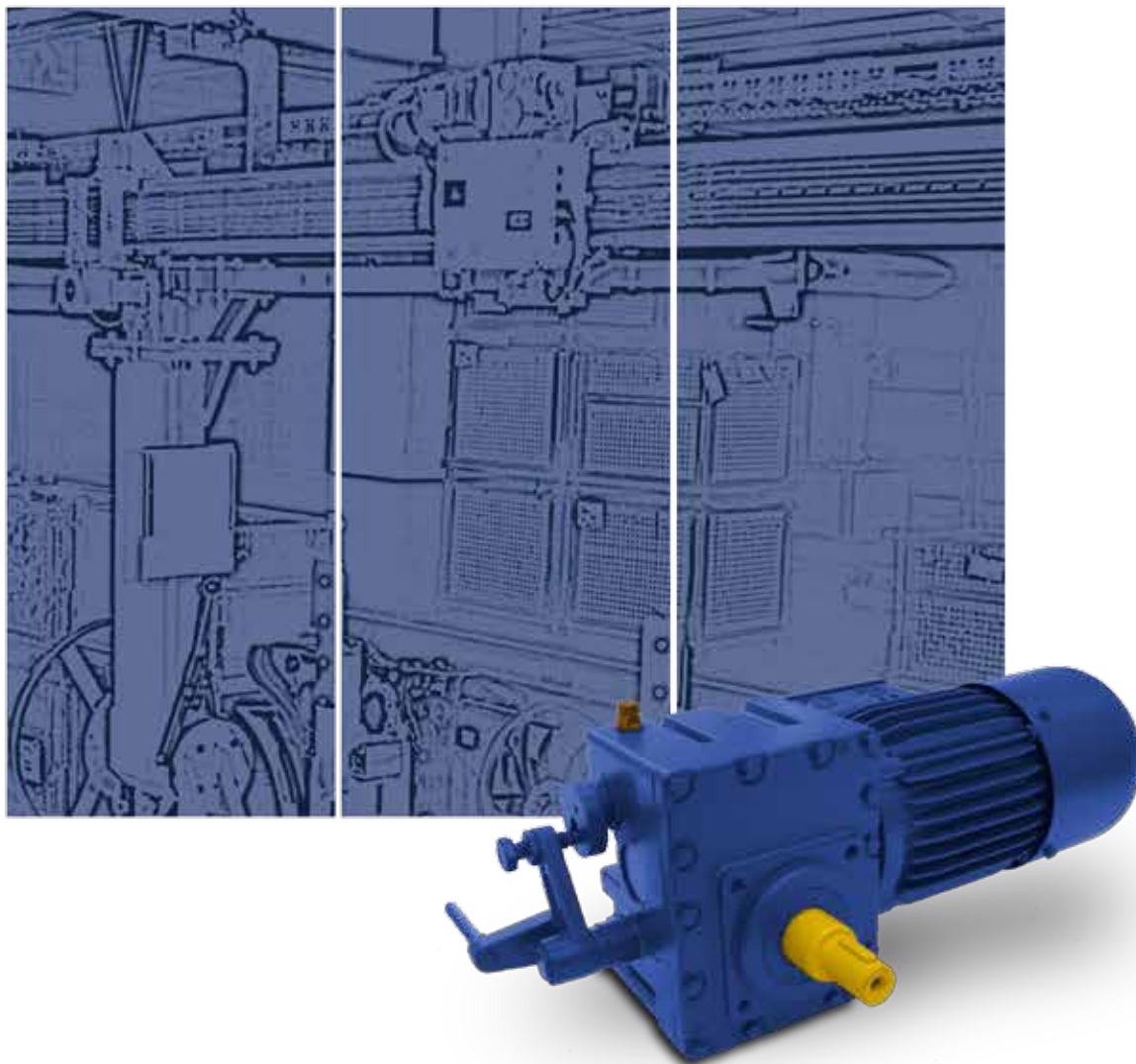


Geared Motors for Monorail Systems

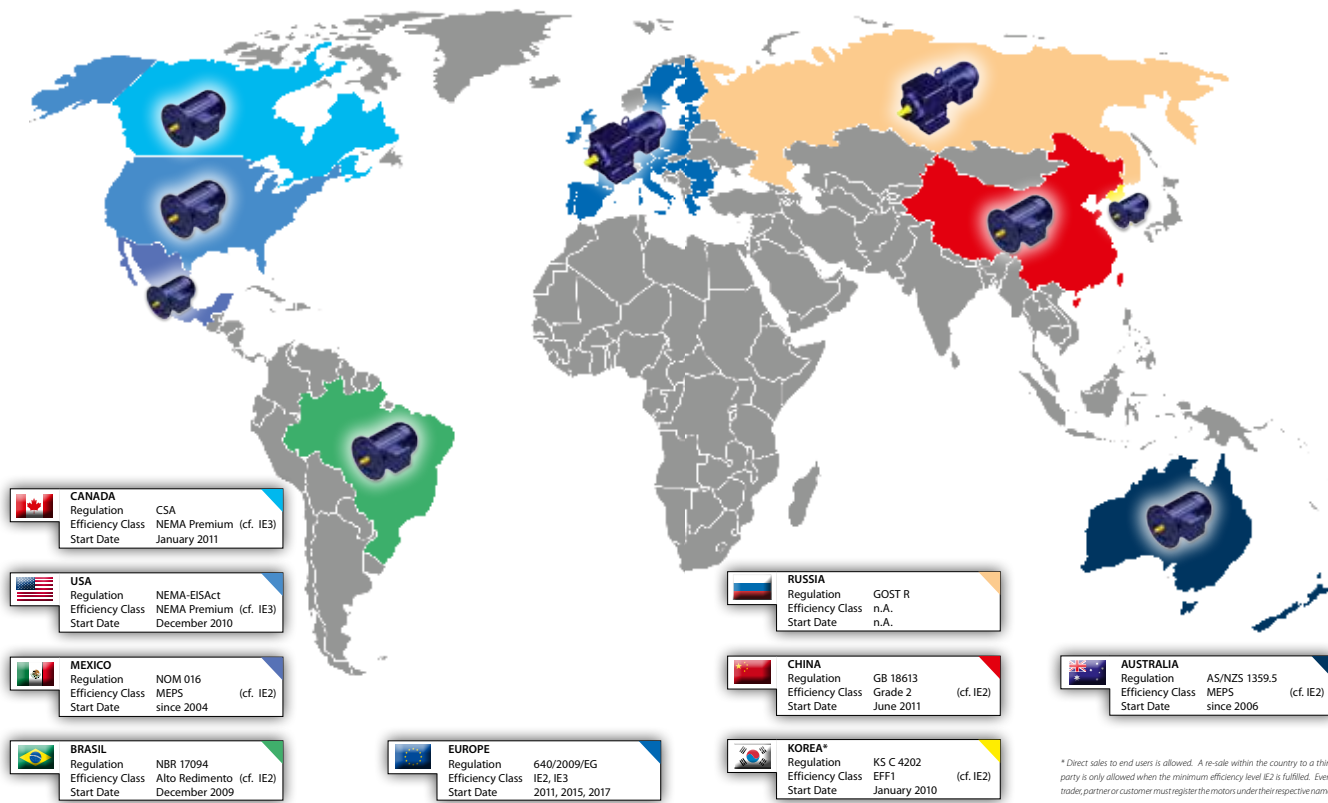
Catalogue Edition 03/2014 EN



 **Bauer®**
Gear Motor

An Altra Industrial Motion Company

Worldwide Efficiency Regulations



Legend

Efficiency requirements are valid for geared motors and solo motors

Efficiency requirements are valid only for solo motors

Exceptions to regulation (EC) no. 640/2009/EC of 22 July 2009:

Operating conditions Motors designed to operate fully submerged in a liquid (IP68)	Ambient conditions - at heights above 1,000 metres above sea level - at ambient temperatures above 40° C - at maximum operating temperatures above 400 °C - at ambient temperatures below -15° C (all motors) or ambient temperatures below 0° C (air cooled motors) - with coolant temperatures at product intake below 5 °C or above 25 °C from 27. July 2014 - at heights above 4,000 metres above sea level - at ambient temperatures above 60° C - at ambient temperatures below -30° C (all motors) or ambient temperatures below 0° C (air cooled motors)	Ambient conditions in areas with a potentially explosive atmosphere as mentioned in Directive 94/9/EC of the European Parliament and Council
Construction motors that are completely integrated in a product (such as a transmission, pump, fan or compressor) whose energy efficiency cannot be determined independently of this product		Other - Brake motors - Pole changing motors 8,10,12 pole motors - Single phase motors - DC motors - Duty cycles other than S1 - Motors exclusively designed for inverter duty

Type Designations

BM 10 - 7 1 V / D.. 09L A 4 - TF - ST - G - SL - K / ES 010 A 9 HN / C2

B M 10 Z X - 7 1 V

- V = Flange A or C at front
- H = Flange A or C at rear
- UO = Foot bottom and top
- 1 = Solid Shaft, front
- 2 = Solid Shaft, rear
- 3 = Solid Shaft, front and rear
- 7 = Solid Shaft front, flush with Standard-Flange only BM30-40
- 0 = Gear Housing, no surface machining
- 6 = Gear Housing, Foot-threaded bores
- 7 = Gear Housing, C - Flange
- = seperates gear type from gear design
- X = reinforced bearings for higher wheel loading
- Z = Gearbox with pre-stage
- = Gear Size (09, 10, 20, 30, 40)
- B M = Gear type (BM)

D .. 09 L A 4 - TF - S

- S = rectifier
- TF = Motor monitoring
- 4 = No. of pole for motor
- LA = Motor core length and design
- 09 = Motor size
- .. = SE Three-Phase Motor with increased efficiency acc. to IE1
- .. = HE Three-Phase Motor with increased efficiency acc. to IE2
- .. = PE Three-Phase Motor with increased efficiency acc. to IE3
- D = Three-Phase Motor
- S = Permanent Magnet Synchronous Motor

ES 010 A 9 HN

- HA = Hand Release (lockable)
- HN = Hand Release (none lockable)
- 9 = Code for setting torque
- A = Design
- 010 = Brake size
- ES = Single disk brakes - HOLDING BRAKE
- ZS = Double disk brakes - HOLDING BRAKE
- ESX = Single disk brakes - WORKING BRAKE
- ZSX = Double disk brakes - WORKING BRAKE

B M .. - 0 7 V / .. / S ..

- 01 = Flange A and solid shaft extended on gearbox side V (BM30;BM40)
- 02 = Flange A and solid shaft „greatly“ extended on gearbox side V (BM30;BM40)
- V = Flange A
- 7 = Solid Shaft front, flush with Standard-Flange only BM30-40
- 0 = Gear Housing, no surface machining
- = seperates gear type from gear design
- = Gear Size (09, 10, 20, 30, 40)
- B M = Gear type (BM)

EU-Directive 640/2009/EC

What does the EU directive mean?

EN 60034-30 is an international standard for energy-efficient motors and will in future years be used worldwide in this area. Electric motors account for approximately 1.07 billion kWh of the total energy demand of the EU. Using energy efficient motors would achieve energy savings of 20 to 30 per cent, thereby reducing the total cost of ownership (TCO) and reducing global warming.

As things stand today

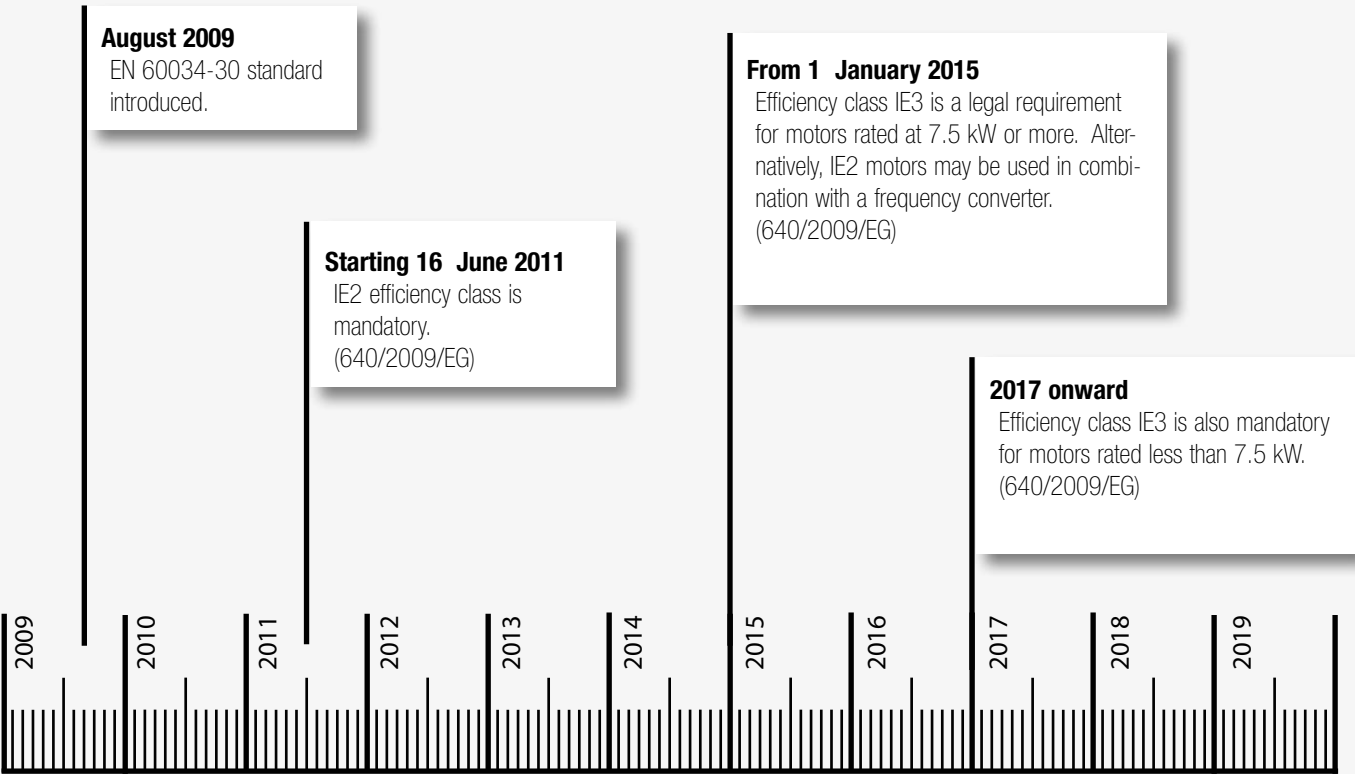
New IE (International Energy Efficiency) efficiency classes were introduced at the beginning of 2009:

- IE1 = Standard Efficiency (~ EFF2)
- IE2 = High Efficiency (~ EFF1)
- IE3 = Premium Efficiency (10–15 % higher efficiency than IE2)
- IE4 = Super Premium Efficiency

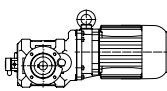
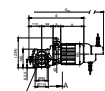
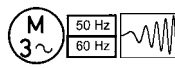
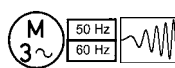
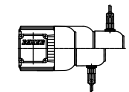
The IE classes cover the following:

Rated voltage
up to 1,000 V
Power
0.75 kW to 375 kW
Number of poles
2, 4 or 6 (50 and 60 Hz)
Operation
Mains Duty
Operating modes
S1
Remarks
Geared motors are considered

What happens when?



Geared motors for electric overhead conveyors series BM

		Page
Advantages for Bauer Geared Motors		11-14
Product Description		15-18
Type Designations		19-26
Gear Motor Selection		27-36
Gearboxes and Lubrication		37-46
Selection tables ASM-IE1		47-58
Selection tables ASM-IE2		59-70
Selection tables PMSM - IE4 1500 ¹ / _{min}		71-76
Selection tables PMSM - IE4 3000 ¹ / _{min}		77-82
Dimensional drawings		83-112
Motors - ASM		113-158
Motors - PMSM		159-200
Motor Components		201-226
BAUER global		227-238

1

2

3

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14

Flexible and robust for large and small loads

We are one of the leading manufacturers of intelligent drive technology for more than 85 years. Innovative products, modern processes and responsible employees realise this with the target of conserving resources and the environment together with efficient energy use over our whole field of activity. The success of our efforts assumes that we know and master our customers applications and the requirements on drive technology. We do this perfectly - from engineering, design and calculation through procurement, production and logistic to special application knowledge in the most important branch sectors. Modelled on the basis of Bauer's 2000 Geared Motor Range, the success of the electric monorail drives is just one example of Bauer's years of expertise and industry knowledge in the field of dedicated geared motor solutions.

CD Rom:



Literatur:

For further information on all of our products, please see:
www.bauergears.com



The most recent version of the Terms and Conditions can be found under „www.bauergears.com“.

Geared motors for electric overhead conveyors series BM

General Product Overview

Helical-Geared Motor Series BG



Compact and economical inline helical geared motors for long lifetime under arduous conditions.

- Motor power from 0.03 kW to 75 kW
- 13 gearbox sizes for torques from 20 Nm to 18500 Nm
- New attachment possibilities with low design height
- High efficiency through 2 stage base design
- Enclosure IP 65 as standard

Shaft-Mounted Geared Motor Series BF



Shaft-mounted geared motors with integrated torque arm are easily integrated and economically applied.

- Motor power from 0.03 kW to 75 kW
- 10 gearbox sizes for torques from 90 Nm to 18500 Nm
- Gearbox housing with integral torque arm
- High efficiency through 2 stage base design
- Enclosure IP 65 as standard

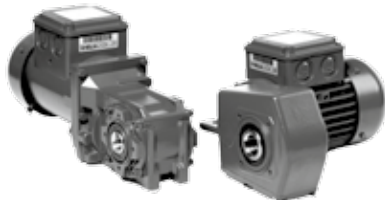
Bevel-Geared Motor Series BK



Power-dense, right-angle, bevel-geared motors ensure the highest efficiency especially when used with frequency inverters.

- Motor power from 0.03 kW to 75 kW
- 10 gearbox sizes for torques from 80 Nm to 18500 Nm
- The right angle gearbox with universal attachment possibilities
- High efficiency through 2 stage base design
- Enclosure IP 65 as standard

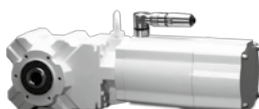
Small Industry Geared Motors KIG



Gearbox and motor build a compact unit. Small industrial gear motors are space-saving and versatile and can be supplied for any mounting position.

- Available for three-phase and single-phase
- Lightweight, compact drives help to reduce the weight of the machine
- Saves space and reduces costs, especially for conveyor systems
- Motor connection via CAGE CLAMP® is vibration-proof and saves you money
- Motor parts for many installation situations and supply voltages
- In self- or non-ventilated design

AsepticDrive™



Geared motors for the food & beverage industry as well as for all applications with high cleaning intensity or ambient conditions such as dust, fluff etc.

- Motor without fan and cooling fins
- Motor power
 - DA08 0.25 kW - 0.55 kW
 - DA09 0.37 kW - 1.5 kW
 - DA11 1.1 kW - 2.2 kW
- Available with helical, parallel shaft, bevel and worm gears
- Motor winding in Iso Class F with thermistors as standard
- Enclosure IP 67 and IP 69K with acid and alkali resistant coating as standard
- Motor connection through standard stainless steel plug connector

CleanDrive™



Geared motors for the Food & Beverage industry in enclosure IP 66 with acid and alkali resistant coating as standard.

- Motor without fan and cooling fins
- Motor power 0.12 kW
- Motor winding in Iso Class F with thermistors as standard
- Motor connection through standard terminal box or stainless steel cable gland

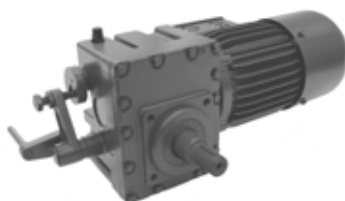
Worm-Geared Motor Series BS



Economical, right-angle, worm-gear motors install easily in the tightest applications.

- Motor power from 0.03 kW to 5.5 kW
- 8 gearbox sizes for torques from 25 Nm to 1000 Nm
- Hollow shaft version already available from 25 Nm
- High loadable worm gearing for long lifetime
- Enclosure IP 65 as standard

Overhead Monorail Geared Motor Series BM



A completely new range of monorail drives for light and heavy load monorail applications.

- Torques from 30 Nm up to 680 Nm
- Radial force up to 25.000 N
- Flexible mounting on the running gear
- Enclosure IP 65 as standard
- Improved efficiency – lower energy consumption – ideal as travelling drives
- Reverse motion of the gearbox is possible

Frequency Converter Geared Motor Series Eta-K



Eta-K solutions are combinations of geared motors and frequency converters. They provide compact drive solutions with infinite speed control.

- Saving space and costs
- No shielded motor cables required
- Mechatronic adaption of VLT drive and geared motor
- Motor power range 0.12 kW up to 7.5 kW
- Supply voltage 3 x 380 V - 480 V
- Compliance to all EMC standards
- Standard RS485-Interface, optional Profibus-Interface
- Zone 2 and 22 possible
- UL approved

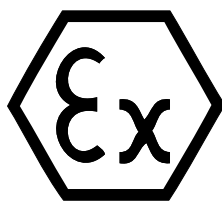
CAGE CLAMP®



The use of Bauer geared motors up to 30 kW with CAGE CLAMP® connection technology reduce costs both during installation and in service cases.

- Cost reduction during connection
- Simple handling
- Cable core diameters up to 25 mm² without wire-end sleeves
- Cost saving in material and tooling
- Vibration and shock resistant
- approved

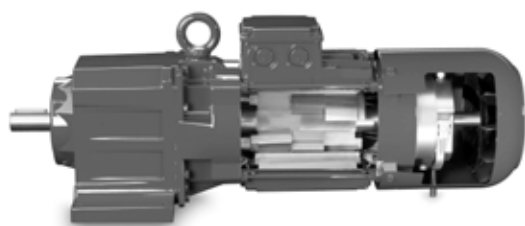
Explosion-proof BAUER Geared Motors



Geared motors suitable for use in explosive areas:

GAS	Zones 1, 2		
DUST	Zones 21, 22		
DXD	Zone 1,	II 2 G Ex d(e) IIC T3...T4 Gb	0,12... 75 kW
DXE	Zone 1,	II 2 G Ex e IIC T1...T4 Gb	0,12... 11 kW
SXE	Zone 1,	II 2 G Ex e IIC T1...T4 Gb	0,55 ... 15 kW
DXN	Zone 2,	II 3 G Ex nA IIC T3 Gc	0,03... 30 kW
DXC	Zone 21,	II 2 D Ex tb IIIC T160°C IP66 Db	0,03... 30 kW
DXC	Zone 21,	II 2 D Ex tb IIIC T120°C IP66 Db	0,03... 22 kW
SXC	Zone 21,	II 2 D Ex tb IIIC T120°C...160°C IP66 Db	
DXS	Zone 22,	II 3 D Ex tc IIIC T120°C...160°C IP65 Dc	0,03... 30 kW
DXD	Zone 1/21,	II 2 G Ex d(e) IIC T3...T4 Gb	
		II 2 D Ex tb IIIC T120°C...160°C IP65 Db	0,12... 75 kW
DXE	Zone 1/21,	II 2 G Ex e IIC T1...T4 Gb	
		II 2 D Ex tb IIIC T120°C...160°C IP66 Db	0,12... 11 kW
SXE	Zone 1/21,	II 2 G Ex e IIC T1...T4 Gb	
		II 2 D Ex tb IIIC T120°C...160°C IP66 Db	0,55... 15 kW
DXS	Zone 2/22,	II 3 G Ex nA IIC T1...T3 Gc	
		II 3 D Ex tc IIIC T120°C...160°C IP65 Dc	0,03... 30 kW

Energy Saving Geared Motors



η	Advantages	Your benefits
Without	- Motor design according to duty - Small installation volume and minimum weight - Higher motor powers	- Economical - Small installation space - Efficient motor utilisation - Tailored to customer application - Smaller motor frame size
IE1	- Standard efficiency in continuous operation - Small installation volume and minimum weight	- Economical - Small installation space - For general-purpose use inside or outside Europe
IE2	- Higher efficiency in continuous operation - Higher start-up torque	- Economical - Small installation space - Up to 34% more energy savings compared to IE1 - Lower rated motor power than IE1 for dynamic load applications - Short amortisation period
IE3	- Premium efficiency in continuous operation - Higher start-up torque	- Up to 18% more energy savings compared to IE2 - Already meets minimum efficiency requirements for 2015/2017
IE4	- Super Premium efficiency - Speed control with highest possible efficiency - Small installation volume and minimum weight - Considerably better efficiency than IE2 motors, even under partial load conditions - High torque and power density - High overload capacity	- Up to 39% more energy savings compared to IE2 - Short amortisation period - Small installation space - Compact drive unit - More torque with same size motor frame - Requires smaller installation space with same power - Reduced number of variants thanks to higher efficiency over the entire torque range - Design security thanks to spare drive unit capacity - Technology leader - Already meets the efficiency requirements of future standards

Energy Saving Geared Motors Series S in IE4 for explosion hazardous areas



Permanent magnet synchronous motors (PMSM) Series S as variable-speed motors in efficiency class IE4 for use in explosion hazardous areas.

- Design torque M_N :
5 Nm – 48 Nm
- Rated power P_N :
0,75 kW – 15 kW
- Protection type: Increased Safety
Zone 1

 II 2 G Ex e IIC T1 - T3 Gb

S.XE.08MA4
S.XE.08LA4
S.XE.09SA4
S.XE.09XA4
S.XE.11SA6
S.XE.11MA6
S.XE.11LA6

- Dust explosion protection
Zone 21

 II 2 D Ex tb IIIC T160°C ... 120° Db

S.XC.08MA4
S.XC.08LA4
S.XC.09SA4
S.XC.09XA4
S.XC.11SA6
S.XC.11MA6
S.XC.11LA6

The highest energy efficiency that can be achieved with the current state of motor technology.

W
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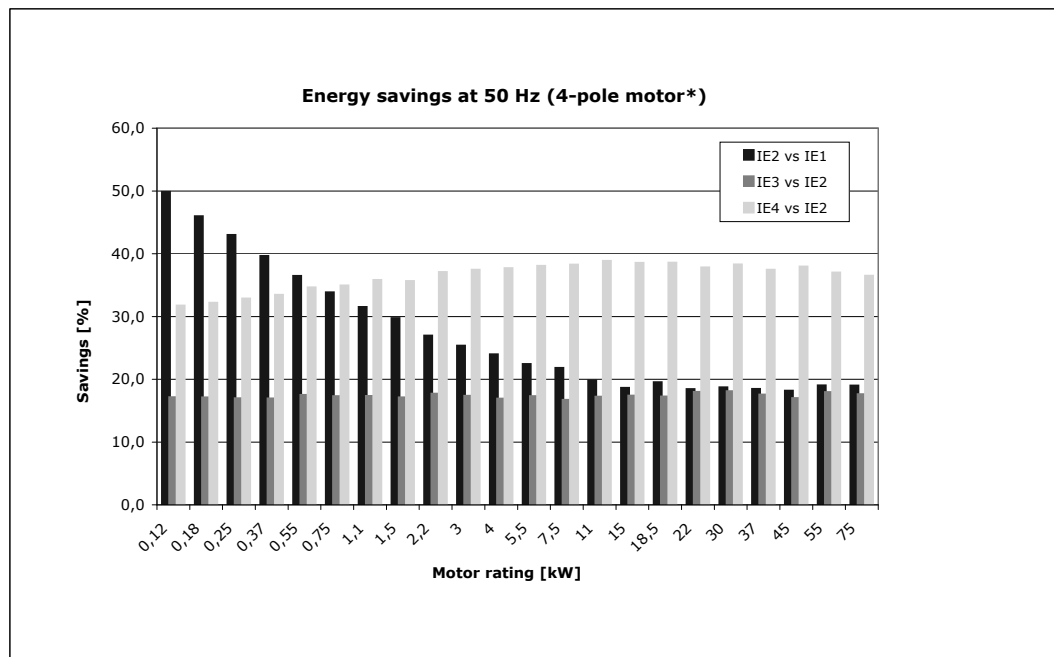
Geared motors for electric overhead conveyors series BM

General Product Overview

Investment security for the future

Electrically driven machinery accounts for around 70% of overall energy demand for industrial consumption. If existing drives which have already been in service for decades were to be replaced by modern drive systems, energy savings of 135 billion kilowatt-hours per year would be possible within Europe. The Bauer Gear Motor range of motors offers trend-setting technologies for energy-efficient drives and for motor designs tailored to specific applications. The latter option enables highly efficient drive solutions without requiring additional space.

Potential for energy savings in drive technology



P _N [kW]	IE1*	IE2*	IE3*	IE3*	IE4*
0,55	DSE08MA4	DHE08LA4			SU08MA4
0,75	DSE08LA4	DHE08XA4	DPE09LA4		S08MA4
1,1	DSE09SA4	DHE09LA4	DPE09XA4		S08LA4
1,5	DSE09LA4	DHE09XA4	DPE09XA4C	S08LA4	S09SA4
2,2	DSE09XA4	DHE09XA4C	DPE11MA4	S09SA4	S09XA4
3	DSE11SA4	DHE11MA4	DPE11LA4	S09XA4	S11SA6
4	DSE11MA4	DHE11LA4	DPE11LA4C	S11SA6	S11MA6
5,5	DSE11LA4	DHE11LA4C	DPE13LA4	S11MA6	S11LA6

*at 1,500 rpm



Advantages for Bauer Electric overhead conveyors systems

11-14

Bauer-Electric overhead conveyors systems

Bauer-Gearboxes

Bauer-Motors

Bauer-Brakes

Bauer-electric overhead conveyors systems

What we offer...	Your benefit...
Tried and tested technology with several thousand drives in the field	Reliability
Flexible assembly possibility	Simple engineering
Coupling lever always on the front side	Simple engineering, easy to reach
Gearboxes designed for efficiency	Energy saving
Industry standard shaft connection	Flexible choice of wheel
Long service intervals	High productivity
Finely graduated brake torques	High availability
Asynchronous and permanent magnet technology	High flexibility in engineering reduces stocking costs and increases the working capital
Permanent magnet synchronous motors	Energy saving, high power density, weight reduction
Customer specific modifications	Flexibility
Drives can be reversed without disengaging the clutch	Reduced downtime

1

Bauer Gearboxes

Easy access to the fixation points reduces assembly times and installation costs

- Low servicing costs as the lubrication change results in normal duty with a lubrication temperature of approx. 80°C first after 15.000 operating hours when using CLP oils or 25.000 operating hours when using PGLP oils
- 2-stage gearbox concept reduces the spare part stocking
- A variety of attachment possibilities (Foot, Flange, Solid and Hollow shafts, Torque arms)
- Sealed housing design reduces the risk of oil leakage and increases the oil lifetime
- The large housing volume allows usage in very harsh environments

Bauer Motors

- Low operating costs due to high motor efficiencies (IE2, IE3 and IE4 as Standard)
- Low installation costs through CAGE CLAMP® instead of the classical terminal block connection
- A variety of additional designs (connectors, brakes, backstops, rain covers, forced cooling, encoders etc.)
- Cost reduction of connection cabling and avoidance of additional protective elements (chokes, filters etc.), through built-on inverters (ETA-K)
- Ideal for frequency inverter

Bauer Brakes

- Low servicing costs through long lifetime of the brake discs
- Brake-Motor correlation tailor made to the application by virtue of on average three brake sizes per motor size
- A variety of designs (lockable and non-lockable hand release, microswitch, heaters)
- Robust design for heavy duty applications
- Enclosure IP65 as standard
- Very high wear resistance.



Geared motors for electric overhead conveyors series BM

Advantages

1



PARTNERSHIP AT EYE LEVEL



REFERENCES

PIONEERS

FLEXIBILITY

OPEN SYSTEM

TRADITION

PLUG&DRIVE

WORLDWIDE PARTNER NETWORK

APPLICATION EXPERTISE



NORD AND SOUTH AMERICA

- Bauer MLD - Sladeview - CA
- Bauer Gear Motor LLC. - Somerset, USA

EUROPE

- Eegholm a/s - Sønderborg - DK
- Elektrotechnik & Automation Ulrich Brodbeck - Aichtal - DE
- Klebs & Hartmann GmbH & Co. KG - Ludwigshafen - DE
- Scheib Elektrotechnik GmbH - Düsseldorf - DE
- Steinlen Elektromaschinenbau GmbH - Burgwedel - DE
- Bauer Gearmotor AS - Skedsmokorset - N
- ESKO Elektromaschinenbau GmbH - Fohnsdorf - AT
- Bauer Gearmotor Sverige AB - Gustavsfors - S
- Meier & Co AG - Niedergösgen - CH
- TEM - Igualada - ES

MEA

- International Combustion India Ltd. - Aurangabad - IND
- BAUER a Division of Hudaco - Germiston - ZA

RUSSIA

- Altra Industrial Motion OOO - Moskau - RU

CHINA

- Altra Industrial Motion (Shenzhen) Co., Ltd - Beijing - CN

PRODUCTION

- Bauer Gear Motor GmbH - Esslingen - DE
- Bauer Gear Motor Slovakia s.r.o. - Zlaté Moravce - SK

NORD AND SOUTH AMERICA

- Grenzbach North America - Newnan - USA
- North America Service Rho Industries Inc. - Dundas, CA
- Grenzbach do Brasil Ltda.- São José dos Campos - BR

EUROPE

- LJU Service - Potsdam - DE
- Tiltech n.v. - Dendermonde - BE
- Sical Automation S.L. - Madrid - ES
- LJU Czech Republic - Mladá Boleslav - CZ
- LJU-PROTEK - Yenisehir/Izmir - TR

MEA

- Grenzbach Machinery (India) Pvt. Ltd. - Poona - IND

APAC

- ECS Industries PTY LTD - Donvale - AU
- Shinkang Intech Co. Ltd. - Kyungki-Do - KR

CHINA

- Grenzbach Machinery (Shanghai) Ltd. - Shanghai - CN
- OJ Automation (Shanghai) Co., Ltd. - Shanghai - CN

PRODUCTION

- LJU Automatisierungstechnik GmbH - Potsdam - DE



Product Description

- Five unit sizes to handle every load
- Installed positions of geared motors
- Notes on safety
- Guards for rotating parts
- Protection against accidental contact
- Operating noise
- Paint finish and corrosion protection

Product Description

Description of BM geared motors

Five unit sizes to handle every load

The BM (Bauer Monorail) series offers five gear unit sizes which differ in their permissible torques (from 50 to 680 Nm). The gear units are also offered in heavy duty versions for increased permissible radial loads.

	Gear unit	F_{RN} in N	d_{AW} in mm	Shaft height in mm	Shaft collar in mm
1	BM09	4400	20	61	30
	BM09X	6500	25	61	30
2	BM10	8000	25	62,5 (60)	34,5
	BM10X	10000	25	62,5 (60)	34,5
3	BM20	10000	30	70,5 (68)	35
	BM20X	12000	30	70,5 (68)	35
4	BM30(Z)	12000	35	94 (90)	45
	BM30(Z)X	15000	35	94 (90)	45
5	BM40(Z)	20000	55	125 (120)	60
	BM40(Z)X	25000	55	125 (120)	60

Type	Allowable torque [Nm]	Allowable wheel load at power application *ML [N]	Gear ratios	Speed (based on wheel [m/min])	Wheel diameter [mm]	Output shaft [mm]
BM09	30 - 100	4400	11,34 - 53,85	10 - 100	125	20 x 35
BM09X		6500		12,8 - 128	160	25 x 35
BM10	140 - 160	8000	11,68 - 58,18	12 - 128	160	25 x 35
BM10X		10000		16 - 160	200	25 x 35
BM20	182 - 220	10000	7,66 - 74,76	9 - 69	160	30 x 35
BM20X		12000		12 - 87	200	30 x 35
BM30	260 - 350	12000	7,91 - 71,09	13 - 186	200	35 x 49
BM30X		15000		16 - 233	250	35 x 49
BM40	600 - 680	20000	11,17 - 104	11 - 162	250	55 x 110
BM40X		25000		13 - 194	300	55 x 110

*ML: The position of the power application point „centre of wheel“ can be seen on the applicable dimensional drawings. Significantly higher gear ratios are optional.

The BM09 and BM10 gear units can run on “C1 profiles”. Compliance with the VDI Code of practice 3643 (C1-Standard) and the need to reduce the cost of overhead conveyor drives of this size resulted in a thoroughly tested design which uses a worm-gear set in the first stage and a spur gear set in the second stage. The worm-gear stage with its very small reduction ratios offers particularly high levels of efficiency (greater than 85 %) thanks to the high speeds. The mechanical claw clutch engages the first stage on the BM09 and the final stage on the BM10.

BM20, BM30 and BM40 are heavy-load overhead conveyor drives and have a helical-gear set in the first stage and a bevel-gear set in the final stage. The clutch is mounted in the final stage on these gear units also.

The BM10, BM20, BM30 and BM40 offer additional mounting options. The flange can be located outside on the front of the gear unit, or on the back (“H” side). A version with sturdy securing threads on the underside (“U”) and on top (“O”) of the gear unit can also be supplied. This enables new and easy - to - maintain carriage designs. The use of BM gear units as drive units for floor conveyors is simplified by the version with an output shaft on both sides. Hollow shaft design available on request.

Product Description

Selection of geared motors

2

Installed positions of geared motors

Bauer geared motors can be supplied for any type of fitting position. Vertical installation positions (motor-down) place a particularly severe strain on the shaft seal. It is advisable to avoid this arrangement especially at high motor speeds (e.g. above 1800 r/min) and continuous operation.

Notes on safety

See the notes on safety regarding installation in Operating Instructions.

Guards for rotating parts

The shrink disk (SSV) guards required under the German law relating to technical materials (Law Concerning Industrial Equipment - Equipment safety law GPSG) or by the Accident Prevention Regulations (UVV) are not included in the standard scope of supply because they are fitted by the customer in most cases, or the risk of accident can be eliminated by suitable installation.

See the Operating Instruction.

Protection against accidental contact

The D04LA and D05LA small motors have smooth motor housings. In the textile, pharmaceutical and foodstuffs industries in particular and in plant engineering, this IP54 version has a number of advantages over ribbed housings. In some instances, protection against accidental contact may have to be installed by the customer because for technical reasons, the surface temperatures of motors with smooth housings can be high, especially in continuous operation.

Operating noise

The typical operating noise levels of BAUER geared motors are within the limits stipulated by VDI directive 2159 for gears and EN 60034-9, Table 2 for motors.

For physical reasons, low-ratio, high-speed gears produce more noise than medium- and high-ratio gears operating at low speeds.

Paint finish and corrosion protection

BAUER geared motors are spray-painted in RAL 7031 to DIN 1843 as standard. Other RAL colours are available at extra cost.

The output shafts are shipped in protective sleeves or with a protective coating to prevent corrosion.

If high requirements for corrosion resistance are required, the drives are available with enhanced corrosion protection: CORO 1, CORO 2, or CORO 3 (see chapter 11 "Special corrosion protection").

Paint finishes up to 200 µm in thickness are available on request at extra cost. Thicker paint finishes for geared motors are impractical, because the paint tends to flake at the ribs and when the terminal box is opened.

▲ Bauer		D-73734 Esslingen	
3-Mot. No E		A/	
Type BM09-71V/DHE08MA4-TF-G-S/ES010A9			
0.37 $\frac{\text{kW}}{\text{const. P}}$		0.60	(50°C) F
50-Hz Δ		230 V	2.1 A
n_1 1420	n_2	26.5 (min)	53.85
5-50.87-Hz		49-230-400 V	
		IE2 74%	
MF H1		0.65	0.6 L PGLP 220
		T_{max} 40°	
180 V DC 0.17 A		10 L/min	380-420 V AC
CE		EN 60034	

Type Designations

Significance of type designation
BM-series electric overhead conveyors
Description of the Designs
General Description

Geared motors for electric overhead conveyors series BM

Type Designations

Monorail geared motor with brake and series options

Example: monorail geared motor with brake and series options

Significance of type designation

The type designation of a BAUER geared motor is a code designating all the features in the drive configuration.

The type designation of a BAUER geared motor is a code designating of all the features in the drive configuration. The build-up of the type designation is explained with the help of the following example of a monorail geared motor with brake and series options.

	Gear										/	Motor										/	Brake									
	BM	40	Z	-	1	1	U	W	/	D..	09L	A	4	-	TF	-	S	/	ES	010	A	9	HN	/	C2							
Bauer-Monorail																																
Gear size 40																																
With pre-stage																																
Separates gear type from gear design																																
Gear housing, foot with clearance holes at bottom																																
Solid output shaft at front																																
Foot with clearance holes at bottom																																
Double shaft seals																																
End of gear part, start of motor part																																
Three-phase motor																																
Motor size																																
State of construction of motor																																
Poles of Winding																																
Separates motor-type from motor supplement																																
Motor protection, thermistors from thermal class F																																
Separation between motor supplements																																
Standard brake rectifier, in the motor terminal box																																
End of motor, start of brake																																
Single disc brake																																
Brake size																																
State of construction of brake																																
Code for braking torque set																																
Manual release non lockable																																
End of supplement, start total design																																
Unit in corrosion protection CORO2																																

Geared motors for electric overhead conveyors series BM

Type Designations

3

gear type
 gear size
 pre-stage
 re-inforced bearing ($\geq$ BK20)
 code for gear design
 code for shaft design
 Three-phase motor
 motor size
 core length
 design edition
 number of poles

BM30 Z X-61U / D..09 LA4

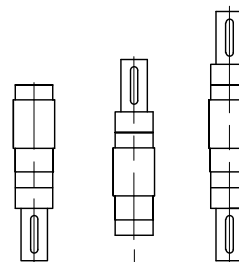
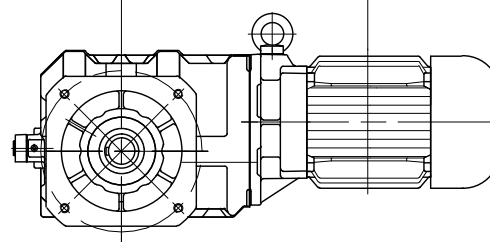
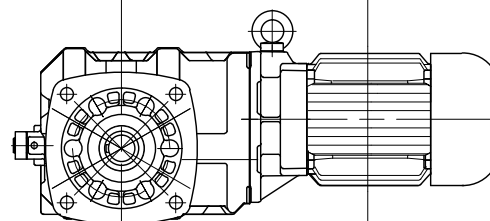
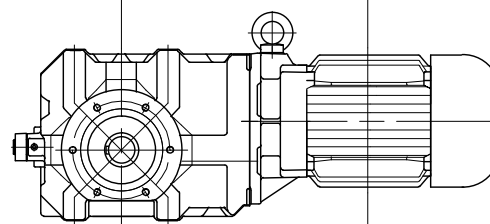
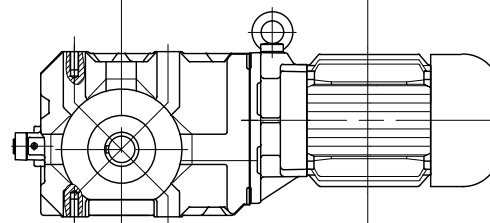
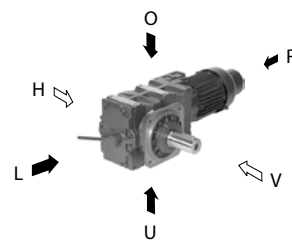
6 . O ——— foot with threaded holes, top
 6 . U ——— foot with threaded holes, bottom
 6 . UO ——— foot with threaded holes, bottom and top

7 . V ——— C-flange with threaded holes, front
 7 . H ——— C-flange with threaded holes, rear

8 . ——— completely machined
 07 . V /.../ S02 ——— far drawn flange at front

07 . V /.../ S01 ——— drawn flange at front

. 1 solid shaft on gear side V
 . 2 solid shaft on gear side H
 . 3 solid shaft on gear side V and H



Geared motors for electric overhead conveyors series BM

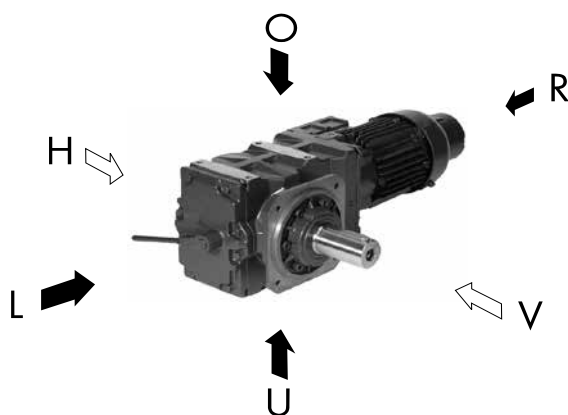
Type Designations

Gear unit designs:

Gear unit	1st stage	2nd stage	Flange on rear	"U" and "O" foot threads	Output shaft on both sides	Output shaft on rear	Preferred flange
BM09(X)	Worm-gear	Helical-gear	-	-	-	-	-
BM10(X)	Worm-gear	Helical-gear	Option	Option	Option	-	-
BM20(X)	Helical-gear	Bevel-gear	Option	Option	Option	-	-
BM30Z(X)	Helical-gear	Bevel-gear	Option	Option	Option	-	Option
BM40Z(X)	Helical-gear	Bevel-gear	Option	Option	Option	Option	Option

Type designation and components of the BM-series geared motors

BM..-	Bauer Monorail geared motor Gear unit size (BM09,10, 20, 30, 40)
BM..Z-..	Gear unit with additional primary stage for very high reduction ratios
BM..G-..	Gear unit with double gearing for very high reduction ratios
BM..X-..	Reinforced gear unit for high wheel loads
BM..-7.V	C-flange with threaded holes on the "V" side of the gear unit
BM..-7.H	C-flange with threaded holes on the "H" side of the gear unit (available on request)
BM..-6.UO/	Foot thread on the "U" and "O" sides of the gear unit (not with BM09)
BM..-.1/	Solid shaft on the "V" side of the gear unit
BM..-.2/	Solid shaft on the "H" side of the gear unit (available on request)
BM..-.3/	Solid shaft on the "V" and "H" sides of the motor (available on request)
BM..-07V/..S01	A-flange and solid shaft extended on the V side of the gear unit (BM30; BM40)
BM..-07V/..S02	A-flange and solid shaft "greatly" extended on the V side of the gear unit (BM30; BM40)



V =	Front The side of the gear unit facing toward the viewer looking toward the type H1 unit
H =	Rear The side of the gear unit facing away from the viewer looking toward the type H1 unit
L =	Links The left side of the gear unit as viewed from the output shaft side of type H1, or the torque brace oriented to the left
O =	Top The top side of the gear unit as viewed from the output shaft side of type H1, or the torque brace oriented upwards
U =	Bottom The bottom side of the gear unit as viewed from the output shaft side of type H1, or the torque brace oriented downwards

Geared motors for electric overhead conveyors series BM

Type Designations

3

	Gear	/	Motor	/	Brake
Bauer-Monorail	BM		40		Z
Gear size 40					1
With pre-stage					1
Separates gear type from gear design					U
Gear housing: foot with clearance holes					W
Output shaft at front					D
Foot with clearance holes at bottom					09L
Double shaft seal					A
End of gear part, start of motor part					4
Three-phase motor					-
Motor size					IE
State of construction of motor					-
Number of winding poles					S
Separates motor type from motor supplements					/
Motor protection: thermistors for thermal class F					ES
Separation between motor supplements					010
Standard rectifier for brake, in motor terminal box					A
End of motor, start of brake					2
Single-disc brake					HN
Brake size					/
State of construction of brake					C2
Configured braking torque					
Manual release, non-lockable					
End of supplement, start of total design					
Unit with CORO2 corrosion protection					

Three-phase motor

D	=	Three-phase motor
E	=	Single-phase motor (Steinmetz circuit)
S	=	PM-Synchronous motor
. A	=	Aseptic motor (germ-free drive)
. SE	=	Three-phase motor with enhanced efficiency compliant with IE1
. HE	=	Three-phase motor with enhanced efficiency compliant with IE2
. PE	=	Three-phase motor with enhanced efficiency compliant with IE3
. N	=	Motor without gear unit; foot-mount version
. NF	=	Motor without gear unit; flange-mount version
. R	=	Roller table motor
. XE	=	Explosion-proof motor with increased safety
. XD	=	Explosion-proof motors
. W	=	Torque motor
. L	=	Special rotor for traction and slewing gear motors
. C	=	With main and auxiliary windings; only with single-phase motors (EC....)
. V	=	Multiple voltage ranges (wide voltage range)
. U	=	Unventilated (no forced ventilation)

Motor protection

TB	=	Thermistor 140°
TF	=	Thermistor 160°
TH	=	Thermistor 180°
TEB	=	Thermistor warning/shutdown 120°/140°
TBF	=	Thermistor warning/shutdown 140°/160°
TFH	=	Thermistor warning/shutdown 160°/180°
TOB	=	Thermostatic switch, NC 140°
TOF	=	Thermostatic switch, NC 160°
TOH	=	Thermostatic switch, NC 180°
TSB	=	Thermostatic switch, NO 125°
TSF	=	Thermostatic switch, NO 160°
TSH	=	Thermostatic switch, NO 180°
TX	=	Other

Brake rectifier in motor terminal box

S	=	Standard rectifier	SG
E	=	Special rectifier	ESG
M	=	Special rectifier	MSG

Plug connector Heavy-duty fan Protective cover

ST	=	Harting (other)
SL		
D		

Geared motors for electric overhead conveyors series BM

Type Designations

	Gear										/	Motor										/	Brake									
	BM	40	Z	-	1	1	U	W	/	D..	09L	A	4	-	TF	-	S	/	ES	010	A	9	HN	/	C2							
Bauer-Monorail																																
Gear size 40																																
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Single-disc brake																																
Brake size																																
State of construction of brake																																
Configured braking torque																																
Manual release, non-lockable																																
End of supplement, start of total design																																
Unit with CORO2 corrosion protection																																

Brake

E	= Single-disc brake
ES	= Single-disc holding brake
EH	= Single-disc holding brake in heavy duty
ZS	= Two-disc holding brake
ESX	= Single-disc service brake
EHX	= Single-disc service brake in heavy duty version
ZSX	= Two-disc service brake
... 010	= Brake size
... ... A	= Construction state
... 9	= Code for configured braking torque
... HN	= Manual release (not lockable)
... HA	= Manual release (lockable)

Reverse rotation block

RR	= Blocking direction clockwise
RL	= Blocking direction counterclockwise

Encoders

G

Second shaft end

ZW	= With parallel key
ZV	= With square shaft

Forced ventilation

FV

Overall design

AV	= USA/Canada version with shaft dimensions in inches
AM	= USA/Canada version with metric shaft dimensions
UL	= US version
CS	= Canadian version
C1	= Coro1 corrosion protection
C2	= Coro2 corrosion protection
C3	= Coro3 corrosion protection
SP	= Non-catalogue version



Bauer has an experienced team of experts available for the dimensioning of EHB carriage drives.

If you give a precise description of the conditions of operation, using our questionnaire (see 14.2), a quote for the best drive for you can be processed as quickly as possible.

For frequently used applications where the drives are supplied from a frequency inverter, however, the selection tables below can be used for rough drive dimensioning.

Procedure for selecting BM-series geared motors

1) Establish the wheel load and running wheel diameter

$$F_A = m_A \cdot g$$

F_A	[N]	(Wheel load on running wheel)
m_A	[kg]	(Mass acting on the drive wheel)
g	[9,81 m/s ²]	Acceleration due to gravity
F_{RN}	[N]	(Maximum permissible radial force at the centre, of the wheel, see table 14.3.1 and 14.4.1)

Selection is based on the following: $F_A < F_{RN}$

Running wheel diameter d is determined by the plant engineer (preferred diameters: 125 mm, 160 mm, 200 mm, 300 mm). Criteria are wheel load and carriage design, for example.

2) The travelling speed is a further important criterion in the selection tables.

Two setting ranges are available for selection: 1:10 and 1:20. The full range of rated torques up to these frequencies are available. At higher frequencies, the torque decreases as a result of the speed range under field control. As a rule, geared motors with the 1:10 setting range are somewhat quieter in operation and those with the 1:20 setting range have smaller, less expensive motor components. The 1:20 setting range facilitates lower positioning speeds.

$$n_2 = \frac{v}{d \cdot \pi}$$

v	[m/min]	(Travelling speed)
n_2	[1/min]	(Speed at the output shaft)
d	[m]	(Running wheel diameter)

3) Geared motor selection in accordance with the required acceleration torque M_{acc2} (specification: $M_{acc2} > M_{tot}$) and the permissible long-term rated torque M_{N2} (specification: $M_{N2} > M_L + M_h$).

The values for M_{acc2} and M_{N2} are contained in the selection tables. If acceleration torque M_{acc2} is not sufficient, the table usually provides higher values for torques M_{acc2} and M_{N2} at a higher permissible radial force F_{RN} .

Torque from rolling friction [Nm]:

$$M_w = F_w \cdot \frac{d}{2} = m \cdot f_w \cdot \frac{d}{2}$$

Lift on gradient [Nm]:

$$M_h = m \cdot g \cdot \sin \alpha \cdot \frac{d}{2}$$

Acceleration torque [Nm]:

$$M_a = m \cdot a \cdot \frac{d}{2} = m \cdot \frac{v}{t_a} \cdot \frac{d}{2}$$

Total torque required during acceleration [Nm]:

$$M_{\text{tot}} = M_w + M_h + M_a$$

M_{acc2} = Torque [Nm] available at the output shaft during acceleration

M_{N2} = Torque [Nm] available at the output shaft during continuous operation.

d	[m]	(Running wheel diameter)
m	[kg]	(Moving mass)
f_w	[N/kg]	(Rolling resistance from rolling friction per 1000 kg, guide value approximately ca. 200 N / 1000 kg = 0.2 N/kg)
F_w	[N]	(Rolling resistance from rolling friction)
v	[m/s]	(Maximum travelling speed)
t_a	[s]	(Run-up time)
a	[m/s ²]	(Acceleration, standard values approximately 0,3 m/s ² ...1 m/s ²)
α		(Angle of inclination)

4) Establishing the brake size in the brake selection table.

Choose a brake which can be fitted externally and then select the required braking torque.
Guide value for braking torque on the horizontal $M_{\text{br1}} = 0,9 \cdot M_{N1}$.

Total load and rotor at the moment of inertia at the rotor shaft [kgm²]

$$J_{\text{tot1}} = J_{\text{Last1}} + J_{\text{rot}} (+J_{\text{SL}}) \quad (J_{\text{SL}}, \text{ with heavy cast-iron fan impeller})$$

Load at the moment of inertia at the rotor shaft [kgm²]

$$J_{\text{Last1}} = m \cdot \frac{\left(\frac{d}{2}\right)^2}{i^2} \quad \text{oder} \quad J_{\text{Last1}} = 91,2 \cdot m \cdot \frac{v^2}{n_1^2}$$

Braking time [s]:

$$t_{\text{br}} = \frac{J_{\text{tot1}} \cdot n_1}{9,55 \cdot M_{\text{br}}}$$

n_1	[1/min]	Rotor shaft speed
M_{br}	[Nm]	Brake torque of the mechanical brake

$$a_{\text{br}} = \frac{v}{t_{\text{br}}}$$

Rate of deceleration [m/s²]:

v	[m/s]	Travelling speed
a_{br}	[m/s ²]	Rate of deceleration

The calculated rate of deceleration a_{br} is a guide value which is exceeded somewhat in practice since the rolling resistance and level of efficiency are not taken into account.

d	[m]	(Running wheel diameter))
m	[kg]	(Moving mass)
i		Gear reduction ratio
v	[m/s]	Travelling speed
n_1	[1/min]	Rotor shaft speed
J_{rot}	[kgm ²]	Moment of inertia of the rotor at the rotor shaft from the motor table
J_{SL}	[kgm ²]	Moment of inertia of the heavy cast-iron fan from the motor table

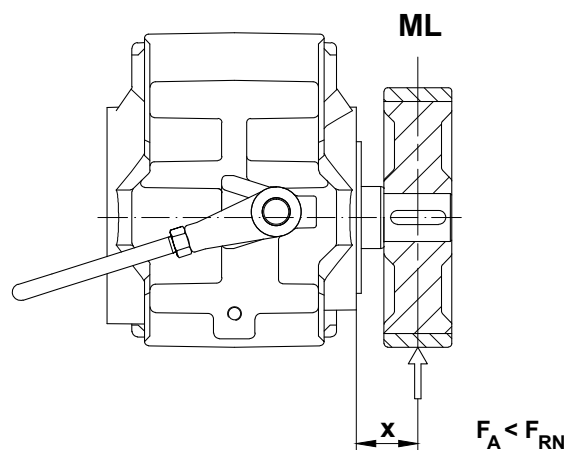
5) Compare the dimensional drawing of the geared motor with the carriage design, and determine the position of the terminal box.

6) Compare the electrical data of the motor (I_N und I_{acc}) with the data of the inverter supplied.

Permissible radial forces

d_{Wheel} in mm	F_{RN} in N	Gear unit type	D_{Shaft} in mm
125	4400	BM09	20
125	6500	BM09X	25
125	8000	BM10	25
160	6500	BM09X	25
160	8000	BM10	25
200	8000	BM10	25
200	10000	BM10X	25
200	10000	BM20	30
200	12000	BM20X	30
200	12000	BM30(Z)	35
200	15000	BM30(Z)X	35
250	15000	BM30(Z)	35
250	20000	BM40(Z)	55
300	20000	BM40(Z)	55
300	25000	BM40(Z)X	55

Definition des Kraftangriffes der Radlast



Maß x, siehe entsprechendes Maßbild

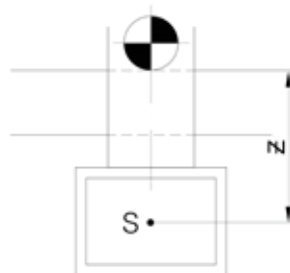
Abbreviations in the selection tables:

v	Travelling speed of the wheel diameter at a synchronous speed
i	Gear reduction ratio
M_{acc2}	Acceleration torque at the output shaft
M_{N2}	Permissible permanent load torque at the output shaft between 30 and 50 or 30 and 87 Hz in inverter duty
I_{acc}	Acceleration current (must be produced by the inverter)
I_L	Required current in inverter duty with $M_L = M_{N2}$
P	Rated output
n_2	Rated speed of the output shaft on a 50 Hz system
F_{RN}	Permissible radial force at the centre of the wheel (see dimension diagram)
d_{Wheel}	Running wheel diameter
d_{AW}	Output shaft diameter

Carriage design

Prinzip „X/X“ = „/“ (Please enter principle used)

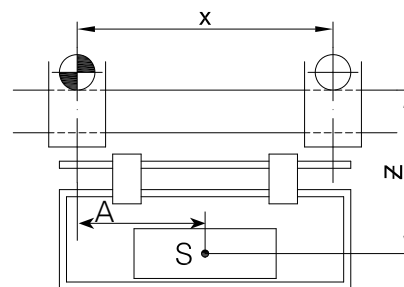
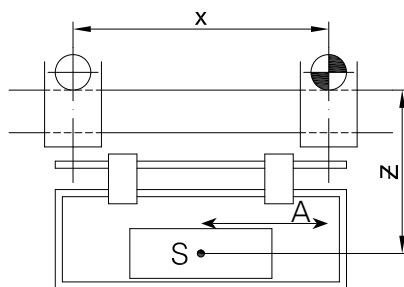
Prinzip „1/1“: One running wheel / one driven wheel



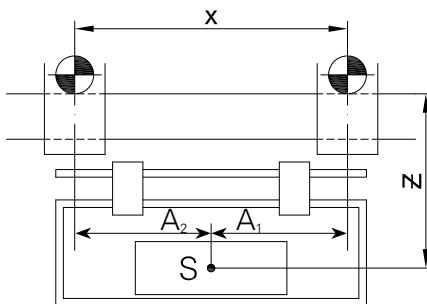
Legend:

- S Load centre of gravity
- Z Distance from rail to load centre of gravity
- X Distance between running wheels
- Y Distance between pivot joints
- A, A1, A2 Distance from middle of running wheel to centre of gravity
-  Driven wheel
-  Non-driven wheel

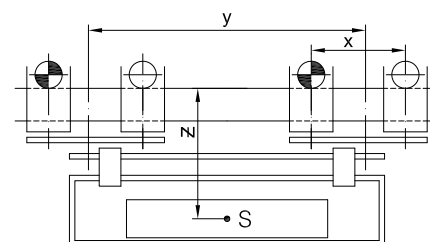
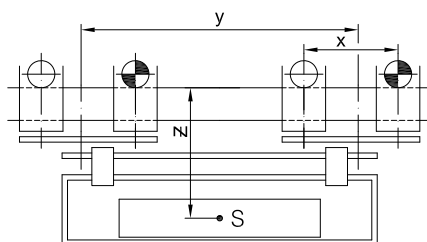
Prinzip „1/2“: Two running wheels / one driven wheel



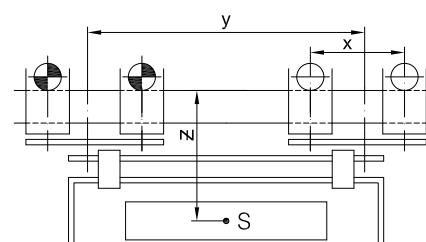
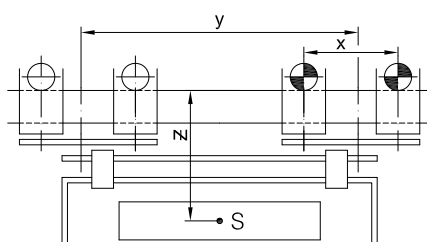
Prinzip „2/2“: Two running wheels / two driven wheels



Prinzip „1/4“: four running wheels/with one driven wheel per trolley

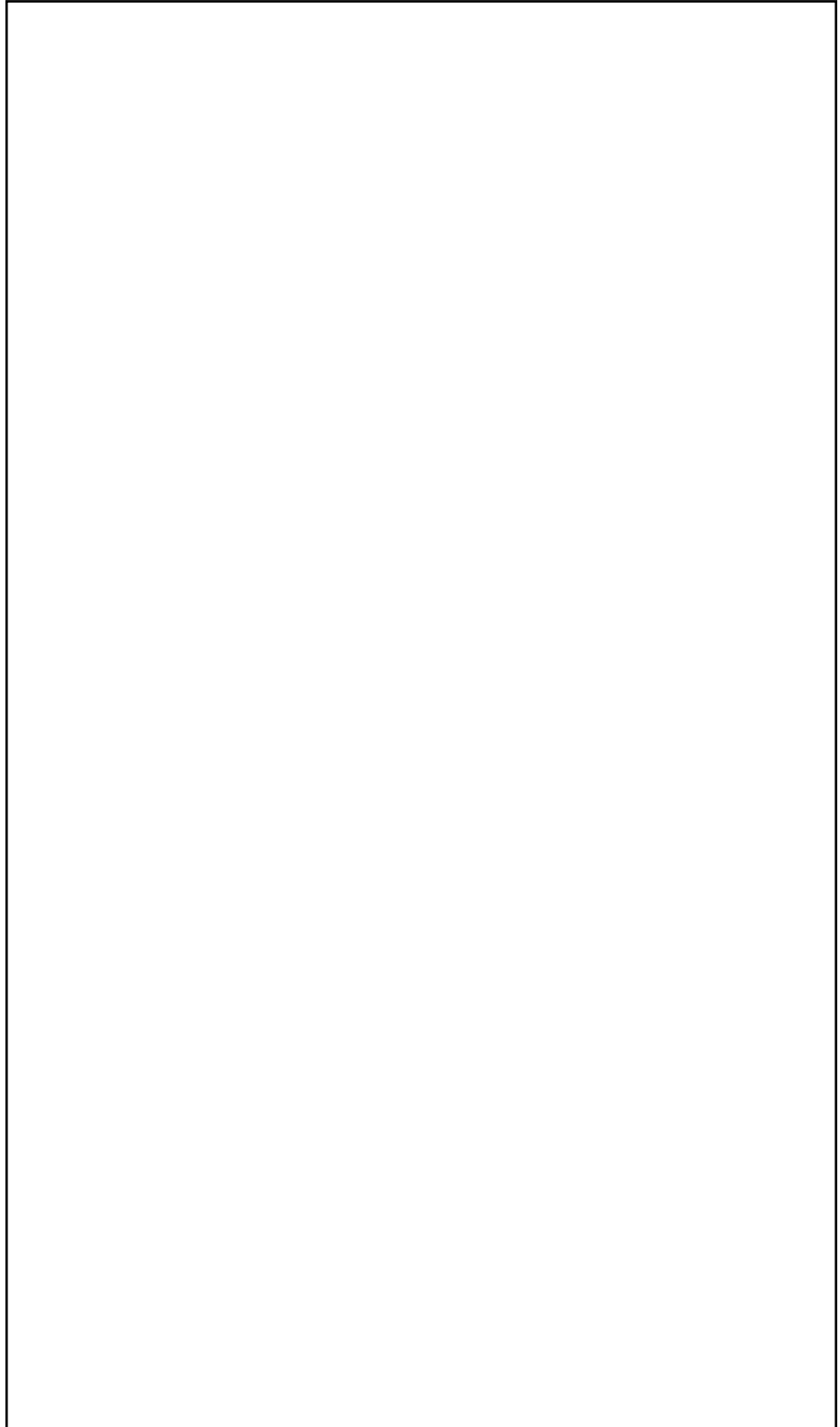


Prinzip „2/4“: four running wheels/two driven wheels per trolley



Note, „Principle 2/2“ and „Principle 2/4“ both involve carriages with two drives. Particular attention must be paid to cornering in such cases since different speeds will be present on the two drives when entering and exiting the corner; in practice this is resolved by the different motor slip on the two drives. This can cause considerable additional loading on the gear unit and motor, particularly where curves are tight and there are large distances between the drives wheels.

Please provide a sketch of your own principle here:



Geared motors for electric overhead conveyors series BM

Questionnaire on drive designs

Address

Company:
Street address:
Postcode:
Town:
Contact person:
Telephone:
Fax:
Email:
Requesting ☐return call ☐project planning ☐controls

BAUER contact details

Please submit your completed questionnaire to:

Fax: +49 711 3518 429 or
Email: monorail@bauergears.com

4

Trolley construction

Trolley construction

☐1/2 ☐2/2 ☐1/4 ☐2/4 ☐other

Dimensions X [mm]
Y [mm]
Z [mm]
A [mm]
A1 [mm]
A2 [mm]

Operating Conditions

Installation height (above sea level) [m]
Ambient temperature min. [°C]
max. [°C]
Mains voltage [V]
Mains frequency [Hz]
Regulations
Further information
.....

Technical data - drive

Trolley mass [kg]
Suspension gear mass [kg]
Gear motor mass [kg]
Transport load mass [kg]
Wheel load of the driving wheel [N]
Radial force on the main shaft [N]
Distance from shaft collar of... [mm]
Axial force on the main shaft [N]
Bogie wheel diameter d [mm]
Bogie wheel material [--]
Minimum curve radius [m]
Angle of the sharpest curve [°]
Total track length [m]
Horizontal travel
Travel velocity max. [m/min]
Duty cycle [%]
Number of start-ups per hour [--]
Travel velocity min. [m/min]
Duty cycle [%]
Number of start-ups per hour [--]
Travel through curves
Travel velocity max. [m/min]
Duty cycle [%]
Number of start-ups per hour [--]
Travel velocity (curve) min. [m/min]
Duty cycle [%]
Number of start-ups per hour [--]
Desired acceleration [m/s²]
Desired deceleration [m/s²]
Permissible braking distance during operation..... [mm]
Requisite stopping accuracy [mm]
Permissible braking distance for emergency stop..... [mm]
Number of start-ups per hour [--]
Coupling ☐ manual coupling ☐ mechanical coupling
Coupling and uncoupling possible while loaded ☐ YES ☐ NO

Technical data - ascent

Ascent [°]
 Length of inclined track [m]
 Travel velocity [m/min]
 Duty cycle [%]
 Number of start-ups per hour [--]
 Desired acceleration [m/s²]
 Desired deceleration [m/s²]
 Permissible braking distance during operation [mm]
 Requisite stopping accuracy [mm]
 Permissible braking distance for emergency stop [mm]
 Number of start-ups per hour [--]
 Ascent assistance available ☐ YES ☐ NO [N]
 Surface pressure [N]

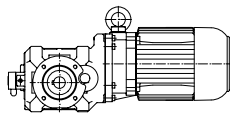
Technical data - descent

Descent [°]
 Length of declined track [m]
 Travel velocity [m/min]
 Duty cycle [%]
 Number of start-ups per hour [--]
 Desired acceleration [m/s²]
 Desired deceleration [m/s²]
 Permissible braking distance during operation [mm]
 Requisite stopping accuracy [mm]
 Permissible braking distance during emergency stop [mm]
 Number of start-ups per hour [--]
 Ascent assistance available ☐ YES ☐ NO [N]
 Surface pressure [N]

Further drive versions

Mechanical brakes ☐ YES ☐ NO
 Manual release ☐ YES ☐ NO
 Brake supply voltage [V]
 Brake rectifier ☐ on trolley control panel ☐ in terminal box
 Brake switching ☐ AC ☐ DC
 Motor protection ☐ PTC ☐ thermostat
 Motor connection ☐ terminal box ☐ connector
Main shaft
 Dimensions dxl [mm]
 Model ☐ with keyway ☐ without keyway
 Construction [--]
 Terminal box position [--]
 RAL tone paint [--]
 (BAUER-Standard RAL 7031)





Gearboxes and Lubrication

37-46

Standard fitting

Position of the terminal box and the cable entry

Lubricants

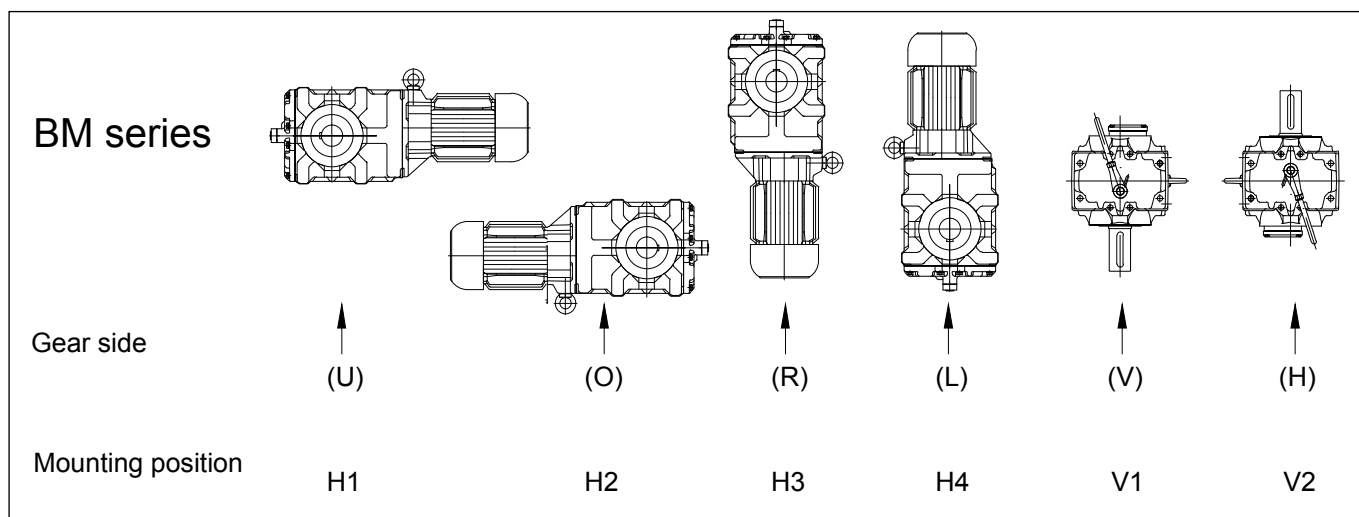
Lubricant quantities

Gear ventilation

Position of the grease nipple for gearbox designs with

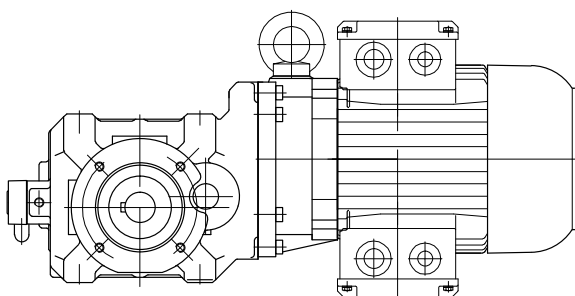
Position of threaded plugs, pre-stage gears (Z)

Position of the drain plugs in the System Cover



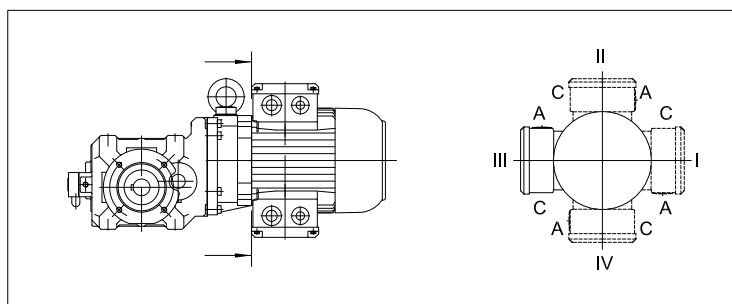
Standard fitting position of BM geared motors

Geared motor carriages for overhead conveyors are almost always installed horizontally in installation type H1. The lubricant quantity is adapted to suit the resulting inclined positions of the gear unit where ascents and descents have to be negotiated. Please therefore specify the rise angle with your enquiries or orders. BM-series geared motors can also **be used as** point operating gears. Please indicate the mounting orientation. This usually differs from the fitting position of the carriage drives.



Position of the terminal box and the cable glands

The standard position of the terminal box for BM geared motors is position III, opposite the output shaft pointing towards the "H" side of the gear unit. This position is preferred for most overhead conveyor applications. The terminal box can be supplied rotated by 90 degrees about the motor axis upon request. The standard cable entry is from side A or C. Cable entry towards the fan cowl (B) available on request.



Geared motors for electric overhead conveyors series BM

Lubricants

Lubricants

The drives are shipped ready-filled with gear lubricant. Lubricated in this way, the gear units are suitable for ambient temperatures in the range -20°C to + 40°C. The quantity of lubricant is optimised for the desired installed position as is stated on the nameplate. The type of lubricant is stated in the Operating Instructions. Lubricants for other temperature ranges or special applications available on request.

Wear-protective EP gear oils as indicated in the following table have proven particularly effective:

	Lubricant type	
	Synthetic Oil	
	ISO VG 460	
Disposal No.	ASN 13 02 06	
	Standard oil for gearboxes in the series BM20-BM40 High temperature oil for gearboxes in the series BM20-BM40	
Lubricant Manufacturer		
AGIP		
ARAL		DEGOL GS460
BECHEM RHUS		
BP		ENERSYN SG-XP 460
CASTROL		ALPHASYN PG 460 TRIBOL 800/460 ALPHASYN 460
ESSO		
FUCHS		RENOLIN PG 460
KLÜBER		KLÜBERSYNTH GH6-460
MOBIL		GLYGOYLE 460
OEST		
OPTIMOL		OPTIFLEX A 460
SHELL		OMALA S4 WE 460
TEXACO		
TOTAL		
WINTERSHALL		

Important:

Synthetic gear oils of a Polyglykol base (e.g. PGLP...) must be disposed of separately to mineral oil as **Special Waste**.

So long as the ambient temperature does not fall below – 20 °C the international definition of the viscosity class at 40 °C according to ISO 3448 and DIN 51519 ISO the viscosity class VG220 (SAE90) is recommended according, in North America AGMA 5EP.

For lower temperatures it is recommended to use oils of a lower nominal viscosity with a corresponding better starting characteristic, for instance a PGLP with a nominal viscosity VG68 (SAE80) or AGMA 2EP respectively. These types of oil can already be necessary at a temperature around the freezing point, if the break away torque of a drive is reduced by some smooth starting device or if the motor has a relatively low power.

Lubricant quantities

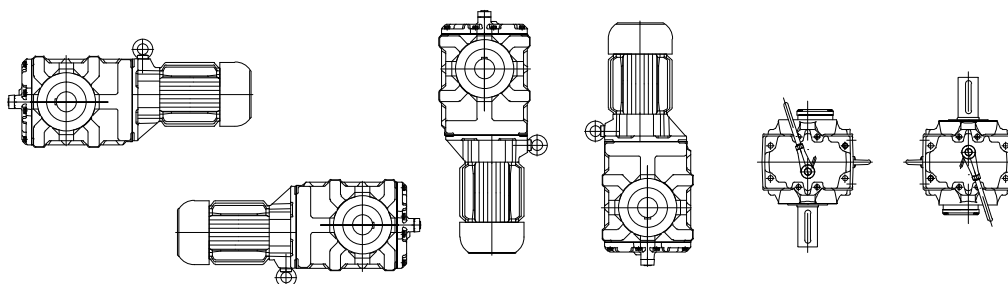
The preferred quantity of lubricant for the planned type of installation is stated on the motor's rating plate (symbol "oil can"). When topping up care should be taken to ensure that, depending on the fitting position, gearwheels and rolling contact bearings positioned at the top are also properly oiled. In special versions the oil level mark should be noted. Information about the quantity of lubricant required for other types of installation can be obtained from the factory.

