

g500-S + m540-P shaft-mounted helical geared motor



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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.

About this document

Further documents



Further documents



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

www.lenze.com → Downloads



Notations and conventions

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

Numbers			
	Decimal separator	Point	In general, the decimal point is used. Example: 1 234.56
Warning			
	UL warning	UL	Are used in English and French.
	UR warning	UR	
Text			
	Programs	» «	Software Example: »Engineer«, »EASY Starter«
Icons			
	Page reference		Reference to another page with additional information Example:  16 = see page 16
	Documentation reference		Reference to another documentation with additional information Example:  EDKxxx = see documentation EDKxxx

Layout of the safety instructions

DANGER!

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

WARNING!

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

CAUTION!

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

NOTICE

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



Product information

Product description

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

The slimline shaft-mounted helical gearboxes are characterized by high permissible radial forces, closely stepped ratios and a low backlash. They are available in a 2- and 3-stage design with a torque of up to 19,000 Nm and a ratio of up to $i = 370$.

Versions

- Slimline design saves installation space of the machine
- Market standard shaft dimensions and standardized flanges for easy machine integration
- High accuracy with axial output provide for the highest efficiency

Three-phase AC motors for mains and inverter operation

In a power range from 1.5 to 55 kW, Lenze offers inverter-compatible three-phase AC motors in accordance with the Ecodesign Directive for more extensive tasks.

These motors have efficiency class IE3 and can be used for the versions required for open-loop or closed-loop inverter operation.

Customer benefit

- Efficiency class IE3 for the greatest economic benefit
- Space-saving thanks to compact direct attachment to Lenze gearboxes
- Can be used universally for a wide range of machine tasks due to the market-oriented modular system
- Conventional connectors ensure quick connection, also during servicing



g500-S8000 gearbox with m550-P180/M4 three-phase AC motor



Flexible in motor mounting

For motor mounting, Lenze offers a scalable modular system of gearboxes with adapters.

Power is transmitted between the motor and gearbox via a flexible jaw coupling or a plug-in hollow shaft. The shaft holders are available for motor shafts with or without featherkey, depending on the design.

Customer benefit

- Can be used universally for a wide range of machine tasks due to the market-oriented modular system
- Simple plug-in motor mounting
- Mounting motors according to IEC 72/DIN 42948
- Mounting motors according to NEMA C/TC
- Mounting servo motors with square flange according to IEC 72/DIN 42948
- Torsional vibration damping power transmission of the coupling
- Motor shaft connection, low backlash or backlash-free, depending on version

More information can be found under:

► [Gearbox data](#) 43

► [Gearboxes with adapter](#) 47



g500-S shaft-mounted helical gearbox with adapter for IEC standard motors



Identification of the products

Gearbox product name

Gearbox type	Product range		Version	Rated torque Nm	Product
Shaft-mounted helical gearbox	g500	-	S	8000	g500-S8000
				14000	g500-S14000
				19000	g500-S19000

Three-phase AC motor product name

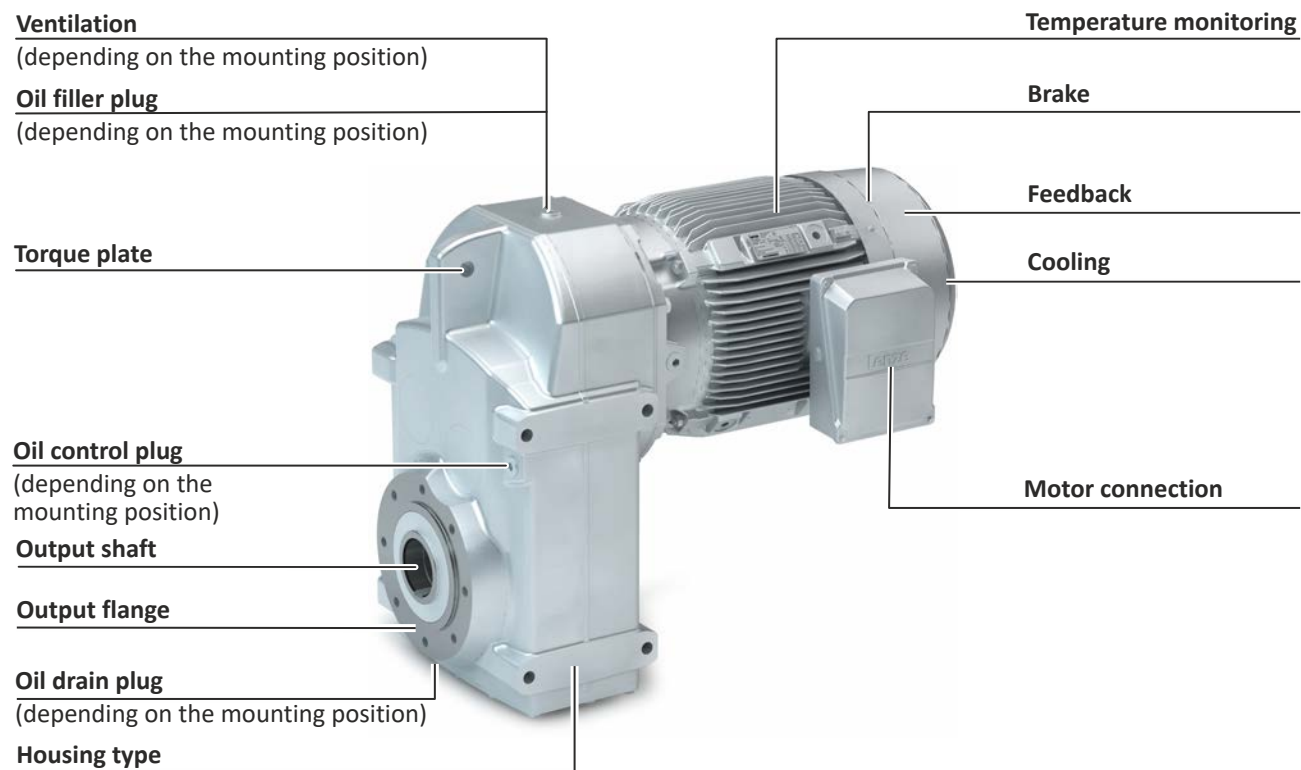
Example	m540	-	P	90	supply	L	4
---------	------	---	---	----	--------	---	---

Meaning	Variant	Product name					
Product family		m550					
Efficiency class	IE3			P			
Size					90 100 112 132 160 180 200 225 250		
Motor length	Medium					M	
	Long					L	
Number of pole pairs	4-pole						4



Features

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





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.

Geared motors 8000 Nm to 20000 Nm

Gearbox		g500-S8000		g500-S14000	g500-S19000
Min. motor assignment		m540-P100		m540-P112	m540-P112
Max. motor assignment		m540-P250		m540-P250	m540-P250
Technical data					
Max. output torque	Nm	8000		14000	19000
Min. drive power at 50 Hz	kW	2.2		4.0	4.0
Max. drive power at 50 Hz	kW	55		55	55
Mounting position					
Standard		M1, M2, M3, M4, M5, M6 (ABCDEF)			
Combined		-			
Color		Primed Painted in RAL colors			
Surface and corrosion protection		OKS-S Different types of OKS			
Output shaft					
Solid shaft with featherkey (V)	mm	90 x 170		110 x 210	120 x 210
Hollow shaft with keyway (H)	mm	90		100	120
Hollow shaft with shrink disc (S)	mm	95		105	125
Shaft material		Steel			
Output shaft bearing		Standard			
Gearbox version		With foot (HBR)/(VBR/SBR) With foot and centring (HAR/VAR(SAR) With foot and output flange (HAK/VAK/SAK)			
Output flange (K)	mm	450		550	660
Ventilation		Vent valve Oil compensation reservoir			
Cooling		Integral fan Blowers			
Product extensions					
Torque plate		Rubber buffers			
Shaft cover		Shrink disc cover			
Connection method		Y/Δ			
Connection type		Terminal box HAN connector			
Spring-applied brake		Without Application brake			
Feedback		Without Incremental encoder			
Temperature monitoring		PTC thermistor			



Designs

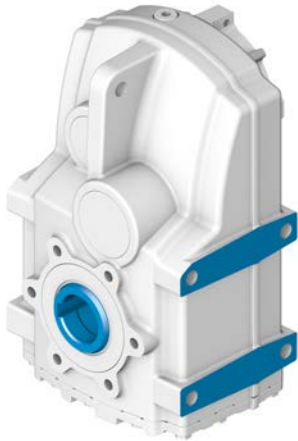
Gearbox versions



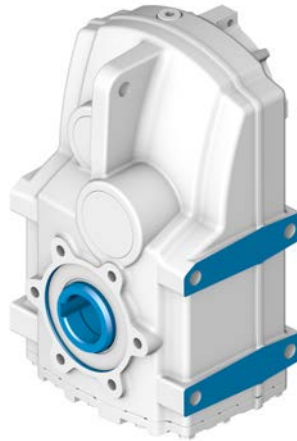
Please observe the available gearbox designs!

► [The modular system](#) 12

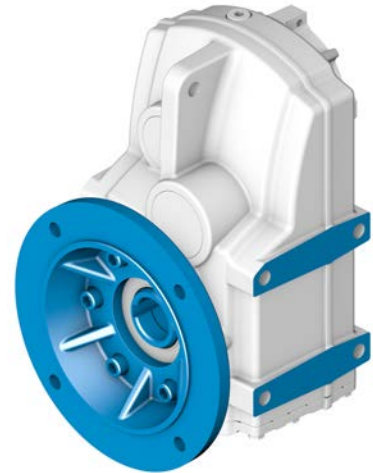
Hollow shaft, with foot



Without centring (HBR)

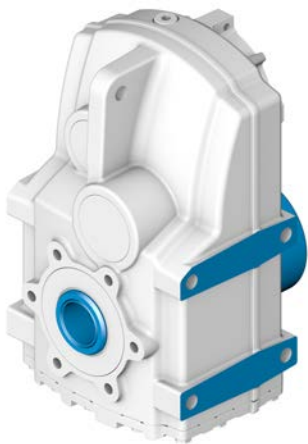


With centring (HAR)



Flange with through holes (HAK)

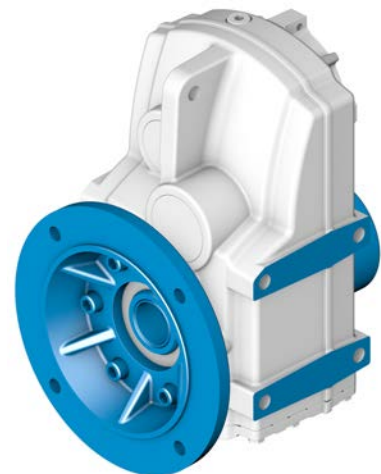
Shrink disc with foot



Without centering (SBR)



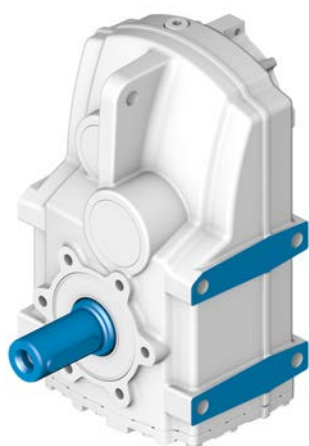
With centring (SAR)



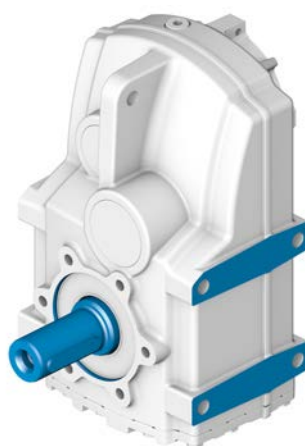
Flange with through holes (SAK)



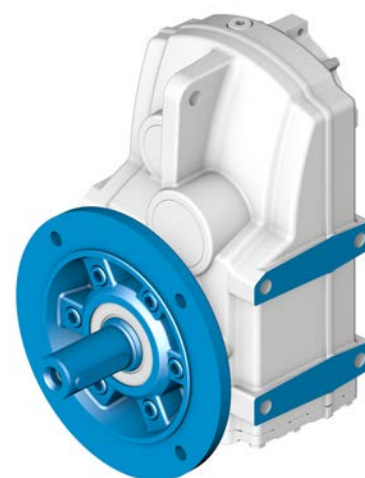
Solid shaft with foot



Without centering (VBR)



With centring (VAR)

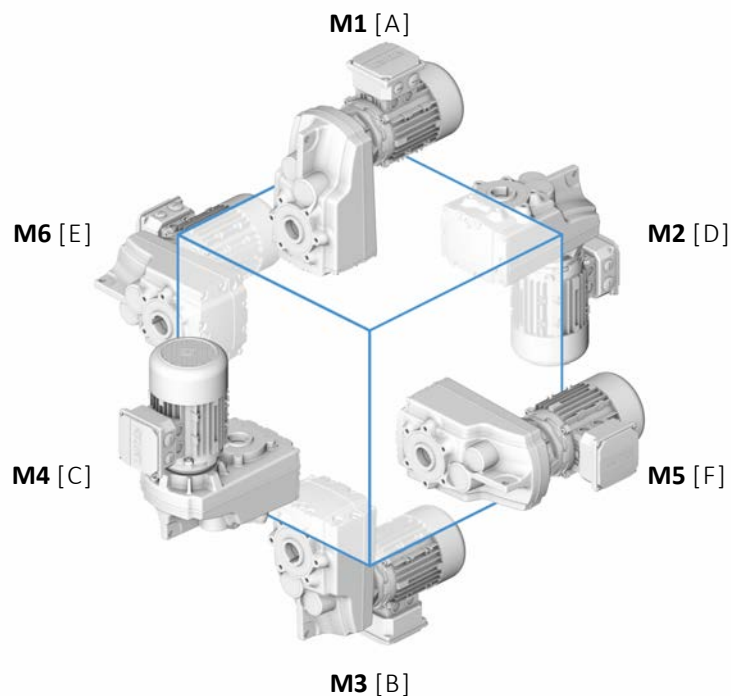


Flange with through holes (VAK)



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.



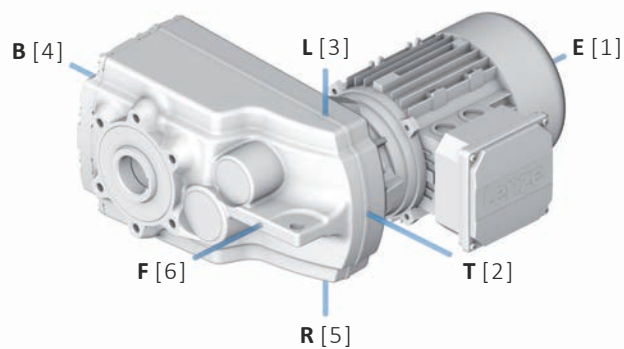
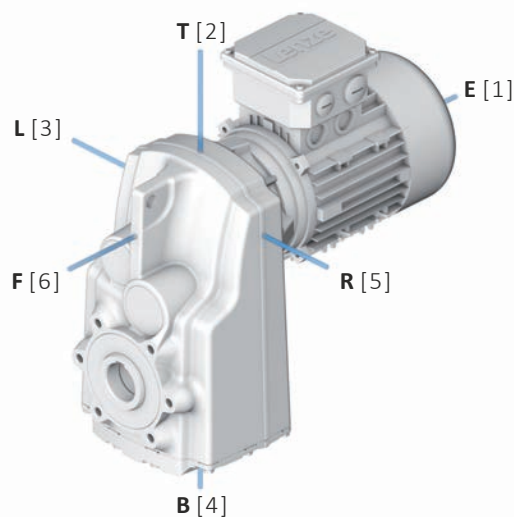
Defined positions on the geared motor

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)

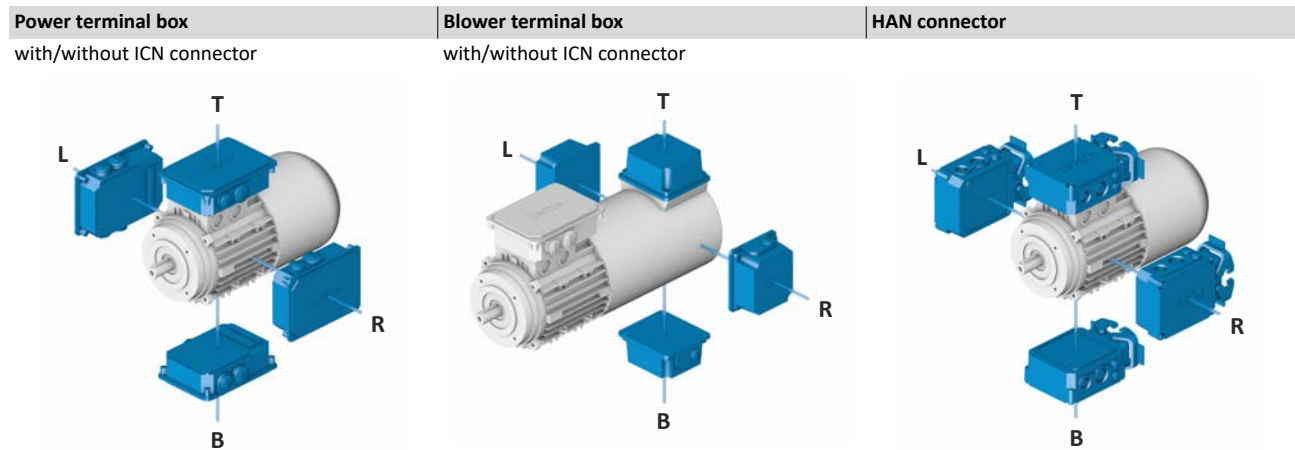


Product information

The modular system
Mounting positions



Positions of the terminal boxes/connectors

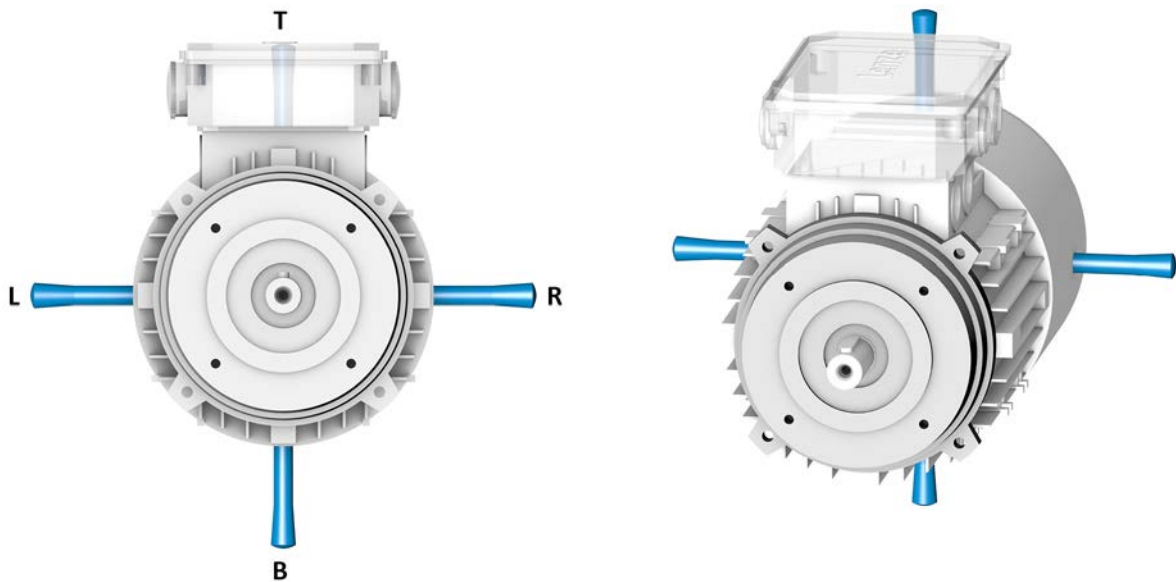


Positions of the connections

HAN connector



Position of the manual release lever



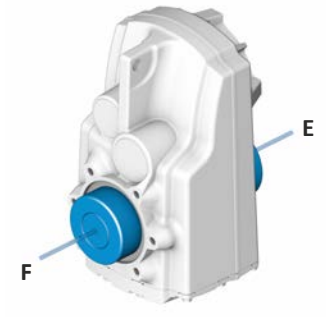


Position of the hollow shaft with shrink disc



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 the specifications of the corresponding documentation. This is the condition for safe and trouble-free operation and the achievement of the specified product features.
- The procedural notes and circuit details given in the associated documentation are suggestions and their transferability to the respective application has to be checked. The manufacturer of the product does not take responsibility for the suitability of the process and circuit proposals.
- All work with and on the product may only be carried out by qualified personnel. IEC 60364 and CENELEC HD 384 define the qualifications of these persons:
 - They are familiar with installing, mounting, commissioning, and operating the product.
 - They have the corresponding qualifications for their work.
 - They know and can apply all regulations for the prevention of accidents, directives, and laws applicable at the place of use.

Application as directed

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



Residual hazards

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

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

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

Product

Observe the warning labels on the product!



Dangerous electrical voltage:

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



Electrostatic sensitive devices:

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



High leakage current:

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



Hot surface:

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

Protection of persons

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

Motor protection

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

Information on project planning

Safety instructions
Residual hazards



Gearbox protection

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



General information

NOTICE

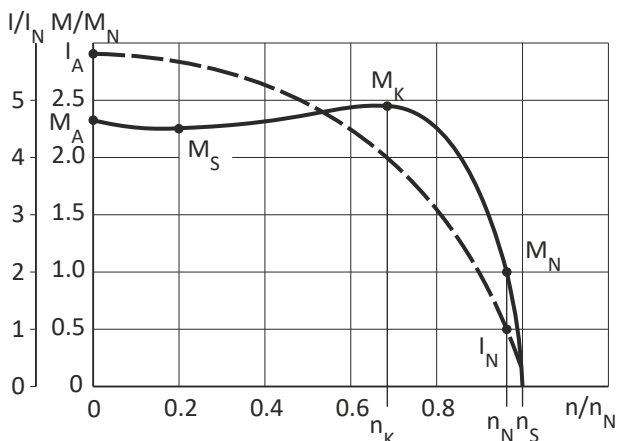
For gearboxes with hollow shaft and shrink disk
observe the following requirements for the machine shaft:

- 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

Operation with mains power

If operated with mains power, the three-phase AC motor starts up in accordance with the speed-torque characteristic when switched on. It follows this characteristic until it reaches its stable operating point. The operating point is reached when the load or rated torque (M_N) is smaller than the starting torque (M_A) and pull-up torque (M_S). The rated speed (n_N) of the drive is always less than the arithmetic synchronous speed (n_S).

The difference between rated and synchronous speed relative to the synchronous speed is called the slip.





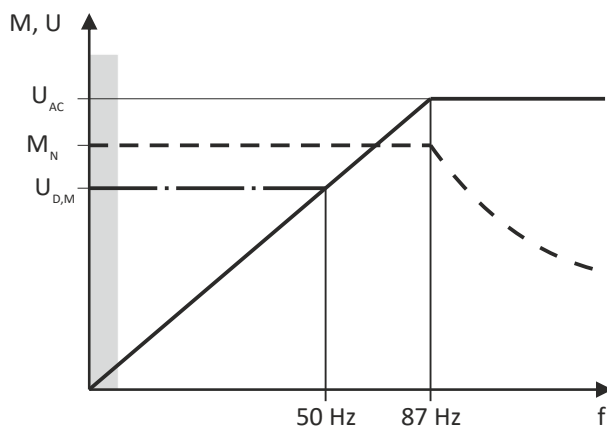
Operation on the frequency inverter

Standard setting

The frequency inverter is set for easy operation on a three-phase AC motor with vector control by default. The rated torque of the motor is available in a setting range up to 50 Hz in this mode of operation.

Extended setting range up to 87 Hz

If the frequency inverter's U/f reference point is set to 87 Hz, the rated torque can be taken into account in an extended setting range. A 230/400 V motor is used here, for example, and operated in delta on a 400 V frequency inverter. The setting range is increased by 40 %. The inverter must be dimensioned for a rated motor current of 230 V.



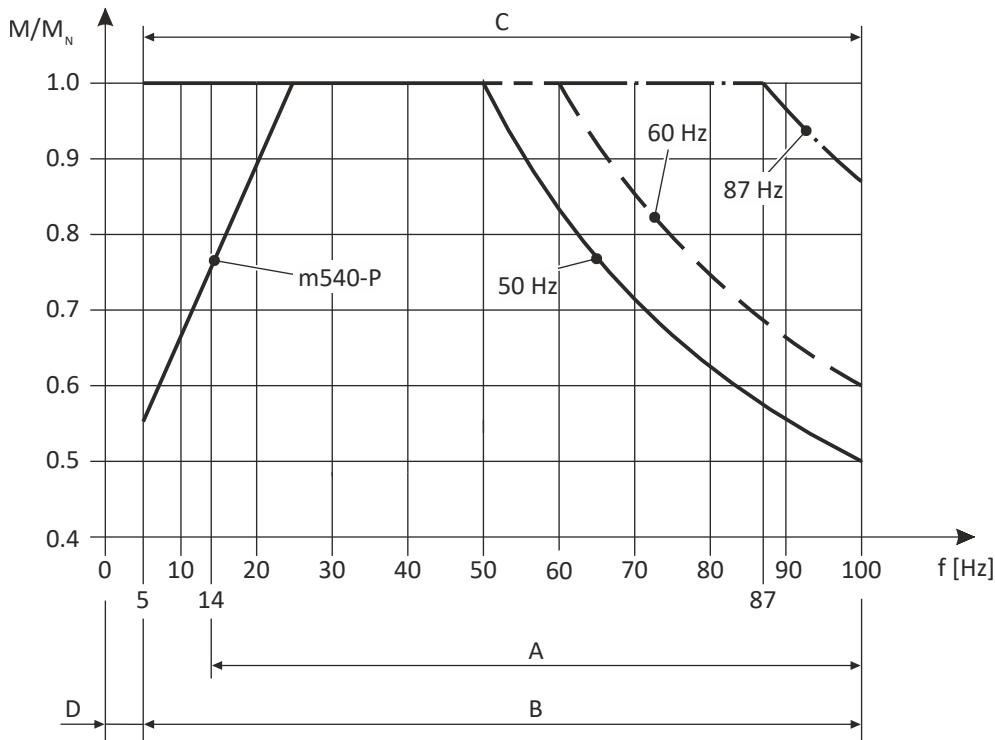


Torque reduction at low motor frequencies

At low motor frequencies (usually < 20 Hz) and with an integral fan, the motor is not cooled sufficiently at the rated torque. The motor can be operated from 5 Hz by reducing the torque accordingly.

Constant cooling takes place over the entire speed range in motors with a blower. This means that they can be used with their rated torque from 5 Hz.

The diagram shows the motor size-dependent torque reduction for self-ventilated motors, taking into account the thermal behavior during operation at the inverter.



- A Operation with integral fan and brake
- B Operation with integral fan and brakes with a wide range voltage of DC 180 ... 205 V or AC 400 ... 460 V
Operation with integral fan and "holding current reduction" brake control
- C Operation with blower
- D Operation below 5 Hz is possible depending on the application and the control method.
Verification of the application by Lenze required.

Thermal power limit

The thermal power limit, defined by the heat balance, limits the permissible continuous gearbox power. It is affected by

- the churning losses in the lubricant. These are determined by the mounting position and the circumferential speed of the gears
- the load and the speed spectrum.
- the ambient conditions: temperature, air circulation, input or dissipation of heat via shafts and the foundations.



NOTICE

A thermal check with the Drive Solution Designer (DSD) or contacting your Lenze representative is required if

- ▶ the input speed $n_1 > 1500$ rpm is fallen below in case of the gearbox ratios given in the following.
- ▶ the drive speeds mentioned in the following will be exceeded as a function of the mounting position. For a short period of time up to 5 min, 30 % higher speeds are permissible.
- ▶ the ambient temperature is predominantly above +30 °C.

Gearbox		Ratio i	
g500-S8000 ... S19000		≤ 40	

Motor	Mounting position M1	Mounting position M3, M5, M6	Mounting position M2, M4
m540-P90 ... P250	1500 rpm	1500 rpm	1500 rpm



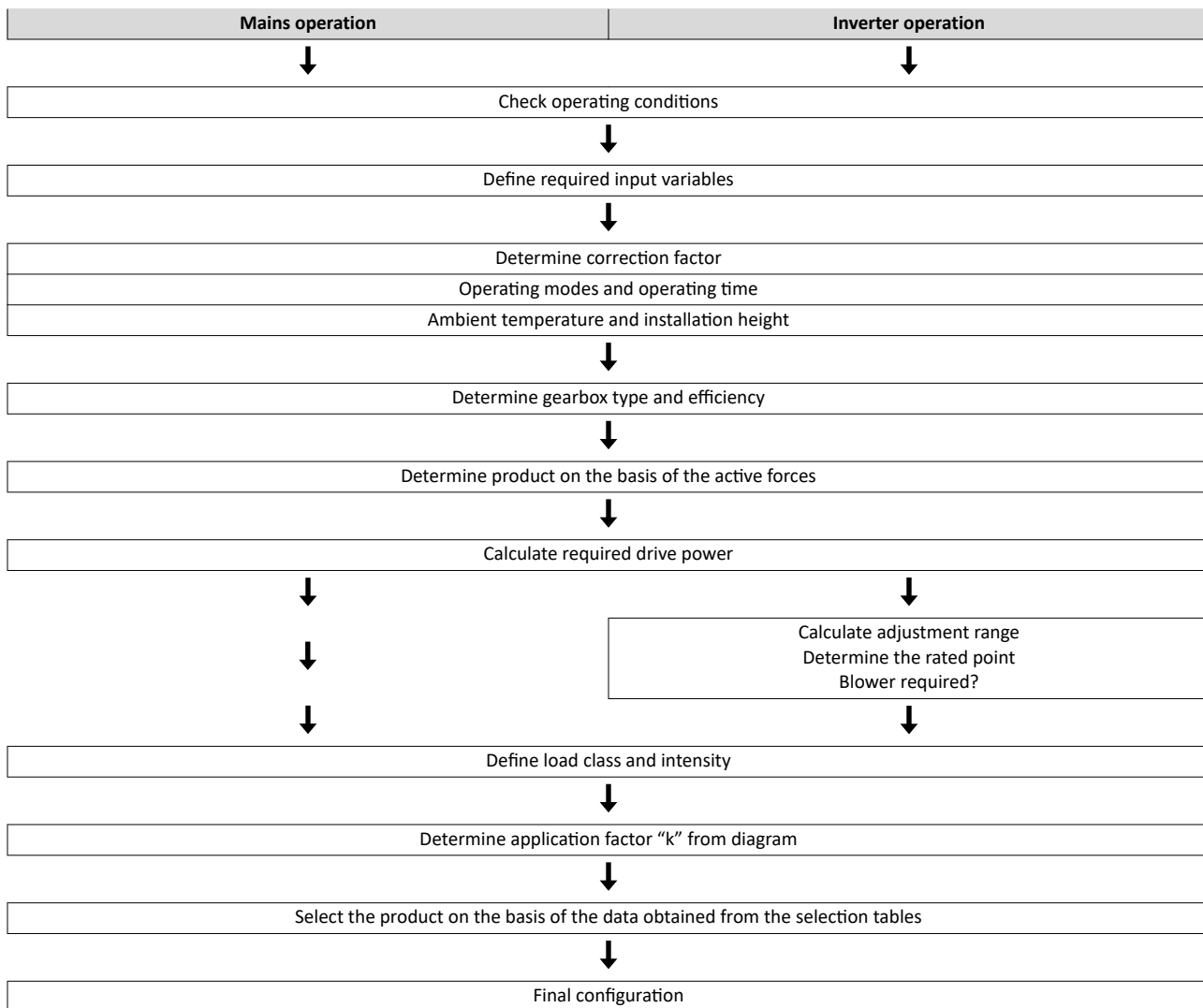
Drive dimensioning

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.

