



be in motion

**Three-phase
synchronous motors**

DSC1-045-100

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Issue 11/2016

1. Three-phase synchronous motors DSC1-045-100




With its DSC 45-100 series, Baumüller is making the torque motor servo-ready. In developing this series, the focus was on improving ratings in order to achieve a higher torque density while also drastically reducing the volume of the unit. The typical servo speed range of up to 4000 min⁻¹ is, however, still covered.

The motors feature a smooth housing surface is extremely easy to mount and offer a high degree of protection.

1.1. General technical data

Version:	IM B5	Horizontal mounting acc. to EN 60034-7
	IM V1	Vertical mounting, shaft end at the bottom acc. to EN 60034-7
	IM V3	Vertical mounting, shaft end at the top acc. to EN 60034-7 (Note: In the case of IP64 shaft ends, protection against the ingress of water and dust must be ensured.)
Degree of protection:	IP64	Standard: without shaft seal ring, with opposing plugs fitted and fully enclosed terminal boxes
	IP65	Option: with shaft seal ring, with opposing plugs fitted and fully enclosed terminal boxes
	IP65	Without consideration of shaft bushing with opposing plugs fitted and fully enclosed terminal boxes
	IP67	Without consideration of the shaft bushing for IC410 and IC 3W7, fitted with mating connectors, not for motors with terminal box
Connection	Main connection	See chapter 3.6, 3.7 and 3.3.10
	Encoder connection	The main, encoder and fan connector can optionally be obtained in the speedtec version Size 1.5 exclusively in speedtec Version
	Brake	Connection in the main connection Note: If the main connection is speedtec design then all the other connection sockets will be implemented with speedtec sockets
	Temperature sensor	Standard in the main connection and optional in the encoder socket
Temperature sensor	PT1000, KTY84 – 130 optional	Linear temperature sensor for the analysis in the controller
Cooling type	IC 410	Size 045-100 surface-cooled without fan
	IC 416	Size 056-100 surface-cooled with fan
	IC 3W7	Size 071-100 water-cooled machine
Temperature rise	Δθ = 105 K	Insulation class F acc. to EN 60034
Environmental conditions for running	Class 3K3/3Z12 as per DIN EN 60721-3-3:1995, however: temperature range 0-40 °C	Represents 0 to 40 °C at 5 % to 85 % rel. humidity and an absolute humidity of 1 g/m ³ to 25 g/m ³ and an installation height up to approx. 1,400 m.
Environmental conditions for long-term storage	Class 1K2/1M1 DIN EN 60721-3-1:1995, however: temperature range -15-60 °C	Represents -15 to 60 °C at 5 % to 85 % rel. humidity and an absolute humidity of 1 g/m ³ to 25 g/m ³ ; at temperatures below 3 °C you should drain the cooling water

Environmental conditions for transport	Class 2K2/2M1 DIN EN 60721-3-2:1995, however: temperature range -15-60 °C	Represents -15 to 60 °C at 5 % to 85 % rel. humidity and an absolute humidity of 1 g/m ³ to 25 g/m ³ ; at temperatures below 3 °C you should drain the cooling water
Paint	Black matt	RAL 9005
Bearings	D end ND end	Standard: Ball bearings. Optional: Roller bearings (for size 56-100) Ball bearings, locating bearings
Bearing service life	L _{10h} 20.000h	Approximate value, rolling-contact bearings with long-term grease lubrication
Balance quality	A B	Acc. to DIN EN 60034-14 (VDE 0530 Part 14): 2004-09 On request (for ball bearing only)
True running	N R	Standard: Normal acc. to DIN 42955 Option: Reduced according to DIN 42955 (only at ball bearings)
Vibration-resistant up to	Radial 3 g Axial 0.5g	10 Hz to 100 Hz acc. to EN 60068-2-6 10 Hz to 100 Hz acc. to EN 60068-2-6
Flange	as per standard IEC standard	Centralization diameter: tolerance j6
Shaft end	Cylindrical	Smooth acc. to DIN 748 (also available with key DIN 6885) Centralization with female thread as per DIN 332 Form D
Holding brake	Option	Zero play permanent magnet brake
Speed actual value encoder	Resolver Sincos encoder	Standard, see Chapter 3.3 Optional, see Chapter 3.3
Approvals	CE; 	Standard

1.2. General safety instructions

The standard versions of the motors are unsuitable for operation in salty or aggressive atmospheres and are not suitable for erection outdoors. If, with an air-cooled motor, the air is contaminated with dust particles or similar substances in the surrounding air, which cannot be kept out efficiently by the filter elements in use, then the a conversation with the manufacturer is necessary to find a solution to the problem.

Suitable steps to reduce bearing currents are to be taken before commissioning the motor, depending on the application and system. The motor manufacturer must be consulted in this regard.

CAUTION:

With allocation of the motor in a specific protection class, it is a standardized brief test procedure. This can vary considerably depending on the actual environmental conditions at the site of installation.

Depending on the environmental conditions, such as the chemical consistency of the dust materials or the cooling media being used at the site of installation, evaluation of the suitability of the motor based on the type of protection is only possible to a limited extent (e.g. electrically conducting dust materials or aggressive coolant vapors or coolant fluids). In these cases the motor must additionally be protected by appropriate measures on the machine side.

1.3. Definition of ratings

1.3.1. Definitions of power ratings for air-cooled machines

The power ratings (torques) listed in the table applies to continuous operation (S1) at the rated speed and a maximum ambient temperature of 40°C, for machines installed below 1,000 m a.m.s.l.
 If motors are to be operated at an ambient temperature of more than 40°C, or altitudes above 1,000 m a.m.s.l., the required list power rating P_L (list torque M_r) is calculated from the product of factors k_1 and k_2 (specified in the table below) and the required power rating P (torque M).

Ambient temperature	40°C	45°C	50°C	55°C	60°C
Correction factor k_1	1	1.06	1.13	1.22	1.34
Altitude a.m.s.l. up to	1.000 m	2.000 m	3.000 m	4.000 m	5.000 m
Correction factor k_2	1	1.07	1.16	1.27	1.55

Design changes may be necessary in the case of ambient temperatures above 40°C and installation of motors in an enclosure: For this reason, it is imperative that the manufacturer is contacted.

If, in the case of an increasing site altitude above 1.000 m, the ambient temperature decreases by approx. 10°C per 1.000 m increase, no power correction is necessary (note the minimum operating temperature).

1.3.2. Definitions of power ratings for water-cooled machines

The power ratings (torques) that appear in the list apply to permanent operation S1 at nominal speed, provided the cooling circuit requirements for water-cooled motors are met!

The reduction factors included in the table below must be considered when operating DSC motors with higher coolant inlet temperatures:

Coolant inlet temperature	25 °C	30 °C	35 °C	40 °C	45 °C
Percentage of list performance (torque)	100 %	97 %	95 %	92 %	89 %

1.4. Water cooling

1.4.1. Coolant consistency

The coolant must satisfy the following specifications:

Conditions	Unit	Value
Maximum permitted system pressure	bar	6
Temperature of coolant - for motor	° C	10 to 25
pH value (at 20° C)	---	6.5 to 9
Overall hardness	mmol/l	1.43 to 2.5
Chloride - Cl ⁻	mg/l	< 200
Sulphate - SO ₄ ²⁻	mg/l	< 200
Oil	mg/l	< 1
Permitted particle size of solid foreign objects, particles (e.g. sand)	mm	< 0.1

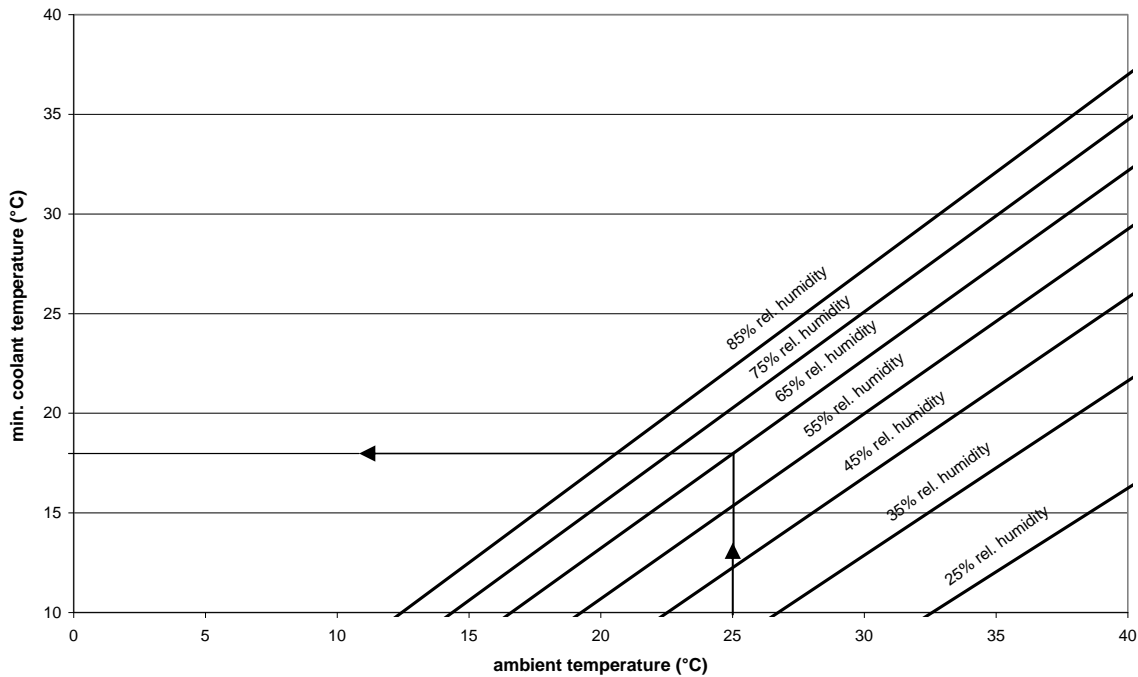
Clean water that is free of dirt and suspended matter must be used as a coolant.

Note:

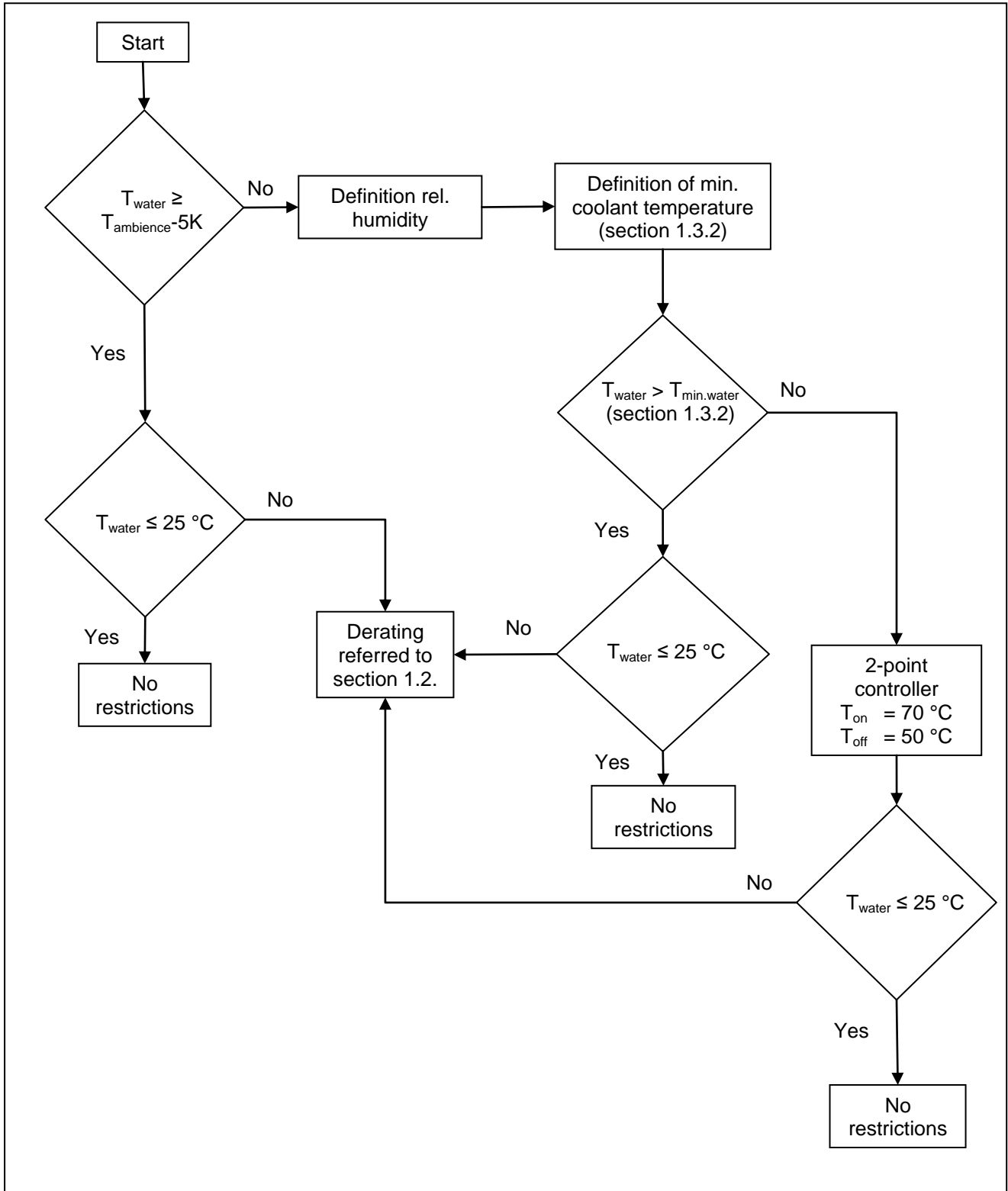
If the specific heat capacity is reduced by adding glycol for example, in dependence of the mixing ratio is a power reduction in the consequence, which is to be asked for at the manufacturer.

Compared to water cooling in the event of the use of hydraulic oil (HLP 46) a power rating reduction according to the overall length and speed of 20 to 25% arises for sizes 56-100 and 10% for size 132. The base is an inlet temperature of 35°C at both cooling mediums and an identical volume flow rate. The decrease of pressure is higher if using the hydraulic oil. Specific power ratings are available on request.

1.4.2. Min. coolant temperature against ambient temperature and humidity



The allowed coolant temperature depends on relative humidity and ambient temperature. For example with an ambient temperature of 25 °C and a relative humidity of 65% the minimum coolant temperature is 18 °C. Because these are limiting values on practical side a coolant temperature greater than 18 °C should be used. If this minimum coolant temperature will be under run the two- point controller of Baumüller drive must be used to avoid condensation.



Note:

The supply of cooling fluid must be interrupted to prevent condensation when storing for an extended period. In addition, at ambient temperatures <math>< 3^\circ\text{C}</math> and if the motor has not run for an extended period, drain the cooling fluid to prevent damage caused by frost. When using anti-freeze you need to consult the manufacturer.

1.4.3. Specifications for required coolant volume flows

Motor type	Volume flow [l/min]	Pressure decrease $\pm 15\%$ [bar]	Heating [K]	Max. coolant pressure [bar]	Connection (G internal thread)
DSC1-071K64W	5	0.33	3	6	stainless steel tube $\varnothing 8 \times 1$
DSC1-071S64W	5	0.4	5	6	stainless steel tube $\varnothing 8 \times 1$
DSC1-071M64W	5	0.5	6	6	stainless steel tube $\varnothing 8 \times 1$

Motor type	Volume flow [l/min]	Pressure decrease $\pm 15\%$ [bar]	Heating [K]	Max. coolant pressure [bar]	Connection (G internal thread)
DSC1-100K64W	5	0.34	3	6	stainless steel tube $\varnothing 8 \times 1$
DSC1-100S64W	5	0.4	5	6	stainless steel tube $\varnothing 8 \times 1$
DSC1-100M64W	5	0.46	7	6	stainless steel tube $\varnothing 8 \times 1$

Controlling the feed valve individually is possible, depending on the motor temperature measured by the temperature sensor.

Note:

The given cooling volume flows relate to the highest rotary speed of the relevant motor lengths. It is possible to make an individual cooling unit evaluation on the basis of the motors power loss ($P_V = P_N / \eta_N - P_N$). The cooling unit should be scaled so that its cooling performance matches the motor power loss and so that 100% of the waste heat is diffused by the unit.

Sufficient quantities of additives for corrosion and germ protection must be mixed in. The additive type and dosage are based on recommendations from the additive manufacturer and the prevailing ambient conditions. A lowering of the specific heating capacity leads to an output reduction in relation to the mixing ratio which should be enquired at the manufacturer.

1.4.4. Materials in the motor that make contact with the product

The following materials that make contact with the medium are used in the motor:

Cooling system: stainless steel

Water connections: According to standard, the motors are supplied with a stainless steel tube $\varnothing 8 \times 1$ without additional connection technology. The water connection with the John Guest - quick connector SM 040 808 S can be optionally provided (dia 8 by dia 8). Please include this option including the order code when ordering.

1.5. Winding insulation and heating

The motors are designed for operation on converters with intermediate circuit voltages up to 640 V.

Higher intermediate link voltages of ≤ 800 V are possible, if voltage spikes on the motor terminals are limited to < 1200 V by suitable filters in the motor supply line.

1.6. Explanation of motor data

n_N	Rated speed [rpm]
M_0	Nominal torque [Nm] with speeds ≥ 1 [rpm] without time limit
I_0	nominal current [A] with speeds ≥ 1 [rpm] without time limit, I_0 is the r.m.s. value
$M_{0,max}$	Maximum static torque [Nm] with maximum current [A] and speed = 0, momentarily
$I_{0,max}$	Static current [A] at $M_{0,max}$; $I_{0,max}$ is the effective value
P_N	Rated output [kW] with M_N and n_N (see Performance definition)
M_N	Rated torque [Nm]
I_N	Rated effective current [A]
$k_{E/cold}$	Voltage constant (EMF) to [V per 1000 rpm]
f_N	Rated frequency [Hz]
J	Rotor inertia incl. resolver without holding brake [kgm ²]
m	Motor mass [kg]

When the converter is operating, the specified rated outputs and torques at the rated speed are achieved with a clocking frequency of ≥ 4 kHz in the power divider. We recommend a cycle frequency of > 6 kHz. All converters scheduled for use must have the option of field weakening as a mandatory requirement.

The **sizemaXX** drive configurator is available at www.baumueller.de for designing the motors and the overall drive system.

1.7. Type key

DSC1 -XXXXXXXX-XX-XX-XXX-XXX-X-XX-X-XXX	Type
DSC1- <u>XXX</u> XXXXXXXX-XX-XX-XXX-XXX-X-XX-X-XXX	Overall size 045 056 071 100
DSC1-XXX <u>XX</u> XXXX-XX-XX-XXX-XXX-X-XX-X-XXX	Overall length KO SO MO
DSC1-XXXXXX <u>XX</u> X-XX-XX-XXX-XXX-X-XX-X-XXX	Degree of protection 64 - Degree of protection IP64 65 - Degree of protection IP65
DSC1-XXXXXXXX <u>X</u> -XX-XX-XXX-XXX-X-XX-X-XXX	Cooling type U - Without fan O - With fan, 230 VAC supply voltage W – Water cooling
DSC1-XXXXXXXX- <u>XX</u> -XX-XXX-XXX-X-XX-X-XXX	Nominal speed class 10 - 1000 rmp 20 - 2000 rmp 30 - 3000 rmp 40 - 4000 rmp

DSC1-XXXXXXXX-XX- <u>XX</u> -XXX-XXX-X-XX-X-XXX	Uzk_ DC 54 - 540 V
DSC1-XXXXXXXX-XX-XX- <u>XXX</u> -XXX-X-XX-X-XXX	Encoder type O – No encoder A - Resolver B - SEK52 C - SEL52 D - SRS50 E - SRM50 F - ECN1313 G - EQN1325 H - ECN1325 I - EQN1337 M - Resolver (Safety) N - SRS50-S (Safety) Q - SRM50-S (Safety) S - SKS36-S (Safety) U - SKM36-S (Safety) X - EQI1331 Y - ECI1319 5 - ECN1325-S (Safety) 6 - EQN1337-S (Safety) g - EFS50 Hiperface DSL (21 bit) h - EFM50 Hiperface DSL (21 bit)
DSC1-XXXXXXXX-XX-XX- <u>XX</u> -XXX-X-XX-X-XXX	Brake O – Without brake B – With PE-brake
DSC1-XXXXXXXX-XX-XX- <u>XXX</u> -XXX-X-XX-X-XXX	Shaft options A - Smooth shaft B - With parallel key
DSC1-XXXXXXXX-XX-XX-XXX- <u>XXX</u> -X-XX-X-XXX	Main connection type K – Terminal box (with KTY) T – Terminal box (KTY on encoder socket) M – Terminal box (with PT1000) N – Terminal box (PT1000 on encoder socket) S – Terminal box M23-thread (KTY on main connection) P – Connector socket M23-thread (KTY on encoder socket) G – Connector socket speedtec (KTY on main connection) H – Connector socket speedtec (KTY on encoder socket) B – Connector socket speedtec (PT1000 on main connection) D – Connector socket speedtec (PT1000 on the encoder socket)

DSC1-XXXXXXXX-XX-XX-XXX- <u>XX</u> -X-XX-X-XXX	<p>Main outlet port</p> <p>T - Top L - Left with a view toward D-side on shaft end R - Right with a view toward D-side on shaft end D - DE (D-side) N - NDE (N-side) P - Pivoted</p>
DSC1-XXXXXXXX-XX-XX-XXX- <u>X</u> -X-XX-X-XXX	<p>Encoder connection outlet</p> <p>O – Without encoder L - Left with a view toward D-side on shaft end R - Right with a view toward D-side on shaft end D - DE (D-side) N - NDE (N-side) P – Pivoted</p>
DSC1-XXXXXXXX-XX-XX-XXX-XXX- <u>X</u> -XX-X-XXX	<p>Bearing</p> <p>K - Ball bearing D-side R - Roller bearing D-side</p>
DSC1-XXXXXXXX-XX-XX-XXX-XXX-X- <u>X</u> -X-XXX	<p>Vibration level</p> <p>A - Vibration level A B - Vibration level B</p>
DSC1-XXXXXXXX-XX-XX-XXX-XXX-X- <u>X</u> -X-XXX	<p>True running</p> <p>N - Normal R - Reduced</p>
DSC1-XXXXXXXX-XX-XX-XXX-XXX-X-XX- <u>X</u> -XXX	<p>Gear box / pump mounting</p> <p>O - Without transmission mount and without pump A - BPE - Gear box B - BPEF - Gear box C - BPEA - Gear box D - BPN - Gear box E - BPNA - Gear box F - BPNF - Gear box G - BPV - Gear box H - BPVF - Gear box</p>
DSC1-XXXXXXXX-XX-XX-XXX-XXX-X-XX-X- <u>XXX</u>	<p>Special version</p> <p>000 - No special version AJ1 - Water connection with connector OS1 – Fan with 115 VAC supply voltage OS2 - Fan with 24 VDC supply voltage XXX - Special version (internal coding)</p> <p>Special coding is made alphanumeric</p>

Example configuration: DSC1-071SO64O-10-54-AOA-BPP-K-AN-O-000

2. Technical data

2.1. DSC1-045

3 AC 400 V mains voltage for converters with unregulated supply

Motor type	Nom. speed	Stand-still torque ¹⁾	Stand-still current ¹⁾	max. static torque	Max. static current	Rated output ¹⁾	Rated torque ¹⁾	Rated current ¹⁾	Voltage constant	Rated frequency	Rotor inertia (motor) ²⁾	Weight ³⁾
	n_N min^{-1}	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$k_{E/cold}$ $\text{V}/1000\text{r}/\text{min}$	f_N Hz	J kgcm^2	m kg
DSC1-045K64U20-5	2000	2.7	1.3	8.7	4.9	0.5	2.5	1.3	140	166.7	1.4	4
DSC1-045S64U20-5	2000	4.5	2.0	18	8.9	0.9	4.1	1.9	154	166.7	2.3	5.5
DSC1-045M64U20-5	2000	6.2	2.6	26	12.7	1.1	5.4	2.3	162	166.7	3.2	7
DSC1-045K64U30-5	3000	2.7	1.9	8.7	7	0.7	2.3	1.6	98.5	250.0	1.4	4
DSC1-045S64U30-5	3000	4.5	2.7	18	12.4	1.1	3.5	2.3	111	250.0	2.3	5.5
DSC1-045M64U30-5	3000	6.2	3.7	26	18.2	1.3	4.2	2.6	113	250.0	3.2	7
DSC045K64U40-5	4000	2.7	2.4	8.7	8.9	0.8	1.9	1.8	76.9	333.3	1.4	4
DSC1-045S64U40-5	4000	4.5	3.5	17	15.9	1.1	2.7	2.3	86.3	333.3	2.3	5.5
DSC1-045M64U40-5	4000	6.2	4.7	26	23.3	1.0	2.5	2.1	88.4	333.3	3.2	7

¹⁾ Coil overtemperature $\Delta T < 105\text{K}$; direct flange mounting (mounting plate 250 x 250 x 10 mm)

²⁾ Rotor inertia moment with PE brake: +1.0 kgcm^2

³⁾ Weight with PE brake: +1.0 kg

2.2. DSC1-056

DSC1-056..64 U.. (without fan)

3 AC 400 V mains voltage for converters with unregulated supply

Motor type	Nom. speed	Stand-still torque ¹⁾	Stand-still current ¹⁾	max. static torque	Max. static current	Rated output ¹⁾	Rated torque ¹⁾	Rated current ¹⁾	Voltage constant	Rated frequency	Rotor inertia (motor) ²⁾	Weight ³⁾
	n_N min ⁻¹	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$k_{E/cold}$ V/1000r/min	f_N Hz	J kgcm ²	m kg
DSC1-056K64U10-5	1000	6.2	1.62	16	5	0.6	6.1	1.6	259	83.3	4.4	7
DSC1-056S64U10-5	1000	11	2.4	32	8.6	1.0	9.9	2.2	298	83.3	7.5	9.5
DSC1-056M64U10-5	1000	14	3	49	12.2	1.5	14	3.0	316	83.3	10.6	12
DSC1-056K64U20-5	2000	6.2	3.0	16	9	1.2	5.8	2.8	142	166.7	4.4	7
DSC1-056S64U20-5	2000	11	4.4	32	15.9	1.9	8.9	3.8	161	166.7	7.5	9.5
DSC1-056M64U20-5	2000	14	5.7	49	22.9	2.6	12	5.1	168	166.7	10.6	12
DSC1-056K64U30-5	3000	6.2	4.2	16	12.9	1.7	5.4	3.8	99.6	250.0	4.4	7
DSC1-056S64U30-5	3000	11	6.3	32	22.9	2.4	7.7	4.8	112	250.0	7.5	9.5
DSC1-056M64U30-5	3000	14	8.2	49	32.7	3.0	9.6	5.7	118	250.0	10.6	12
DSC1-056K64U40-5	4000	6.2	5.4	16	16.4	2	4.8	4.3	78.3	333.3	4.4	7
DSC1-056S64U40-5	4000	11	8.1	32	29.4	2.6	6.3	5.1	87.3	333.3	7.5	9.5

¹⁾ Coil overtemperature $\Delta T < 105K$; direct flange mounting (mounting plate 450 x 400 x 30 mm)

²⁾ Rotor inertia moment with PE brake: +2.9 kgcm²

³⁾ Weight with PE brake: +2.0 kg

DSC1-056..64 O.. (with fan)

3 AC 400 V mains voltage for converters with unregulated supply

Motor type	Nom. speed	Stand-still torque ¹⁾	Stand-still current ¹⁾	max. static torque	Max. static current	Rated output ¹⁾	Rated torque ¹⁾	Rated current ¹⁾	Voltage constant	Rated frequency	Rotor inertia (motor) ²⁾	Weight ³⁾
	n_N min ⁻¹	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$k_{E/cold}$ V/1000r/min	f_N Hz	J kgcm ²	m kg
DSC1-056K64O10-5	900	7.2	1.91	16	5	0.7	7.2	1.9	259	75.0	4.4	10
DSC1-056S64O10-5	900	14	3.1	32	8.6	1.3	14	3.1	298	75.0	7.5	12.5
DSC1-056M64O10-5	900	21	4.4	49	12.2	1.9	20	4.4	316	75.0	10.6	15
DSC1-056K64O20-5	1900	7.2	3.5	16	9	1.4	7.1	3.4	142	158.3	4.4	10
DSC1-056S64O20-5	1900	14	5.8	32	15.9	2.6	13	5.6	161	158.3	7.5	12.5
DSC1-056M64O20-5	1800	21	8.3	49	22.9	3.8	20	8.1	168	150.0	10.6	15
DSC1-056K64O30-5	2800	7.2	4.9	16	12.9	2.0	6.9	4.8	99.6	233.3	4.4	10
DSC1-056S64O30-5	2800	14	8.3	32	22.9	3.7	13	7.8	112	233.3	7.5	12.5
DSC1-056M64O30-5	2600	21	11.9	49	32.7	5.3	19	11.3	118	216.7	10.6	15
DSC1-056K64O40-5	3700	7.2	6.3	16	16.4	2.6	6.7	6	78.3	308.3	4.4	10
DSC1-056S64O40-5	3700	14	10.7	32	29.4	4.7	12	9.5	87.3	308.3	7.5	12.5

¹⁾ Coil overtemperature $\Delta T < 105K$; direct flange mounting (mounting plate 450 x 400 x 30 mm)

²⁾ Rotor inertia moment with PE brake: +2.9 kgcm²

³⁾ Weight with PE brake: +2.0 kg

2.3. DSC1-071

DSC1-071..64 U.. (without fan)

3 AC 400 V mains voltage for converters with unregulated supply

Motor type	Nom. speed	Stand-still torque ¹⁾	Stand-still current ¹⁾	max. static torque	Max. static current	Rated out-put ¹⁾	Rated torque ¹⁾	Rated current ¹⁾	Voltage constant	Rated frequency	Rotor inertia (motor) ²⁾	Weight ³⁾
	n_N min ⁻¹	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$k_{E/cold}$ V/10001/min	f_N Hz	J kgcm ²	m kg
DSC1-071K64U10-5	1000	12	3.1	27	8.6	1.2	12	3.1	260	83.3	12.6	11.5
DSC1-071S64U10-5	1000	22	4.8	55	14.7	2.2	21	4.7	303	83.3	21.8	16.5
DSC1-071M64U10-5	1000	29	6	82	20.9	2.9	27	5.8	320	83.3	31.1	21.5
DSC1-071K64U20-5	2000	12	5.8	27	15.9	2.3	11	5.4	140	166.7	12.6	11.5
DSC1-071S64U20-5	2000	22	9.1	55	27.8	4.0	19	8.3	160	166.7	21.8	16.5
DSC1-071M64U20-5	2000	29	11.4	82	39.3	5.1	24	9.8	170	166.7	31.1	21.5
DSC1-071K64U30-5	3000	12	8.3	27	22.7	3.1	10	7.0	98.2	250.0	12.6	11.5
DSC1-071S64U30-5	3000	22	13.7	55	41.8	5.2	16	10.6	107	250.0	21.8	16.5
DSC1-071M64U30-5	3000	29	16.4	82	57	6.2	20	11.7	117	250.0	31.1	21.5
DSC1-071K64U40-5	4000	12	11.1	27	30.4	3.6	8.6	8.2	73.2	333.3	12.6	11.5
DSC1-071S64U40-5	4000	22	16.8	55	51	5.2	12	10.1	86.5	333.3	21.8	16.5

¹⁾ Coil overtemperature $\Delta T < 105K$; direct flange mounting (mounting plate 450 x 400 x 30 mm³⁾)

²⁾ Rotor inertia moment with PE brake: +7.9 kgcm²

³⁾ Weight with PE brake: +3.0 kg

DSC1-071..64 O.. (with fan)

3 AC 400 V mains voltage for converters with unregulated supply

Motor type	Nom. speed	Stand-still torque ¹⁾	Stand-still current ¹⁾	max. static torque	Max. static current	Rated out-put ¹⁾	Rated torque ¹⁾	Rated current ¹⁾	Voltage constant	Rated frequency	Rotor inertia (motor) ²⁾	Weight ³⁾
	n_N min ⁻¹	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$k_{E/cold}$ V/10001/min	f_N Hz	J kgcm ²	m kg
DSC1-071K64O10-5	1000	16	4.2	27	8.6	1.6	15	4.1	260	83.3	12.6	15
DSC1-071S64O10-5	900	29	6.5	55	14.7	2.7	29	6.6	303	75.0	21.8	20
DSC1-071M64O10-5	900	40	8.5	82	20.9	3.6	39	8.2	320	75.0	31.1	25
DSC1-071K64O20-5	2000	16	7.7	27	15.9	3.1	15	7.4	140	166.7	12.6	15
DSC1-071S64O20-5	1800	29	12.4	55	27.8	5.3	28	12.1	160	150.0	21.8	20
DSC1-071M64O20-5	1800	40	16	82	39.3	7.0	37	14.9	170	150.0	31.1	25
DSC1-071K64O30-5	2900	16	11	27	22.7	4.4	14	10.2	98.2	241.7	12.6	15
DSC1-071S64O30-5	2800	29	18.6	55	41.8	7.5	26	16.6	107	233.3	21.8	20
DSC1-071M64O30-5	2700	40	23.1	82	57	10.0	35	20.7	117	225.0	31.1	25
DSC1-071K64O40-5	3900	16	14.8	27	30.4	5.6	14	13.1	73.2	325.0	12.6	15
DSC1-071S64O40-5	3600	29	22.8	55	51	8.7	23	18.3	86.5	300.0	21.8	20

¹⁾ Coil overtemperature $\Delta T < 105K$; direct flange mounting (mounting plate 450 x 400 x 30 mm)

²⁾ Rotor inertia moment with PE brake: +7.9 kgcm²

³⁾ Weight with PE brake: +3.0 kg

DSC1-071..64 W.. (water cooled)

3 AC 400 V mains voltage for converters with unregulated supply

Motor type	Nom. speed	Stand-still torque ¹⁾	Stand-still current ¹⁾	max. static torque	Max. static current	Rated output ¹⁾	Rated torque ¹⁾	Rated current ¹⁾	Voltage constant	Rated frequency	Rotor inertia (motor) ²⁾	Weight ³⁾
	n_N min ⁻¹	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$k_{E/cold}$ V/10001/min	f_N Hz	J kgcm ²	m kg
DSC1-071KO64W-10-54	900	20	5.4	27	8.6	1.8	20	5.4	260	75.0	12.6	11.7
DSC1-071SO64W-10-54	750	39	9.1	55	14.7	3.0	39	9.1	303	62.5	21.8	16.1
DSC1-071MO64W-10-54	800	58	12.8	82	20.9	4.8	57	12.7	320	66.7	31.1	20.4
DSC1-071KO64W-20-54	1800	20	10.0	27	15.9	3.6	19	9.9	140	150.0	12.6	11.7
DSC1-071SO64W-20-54	1600	39	17.3	55	27.8	6.4	38	17.0	160	133.3	21.8	16.1
DSC1-071MO64W-20-54	1600	58	24.1	82	39.3	9.5	57	23.6	170	133.3	31.1	20.4
DSC1-071KO64W-30-54	2700	20	14.2	27	22.7	5.4	19	13.9	98.2	225.0	12.6	11.7
DSC1-071SO64W-30-54	2400	39	25.9	55	41.8	9.5	38	25.2	107	200.0	21.8	16.1
DSC1-071MO64W-30-54	2400	58	34.8	82	57	14.0	56	33.6	117	200.0	31.1	20.4
DSC1-071KO64W-40-54	3600	20	19.1	27	30.4	7	19	18.1	73.2	300	12.6	11.7
DSC1-071SO64W-40-54	3100	39	31.9	55	51	12	37	30.5	86.5	258.3333	21.8	16.1

¹⁾ Coil overtemperature $\Delta T < 105K$; direct flange mounting (mounting plate 450 x 400 x 30 mm)

²⁾ Rotor inertia moment with PE brake: +7.9 kgcm²

³⁾ Weight with PE brake: +3.0 kg

2.4. DSC1-100

DSC1-100..64 U.. (without fan)

3 AC 400 V mains voltage for converters with unregulated supply

Motor type	Nom. speed	Stand-still torque ¹⁾	Stand-still current ¹⁾	max. static torque	Max. static current	Rated output ¹⁾	Rated torque ¹⁾	Rated current ¹⁾	Voltage constant	Rated frequency	Rotor inertia (motor) ²⁾	Weight ³⁾
	n_N min ⁻¹	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$k_{E/cold}$ V/10001/min	f_N Hz	J kgcm ²	m kg
DSC1-100KO64U-10-54	1000	23	6.9	42	14.5	2.3	22	6.4	231	83.3	45.8	18.5
DSC1-100SO64U-10-54	1000	43	9.9	85	22.8	4.2	40	9.2	295	83.3	73.5	25.7
DSC1-100MO64U-10-54	1000	59	13	125	33.2	5.8	55	12.1	304	83.3	101.2	33.0
DSC1-100KO64U-20-54	2000	23	13.4	42	28.3	4.0	19	10.9	119	166.7	45.8	18.5
DSC1-100SO64U-20-54	2000	43	19.5	84	44.9	7.5	36	16.0	150	166.7	73.5	25.7
DSC1-100MO64U-20-54	2000	59	25	125	64	10.0	48	20.1	158	166.7	101.2	33.0
DSC1-100KO64U-30-54	3000	23	19	42	40.2	4.8	15	12.3	83.6	250.0	45.8	18.5
DSC1-100SO64U-30-54	3000	43	27.7	84	64	9.3	29	18.8	106	250.0	73.5	25.7

¹⁾ Coil overtemperature $\Delta T < 105K$; direct flange mounting (mounting plate 450 x 400 x 30 mm)

If you are using a DSC100..64U.. with absolute value signal encoders, you need to reduce the torques by 1.0 Nm (DSC 100 K), 2.0 Nm (DSC 100 S) or 3.0 Nm (DSC 100 M).

