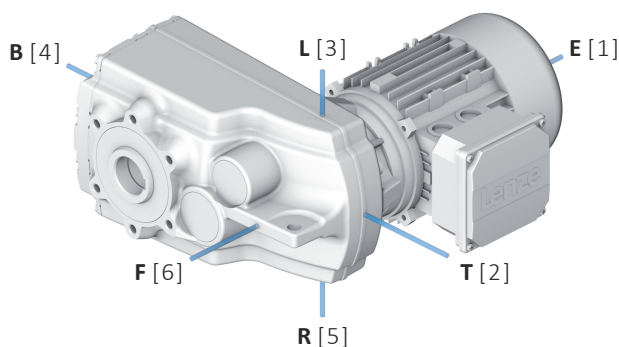
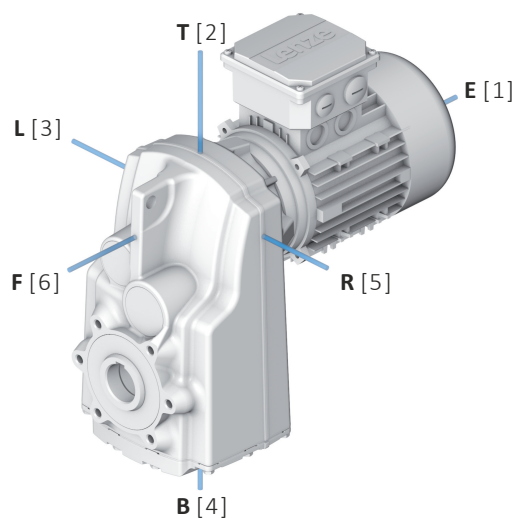
Defined positions on the geared motor

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)

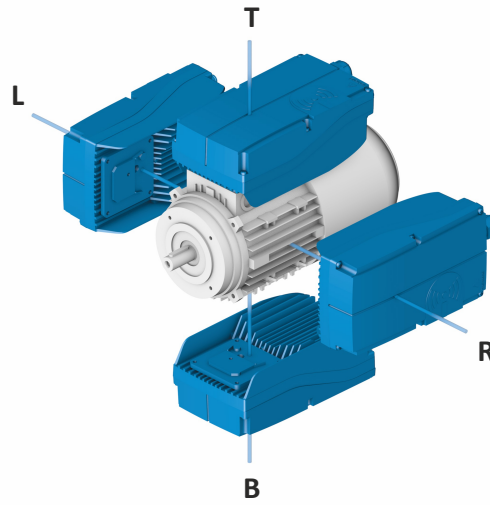
If the geared motor is rotated into a different mounting position M2 ... M6 (B...F), the defined positions on the geared motor are retained.

Example: Mounting position M5 (F)



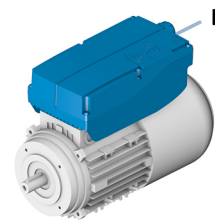
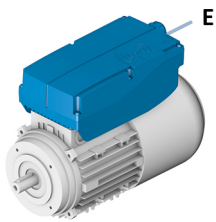


Position of the terminal boxes

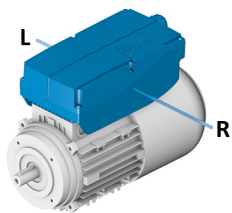


Positions on the terminal box

Mains connection	Control terminal
Cable gland for terminal box	M12 connector
QUICKON V2 connector	
M15 connectors	



External brake resistor	
-------------------------	--

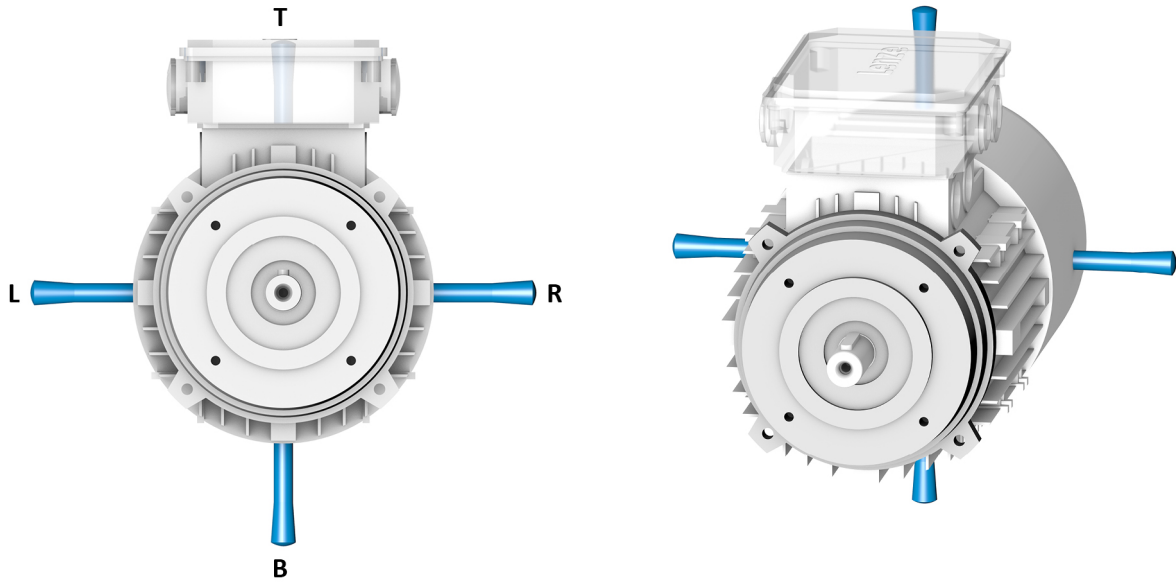


Product information

The modular system
Mounting positions



Position of the manual release lever

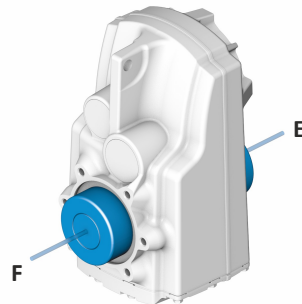


Position of the hollow shaft with shrink disc



The output flange is only available in position "F".

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





Information on project planning

Safety instructions

Basic safety instructions

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

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

Application as directed

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

Information on project planning

Safety instructions
Residual hazards



Residual hazards

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

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

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

Product

Observe the warning labels on the product!



Dangerous electrical voltage:

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



Electrostatic sensitive devices:

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



High leakage current:

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



Hot surface:

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

Protection of persons

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

Motor protection

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



Gearbox protection

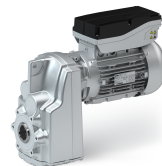
- Excessive vibration accelerations and resonances will damage the gearbox.
 - Do not operate the gearbox at vibration accelerations $> 2 \text{ g}$ (20 m/s^2) of the machine.
 - Do not operate the gearbox in the resonance range of the machine.
- Excessive torques will damage the gearboxes.
 - Do not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

General information

NOTICE

For gearboxes with hollow shaft and shrink disk
observe the following requirements for the machine shaft:

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

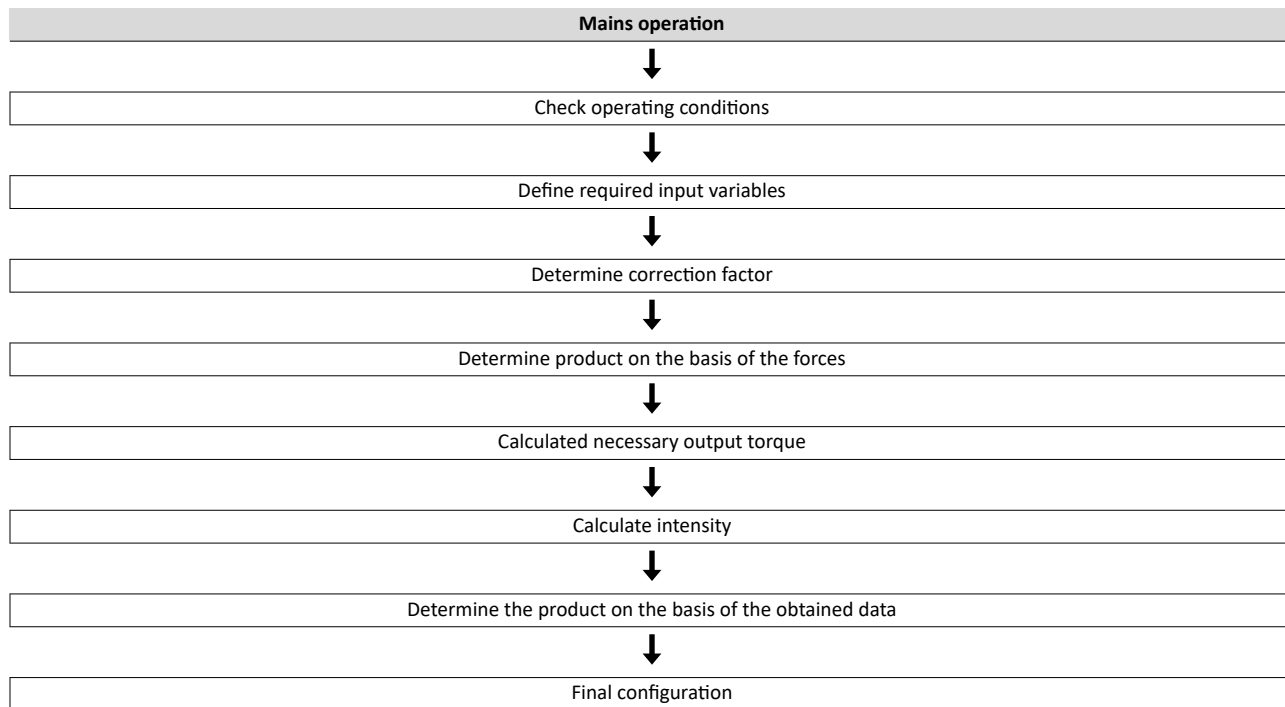


Drive dimensioning

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

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

Please get in touch with your Lenze representative.



Check operating conditions

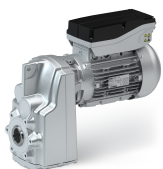
Check
Approvals Conformities Supply voltage Degree of protection Ambient temperature Surface protection

► [Standards and operating conditions](#) 45

► [Surface and corrosion protection](#) 27

Define required input variables

Necessary input variables	Note	Symbol	Unit
Ambient temperature		T_v	°C
Site altitude Amsl		H	m
Radial force		F_{rad}	rated
axial force		F_{ax}	rated
Transmission element at the output	Gear wheels, sprockets ...		
Effective diameter of the transmission element		d_w	mm
Load torque		$M_{L,max}$	Nm
Load speed		$n_{L,max}$	rpm



Determine correction factor

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

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

Determine product on the basis of the forces

Transmission element			Gear wheels	Sprockets	Toothed belt pulleys (depending on the pretension)	Narrow V-belt (depending on the pretension)
Additional radial force factor	f_z		≥ 17 teeth: 1.0 < 17 teeth: 1.15	≥ 20 teeth: 1.0 < 20 teeth: 1.25 < 13 teeth: 1.4	With belt tightener: 2.0 – 2.5 Without belt tightener: 2.5 – 3.0	1.5 – 2.0
			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

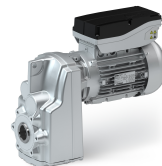
J_Z Additional moment of inertia (handwheel, 2nd shaft end ...)

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](#) 58



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](#) 98

► [Accessories](#) 106

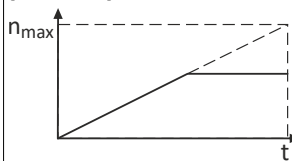
Parameters that can be preset by Lenze

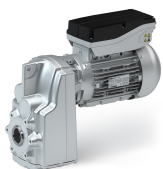


The parameters marked with "order-dependent" in the standard setting can be preset order-related by Lenze.

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.





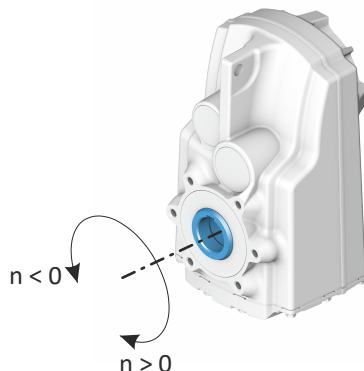
Information on project planning

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-S130

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, M5, M6 (AEF)
Gearboxes								
g500-S130	I	0.7	0.8	0.7	0.7	0.6	0.6	0.7
g500-S220	I	1.1	1.1	.9	1.1	1.0	0.8	1.1
g500-S400	I	1.6	1.3	1.2	1.5	1.3	1.1	1.6
g500-S660	I	2.5	2.4	1.8	2.4	1.9	1.9	2.5
g500-S950	I	2.9	3.2	2.4	3.2	2.4	2.4	-
g500-S2100	I	7.1	7.5	6.0	7.5	5.6	5.5	-
g500-S3100	I	9.7	10.6	8.0	11.7	8.7	7.3	-
g500-S4500	I	19.4	20.0	13.7	21.2	14.7	15.8	-
Pre-stage	I	0.4						

► Gearbox with pre-stage 96



Ventilation



No venting measures are required for the g500-S130 ... S220 gearboxes.

The g500-S220 gearbox can optionally be equipped with a breather element.

From g500-S400 onwards, the gearboxes are supplied with breather elements as standard.

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

- g500-S130 ... S660 in mounting position M1/5/6 (AEF)

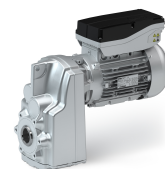


In these gearboxes, the lubricant amount has been optimised for the use in different mounting positions. If required, the breather elements are loosely enclosed and must be mounted before commissioning depending on the mounting position.

► [The modular system](#)  12

Information on project planning

Final configuration
Ventilation



g500-S220 ... S660

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

- ② g500-S220
- ③ g500-S400



Information on project planning

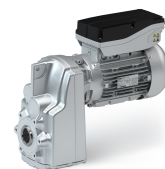
Final configuration
Ventilation

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

- ② g500-S220
- ③ g500-S400
- ④ g500-S660

Information on project planning

Final configuration
Ventilation



g500-S950 ... S4500

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		
Check		
Drain		

⑤ g500-S3100

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

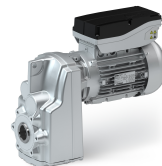
In order to guarantee a reliable lubrication of the toothed parts in mounting position M4 (C) (motor is on the gearbox vertical from the top), a high filling level is required in the gearbox. As a result of the reduced volume of air in the gearbox, this may lead to oil escaping from the ventilation at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

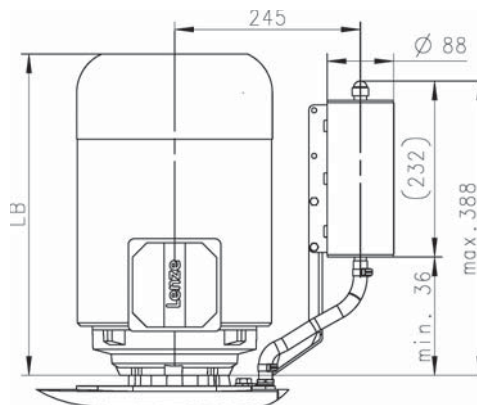
If insufficient space is available, the oil compensation reservoir can also be mounted over the gearbox hose connection on nearby system parts.

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-S2100		g500-S3100		g500-S4500	
Gearbox ratio	Min. input speed	Gearbox ratio	Min. input speed	Gearbox ratio	Min. input speed
	rpm		rpm		rpm
4.593	2000	4.951	2000	4.914	2000
6.029	2000	6.499	2000	6.450	2000
6.870	2000	7.406	2000	7.056	2000
8.272	2000	8.917	2000	8.944	2000
9.452	2000	10.932	2000	9.984	2000
10.504	2000	11.128	2000	11.740	2000
12.406	2000	12.584	2000	12.843	2000
13.787	2000	14.606	2000	13.105	2000
14.137	2000	16.517	2000	14.336	2000
15.711	2000	16.644	2000	16.381	2000
17.022	3000	18.822	2000	18.286	2000
18.917	3000	20.041	3000	20.067	2000
20.869	3000	22.663	3000	22.400	2000
23.193	3000	24.570	3000	26.437	3000
28.275	3000	27.785	3000	29.511	3000
31.422	3000	33.289	3000	32.489	3000
34.333	3000	37.644	3000	36.267	3000
38.156	3000	40.422	3000	42.044	3000
44.431	4000	45.711	3000	46.933	3000
49.378	4000	52.311	4000	51.027	4000
53.924	4000	59.156	4000	56.960	4000
59.927	4000	63.487	4000	64.500	4000
68.162	4000	71.793	4000	72.000	4000
75.750	4000				



Mechanical installation

Important notes

- Install the product according to the information in the chapter "Standards and operating conditions".
 - ▶ [Standards and operating conditions](#) 45
- 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.

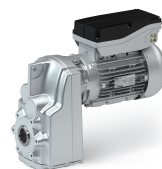
Mains connection with QUICKON connector			
Motor		MSEMA□□063-42	MSEMA□□080-32
Connection		X3	
Laying system		B2	
Connection type		QUICKON connector	
Cable type		Flexible	
Cable cross-section			
Typ.	mm ²	1.5	2.5
Min.	mm ²	1.5	1.5
Max.	mm ²	2.5	2.5

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

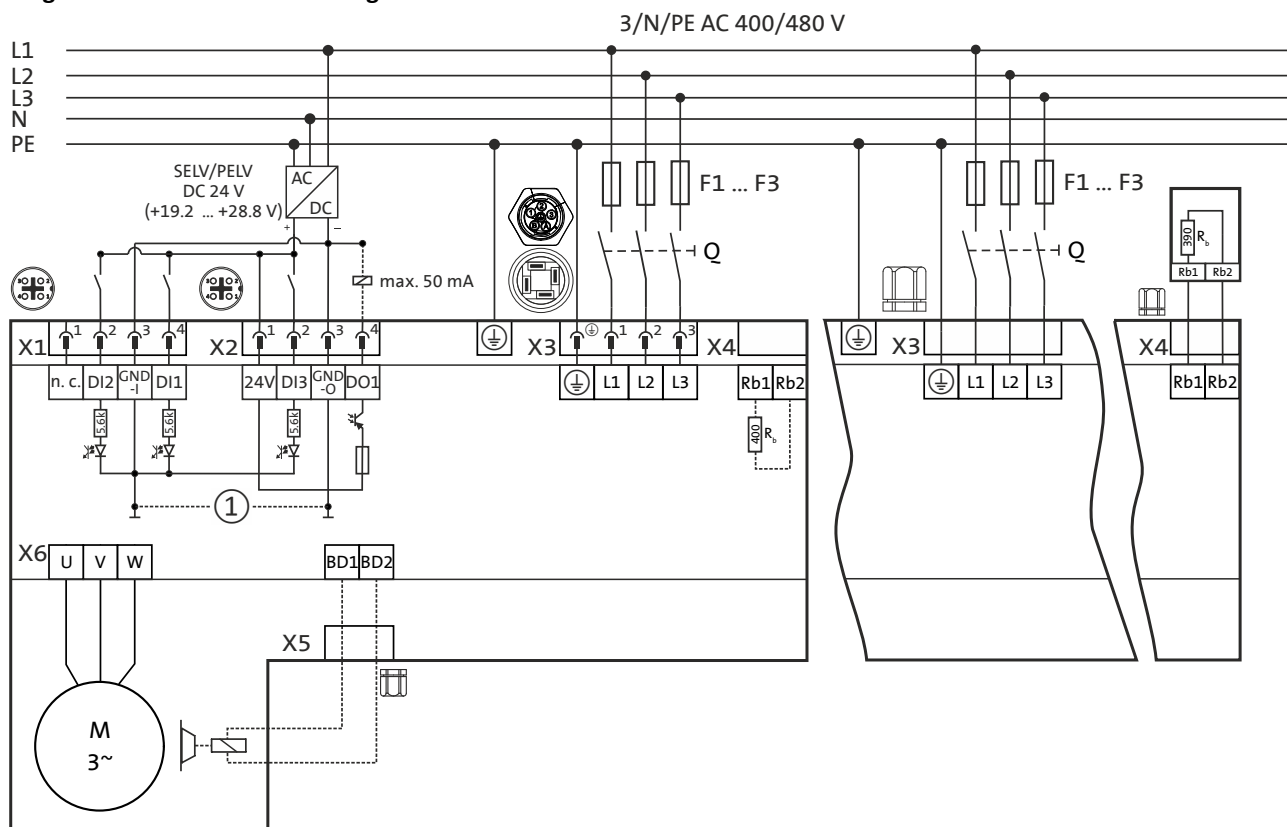
Mains connection cable L1, L2, L3, PE			
Motor		MSEMA□□063-42	MSEMA□□080-32
Connection		X3	
Installation method		B2	
Connection type		Cable	
Cable type		rigid/flexible	
Cable cross-section			
Typ.	mm ²	1.0	1.5
Min.	mm ²	0.75	0.75
Max.	mm ²	1.5	1.5
Stripping length	mm	10	10

Electrical installation

Connection according to EN



Single drive connection according to EN 60204-1



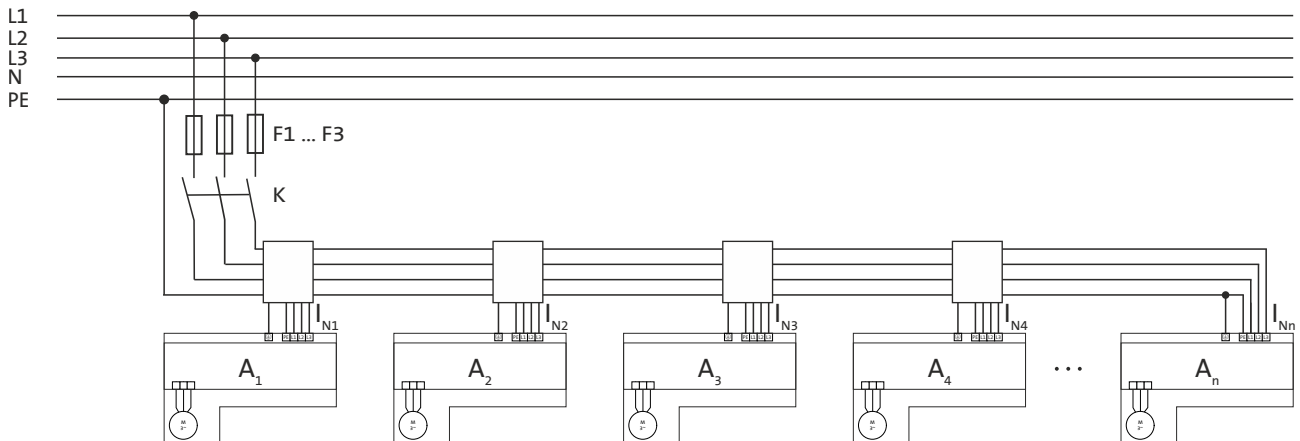
① GND is bridged if the "DI/DO-GND bridged" version is specified on the nameplate.