Operation chart



Check operating conditions

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

► Standards and operating conditions [41](#)

► Surface and corrosion protection [30](#)



Define required input variables

Necessary input variables	Note	Symbol	Unit
Operating time / day		OD	
Ambient temperature		T_V	°C
Site altitude amsl		H	m
Radial force		F_{rad}	N
Axial force		F_{ax}	N
Transmission element at the output Effective diameter of the transmission element	Gear wheels, sprockets ...	d_w	mm
Load torque	For short-term load peaks	$M_{L,max}$	Nm
	In rated operation	M_L	Nm
	In mains operation, $M_{L,max}/M_L$ should be < 2.0 to guarantee a safe start of the motor		
Load speed		$n_{L,max}$	rpm
	In inverter operation	$n_{L,min}$	rpm
Runtime for $M_{L,max}$	In inverter operation		%
External moments of inertia		J_{ext}	kgcm ²
Switching operations per hour		S_H	1/h

Determine correction factor

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

► Operating modes of the motor [120](#)

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

Ambient temperature		
≤ 40 °C	≤ 45 °C	≤ 50 °C
Correction factor		
k_{TU}	k_{TU}	k_{TU}
1	0.95	0.90

Mounting position						
Gearboxes	Mounting position					
	M1	M2	M3	M4	M5	M6
	Correction factor					
	k_E	k_E	k_E	k_E	k_E	k_E
g500-H	1.00	0.70	0.80	0.80	1.00	1.00
g500-S	1.00	0.70	0.80	0.85	0.80	0.90
g500-B	1.00	0.70	0.80	0.80	0.80	0.80

► Selection tables [53](#)



Gearbox efficiency

Gearboxes	Gearbox efficiency	
	η_{c1}	
g500-S		
2-stage	0.96	
3-stage	0.95	
4-stage	0.94	

Determine product on the basis of the forces

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

dw Effective diameter of transmission element in mm

f_w Additional load factor

► [Radial forces and axial forces](#) 51

Calculate drive power

Required Drive power	kW	$P_1 = \frac{M_L \times \eta_{L,max}}{9549 \times k_L \times k_H \times k_{TU} \times \eta_g}$	
----------------------	----	--	--

k_L Correction factor - operating mode

k_{TU} Correction factor - ambient temperature

k_H Correction factor - site altitude

η_g Gearbox efficiency

Intensity and load class for mains operation

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

i Ratio of gearbox

J_B Moment of inertia of brake

J_L Load moment of inertia

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

J_M Motor moment of inertia

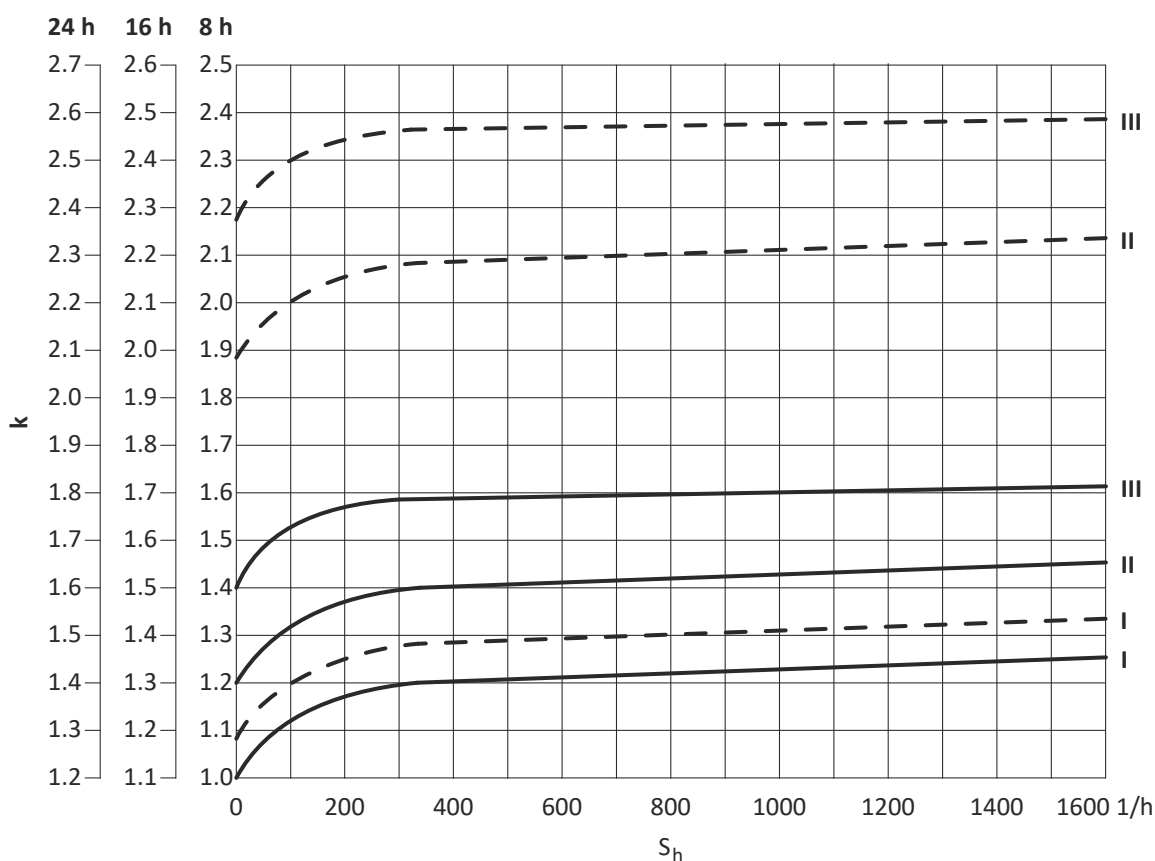
Intensity	Load type	Load class
$F_I \leq 1.25$	Smooth operation, small or light jolts	I
$1.25 < F_I \leq 4$	Uneven operation, average jolts	II
$F_I > 4$	Uneven operation, severe jolts and/or alternating load	III



Intensity and load class for inverter operation

	Calculation	
Intensity	$M_I = \frac{M_{L,max}}{M_L}$	For alternating load, select load class III!
Intensity	Load type	Load class
$M_I \leq 1.5$	Smooth operation, small or light jolts	I
$1.5 < M_I \leq 2$	Uneven operation, average jolts	II
$2 < M_I \leq 2.5$	Uneven operation, severe jolts and/or alternating load	III

Application factor k



- k Application factor
 S_h Switching rate
 — Ratio of motor stalling torque/rated torque < 2.5
 - - - Ratio of motor stalling torque/rated torque ≥ 2.5

Stalling/rated motor torque ▶ [Rated data](#) 109

Check and select product

Data ▶ [Selection tables](#) 53

Mains operation

Selection table	Screening	Unit	Note
Rated frequency	50	Hz	
Rated power	$P_{rated} \geq P_1$	kW	
Output torque	$M_2 \geq M_L$	Nm	The geared motor must be able to provide enough torque for $M_{L,max}$.
Output speed	$n_2 \approx n_{L,max}$	rpm	
Load factor	$c \geq k$		



Inverter operation

Selection table	Check	Unit	Note
Rated frequency	50/87	Hz	
Rated power	$P_{\text{rated}} \geq P_1$	kW	
Output torque	$M_2 \geq M_L$	Nm	The geared motor must be able to provide enough torque for $M_{L,\text{max}}$.
Max. Output speed	$n_2 \approx n_{L,\text{max}}$	rpm	
Min. Output speed			
Self-ventilated	$n_{21} \approx n_{L,\text{min}}$	rpm	Adjustment ranges ≤ 2.5 (50 Hz) Adjustment ranges ≤ 4.35 (87 Hz)
Forced-ventilated			
Self-ventilated (Output torque reduced)	$n_{22} \approx n_{L,\text{min}}$	rpm	Adjustment ranges ≤ 10 (50 Hz) Adjustment ranges ≤ 17.4 (87 Hz)
Load factor	$c \geq k$		

Order information	Example
Geared motor	
Gearbox	g500-S8000
Motor	m540-P100/M4
Gearbox ratio i	99.180
Number of stages	3



Final configuration

	Screening
Connection dimensions	Output shaft Output flange/foot
Mounting position	Geared motor Connector/terminal box Driven shaft/output flange
Product extensions	Torque plate Shaft cover Connector/terminal box Brake Feedback Blower Temperature monitoring Second shaft end Handwheel Protection cover ...

More information about the final configuration:

► [The modular system](#) 12

► [Product extensions](#) 81

Surface and corrosion protection

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

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

Surface and corrosion protection	Applications	Product
		g500-H5000 ... H14000 g500-S8000 ... S19000 g500-B8000 ... B20000
OKS-G (primed)	• Dependent on subsequent top coat applied	Optionally
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 %	Optionally

Surface and corrosion protection	Corrosivity category	Surface coating	Color	Coating thickness
	DIN EN ISO 12944-2	Design		
OKS-G (primed)	-	• Dip priming of the gray cast iron parts • 2K PUR priming coat	-	60 ... 90 µm
OKS-S (small)	Comparable to C1	• Dip priming of the gray cast iron parts • 2K-PUR top coat	• Standard: RAL 7012 • Optional: RAL Classic	80 ... 120 µm
OKS-M (medium)	Comparable to C2	• Dip priming of the gray cast iron parts • 2K PUR priming coat • 2K-PUR top coat		110 ... 160 µm



Information on project planning

Final configuration
Lubricants

Lubricants

Lubricant	CLP 220					CLP 460				
Ambient temperature	0 ... +40 °C									
Specification	Mineral oil with EP additives									
Changing interval										
Operating hours	16000									
Not later than after	3 years									
At oil temperature	80 °C									
Manufacturer	Fuchs		Klüber	Shell		Fuchs		Klüber	Shell	
Manufacturer series	Renolin		Klüberoil	Omala		Renolin		Klüberoil	Omala	
Manufacturer type	CLP 220	CLP Plus 220	GEM 1-220 N	S2 G 220	S2 GX 220	CLP 460	CLP Plus 460	GEM 1-460 N	S2 G 460	S2 GX 460

Lubricant	CLP HC 220				CLP HC 220USDA H1		CLP HC 320			
Ambient temperature	-30 ... +40 °C				-20 ... +40 °C		-20 ... +50 °C			
Specification	Synthetic oil (polyalfaolefins basis)									
Changing interval										
Operating hours	25000				16000		25000			
Not later than after	4 years				3 years		4 years			
At oil temperature	80 °C									
Manufacturer	Fuchs		Klüber	Shell	Fuchs	Klüber	Fuchs		Klüber	Shell
Manufacturer series	Renolin Unisyn		Klübersyn th	Omala	Cassida Fluid	Klüberoil	Renolin Unisyn		Klübersyn th	Omala
Manufacturer type	CLP 220	XT 220	GEM 4-220 N	S4 GX HD 220	GL 220	4 UH1-220 N	CLP 320	XT 320	GEM 4-320 N	S4 GX HD 320

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.

Gearbox	M1 (A)	M2 (D)	M3 (B)	M4 (C)	M5 (F)	M6 (E)
	I	I	I	I	I	I
g500-S8000-2	25	34	24	38	23	24.5
g500-S8000-3	25	34	24	38	23	24.5
g500-S14000-2	40.5	54	37.5	61	37.5	39.5
g500-S14000-3	40.5	54	37.5	61	37.5	39.5
g500-S19000-2	66	77	50	82	55	53.5
g500-S19000-3	66	77	50	82	55	53.5



Ventilation

NOTICE

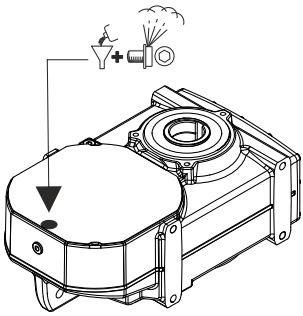
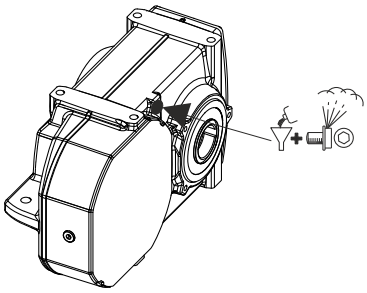
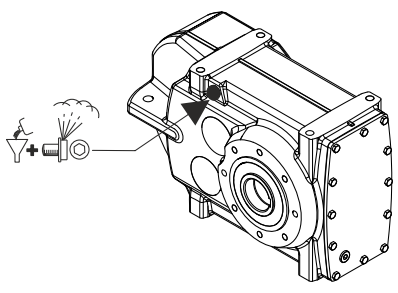
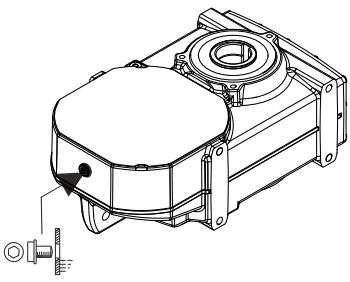
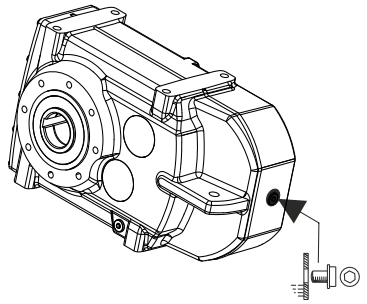
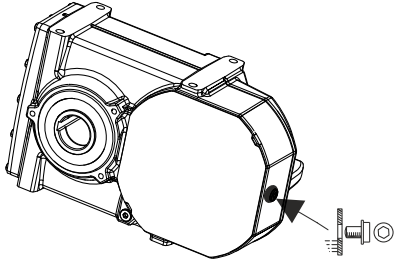
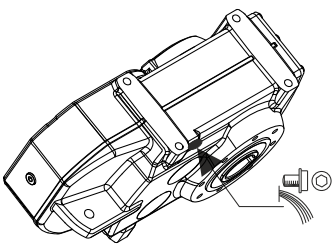
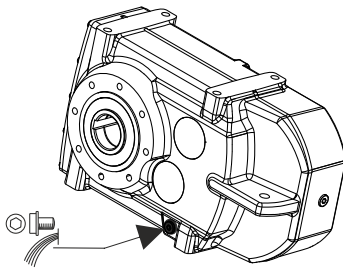
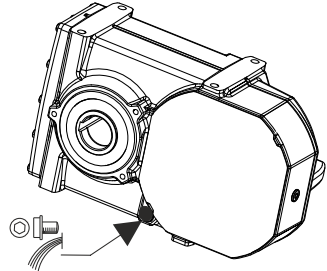
► For gearboxes with ventilation, a gap of at least 30 mm has to be observed to the machine wall on the corresponding gearbox side.

g500-S8000 ...S19000

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

- ② 2-stage gearboxes
- ③ 3-stage gearboxes



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



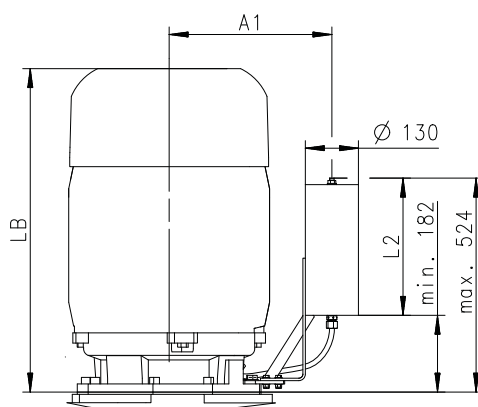
Gearbox with oil compensation reservoir for mounting position M4 (C)

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

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

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

Dimensions of oil compensation reservoir



Gearbox	A1	L2
	mm	mm
g500-S8000	399	336
g500-S14000	427	336
g500-S19000	427	336



Mechanical installation

Important notes

- Install the product according to the information in the chapter "Standards and operating conditions".
 - ▶ [Standards and operating conditions](#)  41
- 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 for high leakage current

If the leakage current is greater than 3.5 mA for alternating current or greater than 10 mA for direct current, the standard EN 61800-5-1 requires that at least one or more of the following measures be met:

- The minimum PE conductor cross-section is 10 mm² with Cu or 16 mm² with Al.
- Attachment of an additional protective grounding conductor with the same cross-section as the original protective grounding conductor.
 - Do not place the additional terminal on the same terminal.
- Provide automatic disconnection of the mains in case of interruption of the protective conductor.

▶ [Connection options](#)  83

Operation on an external inverter

A max. pulse voltage amplitude of $U_{pk} = 1560 \text{ V}$ at the motor terminals must not be exceeded.

Here, the minimum pulse rise time must be $t_r = 0.1 \text{ } \mu\text{s}$.

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

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



Preparation

EMC-compliant wiring



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



Technical data

Notes regarding the given data

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 = -30 ... +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 + m500 shaft-mounted helical geared motors \(Lenze.com\)](https://www.lenze.com/g500+m500-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
		2009/125/EC	Ecodesign Directive		
		2011/65/EU	RoHS		
		2014/30/EU	EMC Directive		
		2014/35/EU	Low-Voltage Directive		
Great Britain	UKCA	S.I. 2012/3032	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012		UKCA mark
		S.I. 2016/1091	The Electromagnetic Compatibility Regulations 2016		
		S.I. 2016/1101	The Electrical Equipment (Safety) Regulations 2016		
		S.I. 2021/745	The Ecodesign for Energy-Related Products and Energy Information Regulations 2021		

America					
Country	Conformity/ approval	Law/standard	Description	Special feature	Product representation
Canada	CSA	CSA 22.1 No. 100	CSA Standard for Motors and Generators	-	cURus mark
	NrCAN	SOR/2016-311 (Division 12 - Subdivision A)	Energy Efficiency Regulations		UL Energy mark
USA	DOE	10 CFR Part 431 - Subpart B	Energy Efficiency Program for Certain Commercial and Industrial Equipment		UL Energy mark + CC number
	UL	UL 1004-1	UL Standard for Rotating Electrical Machines		cURus mark

Asia					
Country	Conformity/ approval	Law/standard	Description	Special feature	Product representation
China	-	GB 18613	Minimum allowable values of energy efficiency and energy efficiency grades for small and medium three-phase asynchronous motors	-	CEL mark
		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

Protection of persons and device protection

Temperature class			
-	EN IEC 60034-1	F (155 °C)	Insulation system
Utilization		B (130 °C)	Utilization

Technical data

Standards and operating conditions
EMC data



EMC data

Environmental conditions

Energy efficiency			
10 CFR	10 CFR Part 431	-	-
GB	GB 18613-2012		
Premium Efficiency	EN IEC 60034-30-1	IE3 class	
Climate			
Operation	EN 60721-3-3:1995 + A2:1997	3K3 (-20 ...+40 °C)	Operation without brake, self-ventilated
		3K3 (-20 ...+60 °C)	
Site altitude			
0 ... 1000 m amsl	-	Without current derating	
1000 ... 4000 m amsl		With derating	Current derating by 5 %/1000 m
Air humidity			
-	-	Average relative humidity 85 %	Without condensation



Gearbox data

The following tables contain the most important data of the gearbox for attachable motors of a geared motor.

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).

g500-S8000, 2-stage gearboxes

output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
n_2	$M_{2, \max}$	i	z_g	z_t	Standard
rpm	Nm				'
308	5650	4.550	132	29	9
241	5680	5.820	1892	325	8
211	5690	6.640	1122	169	8
173	5690	8.090	2420	299	8
156	6770	8.970	260	29	6
122	7320	11.470	172	15	6
107	7620	13.080	170	13	6
87.8	8000	15.940	1100	69	6
77.3	8000	18.100	380	21	6
71.0	8000	19.710	1360	69	6
63.0	8000	22.220	200	9	6
56.2	8000	24.930	1720	69	6
50.1	8000	27.940	1760	63	6
45.0	8000	31.110	280	9	6
40.1	8000	34.930	524	15	6
36.3	8000	38.550	2660	69	6
31.9	8000	43.890	395	9	6
28.9	8000	48.480	1600	33	6



g500-S8000, 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				'
43.3	7510	32.330	13870	429	6
35.5	7970	39.430	29930	759	6
30.9	8000	45.300	31390	693	6
28.0	8000	50.010	37960	759	6
24.8	8000	56.370	5130	91	6
20.4	8000	68.760	11070	161	6
17.7	8000	78.980	3870	49	6
16.1	8000	87.200	14040	161	6
14.1	8000	99.180	4860	49	6
12.5	8000	112.360	18090	161	6
11.0	8000	126.730	6210	49	6
9.9	8000	141.430	990	7	6
8.8	8000	158.910	5562	35	6
7.8	8000	179.440	28890	161	6
6.9	8000	202.500	405	2	6
6.2	8000	224.420	17280	77	6
5.5	8000	252.640	3537	14	6
4.9	8000	285.000	285	1	6
4.6	8000	304.030	36180	119	6
4.3	8000	323.040	9045	28	6
3.7	8000	377.000	18495	49	6

g500-S14000, 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				'
308	7300	4.550	132	29	8
245	8210	5.720	2156	377	7
195	8310	7.180	2332	325	7
174	8350	8.070	1364	169	7
156	10400	8.970	260	29	6
124	11700	11.260	980	87	5
99.1	12900	14.130	212	15	5
88.1	13500	15.900	620	39	5
73.2	13600	19.130	440	23	5
65.8	13600	21.270	1340	63	5
59.6	13600	23.480	540	23	5
53.1	13600	26.350	1660	63	5
46.9	13600	29.860	2060	69	5
42.4	13600	33.020	2080	63	5
37.9	13600	36.940	665	18	5
34.1	13600	41.070	616	15	5
31.2	12400	44.930	3100	69	5



g500-S14000, 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				'
43.9	13600	31.920	4628	145	6
34.3	13600	40.820	15308	375	6
30.1	13600	46.550	3026	65	6
27.7	13600	50.630	24960	493	5
21.6	13600	64.750	5504	85	5
19.0	13600	73.850	960	13	5
15.6	13600	90.030	35200	391	5
13.7	13600	102.180	12160	119	5
12.6	13600	111.300	2560	23	5
11.2	13600	125.490	6400	51	5
9.9	13600	140.770	55040	391	5
8.9	13600	157.760	56320	357	5
8.0	13600	175.690	8960	51	5
7.1	13600	197.270	16768	85	5
6.4	13600	217.700	85120	391	5
5.6	13600	247.840	12640	51	5
5.1	13600	273.800	51200	187	5
4.6	13600	304.940	5184	17	5
4.1	13600	343.010	52480	153	5
3.8	13600	368.000	106240	289	5

g500-S19000, 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				'
165	14700	8.470	3811	450	5
129	16300	10.890	4738	435	5
106	17600	13.260	5768	435	5
86.4	19000	16.210	6077	375	5
74.7	19000	18.750	7313	390	5
63.4	19000	22.090	7622	345	5
56.3	19000	24.850	7828	315	5
51.5	19000	27.170	9373	345	5
46.0	19000	30.410	3193	105	5
41.1	19000	34.030	3914	115	5
36.9	19000	37.930	11948	315	5



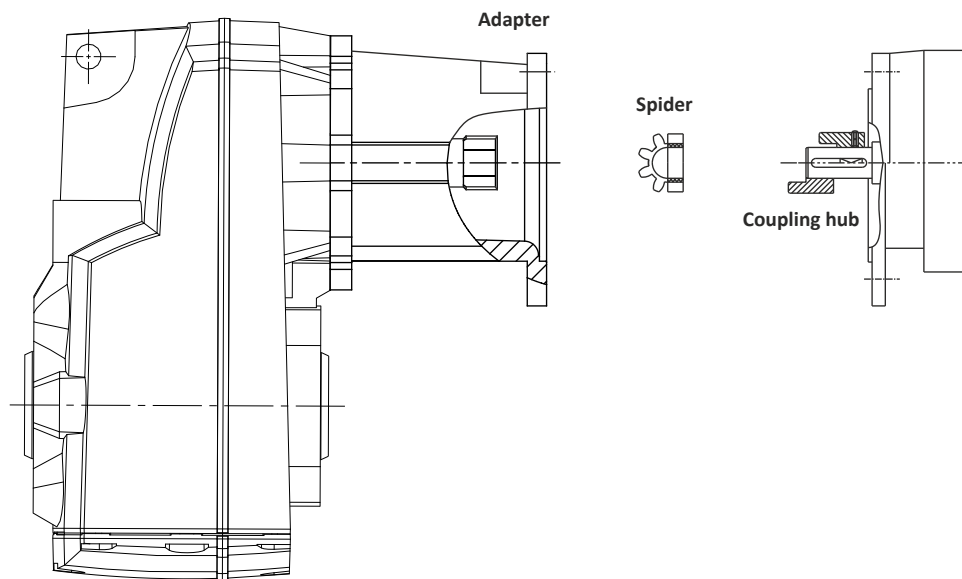
g500-S19000, 3-stage gearboxes

output speed	Max. output torque	Ratio	Number of teeth		Max. backlash
					Standard
n_2	$M_{2, \max}$	i	z_g	z_t	
rpm	Nm				'
43.3	19000	32.320	9373	290	5
34.5	19000	40.610	35329	870	5
28.3	19000	49.430	121849	2465	5
22.5	19000	62.110	459277	7395	5
18.0	19000	77.920	496769	6375	5
16.0	19000	87.650	22351	255	5
13.3	19000	105.480	206206	1955	5
11.9	19000	117.270	89713	765	5
10.8	19000	129.450	253071	1955	5
9.6	19000	145.280	111137	765	5
8.5	19000	164.610	965419	5865	5
7.7	19000	182.030	139256	765	5
6.9	19000	203.690	1246609	6120	5
6.2	19000	226.420	1443442	6375	5
5.7	19000	247.710	290563	1173	5
5.0	19000	280.270	571753	2040	5
4.5	19000	310.760	290563	935	5
4.0	19000	347.350	590499	1700	5



Gearboxes with adapter

Versions with flexible coupling

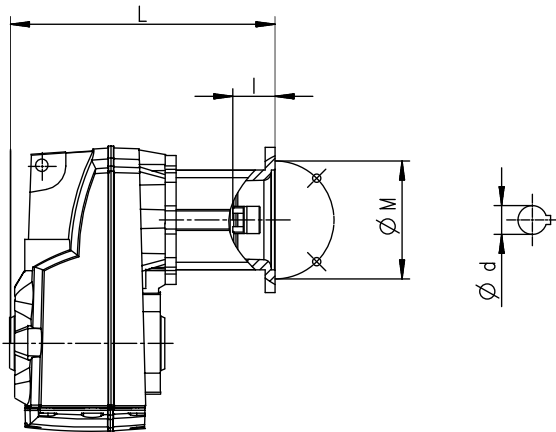


Power is transmitted between the motor and gearbox via a flexible coupling. The gearbox shaft is designed as a claw on the motor side. The counterpart, the coupling hub, is placed on the motor shaft and secured axially. A spider is arranged between the two claws, which can absorb shocks and ensures torsional vibration-damping power transmission.

- Coupling hub with keyway
 - Positive power transmission
 - Suitable for normal operation
- Clamping hub with tangential terminal screw and keyway
 - Positive and non-positive power transmission
 - Suitable for reversing duty
- Tension ring hub without keyway
 - Non-positive power transmission
 - Suitable for reversing duty



Dimensions of gearbox with adapter for IEC standard motors



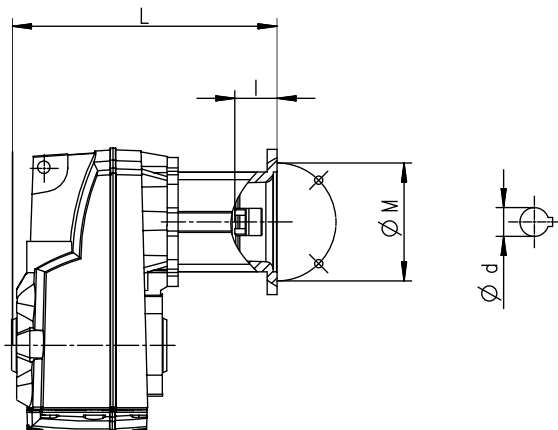
Gearbox dimensions ▶ [Basic dimensions](#) 70

Versions with flexible coupling

Motor				Adapter		Gearbox g500		
	Size	Shaft			Size	-S8000	-S14000	-S19000
		d	l	M		L	L	L
kW		mm	mm	mm		mm	mm	mm
2.2 3.0 4.0	100 112	28	60	FT215	T55	513	567	619
5.5 7.5	132	38	80	FF265	T61	584	637	686
11.0 15.0	160	42	110	FT300	T65	629	682	731
18.5 22.0	180	48	110	FT300	T66	629	682	731
30.0	200	55	110	FT350	T70	674	537	776
37.0 45.0	225	60	140	FT400	T76	722	773	822
55.0	250	65	140	FT500	T81	759	807	856
75.0 90.0	280	75	140	FT500	T82	635	683	733
110 132	315	80	170	FT600	T86	-	-	757



Dimensions of gearbox with adapter for NEMA motors



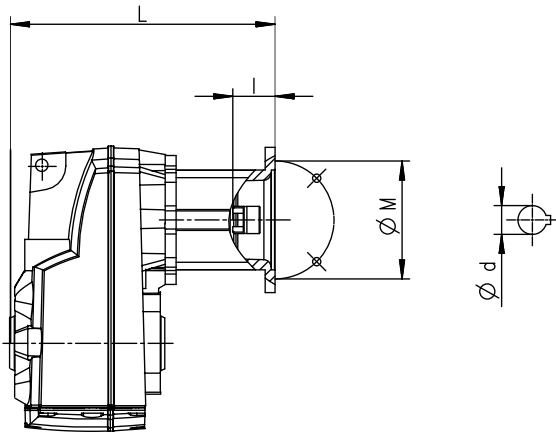
Gearbox dimensions ► [Basic dimensions](#) 70

Versions with flexible coupling

Motor			Adapter		Gearbox g500		
Size	Shaft			Size	-S8000	-S14000	-S19000
	d	l	M		L	L	L
	inch	inch	inch		mm	mm	mm
182/184 TC	1.125	2.750	7.252	A18	525	-	-
213/215 TC	1.375	3.375	7.252	A21	589	642	691
254/256 TC	1.625	4.000	7.252	A25	619	672	721
284/286 TC	1.875	4.625	9.000	A28	637	690	739
324/326 TC	2.125	5.250	11.000	A32	715	766	815
364/365 TC	2.375	5.875	11.000	A36	768	815	864



Dimensions of gearboxes with adapter for servo motors



Gearbox dimensions ▶ [Basic dimensions](#) 70

Versions with flexible coupling

Motor			Adapter		Gearbox g500		
	Shaft			Size	-S8000	-S14000	-S19000
M	d	l	M		L	L	L
mm	mm	mm	mm		mm	mm	mm
130	24	58	FT130	E07	404	-	-
165	32	80	FT165	E09	417	470	519
215	38	80	FT215	E11	446	498	547
300	48	110	FT300	G13	611	664	713
350	55	110	FT350	G16	668	719	768



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 .

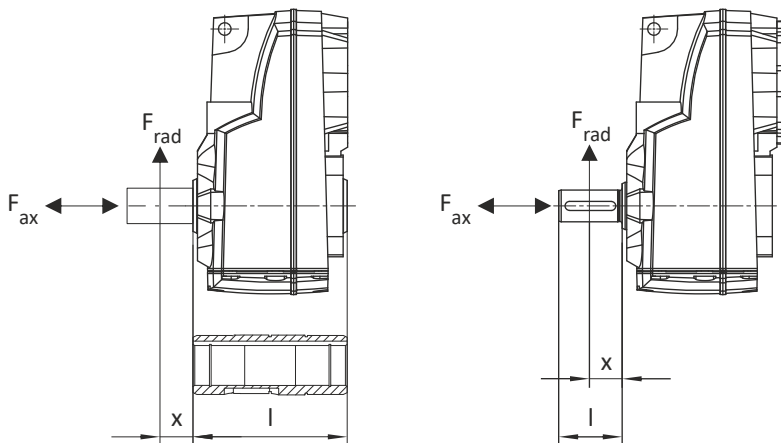
$$F_{\text{rad, perm}} = f_w \times F_{\text{rad, max}}$$

Permissible axial force

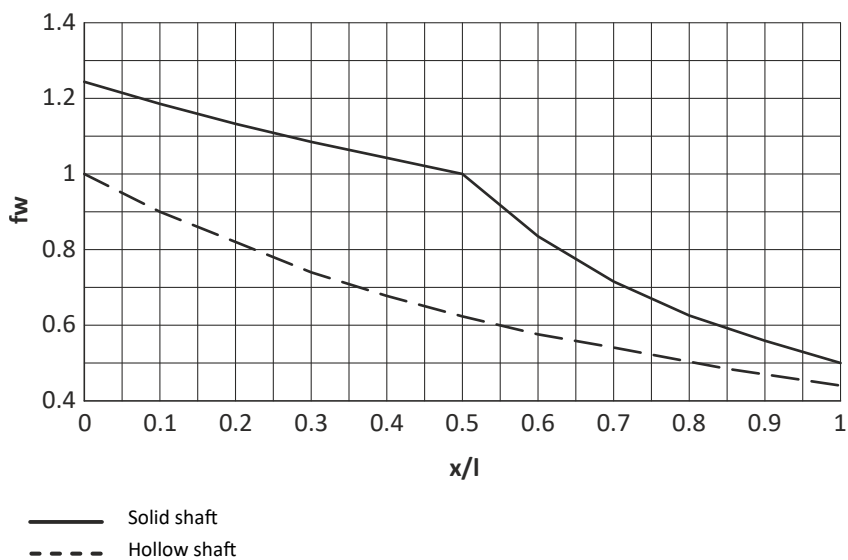
If there is no radial force, the maximum axial force is 50% of the value in the table $F_{\text{rad, max}}$

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

Application of forces



Additional load factor f_w on the drive shaft





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]						
	250	160	100	63	40	25	16
	Max. radial force $F_{rad,max}$ [rated]						
g500-S8000	23000	27000	30000	38000	48000	55000	65000
g500-S14000	34000	41000	44000	55000	65000	73500	73500
g500-S19000		55000	61000	74000	91000	100000	111000

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

Getriebe	Output speed n_2 [rpm]						
	250	160	100	63	40	25	16
	Max. radial force $F_{rad,max}$ [rated]						
g500-S8000	27000	31000	35000	43000	52000	59000	65000
g500-S14000	36000	42000	47000	57000	66000	73500	73500
g500-S19000		49000	54000	65000	79000	100000	111000

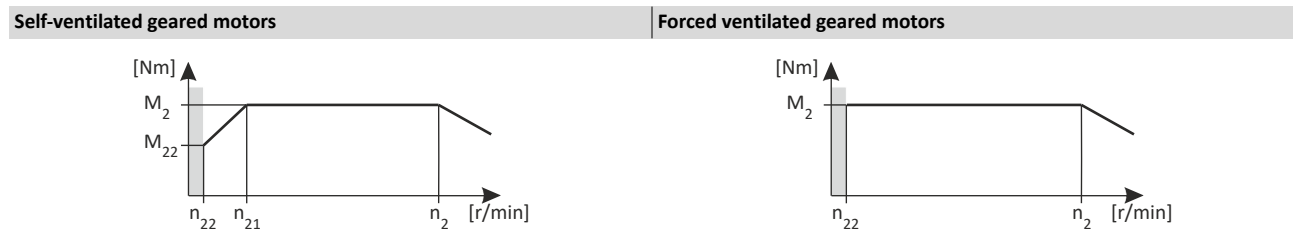
Max. radial force, gearbox with solid shaft and flange (V□K)

Getriebe	Output speed n_2 [rpm]						
	250	160	100	63	40	25	16
	Max. radial force $F_{rad,max}$ [rated]						
g500-S8000	27000	31000	35000	43000	52000	59000	71500
g500-S14000	36000	42000	47000	57000	66000	77000	81000
g500-S19000		49000	54000	65000	79000	100000	118000



Selection tables

Torque characteristic with inverter operation



20 Hz to 50 or 87 Hz: Operation at constant torque.

Below 20 Hz (n_{21}): Derating without separate fan.

