g500-S + MF shaft-mounted helical geared motors, inverter-optimized

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About this document

Document description

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

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

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

Further documents

Information and tools with regard to the Lenze products can be found on the Internet:
www.lenze.com → Downloads

Notations and conventions

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

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

Layout of the safety instructions

⚠DANGER!

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

⚠WARNING!

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

⚠CAUTION!

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

NOTICE

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

Product information

Product description

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

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

Types

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

Three-phase AC motor for inverter operation

In a power range from 0.55 to 22 kW, Lenze offers inverter-compatible three-phase AC motors for more extensive tasks.

The energy-efficient, inverter-optimized MF three-phase AC motors are particularly suitable for tasks that demand large setting ranges with minimal sizes.

Customer benefit

- Exceed efficiency class IE2
- Four-pole motors in the designs B3, B5 and B14
- Setting range up to 1:24 with constant torque
- More dynamic than conventional three-phase AC motors
- Optimized for use as geared motors with g500 gearboxes and i510 cabinet, i550 cabinet, i550 protec and i550 motec frequency inverters

g500-S950 gearbox with MFEMAXX090-32 motor

Identification of the products

Gearbox product name

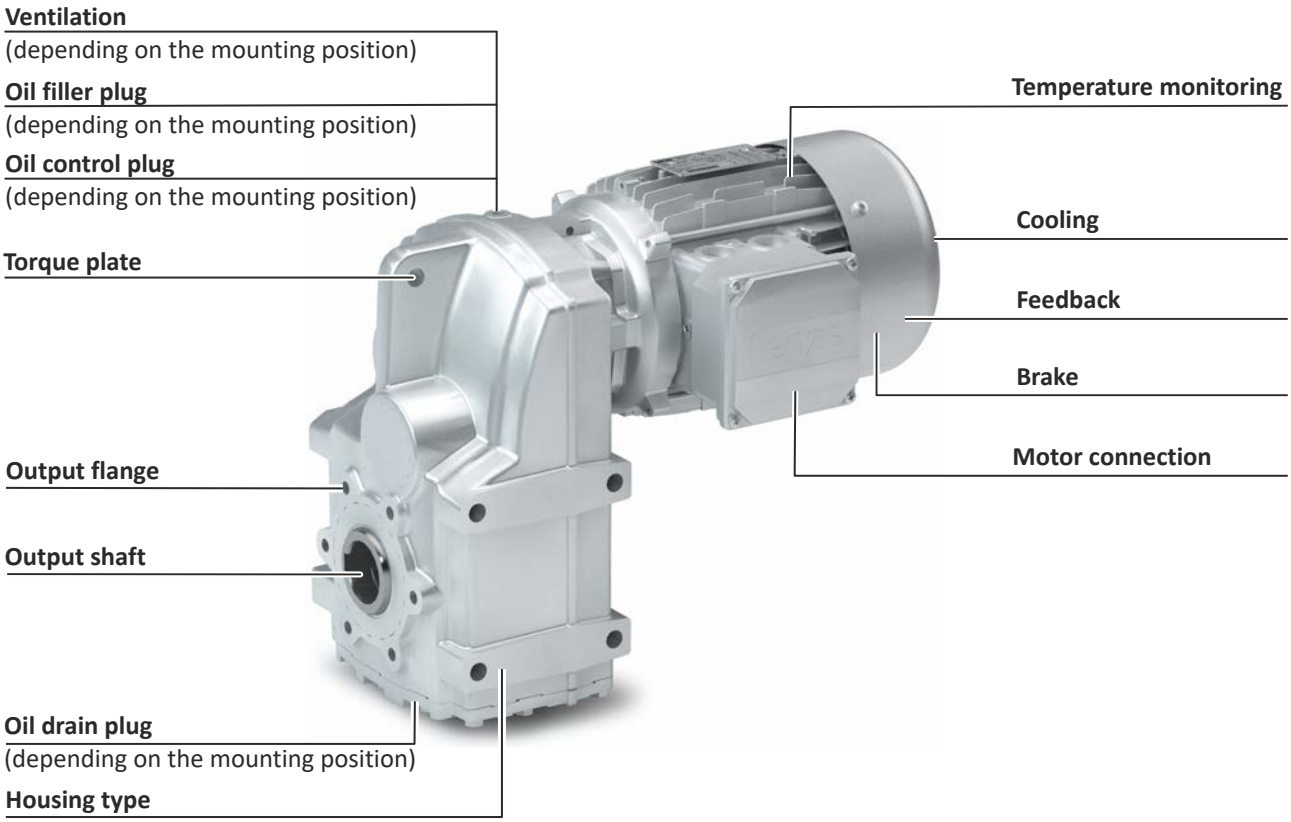
Gearbox type	Product series		Type	Rated torque Nm	Product
Shaft-mounted helical gearbox	g500	-	S	130	g500-S130
				220	g500-S220
				400	g500-S400
				660	g500-S660
				950	g500-S950
				2100	g500-S2100
				3100	g500-S3100
				4500	g500-S4500

Three-phase AC motor product name

Meaning	Variant	Product name							
Product family		MF							
Wildcard	Cooling		□						
Internal code				MA					
Wildcard	Brake Feedback				□□				
Size						063 080 090 100 112 132			
Overall length								1 ... 4	
Number of pole pairs	4-pole								2

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 up to 660 Nm

Gearbox		**g500-S130**	**g500-S220**	**g500-S400**	**g500-S660**
Min. motor assignment		**MF□MA□□063**	**MF□MA□□063**	**MF□MA□□063**	**MF□MA□□063**
Max. motor assignment		**MF□MA□□090**	**MF□MA□□100**	**MF□MA□□112**	**MF□MA□□132**
Technical data					
Max. output torque	Nm	130	220	400	660
Min. drive power at 50 Hz	kW	0.55	0.55	0.55	0.55
Max. drive power at 50 Hz	kW	4.0	7.5	11	22
Mounting position					
Standard		**M1/M2/M3/M4/M5/M6 (ABCDEF)**			
Combined		M1/5/6 (AEF)			
Color		**Unpainted** Primed/RAL colors			
Surface and corrosion protection		**Without OKS** Different types of OKS			
Output shaft					
Solid shaft with featherkey (V)	mm	25 x 50	25 x 50	30 x 60	35 x 70 40 x 80
Hollow shaft with keyway (H)	mm	25	25/30	30/35	40/45
Hollow shaft with shrink disc (S)	mm	25	25/30	35	40
Shaft material		**Steel** Stainless steel			
Output shaft bearing		Normal			
Gearbox design		With foot (HBR/VBR) **Without foot and centring (HCR)**/(VCR/SCR) With centring (HCR/VCR/SCR) With output flange (HCK/VCK/SCK)			
Output flange (K)	mm	160	160	200	200/250
Ventilation		Without		Vent valve	
Cooling		**Integral fan** Blower			
Product extensions					
Torque plate		Rubber buffers			
Shaft cover		Shrink disc cover			
Connection method		Y/Δ			
Connection type		**Terminal box** ICN connector HAN connector M12 connector			
Spring-applied brake		**Without** With			
Feedback		**Without** Resolver Incremental encoder Absolute value encoder			
Temperature monitoring		**TKO thermal contact** PT1000 temperature sensor PTC thermistor			

Geared motors from 950 Nm to 4500 Nm

Gearbox		**g500-S950**	**g500-S2100**	**g500-S3100**	**g500-S4500**
Min. motor assignment		**MF□MA□□063**	**MF□MA□□063**	**MF□MA□□063**	**MF□MA□□063**
Max. motor assignment		**MF□MA□□132**	**MF□MA□□132**	**MF□MA□□132**	**MF□MA□□132**
Technical data					
Max. output torque	Nm	950	2100	3100	4500
Min. drive power	kW	0.55	0.55	0.55	0.55
Max. drive power	kW	22	22	22	22
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	40 x 80	50 x 100	60 x 120	70 x 140 80 x 160
Hollow shaft with keyway (H)	mm	40	50/55	60/70	70/80
Hollow shaft with shrink disc (S)	mm	40	50	65	75/80
Shaft material		**Steel** Stainless steel			
Output shaft bearing		Normal			
Gearbox design		**With foot (HBR)**/(VBR/SBR) With foot and centering (HAR/VAR(SAR) With foot and output flange (HAK/VAK/SAK)			
Output flange (K)	mm	250	250/300	350	400/450
Ventilation		**Vent valve**			
			Oil compensation reservoir		
Cooling		**Integral fan** Blower			
Product extensions					
Torque plate		Rubber buffers			
Shaft cover		Shrink disc cover			
Connection method		Y/Δ			
Connection type		**Terminal box** ICN connector HAN connector M12 connector			
Spring-applied brake		**Without** With			
Feedback		**Without** Resolver Incremental encoder Absolute value encoder			
Temperature monitoring		**TKO thermal contact** PT1000 temperature sensor PTC thermistor			

Designs

Gearbox designs

Observe the available gearbox designs!

▸ The modular system 📖 12

g500-S130 ... S660

Hollow shaft, with foot

Without centring (HBR)

Hollow shaft, without foot

Without centring (HDR)

With centering (HCR)

Flange with through holes (HCK)

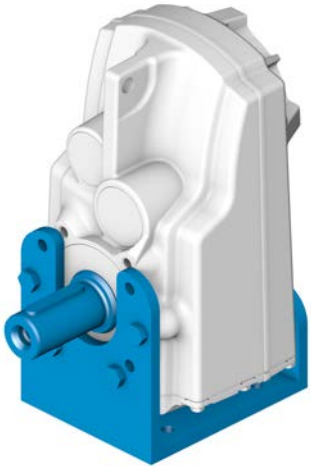
Shrink disc, without foot

Without centring (SDR)

With centring (SCR)

Flange with through holes (SCK)

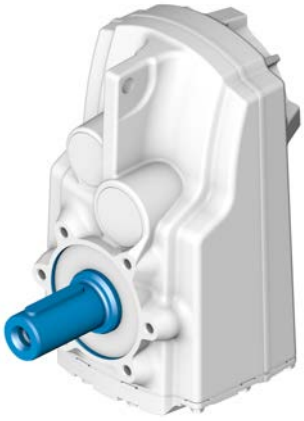
Solid shaft, with foot



Without centring (VBR)

Solid shaft, without foot

Without centring (VDR)

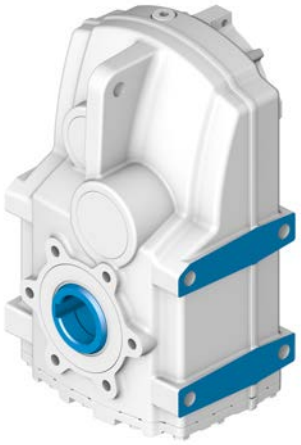


With centering (VCR)

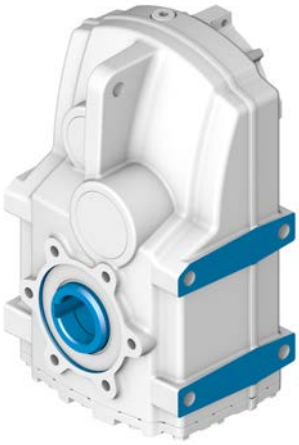
Flange with through holes (VCK)

g500-S950 ... S4500

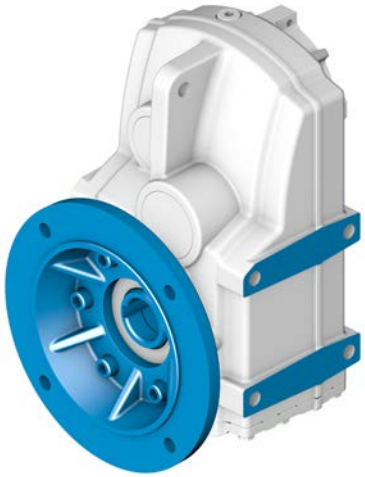
Hollow shaft, with foot



Without centring (HBR)



With centring (HAR)

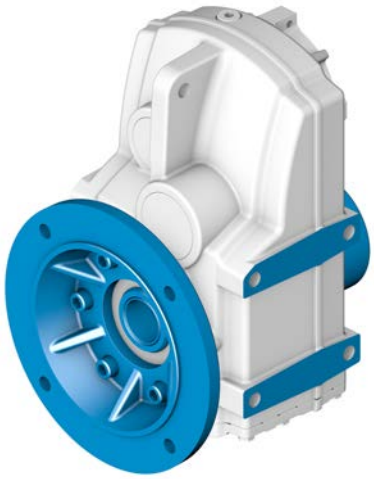


Flange with through holes (HAK)

Shrink disc, with foot

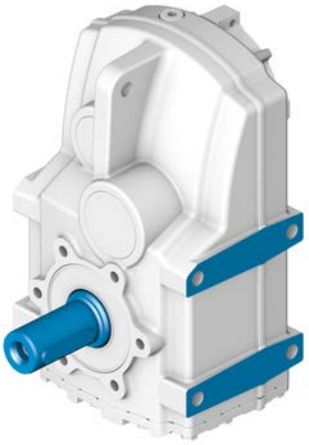
Without centring (SBR)

With centring (SAR)

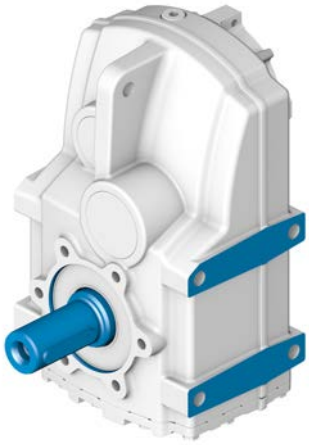


Flange with through holes (SAK)

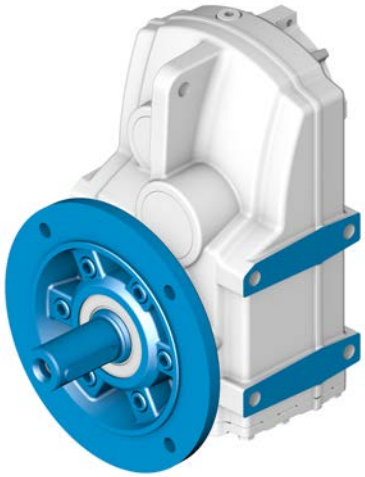
Solid shaft, with foot



Without centring (VBR)



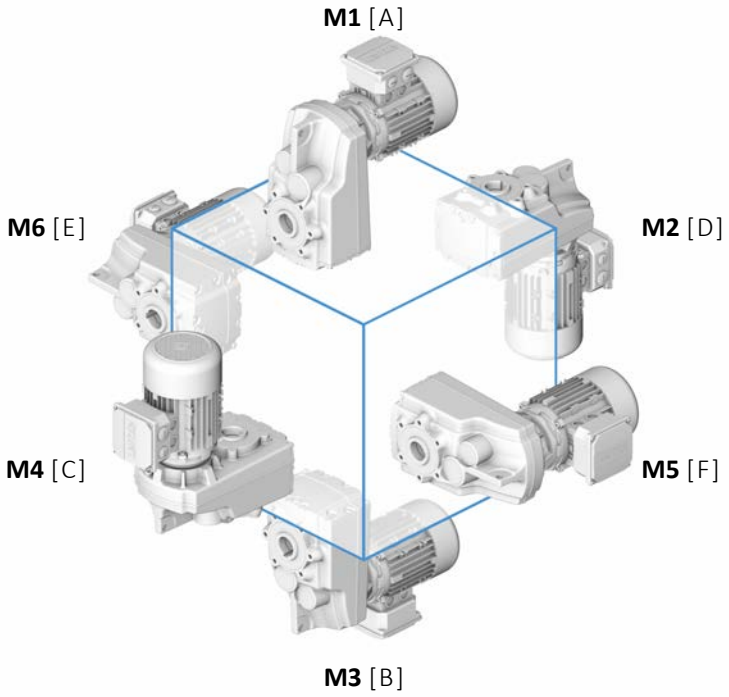
With centring (VAR)



Flange with through holes (VAK)

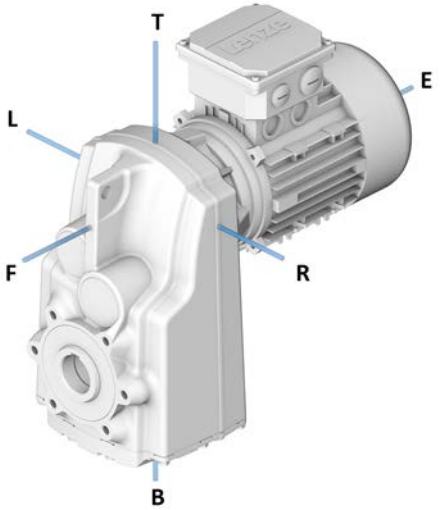
Mounting positions

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.



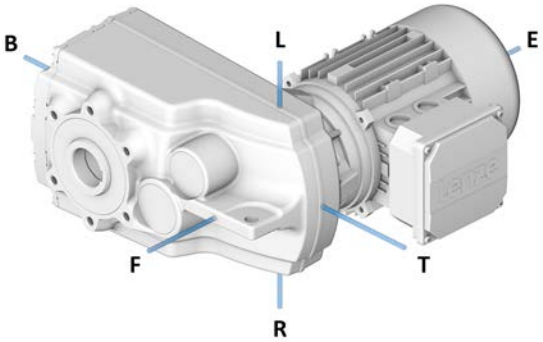
Defined positions on the geared motor

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)



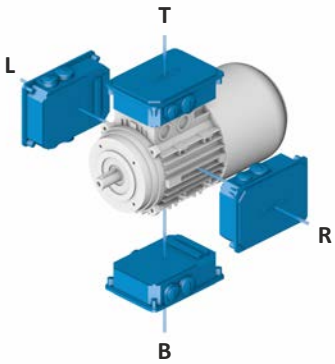
If the geared motor is rotated into a different mounting position M2 ... M6 (B...F), the defined positions on the geared motor are retained.

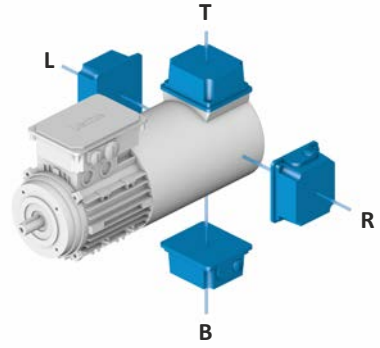
Example: Mounting position M5 (F)

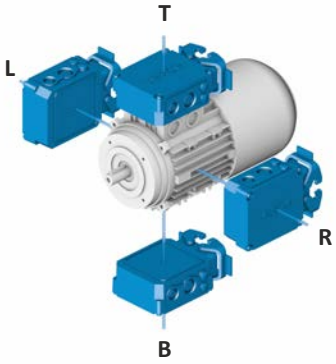


Positions of the terminal boxes/connectors

Power terminal box	Blower terminal box	HAN connector
with/without ICN connector	with/without ICN connector	

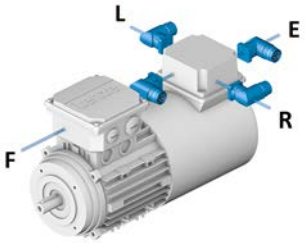






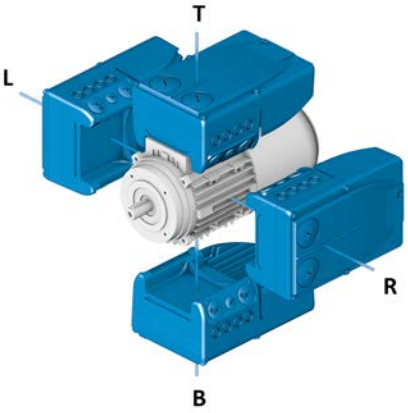
Positions of the connections

Power terminal box	Blower terminal box	HAN connector
ICN cable glands/connectors	ICN cable glands/connectors	

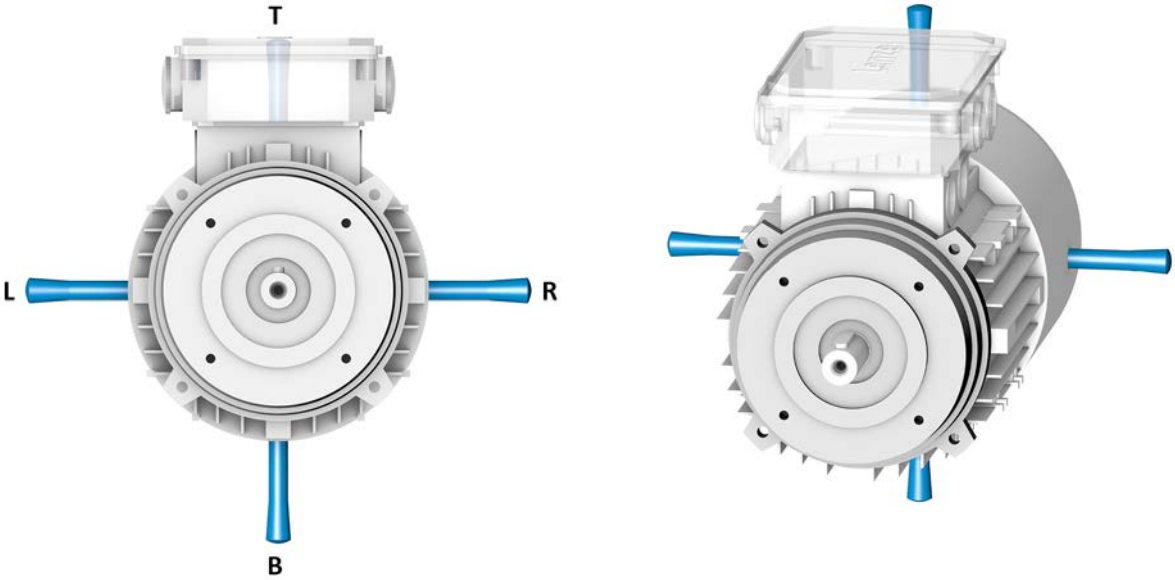


Positions of the i550/8400 motec frequency inverters

Positions of i550/8400 motec	Positions of the connectors
	8400 motec I/O connection



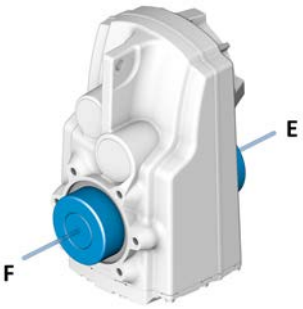
Position of the manual release lever



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.



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.

Please observe the specific safety information in the other sections!

Application as directed

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

Foreseeable misuse

- Use in potentially explosive areas
- Use in agressive environments
- Use under water
- Use under radiation
- Use in generator mode

Residual hazards

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

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

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

Product

Observe the warning labels on the product!

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

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

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

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

Protection of persons

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

Motor protection

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

Gearbox protection

- Excessive vibration accelerations and resonances will damage the gearbox.
  - Do not operate the gearbox at vibration accelerations > 2 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.

Information on project planning

General information

NOTICE

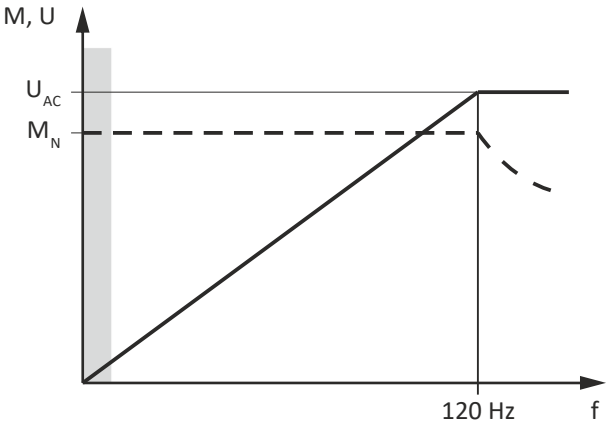
For gearboxes with hollow shaft and shrink disk

observe the following requirements for the machine shaft:

- ► Fit tolerance h6
- ► Material yield strength Re ≥ 360 MPa
- ► Modulus of elasticity approx. 210000 MPa
- ► Surface roughness Rz ≤ 15 µm
- ► No radial, axial forces and forces due to stress/rotation permissible

Operation on a frequency inverter

Large setting ranges and optimum operation with rated torque. These are the strengths of the MF motor on the frequency inverter. Compared to the 50-Hz operation, the setting range increases by 250 %. It is quite simply not possible for a drive to be operated any more efficiently in a machine.

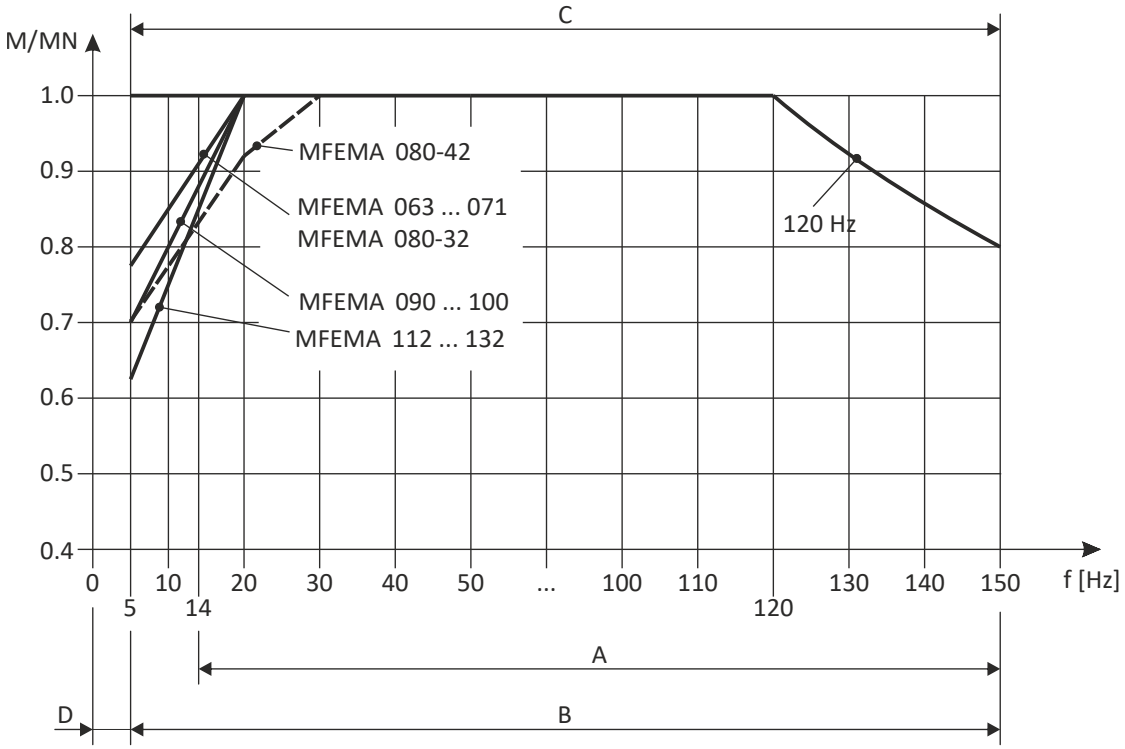


Torque reduction at low motor frequencies

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 on the inverter.



A	Operation with integral fan and brake
B	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 mode. 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-S2100 ... S4500	≤ 16

Motor	Mounting position M5, M6	Mounting position M1, M3	Mounting position M2, M4
MF☐MA☐☐063 ... 100	4000 rpm	3500 rpm	3000 rpm
MF☐MA☐☐112 ... 132	3000 rpm	2600 rpm	1500 rpm

Possible ways of extending the application area

- Shaft sealing ring made of FKM material/Viton (option)
- Reducing the lubricant amount (after consultation with Lenze)
- Cooling the geared motor by air convection on the machine/system

Drive dimensioning

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

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

Please get in touch with your Lenze representative.

Workflow

Inverter operation

↓

Check operating conditions

↓

Define required input variables

↓

Determine correction factor
Operating modes and operating time
Ambient temperature and installation height

↓

Determine gearbox type and efficiency

↓

Determine product on the basis of the acting forces

↓

Calculate required drive power

↓

Calculate setting range
Define rated point
Blower required?

↓

Define load class and intensity

↓

Determine application factor k from diagram

↓

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

↓

Final configuration

Check operating conditions

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

▸ Standards and operating conditions 📖 48

▸ Surface and corrosion protection 📖 33

Define required input variables

Required input variables	Note	Symbol	Unit
Operating time / day		BD	
Ambient temperature		T_V	°C
Site altitude amsl		H	m
Radial force		F_{rad}	rated
Axial force		F_{ax}	rated
Transmission element at the output Effective diameter of the transmission element	Gear wheels, sprockets …	d_w	mm
Load torque	For short-term load peaks	$M_{L,max}$	Nm
	At rated operation	M_L	Nm
Load speed		$n_{L,max}$	rpm
Runtime for $M_{L,max}$			%
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 🕮 176

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 🕮 60

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 < 17 teeth: 1.15	≥ 20 teeth: 1.0 < 20 teeth: 1.25 < 13 teeth: 1.4	With belt tightener: 2.0 – 2.5 Without belt tightener: 2.5 – 3.0	1.5 – 2.0
			Calculation		**Check**	
Radial force	F_{rad}	N	$F_{rad} = 2000 \times \frac{M_{L,max} \times f_z}{dw}$		$F_{rad} \leq f_W \times F_{rad,max}$	
Axial force	F_{ax}	N			$F_{ax} \leq F_{rad,max} \times 0.5$	

dw Effective diameter of transmission element in mm

f_W Additional load factor

▸ Radial forces and axial forces 58

Calculate drive power

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

k_L Correction factor - operating mode

k_H Correction factor - site altitude

k_{TU} Correction factor - ambient temperature

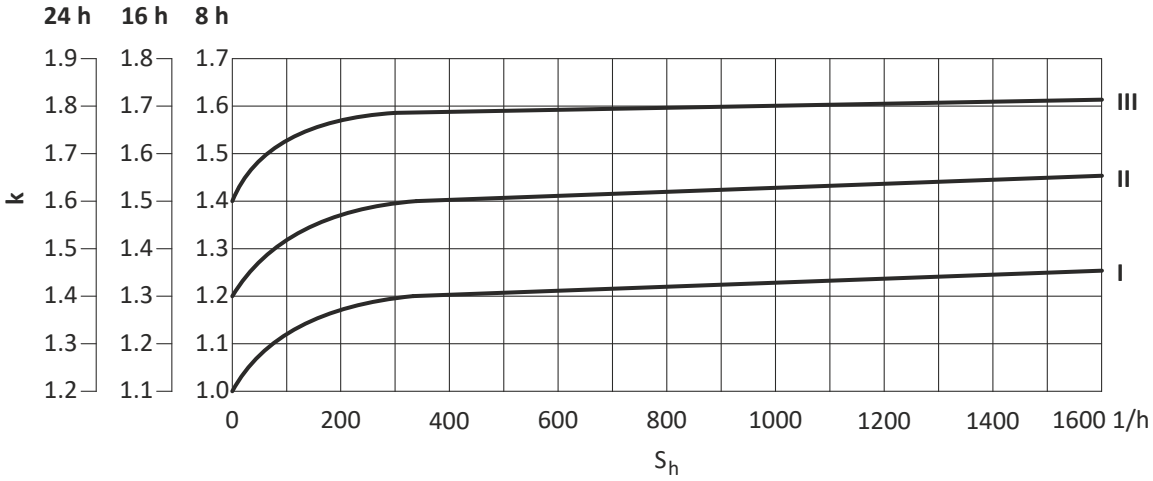
η_G Gearbox efficiency

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

Check and select product

Data ▸ Selection tables 🕮 60

Inverter operation

Selection table	Check	Unit	Note
Rated power	$P_{rated} \geq P_1$	kW	
Output torque	$M_2 \geq M_L$	Nm	The geared motor must be able to provide sufficient torque for $M_{L,max.}$
Max. output speed	$n_2 \approx n_{L,max}$	rpm	
Min. output speed			
Self-ventilated	$n_{21} \approx n_{L,min}$	rpm	Setting range≤ 6 (20 ... 120 Hz)
Forced ventilated Self-ventilated (reduced output torque)	$n_{22} \approx n_{L,min}$	rpm	Setting range≤ 24 (5 ... 120 Hz)
Load factor	c ≥ k		

Order information	Example
Geared motor	
Gearbox	g500-S130
Motor	MF☐MA☐☐063-32
Gearbox ratio i	31.387
Number of stages	2

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 📖 125

Surface and corrosion protection

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

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

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

Without OKS (unpainted):

The aluminum parts are uncoated and cast iron parts primed with gray paint. Slight color differences between the components are possible.

Surface and corrosion protection	**Applications**	**Product**	
		g500-H45 ... H450 g500-S130 ... S660 g500-B45 ... B450	**g500-H600 ... H1500 g500-S950 ... S4500 g500-B600 ... B1500**
Without OKS (unpainted)	• Indoor installation, no special corrosion protection necessary • Painting by customer	Default	-
OKS-G (primed)	• Dependent on subsequent top coat applied	Optionally	Optionally
OKS-S (small)	• Standard applications • Indoor installation in heated buildings • Air humidity up to 90 %		Default
OKS-M (medium)	• Indoor installation in unheated buildings • Covered, protected outdoor installation • Air humidity up to 95 %		Optionally
OKS-L (large)	• Outdoor installation • Chemical industrial plants • Food industry • Air humidity above 95 %		

Surface and corrosion protection	**Corrosivity category**	**Surface coating**	**Color**	**Coating thickness**
	DIN EN ISO 12944-2	**Design**		
Without OKS (unpainted)	-	• Dip priming of the gray cast iron parts	-	30 ... 50 µm
OKS-G (primed)	-	• Dip priming of the gray cast iron parts • 2K PUR priming coat	-	80 ... 120 µm
OKS-S (small)	Comparable to C1	• Dip priming of the gray cast iron parts • 2K-PUR top coat	• Standard: RAL 7012 • Optional: According to RAL Classic possible	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
OKS-L (large)	Comparable to C3			140 ... 200 µm

Lubricants

Maße LB und Δ L ▸ Basic dimensions 📖 87

The following gearboxes are lubricated for life:

- g500-S130

Recommended lubricants:

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

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

Lubricant amounts for stocking

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

The exact values can be found on the nameplate.

Mounting position		M1 (A)	M2 (D)	M3 (B)	M4 (C)	M5 (F)	M6 (E)	M1, M5, M6 (AEF)
Gearboxes								
g500-S130	l	0.7	0.8	0.7	0.7	0.6	0.6	0.7
g500-S220	l	1.1	1.1	.9	1.1	1.0	0.8	1.1
g500-S400	l	1.6	1.3	1.2	1.5	1.3	1.1	1.6
g500-S660	l	2.5	2.4	1.8	2.4	1.9	1.9	2.5
g500-S950	l	2.9	3.2	2.4	3.2	2.4	2.4	-
g500-S2100	l	7.1	7.5	6.0	7.5	5.6	5.5	-
g500-S3100	l	9.7	10.6	8.0	11.7	8.7	7.3	-
g500-S4500	l	19.4	20.0	13.7	21.2	14.7	15.8	-
Pre-stage	l	0.4						

▸ Gearbox with pre-stage 📖 119

Ventilation

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

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

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

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

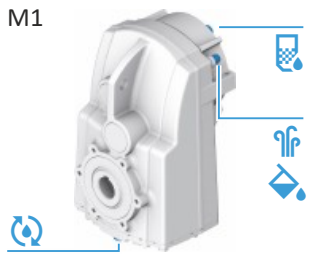
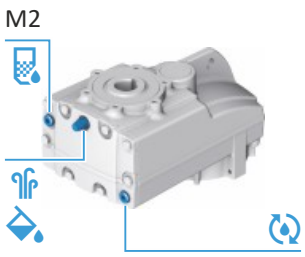
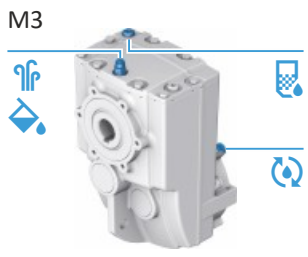
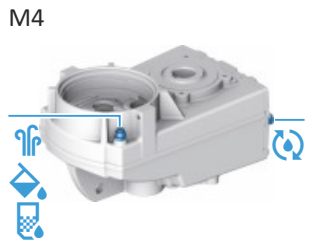
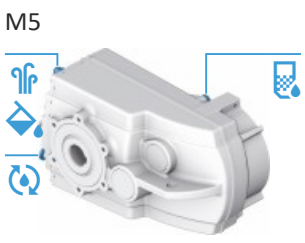
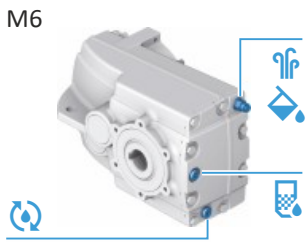
- g500-S130 ... S660 in mounting position M1/5/6 (AEF)

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

NOTICE

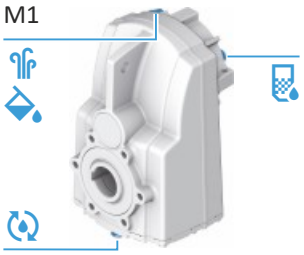
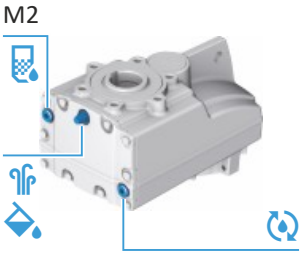
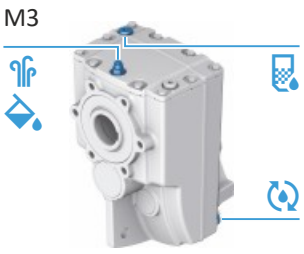
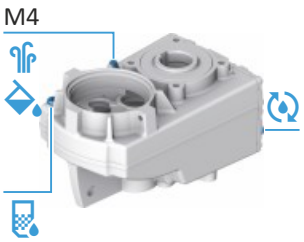
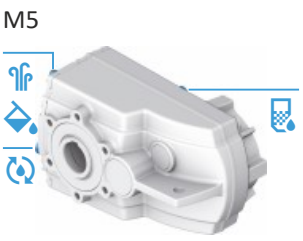
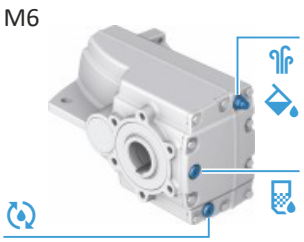
► For gearboxes with ventilation, a gap of at least 30 mm has to be observed to the machine wall on the corresponding gearbox side.

g500-S220

Mounting position		
M1 (A)	**M2 (D)**	**M3 (B)**
		
M4 (C)	**M5 (F)**	**M6 (E)**
		

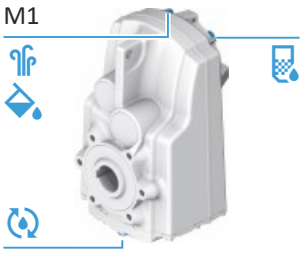
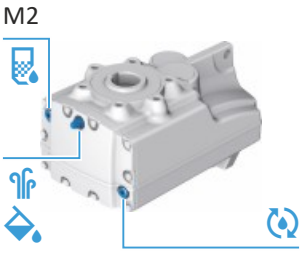
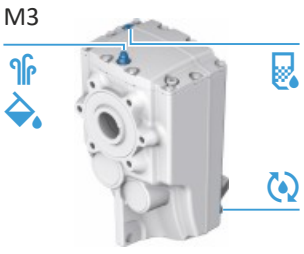
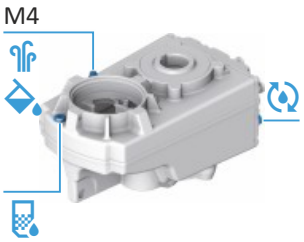
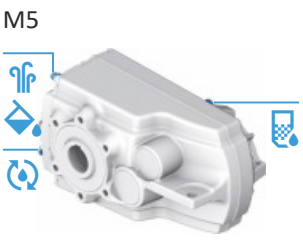
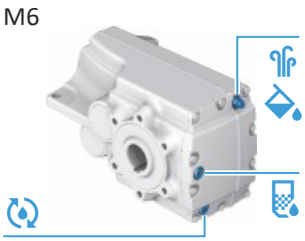
Ventilation Change oil Fill oil Oil level

g500-S400

Mounting position		
M1 (A)	**M2 (D)**	**M3 (B)**
		
M4 (C)	**M5 (F)**	**M6 (E)**
		

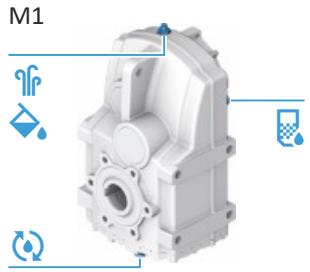
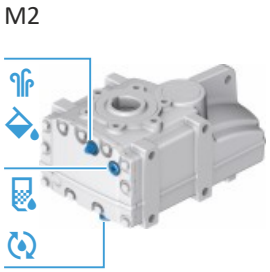
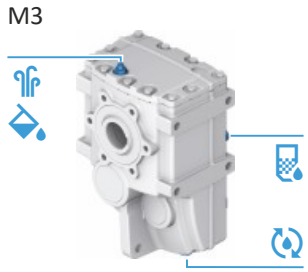
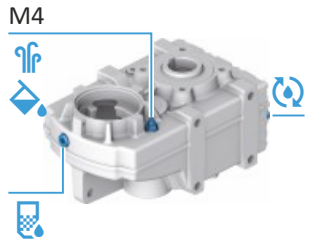
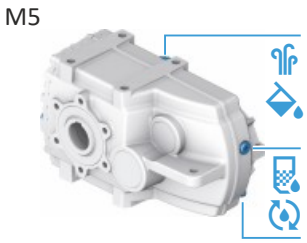
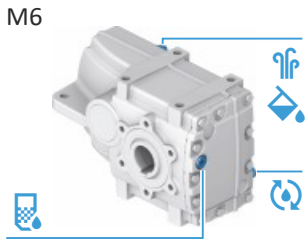
Ventilation Change oil Fill oil Oil level

g500-S660

Mounting position		
M1 (A)	**M2 (D)**	**M3 (B)**
		
M4 (C)	**M5 (F)**	**M6 (E)**
		

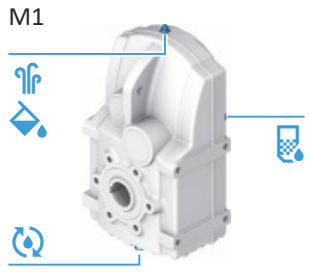
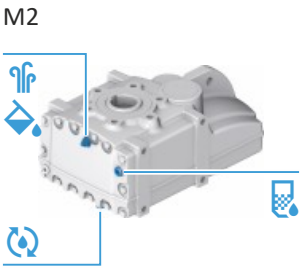
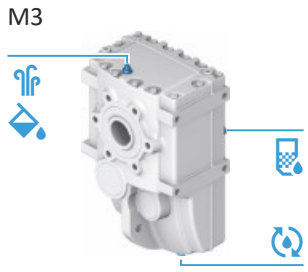
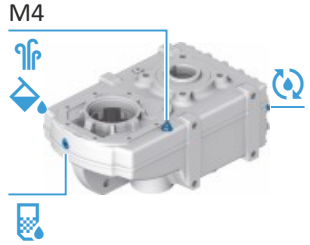
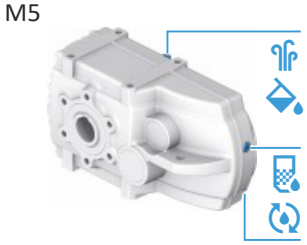
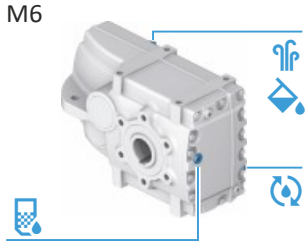
Ventilation Change oil Fill oil Oil level

g500-S950

Mounting position		
M1 (A)	**M2 (D)**	**M3 (B)**
		
M4 (C)	**M5 (F)**	**M6 (E)**
		

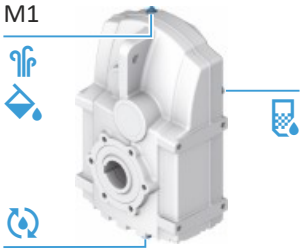
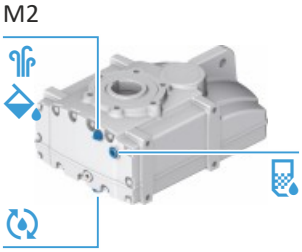
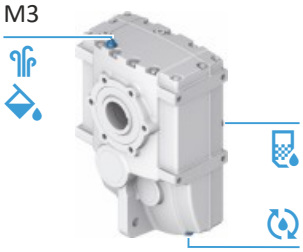
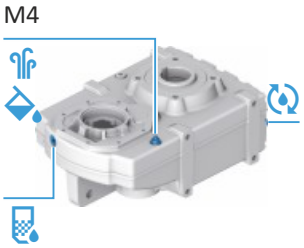
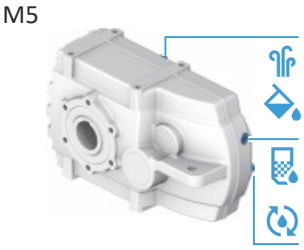
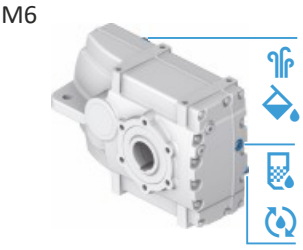
Ventilation Change oil Fill oil Oil level

g500-S2100

Mounting position		
M1 (A)	**M2 (D)**	**M3 (B)**
		
M4 (C)	**M5 (F)**	**M6 (E)**
		

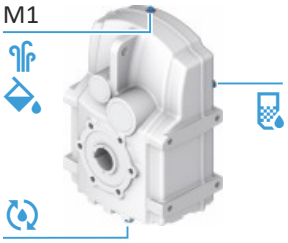
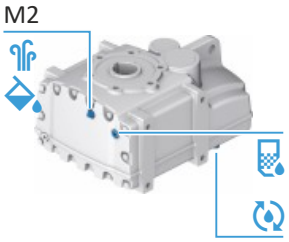
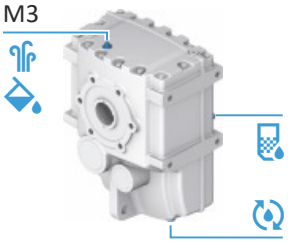
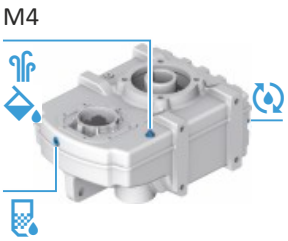
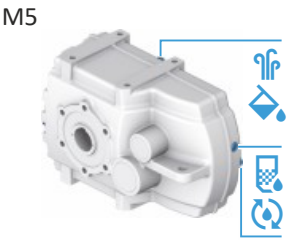
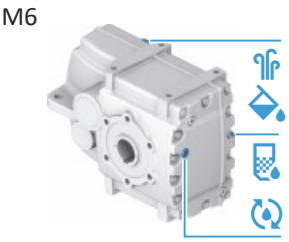
Ventilation Change oil Fill oil Oil level

g500-S3100

Mounting position		
M1 (A)	**M2 (D)**	**M3 (B)**
		
M4 (C)	**M5 (F)**	**M6 (E)**
		

Ventilation Change oil Fill oil Oil level

g500-S4500

Mounting position		
M1 (A)	**M2 (D)**	**M3 (B)**
		
M4 (C)	**M5 (F)**	**M6 (E)**
		

Ventilation Change oil Fill oil Oil level

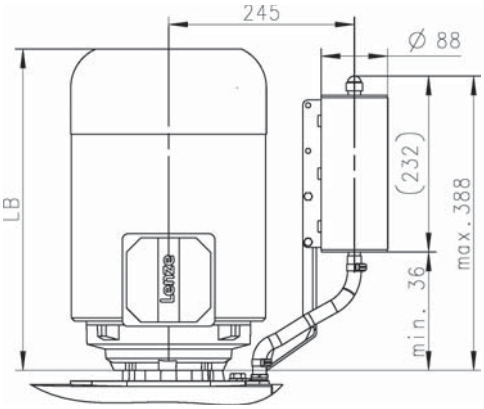
Gearbox with oil compensation reservoir for mounting position M4 (C)

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

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

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

Dimensions of the oil compensation reservoir



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

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

Mechanical installation

Important notes

- Install the product according to the information in the chapter "Standards and operating conditions".

  ▸ Standards and operating conditions 📖 48
- The technical data and the data regarding the supply conditions can be found on the nameplate and in this documentation.
- Ambient media − especially chemically aggressive ones − may damage shaft sealing rings, lacquers and plastics.
- Lenze offers special surface and corrosion protection in this case.

Transport

⚠CAUTION!

Danger from tipping and falling loads!

Standing beneath suspended loads is prohibited!

Possible consequences: Minor or moderate injuries.

► To achieve a load direction that is as vertical as possible (maximum load-bearing capacity), use additional, suitable load carriers if necessary. Secure the load carrier against slipping!

► Screw in the transport aids completely. They must lie flat and over the entire surface!

► Load the transport aids vertically in the direction of the screw axis! Inclined or lateral tension reduces the load-bearing capacity! Observe the specifications in the DIN 580!

NOTICE

Eye bolts or lifting eyes on the motor are not suitable for transporting geared motors.

Only use these for mounting/dismounting the motor on the gearbox.

Possible consequences: Damage to the geared motor.

► Only use the threads provided on the gearbox for eye bolts or lifting eyes for transporting the geared motor.

Preconditions

- 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.

The lifting eye is not included in the scope of supply!

Position of the lifting eye

Geared motor	
	Lifting eye on the housing
G50BS113Mxxxxxx	●
G50BS122Mxxxxxx	●
G50BS140Mxxxxxx	●
G50BS166Mxxxxxx	●
G50BS195Mxxxxxx	●
G50BS221Mxxxxxx	●
G50BS231Mxxxxxx	●
G50BS245Mxxxxxx	●
G50BS280Mxxxxxx	●
G50BS314Mxxxxxx	●
G50BS319Mxxxxxx	●

Installation

Ventilation elements

Gearboxes that are supplied with a pre-assembled ventilation element:

- The ventilation element is identified by a sign on the gearbox.
- Remove the transport lock from the ventilation element before initial commissioning.

Gearboxes that are supplied with a loosely attached ventilation element:

- Before commissioning for the first time, install the ventilation element according to the mounting position.

Mounting surfaces

- 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 mm^2 with Cu or 16 mm^2 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 📖 127

Operation on an external inverter

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

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 + MF shaft-mounted helical geared motors (Lenze.com)

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

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

Asia					
Country	**Conformity/ approval**	**Law/standard**	**Description**	**Special feature**	**Product representation**
China	-	GB/T 26572	Requirements on concentration limits for certain restricted substances in electrical and electronic products	-	EFUP mark
	CCC	GB 12350	Safety requirements of small power motors		CCC mark

Protection of persons and device protection

Degree of protection			
-	EN IEC 60529,EN IEC 60034-5	IP54	Information applies to the mounted and ready-for-use state
		IP55	With resolver RS1
			With HTL incremental IG128-24V-H
			Information applies to the mounted and ready-for-use state
		IP65	With resolver RS1
			With HTL incremental IG128-24V-H
			With brake
			Information applies to the mounted and ready-for-use state
		IP66	With resolver RS1
			With HTL incremental IG128-24V-H
			With brake
			Information applies to the mounted and ready-for-use state

EMC data

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

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

Environmental conditions

Climate			
Operation	EN 60721-3-3:1995 + A2:1997	-	-
Storage	EN 60721-3-1:1997	1K3 (-25 ... +60 °C)	
Transport	EN 60721-3-2:1997	2K3 (-25 ... +70 °C)	
Operation	EN 60721-3-3:1995 + A2:1997	3K3 (-20 ...+40 °C)	

Site altitude		
0 … 1000 m amsl	-	Without current derating
1000 … 4000 m amsl		0225

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.