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 [111](#)

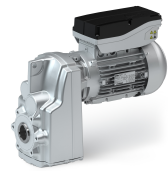
- Use of copper cables insulated with PVC
 - Conductor temperature $\leq 70\text{ °C}$, ambient temperature $\leq 40\text{ °C}$
- No bundling of cables or wires, three wires under load
- Typical utilization 80 % of the respective cable cross-section taken into account

Group drive sizing

Example:

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

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



Connection according to cULus



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

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

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

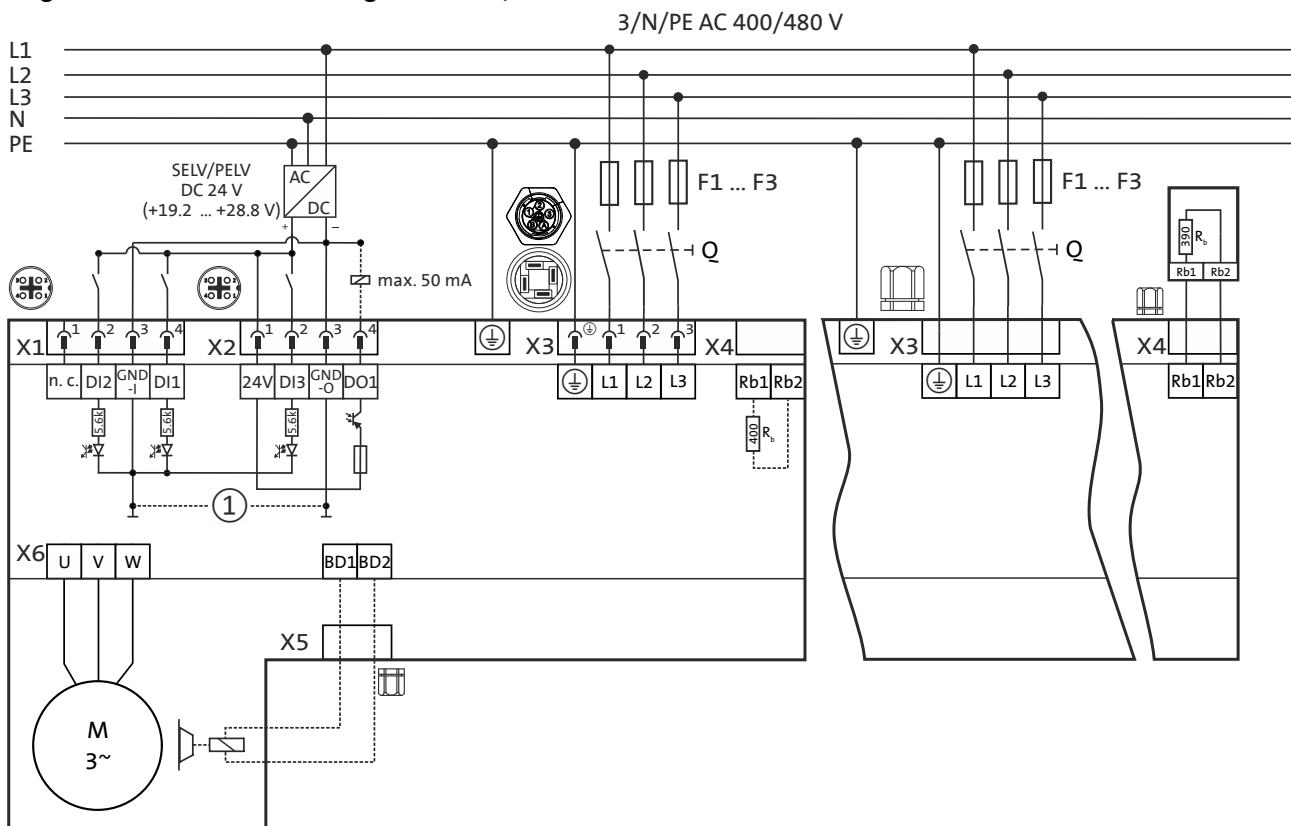
Mains connection cable L1, L2, L3, PE				
Motor		MSEMA□□063-42		MSEMA□□080-32
Connection		X3		
Connection type		Cable		
Cable type		rigid/flexible		
Cable cross-section				
Typ.	AWG	18		16
Min.	AWG	18		18
Max.	AWG	16		16
Stripping length	mm	10		10



⚠ WARNING!

- ▶ **UL marking**
- ▶ Use 75 °C copper wire only, except for control circuits.
- ▶ Maximum conductor size is AWG14.
- ▶ Cord connected drives are for use only in NFPA 79 applications.
- ▶ Overload protection: 125 % of rated FLA
- ▶ Integral solid state short circuit protection does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the National Electrical Code and any additional local codes.
- ▶ CAUTION - Risk of electric shock. Do not disconnect under load.
- ▶ **Marquage UL**
- ▶ Utiliser exclusivement des conducteurs en cuivre 75 °C, sauf pour la partie commande.
- ▶ Taille de conducteur maximale : AWG14.
- ▶ Les entraînements avec câble d'alimentation sont destinés exclusivement à des applications conformes à la norme NFPA 79.
- ▶ Protection contre les surcharges : homologuée pour 125 % du courant assigné à pleine charge.
- ▶ La protection statique intégrée n'offre pas la même protection qu'un disjoncteur. Une protection par disjoncteur externe doit être fournie, conformément au National Electrical Code et aux réglementations locales applicables.
- ▶ ATTENTION ! Risque de choc électrique. Ne pas débrancher l'équipement sous charge.

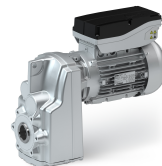
Single drive connection according to NFPA 70, NFPA 79



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

Electrical installation

Connection according to cULus

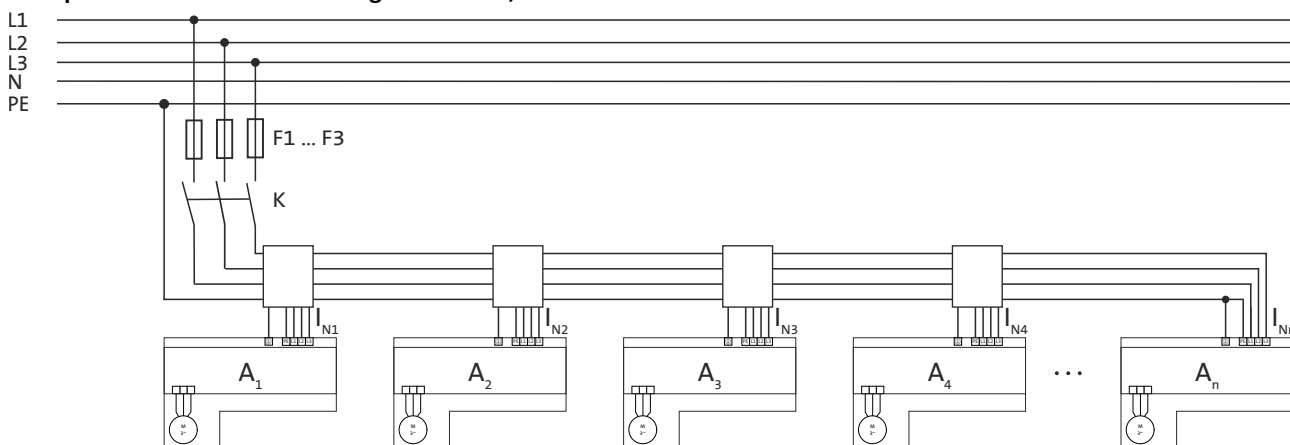


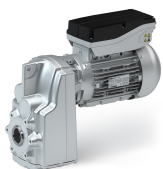
Fuse data (F1 ... F3)				
Motor		MSEMA□□063-42		MSEMA□□080-32
Cable installation in accordance with		NFPA 70, NFPA 79		
Fuse				
Standard		UL 248		
Typ. Rated current	A	3		6
Max. rated current	A	3		10
Semiconductor fuse				
Standard		UL 248		
Typ. Rated current	A	3		6
Max. rated current	A	3		10
Circuit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

⚠ WARNING!

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

Group drive connection according to NFPA 70, NFPA 79





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 [111](#)

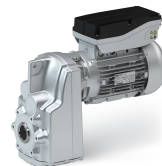
- Use of copper cables insulated with PVC
 - Conductor temperature $\leq 70\text{ °C}$, ambient temperature $\leq 40\text{ °C}$
- No bundling of cables or wires, three wires under load
- Typical utilization 80 % of the respective cable cross-section taken into account

⚠ 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

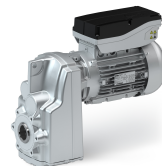
More information and certificates of approval can be found under

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

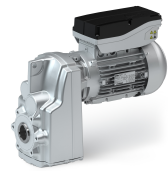
Electrical supply conditions

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		



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.



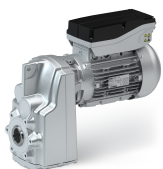
The rated torque can be gathered from the last digits of the product name e.g. g500-B110 (110 Nm).

g500-S130, 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				'
382	43.3	3.661	637	174	19
279	59.3	5.021	728	145	18
218	70.9	6.425	559	87	18
199	38.3	7.029	5096	725	18
149	111	9.411	847	90	12
109	130	12.907	968	75	12
77.5	98.4	18.069	6776	375	12
60.7	117	23.048	484	21	12
49.6	130	28.233	847	30	12
39.4	130	35.493	2662	75	12
30.6	130	45.711	2057	45	12
24.2	130	57.933	869	15	11
19.3	130	72.600	363	5	11
14.6	115	95.648	10043	105	11

g500-S130, 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				'
14.8	130	94.649	21296	225	12
10.6	130	132.508	149072	1125	12
8.3	130	169.016	10648	63	12
6.8	130	207.044	9317	45	12
5.6	130	251.277	75383	300	12
4.4	130	315.891	118459	375	12
3.4	130	406.829	183073	450	12
2.7	130	515.607	77341	150	12
2.2	130	646.140	32307	50	12
1.7	130	825.825	33033	40	12



g500-S220, 2-stage gearboxes

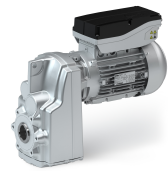
Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n ₂	M _{2, max}	i	z _g	z _t	
rpm	Nm				'
365	89.3	3.840	553	144	16
266	181	5.267	79	15	16
183	178	7.667	23	3	12
133	220	10.514	368	35	12
104	220	13.456	1978	147	12
95.1	174	14.720	368	25	12
74.6	207	18.776	920	49	12
60.9	220	23.000	23	1	11
46.8	220	29.937	1886	63	11
37.6	220	37.238	782	21	11
29.1	173	48.190	1012	21	11
23.9	183	58.486	2047	35	11
18.7	181	74.750	299	4	11

g500-S220, 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				'
30.9	220	45.333	136	3	12
23.5	220	59.581	6256	105	12
18.4	220	76.249	33626	441	12
14.4	220	97.528	43010	441	12
11.1	220	126.610	13294	105	12
8.6	220	162.252	23851	147	12
6.7	220	209.887	48484	231	12
5.1	220	273.079	17204	63	12
4.0	220	353.762	7429	21	12
3.1	163	451.512	37927	84	12

g500-S220, 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				'
4.8	220	293.418	303688	1035	13
3.6	220	385.636	86768	225	13
2.8	220	493.522	466378	945	13
2.2	220	631.249	119306	189	13
1.7	220	819.476	184382	225	13
1.4	220	994.545	745909	750	13
1.1	220	1274.522	2676497	2100	13
0.8	220	1648.712	1360187	825	12
0.7	220	2107.202	1390753	660	12
0.5	220	2741.628	493493	180	12



g500-S400, 2-stage gearboxes

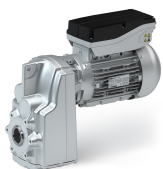
Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
419	77.6	3.339	581	174	16
306	189	4.579	664	145	16
239	120	5.860	3569	609	13
218	75.8	6.411	4648	725	12
166	196	8.436	329	39	12
121	400	11.569	752	65	12
94.6	302	14.806	4042	273	12
86.4	191	16.197	5264	325	12
67.8	228	20.659	1880	91	11
55.3	400	25.308	329	13	11
42.5	300	32.940	3854	117	11
34.2	316	40.974	1598	39	11
26.4	190	53.026	2068	39	11
21.8	201	64.354	4183	65	11

g500-S400, 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				'
21.4	352	65.559	12784	195	11
16.7	400	83.900	68714	819	11
13.0	399	107.314	87890	819	11
10.0	399	139.313	27166	195	11
7.8	400	178.531	48739	273	11
6.1	396	230.946	99076	429	11
4.7	400	300.479	35156	117	11
3.6	373	389.256	15181	39	11
2.8	287	496.814	77503	156	11

g500-S400, 4-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				'
2.9	400	480.766	281248	585	11
2.3	400	615.266	1511708	2457	11
1.8	400	786.968	1933580	2457	11
1.4	400	1021.627	597652	585	11
1.1	400	1239.884	1208887	975	11
0.9	400	1588.927	4337771	2730	11
0.7	400	2055.423	4408882	2145	11
0.5	400	2627.015	173383	66	11
0.4	388	3417.944	61523	18	11



g500-S660, 2-stage gearboxes

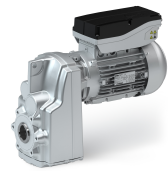
Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
357	322	3.920	98	25	14
260	441	5.376	672	125	13
204	281	6.880	172	25	13
192	593	7.311	329	45	11
140	625	10.027	752	75	10
109	524	12.832	4042	315	10
99.7	580	14.037	5264	375	10
78.2	365	17.905	376	21	10
63.8	660	21.933	329	15	9
49.0	484	28.548	3854	135	9
39.4	508	35.511	1598	45	9
30.5	355	45.956	2068	45	9
25.1	376	55.773	4183	75	9

g500-S660, 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				'
24.6	650	56.818	12784	225	10
19.3	660	72.713	68714	945	10
17.6	427	79.545	89488	1125	10
13.8	505	101.460	6392	63	10
11.3	660	124.289	5593	45	10
9.0	659	156.249	35156	225	10
7.0	660	201.230	27166	135	10
5.5	660	255.034	126242	495	10
4.4	660	319.600	1598	5	10
3.3	511	421.060	132634	315	10

g500-S660, 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				'
3.4	640	416.664	281248	675	10
2.4	660	583.329	1968736	3375	10
1.9	660	744.042	140624	189	10
1.5	660	911.452	123046	135	10
1.2	660	1145.825	773432	675	10
0.9	660	1475.684	597652	405	10
0.7	660	1870.252	252484	135	10
0.6	660	2269.806	5617769	2475	10
0.5	660	2844.440	71111	25	10
0.4	660	3635.450	72709	20	10



g500-S950, 2-stage gearboxes

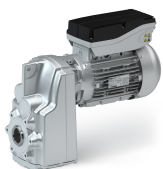
Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
320	546	4.380	403	92	15
260	434	5.391	124	23	14
232	496	6.038	3472	575	14
182	314	7.702	1240	161	14
138	950	10.183	611	60	10
99.7	950	14.037	5264	375	9
78.2	731	17.905	376	21	9
63.8	950	21.933	329	15	9
49.0	950	28.548	3854	135	9
40.0	950	34.989	3149	90	9
30.5	657	45.956	2068	45	9
25.1	700	55.773	4183	75	9
19.9	703	70.500	141	2	9

g500-S950, 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				'
25.0	950	55.982	12596	225	9
19.5	950	71.644	135407	1890	10
17.9	912	78.375	88172	1125	9
14.0	950	99.968	6298	63	9
11.4	950	122.461	22043	180	9
8.8	950	159.394	129109	810	9
7.1	950	198.270	53533	270	9
5.5	905	256.585	34639	135	9
4.5	950	311.401	280261	900	9
3.5	947	397.999	286559	720	9

g500-S950, 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				'
3.9	950	357.042	3615052	10125	10
3.1	950	455.411	258218	567	10
2.4	950	574.751	1939784	3375	10
1.9	950	733.101	138556	189	10
1.6	950	898.048	242473	270	10
1.2	950	1168.888	1420199	1215	10
1.0	950	1453.983	588863	405	10
0.7	950	1881.625	762058	405	9
0.6	950	2283.608	3082871	1350	9
0.5	950	2771.470	24943229	9000	9
0.4	950	3542.188	25503751	7200	9
0.3	950	4527.234	26076869	5760	9



g500-S2100, 2-stage gearboxes

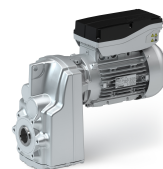
Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
305	1112	4.593	689	150	12
232	748	6.029	2279	378	11
204	856	6.870	371	54	11
169	665	8.272	3127	378	11
133	1872	10.504	1313	125	8
102	1710	13.787	4343	315	7
89.1	1958	15.711	707	45	7
74.0	1522	18.917	5959	315	7
60.4	2050	23.193	3131	135	7
44.6	2050	31.422	1414	45	7
36.7	2050	38.156	1717	45	7
28.4	1396	49.378	2222	45	7
23.4	1485	59.927	8989	150	7
18.5	1444	75.750	303	4	7

g500-S2100, 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				'
31.5	2050	44.515	12019	270	8
22.9	2050	61.049	13736	225	8
17.9	2050	78.128	73831	945	7
16.4	2050	85.468	96152	1125	7
12.8	2050	109.016	6868	63	7
10.5	2050	133.544	12019	90	7
8.1	2050	173.820	70397	405	7
6.5	2050	216.215	29189	135	7
5.0	2050	279.807	37774	135	7
4.1	2050	339.584	152813	450	7
3.3	2050	429.250	1717	4	7

g500-S2100, 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				'
3.6	2050	389.356	3942232	10125	8
2.8	2050	496.628	281588	567	8
2.3	2050	608.369	492779	810	8
1.8	2050	791.846	2886277	3645	8
1.4	2050	984.979	1196749	1215	8
1.1	2050	1274.678	1548734	1215	8
0.9	2050	1585.575	642158	405	8
0.7	2050	2051.921	831028	405	8
0.6	2050	2490.286	1680943	675	8
0.5	2050	3022.302	13600357	4500	8
0.4	2050	3862.773	13905983	3600	8
0.3	2050	4882.719	156247	32	8



g500-S3100, 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				'
283	1199	4.951	2847	575	10
215	806	6.499	3139	483	10
189	923	7.406	511	69	9
157	717	8.917	4307	483	9
128	1140	10.932	2263	207	9
111	2965	12.584	1573	125	6
84.8	2049	16.517	5203	315	6
74.4	2346	18.822	847	45	6
61.8	1823	22.663	7139	315	6
50.4	2897	27.785	3751	135	6
37.2	2492	37.644	1694	45	6
30.6	2550	45.711	2057	45	6
23.7	1673	59.156	2662	45	6
19.5	1779	71.793	10769	150	6

g500-S3100, 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				'
26.3	3054	53.330	14399	270	6
19.1	3100	73.138	16456	225	6
15.0	3100	93.599	88451	945	6
13.7	3100	102.393	115192	1125	6
10.7	2624	130.603	8228	63	6
8.8	3100	159.989	14399	90	6
6.7	3100	208.240	84337	405	6
5.4	3100	259.030	34969	135	6
4.2	2547	335.215	45254	135	6
3.4	2702	406.829	183073	450	6

g500-S3100, 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				'
3.9	3100	358.375	403172	1125	6
3.1	3100	457.111	4114	9	6
2.5	3100	559.961	100793	180	6
1.9	3100	728.838	590359	810	6
1.5	3100	906.604	244783	270	6
1.2	3100	1180.024	1433729	1215	6
1.0	3100	1467.835	594473	405	6
0.7	3100	1899.551	769318	405	6
0.6	3100	2458.242	995588	405	6
0.5	3100	2983.412	2013803	675	6
0.4	3100	3620.777	16293497	4500	6
0.3	3100	4627.679	16659643	3600	6
0.2	2794	5849.594	187187	32	6



g500-S4500, 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				'
285	2113	4.914	2457	500	9
217	2451	6.450	129	20	9
198	1708	7.056	882	125	9
140	4163	9.984	1248	125	5
107	4500	13.105	1376	105	4
97.7	3470	14.336	1792	125	4
76.6	2268	18.286	128	7	4
62.5	4423	22.400	112	5	4
47.4	3077	29.511	1328	45	4
38.6	3099	36.267	544	15	4
29.8	2618	46.933	704	15	4
24.6	2785	56.960	1424	25	4
19.4	2586	72.000	72	1	4

g500-S4500, 3-stage gearboxes

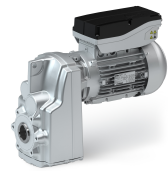
Output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
32.9	4291	42.520	18496	435	4
23.8	4500	58.933	884	15	4
19.3	4500	72.533	1088	15	4
17.2	4500	81.237	30464	375	4
13.5	4166	103.619	2176	21	4
11.0	4500	126.933	1904	15	4
8.5	4500	165.215	22304	135	4
6.9	4500	202.489	9112	45	4
5.3	3746	265.956	11968	45	4
4.3	3989	322.773	24208	75	4
3.4	4004	408.000	408	1	4

g500-S4500, 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				'
3.9	4500	362.667	1088	3	5
3.2	4500	444.267	6664	15	5
2.4	4500	578.252	78064	135	4
2.0	4500	708.711	31892	45	4
1.5	4500	922.449	373592	405	4
1.2	4500	1147.437	154904	135	4
1.2	4208	1211.575	490688	405	4
0.9	4500	1507.081	203456	135	4
0.7	4500	1950.341	263296	135	4
0.6	4500	2367.004	532576	225	4
0.5	4500	2872.683	1077256	375	4
0.5	4500	3025.244	136136	45	4
0.4	4500	3671.547	275366	75	4
0.3	4016	4641.000	4641	1	4

Technical data

Radial forces and axial forces



Radial forces and axial forces

Permissible radial force

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

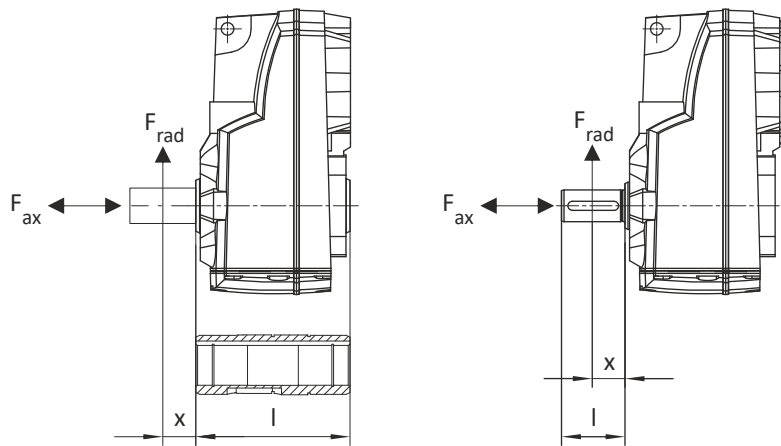
$$F_{\text{rad, perm}} = f_w \times F_{\text{rad, max}}$$

Permissible axial force

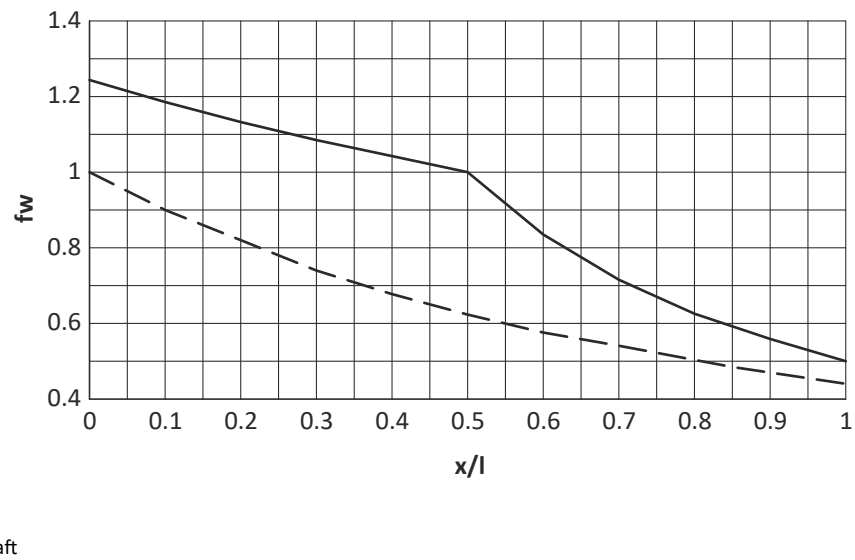
If there is no radial force, the maximum axial force is 50% of the value in the table $F_{\text{rad, max}}$

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

Application of forces



Additional load factor f_w on the drive shaft





Technical data

Radial forces and axial forces

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



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



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

Max. radial force, gearbox with hollow shaft (H□R/H□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-S130	1000	1100	1300	1500	1650	2200	2750	3450	4200	4500
g500-S220	2100	2300	2800	3200	3800	4600	5500	6300	7000	7000
g500-S400	2200	2500	3000	3400	4100	5000	6000	7100	8000	8000
g500-S660	2500	2900	3500	4000	5000	6600	8500	10800	12000	12000
g500-S950	3400	4000	4300	5000	6000	8000	10300	11500	12500	13000
g500-S2100	4500	5100	6200	6500	7500	10000	12000	15700	15700	16000
g500-S3100	5200	5700	7000	8000	9000	12500	15000	17000	19800	19800
g500-S4500	11100	12900	15000	17500	19000	20000	23000	30000	30000	30000

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

Getriebe	Output speed n_2 [rpm]									
	1000	630	400	250	160	100	63	40	25	16
	Max. radial force $F_{rad,max}$ [rated]									
g500-S130	1000	1100	1300	1500	1650	2200	2750	3450	4200	4500
g500-S220	1700	1900	2300	2700	3200	3600	3600	3600	3600	3600
g500-S400	1700	1900	2300	2700	3200	4000	4800	5800	6200	6200
g500-S660	2300	2600	3100	3600	3900	5100	6500	8400	9000	9000
g500-S950	6100	6800	8200	9500	10300	10300	10300	10300	10300	10300
g500-S2100	7500	8200	10000	11500	13600	15700	15700	15700	15700	15700
g500-S3100	9400	10300	12600	14500	16500	18000	19800	19800	19800	19800
g500-S4500	12000	13100	16100	18500	20000	22000	25000	30000	30000	30000

