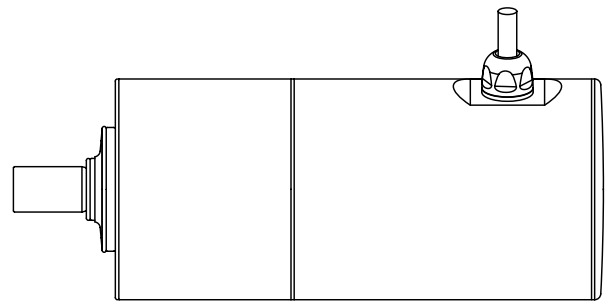


# GEORGII KOBOLD

Creating Motion  
since 1924



Motors and Gearboxes for  
Food, Beverage  
and Pharmaceutical Industries







Dipl.-Psych. Andreas Vonderschmidt, B. Sc. (Elektro-Ing.)  
Management

Dr.-Ing. Reiner Vonderschmidt  
Management

Dr.-Ing. Stefan Vonderschmidt  
Management

Tradition meets modernity,  
experience combined with innovation.

*"Basically, all we need are aluminum ingots, copper wire, sheet metal coils, magnets and semi-finished products in order to build gearmotors." This casual sentence by the Georgii Kobold management team perfectly describes the vertical range of manufacturing within the company. Thanks to the entrepreneurial vision of the Vonderschmidt family, this statement is still valid today at Georgii Kobold. At the sites in Horb and Hemmingen, you will find all of the production steps, i.e. development, design, casting, punching, winding, assembly, CNC machining, gear cutting and painting. All of these are carried out in-house.*

This enormous vertical range of manufacturing is an invaluable advantage when manufacturing hygienically-design drives - especially while production of certified motors and gearboxes for hygienic and process-integrated areas. Because of this, Georgii Kobold can live up to its responsibilities to the user.

Their combined manufacturing expertise also makes the company flexible enough to customize hygienically-design drives which are customized for specific requirements.

The food industry, the pharmaceutical industry, the processing industry as well as beverage bottlers all have very high demands on system and machine components, and they therefore rely on Georgii Kobold's expertise in hygienic design.

For areas with stringent hygiene requirements, Georgii Kobold has developed stainless steel gearmotors, which can be supplied with an integrated servo controller on request. Their materials and finishes allow the use of clean-in-place (CIP) procedures with aggressive disinfectants under high pressure.

When the company was founded in 1924, hardly anyone could have imagined where the development would go. Entrepreneurial spirit and passion for development thrive together at Georgii Kobold. That's why one of the milestones in the company's history was the development and market launch of the magnetic gearmotor in 2016. The completely contactless power transmission impresses with its efficiency and low noise level.

Today, Georgii Kobold GmbH & Co. KG is a family-owned company managed by Dr. Reiner Vonderschmidt, Andreas Vonderschmidt and Dr. Stefan Vonderschmidt.



## Safety for Challenging Applications

The requirements for the production of food and pharmaceutical products are very high in order to guarantee reliable consumer protection. These requirements must also be met by all components used during production.

For areas with stringent hygiene requirements, GEORGII KOBOLD has designed a new, hygienically-design series of stainless steel gearmotor, which can also be supplied with integrated servo controllers.

Depending on the zone in which they are placed, our gearmotors and torque motors have specific, wash-down specifications for the material and their surface finishes.

In the demanding, process integrated areas, for example, the use of aggressive and efficient cleaning agents and disinfectants is possible, and these can be applied with pressure washers.

GEORGII KOBOLD can also offer customized products to meet your specific requirements.

## At a Glance

- Intelligent, redundantly-sealed design concepts and extended product variety with lubricant-free, magnetic transmissions and torque motors featuring Hygienic Designs.
- Extensive customizations of the hygienically-designed motors to your specifications. We implement a "one-piece-flow" and are thus in a position to make individual adaptations even for small purchase quantities.
- Hygienic design according to EHEDG guidelines
- To avoid over-optimization, the adaptation of the motors in terms of their size and shape, as well as the availability of different levels of hygiene from corrosion resistant to hygienic design in AISI 316L (DIN EN 1.4404) stainless steel or anodized aluminum, depending on requirements and application.



# HYGIENIC



# DESIGN

...





Hygienically-designed gearmotors and torque motors from GEORGII KOBOLD for industries with extreme demands for hygiene, cleanliness and corrosion protection, such as in

- Food Industry
- Beverage Bottling
- Pharmaceutical Industry
- Process Engineering



... IS OUR

EXPERTISE ...



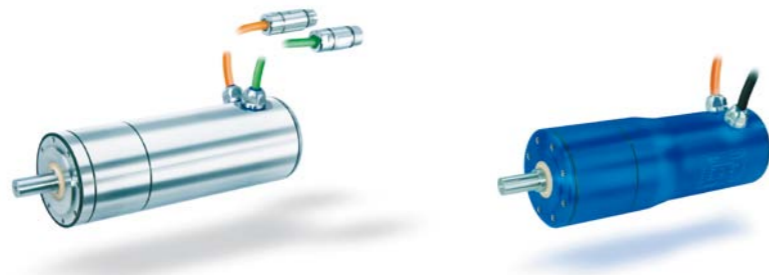
The European Hygienic Engineering & Design Group (EHEDG) is an expert community of machinery and component manufacturers as well as experts from the food industry, research institutes and health authorities. As a member of EHEDG, we consider it our task to contribute to the hygienic engineering and design of drives in all areas of the food industry and thus help ensure the safe production of foodstuffs in all areas of the food industry. Our products demonstrate this commitment.



# ... FOR YOUR PROBLEM ZONES.

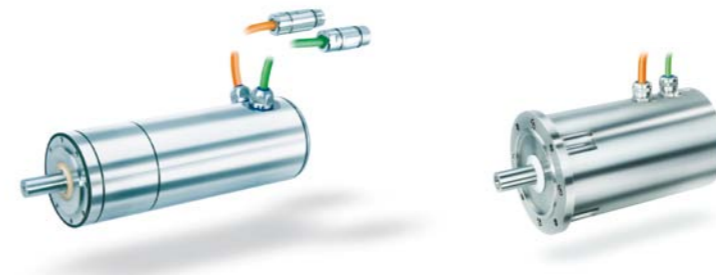
Specific and sometimes extremely demanding hygiene requirements apply to the production of foodstuffs. A distinction is made here between three zones, each of which places different demands on the individual system and machine components used. Depending on the zone in which they are used, we also implement specific requirements for our motors in terms of the material used, the surface finish, and their cleaning.

## Hygienic Design Zone (process integrated)



Demand on hygienic design	Very high	High
Material	AISI 316L (DIN EN 1.4404) or AISI 304 (DIN EN 1.4301)	Anodised aluminium
Surface	Finely turned (Ra<0.8µm)	Finely turned (Ra<0.8µm)
Protection class	IP66K/IP69K	IP66K/IP69K
Cleaning	With aggressive cleaning agents, high-pressure cleaning	Water jet or high-pressure cleaning
Achievement of EHEDG criteria	Yes	Mostly (material deviation)

## Spray Zone (near the process)



Demand on hygienic design	Very high	Medium
Material	AISI 316L (DIN EN 1.4404) or AISI 304 (DIN EN 1.4301)	Anodised aluminium or AISI 304 (DIN EN 1.4301)
Surface	Finely turned (Ra<0.8µm)	Turned
Protection class	IP66K/IP69K	IP66K/IP69K
Cleaning	High-pressure cleaning	Water jet or high-pressure cleaning
Achievement of EHEDG criteria	Yes	No

## Zoning in the Food and Beverage Industries

- Hygienic Design Zone:**  
 (product is integrated in the process)
 Food is in contact with the drives and their components
- Spray Zone:**  
 (near the process)
 Food can drip or splash and get back into the manufacturing process and cause contamination.
- Non-product Zone:**
No food contact possible



# Driving Power – for Hygienic Applications

## Mechanical Versions:

### Mounting Forms

- Servo motors: IM B14, IM B5
- Planetary gear motors: IM B14

### Mounting Positions

- As desired

### Flange Accuracy

- Flanges according to EN 50347 ISO j6

### Housings and End Shields

- Dead-space-free housing construction
- Stainless steel AISI 304 (DIN EN 1.4301)
- Surface roughness Ra <0.8 µm
- Sealed to existing metal/metal connections with silicone O-rings

### Stator

- Potted stator windings

### Rotor

- Rare-earth permanent magnets

### Vibration Severity

- Vibration quality A according to DIN EN 60034-14

### Shaft End

- According to DIN 748, part 3, but with a more precise k5 fit
- Centering with thread according to DIN 332 form D
- Shaft with keyway according to DIN 6885-1

### Lubrication of Bearings and Gears

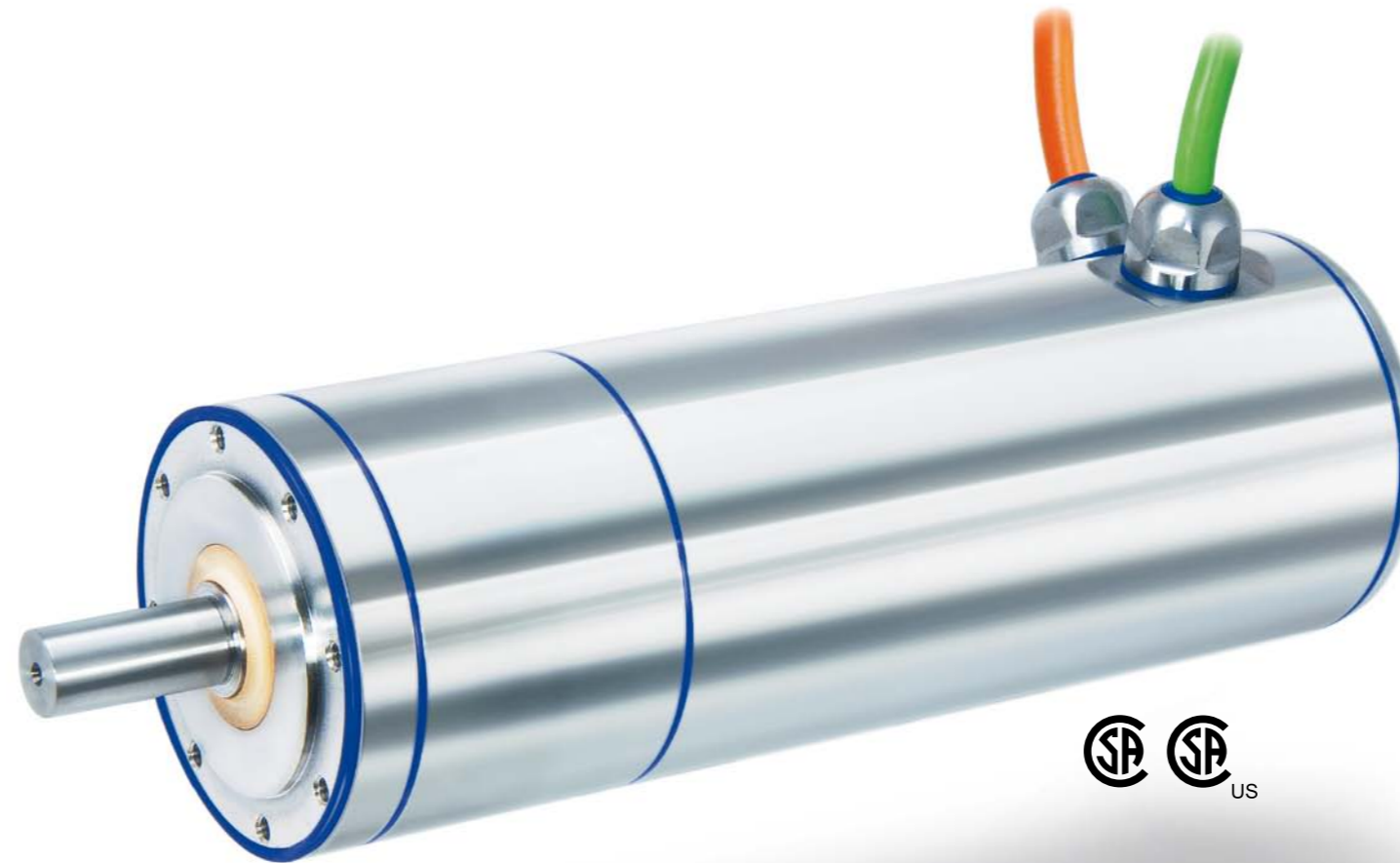
- Food grade lifetime lubrication
- Closed system

### Service Life

- > 20,000 h

### Ingress Protection Class

- IP69K



## Electrical Versions:

### Version

- According to DIN EN 60034 and VDE 0530

### Voltage

- 400 V nominal voltage
- Other versions (e.g. 230 V or 48 V) possible on request

### Isolation

- ISO Class F

### Power

- Motor power applies to the following operating conditions:  
Installation site: <1,000 m above sea level,  
Ambient temperature: -20 °C to +40 °C,  
Operating mode: Continuous (S1)

### Winding Protection

- PT1000
- Other versions possible on request

### Feedback Systems

- Resolver
- Hiperface
- EnDat

### Connection

- According to connection diagram (see page 12)

### Brake

- Permanent magnet brake
- Voltage 24 V<sub>DC</sub>  
The brake is designed as a holding brake and is used to lock the drive shaft at standstill

### Brake

Motor size	Holding torque	Rated voltage	Rated current	Switching times	Moment of inertia	Weight
	M <sub>BR1</sub> [Nm]	U <sub>NBR1</sub> [V]	I <sub>NBR1</sub> [A]	t <sub>1</sub> [ms]	J <sub>BR</sub> [10 <sup>-4</sup> kgm <sup>2</sup> ]	G <sub>BR1</sub> [kg]
KSG/KSY 16..	2.0	24	0.46	25/6	0.12	0.21
KSG/KSY 26..	4.5	24	0.50	35/7	0.19	0.38
KSG/KSY 36..	9.0	24	0.75	40/7	0.56	0.53
KSG/KSY 46..	18.0	24	1.00	50/10	1.9	1.1
KSG/KSY 56..	36.0	24	1.10	90/22	6.2	1.9

Other designs on request.

## Hygienic Design Cable Versions

	Maximum power Food105	Maximum dynamics Food80
Sheath	PVC	PUR
Conductors	VX	PUR
Max. Operating temperature	105 °C	80 °C
Certification	UL/CSA	UL/CSA
	1,000 V, external wiring	1,000 V, external wiring



## Cable Weight

Motor frame size	Power cable	Weight	Motor frame size	Encoder cable	Weight
Size 1	4x0.75mm <sup>2</sup> +1x[2x0.5mm <sup>2</sup> ]	0.128 kg/m	Size 1 - 5	4x2x0.25mm <sup>2</sup> +2x0.5mm <sup>2</sup>	0.125 kg/m
Size 2, Size 3	4x1.5mm <sup>2</sup> +1x[2x0.5mm <sup>2</sup> ]	0.165 kg/m			
Size 4	4x2.5mm <sup>2</sup> +1x[2x0.5mm <sup>2</sup> ]	0.225 kg/m			
Size 5	4x4.0mm <sup>2</sup> +1x[2x0.5mm <sup>2</sup> ]	0.341 kg/m			

Note:  
The weight information of the motors does not include the weight of the cables.  
The weights of the cables must be added separately and will depend on their lengths.

## Signal Pinouts



Motor		Resolver R4		Encoder RQ Sick	
Pin	Signal	Pin	Signal	Pin	Signal
1	W	1	S4 SIN+	1	DATA-
2	PE	2	S1 COS-	2	V <sub>CC</sub> (+8V)
3	U	3	PTC	4	SIN
4	V	4	PTC	5	COS
A	N.C.	5	R1 REF-	6	DATA+
B	N.C.	7	R2 REF+	7	GND
C	BR+	10	S2 SIN-	8	REFSIN
D	BR-	11	S3 COS+	9	REFCOS
		6, 8, 9, 12	N.C.	10	PTC
				11	PTC
				3, 12	N.C.

Note:  
Stainless steel connectors do not meet the EHEDG criterion.  
We therefore recommend using the cable version for use in the spray or process zone.

## Encoder Systems

Motor Type Code	Feedback	Properties
R4	Resolver	1 cycle/rev, U <sub>s</sub> /U <sub>k</sub> =0.5
RQ	SKM36, Sick-Stegmann	Hiperface, Absolute-Multiturn 128 lines/rev (12 bit + 12 bit)
RS	SKS36, Sick-Stegmann	Hiperface, Absolute-Singleturn 128 lines/rev (12 bit)
RE-1	ECN 1313, Heidenhain	EnDat, Absolute-Singleturn 512 lines/rev (13 bit)
RD-1	EQN 1325, Heidenhain	EnDat, Absolute-Multiturn 2048 lines/rev (12 bit + 13 bit)

Additional encoder systems available on request.

## Winding Protection

Standard: PT1000 Temperature Sensor (other sensors on request).

## Type Code Format

Motor	KSX	2	6	4	.55	HD	-MD	-Rx	/400	/...	/SX	/PG-I	70.03	/V	/SX
<b>Gearmotor</b>	<b>KSG</b>	<b>2</b>	<b>6</b>	<b>4</b>	<b>.55</b>	<b>HD</b>	<b>-MD</b>	<b>-Rx</b>	<b>/400</b>	<b>/...</b>	<b>/SX</b>	<b>/PG-I</b>	<b>70.03</b>	<b>/V</b>	<b>/SX</b>
<ul style="list-style-type: none"> <li>Basic motor type</li> <li>Frame size</li> <li>Number of poles</li> <li>Length of lamination packages (cm)</li> <li>Rated speed (/100) in rpm</li> <li>Hygienically-designed series</li> <li>Brake</li> <li>Type of feedback (R4 = resolver / RQ = Sick Stegmann (standard), see p. 13)</li> <li>Rated voltage</li> <li>Variants of the basic type (on request)</li> <li>Special mechanical and electrical designs, on request</li> <li>Integrated gearbox: PG-Planetary gearbox</li> <li>Gearbox size and ratio</li> <li>Shaft design of gearbox: solid shaft (V) or solid-shaft block flange (VB)</li> <li>other mechanical designs on request</li> </ul>															



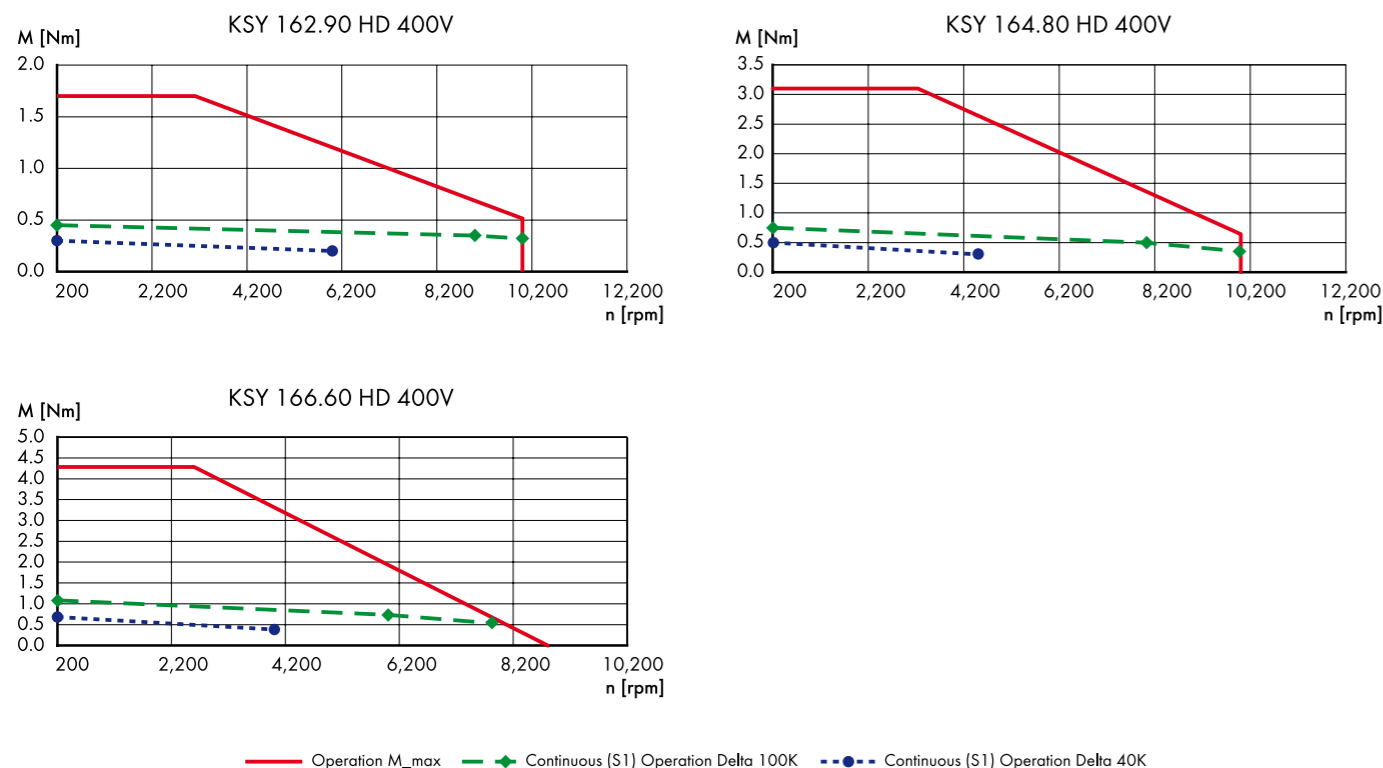
# Technical Data - Motor

## KSY-HD Size 1

Motor Size/KSY-HD...		KSY-HD 162.90	KSY-HD 164.80	KSY-HD 166.60
Rated voltage	$U_N$ [V]	400	400	400
Rated frequency	$f_N$ [Hz]	450	400	300
EMF constant	$K_E$ [V/1000 1/min]*	30	34	45
Rated speed	$n_N$ [1/min]	9000	8000	6000
Rated power	$P_N$ [kW]	0.30	0.40	0.50
Rated torque	$M_N$ [Nm]	0.35	0.50	0.75
Rated current	$I_N$ [A]	0.75	1.00	1.10
Rated torque constant	$K_{TN}$ [Nm/A]*	0.47	0.50	0.68
Standstill torque	$M_0$ [Nm]**	0.45	0.75	1.10
Standstill current	$I_0$ [A]**	0.90	1.40	1.50
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.50	0.54	0.73
Peak torque	$M_{max}$ [Nm]***	1.7	3.1	4.3
Peak current	$I_{max}$ [A]***	4.2	6.7	6.9
Peak torque constant	$K_{Tmax}$ [Nm/A]*	0.40	0.46	0.62
Stator resistance	$R_{UV}$ [W]*	28.9	12.8	13.2
Stator inductivity	$L_{UV}$ [mH]	26.1	15.7	18.0
Electrical time constant	$T_{el}$ [ms]	0.9	1.2	1.4
Thermal time constant	$T_{th}$ [min]****	32	34	35
Mass moment of inertia	$J_{rot}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	0.12	0.18	0.24
Motor weight	$m_{mot}$ [kg]*****	3.4	4.0	4.6
<b>Motor with brake</b>				
Mass moment of inertia	$J_{rot}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	0.24	0.30	0.36
Motor weight	$m_{motor+brake}$ [kg]*****	4.2	4.8	5.4
Holding torque	$M_{brake}$ [Nm]	2	2	2

\* values at 20 °C / \*\* values at 200 rpm (motor) / \*\*\* short time operation max. 3 seconds / \*\*\*\* estimated value / \*\*\*\*\* weight without cables (cable weight p. 12)

### Speed-Torque Curves KSY-HD 162/164/166

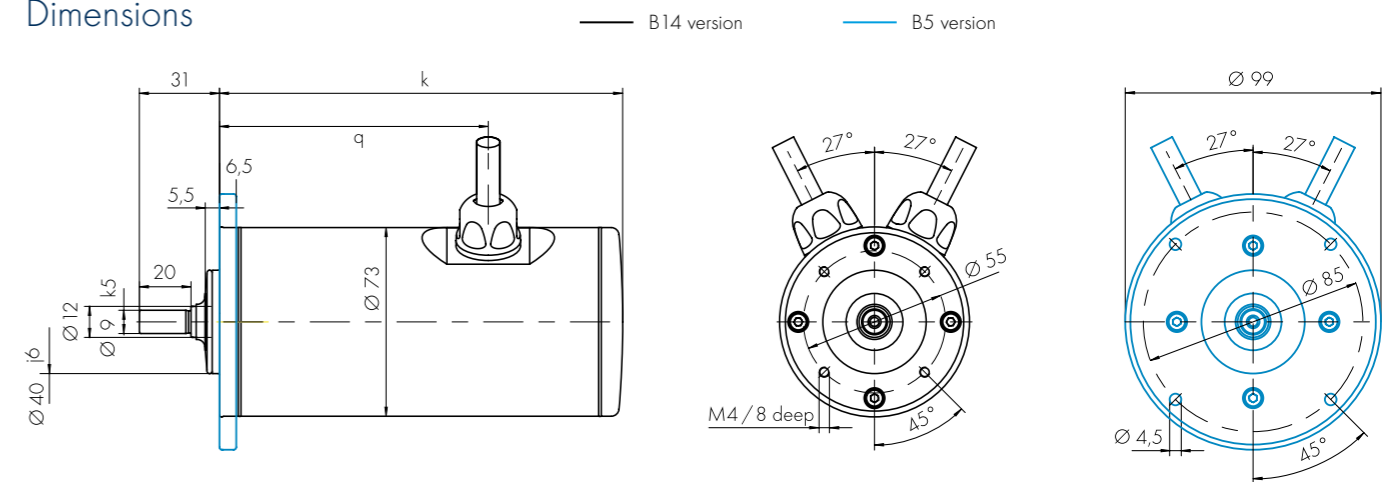


With MD brake Size/KSY-HD...		KSY-HD 162.90	KSY-HD 164.80	KSY-HD 166.60
Rated speed	$n_N$ [1/min]	9000	8000	6000
Rated power	$P_N$ [kW]	0.28	0.39	0.44
Rated torque	$M_N$ [Nm]	0.30	0.46	0.70
Rated current	$I_N$ [A]	0.64	0.92	1.03
Rated torque constant	$K_{TN}$ [Nm/A]*	0.47	0.50	0.68
Standstill torque	$M_0$ [Nm]**	0.40	0.72	1.00
Standstill current	$I_0$ [A]**	0.80	1.33	1.37
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.50	0.54	0.73