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-S130, 2-stage gearboxes

Max. output torque	Ratio	Number of teeth		Max. backlash
				Standard
$M_{2, max}$	i	z_g	z_t	
Nm				'
43.3	3.661	637	174	19
59.3	5.021	728	145	18
70.9	6.425	559	87	18
38.3	7.029	5096	725	18
111	9.411	847	90	12
130	12.907	968	75	12
98.4	18.069	6776	375	12
117	23.048	484	21	12
130	28.233	847	30	12
130	35.493	2662	75	12
130	45.711	2057	45	12
130	57.933	869	15	11
130	72.600	363	5	11
115	95.648	10043	105	11

g500-S130, 3-stage gearboxes

Max. output torque	Ratio	Number of teeth		Max. backlash
				Standard
$M_{2, max}$	i	z_g	z_t	
Nm				'
130	94.649	21296	225	12
130	132.508	149072	1125	12
130	169.016	10648	63	12
130	207.044	9317	45	12
130	251.277	75383	300	12
130	315.891	118459	375	12
130	406.829	183073	450	12
130	515.607	77341	150	12
130	646.140	32307	50	12
130	825.825	33033	40	12

g500-S220, 2-stage gearboxes

Max. output torque	Ratio	Number of teeth		Max. backlash
				Standard
$M_{2, max}$	i	z_g	z_t	
Nm				'
89.3	3.840	553	144	16
181	5.267	79	15	16
178	7.667	23	3	12
220	10.514	368	35	12
220	13.456	1978	147	12
174	14.720	368	25	12
207	18.776	920	49	12
220	23.000	23	1	11
220	29.937	1886	63	11
220	37.238	782	21	11
173	48.190	1012	21	11
183	58.486	2047	35	11
181	74.750	299	4	11

g500-S220, 3-stage gearboxes

Max. output torque	Ratio	Number of teeth		Max. backlash
				Standard
$M_{2, max}$	i	z_g	z_t	
Nm				'
220	45.333	136	3	12
220	59.581	6256	105	12
220	76.249	33626	441	12
220	97.528	43010	441	12
220	126.610	13294	105	12
220	162.252	23851	147	12
220	209.887	48484	231	12
220	273.079	17204	63	12
220	353.762	7429	21	12
163	451.512	37927	84	12

g500-S220, 4-stage gearboxes

Max. output torque	Ratio	Number of teeth		Max. backlash
				Standard
$M_{2, max}$	i	z_g	z_t	
Nm				'
220	293.418	303688	1035	13
220	385.636	86768	225	13
220	493.522	466378	945	13
220	631.249	119306	189	13
220	819.476	184382	225	13
220	994.545	745909	750	13
220	1274.522	2676497	2100	13
220	1648.712	1360187	825	12
220	2107.202	1390753	660	12
220	2741.628	493493	180	12

g500-S400, 2-stage gearboxes

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

g500-S400, 3-stage gearboxes

Max. output torque	Ratio	Number of teeth		Max. backlash
				Standard
$M_{2, max}$	i	z_g	z_t	
Nm				'
352	65.559	12784	195	11
400	83.900	68714	819	11
399	107.314	87890	819	11
399	139.313	27166	195	11
400	178.531	48739	273	11
396	230.946	99076	429	11
400	300.479	35156	117	11
373	389.256	15181	39	11
287	496.814	77503	156	11

g500-S400, 4-stage gearboxes

Max. output torque	Ratio	Number of teeth		Max. backlash
				Standard
$M_{2, max}$	i	z_g	z_t	
Nm				'
400	480.766	281248	585	11
400	615.266	1511708	2457	11
400	786.968	1933580	2457	11
400	1021.627	597652	585	11
400	1239.884	1208887	975	11
400	1588.927	4337771	2730	11
400	2055.423	4408882	2145	11
400	2627.015	173383	66	11
388	3417.944	61523	18	11

g500-S660, 2-stage gearboxes

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

g500-S660, 3-stage gearboxes

Max. output torque	Ratio	Number of teeth		Max. backlash
				Standard
$M_{2, max}$	i	z_g	z_t	
Nm				'
650	56.818	12784	225	10
660	72.713	68714	945	10
427	79.545	89488	1125	10
505	101.460	6392	63	10
660	124.289	5593	45	10
659	156.249	35156	225	10
660	201.230	27166	135	10
660	255.034	126242	495	10
660	319.600	1598	5	10
511	421.060	132634	315	10

g500-S660, 4-stage gearboxes

Max. output torque	Ratio	Number of teeth		Max. backlash
				Standard
$M_{2, max}$	i	z_g	z_t	
Nm				'
640	416.664	281248	675	10
660	583.329	1968736	3375	10
660	744.042	140624	189	10
660	911.452	123046	135	10
660	1145.825	773432	675	10
660	1475.684	597652	405	10
660	1870.252	252484	135	10
660	2269.806	5617769	2475	10
660	2844.440	71111	25	10
660	3635.450	72709	20	10

g500-S950, 2-stage gearboxes

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

g500-S950, 3-stage gearboxes

Max. output torque	Ratio	Number of teeth		Max. backlash
				Standard
$M_{2, max}$	i	z_g	z_t	
Nm				'
950	55.982	12596	225	9
950	71.644	135407	1890	10
912	78.375	88172	1125	9
950	99.968	6298	63	9
950	122.461	22043	180	9
950	159.394	129109	810	9
950	198.270	53533	270	9
905	256.585	34639	135	9
950	311.401	280261	900	9
947	397.999	286559	720	9

g500-S950, 4-stage gearboxes

Max. output torque	Ratio	Number of teeth		Max. backlash
				Standard
$M_{2, max}$	i	z_g	z_t	
Nm				'
950	357.042	3615052	10125	10
950	455.411	258218	567	10
950	574.751	1939784	3375	10
950	733.101	138556	189	10
950	898.048	242473	270	10
950	1168.888	1420199	1215	10
950	1453.983	588863	405	10
950	1881.625	762058	405	9
950	2283.608	3082871	1350	9
950	2771.470	24943229	9000	9
950	3542.188	25503751	7200	9
950	4527.234	26076869	5760	9

g500-S2100, 2-stage gearboxes

Max. output torque	Ratio	Number of teeth		Max. backlash
				Standard
$M_{2, max}$	i	z_g	z_t	
Nm				'
1112	4.593	689	150	12
748	6.029	2279	378	11
856	6.870	371	54	11
665	8.272	3127	378	11
1872	10.504	1313	125	8
1710	13.787	4343	315	7
1958	15.711	707	45	7
1522	18.917	5959	315	7
2050	23.193	3131	135	7
2050	31.422	1414	45	7
2050	38.156	1717	45	7
1396	49.378	2222	45	7
1485	59.927	8989	150	7
1444	75.750	303	4	7

g500-S2100, 3-stage gearboxes

Max. output torque	Ratio	Number of teeth		Max. backlash
				Standard
$M_{2, max}$	i	z_g	z_t	
Nm				'
2050	44.515	12019	270	8
2050	61.049	13736	225	8
2050	78.128	73831	945	7
2050	85.468	96152	1125	7
2050	109.016	6868	63	7
2050	133.544	12019	90	7
2050	173.820	70397	405	7
2050	216.215	29189	135	7
2050	279.807	37774	135	7
2050	339.584	152813	450	7
2050	429.250	1717	4	7

g500-S2100, 4-stage gearboxes

Max. output torque	Ratio	Number of teeth		Max. backlash
				Standard
$M_{2, max}$	i	z_g	z_t	
Nm				'
2050	389.356	3942232	10125	8
2050	496.628	281588	567	8
2050	608.369	492779	810	8
2050	791.846	2886277	3645	8
2050	984.979	1196749	1215	8
2050	1274.678	1548734	1215	8
2050	1585.575	642158	405	8
2050	2051.921	831028	405	8
2050	2490.286	1680943	675	8
2050	3022.302	13600357	4500	8
2050	3862.773	13905983	3600	8
2050	4882.719	156247	32	8

g500-S3100, 2-stage gearboxes

Max. output torque	Ratio	Number of teeth		Max. backlash
				Standard
$M_{2, max}$	i	z_g	z_t	
Nm				'
1199	4.951	2847	575	10
806	6.499	3139	483	10
923	7.406	511	69	9
717	8.917	4307	483	9
1140	10.932	2263	207	9
2965	12.584	1573	125	6
2049	16.517	5203	315	6
2346	18.822	847	45	6
1823	22.663	7139	315	6
2897	27.785	3751	135	6
2492	37.644	1694	45	6
2550	45.711	2057	45	6
1673	59.156	2662	45	6
1779	71.793	10769	150	6

g500-S3100, 3-stage gearboxes

Max. output torque	Ratio	Number of teeth		Max. backlash
				Standard
$M_{2, max}$	i	z_g	z_t	
Nm				'
3054	53.330	14399	270	6
3100	73.138	16456	225	6
3100	93.599	88451	945	6
3100	102.393	115192	1125	6
2624	130.603	8228	63	6
3100	159.989	14399	90	6
3100	208.240	84337	405	6
3100	259.030	34969	135	6
2547	335.215	45254	135	6
2702	406.829	183073	450	6

g500-S3100, 4-stage gearboxes

Max. output torque	Ratio	Number of teeth		Max. backlash
				Standard
$M_{2, max}$	i	z_g	z_t	
Nm				'
3100	358.375	403172	1125	6
3100	457.111	4114	9	6
3100	559.961	100793	180	6
3100	728.838	590359	810	6
3100	906.604	244783	270	6
3100	1180.024	1433729	1215	6
3100	1467.835	594473	405	6
3100	1899.551	769318	405	6
3100	2458.242	995588	405	6
3100	2983.412	2013803	675	6
3100	3620.777	16293497	4500	6
3100	4627.679	16659643	3600	6
2794	5849.594	187187	32	6

g500-S4500, 2-stage gearboxes

Max. output torque	Ratio	Number of teeth		Max. backlash
				Standard
$M_{2, max}$	i	z_g	z_t	
Nm				'
2113	4.914	2457	500	9
2451	6.450	129	20	9
1708	7.056	882	125	9
4163	9.984	1248	125	5
4500	13.105	1376	105	4
3470	14.336	1792	125	4
2268	18.286	128	7	4
4423	22.400	112	5	4
3077	29.511	1328	45	4
3099	36.267	544	15	4
2618	46.933	704	15	4
2785	56.960	1424	25	4
2586	72.000	72	1	4

g500-S4500, 3-stage gearboxes

Max. output torque	Ratio	Number of teeth		Max. backlash
				Standard
$M_{2, max}$	i	z_g	z_t	
Nm				'
4291	42.520	18496	435	4
4500	58.933	884	15	4
4500	72.533	1088	15	4
4500	81.237	30464	375	4
4166	103.619	2176	21	4
4500	126.933	1904	15	4
4500	165.215	22304	135	4
4500	202.489	9112	45	4
3746	265.956	11968	45	4
3989	322.773	24208	75	4
4004	408.000	408	1	4

g500-S4500, 4-stage gearboxes

Max. output torque	Ratio	Number of teeth		Max. backlash
				Standard
$M_{2, max}$	i	z_g	z_t	
Nm				'
4500	362.667	1088	3	5
4500	444.267	6664	15	5
4500	578.252	78064	135	4
4500	708.711	31892	45	4
4500	922.449	373592	405	4
4500	1147.437	154904	135	4
4208	1211.575	490688	405	4
4500	1507.081	203456	135	4
4500	1950.341	263296	135	4
4500	2367.004	532576	225	4
4500	2872.683	1077256	375	4
4500	3025.244	136136	45	4
4500	3671.547	275366	75	4
4016	4641.000	4641	1	4

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.

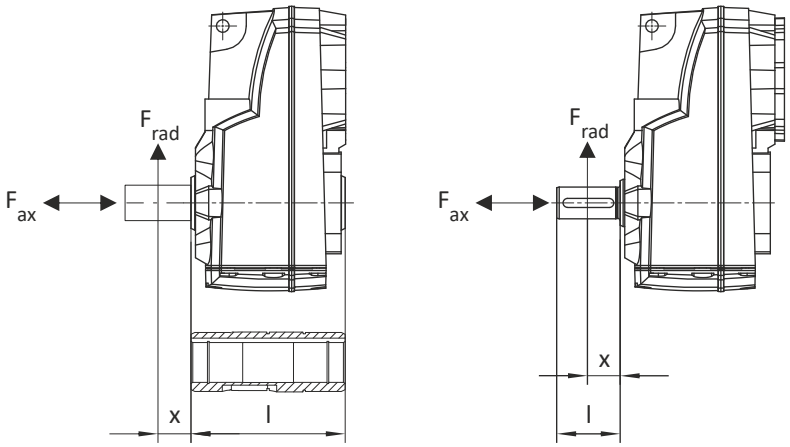
$F_{rad, perm} = f_w \times F_{rad,max}$

Permissible axial force

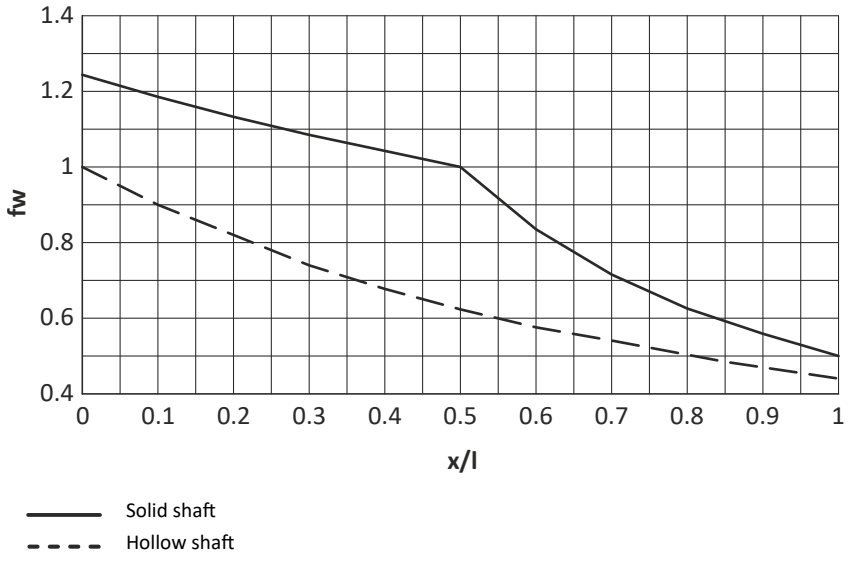
If there is no radial force, the maximum axial force is 50% of the value in the table $F_{rad,max}$

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

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]									
	1000	630	400	250	160	100	63	40	25	16
	Max. radial force $F_{rad,max}$ [rated]									
g500-S130	1000	1100	1300	1500	1650	2200	2750	3450	4200	4500
g500-S220	2100	2300	2800	3200	3800	4600	5500	6300	7000	7000
g500-S400	2200	2500	3000	3400	4100	5000	6000	7100	8000	8000
g500-S660	2500	2900	3500	4000	5000	6600	8500	10800	12000	12000
g500-S950	3400	4000	4300	5000	6000	8000	10300	11500	12500	13000
g500-S2100	4500	5100	6200	6500	7500	10000	12000	15700	15700	16000
g500-S3100	5200	5700	7000	8000	9000	12500	15000	17000	19800	19800
g500-S4500	11100	12900	15000	17500	19000	20000	23000	30000	30000	30000

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

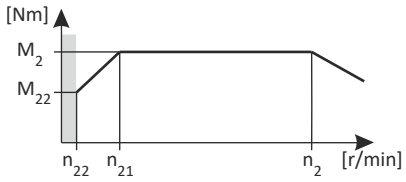
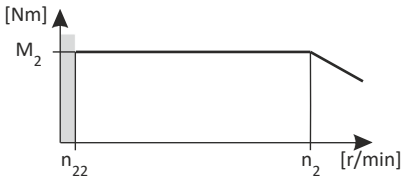
Getriebe	Output speed n_2 [rpm]									
	1000	630	400	250	160	100	63	40	25	16
	Max. radial force $F_{rad,max}$ [rated]									
g500-S130	1000	1100	1300	1500	1650	2200	2750	3450	4200	4500
g500-S220	1700	1900	2300	2700	3200	3600	3600	3600	3600	3600
g500-S400	1700	1900	2300	2700	3200	4000	4800	5800	6200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

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

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

Selection tables

Torque characteristic during inverter operation

Self-ventilated geared motors	Forced ventilated geared motors
	
20 Hz to 120 Hz: Operation at constant torque. Below 20 Hz (n_{21}): Derating without blower. Below 5 Hz (n_{22}): Verification of the application by Lenze required.	5 Hz to 120 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	Explanation
120 Hz: P_{rated} = 0.55 kW	Rated motor power at a rated frequency of 120 Hz

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M^{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
39.6	4.1	164	5.4	940	5.4	4.8	5.263	3.661	g500-S130	MFXMA 063-32	2	9.9
28.9	5.7	120	7.5	685	7.5	4.8	4.587	5.021	g500-S130	MFXMA 063-32	2	9.9
22.6	7.2	93.6	9.5	537	9.5	4.8	5.276	6.411	g500-S400	MFXMA 063-32	2	15
22.6	7.2	93.4	9.5	535	9.5	4.5	4.273	6.425	g500-S130	MFXMA 063-32	2	9.9

Basic weight

Number of gear stages

Motor product name

Gearbox product name

Ratio

Moment of inertia without brake

Data at 120 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 20 Hz

n_{21} = output speed - M_2 = output torque

Data at 5 Hz

n_{22} = output speed - M_{22} = Output torque (forced ventilated motors can deliver the torque M_2 over the entire adjustment range)

120 Hz: 0.55 kW

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
39.6	4.1	164	5.4	940	5.4	4.8	5.263	3.661	g500-S130	MFXMA 063-32	2	9.9
28.9	5.7	120	7.5	685	7.5	4.8	4.587	5.021	g500-S130	MFXMA 063-32	2	9.9
22.6	7.2	93.6	9.5	537	9.5	4.8	5.276	6.411	g500-S400	MFXMA 063-32	2	15
22.6	7.2	93.4	9.5	535	9.5	4.5	4.273	6.425	g500-S130	MFXMA 063-32	2	9.9
20.6	7.9	85.4	10.0	489	10.0	4.5	4.188	7.029	g500-S130	MFXMA 063-32	2	9.9
15.4	10.6	63.8	14.0	366	14.0	4.8	4.730	9.411	g500-S130	MFXMA 063-32	2	9.9
11.2	14.5	46.5	19.0	267	19.0	4.8	4.304	12.907	g500-S130	MFXMA 063-32	2	9.9
9.9	16.6	40.8	22.0	234	22.0	4.8	4.283	14.720	g500-S220	MFXMA 063-32	2	12
9.0	18.2	37.0	24.0	212	24.0	4.8	4.404	16.197	g500-S400	MFXMA 063-32	2	15
8.0	20.3	33.2	27.0	190	27.0	4.2	4.044	18.069	g500-S130	MFXMA 063-32	2	9.9
6.3	25.9	26.0	34.0	149	34.0	3.3	3.932	23.048	g500-S130	MFXMA 063-32	2	9.9
5.1	31.8	21.3	42.0	122	42.0	2.7	3.869	28.233	g500-S130	MFXMA 063-32	2	9.9
4.8	33.7	20.0	44.0	115	44.0	4.2	3.899	29.937	g500-S220	MFXMA 063-32	2	12
4.4	37.1	18.2	49.0	104	49.0	4.7	3.928	32.940	g500-S400	MFXMA 063-32	2	15
4.1	39.9	16.9	53.0	96.9	53.0	2.4	3.811	35.493	g500-S130	MFXMA 063-32	2	9.9
3.9	41.9	16.1	55.0	92.4	55.0	3.8	3.845	37.238	g500-S220	MFXMA 063-32	2	12
3.5	46.1	14.6	61.0	84.0	61.0	4.0	3.864	40.974	g500-S400	MFXMA 063-32	2	15
3.2	50.3	13.2	66.0	75.9	66.0	2.5	3.899	45.333	g500-S220	MFXMA 063-32	3	12
3.2	51.4	13.1	68.0	75.3	68.0	1.8	3.774	45.711	g500-S130	MFXMA 063-32	2	9.9
3.2	51.7	13.1	68.0	74.9	68.0	4.0	3.975	45.956	g500-S660	MFXMA 063-32	2	20
3.0	54.2	12.5	72.0	71.4	72.0	2.9	3.791	48.190	g500-S220	MFXMA 063-32	2	12
2.7	59.7	11.3	79.0	64.9	79.0	3.6	3.803	53.026	g500-S400	MFXMA 063-32	2	15
2.6	62.8	10.8	83.0	61.7	83.0	3.5	3.901	55.773	g500-S660	MFXMA 063-32	2	20
2.5	65.2	10.4	86.0	59.4	86.0	1.4	3.748	57.933	g500-S130	MFXMA 063-32	2	9.9
2.5	65.8	10.3	87.0	58.8	87.0	2.4	3.767	58.486	g500-S220	MFXMA 063-32	2	12
2.4	66.1	10.1	87.0	57.7	87.0	2.2	3.831	59.581	g500-S220	MFXMA 063-32	3	12
2.3	72.4	9.3	96.0	53.5	96.0	3.0	3.774	64.354	g500-S400	MFXMA 063-32	2	15
2.2	72.7	9.2	96.0	52.5	96.0	3.6	3.839	65.559	g500-S400	MFXMA 063-32	3	15
2.0	81.7	8.3	108	47.4	108	1.2	3.732	72.600	g500-S130	MFXMA 063-32	2	9.9
1.9	84.1	8.0	111	46.0	111	1.5	3.743	74.750	g500-S220	MFXMA 063-32	2	12
1.9	84.5	7.9	111	45.1	111	1.9	3.791	76.249	g500-S220	MFXMA 063-32	3	12
1.7	93.0	7.2	123	41.0	123	3.1	3.795	83.900	g500-S400	MFXMA 063-32	3	15
1.5	105	6.3	138	36.3	138	0.9	3.837	94.649	g500-S130	MFXMA 063-32	3	13
1.5	108	6.2	143	35.3	143	1.5	3.761	97.528	g500-S220	MFXMA 063-32	3	12
1.4	113	5.9	148	33.9	148	4.3	3.862	101.460	g500-S660	MFXMA 063-32	3	21
1.4	119	5.6	157	32.1	157	2.4	3.764	107.314	g500-S400	MFXMA 063-32	3	15
1.2	138	4.8	182	27.7	182	3.5	3.823	124.289	g500-S660	MFXMA 063-32	3	21
1.1	140	4.7	185	27.2	185	1.1	3.743	126.610	g500-S220	MFXMA 063-32	3	12
1.0	154	4.3	204	24.7	204	1.9	3.745	139.313	g500-S400	MFXMA 063-32	3	15
0.9	173	3.8	228	22.0	228	2.8	3.782	156.249	g500-S660	MFXMA 063-32	3	21
0.9	177	3.8	233	21.6	233	3.9	3.912	159.394	g500-S950	MFXMA 063-32	3	41
0.9	180	3.7	237	21.2	237	0.9	3.730	162.252	g500-S220	MFXMA 063-32	3	12
0.8	198	3.4	261	19.3	261	1.5	3.731	178.531	g500-S400	MFXMA 063-32	3	15
0.7	220	3.0	290	17.4	290	3.1	3.853	198.270	g500-S950	MFXMA 063-32	3	41
0.7	223	3.0	294	17.1	294	2.1	3.756	201.230	g500-S660	MFXMA 063-32	3	21
0.6	256	2.6	338	14.9	338	1.1	3.721	230.946	g500-S400	MFXMA 063-32	3	15
0.6	283	2.4	373	13.5	373	1.7	3.737	255.034	g500-S660	MFXMA 063-32	3	21
0.6	284	2.3	375	13.4	375	2.4	3.796	256.585	g500-S950	MFXMA 063-32	3	41
0.5	310	2.1	409	12.3	409	4.0	3.970	279.807	g500-S2100	MFXMA 063-32	3	73
0.5	333	2.0	439	11.4	439	0.9	3.714	300.479	g500-S400	MFXMA 063-32	3	15
0.5	345	1.9	455	11.0	455	2.0	3.770	311.401	g500-S950	MFXMA 063-32	3	41

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
0.5	354	1.9	467	10.8	467	1.3	3.725	319.600	g500-S660	MFXMA 063-32	3	21
0.4	372	1.8	490	10.3	490	4.0	3.985	335.215	g500-S3100	MFXMA 063-32	3	112
0.4	377	1.8	497	10.1	497	3.5	3.897	339.584	g500-S2100	MFXMA 063-32	3	73
0.4	390	1.7	514	9.6	514	1.8	3.922	357.042	g500-S950	MFXMA 063-32	4	44
0.4	425	1.5	561	8.8	561	3.5	3.974	389.356	g500-S2100	MFXMA 063-32	4	76
0.4	441	1.5	582	8.6	582	1.5	3.745	397.999	g500-S950	MFXMA 063-32	3	41
0.4	451	1.5	595	8.5	595	3.5	3.907	406.829	g500-S3100	MFXMA 063-32	3	112
0.3	476	1.4	628	8.0	628	2.8	3.827	429.250	g500-S2100	MFXMA 063-32	3	73
0.3	497	1.3	656	7.6	656	1.4	3.914	455.411	g500-S950	MFXMA 063-32	4	44
0.3	542	1.2	715	6.9	715	2.7	3.949	496.628	g500-S2100	MFXMA 063-32	4	76
0.3	628	1.0	828	6.0	828	1.1	3.800	574.751	g500-S950	MFXMA 063-32	4	44
0.2	664	1.0	876	5.7	876	2.2	3.935	608.369	g500-S2100	MFXMA 063-32	4	76
0.2	796	0.8	1050	4.7	1050	2.8	3.938	728.838	g500-S3100	MFXMA 063-32	4	115
0.2	801	0.8	1056	4.7	1056	0.9	3.797	733.101	g500-S950	MFXMA 063-32	4	44
0.2	865	0.8	1140	4.3	1140	1.7	3.921	791.846	g500-S2100	MFXMA 063-32	4	76
0.2	990	0.7	1306	3.8	1306	2.3	3.870	906.604	g500-S3100	MFXMA 063-32	4	115
0.2	1007	0.7	1329	3.7	1329	3.2	3.957	922.449	g500-S4500	MFXMA 063-32	4	190
0.1	1076	0.6	1419	3.5	1419	1.4	3.859	984.979	g500-S2100	MFXMA 063-32	4	76
0.1	1253	0.5	1653	3.0	1653	2.6	3.882	1147.437	g500-S4500	MFXMA 063-32	4	190
0.1	1289	0.5	1700	2.9	1700	1.7	3.860	1180.024	g500-S3100	MFXMA 063-32	4	115
0.1	1323	0.5	1745	2.8	1745	2.5	3.823	1211.575	g500-S4500	MFXMA 063-32	4	190
0.1	1392	0.5	1836	2.7	1836	1.1	3.800	1274.678	g500-S2100	MFXMA 063-32	4	76
0.1	1603	0.4	2114	2.3	2114	1.4	3.854	1467.835	g500-S3100	MFXMA 063-32	4	115
0.1	1646	0.4	2171	2.3	2171	2.0	3.867	1507.081	g500-S4500	MFXMA 063-32	4	190
0.1	1731	0.4	2284	2.2	2284	0.9	3.797	1585.575	g500-S2100	MFXMA 063-32	4	76
0.1	2074	0.3	2736	1.8	2736	1.1	3.797	1899.551	g500-S3100	MFXMA 063-32	4	115
0.1	2130	0.3	2809	1.8	2809	1.5	3.805	1950.341	g500-S4500	MFXMA 063-32	4	190
0.1	2585	0.3	3409	1.5	3409	1.3	3.800	2367.004	g500-S4500	MFXMA 063-32	4	190
0.1	2684	0.2	3540	1.4	3540	0.8	3.794	2458.242	g500-S3100	MFXMA 063-32	4	115
0.1	3137	0.2	4137	1.2	4137	1.0	3.773	2872.683	g500-S4500	MFXMA 063-32	4	190
0.0	3303	0.2	4357	1.1	4357	1.0	3.748	3025.244	g500-S4500	MFXMA 063-32	4	190
0.0	4009	0.2	5288	0.9	5288	0.8	3.746	3671.547	g500-S4500	MFXMA 063-32	4	190

120 Hz: 0.75 kW

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
39.6	5.6	164	7.5	929	7.5	3.5	5.263	3.661	g500-S130	MFXMA 063-42	2	9.9
28.9	7.7	120	10.0	677	10.0	3.5	4.587	5.021	g500-S130	MFXMA 063-42	2	9.9
22.6	9.8	93.6	13.0	530	13.0	3.5	5.276	6.411	g500-S400	MFXMA 063-42	2	15
22.6	9.8	93.4	13.0	529	13.0	3.3	4.273	6.425	g500-S130	MFXMA 063-42	2	9.9
20.6	10.8	85.4	14.0	484	14.0	3.3	4.188	7.029	g500-S130	MFXMA 063-42	2	9.9
15.4	14.4	63.8	19.0	361	19.0	3.5	4.730	9.411	g500-S130	MFXMA 063-42	2	9.9
11.2	19.8	46.5	26.0	263	26.0	3.5	4.304	12.907	g500-S130	MFXMA 063-42	2	9.9
9.9	22.6	40.8	30.0	231	30.0	3.5	4.283	14.720	g500-S220	MFXMA 063-42	2	12
9.0	24.8	37.0	33.0	210	33.0	3.5	4.404	16.197	g500-S400	MFXMA 063-42	2	15
8.0	27.7	33.2	37.0	188	37.0	3.0	4.044	18.069	g500-S130	MFXMA 063-42	2	9.9
7.7	28.8	32.0	38.0	181	38.0	3.7	4.118	18.776	g500-S220	MFXMA 063-42	2	12
7.0	31.7	29.0	42.0	165	42.0	3.7	4.192	20.659	g500-S400	MFXMA 063-42	2	15
6.3	35.3	26.0	47.0	148	47.0	2.4	3.932	23.048	g500-S130	MFXMA 063-42	2	9.9
5.1	43.3	21.3	58.0	120	58.0	2.0	3.869	28.233	g500-S130	MFXMA 063-42	2	9.9
4.8	45.9	20.0	61.0	114	61.0	3.1	3.899	29.937	g500-S220	MFXMA 063-42	2	12
4.4	50.5	18.2	67.0	103	67.0	3.4	3.928	32.940	g500-S400	MFXMA 063-42	2	15
4.1	54.4	16.9	73.0	95.8	73.0	1.7	3.811	35.493	g500-S130	MFXMA 063-42	2	9.9
3.9	57.1	16.1	76.0	91.3	76.0	2.8	3.845	37.238	g500-S220	MFXMA 063-42	2	12
3.5	62.8	14.6	84.0	83.0	84.0	2.9	3.864	40.974	g500-S400	MFXMA 063-42	2	15
3.2	68.5	13.2	91.0	75.0	91.0	1.8	3.899	45.333	g500-S220	MFXMA 063-42	3	12
3.2	70.1	13.1	94.0	74.4	94.0	1.3	3.774	45.711	g500-S130	MFXMA 063-42	2	9.9
3.2	70.4	13.1	94.0	74.0	94.0	2.9	3.975	45.956	g500-S660	MFXMA 063-42	2	20
3.0	73.9	12.5	99.0	70.6	99.0	2.1	3.791	48.190	g500-S220	MFXMA 063-42	2	12
2.7	81.3	11.3	109	64.1	109	2.6	3.803	53.026	g500-S400	MFXMA 063-42	2	15
2.6	85.5	10.8	114	61.0	114	2.5	3.901	55.773	g500-S660	MFXMA 063-42	2	20
2.6	85.8	10.6	115	59.8	115	4.0	4.081	56.818	g500-S660	MFXMA 063-42	3	21
2.5	88.8	10.4	119	58.7	119	1.1	3.748	57.933	g500-S130	MFXMA 063-42	2	9.9
2.5	89.7	10.3	120	58.1	120	1.8	3.767	58.486	g500-S220	MFXMA 063-42	2	12
2.4	90.0	10.1	120	57.1	120	1.6	3.831	59.581	g500-S220	MFXMA 063-42	3	12
2.3	98.7	9.3	132	52.8	132	2.2	3.774	64.354	g500-S400	MFXMA 063-42	2	15
2.2	99.0	9.2	132	51.9	132	2.6	3.839	65.559	g500-S400	MFXMA 063-42	3	15
2.0	110	8.3	147	46.8	147	4.1	3.964	72.713	g500-S660	MFXMA 063-42	3	21
2.0	111	8.3	149	46.8	149	0.8	3.732	72.600	g500-S130	MFXMA 063-42	2	9.9
1.9	115	8.0	153	45.5	153	1.1	3.743	74.750	g500-S220	MFXMA 063-42	2	12
1.9	115	7.9	154	44.6	154	1.4	3.791	76.249	g500-S220	MFXMA 063-42	3	12
1.9	118	7.7	158	43.4	158	4.4	4.334	78.375	g500-S950	MFXMA 063-42	3	41
1.8	120	7.5	160	42.7	160	4.0	3.930	79.545	g500-S660	MFXMA 063-42	3	21
1.7	127	7.2	169	40.5	169	2.3	3.795	83.900	g500-S400	MFXMA 063-42	3	15
1.5	147	6.2	197	34.9	197	1.1	3.761	97.528	g500-S220	MFXMA 063-42	3	12
1.5	151	6.0	202	34.0	202	4.1	4.149	99.968	g500-S950	MFXMA 063-42	3	41
1.4	153	5.9	205	33.5	205	3.1	3.862	101.460	g500-S660	MFXMA 063-42	3	21
1.4	162	5.6	216	31.7	216	1.8	3.764	107.314	g500-S400	MFXMA 063-42	3	15
1.2	188	4.8	251	27.4	251	2.5	3.823	124.289	g500-S660	MFXMA 063-42	3	21
1.1	191	4.7	255	26.9	255	0.8	3.743	126.610	g500-S220	MFXMA 063-42	3	12
1.0	210	4.3	281	24.4	281	1.4	3.745	139.313	g500-S400	MFXMA 063-42	3	15
0.9	236	3.8	315	21.8	315	2.0	3.782	156.249	g500-S660	MFXMA 063-42	3	21
0.9	241	3.8	321	21.3	321	2.8	3.912	159.394	g500-S950	MFXMA 063-42	3	41
0.8	270	3.4	360	19.0	360	1.1	3.731	178.531	g500-S400	MFXMA 063-42	3	15
0.7	299	3.0	400	17.1	400	2.3	3.853	198.270	g500-S950	MFXMA 063-42	3	41
0.7	304	3.0	406	16.9	406	1.6	3.756	201.230	g500-S660	MFXMA 063-42	3	21
0.6	349	2.6	466	14.7	466	0.8	3.721	230.946	g500-S400	MFXMA 063-42	3	15

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
0.6	385	2.4	514	13.3	514	1.2	3.737	255.034	g500-S660	MFXMA 063-42	3	21
0.6	387	2.3	517	13.3	517	1.8	3.796	256.585	g500-S950	MFXMA 063-42	3	41
0.5	423	2.1	564	12.2	564	2.9	3.970	279.807	g500-S2100	MFXMA 063-42	3	73
0.5	470	1.9	628	10.9	628	1.5	3.770	311.401	g500-S950	MFXMA 063-42	3	41
0.5	483	1.9	644	10.6	644	1.0	3.725	319.600	g500-S660	MFXMA 063-42	3	21
0.4	506	1.8	676	10.1	676	2.9	3.985	335.215	g500-S3100	MFXMA 063-42	3	112
0.4	513	1.8	685	10.0	685	2.5	3.897	339.584	g500-S2100	MFXMA 063-42	3	73
0.4	531	1.7	709	9.5	709	1.3	3.922	357.042	g500-S950	MFXMA 063-42	4	44
0.4	579	1.5	773	8.7	773	2.5	3.974	389.356	g500-S2100	MFXMA 063-42	4	76
0.4	601	1.5	803	8.5	803	1.1	3.745	397.999	g500-S950	MFXMA 063-42	3	41
0.4	614	1.5	820	8.4	820	2.5	3.907	406.829	g500-S3100	MFXMA 063-42	3	112
0.3	648	1.4	866	7.9	866	2.0	3.827	429.250	g500-S2100	MFXMA 063-42	3	73
0.3	677	1.3	905	7.5	905	1.0	3.914	455.411	g500-S950	MFXMA 063-42	4	44
0.3	739	1.2	986	6.8	986	2.0	3.949	496.628	g500-S2100	MFXMA 063-42	4	76
0.3	855	1.0	1142	5.9	1142	0.8	3.800	574.751	g500-S950	MFXMA 063-42	4	44
0.2	905	1.0	1208	5.6	1208	1.6	3.935	608.369	g500-S2100	MFXMA 063-42	4	76
0.2	1084	0.8	1448	4.7	1448	2.1	3.938	728.838	g500-S3100	MFXMA 063-42	4	115
0.2	1178	0.8	1573	4.3	1573	1.3	3.921	791.846	g500-S2100	MFXMA 063-42	4	76
0.2	1348	0.7	1801	3.8	1801	1.7	3.870	906.604	g500-S3100	MFXMA 063-42	4	115
0.2	1372	0.7	1832	3.7	1832	2.4	3.957	922.449	g500-S4500	MFXMA 063-42	4	190
0.1	1465	0.6	1956	3.5	1956	1.0	3.859	984.979	g500-S2100	MFXMA 063-42	4	76
0.1	1707	0.5	2279	3.0	2279	1.9	3.882	1147.437	g500-S4500	MFXMA 063-42	4	190
0.1	1755	0.5	2344	2.9	2344	1.3	3.860	1180.024	g500-S3100	MFXMA 063-42	4	115
0.1	1802	0.5	2406	2.8	2406	1.8	3.823	1211.575	g500-S4500	MFXMA 063-42	4	190
0.1	2183	0.4	2915	2.3	2915	1.0	3.854	1467.835	g500-S3100	MFXMA 063-42	4	115
0.1	2242	0.4	2993	2.3	2993	1.4	3.867	1507.081	g500-S4500	MFXMA 063-42	4	190
0.1	2901	0.3	3874	1.7	3874	1.1	3.805	1950.341	g500-S4500	MFXMA 063-42	4	190
0.1	3521	0.3	4701	1.4	4701	0.9	3.800	2367.004	g500-S4500	MFXMA 063-42	4	190

120 Hz: 1.1 kW

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
43.4	7.5	180	9.8	1045	9.8	4.8	17.960	3.339	g500-S400	MFXMA 071-32	2	17
39.6	8.2	164	11.0	953	11.0	4.2	14.363	3.661	g500-S130	MFXMA 071-32	2	12
37.8	8.6	156	11.0	909	11.0	4.8	15.396	3.840	g500-S220	MFXMA 071-32	2	14
28.9	11.3	120	15.0	695	15.0	3.9	13.687	5.021	g500-S130	MFXMA 071-32	2	12
24.7	13.1	102	17.0	596	17.0	4.2	14.661	5.860	g500-S400	MFXMA 071-32	2	17
22.6	14.4	93.6	19.0	544	19.0	4.2	14.376	6.411	g500-S400	MFXMA 071-32	2	17
22.6	14.4	93.4	19.0	543	19.0	3.5	13.373	6.425	g500-S130	MFXMA 071-32	2	12
20.6	15.8	85.4	21.0	497	21.0	3.4	13.288	7.029	g500-S130	MFXMA 071-32	2	12
18.9	17.2	78.3	22.0	455	22.0	4.8	14.299	7.667	g500-S220	MFXMA 071-32	2	14
17.2	18.9	71.1	25.0	414	25.0	4.8	14.745	8.436	g500-S400	MFXMA 071-32	2	17
15.4	21.1	63.8	27.0	371	27.0	3.4	13.830	9.411	g500-S130	MFXMA 071-32	2	12
11.2	28.9	46.5	38.0	270	38.0	2.6	13.404	12.907	g500-S130	MFXMA 071-32	2	12
10.8	30.2	44.6	39.0	259	39.0	4.2	13.473	13.456	g500-S220	MFXMA 071-32	2	14
9.9	33.0	40.8	43.0	237	43.0	3.9	13.383	14.720	g500-S220	MFXMA 071-32	2	14
9.8	33.2	40.5	43.0	236	43.0	4.2	13.617	14.806	g500-S400	MFXMA 071-32	2	17
9.0	36.3	37.0	47.0	216	47.0	4.2	13.504	16.197	g500-S400	MFXMA 071-32	2	17
8.1	40.1	33.5	52.0	195	52.0	4.2	14.215	17.905	g500-S660	MFXMA 071-32	2	22
8.0	40.5	33.2	53.0	193	53.0	2.1	13.144	18.069	g500-S130	MFXMA 071-32	2	12
7.7	42.1	32.0	55.0	186	55.0	3.4	13.218	18.776	g500-S220	MFXMA 071-32	2	14
7.0	46.3	29.0	60.0	169	60.0	4.5	13.292	20.659	g500-S400	MFXMA 071-32	2	17
6.3	51.5	26.1	67.0	152	67.0	2.8	13.120	23.000	g500-S220	MFXMA 071-32	2	14
6.3	51.7	26.0	67.0	151	67.0	1.7	13.032	23.048	g500-S130	MFXMA 071-32	2	12
5.7	56.7	23.7	74.0	138	74.0	4.0	13.170	25.308	g500-S400	MFXMA 071-32	2	17
5.1	63.3	21.3	82.0	124	82.0	1.4	12.969	28.233	g500-S130	MFXMA 071-32	2	12
5.1	64.0	21.0	83.0	122	83.0	4.0	13.409	28.548	g500-S660	MFXMA 071-32	2	22
4.8	67.1	20.0	87.0	117	87.0	2.2	12.999	29.937	g500-S220	MFXMA 071-32	2	14
4.4	73.8	18.2	96.0	106	96.0	4.0	13.028	32.940	g500-S400	MFXMA 071-32	2	17
4.1	79.5	16.9	104	98.3	104	1.2	12.911	35.493	g500-S130	MFXMA 071-32	2	12
4.1	79.6	16.9	104	98.3	104	3.7	13.242	35.511	g500-S660	MFXMA 071-32	2	22
3.9	83.5	16.1	109	93.7	109	1.9	12.945	37.238	g500-S220	MFXMA 071-32	2	14
3.5	91.8	14.6	120	85.2	120	3.2	12.964	40.974	g500-S400	MFXMA 071-32	2	17
3.2	102	13.1	133	76.3	133	0.9	12.874	45.711	g500-S130	MFXMA 071-32	2	12
3.2	103	13.1	134	75.9	134	3.4	13.075	45.956	g500-S660	MFXMA 071-32	2	22
3.2	103	13.1	134	75.9	134	3.7	13.561	45.956	g500-S950	MFXMA 071-32	2	42
3.0	108	12.5	141	72.4	141	1.5	12.891	48.190	g500-S220	MFXMA 071-32	2	14
2.7	119	11.3	155	65.8	155	2.1	12.903	53.026	g500-S400	MFXMA 071-32	2	17
2.6	125	10.8	163	62.6	163	2.8	13.001	55.773	g500-S660	MFXMA 071-32	2	22
2.6	125	10.8	163	62.6	163	3.3	13.360	55.773	g500-S950	MFXMA 071-32	2	42
2.6	125	10.6	163	61.4	163	3.4	13.181	56.818	g500-S660	MFXMA 071-32	3	23
2.5	131	10.3	171	59.7	171	1.2	12.867	58.486	g500-S220	MFXMA 071-32	2	14
2.4	132	10.1	171	58.6	171	1.1	12.931	59.581	g500-S220	MFXMA 071-32	3	14
2.3	144	9.3	188	54.2	188	1.5	12.874	64.354	g500-S400	MFXMA 071-32	2	17
2.2	145	9.2	189	53.2	189	1.8	12.939	65.559	g500-S400	MFXMA 071-32	3	17
2.1	158	8.5	206	49.5	206	2.6	13.161	70.500	g500-S950	MFXMA 071-32	2	42
2.0	158	8.4	206	48.7	206	4.4	13.534	71.644	g500-S950	MFXMA 071-32	3	43
2.0	161	8.3	209	48.0	209	3.0	13.064	72.713	g500-S660	MFXMA 071-32	3	23
1.9	168	7.9	219	45.8	219	1.0	12.891	76.249	g500-S220	MFXMA 071-32	3	14
1.9	173	7.7	225	44.5	225	4.0	13.434	78.375	g500-S950	MFXMA 071-32	3	43
1.8	176	7.5	229	43.9	229	2.7	13.030	79.545	g500-S660	MFXMA 071-32	3	23
1.7	185	7.2	241	41.6	241	1.6	12.895	83.900	g500-S400	MFXMA 071-32	3	17
1.5	221	6.0	288	34.9	288	3.1	13.249	99.968	g500-S950	MFXMA 071-32	3	43

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
1.4	224	5.9	292	34.4	292	2.2	12.962	101.460	g500-S660	MFXMA 071-32	3	23
1.4	237	5.6	309	32.5	309	1.2	12.864	107.314	g500-S400	MFXMA 071-32	3	17
1.2	270	4.9	352	28.5	352	2.6	13.141	122.461	g500-S950	MFXMA 071-32	3	43
1.2	274	4.8	358	28.1	358	1.8	12.923	124.289	g500-S660	MFXMA 071-32	3	23
1.0	308	4.3	401	25.1	401	1.0	12.845	139.313	g500-S400	MFXMA 071-32	3	17
0.9	345	3.8	449	22.3	449	1.4	12.882	156.249	g500-S660	MFXMA 071-32	3	23
0.9	352	3.8	459	21.9	459	2.0	13.012	159.394	g500-S950	MFXMA 071-32	3	43
0.8	384	3.5	500	20.1	500	3.9	13.395	173.820	g500-S2100	MFXMA 071-32	3	75
0.7	438	3.0	570	17.6	570	1.6	12.953	198.270	g500-S950	MFXMA 071-32	3	43
0.7	444	3.0	579	17.3	579	1.1	12.856	201.230	g500-S660	MFXMA 071-32	3	23
0.7	460	2.9	599	16.8	599	4.4	13.487	208.240	g500-S3100	MFXMA 071-32	3	114
0.7	477	2.8	622	16.1	622	3.1	13.233	216.215	g500-S2100	MFXMA 071-32	3	75
0.6	566	2.3	738	13.6	738	1.2	12.896	256.585	g500-S950	MFXMA 071-32	3	43
0.6	572	2.3	745	13.5	745	3.7	13.258	259.030	g500-S3100	MFXMA 071-32	3	114
0.5	587	2.3	765	13.1	765	3.7	13.661	265.956	g500-S4500	MFXMA 071-32	3	189
0.5	618	2.1	805	12.5	805	2.4	13.070	279.807	g500-S2100	MFXMA 071-32	3	75
0.5	687	1.9	896	11.2	896	1.0	12.870	311.401	g500-S950	MFXMA 071-32	3	43
0.4	713	1.9	928	10.8	928	3.3	13.428	322.773	g500-S4500	MFXMA 071-32	3	189
0.4	740	1.8	964	10.4	964	3.1	13.085	335.215	g500-S3100	MFXMA 071-32	3	114
0.4	750	1.8	977	10.3	977	2.0	12.997	339.584	g500-S2100	MFXMA 071-32	3	75
0.4	776	1.7	1012	9.8	1012	0.9	13.022	357.042	g500-S950	MFXMA 071-32	4	46
0.4	779	1.7	1015	9.7	1015	2.9	13.257	358.375	g500-S3100	MFXMA 071-32	4	117
0.4	789	1.7	1028	9.6	1028	4.2	13.422	362.667	g500-S4500	MFXMA 071-32	4	192
0.4	847	1.5	1103	9.0	1103	1.8	13.074	389.356	g500-S2100	MFXMA 071-32	4	78
0.4	898	1.5	1170	8.6	1170	2.5	13.007	406.829	g500-S3100	MFXMA 071-32	3	114
0.4	901	1.5	1174	8.6	1174	2.6	13.203	408.000	g500-S4500	MFXMA 071-32	3	189
0.3	948	1.4	1235	8.1	1235	1.6	12.927	429.250	g500-S2100	MFXMA 071-32	3	75
0.3	966	1.4	1259	7.9	1259	3.4	13.340	444.267	g500-S4500	MFXMA 071-32	4	192
0.3	994	1.3	1295	7.6	1295	2.3	13.211	457.111	g500-S3100	MFXMA 071-32	4	117
0.3	1080	1.2	1407	7.0	1407	1.4	13.049	496.628	g500-S2100	MFXMA 071-32	4	78
0.3	1218	1.1	1587	6.2	1587	1.9	13.185	559.961	g500-S3100	MFXMA 071-32	4	117
0.3	1257	1.0	1638	6.0	1638	2.6	13.259	578.252	g500-S4500	MFXMA 071-32	4	192
0.2	1323	1.0	1724	5.7	1724	1.1	13.035	608.369	g500-S2100	MFXMA 071-32	4	78
0.2	1541	0.8	2008	4.9	2008	2.1	13.218	708.711	g500-S4500	MFXMA 071-32	4	192
0.2	1585	0.8	2065	4.8	2065	1.4	13.038	728.838	g500-S3100	MFXMA 071-32	4	117
0.2	1722	0.8	2244	4.4	2244	0.9	13.021	791.846	g500-S2100	MFXMA 071-32	4	78
0.2	1971	0.7	2569	3.8	2569	1.2	12.970	906.604	g500-S3100	MFXMA 071-32	4	117
0.2	2006	0.7	2614	3.8	2614	1.6	13.057	922.449	g500-S4500	MFXMA 071-32	4	192
0.1	2495	0.5	3251	3.0	3251	1.3	12.982	1147.437	g500-S4500	MFXMA 071-32	4	192
0.1	2566	0.5	3344	3.0	3344	0.9	12.960	1180.024	g500-S3100	MFXMA 071-32	4	117
0.1	2635	0.5	3433	2.9	3433	1.3	12.923	1211.575	g500-S4500	MFXMA 071-32	4	192
0.1	3277	0.4	4270	2.3	4270	1.0	12.967	1507.081	g500-S4500	MFXMA 071-32	4	192