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

Getriebe	Output speed n_2 [rpm]									
	1000	630	400	250	160	100	63	40	25	16
	Max. radial force $F_{rad,max}$ [rated]									
g500-S130	1000	1100	1300	1500	1650	2200	2750	3450	4200	4500
g500-S220	2400	2600	3200	3700	4400	4600	4600	4600	4600	4600
g500-S400	3300	3600	4400	5100	5900	6800	7000	7000	7000	7000
g500-S660	4500	5000	6100	7000	7800	9600	10000	10000	10000	10000
g500-S950	4900	5300	6500	7500	8500	10300	10300	10300	10300	10300
g500-S2100	7400	8200	10000	11500	13600	15700	15700	15700	15700	15700
g500-S3100	12800	14100	17200	19800	19800	19800	19800	19800	19800	19800
g500-S4500	17500	19200	23500	27000	28000	30000	30000	30000	30000	30000



Notes on the selection tables

The following legend shows the layout of the selection tables:

Example

Explanation

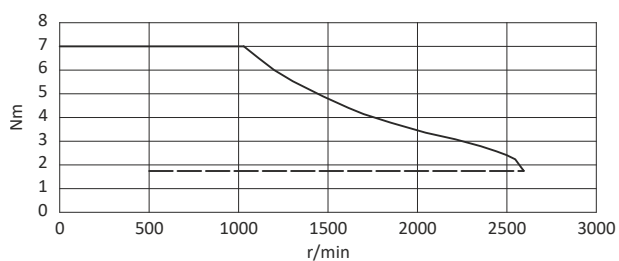
$$M_{\max} = 7.0 \text{ Nm}$$

Max. torque of the drive motor

Mains operation								Geared motor			
Min. output speed		Max. output speed		Starting torque							
n_{21}	M_2	n_2	M_2	$M_{a,1}$	$M_{a,2}$	J	i			z	m
r/min	Nm	r/min	Nm	Nm	Nm	kgcm ²					kg
31.3	27.0	163	27.0	109	109	3.950	15.979	g500-S130	MSEMA□□063-42	2	11
24.6	35.0	128	35.0	130	138	3.875	20.381	g500-S130	MSEMA□□063-42	2	11
21.7	39.0	113	39.0	130	157	3.932	23.048	g500-S130	MSEMA□□063-42	2	11
20.1	42.0	104	42.0	130	163	3.831	24.967	g500-S130	MSEMA□□063-42	2	11

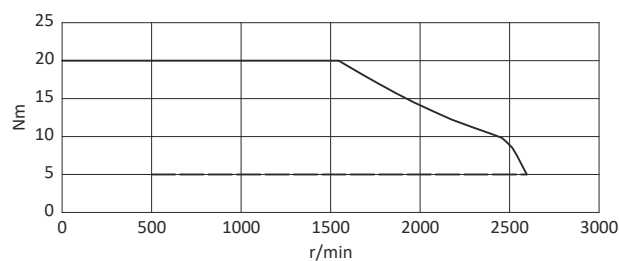
[illegible]

MSEMA□□063-42



- - - - Output torque
 ————— Starting torque

MSEMA□□080-32





Technical data

Selection tables

7 Nm

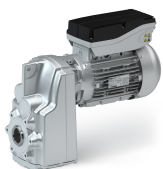
Mains operation								Geared motor			
Min. output speed		Max. output speed		Starting torque							
n ₂₁	M ₂	n ₂	M ₂	M _{a,1}	M _{a,2}	J	i			z	m
rpm	Nm	rpm	Nm	Nm	Nm	kgcm ²					kg
137	6.0	710	6.0	25.0	24.9	5.263	3.661	g500-S130	MSEMA□□063-42	2	11
99.6	9.0	518	9.0	34.0	34.1	4.587	5.021	g500-S130	MSEMA□□063-42	2	11
78.0	11.0	406	11.0	44.0	43.5	5.276	6.411	g500-S400	MSEMA□□063-42	2	17
77.9	11.0	405	11.0	44.0	43.6	4.273	6.425	g500-S130	MSEMA□□063-42	2	11
71.2	12.0	370	12.0	48.0	47.7	4.188	7.029	g500-S130	MSEMA□□063-42	2	11
53.2	16.0	276	16.0	64.0	63.9	4.730	9.411	g500-S130	MSEMA□□063-42	2	11
38.8	22.0	201	22.0	88.0	87.7	4.304	12.907	g500-S130	MSEMA□□063-42	2	11
34.0	25.0	177	25.0	100	100	4.283	14.720	g500-S220	MSEMA□□063-42	2	13
30.9	28.0	161	28.0	110	110	4.404	16.197	g500-S400	MSEMA□□063-42	2	17
27.7	31.0	144	31.0	123	123	4.044	18.069	g500-S130	MSEMA□□063-42	2	11
26.7	32.0	138	32.0	128	128	4.118	18.776	g500-S220	MSEMA□□063-42	2	13
24.3	35.0	126	35.0	140	140	4.192	20.659	g500-S400	MSEMA□□063-42	2	17
21.7	39.0	113	39.0	130	157	3.932	23.048	g500-S130	MSEMA□□063-42	2	11
17.8	48.0	92.0	48.0	130	163	3.869	28.233	g500-S130	MSEMA□□063-42	2	11
16.8	51.0	86.8	51.0	203	203	3.899	29.937	g500-S220	MSEMA□□063-42	2	13
15.2	56.0	78.9	56.0	224	224	3.928	32.940	g500-S400	MSEMA□□063-42	2	17
14.1	60.0	73.2	60.0	130	163	3.811	35.493	g500-S130	MSEMA□□063-42	2	11
13.5	63.0	69.8	63.0	220	242	3.845	37.238	g500-S220	MSEMA□□063-42	2	13
12.3	70.0	63.4	70.0	253	278	3.864	40.974	g500-S400	MSEMA□□063-42	2	17
11.1	76.0	57.3	76.0	220	275	3.899	45.333	g500-S220	MSEMA□□063-42	3	13
11.0	78.0	56.8	78.0	130	143	3.774	45.711	g500-S130	MSEMA□□063-42	2	11
10.9	78.0	56.5	78.0	284	312	3.975	45.956	g500-S660	MSEMA□□063-42	2	22
10.4	82.0	53.9	82.0	220	242	3.791	48.190	g500-S220	MSEMA□□063-42	2	13
9.5	90.0	49.0	90.0	293	322	3.803	53.026	g500-S400	MSEMA□□063-42	2	17
9.0	95.0	46.6	95.0	301	331	3.901	55.773	g500-S660	MSEMA□□063-42	2	22
8.7	98.0	44.8	98.0	130	143	3.748	57.933	g500-S130	MSEMA□□063-42	2	11
8.6	99.0	44.4	99.0	220	242	3.767	58.486	g500-S220	MSEMA□□063-42	2	13
8.4	100	43.6	100	220	275	3.831	59.581	g500-S220	MSEMA□□063-42	3	13
7.8	109	40.4	109	301	331	3.774	64.354	g500-S400	MSEMA□□063-42	2	17
7.7	110	39.6	110	400	439	3.839	65.559	g500-S400	MSEMA□□063-42	3	17
6.9	123	35.8	123	130	143	3.732	72.600	g500-S130	MSEMA□□063-42	2	11
6.7	127	34.7	127	172	190	3.743	74.750	g500-S220	MSEMA□□063-42	2	13
6.6	128	34.0	128	220	275	3.791	76.249	g500-S220	MSEMA□□063-42	3	13
6.3	133	32.6	133	532	532	3.930	79.545	g500-S660	MSEMA□□063-42	3	22
6.0	140	30.9	140	400	500	3.795	83.900	g500-S400	MSEMA□□063-42	3	17
5.3	158	27.4	158	130	143	3.837	94.649	g500-S130	MSEMA□□063-42	3	14
5.2	163	26.6	163	220	275	3.761	97.528	g500-S220	MSEMA□□063-42	3	13
5.0	170	25.6	170	660	679	3.862	101.460	g500-S660	MSEMA□□063-42	3	22
4.7	179	24.2	179	399	499	3.764	107.314	g500-S400	MSEMA□□063-42	3	17
4.1	208	20.9	208	660	825	3.823	124.289	g500-S660	MSEMA□□063-42	3	22
4.0	212	20.5	212	220	275	3.743	126.610	g500-S220	MSEMA□□063-42	3	13
3.6	233	18.6	233	399	498	3.745	139.313	g500-S400	MSEMA□□063-42	3	17
3.3	261	16.6	261	660	825	3.782	156.249	g500-S660	MSEMA□□063-42	3	22
3.2	267	16.3	267	950	1066	3.912	159.394	g500-S950	MSEMA□□063-42	3	42
3.1	271	16.0	271	220	275	3.730	162.252	g500-S220	MSEMA□□063-42	3	13
2.9	299	14.5	299	400	500	3.731	178.531	g500-S400	MSEMA□□063-42	3	17
2.6	332	13.1	332	950	1045	3.853	198.270	g500-S950	MSEMA□□063-42	3	42
2.5	337	12.9	337	660	726	3.756	201.230	g500-S660	MSEMA□□063-42	3	22
2.2	386	11.2	386	396	435	3.721	230.946	g500-S400	MSEMA□□063-42	3	17
2.0	427	10.1	427	660	726	3.737	255.034	g500-S660	MSEMA□□063-42	3	22
2.0	429	10.1	429	950	1045	3.796	256.585	g500-S950	MSEMA□□063-42	3	42

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
1.8	468	9.2	468	1701	1871	3.970	279.807	g500-S2100	MSEMA□□063-42	3	74
1.7	503	8.6	503	400	440	3.714	300.479	g500-S400	MSEMA□□063-42	3	17
1.7	521	8.3	521	950	1045	3.770	311.401	g500-S950	MSEMA□□063-42	3	42
1.6	535	8.1	535	640	704	3.725	319.600	g500-S660	MSEMA□□063-42	3	22
1.5	561	7.7	561	2037	2241	3.985	335.215	g500-S3100	MSEMA□□063-42	3	114
1.5	568	7.6	568	1804	1985	3.897	339.584	g500-S2100	MSEMA□□063-42	3	74
1.5	588	7.2	588	950	1188	3.922	357.042	g500-S950	MSEMA□□063-42	4	45
1.3	641	6.6	641	2050	2563	3.974	389.356	g500-S2100	MSEMA□□063-42	4	77
1.3	666	6.5	666	904	994	3.745	397.999	g500-S950	MSEMA□□063-42	3	42
1.3	680	6.3	680	2162	2378	3.907	406.829	g500-S3100	MSEMA□□063-42	3	114
1.2	718	6.0	718	1844	2029	3.827	429.250	g500-S2100	MSEMA□□063-42	3	74
1.1	750	5.7	750	950	1188	3.914	455.411	g500-S950	MSEMA□□063-42	4	45
1.1	818	5.2	818	2050	2563	3.949	496.628	g500-S2100	MSEMA□□063-42	4	77
0.9	947	4.5	947	950	1045	3.800	574.751	g500-S950	MSEMA□□063-42	4	45
0.9	1002	4.2	1002	2050	2563	3.935	608.369	g500-S2100	MSEMA□□063-42	4	77
0.7	1201	3.5	1201	3100	3875	3.938	728.838	g500-S3100	MSEMA□□063-42	4	117
0.7	1304	3.2	1304	2050	2563	3.921	791.846	g500-S2100	MSEMA□□063-42	4	77
0.6	1493	2.8	1493	3100	3410	3.870	906.604	g500-S3100	MSEMA□□063-42	4	117
0.6	1520	2.8	1520	4500	5625	3.957	922.449	g500-S4500	MSEMA□□063-42	4	192
0.6	1623	2.6	1623	2050	2255	3.859	984.979	g500-S2100	MSEMA□□063-42	4	77
0.5	1890	2.2	1890	4500	4950	3.882	1147.437	g500-S4500	MSEMA□□063-42	4	192
0.5	1944	2.2	1944	3100	3410	3.860	1180.024	g500-S3100	MSEMA□□063-42	4	117
0.5	1996	2.1	1996	4500	4950	3.823	1211.575	g500-S4500	MSEMA□□063-42	4	192
0.4	2100	2.0	2100	2050	2255	3.800	1274.678	g500-S2100	MSEMA□□063-42	4	77
0.4	2418	1.7	2418	3100	3410	3.854	1467.835	g500-S3100	MSEMA□□063-42	4	117
0.4	2483	1.7	2483	4500	4950	3.867	1507.081	g500-S4500	MSEMA□□063-42	4	192
0.3	3129	1.3	3129	3100	3410	3.797	1899.551	g500-S3100	MSEMA□□063-42	4	117
0.3	3213	1.3	3213	4500	4950	3.805	1950.341	g500-S4500	MSEMA□□063-42	4	192
0.3	3899	1.0	3899	4500	4950	3.800	2367.004	g500-S4500	MSEMA□□063-42	4	192
0.2	4732	0.9	4732	4500	4950	3.773	2872.683	g500-S4500	MSEMA□□063-42	4	192
0.2	4984	0.8	4984	4500	4950	3.748	3025.244	g500-S4500	MSEMA□□063-42	4	192



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
150	16.0	779	16.0	65.0	64.8	31.160	3.339	g500-S400	MSEMA□□080-32	2	23
137	18.0	710	18.0	63.0	71.0	27.563	3.661	g500-S130	MSEMA□□080-32	2	18
130	19.0	677	19.0	75.0	74.5	28.596	3.840	g500-S220	MSEMA□□080-32	2	20
99.6	24.0	518	24.0	76.0	95.0	26.887	5.021	g500-S130	MSEMA□□080-32	2	18
85.4	28.0	444	28.0	114	114	27.861	5.860	g500-S400	MSEMA□□080-32	2	23
78.0	31.0	406	31.0	124	124	27.576	6.411	g500-S400	MSEMA□□080-32	2	23
77.9	31.0	405	31.0	87.0	109	26.573	6.425	g500-S130	MSEMA□□080-32	2	18
71.2	34.0	370	34.0	92.0	115	26.488	7.029	g500-S130	MSEMA□□080-32	2	18
65.3	37.0	339	37.0	149	149	27.499	7.667	g500-S220	MSEMA□□080-32	2	20
59.3	41.0	308	41.0	164	164	27.945	8.436	g500-S400	MSEMA□□080-32	2	23
53.2	46.0	276	46.0	125	156	27.030	9.411	g500-S130	MSEMA□□080-32	2	18
38.8	63.0	201	63.0	130	163	26.604	12.907	g500-S130	MSEMA□□080-32	2	18
37.2	65.0	193	65.0	220	261	26.673	13.456	g500-S220	MSEMA□□080-32	2	20
34.0	71.0	177	71.0	220	275	26.583	14.720	g500-S220	MSEMA□□080-32	2	20
33.8	72.0	176	72.0	287	287	26.817	14.806	g500-S400	MSEMA□□080-32	2	23
30.9	79.0	161	79.0	314	314	26.704	16.197	g500-S400	MSEMA□□080-32	2	23
28.0	87.0	145	87.0	347	347	27.415	17.905	g500-S660	MSEMA□□080-32	2	29
27.7	88.0	144	88.0	130	163	26.344	18.069	g500-S130	MSEMA□□080-32	2	18
26.7	91.0	138	91.0	220	275	26.418	18.776	g500-S220	MSEMA□□080-32	2	20
24.3	100	126	100	393	401	26.492	20.659	g500-S400	MSEMA□□080-32	2	23
21.8	112	113	112	220	275	26.320	23.000	g500-S220	MSEMA□□080-32	2	20
21.7	112	113	112	130	163	26.232	23.048	g500-S130	MSEMA□□080-32	2	18
19.8	123	103	123	400	491	26.370	25.308	g500-S400	MSEMA□□080-32	2	23
17.8	137	92.0	137	130	163	26.169	28.233	g500-S130	MSEMA□□080-32	2	18
17.6	138	91.0	138	484	554	26.609	28.548	g500-S660	MSEMA□□080-32	2	29
16.8	145	86.8	145	220	275	26.199	29.937	g500-S220	MSEMA□□080-32	2	20
15.2	160	78.9	160	400	500	26.228	32.940	g500-S400	MSEMA□□080-32	2	23
14.1	172	73.2	172	508	559	26.442	35.511	g500-S660	MSEMA□□080-32	2	29
13.5	181	69.8	181	220	242	26.145	37.238	g500-S220	MSEMA□□080-32	2	20
12.3	199	63.4	199	400	440	26.164	40.974	g500-S400	MSEMA□□080-32	2	23
10.9	223	56.5	223	598	658	26.275	45.956	g500-S660	MSEMA□□080-32	2	29
10.9	223	56.5	223	657	723	26.761	45.956	g500-S950	MSEMA□□080-32	2	48
10.4	234	53.9	234	220	242	26.091	48.190	g500-S220	MSEMA□□080-32	2	20
9.5	257	49.0	257	348	383	26.103	53.026	g500-S400	MSEMA□□080-32	2	23
9.0	271	46.6	271	508	559	26.201	55.773	g500-S660	MSEMA□□080-32	2	29
9.0	271	46.6	271	700	770	26.560	55.773	g500-S950	MSEMA□□080-32	2	48
8.9	271	45.7	271	650	813	26.381	56.818	g500-S660	MSEMA□□080-32	3	29
7.8	312	40.4	312	302	333	26.074	64.354	g500-S400	MSEMA□□080-32	2	23
7.7	313	39.6	313	400	500	26.139	65.559	g500-S400	MSEMA□□080-32	3	24
7.1	342	36.8	342	702	773	26.361	70.500	g500-S950	MSEMA□□080-32	2	48
7.0	342	36.2	342	950	1188	26.734	71.644	g500-S950	MSEMA□□080-32	3	49
6.9	347	35.7	347	660	825	26.264	72.713	g500-S660	MSEMA□□080-32	3	29
6.4	375	33.1	375	950	1188	26.634	78.375	g500-S950	MSEMA□□080-32	3	49
6.3	380	32.6	380	660	825	26.230	79.545	g500-S660	MSEMA□□080-32	3	29
6.0	401	30.9	401	400	500	26.095	83.900	g500-S400	MSEMA□□080-32	3	24
5.1	478	26.0	478	950	1188	26.449	99.968	g500-S950	MSEMA□□080-32	3	49
5.0	485	25.6	485	660	825	26.162	101.460	g500-S660	MSEMA□□080-32	3	29
4.6	521	23.8	521	2050	2084	27.379	109.016	g500-S2100	MSEMA□□080-32	3	81
4.1	585	21.2	585	950	1188	26.341	122.461	g500-S950	MSEMA□□080-32	3	49
4.1	594	20.9	594	660	825	26.123	124.289	g500-S660	MSEMA□□080-32	3	29
3.9	624	19.9	624	2496	2496	27.480	130.603	g500-S3100	MSEMA□□080-32	3	121

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
3.3	747	16.6	747	660	825	26.082	156.249	g500-S660	MSEMA□□080-32	3	29
3.2	762	16.3	762	950	1188	26.212	159.394	g500-S950	MSEMA□□080-32	3	49
2.9	831	14.9	831	2050	2563	26.595	173.820	g500-S2100	MSEMA□□080-32	3	81
2.6	947	13.1	947	950	1045	26.153	198.270	g500-S950	MSEMA□□080-32	3	49
2.5	995	12.4	995	3100	3875	26.687	208.240	g500-S3100	MSEMA□□080-32	3	121
2.4	1033	12.0	1033	2050	2255	26.433	216.215	g500-S2100	MSEMA□□080-32	3	81
2.0	1238	10.0	1238	3100	3410	26.458	259.030	g500-S3100	MSEMA□□080-32	3	121
1.9	1271	9.7	1271	3746	4121	26.861	265.956	g500-S4500	MSEMA□□080-32	3	196
1.8	1337	9.2	1337	2050	2255	26.270	279.807	g500-S2100	MSEMA□□080-32	3	81
1.6	1542	8.0	1542	3988	4387	26.628	322.773	g500-S4500	MSEMA□□080-32	3	196
1.5	1602	7.7	1602	3100	3410	26.285	335.215	g500-S3100	MSEMA□□080-32	3	121
1.5	1623	7.6	1623	2050	2255	26.197	339.584	g500-S2100	MSEMA□□080-32	3	81
1.4	1687	7.2	1687	3100	3875	26.457	358.375	g500-S3100	MSEMA□□080-32	4	124
1.4	1707	7.1	1707	4500	5625	26.622	362.667	g500-S4500	MSEMA□□080-32	4	199
1.3	1833	6.6	1833	2050	2563	26.274	389.356	g500-S2100	MSEMA□□080-32	4	84
1.3	1944	6.3	1944	3100	3410	26.207	406.829	g500-S3100	MSEMA□□080-32	3	121
1.3	1950	6.3	1950	4004	4405	26.403	408.000	g500-S4500	MSEMA□□080-32	3	196
1.2	2051	6.0	2051	2050	2255	26.127	429.250	g500-S2100	MSEMA□□080-32	3	81
1.2	2091	5.8	2091	4500	5625	26.540	444.267	g500-S4500	MSEMA□□080-32	4	199
1.1	2151	5.6	2151	3100	3875	26.411	457.111	g500-S3100	MSEMA□□080-32	4	124
1.1	2337	5.2	2337	2050	2563	26.249	496.628	g500-S2100	MSEMA□□080-32	4	84
0.9	2636	4.6	2636	3100	3875	26.385	559.961	g500-S3100	MSEMA□□080-32	4	124
0.9	2722	4.4	2722	4500	5625	26.459	578.252	g500-S4500	MSEMA□□080-32	4	199
0.8	3336	3.6	3336	4500	5625	26.418	708.711	g500-S4500	MSEMA□□080-32	4	199
0.7	3430	3.5	3430	3100	3875	26.238	728.838	g500-S3100	MSEMA□□080-32	4	124
0.6	4342	2.8	4342	4500	5625	26.257	922.449	g500-S4500	MSEMA□□080-32	4	199
0.5	5401	2.2	5401	4500	4950	26.182	1147.437	g500-S4500	MSEMA□□080-32	4	199



Dimensions

Notes on the basic dimensions

Gearboxes	Without pre-stage	With pre-stage
g500-S130	2-stage	3-stage
g500-S220 ... S4500	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](#) 96

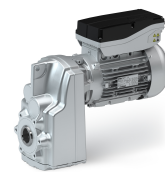
Motor	MSEMA ☐ ☐	
	063-42	080-32

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

Gearboxes	Min. length of the machine shaft
	mm
g500-S130	75
g500-S220	80
g500-S400	100
g500-S660	110
g500-S950	120
g500-S2100	135
g500-S3100	155
g500-S4500	190