With RQ-3 encoder Size/KSY-HD...		KSY-HD 162.90	KSY-HD 164.80	KSY-HD 166.60
Rated speed	$n_N$ [1/min]	9000	8000	6000
Rated power	$P_N$ [kW]	0.30	0.38	0.42
Rated torque	$M_N$ [Nm]	0.32	0.45	0.67
Rated current	$I_N$ [A]	0.68	0.90	0.99
Rated torque constant	$K_{TN}$ [Nm/A]*	0.47	0.50	0.68
Standstill torque	$M_0$ [Nm]**	0.41	0.73	0.99
Standstill current	$I_0$ [A]**	0.82	1.35	1.36
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.50	0.54	0.73

With MD brake & RQ-3 encoder Size/KSY-HD...		KSY-HD 162.90	KSY-HD 164.80	KSY-HD 166.60
Rated speed	$n_N$ [1/min]	9000	8000	6000
Rated power	$P_N$ [kW]	0.26	0.31	0.37
Rated torque	$M_N$ [Nm]	0.28	0.37	0.59
Rated current	$I_N$ [A]	0.60	0.74	0.87
Rated torque constant	$K_{TN}$ [Nm/A]*	0.47	0.50	0.68
Standstill torque	$M_0$ [Nm]**	0.38	0.68	0.93
Standstill current	$I_0$ [A]**	0.76	1.26	1.27
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.50	0.54	0.73

### Dimensions



Type/KSY 1	Resolver R4	Resolver and brake	RQ encoder	RQ encoder and brake
	q	k	k	k
KSY 162... HD(-MD)-R../S1	84	136	154	195
KSY 164... HD(-MD)-R../S1	104	156	174	215
KSY 166... HD(-MD)-R../S1	124	176	194	235



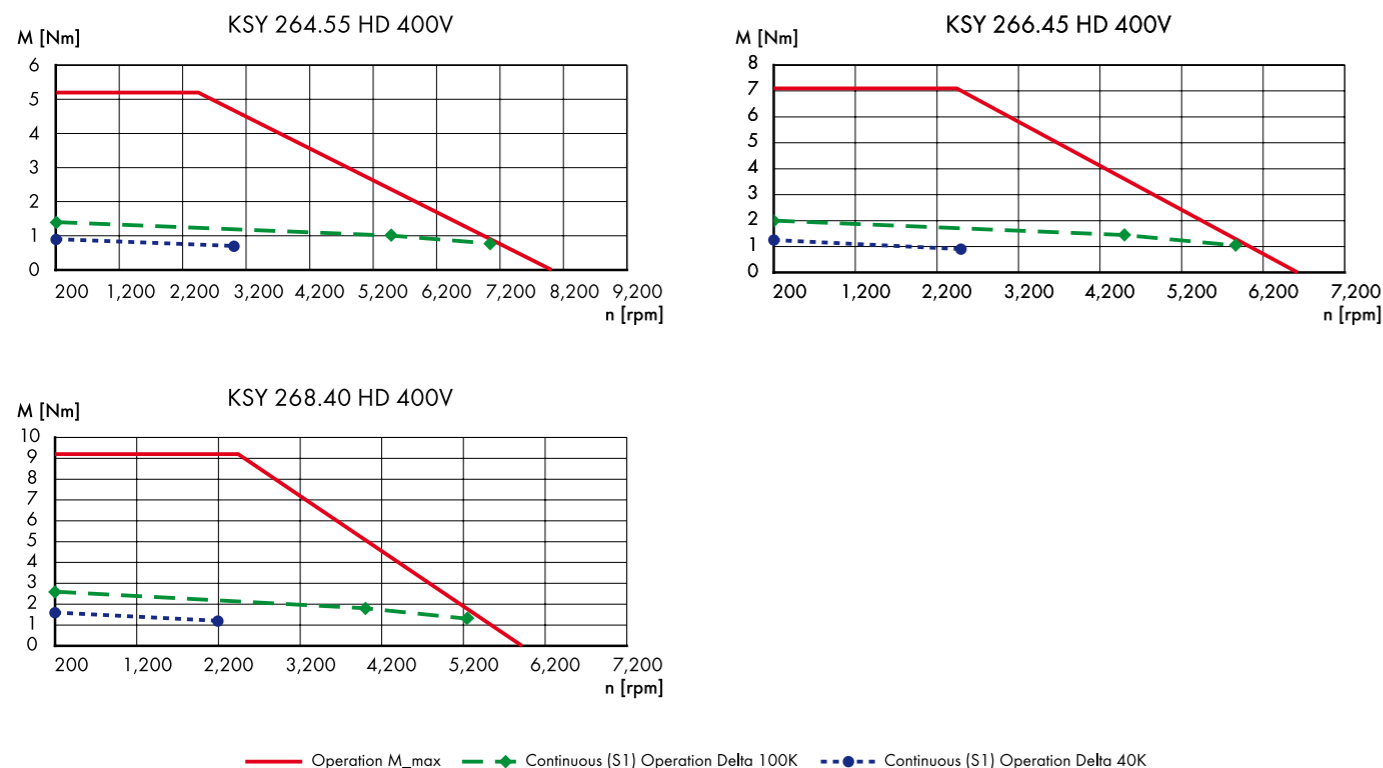
# Technical Data - Motor

## KSY-HD Size 2

Motor Size/KSY-HD...		KSY-HD 264.55	KSY-HD 266.45	KSY-HD 268.40
Rated voltage	$U_N$ [V]	400	400	400
Rated frequency	$f_N$ [Hz]	275	225	200
EMF constant	$K_E$ [V/1000 1/min]*	49.9	60.4	67.6
Rated speed	$n_N$ [1/min]	5500	4500	4000
Rated power	$P_N$ [kW]	0.60	0.70	0.80
Rated torque	$M_N$ [Nm]	1.00	1.44	1.80
Rated current	$I_N$ [A]	1.40	1.60	1.80
Rated torque constant	$K_{TN}$ [Nm/A]*	0.71	0.88	1.00
Standstill torque	$M_0$ [Nm]**	1.40	2.00	2.60
Standstill current	$I_0$ [A]**	1.90	2.20	2.50
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.74	0.91	1.04
Peak torque	$M_{max}$ [Nm]***	5.2	7.1	9.2
Peak current	$I_{max}$ [A]***	7.6	8.7	10.0
Peak torque constant	$K_{Tmax}$ [Nm/A]*	0.68	0.82	0.92
Stator resistance	$R_{UV}$ [W]*	9.7	8.1	6.7
Stator inductivity	$L_{UV}$ [mH]	14.8	14.2	13.2
Electrical time constant	$T_{el}$ [ms]	1.5	1.8	2.0
Thermal time constant	$T_{th}$ [min]****	37	39	41
Mass moment of inertia	$J_{rot}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	0.50	0.73	0.95
Motor weight	$m_{mot}$ [kg]*****	5.5	6.4	7.2
<b>Motor with brake</b>				
Mass moment of inertia	$J_{rot}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	0.70	0.93	1.15
Motor weight	$m_{motor+brake}$ [kg]*****	6.8	7.7	8.5
Holding torque	$M_{brake}$ [Nm]	4.5	4.5	4.5

\* values at 20 °C / \*\* values at 200 rpm (motor) / \*\*\* short time operation max. 3 seconds / \*\*\*\* estimated value / \*\*\*\*\* weight without cables (cable weight p. 12)

### Speed-Torque Curves KSY-HD 264/266/268

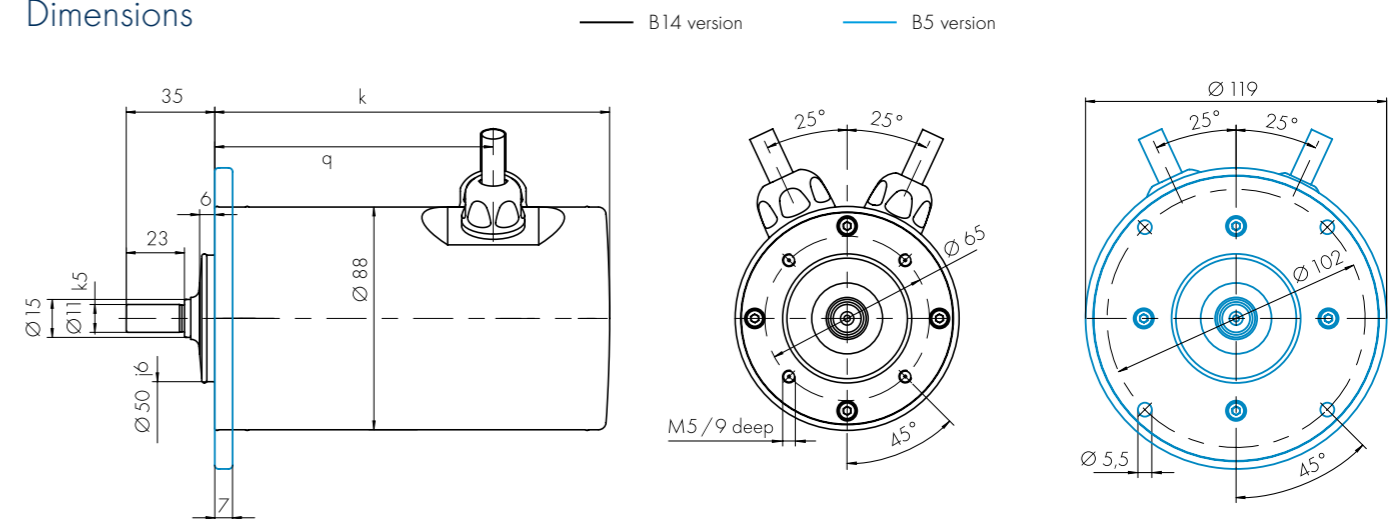


With MD brake Size/KSY-HD...		KSY-HD 264.55	KSY-HD 266.45	KSY-HD 268.40
Rated speed	$n_N$ [1/min]	5500	4500	4000
Rated power	$P_N$ [kW]	0.55	0.65	0.73
Rated torque	$M_N$ [Nm]	0.95	1.37	1.75
Rated current	$I_N$ [A]	1.34	1.56	1.75
Rated torque constant	$K_{TN}$ [Nm/A]*	0.71	0.88	1.00
Standstill torque	$M_0$ [Nm]**	1.36	1.93	2.50
Standstill current	$I_0$ [A]**	1.84	2.12	2.40
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.74	0.91	1.04

With RQ-3 encoder Size/KSY-HD...		KSY-HD 264.55	KSY-HD 266.45	KSY-HD 268.40
Rated speed	$n_N$ [1/min]	5500	4500	4000
Rated power	$P_N$ [kW]	0.54	0.59	0.67
Rated torque	$M_N$ [Nm]	0.93	1.26	1.60
Rated current	$I_N$ [A]	1.31	1.43	1.60
Rated torque constant	$K_{TN}$ [Nm/A]*	0.71	0.88	1.00
Standstill torque	$M_0$ [Nm]**	1.36	1.85	2.37
Standstill current	$I_0$ [A]**	1.84	2.03	2.28
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.74	0.91	1.04

With MD brake & RQ-3 encoder Size/KSY-HD...		KSY-HD 264.55	KSY-HD 266.45	KSY-HD 268.40
Rated speed	$n_N$ [1/min]	5500	4500	4000
Rated power	$P_N$ [kW]	0.47	0.53	0.60
Rated torque	$M_N$ [Nm]	0.81	1.12	1.43
Rated current	$I_N$ [A]	1.14	1.27	1.43
Rated torque constant	$K_{TN}$ [Nm/A]*	0.71	0.88	1.00
Standstill torque	$M_0$ [Nm]**	1.28	1.76	2.26
Standstill current	$I_0$ [A]**	1.73	1.93	2.17
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.74	0.91	1.04

### Dimensions



Type/KSY 2	Resolver R4	Resolver and brake	RQ encoder	RQ encoder and brake
	q	k	k	k
KSY 264... HD(-MD)-R../S1	110	156	171	215
KSY 266... HD(-MD)-R../S1	130	176	211	235
KSY 268... HD(-MD)-R../S1	150	196	231	255

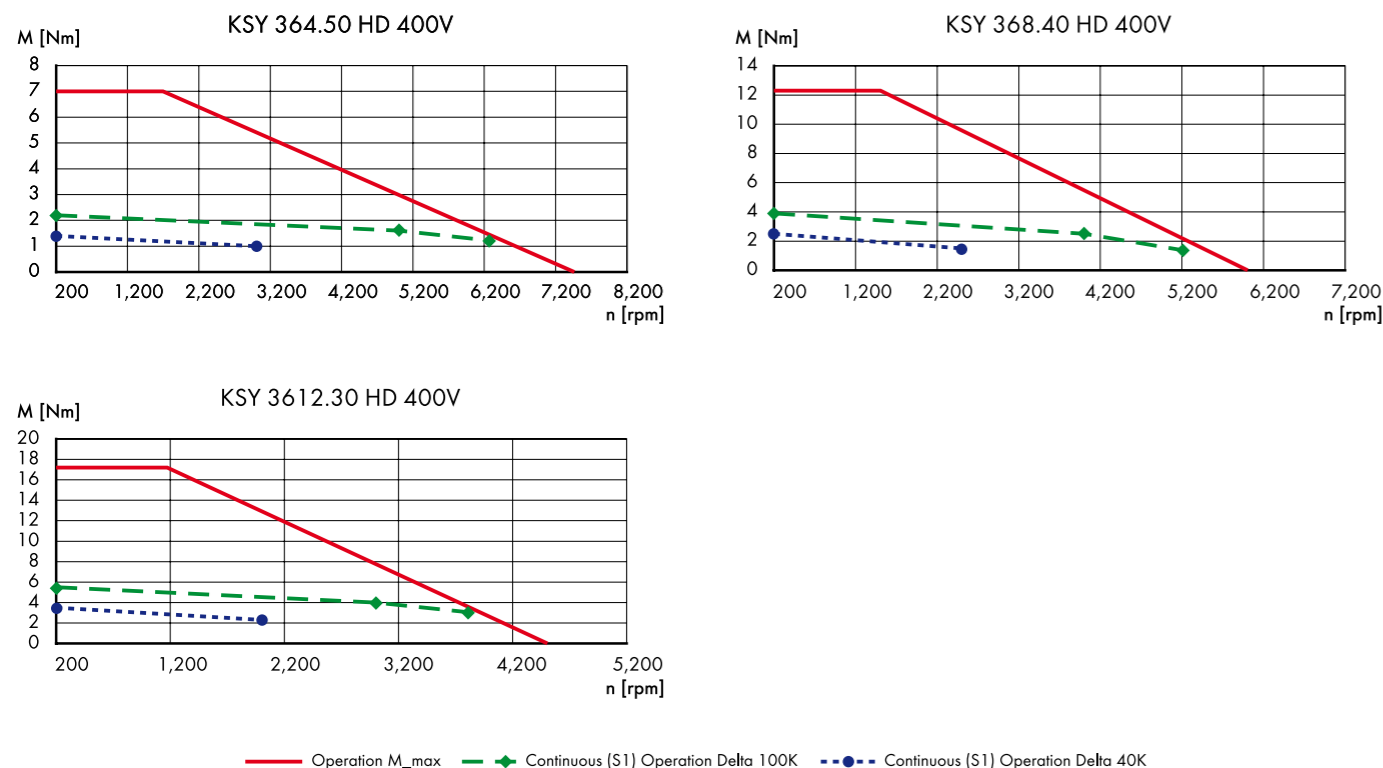
# Technical Data - Motor

## KSY-HD Size 3

Motor Size/KSY-HD...		KSY-HD 364.50	KSY-HD 368.40	KSY-HD 3612.30
Rated voltage	$U_N$ [V]	400	400	400
Rated frequency	$f_N$ [Hz]	250	200	150
EMF constant	$K_E$ [V/1000 1/min]*	53.6	66.6	88.8
Rated speed	$n_N$ [1/min]	5000	4000	3000
Rated power	$P_N$ [kW]	0.80	1.00	1.30
Rated torque	$M_N$ [Nm]	1.60	2.50	4.00
Rated current	$I_N$ [A]	1.90	2.50	2.90
Rated torque constant	$K_{TN}$ [Nm/A]*	0.83	1.00	1.38
Standstill torque	$M_0$ [Nm]**	2.20	3.90	5.50
Standstill current	$I_0$ [A]**	2.60	3.80	3.90
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.85	1.03	1.41
Peak torque	$M_{max}$ [Nm]***	7.0	12.3	17.2
Peak current	$I_{max}$ [A]***	9.3	13.3	13.9
Peak torque constant	$K_{Tmax}$ [Nm/A]*	0.75	0.92	1.24
Stator resistance	$R_{UV}$ [W]*	6.3	3.6	3.8
Stator inductivity	$L_{UV}$ [mH]	24.4	18.6	21.5
Electrical time constant	$T_{el}$ [ms]	3.9	5.2	5.7
Thermal time constant	$T_{th}$ [min]****	43	47	50
Mass moment of inertia	$J_{rot}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	1.3	2.3	3.3
Motor weight	$m_{mot}$ [kg]*****	8.5	11	13.5
<b>Motor with brake</b>				
Mass moment of inertia	$J_{rot}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	1.9	2.9	3.9
Motor weight	$m_{motor+brake}$ [kg]*****	10.5	13.0	15.5
Holding torque	$M_{brake}$ [Nm]	9	9	9

\* values at 20 °C / \*\* values at 200 rpm (motor) / \*\*\* short time operation max. 3 seconds / \*\*\*\* estimated value / \*\*\*\*\* weight without cables (cable weight p. 12)

### Speed-Torque Curves KSY-HD 364/368/3612

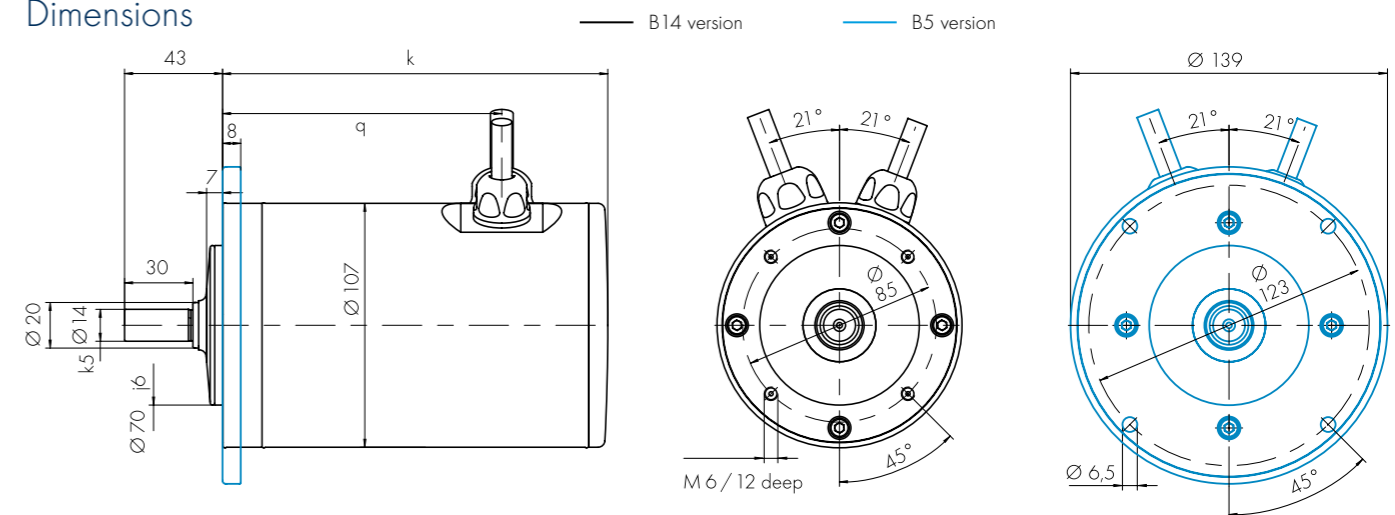


With MD brake Size/KSY-HD...		KSY-HD 364.50	KSY-HD 368.40	KSY-HD 3612.30
Rated speed	$n_N$ [1/min]	5000	4000	3000
Rated power	$P_N$ [kW]	0.73	0.92	1.16
Rated torque	$M_N$ [Nm]	1.40	2.20	3.70
Rated current	$I_N$ [A]	1.69	2.20	2.68
Rated torque constant	$K_{TN}$ [Nm/A]*	0.83	1.00	1.38
Standstill torque	$M_0$ [Nm]**	2.10	3.70	5.20
Standstill current	$I_0$ [A]**	2.47	3.59	3.69
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.85	1.03	1.41

With RQ-3 encoder Size/KSY-HD...		KSY-HD 364.50	KSY-HD 368.40	KSY-HD 3612.30
Rated speed	$n_N$ [1/min]	5000	4000	3000
Rated power	$P_N$ [kW]	0.73	0.88	1.06
Rated torque	$M_N$ [Nm]	1.39	2.09	3.36
Rated current	$I_N$ [A]	1.67	2.09	2.43
Rated torque constant	$K_{TN}$ [Nm/A]*	0.83	1.00	1.38
Standstill torque	$M_0$ [Nm]**	2.07	3.60	5.01
Standstill current	$I_0$ [A]**	2.44	3.50	3.55
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.85	1.03	1.41

With MD brake & RQ-3 encoder Size/KSY-HD...		KSY-HD 364.50	KSY-HD 368.40	KSY-HD 3612.30
Rated speed	$n_N$ [1/min]	5000	4000	3000
Rated power	$P_N$ [kW]	0.57	0.65	0.88
Rated torque	$M_N$ [Nm]	1.09	1.54	2.80
Rated current	$I_N$ [A]	1.31	1.54	2.03
Rated torque constant	$K_{TN}$ [Nm/A]*	0.83	1.00	1.38
Standstill torque	$M_0$ [Nm]**	1.88	3.31	4.66
Standstill current	$I_0$ [A]**	2.21	3.21	3.30
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.85	1.03	1.41

### Dimensions



Type/KSY 3	Resolver R4	Resolver and brake	RQ encoder	RQ encoder and brake
	q	k	k	k
KSY 364... HD(-MD)-R../S1	123	169	183	225
KSY 368... HD(-MD)-R../S1	163	209	223	265
KSY 3612... HD(-MD)-R../S1	203	249	283	305



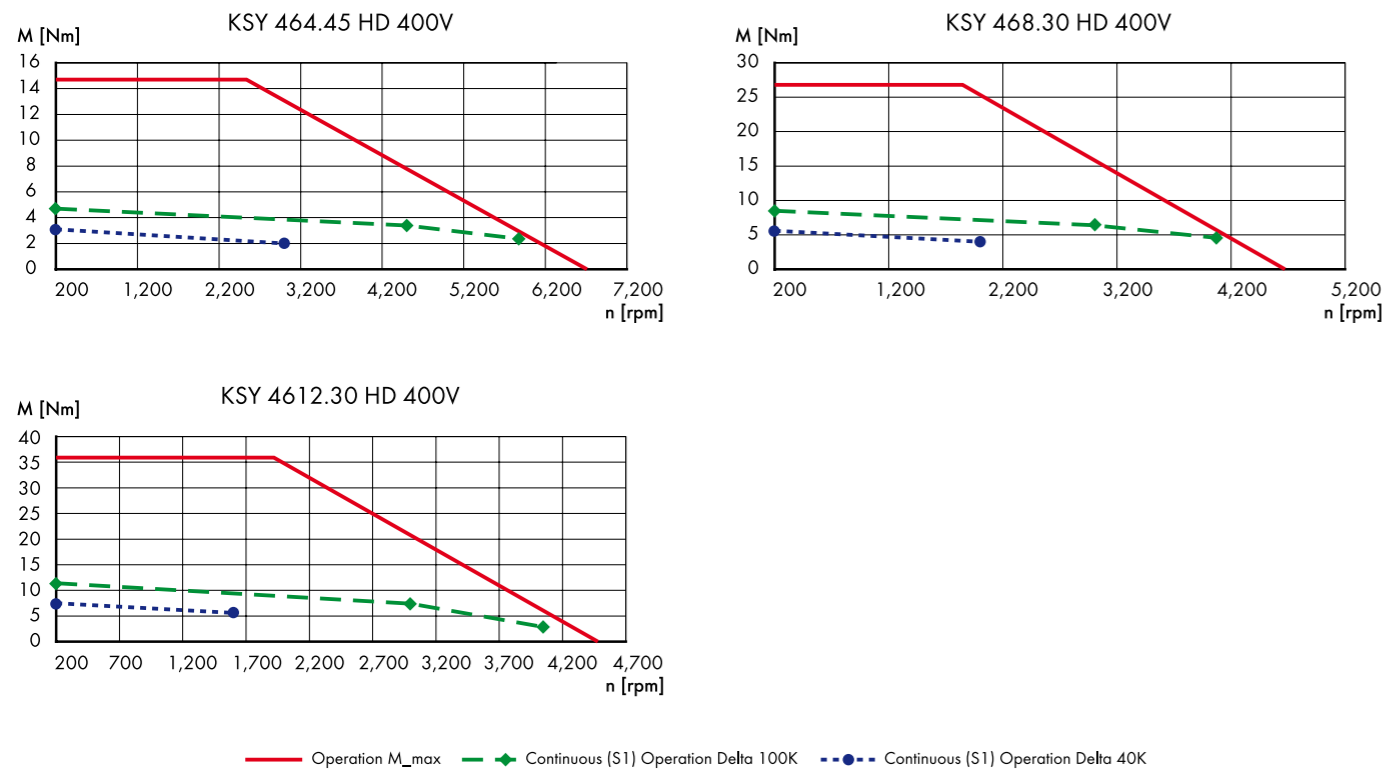
# Technical Data - Motor

## KSY-HD Size 4

Motor Size/KSY-HD...		KSY-HD 464.45	KSY-HD 468.30	KSY-HD 4612.30
Rated voltage	$U_N$ [V]	400	400	400
Rated frequency	$f_N$ [Hz]	225	150	150
EMF constant	$K_E$ [V/1000 1/min]*	59.6	85.6	89.3
Rated speed	$n_N$ [1/min]	4500	3000	3000
Rated power	$P_N$ [kW]	1.60	2.01	2.32
Rated torque	$M_N$ [Nm]	3.40	6.40	7.40
Rated current	$I_N$ [A]	3.70	4.80	5.60
Rated torque constant	$K_{TN}$ [Nm/A]*	0.92	1.33	1.32
Standstill torque	$M_0$ [Nm]**	4.70	8.50	11.40
Standstill current	$I_0$ [A]**	5.20	6.30	8.50
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.90	1.35	1.34
Peak torque	$M_{max}$ [Nm]***	14.7	26.8	35.9
Peak current	$I_{max}$ [A]***	18.2	22.2	29.8
Peak torque constant	$K_{Tmax}$ [Nm/A]*	0.81	1.21	1.20
Stator resistance	$R_{UV}$ [W]*	2.3	1.8	1.1
Stator inductivity	$L_{UV}$ [mH]	6.4	6.9	4.6
Electrical time constant	$T_{el}$ [ms]	2.8	3.8	4.2
Thermal time constant	$T_{th}$ [min]****	58	63	67
Mass moment of inertia	$J_{rot}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	4.5	8.0	11.5
Motor weight	$m_{mot}$ [kg]*****	15	19	23
<b>Motor with brake</b>				
Mass moment of inertia	$J_{rot}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	6.5	10.0	13.5
Motor weight	$m_{motor+brake}$ [kg]*****	18	22	26
Holding torque	$M_{brake}$ [Nm]	18	18	18