120 Hz: 1.5 kW

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
43.4	10.2	180	13.0	1033	13.0	3.5	17.960	3.339	g500-S400	MFXMA 071-42	2	17
39.6	11.2	164	15.0	942	15.0	3.1	14.363	3.661	g500-S130	MFXMA 071-42	2	12
37.8	11.7	156	15.0	898	15.0	3.5	15.396	3.840	g500-S220	MFXMA 071-42	2	14
28.9	15.3	120	20.0	687	20.0	2.9	13.687	5.021	g500-S130	MFXMA 071-42	2	12
24.7	17.9	102	24.0	589	24.0	3.1	14.661	5.860	g500-S400	MFXMA 071-42	2	17
22.6	19.6	93.6	26.0	538	26.0	3.1	14.376	6.411	g500-S400	MFXMA 071-42	2	17
22.6	19.6	93.4	26.0	537	26.0	2.6	13.373	6.425	g500-S130	MFXMA 071-42	2	12
20.6	21.5	85.4	28.0	491	28.0	2.5	13.288	7.029	g500-S130	MFXMA 071-42	2	12
18.9	23.4	78.3	31.0	450	31.0	3.5	14.299	7.667	g500-S220	MFXMA 071-42	2	14
17.2	25.8	71.1	34.0	409	34.0	3.5	14.745	8.436	g500-S400	MFXMA 071-42	2	17
15.4	28.8	63.8	38.0	367	38.0	2.5	13.830	9.411	g500-S130	MFXMA 071-42	2	12
11.2	39.4	46.5	52.0	267	52.0	1.9	13.404	12.907	g500-S130	MFXMA 071-42	2	12
10.8	41.1	44.6	54.0	256	54.0	3.1	13.473	13.456	g500-S220	MFXMA 071-42	2	14
9.9	45.0	40.8	59.0	234	59.0	2.8	13.383	14.720	g500-S220	MFXMA 071-42	2	14
9.8	45.2	40.5	60.0	233	60.0	3.1	13.617	14.806	g500-S400	MFXMA 071-42	2	17
9.0	49.5	37.0	65.0	213	65.0	3.1	13.504	16.197	g500-S400	MFXMA 071-42	2	17
8.1	54.7	33.5	72.0	193	72.0	3.1	14.215	17.905	g500-S660	MFXMA 071-42	2	22
8.0	55.2	33.2	73.0	191	73.0	1.5	13.144	18.069	g500-S130	MFXMA 071-42	2	12
7.7	57.4	32.0	76.0	184	76.0	2.5	13.218	18.776	g500-S220	MFXMA 071-42	2	14
7.0	63.1	29.0	83.0	167	83.0	3.3	13.292	20.659	g500-S400	MFXMA 071-42	2	17
6.3	70.3	26.1	93.0	150	93.0	2.0	13.120	23.000	g500-S220	MFXMA 071-42	2	14
6.3	70.4	26.0	93.0	150	93.0	1.2	13.032	23.048	g500-S130	MFXMA 071-42	2	12
5.7	77.3	23.7	102	136	102	2.9	13.170	25.308	g500-S400	MFXMA 071-42	2	17
5.1	86.3	21.3	114	122	114	1.0	12.969	28.233	g500-S130	MFXMA 071-42	2	12
5.1	87.2	21.0	115	121	115	2.9	13.409	28.548	g500-S660	MFXMA 071-42	2	22
4.8	91.5	20.0	121	115	121	1.6	12.999	29.937	g500-S220	MFXMA 071-42	2	14
4.4	101	18.2	133	105	133	2.9	13.028	32.940	g500-S400	MFXMA 071-42	2	17
4.1	109	16.9	143	97.2	143	0.9	12.911	35.493	g500-S130	MFXMA 071-42	2	12
4.1	109	16.9	143	97.2	143	2.7	13.242	35.511	g500-S660	MFXMA 071-42	2	22
3.9	114	16.1	150	92.6	150	1.4	12.945	37.238	g500-S220	MFXMA 071-42	2	14
3.5	125	14.6	165	84.2	165	2.3	12.964	40.974	g500-S400	MFXMA 071-42	2	17
3.2	140	13.1	185	75.1	185	2.5	13.075	45.956	g500-S660	MFXMA 071-42	2	22
3.2	140	13.1	185	75.1	185	2.7	13.561	45.956	g500-S950	MFXMA 071-42	2	42
3.0	147	12.5	194	71.6	194	1.1	12.891	48.190	g500-S220	MFXMA 071-42	2	14
2.7	162	11.3	214	65.1	214	1.6	12.903	53.026	g500-S400	MFXMA 071-42	2	17
2.6	171	10.8	225	61.9	225	2.1	13.001	55.773	g500-S660	MFXMA 071-42	2	22
2.6	171	10.8	225	61.9	225	2.4	13.360	55.773	g500-S950	MFXMA 071-42	2	42
2.6	171	10.6	225	60.7	225	2.5	13.181	56.818	g500-S660	MFXMA 071-42	3	23
2.5	179	10.3	235	59.0	235	0.9	12.867	58.486	g500-S220	MFXMA 071-42	2	14
2.4	179	10.1	236	57.9	236	0.8	12.931	59.581	g500-S220	MFXMA 071-42	3	14
2.3	197	9.3	259	53.6	259	1.1	12.874	64.354	g500-S400	MFXMA 071-42	2	17
2.2	197	9.2	260	52.6	260	1.3	12.939	65.559	g500-S400	MFXMA 071-42	3	17
2.1	216	8.5	284	48.9	284	1.9	13.161	70.500	g500-S950	MFXMA 071-42	2	42
2.0	216	8.4	284	48.2	284	3.2	13.534	71.644	g500-S950	MFXMA 071-42	3	43
2.0	219	8.3	288	47.4	288	2.2	13.064	72.713	g500-S660	MFXMA 071-42	3	23
1.9	236	7.7	311	44.0	311	2.9	13.434	78.375	g500-S950	MFXMA 071-42	3	43
1.8	240	7.5	315	43.4	315	2.0	13.030	79.545	g500-S660	MFXMA 071-42	3	23
1.7	253	7.2	333	41.1	333	1.2	12.895	83.900	g500-S400	MFXMA 071-42	3	17
1.5	301	6.0	396	34.5	396	2.3	13.249	99.968	g500-S950	MFXMA 071-42	3	43
1.4	305	5.9	402	34.0	402	1.6	12.962	101.460	g500-S660	MFXMA 071-42	3	23
1.4	323	5.6	426	32.1	426	0.9	12.864	107.314	g500-S400	MFXMA 071-42	3	17

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
1.3	328	5.5	432	31.6	432	3.9	14.179	109.016	g500-S2100	MFXMA 071-42	3	75
1.2	369	4.9	486	28.2	486	1.9	13.141	122.461	g500-S950	MFXMA 071-42	3	43
1.2	374	4.8	493	27.8	493	1.3	12.923	124.289	g500-S660	MFXMA 071-42	3	23
1.1	393	4.6	518	26.4	518	3.9	14.280	130.603	g500-S3100	MFXMA 071-42	3	114
0.9	470	3.8	620	22.1	620	1.0	12.882	156.249	g500-S660	MFXMA 071-42	3	23
0.9	480	3.8	632	21.6	632	1.4	13.012	159.394	g500-S950	MFXMA 071-42	3	43
0.8	523	3.5	689	19.8	689	2.8	13.395	173.820	g500-S2100	MFXMA 071-42	3	75
0.7	597	3.0	786	17.4	786	1.2	12.953	198.270	g500-S950	MFXMA 071-42	3	43
0.7	627	2.9	826	16.6	826	3.2	13.487	208.240	g500-S3100	MFXMA 071-42	3	114
0.7	651	2.8	858	16.0	858	2.3	13.233	216.215	g500-S2100	MFXMA 071-42	3	75
0.6	772	2.3	1018	13.4	1018	0.9	12.896	256.585	g500-S950	MFXMA 071-42	3	43
0.6	780	2.3	1027	13.3	1027	2.7	13.258	259.030	g500-S3100	MFXMA 071-42	3	114
0.5	801	2.3	1055	13.0	1055	2.7	13.661	265.956	g500-S4500	MFXMA 071-42	3	189
0.5	842	2.1	1110	12.3	1110	1.8	13.070	279.807	g500-S2100	MFXMA 071-42	3	75
0.4	972	1.9	1280	10.7	1280	2.4	13.428	322.773	g500-S4500	MFXMA 071-42	3	189
0.4	1009	1.8	1329	10.3	1329	2.2	13.085	335.215	g500-S3100	MFXMA 071-42	3	114
0.4	1022	1.8	1347	10.2	1347	1.5	12.997	339.584	g500-S2100	MFXMA 071-42	3	75
0.4	1063	1.7	1400	9.6	1400	2.1	13.257	358.375	g500-S3100	MFXMA 071-42	4	117
0.4	1075	1.7	1417	9.5	1417	3.0	13.422	362.667	g500-S4500	MFXMA 071-42	4	192
0.4	1155	1.5	1521	8.9	1521	1.3	13.074	389.356	g500-S2100	MFXMA 071-42	4	78
0.4	1225	1.5	1613	8.5	1613	1.8	13.007	406.829	g500-S3100	MFXMA 071-42	3	114
0.4	1228	1.5	1618	8.5	1618	1.9	13.203	408.000	g500-S4500	MFXMA 071-42	3	189
0.3	1292	1.4	1702	8.0	1702	1.2	12.927	429.250	g500-S2100	MFXMA 071-42	3	75
0.3	1317	1.4	1736	7.8	1736	2.5	13.340	444.267	g500-S4500	MFXMA 071-42	4	192
0.3	1355	1.3	1786	7.5	1786	1.7	13.211	457.111	g500-S3100	MFXMA 071-42	4	117
0.3	1473	1.2	1940	6.9	1940	1.0	13.049	496.628	g500-S2100	MFXMA 071-42	4	78
0.3	1660	1.1	2188	6.2	2188	1.4	13.185	559.961	g500-S3100	MFXMA 071-42	4	117
0.3	1715	1.0	2259	6.0	2259	1.9	13.259	578.252	g500-S4500	MFXMA 071-42	4	192
0.2	1804	1.0	2377	5.7	2377	0.8	13.035	608.369	g500-S2100	MFXMA 071-42	4	78
0.2	2102	0.8	2769	4.9	2769	1.6	13.218	708.711	g500-S4500	MFXMA 071-42	4	192
0.2	2161	0.8	2847	4.7	2847	1.0	13.038	728.838	g500-S3100	MFXMA 071-42	4	117
0.2	2688	0.7	3542	3.8	3542	0.8	12.970	906.604	g500-S3100	MFXMA 071-42	4	117
0.2	2735	0.7	3604	3.7	3604	1.2	13.057	922.449	g500-S4500	MFXMA 071-42	4	192
0.1	3402	0.5	4483	3.0	4483	1.0	12.982	1147.437	g500-S4500	MFXMA 071-42	4	192
0.1	3593	0.5	4733	2.8	4733	0.9	12.923	1211.575	g500-S4500	MFXMA 071-42	4	192

120 Hz: 2.2 kW

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
43.4	14.6	180	19.0	1048	19.0	4.3	33.160	3.339	g500-S400	MFXMA 080-32	2	22
39.6	16.0	164	21.0	956	21.0	2.2	29.563	3.661	g500-S130	MFXMA 080-32	2	17
37.8	16.8	156	22.0	911	22.0	4.3	30.596	3.840	g500-S220	MFXMA 080-32	2	18
31.7	20.0	131	27.0	764	27.0	4.3	30.907	4.579	g500-S400	MFXMA 080-32	2	22
28.9	21.9	120	29.0	697	29.0	2.0	28.887	5.021	g500-S130	MFXMA 080-32	2	17
27.5	23.0	114	31.0	665	31.0	4.3	29.544	5.267	g500-S220	MFXMA 080-32	2	18
24.7	25.6	102	34.0	597	34.0	4.0	29.861	5.860	g500-S400	MFXMA 080-32	2	22
22.6	28.0	93.6	37.0	546	37.0	4.0	29.576	6.411	g500-S400	MFXMA 080-32	2	22
22.6	28.1	93.4	37.0	545	37.0	1.8	28.573	6.425	g500-S130	MFXMA 080-32	2	17
21.1	30.0	87.2	40.0	509	40.0	4.2	31.484	6.880	g500-S660	MFXMA 080-32	2	27
20.6	30.7	85.4	41.0	498	41.0	1.7	28.488	7.029	g500-S130	MFXMA 080-32	2	17
18.9	33.5	78.3	45.0	457	45.0	3.7	29.499	7.667	g500-S220	MFXMA 080-32	2	18
18.8	33.6	77.9	45.0	454	45.0	4.2	33.080	7.702	g500-S950	MFXMA 080-32	2	47
17.2	36.8	71.1	49.0	415	49.0	4.3	29.945	8.436	g500-S400	MFXMA 080-32	2	22
15.4	41.1	63.8	55.0	372	55.0	1.7	29.030	9.411	g500-S130	MFXMA 080-32	2	17
13.8	45.9	57.1	61.0	333	61.0	2.7	28.961	10.514	g500-S220	MFXMA 080-32	2	18
12.5	50.5	51.9	67.0	303	67.0	4.3	29.198	11.569	g500-S400	MFXMA 080-32	2	22
11.3	56.0	46.8	75.0	273	75.0	4.2	30.216	12.832	g500-S660	MFXMA 080-32	2	27
11.2	56.4	46.5	75.0	271	75.0	1.3	28.604	12.907	g500-S130	MFXMA 080-32	2	17
10.8	58.7	44.6	78.0	260	78.0	2.1	28.673	13.456	g500-S220	MFXMA 080-32	2	18
10.3	61.3	42.7	82.0	249	82.0	4.3	29.963	14.037	g500-S660	MFXMA 080-32	2	27
9.9	64.3	40.8	86.0	238	86.0	1.9	28.583	14.720	g500-S220	MFXMA 080-32	2	18
9.8	64.6	40.5	86.0	236	86.0	3.5	28.817	14.806	g500-S400	MFXMA 080-32	2	22
9.0	70.7	37.0	94.0	216	94.0	3.2	28.704	16.197	g500-S400	MFXMA 080-32	2	22
8.1	78.2	33.5	104	196	104	4.0	29.415	17.905	g500-S660	MFXMA 080-32	2	27
8.1	78.2	33.5	104	196	104	4.2	31.342	17.905	g500-S950	MFXMA 080-32	2	47
8.0	78.9	33.2	105	194	105	1.1	28.344	18.069	g500-S130	MFXMA 080-32	2	17
7.7	82.0	32.0	109	186	109	1.7	28.418	18.776	g500-S220	MFXMA 080-32	2	18
7.0	90.2	29.0	120	169	120	2.9	28.492	20.659	g500-S400	MFXMA 080-32	2	22
6.6	95.8	27.4	128	160	128	4.0	29.089	21.933	g500-S660	MFXMA 080-32	2	27
6.3	100	26.1	134	152	134	1.4	28.320	23.000	g500-S220	MFXMA 080-32	2	18
6.3	101	26.0	134	152	134	0.8	28.232	23.048	g500-S130	MFXMA 080-32	2	17
5.7	111	23.7	147	138	147	2.3	28.370	25.308	g500-S400	MFXMA 080-32	2	22
5.1	125	21.0	166	123	166	3.4	28.609	28.548	g500-S660	MFXMA 080-32	2	27
5.1	125	21.0	166	123	166	4.0	29.763	28.548	g500-S950	MFXMA 080-32	2	47
4.8	131	20.0	174	117	174	1.1	28.199	29.937	g500-S220	MFXMA 080-32	2	18
4.4	144	18.2	192	106	192	2.0	28.228	32.940	g500-S400	MFXMA 080-32	2	22
4.1	153	17.1	204	100	204	3.7	29.214	34.989	g500-S950	MFXMA 080-32	2	47
4.1	155	16.9	207	98.6	207	3.0	28.442	35.511	g500-S660	MFXMA 080-32	2	27
3.9	163	16.1	217	94.0	217	1.0	28.145	37.238	g500-S220	MFXMA 080-32	2	18
3.5	179	14.6	239	85.4	239	1.6	28.164	40.974	g500-S400	MFXMA 080-32	2	22
3.2	201	13.1	268	76.2	268	2.2	28.275	45.956	g500-S660	MFXMA 080-32	2	27
3.2	201	13.1	268	76.2	268	3.4	28.761	45.956	g500-S950	MFXMA 080-32	2	47
2.9	216	12.2	287	70.9	287	3.7	30.536	49.378	g500-S2100	MFXMA 080-32	2	79
2.6	241	10.7	321	62.5	321	2.5	29.061	55.982	g500-S950	MFXMA 080-32	3	47
2.6	244	10.8	325	62.8	325	1.5	28.201	55.773	g500-S660	MFXMA 080-32	2	27
2.6	244	10.8	325	62.8	325	2.7	28.560	55.773	g500-S950	MFXMA 080-32	2	47
2.6	244	10.6	326	61.6	326	1.7	28.381	56.818	g500-S660	MFXMA 080-32	3	27
2.5	258	10.1	344	59.2	344	3.7	30.959	59.156	g500-S3100	MFXMA 080-32	2	118
2.4	262	10.0	349	58.4	349	3.2	29.854	59.927	g500-S2100	MFXMA 080-32	2	79
2.2	282	9.2	376	53.4	376	0.9	28.139	65.559	g500-S400	MFXMA 080-32	3	22

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
2.1	308	8.5	410	49.6	410	1.6	28.361	70.500	g500-S950	MFXMA 080-32	2	47
2.0	308	8.4	411	48.9	411	2.2	28.734	71.644	g500-S950	MFXMA 080-32	3	47
2.0	313	8.3	417	48.1	417	1.5	28.264	72.713	g500-S660	MFXMA 080-32	3	27
2.0	314	8.4	418	48.8	418	3.2	30.141	71.793	g500-S3100	MFXMA 080-32	2	118
1.9	331	7.9	441	46.2	441	2.5	29.224	75.750	g500-S2100	MFXMA 080-32	2	79
1.9	336	7.7	448	44.8	448	4.4	30.146	78.128	g500-S2100	MFXMA 080-32	3	79
1.9	337	7.7	449	44.7	449	2.0	28.634	78.375	g500-S950	MFXMA 080-32	3	47
1.8	342	7.5	456	44.0	456	1.4	28.230	79.545	g500-S660	MFXMA 080-32	3	27
1.7	368	7.0	490	41.0	490	4.0	29.904	85.468	g500-S2100	MFXMA 080-32	3	79
1.5	430	6.0	573	35.0	573	1.6	28.449	99.968	g500-S950	MFXMA 080-32	3	47
1.4	436	5.9	582	34.5	582	1.1	28.162	101.460	g500-S660	MFXMA 080-32	3	27
1.3	469	5.5	625	32.1	625	3.1	29.379	109.016	g500-S2100	MFXMA 080-32	3	79
1.2	527	4.9	702	28.6	702	1.3	28.341	122.461	g500-S950	MFXMA 080-32	3	47
1.2	535	4.8	713	28.2	713	0.9	28.123	124.289	g500-S660	MFXMA 080-32	3	27
1.1	562	4.6	749	26.8	749	3.9	29.480	130.603	g500-S3100	MFXMA 080-32	3	119
1.1	574	4.5	766	26.2	766	2.5	29.065	133.544	g500-S2100	MFXMA 080-32	3	79
0.9	686	3.8	914	22.0	914	1.0	28.212	159.394	g500-S950	MFXMA 080-32	3	47
0.9	688	3.8	917	21.9	917	3.2	29.132	159.989	g500-S3100	MFXMA 080-32	3	119
0.9	711	3.6	947	21.2	947	4.5	30.022	165.215	g500-S4500	MFXMA 080-32	3	194
0.8	748	3.5	997	20.1	997	2.0	28.595	173.820	g500-S2100	MFXMA 080-32	3	79
0.7	871	3.0	1161	17.3	1161	3.7	29.386	202.489	g500-S4500	MFXMA 080-32	3	194
0.7	896	2.9	1194	16.8	1194	2.5	28.687	208.240	g500-S3100	MFXMA 080-32	3	119
0.7	930	2.8	1240	16.2	1240	1.6	28.433	216.215	g500-S2100	MFXMA 080-32	3	79
0.6	1114	2.3	1485	13.5	1485	2.0	28.458	259.030	g500-S3100	MFXMA 080-32	3	119
0.5	1144	2.3	1525	13.2	1525	2.8	28.861	265.956	g500-S4500	MFXMA 080-32	3	194
0.5	1203	2.1	1604	12.5	1604	1.2	28.270	279.807	g500-S2100	MFXMA 080-32	3	79
0.4	1388	1.9	1851	10.8	1851	2.3	28.628	322.773	g500-S4500	MFXMA 080-32	3	194
0.4	1442	1.8	1922	10.4	1922	1.5	28.285	335.215	g500-S3100	MFXMA 080-32	3	119
0.4	1460	1.8	1947	10.3	1947	1.0	28.197	339.584	g500-S2100	MFXMA 080-32	3	79
0.4	1518	1.7	2024	9.8	2024	1.5	28.457	358.375	g500-S3100	MFXMA 080-32	4	122
0.4	1536	1.7	2048	9.7	2048	2.1	28.622	362.667	g500-S4500	MFXMA 080-32	4	197
0.4	1649	1.5	2199	9.0	2199	0.9	28.274	389.356	g500-S2100	MFXMA 080-32	4	82
0.4	1750	1.5	2333	8.6	2333	1.3	28.207	406.829	g500-S3100	MFXMA 080-32	3	119
0.4	1755	1.5	2339	8.6	2339	1.6	28.403	408.000	g500-S4500	MFXMA 080-32	3	194
0.3	1882	1.4	2509	7.9	2509	1.7	28.540	444.267	g500-S4500	MFXMA 080-32	4	197
0.3	1936	1.3	2582	7.7	2582	1.1	28.411	457.111	g500-S3100	MFXMA 080-32	4	122
0.3	2372	1.1	3163	6.3	3163	0.9	28.385	559.961	g500-S3100	MFXMA 080-32	4	122
0.3	2450	1.0	3266	6.1	3266	1.3	28.459	578.252	g500-S4500	MFXMA 080-32	4	197
0.2	3002	0.8	4003	4.9	4003	1.1	28.418	708.711	g500-S4500	MFXMA 080-32	4	197
0.2	3908	0.7	5210	3.8	5210	0.8	28.257	922.449	g500-S4500	MFXMA 080-32	4	197

120 Hz: 3 kW

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
43.4	20.1	180	27.0	1042	27.0	3.1	33.160	3.339	g500-S400	MFXMA 080-42	2	22
39.6	22.0	164	29.0	951	29.0	1.6	29.563	3.661	g500-S130	MFXMA 080-42	2	17
37.8	23.1	156	31.0	906	31.0	3.1	30.596	3.840	g500-S220	MFXMA 080-42	2	18
31.7	27.5	131	36.0	760	36.0	3.1	30.907	4.579	g500-S400	MFXMA 080-42	2	22
28.9	30.2	120	40.0	693	40.0	1.4	28.887	5.021	g500-S130	MFXMA 080-42	2	17
27.5	31.7	114	42.0	661	42.0	3.1	29.544	5.267	g500-S220	MFXMA 080-42	2	18
24.7	35.3	102	47.0	594	47.0	2.9	29.861	5.860	g500-S400	MFXMA 080-42	2	22
22.6	38.6	93.6	51.0	543	51.0	2.9	29.576	6.411	g500-S400	MFXMA 080-42	2	22
22.6	38.7	93.4	51.0	542	51.0	1.3	28.573	6.425	g500-S130	MFXMA 080-42	2	17
21.1	41.4	87.2	55.0	506	55.0	3.1	31.484	6.880	g500-S660	MFXMA 080-42	2	27
20.6	42.3	85.4	56.0	495	56.0	1.2	28.488	7.029	g500-S130	MFXMA 080-42	2	17
18.9	46.1	78.3	61.0	454	61.0	2.7	29.499	7.667	g500-S220	MFXMA 080-42	2	18
18.8	46.3	77.9	61.0	452	61.0	3.1	33.080	7.702	g500-S950	MFXMA 080-42	2	47
17.2	50.7	71.1	67.0	413	67.0	3.1	29.945	8.436	g500-S400	MFXMA 080-42	2	22
15.4	56.6	63.8	75.0	370	75.0	1.3	29.030	9.411	g500-S130	MFXMA 080-42	2	17
13.8	63.2	57.1	84.0	331	84.0	2.0	28.961	10.514	g500-S220	MFXMA 080-42	2	18
12.5	69.6	51.9	92.0	301	92.0	3.1	29.198	11.569	g500-S400	MFXMA 080-42	2	22
11.3	77.2	46.8	102	271	102	3.1	30.216	12.832	g500-S660	MFXMA 080-42	2	27
11.2	77.6	46.5	103	270	103	1.0	28.604	12.907	g500-S130	MFXMA 080-42	2	17
10.8	80.9	44.6	107	259	107	1.6	28.673	13.456	g500-S220	MFXMA 080-42	2	18
10.3	84.4	42.7	112	248	112	3.1	29.963	14.037	g500-S660	MFXMA 080-42	2	27
9.9	88.5	40.8	117	236	117	1.4	28.583	14.720	g500-S220	MFXMA 080-42	2	18
9.8	89.1	40.5	118	235	118	2.6	28.817	14.806	g500-S400	MFXMA 080-42	2	22
9.0	97.4	37.0	129	215	129	2.3	28.704	16.197	g500-S400	MFXMA 080-42	2	22
8.1	108	33.5	142	194	142	2.9	29.415	17.905	g500-S660	MFXMA 080-42	2	27
8.1	108	33.5	142	194	142	3.1	31.342	17.905	g500-S950	MFXMA 080-42	2	47
7.7	113	32.0	149	185	149	1.3	28.418	18.776	g500-S220	MFXMA 080-42	2	18
7.0	124	29.0	164	168	164	2.1	28.492	20.659	g500-S400	MFXMA 080-42	2	22
6.6	132	27.4	174	159	174	3.0	29.089	21.933	g500-S660	MFXMA 080-42	2	27
6.3	138	26.1	183	151	183	1.0	28.320	23.000	g500-S220	MFXMA 080-42	2	18
5.7	152	23.7	201	138	201	1.7	28.370	25.308	g500-S400	MFXMA 080-42	2	22
5.1	172	21.0	227	122	227	2.5	28.609	28.548	g500-S660	MFXMA 080-42	2	27
5.1	172	21.0	227	122	227	3.0	29.763	28.548	g500-S950	MFXMA 080-42	2	47
4.4	198	18.2	262	106	262	1.5	28.228	32.940	g500-S400	MFXMA 080-42	2	22
4.1	211	17.1	278	99.5	278	2.7	29.214	34.989	g500-S950	MFXMA 080-42	2	47
4.1	214	16.9	283	98.0	283	2.2	28.442	35.511	g500-S660	MFXMA 080-42	2	27
3.5	247	14.6	326	84.9	326	1.2	28.164	40.974	g500-S400	MFXMA 080-42	2	22
3.2	276	13.1	366	75.7	366	1.6	28.275	45.956	g500-S660	MFXMA 080-42	2	27
3.2	276	13.1	366	75.7	366	2.5	28.761	45.956	g500-S950	MFXMA 080-42	2	47
2.9	297	12.2	393	70.5	393	2.7	30.536	49.378	g500-S2100	MFXMA 080-42	2	79
2.6	332	10.7	439	62.2	439	1.9	29.061	55.982	g500-S950	MFXMA 080-42	3	47
2.6	336	10.8	444	62.4	444	1.1	28.201	55.773	g500-S660	MFXMA 080-42	2	27
2.6	336	10.8	444	62.4	444	2.0	28.560	55.773	g500-S950	MFXMA 080-42	2	47
2.6	337	10.6	445	61.2	445	1.3	28.381	56.818	g500-S660	MFXMA 080-42	3	27
2.5	356	10.1	471	58.8	471	2.7	30.959	59.156	g500-S3100	MFXMA 080-42	2	118
2.4	361	10.0	477	58.1	477	2.4	29.854	59.927	g500-S2100	MFXMA 080-42	2	79
2.1	424	8.5	561	49.4	561	1.2	28.361	70.500	g500-S950	MFXMA 080-42	2	47
2.0	425	8.4	561	48.6	561	1.6	28.734	71.644	g500-S950	MFXMA 080-42	3	47
2.0	431	8.3	570	47.9	570	1.1	28.264	72.713	g500-S660	MFXMA 080-42	3	27
2.0	432	8.4	571	48.5	571	2.4	30.141	71.793	g500-S3100	MFXMA 080-42	2	118
1.9	456	7.9	603	45.9	603	1.8	29.224	75.750	g500-S2100	MFXMA 080-42	2	79

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
1.9	463	7.7	612	44.5	612	3.2	30.146	78.128	g500-S2100	MFXMA 080-42	3	79
1.9	464	7.7	614	44.4	614	1.5	28.634	78.375	g500-S950	MFXMA 080-42	3	47
1.8	471	7.5	623	43.7	623	1.0	28.230	79.545	g500-S660	MFXMA 080-42	3	27
1.7	506	7.0	670	40.7	670	2.9	29.904	85.468	g500-S2100	MFXMA 080-42	3	79
1.5	555	6.4	733	37.2	733	3.9	30.342	93.599	g500-S3100	MFXMA 080-42	3	119
1.5	592	6.0	783	34.8	783	1.2	28.449	99.968	g500-S950	MFXMA 080-42	3	47
1.4	607	5.9	802	34.0	802	3.7	30.068	102.393	g500-S3100	MFXMA 080-42	3	119
1.4	614	5.8	812	33.6	812	3.9	31.999	103.619	g500-S4500	MFXMA 080-42	3	194
1.3	646	5.5	854	31.9	854	2.3	29.379	109.016	g500-S2100	MFXMA 080-42	3	79
1.2	726	4.9	960	28.4	960	0.9	28.341	122.461	g500-S950	MFXMA 080-42	3	47
1.1	774	4.6	1023	26.6	1023	2.9	29.480	130.603	g500-S3100	MFXMA 080-42	3	119
1.1	791	4.5	1047	26.1	1047	1.9	29.065	133.544	g500-S2100	MFXMA 080-42	3	79
0.9	948	3.8	1254	21.8	1254	2.4	29.132	159.989	g500-S3100	MFXMA 080-42	3	119
0.9	979	3.6	1295	21.1	1295	3.3	30.022	165.215	g500-S4500	MFXMA 080-42	3	194
0.8	1030	3.5	1362	20.0	1362	1.4	28.595	173.820	g500-S2100	MFXMA 080-42	3	79
0.7	1200	3.0	1587	17.2	1587	2.7	29.386	202.489	g500-S4500	MFXMA 080-42	3	194
0.7	1234	2.9	1632	16.7	1632	1.8	28.687	208.240	g500-S3100	MFXMA 080-42	3	119
0.7	1281	2.8	1694	16.1	1694	1.2	28.433	216.215	g500-S2100	MFXMA 080-42	3	79
0.6	1535	2.3	2030	13.4	2030	1.5	28.458	259.030	g500-S3100	MFXMA 080-42	3	119
0.5	1576	2.3	2084	13.1	2084	2.1	28.861	265.956	g500-S4500	MFXMA 080-42	3	194
0.5	1658	2.1	2193	12.4	2193	0.9	28.270	279.807	g500-S2100	MFXMA 080-42	3	79
0.4	1913	1.9	2529	10.8	2529	1.7	28.628	322.773	g500-S4500	MFXMA 080-42	3	194
0.4	1986	1.8	2627	10.4	2627	1.1	28.285	335.215	g500-S3100	MFXMA 080-42	3	119
0.4	2092	1.7	2766	9.7	2766	1.1	28.457	358.375	g500-S3100	MFXMA 080-42	4	122
0.4	2117	1.7	2799	9.6	2799	1.5	28.622	362.667	g500-S4500	MFXMA 080-42	4	197
0.4	2411	1.5	3188	8.6	3188	0.9	28.207	406.829	g500-S3100	MFXMA 080-42	3	119
0.4	2418	1.5	3197	8.5	3197	1.2	28.403	408.000	g500-S4500	MFXMA 080-42	3	194
0.3	2593	1.4	3429	7.8	3429	1.3	28.540	444.267	g500-S4500	MFXMA 080-42	4	197
0.3	2668	1.3	3528	7.6	3528	0.8	28.411	457.111	g500-S3100	MFXMA 080-42	4	122
0.3	3375	1.0	4464	6.0	4464	1.0	28.459	578.252	g500-S4500	MFXMA 080-42	4	197

120 Hz: 4 kW

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
43.4	24.9	180	35.0	1042	35.0	3.0	37.160	3.339	g500-S400	MFXMA 090-32	2	29
39.6	27.3	164	39.0	951	39.0	1.2	33.563	3.661	g500-S130	MFXMA 090-32	2	24
37.8	28.7	156	41.0	906	41.0	3.0	34.596	3.840	g500-S220	MFXMA 090-32	2	25
31.7	34.2	131	48.0	760	48.0	3.0	34.907	4.579	g500-S400	MFXMA 090-32	2	29
28.9	37.5	120	53.0	693	53.0	1.1	32.887	5.021	g500-S130	MFXMA 090-32	2	24
27.5	39.3	114	56.0	661	56.0	2.5	33.544	5.267	g500-S220	MFXMA 090-32	2	25
24.7	43.8	102	62.0	594	62.0	2.8	33.861	5.860	g500-S400	MFXMA 090-32	2	29
22.6	47.9	93.6	68.0	543	68.0	2.8	33.576	6.411	g500-S400	MFXMA 090-32	2	29
22.6	48.0	93.4	68.0	542	68.0	1.0	32.573	6.425	g500-S130	MFXMA 090-32	2	24
21.1	51.4	87.2	73.0	506	73.0	2.9	35.484	6.880	g500-S660	MFXMA 090-32	2	34
20.6	52.5	85.4	74.0	495	74.0	0.9	32.488	7.029	g500-S130	MFXMA 090-32	2	24
18.9	57.3	78.3	81.0	454	81.0	2.0	33.499	7.667	g500-S220	MFXMA 090-32	2	25
18.8	57.5	77.9	81.0	452	81.0	2.9	37.080	7.702	g500-S950	MFXMA 090-32	2	54
17.2	63.0	71.1	89.0	413	89.0	3.0	33.945	8.436	g500-S400	MFXMA 090-32	2	29
15.4	70.3	63.8	100	370	100	1.0	33.030	9.411	g500-S130	MFXMA 090-32	2	24
13.8	78.5	57.1	111	331	111	1.5	32.961	10.514	g500-S220	MFXMA 090-32	2	25
12.5	86.4	51.9	122	301	122	2.5	33.198	11.569	g500-S400	MFXMA 090-32	2	29
11.3	95.9	46.8	136	271	136	2.9	34.216	12.832	g500-S660	MFXMA 090-32	2	34
10.8	101	44.6	142	259	142	1.2	32.673	13.456	g500-S220	MFXMA 090-32	2	25
10.3	105	42.7	148	248	148	3.0	33.963	14.037	g500-S660	MFXMA 090-32	2	34
9.9	110	40.8	156	236	156	1.1	32.583	14.720	g500-S220	MFXMA 090-32	2	25
9.8	111	40.5	157	235	157	1.9	32.817	14.806	g500-S400	MFXMA 090-32	2	29
9.0	121	37.0	171	215	171	1.8	32.704	16.197	g500-S400	MFXMA 090-32	2	29
8.1	134	33.5	189	194	189	2.6	33.415	17.905	g500-S660	MFXMA 090-32	2	34
8.1	134	33.5	189	194	189	2.9	35.342	17.905	g500-S950	MFXMA 090-32	2	54
7.7	140	32.0	199	185	199	1.0	32.418	18.776	g500-S220	MFXMA 090-32	2	25
7.0	154	29.0	218	168	218	1.6	32.492	20.659	g500-S400	MFXMA 090-32	2	29
6.6	164	27.4	232	159	232	2.4	33.089	21.933	g500-S660	MFXMA 090-32	2	34
5.7	189	23.7	268	138	268	1.3	32.370	25.308	g500-S400	MFXMA 090-32	2	29
5.1	213	21.0	302	122	302	1.9	32.609	28.548	g500-S660	MFXMA 090-32	2	34
5.1	213	21.0	302	122	302	2.7	33.763	28.548	g500-S950	MFXMA 090-32	2	54
4.4	246	18.2	348	106	348	1.1	32.228	32.940	g500-S400	MFXMA 090-32	2	29
4.1	261	17.1	370	99.5	370	2.4	33.214	34.989	g500-S950	MFXMA 090-32	2	54
4.1	265	16.9	376	98.0	376	1.7	32.442	35.511	g500-S660	MFXMA 090-32	2	34
3.5	306	14.6	433	84.9	433	0.9	32.164	40.974	g500-S400	MFXMA 090-32	2	29
3.2	343	13.1	486	75.7	486	1.2	32.275	45.956	g500-S660	MFXMA 090-32	2	34
3.2	343	13.1	486	75.7	486	1.9	32.761	45.956	g500-S950	MFXMA 090-32	2	54
2.9	369	12.2	522	70.5	522	2.5	34.536	49.378	g500-S2100	MFXMA 090-32	2	86
2.6	412	10.7	583	62.2	583	1.4	33.061	55.982	g500-S950	MFXMA 090-32	3	54
2.6	417	10.8	590	62.4	590	0.8	32.201	55.773	g500-S660	MFXMA 090-32	2	34
2.6	417	10.8	590	62.4	590	1.5	32.560	55.773	g500-S950	MFXMA 090-32	2	54
2.6	418	10.6	592	61.2	592	0.9	32.381	56.818	g500-S660	MFXMA 090-32	3	34
2.5	442	10.1	626	58.8	626	2.5	34.959	59.156	g500-S3100	MFXMA 090-32	2	125
2.4	448	10.0	634	58.1	634	2.2	33.854	59.927	g500-S2100	MFXMA 090-32	2	86
2.1	527	8.5	746	49.4	746	0.9	32.361	70.500	g500-S950	MFXMA 090-32	2	54
2.0	527	8.4	746	48.6	746	1.2	32.734	71.644	g500-S950	MFXMA 090-32	3	54
2.0	535	8.3	757	47.9	757	0.8	32.264	72.713	g500-S660	MFXMA 090-32	3	34
2.0	536	8.4	759	48.5	759	2.2	34.141	71.793	g500-S3100	MFXMA 090-32	2	125
1.9	566	7.9	801	45.9	801	1.7	33.224	75.750	g500-S2100	MFXMA 090-32	2	86
1.9	575	7.7	814	44.5	814	2.4	34.146	78.128	g500-S2100	MFXMA 090-32	3	86
1.9	577	7.7	816	44.4	816	1.1	32.634	78.375	g500-S950	MFXMA 090-32	3	54

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
1.7	629	7.0	890	40.7	890	2.2	33.904	85.468	g500-S2100	MFXMA 090-32	3	86
1.5	689	6.4	975	37.2	975	3.0	34.342	93.599	g500-S3100	MFXMA 090-32	3	126
1.5	736	6.0	1041	34.8	1041	0.9	32.449	99.968	g500-S950	MFXMA 090-32	3	54
1.4	754	5.9	1067	34.0	1067	2.8	34.068	102.393	g500-S3100	MFXMA 090-32	3	126
1.4	763	5.8	1079	33.6	1079	3.7	35.999	103.619	g500-S4500	MFXMA 090-32	3	201
1.3	802	5.5	1136	31.9	1136	1.7	33.379	109.016	g500-S2100	MFXMA 090-32	3	86
1.1	961	4.6	1360	26.6	1360	2.2	33.480	130.603	g500-S3100	MFXMA 090-32	3	126
1.1	983	4.5	1391	26.1	1391	1.4	33.065	133.544	g500-S2100	MFXMA 090-32	3	86
0.9	1177	3.8	1667	21.8	1667	1.8	33.132	159.989	g500-S3100	MFXMA 090-32	3	126
0.9	1216	3.6	1721	21.1	1721	2.5	34.022	165.215	g500-S4500	MFXMA 090-32	3	201
0.8	1279	3.5	1811	20.0	1811	1.1	32.595	173.820	g500-S2100	MFXMA 090-32	3	86
0.7	1490	3.0	2109	17.2	2109	2.0	33.386	202.489	g500-S4500	MFXMA 090-32	3	201
0.7	1532	2.9	2169	16.7	2169	1.4	32.687	208.240	g500-S3100	MFXMA 090-32	3	126
0.7	1591	2.8	2252	16.1	2252	0.9	32.433	216.215	g500-S2100	MFXMA 090-32	3	86
0.6	1906	2.3	2698	13.4	2698	1.1	32.458	259.030	g500-S3100	MFXMA 090-32	3	126
0.5	1957	2.3	2770	13.1	2770	1.6	32.861	265.956	g500-S4500	MFXMA 090-32	3	201
0.4	2375	1.9	3362	10.8	3362	1.3	32.628	322.773	g500-S4500	MFXMA 090-32	3	201
0.4	2467	1.8	3492	10.4	3492	0.8	32.285	335.215	g500-S3100	MFXMA 090-32	3	126
0.4	2598	1.7	3677	9.7	3677	0.8	32.457	358.375	g500-S3100	MFXMA 090-32	4	129
0.4	2629	1.7	3721	9.6	3721	1.2	32.622	362.667	g500-S4500	MFXMA 090-32	4	204
0.4	3002	1.5	4250	8.5	4250	1.0	32.403	408.000	g500-S4500	MFXMA 090-32	3	201
0.3	3220	1.4	4558	7.8	4558	0.9	32.540	444.267	g500-S4500	MFXMA 090-32	4	204

120 Hz: 5.5 kW

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
43.4	33.7	180	48.0	1056	48.0	3.2	66.160	3.339	g500-S400	MFXMA 100-12	2	37
37.8	38.7	156	56.0	918	56.0	2.4	63.596	3.840	g500-S220	MFXMA 100-12	2	34
37.0	39.6	153	57.0	899	57.0	4.1	69.801	3.920	g500-S660	MFXMA 100-12	2	43
31.7	46.2	131	66.0	770	66.0	2.8	63.907	4.579	g500-S400	MFXMA 100-12	2	37
27.5	53.1	114	76.0	669	76.0	1.8	62.544	5.267	g500-S220	MFXMA 100-12	2	34
27.0	54.2	112	78.0	656	78.0	4.1	66.264	5.376	g500-S660	MFXMA 100-12	2	43
26.9	54.4	111	78.0	654	78.0	4.2	70.248	5.391	g500-S950	MFXMA 100-12	2	62
24.7	59.1	102	85.0	602	85.0	2.3	62.861	5.860	g500-S400	MFXMA 100-12	2	37
24.0	60.9	99.4	87.0	584	87.0	4.1	68.506	6.038	g500-S950	MFXMA 100-12	2	62
22.6	64.7	93.6	93.0	550	93.0	2.1	62.576	6.411	g500-S400	MFXMA 100-12	2	37
21.1	69.4	87.2	99.0	512	99.0	3.5	64.484	6.880	g500-S660	MFXMA 100-12	2	43
19.8	73.8	82.1	106	482	106	4.1	65.896	7.311	g500-S660	MFXMA 100-12	2	43
18.9	77.4	78.3	111	460	111	1.5	62.499	7.667	g500-S220	MFXMA 100-12	2	34
18.8	77.7	77.9	111	458	111	3.5	66.080	7.702	g500-S950	MFXMA 100-12	2	62
17.5	83.5	72.5	120	426	120	4.2	77.792	8.272	g500-S2100	MFXMA 100-12	2	94
17.2	85.1	71.1	122	418	122	2.3	62.945	8.436	g500-S400	MFXMA 100-12	2	37
16.3	90.0	67.3	129	395	129	4.2	89.171	8.917	g500-S3100	MFXMA 100-12	2	134
14.5	101	59.8	145	352	145	3.2	64.188	10.027	g500-S660	MFXMA 100-12	2	43
13.8	106	57.1	152	335	152	1.1	61.961	10.514	g500-S220	MFXMA 100-12	2	34
12.5	117	51.9	167	305	167	1.8	62.198	11.569	g500-S400	MFXMA 100-12	2	37
11.3	130	46.8	186	275	186	2.7	63.216	12.832	g500-S660	MFXMA 100-12	2	43
10.8	136	44.6	195	262	195	0.9	61.673	13.456	g500-S220	MFXMA 100-12	2	34
10.3	142	42.7	203	251	203	2.5	62.963	14.037	g500-S660	MFXMA 100-12	2	43
10.3	142	42.7	203	251	203	3.5	65.678	14.037	g500-S950	MFXMA 100-12	2	62
9.8	149	40.5	214	238	214	1.4	61.817	14.806	g500-S400	MFXMA 100-12	2	37
9.0	163	37.0	234	218	234	1.3	61.704	16.197	g500-S400	MFXMA 100-12	2	37
8.1	181	33.5	259	197	259	1.9	62.415	17.905	g500-S660	MFXMA 100-12	2	43
8.1	181	33.5	259	197	259	2.8	64.342	17.905	g500-S950	MFXMA 100-12	2	62
7.7	191	31.7	273	186	273	4.8	72.503	18.917	g500-S2100	MFXMA 100-12	2	94
7.0	209	29.0	299	171	299	1.1	61.492	20.659	g500-S400	MFXMA 100-12	2	37
6.6	221	27.4	317	161	317	1.8	62.089	21.933	g500-S660	MFXMA 100-12	2	43
6.6	221	27.4	317	161	317	2.6	63.574	21.933	g500-S950	MFXMA 100-12	2	62
6.4	229	26.5	328	156	328	4.8	75.383	22.663	g500-S3100	MFXMA 100-12	2	134
5.7	255	23.7	366	139	366	0.9	61.370	25.308	g500-S400	MFXMA 100-12	2	37
5.1	288	21.0	413	124	413	1.4	61.609	28.548	g500-S660	MFXMA 100-12	2	43
5.1	288	21.0	413	124	413	2.0	62.763	28.548	g500-S950	MFXMA 100-12	2	62
4.6	317	19.1	454	112	454	3.8	66.288	31.422	g500-S2100	MFXMA 100-12	2	94
4.1	353	17.1	506	101	506	1.8	62.214	34.989	g500-S950	MFXMA 100-12	2	62
4.1	358	16.9	513	99.3	513	1.2	61.442	35.511	g500-S660	MFXMA 100-12	2	43
3.9	380	15.9	544	93.6	544	3.8	67.332	37.644	g500-S3100	MFXMA 100-12	2	134
3.8	385	15.7	552	92.4	552	3.2	64.981	38.156	g500-S2100	MFXMA 100-12	2	94
3.3	442	13.5	634	79.2	634	2.4	65.679	44.515	g500-S2100	MFXMA 100-12	3	95
3.2	461	13.1	661	77.1	661	3.2	65.689	45.711	g500-S3100	MFXMA 100-12	2	134
3.2	464	13.1	664	76.7	664	1.4	61.761	45.956	g500-S950	MFXMA 100-12	2	62
3.1	474	12.8	678	75.1	678	3.2	69.586	46.933	g500-S4500	MFXMA 100-12	2	207
2.9	498	12.2	714	71.4	714	2.6	63.536	49.378	g500-S2100	MFXMA 100-12	2	94
2.7	530	11.3	759	66.1	759	3.4	66.283	53.330	g500-S3100	MFXMA 100-12	3	135
2.6	556	10.7	797	63.0	797	1.0	62.061	55.982	g500-S950	MFXMA 100-12	3	63
2.6	563	10.8	806	63.2	806	1.1	61.560	55.773	g500-S950	MFXMA 100-12	2	62
2.5	575	10.5	823	61.9	823	2.7	67.247	56.960	g500-S4500	MFXMA 100-12	2	207
2.5	597	10.1	855	59.6	855	2.6	63.959	59.156	g500-S3100	MFXMA 100-12	2	134

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
2.4	605	10.0	866	58.8	866	2.2	62.854	59.927	g500-S2100	MFXMA 100-12	2	94
2.4	607	9.8	869	57.7	869	2.0	64.072	61.049	g500-S2100	MFXMA 100-12	3	95
2.0	712	8.4	1020	49.2	1020	0.9	61.734	71.644	g500-S950	MFXMA 100-12	3	63
2.0	721	8.3	1033	48.6	1033	4.1	68.043	72.533	g500-S4500	MFXMA 100-12	3	210
2.0	724	8.4	1038	49.1	1038	2.2	63.141	71.793	g500-S3100	MFXMA 100-12	2	134
2.0	727	8.3	1041	49.0	1041	2.2	65.087	72.000	g500-S4500	MFXMA 100-12	2	207
2.0	727	8.2	1041	48.2	1041	2.8	64.394	73.138	g500-S3100	MFXMA 100-12	3	135
1.9	764	7.9	1095	46.5	1095	1.4	62.224	75.750	g500-S2100	MFXMA 100-12	2	94
1.9	777	7.7	1113	45.1	1113	1.8	63.146	78.128	g500-S2100	MFXMA 100-12	3	95
1.9	779	7.7	1116	45.0	1116	0.8	61.634	78.375	g500-S950	MFXMA 100-12	3	63
1.8	807	7.4	1157	43.4	1157	3.7	66.749	81.237	g500-S4500	MFXMA 100-12	3	210
1.7	850	7.0	1217	41.2	1217	1.6	62.904	85.468	g500-S2100	MFXMA 100-12	3	95
1.5	930	6.4	1333	37.7	1333	2.2	63.342	93.599	g500-S3100	MFXMA 100-12	3	135
1.4	1018	5.9	1458	34.4	1458	2.0	63.068	102.393	g500-S3100	MFXMA 100-12	3	135
1.4	1030	5.8	1475	34.0	1475	2.9	64.999	103.619	g500-S4500	MFXMA 100-12	3	210
1.3	1084	5.5	1552	32.3	1552	1.3	62.379	109.016	g500-S2100	MFXMA 100-12	3	95
1.1	1262	4.7	1807	27.8	1807	2.4	64.012	126.933	g500-S4500	MFXMA 100-12	3	210
1.1	1298	4.6	1860	27.0	1860	1.6	62.480	130.603	g500-S3100	MFXMA 100-12	3	135
1.1	1327	4.5	1902	26.4	1902	1.0	62.065	133.544	g500-S2100	MFXMA 100-12	3	95
0.9	1590	3.8	2278	22.0	2278	1.3	62.132	159.989	g500-S3100	MFXMA 100-12	3	135
0.9	1642	3.6	2353	21.3	2353	1.8	63.022	165.215	g500-S4500	MFXMA 100-12	3	210
0.7	2013	3.0	2883	17.4	2883	1.5	62.386	202.489	g500-S4500	MFXMA 100-12	3	210
0.7	2070	2.9	2965	16.9	2965	1.0	61.687	208.240	g500-S3100	MFXMA 100-12	3	135
0.6	2575	2.3	3688	13.6	3688	0.8	61.458	259.030	g500-S3100	MFXMA 100-12	3	135
0.5	2643	2.3	3787	13.3	3787	1.1	61.861	265.956	g500-S4500	MFXMA 100-12	3	210
0.4	3208	1.9	4596	10.9	4596	0.9	61.628	322.773	g500-S4500	MFXMA 100-12	3	210
0.4	3551	1.7	5087	9.7	5087	0.8	61.622	362.667	g500-S4500	MFXMA 100-12	4	213

120 Hz: 7.5 kW

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
43.4	46.3	180	66.0	1053	66.0	2.3	66.160	3.339	g500-S400	MFXMA 100-32	2	37
37.8	53.3	156	76.0	915	76.0	1.8	63.596	3.840	g500-S220	MFXMA 100-32	2	34
37.0	54.4	153	77.0	897	77.0	3.0	69.801	3.920	g500-S660	MFXMA 100-32	2	43
31.7	63.5	131	90.0	768	90.0	2.0	63.907	4.579	g500-S400	MFXMA 100-32	2	37
27.5	73.1	114	104	667	104	1.3	62.544	5.267	g500-S220	MFXMA 100-32	2	34
27.0	74.6	112	106	654	106	3.0	66.264	5.376	g500-S660	MFXMA 100-32	2	43
26.9	74.8	111	106	652	106	3.1	70.248	5.391	g500-S950	MFXMA 100-32	2	62
24.7	81.3	102	115	600	115	1.7	62.861	5.860	g500-S400	MFXMA 100-32	2	37
24.0	83.8	99.4	119	582	119	3.0	68.506	6.038	g500-S950	MFXMA 100-32	2	62
22.6	88.9	93.6	126	548	126	1.6	62.576	6.411	g500-S400	MFXMA 100-32	2	37
21.1	95.5	87.2	136	511	136	2.6	64.484	6.880	g500-S660	MFXMA 100-32	2	43
19.8	101	82.1	144	481	144	3.0	65.896	7.311	g500-S660	MFXMA 100-32	2	43
18.9	106	78.3	151	459	151	1.1	62.499	7.667	g500-S220	MFXMA 100-32	2	34
18.8	107	77.9	152	456	152	2.5	66.080	7.702	g500-S950	MFXMA 100-32	2	62
17.5	115	72.5	163	425	163	3.1	77.792	8.272	g500-S2100	MFXMA 100-32	2	94
17.2	117	71.1	166	417	166	1.7	62.945	8.436	g500-S400	MFXMA 100-32	2	37
16.3	124	67.3	176	394	176	3.1	89.171	8.917	g500-S3100	MFXMA 100-32	2	134
14.5	139	59.8	197	351	197	2.4	64.188	10.027	g500-S660	MFXMA 100-32	2	43
13.8	146	57.1	207	334	207	0.8	61.961	10.514	g500-S220	MFXMA 100-32	2	34
12.5	161	51.9	228	304	228	1.3	62.198	11.569	g500-S400	MFXMA 100-32	2	37
11.3	178	46.8	253	274	253	2.0	63.216	12.832	g500-S660	MFXMA 100-32	2	43
10.3	195	42.7	276	250	276	1.8	62.963	14.037	g500-S660	MFXMA 100-32	2	43
10.3	195	42.7	276	250	276	2.6	65.678	14.037	g500-S950	MFXMA 100-32	2	62
9.8	205	40.5	292	237	292	1.0	61.817	14.806	g500-S400	MFXMA 100-32	2	37
9.0	225	37.0	319	217	319	0.9	61.704	16.197	g500-S400	MFXMA 100-32	2	37
8.1	248	33.5	353	196	353	1.4	62.415	17.905	g500-S660	MFXMA 100-32	2	43
8.1	248	33.5	353	196	353	2.0	64.342	17.905	g500-S950	MFXMA 100-32	2	62
7.7	263	31.7	373	186	373	3.5	72.503	18.917	g500-S2100	MFXMA 100-32	2	94
7.0	287	29.0	407	170	407	0.8	61.492	20.659	g500-S400	MFXMA 100-32	2	37
6.6	304	27.4	432	160	432	1.3	62.089	21.933	g500-S660	MFXMA 100-32	2	43
6.6	304	27.4	432	160	432	1.9	63.574	21.933	g500-S950	MFXMA 100-32	2	62
6.4	314	26.5	446	155	446	3.5	75.383	22.663	g500-S3100	MFXMA 100-32	2	134
5.1	396	21.0	562	123	562	1.0	61.609	28.548	g500-S660	MFXMA 100-32	2	43
5.1	396	21.0	562	123	562	1.5	62.763	28.548	g500-S950	MFXMA 100-32	2	62
4.6	436	19.1	619	112	619	2.8	66.288	31.422	g500-S2100	MFXMA 100-32	2	94
4.1	485	17.1	689	101	689	1.3	62.214	34.989	g500-S950	MFXMA 100-32	2	62
4.1	493	16.9	699	99.0	699	0.9	61.442	35.511	g500-S660	MFXMA 100-32	2	43
3.9	522	15.9	741	93.4	741	2.8	67.332	37.644	g500-S3100	MFXMA 100-32	2	134
3.8	529	15.7	751	92.1	751	2.4	64.981	38.156	g500-S2100	MFXMA 100-32	2	94
3.3	608	13.5	864	79.0	864	1.8	65.679	44.515	g500-S2100	MFXMA 100-32	3	95
3.2	634	13.1	900	76.9	900	2.4	65.689	45.711	g500-S3100	MFXMA 100-32	2	134
3.2	638	13.1	905	76.5	905	1.0	61.761	45.956	g500-S950	MFXMA 100-32	2	62
3.1	651	12.8	924	74.9	924	2.4	69.586	46.933	g500-S4500	MFXMA 100-32	2	207
2.9	685	12.2	973	71.2	973	1.9	63.536	49.378	g500-S2100	MFXMA 100-32	2	94
2.7	729	11.3	1035	65.9	1035	2.5	66.283	53.330	g500-S3100	MFXMA 100-32	3	135
2.6	774	10.8	1098	63.0	1098	0.8	61.560	55.773	g500-S950	MFXMA 100-32	2	62
2.5	790	10.5	1122	61.7	1122	2.0	67.247	56.960	g500-S4500	MFXMA 100-32	2	207
2.5	821	10.1	1165	59.4	1165	1.9	63.959	59.156	g500-S3100	MFXMA 100-32	2	134
2.4	831	10.0	1180	58.7	1180	1.6	62.854	59.927	g500-S2100	MFXMA 100-32	2	94
2.4	834	9.8	1184	57.6	1184	1.5	64.072	61.049	g500-S2100	MFXMA 100-32	3	95
2.0	991	8.3	1407	48.5	1407	3.0	68.043	72.533	g500-S4500	MFXMA 100-32	3	210