Technical data

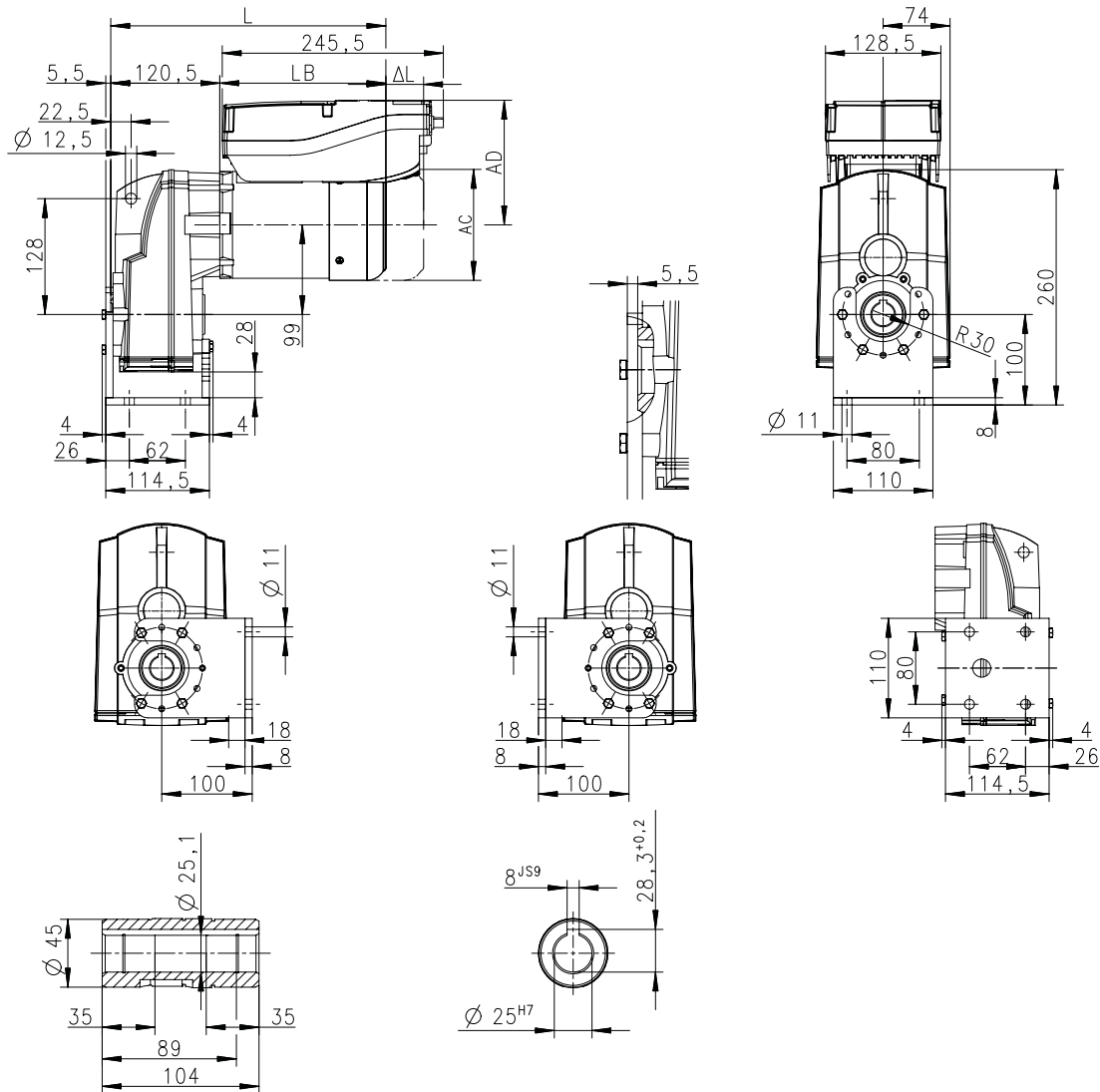
Dimensions
Basic dimensions



Basic dimensions

g500-S130, 2-stage

Gearbox design: Hollow shaft with foot (HBR)



8800533-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	304	347
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 96

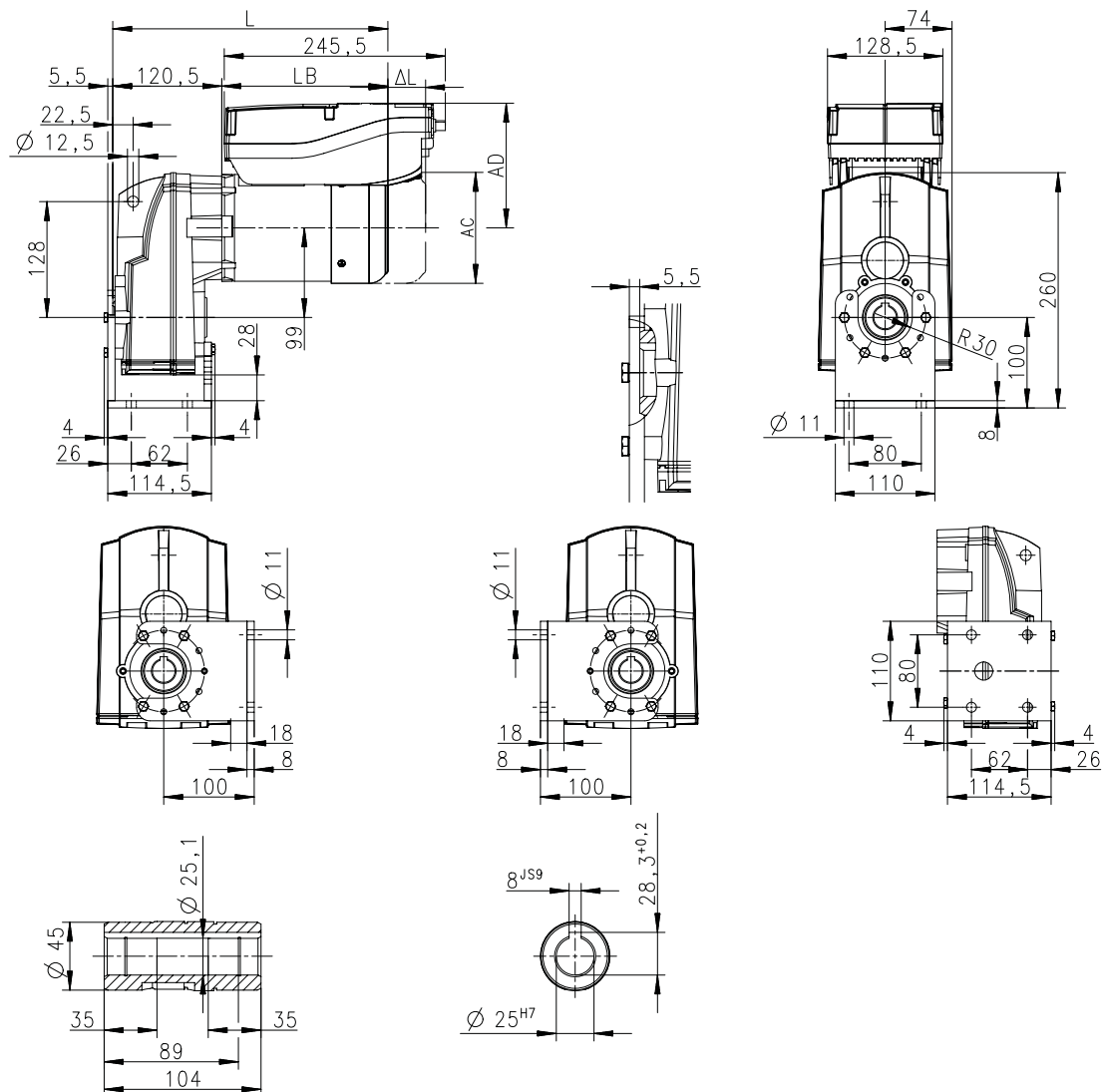


Technical data

Dimensions
Basic dimensions

g500-S130, 2-stage

Gearbox design: Hollow shaft with foot (HBR)



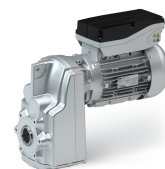
8800533-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	304	347
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 96

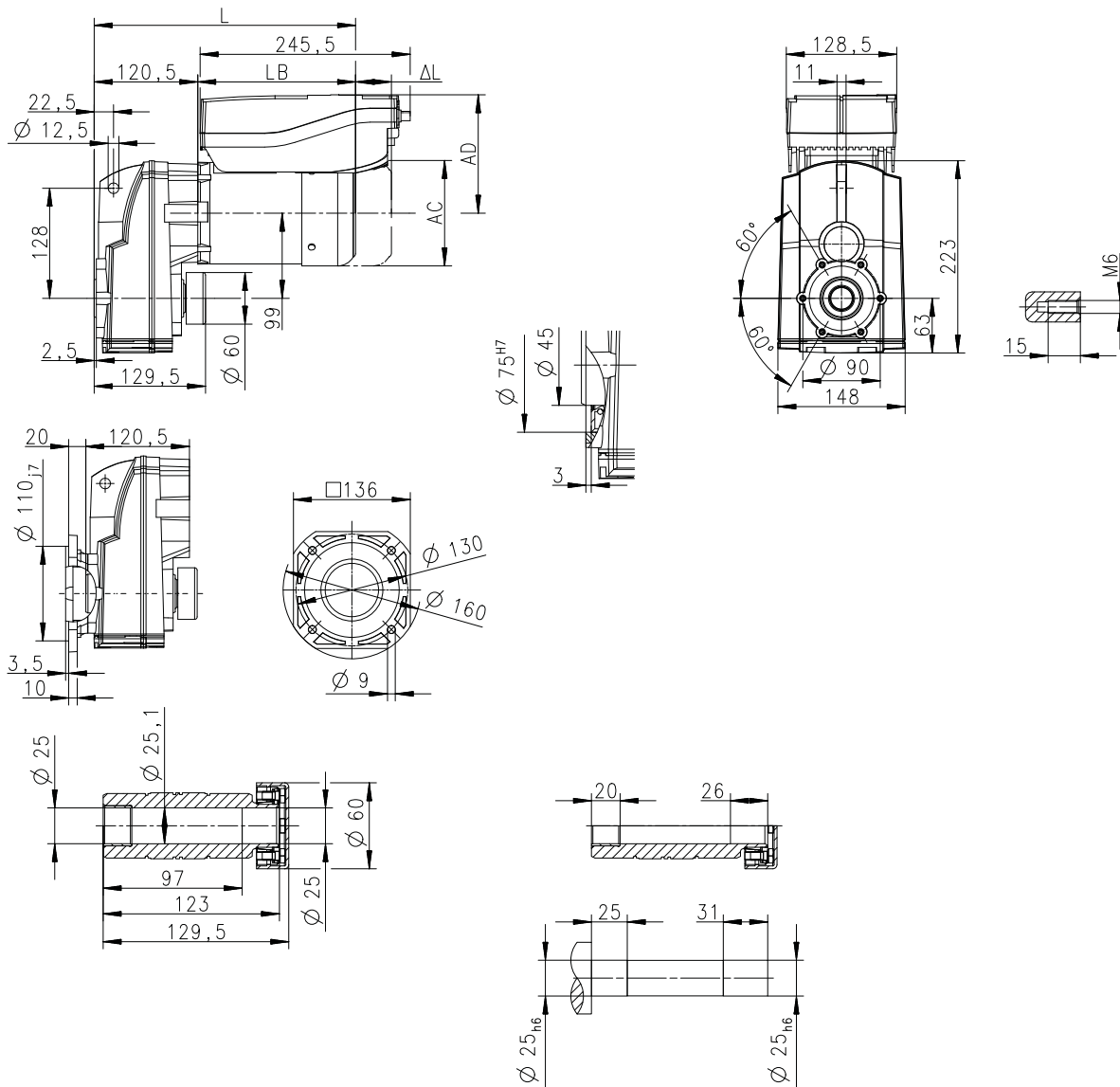
Technical data

Dimensions
Basic dimensions



g500-S130, 2-stage

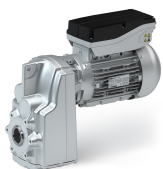
Gearbox design: Hollow shaft with shrink disc, without foot (SDR/SCR/SCK)



8800173-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	304	347
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 96

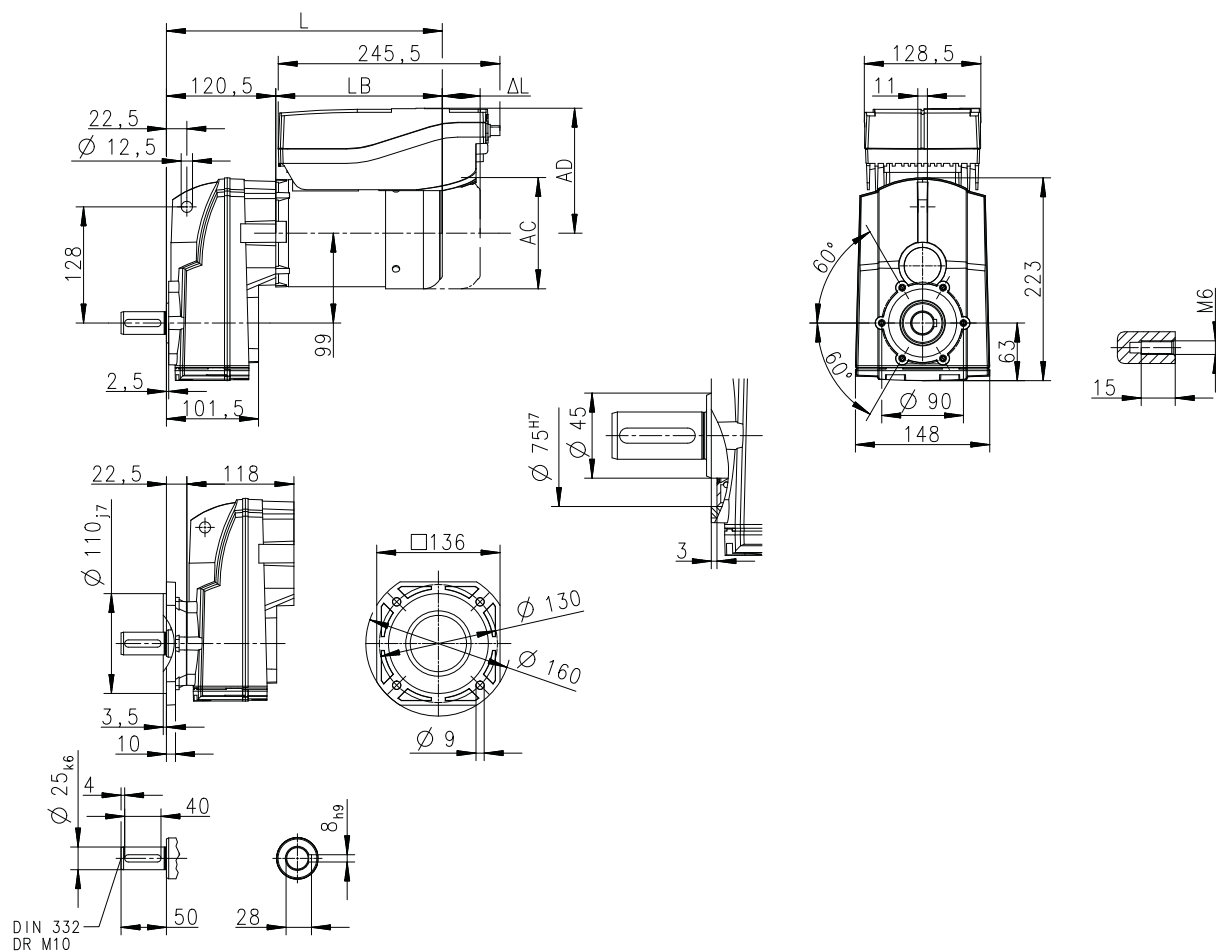


Technical data

Dimensions
Basic dimensions

g500-S130, 2-stage

Gearbox design: Solid shaft without foot (VDR/VCR/VCK)



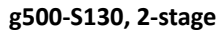
8800172-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	304	347
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 96

Dimensions

Basic dimensions

[illegible]

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	304	347
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

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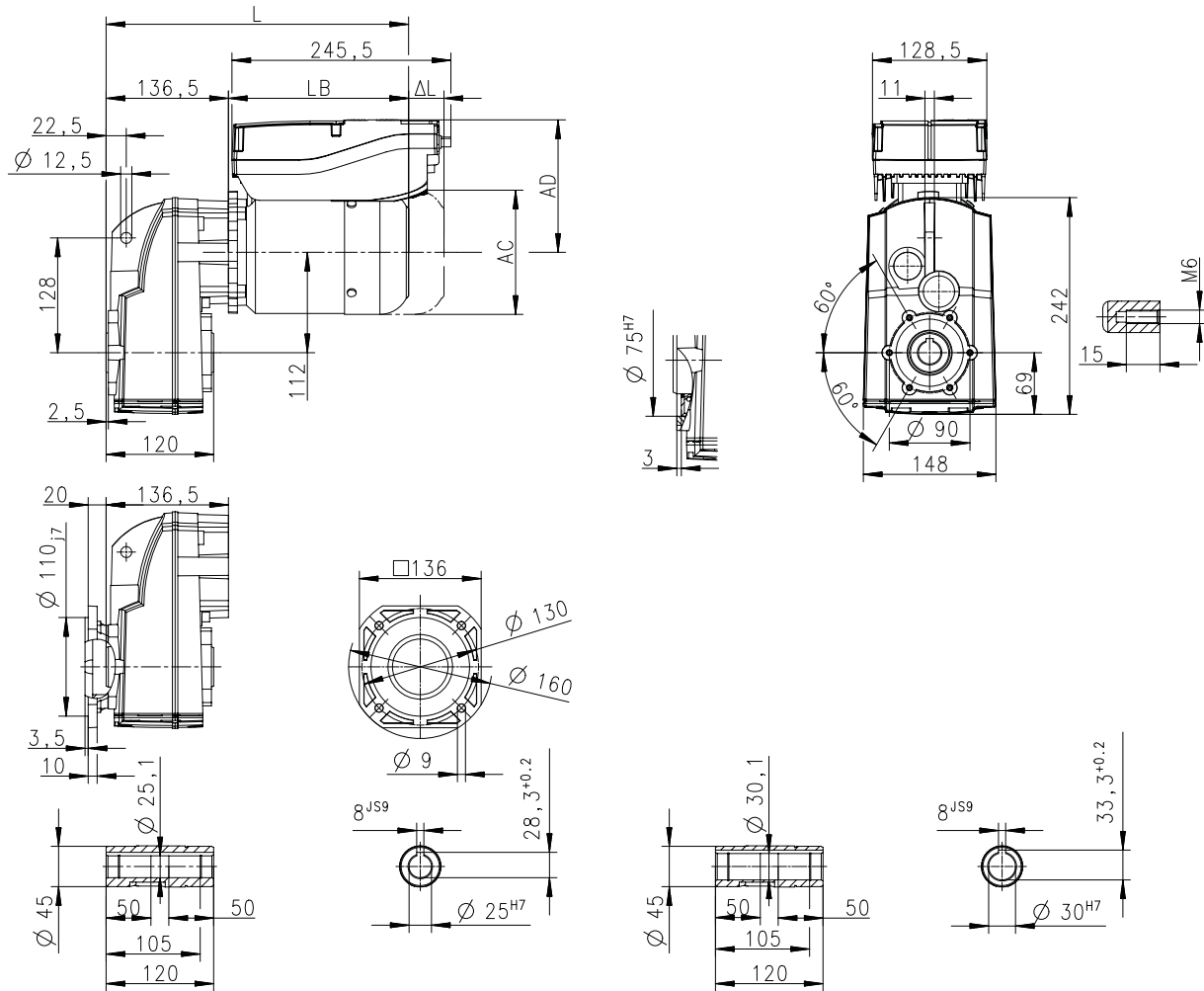


Technical data

Dimensions
Basic dimensions

g500-S220, 2-/3-stage

Gearbox design: Hollow shaft without foot (HDR/HCR/HCK)



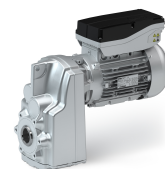
8800175-01

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	320	363
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 96

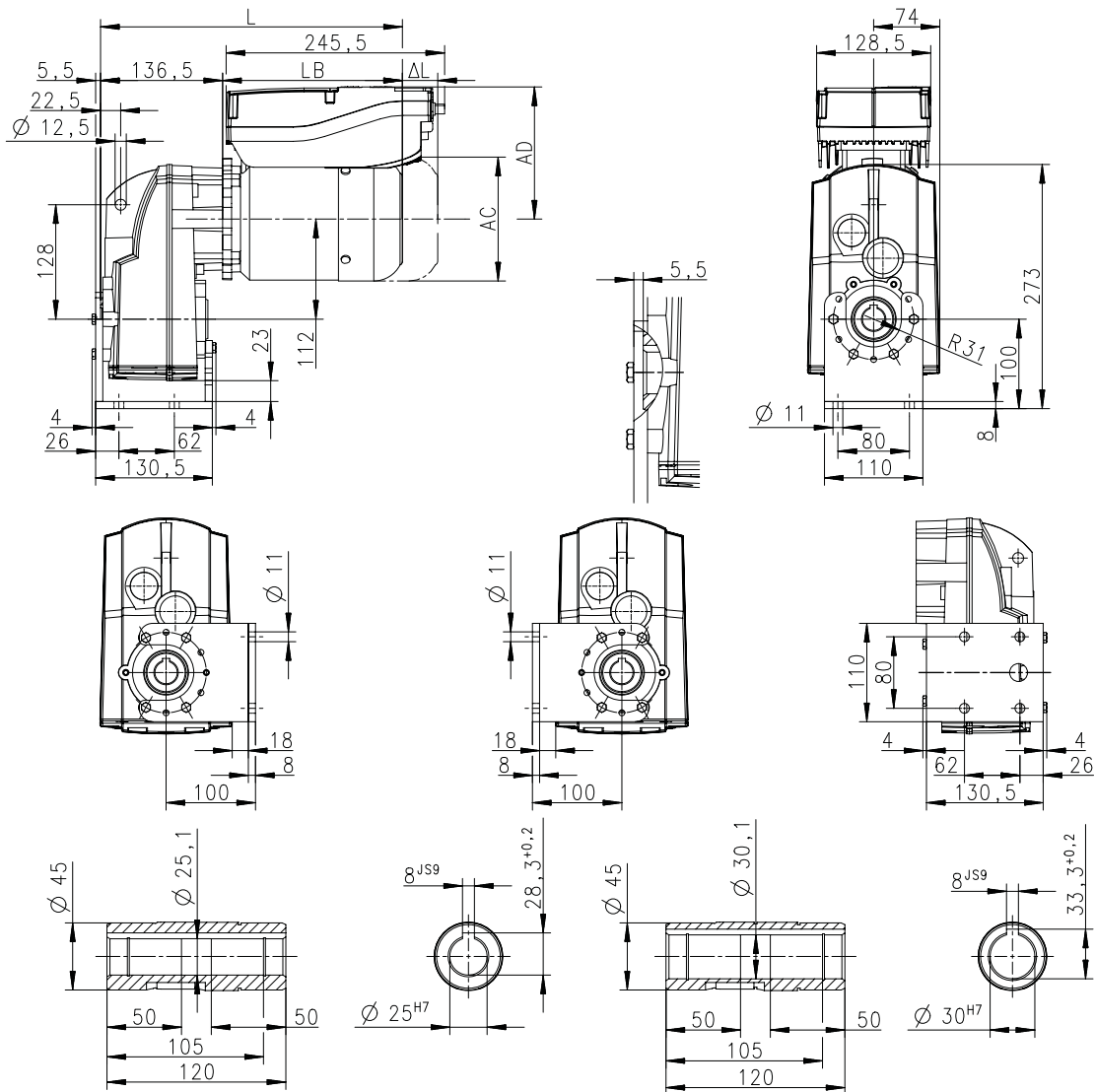
Technical data

Dimensions
Basic dimensions



g500-S220, 2-/3-stage

Gearbox design: Hollow shaft with foot (HBR)



8800556-01

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	320	363
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 96