\* values at 20 °C / \*\* values at 200 rpm (motor) / \*\*\* short time operation max. 3 seconds / \*\*\*\* estimated value / \*\*\*\*\* weight without cables (cable weight p. 12)

### Speed-Torque Curves KSY-HD 464/468/4612

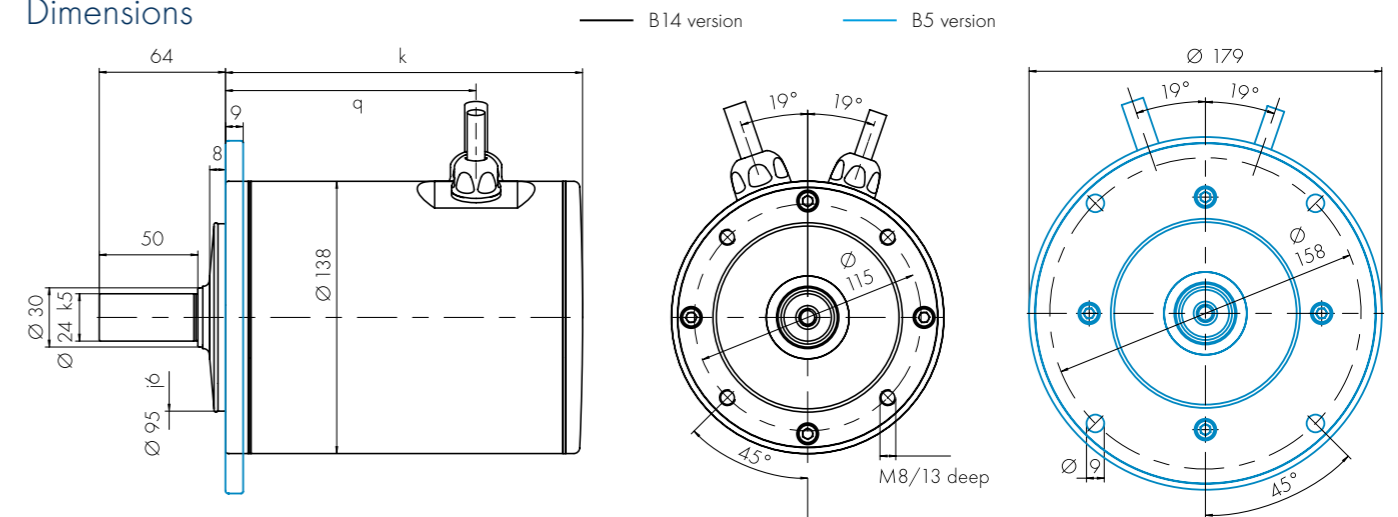


With MD brake Size/KSY-HD...		KSY-HD 464.45	KSY-HD 468.30	KSY-HD 4612.30
Rated speed	$n_N$ [1/min]	4500	3000	3000
Rated power	$P_N$ [kW]	1.41	1.85	2.10
Rated torque	$M_N$ [Nm]	3.00	5.90	6.70
Rated current	$I_N$ [A]	3.26	4.44	5.08
Rated torque constant	$K_{TN}$ [Nm/A]*	0.92	1.33	1.32
Standstill torque	$M_0$ [Nm]**	4.40	8.10	10.90
Standstill current	$I_0$ [A]**	4.89	6.00	8.13
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.90	1.35	1.34

With RQ-3 encoder Size/KSY-HD...		KSY-HD 464.45	KSY-HD 468.30	KSY-HD 4612.30
Rated speed	$n_N$ [1/min]	4500	3000	3000
Rated power	$P_N$ [kW]	1.37	1.73	1.82
Rated torque	$M_N$ [Nm]	2.90	5.50	5.80
Rated current	$I_N$ [A]	3.15	4.14	4.39
Rated torque constant	$K_{TN}$ [Nm/A]*	0.92	1.33	1.32
Standstill torque	$M_0$ [Nm]**	4.30	7.80	10.40
Standstill current	$I_0$ [A]**	4.78	5.78	7.76
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.90	1.35	1.34

With MD brake & RQ-3 encoder Size/KSY-HD...		KSY-HD 464.45	KSY-HD 468.30	KSY-HD 4612.30
Rated speed	$n_N$ [1/min]	4500	3000	3000
Rated power	$P_N$ [kW]	1.08	1.45	1.38
Rated torque	$M_N$ [Nm]	2.30	4.60	4.40
Rated current	$I_N$ [A]	2.50	3.46	3.33
Rated torque constant	$K_{TN}$ [Nm/A]*	0.92	1.33	1.32
Standstill torque	$M_0$ [Nm]**	4.00	7.20	9.70
Standstill current	$I_0$ [A]**	4.44	5.33	7.24
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.90	1.35	1.34

### Dimensions



Type/KSY 4	Resolver R4	Resolver and brake	RQ encoder	RQ encoder and brake
	q	k	k	k
KSY 464... HD(-MD)-R../S1	127	181	196	247
KSY 468... HD(-MD)-R../S1	167	221	236	287
KSY 4612... HD(-MD)-R../S1	207	261	276	327

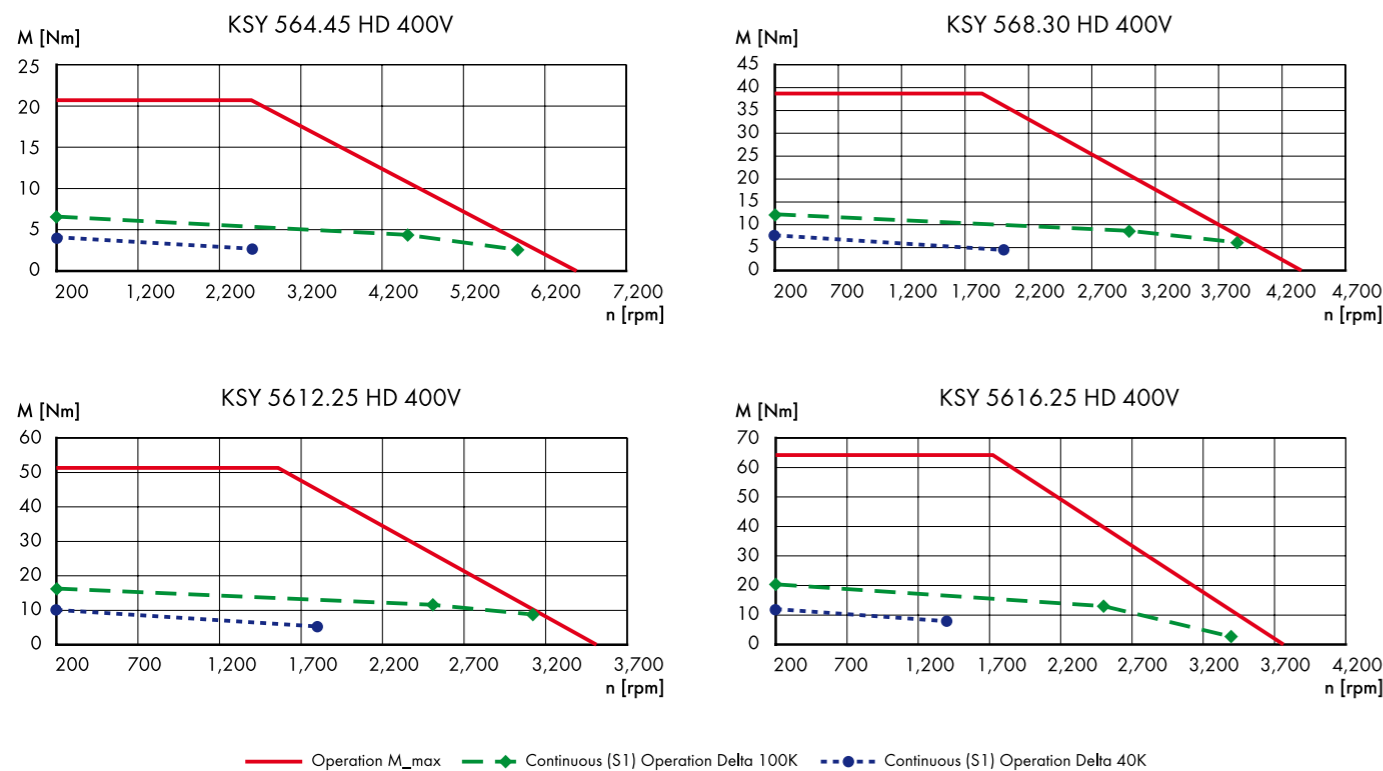
# Technical Data - Motor

## KSY-HD Size 5

Motor Size/KSY-HD...		KSY-HD 564.45	KSY-HD 568.30	KSY-HD 5612.25	KSY-HD 5616.25
Rated voltage	$U_N$ [V]	400	400	400	400
Rated frequency	$f_N$ [Hz]	225	150	125	125
EMF constant	$K_E$ [V/1000 1/min]*	60.7	91.9	113.9	106.3
Rated speed	$n_N$ [1/min]	4500	3000	2500	2500
Rated power	$P_N$ [kW]	2.07	2.73	3.04	3.43
Rated torque	$M_N$ [Nm]	4.40	8.70	11.60	13.00
Rated current	$I_N$ [A]	4.80	6.30	6.80	8.20
Rated torque constant	$K_{TN}$ [Nm/A]*	0.92	1.38	1.71	1.60
Standstill torque	$M_0$ [Nm]**	6.60	12.30	16.30	20.40
Standstill current	$I_0$ [A]**	7.10	8.90	9.50	12.70
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.93	1.38	1.72	1.61
Peak torque	$M_{max}$ [Nm]***	20.7	38.7	51.3	64.2
Peak current	$I_{max}$ [A]***	25.0	31.1	33.1	44.6
Peak torque constant	$K_{Tmax}$ [Nm/A]*	0.83	1.24	1.55	1.44
Stator resistance	$R_{UV}$ [W]*	1.4	1.0	1.0	0.6
Stator inductivity	$L_{UV}$ [mH]	4.4	4.7	4.9	3.2
Electrical time constant	$T_{el}$ [ms]	3.1	4.7	4.9	5.3
Thermal time constant	$T_{th}$ [min]****	65	71	75	79
Mass moment of inertia	$J_{rot}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	12	21	30	39
Motor weight	$m_{mot}$ [kg]*****	20	25	30	35
<b>Motor with brake</b>					
Mass moment of inertia	$J_{rot}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	19	28	37	46
Motor weight	$m_{motor+brake}$ [kg]*****	25	30	35	40
Holding torque	$M_{brake}$ [Nm]	36	36	36	36

\* values at 20 °C / \*\* values at 200 rpm (motor) / \*\*\* short time operation max. 3 seconds / \*\*\*\* estimated value / \*\*\*\*\* weight without cables (cable weight p. 12)

### Speed-Torque Curves KSY-HD 564/568/5612/5616

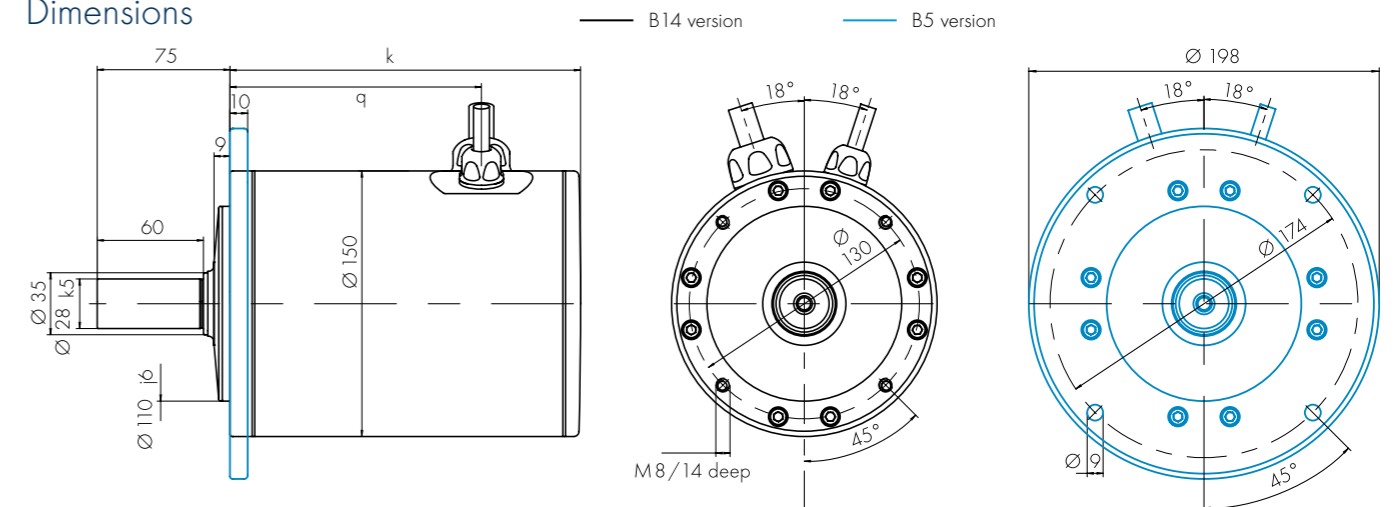


With MD brake Size/KSY-HD...		KSY-HD 564.45	KSY-HD 568.30	KSY-HD 5612.25	KSY-HD 5616.25
Rated speed	$n_N$ [1/min]	4500	3000	2500	2500
Rated power	$P_N$ [kW]	1.88	2.51	2.85	3.17
Rated torque	$M_N$ [Nm]	4.00	8.00	10.90	12.10
Rated current	$I_N$ [A]	4.35	5.80	6.37	7.56
Rated torque constant	$K_{TN}$ [Nm/A]*	0.92	1.38	1.71	1.60
Standstill torque	$M_0$ [Nm]**	6.30	11.80	15.80	19.80
Standstill current	$I_0$ [A]**	6.77	8.55	9.19	12.30
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.93	1.38	1.72	1.61

With RQ-3 encoder Size/KSY-HD...		KSY-HD 564.45	KSY-HD 568.30	KSY-HD 5612.25	KSY-HD 5616.25
Rated speed	$n_N$ [1/min]	4500	3000	2500	2500
Rated power	$P_N$ [kW]	1.70	2.25	2.47	2.54
Rated torque	$M_N$ [Nm]	3.61	7.17	9.43	9.71
Rated current	$I_N$ [A]	3.92	5.20	5.51	6.07
Rated torque constant	$K_{TN}$ [Nm/A]*	0.92	1.38	1.71	1.60
Standstill torque	$M_0$ [Nm]**	6.06	11.23	14.80	18.43
Standstill current	$I_0$ [A]**	6.52	8.14	8.60	11.45
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.93	1.38	1.72	1.61

With MD brake & RQ-3 encoder Size/KSY-HD...		KSY-HD 564.45	KSY-HD 568.30	KSY-HD 5612.25	KSY-HD 5616.25
Rated speed	$n_N$ [1/min]	4500	3000	2500	2500
Rated power	$P_N$ [kW]	1.31	1.87	2.09	2.00
Rated torque	$M_N$ [Nm]	2.79	5.94	7.98	7.65
Rated current	$I_N$ [A]	3.03	4.30	4.67	4.78
Rated torque constant	$K_{TN}$ [Nm/A]*	0.92	1.38	1.71	1.60
Standstill torque	$M_0$ [Nm]**	5.61	10.49	13.92	17.43
Standstill current	$I_0$ [A]**	6.03	7.60	8.09	10.83
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.93	1.38	1.72	1.61

### Dimensions



Type/KSY 5	Resolver R4	Resolver and brake	RQ encoder	RQ encoder and brake
	q	k	k	k
KSY 564... HD(-MD)-R../S1	142	198	245	267
KSY 568... HD(-MD)-R../S1	182	238	285	307
KSY 5612... HD(-MD)-R../S1	182	278	325	347
KSY 5616... HD(-MD)-R../S1	262	318	365	387



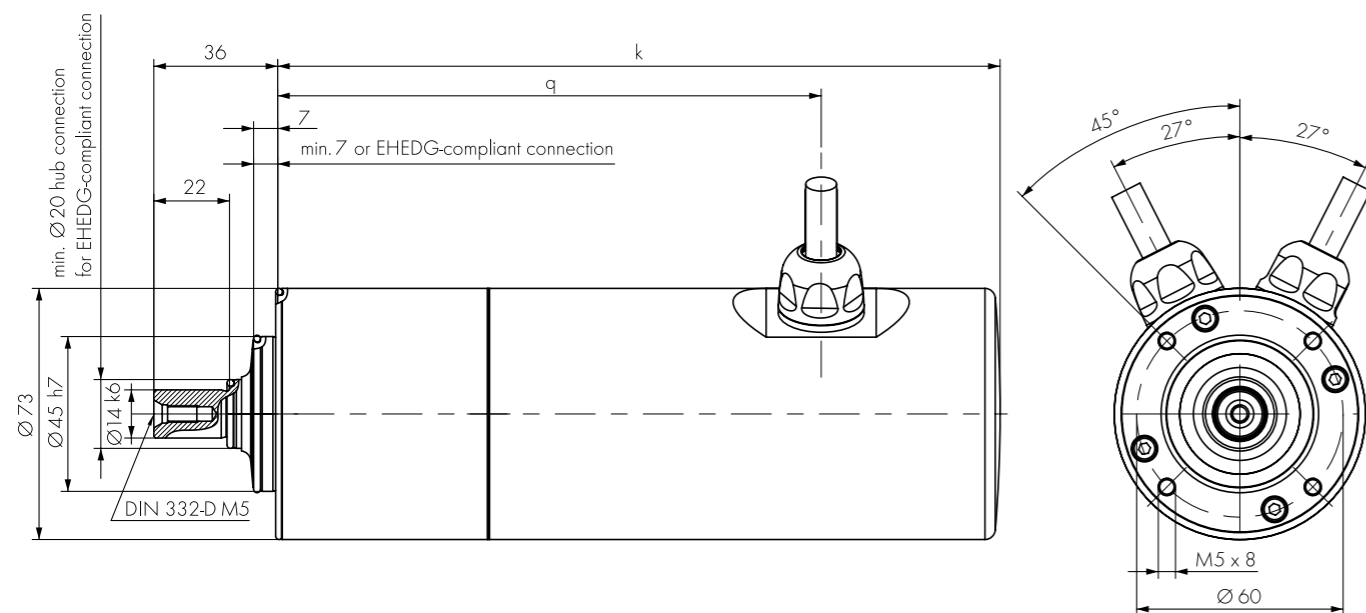
# Technical Data - Gearmotor

## Motor data for type KSG-HD Size 1

Gearmotor Size/KSG...		162.90	164.80	166.60
Rated voltage	$U_N$ [V]	400	400	400
Rated frequency	$f_N$ [Hz]	300	300	300
EMF constant	$K_E$ [V/1000 1/min] <sup>*</sup>	30	34	45
Rated speed	$n_N$ [1/min]	6000	6000	6000
Rated power	$P_N$ [kW]	0.22	0.31	0.38
Rated torque	$M_N$ [Nm]	0.35	0.50	0.60
Rated current	$I_N$ [A]	0.75	1.00	0.88
Rated torque constant	$K_{TN}$ [Nm/A] <sup>*</sup>	0.47	0.50	0.68
Standstill torque	$M_0$ [Nm] <sup>**</sup>	0.40	0.70	0.95
Standstill current	$I_0$ [A] <sup>**</sup>	0.80	1.30	1.30
Standstill torque constant	$K_{T0}$ [Nm/A] <sup>*</sup>	0.50	0.54	0.73
Peak torque	$M_{max}$ [Nm] <sup>***</sup>	1.7	3.1	4.3
Peak current	$I_{max}$ [A] <sup>***</sup>	4.2	6.7	6.9
Peak torque constant	$K_{Tmax}$ [Nm/A] <sup>*</sup>	0.40	0.46	0.62
Stator resistance	$R_{U,V}$ [Ohm] <sup>*</sup>	28.9	12.8	13.2
Stator inductivity	$L_{U,V}$ [mH]	26.1	15.7	18.0
Electrical time constant	$T_{el}$ [ms]	0.9	1.2	1.4
Thermal time constant	$T_{th}$ [min] <sup>****</sup>	32	34	35
Mass moment of inertia	$J_{rot}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	0.12	0.18	0.24
Motor weight	$m_{mot}$ [kg] <sup>*****</sup>	3.4	4.0	4.6
<b>Motor with brake</b>				
Mass moment of inertia	$J_{rot}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	0.24	0.30	0.36
Motor weight	$m_{motor+brake}$ [kg] <sup>*****</sup>	4.2	4.8	5.4
Holding torque	$M_{brake}$ [Nm]	2	2	2
Maximum motor speed	$n_{max\_Mot}$ [1/min]	6000	6000	6000

\* values at 20 °C / \*\* values at 200 rpm (motor) / \*\*\* short time operation max. 3 seconds / \*\*\*\* estimated value / \*\*\*\*\* weight without cables (cable weight p. 12)

### Dimensions



With MD brake Size/KSG...		162.90	164.80	166.60
Rated speed	$n_N$ [1/min]	6000	6000	6000
Rated power	$P_N$ [kW]	0.19	0.28	0.31
Rated torque	$M_N$ [Nm]	0.30	0.45	0.50
Rated current	$I_N$ [A]	0.64	0.90	0.74
Rated torque constant	$K_{TN}$ [Nm/A] <sup>*</sup>	0.47	0.50	0.68
Standstill torque	$M_0$ [Nm] <sup>**</sup>	0.35	0.65	0.90
Standstill current	$I_0$ [A] <sup>**</sup>	0.70	1.20	1.23
Standstill torque constant	$K_{T0}$ [Nm/A] <sup>*</sup>	0.50	0.54	0.73

With RQ-3 encoder Size/KSG...		162.90	164.80	166.60
Rated speed	$n_N$ [1/min]	6000	6000	6000
Rated power	$P_N$ [kW]	0.19	0.28	0.31
Rated torque	$M_N$ [Nm]	0.30	0.45	0.50
Rated current	$I_N$ [A]	0.64	0.90	0.74
Rated torque constant	$K_{TN}$ [Nm/A] <sup>*</sup>	0.47	0.50	0.68
Standstill torque	$M_0$ [Nm] <sup>**</sup>	0.35	0.65	0.90
Standstill current	$I_0$ [A] <sup>**</sup>	0.70	1.20	1.23
Standstill torque constant	$K_{T0}$ [Nm/A] <sup>*</sup>	0.50	0.54	0.73

With MD brake & RQ-3 encoder Size/KSG...		162.90	164.80	166.60
Rated speed	$n_N$ [1/min]	6000	6000	6000
Rated power	$P_N$ [kW]	0.16	0.22	0.22
Rated torque	$M_N$ [Nm]	0.25	0.35	0.35
Rated current	$I_N$ [A]	0.53	0.70	0.51
Rated torque constant	$K_{TN}$ [Nm/A] <sup>*</sup>	0.47	0.50	0.68
Standstill torque	$M_0$ [Nm] <sup>**</sup>	0.30	0.60	0.80
Standstill current	$I_0$ [A] <sup>**</sup>	0.60	1.11	1.10
Standstill torque constant	$K_{T0}$ [Nm/A] <sup>*</sup>	0.50	0.54	0.73

Type/KSG 1	Resolver R4	Resolver and brake	RQ encoder	RQ encoder and brake
	q	k	k	k
KSG 162... HD(-MD)-R../S1/PG-HD-I-50..	148	190	206	247
KSG 164... HD(-MD)-R../S1/PG-HD-I-50..	158	210	226	267
KSG 166... HD(-MD)-R../S1/PG-HD-I-50..	178	230	246	287