Below 5 Hz (n_{22}): Verification of the application by Lenze required.

5 Hz to 50 or 87 Hz: Operation at constant torque.

Below 5 Hz (n_{22}): Verification of the application by Lenze required.

Notes on the selection tables

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

The following legend shows the layout of the selection tables:

Example

50 Hz: $P_N = 2.2 \text{ kW}$

87 Hz: $P_N = 3.9 \text{ kW}$

Explanation

Rated motor power at a rated frequency of 50 Hz

Rated motor power at a frequency of 87 Hz

Inverter operation										Geared motor					
				Mains operation											
5 Hz -		- 20 Hz		50 Hz (1:10)			87 Hz (1:17.4)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		rpm	Nm		kgcm ²					kg
1.5	748	7.4	1356	14.8	1356	5.9	26.0	1356	5.9	193.000	99.180	g500-S8000	m540-P100/M4	3	310
1.3	847	6.5	1536	13.0	1536	5.2	22.9	1536	5.2	183.000	112.360	g500-S8000	m540-P100/M4	3	310

Data at 50 Hz n_2 = Output speed - M_2 = Output torque c = the load capacity of the gearbox is the ratio of the permissible rated torque of the gearbox to the rated torque of the motor (converted to the output shaft). c must always be greater than the application factor determined for the application. k $c = \frac{M_{2,zul}}{M_{1,N} \times i \times \eta_{Getr}} > k$	Data at 87 Hz	Ratio	Moment of inertia without brake	Gearbox product name	Motor product name	Number of gear stages	Basic weight
Data at 20 Hz n_{21} = Output speed - M_2 = Output torque							
Data at 5 Hz n_{22} = Output speed - M_{22} = Output torque (Externally cooled motors can deliver the torque M_2 over the entire adjustment range)							

Technical data

Selection tables



50 Hz: 2.2 kW

87 Hz: 3.9 kW

Inverter operation												Geared motor			
5 Hz -		- 20 Hz		50 Hz (1:10)			87 Hz (1:17.4)								
n ₂₂	M ₂₂	n ₂₁	M ₂	n ₂	M ₂	c	n ₂	M ₂	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		rpm	Nm		kgcm ²					kg
1.1	956	5.8	1733	11.6	1733	4.6	20.3	1733	4.6	177.000	126.730	g500-S8000	m540-P100/M4	3	310
1.0	1067	5.2	1933	10.4	1933	4.1	18.2	1933	4.1	171.000	141.430	g500-S8000	m540-P100/M4	3	310
0.9	1198	4.6	2172	9.2	2172	3.7	16.2	2172	3.7	166.000	158.910	g500-S8000	m540-P100/M4	3	310
0.8	1353	4.1	2453	8.2	2453	3.3	14.4	2453	3.3	163.000	179.440	g500-S8000	m540-P100/M4	3	310
0.7	1527	3.6	2768	7.2	2768	2.9	12.7	2768	2.9	159.000	202.500	g500-S8000	m540-P100/M4	3	310
0.6	1692	3.3	3068	6.5	3068	2.6	11.5	3068	2.6	156.000	224.420	g500-S8000	m540-P100/M4	3	310
0.6	1905	2.9	3454	5.8	3454	2.3	10.2	3454	2.3	154.000	252.640	g500-S8000	m540-P100/M4	3	310
0.5	2149	2.6	3896	5.1	3896	2.1	9.0	3896	2.1	151.000	285.000	g500-S8000	m540-P100/M4	3	310
0.5	2293	2.4	4156	4.8	4156	1.9	8.5	4156	1.9	150.000	304.030	g500-S8000	m540-P100/M4	3	310
0.4	2436	2.3	4416	4.5	4416	1.8	8.0	4416	1.8	149.000	323.040	g500-S8000	m540-P100/M4	3	310
0.4	2843	1.9	5154	3.9	5154	1.6	6.8	5154	1.6	147.100	377.000	g500-S8000	m540-P100/M4	3	310

50 Hz: 3 kW

87 Hz: 5.2 kW

Inverter operation												Geared motor			
5 Hz -		- 20 Hz		50 Hz (1:10)			87 Hz (1:17.4)								
n ₂₂	M ₂₂	n ₂₁	M ₂	n ₂	M ₂	c	n ₂	M ₂	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		rpm	Nm		kgcm ²					kg
1.7	900	8.4	1634	16.7	1634	4.9	29.5	1634	4.9	203.000	87.200	g500-S8000	m540-P100/L4	3	310
1.5	1023	7.4	1858	14.7	1858	4.3	25.9	1858	4.3	193.000	99.180	g500-S8000	m540-P100/L4	3	310
1.3	1159	6.5	2105	13.0	2105	3.8	22.9	2105	3.8	183.000	112.360	g500-S8000	m540-P100/L4	3	310
1.1	1308	5.8	2375	11.5	2375	3.4	20.3	2375	3.4	177.000	126.730	g500-S8000	m540-P100/L4	3	310
1.0	1459	5.2	2650	10.3	2650	3.0	18.2	2650	3.0	171.000	141.430	g500-S8000	m540-P100/L4	3	310
0.9	1640	4.6	2978	9.2	2978	2.7	16.2	2978	2.7	166.000	158.910	g500-S8000	m540-P100/L4	3	310
0.8	1851	4.1	3362	8.1	3362	2.4	14.3	3362	2.4	163.000	179.440	g500-S8000	m540-P100/L4	3	310
0.7	2089	3.6	3794	7.2	3794	2.1	12.7	3794	2.1	159.000	202.500	g500-S8000	m540-P100/L4	3	310
0.6	2316	3.3	4205	6.5	4205	1.9	11.5	4205	1.9	156.000	224.420	g500-S8000	m540-P100/L4	3	310
0.6	2607	2.9	4734	5.8	4734	1.7	10.2	4734	1.7	154.000	252.640	g500-S8000	m540-P100/L4	3	310
0.5	2941	2.6	5340	5.1	5340	1.5	9.0	5340	1.5	151.000	285.000	g500-S8000	m540-P100/L4	3	310
0.5	3137	2.4	5697	4.8	5697	1.4	8.5	5697	1.4	150.000	304.030	g500-S8000	m540-P100/L4	3	310
0.4	3333	2.3	6053	4.5	6053	1.3	8.0	6053	1.3	149.000	323.040	g500-S8000	m540-P100/L4	3	310
0.4	3890	1.9	7064	3.9	7064	1.1	6.8	7064	1.1	147.100	377.000	g500-S8000	m540-P100/L4	3	310



50 Hz: 4 kW

87 Hz: 7.35 kW

Inverter operation												Geared motor			
5 Hz -		- 20 Hz		50 Hz (1:10)			87 Hz (1:17.4)								
n ₂₂	M ₂₂	n ₂₁	M ₂	n ₂	M ₂	c	n ₂	M ₂	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		rpm	Nm		kgcm ²					kg
1.8	1087	9.2	1978	18.5	1978	4.0	32.5	1978	4.0	241.000	78.980	g500-S8000	m540-P112/M4	3	310
1.7	1200	8.4	2184	16.7	2184	3.7	29.5	2184	3.7	233.000	87.200	g500-S8000	m540-P112/M4	3	310
1.5	1364	7.4	2484	14.7	2484	3.2	25.9	2484	3.2	223.000	99.180	g500-S8000	m540-P112/M4	3	310
1.3	1531	6.6	2788	13.1	2788	4.9	23.1	2788	4.9	271.000	111.300	g500-S14000	m540-P112/M4	3	481
1.3	1546	6.5	2814	13.0	2814	2.8	22.9	2814	2.8	213.000	112.360	g500-S8000	m540-P112/M4	3	310
1.2	1726	5.8	3143	11.6	3143	4.3	20.5	3143	4.3	256.000	125.490	g500-S14000	m540-P112/M4	3	481
1.1	1744	5.8	3174	11.5	3174	2.5	20.3	3174	2.5	207.000	126.730	g500-S8000	m540-P112/M4	3	310
1.0	1937	5.2	3526	10.4	3526	3.9	18.3	3526	3.9	244.000	140.770	g500-S14000	m540-P112/M4	3	481
1.0	1946	5.2	3542	10.3	3542	2.3	18.2	3542	2.3	201.000	141.430	g500-S8000	m540-P112/M4	3	310
0.9	2170	4.6	3951	9.3	3951	3.4	16.3	3951	3.4	234.000	157.760	g500-S14000	m540-P112/M4	3	481
0.9	2186	4.6	3980	9.2	3980	2.0	16.2	3980	2.0	196.000	158.910	g500-S8000	m540-P112/M4	3	310
0.9	2265	4.4	4123	8.9	4123	4.6	15.6	4123	4.6	287.000	164.610	g500-S19000	m540-P112/M4	3	729
0.8	2417	4.2	4401	8.3	4401	3.1	14.6	4401	3.1	224.000	175.690	g500-S14000	m540-P112/M4	3	481
0.8	2469	4.1	4494	8.1	4494	1.8	14.3	4494	1.8	193.000	179.440	g500-S8000	m540-P112/M4	3	310
0.8	2504	4.0	4559	8.0	4559	4.2	14.1	4559	4.2	268.000	182.030	g500-S19000	m540-P112/M4	3	729
0.7	2714	3.7	4941	7.4	4941	2.8	13.0	4941	2.8	216.000	197.270	g500-S14000	m540-P112/M4	3	481
0.7	2786	3.6	5072	7.2	5072	1.6	12.7	5072	1.6	189.000	202.500	g500-S8000	m540-P112/M4	3	310
0.7	2802	3.6	5102	7.2	5102	3.7	12.6	5102	3.7	254.000	203.690	g500-S19000	m540-P112/M4	3	729
0.7	2995	3.4	5453	6.7	5453	2.5	11.8	5453	2.5	210.000	217.700	g500-S14000	m540-P112/M4	3	481
0.6	3087	3.3	5621	6.5	5621	1.4	11.5	5621	1.4	186.000	224.420	g500-S8000	m540-P112/M4	3	310
0.6	3115	3.2	5671	6.4	5671	3.4	11.4	5671	3.4	241.000	226.420	g500-S19000	m540-P112/M4	3	729
0.6	3408	2.9	6204	5.9	6204	3.1	10.4	6204	3.1	231.000	247.710	g500-S19000	m540-P112/M4	3	729
0.6	3410	2.9	6208	5.9	6208	2.2	10.4	6208	2.2	203.000	247.840	g500-S14000	m540-P112/M4	3	481
0.6	3476	2.9	6328	5.8	6328	1.3	10.2	6328	1.3	184.000	252.640	g500-S8000	m540-P112/M4	3	310
0.5	3767	2.7	6858	5.3	6858	2.0	9.4	6858	2.0	198.000	273.800	g500-S14000	m540-P112/M4	3	481
0.5	3856	2.6	7020	5.2	7020	2.7	9.2	7020	2.7	219.000	280.270	g500-S19000	m540-P112/M4	3	729
0.5	3921	2.6	7138	5.1	7138	1.1	9.0	7138	1.1	181.000	285.000	g500-S8000	m540-P112/M4	3	310
0.5	4183	2.4	7615	4.8	7615	1.1	8.5	7615	1.1	180.000	304.030	g500-S8000	m540-P112/M4	3	310
0.5	4195	2.4	7638	4.8	7638	1.8	8.4	7638	1.8	194.000	304.940	g500-S14000	m540-P112/M4	3	481
0.5	4275	2.3	7784	4.7	7784	2.4	8.3	7784	2.4	213.000	310.760	g500-S19000	m540-P112/M4	3	729
0.4	4444	2.3	8091	4.5	8091	1.0	8.0	8091	1.0	179.000	323.040	g500-S8000	m540-P112/M4	3	310
0.4	4719	2.1	8591	4.3	8591	1.6	7.5	8591	1.6	189.000	343.010	g500-S14000	m540-P112/M4	3	481
0.4	4779	2.1	8700	4.2	8700	2.2	7.4	8700	2.2	206.000	347.350	g500-S19000	m540-P112/M4	3	729
0.4	5063	2.0	9217	4.0	9217	1.5	7.0	9217	1.5	188.000	368.000	g500-S14000	m540-P112/M4	3	481
0.4	5187	1.9	9443	3.9	9443	0.9	6.8	9443	0.9	177.100	377.000	g500-S8000	m540-P112/M4	3	310

Technical data

Selection tables



50 Hz: 5.5 kW

87 Hz: 9.6 kW

Inverter operation												Geared motor			
5 Hz -		- 20 Hz		50 Hz (1:10)			87 Hz (1:17.4)								
n ₂₂	M ₂₂	n ₂₁	M ₂	n ₂	M ₂	c	n ₂	M ₂	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		rpm	Nm		kgcm ²					kg
3.0	924	15.2	1679	30.3	1679	4.8	53.2	1679	4.8	371.000	48.480	g500-S8000	m540-P132/M4	2	329
2.9	940	14.7	1707	29.4	1707	4.7	51.6	1707	4.4	413.000	50.010	g500-S8000	m540-P132/M4	3	338
2.6	1059	13.0	1924	26.1	1924	4.2	45.8	1924	3.9	451.000	56.370	g500-S8000	m540-P132/M4	3	338
2.1	1292	10.7	2347	21.4	2347	3.4	37.5	2347	3.2	425.000	68.760	g500-S8000	m540-P132/M4	3	338
1.8	1484	9.3	2696	18.6	2696	3.0	32.7	2696	3.0	411.000	78.980	g500-S8000	m540-P132/M4	3	338
1.7	1638	8.4	2976	16.9	2976	2.7	29.6	2976	2.7	403.000	87.200	g500-S8000	m540-P132/M4	3	338
1.6	1691	8.2	3073	16.3	3073	4.4	28.7	3073	4.4	472.000	90.030	g500-S14000	m540-P132/M4	3	509
1.5	1863	7.4	3385	14.8	3385	2.4	26.0	3385	2.4	393.000	99.180	g500-S8000	m540-P132/M4	3	338
1.4	1920	7.2	3487	14.4	3487	3.9	25.2	3487	3.9	453.000	102.180	g500-S14000	m540-P132/M4	3	509
1.3	2091	6.6	3799	13.2	3799	3.6	23.2	3799	3.6	441.000	111.300	g500-S14000	m540-P132/M4	3	509
1.3	2111	6.5	3835	13.1	3835	2.1	23.0	3835	2.1	383.000	112.360	g500-S8000	m540-P132/M4	3	338
1.2	2203	6.3	4002	12.5	4002	4.8	22.0	4002	4.8	517.000	117.270	g500-S19000	m540-P132/M4	3	757
1.2	2358	5.9	4283	11.7	4283	3.2	20.6	4283	3.2	426.000	125.490	g500-S14000	m540-P132/M4	3	509
1.1	2381	5.8	4325	11.6	4325	1.9	20.4	4325	1.9	377.000	126.730	g500-S8000	m540-P132/M4	3	338
1.1	2432	5.7	4418	11.4	4418	4.3	19.9	4418	4.3	500.000	129.450	g500-S19000	m540-P132/M4	3	757
1.0	2645	5.2	4804	10.4	4804	2.8	18.3	4804	2.8	414.000	140.770	g500-S14000	m540-P132/M4	3	509
1.0	2657	5.2	4827	10.4	4827	1.7	18.2	4827	1.7	371.000	141.430	g500-S8000	m540-P132/M4	3	338
1.0	2729	5.1	4958	10.1	4958	3.8	17.8	4958	3.8	476.000	145.280	g500-S19000	m540-P132/M4	3	757
0.9	2964	4.7	5384	9.3	5384	2.5	16.4	5384	2.5	404.000	157.760	g500-S14000	m540-P132/M4	3	509
0.9	2986	4.6	5423	9.3	5423	1.5	16.2	5423	1.5	366.000	158.910	g500-S8000	m540-P132/M4	3	338
0.9	3093	4.5	5618	8.9	5618	3.4	15.7	5618	3.4	457.000	164.610	g500-S19000	m540-P132/M4	3	757
0.8	3301	4.2	5996	8.4	5996	2.3	14.7	5996	2.3	394.000	175.690	g500-S14000	m540-P132/M4	3	509
0.8	3371	4.1	6124	8.2	6124	1.3	14.4	6124	1.3	363.000	179.440	g500-S8000	m540-P132/M4	3	338
0.8	3420	4.0	6213	8.1	6213	3.1	14.2	6213	3.1	438.000	182.030	g500-S19000	m540-P132/M4	3	757
0.7	3706	3.7	6733	7.5	6733	2.0	13.1	6733	2.0	386.000	197.270	g500-S14000	m540-P132/M4	3	509
0.7	3805	3.6	6911	7.3	6911	1.2	12.7	6911	1.2	359.000	202.500	g500-S8000	m540-P132/M4	3	338
0.7	3827	3.6	6952	7.2	6952	2.7	12.7	6952	2.7	424.000	203.690	g500-S19000	m540-P132/M4	3	757
0.7	4090	3.4	7430	6.8	7430	1.8	11.9	7430	1.8	380.000	217.700	g500-S14000	m540-P132/M4	3	509
0.6	4216	3.3	7659	6.6	7659	1.0	11.5	7659	1.0	356.000	224.420	g500-S8000	m540-P132/M4	3	338
0.6	4254	3.2	7728	6.5	7728	2.5	11.4	7728	2.5	411.000	226.420	g500-S19000	m540-P132/M4	3	757
0.6	4654	3.0	8454	5.9	8454	2.3	10.4	8454	2.3	401.000	247.710	g500-S19000	m540-P132/M4	3	757
0.6	4656	3.0	8459	5.9	8459	1.6	10.4	8459	1.6	373.000	247.840	g500-S14000	m540-P132/M4	3	509
0.6	4747	2.9	8622	5.8	8622	0.9	10.2	8622	0.9	354.000	252.640	g500-S8000	m540-P132/M4	3	338
0.5	5144	2.7	9345	5.4	9345	1.5	9.4	9345	1.5	368.000	273.800	g500-S14000	m540-P132/M4	3	509
0.5	5266	2.6	9565	5.2	9565	2.0	9.2	9565	2.0	389.000	280.270	g500-S19000	m540-P132/M4	3	757
0.5	5354	2.6	9727	5.2	9727	0.8	9.1	9727	0.8	351.000	285.000	g500-S8000	m540-P132/M4	3	338
0.5	5729	2.4	10407	4.8	10407	1.3	8.5	10407	1.3	364.000	304.940	g500-S14000	m540-P132/M4	3	509
0.5	5838	2.4	10606	4.7	10606	1.8	8.3	10606	1.8	383.000	310.760	g500-S19000	m540-P132/M4	3	757
0.4	6444	2.1	11707	4.3	11707	1.2	7.5	11707	1.2	359.000	343.010	g500-S14000	m540-P132/M4	3	509
0.4	6526	2.1	11855	4.2	11855	1.6	7.4	11855	1.6	376.000	347.350	g500-S19000	m540-P132/M4	3	757
0.4	6914	2.0	12560	4.0	12560	1.1	7.0	12560	1.1	358.000	368.000	g500-S14000	m540-P132/M4	3	509



50 Hz: 7.5 kW

87 Hz: 13.1 kW

Inverter operation												Geared motor			
5 Hz -		- 20 Hz		50 Hz (1:10)			87 Hz (1:17.4)								
n ₂₂	M ₂₂	n ₂₁	M ₂	n ₂	M ₂	c	n ₂	M ₂	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		rpm	Nm		kgcm ²					kg
4.5	831	22.7	1511	45.3	1511	5.0	79.6	1511	4.2	595.000	32.330	g500-S8000	m540-P132/L4	3	338
4.2	911	21.0	1657	41.9	1657	4.8	73.7	1657	4.8	511.000	34.930	g500-S8000	m540-P132/L4	2	329
3.8	1006	19.1	1829	38.0	1829	4.4	66.8	1829	4.4	504.000	38.550	g500-S8000	m540-P132/L4	2	329
3.7	1014	18.6	1843	37.2	1843	4.3	65.3	1843	3.6	562.000	39.430	g500-S8000	m540-P132/L4	3	338
3.3	1145	16.7	2082	33.4	2082	3.8	58.7	2082	3.8	496.000	43.890	g500-S8000	m540-P132/L4	2	329
3.2	1165	16.2	2118	32.3	2118	3.8	56.8	2118	3.2	543.000	45.300	g500-S8000	m540-P132/L4	3	338
3.0	1265	15.2	2300	30.2	2300	3.5	53.1	2300	3.5	491.000	48.480	g500-S8000	m540-P132/L4	2	329
2.9	1286	14.7	2338	29.3	2338	3.4	51.5	2338	3.3	533.000	50.010	g500-S8000	m540-P132/L4	3	338
2.6	1449	13.0	2635	26.0	2635	3.0	45.7	2635	2.9	571.000	56.370	g500-S8000	m540-P132/L4	3	338
2.2	1665	11.4	3027	22.6	3027	4.5	39.8	3027	4.3	654.000	64.750	g500-S14000	m540-P132/L4	3	509
2.1	1768	10.7	3214	21.3	3214	2.5	37.4	3214	2.4	545.000	68.760	g500-S8000	m540-P132/L4	3	338
2.0	1898	10.0	3452	19.8	3452	3.9	34.9	3452	3.9	636.000	73.850	g500-S14000	m540-P132/L4	3	509
1.8	2030	9.3	3692	18.5	3692	2.2	32.6	3692	2.2	531.000	78.980	g500-S8000	m540-P132/L4	3	338
1.7	2242	8.4	4076	16.8	4076	2.0	29.5	4076	2.0	523.000	87.200	g500-S8000	m540-P132/L4	3	338
1.7	2253	8.4	4097	16.7	4097	4.6	29.4	4097	4.6	723.000	87.650	g500-S19000	m540-P132/L4	3	757
1.6	2314	8.2	4209	16.3	4209	3.2	28.6	4209	3.2	592.000	90.030	g500-S14000	m540-P132/L4	3	509
1.5	2550	7.4	4637	14.8	4637	1.7	26.0	4637	1.7	513.000	99.180	g500-S8000	m540-P132/L4	3	338
1.4	2627	7.2	4777	14.3	4777	2.9	25.2	4777	2.9	573.000	102.180	g500-S14000	m540-P132/L4	3	509
1.4	2712	7.0	4931	13.9	4931	3.9	24.4	4931	3.9	674.000	105.480	g500-S19000	m540-P132/L4	3	757
1.3	2861	6.6	5203	13.2	5203	2.6	23.1	5203	2.6	561.000	111.300	g500-S14000	m540-P132/L4	3	509
1.3	2888	6.5	5253	13.0	5253	1.5	22.9	5253	1.5	503.000	112.360	g500-S8000	m540-P132/L4	3	338
1.2	3015	6.3	5482	12.5	5482	3.5	22.0	5482	3.5	637.000	117.270	g500-S19000	m540-P132/L4	3	757
1.2	3226	5.9	5866	11.7	5866	2.3	20.5	5866	2.3	546.000	125.490	g500-S14000	m540-P132/L4	3	509
1.1	3258	5.8	5924	11.6	5924	1.4	20.3	5924	1.4	497.000	126.730	g500-S8000	m540-P132/L4	3	338
1.1	3328	5.7	6052	11.3	6052	3.1	19.9	6052	3.1	620.000	129.450	g500-S19000	m540-P132/L4	3	757
1.0	3619	5.2	6581	10.4	6581	2.1	18.3	6581	2.1	534.000	140.770	g500-S14000	m540-P132/L4	3	509
1.0	3636	5.2	6612	10.4	6612	1.2	18.2	6612	1.2	491.000	141.430	g500-S8000	m540-P132/L4	3	338
1.0	3735	5.1	6792	10.1	6792	2.8	17.7	6792	2.8	596.000	145.280	g500-S19000	m540-P132/L4	3	757
0.9	4056	4.7	7375	9.3	7375	1.8	16.3	7375	1.8	524.000	157.760	g500-S14000	m540-P132/L4	3	509
0.9	4085	4.6	7429	9.2	7429	1.1	16.2	7429	1.1	486.000	158.910	g500-S8000	m540-P132/L4	3	338
0.9	4232	4.5	7695	8.9	7695	2.5	15.6	7695	2.5	577.000	164.610	g500-S19000	m540-P132/L4	3	757
0.8	4516	4.2	8213	8.3	8213	1.7	14.7	8213	1.7	514.000	175.690	g500-S14000	m540-P132/L4	3	509
0.8	4613	4.1	8389	8.2	8389	1.0	14.4	8389	1.0	483.000	179.440	g500-S8000	m540-P132/L4	3	338
0.8	4679	4.0	8510	8.0	8510	2.2	14.1	8510	2.2	558.000	182.030	g500-S19000	m540-P132/L4	3	757
0.7	5071	3.7	9222	7.4	9222	1.5	13.1	9222	1.5	506.000	197.270	g500-S14000	m540-P132/L4	3	509
0.7	5206	3.6	9467	7.2	9467	0.9	12.7	9467	0.9	479.000	202.500	g500-S8000	m540-P132/L4	3	338
0.7	5236	3.6	9522	7.2	9522	2.0	12.6	9522	2.0	544.000	203.690	g500-S19000	m540-P132/L4	3	757
0.7	5596	3.4	10177	6.7	10177	1.3	11.8	10177	1.3	500.000	217.700	g500-S14000	m540-P132/L4	3	509
0.6	5821	3.2	10585	6.5	10585	1.8	11.4	10585	1.8	531.000	226.420	g500-S19000	m540-P132/L4	3	757
0.6	6368	3.0	11580	5.9	11580	1.6	10.4	11580	1.6	521.000	247.710	g500-S19000	m540-P132/L4	3	757
0.6	6371	3.0	11586	5.9	11586	1.2	10.4	11586	1.2	493.000	247.840	g500-S14000	m540-P132/L4	3	509
0.5	7039	2.7	12800	5.4	12800	1.1	9.4	12800	1.1	488.000	273.800	g500-S14000	m540-P132/L4	3	509
0.5	7205	2.6	13102	5.2	13102	1.5	9.2	13102	1.5	509.000	280.270	g500-S19000	m540-P132/L4	3	757
0.5	7839	2.4	14255	4.8	14255	1.0	8.4	14255	1.0	484.000	304.940	g500-S14000	m540-P132/L4	3	509
0.5	7989	2.4	14528	4.7	14528	1.3	8.3	14528	1.3	503.000	310.760	g500-S19000	m540-P132/L4	3	757
0.4	8818	2.1	16035	4.3	16035	0.9	7.5	16035	0.9	479.000	343.010	g500-S14000	m540-P132/L4	3	509
0.4	8929	2.1	16238	4.2	16238	1.2	7.4	16238	1.2	496.000	347.350	g500-S19000	m540-P132/L4	3	757

Technical data

Selection tables



50 Hz: 11 kW

87 Hz: 19.2 kW

Inverter operation												Geared motor			
5 Hz -		- 20 Hz		50 Hz (1:10)			87 Hz (1:17.4)								
n ₂₂	M ₂₂	n ₂₁	M ₂	n ₂	M ₂	c	n ₂	M ₂	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		rpm	Nm		kgcm ²					kg
5.8	947	29.7	1722	59.2	1722	4.7	104	1722	4.4	914.000	24.930	g500-S8000	m540-P160/M4	2	345
5.2	1062	26.5	1930	52.8	1930	4.2	92.5	1930	3.9	902.000	27.940	g500-S8000	m540-P160/M4	2	345
4.7	1182	23.8	2149	47.4	2149	3.7	83.1	2149	3.7	890.000	31.110	g500-S8000	m540-P160/M4	2	345
4.5	1211	22.9	2201	45.6	2201	3.4	80.0	2201	2.9	965.000	32.330	g500-S8000	m540-P160/M4	3	354
4.2	1327	21.2	2412	42.2	2412	3.3	74.0	2412	3.3	881.000	34.930	g500-S8000	m540-P160/M4	2	345
3.8	1465	19.2	2662	38.3	2662	3.0	67.1	2662	3.0	874.000	38.550	g500-S8000	m540-P160/M4	2	345
3.7	1477	18.8	2684	37.4	2684	3.0	65.6	2684	2.5	932.000	39.430	g500-S8000	m540-P160/M4	3	354
3.6	1529	18.1	2779	36.1	2779	4.9	63.3	2779	4.1	1056.000	40.820	g500-S14000	m540-P160/M4	3	525
3.5	1561	18.0	2836	35.9	2836	4.8	62.9	2836	4.8	910.000	41.070	g500-S14000	m540-P160/M4	2	510
3.3	1668	16.9	3031	33.6	3031	2.6	58.9	3031	2.6	866.000	43.890	g500-S8000	m540-P160/M4	2	345
3.2	1696	16.3	3083	32.6	3083	2.6	57.1	3083	2.2	913.000	45.300	g500-S8000	m540-P160/M4	3	354
3.2	1707	16.5	3103	32.8	3103	4.0	57.5	3103	4.0	898.000	44.930	g500-S14000	m540-P160/M4	2	510
3.1	1743	15.9	3169	31.7	3169	4.3	55.5	3169	3.6	1031.000	46.550	g500-S14000	m540-P160/M4	3	525
3.0	1842	15.3	3348	30.4	3348	2.4	53.3	3348	2.4	861.000	48.480	g500-S8000	m540-P160/M4	2	345
2.9	1873	14.8	3404	29.5	3404	2.4	51.7	3404	2.2	903.000	50.010	g500-S8000	m540-P160/M4	3	354
2.9	1896	14.6	3446	29.1	3446	4.0	51.1	3446	3.7	1132.000	50.630	g500-S14000	m540-P160/M4	3	525
2.6	2111	13.1	3837	26.2	3837	2.1	45.9	3837	2.0	941.000	56.370	g500-S8000	m540-P160/M4	3	354
2.3	2326	11.9	4228	23.7	4228	4.5	41.6	4228	4.3	1267.000	62.110	g500-S19000	m540-P160/M4	3	773
2.2	2425	11.4	4407	22.8	4407	3.1	39.9	4407	2.9	1024.000	64.750	g500-S14000	m540-P160/M4	3	525
2.1	2575	10.8	4680	21.5	4680	1.7	37.6	4680	1.6	915.000	68.760	g500-S8000	m540-P160/M4	3	354
2.0	2766	10.0	5027	20.0	5027	2.7	35.0	5027	2.7	1006.000	73.850	g500-S14000	m540-P160/M4	3	525
1.9	2918	9.5	5304	18.9	5304	3.6	33.2	5304	3.6	1153.000	77.920	g500-S19000	m540-P160/M4	3	773
1.8	2958	9.4	5376	18.7	5376	1.5	32.7	5376	1.5	901.000	78.980	g500-S8000	m540-P160/M4	3	354
1.7	3265	8.5	5935	16.9	5935	1.4	29.6	5935	1.4	893.000	87.200	g500-S8000	m540-P160/M4	3	354
1.7	3282	8.4	5966	16.8	5966	3.2	29.5	5966	3.2	1093.000	87.650	g500-S19000	m540-P160/M4	3	773
1.6	3371	8.2	6128	16.4	6128	2.2	28.7	6128	2.2	962.000	90.030	g500-S14000	m540-P160/M4	3	525
1.5	3714	7.5	6751	14.9	6751	1.2	26.1	6751	1.2	883.000	99.180	g500-S8000	m540-P160/M4	3	354
1.4	3826	7.2	6955	14.4	6955	2.0	25.3	6955	2.0	943.000	102.180	g500-S14000	m540-P160/M4	3	525
1.4	3950	7.0	7180	14.0	7180	2.7	24.5	7180	2.7	1044.000	105.480	g500-S19000	m540-P160/M4	3	773
1.3	4168	6.6	7576	13.3	7576	1.8	23.2	7576	1.8	931.000	111.300	g500-S14000	m540-P160/M4	3	525
1.3	4208	6.6	7648	13.1	7648	1.1	23.0	7648	1.1	873.000	112.360	g500-S8000	m540-P160/M4	3	354
1.2	4392	6.3	7982	12.6	7982	2.4	22.0	7982	2.4	1007.000	117.270	g500-S19000	m540-P160/M4	3	773
1.2	4699	5.9	8542	11.8	8542	1.6	20.6	8542	1.6	916.000	125.490	g500-S14000	m540-P160/M4	3	525
1.1	4746	5.8	8626	11.6	8626	0.9	20.4	8626	0.9	867.000	126.730	g500-S8000	m540-P160/M4	3	354
1.1	4848	5.7	8811	11.4	8811	2.2	20.0	8811	2.2	990.000	129.450	g500-S19000	m540-P160/M4	3	773
1.0	5272	5.3	9582	10.5	9582	1.4	18.4	9582	1.4	904.000	140.770	g500-S14000	m540-P160/M4	3	525
1.0	5296	5.2	9627	10.4	9627	0.8	18.3	9627	0.8	861.000	141.430	g500-S8000	m540-P160/M4	3	354
1.0	5440	5.1	9889	10.2	9889	1.9	17.8	9889	1.9	966.000	145.280	g500-S19000	m540-P160/M4	3	773
0.9	5908	4.7	10738	9.3	10738	1.3	16.4	10738	1.3	894.000	157.760	g500-S14000	m540-P160/M4	3	525
0.9	6164	4.5	11205	9.0	11205	1.7	15.7	11205	1.7	947.000	164.610	g500-S19000	m540-P160/M4	3	773
0.8	6579	4.2	11959	8.4	11959	1.1	14.7	11959	1.1	884.000	175.690	g500-S14000	m540-P160/M4	3	525
0.8	6817	4.1	12390	8.1	12390	1.5	14.2	12390	1.5	928.000	182.030	g500-S19000	m540-P160/M4	3	773
0.7	7387	3.8	13428	7.5	13428	1.0	13.1	13428	1.0	876.000	197.270	g500-S14000	m540-P160/M4	3	525
0.7	7628	3.6	13865	7.2	13865	1.4	12.7	13865	1.4	914.000	203.690	g500-S19000	m540-P160/M4	3	773
0.7	8152	3.4	14818	6.8	14818	0.9	11.9	14818	0.9	870.000	217.700	g500-S14000	m540-P160/M4	3	525
0.6	8479	3.3	15412	6.5	15412	1.2	11.4	15412	1.2	901.000	226.420	g500-S19000	m540-P160/M4	3	773
0.6	9276	3.0	16861	6.0	16861	1.1	10.4	16861	1.1	891.000	247.710	g500-S19000	m540-P160/M4	3	773
0.6	9281	3.0	16870	6.0	16870	0.8	10.4	16870	0.8	863.000	247.840	g500-S14000	m540-P160/M4	3	525
0.5	10496	2.6	19077	5.3	19077	1.0	9.2	19077	1.0	879.000	280.270	g500-S19000	m540-P160/M4	3	773
0.5	11637	2.4	21153	4.7	21153	0.9	8.3	21153	0.9	873.000	310.760	g500-S19000	m540-P160/M4	3	773