²⁾ Rotor inertia moment with PE brake: +17.6 kgcm²

³⁾ Weight with PE brake: +6.0 kg

DSC1-100..64 O.. (with fan)

3 AC 400 V mains voltage for converters with unregulated supply

Motor type	Nom. speed	Stand-still torque ¹⁾	Stand-still current ¹⁾	max. static torque	Max. static current	Rated output ¹⁾	Rated torque ¹⁾	Rated current ¹⁾	Voltage constant	Rated frequency	Rotor inertia (motor) ²⁾	Weight ³⁾
	n_N min ⁻¹	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$k_{E/cold}$ V/10001/min	f_N Hz	J kgcm ²	m kg
DSC1-100KO64O-10-54	1000	27	8.1	42	14.5	2.7	26	7.8	231	83.3	45.8	22.4
DSC1-100SO64O-10-54	900	53	12.3	85	22.8	4.7	49	11.4	295	75.0	73.5	29.6
DSC1-100MO64O-10-54	900	79	17.6	125	33.2	7.0	74	16.6	304	75.0	101.2	36.9
DSC1-100KO64O-20-54	2000	27	15.8	42	28.3	5.2	25	14.4	119	166.7	45.8	22.4
DSC1-100SO64O-20-54	1800	53	24.2	84	44.9	8.4	45	20.2	150	150.0	73.5	29.6
DSC1-100MO64O-20-54	1800	79	33.8	125	64	12.7	68	29.3	158	150.0	101.2	36.9
DSC1-100KO64O-30-54	3000	27	22.5	42	40.2	7.3	23	18.9	83.6	250.0	45.8	22.4
DSC1-100SO64O-30-54	2800	53	34.3	84	64	11.0	38	24.3	106	233.3	73.5	29.6

¹⁾ Coil overtemperature $\Delta T < 105K$; direct flange mounting (mounting plate 450 x 400 x 30 mm)

²⁾ Rotor inertia moment with PE brake: +17.6 kgcm²

³⁾ Weight with PE brake: +6.0 kg

DSC1-100..64 W.. (water cooled)

3 AC 400 V mains voltage for converters with unregulated supply

Motor type	Nom. speed	Stand-still torque ¹⁾	Stand-still current ¹⁾	max. static torque	Max. static current	Rated output ¹⁾	Rated torque ¹⁾	Rated current ¹⁾	Voltage constant	Rated frequency	Rotor inertia (motor) ²⁾	Weight ³⁾
	n_N min ⁻¹	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$k_{E/cold}$ V/10001/min	f_N Hz	J kgcm ²	m kg
DSC1-100KO64W-10-54	1000	34	10.5	42	14.5	3.5	33	10.3	231	83.3	45.8	21.2
DSC1-100SO64W-10-54	850	69	17.0	85	22.8	6.1	68	16.6	295	70.8	73.5	29.2
DSC1-100MO64W-10-54	850	105	25.5	125	33.2	9.3	105	25.0	304	70.8	101.2	37.2
DSC1-100KO64W-20-54	2000	34	20.4	42	28.3	6.8	32	19.5	119	166.7	45.8	21.2
DSC1-100SO64W-20-54	1800	69	33.5	84	44.9	13.0	67	32.0	150	150.0	73.5	29.2
DSC1-100MO64W-20-54	1700	105	48.9	125	64	18.0	100	46.7	158	141.7	101.2	37.2
DSC1-100KO64W-30-54	3000	34	29	42	40.2	10.0	32	27.2	83.6	250.0	45.8	21.2
DSC1-100SO64W-30-54	2600	69	47.4	84	64	18.0	65	44.4	106	216.7	73.5	29.2

¹⁾ Coil overtemperature $\Delta T < 105K$; direct flange mounting (mounting plate 450 x 400 x 30 mm)

²⁾ Rotor inertia moment with PE brake: +17.6 kgcm²

³⁾ Weight with PE brake: +6.0 kg

2.5. Radial force diagrams

All bearings are designed for a service life of 20,000 h L_{10h} . The load values specified below may thereby not be exceeded. The permissible radial forces F_R are valid only for the horizontal installation of the motor without additional axial forces.

Furthermore, the specified average speeds must be adhered to reach the grease consumption period of 20,000 h under the following conditions:

- low-vibration applications
- horizontal installation
- oscillatory bearing motion in which at least one pivot angle of 180° is performed
- Continuous bearing temperatures $<120^\circ \text{ C}$.

Axial loading on the motor shaft is generally not permitted.

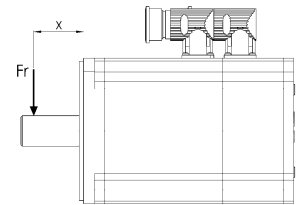
No axial forces may develop when mounting clutches, pulleys, etc. on the motor shaft!

2.5.1. Sample diagram

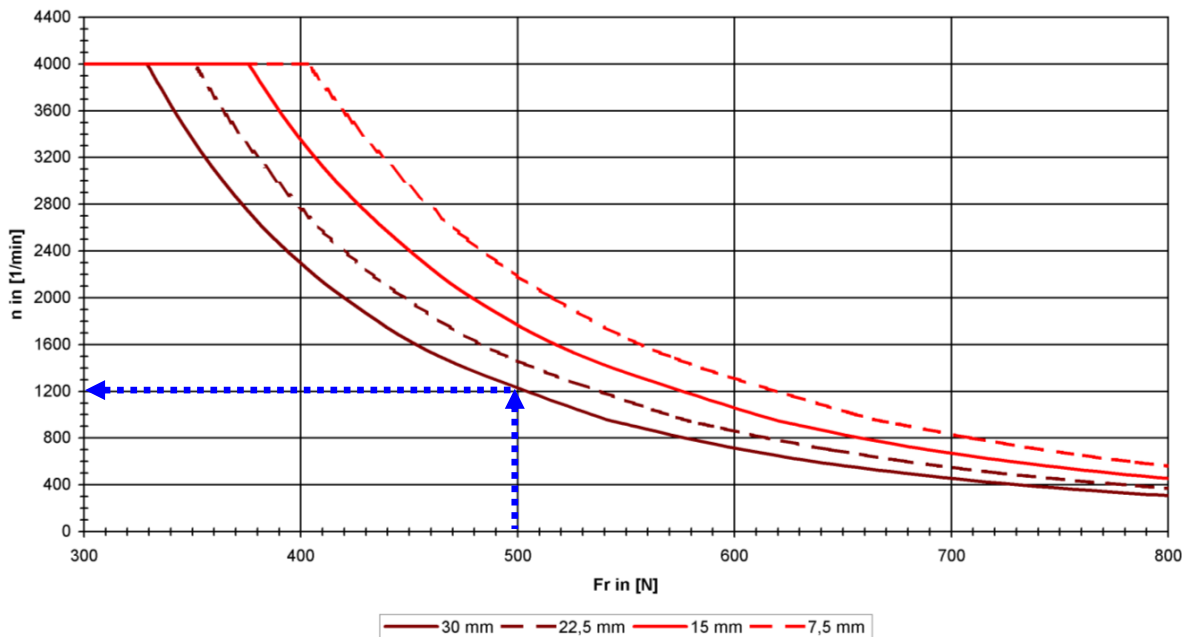
Sample diagrams:

Driving forces $x = 30 \text{ mm}$ from the shaft shoulder

Bearing service life 20,000 h, shaft with parallel key groove



DSC 45
Kugellager / Ball bearing

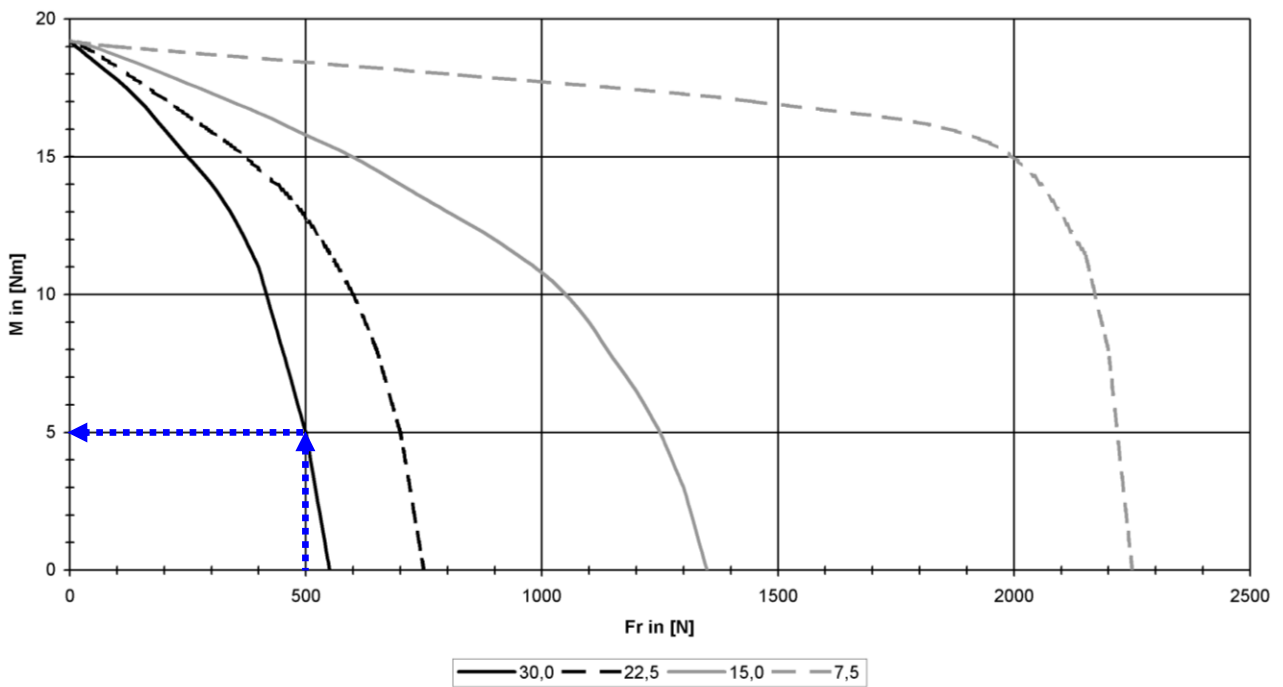


Explanation of the sample chart:

The potential maximum speed of the bearing can be calculated via radial force F_r of the application in characteristic "ball bearing".

At a radial force of 500 N with a driving force point of $x = 30 \text{ mm}$ from the shaft shoulder, a maximum speed of 1200 rpm results.

DSC 45
Welle mit Nut / Shaft with key

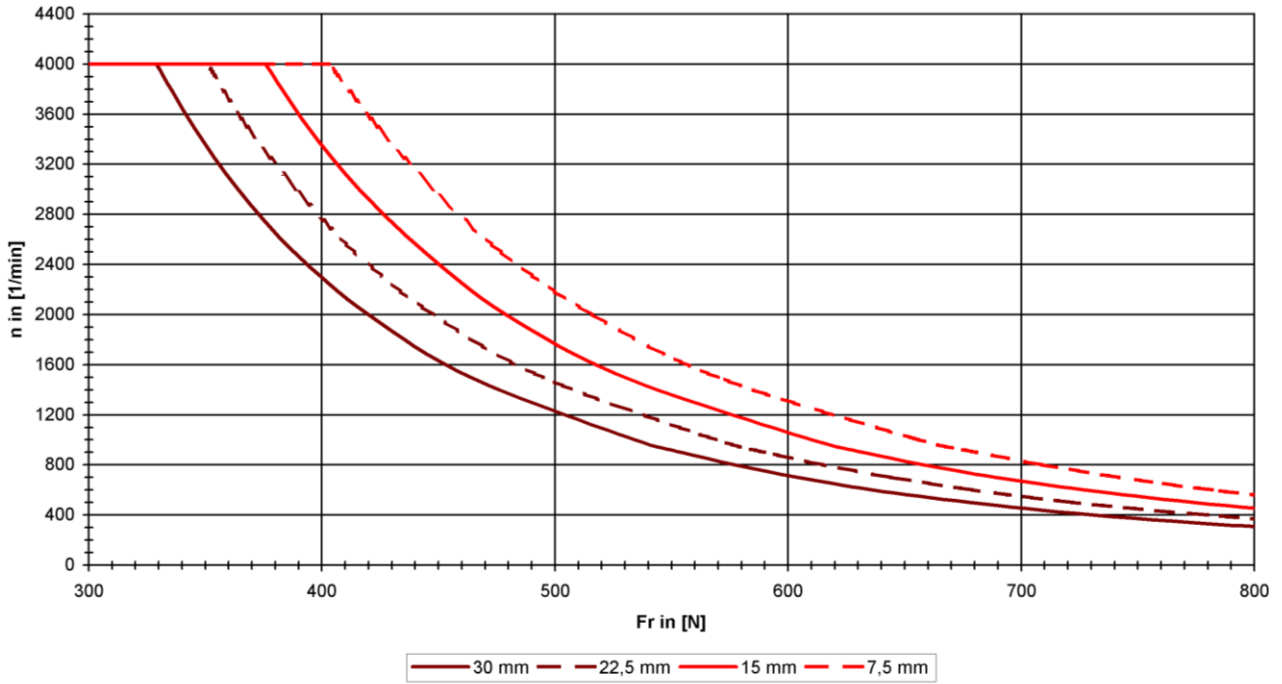


Explanation of the sample chart:

The maximum torque to be still transmitted results from the characteristic "shaft".
At a centrifugal force of 500 N with a driving force point of $x = 30$ mm from the shaft shoulder, a torque to be still transmitted of 5Nm results.

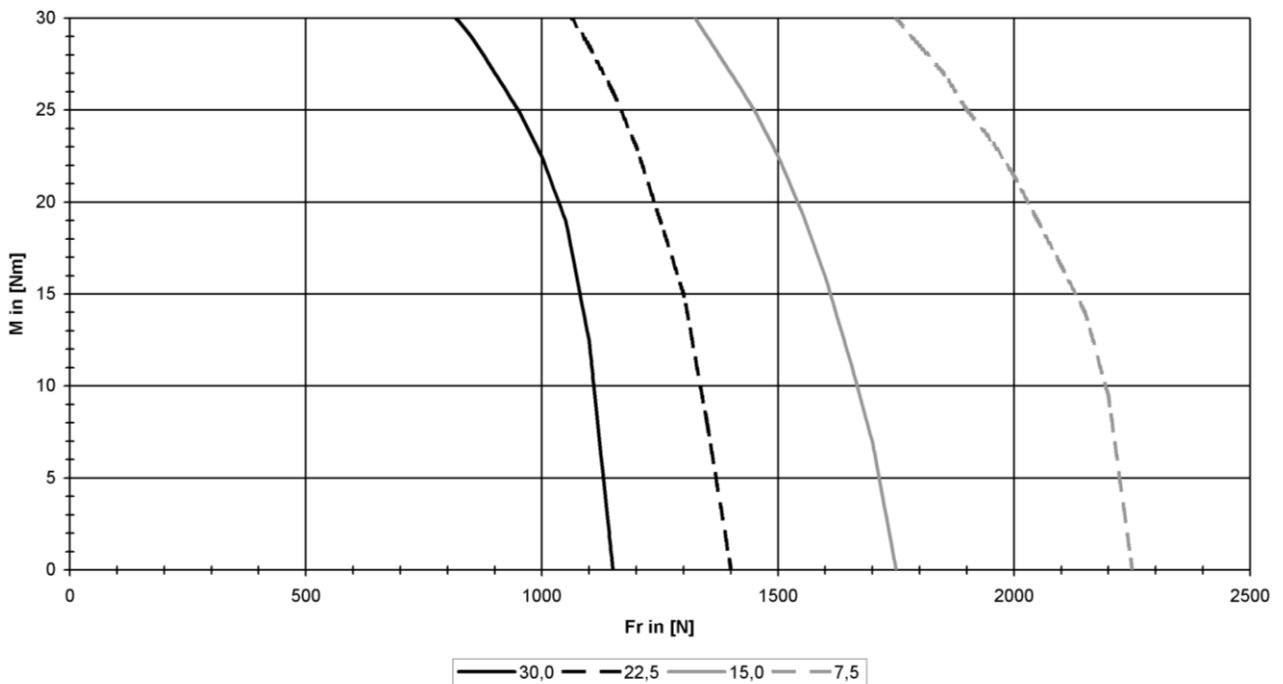
2.5.2. Diagram DSC1-045

DSC 45
Kugellager / Ball bearing

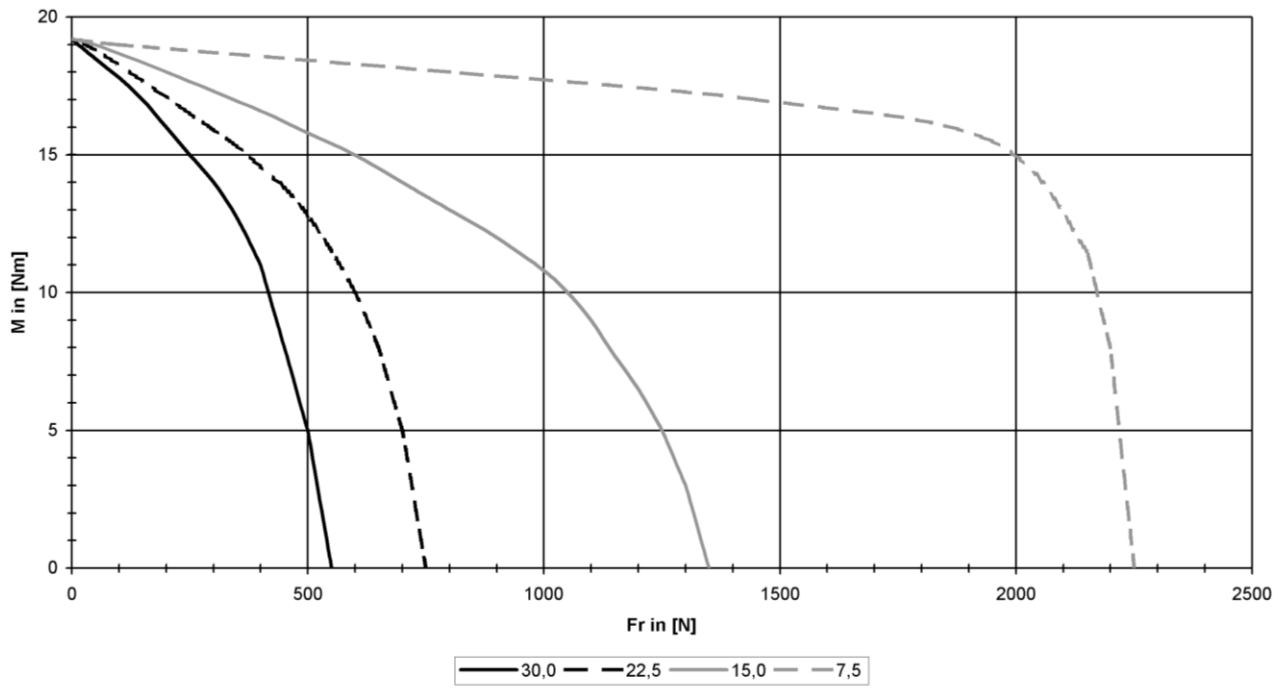


Note: 20,000h grease consumption duration at $n_{\text{effective}} \leq 4,000$ rpm

DSC 45
glatte Welle / Shaft without key

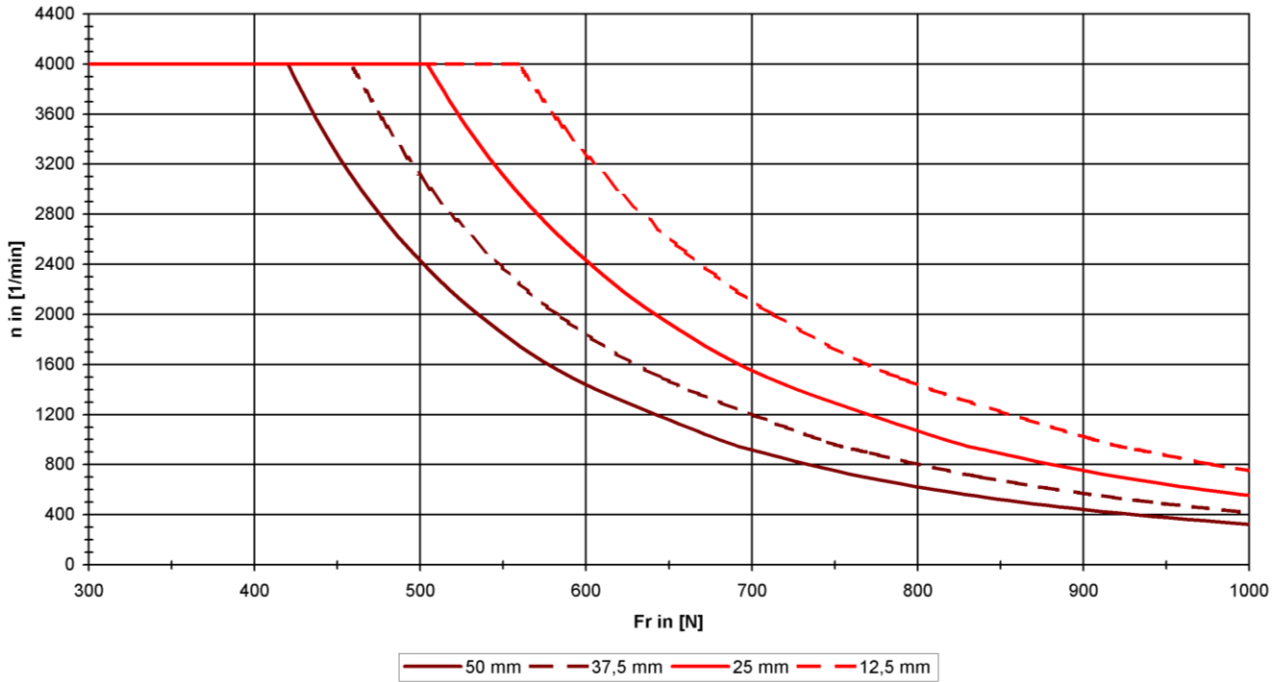


DSC 45
Welle mit Nut / Shaft with key



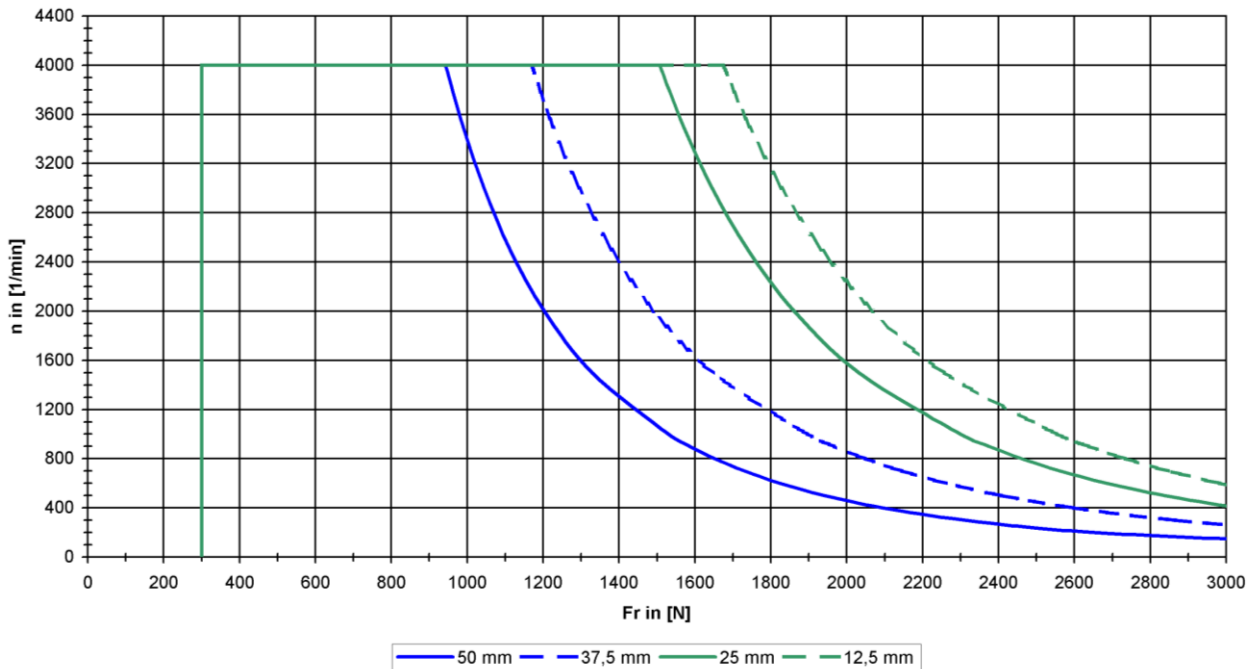
2.5.3. Diagram DSC1-056

DSC 56
Kugellager / Ball bearing



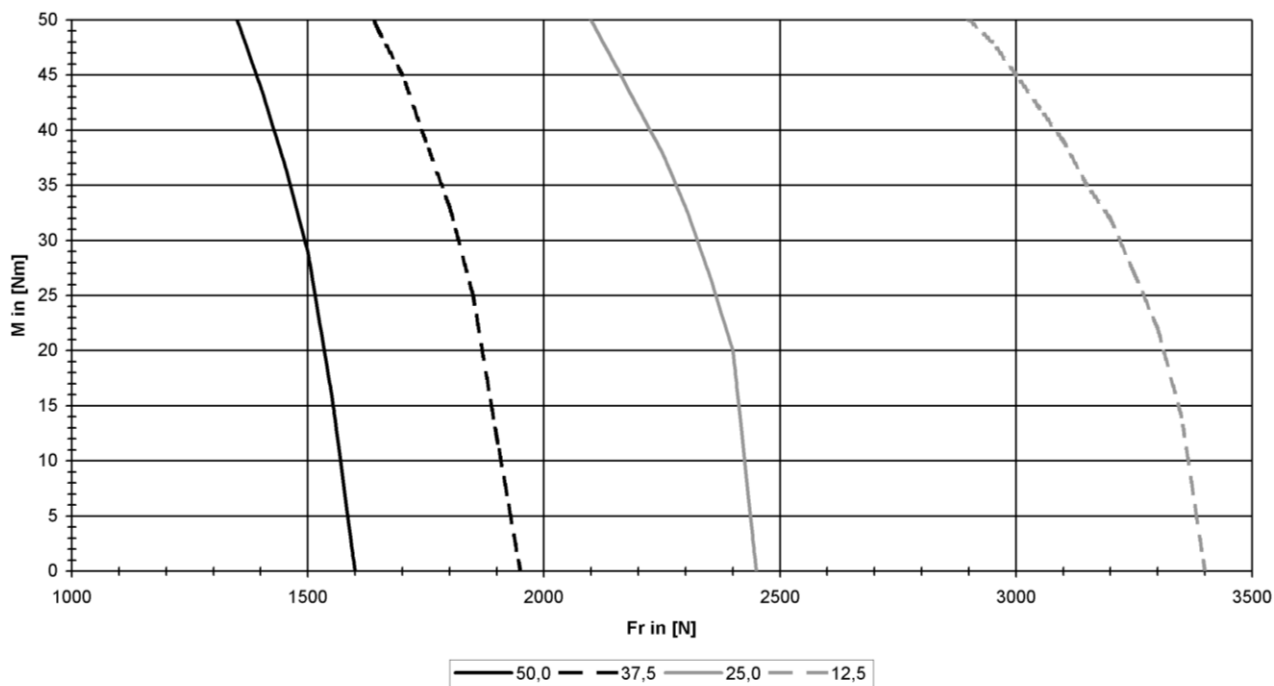
Note: 20,000h grease consumption duration at $n_{\text{effective}} \leq 4,000$ rpm

DSC 56
Rollenlager / Roller bearing

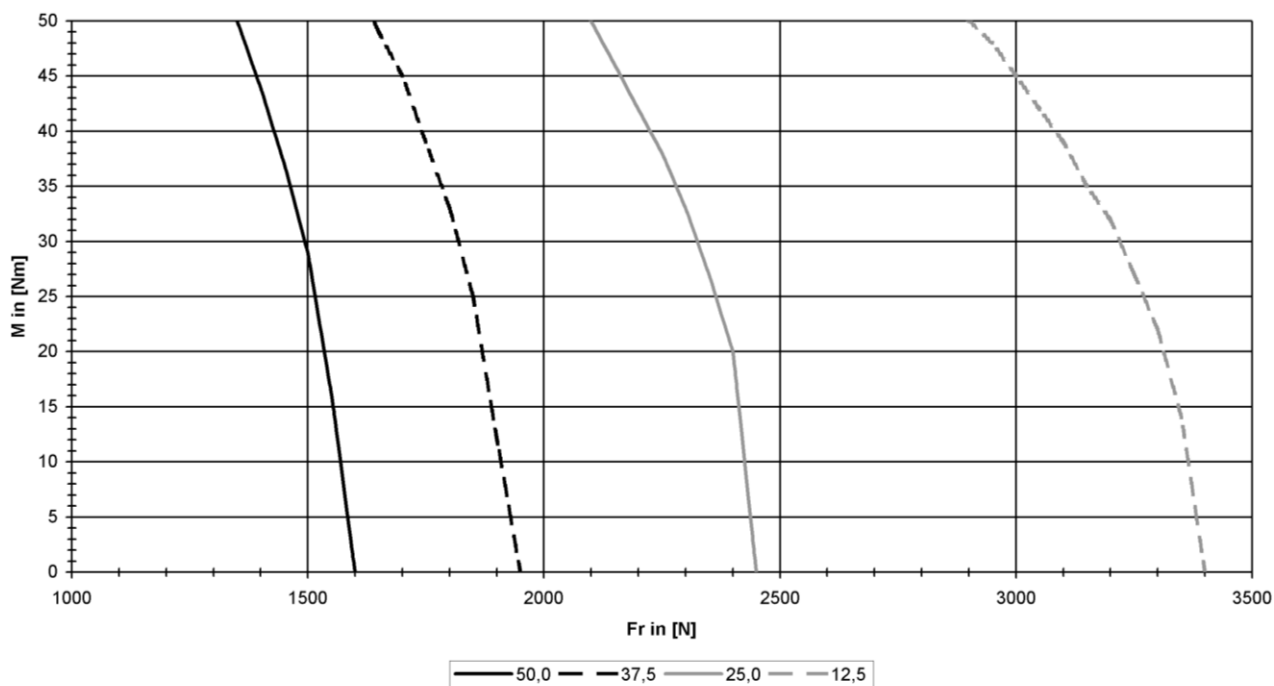


Note: 20,000h grease consumption duration at $n_{\text{effective}} \leq 1,500$ rpm