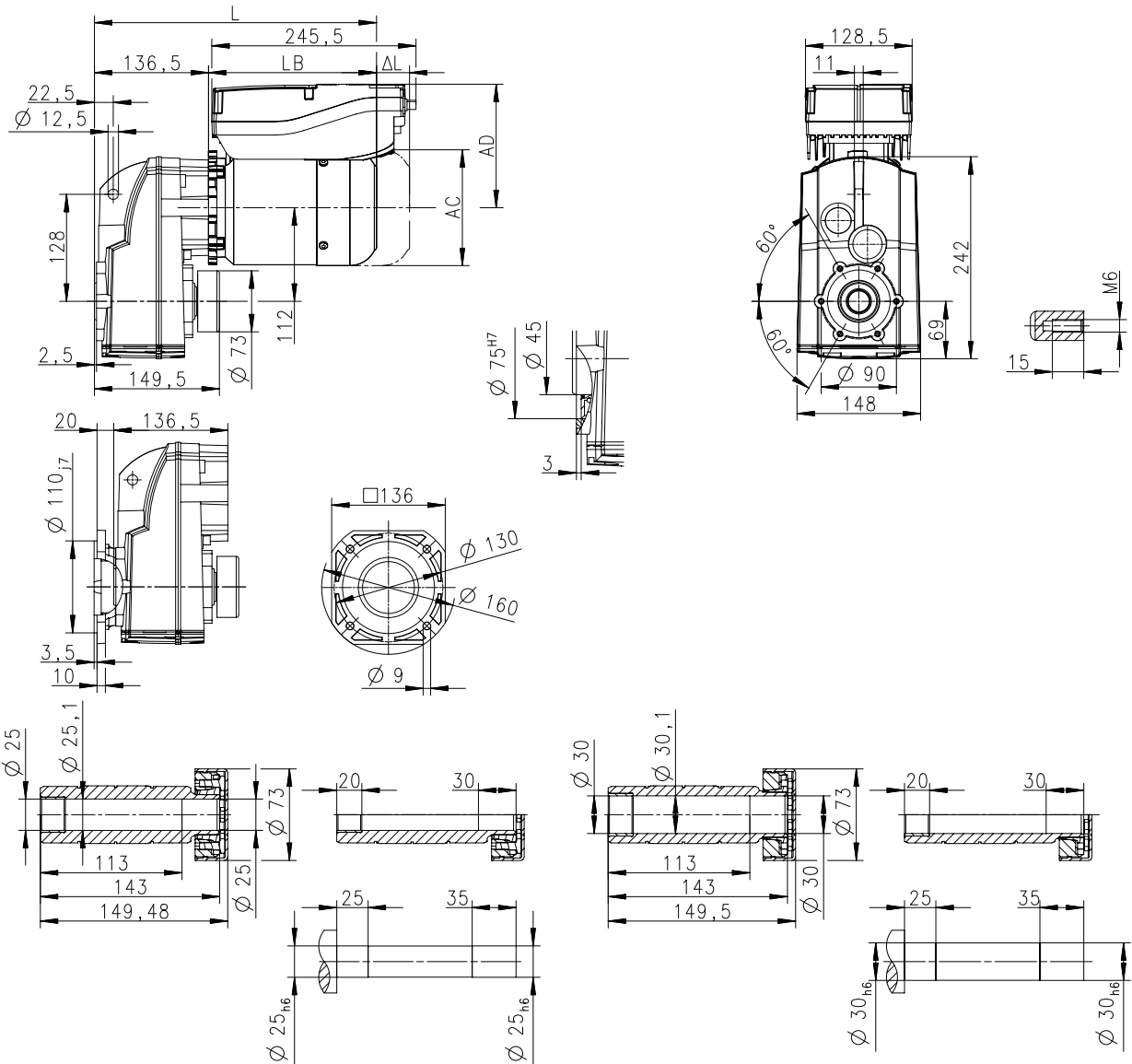


Technical data

Dimensions
Basic dimensions

g500-S220, 2-/3-stage

Gearbox design: Hollow shaft with shrink disc, without foot (SDR/SCR/SCK)



8800177-01

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	320	363
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 96

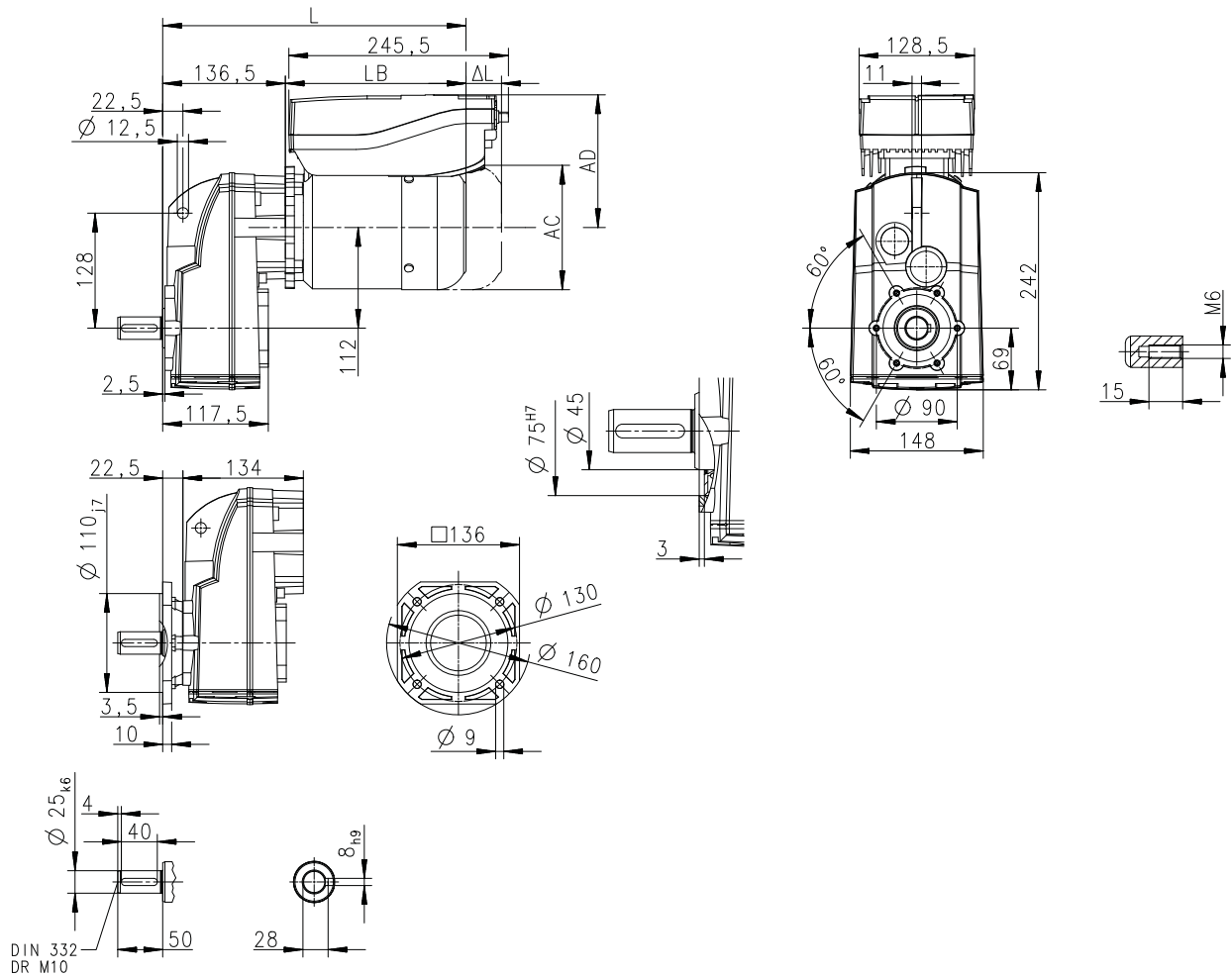
Technical data

Dimensions
Basic dimensions



g500-S220, 2-/3-stage

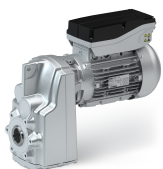
Gearbox design: Solid shaft without foot (VDR/VCR/VCK)



8800176-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	320	363
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 96

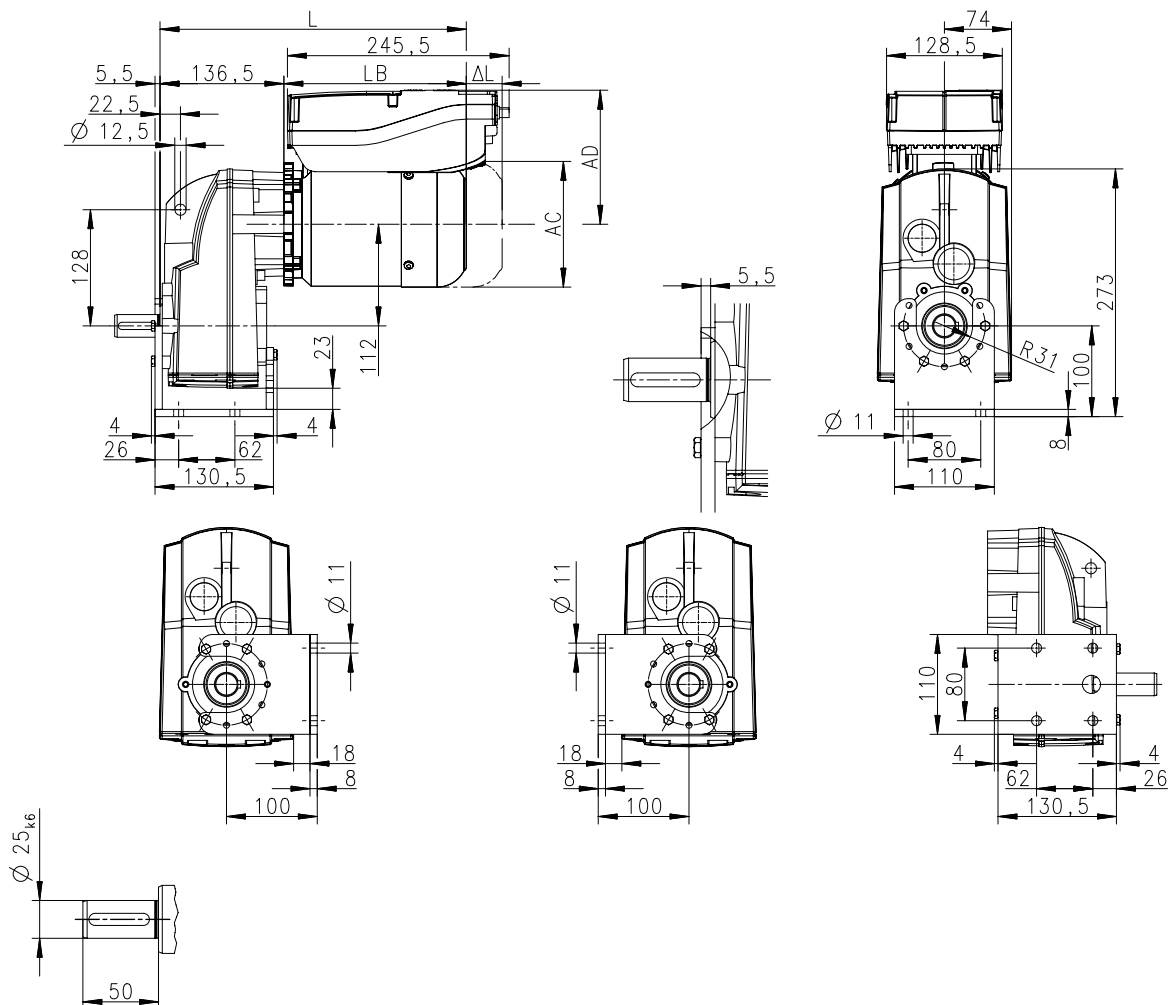


Technical data

Dimensions
Basic dimensions

g500-S220, 2-/3-stage

Gearbox design: Solid shaft with foot (VBR)



8800178-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	320	363
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 96

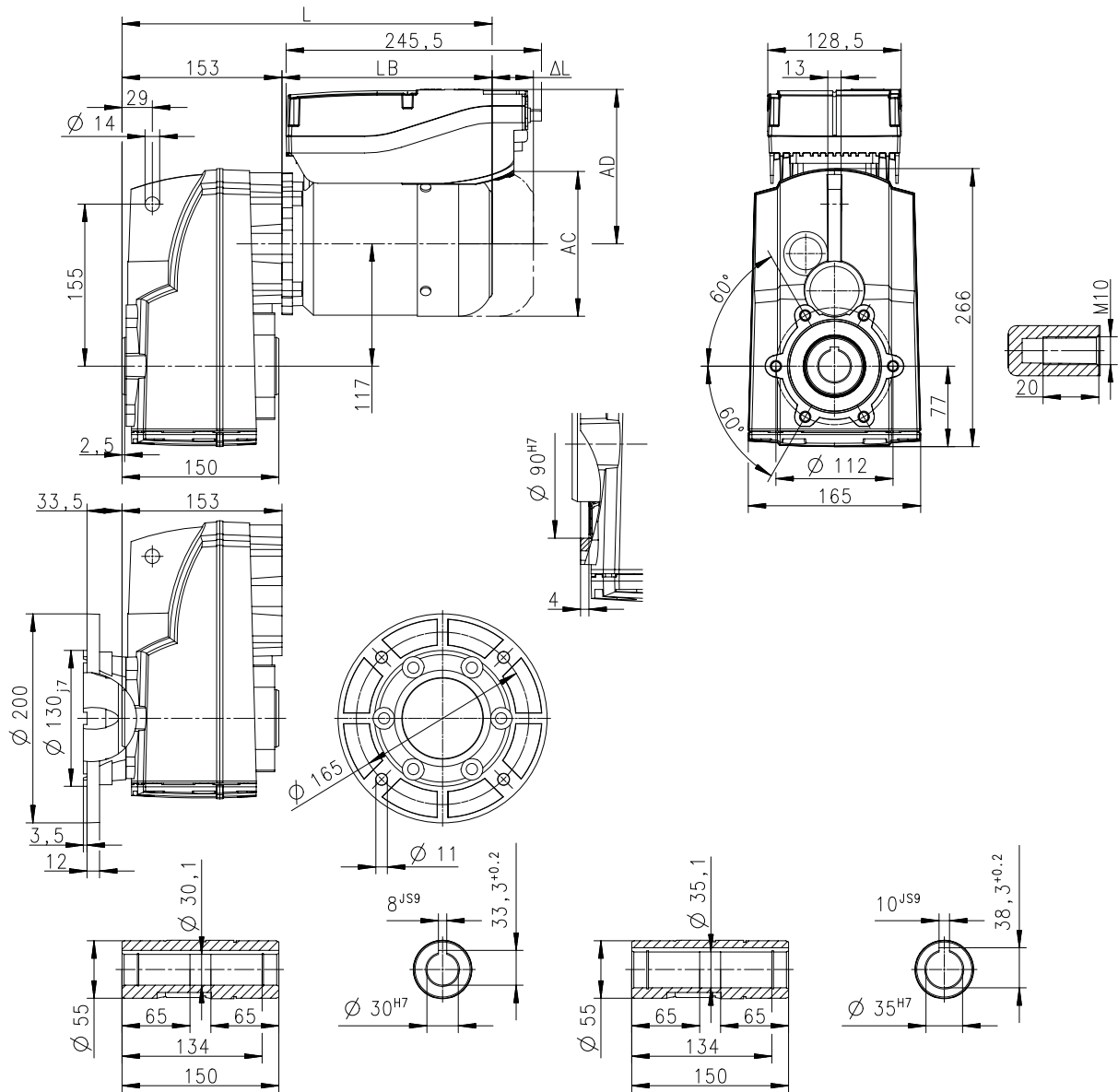
Technical data

Dimensions
Basic dimensions



g500-S400, 2-/3-stage

Gearbox design: Hollow shaft without foot (HDR/HCR/HCK)



8800179-01

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	336	379
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 96

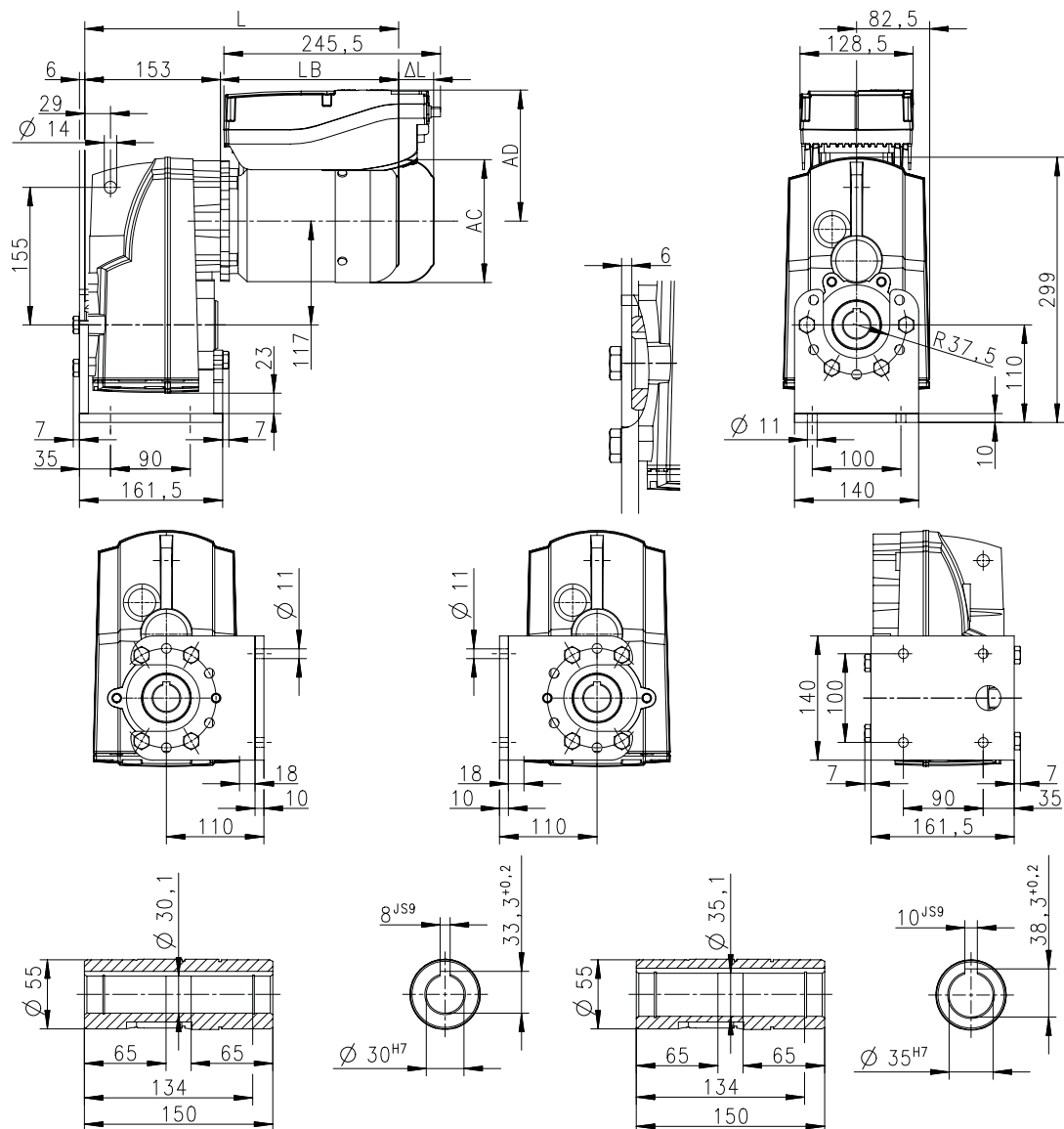
Technical data

Dimensions

Basic dimensions

g500-S400, 2-/3-stage

Gearbox design: Hollow shaft with foot (HBR)



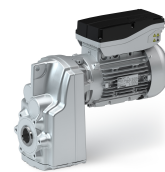
8800559-01

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	336	379
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths  96

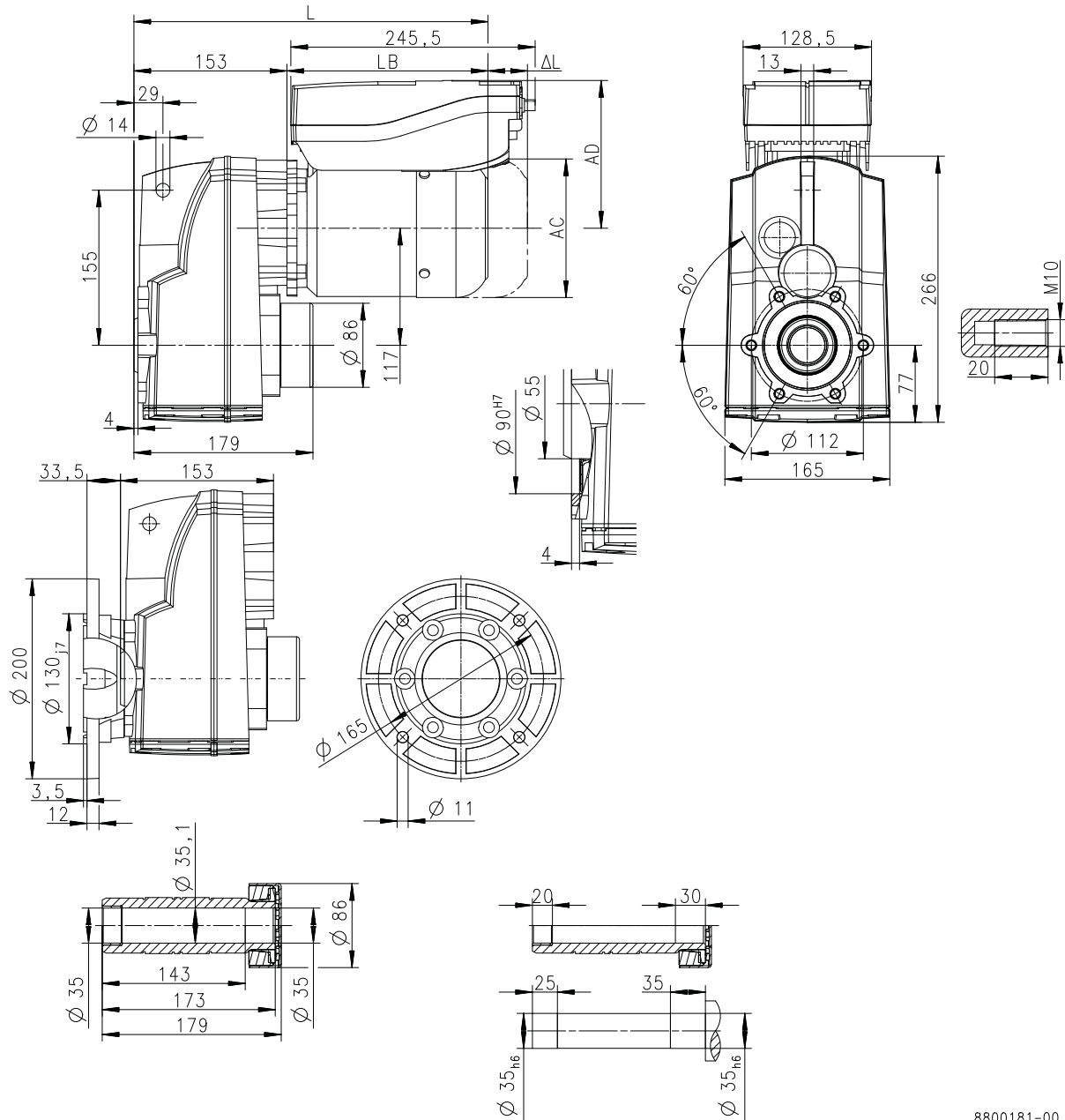
Technical data

Dimensions
Basic dimensions



g500-S400, 2-/3-stage

Gearbox design: Hollow shaft with shrink disc, without foot (SDR/SCR/SCK)



8800181-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	336	379
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 96

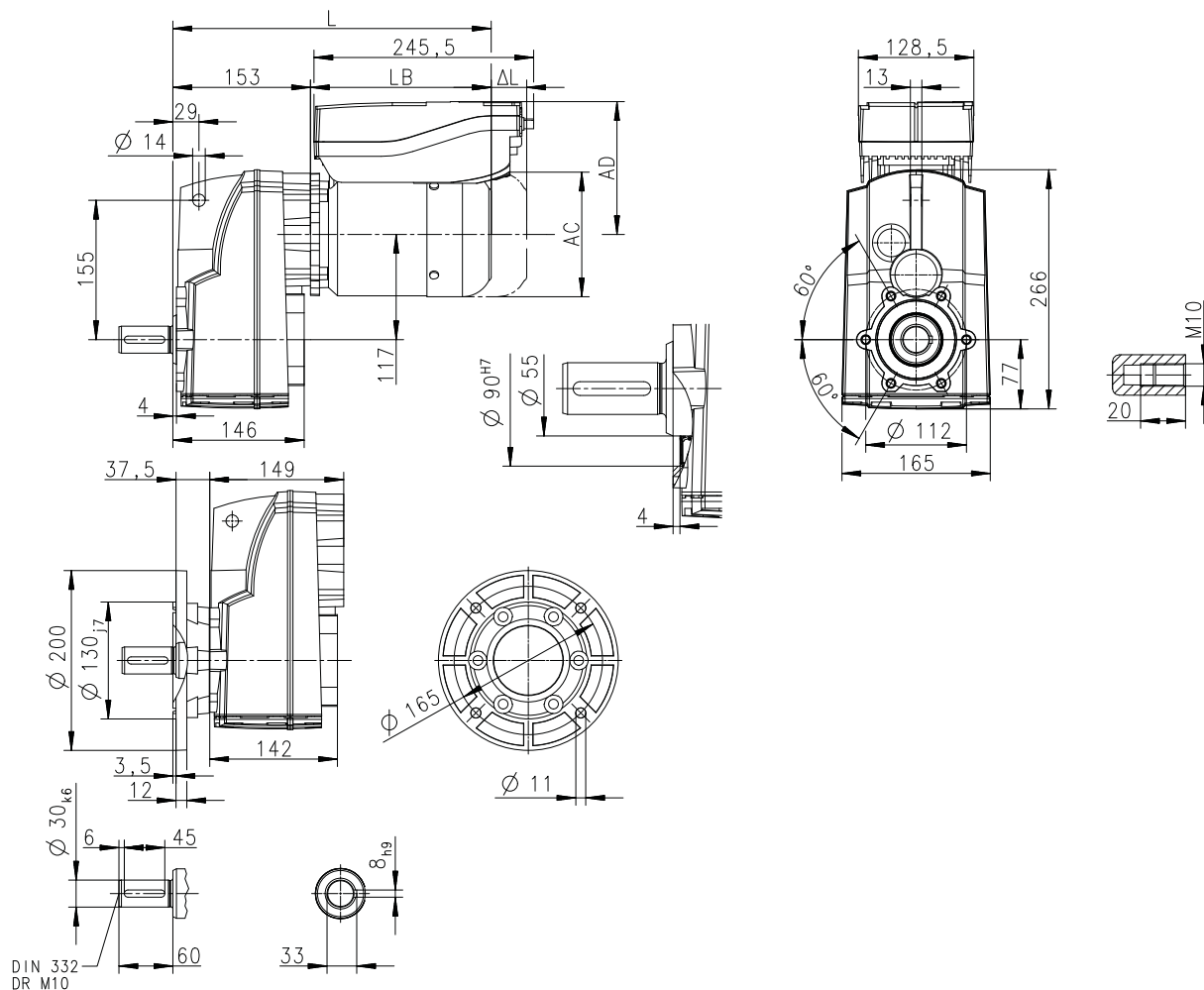


Technical data

Dimensions
Basic dimensions

g500-S400, 2-/3-stage

Gearbox design: Solid shaft without foot (VDR/VCR/VCK)