Technical data

Selection tables

Inverter operation												Geared motor			
5 Hz -		- 20 Hz		50 Hz (1:10)			87 Hz (1:17.4)							z	m
n ₂₂	M ₂₂	n ₂₁	M ₂	n ₂	M ₂	c	n ₂	M ₂	c	J	i				
rpm	Nm	rpm	Nm	rpm	Nm		rpm	Nm		kgcm ²					kg
0.4	13007	2.1	23643	4.2	23643	0.8	7.4	23643	0.8	866.000	347.350	g500-S19000	m540-P160/M4	3	773

Technical data

Selection tables



50 Hz: 15 kW

87 Hz: 26.3 kW

Inverter operation												Geared motor			
5 Hz -		- 20 Hz		50 Hz (1:10)			87 Hz (1:17.4)								
n ₂₂	M ₂₂	n ₂₁	M ₂	n ₂	M ₂	c	n ₂	M ₂	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		rpm	Nm		kgcm ²					kg
8.0	938	40.9	1705	81.5	1705	4.7	143	1705	4.5	1122.000	18.100	g500-S8000	m540-P160/L4	2	362
7.4	1021	37.5	1856	74.8	1856	4.3	131	1856	4.1	1107.000	19.710	g500-S8000	m540-P160/L4	2	362
6.5	1151	33.3	2093	66.4	2093	3.8	116	2093	3.6	1089.000	22.220	g500-S8000	m540-P160/L4	2	362
5.8	1291	29.7	2348	59.2	2348	3.4	104	2348	3.2	1074.000	24.930	g500-S8000	m540-P160/L4	2	362
5.2	1447	26.5	2632	52.8	2632	3.0	92.5	2632	2.9	1062.000	27.940	g500-S8000	m540-P160/L4	2	362
4.9	1547	24.8	2812	49.4	2812	4.8	86.6	2812	4.6	1123.000	29.860	g500-S14000	m540-P160/L4	2	527
4.7	1612	23.8	2930	47.4	2930	2.7	83.1	2930	2.7	1050.000	31.110	g500-S8000	m540-P160/L4	2	362
4.5	1630	23.2	2963	46.2	2963	4.6	81.0	2963	3.8	1345.000	31.920	g500-S14000	m540-P160/L4	3	542
4.5	1651	22.9	3001	45.6	3001	2.5	80.0	3001	2.1	1125.000	32.330	g500-S8000	m540-P160/L4	3	371
4.4	1711	22.4	3110	44.7	3110	4.4	78.3	3110	4.4	1101.000	33.020	g500-S14000	m540-P160/L4	2	527
4.2	1810	21.2	3290	42.2	3290	2.4	74.0	3290	2.4	1041.000	34.930	g500-S8000	m540-P160/L4	2	362
3.9	1914	20.0	3479	39.9	3479	3.9	70.0	3479	3.9	1085.000	36.940	g500-S14000	m540-P160/L4	2	527
3.8	1997	19.2	3631	38.3	3631	2.2	67.1	3631	2.2	1034.000	38.550	g500-S8000	m540-P160/L4	2	362
3.7	2013	18.8	3660	37.4	3660	2.2	65.6	3660	1.8	1092.000	39.430	g500-S8000	m540-P160/L4	3	371
3.6	2084	18.1	3789	36.1	3789	3.6	63.3	3789	3.0	1216.000	40.820	g500-S14000	m540-P160/L4	3	542
3.5	2128	18.0	3868	35.9	3868	3.5	62.9	3868	3.5	1070.000	41.070	g500-S14000	m540-P160/L4	2	527
3.3	2274	16.9	4134	33.6	4134	1.9	58.9	4134	1.9	1026.000	43.890	g500-S8000	m540-P160/L4	2	362
3.2	2313	16.3	4205	32.6	4205	1.9	57.1	4205	1.6	1073.000	45.300	g500-S8000	m540-P160/L4	3	371
3.2	2328	16.5	4232	32.8	4232	2.9	57.5	4232	2.9	1058.000	44.930	g500-S14000	m540-P160/L4	2	527
3.1	2377	15.9	4321	31.7	4321	3.2	55.5	4321	2.6	1191.000	46.550	g500-S14000	m540-P160/L4	3	542
3.0	2511	15.3	4566	30.4	4566	1.8	53.3	4566	1.8	1021.000	48.480	g500-S8000	m540-P160/L4	2	362
2.9	2553	14.8	4642	29.5	4642	1.7	51.7	4642	1.6	1063.000	50.010	g500-S8000	m540-P160/L4	3	371
2.9	2585	14.6	4700	29.1	4700	2.9	51.1	4700	2.7	1292.000	50.630	g500-S14000	m540-P160/L4	3	542
2.6	2878	13.1	5233	26.2	5233	1.5	45.9	5233	1.5	1101.000	56.370	g500-S8000	m540-P160/L4	3	371
2.3	3171	11.9	5766	23.7	5766	3.3	41.6	5766	3.1	1427.000	62.110	g500-S19000	m540-P160/L4	3	790
2.2	3306	11.4	6011	22.8	6011	2.3	39.9	6011	2.1	1184.000	64.750	g500-S14000	m540-P160/L4	3	542
2.1	3511	10.8	6383	21.5	6383	1.3	37.6	6383	1.2	1075.000	68.760	g500-S8000	m540-P160/L4	3	371
2.0	3770	10.0	6855	20.0	6855	2.0	35.0	6855	2.0	1166.000	73.850	g500-S14000	m540-P160/L4	3	542
1.9	3978	9.5	7233	18.9	7233	2.6	33.2	7233	2.6	1313.000	77.920	g500-S19000	m540-P160/L4	3	790
1.8	4032	9.4	7332	18.7	7332	1.1	32.7	7332	1.1	1061.000	78.980	g500-S8000	m540-P160/L4	3	371
1.7	4452	8.5	8095	16.9	8095	1.0	29.6	8095	1.0	1053.000	87.200	g500-S8000	m540-P160/L4	3	371
1.7	4475	8.4	8136	16.8	8136	2.3	29.5	8136	2.3	1253.000	87.650	g500-S19000	m540-P160/L4	3	790
1.6	4597	8.2	8357	16.4	8357	1.6	28.7	8357	1.6	1122.000	90.030	g500-S14000	m540-P160/L4	3	542
1.5	5064	7.5	9207	14.9	9207	0.9	26.1	9207	0.9	1043.000	99.180	g500-S8000	m540-P160/L4	3	371
1.4	5217	7.2	9485	14.4	9485	1.4	25.3	9485	1.4	1103.000	102.180	g500-S14000	m540-P160/L4	3	542
1.4	5385	7.0	9791	14.0	9791	1.9	24.5	9791	1.9	1204.000	105.480	g500-S19000	m540-P160/L4	3	790
1.3	5682	6.6	10332	13.3	10332	1.3	23.2	10332	1.3	1091.000	111.300	g500-S14000	m540-P160/L4	3	542
1.2	5987	6.3	10886	12.6	10886	1.8	22.0	10886	1.8	1167.000	117.270	g500-S19000	m540-P160/L4	3	790
1.2	6407	5.9	11649	11.8	11649	1.2	20.6	11649	1.2	1076.000	125.490	g500-S14000	m540-P160/L4	3	542
1.1	6609	5.7	12017	11.4	12017	1.6	20.0	12017	1.6	1150.000	129.450	g500-S19000	m540-P160/L4	3	790
1.0	7187	5.3	13067	10.5	13067	1.0	18.4	13067	1.0	1064.000	140.770	g500-S14000	m540-P160/L4	3	542
1.0	7417	5.1	13486	10.2	13486	1.4	17.8	13486	1.4	1126.000	145.280	g500-S19000	m540-P160/L4	3	790
0.9	8055	4.7	14644	9.3	14644	0.9	16.4	14644	0.9	1054.000	157.760	g500-S14000	m540-P160/L4	3	542
0.9	8404	4.5	15280	9.0	15280	1.2	15.7	15280	1.2	1107.000	164.610	g500-S19000	m540-P160/L4	3	790
0.8	8970	4.2	16309	8.4	16309	0.8	14.7	16309	0.8	1044.000	175.690	g500-S14000	m540-P160/L4	3	542
0.8	9294	4.1	16897	8.1	16897	1.1	14.2	16897	1.1	1088.000	182.030	g500-S19000	m540-P160/L4	3	790
0.7	10399	3.6	18908	7.2	18908	1.0	12.7	18908	1.0	1074.000	203.690	g500-S19000	m540-P160/L4	3	790
0.6	11560	3.3	21018	6.5	21018	0.9	11.4	21018	0.9	1061.000	226.420	g500-S19000	m540-P160/L4	3	790
0.6	12647	3.0	22994	6.0	22994	0.8	10.4	22994	0.8	1051.000	247.710	g500-S19000	m540-P160/L4	3	790



50 Hz: 18.5 kW

87 Hz: 32.2 kW

Inverter operation												Geared motor			
5 Hz -		- 20 Hz		50 Hz (1:10)			87 Hz (1:17.4)								
n ₂₂	M ₂₂	n ₂₁	M ₂	n ₂	M ₂	c	n ₂	M ₂	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		rpm	Nm		kgcm ²					kg
11.1	839	56.2	1525	112	1525	5.0	197	1525	4.2	1512.000	13.080	g500-S8000	m540-P180/M4	2	437
9.1	1022	46.1	1859	92.2	1859	4.3	162	1859	3.6	1456.000	15.940	g500-S8000	m540-P180/M4	2	437
8.0	1161	40.6	2110	81.2	2110	3.8	143	2110	3.6	1432.000	18.100	g500-S8000	m540-P180/M4	2	437
7.4	1264	37.3	2298	74.6	2298	3.5	131	2298	3.3	1417.000	19.710	g500-S8000	m540-P180/M4	2	437
6.5	1425	33.1	2591	66.2	2591	3.1	116	2591	2.9	1399.000	22.220	g500-S8000	m540-P180/M4	2	437
6.2	1506	31.3	2738	62.6	2738	5.0	110	2738	4.7	1486.000	23.480	g500-S14000	m540-P180/M4	2	602
5.8	1599	29.5	2907	59.0	2907	2.8	104	2907	2.6	1384.000	24.930	g500-S8000	m540-P180/M4	2	437
5.5	1690	27.9	3072	55.8	3072	4.4	97.9	3072	4.2	1457.000	26.350	g500-S14000	m540-P180/M4	2	602
5.2	1792	26.3	3258	52.6	3258	2.5	92.3	3258	2.3	1372.000	27.940	g500-S8000	m540-P180/M4	2	437
4.9	1915	24.6	3481	49.2	3481	3.9	86.4	3481	3.7	1433.000	29.860	g500-S14000	m540-P180/M4	2	602
4.7	1995	23.6	3627	47.3	3627	2.2	82.9	3627	2.2	1360.000	31.110	g500-S8000	m540-P180/M4	2	437
4.5	2017	23.0	3668	46.1	3668	3.7	80.8	3668	3.1	1655.000	31.920	g500-S14000	m540-P180/M4	3	617
4.5	2043	22.7	3715	45.5	3715	2.0	79.8	3715	1.7	1435.000	32.330	g500-S8000	m540-P180/M4	3	446
4.4	2118	22.3	3850	44.5	3850	3.5	78.1	3850	3.5	1411.000	33.020	g500-S14000	m540-P180/M4	2	602
4.3	2182	21.6	3968	43.2	3968	4.8	75.8	3968	4.8	1469.000	34.030	g500-S19000	m540-P180/M4	2	836
4.2	2240	21.0	4073	42.1	4073	2.0	73.9	4073	2.0	1351.000	34.930	g500-S8000	m540-P180/M4	2	437
3.9	2369	19.9	4307	39.8	4307	3.2	69.8	4307	3.2	1395.000	36.940	g500-S14000	m540-P180/M4	2	602
3.8	2432	19.4	4422	38.8	4422	4.3	68.0	4422	4.3	1443.000	37.930	g500-S19000	m540-P180/M4	2	836
3.7	2492	18.6	4531	37.3	4531	1.8	65.4	4531	1.5	1402.000	39.430	g500-S8000	m540-P180/M4	3	446
3.6	2567	18.1	4667	36.2	4667	4.1	63.5	4667	3.4	1778.000	40.610	g500-S19000	m540-P180/M4	3	865
3.6	2580	18.0	4691	36.0	4691	2.9	63.2	4691	2.4	1526.000	40.820	g500-S14000	m540-P180/M4	3	617
3.5	2634	17.9	4789	35.8	4789	2.8	62.8	4789	2.8	1380.000	41.070	g500-S14000	m540-P180/M4	2	602
3.2	2863	16.2	5205	32.5	5205	1.5	57.0	5205	1.3	1383.000	45.300	g500-S8000	m540-P180/M4	3	446
3.1	2942	15.8	5349	31.6	5349	2.5	55.4	5349	2.1	1501.000	46.550	g500-S14000	m540-P180/M4	3	617
2.9	3124	14.9	5680	29.7	5680	3.4	52.2	5680	3.2	1857.000	49.430	g500-S19000	m540-P180/M4	3	865
2.9	3161	14.7	5747	29.4	5747	1.4	51.6	5747	1.3	1373.000	50.010	g500-S8000	m540-P180/M4	3	446
2.9	3200	14.5	5818	29.0	5818	2.3	51.0	5818	2.2	1602.000	50.630	g500-S14000	m540-P180/M4	3	617
2.6	3563	13.0	6478	26.1	6478	1.2	45.8	6478	1.2	1411.000	56.370	g500-S8000	m540-P180/M4	3	446
2.3	3925	11.8	7137	23.7	7137	2.7	41.5	7137	2.5	1737.000	62.110	g500-S19000	m540-P180/M4	3	865
2.2	4092	11.4	7441	22.7	7441	1.8	39.8	7441	1.7	1494.000	64.750	g500-S14000	m540-P180/M4	3	617
2.1	4346	10.7	7901	21.4	7901	1.0	37.5	7901	1.0	1385.000	68.760	g500-S8000	m540-P180/M4	3	446
2.0	4667	10.0	8486	19.9	8486	1.6	34.9	8486	1.6	1476.000	73.850	g500-S14000	m540-P180/M4	3	617
1.9	4925	9.4	8954	18.9	8954	2.1	33.1	8954	2.1	1623.000	77.920	g500-S19000	m540-P180/M4	3	865
1.8	4992	9.3	9076	18.6	9076	0.9	32.7	9076	0.9	1371.000	78.980	g500-S8000	m540-P180/M4	3	446
1.7	5540	8.4	10072	16.8	10072	1.9	29.4	10072	1.9	1563.000	87.650	g500-S19000	m540-P180/M4	3	865
1.6	5690	8.2	10345	16.3	10345	1.3	28.7	10345	1.3	1432.000	90.030	g500-S14000	m540-P180/M4	3	617
1.4	6458	7.2	11742	14.4	11742	1.2	25.2	11742	1.2	1413.000	102.180	g500-S14000	m540-P180/M4	3	617
1.4	6667	7.0	12121	13.9	12121	1.6	24.5	12121	1.6	1514.000	105.480	g500-S19000	m540-P180/M4	3	865
1.3	7034	6.6	12790	13.2	12790	1.1	23.2	12790	1.1	1401.000	111.300	g500-S14000	m540-P180/M4	3	617
1.2	7412	6.3	13476	12.5	13476	1.4	22.0	13476	1.4	1477.000	117.270	g500-S19000	m540-P180/M4	3	865
1.2	7931	5.9	14420	11.7	14420	0.9	20.6	14420	0.9	1386.000	125.490	g500-S14000	m540-P180/M4	3	617
1.1	8181	5.7	14875	11.4	14875	1.3	19.9	14875	1.3	1460.000	129.450	g500-S19000	m540-P180/M4	3	865
1.0	8897	5.2	16176	10.4	16176	0.8	18.3	16176	0.8	1374.000	140.770	g500-S14000	m540-P180/M4	3	617
1.0	9182	5.1	16694	10.1	16694	1.1	17.8	16694	1.1	1436.000	145.280	g500-S19000	m540-P180/M4	3	865
0.9	10404	4.5	18916	8.9	18916	1.0	15.7	18916	1.0	1417.000	164.610	g500-S19000	m540-P180/M4	3	865
0.8	11505	4.0	20917	8.1	20917	0.9	14.2	20917	0.9	1398.000	182.030	g500-S19000	m540-P180/M4	3	865
0.7	12873	3.6	23406	7.2	23406	0.8	12.7	23406	0.8	1384.000	203.690	g500-S19000	m540-P180/M4	3	865

Technical data

Selection tables



50 Hz: 22 kW

87 Hz: 38.5 kW

Inverter operation												Geared motor			
5 Hz -		- 20 Hz		50 Hz (1:10)			87 Hz (1:17.4)								
n ₂₂	M ₂₂	n ₂₁	M ₂	n ₂	M ₂	c	n ₂	M ₂	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		rpm	Nm		kgcm ²					kg
12.6	874	64.1	1590	128	1590	4.6	225	1590	3.8	1641.000	11.470	g500-S8000	m540-P180/L4	2	442
11.1	997	56.2	1813	112	1813	4.2	197	1813	3.5	1612.000	13.080	g500-S8000	m540-P180/L4	2	442
9.1	1215	46.1	2209	92.2	2209	3.6	162	2209	3.0	1556.000	15.940	g500-S8000	m540-P180/L4	2	442
8.0	1380	40.6	2509	81.2	2509	3.2	143	2509	3.0	1532.000	18.100	g500-S8000	m540-P180/L4	2	442
7.4	1503	37.3	2732	74.6	2732	2.9	131	2732	2.8	1517.000	19.710	g500-S8000	m540-P180/L4	2	442
6.8	1622	34.6	2948	69.1	2948	4.6	121	2948	4.4	1606.000	21.270	g500-S14000	m540-P180/L4	2	607
6.5	1694	33.1	3080	66.2	3080	2.6	116	3080	2.5	1499.000	22.220	g500-S8000	m540-P180/L4	2	442
6.2	1790	31.3	3255	62.6	3255	4.2	110	3255	4.0	1586.000	23.480	g500-S14000	m540-P180/L4	2	607
5.8	1901	29.5	3456	59.0	3456	2.3	104	3456	2.2	1484.000	24.930	g500-S8000	m540-P180/L4	2	442
5.5	2009	27.9	3652	55.8	3652	3.7	97.9	3652	3.5	1557.000	26.350	g500-S14000	m540-P180/L4	2	607
5.2	2130	26.3	3873	52.6	3873	2.1	92.3	3873	2.0	1472.000	27.940	g500-S8000	m540-P180/L4	2	442
4.9	2276	24.6	4139	49.2	4139	3.3	86.4	4139	3.1	1533.000	29.860	g500-S14000	m540-P180/L4	2	607
4.8	2318	24.2	4215	48.3	4215	4.5	84.8	4215	4.5	1602.000	30.410	g500-S19000	m540-P180/L4	2	841
4.7	2372	23.6	4312	47.3	4312	1.9	82.9	4312	1.9	1460.000	31.110	g500-S8000	m540-P180/L4	2	442
4.5	2398	23.0	4361	46.1	4361	3.1	80.8	4361	2.6	1755.000	31.920	g500-S14000	m540-P180/L4	3	622
4.5	2428	22.7	4415	45.5	4415	4.3	79.8	4415	3.6	2021.000	32.320	g500-S19000	m540-P180/L4	3	870
4.5	2429	22.7	4417	45.5	4417	1.7	79.8	4417	1.4	1535.000	32.330	g500-S8000	m540-P180/L4	3	451
4.4	2517	22.3	4577	44.5	4577	3.0	78.1	4577	3.0	1511.000	33.020	g500-S14000	m540-P180/L4	2	607
4.3	2594	21.6	4717	43.2	4717	4.0	75.8	4717	4.0	1569.000	34.030	g500-S19000	m540-P180/L4	2	841
4.2	2663	21.0	4842	42.1	4842	1.7	73.9	4842	1.7	1451.000	34.930	g500-S8000	m540-P180/L4	2	442
3.9	2816	19.9	5120	39.8	5120	2.7	69.8	5120	2.7	1495.000	36.940	g500-S14000	m540-P180/L4	2	607
3.8	2892	19.4	5258	38.8	5258	3.6	68.0	5258	3.6	1543.000	37.930	g500-S19000	m540-P180/L4	2	841
3.7	2963	18.6	5387	37.3	5387	1.5	65.4	5387	1.2	1502.000	39.430	g500-S8000	m540-P180/L4	3	451
3.6	3051	18.1	5548	36.2	5548	3.4	63.5	5548	2.9	1878.000	40.610	g500-S19000	m540-P180/L4	3	870
3.6	3067	18.0	5577	36.0	5577	2.4	63.2	5577	2.0	1626.000	40.820	g500-S14000	m540-P180/L4	3	622
3.5	3131	17.9	5693	35.8	5693	2.4	62.8	5693	2.4	1480.000	41.070	g500-S14000	m540-P180/L4	2	607
3.2	3404	16.2	6189	32.5	6189	1.3	57.0	6189	1.1	1483.000	45.300	g500-S8000	m540-P180/L4	3	451
3.1	3498	15.8	6359	31.6	6359	2.1	55.4	6359	1.8	1601.000	46.550	g500-S14000	m540-P180/L4	3	622
2.9	3714	14.9	6753	29.7	6753	2.8	52.2	6753	2.7	1957.000	49.430	g500-S19000	m540-P180/L4	3	870
2.9	3758	14.7	6832	29.4	6832	1.2	51.6	6832	1.1	1473.000	50.010	g500-S8000	m540-P180/L4	3	451
2.9	3804	14.5	6917	29.0	6917	2.0	51.0	6917	1.9	1702.000	50.630	g500-S14000	m540-P180/L4	3	622
2.6	4236	13.0	7701	26.1	7701	1.0	45.8	7701	1.0	1511.000	56.370	g500-S8000	m540-P180/L4	3	451
2.3	4667	11.8	8485	23.7	8485	2.2	41.5	8485	2.1	1837.000	62.110	g500-S19000	m540-P180/L4	3	870
2.2	4865	11.4	8846	22.7	8846	1.5	39.8	8846	1.5	1594.000	64.750	g500-S14000	m540-P180/L4	3	622
2.1	5166	10.7	9393	21.4	9393	0.9	37.5	9393	0.8	1485.000	68.760	g500-S8000	m540-P180/L4	3	451
2.0	5549	10.0	10089	19.9	10089	1.4	34.9	10089	1.4	1576.000	73.850	g500-S14000	m540-P180/L4	3	622
1.9	5855	9.4	10645	18.9	10645	1.8	33.1	10645	1.8	1723.000	77.920	g500-S19000	m540-P180/L4	3	870
1.7	6586	8.4	11974	16.8	11974	1.6	29.4	11974	1.6	1663.000	87.650	g500-S19000	m540-P180/L4	3	870
1.6	6765	8.2	12299	16.3	12299	1.1	28.7	12299	1.1	1532.000	90.030	g500-S14000	m540-P180/L4	3	622
1.4	7678	7.2	13959	14.4	13959	1.0	25.2	13959	1.0	1513.000	102.180	g500-S14000	m540-P180/L4	3	622
1.4	7925	7.0	14410	13.9	14410	1.3	24.5	14410	1.3	1614.000	105.480	g500-S19000	m540-P180/L4	3	870
1.3	8363	6.6	15205	13.2	15205	0.9	23.2	15205	0.9	1501.000	111.300	g500-S14000	m540-P180/L4	3	622
1.2	8811	6.3	16021	12.5	16021	1.2	22.0	16021	1.2	1577.000	117.270	g500-S19000	m540-P180/L4	3	870
1.1	9727	5.7	17684	11.4	17684	1.1	19.9	17684	1.1	1560.000	129.450	g500-S19000	m540-P180/L4	3	870
1.0	10916	5.1	19847	10.1	19847	1.0	17.8	19847	1.0	1536.000	145.280	g500-S19000	m540-P180/L4	3	870
0.9	12368	4.5	22488	8.9	22488	0.8	15.7	22488	0.8	1517.000	164.610	g500-S19000	m540-P180/L4	3	870



50 Hz: 30 kW

87 Hz: 52.5 kW

Inverter operation												Geared motor			
5 Hz -		- 20 Hz		50 Hz (1:10)			87 Hz (1:17.4)								
n ₂₂	M ₂₂	n ₂₁	M ₂	n ₂	M ₂	c	n ₂	M ₂	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		rpm	Nm		kgcm ²					kg
21.8	690	111	1255	221	1255	4.5	389	1255	3.8	2477.000	6.640	g500-S8000	m540-P200/M4	2	512
17.9	841	90.9	1529	182	1529	3.7	319	1529	3.1	2400.000	8.090	g500-S8000	m540-P200/M4	2	512
16.2	933	81.9	1696	164	1696	4.0	288	1696	3.3	2579.000	8.970	g500-S8000	m540-P200/M4	2	512
12.6	1193	64.1	2168	128	2168	3.4	225	2168	2.8	2441.000	11.470	g500-S8000	m540-P200/M4	2	512
11.1	1360	56.2	2473	112	2473	3.1	197	2473	2.6	2412.000	13.080	g500-S8000	m540-P200/M4	2	512
10.3	1469	52.0	2671	104	2671	4.8	183	2671	4.0	2586.000	14.130	g500-S14000	m540-P200/M4	2	677
9.1	1653	46.2	3006	92.5	3006	4.5	162	3006	3.8	2514.000	15.900	g500-S14000	m540-P200/M4	2	677
9.1	1657	46.1	3014	92.2	3014	2.7	162	3014	2.2	2356.000	15.940	g500-S8000	m540-P200/M4	2	512
8.0	1882	40.6	3422	81.2	3422	2.3	143	3422	2.2	2332.000	18.100	g500-S8000	m540-P200/M4	2	512
7.6	1989	38.4	3617	76.8	3617	3.8	135	3617	3.6	2449.000	19.130	g500-S14000	m540-P200/M4	2	677
7.4	2049	37.3	3726	74.6	3726	2.2	131	3726	2.0	2317.000	19.710	g500-S8000	m540-P200/M4	2	512
6.8	2212	34.6	4021	69.1	4021	3.4	121	4021	3.2	2406.000	21.270	g500-S14000	m540-P200/M4	2	677
6.6	2297	33.3	4176	66.5	4176	4.6	117	4176	4.3	2521.000	22.090	g500-S19000	m540-P200/M4	2	911
6.5	2310	33.1	4201	66.2	4201	1.9	116	4201	1.8	2299.000	22.220	g500-S8000	m540-P200/M4	2	512
6.2	2441	31.3	4439	62.6	4439	3.1	110	4439	2.9	2386.000	23.480	g500-S14000	m540-P200/M4	2	677
5.8	2584	29.6	4698	59.2	4698	4.0	104	4698	3.8	2469.000	24.850	g500-S19000	m540-P200/M4	2	911
5.8	2592	29.5	4713	59.0	4713	1.7	104	4713	1.6	2284.000	24.930	g500-S8000	m540-P200/M4	2	512
5.5	2740	27.9	4982	55.8	4982	2.7	97.9	4982	2.6	2357.000	26.350	g500-S14000	m540-P200/M4	2	677
5.3	2825	27.1	5137	54.1	5137	3.7	95.0	5137	3.5	2441.000	27.170	g500-S19000	m540-P200/M4	2	911
5.2	2905	26.3	5282	52.6	5282	1.5	92.3	5282	1.4	2272.000	27.940	g500-S8000	m540-P200/M4	2	512
4.9	3105	24.6	5645	49.2	5645	2.4	86.4	5645	2.3	2333.000	29.860	g500-S14000	m540-P200/M4	2	677
4.8	3162	24.2	5749	48.3	5749	3.3	84.8	5749	3.3	2402.000	30.410	g500-S19000	m540-P200/M4	2	911
4.7	3235	23.6	5881	47.3	5881	1.4	82.9	5881	1.4	2260.000	31.110	g500-S8000	m540-P200/M4	2	512
4.5	3271	23.0	5947	46.1	5947	2.3	80.8	5947	1.9	2555.000	31.920	g500-S14000	m540-P200/M4	3	692
4.5	3312	22.7	6022	45.5	6022	3.2	79.8	6022	2.6	2821.000	32.320	g500-S19000	m540-P200/M4	3	940
4.5	3313	22.7	6024	45.5	6024	1.3	79.8	6024	1.0	2335.000	32.330	g500-S8000	m540-P200/M4	3	521
4.4	3433	22.3	6243	44.5	6243	2.2	78.1	6243	2.2	2311.000	33.020	g500-S14000	m540-P200/M4	2	677
4.3	3538	21.6	6433	43.2	6433	3.0	75.8	6433	3.0	2369.000	34.030	g500-S19000	m540-P200/M4	2	911
3.9	3841	19.9	6984	39.8	6984	2.0	69.8	6984	2.0	2295.000	36.940	g500-S14000	m540-P200/M4	2	677
3.8	3944	19.4	7171	38.8	7171	2.7	68.0	7171	2.7	2343.000	37.930	g500-S19000	m540-P200/M4	2	911
3.7	4041	18.6	7347	37.3	7347	1.1	65.4	7347	0.9	2302.000	39.430	g500-S8000	m540-P200/M4	3	521
3.6	4162	18.1	7567	36.2	7567	2.5	63.5	7567	2.1	2678.000	40.610	g500-S19000	m540-P200/M4	3	940
3.6	4183	18.0	7606	36.0	7606	1.8	63.2	7606	1.5	2426.000	40.820	g500-S14000	m540-P200/M4	3	692
3.2	4642	16.2	8440	32.5	8440	1.0	-	-	-	2283.000	45.300	g500-S8000	m540-P200/M4	3	521
3.1	4770	15.8	8673	31.6	8673	1.6	55.4	8673	1.3	2401.000	46.550	g500-S14000	m540-P200/M4	3	692
2.9	5066	14.9	9210	29.7	9210	2.1	52.2	9210	2.0	2757.000	49.430	g500-S19000	m540-P200/M4	3	940
2.9	5125	14.7	9318	29.4	9318	0.9	51.6	9318	0.8	2273.000	50.010	g500-S8000	m540-P200/M4	3	521
2.9	5189	14.5	9434	29.0	9434	1.4	51.0	9434	1.4	2502.000	50.630	g500-S14000	m540-P200/M4	3	692
2.3	6365	11.8	11573	23.7	11573	1.6	41.5	11573	1.6	2637.000	62.110	g500-S19000	m540-P200/M4	3	940
2.2	6636	11.4	12065	22.7	12065	1.1	39.8	12065	1.1	2394.000	64.750	g500-S14000	m540-P200/M4	3	692
2.0	7568	10.0	13760	19.9	13760	1.0	34.9	13760	1.0	2376.000	73.850	g500-S14000	m540-P200/M4	3	692
1.9	7985	9.4	14518	18.9	14518	1.3	33.1	14518	1.3	2523.000	77.920	g500-S19000	m540-P200/M4	3	940
1.7	8982	8.4	16331	16.8	16331	1.2	29.4	16331	1.2	2463.000	87.650	g500-S19000	m540-P200/M4	3	940
1.6	9226	8.2	16775	16.3	16775	0.8	28.7	16775	0.8	2332.000	90.030	g500-S14000	m540-P200/M4	3	692
1.4	10809	7.0	19653	13.9	19653	1.0	24.5	19653	1.0	2414.000	105.480	g500-S19000	m540-P200/M4	3	940
1.2	12018	6.3	21850	12.5	21850	0.9	22.0	21850	0.9	2377.000	117.270	g500-S19000	m540-P200/M4	3	940