DSC 56
glatte Welle / Shaft without key

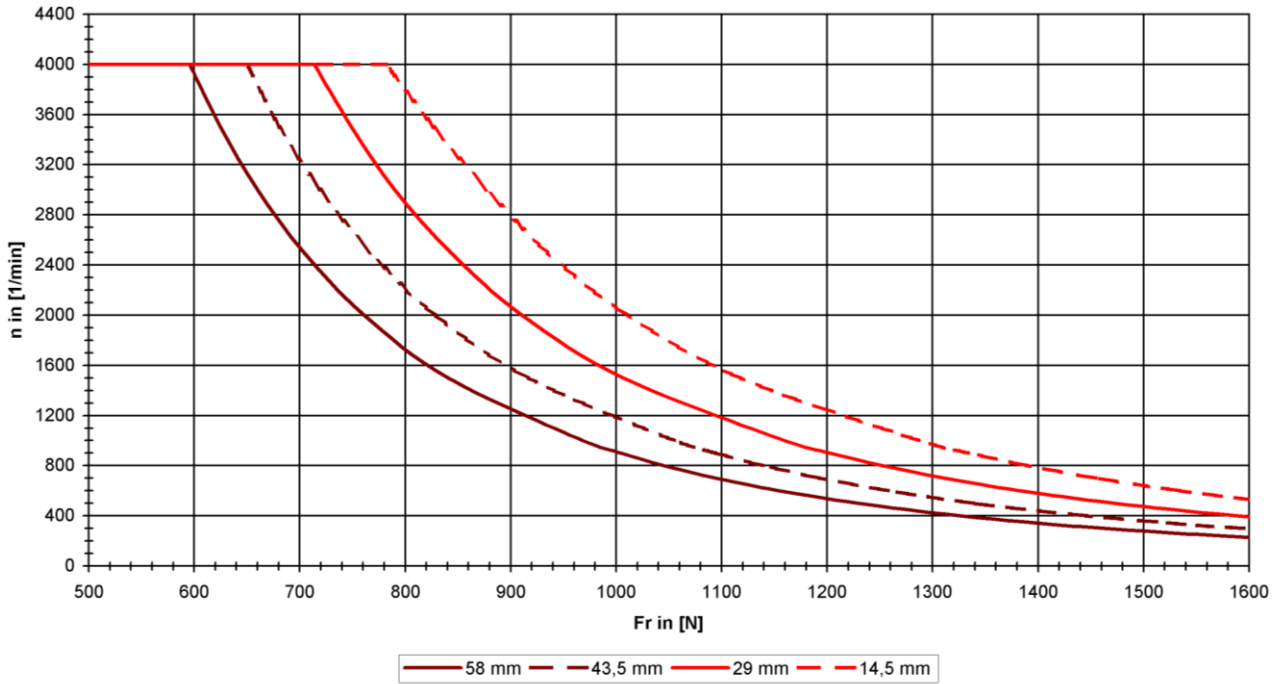


DSC 56
Welle mit Nut / Shaft with key



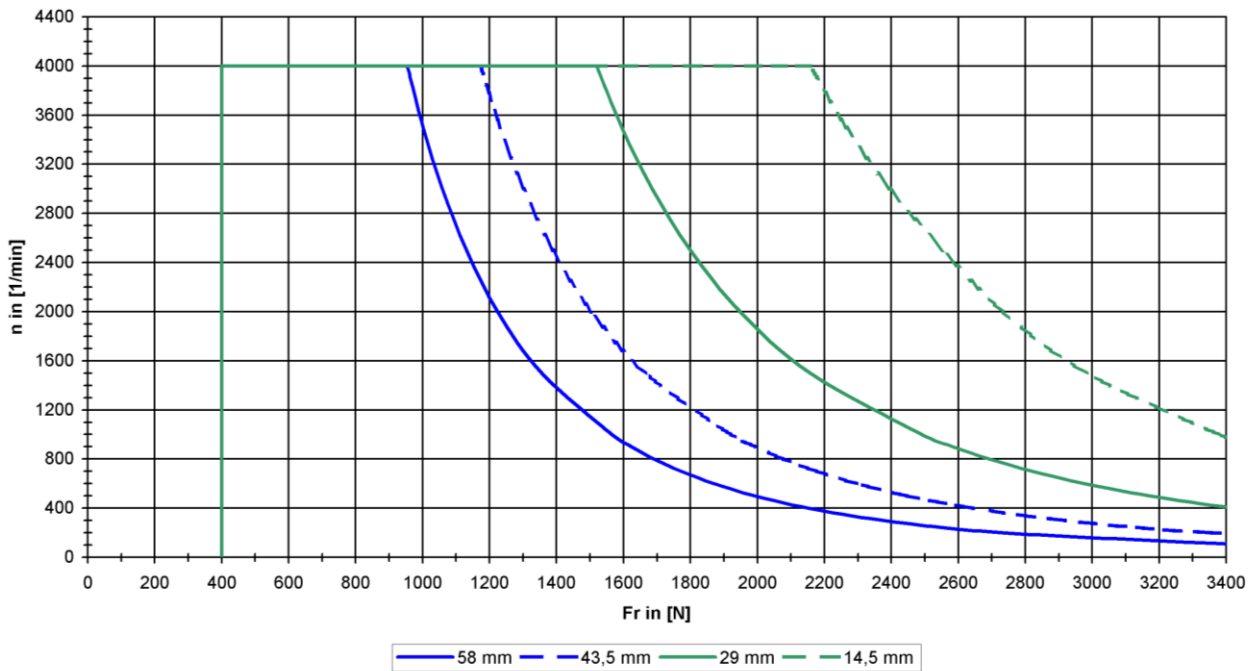
2.5.4. Diagram DSC1-071

DSC 71
Kugellager / Ball bearing



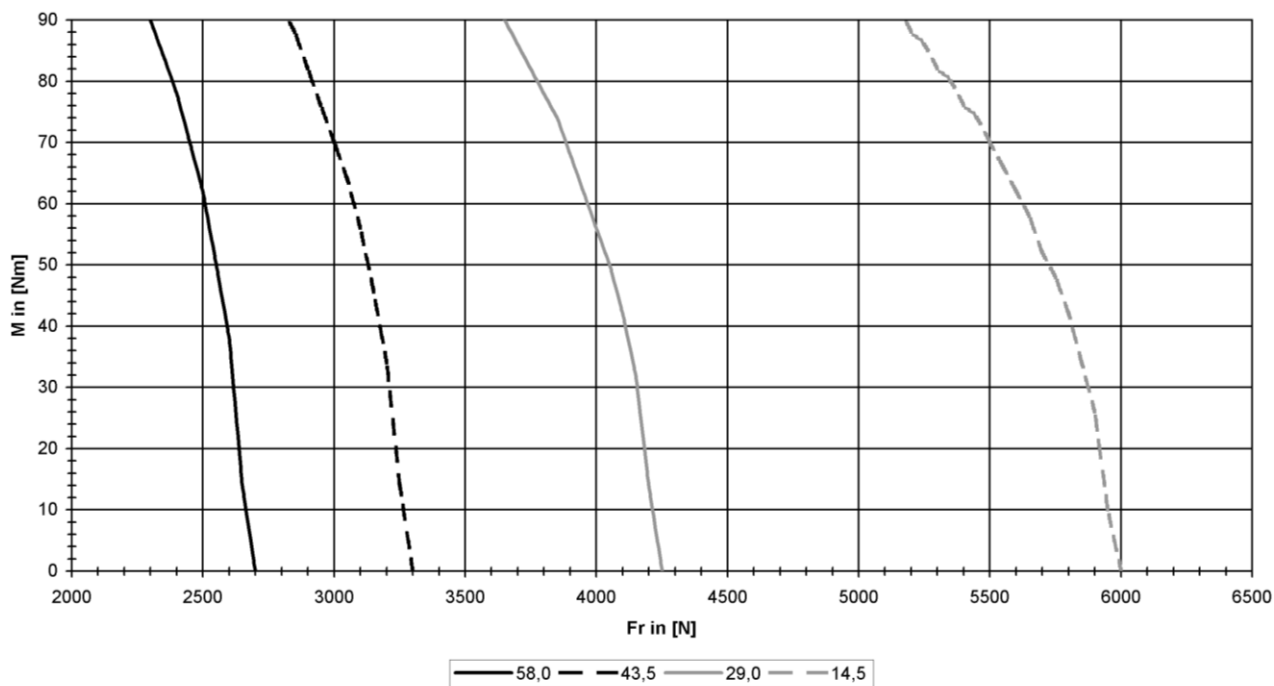
Note: 20,000h grease consumption duration at $n_{\text{effective}} \leq 4,000$ rpm

DSC 71
Rollenlager / Roller bearing

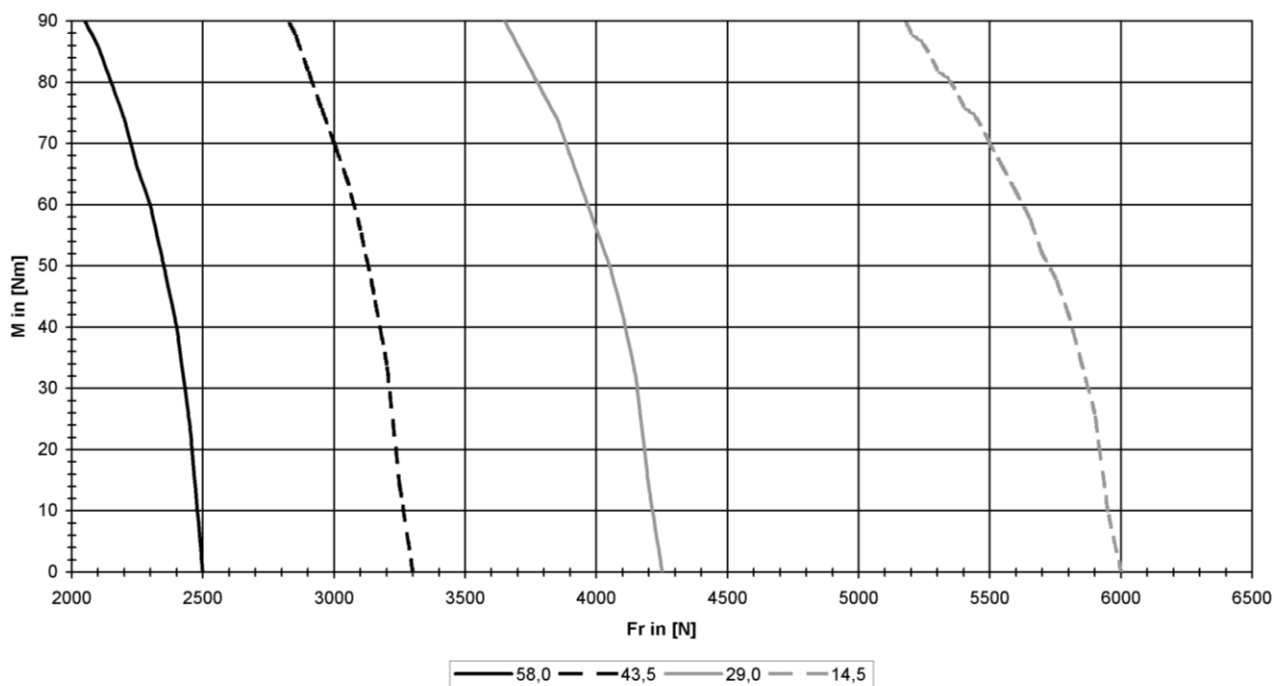


Note: 20,000 grease consumption duration at $n_{\text{effective}} \leq 1,150$ rpm

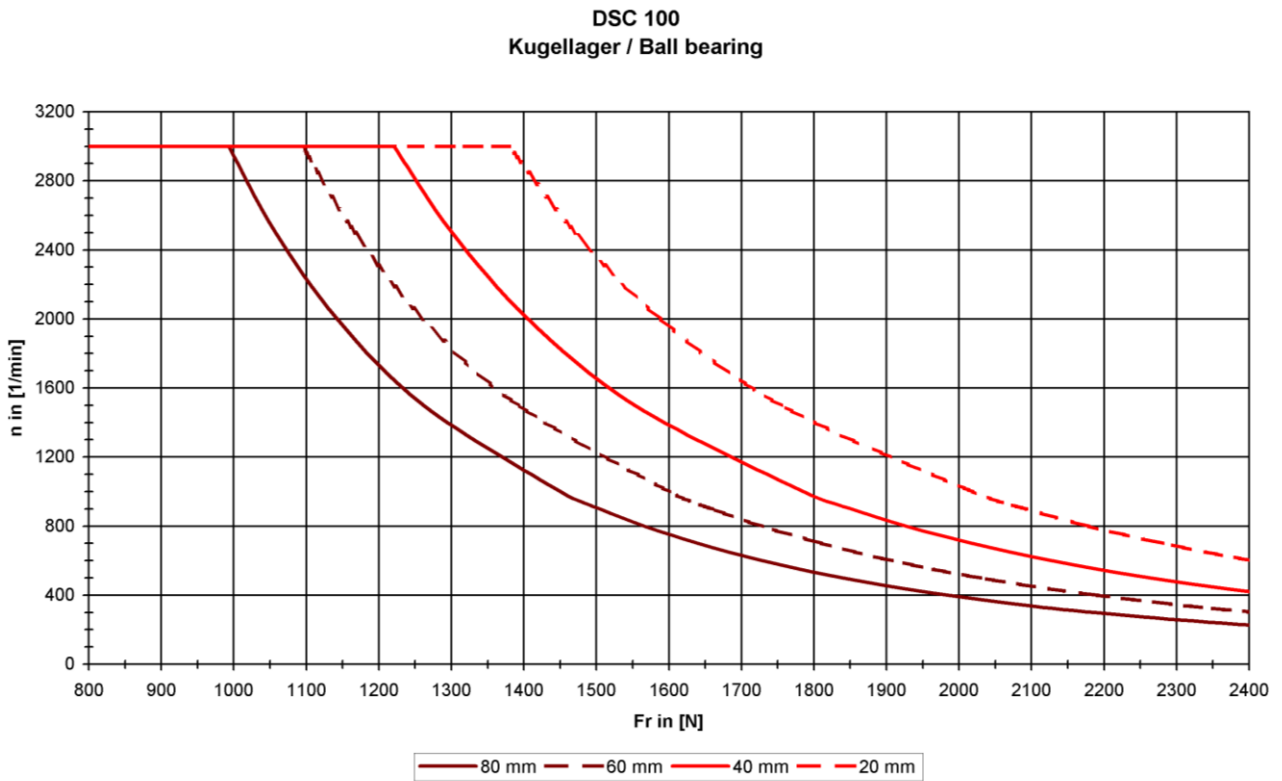
DSC 71
glatte Welle / Shaft without key



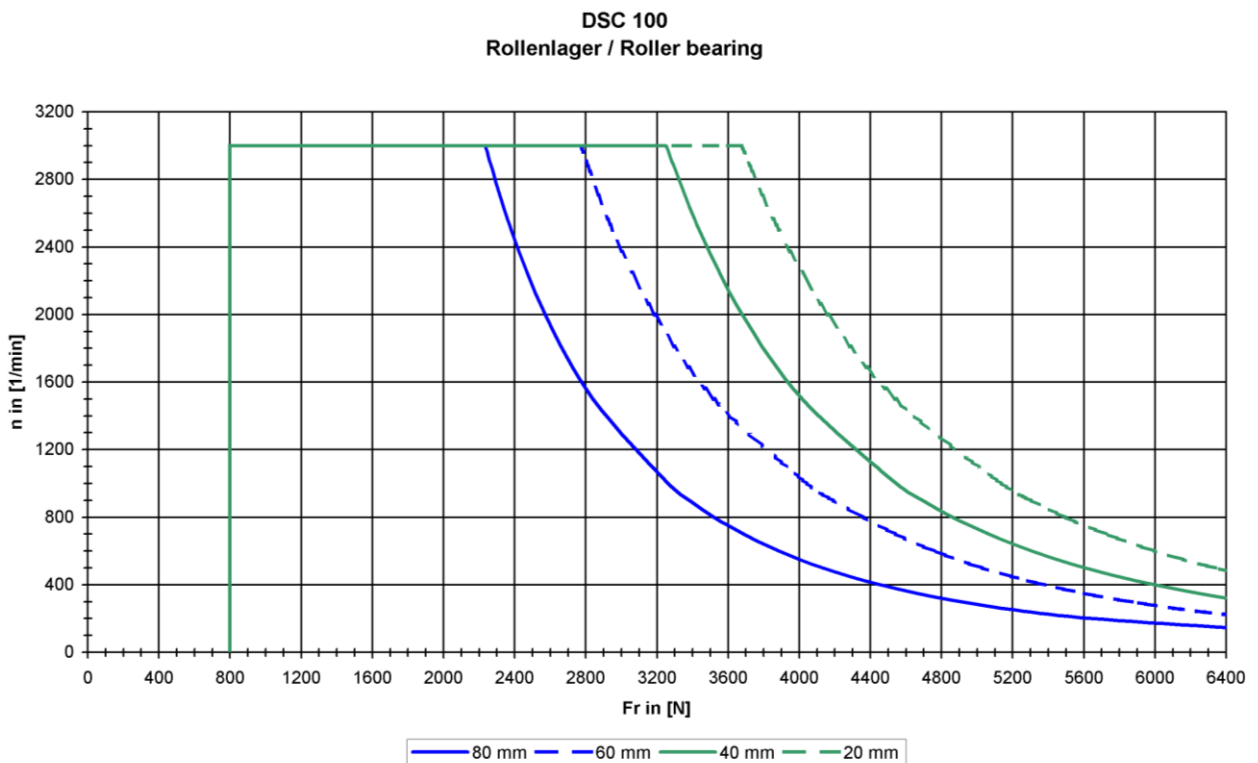
DSC 71
Welle mit Nut / Shaft with key



2.5.5. Diagram DSC1-100

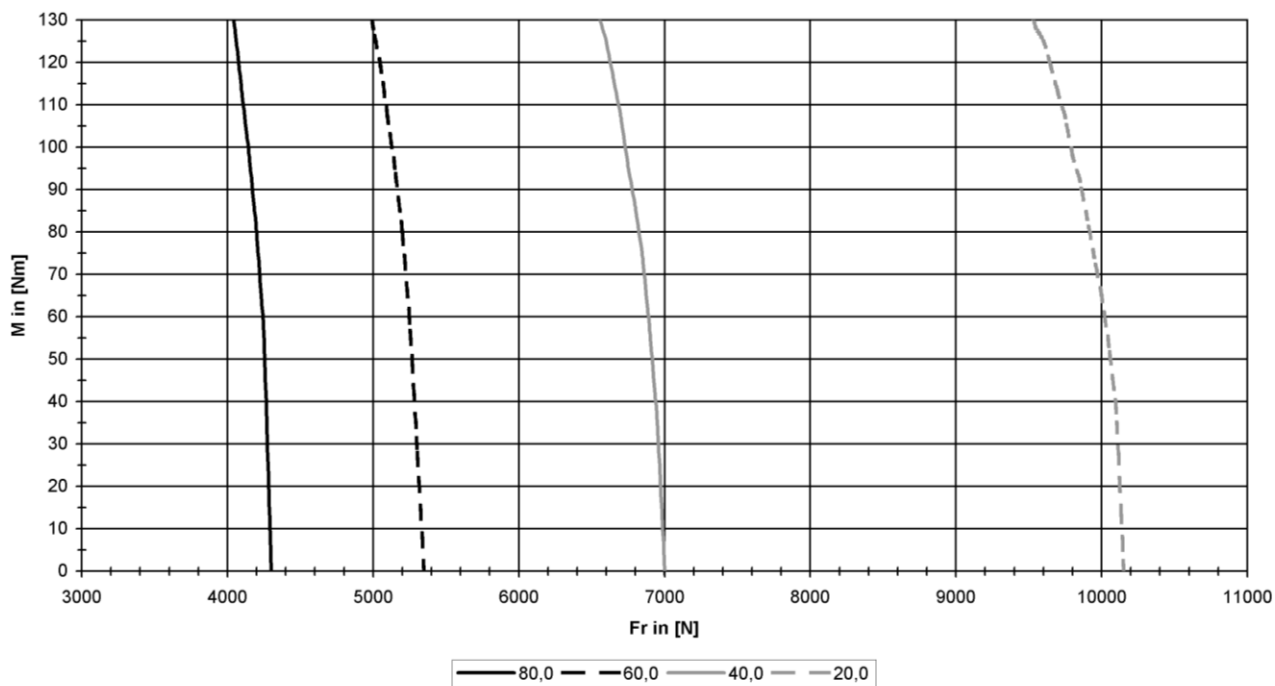


Note: 20,000h grease consumption duration at $n_{\text{effective}} \leq 3,000$ rpm

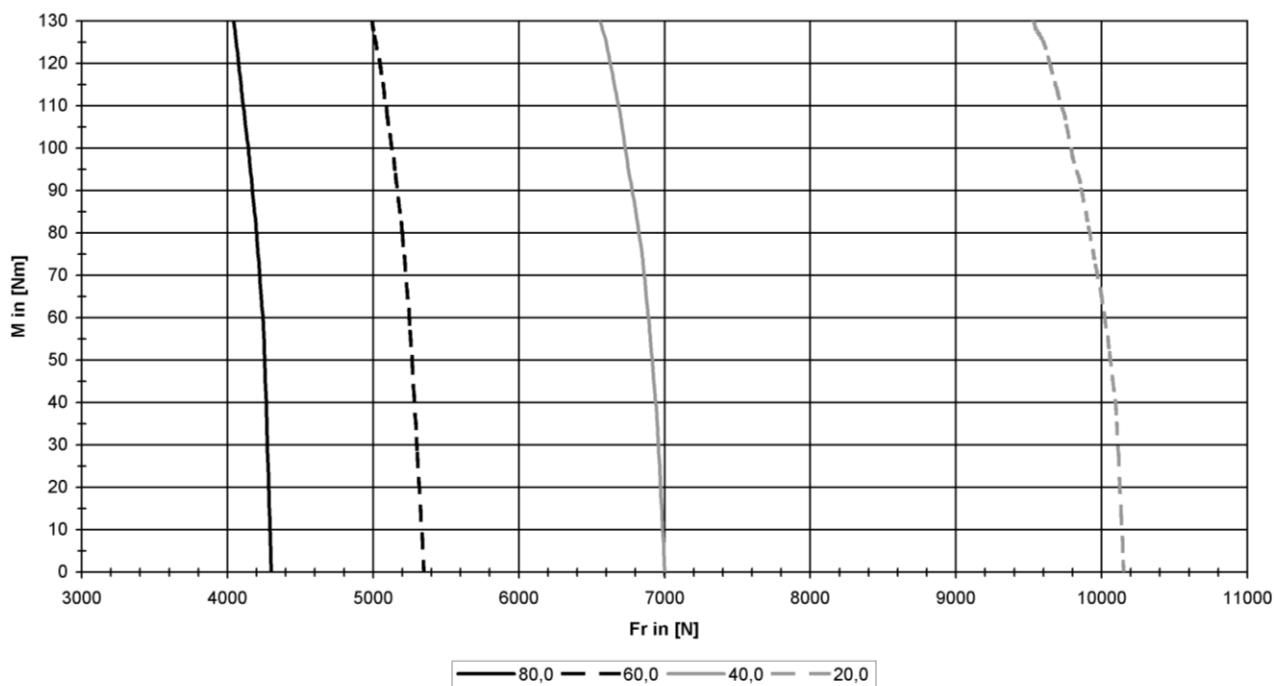


Note: 20,000 grease consumption duration at $n_{\text{effective}} \leq 850$ rpm

DSC 100
glatte Welle / Shaft without key



DSC 100
Welle mit Nut / Shaft with key



3. Motor components (options)

3.1. Holding brake

The motors can be optionally equipped with a holding brake. The holding brake is a backlash-free permanent magnetic brake. The brakes work according to the closed current principle, i.e. the brake is applied when switched off (or at a failure of the operating voltage). The brakes are designed for an operating voltage of 24 VDC. The specifications by the brake manufacturer apply at room temperature.

The motors are available with the following holding brakes:

Motor type	DSC1-045	DSC1-056	DSC1-071	DSC1-100
Minimal static holding torque [Nm] at 120 °C.	10	20	45	105
Nominal dynamic holding torque [Nm] at 120 °C.	8	18	25	45
Maximum switching energy [J] per braking from n = 3,000 rpm	270	320	1400	2800
Connection values [V] (+6 % / -10 %)	24	24	24	24
Power consumption [W]	18	20	28	50
Moment of inertia [kgcm ²]	0.6	2.9	7.9	17.6
Switching time On [ms] Ventilation; with basic air gap	40	65	100	200
Switching time Off [ms] Braking; with basic air gap	20	30	40	50

All brakes are not fail safe brakes in the sense that a torque reduction cannot occur due to uninfluenceable malfunction factors. Depending on the application, the relevant accident prevention regulations, as well as basic health and safety requirements of Annex I of the Machinery Directive and the harmonized European standards must be observed.

For emergency stops or power failures, approximately 2,000 brake processes can be performed.

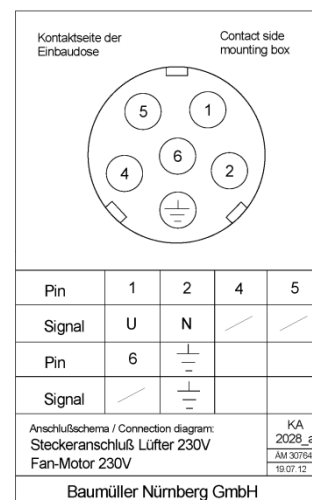
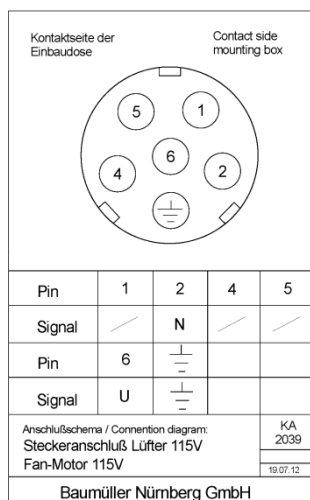
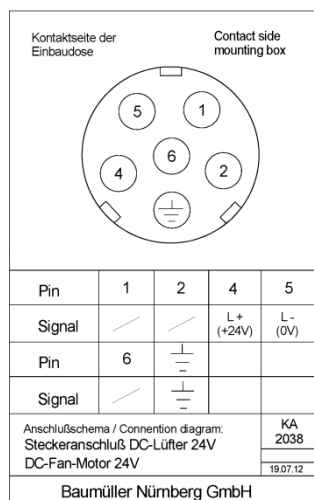
(Condition: maximum external inertia = motor inertia and n_{max} type-related;

Max. braking / hour <20; evenly distributed).

3.2. Fan

	DSC1-056..100			
Rated voltage [V]	24 V DC	115 V AC	230 V AC	
Rated frequency [Hz]	-	60	50	60
Rated current [A]	0.52	0.47	0.22	0.20
Rated speed [rpm]	2758	2394	2385	2099
Power rating [W]	12.4	35	32	30
Connection	6 - pole plug			
Protection type	IP65			

Fan connection 24 V DC / 115 V AC / 230 V AC

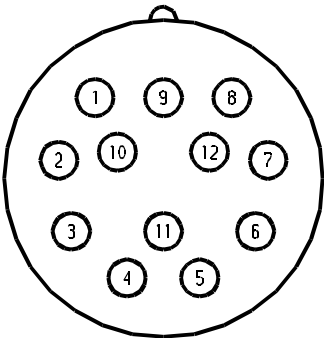


View on the contact side of the receptacle

3.3. Encoder

3.3.1. Resolver

Pole pair number	1
Transmission ratio	0.5 ± 0.05
Frequency	5 kHz
Nominal input voltage	$7 V_{rms}$
Effective input power at no-load speed	112 mW
Current consumption at no-load speed	70 mA
Max. output voltage at no-load speed	$3.5 V \pm 10\%$
Voltage constant	$61 mV/^\circ$
Rotor resistance	$48 \Omega \pm 10\%$
Stator resistance	$31 \Omega \pm 15\%$
Rotor impedance at no-load speed	$70 + j 74 \Omega \pm 15\%$
Rotor impedance with short circuit	$62 + j 66 \Omega \pm 15\%$
Stator impedance at no-load speed with minimum coupling	$108 + j 206 \Omega \pm 15\%$
Stator impedance with short circuit and maximum coupling	$97 + j 183 \Omega \pm 15\%$
Phase shift	$8^\circ \pm 3^\circ$
Zero voltage	30 mV
Angle error in relation to $(\Delta\phi_{max} + \Delta\phi_{min})/2$	$\pm 6'$
Shock (11 ms)	$\leq 1000 m/s^2$
Vibration (55 - 2000Hz)	$\leq 500 m/s^2 (55-2000 Hz)$

Resolver connection	Pin	Signal	Option for allocation PT1000 (R1/R2) or KTY (K+/K-) on encoder socket
	1	cos -	cos -
	2	-	-
	3	-	-
	4	-	-
	5	sin -	sin -
	6	sin +	sin +
	7	-	K - or R2
	8	cos +	cos +
	9	-	K + or R1
	10	ref +	ref +
	11	-	-
	12	ref -	ref -

View on the contact side of the receptacle

NOTE:

Use only at low demands on the true running characteristics of the motor.
The specifications are information by the encoder manufacturer.



3.3.2. Resolver for safety-oriented applications

Pole pair number	1
Transmission ratio	0,5 ± 0,05
Frequency	5 kHz
Safety integrity level	SIL 3 (IEC 61508) in Kombination mit b maXX5000
Performance Level	PL e (EN ISO 13849) in Kombination mit b maxx5000
Maximum angular acceleration	100.000 rad/s ²
Effective input power at no-load speed	112 mW
Nominal input voltage	7 V _{rms}
Current consumption at no-load speed	70 mA
Max. output voltage at no-load speed	3,5 V ± 10%
Voltage constant	61 mV/°
Rotor resistance	48 Ω ± 10%
Stator resistance	31 Ω ± 15%
Rotor impedance at no-load speed	70 + j 74Ω ± 15%
Rotor impedance with short circuit	62 + j 66Ω ± 15%
Stator impedance at no-load speed with minimum coupling	108 + j 206Ω ± 15%
Stator impedance with short circuit and maximum coupling	97 + j 183Ω ± 15%
Phase shift	8° ± 3°
Zero voltage	30 mV
Angle error related to $(\Delta\varphi_{\max} + \Delta\varphi_{\min})/2$	± 6'
Shock according to DIN EN 60068-2-27 (11 ms)	≤ 1000 m/s ²
Vibration according to DIN EN 60068-2-6	≤ 500 m/s ² (55-2000 Hz)

Resolver connection

	Pin	Signal	Option for allocation PT1000 (R1/R2) or KTY (K+/K-) at encoder socket
	1	cos -	cos -
	2	-	-
	3	-	-
	4	-	-
	5	sin -	sin -
	6	sin +	sin +
	7	-	K - or R2
	8	cos +	cos +
	9	-	K + or R1
	10	ref +	ref +
	11	-	-
	12	ref -	ref -

View of the contact side of the receptacle

NOTE:

Use only at low demands on the true running characteristics of the motor.

The technical data is the specifications of the encoder manufacturer.

The configuration options for the safety encoders with different engine versions can be found in the product configurator.

3.3.3. SINCOS SEK/SEL 52 (the company SICK/Stegmann)

	SEK52	SEL52
Number of sine, cosine periods per revolution	16	
Measuring step for the interpolation of the sine, cosine periods such as 12 bit	20"	
Number of absolute resolved revolutions	1	1
Code type for the absolute value	binär	
Error limits for evaluating the sine, cosine periods, integral non-linearity	+/- 288"	
Non-linearity within a sine, cosine, differential non-linearity at nominal position +/- 0.1 mm	+/- 72"	
Operating speed until the absolute position can be formed	6000 rpm	
Max. operating speed	12000 rpm	12000 rpm
Output signal	serielle RS 485, asynchron, halbduplex	
Operating voltage range	7-12 V	
max. no-load operating current	50 mA	
Shock according to DIN EN 60068-2-27 (10 ms)	100 g	
Vibration according to EN 60068-2-6 (10-2000 Hz)	50 g	

SEK / SEL 52 connection

	Pin	Signal	Option for allocation PT1000 (R1/R2) or KTY (K+/K-) on encoder socket
	1	cos -	cos -
	2	+ 485	+ 485
	3	-	K + or R1
	4	-	K - or R2
	5	sin +	sin +
	6	sin -	sin -
	7	- 485	- 485
	8	cos +	cos +
	9	-	-
	10	GND	GND
	11	-	-
	12	+ U	+ U

View on the contact side of the receptacle

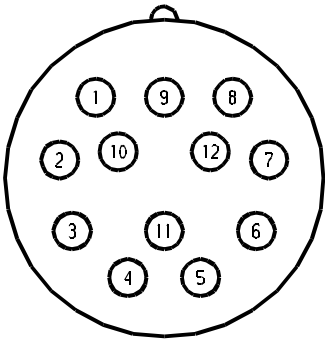
NOTE:

This encoder is a component susceptible to ESD.
The technical data is specification from the encoder manufacturer.

3.3.4. SINCOS SRS/SRM 50 (the company SICK/Stegmann)

	SRS50	SRM50
Number of sine and cosine periods per revolution	1024	
Number of steps per revolution	32768	
Number of absolute completed revolutions	1	1
Code type for the absolute value	Binary	
Output frequency of the sine and cosine signals	0-200 kHz	
Fault limits in evaluation of the sine, cosine signals; integral non-linearity in the relaxed state	+/- 45"	
Nonlinearity within a sine or cosine period; differential nonlinearity	+/- 7"	
Maximum speed at which the absolute position can be defined	6000 rpm	
Maximum operating speed	12000 rpm	
Output signals; 2 x 90° offset sinusoidal signals (V _{SS})	1 V _{SS}	
Output signal	serielle RS 485, asynchron, halbduplex	
Operating voltage range	7-12 V	
Operating current without load	80 mA	
Shock as per DIN EN 60068-2-27	100 g (10 ms)	
Vibration as per DIN EN 60068-2-6 (10-2000 Hz)	20 g	

SRS/SRM 50 connection

	Pin	Signal	Option for allocation PT1000 (R1/R2) or KTY (K+/K-) on encoder socket
	1	cos -	cos -
	2	+ 485	+ 485
	3	-	K + or R1
	4	-	K - or R2
	5	sin +	sin +
	6	sin -	sin -
	7	- 485	- 485
	8	cos +	cos +
	9	-	-
	10	GND	GND
	11	-	-
	12	+ U	+ U

View on the contact side of the receptacle

NOTE:

This encoder is a component susceptible to ESD.
The technical data is specification from the encoder manufacturer.