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
2.0	996	8.4	1414	49.0	1414	1.6	63.141	71.793	g500-S3100	MFXMA 100-32	2	134
2.0	999	8.3	1418	48.8	1418	1.6	65.087	72.000	g500-S4500	MFXMA 100-32	2	207
2.0	1000	8.2	1419	48.1	1419	2.1	64.394	73.138	g500-S3100	MFXMA 100-32	3	135
1.9	1051	7.9	1492	46.4	1492	1.0	62.224	75.750	g500-S2100	MFXMA 100-32	2	94
1.9	1068	7.7	1516	45.0	1516	1.3	63.146	78.128	g500-S2100	MFXMA 100-32	3	95
1.8	1110	7.4	1576	43.3	1576	2.7	66.749	81.237	g500-S4500	MFXMA 100-32	3	210
1.7	1168	7.0	1658	41.1	1658	1.2	62.904	85.468	g500-S2100	MFXMA 100-32	3	95
1.5	1279	6.4	1816	37.6	1816	1.6	63.342	93.599	g500-S3100	MFXMA 100-32	3	135
1.4	1399	5.9	1986	34.3	1986	1.5	63.068	102.393	g500-S3100	MFXMA 100-32	3	135
1.4	1416	5.8	2010	33.9	2010	2.1	64.999	103.619	g500-S4500	MFXMA 100-32	3	210
1.3	1490	5.5	2115	32.2	2115	0.9	62.379	109.016	g500-S2100	MFXMA 100-32	3	95
1.1	1735	4.7	2463	27.7	2463	1.7	64.012	126.933	g500-S4500	MFXMA 100-32	3	210
1.1	1785	4.6	2534	26.9	2534	1.2	62.480	130.603	g500-S3100	MFXMA 100-32	3	135
0.9	2186	3.8	3104	22.0	3104	1.0	62.132	159.989	g500-S3100	MFXMA 100-32	3	135
0.9	2258	3.6	3205	21.3	3205	1.3	63.022	165.215	g500-S4500	MFXMA 100-32	3	210
0.7	2767	3.0	3928	17.4	3928	1.1	62.386	202.489	g500-S4500	MFXMA 100-32	3	210
0.5	3635	2.3	5160	13.2	5160	0.8	61.861	265.956	g500-S4500	MFXMA 100-32	3	210

120 Hz: 11 kW

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
43.4	61.6	180	96.0	1057	96.0	1.6	112.160	3.339	g500-S400	MFXMA 112-22	2	49
37.0	72.3	153	113	901	113	2.3	115.801	3.920	g500-S660	MFXMA 112-22	2	54
33.1	80.8	137	126	806	126	2.8	120.117	4.380	g500-S950	MFXMA 112-22	2	74
31.7	84.4	131	132	771	132	1.4	109.907	4.579	g500-S400	MFXMA 112-22	2	49
27.0	99.1	112	155	657	155	2.3	112.264	5.376	g500-S660	MFXMA 112-22	2	54
26.9	99.4	111	155	655	155	2.4	116.248	5.391	g500-S950	MFXMA 112-22	2	74
24.7	108	102	169	602	169	1.2	108.861	5.860	g500-S400	MFXMA 112-22	2	49
24.1	111	99.5	174	586	174	3.2	136.232	6.029	g500-S2100	MFXMA 112-22	2	106
24.0	111	99.4	174	585	174	2.3	114.506	6.038	g500-S950	MFXMA 112-22	2	74
22.6	118	93.6	185	551	185	1.1	108.576	6.411	g500-S400	MFXMA 112-22	2	49
22.3	120	92.3	187	543	187	3.2	157.653	6.499	g500-S3100	MFXMA 112-22	2	145
21.1	127	87.3	198	514	198	2.9	129.562	6.870	g500-S2100	MFXMA 112-22	2	106
21.1	127	87.2	198	513	198	1.9	110.484	6.880	g500-S660	MFXMA 112-22	2	54
19.8	135	82.1	211	483	211	2.1	111.896	7.311	g500-S660	MFXMA 112-22	2	54
19.6	137	81.0	213	477	213	2.9	146.059	7.406	g500-S3100	MFXMA 112-22	2	145
18.8	142	77.9	222	458	222	1.7	112.080	7.702	g500-S950	MFXMA 112-22	2	74
17.5	153	72.5	238	427	238	2.5	123.792	8.272	g500-S2100	MFXMA 112-22	2	106
17.2	156	71.1	243	418	243	1.2	108.945	8.436	g500-S400	MFXMA 112-22	2	49
16.3	164	67.3	257	396	257	2.5	135.171	8.917	g500-S3100	MFXMA 112-22	2	145
14.5	185	59.8	289	352	289	1.6	110.188	10.027	g500-S660	MFXMA 112-22	2	54
14.2	188	58.9	293	347	293	2.4	114.744	10.183	g500-S950	MFXMA 112-22	2	74
13.3	202	54.9	315	323	315	2.2	126.882	10.932	g500-S3100	MFXMA 112-22	2	145
12.5	213	51.9	333	305	333	0.9	108.198	11.569	g500-S400	MFXMA 112-22	2	49
11.3	237	46.8	370	275	370	1.3	109.216	12.832	g500-S660	MFXMA 112-22	2	54
10.5	254	43.5	397	256	397	3.2	126.274	13.787	g500-S2100	MFXMA 112-22	2	106
10.3	259	42.7	404	252	404	1.2	108.963	14.037	g500-S660	MFXMA 112-22	2	54
10.3	259	42.7	404	252	404	1.8	111.678	14.037	g500-S950	MFXMA 112-22	2	74
9.2	290	38.2	453	225	453	2.9	121.894	15.711	g500-S2100	MFXMA 112-22	2	106
8.8	305	36.3	476	214	476	3.2	131.696	16.517	g500-S3100	MFXMA 112-22	2	145
8.1	330	33.5	516	197	516	1.0	108.415	17.905	g500-S660	MFXMA 112-22	2	54
8.1	330	33.5	516	197	516	1.4	110.342	17.905	g500-S950	MFXMA 112-22	2	74
7.9	337	32.8	527	193	527	3.6	145.754	18.286	g500-S4500	MFXMA 112-22	2	218
7.7	347	31.9	542	188	542	3.3	126.070	18.822	g500-S3100	MFXMA 112-22	2	145
7.7	349	31.7	545	187	545	2.9	118.503	18.917	g500-S2100	MFXMA 112-22	2	106
6.6	404	27.4	632	161	632	0.9	108.089	21.933	g500-S660	MFXMA 112-22	2	54
6.6	404	27.4	632	161	632	1.3	109.574	21.933	g500-S950	MFXMA 112-22	2	74
6.4	418	26.5	653	156	653	2.9	121.383	22.663	g500-S3100	MFXMA 112-22	2	145
6.3	428	25.9	668	152	668	2.5	115.792	23.193	g500-S2100	MFXMA 112-22	2	106
5.2	512	21.6	801	127	801	2.5	117.708	27.785	g500-S3100	MFXMA 112-22	2	145
5.1	526	21.0	823	124	823	1.0	108.763	28.548	g500-S950	MFXMA 112-22	2	74
4.9	544	20.3	850	120	850	2.5	125.441	29.511	g500-S4500	MFXMA 112-22	2	218
4.6	579	19.1	905	112	905	2.1	112.288	31.422	g500-S2100	MFXMA 112-22	2	106
4.1	645	17.1	1008	101	1008	0.9	108.214	34.989	g500-S950	MFXMA 112-22	2	74
4.0	669	16.5	1045	97.3	1045	2.3	120.495	36.267	g500-S4500	MFXMA 112-22	2	218
3.9	694	15.9	1085	93.8	1085	2.2	113.332	37.644	g500-S3100	MFXMA 112-22	2	145
3.8	703	15.7	1099	92.5	1099	1.8	110.981	38.156	g500-S2100	MFXMA 112-22	2	106
3.4	772	14.1	1207	83.0	1207	2.7	123.002	42.520	g500-S4500	MFXMA 112-22	3	221
3.3	808	13.5	1263	79.3	1263	1.2	111.679	44.515	g500-S2100	MFXMA 112-22	3	106
3.2	843	13.1	1317	77.2	1317	1.8	111.689	45.711	g500-S3100	MFXMA 112-22	2	145
3.1	865	12.8	1352	75.2	1352	1.8	115.586	46.933	g500-S4500	MFXMA 112-22	2	218
2.9	910	12.2	1423	71.5	1423	1.4	109.536	49.378	g500-S2100	MFXMA 112-22	2	106

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
2.7	968	11.3	1514	66.2	1514	1.7	112.283	53.330	g500-S3100	MFXMA 112-22	3	146
2.5	1050	10.5	1641	62.0	1641	1.5	113.247	56.960	g500-S4500	MFXMA 112-22	2	218
2.5	1070	10.2	1673	59.9	1673	2.3	116.777	58.933	g500-S4500	MFXMA 112-22	3	221
2.5	1091	10.1	1705	59.7	1705	1.5	109.959	59.156	g500-S3100	MFXMA 112-22	2	145
2.4	1105	10.0	1727	58.9	1727	1.1	108.854	59.927	g500-S2100	MFXMA 112-22	2	106
2.4	1109	9.8	1733	57.8	1733	1.0	110.072	61.049	g500-S2100	MFXMA 112-22	3	106
2.0	1317	8.3	2059	48.7	2059	2.1	114.043	72.533	g500-S4500	MFXMA 112-22	3	221
2.0	1324	8.4	2069	49.2	2069	1.1	109.141	71.793	g500-S3100	MFXMA 112-22	2	145
2.0	1327	8.3	2075	49.0	2075	1.2	111.087	72.000	g500-S4500	MFXMA 112-22	2	218
2.0	1328	8.2	2076	48.3	2076	1.4	110.394	73.138	g500-S3100	MFXMA 112-22	3	146
1.9	1419	7.7	2218	45.2	2218	0.9	109.146	78.128	g500-S2100	MFXMA 112-22	3	106
1.8	1475	7.4	2306	43.5	2306	1.9	112.749	81.237	g500-S4500	MFXMA 112-22	3	221
1.7	1552	7.0	2426	41.3	2426	0.8	108.904	85.468	g500-S2100	MFXMA 112-22	3	106
1.5	1700	6.4	2657	37.7	2657	1.1	109.342	93.599	g500-S3100	MFXMA 112-22	3	146
1.4	1859	5.9	2906	34.5	2906	1.0	109.068	102.393	g500-S3100	MFXMA 112-22	3	146
1.4	1882	5.8	2941	34.1	2941	1.5	110.999	103.619	g500-S4500	MFXMA 112-22	3	221
1.1	2305	4.7	3603	27.8	3603	1.2	110.012	126.933	g500-S4500	MFXMA 112-22	3	221
0.9	3000	3.6	4689	21.4	4689	0.9	109.022	165.215	g500-S4500	MFXMA 112-22	3	221

120 Hz: 15 kW

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
37.0	98.1	153	153	908	153	2.1	344.801	3.920	g500-S660	MFXMA 132-12	2	82
33.1	110	137	171	813	171	2.7	349.117	4.380	g500-S950	MFXMA 132-12	2	102
31.6	115	131	180	775	180	4.6	381.551	4.593	g500-S2100	MFXMA 132-12	2	134
29.3	124	121	194	719	194	4.6	418.458	4.951	g500-S3100	MFXMA 132-12	2	173
27.0	135	112	210	662	210	1.8	341.264	5.376	g500-S660	MFXMA 132-12	2	82
26.9	135	111	211	660	211	2.5	345.248	5.391	g500-S950	MFXMA 132-12	2	102
24.1	151	99.5	236	591	236	4.3	365.232	6.029	g500-S2100	MFXMA 132-12	2	134
24.0	151	99.4	236	590	236	2.3	343.506	6.038	g500-S950	MFXMA 132-12	2	102
22.3	163	92.3	254	548	254	4.3	386.653	6.499	g500-S3100	MFXMA 132-12	2	173
21.1	172	87.3	269	518	269	4.2	358.562	6.870	g500-S2100	MFXMA 132-12	2	134
21.1	172	87.2	269	517	269	1.4	339.484	6.880	g500-S660	MFXMA 132-12	2	82
20.5	177	85.0	276	505	276	4.6	421.966	7.056	g500-S4500	MFXMA 132-12	2	246
19.8	183	82.1	286	487	286	1.6	340.896	7.311	g500-S660	MFXMA 132-12	2	82
19.6	185	81.0	290	481	290	4.4	375.059	7.406	g500-S3100	MFXMA 132-12	2	173
18.8	193	77.9	301	462	301	2.0	341.080	7.702	g500-S950	MFXMA 132-12	2	102
17.5	207	72.5	323	430	323	3.5	352.792	8.272	g500-S2100	MFXMA 132-12	2	134
16.3	223	67.3	349	399	349	4.0	364.171	8.917	g500-S3100	MFXMA 132-12	2	173
14.5	251	59.8	392	355	392	1.2	339.188	10.027	g500-S660	MFXMA 132-12	2	82
14.2	255	58.9	398	350	398	1.8	343.744	10.183	g500-S950	MFXMA 132-12	2	102
13.8	263	57.1	411	339	411	3.4	364.396	10.504	g500-S2100	MFXMA 132-12	2	134
13.3	274	54.9	427	326	427	3.4	355.882	10.932	g500-S3100	MFXMA 132-12	2	173
11.5	315	47.7	492	283	492	4.5	373.737	12.584	g500-S3100	MFXMA 132-12	2	173
11.3	321	46.8	502	277	502	1.0	338.216	12.832	g500-S660	MFXMA 132-12	2	82
10.5	345	43.5	539	258	539	2.9	355.274	13.787	g500-S2100	MFXMA 132-12	2	134
10.3	351	42.7	549	254	549	0.9	337.963	14.037	g500-S660	MFXMA 132-12	2	82
10.3	351	42.7	549	254	549	1.3	340.678	14.037	g500-S950	MFXMA 132-12	2	102
10.1	359	41.9	561	248	561	4.6	391.433	14.336	g500-S4500	MFXMA 132-12	2	246
9.2	393	38.2	614	227	614	2.5	350.894	15.711	g500-S2100	MFXMA 132-12	2	134
8.8	414	36.3	646	216	646	3.6	360.696	16.517	g500-S3100	MFXMA 132-12	2	173
8.1	448	33.5	700	199	700	1.0	339.342	17.905	g500-S950	MFXMA 132-12	2	102
7.9	458	32.8	715	195	715	4.9	374.754	18.286	g500-S4500	MFXMA 132-12	2	246
7.7	471	31.9	736	189	736	3.6	355.070	18.822	g500-S3100	MFXMA 132-12	2	173
7.7	474	31.7	740	188	740	2.4	347.503	18.917	g500-S2100	MFXMA 132-12	2	134
6.6	549	27.4	858	162	858	0.9	338.574	21.933	g500-S950	MFXMA 132-12	2	102
6.5	561	26.8	876	159	876	4.3	365.159	22.400	g500-S4500	MFXMA 132-12	2	246
6.4	567	26.5	886	157	886	3.0	350.383	22.663	g500-S3100	MFXMA 132-12	2	173
6.3	581	25.9	907	154	907	1.9	344.792	23.193	g500-S2100	MFXMA 132-12	2	134
5.2	696	21.6	1086	128	1086	2.4	346.708	27.785	g500-S3100	MFXMA 132-12	2	173
4.9	739	20.3	1154	121	1154	3.3	354.441	29.511	g500-S4500	MFXMA 132-12	2	246
4.6	787	19.1	1229	113	1229	1.6	341.288	31.422	g500-S2100	MFXMA 132-12	2	134
4.0	908	16.5	1418	98.2	1418	3.0	349.495	36.267	g500-S4500	MFXMA 132-12	2	246
3.9	942	15.9	1472	94.6	1472	2.0	342.332	37.644	g500-S3100	MFXMA 132-12	2	173
3.8	955	15.7	1492	93.3	1492	1.3	339.981	38.156	g500-S2100	MFXMA 132-12	2	134
3.4	1048	14.1	1638	83.7	1638	2.0	352.002	42.520	g500-S4500	MFXMA 132-12	3	249
3.3	1098	13.5	1714	80.0	1714	0.9	340.679	44.515	g500-S2100	MFXMA 132-12	3	134
3.2	1144	13.1	1787	77.9	1787	1.6	340.689	45.711	g500-S3100	MFXMA 132-12	2	173
3.1	1175	12.8	1835	75.9	1835	2.3	344.586	46.933	g500-S4500	MFXMA 132-12	2	246
2.7	1315	11.3	2054	66.8	2054	1.3	341.283	53.330	g500-S3100	MFXMA 132-12	3	174
2.5	1426	10.5	2227	62.5	2227	1.7	342.247	56.960	g500-S4500	MFXMA 132-12	2	246
2.5	1453	10.2	2270	60.4	2270	1.7	345.777	58.933	g500-S4500	MFXMA 132-12	3	249
2.0	1788	8.3	2794	49.1	2794	1.5	343.043	72.533	g500-S4500	MFXMA 132-12	3	249

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
2.0	1803	8.2	2817	48.7	2817	1.0	339.394	73.138	g500-S3100	MFXMA 132-12	3	174
1.8	2003	7.4	3129	43.8	3129	1.4	341.749	81.237	g500-S4500	MFXMA 132-12	3	249
1.5	2308	6.4	3605	38.0	3605	0.8	338.342	93.599	g500-S3100	MFXMA 132-12	3	174
1.4	2555	5.8	3991	34.4	3991	1.1	339.999	103.619	g500-S4500	MFXMA 132-12	3	249
1.1	3130	4.7	4889	28.0	4889	0.9	339.012	126.933	g500-S4500	MFXMA 132-12	3	249

120 Hz: 18.5 kW

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
37.0	121	153	189	908	189	1.7	344.801	3.920	g500-S660	MFXMA 132-22	2	82
33.1	135	137	211	813	211	2.2	349.117	4.380	g500-S950	MFXMA 132-22	2	102
31.6	142	131	221	775	221	3.8	381.551	4.593	g500-S2100	MFXMA 132-22	2	134
29.3	153	121	238	719	238	3.8	418.458	4.951	g500-S3100	MFXMA 132-22	2	173
27.0	166	112	259	662	259	1.4	341.264	5.376	g500-S660	MFXMA 132-22	2	82
26.9	166	111	259	660	259	2.0	345.248	5.391	g500-S950	MFXMA 132-22	2	102
24.1	186	99.5	290	591	290	3.5	365.232	6.029	g500-S2100	MFXMA 132-22	2	134
24.0	186	99.4	291	590	291	1.9	343.506	6.038	g500-S950	MFXMA 132-22	2	102
22.3	201	92.3	313	548	313	3.5	386.653	6.499	g500-S3100	MFXMA 132-22	2	173
21.1	212	87.3	331	518	331	3.4	358.562	6.870	g500-S2100	MFXMA 132-22	2	134
21.1	212	87.2	331	517	331	1.1	339.484	6.880	g500-S660	MFXMA 132-22	2	82
20.5	218	85.0	340	505	340	3.8	421.966	7.056	g500-S4500	MFXMA 132-22	2	246
19.8	226	82.1	352	487	352	1.3	340.896	7.311	g500-S660	MFXMA 132-22	2	82
19.6	229	81.0	356	481	356	3.5	375.059	7.406	g500-S3100	MFXMA 132-22	2	173
18.8	238	77.9	371	462	371	1.6	341.080	7.702	g500-S950	MFXMA 132-22	2	102
17.5	255	72.5	398	430	398	2.8	352.792	8.272	g500-S2100	MFXMA 132-22	2	134
16.3	275	67.3	429	399	429	3.2	364.171	8.917	g500-S3100	MFXMA 132-22	2	173
14.5	309	59.8	483	355	483	1.0	339.188	10.027	g500-S660	MFXMA 132-22	2	82
14.2	314	58.9	490	350	490	1.5	343.744	10.183	g500-S950	MFXMA 132-22	2	102
13.8	324	57.1	505	339	505	2.8	364.396	10.504	g500-S2100	MFXMA 132-22	2	134
13.3	337	54.9	526	326	526	2.8	355.882	10.932	g500-S3100	MFXMA 132-22	2	173
11.5	388	47.7	606	283	606	3.7	373.737	12.584	g500-S3100	MFXMA 132-22	2	173
11.3	396	46.8	618	277	618	0.8	338.216	12.832	g500-S660	MFXMA 132-22	2	82
10.5	425	43.5	663	258	663	2.3	355.274	13.787	g500-S2100	MFXMA 132-22	2	134
10.3	433	42.7	676	254	676	1.1	340.678	14.037	g500-S950	MFXMA 132-22	2	102
10.1	442	41.9	690	248	690	3.8	391.433	14.336	g500-S4500	MFXMA 132-22	2	246
9.2	485	38.2	756	227	756	2.0	350.894	15.711	g500-S2100	MFXMA 132-22	2	134
8.8	510	36.3	795	216	795	2.9	360.696	16.517	g500-S3100	MFXMA 132-22	2	173
8.1	552	33.5	862	199	862	0.8	339.342	17.905	g500-S950	MFXMA 132-22	2	102
7.9	564	32.8	880	195	880	4.0	374.754	18.286	g500-S4500	MFXMA 132-22	2	246
7.7	581	31.9	906	189	906	2.9	355.070	18.822	g500-S3100	MFXMA 132-22	2	173
7.7	584	31.7	910	188	910	1.9	347.503	18.917	g500-S2100	MFXMA 132-22	2	134
6.5	691	26.8	1078	159	1078	3.5	365.159	22.400	g500-S4500	MFXMA 132-22	2	246
6.4	699	26.5	1091	157	1091	2.4	350.383	22.663	g500-S3100	MFXMA 132-22	2	173
6.3	716	25.9	1116	154	1116	1.6	344.792	23.193	g500-S2100	MFXMA 132-22	2	134
5.2	857	21.6	1337	128	1337	2.0	346.708	27.785	g500-S3100	MFXMA 132-22	2	173
4.9	911	20.3	1420	121	1420	2.7	354.441	29.511	g500-S4500	MFXMA 132-22	2	246
4.6	970	19.1	1512	113	1512	1.3	341.288	31.422	g500-S2100	MFXMA 132-22	2	134
4.0	1119	16.5	1745	98.2	1745	2.4	349.495	36.267	g500-S4500	MFXMA 132-22	2	246
3.9	1161	15.9	1812	94.6	1812	1.6	342.332	37.644	g500-S3100	MFXMA 132-22	2	173
3.8	1177	15.7	1836	93.3	1836	1.1	339.981	38.156	g500-S2100	MFXMA 132-22	2	134
3.4	1292	14.1	2015	83.7	2015	1.6	352.002	42.520	g500-S4500	MFXMA 132-22	3	249
3.2	1410	13.1	2200	77.9	2200	1.3	340.689	45.711	g500-S3100	MFXMA 132-22	2	173
3.1	1448	12.8	2259	75.9	2259	1.8	344.586	46.933	g500-S4500	MFXMA 132-22	2	246
2.7	1621	11.3	2528	66.8	2528	1.0	341.283	53.330	g500-S3100	MFXMA 132-22	3	174
2.5	1757	10.5	2741	62.5	2741	1.4	342.247	56.960	g500-S4500	MFXMA 132-22	2	246
2.5	1791	10.2	2794	60.4	2794	1.4	345.777	58.933	g500-S4500	MFXMA 132-22	3	249
2.0	2204	8.3	3438	49.1	3438	1.2	343.043	72.533	g500-S4500	MFXMA 132-22	3	249
2.0	2223	8.2	3467	48.7	3467	0.8	339.394	73.138	g500-S3100	MFXMA 132-22	3	174
1.8	2469	7.4	3851	43.8	3851	1.1	341.749	81.237	g500-S4500	MFXMA 132-22	3	249
1.4	3149	5.8	4912	34.4	4912	0.9	339.999	103.619	g500-S4500	MFXMA 132-22	3	249

120 Hz: 22 kW

Inverter operation									Geared motor			
5 Hz -		- 20 Hz		- 120 Hz (1:24)								
n_{22}	M_{22}	n_{21}	M_2	n_2	M_2	c	J	i			z	m
rpm	Nm	rpm	Nm	rpm	Nm		kgcm²					kg
37.0	144	153	225	906	225	1.4	344.801	3.920	g500-S660	MFXMA 132-32	2	82
33.1	161	137	252	810	252	1.9	349.117	4.380	g500-S950	MFXMA 132-32	2	102
31.6	169	131	264	773	264	3.2	381.551	4.593	g500-S2100	MFXMA 132-32	2	134
29.3	182	121	284	717	284	3.2	418.458	4.951	g500-S3100	MFXMA 132-32	2	173
27.0	198	112	309	660	309	1.2	341.264	5.376	g500-S660	MFXMA 132-32	2	82
26.9	198	111	310	659	310	1.7	345.248	5.391	g500-S950	MFXMA 132-32	2	102
24.1	222	99.5	346	589	346	3.0	365.232	6.029	g500-S2100	MFXMA 132-32	2	134
24.0	222	99.4	347	588	347	1.6	343.506	6.038	g500-S950	MFXMA 132-32	2	102
22.3	239	92.3	373	546	373	3.0	386.653	6.499	g500-S3100	MFXMA 132-32	2	173
21.1	253	87.3	395	517	395	2.8	358.562	6.870	g500-S2100	MFXMA 132-32	2	134
21.1	253	87.2	395	516	395	0.9	339.484	6.880	g500-S660	MFXMA 132-32	2	82
20.5	260	85.0	405	503	405	3.2	421.966	7.056	g500-S4500	MFXMA 132-32	2	246
19.8	269	82.1	420	486	420	1.1	340.896	7.311	g500-S660	MFXMA 132-32	2	82
19.6	272	81.0	425	479	425	3.0	375.059	7.406	g500-S3100	MFXMA 132-32	2	173
18.8	283	77.9	442	461	442	1.3	341.080	7.702	g500-S950	MFXMA 132-32	2	102
17.5	304	72.5	475	429	475	2.4	352.792	8.272	g500-S2100	MFXMA 132-32	2	134
16.3	328	67.3	512	398	512	2.7	364.171	8.917	g500-S3100	MFXMA 132-32	2	173
14.5	369	59.8	576	354	576	0.8	339.188	10.027	g500-S660	MFXMA 132-32	2	82
14.2	375	58.9	585	349	585	1.2	343.744	10.183	g500-S950	MFXMA 132-32	2	102
13.8	386	57.1	603	338	603	2.3	364.396	10.504	g500-S2100	MFXMA 132-32	2	134
13.3	402	54.9	628	325	628	2.3	355.882	10.932	g500-S3100	MFXMA 132-32	2	173
11.5	463	47.7	723	282	723	3.1	373.737	12.584	g500-S3100	MFXMA 132-32	2	173
10.5	507	43.5	792	258	792	1.9	355.274	13.787	g500-S2100	MFXMA 132-32	2	134
10.3	516	42.7	806	253	806	0.9	340.678	14.037	g500-S950	MFXMA 132-32	2	102
10.1	527	41.9	823	248	823	3.2	391.433	14.336	g500-S4500	MFXMA 132-32	2	246
9.2	578	38.2	902	226	902	1.7	350.894	15.711	g500-S2100	MFXMA 132-32	2	134
8.8	607	36.3	949	215	949	2.5	360.696	16.517	g500-S3100	MFXMA 132-32	2	173
7.9	672	32.8	1050	194	1050	3.4	374.754	18.286	g500-S4500	MFXMA 132-32	2	246
7.7	692	31.9	1081	189	1081	2.4	355.070	18.822	g500-S3100	MFXMA 132-32	2	173
7.7	696	31.7	1087	188	1087	1.6	347.503	18.917	g500-S2100	MFXMA 132-32	2	134
6.5	824	26.8	1287	159	1287	2.9	365.159	22.400	g500-S4500	MFXMA 132-32	2	246
6.4	833	26.5	1302	157	1302	2.0	350.383	22.663	g500-S3100	MFXMA 132-32	2	173
6.3	853	25.9	1332	153	1332	1.3	344.792	23.193	g500-S2100	MFXMA 132-32	2	134
5.2	1022	21.6	1596	128	1596	1.7	346.708	27.785	g500-S3100	MFXMA 132-32	2	173
4.9	1085	20.3	1695	120	1695	2.3	354.441	29.511	g500-S4500	MFXMA 132-32	2	246
4.6	1155	19.1	1805	113	1805	1.1	341.288	31.422	g500-S2100	MFXMA 132-32	2	134
4.0	1334	16.5	2083	97.9	2083	2.0	349.495	36.267	g500-S4500	MFXMA 132-32	2	246
3.9	1384	15.9	2162	94.3	2162	1.4	342.332	37.644	g500-S3100	MFXMA 132-32	2	173
3.8	1403	15.7	2192	93.0	2192	0.9	339.981	38.156	g500-S2100	MFXMA 132-32	2	134
3.4	1540	14.1	2406	83.5	2406	1.3	352.002	42.520	g500-S4500	MFXMA 132-32	3	249
3.2	1681	13.1	2626	77.7	2626	1.1	340.689	45.711	g500-S3100	MFXMA 132-32	2	173
3.1	1726	12.8	2696	75.6	2696	1.5	344.586	46.933	g500-S4500	MFXMA 132-32	2	246
2.7	1932	11.3	3017	66.6	3017	0.9	341.283	53.330	g500-S3100	MFXMA 132-32	3	174
2.5	2095	10.5	3272	62.3	3272	1.1	342.247	56.960	g500-S4500	MFXMA 132-32	2	246
2.5	2135	10.2	3334	60.2	3334	1.2	345.777	58.933	g500-S4500	MFXMA 132-32	3	249
2.0	2627	8.3	4104	48.9	4104	1.0	343.043	72.533	g500-S4500	MFXMA 132-32	3	249
1.8	2942	7.4	4596	43.7	4596	0.9	341.749	81.237	g500-S4500	MFXMA 132-32	3	249

Motor – inverter assignment

Rated frequency 120 Hz

Supply voltage 3x 230/240 V

Motor		Frequency inverter				
Rated power	MF☐MA☐☐	i510 cabinet	i550 cabinet	i550 protec	i550 motec	8400 motec
P_{rated}						
kW						
0.55	063-32	i510-C0.55/230-2	i550-C0.55/230-2	i550-P0.55/230-1	i550-M0.55/230-3	-
0.75	063-42	i510-C0.75/230-2	i550-C0.75/120-1	i550-P0.75/230-2	i550-M0.75/230-3	-
1.1	071-32	i510-C1.1/230-2	i550-C1.1/230-2	i550-P1.1/120-1	i550-M1.1/230-3	-
1.5	071-42	i510-C1.5/230-2	i550-C1.5/230-1	i550-P1.5/230-1	i550-M1.5/230-3	-
2.2	080-32	i510-C2.2/230-2	i550-C2.2/230-1	i550-P2.2/230-2	i550-M2.2/230-3	-
3	080-42	i510-C4.0/230-3	i550-C4.0/230-3	i550-P4.0/230-3	i550-M3.0/230-3	-

Supply voltage 3x 400/480 V

Motor		Frequency inverter				
Rated power	MF☐MA☐☐	i510 cabinet	i550 cabinet	i550 protec	i550 motec	8400 motec
P_{rated}						
kW						
0.55	063-32	i510-C0.55/400-3	i550-C0.55/400-3	i550-P0.55/400-3	i550-M0.55/400-3	E84DVB☐5514S☐☐☐2☐
0.75	063-42	i510-C0.75/400-3	i550-C0.75/400-3	i550-P0.75/400-3	i550-M0.75/400-3	E84DVB☐7514S☐☐☐2☐
1.1	071-32	i510-C1.1/400-3	i550-C1.1/400-3	i550-P1.1/400-3	i550-M1.1/400-3	E84DVB☐1124S☐☐☐2☐
1.5	071-42	i510-C1.5/400-3	i550-C1.5/400-3	i550-P1.5/400-3	i550-M1.5/400-3	E84DVB☐1524S☐☐☐2☐
2.2	080-32	i510-C2.2/400-3	i550-C2.2/400-3	i550-P2.2/400-3	i550-M2.2/400-3	E84DVB☐2224S☐☐☐2☐
3	080-42	i510-C3.0/400-3	i550-C3.0/400-3	i550-P3.0/400-3	i550-M3.0/400-3	E84DVB☐3024S☐☐☐2☐
4	090-32	i510-C4.0/400-3	i550-C4.0/400-3	i550-P4.0/400-3	i550-M4.0/400-3	E84DVB☐4024S☐☐☐2☐
5.5	100-12	i510-C5.5/400-3	i550-C5.5/400-3	i550-P5.5/400-3	i550-M5.5/400-3	E84DVB☐5524S☐☐☐2☐
7.5	100-32	i510-C7.5/400-3	i550-C7.5/400-3	i550-P7.5/400-3	i550-M7.5/400-3	E84DVB☐7524S☐☐☐2☐
11	112-22	i510-C11/400-3	i550-C11/400-3	i550-P11/400-3	i550-M11/400-3	-
15	132-12	-	i550-C15/400-3	i550-P15/400-3	i550-M15/400-3	-
18.5	132-22	-	i550-C18/400-3	i550-P18/400-3	i550-M18/400-3	-
22	132-32	-	i550-C22/400-3	i550-P22/400-3	-	-

Dimensions

Notes on the basic dimensions

Gearboxes	Without pre-stage	With pre-stage
g500-S130	2-stage	3-stage
g500-S220 ... S4500	2-/3-stage	4-stage

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

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

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

Deviating dimensions: ▸ Gearbox with pre-stage 🕮 119

The following legend shows the layout of the dimension tables:

Motor	MF☐MA☐☐		
	063-32	063-42	071-32

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

NOTICE

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

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

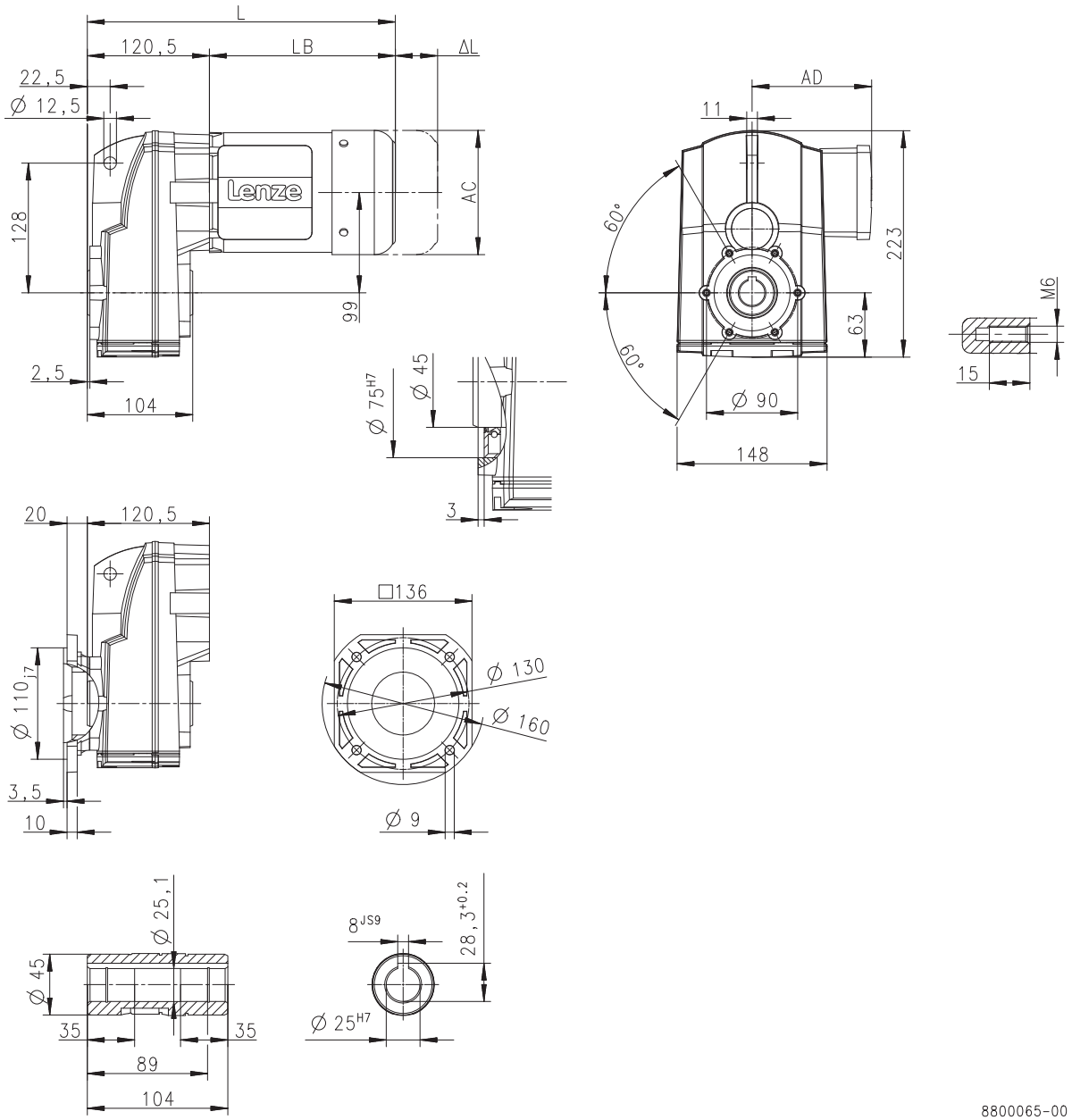
► The specified min. length of the machine shaft must be reached.

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

Basic dimensions

g500-S130, 2-stage

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

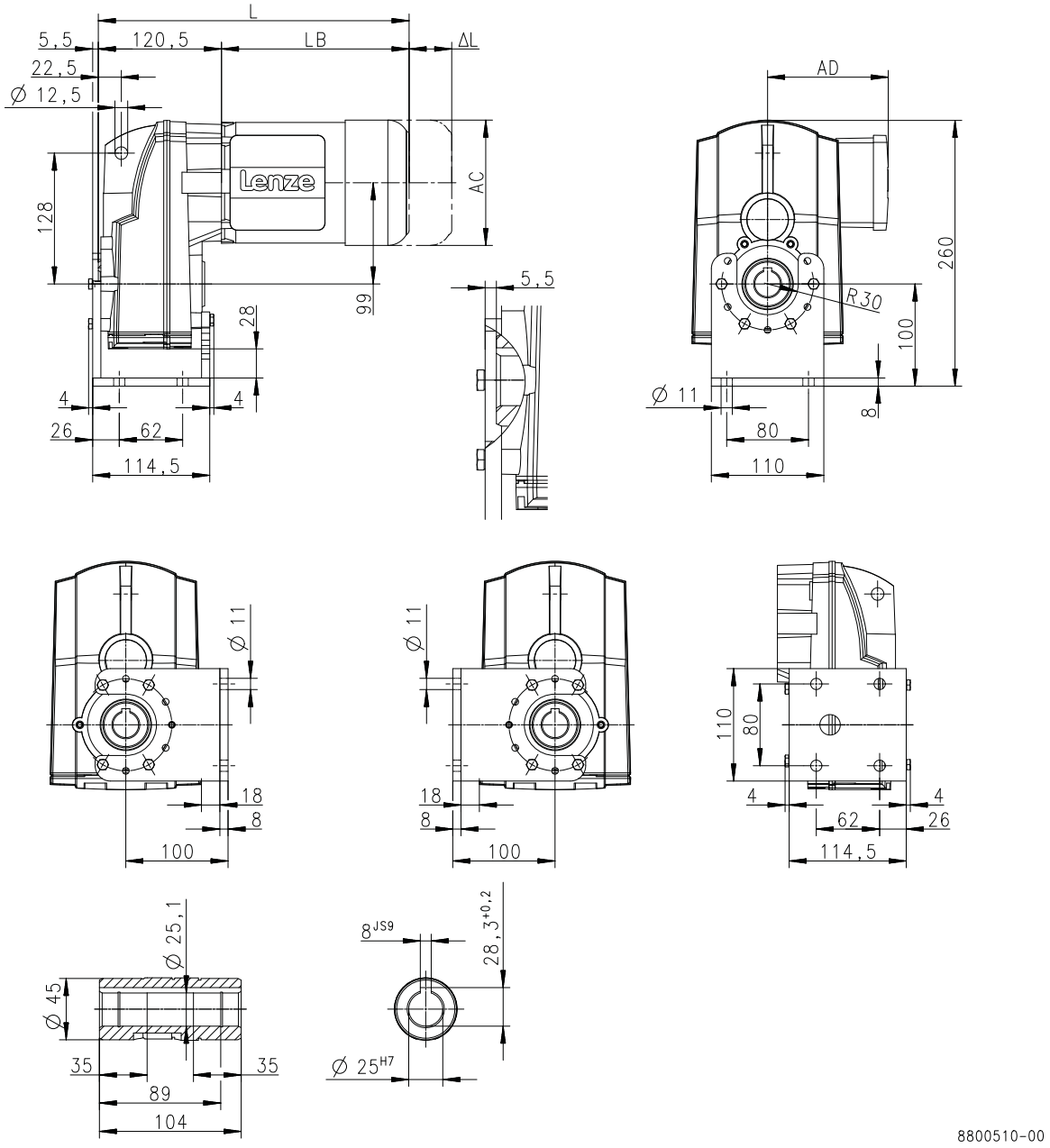


Motor series			MFXMA			
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**
Total length	L	mm	304	325	347	407
Motor length	LB	mm	183	204	226	286
Motor diameter	AC	mm	123	139	156	176
Motor/connection distance	AD	mm	109	118	132	137

Δ L ▸ Additional lengths 123

g500-S130, 2-stage

Gearbox design: Hollow shaft with foot (HBR)

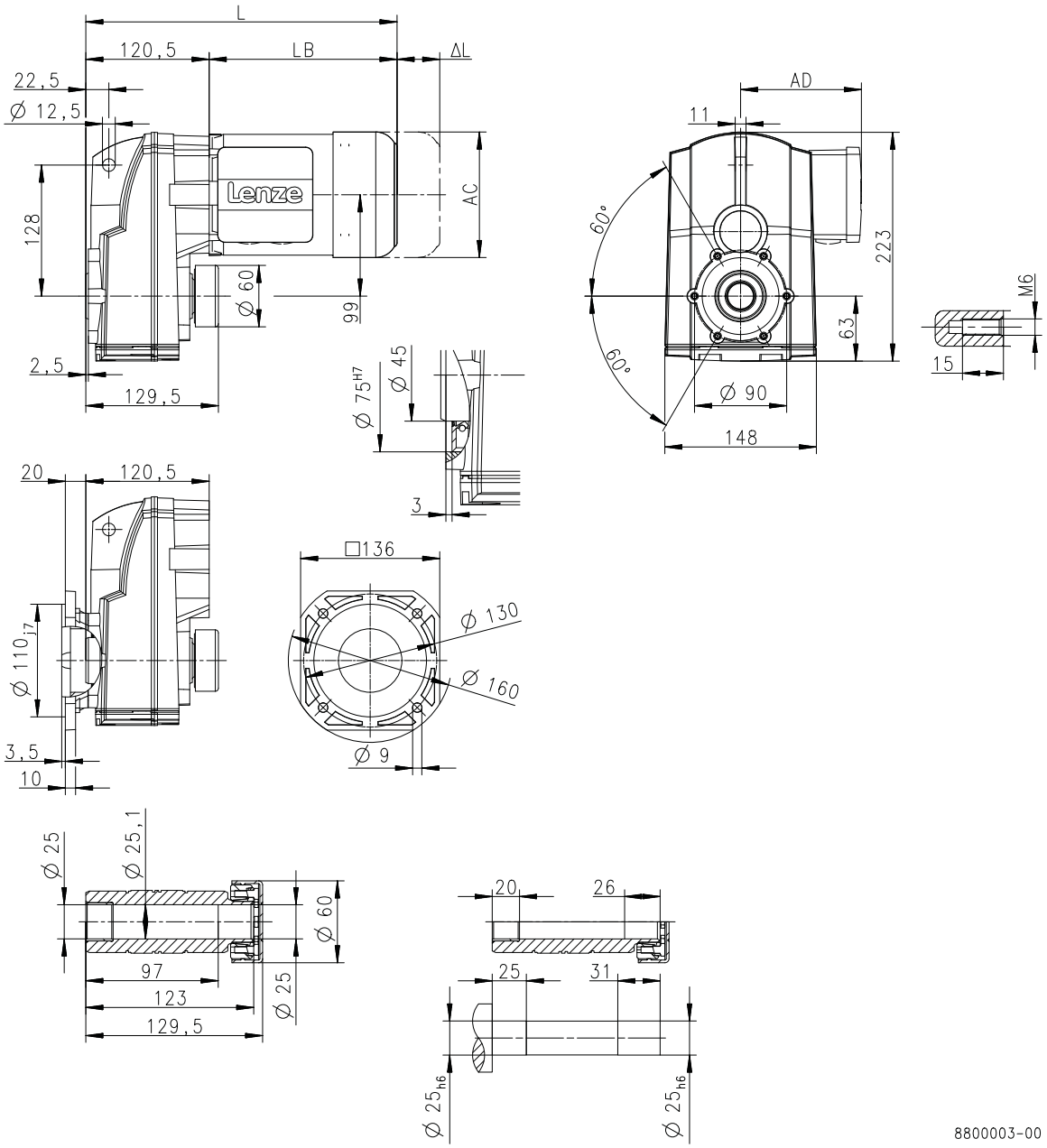


Motor series			MFXMA			
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**
Total length	L	mm	304	325	347	407
Motor length	LB	mm	183	204	226	286
Motor diameter	AC	mm	123	139	156	176
Motor/connection distance	AD	mm	109	118	132	137

Δ L ▸ Additional lengths 123

g500-S130, 2-stage

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

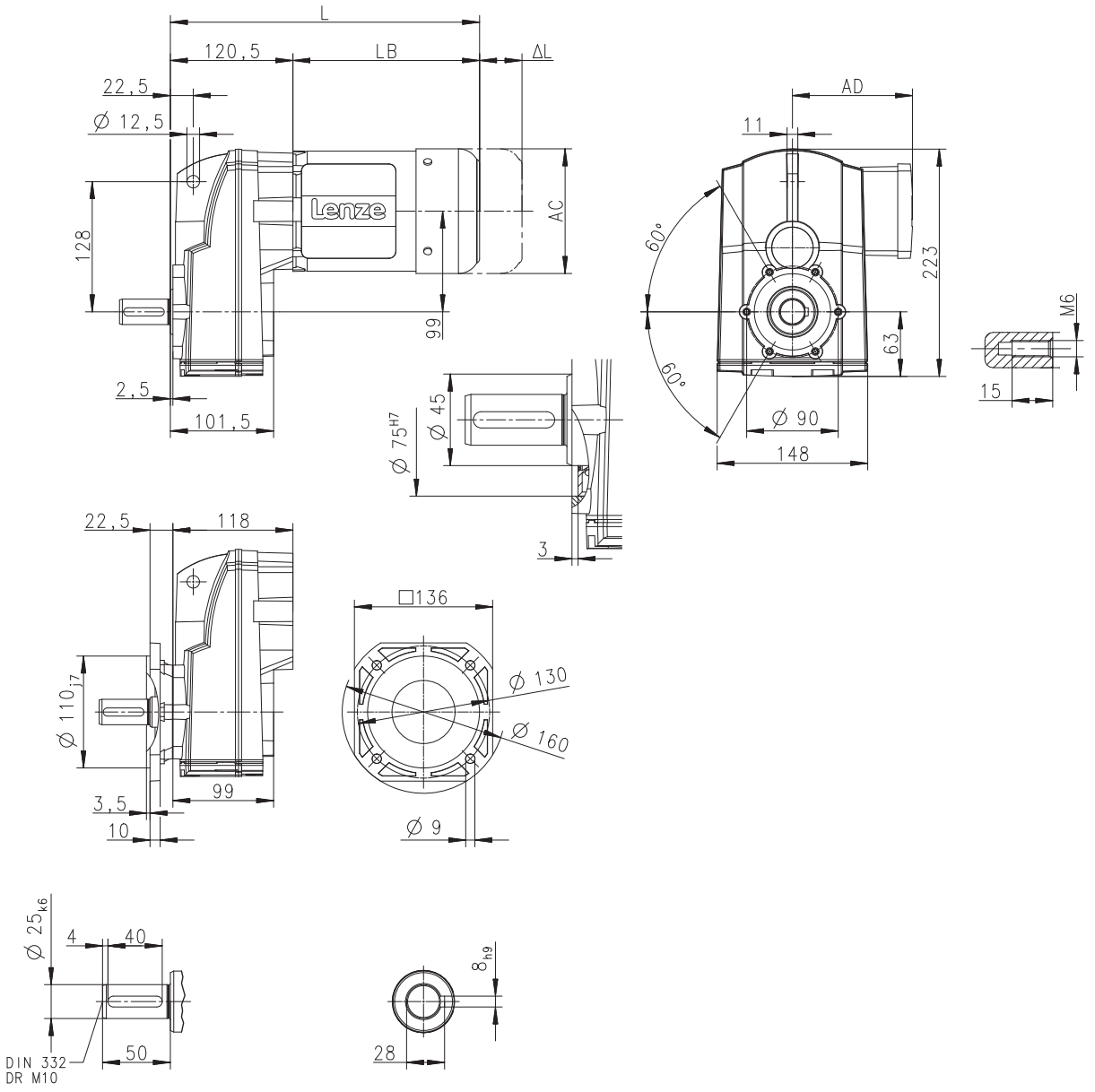


Motor series			MFXMA			
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**
Total length	L	mm	304	325	347	407
Motor length	LB	mm	183	204	226	286
Motor diameter	AC	mm	123	139	156	176
Motor/connection distance	AD	mm	109	118	132	137