Geared motors for electric overhead conveyors series BM

Lubricants

Lubricant quantities, BM-series gears

Lubrication quantity in l



5

Gearbox type	Lubrication quantity in l					
	H1	H2	H3	H4	V1	V2
BM09	0.5	on request				
BM10	0.65					
BM20	0.7					
BM30	1.2					
	1.8*					
BM30/S1	1.2					
	1.8*					
BM30/S2	1.3					
	1.9*					
BM40	2.5					
	3.2*					
BM40/S1	2.5					
	3.2*					
BM40/S2	2.6					
	3.3*					

*: Lubrication quantity für BM30Z/BM40Z

Caution: if * is shown the lubrication quantity of the pre-stage is filled into the main gear.

Lubricant quantity the primary stage (Z) for installation type H1

Gear unit	Litres in the primary stage (Z)
BM09(X)	-
BM10(X)	-
BM20(X)	0,15
BM30(X)	-
BM40(X)	-
BM30Z(X)	0,2
BM40Z(X)	0,32

Lubricant quantities for other types of installation available on request.

Gear ventilation

BM gear units are shipped ready-equipped with a vent plug. Low operating temperatures are achieved thanks to the high levels of efficiency of BM gear units and the fact that their surfaces have been designed for optimum heat dissipation. This results in oil change intervals of 2500.

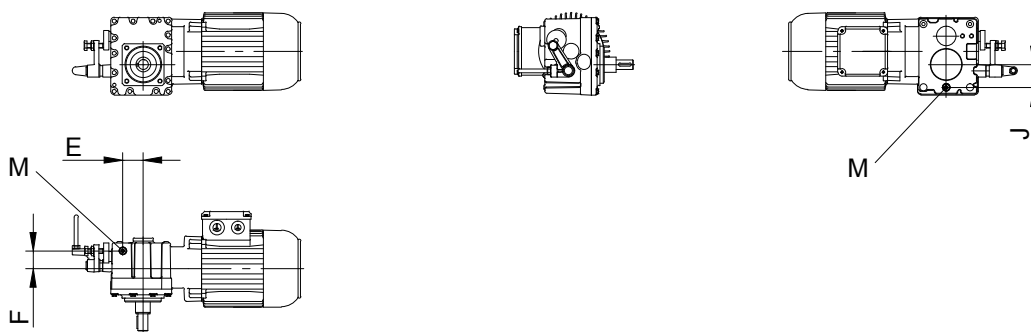
Geared motors for electric overhead conveyors series BM

Threaded plugs

Position of threaded plugs, BM

Size

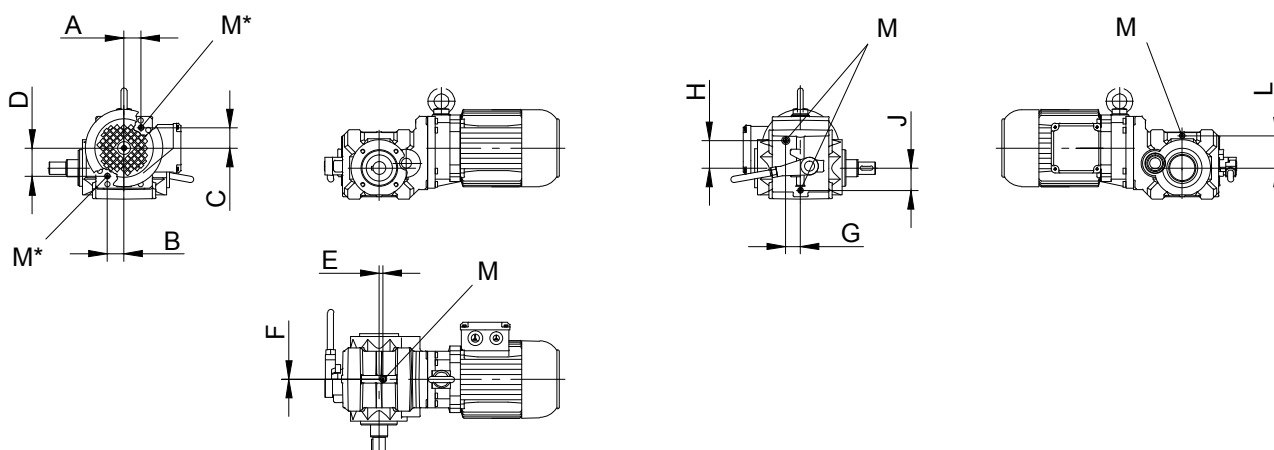
BM09



5

Size

BM10 - BM40



M = Plug according to DIN 908

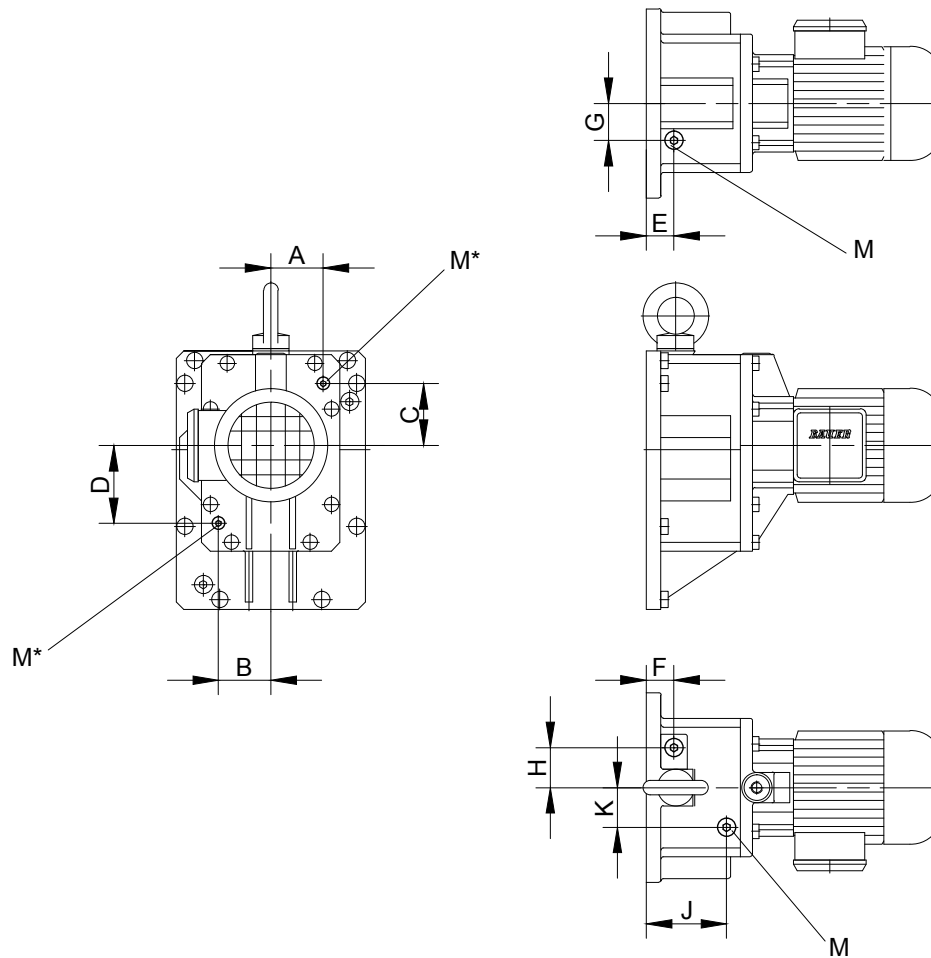
Typ	A	B	C	D	E	F	G	H	J	L	M
BM09	-				41	36	-	-	46.5	-	M10x1
BM10	* Tab.I-Tab.III size B10				8	0	30	55	45	-	M10x1
BM20	* Tab.I-Tab.III size B10				0	49	-	-	45	62	M10x1
BM30	* Tab.I-Tab.III size B10				-	-	0	70	-	-	M10x1
BM40	* Tab.I-Tab.III size B10				-	-	0	-	-	-	-

* see Position of the oil drain and filler plugs on the system cover

Geared motors for electric overhead conveyors series BM

Threaded plugs

Position of threaded plugs, pre-stage gears (Z)



M = Plug according to DIN 908

Gear	A	B	C	D	E	F	G	H	J	K	M
BM20(Z)	-	-	-	-	49	-	28.5	-	23.5	28	M10x1
BM30(Z)	* Tab.I u. II size B.10				-	24	-	30	-	-	M10x1
BM40(Z)	* Tab.I u. II size B.20				-	27.5	-	36.5	-	-	M14x1.5

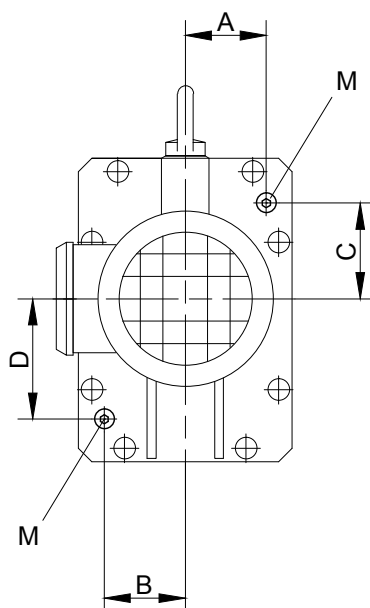
* see position of the oil drain and filler plugs on the system cover

M* =Factor and position of the drain plug see page 44.

Geared motors for electric overhead conveyors series BM

Threaded plugs

Position of the drain plugs in the System Cover
Design with Standard Geared Motor



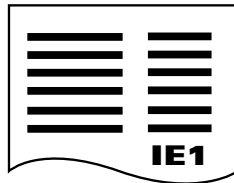
M = Plug according to DIN 908

Table I: Design with standard geared motor

Gear	Size	A	B	C	D	M
BM10(X)	D05-D..09	36	34	43.5	59	M10x1
BM20(Z)	D05-D..09	44	44	58	72.5	M10x1
BM30(Z)	D05-D..09	56.5	40	58.2	75	M10x1
BM40(Z)	D..08-D..11	66	71	71	94	M14x1.5

M* =Factor and position of the drain plug see page 44.

6



Selection tables ASM-IE1

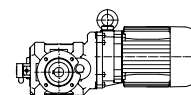
Page

47-58

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors ASM IE1

P = 0.03 kW



50 Hz			i	Type	m kg	F _{RN} N	F _{RV} N	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
11.5	23.5	9.4	117.9	BM20Z-../D04LA4	21	10000	12000	14	19.4	11
9.5	28.5	7.7	142.8	"	"	10000	12000	11.5	23.5	9.4
7.6	35.5	5.9	178.9	"	"	10000	12000	9.1	29.5	7.1
6.6	41	4.7	205.3	"	"	10000	12000	7.9	34	5.7

P = 0.04 kW

50 Hz			i	Type	m kg	F _{RN} N	F _{RV} N	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
16	22.5	9.8	85.45	BM20Z-../D04LA4	21	10000	12000	19	19.1	12
14	25.5	8.6	99.47	"	"	10000	12000	16.5	21.5	10
11.5	31.5	7.0	117.9	"	"	10000	12000	14	25.5	8.6
9.5	38	5.8	142.8	"	"	10000	12000	11.5	31.5	7.0
7.6	47.5	4.4	178.9	"	"	10000	12000	9.1	39.5	5.3
6.6	54	3.6	205.3	"	"	10000	12000	7.9	45.5	4.2

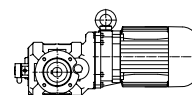
P = 0.06 kW

50 Hz			i	Type	m kg	F _{RN} N	F _{RV} N	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
120	4.2	7.1	11.34	BM09-../D05LA4	13	4400	6500	143	3.5	8.6
103	4.85	6.6	13.23	"	"	4400	6500	123	4.05	7.9
77	6.5	7.2	17.73	"	"	4400	6500	92	5.4	8.7
64	7.8	7.2	21.20	"	"	4400	6500	77	6.5	8.6
55	9.1	6.5	24.74	"	"	4400	6500	66	7.6	7.8
52	9.6	7.2	25.98	"	"	4400	6500	63	8.0	8.6
45	11.2	6.4	30.31	"	"	4400	6500	54	9.3	7.7
41	12.2	7.1	32.97	"	"	4400	6500	49.5	10.1	8.6
35.5	14.2	6.5	38.46	"	"	4400	6500	42.5	11.8	7.8
32	15.5	5.5	42.44	"	"	4400	6500	38.5	12.9	6.6
25.5	19.5	5.5	53.85	"	"	4400	6500	30.5	16.3	6.6
7.6	71	2.9	178.9	BM20Z-../D06LA4	24	10000	12000	9.1	59	3.5
6.6	82	2.4	205.3	"	"	10000	12000	7.9	68	2.8

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors ASM IE1

P = 0.09 kW



50 Hz			i	Type	m kg	F _{RN} N	F _{RV} N	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
120	6.3	4.8	11.34	BM09-../D05LA4	13	4400	6500	143	5.2	5.8
103	7.3	4.4	13.23	"	"	4400	6500	123	6.1	5.2
77	9.8	4.8	17.73	"	"	4400	6500	92	8.2	5.7
64	11.8	4.7	21.20	"	"	4400	6500	77	9.8	5.7
55	13.7	4.3	24.74	"	"	4400	6500	66	11.4	5.2
52	14.5	4.8	25.98	"	"	4400	6500	63	12	5.8
45	16.8	4.3	30.31	"	"	4400	6500	54	14	5.1
41	18.4	4.7	32.97	"	"	4400	6500	49.5	15.2	5.7
35.5	21	4.4	38.46	"	"	4400	6500	42.5	17.7	5.2
32	23	3.7	42.44	"	"	4400	6500	38.5	19.4	4.4
25.5	29	3.7	53.85	"	"	4400	6500	30.5	24.5	4.4
11.5	71	3.1	117.9	BM20Z-../D06LA4	24	10000	12000	14	58	3.8
9.5	85	2.6	142.8	"	"	10000	12000	11.5	71	3.1
7.6	107	1.95	178.9	"	"	10000	12000	9.1	89	2.3
6.6	123	1.55	205.3	"	"	10000	12000	7.9	103	1.85
3.9	178	2.8	348.7	BM40Z-../D06LA4	64	20000	25000	4.7	148	3.4
3.2	210	2.4	430.0	"	"	20000	25000	3.8	180	2.8

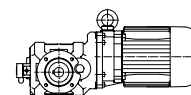
P = 0.12 kW

50 Hz			i	Type	m kg	F _{RN} N	F _{RV} N	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
120	8.4	3.6	11.34	BM09-../D05LA4	13	4400	6500	143	7.0	4.3
103	9.7	3.3	13.23	"	"	4400	6500	123	8.1	4.0
77	13	3.6	17.73	"	"	4400	6500	92	10.9	4.3
64	15.7	3.6	21.20	"	"	4400	6500	77	13	4.3
55	18.3	3.2	24.74	"	"	4400	6500	66	15.2	3.9
52	19.3	3.6	25.98	"	"	4400	6500	63	16	4.3
45	22	3.3	30.31	"	"	4400	6500	54	18.6	3.9
41	24.5	3.6	32.97	"	"	4400	6500	49.5	20	4.4
35.5	28	3.3	38.46	"	"	4400	6500	42.5	23.5	3.9
32	31	2.7	42.44	"	"	4400	6500	38.5	25.5	3.3
25.5	39	2.8	53.85	"	"	4400	6500	30.5	32.5	3.3
18.5	58	3.1	74.76	BM20-../D06LA4	23	10000	12000	22	49	3.7
16	68	3.2	85.45	BM20Z-../D06LA4	24	10000	12000	19	57	3.9
14	77	2.9	99.47	"	"	10000	12000	16.5	65	3.4
11.5	94	2.3	117.9	"	"	10000	12000	14	77	2.9
9.5	114	1.95	142.8	"	"	10000	12000	11.5	94	2.3
7.6	143	1.45	178.9	"	"	10000	12000	9.1	119	1.75
6.6	164	1.2	205.3	"	"	10000	12000	7.9	137	1.4
9.0	108	3.2	150.3	BM30Z-../D06LA4	41	12000	15000	11	88	4.0
7.7	126	2.8	177.2	"	"	12000	15000	9.2	105	3.3
4.7	197	3.0	289.8	BM40Z-../D06LA4	64	20000	25000	5.6	165	3.6
3.9	235	2.2	348.7	"	"	20000	25000	4.7	197	2.6
3.2	285	1.75	430.0	"	"	20000	25000	3.8	240	2.1

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors ASM IE1

P = 0.18 kW



50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
120	12.6	2.4	11.34	BM09-../D05LA4	13	4400	6500	143	10.5	2.9
103	14.6	2.2	13.23	"	"	4400	6500	123	12.2	2.6
77	19.6	2.4	17.73	"	"	4400	6500	92	16.4	2.9
64	23.5	2.4	21.20	"	"	4400	6500	77	19.6	2.9
55	27.5	2.1	24.74	"	"	4400	6500	66	22.5	2.6
52	29	2.4	25.98	"	"	4400	6500	63	24	2.9
45	33.5	2.1	30.31	"	"	4400	6500	54	28	2.6
41	36.5	2.4	32.97	"	"	4400	6500	49.5	30.5	2.9
35.5	42.5	2.2	38.46	"	"	4400	6500	42.5	35.5	2.6
32	46.5	1.85	42.44	"	"	4400	6500	38.5	38.5	2.2
25.5	58	1.85	53.85	"	"	4400	6500	30.5	49	2.2
30	48	3.3	45.00	BM10-../D06LA4	21	8000	10000	36	40	4.0
26	54	2.8	52.44	"	"	8000	10000	31	45	3.3
23.5	59	2.7	58.18	"	"	8000	10000	28	50	3.2
22.5	72	2.7	60.64	BM20-../D06LA4	23	10000	12000	27	60	3.2
18.5	88	2.1	74.76	"	"	10000	12000	22	74	2.5
16	102	2.2	85.45	BM20Z-../D06LA4	24	10000	12000	19	85	2.6
14	116	1.9	99.47	"	"	10000	12000	16.5	98	2.2
11.5	142	1.55	117.9	"	"	10000	12000	14	116	1.9
9.5	171	1.3	142.8	"	"	10000	12000	11.5	142	1.55
7.6	210	1.0	178.9	"	"	10000	12000	9.1	179	1.15
19	79	3.3	71.09	BM30-../D06LA4	39	12000	15000	23	65	4.0
13.5	109	3.2	100.7	BM30Z-../D06LA4	41	12000	15000	16.5	89	3.9
11	134	2.6	128.2	"	"	12000	15000	13	113	3.1
9.0	162	2.2	150.3	"	"	12000	15000	11	132	2.7
7.7	189	1.85	177.2	"	"	12000	15000	9.2	158	2.2
6.4	220	3.1	211.5	BM40Z-../D06LA4	64	20000	25000	7.7	183	3.7
5.5	250	2.7	246.6	"	"	20000	25000	6.6	210	3.2
4.7	295	2.0	289.8	"	"	20000	25000	5.6	245	2.4
3.9	355	1.45	348.7	"	"	20000	25000	4.7	295	1.7
3.2	425	1.2	430.0	"	"	20000	25000	3.8	360	1.4

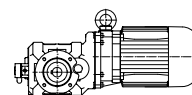
P = 0.25 kW

50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
120	17.5	1.7	11.34	BM09-../D05LA4	13	4400	6500	143	14.6	2.1
103	20	1.6	13.23	"	"	4400	6500	123	17	1.9
77	27	1.75	17.73	"	"	4400	6500	92	22.5	2.1
64	32.5	1.7	21.20	"	"	4400	6500	77	27	2.1
55	38	1.55	24.74	"	"	4400	6500	66	31.5	1.85
52	40	1.75	25.98	"	"	4400	6500	63	33	2.1
45	46.5	1.55	30.31	"	"	4400	6500	54	38.5	1.85
41	51	1.7	32.97	"	"	4400	6500	49.5	42	2.1
35.5	59	1.55	38.46	"	"	4400	6500	42.5	49	1.9
32	64	1.35	42.44	"	"	4400	6500	38.5	53	1.6
25.5	81	1.35	53.85	"	"	4400	6500	30.5	68	1.6
41	50	3.0	33.19	BM10-../D06LA4	21	8000	10000	49	41.5	3.6
37	55	2.9	36.82	"	"	8000	10000	44	46.5	3.4
33.5	59	2.5	40.56	"	"	8000	10000	40	50	3.0
30	66	2.4	45.00	"	"	8000	10000	36	55	2.9
26	75	2.0	52.44	"	"	8000	10000	31	63	2.4
23.5	83	1.95	58.18	"	"	8000	10000	28	69	2.3

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors ASM IE1

P = 0.25 kW



50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
32.5	69	3.2	42.18	BM20-../D06LA4	23	10000	12000	38.5	58	3.8
26	87	2.4	52.84	"	"	10000	12000	31	73	2.9
22.5	100	1.95	60.64	"	"	10000	12000	27	84	2.3
18.5	122	1.5	74.76	"	"	10000	12000	22	103	1.75
16	141	1.55	85.45	BM20Z-../D06LA4	24	10000	12000	19	119	1.85
14	162	1.35	99.47	"	"	10000	12000	16.5	137	1.6
11.5	197	1.1	117.9	"	"	10000	12000	14	162	1.35
9.5	235	0.94	142.8	"	"	10000	12000	11.5	197	1.1
22.5	93	2.9	61.33	BM30-../D06LA4	39	12000	15000	26.5	79	3.4
19	110	2.3	71.09	"	"	12000	15000	23	91	2.8
16	129	2.7	85.96	BM30Z-../D06LA4	41	12000	15000	19	109	3.2
13.5	152	2.3	100.7	"	"	12000	15000	16.5	124	2.8
11	186	1.9	128.2	"	"	12000	15000	13	157	2.2
9.0	225	1.55	150.3	"	"	12000	15000	11	184	1.9
7.7	260	1.35	177.2	"	"	12000	15000	9.2	220	1.6
9.5	210	3.2	143.0	BM40Z-../D06LA4	64	20000	25000	11.5	174	3.9
8.0	245	2.8	169.0	"	"	20000	25000	9.6	205	3.3
6.4	305	2.2	211.5	"	"	20000	25000	7.7	250	2.7
5.5	350	1.95	246.6	"	"	20000	25000	6.6	290	2.3
4.7	410	1.45	289.8	"	"	20000	25000	5.6	345	1.75
3.9	495	1.0	348.7	"	"	20000	25000	4.7	410	1.25
3.2	590	0.85	430.0	"	"	20000	25000	3.8	500	1.0

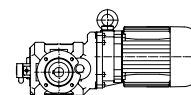
P = 0.3 kW

50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
120	21	1.45	11.34	BM09-../D07LA4	17	4400	6500	143	17.6	1.7
103	24	1.35	13.23	"	"	4400	6500	123	20	1.6
77	32.5	1.45	17.73	"	"	4400	6500	92	27	1.75
64	39	1.45	21.20	"	"	4400	6500	77	32.5	1.7
55	45.5	1.3	24.74	"	"	4400	6500	66	38	1.55
52	48	1.45	25.98	"	"	4400	6500	63	40	1.75
45	56	1.3	30.31	"	"	4400	6500	54	46.5	1.55
41	61	1.45	32.97	"	"	4400	6500	49.5	50	1.75
35.5	71	1.3	38.46	"	"	4400	6500	42.5	59	1.55
32	77	1.1	42.44	"	"	4400	6500	38.5	64	1.35
25.5	97	1.1	53.85	"	"	4400	6500	30.5	81	1.35
51	49	3.1	26.55	BM10-../D07LA4	23	8000	10000	62	40.5	3.7
46	54	3.0	29.45	"	"	8000	10000	56	45	3.6
41	60	2.5	33.19	"	"	8000	10000	49	50	3.0
37	66	2.4	36.82	"	"	8000	10000	44	55	2.9
33.5	71	2.1	40.56	"	"	8000	10000	40	60	2.5
30	80	2.0	45.00	"	"	8000	10000	36	66	2.4
26	90	1.65	52.44	"	"	8000	10000	31	75	2.0
23.5	99	1.6	58.18	"	"	8000	10000	28	83	1.95
38.5	70	3.1	35.25	BM20-../D07LA4	26	10000	12000	46	59	3.7
32.5	83	2.7	42.18	"	"	10000	12000	38.5	70	3.1
26	104	2.0	52.84	"	"	10000	12000	31	87	2.4
22.5	120	1.6	60.64	"	"	10000	12000	27	100	1.95
18.5	147	1.25	74.76	"	"	10000	12000	22	123	1.5
16	170	1.3	85.45	BM20Z-../D07LA4	27	10000	12000	19	143	1.55
14	194	1.15	99.47	"	"	10000	12000	16.5	164	1.35
11.5	235	0.94	117.9	"	"	10000	12000	14	194	1.15

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors ASM IE1

P = 0.3 kW



50 Hz			i	Type	m kg	F _{RN} N	F _{RV} N	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
22.5	112	2.4	61.33	BM30-../D07LA4	41	12000	15000	26.5	95	2.8
19	132	1.95	71.09	"	"	12000	15000	23	109	2.4
16	155	2.3	85.96	BM30Z-../D07LA4	44	12000	15000	19	131	2.7
13.5	182	1.9	100.7	"	"	12000	15000	16.5	149	2.3
11	220	1.6	128.2	"	"	12000	15000	13	189	1.85
9.0	270	1.3	150.3	"	"	12000	15000	11	220	1.6
7.7	315	1.1	177.2	"	"	12000	15000	9.2	260	1.35
11.5	210	3.2	118.2	BM40Z-../D07LA4	66	20000	25000	14	173	3.9
9.5	250	2.7	143.0	"	"	20000	25000	11.5	205	3.3
8.0	295	2.3	169.0	"	"	20000	25000	9.6	245	2.8
6.4	365	1.85	211.5	"	"	20000	25000	7.7	305	2.2
5.5	420	1.6	246.6	"	"	20000	25000	6.6	350	1.95
4.7	490	1.2	289.8	"	"	20000	25000	5.6	410	1.45
3.9	590	0.86	348.7	"	"	20000	25000	4.7	490	1.05

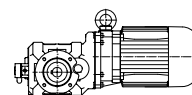
P = 0.37 kW

50 Hz			i	Type	m kg	F _{RN} N	F _{RV} N	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
120	25.5	1.2	11.34	BM09-../D07LA4	17	4400	6500	143	21.5	1.4
103	30	1.05	13.23	"	"	4400	6500	123	25	1.3
77	40	1.2	17.73	"	"	4400	6500	92	33.5	1.4
64	48.5	1.15	21.20	"	"	4400	6500	77	40	1.4
55	56	1.05	24.74	"	"	4400	6500	66	47	1.25
52	59	1.15	25.98	"	"	4400	6500	63	49	1.4
45	69	1.05	30.31	"	"	4400	6500	54	57	1.25
41	75	1.15	32.97	"	"	4400	6500	49.5	62	1.4
35.5	87	1.05	38.46	"	"	4400	6500	42.5	73	1.25
32	96	0.89	42.44	"	"	4400	6500	38.5	79	1.1
25.5	120	0.9	53.85	"	"	4400	6500	30.5	100	1.1
60	51	2.9	22.62	BM10-../D07LA4	23	8000	10000	72	43	3.5
54	57	2.8	25.09	"	"	8000	10000	65	47.5	3.4
51	60	2.5	26.55	"	"	8000	10000	62	50	3.0
46	67	2.4	29.45	"	"	8000	10000	56	55	2.9
41	74	2.0	33.19	"	"	8000	10000	49	62	2.4
37	82	1.95	36.82	"	"	8000	10000	44	69	2.3
33.5	88	1.7	40.56	"	"	8000	10000	40	74	2.0
30	98	1.65	45.00	"	"	8000	10000	36	82	1.95
26	111	1.35	52.44	"	"	8000	10000	31	93	1.6
23.5	123	1.3	58.18	"	"	8000	10000	28	103	1.55
46	72	3.1	29.39	BM20-../D07LA4	26	10000	12000	56	59	3.7
38.5	87	2.5	35.25	"	"	10000	12000	46	72	3.1
32.5	103	2.1	42.18	"	"	10000	12000	38.5	87	2.5
26	129	1.6	52.84	"	"	10000	12000	31	108	1.95
22.5	149	1.3	60.64	"	"	10000	12000	27	124	1.55
18.5	181	1.0	74.76	"	"	10000	12000	22	152	1.2
16	205	1.05	85.45	BM20Z-../D07LA4	27	10000	12000	19	176	1.25
14	235	0.94	99.47	"	"	10000	12000	16.5	200	1.1
27.5	114	2.8	49.66	BM30-../D07LA4	41	12000	15000	33	95	3.3
22.5	138	1.95	61.33	"	"	12000	15000	26.5	117	2.3
19	163	1.6	71.09	"	"	12000	15000	23	135	1.9

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors ASM IE1

P = 0.37 kW



50 Hz			i	Type	m kg	F _{RN} N	F _{RV} N	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
16	192	1.8	85.96	BM30Z-../D07LA4	44	12000	15000	19	161	2.2
13.5	225	1.55	100.7	"	"	12000	15000	16.5	184	1.9
11	275	1.25	128.2	"	"	12000	15000	13	230	1.5
9.0	330	1.05	150.3	"	"	12000	15000	11	270	1.3
7.7	390	0.9	177.2	"	"	12000	15000	9.2	325	1.1
11.5	260	2.6	118.2	BM40Z-../D07LA4	66	20000	25000	14	210	3.2
9.5	310	2.2	143.0	"	"	20000	25000	11.5	255	2.7
8.0	365	1.85	169.0	"	"	20000	25000	9.6	305	2.2
6.4	450	1.5	211.5	"	"	20000	25000	7.7	375	1.8
5.5	520	1.3	246.6	"	"	20000	25000	6.6	430	1.6
4.7	600	1.0	289.8	"	"	20000	25000	5.6	510	1.15

6

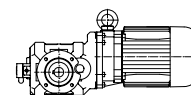
P = 0.55 kW

50 Hz			i	Type	m kg	F _{RN} N	F _{RV} N	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
124	37	0.81	11.34	BM09-../D08MA4	18	4400	6500	149	31	0.97
79	58	0.81	17.73	"	"	4400	6500	95	48.5	0.97
67	68	0.82	21.20	"	"	4400	6500	80	57	0.98
54	85	0.81	25.98	"	"	4400	6500	65	71	0.97
42.5	108	0.81	32.97	"	"	4400	6500	51	90	0.97
86	54	2.7	16.39	BM10-../D08MA4	24	8000	10000	103	45	3.2
78	59	2.6	18.18	"	"	8000	10000	93	50	3.1
62	74	2.0	22.62	"	"	8000	10000	75	61	2.5
56	82	1.95	25.09	"	"	8000	10000	67	68	2.4
53	87	1.7	26.55	"	"	8000	10000	64	72	2.1
48	96	1.65	29.45	"	"	8000	10000	58	79	2.0
42.5	106	1.4	33.19	"	"	8000	10000	51	88	1.7
38.5	117	1.35	36.82	"	"	8000	10000	46	98	1.65
35	126	1.2	40.56	"	"	8000	10000	41.5	106	1.4
31.5	140	1.15	45.00	"	"	8000	10000	37.5	117	1.35
27	159	0.94	52.44	"	"	8000	10000	32.5	132	1.15
24.5	175	0.91	58.18	"	"	8000	10000	29	148	1.1
71	70	3.1	19.72	BM20-../D08MA4	26	10000	12000	86	58	3.8
56	89	2.5	25.25	"	"	10000	12000	67	74	3.0
48	103	2.1	29.39	"	"	10000	12000	58	86	2.6
40	124	1.75	35.25	"	"	10000	12000	48	103	2.1
33.5	148	1.5	42.18	"	"	10000	12000	40	124	1.75
26.5	188	1.1	52.84	"	"	10000	12000	32	155	1.35
23.5	210	0.92	60.64	"	"	10000	12000	28	178	1.1
21	235	0.94	66.74	BM20Z-../D08MA4	28	10000	12000	25.5	195	1.15
40.5	118	3.0	34.88	BM30-../D08MA4	42	12000	15000	48.5	98	3.6
34.5	137	2.6	41.13	"	"	12000	15000	41	115	3.0
28.5	164	1.95	49.66	"	"	12000	15000	34	137	2.3
23	200	1.35	61.33	"	"	12000	15000	27.5	168	1.6
20	230	1.1	71.09	"	"	12000	15000	24	192	1.35
16.5	275	1.25	85.96	BM30Z-../D08MA4	45	12000	15000	20	225	1.55
14	320	1.1	100.7	"	"	12000	15000	17	265	1.3
11	410	0.85	128.2	"	"	12000	15000	13.5	330	1.05
20	225	3.0	70.11	BM40-../D08MA4	63	20000	25000	24	190	3.6
17	265	2.3	84.36	"	"	20000	25000	20	225	2.7
13.5	330	1.8	104.0	"	"	20000	25000	16.5	270	2.2
12	370	1.85	118.2	BM40Z-../D08MA4	67	20000	25000	14.5	305	2.2
9.8	450	1.5	143.0	"	"	20000	25000	12	365	1.85
8.3	520	1.3	169.0	"	"	20000	25000	10	435	1.55
6.7	640	1.05	211.5	"	"	20000	25000	8.0	530	1.3
5.7	740	0.92	246.6	"	"	20000	25000	6.9	610	1.1

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors ASM IE1

P = 0.75 kW



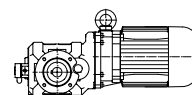
50 Hz			i	Type	m kg	F _{RN} N	F _{RV} N	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
120	54	2.6	11.68	BM10-../DSE08LA4	26	8000	10000	144	45	3.1
109	59	2.5	12.95	"	"	8000	10000	130	50	3.0
86	74	1.95	16.39	"	"	8000	10000	103	61	2.4
78	81	1.9	18.18	"	"	8000	10000	93	68	2.3
62	101	1.5	22.62	"	"	8000	10000	75	84	1.8
56	112	1.45	25.09	"	"	8000	10000	67	94	1.7
53	118	1.25	26.55	"	"	8000	10000	64	98	1.55
48	131	1.2	29.45	"	"	8000	10000	58	108	1.5
42.5	144	1.05	33.19	"	"	8000	10000	51	120	1.25
38.5	159	1.0	36.82	"	"	8000	10000	46	133	1.2
35	171	0.88	40.56	"	"	8000	10000	41.5	144	1.05
31.5	191	0.84	45.00	"	"	8000	10000	37.5	160	1.0
84	81	2.7	16.72	BM20-../DSE08LA4	28	10000	12000	101	67	3.3
71	95	2.3	19.72	"	"	10000	12000	86	79	2.8
56	121	1.8	25.25	"	"	10000	12000	67	101	2.2
48	141	1.55	29.39	"	"	10000	12000	58	117	1.9
40	170	1.3	35.25	"	"	10000	12000	48	141	1.55
33.5	200	1.1	42.18	"	"	10000	12000	40	170	1.3
26.5	255	0.82	52.84	"	"	10000	12000	32	210	1.0
25	270	0.81	56.58	BM20Z-../DSE08LA4	30	10000	12000	30	225	0.98
60	108	3.2	23.38	BM30-../DSE08LA4	44	12000	15000	72	90	3.9
47.5	137	2.6	29.76	"	"	12000	15000	57	114	3.1
40.5	160	2.2	34.88	"	"	12000	15000	48.5	134	2.6
34.5	186	1.9	41.13	"	"	12000	15000	41	157	2.2
28.5	220	1.45	49.66	"	"	12000	15000	34	187	1.7
23	270	1.0	61.33	"	"	12000	15000	27.5	225	1.2
20	315	0.82	71.09	"	"	12000	15000	24	260	0.99
16.5	375	0.93	85.96	BM30Z-../DSE08LA4	46	12000	15000	20	310	1.15
14	435	0.8	100.7	"	"	12000	15000	17	360	0.97
27.5	225	3.0	51.18	BM40-../DSE08LA4	64	20000	25000	33	191	3.6
23.5	265	2.6	59.66	"	"	20000	25000	28.5	220	3.1
20	310	2.2	70.11	"	"	20000	25000	24	255	2.7
17	365	1.65	84.36	"	"	20000	25000	20	310	1.95
13.5	450	1.35	104.0	"	"	20000	25000	16.5	365	1.65
12	500	1.35	118.2	BM40Z-../DSE08LA4	69	20000	25000	14.5	415	1.65
9.8	610	1.1	143.0	"	"	20000	25000	12	500	1.35
8.3	710	0.96	169.0	"	"	20000	25000	10	590	1.15

6

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors ASM IE1

P = 1.1 kW



50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
120	79	1.75	11.68	BM10-../DSE08XA4	27	8000	10000	144	66	2.1
109	87	1.7	12.95	"	"	8000	10000	130	73	2.1
86	108	1.35	16.39	"	"	8000	10000	103	90	1.6
78	119	1.3	18.18	"	"	8000	10000	93	100	1.55
62	149	1.0	22.62	"	"	8000	10000	75	123	1.2
56	165	0.97	25.09	"	"	8000	10000	67	137	1.15
53	174	0.86	26.55	"	"	8000	10000	64	144	1.05
48	192	0.83	29.45	"	"	8000	10000	58	159	1.0
138	72	3.1	10.15	BM20-../DSE08XA4	29	10000	12000	166	60	3.7
105	95	2.3	13.34	"	"	10000	12000	126	79	2.8
84	118	1.85	16.72	"	"	10000	12000	101	98	2.2
71	140	1.55	19.72	"	"	10000	12000	86	116	1.9
56	178	1.25	25.25	"	"	10000	12000	67	148	1.5
48	205	1.05	29.39	"	"	10000	12000	58	172	1.3
40	245	0.9	35.25	"	"	10000	12000	48	205	1.05
87	111	3.2	16.10	BM30-../DSE08XA4	45	12000	15000	105	92	3.8
71	136	2.6	19.96	"	"	12000	15000	85	113	3.1
60	159	2.2	23.38	"	"	12000	15000	72	132	2.7
47.5	200	1.75	29.76	"	"	12000	15000	57	167	2.1
40.5	235	1.5	34.88	"	"	12000	15000	48.5	197	1.8
34.5	270	1.3	41.13	"	"	12000	15000	41	230	1.5
28.5	325	0.97	49.66	"	"	12000	15000	34	270	1.15
40.5	230	3.0	34.61	BM40-../DSE08XA4	65	20000	25000	49	192	3.5
34.5	270	2.5	40.88	"	"	20000	25000	41.5	225	3.0
27.5	335	2.0	51.18	"	"	20000	25000	33	280	2.4
23.5	390	1.75	59.66	"	"	20000	25000	28.5	320	2.1
20	455	1.5	70.11	"	"	20000	25000	24	380	1.8
17	530	1.15	84.36	"	"	20000	25000	20	455	1.3
13.5	660	0.91	104.0	"	"	20000	25000	16.5	540	1.1
12	740	0.92	118.2	BM40Z-../DSE08XA4	70	20000	25000	14.5	610	1.1

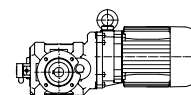
P = 1.5 kW

50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
122	106	1.3	11.68	BM10-../DSE09LA4	34	8000	10000	147	88	1.6
110	118	1.25	12.95	"	"	8000	10000	133	98	1.55
87	146	0.99	16.39	"	"	8000	10000	105	121	1.2
79	161	0.96	18.18	"	"	8000	10000	95	134	1.15
186	73	2.7	7.66	BM20-../DSE09LA4	36	9100	10900	225	60	3.3
140	97	2.3	10.15	"	"	10000	12000	169	80	2.8
107	127	1.75	13.34	"	"	10000	12000	129	105	2.1
85	160	1.4	16.72	"	"	10000	12000	103	132	1.65
73	186	1.2	19.72	"	"	10000	12000	87	156	1.4
57	235	0.94	25.25	"	"	10000	12000	68	200	1.1
114	115	3.0	12.46	BM30-../DSE09LA4	52	12000	15000	138	95	3.7
89	148	2.4	16.10	"	"	12000	15000	107	123	2.8
72	183	1.9	19.96	"	"	12000	15000	86	153	2.3
61	210	1.65	23.38	"	"	12000	15000	74	176	2.0
48	270	1.3	29.76	"	"	12000	15000	58	220	1.6
41	315	1.1	34.88	"	"	12000	15000	49.5	260	1.35
35	365	0.96	41.13	"	"	12000	15000	42	305	1.15

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors ASM IE1

P = 1.5 kW



50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
50	255	2.7	28.59	BM40-../DSE09LA4	72	20000	25000	60	210	3.2
41.5	310	2.2	34.61	"	"	20000	25000	49.5	260	2.6
35	365	1.85	40.88	"	"	20000	25000	42	305	2.2
28	450	1.5	51.18	"	"	20000	25000	33.5	375	1.8
24	520	1.3	59.66	"	"	20000	25000	29	430	1.6
20.5	600	1.15	70.11	"	"	20000	25000	24.5	500	1.35
17	730	0.82	84.36	"	"	20000	25000	20.5	600	1.0

P = 2.2 kW

50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
122	156	0.9	11.68	BM10-../DSE09XA4	38	8000	10000	147	130	1.1
110	173	0.87	12.95	"	"	8000	10000	133	143	1.05
186	107	1.85	7.66	BM20-../DSE09XA4	40	9100	10900	225	88	2.3
140	142	1.55	10.15	"	"	10000	12000	169	118	1.85
107	186	1.2	13.34	"	"	10000	12000	129	154	1.45
85	230	0.96	16.72	"	"	10000	12000	103	193	1.15
73	270	0.81	19.72	"	"	10000	12000	87	225	0.98
180	107	3.0	7.91	BM30-../DSE09XA4	56	11000	13800	220	87	3.7
142	136	2.6	10.06	"	"	12000	15000	170	113	3.1
114	169	2.1	12.46	"	"	12000	15000	138	140	2.5
89	215	1.65	16.10	"	"	12000	15000	107	180	1.95
72	265	1.3	19.96	"	"	12000	15000	86	220	1.6
61	310	1.15	23.38	"	"	12000	15000	74	255	1.35
48	395	0.89	29.76	"	"	12000	15000	58	325	1.1
79	235	2.9	18.05	BM40-../DSE09XA4	76	20000	25000	95	199	3.4
64	295	2.3	22.44	"	"	20000	25000	77	245	2.8
50	375	1.8	28.59	"	"	20000	25000	60	315	2.2
41.5	455	1.5	34.61	"	"	20000	25000	49.5	380	1.8
35	540	1.25	40.88	"	"	20000	25000	42	450	1.5
28	660	1.05	51.18	"	"	20000	25000	33.5	550	1.25
24	770	0.88	59.66	"	"	20000	25000	29	630	1.1

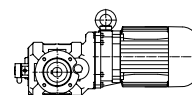
P = 3 kW

50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
128	200	3.1	11.17	BM40-../DSE11SA4	84	18300	22900	154	167	3.7
98	260	2.6	14.50	"	"	20000	25000	118	215	3.2
79	325	2.1	18.05	"	"	20000	25000	95	270	2.5
64	400	1.7	22.44	"	"	20000	25000	77	330	2.1
50	510	1.35	28.59	"	"	20000	25000	60	425	1.6
41.5	620	1.1	34.61	"	"	20000	25000	49.5	520	1.3
35	730	0.93	40.88	"	"	20000	25000	42	610	1.1

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors ASM IE1

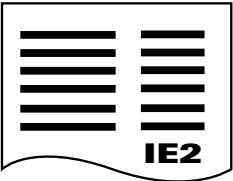
P = 4 kW



50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
128	265	2.4	11.17	BM40-../DSE11MA4	90	18300	22900	154	220	2.8
98	350	1.95	14.50	"	"	20000	25000	118	290	2.3
79	435	1.55	18.05	"	"	20000	25000	95	360	1.9
64	530	1.3	22.44	"	"	20000	25000	77	445	1.55
50	680	1.0	28.59	"	"	20000	25000	60	570	1.2
41.5	820	0.83	34.61	"	"	20000	25000	49.5	690	0.99

P = 5.5 kW

50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
128	365	1.7	11.17	BM40-../DSE11LA4	102	18300	22900	154	305	2.0
98	480	1.4	14.50	"	"	20000	25000	118	400	1.7
79	590	1.15	18.05	"	"	20000	25000	95	495	1.35
64	730	0.93	22.44	"	"	20000	25000	77	610	1.1



Selection tables ASM-IE2

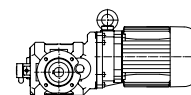
Page

59-70

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors ASM IE2

P = 0.03 kW



50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
11.5	23.5	9.4	117.9	BM20Z-../D04LA4	21	10000	12000	14	19.4	11
9.5	28.5	7.7	142.8	"	"	10000	12000	11.5	23.5	9.4
7.6	35.5	5.9	178.9	"	"	10000	12000	9.1	29.5	7.1
6.6	41	4.7	205.3	"	"	10000	12000	7.9	34	5.7

P = 0.04 kW

50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
16	22.5	9.8	85.45	BM20Z-../D04LA4	21	10000	12000	19	19.1	12
14	25.5	8.6	99.47	"	"	10000	12000	16.5	21.5	10
11.5	31.5	7.0	117.9	"	"	10000	12000	14	25.5	8.6
9.5	38	5.8	142.8	"	"	10000	12000	11.5	31.5	7.0
7.6	47.5	4.4	178.9	"	"	10000	12000	9.1	39.5	5.3
6.6	54	3.6	205.3	"	"	10000	12000	7.9	45.5	4.2

P = 0.06 kW

50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
120	4.2	7.1	11.34	BM09-../D05LA4	13	4400	6500	143	3.5	8.6
103	4.85	6.6	13.23	"	"	4400	6500	123	4.05	7.9
77	6.5	7.2	17.73	"	"	4400	6500	92	5.4	8.7
64	7.8	7.2	21.20	"	"	4400	6500	77	6.5	8.6
55	9.1	6.5	24.74	"	"	4400	6500	66	7.6	7.8
52	9.6	7.2	25.98	"	"	4400	6500	63	8.0	8.6
45	11.2	6.4	30.31	"	"	4400	6500	54	9.3	7.7
41	12.2	7.1	32.97	"	"	4400	6500	49.5	10.1	8.6
35.5	14.2	6.5	38.46	"	"	4400	6500	42.5	11.8	7.8
32	15.5	5.5	42.44	"	"	4400	6500	38.5	12.9	6.6
25.5	19.5	5.5	53.85	"	"	4400	6500	30.5	16.3	6.6
7.6	71	2.9	178.9	BM20Z-../D06LA4	24	10000	12000	9.1	59	3.5
6.6	82	2.4	205.3	"	"	10000	12000	7.9	68	2.8

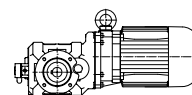
P = 0.09 kW

50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
120	6.3	4.8	11.34	BM09-../D05LA4	13	4400	6500	143	5.2	5.8
103	7.3	4.4	13.23	"	"	4400	6500	123	6.1	5.2
77	9.8	4.8	17.73	"	"	4400	6500	92	8.2	5.7
64	11.8	4.7	21.20	"	"	4400	6500	77	9.8	5.7
55	13.7	4.3	24.74	"	"	4400	6500	66	11.4	5.2
52	14.5	4.8	25.98	"	"	4400	6500	63	12	5.8
45	16.8	4.3	30.31	"	"	4400	6500	54	14	5.1
41	18.4	4.7	32.97	"	"	4400	6500	49.5	15.2	5.7
35.5	21	4.4	38.46	"	"	4400	6500	42.5	17.7	5.2
32	23	3.7	42.44	"	"	4400	6500	38.5	19.4	4.4
25.5	29	3.7	53.85	"	"	4400	6500	30.5	24.5	4.4
11.5	71	3.1	117.9	BM20Z-../D06LA4	24	10000	12000	14	58	3.8
9.5	85	2.6	142.8	"	"	10000	12000	11.5	71	3.1
7.6	107	1.95	178.9	"	"	10000	12000	9.1	89	2.3
6.6	123	1.55	205.3	"	"	10000	12000	7.9	103	1.85
3.9	178	2.8	348.7	BM40Z-../D06LA4	64	20000	25000	4.7	148	3.4
3.2	210	2.4	430.0	"	"	20000	25000	3.8	180	2.8

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors ASM IE2

P = 0.12 kW



50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
120	8.4	3.6	11.34	BM09-../D05LA4	13	4400	6500	143	7.0	4.3
103	9.7	3.3	13.23	"	"	4400	6500	123	8.1	4.0
77	13	3.6	17.73	"	"	4400	6500	92	10.9	4.3
64	15.7	3.6	21.20	"	"	4400	6500	77	13	4.3
55	18.3	3.2	24.74	"	"	4400	6500	66	15.2	3.9
52	19.3	3.6	25.98	"	"	4400	6500	63	16	4.3
45	22	3.3	30.31	"	"	4400	6500	54	18.6	3.9
41	24.5	3.6	32.97	"	"	4400	6500	49.5	20	4.4
35.5	28	3.3	38.46	"	"	4400	6500	42.5	23.5	3.9
32	31	2.7	42.44	"	"	4400	6500	38.5	25.5	3.3
25.5	39	2.8	53.85	"	"	4400	6500	30.5	32.5	3.3
18.5	58	3.1	74.76	BM20-../D06LA4	23	10000	12000	22	49	3.7
16	68	3.2	85.45	BM20Z-../D06LA4	24	10000	12000	19	57	3.9
14	77	2.9	99.47	"	"	10000	12000	16.5	65	3.4
11.5	94	2.3	117.9	"	"	10000	12000	14	77	2.9
9.5	114	1.95	142.8	"	"	10000	12000	11.5	94	2.3
7.6	143	1.45	178.9	"	"	10000	12000	9.1	119	1.75
6.6	164	1.2	205.3	"	"	10000	12000	7.9	137	1.4
9.0	108	3.2	150.3	BM30Z-../D06LA4	41	12000	15000	11	88	4.0
7.7	126	2.8	177.2	"	"	12000	15000	9.2	105	3.3
4.7	197	3.0	289.8	BM40Z-../D06LA4	64	20000	25000	5.6	165	3.6
3.9	235	2.2	348.7	"	"	20000	25000	4.7	197	2.6
3.2	285	1.75	430.0	"	"	20000	25000	3.8	240	2.1

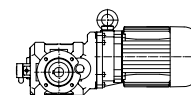
P = 0.18 kW

50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
120	12.6	2.4	11.34	BM09-../D05LA4	13	4400	6500	143	10.5	2.9
103	14.6	2.2	13.23	"	"	4400	6500	123	12.2	2.6
77	19.6	2.4	17.73	"	"	4400	6500	92	16.4	2.9
64	23.5	2.4	21.20	"	"	4400	6500	77	19.6	2.9
55	27.5	2.1	24.74	"	"	4400	6500	66	22.5	2.6
52	29	2.4	25.98	"	"	4400	6500	63	24	2.9
45	33.5	2.1	30.31	"	"	4400	6500	54	28	2.6
41	36.5	2.4	32.97	"	"	4400	6500	49.5	30.5	2.9
35.5	42.5	2.2	38.46	"	"	4400	6500	42.5	35.5	2.6
32	46.5	1.85	42.44	"	"	4400	6500	38.5	38.5	2.2
25.5	58	1.85	53.85	"	"	4400	6500	30.5	49	2.2
30	48	3.3	45.00	BM10-../D06LA4	21	8000	10000	36	40	4.0
26	54	2.8	52.44	"	"	8000	10000	31	45	3.3
23.5	59	2.7	58.18	"	"	8000	10000	28	50	3.2
22.5	72	2.7	60.64	BM20-../D06LA4	23	10000	12000	27	60	3.2
18.5	88	2.1	74.76	"	"	10000	12000	22	74	2.5
16	102	2.2	85.45	BM20Z-../D06LA4	24	10000	12000	19	85	2.6
14	116	1.9	99.47	"	"	10000	12000	16.5	98	2.2
11.5	142	1.55	117.9	"	"	10000	12000	14	116	1.9
9.5	171	1.3	142.8	"	"	10000	12000	11.5	142	1.55
7.6	210	1.0	178.9	"	"	10000	12000	9.1	179	1.15
19	79	3.3	71.09	BM30-../D06LA4	39	12000	15000	23	65	4.0
13.5	109	3.2	100.7	BM30Z-../D06LA4	41	12000	15000	16.5	89	3.9
11	134	2.6	128.2	"	"	12000	15000	13	113	3.1
9.0	162	2.2	150.3	"	"	12000	15000	11	132	2.7
7.7	189	1.85	177.2	"	"	12000	15000	9.2	158	2.2

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors ASM IE2

P = 0.18 kW



50 Hz			i	Type	m kg	F _{RN} N	F _{RV} N	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
6.4	220	3.1	211.5	BM40Z-../D06LA4	64	20000	25000	7.7	183	3.7
5.5	250	2.7	246.6	"	"	20000	25000	6.6	210	3.2
4.7	295	2.0	289.8	"	"	20000	25000	5.6	245	2.4
3.9	355	1.45	348.7	"	"	20000	25000	4.7	295	1.7
3.2	425	1.2	430.0	"	"	20000	25000	3.8	360	1.4

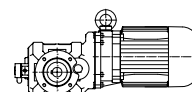
P = 0.25 kW

50 Hz			i	Type	m kg	F _{RN} N	F _{RV} N	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
120	17.5	1.7	11.34	BM09-../D05LA4	13	4400	6500	143	14.6	2.1
103	20	1.6	13.23	"	"	4400	6500	123	17	1.9
77	27	1.75	17.73	"	"	4400	6500	92	22.5	2.1
64	32.5	1.7	21.20	"	"	4400	6500	77	27	2.1
55	38	1.55	24.74	"	"	4400	6500	66	31.5	1.85
52	40	1.75	25.98	"	"	4400	6500	63	33	2.1
45	46.5	1.55	30.31	"	"	4400	6500	54	38.5	1.85
41	51	1.7	32.97	"	"	4400	6500	49.5	42	2.1
35.5	59	1.55	38.46	"	"	4400	6500	42.5	49	1.9
32	64	1.35	42.44	"	"	4400	6500	38.5	53	1.6
25.5	81	1.35	53.85	"	"	4400	6500	30.5	68	1.6
41	50	3.0	33.19	BM10-../D06LA4	21	8000	10000	49	41.5	3.6
37	55	2.9	36.82	"	"	8000	10000	44	46.5	3.4
33.5	59	2.5	40.56	"	"	8000	10000	40	50	3.0
30	66	2.4	45.00	"	"	8000	10000	36	55	2.9
26	75	2.0	52.44	"	"	8000	10000	31	63	2.4
23.5	83	1.95	58.18	"	"	8000	10000	28	69	2.3
32.5	69	3.2	42.18	BM20-../D06LA4	23	10000	12000	38.5	58	3.8
26	87	2.4	52.84	"	"	10000	12000	31	73	2.9
22.5	100	1.95	60.64	"	"	10000	12000	27	84	2.3
18.5	122	1.5	74.76	"	"	10000	12000	22	103	1.75
16	141	1.55	85.45	BM20Z-../D06LA4	24	10000	12000	19	119	1.85
14	162	1.35	99.47	"	"	10000	12000	16.5	137	1.6
11.5	197	1.1	117.9	"	"	10000	12000	14	162	1.35
9.5	235	0.94	142.8	"	"	10000	12000	11.5	197	1.1
22.5	93	2.9	61.33	BM30-../D06LA4	39	12000	15000	26.5	79	3.4
19	110	2.3	71.09	"	"	12000	15000	23	91	2.8
16	129	2.7	85.96	BM30Z-../D06LA4	41	12000	15000	19	109	3.2
13.5	152	2.3	100.7	"	"	12000	15000	16.5	124	2.8
11	186	1.9	128.2	"	"	12000	15000	13	157	2.2
9.0	225	1.55	150.3	"	"	12000	15000	11	184	1.9
7.7	260	1.35	177.2	"	"	12000	15000	9.2	220	1.6
9.5	210	3.2	143.0	BM40Z-../D06LA4	64	20000	25000	11.5	174	3.9
8.0	245	2.8	169.0	"	"	20000	25000	9.6	205	3.3
6.4	305	2.2	211.5	"	"	20000	25000	7.7	250	2.7
5.5	350	1.95	246.6	"	"	20000	25000	6.6	290	2.3
4.7	410	1.45	289.8	"	"	20000	25000	5.6	345	1.75
3.9	495	1.0	348.7	"	"	20000	25000	4.7	410	1.25
3.2	590	0.85	430.0	"	"	20000	25000	3.8	500	1.0

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors ASM IE2

P = 0.3 kW



50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
120	21	1.45	11.34	BM09-../D07LA4	17	4400	6500	143	17.6	1.7
103	24	1.35	13.23	"	"	4400	6500	123	20	1.6
77	32.5	1.45	17.73	"	"	4400	6500	92	27	1.75
64	39	1.45	21.20	"	"	4400	6500	77	32.5	1.7
55	45.5	1.3	24.74	"	"	4400	6500	66	38	1.55
52	48	1.45	25.98	"	"	4400	6500	63	40	1.75
45	56	1.3	30.31	"	"	4400	6500	54	46.5	1.55
41	61	1.45	32.97	"	"	4400	6500	49.5	50	1.75
35.5	71	1.3	38.46	"	"	4400	6500	42.5	59	1.55
32	77	1.1	42.44	"	"	4400	6500	38.5	64	1.35
25.5	97	1.1	53.85	"	"	4400	6500	30.5	81	1.35
51	49	3.1	26.55	BM10-../D07LA4	23	8000	10000	62	40.5	3.7
46	54	3.0	29.45	"	"	8000	10000	56	45	3.6
41	60	2.5	33.19	"	"	8000	10000	49	50	3.0
37	66	2.4	36.82	"	"	8000	10000	44	55	2.9
33.5	71	2.1	40.56	"	"	8000	10000	40	60	2.5
30	80	2.0	45.00	"	"	8000	10000	36	66	2.4
26	90	1.65	52.44	"	"	8000	10000	31	75	2.0
23.5	99	1.6	58.18	"	"	8000	10000	28	83	1.95
38.5	70	3.1	35.25	BM20-../D07LA4	26	10000	12000	46	59	3.7
32.5	83	2.7	42.18	"	"	10000	12000	38.5	70	3.1
26	104	2.0	52.84	"	"	10000	12000	31	87	2.4
22.5	120	1.6	60.64	"	"	10000	12000	27	100	1.95
18.5	147	1.25	74.76	"	"	10000	12000	22	123	1.5
16	170	1.3	85.45	BM20Z-../D07LA4	27	10000	12000	19	143	1.55
14	194	1.15	99.47	"	"	10000	12000	16.5	164	1.35
11.5	235	0.94	117.9	"	"	10000	12000	14	194	1.15
22.5	112	2.4	61.33	BM30-../D07LA4	41	12000	15000	26.5	95	2.8
19	132	1.95	71.09	"	"	12000	15000	23	109	2.4
16	155	2.3	85.96	BM30Z-../D07LA4	44	12000	15000	19	131	2.7
13.5	182	1.9	100.7	"	"	12000	15000	16.5	149	2.3
11	220	1.6	128.2	"	"	12000	15000	13	189	1.85
9.0	270	1.3	150.3	"	"	12000	15000	11	220	1.6
7.7	315	1.1	177.2	"	"	12000	15000	9.2	260	1.35
11.5	210	3.2	118.2	BM40Z-../D07LA4	66	20000	25000	14	173	3.9
9.5	250	2.7	143.0	"	"	20000	25000	11.5	205	3.3
8.0	295	2.3	169.0	"	"	20000	25000	9.6	245	2.8
6.4	365	1.85	211.5	"	"	20000	25000	7.7	305	2.2
5.5	420	1.6	246.6	"	"	20000	25000	6.6	350	1.95
4.7	490	1.2	289.8	"	"	20000	25000	5.6	410	1.45
3.9	590	0.86	348.7	"	"	20000	25000	4.7	490	1.05

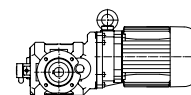
P = 0.37 kW

50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
120	25.5	1.2	11.34	BM09-../D07LA4	17	4400	6500	143	21.5	1.4
103	30	1.05	13.23	"	"	4400	6500	123	25	1.3
77	40	1.2	17.73	"	"	4400	6500	92	33.5	1.4
64	48.5	1.15	21.20	"	"	4400	6500	77	40	1.4
55	56	1.05	24.74	"	"	4400	6500	66	47	1.25
52	59	1.15	25.98	"	"	4400	6500	63	49	1.4
45	69	1.05	30.31	"	"	4400	6500	54	57	1.25
41	75	1.15	32.97	"	"	4400	6500	49.5	62	1.4
35.5	87	1.05	38.46	"	"	4400	6500	42.5	73	1.25
32	96	0.89	42.44	"	"	4400	6500	38.5	79	1.1
25.5	120	0.9	53.85	"	"	4400	6500	30.5	100	1.1

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors ASM IE2

P = 0.37 kW



50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
60	51	2.9	22.62	BM10-../D07LA4	23	8000	10000	72	43	3.5
54	57	2.8	25.09	"	"	8000	10000	65	47.5	3.4
51	60	2.5	26.55	"	"	8000	10000	62	50	3.0
46	67	2.4	29.45	"	"	8000	10000	56	55	2.9
41	74	2.0	33.19	"	"	8000	10000	49	62	2.4
37	82	1.95	36.82	"	"	8000	10000	44	69	2.3
33.5	88	1.7	40.56	"	"	8000	10000	40	74	2.0
30	98	1.65	45.00	"	"	8000	10000	36	82	1.95
26	111	1.35	52.44	"	"	8000	10000	31	93	1.6
23.5	123	1.3	58.18	"	"	8000	10000	28	103	1.55
46	72	3.1	29.39	BM20-../D07LA4	26	10000	12000	56	59	3.7
38.5	87	2.5	35.25	"	"	10000	12000	46	72	3.1
32.5	103	2.1	42.18	"	"	10000	12000	38.5	87	2.5
26	129	1.6	52.84	"	"	10000	12000	31	108	1.95
22.5	149	1.3	60.64	"	"	10000	12000	27	124	1.55
18.5	181	1.0	74.76	"	"	10000	12000	22	152	1.2
16	205	1.05	85.45	BM20Z-../D07LA4	27	10000	12000	19	176	1.25
14	235	0.94	99.47	"	"	10000	12000	16.5	200	1.1
27.5	114	2.8	49.66	BM30-../D07LA4	41	12000	15000	33	95	3.3
22.5	138	1.95	61.33	"	"	12000	15000	26.5	117	2.3
19	163	1.6	71.09	"	"	12000	15000	23	135	1.9
16	192	1.8	85.96	BM30Z-../D07LA4	44	12000	15000	19	161	2.2
13.5	225	1.55	100.7	"	"	12000	15000	16.5	184	1.9
11	275	1.25	128.2	"	"	12000	15000	13	230	1.5
9.0	330	1.05	150.3	"	"	12000	15000	11	270	1.3
7.7	390	0.9	177.2	"	"	12000	15000	9.2	325	1.1
11.5	260	2.6	118.2	BM40Z-../D07LA4	66	20000	25000	14	210	3.2
9.5	310	2.2	143.0	"	"	20000	25000	11.5	255	2.7
8.0	365	1.85	169.0	"	"	20000	25000	9.6	305	2.2
6.4	450	1.5	211.5	"	"	20000	25000	7.7	375	1.8
5.5	520	1.3	246.6	"	"	20000	25000	6.6	430	1.6
4.7	600	1.0	289.8	"	"	20000	25000	5.6	510	1.15

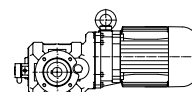
P = 0.55 kW

50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
124	37	0.81	11.34	BM09-../D08MA4	18	4400	6500	149	31	0.97
79	58	0.81	17.73	"	"	4400	6500	95	48.5	0.97
67	68	0.82	21.20	"	"	4400	6500	80	57	0.98
54	85	0.81	25.98	"	"	4400	6500	65	71	0.97
42.5	108	0.81	32.97	"	"	4400	6500	51	90	0.97
86	54	2.7	16.39	BM10-../D08MA4	24	8000	10000	103	45	3.2
78	59	2.6	18.18	"	"	8000	10000	93	50	3.1
62	74	2.0	22.62	"	"	8000	10000	75	61	2.5
56	82	1.95	25.09	"	"	8000	10000	67	68	2.4
53	87	1.7	26.55	"	"	8000	10000	64	72	2.1
48	96	1.65	29.45	"	"	8000	10000	58	79	2.0
42.5	106	1.4	33.19	"	"	8000	10000	51	88	1.7
38.5	117	1.35	36.82	"	"	8000	10000	46	98	1.65
35	126	1.2	40.56	"	"	8000	10000	41.5	106	1.4
31.5	140	1.15	45.00	"	"	8000	10000	37.5	117	1.35
27	159	0.94	52.44	"	"	8000	10000	32.5	132	1.15
24.5	175	0.91	58.18	"	"	8000	10000	29	148	1.1

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors ASM IE2

P = 0.55 kW



50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
71	70	3.1	19.72	BM20-../D08MA4	26	10000	12000	86	58	3.8
56	89	2.5	25.25	"	"	10000	12000	67	74	3.0
48	103	2.1	29.39	"	"	10000	12000	58	86	2.6
40	124	1.75	35.25	"	"	10000	12000	48	103	2.1
33.5	148	1.5	42.18	"	"	10000	12000	40	124	1.75
26.5	188	1.1	52.84	"	"	10000	12000	32	155	1.35
23.5	210	0.92	60.64	"	"	10000	12000	28	178	1.1
21	235	0.94	66.74	BM20Z-../D08MA4	28	10000	12000	25.5	195	1.15
40.5	118	3.0	34.88	BM30-../D08MA4	42	12000	15000	48.5	98	3.6
34.5	137	2.6	41.13	"	"	12000	15000	41	115	3.0
28.5	164	1.95	49.66	"	"	12000	15000	34	137	2.3
23	200	1.35	61.33	"	"	12000	15000	27.5	168	1.6
20	230	1.1	71.09	"	"	12000	15000	24	192	1.35
16.5	275	1.25	85.96	BM30Z-../D08MA4	45	12000	15000	20	225	1.55
14	320	1.1	100.7	"	"	12000	15000	17	265	1.3
11	410	0.85	128.2	"	"	12000	15000	13.5	330	1.05
20	225	3.0	70.11	BM40-../D08MA4	63	20000	25000	24	190	3.6
17	265	2.3	84.36	"	"	20000	25000	20	225	2.7
13.5	330	1.8	104.0	"	"	20000	25000	16.5	270	2.2
12	370	1.85	118.2	BM40Z-../D08MA4	67	20000	25000	14.5	305	2.2
9.8	450	1.5	143.0	"	"	20000	25000	12	365	1.85
8.3	520	1.3	169.0	"	"	20000	25000	10	435	1.55
6.7	640	1.05	211.5	"	"	20000	25000	8.0	530	1.3
5.7	740	0.92	246.6	"	"	20000	25000	6.9	610	1.1

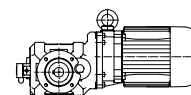
P = 0.75 kW

50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
122	53	2.6	11.68	BM10-../DHE08XA4	27	8000	10000	147	44	3.2
110	59	2.5	12.95	"	"	8000	10000	133	49	3.1
87	73	2.0	16.39	"	"	8000	10000	105	60	2.4
79	80	1.95	18.18	"	"	8000	10000	95	67	2.3
63	100	1.5	22.62	"	"	8000	10000	76	82	1.85
57	110	1.45	25.09	"	"	8000	10000	69	91	1.75
54	116	1.3	26.55	"	"	8000	10000	65	96	1.55
48.5	129	1.25	29.45	"	"	8000	10000	59	106	1.5
43	143	1.05	33.19	"	"	8000	10000	52	118	1.25
39	157	1.0	36.82	"	"	8000	10000	46.5	132	1.2
35.5	169	0.89	40.56	"	"	8000	10000	42.5	141	1.05
32	188	0.85	45.00	"	"	8000	10000	38	158	1.0
85	80	2.8	16.72	BM20-../DHE08XA4	29	10000	12000	103	66	3.3
73	93	2.4	19.72	"	"	10000	12000	87	78	2.8
57	119	1.85	25.25	"	"	10000	12000	68	100	2.2
48.5	140	1.55	29.39	"	"	10000	12000	59	115	1.9
40.5	168	1.3	35.25	"	"	10000	12000	49	138	1.6
34	200	1.1	42.18	"	"	10000	12000	41	165	1.35
27	250	0.84	52.84	"	"	10000	12000	32.5	205	1.0
25.5	265	0.83	56.58	BM20Z-../DHE08XA4	31	10000	12000	30.5	220	1.0
61	106	3.3	23.38	BM30-../DHE08XA4	45	12000	15000	74	88	4.0
48	135	2.6	29.76	"	"	12000	15000	58	112	3.1
41	158	2.2	34.88	"	"	12000	15000	49.5	131	2.7
35	184	1.9	41.13	"	"	12000	15000	42	153	2.3
29	215	1.45	49.66	"	"	12000	15000	34.5	184	1.7
23.5	265	1.0	61.33	"	"	12000	15000	28	225	1.2
20	315	0.82	71.09	"	"	12000	15000	24.5	255	1.0

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors ASM IE2

P = 0.75 kW



50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
17	365	0.96	85.96	BM30Z-../DHE08XA4	48	12000	15000	20	310	1.15
14.5	420	0.83	100.7	"	"	12000	15000	17	360	0.97
28	225	3.0	51.18	BM40-../DHE08XA4	65	20000	25000	33.5	188	3.6
24	260	2.6	59.66	"	"	20000	25000	29	215	3.2
20.5	300	2.3	70.11	"	"	20000	25000	24.5	250	2.7
17	365	1.65	84.36	"	"	20000	25000	20.5	300	2.0
14	430	1.4	104.0	"	"	20000	25000	16.5	365	1.65
12.5	485	1.4	118.2	BM40Z-../DHE08XA4	70	20000	25000	14.5	415	1.65
10	600	1.15	143.0	"	"	20000	25000	12	500	1.35
8.5	690	0.99	169.0	"	"	20000	25000	10.5	560	1.2

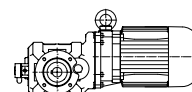
P = 1.1 kW

50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
124	77	1.8	11.68	BM10-../DHE09LA4	34	8000	10000	149	64	2.2
112	85	1.75	12.95	"	"	8000	10000	135	70	2.1
88	106	1.35	16.39	"	"	8000	10000	107	87	1.65
80	116	1.35	18.18	"	"	8000	10000	96	97	1.6
64	144	1.05	22.62	"	"	8000	10000	77	120	1.25
58	159	1.0	25.09	"	"	8000	10000	70	132	1.2
55	168	0.89	26.55	"	"	8000	10000	66	140	1.05
49	188	0.85	29.45	"	"	8000	10000	60	154	1.05
142	70	3.1	10.15	BM20-../DHE09LA4	36	10000	12000	172	58	3.8
108	92	2.4	13.34	"	"	10000	12000	131	76	2.9
87	114	1.95	16.72	"	"	10000	12000	105	95	2.3
74	134	1.65	19.72	"	"	10000	12000	89	112	1.95
58	172	1.3	25.25	"	"	10000	12000	69	144	1.55
49	200	1.1	29.39	"	"	10000	12000	60	166	1.35
41	240	0.92	35.25	"	"	10000	12000	49.5	200	1.1
90	107	3.3	16.10	BM30-../DHE09LA4	52	12000	15000	109	88	4.0
73	132	2.7	19.96	"	"	12000	15000	88	109	3.2
62	154	2.3	23.38	"	"	12000	15000	75	127	2.8
48.5	197	1.8	29.76	"	"	12000	15000	59	162	2.2
41.5	230	1.5	34.88	"	"	12000	15000	50	191	1.85
35.5	265	1.3	41.13	"	"	12000	15000	42.5	220	1.6
29	320	0.99	49.66	"	"	12000	15000	35.5	260	1.2
27	335	0.84	53.67	BM30Z-../DHE09LA4	54	12000	15000	32.5	280	1.0
21	435	0.8	69.35	"	"	12000	15000	25.5	355	0.99
42	225	3.0	34.61	BM40-../DHE09LA4	72	20000	25000	51	185	3.7
35.5	265	2.6	40.88	"	"	20000	25000	43	215	3.2
28.5	320	2.1	51.18	"	"	20000	25000	34	270	2.5
24.5	375	1.8	59.66	"	"	20000	25000	29.5	310	2.2
21	435	1.55	70.11	"	"	20000	25000	25	365	1.85
17.5	520	1.15	84.36	"	"	20000	25000	21	435	1.4
14	630	0.95	104.0	"	"	20000	25000	17	520	1.15
12.5	710	0.96	118.2	BM40Z-../DHE09LA4	76	20000	25000	15	590	1.15
10.5	840	0.81	143.0	"	"	20000	25000	12.5	700	0.97

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors ASM IE2

P = 1.5 kW



50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
124	105	1.35	11.68	BM10-../DHE09XA4	38	8000	10000	149	87	1.6
112	116	1.3	12.95	"	"	8000	10000	135	96	1.55
88	144	1.0	16.39	"	"	8000	10000	107	119	1.2
80	159	0.97	18.18	"	"	8000	10000	96	132	1.15
188	72	2.8	7.66	BM20-../DHE09XA4	40	9100	10900	230	59	3.4
142	95	2.3	10.15	"	"	10000	12000	172	79	2.8
108	126	1.75	13.34	"	"	10000	12000	131	103	2.1
87	156	1.4	16.72	"	"	10000	12000	105	129	1.7
74	183	1.2	19.72	"	"	10000	12000	89	152	1.45
58	230	0.96	25.25	"	"	10000	12000	69	197	1.1
49	275	0.8	29.39	"	"	10000	12000	60	225	0.98
116	113	3.1	12.46	BM30-../DHE09XA4	56	12000	15000	140	94	3.7
90	146	2.4	16.10	"	"	12000	15000	109	120	2.9
73	180	1.95	19.96	"	"	12000	15000	88	149	2.3
62	210	1.65	23.38	"	"	12000	15000	75	173	2.0
48.5	265	1.3	29.76	"	"	12000	15000	59	220	1.6
41.5	310	1.15	34.88	"	"	12000	15000	50	260	1.35
35.5	360	0.97	41.13	"	"	12000	15000	42.5	300	1.15
51	250	2.7	28.59	BM40-../DHE09XA4	76	20000	25000	61	210	3.2
42	305	2.2	34.61	"	"	20000	25000	51	250	2.7
35.5	360	1.9	40.88	"	"	20000	25000	43	295	2.3
28.5	440	1.55	51.18	"	"	20000	25000	34	370	1.85
24.5	510	1.35	59.66	"	"	20000	25000	29.5	425	1.6
21	590	1.15	70.11	"	"	20000	25000	25	495	1.35
17.5	710	0.85	84.36	"	"	20000	25000	21	590	1.0

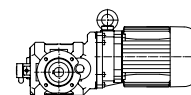
P = 2.2 kW

50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
124	154	0.91	11.68	BM10-../DHE09XA4C	40	8000	10000	149	128	1.1
112	170	0.88	12.95	"	"	8000	10000	135	141	1.05
188	106	1.9	7.66	BM20-../DHE09XA4C	42	9100	10900	230	86	2.3
142	140	1.55	10.15	"	"	10000	12000	172	116	1.9
108	184	1.2	13.34	"	"	10000	12000	131	152	1.45
87	225	0.98	16.72	"	"	10000	12000	105	190	1.15
74	265	0.83	19.72	"	"	10000	12000	89	220	1.0
183	105	3.1	7.91	BM30-../DHE09XA4C	58	11000	13800	220	87	3.7
144	134	2.6	10.06	"	"	12000	15000	173	111	3.2
116	166	2.1	12.46	"	"	12000	15000	140	138	2.5
90	210	1.65	16.10	"	"	12000	15000	109	177	2.0
73	260	1.35	19.96	"	"	12000	15000	88	215	1.65
62	305	1.15	23.38	"	"	12000	15000	75	250	1.4
48.5	390	0.9	29.76	"	"	12000	15000	59	320	1.1
80	235	2.9	18.05	BM40-../DHE09XA4C	79	20000	25000	97	194	3.5
65	290	2.3	22.44	"	"	20000	25000	78	240	2.8
51	370	1.85	28.59	"	"	20000	25000	61	305	2.2
42	450	1.5	34.61	"	"	20000	25000	51	370	1.85
35.5	530	1.3	40.88	"	"	20000	25000	43	435	1.55
28.5	640	1.05	51.18	"	"	20000	25000	34	540	1.25
24.5	750	0.91	59.66	"	"	20000	25000	29.5	620	1.1

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors ASM IE2

P = 3 kW



50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
129	199	3.1	11.17	BM40-../DHE11MA4	90	18300	22900	156	165	3.8
100	255	2.7	14.50	"	"	20000	25000	120	210	3.2
80	320	2.1	18.05	"	"	20000	25000	97	265	2.6
65	395	1.7	22.44	"	"	20000	25000	78	330	2.1
51	500	1.35	28.59	"	"	20000	25000	61	420	1.6
42	610	1.1	34.61	"	"	20000	25000	51	500	1.35
35.5	720	0.94	40.88	"	"	20000	25000	43	590	1.15