3.3.5. SINCOS SRS/SRM50-S (the company SICK/Stegmann)

	SRS50-S	SRM50-S
Safety integrity level	SIL2 (IEC 61508), SILCL2 (IEC 62061)	
Category	3 (EN ISO 13849)	
Performance Level	PL d (EN ISO 13849)	
Maximum angular acceleration	200.000 rad/s ²	
Number of sine, cosine periods per revolution	1.024	
Number of steps per revolution	32.768	
Number of absolute revolutions	1	4.096
Code type for the absolute value	binär	
Output frequency of the sine, cosine signals	0-200 kHz	
Fault limits in evaluation of the sine, cosine signals. Integral non-linearity in the relaxed state	+/- 45"	
Non-linearity within a sine or cosine period. Differential non-linearity	+/- 7"	
Working speed up to which the absolute position can be formed	6.000 1/min	
Maximum operating speed	12.000 1/min	
Output signals; 2x90° offset sinusoidal signals	1 V _{ss}	
Output signal	serielle RS 485, asynchron, halbduplex	
Operating voltage range	7-12 V	
Operating current without load	80 mA	
Shock according to DIN EN 60068-2-27	100 g (10 ms)	
Vibration according to DIN EN 60068-2-6 (10-2000 Hz)	20 g	

SKS/SKM36-S and SRS/SRM50-S connection

	Pin	Signal	Option for allocation PT1000 (R1/R2) or KTY (K+/K-) at encoder socket
	1	cos -	cos -
	2	+ 485	+ 485
	3	-	K + or R1
	4	-	K - or R2
	5	sin +	sin +
	6	sin -	sin -
	7	- 485	- 485
	8	cos +	cos +
	9	-	-
	10	GND	GND
	11	-	-
	12	+ U	+ U

View of the contact side of the receptacle

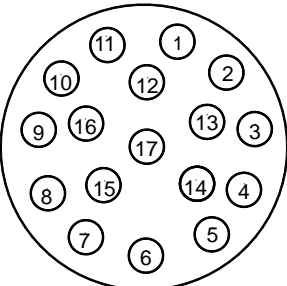
NOTE:

This encoder is a component susceptible to ESD. The technical data is the specifications of the encoder manufacturer. The configuration options for the safety encoders with different engine versions can be found in the product configurator. The combination SRS/SRM50-S with add-on gearbox is available by request. ECN1313 / EQN1325 (the company Heidenhain). These encoders are not available for uncooled motors with n_{means} ≥ 3,000 rpm.

3.3.6. ECN1313/EQN1325 (the company Heidenhain)

	ECN 1313	EQN 1325
Number of sine and cosine periods per revolution	2048	
System accuracy in arc seconds	± 20"	
Number of absolute completed revolutions	1	4096 (12 bit)
Code type for the absolute value	EnDat 2.1	
Sampling limit frequency or limit frequency	0-200 kHz	
Position values/revolution	8192 (13 bit)	
Maximum speed at which the absolute position can be defined	12000 rpm	
Maximum operating speed	12000 rpm	
Power supply	3,6-14 V	
Current consumption without load	≤ 160 mA	≤ 200 mA
Shock 6ms as per DIN EN 60068-2-27 (6 ms)	≤ 2000 m/s ²	
Vibration 55-2000Hz as per DIN EN 60068-2-6 (55-2000 Hz)	≤ 300 m/s ²	

ECN1313/EQN1325 connection

	Pin	Signal	Option for allocation PT1000 (R1/R2) or KTY (K+/K-)on encoder socket
	1	U _p	U _p
	2	-	-
	3	-	-
	4	0V	0V
	5	-	K +
	6	-	K -
	7	U _p	U _p
	8	Clock	Clock
	9	Clock inv.	Clock inv.
	10	0V	0V
	11	-	-
	12	B +	B +
	13	B -	B -
	14	Data	Data
	15	A +	A +
	16	A -	A -
	17	Data inv.	Data inv.

View on the contact side of the receptacle

NOTE:

This encoder is a component susceptible to ESD.
The technical data is specification from the encoder manufacturer.

3.3.7. ECI1319/EQI1331 (the company Heidenhain)

Motor size	DSC1-056-100	
	ECI 1319	EQI 1331
Number of lines	-	
System accuracy	± 65"	
Number of absolute completed revolutions	1	4096 (12 bit)
Code type for the absolute value	EnDat 2.2	
Position values/revolution	524 288 (19 bit)	
Maximum speed at which the absolute position can be defined	15000 1/min	
Maximum operating speed	15000 1/min	12000 1/min
Power supply	3,6... 14 V	
Current consumption without load	95 mA	115 mA
Shock 6ms as per DIN EN 60068-2-27(6 ms)	≤ 2000 m/s ²	
Vibration 55-2000Hz as per DIN EN 60068-2-6 (55-2000 Hz)	≤ 400 m/s ²	

ECN1319/EQN1331 connection

	Pin	Signal
	1	Clock
	2	Clock inv.
	3	U _p
	4	0V
	5	Data
	6	Data inv.
	7	Sensor U _p
	8	Sensor 0V
	9	-

View on the contact side of the receptacle

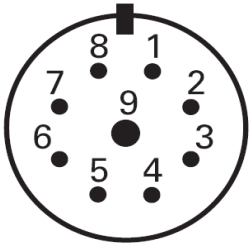
NOTE:

This encoder is a component susceptible to ESD.
The technical data is specification from the encoder manufacturer.

3.3.8. ECN1325 / EQN1337 (the company Heidenhain)

	ECN 1325	EQN 1337
Number of lines	2048	
System accuracy	± 20"	
Number of absolute completed revolutions	1	4096 (12 bit)
Code type for the absolute value	EnDat 2.2	
Position values/revolution	33554432 (25 bit)	
Maximum speed at which the absolute position can be defined	12000 rpm	
Maximum operating speed	12000 rpm	
Power supply	3,6...14 V	
Current consumption without load	≤ 160 mA	≤ 200 mA
Shock 6ms as per DIN EN 60068-2-27(6 ms)	≤ 2000 m/s ²	
Vibration 55-2000Hz as per DIN EN 60068-2-6 (55-2000 Hz)	≤ 300 m/s ²	

ECN1325/EQN1337 connection

	Pin	Signal
	1	Clock
	2	Clock inv.
	3	U _p
	4	0V
	5	Data
	6	Data inv.
	7	Sensor U _p
	8	Sensor 0V
	9	-

View on the contact side of the receptacle

NOTE:

This encoder is a component susceptible to ESD.
The technical data is specification from the encoder manufacturer.



3.3.9. ECN 1325-S/EQN1337-S (the company Heidenhain)

	ECN1325-S	EQN1337-S
Safety integrity level	SIL 2 nach EN 61508	
Category	3 (EN ISO 13849)	
Performance Level	PL d (EN ISO 13849)	
Maximum angular acceleration	50.000 rad/s ²	
System accuracy	± 20"	
Number of absolute completed revolutions	1	4.096 (12bit)
Code type for the absolute value	EnDat 2.2	
Position values / revolution	33.554.432 (25 bit)	
Maximum speed at which the absolute position can be defined	12.000 1/min	
Maximum operating speed	12.000 1/min	
Power supply	3,6... 14 V	
Current consumption without load	≤ 160mA	≤ 200mA
Shock according to DIN EN 60068-2-27 (6 ms)	≤ 2000 m/s ²	
Vibration according to DIN EN 60068-2-6 (55-2000 Hz)	≤ 300 m/s ²	

ECN1325-S/EQN1337-S connection

	Pin	Signal
	1	Clock
	2	Clock inv.
	3	U _p
	4	0V
	5	Data
	6	Data inv.
	7	Sensor U _p
	8	Sensor 0V
	9	-

View of the contact side of the receptacle

NOTE:

This encoder is a component susceptible to ESD.
The technical data is the specifications of the encoder manufacturer.

The configuration options for the safety encoders with different engine versions can be found in the product configurator.

The combination ECN1325/EQN1337-S with add-on gearbox is available by request. These encoders are not available for uncooled motors with n_{means} ≥ 3,000 rpm.

3.3.10. EFS50/EFM50 Hiperface DSL® (the company SICK/Stegmann)

	EFS50	EFM50
Number of absolute completed revolutions	1 (21-bit)	4.096 (21-bit)
Code type for the absolute value	Binary	
Interface signals	Digital, RS-485	
Position values / revolution	2,097,152	
Maximum angular acceleration	200,000 wheel/s ²	
Maximum operating speed	12,000 rpm	9,000 rpm
Power supply	7...12 V	
Current consumption without load	≤ 150 mA	
Resistance to shocks	100 g / 6 ms / according to EN 60068-2-27	
Resistance to vibration	30 g, 10 Hz ... 2.000 Hz / according to EN 60068-2-6	
Working temperature	-20°C...+120°C	

Connection EFS50/EFM50 DSL Hiperface

	Pin	Signal
	1	U
	3	V
	4	W
	⊕	GN / GE
	A	B+
	B	B-
	C	DSL+
	D	DSL-

View of the contact side of the receptacle, size 1

	Pin	Signal
	U	U
	V	V
	W	W
	N	/
	⊕	GN/GE
	+	B+
	-	B-
	1	/
	2	/
	H	DSL+
	L	DSL-

View of the contact side of the receptacle, size 1.5

The configuration options for the Hiperface DSL encoder with different engine versions can be found in the product configurator. The encoders can be used up to a cable length of 60 m.

3.4. Encoder cables for b maXX 4000

General Information

A prefabricated encoder cable is used for all encoder systems. The connection at the motor end consists of a 12-pole circular signal connector on resolvers and Hyperface® – encoders, a 17-pole circular signal connector on ECN1313/EQN1325 and a 9-pole circular signal connector on ECN1325/EQN1337. The connection at the controller side consists of a 15-pole D-Sub connector. Alternatively, the signal connector on the motor side is available for Speed-Tec versions with trailing cables.

The dragable cable is suitable for mobile applications such as drag chains, for example. Unlike non-dragable cables made from PVC, the cable sheath is made from durable PU (suitable for environments where acids and bases are present).

3.4.1. Technical data

Technical description - non-dragable for resolver/ SinCos Hiperface®-interface / SinCos - and TTL - incremental encoder

- LiYCY, 5x (2x0.14mm²) + 2 x 0.5mm² copper strand, twisted pairs
- PVC sheath, grey; inscription with Baumüller logo, black
- 1st side: 12-pole circular signal plug connector with 12 socket contacts
- 2nd side: 15-pole D-Sub plug connector with pin contacts and locking screws 4-40UNC
- Outer diameter 9.0 mm (+/- 0.3mm)
- Bending radius: $r \geq 60$ mm (fixed routing), $r \geq 135$ mm (flexible use)
- Nominal voltage: 250V_{AC}

Technical description - dragable for resolver/ SinCos Hiperface®-interface / SinCos - and TTL - incremental encoder

- Li12YC11Y, 5x (2x0.14mm²) + 2 x 0.5mm² copper strand, twisted pairs
- PU sheath, black; inscription with Baumüller logo, white
- 1st side: 12-pole circular signal plug connector with 12 socket contacts
- 2nd side: 15-pole D-Sub plug connector with pin contacts and locking screws 4-40UNC
- Outer diameter 9.0 mm (+/- 0.3mm)
- Bending radius: $r \geq 70$ mm (fixed routing), $r \geq 100$ mm (flexible use)
- Nominal voltage: 300V_{AC}

Technical description - non-dragable for EnDat® 2.1-interface

- LiYCY, 5x (2x0.14mm²) + 2 x 0.5mm² copper strand, twisted pairs
- PVC sheath, grey; inscription with Baumüller logo, black
- 1st side: 17-pole circular signal plug connector with 17 socket contacts
- 2nd side: 15-pole D-Sub plug connector with pin contacts and locking screws 4-40UNC
- Outer diameter 9.0 mm (+/- 0.3mm)
- Bending radius: $r \geq 60$ mm (fixed routing), $r \geq 135$ mm (flexible use)
- Nominal voltage: 250V_{AC}

Technical description - dragable for EnDat® 2.1-interface

- Li12YC11Y, 5x (2x0.14mm²) + 2 x 0.5mm² copper strand, twisted pairs
- PU sheath, black; inscription with Baumüller logo, white
- 1st side: 17-pole circular signal plug connector with 17 socket contacts
- 2nd side: 15-pole D-Sub plug connector with pin contacts and locking screws 4-40UNC
- Outer diameter 9.0 mm (+/- 0.3mm)
- Bending radius: $r \geq 70$ mm (fixed routing), $r \geq 100$ mm (flexible use)
- Nominal voltage: 300V_{AC}

Technical description - dragable for EnDat® 2.2-interface

- PUR sheath, 1x(4x0.14mm²) + (4x0.34mm²)
- 1 twisted foursome 0.14mm², 4 wires 0.34mm², copper, tin-plated
- Total shield CuSn, inscription Heidenhain
- 1st side: 9-pole circular signal plug connector with 8 socket contacts
- 2nd side: 15-pole D-Sub plug connector with pin contacts and locking screws 4-40UNC
- Outer diameter 6.0 mm
- Bending radius: $r \geq 20$ mm (fixed routing), $r \geq 75$ mm (flexible use)
- Dielectric strength wire/wire and wire/shield: 0.5kV at 50Hz, 1 minute

3.4.2. Application references

- **Operating temperature of encoder cable resolver/ SinCos Hiperface®-interface / SinCos - and TTL - incremental encoder / EnDat® 2.1**

	Dragable on the surface	Not dragable on the surface
Limit temperature		
Static use/minimal movement	- 40 °C to + 80 °C	- 30 °C to + 80 °C
Permanent movement	- 30 °C to + 80 °C	- 5 °C to + 70 °C

- **Operating temperature of encoder cable EnDat® 2.2**

	Dragable on the surface
Limit temperature	
Static use/minimal movement	- 40 °C to + 80 °C
Permanent movement	- 10 °C to + 80 °C

- **Routing of cable on motor**

The cables must not touch the surface of the motor.

3.4.3. Order information for encoder cables

Encoder cables for resolver/ SinCos Hiperface®-interface / SinCos - and TTL - incremental encoder - prefabricated cables with connector

Not dragable, prefabricated

Cable 5 x (2x0.14mm²) + 2 x 0.5 mm² with plug connector

Length in m	Item Number
1	243601
2	211338
3	219333
4	231166
5	209879
6	220197
7	216455
8	220429
10	210052
15	215716
20	218568
25	218569
30	217094
35	216444
40	217095
45	217567
50	217568
55	217569
60	217570
70	232088

Dragable, prefabricated

Cable 5 x (2x0.14mm²) + 2 x 0.5 mm² with plug connector

Length in m	Item Number	Item Number (Speed Tec)
3	246658	448944
4	243379	448945
5	239540	448948
6	242954	448946
8	239541	448949
10	239542	448956
15	239543	448962
20	239544	448967
25	239545	448970
30	239546	448971
35	239547	448973
40	240520	448976
45	240521	448978
50	240522	448980
55	244033	448981
60	245484	448982

Encoder cables for EnDat® 2.1- prefabricated cables with plug connector

Not dragable, prefabricated

Cable 5 x (2x0.14mm²) + 2 x 0.5 mm² with plug connector

Length in m	Item Number
2	383152
3	383923
5	393885
7	389445
8	380138
9	389446
10	393886
15	388505
20	388418
25	393887
30	393888
35	387958
40	382006
50	388419
70	384473
90	387391

Dragable, prefabricated

Cable 5 x (2x0.14mm²) + 2 x 0.5 mm² with plug connector

Length in m	Item Number	Item Number (Speed Tec)
2	393889	448816
3	369864	448817
5	394014	448818
7	389807	448819
8	393890	448820
9	389808	448821
10	393891	448822
15	393892	448823
17	371494	448824
20	393893	448825
25	393894	448826
30	380358	448827
35	391216	448828
40	382005	448830
50	378022	448832

Encoder cables for EnDat® 2.2 - prefabricated cables with plug connector

Dragable, prefabricated

cable 1x4x0.14 + 4x0.34 PUR Ø 6mm with plug connector

Length in m	Item Number	Item Number (Speed Tec)
2	434056	459031
3	434057	459032
5	434058	459033
10	434059	459035
15	434060	459036
20	434061	459037
25	434062	459038
50	434063	459042

3.5. Encoder cables for b maXX 5000

A prefabricated encoder cable is used for all encoder systems. The connection at the motor end consists of a 12-pole circular signal connector on resolvers and Hyperface® encoder, a 17-pole circular signal connector on ECN1313/EQN1325. The connection at the controller side consists of a 26-pole D-Sub connector. Alternatively, the signal connector on the motor side is available in a Speed-Tec version.

3.5.1. Technical data

Technical description - dragable for resolver

- Li9YC, 1 x (2 x 0,25) + Li9Y, 2 x (2x0,25) + Li9YC11Y, 1 x (2 x 0,34), copper strand, twisted pairs
- PUR sheat, green; inscription with Baumüller Nürnberg and encoder cable Resolver
- 1st side: 12-pole circular signal plug connector with 12 socket contacts
- 2nd side: 26-pole D-Sub plug connector with pin contacts and locking screws 4-40UNC
- Outer diameter 7.3 mm (+/- 0.3mm)
- Bending radius: $r \geq 4 \times D$ (fixed routing), $r \geq 10 \times D$ (flexible use)

Technical description - dragable for SinCos Hyperface®-interface und SinCos - and TTL - incremental encoder

- Li9YC, 3 x (2 x 0,25) , + Li9Y, 3 x (2 x 0,25) + Li9YC11Y, 1 x (2x0,34), copper strand, twisted pairs
- PUR sheat, green; inscription with Baumüller Nürnberg and encoder cable Hyperface or Incremental
- 1st side: 12-pole circular signal plug connector with 12 socket contacts
- 2nd side: 26-pole D-Sub plug connector with pin contacts and locking screws 4-40UNC
- Outer diameter 9.6 mm (+/- 0.3mm)
- Bending radius: $r \geq 4 \times D$ (fixed routing), $r \geq 10 \times D$ (flexible use)

Technical description – dragable for EnDat® 2.1-interface

- Li9YC, 3 x (2 x 0,25) , + Li9Y, 3 x (2 x 0,25) + Li9YC11Y, 1 x (2x0,34), copper strand, twisted pairs
- PUR sheat, green; inscription with Baumüller Nürnberg and encoder cable Endat 2.1
- 1st side: 17-pole circular signal plug connector with 17 socket contacts
- 2nd side: 26-pole D-Sub plug connector with pin contacts and locking screws 4-40UNC
- Outer diameter 9.6 mm (+/- 0.3mm)
- Bending radius: $r \geq 4 \times D$ (fixed routing), $r \geq 10 \times D$ (flexible use)

Technical description – Draggable hybrid cable for Hiperface DSL®

- Hybrid cable
- Shielding braid Copper wires, tinned
- PUR sheath, orange, flame-retardant, self-extinguishing
- 1st side: metal round plug speedtec M23 hybrid socket 8-pole for wire with 4G1.5 and 4G2.5
metal round plug speedtec M40 hybrid socket 5+4-pole + 2 -pole insulating body for wire with 4G2.5, 4G4 and 4G6
- 2nd side: Metal 45°-D-Sub plug, 26-pole with electronics
- Ready-for-use cable for bmaXX 5300
- Cable for bmaXX 5500 being prepared

3.5.2. Application references

- **Operating temperature of encoder cable resolver/ SinCos Hiperface®-interface / SinCos - and TTL - incremental encoder / EnDat® 2.1**

Limit temperature	on the surface
Static use/minimal movement	- 40 °C to + 80 °C
Permanent movement	- 20 °C to + 60 °C

- **Routing of cable on motor**

The cables must not touch the surface of the motor.

3.5.3. Order information for encoder cables

Encoder cable - prefabricated with plug

For resolver

Length in m	Item Number	Item Number (Speed Tec)
1	429914	448746
2	429915	448747
3	429916	448748
5	429917	448749
7	429918	448750
10	429919	448751
15	429920	448752
20	429921	448753
25	429922	448754
30	429923	448755
35	429924	448756
40	429925	448757
50	429926	448758
75	429927	448759

For SinCos Hiperface® - interface

Length in m	Item Number	Art. Nr. (Speed Tec)
1	429958	448761
2	429959	448762
3	429960	448763
5	429961	448764
7	429962	448765
10	429963	448766
15	429964	448767
20	429965	448768
25	429966	448769
30	429967	448770
35	429968	448772
40	429969	448773
50	429970	448774
75	429971	448775

For SinCos - and TTL - incremental encoder

Length in m	Item Number	Item Number (Speed Tec)
1	430015	448777
2	430016	448778
3	430017	448779

For SinCos EnDat® 2.1 - interface

Length in m	Item Number	Item Number (Speed Tec)
1	429986	448796
2	429987	448797
3	429988	448798

5	430018	448780	5	429989	448799
7	430019	448781	7	429990	448800
10	430020	448782	10	429991	448801
15	430021	448783	15	429992	448802
20	430022	448784	20	429993	448803
25	430023	448785	25	429994	448804
30	430024	448786	30	429995	448805
35	430025	448787	35	429996	448806
40	430026	448788	40	429997	448807
50	430027	448789	50	429998	448808
75	430028	448790	75	429999	448809

For Hiperface DSL® hybrid cables size 1 for bmaXX 5300¹⁾

Length [m]	Rated current 15A	Rated current 20A
	4G1.5+(2x0.75)+ (2x22AWG)	4G2.5+(2x1.0)+ (2x22AWG)
	Item No.	Item No.
3	464201	464217
5	464202	464218
7	464203	464219
10	464204	464220
15	464205	464221
20	464206	464222
25	464207	464223
30	464208	464224
35	464209	464225
40	464210	464226
50	464211	464227
60	464212	464228

For Hiperface DSL® hybrid cables size 1.5 for bmaXX 5300¹⁾

Length [m]	Rated current 21A	Rated current 28A	Rated current 36A
	4G2.5+(2x1.0)+(2x22AWG)	4G4.0+(2x1.0)+(2x22AWG)	4G6.0+(2x1.0)+(2x22AWG)
	Item No.	Item No.	Item No.
3	464235	448798	464278
5	464236	448799	464279
7	464237	448800	464280
10	464238	448801	464281
15	464239	448802	464282
20	464240	448803	464283
25	464241	448804	464284
30	464242	448805	464285
35	464243	448806	464286
40	464244	448807	464287
50	464245	448808	464288
60	464246	448809	464289

¹⁾ Cables are being prepared for bmaXX 5500

3.6. Motor cables

The motor cables are highly flexible trailing cables with overall shielding. They comply with VDE, UL and CSA regulations. The control cables are integrated as star quads. The brake control and the temperature sensor are connected via the main connector. The cables are particularly suited for the optimum use of cable racks thanks to their small cross-section, low weight, and non-impeding surface. As a result, they can be used efficiently in trailing chains. The overall shielding with an optical coverage of more than 85% makes the cable non-critical from an EMC perspective.

3.6.1. Technical data

- Sheath resistance to media such as coolants and machine and gearbox oils
- Abrasion resistance thanks to a special surface in cable racks and trailing chains
- Highly flexible trailing cable, minimum bending radius for flexible use: 12 x D
- Non-blocking sheath surface with satin finish
- Shield made of tinned copper braid with optical coverage of $\geq 85\%$
- Core insulation made from TPE or polyester, sheath material: Halogen-free PUR
- Cable is CFC and silicone-free
- Behavior in the event of fire: Fire-inhibiting, halogen-free
- Cable color RAL 1028, melon yellow
- Label features Baumüller logo and VDE, UL and CSA marks

Rated voltage

- U_0/U 600/1.000 V (power cores)
- U 24 V DC (control cores)

Core labeling

- Power cores U, VV, WWW
- Colored control cable pairs as star quads in red, white, black, yellow

Assignment of pairs: (note the polarity)

- Red – black (brake)
- white – yellow (temperature)

3.6.2. Main connection via connector

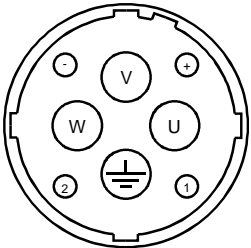
Note:

The connector size is determined by the standstill current I_0 of the motor used. Motors with a standstill current of $\leq 20A$ feature a size 1 main connector. For standstill currents of $20 A < I_0 \leq 36 A$, a size 1.5 main connector is used. A terminal box must be used at a $I_0 > 36A$.

Poles of the female main connectors:

		Pin	Signal	Color/labeling
Size 1 $I_0 \leq 20 A$		1	Phase U	U
		⊥	PE	Green/yellow
		3	Phase V	V V
		4	Phase W	W W W
		A	B+	Red
		B	B-	Black
		C	K+	White
		D	K-	Yellow


View of contact side of female connector

		Pin	Signal	Color/labeling
Size 1.5 $I_0 \leq 36 \text{ A}$		U V W ⏏ + - 1 2	Phase U Phase V Phase W PE B+ B- K- K+	U V V W W W green / yellow Red Black White Yellow

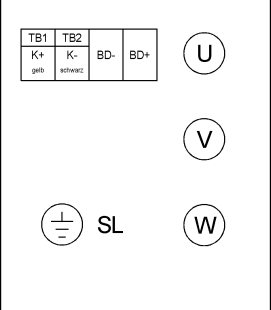
View of contact side of female connector

Cable cross-section ²⁾	Rated current [A] ^{1) 2)}	Connector 540 V Size ²⁾	Cable diameter ²⁾ [mm]
4x1.5 mm ² + 4x0.75 mm ²	15	1	11.7 – 12.3
4x2.5 mm ² + 4x0.75 mm ²	20	1	12.7 – 14.6
4x4 mm ² + 4x0.75 mm ²	28	1.5	14.2 – 15.4
4x6 mm ² + 4x0.75 mm ²	36	1.5	16.6 – 17.9
4x10 mm ² + 4x0.75 mm ²	50	1.5	20.5 – 21.5
4x16 mm ² + 4x0.75 mm ²	66	-	23.0-25.8
4x25 mm ² + 2x(2x1.5 mm ²)	84	-	26.3-29.7
4x35 mm ² + 2x(2x1.5 mm ²)	104	-	30.8-32.5

¹⁾ Current carrying capacity acc. to Table 5, laying type C or E VDE 0113/EN 60204 Part 1 issue 1997)
Ambient temperature 40 °C

²⁾ Deviating regulations apply for  approved motors

3.6.3. Main connection via terminal boxes

	<p>Connection diagram</p> <p>U V W Power connection K+ / K- Temperature sensor BD+ / BD- Brake SL Earth wire</p>
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3.6.4. Application notes

Operating temperature

The cables can be operated within a temperature range of between -20 °C and +80 °C,

Cable laying at the motor

The cables must not touch the motor surface,

Smallest permissible bending radii

12x outer cable diameter,

3.6.5. Ordering data for main connection cables

Rated current: 15 A

Cable 4 x 1,5 mm² + 4 x 0,75 mm²

With connector size 1

Length in m	Item Number	Item Number	Speed	Tec
5	324781	445872		
7	324782	445887		
10	324783	445889		
15	324784	447675		
20	324785	447676		
25	324786	447677		
30	324787	447678		
35	324788	447679		
40	324789	447680		
50	324790	447681		
75	324791	447682		
100	324792	447683		

Rated current: 28 A

Cable 4 x 4 mm² + 4x 0,75 mm²

With connector size 1,5

Length in m	Item Number	Item Number	Speed	Tec
5	326589	448063		
7	326591	448064		
10	326592	448065		
15	326593	448066		
20	326594	448067		
25	326596	448069		
30	326597	448070		
35	326598	448071		
40	326599	448072		

Rated current: 20 A

Cable 4 x 2,5 mm² + 4x 0,75 mm²

With connector size 1

Length in m	Item Number	Item Number	Speed	Tec
5	414840	447684		
7	380967	447687		
10	413410	447688		
15	414841	447692		
20	414842	447698		
25	414843	447852		
30	414846	447853		
35	414848	447854		
40	414849	447855		
50	414850	447856		
75	414851	447857		
100	414852	447858		

Rated current 36 A

Cable 4 x 6 mm² + 4x 0,75 mm²

With connector size 1,5

Length in m	Item Number	Item Number	Speed	Tec
5	326600	448080		
7	326601	448118		
10	326602	448119		
15	326603	448120		
20	326604	448121		
25	326605	448122		
30	326606	448123		
35	326607	448124		
40	326608	448125		

Rated current: 21 A

Cable 4 x 2,5 mm² + 4x 0,75 mm²

With connector size 1,5

Length in m	Article number	Item Number	Speed	Tec
5	326577	447686		
7	326578	447689		
10	326579	447690		
15	326580	447691		
20	326581	447693		
25	326582	447694		
30	326583	447695		
35	326584	447696		
40	326585	447697		
50	326586	447699		
75	326587	448060		
100	326588	448061		

Rated current: 50 A


Cable 4 x 10 mm² + 4x 0,75 mm²

With connector size 1,55

Length in m	Article number	Item Number	Speed	Tec
5	326609	448129		
7	326610	448131		
10	326611	448132		
15	326612	448133		
20	326613	448134		
25	326614	448135		
30	326615	448136		
35	326616	448137		
40	326617	448138		

Mating plug

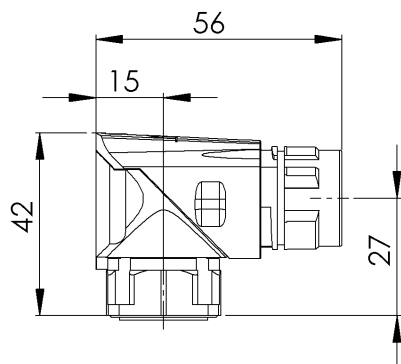
Type	Article number	Art, Nr, Speed	Tec
Gr, 1 f, 4x1,5mm ² o, x2,5mm ²	261740	445486	
Gr, 1,5 f, 4x2,5mm ² bis 4x6mm ²	326574	445487	
Gr, 1,5 f, 4x10mm ²	326569	445488	

Deviating regulations apply for  approved motors,

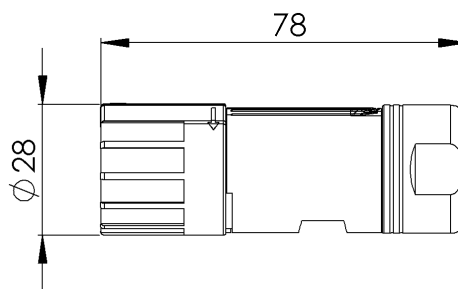
3.7. Dimensional drawings for equipment socket and plug

3.7.1. Main connection:

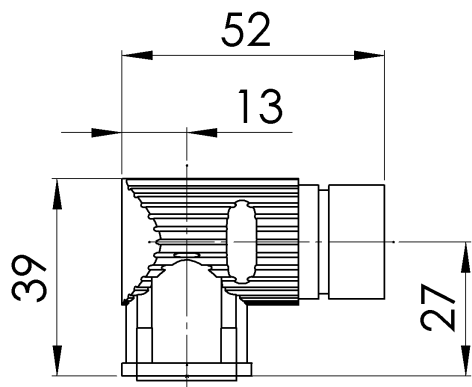
Speed-Tec - rotary angle socket
(Size 1 for Current I_0 up to 20 A)
or hybrid socket DSL Hiperface



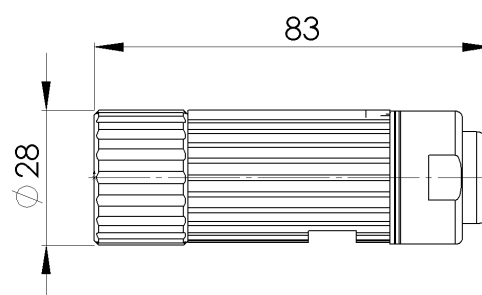
Speed-Tec - mating connector
(Size 1 for Current I_0 up to 20 A)



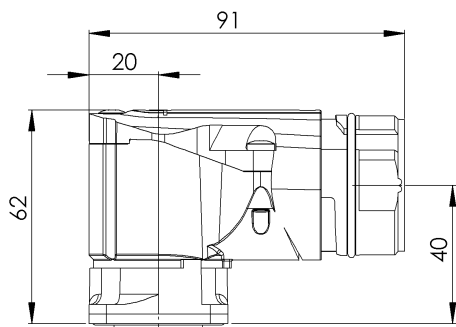
Rotary angle socket
(Size 1 for Current I_0 up to 20 A)



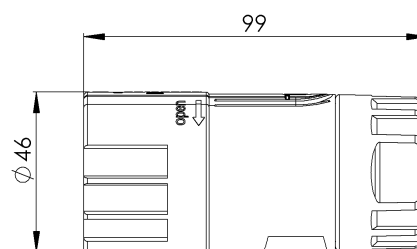
Mating connector
(Size 1 for Current I_0 up to 20 A)



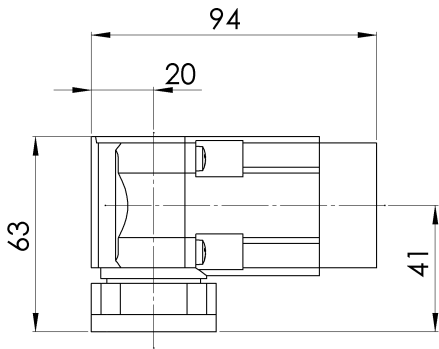
Speed-Tec - rotary angle socket
(Size 1,5 for Current I_0 up to 36 A)
or hybrid socket DSL Hiperface



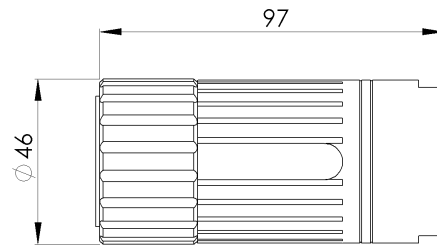
Speed-Tec - mating connector
(Size 1,5 for Current I_0 up to 36 A)



Rotating accessory socket
(Size 1,5 for Current I0 up to 36 A)

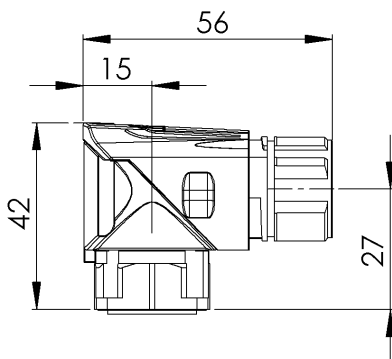


Rotating accessory socket
(Size 1,5 for Current I0 up to 36 A)