Δ L ▸ Additional lengths 123

g500-S130, 2-stage

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



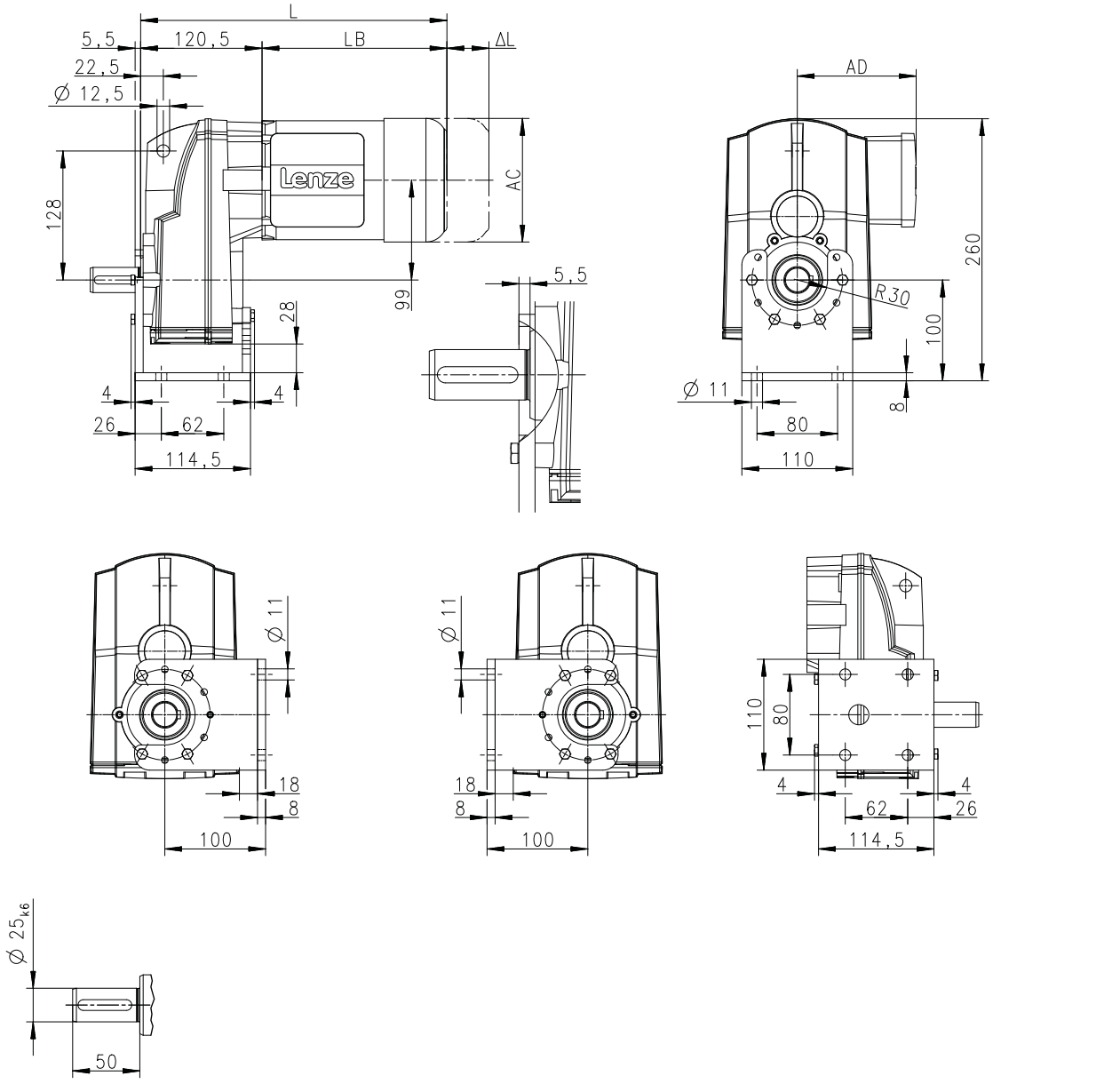
8800066-00

Motor series			MFXMA			
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**
Total length	L	mm	304	325	347	407
Motor length	LB	mm	183	204	226	286
Motor diameter	AC	mm	123	139	156	176
Motor/connection distance	AD	mm	109	118	132	137

Δ L ▸ Additional lengths 123

g500-S130, 2-stage

Gearbox design: Solid shaft with foot (VBR)



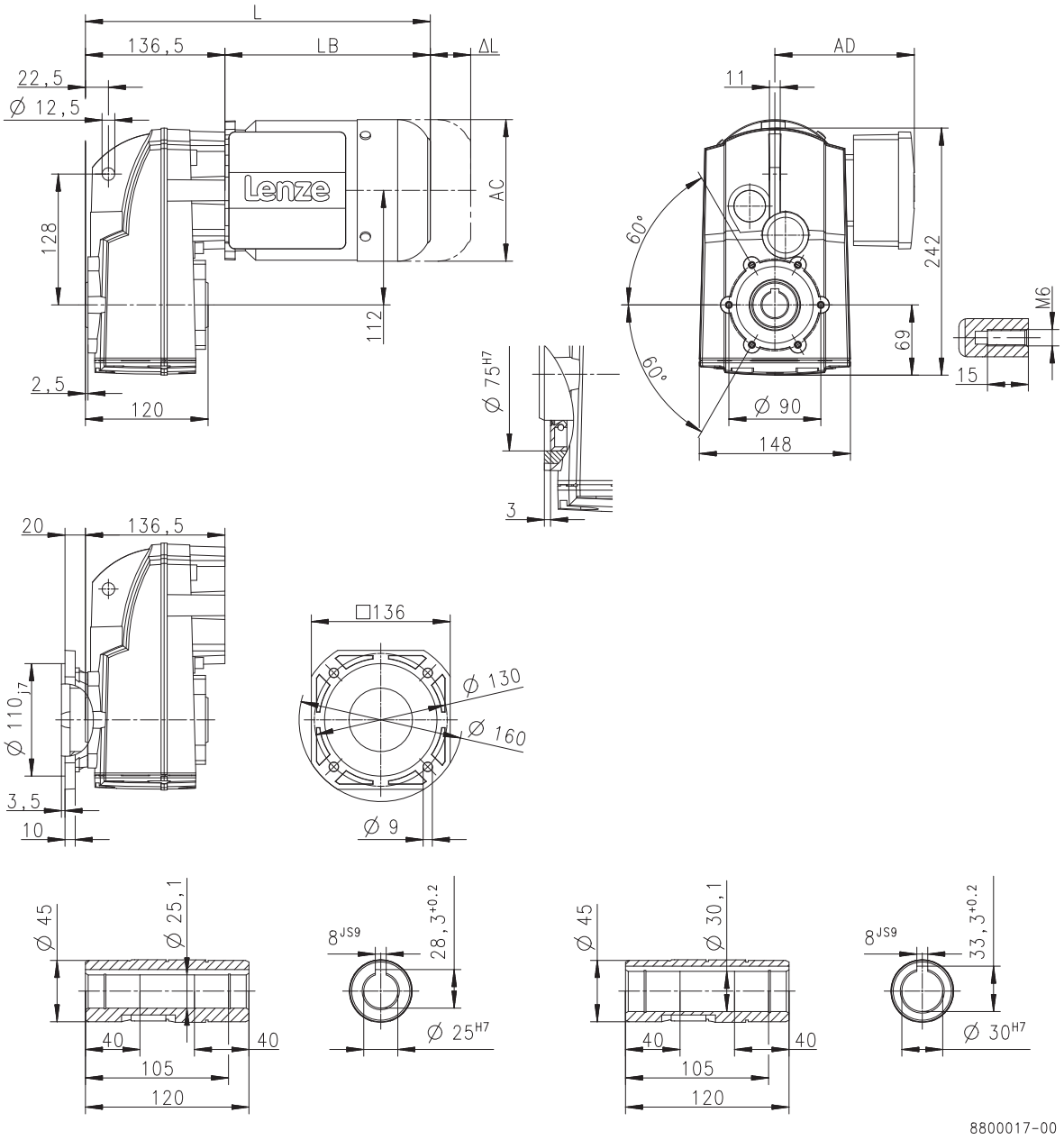
8800004-00

Motor series			MFXMA			
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**
Total length	L	mm	304	325	347	407
Motor length	LB	mm	183	204	226	286
Motor diameter	AC	mm	123	139	156	176
Motor/connection distance	AD	mm	109	118	132	137

Δ L ▸ Additional lengths 123

g500-S220, 2-/3-stage

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

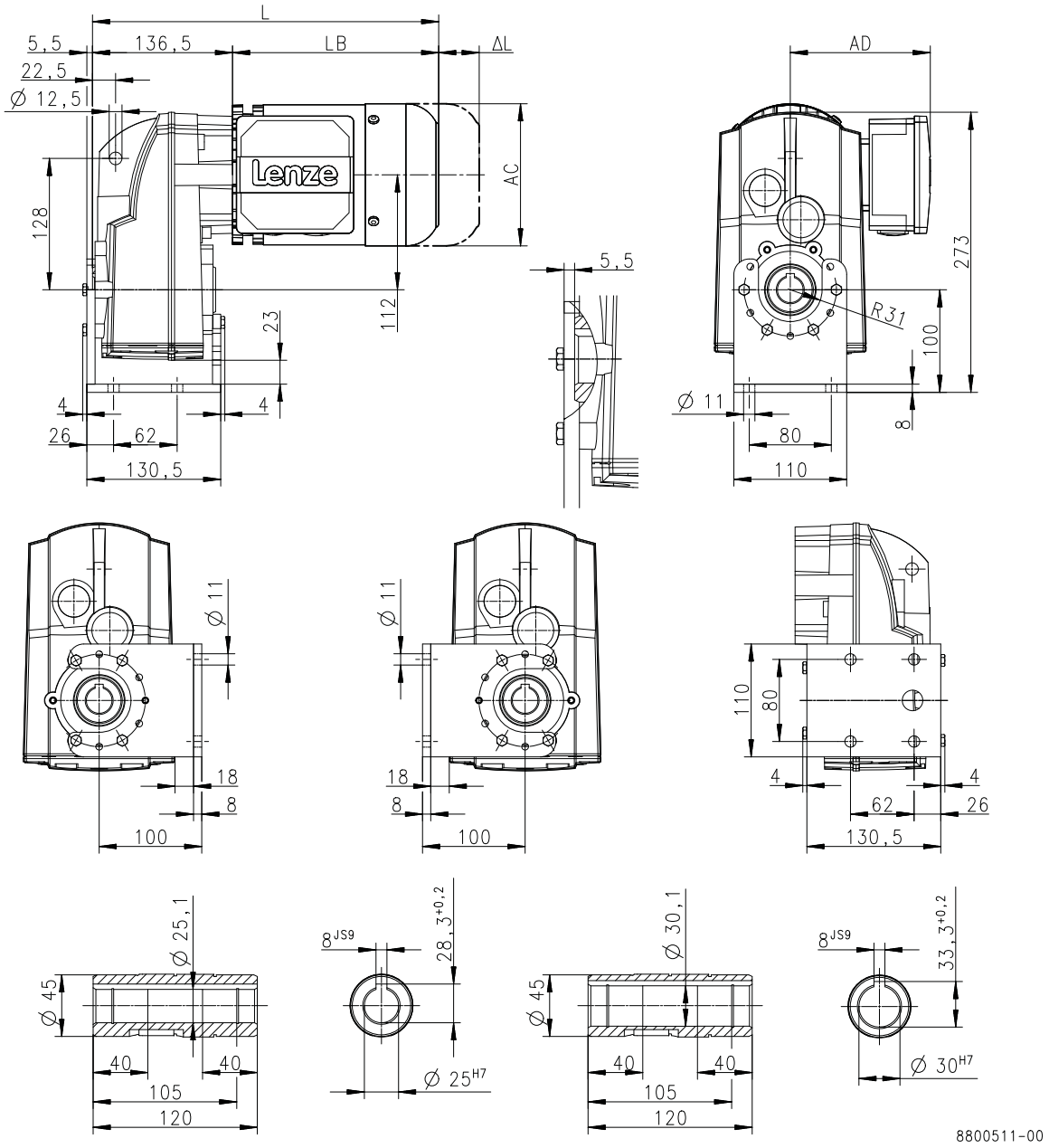


Motor series			MFXMA				
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**
Total length	L	mm	320	341	363	423	472
Motor length	LB	mm	183	204	226	286	335
Motor diameter	AC	mm	123	139	156	176	194
Motor/connection distance	AD	mm	109	118	132	137	147

Δ L ▸ Additional lengths 123

g500-S220, 2-/3-stage

Gearbox design: Hollow shaft with foot (HBR)

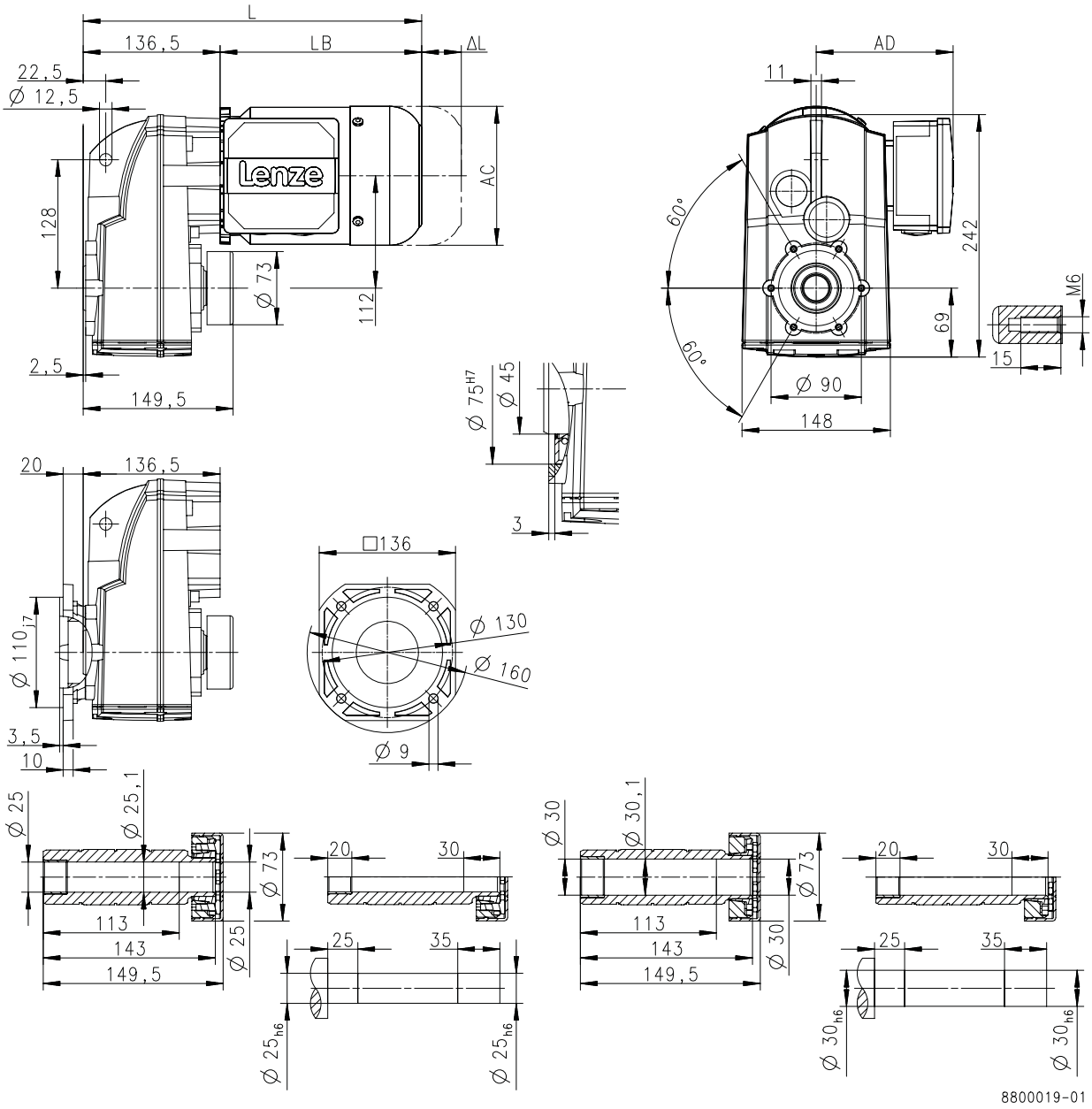


Motor series			MFXMA				
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**
Total length	L	mm	320	341	363	423	472
Motor length	LB	mm	183	204	226	286	335
Motor diameter	AC	mm	123	139	156	176	194
Motor/connection distance	AD	mm	109	118	132	137	147

Δ L ▸ Additional lengths 123

g500-S220, 2-/3-stage

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

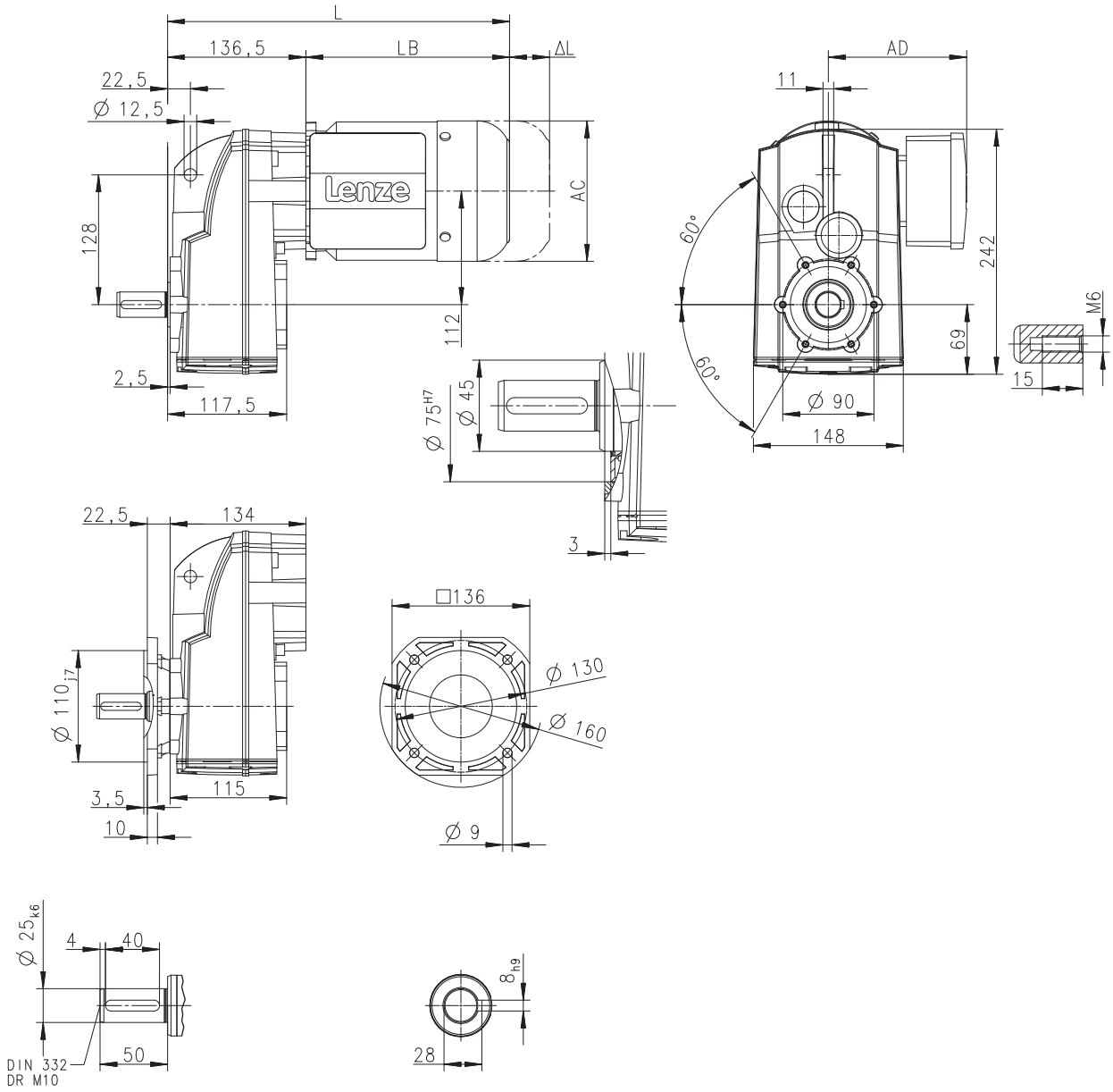


Motor series			MFXMA				
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**
Total length	L	mm	320	341	363	423	472
Motor length	LB	mm	183	204	226	286	335
Motor diameter	AC	mm	123	139	156	176	194
Motor/connection distance	AD	mm	109	118	132	137	147

Δ L ▸ Additional lengths 123

g500-S220, 2-/3-stage

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

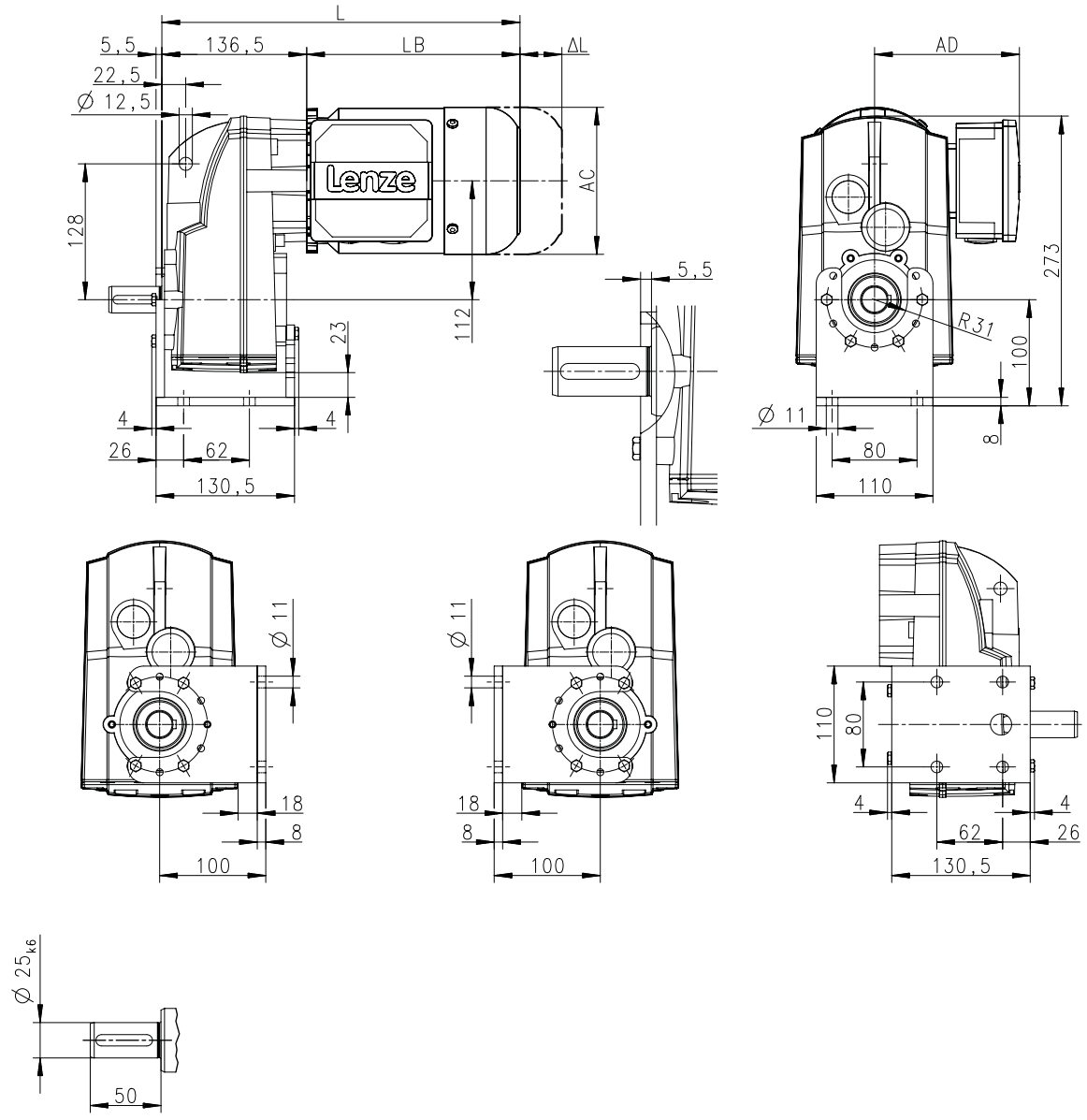


Motor series			MFXMA				
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**
Total length	L	mm	320	341	363	423	472
Motor length	LB	mm	183	204	226	286	335
Motor diameter	AC	mm	123	139	156	176	194
Motor/connection distance	AD	mm	109	118	132	137	147

Δ L ▸ Additional lengths 123

g500-S220, 2-/3-stage

Gearbox design: Solid shaft with foot (VBR)



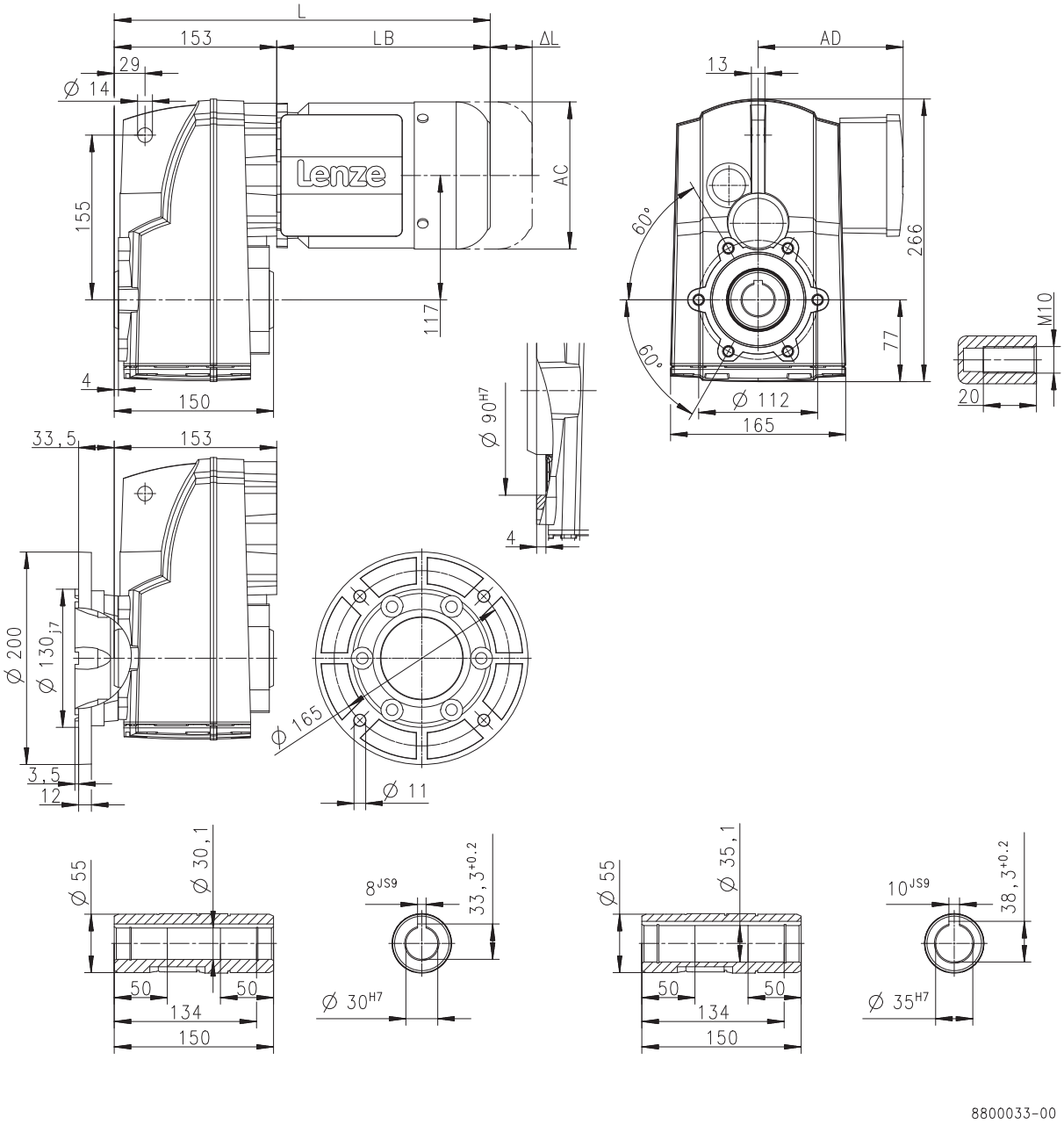
8800020-00

Motor series			MFXMA				
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**
Total length	L	mm	320	341	363	423	472
Motor length	LB	mm	183	204	226	286	335
Motor diameter	AC	mm	123	139	156	176	194
Motor/connection distance	AD	mm	109	118	132	137	147

Δ L ▸ Additional lengths 123

g500-S400, 2-/3-stage

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



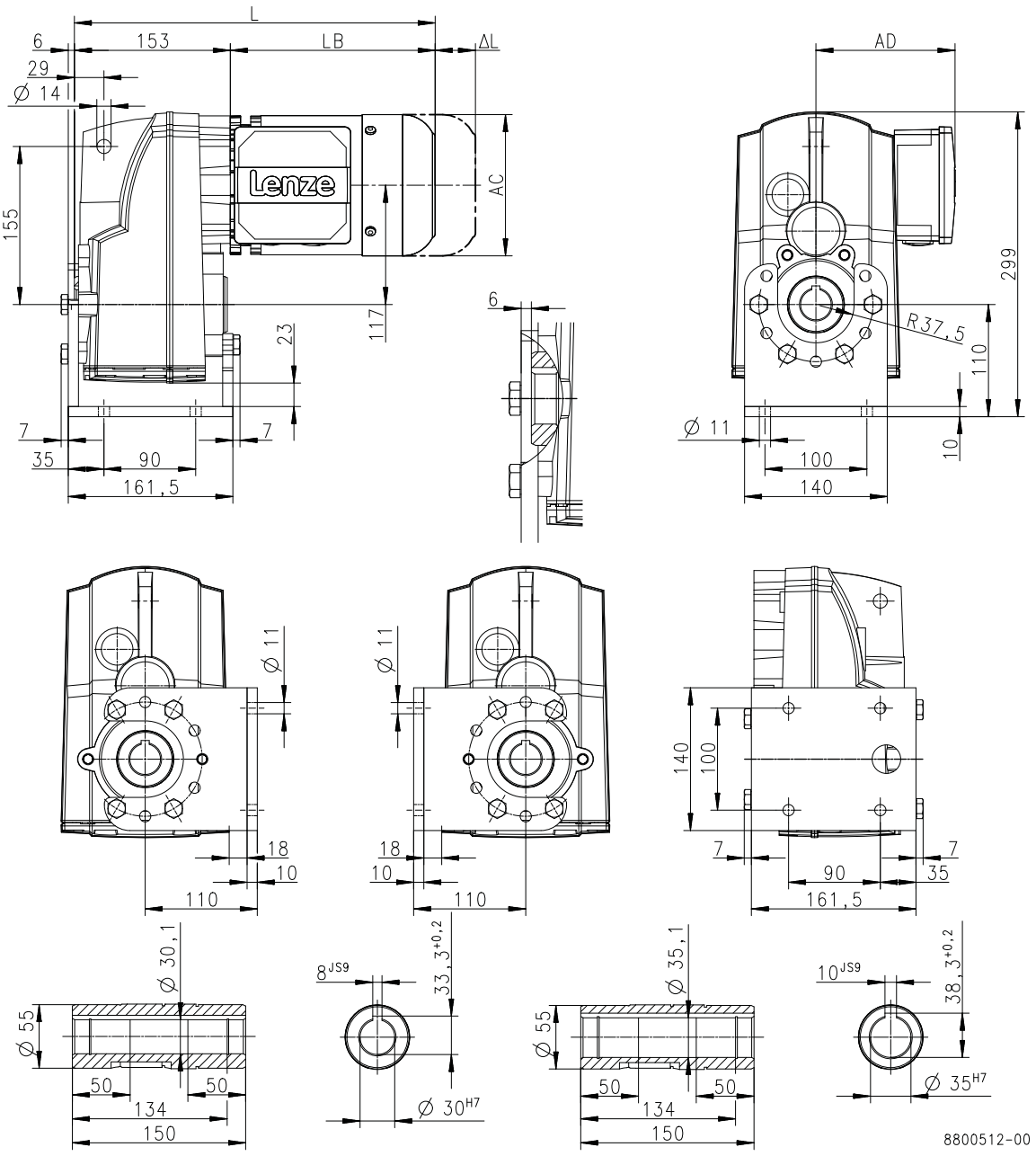
8800033-00

Motor series			MFXMA					
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**
Total length	L	mm	336	357	379	439	488	489
Motor length	LB	mm	183	204	226	286	335	336
Motor diameter	AC	mm	123	139	156	176	194	218
Motor/connection distance	AD	mm	109	118	132	137	147	158

Δ L ▸ Additional lengths 123

g500-S400, 2-/3-stage

Gearbox design: Hollow shaft with foot (HBR)

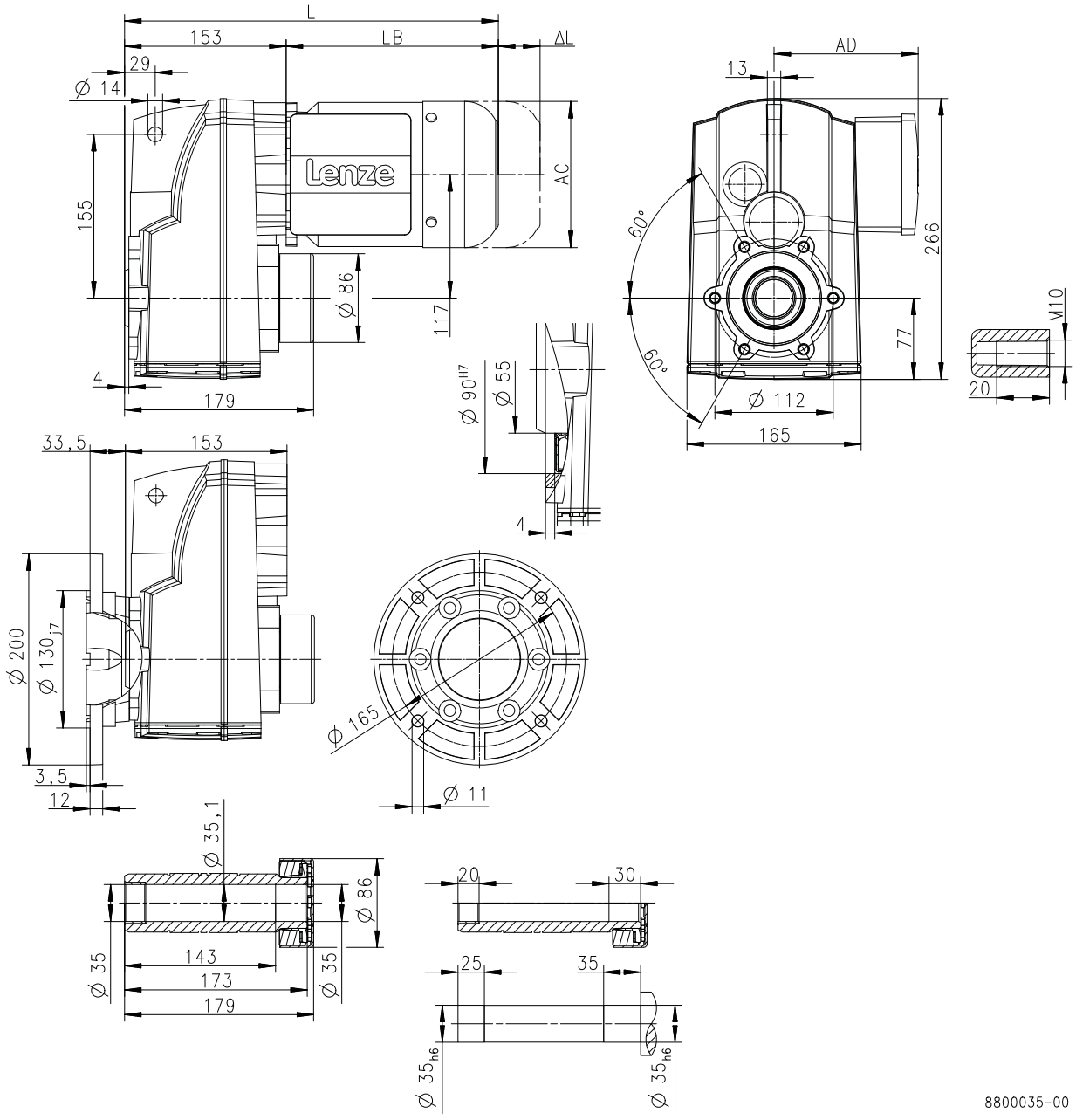


Motor series			MFXMA					
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**
Total length	L	mm	336	357	379	439	488	489
Motor length	LB	mm	183	204	226	286	335	336
Motor diameter	AC	mm	123	139	156	176	194	218
Motor/connection distance	AD	mm	109	118	132	137	147	158

Δ L ▸ Additional lengths 123

g500-S400, 2-/3-stage

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

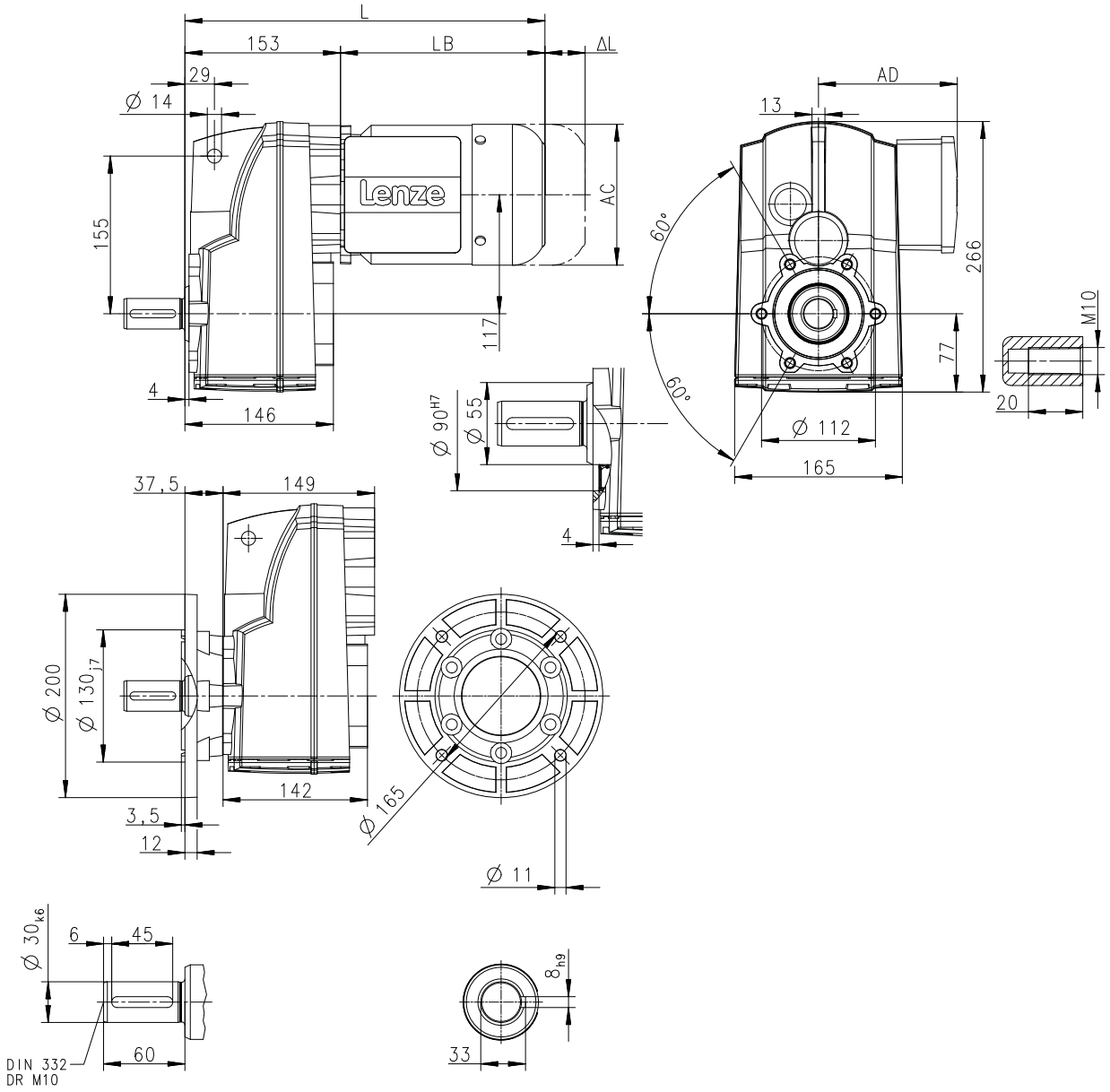


Motor series			MFXMA					
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**
Total length	L	mm	336	357	379	439	488	489
Motor length	LB	mm	183	204	226	286	335	336
Motor diameter	AC	mm	123	139	156	176	194	218
Motor/connection distance	AD	mm	109	118	132	137	147	158

Δ L ▸ Additional lengths 123

g500-S400, 2-/3-stage

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



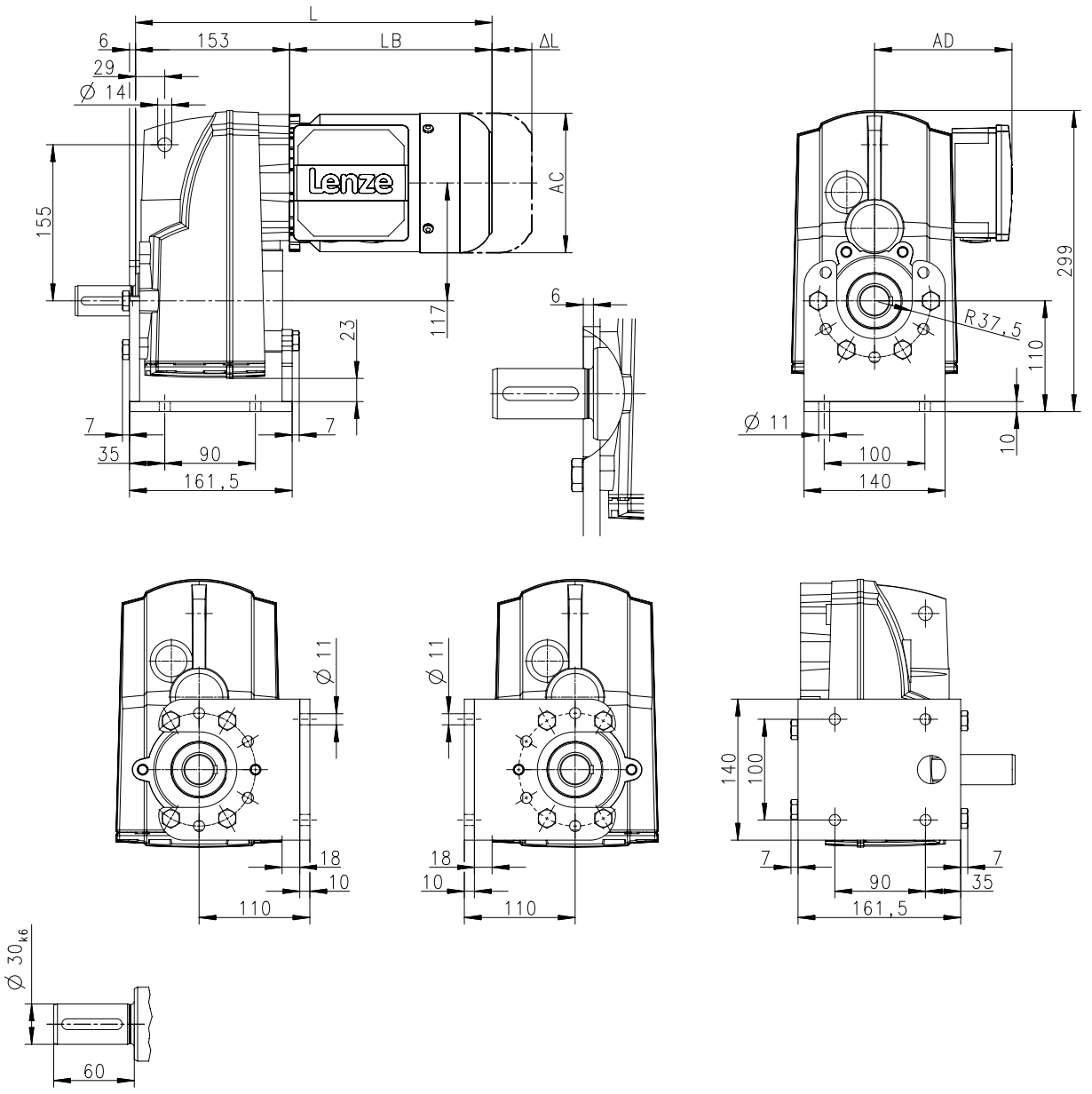
8800034-00

Motor series			MFXMA					
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**
Total length	L	mm	336	357	379	439	488	489
Motor length	LB	mm	183	204	226	286	335	336
Motor diameter	AC	mm	123	139	156	176	194	218
Motor/connection distance	AD	mm	109	118	132	137	147	158

Δ L ▸ Additional lengths 123

g500-S400, 2-/3-stage

Gearbox design: Solid shaft with foot (VBR)



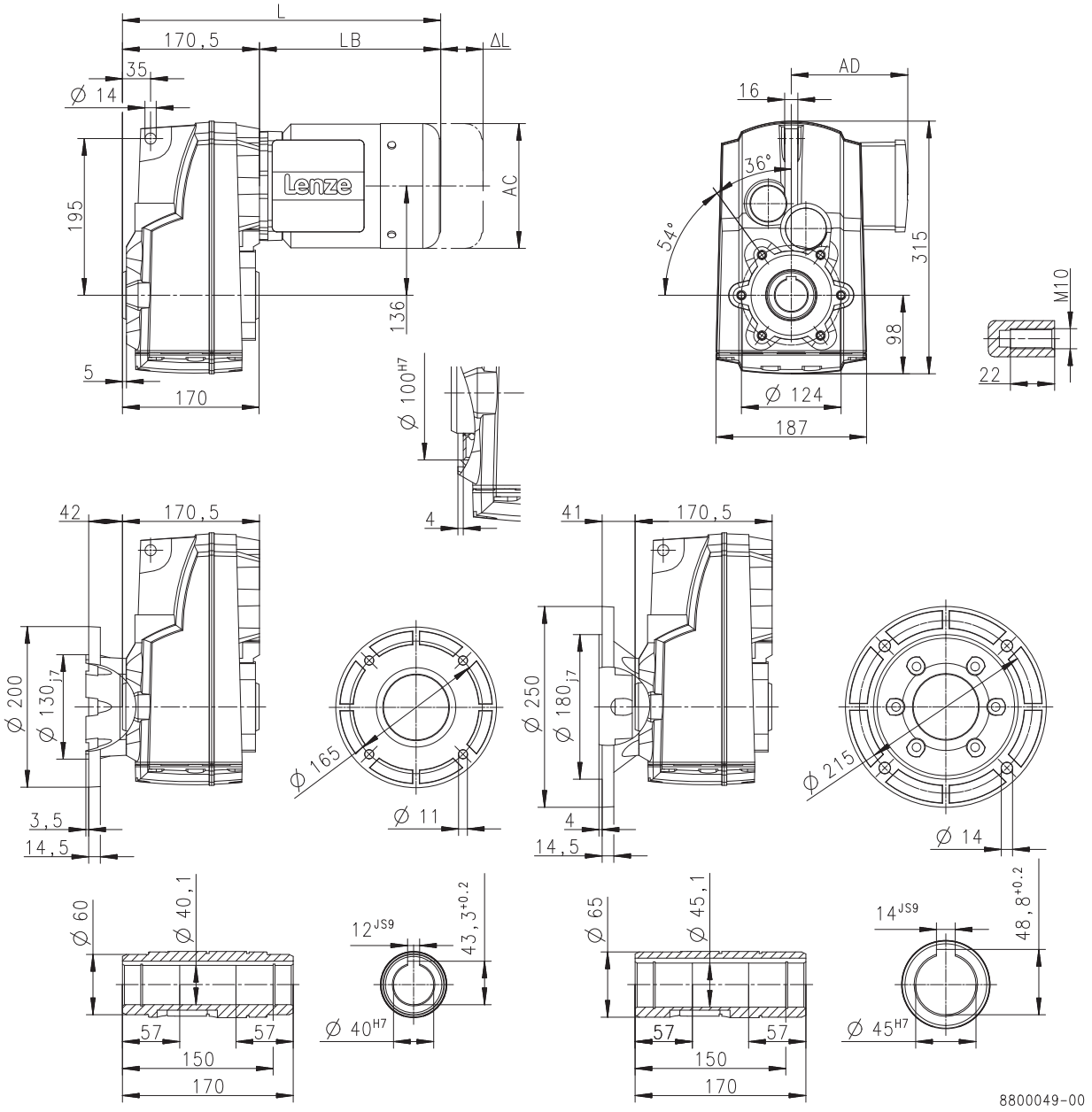
8800036-00

Motor series			MFXMA					
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**
Total length	L	mm	336	357	379	439	488	489
Motor length	LB	mm	183	204	226	286	335	336
Motor diameter	AC	mm	123	139	156	176	194	218
Motor/connection distance	AD	mm	109	118	132	137	147	158

Δ L ▸ Additional lengths 123

g500-S660, 2-/3-stage

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

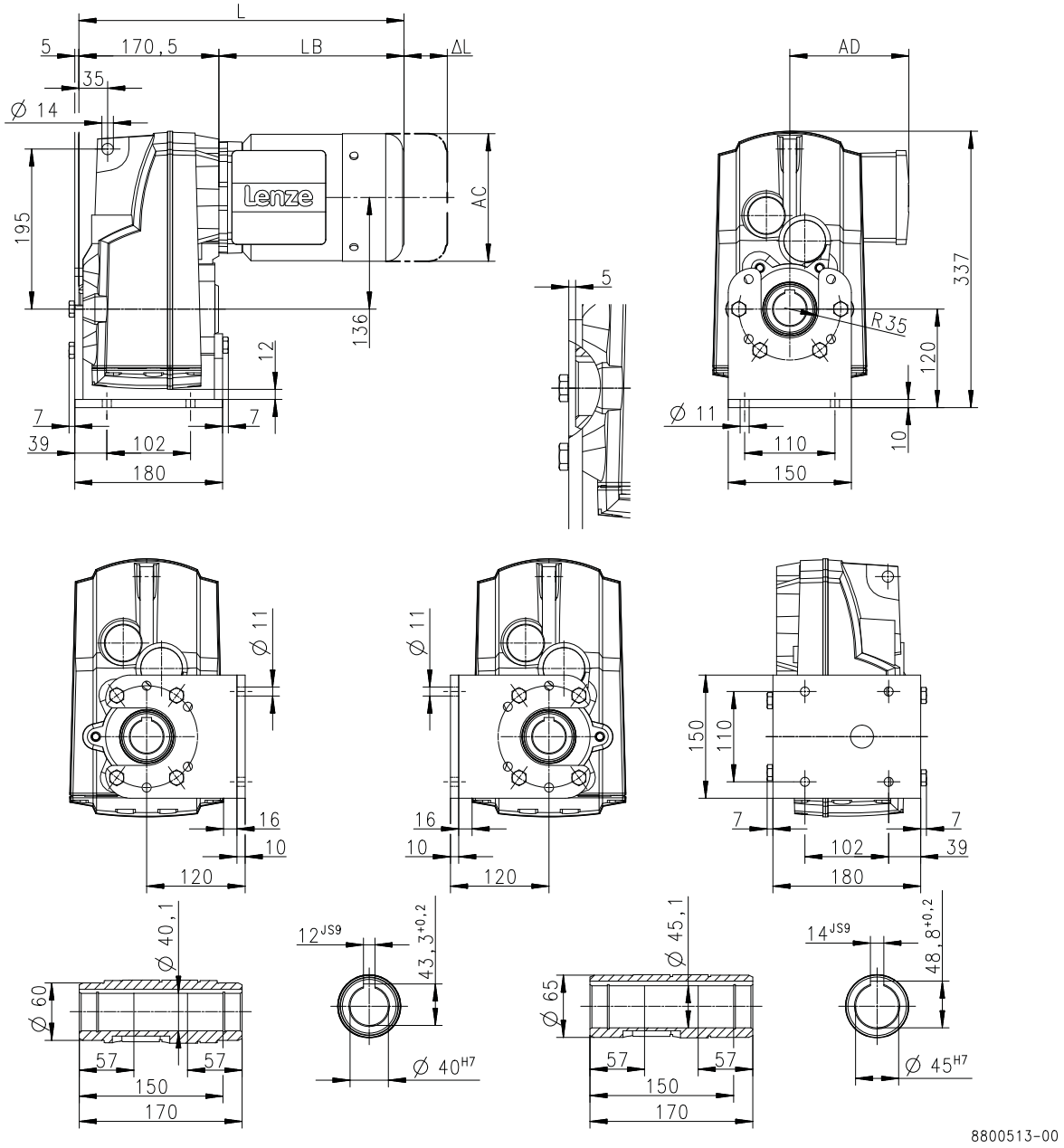


Motor series			MFXMA						
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**	**132-12 132-22 132-32**
Total length	L	mm	354	375	397	457	506	507	599
Motor length	LB	mm	183	204	226	286	335	336	428
Motor diameter	AC	mm	123	139	156	176	194	218	258
Motor/connection distance	AD	mm	109	118	132	137	147	158	187