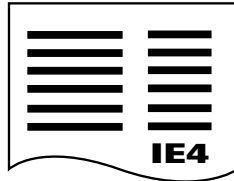
P = 4 kW

50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
129	265	2.4	11.17	BM40-../DHE11LA4	102	18300	22900	156	220	2.8
100	340	2.0	14.50	"	"	20000	25000	120	285	2.4
80	425	1.6	18.05	"	"	20000	25000	97	350	1.95
65	520	1.3	22.44	"	"	20000	25000	78	440	1.55
51	670	1.0	28.59	"	"	20000	25000	61	560	1.2
42	810	0.84	34.61	"	"	20000	25000	51	670	1.0

P = 5.5 kW

50 Hz			i	Type	m	F _{RN}	F _{RV}	60 Hz		
n ₂ 1/min	M ₂ Nm	f _B						n ₂ 1/min	M ₂ Nm	f _B
131	360	1.75	11.17	BM40-../DHE11LA4C	106	18300	22900	158	295	2.1
101	465	1.45	14.50	"	"	20000	25000	122	385	1.75
81	580	1.15	18.05	"	"	20000	25000	98	480	1.4
66	710	0.96	22.44	"	"	20000	25000	79	590	1.15

8



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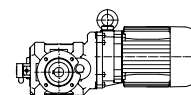
Selection tables PMSM - IE4 1500 ¹/_{min}

71-76

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors PMSM - IE4 1500 1/min

M₁ = 4.75 Nm

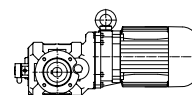


n2	M2	Type	Speed range n2 [1/min] at engine speed n1 [1/min]					Torque range M2 [Nm] at engine speed n1 [1/min]					fB	i _{ges}	m	F _{RN}	F _{RV}
1/min	Nm		150	500	1000	1500	1800	150	500	1000	1500	1800			kg	N	N
128	69	BM10-../S08MA4	12,5	42,5	85	128	154	53	59	69	69	69	2,0	11,68	24	8000	10000.0
115	76		11,5	38,5	77	115	138	58	65	76	76	76	2,0	12,95	24	8000	10000.0
91	94		9,1	30,5	61	91	109	72	81	94	94	94	1,5	16,39	24	8000	10000.0
82	105		8,2	27,5	55	82	99	80	90	105	105	105	1,5	18,18	24	8000	10000.0
66	129		6,6	22	44	66	79	99	111	129	129	129	1,2	22,62	24	8000	10000.0
59	143		5,9	19,5	39,5	59	71	110	123	143	143	143	1,1	25,09	24	8000	10000.0
56	151		5,6	18,5	37,5	56	67	116	130	151	151	151	0,99	26,55	24	8000	10000.0
50	168		5,0	16,5	33,5	50	61	129	145	168	168	168	0,95	29,45	24	8000	10000.0
45	185		4,5	15	30	45	54	142	159	185	185	185	0,81	33,19	24	8000	10000.0
112	82	BM20-../S08MA4	11	37	74	112	134	63	70	82	82	82	2,7	13,34	26	10000	12000.0
89	103		8,9	29,5	59	89	107	79	88	103	103	103	2,1	16,72	26	10000	12000.0
76	121		7,6	25	50	76	91	93	104	121	121	121	1,8	19,72	26	10000	12000.0
59	155		5,9	19,5	39,5	59	71	119	134	155	155	155	1,4	25,25	26	10000	12000.0
51	181		5,1	17	34	51	61	139	156	181	181	181	1,2	29,39	26	10000	12000.0
42,5	215		4,2	14	28	42,5	51	167	187	215	215	215	1,0	35,25	26	10000	12000.0
35,5	260		3,5	11,5	23,5	35,5	42,5	200	220	260	260	260	0,84	42,18	26	10000	12000.0
75	119	BM30-../S08MA4	7,5	25	50	75	90	91	102	119	119	119	2,9	19,96	42	12000	15000.0
64	138		6,4	21	42,5	64	76	106	119	138	138	138	2,5	23,38	42	12000	15000.0
50	176		5,0	16,5	33,5	50	60	135	151	176	176	176	2,0	29,76	42	12000	15000.0
43	205		4,3	14	28,5	43	51	158	177	205	205	205	1,7	34,88	42	12000	15000.0
36	240		3,6	12	24	36	43,5	185	205	240	240	240	1,5	41,13	42	12000	15000.0
30	285		3,0	10	20	30	36	220	245	285	285	285	1,1	49,66	42	12000	15000.0
27,5	300	BM30Z-../S08MA4	2,7	9,3	18,5	27,5	33,5	230	260	300	300	300	0,92	53,67	45	12000	15000.0
21,5	390		2,1	7,2	14	21,5	25,5	300	335	390	390	390	0,89	69,35	45	12000	15000.0
36,5	235	BM40-../S08MA4	3,6	12	24	36,5	44	183	205	235	235	235	2,8	40,88	63	20000	25000.0
29	290		2,9	9,7	19,5	29	35	225	250	290	290	290	2,3	51,18	63	20000	25000.0
25	340		2,5	8,3	16,5	25	30	260	290	340	340	340	2,0	59,66	63	20000	25000.0
21	395		2,1	7,1	14	21	25,5	300	340	395	395	395	1,7	70,11	63	20000	25000.0
17,5	475		1,7	5,9	11,5	17,5	21	365	410	475	475	475	1,3	84,36	63	20000	25000.0
14	570		1,4	4,8	9,6	14	17	440	495	570	570	570	1,0	104	63	20000	25000.0
12,5	650	BM40Z-../S08MA4	1,2	4,2	8,4	12,5	15	500	560	650	650	650	1,0	118,2	67	20000	25000.0
10	780		1,0	3,4	6,9	10	12,5	600	670	780	780	780	0,87	143	67	20000	25000.0

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors PMSM - IE4 1500 1/ min

M₁ = 9.55 Nm



n2	M2	Type	Speed range n2 [1/min] at engine speed n1 [1/min]					Torque range M2 [Nm] at engine speed n1 [1/min]					fB	i _{ges}	m	F _{RN}	F _{RV}
1/min	Nm		150	500	1000	1500	1800	150	500	1000	1500	1800			kg	N	N
128	101	BM10-../S08LA4	12,5	42,5	85	128	154	69	85	101	101	101	1,4	11,68	26	8000	10000.0
115	112		11,5	38,5	77	115	138	76	94	112	112	112	1,3	12,95	26	8000	10000.0
91	139		9,1	30,5	61	91	109	94	116	139	139	139	1,0	16,39	26	8000	10000.0
82	154		8,2	27,5	55	82	99	105	129	154	154	154	1,0	18,18	26	8000	10000.0
195	69	BM20-../S08LA4	19,5	65	130	195	230	47	58	69	69	69	2,9	7,66	28	9100	10900.0
147	92		14,5	49	98	147	177	62	77	92	92	92	2,4	10,15	28	10000	12000.0
112	121		11	37	74	112	134	82	101	121	121	121	1,8	13,34	28	10000	12000.0
89	151		8,9	29,5	59	89	107	103	127	151	151	151	1,5	16,72	28	10000	12000.0
76	178		7,6	25	50	76	91	121	149	178	178	178	1,2	19,72	28	10000	12000.0
59	225		5,9	19,5	39,5	59	71	155	191	225	225	225	0,96	25,25	28	10000	12000.0
51	265		5,1	17	34	51	61	181	220	265	265	265	0,83	29,39	28	10000	12000.0
93	141	BM30-../S08LA4	9,3	31	62	93	111	96	118	141	141	141	2,5	16,1	44	12000	15000.0
75	175		7,5	25	50	75	90	119	146	175	175	175	2,0	19,96	44	12000	15000.0
64	200		6,4	21	42,5	64	76	138	170	200	200	200	1,7	23,38	44	12000	15000.0
50	255		5,0	16,5	33,5	50	60	176	215	255	255	255	1,4	29,76	44	12000	15000.0
43	300		4,3	14	28,5	43	51	205	250	300	300	300	1,2	34,88	44	12000	15000.0
36	350		3,6	12	24	36	43,5	240	295	350	350	350	0,99	41,13	44	12000	15000.0
52	245	BM40-../S08LA4	5,2	17	34,5	52	62	167	205	245	245	245	2,8	28,59	64	20000	25000.0
43	295		4,3	14	28,5	43	52	200	245	295	295	295	2,3	34,61	64	20000	25000.0
36,5	350		3,6	12	24	36,5	44	235	290	350	350	350	1,9	40,88	64	20000	25000.0
29	430		2,9	9,7	19,5	29	35	290	360	430	430	430	1,6	51,18	64	20000	25000.0
25	500		2,5	8,3	16,5	25	30	340	420	500	500	500	1,4	59,66	64	20000	25000.0
21	580		2,1	7,1	14	21	25,5	395	485	580	580	580	1,2	70,11	64	20000	25000.0
17,5	700		1,7	5,9	11,5	17,5	21	475	580	700	700	700	0,86	84,36	64	20000	25000.0

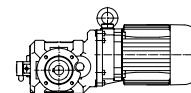
M₁ = 14 Nm

n2	M2	Type	Speed range n2 [1/min] at engine speed n1 [1/min]					Torque range M2 [Nm] at engine speed n1 [1/min]					fB	i _{ges}	m	F _{RN}	F _{RV}
1/min	Nm		150	500	1000	1500	1800	150	500	1000	1500	1800			kg	N	N
128	138	BM10-../S09SA4	12,5	42,5	85	128	154	85	106	138	138	122	1,0	11,68	30	8000	10000
115	153		11,5	38,5	77	115	138	94	117	153	153	135	0,98	12,95	30	8000	10000
195	94	BM20-../S09SA4	19,5	65	130	195	230	58	72	94	94	83	2,1	7,66	32	9100	10900
147	125		14,5	49	98	147	177	77	96	125	125	110	1,8	10,15	32	10000	12000
112	164		11	37	74	112	134	101	126	164	164	145	1,3	13,34	32	10000	12000
89	205		8,9	29,5	59	89	107	127	158	205	205	182	1,1	16,72	32	10000	12000
76	240		7,6	25	50	76	91	149	187	240	240	215	0,9	19,72	32	10000	12000
149	120	BM30-../S09SA4	14,5	49,5	99	149	178	74	92	120	120	106	2,9	10,06	48	12000	15000
120	149		12	40	80	120	144	91	114	149	149	131	2,3	12,46	48	12000	15000
93	192		9,3	31	62	93	111	118	148	192	192	170	1,8	16,1	48	12000	15000
75	235		7,5	25	50	75	90	146	183	235	235	210	1,5	19,96	48	12000	15000
64	275		6,4	21	42,5	64	76	170	210	275	275	240	1,3	23,38	48	12000	15000
50	350		5,0	16,5	33,5	50	60	215	270	350	350	310	0,99	29,76	48	12000	15000
43	410		4,3	14	28,5	43	51	250	315	410	410	365	0,85	34,88	48	12000	15000
66	260	BM40-../S09SA4	6,6	22	44,5	66	80	161	200	260	260	230	2,6	22,44	68	20000	25000
52	330		5,2	17	34,5	52	62	205	255	330	330	295	2,0	28,59	68	20000	25000
43	400		4,3	14	28,5	43	52	245	310	400	400	355	1,7	34,61	68	20000	25000
36,5	475		3,6	12	24	36,5	44	290	365	475	475	420	1,4	40,88	68	20000	25000
29	580		2,9	9,7	19,5	29	35	360	450	580	580	510	1,2	51,18	68	20000	25000
25	680		2,5	8,3	16,5	25	30	420	520	680	680	600	1,0	59,66	68	20000	25000
21	790		2,1	7,1	14	21	25,5	485	600	790	790	700	0,86	70,11	68	20000	25000

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors PMSM - IE4 1500 1/min

M₁ = 19 Nm



n2	M2	Type	Speed range n2 [1/min] at engine speed n1 [1/min]					Torque range M2 [Nm] at engine speed n1 [1/min]					fB	i _{ges}	m	F _{RN}	F _{RV}
1/min	Nm		150	500	1000	1500	1800	150	500	1000	1500	1800			kg	N	N
195	145	BM20-../S09XA4	19,5	65	130	195	230	90	116	145	145	138	1,4	7,66	40	9100	10900
147	192		14,5	49	98	147	177	120	154	192	192	183	1,1	10,15	40	10000	12000
112	250		11	37	74	112	134	158	200	250	250	240	0,87	13,34	40	10000	12000
189	145	BM30-../S09XA4	18,5	63	126	189	225	90	116	145	145	138	2,2	7,91	56	11000	13800
149	185		14,5	49,5	99	149	178	115	148	185	185	175	1,9	10,06	56	12000	15000
120	225		12	40	80	120	144	143	183	225	225	215	1,5	12,46	56	12000	15000
93	295		9,3	31	62	93	111	185	235	295	295	280	1,2	16,1	56	12000	15000
75	365		7,5	25	50	75	90	225	290	365	365	345	0,95	19,96	56	12000	15000
64	425		6,4	21	42,5	64	76	265	340	425	425	400	0,82	23,38	56	12000	15000
103	260	BM40-../S09XA4	10	34	68	103	124	163	205	260	260	245	2,6	14,5	76	20000	25000
83	320		8,3	27,5	55	83	99	200	255	320	320	305	2,1	18,05	76	20000	25000
66	400		6,6	22	44,5	66	80	250	320	400	400	380	1,7	22,44	76	20000	25000
52	510		5,2	17	34,5	52	62	320	410	510	510	485	1,3	28,59	76	20000	25000
43	620		4,3	14	28,5	43	52	385	495	620	620	590	1,1	34,61	76	20000	25000
36,5	730		3,6	12	24	36,5	44	455	580	730	730	690	0,92	40,88	76	20000	25000

M₁ = 25.5 Nm

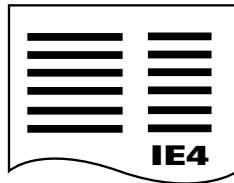
n2	M2	Type	Speed range n2 [1/min] at engine speed n1 [1/min]					Torque range M2 [Nm] at engine speed n1 [1/min]					fB	i _{ges}	m	F _{RN}	F _{RV}
1/min	Nm		150	500	1000	1500	1800	150	500	1000	1500	1800			kg	N	N
134	225	BM40-../S11SA6	13	44,5	89	134	161	180	200	225	225	225	2,8	11,17	84	18300	22900.0
103	290		10	34	68	103	124	230	260	290	290	290	2,3	14,5	84	20000	25000.0
83	365		8,3	27,5	55	83	99	290	320	365	365	365	1,9	18,05	84	20000	25000.0
66	450		6,6	22	44,5	66	80	360	400	450	450	450	1,5	22,44	84	20000	25000.0
52	570		5,2	17	34,5	52	62	460	510	570	570	570	1,2	28,59	84	20000	25000.0
43	700		4,3	14	28,5	43	52	560	620	700	700	700	0,97	34,61	84	20000	25000.0
36,5	820		3,6	12	24	36,5	44	660	730	820	820	820	0,82	40,88	84	20000	25000.0

M₁ = 35 Nm

n2	M2	Type	Speed range n2 [1/min] at engine speed n1 [1/min]					Torque range M2 [Nm] at engine speed n1 [1/min]					fB	i _{ges}	m	F _{RN}	F _{RV}
1/min	Nm		150	500	1000	1500	1800	150	500	1000	1500	1800			kg	N	N
134	350	BM40-../S11MA6	13	44,5	89	134	161	265	300	350	350	350	1,8	11,17	90	18300	22900.0
103	455		10	34	68	103	124	345	390	455	455	455	1,5	14,5	90	20000	25000.0
83	560		8,3	27,5	55	83	99	430	485	560	560	560	1,2	18,05	90	20000	25000.0
66	700		6,6	22	44,5	66	80	530	600	700	700	700	0,96	22,44	90	20000	25000.0

M₁ = 48 Nm

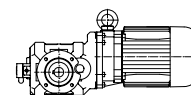
n2	M2	Type	Speed range n2 [1/min] at engine speed n1 [1/min]					Torque range M2 [Nm] at engine speed n1 [1/min]					fB	i _{ges}	m	F _{RN}	F _{RV}
1/min	Nm		150	500	1000	1500	1800	150	500	1000	1500	1800			kg	N	N
134	480	BM40-../S11LA6	13	44,5	89	134	161	325	395	480	480	475	1,3	11,17	102	18300	22900.0
103	620		10	34	68	103	124	420	510	620	620	610	1,1	14,5	102	20000	25000.0
83	770		8,3	27,5	55	83	99	520	640	770	770	770	0,87	18,05	102	20000	25000.0



Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors PMSM - IE4 3000 1'/min

M₁ = 7 Nm

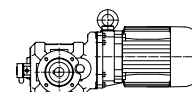


n ₂	M ₂	Type	Speed range n ₂ [1/min] at engine speed n ₁ [1/min]					Torque range M ₂ [Nm] at engine speed n ₁ [1/min]					f _B	i _{ges}	m	F _{RN}	F _{RV}
1/min	Nm		150	500	1000	3000	3600	150	500	1000	3000	3600			kg	N	N
255	69	BM10-../S08MA4	12,5	42,5	85	255	305	53	59	69	69	69	2,0	11,68	24	8000	10000.0
230	76		11,5	38,5	77	230	275	58	65	76	76	76	2,0	12,95	24	8000	10000.0
183	94		9,1	30,5	61	183	215	72	81	94	94	94	1,5	16,39	24	8000	10000.0
165	105		8,2	27,5	55	165	198	80	90	105	105	105	1,5	18,18	24	8000	10000.0
132	129		6,6	22	44	132	159	99	111	129	129	129	1,2	22,62	24	8000	10000.0
119	143		5,9	19,5	39,5	119	143	110	123	143	143	143	1,1	25,09	24	8000	10000.0
112	151		5,6	18,5	37,5	112	135	116	130	151	151	151	0,99	26,55	24	8000	10000.0
101	168		5,0	16,5	33,5	101	122	129	145	168	168	168	0,95	29,45	24	8000	10000.0
90	185		4,5	15	30	90	108	142	159	185	185	185	0,81	33,19	24	8000	10000.0
220	82	BM20-../S08MA4	11	37	74	220	265	63	70	82	82	82	2,7	13,34	26	10000	12000.0
179	103		8,9	29,5	59	179	215	79	88	103	103	103	2,1	16,72	26	10000	12000.0
152	121		7,6	25	50	152	182	93	104	121	121	121	1,8	19,72	26	10000	12000.0
118	155		5,9	19,5	39,5	118	142	119	134	155	155	155	1,4	25,25	26	10000	12000.0
102	181		5,1	17	34	102	122	139	156	181	181	181	1,2	29,39	26	10000	12000.0
85	215		4,2	14	28	85	102	167	187	215	215	215	1,0	35,25	26	10000	12000.0
71	260		3,5	11,5	23,5	71	85	200	220	260	260	260	0,84	42,18	26	10000	12000.0
150	119	BM30-../S08MA4	7,5	25	50	150	180	91	102	119	119	119	2,9	19,96	42	12000	15000.0
128	138		6,4	21	42,5	128	153	106	119	138	138	138	2,5	23,38	42	12000	15000.0
100	176		5,0	16,5	33,5	100	120	135	151	176	176	176	2,0	29,76	42	12000	15000.0
86	205		4,3	14	28,5	86	103	158	177	205	205	205	1,7	34,88	42	12000	15000.0
72	240		3,6	12	24	72	87	185	205	240	240	240	1,5	41,13	42	12000	15000.0
60	285		3,0	10	20	60	72	220	245	285	285	285	1,1	49,66	42	12000	15000.0
55	300	BM30Z-../S08MA4	2,7	9,3	18,5	55	67	230	260	300	300	300	0,92	53,67	45	12000	15000.0
43	390		2,1	7,2	14	43	51	300	335	390	390	390	0,89	69,35	45	12000	15000.0
73	235	BM40-../S08MA4	3,6	12	24	73	88	183	205	235	235	235	2,8	40,88	63	20000	25000.0
58	290		2,9	9,7	19,5	58	70	225	250	290	290	290	2,3	51,18	63	20000	25000.0
50	340		2,5	8,3	16,5	50	60	260	290	340	340	340	2,0	59,66	63	20000	25000.0
42,5	395		2,1	7,1	14	42,5	51	300	340	395	395	395	1,7	70,11	63	20000	25000.0
35,5	475		1,7	5,9	11,5	35,5	42,5	365	410	475	475	475	1,3	84,36	63	20000	25000.0
28,5	570		1,4	4,8	9,6	28,5	34,5	440	495	570	570	570	1,0	104	63	20000	25000.0
25	650	BM40Z-../S08MA4	1,2	4,2	8,4	25	30	500	560	650	650	650	1,0	118,2	67	20000	25000.0
20,5	780		1,0	3,4	6,9	20,5	25	600	670	780	780	780	0,87	143	67	20000	25000.0

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors PMSM - IE4 3000 1/ min

M₁ = 9.55 Nm



n2	M2	Type	Speed range n2 [1/min] at engine speed n1 [1/min]					Torque range M2 [Nm] at engine speed n1 [1/min]					fB	i _{ges}	m	F _{RN}	F _{RV}
1/min	Nm		150	500	1000	3000	3600	150	500	1000	3000	3600			kg	N	N
255	101	BM10-../S08LA4	12,5	42,5	85	255	305	69	85	101	101	101	1,4	11,68	26	8000	10000.0
230	112		11,5	38,5	77	230	275	76	94	112	112	112	1,3	12,95	26	8000	10000.0
183	139		9,1	30,5	61	183	215	94	116	139	139	139	1,0	16,39	26	8000	10000.0
165	154		8,2	27,5	55	165	198	105	129	154	154	154	1,0	18,18	26	8000	10000.0
390	69	BM20-../S08LA4	19,5	65	130	390	465	47	58	69	69	69	2,9	7,66	28	9100	10900.0
295	92		14,5	49	98	295	350	62	77	92	92	92	2,4	10,15	28	10000	12000.0
220	121		11	37	74	220	265	82	101	121	121	121	1,8	13,34	28	10000	12000.0
179	151		8,9	29,5	59	179	215	103	127	151	151	151	1,5	16,72	28	10000	12000.0
152	178		7,6	25	50	152	182	121	149	178	178	178	1,2	19,72	28	10000	12000.0
118	225		5,9	19,5	39,5	118	142	155	191	225	225	225	0,96	25,25	28	10000	12000.0
102	265		5,1	17	34	102	122	181	220	265	265	265	0,83	29,39	28	10000	12000.0
186	141	BM30-../S08LA4	9,3	31	62	186	220	96	118	141	141	141	2,5	16,1	44	12000	15000.0
150	175		7,5	25	50	150	180	119	146	175	175	175	2,0	19,96	44	12000	15000.0
128	200		6,4	21	42,5	128	153	138	170	200	200	200	1,7	23,38	44	12000	15000.0
100	255		5,0	16,5	33,5	100	120	176	215	255	255	255	1,4	29,76	44	12000	15000.0
86	300		4,3	14	28,5	86	103	205	250	300	300	300	1,2	34,88	44	12000	15000.0
72	350		3,6	12	24	72	87	240	295	350	350	350	0,99	41,13	44	12000	15000.0
104	245	BM40-../S08LA4	5,2	17	34,5	104	125	167	205	245	245	245	2,8	28,59	64	20000	25000.0
86	295		4,3	14	28,5	86	104	200	245	295	295	295	2,3	34,61	64	20000	25000.0
73	350		3,6	12	24	73	88	235	290	350	350	350	1,9	40,88	64	20000	25000.0
58	430		2,9	9,7	19,5	58	70	290	360	430	430	430	1,6	51,18	64	20000	25000.0
50	500		2,5	8,3	16,5	50	60	340	420	500	500	500	1,4	59,66	64	20000	25000.0
42,5	580		2,1	7,1	14	42,5	51	395	485	580	580	580	1,2	70,11	64	20000	25000.0
35,5	700		1,7	5,9	11,5	35,5	42,5	475	580	700	700	700	0,86	84,36	64	20000	25000.0

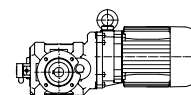
M₁ = 12.75 Nm

n2	M2	Type	Speed range n2 [1/min] at engine speed n1 [1/min]					Torque range M2 [Nm] at engine speed n1 [1/min]					fB	i _{ges}	m	F _{RN}	F _{RV}
1/min	Nm		150	500	1000	3000	3600	150	500	1000	3000	3600			kg	N	N
255	138	BM10-../S09SA4	12,5	42,5	85	255	305	85	106	138	138	116	1,0	11,68	30	8000	10000
230	153		11,5	38,5	77	230	275	94	117	153	153	129	0,98	12,95	30	8000	10000
390	94	BM20-../S09SA4	19,5	65	130	390	465	58	72	94	94	80	2,1	7,66	32	9100	10900
295	125		14,5	49	98	295	350	77	96	125	125	106	1,8	10,15	32	10000	12000
220	164		11	37	74	220	265	101	126	164	164	139	1,3	13,34	32	10000	12000
179	205		8,9	29,5	59	179	215	127	158	205	205	174	1,1	16,72	32	10000	12000
152	240		7,6	25	50	152	182	149	187	240	240	205	0,9	19,72	32	10000	12000
295	120	BM30-../S09SA4	14,5	49,5	99	295	355	74	92	120	120	101	2,9	10,06	48	12000	15000
240	149		12	40	80	240	285	91	114	149	149	126	2,3	12,46	48	12000	15000
186	192		9,3	31	62	186	220	118	148	192	192	162	1,8	16,1	48	12000	15000
150	235		7,5	25	50	150	180	146	183	235	235	200	1,5	19,96	48	12000	15000
128	275		6,4	21	42,5	128	153	170	210	275	275	230	1,3	23,38	48	12000	15000
100	350		5,0	16,5	33,5	100	120	215	270	350	350	295	0,99	29,76	48	12000	15000
86	410		4,3	14	28,5	86	103	250	315	410	410	345	0,85	34,88	48	12000	15000
133	260	BM40-../S09SA4	6,6	22	44,5	133	160	161	200	260	260	220	2,6	22,44	68	20000	25000
104	330		5,2	17	34,5	104	125	205	255	330	330	280	2,0	28,59	68	20000	25000
86	400		4,3	14	28,5	86	104	245	310	400	400	340	1,7	34,61	68	20000	25000
73	475		3,6	12	24	73	88	290	365	475	475	400	1,4	40,88	68	20000	25000
58	580		2,9	9,7	19,5	58	70	360	450	580	580	495	1,2	51,18	68	20000	25000
50	680		2,5	8,3	16,5	50	60	420	520	680	680	570	1,0	59,66	68	20000	25000
42,5	790		2,1	7,1	14	42,5	51	485	600	790	790	670	0,86	70,11	68	20000	25000

Geared motors for electric overhead conveyors series BM

Selection table asynchronous motors PMSM - IE4 3000 1/min

M₁ = 20 Nm



n2	M2	Type	Speed range n2 [1/min] at engine speed n1 [1/min]					Torque range M2 [Nm] at engine speed n1 [1/min]					fB	i _{ges}	m	F _{RN}	F _{RV}
1/min	Nm		150	500	1000	3000	3600	150	500	1000	3000	3600			kg	N	N
390	145	BM20-../S09XA4	19,5	65	130	390	465	90	116	145	145	105	1,4	7,66	40	9100	10900
295	192		14,5	49	98	295	350	120	154	192	192	139	1,1	10,15	40	10000	12000
220	250		11	37	74	220	265	158	200	250	250	183	0,87	13,34	40	10000	12000
375	145	BM30-../S09XA4	18,5	63	126	375	455	90	116	145	145	105	2,2	7,91	56	11000	13800
295	185		14,5	49,5	99	295	355	115	148	185	185	134	1,9	10,06	56	12000	15000
240	225		12	40	80	240	285	143	183	225	225	166	1,5	12,46	56	12000	15000
186	295		9,3	31	62	186	220	185	235	295	295	210	1,2	16,1	56	12000	15000
150	365		7,5	25	50	150	180	225	290	365	365	265	0,95	19,96	56	12000	15000
128	425		6,4	21	42,5	128	153	265	340	425	425	305	0,82	23,38	56	12000	15000
205	260	BM40-../S09XA4	10	34	68	205	245	163	205	260	260	189	2,6	14,5	76	20000	25000
166	320		8,3	27,5	55	166	199	200	255	320	320	235	2,1	18,05	76	20000	25000
133	400		6,6	22	44,5	133	160	250	320	400	400	290	1,7	22,44	76	20000	25000
104	510		5,2	17	34,5	104	125	320	410	510	510	370	1,3	28,59	76	20000	25000
86	620		4,3	14	28,5	86	104	385	495	620	620	450	1,1	34,61	76	20000	25000
73	730		3,6	12	24	73	88	455	580	730	730	530	0,92	40,88	76	20000	25000

M₁ = 23.9 Nm

n2	M2	Type	Speed range n2 [1/min] at engine speed n1 [1/min]					Torque range M2 [Nm] at engine speed n1 [1/min]					fB	i _{ges}	m	F _{RN}	F _{RV}
1/min	Nm		150	500	1000	3000	3600	150	500	1000	3000	3600			kg	N	N
265	225	BM40-../S11SA6	13	44,5	89	265	320	180	200	225	225	225	2,8	11,17	84	18300	22900.0
205	290		10	34	68	205	245	230	260	290	290	290	2,3	14,5	84	20000	25000.0
166	365		8,3	27,5	55	166	199	290	320	365	365	365	1,9	18,05	84	20000	25000.0
133	450		6,6	22	44,5	133	160	360	400	450	450	450	1,5	22,44	84	20000	25000.0
104	570		5,2	17	34,5	104	125	460	510	570	570	570	1,2	28,59	84	20000	25000.0
86	700		4,3	14	28,5	86	104	560	620	700	700	700	0,97	34,61	84	20000	25000.0
73	820		3,6	12	24	73	88	660	730	820	820	820	0,82	40,88	84	20000	25000.0

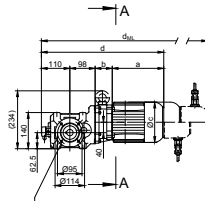
M₁ = 35 Nm

n2	M2	Type	Speed range n2 [1/min] at engine speed n1 [1/min]					Torque range M2 [Nm] at engine speed n1 [1/min]					fB	i _{ges}	m	F _{RN}	F _{RV}
1/min	Nm		150	500	1000	3000	3600	150	500	1000	3000	3600			kg	N	N
265	350	BM40-../S11MA6	13	44,5	89	265	320	265	280	350	350	340	1,8	11,17	90	18300	22900.0
205	455		10	34	68	205	245	345	365	455	455	445	1,5	14,5	90	20000	25000.0
166	560		8,3	27,5	55	166	199	430	450	560	560	550	1,2	18,05	90	20000	25000.0
133	700		6,6	22	44,5	133	160	530	560	700	700	690	0,96	22,44	90	20000	25000.0

M₁ = 48 Nm

n2	M2	Type	Speed range n2 [1/min] at engine speed n1 [1/min]					Torque range M2 [Nm] at engine speed n1 [1/min]					fB	i _{ges}	m	F _{RN}	F _{RV}
1/min	Nm		150	500	1000	3000	3600	150	500	1000	3000	3600			kg	N	N
265	480	BM40-../S11LA6	13	44,5	89	265	320	325	395	480	480	400	1,3	11,17	102	18300	22900.0
205	620		10	34	68	205	245	420	510	620	620	520	1,1	14,5	102	20000	25000.0
166	770		8,3	27,5	55	166	199	520	640	770	770	640	0,87	18,05	102	20000	25000.0

10



Page

Dimensional drawings for electric overhead conveyors series BM - Standard

83-112

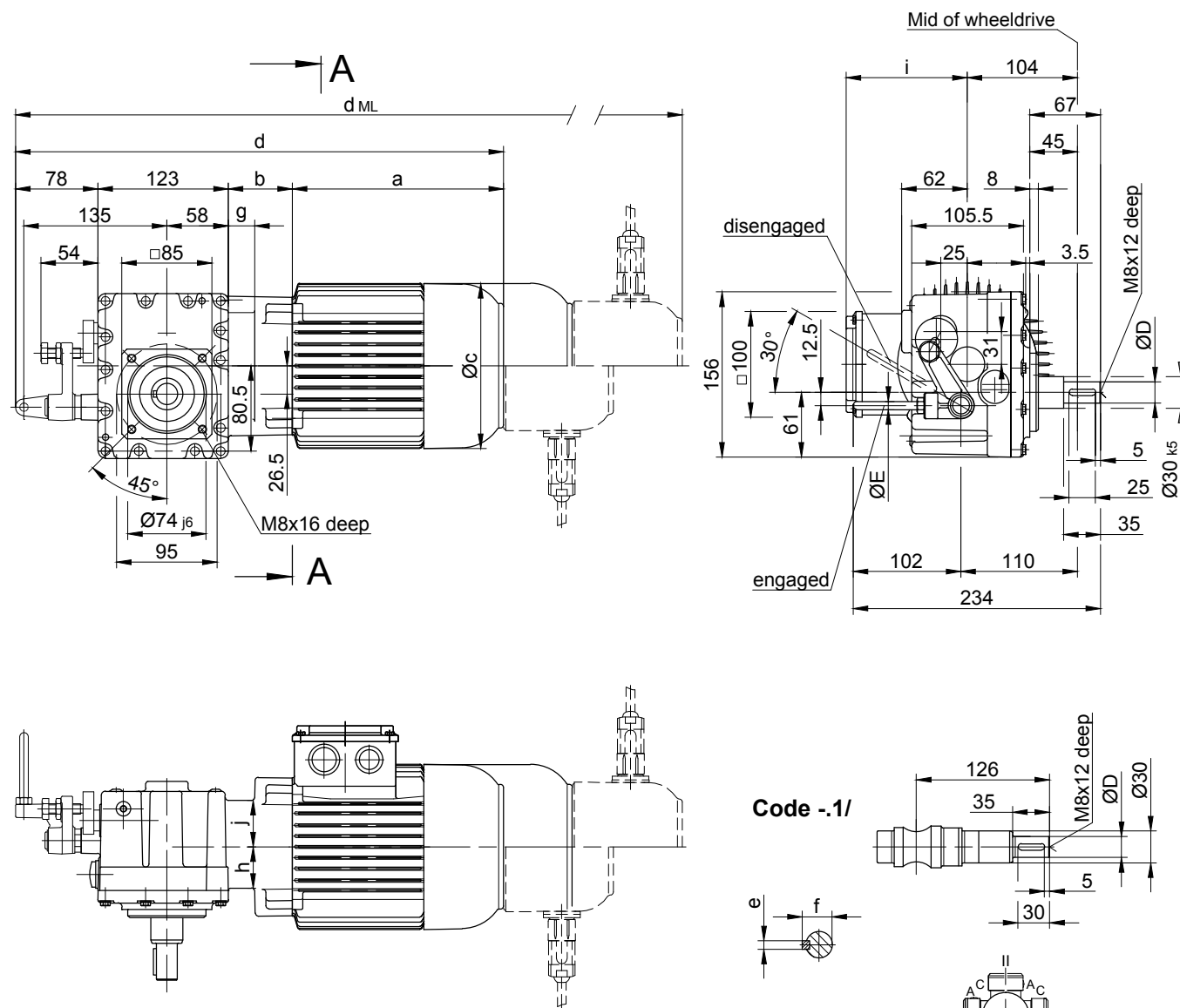
Additional Dimension Sheet

- Standard terminal box
- Plug-connector terminal box
- Standard brakes
- "Heavy-Duty"- brake
- Motors with back stop
- Motors with second shaft end
- Motors with brake and second shaft end
- Motors with "heavy duty" brake and second shaft end
- Motors with protective hood
- Motors with independent fan
- Motors with brake and independent fan
- Motors with encoder and built-on independent fan
- Motors with brake and encoder with built-on independent fan
- Motors with standard encoder
- Motors with "heavy duty" encoder
- Motors with brake and encoder
- Motors with "heavy duty" brake and encoder
- Motors in IEC design

BM09

Flange with tapped holes at front. Follow-up type of SZ2-V3209

Code -7.V/



Type/ Shaft Ø D/ Clutch lever Ø E

Type	Ø D	e	f	Clutch lever Ø				Ø E				IV							
BM09-../ D...	20 _{k6}	6	22.5									8mm				Standard			
BM09X-../ D...	25 _{k6}	8	28									10mm				Reinforced Version			
Type											Design with motor extensions								
Gear	ASM	PMSM	a	b	c	d	g	h	i	j	ES../ZS..	G	ES../ZS..-G	RR/RL					
											d _{ML}	d _{ML}	d _{ML}	d _{ML}					
BM09(X)-../	D05..	S05..	170	14	123	386	-	-	100	-	427	489	530	-					
BM09(X)-../	D06..	-	170	14	123	386	-	-	100	-	427	489	530	-					
BM09(X)-../	D07..	-	190	14	123	406	-	-	100	-	447	509	550	-					
BM09(X)-../	D..08..	S..08..	200	60.5	156	461	25	39	115	44	527	568	634	527					

The actual gearbox design can vary from the geometry shown.

Dimensional drawings

Technical drawing of a shaft assembly. The drawing shows a shaft with a central section of length 232 mm and a total length of 302 mm. The shaft has a diameter of $\varnothing 34.5$ mm with a tolerance of ± 0.025 mm (k6). The central section has a diameter of $\varnothing 25$ mm with a tolerance of ± 0.025 mm (k6). The shaft is fitted with a component labeled D8-DIN332. The distance from the center of the shaft to the center of the component is 116 mm.

87

Dimensional drawings

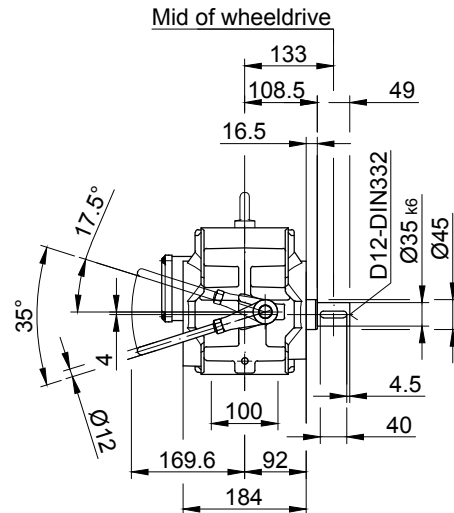
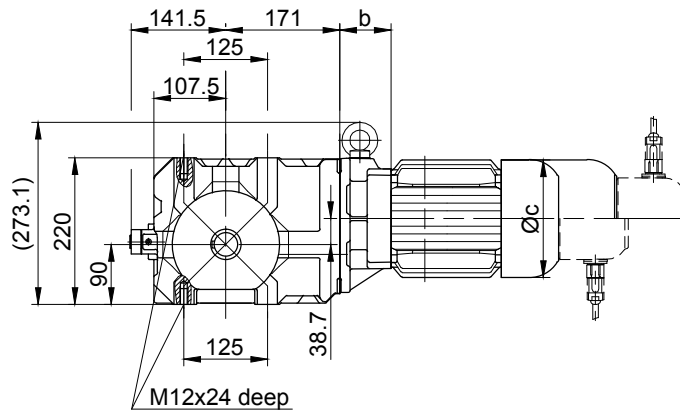
10

89

BM30 - BM30Z

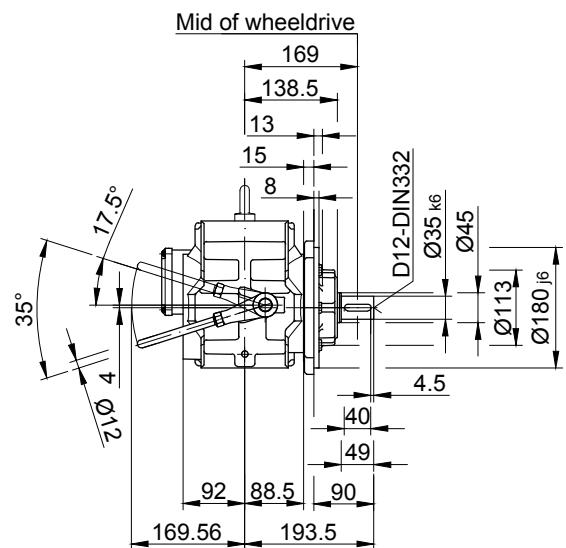
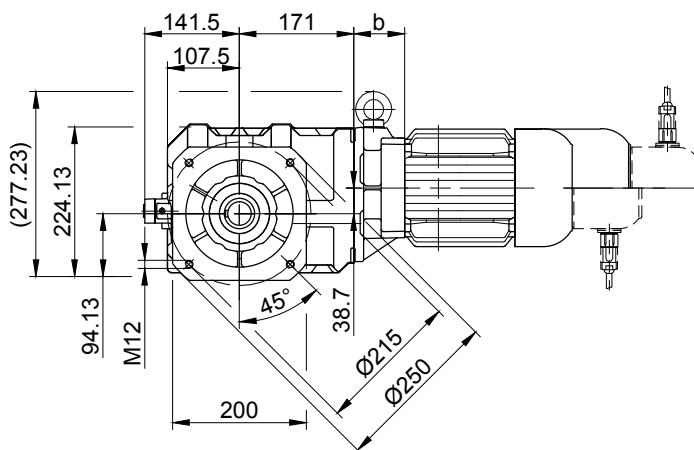
Foot with tapped holes at bottom and top

Code -6.UO/



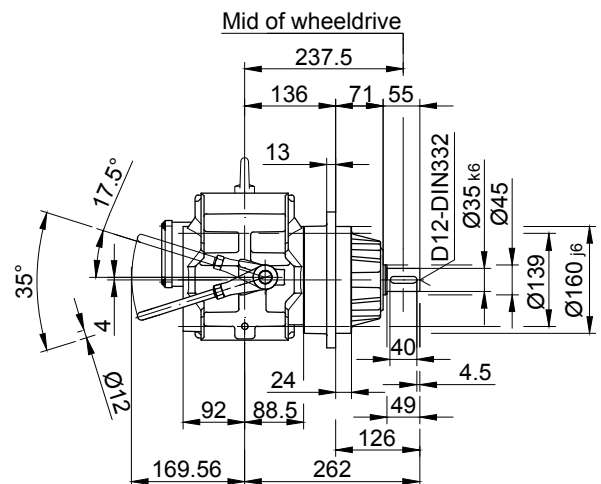
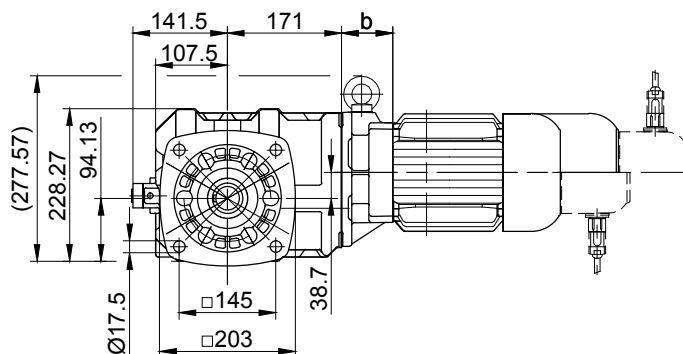
drawn flange at front

Code -07V/.../S01



far drawn flange at front

Code -07V/.../S02

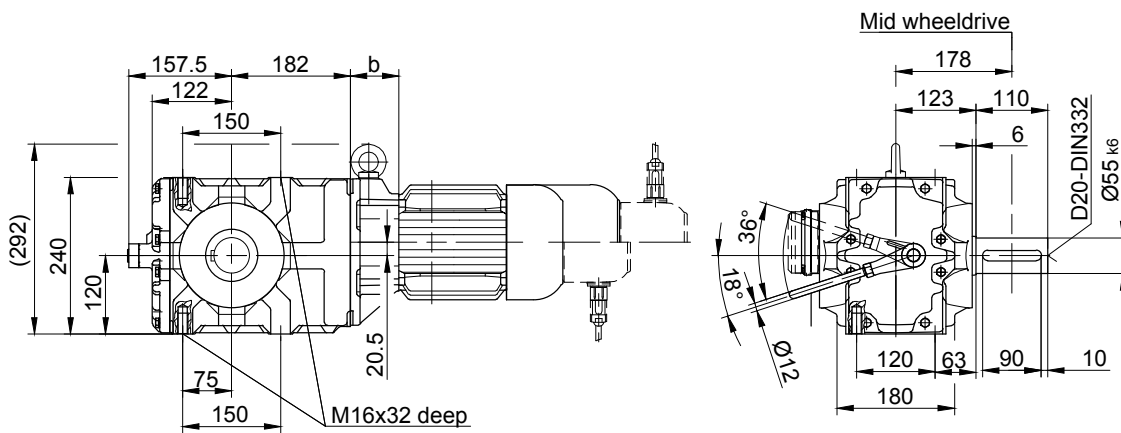


The actual gearbox design can vary from the geometry shown.

BM40 - BM40Z

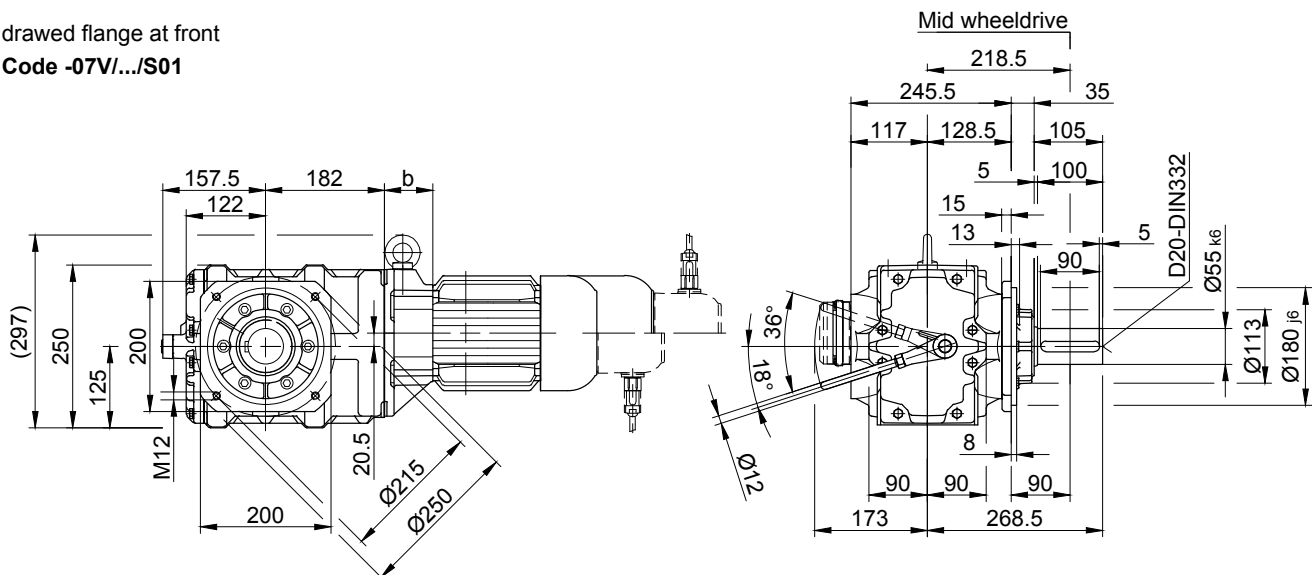
Foot with tapped holes at bottom and top

Code -6.UO/



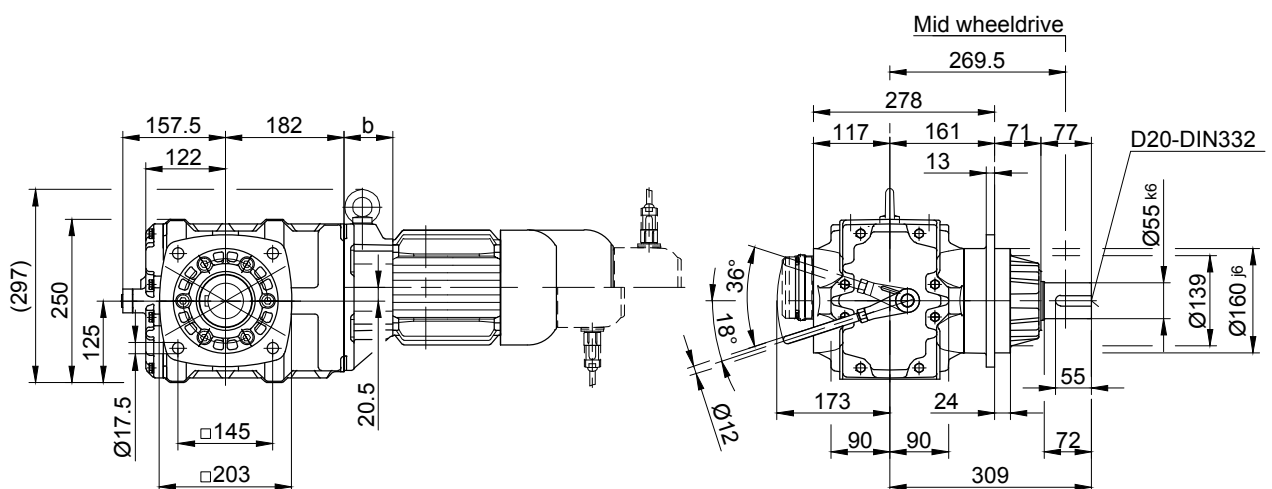
drawn flange at front

Code -07V/.../S01



far drawn flange at front

Code -07V/.../S02

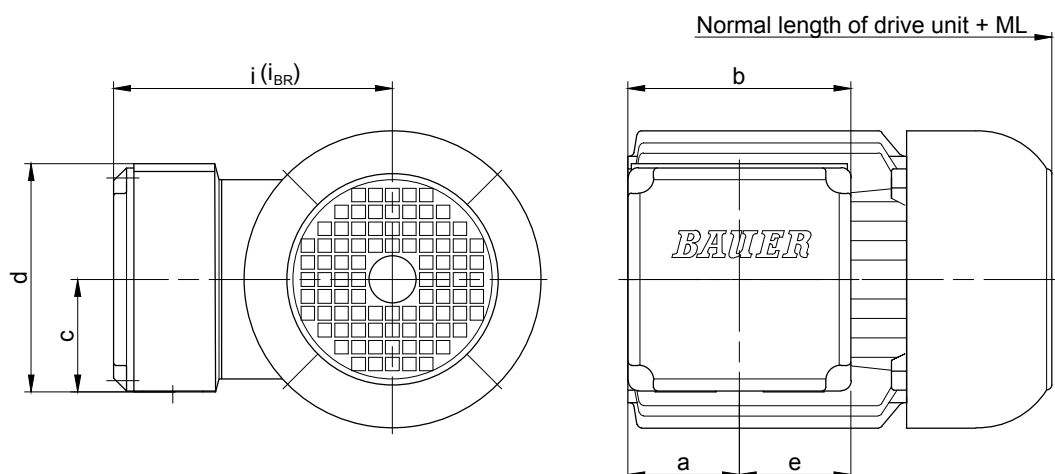


The actual gearbox design can vary from the geometry shown.

Geared motors for electric overhead conveyors series BM

Additional Dimension Sheet

Standard terminal box

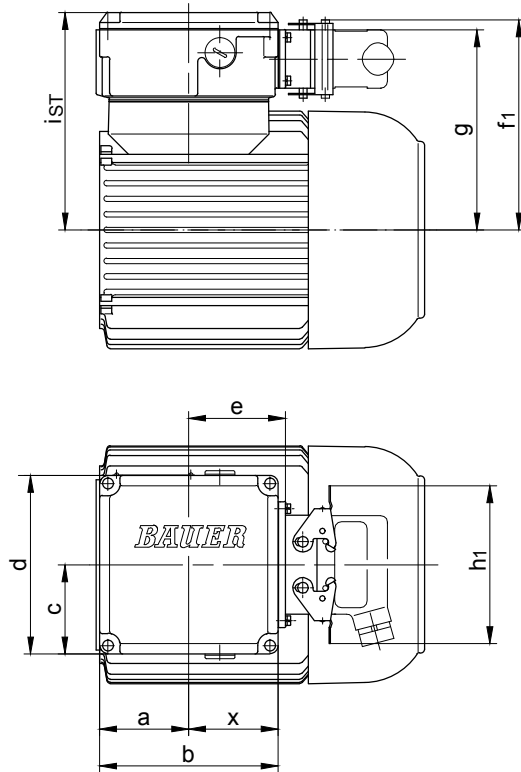


Motor/ Motor with Brake		Dimensions (mm)						Code	Cable entry Major (M) Minor (N)	max. wrench size for cable entry gland
ASM	PMSM	a	b	c	d	e	i / i _{BR}			
D04	-	42.5	88	44	88	44	90	KAG1	M=2xM20x1.5	24 mm
D05	S05	50	100	50	100	50	100	KAG2	M=2xM25x1.5	29 mm
D06	-	50	100	50	100	50	100	KAG2	M=2xM25x1.5	29 mm
D07..	-	50	100	50	100	50	100	KAG2	M=2xM25x1.5	29 mm
D..08	S..08	50	100	50	100	50	115	KAG2	M=2xM25x1.5	29 mm
D..09	S..09	50	100	50	100	50	124	KAG2	M=2xM25x1.5	29 mm
D..11	S..11	62	132	66.5	135	66	181	TB222	M=2xM32x1.5; N=2xM25x1.5	-
D..13	-	78	156	78.5	158	78	217	TB322	M=2xM40x1.5; N=2xM25x1.5	-
D..16	-	74	156	78.5	158	78	243	TB322	M=2xM40x1.5; N=2xM25x1.5	-
D..18	-	94	200	100.5	201	100	288	TB422	M=2xM50x1.5; N=2xM25x1.5	-

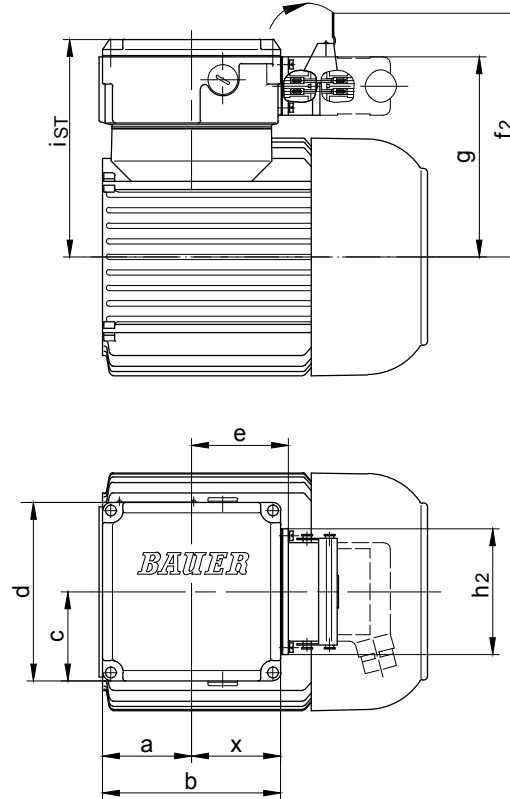
The actual gearbox design can vary from the geometry shown.

Plug-connector terminal box

Standard design (two brackets)



Optional for DESINA (one bracket)



10

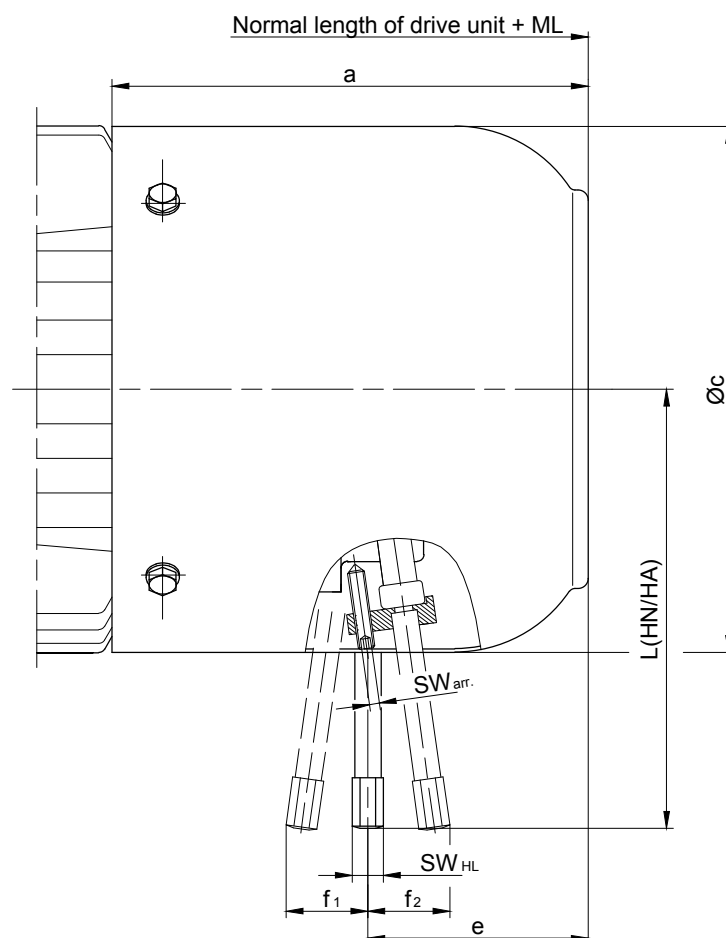
Motor ASM	PMSM	Size of terminal box	a	b	c	d	e	f ₁	f ₂	g	h ₁	h ₂	iST	x
D04	-	TBS1	30	90	52.5	106	49	118.5	147	111	117	93	124.5	46
D05	S05	TBS1	57	90	52.5	106	49	123.5	152	116	117	93	129.5	46
D06	-	TBS1	45	90	52.5	106	49	125.5	154	118	117	93	131.5	46
D07	-	TBS1	45	90	52.5	106	49	125.5	154	118	117	93	131.5	46
D..08	S..08	TBS1	45	90	52.5	106	49	143.5	172	136	117	93	149.5	46
D..09	S..09	TBS2	62	132	66	135	71.5	158.5	187	158	117	93	164	68.5
D..11	S..11	TBS2	62	132	66	135	71.5	175.5	191	166	117	93	181	68.5
D..13	-	TBS3	78	156	78	158	83.5	199	227.5	191.5	117	93	216	79.5
D..16	-	TBS3	74	156	78	158	83.5	225	253.5	225	117	93	242	79.5
D..18	-	TBS4	94	200	100	201	105.5	257	299	257	117	93	287	100.5

The actual gearbox design can vary from the geometry shown.

Geared motors for electric overhead conveyors series BM

Additional Dimension Sheet

Standard brakes



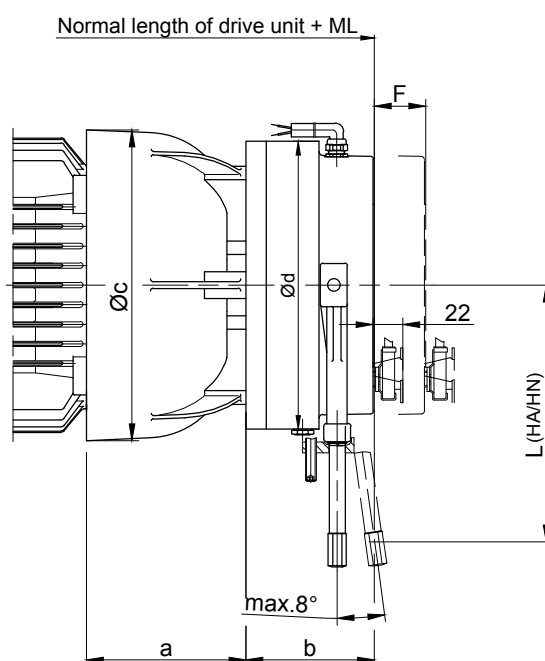
Motor Type		Brake Type	ML(mm) Additional length with brake	Dimensions (mm)								Add. weight
ASM	PMSM			a	Øc	e	f ₁	f ₂	L(HN/HA)	SW _{HL}	SW _{arr.}	kg
D04	-	E003 E003 / E004	43.5	97	110.5	58.5	20.5	24	96/102	11	11	1.0
D05	S05		42	102	60							
D06	-				123	58.5						
D07	-											
D..08	S..08	ES(X)010	66	141	156	68	-	29	132	8	2.5	2.6
D..09	S..09	ES(X)010	93	173	176	99	-	29	132	8	2.5	2.7
		ES(X)027				91	-	35.5	162			4.2
D..11	S..11	ES(X)027	98	195	218	103	-	35.5	162	8	2.5	4.5
		ES(X)040				100	-	37	172			6.3
		ES(X)070				96	-	34.5	190	12	4	8.5
		ES(X)040				125	-	41	202	12	4	6.5
D..13	-	ES(X)070	111	225	258	121	-	38	225			8.5
		ES(X)125				116	-	45	223	12.5		
D..16	-	ES(X)125	144	280	310	148	-	48.5	244	12	4	13.5
		ES(X)200				141	-	50	256			19
		ZS(X)300				112	-					22
D..18	-	ES(X)250	149	304	348	153	-	58.5	286	12	4	28
		ZS(X)500				123	-			19	5	30

HN = Manual release non-locking

HA = Manual release locking

The actual gearbox design can vary from the geometry shown.

“Heavy-Duty”- brake



10

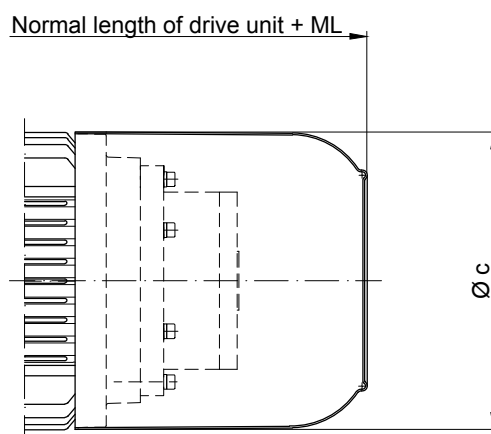
Motor		Brake	ML(mm) Additional length with brake		Dimensions (mm)					Add. weight
ASM	PMSM		Standard	Micro s.	a	b	c	Ød	L (HA/HN)	kg
D..08	S..08	EH(X)027	79	101	83.5	66.5	166	145	162	5.5
D..09	S..09	EH(X)040	90	112	102	73	191	168	172	8.3
D..11	S..11	EH(X)125	114	136	120	95	231	213	208.5	19.5
D..13	-	EH(X)200	128	150	140	106	274.5	245	221	29.3
D..16	-	EH(X)400	141	163	155	124	326	324	313	55.8
D..18	-		152	174	183		366			61

The actual gearbox design can vary from the geometry shown.

Geared motors for electric overhead conveyors series BM

Additional Dimension Sheet

Motors with back stop

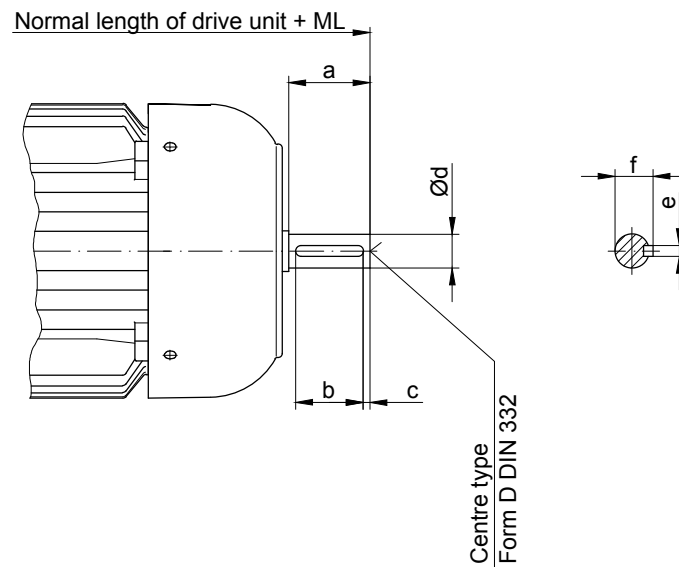


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Motor		ML (mm) Add. length with backstop	Dimensions (mm)	Add. weight
ASM	PMSM		c	kg
D..08	S..08	66	156	6.5
D..09	S..09	93	181	6.5
D..11	S..11	98	228	8
D..13	-	111	258	13.5
D..16	-	144	322	16
D..18	-	149	368	17

The actual gearbox design can vary from the geometry shown.

Motors with second shaft end



10

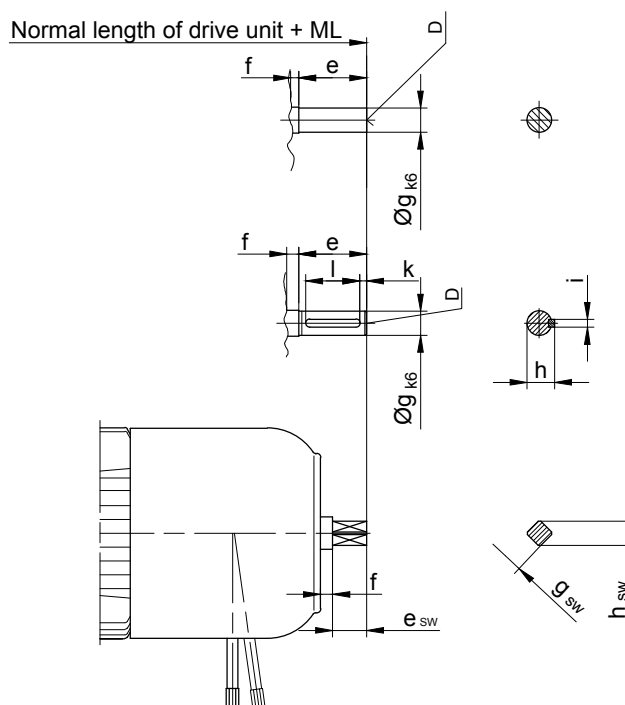
Motor		ML(mm) Add. length with second shaft extension	Dimensions (mm)						Centre DIN 332
ASM	PMSM		a	b	c	d	e	f	
D04	-	20	15	-	-	8g6	-	-	-
D05	S05	25	20	-	-	10k6	-	-	-
D06	-	25	20	-	-	10k6	-	-	-
D07	-	25.5	20	-	-	10k6	-	-	-
D..08	S..08	45	40	30	5	16k6	5	18	D 5
D..09	S..09	55	50	40	5	20k6	6	22.5	D 5
D..11	S..11	65	60	50	5	25k6	8	28	D 8
D..13	-	85	80	60	10	35k6	10	38	D 12
D..16	-	115	110	90	10	40k6	12	43	D 16
D..18	-	115	110	90	10	45k6	14	48.5	D 16

The actual gearbox design can vary from the geometry shown.

Geared motors for electric overhead conveyors series BM

Additional Dimension Sheet

Motors with brake and second shaft end



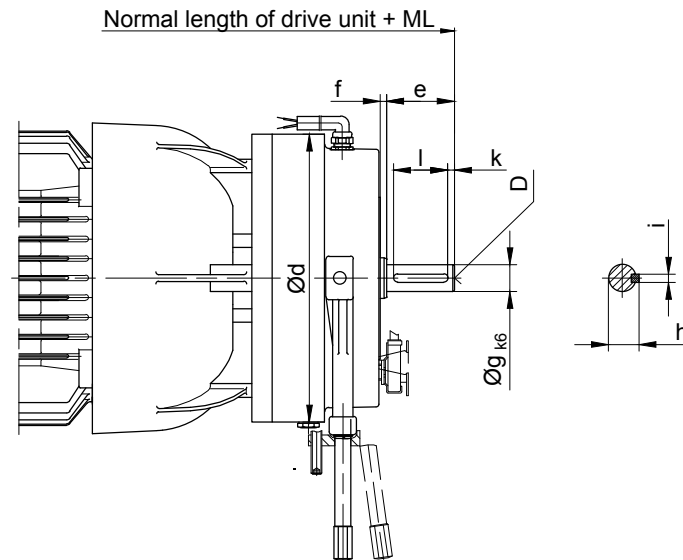
Motor		Brake	Additional length		Dimensions (mm)										Center D DIN332			
ASM	PMSM		ML	ML _{SW}	e	e _{SW}	f	g	g _{SW}	h	h _{SW}	i	k	l		SW		
D04	-	E003	63	-	15	-	5	8	-	-	-	-	-	-	-	-		
D05	S05																	
D06	-																	
D07	-				E003 / E004													
D..08	S..08	ES(X)..	121	96 [*]	50	25 [*]	5	18	SW14 [*]	20.5	18 [*]	6	5	40	D6	D4 [*]		
D..09	S..09		98	123 [*]														
D..11	S..11		153.5 [*]	128				50 [*]	25	20 [*]	SW14	22.5 [*]	18	6 [*]		40 [*]	D6 [*]	D4
D..13	-		176 [*]	156														
D..16	-	ES(X).. / ZS(X)..	208.5 [*]	188.5	60 [*]	40	4.5	28 [*]	SW22	31 [*]	28	8 [*]	5 [*]	50 [*]	D10 [*]	D10		
D..18	-		359 [*]	194.5			5											

* Special design

** with manual release

The actual gearbox design can vary from the geometry shown.

Motors with "heavy duty" brake and second shaft end



10

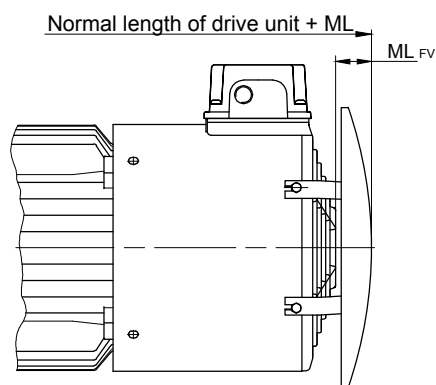
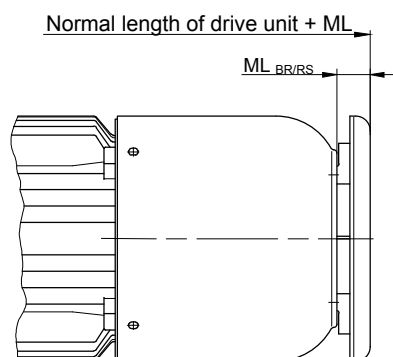
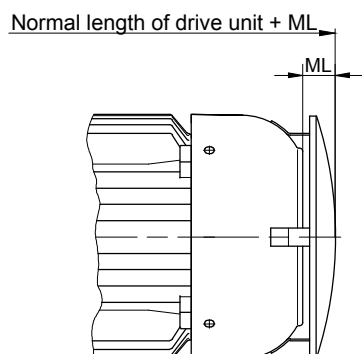
Motor		Brake	ML(mm) Additional length with brake and encoder	Dimensions (mm)								Centring D 332	Add. weight			
ASM	PMSM			Ød	e	f	g	h	i	k	k					
D..08	S..08	EH(X)027	132	145	50	4	18	20.5	6	5	6	D06	6			
D..09	S..09	EH(X)040	144	168		20	22.5	31					8	8	D10	9
D..11	S..11	EH(X)125	169	213			28									33
D..13	-	EH(X)200	192	245	60	5	28	31	8	8	D10	29.5	56			
D..16	-	EH(X)400	205.5	324			30	33					61			
D..18	-		216.5													

The actual gearbox design can vary from the geometry shown.

Geared motors for electric overhead conveyors series BM

Additional Dimension Sheet

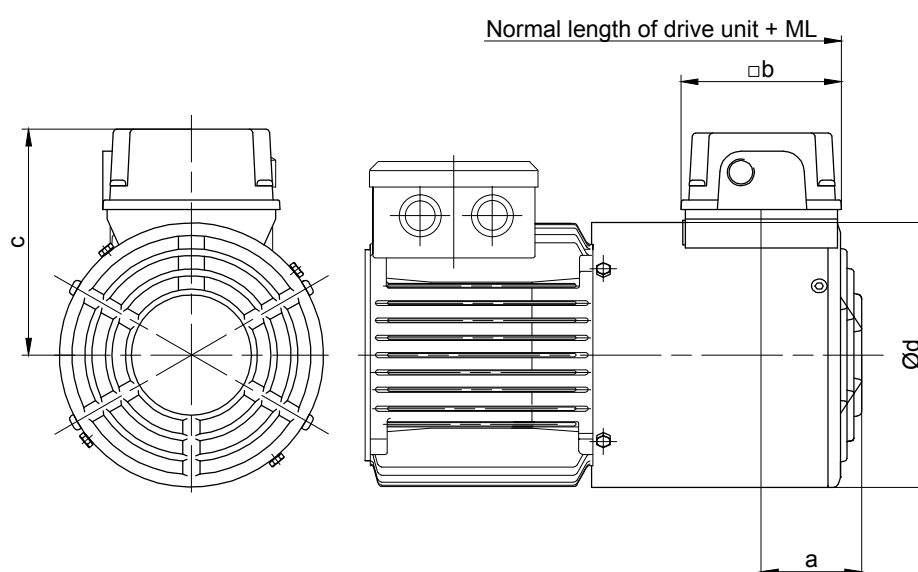
Motors with protective hood



Motor		ML(mm) Add. length with attached protective cover				Add. weight
ASM	PMSM	ML	ML _{BR}	ML _{RS}	ML _{FV}	kg
D06	-	18	-	-	-	0.15
D07	-	18	-	-	-	0.15
D..08	S..08	14.5	24.5	24.5	40	0.20
D..09	S..09	22	24.5	24.5	30	0.30
D..11	S..11	29	29.5	29.5	33	0.40
D..13	-	30	29.5	29.5	25	0.6
D..16	-	47	34.5	34.5	32	1.8
D..18	-	54	34.5	34.5	32	5.5

The actual gearbox design can vary from the geometry shown.

Motors with independent fan



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Drive Motor		Fan Motor			400 V	ML (mm) Additional length forced vent.	Dimensions (mm)				Add. weight ~ kg
ASM	PMSM	Type	kW	r/min	A		a	b	c	d	
D..08	S..08	FV D08	0.019	2670	0.029	92	69.5	95	131.5	157	2.2
D..09	S..09	FV D09	0.046	2820	0.106	97	69.5	95	141.5	176	2.7
D..11	S..11	FV D11	0.051	2660	0.110	97	79.5	95	162.5	219	3.2
D..13	-	FV D13	0.073	2820	0.169	119	78.8	95	182	258	4.6
D..16*	-	FV D16	0.154	2760	0.347	144	78.8	95	208.5	311	6.4
D..18*	-	FV D18	0.154	2760	0.347	303	78.8	95	208.5	348	8.4

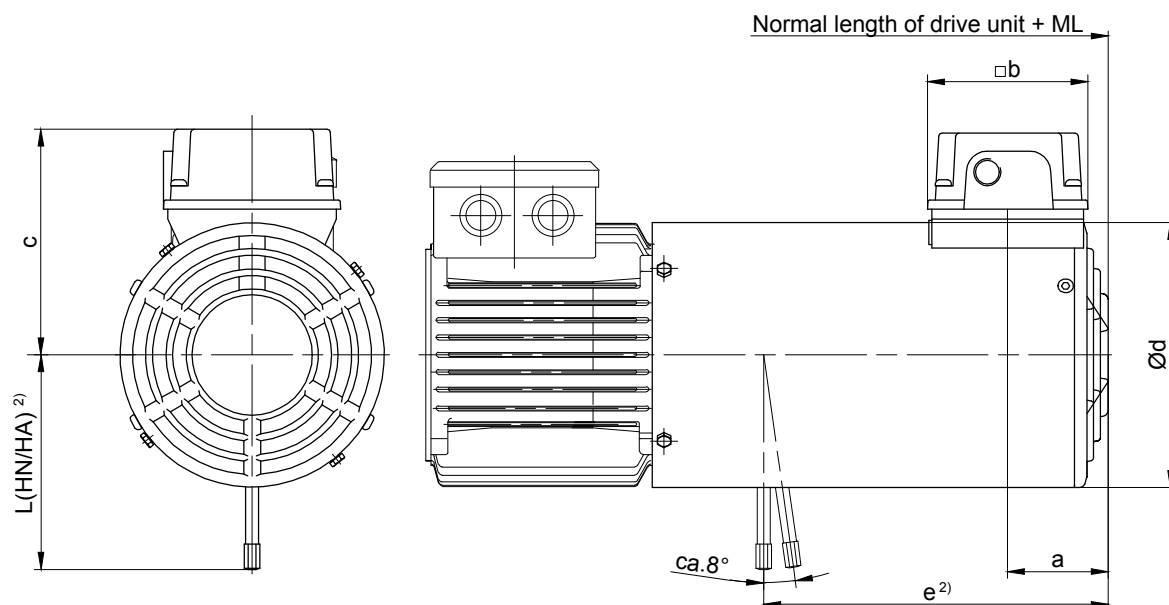
* bayonet joint

The actual gearbox design can vary from the geometry shown.

Geared motors for electric overhead conveyors series BM

Additional Dimension Sheet

Motors with brake and independent fan



Motor		Brake	ML (mm) ¹⁾ Additional length with attached brake and forced ventilation	Dimensions (mm)						Add. weight
ASM	PMSM			a	b	c	Ød	e ²⁾	L(HN/HA) ²⁾	~kg
D..08	S..08	ES(X)010	202	59	95	131.5	157	204	132	5.0
D..09	S..09	ES(X)010	214	69.5	95	141.5	176	220	132	5.5
		ES(X)027						212	162	7.5
D..11*	S..11*	ES(X)027	221	69.5	95	162.5	219	226	162	8.0
		ES(X)040						223	172	10
		ES(X)070						218	184	12
D..13*	-	ES(X)040	237	79.5	95	182	258	254	202	11.5
		ES(X)070						250	225	13.5
		ES(X)125						245	223	17.5
D..16*	-	ES(X)125	294	78.8	95	208.5	311	298	244	19.5
		ES(X)200						291	256	25
		ZS(X)300						262		27
D..18*	-	ES(X)250	303	78.8	95	208.5	348	307	286	37
		ZS(X)500						277		38.5

* bayonet joint

1) The additional length is for normal motor unit without brake.