# Technical Data - Gearmotor

## KSG-HD Size 1

Motor KSG...		162.90 HD.../ PG-I- 50.03	162.90 HD.../ PG-I- 50.05	162.90 HD.../ PG-I- 50.07	162.90 HD.../ PG-I- 50.10	164.80 HD.../ PG-I- 50.03	164.80 HD.../ PG-I- 50.05	164.80 HD.../ PG-I- 50.07	164.80 HD.../ PG-I- 50.10
Gear ratio	i	3	5	7	10	3	5	7	10
Rated torque	$M_N$ [Nm]	1.0	1.7	2.3	3.3	1.4	2.4	3.3	4.8
Rated speed	$n_N$ [U/min]	2000	1200	860	600	2000	1200	860	600
Rated power	$P_N$ [kW]	0.21	0.21	0.21	0.21	0.29	0.30	0.30	0.30
Stall torque	$M_0$ [Nm]**	1.1	1.9	2.7	3.8	2	3.3	4.7	6.7
Maximum speed	$n_{Max}$ [U/min]	2000	1200	860	600	2000	1200	860	600
Maximum torque	$M_{max}$ [Nm]***	4.8	8.1	11.3	16.2	8.8	14.7	20.6	29.5
Max. permissible braking torque (at max. 1000 cycles per hour)	$M_{BRE}$ [Nm]	6.0	10.0	14.0	20.0	6.0	10.0	14.0	20.0
Emergency stop torque	[Nm]	50	50	40	40	50	50	40	40
Radial force (S1 = 100 %/S3 = 60%/allowed 1000x)	$F_{Rmax}$ [N]	800 / 1000 / 1600				800 / 1000 / 1600			
Axial force (S1 = 100 %/S3 = 60%/allowed 1000x)	$F_{Amax}$ [N]	1200 / 1600 / 2400				1200 / 1600 / 2400			
Torsional backlash (Standard version)	$\varphi$ [arcmin]	≤5	≤5	≤5	≤5	≤5	≤5	≤5	≤5
Torsional backlash - reduced (Special version)	$\varphi_r$ [arcmin]	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2
Moment of inertia of gearmotor (without brake)	$J_{GM}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	0.196	0.141	0.129	0.124	0.256	0.201	0.189	0.184
Moment of inertia of gearmotor (with brake)	$J_{GM+BR}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	0.316	0.262	0.249	0.244	0.376	0.321	0.309	0.304
Running noise at rated speed	L [dB(A)]	≤55	≤55	≤55	≤55	≤55	≤55	≤55	≤55
Weight	m [kg]*****	4.9	4.9	4.8	4.8	5.5	5.5	5.4	5.4
<b>With MD brake</b>									
Gear ratio		3	5	7	10	3	5	7	10
Rated speed	$n_N$ [1/min]	2000	1200	860	600	2000	1200	860	600
Rated power	$P_N$ [kW]	0.18	0.18	0.18	0.18	0.27	0.27	0.27	0.27
Rated torque	$M_N$ [Nm]	0.86	1.43	2.00	2.85	1.28	2.14	2.99	4.28
Standstill torque	$M_0$ [Nm]**	1.00	1.66	2.33	3.33	1.85	3.09	4.32	6.18
Weight	m [kg]*****	5.7	5.7	5.6	5.6	6.3	6.3	6.2	6.2
<b>With RQ-3 encoder</b>									
Gear ratio		3	5	7	10	3	5	7	10
Rated speed	$n_N$ [1/min]	2000	1200	860	600	2000	1200	860	600
Rated power	$P_N$ [kW]	0.18	0.18	0.18	0.18	0.27	0.27	0.27	0.27
Rated torque	$M_N$ [Nm]	0.86	1.43	2.00	2.85	1.28	2.14	2.99	4.28
Standstill torque	$M_0$ [Nm]**	1.00	1.66	2.33	3.33	1.85	3.09	4.32	6.18
Weight	m [kg]*****	5.4	5.4	5.3	5.3	6.0	6.0	5.9	5.9
<b>With MD brake &amp; RQ-3 encoder</b>									
Gear ratio		3	5	7	10	3	5	7	10
Rated speed	$n_N$ [1/min]	2000	1200	860	600	2000	1200	860	600
Rated power	$P_N$ [kW]	0.15	0.15	0.15	0.15	0.21	0.21	0.21	0.21
Rated torque	$M_N$ [Nm]	0.71	1.19	1.66	2.38	1.00	1.66	2.33	3.33
Standstill torque	$M_0$ [Nm]**	0.86	1.43	2.00	2.85	1.71	2.85	3.99	5.70
Weight	m [kg]*****	6.2	6.2	6.1	6.1	6.8	6.8	6.7	6.7

\* values at 20 °C / \*\* values at 200 rpm (motor) / \*\*\* short time operation max. 3 seconds / \*\*\*\*\* weight data without cables (cable weight see page 12)

Motor KSG...		166.60 HD.../ PG-I- 50.03	166.60 HD.../ PG-I- 50.05	166.60 HD.../ PG-I- 50.07	166.60 HD.../ PG-I- 50.10
Gear ratio	i	3	5	7	10
Rated torque	$M_N$ [Nm]	1.7	2.9	4.0	5.7
Rated speed	$n_N$ [U/min]	2000	1200	860	600
Rated power	$P_N$ [kW]	0.36	0.36	0.36	0.36
Stall torque	$M_0$ [Nm]**	2.7	4.5	6.3	9.0
Maximum speed	$n_{Max}$ [U/min]	2000	1200	860	600
Maximum torque	$M_{max}$ [Nm]***	12.3	20.4	28.6	30.0
Max. permissible braking torque (at max. 1000 cycles per hour)	$M_{BRE}$ [Nm]	6.0	10.0	14.0	20.0
Emergency stop torque	[Nm]	50	50	40	40
Radial force (S1 = 100 %/S3 = 60%/allowed 1000x)	$F_{Rmax}$ [N]	800 / 1000 / 1600			
Axial force (S1 = 100 %/S3 = 60%/allowed 1000x)	$F_{Amax}$ [N]	1200 / 1600 / 2400			
Torsional backlash (Standard version)	$\varphi$ [arcmin]	≤5	≤5	≤5	≤5
Torsional backlash - reduced (Special version)	$\varphi_r$ [arcmin]	≤2	≤2	≤2	≤2
Moment of inertia of gearmotor (without brake)	$J_{GM}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	0.316	0.262	0.249	0.244
Moment of inertia of gearmotor (with brake)	$J_{GM+BR}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	0.436	0.382	0.369	0.364
Running noise at rated speed	L [dB(A)]	≤55	≤55	≤55	≤55
Weight	m [kg]*****	6.1	6.1	6.0	6.0
<b>With MD brake</b>					
Gear ratio		3	5	7	10
Rated speed	$n_N$ [1/min]	2000	1200	860	600
Rated power	$P_N$ [kW]	0.30	0.30	0.30	0.30
Rated torque	$M_N$ [Nm]	1.43	2.38	3.33	4.75
Standstill torque	$M_0$ [Nm]**	2.57	4.28	5.99	8.55
Weight	m [kg]*****	6.9	6.9	6.8	6.8
<b>With RQ-3 encoder</b>					
Gear ratio		3	5	7	10
Rated speed	$n_N$ [1/min]	2000	1200	860	600
Rated power	$P_N$ [kW]	0.30	0.30	0.30	0.30
Rated torque	$M_N$ [Nm]	1.43	2.38	3.33	4.75
Standstill torque	$M_0$ [Nm]**	2.57	4.28	5.99	8.55
Weight	m [kg]*****	6.6	6.6	6.5	6.5
<b>With MD brake &amp; RQ-3 encoder</b>					
Gear ratio		3	5	7	10
Rated speed	$n_N$ [1/min]	2000	1200	860	600
Rated power	$P_N$ [kW]	0.21	0.21	0.21	0.21
Rated torque	$M_N$ [Nm]	1.00	1.66	2.33	3.33
Standstill torque	$M_0$ [Nm]**	2.28	3.80	5.32	7.60
Weight	m [kg]*****	7.4	7.4	7.3	7.3

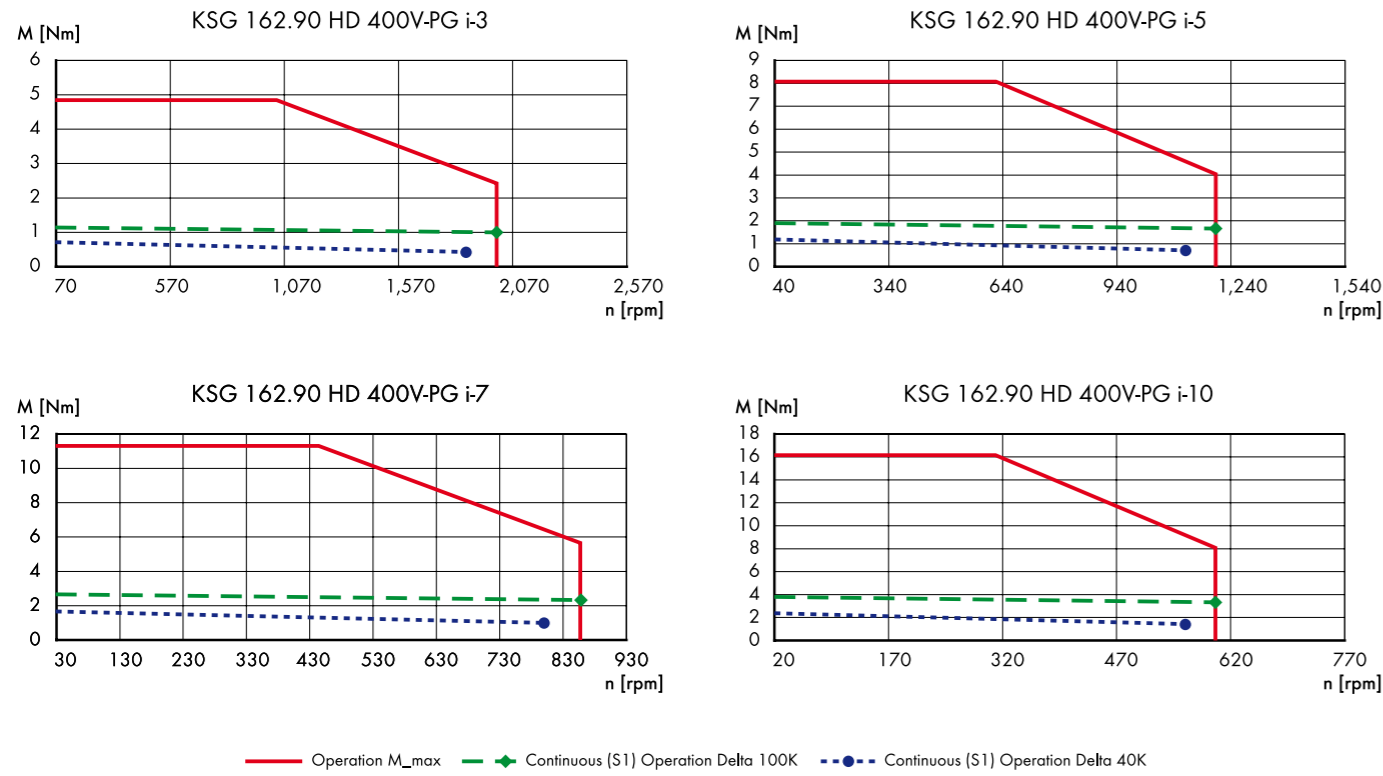
\* values at 20 °C / \*\* values at 200 rpm (motor) / \*\*\* short time operation max. 3 seconds / \*\*\*\*\* weight data without cables (cable weight see page 12)



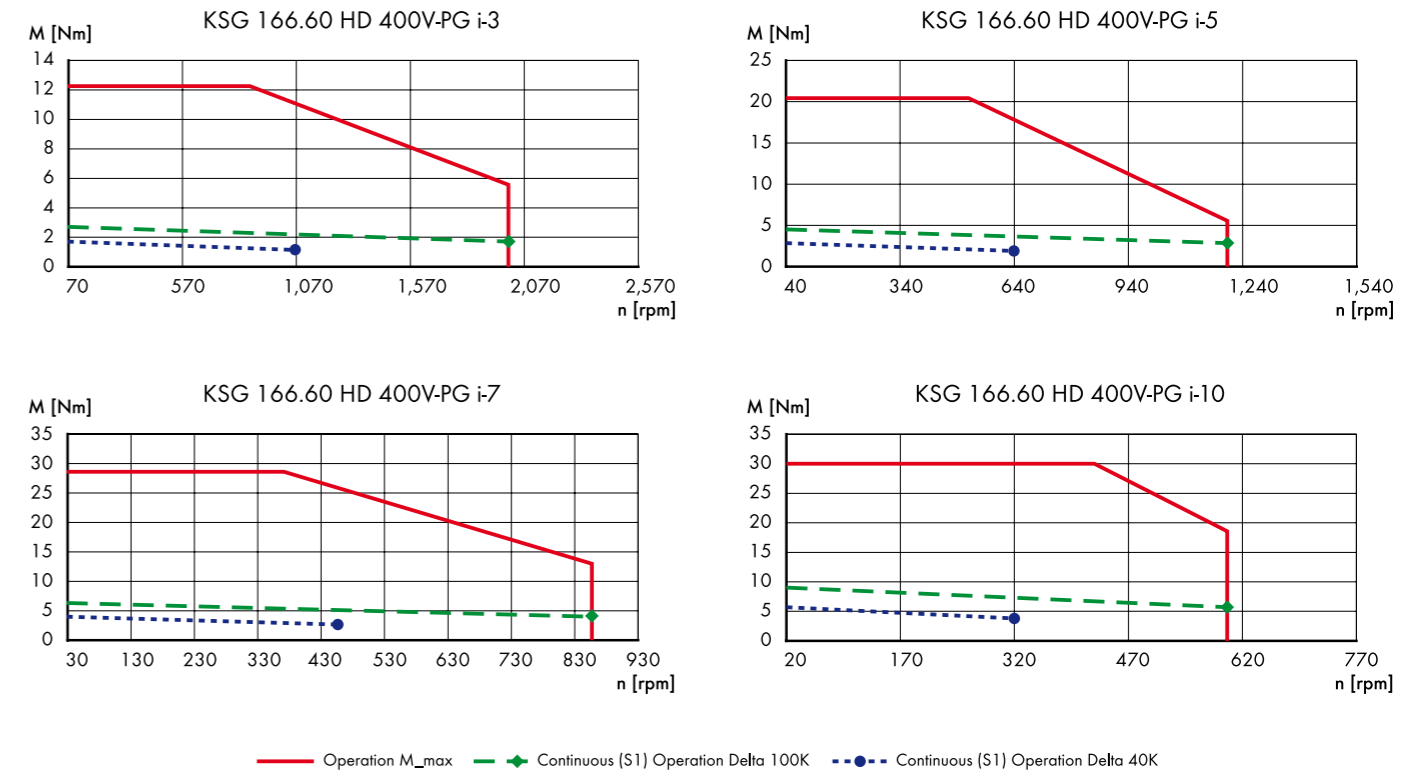
# Speed-Torque Diagrams - Gear Units

## KSG-HD Size 1

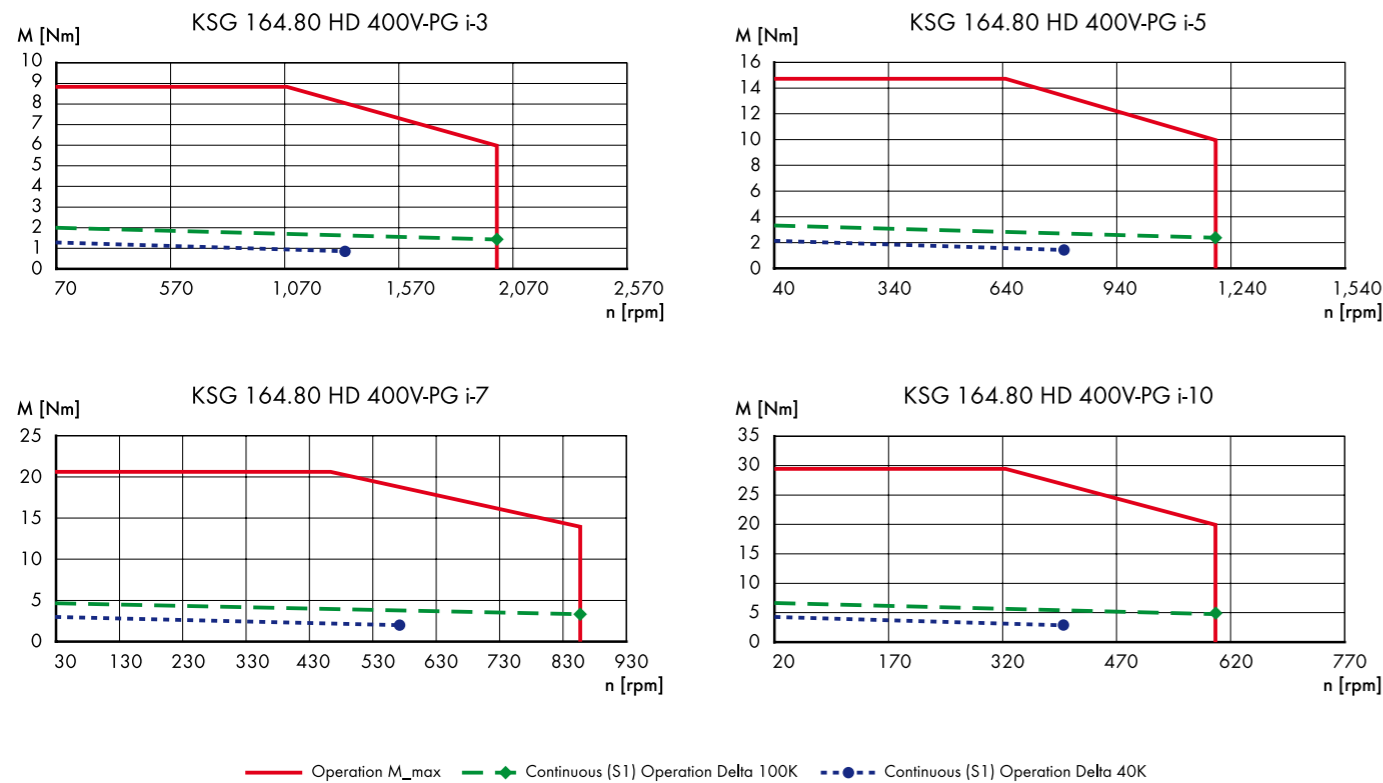
### Speed-Torque Curves KSG-HD 162



### Speed-Torque Curves KSG-HD 166



### Speed-Torque Curves KSG-HD 164



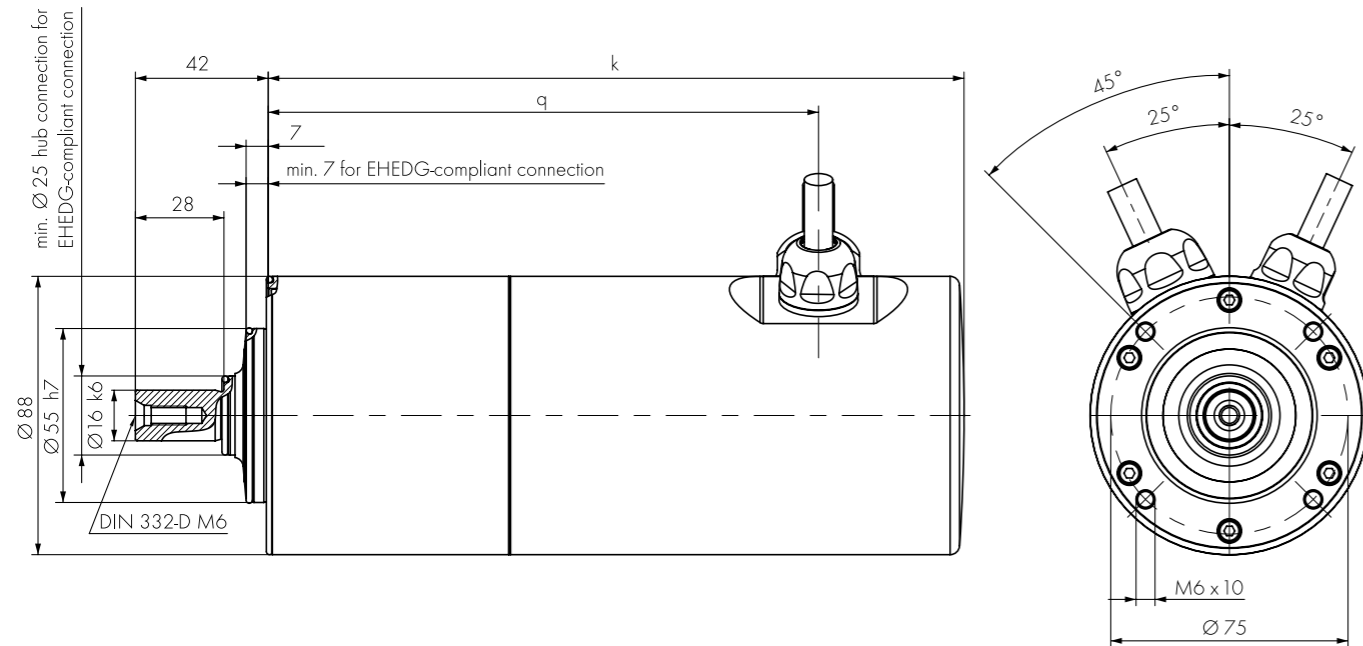
# Technical Data - Gearmotor

## Motor data for type KSG-HD Size 2

Gearmotor		264.55	266.45	268.40
Size/KSG...				
Rated voltage	$U_N$ [V]	400	400	400
Rated frequency	$f_N$ [Hz]	275	225	200
EMF constant	$K_E$ [V/1000 1/min] <sup>*</sup>	49.9	60.4	67.6
Rated speed	$n_N$ [1/min]	5500	4500	4000
Rated power	$P_N$ [kW]	0.46	0.52	0.61
Rated torque	$M_N$ [Nm]	0.80	1.10	1.45
Rated current	$I_N$ [A]	1.13	1.24	1.45
Rated torque constant	$K_{TN}$ [Nm/A] <sup>*</sup>	0.71	0.88	1.00
Standstill torque	$M_0$ [Nm] <sup>**</sup>	1.29	1.77	2.28
Standstill current	$I_0$ [A] <sup>**</sup>	1.74	1.95	2.19
Standstill torque constant	$K_{T0}$ [Nm/A] <sup>*</sup>	0.74	0.91	1.04
Peak torque	$M_{max}$ [Nm] <sup>***</sup>	5.2	7.1	9.2
Peak current	$I_{max}$ [A] <sup>***</sup>	7.6	8.7	10.0
Peak torque constant	$K_{Tmax}$ [Nm/A] <sup>*</sup>	0.68	0.82	0.92
Stator resistance	$R_{U,V}$ [Ohm] <sup>*</sup>	9.7	8.1	6.7
Stator inductivity	$L_{U,V}$ [mH]	14.8	14.2	13.2
Electrical time constant	$T_{el}$ [ms]	1.5	1.8	2.0
Thermal time constant	$T_{th}$ [min] <sup>****</sup>	37	39	41
Mass moment of inertia	$J_{rot}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	0.50	0.73	0.95
Motor weight	$m_{mot}$ [kg] <sup>*****</sup>	5.5	6.4	7.2
<b>Motor with brake</b>				
Mass moment of inertia	$J_{rot}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	0.7	0.93	1.15
Motor weight	$m_{motor+brake}$ [kg] <sup>*****</sup>	6.8	7.7	8.5
Holding torque	$M_{brake}$ [Nm]	4.5	4.5	4.5
Maximum motor speed	$n_{max\_Mot}$ [1/min]	6000	6000	6000

\* values at 20 °C / \*\* values at 200 rpm (motor) / \*\*\* short time operation max. 3 seconds / \*\*\*\* estimated value / \*\*\*\*\* weight without cables (cable weight p. 12)

### Dimensions



With MD brake		264.55	266.45	268.40
Size/KSG...				
Rated speed	$n_N$ [1/min]	5500	4500	4000
Rated power	$P_N$ [kW]	0.40	0.47	0.54
Rated torque	$M_N$ [Nm]	0.70	1.00	1.30
Rated current	$I_N$ [A]	0.99	1.14	1.30
Rated torque constant	$K_{TN}$ [Nm/A] <sup>*</sup>	0.71	0.88	1.00
Standstill torque	$M_0$ [Nm] <sup>**</sup>	1.20	1.65	2.20
Standstill current	$I_0$ [A] <sup>**</sup>	1.62	1.81	2.12
Standstill torque constant	$K_{T0}$ [Nm/A] <sup>*</sup>	0.74	0.91	1.04

With RQ-3 encoder		264.55	266.45	268.40
Size/KSG...				
Rated speed	$n_N$ [1/min]	5500	4500	4000
Rated power	$P_N$ [kW]	0.40	0.45	0.50
Rated torque	$M_N$ [Nm]	0.70	0.95	1.20
Rated current	$I_N$ [A]	0.99	1.08	1.20
Rated torque constant	$K_{TN}$ [Nm/A] <sup>*</sup>	0.71	0.88	1.00
Standstill torque	$M_0$ [Nm] <sup>**</sup>	1.20	1.65	2.10
Standstill current	$I_0$ [A] <sup>**</sup>	1.62	1.81	2.02
Standstill torque constant	$K_{T0}$ [Nm/A] <sup>*</sup>	0.74	0.91	1.04

With MD brake & RQ-3 encoder		264.55	266.45	268.40
Size/KSG...				
Rated speed	$n_N$ [1/min]	5500	4500	4000
Rated power	$P_N$ [kW]	0.29	0.33	0.36
Rated torque	$M_N$ [Nm]	0.50	0.70	0.85
Rated current	$I_N$ [A]	0.70	0.80	0.85
Rated torque constant	$K_{TN}$ [Nm/A] <sup>*</sup>	0.71	0.88	1.00
Standstill torque	$M_0$ [Nm] <sup>**</sup>	1.10	1.50	2.00
Standstill current	$I_0$ [A] <sup>**</sup>	1.49	1.65	1.88
Standstill torque constant	$K_{T0}$ [Nm/A] <sup>*</sup>	0.74	0.91	1.04

Type/KSG 2	Resolver R4	Resolver and brake	RQ encoder	RQ encoder and brake
	q	k	k	k
KSG 264... HD(-MD)-R../S1/PG-HD-I-70..	174	220	235	280
KSG 266... HD(-MD)-R../S1/PG-HD-I-70..	194	240	255	300
KSG 268... HD(-MD)-R../S1/PG-HD-I-70..	214	260	275	320