Δ L ▸ Additional lengths 123

g500-S660, 2-/3-stage

Gearbox design: Hollow shaft with foot (HBR)

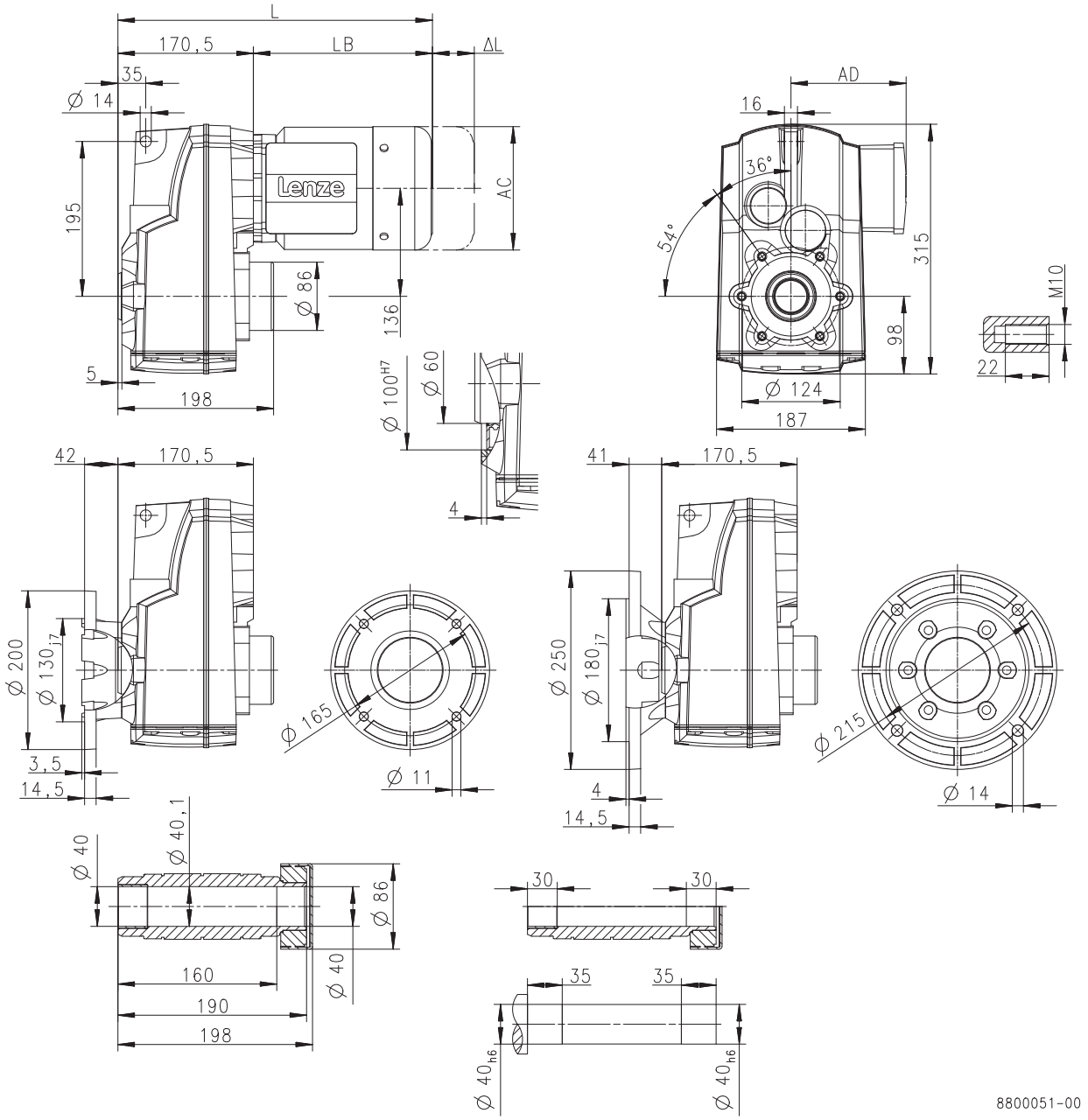


Motor series			MFXMA						
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**	**132-12 132-22 132-32**
Total length	L	mm	354	375	397	457	506	507	599
Motor length	LB	mm	183	204	226	286	335	336	428
Motor diameter	AC	mm	123	139	156	176	194	218	258
Motor/connection distance	AD	mm	109	118	132	137	147	158	187

Δ L ▸ Additional lengths 🕮 123

g500-S660, 2-/3-stage

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

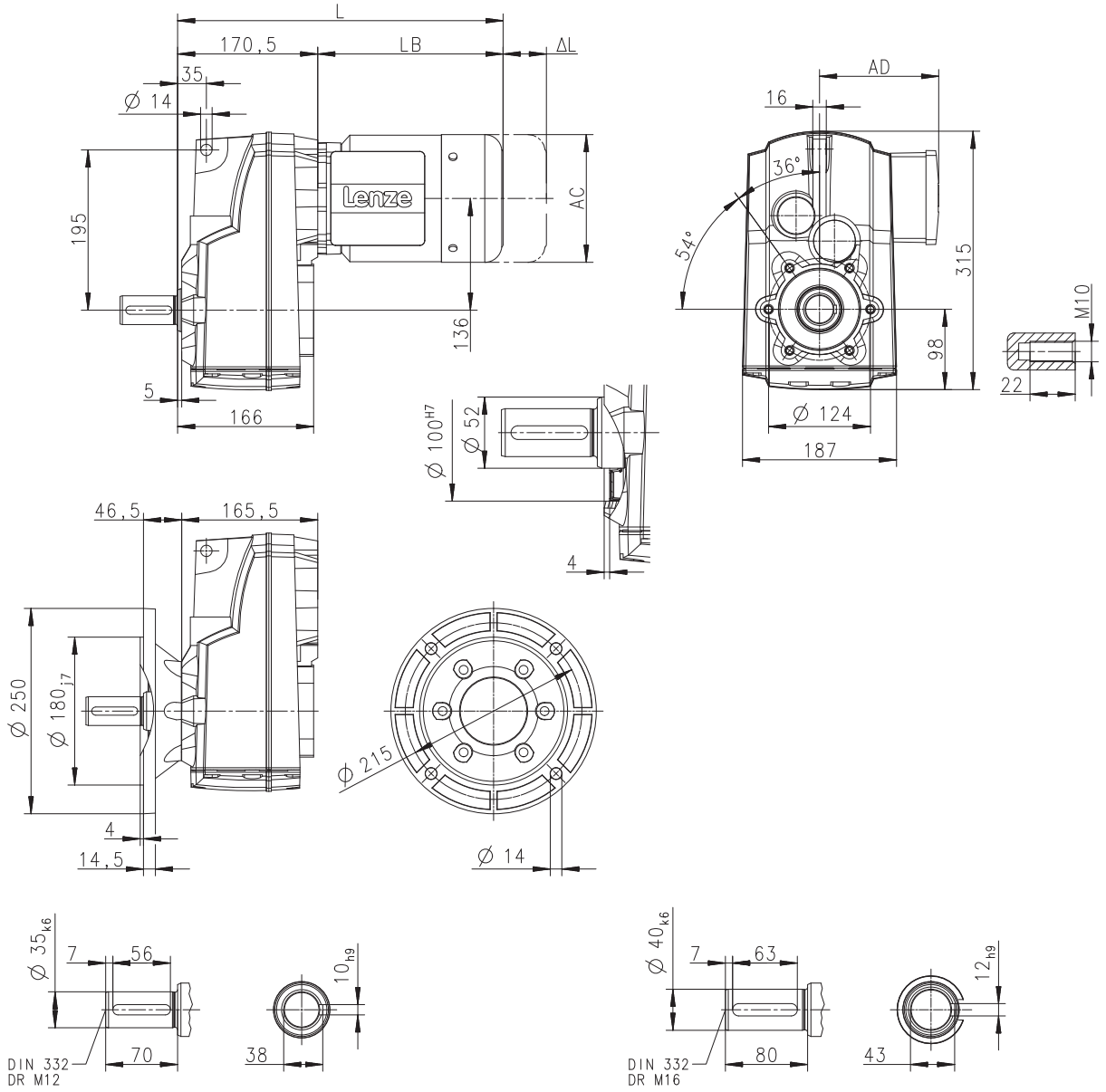


Motor series			MFXMA						
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**	**132-12 132-22 132-32**
Total length	L	mm	354	375	397	457	506	507	599
Motor length	LB	mm	183	204	226	286	335	336	428
Motor diameter	AC	mm	123	139	156	176	194	218	258
Motor/connection distance	AD	mm	109	118	132	137	147	158	187

Δ L ▸ Additional lengths 123

g500-S660, 2-/3-stage

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

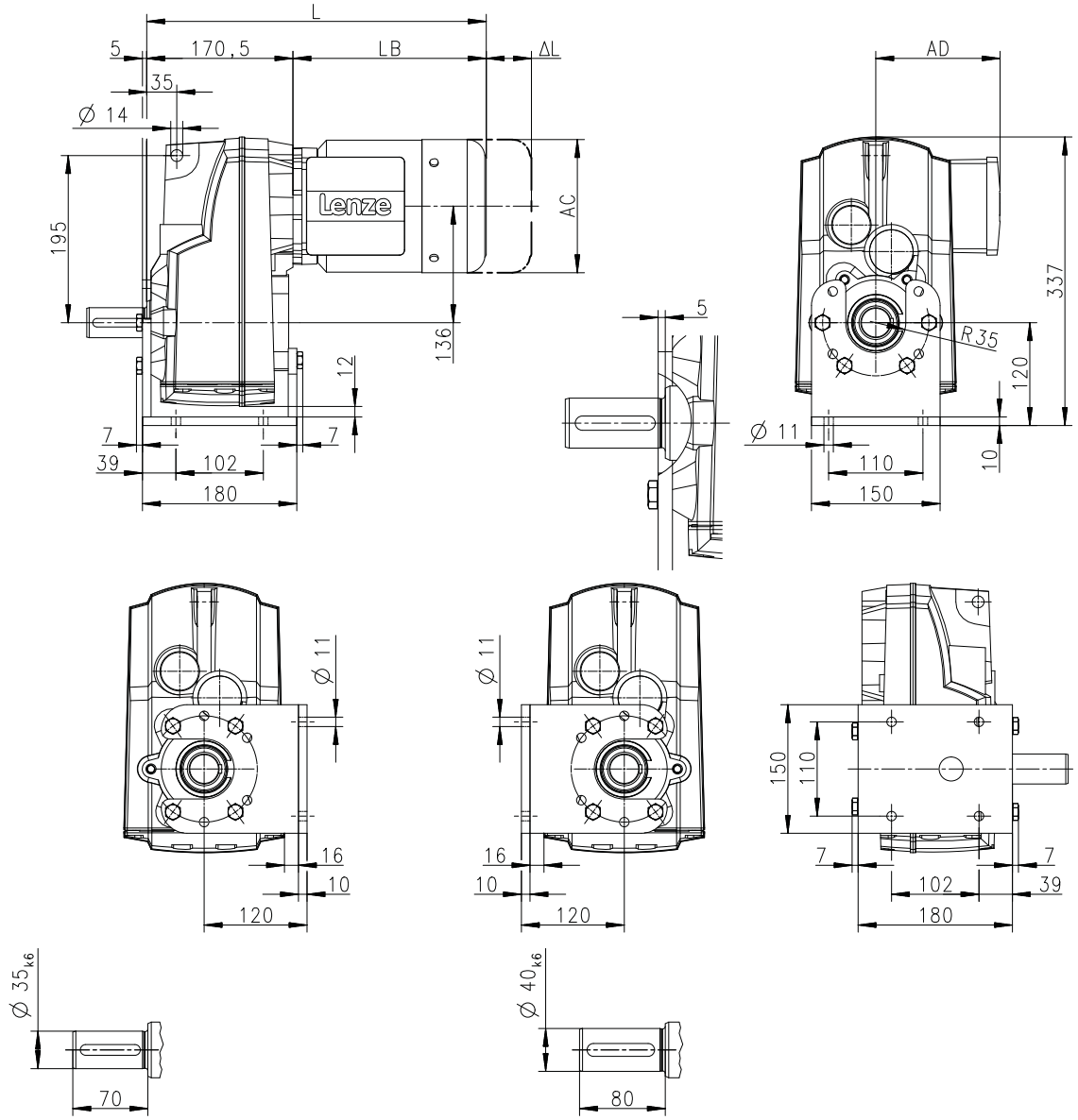


Motor series			MFXMA						
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**	**132-12 132-22 132-32**
Total length	L	mm	354	375	397	457	506	507	599
Motor length	LB	mm	183	204	226	286	335	336	428
Motor diameter	AC	mm	123	139	156	176	194	218	258
Motor/connection distance	AD	mm	109	118	132	137	147	158	187

Δ L ▸ Additional lengths 123

g500-S660, 2-/3-stage

Gearbox design: Solid shaft with foot (VBR)



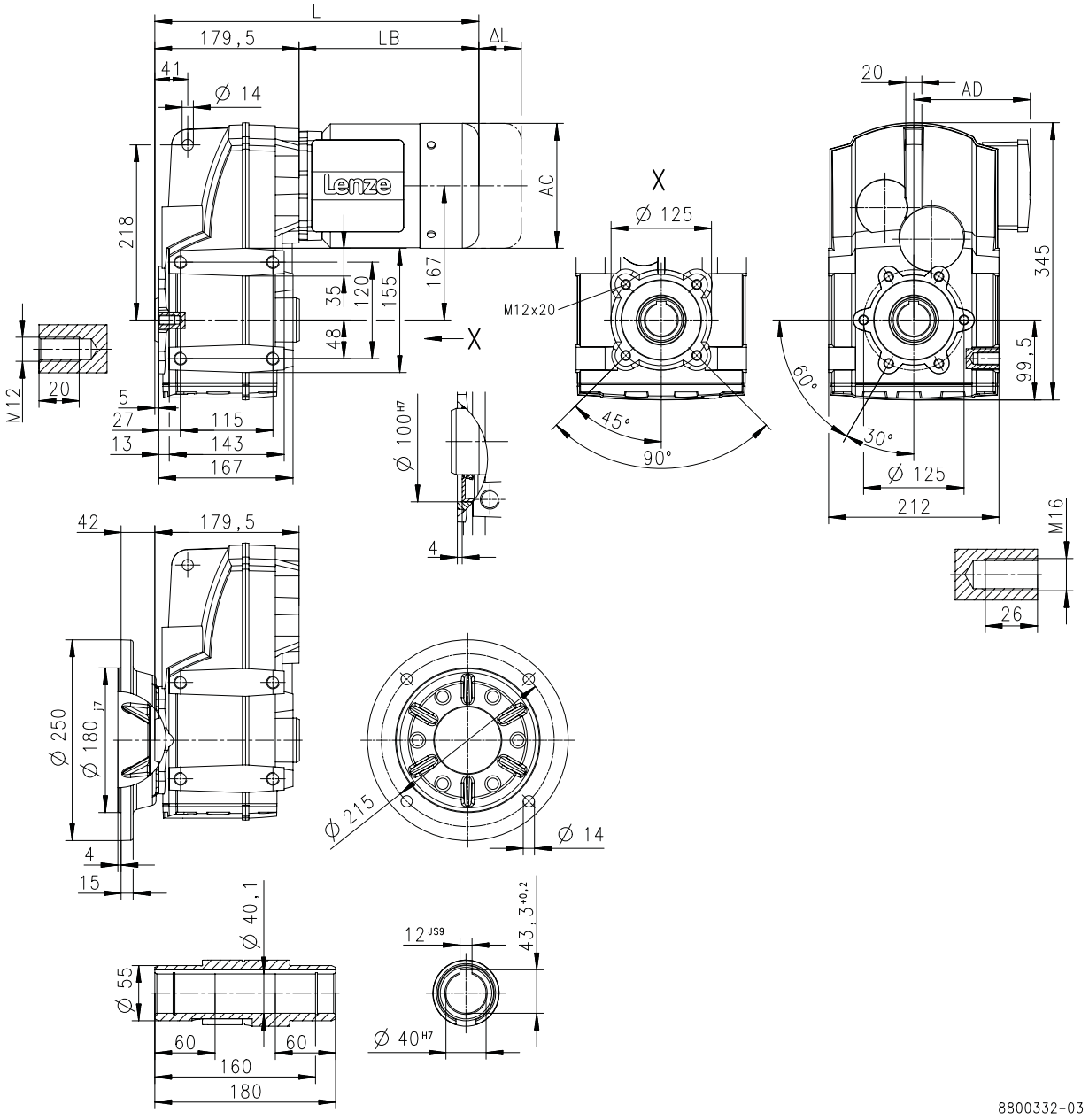
8800052-00

Motor series			MFXMA						
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**	**132-12 132-22 132-32**
Total length	L	mm	354	375	397	457	506	507	599
Motor length	LB	mm	183	204	226	286	335	336	428
Motor diameter	AC	mm	123	139	156	176	194	218	258
Motor/connection distance	AD	mm	109	118	132	137	147	158	187

Δ L ▸ Additional lengths 123

g500-S950, 2-/3-stage

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

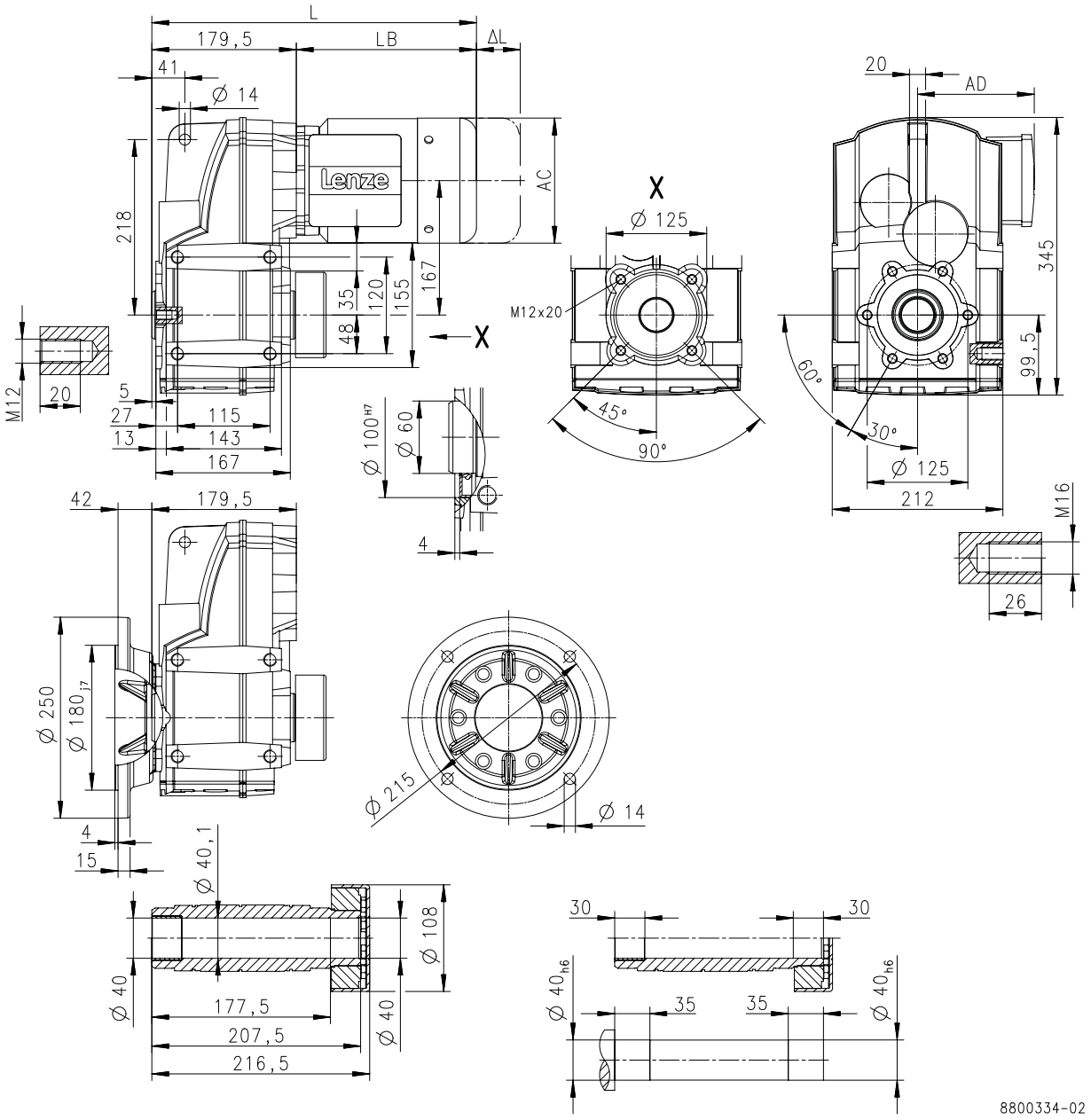


Motor series			MFXMA						
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**	**132-12 132-22 132-32**
Total length	L	mm	363	384	406	466	515	516	608
Motor length	LB	mm	183	204	226	286	335	336	428
Motor diameter	AC	mm	123	139	156	176	194	218	258
Motor/connection distance	AD	mm	109	118	132	137	147	158	187

Δ L ▸ Additional lengths 🕮 123

g500-S950, 2-/3-stage

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

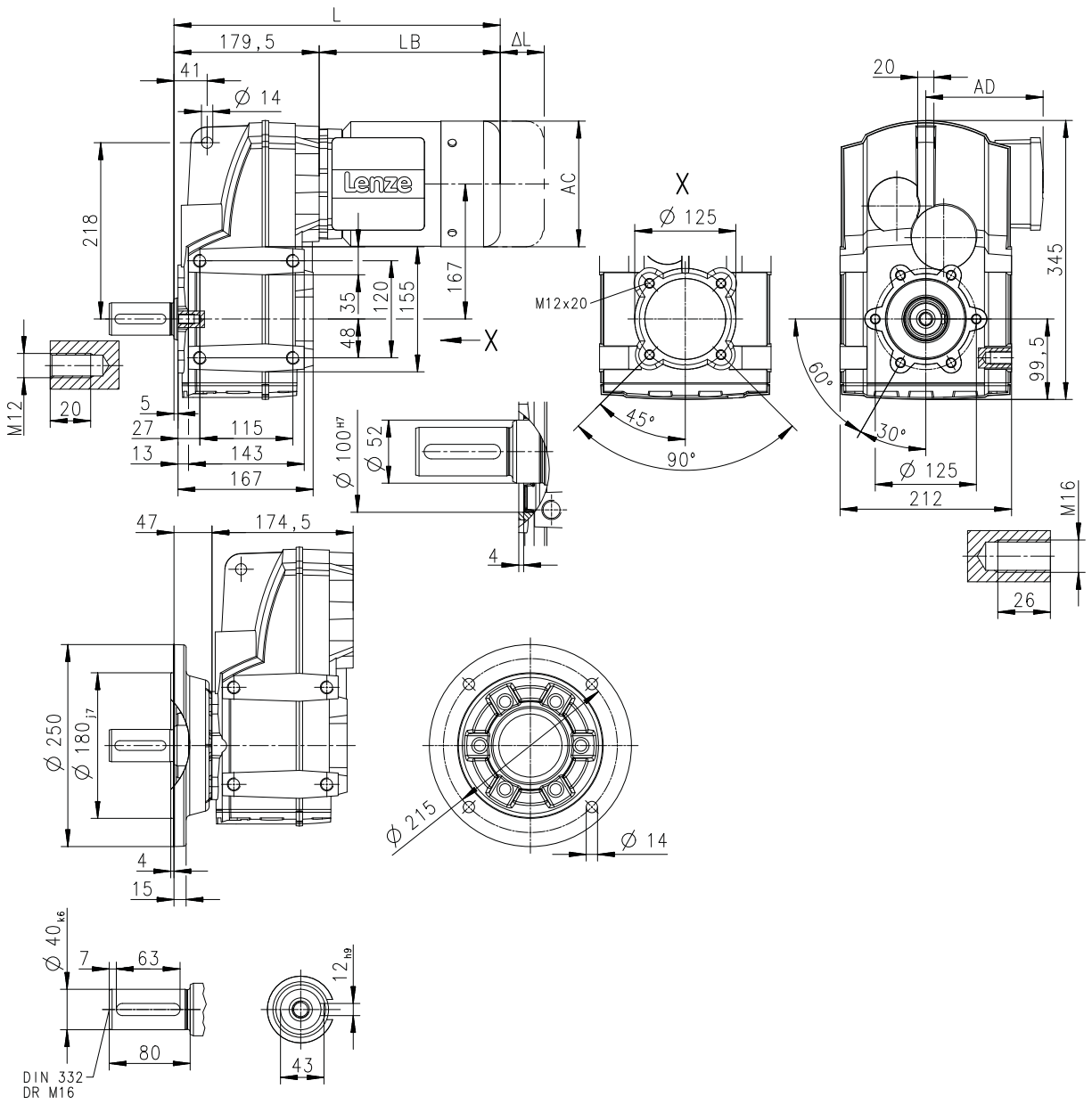


Motor series			MFXMA						
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**	**132-12 132-22 132-32**
Total length	L	mm	363	384	406	466	515	516	608
Motor length	LB	mm	183	204	226	286	335	336	428
Motor diameter	AC	mm	123	139	156	176	194	218	258
Motor/connection distance	AD	mm	109	118	132	137	147	158	187

Δ L ▸ Additional lengths 123

g500-S950, 2-/3-stage

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

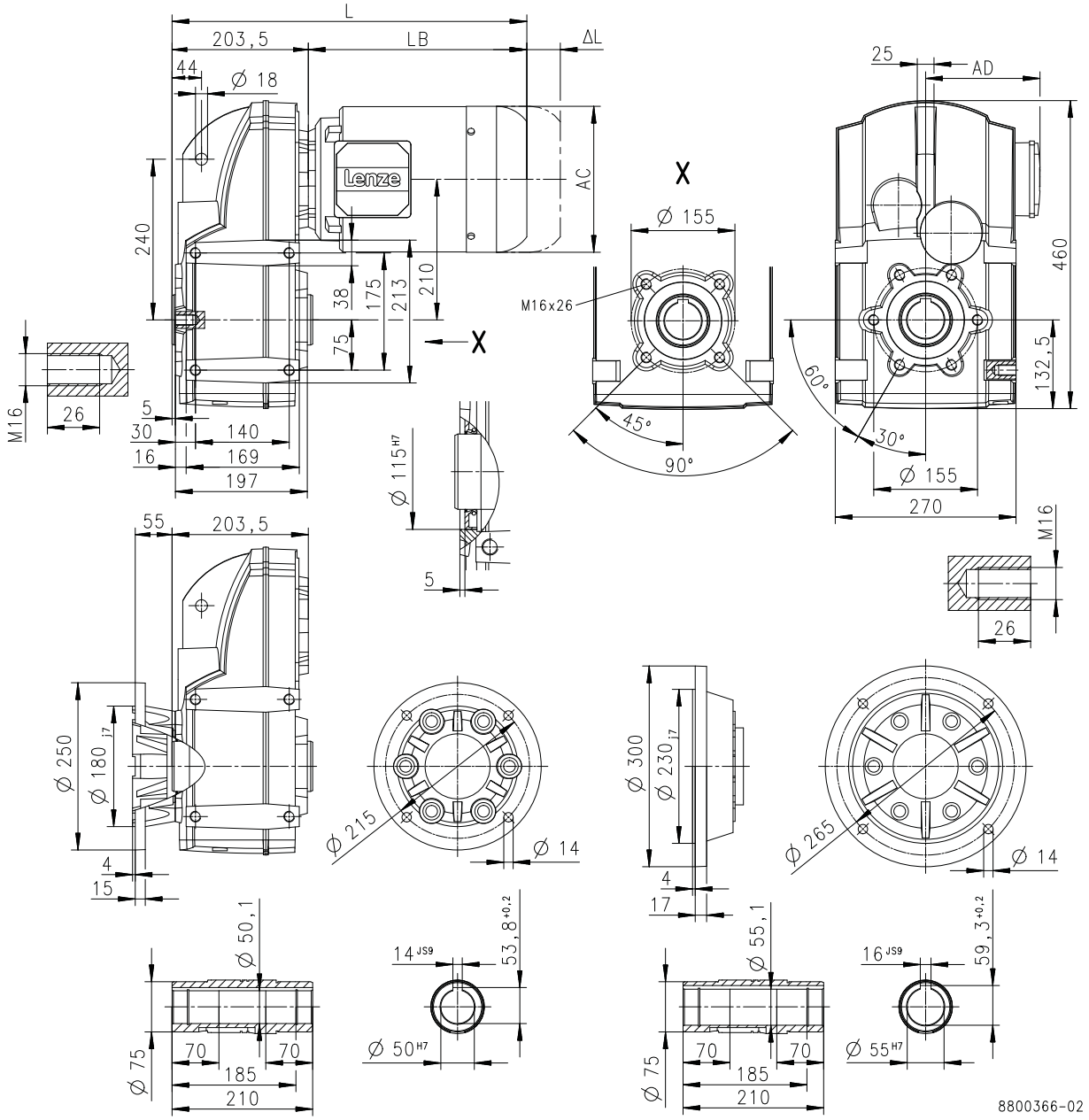


Motor series			MFXMA						
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**	**132-12 132-22 132-32**
Total length	L	mm	363	384	406	466	515	516	608
Motor length	LB	mm	183	204	226	286	335	336	428
Motor diameter	AC	mm	123	139	156	176	194	218	258
Motor/connection distance	AD	mm	109	118	132	137	147	158	187

Δ L ▸ Additional lengths 123

g500-S2100, 2-/3-stage

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

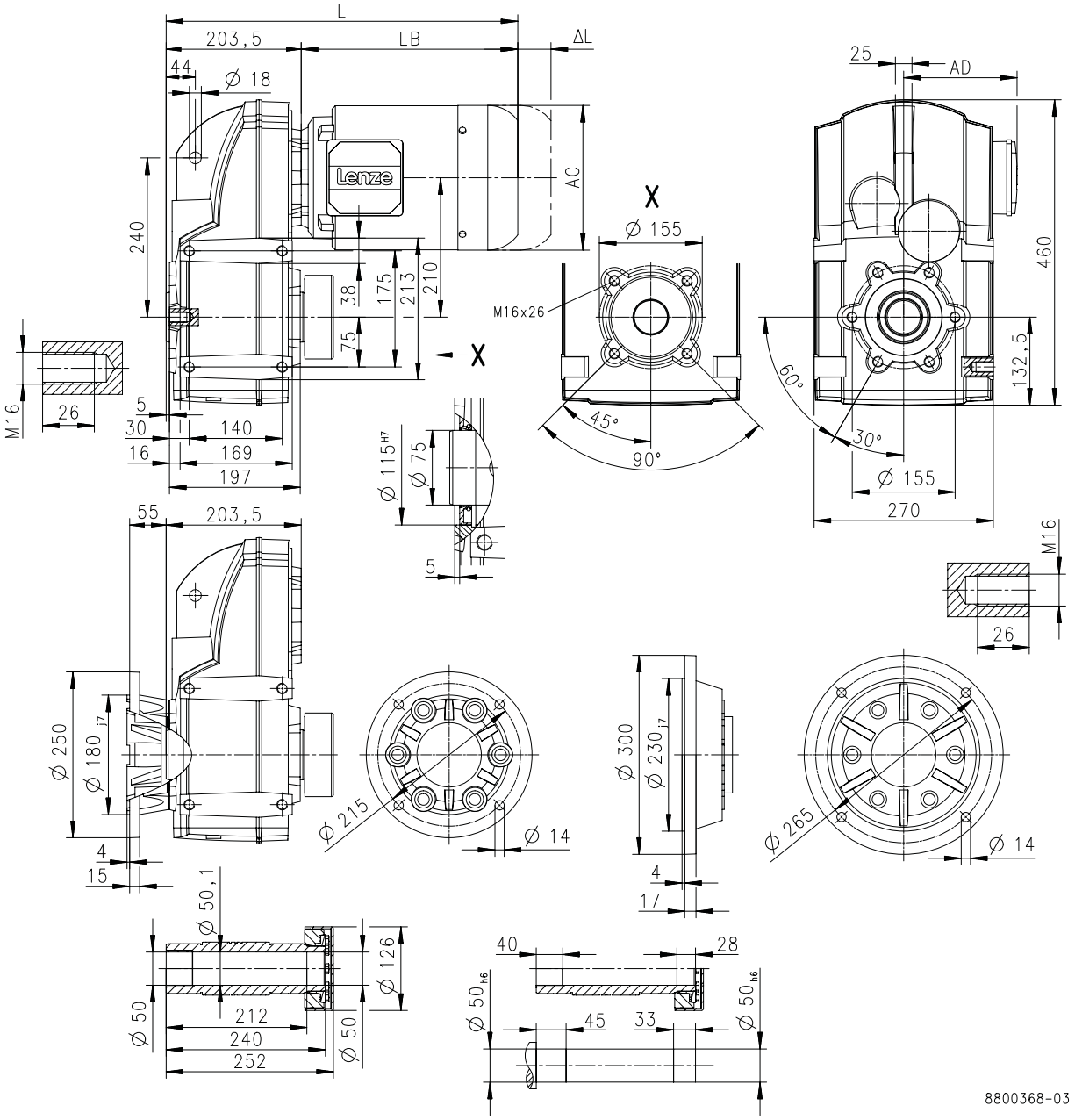


Motor series			MFXMA						
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**	**132-12 132-22 132-32**
Total length	L	mm	387	408	430	490	539	540	632
Motor length	LB	mm	183	204	226	286	335	336	428
Motor diameter	AC	mm	123	139	156	176	194	218	258
Motor/connection distance	AD	mm	109	118	132	137	147	158	187

Δ L ▸ Additional lengths 123

g500-S2100, 2-/3-stage

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

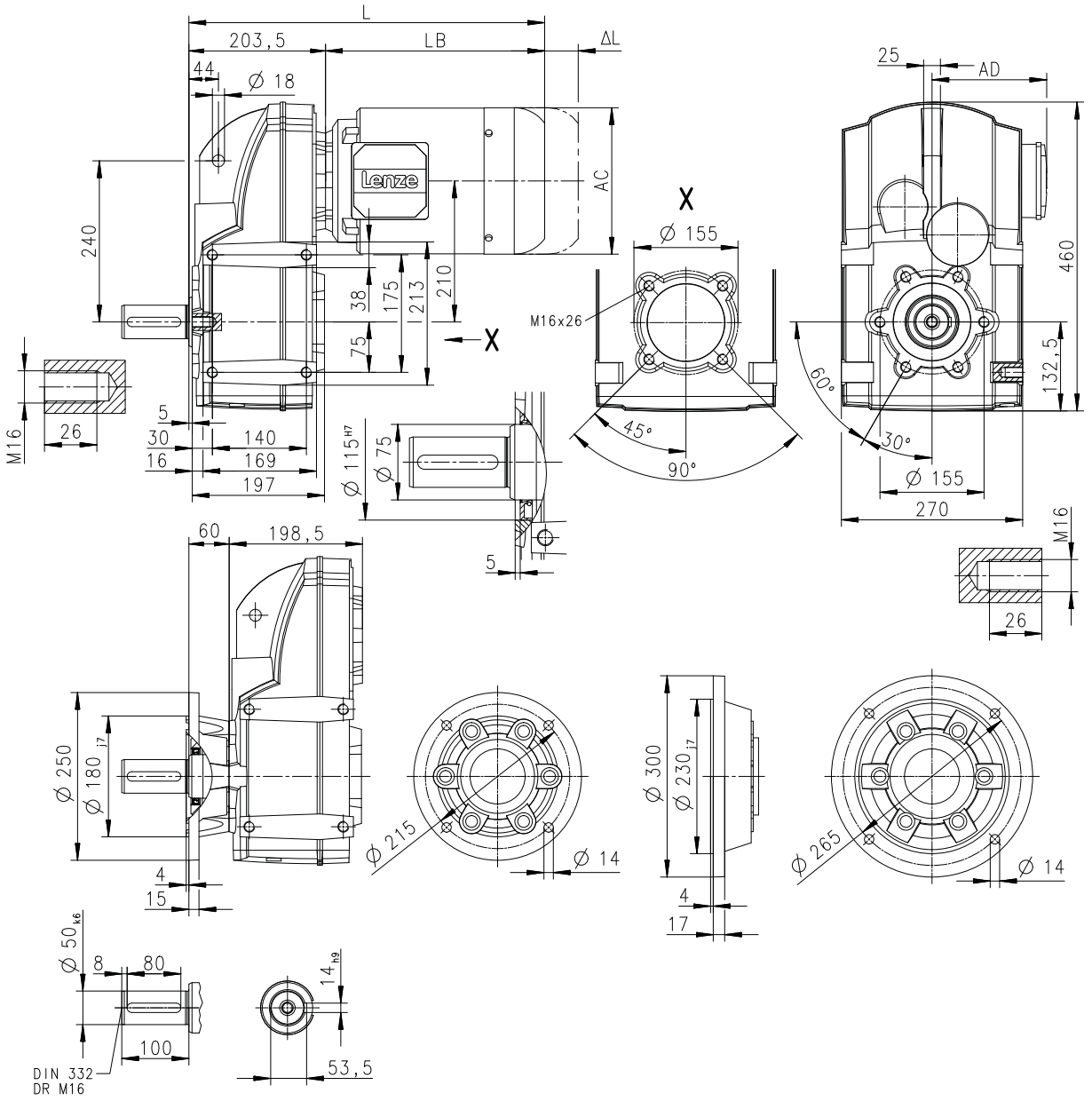


Motor series			MFXMA						
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**	**132-12 132-22 132-32**
Total length	L	mm	387	408	430	490	539	540	632
Motor length	LB	mm	183	204	226	286	335	336	428
Motor diameter	AC	mm	123	139	156	176	194	218	258
Motor/connection distance	AD	mm	109	118	132	137	147	158	187

Δ L ▸ Additional lengths 123

g500-S2100, 2-/3-stage

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

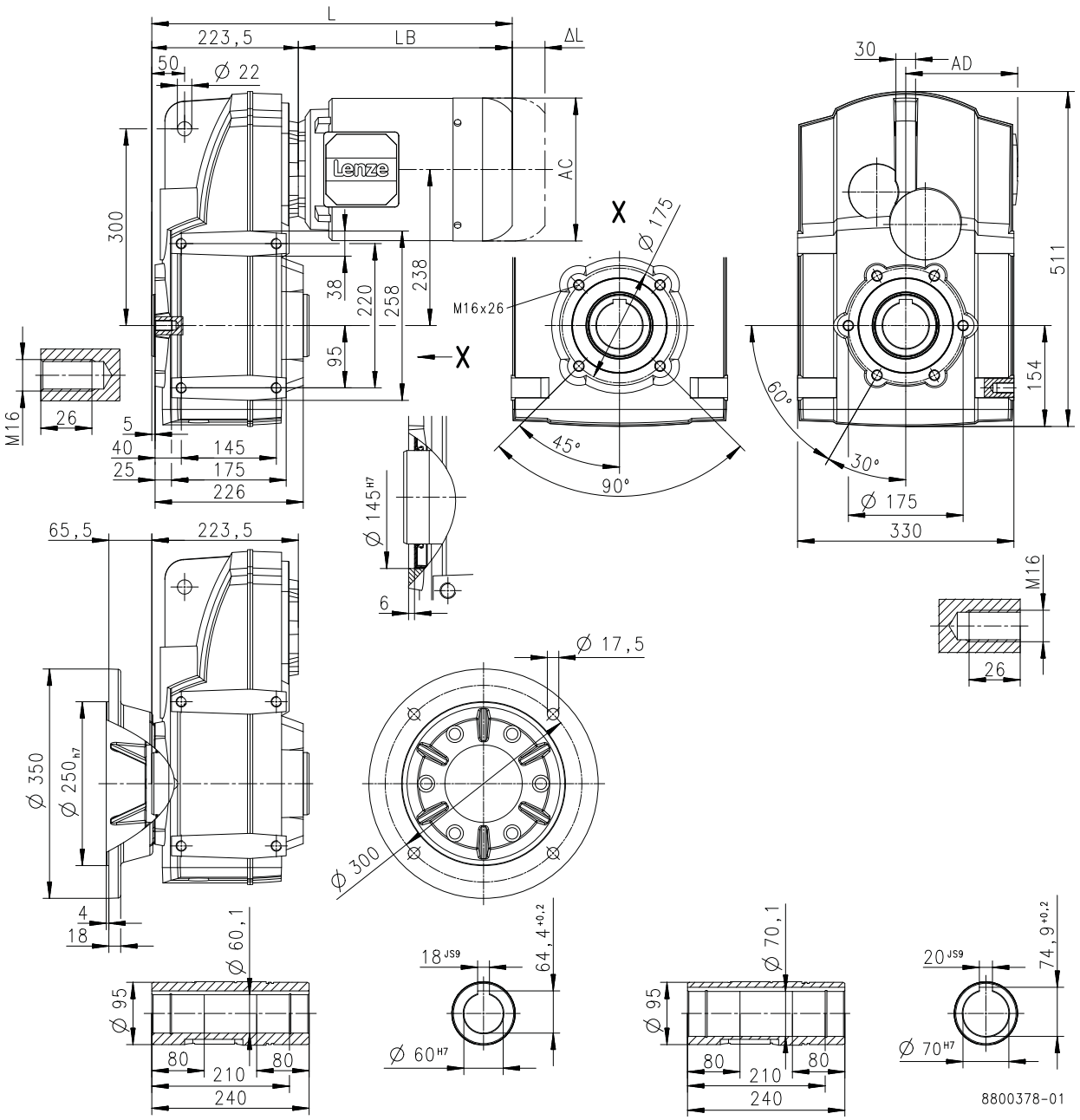


Motor series			MFXMA						
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**	**132-12 132-22 132-32**
Total length	L	mm	387	408	430	490	539	540	632
Motor length	LB	mm	183	204	226	286	335	336	428
Motor diameter	AC	mm	123	139	156	176	194	218	258
Motor/connection distance	AD	mm	109	118	132	137	147	158	187

Δ L ▸ Additional lengths 123

g500-S3100, 2-/3-stage

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

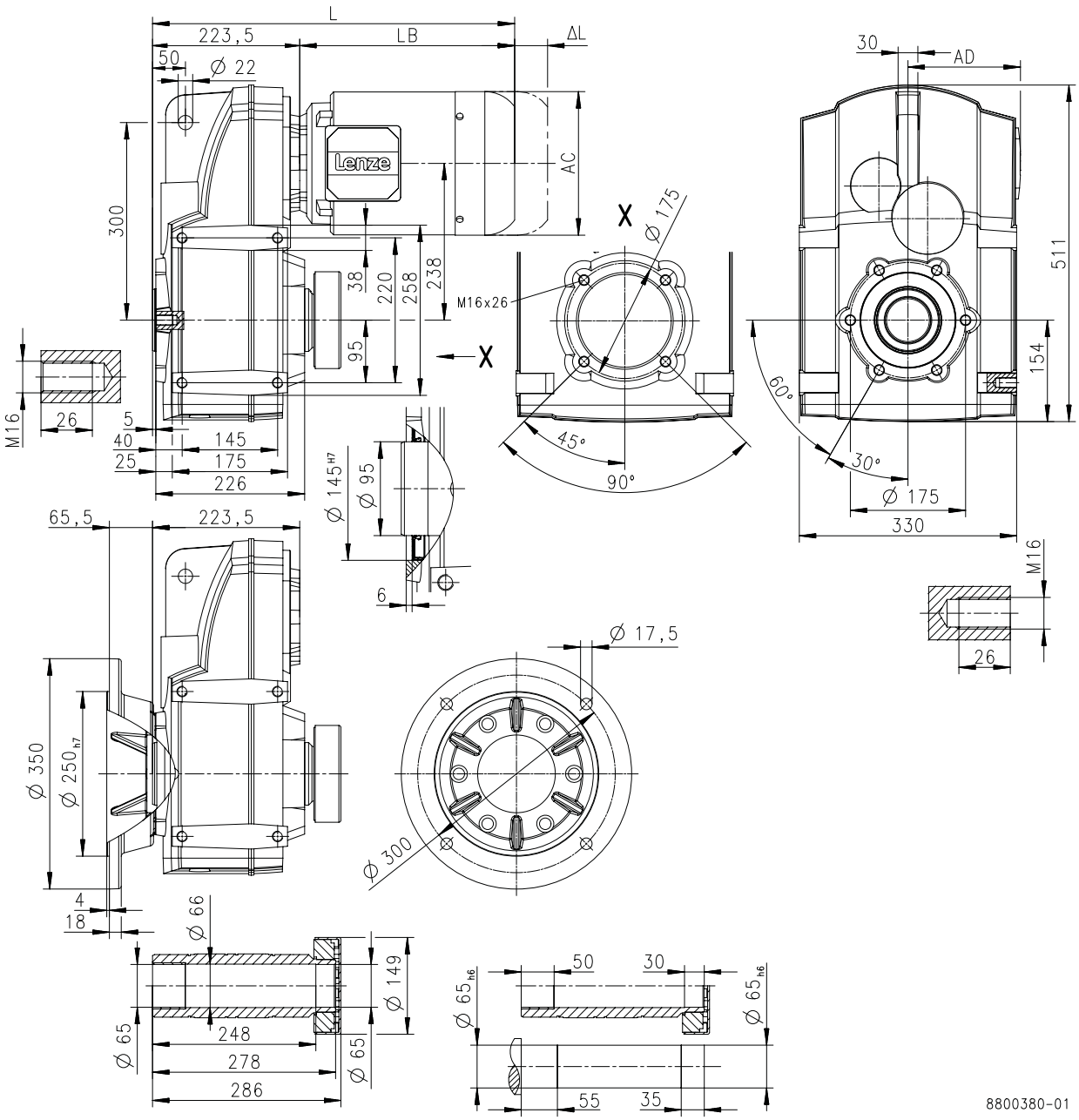


Motor series			MFXMA						
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**	**132-12 132-22 132-32**
Total length	L	mm	407	428	450	510	559	560	652
Motor length	LB	mm	183	204	226	286	335	336	428
Motor diameter	AC	mm	123	139	156	176	194	218	258
Motor/connection distance	AD	mm	109	118	132	137	147	158	187

Δ L ▸ Additional lengths 123

g500-S3100, 2-/3-stage

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

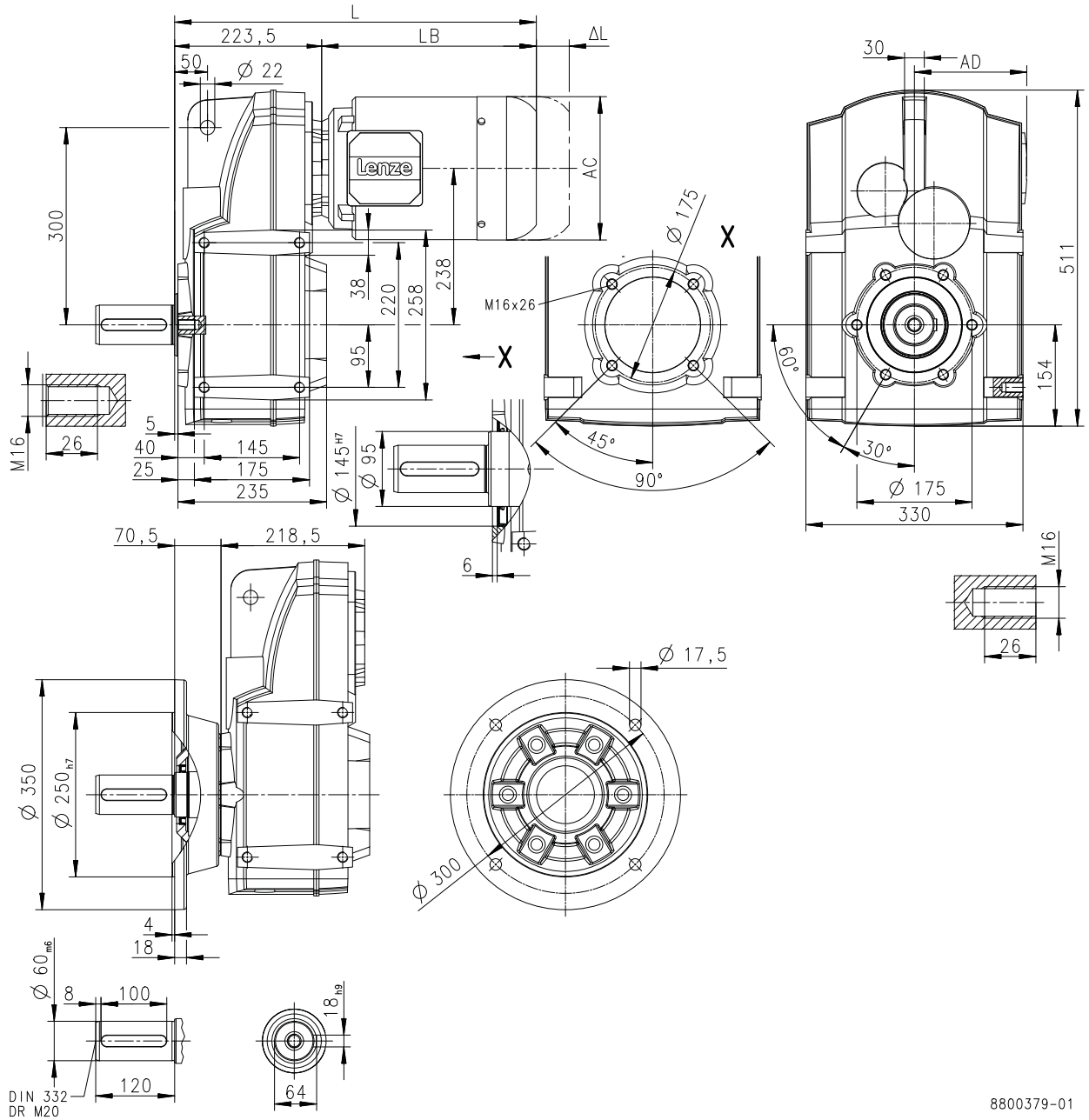


Motor series			MFXMA						
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**	**132-12 132-22 132-32**
Total length	L	mm	407	428	450	510	559	560	652
Motor length	LB	mm	183	204	226	286	335	336	428
Motor diameter	AC	mm	123	139	156	176	194	218	258
Motor/connection distance	AD	mm	109	118	132	137	147	158	187