Other dimensions see the appropriate normal dimensioned sketch

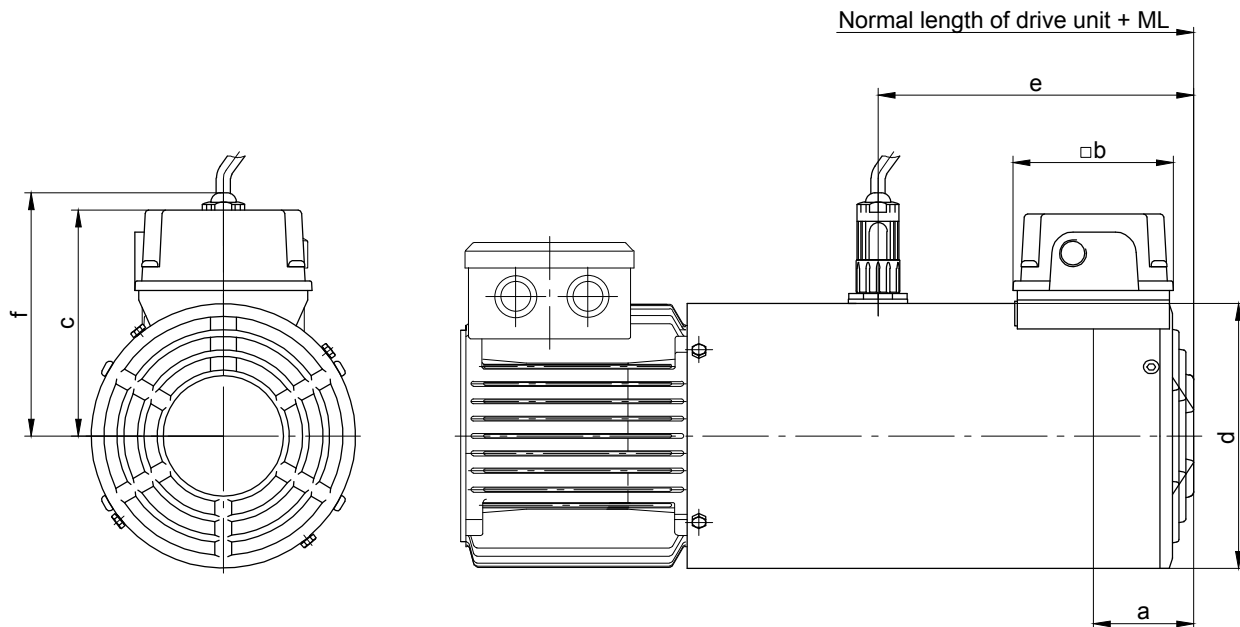
2) Brake release on request

The actual gearbox design can vary from the geometry shown.

Geared motors for electric overhead conveyors series BM

Additional Dimension Sheet

Motors with encoder and built-on independent fan



Motor		ML(mm) ¹⁾ Additional length with attached encoder and forced ventilation	Dimensions (mm)						Add. weight ~ kg
ASM	PMSM		a	b	c	d	e	f	
D..08	S..08	202	59	95	131.5	157	187	144	2.6
D..09	S..09	214	69.5	95	141.5	176	192	153.5	3.3
D..11*	S..11*	221	69.5	95	162.5	218	192	-	4.0
D..13*	-	240	79.5	95	182	258	217	-	5.7
D..16*	-	294	78.8	95	208.5	311	252	-	7.9
D..18*	-	303	78.8	95	208.5	348	267	-	10.9

* with bayonet joint

1) The additional length is for normal motor unit without brake.

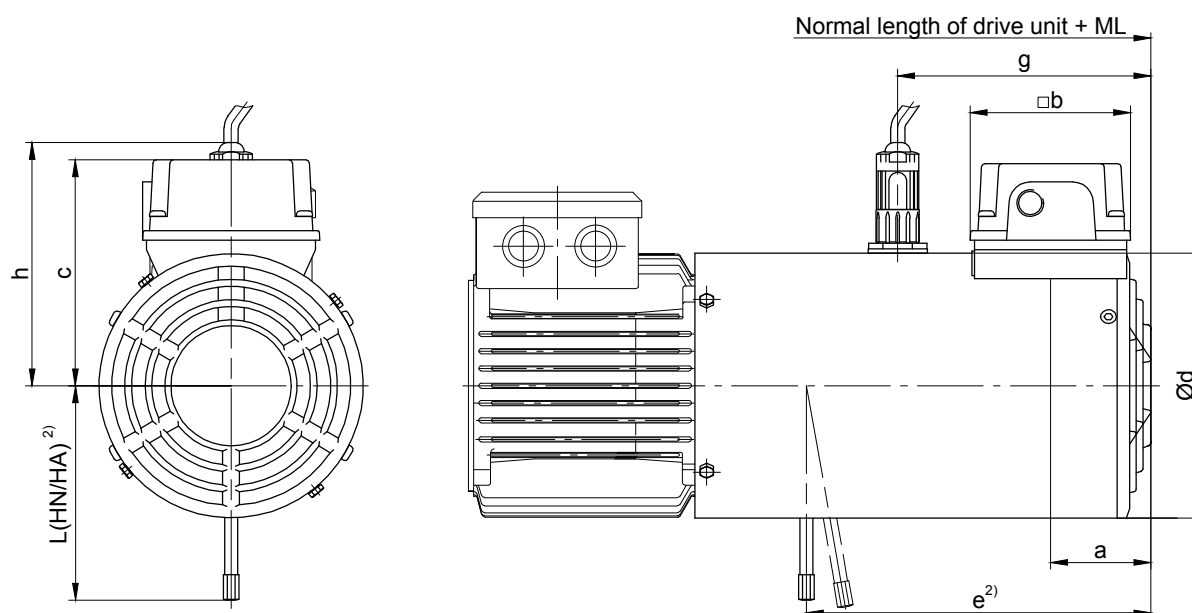
Other dimensions see the appropriate normal dimensioned sketch

The actual gearbox design can vary from the geometry shown.

Geared motors for electric overhead conveyors series BM

Additional Dimension Sheet

Motors with brake and encoder with built-on independent fan



Motor		Brake	ML (mm) ¹⁾ Additional length with attached brake, encoder and forced ventilation	Dimensions (mm)								Add. weight
ASM	PMSM			a	b	c	Ød	e ²⁾	g	h	L(HN/HA) ²⁾	~ kg
D..08	S..08	ES(X)010	202	59	95	131.5	157	204	150	150	132	6.0
D..09	S..09	ES(X)010	214	69.5	95	141.5	176	220	160	160	132	6.5
		ES(X)027						212	160		162	8.5
D..11*	S..11*	ES(X)027	221	69.5	95	162.5	219	226	155	155	162	9.0
		ES(X)040						223	155		172	11.5
		ES(X)070						218	155		184	13.5
D..13*	-	ES(X)040	240	79.5	95	182	258	254	175	175	202	13
		ES(X)070						250	175		225	15
		ES(X)125						245	175		223	19
D..16*	-	ES(X)125	294	78.8	95	208.5	311	298	195	195	244	21
		ES(X)200						291	195		256	27
		ZS(X)300						262	195			29
D..18*	-	ES(X)250	303	78.8	95	208.5	348	207	212	212	286	39
		ZS(X)500						277	212			40.5

bayonet joint

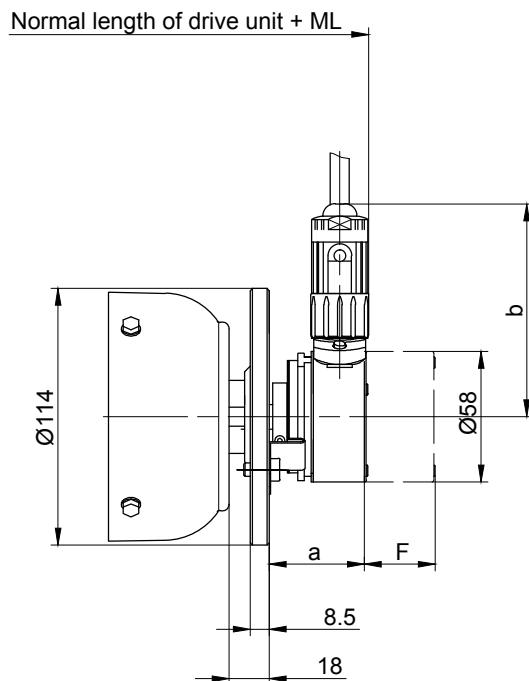
1) The additional length is for normal motor unit without brake.

Other dimensions see the appropriate normal dimensioned sketch

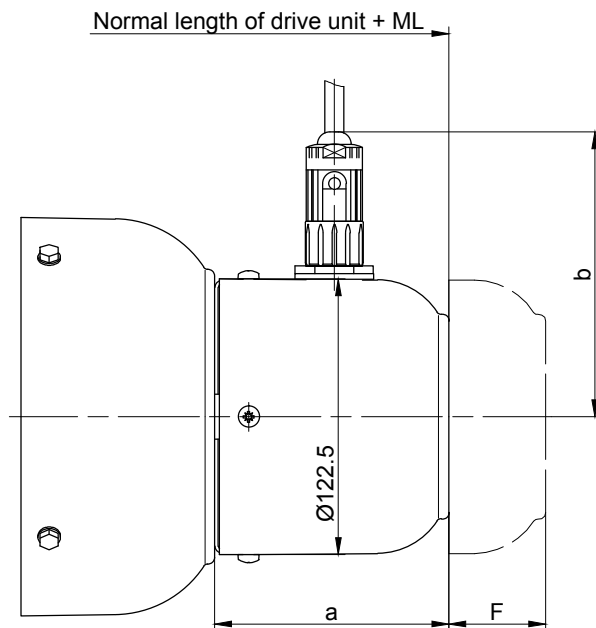
2) Brake release on request

The actual gearbox design can vary from the geometry shown.

Motors with standard encoder



D04



D05-D..18
S05, S..08-S..11

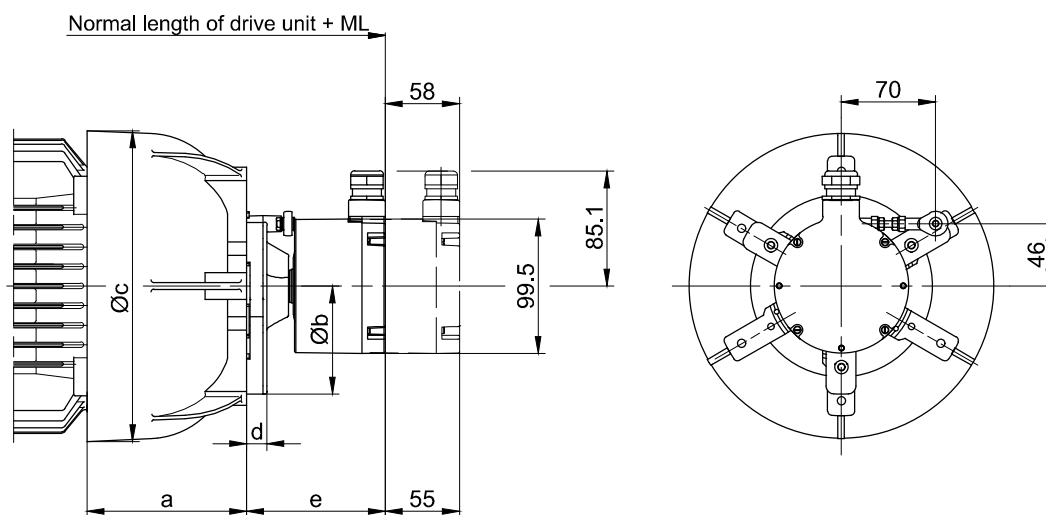
Motor		ML(mm) Additional length with encoder	Dimensions (mm)				Add. weight	Free space for removing encoder "F"			
ASM	PMSM		incremental encoder		absolute encoder			incremental encoder	absolute encoder		
			Fa. Kübler Typ 5820		Fa. TR Typ CS58-M					Fa. Kübler Typ 5820	Fa. TR Typ CS58-M
			a	b	a	b					
D04	-	62.5	43.5	95	69.5	109.5	0.7	30	55		
D05	S05	103	98.5	127	98.5	127	0.9	63	88		
D06	-										
D07	-										
D..08	S..08	107	107.5		107.5		0.8	43	68		
D..09	S..09		104	104							
D..11	S..11										
D..13	-										
D..16	-	108									
D..18	-										

The actual gearbox design can vary from the geometry shown.

Geared motors for electric overhead conveyors series BM

Additional Dimension Sheet

Motors with "heavy duty" encoder

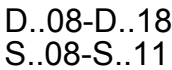
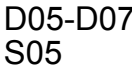


Motor		ML(mm) Additional length with encoder	Dimensions (mm)					Add. weight kg
ASM	PMSM		a	b	c	d	e	
D..08	S..08	114	83.5	160	166	15	102.5	2
D..09	S..09	118.5	102		191			5.4
D..11	S..11	121.5	120		231			8.6
D..13	-	115.5	140	185	274.5	17	94.5	9.6
D..16	-	113.5	155		326			11.5
D..18	-	122.5	183		366			

The actual gearbox design can vary from the geometry shown.

Additional Dimension Sheet

Motors with brake and encoder



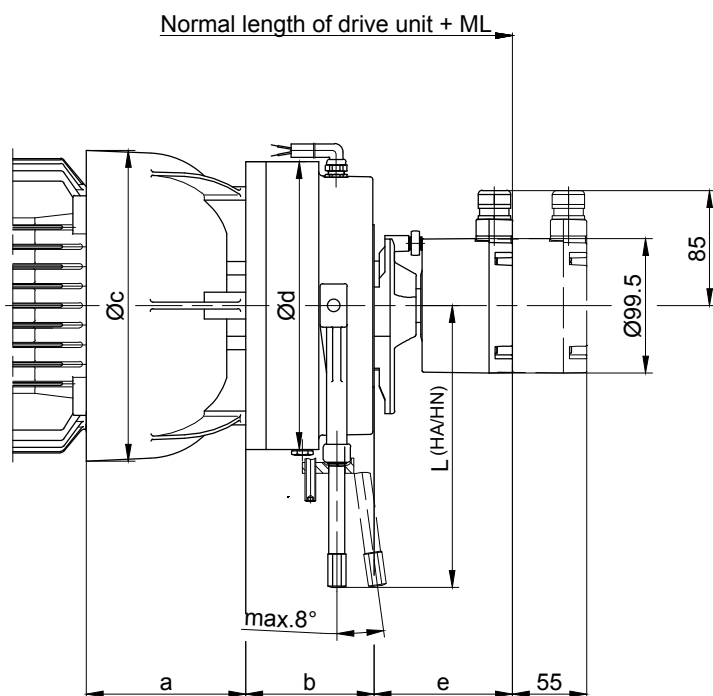
Motor		Brake	ML(mm) Additional length with brake and encoder	Dimensions (mm)				Add. weight	Free space for removing encoder "F"	
				incremental encoder Fa. Kübler Typ 5820		absolute encoder Fa. TR Typ CS58-M			incremental encoder Fa. Kübler Typ 5820	absolute encoder Fa. TR Typ CS58-M
ASM	PMSM			a	b	a	b	kg		
D04	-	E003 E003 / E004	105.5	43.5	95	69.5	109.5	0.7	30	55
D05	S05		145	102	127	102	127	0.9	63	88
D06	-									
D07	-									
D..08	S..08	ES(X)..								
D..09	S..09	ES(X)..	197							
D..11	S..11	ES(X)..	200							
D..13	-	ES(X)..	212							
D..16	-	ES(X).. / ZS(X)..	248							
D..18	-	ES(X).. / ZS(X)..	253							

The actual gearbox design can vary from the geometry shown.

Geared motors for electric overhead conveyors series BM

Additional Dimension Sheet

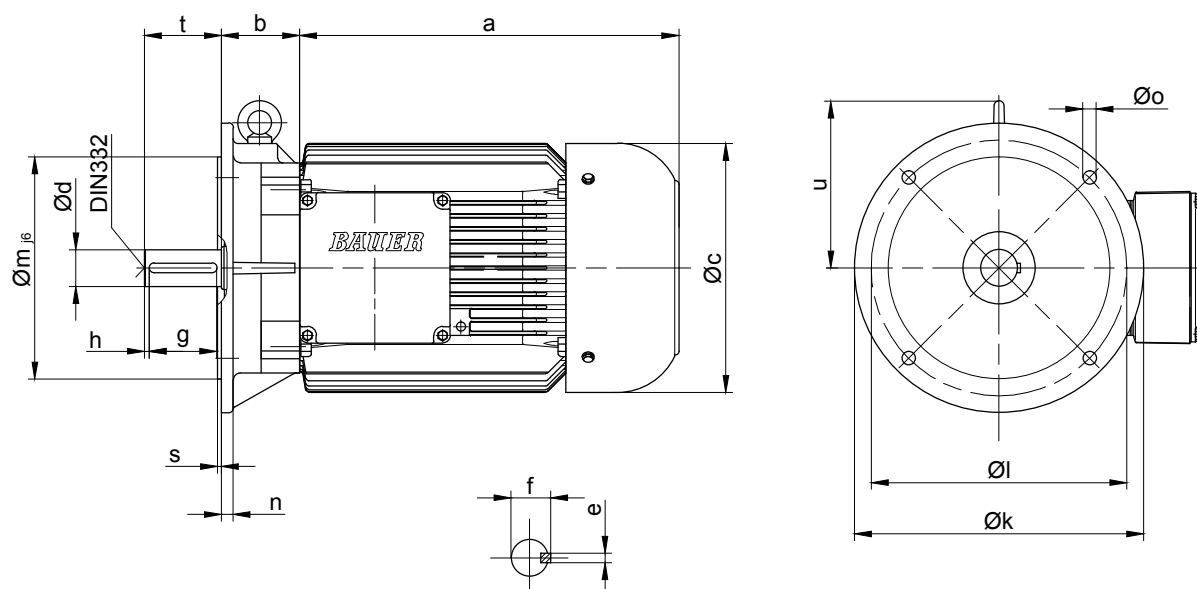
Motors with “heavy duty” brake and encoder



10

Motor		Brake	ML(mm) Additional length with brake and encoder	Dimensions (mm)						Add. weight
ASM	PMSM			a	b	c	Ød	e	L (HA/HN)	kg
D..08	S..08	EH(X)027	180.5	83.5	66.5	166	145	102.5	162	7.1
D..09	S..09	EH(X)040	191.5	102	73	191	168		172	10
D..11	S..11	EH(X)125	216.5	120	95	231	213		208.5	21.4
D..13	-	EH(X)200	259	140	106	274.5	245	94.5	221	32
D..16	-	EH(X)400	243	155	124	326	324		313	58
D..18	-		254	183		366				61

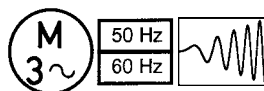
The actual gearbox design can vary from the geometry shown.



Motor		Dimensions (mm)																Center
ASM	PMSM	a	b	c	d	e	f	g	h	k	l	m	n	o	s	t	u	DIN 332
D06	-	170	45	123	11 _{j6}	4	12.5	18	2.5	140	115	95	9	10	2.75	23	-	D4
D07	-	190	45	123	11 _{j6}	4	12.5	18	2.5	140	115	95	9	10	2.75	23	-	D4
D..08	S..08	200	49	156	19 _{j6}	6	21.5	35	2.5	200	165	130	10	12	3.5	40	-	D4
D..09	S..09	251	66	176	24 _{j6}	8	27	40	5	200	165	130	10	12	3.5	50	128.5	D6
D..11	S..11	319	75	218	28 _{j6}	8	31	50	5	250	215	180	11	14.5	4	60	145.5	D8
D..13	-	393	81	266	38 _{k6}	10	41	70	5	300	265	230	12	14	4	80	173	D12
D..16	-	429	98.5	310	42 _{k6}	12	45	90	10	350	300	250	13	18.5	5	110	215.5	D16

The actual gearbox design can vary from the geometry shown.

11



Page

Motors - ASM

113-158

General

Duty Cycles acc. to DIN EN 60034

Technical data of the 50 Hz motors

Technical data of the 60 Hz motors

Operation with frequency converter

General

ErP Directive 2009/125/EC

Directive 2009/125/EC of the European Parliament and the Council, issued in 2009, specifies requirements for the environmentally responsible design of energy-related products (ErPs). In November 2009 it superseded Directive 2005/32/EC, which formed the framework for requirements for the environmentally responsible design of energy-using products (EuPs). This change has no effect on already proclaimed implementation measures.

From 16 June 2011 onward, new motors or geared motors marketed in the EU must comply with the requirements of **energy efficiency class IE2**. **From 1 January 2015 onward**, **motors with rated outputs from 7.5 to 375 kW** destined for the European market must comply with **energy efficiency class IE3**, and **from 1 January 2017 onward this requirement also applies to smaller motors rated at 0.75 kW** or more.

Objectives

The ErP Directive has several objectives:

1. **Mitigating the environmental impact of energy-using products**

This objective is intended to be achieved by the documentation and labelling of products, by regulations for inspection, and by the formulation of individual requirements in implementation measures. As the entire product life cycle is taken into consideration, action must be taken as early as the design phase.

2. **Climate protection**

Achievement of the EU climate protection objectives is to be supported. This can be implemented by reducing energy consumption and the emission of global warming gasses in the production, operation and disposal of energy-using products.

3. **Harmonised legislation**

The directive creates a framework for the European regulation of environmental design requirements. This avoids trade impediments resulting from differences in national regulations. This can be achieved by means of the proclamation of legally binding implementation measures for the entire Community and protection of free trade in goods against further-reaching regulations of the Member States.

IEC 60034-30-1

Rotating electrical machines. Efficiency classes of line operated AC motors (IE-Code)

The new edition IEC 60034-30-1 addresses now all types of single speed electrical motors which are rated for a sinusoidal power supply and for mains and constant duty according to IEC 60034-1 or IEC 60079-0. This includes, without any differentiation of the motor technology, single and three phase low voltage motors independent of their rated voltage or frequency together with Line Start permanent magnet motors.

Geared motors for electric overhead conveyors series BM

Motors

General

Efficiency class designation		Comparison with CEMEP classification	
Efficiency	Code	Efficiency	Logo
Super Premium	IE4	-	-
Premium	IE3	-	-
High	IE2	High	
Standard	IE1	Improved	
Lower than Standard	No designation	Standard	

640/2009/EG

Motors subject to the ErP Directive as specified by the Electric Motors Regulation 640/2009/EC

- Single-speed, three-phase, 50 Hz and 50/60 Hz
 - 2-, 4- or 6-pole motors
 - Rated output from 0.75 to 375 kW
 - Rated voltage up to 1000 V
 - Duty type S1 (continuous running)
 - For operation directly from the mains (50 Hz or 60 Hz)
 - For Design N motors complying with IEC 60034-12
 - Motors with two switchable rated voltages, under the condition that the magnetic flux is the same with both voltages
 - Geared motors
- The new Electric Motors Regulation has a broader scope than the standard previously used in Europe.

Motors excluded from the regulation

- Motors exclusively manufactured for converter operation in accordance with IEC 60034-25
- Pole-changing motors
- Motors fully integrated into a machine (such as pumps, fans and compressors) that cannot be tested separately from the machine
- At altitudes exceeding 4000 meters above sea-level
- Where ambient air temperatures exceed 60°C
- Where ambient air temperatures are less than -30 °C
- From 16 June 2011 onward: IE1 motors for none S1 duty destined for the European market
- Explosion-proof motors (explosion protection has higher priority)
- Brake motors
- as from 2015/2017, IE2-Motors for use with variable speed drives (Additional name plate)

Example :



Method for determining motor efficiency according to IEC 60034-2-1

Individual loss method
Additional losses using the residual loss method
Low measurement uncertainty

General

Bauer geared motors for connection to three-phase supply are supplied with specially designed induction motors. This design ensures maximum operating safety with high breakaway torque and minimum starting current.

The torque/speed characteristic is largely free of torque dips. Torque is optimised to suit requirements and application parameters. See "www.bauergears.com" for more information.

Torques

The torques as stated in the selection tables are fully available at the output shaft. These figures apply for continuous operation (S1-100%) at a maximum ambient temperature of 40° C and at site elevations up to 1000 m above sea level. Drives for higher ambient temperatures and site elevations are available on request. Gear efficiencies, which are lower than the usual values for spur gears, are taken into account in the torques listed in the selection tables.

Line voltages

BAUER motors are available as standard for the following three-phase line voltages:

Motor size	Standard voltages:
D04LA4 - D09XA4	220 V Δ / 380 V Y 50 Hz
0,06 - 2,2 kW	230 V Δ / 400 V Y 50 Hz* (anm-iec38)
	240 V Δ / 415 V Y 50 Hz**
	440 V Y / 60 Hz
	460 V Y / 60 Hz
from D11SA4	220 V Δ / 380 V Y 50 Hz
from 3,0 kW	230 V Δ / 400 V Y 50 Hz
	240 V Δ / 415 V Y 50 Hz**
	440 V Y / 60 Hz
	460 V Y / 60 Hz
	380 V Δ / 660 V Y 50 Hz
	400 V Δ / 690 V Y 50 Hz*
	415 V Δ / 50 Hz**
	440 V Δ / 60 Hz
	460 V Δ / 60 Hz

*Voltage recommended world-wide by IEC 38 and in Europe by CENELEC.

**= Insulation Class F is necessary.

Designs for other voltages available on request and at extra cost.

Unless otherwise specified, motors for operation in conjunction with frequency converters with a 50 or 60 Hz frequency have a Y-circuit to optimise operating noise and winding load.

Unless otherwise stated, the tolerance for the rated voltage is +/- 5 %, in accordance with IEC 60034-1.

The D04 to D18 motors in 4 pole design can be operated within a tolerance of +/- 10 % of the rated voltage (400 V 50 Hz).

Geared motors for electric overhead conveyors series BM

Motors

General

Line frequencies

All motors are available with the same power ratings for either 50 or 60 Hz . Increased power models are available on request.

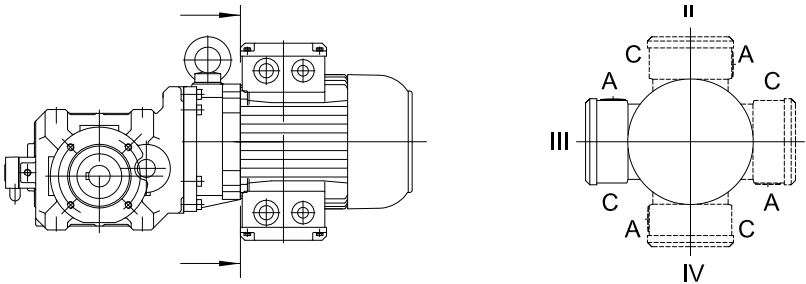
Rating plate

Bauer geared motors are supplied with a corrosion-proof rating plate as standard. The standard rating plate is made of special plastic tried and tested in many years of practical use and approved for hazardous areas by the Physikalisch-Technische-Bundesanstalt (PTB).

 Bauer		D-73734 Esslingen	
3~Mot No		A/	
Type BM09-71V/DHE08MA4-TF-G-S/ES010A9			
0,37 kW		cosφ	0,60
50 Hz			230 V
		2,1 A	
n ₁ 1420		n ₂	26,5 r/min
		53,85	114 Nm
5-50-87 Hz		49-230-400 V	
		IE2 74%	
IM H1		IP 65	
		0,5 L PGLP 220	
		t _{amb} 40°	20 kg
	180 V DC	0,17 A	10 l/min
			380. 420 V AC
			SCH01 EN 60034

Terminal box

The cables of motors with and without brakes can be introduced into the motor terminal box from side A or side C.



The standard position for the motor terminal box is shown in the dimensional drawings for the geared motors (see chapter 10,11,12 and 13). The terminal box can be installed at any of 3 other positions on request, if on-site space is restricted. The 4 possible positions are 90° offsets around the axis of the motor (dimensional drawing and designation for standard terminal box, see chapter 17 “Dimensional drawing standard terminal box”).

Cast-on terminal boxes (KAG) are supplied with knock out entries with metric nut for cable gland. Screw- on terminal boxes (TBI...4 are supplied with a metric screw thread as standard.

General

Motor connections

The electrical connection of gear motors is time consuming and creates costs, which cannot be neglected both during initial installation and in service cases. These costs are reduced considerably by the use of BAUER Gear Motors, have CAGE CLAMP® connection technology instead of the conventional terminal block – and that without extra charge.



What are the advantages for you ?

Cost reduction during connection

Public timing test have confirmed, that the electrical connection of a cable by means of CAGE CLAMP® technology saves up to 75% working time compared with the classic screw connection.

Simple Handling

Cable connection from the top, very easily accessible: The CAGE CLAMP® spring is pressed, and the cable inserted from the front, i.e. in the field of vision of the installation engineer.

Which cable core diameters ?

Suitable for all copper wires from 0,5 mm² to 25 mm².

Cost saving in material and tooling

- multicore cable ends, cable eyes or cable ring eyes are no longer needed
- Tools such as crimping pliers are no longer needed
- Inadvertently over tightening or breaking of the terminal bolts and the procurement of a new terminal block belong in the past.
- Searching and procurement of nuts and washers for the terminal blocks, which have fallen down, also belongs in the past.

Vibration and shock resistant

Vibration and shock result neither in conductor damage nor in a measurable contact interruption. The connection is service free.

Type of conductors

The CAGE CLAMP®-connector can clamp fine stranded, stranded and solid cores wires.

Geared motors for electric overhead conveyors series BM

Motors

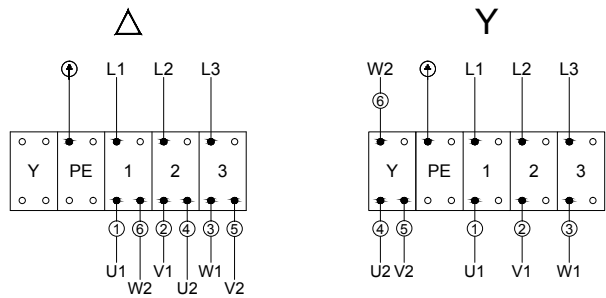
General

Terminal connections for single speed motors without motor protection

Standard connection of three phase motors without motor protection via CAGE CLAMP®.

D04 ... D..09

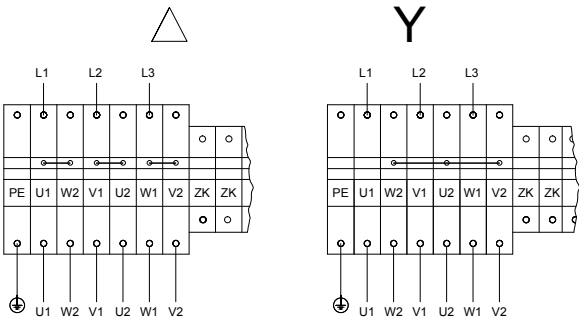
Three Phase motor means of CAGE CLAMP®



	IEC / EN 60034-8	NEMA MG 1	Colour
Supply lines	L1 L2 L3	L1 L2 L3	
Motor winding	U1 V1 W1 U2 V2 W2	T1 T2 T3 T4 T5 T6	black blue brown yellow red violet
Δ	Connections for the low rated voltage (e.g.: 230 V)		
Y	Connections for the high rated voltage (e.g.: 400 V)		

D..11 ... D..18

Connection of three phase motor via CAGE CLAMP



	IEC / EN 60034-8	NEMA MG 1	Colour
Supply lines	L1 L2 L3	L1 L2 L3	
Motor winding	U1 V1 W1 U2 V2 W2	T1 T2 T3 T4 T5 T6	black blue brown yellow red violet
Δ	Connections for the low rated voltage (e.g.: 230 V)		
Y	Connections for the high rated voltage (e.g.: 400 V)		
ZK	Optional additional connection		

Geared motors for electric overhead conveyors series BM

Motors

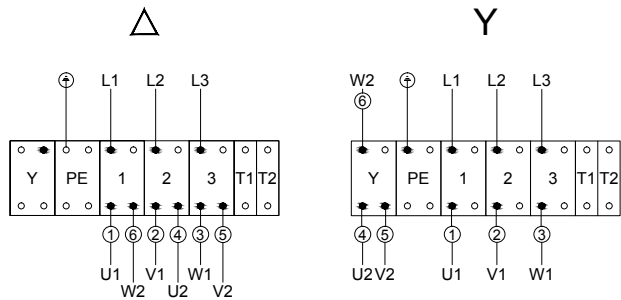
General

Terminal connections for single speed motors with motor protection

Standard connection of three phase motors with motor protection via CAGE CLAMP®.

D04 ... DO..09

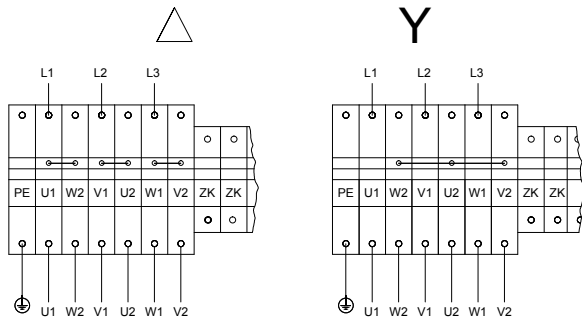
Three Phase motor and thermal protection connection by means of CAGE CLAMP®



	IEC / EN 60034-8	NEMA MG 1	Colour
Supply lines	L1 L2 L3	L1 L2 L3	
Motor winding	U1 V1 W1 U2 V2 W2	T1 T2 T3 T4 T5 T6	black blue brown yellow red violet
Δ	Connections for the low rated voltage (e.g.: 230 V)		
Y	Connections for the high rated voltage (e.g.: 400 V)		
T1 T2	Thermal motor protection		

D..11 ... D..18

Connection of three phase motor via CAGE CLAMP



	IEC / EN 60034-8	NEMA MG 1	Colour
Supply lines	L1 L2 L3	L1 L2 L3	
Motor winding	U1 V1 W1 U2 V2 W2	T1 T2 T3 T4 T5 T6	black blue brown yellow red violet
Δ	Connections for the low rated voltage (e.g.: 230 V)		
Y	Connections for the high rated voltage (e.g.: 400 V)		
ZK	Optional additional connection		

Geared motors for electric overhead conveyors series BM

Motors

General

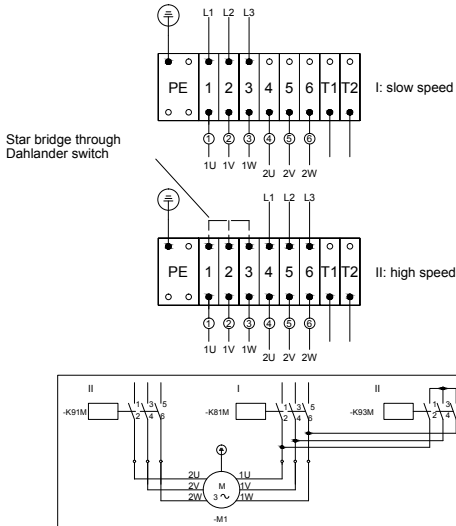
Terminal connections for pole changing motors in Dahlander connection (Δ /YY or Y/YY)

Standard connection of three phase motors without motor protection via CAGE CLAMP®.

D04 ... D..09, S04...S09

Motor 2 Speeds, Dhalander connection D/YY or Y/YY

(T1-T2 Thermal Motor protection optional)

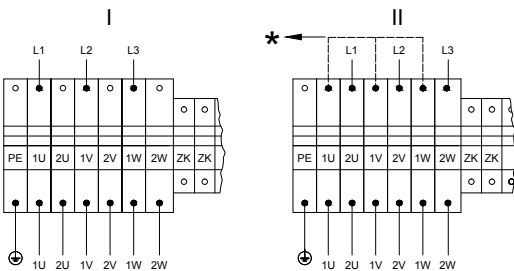


	IEC / EN 60034-8	NEMA MG 1	Colour
Supply lines	L1 L2 L3	L1 L2 L3	
Motor winding	1U 1V 1W 2U 2V 2W	T1 T2 T3 T5 T6 T4	black blue brown yellow red violet
I	Low speed		
II	High speed		

D..11, S11

Connection of three phase motor via CAGE CLAMP

Pole changing for 2 speeds; Dahlander connection Δ YY



	IEC / EN 60034-8	NEMA MG 1	Colour
Supply lines	L1 L2 L3	L1 L2 L3	
Motor winding	1U 1V 1W 2U 2V 2W	T1 T2 T3 T4 T5 T6	black blue brown yellow red violet
I	Low speed		
II	High speed		
ZK	Optional additional connection		
*	Star point over Dahlander Relay		

Geared motors for electric overhead conveyors series BM

Motors

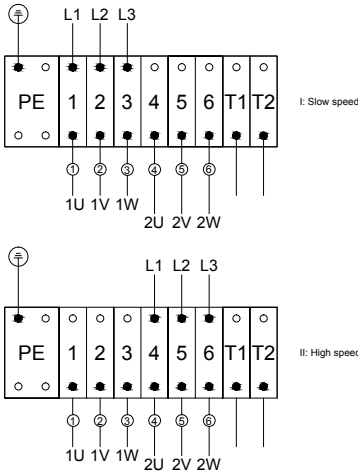
General

Terminal connections for pole changing motors with two separate windings (Y/Y or Δ/Δ)

Standard connection of three phase motors with motor protection via CAGE CLAMP®.

D04 ... D..09, S04...S09

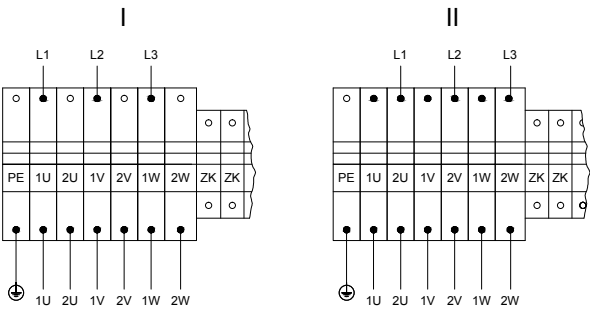
Pole change motor
2 Speeds, 2 windings Y/Y or D/D
(T1-T2 Thermal Motor protection optional)



	IEC / EN 60034-8	NEMA MG 1	Colour
Supply lines	L1 L2 L3	L1 L2 L3	
Motor winding	1U 1V 1W 2U 2V 2W	T1 T2 T3 T11 T12 T13	black blue brown yellow red violet
I	Low speed		
II	High speed		
T1 T2	Thermal motor protection		

D..11, S11

Connection of three phase motor via CAGE CLAMP
Pole changing for 2 speeds; separate windings Y/Y or Δ/Δ



	IEC / EN 60034-8	NEMA MG 1	Colour
Supply lines	L1 L2 L3	L1 L2 L3	
Motor winding	1U 1V 1W 2U 2V 2W	T1 T2 T3 T4 T5 T6	black blue brown yellow red violet
I	Low speed		
II	High speed		
ZK	Optional additional connection		

Geared motors for electric overhead conveyors series BM

Motors

General

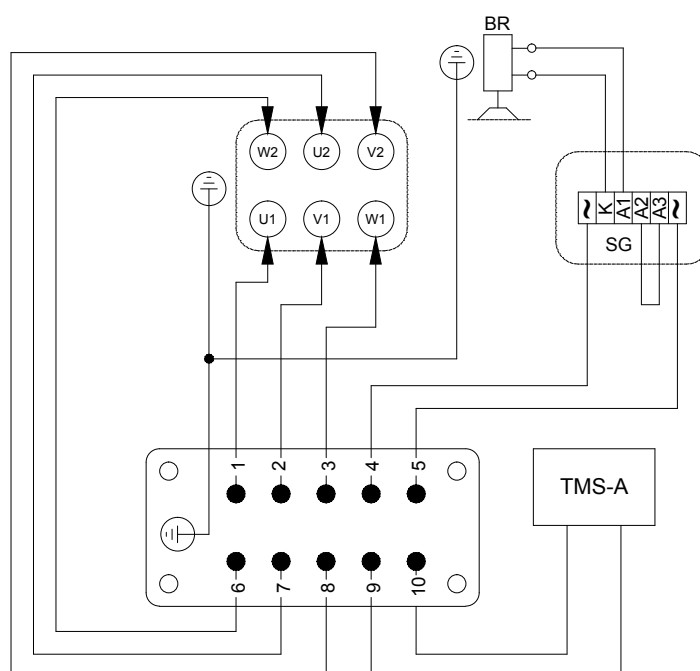
Plug-and-socket connection

D06 to D..16 Bauer motors are available with plug-in motor connection. The socket housing is mounted on the fan-cowl side of the terminal box as standard. This layout minimises the protrusion caused by the plug.

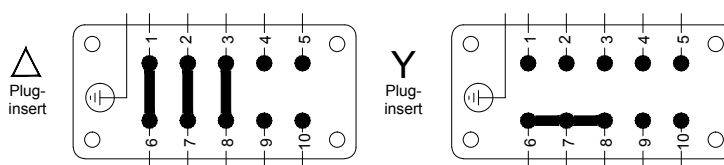
The standard plug-and-socket type connection incorporates the attachment housing, pin insert and cover. Grommet-type housings and jack inserts are available on request at extra cost. Pin assignments on request (dimensional drawing, see chapter 17 "Dimensional drawing, plug-connector terminal box").



A design with single clamp lever according to the DESINA regulation of the „Verbandes Deutscher Werkzeugmaschinenhersteller“ (VDW) is also available.



Δ - or Y-Connection in the plughousing or installation cabinet is performed by the machine manufacturer.



Han 10ESS

Caution !

Motor shaft rotates clockwise for this connection (A-side).
The rotation of the gear shaft is dependent on the gear design.

The motors are also available with a low-cost round plug connector as an alternative. This is fitted at the factory in the standard terminal box and is also suitable for brake connection, thermistors and thermostats. Additional information on request.

Bauer motors from D08 with motor-mounted brake are also available with plug-in brake connection. This means that if it requires attention, the brake can be replaced on site with no loss of time.

General

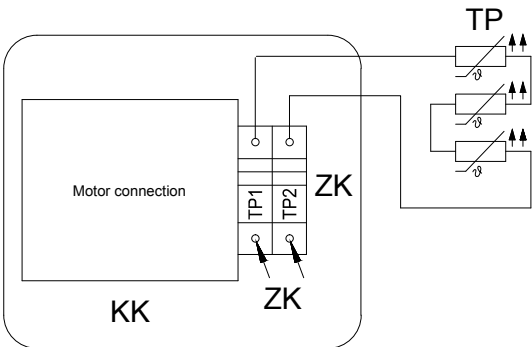
Motor protection

Each geared motor requires a current-dependent motor protection switch or an overcurrent relay with thermal delay in the switchgear to protect the motor windings. The rated motor currents required for settings are stated in the order acknowledgment. Thermal protection for the winding is recommended as an additional safety measure for special operating conditions (short-time or intermittent periodic duty, high switching frequency, severe voltage fluctuations or restricted cooling) and for operation in conjunction with a frequency converter.

Thermistors (PTC)

Thermistors are temperature-dependent resistors which are fitted in each phase winding. In conjunction with a motor protection switch, they ensure optimum protection for the winding in the event of rapid temperature rise. Characteristic to DIN 44081 and "Mark A" to IEC 34-11-2. Thermistors are available for all motors at extra cost. The requisite monitoring device is not included in the scope of supply.

Thermal motor protection with PTC-thermistors



KK	Terminal box
ZK	Additional terminals
TP	PTC-thermistors DIN 44081/IEC 34-11-2 Mark A
TCU	Connection of thermistor control unit EN 60947 Max. permissible testing voltage 2,5 VDC / thermistor in case of  with auth. certificate: 

The location of the additional terminals in the drawing is not necessarily identical with the actual arrangement.

Geared motors for electric overhead conveyors series BM

Motors

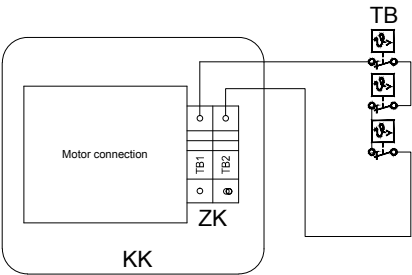
General

Thermostatic protection

Bimetal switches are used for slow-acting, independent temperature monitoring and are embedded in each winding section of the motor.

The bimetal disc is sized such that when the temperature rises above a specific, previously set value, the disc suddenly snaps from a convex state to a concave state and the contact moves vertically away from the contact plate. In this state the switch is either open (normally closed switch) or closed (normally open switch). A significant temperature change is necessary to allow the bimetal disc to independently snap back to its initial position. When it does, the switch is again closed (normally closed switch) or open (normally open switch). Thermal protection switches are available for all motors at additional cost. For technical reasons, this option is not recommended for large motors (D11 to D18).

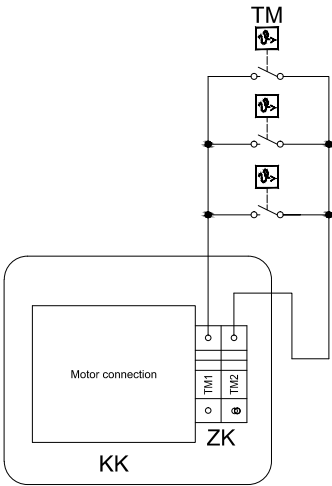
Thermal motor protection with thermostats
(with normally closed contacts)



KK	Terminal box
ZK	Additional terminals
TB	Thermostats with normally closed contacts max. 250VAC 1,6A

The location of the additional terminals in the drawing is not necessarily identical with the actual arrangement.

Thermal motor protection with thermostats
(with normally opened contacts)



KK	Terminal box
ZK	Additional terminals
TB	Thermostats with normally closed contacts max. 250VAC 1,6A

The location of the additional terminals in the drawing is not necessarily identical with the actual arrangement.

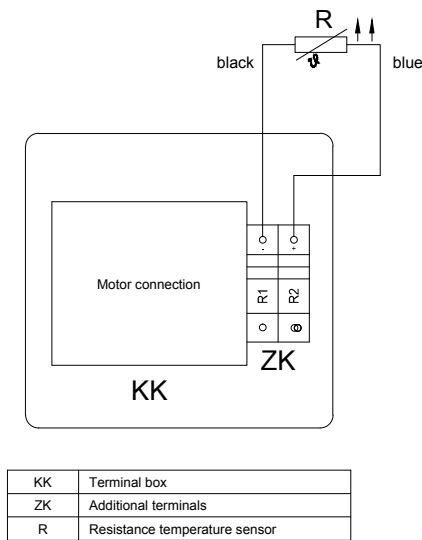
General

KTY sensors

KTY sensors with heat-shrink insulation can be used to measure and monitor critical surface temperatures and internal temperatures of motors and machines. These sensors are suitable for use in harsh industrial environments in all places where accurate measurements with a single sensor are required. KTY sensors are available for all types of motors at additional cost.

Working principle: KTY sensors are temperature-dependent components. The resistance of the KTY sensor increases when its temperature rises. The characteristic curve is nearly linear in the sensor's measuring range; the reference resistance (at 100 °C) is 970 to 1030 ohms.

Resistance temperature sensor KTY84-130SH



The location of the additional terminals in the drawing is not necessarily identical with the actual arrangement.

General

PT100 sensors

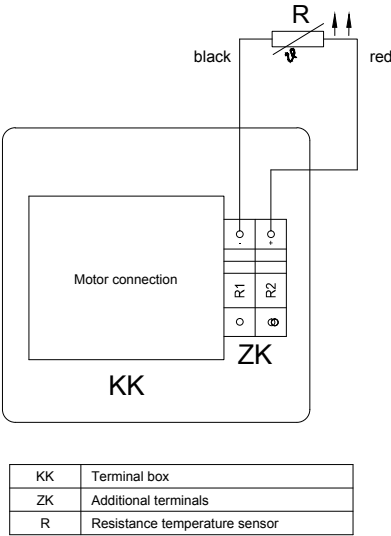
Precise monitoring of motor temperatures is necessary in many fields of industry. Pt100 sensors feature high accuracy, short response time and long-term stability, and they are suitable for use over a wide range of temperatures. Pt100 sensors are available for all motor types at additional cost.

Specifications

Nominal resistance: 100 Ω at 0 °C

The resistance characteristics are specified in EN 60751.

Resistance temperature sensor PT 100



The location of the additional terminals in the drawing is not necessarily identical with the actual arrangement.

General

Insulation

The gearmotors described in the selection tables of this catalogue with the motor sizes D04, D05, D06, D08, D..09S and D..09L are executed in insulation class B. Temperature class F is available on request at extra cost.

4-pole motors D07 and D..09XA4 (2.2 kW) to D..18XA4 (30 kW) and all multi-speed motors are rated in Temperature Class F as standard.

Insulation Class F bestows the winding a multiple protection against high humidity, acidic gases and heavy tropical influences while making the same shock resistant and more resistant to heat. Protection against insects (termites) is guaranteed through the complete enclosure (IP65) as long as the mains cables are encased in metal.

Degree of protection

Bauer motors from motor size D06 are manufactured to IP65 degree of protection as standard. Motor sizes D04 and D05 have smooth housings, degree of protection IP 54, on request in IP65 at extra cost. The motor terminal box is always IP 65.

Special corrosion protection

If high requirements for corrosion resistance are required, the geared motors are available with three levels of enhanced corrosion protection:

CORO1: Finished with two-component paint to protect against chemically aggressive gases and vapours.

CORO2: External paint as CORO1. In addition, sheet steel fan cowl with coating. The screws for the terminal-box cover are non-rusting steel.

CORO3 with IP 66: Available from motor size D06. Corrosion protection as CORO2. All motors manufactured within Temperature Class F. Terminal box compartment separated from motor interior by cast resin. Threaded cable entries and mating faces have special seals. See Bauer special imprint SD1 for more information.

Speed of output shaft

The rated speeds in the selection tables are guidelines for load at rated power. Speed can vary depending on degree of load and temperature (particularly in the case of relatively small motors). Combination gear units for lower speeds are available on request.

Notes on design

Use the torque required at the lowest operating speed to select motors for applications which require constant torque over the entire speed range, as is the case, for example, with lifting gear and conveyors. Bear in mind, too, the possibility of torque being lower in the field-weakening range.

Use only the torque required at the highest operating speed to select motors for applications which require square-law torque over the speed range, as is the case, for example, with pumps and fans. Field weakening is not permissible.

The motor's power is frequency-dependent. It can be approximated in kW from torque M in Nm, the 50 Hz or 60 Hz speed n and the frequency f in Hz by means of the equation

$$P = M \times n / 9550 \times f / 50$$

or

$$P = M \times n / 9550 \times f / 60$$

If a frequency inverter is used in conjunction with a pulse generator, the full 50 Hz or 60 Hz rated torque is available as holding torque at motor standstill (independent fan required for prolonged periods at standstill). In many instances, however, a mechanical brake is necessary for holding a position exactly or for safety reasons.

Geared motors for electric overhead conveyors series BM

Motors

General

The use of thermistors for the thermal protection of the motor winding for frequency inverter duty are strictly recommended (available at extra cost for all motor sizes).

Increased torque with reduced duty factor

A reduction in duty factor increases the torque available at the low end of the frequency range (up to the transition frequency for field weakening) in accordance with the factors in the table below:

Duty factor	Motor torque with reduced duty factor	Increase in current requirement - approximate
100 %	-	-
60 %	1,15 x S1 torque	1,15 x S1 current
40 %	1,30 x S1 torque	1,30 x S1 current
25 %	1,45 x S1 torque	1,45 x S1 current
15 %	1,60 x S1 torque	1,60 x S1 current

This, in turn, means that short-term overload by a factor of 1.6 is permissible for starting from a low speed, for example. An increase in torque in the field-weakening range due to a reduction in duty factor is possible only under certain conditions; the 1.6x S1 torque generally cannot be achieved

Increased torque with external fan

If an independent fan is used, the S1- torque in the lower frequency range (below 30 Hz) need not be reduced, i.e., when it has an independent fan the motor can provide the 50 Hz or 60 Hz rated torque throughout the entire frequency range to the cut-off frequency of the field weakening.

With a high quality frequency inverter of 160%, when independent ventilation is combined with a reduced duty factor the 50 Hz or 60 Hz torque is available from rest through to the transition frequency of the field weakening range.

External ventilation is available for motor types D08 and larger (see chapter 16 "Motor-independent fan (FV)). In many instances, a more economical alternative is to select a larger motor without external ventilation.

High quality frequency inverters reduce voltage in part-load operation to lower the motor current and thus improve efficiency. This converter function emulates the method of operation of commercially available "energy-saving devices".

Energy-saving function

Regeneration

By decreasing the voltage, the high grade frequency converter reduces the motor current, thereby enhancing efficiency. Inverter functions such as these are fundamental to the operation of the 'energy-saving devices' currently found on the market. As with motor torque, an increase in regenerative torque with reduced duty factor is permissible.

Notes on operation with other-make frequency inverters

The precondition is that the motor current generated by the frequency converter is largely free of harmonics. The harmonics generated in the motor by some old-style frequency inverters result in additional losses and cut available torque by some 10% across the entire frequency range. There is also a risk of oscillation causing damage to the gear unit.

At frequencies below approximately 5 Hz, operation without pulse generators is possible only using a frequency inverter with state-of-the-art control. If frequency inverters are used that do not feature load-dependent frequency and current adjustment, the increase in the motor's current consumption means that, particularly in the case of small motors (D04-D..09), torque has to be reduced at frequencies below approximately 10 Hz even if an external fan is used or the duty factor is reduced. Regenerative operation is possible only under certain circumstances.

General

Explosion protection

The **gearboxes** described in this catalogue are suitable for use in explosive areas of Zones 1, 2, 21 and 22. An **EC-Declaration of Conformity** can be supplied on request; it is based on a "ignition hazards assessment report" which has been registered with a notified body (PTB). The explosion class of the associated **motors** are designated according to the Zone in which they should be used and according to the Method of use (e.g. use on inverter). The motor parts are partly larger or – for explosion proof – differently designed compared with the standard design shown in this catalogue. The modular system shown in section 3 allows, in most cases, the gear sizes and the connection dimensions to be maintained.

ATEX

The term ATEX is derived from Atmosphères explosibles. The designation 95 and 137 are based on a new numbering of the articles of the first contract of the foundation of the EU. **ATEX 95:** Directive 94/9/EC on the approximation of the laws of the member states concerning equipment and protective systems intended for use in potentially explosive atmospheres; binding for **placing on the market** since 01.07.2003

ATEX 137: Directive 1999/92/EG on minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres; binding for use in new installations since 01.07.2003 and binding for existing installations to comply with the requirements from 01.07.2006.

For Safety Instructions for the use of explosion protection geared motors, see the operating instructions BA170...

Scope of supply

Geared motors suitable for use in explosive areas:

GAS	Zones 1, 2		
DUST	Zones 21, 22		
DXD	Zone 1,	II 2 G Ex d(e) IIC T3...T4 Gb	0,12... 75 kW
DXE	Zone 1,	II 2 G Ex e IIC T1...T4 Gb	0,12... 11 kW
SXE	Zone 1,	II 2 G Ex e IIC T1...T4 Gb	0,55 ... 15 kW
DXN	Zone 2,	II 3 G Ex nA IIC T3 Gc	0,03... 30 kW
DXC	Zone 21,	II 2 D Ex tb IIIC T160°C IP66 Db	0,03... 30 kW
DXC	Zone 21,	II 2 D Ex tb IIIC T120°C IP66 Db	0,03... 22 kW
SXC	Zone 21,	II 2 D Ex tb IIIC T120°C...160°C IP66 Db	
DXS	Zone 22,	II 3 D Ex tc IIIC T120°C...160°C IP65 Dc	0,03... 30 kW
DXD	Zone 1/21,	II 2 G Ex d(e) IIC T3...T4 Gb	
		II 2 D Ex tb IIIC T120°C...160°C IP65 Db	0,12... 75 kW
DXE	Zone 1/21,	II 2 G Ex e IIC T1...T4 Gb	
		II 2 D Ex tb IIIC T120°C...160°C IP66 Db	0,12... 11 kW
SXE	Zone 1/21,	II 2 G Ex e IIC T1...T4 Gb	
		II 2 D Ex tb IIIC T120°C...160°C IP66 Db	0,55... 15 kW
DXS	Zone 2/22,	II 3 G Ex nA IIC T1...T3 Gc	
		II 3 D Ex tc IIIC T120°C...160°C IP65 Dc	0,03... 30 kW

Frequency converters

Frequency converters used must comply with the requirements set out in the EC Type Examination Certificate.

For the corresponding motor type, the EC Type Examination Certificate contains the maximum possible torques depending on the frequency, the corresponding rated current, converter settings and other requirements for the converter.

The pulse voltage at the motor terminals must be limited to a maximum permissible pulse voltage of 1,556 V ($2 \times \sqrt{2} \times 550$ V) by selecting a suitable frequency converter and/or using filters.

The maximum permissible frequency converter input voltage is 500 V

Protective device

The motor is protected against unacceptable heating by the defined frequency converter setting, as well as by the integrated thermistor sensor in accordance with DIN 44081 / 44082 Response temperature **140°C**. Analysis of the built-in thermal winding protection must be done by using a trip unit with Ex-mark II (2) G or II (2) D that fulfils the requirements of Directive 94/9/EC.

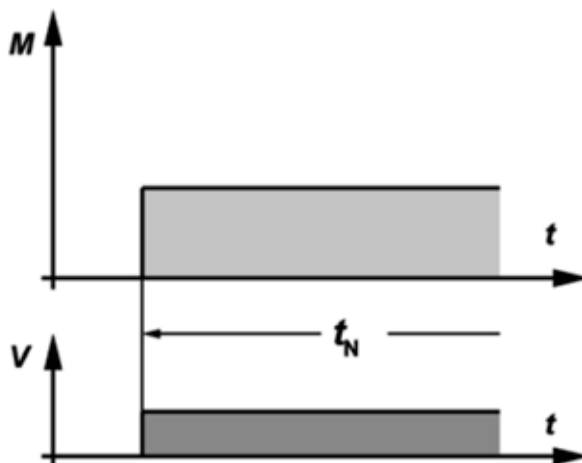
Geared motors for electric overhead conveyors series BM Motors

Duty types as defined by EN 60034

General

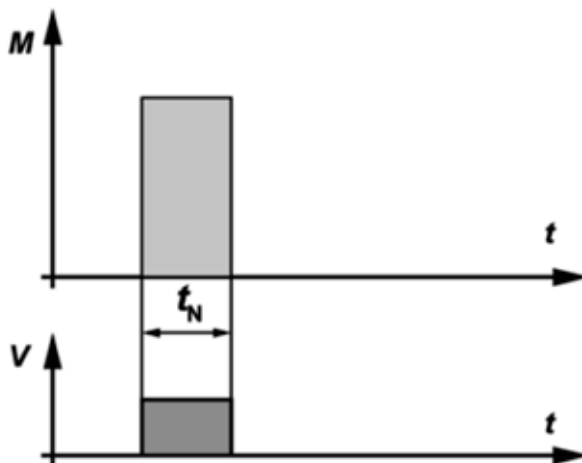
#Aside from special drives (such as lifting equipment), standard motors are always designed for continuous running duty. If the drive is operated with frequent on/off cycles, it may be necessary to select a larger motor with a special design. On the other hand, with pronounced short-time duty it is often possible to select a smaller model. **For this reason, it is technically necessary or economically advantageous to inform the motor manufacturer of any duty type that differs from continuous running.**

Continuous running duty (S1)



Operation under rated load for sufficient time to allow temperature equilibrium to be attained, such that the temperature does not increase any more with continued operation. The equipment can operate continuously under the rated load without exceeding the allowable temperature.

Short-time duty (S2)

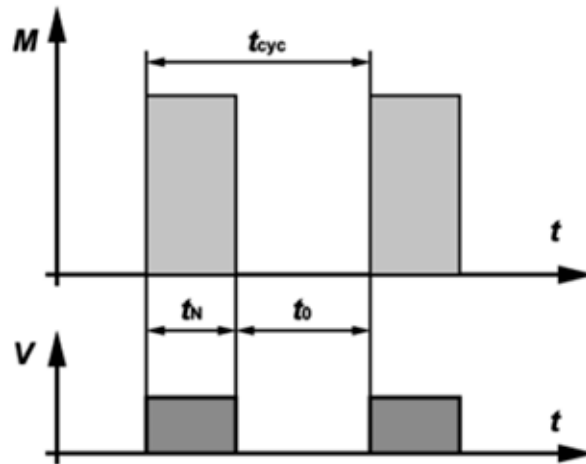


The operating time under rated load is short compared with the subsequent rest period. The standard operating times are 10, 30, 60 and 90 minutes. The equipment can operate for this period under the rated load without exceeding the allowable temperature.

Example: S2 – 60 min

Duty types as defined by EN 60034

Intermittent periodic duty (S3)



S3 duty consists of a sequence of identical cycles, each composed of an operating time with constant load and a rest time with the windings de-energised. The cycle is such that the starting current does not significantly affect the temperature rise. The operating time under rated load and the subsequent pause are both short. The equipment can operate under load only during the period indicated by the duty cycle as a percentage of the total cycle time (cycle duration).

The standardised duty cycles are 15, 25, 40 and 60%. The cycle duration is 10 minutes unless otherwise specified.

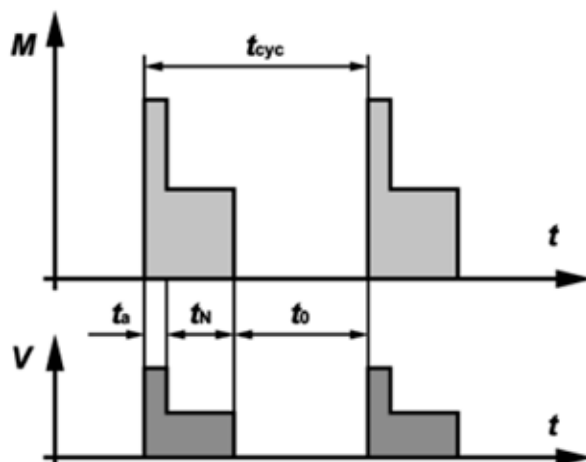
Intermittent periodic duty means that a state of thermal equilibrium is not reached during the load interval.

The duty cycle can be determined as follows:

$$ED = \frac{t_N}{t_{cyc}} \times 100\% = \frac{t_N}{t_N + t_0} \times 100\%$$

Example: S3 – 25%

Intermittent periodic duty with starting (S4)



Duty types as defined by EN 60034

S4 duty consists of a sequence of identical cycles, each of which is composed of a distinct starting time, a time of operation under constant load, and a rest period with the windings de-energised.

The operating time under rated load and the subsequent pause are both short. The equipment can operate under load only during the period indicated by the duty cycle as a percentage of the total cycle time (cycle duration).

The standardised duty cycles are 15, 20, 40 and 60%. The cycle duration is 10 minutes unless otherwise specified.

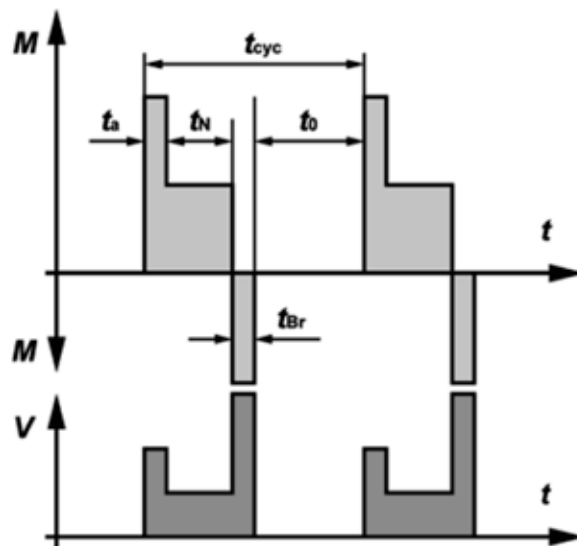
The load cycle corresponds to mode S3, but with additional heating during the starting time that must be taken into account.

The duty cycle can be determined as follows:

$$ED = \frac{(t_a + t_N)}{t_{cyc}} \times 100\% = \frac{t_a + t_N}{t_a + t_N + t_0} \times 100\%$$

Example: S4 – 25%, $J_M = 0.15 \text{ kgm}^2$

Intermittent periodic duty with electric braking (S5)



S5 duty consists of a sequence of identical cycles, each of which is composed of a starting time, a time of operation under constant load, a time of fast electric braking, and a rest period with the windings de-energised.

The operating time under rated load and the subsequent pause are both short. The equipment can operate under load only during the period indicated by the duty cycle as a percentage of the total cycle time (cycle duration).

The standardised duty cycles are 15, 20, 40 and 60%. The cycle duration is 10 minutes unless otherwise specified.

The load cycle corresponds to S3 duty, but with additional warming during the starting time t_a and the braking time t_{br} taken into account.

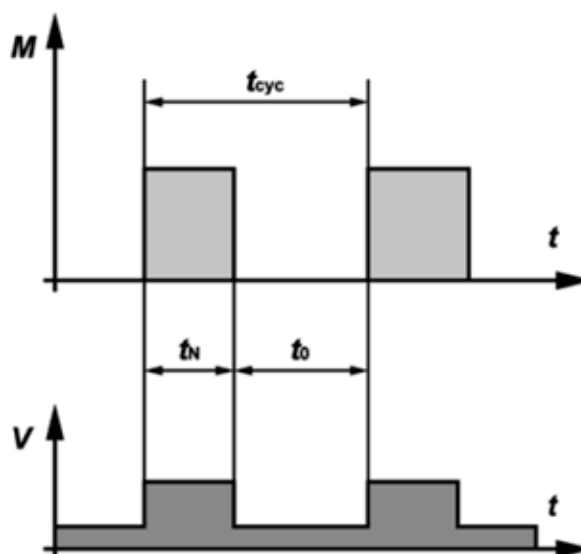
The duty cycle can be determined as follows:

$$ED = \frac{(t_a + t_N + t_{br})}{t_{cyc}} \times 100\% = \frac{t_a + t_N + t_{br}}{t_a + t_N + t_{br} + t_0} \times 100\%$$

Example: S5 – 25%; $J_M = 0.15 \text{ kgm}^2$, $J_{ext} = 0.7 \text{ kgm}^2$

Duty types as defined by EN 60034

Continuous-operation periodic duty (S6)



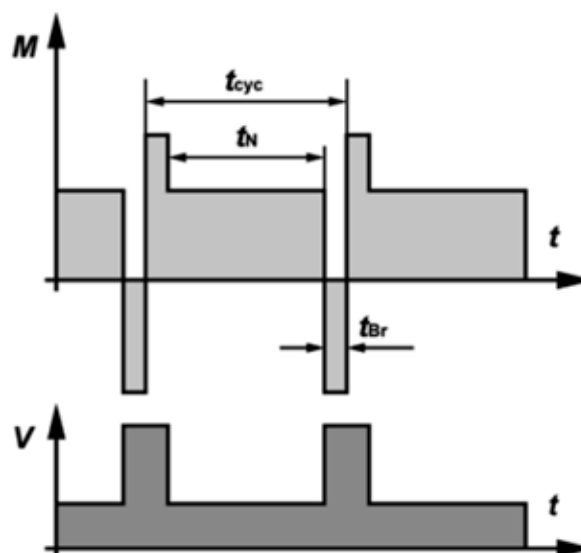
This type of duty corresponds to S3, with the exception that the equipment remains energised during the rest periods. In other words, it operates with no load during these periods. The duty cycle and cycle duration are specified the same way as for S3 duty.

The duty cycle can be determined as follows:

$$ED = \frac{t_N}{t_{cyc}} \times 100\% = \frac{t_N}{t_N + t_0} \times 100\%$$

Example: S6 – 40%

Continuous-operation periodic duty with electric braking (S7)



The machine starts up, operates under load, and then is braked electrically, for example by feeding it from a DC power source. Following this, it starts up again immediately. The machine can operate continuously in this manner if the specified moments of inertia of the motor J_M and of the load J_{ext} as well as the specified duty cycle are not exceeded. If the cycle duration is not specified, it is assumed to be 10 minutes.

The duty cycle can be determined as follows: $DC = 1$

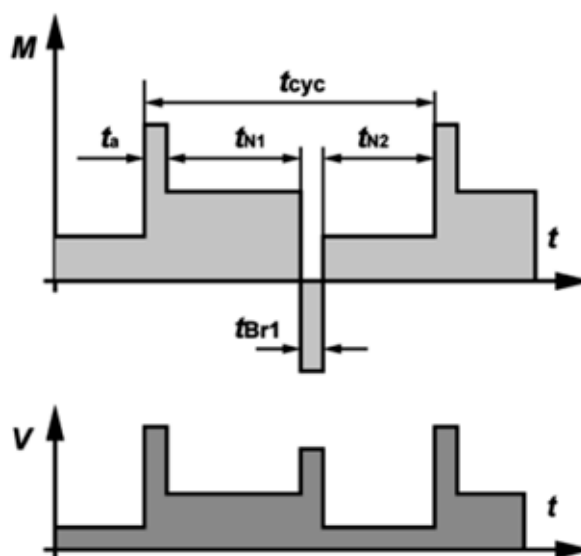
Example: S7 – $J_M = 0.4 \text{ kgm}^2$, $J_{ext} = 7.5 \text{ kgm}^2$

Geared motors for electric overhead conveyors series BM

Motors

Duty types as defined by EN 60034

Continuous-operation periodic duty with relative load/speed changes (S8)



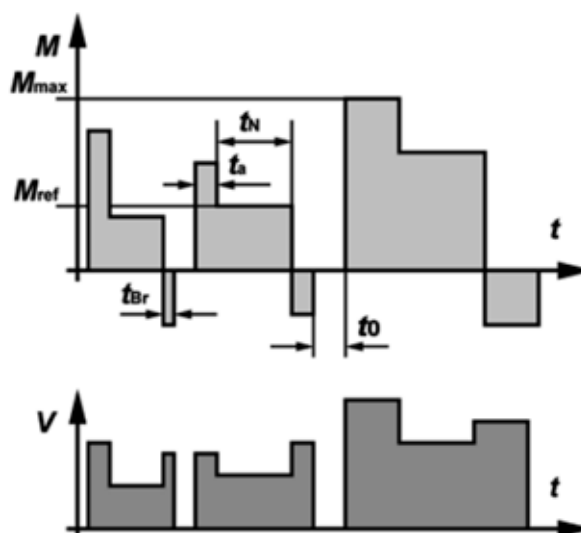
The machine runs continuously under variable load with frequent speed variations. The machine can operate continuously in this manner if at each speed the specified values are not exceeded (moments of inertia J_M and J_{Ext} cycle duration (if other than 10 minutes), rated output and duty cycle. With a moment of inertia of 1 kg m^2 , the acceleration characteristics are the same as with a mass of 1 kg at a distance of 1 m from the axis of rotation).

The duty cycle can be determined as follows:

$$ED = \frac{t_a + t_{N1}}{t_{cyc}} \times 100\% = \frac{t_{Br} + t_{N2}}{t_{cyc}} \times 100\%$$

Example: S8 – $J_M = 0.5 \text{ kgm}^2$, $J_{ext} = 6 \text{ kgm}^2$

Duty with non-periodic load and speed variations (S9)

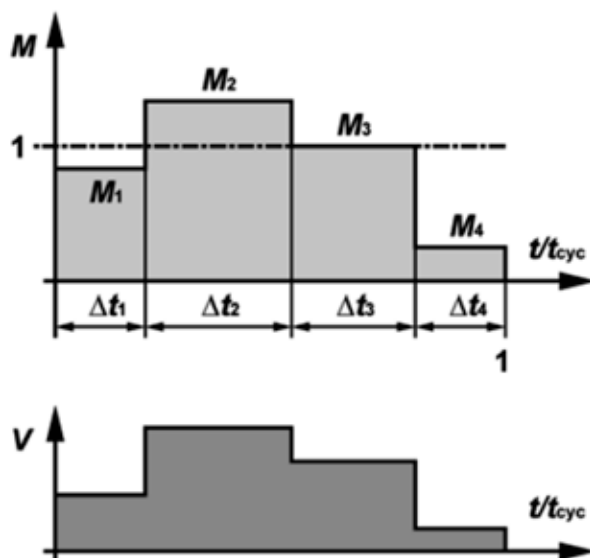


In S9 duty the load and the speed vary non-periodically within the permissible operating range. This includes frequently applied overloads, which must never exceed the reference load.

For this duty type, a constant load appropriately selected and based on duty type S1 shall be taken as the reference value M_{ref} for the overload.

Duty types as defined by EN 60034

Duty with discrete constant loads and speeds (S10)



S10 duty comprises operation with at most four different load levels, each of which is maintained long enough to allow the machine to reach thermal equilibrium.

The minimum load within a duty cycle may have a value of zero (no-load operation or at rest with the windings de-energised).

The appropriate abbreviation is S10 followed by the per unit quantities $p/\Delta t$ for the respective load and its duration and the per unit quantity TL for the relative thermal life expectancy of the insulation system. The reference value for the thermal life expectancy is the thermal life expectancy at rating for continuous running duty and permissible limits of temperature rise based on duty type S1. For a time de-energized and at rest, the load shall be indicated by the letter r .

Example: S10 $p/\Delta t = 1.1/0.4, 1/0.3, 0.9/0.2, r/0.1; TL = 0.6$

Geared motors for electric overhead conveyors series BM

Motors

50 Hz

Technical data 4-pole IE1 motors

4-pole IE1 motors for continuous operation S1, line frequency 50 Hz

For use after 16 June 2011 only in non-EU countries, except for brake motors

P _N	Type	n _N	M _N	I _N	Con- nec- tion	cos φ	η	η	η	I _A /I _N	M _A /M _N	M _S /M _N	M _K /M _N	J _{rot}	Brake
kW		1/min	Nm	400 V A			(100% - Last) %	(75% - Last) %	(50% - Last) %					kgm ²	
0,03	D04LA4	1350	0,21	0,20	Y	0,60	-	-	-	2,2	2,6	2,6	3,0	0,000175	E003
0,04	D04LA4	1350	0,28	0,20	Y	0,60	-	-	-	2,2	2,0	2,0	2,3	0,000175	
0,06	D04LA4	1350	0,42	0,30	Y	0,60	-	-	-	2,3	2,1	2,1	2,4	0,000175	
0,09	D04LA4	1350	0,63	0,45	Y	0,69	-	-	-	2,5	2,2	2,2	2,6	0,000175	
0,12	D04LA4	1350	0,84	0,46	Y	0,73	-	-	-	2,3	1,7	1,7	1,9	0,000175	
0,06	D05LA4	1350	0,42	0,35	Y	0,72	-	-	-	3,7	3,7	3,5	3,7	0,000295	E003
0,09	D05LA4	1350	0,63	0,38	Y	0,70	-	-	-	3,9	3,0	2,8	3,0	0,000295	
0,12	D05LA4	1350	0,85	0,42	Y	0,73	-	-	-	3,4	2,2	2,1	2,2	0,000295	
0,18	D05LA4	1350	1,28	0,63	Y	0,70	-	-	-	3,4	2,3	2,2	2,4	0,000295	
0,25	D05LA4	1350	1,75	0,88	Y	0,69	-	-	-	3,3	2,3	2,2	2,3	0,000295	
0,06	D06LA4	1350	0,42	0,35	Y	0,72	-	-	-	3,7	3,7	3,5	3,7	0,000295	E003
0,09	D06LA4	1350	0,63	0,38	Y	0,70	-	-	-	3,9	3,0	2,8	3,0	0,000295	
0,12	D06LA4	1350	0,85	0,42	Y	0,73	-	-	-	3,4	2,2	2,1	2,2	0,000295	
0,18	D06LA4	1350	1,28	0,63	Y	0,70	-	-	-	3,4	2,3	2,2	2,4	0,000295	
0,25	D06LA4	1350	1,76	0,89	Y	0,69	-	-	-	3,2	2,3	2,2	2,3	0,000295	
0,3	D07LA4	1350	2,1	1,30	Y	0,60	-	-	-	2,7	2,7	2,7	2,8	0,000385	E003
0,37	D07LA4	1350	2,6	1,35	Y	0,66	-	-	-	2,6	2,2	2,2	2,2	0,000385	E004
0,55	DSE08MA4	1400	3,75	1,45	Y	0,72	75,4	75,2	72,0	4,2	2,1	2,0	2,4	0,00115	ES(X)010 EH(X)027
0,75	DSE08LA4	1400	5,1	1,95	Y	0,76	75,6	76,2	72,7	4,6	2,0	2,0	2,4	0,00150	
1,1	DSE08XA4	1400	7,5	2,8	Y	0,75	75,5	76,8	73,5	3,7	2,0	1,8	2,2	0,00170	ES(X)010 ES(X)027 EH(X)040
1,1	DSE09SA4	1420	7,5	2,6	Y	0,76	80,0	80	77,5	4,9	2,5	2,2	2,8	0,00245	
1,5	DSE09LA4	1420	10,1	3,5	Y	0,76	80,7	80,9	79,5	5,0	2,5	2,3	2,9	0,00320	
2,2	DSE09XA4	1420	15	4,9	Y	0,81	80,5	81,1	80,4	4,5	2,3	2,2	2,6	0,00380	
3	DSE11SA4	1420	20	6,4	D	0,80	84,4	85,0	83,8	5,9	2,7	2,5	3,2	0,00810	ES(X)027
4	DSE11MA4	1420	27	8,4	D	0,83	84,0	84,9	84,2	5,5	2,8	2,4	3,0	0,01050	ES(X)040
5,5	DSE11LA4	1420	37	11,3	D	0,83	85,8	86,2	85,4	6,3	2,8	2,6	3,2	0,01400	ES(X)070 EH(X)125

P	Rated output at 50 HZ mains frequency
n	Typical rated rotor shaft speed with 50 Hz mains frequency
M _N	Rated torque at rotor shaft
I _N	Rated current at 400 V (for other special voltages, multiply by the inverse voltage ratio to convert the current at 400 V to the current at the desired voltage)
cos φ	Power factor
I _A /I _N	Relative starting current
M _A /M _N	Relative starting torque
M _S /M _N	Relative pull-up torque
M _K /M _N	Relative breakdown torque
J _{rot}	Rotor moment of inertia
η	Efficiency with different loads
Brake	See Section 16 for brake configuration.