# Technical Data - Gearmotor

## KSG-HD Size 2

Motor KSG...		264.55 HD.../ PG-I- 70.03	264.55 HD.../ PG-I- 70.05	264.55 HD.../ PG-I- 70.07	264.55 HD.../ PG-I- 70.10	266.45 HD.../ PG-I- 70.03	266.45 HD.../ PG-I- 70.05	266.45 HD.../ PG-I- 70.07	266.45 HD.../ PG-I- 70.10
Gear ratio	i	3	5	7	10	3	5	7	10
Rated torque	$M_N$ [Nm]	2.3	3.8	5.3	7.6	3.1	5.2	7.3	10.5
Rated speed	$n_N$ [U/min]	1830	1100	790	550	1500	900	640	450
Rated power	$P_N$ [kW]	0.44	0.44	0.44	0.44	0.49	0.49	0.49	0.49
Stall torque	$M_0$ [Nm]**	3.7	6.1	8.6	12.3	5	8.4	11.8	16.8
Maximum speed	$n_{Max}$ [U/min]	2000	1200	860	600	2000	1200	860	600
Maximum torque	$M_{max}$ [Nm]***	14.8	24.7	34.6	49.4	20.2	33.7	47.2	60
Max. permissible braking torque (at max. 1000 cycles per hour)	$M_{BRE}$ [Nm]	13.5	22.5	31.5	45.0	13.5	22.5	31.5	45.0
Emergency stop torque	[Nm]	110	110	90	80	110	110	90	80
Radial force (S1 = 100 %/S3 = 60%/allowed 1000x)	$F_{Rmax}$ [N]	1000 / 1400 / 1800				1000 / 1400 / 1800			
Axial force (S1 = 100 %/S3 = 60%/allowed 1000x)	$F_{Amax}$ [N]	2000 / 3000 / 4000				2000 / 3000 / 4000			
Torsional backlash (Standard version)	$\varphi$ [arcmin]	≤5	≤5	≤5	≤5	≤5	≤5	≤5	≤5
Torsional backlash - reduced (Special version)	$\varphi_r$ [arcmin]	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2
Moment of inertia of gearmotor (without brake)	$J_{GM}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	0.733	0.568	0.531	0.516	0.963	0.798	0.761	0.746
Moment of inertia of gearmotor (with brake)	$J_{GM+BR}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	0.933	0.768	0.731	0.716	1.163	0.998	0.961	0.946
Running noise at rated speed	L [dB(A)]	≤55	≤55	≤55	≤55	≤55	≤55	≤55	≤55
Weight	m [kg]*****	8.2	8.2	8.1	8.1	9.1	9.1	9.0	9.0
<b>With MD brake</b>									
Gear ratio		3	5	7	10	3	5	7	10
Rated speed	$n_N$ [1/min]	1830	1100	790	550	1500	900	640	450
Rated power	$P_N$ [kW]	0.38	0.38	0.38	0.38	0.45	0.45	0.45	0.45
Rated torque	$M_N$ [Nm]	2.00	3.33	4.66	6.65	2.85	4.75	6.65	9.50
Standstill torque	$M_0$ [Nm]**	3.42	5.70	7.98	11.40	4.70	7.84	10.97	15.68
Weight	m [kg]*****	9.5	9.5	9.4	9.4	10.4	10.4	10.3	10.3
<b>With RQ-3 encoder</b>									
Gear ratio		3	5	7	10	3	5	7	10
Rated speed	$n_N$ [1/min]	1830	1100	790	550	1500	900	640	450
Rated power	$P_N$ [kW]	0.38	0.38	0.39	0.38	0.43	0.43	0.42	0.43
Rated torque	$M_N$ [Nm]	2.00	3.33	4.66	6.65	2.71	4.51	6.32	9.03
Standstill torque	$M_0$ [Nm]**	3.42	5.70	7.98	11.40	4.70	7.84	10.97	15.68
Weight	m [kg]*****	9.1	9.1	9.0	9.0	10.0	10.0	9.9	9.9
<b>With MD brake &amp; RQ-3 encoder</b>									
Gear ratio		3	5	7	10	3	5	7	10
Rated speed	$n_N$ [1/min]	1830	1100	790	550	1500	900	640	450
Rated power	$P_N$ [kW]	0.27	0.27	0.28	0.27	0.31	0.31	0.31	0.31
Rated torque	$M_N$ [Nm]	1.43	2.38	3.33	4.75	2.00	3.33	4.66	6.65
Standstill torque	$M_0$ [Nm]**	3.14	5.23	7.32	10.45	4.28	7.13	9.98	14.25
Weight	m [kg]*****	10.4	10.4	10.3	10.3	11.3	11.3	11.2	11.2

\* values at 20 °C / \*\* values at 200 rpm (motor) / \*\*\* short time operation max. 3 seconds / \*\*\*\*\* weight data without cables (cable weight see page 12)

Motor KSG...		268.40 HD.../ PG-I- 70.03	268.40 HD.../ PG-I- 70.05	268.40 HD.../ PG-I- 70.07	268.40 HD.../ PG-I- 70.10
Gear ratio	i	3	5	7	10
Rated torque	$M_N$ [Nm]	4.1	6.9	9.6	13.8
Rated speed	$n_N$ [U/min]	1330	800	570	400
Rated power	$P_N$ [kW]	0.57	0.58	0.57	0.58
Stall torque	$M_0$ [Nm]**	6.5	10.8	15.2	21.7
Maximum speed	$n_{Max}$ [U/min]	2000	1200	860	600
Maximum torque	$M_{max}$ [Nm]***	26.2	43.7	61.2	60.0
Max. permissible braking torque (at max. 1000 cycles per hour)	$M_{BRE}$ [Nm]	13.5	22.5	31.5	45.0
Emergency stop torque	[Nm]	110	110	90	80
Radial force (S1 = 100 %/S3 = 60%/allowed 1000x)	$F_{Rmax}$ [N]	1000 / 1400 / 1800			
Axial force (S1 = 100 %/S3 = 60%/allowed 1000x)	$F_{Amax}$ [N]	2000 / 3000 / 4000			
Torsional backlash (Standard version)	$\varphi$ [arcmin]	≤5	≤5	≤5	≤5
Torsional backlash - reduced (Special version)	$\varphi_r$ [arcmin]	≤2	≤2	≤2	≤2
Moment of inertia of gearmotor (without brake)	$J_{GM}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	1.183	1.018	0.981	0.966
Moment of inertia of gearmotor (with brake)	$J_{GM+BR}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	1.383	1.218	1.181	1.166
Running noise at rated speed	L [dB(A)]	≤55	≤55	≤55	≤55
Weight	m [kg]*****	9.9	9.9	9.8	9.8
<b>With MD brake</b>					
Gear ratio		3	5	7	10
Rated speed	$n_N$ [1/min]	1330	800	570	400
Rated power	$P_N$ [kW]	0.52	0.52	0.52	0.52
Rated torque	$M_N$ [Nm]	3.71	6.18	8.65	12.35
Standstill torque	$M_0$ [Nm]**	6.27	10.45	14.63	20.90
Weight	m [kg]*****	11.2	11.2	11.1	11.1
<b>With RQ-3 encoder</b>					
Gear ratio		3	5	7	10
Rated speed	$n_N$ [1/min]	1330	800	570	400
Rated power	$P_N$ [kW]	0.48	0.48	0.48	0.48
Rated torque	$M_N$ [Nm]	3.42	5.70	7.98	11.40
Standstill torque	$M_0$ [Nm]**	5.99	9.98	13.97	19.95
Weight	m [kg]*****	10.8	10.8	10.7	10.7
<b>With MD brake &amp; RQ-3 encoder</b>					
Gear ratio		3	5	7	10
Rated speed	$n_N$ [1/min]	1330	800	570	400
Rated power	$P_N$ [kW]	0.34	0.34	0.34	0.34
Rated torque	$M_N$ [Nm]	2.42	4.04	5.65	8.08
Standstill torque	$M_0$ [Nm]**	5.70	9.50	13.30	19.00
Weight	m [kg]*****	12.1	12.1	12.0	12.0

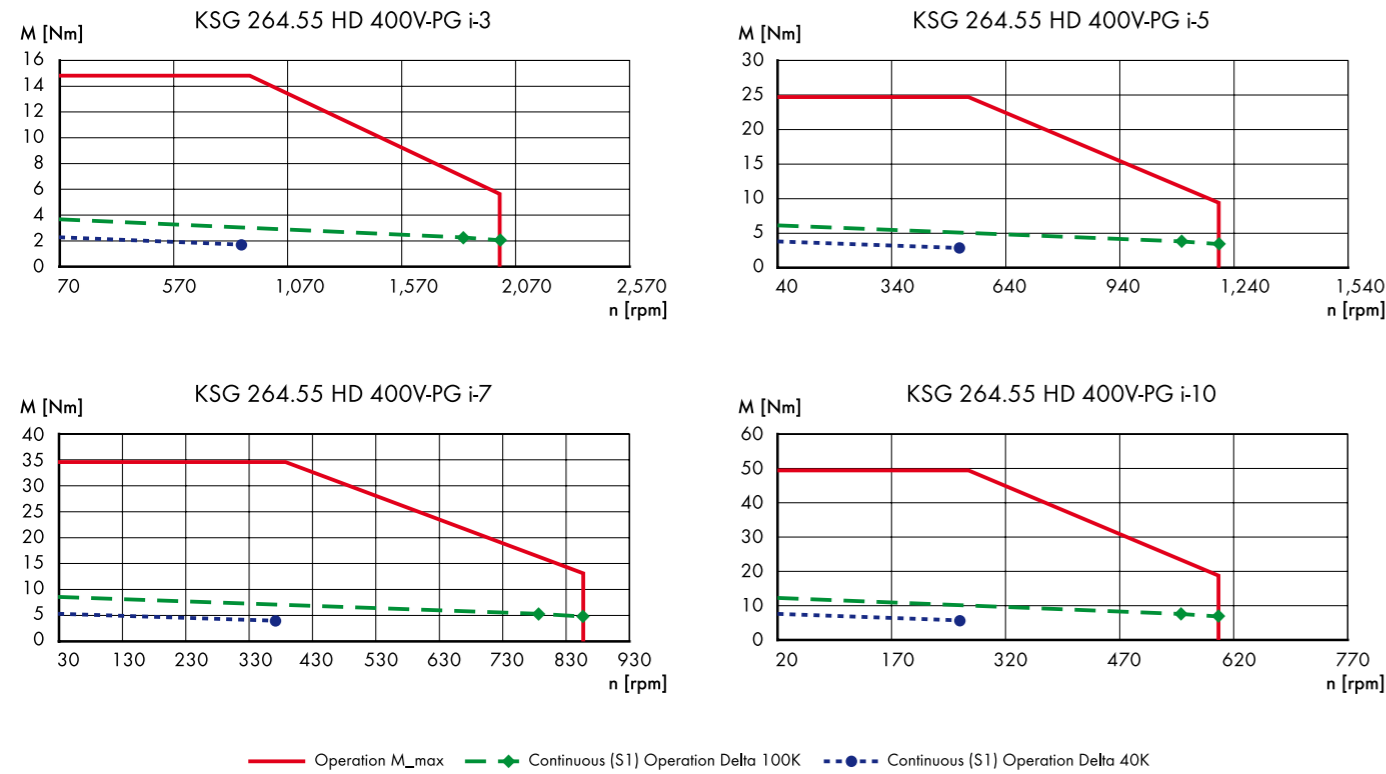
\* values at 20 °C / \*\* values at 200 rpm (motor) / \*\*\* short time operation max. 3 seconds / \*\*\*\*\* weight data without cables (cable weight see page 12)



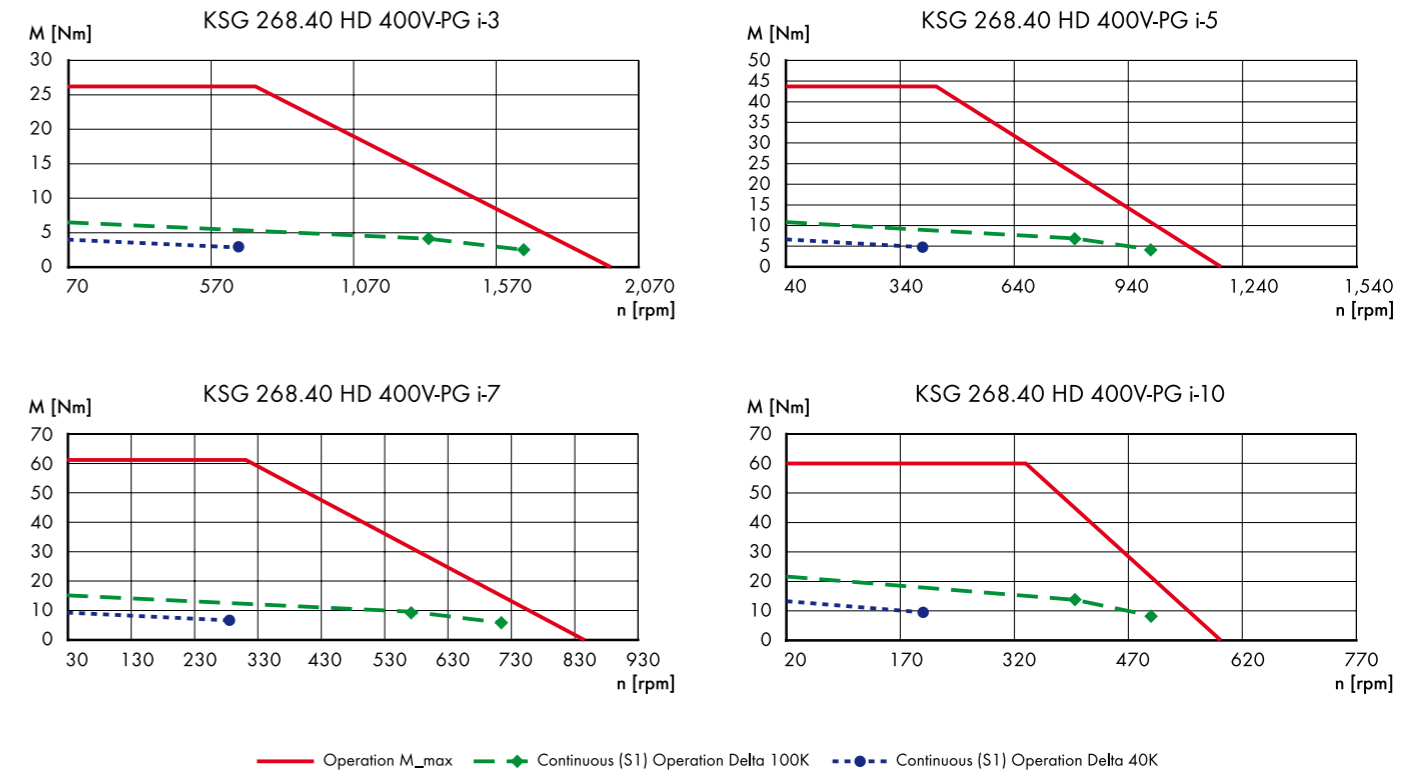
# Speed-Torque Diagrams - Gear Units

## KSG-HD Size 2

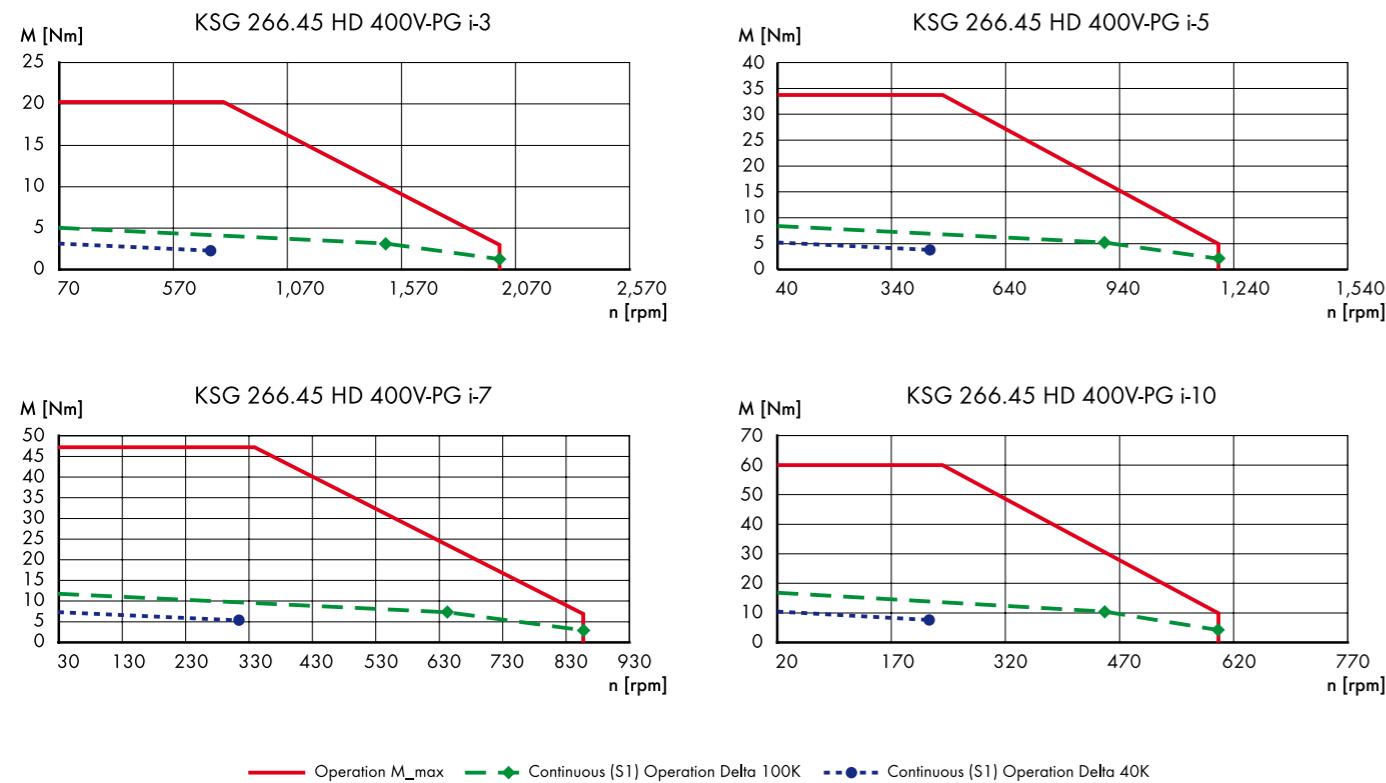
### Speed-Torque Curves KSG-HD 264



### Speed-Torque Curves KSG-HD 268



### Speed-Torque Curves KSG-HD 266



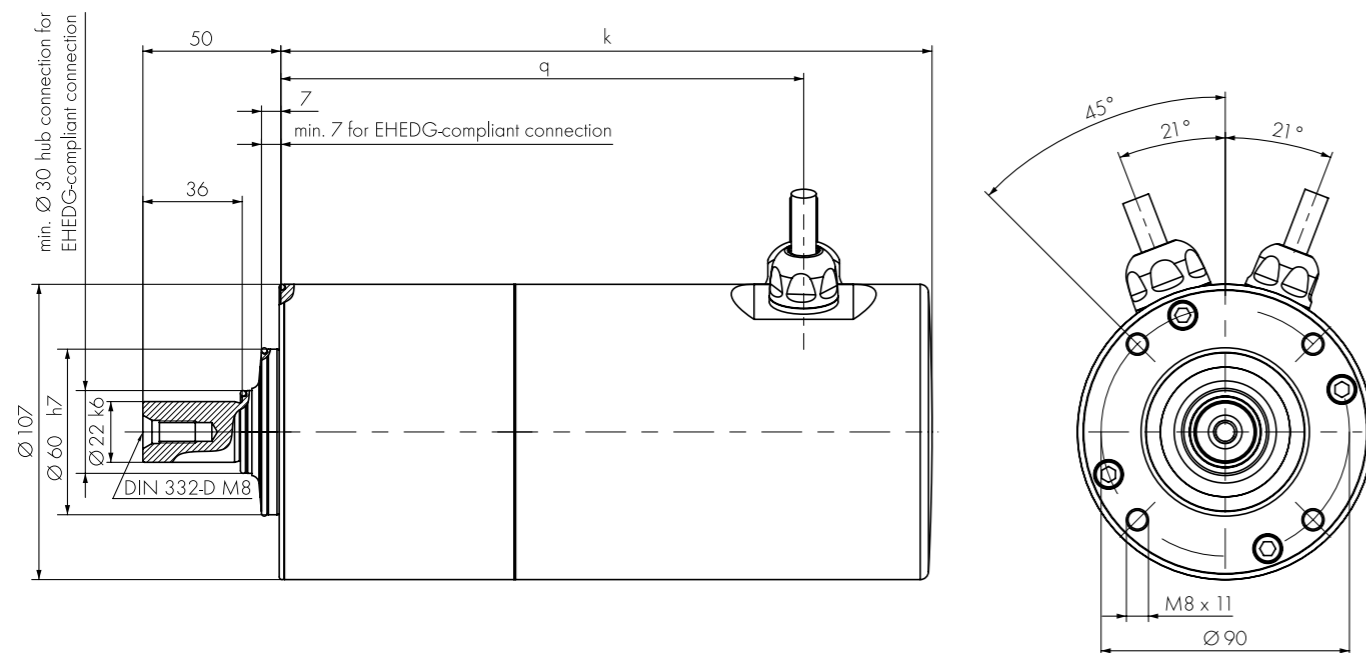
# Technical Data - Gearmotor

## Motor data for type KSG-HD Size 3

Gearmotor		364.50	368.40	3612.30
Rated voltage	$U_N$ [V]	400	400	400
Rated frequency	$f_N$ [Hz]	250	200	150
EMF constant	$K_E$ [V/1000 1/min] <sup>*</sup>	53.6	66.6	88.8
Rated speed	$n_N$ [1/min]	5000	4000	3000
Rated power	$P_N$ [kW]	0.68	0.80	0.97
Rated torque	$M_N$ [Nm]	1.10	1.60	2.90
Rated current	$I_N$ [A]	1.33	1.60	2.10
Rated torque constant	$K_{TN}$ [Nm/A] <sup>*</sup>	0.83	1.00	1.38
Standstill torque	$M_0$ [Nm] <sup>**</sup>	1.90	3.40	4.70
Standstill current	$I_0$ [A] <sup>**</sup>	2.24	3.30	3.33
Standstill torque constant	$K_{T0}$ [Nm/A] <sup>*</sup>	0.85	1.03	1.41
Peak torque	$M_{max}$ [Nm] <sup>***</sup>	7.0	12.3	17.2
Peak current	$I_{max}$ [A] <sup>***</sup>	9.3	13.3	13.9
Peak torque constant	$K_{Tmax}$ [Nm/A] <sup>*</sup>	0.75	0.92	1.24
Stator resistance	$R_{U,V}$ [Ohm] <sup>*</sup>	6.3	3.6	3.8
Stator inductivity	$L_{U,V}$ [mH]	24.4	18.6	21.5
Electrical time constant	$T_{el}$ [ms]	3.9	5.2	5.7
Thermal time constant	$T_{th}$ [min] <sup>****</sup>	43	47	50
Mass moment of inertia	$J_{rot}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	1.3	2.3	3.3
Motor weight	$m_{mot}$ [kg] <sup>*****</sup>	8.5	11.0	13.5
<b>Motor with brake</b>				
Mass moment of inertia	$J_{rot}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	1.9	2.9	3.9
Motor weight	$m_{motor+brake}$ [kg] <sup>*****</sup>	10.5	13.0	15.5
Holding torque	$M_{brake}$ [Nm]	9.0	9.0	9.0
Maximum motor speed	$n_{max\_Mot}$ [1/min]	6000	6000	6000

\* values at 20 °C / \*\* values at 200 rpm (motor) / \*\*\* short time operation max. 3 seconds / \*\*\*\* estimated value / \*\*\*\*\* weight without cables (cable weight p. 12)

### Dimensions



With MD brake		364.50	368.40	3612.30
Rated speed	$n_N$ [1/min]	5000	4000	3000
Rated power	$P_N$ [kW]	0.58	0.65	0.71
Rated torque	$M_N$ [Nm]	1.10	1.55	2.25
Rated current	$I_N$ [A]	1.33	1.55	1.38
Rated torque constant	$K_{TN}$ [Nm/A] <sup>*</sup>	0.83	1.00	1.38
Standstill torque	$M_0$ [Nm] <sup>**</sup>	1.70	3.10	4.30
Standstill current	$I_0$ [A] <sup>**</sup>	2.00	3.01	4.05
Standstill torque constant	$K_{T0}$ [Nm/A] <sup>*</sup>	0.85	1.03	1.41

With RQ-3 encoder		364.50	368.40	3612.30
Rated speed	$n_N$ [1/min]	4500	3500	3000
Rated power	$P_N$ [kW]	0.52	0.60	0.69
Rated torque	$M_N$ [Nm]	1.10	1.65	2.20
Rated current	$I_N$ [A]	1.33	1.65	1.59
Rated torque constant	$K_{TN}$ [Nm/A] <sup>*</sup>	0.83	1.00	1.38
Standstill torque	$M_0$ [Nm] <sup>**</sup>	1.80	3.10	4.30
Standstill current	$I_0$ [A] <sup>**</sup>	2.12	3.01	3.05
Standstill torque constant	$K_{T0}$ [Nm/A] <sup>*</sup>	0.85	1.03	1.41

With MD brake & RQ-3 encoder		364.50	368.40	3612.30
Rated speed	$n_N$ [1/min]	4500	3500	3000
Rated power	$P_N$ [kW]	0.28	0.24	0.28
Rated torque	$M_N$ [Nm]	0.60	0.65	0.90
Rated current	$I_N$ [A]	0.72	0.65	0.65
Rated torque constant	$K_{TN}$ [Nm/A] <sup>*</sup>	0.83	1.00	1.38
Standstill torque	$M_0$ [Nm] <sup>**</sup>	1.50	2.70	3.80
Standstill current	$I_0$ [A] <sup>**</sup>	1.76	2.62	2.70
Standstill torque constant	$K_{T0}$ [Nm/A] <sup>*</sup>	0.85	1.03	1.41