Δ L ▸ Additional lengths 123

g500-S3100, 2-/3-stage

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

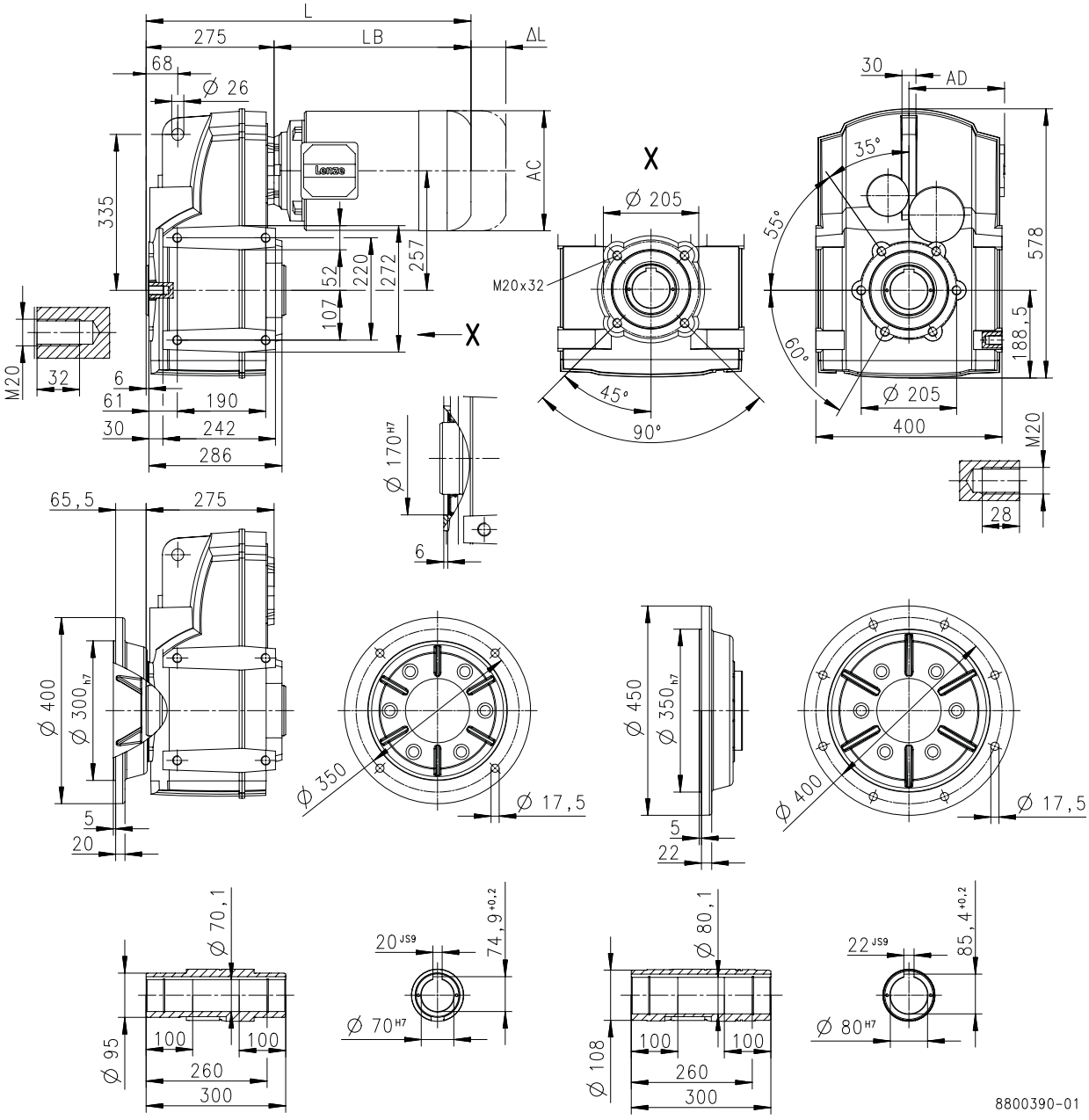


Motor series			MFXMA						
Motor			**063-32 063-42**	**071-32 071-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**	**132-12 132-22 132-32**
Total length	L	mm	407	428	450	510	559	560	652
Motor length	LB	mm	183	204	226	286	335	336	428
Motor diameter	AC	mm	123	139	156	176	194	218	258
Motor/connection distance	AD	mm	109	118	132	137	147	158	187

Δ L ▸ Additional lengths 123

g500-S4500, 2-/3-stage

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

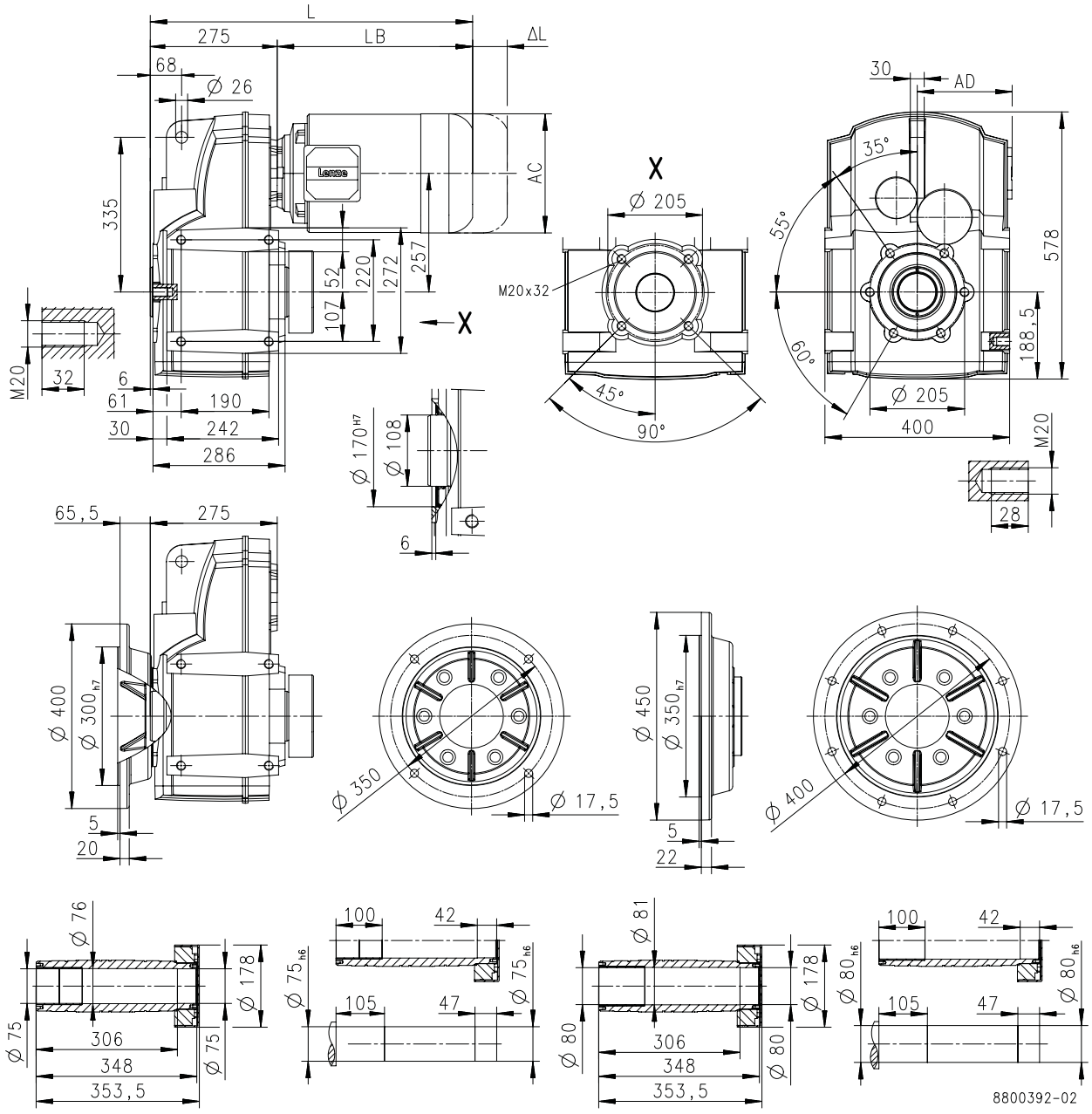


Motor series			MFXMA						
Motor			**071-32 071-42**	**063-32 063-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**	**132-12 132-22 132-32**
Total length	L	mm	479	458	501	561	610	611	703
Motor length	LB	mm	204	183	226	286	335	336	428
Motor diameter	AC	mm	139	123	156	176	194	218	258
Motor/connection distance	AD	mm	118	109	132	137	147	158	187

Δ L ▸ Additional lengths 123

g500-S4500, 2-/3-stage

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

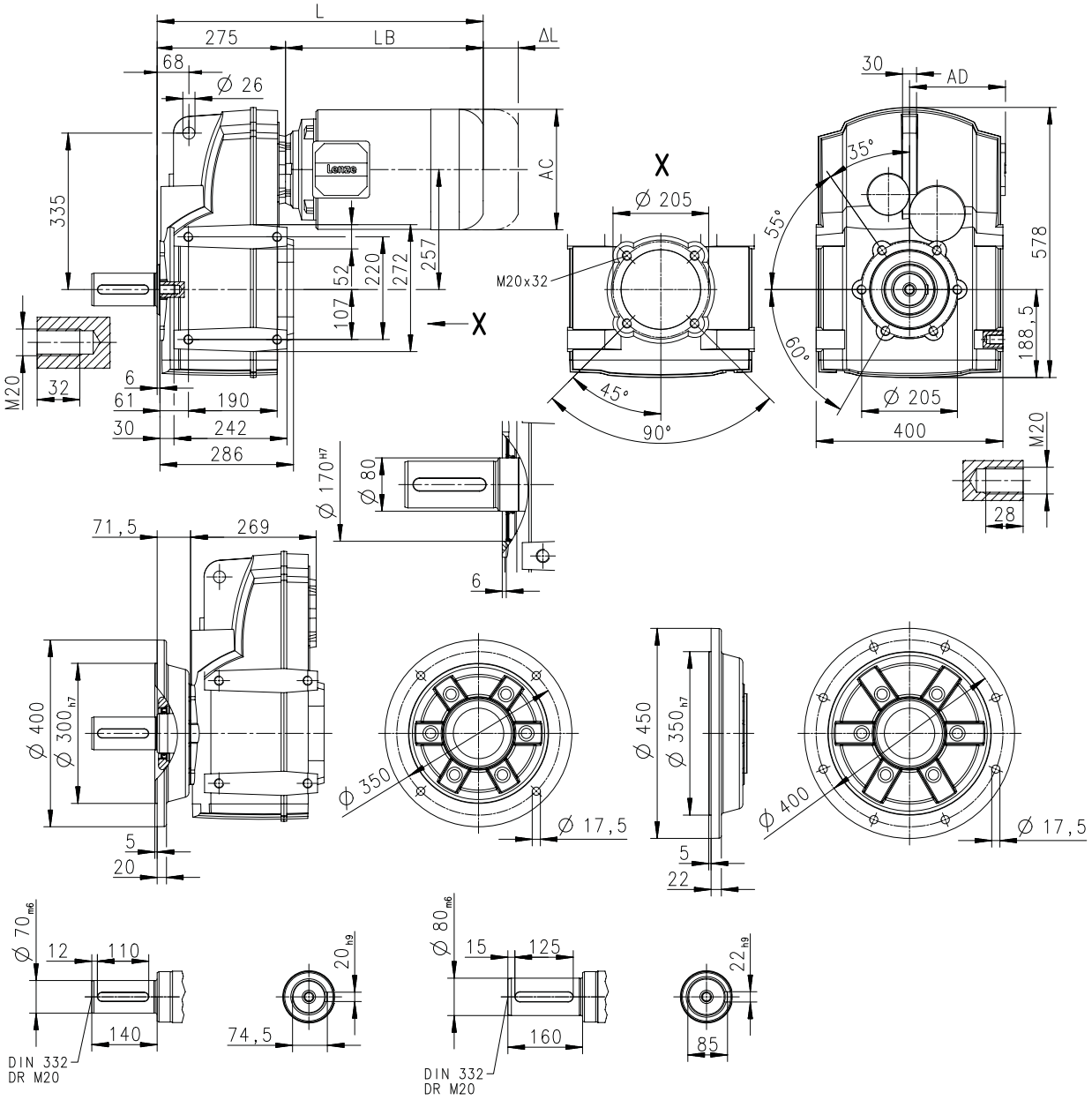


Motor series			MFXMA						
Motor			**071-32 071-42**	**063-32 063-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**	**132-12 132-22 132-32**
Total length	L	mm	479	458	501	561	610	611	703
Motor length	LB	mm	204	183	226	286	335	336	428
Motor diameter	AC	mm	139	123	156	176	194	218	258
Motor/connection distance	AD	mm	118	109	132	137	147	158	187

Δ L ▸ Additional lengths 123

g500-S4500, 2-/3-stage

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



Motor series			MFXMA						
Motor			**071-32 071-42**	**063-32 063-42**	**080-32 080-42**	**090-32**	**100-12 100-32**	**112-22**	**132-12 132-22 132-32**
Total length	L	mm	479	458	501	561	610	611	703
Motor length	LB	mm	204	183	226	286	335	336	428
Motor diameter	AC	mm	139	123	156	176	194	218	258
Motor/connection distance	AD	mm	118	109	132	137	147	158	187

Δ L ▸ Additional lengths 123

Gearbox with pre-stage

g500-S130, 3-stage

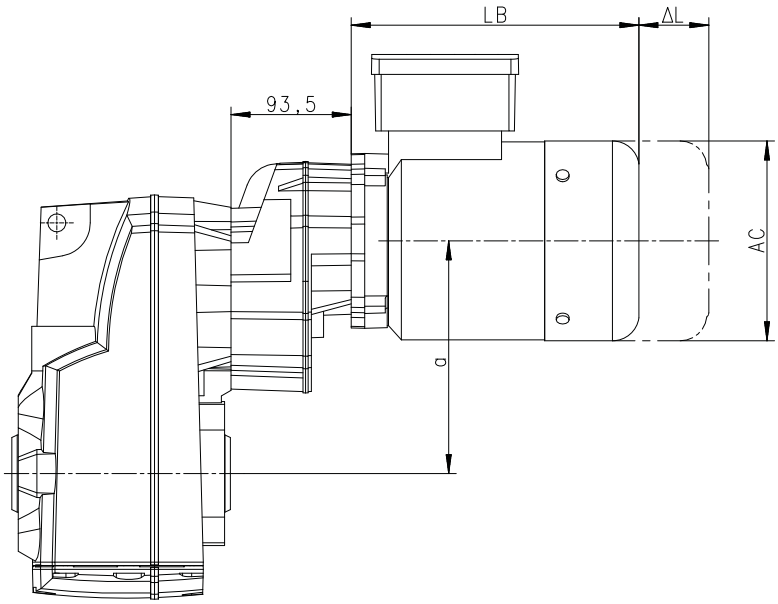
g500-S220 ... S4500, 4-stage

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

▸ Basic dimensions 📖 87

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

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



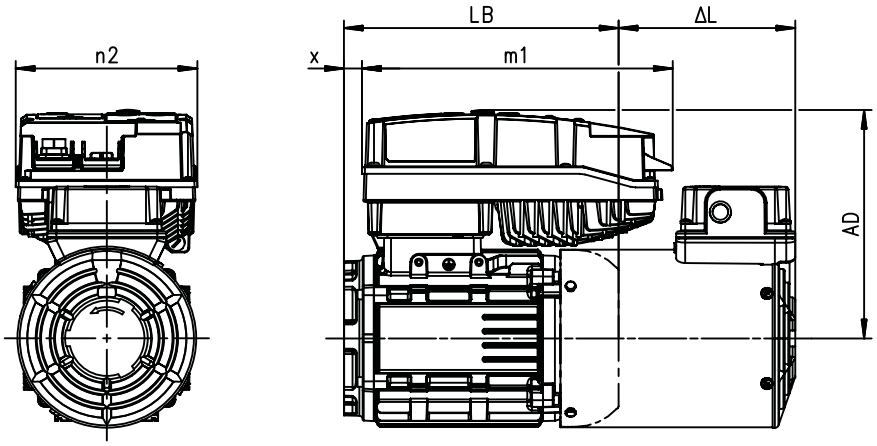
8800901-00

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

Integrated inverters

i550 motec

Supply voltage 3x 230/240 V



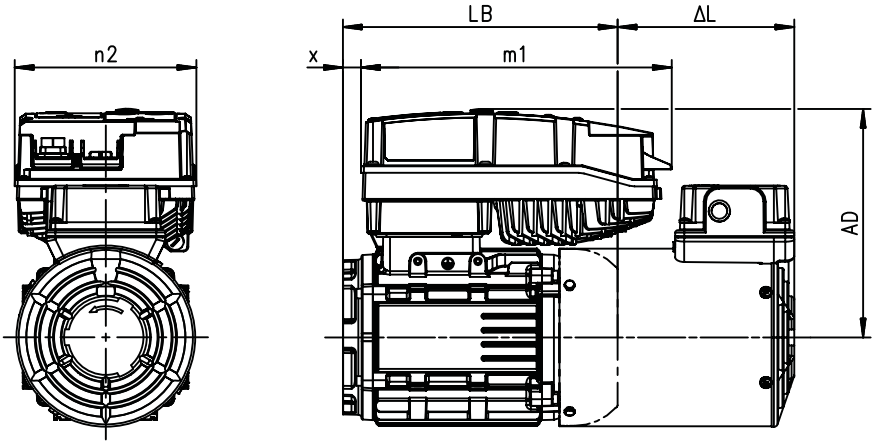
8801670-1

Rated frequency 120 Hz

Motor	Frequency inverter				
MF□MA□□	i550 motec				
		g_1	m_1	n_2	x
		mm	mm	mm	mm
063-32	i550-M0.55/230-3	180	265	159	3
063-42	i550-M0.75/230-3	180	265	159	3
071-32	i550-M1.1/230-3	188	265	159	12
071-42	i550-M1.5/230-3	188	265	159	12
080-32	i550-M2.2/230-3	215	265	159	19
080-42	i550-M3.0/230-3	215	265	159	19

i550 motec

Supply voltage 3x 400/480 V



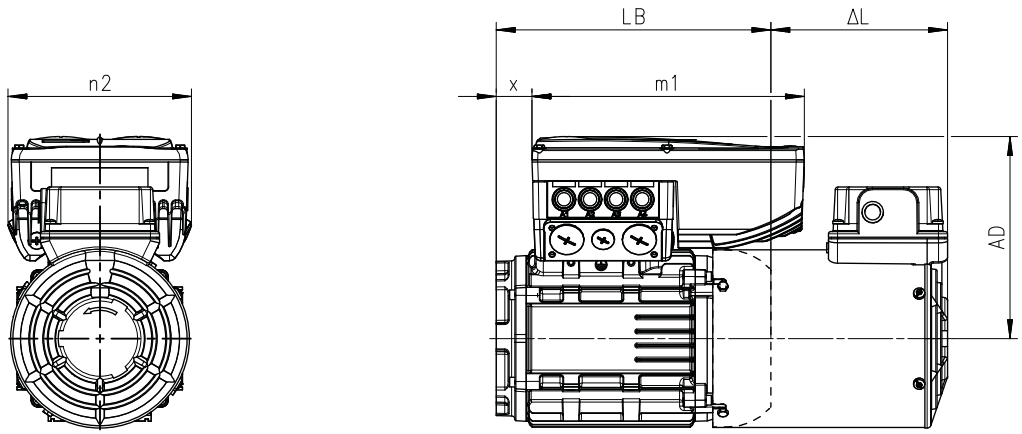
8801670-1

Rated frequency 120 Hz

Motor	Frequency inverter				
MF□MA□□	i550 motec				
		g_1	m_1	n_2	x
		mm	mm	mm	mm
063-32	i550-M0.55/400-3	180	265	159	3
063-42	i550-M0.75/400-3	180	265	159	3
071-32	i550-M1.1/400-3	188	265	159	12
071-42	i550-M1.5/400-3	188	265	159	12
080-32	i550-M2.2/400-3	197	265	159	19
080-42	i550-M3.0/400-3	215	265	159	19
090-32	i550-M4.0/400-3	228	265	159	23
100-12	i550-M5.5/400-3	228	265	159	30
100-32	i550-M7.5/400-3	256	359	211	30
112-22	i550-M11/400-3	256	359	211	32
132-12	i550-M15/400-3	337	443	280	2
132-22	i550-M18/400-3	337	443	280	2

8400 motec

Supply voltage 3x 400/480 V



8801071_00

Rated frequency 120 Hz

Motor	Frequency inverter				
MF☐MA☐☐	8400 motec				
		g_1	m_1	n_2	x
		mm	mm	mm	mm
063-32	E84DVB☐5514S☐☐☐2☐	154	240	161	23.5
063-42	E84DVB☐7514S☐☐☐2☐	154	240	161	23.5
071-32	E84DVB☐1124S☐☐☐2☐	163	240	161	29.5
071-42	E84DVB☐1524S☐☐☐2☐	163	240	161	29.5
080-32	E84DVB☐2224S☐☐☐2☐	201	260	176	31.5
080-42	E84DVB☐3024S☐☐☐2☐	201	260	176	31.5
090-32	E84DVB☐4024S☐☐☐2☐	261	325	195	23.5
100-12	E84DVB☐5524S☐☐☐2☐	272	325	195	30
100-32	E84DVB☐7524S☐☐☐2☐	272	325	195	30

Maße LB und Δ L ▸ Basic dimensions 📖 87

Additional lengths

Self-ventilated motors

Motor			MF☐MA☐☐						
			063-32	071-32	080-32	090-32	100-12	112-22	132-12
			063-42	071-42	080-42		100-32		132-22
									132-32
Without feedback/brake	Δ L	mm	0	0	0	0	0	0	0
Brake	Δ L	[mm]	40	52	73	68	76	90	80
Feedback	Δ L	[mm]	56	51	111	87	81	80	103
Brake + feedback	Δ L	[mm]	103	96	111	105	101	120	125

Forced ventilated motors

Motor			MF☐MA☐☐						
			063-32	071-32	080-32	090-32	100-12	112-22	132-12
			063-42	071-42	080-42		100-32		132-22
									132-32
Without feedback/brake	Δ L	[mm]	128	128	128	128	109	102	115
Brake	Δ L	[mm]	170	165	183	181	170	183	202
Feedback	Δ L	[mm]	128	128	128	128	109	183	202
Brake + feedback	Δ L	[mm]	170	165	183	181	170	183	202

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 📖 60

Observe ▸ Additional weights 📖 124!

Additional weights

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

Gearboxes

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

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

Motors

Motor			MF☐MA☐☐						
			063-32	071-32	080-32	090-32	100-12	112-22	132-12
			063-42	071-42	080-42		100-32		132--22
									132-32
Brake									
06	m	kg	0.9	0.9					
08	m	kg		1.5	1.5	1.5			
10	m	kg			2.6	2.6	2.6		
12	m	kg					4.2	4.2	
14	m	kg						5.8	5.8
16	m	kg							8.7
Manual release lever	m	kg	0.1	0.1	0.2	0.2	0.2	0.4	0.5
Blower	m	kg	2.0	2.1	2.3	2.7	3.0	3.1	4.2

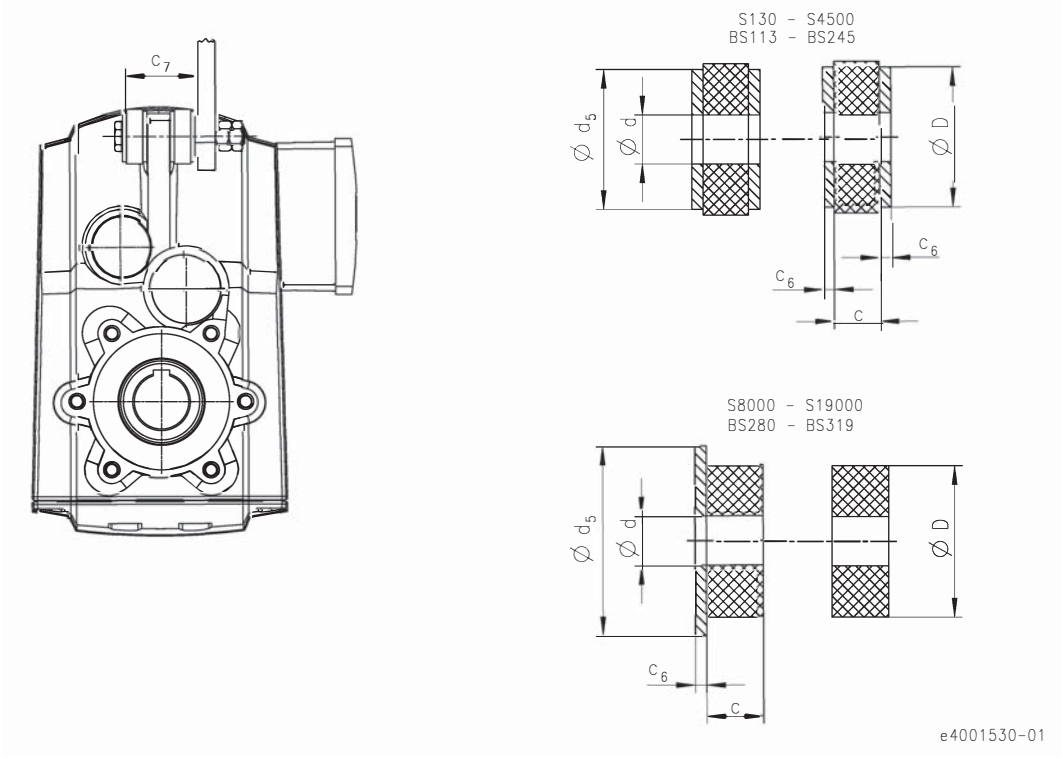
Product extensions

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

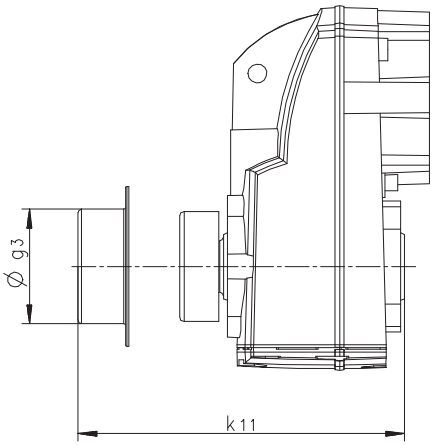


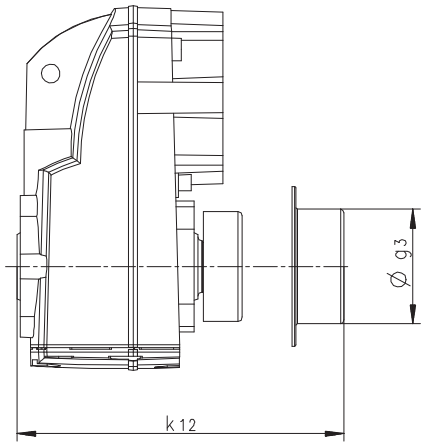
Gearboxes	Dimensions					
	d	D	d_5	c	c_6	c_7
	mm	mm	mm	mm	mm	mm
g500-S130	11.0	30.0	30	12.0	2.50	45.0
g500-S220	11.0	30.0	30	12.0	2.50	45.0
g500-S400	13.0	40,0	37	12.0	3.00	49.0
g500-S660	13.0	40,0	37	12.0	3.00	52.0
g500-S950	13.0	40,0	37	12.0	3.00	56.0
g500-S2100	17.0	50.0	50	24.0	3.00	85.0
g500-S3100	21.0	60.0	60	24.0	4.00	94.0
g500-S4500	26.0	72.0	72	24.0	5.00	98.0

Shaft covers

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

Shrink disc cover





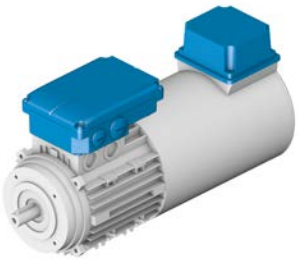
Gearboxes	Dimensions		
	G_3	k_{11}	k_{12}
	mm	mm	mm
g500-S130	63.0	132	132
g500-S220	76.0	152	152
g500-S400	90.0	182	182
g500-S660	90.0	200	202
g500-S950	110	219	219
g500-S2100	127	252	252
g500-S3100	155	290	290
g500-S4500	188	355	357

Motor connection

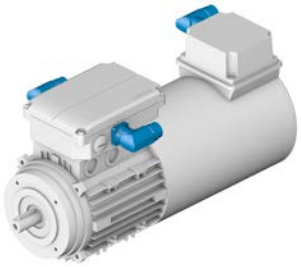
Connection options

The motor are equipped with a terminal box by default.

Alternatively, different connectors can be selected for fast commissioning or maintenance.



Terminal box with cable gland



Terminal box with ICN connector

HAN connector

Frequency inverter operation

For frequency inverter operation, the base frequencies were set to the following rated voltages:

Rated frequency	Motor	Power	Rated voltage	Circuit
Hz		kW	V	
120	MF☐MA☐☐063-32 ... MF☐MA☐☐080-32	0.55 ... 3.0	200	Δ
	MF☐MA☐☐080-42 ... MF☐MA☐☐132-32	4.0 ... 22.0	350	Y

Assignment of the terminal boxes

Assignment of the terminal boxes with one temperature monitor

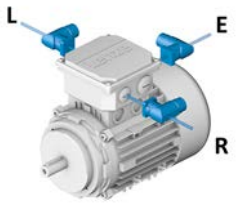
Motor	MF□MA□□						
	063-32	071-32	080-32	090-32	100-12	112-22	132-12
	063-42	071-42	080-42		100-32		132-22
							132-32
Without product extensions							
Terminal box	KK1	KK1	KK1	KK1	KK1	KK1	KK1
ICN connector							
Power	ICN-M23	ICN-M23	ICN-M23	ICN-M23	ICN-M23	-	-
Terminal box	KK1	KK1	KK1	KK1	KK1	-	-
Product extension - brake							
Terminal box	KK2	KK2	KK2	KK2	KK2	KK2	KK3
ICN connector							
Power/brake	ICN-M23	ICN-M23	ICN-M23	ICN-M23	ICN-M23	-	-
Terminal box	KK2	KK2	KK2	KK2	KK2	-	-
Product extension - feedback							
Terminal box	KK2	KK2	KK2	KK2	KK2	KK2	KK3
ICN connector							
Power/brake	ICN-M23	ICN-M23	ICN-M23	ICN-M23	ICN-M23	-	-
Feedback	ICN-M23	ICN-M23	ICN-M23	ICN-M23	ICN-M23	-	-
Terminal box	KK2	KK2	KK2	KK2	KK2	-	-
Product extension - brake + feedback							
Terminal box	KK3	KK3	KK3	KK3	KK3	KK3	KK3
ICN connector							
Power/brake	ICN-M23	ICN-M23	ICN-M23	ICN-M23	ICN-M23	-	-
Feedback	ICN-M23	ICN-M23	ICN-M23	ICN-M23	ICN-M23	ICN-M23	ICN-M23
Terminal box	KK2	KK2	KK2	KK2	KK2	KK2	KK3
Product extension - blower							
Terminal box	●	●	●	●	●	●	●
Power connector	ICN-M17	ICN-M17	ICN-M17	ICN-M17	ICN-M17	ICN-M17	ICN-M17

Assignment of the terminal boxes with two temperature monitors

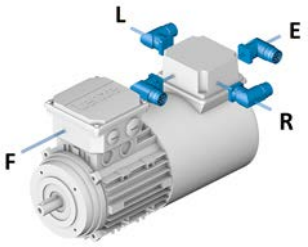
Motor	MF□MA□□						
	063-32	071-32	080-32	090-32	100-12	112-22	132-12
	063-42	071-42	080-42		100-32		132-22
							132-32
Without product extensions							
Terminal box	KK2	KK2	KK2	KK2	KK2	KK2	KK3
Product extension - brake							
Terminal box	KK2	KK2	KK2	KK2	KK2	KK2	KK3
Product extension - feedback							
Terminal box	KK2	KK2	KK2	KK2	KK2	KK2	KK3
Product extension - brake + feedback							
Terminal box	KK3	KK3	KK3	KK3	KK3	KK3	KK3

Positions of the connectors

Positions on the motor terminal box

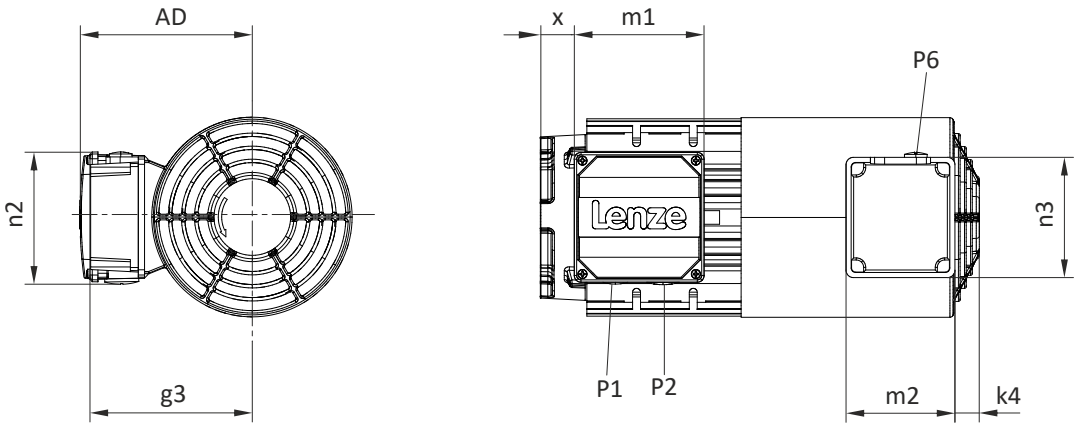


Positions on the blower terminal box



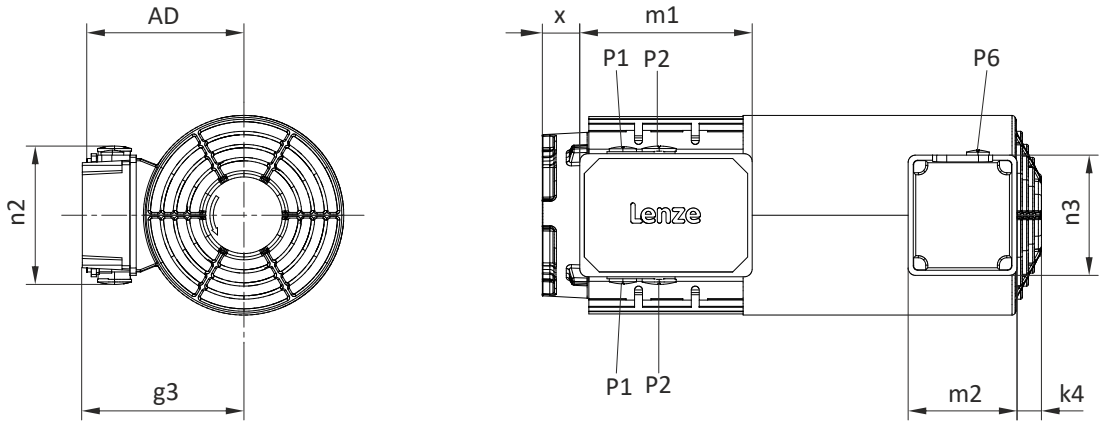
Terminal box	Positions	Note
Motor terminal box KK1		
Cable glands	L, E or R	-
ICN connector: Power	L, E or R	-
Motor terminal box KK2		
Cable glands	L and R	-
ICN connector: Power/brake	L or R	-
ICN connector: Feedback	L or R	The feedback connector is mounted on the terminal box via a plate and is located opposite the power connector.
Motor terminal box KK3		
Cable glands	L and R	-
ICN connector: Feedback	L or R	The feedback connector is mounted on the terminal box via a plate.
Blower terminal box		
Cable glands	L, E or R	-
ICN connector	L, E or R	--

Dimensions of KK1 power terminal box



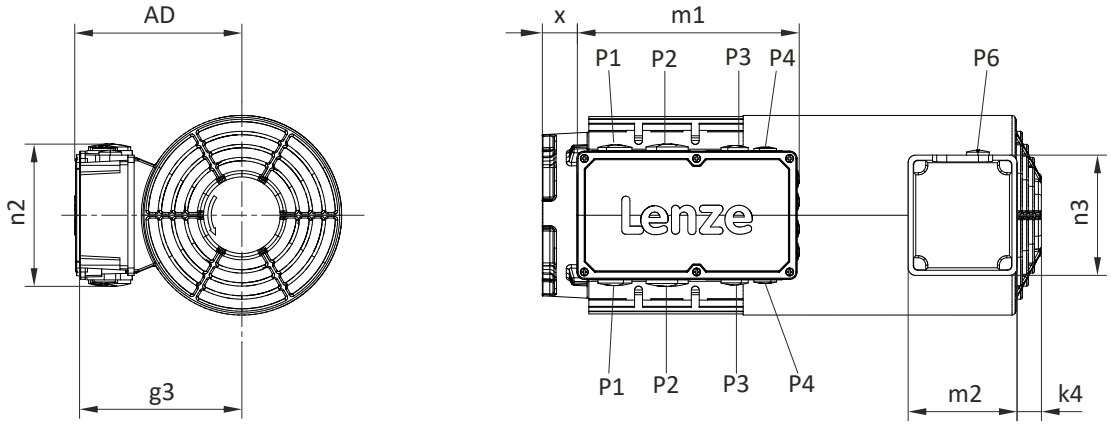
Motor		MF□MA□□						
		063-32	071-32	080-32	090-32	100-12	112-22	132-12
		063-42	071-42	080-42		100-32		132-22
								132-32
Motor terminal box								
AD	mm	100	109	150	157	166	176	195
x	mm	17	20	15	30	31	39	58
m1	mm	75	75	115	115	115	115	122
n2	mm	75	75	115	115	115	115	122
P1	mm	M16x1.5	M16x1.5	M20x1.5	M20x1.5	M20x1.5	M20x1.5	M32x1.5
P2	mm	M20x1.5	M20x1.5	M25x1.5	M25x1.5	M25x1.5	M25x1.5	M32x1.5
Blower terminal box								
g3	mm	115	122	133	141	150	162	182
k4	mm	0	0	0	0	0	0	0
m2	mm	105	105	105	105	105	105	105
n3	mm	105	105	105	105	105	105	105
P6	mm	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5

Dimensions of KK2 power terminal box



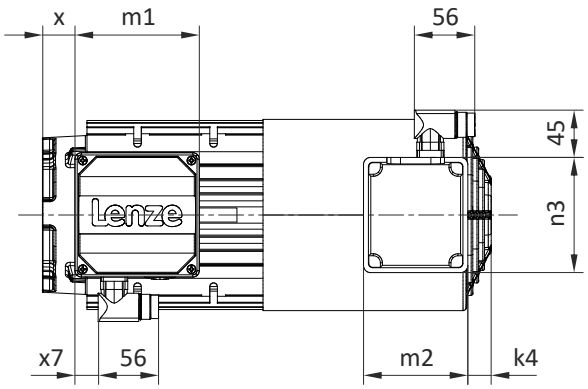
Motor		MF□MA□□					
		063-32	071-32	080-32	090-32	100-12	112-22
		063-42	071-42	080-42		100-32	
Motor terminal box							
AD	mm	107	118	132	137	147	158
x	mm	9	11	18	33	34	42
m1	mm	136	136	152	152	152	152
n2	mm	103	103	121	121	121	121
P1	mm	M16x1.5	M16x1.5	M20x1.5	M20x1.5	M20x1.5	M20x1.5
P2	mm	M20x1.5	M20x1.5	M25x1.5	M25x1.5	M25x1.5	M25x1.5
Blower terminal box							
g3	mm	115	122	133	141	150	162
k4	mm	0	0	0	0	0	0
m2	mm	105	105	105	105	105	105
n3	mm	105	105	105	105	105	105
P6	mm	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5

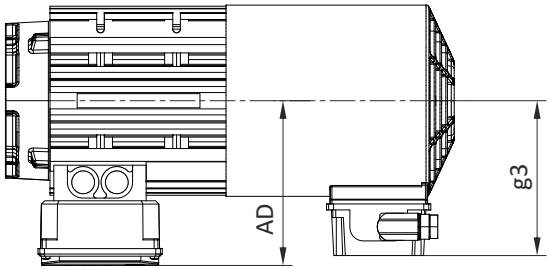
Dimensions of KK3 power terminal box



Motor		MF☐MA☐☐						
		063-32	071-32	080-32	090-32	100-12	112-22	132-12
		063-42	071-42	080-42		100-32		132-22
								132-32
Motor terminal box								
AD	mm	124	133	142	147	158	168	187
x	mm	-2	1	16	31	32	40	63
m1	mm	195	195	195	195	195	195	195
n2	mm	125	125	125	125	125	125	125
P1	mm	M25x1.5	M25x1.5	M25x1.5	M25x1.5	M25x1.5	M25x1.5	M25x1.5
P2	mm	M32x1.5	M32x1.5	M32x1.5	M32x1.5	M32x1.5	M32x1.5	M32x1.5
P3	mm	M20x1.5	M20x1.5	M20x1.5	M20x1.5	M20x1.5	M20x1.5	M20x1.5
P4	mm	M16x1.5	M16x1.5	M16x1.5	M16x1.5	M16x1.5	M16x1.5	M16x1.5
Blower terminal box								
g3	mm	115	122	133	141	150	162	182
k4	mm	0	0	0	0	0	0	0
m2	mm	105	105	105	105	105	105	105
n3	mm	105	105	105	105	105	105	105
P6	mm	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5	1x M16x1.5

Dimensions of KK1 power terminal box with ICN connector





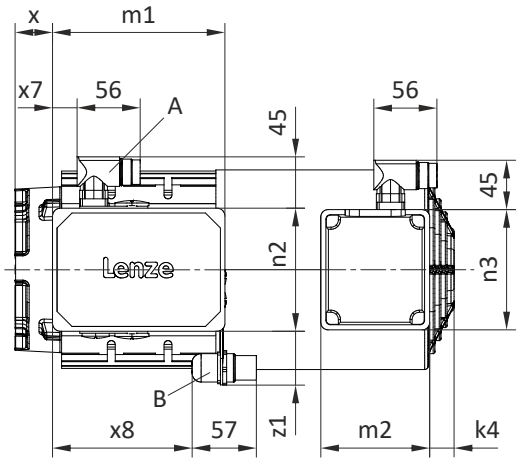
Motor		MF☐MA☐☐				
		063-32	071-32	080-32	090-32	100-12
		063-42	071-42	080-42		100-32
Motor terminal box						
AD	mm	100	109	150	157	166
x	mm	17	20	15	30	31
m1	mm	75	75	115	115	115
n2	mm	75	75	115	115	115
x7	mm	16	16	23	23	23
Blower terminal box						
g3	mm	115	122	133	141	150
k4	mm	0	0	0	0	0
m2	mm	105	105	105	105	105
n3	mm	105	105	105	105	105

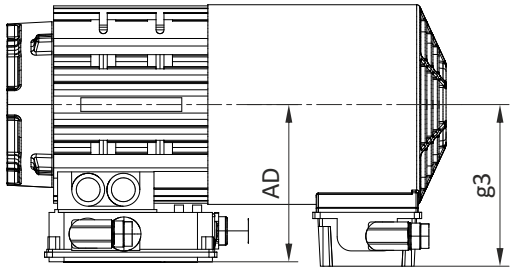
Dimensions of KK2/KK3 power terminal box with ICN connector

Power/brake connection: Position A.

Feedback connection: Position B.

For the motors MF☐MA☐☐112-22 ... 132-32 only the connector for the feedback connection is available! The connection for power/brake is made via cable glands.





Motor		MF☐MA☐☐						
		063-32	071-32	080-32	090-32	100-12	112-22	132-12
		063-42	071-42	080-42		100-32		132-22
								132-32
Motor terminal box		KK2	KK2	KK2	KK2	KK2	KK2	KK3
AD	mm	107	118	132	137	147	158	187
x	mm	9	11	18	33	34	42	63
m1	mm	136	136	152	152	152	152	195
n2	mm	103	103	121	121	121	121	125
x7	mm	16	16	23	23	23	-	-
x8	mm	109	109	125	125	125	125	166
z1, max	mm	43	43	41	41	41	41	71
Blower terminal box								
g3	mm	115	122	133	141	150	162	182
k4	mm	0	0	0	0	0	0	0
m2	mm	105	105	105	105	105	105	105
n3	mm	105	105	105	105	105	105	105

Assignment of the connectors HAN

The power, brake and temperature monitoring can be connected in the HAN connector.

The designs HAN 10E or HAN modular with two power modules (16 A or 40 A) are available.

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

An additional rectifier can be connected with HAN modular.

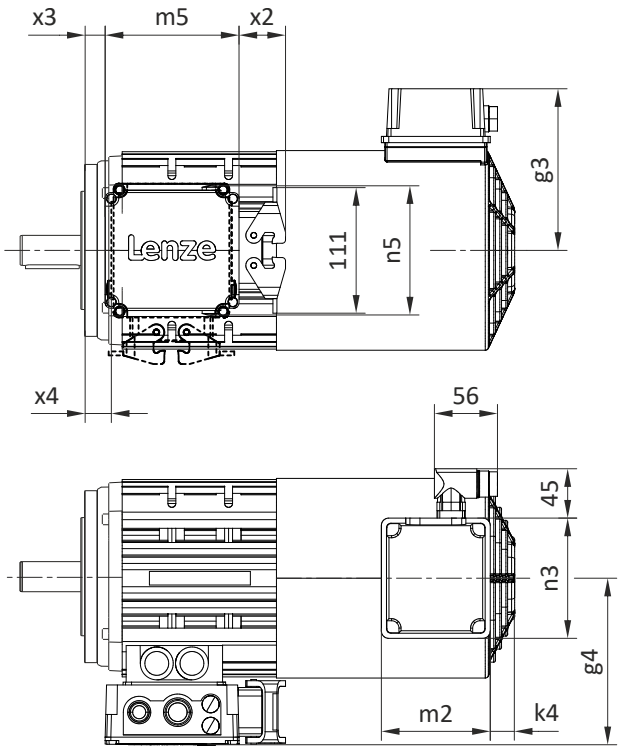
Feedback in conjunction with the HAN plug connector or the integrated i550 motec and 8400 motec is only available with the IG128-24V-H add-on incremental encoder (with 0.5 m cable and M12 plug connector).

Motor	**MF☐MA☐☐**						
	063-32	**071-32**	**080-32**	**090-32**	**100-12**	**112-22**	**132-12**
	063-42	**071-42**	**080-42**		**100-32**		**132-22**
HAN 10E connector							
Connection: • Power • Brake • Temperature monitoring TK0 or PT1000	•	•	•	•	•	-	-
HAN modular connector							
Connection: • Power • Brake • Temperature monitoring TK0 or PT1000	•	•	•	•	•	-	•

Positions of the connections

HAN connector positions

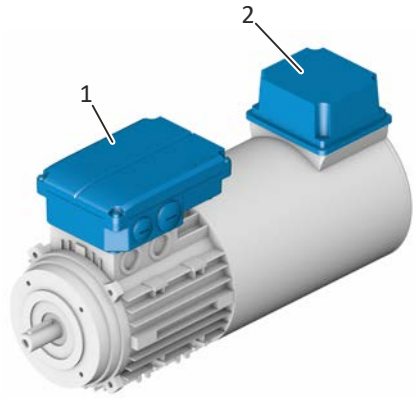
Dimensions of HAN connector



Motor		MF☐MA☐☐						
		063-32	071-32	080-32	090-32	100-12	112-22	132-12
		063-42	071-42	080-42		100-32		132-22
HAN connector Power/brake								
g4	mm	120	129	138	143	157	-	233
x3	mm	11	16	18	22	29	-	48
x4	mm	12	17	26	30	37	-	18
x2	mm	41	41	41	41	41	-	47
m5	mm	118	118	118	118	118	-	120
n5	mm	102	102	102	102	102	-	180
Blower terminal box								
g3	mm	115	122	133	141	150	-	182
k4	mm	0	0	0	0	0	-	0
m2	mm	105	105	105	105	105	-	105
n3	mm	105	105	105	105	105	-	105

Connection via terminal box

Position of the connections

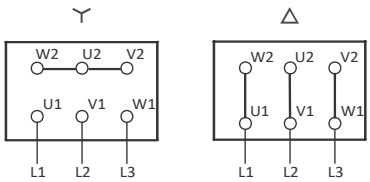


Position	Meaning	Note
1	Power connection Brake connection PE connection Feedback connection Connection of temperature monitoring	For the terminal box "KK1", the position of the cable connections "L", "R" or "E" must be specified.
2	Blower connection	When ordering, specify the mounting position of the 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 circuit

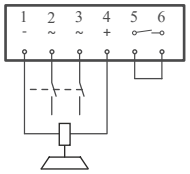


Terminal box, power		
Contact	**Name**	**Meaning**
PE	PE	PE conductor
U1	L1	Motor winding phase
V1	L2	
W1	L3	

DC brake connection

Contact	Name	Meaning
BD1	+	Brake +
BD2	-	Brake -

Connection of brake AC



Connection via rectifiers		
Contact	**Name**	**Meaning**
~	L1	Mains
~	N	
+	+	Holding brake (factory-wired)
-	-	
		Switching contact - DC switching

Feedback connection

Resolver		
Contact	**Name**	**Meaning**
B1	+Ref	Transformer windings (reference windings)
B2	-Ref	
B3	+VCC ETS	Power supply: electronic nameplate (Only for model with electronic nameplate ETS)
B4	+COS	Cosine stator winding
B5	-COS	
B6	+SIN	Sine stator winding
B7	-SIN	
B8		Not assigned

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

Incremental encoder SinCos absolute value encoder with Hiperface©		
Contact	**Designation**	**Meaning**
B1	+ UB	Supply +
B2	GND	Mass
B3	A	Track A/+COS
B4	A^-	Track A inverse/-COS
B5	B	Track B/+SIN
B6	B^-	Track B inverse/-SIN
B7	Z	Zero track/+RS485
B8	Z^-	Zero track inverse/-RS485
B10		Incremental encoder shield

Connection of temperature monitoring

Contact	Name	Meaning
TB1		Thermal contact TCO
TB2		
1TP1		PTC thermistor 150
1TP2		
2TP1		PTC thermistor 130
2TP2		
R1	+	Thermal detectors PT1000 +
R2	-	Thermal detectors PT1000 -

Blower connection

1-phase		
Contact	**Name**	**Meaning**
PE	PE	PE conductor
U1	L1	Mains connection
U2	N	

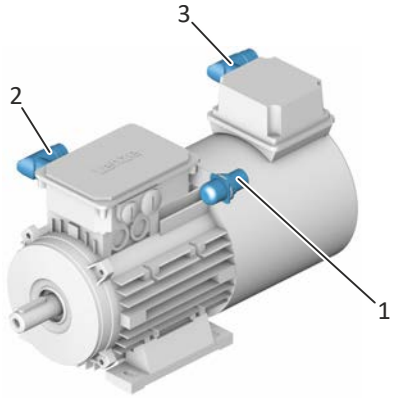
three-phase			
Contact	**Name**	**Meaning**	**Note**
PE	PE	PE conductor	
U1	L1	Mains connection	Pay attention to the direction of rotation! Swap L1 and L2 if the direction of rotation is incorrect.
V1	L2		
W1	L3		

Connection via connector

Preassembled Lenze system cables are available for fast and error-free connection of Lenze motors to Lenze inverters.

Details and data can be found in the "Accessories" brochure on the Internet.