The standard motor winding configuration is for 400 V / 50 Hz.

All motors designed for thermal class F are suitable for operation over the voltage range 380–420 V or 400 V +/- 10%.

Note: the current, power factor and torque vary depending on the deviation from 400 V.

See “www.bauergears.com” for more information.

Technical data 4-pole IE2 motors

4-pole motors for continuous operation S1, line frequency 50 Hz

P _N	Type	n _N	M _N	I _N	Con- nec- tion	cos φ	η	η	η	I _A /I _N	M _A /M _N	M _S /M _N	M _K /M _N	J _{rot}	Brake
kW		1/min	Nm	(400 V) A			(100% - Last) %	(75% - Last) %	(50% - Last) %					kgm ²	
0,03	D04LA4	1350	0,21	0,20	Y	0,60	-	-	-	2,2	2,6	2,6	3,0	0,000175	E003
0,04	D04LA4	1350	0,28	0,20	Y	0,60	-	-	-	2,2	2,0	2,0	2,3	0,000175	
0,06	D04LA4	1350	0,42	0,30	Y	0,60	-	-	-	2,3	2,1	2,1	2,4	0,000175	
0,09	D04LA4	1350	0,63	0,45	Y	0,69	-	-	-	2,5	2,2	2,2	2,6	0,000175	
0,12	D04LA4	1350	0,84	0,46	Y	0,73	-	-	-	2,3	1,7	1,7	1,9	0,000175	
0,06	D05LA4	1350	0,42	0,35	Y	0,72	-	-	-	3,7	3,7	3,5	3,7	0,000295	E003
0,09	D05LA4	1350	0,63	0,38	Y	0,70	-	-	-	3,9	3,0	2,8	3,0	0,000295	
0,12	D05LA4	1350	0,85	0,42	Y	0,73	-	-	-	3,4	2,2	2,1	2,2	0,000295	
0,18	D05LA4	1350	1,28	0,63	Y	0,70	-	-	-	3,4	2,3	2,2	2,4	0,000295	
0,25	D05LA4	1350	1,75	0,88	Y	0,69	-	-	-	3,3	2,3	2,2	2,3	0,000295	
0,06	D06LA4	1350	0,42	0,35	Y	0,72	-	-	-	3,7	3,7	3,5	3,7	0,000295	E003
0,09	D06LA4	1350	0,63	0,38	Y	0,70	-	-	-	3,9	3,0	2,8	3,0	0,000295	
0,12	D06LA4	1350	0,85	0,42	Y	0,73	-	-	-	3,4	2,2	2,1	2,2	0,000295	
0,18	D06LA4	1350	1,28	0,63	Y	0,70	-	-	-	3,4	2,3	2,2	2,4	0,000295	
0,25	D06LA4	1350	1,76	0,89	Y	0,69	-	-	-	3,2	2,3	2,2	2,3	0,000295	
0,3	D07LA4	1350	2,1	1,30	Y	0,60	-	-	-	2,7	2,7	2,7	2,8	0,000385	E003
0,37	D07LA4	1350	2,6	1,35	Y	0,66	-	-	-	2,6	2,2	2,2	2,2	0,000385	E004
0,37	DHE08MA4	1420	2,45	1,20	Y	0,60	76,2	76,0	74,2	5,4	3,2	3,0	3,6	0,00115	ES(X)010 EH(X)027
0,55	DHE08LA4	1420	3,7	1,36	Y	0,74	78,4	78,8	76,0	6,8	2,1	2,0	2,4	0,0015	
0,75	DHE08XA4	1420	5,0	1,88	Y	0,72	79,7	80,0	77,4	4,7	2,3	2,2	2,7	0,00170	
0,75	DHE09SA4	1440	5,0	1,8	Y	0,73	81,6	81,0	77,4	5,9	3,1	2,7	3,5	0,00245	ES(X)010 ES(X)027 EH(X)040
1,1	DHE09LA4	1440	7,3	2,5	Y	0,75	82,7	82,3	79,8	5,9	2,9	2,7	3,4	0,0032	
1,5	DHE09XA4	1440	10,0	3,3	Y	0,78	83,2	82,8	79,5	5,6	3,0	2,9	3,3	0,0038	
2,2	DHE09XA4C	1440	14,5	4,75	Y	0,79	84,5	85,0	83,5	5,2	1,8	1,7	2,7	0,0053	ES(X)027 ES(X)040 EH(X)070 EH(X)125
2,2	DHE11SA4	1440	14,5	4,6	Y	0,80	86,2	86,0	84,7	7,0	3,1	2,8	3,6	0,0081	
3	DHE11MA4	1440	20	6,3	D	0,80	86,5	86,5	84,7	6,7	3,4	2,8	3,7	0,0105	
4	DHE11LA4	1440	26,5	8,4	D	0,79	87,5	87,0	85,3	7,6	3,6	3,3	4,2	0,0140	ES(X)070 EH(X)125
5,5	DHE11LA4C	1460	36	11,0	D	0,82	87,8	88,2	86,5	6,7	2,1	1,6	3,4	0,0162	

P	Rated power at 50 Hz line frequency
n	Guideline value for rated speed at the rotor shaft at 50 Hz line frequency
M _N	Rated torque at the rotor shaft
I _N	Rated current at 400 V (the current can be converted as inverse ratios of voltages from 400 V to the desired special voltage)
cos φ	Power factor
I _A /I _N	Relative starting current
M _A /M _N	Relative breakaway torque
M _S /M _N	Relative pull-up torque
M _K /M _N	Relative breakdown torque
J _{rot}	Mass moment of inertia of the rotor
Brake	recommended standard brake for normal requirements (see chapter 16)

Winding configuration for standard motors for 400 V / 50 Hz.

All motors are suitable for the voltage range 380...420V or 400V +/- 10% if executed in insulation class F.

Important: Current, power factor and torque change as voltage deviates from 400 V.

See "www.bauergears.com" for more information.

Geared motors for electric overhead conveyors series BM Motors

50 Hz

Technical data 4-pole IE3 motors

4-pole motors for intermittent periodic duty S3/S6, line frequency 50 Hz

P _N	Type	n _N	M _N	I _N	Con- tec- tion	cos φ	η	η	η	I _A /I _N	M _A /M _N	M _S /M _N	M _K /M _N	J _{rot}
kW		1/min	Nm	400 V A			(100% - Last) %	(75% - Last) %	(50% - Last) %					kgm ²
0,75	DPE09LA4	1440	4,9	1,68	Y	0,76	84,0	83,2	79,9	6,6	3,3	2,7	3,7	0,0032
1,1	DPE09XA4	1440	7,25	2,45	Y	0,76	85,0	84,1	81,2	7,1	3,6	3,2	4,0	0,0038
1,5	DPE09XA4C	1460	9,8	3,25	Y	0,78	85,3	85,5	83,0	6	2,1	2	3,1	0,0053
1,5	DPE11SA4	1460	9,8	3,20	Y	0,79	86,8	86,0	83,0	8,2	3,5	3,0	4,3	0,0081
2,2	DPE11MA4	1450	14,5	4,50	Y	0,81	87,0	86,5	84,6	7,8	3,7	3,0	4,0	0,0105
3,0	DPE11LA4	1450	19,7	6,05	D	0,81	88,2	88,1	86,2	8,3	3,6	3	4,2	0,0140
4,0	DPE11LA4C	1470	26	8,3	D	0,78	88,8	88,5	86,5	7,5	2,2	2	4	0,0162

P	Rated power at 50 Hz line frequency, duty type S3/S6
n	Guideline value for rated speed at the rotor shaft at 50 Hz line frequency
M _N	Rated torque at the rotor shaft
I _N	Rated current at 400 V (the current can be converted as inverse ratios of voltages from 400 V to the desired special voltage)
cos φ	Power factor
I _A /I _N	Relative starting current
M _A /M _N	Relative breakaway torque
M _S /M _N	Relative pull-up torque
M _K /M _N	Relative breakdown torque
J _{rot}	Mass moment of inertia of the rotor
Brake	recommended standard brake for normal requirements (see chapter 16)

Winding configuration for standard motors for 400 V / 50 Hz.

See "www.bauergears.com" for more information.

Geared motors for electric overhead conveyors series BM

Motors

50 Hz

Technical data 4-pole S3/S6

4 pole motors for periodic duty S3/S6-75%, Mains Frequency 50 Hz

P _N	Type	n _N	M _N	I _N	Conne- ction	cos φ	I _A /I _N	M _A /M _N	M _S /M _N	M _K /M _N	J _{rot}	Brake
kW		1/min	Nm	400V A							kgm ²	
0,03	D04LA4	1350	0,21	0,20	Y	0,60	2,2	2,6	2,6	3,0	0,000175	E003
0,04	D04LA4	1350	0,28	0,20	Y	0,60	2,2	2,0	2,0	2,3	0,000175	
0,06	D04LA4	1350	0,42	0,30	Y	0,60	2,3	2,1	2,1	2,4	0,000175	
0,09	D04LA4	1350	0,63	0,45	Y	0,69	2,5	2,2	2,2	2,6	0,000175	
0,12	D04LA4	1350	0,84	0,46	Y	0,73	2,3	1,7	1,7	1,9	0,000175	
0,06	D05LA4	1350	0,42	0,35	Y	0,72	3,7	3,7	3,5	3,7	0,000295	E003
0,09	D05LA4	1350	0,63	0,38	Y	0,70	3,9	3,0	2,8	3,0	0,000295	
0,12	D05LA4	1350	0,85	0,42	Y	0,73	3,4	2,2	2,1	2,2	0,000295	
0,18	D05LA4	1350	1,28	0,63	Y	0,70	3,4	2,3	2,2	2,4	0,000295	
0,25	D05LA4	1350	1,75	0,88	Y	0,69	3,3	2,3	2,2	2,3	0,000295	
0,06	D06LA4	1350	0,42	0,35	Y	0,72	3,7	3,7	3,5	3,7	0,000295	E003
0,09	D06LA4	1350	0,63	0,38	Y	0,70	3,9	3,0	2,8	3,0	0,000295	
0,12	D06LA4	1350	0,85	0,42	Y	0,73	3,4	2,2	2,1	2,2	0,000295	
0,18	D06LA4	1350	1,28	0,63	Y	0,70	3,4	2,3	2,2	2,4	0,000295	
0,25	D06LA4	1350	1,76	0,89	Y	0,69	3,2	2,3	2,2	2,3	0,000295	
0,3	D07LA4	1350	2,1	1,30	Y	0,60	2,7	2,7	2,7	2,8	0,000385	E003
0,37	D07LA4	1350	2,6	1,35	Y	0,66	2,6	2,2	2,2	2,2	0,000385	E004
0,55	DSE08MA4	1400	3,75	1,45	Y	0,72	4,2	2,1	2,0	2,4	0,00115	ES(X)010 EH(X)027
0,75	DSE08LA4	1400	5,1	1,95	Y	0,76	4,6	2,0	2,0	2,4	0,00150	
1,1	DSE08XA4	1400	7,5	2,8	Y	0,75	3,7	2,0	1,8	2,2	0,00170	
1,1	DSE09SA4	1420	7,5	2,6	Y	0,76	4,9	2,5	2,2	2,8	0,00245	ES(X)010
1,5	DSE09LA4	1420	10,1	3,5	Y	0,76	5,0	2,5	2,3	2,9	0,00320	ES(X)027
2,2	DSE09XA4	1420	15	4,9	Y	0,81	4,5	2,3	2,2	2,6	0,00380	EH(X)040
3	DSE11SA4	1420	20	6,4	D	0,80	5,9	2,7	2,5	3,2	0,00810	ES(X)027
4	DSE11MA4	1420	27	8,4	D	0,83	5,5	2,8	2,4	3,0	0,01050	ES(X)040
5,5	DSE11LA4	1420	37	11,3	D	0,83	6,3	2,8	2,6	3,2	0,01400	ES(X)070 EH(X)125

P	Rated outputs at 50 Hz line frequency
n	Guideline values for rated speeds at the rotor shaft at 50 Hz line frequency
M _N	Rated torques at the rotor shaft
I _N	Rated currents 400 V Δ/YY (currents can be converted as inverse ratios of voltages from 400 V to the desired special voltage)
cos φ	Power factors
I _A /I _N	Relative starting currents
M _A /M _N	Relative breakaway torques
M _S /M _N	Relative pull-up torques
M _K /M _N	Relative breakdown torques
J _{rot}	Mass moment of inertia of the rotor
Brake	Delection of the brake, see chapter 16

Standard motor winding design for 400V / 50 Hz

Geared motors for electric overhead conveyors series BM Motors

50 Hz

Technical data 4-pole S3/S6

4-pole motors for intermittent periodic duty (S3/S6) and 50 Hz mains frequency

P	ED	Type	n	M _N	I _N (400 V)	Connec- tion	cos φ	I _A /I _N	M _A /M _N	M _S /M _N	M _K /M _N	J _{rot}
kW			1/min	Nm	A							kgm ²
0,15	15%	D04LA4	1350	1,05	0,60	Y	0,77	2,0	1,6	1,5	1,6	0,000175
0,3	15%	D05LA4	1350	2,1	0,98	Y	0,75	2,6	1,9	1,8	1,9	0,000295
0,3	60%	D06LA4	1350	2,1	0,98	Y	0,75	2,6	1,9	1,8	1,9	0,000295
0,55	60%	D07LA4	1350	3,9	1,95	Y	0,86	3,4	1,6	1,5	1,6	0,000385
0,75	60%	D08MA4	1400	5,1	2,0	Y	0,81	3,4	1,6	1,4	1,7	0,00115
1,1	60%	D08LA4	1400	7,5	2,8	Y	0,82	3,3	1,5	1,4	1,7	0,0015
1,5	60%	D09SA4	1400	10,2	3,6	Y	0,84	3,9	1,7	1,5	2,0	0,00245
2,2	60%	D09LA4	1400	15	5,0	Y	0,86	3,9	1,6	1,5	1,9	0,0032
3,0	60%	D09XA4	1400	20	6,8	Y	0,86	3,4	1,7	1,6	1,9	0,0038
4,0	60%	D11SA4	1420	26,5	8,9	Δ	0,85	4,0	1,6	1,4	2,0	0,0081
5,5	60%	D11MA4	1420	37	11,7	Δ	0,87	4,3	1,5	1,5	2,0	0,0105
7,5	60%	D11LA4	1420	50	16	Δ	0,87	4,3	1,8	1,7	2,1	0,014

P Rated output at 50 Hz mains frequency, S3/S6 duty

DC Permissible duty cycle

n Typical rated rotor shaft speed at 50 Hz

M_N Mains frequency

M_N Rated shaft torque

I_N Rated current at 400 V (for other special voltages, multiply by the inverse voltage ratio to convert the current at 400 V to the current at the desired voltage)

cos φ Power factor

I_A/I_N Relative starting current

M_A/M_N Relative starting torque

M_S/M_N Relative pull-up torque

M_K/M_N Relative breakdown torque

J_{rot} Rotor moment of inertia

The standard motor winding configuration is for 400 V / 50 Hz.

See "www.bauergears.com" for more information.

Geared motors for electric overhead conveyors series BM

Motors

50 Hz

Technical data 4/2-pole S1

4/2-pole Δ /YY motors for continuous running duty (S1) and 50 Hz mains frequency

P kW	Type	n 1/min	M _N Nm	I _N (400 V) A	cos φ	I _A /I _N	M _A /M _N	M _S /M _N	M _K /M _N	J _{rot} kgm ²
0,03 / 0,06	D04LA42	1350 / 2700	0,210 / 0,210	0,230 / 0,250	0,56 / 0,67	2,2 / 3,1	3,4 / 3,1	3,4 / 3,1	3,6 / 3,3	0,000175
0,04 / 0,08	D04LA42	1350 / 2700	0,280 / 0,280	0,250 / 0,280	0,60 / 0,75	2,0 / 2,8	3,0 / 2,1	3,0 / 2,1	3,3 / 2,2	0,000175
0,06 / 0,12	D05LA42	1350 / 2700	0,420 / 0,420	0,450 / 0,450	0,50 / 0,75	2,8 / 3,3	3,1 / 2,0	3,0 / 1,9	3,8 / 2,6	0,000295
0,08 / 0,16	D05LA42	1350 / 2700	0,56 / 0,56	0,50 / 0,50	0,55 / 0,75	2,8 / 3,3	3,1 / 1,8	2,7 / 1,7	3,4 / 2,3	0,000295
0,06 / 0,12	D06LA42	1350 / 2700	0,420 / 0,420	0,450 / 0,450	0,50 / 0,75	2,8 / 3,3	3,1 / 2,0	3,0 / 1,9	3,8 / 2,6	0,000295
0,08 / 0,16	D06LA42	1350 / 2700	0,56 / 0,56	0,50 / 0,50	0,55 / 0,75	2,8 / 3,3	2,8 / 1,8	2,7 / 1,7	3,4 / 2,3	0,000295
0,11 / 0,22	D06LA42	1350 / 2700	0,77 / 0,77	0,68 / 0,68	0,55 / 0,75	2,8 / 3,3	2,8 / 1,8	2,7 / 1,7	3,4 / 2,3	0,000295
0,16 / 0,32	D06LA42	1350 / 2700	1,13 / 1,13	0,90 / 0,90	0,57 / 0,80	2,8 / 3,3	2,6 / 1,7	2,5 / 1,6	3,1 / 2,1	0,000295
0,2 / 0,4	D07LA42	1400 / 2800	1,35 / 1,37	1,10 / 1,15	0,58 / 0,81	2,9 / 3,6	2,8 / 1,6	2,7 / 1,4	3,0 / 2,0	0,000385
0,28 / 0,56	D08MA42	1400 / 2800	1,90 / 1,90	1,20 / 1,75	0,61 / 0,81	3,4 / 2,9	2,3 / 1,5	2,3 / 1,4	3,0 / 1,9	0,00115
0,4 / 0,8	D08LA42	1400 / 2800	2,7 / 2,7	1,53 / 1,91	0,62 / 0,90	4,7 / 5,1	2,7 / 1,8	2,4 / 1,7	3,1 / 2,1	0,0015
0,5 / 1,0	D09SA42	1400 / 2800	3,4 / 3,4	1,65 / 2,4	0,71 / 0,91	5,1 / 4,5	2,9 / 1,9	2,9 / 1,9	3,6 / 2,4	0,00245
0,7 / 1,4	D09SA42	1400 / 2800	4,8 / 4,8	2,1 / 3,3	0,71 / 0,93	4,7 / 4,1	2,5 / 1,6	2,5 / 1,6	3,1 / 2,0	0,00245
1,0 / 2,0	D09LA42	1400 / 2800	6,8 / 6,8	2,9 / 4,7	0,72 / 0,94	4,7 / 4,1	2,5 / 1,6	2,5 / 1,6	3,1 / 2,0	0,0032
1,2 / 2,4	D09XA42	1400 / 2800	8,2 / 8,1	3,8 / 5,7	0,65 / 0,87	6,2 / 3,0	2,5 / 1,8	2,5 / 1,8	3,1 / 2,3	0,0038
1,4 / 2,8	D11SA42	1420 / 2840	9,4 / 9,4	3,6 / 6,2	0,74 / 0,90	6,4 / 4,5	3,0 / 1,7	2,6 / 1,5	4,1 / 2,8	0,0081
2,0 / 4,0	D11MA42	1420 / 2840	13,5 / 13,4	5,5 / 9,1	0,70 / 0,90	6,7 / 5,4	3,1 / 2,1	2,7 / 1,6	3,7 / 2,5	0,0105
2,5 / 5,0	D11LA42	1420 / 2840	16,8 / 16,8	5,5 / 10	0,79 / 0,92	5,6 / 4,6	2,8 / 1,8	2,7 / 1,7	3,7 / 2,6	0,014

P	Rated output at 50 Hz mains frequency
n	Typical rated rotor shaft speed at 50 Hz
	Mains frequency
M _N	Rated torque at rotor shaft
I _N	Rated current at 400 V Δ /YY (for other special voltages, multiply by the inverse voltage ratio to convert the current at 400 V to the current at the desired voltage)
cos φ	Power factor
I _A /I _N	Relative starting current
M _A /M _N	Relative starting torque
M _S /M _N	Relative pull-up torque
M _K /M _N	Relative breakdown torque
J _{rot}	Rotor moment of inertia

11

Geared motors for electric overhead conveyors series BM

Motors

50 Hz

Technical data 8/4-pole S1

8/4-pole Δ /YY motors for continuous running duty (S1) and 50 Hz mains frequency

P kW	Type	n 1/min	M _N Nm	I _N (400 V) A	cos φ	I _A /I _N	M _A /M _N	M _S /M _N	M _K /M _N	J _{rot} kgm ²
0,03 / 0,06	D05LA84	680 / 1350	0,410 / 0,420	0,300 / 0,280	0,52 / 0,71	1,6 / 2,6	2,7 / 1,9	1,6 / 1,7	1,6 / 1,7	0,000295
0,03 / 0,06	D06LA84	680 / 1350	0,410 / 0,420	0,300 / 0,280	0,52 / 0,71	1,6 / 2,6	2,7 / 1,9	1,6 / 1,7	1,6 / 1,7	0,000295
0,04 / 0,08	D06LA84	680 / 1350	0,54 / 0,56	0,480 / 0,400	0,52 / 0,66	1,4 / 2,2	2,6 / 2,1	1,6 / 1,7	1,6 / 1,7	0,000295
0,06 / 0,12	D07LA84	680 / 1350	0,84 / 0,85	0,70 / 0,60	0,52 / 0,66	1,7 / 2,8	3,2 / 1,7	3,2 / 1,5	3,3 / 2,1	0,000385
0,06 / 0,12	D08LA84	700 / 1400	0,81 / 0,81	0,50 / 0,50	0,61 / 0,83	2,8 / 3,7	3,1 / 2,3	3,1 / 2,3	3,7 / 3,1	0,0025
0,08 / 0,16	D08LA84	700 / 1400	1,08 / 1,09	0,62 / 0,62	0,61 / 0,83	2,8 / 3,7	3,0 / 2,2	3,0 / 2,2	3,5 / 3,0	0,0025
0,11 / 0,22	D08LA84	700 / 1400	1,49 / 1,5	0,80 / 0,80	0,61 / 0,83	2,8 / 3,7	2,8 / 2,1	2,8 / 2,1	3,3 / 2,8	0,0025
0,14 / 0,28	D08LA84	700 / 1400	1,90 / 1,91	1,00 / 1,00	0,61 / 0,83	2,8 / 3,7	2,8 / 2,1	2,8 / 2,1	3,3 / 2,8	0,0025
0,2 / 0,4	D08LA84	700 / 1400	2,7 / 2,7	1,10 / 1,30	0,55 / 0,77	2,8 / 3,7	2,3 / 1,7	2,3 / 1,7	2,7 / 2,3	0,0025
0,25 / 0,5	D09XC84	700 / 1400	3,3 / 3,3	1,40 / 1,40	0,48 / 0,77	2,9 / 5,0	2,7 / 2,0	2,7 / 2,1	3,1 / 2,7	0,006
0,28 / 0,56	D09XC84	700 / 1400	3,8 / 3,8	1,40 / 1,50	0,57 / 0,80	2,9 / 4,9	2,4 / 1,8	2,4 / 1,9	2,8 / 2,4	0,006
0,4 / 0,8	D09XC84	700 / 1400	5,4 / 5,4	1,95 / 2,4	0,55 / 0,79	2,8 / 4,2	2,3 / 1,7	2,3 / 1,8	2,7 / 2,3	0,006
0,5 / 1,0	D09XC84	700 / 1400	6,8 / 6,8	2,4 / 2,6	0,55 / 0,81	2,6 / 4,0	2,2 / 1,6	2,2 / 1,6	2,5 / 2,2	0,006
0,8 / 1,6	D11LC84	710 / 1420	10,7 / 10,7	3,0 / 4,2	0,63 / 0,88	3,5 / 4,3	2,2 / 1,9	2,2 / 1,7	2,8 / 2,7	0,0215
1,1 / 2,2	D11LC84	710 / 1420	14,7 / 14,7	4,0 / 5,0	0,58 / 0,85	3,9 / 5,7	2,3 / 2,1	2,3 / 1,7	2,7 / 2,5	0,0215
1,6 / 3,2	D11LC84	710 / 1420	21,5 / 21,5	6,0 / 7,6	0,59 / 0,84	3,7 / 5,1	2,2 / 1,8	2,1 / 1,5	2,6 / 2,3	0,0215

P	Rated output at 50 Hz mains frequency
n	Typical rated rotor shaft speed at 50 Hz Mains frequency
M _N	Rated torque at rotor shaft
I _N	Rated current at 400 V Δ /YY (for other special voltages, multiply by the inverse voltage ratio to convert the current at 400 V to the current at the desired voltage)
cos φ	Power factor
I _A /I _N	Relative starting current
M _A /M _N	Relative starting torque
M _A /M _N	Relative pull-up torque
M _K /M _N	Relative breakdown torque
J _{rot}	Rotor moment of inertia

Geared motors for electric overhead conveyors series BM

Motors

50 Hz

Technical data 8/2-pole S3

8/2-pole Y/Y motors for intermittent periodic duty S3 25/75% and 50 Hz mains frequency

P kW	ED	Type	n 1/min	M _N Nm	I _N (400 V) A	cos φ	I _A /I _N	M _A /M _N	M _S /M _N	M _K /M _N	J _{rot} kgm ²
0,04 / 0,16	25/75%	D05LA82	680 / 2700	0,56 / 0,56	0,400 / 0,80	0,63 / 0,75	1,6 / 3,2	1,9 / 2,2	1,9 / 2,1	2,0 / 2,3	0,000295
0,05 / 0,20	25/75%	D06LA82	680 / 2700	0,70 / 0,70	0,51 / 1,02	0,63 / 0,75	1,4 / 2,8	1,7 / 2,0	1,7 / 1,9	1,8 / 2,1	0,000295
0,063 / 0,25	25/75%	D07LA82	650 / 2840	0,87 / 0,87	0,60 / 1,20	0,69 / 0,62	1,4 / 2,6	1,6 / 1,4	1,6 / 1,4	1,8 / 2,7	0,000385
0,071 / 0,28	25/75%	D07LA82	650 / 2840	0,99 / 0,98	0,65 / 1,40	0,69 / 0,68	1,4 / 2,6	1,5 / 1,3	1,5 / 1,3	1,7 / 2,6	0,000385
0,063 / 0,25	25/75%	D08LA82	700 / 2800	0,85 / 0,85	0,55 / 0,70	0,55 / 0,87	2,8 / 4,0	2,4 / 2,6	2,4 / 2,5	2,8 / 3,0	0,0015
0,09 / 0,36	25/75%	D08LA82	700 / 2800	1,22 / 1,22	0,70 / 1,05	0,60 / 0,92	2,9 / 4,5	2,0 / 2,6	2,0 / 2,5	2,4 / 2,9	0,0015
0,12 / 0,5	25/75%	D08LA82	700 / 2800	1,70 / 1,70	0,95 / 1,43	0,60 / 0,92	2,9 / 4,5	2,0 / 2,6	2,0 / 2,5	2,4 / 2,9	0,0015
0,16 / 0,63	25/75%	D08LA82	700 / 2800	2,1 / 2,1	1,20 / 1,45	0,63 / 0,90	2,0 / 4,6	1,8 / 2,1	1,8 / 2,0	2,2 / 2,4	0,0015
0,25 / 1,0	25/75%	D09XA82	700 / 2800	3,4 / 3,4	1,30 / 2,3	0,62 / 0,90	2,2 / 5,2	1,9 / 2,3	1,9 / 2,3	2,0 / 2,6	0,0038
0,36 / 1,4	25/75%	D09XA82	700 / 2800	4,9 / 4,8	2,1 / 3,3	0,57 / 0,87	2,0 / 4,5	1,9 / 2,1	1,9 / 2,1	2,0 / 2,4	0,0038
0,45 / 1,8	25/75%	D09XA82	700 / 2800	6,1 / 6,1	2,4 / 4,3	0,65 / 0,89	2,0 / 4,3	1,7 / 2,0	1,7 / 2,0	2,0 / 2,5	0,0038
0,56 / 2,2	25/75%	D11LA82	710 / 2840	7,5 / 7,3	2,3 / 4,7	0,60 / 0,94	3,2 / 4,9	1,9 / 2,9	1,9 / 2,4	2,2 / 2,9	0,014
0,71 / 2,8	25/75%	D11LA82	710 / 2840	9,5 / 9,4	2,8 / 5,6	0,58 / 0,94	2,5 / 4,7	1,9 / 2,3	1,9 / 2,0	2,1 / 2,4	0,014
0,90 / 3,6	25/75%	D11LA82	710 / 2840	12,1 / 12,1	3,5 / 7,9	0,58 / 0,94	2,5 / 4,5	1,8 / 2,0	1,8 / 1,8	2,0 / 2,1	0,014

P	Rated output at 50 Hz mains frequency and S3 25/75% duty
n	Typical rated rotor shaft speed at 50 Hz Mains frequency
M _N	Rated torque at rotor shaft
I _N	Rated current at 400 V Y/Y (for other special voltages, multiply by the inverse voltage ratio to convert the current at 460 V to the current at the desired voltage)
cos φ	Power factor
I _A /I _N	Relative starting current
M _A /M _N	Relative starting torque
M _S /M _N	Relative pull-up torque
M _K /M _N	Relative breakdown torque
J _{rot}	Rotor moment of inertia

Geared motors for electric overhead conveyors series BM

Motors

50 Hz

Technical data 12/2-pole S3

12/2 pole motors Y/Y for periodic duty S3-25/75%, Mains Frequency 50 Hz

P kW	ED	Type	n 1/min	M _N Nm	I _N (400 V) A	cos φ	I _A /I _N	M _A /M _N	M _S /M _N	M _K /M _N	J _{rot} kgm ²
0,045 / 0,28	25/75%	D08LA122	470 / 2800	0,92 / 0,95	0,55 / 0,86	0,70 / 0,90	1,4 / 4,5	1,9 / 2,4	1,9 / 2,4	1,9 / 2,7	0,0015
0,063 / 0,4	25/75%	D08LA122	470 / 2800	1,29 / 1,36	0,66 / 1,10	0,70 / 0,90	1,4 / 4,5	1,7 / 2,2	1,7 / 2,2	1,7 / 2,4	0,0015
0,09 / 0,56	25/75%	D08LA122	470 / 2800	1,85 / 1,91	1,00 / 1,45	0,63 / 0,89	1,4 / 4,1	1,7 / 2,1	1,7 / 2,3	1,8 / 2,4	0,0015
0,11 / 0,71	25/75%	D09XA122	470 / 2800	2,3 / 2,4	1,05 / 1,60	0,59 / 0,88	1,5 / 5,5	1,7 / 2,7	1,7 / 2,6	1,8 / 3,3	0,0038
0,16 / 1,0	25/75%	D09XA122	470 / 2800	3,2 / 3,4	1,70 / 2,4	0,62 / 0,89	1,5 / 5,5	1,8 / 2,6	1,8 / 2,5	1,8 / 3,3	0,0038
0,20 / 1,25	25/75%	D09XA122	470 / 2800	4,1 / 4,2	2,0 / 3,0	0,62 / 0,89	1,5 / 5,0	1,7 / 2,4	1,7 / 2,3	1,7 / 3,1	0,0038
0,25 / 1,6	25/75%	D11LA122	470 / 2840	5,1 / 5,3	2,3 / 3,4	0,53 / 0,95	1,6 / 4,9	1,7 / 2,6	1,7 / 2,4	2,0 / 2,8	0,014
0,32 / 2,0	25/75%	D11LA122	470 / 2840	6,5 / 6,7	2,9 / 4,0	0,53 / 0,94	1,6 / 4,7	1,7 / 2,5	1,7 / 2,2	2,0 / 2,7	0,014
0,45 / 2,8	25/75%	D11LA122	470 / 2840	9,2 / 9,4	4,5 / 5,6	0,52 / 0,94	1,6 / 4,7	1,5 / 2,3	1,5 / 2,0	1,8 / 2,4	0,014

P	Nominal Powers for 50 Hz mains frequency, Duty S3-25/75%
n	Guideline values for rated speeds at the rotor shaft at 50 Hz line frequency
M _N	Rated torques at the rotor shaft
I _N	Rated currents 400 V Δ/YY (currents can be converted as inverse ratios of voltages from 400 V to the desired special voltage)
cos φ	Power factors
I _A /I _N	Relative starting currents
M _A /M _N	Relative breakaway torques
M _S /M _N	Relative pull-up torques
M _K /M _N	Relative breakdown torques
J _{rot}	Mass moment of inertia of the rotor

Geared motors for electric overhead conveyors series BM

Motors

60 Hz

Technical data 4-pole IE1 motors

4-pole IE1 motors for continuous running duty S1 and 60 Hz mains frequency

For use after 16 June 2011 only in non-EU countries, except for brake motors

P _N	Type	n _N	M _N	I _N	Con- nec- tion	cos φ	η	η	η	I _A /I _N	M _A /M _N	M _S /M _N	M _K /M _N	J _{rot}	Brake
kW		1/min	Nm	460 V A			(100% - Last) %	(75% - Last) %	(50% - Last) %					kgm ²	
0,03	D04LA4	1620	0,17	0,18	Y	0,60	-	-	-	2,4	2,9	2,9	3,3	0,000175	E003
0,04	D04LA4	1620	0,23	0,18	Y	0,60	-	-	-	2,4	2,2	2,2	2,5	0,000175	
0,06	D04LA4	1620	0,35	0,28	Y	0,60	-	-	-	2,5	2,3	2,3	2,7	0,000175	
0,09	D04LA4	1620	0,52	0,40	Y	0,69	-	-	-	2,7	2,4	2,4	2,9	0,000175	
0,12	D04LA4	1620	0,7	0,42	Y	0,73	-	-	-	2,5	1,9	1,9	2,1	0,000175	
0,06	D05LA4	1620	0,35	0,32	Y	0,72	-	-	-	4,1	4,1	3,8	4,1	0,000295	E003
0,09	D05LA4	1620	0,52	0,35	Y	0,70	-	-	-	4,3	3,3	3,1	3,3	0,000295	
0,12	D05LA4	1620	0,7	0,38	Y	0,73	-	-	-	3,7	2,4	2,3	2,4	0,000295	
0,18	D05LA4	1620	1,06	0,58	Y	0,70	-	-	-	3,7	2,5	2,4	2,6	0,000295	
0,25	D05LA4	1620	1,45	0,80	Y	0,69	-	-	-	3,6	2,5	2,4	2,5	0,000295	
0,06	D06LA4	1620	0,35	0,32	Y	0,72	-	-	-	4,1	4,1	3,8	4,1	0,000295	E003
0,09	D06LA4	1620	0,52	0,35	Y	0,70	-	-	-	4,3	3,3	3,1	3,3	0,000295	
0,12	D06LA4	1620	0,7	0,38	Y	0,73	-	-	-	3,7	2,4	2,3	2,4	0,000295	
0,18	D06LA4	1620	1,06	0,58	Y	0,70	-	-	-	3,7	2,5	2,4	2,6	0,000295	
0,25	D06LA4	1620	1,45	0,80	Y	0,69	-	-	-	3,6	2,5	2,4	2,5	0,000295	
0,3	D07LA4	1620	1,76	1,20	Y	0,60	-	-	-	3,0	3,0	3,0	3,1	0,000385	E003
0,37	D07LA4	1620	2,1	1,26	Y	0,66	-	-	-	2,8	2,4	2,4	2,4	0,000385	E004
0,55	DSE08MA4	1720	3,1	1,28	Y	0,72	75,4	75,2	73,0	4,6	2,3	2,2	2,7	0,00115	ES(X)010 EH(X)027
0,75	DSE08LA4	1720	4,15	1,75	Y	0,69	78,2	77,0	72,7	4,8	2,5	2,4	2,9	0,00150	
1,1	DSE08XA4	1720	6,2	2,4	Y	0,71	79,0	77,0	73,0	4,1	2,2	2,0	2,4	0,00170	
1,1	DSE09SA4	1740	6,05	2,3	Y	0,72	83,6	82,6	79,2	6,5	3,6	3,3	4,0	0,00245	ES(X)010 ES(X)027 EH(X)040
1,5	DSE09LA4	1740	8,25	3,1	Y	0,72	84,2	83,5	80,4	6,5	3,4	3,1	4,0	0,00320	
2,2	DSE09XA4	1720	12,2	4,3	Y	0,76	84,9	85,0	83,0	6,2	3,3	3,0	3,6	0,00380	
3	DSE11SA4	1740	16,4	5,5	D	0,78	86,7	86,6	84,4	6,9	3,0	2,7	3,8	0,00810	ES(X)027 ES(X)040 ES(X)070 EH(X)125
4	DSE11MA4	1740	21,9	7,2	D	0,81	86,2	86,4	84,9	6,9	3,3	2,7	3,7	0,01050	
5,5	DSE11LA4	1740	30,2	9,7	D	0,81	87,7	87,8	86	7,6	3,3	2,9	4,0	0,01400	

P	Rated torque at 60 Hz mains frequency
n	Typical rated rotor shaft speed at 60 Hz
	Mains frequency
M _N	Rated torque at rotor shaft
I _N	Rated current at 460 V (for other special voltages, multiply by the inverse voltage ratio to convert the current at 460 V to the current at the desired voltage)
cos φ	Power factor
I _A /I _N	Relative starting current
M _A /M _N	Relative starting torque
M _S /M _N	Relative pull-up torque
M _K /M _N	Relative breakdown torque
J _{rot}	Rotor moment of inertia
η	Efficiency with different loads
Brake	Brake configuration (see Section 16)

The standard motor winding configuration is for 460 V / 60 Hz.

All motors designed for thermal class F are suitable for operation over the voltage range 440–480 V or 460 V +/- 10%.

Note: the current, power factor and torque vary depending on the deviation from 460 V.

See “www.bauergears.com” for more information.

Geared motors for electric overhead conveyors series BM

Motors

60 Hz

Technical data 4-pole IE2 motors

4-pole motors for continuous operation S1, line frequency 60 Hz

P _N	Type	n _N	M _N	I _N	Con- nec- tion	cos φ	η	η	η	I _A /I _N	M _A /M _N	M _S /M _N	M _K /M _N	J _{rot}	Brake
kW		1/min	Nm	460 V A			(100% - Last) %	(75% - Last) %	(50% - Last) %					kgm ²	
0,03	D04LA4	1620	0,17	0,18	Y	0,60	-	-	-	2,4	2,9	2,9	3,3	0,000175	E003
0,04	D04LA4	1620	0,23	0,18	Y	0,60	-	-	-	2,4	2,2	2,2	2,5	0,000175	
0,06	D04LA4	1620	0,35	0,28	Y	0,60	-	-	-	2,5	2,3	2,3	2,7	0,000175	
0,09	D04LA4	1620	0,52	0,40	Y	0,69	-	-	-	2,7	2,4	2,4	2,9	0,000175	
0,12	D04LA4	1620	0,7	0,42	Y	0,73	-	-	-	2,5	1,9	1,9	2,1	0,000175	
0,06	D05LA4	1620	0,35	0,32	Y	0,72	-	-	-	4,1	4,1	3,8	4,1	0,000295	E003
0,09	D05LA4	1620	0,52	0,35	Y	0,70	-	-	-	4,3	3,3	3,1	3,3	0,000295	
0,12	D05LA4	1620	0,7	0,38	Y	0,73	-	-	-	3,7	2,4	2,3	2,4	0,000295	
0,18	D05LA4	1620	1,06	0,58	Y	0,70	-	-	-	3,7	2,5	2,4	2,6	0,000295	
0,25	D05LA4	1620	1,45	0,80	Y	0,69	-	-	-	3,6	2,5	2,4	2,5	0,000295	
0,06	D06LA4	1620	0,35	0,32	Y	0,72	-	-	-	4,1	4,1	3,8	4,1	0,000295	E003
0,09	D06LA4	1620	0,52	0,35	Y	0,70	-	-	-	4,3	3,3	3,1	3,3	0,000295	
0,12	D06LA4	1620	0,7	0,38	Y	0,73	-	-	-	3,7	2,4	2,3	2,4	0,000295	
0,18	D06LA4	1620	1,06	0,58	Y	0,70	-	-	-	3,7	2,5	2,4	2,6	0,000295	
0,25	D06LA4	1620	1,45	0,80	Y	0,69	-	-	-	3,6	2,5	2,4	2,5	0,000295	
0,3	D07LA4	1620	1,76	1,20	Y	0,60	-	-	-	3,0	3,0	3,0	3,1	0,000385	E003
0,37	D07LA4	1620	2,1	1,26	Y	0,66	-	-	-	2,8	2,4	2,4	2,4	0,000385	E004
0,75	DHE08XA4	1720	4,1	1,60	Y	0,72	82,5	81,0	78,0	5,1	2,5	2,4	3,0	0,0017	ES(X)010 EH(X)027
0,75	DHE09SA4	1740	4,1	1,60	Y	0,70	83,7	82,4	78,3	7,3	3,4	3,0	4,0	0,00245	ES(X)010 ES(X)027 EH(X)040
1,1	DHE09LA4	1740	6,0	2,25	Y	0,73	84,8	83,8	80,4	7,3	3,6	3,3	4,3	0,0032	
1,5	DHE09XA4	1740	8,2	2,95	Y	0,74	85,8	85,2	82,5	7,2	3,7	3,5	4,3	0,0038	
2,2	DHE09XA4C	1760	12	4,0	Y	0,79	87,5	87,5	86,0	6,0	2,1	2,0	3,1	0,0053	
2,2	DHE11SA4	1760	12	4,0	Y	0,78	87,7	87,2	84,1	8,3	3,5	3,1	4,3	0,0081	
3	DHE11MA4	1760	16,5	5,5	D	0,78	87,6	87,2	83,9	7,9	3,9	3,1	4,4	0,0105	ES(X)027 ES(X)040
4	DHE11LA4	1760	21,5	7,3	D	0,77	88,3	87,5	84,6	9,3	4,1	3,6	4,9	0,0140	ES(X)070
5,5	DHE11LA4C	1760	30	9,5	D	0,81	89,6	89,2	88,3	8,2	2,4	1,8	4,1	0,0162	EH(X)125

P	Rated output at 60 Hz line frequency
n	Guideline value for rated speed at the rotor shaft at 60 Hz line frequency
M _N	Rated torque at the rotor shaft
I _N	Rated current at 460 V (the current can be converted as inverse ratios of voltages from 460 V to the desired special voltage)
cos φ	Power factor
I _A /I _N	Relative starting current
M _A /M _N	Relative breakaway torque
M _S /M _N	Relative pull-up torque
M _K /M _N	Relative breakdown torque
J _{rot}	Mass moment of inertia of the rotor
Brake	recommended standard brake for normal requirements (see chapter 16)

Winding configuration for standard motors for 460 V / 60 Hz.

All motors are suitable for the voltage range 440...480V or 460V +/- 10% if executed in insulation class F.

Important: Current, power factor and torque change as voltage deviates from 460 V.

See "www.bauergears.com" for more information.

Technical data 4-pole S3/S6

4-pole motors for intermittent periodic duty (S3/S6 75%) and 60 Hz mains frequency

P _N	Type	n _N	M _N	I _N	Connec- tion	cos φ	I _A /I _N	M _A /M _N	M _S /M _N	M _K /M _N	J _{rot}	Brake
kW		1/min	Nm	460V A							kgm ²	
0,03	D04LA4	1620	0,17	0,18	Y	0,60	2,4	2,9	2,9	3,3	0,000175	E003
0,04	D04LA4	1620	0,23	0,18	Y	0,60	2,4	2,2	2,2	2,5	0,000175	
0,06	D04LA4	1620	0,35	0,28	Y	0,60	2,5	2,3	2,3	2,7	0,000175	
0,09	D04LA4	1620	0,52	0,40	Y	0,69	2,7	2,4	2,4	2,9	0,000175	
0,12	D04LA4	1620	0,7	0,42	Y	0,73	2,5	1,9	1,9	2,1	0,000175	
0,06	D05LA4	1620	0,35	0,32	Y	0,72	4,1	4,1	3,8	4,1	0,000295	E003
0,09	D05LA4	1620	0,52	0,35	Y	0,70	4,3	3,3	3,1	3,3	0,000295	
0,12	D05LA4	1620	0,7	0,38	Y	0,73	3,7	2,4	2,3	2,4	0,000295	
0,18	D05LA4	1620	1,06	0,58	Y	0,70	3,7	2,5	2,4	2,6	0,000295	
0,25	D05LA4	1620	1,45	0,80	Y	0,69	3,6	2,5	2,4	2,5	0,000295	
0,06	D06LA4	1620	0,35	0,32	Y	0,72	4,1	4,1	3,8	4,1	0,000295	E003
0,09	D06LA4	1620	0,52	0,35	Y	0,70	4,3	3,3	3,1	3,3	0,000295	
0,12	D06LA4	1620	0,7	0,38	Y	0,73	3,7	2,4	2,3	2,4	0,000295	
0,18	D06LA4	1620	1,06	0,58	Y	0,70	3,7	2,5	2,4	2,6	0,000295	
0,25	D06LA4	1620	1,45	0,80	Y	0,69	3,6	2,5	2,4	2,5	0,000295	
0,3	D07LA4	1620	1,76	1,20	Y	0,60	3,0	3,0	3,0	3,1	0,000385	E003
0,37	D07LA4	1620	2,1	1,26	Y	0,66	2,8	2,4	2,4	2,4	0,000385	E004
0,55	DSE08MA4	1720	3,1	1,28	Y	0,72	4,6	2,3	2,2	2,7	0,00115	ES(X)010 EH(X)027
0,75	DSE08LA4	1720	4,15	1,75	Y	0,69	4,8	2,5	2,4	2,9	0,00150	
1,1	DSE08XA4	1720	6,2	2,4	Y	0,71	4,1	2,2	2,0	2,4	0,00170	
1,1	DSE09SA4	1740	6,05	2,3	Y	0,72	6,5	3,6	3,3	4,0	0,00245	ES(X)010
1,5	DSE09LA4	1740	8,25	3,1	Y	0,72	6,5	3,4	3,1	4,0	0,00320	ES(X)027
2,2	DSE09XA4	1720	12,2	4,3	Y	0,76	6,2	3,3	3,0	3,6	0,00380	EH(X)40
3	DSE11SA4	1740	16,4	5,5	D	0,78	6,9	3,0	2,7	3,8	0,00810	ES(X)027
4	DSE11MA4	1740	21,9	7,2	D	0,81	6,9	3,3	2,7	3,7	0,01050	ES(X)040
5,5	DSE11LA4	1740	30,2	9,7	D	0,81	7,6	3,3	2,9	4,0	0,01400	ES(X)070 EH(X)125

P	Rated torque at 60 Hz mains frequency
n	Typical rated rotor shaft speed at 60 Hz Mains frequency
M _N	Rated torque at rotor shaft
I _N	Rated current at 460 V (for other special voltages, multiply by the inverse voltage ratio to convert the current at 460 V to the current at the desired voltage)
cos φ	Power factor
I _A /I _N	Relative starting current
M _A /M _N	Relative starting torque
M _S /M _N	Relative pull-up torque
M _K /M _N	Relative breakdown torque
J _{rot}	Rotor moment of inertia
Brake	Brake configuration (see Section 16)

The standard motor winding configuration is for 460 V / 60 Hz.

Geared motors for electric overhead conveyors series BM Motors

60 Hz

Technical data 4-pole S3/S6

4-pole motors for intermittent periodic duty (S3/S6) and 60 Hz mains frequency

P kW	ED	Type	n 1/min	M _N Nm	I _N (460 V) A	Connection	cos φ	I _A /I _N	M _A /M _N	M _S /M _N	M _K /M _N	J _{rot} kgm ²
0,15	15%	D04LA4	1620	0,87	0,56	Y	0,77	2,2	1,8	1,7	1,8	0,000175
0,3	15%	D05LA4	1620	1,75	0,9	Y	0,75	2,8	2,1	2,0	2,1	0,000295
0,3	60%	D06LA4	1620	1,75	0,9	Y	0,75	2,8	2,1	2,0	2,1	0,000295
0,55	60%	D07LA4	1620	3,2	1,78	Y	0,86	3,7	1,8	1,6	1,8	0,000385
0,75	60%	D08MA4	1680	4,2	1,84	Y	0,81	3,7	1,8	1,5	1,9	0,00115
1,1	60%	D08LA4	1680	6,2	2,5	Y	0,82	3,6	1,6	1,5	1,9	0,0015
1,5	60%	D09SA4	1680	8,5	3,3	Y	0,84	4,3	1,9	1,6	2,2	0,00245
2,2	60%	D09LA4	1680	12,5	4,5	Y	0,86	4,3	1,8	1,6	2,1	0,0032
3,0	60%	D09XA4	1680	16,6	6,2	Y	0,86	3,7	1,9	1,8	2,1	0,0038
4,0	60%	D11SA4	1710	22	8,1	Δ	0,85	4,4	1,8	1,5	2,2	0,0081
5,5	60%	D11MA4	1710	30,5	10,7	Δ	0,87	4,7	1,6	1,6	2,2	0,0105
7,5	60%	D11LA4	1710	41,5	14,6	Δ	0,87	5,0	2,0	1,9	2,3	0,014

P	Rated output at 60 Hz mains frequency, S3/S6 duty
DC	Permissible duty cycle
n	Typical rated rotor shaft speed at 60 Hz Mains frequency
M _N	Rated shaft torque
I _N	Rated current at 460 V (for other special voltages, multiply by the inverse voltage ratio to convert the current at 460 V to the current at the desired voltage)
cos φ	Power factor
I _A /I _N	Relative starting current
M _A /M _N	Relative starting torque
M _S /M _N	Relative pull-up torque
M _K /M _N	Relative breakdown torque
J _{rot}	Rotor moment of inertia

The standard motor winding configuration is for 460 V / 60 Hz.

See "www.bauergears.com" for additional information.

Geared motors for electric overhead conveyors series BM

Motors

60 Hz

Technical data 4-pole S1

4/2-pole motors Δ/YY for continuous operation S1, line frequency 60 Hz

P	Type	n	M _N	I _N (460 V)	cos φ	I _A /I _N	M _A /M _N	M _S /M _N	M _K /M _N	J _{rot}
kW		1/min	Nm	A						kgm ²
0,03 / 0,06	D04LA42	1620 / 3240	0,160 / 0,170	0,200 / 0,230	0,56 / 0,67	2,4 / 3,4	3,8 / 3,4	3,8 / 3,4	4,0 / 3,7	0,000175
0,04 / 0,08	D04LA42	1620 / 3240	0,230 / 0,230	0,230 / 0,260	0,60 / 0,75	2,2 / 3,1	3,3 / 2,3	3,3 / 2,3	3,7 / 2,4	0,000175
0,06 / 0,12	D05LA42	1620 / 3240	0,350 / 0,350	0,420 / 0,420	0,50 / 0,75	3,1 / 3,6	3,4 / 2,2	3,3 / 2,1	4,2 / 2,9	0,000295
0,08 / 0,16	D05LA42	1620 / 3240	0,470 / 0,470	0,460 / 0,460	0,55 / 0,75	3,1 / 3,6	3,1 / 2,0	3,0 / 1,9	3,8 / 2,5	0,000295
0,06 / 0,12	D06LA42	1620 / 3240	0,350 / 0,350	0,420 / 0,420	0,50 / 0,75	3,1 / 3,6	3,4 / 2,2	3,3 / 2,1	4,2 / 2,9	0,000295
0,08 / 0,16	D06LA42	1620 / 3240	0,470 / 0,470	0,460 / 0,460	0,55 / 0,75	3,1 / 3,6	3,1 / 2,0	3,0 / 1,9	3,8 / 2,5	0,000295
0,11 / 0,22	D06LA42	1620 / 3240	0,64 / 0,64	0,63 / 0,63	0,55 / 0,75	3,1 / 3,6	3,1 / 2,0	3,0 / 1,9	3,8 / 2,5	0,000295
0,16 / 0,32	D06LA42	1620 / 3240	0,94 / 0,94	0,82 / 0,82	0,57 / 0,80	3,1 / 3,6	2,8 / 1,9	2,7 / 1,8	3,4 / 2,3	0,000295
0,2 / 0,4	D07LA42	1680 / 3360	1,12 / 1,14	1,04 / 1,08	0,58 / 0,81	3,2 / 3,9	3,1 / 1,8	3,0 / 1,5	3,3 / 2,2	0,000385
0,28 / 0,56	D08MA42	1680 / 3360	1,58 / 1,58	1,10 / 1,60	0,61 / 0,81	3,7 / 3,2	2,5 / 1,7	2,5 / 1,5	3,3 / 2,1	0,00115
0,4 / 0,8	D08LA42	1680 / 3360	2,2 / 2,2	1,40 / 1,74	0,62 / 0,90	5,1 / 5,6	3,0 / 2,0	2,6 / 1,9	3,4 / 2,3	0,0015
0,5 / 1,0	D09SA42	1680 / 3360	2,8 / 2,8	1,60 / 2,6	0,71 / 0,91	5,5 / 4,6	3,4 / 2,2	3,4 / 2,2	4,2 / 2,6	0,00245
0,7 / 1,4	D09SA42	1680 / 3360	3,9 / 3,9	1,93 / 3,1	0,71 / 0,93	5,1 / 4,5	2,8 / 1,8	2,8 / 1,8	3,4 / 2,2	0,00245
1,0 / 2,0	D09LA42	1680 / 3360	5,6 / 5,6	2,8 / 4,3	0,72 / 0,94	5,1 / 4,5	2,8 / 1,8	2,8 / 1,8	3,4 / 2,2	0,0032
1,2 / 2,4	D09XA42	1680 / 3360	6,8 / 6,7	3,4 / 5,2	0,65 / 0,87	6,8 / 3,3	2,7 / 2,0	2,7 / 2,0	3,4 / 2,5	0,0038
1,4 / 2,8	D11SA42	1710 / 3420	7,8 / 7,8	3,3 / 5,7	0,74 / 0,90	7,0 / 4,9	3,3 / 1,9	2,8 / 1,6	4,5 / 3,1	0,0081
2,0 / 4,0	D11MA42	1710 / 3420	11,2 / 11,1	5,1 / 8,4	0,70 / 0,90	7,3 / 5,9	3,4 / 2,3	3,0 / 1,8	4,1 / 2,8	0,0105
2,5 / 5,0	D11LA42	1710 / 3420	14 / 14	5,0 / 9,1	0,79 / 0,92	6,1 / 5,0	3,1 / 2,0	3,0 / 1,9	4,1 / 2,8	0,014

P	Rated outputs at 60 Hz line frequency
n	Guideline values for rated speeds at the rotor shaft at 60 Hz line frequency
M _N	Rated torques at the rotor shaft
I _N	Rated currents 460 V Δ/YY (currents can be converted as inverse ratios of voltages from 460 V to the desired special voltage)
cos φ	Power factors
I _A /I _N	Relative starting currents
M _A /M _N	Relative breakaway torques
M _S /M _N	Relative pull-up torques
M _K /M _N	Relative breakdown torques
J _{rot}	Mass moment of inertia of the rotor

Geared motors for electric overhead conveyors series BM

Motors

60 Hz

Technical data 8/4-pole S1

8/4-pole motors Δ/YY for continuous operation S1, line frequency 60 Hz

P kW	Type	n 1/min	M _N Nm	I _N (460 V) A	cos φ	I _A /I _N	M _A /M _N	M _S /M _N	M _K /M _N	J _{rot} kgm ²
0,03 / 0,06	D05LA84	810 / 1620	0,340 / 0,350	0,280 / 0,260	0,52 / 0,71	1,8 / 2,8	3,0 / 2,1	1,8 / 1,9	1,8 / 1,9	0,000295
0,03 / 0,06	D06LA84	810 / 1620	0,340 / 0,350	0,280 / 0,260	0,52 / 0,71	1,8 / 2,8	3,0 / 2,1	1,8 / 1,9	1,8 / 1,9	0,000295
0,04 / 0,08	D06LA84	810 / 1620	0,450 / 0,460	0,440 / 0,370	0,52 / 0,66	1,5 / 2,4	2,9 / 2,3	1,8 / 1,9	1,8 / 1,9	0,000295
0,06 / 0,12	D07LA84	810 / 1620	0,70 / 0,70	0,65 / 0,55	0,52 / 0,66	1,9 / 3,1	3,5 / 1,9	3,5 / 1,7	3,6 / 2,3	0,000385
0,06 / 0,12	D08LA84	840 / 1680	0,67 / 0,67	0,460 / 0,460	0,61 / 0,83	3,1 / 4,1	3,4 / 2,5	3,4 / 2,5	3,9 / 3,2	0,0025
0,08 / 0,16	D08LA84	840 / 1680	0,90 / 0,90	0,57 / 0,57	0,61 / 0,83	3,1 / 4,1	3,3 / 2,4	3,3 / 2,4	3,9 / 3,3	0,0025
0,11 / 0,22	D08LA84	840 / 1680	1,24 / 1,25	0,74 / 0,74	0,61 / 0,83	3,1 / 4,1	3,1 / 2,3	3,1 / 2,3	3,7 / 3,1	0,0025
0,14 / 0,28	D08LA84	840 / 1680	1,58 / 1,59	0,92 / 0,92	0,61 / 0,83	3,1 / 4,1	3,1 / 2,3	3,1 / 2,3	3,7 / 3,1	0,0025
0,2 / 0,4	D08LA84	840 / 1680	2,2 / 2,2	1,05 / 1,20	0,55 / 0,77	3,1 / 4,1	2,5 / 1,9	2,5 / 1,9	3,0 / 2,5	0,0025
0,25 / 0,5	D09XC84	840 / 1680	2,8 / 2,8	1,28 / 1,28	0,48 / 0,77	3,2 / 5,5	3,0 / 2,2	3,0 / 2,3	3,4 / 3,0	0,006
0,28 / 0,56	D09XC84	840 / 1680	3,1 / 3,1	1,29 / 1,38	0,57 / 0,80	3,2 / 5,4	2,7 / 2,0	2,7 / 2,1	3,1 / 2,7	0,006
0,4 / 0,8	D09XC84	840 / 1680	4,5 / 4,5	1,80 / 2,2	0,55 / 0,79	3,1 / 4,6	2,5 / 1,9	2,5 / 2,0	3,0 / 2,5	0,006
0,5 / 1,0	D09XC84	840 / 1680	5,6 / 5,6	2,2 / 2,4	0,55 / 0,81	2,9 / 4,4	2,4 / 1,8	2,4 / 1,8	2,8 / 2,4	0,006
0,8 / 1,6	D11LC84	850 / 1710	8,9 / 8,9	2,8 / 3,8	0,63 / 0,88	3,8 / 4,7	2,4 / 2,1	2,4 / 1,9	3,1 / 3,0	0,0215
1,1 / 2,2	D11LC84	850 / 1710	12,2 / 12,2	3,7 / 4,5	0,58 / 0,85	4,3 / 6,2	2,5 / 2,3	2,5 / 1,9	3,0 / 2,7	0,0215
1,6 / 3,2	D11LC84	850 / 1710	17,9 / 17,9	5,5 / 7,0	0,59 / 0,84	4,1 / 5,6	2,4 / 2,0	2,3 / 1,6	2,8 / 2,5	0,0215

P	Rated outputs at 60 Hz line frequency
n	Guideline values for rated speeds at the rotor shaft at 60 Hz line frequency
M _N	Rated torques at the rotor shaft
I _N	Rated currents 460 V Δ/YY (currents can be converted as inverse ratios of voltages from 460 V to the desired special voltage)
cos φ	Power factors
I _A /I _N	Relative starting currents
M _A /M _N	Relative breakaway torques
M _S /M _N	Relative pull-up torques
M _K /M _N	Relative breakdown torques
J _{rot}	Mass moment of inertia of the rotor

Geared motors for electric overhead conveyors series BM

Motors

60 Hz

Technical data 8/2-pole S3/S6

8/2-pole motors Y/Y for for periodic intermittent

P	ED	Type	n	M _N	I _N (460 V)	cos φ	I _A /I _N	M _A /M _N	M _S /M _N	M _K /M _N	J _{rot}
kW			1/min	Nm	A						kgm ²
0,04 / 0,16	25/75%	D05LA82	810 / 3240	0,460 / 0,470	0,370 / 0,74	0,63 / 0,75	1,8 / 3,5	2,1 / 2,4	2,1 / 2,3	2,2 / 2,5	0,000295
0,05 / 0,20	25/75%	D06LA82	810 / 3240	0,58 / 0,59	0,470 / 0,94	0,63 / 0,75	1,5 / 3,1	1,9 / 2,2	1,9 / 2,1	2,0 / 2,3	0,000295
0,063 / 0,25	25/75%	D07LA82	800 / 3420	0,75 / 0,75	0,55 / 1,10	0,69 / 0,62	1,5 / 2,8	1,8 / 1,5	1,8 / 1,5	2,0 / 3,0	0,000385
0,071 / 0,28	25/75%	D07LA82	800 / 3420	0,82 / 0,81	0,60 / 1,30	0,69 / 0,68	1,5 / 2,8	1,7 / 1,4	1,7 / 1,4	1,9 / 2,9	0,000385
0,063 / 0,25	25/75%	D08LA82	840 / 3360	0,70 / 0,71	0,51 / 0,65	0,55 / 0,87	3,1 / 4,4	2,6 / 2,9	2,6 / 2,8	3,1 / 3,3	0,0015
0,09 / 0,36	25/75%	D08LA82	840 / 3360	1,01 / 1,01	0,65 / 0,98	0,60 / 0,92	3,2 / 4,9	2,2 / 2,9	2,2 / 2,8	2,7 / 3,2	0,0015
0,12 / 0,50	25/75%	D08LA82	840 / 3360	1,41 / 1,41	0,90 / 1,33	0,60 / 0,92	3,2 / 4,9	2,2 / 2,9	2,2 / 2,8	2,7 / 3,2	0,0015
0,16 / 0,63	25/75%	D08LA82	840 / 3360	1,79 / 1,75	1,12 / 1,35	0,63 / 0,90	2,2 / 5,0	2,0 / 2,3	2,0 / 2,2	2,5 / 2,7	0,0015
0,25 / 1,0	25/75%	D09XA82	840 / 3360	2,8 / 2,8	1,19 / 2,1	0,62 / 0,90	2,4 / 5,7	2,1 / 2,5	2,1 / 2,5	2,2 / 2,8	0,0038
0,36 / 1,4	25/75%	D09XA82	840 / 3360	4,0 / 3,9	1,91 / 3,0	0,57 / 0,87	2,2 / 4,9	2,1 / 2,3	2,1 / 2,3	2,2 / 2,6	0,0038
0,45 / 1,8	25/75%	D09XA82	840 / 3360	5,1 / 5,0	2,2 / 3,9	0,65 / 0,89	2,2 / 4,7	1,9 / 2,2	1,9 / 2,2	2,2 / 2,7	0,0038
0,56 / 2,2	25/75%	D11LA82	850 / 3420	6,2 / 6,0	2,1 / 4,3	0,60 / 0,94	3,5 / 5,4	2,1 / 3,2	2,1 / 2,6	2,4 / 3,2	0,014
0,71 / 2,8	25/75%	D11LA82	850 / 3420	7,9 / 7,8	2,5 / 5,1	0,58 / 0,94	2,7 / 5,1	2,1 / 2,5	2,1 / 2,2	2,3 / 2,6	0,014
0,90 / 3,6	25/75%	D11LA82	850 / 3420	10 / 10	3,2 / 7,2	0,58 / 0,94	2,7 / 4,9	2,0 / 2,2	2,0 / 2,0	2,2 / 2,3	0,014

P	Rated outputs at 60 Hz line frequency, duty type S3-25/75%
n	Guideline values for rated speeds at the rotor shaft at 60 Hz line frequency
M _N	Rated torques at the rotor shaft
I _N	Rated currents 460 V Y/Y (currents can be converted as inverse ratios of voltages from 460 V to the desired special voltage)
cos φ	Power factors
I _A /I _N	Relative starting currents
M _A /M _N	Relative breakaway torques
M _S /M _N	Relative pull-up torques
M _K /M _N	Relative breakdown torques
J _{rot}	Mass moment of inertia of the rotor

Technical data 12/2-pole S3

12/2-pole motors Y/Y for intermittent periodic duty S3-25/75%, line frequency 60 Hz

P kW	ED	Type	n 1/min	M _N Nm	I _N (460 V) A	cos φ	I _A /I _N	M _A /M _N	M _S /M _N	M _K /M _N	J _{rot} kgm ²
0,045 / 0,28	25/75%	D08LA122	560 / 3360	0,76 / 0,79	0,51 / 0,79	0,70 / 0,90	1,5 / 4,9	2,1 / 2,7	2,1 / 2,7	2,1 / 3,0	0,0015
0,063 / 0,40	25/75%	D08LA122	560 / 3360	1,07 / 1,13	0,61 / 1,02	0,70 / 0,90	1,5 / 4,9	1,9 / 2,4	1,9 / 2,4	1,9 / 2,7	0,0015
0,09 / 0,56	25/75%	D08LA122	560 / 3360	1,54 / 1,59	0,95 / 1,35	0,63 / 0,89	1,5 / 4,5	1,9 / 2,3	1,9 / 2,5	2,0 / 2,6	0,0015
0,11 / 0,71	25/75%	D09XA122	560 / 3360	1,88 / 2,0	1,00 / 1,50	0,59 / 0,88	1,6 / 6,0	1,9 / 3,0	1,9 / 2,9	2,0 / 3,6	0,0038
0,16 / 1,0	25/75%	D09XA122	560 / 3360	2,7 / 2,8	1,56 / 2,2	0,62 / 0,89	1,6 / 6,0	2,0 / 2,9	2,0 / 2,7	2,0 / 3,6	0,0038
0,2 / 1,25	25/75%	D09XA122	560 / 3360	3,4 / 3,5	1,85 / 2,8	0,62 / 0,89	1,6 / 5,5	1,9 / 2,6	1,9 / 2,5	1,9 / 3,4	0,0038
0,25 / 1,6	25/75%	D11LA122	560 / 3420	4,2 / 4,4	2,1 / 3,1	0,53 / 0,95	1,8 / 5,4	1,9 / 2,8	1,9 / 2,6	2,2 / 3,1	0,014
0,32 / 2,0	25/75%	D11LA122	560 / 3420	5,4 / 5,5	2,7 / 3,6	0,53 / 0,94	1,8 / 5,1	1,9 / 2,7	1,9 / 2,4	2,2 / 3,0	0,014
0,45 / 2,8	25/75%	D11LA122	560 / 3420	7,6 / 7,8	3,8 / 5,1	0,52 / 0,94	1,8 / 5,1	1,6 / 2,5	1,6 / 2,2	2,0 / 2,6	0,014

P	Rated outputs at 60 Hz line frequency, duty type S3-25/75%
n	Guideline values for rated speeds at the rotor shaft at 60 Hz line frequency
M _N	Rated torques at the rotor shaft
I _N	Rated currents 460 V Y/Y (currents can be converted as inverse ratios of voltages from 460 V to the desired special voltage)
cos φ	Power factors
I _A /I _N	Relative starting currents
M _A /M _N	Relative breakaway torques
M _S /M _N	Relative pull-up torques
M _K /M _N	Relative breakdown torques
J _{rot}	Mass moment of inertia of the rotor



Operation with frequency converter 5...70 Hz

The figures given in the table below are for Bauer motors operating in conjunction with the frequency inverter. The torques referred to in tables can be entered for the respective frequencies in continuous operation (S1 = duty factor 100%).

Motor torques for frequency-converter range 5 Hz - 70 Hz, line frequency 50 Hz

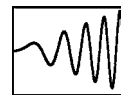
P	Type	Conne- tion	5 Hz	10 Hz	20 Hz	30 Hz	50 Hz	60 Hz	70 Hz	5 Hz	10 Hz	20 Hz	30 Hz	50 Hz	60 Hz	70 Hz
kW			M	M	M	M	M	M	M	I	I	I	I	I	I	I
			Nm	Nm	Nm	Nm	Nm	Nm	Nm	A	A	A	A	A	A	A
0,03	D04LA4	Y	0,125	0,155	0,185	0,205	0,210	0,210	0,180	0,190	0,193	0,198	0,200	0,200	0,230	0,230
0,04	D04LA4	Y	0,165	0,210	0,250	0,275	0,280	0,275	0,205	0,190	0,193	0,198	0,200	0,200	0,230	0,200
0,06	D04LA4	Y	0,250	0,315	0,375	0,410	0,420	0,420	0,320	0,290	0,295	0,300	0,300	0,300	0,340	0,305
0,09	D04LA4	Y	0,375	0,470	0,56	0,62	0,63	0,63	0,52	0,435	0,440	0,450	0,450	0,450	0,51	0,495
0,12	D04LA4	Y	0,50	0,63	0,75	0,82	0,84	0,69	0,50	0,440	0,450	0,455	0,460	0,460	0,460	0,450
0,06	D05LA4	Y	0,250	0,315	0,375	0,410	0,420	0,420	0,360	0,300	0,315	0,340	0,350	0,350	0,395	0,400
0,09	D05LA4	Y	0,375	0,470	0,56	0,62	0,63	0,63	0,54	0,355	0,365	0,375	0,380	0,380	0,430	0,430
0,12	D05LA4	Y	0,51	0,63	0,76	0,83	0,85	0,81	0,59	0,370	0,385	0,410	0,420	0,420	0,455	0,410
0,18	D05LA4	Y	0,76	0,96	1,15	1,26	1,28	1,28	0,97	0,59	0,60	0,62	0,63	0,63	0,72	0,64
0,25	D05LA4	Y	1,05	1,31	1,57	1,72	1,75	1,74	1,28	0,85	0,86	0,87	0,88	0,88	1,00	0,88
0,06	D06LA4	Y	0,250	0,315	0,375	0,410	0,420	0,420	0,360	0,300	0,315	0,340	0,350	0,350	0,395	0,400
0,09	D06LA4	Y	0,375	0,470	0,56	0,62	0,63	0,63	0,54	0,355	0,365	0,375	0,380	0,38	0,430	0,430
0,12	D06LA4	Y	0,51	0,63	0,76	0,83	0,85	0,81	0,59	0,37	0,385	0,41	0,420	0,42	0,455	0,41
0,18	D06LA4	Y	0,76	0,96	1,15	1,26	1,28	1,28	0,97	0,59	0,60	0,62	0,63	0,63	0,72	0,64
0,25	D06LA4	Y	1,05	1,32	1,58	1,73	1,76	1,75	1,29	0,85	0,87	0,88	0,89	0,89	1,01	0,89
0,3	D07LA4	Y	1,27	1,59	1,9	2,0	2,1	2,1	1,81	1,25	1,27	1,29	1,30	1,30	1,47	1,47
0,37	D07LA4	Y	1,57	1,96	2,3	2,5	2,6	2,5	1,83	1,30	1,32	1,34	1,35	1,35	1,46	1,34
0,37	DHE08MA4	Y	1,47	1,83	2,2	2,4	2,4	2,4	2,1	1,18	1,19	1,2	1,2	1,2	1,36	1,36
0,55	DHE08LA4	Y	2,2	2,8	3,3	3,6	3,7	3,7	2,8	1,13	1,21	1,3	1,36	1,36	1,54	1,38
0,75	DHE08XA4	Y	3	3,8	4,5	4,9	5	5	4,2	1,68	1,75	1,83	1,88	1,88	2,2	2,2
0,75	DHE09SA4	Y	3	3,8	4,5	4,9	5	5	4,2	1,59	1,66	1,75	1,8	1,8	2,1	2,1
1,1	DHE09LA4	Y	4,3	5,4	6,5	7,2	7,3	7,3	6,2	2,2	2,4	2,5	2,6	2,6	2,9	2,9
1,5	DHE09XA4	Y	5,9	7,4	8,9	9,8	9,9	9,9	8,5	2,8	3,1	3,2	3,4	3,4	3,8	3,8
2,2	DHE09XA4C	Y	8,7	10,8	13	14,3	14,5	14,5	12,4	3,8	4,2	4,5	4,8	4,8	5,4	5,4
2,2	DHE11SA4	Y	8,7	10,8	13	14,3	14,5	14,5	12,4	3,6	3,9	4,4	4,6	4,6	5,2	5,3
3	DHE11MA4	Y	12	15	18	19,7	20	20	17,1	4,9	5,4	5,9	6,3	6,3	7,2	7,2
4	DHE11LA4	Y	15,9	19,8	23,5	26	26,5	26,5	22,5	6,5	7,2	7,9	8,4	8,4	9,5	9,5
5,5	DHE11LA4C	Y	21,5	27	32	35,5	36	36	30,5	8,1	9	10	10,7	10,7	12,1	12,1

Field weakening for frequencies above 50 Hz, winding for standard voltage **400 V Y / 50 Hz**, Temperature Class F.

P	Rated output
n	Guideline value for rated speed at the rotor shaft
M	Permissible load torque (S1-100%) for operation with frequency inverter
M _N	Rated torque at the rotor shaft
I	Load current for operation with frequency inverter

Motors with standard windings can be switched from Y- to Δ- circuit for operation with a converter having a single-phase mains connection. This has no effect on the torques and frequencies as listed in the table above. As regards the choice of converter, however, note that currents are higher than those of the Y-circuit by a factor of 1.73.

The load currents in the table are guideline values for selecting the size of frequency inverter. Load current is lower if the load torque is below the values permitted for 30-70 Hz and the frequency inverter used is of the high-grade type. This means that a smaller inverter can sometimes be used, particularly in conjunction with large motors.



Operation with frequency converter 5 Hz - 100 Hz

Motor torques for frequency-converter range 5 Hz - 100 Hz, line frequency 50 Hz

P kW	Type	Connection	5 Hz M Nm	8,7 Hz M Nm	10 Hz M Nm	20 Hz M Nm	87 Hz M Nm	100 Hz M Nm	5 Hz I A	8,7 Hz I A	10 Hz I A	20 Hz I A	87 Hz I A	100 Hz I A
0,03	D04LA4	D	0,125	0,15	0,155	0,185	0,21	0,21	0,33	0,335	0,335	0,345	0,35	0,38
0,04	D04LA4	D	0,165	0,2	0,21	0,25	0,28	0,28	0,33	0,335	0,335	0,345	0,35	0,38
0,06	D04LA4	D	0,25	0,3	0,315	0,375	0,42	0,42	0,51	0,51	0,51	0,52	0,52	0,57
0,09	D04LA4	D	0,375	0,45	0,47	0,56	0,63	0,63	0,76	0,76	0,77	0,78	0,78	0,86
0,12	D04LA4	D	0,5	0,6	0,63	0,75	0,84	0,75	0,76	0,77	0,78	0,79	0,8	0,8
0,06	D05LA4	D	0,25	0,3	0,315	0,375	0,42	0,42	0,52	0,54	0,55	0,59	0,61	0,67
0,09	D05LA4	D	0,375	0,45	0,47	0,56	0,63	0,63	0,62	0,63	0,63	0,65	0,66	0,73
0,12	D05LA4	D	0,51	0,61	0,63	0,76	0,85	0,85	0,64	0,67	0,67	0,71	0,73	0,8
0,18	D05LA4	D	0,76	0,92	0,96	1,15	1,28	1,28	1,01	1,04	1,04	1,07	1,1	1,2
0,25	D05LA4	D	1,05	1,25	1,31	1,57	1,75	1,75	1,46	1,48	1,49	1,51	1,53	1,68
0,06	D06LA4	D	0,25	0,3	0,315	0,375	0,42	0,42	0,52	0,54	0,55	0,59	0,61	0,67
0,09	D06LA4	D	0,375	0,45	0,47	0,56	0,63	0,63	0,62	0,63	0,63	0,65	0,66	0,73
0,12	D06LA4	D	0,51	0,61	0,63	0,76	0,85	0,85	0,64	0,67	0,67	0,71	0,73	0,8
0,18	D06LA4	D	0,76	0,92	0,96	1,15	1,28	1,28	1,01	1,04	1,04	1,07	1,1	1,2
0,25	D06LA4	D	1,05	1,26	1,32	1,58	1,76	1,76	1,47	1,49	1,5	1,53	1,55	1,69
0,3	D07LA4	D	1,27	1,52	1,59	1,9	2,1	2,1	2,2	2,2	2,2	2,2	2,3	2,5
0,37	D07LA4	D	1,57	1,88	1,96	2,3	2,6	2,6	2,2	2,3	2,3	2,4	2,4	2,6
0,37	DHE08MA4	D	1,47	1,76	1,83	2,2	2,4	2,4	2,1	2,1	2,1	2,1	2,1	2,3
0,55	DHE08LA4	D	2,2	2,6	2,8	3,3	3,7	3,7	1,95	2,1	2,1	2,2	2,4	2,6
0,75	DHE08XA4	D	3	3,6	3,8	4,5	5	5	3	3,1	3,1	3,2	3,3	3,6
0,75	DHE09SA4	D	3	3,6	3,8	4,5	5	5	2,8	2,8	2,9	3,1	3,2	3,5
1,1	DHE09LA4	D	4,3	5,2	5,4	6,5	7,3	7,3	3,8	4	4	4,2	4,5	4,9
1,5	DHE09XA4	D	5,9	7,1	7,4	8,9	9,9	9,9	4,6	5	5,1	5,5	5,9	6,4
2,2	DHE09XA4C	D	8,7	10,4	10,8	13	14,5	14,5	6,7	7,1	7,2	7,8	8,3	9,1
2,2	DHE11SA4	D	8,7	10,4	10,8	13	14,5	14,5	6,2	6,7	6,8	7,5	8	8,8
3	DHE11MA4	D	12	14,3	15	18	20	20	8,4	9,1	9,3	10,3	11	12
4	DHE11LA4	D	15,9	19	19,8	23,5	26,5	26,5	11,9	12,6	12,8	13,9	14,6	16
5,5	DHE11LA4C	D	21,5	25,5	27	32	36	36	14,2	15,6	15,9	17,8	19,1	21

Field weakening for frequencies above 87 Hz, winding for
230 V Δ/ 50 Hz ($U_{\max} = 400 \text{ V } \Delta/87 \text{ Hz}$), Temperature Class F.