Type/KSG 3	Resolver R4	Resolver and brake	RQ encoder	RQ encoder and brake
	q	k	k	k
KSG 364... HD(-MD)-R../S1/PG-HD-I90..	189.5	236	250	296
KSG 368... HD(-MD)-R../S1/PG-HD-I90..	229.5	276	290	336
KSG 3612... HD(-MD)-R../S1/PG-HD-I90..	269.5	316	330	376

# Technical Data - Gearmotor

## KSG-HD Size 3

Motor KSG...		364.50	364.50	364.50	364.50	368.40	368.40	368.40	368.40
		HD.../ PG-I- 90.03	HD.../ PG-I- 90.05	HD.../ PG-I- 90.07	HD.../ PG-I- 90.10	HD.../ PG-I- 90.03	HD.../ PG-I- 90.05	HD.../ PG-I- 90.07	HD.../ PG-I- 90.10
Gear ratio	i	3	5	7	10	3	5	7	10
Rated torque	$M_N$ [Nm]	3.1	5.2	7.3	10.5	4.6	7.6	10.6	15.2
Rated speed	$n_N$ [U/min]	1670	1000	710	500	1330	800	570	400
Rated power	$P_N$ [kW]	0.54	0.54	0.54	0.55	0.64	0.64	0.63	0.64
Stall torque	$M_0$ [Nm]**	5.4	9.0	12.6	18.1	9.7	16.2	22.6	32.3
Maximum speed	$n_{Max}$ [U/min]	2000	1200	860	600	2000	1200	860	600
Maximum torque	$M_{max}$ [Nm]***	20.0	33.3	46.6	66.5	35.1	58.4	81.8	100.0
Max. permissible braking torque (at max. 1000 cycles per hour)	$M_{BRE}$ [Nm]	27.0	45.0	63.0	90.0	27.0	45.0	63.0	90.0
Emergency stop torque	[Nm]	170	170	140	110	170	170	140	110
Radial force (S1 = 100 %/S3 = 60%/allowed 1000x)	$F_{Rmax}$ [N]	2000 / 2500 / 4000				2000 / 2500 / 4000			
Axial force (S1 = 100 %/S3 = 60%/allowed 1000x)	$F_{Amax}$ [N]	3500 / 4500 / 7000				3500 / 4500 / 7000			
Torsional backlash (Standard version)	$\varphi$ [arcmin]	≤5	≤5	≤5	≤5	≤5	≤5	≤5	≤5
Torsional backlash - reduced (Special version)	$\varphi_r$ [arcmin]	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2
Moment of inertia of gearmotor (without brake)	$J_{GM}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	1.869	1.464	1.361	1.338	2.869	2.464	2.361	2.338
Moment of inertia of gearmotor (with brake)	$J_{GM+BR}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	2.469	2.064	1.961	1.938	3.469	3.064	2.961	2.938
Running noise at rated speed	L [dB(A)]	≤55	≤55	≤55	≤55	≤55	≤55	≤55	≤55
Weight	m [kg]*****	12.8	12.8	12.7	12.7	15.3	15.3	15.2	15.2
<b>With MD brake</b>									
Gear ratio		3	5	7	10	3	5	7	10
Rated speed	$n_N$ [1/min]	1670	1000	710	500	1330	800	570	400
Rated power	$P_N$ [kW]	0.55	0.55	0.54	0.55	0.62	0.62	0.62	0.62
Rated torque	$M_N$ [Nm]	3.14	5.23	7.32	10.45	4.42	7.36	10.31	14.73
Standstill torque	$M_0$ [Nm]**	4.85	8.08	11.31	16.15	8.84	14.73	20.62	29.45
Weight	m [kg]*****	14.8	14.8	14.7	14.7	17.3	17.3	17.2	17.2
<b>With RQ-3 encoder</b>									
Gear ratio		3	5	7	10	3	5	7	10
Rated speed	$n_N$ [1/min]	1500	900	640	450	1170	700	500	350
Rated power	$P_N$ [kW]	0.49	0.49	0.49	0.49	0.57	0.57	0.57	0.57
Rated torque	$M_N$ [Nm]	3.14	5.23	7.32	10.45	4.70	7.84	10.97	15.68
Standstill torque	$M_0$ [Nm]**	5.13	8.55	11.97	17.10	8.84	14.73	20.62	29.45
Weight	m [kg]*****	13.8	13.8	13.7	13.7	16.3	16.3	16.2	16.2
<b>With MD brake &amp; RQ-3 encoder</b>									
Gear ratio		3	5	7	10	3	5	7	10
Rated speed	$n_N$ [1/min]	1500	900	640	450	1170	700	500	350
Rated power	$P_N$ [kW]	0.27	0.27	0.27	0.27	0.23	0.23	0.23	0.23
Rated torque	$M_N$ [Nm]	1.71	2.85	3.99	5.70	1.85	3.09	4.32	6.18
Standstill torque	$M_0$ [Nm]**	4.28	7.13	9.98	14.25	7.70	12.83	17.96	25.65
Weight	m [kg]*****	15.8	15.8	15.7	15.7	18.3	18.3	18.2	18.2

\* values at 20 °C / \*\* values at 200 rpm (motor) / \*\*\* short time operation max. 3 seconds / \*\*\*\*\* weight data without cables (cable weight see page 12)

Motor KSG...		3612.30	3612.30	3612.30	3612.30
		HD.../ PG-I- 90.03	HD.../ PG-I- 90.05	HD.../ PG-I- 90.07	HD.../ PG-I- 90.10
Gear ratio	i	3	5	7	10
Rated torque	$M_N$ [Nm]	8.3	13.8	19.3	27.6
Rated speed	$n_N$ [U/min]	1000	600	430	300
Rated power	$P_N$ [kW]	0.87	0.87	0.87	0.87
Stall torque	$M_0$ [Nm]**	13.4	22.3	31.3	44.7
Maximum speed	$n_{Max}$ [U/min]	2000	1200	860	600
Maximum torque	$M_{max}$ [Nm]***	49.0	81.7	114.4	100.0
Max. permissible braking torque (at max. 1000 cycles per hour)	$M_{BRE}$ [Nm]	27.0	45.0	63.0	90.0
Emergency stop torque	[Nm]	170	170	140	110
Radial force (S1 = 100 %/S3 = 60%/allowed 1000x)	$F_{Rmax}$ [N]	2000 / 2500 / 4000			
Axial force (S1 = 100 %/S3 = 60%/allowed 1000x)	$F_{Amax}$ [N]	3500 / 4500 / 7000			
Torsional backlash (Standard version)	$\varphi$ [arcmin]	≤5	≤5	≤5	≤5
Torsional backlash - reduced (Special version)	$\varphi_r$ [arcmin]	≤2	≤2	≤2	≤2
Moment of inertia of gearmotor (without brake)	$J_{GM}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	3.869	3.464	3.361	3.338
Moment of inertia of gearmotor (with brake)	$J_{GM+BR}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	4.469	4.064	3.961	3.938
Running noise at rated speed	L [dB(A)]	≤55	≤55	≤55	≤55
Weight	m [kg]*****	17.8	17.8	17.7	17.7
<b>With MD brake</b>					
Gear ratio		3	5	7	10
Rated speed	$n_N$ [1/min]	1000	600	430	300
Rated power	$P_N$ [kW]	0.67	0.67	0.67	0.67
Rated torque	$M_N$ [Nm]	6.41	10.69	14.96	21.38
Standstill torque	$M_0$ [Nm]**	12.26	20.42	28.60	40.85
Weight	m [kg]*****	19.8	19.8	19.7	19.7
<b>With RQ-3 encoder</b>					
Gear ratio		3	5	7	10
Rated speed	$n_N$ [1/min]	1000	600	430	300
Rated power	$P_N$ [kW]	0.66	0.66	0.66	0.66
Rated torque	$M_N$ [Nm]	6.27	10.45	14.63	20.90
Standstill torque	$M_0$ [Nm]**	12.26	20.42	28.60	40.85
Weight	m [kg]*****	18.8	18.8	18.7	18.7
<b>With MD brake &amp; RQ-3 encoder</b>					
Gear ratio		3	5	7	10
Rated speed	$n_N$ [1/min]	1000	600	430	300
Rated power	$P_N$ [kW]	0.27	0.27	0.27	0.27
Rated torque	$M_N$ [Nm]	2.57	4.28	5.99	8.55
Standstill torque	$M_0$ [Nm]**	10.83	18.05	25.27	36.10
Weight	m [kg]*****	20.8	20.8	20.7	20.7

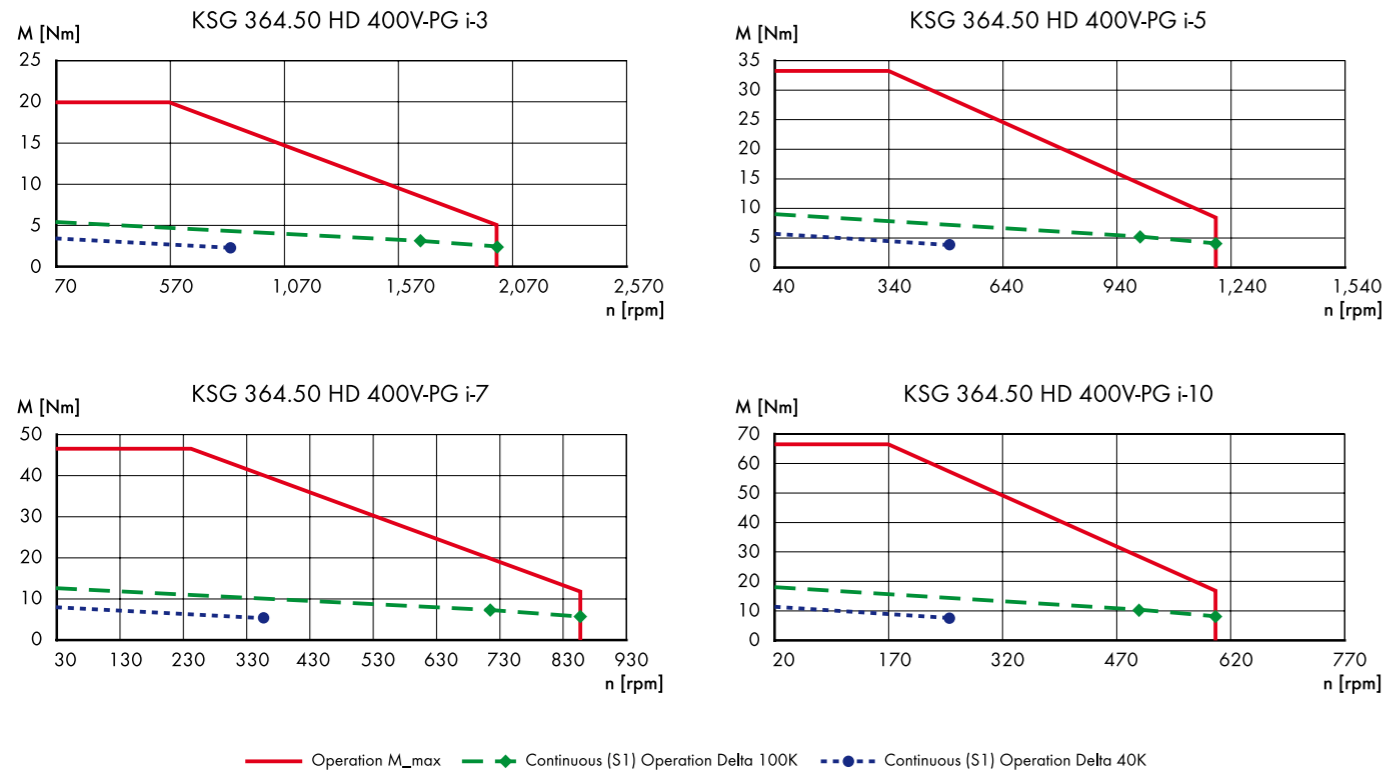
\* values at 20 °C / \*\* values at 200 rpm (motor) / \*\*\* short time operation max. 3 seconds / \*\*\*\*\* weight data without cables (cable weight see page 12)



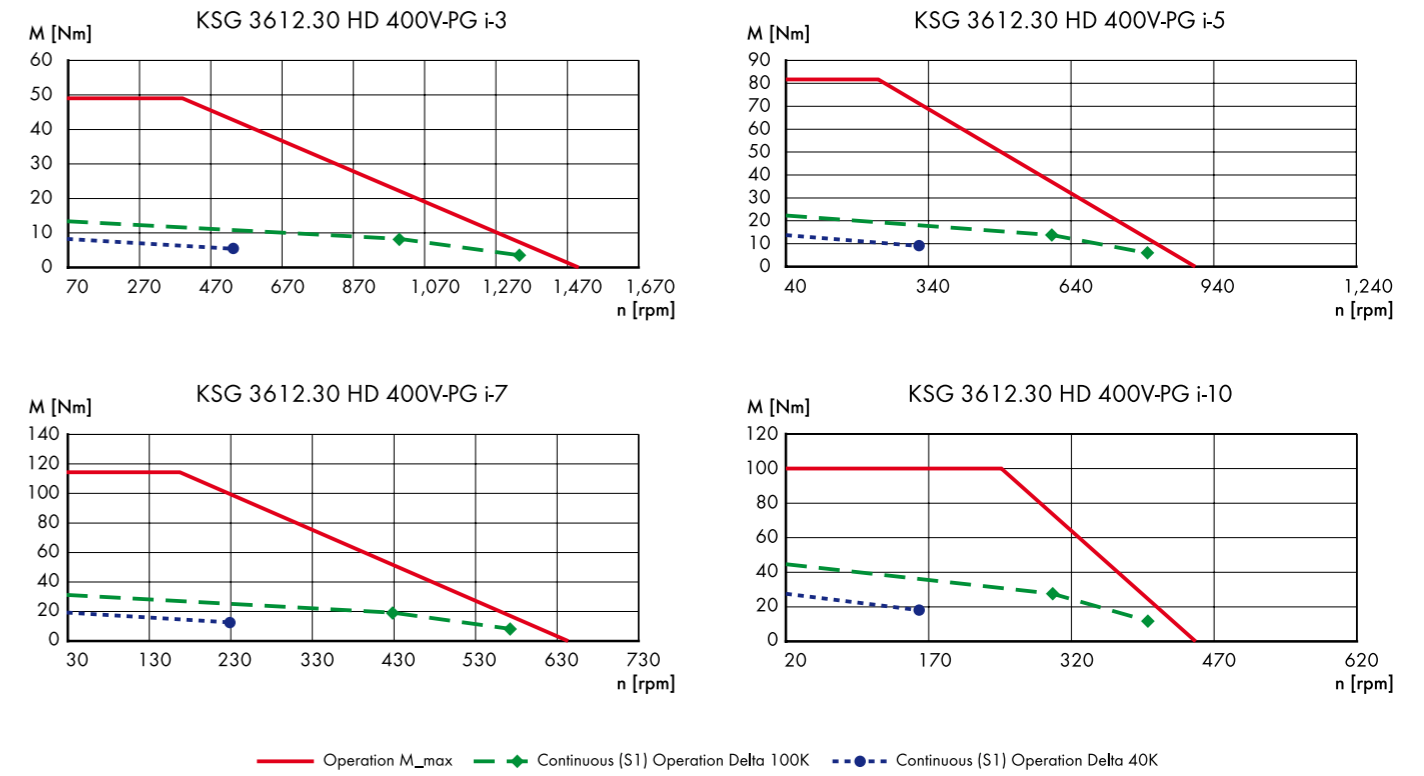
# Speed-Torque Diagrams - Gear Units

## KSG-HD Size 3

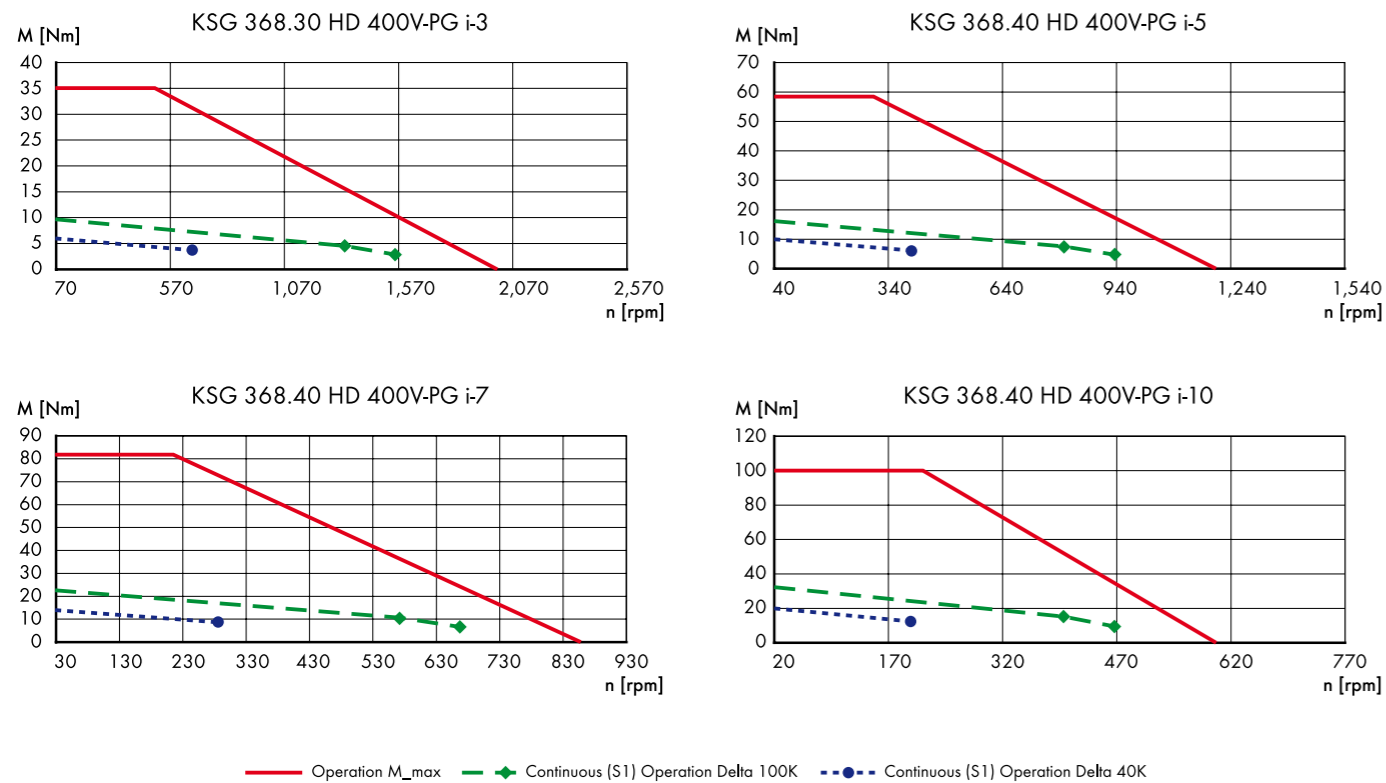
### Speed-Torque Curves KSG-HD 364



### Speed-Torque Curves KSG-HD 3612



### Speed-Torque Curves KSG-HD 368



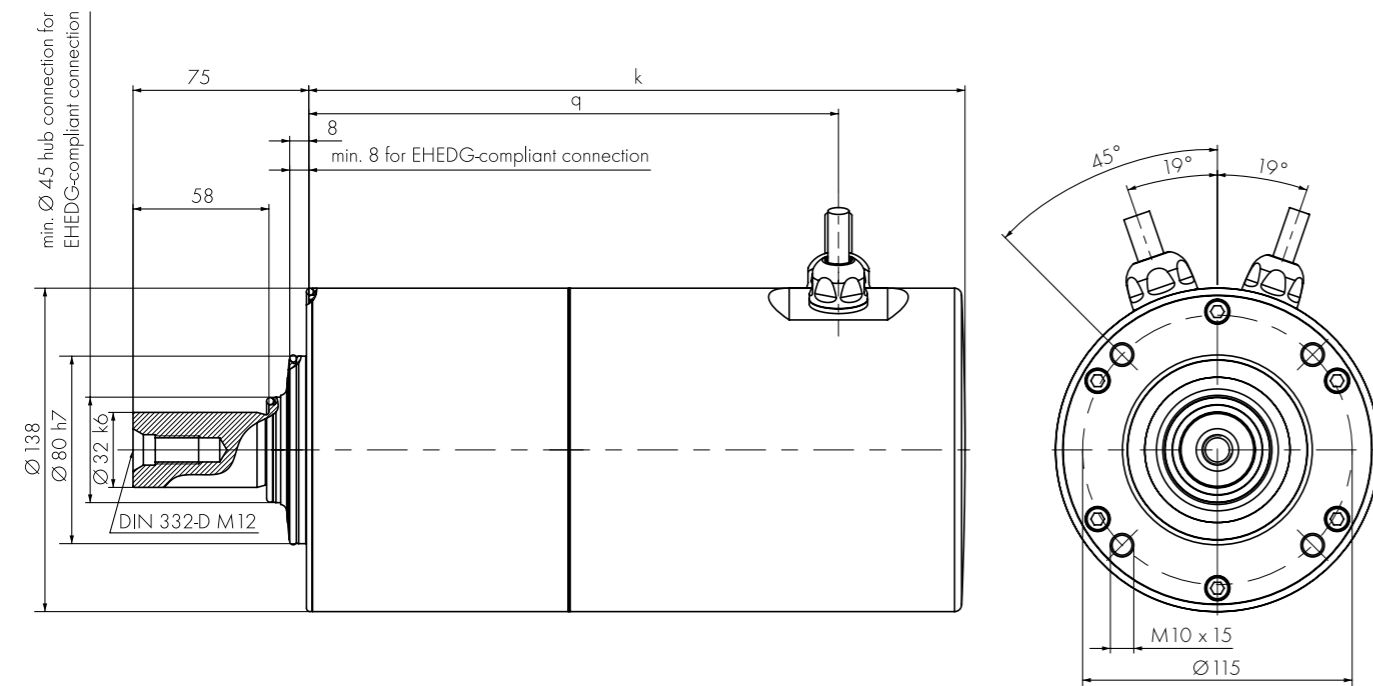
# Technical Data - Gearmotor

## Motor data for type KSG-HD Size 4

Gearmotor		464.45	468.30	4612.30
Size/KSG...				
Rated voltage	$U_N$ [V]	400	400	400
Rated frequency	$f_N$ [Hz]	225	150	125
EMF constant	$K_E$ [V/1000 1/min]*	59.6	85.6	89.3
Rated speed	$n_N$ [1/min]	4500	3000	2500
Rated power	$P_N$ [kW]	1.23	1.63	1.83
Rated torque	$M_N$ [Nm]	2.10	4.30	5.90
Rated current	$I_N$ [A]	2.33	3.23	4.47
Rated torque constant	$K_{TN}$ [Nm/A]*	0.90	1.33	1.32
Standstill torque	$M_0$ [Nm]**	3.90	7.10	9.40
Standstill current	$I_0$ [A]**	4.24	5.26	7.01
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.92	1.35	1.34
Peak torque	$M_{max}$ [Nm]***	14.7	26.8	35.9
Peak current	$I_{max}$ [A]***	18.2	22.2	29.8
Peak torque constant	$K_{Tmax}$ [Nm/A]*	0.81	1.21	1.20
Stator resistance	$R_{U,V}$ [Ohm]*	2.3	1.8	1.1
Stator inductivity	$L_{U,V}$ [mH]	6.4	6.90	4.6
Electrical time constant	$T_{el}$ [ms]	2.8	3.8	4.2
Thermal time constant	$T_{th}$ [min]****	58	63	67
Mass moment of inertia	$J_{rot}$ [ $10^{-4}$ kgm <sup>2</sup> ]	4.5	8.0	11.5
Motor weight	$m_{mot}$ [kg]*****	15	19	23
<b>Motor with brake</b>				
Mass moment of inertia	$J_{rot}$ [ $10^{-4}$ kgm <sup>2</sup> ]	6.5	10	13.5
Motor weight	$m_{motor+brake}$ [kg]*****	18	22	26
Holding torque	$M_{brake}$ [Nm]	18	18	18
Maximum motor speed	$n_{max\_Mot}$ [1/min]	4500	5000	5000

\* values at 20 °C / \*\* values at 200 rpm (motor) / \*\*\* short time operation max. 3 seconds / \*\*\*\* estimated value / \*\*\*\*\* weight without cables (cable weight p. 12)

### Dimensions



With MD brake		464.45	468.30	4612.30
Size/KSG...				
Rated speed	$n_N$ [1/min]	4500	3000	2500
Rated power	$P_N$ [kW]	0.85	0.97	1.18
Rated torque	$M_N$ [Nm]	1.80	3.10	4.50
Rated current	$I_N$ [A]	1.96	2.33	3.41
Rated torque constant	$K_{TN}$ [Nm/A]*	0.92	1.33	1.32
Standstill torque	$M_0$ [Nm]**	3.50	6.40	8.70
Standstill current	$I_0$ [A]**	3.89	4.74	6.49
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.90	1.35	1.34

With RQ-3 encoder		464.45	468.30	4612.30
Size/KSG...				
Rated speed	$n_N$ [1/min]	4000	3000	2500
Rated power	$P_N$ [kW]	0.88	1.07	1.15
Rated torque	$M_N$ [Nm]	2.10	3.40	4.40
Rated current	$I_N$ [A]	2.28	2.56	3.33
Rated torque constant	$K_{TN}$ [Nm/A]*	0.92	1.33	1.32
Standstill torque	$M_0$ [Nm]**	3.60	6.50	8.60
Standstill current	$I_0$ [A]**	4.0	4.81	6.42
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.90	1.35	1.34

With MD brake & RQ-3 encoder		464.45	468.30	4612.30
Size/KSG...				
Rated speed	$n_N$ [1/min]	4000	2600	2200
Rated power	$P_N$ [kW]	0.31	0.71	0.83
Rated torque	$M_N$ [Nm]	0.75	2.60	3.60
Rated current	$I_N$ [A]	0.82	1.95	2.73
Rated torque constant	$K_{TN}$ [Nm/A]*	0.92	1.33	1.32
Standstill torque	$M_0$ [Nm]**	3.00	5.60	7.60
Standstill current	$I_0$ [A]**	3.33	4.15	5.67
Standstill torque constant	$K_{T0}$ [Nm/A]*	0.90	1.35	1.34