Technical data

Selection tables



50 Hz: 37 kW

87 Hz: 64.8 kW

Inverter operation												Geared motor			
5 Hz -		- 20 Hz		50 Hz (1:10)			87 Hz (1:17.4)								
n ₂₂	M ₂₂	n ₂₁	M ₂	n ₂	M ₂	c	n ₂	M ₂	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		rpm	Nm		kgcm ²					kg
24.9	740	127	1350	254	1350	4.2	445	1350	3.5	4525.000	5.820	g500-S8000	m540-P225/M4	2	557
21.8	844	111	1540	223	1540	3.7	390	1540	3.1	4477.000	6.640	g500-S8000	m540-P225/M4	2	557
20.2	912	103	1665	206	1665	5.0	360	1665	4.2	4689.000	7.180	g500-S14000	m540-P225/M4	2	722
18.0	1026	91.7	1872	183	1872	4.5	321	1872	3.7	4596.000	8.070	g500-S14000	m540-P225/M4	2	722
17.9	1028	91.5	1876	183	1876	3.0	320	1876	2.5	4400.000	8.090	g500-S8000	m540-P225/M4	2	557
16.2	1140	82.5	2080	165	2080	3.3	289	2080	2.7	4579.000	8.970	g500-S8000	m540-P225/M4	2	557
16.2	1140	82.5	2080	165	2080	5.0	289	2080	4.2	4910.000	8.970	g500-S14000	m540-P225/M4	2	722
12.9	1431	65.7	2611	131	2611	4.5	230	2611	3.7	4734.000	11.260	g500-S14000	m540-P225/M4	2	722
12.6	1458	64.5	2660	129	2660	2.8	226	2660	2.3	4441.000	11.470	g500-S8000	m540-P225/M4	2	557
11.1	1662	56.6	3034	113	3034	2.5	198	3034	2.1	4412.000	13.080	g500-S8000	m540-P225/M4	2	557
10.3	1796	52.4	3277	105	3277	3.9	183	3277	3.3	4586.000	14.130	g500-S14000	m540-P225/M4	2	722
9.1	2020	46.5	3688	93.0	3688	3.7	163	3688	3.1	4514.000	15.900	g500-S14000	m540-P225/M4	2	722
9.1	2026	46.4	3697	92.7	3697	2.2	162	3697	1.8	4356.000	15.940	g500-S8000	m540-P225/M4	2	557
8.0	2300	40.9	4198	81.7	4198	1.9	143	4198	1.8	4332.000	18.100	g500-S8000	m540-P225/M4	2	557
7.7	2383	39.5	4349	78.8	4349	4.4	138	4349	4.1	4610.000	18.750	g500-S19000	m540-P225/M4	2	956
7.6	2431	38.7	4437	77.3	4437	3.1	135	4437	2.9	4449.000	19.130	g500-S14000	m540-P225/M4	2	722
7.4	2505	37.5	4571	75.0	4571	1.8	131	4571	1.7	4317.000	19.710	g500-S8000	m540-P225/M4	2	557
6.8	2703	34.8	4933	69.5	4933	2.8	122	4933	2.6	4406.000	21.270	g500-S14000	m540-P225/M4	2	722
6.6	2807	33.5	5123	66.9	5123	3.7	117	5123	3.5	4521.000	22.090	g500-S19000	m540-P225/M4	2	956
6.5	2824	33.3	5153	66.5	5153	1.6	117	5153	1.5	4299.000	22.220	g500-S8000	m540-P225/M4	2	557
6.2	2984	31.5	5446	62.9	5446	2.5	110	5446	2.4	4386.000	23.480	g500-S14000	m540-P225/M4	2	722
5.8	3158	29.8	5763	59.5	5763	3.3	104	5763	3.1	4469.000	24.850	g500-S19000	m540-P225/M4	2	956
5.8	3168	29.7	5782	59.3	5782	1.4	104	5782	1.3	4284.000	24.930	g500-S8000	m540-P225/M4	2	557
5.5	3348	28.1	6111	56.1	6111	2.2	98.2	6111	2.1	4357.000	26.350	g500-S14000	m540-P225/M4	2	722
5.3	3453	27.2	6301	54.4	6301	3.0	95.3	6301	2.9	4441.000	27.170	g500-S19000	m540-P225/M4	2	956
5.2	3550	26.5	6480	52.9	6480	1.2	92.6	6480	1.2	4272.000	27.940	g500-S8000	m540-P225/M4	2	557
4.9	3794	24.8	6925	49.5	6925	2.0	86.7	6925	1.9	4333.000	29.860	g500-S14000	m540-P225/M4	2	722
4.8	3864	24.3	7053	48.6	7053	2.7	85.1	7053	2.7	4402.000	30.410	g500-S19000	m540-P225/M4	2	956
4.5	3998	23.2	7296	46.3	7296	1.9	81.1	7296	1.6	4555.000	31.920	g500-S14000	m540-P225/M4	3	737
4.5	4048	22.9	7388	45.7	7388	2.6	80.1	7388	2.1	4821.000	32.320	g500-S19000	m540-P225/M4	3	985
4.5	4049	22.9	7390	45.7	7390	1.0	80.0	7390	0.9	4335.000	32.330	g500-S8000	m540-P225/M4	3	566
4.4	4196	22.4	7658	44.8	7658	1.8	78.4	7658	1.8	4311.000	33.020	g500-S14000	m540-P225/M4	2	722
4.3	4324	21.7	7892	43.4	7892	2.4	76.1	7892	2.4	4369.000	34.030	g500-S19000	m540-P225/M4	2	956
3.8	4820	19.5	8797	39.0	8797	2.2	68.2	8797	2.2	4343.000	37.930	g500-S19000	m540-P225/M4	2	956
3.7	4938	18.8	9013	37.5	9013	0.9	-	-	-	4302.000	39.430	g500-S8000	m540-P225/M4	3	566
3.6	5086	18.2	9283	36.4	9283	2.1	63.7	9283	1.7	4678.000	40.610	g500-S19000	m540-P225/M4	3	985
3.6	5112	18.1	9331	36.2	9331	1.5	63.4	9331	1.2	4426.000	40.820	g500-S14000	m540-P225/M4	3	737
3.1	5830	15.9	10640	31.8	10640	1.3	55.6	10640	1.1	4401.000	46.550	g500-S14000	m540-P225/M4	3	737
2.9	6190	15.0	11299	29.9	11299	1.7	52.4	11299	1.6	4757.000	49.430	g500-S19000	m540-P225/M4	3	985
2.9	6341	14.6	11573	29.2	11573	1.2	51.1	11573	1.1	4502.000	50.630	g500-S14000	m540-P225/M4	3	737
2.3	7778	11.9	14197	23.8	14197	1.3	41.7	14197	1.3	4637.000	62.110	g500-S19000	m540-P225/M4	3	985
2.2	8109	11.4	14801	22.8	14801	0.9	40.0	14801	0.9	4394.000	64.750	g500-S14000	m540-P225/M4	3	737
2.0	9249	10.0	16881	20.0	16881	0.8	35.0	16881	0.8	4376.000	73.850	g500-S14000	m540-P225/M4	3	737
1.9	9758	9.5	17811	19.0	17811	1.1	33.2	17811	1.1	4523.000	77.920	g500-S19000	m540-P225/M4	3	985
1.7	10977	8.4	20035	16.9	20035	1.0	29.5	20035	1.0	4463.000	87.650	g500-S19000	m540-P225/M4	3	985



50 Hz: 45 kW

87 Hz: 78.7 kW

Inverter operation												Geared motor			
5 Hz -		- 20 Hz		50 Hz (1:10)			87 Hz (1:17.4)								
n ₂₂	M ₂₂	n ₂₁	M ₂	n ₂	M ₂	c	n ₂	M ₂	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		rpm	Nm		kgcm ²					kg
31.9	706	163	1284	325	1284	4.4	569	1284	3.7	5217.000	4.550	g500-S8000	m540-P225/L4	2	592
24.9	903	127	1643	254	1643	3.5	445	1643	2.9	5025.000	5.820	g500-S8000	m540-P225/L4	2	592
21.8	1031	111	1874	223	1874	3.0	390	1874	2.5	4977.000	6.640	g500-S8000	m540-P225/L4	2	592
20.2	1114	103	2027	206	2027	4.1	360	2027	3.4	5189.000	7.180	g500-S14000	m540-P225/L4	2	757
18.0	1253	91.7	2278	183	2278	3.7	321	2278	3.1	5096.000	8.070	g500-S14000	m540-P225/L4	2	757
17.9	1256	91.5	2284	183	2284	2.5	320	2284	2.1	4900.000	8.090	g500-S8000	m540-P225/L4	2	592
16.2	1392	82.5	2532	165	2532	2.7	289	2532	2.2	5079.000	8.970	g500-S8000	m540-P225/L4	2	592
16.2	1392	82.5	2532	165	2532	4.1	289	2532	3.4	5410.000	8.970	g500-S14000	m540-P225/L4	2	757
12.9	1748	65.7	3178	131	3178	3.7	230	3178	3.1	5234.000	11.260	g500-S14000	m540-P225/L4	2	757
12.6	1780	64.5	3238	129	3238	2.3	226	3238	1.9	4941.000	11.470	g500-S8000	m540-P225/L4	2	592
11.1	2030	56.6	3692	113	3692	2.1	198	3692	1.7	4912.000	13.080	g500-S8000	m540-P225/L4	2	592
10.9	2058	55.8	3743	112	3743	4.7	195	3743	3.9	5387.000	13.260	g500-S19000	m540-P225/L4	2	991
10.3	2193	52.4	3988	105	3988	3.2	183	3988	2.7	5086.000	14.130	g500-S14000	m540-P225/L4	2	757
9.1	2468	46.5	4488	93.0	4488	3.0	163	4488	2.5	5014.000	15.900	g500-S14000	m540-P225/L4	2	757
9.1	2474	46.4	4499	92.7	4499	1.8	162	4499	1.5	4856.000	15.940	g500-S8000	m540-P225/L4	2	592
8.9	2516	45.7	4576	91.2	4576	4.2	160	4576	3.5	5195.000	16.210	g500-S19000	m540-P225/L4	2	991
8.0	2809	40.9	5109	81.7	5109	1.6	143	5109	1.5	4832.000	18.100	g500-S8000	m540-P225/L4	2	592
7.7	2910	39.5	5293	78.8	5293	3.6	138	5293	3.4	5110.000	18.750	g500-S19000	m540-P225/L4	2	991
7.6	2969	38.7	5400	77.3	5400	2.5	135	5400	2.4	4949.000	19.130	g500-S14000	m540-P225/L4	2	757
7.4	3059	37.5	5564	75.0	5564	1.4	131	5564	1.4	4817.000	19.710	g500-S8000	m540-P225/L4	2	592
6.8	3301	34.8	6004	69.5	6004	2.3	122	6004	2.2	4906.000	21.270	g500-S14000	m540-P225/L4	2	757
6.6	3428	33.5	6235	66.9	6235	3.1	117	6235	2.9	5021.000	22.090	g500-S19000	m540-P225/L4	2	991
6.5	3449	33.3	6272	66.5	6272	1.3	117	6272	1.2	4799.000	22.220	g500-S8000	m540-P225/L4	2	592
6.2	3644	31.5	6628	62.9	6628	2.1	110	6628	1.9	4886.000	23.480	g500-S14000	m540-P225/L4	2	757
5.8	3857	29.8	7014	59.5	7014	2.7	104	7014	2.6	4969.000	24.850	g500-S19000	m540-P225/L4	2	991
5.8	3869	29.7	7037	59.3	7037	1.1	104	7037	1.1	4784.000	24.930	g500-S8000	m540-P225/L4	2	592
5.5	4090	28.1	7438	56.1	7438	1.8	98.2	7438	1.7	4857.000	26.350	g500-S14000	m540-P225/L4	2	757
5.3	4217	27.2	7669	54.4	7669	2.5	95.3	7669	2.4	4941.000	27.170	g500-S19000	m540-P225/L4	2	991
5.2	4336	26.5	7887	52.9	7887	1.0	92.6	7887	1.0	4772.000	27.940	g500-S8000	m540-P225/L4	2	592
4.9	4634	24.8	8429	49.5	8429	1.6	86.7	8429	1.5	4833.000	29.860	g500-S14000	m540-P225/L4	2	757
4.8	4720	24.3	8584	48.6	8584	2.2	85.1	8584	2.2	4902.000	30.410	g500-S19000	m540-P225/L4	2	991
4.5	4883	23.2	8880	46.3	8880	1.5	81.1	8880	1.3	5055.000	31.920	g500-S14000	m540-P225/L4	3	772
4.5	4944	22.9	8991	45.7	8991	2.1	80.1	8991	1.8	5321.000	32.320	g500-S19000	m540-P225/L4	3	1020
4.5	4945	22.9	8994	45.7	8994	0.8	-	-	-	4835.000	32.330	g500-S8000	m540-P225/L4	3	601
4.4	5125	22.4	9321	44.8	9321	1.5	78.4	9321	1.5	4811.000	33.020	g500-S14000	m540-P225/L4	2	757
4.3	5282	21.7	9606	43.4	9606	2.0	76.1	9606	2.0	4869.000	34.030	g500-S19000	m540-P225/L4	2	991
3.8	5887	19.5	10707	39.0	10707	1.8	68.2	10707	1.8	4843.000	37.930	g500-S19000	m540-P225/L4	2	991
3.6	6212	18.2	11298	36.4	11298	1.7	63.7	11298	1.4	5178.000	40.610	g500-S19000	m540-P225/L4	3	1020
3.6	6244	18.1	11356	36.2	11356	1.2	63.4	11356	1.0	4926.000	40.820	g500-S14000	m540-P225/L4	3	772
3.1	7120	15.9	12950	31.8	12950	1.1	55.6	12950	0.9	4901.000	46.550	g500-S14000	m540-P225/L4	3	772
2.9	7561	15.0	13751	29.9	13751	1.4	52.4	13751	1.3	5257.000	49.430	g500-S19000	m540-P225/L4	3	1020
2.9	7744	14.6	14085	29.2	14085	1.0	51.1	14085	0.9	5002.000	50.630	g500-S14000	m540-P225/L4	3	772
2.3	9500	11.9	17279	23.8	17279	1.1	41.7	17279	1.0	5137.000	62.110	g500-S19000	m540-P225/L4	3	1020
1.9	11919	9.5	21677	19.0	21677	0.9	33.2	21677	0.9	5023.000	77.920	g500-S19000	m540-P225/L4	3	1020

Technical data

Selection tables



50 Hz: 55 kW

87 Hz: 87 kW

Inverter operation												Geared motor			
5 Hz -		- 20 Hz		50 Hz (1:10)			87 Hz (1:17.4)								
n ₂₂	M ₂₂	n ₂₁	M ₂	n ₂	M ₂	c	n ₂	M ₂	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		rpm	Nm		kgcm ²					kg
31.9	861	163	1562	326	1562	3.6	571	1412	3.3	9017.000	4.550	g500-S8000	m540-P250/M4	2	692
31.9	861	163	1562	326	1562	4.7	571	1412	4.3	9467.000	4.550	g500-S14000	m540-P250/M4	2	857
25.3	1082	129	1964	259	1964	4.2	454	1775	3.9	9197.000	5.720	g500-S14000	m540-P250/M4	2	857
24.9	1101	127	1998	255	1998	2.8	446	1807	2.6	8825.000	5.820	g500-S8000	m540-P250/M4	2	692
21.8	1256	111	2280	223	2280	2.5	391	2061	2.3	8777.000	6.640	g500-S8000	m540-P250/M4	2	692
20.2	1358	103	2465	206	2465	3.4	362	2229	3.1	8989.000	7.180	g500-S14000	m540-P250/M4	2	857
18.0	1526	91.7	2771	184	2771	3.0	322	2505	2.8	8896.000	8.070	g500-S14000	m540-P250/M4	2	857
17.9	1530	91.5	2778	183	2778	2.1	321	2511	1.9	8700.000	8.090	g500-S8000	m540-P250/M4	2	692
16.2	1697	82.5	3080	165	3080	2.2	290	2784	2.0	8879.000	8.970	g500-S8000	m540-P250/M4	2	692
16.2	1697	82.5	3080	165	3080	3.4	290	2784	3.1	9210.000	8.970	g500-S14000	m540-P250/M4	2	857
13.3	2060	68.0	3739	136	3739	4.4	239	3380	4.0	9406.000	10.890	g500-S19000	m540-P250/M4	2	1091
12.9	2130	65.7	3866	132	3866	3.0	231	3495	2.8	9034.000	11.260	g500-S14000	m540-P250/M4	2	857
12.6	2170	64.5	3939	129	3939	1.9	227	3560	1.7	8741.000	11.470	g500-S8000	m540-P250/M4	2	692
11.1	2474	56.6	4491	113	4491	1.7	199	4060	1.6	8712.000	13.080	g500-S8000	m540-P250/M4	2	692
10.9	2508	55.8	4553	112	4553	3.9	196	4116	3.6	9187.000	13.260	g500-S19000	m540-P250/M4	2	1091
10.3	2673	52.4	4852	105	4852	2.7	184	4386	2.5	8886.000	14.130	g500-S14000	m540-P250/M4	2	857
9.1	3008	46.5	5460	93.2	5460	2.5	163	4935	2.3	8814.000	15.900	g500-S14000	m540-P250/M4	2	857
9.1	3015	46.4	5473	93.0	5473	1.5	163	4948	1.4	8656.000	15.940	g500-S8000	m540-P250/M4	2	692
8.9	3066	45.7	5566	91.4	5566	3.4	160	5032	3.1	8995.000	16.210	g500-S19000	m540-P250/M4	2	1091
8.0	3424	40.9	6215	81.9	6215	1.3	144	5618	1.4	8632.000	18.100	g500-S8000	m540-P250/M4	2	692
7.7	3547	39.5	6438	79.0	6438	3.0	139	5820	3.1	8910.000	18.750	g500-S19000	m540-P250/M4	2	1091
7.6	3618	38.7	6569	77.5	6569	2.1	136	5938	2.2	8749.000	19.130	g500-S14000	m540-P250/M4	2	857
7.4	3728	37.5	6768	75.2	6768	1.2	132	6118	1.2	8617.000	19.710	g500-S8000	m540-P250/M4	2	692
6.8	4023	34.8	7304	69.7	7304	1.9	122	6602	2.0	8706.000	21.270	g500-S14000	m540-P250/M4	2	857
6.6	4178	33.5	7585	67.1	7585	2.5	118	6857	2.6	8821.000	22.090	g500-S19000	m540-P250/M4	2	1091
6.5	4203	33.3	7630	66.7	7630	1.1	117	6897	1.1	8599.000	22.220	g500-S8000	m540-P250/M4	2	692
6.2	4441	31.5	8063	63.1	8063	1.7	111	7288	1.8	8686.000	23.480	g500-S14000	m540-P250/M4	2	857
5.8	4700	29.8	8533	59.6	8533	2.2	105	7713	2.3	8769.000	24.850	g500-S19000	m540-P250/M4	2	1091
5.5	4984	28.1	9048	56.2	9048	1.5	98.6	8179	1.6	8657.000	26.350	g500-S14000	m540-P250/M4	2	857
5.3	5139	27.2	9330	54.5	9330	2.0	95.6	8434	2.1	8741.000	27.170	g500-S19000	m540-P250/M4	2	1091
4.8	5752	24.3	10442	48.7	10442	1.8	85.4	9439	2.0	8702.000	30.410	g500-S19000	m540-P250/M4	2	1091
4.5	5951	23.2	10802	46.4	10802	1.3	81.4	9765	1.2	8855.000	31.920	g500-S14000	m540-P250/M4	3	872
4.5	6025	22.9	10938	45.9	10938	1.7	80.4	9887	1.6	9121.000	32.320	g500-S19000	m540-P250/M4	3	1120
3.6	7571	18.2	13743	36.5	13743	1.4	64.0	12423	1.3	8978.000	40.610	g500-S19000	m540-P250/M4	3	1120
3.6	7610	18.1	13814	36.3	13814	1.0	63.6	12488	0.9	8726.000	40.820	g500-S14000	m540-P250/M4	3	872
3.1	8678	15.9	15754	31.8	15754	0.9	-	-	-	8701.000	46.550	g500-S14000	m540-P250/M4	3	872
2.9	9215	15.0	16728	30.0	16728	1.1	52.6	15122	1.2	9057.000	49.430	g500-S19000	m540-P250/M4	3	1120
2.3	11579	11.9	21020	23.9	21020	0.9	41.8	19001	1.0	8937.000	62.110	g500-S19000	m540-P250/M4	3	1120



Motor – inverter assignment

Supply voltage 1x 230/240 V

Rated frequency 50/60 Hz

Rated power	Motor	Frequency inverter	
		i510 cabinet	i550 cabinet
P_N			
kW			
1.5	m540-P90/L4	i510-C1.5/230-1	i550-C1.5/230-1
1.5	m540-P90/L4	i510-C1.5/230-2	i550-C1.5/230-2
2.2	m540-P90/L4	i510-C2.2/230-1	i550-C2.2/230-1
2.2	m540-P90/L4	i510-C2.2/230-2	i550-C2.2/230-2

Supply voltage 3x 230/240 V

Rated frequency 50/60 Hz

Rated power	Motor	Frequency inverter	
		i510 cabinet	i550 cabinet
P_N			
kW			
1.5	m540-P90/L4	i510-C1.5/230-2	i550-C1.5/230-2
2.2	m540-P100/M4	i510-C2.2/230-2	i550-C2.2/230-2
3	m540-P100/L4	i510-C4.0/230-3	i550-C4.0/230-3
4	m540-P112/M4	i510-C4.0/230-3	i550-C4.0/230-3
5.5	m540-P132/M4	i510-C5.5/230-3	i550-C5.5/230-3



Supply voltage 3x 400/480 V

Rated frequency 50/60 Hz

Rated power	Motor	Frequency inverter	
		i510 cabinet	i550 cabinet
P_N			
kW			
1.5	m540-P90/L4	i510-C1.5/400-3	i550-C1.5/400-3
2.2	m540-P100/M4	i510-C2.2/400-3	i550-C2.2/400-3
3	m540-P100/L4	i510-C3.0/400-3	i550-C3.0/400-3
4	m540-P112/M4	i510-C4.0/400-3	i550-C4.0/400-3
5.5	m540-P132/M4	i510-C5.5/400-3	i550-C5.5/400-3
7.5	m540-P132/L4	i510-C7.5/400-3	i550-C7.5/400-3
11	m540-P160/M4	i510-C11/400-3	i550-C11/400-3
15	m540-P160/L4	-	i550-C15/400-3
18.5	m540-P180/M4	-	i550-C18/400-3
22	m540-P180/L4	-	i550-C22/400-3
30	m540-P200/M4	-	i550-C30/400-3
37	m540-P225/M4	-	i550-C37/400-3
45	m540-P225/L4	-	i550-C45/400-3
55	m540-P250/M4	-	i550-C55/400-3

Rated frequency 87 Hz

Rated power	Motor	Frequency inverter	
		i510 cabinet	i550 cabinet
P_N			
kW			
2.6	m540-P90/L4	i510-C3.0/400-3	i550-C3.0/400-3
3.9	m540-P100/M4	i510-C4.0/400-3	i550-C4.0/400-3
5.2	m540-P100/L4	i510-C5.5/400-3	i550-C5.5/400-3
7.35	m540-P112/M4	i510-C7.5/400-3	i550-C7.5/400-3
9.6	m540-P132/M4	i510-C11/400-3	i550-C11/400-3
13.1	m540-P132/L4	-	i550-C15/400-3
19.2	m540-P160/M4	-	i550-C22/400-3
26.3	m540-P160/L4	-	i550-C30/400-3
32.2	m540-P180/M4	-	i550-C37/400-3
38.5	m540-P180/L4	-	i550-C45/400-3
52.5	m540-P200/M4	-	i550-C55/400-3
64.8	m540-P225/M4	-	i550-C75/400-3
78.7	m540-P225/L4	-	i550-C90/400-3
87	m540-P250/M4	-	i550-C90/400-3



Dimensions

Notes on the basic dimensions

The following legend shows the layout of the dimension tables:

Motor	m540-P		
	90/L4	100/M4	100/L4

Table content		Explanation
Total length	L	Total length of the drive without brake/feedback
Motor length	LB	Length of the motor without brake/feedback
Motor diameter	AC	Motor diameter
Motor/connection distance	AD	Distance from center of motor to end of terminal box

Technical data

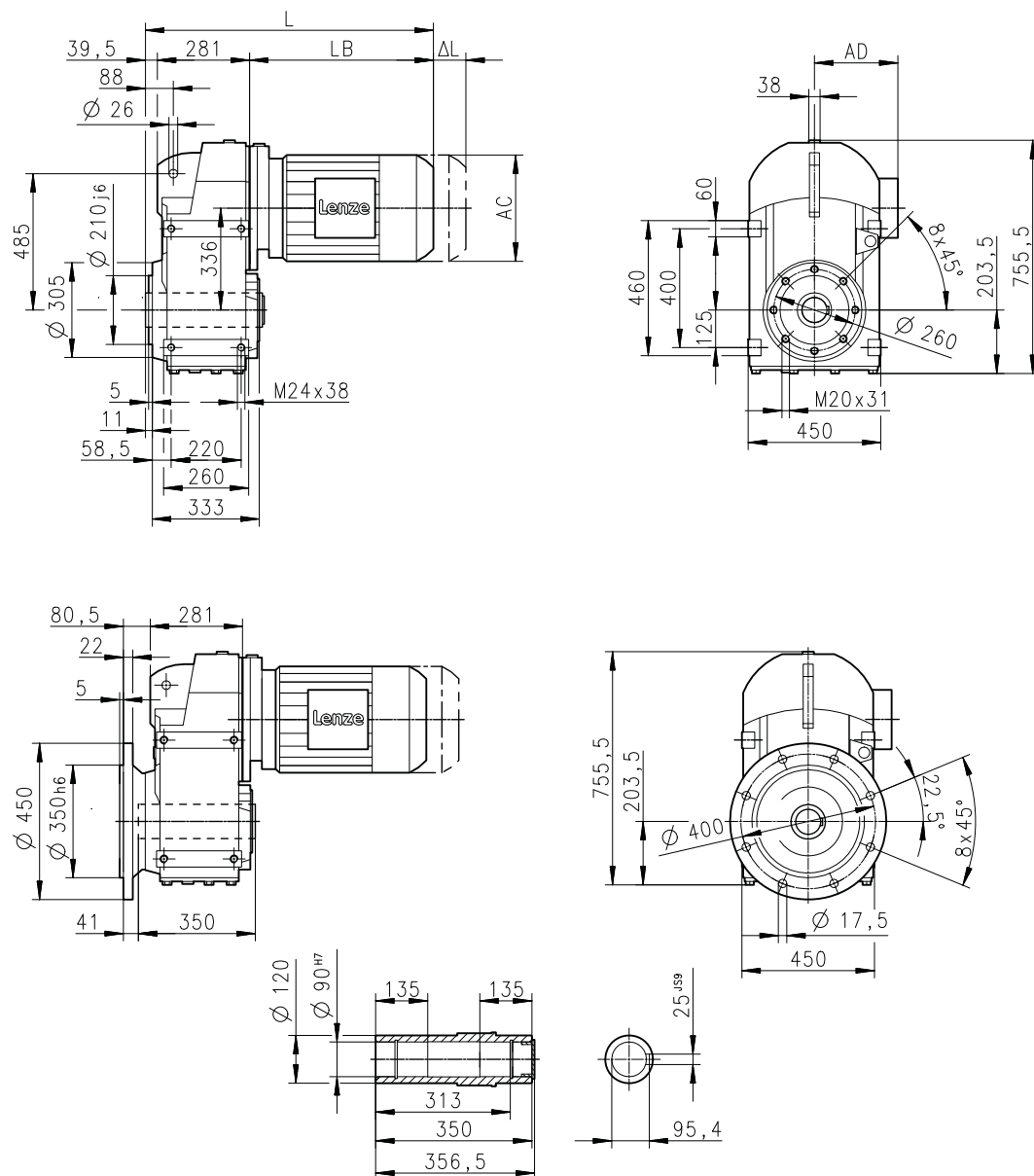
Dimensions
Basic dimensions



Basic dimensions

g500-S8000, 2-/3-stage

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



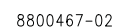
8800465-02

Motor series			m540-P										
Motor			100M4 100L4	112M4	132M4 132L4	160M4	160L4	180M4	180L4	200M4	225M4	225L4	250M4
Total length	L	mm	712	712	783	815	875	888	918	981	1002	1062	1113
Motor length	LB	mm	391	391	462	494	554	567	597	660	681	741	792
Motor diameter	AC	mm	198	222	264	318	318	353	353	393	439	439	487
Motor/connection distance	AD	mm	171	182	207	241	241	292	292	315	337	337	408

ΔL ▶ Additional lengths 79



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



Δ L ▶ Additional lengths  79

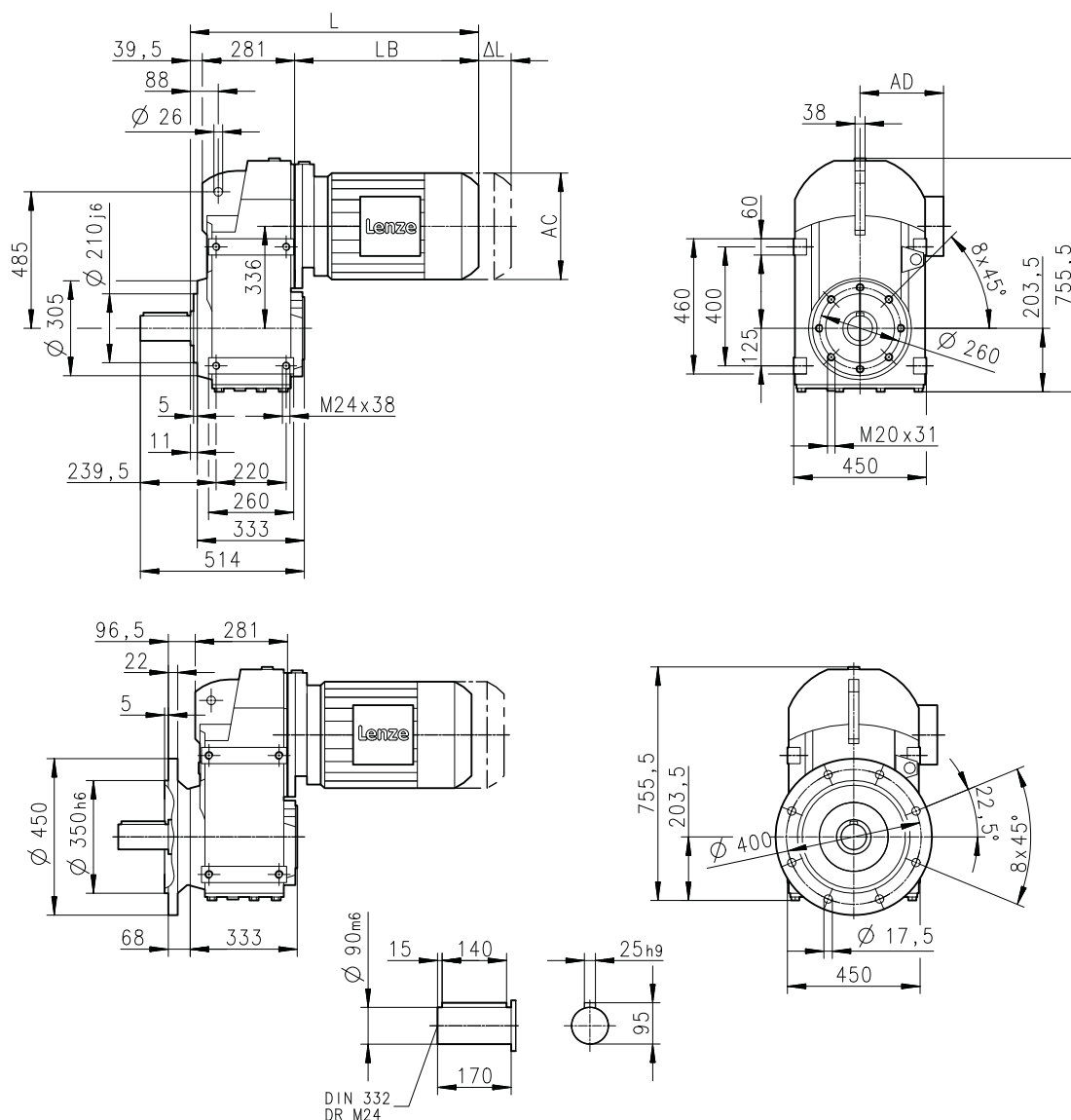
Technical data

Dimensions
Basic dimensions



g500-S8000, 2-/3-stage

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



8800466-02

Motor series			m540-P										
Motor			100M4 100L4	112M4	132M4 132L4	160M4	160L4	180M4	180L4	200M4	225M4	225L4	250M4
Total length	L	mm	712	712	783	815	875	888	918	981	1002	1062	1113
Motor length	LB	mm	391	391	462	494	554	567	597	660	681	741	792
Motor diameter	AC	mm	198	222	264	318	318	353	353	393	439	439	487
Motor/connection distance	AD	mm	171	182	207	241	241	292	292	315	337	337	408