P	Rated output
n	Guideline value for rated speed at the rotor shaft
M	P0ermissible load torque (S1-100%) for operation with frequency inverter
M_N	Rated torque at the rotor shaft
I	Load current for operation with frequency inverter

The load currents in the table are guideline values for selecting the size of frequency inverter. Load current is lower if the load torque is below the values permitted for 30-100 Hz and the frequency inverter used is of the high-grade type. This means that a smaller inverter can sometimes be used, particularly in conjunction with large motors.



Geared motors for electric overhead conveyors series BM

Motors

Operation with frequency converter 6 Hz - 84 Hz

Motor torques for frequency-converter range 6 Hz - 84 Hz, line frequency 60 Hz

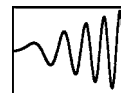
P kW	Type	Con- nec- tion	6 Hz M Nm	12 Hz M Nm	24 Hz M Nm	36 Hz M Nm	60 Hz M Nm	72 Hz M Nm	84 Hz M Nm	6 Hz I A	12 Hz I A	24 Hz I A	36 Hz I A	60 Hz I A	72 Hz I A	84 Hz I A
0,03	D04LA4	Y	0,115	0,140	0,165	0,180	0,180	0,180	0,150	0,176	0,178	0,180	0,185	0,180	0,205	0,205
0,04	D04LA4	Y	0,145	0,180	0,215	0,235	0,230	0,230	0,180	0,176	0,178	0,180	0,185	0,180	0,205	0,190
0,06	D04LA4	Y	0,220	0,275	0,325	0,355	0,350	0,350	0,300	0,275	0,275	0,280	0,290	0,280	0,320	0,320
0,09	D04LA4	Y	0,330	0,410	0,485	0,53	0,520	0,520	0,445	0,400	0,400	0,400	0,415	0,400	0,455	0,455
0,12	D04LA4	Y	0,445	0,55	0,65	0,71	0,70	0,63	0,465	0,410	0,415	0,420	0,435	0,420	0,435	0,415
0,06	D05LA4	Y	0,220	0,275	0,325	0,355	0,350	0,350	0,300	0,280	0,295	0,315	0,330	0,320	0,365	0,365
0,09	D05LA4	Y	0,330	0,410	0,485	0,53	0,520	0,520	0,445	0,335	0,340	0,350	0,360	0,350	0,395	0,400
0,12	D05LA4	Y	0,445	0,55	0,65	0,71	0,70	0,70	0,53	0,345	0,36	0,375	0,395	0,38	0,43	0,385
0,18	D05LA4	Y	0,67	0,83	0,99	1,08	1,06	1,06	0,87	0,54	0,56	0,58	0,60	0,58	0,66	0,64
0,25	D05LA4	Y	0,92	1,14	1,36	1,48	1,45	1,45	1,15	0,78	0,79	0,8	0,83	0,8	0,91	0,85
0,06	D06LA4	Y	0,22	0,275	0,325	0,355	0,35	0,35	0,3	0,28	0,295	0,315	0,330	0,32	0,365	0,365
0,09	D06LA4	Y	0,33	0,41	0,485	0,53	0,52	0,52	0,445	0,335	0,34	0,35	0,360	0,35	0,395	0,4
0,12	D06LA4	Y	0,445	0,55	0,65	0,71	0,70	0,70	0,53	0,345	0,36	0,375	0,395	0,38	0,43	0,385
0,18	D06LA4	Y	0,67	0,83	0,99	1,08	1,06	1,06	0,87	0,54	0,56	0,58	0,60	0,58	0,66	0,64
0,25	D06LA4	Y	0,92	1,14	1,36	1,48	1,45	1,45	1,15	0,78	0,79	0,8	0,83	0,8	0,91	0,85
0,3	D07LA4	Y	1,12	1,38	1,65	1,80	1,76	1,76	1,5	1,18	1,19	1,20	1,24	1,2	1,36	1,36
0,37	D07LA4	Y	1,37	1,69	2,0	2,2	2,1	2,1	1,64	1,24	1,25	1,26	1,30	1,26	1,43	1,28
0,55	D08MA4	Y	1,98	2,4	2,9	3,1	3,1	3,1	2,4	1,29	1,36	1,44	1,51	1,47	1,66	1,55
0,75	DHE08XA4	Y	2,4	3,1	3,7	4,1	4,1	4,1	3,7	1,45	1,5	1,56	1,6	1,6	1,78	1,81
0,75	DHE09SA4	Y	2,4	3,1	3,7	4,1	4,1	4,1	3,7	1,34	1,43	1,53	1,6	1,6	1,78	1,81
1,10	DHE09LA4	Y	3,6	4,5	5,4	5,9	6	6	5,4	1,85	1,99	2,2	2,2	2,2	2,5	2,6
1,50	DHE09XA4	Y	4,9	6,1	7,3	8,1	8,2	8,2	7,3	2,4	2,6	2,8	3	3	3,3	3,4
2,2	DHE09XA4C	Y	7,2	9	10,8	11,8	12	12	10,8	3,5	3,7	3,9	4	4	4,5	4,5
2,2	DHE11SA4	Y	7,2	9	10,8	11,8	12	12	10,8	3,1	3,5	3,8	4	4	4,5	4,5
3,0	DHE11MA4	Y	9,9	12,3	14,8	16,2	16,5	16,5	14,8	4,2	4,7	5,2	5,5	5,5	6,1	6,3
4,0	DHE11LA4	Y	13	16,2	19,5	21	21,5	21,5	19,5	5,6	6,2	6,9	7,3	7,3	8,1	8,3
5,5	DHE11LA4C	Y	18	22,5	27	29,5	30	30	27	7	7,8	8,6	9,2	9,2	10,2	10,4

Field weakening for frequencies above 60 Hz, winding for standard voltage **460 VY / 60 Hz**, Temperature Class F.

P	Rated output
n	Guideline value for rated speed at the rotor shaft
M	permissible load torque (S1-100%) for operation with frequency inverter
M _N	Rated torque at the rotor shaft
I	Load current for operation with frequency inverter

Motors with standard windings can be switched from Y- to Δ- circuit for operation with a converter having a single-phase mains connection. This has no effect on the torques and frequencies as listed in the table above. As regards the choice of converter, however, note that currents are higher than those of the Y-circuit by a factor of 1.73.

The load currents in the table are guideline values for selecting the size of frequency converter. Load current is lower if the load torque is below the values permitted for 36-84 Hz and the frequency inverter used is of the high-grade type. This means that a smaller inverter can sometimes be used, particularly in conjunction with large motors.



Operation with frequency converter 6 Hz - 120 Hz

Motor torques for frequency-converter range 6 Hz - 120 Hz, line frequency 60 Hz

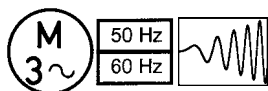
P	Type	Conne- tion	6 Hz	12 Hz	24 Hz	36 Hz	104 Hz	120 Hz	6 Hz	12 Hz	24 Hz	36 Hz	104 Hz	120 Hz
kW			M Nm	M Nm	M Nm	M Nm	M Nm	M Nm	I A	I A	I A	I A	I A	I A
0,03	D04LA4	D	0,105	0,13	0,155	0,18	0,17	0,17	0,245	0,25	0,26	0,325	0,26	0,29
0,04	D04LA4	D	0,145	0,18	0,215	0,235	0,23	0,23	0,28	0,28	0,28	0,325	0,28	0,305
0,06	D04LA4	D	0,22	0,275	0,325	0,355	0,35	0,35	0,455	0,465	0,48	0,5	0,485	0,54
0,09	D04LA4	D	0,33	0,41	0,485	0,53	0,52	0,52	0,72	0,73	0,74	0,72	0,75	0,82
0,12	D04LA4	D	0,445	0,55	0,65	0,71	0,7	0,65	0,63	0,65	0,67	0,75	0,68	0,7
0,06	D05LA4	D	0,22	0,275	0,325	0,355	0,35	0,35	0,48	0,51	0,55	0,57	0,56	0,61
0,09	D05LA4	D	0,33	0,41	0,485	0,53	0,52	0,52	0,58	0,59	0,61	0,63	0,61	0,67
0,12	D05LA4	D	0,445	0,55	0,65	0,71	0,7	0,7	0,6	0,62	0,65	0,68	0,66	0,73
0,18	D05LA4	D	0,67	0,83	0,99	1,08	1,06	1,06	0,93	0,96	1	1,04	1,01	1,11
0,25	D05LA4	D	0,92	1,14	1,36	1,48	1,45	1,45	1,34	1,36	1,38	1,43	1,39	1,53
0,06	D06LA4	D	0,22	0,275	0,325	0,355	0,35	0,35	0,48	0,51	0,55	0,57	0,56	0,61
0,09	D06LA4	D	0,33	0,41	0,485	0,53	0,52	0,52	0,58	0,59	0,61	0,63	0,61	0,67
0,12	D06LA4	D	0,445	0,55	0,65	0,71	0,7	0,7	0,6	0,62	0,65	0,68	0,66	0,73
0,18	D06LA4	D	0,67	0,83	0,99	1,08	1,06	1,06	0,93	0,96	1	1,04	1,01	1,11
0,25	D06LA4	D	0,92	1,14	1,36	1,48	1,45	1,45	1,34	1,36	1,38	1,43	1,39	1,53
0,3	D07LA4	D	1,12	1,38	1,65	1,8	1,76	1,76	2,1	2,1	2,1	2,2	2,1	2,3
0,37	D07LA4	D	1,37	1,69	2	2,2	2,1	2,1	2,2	2,2	2,2	2,2	2,2	2,4
0,55	D08MA4	D	1,98	2,4	2,9	3,1	3,1	3,1	2,2	2,4	2,5	2,7	2,6	2,8
0,75	DHE08XA4	D	2,4	3,1	3,7	4,1	4,1	4,1	2,6	2,6	2,7	2,8	2,8	3,1
0,75	DHE09SA4	D	2,4	3,1	3,7	4,1	4,1	4,1	2,4	2,5	2,7	2,8	2,8	3,1
1,1	DHE09LA4	D	3,6	4,5	5,4	5,9	6	6	3,2	3,5	3,8	3,9	3,9	4,3
1,5	DHE09XA4	D	4,9	6,1	7,3	8,1	8,2	8,2	4,2	4,5	4,9	5,1	5,2	5,7
2,2	DHE09XA4C	D	7,2	9	10,8	11,8	12	12	5,7	6,1	6,6	6,9	7	7,7
2,2	DHE11SA4	D	7,2	9	10,8	11,8	12	12	5,4	5,9	6,5	6,9	7	7,7
3	DHE11MA4	D	9,9	12,3	14,8	16,2	16,5	16,5	7,4	8,1	9	9,5	9,6	10,5
4	DHE11LA4	D	13	16,2	19,5	21	21,5	21,5	10,7	11,4	12,2	12,6	12,7	13,9
5,5	DHE11LA4C	D	18	22,5	27	29,5	30	30	12,4	13,8	15,4	16,4	16,5	18,1

Field weakening for frequencies above 87 Hz, winding for standard voltage 265 V Δ / 60 Hz (U_{max} = 460 V Δ / 104 Hz), Temperature Class F.

P	Rated output
n	Guideline value for rated speed at the rotor shaft
M	permissible load torque (S1-100%) for operation with frequency inverter
M _N	Rated torque at the rotor shaft
I	Load current for operation with frequency inverter

The load currents in the table are guideline values for selecting the size of frequency converter. Load current is lower if the load torque is below the values permitted for 36-120 Hz and the frequency inverter used is of the high-grade type. This means that a smaller inverter can sometimes be used, particularly in conjunction with large motors.

12



Page

Motors- BM

159-200

Motor designs

Technical data of the motors with rated speed 1500 1/min

Technical data of the motors with rated speed 2250 1/min

Technical data of the motors with rated speed 3000 1/min

Operation with frequency converter

Characteristic curve for motors with a rated speed of 1500 1/min

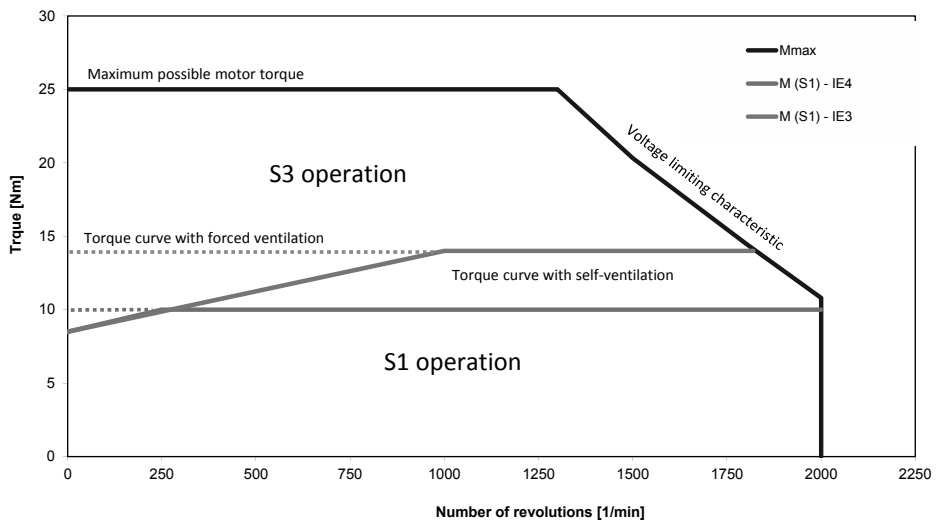
Characteristic curve for motors with a rated speed of 3000 1/min

Drive configuration

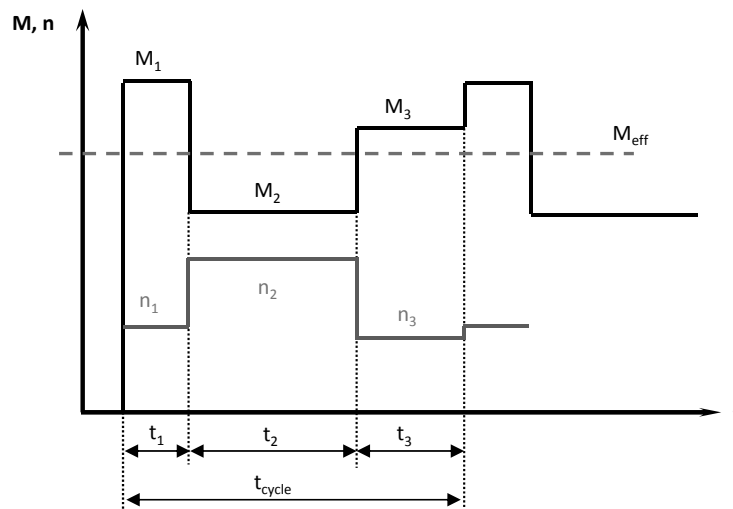
Torque-speed characteristic

The torque versus speed curve shows the operating characteristics of the BM. The reference points shown schematically on the torque versus speed curve are significant criteria for motor selection.

Torque vs. Speed Curve



The motor is determined by the effective motor torque and the average motor speed. Both values M_{eff} and n_{eff} must be below the S1 limit characteristic curve of the motor to be selected.



Drive configuration

Effective torque

$$M_{\text{eff}} = \sqrt{\frac{M_1^2 \cdot t_1 + M_2^2 \cdot t_2 + M_3^2 \cdot t_3 + \dots + M_n^2 \cdot t_n}{t_1 + t_2 + t_3 + \dots + t_n}}$$

Effective rpm

$$n_{\text{eff}} = \frac{n_1 \cdot t_1 + n_2 \cdot t_2 + n_3 \cdot t_3 + \dots + n_n \cdot t_n}{t_1 + t_2 + t_3 + \dots + t_n}$$

Acceleration

Dynamic power

The dynamic power is the power used to accelerate the entire system (load, transmission components, gears and motor).

$$P_{\text{dyn}} = \frac{m \times a \times v}{\eta}$$

P_{dyn} dynamic power [W]

m mass [kg]

a acceleration [m/s²]

v velocity [m/s]

η efficiency

Dynamic load torque

$$M_{\text{dyn}_i} = m \cdot a \cdot \frac{1}{\eta} \cdot \frac{D}{2} \cdot \frac{1}{i}$$

D bogie wheel diameter

i gear reduction ratio

Constant velocity

Static performance

Static performance takes all forces that occur in the unaccelerated state into account. These include: rolling friction, frictional forces, lifting capacity on slopes and wind force.

$$P_s = \frac{F_f \times v}{\eta}$$

P_s static performance [W]

F_f driving resistance [N]

Static load torque (simplified)

$$M_{\text{statt}} = m \cdot g \cdot \frac{1}{\eta} \cdot \frac{D}{2} \cdot \frac{1}{i}$$

g acceleration due to gravity

Drive configuration

Deceleration

Deceleration torque

$$M_{dyn2} = m \cdot (-a) \cdot \eta_L \cdot \frac{D}{2} \cdot \frac{1}{i}$$

$$M_{VER} = M_{stat} + M_{dyn2}$$

M_{Verz} Deceleration torque

Load torques in the driving cycle

Acceleration phase

$$M_{Motor} = M_{stat} + M_{dyn1}$$

Constant velocity

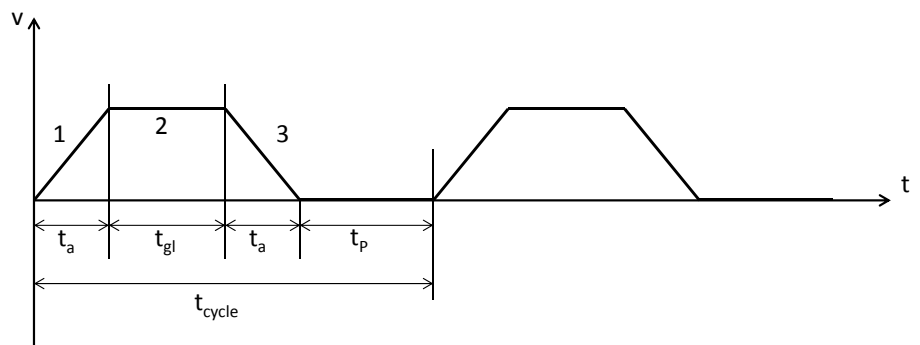
$$M_{Motor} = M_{stat}$$

Braking phase

$$M_{Motor} = M_{stat} + M_{dyn2}$$

Selection of the motor

Example:



Required dynamic torque on the motor (acceleration):

$$M1 = 20Nm$$

Required static torque on the motor:

$$M2 = 8,0Nm$$

Deceleration torque:

$$M3 = 10Nm$$

Acceleration time/deceleration time

$$t_a = 0,5s$$

Constant travel duration

$$t_{gl} = 5s$$

Cycle time

$$t_{Zykl} = 10s$$

Motor speed for constant travel

$$n = 1450 \text{ 1/min}$$

Effective motor torque and moderate motor speed

$$M_{eff} = \sqrt{\frac{M_1^2 \cdot t_a + M_2^2 \cdot t_{gl} + M_3^2 \cdot t_a}{t_{Zykl}}} = 7,55 \text{ Nm}$$

$$n_{eff} = \frac{n \cdot t_a + n \cdot t_{gl} + n \cdot t_a}{t_{Zykl}} = \frac{n \cdot (2 \cdot t_a + t_{gl})}{t_{Zykl}} = 870 \text{ min}^{-1}$$

Geared motors for electric overhead conveyors series BM

Motors

Drive configuration

The following motor is selected:

Type: S08LA4
 Rated output $P_n = 1,5$ kW
 Rated torque: $M_n = 9,55$ Nm
 Rated speed $n_n = 1500$ min⁻¹

Motor Data		S08LA4					
Rated output P_n	kW	1,1	1,5	1,65	2,2	2,2	3
Rated torque M_n	Nm	7	9,55	7	9,55	7	9,55
Rated current I_n	A	2,5	3,4	4,4	6	5,1	6,9
No. of Motor Poles 2p		4	4	4	4	4	4
Motor power n_n	1/min	1500	1500	2250	2250	3000	3000
Nominal Frequency	Hz	50	50	75	75	100	100
Motor efficiency η	%	IE4 - 88,0	IE3-85,3	IE4-89,3	IE3-86,7	IE4-91,0	IE4-89,8
Motorcircuit		Y	Y	D	D	Y	Y
Phase Resistance U-V R_{20}	Ohm	11,34	11,34	3,74	3,74	2,86	2,86
Winding Resistance R_{s20}	Ohm	5,64	5,67	5,67	5,67	1,43	1,43
Inductance D-Axis L_d	mH	80	80	26,7	26,7	20,2	20,2
Inductance Q-Axis L_q	mH	118	118	39,3	39,3	29,4	29,4
Spannungs-Konstante k_e	V/1000 1/min	174	174	100	100	84	84
Torque constant k_t	Nm/A	2,8	2,8	1,6	1,6	1,4	1,4
Peak Torque M_{max} (60s)	Nm	16	16	16	16	16	16
Peak Current I_{max} (60s)	A	5,9	5,9	10,5	10,5	12	12
Moment of inertia	kgm ²	0,0015					

With proper utilisation of the gears by doubling the reduction and increasing the revs of the motor to 3000 min⁻¹, the torque requirement for the motor can be halved, and this makes it possible to decrease the size of the motor.

Instead of the S08LA4, the following motor could be selected in this case:

Type: S08MA4
 Rated output $P_n=1,5$ kW
 Rated torque: $M_n=4,75$ Nm
 Rated speed $n_n=3000$ min⁻¹

Motor Data		S08MA4				
Rated output P_n	kW	0,75	1,1	1,65	1,5	2,2
Rated torque M_n	Nm	4,75	4,75	7	4,75	7
Rated current I_n	A	1,7	2,9	4,3	3,4	5
No. of Motor Poles 2p		4	4	4	4	4
Motor power n_n	1/min	1500	2250	2250	3000	3000
Nominal Frequency	Hz	50	75	75	1000	100
Motor efficiency η	%	IE4-87,4	IE4-89,0	IE3-84,7	IE4-90,1	IE3-87,8
Motorcircuit		Y	D	D	Y	Y
Phase Resistance U-V R_{20}	Ohm	18,8	6,27	6,27	4,8	4,8
Winding Resistance R_{s20}	Ohm	9,4	9,4	9,4	2,4	2,4
Inductance D-Axis L_d	mH	114	38	38	29,3	29,3
Inductance Q-Axis L_q	mH	136	45	45	34,2	34,2
Spannungs-Konstante k_e	V/1000 1/min	177	102	102	89	89
Torque constant k_t	Nm/A	2,8	1,6	1,6	1,4	1,4
Peak Torque M_{max} (60s)	Nm	12	12	12	12	12
Peak Current I_{max} (60s)	A	4,5	7,5	7,5	8,9	8,9
Moment of inertia	kgm ²	0,00115				

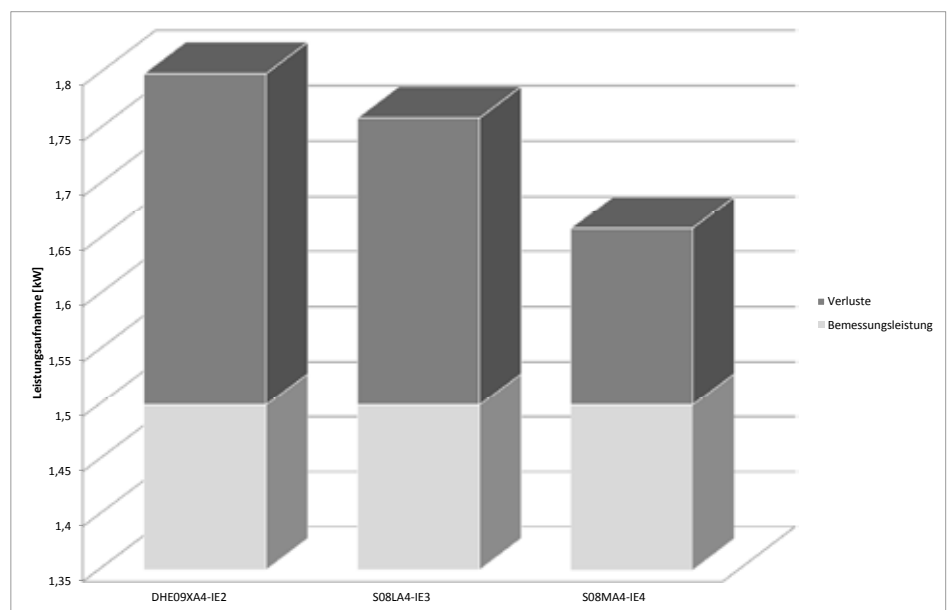
Drive configuration

This both increases the efficiency of the motor and simultaneously reduces the package length. The result is a cheaper drive with increased energy savings.

The diagram below shows the potential energy savings of using the different IE efficiency motors.

With the utilisation of the gears and the use of the S08MA4 IE4 motor, compared with the IE3 S08LA4 the power loss can be reduced by 36.24% and by 45.58% compared with the IE2 DHE09XA4.

At 8 hours of operation on 5 days a week across 50 weeks of a year, this results in an energy saving of 187.37 kW/h compared with the IE3 S08LA4 and 276.14 kW/h compared with the IE2 DHE09XA4.



Geared motors for electric overhead conveyors series BM Motors

Technical data of the motors with Rated speed 1500 ¹/_{min}

Rated speed 1500 ¹/_{min}

Motor	P _n	M _n	I _n	2p	n _n	f	η	Circuit	R ₂₀	R _{s20}	L _d	L _q	ke	kt	M _{max} (60s)	I _{max} (60s)	J
	kW	Nm	A		1/min	Hz	%		Ω	Ω	mH	mH	V/1000 1/min	Nm/A	Nm	A	kgm ²
SU08MA4	0,55	3,5	1,28	4	1500	50	IE4-87,7	Y	18,8	9,4	114	136	177	2,72	10	3,7	0,00115
SU08MA4	0,75	4,75	1,75	4	1500	50	IE3 – 85,6	Y	18,8	9,4	114	136	177	2,72	10	3,7	0,00115
S08MA4	0,75	4,75	1,7	4	1500	50	IE4-87,4	Y	18,8	9,4	114	136	177	2,8	12	4,5	0,00115
SU08LA4	0,75	4,75	1,75	4	1500	50	IE4-89,9	Y	11,34	5,67	80	118	174	2,73	12	4,3	0,00115
S08LA4	1,1	7	2,5	4	1500	50	IE4 – 88,0	Y	11,34	5,64	80	118	174	2,8	16	5,9	0,00115
SU09SA4	1,1	7	2,2	4	1500	50	IE4 – 88,5	Y	9,9	4,95	79	113	200	3,2	20	6,5	0,00245
S08LA4	1,5	9,55	3,4	4	1500	50	IE3-85,3	Y	11,34	5,67	80	118	174	2,8	16	5,9	0,00115
S09SA4	1,5	10	3,1	4	1500	50	IE4 – 89,2	Y	9,9	4,95	79	113	200	3,2	25	8	0,00245
SU09XA4	1,5	10	3,1	4	1500	50	IE4 – 90,0	Y	5,3	2,65	50,8	71,3	204	3,2	25	8	0,0038
S09SA4	2,2	14	4,3	4	1500	50	IE3 – 86,7	Y	9,9	4,95	79	113	200	3,2	25	8	0,00245
S09XA4	2,2	14	4,35	4	1500	50	IE4 – 89,8	Y	5,3	2,65	50,8	71,3	204	3,2	35	11	0,0038
SU11SA6	2,2	14	4,5	6	1500	75	IE4 – 91,2	Y	3,4	1,7	20,5	29	207	3,15	30	9,5	0,012
S09XA4	3	19	5,9	4	1500	50	IE3 – 87,7	Y	5,3	2,65	50,8	71,3	204	3,2	35	11	0,0038
S11SA6	3	19,1	6	6	1500	75	IE4 – 90,6	Y	3,4	1,7	20,5	29	207	3,15	50	17,5	0,012
SU11MA6	3	19,1	6,2	6	1500	75	IE4 – 92,5	Y	1,78	0,89	12,5	18,3	201	3,1	50	17	0,0175
S11SA6	4	25,5	8	6	1500	75	IE3-88,6	Y	3,4	1,7	20,5	29	207	3,15	50	17,5	0,012
S11MA6	4	25,5	8,15	6	1500	75	IE4-92,5	Y	1,78	0,89	12,5	18,3	201	3,1	70	23	0,0175
SU11LA6	4	25,5	8,2	6	1500	75	IE4 – 91,9	Y	1,23	0,615	9,5	13,8	206	3,1	60	20	0,0215
S11MA6	5,5	35	11,2	6	1500	75	IE3-90,8	Y	1,78	0,89	12,5	18,3	201	3,1	70	23	0,0175
S11LA6	5,5	35	10,8	6	1500	75	IE4-92,4	Y	1,23	0,615	9,5	13,8	206	3,2	90	30	0,0215
S11LA6	7,5	48	14,9	6	1500	75	IE3 – 91,4	Y	1,23	0,615	9,5	13,8	206	3,2	90	30	0,0215

P _n	Rated output
M _n	Rated torque:
I _n	Rated current
2p	No. of Motor Poles
n _n	Rated speed
f	Nominal Frequency
η	Motor efficiency
Circuit	Motorcircuit
R ₂₀	Phase Resistance U-V
R _{s20}	Winding Resistance
L _d	Inductance D-Axis
L _q	Inductance Q-Axis
ke	Voltage constant
kt	Torque constant
M _{max} (60s)	Peak Torque
I _{max} (60s)	Peak Current
J	Moment of inertia

All motors: converter supply voltage 380 to 500 V

Geared motors for electric overhead conveyors series BM

Motors

Technical data of the motors with Rated speed 2250 ¹/_{min}

Rated speed 2250 ¹/_{min}

Motor	P _n	M _n	I _n	2p	n _n	f	η	Circuit	R ₂₀	R _{s20}	L _d	L _q	ke	kt	M _{max} (60s)	I _{max} (60s)	J
	kW	Nm	A		1/min	Hz	%		Ω	Ω	mH	mH	V/1000 1/min	Nm/A	Nm	A	kgm ²
SU08MA4	0,85	3,5	2,2	4	2250	75	IE4-90,0	D	6,27	9,4	38	45	102	1,6	10	6,5	0,00115
S08MA4	1,1	4,75	2,9	4	2250	75	IE4-89,0	D	6,27	9,4	38	45	102	1,6	12	7,5	0,00115
SU08LA4	1,1	4,75	2,95	4	2250	75	IE4-91,5	D	3,74	5,67	26,7	39,3	100	1,6	12	7,5	0,00115
S08MA4	1,65	7	4,3	4	2250	75	IE3-84,7	D	6,27	9,4	38	45	102	1,6	12	7,5	0,00115
S08LA4	1,65	7	4,4	4	2250	75	IE4-89,3	D	3,74	5,67	26,7	39,3	100	1,6	16	10,5	0,00115
SU09SA4	1,65	7	3,9	4	2250	75	IE4 - 90,3	D	3,3	4,95	26,3	37,5	115	1,8	20	11	0,00245
S08LA4	2,2	9,55	6	4	2250	75	IE3-86,7	D	3,74	5,67	26,7	39,3	100	1,6	16	10,5	0,00115
S09SA4	2,2	10	5,5	4	2250	75	IE4 - 91,1	D	3,3	4,95	26,3	37,5	115	1,8	25	14	0,00245
SU09XA4	2,2	10	5,7	4	2250	75	IE4 - 91,2	D	1,76	2,65	16,9	23,8	118	1,8	25	14	0,0038
S09SA4	3	12,75	6,8	4	2250	75	IE3 - 89,2	D	3,3	4,95	26,3	37,5	115	1,8	25	14	0,00245
S09XA4	4	17,5	9,2	4	2250	75	IE4 - 90,8	D	1,76	2,65	16,9	23,8	118	1,8	35	19	0,0038

P _n	Rated output
M _n	Rated torque:
I _n	Rated current
2p	No. of Motor Poles
n _n	Rated speed
f	Nominal Frequency
η	Motor efficiency
Circuit	Motorcircuit
R ₂₀	Phase Resistance U-V
R _{s20}	Winding Resistance
L _d	Inductance D-Axis
L _q	Inductance Q-Axis
ke	Spannungs-Konstante
kt	Torque constant
M _{max} (60s)	Peak Torque
I _{max} (60s)	Peak Current
J	Moment of inertia

All motors: converter supply voltage 380 to 500 V

Geared motors for electric overhead conveyors series BM Motors

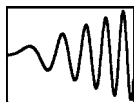
Technical data of the motors with Rated speed 3000 ¹/_{min}

Rated speed 3000 ¹/_{min}

Motor	P _n	M _n	I _n	2p	n _n	f	η	Circuit	R ₂₀	R _{s20}	L _d	L _q	ke	kt	M _{max} (60s)	I _{max} (60s)	J
	kW	Nm	A		1/min	Hz	%		Ω	Ω	mH	mH	V/1000 1/min	Nm/A	Nm	A	kgm ²
SU08MA4	1,1	3,5	2,4	4	3000	100	IE4-91,3	Y	4,8	2,4	29,3	34,2	89	1,45	10	7,0	0,00115
S08MA4	1,5	4,75	3,4	4	3000	100	IE4-90,1	Y	4,8	2,4	29,3	34,2	89	1,4	12	8,9	0,00115
SU08LA4	1,5	4,75	3,5	4	3000	100	IE4-92,2	Y	2,86	1,43	20,2	29,7	84	1,4	12	8,7	0,00115
S08MA4	2,2	7	5	4	3000	100	IE3-87,8	Y	4,8	2,4	29,3	34,2	89	1,4	12	8,9	0,00115
S08LA4	2,2	7	5,1	4	3000	100	IE4-91,0	Y	2,86	1,43	20,2	29,4	84	1,4	16	12	0,00115
SU09SA4	2,2	7	4,6	4	3000	100	IE4 - 91,0	Y	2,46	1,23	19,3	27,4	100	1,6	20	13	0,00245
S08LA4	3	9,55	6,9	4	3000	100	IE4-89,8	Y	2,86	1,43	20,2	29,4	84	1,4	16	12	0,00115
SU09XA4	3	10	6,5	4	3000	100	IE4 - 92,7	Y	1,31	0,655	12,7	17,9	102	1,6	25	15	0,0038
S09SA4	4	12,75	7,9	4	3000	100	IE4 - 91,5	Y	2,46	1,23	19,3	27,4	100	1,6	25	17	0,00245
SU11SA6	4	12,75	8,3	6	3000	150	IE4 - 93,0	Y	0,867	0,434	5,2	7,6	103	1,54	30	19,5	0,012
S09XA4	5,5	17,5	10,7	4	3000	100	IE4 - 93,0	Y	1,31	0,655	12,7	17,9	102	1,6	40	27	0,0038
S11SA6	5,5	17,5	11	6	3000	150	IE4-91,4	Y	0,867	0,434	5,2	7,6	103	1,59	50	34	0,012
SU11MA6	5,5	17,5	11,7	6	3000	150	IE4 - 93,2	D	0,454	0,681	3,4	4,7	102	1,5	45	30	0,0175
S11SA6	7,5	23,9	15,2	6	3000	150	IE3-90,7	Y	0,867	0,434	5,2	7,6	103	1,59	50	34	0,012
S11MA6	7,5	23,9	15,4	6	3000	150	IE4-92,1	D	0,454	0,681	3,4	4,7	102	1,55	70	48	0,0175
SU11LA6	7,5	23,9	15,3	6	3000	150	IE4 - 93,7	D	0,344	0,516	2,8	3,7	108	1,55	60	39	0,0215
S11MA6	9,5	30,2	19,3	6	3000	150	IE3-91,3	D	0,454	0,681	3,4	4,7	102	1,55	70	48	0,0175
S11LA6	9,5	30,2	18,2	6	3000	150	IE4 - 92,7	D	0,344	0,516	2,8	3,7	108	1,6	90	58	0,0215
S11MA6	11	35	22,5	6	3000	150	IE3-91,2	D	0,454	0,681	3,4	4,7	102	1,55	70	48	0,0175
S11LA6	11	35	21,1	6	3000	150	IE4 - 92,9	D	0,344	0,516	2,8	3,7	108	1,6	90	58	0,0215
S11LA6	15	48	29,6	6	3000	150	IE3 - 91,9	D	0,344	0,516	2,8	3,7	108	1,6	90	58	0,0215

P _n	Rated output
M _n	Rated torque:
I _n	Rated current
2p	No. of Motor Poles
n _n	Rated speed
f	Nominal Frequency
η	Motor efficiency
Circuit	Motorcircuit
R ₂₀	Phase Resistance U-V
R _{s20}	Winding Resistance
L _d	Inductance D-Axis
L _q	Inductance Q-Axis
ke	Voltage constant
kt	Torque constant
M _{max} (60s)	Peak Torque
I _{max} (60s)	Peak Current
J	Moment of inertia

All motors: converter supply voltage 380 to 500 V



Operation with frequency converter

The figures given in the table below are for Bauer motors operating in conjunction with the frequency inverter. The torques referred to in tables can be entered for the respective frequencies in continuous operation (S1 = duty factor 100%).

Motor torques in the adjusting range 150 1/min - 1800 1/min, duty type S1

Type	Speed 1/min	Torque Nm	Power kW	Voltages V	Current A	Frequency Hz	Circuit
S08MA4	150	5	0,08	66	1,9	5	Y
	500	5,6	0,29	138	2,1	16,7	Y
	1000	6,5	0,68	235	2,3	33,3	Y
	1500	6,5	1,0	340	2,3	50	Y
	1800	6,5	1,2	378	2,3	60	Y
S08LA4	150	6,5	0,10	55	2,5	5	Y
	500	8,0	0,42	125	3	16,7	Y
	1000	9,55	1,0	225	3,5	33,33	Y
	1500	9,55	1,5	315	3,5	50	Y
	1800	9,55	1,8	378	3,5	60	Y
S09SA4	150	8	0,13	56	2,5	5	Y
	500	10	0,53	140	3,2	16,7	Y
	1000	13	1,36	258	4,0	33,33	Y
	1500	13	2	370	4,0	50	Y
	1800	11,5	2,2	375	4,0	60	Y
S09XA4	150	12,5	0,2	53	4	5	Y
	500	16	0,84	134	5	16,66	Y
	1000	20	2,1	253	6,3	33,33	Y
	1500	20	3,1	364	6,3	50	Y
	1800	19	3,6	380	6,3	60	Y
S11SA6	150	17,5	0,3	53	5,8	7,5	Y
	500	21,5	1,1	134	7,2	25	Y
	1000	25	2,6	253	8	50	Y
	1500	25	3,9	346	8	75	Y
	1800	25	4,7	380	8	90	Y
S11MA6	150	25	0,4	44	8,3	7,5	Y
	500	28	1,5	134	9	25	Y
	1000	35	3,7	253	11,2	50	Y
	1500	35	5,5	328	11,2	75	Y
	1800	35	6,6	380	11,2	90	Y
S11LA6	150	35	0,5	44	11,2	7,5	Y
	500	41	2,1	134	13,1	25	Y
	1000	50	5,2	253	15,5	50	Y
	1500	50	7,9	340	15,5	75	Y
	1800	50	9,4	380	15,5	90	Y

Converter Settings:

Minimum clock frequency: 3 kHz
 Short-term current limit: $160 \% \cdot I_{1500/min}$
 Maximum overload time: 60 s
 Minimum frequency: 5 Hz
 Maximum frequency: 60 Hz
 Permissible operating time below f_{min} : 60 s (in open loop mode) Alle übrigen All
 other settings must be selected according the requirements of the drive.
 The maximum overload time and the permissible operating time below f_{min} are based on
 an interval of 10 minutes.
 Non-standard operating conditions on request.

All motors: converter supply voltage 380 to 500 V

Geared motors for electric overhead conveyors series BM Motors

Operation with frequency converter

Motor-Drehmomente bei Stellbereich 150 1/min - 3600 1/min, Duty type S1

Type	Speed 1/min	Torque Nm	Power kW	Voltages V	Current A	Frequency Hz	Circuit
S08MA4	150	5	0,08	34	3,7	5	Y
	500	5,6	0,29	68	4,1	16,7	Y
	1000	6,5	0,7	119	4,7	33,3	Y
	3000	6,5	2,0	308	4,7	100	Y
	3600	6,5	2,5	372	4,7	120	Y
S08LA4	150	6,5	0,10	23	5	5	Y
	500	8,0	0,42	63	5,9	16,7	Y
	1000	9,55	1,0	114	7,0	33,33	Y
	3000	9,55	3,0	296	7,0	100	Y
	3600	9,55	3,6	358	7,0	120	Y
S09SA4	150	8	0,13	28	5,2	5	Y
	500	10	0,53	70	6,4	16,7	Y
	1000	13	1,36	129	8,25	33,33	Y
	3000	13	4	342	8,25	100	Y
	3600	11	4,15	374	6,9	120	Y
S09XA4	150	12,5	0,196	26	8	5	Y
	500	16	0,84	66	9,9	16,7	Y
	1000	20	2,1	124	12,5	33,33	Y
	3000	20	6,3	334	12,5	100	Y
	3600	14,5	5,5	380	9,2	120	Y
S11SA6	150	17,5	0,3	27	12	7,5	Y
	500	21,5	1,1	68	14,5	25	Y
	1000	25	2,6	126	16	50	Y
	3000	25	7,9	340	16	150	Y
	3600	21	7,9	380	14	180	Y
S11MA6	150	25	0,4	26	16	7,5	Y
	500	28	1,5	68	18,5	25	Y
	1000	35	3,7	126	22,5	50	Y
	3000	35	11,0	325	22,5	150	Y
	3600	30	11,3	380	20	180	Y
S11LA6	150	35	0,5	26	23	7,5	Y
	500	41	2,1	68	26,5	25	Y
	1000	50	5,2	125	31	50	Y
	3000	50	15,7	345	31	150	Y
	3600	42	15,8	380	27	180	Y

Converter Settings:

Minimum clock frequency: 3 kHz
 Short-term current limit: 160 % * $I_{3000/min}$
 Maximum overload time: 60 s
 Minimum frequency: 5 Hz
 Maximum frequency: 120 Hz
 Permissible operating time below f_{min} : 60 s (in open loop mode) Alle übrigen All
 other settings must be selected according the requirements of the drive.
 The maximum overload time and the permissible operating time below f_{min} are based on
 an interval of 10 minutes.
 Non-standard operating conditions on request.

All motors: converter supply voltage 380 to 500 V

Geared motors for electric overhead conveyors series BM Motors

Characteristic curve the motors with Rated speed 1500 ¹/_{min}

Rated data of the motor

Type: **S08MA4**

Rated parameters and data of the motor

Rated output P _n	1,0	1,75	kW
Rated torque: M _n	6,5	6,5	Nm
Rated current I _n	2,3	4,0	A
No. of Motor Poles 2p	4	4	
Rated speed n _n	1500	2600	1/min
Nominal Frequency	50	87	Hz
Motor circuit	wye circuit	delta circuit	
Strang-Resistance R _{s20}	9,35*		Ohm
Strang-Inductance D-Axis L _d	97*		mH
Strang-Inductance Q-Axis L _q	170*		mH
Voltage constant k _e	180	103	V / 1000 1/min
Torque constant k _t	2,82	1,62	Nm / A
Peak Torque M _{max} (60s)	10	10	Nm
Peak Current I _{max} (60s)	3,7	6,4	A
Converter supply voltage	380 - 500		V

Δ * Input value Danfoss Frequency converter FC302 => delta circuit 1/3 of the phase value

Data operation with frequency converter S1 operation, wye circuit

Torque	5,0	5,6	6,5	6,5	6,5	Nm
Power	0,08	0,29	0,68	1,0	1,2	kW
Voltages *	66	138	243	340	378	V
Current	1,9	2,1	2,3	2,3	2,3	A
Frequenz	5	16,66	33,33	50	60	Hz
Speed	150	500	1000	1500	1800	1/min
Duty type	S1					

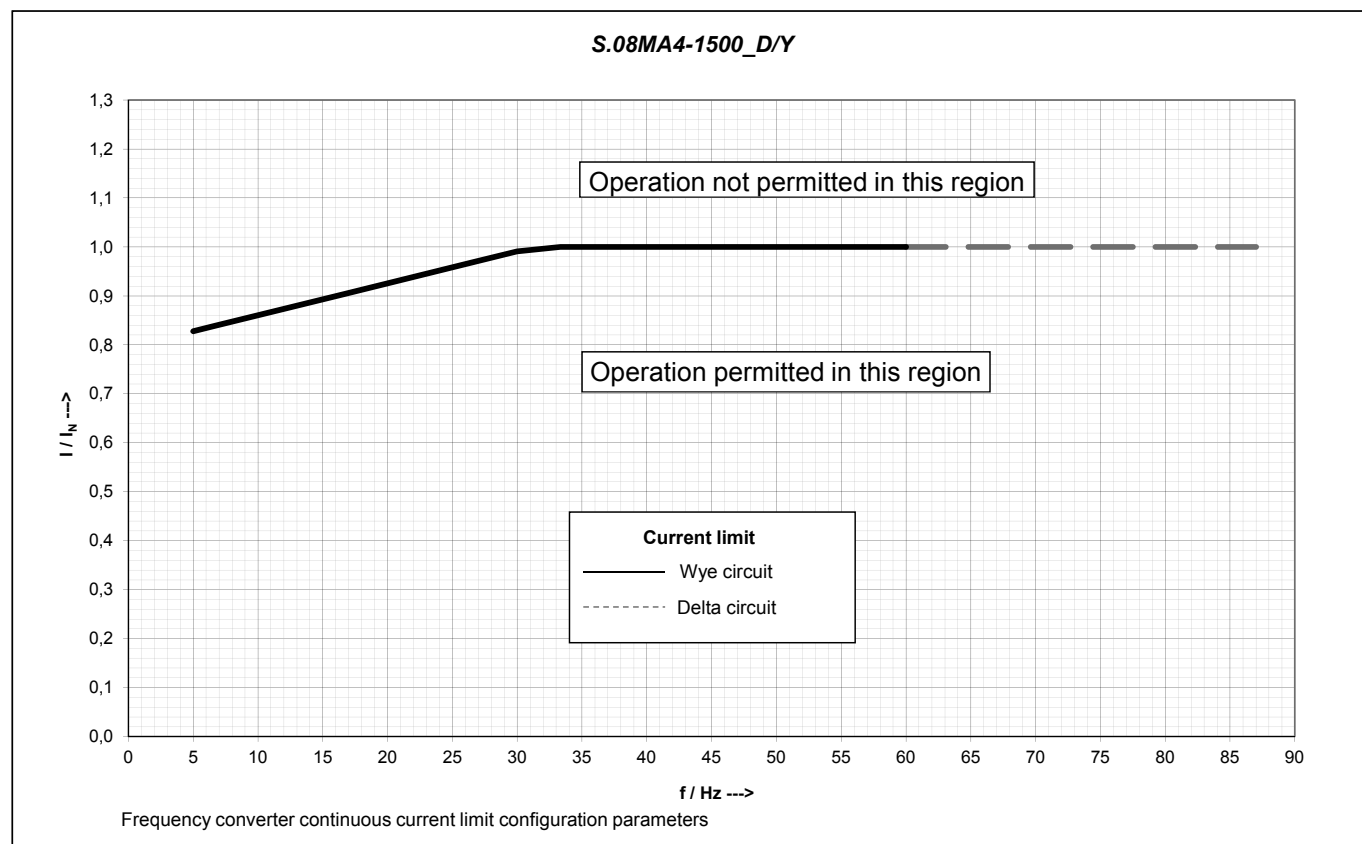
Data operation with frequency converter S1 operation, delta circuit

Torque	5,0	5,6	6,5	6,5	6,5	Nm
Power	0,08	0,29	0,68	1,0	1,75	kW
Voltages *	38	79	142	198	320	V
Current	3,3	3,6	4,0	4,0	4,0	A
Frequenz	5	16,66	33,33	50	87	Hz
Speed	150	500	1000	1500	2600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Characteristic curve the motors with Rated speed 1500 $\frac{1}{\text{min}}$

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10% according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10%, 50/60 Hz. Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Max. permissible ambient temperature range -20 °C to +50 °C

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160% * I_n
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below $f_{\min}$:	60 s
All other settings must be selected according the requirements of the drive.	

The maximum overload time and the permissible operating time below $f_{\min}$ are based on an interval of 10 minutes

Geared motors for electric overhead conveyors series BM Motors

Characteristic curve the motors with Rated speed 1500 ¹/_{min}

Rated data of the motor

Type: **S08LA4**

Rated parameters and data of the motor

Rated output P _n	1,50	2,45	kW
Rated torque: M _n	9,55	9,0	Nm
Rated current I _n	3,5	5,9	A
No. of Motor Poles 2p	4	4	
Rated speed n _n	1500	2600	1/min
Nominal Frequency	50	87	Hz
Motor circuit	wye circuit	delta circuit	
Strang-Resistance R _{s20}	5,5 *		Ohm
Strang-Inductance D-Axis L _d	70 *		mH
Strang-Inductance Q-Axis L _q	117 *		mH
Voltage constant k _e	171	99	V / 1000 1/min
Torque constant k _t	2,73	1,52	Nm / A
Peak Torque M _{max} (60s)	15	14	Nm
Peak Current I _{max} (60s)	5,6	9,5	A
Converter supply voltage	380 - 500		V

Δ * Input value Danfoss Frequency converter FC302 => delta circuit 1/3 of the phase value

Data operation with frequency converter S1 operation, wye circuit

Torque	6,5	8,0	9,55	9,55	9,55	Nm
Power	0,1	0,42	1,0	1,5	1,8	kW
Voltages *	55	125	225	315	378	V
Current	2,5	3,0	3,5	3,5	3,5	A
Frequenz	5	16,66	33,33	50	60	Hz
Speed	150	500	1000	1500	1800	1/min
Duty type	S1					

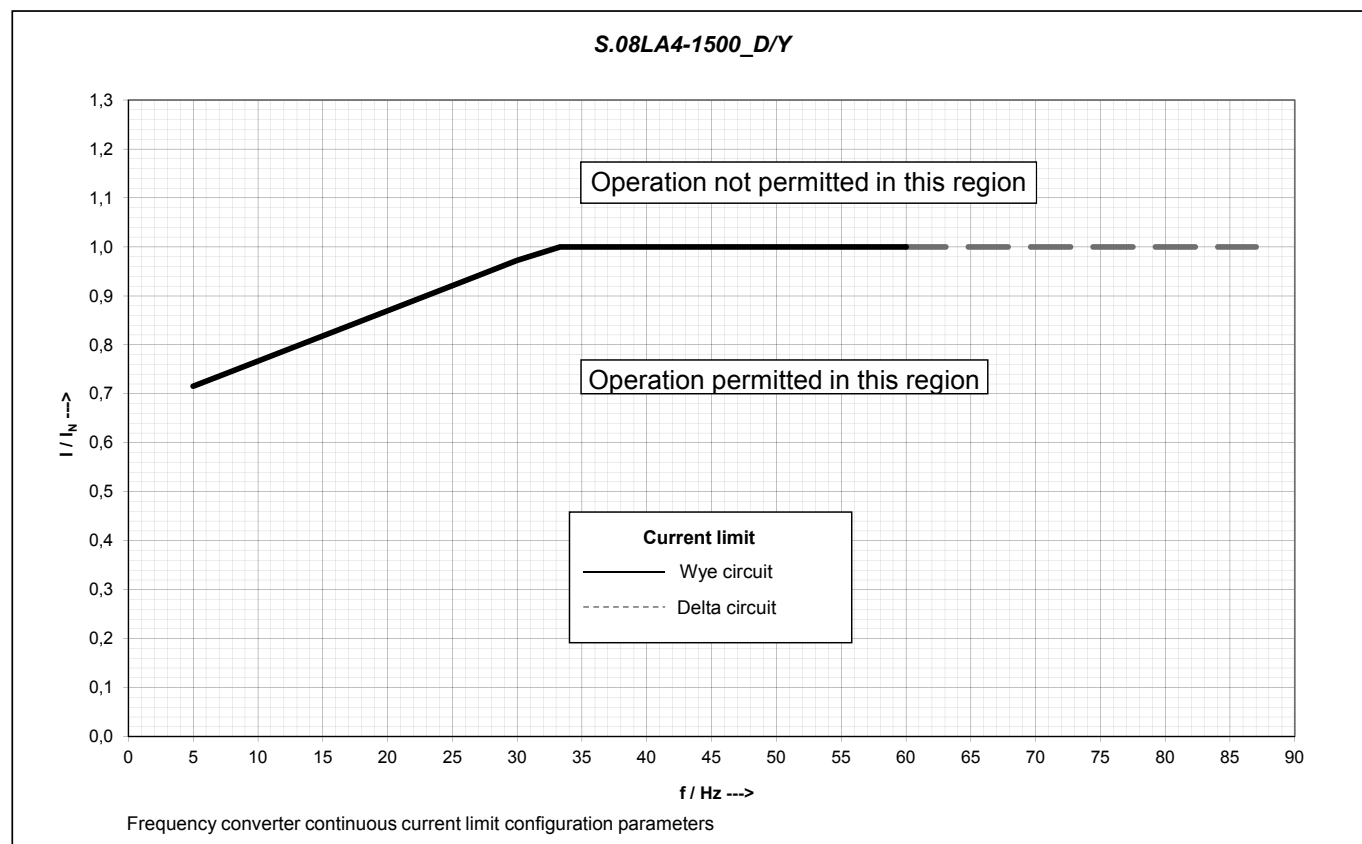
Data operation with frequency converter S1 operation, delta circuit

Torque	6,25	8,0	9,0	9,0	9,0	Nm
Power	0,10	0,39	0,94	1,4	2,45	kW
Voltages *	33	72	131	182	300	V
Current	4,3	5,0	5,9	5,9	5,9	A
Frequenz	5	16,66	33,33	50	87	Hz
Speed	150	500	1000	1500	2600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Characteristic curve the motors with Rated speed 1500 ¹/_{min}

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10% according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10%, 50/60 Hz. Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Max. permissible ambient temperature range -20 °C to +50 °C

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160% * I _n
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes

Geared motors for electric overhead conveyors series BM Motors

Characteristic curve the motors with Rated speed 1500 ¹/_{min}

Rated data of the motor

Type: **S09SA4**

Rated parameters and data of the motor

Rated output P _n	2,0	3,5	kW
Rated torque: M _n	13	13	Nm
Rated current I _n	4,0	7,0	A
No. of Motor Poles 2p	4	4	
Rated speed n _n	1500	2600	1/min
Nominal Frequency	50	87	Hz
Motor circuit	wye circuit	delta circuit	
Strang-Resistance R _{s20}	4,95*		Ohm
Strang-Inductance D-Axis L _d	64,1*		mH
Strang-Inductance Q-Axis L _q	109,8*		mH
Voltage constant k _e	208	120	V / 1000 1/min
Torque constant k _t	3,2	1,85	Nm / A
Peak Torque M _{max} (60s)	20	20	Nm
Peak Current I _{max} (60s)	6,4	11,0	A
Converter supply voltage	380 - 500		V

Δ * Input value Danfoss Frequency converter FC302 => delta circuit 1/3 of the phase value

Data operation with frequency converter S1 operation, wye circuit

Torque	8	10	13	13	11,5	Nm
Power	0,13	0,53	1,36	2	2,2	kW
Voltages *	56	140	258	370	375	V
Current	2,5	3,2	4,0	4,0	4,0	A
Frequenz	5	16,66	33,33	50	60	Hz
Speed	150	500	1000	1500	1800	1/min
Duty type	S1					

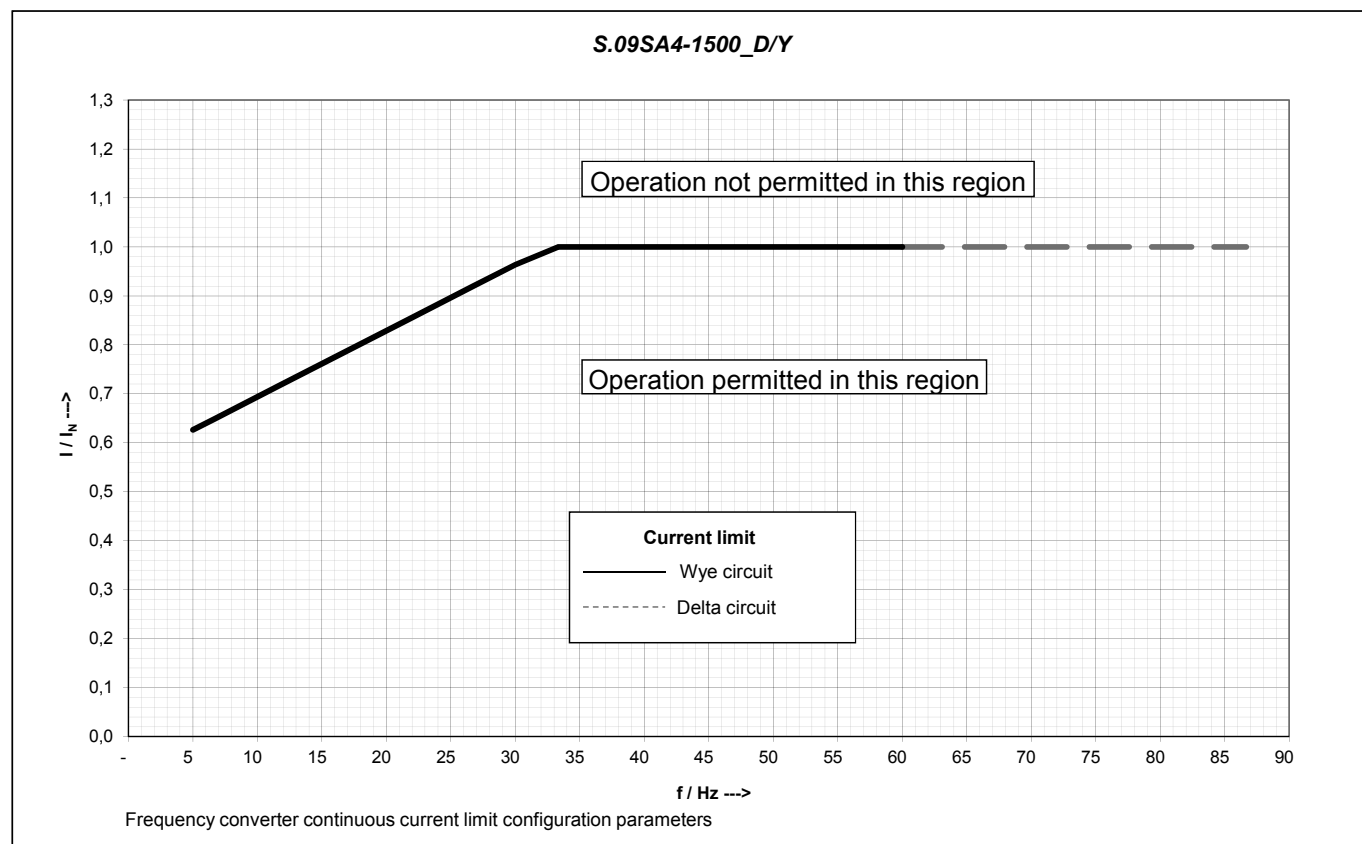
Data operation with frequency converter S1 operation, delta circuit

Torque	8	10	13	13	13	Nm
Power	0,13	0,53	1,36	2	3,5	kW
Voltages *	33	81	149	214	370	V
Current	4,3	5,5	7,0	7,0	7,0	A
Frequenz	5	16,66	33,33	50	87	Hz
Speed	150	500	1000	1500	2600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Characteristic curve the motors with Rated speed 1500 ¹/_{min}

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10% according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10%, 50/60 Hz. Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Max. permissible ambient temperature range -20 °C to +50 °C

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160% * I _N
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes

Geared motors for electric overhead conveyors series BM Motors

Characteristic curve the motors with Rated speed 1500 ¹/_{min}

Rated data of the motor

Type: **S09XA4**

Rated parameters and data of the motor

Rated output P _n	3,1	5,5	kW
Rated torque: M _n	20	20	Nm
Rated current I _n	6,3	10,9	A
No. of Motor Poles 2p	4	4	
Rated speed n _n	1500	2600	1/min
Nominal Frequency	50	87	Hz
Motor circuit	wye circuit	delta circuit	
Strang-Resistance R _{s20}	2,625*		Ohm
Strang-Inductance D-Axis L _d	41,2*		mH
Strang-Inductance Q-Axis L _q	70,1*		mH
Voltage constant k _e	209	120	V / 1000 1/min
Torque constant k _t	3,2	1,85	Nm / A
Peak Torque M _{max} (60s)	31	29	Nm
Peak Current I _{max} (60s)	10	16	A
Converter supply voltage	380 - 500		V

Δ * Input value Danfoss Frequency converter FC302 => delta circuit 1/3 of the phase value

Data operation with frequency converter S1 operation, wye circuit

Torque	13	16	20	20	19	Nm
Power	0,20	0,84	2,1	3,1	3,6	kW
Voltages *	53	134	253	364	380	V
Current	4,0	5,0	6,3	6,3	6,3	A
Frequenz	5	16,66	33,33	50	60	Hz
Speed	150	500	1000	1500	1800	1/min
Duty type	S1					

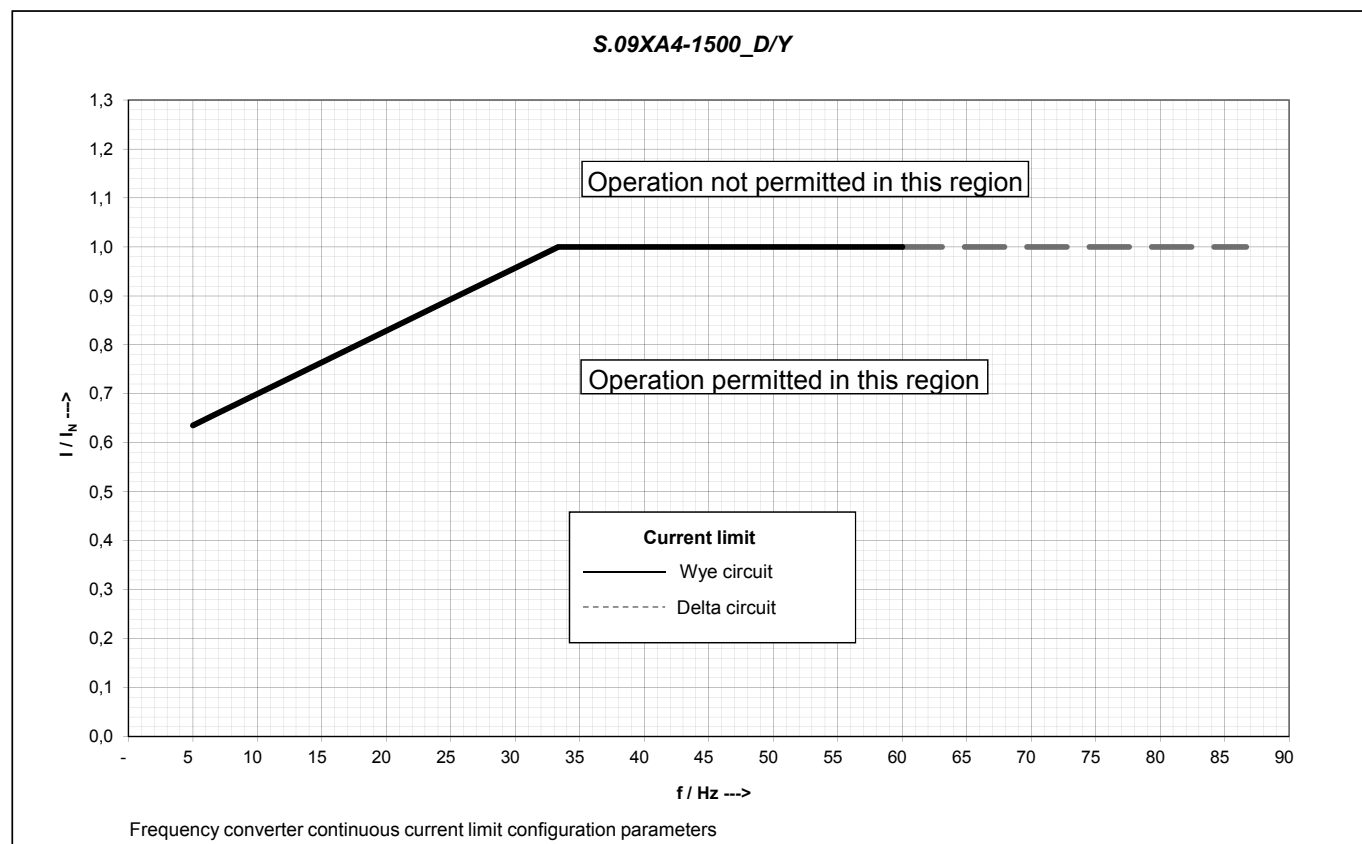
Data operation with frequency converter S1 operation, delta circuit

Torque	13	16	20	20	20	Nm
Power	0,2	0,84	2,1	3,1	5,5	kW
Voltages *	31	78	146	210	348	V
Current	7,0	8,7	10,9	10,9	10,9	A
Frequenz	5	16,66	33,33	50	87	Hz
Speed	150	500	1000	1500	2600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Characteristic curve the motors with Rated speed 1500 ¹/_{min}

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10% according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10%, 50/60 Hz. Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Max. permissible ambient temperature range -20 °C to +50 °C

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160% * I _n
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s
All other settings must be selected according the requirements of the drive.	

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes

Geared motors for electric overhead conveyors series BM Motors

Characteristic curve the motors with Rated speed 1500 ¹/_{min}

Rated data of the motor

Typ : **S11SA6**

Rated parameters and data of the motor

Rated output P _n	3,5	6,1	kW
Rated torque: M _n	22,5	22,5	Nm
Rated current I _n	7,0	12,5	A
No. of Motor Poles 2p	6	6	
Rated speed n _n	1500	2600	1/min
Nominal Frequency	75	130	Hz
Motorcircuit	wye circuit	delta circuit	
Strang-Resistance R _{s20}	1,76*		Ohm
Strang-Inductance D-Axis L _d	20*		mH
Strang-Inductance Q-Axis L _q	30*		mH
Voltage constant k _e	210	121	V / 1000 1/min
Torque constant k _t	3,20	1,80	Nm / A
Peak Torque M _{max} (60s)	35	35	Nm
Peak Current I _{max} (60s)	11	19	A
Converter supply voltage	380 - 500		V

Δ * Input value Danfoss Frequency converter FC302 => delta circuit 1/3 of the phase value

Data operation with frequency converter S1 operation, wye circuit

Torque	18	20	22,5	22,5	22,5	Nm
Power	0,28	1,0	2,4	3,5	6,1	kW
Voltages *	54	132	245	351	381	V
Current	5,6	6,2	7,0	7,0	7,0	A
Frequenz	7,5	25	50	75	90	Hz
Speed	150	500	1000	1500	1800	1/min
Duty type	S1					

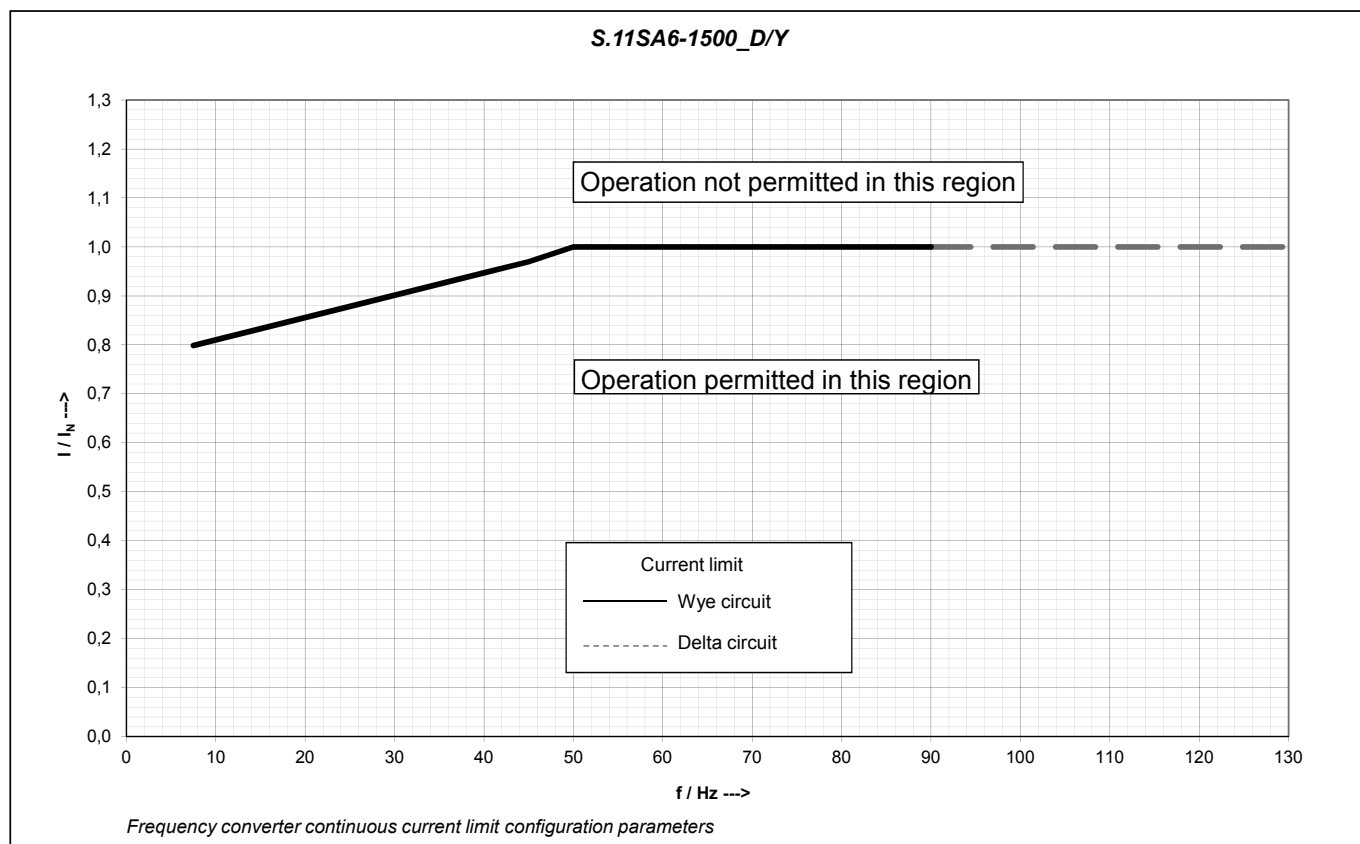
Data operation with frequency converter S1 operation, delta circuit

Torque	18	20	22,5	22,5	22,5	Nm
Power	0,28	1,0	2,4	3,5	6,1	kW
Voltages *	31	76	142	203	341	V
Current	10	11	12,5	12,5	12,5	A
Frequenz	7,5	25	50	75	130	Hz
Speed	150	500	1000	1500	2600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Characteristic curve the motors with Rated speed 1500 ¹/_{min}

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10% according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10%, 50/60 Hz. Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Max. permissible ambient temperature range -20 °C to +50 °C

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160% * I _N
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes

Geared motors for electric overhead conveyors series BM Motors

Characteristic curve the motors with Rated speed 1500 ¹/_{min}

Rated data of the motor

Type: **S11MA6**

Rated parameters and data of the motor

Rated output P _n	5,50	9,50	kW
Rated torque: M _n	35	35	Nm
Rated current I _n	11,0	19,1	A
No. of Motor Poles 2p	6	6	
Rated speed n _n	1500	3600	1/min
Nominal Frequency	75	130	Hz
Motor circuit	wye circuit	delta circuit	
Strang-Resistance R _{s20}	0,892*		Ohm
Strang-Inductance D-Axis L _d	12*		mH
Strang-Inductance Q-Axis L _q	18,4*		mH
Voltage constant k _e	206	117	V / 1000 1/min
Torque constant k _t	3,15	1,79	Nm / A
Peak Torque M _{max} (60s)	55	55	Nm
Peak Current I _{max} (60s)	17	30	A
Converter supply voltage	380 - 500		V

Δ * Input value Danfoss Frequency converter FC302 => delta circuit 1/3 of the phase value

Data operation with frequency converter S1 operation, wye circuit

Torque	26,5	30	35	35	35	Nm
Power	0,42	1,6	3,7	5,5	6,5	kW
Voltages *	46	121	229	331	377	V
Current	8,5	9,5	11,0	11,0	11,0	A
Frequenz	7,5	25	50	75	90	Hz
Speed	150	500	1000	1500	1800	1/min
Duty type	S1					

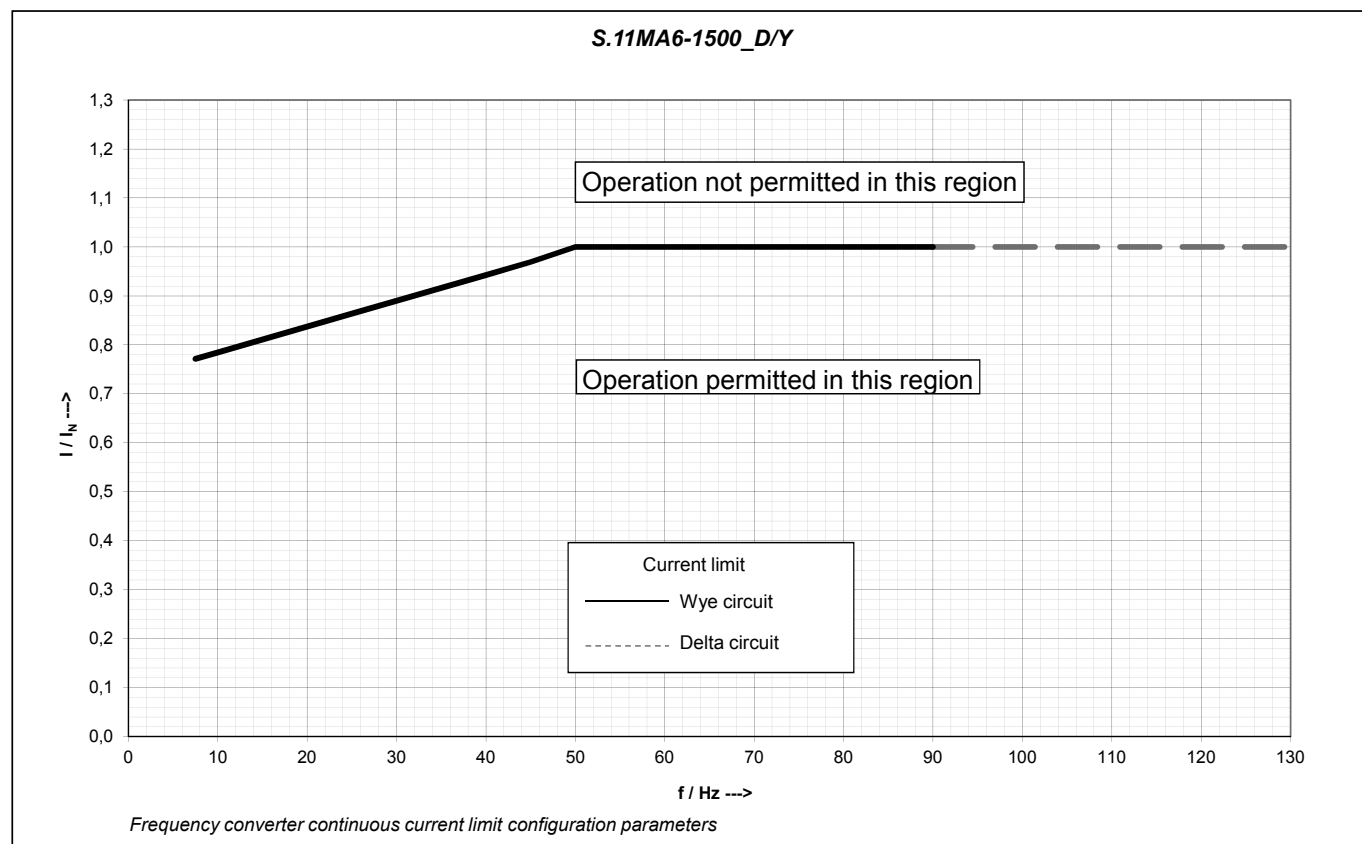
Data operation with frequency converter S1 operation, delta circuit

Torque	26,2	30	35	35	35	Nm
Power	0,41	1,6	3,7	5,5	9,5	kW
Voltages *	27	70	132	190	321	V
Current	14,7	16,7	19,1	19,1	19,1	A
Frequenz	7,5	25	50	75	130	Hz
Speed	150	500	1000	1500	2600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Characteristic curve the motors with Rated speed 1500 ¹/_{min}

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10% according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10%, 50/60 Hz. Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Max. permissible ambient temperature range -20 °C to +50 °C

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160% * I _N
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s
All other settings must be selected according the requirements of the drive.	