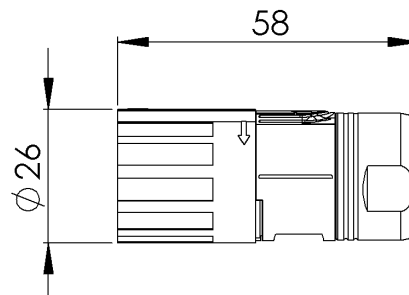


3.7.2. Encoder connection

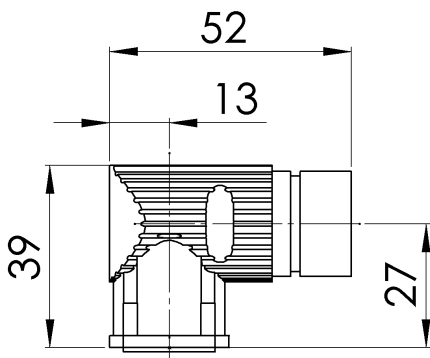
Speed-Tec - rotary angle socket



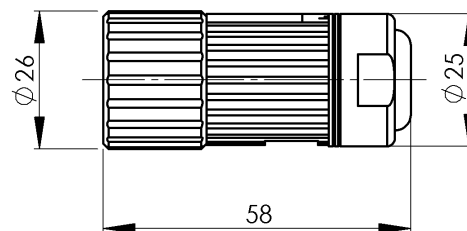
Speed-Tec - mating connector



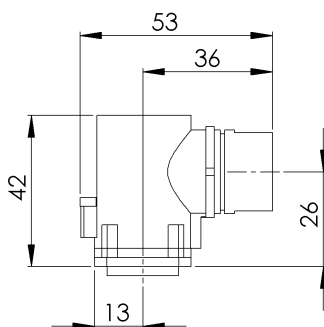
Rotary angle socket



Rotary angle socket - mating connector

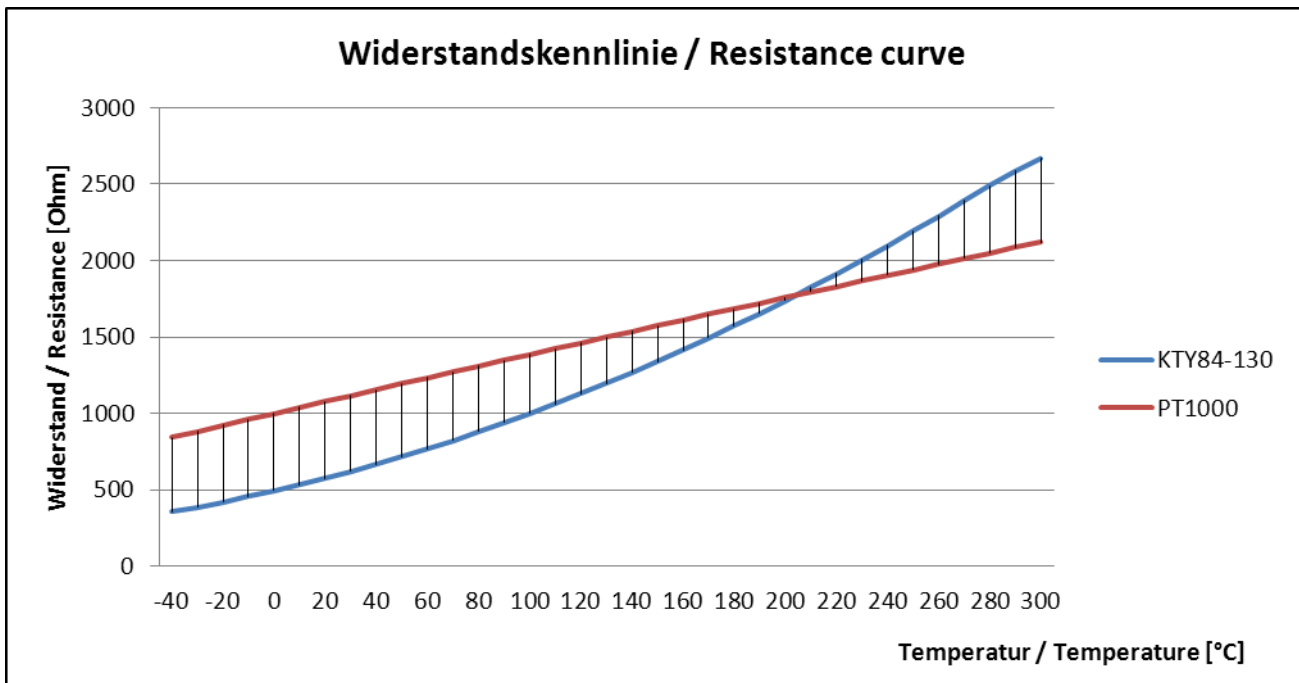


Rotary angle socket for ECN1325/EQN1337 encoder (mating plug cannot be supplied separately)



3.8. Temperature sensor

The temperature sensor is connected via the main connection, Optionally, connection via the encoder box is possible, The respective execution must be marked in the order code,



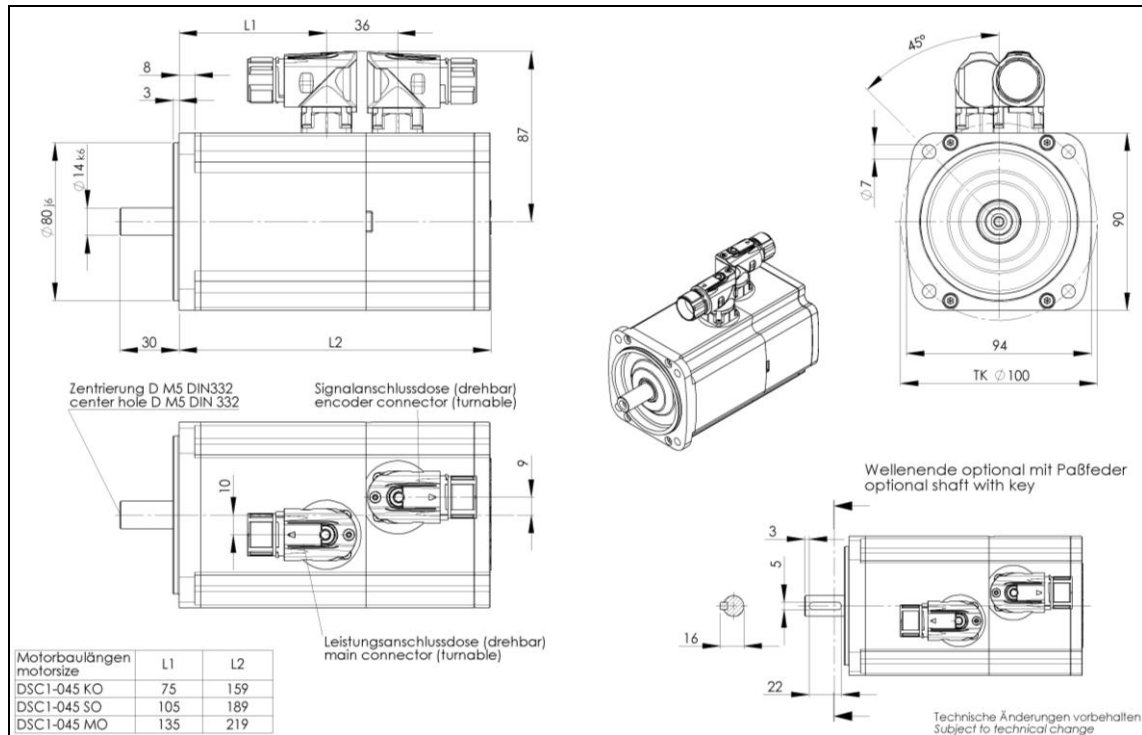
The temperature sensor PT1000 continuously monitors the motor temperature. If the sensor is supplied with a measured current of 2 mA the above shown resistance curve results.

4. Dimension drawings

4.1. Dimension drawings DSC1-045

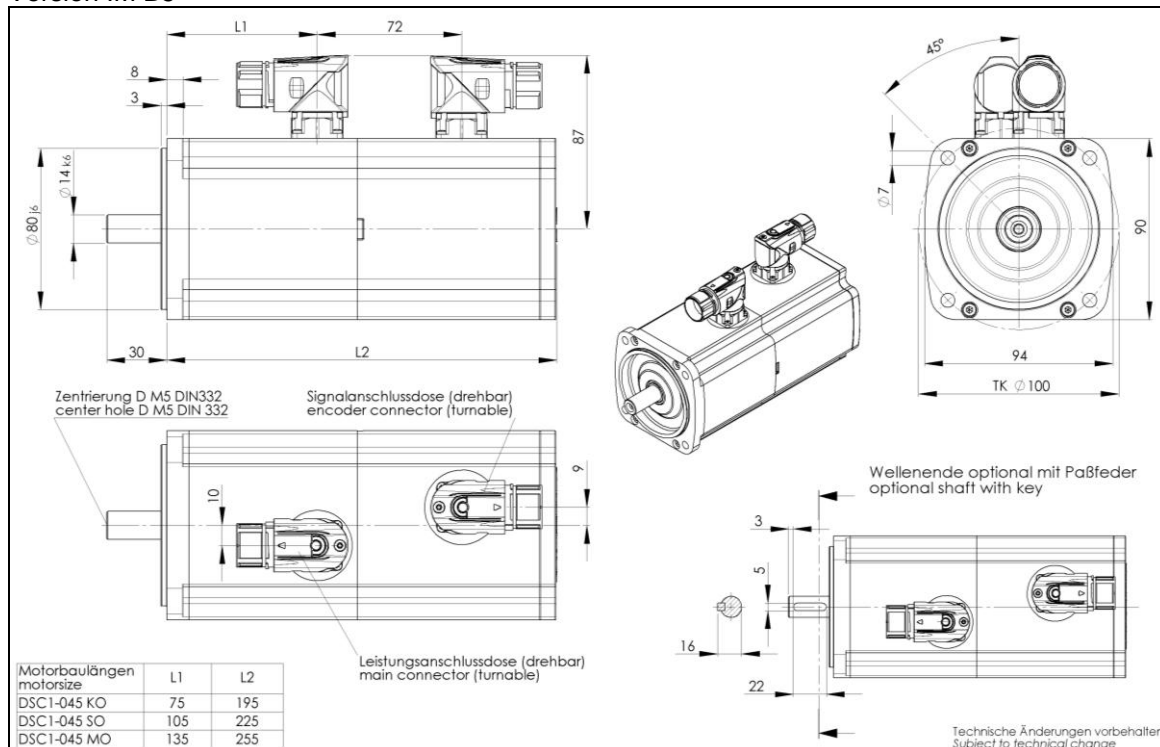
Dimension drawing DSC1-045...U-...-O-PP-...-O-000

Version IM B5



Dimension drawing DSC1-045...U-...-B-PP-...-O-000

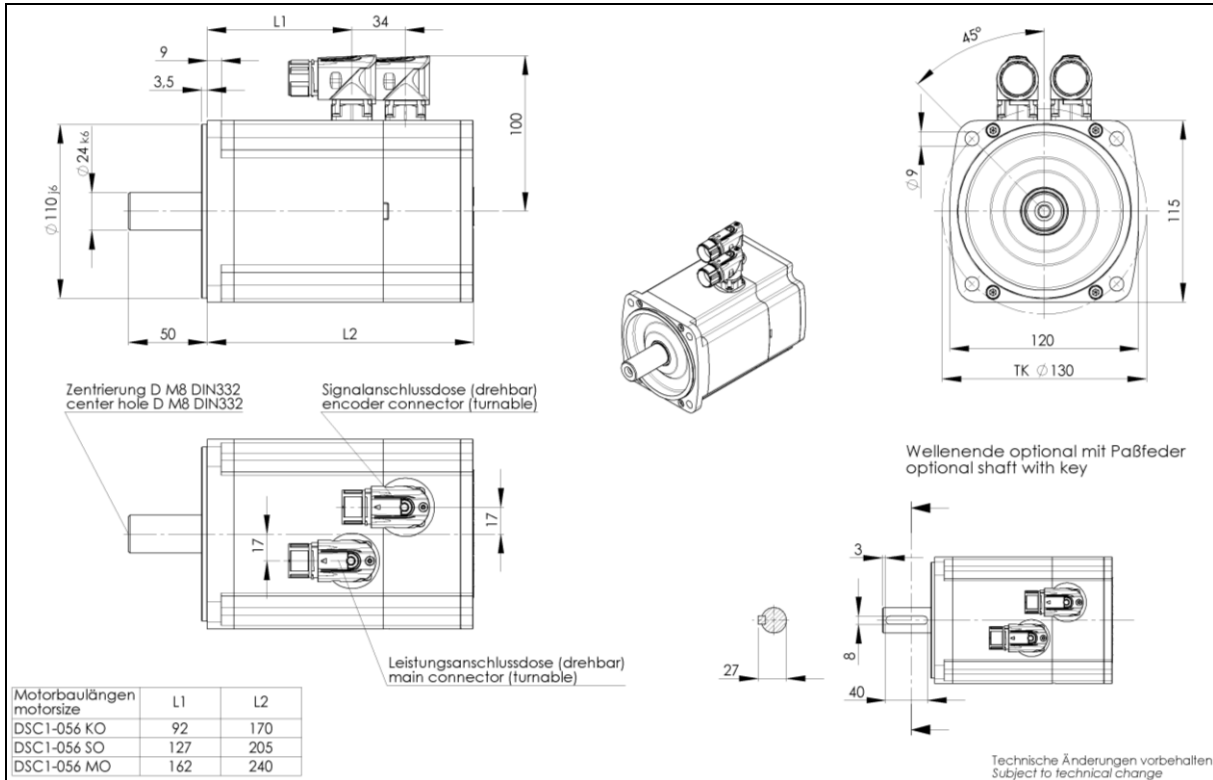
Version IM B5



4.2. Dimension drawings DSC1-056

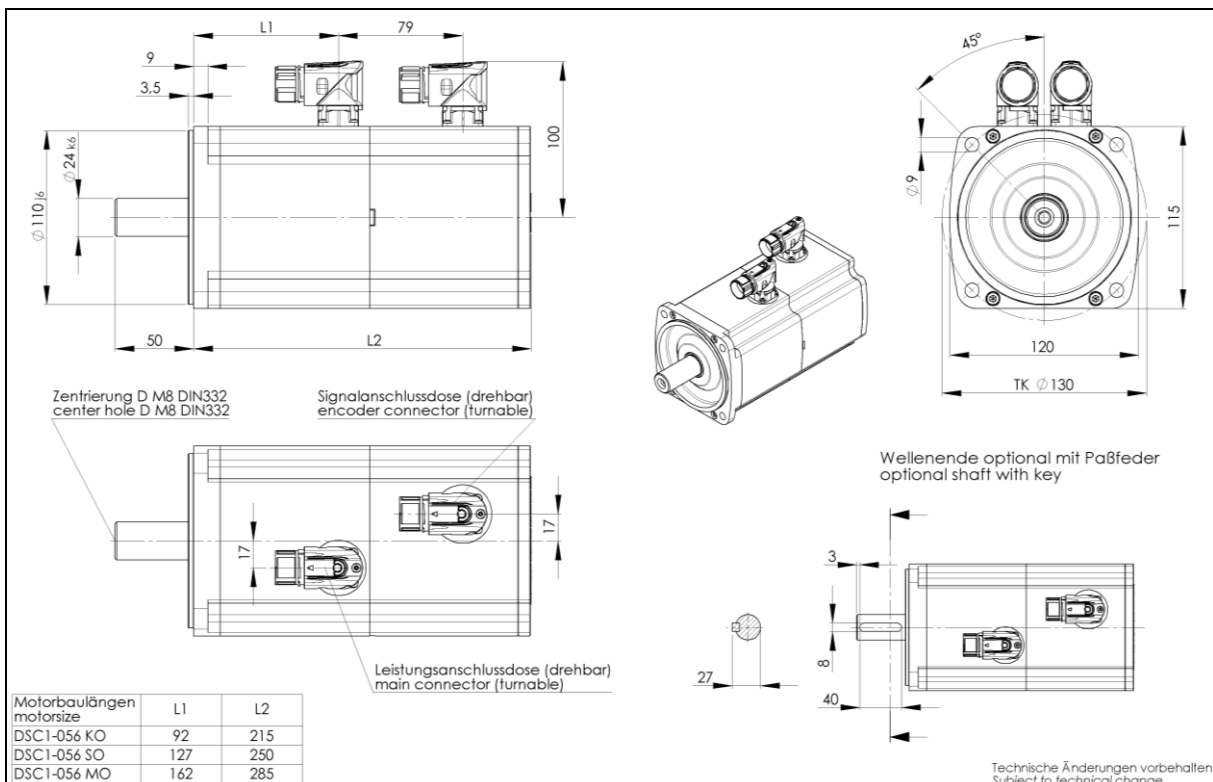
Dimension drawing DSC1-056....U-....-O-..PP-...-O-000

Version IM B5



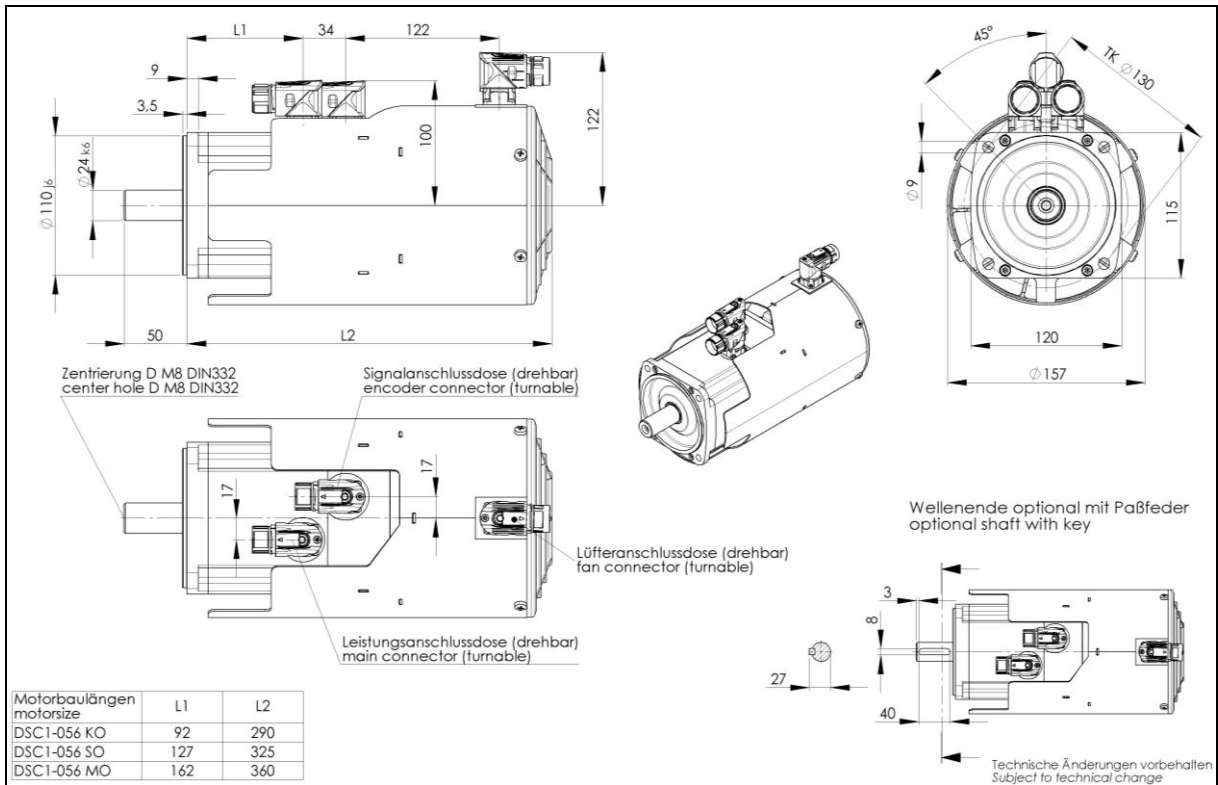
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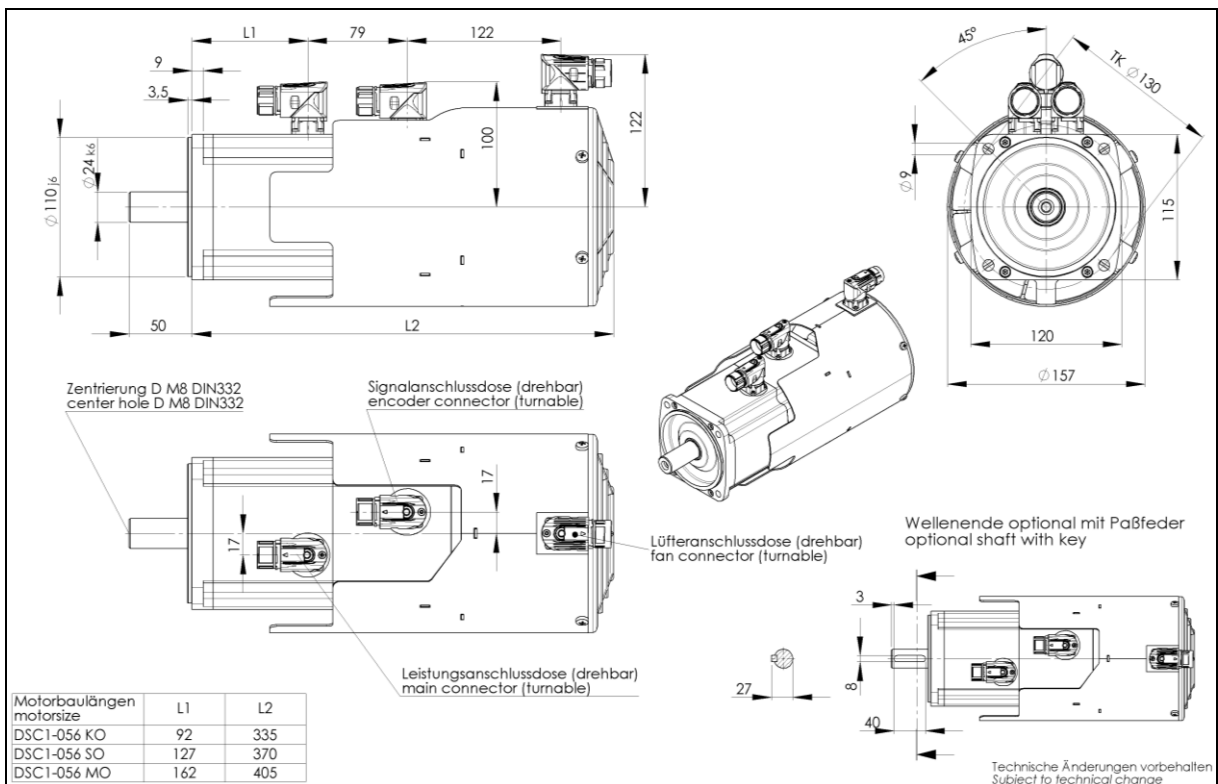
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Version IM B5



Dimension drawing DSC1-056...O-...-B-PP-...-O-000

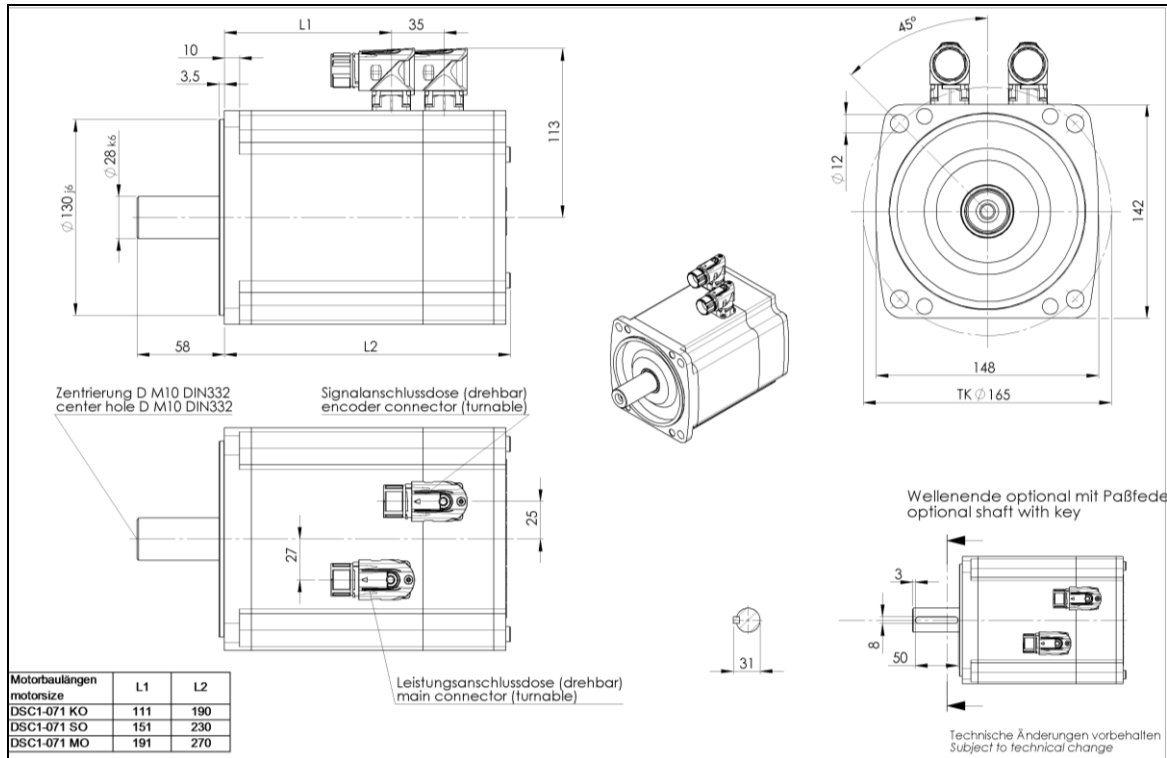
Version IM B5



4.3. Dimension drawings DSC1-071

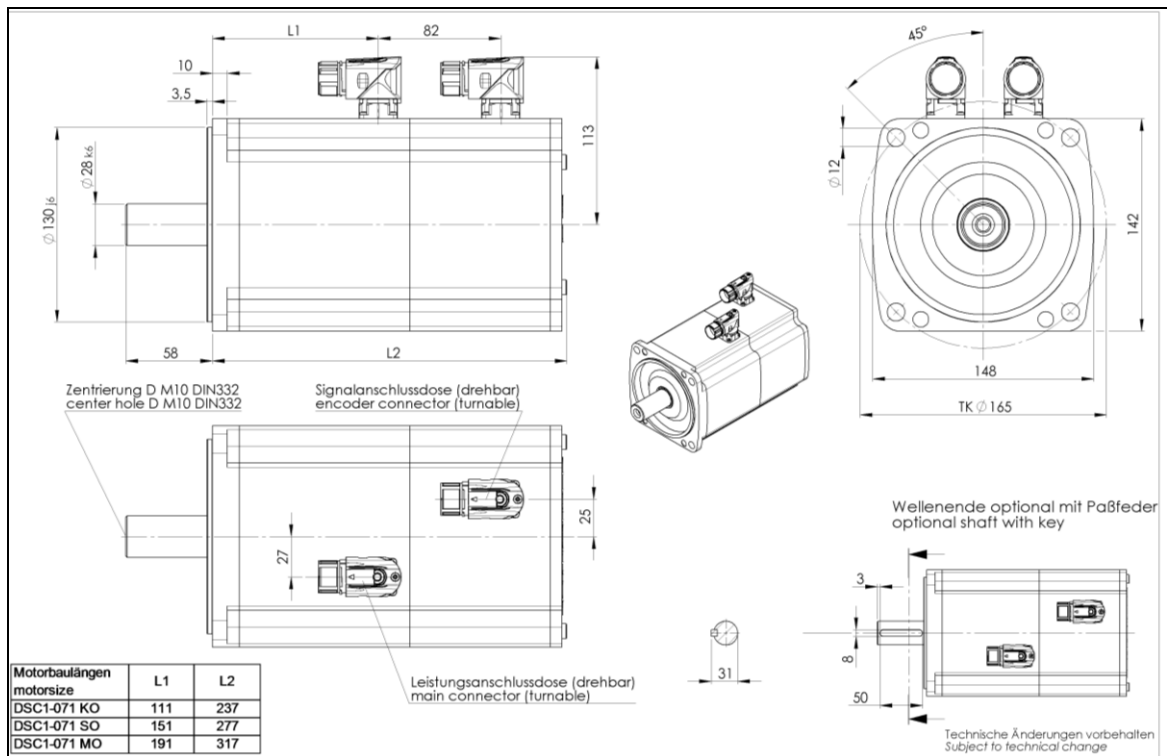
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Version IM B5



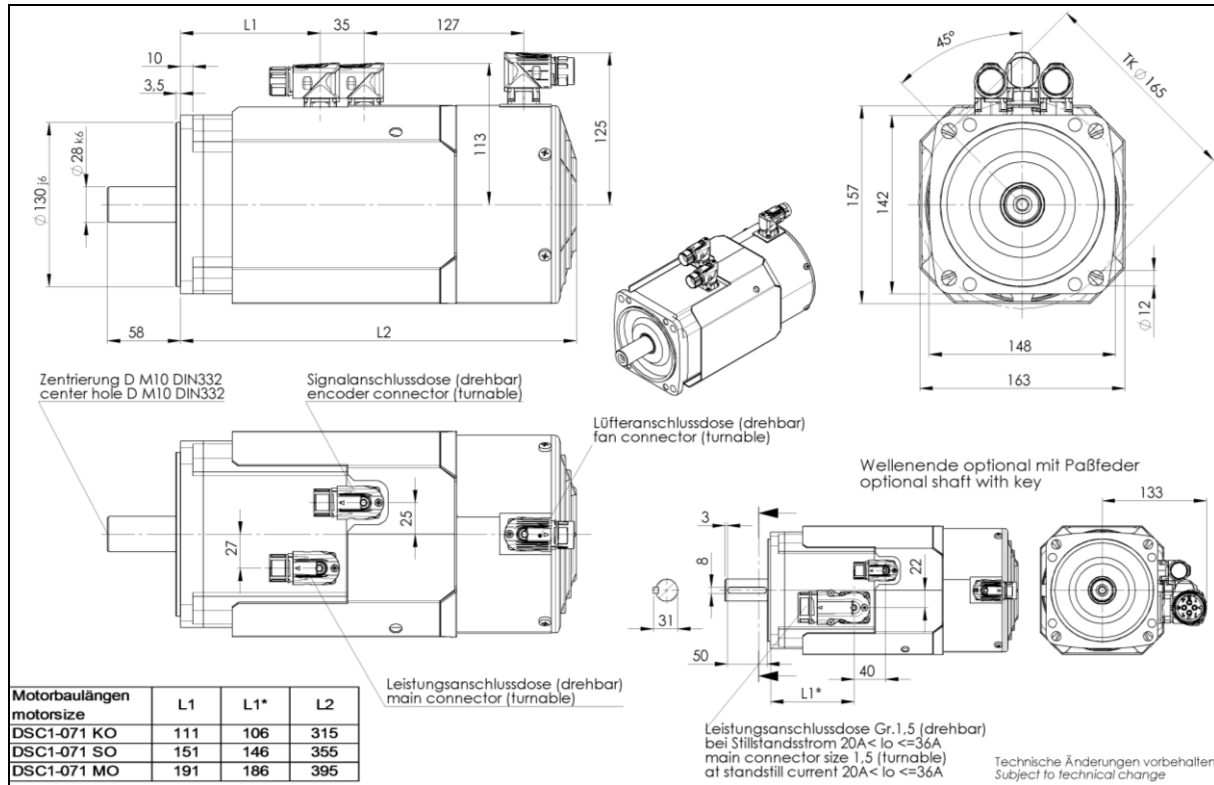
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Version IM B5



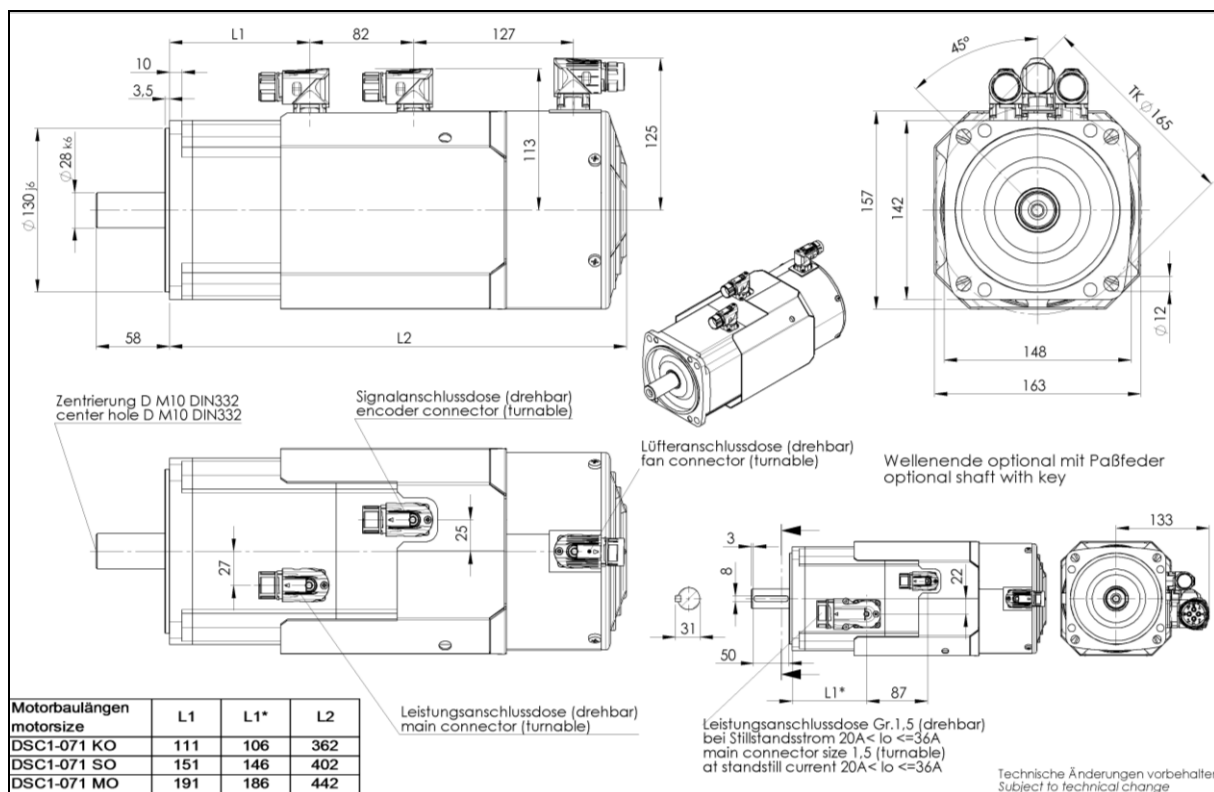
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Version IM B5