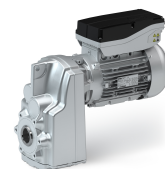
8800180-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	336	379
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 96

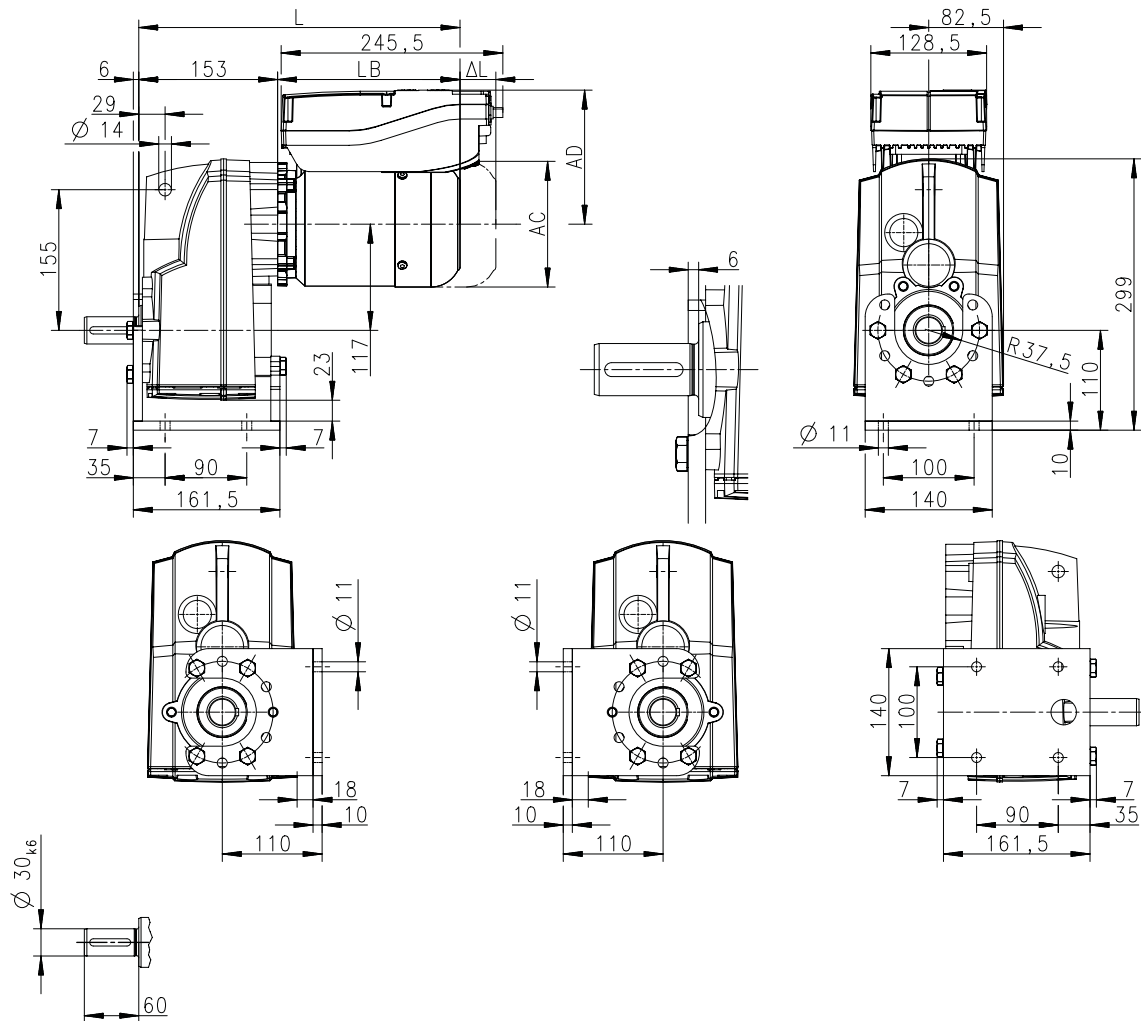
Technical data

Dimensions
Basic dimensions



g500-S400, 2-/3-stage

Gearbox design: Solid shaft with foot (VBR)



8800182-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	336	379
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 96

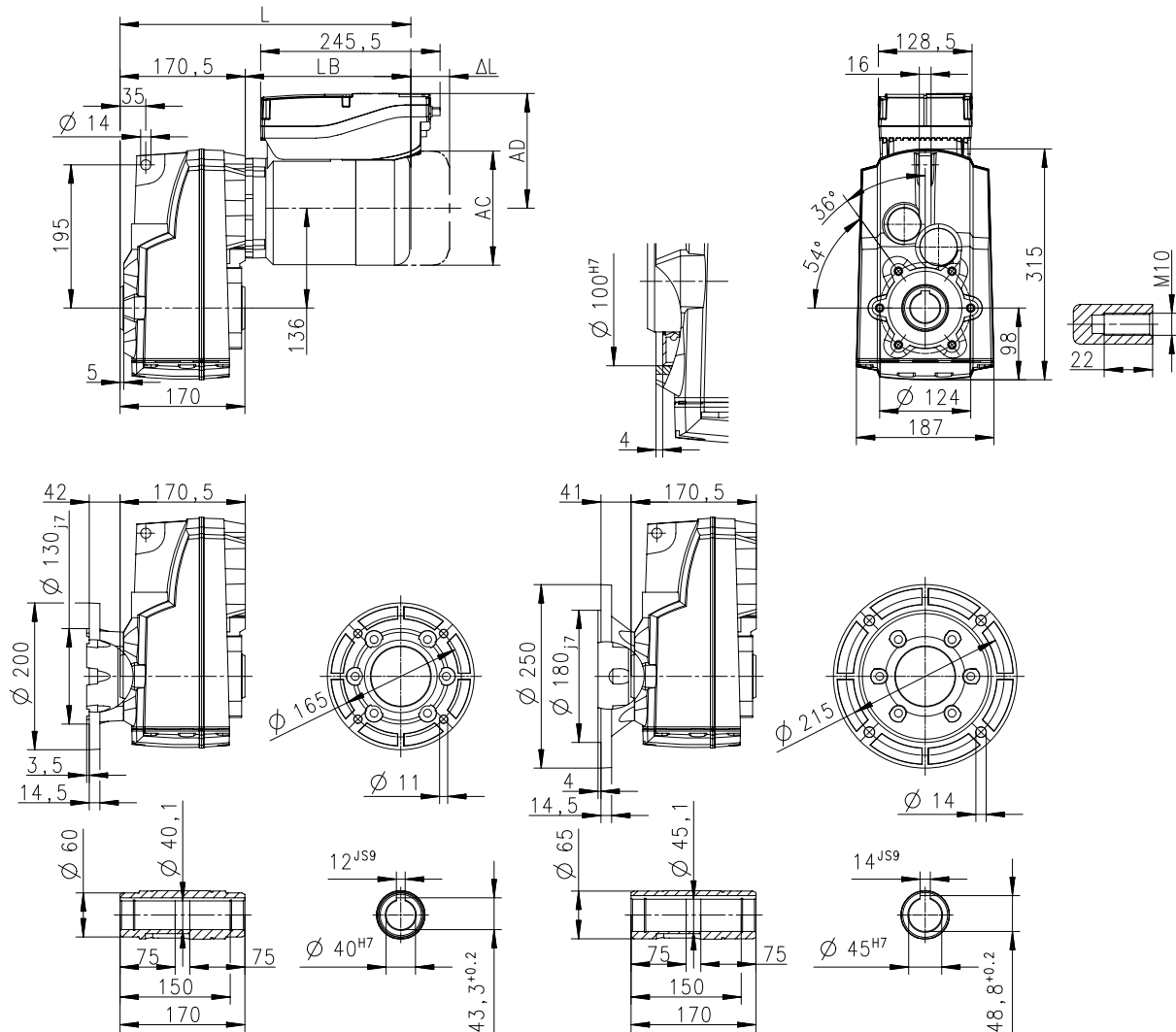


Technical data

Dimensions
Basic dimensions

g500-S660, 2-/3-stage

Gearbox design: Hollow shaft without foot (HDR/HCR/HCK)



8800183-01

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	354	397
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 96

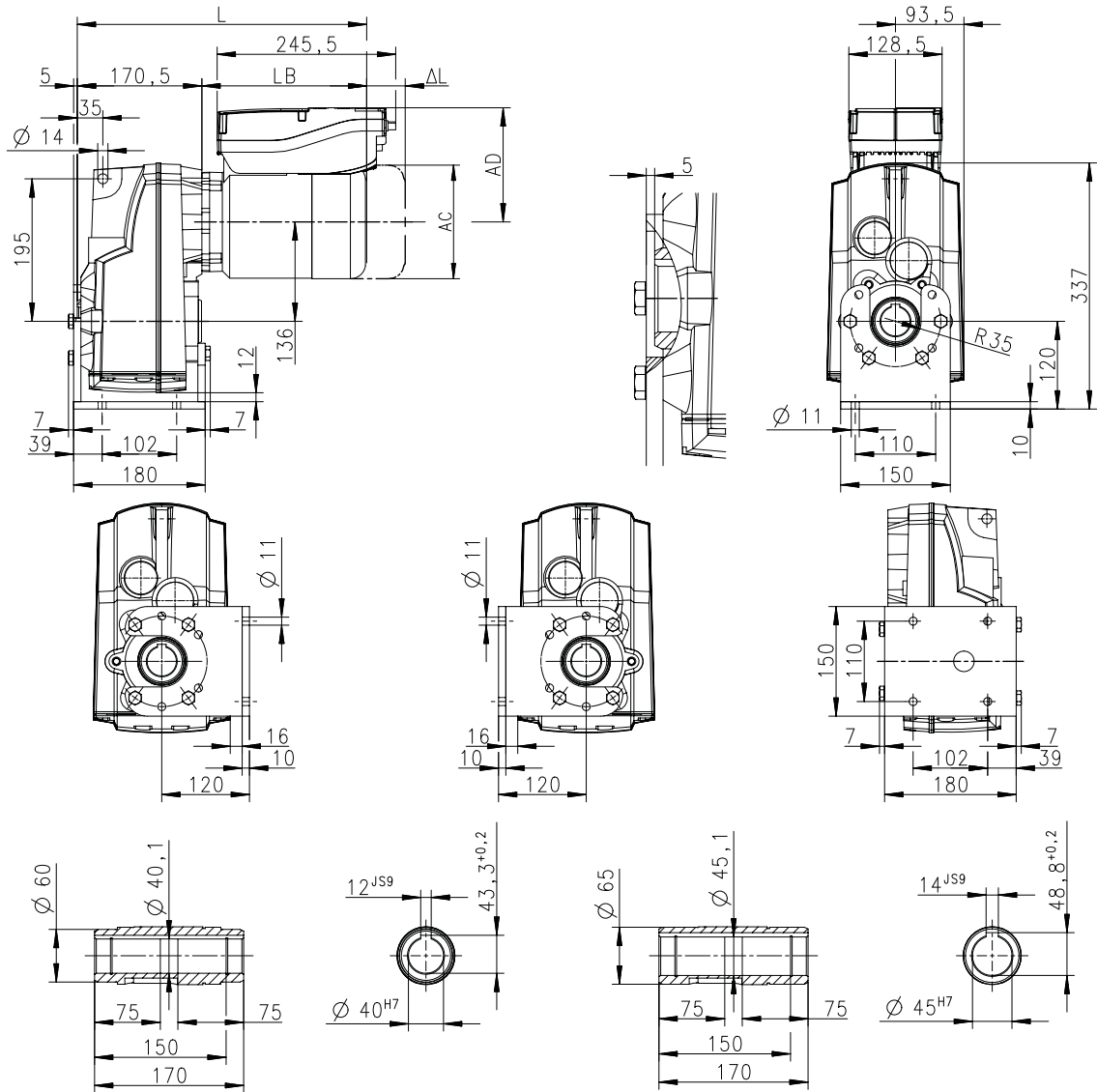
Technical data

Dimensions
Basic dimensions



g500-S660, 2-/3-stage

Gearbox design: Hollow shaft with foot (HBR)



8800562-01

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	354	397
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 96

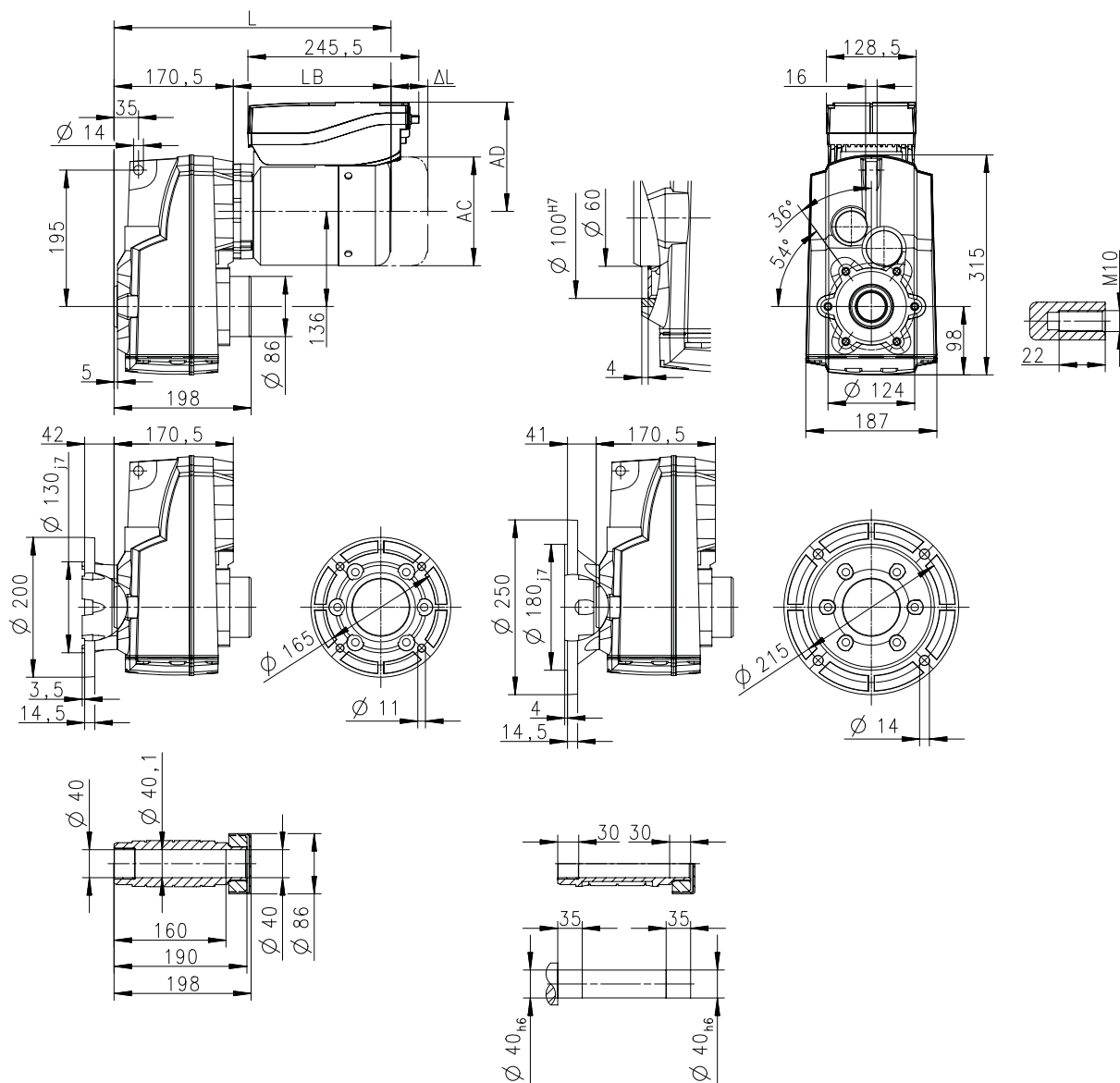


Technical data

Dimensions
Basic dimensions

g500-S660, 2-/3-stage

Gearbox design: Hollow shaft with shrink disc, without foot (SDR/SCR/SCK)



8800185-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	354	397
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 96

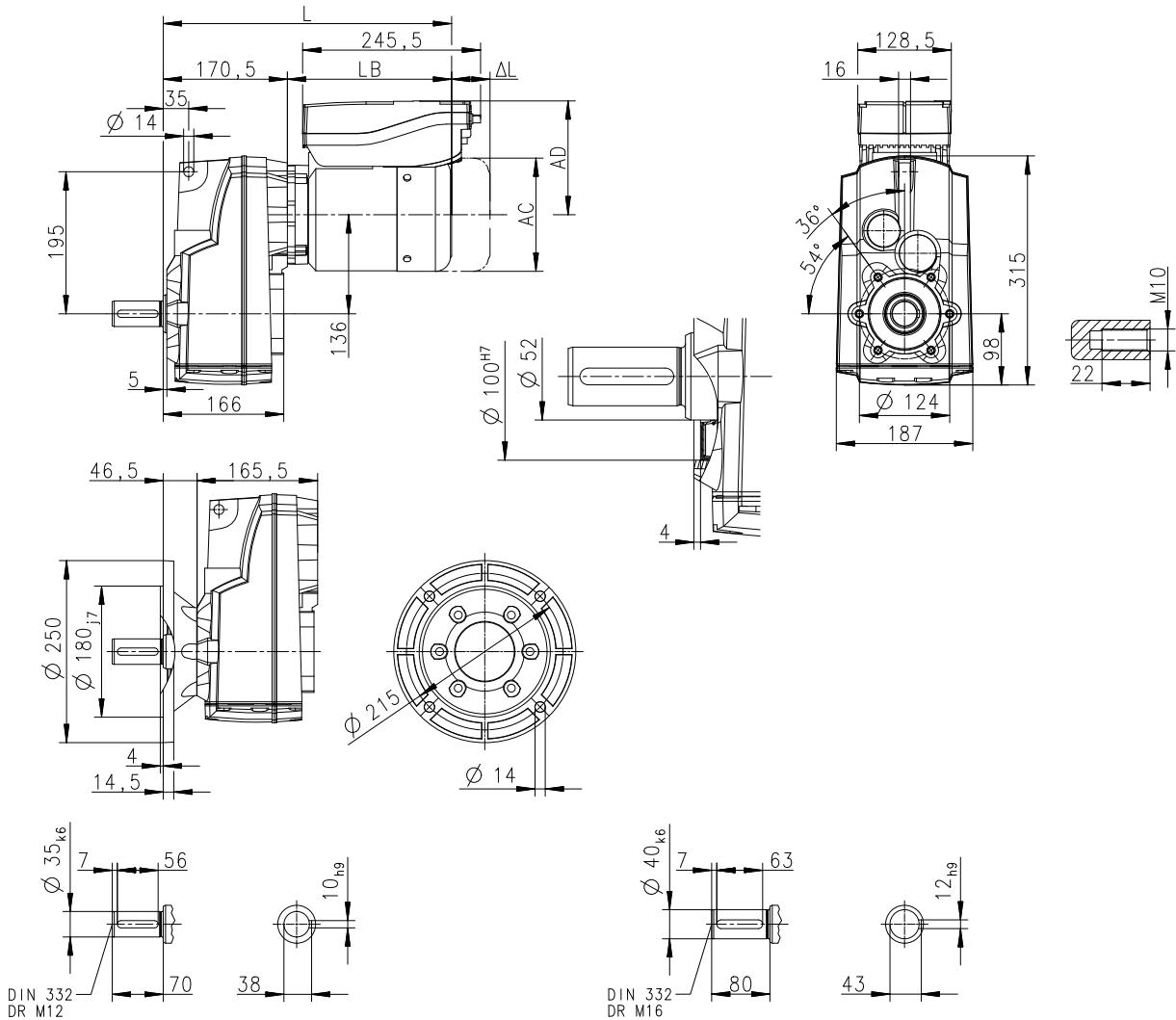
Technical data

Dimensions
Basic dimensions



g500-S660, 2-/3-stage

Gearbox design: Solid shaft without foot (VDR/VCR/VCK)



8800184-00

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	354	397
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 96



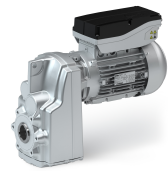
g500-S660, 2-/3-stage

8800186-00

Δ L ▶ Additional lengths  96

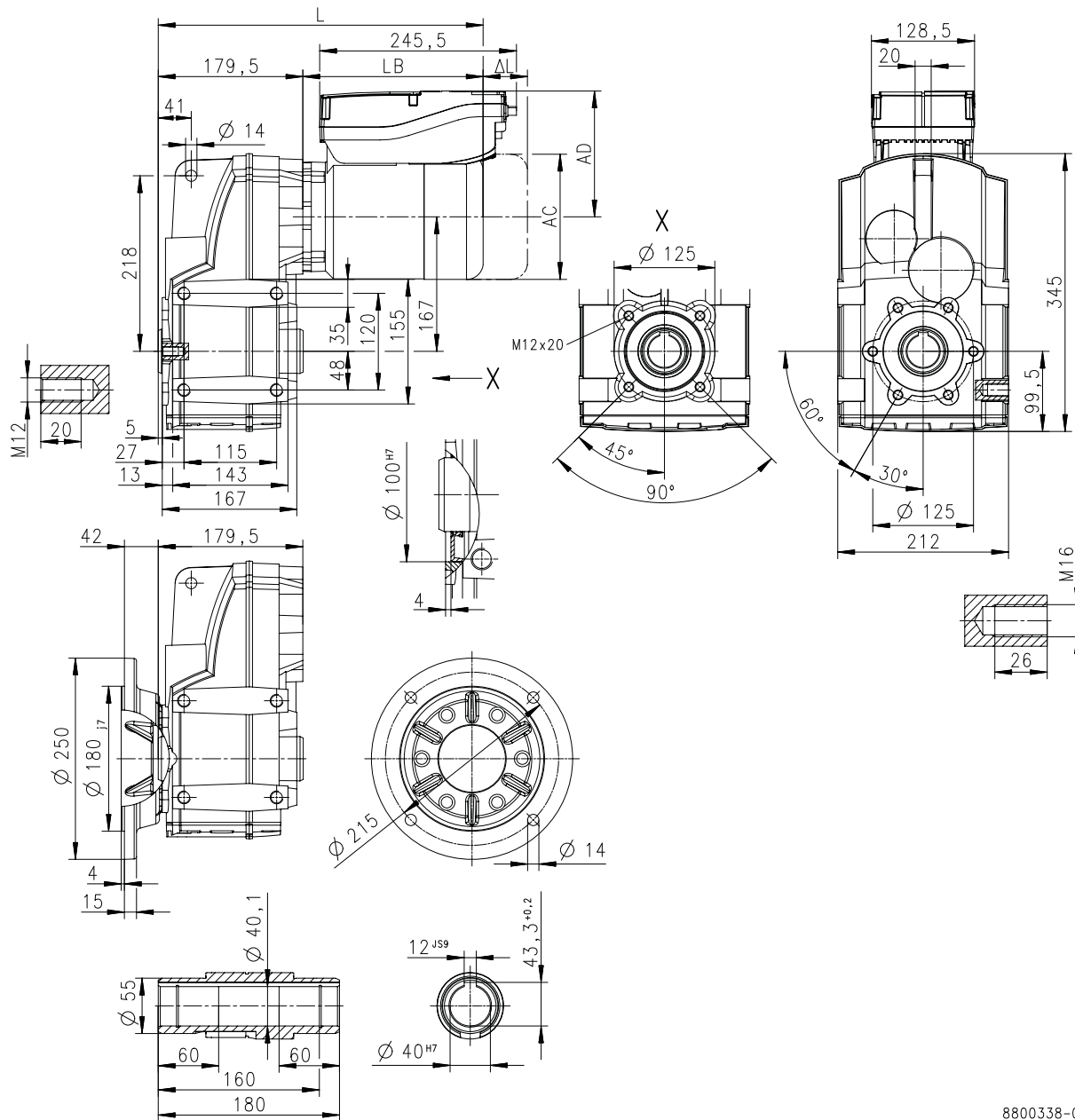
Technical data

Dimensions
Basic dimensions



g500-S950, 2-/3-stage

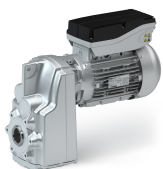
Gearbox design: Hollow shaft with foot (HAR/HBR/HAK)