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes

Geared motors for electric overhead conveyors series BM Motors

Characteristic curve the motors with Rated speed 1500 ¹/_{min}

Rated data of the motor

Type: **S11LA6**

Rated parameters and data of the motor

Rated output P _n	7,50	13	kW
Rated torque: M _n	48	48	Nm
Rated current I _n	14,7	26	A
No. of Motor Poles 2p	6	6	
Rated speed n _n	1500	2600	1/min
Nominal Frequency	75	130	Hz
Motor circuit	wye circuit	delta circuit	
Strang-Resistance R _{s20}	0,605*		Ohm
Strang-Inductance D-Axis L _d	9,3*		mH
Strang-Inductance Q-Axis L _q	13,9*		mH
Voltage constant k _e	210	121	V / 1000 1/min
Torque constant k _t	3,25	1,84	Nm / A
Peak Torque M _{max} (60s)	75	75	Nm
Peak Current I _{max} (60s)	23	40	A
Converter supply voltage	380 - 500		V

Δ * Input value Danfoss Frequency converter FC302 => delta circuit 1/3 of the phase value

Data operation with frequency converter S1 operation, wye circuit

Torque	32,5	39,4	48	48	47,5	Nm
Power	0,51	2,0	5,0	7,5	9,0	kW
Voltages *	44	121	231	338	375	V
Current	9,8	12,0	14,7	14,7	14,7	A
Frequenz	7,5	25	50	75	90	Hz
Speed	150	500	1000	1500	1800	1/min
Duty type	S1					

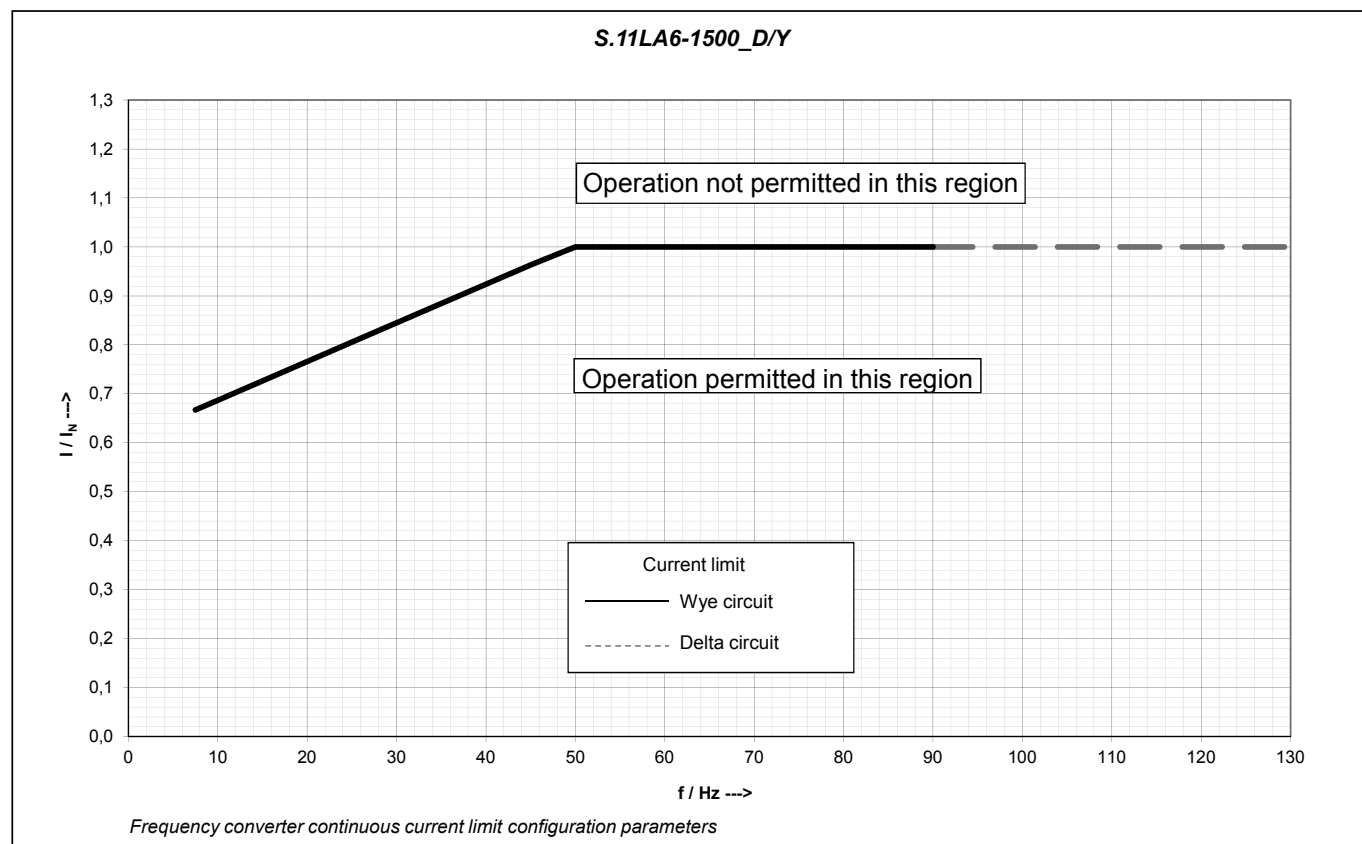
Data operation with frequency converter S1 operation, delta circuit

Torque	32,5	39,5	48	48	48	Nm
Power	0,51	2,0	5,0	7,5	13	kW
Voltages *	26	71	134	197	328	V
Current	17,6	21,1	26	26	26	A
Frequenz	7,5	25	50	75	130	Hz
Speed	150	500	1000	1500	2600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Characteristic curve the motors with Rated speed 1500 $\frac{1}{\text{min}}$

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10% according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10%, 50/60 Hz. Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Max. permissible ambient temperature range -20 °C to +50 °C

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160% * I_N
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f_{min} :	60 s
All other settings must be selected according the requirements of the drive.	

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes

Geared motors for electric overhead conveyors series BM Motors

Characteristic curve the motors with Rated speed 3000 ¹/_{min}

Rated data of the motor

Type: **S08MA4**

Rated parameters and data of the motor

Rated output P _n	2,0	kW
Rated torque: M _n	6,50	Nm
Rated current I _n	4,7	A
No. of Motor Poles 2p	4	
Rated speed n _n	3000	1/min
Nominal Frequency	100	Hz
Motor circuit	wye circuit	
Strang-Resistance R _{s20}	2,36	Ohm
Strang-Inductance D-Axis L _d	24,7	mH
Strang-Inductance Q-Axis L _q	43,5	mH
Voltage constant k _e	90	V / 1000 1/min
Torque constant k _t	1,28	Nm / A
Peak Torque M _{max} (60s)	10	Nm
Peak Current I _{max} (60s)	7,5	A
Converter supply voltage	380 - 500	V

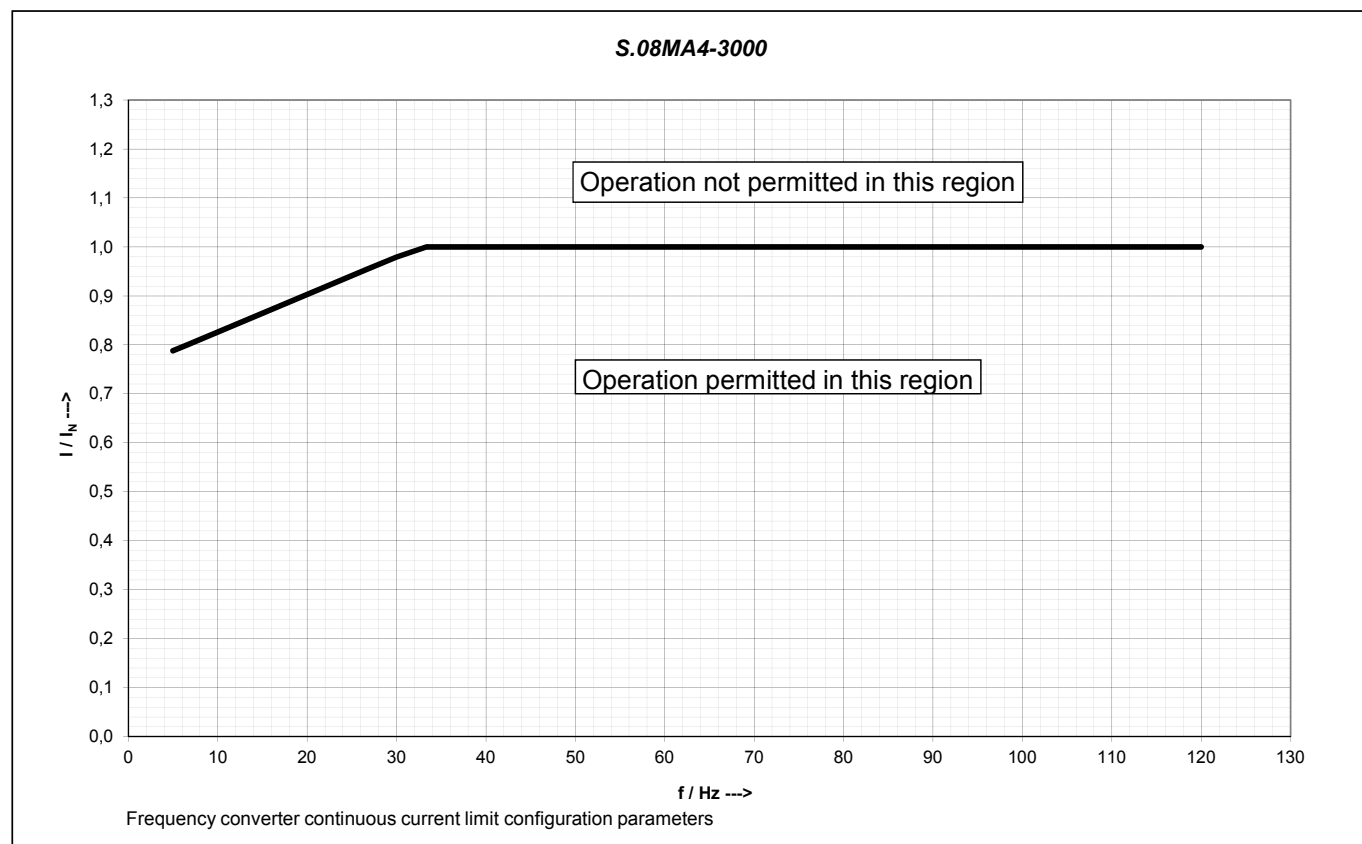
Operation with frequency converter

Torque	5,0	5,6	6,5	6,5	6,5	Nm
Power	0,08	0,29	0,68	2,0	2,5	kW
Voltages *	34	68	119	308	372	V
Current	3,7	4,1	4,7	4,7	4,7	A
Frequenz	5	16,66	33,33	100	120	Hz
Speed	150	500	1000	3000	3600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Characteristic curve the motors with Rated speed 3000 $\frac{1}{\text{min}}$

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10% according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10%, 50/60 Hz. Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Max. permissible ambient temperature range -20 °C to +50 °C

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160% * I_N
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below $f_{\min}$:	60 s
All other settings must be selected according the requirements of the drive.	

The maximum overload time and the permissible operating time below $f_{\min}$ are based on an interval of 10 minutes

Geared motors for electric overhead conveyors series BM Motors

Characteristic curve the motors with Rated speed 3000 ¹/_{min}

Rated data of the motor

Type: **S08LA4**

Rated parameters and data of the motor

Rated output P _n	3,0	kW
Rated torque: M _n	9,55	Nm
Rated current I _n	7,0	A
No. of Motor Poles 2p	4	
Rated speed n _n	3000	1/min
Nominal Frequency	100	Hz
Motor circuit	wye circuit	
Strang-Resistance R _{s20}	1,41	Ohm
Strang-Inductance D-Axis L _d	16,8	mH
Strang-Inductance Q-Axis L _q	29,6	mH
Voltage constant k _e	87	V / 1000 1/min
Torque constant k _t	1,36	Nm / A
Peak Torque M _{max} (60s)	15	Nm
Peak Current I _{max} (60s)	11,2	A
Converter supply voltage	380 - 500	V

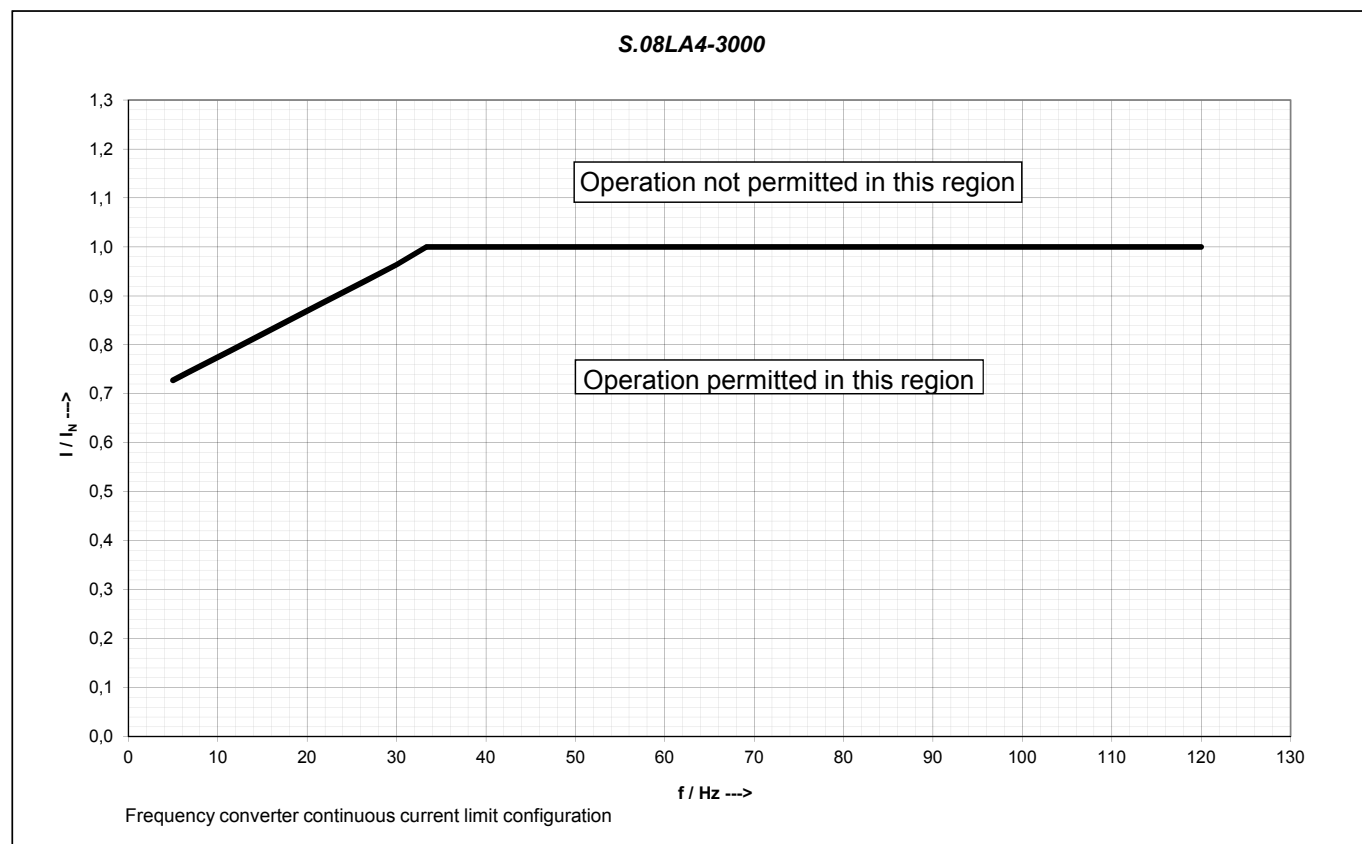
Operation with frequency converter

Torque	6,5	8,0	9,55	9,55	9,55	Nm
Power	0,1	0,42	1,0	3,0	3,6	kW
Voltages *	28	63	114	296	358	V
Current	5,2	5,9	7,0	7,0	7,0	A
Frequenz	5	16,66	33,33	100	120	Hz
Speed	150	500	1000	3000	3600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Characteristic curve the motors with Rated speed 3000 $1/\text{min}$

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10% according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10%, 50/60 Hz. Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Max. permissible ambient temperature range -20 °C to +50 °C

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160% * I_N
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f_{min} :	60 s
All other settings must be selected according the requirements of the drive.	

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes

Geared motors for electric overhead conveyors series BM Motors

Characteristic curve the motors with Rated speed 3000 ¹/_{min}

Rated data of the motor

Type: **S09SA4**

Rated parameters and data of the motor

Rated output P _n	6,3	kW
Rated torque: M _n	20	Nm
Rated current I _n	12,5	A
No. of Motor Poles 2p	4	
Rated speed n _n	3000	1/min
Nominal Frequency	100	Hz
Motor circuit	wye circuit	
Phase Resistance U-V R ₂₀	1,305	Ohm
Strang-Resistance R _{s20}	0,653	Ohm
Strang-Inductance D-Axis L _d	12,7	mH
Strang-Inductance Q-Axis L _q	17,9	mH
Voltage constant k _e	102	V / 1000 1/min
Torque constant k _t	1,60	Nm / A
Peak Torque M _{max} (60s)	30	Nm
Peak Current I _{max} (60s)	20	A
Converter supply voltage	380 - 500	V

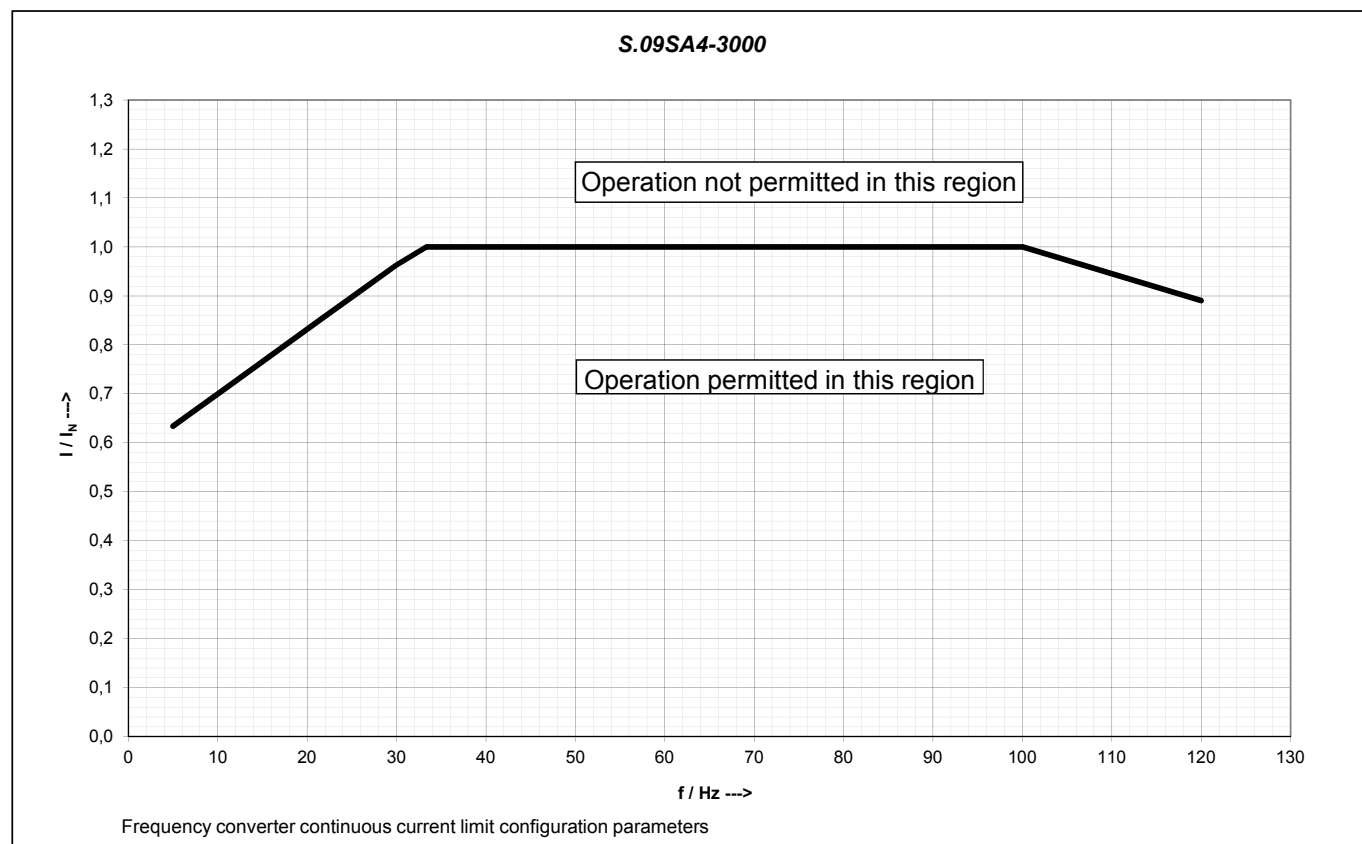
Operation with frequency converter

Torque	12,5	15,7	20	20	14,5	Nm
Power	0,196	0,84	2,1	6,3	5,5	kW
Voltages *	26	66	124	334	380	V
Current	8	9,9	12,5	12,5	9,2	A
Frequenz	5	16,66	33,33	100	120	Hz
Speed	150	500	1000	3000	3600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Characteristic curve the motors with Rated speed 3000 $\frac{1}{\text{min}}$

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10% according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10%, 50/60 Hz. Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Max. permissible ambient temperature range -20 °C to +50 °C

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160% * I_N
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below $f_{\min}$:	60 s
All other settings must be selected according the requirements of the drive.	

The maximum overload time and the permissible operating time below $f_{\min}$ are based on an interval of 10 minutes

Geared motors for electric overhead conveyors series BM Motors

Characteristic curve the motors with Rated speed 3000 ¹/_{min}

Rated data of the motor

Type: **S09XA4**

Rated parameters and data of the motor

Rated output P _n	6,3	kW
Rated torque: M _n	20	Nm
Rated current I _n	12,5	A
No. of Motor Poles 2p	4	
Rated speed n _n	3000	1/min
Nominal Frequency	100	Hz
Motor circuit	wye circuit	
Phase Resistance U-V R ₂₀	1,305	Ohm
Strang-Resistance R _{s20}	0,653	Ohm
Strang-Inductance D-Axis L _d	12,7	mH
Strang-Inductance Q-Axis L _q	17,9	mH
Voltage constant k _e	102	V / 1000 1/min
Torque constant k _t	1,60	Nm / A
Peak Torque M _{max} (60s)	30	Nm
Peak Current I _{max} (60s)	20	A
Converter supply voltage	380 - 500	V

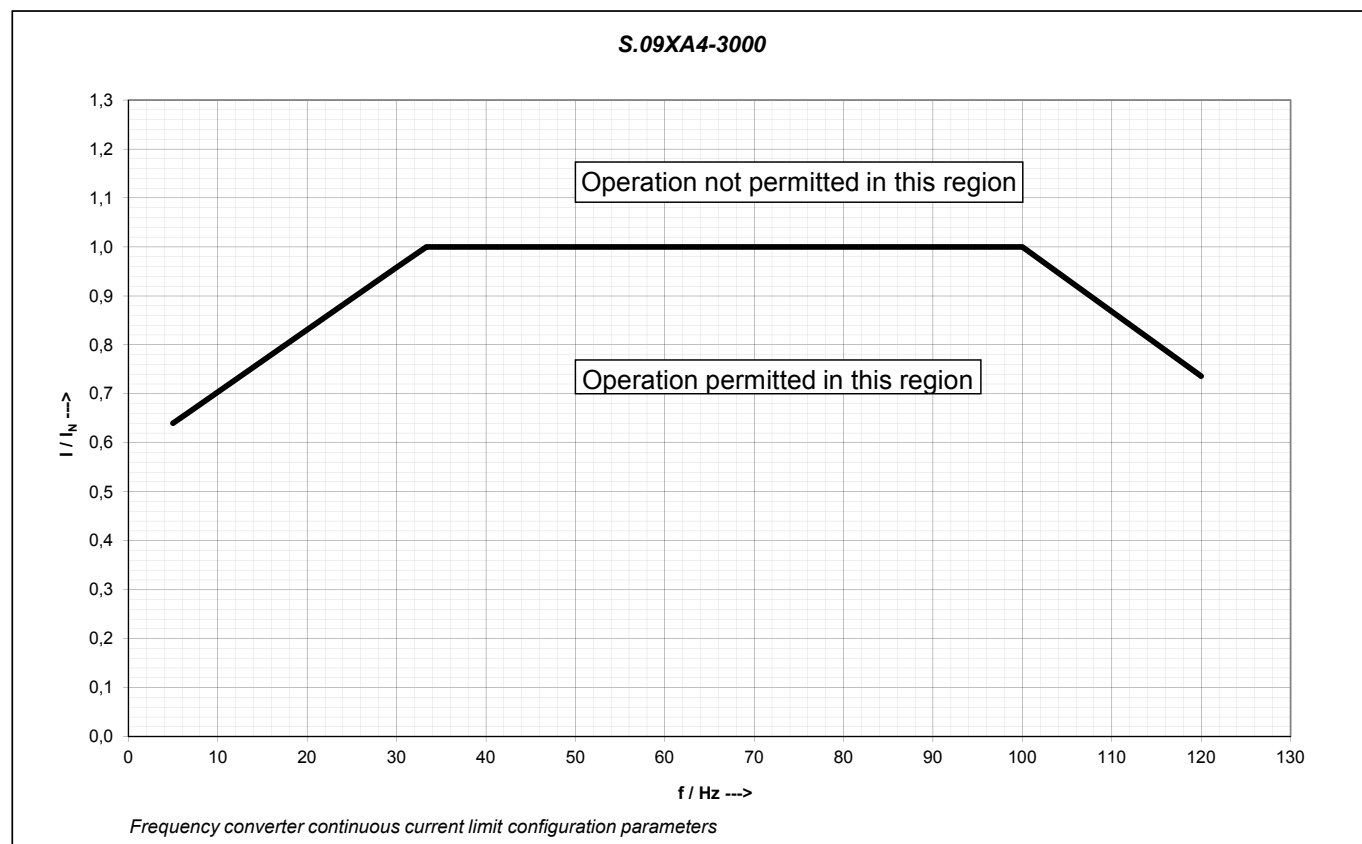
Operation with frequency converter

Torque	12,5	15,7	20	20	14,5	Nm
Power	0,196	0,84	2,1	6,3	5,5	kW
Voltages *	26	66	124	334	380	V
Current	8	9,9	12,5	12,5	9,2	A
Frequenz	5	16,66	33,33	100	120	Hz
Speed	150	500	1000	3000	3600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Characteristic curve the motors with Rated speed 3000 $1/\text{min}$

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10% according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10%, 50/60 Hz. Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Max. permissible ambient temperature range -20 °C to +50 °C

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160% * I_N
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below $f_{\min}$:	60 s
All other settings must be selected according the requirements of the drive.	

The maximum overload time and the permissible operating time below $f_{\min}$ are based on an interval of 10 minutes

Geared motors for electric overhead conveyors series BM Motors

Characteristic curve the motors with Rated speed 3000 ¹/_{min}

Rated data of the motor

Type: **S11SA6**

Rated parameters and data of the motor

Rated output P _n	7,1	kW
Rated torque: M _n	22,5	Nm
Rated current I _n	15,0	A
No. of Motor Poles 2p	6	
Rated speed n _n	3000	1/min
Nominal Frequency	150	Hz
Motor circuit	wye circuit	
Strang-Resistance R _{s20}	0,447	Ohm
Strang-Inductance D-Axis L _d	5,0	mH
Strang-Inductance Q-Axis L _q	7,7	mH
Voltage constant k _e	106	V / 1000 1/min
Torque constant k _t	1,55	Nm / A
Peak Torque M _{max} (60s)	35	Nm
Peak Current I _{max} (60s)	23	A
Converter supply voltage	380 - 500	V

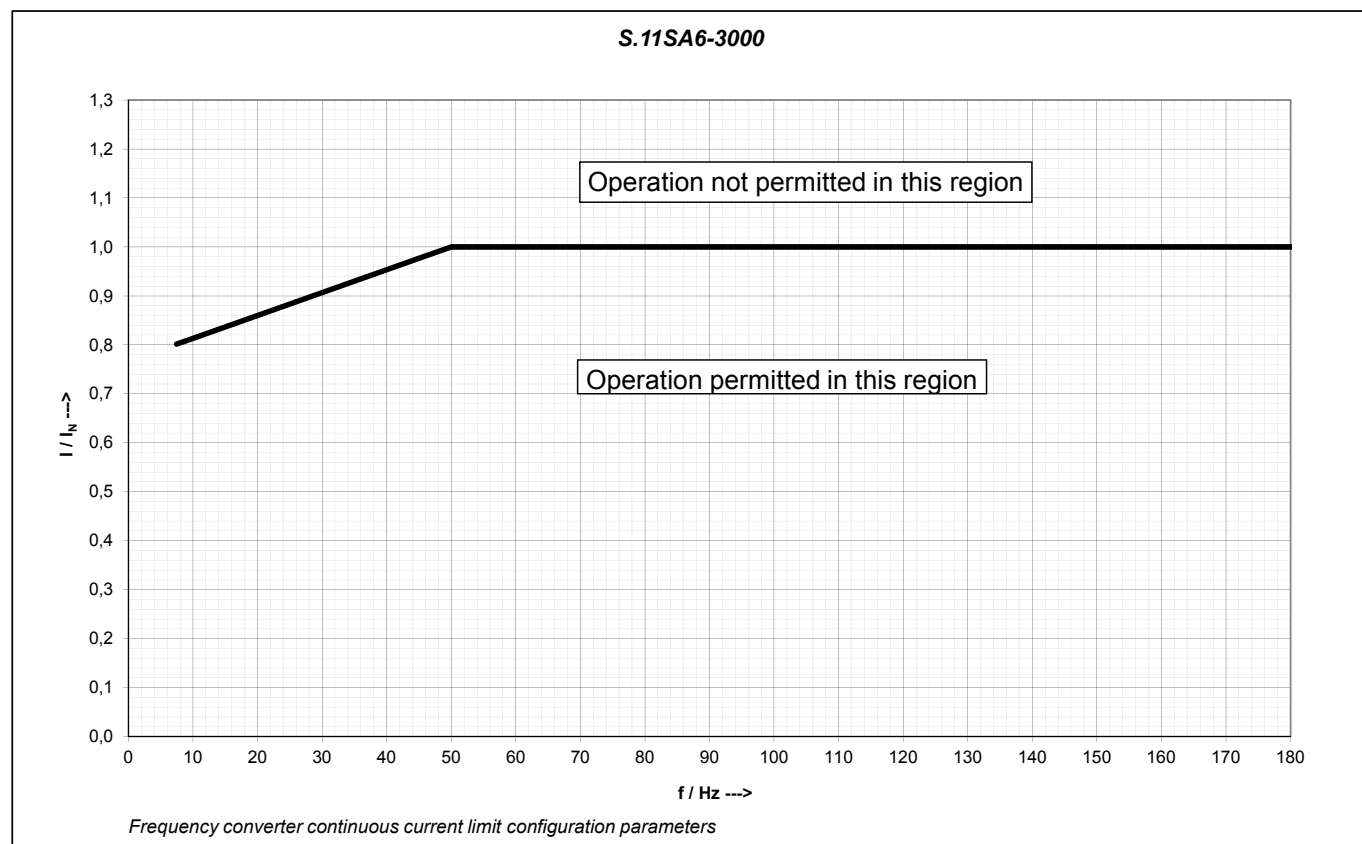
Operation with frequency converter

Torque	18	20	22,5	22,5	22,5	Nm
Power	0,28	1,0	2,4	7,1	8,5	kW
Voltages *	28	66	122	333	368	V
Current	12	13,3	15	15	15	A
Frequenz	7,5	25	50	150	180	Hz
Speed	150	500	1000	3000	3600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Characteristic curve the motors with Rated speed 3000 $1/\text{min}$

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10% according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10%, 50/60 Hz.

Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Max. permissible ambient temperature range -20 °C to +50 °C

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160% * I _N
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s
All other settings must be selected according the requirements of the drive.	

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes

Geared motors for electric overhead conveyors series BM Motors

Characteristic curve the motors with Rated speed 3000 ¹/_{min}

Rated data of the motor

Type: **S11MA6**

Rated parameters and data of the motor

Rated output P _n	11,0	kW
Rated torque: M _n	35	Nm
Rated current I _n	22,5	A
No. of Motor Poles 2p	6	
Rated speed n _n	3000	1/min
Nominal Frequency	150	Hz
Motor circuit	wye circuit	
Strang-Resistance R _{s20}	0,217	Ohm
Strang-Inductance D-Axis L _d	3,0	mH
Strang-Inductance Q-Axis L _q	4,6	mH
Voltage constant k _e	104	V / 1000 1/min
Torque constant k _t	1,55	Nm / A
Peak Torque M _{max} (60s)	55	Nm
Peak Current I _{max} (60s)	35	A
Converter supply voltage	380 - 500	V

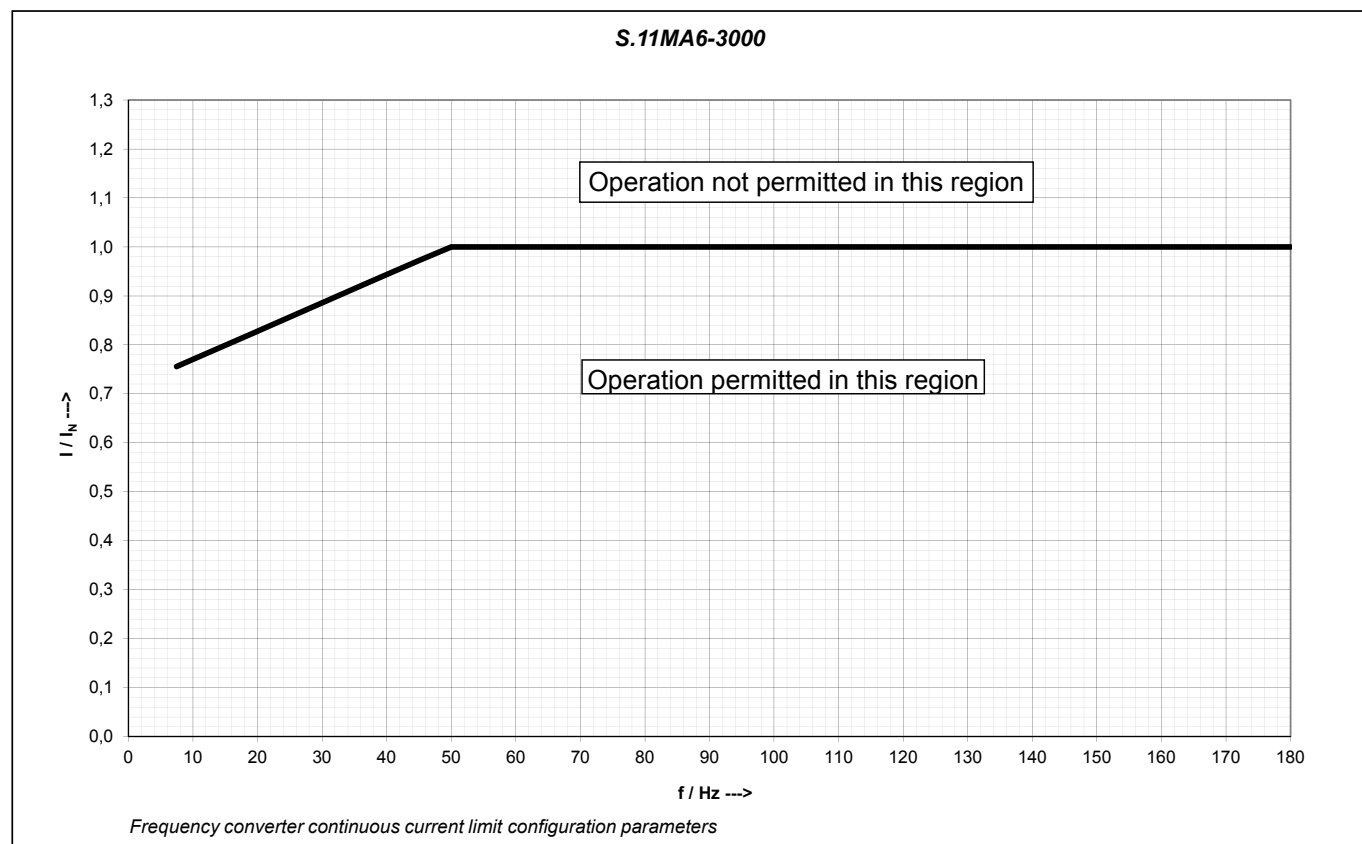
Operation with frequency converter

Torque	26,5	30	35	35	34,3	Nm
Power	0,42	1,6	3,7	11	12,9	kW
Voltages *	23	61	115	320	368	V
Current	17	19,3	22,5	22,5	22,5	A
Frequenz	7,5	25	50	150	180	Hz
Speed	150	500	1000	3000	3600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Characteristic curve the motors with Rated speed 3000 ¹/_{min}

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10% according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10%, 50/60 Hz.

Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Max. permissible ambient temperature range -20 °C to +50 °C

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160% * I _N
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes

Geared motors for electric overhead conveyors series BM Motors

Characteristic curve the motors with Rated speed 3000 ¹/_{min}

Rated data of the motor

Type: **S11LA6**

Rated parameters and data of the motor

Rated output P _n	15,0	kW
Rated torque: M _n	48	Nm
Rated current I _n	30	A
No. of Motor Poles 2p	6	
Rated speed n _n	3000	1/min
Nominal Frequency	150	Hz
Motor circuit	wye circuit	
Strang-Resistance R _{s20}	0,150	Ohm
Strang-Inductance D-Axis L _d	2,4	mH
Strang-Inductance Q-Axis L _q	3,5	mH
Voltage constant k _e	105	V / 1000 1/min
Torque constant k _t	1,59	Nm / A
Peak Torque M _{max} (60s)	75	Nm
Peak Current I _{max} (60s)	48	A
Converter supply voltage	380 - 500	V

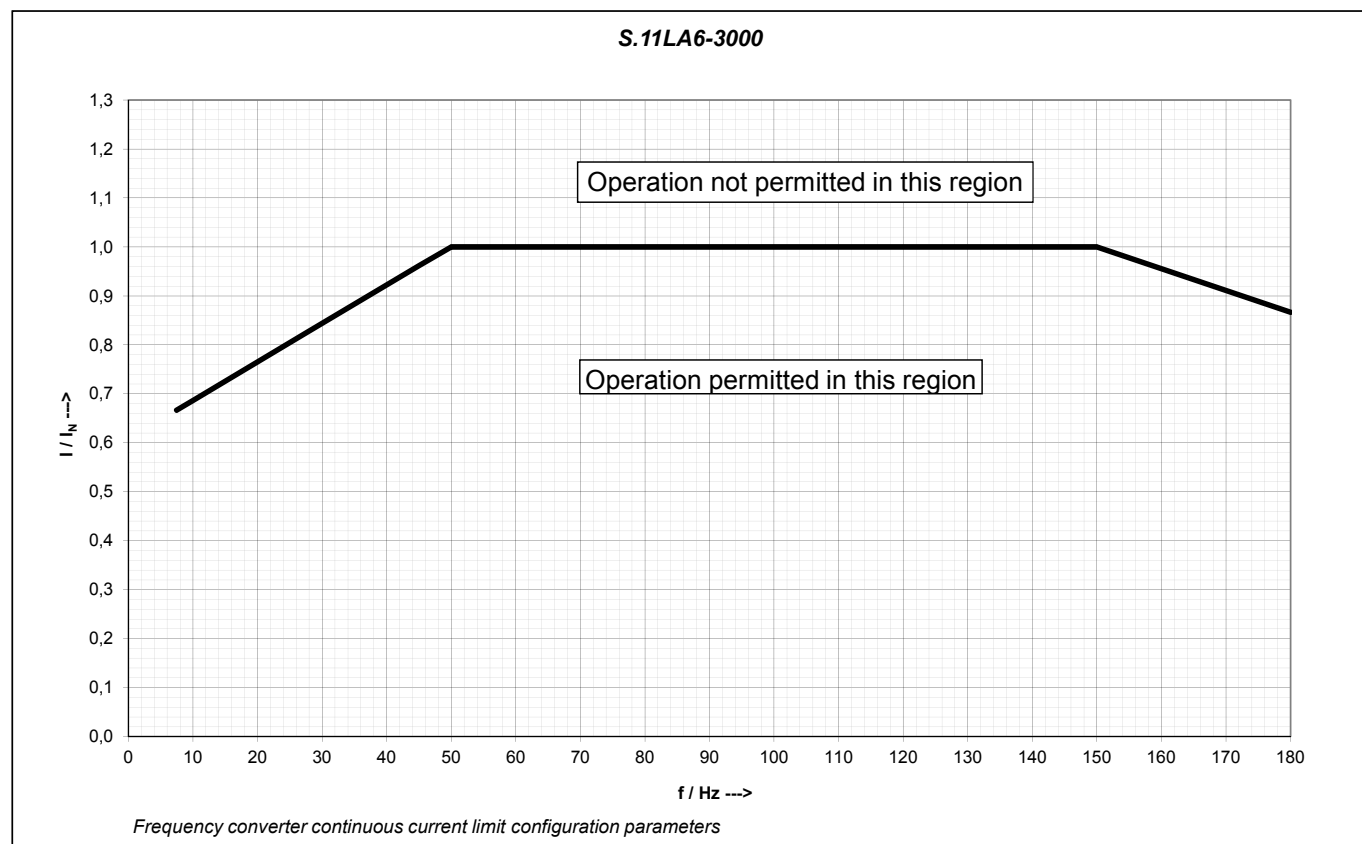
Operation with frequency converter

Torque	32,5	39,4	48	48	40	Nm
Power	0,5	2,1	5,0	15,0	15,0	kW
Voltages *	22,6	61,4	116	327	368	V
Current	20	24	30	30	25,8	A
Frequenz	7,5	25	50	150	180	Hz
Speed	150	500	1000	3000	3600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Characteristic curve the motors with Rated speed 3000 ¹/_{min}

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10% according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10%, 50/60 Hz.

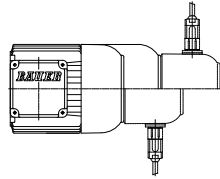
Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Max. permissible ambient temperature range -20 °C to +50 °C

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160% * I _N
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s
All other settings must be selected according the requirements of the drive.	

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes



Motor-mounted components

201-226

Brake
Encoder system
Incremental encoder
Absolute encoder
Modular motor system

Brake

Functional description

The compression springs act on the anchor disc, which is free to move in the axial direction and presses the brake disc, which is keyed to the rotor shaft, against the friction plate or the motor bearing plate. This produces the braking torque.

When a DC voltage is applied to the coil in the electromagnet housing, it generates a magnetic force that opposes the spring force and causes the anchor disc to be pulled toward the electromagnet enclosure. This releases the brake disc and disengages the brake.

Brakes are classified into two types according to how they are used: holding brakes and service brakes.

Holding brake ES.. / ZS..

brake that in normal operation does not convert kinetic energy into frictional energy but is only used to hold a mechanism in a particular position, but which can also be used for motion braking in an emergency.

Service brake ESX.. / ZSX..

A brake that converts kinetic energy into frictional energy in normal operation, which means that it brakes mechanical motion.

When a service brake is used as a holding brake, the braking torque tolerance of up to -30% (in new condition) must be taken into account.

Product description of type ES(X) spring-actuated brakes

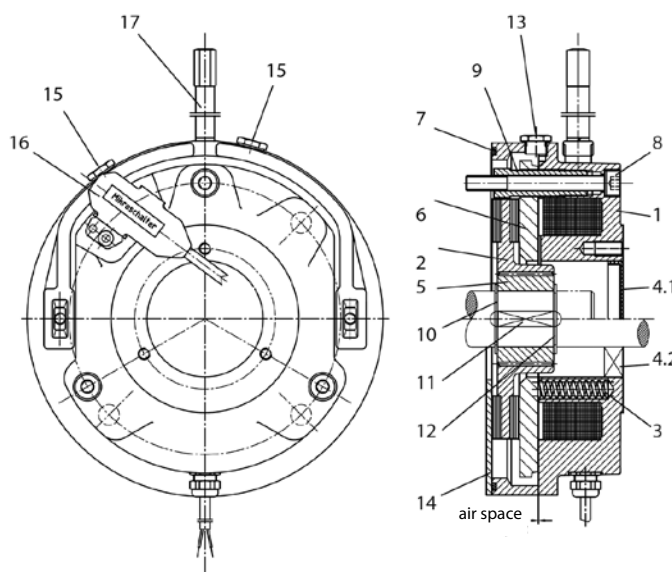


Figure 1: Construction of ES(X) brake

Brake mounting

ES and ESX: Brake mounting is under the fan cover

EH and EHX: Brake mounting is on the fan cover

Geared motors for electric overhead conveyors series BM

Motor Mounted Components

Brake

Options

- Manual release, non-locking or locking
- Microswitch for monitoring operation or wear

Construction

- | | |
|-----|--|
| 1 | Electromagnet housing |
| 2 | Brake disc |
| 3 | Compression spring |
| 4.1 | Cover plate with closed brake |
| 4.2 | Shaft seal with through shaft |
| 5 | Drive bush |
| 6 | Anchor disc |
| 7 | O-ring |
| 8 | Fitting screw with copper washer |
| 9 | Hollow screw |
| 10 | Retaining ring |
| 11 | Key |
| 12 | Retaining ring |
| 13 | Screw plug for checking air gap |
| 14 | Friction plate (only with motor size Dxx08 or Dxx09) |
| 15 | Screw plug for checking microswitch setting |
| 16 | Microswitch (optional) |
| 17 | Manual release (optional) |

**Product description of
type ZS(X) spring-actuated brakes**

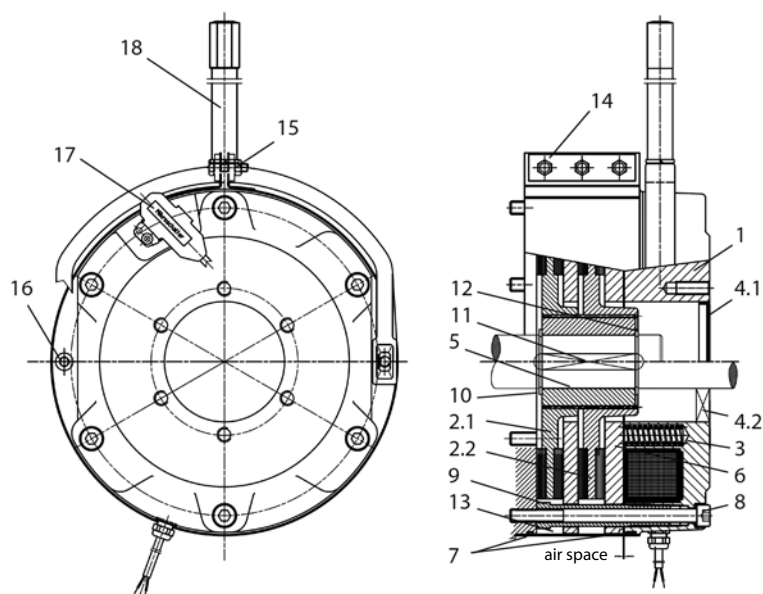


Figure 2: ZS(X) brake construction

Brake

Options

- Manual release, non-locking or locking
- Microswitch for monitoring operation or wear

Construction

1	Electromagnet housing
2	Brake disc 2.1 and 2.2
3	Compression spring
4.1	Cover plate
4.2	Shaft seal with through shaft
5	Drive bush
6	Anchor disc
7	O-ring
8	Fitting screw with copper washer
9	Hollow screw
10	Retaining ring
11	Key
12	Retaining ring
13	Cover
14	Fitting screws
15	Bracket
16	Assembly screw/assembly aid
17	Microswitch (optional)
18	Manual release (optional)

Brake selection and sizing

If the service brake is undersized, it will have increased wear and a shorter lifetime. If it is oversized, the resulting mechanical forces may overload the drive.

If specific application data is not available, in the case of horizontally driven equipment we recommend selecting a braking torque with a safety factor (K) of 1 to 1.5 times the rated torque of the motor.

For braking to standstill, the selected braking torque should be at least 80% of the rated torque of the drive.

Rated torque:

$$M_{\text{Berf}} = \frac{P \times 9550}{n_2} \times K$$

M_{Berf}	Braking torque	[Nm]
P	Motor power	[kW]
n	Rated speed at rotor shaft	[rpm]

For lifting operation, a braking torque equal to twice the rated motor torque should always be chosen for safety reasons.

If the moment of inertia, speed and allowable deceleration time of the machine are known, the braking torque can be calculated as described below.

External moments of inertia

If the masses to be decelerated by the brake do not run at the same speed as the rotor shaft, the moment of inertia (J_{ext}) must be reduced to the value at the rotor shaft

$$J_{\text{ext}} = \frac{J_{\text{ext1}} \times n_1^2 + J_{\text{ext2}} \times n_2^2 + \dots + J_{\text{extn}} \times n_n^2}{i^2}$$

or the external moment of inertia reduced by the gear ratio of the gear unit to the value at the rotor shaft.

Geared motors for electric overhead conveyors series BM

Motor Mounted Components

Brake

$$J_{\text{ext}'} = \frac{J_{\text{ext}}}{i^2}$$

J_{ext}	Total external moment of inertia [kgm ²]
$J_{\text{ext}'}$	Total external moment of inertia referenced to the rotor shaft [kgm ²]
$J_{\text{ext}1,2,\dots}$	Individual external moments of inertia [kgm ²]
i	Gear reduction ratio
n	Rotor shaft speed
$n_{1,2,\dots}$	Speeds of the individual moments of inertia [rpm]

Load torque under static load

$$M_L = F \times r$$

M_L	Load torque [Nm]
F	Force [N]
r	radius [m]

Braking torque with dynamic load

A purely dynamic load is present when flywheels, rolls, etc. must be decelerated and the static load torque is negligible.

$$M_a = \frac{J \times n}{9,55 \times t_a}$$

J_{br}	Moment of inertia of the brake [kgm ²]
J_{rot}	Moment of inertia of the rotor shaft and rotor [kgm ²]
M_a	Deceleration torque [Nm]
n_a	Initial speed at start of deceleration [rpm]
t_a	Total deceleration time (from switch-off until drive is stationary) [s]
t_A	The response time of the brake for braking corresponds to t_{AC} or t_{DC} in the specification tables [s]

Dynamic and static loads

In most application situations, both static and dynamic loads are present.

$$M_{\text{Berf}} = (M_a \pm M_L) \times K \quad \text{where} \quad M_{\text{Berf}} \leq M_{\text{Br}} \quad \text{must hold true.}$$

M_L braking (positive) or driving (negative) load torque [Nm]

Heat generated by each brake cycle

Friction converts the kinetic energy of the moving masses into heat. This amounts to

$$W = \frac{J_{\text{ges}} \times n^2}{182,5} = \frac{(J_{\text{ext}'} + J_{\text{rot}} + J_{\text{Br}}) \times n_a^2}{182,5} \quad \text{where} \quad W \leq W_{\text{max}} \quad \text{must hold true.}$$

W	Braking energy for each brake cycle [J]
M_{max}	Maximum permissible frictional energy per brake cycle (see brake tables)

Brake

Thermally allowable braking energy of service brakes

With a uniform sequence of brake cycles, which means a certain average number of brake cycles per hour, the temperature rises until an equilibrium between heat input and heat dissipation is reached. The temperature rise must be sized to avoid overheating the coil and the friction layer, taking the ambient temperature into account.

Braking to standstill:

$$W_z = W \times Z \leq W_{th}$$

W_{th}	Maximum allowable braking energy per hour
W_z	Braking energy with Z brake cycles
Z	Number of brake cycles per hour

Lifting operation

In lowering operation, the drive motor acts as a generator and its braking effect results in a steady downward motion (constant speed). If we ignore transmission losses, under full load the drive must brake the load with the rated motor torque. If a mechanical brake with a braking torque equal to the braking torque of the motor is applied after the drive is switched off, the downward motion will continue at the same speed. This means that additional braking torque is necessary to stop the motion of the load. For example, if the brake is dimensioned for 200% braking torque, approximately 100% is used for "static" deceleration and the rest is used for "dynamic" deceleration.

If part of the braking torque is required for braking the load during lowering (downward motion), the brake engagement time is greater, and the thermal load is therefore greater.

In this case

$$W_H = \frac{M_{Br}}{M_{Br} - M_L} \times W_z$$

W_H	Friction energy per hour in lifting operation
M_{Br}	Braking torque of the brake

Brake lifetime

The energy absorbed during braking causes the brake disc to wear, which increases the air gap. If the air gap increases beyond a certain maximum gap size, the magnetic field is so weak that the pulling force of the electromagnet is no longer sufficient to release the brake. A proper air gap must be restored by adjusting the air gap or by replacing the brake disc, depending on the type of brake construction.

The maximum number of brake cycles until service is necessary can be calculated as follows:

$$Z_L = \frac{W_L}{W}$$

Z_L	Number of brake cycles until the air gap limit is reached
W_L	Maximum allowable braking energy until maintenance; i.e. replacing the brake disc or adjusting the air gap. Adjustment of the air gap is possible only with type ZXSxx brakes.

Deceleration time

The pure braking time from the start of mechanical braking to standstill depends on the braking deceleration.

Especially with lifting operation, but also in other types of operation, it is necessary to check whether the load torque reinforces the braking effect or counters the braking effect.

The deceleration time is therefore calculated as follows:

$$t_a = \frac{J_{ges} \times n_a}{9,55 \times (M_{Br} \pm M_L)}$$

Geared motors for electric overhead conveyors series BM

Motor Mounted Components

Electrical connection

Brake

General

There are two basic options for providing the supply voltage for the DC electromagnet:

1. Externally from an existing DC control voltage mains or a rectifier in the cabinet.
2. From a rectifier built into the motor or brake terminal box. In this case, the rectifier can be powered either directly from the motor terminal board or from the mains.

Note that in the following cases the rectifier is not allowed to be connected to the terminal board of the motor:

- Pole-changing motors and motors with wide operating voltage range
- Operation from a frequency converter
- Other configurations in which the motor voltage is not constant, such as operation with soft-start devices, start-up transformers, etc.

Release

When the rated voltage is applied to the electromagnet coil, the current through the coils increases exponentially and with it the generated magnetic field. The current must rise to a certain value (I_{release}) before it overcomes the spring force and starts to release the brake.

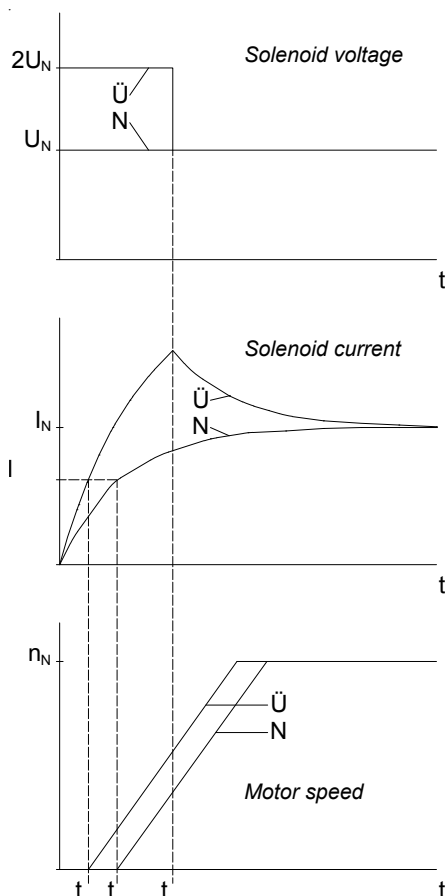


Figure 3: Idealised curves of coil voltage, coil current and motor speed with normal excitation (N) and overexcitation ($\ddot{U}$).
 $t_{\ddot{U}}$: overexcitation time; t_{AN} , $t_{A\ddot{U}}$: Response time with normal excitation and overexcitation.

Brake

Two different situations can arise during the response time t_A , assuming that the voltage is applied to the motor and the brake simultaneously:

- The motor is locked if $M_A < M_L + M_{Br}$
The motor draws its locked-rotor current, which increases the thermal load on the motor.
This situation is illustrated in Figure 3.
- The brake slips if $M_A > M_L + M_{Br}$
In this case, the brake is also thermally stressed during start-up and wears faster.

M_A : locked rotor torque of the motor; M_L : load torque; M_{Br} : braking torque

As can be seen, there is an additional load on the motor and brake in both cases. The effect of the response time increases with increasing brake size. Consequently, it is advisable to reduce the response time, especially with medium-sized and large brakes and with a high cycle rate. This can be achieved relatively easily by means of electrical overexcitation. With this approach, the coil is briefly operated at twice its rated voltage after switch-on.

This causes the current to rise faster than with normal excitation, and it reduces the response time by approximately 50%. This overexcitation function is built into the type MSG special rectifier.

The release current increases with increasing air gap, and with it the response time. When the release current exceeds the rated coil current, the brake will not be released with normal excitation and the brake has reached its wear limit.

Braking

The brake does not start generating braking torque immediately after the coil voltage is switched off. First the magnetic energy must decline to the point that the spring force can overcome the magnetic force. This occurs at the holding current I_{hold} , which is lower than the release current.

The response time depends on how the voltage is switched off.

Switching off the AC supply voltage to a type SG standard rectifier

- a) Rectifier powered from the motor terminal board (Figure 4, curve 1)
Response time t_{A1} : very long

Cause: Due to the residual magnetism of the motor, after the motor voltage is switched off a slowly decaying voltage is induced, and it continues to supply power to the rectifier and thereby to the brake. In addition, the magnetic energy of the brake coil is dissipated relatively slowly in the freewheel circuit of the rectifier.

- b) Rectifier powered separately (Figure 4, curve 2)
Response time t_{A2} : long

Cause: After the rectifier voltage is switched off, the magnetic energy of the brake coil is dissipated relatively slowly in the freewheel circuit of the rectifier.

If the supply voltage is interrupted on the AC side, no significant switch-off voltage occurs on the electromagnet coil.

Geared motors for electric overhead conveyors series BM

Motor Mounted Components

Brake

Interrupting the DC circuit of the electromagnet coil (Figure 4, curve 3)

- a) By a mechanical switch
 - with separate power supply from a DC control voltage mains or
 - at the DC switch contacts (A2 and A3) of the type SG standard rectifier
 Response time t_{A3} : very short

Cause: The magnetic energy of the brake coil is dissipated very quickly by arcing across the switch contacts.

- b) Electronic

Using a type ESG or MSG special rectifier
 Response time t_{A3} : short

Cause: The magnetic energy of the brake coil is dissipated quickly by a varistor integrated in the rectifier.

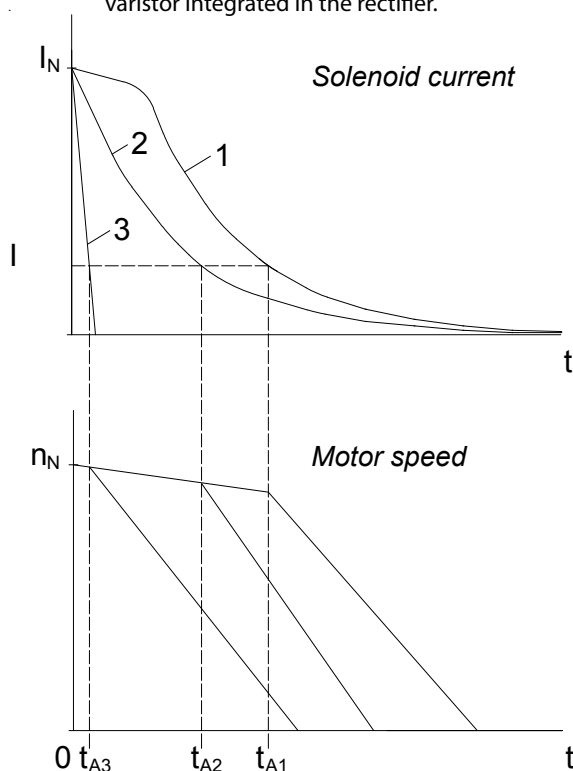


Figure 4: Idealised coil current and motor speed curves after switching off power on the AC side (1 and 2) or DC side (3)

If the circuit is interrupted on the DC side, a high voltage u_q is induced by the electromagnet coil. The magnitude of this voltage depends on the inductance L of the coil and the switch-off speed di/dt according to the formula

$$u_q = L \cdot \frac{di}{dt}$$

Due to the winding design, the inductance L increases with increasing rated coil voltage. Consequently, the voltage spikes induced at switch-off can reach hazardous levels with relatively high coil voltages. For this reason, a varistor is included in the circuit for all brakes with voltages greater than 24 V.

This varistor is solely intended to protect the electromagnet coil; it is not intended to protect adjacent electronic components or devices against electromagnetic interference. On request, brakes with rated voltages of 24 V or less can also be fitted with a varistor. If the circuit is interrupted on the DC side by a mechanical switch, the resulting arcing over the switch contacts causes strong erosion of the contacts. For this reason, only special DC contactors or adapted AC contactors with contacts rated for use class AC3 as specified in EN 60947-4-1 may be used.

Geared motors for electric overhead conveyors series BM

Motor Mounted Components

Brake

Specifications of holding brakes with emergency stop capability

The maximum allowable friction energy values stated here do not apply to brake motors for use in areas with potentially explosive atmospheres.
Refer to separate data in appropriate documents for explosion-proof drives.

Type	M _{Br} [Nm]	W _{max} [10 ³ J]	W _{th} [10 ³ J]	W _L [10 ⁶ J]	t _A [ms]	t _{AC} [ms]	t _{DC} [ms]	P _{el} [W]	J [10 ⁻³ kgm ²]
E003B9	3	1,5	-	-	35	150	15	20	0,01
E003B7	2,2	1,8	-	-	28	210	20		
E003B4	1,5	2,1	-	-	21	275	30		
E004B9	5	2,5	-	-	37	125	15	30	0,017
E004B8	4	3	-	-	30	160	18		
E004B6	2,8	3,6	-	-	23	230	26		
E004B4	2	4,1	-	-	18	290	37		
E004B2	1,4	4,8	-	-	15	340	47	35	0,045
ES010AX	15*	3	-	-	110	-	30		
ES010A9	10	3	-	-	60	100	15		
ES010A8	8	3	-	-	55	150	20		
ES010A5	5	3	-	-	45	220	20		
ES010A4	4	3	-	-	30	250	20		
ES010A2	2,5	3	-	-	25	350	25	50	0,172
ES027AX	32*	2,5	-	-	80	-	30		
ES/EH027A9	27	2,5	-	-	120	100	15		
ES/EH027A7	20	2,5	-	-	100	130	20		
ES/EH027A6	16	2,5	-	-	80	170	25	65	0,45
ES/EH040A9	40	3,5	-	-	100	100	20		
ES/EH040A8	34	3,5	-	-	80	200	25		
ES/EH040A7	27	3,5	-	-	70	250	30	85	0,86
ES070AX	90*	3,5	-	-	120	-	40		
ES070A9	70	3,5	-	-	120	150	18		
ES070A8	63	3,5	-	-	120	200	20		
ES070A7	50	3,5	-	-	90	220	25	105	1,22
ES/EH125A9	125	4,5	-	-	170	220	25		
ES/EH125A8	105	4,5	-	-	150	320	28		
ES/EH125A7	85	4,5	-	-	135	350	30		
ES/EH125A6	70	4,5	-	-	120	440	35		
ES125A5	57	4,5	-	-	100	600	40		
ES125A3	42	4,5	-	-	90	700	45	105	2,85
ES/EH200A9	200	8	-	-	400	150	22		
ES/EH200A8	150	8	-	-	280	250	35		
ES/EH200A7	140	8	-	-	200	320	35		

* Requires overexcitation; permissible only with MSG rectifier

Braking torque tolerance: -10 / +30%

W_{th} and W_L are not specified because little or no braking energy is dissipated by holding brakes when they are used as intended.

For versions with braking torque marked with *, which may only be used with an MSG rectifier, the values of t_A and t_{DC} apply to operation with an MSG rectifier; i.e. t_A for overexcitation or t_{DC} for electronic circuit interruption on the DC side.

Due to the effects of operating temperature and manufacturing tolerances, actual response times may differ from the guideline values listed here.

Geared motors for electric overhead conveyors series BM

Motor Mounted Components

Brake

Specifications of service brakes

The maximum braking energy values stated here do not apply to brake motors for use in areas with potentially explosive atmospheres.
Refer to separate data in appropriate documents for explosion-proof drives.

Type	M _{Br} [Nm]	W _{max} [10 ³ J]	W _{th} [10 ³ J]	W _L [10 ⁶ J]		t _A [ms]	t _{AC} [ms]	t _{DC} [ms]	P _{el} [W]	J [10 ⁻³ kgm ²]
				without HL	with HL					
E003B9	3	1,5	36	55	55	35	150	15	20	0,01
E003B7	2,2	1,8	36	90	90	28	210	20		
E003B4	1,5	2,1	36	140	140	21	275	30		
E004B9	5	2,5	60	50	50	37	125	15	30	0,017
E004B8	4	3	60	100	100	30	160	18		
E004B6	2,8	3,6	60	180	180	23	230	26		
E004B4	2	4,1	60	235	235	18	290	37		
E004B2	1,4	4,8	60	310	310	15	340	47		
ESX010AX	15*	3	250	120	120	110	-	30	35	0,045
ESX010A9	10	3	250	120	120	60	100	15		
ESX010A8	8	3	250	150	150	55	150	20		
ESX010A5	5	3	250	240	240	45	220	20		
ESX010A4	4	3	250	300	240	30	250	20		
ESX010A2	2,5	3	250	390	240	25	350	25		
ESX027AX	27*	10	350	150	150	80	-	30	50	0,172
ESX/EHX027A9	22	10	350	150	150	120	100	15		
ESX/EHX027A7	16	10	350	300	300	100	130	20		
ESX/EHX027A6	13	10	350	350	350	80	170	25		
ESX/EHX040A9	32	20	450	420	420	100	100	20	65	0,45
ESX/EHX040A8	27	20	450	560	490	80	200	25		
ESX/EHX040A7	22	20	450	700	490	70	250	30		
ESX070AX	72*	28	550	700	700	120	-	40	85	0,86
ESX070A9	58	28	550	500	500	120	150	18		
ESX070A8	50	28	550	800	700	120	200	20		
ESX070A7	40	28	550	1200	700	90	220	25		
ESX/EHX125AX	100*	40	700	1900	1900	100	-	70	105	1,22
ESX/EHX125A9	85	40	700	1700	1700	150	320	28		
ESX/EHX125A8	70	40	700	1900	1700	135	350	30		
ESX/EHX125A7	58	40	700	2700	1700	120	440	35		
ESX125A5	45	40	700	3300	1700	100	600	40		
ESX125A3	34	40	700	3300	1700	90	700	45		
ESX/EHX200AX	160*	60	850	2000	2000	105	-	70	105	2,85
ESX/EHX200A9	120	60	850	1700	1700	280	250	35		
ESX/EHX200A8	110	60	850	2600	2600	200	320	35		

* Requires overexcitation; permissible only with MSG rectifier

Braking torque tolerance:

E003 / E004: -10 / +30%

ESXxx / EHXxx: -20 / +30% after run-in; up to -30% in new condition.

For versions with braking torque marked with *, which may only be used with an MSG rectifier, the values of t_A and t_{DC} apply for operation with an MSG rectifier; i.e. t_A for overexcitation or t_{DC} for electronic circuit interruption on the DC side.

The values for W_L are guidelines; actual values may vary significantly depending on the application situation. Periodic inspection of the air gap or brake disc thickness is recommended.

Actual response times may differ from the times listed here due to the effects of operating temperature, brake disc wear and manufacturing tolerances.

Brake

Key to symbols

M_{Br}	Rated braking torque
W_{max}	Maximum allowable friction energy for an emergency stop with a holding brake
W_{max}	Maximum allowable friction energy for each brake cycle with service brakes
W_{th}	Maximum allowable braking energy per hour
W_L	Maximum allowable braking energy until maintenance; i.e. brake disc replacement or air gap adjustment. Air gap adjustment is possible only with type ZSXxx brakes.
H_L	Manual release
t_A	Response time for release with normal excitation. Overexcitation with a type MSG special rectifier reduces the response time by approximately 50%.
t_{AC}	Response time for brakes with AC-side switch-off, i.e. by switching off the supply voltage to a separately powered standard rectifier. If the supply voltage for the rectifier is taken from the motor terminals, considerably longer response times should be expected (depending on the motor size and winding design).
t_{DC}	Response time for braking with DC-side circuit interruption by a mechanical switch. In the case of electronic circuit interruption on the DC side by a type ESG or MSG special rectifier, the response times will be approximately two to three times as long.
P_{el}	Electromagnet coil power consumption at 20 °C. Depending on the rated voltage of the coil, the actual power may differ from the guideline value stated here.
J	Moment of inertia of the drive bush and brake disc(s)

Geared motors for electric overhead conveyors series BM

Motor Mounted Components

Brake

Connection

The electrical connections to the brake are made in the motor terminal box using terminals or the rectifier. Standard voltages:

380–420 V 50/60 Hz (brake coil voltage 180 V DC)

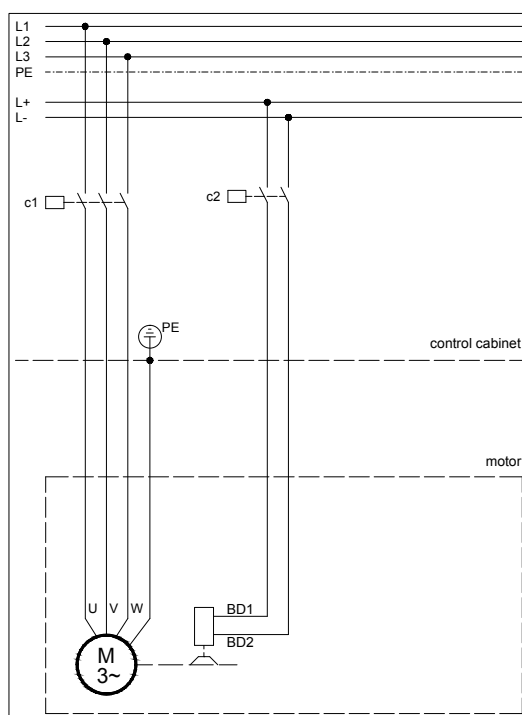
220–230 V 50/60 Hz (brake coil voltage 105 V DC)

24 V DC (brake coil voltage 24 V DC)

Other voltages are available at additional cost.

DC connection
via terminals (K)

The brake must be connected via separate terminals in the motor or brake terminal box directly to the DC voltage. The standard voltages are 180 V DC, 105 V DC and 24 V DC. Brakes with other operating voltages are available at additional cost.



Geared motors for electric overhead conveyors series BM

Motor Mounted Components

Brake

Standard rectifier (S)

Working principle

Half-wave rectifier with switch contacts for DC-side circuit interruption

Input voltage U_1

max. 575 VAC +5%

Output voltage

$0.45 \times U_1$ VDC

Max. output current

2.5 A DC

Ambient temperature

-40 to +40 °C

Connection

Caged Clamp terminals with clamp lever

Clampable conductor cross-section

max. 1.5 mm² without wire end sleeve

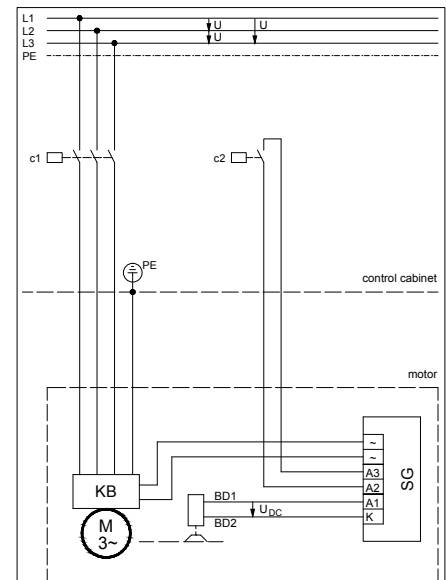
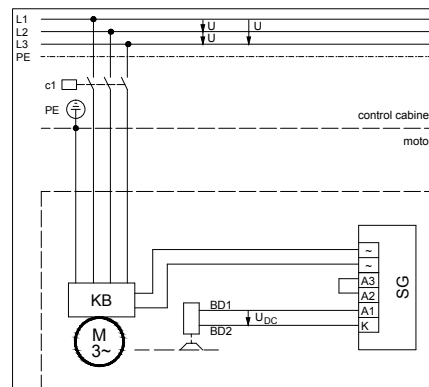
max. 1.5 mm² with wire end sleeve

Approvals

c-CSA-us

c-UL-us (only in combination with B2000 geared motors and brakes in the ES(X) or ZS(X) product series)

The brake must be connected to the AC supply via the standard rectifier in the motor terminal box or brake terminal box. The standard voltages are 380 ... 420 V 50/60 Hz or 220 ... 230 V 50/60 Hz. Other voltages up to 575 V are available at extra cost. In a configuration with standard rectifier, the brake circuit can be interrupted by an extra contact on the d.c. side in order to reduce the response time. This significantly reduces the braking time and overtravel distance.



Voltage connection for the rectifier from the motor terminal block or cage clamp (see Rectifier Connection on Motor Terminal Block or Cage Clamp)

Geared motors for electric overhead conveyors series BM

Motor Mounted Components

Brake

Rectifier for electronic rapid shutdown (E)

Working principle

Half-wave rectifier with electronic DC-side circuit interruption

Input voltage U₁

220–460 V AC ±5%, 50/60 Hz

Output voltage

0.45 x U₁ V DC

Max. output current

1 A DC

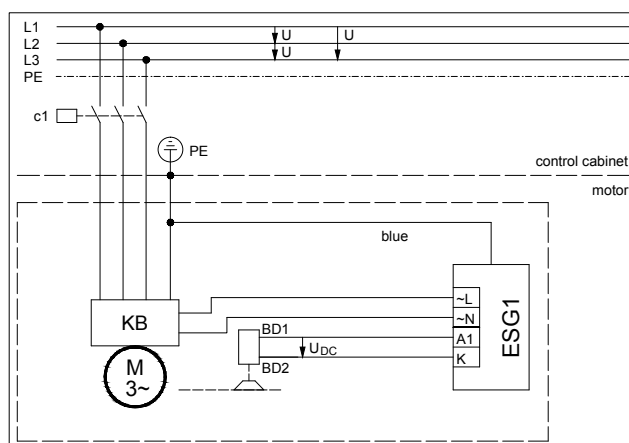
Ambient temperature

-20 °C to +40 °C

Clampable conductor cross-section

max. 1.5 mm²

This rectifier permits electronic DC-side interruption of the brake circuit. No additional cable to the rectifier is necessary. The rectifier is supplied complete with a protective resistor which prevents a mains short-circuit via the shutdown arc of the high-speed motor contactor. Brake response times are significantly shorter than those achievable by AC-side interruption of the brake circuit. They are, however, longer than those achievable with DC-side interruption by a mechanical switch. The brake must be connected to the alternating current via the rapid shutdown rectifier in the motor terminal box or the brake terminal box. The standard voltages are 380 ... 420 V 50/60 Hz or 220 ... 230 V 50/60 Hz. Other voltages up to 460 V are available at extra cost.