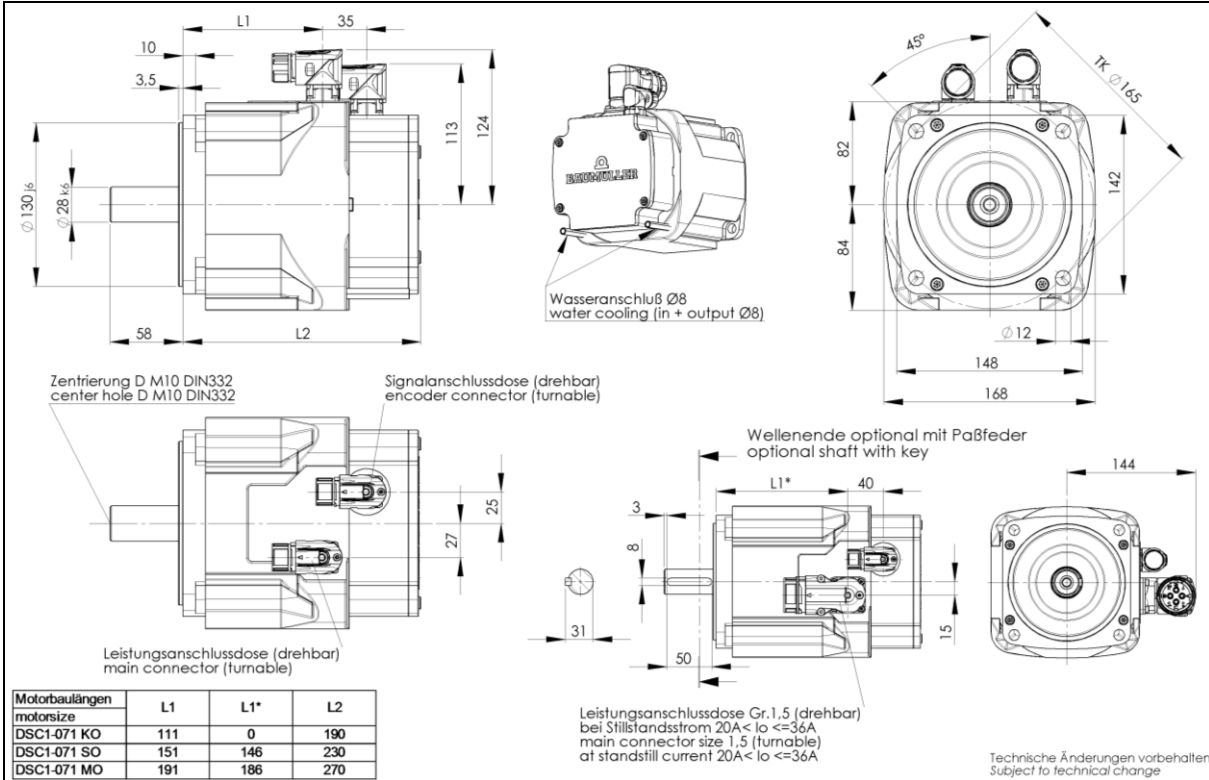


Dimension drawing DSC1-071....O-....B-PP-...-O-000

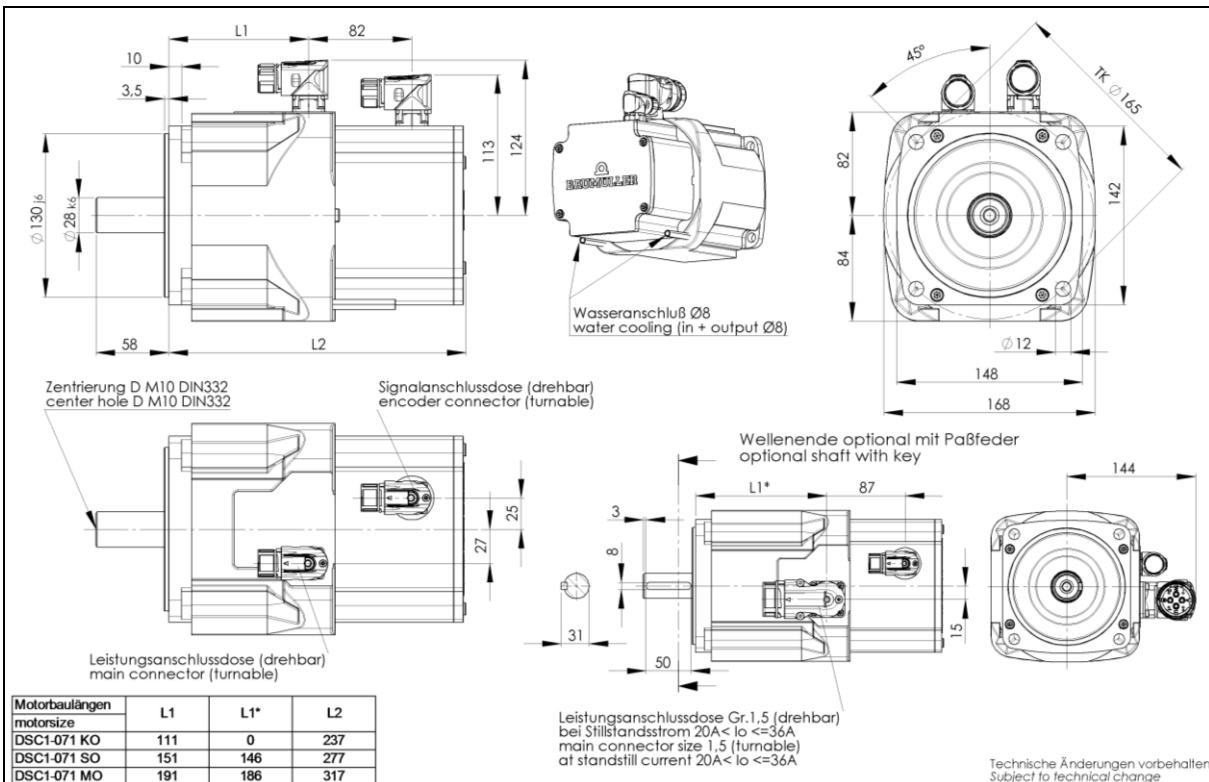
Version IM B5



Dimension drawing DSC1-071....W-....O.-PP-....O-000
Version IM B5



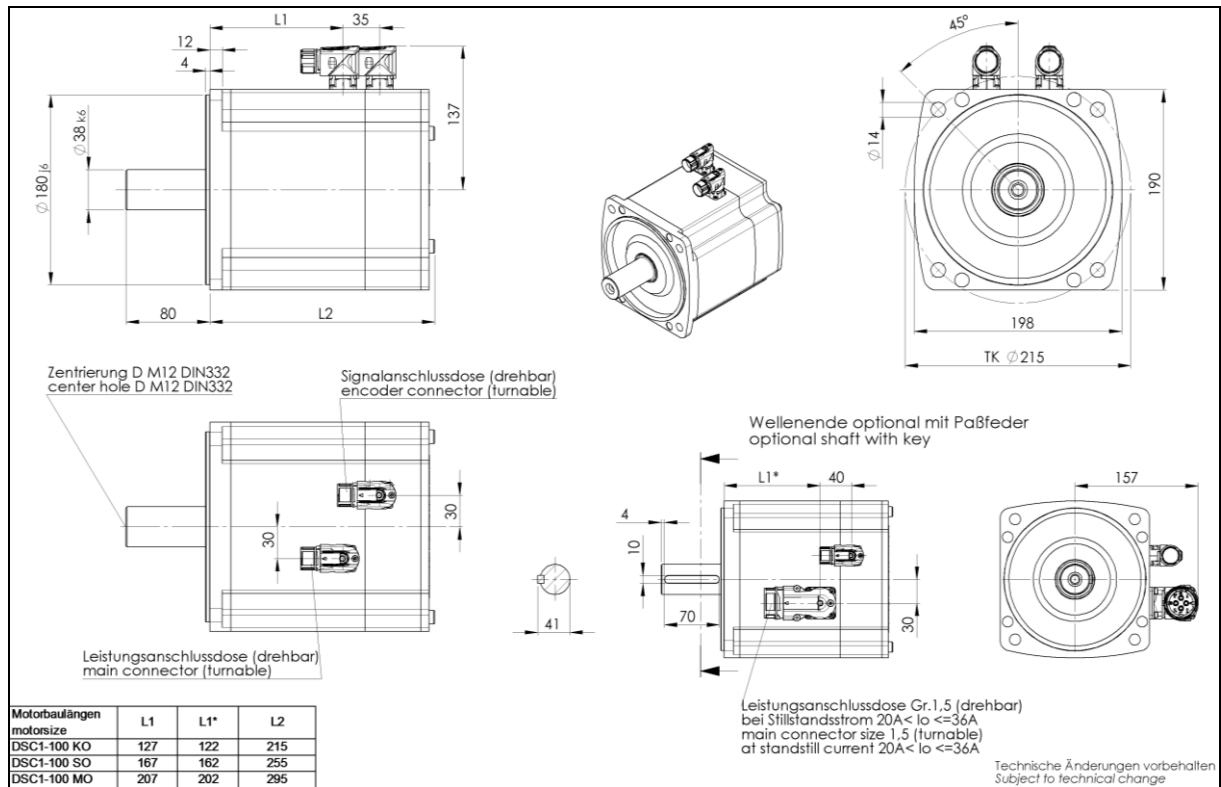
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Version IM B5



4.4. Dimension drawings DSC1-100

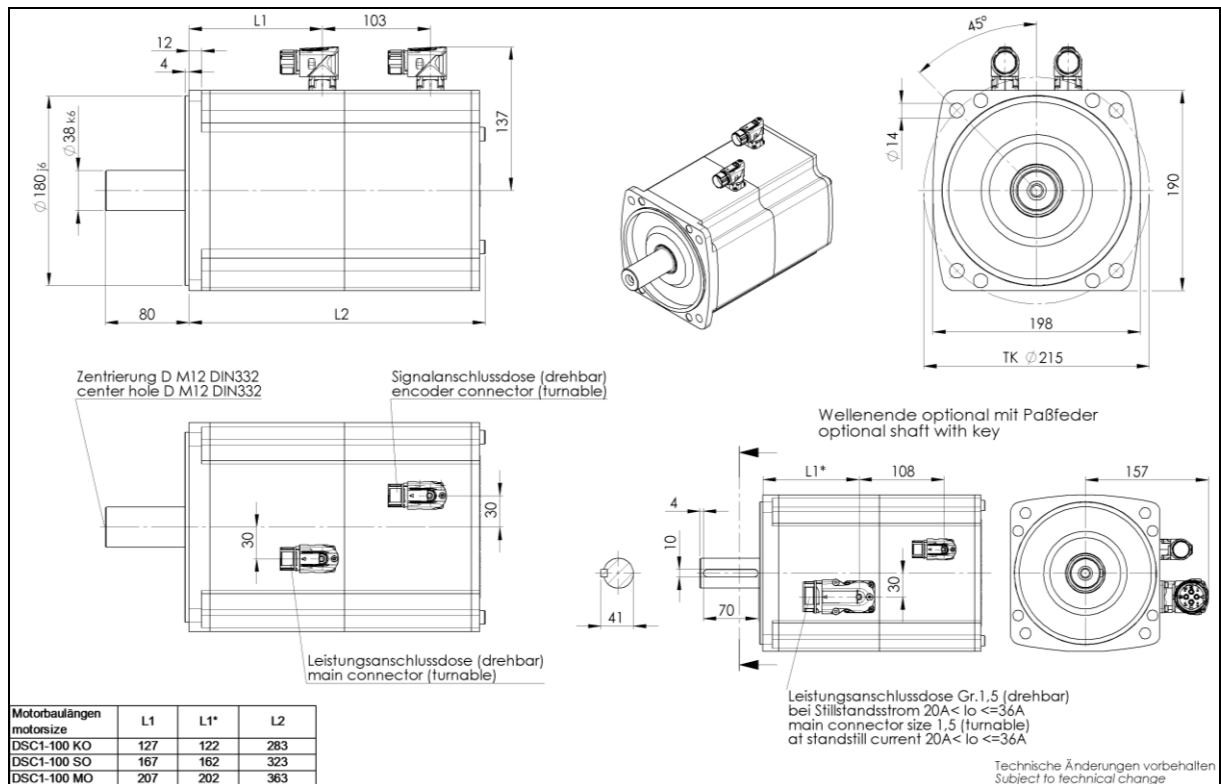
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Version IM B5

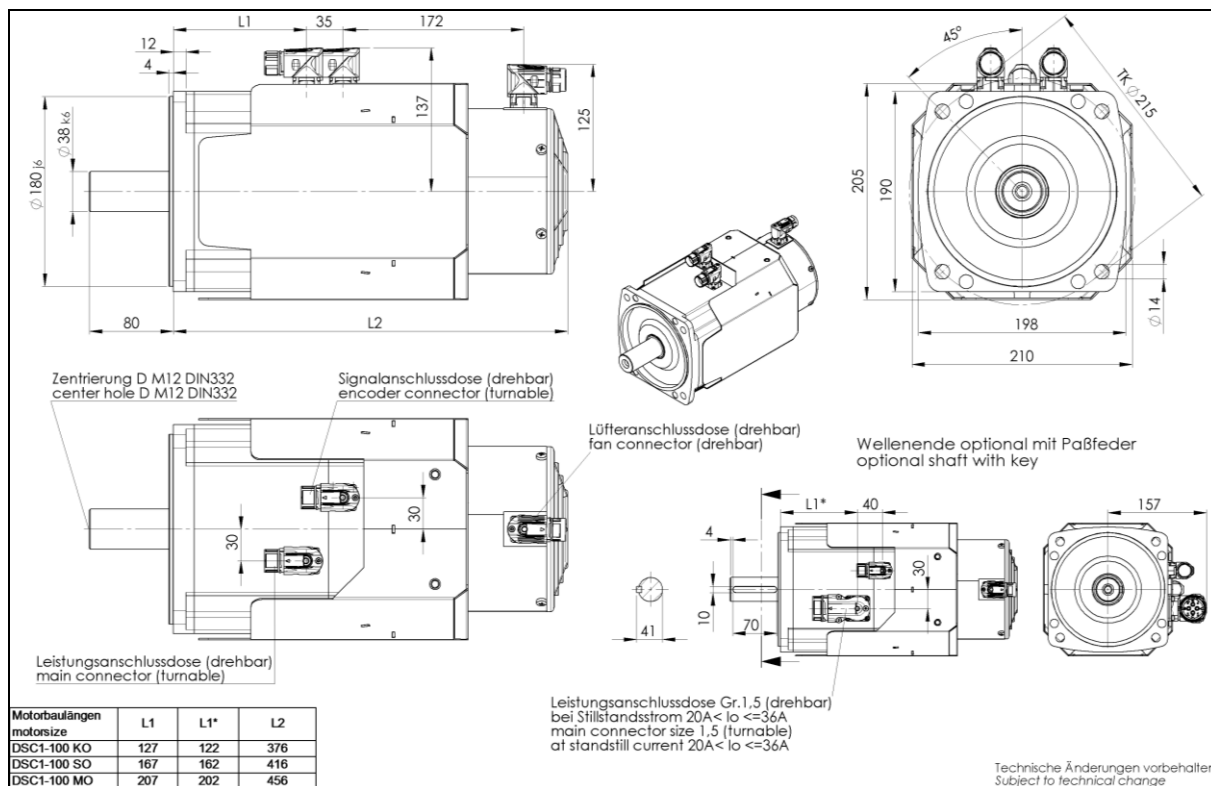


Dimension drawing DSC1-100...U-...-B-PP-...-O-000

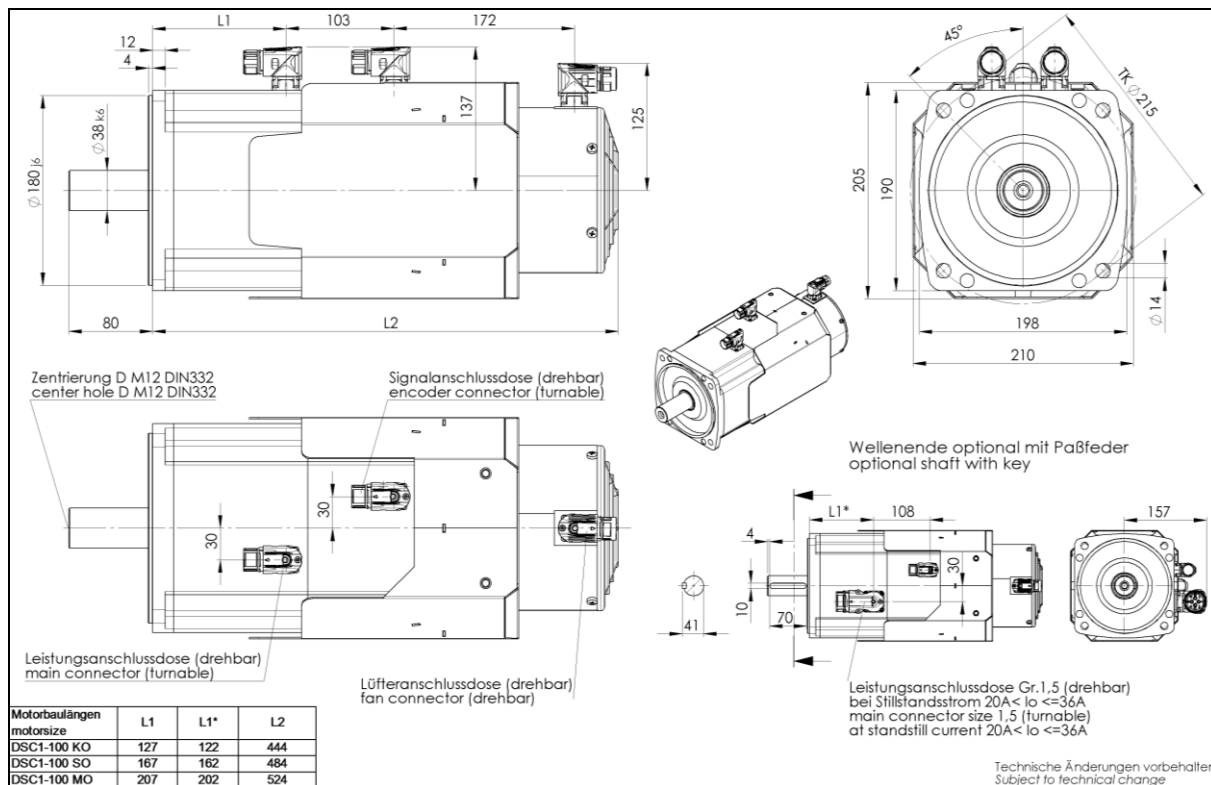
Version IM B5



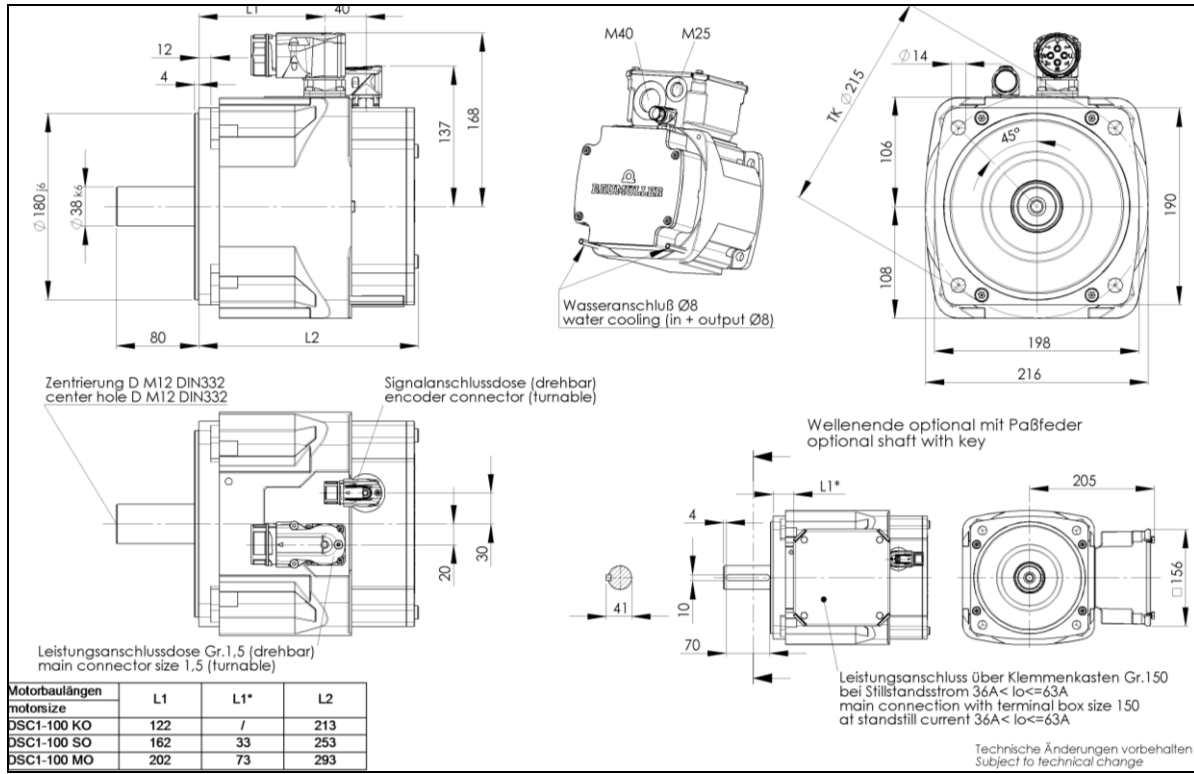
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Version IM B5



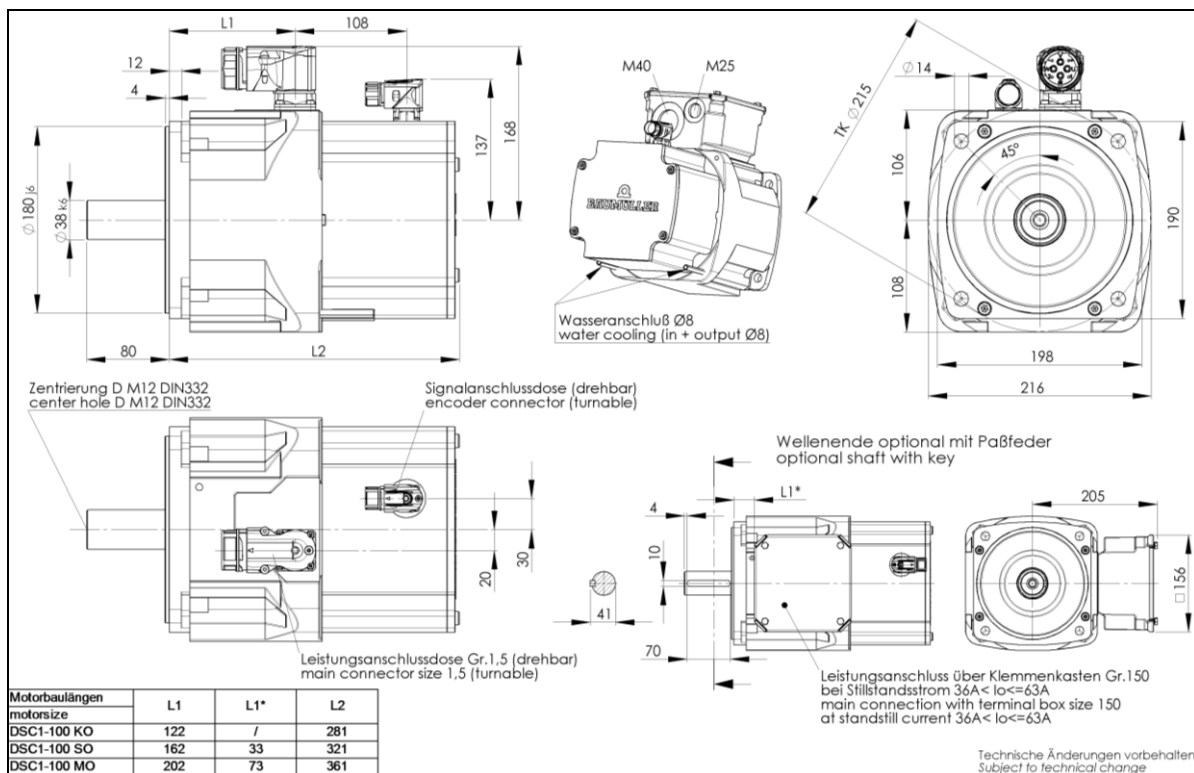
Dimension drawing DSC1-100...O-...-B-PP-...-O-000
Version IM B5



Dimension drawing DSC1-100...W-...-O-...P-...-O-000
Version IM B5



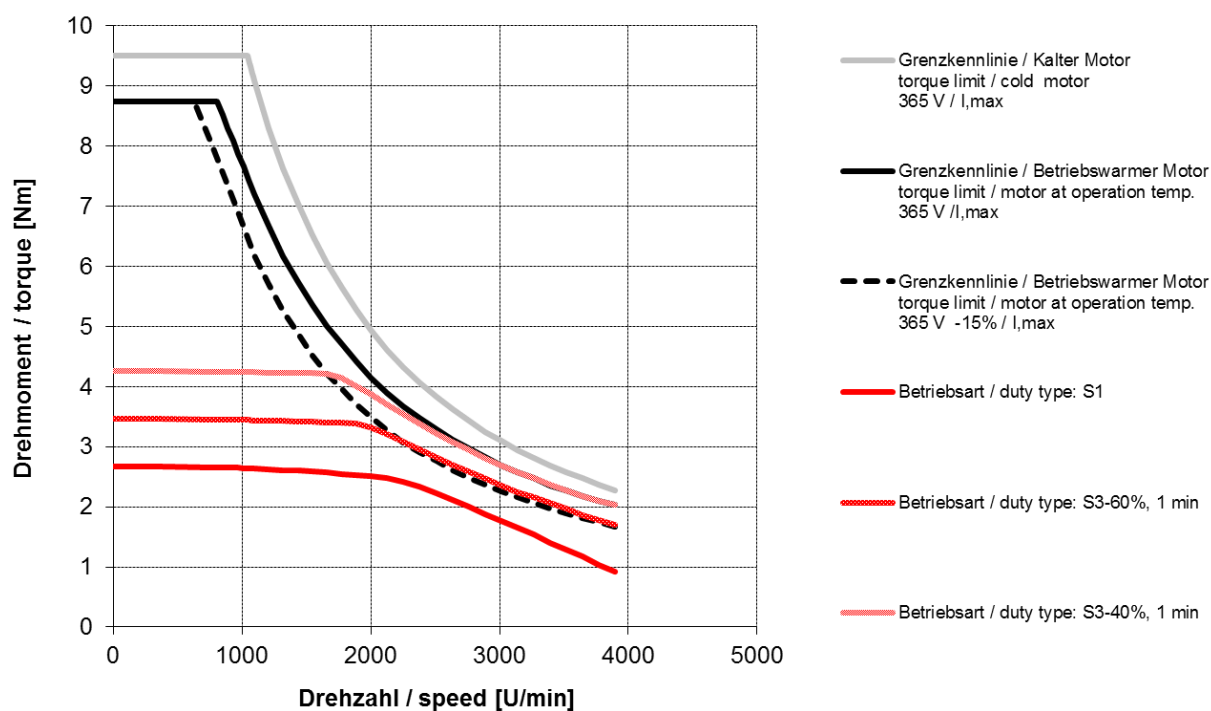
Dimension drawing DSC1-100...W-...-B-...P-...-O-000
Version IM B5