8800338-02

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 96

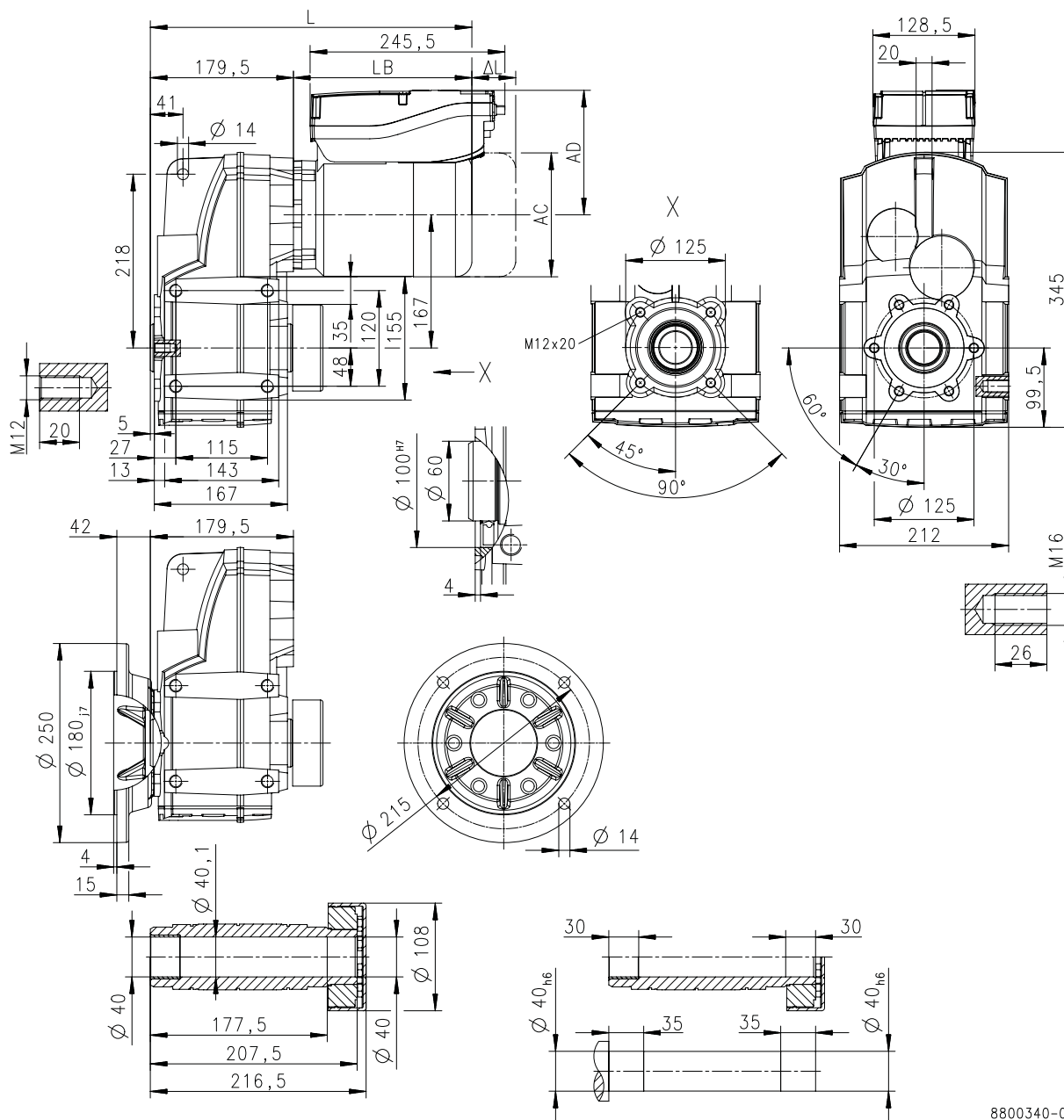


Technical data

Dimensions
Basic dimensions

g500-S950, 2-/3-stage

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



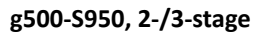
8800340-02

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 96

Dimensions

Basic dimensions



Technical drawing of a 100H7 ball bearing unit. The drawing includes the following dimensions and features:

- Overall Dimensions:**
 - Width: 179,5
 - Height: 245,5
 - Mounting flange diameter: 128,5
 - Mounting flange thickness: 20
 - Mounting flange outer diameter: 345
 - Mounting flange inner diameter: 212
 - Mounting flange hole diameter: 125
 - Mounting flange hole spacing: 212
 - Mounting flange hole diameter: 125
 - Mounting flange hole spacing: 212
 - Mounting flange hole diameter: 125
 - Mounting flange hole spacing: 212
- Bearing Dimensions:**
 - Bearing outer diameter: 125
 - Bearing inner diameter: 16
 - Bearing width: 167
 - Bearing height: 120
 - Bearing width: 155
 - Bearing height: 120
 - Bearing width: 167
 - Bearing height: 120
 - Bearing width: 155
 - Bearing height: 120
- Mounting Details:**
 - Mounting flange hole diameter: 125
 - Mounting flange hole spacing: 212
 - Mounting flange hole diameter: 125
 - Mounting flange hole spacing: 212
 - Mounting flange hole diameter: 125
 - Mounting flange hole spacing: 212
 - Mounting flange hole diameter: 125
 - Mounting flange hole spacing: 212
 - Mounting flange hole diameter: 125
 - Mounting flange hole spacing: 212
- Other Dimensions:**
 - Shaft diameter: 16
 - Shaft hole diameter: 16
 - Shaft hole length: 120
 - Shaft hole diameter: 16
 - Shaft hole length: 120
 - Shaft hole diameter: 16
 - Shaft hole length: 120
 - Shaft hole diameter: 16
 - Shaft hole length: 120

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

86

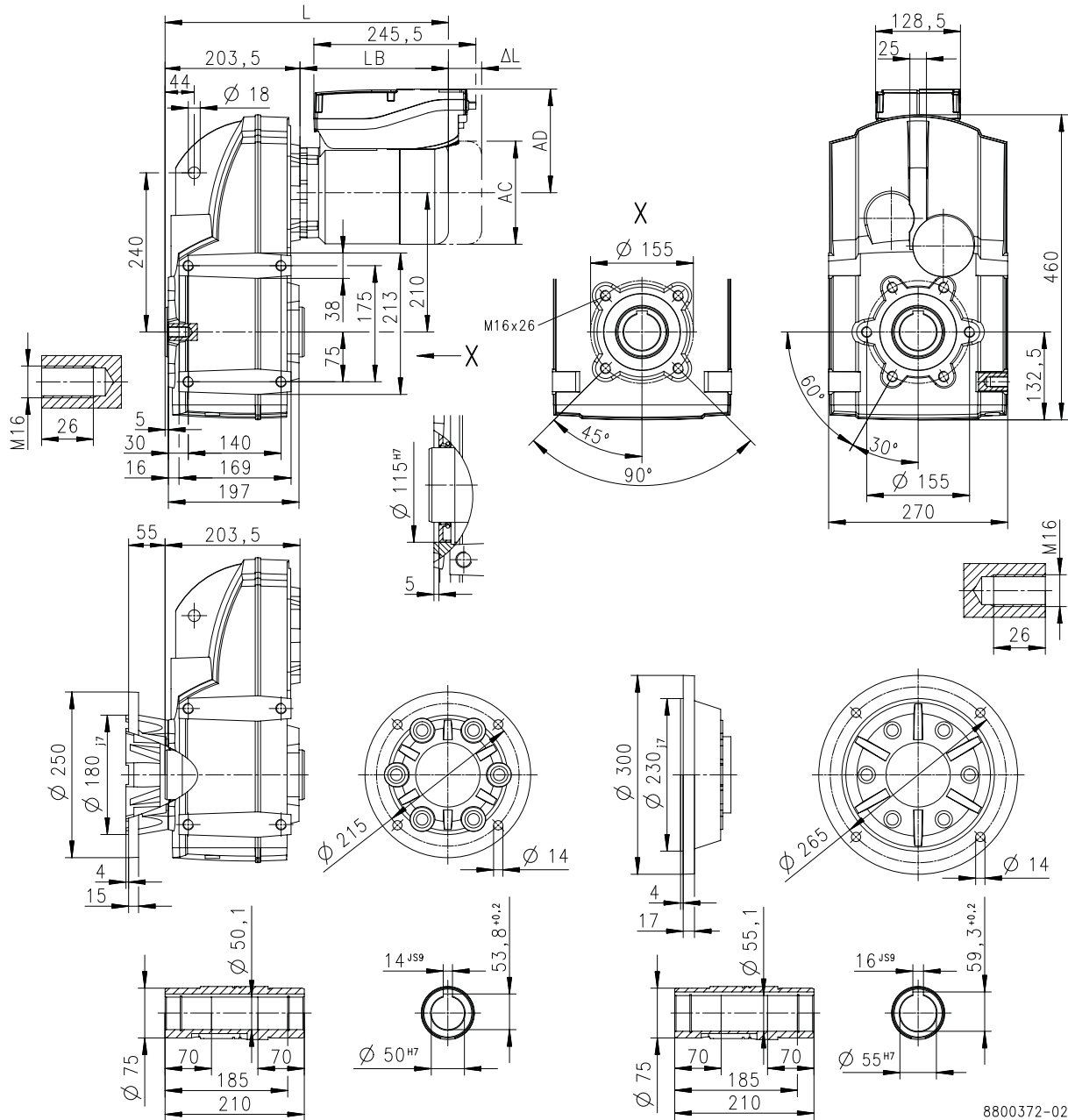


Technical data

Dimensions
Basic dimensions

g500-S2100, 2-/3-stage

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



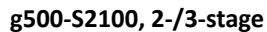
8800372-02

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	387	430
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 96

Dimensions

Basic dimensions

[illegible]

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	387	430
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

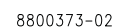
88



Dimensions

Basic dimensions

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



Δ L ▶ Additional lengths  96

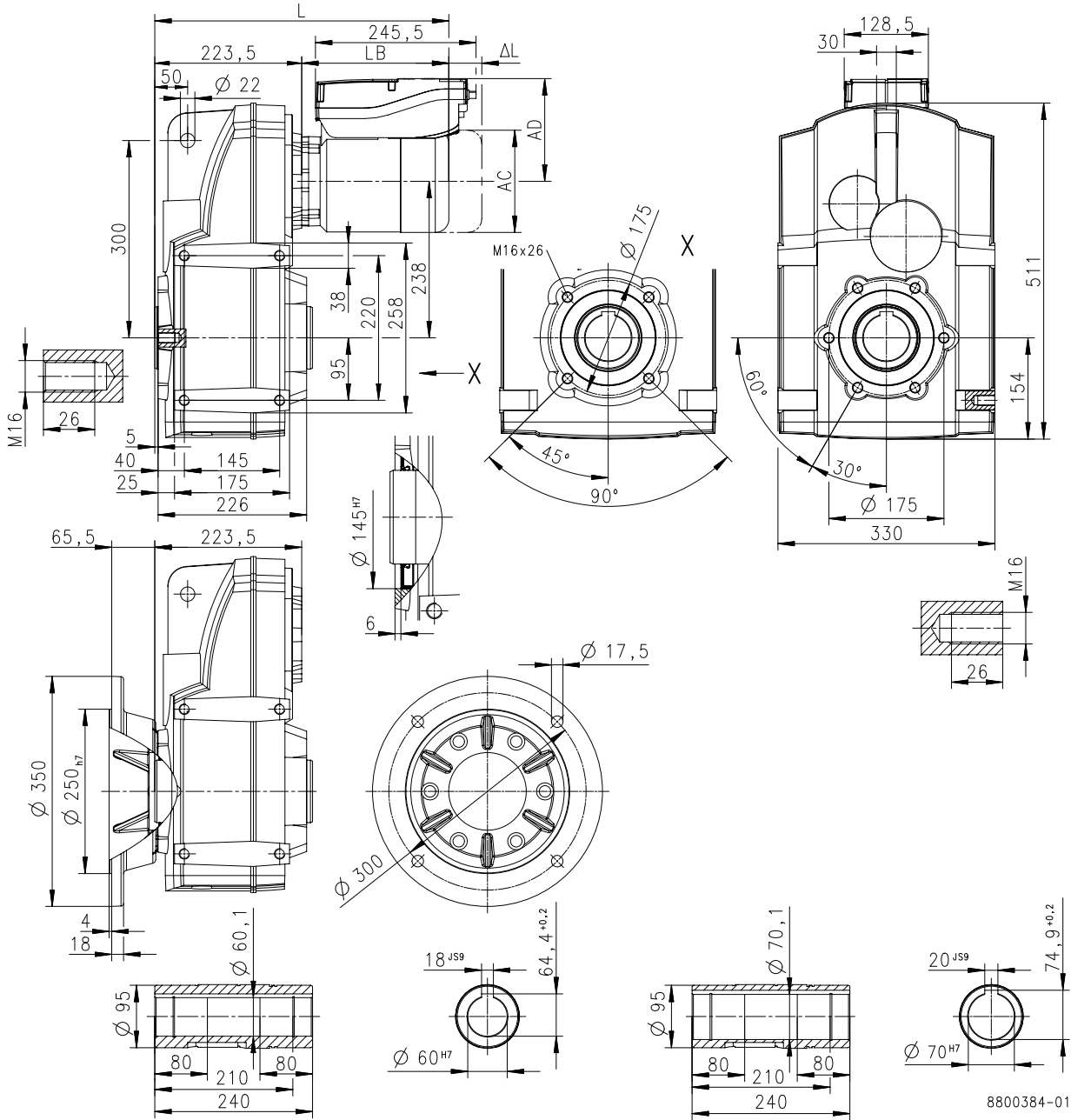
Technical data

Dimensions
Basic dimensions



g500-S3100, 2-/3-stage

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



Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	407	450
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 96

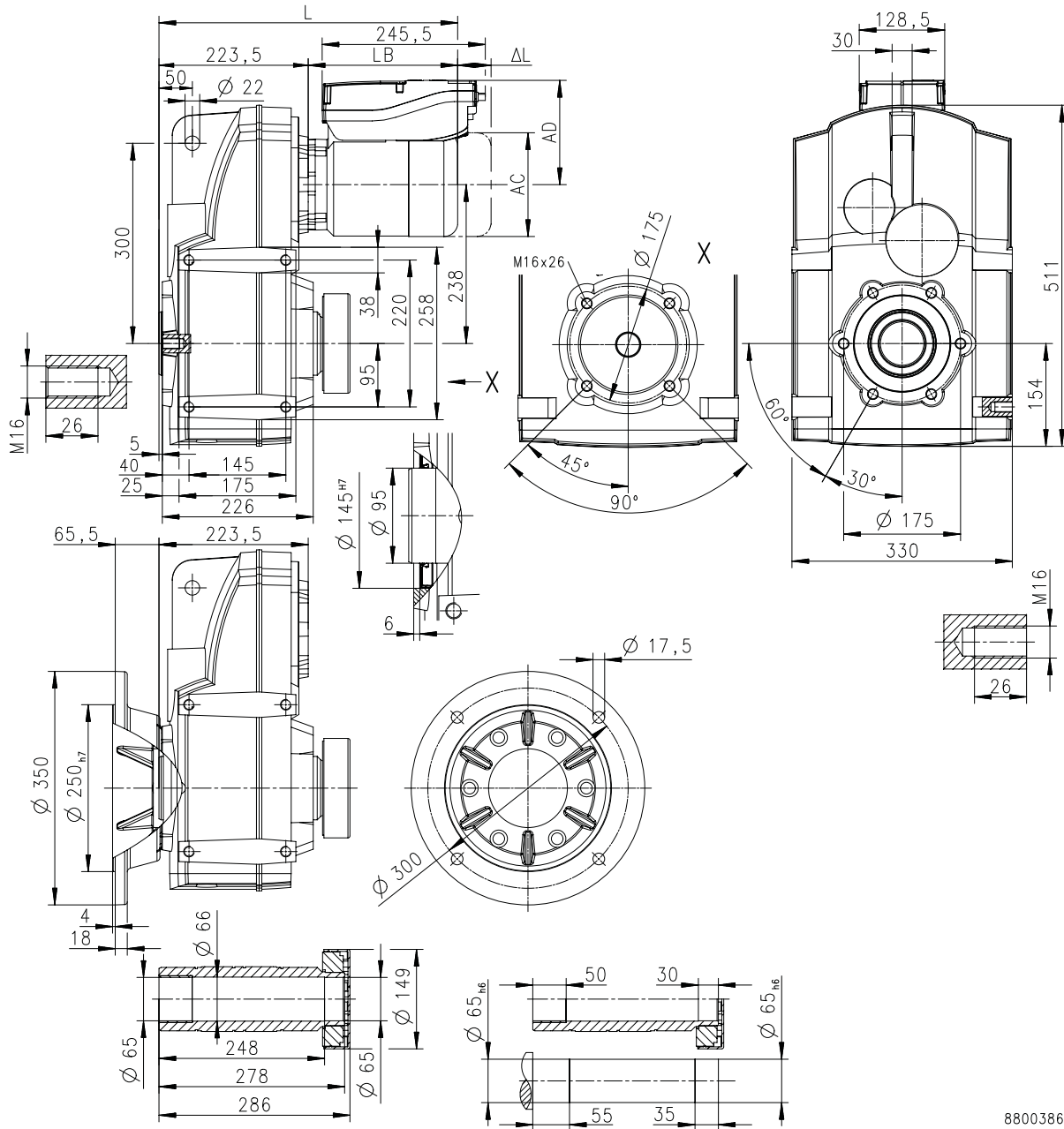


Technical data

Dimensions
Basic dimensions

g500-S3100, 2-/3-stage

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



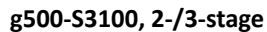
8800386-01

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	407	450
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 96

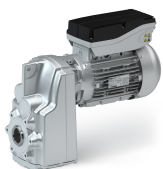
Dimensions

Basic dimensions

[illegible]

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	407	450
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

92

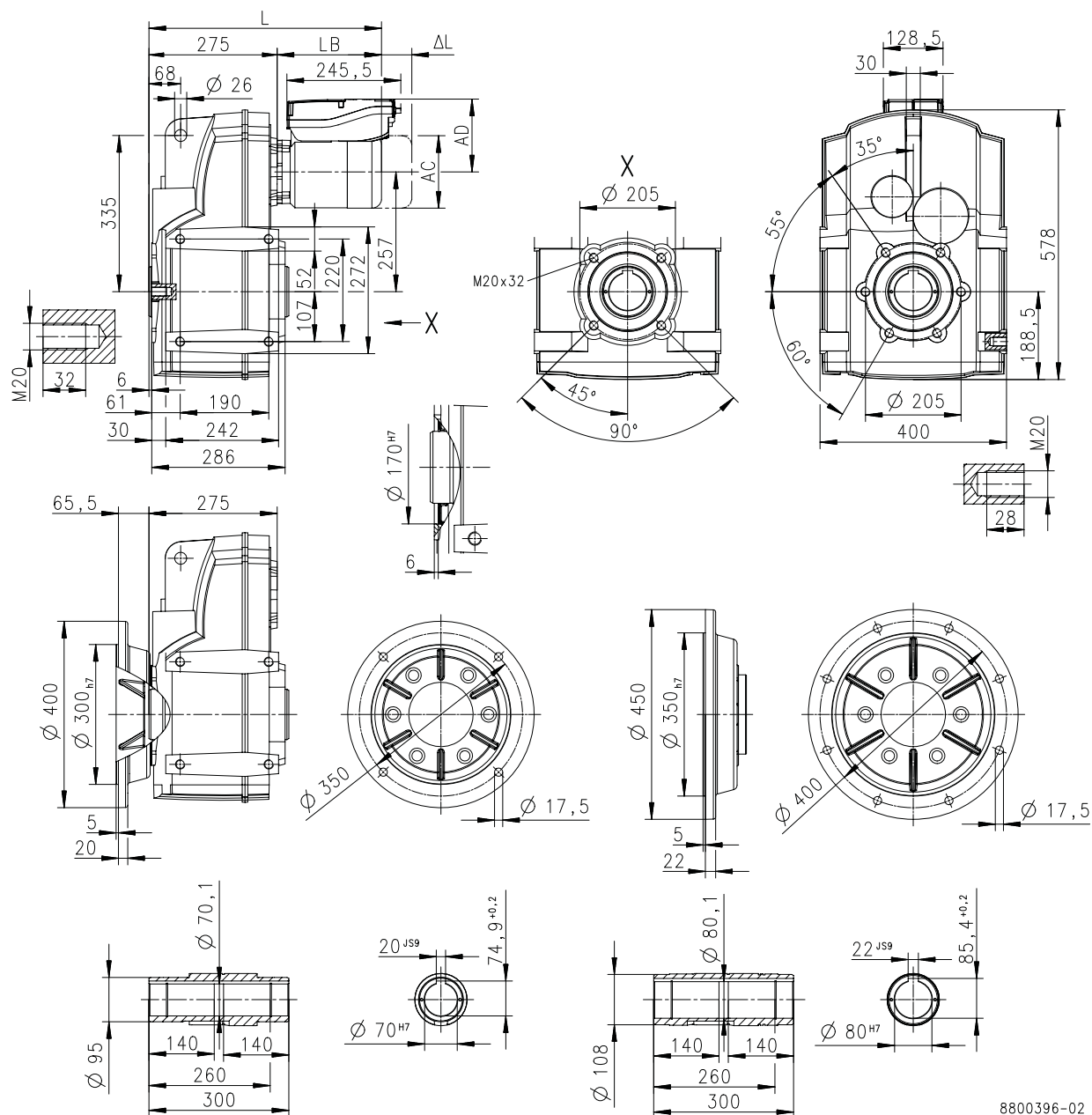


Technical data

Dimensions
Basic dimensions

g500-S4500, 2-/3-stage

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



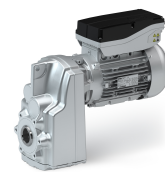
8800396-02

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	458	501
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 96