Voltage connection for the rectifier from the motor terminal block or cage clamp (see Rectifier Connection on Motor Terminal Block or Cage Clamp)

Geared motors for electric overhead conveyors series BM

Motor Mounted Components

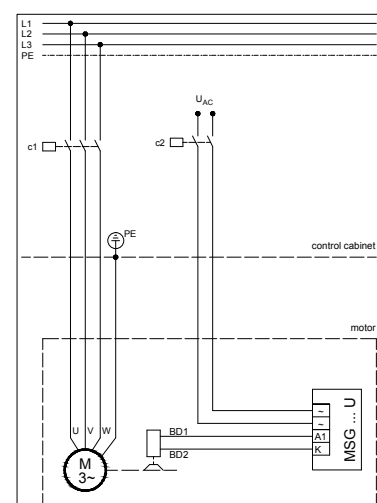
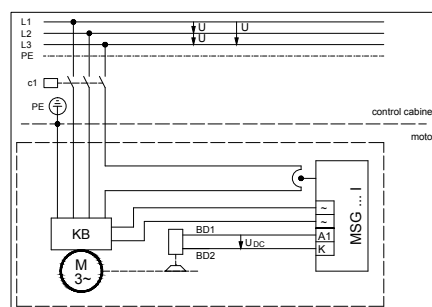
Brake

Standard rectifier (M)

Working principle	MSG 1.5.480I Half-wave rectifier with time-limited overexcitation and electronic DC-side circuit interruption Fast shutdown due to no motor current in one phase
Input voltage U ₁	220–480 V AC +6 / -10%, 50/60 Hz
Output voltage	0.9 x U ₁ V DC during overexcitation 0.45 x U ₁ V DC over overexcitation period
Overexcitation time	0.3 s
Max. output current	1.5 A DC
Ambient temperature	-20 °C to +40 °C
Clampable conductor cross-section	max. 1.5 mm ²

Working principle	MSG 1.5.500U Half-wave rectifier with time-limited overexcitation and electronic DC-side circuit interruption Fast shutdown due to the absence of input voltage
Input voltage U ₁	220–500 V AC ±10%, 50/60 Hz
Output voltage	0.9 x U ₁ V DC during overexcitation 0.45 x U ₁ V DC over overexcitation period
Overexcitation time	0.3 s
Max. output current	1.5 A DC
Ambient temperature	-20 °C to +40 °C
Clampable conductor cross-section	max. 1.5 mm ²

In cases where there are high motor switching frequencies, the brake can be de-energised more rapidly with this rectifier thereby significantly reducing the thermal stress on the motor. In addition, interrupting the brake's DC circuit by electronic means significantly reduces response times. Depending on the circumstances in which they are to be used, either the MSG 1.5.500 U (rapid shutdown brought about by removed supply voltage) or MSG 1.5.480 I (rapid shutdown brought about by removed motor current in a phase) is used. Power supply 220 to 480 V AC.

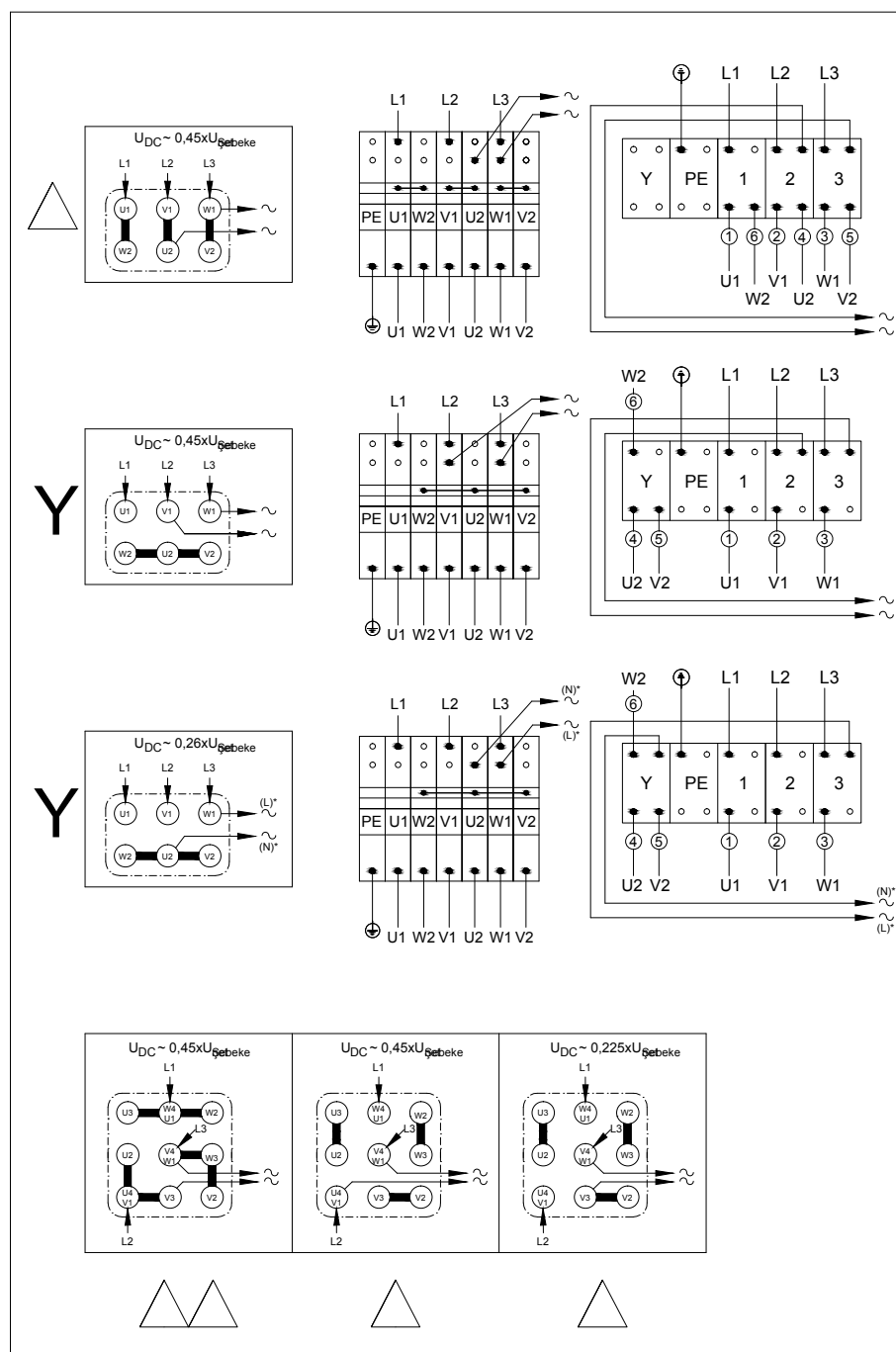


Geared motors for electric overhead conveyors series BM

Motor Mounted Components

Brake

Rectifier Connection on Motor Terminal Block or Cage Clamp



Geared motors for electric overhead conveyors series BM

Motor Mounted Components

Brake

Brake connection, operation with frequency converter

The voltage present at the motor terminal block when operating with a frequency converter is frequency-dependent. Brakes require a constant voltage, so they need a separate electrical connection. This is the reason why the brake is not connected to the motor terminals ex- works.

Brake connection, pole-changing motors

The brakes of pole-changing motors need a separate electrical connection. As is the case with motors for operation with frequency inverters, the brake is not connected to the motor terminals ex-works.

Manual release (HA, HN)

All brakes are available with mechanical manual release on request. Non-latching manual release is the standard version (HN). A latching manual release (HA) can be supplied if required for all brake sizes.

Degree of protection

All BAUER brakes comply with degree of protection IP 65.

Special corrosion protection

If high requirements for corrosion resistance apply, the brakes are available with two levels of enhanced corrosion protection:

- CORO1 (C1):** Finished with two-component paint to protect against chemically aggressive gases and vapours.
- CORO2 (C2):** Same finish as CORO1. The screws for the terminal-box cover are non- rusting steel. The mechanical internals of the brake are made of corrosion- proofed material.

CE mark

BAUER geared motors with externally mounted spring-loaded brakes bear the CE mark.

The brakes comply with:

- the **Machinery Directive (2006/42/EG)**
Manufacturer's declaration available on request
- the **Low-Voltage Directive (2006/95/EG)**
Documented by the CE mark
- the **EMC Directive (2004/108/EG)**
Documented by the CE mark

See BAUER special print SD33.. for more information.

Explosion protection

Brakes for use in hazardous areas are subject to special regulations. Please consult our support specialists in these special cases.

Back stop (RR, RL)

Motors of size D..09 (1,1kW) up to D..18 (30kW) are available with backstop. The locking rotational direction clockwise (RR) or anticlockwise (RL) is to given in the order. The reference is the connection side of the gearbox. Should the connection side not be clearly defined, gearbox side "V" (front) will be assumed (see chapter 17 Dimensions drawing "Motor with back stop").

Note that the back-stop functionality on a motor operating with a frequency converter is guaranteed only at rotor speeds above 670/min.

It is advisable to consult BAUER for applications in corrosive atmospheres, especially for motor-down installed positions.

Geared motors for electric overhead conveyors series BM

Motor Mounted Components

Brake

Second motor shaft extension (ZW, ZV)

The motors are also available on request with a second motor shaft extension in design ZW (shaft with key) or ZV (shaft with square end).

Half the central motor's rated power is available at each of the two shafts. Permissible radial loads available on request. Guards are not included in the scope of supply (for dimensional drawing see chapter 17).

Motors with brakes are available on request with a second shaft stub extended through the brake.

Protective fan cowl (D)

A protective hood over the fan cowl is recommended for outdoor installations where the motor is pointing upward and subject to severe or prolonged exposure to water (dimensional drawing, see chapter 17).

This protective hood is mandatory for upright explosion-proof motors.

A special fan cowl for the textiles industry is available on request at extra cost. This design prevents airborne fibres and fluff clogging the fan cowl.

Motor-independent fan (FV)

For special applications, standard motors and brake motors of size D08 and larger are available with externally mounted motor-independent fans. The standard line voltage of the motor-independent fan matches the voltage of the geared motor (dimensional drawing for motor-independent fan, see chapter 17).

The independent fans are supplied as standard with Bayonet-fitting for standard motors sizes D..16 and D..18 and brake motors sizes D..11 to D..18. Standard enclosure IP66.

Technical Data:

Multivolt Conception Running capacitor for single phase duty enclosed as standard.

Mode	Frame size	Blower diameter	Range of voltage		max. permissible current	max. power input
		(mm)	50 Hz	60 Hz	(A)	W
1 ~ Δ (Δ)	63	118	230-277	230-277	0,12	32
	71	132	230-277	230-277	0,12	33
	80	150	230-277	230-277	0,14	37
	90	169	230-277	230-277	0,29	65
	100	187	230-277	230-277	0,30	75
	112	210	230-277	230-277	0,37	94
	132	250	230-277	230-277	0,60	149
	160-200	300	230-277	---	0,96	236
3 ~ Y	63	118	380-500	380-575	0,06	28
	71	132	380-500	380-575	0,06	29
	80	156	380-500	380-575	0,06	34
	90	169	380-500	380-575	0,19	75
	100	187	380-500	380-575	0,17	94
	112	210	380-500	380-575	0,17	99
	132	250	380-500	380-575	0,25	148
	160-200	300	380-500	380-575	0,54	360
3 ~ Δ	63	118	220-290	220-332	0,10	28
	71	132	220-290	220-332	0,10	28
	80	156	220-290	220-332	0,10	34
	90	169	220-290	220-332	0,33	78
	100	187	220-290	220-332	0,31	87
	112	210	220-290	220-332	0,31	103
	132	250	220-290	220-332	0,45	146
	160-200	300	220-290	220-332	0,91	360

Encoder System

Shaft encoder (G)

Bauer gear motors can be fitted with either an incremental encoder or an absolute encoder for special applications. Both the standard incremental encoder and the absolute encoder are optimised and suitable for use with all modern inverters.

Bauer standard encoders as from motor frame size D05 (0,18kW) are protected against mechanical damage by means of a protective cover (Additional Dimension Sheet see chapter 17).

Special features: standard incremental encoder:

- Robust mount
- Degree of protection IP66
- EMC-tested
- Protected against polarity reversal
- Supply voltage 8-30 V DC
- A-, B- and N-lines and inverted signals or output signals as preferred
- HTL output circuit (TTL on request)
- 1024 pulses per revolution

Special features: standard absolute encoder

- Enclosure: IP66
- Steps per revolution: 8192 (13 Bit)
- Number of turns: 4096 (12 Bit) shaft turns
- Execution of electronic: SSI (Synchronous-Serial Interface)
- Output code: Gray-Code
- Supply voltage: 11-27 VDC
- Loss efficiency (no load): ≤ 3 Watt
- Output driver: RS-422 (2-wire)

Geared motors for electric overhead conveyors series BM

Motor Mounted Components

Incremental rotary encoder

Functional description



Incremental encoders are used to determine motor shaft positions. An incremental encoder detects rotary motion and converts it into an electrical output signal. An encoder disc with a specific number of periods per rotation senses angular motion. The optoelectronic scanning unit generates signals and issues pulses after the signals have been processed in trigger stages. The resolution is defined by the number of opaque and clear segments on the encoder disc. For example, an encoder with 1024 lines will generate a sequence of 1024 pulses for one full rotation.

The combination of an incremental encoder and a frequency converter allows optimised solutions to be developed, such as

- speed controllers with a wide adjustment range
- accurate speed control
- constant-speed control
- position control

Supply voltage:	10–30 V DC with HTL 5 V DC with differential TTL
Output signals:	HTL A, B and N tracks; optional TTL
Pulses per revolution:	1024 Optional 512, 2048, ..., 4096, or others on request
Enclosure rating:	IP 65 (optional IP 67)
Temperature range:	–40 °C to +85 °C

Electrical specifications

Output voltage	RS 422 (TTL compatible)	RS 422 (TTL compatible)	Differential	Differential (7272)
Supply voltage	5–30 V DC	5 V ±5%	10–30 V DC	5–30 V DC
No-load current consumption With inversion:	typ. 40 mA / max. 90 mA	typ. 40 mA max. 90 mA	typ. 50 mA / max. 100 mA	typ. 50 mA max. 100 mA
Allowable load per channel: Pulse rate:	max. ±20 mA max. 300 kHz	max. ±20 mA max. 300 kHz	max. ±20 mA max. 300 kHz	max. ±20 mA max. 300 kHz ³
High signal level:	min. 2.5 V	min. 2.5 V	min. UB – 1 V	min. UB – 2.0 V
Low signal level:	max. 0.5 V	max. 0.5 V	max. 0.5 V	max. 0.5 V
Rise time t_r	max. 200 ns	max. 200 ns	max. 1 µs	max. 1 µs
Fall time t_f	max. 200 ns	max. 200 ns	max. 1 µs	max. 1 µs
Outputs short-circuit proof ¹	Yes ²	Yes ²	Yes	Yes
Supply voltage reverse polarity protection:	Yes	No	Yes	No
CE compliant in accordance with EN 61000-6-2, EN 61000-6-3 and EN 61000-6-4				

¹⁾ With applied supply voltage within specified range

²⁾ Only one channel may be shorted at the same time:
(with UB = 5 V, shorting to another channel, 0 V or +UB is allowed)
(with UB = 5–30 V, shorting to another channel or 0 V is allowed)

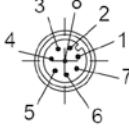
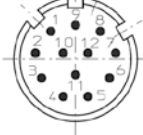
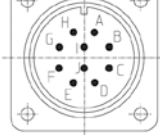
³⁾ Maximum cable length 30 m

Geared motors for electric overhead conveyors series BM

Motor Mounted Components

Incremental rotary encoder

Plug end view with male pin insert

Connector type	8-pin M12 plug	12-pin M23 plug	MIL connector 10-pin
Layout			
Order code:	8.5000.XXX3.XXXX 8.5000.XXX4.XXXX	8.5000.XXX7.XXXX 8.5000.XXX8.XXXX	8.5000XXX.Y.XXXX
Mating 05.CMB-8181-0 connector:		8.0000.5012.0000	8.0000.5062.0000

Signal assignments

Signal:	0 V GND	+U _B	0 V Sens	+U _B Sens	A	A	B	B	Z	Z	Shield
M23 Multifast, 12-pin connector; pin assignments: M12 Eurofast, 8-pin connector; pin assignments:	10 1	12 2	11	2	5 3	6 4	8 5	1 6	3 7	4 8	1) 1)
Military version; 10-pin connector; pin assignments:	F	D		E	A	G	B	H	C	I	J ¹⁾
Cable; lead colour:	WH	BN	GY PK	RD BU	GN	YE	GY	PK	BU	RD	Shield

¹ Shield connected to plug housing.

Insulate unused outputs before putting into service.

Geared motors for electric overhead conveyors series BM

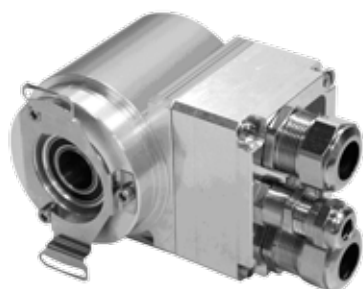
Motor Mounted Components

Absolute rotary encoders

Functional description

Absolute encoders detect both angular and rotational motions and convert them into electrical signals. In contrast to incremental encoders, with absolute encoders the current position is directly available. If an absolute encoder is moved mechanically while it is switched off, after the power is switched on again the current position can be read out immediately and directly. Absolute encoders are available in single-turn and multi-turn versions.

Profibus DP interface



Specifications

Supply voltage	11–27 VDC
No-load current consumption	< 350 mA
Total resolution ¹	≤ 33 bits
Number of steps per revolution, standard/extended ¹	≤ 8,192 / ≤ 32,768
Number of turns, standard/extended ¹	≤ 4,096 / ≤ 256,000
Profibus DP V0	IEC 61158, IEC 61784
PNO encoder profile	Class 1/Class 2
parameters ¹	Counting direction switchover, scaling function, etc.
Output code ¹	Binary, Gray, truncated Gray
Address	3–99, set using a rotary switch
Baud rate	9.6 kbit/s to 12 Mbit/s
TR-specific functions ¹	Gear and speed outputs
Data width on bus for actual position	≤ 25 bits
Permissible mechanical speed	≤ 12,000 rpm
Shaft load	Own mass
Bearing life	≥ 3.9 x 10 ¹⁰ revolutions at
- speed	≤ 6,000 rpm
- operating temperature	≤ 60 °C
Shaft diameter [mm]	10H7
Permissible angular acceleration	≤ 10 ⁴ rad/s ²
Moment of inertia	2.5 x 10 ⁻⁶ kg m ² (typical)
Start-up torque at 20 °C	2 Ncm (typical)
Weight	0.3–0.5 kg

¹ Configurable parameter

Ambient conditions

Vibration (EN 60068-2-6:1996)	≤ 100 m/s ² , sinusoidal 50–2,000 Hz
Shock (EN 60068-2-27:1995)	≤ 1000 m/s ² , half-cycle sinusoidal 11 ms
EMC	- Interference emission compliant with EN 61000-6-3:2007 - Interference immunity compliant with EN 61000-6-2:2006
Operating temperature	0 °C to +60 °C; optionally -20 °C to +70 °C
Storage temperature	-30 °C to +80 °C, dry
Relative humidity (EN 60068-3-4:2002)	98%, non condensing
Enclosure rating (EN 60529:1991) ²	IP 65

² With mating connector fitted and/or cable glands fitted and tightened

Geared motors for electric overhead conveyors series BM

Motor Mounted Components

SSI interface



Absolute rotary encoders

Specifications

Supply voltage	11–27 VDC
No-load current consumption	< 350 mA
Total resolution ¹	≤ 25 bits
Number of steps per revolution ¹	≤ 8,192
Number of rotations, standard ¹	≤ 4,096
Number of rotations, extended ¹	≤ 256,000
SSI	Synchronous Serial Interface
Clock input	Optocoupler
Data output	RS-422, 2-wire
Clock frequency	80 kHz – 1 MHz
Monostable time t_M	16 μ s ≤ t_M ≤ 25 μ s (20 μ s typical)
Output code ¹	Binary, Gray, BCD
Output format ¹	Standard, Tannenbaum, SSI + CRC, 26-bit cycle, variable number of data bits
Negative values ¹	Sign and magnitude, twos complement
SSI or parallel special bits ¹	Limit switch, overspeed, direction indication, motion indication, error indication, parity
F/R ¹	Counting direction
Preset ¹	Electronic alignment
Logic levels	"0" < +2 VDC; "1" = supply voltage
Permissible mechanical speed	≤ 12,000 rpm
Shaft load	Own mass
Bearing life	≥ 3.9 x 10 ¹⁰ revolutions at
- speed	≤ 6,000 rpm
- operating temperature	≤ 60 °C
Shaft diameter [mm]	10H7
Permissible angular acceleration	≤ 10 ⁴ rad/s ²
Moment of inertia	2.5 x 10 ⁻⁶ kg m ² (typical)
Start-up torque at 20 °C	2 Ncm (typical)
Weight	0.3–0.5 kg
Optional	
- incremental signals, RS422 levels	K1+, K1-, K2+, K2- with 1024 or 2048 pulses

¹⁾ Configurable parameter

Ambient conditions

Vibration (EN 60068-2-6:1996)	≤ 100 m/s ² , sinusoidal 50–2,000 Hz
Shock (EN 60068-2-27:1995)	≤ 1000 m/s ² , half-cycle sinusoidal 11 ms
EMC	
- Interference emission compliant with EN 61000-6-3:2007	
- Interference immunity compliant with EN 61000-6-2:2006	
Operating temperature	0 °C to +60 °C; optionally -20 °C to +70 °C
Storage temperature	-30 °C to +80 °C, dry
Relative humidity (EN 60068-3-4:2002)	98%, non condensing
Enclosure rating (EN 60529:1991) ²	IP 65

²⁾ With mating connector fitted and/or cable glands fitted and tightened

In addition to the angular position within a rotation, multiturn encoders detect multiple rotations. An internal reduction gear mechanism connected to the motor shaft is used to detect the number of turns. Consequently, the value measured by a multiturn encoder consists of the current angular position and the number of turns. As with incremental encoders, the reading is calculated and output via various interface modules, depending on the interface.

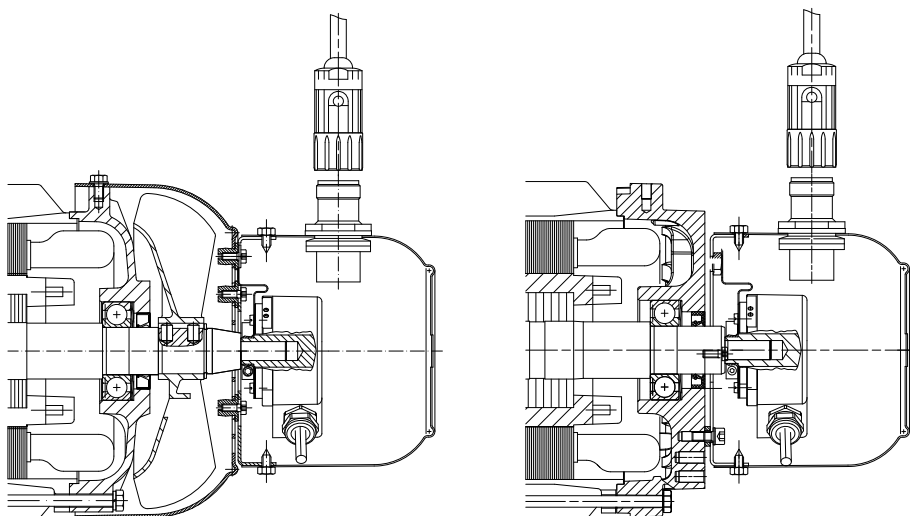
On request, a large range of motor frames can be fitted with sensor bearings. The output signal from the sensor allows the direction of rotation to be determined, among other things. The number of possible pulse counts depends on the frame size. Please enquire for more information.

Geared motors for electric overhead conveyors series BM

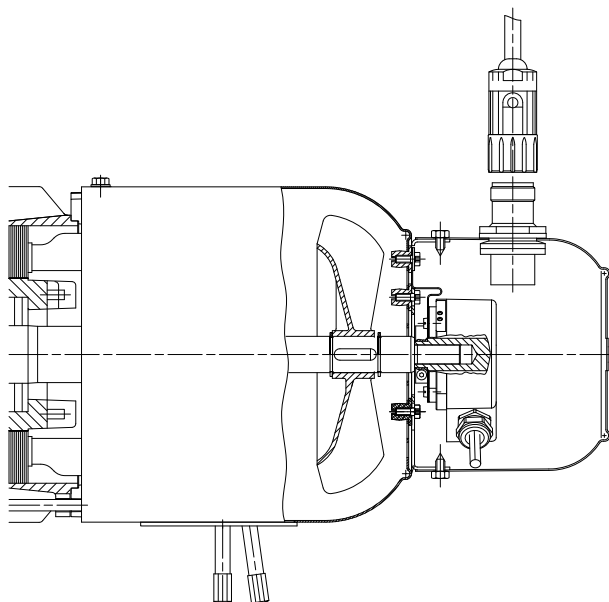
Motor Mounted Components

Modular Motorsystem

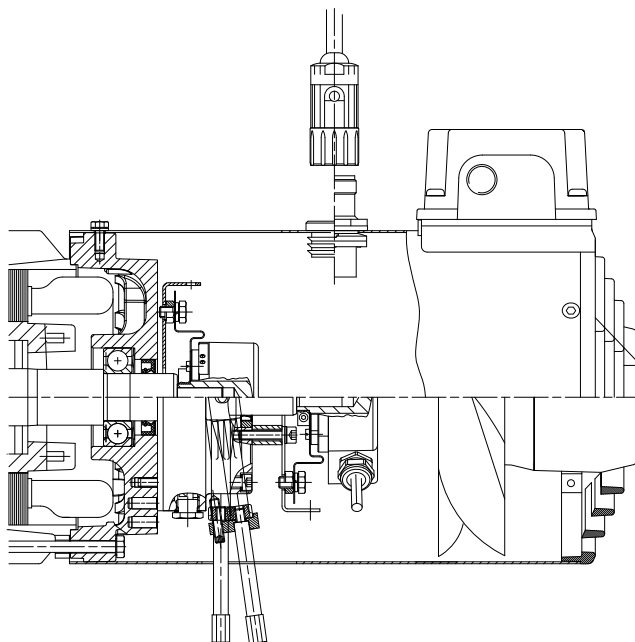
Motor and encoder



Motor, brake and encoder



Motor and forced ventilation



14



Page

Address

227-238

North America
Latin America
Europe
Russia
Middle East & Africa
APAC
China

Geared motors for electric overhead conveyors series BM

Internation Organisation



North America



Canada	Bauer MLD	4020B Sladeview Crescent, Unit 5 Mississauga, Ontario L5L 6B1	Phone Fax	+1 (905) 814 5152 +1 (905) 814 5153	http://www.bauermld.com
United States	Bauer Gear Motor LLC.	31, Schoolhouse Rd N.J. 08873-1212 Somerset	Phone Fax	+1 (732) 4698770 +1 (732) 4698773	bauer.us@bauergears.com http://us.bauergears.com
United States	Edwin L. Heim Company	1918 Greenwood Street 17104 Harrisburg Pennsylvania	Phone Fax	+1 (717) 2338711 +1 (717) 2338840	heimservice@elheim.com www.elheim.com
United States	Gatterdam Electric	114 N. 30th Street KY 40212 Louisville	Phone Fax	+1 (502) 7763937 +1 (502) 7769929	info@gatterdam.com http://www.gatterdam.com

Geared motors for electric overhead conveyors series BM

International Organisation

 Latin America 					
Brazil	MKN Acionamentos LTDA	Rua Marco Gagliano 264 Americanópolis 04412-120 São Paulo-SP	Phone Fax	+55 (11) 56215574 +55 (11) 56211406	mkn.aciona@terra.com.br
Chile	Jung y Cia LTDA	Huerfanos 757 Of 310 Casilla 14478 Santiago de Chile	Phone	+56 (2) 6383731	jung@jung.cl
Colombia	Transmisiones LTDA.	Cra. 69 B No. 21 A - 24 Parque Industrial Salitre 77158 Bogota	Phone Fax	+57 (1) 4126898 +57 (1) 2929737	aguerrero@transmisiones.de http://www.transmisiones.de
Ecuador	Maquinarias Henriques	Vía a Daule KM 6.5 Guayaquil	Phone Fax	+59 (34) 254300 +59 (34) 254939	controles@maquinarias-henriques.com http://www.maquinarias-henriques.com
Guatemala	Juan Niemann & Cia. Ltda.	Apartado Postal 290 C/Mariscal Cruz, C.A. Guatemala Ciudad, C.A.	Phone Fax	+502 (331) 5454 +502 (334) 7453	jcnemann@jcnemann.com http://www.jcnemann.com/motorreductores
Mexico	Opeasa-Zugastek	Blvd. Hnos. Serdan # 45 PH 72760 Col. Amor 72170 Puebla	Phone	+52 (222) 4036242	info@zugastek.com http://www.zugastek.com
Peru	Transmisiones & Servicios S.A.C.	Alcanfores 981. of 601. 18 Miraflores - Lima	Phone Fax	+51 (1) 242 0862 +51 (1) 242 086221	info@transmisiones.pe http://www.transmisiones.pe
Uruguay	Tradinter S.R.L.	Pereira de la luz 1327 11300 Montevideo	Phone Fax	+598 (2) 6221130 +598 (2) 6284691	
Venezuela	EMOTEC S.A.	Calle Johann Schafer, Edif. FHT, Piso 1, Oficina 1, Urb. Buena Vista, Caracas-Venezuela Urb. Sabana Grande Caracas	Phone Fax	+58 (212) 2715261 +58 (212) 2711838	ventas@emotecs.com http://www.emotecs.com

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Internation Organisation



Europe



Austria	BIS Chemserv GmbH	Haimingerstraße 1 D-84489 Burghausen	Phone Fax	+49 (867) 7977507 +49 (867) 7977510	http://www.chemserv.at
Austria	BIS Chemserv GmbH	Bau 28 St. Peter-Straße 25 Postfach 750 A-4021 Linz	Phone Fax	+43 (732) 69172278 +43 (732) 69173322	service@chemserv.at http://www.chemserv.at
Austria	ESKO Elektromaschinen- bau GmbH	Ankerweg 8 8753 Fohnsdorf	Phone Fax	+43 (3573) 27570 +43 (3573) 27570-4	office@esko.at office@esko.at
Austria	Mangold Elektromaschi- nen GmbH	Holzriedstraße 33 6960 Wolfurt	Phone Fax	+43 (5574) 64072-0 +43 (5574) 64072-9	info@mangoldgmbh.at www.mangoldgmbh.at
Belgium	Bauer Gear Motor Europe GmbH	p/a EEBIC bedrijventrum Joseph Wybranlaan 40 1070 Brussel (Anderlecht)	Phone Fax	+32 (2) 5295941 +32 (2) 5295944	info.be@bauergears.com http://be.bauergears.com
Belgium	n.v. EMR s.a.	Voorhavenlaan 22b B-9000 Gent	Phone Fax	+32 (9) 2515956 +32 (9) 2515891	emr@nvemr.be http://www.nvemr.be
Bulgaria	NASA - D Ltd.	kv. Mladost IV bl.602, vh.1 (In front of Business Park Sofia) 1715 Sofia	Phone Fax	+359 (2) 9755065 +359 (2) 9755067	office@nasa-d.com http://www.nasa-d.com
Bulgaria	NASA - D Ltd.	12, Bitolya str. 9002 Varna	Phone Fax	+359 (52) 605995 +359 (52) 600498	varna@nasa-d.com http://www.nasa-d.com
Croatia	Pogonska Tehnika d.o.o.	Horvatovac 94 10000 Zagreb	Phone Fax	+385 1 46 80 174 +385 1 46 80 271	pogonska.tehnika@zg.t-com.hr
Czech Republic	Huber CS s.r.o.	Cihlarska 19 602 00 Brno	Phone Fax	+420 541215635 +420 541216835	doskocil@hubercs.cz http://www.hubercs.cz
Czech Republic	IHR Technika s.r.o.	Boleslavská 902 29306 Kosmonosy	Phone Fax	+420 (326) 722716 +420 (326) 320119	Bauer@ihr-tech.cz http://www.ihr-tech.cz
Czech Republic	Jan Komárek-HMF	Sturova 15 CZ-415 02 Teplice	Phone Fax	+420 (417) 564456 +420 (417) 565688	tomas.abraham@navijama-hmf.cz http://www.navijarna-hmf.cz
Denmark	Eegholm A/S	Grundtvigs allé 165-169 (Main office) Jyllandsgade 30, Hal 2 (Stock) DK 6400 Sønderborg	Phone Fax	+45 (73) 121212 +45 (73) 121213	eegholm@eegholm.dk http://www.eegholm.dk
Estonia	LAAGRI- JA TIHENDIKESKUS OÜ,	Laki 17 12915 Tallinn	Phone	+372 65 30163	http://www.laager.ee
Finland	Bauer Gear Motor Finland Oy Ab	Äyritie 22 01510 Vantaa	Phone Fax	+358 (207) 189700 +358 (207) 189701	info.fi@bauergears.com http://fi.bauergears.com
Finland	Sähkö-Team Oy	Pulttitie 10 00880 Helsinki	Phone Fax	+358 (207) 862330 +358 (207) 862339	korjaamo@sahko-team.fi http://www.sahko-team.fi
Finland	Tornion Sähköpojat Oy	Raidekatu 29 95420 Tornio	Phone Fax	+358 (400) 222401 +358 (16) 446853	markku.rantapaa@sahkopojat.fi http://www.sahkopojat.fi
France	Bauer Gear Motor Europe GmbH	46, avenue des Frères Lumière F-78190 Trappes	Phone Fax	+33 (0) 130137371 +33 (0) 130132088	info.fr@bauergears.com http://fr.bauergears.com
France	Avenel	1, rue Lucien Fromage BP 1 76160 Darnetal (Nord-Quest/Normandie)	Phone Fax	+33 (0) 235085353 +33 (0) 235085608	infos@avenel.fr http://www.avenel.fr
France	Diceep	17-19 Route Nationale 54 280 Nancy-Laneuvelette (Nord-Est)	Phone Fax	+33 (0) 383290343 +33 (0) 383214613	diceep@diceep.fr http://www.diceep.fr
France	FAEP	135 rue du Général de Gaulle 13510 Eguilles	Phone Fax	+33 (4) 42925039 +33 (4) 42923917	faep@wanadoo.fr
France	Petit	Zone industrielle de Bruèges Nord 310 Avenue Monge 30100 Ales (Sud-Est)	Phone Fax	+33 (0) 466306822 +33 (0) 466305985	olivier.lionel@etspetit.com http://www.moteur-pompe.com
France	Secco	161 Avenue Roger Salengro 69120 Vaulx en-Velin (Rhône-Alpes)	Phone Fax	+33 (0) 472375131 +33 (0) 478269904	secco@wanadoo.fr
France	CETIB-DEXIS	ZI du Brezet 19, rue des Frères Lumière 63016 Clermont Ferrand (Centre-Sud)	Phone Fax	+33 (0) 47398149 +33 (0) 47398149	clermont.cetib@dexis.eu
Germany	Bauer Gear Motor GmbH	Eberhard-Bauer-Straße 36-60 73734 Esslingen	Phone Fax	+49 (711) 3518 0 +49 (711) 3518 381	info@bauergears.com http://www.bauergears.com
Germany	Bär - Elektromaschinen	Töberheide 10 D-39340 Haldensleben	Phone Fax	+49 (390) 465669 +49 (390) 4462589	info@baer-ema.de www.baer-ema.de
Germany	Bauer Elektromotoren GmbH	Burbacher Straße 216 D-53129 Bonn	Phone Fax	+49 (228) 917850 +49 (228) 9178516	info@bauerbonn.de http://www.bauerbonn.de

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International Organisation

Europe					
					
Germany	Beck Elektrotechnik	Nürnberger Straße 109 D-97076 Würzburg	Phone Fax	+49 (931) 20050 +49 (931) 2005200	info@team-elektro-beck www.beck-elektrotechnik.de
Germany	Boss Elektromaschinen + Pumpentechnik GmbH	Tankweg 27 D-44147 Dortmund	Phone Fax	+49 (231) 9820220 +49 (231) 98202241	elektromaschinen@boss-gruppe.de www.boss-gruppe.de
Germany	Brenner GmbH Elektrotechnik	Lorcher Straße 10 D-68642 Bürstadt	Phone Fax	+49 (6206) 98060 +49 (6206) 980616	info@brenner-gmbh.de http://www.brenner-gmbh.de
Germany	Bühler & Sell Elektromotoren KG	Sprendlinger Landstraße 180 D-63069 Offenbach	Phone Fax	+49 (69) 423076 +49 (69) 423078	info@buehler-sell.de http://www.buehler-sell.de
Germany	CEFIP- Consulting & Engineering für Industrie-Produkte GmbH	Heidstraße 80 D-44649 Herne	Phone Fax	+49 (2325) 972580 +49 (2325) 9725825	cefip@yahoo.de http://www.cefip.de
Germany	Dent Elektromaschinen GmbH	Rudolf-Diesel-Straße 8/1 D-78532 Tuttlingen	Phone Fax	+49 (7461) 9697270 +49 (7461) 96972719	info@dent-elektromaschinen.de http://www.motorenpartner.de
Germany	Elektromaschinenbau Dipl.-Ing. Kögel & Ernst & Co. GmbH	Am Markbach 2 D-76547 Sinzheim	Phone Fax	+49 (7221) 50950 +49 (7221) 509527	info@koegel-ernst.de http://www.koegel-ernst.de
Germany	Elektro-Anlagen-Technik EAT GmbH	Otto-Lilienthal- Straße 1 D-49134 Wallenhorst - Rulle	Phone Fax	+49 (5407) 817321 +49 (5407) 817329	info@eatechnik.de http://www.eatechnik.de
Germany	Elektro-Maschinen-Bau Bogner GmbH & Co. KG	Industriegebiet 5 D-35463 Fernwald-Annerod	Phone Fax	+49 (641) 41023 +49 (641) 492840	info@elektromaschinenbau-bogner.de http://www.elektromaschinenbau-bogner.de
Germany	elektrotechnik + automation Ulrich Brodbeck GmbH	Gutenbergstraße 5 D-72631 Aichtal	Phone Fax	+49 (7127) 95830 +49 (7127) 958317	info@elektrotechnik-automation.de http://www.elektrotechnik-automation.de
Germany	EMS Elektromotoren GmbH	Gewerbegebiet Egelsee 15 D-93354 Siegenburg	Phone Fax	+49 (9444) 9760 +49 (9444) 976177	bauergear@ems-elektromotoren.de http://www.ems-elektromotoren.de
Germany	Elektrowerk Nordhausen Dipl.-Ing. G. Francke Elektromaschinenbau	An der Helme 14 D-99734 Nordhausen	Phone Fax	+49 (3631) 47950 +49 (3631) 479520	info@elektrowerk-nordhausen.de http://www.elektrowerk-nordhausen.de
Germany	Fuchs Elektromaschinenbau und Vertriebs GmbH	Kaiserstraße 4d D-66133 Saarbrücken-Scheidt	Phone Fax	+49 (681) 98821690 +49 (681) 98821699	fuch_sb@t-online.de http://www.elektromaschinenbau-fuchs.de
Germany	Steinlen Elektromaschinen- bau GmbH	Am Schiffbekerberg 18 D-22111 Hamburg	Phone Fax	+49 (40) 7320307 +49 (40) 7322228	info@steinlen.de http://www.steinlen.de
Germany	Gützold Elektrotechnik GmbH	Herschelstraße 13 D-08060 Zwickau	Phone Fax	+49 (375) 2040550 +49 (375) 2040551	guetzold.gmbh@t-online.de http://www.guetzold.com
Germany	Hans Mayer Elektrotechnik GmbH	Simonshofer Straße 41 D-91207 Lauf a.d. Pegnitz	Phone Fax	+49 (912) 32041 +49 (912) 382661	info@hans-mayer-elektrotechnik.de http://www.hans-mayer-elektrotechnik.de
Germany	Greif GmbH Elektrotechnik	Mushardstraße 11 D-27570 Bremerhaven	Phone Fax	+49 (471) 31997 +49 (471) 303694	info@greif-elektrotechnik.de http://www.greif-elektrotechnik.de
Germany	Janssen Elektromaschinen GmbH	Leerer Landstraße 35-41 D-26603 Aurich	Phone Fax	+49 (4941) 174257 +49 (4941) 174260	info.ema@rolf-janssen.de http://www.janssen-ema.de
Germany	Rülke GbR Jens und Uwe Rülke	Austraße 36 D-08371 Glauchau	Phone Fax	+49 (3763) 50890 +49 (3763) 5632	info@ruecke-glauchau.de www.ruecke-glauchau.de
Germany	Klebs & Hartmann GmbH & Co. KG	August-Heller-Straße 3 D-67065 Ludwigshafen	Phone Fax	+49 (621) 579000 +49 (621) 5790024	e-technik@klebs-hartmann.de http://www.klebs-hartmann.de
Germany	Mangold Elektromaschinen- bau GmbH	Lindauer Straße 116 88046 Friedrichshafen	Phone Fax	+49 (7541) 500622 +49 (7541) 500630	info@mangold-fn.de http://www.mangold-fn.de
Germany	Motoren Franke GmbH	Ringstraße 18 D-01468 Boxdorf	Phone Fax	+49 (351) 207680 +49 (351) 2076829	info@motoren-franke.de http://www.motoren-franke.de
Germany	Polzin Elektromaschinenbau	Kunzestraße 20 D-04249 Leipzig	Phone Fax	+493414250107 +493414250108	polzin.antriebstechnik@t-online.de http://www.polzin-antriebstechnik.de
Germany	Scheib Elektrotechnik GmbH	Martinstraße 38-42 D-40223 Düsseldorf	Phone Fax	+49 (211) 901480 +49 (211) 9014811	info@scheib-gmbh.de http://www.scheib-gmbh.de
Germany	Schulz Systemtechnik GmbH	Schneiderkruger Straße 12 D-49429 Visbek	Phone Fax	+49 (4445) 897-0 +49 (4445) 897-300	info@schulz.st http://www.schulz-elektrotechnik.de
Germany	Siebert Elektromaschinen- bau GmbH	Bunsenstraße 5-7 D-64293 Darmstadt	Phone Fax	+49 (6151) 824462 +49 (6151) 895590	info@siebertgmbh.de http://www.siebertgmbh.de
Germany	Sroczyński GmbH	Pferdestraße 24 D-48084 Osnabrück	Phone Fax	+49 (541) 588443 +49 (541) 588609	info@sroczyński.de http://www.sroczyński.de/

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Europe



Germany	Steinlen Elektromaschinen- bau GmbH	Ehlbeek 21 D-30938 Burgwedel	Phone Fax	+49 (5139) 80700 +49 (5139) 807060	info@steinlen.de http://www.steinlen.de
Germany	Th. Niehues GmbH	Bahnhofstraße 81 D-48308 Senden	Phone Fax	+49 (2536) 99001 +49 (2536) 99019	info@niehues.com http://www.niehues.com
Germany	UAS Meßtechnik GmbH	Prof. H.-Staudinger-Straße 4 D-94234 Viechtach	Phone Fax	+49 (9942) 94860 +49 (9942) 948610	info@uas.de http://www.uas.de
Germany	Wilhelm Kleeberg GmbH & Co.KG E-Motoren E-Werkzeuge	Graf Zeppelin Straße 5 D-24941 Flensburg	Phone Fax	+49 (461) 43054110 +49 (461) 43054114	info@kleeberg-fl.de www.kleeberg-fl.de
Germany	Wilhelm Klörs KG	Bieberer Straße 254 63071 Offenbach	Phone Fax	+49 (69) 543369 +49 (69) 543313	wilhelm.kloers@arcor.de
Greece	Drivotech e.p.e.	Chrysostomou Smyrnis 124 18345 Moschato	Phone Fax	+30 (210) 7233318 +30 (210) 7233357	info@drivotech.gr http://www.drivotech.gr
Hungary	BC Ongroelektro. Kft.	Bolyai tér 1. HU-3702 Kazincbarcika (East Hungary)	Phone Fax	+36 (48) 511186 +36 (48) 712771	toth.tibor@borsodchem.hu
Hungary	Schorch Hungary Ltd. Industrial Site	Gyari Street 1 P.O. box 85 3580 Tiszaujvaros	Phone Fax	+36 (49) 440877 +36 (49) 440877	info@schorchhungaria.hu http://www.schorchhungaria.hu
Italy	Bauer Gear Motor Europe GmbH	Via Kennedy 43 36040 Grisignano di Zocco (VI)	Phone Fax	+39 (0444) 414392 +39 (0444) 414384	bauer.it@bauergears.com http://it.bauergears.com
Italy	Bauer Gear Motor Europe GmbH	Via Fratelli Bandiera 48 20099 Sesto San Giovanni Milano	Phone Fax	+39 (02) 24839719	bauer.it@bauergears.com http://it.bauergears.com
Italy	Elettromeccanica Volta Srl	Via Leucaspide, 10240 74010 Statte TA	Phone Fax	+39 099 4740264 +39 099 4740264	http://www.elettromeccanicavolta.it
Italy	Ma.In s.n.c.	Via Pola, 8 I-10135 Torino	Phone Fax	+39 (011) 3473325 +39 (011) 39133 56	dibello.e@ma-in.com http://www.ma-in.com
Italy	Reima Sud	Via Naz. le delle Puglie Contrada Salice, 11 80021 Afragola (Napoli)	Phone Fax	+39 (081)8512382 +39 (081) 8510066	giacomo.mennitto@reimasud.it
Latvia	SIA Altenom	Brivibas 214B_500 kab. 1039 Riga	Phone Fax	+371 26567342 +371 26525576	e-mail:andris@altenom.com http://www.altenom.com
Lithuania	Dotronika UAB	Smolensko 6 03201 Vilnius	Phone Fax	+370 5 2105742 +370 5 2051967	dainius@dotronika.lt
Netherlands	Cincotech B.V.	Weg en Bos 33b 2661 DL Bergschenhoek	Phone Fax	+31 (10) 2262613 +31 (10) 2262452	info@cincotech.nl http://www.cincotech.nl
Netherlands	Cincotech B.V. Oost Cincotech Oost	Elfuursweg 3a 7213 EK Gorssel	Phone Fax	+31 (575) 471551 +31 (575) 471552	oost@cincotech.nl http://www.cincotech.nl
Netherlands	De Bruyn B.V. Power Repairs	Van Konijnenburgweg 105 NL-4612 PL Bergen op Zoom	Phone Fax	+31 (164) 234302 +31 (164) 255140	repair@de-bruyn.nl http://www.de-bruyn.nl
Netherlands	Gekas & Boot B.V.	Nijverheidscentrum 36 2761 JP Zevenhuizen	Phone Fax	+31 (180) 633488 +31 (180) 633562	zevenhuizen@gekasenboot.nl http://www.gekasenboot.nl
Netherlands	Gekas & Boot Noord b.v.	Holepolder 1 9902 SM Appingedam	Phone Fax	+31 (50) 3187374 +31 (50) 3187337	groningen@gekasenboot.nl http://www.gekasenboot.nl
Netherlands	Gekas & Boot Oost b.v.	Osnabrückstraat 22 7418 BN Deventer	Phone Fax	+31 (570) 608766 +31 (570) 620961	deventer@gekasenboot.nl http://www.gekasenboot.nl
Netherlands	Gekas & Boot Zaanstad b.v.	Grote Tocht 25 1507 CG Zaandam	Phone Fax	+31 (75) 6701901 +31 (75) 6165162	zaanstad@gekasenboot.nl http://www.gekasenboot.nl
Netherlands	Gekas & Boot Zuid b.v.	Pannenweg 208 6031 RK Nederweert	Phone Fax	+31 (495) 634141 +31 (495) 632703	nederweert@gekasenboot.nl http://www.gekasenboot.nl
Norway	BAUER Gearmotorer AS	Postboks 221 NO-2021 Skedsmokorset	Phone Fax	+47 (63) 875950	bauergear@bauergear.no www.bauergear.no
Poland	Steinlen Polska Sp. z o.o.	ul. W. Grabskiego 4/8 63-500 Ostrzeszów	Phone Fax	+48 (62) 7322352 +48 (62) 7322351	biuro@steinlenpolska.pl http://www.steinlenpolska.pl
Serbia & Montenegro	Indas Industry Assistance d.o.o.	Heroja Pinkija 95 YU-21000 Novi Sad	Phone Fax	+381 (21) 4804800 +381 (21) 4804808	office@indas.rs http://www.indas.rs
Slovakia	Bauer Gear Motor Slovakia	Továrenská 49 953 36 Zlaté Moravce	Phone Fax	+421 (37) 6926158 +421 (37) 6926181	bauer.sk@bauergears.com http://sk.bauergears.com
Slovakia	Transmisie Engineering a.s.	P. Mudrona 10 036 01 Martin	Phone Fax	+421 (43) 4133157 +421 (43) 4223818	dps@transmisie.sk http://www.transmisie.sk
Slovakia	TALER ING d.o.o.	Jelovška cesta 43A 4264 Bohinjka Bistrica	Phone Fax	+386 (4) 5747128 +386 (4) 5747129	info@taler-ing.si http://www.taler-ing.si

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Europe				
Spain	TEM S.L. Bauer Gear Center for Spain and Portugal Transmisiones Electromecánicas, S.L.	Pol. Industrial Les ComesCalle Italia 11 Nave 9 08700 Igualada (Barcelona)	Phone +34 (93) 8056021 Fax +34 (93) 8056022	info@tem-sl.com
Spain	Motronic Service, s.a.	Avgda. Castell de Barberà 16 Pol. Ind. Santiga 08210 Barberà del Vallès (Barcelona)	Phone +34 (937) 192920 Fax +34 (937) 192921	motronic@motronic.es http://www.motronic.es
Sweden	BAUER Gearmotorer Sverige AB	Årjängsvägen 4 66693 Gustavsfors	Phone +46 (531) 20050 Fax +46 (531) 20040	postmaster@bauergear.net
Sweden	AB Carl A. Nilssons Elektriska Reparationsverkstad	Industrigatan 60 25229 Helsingborg	Phone +46 (421) 80085 Fax +46 (421) 36592	info@carlanilsson.se http://www.carlanilsson.se
Switzerland	Electro Müller AG	Bözingenstrasse 37 2500 Biel	Phone +41 (32) 344 10 10 Fax +41 (32) 3441019	info@electro-mueller.ch http://www.electro-mueller.ch
Switzerland	Meier + Co AG Integrale Antriebstechnik	Oltnerstrasse 92 5013 Niedergösgen	Phone +41 (62) 8586700 Fax +41 (62) 8586711	info@meico.ch http://www.meico.ch
United Kingdom	Bauer Gear Motor Limited	Unit1 Nat Lane Business Park CW7 3BS Winsford	Phone +44 (1606) 868600 Fax +44 (1606) 868603	info.uk@bauergears.com http://uk.bauergears.com

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R u s s i a



Belarus	Energopro	prospekt Nezavisimosti, 169 220114 Minsk	Phone	+375 172181177	inverter@energopro.by
Kazakhstan	Silumin-Vostok	Revolucionnaya st., 10 070010 Ust-Kamenogorsk	Phone Fax	+7 (7232) 558982 +7 (7232) 552058	info@silumin.kz
Russian Federation	Altra Industrial Motion OOO	Volokolamskoye sh., 142 Bldg 6 Business Center „Irbis“ 125464 Moscow	Phone Fax	+7 (495) 6420468 +7 (495) 6420469	info.ru@bauergears.com http://ru.bauergears.com
Russian Federation	Epos Plus	Turgenevskaya st., 72 344002 Rostov-na-Donu	Phone Fax	+7 (863) 2623570 +7 (863) 2623570	ermakova@epos-plus.ru http://www.epos-plus.ru
Russian Federation	NPF Inger	423800 Naberezhnye Chelny, BSI	Phone	+7 8552778300	info@inger.ru
Russian Federation	Pribor-Service	Uchebnaya st, 90 644010 Omsk	Phone Fax	+7 (3812) 534598 +7 (3812) 534598	info@pribor-servis.ru http://www.pribor-servis.ru
Russian Federation	Privod Service	Nikitina st., 20 634062 Tomsk	Phone Fax	+7 (3822) 535347 +7 (3822) 535347	privodservice@bk.ru http://ps.tomsk.ru
Russian Federation	Privod+	16th Parkovaya st, 30 105484 Moscow	Phone Fax	+7 (495) 9885773 +7 (495) 9885774	info@privodplus.ru http://www.privodplus.ru
Russian Federation	SP Reduktor	Perovskoe st, 21 Moscow	Phone Fax	+7 (495) 2585460 +7 (495) 2585460	derevitskiy a@privod.ru
Russian Federation	S-Tek	Karl Marks st, 29a 443082 Samara	Phone Fax	+7 (846) 2790479 +7 (846) 2790479	s-tec@tec.ru http://www.s-tec.ru
Russian Federation	Stek-Master	Kosmonavtov st. 39 B 420061 Kazan	Phone Fax	+7 (843) 2796468 +7 (843) 2796468	master@stekmaster.ru http://www.stekmaster.ru
Russian Federation	Tet-RS	Borisa Bogatkova st., 63 630008 Novosibirsk	Phone Fax	+7 (383) 2135521 +7 (383) 2663326	koroleva@tet-rs.ru http://www.tet-rs.ru
Russian Federation	TTK Eurasia	Krestinskogo St., 46-a 620073 Ekaterinburg	Phone Fax	+7 (343)345-28-22	info@ttc-eurasia.ru http://www.ttc-eurasia.ru
Russian Federation	Uraltehmarket	Serafima Deryabninoy st., 24 20149 Ekaterinburg	Phone	+7 (343) 3805141 +7 (343) 3805141	info@uraltm.ru http://www.uraltm.ru
Russian Federation	Uralteplotribor	Elkina st., 14 455016 Magnitogorsk	Phone Fax	+7 (3519) 489633 +7 (3519) 489633	smv_utp@mail.ru
Ukraine	Bauer Gear Motor GmbH	47m Mandrykovskaya str. OC «DnZMO», office 508 49000 Dnipropetrovsk	Phone Fax	+38 (095) 2680598 +38 (056) 7637701	Andriy.Balanyuk@bauergears.com http://www.bauergears.com
Ukraine	AIDAR	Ilichev avenue 46 83003 Donetsk	Phone Fax	+38 (062) 3455511 +38 (062) 3452606	sa@aidar.in.ua www.aidar.com.ua
Ukraine	CHP Rychko	Artelnaya str, 10 49081 Dnepropetrovsk	Phone Fax	+38 (067) 5654420	serg_64@ua.fm
Ukraine	Comfort Company	N.Grinchenko str., 4 03038 Kyiv	Phone Fax	+38 (044) 3623676 +38 (044) 3623686	info@comfort-co.com http://www.comfort-co.com
Ukraine	Comfort Group	Bykova str., 16 50036 Krivoy Rog	Phone	+38 (050) 3218998	dir@komfortgroup.com.ua http://www.comfortgroup.com.ua
Ukraine	Fedama	Dragomannova str., 48 79005 Lvov	Phone	+38 (032) 2445560	fedama@lviv.farlep.net
Ukraine	Leko Trade	Akademicheskaya str, 6/1 83037 Donetsk	Phone	+38 (062) 633905	leko_trade@bk.ru www.leko.dn.ua
Ukraine	Nadezhda	Lenina st, 47 61103 Kharkov	Phone	+38 (057) 7177698	nadezhda@ilt.kharkov.ua
Ukraine	Pryvid Plus LLC	Krasnopol'skaya str.9, of.434 49000 Dnepropetrovsk	Phone	+38 (056) 7637701	ot@privod-plus.com.ua http://www.privod-plus.com.ua
Ukraine	Service-Avtomatika	Peremogi st, 56 04080 Kiev	Phone Fax	+38 (044) 3325423 +38 (044) 2230913	serv-avtomatika@ukr.net http://www.s-a.org.ua
Ukraine	ZEVS	Elektrikov str.26 04040 Kiev	Phone	+38 (044) 4980782	yarik100@gmail.com www.z-e-v-s.com.ua

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Middle East & Africa					
Egypt	Universal Est.	P.O. Box 101-Zamalek Cairo	Phone Fax	+20 (2) 33813696 +20 (2) 33813699	m.zohni@uni-est.com
India	International Combustion (India) Ltd.	Infinity Benchmark, 11th Floor, Plot – G1, Block – EP & GP, Salt Lake Electronics Complex, 700 091 Kolkata	Phone Fax	+91 (33) 33153000 +91 (33) 23576653	info@internationalcombustion.in
Israel	I. Ettner - Representations Ltd.	17, Mazal Dli St. Hod Hasharon 45309 69086 Tel-Aviv	Phone Fax	+972 (9)7453552 +972 (9)7452554	israel@ettner.co.il
South Africa	Bauer a Division of Hudaco Trading (Pty) Ltd.	72 Acacia Road 1401 Primrose	Phone Fax	+27 (11) 8289715 +27 (11) 8224135	johnB@gbauer.co.za
Turkey	CEFIP - Makina & Endüstriyel Ürünler San. ve Dis Tic. Ltd. Sti.	Perpa Ticaret Merkezi A Blok Kat: 2 No: 9-0033 34384 Okmeydani - Istanbul	Phone Fax	+90 (212) 2101890 +90 (212) 2101597	cefip@cefip.com.tr http://www.cefip.com.tr
Turkey	Senka Enerji Sanayi ve Ticaret Ltd Sti	Kara Hasan Atli Is Merkezi Sok. No: 1203/11 Kat.: 4/419 Yenisehir / Izmir	Phone Fax	+90 (232) 4695555 +90 (232) 4334371	senka@senka.org
United Arab Emirates	Dubai Drydocks Afloat Repair Division	P.O. BOX 8988 Dubai	Phone Fax	+971 (4) 3451353 +971 (4) 3450116	drydocks@drydocks.gov.ae http://www.drydocks.gov.ae

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A P A C



Australia	Transmission Australia Pty Ltd	22 Corporate Ave PO Box 2334 VIC 3178 Rowville	Phone Fax	+61 (3) 97554444 +61 (3) 97554411	info@transaus.com.au http://www.transaus.com.au
Indonesia	PT. Cahaya Mekar Sejati	Jl. Agung Utara Raya Blok A36 D/46 14350 Jakarta	Phone Fax	+62 (21) 6401803 +62 (21) 64715082	cahkarti@cbn.net.id http://www.bauergearmotor.com
Japan	Leybold Co., Ltd.	5th Floor, Tokyo Tatemono Bldg 1-9-9, Yaesu 1-Chome, Chuo-Ku 103-0028 Tokyo	Phone Fax	+81 (3) 32721861 +81 (3) 32814490	koki@leybold-kk.com
Korea, Republic Of	Chemiko Trading Co. Ltd.	Rm 1612, Namwoon Officetel, 229-10, Mooguh-Dong Nam-Gu Ulsan	Phone Fax	+82 (52) 2772107 +82 (52) 2472195	chemiko@choillian.net http://www.chemiko.net
Korea, Republic Of	Chemiko Trading Co. Ltd.	Chung Rok Bldg, 721-29 Yeoksam – Dong, Kangnam-Gu Seoul	Phone Fax	+82 (2) 5675336 +82 (2) 5541284	chemiko@chol.com http://www.chemiko.net
Malaysia	Greenvi Technologies (M) Sdn Bhd Industrial Automation	No. 64-02, Jalan Molek 2/2 Taman Molek 81100 Johor Bahru, Johor	Phone Fax	+60 (7) 3543006 +60 (7) 3542006	bpchin@greenvi-tech.com http://www.greenvi-tech.com
Philippines	Optima Equipment Corporation	Unit 503 I-Care Building 167 Legazpi St. Corner Dela Rosa St. 1229 Legazpi Village, Makati City	Phone Fax	+63 (2)) 845-0765 +63 (2) 893-6768	vandel@optima-equipment.com
Singapore	AVM Diesel (F.E.) Pte Ltd Gear Centre Southeast Asia	BLK 27 TUAS AVE 13 #01-23 638993 Singapore	Phone Fax	+65 (6) 8636933 +65 (6) 8636900	sales@avmdiesel.com http://www.avmdiesel.com
Singapore	AVM Diesel (F.E.) PTE Gear Centre Southeast	AVM Diesel (F.E.) PTE Ltd. Gear Centre Southeast Asia 638993 Singapore	Phone Fax	+65 (6) 8636933 +65 (6) 8636900	sales@avmdiesel.com http://www.avmdiesel.com
Thailand	Kasetphand Industry Co.,LTD	100 M. 3 SOI Suksawad 76 Suksawad rd. Bangjark, Phrapradaeng 10130 Samutprakarn	Phone Fax	+66 (2) 8176410 +66 (2) 8176437	sakchai_engineer@hotmail.com http://www.ksp.co.th
Vietnam	GNN CO., LTD.	33 Hoa hong 2, W. 2 Phu Nhuan District	Phone Fax	+84 (8) 35174923 +84 (8) 35174924	http://www.gnnvietnam.com

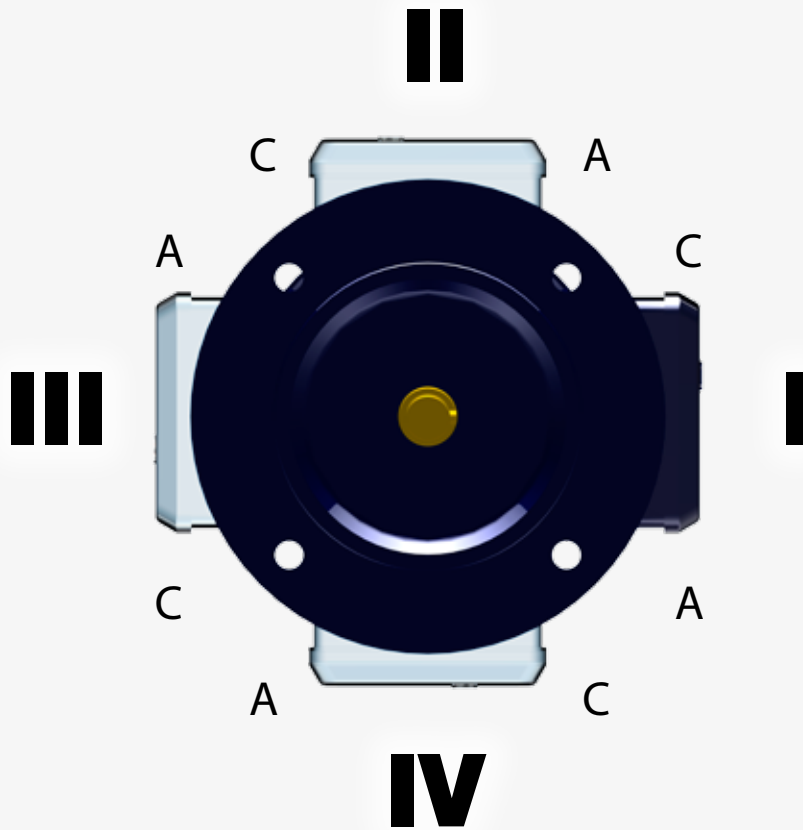
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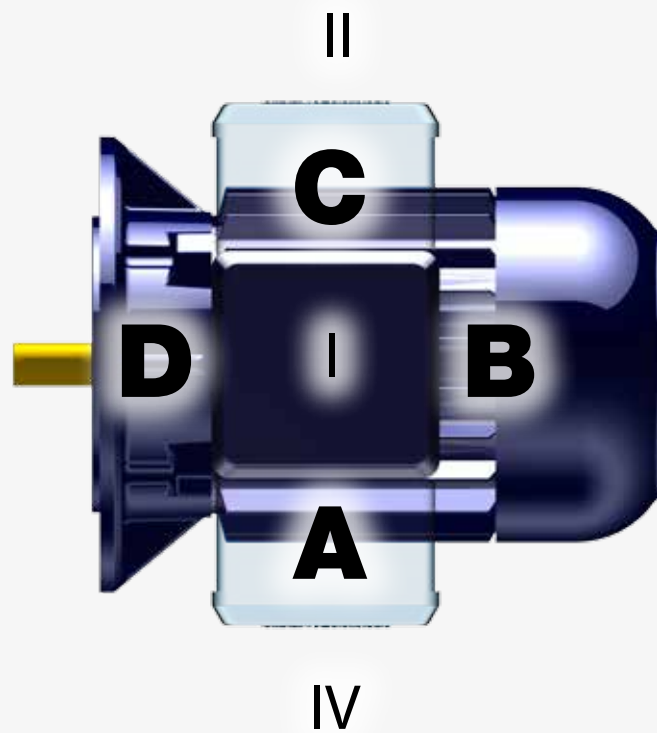
	C h i n a				
China	Altra Industrial Motion (ShenZhen) Co., Ltd	Central International Trade Center, Suite No. 1802 Tower D, No. 6A Jianguomenwai Avenue, Chaoyang District 100022 Beijing	Phone Fax	+86 (10) 85679488 +86 (10) 85679058	yang.yang@bauergears.com.cn http://www.bauergears.com
China	Altra Industrial Motion (ShenZhen) Co., Ltd.	Suite 703, Universal Mansion 168 Yuyuan Road 200040 Shanghai	Phone Fax	+86 (21) 5169 9255 +86 (21) 6248 5387	yang.yang@bauergears.com.cn
China	Shanghai Jinxin Inverter Company	No. 248-5, Xinshi Road 200083 Shanghai	Phone Fax	+86 (21) 65618877 +86 (21) 65600454	http://www.sinodrive.com
Hong Kong	A-CALL Company	Flat 8A, 8th Floor Wing Cheong Industrial Building 109 How Ming Street Kwun Tong Kowloon	Phone Fax	+852 (27) 930250 +852 (27) 930620	kent@a-call.com.hk http://www.a-call.com.hk
Taiwan	Saturn Power Ltd.	9F, No. 69-5, Sec. 2 Chung Cheng E. Rd. Tanshui District 105 New Taipei City	Phone Fax	+886 (2) 28095890 +886 (2) 28096770	service@saturnpowerltd.com http://www.saturnpowerltd.com

Terminal Box

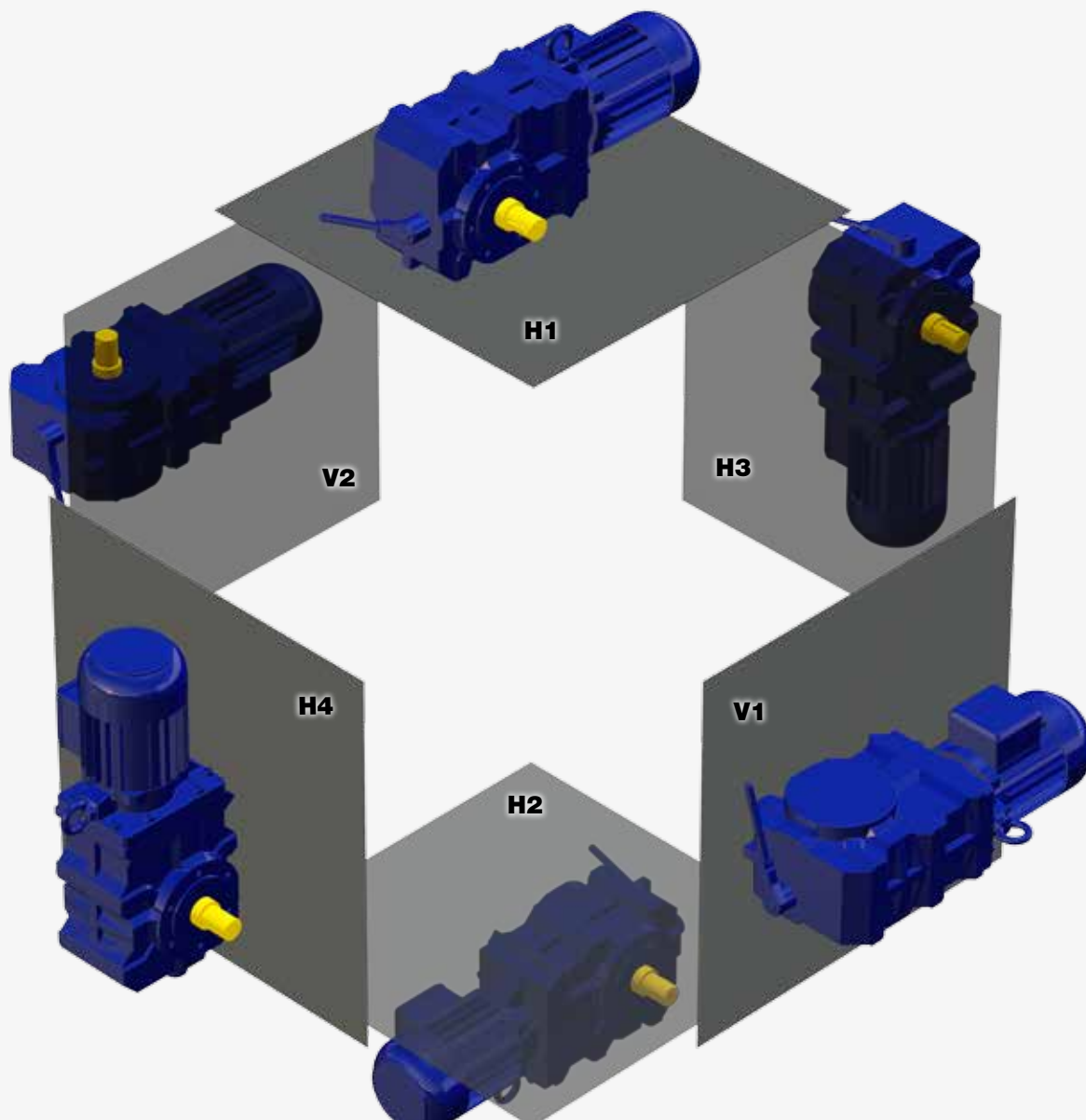
Terminal Box Position



Cable entry Position



Mounting Positions



Investment security for the future

Electrically driven machinery accounts for around 70% of overall energy demand for industrial consumption. Energy savings of 135 billion kilowatt-hours per year would be possible within Europe with the use of modern drive systems.

Bauer Gear Motor GmbH pursues its goals with minimum consumption of raw materials and energy, the lowest possible environmental impact, and efficient utilisation of resources. This philosophy is reflected in our product strategy, and we want to share it with our customers in

WHAT WE OFFER

- Over 85 years of experience in drive technology
- Advice from gear motor specialists
- A high level of engineering expertise for custom drive solutions
- A high level of application expertise
- Global availability
- Exceptional flexibility
- A broad product spectrum
 - Pioneering technologies for energy-efficient drives
 - Standard Efficiency (IE1) and Premium Efficiency (IE3) with standard induction motor technology
 - Super Premium Efficiency (IE4) – the highest efficiency class technologically possible – with permanent magnet synchronous motors (PMSMs)
- Sector-specific solutions as standard

THE BENEFITS FOR YOU

- A partner on your side:
 - that speaks your language
 - that understands you
 - that gives top priority to customer satisfaction
- More added value by using:
 - The Bauer brand, with
 - a good reputation worldwide
 - sturdy and durable drives
 - a high enclosure protection rating of IP65 as standard lying above the market standard
 - extremely high quality awareness
 - Products that are tailored to your applications and give you the benefit of:
 - our expertise as drive manufacturers for over 85 years
 - our knowledge of the industry
 - Higher flexibility
 - adaptation of standard drives to your needs
 - fast time to market for product launch with custom drive solutions (SSD)
- Expert advice for fully exploiting potential energy savings
- Acquiring technology leadership by using IE4 motors
- Achieving investment security by complying with statutory provisions for energy efficiency extending beyond 2017

All Customer Service phone numbers shown in bold

Couplings	Electromagnetic Clutches and Brakes	Heavy Duty Clutches and Brakes	Bauer Gear Motor
Ameridrives Couplings <i>Mill Spindles, Ameriflex, Ameridisc</i> Erie, PA - USA 1-814-480-5000 <i>Gear Couplings</i> San Marcos, TX - USA 1-800-458-0887 Bibby Turboflex <i>Disc, Gear, Grid Couplings, Overload Clutches</i> Dewsbury, England +44 (0) 1924 460801 Boksburg, South Africa +27 (0) 11 918 4270 TB Wood's <i>Elastomeric Couplings</i> Chambersburg, PA - USA 1-888-829-6637 – Press #5 <i>For application assistance:</i> 1-888-829-6637 – Press #7 <i>General Purpose Disc Couplings</i> San Marcos, TX - USA 1-888-449-9439 Ameridrives Power Transmission <i>Universal Joints, Drive Shafts, Mill Gear Couplings</i> Green Bay, WI - USA 1-920-593-2444 Huco Dynatork <i>Precision Couplings and Air Motors</i> Hartford, England +44 (0) 1992 501900 Chambersburg, PA - USA 1-888-829-6637 Lamiflex Couplings <i>Flexible Couplings, Bearing Isolators, and Coupling Guards</i> São Paulo, SP - Brasil +55 (11) 5679-6533 Guardian Couplings <i>Flywheel, Jaw, Shear, Gear, Grid, Disc and Engine Couplings</i> Michigan City, IN - USA 1-219-874-5248	Warner Electric <i>Electromagnetic Clutches and Brakes</i> New Hartford, CT - USA 1-800-825-6544 <i>For application assistance:</i> 1-800-825-9050 Saint Barthélemy d'Anjou, France +33 (0) 2 41 21 24 24 <i>Precision Electric Coils and Electro-magnetic Clutches and Brakes</i> Columbia City, IN - USA 1-260-244-6183 Matrix International <i>Electromagnetic Clutches and Brakes, Pressure Operated Clutches and Brakes</i> Brechin, Scotland +44 (0) 1356 602000 New Hartford, CT - USA 1-800-825-6544 Inertia Dynamics <i>Spring Set Brakes; Power On and Wrap Spring Clutch/Brakes</i> New Hartford, CT - USA 1-800-800-6445 Overrunning Clutches Formsprag Clutch <i>Overrunning Clutches and Holdbacks</i> Warren, MI - USA 1-800-348-0881 – Press #1 <i>For application assistance:</i> 1-800-348-0881 – Press #2 Marland Clutch <i>Roller Ramp and Sprag Type Over-running Clutches and Backstops</i> South Beloit, IL - USA 1-800-216-3515 Stieber Clutch <i>Overrunning Clutches and Holdbacks</i> Heidelberg, Germany +49 (0) 6221 30 47 0 Belted Drives and Sheaves TB Wood's <i>Belted Drives</i> Chambersburg, PA - USA 1-888-829-6637 – Press #5 <i>For application assistance:</i> 1-888-829-6637 – Press #7	Wichita Clutch <i>Pneumatic Clutches and Brakes</i> Wichita Falls, TX - USA 1-800-964-3262 Bedford, England +44 (0) 1234 350311 Twiflex Limited <i>Caliper Brakes and Thrusters</i> Twickenham, England +44 (0) 20 8894 1161 Industrial Clutch <i>Pneumatic and Oil Immersed Clutches and Brakes</i> Waukesha, WI - USA 1-262-547-3357 Svendborg Brakes <i>Industrial Brakes and Brake Systems</i> Vejstrup, Denmark +45 63 255 255 Gearing Boston Gear <i>Enclosed and Open Gearing, Electrical and Mechanical P.T. Components</i> Charlotte, NC - USA 1-800-825-6544 <i>For application assistance:</i> 1-800-816-5608 Bauer Gear Motor <i>Gearred Motors</i> Esslingen, Germany +49 (711) 3518-0 Somerset, NJ - USA 1-732-469-8770 Nuttall Gear and Delroyd Worm Gear <i>Worm Gear and Helical Speed Reducers</i> Niagara Falls, NY - USA 1-716-298-4100 Linear Products Warner Linear <i>Linear Actuators</i> Belvidere, IL - USA 1-800-825-6544 <i>For application assistance:</i> 1-800-825-9050 Saint Barthélemy d'Anjou, France +33 (0) 2 41 21 24 24	Bauer Gear Motor GmbH Eberhard-Bauer-Strasse 36-60 73734 Esslingen - Germany +49 711 3518 0 +49 711 3518 381 (Fax) Bauer Gear Motor Slovakia s.r.o. Tovarenská 49 953 01 Zlate Moravce - Slovakia +421 37 6926100 +421 37 6926181 (Fax) Bauer Gear Motor Limited Nat Lane Business Park Winsford, Cheshire CW7 3BS - United Kingdom +44 1606 868600 +44 1606 868603 (Fax) Bauer Gear Motor LLC 31 Schoolhouse Rd. Somerset NJ 08873-1212 - USA +1 732 469 8770 +1 732 469 8773 (Fax) Altra Industrial Motion (Shenzhen) Co., Ltd. 18 Huan Zhen Road Dabo Industrial Zone - BoGoang Village ShaJing Town - BaoAn District Guangdong Province 518104 Shenzhen City - China +86 755 27246308 +86 755 27246017 (Fax) Altra Industrial Motion 000 Volokolamskoye sh., 142, bldg 6 Business Center „Irbis“ 125464 Moscow - Russia +7 495 6420468 +7 495 6420469 (Fax) Customer Centre Finland 01510 Vantaa +358 207 189700 Customer Centre France-Benelux Brussel (Anderlecht) +32 2 5295941 Customer Centre Italy Grisignano di Zocco (VI) +39 0444 414392

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www.bauergears.com

Eberhard Bauer Straße 36-60
 73734 Esslingen - Germany
 Tel: +49 711 3518-0
 Fax: +49 711 3518-381