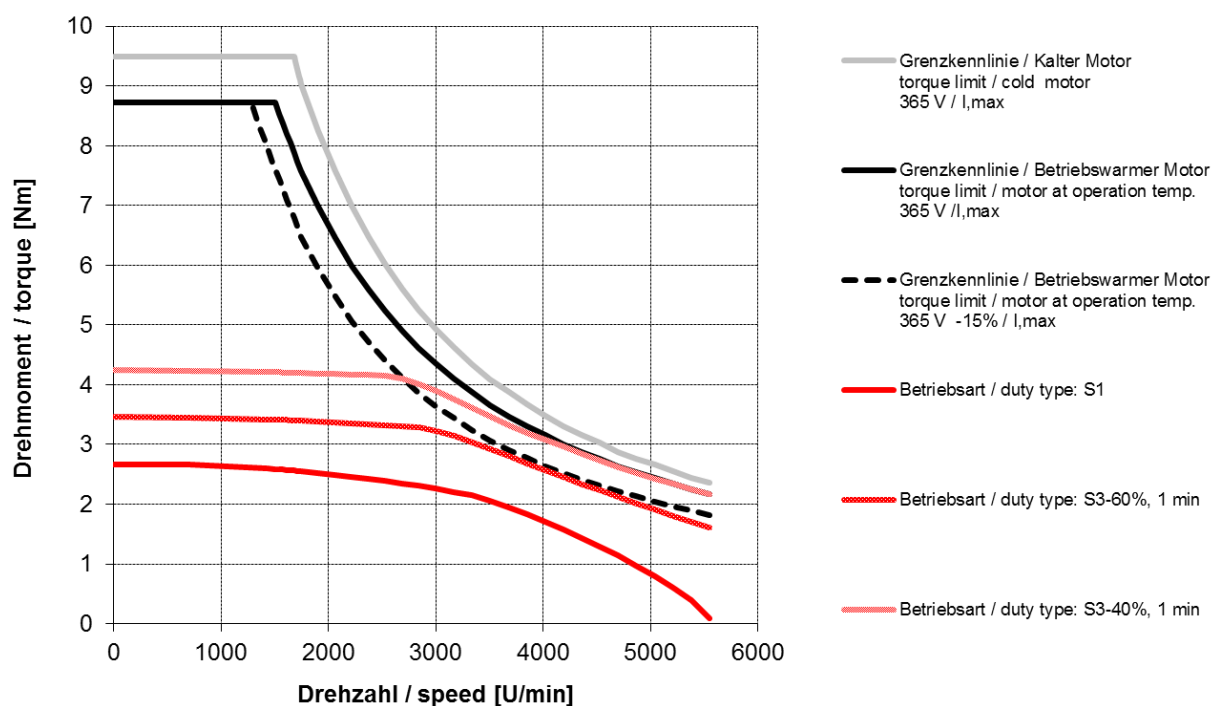
5. Motor characteristic curves

5.1. Characteristic curves DSC1-045

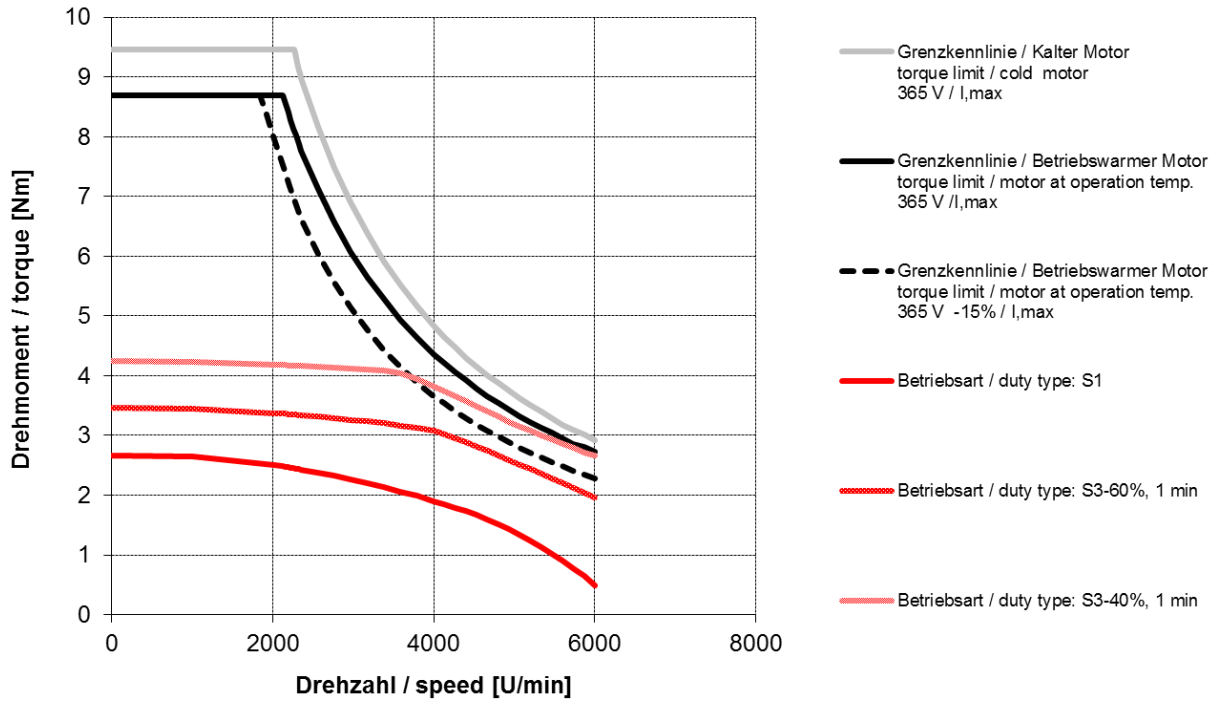
DSC1-045KO64U-20-54



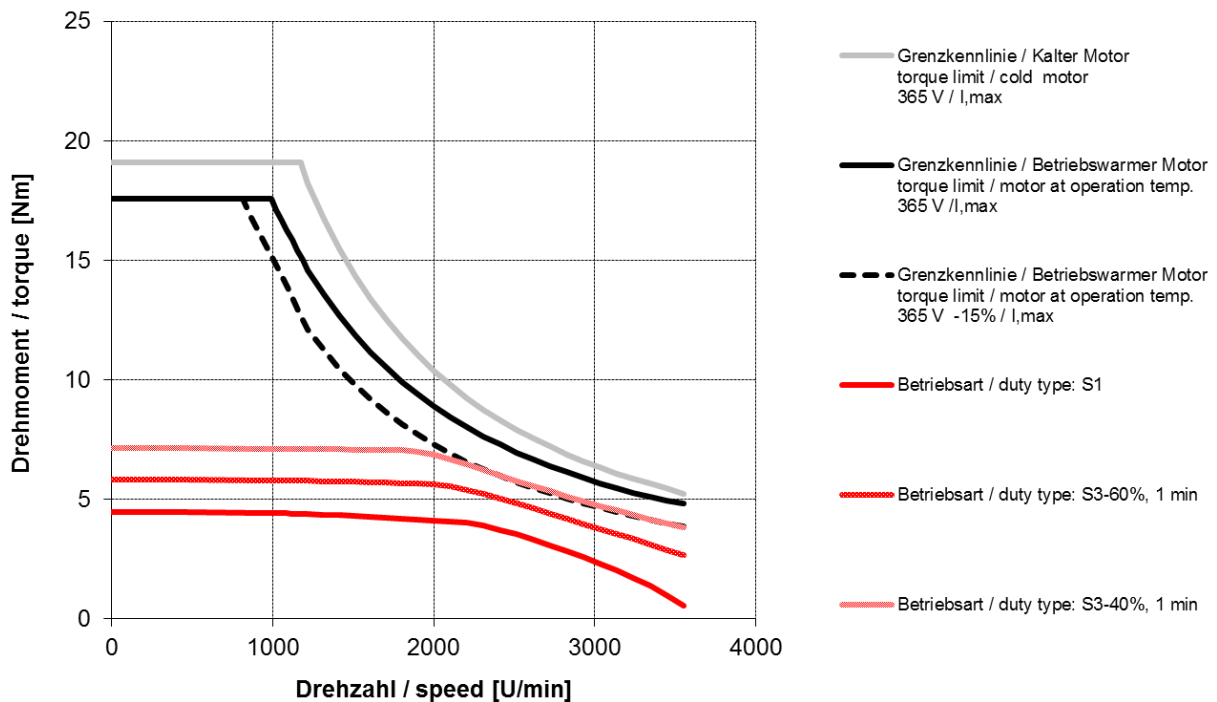
DSC1-045KO64U-30-54



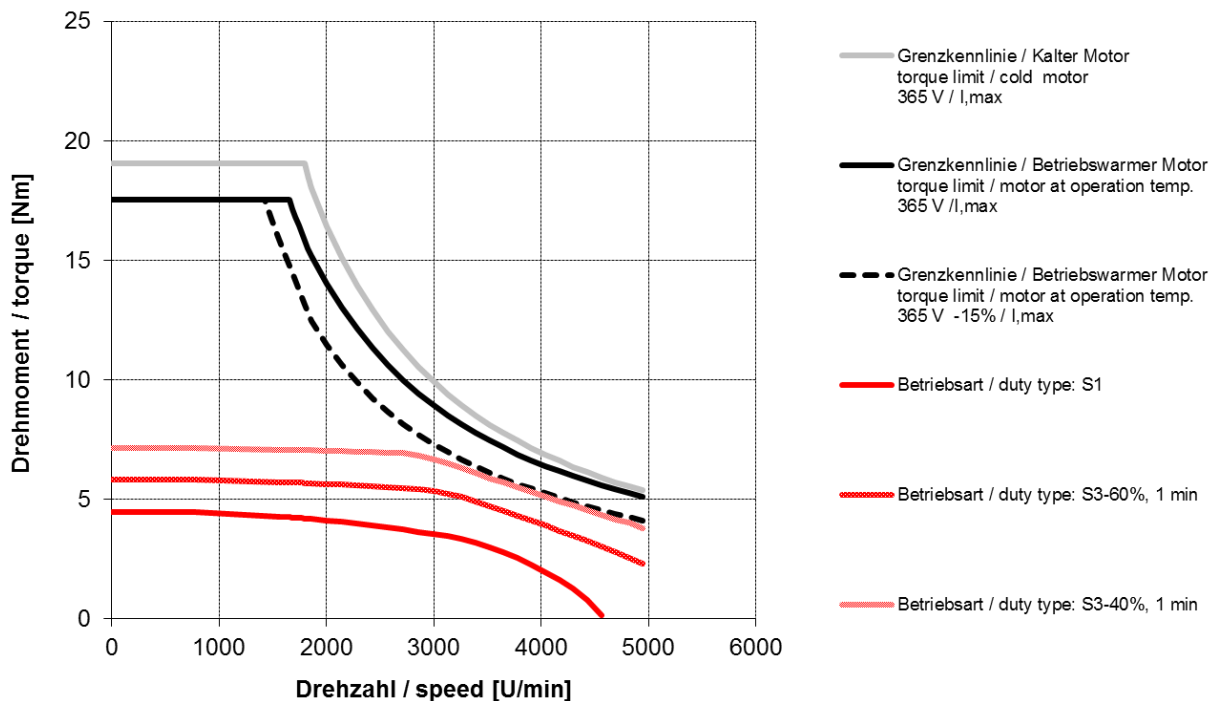
DSC1-045KO64U-40-54



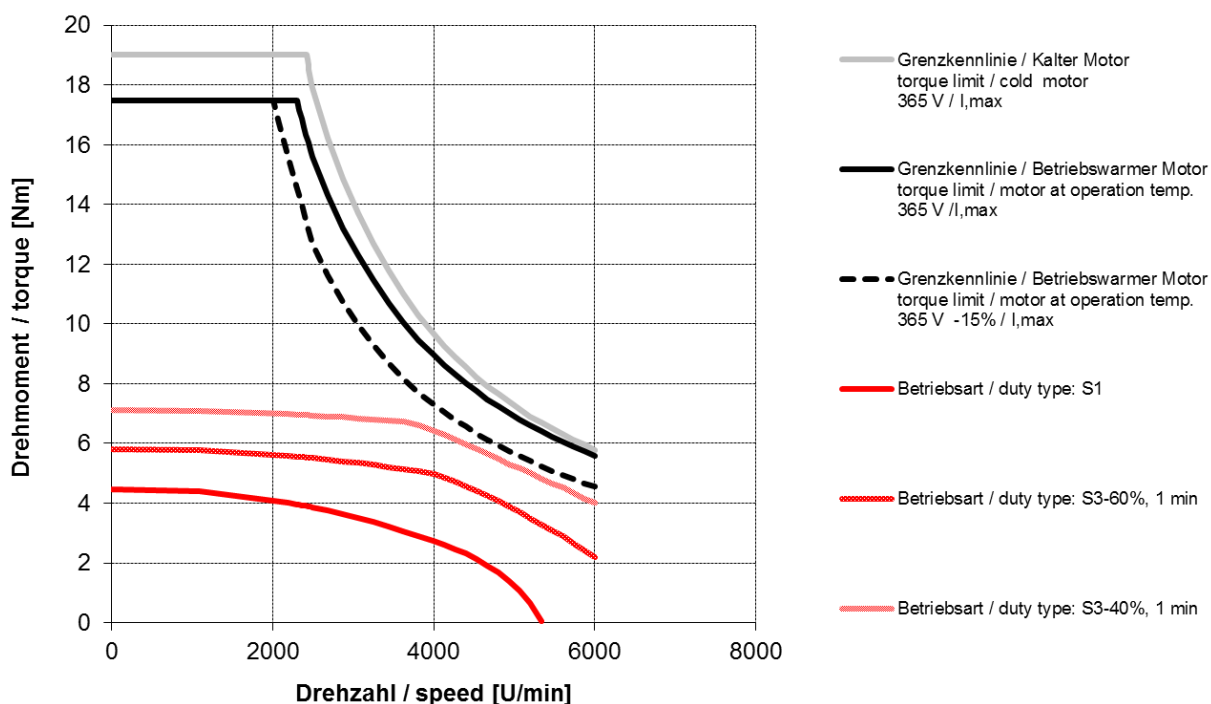
DSC1-045SO64U-20-54



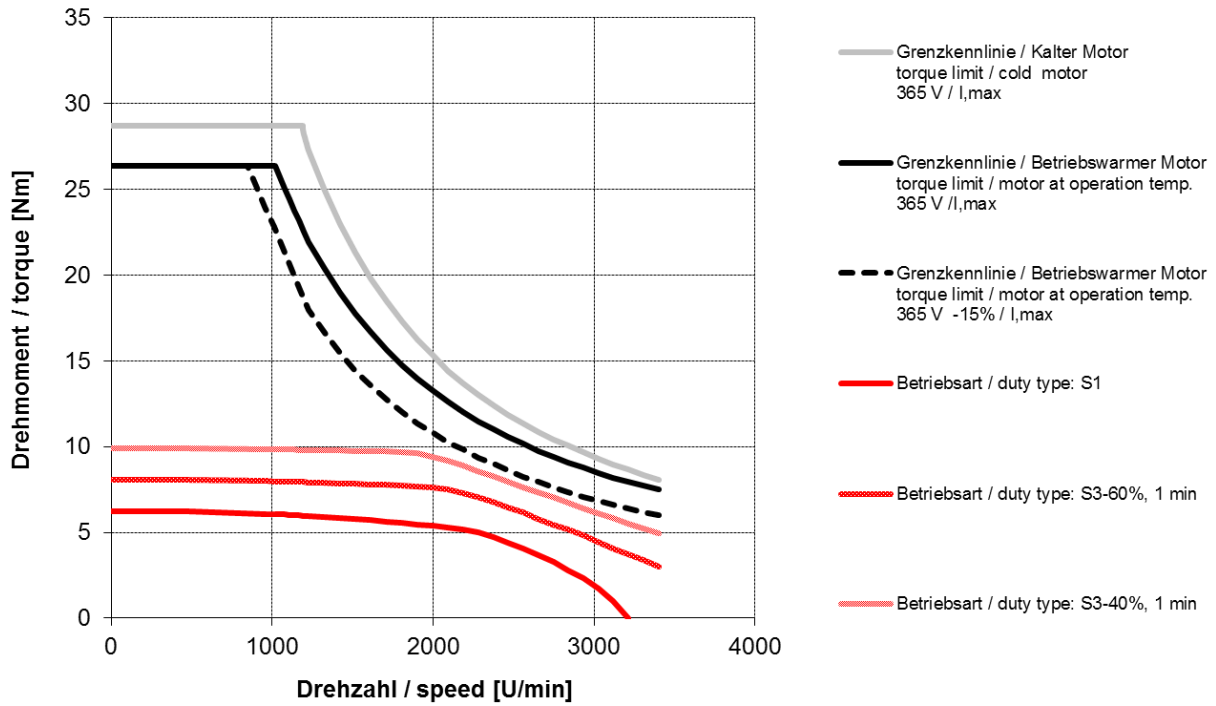
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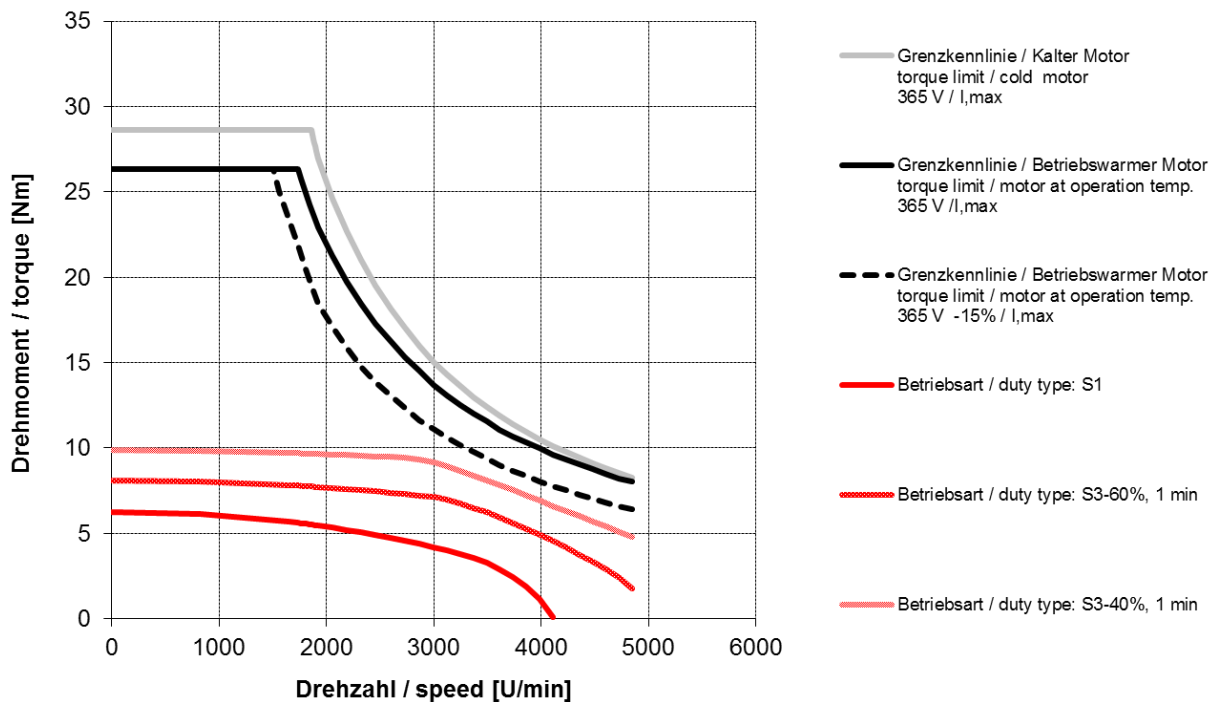
DSC1-045SO64U-40-54



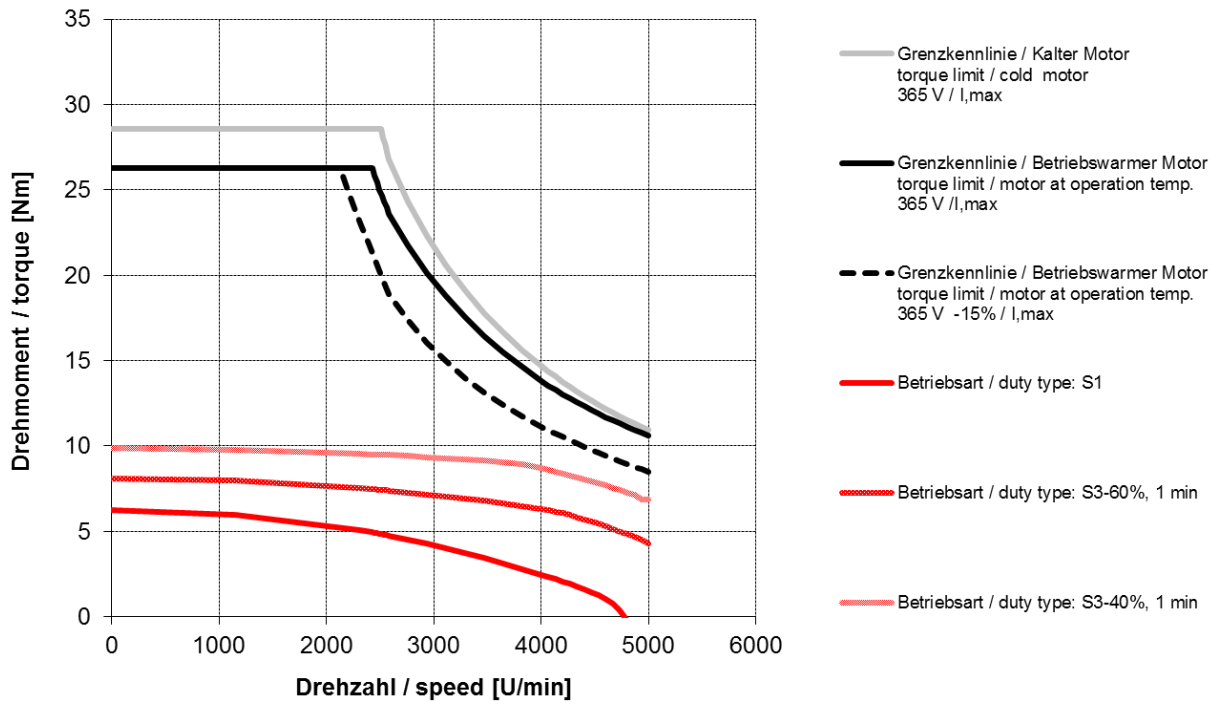
DSC1-045MO64U-20-54



DSC1-045MO64U-30-54



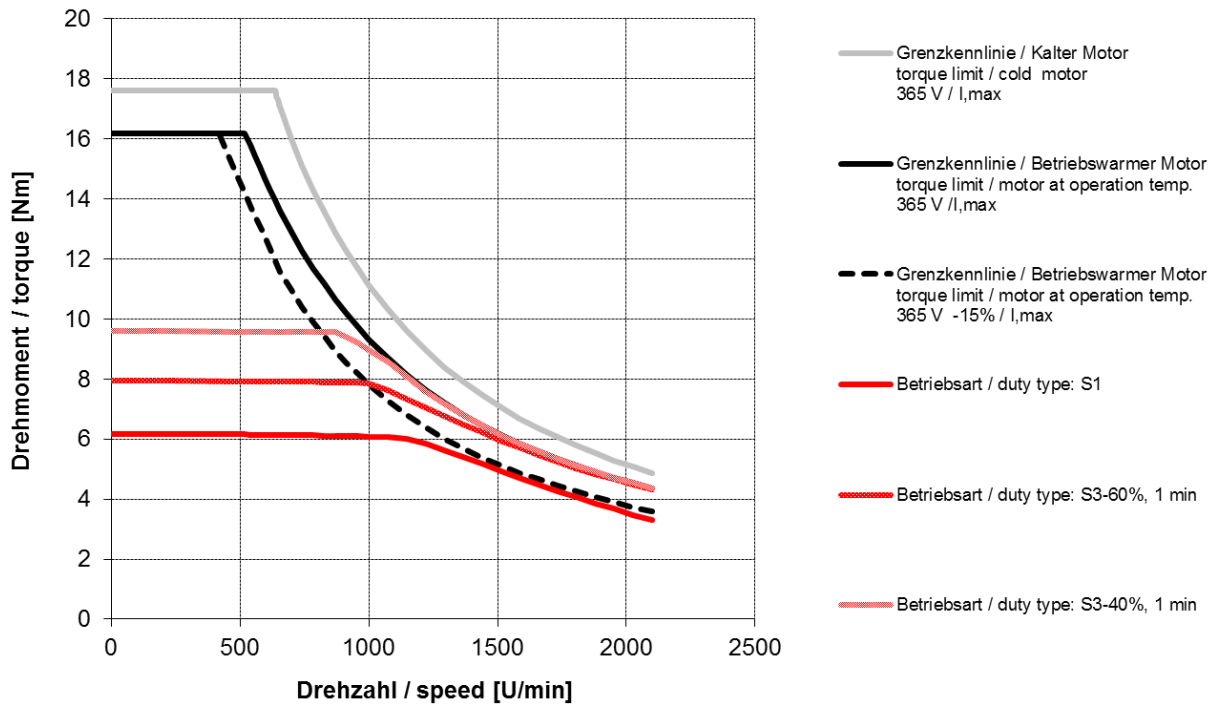
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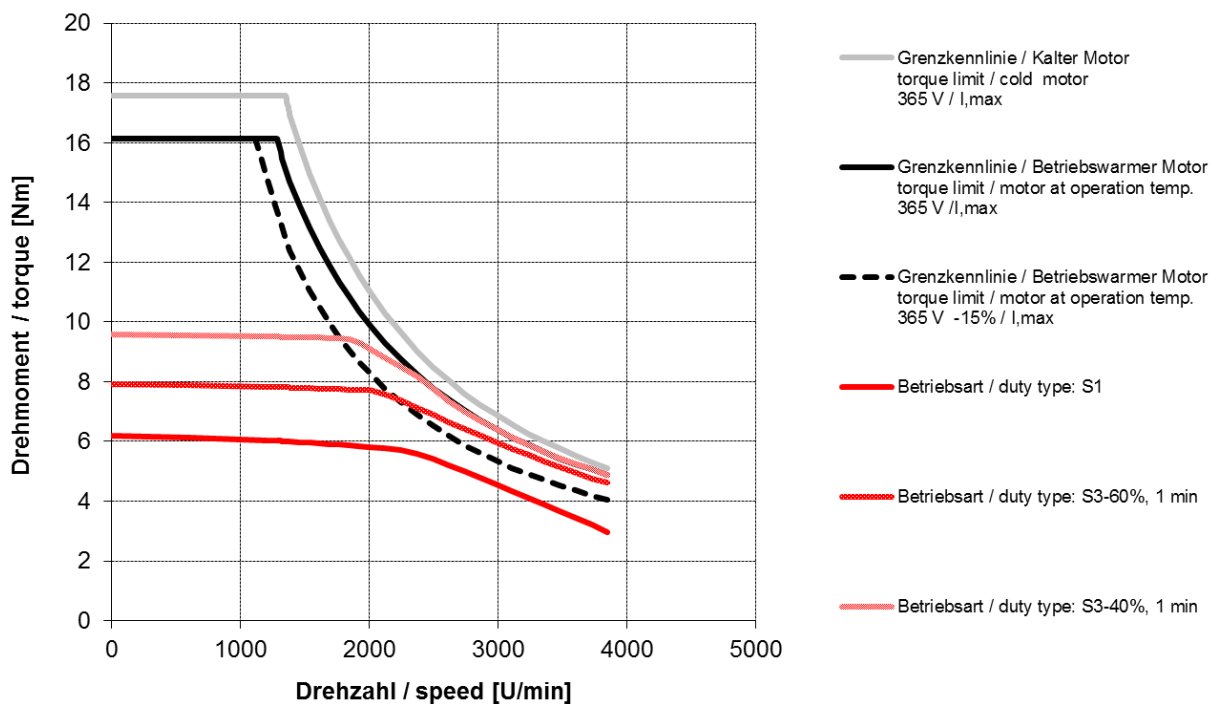
5.2. Characteristic curves DSC1-056

5.2.1. DSC1-056..64U..

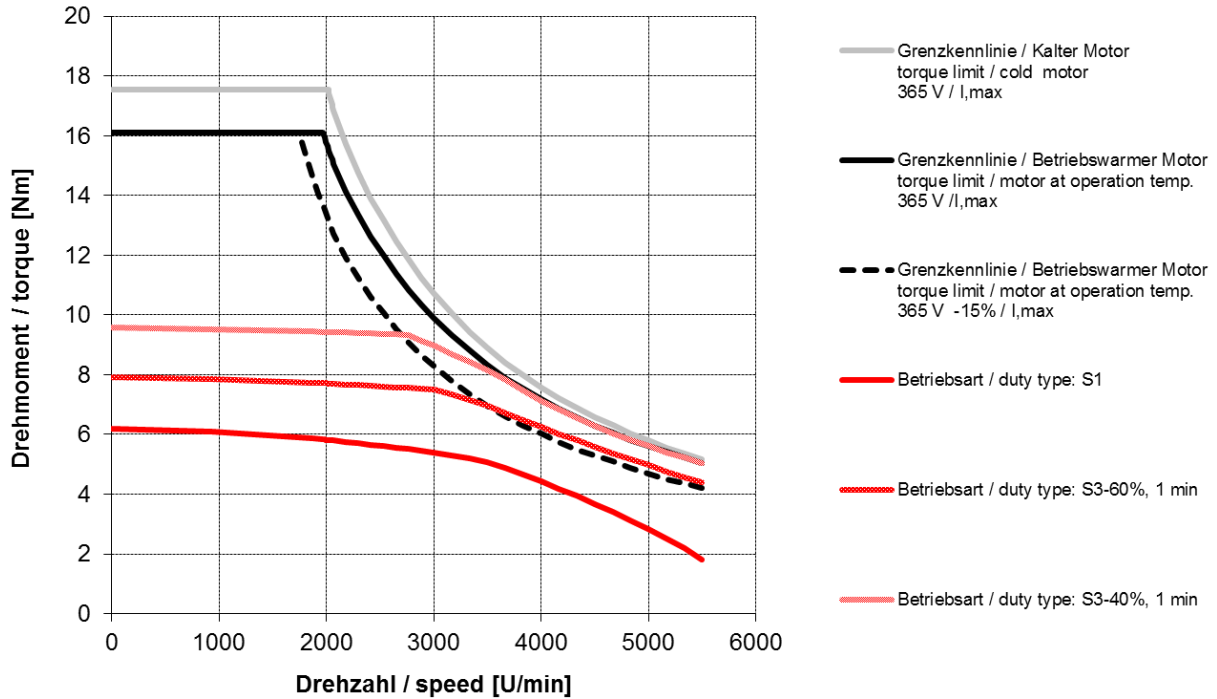
DSC1-056KO64U-10-54



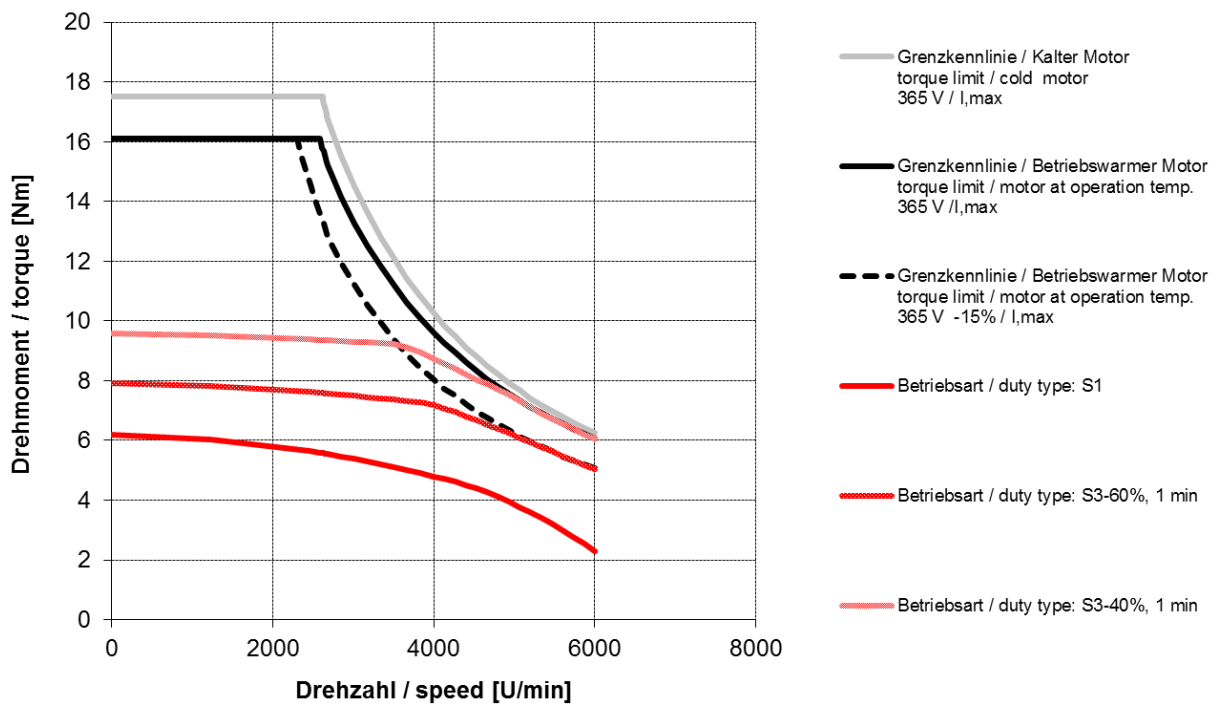
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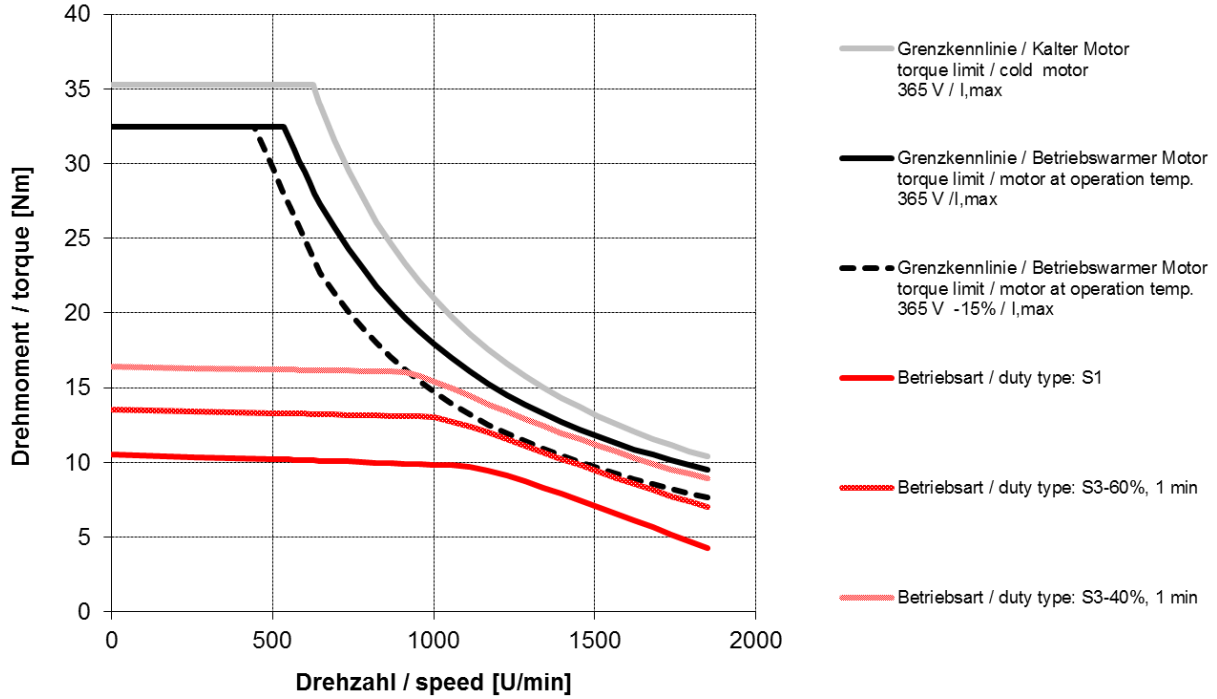
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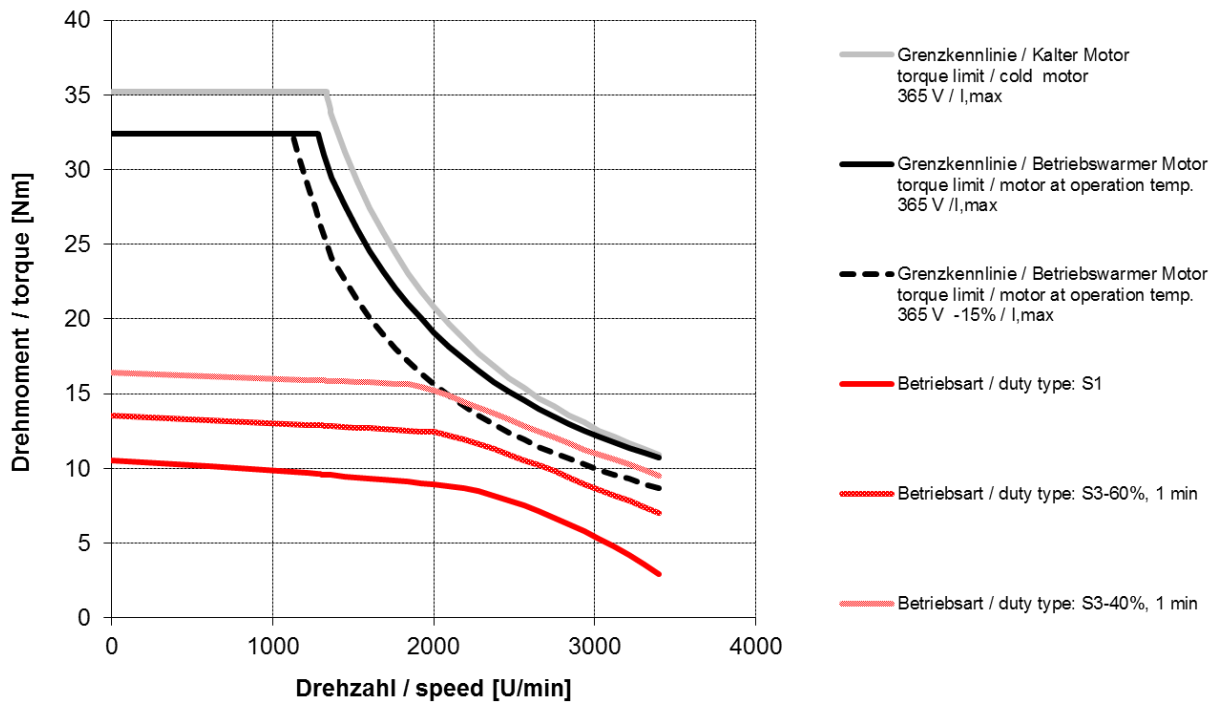
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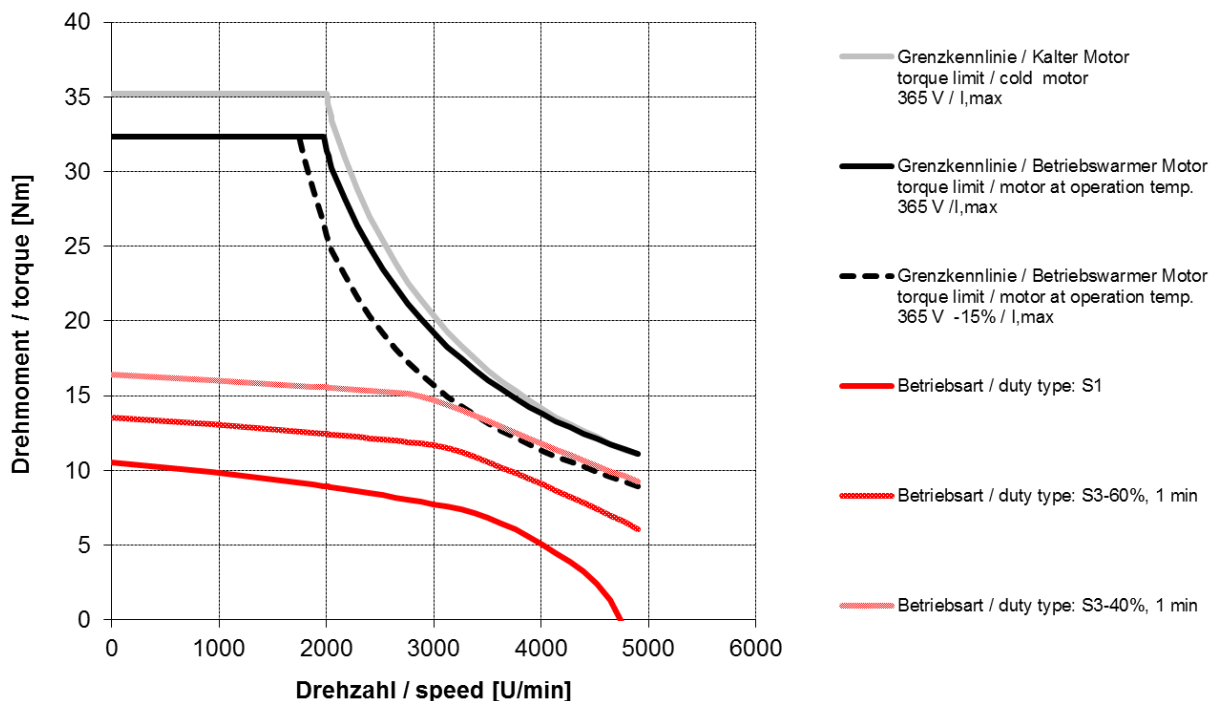
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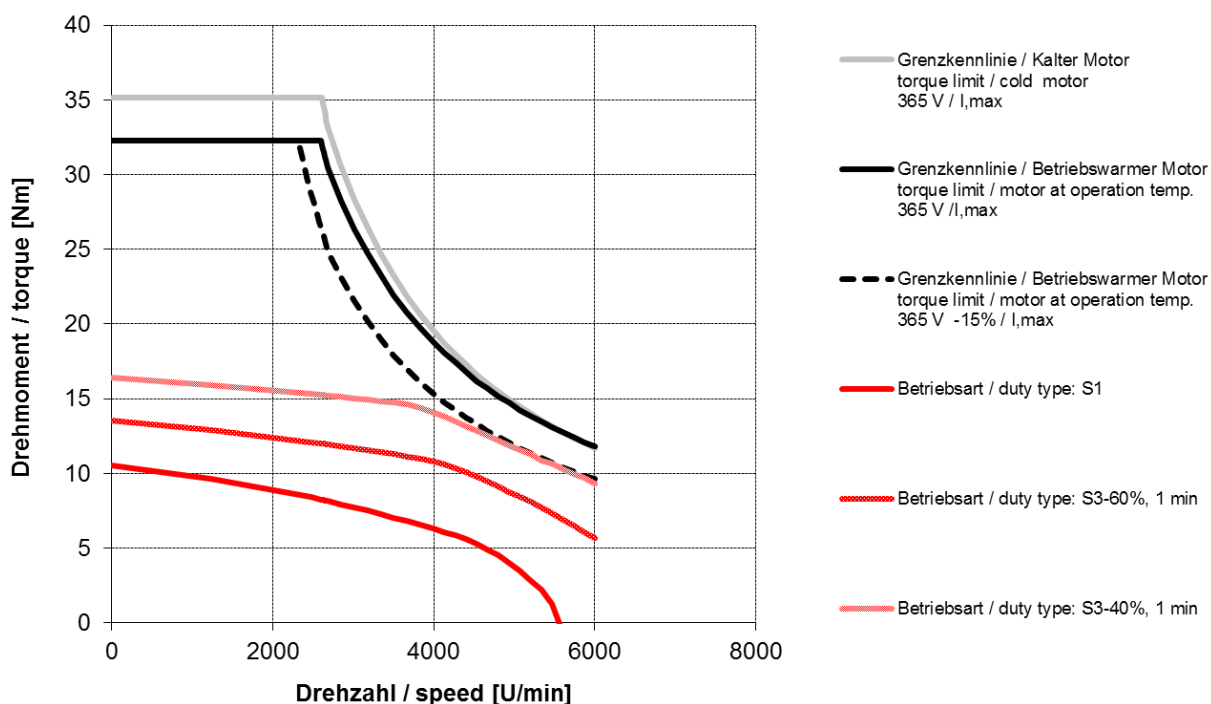
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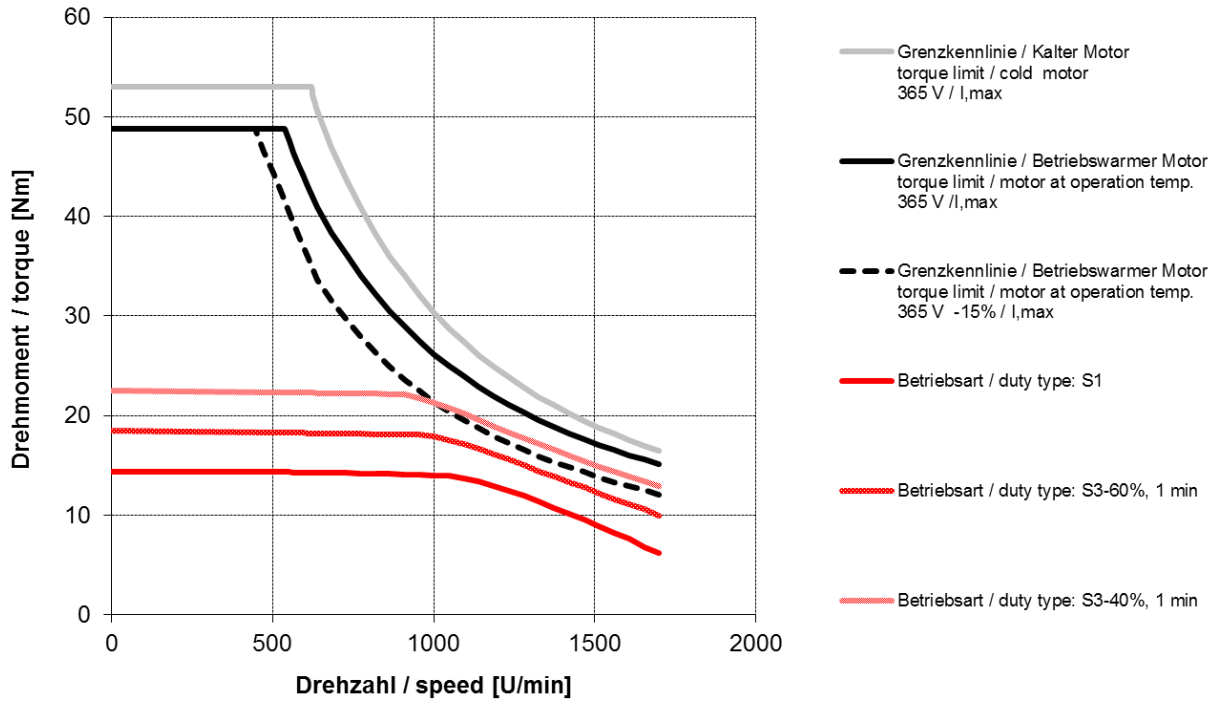
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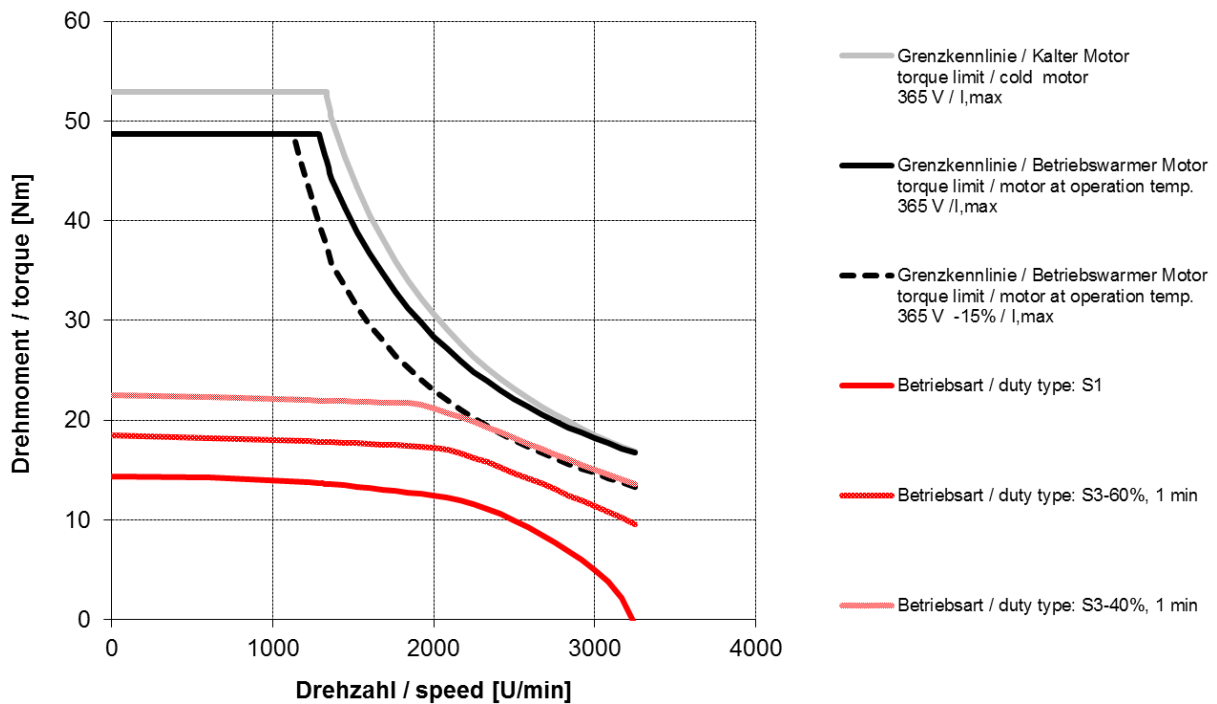
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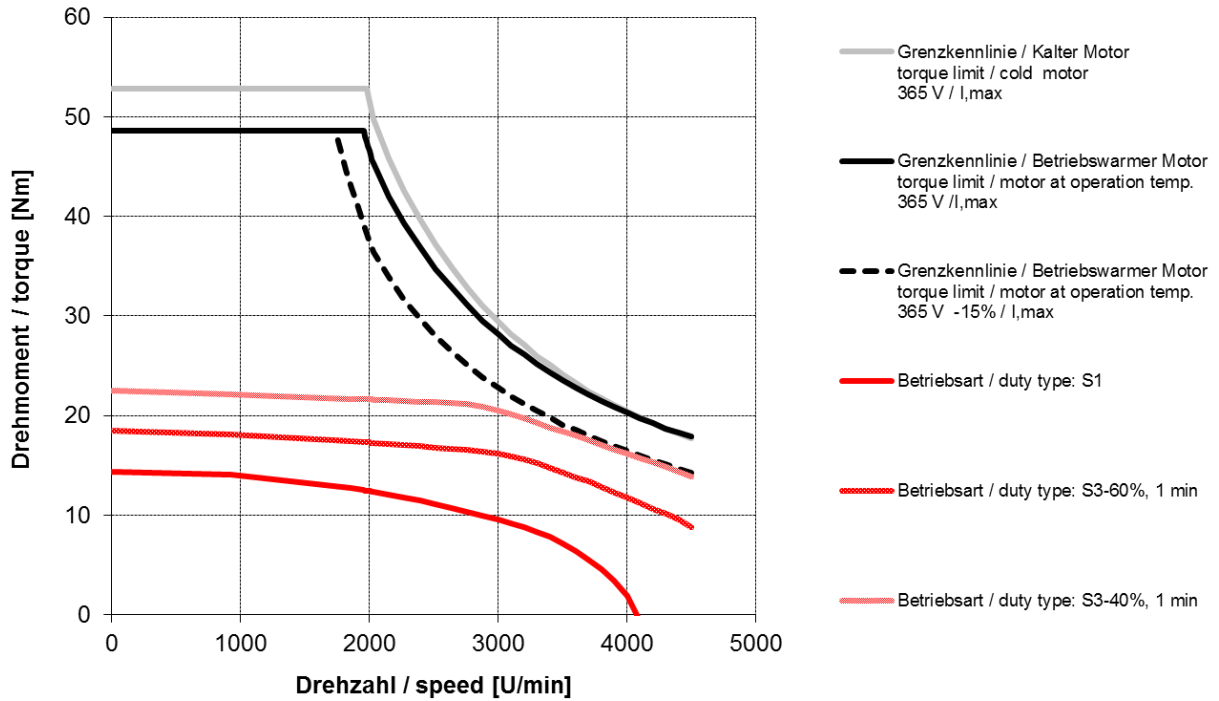
DSC1-056MO64U-10-54