Type/KSG 4	Resolver R4	Resolver and brake	RQ encoder	RQ encoder and brake
	q	k	k	k
KSG 464... HD(-MD)-R../S1/PG-HD-I-120..	226	280	295	346
KSG 468... HD(-MD)-R../S1/PG-HD-I-120..	266	320	335	386
KSG 4612... HD(-MD)-R../S1/PG-HD-I-120..	306	360	375	426

# Technical Data - Gearmotor

## KSG-HD Size 4

Motor KSG...		464.45	464.45	464.45	464.45	468.30	468.30	468.30	468.30
		HD.../ PG-I- 120.03	HD.../ PG-I- 120.05	HD.../ PG-I- 120.07	HD.../ PG-I- 120.10	HD.../ PG-I- 120.03	HD.../ PG-I- 120.05	HD.../ PG-I- 120.07	HD.../ PG-I- 120.10
Gear ratio	i	3	5	7	10	3	5	7	10
Rated torque	$M_N$ [Nm]	6.0	10.0	14.0	20.0	12.3	20.4	28.6	40.9
Rated speed	$n_N$ [U/min]	1500	900	640	450	1000	600	430	300
Rated power	$P_N$ [kW]	0.94	0.94	0.94	0.94	1.29	1.28	1.29	1.28
Stall torque	$M_0$ [Nm]**	11.1	18.5	25.9	37.1	20.2	33.7	47.2	67.5
Maximum speed	$n_{Max}$ [U/min]	1500	900	640	450	1500	1000	710	500
Maximum torque	$M_{max}$ [Nm]***	41.9	69.8	97.8	139.7	76.4	127.3	178.2	240
Max. permissible braking torque (at max. 1000 cycles per hour)	$M_{BRE}$ [Nm]	54.0	90.0	126.0	180.0	54.0	90.0	126.0	180.0
Emergency stop torque	[Nm]	440	440	330	270	440	440	330	270
Radial force (S1 = 100 %/S3 = 60%/allowed 1000x)	$F_{Rmax}$ [N]	4000 / 5000 / 7000				4000 / 5000 / 7000			
Axial force (S1 = 100 %/S3 = 60%/allowed 1000x)	$F_{Amax}$ [N]	5000 / 6000 / 9000				5000 / 6000 / 9000			
Torsional backlash (Standard version)	$\varphi$ [arcmin]	≤5	≤5	≤5	≤5	≤5	≤5	≤5	≤5
Torsional backlash - reduced (Special version)	$\varphi_r$ [arcmin]	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2
Moment of inertia of gearmotor (without brake)	$J_{GM}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	6.938	5.230	4.837	4.669	10.438	8.730	8.337	8.169
Moment of inertia of gearmotor (with brake)	$J_{GM+BR}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	8.938	7.230	6.837	6.669	12.438	10.730	10.337	10.169
Running noise at rated speed	L [dB(A)]	≤55	≤55	≤55	≤55	≤55	≤55	≤55	≤55
Weight	m [kg]*****	24.5	24.5	24.4	24.4	28.5	28.5	28.4	28.4
<b>With MD brake</b>									
Gear ratio		3	5	7	10	3	5	7	10
Rated speed	$n_N$ [1/min]	1500	900	640	450	1000	600	430	300
Rated power	$P_N$ [kW]	0.90	0.90	0.89	0.90	1.28	1.28	1.29	1.28
Rated torque	$M_N$ [Nm]	5.13	8.55	11.97	17.10	8.84	14.73	20.62	29.45
Standstill torque	$M_0$ [Nm]**	10.83	18.05	25.27	36.10	19.95	33.25	46.55	66.50
Weight	m [kg]*****	27.5	27.5	27.4	27.4	31.5	31.5	31.4	31.4
<b>With RQ-3 encoder</b>									
Gear ratio		3	5	7	10	3	5	7	10
Rated speed	$n_N$ [1/min]	1330	800	570	400	1000	600	430	300
Rated power	$P_N$ [kW]	0.83	0.84	0.83	0.84	1.01	1.01	1.02	1.01
Rated torque	$M_N$ [Nm]	5.99	9.98	13.97	19.95	9.69	16.15	22.61	32.30
Standstill torque	$M_0$ [Nm]**	11.12	18.53	25.94	37.05	19.95	33.25	46.55	66.50
Weight	m [kg]*****	26.5	26.5	26.4	26.4	30.5	30.5	30.4	30.4
<b>With MD brake &amp; RQ-3 encoder</b>									
Gear ratio		3	5	7	10	3	5	7	10
Rated speed	$n_N$ [1/min]	1330	800	570	400	870	520	370	260
Rated power	$P_N$ [kW]	0.30	0.30	0.30	0.30	0.68	0.67	0.67	0.67
Rated torque	$M_N$ [Nm]	2.14	3.56	4.99	7.13	7.41	12.35	17.29	24.70
Standstill torque	$M_0$ [Nm]**	9.69	16.15	22.61	32.30	17.67	29.45	41.23	58.90
Weight	m [kg]*****	29.5	29.5	29.4	29.4	33.5	33.5	33.4	33.4

\* values at 20 °C / \*\* values at 200 rpm (motor) / \*\*\* short time operation max. 3 seconds / \*\*\*\*\* weight data without cables (cable weight see page 12)

Motor KSG...		4612.30	4612.30	4612.30	4612.30
		HD.../ PG-I- 120.03	HD.../ PG-I- 120.05	HD.../ PG-I- 120.07	HD.../ PG-I- 120.10
Gear ratio	i	3	5	7	10
Rated torque	$M_N$ [Nm]	16.8	28.0	39.2	56.1
Rated speed	$n_N$ [U/min]	830	500	360	250
Rated power	$P_N$ [kW]	1.46	1.46	1.48	1.47
Stall torque	$M_0$ [Nm]**	26.8	44.7	62.5	89.3
Maximum speed	$n_{Max}$ [U/min]	1500	1000	710	500
Maximum torque	$M_{max}$ [Nm]***	102.3	170.5	238.7	240
Max. permissible braking torque (at max. 1000 cycles per hour)	$M_{BRE}$ [Nm]	54.0	90.0	126.0	180.0
Emergency stop torque	[Nm]	440	440	330	270
Radial force (S1 = 100 %/S3 = 60%/allowed 1000x)	$F_{Rmax}$ [N]	4000 / 5000 / 7000			
Axial force (S1 = 100 %/S3 = 60%/allowed 1000x)	$F_{Amax}$ [N]	5000 / 6000 / 9000			
Torsional backlash (Standard version)	$\varphi$ [arcmin]	≤5	≤5	≤5	≤5
Torsional backlash - reduced (Special version)	$\varphi_r$ [arcmin]	≤2	≤2	≤2	≤2
Moment of inertia of gearmotor (without brake)	$J_{GM}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	13.938	12.230	11.837	11.669
Moment of inertia of gearmotor (with brake)	$J_{GM+BR}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	15.938	14.230	13.837	13.669
Running noise at rated speed	L [dB(A)]	≤55	≤55	≤55	≤55
Weight	m [kg]*****	32.5	32.5	32.4	32.4
<b>With MD brake</b>					
Gear ratio		3	5	7	10
Rated speed	$n_N$ [1/min]	830	500	360	250
Rated power	$P_N$ [kW]	1.12	1.12	1.13	1.12
Rated torque	$M_N$ [Nm]	12.83	21.38	29.93	42.75
Standstill torque	$M_0$ [Nm]**	24.80	41.33	57.86	82.65
Weight	m [kg]*****	35.5	35.5	35.4	35.4
<b>With RQ-3 encoder</b>					
Gear ratio		3	5	7	10
Rated speed	$n_N$ [1/min]	830	500	360	250
Rated power	$P_N$ [kW]	1.09	1.09	1.10	1.09
Rated torque	$M_N$ [Nm]	12.54	20.90	29.26	41.80
Standstill torque	$M_0$ [Nm]**	18.53	30.88	43.23	61.75
Weight	m [kg]*****	34.5	34.5	34.4	34.4
<b>With MD brake &amp; RQ-3 encoder</b>					
Gear ratio		3	5	7	10
Rated speed	$n_N$ [1/min]	730	440	310	220
Rated power	$P_N$ [kW]	0.78	0.79	0.78	0.79
Rated torque	$M_N$ [Nm]	10.26	17.10	23.94	34.20
Standstill torque	$M_0$ [Nm]**	21.66	36.10	50.54	72.20
Weight	m [kg]*****	37.5	37.5	37.4	37.4

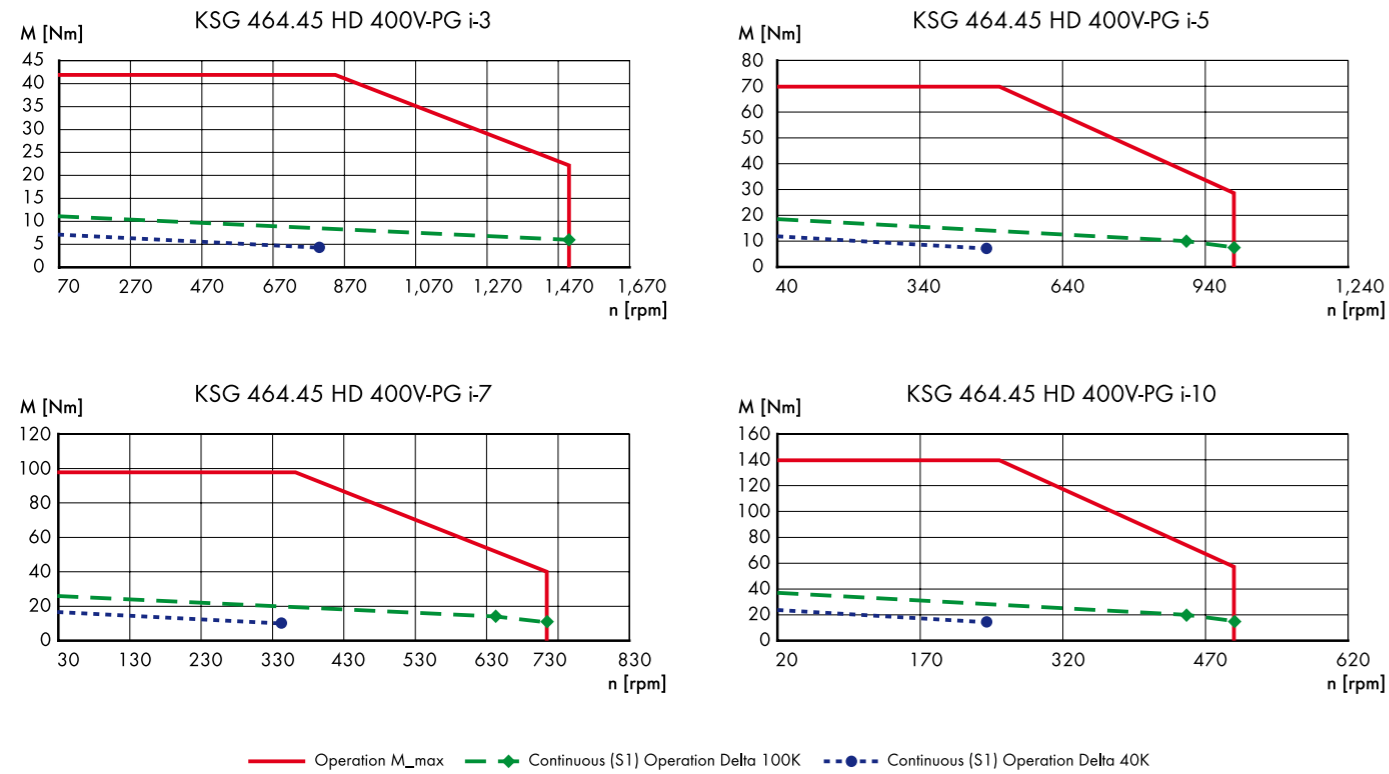
\* values at 20 °C / \*\* values at 200 rpm (motor) / \*\*\* short time operation max. 3 seconds / \*\*\*\*\* weight data without cables (cable weight see page 12)



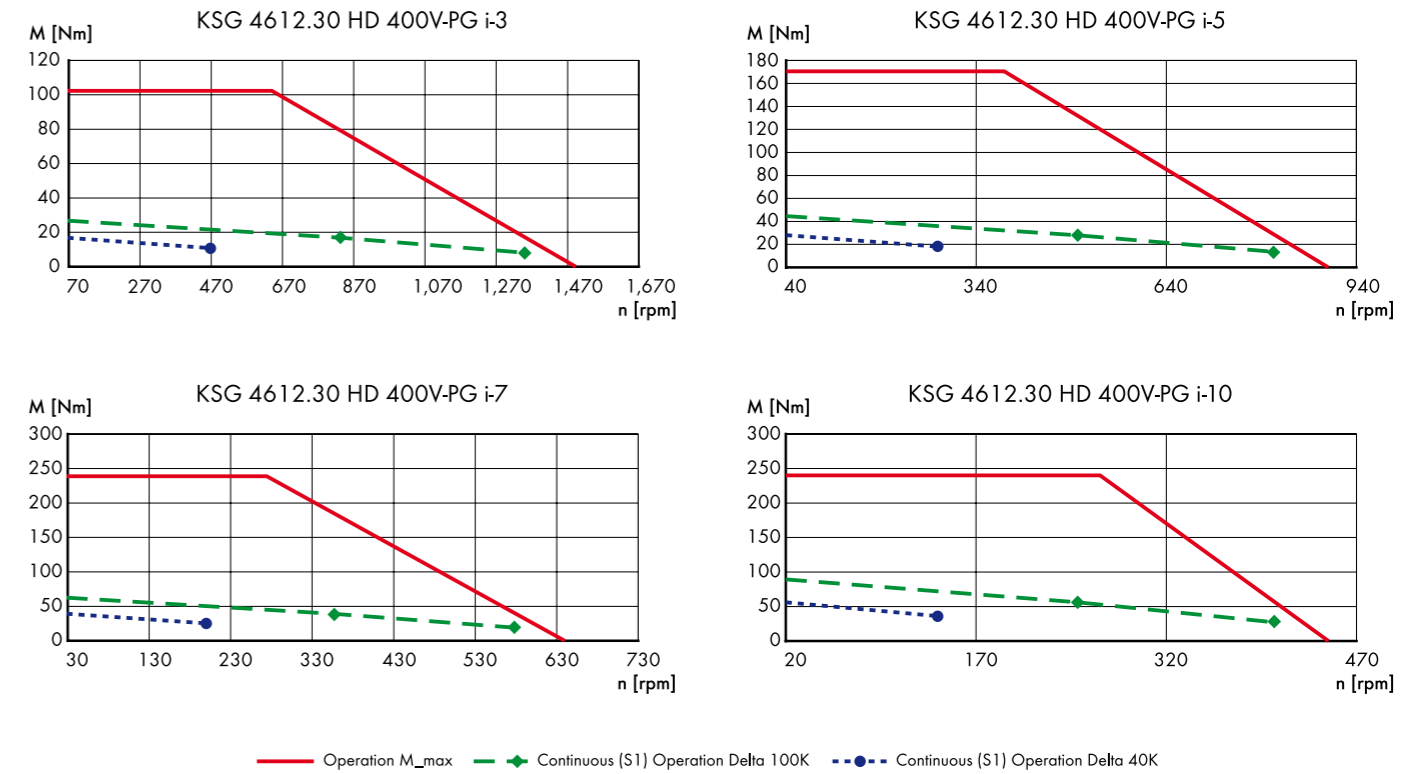
# Speed-Torque Diagrams - Gear Units

## KSG-HD Size 4

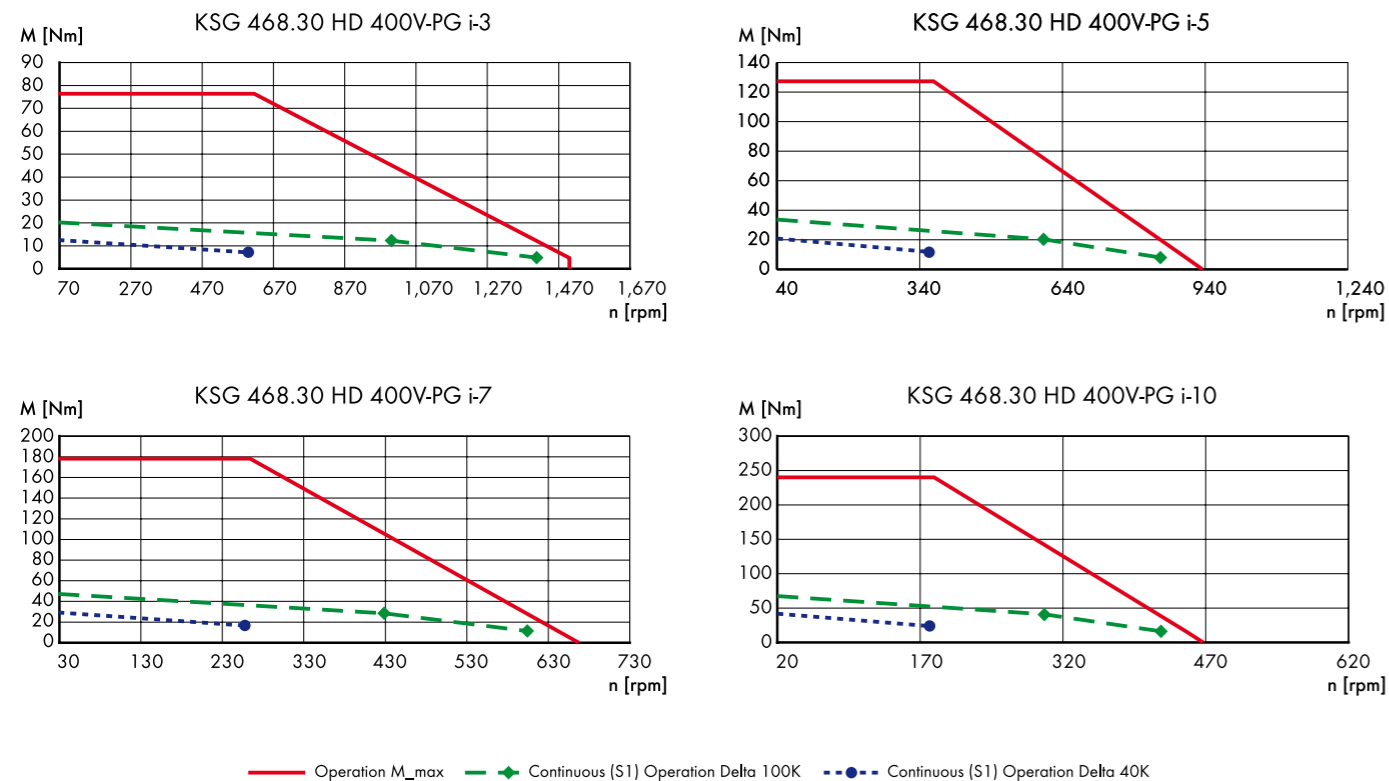
### Speed-Torque Curves KSG-HD 464



### Speed-Torque Curves KSG-HD 4612



### Speed-Torque Curves KSG-HD 468



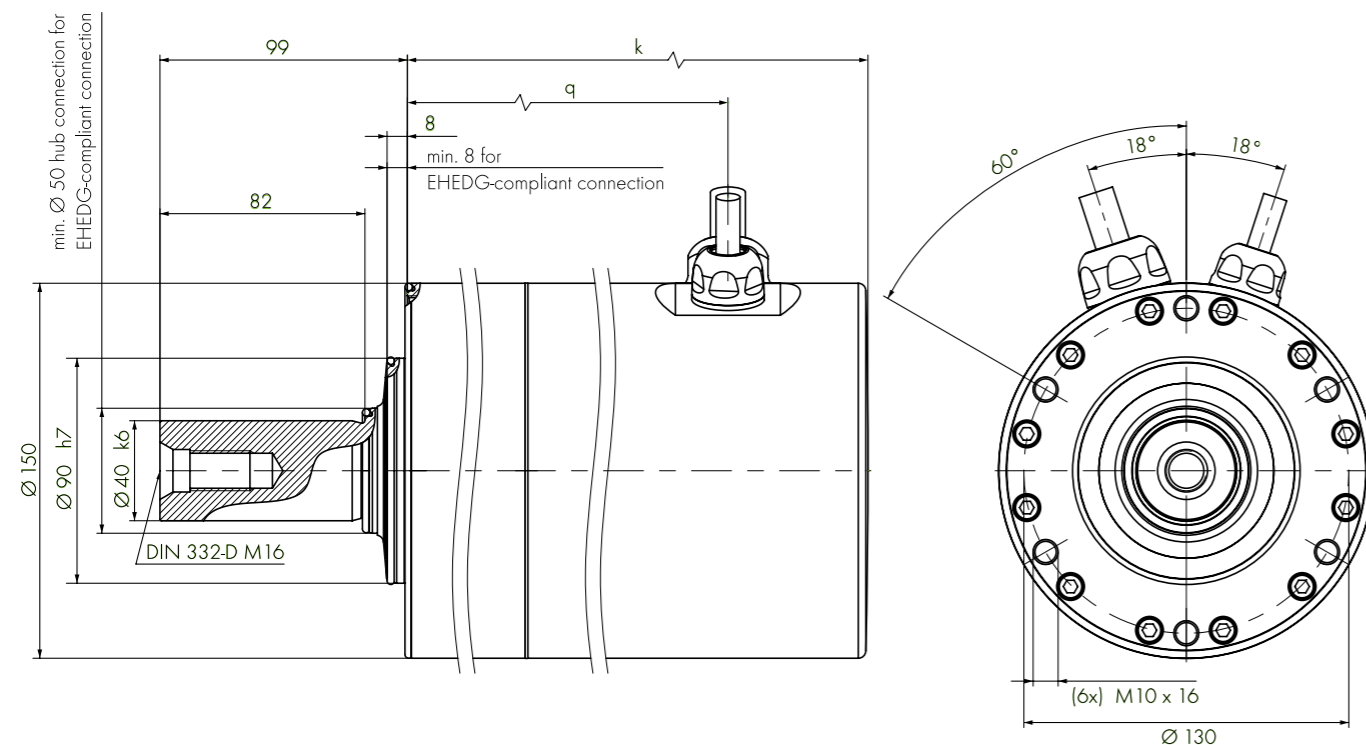
# Technical Data - Gearmotor

## Motor data for type KSG-HD Size 5

Gearmotor Size/KSG...		564.45	568.30	5612.25	5616.25
Rated voltage	$U_N$ [V]	400	400	400	400
Rated frequency	$f_N$ [Hz]	200	150	125	125
EMF constant	$K_E$ [V/1000 1/min] <sup>*</sup>	60.7	91.9	113.9	106.3
Rated speed	$n_N$ [1/min]	4000	3000	2500	2000
Rated power	$P_N$ [kW]	1.63	2.10	2.36	2.60
Rated torque	$M_N$ [Nm]	3.20	5.40	7.30	10.90
Rated current	$I_N$ [A]	3.48	3.91	4.27	6.81
Rated torque constant	$K_{TN}$ [Nm/A] <sup>*</sup>	0.92	1.38	1.71	1.60
Standstill torque	$M_0$ [Nm] <sup>**</sup>	5.50	10.20	13.50	16.90
Standstill current	$I_0$ [A] <sup>**</sup>	5.91	7.39	7.85	10.50
Standstill torque constant	$K_{T0}$ [Nm/A] <sup>*</sup>	0.93	1.38	1.72	1.61
Peak torque	$M_{max}$ [Nm] <sup>***</sup>	20.7	38.7	51.3	64.2
Peak current	$I_{max}$ [A] <sup>***</sup>	25.0	31.1	33.1	44.6
Peak torque constant	$K_{Tmax}$ [Nm/A] <sup>*</sup>	0.83	1.24	1.55	1.44
Stator resistance	$R_{UV}$ [Ohm] <sup>*</sup>	1.4	1.0	1.0	0.6
Stator inductivity	$L_{UV}$ [mH]	4.4	4.7	4.9	3.2
Electrical time constant	$T_{el}$ [ms]	3.1	4.7	4.9	5.3
Thermal time constant	$T_{th}$ [min] <sup>****</sup>	65	71	75	79
Mass moment of inertia	$J_{rot}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	12	21	30	39
Motor weight	$m_{mot}$ [kg] <sup>*****</sup>	20	25	30	35
<b>Motor with brake</b>					
Mass moment of inertia	$J_{rot}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	19	28	37	46
Motor weight	$m_{motor+brake}$ [kg] <sup>*****</sup>	25	30	35	40
Holding torque	$M_{brake}$ [Nm]	36	36	36	36
Maximum motor speed	$n_{max\_Mot}$ [1/min]	4000	4500	4500	4500

\* values at 20 °C / \*\* values at 200 rpm (motor) / \*\*\* short time operation max. 3 seconds / \*\*\*\* estimated value / \*\*\*\*\* weight without cables (cable weight p. 12)

### Dimensions



With MD brake Size/KSG...		564.45	568.30	5612.25	5616.25
Rated speed	$n_N$ [1/min]	4000	3000	2500	2000
Rated power	$P_N$ [kW]	1.26	1.13	1.36	1.88
Rated torque	$M_N$ [Nm]	3.00	3.60	5.20	9.00
Rated current	$I_N$ [A]	3.26	2.61	3.04	5.63
Rated torque constant	$K_{TN}$ [Nm/A] <sup>*</sup>	0.92	1.38	1.71	1.60
Standstill torque	$M_0$ [Nm] <sup>**</sup>	5.00	9.40	12.50	15.80
Standstill current	$I_0$ [A] <sup>**</sup>	5.38	6.81	7.27	9.81
Standstill torque constant	$K_{T0}$ [Nm/A] <sup>*</sup>	0.93	1.38	1.72	1.61