Position of the connections

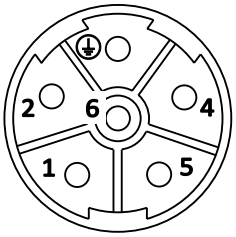


Position	Meaning	Note
1	ICN-M23 connector, 6-pole • Power connection • Brake connection • PE connection	When ordering, specify the mounting position of the connector: • Shown here: "T" • Opposite "L
	In addition to connector ICN-M23, 8-pole: • Connection of TKO temperature monitoring	Caution: Max. brake supply voltage ≤ 230 V
2	ICN-M23 connector • Feedback connection • Connection of PT1000 temperature sensor	The mounting position of the feedback connector is located on the opposite side from the power connection (position L/R).
3	ICN-M17 connector • 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 and brake connection

ICN-M23 connector assignment

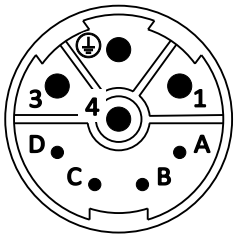
6-pole



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

ICN-M23 connector assignment

8-pole

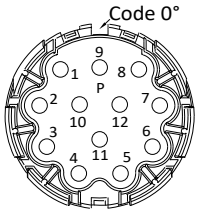


M23 8-pole		
Contact	**Name**	**Meaning**
1	U	Power phase U
PE	PE	PE conductor
3	W	Power phase W
4	V	Power phase V
A	TB1	Temperature monitoring: TCO
B	TB2	Temperature monitoring: TCO
C	BD1 / BA1	Brake DC +/AC ≤ 230 V
D	BD2 / BA2	Brake DC-/AC ≤ 230V

Feedback and temperature monitoring connection

ICN-M23 connector assignment

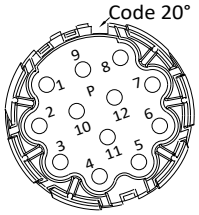
Resolver



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

ICN-M23 connector assignment

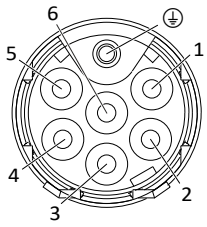
Incremental and SinCos absolute value encoder Hiperface©



ICN M23 for encoders		
Contact	**Name**	**Meaning**
1	B	Track B / +SIN
2	A^-	Track A inverse /-COS
3	A	Track A / + COS
4	+UB	Supply +
5	GND	Mass
6	Z^-	Zero track inverse /-RS485
7	Z	Zero track / + RS485
8		Not assigned
9	B^-	Track B inverse/-SIN
10		Not assigned
11	+	Temperature monitoring: PT1000
12	-	Temperature monitoring: PT1000

Blower

Pin assignment ICN-M17

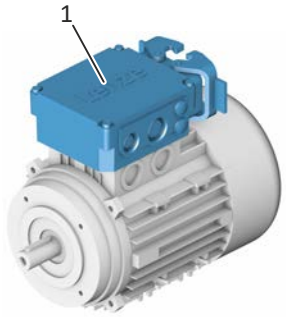


M17 for blowers 1-ph		
Contact	**Name**	**Meaning**
PE	PE	PE conductor
1	U1	Fan
2	U2	Fan
3		Not assigned
4		Not assigned
5		Not assigned
6		Not assigned

M17 for blowers 3-ph		
Contact	**Name**	**Meaning**
PE	PE	PE conductor
1	U	Power phase U
2		Not assigned
3	V	Power phase V
4		Not assigned
5		Not assigned
6	W	Power phase W

Connection via HAN connector

Position of the connections



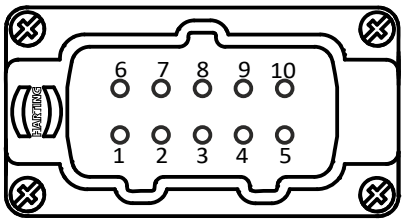
Note	Meaning
1	Power connection Brake connection PE connection Connection of temperature monitoring
	Additionally for HAN-Modular: • Rectifier connection

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



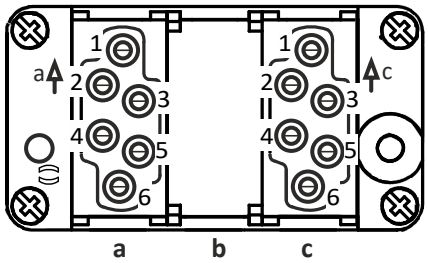
Bridge arrangement in the HAN 10E mating connector		
Contact	**Name**	**Meaning**
6-7-8	Y	Connection
1-6 2-7 3-8	Δ	

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	

HAN modular connector

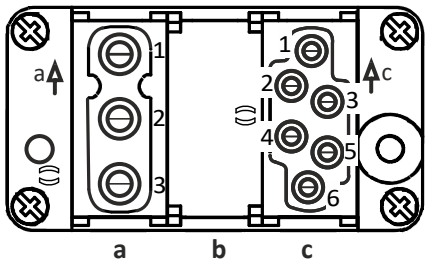
The motor connection is specified in the terminal box.

HAN modular 16 A pin assignment



HAN modular 16 A			
Module	**Contact**	**Name**	**Meaning**
a	1	U1	Motor winding phase
	2	V1	
	3	W1	
b			Blank module
c	1	TKO/+PT1000	Temperature monitoring
	2	+/AC	Brake
	3	-/AC	
	4	Schaltkontakt	Rectifier
	5		
	6	TKO/-PT1000	Temperature monitoring

HAN modular 40 A pin assignment

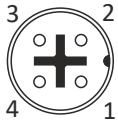


HAN modular 40 A			
Module	**Contact**	**Name**	**Meaning**
a	1	U1	Motor winding phase
	2	V1	
	3	W1	
b			Blank module
c	1	TKO/+PT1000	Temperature monitoring
	2	+/AC	Brake
	3	-/AC	
	4	Schaltkontakt	Rectifier
	5		
	6	TKO/-PT1000	Temperature monitoring

Connection via M12 connector

M12 pin assignment

Incr. encoder IG128-24V-H



ICN M12		
Contact	**Name**	**Meaning**
1	+UB	Supply +
2	B	Track B
3	GND	Mass
4	A	Track A

Spring-applied 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. The spring-applied brakes can be used as holding brakes, application brakes or safety brakes.

Overview

Versions	IP54/55 protection	
	Standard	LongLife
Controllers	DC supply AC supply via rectifier in the terminal box	
Supply voltages		
DC voltage	DC 24 V ±10 % DC 103 V ±10 % DC 127 V ±10 % DC 180 V ±10 % DC 205 V ±10 % DC 215 V ±10 % AC 460 V ±10 %	
Mains voltage	AC 230 V ±10 % AC 400 V ±10 % AC 460 V ±10 %	
Switching cycles		
Repetitive	1×10^6	10×10^6
Reversing	1×10^6	15×10^6
Friction lining	Low-wear	
Options	Manual release UL/CSA-approved	

Information on project planning

Important notes

⚠ DANGER!

Malfunction of the brake

Even small amounts of oil or grease on the friction surfaces reduce the braking torque considerably.

Possible consequences: Death or severe injuries

► Always keep the friction surfaces free of oil and grease.

Connection

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.

Connection of the spring-applied brake

The spring-applied brakes can be ordered for connection to AC or DC voltage.

Connection to AC voltage

- A rectifier is required to convert the AC voltage into a DC voltage.
- The rectifier is included in the scope of supply. It is mounted in the terminal box of the motor.
- Available rectifiers:
  - Half-wave rectifier, 6-pole
  - Bridge rectifier, 6-pole
  - Bridge/half-wave rectifier, 6-pole

    With the holding current reduction or overexcitation option

Connection to DC voltage

- No rectifier is required.
- A freewheeling diode or a spark suppressor must be used to prevent high induction peaks.

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:

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

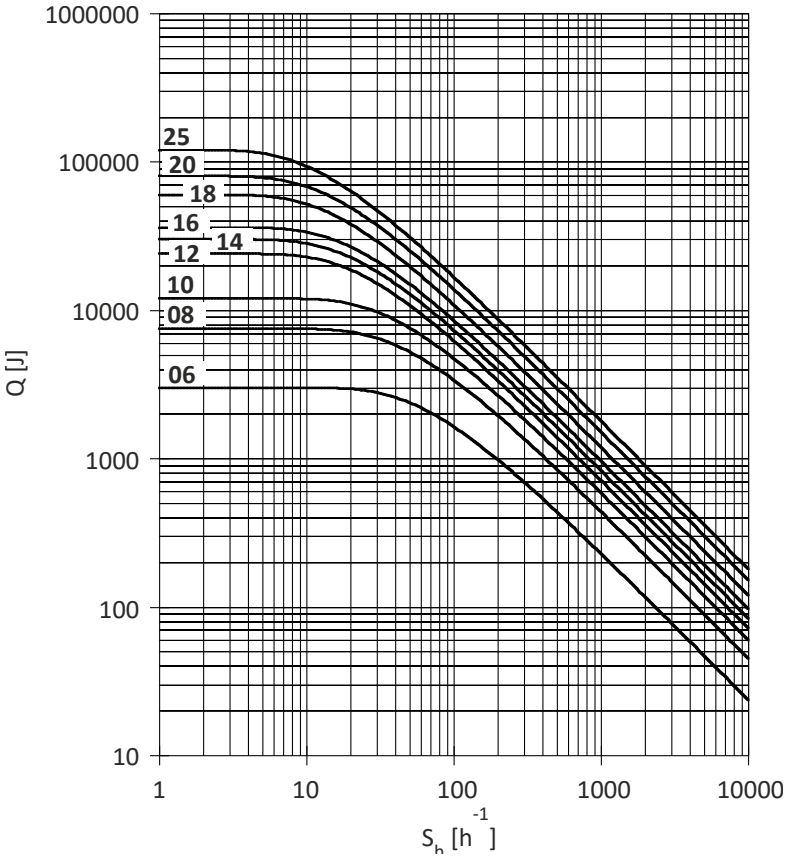
AC or DC voltage switching

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.

Permissible friction energy



Q	Switching energy per switching cycle
S_h	Switching rate
06 ... 25	Brake size

Spring-applied holding brake

The spring-applied brakes are pure holding brakes. Emergency stops are possible.

⚠ DANGER!

An emergency stop during operation can cause the holding brake to malfunction.

Possible consequences: Personal injury and/or damage to property.

► After an emergency stop, check the air gap and the friction lining for damage.

► If the air gap is too large or the friction lining is damaged, replace the brake rotor.

Assignment of braking torques

For optimum adaptation of the brake motor to the application, spring-applied brakes with several braking torques are available for each motor frame size.

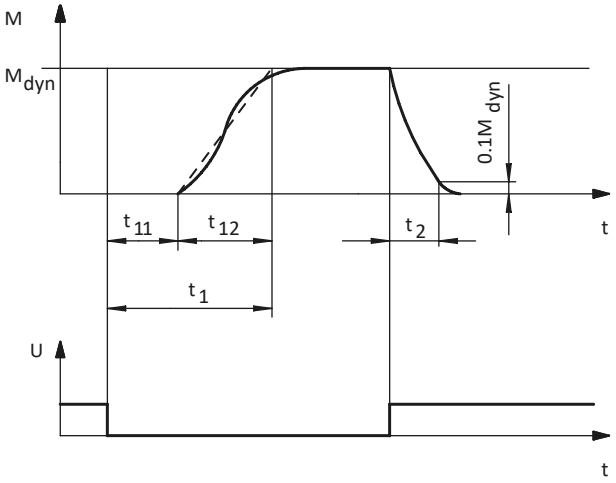
Assignment of braking torques

Motor	Single brake					
	06	08	10	12	14	16
	Nm	Nm	Nm	Nm	Nm	Nm
MF 063-32	2.5 4					
MF 063-42						
MF 071-32		3.5				
MF 071-42		3.5 8				
MF 080-32			7			
MF 080-42			7 16			
MF 090-32			7 16 23			
MF 100-12			7 16	14 32		
MF 100-32				14 32 46		
MF 112-22				14 32	35 60	
MF 132-12						60 80
MF 132-22						60 80 100
MF 132-32						

Motor	Single brake LongLife			
	06	08	10	12
	Nm	Nm	Nm	Nm
MF 063-32	4			
MF 063-42				
MF 071-32		3.5		
MF 071-42		3.5 8		
MF 080-32		8	7	
MF 080-42			7 16	
MF 090-32				
MF 100-12			16	14 32
MF 100-32				

Rated data

Switching times of the spring-applied brakes



t_1	Engagement time	t_{11}	Delay time during linking
t_2	Disengagement time (up to M = 0.1 M_{dyn})	t_{12}	Rise time of the braking torque
M_{dyn}	Braking torque at constant speed	U	Voltage

Rated data, Single brake, IP54/55

Brake 06, 08

Brake		**06**		**08**	
Braking torque		**2.5**	**4**	**3.5**	**8**
Power input					
DC 24 V	W	20	20	25	25
DC 103 V	W	20	20	25	25
DC 127 V	W	20	20	27	27
DC 180 V	W	20	20	25	25
DC 205 V	W	20	20	25	25
DC 215 V	W	20	20	25	25
AC 230 V	W	20	20	25	25
AC 400 V	W	20	20	25	25
AC 460 V	W	20	20	25	25
Cold Brake AC 230V	W	20	20	25	25
Cold Brake AC 400V	W	23	23	27	27
Overexcitation AC 230 V	W	20	20	25	25
Overexcitation AC 400 V	W	20	20	25	25
Moment of inertia	kgcm²	0.15	0.15	0.61	0.61
Braking torque is static	Nm	2.5	4	3.5	8
Min. static braking torque tolerance	%	-25	-25	-25	-25
Max. static braking torque tolerance	%	35	35	35	35
Dynamic braking torque					
100 rpm	Nm	2.5	4.0	3.5	8.0
1000 rpm	Nm	2.3	3.7	3.1	7.1
1200 rpm	Nm	2.3	3.6	3.0	7.0
1500 rpm	Nm	2.2	3.5	3.0	6.8
1800 rpm	Nm	2.2	3.4	2.9	6.6
2500 rpm	Nm	2.1	3.3	2.8	6.4
3000 rpm	Nm	2.0	3.2	2.7	6.2
3600 rpm	Nm	2.0	3.2	2.7	6.1
Min. dynamic braking torque tolerance	%	-25	-25	-25	-25
Max. dynamic braking torque tolerance	%	35	35	35	35
Friction energy					
100 rpm	kJ	3	3	7.5	7.5
1000 rpm	kJ	3	3	7.5	7.5
1200 rpm	kJ	3	3	7.5	7.5
1500 rpm	kJ	3	3	7.5	7.5
1800 rpm	kJ	3	3	7.5	7.5
2500 rpm	kJ	3	3	7.5	7.5
3000 rpm	kJ	3	3	7.5	7.5
3600 rpm	kJ	3	3	7.5	7.5
Maximum speed - operation	rpm	3600	3600	3600	3600
Maximum speed - idle state	rpm	10000	10000	10000	10000

Brake		**06**		**08**	
Braking torque		**2.5**	**4**	**3.5**	**8**
Delay time t11					
DC voltage	ms	25	15	14	15
AC mains voltage	ms	25	15	14	15
Cold Brake AC 230V	ms	24	16	22	25
Cold Brake AC 400V	ms	27	19	28	28
Overexcitation AC 230 V	ms	31	20	33	31
Overexcitation AC 400 V	ms	24	16	22	25
Rise time t12					
DC voltage	ms	13	13	10	16
AC mains voltage	ms	13	13	10	16
Cold Brake AC 230V	ms	12	14	16	27
Cold Brake AC 400V	ms	14	16	20	30
Overexcitation AC 230 V	ms	16	17	24	33
Overexcitation AC 400 V	ms	12	14	16	27
Engagement time t1					
DC voltage	ms	38	28	24	31
AC mains voltage	ms	38	28	24	31
Cold Brake AC 230V	ms	36	30	38	52
Cold Brake AC 400V	ms	41	35	48	58
Overexcitation AC 230 V	ms	47	37	57	64
Overexcitation AC 400 V	ms	36	30	38	52
Disengagement time t2					
DC voltage	ms	30	45	37	57
AC mains voltage	ms	30	45	37	57
Cold Brake AC 230V	ms	30	45	37	57
Cold Brake AC 400V	ms	21	30	24	36
Overexcitation AC 230 V	ms	17	22	18	26
Overexcitation AC 400 V	ms	17	22	18	26
Overexcitation time					
Cold Brake AC 230V	ms	300	300	300	300
Cold Brake AC 400V	ms	300	300	300	300
Overexcitation AC 230 V	ms	300	300	300	300
Overexcitation AC 400 V	ms	300	300	300	300
Friction energy QBW					
DC voltage	MJ	113.1	84.8	210.4	157.8
AC mains voltage	MJ	113.1	84.8	210.4	157.8
Cold Brake AC 230V	MJ	113.1	84.8	210.4	157.8
Cold Brake AC 400V	MJ	113.1	113.1	210.4	210.4
Overexcitation AC 230 V	MJ	113.1	113.1	210.4	210.4
Overexcitation AC 400 V	MJ	113.1	84.8	210.4	157.8
Reversing cycles		$1x\ 10^6$	$1x\ 10^6$	$1x\ 10^6$	$1x\ 10^6$
Repetitive cycles		$1x\ 10^6$	$1x\ 10^6$	$1x\ 10^6$	$1x\ 10^6$

Rated data, Single brake, IP54/55

Brake 10, 12

Brake		**10**			**12**		
Braking torque		**7**	**16**	**23**	**14**	**32**	**46**
Power input							
DC 24 V	W	30	30	30	40	40	40
DC 103 V	W	32	32	32	40	40	40
DC 127 V	W	30	30	30	40	40	40
DC 180 V	W	32	32	32	40	40	40
DC 205 V	W	33	33	33	40	40	40
DC 215 V	W	30	30	30	40	40	40
AC 230 V	W	33	33	33	40	40	40
AC 400 V	W	32	32	32	40	40	40
AC 460 V	W	33	33	33	40	40	40
Cold Brake AC 230V	W	33	33	33	40	40	40
Cold Brake AC 400V	W	30	30	30	42	42	42
Overexcitation AC 230 V	W	32	32	32	40	40	40
Overexcitation AC 400 V	W	32	32	32	40	40	40
Moment of inertia	$kgcm^2$	2	2	2	4.5	4.5	4.5
Braking torque is static	Nm	7	16	23	14	32	46
Min. static braking torque tolerance	%	-25	-25	-25	-25	-25	-25
Max. static braking torque tolerance	%	35	35	35	35	35	35
Dynamic braking torque							
100 rpm	Nm	7.0	16	23	14	32	46
1000 rpm	Nm	6.1	14	20	12	28	40
1200 rpm	Nm	6.0	14	20	12	27	39
1500 rpm	Nm	5.8	13	19	11	26	38
1800 rpm	Nm	5.7	13	19	11	26	37
2500 rpm	Nm	5.5	12	18	11	24	35
3000 rpm	Nm	5.3	12	17	11	24	35
3600 rpm	Nm	5.2	12	17	10	23	34
Min. dynamic braking torque tolerance	%	-25	-25	-25	-25	-25	-25
Max. dynamic braking torque tolerance	%	35	35	35	35	35	35
Friction energy							
100 rpm	kJ	12	12	12	24	24	24
1000 rpm	kJ	12	12	12	24	24	24
1200 rpm	kJ	12	12	12	24	24	24
1500 rpm	kJ	12	12	12	24	24	24
1800 rpm	kJ	12	12	12	24	24	24
2500 rpm	kJ	12	12	12	24	24	24
3000 rpm	kJ	12	12	12	24	24	24
3600 rpm	kJ	12	12	12	7	7	7
Maximum speed - operation	rpm	3600	3600	3600	3600	3600	3600
Maximum speed - idle state	rpm	10000	10000	10000	10000	10000	10000

Brake		**10**			**12**		
Braking torque		**7**	**16**	**23**	**14**	**32**	**46**
Delay time t11							
DC voltage	ms	20	28	10	21	28	16
AC mains voltage	ms	20	28	10	21	28	16
Cold Brake AC 230V	ms	35	31	24	49	48	27
Cold Brake AC 400V	ms	47	34	27	64	55	42
Overexcitation AC 230 V	ms	52	44	29	73	62	54
Overexcitation AC 400 V	ms	35	31	24	49	48	27
Rise time t12							
DC voltage	ms	17	19	19	19	25	25
AC mains voltage	ms	17	19	19	19	25	25
Cold Brake AC 230V	ms	30	21	46	44	43	42
Cold Brake AC 400V	ms	40	23	51	58	49	66
Overexcitation AC 230 V	ms	44	30	55	66	55	84
Overexcitation AC 400 V	ms	30	21	46	44	43	42
Engagement time t1							
DC voltage	ms	37	47	29	40	53	41
AC mains voltage	ms	37	47	29	40	53	41
Cold Brake AC 230V	ms	65	52	70	93	91	69
Cold Brake AC 400V	ms	87	57	78	122	104	108
Overexcitation AC 230 V	ms	96	74	84	139	117	138
Overexcitation AC 400 V	ms	65	52	70	93	91	69
Disengagement time t2							
DC voltage	ms	57	76	109	65	115	193
AC mains voltage	ms	57	76	109	65	115	193
Cold Brake AC 230V	ms	57	76	109	65	115	193
Cold Brake AC 400V	ms	40	53	72	48	78	114
Overexcitation AC 230 V	ms	31	41	53	38	59	81
Overexcitation AC 400 V	ms	31	41	53	38	59	81
Overexcitation time							
Cold Brake AC 230V	ms	300	300	300	300	300	300
Cold Brake AC 400V	ms	300	300	300	300	300	300
Overexcitation AC 230 V	ms	300	300	300	300	300	300
Overexcitation AC 400 V	ms	300	300	300	300	300	300
Friction energy QBW							
DC voltage	MJ	264	264	198	706.2	529.6	353.1
AC mains voltage	MJ	264	264	198	706.2	529.6	353.1
Cold Brake AC 230V	MJ	264	264	198	706.2	529.6	353.1
Cold Brake AC 400V	MJ	264	264	264	706.2	706.2	706.2
Overexcitation AC 230 V	MJ	264	264	264	706.2	706.2	706.2
Overexcitation AC 400 V	MJ	264	264	198	706.2	529.6	353.1
Reversing cycles		$1x\ 10^6$	$1x\ 10^6$	$1x\ 10^6$	$1x\ 10^6$	$1x\ 10^6$	$1x\ 10^6$
Repetitive cycles		$1x\ 10^6$	$1x\ 10^6$	$1x\ 10^6$	$1x\ 10^6$	$1x\ 10^6$	$1x\ 10^6$

Rated data, Single brake, IP54/55

Brake 14, 16

Brake		**14**		**16**		
Braking torque		**35**	**60**		**80**	**100**
Power input						
DC 24 V	W	50	50	55	55	55
DC 103 V	W	53	53	56	56	56
DC 127 V	W	50	50	55	55	55
DC 180 V	W	53	53	55	55	55
DC 205 V	W	53	53	56	56	56
DC 215 V	W	53	53	55	55	55
AC 230 V	W	53	53	56	56	56
AC 400 V	W	53	53	55	55	55
AC 460 V	W	53	53	56	56	56
Cold Brake AC 230V	W	53	53	56	56	56
Cold Brake AC 400V	W	54	54	55	55	55
Overexcitation AC 230 V	W	53	53	56	56	56
Overexcitation AC 400 V	W	53	53	55	55	55
Moment of inertia	kgcm²	6.3	6.3	15	15	15
Braking torque is static	Nm	35	60	60	80	100
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	35	60	60	80	100
1000 rpm	Nm	30	51	50	66	83
1200 rpm	Nm	29	50	49	65	81
1500 rpm	Nm	28	49	47	62	78
1800 rpm	Nm	28	47	46	62	77
2500 rpm	Nm	26	45	44	58	73
3000 rpm	Nm	26	44	43	57	71
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	30	30	36	36	36
1000 rpm	kJ	30	30	36	36	36
1200 rpm	kJ	30	30	36	36	36
1500 rpm	kJ	30	30	36	36	36
1800 rpm	kJ	30	30	36	36	36
2500 rpm	kJ	30	30	36	36	36
3000 rpm	kJ	18	18	11	11	11
3600 rpm	kJ	-	-	-	-	-
Maximum speed - operation	rpm	3000	3000	3000	3000	3000
Maximum speed - idle state	rpm	10000	10000	10000	10000	10000

Brake		**14**		**16**		
Braking torque		**35**	**60**		**80**	**100**
Delay time t11						
DC voltage	ms	37	17	53	27	22
AC mains voltage	ms	37	17	53	27	22
Cold Brake AC 230V	ms	61	33	114	58	41
Cold Brake AC 400V	ms	69	43	133	74	56
Overexcitation AC 230 V	ms	76	47	145	89	70
Overexcitation AC 400 V	ms	61	33	114	58	41
Rise time t12						
DC voltage	ms	22	25	30	30	30
AC mains voltage	ms	22	25	30	30	30
Cold Brake AC 230V	ms	36	47	65	64	56
Cold Brake AC 400V	ms	41	63	75	82	76
Overexcitation AC 230 V	ms	45	69	82	99	95
Overexcitation AC 400 V	ms	36	47	65	64	56
Engagement time t1						
DC voltage	ms	59	42	83	57	52
AC mains voltage	ms	59	42	83	57	52
Cold Brake AC 230V	ms	97	80	179	122	97
Cold Brake AC 400V	ms	110	106	208	156	132
Overexcitation AC 230 V	ms	121	116	227	188	165
Overexcitation AC 400 V	ms	97	80	179	122	97
Disengagement time t2						
DC voltage	ms	148	210	169	220	297
AC mains voltage	ms	148	210	169	220	297
Cold Brake AC 230V	ms	148	210	169	220	297
Cold Brake AC 400V	ms	98	131	125	154	191
Overexcitation AC 230 V	ms	71	92	100	119	141
Overexcitation AC 400 V	ms	71	92	100	119	141
Overexcitation time						
Cold Brake AC 230V	ms	300	300	1300	1300	1300
Cold Brake AC 400V	ms	300	300	300	300	300
Overexcitation AC 230 V	ms	300	300	300	300	300
Overexcitation AC 400 V	ms	300	300	1300	1300	1300
Friction energy QBW						
DC voltage	MJ	761.4	571	965.7	965.7	643.8
AC mains voltage	MJ	761.4	571	965.7	965.7	643.8
Cold Brake AC 230V	MJ	761.4	571	965.7	965.7	643.8
Cold Brake AC 400V	MJ	761.4	761.4	965.7	965.7	965.7
Overexcitation AC 230 V	MJ	761.4	761.4	965.7	965.7	965.7
Overexcitation AC 400 V	MJ	761.4	571	965.7	965.7	643.8
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, Single brake LongLife, IP54/55

Brake 06, 08

Brake		**06**	**08**	
Braking torque		**4**	**3.5**	**8**
Power input				
DC 24 V	W	20	25	25
DC 103 V	W	20	25	25
DC 127 V	W	20	27	27
DC 180 V	W	20	25	25
DC 205 V	W	20	25	25
DC 215 V	W	20	25	25
AC 230 V	W	20	25	25
AC 400 V	W	20	25	25
AC 460 V	W	20	25	25
Cold Brake AC 230V	W	20	25	25
Cold Brake AC 400V	W	23	27	27
Overexcitation AC 230 V	W	20	25	25
Overexcitation AC 400 V	W	20	25	25
Moment of inertia	kgcm²	0.15	0.61	0.61
Braking torque is static	Nm	4	3.5	8
Min. static braking torque tolerance	%	-25	-25	-25
Max. static braking torque tolerance	%	35	35	35
Dynamic braking torque				
100 rpm	Nm	4.0	3.5	8.0
1000 rpm	Nm	3.7	3.1	7.1
1200 rpm	Nm	3.6	3.0	7.0
1500 rpm	Nm	3.5	3.0	6.8
1800 rpm	Nm	3.4	2.9	6.6
2500 rpm	Nm	3.3	2.8	6.4
3000 rpm	Nm	3.2	2.7	6.2
3600 rpm	Nm	3.2	2.7	6.1
Min. dynamic braking torque tolerance	%	-25	-25	-25
Max. dynamic braking torque tolerance	%	35	35	35
Friction energy				
100 rpm	kJ	3	7.5	7.5
1000 rpm	kJ	3	7.5	7.5
1200 rpm	kJ	3	7.5	7.5
1500 rpm	kJ	3	7.5	7.5
1800 rpm	kJ	3	7.5	7.5
2500 rpm	kJ	3	7.5	7.5
3000 rpm	kJ	3	7.5	7.5
3600 rpm	kJ	3	7.5	7.5
Maximum speed - operation	rpm	3600	3600	3600
Maximum speed - idle state	rpm	10000	10000	10000

Brake		**06**	**08**	
Braking torque		**4**	**3.5**	**8**
Delay time t11				
DC voltage	ms	15	14	15
AC mains voltage	ms	15	14	15
Cold Brake AC 230V	ms	16	22	25
Cold Brake AC 400V	ms	19	28	28
Overexcitation AC 230 V	ms	20	33	31
Overexcitation AC 400 V	ms	16	22	25
Rise time t12				
DC voltage	ms	13	10	16
AC mains voltage	ms	13	10	16
Cold Brake AC 230V	ms	14	16	27
Cold Brake AC 400V	ms	16	20	30
Overexcitation AC 230 V	ms	17	24	33
Overexcitation AC 400 V	ms	14	16	27
Engagement time t1				
DC voltage	ms	28	24	31
AC mains voltage	ms	28	24	31
Cold Brake AC 230V	ms	30	38	52
Cold Brake AC 400V	ms	35	48	58
Overexcitation AC 230 V	ms	37	57	64
Overexcitation AC 400 V	ms	30	38	52
Disengagement time t2				
DC voltage	ms	45	37	57
AC mains voltage	ms	45	37	57
Cold Brake AC 230V	ms	45	37	57
Cold Brake AC 400V	ms	30	24	36
Overexcitation AC 230 V	ms	22	18	26
Overexcitation AC 400 V	ms	22	18	26
Overexcitation time				
Cold Brake AC 230V	ms	300	300	300
Cold Brake AC 400V	ms	300	300	300
Overexcitation AC 230 V	ms	300	300	300
Overexcitation AC 400 V	ms	300	300	300
Friction energy QBW				
DC voltage	MJ	84.8	210.4	157.8
AC mains voltage	MJ	84.8	210.4	157.8
Cold Brake AC 230V	MJ	84.8	210.4	157.8
Cold Brake AC 400V	MJ	113.1	210.4	210.4
Overexcitation AC 230 V	MJ	113.1	210.4	210.4
Overexcitation AC 400 V	MJ	84.8	210.4	157.8
Reversing cycles		$15x\ 10^6$	$15x\ 10^6$	$15x\ 10^6$
Repetitive cycles		$10x\ 10^6$	$10x\ 10^6$	$10x\ 10^6$

Rated data, Single brake LongLife, IP54/55

Brake 10, 12

Brake		**10**		**12**	
Braking torque		**7**	**16**	**14**	**32**
Power input					
DC 24 V	W	30	30	40	40
DC 103 V	W	32	32	40	40
DC 127 V	W	30	30	40	40
DC 180 V	W	32	32	40	40
DC 205 V	W	33	33	40	40
DC 215 V	W	30	30	40	40
AC 230 V	W	33	33	40	40
AC 400 V	W	32	32	40	40
AC 460 V	W	33	33	40	40
Cold Brake AC 230V	W	33	33	40	40
Cold Brake AC 400V	W	30	30	42	42
Overexcitation AC 230 V	W	32	32	40	40
Overexcitation AC 400 V	W	32	32	40	40
Moment of inertia	kgcm²	2	2	4.5	4.5
Braking torque is static	Nm	7	16	14	32
Min. static braking torque tolerance	%	-25	-25	-25	-25
Max. static braking torque tolerance	%	35	35	35	35
Dynamic braking torque					
100 rpm	Nm	7.0	16	14	32
1000 rpm	Nm	6.1	14	12	28
1200 rpm	Nm	6.0	14	12	27
1500 rpm	Nm	5.8	13	11	26
1800 rpm	Nm	5.7	13	11	26
2500 rpm	Nm	5.5	12	11	24
3000 rpm	Nm	5.3	12	11	24
3600 rpm	Nm	5.2	12	10	23
Min. dynamic braking torque tolerance	%	-25	-25	-25	-25
Max. dynamic braking torque tolerance	%	35	35	35	35
Friction energy					
100 rpm	kJ	12	12	24	24
1000 rpm	kJ	12	12	24	24
1200 rpm	kJ	12	12	24	24
1500 rpm	kJ	12	12	24	24
1800 rpm	kJ	12	12	24	24
2500 rpm	kJ	12	12	24	24
3000 rpm	kJ	12	12	24	24
3600 rpm	kJ	12	12	7	7
Maximum speed - operation	rpm	3600	3600	3600	3600
Maximum speed - idle state	rpm	10000	10000	10000	10000

Brake		**10**		**12**	
Braking torque		**7**	**16**	**14**	**32**
Delay time t11					
DC voltage	ms	20	28	21	28
AC mains voltage	ms	20	28	21	28
Cold Brake AC 230V	ms	35	31	49	48
Cold Brake AC 400V	ms	47	34	64	55
Overexcitation AC 230 V	ms	52	44	73	62
Overexcitation AC 400 V	ms	35	31	49	48
Rise time t12					
DC voltage	ms	17	19	19	25
AC mains voltage	ms	17	19	19	25
Cold Brake AC 230V	ms	30	21	44	43
Cold Brake AC 400V	ms	40	23	58	49
Overexcitation AC 230 V	ms	44	30	66	55
Overexcitation AC 400 V	ms	30	21	44	43
Engagement time t1					
DC voltage	ms	37	47	40	53
AC mains voltage	ms	37	47	40	53
Cold Brake AC 230V	ms	65	52	93	91
Cold Brake AC 400V	ms	87	57	122	104
Overexcitation AC 230 V	ms	96	74	139	117
Overexcitation AC 400 V	ms	65	52	93	91
Disengagement time t2					
DC voltage	ms	57	76	65	115
AC mains voltage	ms	57	76	65	115
Cold Brake AC 230V	ms	57	76	65	115
Cold Brake AC 400V	ms	40	53	48	78
Overexcitation AC 230 V	ms	31	41	38	59
Overexcitation AC 400 V	ms	31	41	38	59
Overexcitation time					
Cold Brake AC 230V	ms	300	300	300	300
Cold Brake AC 400V	ms	300	300	300	300
Overexcitation AC 230 V	ms	300	300	300	300
Overexcitation AC 400 V	ms	300	300	300	300
Friction energy QBW					
DC voltage	MJ	264	264	706.2	529.6
AC mains voltage	MJ	264	264	706.2	529.6
Cold Brake AC 230V	MJ	264	264	706.2	529.6
Cold Brake AC 400V	MJ	264	264	706.2	706.2
Overexcitation AC 230 V	MJ	264	264	706.2	706.2
Overexcitation AC 400 V	MJ	264	264	706.2	529.6
Reversing cycles		$15x\ 10^6$	$15x\ 10^6$	$15x\ 10^6$	$15x\ 10^6$
Repetitive cycles		$10x\ 10^6$	$10x\ 10^6$	$10x\ 10^6$	$10x\ 10^6$

Option: Reduction of the holding current (cold brake)

By reducing the holding current, the bridge/half-wave rectifier reduces the power consumption of the open brake. As the brake heats up less, this control is referred to as a “Cold Brake”. This is necessary at low speeds in order to counteract impermissible heating. This means that no blower is required even with a speed setting range below 14 Hz. In addition, only a quarter of the braking power is required, thus saving energy.

Option: Short-time overexcitation of the brake coil

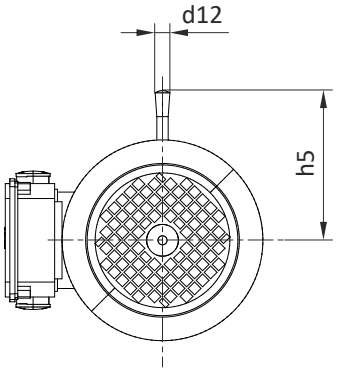
The disengagement time can be reduced by triggering the brake coil with twice the rated voltage for an overexcitation time. The brake releases much faster and the wear on the friction lining decreases. As a result of these features, this control variant is particularly ideal for hoist applications.

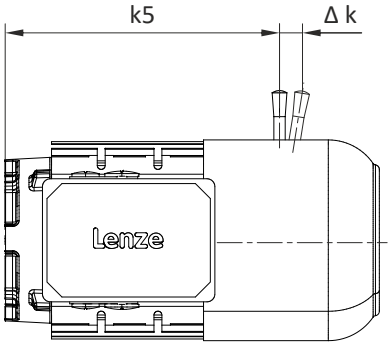
Option: Manual release

The brake can be ordered with a manual release lever to facilitate positioning and maintenance work. The brake can be released manually in deenergized mode by actuating the manual release lever.

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.

Dimensions of manual release lever





Product	Brake	Dimensions			
		k5	Δ k	h5	d12
		mm	mm	mm	mm
MF☐MA☐☐063-32 MF☐MA☐☐063-42	06	169	29	107	13.0
MF☐MA☐☐071-32 MF☐MA☐☐071-42	06	185	29	107	13.0
	08	186	27	136	13.0
MF☐MA☐☐080-32 MF☐MA☐☐080-42	08	223	27	136	13.0
	10	234	28	132	13.0
MF☐MA☐☐090-32	08	256	27	136	13.0
	10	267	28	132	13.0
MF☐MA☐☐100-12 MF☐MA☐☐100-32	10	305	28	132	13.0
	12	307	37	161	13.0
MF☐MA☐☐112-22	12	309	37	161	13.0
	14	313	41	195	24.0
MF☐MA☐☐132-12 MF☐MA☐☐132-22 MF☐MA☐☐132-32	14	398	41	195	24.0
	16	398	45	240	24.0

Options

The spring-applied brakes can be used as service brakes or holding brakes. Emergency stops are possible.

The spring-applied brake is available as a LongLife version for applications with very high switching frequencies.

The brake mechanism is reinforced. Up to 10 million repetitive or 15 million reversing switching cycles are possible.

Feedback

The motor can be equipped with the following feedback systems for speed control via an inverter:

A resolver, incremental encoder and SinCos absolute value encoder are optionally available to evaluate the speed and position of the motor shaft.

The resolver can be used to measure an absolute value within one revolution of the rotor. A SinCos absolute value encoder is used if not only the angle within one revolution is to be made available immediately but also the revolution within a set range. The SinCos absolute value encoder detects not only the speed and rotor position but also the position of the machine. It consists of a speed sensor system, for example TTL, and an absolute value information recorder, for example Hyperface.

The HTL incremental encoder is used in the frequency inverter range for less dynamic applications.

The TTL incremental encoder can generate a higher number of pulses. It is used for dynamic applications with very high requirements regarding accuracy. If the absolute angular position of the drive is required directly after the system is switched on without performing additional homing, this can be realized via a resolver or SinCos absolute value encoder.

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**
Accuracy	'	-10 ... 10
Absolute positioning		1 revolution
Max. input voltage		
DC	V	10
Max. input frequency	kHz	4
Ratio		
Stator / rotor		0.3 ± 5%
Rotor impedance	Ω	51 + j90
Stator impedance	Ω	102 + j150
Impedance	Ω	44 + j76
Min. insulation resistance		
At DC 500 V	MΩ	10
Number of pole pairs		1

Incremental encoder

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

Incremental HTL encoder

Feedback in conjunction with the HAN plug connector or the integrated i550 motec and 8400 motec is only available with the IG128-24V-H add-on incremental encoder (with 0.5 m cable and M12 plug connector).

Feedback type			**Encoder**			
Feedback			**IG128-24V-H**	**IG512-24V-H**	**IG1024-24V-H**	**IG2048-24V-H**
Design			Mounting	Mounting	Mounting	Mounting
Pulses			128	512	1024	2048
Output signals			HTL	HTL	HTL	HTL
Interfaces			A, B	A, B; N; Ai, Bi; Ni	A, B; N; Ai, Bi; Ni	A, B; N; Ai, Bi; Ni
Absolute revolution			0	0	0	0
Min. accuracy		'	-22.5	-2	-2	-2
Max. accuracy		'	22.5	2	2	2
Min. DC input voltage	$V_{in,min}$	V	8	8	8	8
Max. DC input voltage	$V_{in,max}$	V	26	30	30	30
Max. current consumption	I_{max}	A	0.04	0.15	0.15	0.15
Limit frequency	f_{max}	kHz	30	160	160	160

TTL incremental encoder

Feedback type			**Encoder**		**TTL-Inkremental**
Feedback			**IG512-5V-T**	**IG1024-5V-T**	**IG2048-5V-T**
Design			Mounting		
Pulses			512	1024	2048
Output signals			TTL	TTL	TTL
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	$V_{in,min}$	V	4.75	4.75	4.75
Max. DC input voltage	$V_{in,max}$	V	5.25	5.25	5.25
Max. current consumption	I_{max}	A	0.15	0.15	0.15
Limit frequency	f_{max}	kHz	300	300	300

Absolute value encoder

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

Feedback type			**SinCos absolute value encoder**
Feedback			**AM1024-8V-H**
Design			Mounting
Encoder type			Multi-turn
Pulses			1024
Output signals			SinCos 1 Vss
Interfaces			Hiperface
Absolute revolution			4096
Min. accuracy		'	-0.8
Max. accuracy		'	0.8
Min. DC input voltage	$V_{in,min}$	V	7
Max. DC input voltage	$V_{in,max}$	V	12
Max. current consumption	I_{max}	A	0.08
Limit frequency	f_{max}	kHz	200

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 25

Standard version

Rated data50Hz, 230/400V

Motor series			MFXMA								
Size			063			071			080		
Number of phases			1	3	3	1	3	3	1	3	3
Wiring			-	Delta	Star	-	Delta	Star	-	Delta	Star
Rated voltage	V_{rated}	V	230	230	400	230	230	400	230	230	400
Rated power	P_{rated}	kW	0.034	0.015	0.015	0.035	0.016	0.016	0.036	0.02	0.02
Rated current	I_{rated}	A	0.15	0.083	0.05	0.15	0.083	0.05	0.16	0.088	0.05

Motor series			MFXMA								
Size			090			100			112		
Number of phases			1	3	3	1	3	3	1	3	3
Wiring			-	Delta	Star	-	Delta	Star	-	Delta	Star
Rated voltage	V_{rated}	V	230	230	400	230	230	400	230	230	400
Rated power	P_{rated}	kW	0.038	0.036	0.036	0.044	0.043	0.043	0.05	0.054	0.054
Rated current	I_{rated}	A	0.19	0.19	0.11	0.2	0.19	0.11	0.23	0.2	0.11

Motor series			MFXMA		
Size			132		
Number of phases			1	3	3
Wiring			-	Delta	Star
Rated voltage	V_{rated}	V	230	230	400
Rated power	P_{rated}	kW	0.095	0.091	0.091
Rated current	I_{rated}	A	0.42	0.33	0.19

Rated data60Hz, 265/460V

Motor series			MFXMA								
Size			063			071			080		
Number of phases			1	3	3	1	3	3	1	3	3
Wiring			-	Delta	Star	-	Delta	Star	-	Delta	Star
Rated voltage	V_{rated}	V	265	265	460	265	265	460	265	265	460
Rated power	P_{rated}	kW	0.05	0.018	0.018	0.052	0.02	0.02	0.055	0.028	0.028
Rated current	I_{rated}	A	0.19	0.09	0.05	0.2	0.09	0.05	0.21	0.09	0.05

Motor series			MFXMA								
Size			090			100			112		
Number of phases			1	3	3	1	3	3	1	3	3
Wiring			-	Delta	Star	-	Delta	Star	-	Delta	Star
Rated voltage	V_{rated}	V	265	265	460	265	265	460	265	265	460
Rated power	P_{rated}	kW	0.058	0.047	0.047	0.069	0.059	0.059	0.085	0.074	0.074
Rated current	I_{rated}	A	0.22	0.19	0.11	0.26	0.19	0.11	0.32	0.21	0.12

Motor series			MFXMA		
Size			132		
Number of phases			1	3	3
Wiring			-	Delta	Star
Rated voltage	V_{rated}	V	265	265	460
Rated power	P_{rated}	kW	0.156	0.134	0.134
Rated current	I_{rated}	A	0.59	0.36	0.21

Temperature monitoring

Thermal contacts TC0

The TCO thermal contact (thermal break contact) is a bimetallic switch. The thermal contact monitors the motor winding temperature; e.g., at excessively high temperatures, it switches the upstream motor relay. The motor is disconnected from the line voltage and coasts down via the relay.

Functional principle			**Normally-closed contact**
Operating temperature		°C	150
Min. switching temperature		°C	-5
Max. switching temperature		°C	5
Min. reset temperature		°C	90
Max. reset temperature		°C	135
Max. AC switching current		A	2.5
Max. AC switching voltage		V	250
Max. DC switching current		A	40
Max. DC switching voltage		V	12

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.

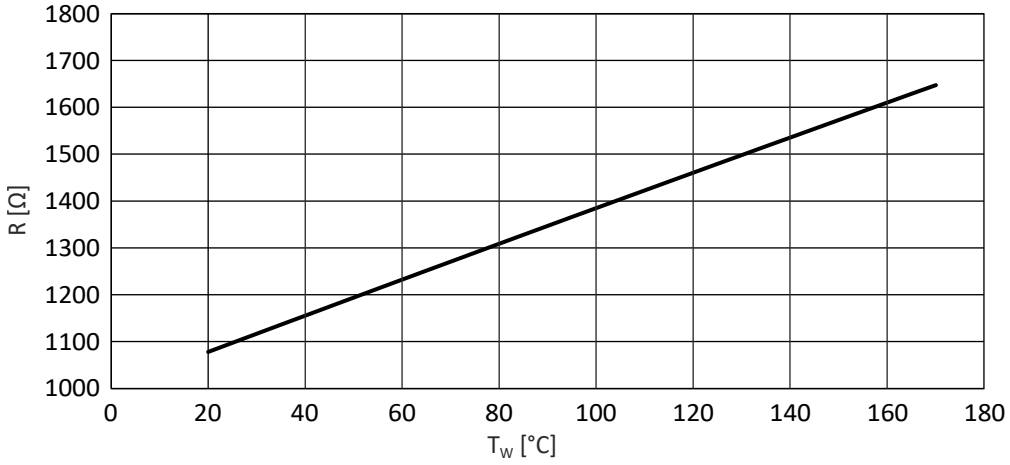
Functional principle			**Sprunghafte Widerstandsänderung**
Operating temperature		°C	155
Min. switching temperature		°C	-5
Max. switching temperature		°C	5
Temperature		°C	-20
Rated resistance			
155 °C			1330
140 °C			550
-20 °C			100

Thermal detectors PT1000

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

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

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



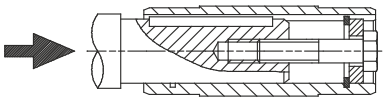
R	Resistance
T_W	Winding temperature

Accessories

Hollow shaft mounting kit

A mounting kit is available for easy installation of the solid shaft.

Scope of supply



- Hexagon head screw
- Circlip
- Washer

Mounting set		Solid shaft	Hollow shaft diameter g500-												
Name	Material number	Thread	S130	S220		S400		S660		S950	S2100		S3100		S4500	
			25	25	30	30	35	40	45	40	50	55	60	70	70	80
Mounting kit B18	415783	M6														
Mounting kit B20	407309	M6														
Mounting kit B25	395903	M10	●	●												
Mounting kit B30	395904	M10			●	●										
Mounting kit B35	395905	M12					●									
Mounting kit B40	395906	M16						●		●						
Mounting kit B45	395907	M16							●							
Mounting kit B50	395908	M16									●					
Mounting kit B55	395909	M20										●				
Mounting kit B60	395910	M20											●			
Mounting kit B70	395911	M20												●	●	
Mounting kit B80	395912	M20														●

Motor data

Rated data

Rated data 120 Hz

Motor			MF☐MA☐☐				
			063-32	063-42	071-32	071-42	080-32
Rated power	P_{rated}	kW	0.55	0.75	1.1	1.5	2.2
Rated speed	n_{rated}	rpm	3440	3400	3490	3450	3500
Max. speed	n_{max}	rpm	4500	4500	4500	4500	4500
Max. torque	M_{max}	Nm	6.00	8.00	12.0	16.0	24.0
Rated voltage							
Delta	$V_{N, \Delta}$	V	200	210	200	205	200
Star	$V_{N, Y}$	V	345	370	345	360	345
Rated current							
Delta	$I_{N, \Delta}$	A	3.20	4.00	5.50	6.80	9.10
Star	$I_{N, Y}$	A	1.80	2.30	3.20	3.90	5.30
Rated torque	M_{rated}	Nm	1.53	2.11	3.01	4.15	6.00
Power factor	cos ϕ		0.68	0.69	0.77	0.8	0.86
Efficiency							
at 75 % P_{rated}	η		0.750	0.796	0.814	0.828	0.843
at 100 % P_{rated}	η		0.750	0.796	0.814	0.828	0.843
Moment of inertia	J	kgcm²	3.70	3.70	12.8	12.8	28.0
Weight	m	kg	4.40	4.40	6.40	6.40	11.0

Motor			MF☐MA☐☐				
			080-42	090-32	100-12	100-32	112-22
Rated power	P_{rated}	kW	3	4	5.5	7.5	11
Rated speed	n_{rated}	rpm	3480	3480	3525	3515	3530
Max. speed	n_{max}	rpm	4500	4500	4500	4500	4500
Max. torque	M_{max}	Nm	32.0	44.0	60.0	80.0	120
Rated voltage							
Delta	$V_{N, \Delta}$	V	210	-	-	-	-
Star	$V_{N, Y}$	V	370	370	340	375	370
Rated current							
Delta	$I_{N, \Delta}$	A	11.4	-	-	-	-
Star	$I_{N, Y}$	A	6.60	8.50	12.9	15.9	23.5
Rated torque	M_{rated}	Nm	8.20	10.9	14.9	20.3	29.7
Power factor	cos ϕ		0.86	0.85	0.81	0.81	0.78
Efficiency							
at 75 % P_{rated}	η		0.855	0.870	0.879	0.889	0.898
at 100 % P_{rated}	η		0.855	0.866	0.877	0.887	0.898
Moment of inertia	J	kgcm²	28.0	32.0	61.0	61.0	107
Weight	m	kg	11.0	18.0	26.5	26.5	38.0

Motor data
Rated data
Rated data 120 Hz

Motor			MF□MA□□		
			132-12	132-22	132-32
Rated power	P_{rated}	kW	15	18.5	22
Rated speed	n_{rated}	rpm	3560	3560	3550
Max. speed	n_{max}	rpm	4500	4500	4500
Max. torque	M_{max}	Nm	160	200	240
Rated voltage					
Delta	$V_{N, \Delta}$	V	-	-	-
Star	$V_{N, Y}$	V	370	360	380
Rated current					
Delta	$I_{N, \Delta}$	A	-	-	-
Star	$I_{N, Y}$	A	31.2	39.0	44.5
Rated torque	M_{rated}	Nm	40.3	49.6	59.2
Power factor	cos ϕ		0.84	0.84	0.83
Efficiency					
at 75 % P_{rated}	η		0.889	0.899	0.905
at 100 % P_{rated}	η		0.906	0.912	0.916
Moment of inertia	J	kgcm²	336	336	336
Weight	m	kg	66.0	66.0	66.0

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:

CE

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"

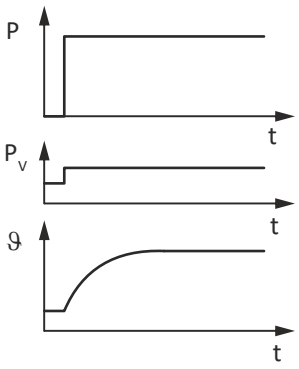
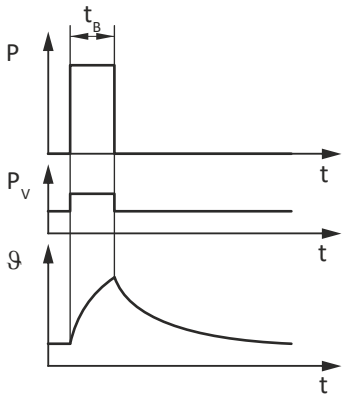
Appendix

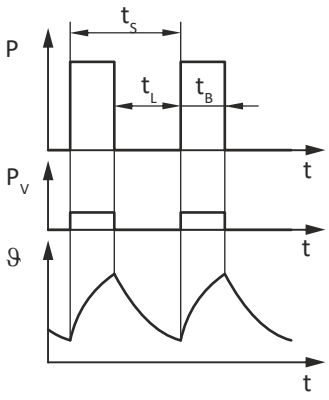
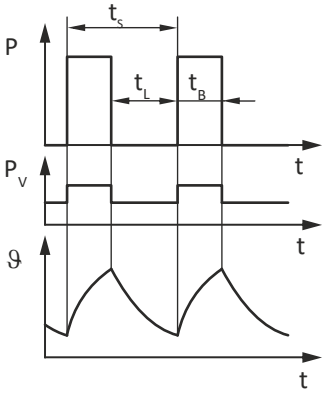
Good to know

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	P_V	Power loss
t	Time	t_B	Load period
t_L	Idle time	t_S	Cycle duration
ϑ	Temperature		

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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