Δ L ▶ Additional lengths 79

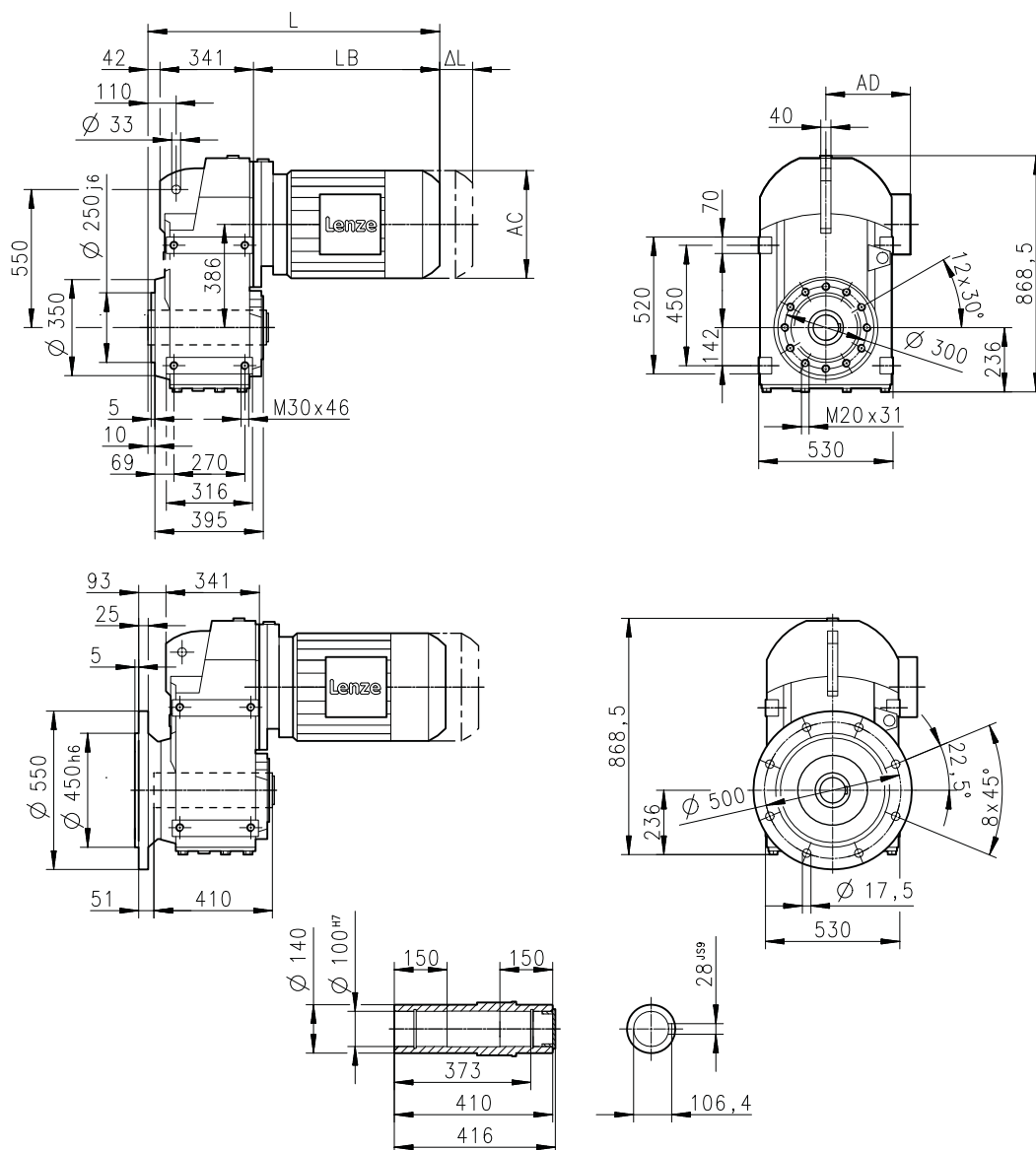


Technical data

Dimensions
Basic dimensions

g500-S14000, 2-/3-stage

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



8800499-01

Motor series			m540-P									
Motor			112M4	132L4 132M4	160M4	160L4	180M4	180L4	200M4	225M4	225L4	250M4
Total length	L	mm	762	832	864	924	937	967	1030	1049	1109	1157
Motor length	LB	mm	379	449	481	541	554	584	647	666	726	774
Motor diameter	AC	mm	222	264	318	318	353	353	393	439	439	487
Motor/connection distance	AD	mm	182	207	241	241	292	292	315	337	337	408

Δ L ▶ Additional lengths 79

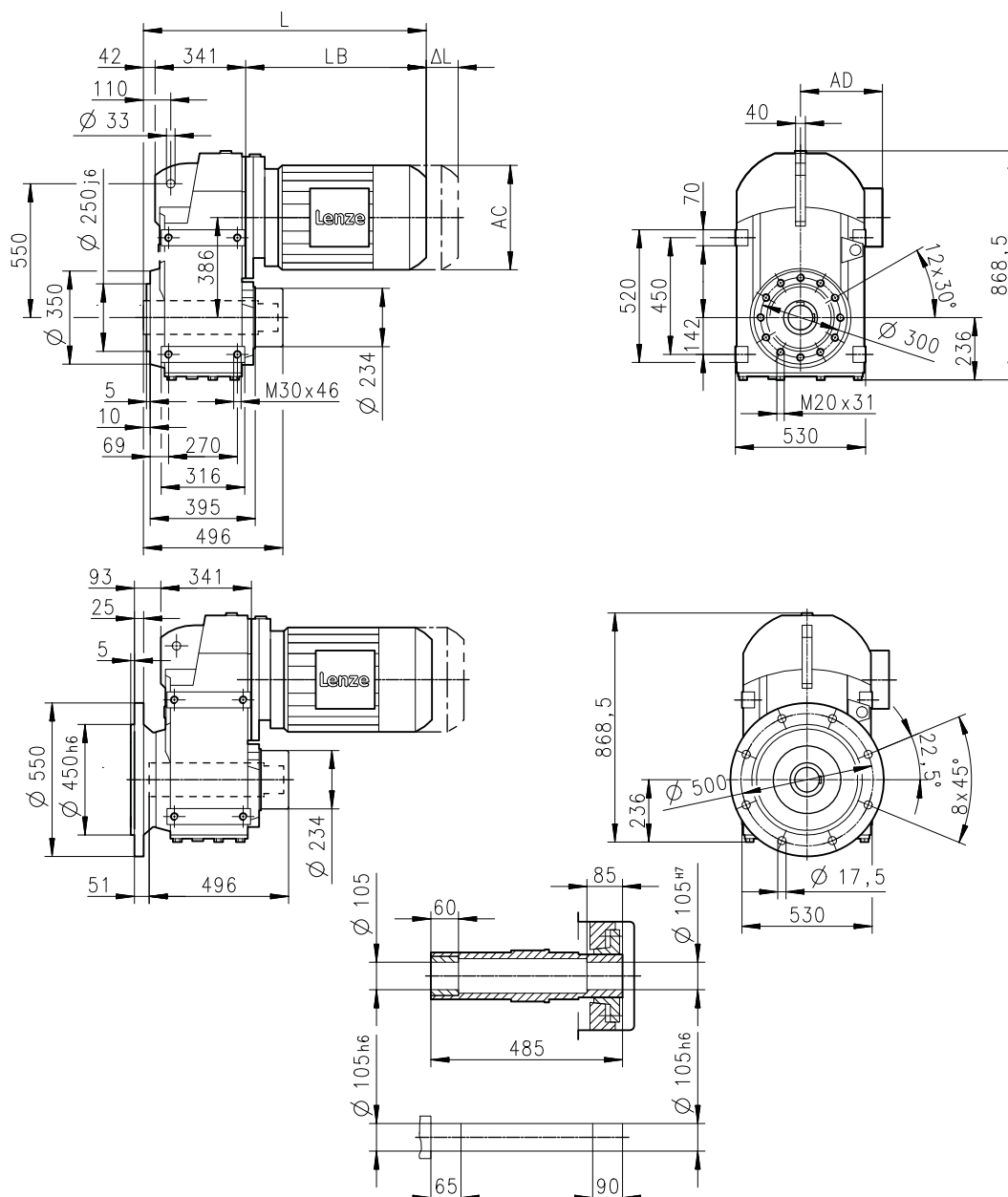
Technical data

Dimensions
Basic dimensions



g500-S14000, 2-/3-stage

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



8800470-01

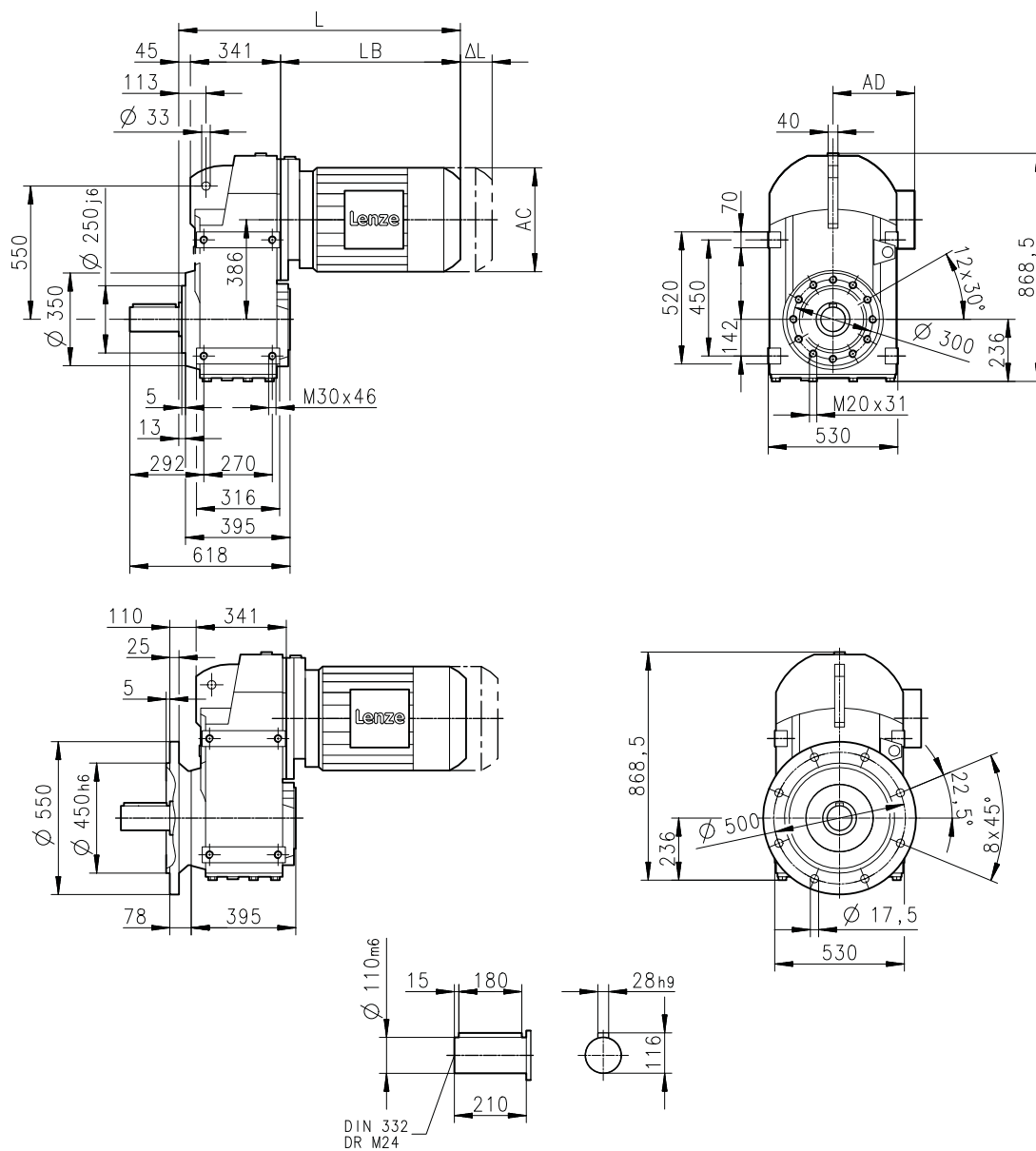
Motor series			m540-P									
Motor			112M4	132L4 132M4	160M4	160L4	180M4	180L4	200M4	225M4	225L4	250M4
Total length	L	mm	762	832	864	924	937	967	1030	1049	1109	1157
Motor length	LB	mm	379	449	481	541	554	584	647	666	726	774
Motor diameter	AC	mm	222	264	318	318	353	353	393	439	439	487
Motor/connection distance	AD	mm	182	207	241	241	292	292	315	337	337	408

Δ L ▶ Additional lengths 79



g500-S14000, 2-/3-stage

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



8800469-01

Motor series			m540-P									
Motor			112M4	132L4 132M4	160M4	160L4	180M4	180L4	200M4	225M4	225L4	250M4
Total length	L	mm	762	832	864	924	937	967	1030	1049	1109	1157
Motor length	LB	mm	379	449	481	541	554	584	647	666	726	774
Motor diameter	AC	mm	222	264	318	318	353	353	393	439	439	487
Motor/connection distance	AD	mm	182	207	241	241	292	292	315	337	337	408

Δ L ▶ Additional lengths 79

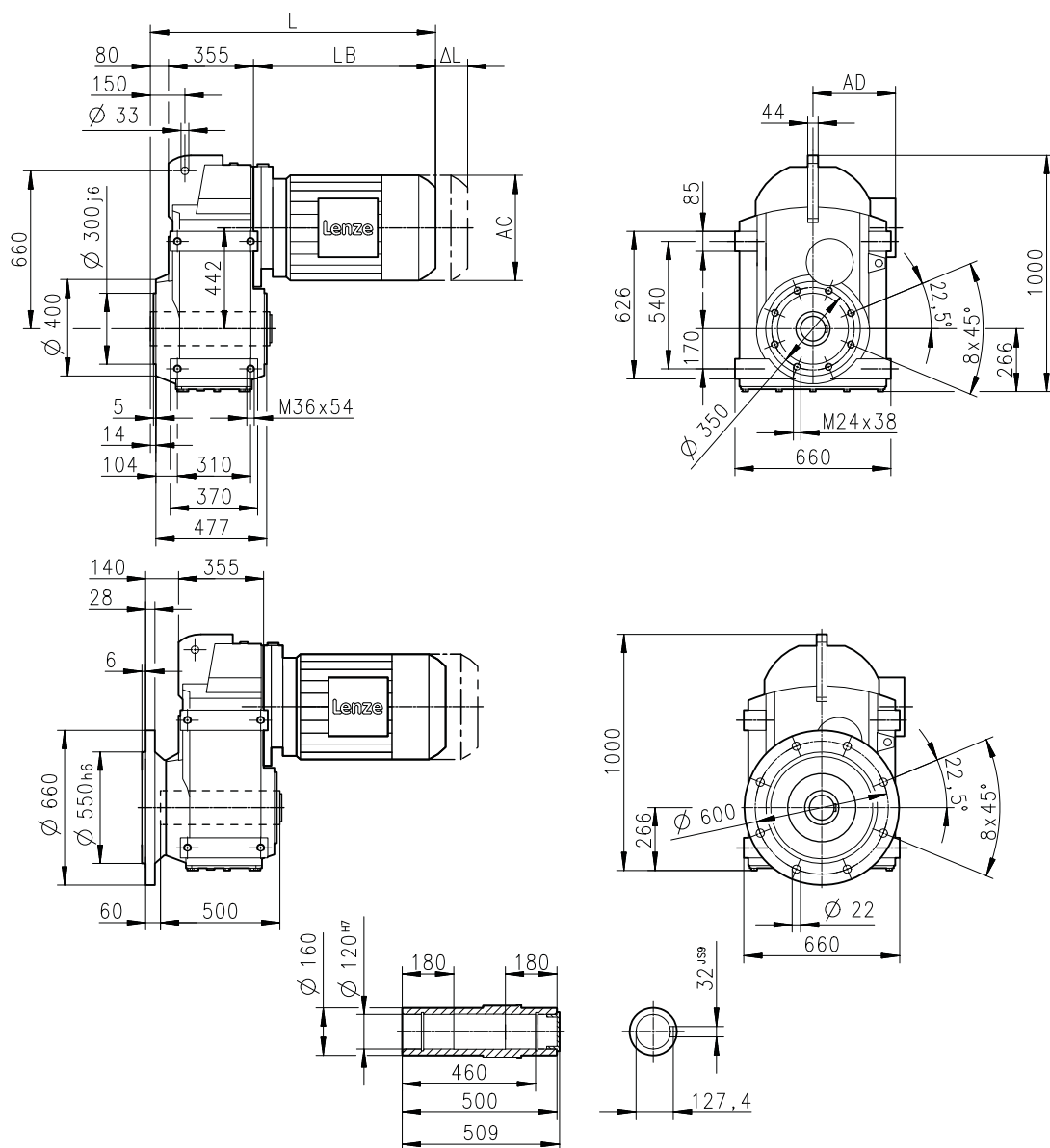
Technical data

Dimensions
Basic dimensions



g500-S19000, 2-/3-stage

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



8800501-01

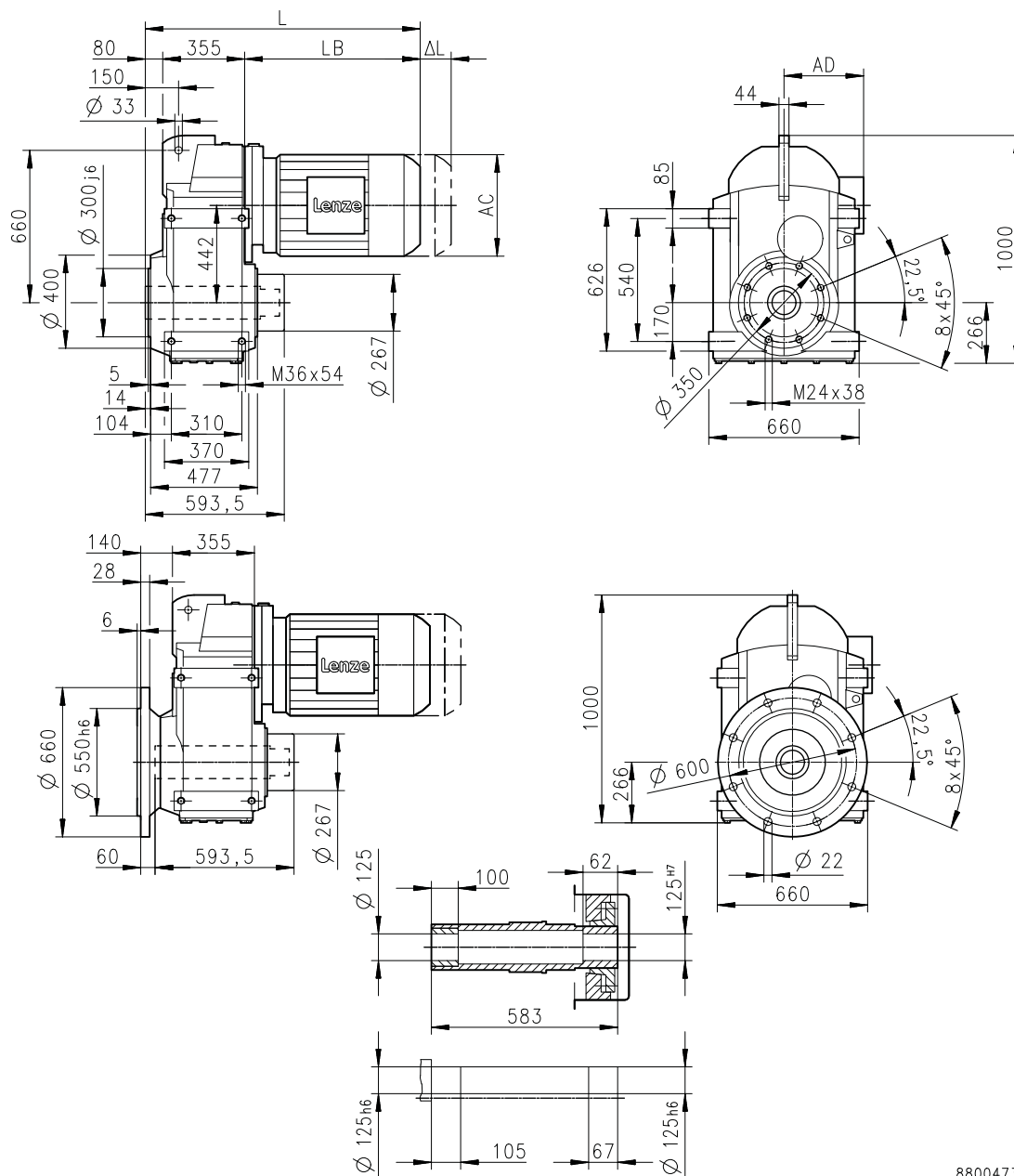
Motor series			m540-P									
Motor			112M4	132M4 132L4	160L4	160M4	180M4	180L4	200M4	225M4	225L4	250M4
Total length	L	mm	814	884	976	916	989	1019	1082	1101	1161	1209
Motor length	LB	mm	379	449	541	481	554	584	647	666	726	774
Motor diameter	AC	mm	222	264	318	318	353	353	393	439	439	487
Motor/connection distance	AD	mm	182	207	241	241	292	292	315	337	337	408

Δ L ▶ Additional lengths 79



g500-S19000, 2-/3-stage

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



8800473-01

Motor series			m540-P									
Motor			112M4	132M4 132L4	160L4	160M4	180M4	180L4	200M4	225M4	225L4	250M4
Total length	L	mm	814	884	976	916	989	1019	1082	1101	1161	1209
Motor length	LB	mm	379	449	541	481	554	584	647	666	726	774
Motor diameter	AC	mm	222	264	318	318	353	353	393	439	439	487
Motor/connection distance	AD	mm	182	207	241	241	292	292	315	337	337	408

Δ L ▶ Additional lengths 79

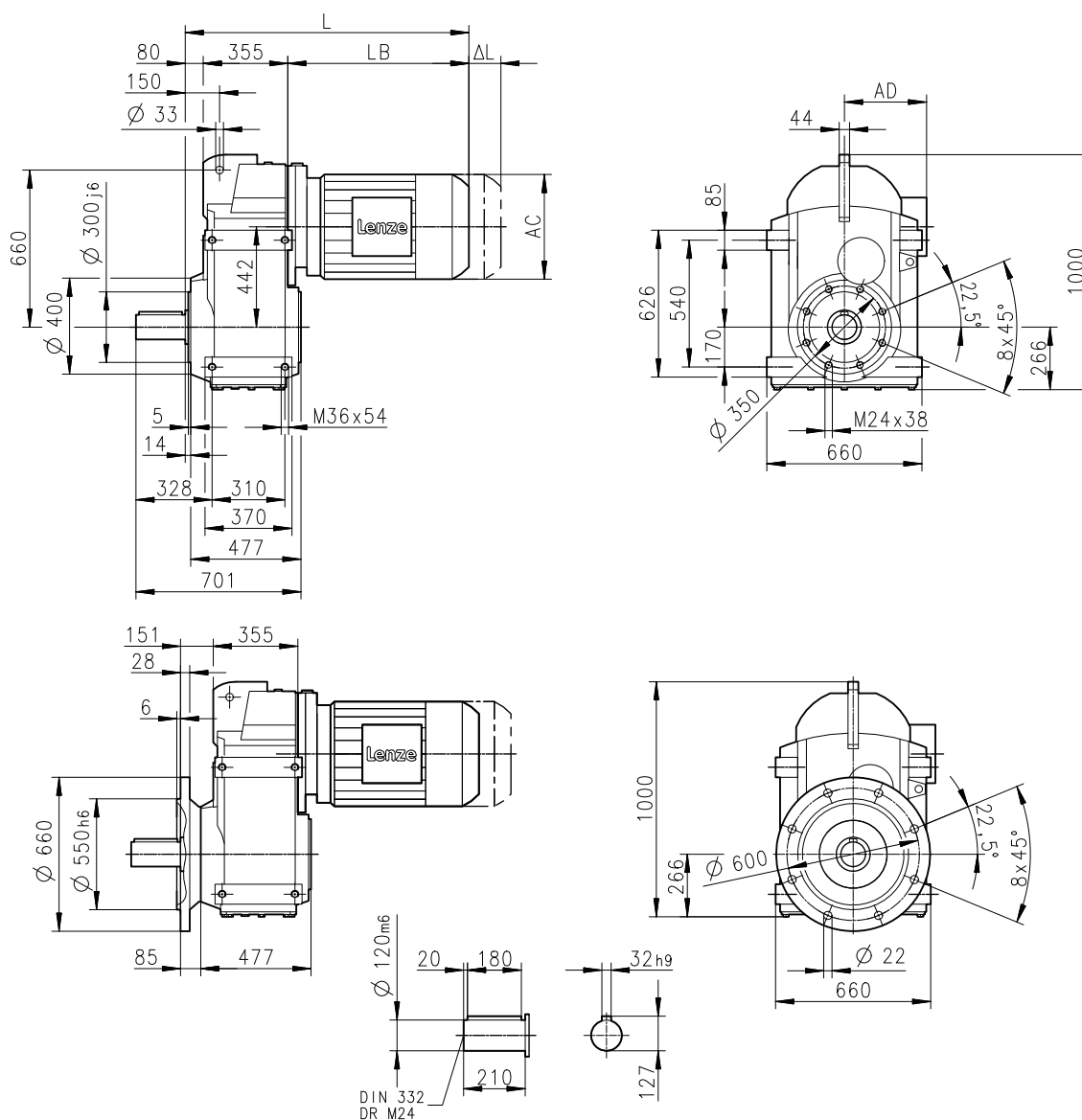
Technical data

Dimensions
Basic dimensions



g500-S19000, 2-/3-stage

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



8800472-01

Motor series			m540-P									
Motor			112M4	132M4 132L4	160L4	160M4	180M4	180L4	200M4	225M4	225L4	250M4
Total length	L	mm	814	884	976	916	989	1019	1082	1101	1161	1209
Motor length	LB	mm	379	449	541	481	554	584	647	666	726	774
Motor diameter	AC	mm	222	264	318	318	353	353	393	439	439	487
Motor/connection distance	AD	mm	182	207	241	241	292	292	315	337	337	408

ΔL ▶ Additional lengths 79



Additional lengths

Self-ventilated motors

Motor			m540-P					
			90/L4	100/M4	112/M4	132/M4	160/M4	180/M4
				100/L4		132/L4	160/L4	180/L4
With feedback	Δ L	[mm]	92.5	93.5	95.0	95.0	95.0	95.0
With spring-applied brake	Δ L	[mm]	70.0	78.5	73.0	105	116	129
With spring-applied brake and feedback	Δ L	[mm]	163	172	168	200	211	224

Motor			m540-P		
			200/M4	225/M4	250/M4
				225/L4	
With feedback	Δ L	[mm]	95.0	125	125
With spring-applied brake	Δ L	[mm]	147	239	225
With spring-applied brake and feedback	Δ L	[mm]	242	364	350

Forced ventilated motors

Motor			m540-P					
			90/L4	100/M4	112/M4	132/M4	160/M4	180/M4
				100/L4		132/L4	160/L4	180/L4
Without feedback/brake	Δ L	[mm]	85.0	81.5	81.0	115	131	132
With feedback	Δ L	[mm]	213	219	206	259	285	274
With spring-applied brake	Δ L	[mm]	120	122	113	165	191	199
With spring-applied brake and feedback	Δ L	[mm]	213	219	206	259	285	274

Motor			m540-P		
			200/M4	225/M4	250/M4
				225/L4	
Without feedback/brake	Δ L	[mm]	141	228	233
With feedback	Δ L	[mm]	293	787	827
With spring-applied brake	Δ L	[mm]	233	-	-
With spring-applied brake and feedback	Δ L	[mm]	293	-	-



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](#)  53

Observe ► [Additional weights](#)  80!

Additional weights



Add the individual additional weights to the basic weight depending on the design.

Gearbox

Gearbox			g500-S8000	g500-S14000	g500-S19000
Solid shaft	m	kg	22.0	43.0	55.0
Shrink disc	m	kg	6.0	18.0	15.0
Flange	m	kg	42.0	129.0	169.0
Torque plate					
Rubber buffers	m	kg	1.0	1.0	1.0
Shaft cover					
Shrink disc cover	m	kg	0.5	0.6	0.9

Motors

Motor			m540-P								
			90/L4	100/M4 100/L4	112/M4	132/M4 132/L4	160/M4 160/L4	180/M4 180/L4	200/M4	225/M4 225/L4	250/M4
Blowers											
Without product extension	m	kg	1.9	2.1	2.2	3.0	4.2	8.2	9.8	22.0	22.0
Spring-applied brake											
08	m	kg	1.5								
10	m	kg	2.6	2.6							
12	m	kg	4.2	4.2	4.2						
14	m	kg		5.8	5.8						
16	m	kg				8.7					
18	m	kg				12.6	12.6				
20	m	kg					12.6	12.6	12.6		
25	m	kg							31.0	31.0	
30	m	kg								45.0	45.0
40	m	kg									80.0
Manual release lever	m	kg	??	??	??	??	??	??	??	??	??
Feedback	m	kg	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5



Product extensions

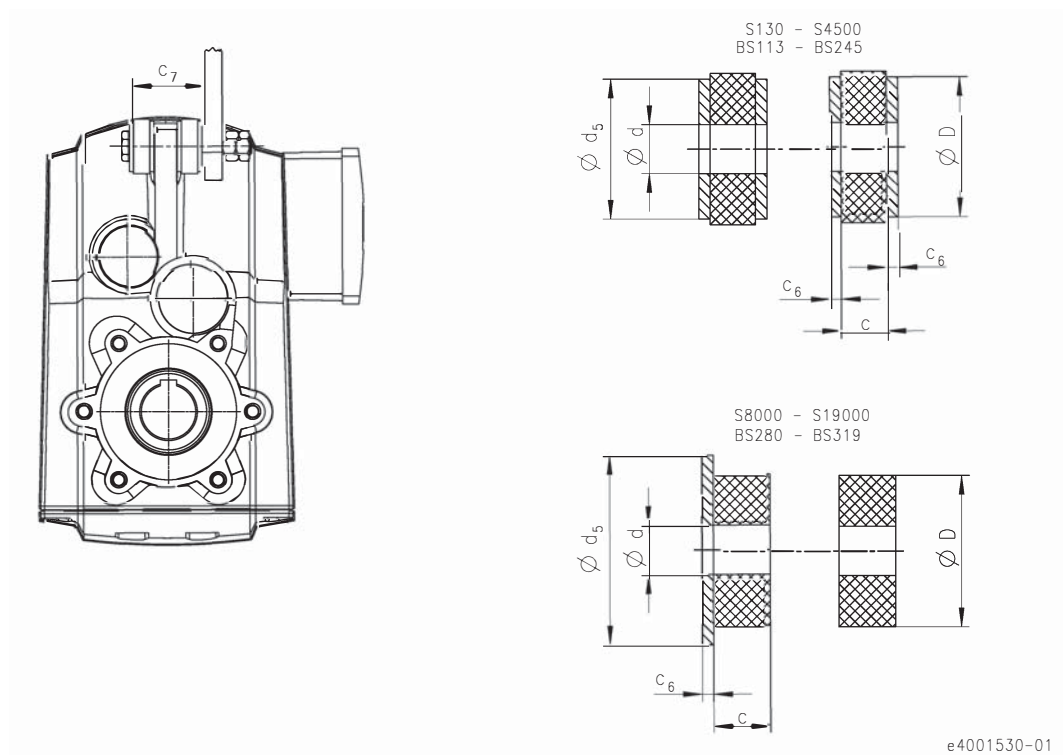
Torque plates

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

g500-S8000 ... S19000



Gearbox	Dimensions					
	d	D	d ₅	c	c ₆	c ₇
	mm	mm	mm	mm	mm	mm
g500-S8000	25.0	80.0	100	40.0	10.0	128
g500-S14000	31.0	120	140	50.0	12.0	152
g500-S19000	31.0	120	140	50.0	12.0	156



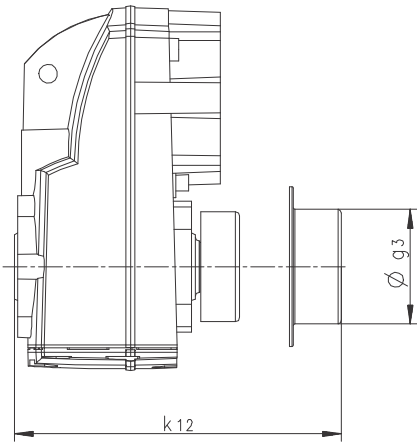
Shaft covers

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

Shrink disc cover



The shrink disc is only available in position "B" (on the motor side).