With RQ-3 encoder Size/KSG...		564.45	568.30	5612.25	5616.25
Rated speed	$n_N$ [1/min]	3500	3000	2500	2000
Rated power	$P_N$ [kW]	1.14	1.13	1.20	1.70
Rated torque	$M_N$ [Nm]	3.10	3.60	4.60	8.10
Rated current	$I_N$ [A]	3.37	2.61	2.69	5.06
Rated torque constant	$K_{TN}$ [Nm/A] <sup>*</sup>	0.92	1.38	1.71	1.60
Standstill torque	$M_0$ [Nm] <sup>**</sup>	5.00	9.40	12.30	15.30
Standstill current	$I_0$ [A] <sup>**</sup>	5.38	6.81	7.15	9.50
Standstill torque constant	$K_{T0}$ [Nm/A] <sup>*</sup>	0.93	1.38	1.72	1.61

With MD brake & RQ-3 encoder Size/KSG...		564.45	568.30	5612.25	5616.25
Rated speed	$n_N$ [1/min]	3000	2500	2000	1500
Rated power	$P_N$ [kW]	0.82	0.89	1.13	1.46
Rated torque	$M_N$ [Nm]	2.60	3.40	5.40	9.30
Rated current	$I_N$ [A]	2.83	2.46	3.16	5.81
Rated torque constant	$K_{TN}$ [Nm/A] <sup>*</sup>	0.92	1.38	1.71	1.60
Standstill torque	$M_0$ [Nm] <sup>**</sup>	4.30	8.20	10.90	13.70
Standstill current	$I_0$ [A] <sup>**</sup>	4.62	5.94	6.34	8.51
Standstill torque constant	$K_{T0}$ [Nm/A] <sup>*</sup>	0.93	1.38	1.72	1.61

Type/KSG 5	Resolver R4	Resolver and brake	RQ encoder	RQ encoder and brake
	q	k	k	k
KSG 564... HD(-MD)-R../S1/PG-HD-I-150..	252.5	308.5	323.5	377.5
KSG 568... HD(-MD)-R../S1/PG-HD-I-150..	292.5	348.5	363.5	417.5
KSG 5612... HD(-MD)-R../S1/PG-HD-I-150..	332.5	388.5	403.5	457.5
KSG 5616... HD(-MD)-R../S1/PG-HD-I-150..	372.5	428.5	443.5	497.5

# Technical Data - Gearmotor

## KSG-HD Size 5

Motor KSG...		564.45	564.45	564.45	564.45	568.30	568.30	568.30	568.30
		HD.../ PG-I- 150.03	HD.../ PG-I- 150.05	HD.../ PG-I- 150.07	HD.../ PG-I- 150.10	HD.../ PG-I- 150.03	HD.../ PG-I- 150.05	HD.../ PG-I- 150.07	HD.../ PG-I- 150.10
Gear ratio	i	3	5	7	10	3	5	7	10
Rated torque	$M_N$ [Nm]	9.1	15.2	21.3	30.4	15.4	25.7	35.9	51.3
Rated speed	$n_N$ [U/min]	1330	800	570	400	1000	600	430	300
Rated power	$P_N$ [kW]	1.27	1.27	1.27	1.27	1.61	1.61	1.62	1.61
Stall torque	$M_0$ [Nm]**	15.7	26.1	36.6	52.3	29.1	48.5	67.8	96.9
Maximum speed	$n_{Max}$ [U/min]	1330	800	570	400	1330	900	640	450
Maximum torque	$M_{max}$ [Nm]***	59.0	98.3	137.7	196.7	110.3	183.8	257.4	367.7
Max. permissible braking torque (at max. 1000 cycles per hour)	$M_{BRE}$ [Nm]	108.0	180.0	252.0	360.0	108.0	180.0	252.0	360.0
Emergency stop torque	[Nm]	830	830	750	440	830	830	750	440
Radial force (S1 = 100 %/S3 = 60%/allowed 1000x)	$F_{Rmax}$ [N]	5000 / 6000 / 9000				5000 / 6000 / 9000			
Axial force (S1 = 100 %/S3 = 60%/allowed 1000x)	$F_{Amax}$ [N]	6500 / 9000 / 12000				6500 / 9000 / 12000			
Torsional backlash (Standard version)	$\varphi$ [arcmin]	≤5	≤5	≤5	≤5	≤5	≤5	≤5	≤5
Torsional backlash - reduced (Special version)	$\varphi_r$ [arcmin]	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2
Moment of inertia of gearmotor (without brake)	$J_{GM}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	18.384	13.680	12.756	12.376	27.384	22.680	21.756	21.376
Moment of inertia of gearmotor (with brake)	$J_{GM+BR}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	25.384	20.680	19.756	19.376	34.384	29.680	28.756	28.376
Running noise at rated speed	L [dB(A)]	≤55	≤55	≤55	≤55	≤55	≤55	≤55	≤55
Weight	m [kg]*****	32.8	32.8	32.7	32.7	37.8	37.8	37.7	37.7
<b>With MD brake</b>									
Gear ratio		3	5	7	10	3	5	7	10
Rated speed	$n_N$ [1/min]	1330	800	570	400	1000	600	430	300
Rated power	$P_N$ [kW]	1.19	1.19	1.19	1.19	1.07	1.07	1.08	1.07
Rated torque	$M_N$ [Nm]	8.55	14.25	19.95	28.50	10.26	17.10	23.94	34.20
Standstill torque	$M_0$ [Nm]**	14.25	23.75	33.25	47.50	26.79	44.65	62.51	89.30
Weight	m [kg]*****	37.8	37.8	37.7	37.7	42.8	42.8	42.7	42.7
<b>With RQ-3 encoder</b>									
Gear ratio		3	5	7	10	3	5	7	10
Rated speed	$n_N$ [1/min]	1170	700	500	350	1000	600	430	300
Rated power	$P_N$ [kW]	1.08	1.08	1.08	1.08	1.07	1.07	1.08	1.07
Rated torque	$M_N$ [Nm]	8.84	14.73	20.62	29.45	10.26	17.10	23.94	34.20
Standstill torque	$M_0$ [Nm]**	14.25	23.75	33.25	47.50	26.79	44.65	62.51	89.30
Weight	m [kg]*****	35.8	35.8	35.7	35.7	40.8	40.8	40.7	40.7
<b>With MD brake &amp; RQ-3 encoder</b>									
Gear ratio		3	5	7	10	3	5	7	10
Rated speed	$n_N$ [1/min]	1000	600	430	300	830	500	360	250
Rated power	$P_N$ [kW]	0.99	0.99	0.99	0.98	1.26	1.27	1.28	1.27
Rated torque	$M_N$ [Nm]	7.41	12.35	17.29	24.70	9.69	16.15	22.61	32.30
Standstill torque	$M_0$ [Nm]**	12.26	20.43	28.60	40.85	23.37	38.95	54.53	77.90
Weight	m [kg]*****	40.8	40.8	40.7	40.7	45.8	45.8	45.7	45.7

\* values at 20 °C / \*\* values at 200 rpm (motor) / \*\*\* short time operation max. 3 seconds / \*\*\*\*\* weight data without cables (cable weight see page 12)

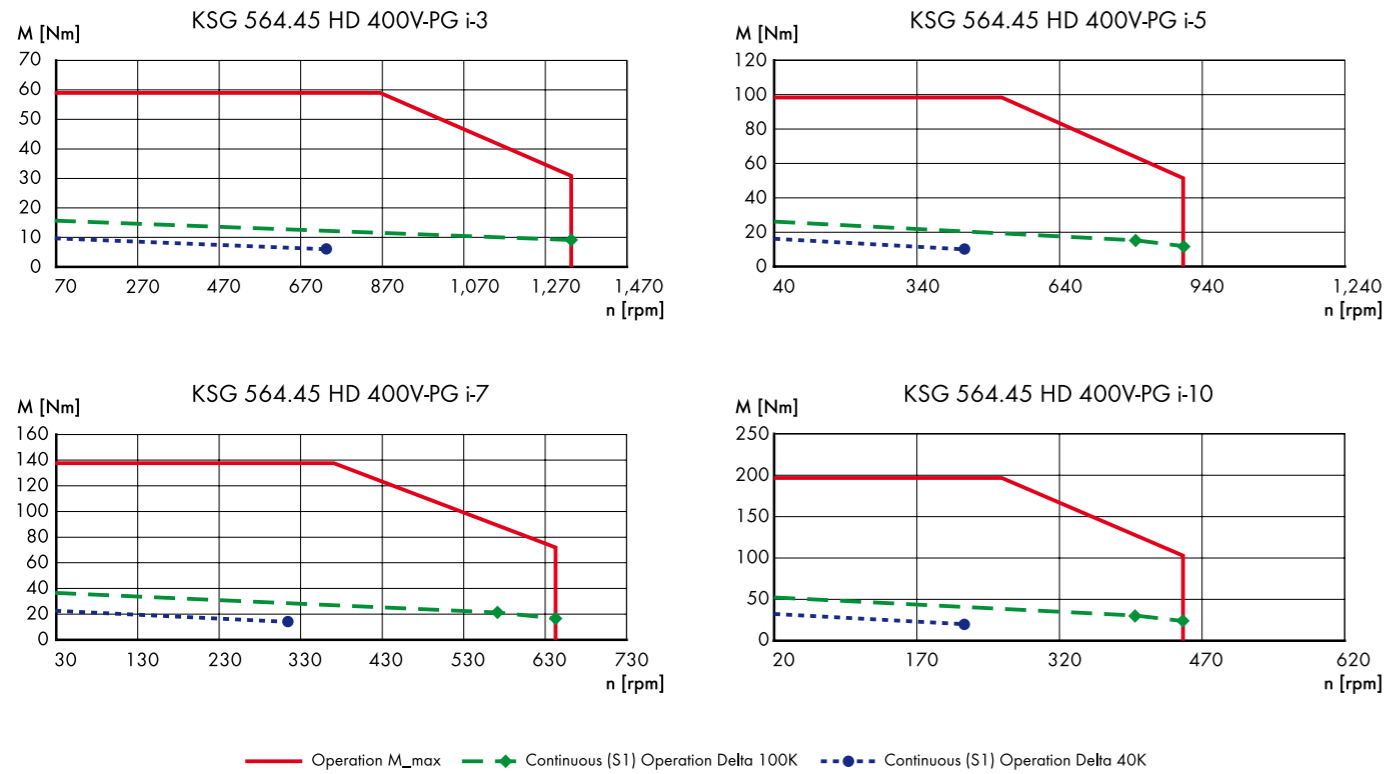
Motor KSG...		5612.25	5612.25	5612.25	5612.25	5616.25	5616.25	5616.25	5616.25
		HD.../ PG-I- 150.03	HD.../ PG-I- 150.05	HD.../ PG-I- 150.07	HD.../ PG-I- 150.10	HD.../ PG-I- 150.03	HD.../ PG-I- 150.05	HD.../ PG-I- 150.07	HD.../ PG-I- 150.10
Gear ratio	i	3	5	7	10	3	5	7	10
Rated torque	$M_N$ [Nm]	20.8	34.7	48.5	69.4	31.1	51.8	72.5	103.6
Rated speed	$n_N$ [U/min]	830	500	360	250	670	400	290	200
Rated power	$P_N$ [kW]	1.81	1.82	1.83	1.82	2.18	2.17	2.20	2.17
Stall torque	$M_0$ [Nm]**	38.5	64.1	89.8	128.3	48.2	80.3	112.4	160.6
Maximum speed	$n_{Max}$ [U/min]	1330	900	640	450	1330	900	640	450
Maximum torque	$M_{max}$ [Nm]***	146.2	243.7	341.1	400	183.0	305.0	426.9	400.0
Max. permissible braking torque (at max. 1000 cycles per hour)	$M_{BRE}$ [Nm]	108.0	180.0	252.0	360.0	108.0	180.0	252.0	360.0
Emergency stop torque	[Nm]	830	830	750	440	830	830	750	440
Radial force (S1 = 100 %/S3 = 60%/allowed 1000x)	$F_{Rmax}$ [N]	5000 / 6000 / 9000				5000 / 6000 / 9000			
Axial force (S1 = 100 %/S3 = 60%/allowed 1000x)	$F_{Amax}$ [N]	6500 / 9000 / 12000				6500 / 9000 / 12000			
Torsional backlash (Standard version)	$\varphi$ [arcmin]	≤5	≤5	≤5	≤5	≤5	≤5	≤5	≤5
Torsional backlash - reduced (Special version)	$\varphi_r$ [arcmin]	≤2	≤2	≤2	≤2	≤2	≤2	≤2	≤2
Moment of inertia of gearmotor (without brake)	$J_{GM}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	36.384	31.680	30.756	30.376	45.384	40.680	39.756	39.376
Moment of inertia of gearmotor (with brake)	$J_{GM+BR}$ [10 <sup>-4</sup> kgm <sup>2</sup> ]	43.384	38.680	37.756	37.376	52.384	47.680	46.756	46.376
Running noise at rated speed	L [dB(A)]	≤55	≤55	≤55	≤55	≤55	≤55	≤55	≤55
Weight	m [kg]*****	42.8	42.8	42.7	42.7	47.8	47.8	47.7	47.7
<b>With MD brake</b>									
Gear ratio		3	5	7	10	3	5	7	10
Rated speed	$n_N$ [1/min]	830	500	360	250	670	400	290	200
Rated power	$P_N$ [kW]	1.27	1.29	1.30	1.29	1.80	1.79	1.82	1.79
Rated torque	$M_N$ [Nm]	14.82	24.70	34.58	49.40	25.65	42.75	59.85	85.50
Standstill torque	$M_0$ [Nm]**	35.63	59.38	83.13	118.75	45.03	75.05	105.07	150.10
Weight	m [kg]*****	47.8	47.8	47.7	47.7	52.8	52.8	52.7	52.7
<b>With RQ-3 encoder</b>									
Gear ratio		3	5	7	10	3	5	7	10
Rated speed	$n_N$ [1/min]	830	500	360	250	670	400	290	200
Rated power	$P_N$ [kW]	1.14	1.14	1.15	1.14	1.62	1.61	1.64	1.61
Rated torque	$M_N$ [Nm]	13.11	21.85	30.59	43.70	23.09	38.48	53.87	76.95
Standstill torque	$M_0$ [Nm]**	35.06	58.43	81.80	116.85	43.61	72.68	101.75	145.35
Weight	m [kg]*****	45.8	45.8	45.7	45.7	50.8	50.8	50.7	50.7
<b>With MD brake &amp; RQ-3 encoder</b>									
Gear ratio		3	5	7	10	3	5	7	10
Rated speed	$n_N$ [1/min]	670	400	290	200	500	300	210	150
Rated power	$P_N$ [kW]	1.48	1.47	1.49	1.47	1.67	1.67	1.64	1.67
Rated torque	$M_N$ [Nm]	15.39	25.65	35.91	51.30	26.51	44.18	61.85	88.35
Standstill torque	$M_0$ [Nm]**	31.07	51.78	72.49	103.55	39.05	65.08	91.11	130.15
Weight	m [kg]*****	50.8	50.8	50.7	50.7	55.8	55.8	55.7	55.7

\* values at 20 °C / \*\* values at 200 rpm (motor) / \*\*\* short time operation max. 3 seconds / \*\*\*\*\* weight data without cables (cable weight see page 12)

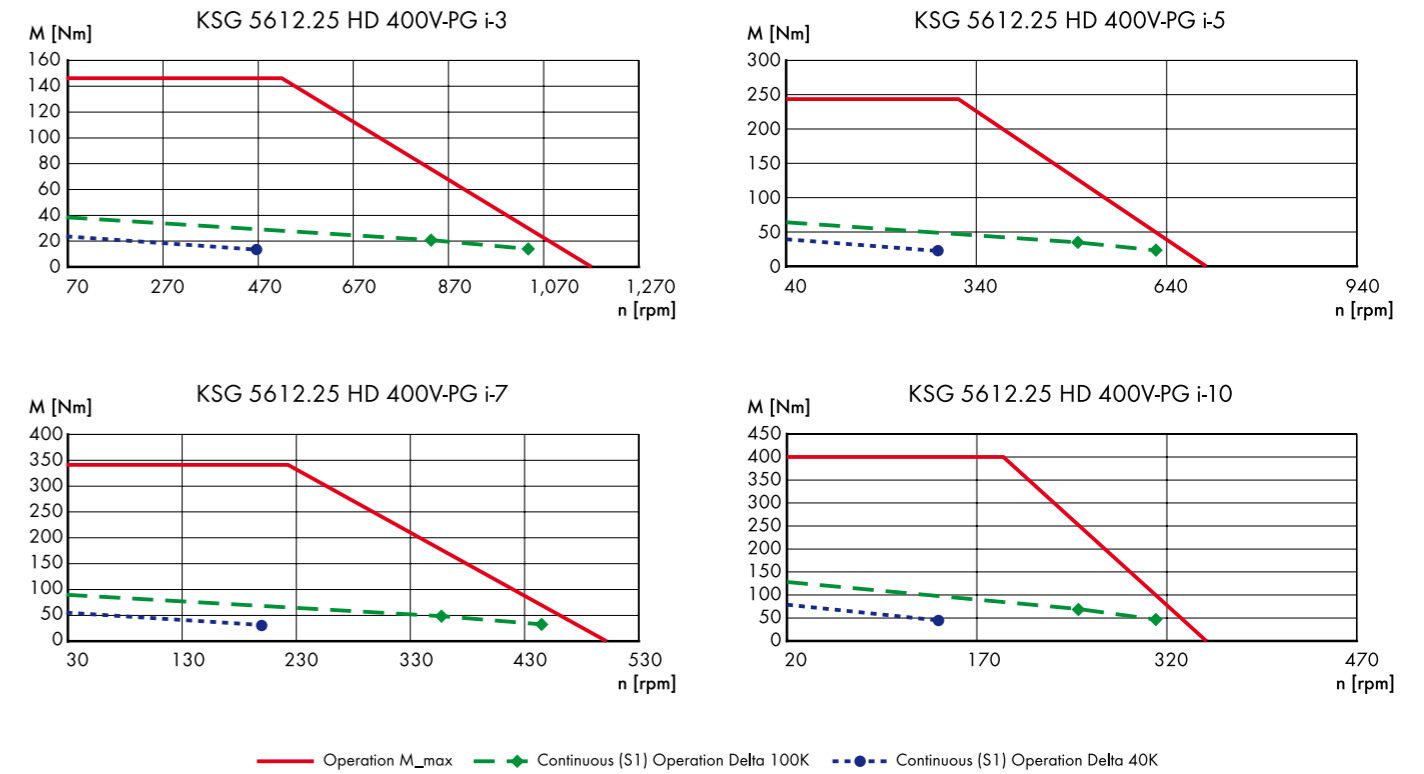
# Speed-Torque Diagrams - Gear Units

## KSG-HD Size 5

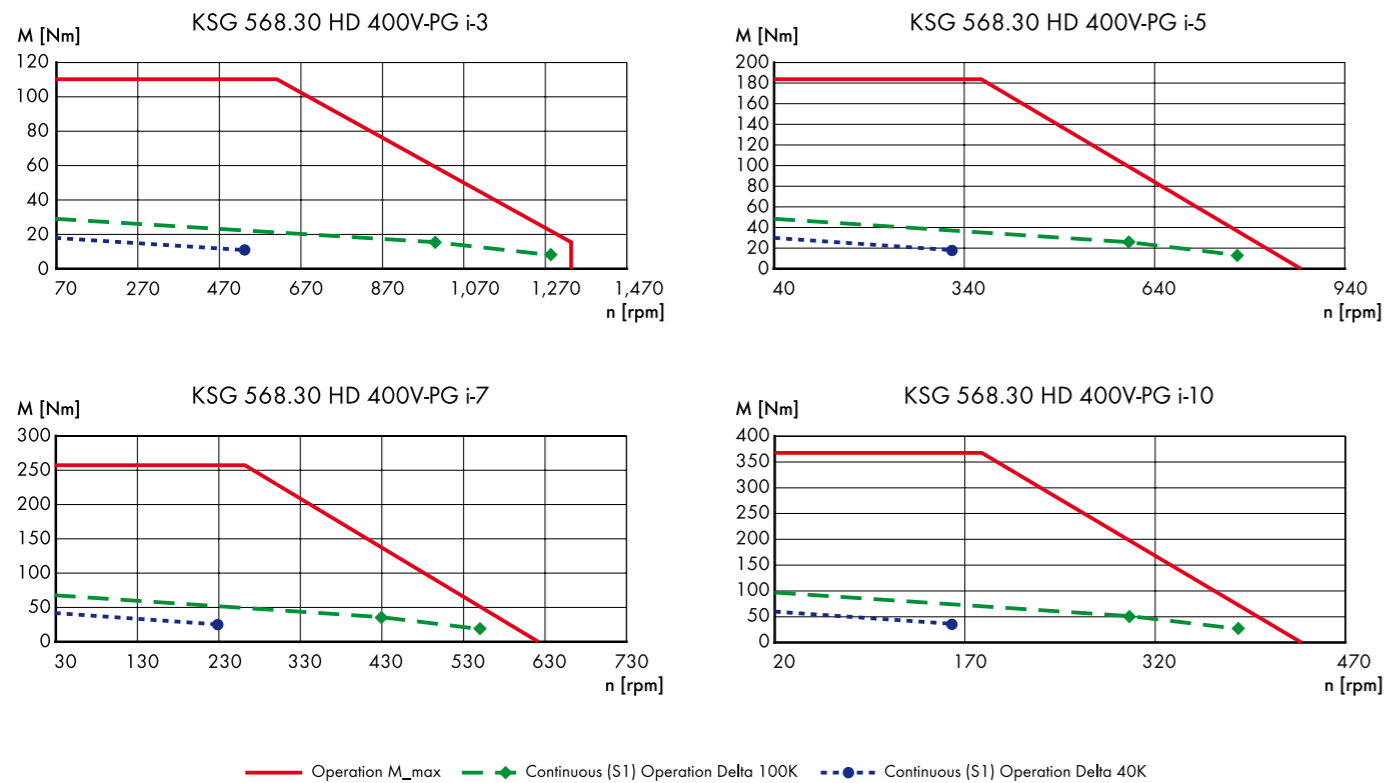
### Speed-Torque Curves KSG-HD 564



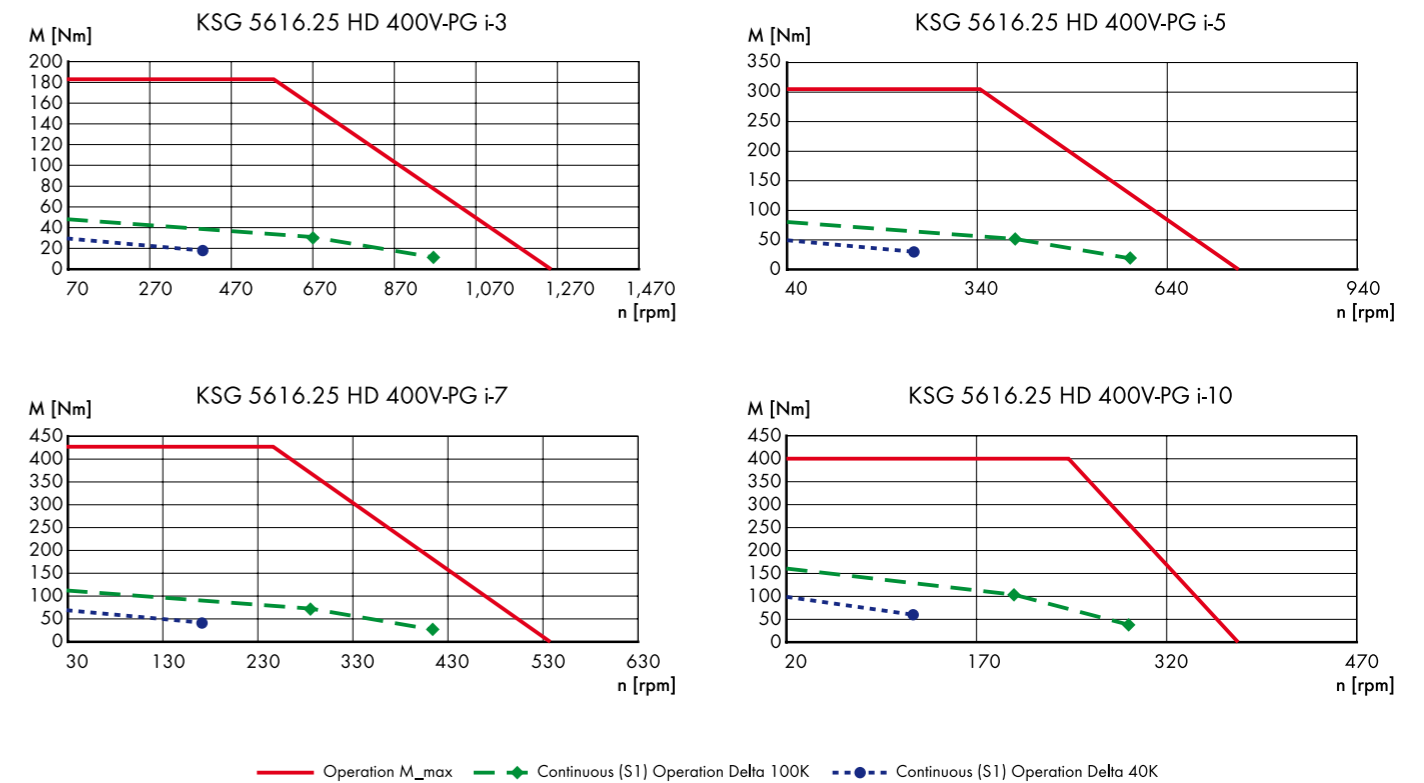
### Speed-Torque Curves KSG-HD 5612



### Speed-Torque Curves KSG-HD 568



### Speed-Torque Curves KSG-HD 5616





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The technical data and dimensions have been carefully compiled and are subject to change. We reserve the right to make corrections.

All data are subject to change to serve technical progress.

## Application Areas

- Food Industry
- Beverage Bottling
- Pharmaceutical Industry
- Process Engineering

## Product Focus

- Stainless Steel Motors and Gearboxes
- Magnetic Gearmotors
- Integrated Servo Gearmotors
- Torque Motors
- System Products
- Customized Motors



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