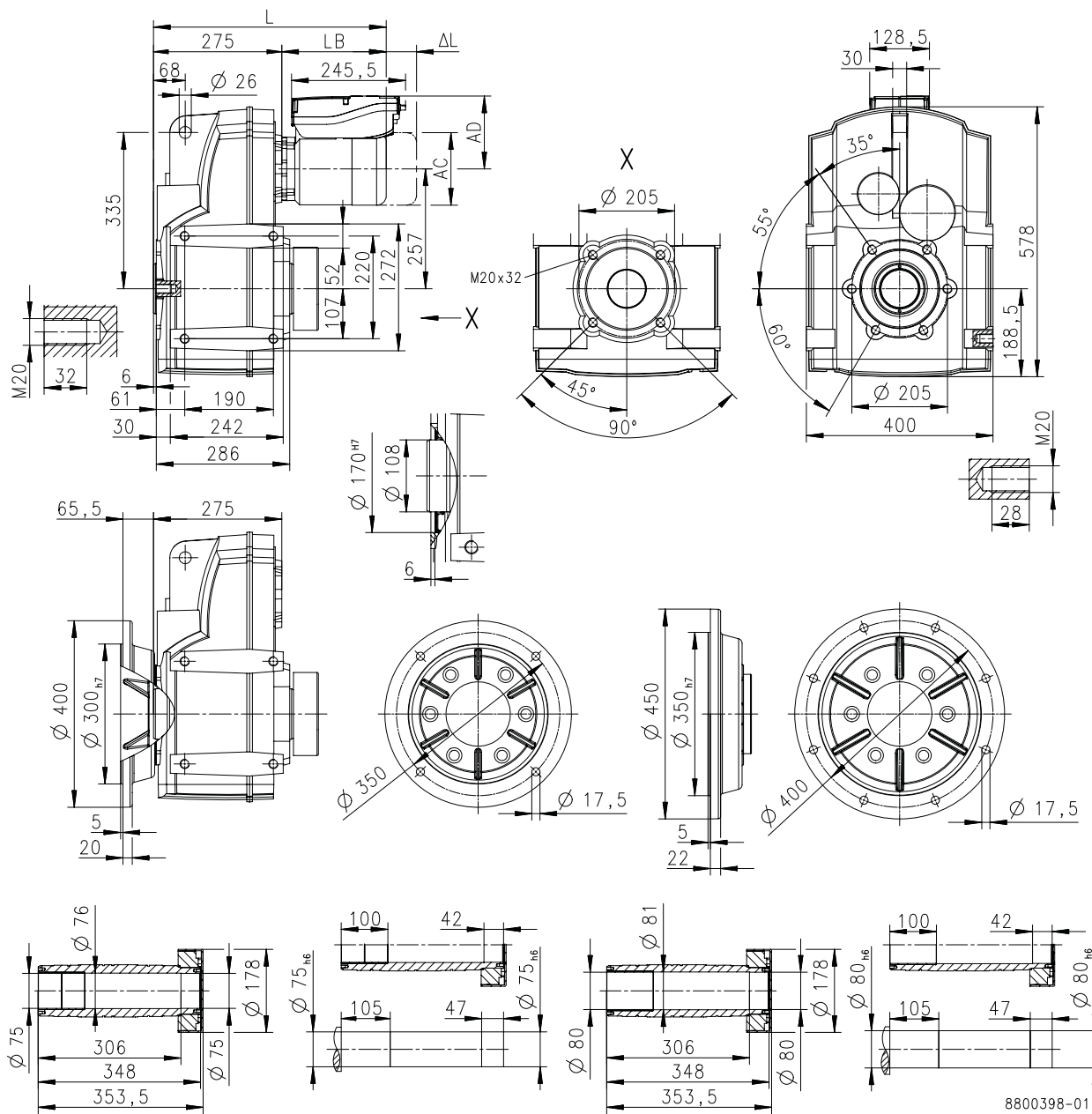
Technical data

Dimensions
Basic dimensions



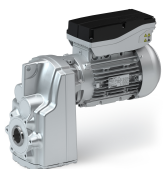
g500-S4500, 2-/3-stage

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



Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	458	501
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

Δ L ▶ Additional lengths 96

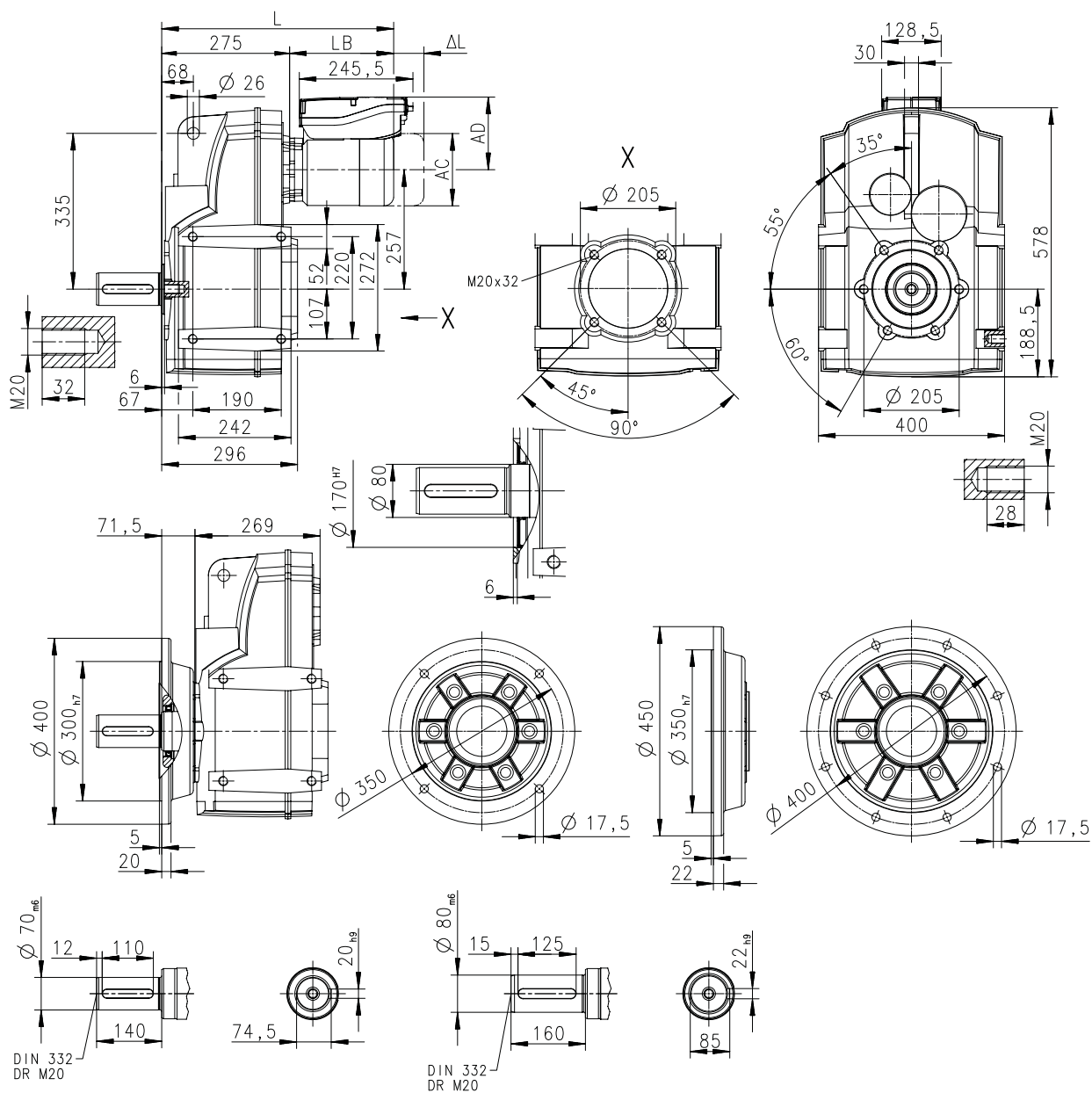


Technical data

Dimensions
Basic dimensions

g500-S4500, 2-/3-stage

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



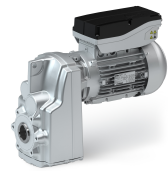
8800397-01

Motor series			MSEMA	
Motor			063-42	080-32
Total length	L	mm	458	501
Motor length	LB	mm	183	226
Motor diameter	AC	mm	123	156
Motor/connection distance	AD	mm	141	159

ΔL ▶ Additional lengths 96

Technical data

Dimensions
Gearbox with pre-stage



Gearbox with pre-stage

g500-S130, 3-stage

g500-S220 ... S4500, 4-stage

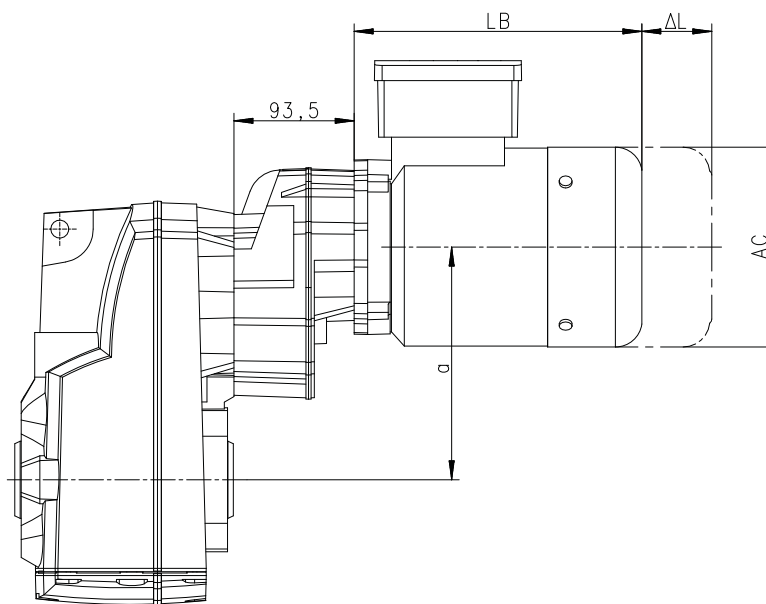


The geared motor dimensions are taken from the basic dimensions except for the overall length "L" and the center distance "a".

► [Basic dimensions](#)  64

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.



8800901-00

Gearboxes			S130	S220	S400	S660	S950	S2100	S3100	S4500
			3-stage	4-stage						
Center distance	a	mm	144	157	162	181	212	255	283	302

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](#)  58

Observe ► [Additional weights](#)  97!

Additional weights

Gearboxes

Gearboxes			g500-S130	g500-S220	g500-S400	g500-S660
Solid shaft	m	kg	0.5	0.5	1.7	2.5
Shrink disc	m	kg	0.2	0.4	0.6	0.6
Foot	m	kg	1.7	1.8	3.3	4.3
Flange	m	kg	0.4	0.4	0.9	1.7
Torque plate						
Rubber buffers	m	kg	0.1	0.1	0.1	0.1
Shaft cover						
Shrink disc cover	m	kg	0.1	0.1	0.1	0.1

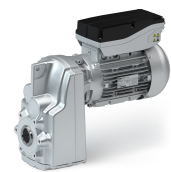
Gearboxes			g500-S950	g500-S2100	g500-S3100	g500-S4500
Solid shaft	m	kg	3.0	5.5	8.4	19.0
Shrink disc	m	kg	1.2	1.7	2.3	4.3
Foot	m	kg		-	-	-
Flange	m	kg	6.0	11.5	15.0	29.0
Torque plate						
Rubber buffers	m	kg	0.1	0.5	0.5	0.5
Shaft cover						
Shrink disc cover	m	kg	0.1	0.2	0.3	0.4

Motors

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

Product extensions

Torque plates



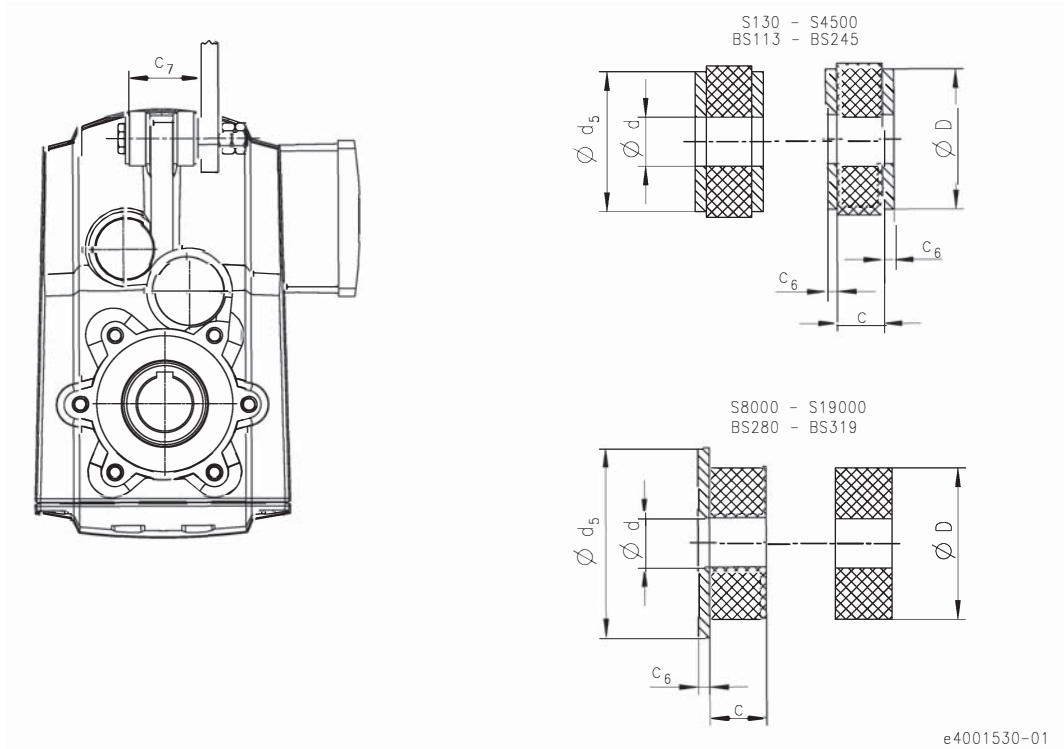
Product extensions

Torque plates

Torque support is usually provided by means of the foot or flange.

The integrated torque plate is another simple possibility. In this case, torque support is provided only via one point and is suitable for shaft-mounted gearboxes, among other things. Moreover, suitable rubber buffers ensure stress-free installation and absorb any slight impacts.

Rubber buffer for torque plate



e4001530-01

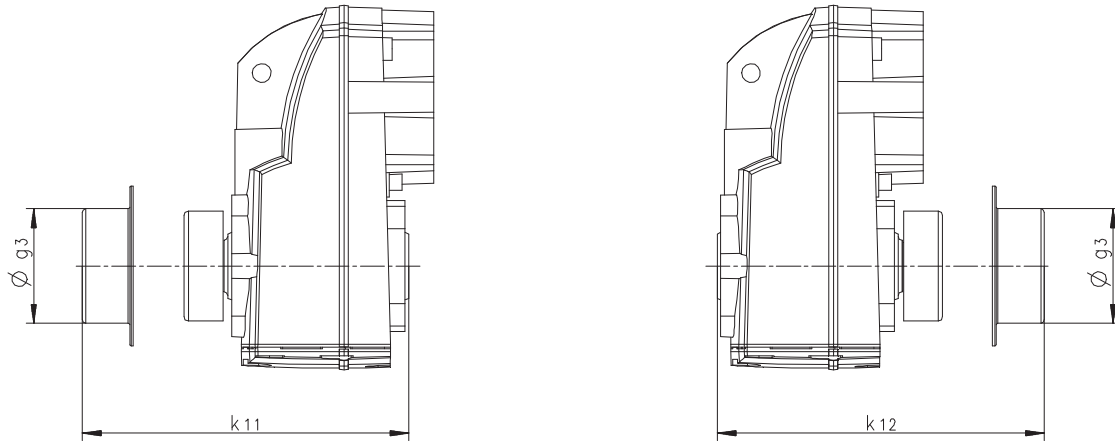
Gearboxes	Dimensions					
	d	D	d ₅	c	c ₆	c ₇
	mm	mm	mm	mm	mm	mm
g500-S130	11.0	30.0	30	12.0	2.50	45.0
g500-S220	11.0	30.0	30	12.0	2.50	45.0
g500-S400	13.0	40,0	37	12.0	3.00	49.0
g500-S660	13.0	40,0	37	12.0	3.00	52.0
g500-S950	13.0	40,0	37	12.0	3.00	56.0
g500-S2100	17.0	50.0	50	24.0	3.00	85.0
g500-S3100	21.0	60.0	60	24.0	4.00	94.0
g500-S4500	26.0	72.0	72	24.0	5.00	98.0



Shaft covers

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

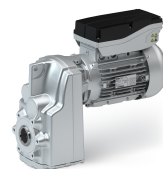
Shrink disc cover



Gearboxes	Dimensions		
	G_3	k_{11}	k_{12}
	mm	mm	mm
g500-S130	63.0	132	132
g500-S220	76.0	152	152
g500-S400	90.0	182	182
g500-S660	90.0	200	202
g500-S950	110	219	219
g500-S2100	127	252	252
g500-S3100	155	290	290
g500-S4500	188	355	357

Product extensions

Motor connection
Connection via terminal box



Motor connection

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

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

The connections are kept easily accessible from the fan side.

► [Electrical installation](#) 36

Connection via terminal box

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

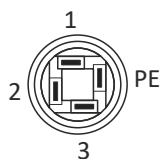
Connection via QUICKON V2 connector

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



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

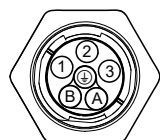
Mains connection X3



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

Connection via M15 connector

Mains connection X3



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



Product extensions

Motor connection
Connection via M12 connector

Connection via M12 connector

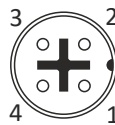
Control connections with M12 connectors

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

NOTICE

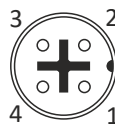
In the "DI/DO-GND bridged" version, the masses of the control terminal X1 and X2 (GND-I and GND-O) are connected to each other. If only one speed is used, the connection to X2 is sufficient.

Control connection X1



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

Control connection X2



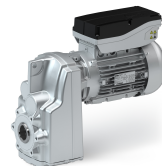
M12 A coded X2		
Contact	Name	Meaning
1	24V	24 V supply (DO1 supply)
2	DI3	Digital input 3 (reference X1;3 = GND-I)
4	DO1	Digital output 1
3	GND-O	Ground of digital output

Connection data - digital inputs for control connection X1/X2

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

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!

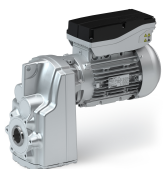
The brake may not be used as a safety element (particularly with hoist axes) without additional measures being implemented.

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

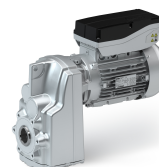
Motor	LongLife design	
	06	08
	Nm	Nm
MSEMA 063-42	4	
MSEMA 080-32		8

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



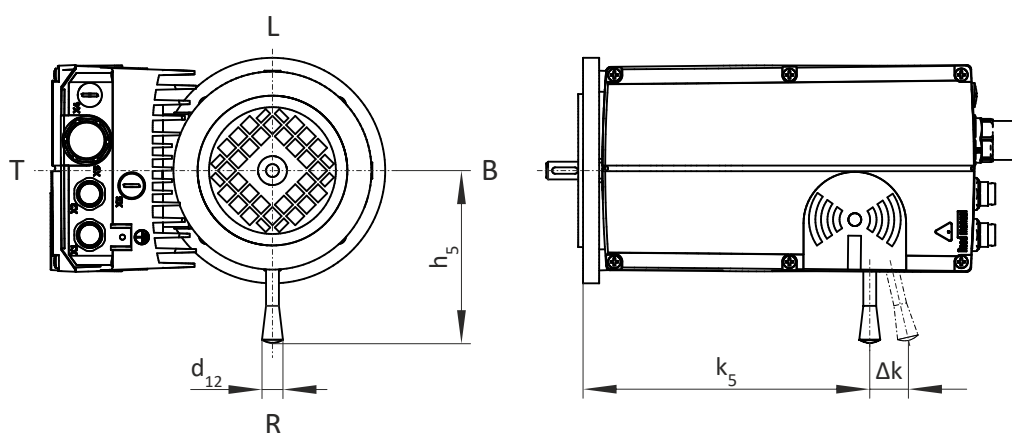
Rated data, LongLife design, IP54/55

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.

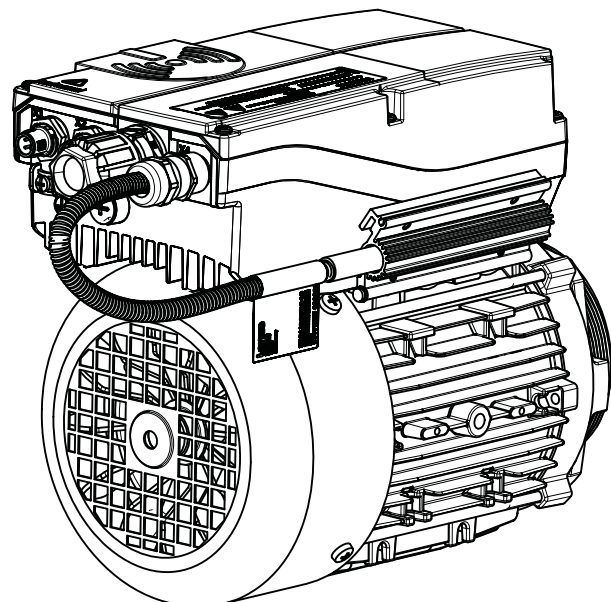
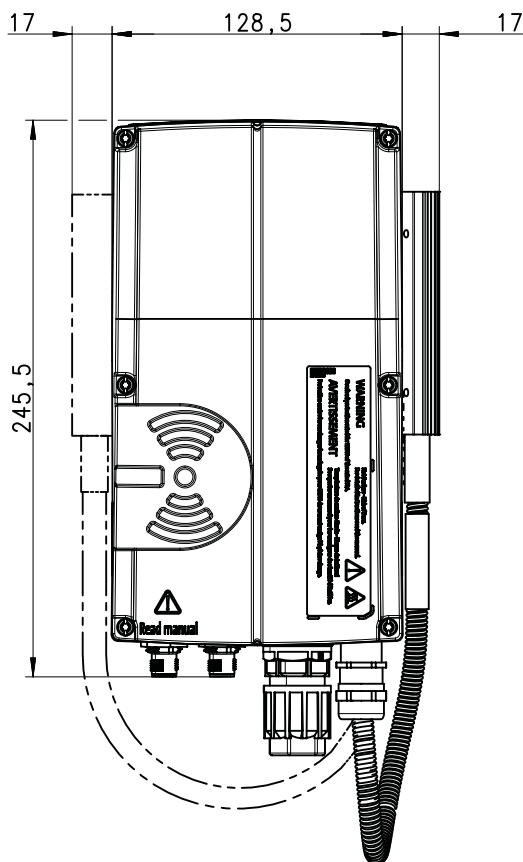
NOTICE

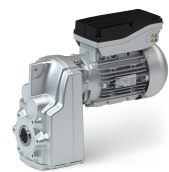
Do not fall below the minimally connectable brake resistance of 180 Ω at the terminal "X4".

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	
Brake resistor		Internal	External
Order code			ERBU390R020W
Rated resistance	Ω	400	390
Rated power	W	10	20
Thermal capacity	kWs	0.100	0.250
Mass	kg	0.05	0.17

Terminal box dimensions with external brake resistor





Accessories

NFC adapter



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

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



QUICKON connector

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

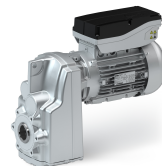
Nuts for QUICKON connection

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

NOTICE

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

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



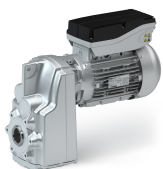
QUICKON V2 components for cable cross-section 2.5 ... 6 mm²		
Order code	Type	
QUICKON V2 H-distributor		
EWS0114		• Number of poles: 5 • Connection cross-section: 6 mm² • Cable diameter: 9 ... 20 mm • Connection frequency: ≥ 50 • No V2 nuts are included QUICKON in the scope of supply. These need to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

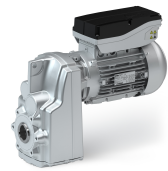


Product codes

Gearbox product code

Example		G	50	B	S	113	M	H	D	R	2	C	1B
Product type	Gearbox	G											
Product family			50										
Version				B									
Gearbox type	Shaft-mounted helical gearbox				S								
Output torque	130 Nm					113							
	220 Nm					122							
	400 Nm					140							
	660 Nm					166							
	950 Nm					195							
	2100 Nm					221							
	3100 Nm					231							
	4500 Nm					245							
	8000 Nm					280							
	14000 Nm					314							
	19000 Nm					319							
Type of construction	Geared motor						M						
	Gearbox						N						
Shaft design	Solid shaft with featherkey							V					
	Hollow shaft with keyway							H					
	Hollow shaft with shrink disc							S					
Housing type	Foot mounting + centering								A				
	Foot mounting								B				
	With centering								C				
	Threaded pitch circle								D				
Flange mounting	Without flange									R			
	Flange with through holes									K			
Number of stages	2-stage										2		
	3-stage										3		
	4-stage										4		
Motor mounting	Integrated motor											C	
	IEC adapter with jaw coupling											N	
	IEC adapter with plug-in hollow shaft											T	
	NEMA adapter with jaw coupling											H	
	NEMA adapter with plug-in hollow shaft											A	
	Servo motor adapter with plug-in hollow shaft											B	
	Servo motor adapter with jaw coupling											S	
Drive size												E	
												D	
												G	
													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.

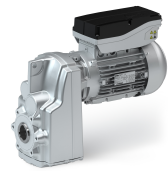
Operating modes S1 ... S10 as specified by EN 60034-1 describe the basic stress of an electrical machine.

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