Gearbox	Dimensions	
	g_3	k_{12}
	mm	mm
g500-S8000	218	425
g500-S14000	258	520
g500-S19000	310	622



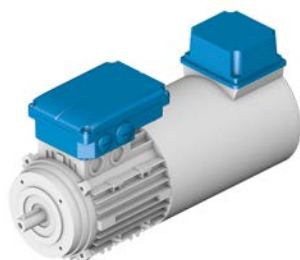
Motor connection

Connection options



The motors are equipped with a terminal box by default.

Alternatively, the HAN plug connector can be selected for quick commissioning or maintenance.



Terminal box with cable gland



HAN connector

The three-phase AC motors are intended for operation on constant mains and an inverter.

Mains operation

For mains operation, the motors are available in the following mains voltages:

Mains frequency	Mains voltage	Mains voltage range	Circuit
Hz	V	V	
50	400	380 ... 420	Y
	230	220 ... 240	Δ
60	460	440 ... 480	Y

The motors are rated for the specified mains voltage range.

According to EN 60034-1, the motors operate reliably in continuous operation at $\pm 5\%$ of the line voltage range. This ensures reliable operation in the recommended range $\pm 10\%$ of the IEC standard voltages 230 V, 400 V and 460 V.

Frequency inverter operation

The base frequencies for frequency inverter operation have been set to the following rated voltages:

Rated frequency	Rated voltage	Circuit
Hz	V	
50	400	Y
	230	Δ
87	400	Δ

Product extensions

Motor connection
Assignment of the terminal boxes



Assignment of the terminal boxes

Depending on the product extension of the motor, different terminal box sizes (KK5, KK6 or KK7) are used.



Only one temperature monitor can be connected in the terminal boxes.

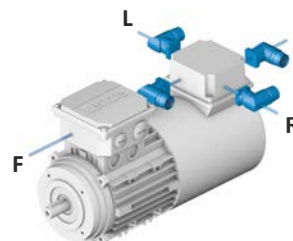
Motor	m540-P								
	90/L4	100/M4 100/L4	112/M4	132/M4 132/L4	160/M4 160/L4	180/M4 180/L4	200/M4	225/M4 225/L4	250/M4
Without product extensions									
Terminal box	KK5	KK5	KK5	KK5	KK5	KK6	KK6	KK6	KK6
Product extension - brake									
Terminal box	KK6	KK6	KK6	KK6	KK6	KK6	KK6	KK6	KK6
Product extension - feedback									
Terminal box	KK7	KK7	KK7	KK7	KK7	KK7	KK7	KK6	KK6
Product extension - brake + feedback									
Terminal box	KK7	KK7	KK7	KK7	KK7	KK7	KK7	KK7	KK7

Positions of the connections

Positions on the motor terminal box



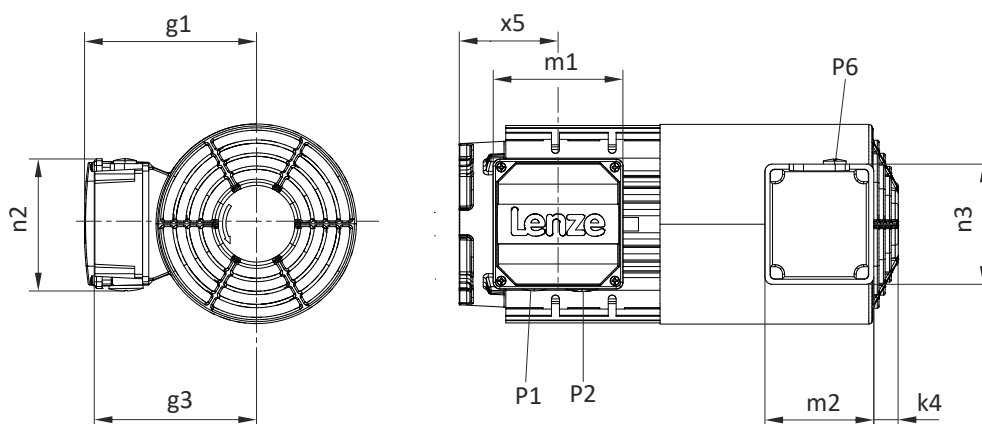
Positions on the blower terminal box



Terminal box	Positions	Note
Motor terminal box KK5		
Cable glands	L, E or R	
Motor terminal box KK6		
Cable glands	L, E or R	
Motor terminal box KK7		
Cable glands	L and R	
Blower terminal box		
Cable glands	L, E or R	



Dimensions of KK5 power terminal box



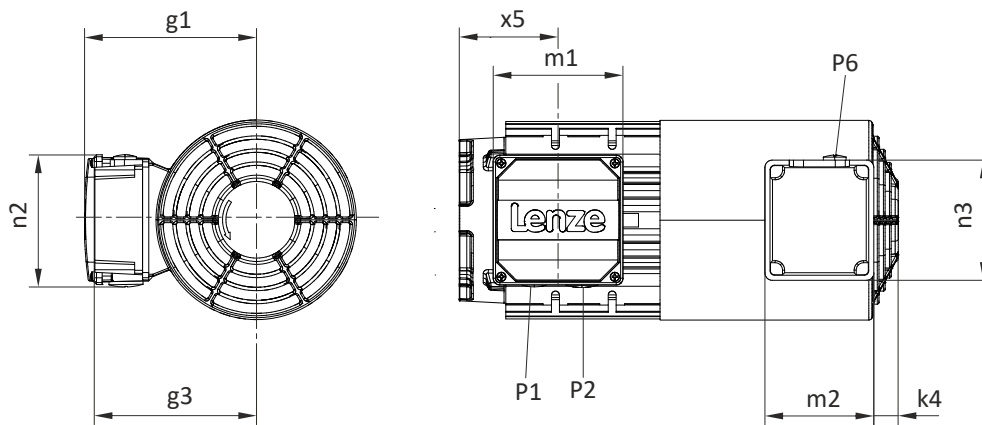
Motor			m540-P				
			100/M4	112/M4	132/M4	160/M4	160/L4
			100/L4		132/L4		
Gearbox							
g500-S8000	x ₅	mm	226	217	267	250	310
g500-S14000	x ₅	mm	-	205	254	237	297
g500-S19000	x ₅	mm	-	205	254	237	297
Terminal box							
	g ₁	mm	166	177	202	237	237
	m ₁	mm	112	112	130	145	145
	n ₂	mm	135	135	135	175	175
	P1	mm	M32x1.5	M32x1.5	M32x1.5	M40x1.5	M40x1.5
	P2	mm	M32x1.5	M32x1.5	M32x1.5	M40x1.5	M40x1.5
	k ₄	mm	32	32	0	0	0
	m ₂	mm	95	95	107	107	107
	n ₃	mm	105	105	105	105	105
	P ₆	mm	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5

Product extensions

Motor connection
Assignment of the terminal boxes



Dimensions of KK6 power terminal box



Motor			m540-P				
			100/M4	112/M4	132/M4	160/M4	160/L4
			100/L4		132/L4		
Gearbox							
g500-S8000	x ₅	mm	226	217	267	250	310
g500-S14000	x ₅	mm	-	205	254	237	297
g500-S19000	x ₅	mm	-	205	254	237	297
Terminal box							
	g ₁	mm	171	182	207	241	241
	m ₁	mm	135	135	162	180	180
	n ₂	mm	135	135	162	180	180
	P1	mm	M32x1.5	M32x1.5	M32x1.5	M40x1.5	M40x1.5
	P2	mm	M32x1.5	M32x1.5	M32x1.5	M40x1.5	M40x1.5
	k ₄	mm	32	32	0	0	0
	m ₂	mm	95	95	107	107	107
	n ₃	mm	105	105	105	105	105
	P ₆	mm	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5--

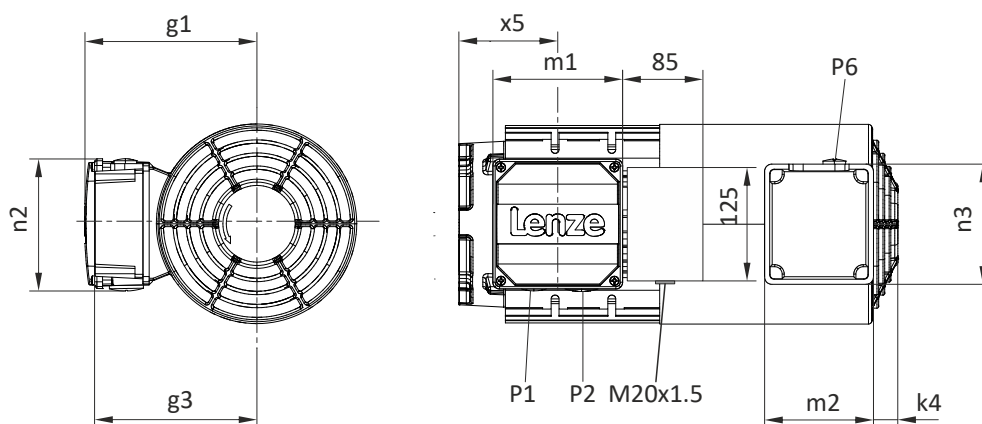
Motor			m540-P					
			-P180/M4	-P180/L4	-P200/M4	-P225/M4	-P225/L4	-P250/M4
Gearbox								
g500-S8000	x ₅	mm	310	340	399	403	463	
g500-S14000	x ₅	mm	296	326	386	388	448	463
g500-S19000	x ₅	mm	296	326	386	388	488	463
Terminal box								
	g ₁	mm	292	292	315	408	408	457
	m ₁	mm	197	197	197	233	233	299
	n ₂	mm	265	265	266	319	319	374
	P1	mm	M40x1.5	M40x1.5	M50x1.5	M63x1.5	M50x1.5	M63x1.5
	P2	mm	M40x1.5	M40x1.5	M50x1.5	M63x1.5	M50x1.5	M63x1.5
	k ₄	mm	0	0	0	0	0	0
	m ₂	mm	107	107	107	107	107	107
	n ₃	mm	105	105	105	105	105	105
	P ₆	mm	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5



Product extensions

Motor connection
Assignment of the terminal boxes

Dimensions of KK7 power terminal box



Motor			m540-P				
			100/M4	112/M4	132/M4	160/M4	160/L4
			100/L4		132/L4		
Gearbox							
g500-S8000	x ₅	mm	226	217	267	250	310
g500-S14000	x ₅	mm	-	205	254	237	297
g500-S19000	x ₅	mm	-	205	254	237	297
Terminal box							
	g ₁	mm	171	182	207	241	241
	m ₁	mm	135	135	162	180	180
	n ₂	mm	135	135	162	180	180
	P1	mm	M32x1.5	M32x1.5	M32x1.5	M40x1.5	M40x1.5
	P2	mm	M32x1.5	M32x1.5	M32x1.5	M40x1.5	M40x1.5
	k ₄	mm	32	32	0	0	0
	m ₂	mm	95	95	107	107	107
	n ₃	mm	105	105	105	105	105
	P ₆	mm	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5--

Motor			m540-P					
			-P180/M4	-P180/L4	-P200/M4	-P225/M4	-P225/L4	-P250/M4
Gearbox								
g500-S8000	x ₅	mm	310	340	399	403	463	
g500-S14000	x ₅	mm	296	326	386	388	448	463
g500-S19000	x ₅	mm	296	326	386	388	488	463
Terminal box								
	g ₁	mm	292	292	315	408	408	457
	m ₁	mm	197	197	197	233	233	299
	n ₂	mm	265	265	266	319	319	374
	P1	mm	M40x1.5	M40x1.5	M50x1.5	M63x1.5	M50x1.5	M63x1.5
	P2	mm	M40x1.5	M40x1.5	M50x1.5	M63x1.5	M50x1.5	M63x1.5
	k ₄	mm	0	0	0	0	0	0
	m ₂	mm	107	107	107	107	107	107
	n ₃	mm	105	105	105	105	105	105
	P ₆	mm	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5



Assignment of the connectors HAN

The power, brake and temperature monitoring can be connected in the HAN 10E connector.
It is available with the power module 16 A.



The HAN 10E plug connector is only available for motors with the Y/Δ connection method.

Motor	m540-P								
	90/L4	100/M4 100/L4	112/M4	132/M4 132/L4	160/M4 160/L4	180/M4 180/L4	200/M4	225/M4 225/L4	250/M4
HAN 10E connector									
Connection: • Power • Brake • PTC thermistor temperature monitoring	•	•	•	-	-	-	-	-	-

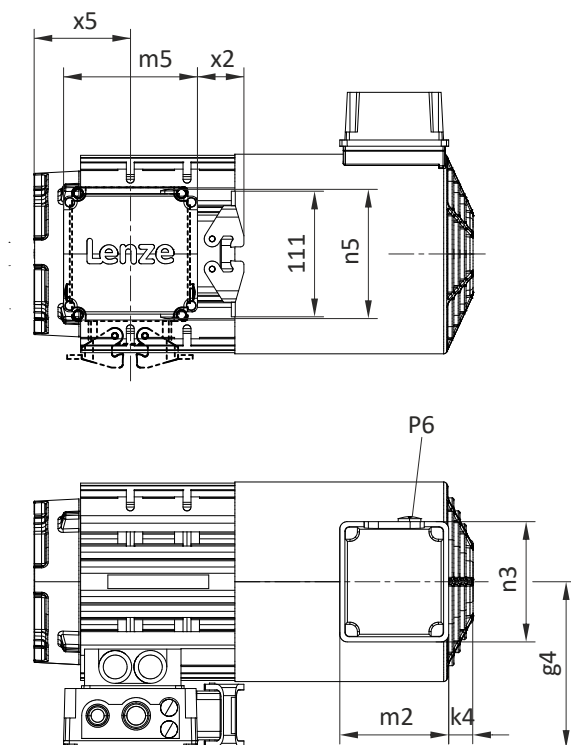
Positions of the connections

HAN connector positions





Dimensions of HAN connector



Motor			m540-P		
			100/M4	100/L4	112/M4
Gearbox					
g500-S8000	x ₅	mm	226	226	217
g500-S14000	x ₅	mm			205
g500-S19000	x ₅	mm			205
Terminal box					
	g ₄	mm	171	171	182
	x ₂	mm	46	46	46
	m ₅	mm	135	135	135
	n ₅	mm	135	135	135
	k ₄	mm	32	32	32
	m ₂	mm	95	95	95
	n ₃	mm	105	105	105
	P ₆	mm	1x M16x1.5	1x M16x1.5	1x M16x1.5

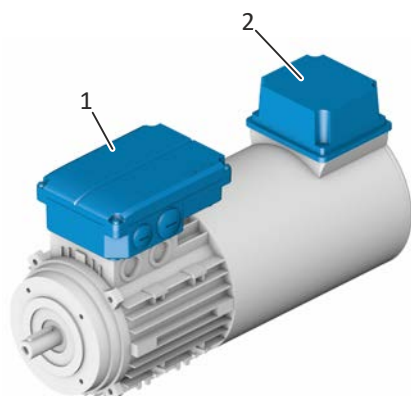
Product extensions

Motor connection
Connection via terminal box



Connection via terminal box

Position of the connections

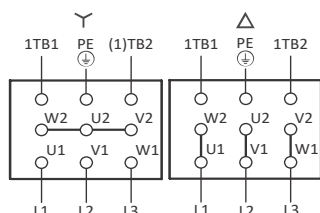


Position	Meaning	Note
1	Power connection Brake connection PE connection Feedback connection Connection of temperature monitoring	For the terminal boxes "KK5 and KK6", the position of the power connections "L", "R" or "E" must be specified.
2	Blower connection	When ordering, specify the mounting position of the terminal box: • Shown here: "T" • "L", "R" or "B" If required, the terminal box can be rotated step by step by 90 ° after loosening the screws in the terminal box.

Power connection

Bridge arrangement

Y/Δ connection



Terminal box, power		
Contact	Name	Meaning
PE	PE	PE conductor
U1	L1	Motor winding phase
V1	L2	
W1	L3	
1TB1		PTC thermistor temperature monitoring
1TB2		

DC brake connection

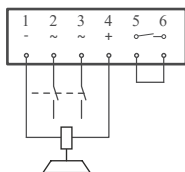
Terminal box, DC brake		
Contact	Name	Meaning
BD1	+	Brake +
BD2	-	Brake -



Product extensions

Motor connection
Connection via terminal box

AC brake connection



Switching contact - DC switching

Terminal box, AC brake		
Contact	Name	Meaning
~	BA1	Mains L1
	BA2	Mains N
+	BD1	Holding brake (factory-wired)
-	BD2	
Switch symbol		Switching contact - DC switching

Feedback connection

Terminal box, incremental encoder HTL/TTL		
Contact	Name	Meaning
+	+ UB	Supply +
-	GND	Mass
A	A/+COS	Track A / + COS
A ⁻	A ⁻ /Ref COS	Track A inverse /-COS
B	B/+SIN	Track B / +SIN
B ⁻	B ⁻ /Ref SIN	Track B inverse/-SIN
0	0	Zero track / + RS485
0 ⁻	0 ⁻	Zero track inverse /-RS485

Connection of temperature monitoring

Terminal box, temperature monitoring		
Contact	Name	Meaning
TB1		Temperature monitoring: TCO
TB2		
1TP1		
2TP1		
R1	+	Temperature sensor PT1000 +
R2	-	Temperature sensor PT1000 -
1TP2		PTC150 thermistor
2TP2		PTC130 thermistor

Blower connection

Terminal box, 1-phase separate fan		
Contact	Name	Meaning
PE	PE	PE conductor
U1	L1	Mains
U2	N	

Terminal box, 3-phase separate fan		
Contact	Name	Meaning
PE	PE	PE conductor
U1	L1	Mains connection
V1	L2	
W1	L3	

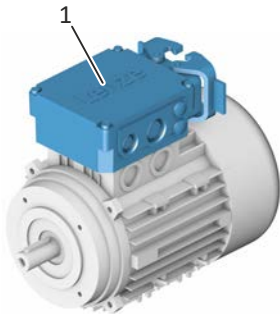
Product extensions

Motor connection
Connection via HAN connector



Connection via HAN connector

Position of the connections



Position	Meaning
1	Power connection Brake connection PE connection Connection of temperature monitoring

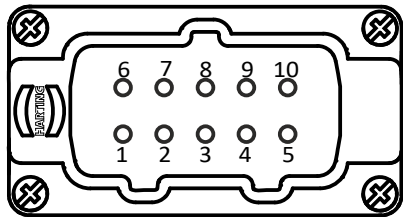
HAN 10E connector



The motor connection is specified in the counter plug.

The connector is only suitable for motors with the connection method Y/ Δ .

HAN 10E connector assignment



Bridge arrangement in the HAN 10E mating connector		
Contact	Name	Meaning
6-7-8	Y	Connection
1-6	Δ	
2-7		
3-8		

HAN 10 E		
Contact	Name	Meaning
1	U1	Motor winding phase
2	V1	
3	W1	
4	+/-AC	Brake
5	-/-AC	
6	W2	Motor winding phase
7	U2	
8	V2	
9	TKO/+PT1000	Temperature monitoring
10	TKO/-PT1000	



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.

Brake connection

If the installation is already supplied with DC voltage, a direct connection without rectifier is possible. High induction peaks may occur and a freewheeling diode or a spark suppressor should be provided.

A rectifier is required if the brake is connected to the mains. This is included in the scope of supply and is located in the motor's terminal box.

Rectifier

The rectifier converts the connection's AC voltage into a DC voltage.

Alternatively, a half-wave bridge rectifier can be used for the application brake. This provides twice the voltage for a very short time (300 ms). As a result, the features of the brake – depending on the assignment of the brake's coil voltage and supply voltage – can be optimized in the form of a short-term overexcitation of the brake coil or a reduction of the holding current.

AC or DC voltage switching

Brakes can be switched both before the rectifier (AC voltage switching) as well as after the rectifier (DC voltage switching). The choice of control system influences the engagement time of the armature plate, inter alia.

AC switching increases the engagement time by a factor of 5 to 10 compared to DC switching. This is to be observed taken into account when choosing the control system. DC switching is possible by simply removing a bridge and using the switching contact connection. However, this calls for two additional cores in the control cabinet.

DC switching is particularly expedient for lifting applications because a short engagement time is necessary here to guarantee a secure hold without any prior slipping of the load.

Motor supply cables

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

The following applies to Lenze system cables:

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

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 application brake



Spring-applied application brake

NOTICE

If used as a service brake, the braking torques are dependent on the motor speed to be braked.

► During braking from a high speed and in the event of emergency stops, the braking torque is significantly reduced.

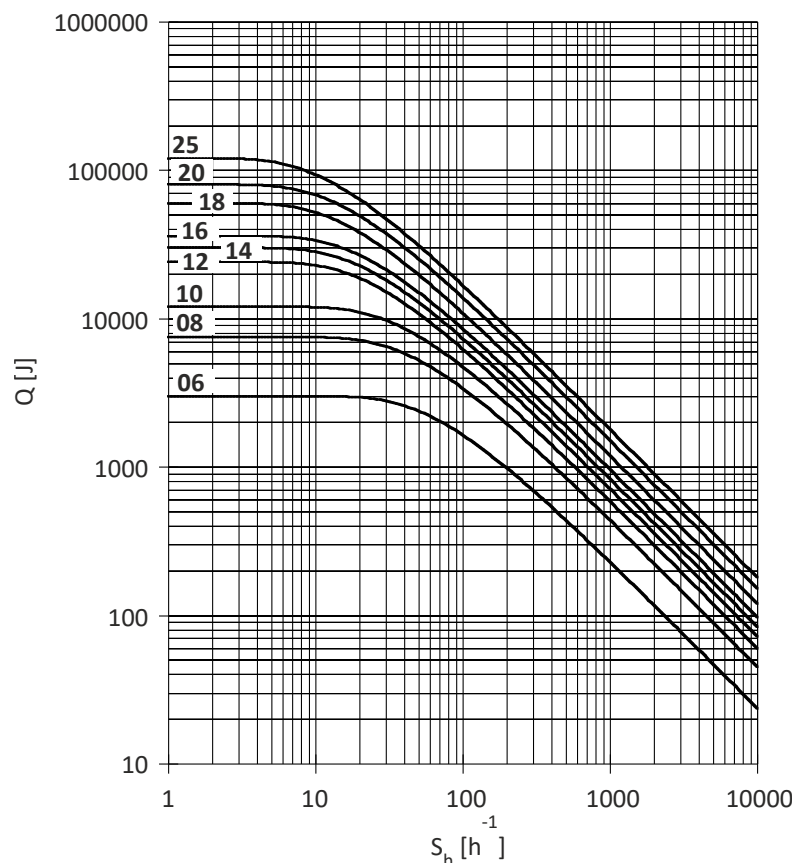
Friction linings

The application brakes are designed with low-wear friction linings:

- Long service life
- Short run-in process required
- Higher friction work until the brake is replaced
- Higher maximum switching work



Permissible friction energy

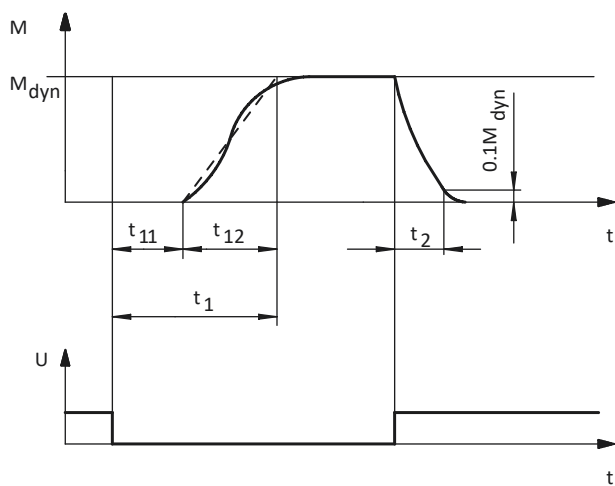


Q Switching energy per switching cycle

S_h Switching rate

06 ... 25 Brake size

Switching times of the spring-applied brakes



t_1 Engagement time

t_2 Disengagement time (up to $M = 0.1 M_{dyn}$)

M_{dyn} Braking torque at constant speed

t_{11} Delay time during linking

t_{12} Rise time of the braking torque

U Voltage

Product extensions

Brakes

Spring-applied application brake



Versions	Protection class IP55
	Standard
Control	DC supply AC supply via rectifier in the terminal box
Supply voltages	
DC voltage	DC 24 V ±10 % DC 205 V ±10 %
Mains voltage	AC 230 V ±10 % AC 400 V ±10 % AC 460 V ±10 %
Switching cycles	
Repetitive	1 x 10 ⁶
Reversing	1 x 10 ⁶
Friction lining	Low-wear
Options	Manual release UL/CSA-approved



Braking torques

An application brake with several braking torques is available for every motor frame size for an optimum adjustment of the brake motor to the application. Starting from a standard braking torque, the braking torques can be adjusted up or down.

When the braking torque is reduced, great wear reserves can be attained. A higher braking torque is to be provided for lifting applications. In this case, the earth's gravity acts as an additional acceleration in a negative direction.

In addition, some applications require a 2-fold safety factor for the braking torque.

Assignment of braking torques

Motor	Adjustable											
	ABR 08	ABR 10	ABR 12	ABR 14	ABR 16	ABR 18	ABR 20	ABR 25	ABR 30	ABR 40		
	Nm	Nm	Nm	Nm	Nm	Nm	Nm	Nm	Nm	Nm		
m540-P90/M4	4	8 16 20	14									
m540-P90/L4	8		32									
m540-P100/M4			14 32 40	38								
m540-P100/L4												
m540-P112/M4	20		38 60									
m540-P132/M4				63 80 100	80 150							
m540-P132/L4												
m540-P160/M4						145 260						
m540-P160/L4												
m540-P180/M4						145 260 315						
m540-P180/L4												
m540-P200/M4						265 400						
m540-P225/M4							300 400 650					
m540-P225/L4												
m540-P250/M4									650 750 850			

Product extensions

Brakes
Spring-applied application brake



Rated data, Standard design, IP55

Application brake ABR 08, ABR 10

Application brake		ABR 08		ABR 10		
Braking torque	Nm	4	8	8	16	20
Power input	W	25	25	30	30	30
Moment of inertia	kgcm ²	0.61	0.61	2	2	2
Braking torque is static	Nm	4	8	8	16	20
Min. static braking torque tolerance	%	-25	-25	-25	-25	-25
Max. static braking torque tolerance	%	35	35	35	35	35
Dynamic braking torque						
100 rpm	Nm	4.0	8.0	8.0	16	20
1000 rpm	Nm	3.6	7.2	7.0	14	17
1200 rpm	Nm	3.5	7.0	6.8	14	17
1500 rpm	Nm	3.4	6.8	6.6	13	17
1800 rpm	Nm	3.3	6.7	6.5	13	16
3000 rpm	Nm	3.0	6.3	6.1	12	15
3600 rpm	Nm	3.0	6.1	5.9	12	15
Min. dynamic braking torque tolerance	%	-25	-25	-25	-25	-25
Max. dynamic braking torque tolerance	%	35	35	35	35	35
Friction energy						
100 rpm	kJ	7.5	7.5	12	12	12
1000 rpm	kJ	7.5	7.5	12	12	12
1200 rpm	kJ	7.5	7.5	12	12	12
1500 rpm	kJ	7.5	7.5	12	12	12
1800 rpm	kJ	7.5	7.5	12	12	12
3000 rpm	kJ	7.5	7.5	12	12	12
3600 rpm	kJ	7.5	7.5	12	12	12
Maximum speed - operation	rpm	3600	3600	3600	3600	3600
Maximum speed - idle state	rpm	10000	10000	10000	10000	10000

Application brake		ABR 08		ABR 10		
Braking torque	Nm	4	8	8	16	20
Delay time t11						
DC voltage	ms	30	15	22	28	23
AC mains voltage	ms	30	15	22	28	23
Rise time t12						
DC voltage	ms	20	16	14	19	15
AC mains voltage	ms	20	16	14	19	15
Engagement time t1						
DC voltage	ms	50	31	36	47	38
AC mains voltage	ms	50	31	36	47	38
Disengagement time t2						
DC voltage	ms	30	57	55	76	93
AC mains voltage	ms	30	57	55	76	93
Friction energy QBW						
DC voltage	MJ	324	158	405	264	396
AC mains voltage	MJ	324	158	405	264	396
Reversing cycles		1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶
Repetitive cycles		1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶



Rated data, Standard design, IP55

Application brake ABR 12, ABR 14

Application brake		ABR 12			ABR 14	
Braking torque	Nm	14	32	40	38	60
Power input	W	40	40	40	50	50
Moment of inertia	kgcm ²	4.5	4.5	4.5	6.3	6.3
Braking torque is static	Nm	14	32	40	38	60
Min. static braking torque tolerance	%	-25	-25	-25	-25	-25
Max. static braking torque tolerance	%	35	35	35	35	35
Dynamic braking torque						
100 rpm	Nm	14	32	40	38	60
1000 rpm	Nm	12	27	34	32	51
1200 rpm	Nm	12	27	33	31	50
1500 rpm	Nm	11	26	32	30	48
1800 rpm	Nm	11	26	32	30	47
3000 rpm	Nm	10	24	30	28	44
3600 rpm	Nm	10	23	29	-	-
Min. dynamic braking torque tolerance	%	-25	-25	-25	-25	-25
Max. dynamic braking torque tolerance	%	35	35	35	35	35
Friction energy						
100 rpm	kJ	24	24	24	30	30
1000 rpm	kJ	24	24	24	30	30
1200 rpm	kJ	24	24	24	30	30
1500 rpm	kJ	24	24	24	30	30
1800 rpm	kJ	24	24	24	30	30
3000 rpm	kJ	24	24	24	18	18
3600 rpm	kJ	7	7	7	-	-
Maximum speed - operation	rpm	3600	3600	3600	3000	3000
Maximum speed - idle state	rpm	10000	10000	10000	10000	10000

Application brake		ABR 12			ABR 14	
Braking torque	Nm	14	32	40	38	60
Delay time t11						
DC voltage	ms	27	28	24	24	17
AC mains voltage	ms	27	28	24	24	17
Rise time t12						
DC voltage	ms	19	25	21	36	25
AC mains voltage	ms	19	25	21	36	25
Engagement time t1						
DC voltage	ms	46	53	45	60	42
AC mains voltage	ms	46	53	45	60	42
Disengagement time t2						
DC voltage	ms	65	115	140	140	210
AC mains voltage	ms	65	115	140	140	210
Friction energy QBW						
DC voltage	MJ	948	530	948	1276	571
AC mains voltage	MJ	948	530	948	1276	571
Reversing cycles		1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶
Repetitive cycles		1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶

Product extensions

Brakes
Spring-applied application brake



Rated data, Standard design, IP55

Application brake ABR 16, ABR 18

Application brake		ABR 16			ABR 18	
Braking torque	Nm	63	80	100	80	150
Power input	W	56	56	56	87	87
Moment of inertia	kgcm ²	15	15	15	29	29
Braking torque is static	Nm	63	80	100	80	150
Min. static braking torque tolerance	%	-25	-25	-25	-25	-25
Max. static braking torque tolerance	%	35	35	35	35	35
Dynamic braking torque						
100 rpm	Nm	63	80	100	80	150
1000 rpm	Nm	52	66	82	64	121
1200 rpm	Nm	50	65	80	62	118
1500 rpm	Nm	50	63	79	62	115
1800 rpm	Nm	48	61	76	59	112
3000 rpm	Nm	45	57	72	-	-
3600 rpm	Nm	-	-	-	-	-
Min. dynamic braking torque tolerance	%	-25	-25	-25	-25	-25
Max. dynamic braking torque tolerance	%	35	35	35	35	35
Friction energy						
100 rpm	kJ	36	36	36	60	60
1000 rpm	kJ	36	36	36	60	60
1200 rpm	kJ	36	36	36	60	60
1500 rpm	kJ	36	36	36	60	60
1800 rpm	kJ	36	36	36	36	36
3000 rpm	kJ	11	11	11	-	-
3600 rpm	kJ	-	-	-	-	-
Maximum speed - operation	rpm	3000	3000	3000	1800	1800
Maximum speed - idle state	rpm	10000	10000	10000	10000	10000

Application brake		ABR 16			ABR 18	
Braking torque	Nm	63	80	100	80	150
Delay time t11						
DC voltage	ms	34	27	24	20	33
AC mains voltage	ms	34	27	24	20	33
Rise time t12						
DC voltage	ms	38	30	25	20	45
AC mains voltage	ms	38	30	25	20	45
Engagement time t1						
DC voltage	ms	72	57	49	40	78
AC mains voltage	ms	72	57	49	40	78
Disengagement time t2						
DC voltage	ms	170	220	280	180	270
AC mains voltage	ms	170	220	280	180	270
Friction energy QBW						
DC voltage	MJ	2310	966	2310	2295	1542
AC mains voltage	MJ	2310	966	2310	2295	1542
Reversing cycles		1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶
Repetitive cycles		1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶



Rated data, Standard design, IP55

Application brake ABR 20, ABR 25

Application brake		ABR 20			ABR 25	
Braking torque	Nm	145	260	315	265	400
Power input	W	100	100	100	110	110
Moment of inertia	kgcm ²	73	73	73	200	200
Braking torque is static	Nm	145	260	315	265	400
Min. static braking torque tolerance	%	-25	-25	-25	-25	-25
Max. static braking torque tolerance	%	35	35	35	35	35
Dynamic braking torque						
100 rpm	Nm	145	260	315	265	400
1000 rpm	Nm	115	206	249	201	307
1200 rpm	Nm	112	201	243	196	300
1500 rpm	Nm	109	195	236	194	291
1800 rpm	Nm	-	-	-	-	-
3000 rpm	Nm	-	-	-	-	-
3600 rpm	Nm	-	-	-	-	-
Min. dynamic braking torque tolerance	%	-25	-25	-25	-25	-25
Max. dynamic braking torque tolerance	%	35	35	35	35	35
Friction energy						
100 rpm	kJ	80	80	80	120	120
1000 rpm	kJ	80	80	80	120	120
1200 rpm	kJ	80	80	80	120	120
1500 rpm	kJ	24	24	24	36	36
1800 rpm	kJ	-	-	-	-	-
3000 rpm	kJ	-	-	-	-	-
3600 rpm	kJ	-	-	-	-	-
Maximum speed - operation	rpm	1500	1500	1500	1500	1500
Maximum speed - idle state	rpm	10000	10000	10000	10000	10000

Application brake		ABR 20			ABR 25	
Braking torque	Nm	145	260	315	265	400
Delay time t11						
DC voltage	ms	72	65	60	155	110
AC mains voltage	ms	72	65	60	155	110
Rise time t12						
DC voltage	ms	108	100	80	120	120
AC mains voltage	ms	108	100	80	120	120
Engagement time t1						
DC voltage	ms	180	165	150	275	230
AC mains voltage	ms	180	165	150	275	230
Disengagement time t2						
DC voltage	ms	230	340	410	230	390
AC mains voltage	ms	230	340	410	230	390
Friction energy QBW						
DC voltage	MJ	4680	2322	3489	6480	3522
AC mains voltage	MJ	4680	2322	3489	6480	3522
Reversing cycles		1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶
Repetitive cycles		1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶

Product extensions

Brakes
Spring-applied application brake



Rated data, Standard design, IP55

Application brake ABR 30, ABR 40

Application brake		ABR 30			ABR 40		
Braking torque	Nm	300	400	650	650	750	850
Power input	W	140	140	220	140	140	140
Moment of inertia	kgcm ²	195	195	195	445	445	445
Braking torque is static	Nm	300	400	650	650	750	850
Dynamic braking torque							
100 rpm	Nm	300	400	650	650	750	850
1000 rpm	Nm	231	308	501	481	555	629
1200 rpm	Nm	225	300	488	468	540	612
1500 rpm	Nm	219	292	475	455	525	595
1800 rpm	Nm	213	284	462	442	510	578
3000 rpm	Nm	198	264	429	410	473	536
3600 rpm	Nm	-	-	-	-	-	-
Friction energy							
100 rpm	kJ	150	150	150	200	200	200
1000 rpm	kJ	150	150	150	200	200	200
1200 rpm	kJ	150	150	150	200	200	200
1500 rpm	kJ	150	150	150	200	200	200
1800 rpm	kJ	150	150	150	200	200	200
3000 rpm	kJ	150	150	150	200	200	200
3600 rpm	kJ	-	-	-	-	-	-

Application brake		ABR 30			ABR 40		
Braking torque	Nm	300	400	650	650	750	850
Delay time t11							
DC voltage		-	-	-	-	-	-
AC mains voltage	ms	120	105	70	160	190	190
Rise time t12							
DC voltage		-	-	-	-	-	-
AC mains voltage	ms	130	130	130	160	160	160
Engagement time t1							
DC voltage		-	-	-	-	-	-
AC mains voltage	ms	250	235	200	320	350	350
Disengagement time t2							
DC voltage		-	-	-	-	-	-
AC mains voltage	ms	180	200	250	400	350	350
Friction energy QBW							
DC voltage		-	-	-	-	-	-
AC mains voltage	MJ	3700	3700	3700	4000	4000	4000
Reversing cycles		1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶
Repetitive cycles		1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶	1x 10 ⁶

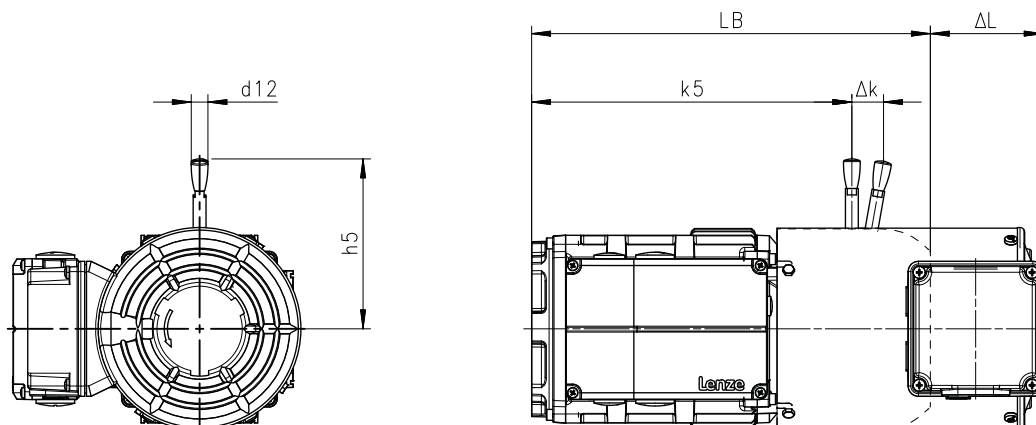


Product extensions

Brakes
Spring-applied application brake

Dimensions of the manual release lever

Standard design, degree of protection IP54/55



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Motor			m540-P									
			100/M4		112/M4		132/M4		160/M4		160/L4	
			100/L4				132/L4					
Brake			ABR10	ABR12	ABR12	ABR14	ABR16	ABR18	ABR18	ABR20	ABR18	ABR20
Gearbox												
g500-S8000	k5	mm	353	355	346	350	425	438	454	461	514	521
g500-S14000	k5	mm	-	-	334	338	412	425	441	448	501	508
g500-S19000	k5	mm	-	-	334	338	412	425	441	448	501	508
Brake												
	Δ k	mm	28	37	37	41	55	59	59	74	59	74
	h5	mm	132	161	161	195	240	279	279	319	279	319
	d12	mm	13.0	13.0	13.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0

Motor			m540-P									
			180/M4	180/L4	200/M4		225/M4		225/L4		250/M4	
			ABR 20	ABR 20	ABR 20	ABR 25	ABR 25	ABR 30	ABR 25	ABR 30	ABR 30	ABR 40
Gearbox												
g500-S8000	k5	mm	509	539	607	617	672	673	732	733	-	-
g500-S14000	k5	mm	495	525	594	604	657	658	717	718	736	736
g500-S19000	k5	mm	495	525	594	604	657	658	757	758	736	736
Brake												
	Δ k	mm	74	74	74	103	103	69	103	69	69	65
	h5	mm	319	319	319	445	445	330	445	330	330	377
	d12	mm	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0



Feedback

Resolver

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

Feedback type			Resolver
Feedback			RS1
Speed-dependent safety functions			nein
Design			Mounting
Resolution - angle		'	0.8
Min. accuracy		'	-10
Max. accuracy		'	10
Absolute positioning			1 revolution
Max. speed	$n_{\max}$	rpm	8000
Max. DC input voltage	$V_{\text{in,max}}$	V	10
Max. input frequency	$f_{\text{in,max}}$	kHz	4
Ratio stator/rotor			0.3
Min ratio tolerance		%	-5
Max ratio tolerance		%	5
Rotor impedance	Z_{ro}	Ω	51+j90
Stator impedance	Z_{so}	Ω	102+j150
Impedance	Z_{rs}	Ω	44+j76
Min. insulation resistance at DC 500 V	R_{min}	M Ω	10
Number of pole pairs			1
Max. angle error Min		'	-10
Max. angle error Max		'	10

Incremental encoder

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

Incremental HTL encoder

Feedback type			Encoder		
Feedback			IG512-24V-H	IG1024-24V-H	IG2048-24V-H
Design			Mounting	Mounting	Mounting
Pulses			512	1024	2048
Output signals			HTL	HTL	HTL
Interfaces			A, B; N; Ai, Bi; Ni	A, B; N; Ai, Bi; Ni	A, B; N; Ai, Bi; Ni
Absolute revolution			0	0	0
Min. accuracy		'	-2	-2	-2
Max. accuracy		'	2	2	2
Min. DC input voltage	$V_{\text{in,min}}$	V	8	8	8
Max. DC input voltage	$V_{\text{in,max}}$	V	30	30	30
Max. current consumption	I_{max}	A	0.15	0.15	0.15
Limit frequency	f_{max}	kHz	160	160	160



Blower

The motor is optionally available with a blower for operation with the rated torque and low motor speeds or a higher switching frequency.

The blower cools the motor independent of the motor speed.

If a blower is used, the torque does not have to be reduced if operated below 20 Hz.



A higher powered motor with simultaneous derating can be used in many cases instead of a blower.

Torque reduction at low motor frequencies ► [General information](#) 21

Standard version

Motor series			m540-P								
Size			090			100			112		
Number of phases			1	3	3	1	3	3	1	3	3
			-	Dreieck	Stern	-	Dreieck	Stern	-	Dreieck	Stern
Rated voltage	V _{rated}	V	230	230	400	230	230	400	230	230	400
Rated power	P _{rated}	kW	0.065	0.091	0.091	0.075	0.091	0.091	0.094	0.1	0.1
Rated current	I _{rated}	A	0.29	0.38	0.22	0.3	0.37	0.22	0.37	0.35	0.2

Motor series			m540-P								
Size			132			160			180		
Number of phases			1	3	3	1	3	3	1	3	3
			-	Dreieck	Stern	-	Dreieck	Stern	-	Dreieck	Stern
Rated voltage	V _{rated}	V	230	230	400	230	230	400	230	230	400
Rated power	P _{rated}	kW	0.15	0.15	0.15	0.25	0.36	0.36	0.23	0.22	0.22
Rated current	I _{rated}	A	0.57	0.58	0.33	0.97	0.93	0.56	0.93	0.71	0.4

Motor series			m540-P							
Size			200			225		250		
Number of phases			1	3	3	3	3	3	3	3
			-	Dreieck	Stern	Dreieck	Stern	Dreieck	Stern	
Rated voltage	V _{rated}	V	230	230	400	230	400	230	400	
Rated power	P _{rated}	kW	0.23	0.22	0.22	0.45	0.45	0.45	0.45	
Rated current	I _{rated}	A	0.93	0.85	0.51	2	1.15	2	1.15	

Product extensions

Temperature monitoring
PTC thermistor



Temperature monitoring

PTC thermistor

The PTC thermistor is operated in conjunction with a tripping unit. If the motor becomes too hot, the motor can be switched off with the aid of a contactor. In contrast to the thermal contact, a quick restart is possible.

Motor m540-P90

Functional principle			Sprunghafte Widerstandsänderung
Operating temperature		°C	155
Min. switching temperature		°C	-5
Max. switching temperature		°C	5
Temperature		°C	-20
Rated resistance			
155 °C			1330
140 °C			550
-20 °C			100

Motor m540-P100 ... P250

Functional principle			Sprunghafte Widerstandsänderung
Operating temperature		°C	155
Min. switching temperature		°C	-5
Max. switching temperature		°C	5
Temperature		°C	140
Rated resistance			
155 °C			3990
140 °C			1650
-20 °C			300



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 T	
	IEC adapter with plug-in hollow shaft											H	
	NEMA adapter with jaw coupling											A	
	NEMA adapter with plug-in hollow shaft											B	
	Servo motor adapter with plug-in hollow shaft											S	
	Servo motor adapter with jaw coupling											E D G	
Drive size													1A ... □H 08 ... 82



Motor product code

Example		M	54	A	P	090	M	04	5	E	0	0	C	C
Product type	Motor	M												
Product family			54											
Version				A										
Efficiency class	IE3				P									
Size						090 100 112 132 160 180 200 225 250								
Overall length	Medium						M							
	Long						L							
Number of poles	4-pole							04						
Protection class	IP55								5					
	IP65								6					
Cooling	Self-ventilation									E				
	Forced ventilation									F				
Brake	Without										0			
	Spring-applied brake										F			
Feedback	Without											0		
	Incremental encoder											E		
Approvals	None												N	
	CE												C	
	CE, cURus												U	
Design types	Internal key													C



Motor data

Rated data
Rated data 50 Hz

Motor data

Rated data

Rated data 50 Hz

Motor			m540-P				
			90/L4	100/M4	100/L4	112/M4	132/M4
Rated power	P_{rated}	kW	1.5	2.2	3	4	5.5
Rated speed	n_{rated}	rpm	1445	1465	1460	1460	1470
Max. speed	n_{max}	rpm	3600	3600	3600	3600	3600
Rated voltage							
Delta		V	230	230	230	230	230
Star	$V_{N, Y}$	V	400	400	400	400	400
Rated current							
230 V	$I_{N, \Delta}$	A	5.50	7.60	10.2	13.7	18.7
400 V	$I_{N, Y}$	A	3.15	4.40	5.90	7.90	10.8
Starting current	I_a	A	22.7	37.0	49.0	56.1	92.9
Rated torque	M_{rated}	Nm	9.91	14.3	19.6	26.2	35.7
Starting torque	M_a	Nm	26.8	45.8	49.0	62.9	104
Stalling torque	M_b	Nm	35.7	62.9	76.4	96.9	132
Power factor	$\cos \phi$		0.8	0.83	0.83	0.82	0.82
Efficiency							
at 50 % P_{rated}	η		0.849	0.859	0.879	0.886	0.894
at 75 % P_{rated}	η		0.859	0.870	0.885	0.892	0.900
at 100 % P_{rated}	η		0.853	0.867	0.877	0.886	0.896
Moment of inertia	J	kgcm ²	49.0	140	140	170	340
Weight	m	kg	15.0	29.0	29.0	29.0	57.0

Motor data

Rated data

Rated data 50 Hz



Motor			m540-P				
			132/L4	160/M4	160/L4	180/M4	180/L4
Rated power	P_{rated}	kW	7.5	11	15	18.5	22
Rated speed	n_{rated}	rpm	1465	1475	1475	1470	1470
Max. speed	n_{max}	rpm	3600	3600	3600	3600	3600
Rated voltage							
Delta		V	230	230	230	230	230
Star	$V_{N, Y}$	V	400	400	400	400	400
Rated current							
230 V	$I_{N, \Delta}$	A	24.8	35.5	49.4	60.5	71.0
400 V	$I_{N, Y}$	A	14.3	20.5	28.5	35.0	41.0
Starting current	I_a	A	117	156	242	252	279
Rated torque	M_{rated}	Nm	48.9	71.2	97.1	120	143
Starting torque	M_a	Nm	127	185	243	301	329
Stalling torque	M_b	Nm	181	242	369	397	472
Power factor	$\cos \phi$		0.84	0.84	0.82	0.82	0.83
Efficiency							
at 50 % P_{rated}	η		0.908	0.912	0.915	0.930	0.936
at 75 % P_{rated}	η		0.911	0.918	0.923	0.931	0.936
at 100 % P_{rated}	η		0.904	0.914	0.921	0.926	0.930
Moment of inertia	J	kgcm ²	460	830	990	1300	1400
Weight	m	kg	57.0	73.0	90.0	165	170

Motor			m540-P			
			200/M4	225/M4	225/L4	250/M4
Rated power	P_{rated}	kW	30	37	45	55
Rated speed	n_{rated}	rpm	1470	1478	1478	1482
Max. speed	n_{max}	rpm	3600	3600	3600	3600
Rated voltage						
Delta		V	230	230	230	230
Star	$V_{N, Y}$	V	400	400	400	400
Rated current						
230 V	$I_{N, \Delta}$	A	95.5	115	139	167
400 V	$I_{N, Y}$	A	55.0	66.0	80.0	96.0
Starting current	I_a	A	402	422	512	653
Rated torque	M_{rated}	Nm	195	239	291	354
Starting torque	M_a	Nm	507	598	757	885
Stalling torque	M_b	Nm	604	646	786	1.03e+3
Power factor	$\cos \phi$		0.84	0.86	0.86	0.87
Efficiency						
at 50 % P_{rated}	η		0.942	0.944	0.951	0.950
at 75 % P_{rated}	η		0.942	0.945	0.949	0.951
at 100 % P_{rated}	η		0.936	0.939	0.942	0.946
Moment of inertia	J	kgcm ²	2200	4200	4700	8500
Weight	m	kg	240	285	320	420



Motor data

Rated data
Rated data 60 Hz

Rated data 60 Hz

Motor			m540-P				
			90/L4	100/M4	100/L4	112/M4	132/M4
Rated power	P_{rated}	kW	1.5	2.2	3	3.7	5.5
Rated speed	n_{rated}	rpm	1755	1770	1760	1770	1775
Max. speed	n_{max}	rpm	3600	3600	3600	3600	3600
Rated voltage							
Star	$V_{N, Y}$	V	460	460	460	460	460
Rated current							
460 V	$I_{N, Y}$	A	2.85	3.80	5.10	6.50	9.30
Starting current	I_a	A	23.9	36.5	48.5	53.3	90.2
Rated torque	M_{rated}	Nm	8.16	11.9	16.3	20.0	29.6
Starting torque	M_a	Nm	24.5	41.7	50.5	58.0	115
Stalling torque	M_b	Nm	35.1	60.7	75.0	86.0	133
Power factor	$\cos \phi$		0.77	0.81	0.82	0.8	0.81
Efficiency							
at 50 % P_{rated}	η		0.846	0.872	0.883	0.877	0.905
at 75 % P_{rated}	η		0.864	0.892	0.895	0.894	0.916
at 100 % P_{rated}	η		0.865	0.895	0.895	0.895	0.917
Moment of inertia	J	kgcm ²	49.0	140	140	170	340
Weight	m	kg	15.0	29.0	29.0	29.0	57.0

Motor			m540-P				
			132/L4	160/M4	160/L4	180/M4	180/L4
Rated power	P_{rated}	kW	7.5	11	15	18.5	22
Rated speed	n_{rated}	rpm	1770	1775	1780	1775	1775
Max. speed	n_{max}	rpm	3600	3600	3600	3600	3600
Rated voltage							
Star	$V_{N, Y}$	V	460	460	460	460	460
Rated current							
460 V	$I_{N, Y}$	A	12.4	18.0	25.0	30.5	36.5
Starting current	I_a	A	119	160	238	238	281
Rated torque	M_{rated}	Nm	40.5	59.2	80.5	99.5	118
Starting torque	M_a	Nm	109	178	234	269	332
Stalling torque	M_b	Nm	170	225	346	358	438
Power factor	$\cos \phi$		0.83	0.83	0.81	0.81	0.81
Efficiency							
at 50 % P_{rated}	η		0.910	0.911	0.914	0.931	0.933
at 75 % P_{rated}	η		0.918	0.923	0.928	0.937	0.938
at 100 % P_{rated}	η		0.917	0.924	0.930	0.936	0.936
Moment of inertia	J	kgcm ²	460	830	990	1300	1400
Weight	m	kg	57.0	73.0	90.0	165	170

Motor data

Rated data

Rated data 60 Hz



Motor			m540-P			
			200/M4	225/M4	225/L4	250/M4
Rated power	P_{rated}	kW	30	37	45	55
Rated speed	n_{rated}	rpm	1778	1782	1782	1786
Max. speed	n_{max}	rpm	3600	3600	3600	3600
Rated voltage						
Star	$V_{N, Y}$	V	460	460	460	460
Rated current						
460 V	$I_{N, Y}$	A	48.0	58.0	71.0	84.0
Starting current	I_a	A	389	435	511	638
Rated torque	M_{rated}	Nm	161	198	241	294
Starting torque	M_a	Nm	483	555	699	823
Stalling torque	M_b	Nm	564	595	723	941
Power factor	$\cos \phi$		0.83	0.85	0.84	0.86
Efficiency						
at 50 % P_{rated}	η		0.938	0.942	0.949	0.951
at 75 % P_{rated}	η		0.943	0.947	0.953	0.956
at 100 % P_{rated}	η		0.941	0.945	0.950	0.954
Moment of inertia	J	kgcm ²	2200	4200	4700	8500
Weight	m	kg	240	285	320	420



Motor data

Rated data
Rated data 87 Hz

Rated data 87 Hz

Motor			m540-P				
			90/L4	100/M4	100/L4	112/M4	132/M4
Rated power	P _{rated}	kW	2.6	3.9	5.2	7.35	9.6
Rated speed	n _{rated}	rpm	2555	2575	2570	2570	2580
Max. speed	n _{max}	rpm	3600	3600	3600	3600	3600
Max. torque	M _{max}	Nm	35.5	62.5	75.9	96.4	130
Rated voltage							
Delta	V _{N, Δ}	V	400	400	400	400	400
Rated current							
400 V	I _{N, Δ}	A	5.80	8.00	10.7	14.4	19.6
Rated torque	M _{rated}	Nm	9.91	14.3	19.6	26.2	35.7
Power factor	cos φ		0.76	0.82	0.82	0.81	0.81
Efficiency							
at 50 % P _{rated}	η		0.870	0.888	0.887	0.892	0.910
at 75 % P _{rated}	η		0.880	0.898	0.897	0.902	0.920
at 100 % P _{rated}	η		0.880	0.898	0.897	0.902	0.920
Moment of inertia	J	kgcm ²	49.0	140	140	170	340
Weight	m	kg	15.0	29.0	29.0	29.0	57.0

Motor			m540-P				
			132/L4	160/M4	160/L4	180/M4	180/L4
Rated power	P _{rated}	kW	13.1	19.2	26.3	32.2	38.5
Rated speed	n _{rated}	rpm	2575	2585	2585	2580	2580
Max. speed	n _{max}	rpm	3600	3600	3600	3600	3600
Max. torque	M _{max}	Nm	181	226	364	392	468
Rated voltage							
Delta	V _{N, Δ}	V	400	400	400	400	400
Rated current							
400 V	I _{N, Δ}	A	26.0	36.6	50.9	62.3	73.1
Rated torque	M _{rated}	Nm	48.9	71.2	97.1	120	143
Power factor	cos φ		0.84	0.82	0.8	0.79	0.82
Efficiency							
at 50 % P _{rated}	η		0.909	0.913	0.915	0.921	0.923
at 75 % P _{rated}	η		0.919	0.923	0.925	0.936	0.938
at 100 % P _{rated}	η		0.919	0.923	0.925	0.936	0.938
Moment of inertia	J	kgcm ²	460	830	990	1300	1400
Weight	m	kg	57.0	73.0	90.0	165	170

Motor data

Rated data

Rated data 87 Hz



Motor			m540-P			
			200/M4	225/M4	225/L4	250/M4
Rated power	P_{rated}	kW	52.5	64.8	78.7	87
Rated speed	n_{rated}	rpm	2580	2588	2588	2598
Max. speed	n_{max}	rpm	3600	3600	3600	3600
Max. torque	M_{max}	Nm	604	645	786	1020
Rated voltage						
Delta	$V_{N, \Delta}$	V	400	400	400	400
Rated current						
400 V	$I_{N, \Delta}$	A	98.4	119	143	154
Rated torque	M_{rated}	Nm	195	239	291	320
Power factor	$\cos \phi$		0.83	0.85	0.86	0.86
Efficiency						
at 50 % P_{rated}	η		0.928	0.916	0.919	0.923
at 75 % P_{rated}	η		0.943	0.926	0.934	0.938
at 100 % P_{rated}	η		0.943	0.926	0.934	0.938
Moment of inertia	J	kgcm ²	2200	4200	4700	8500
Weight	m	kg	240	285	320	420



Ecodesign Directive

Product information acc. to REGULATION (EU) 2019/1781 (ANNEX I, Section 2)

Legend

Efficiency (η_{rated} , η) The efficiency refers to the rated voltage and an ambient reference temperature of 25 °C.

Operating points (n; M) n = Speed as a percentage of the rated speed n_{rated} ; M = Torque as a percentage of the rated torque M_{rated}

Power losses P_V (n; M) Power losses as a percentage of the rated output power P_{rated} for the operating points (n; M).

Rated efficiency at full load	η_{rated}	%	84.1	86.5	85.3	86.5	86.7	89.5	87.7	89.5
Efficiency at 75 % rated load	η	%	84.7	86.4	85.9	86.4	87	89.2	88.5	89.5
Efficiency at 50 % rated load	η	%	83.4	84.2	84.9	84.6	85.9	87.2	87.9	88.3
Efficiency level			IE3							
Name of the manufacturer			Lenze SE · Hans-Lenze-Str. 1 · 31855 Aerzen · GERMANY							
Commercial register number			Hannover HRB 204803							
Model identifier of the product			M54AP090M04		M54AP090L04		M54AP100M04		M54AP100L04	
Number of poles of the motor			4							
Rated output power	P_{rated}	kW	1.1		1.5		2.2		3	
Rated input frequency	f_{rated}	Hz	50	60	50	60	50	60	50	60
Rated voltage	V_{rated}	V	400	460	400	460	400	460	400	460
Rated speed	n_{rated}	min ⁻¹	1440	1750	1445	1755	1465	1770	1460	1760
Number of motor phases			Three-phase motor							
Altitudes above sea level		m	0 ... 1000							
Ambient air temperature		°C	-20 ... +40							
Maximum operating temperature		°C	155							
Potentially explosive atmospheres			Operation in explosive atmospheres not permitted							
Power losses										
25; 25	P_V (n; M)	%	5	5	3	3	2	3	2	3
25; 100	P_V (n; M)	%	15	15	14	14	10	9	11	11
50; 25	P_V (n; M)	%	6	6	4	4	3	4	3	4
50; 50	P_V (n; M)	%	8	8	6	6	5	5	5	5
50; 100	P_V (n; M)	%	17	17	15	15	11	11	12	12
90; 50	P_V (n; M)	%	10	10	8	8	6	7	6	7
90; 100	P_V (n; M)	%	19	19	18	18	13	13	14	14



Rated efficiency at full load	η_{rated}	%	89.5	88.6	89.6	91.7	90.4	91.7	91.4	92.4
Efficiency at 75 % rated load	η	%	89.4	89.2	90	91.6	91.1	91.8	91.8	92.3
Efficiency at 50 % rated load	η	%	87.7	88.6	89.4	90.5	90.8	91	91.2	91.1
Efficiency level			IE3							
Name of the manufacturer			Lenze SE · Hans-Lenze-Str. 1 · 31855 Aerzen · GERMANY							
Commercial register number			Hannover HRB 204803							
Model identifier of the product			M54AP112M04		M54AP132M04		M54AP132L04		M54AP160M04	
Number of poles of the motor			4							
Rated output power	P_{rated}	kW	3.7	4	5.5		7.5		11	
Rated input frequency	f_{rated}	Hz	60	50	50	60	50	60	50	60
Rated voltage	V_{rated}	V	460	400	400	460	400	460	400	460
Rated speed	n_{rated}	min ⁻¹	1770	1460	1470	1775	1465	1770	1475	1775
Number of motor phases			Three-phase motor							
Altitudes above sea level		m	0 ... 1000							
Ambient air temperature		°C	-20 ... +40							
Maximum operating temperature		°C	155							
Potentially explosive atmospheres			Operation in explosive atmospheres not permitted							
Power losses										
25; 25	$P_V(n; M)$	%	2	2	2	2	2	2	2	2
25; 100	$P_V(n; M)$	%	10	10	7	7	8	7	7	6
50; 25	$P_V(n; M)$	%	3	3	2	2	2	2	3	2
50; 50	$P_V(n; M)$	%	5	5	4	4	3	4	4	3
50; 100	$P_V(n; M)$	%	11	11	8	8	9	8	8	7
90; 50	$P_V(n; M)$	%	6	6	5	5	5	5	5	5
90; 100	$P_V(n; M)$	%	13	13	10	10	10	10	9	9



Rated efficiency at full load	η_{rated}	%	92.1	93	92.6	93.6	93	93.6	93.6	94.1
Efficiency at 75 % rated load	η	%	92.3	92.8	93.1	93.7	93.6	93.8	94.2	94.3
Efficiency at 50 % rated load	η	%	91.5	91.4	93	93.1	93.6	93.3	94.2	93.8
Efficiency level			IE3							
Name of the manufacturer			Lenze SE · Hans-Lenze-Str. 1 · 31855 Aerzen · GERMANY							
Commercial register number			Hannover HRB 204803							
Model identifier of the product			M54AP160L04		M54AP180M04		M54AP180L04		M54AP200M04	
Number of poles of the motor			4							
Rated output power	P_{rated}	kW	15		18.5		22		30	
Rated input frequency	f_{rated}	Hz	50	60	50	60	50	60	50	60
Rated voltage	V_{rated}	V	400	460	400	460	400	460	400	460
Rated speed	n_{rated}	min ⁻¹	1475	1780	1470	1775	1470	1775	1470	1778
Number of motor phases			Three-phase motor							
Altitudes above sea level		m	0 ... 1000							
Ambient air temperature		°C	-20 ... +40							
Maximum operating temperature		°C	155							
Potentially explosive atmospheres			Operation in explosive atmospheres not permitted							
Power losses										
25; 25	$P_V (n; M)$	%	1	2	2	1	1	1	1	1
25; 100	$P_V (n; M)$	%	6	6	6	6	6	6	5	5
50; 25	$P_V (n; M)$	%	2	3	2	2	2	2	2	2
50; 50	$P_V (n; M)$	%	3	4	3	3	3	3	2	2
50; 100	$P_V (n; M)$	%	7	8	7	6	7	7	6	6
90; 50	$P_V (n; M)$	%	4	6	4	4	4	4	4	3
90; 100	$P_V (n; M)$	%	9	10	8	8	8	8	7	7



Rated efficiency at full load	η_{rated}	%	93.9	94.5	94.2	95	94.6	95.4
Efficiency at 75 % rated load	η	%	94.5	94.7	94.9	95.3	95.1	95.6
Efficiency at 50 % rated load	η	%	94.4	94.2	95.1	94.9	95	95.1
Efficiency level			IE3					
Name of the manufacturer			Lenze SE · Hans-Lenze-Str. 1 · 31855 Aerzen · GERMANY					
Commercial register number			Hannover HRB 204803					
Model identifier of the product			M54AP225M04		M54AP225L04		M54AP250M04	
Number of poles of the motor			4					
Rated output power	P_{rated}	kW	37		45		55	
Rated input frequency	f_{rated}	Hz	50	60	50	60	50	60
Rated voltage	V_{rated}	V	400	460	400	460	400	460
Rated speed	n_{rated}	min ⁻¹	1478	1782	1478	1782	1482	1786
Number of motor phases			Three-phase motor					
Altitudes above sea level		m	0 ... 1000					
Ambient air temperature		°C	-20 ... +40					
Maximum operating temperature		°C	155					
Potentially explosive atmospheres			Operation in explosive atmospheres not permitted					
Power losses								
25; 25	$P_V (n; M)$	%	1	1	1	1	1	1
25; 100	$P_V (n; M)$	%	5	5	5	5	4	4
50; 25	$P_V (n; M)$	%	1	1	1	1	1	1
50; 50	$P_V (n; M)$	%	2	2	2	2	2	2
50; 100	$P_V (n; M)$	%	6	5	5	5	4	5
90; 50	$P_V (n; M)$	%	3	3	3	3	3	3
90; 100	$P_V (n; M)$	%	7	7	6	6	6	6



Environmental notes and recycling

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



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



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

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

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

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



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

REACH

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

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

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

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



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

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



Appendix

Good to know

Operating modes of the motor

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



Enclosures

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

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

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

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