DSC1-056MO64U-20-54

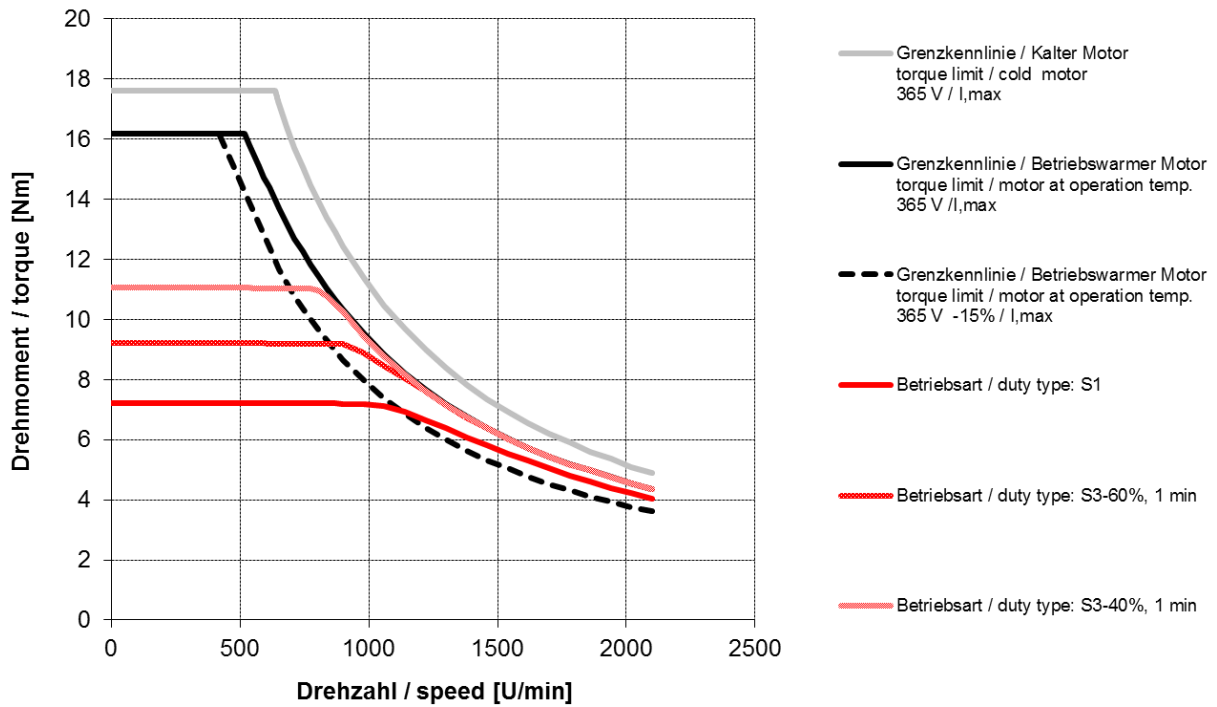


DSC1-056MO64U-30-54

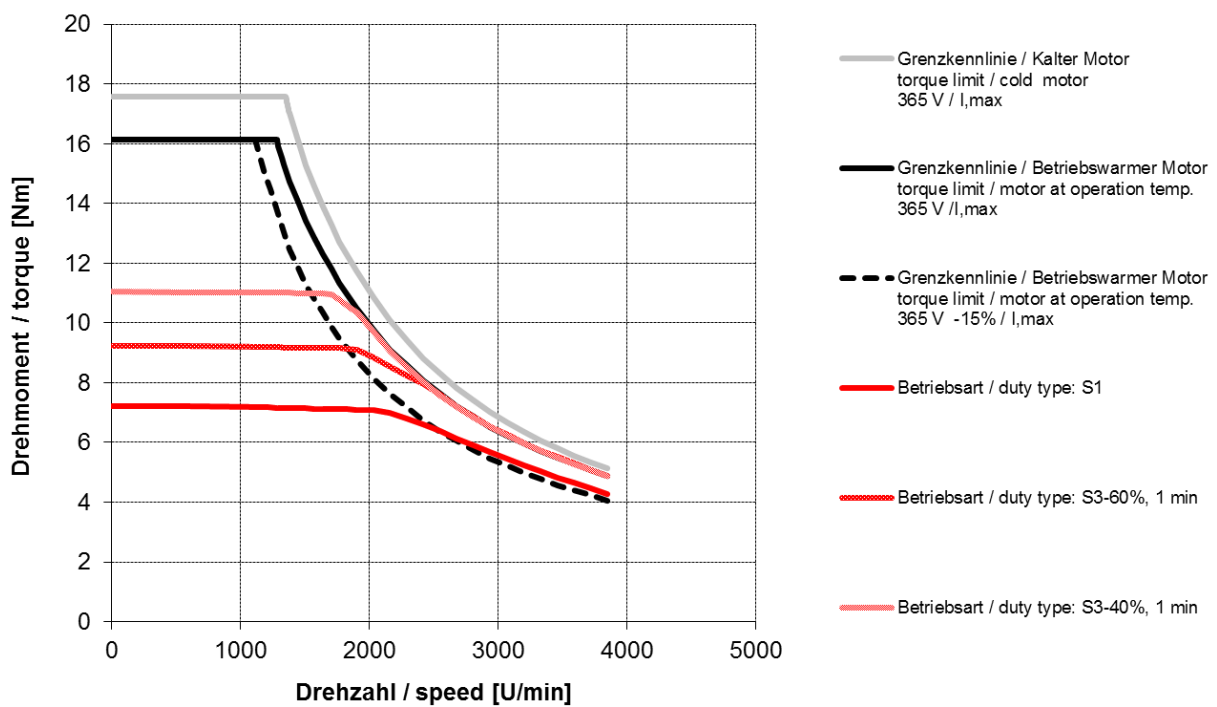


5.2.2. DSC1-056..640..

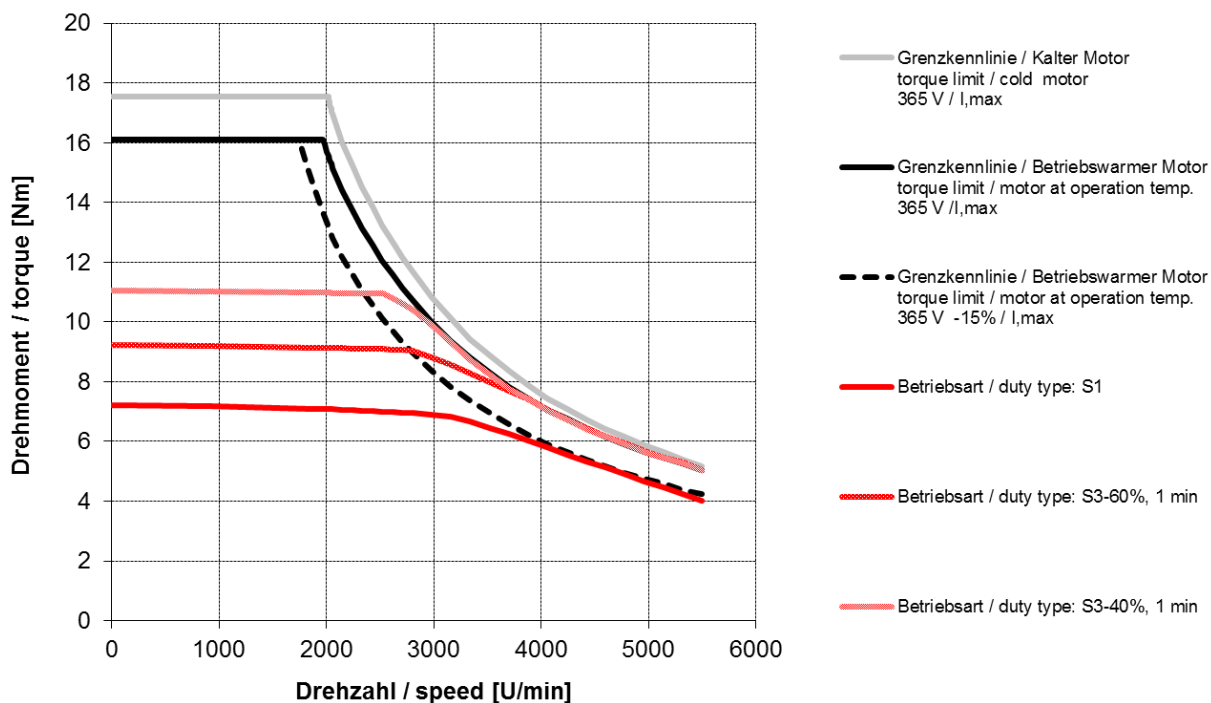
DSC1-056KO640-10-54



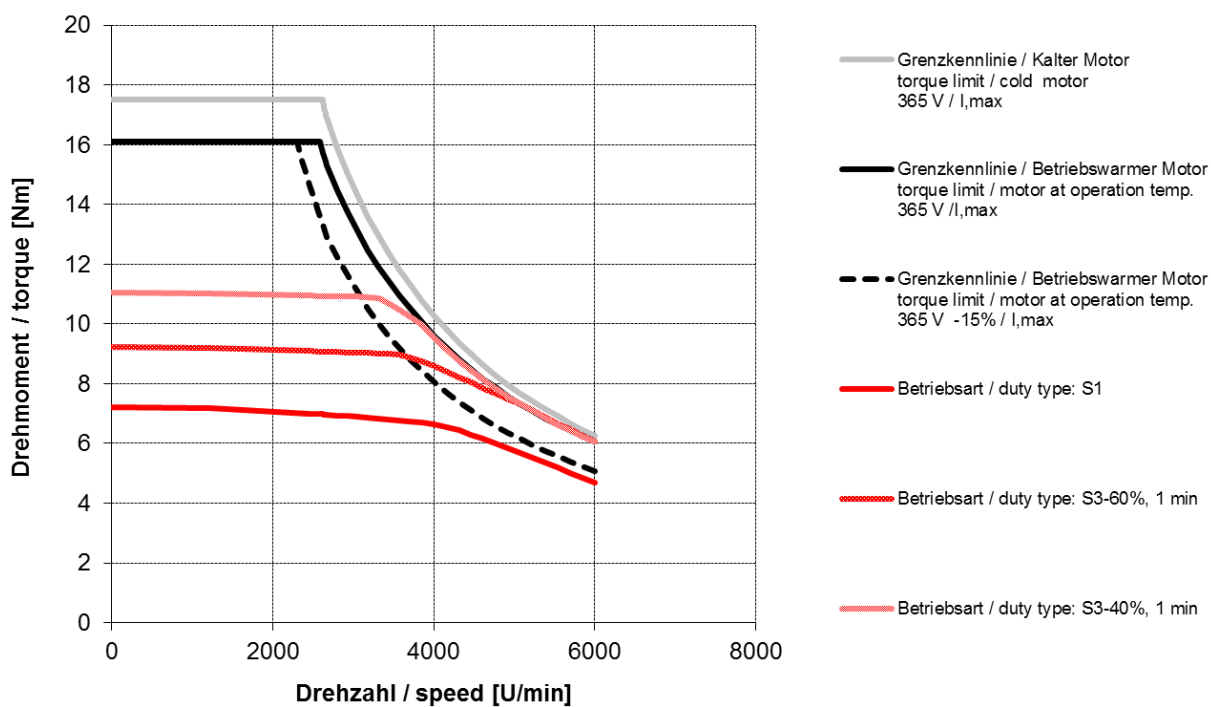
DSC1-056KO640-20-54



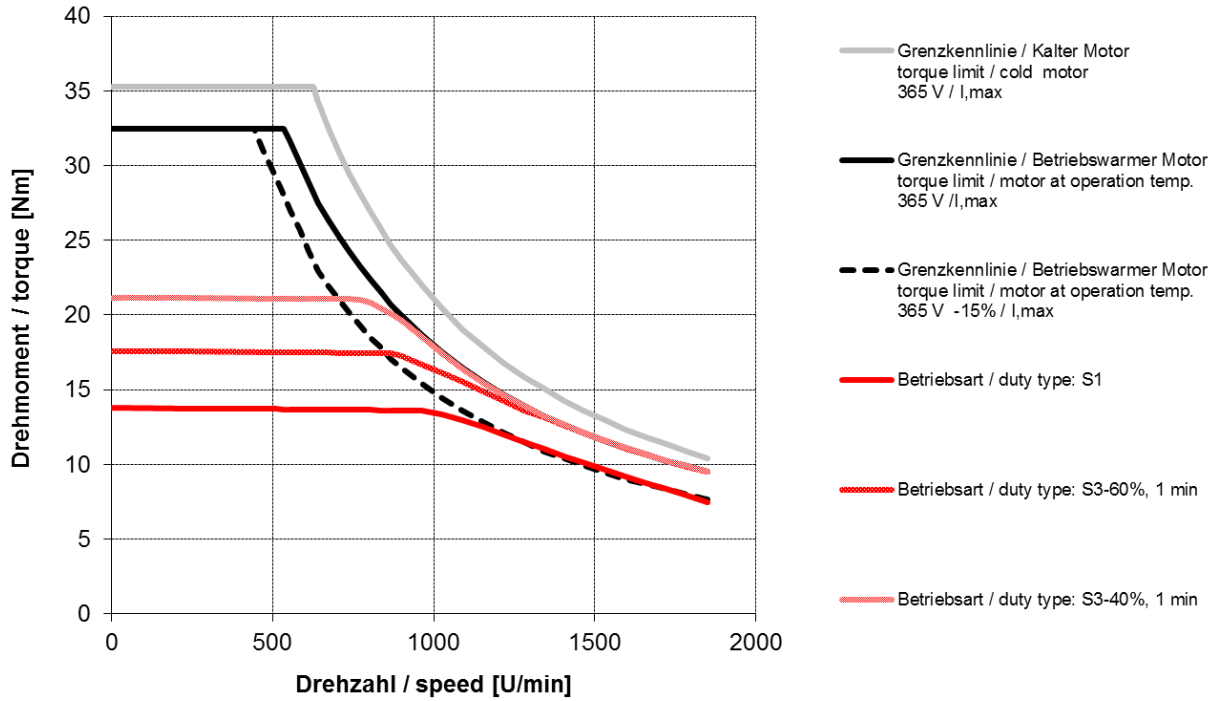
DSC1-056KO640-30-54



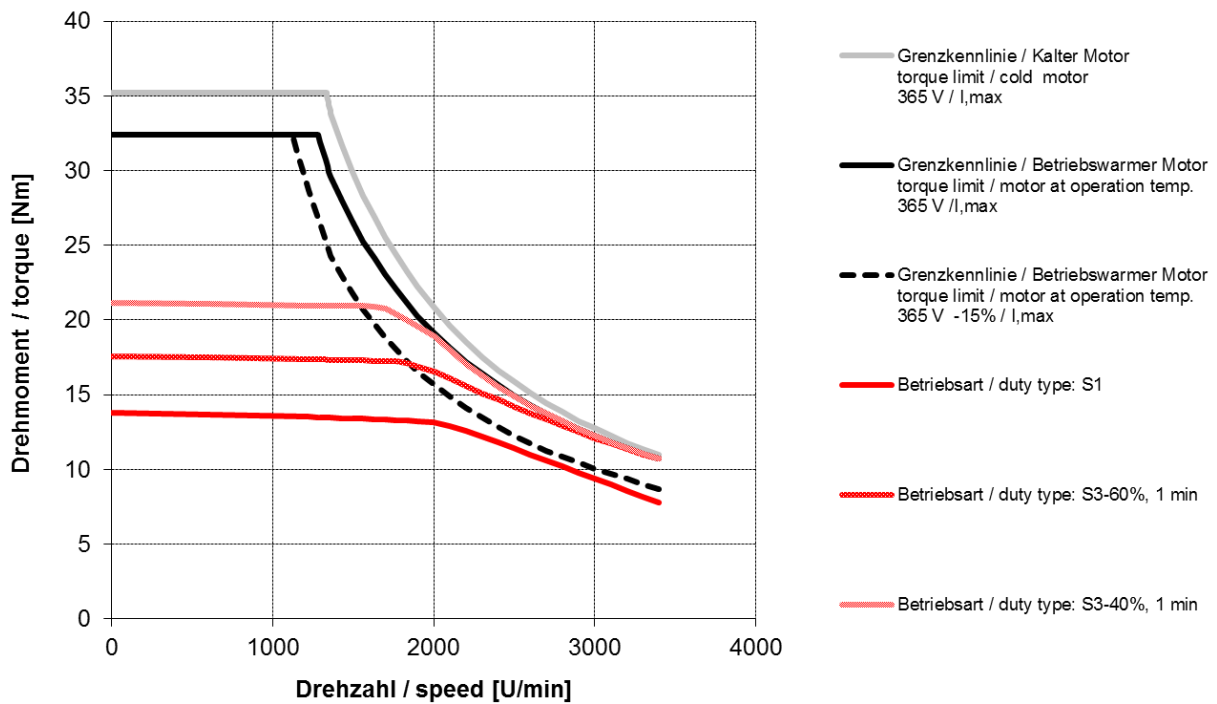
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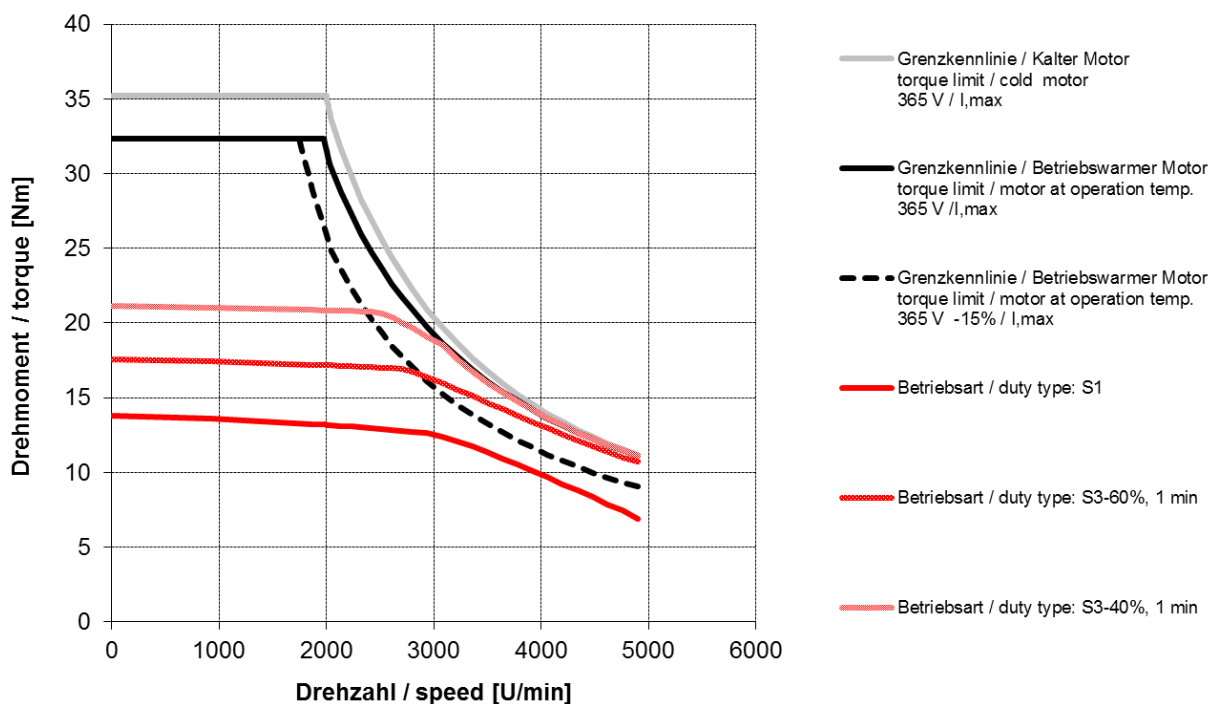
DSC1-056SO640-10-54



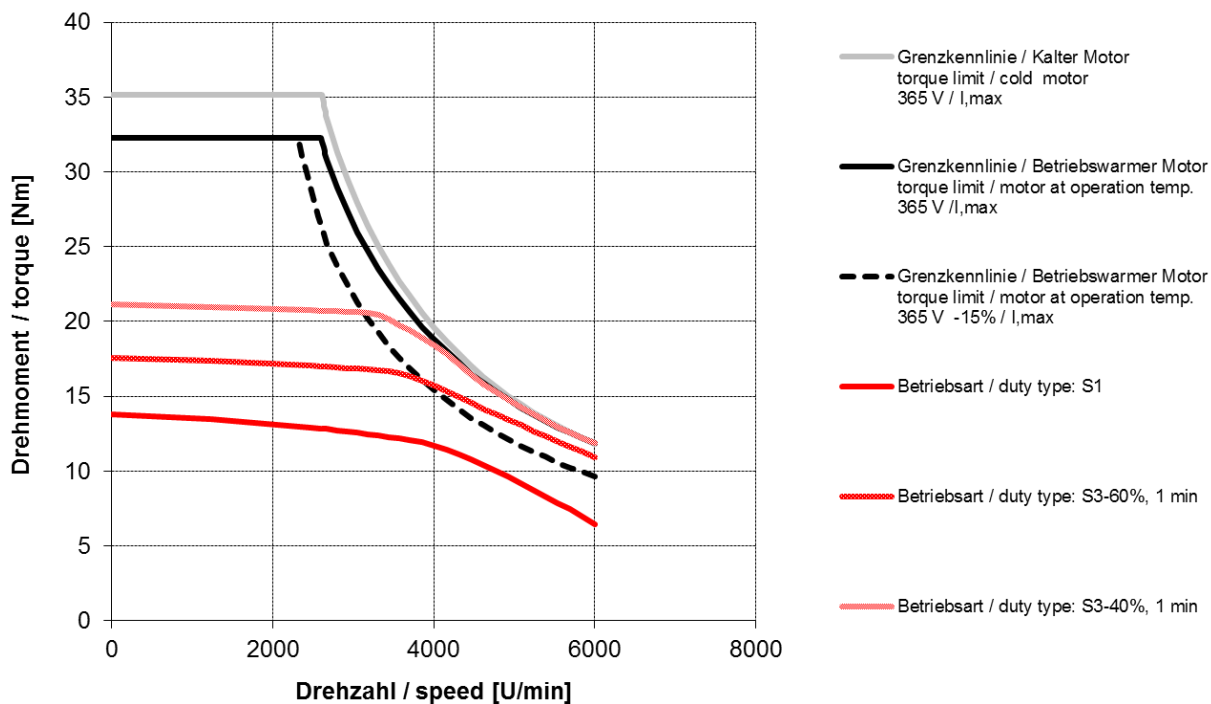
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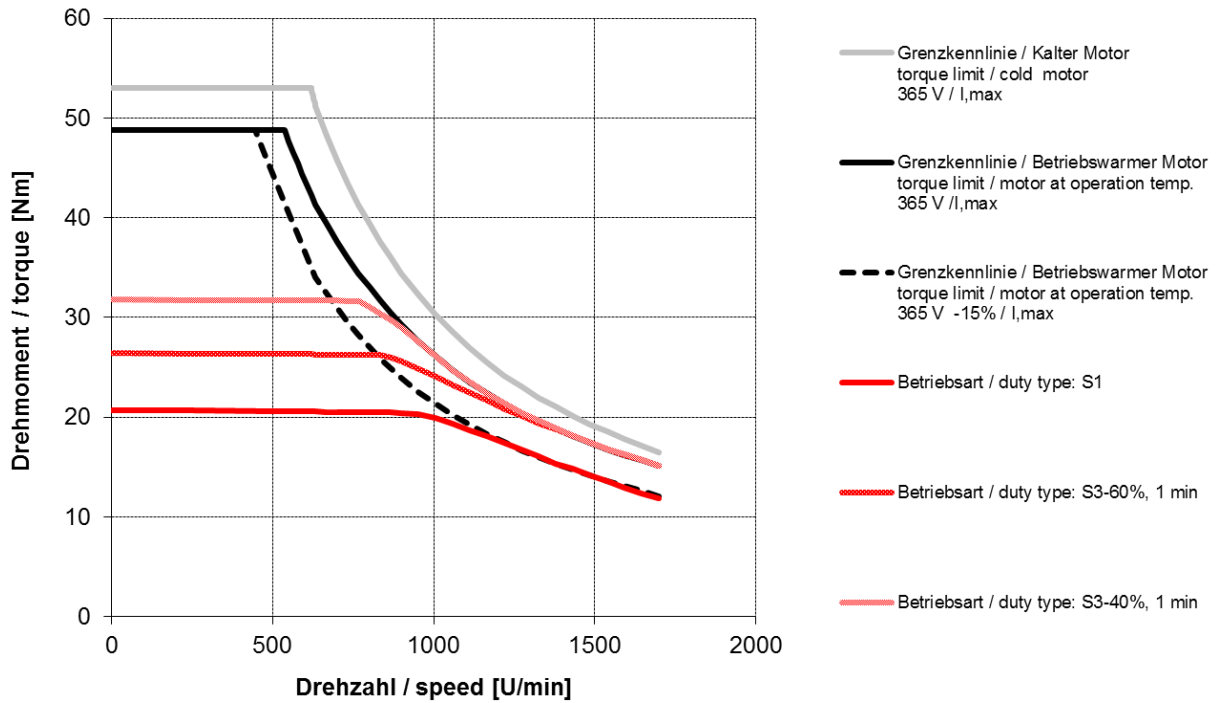
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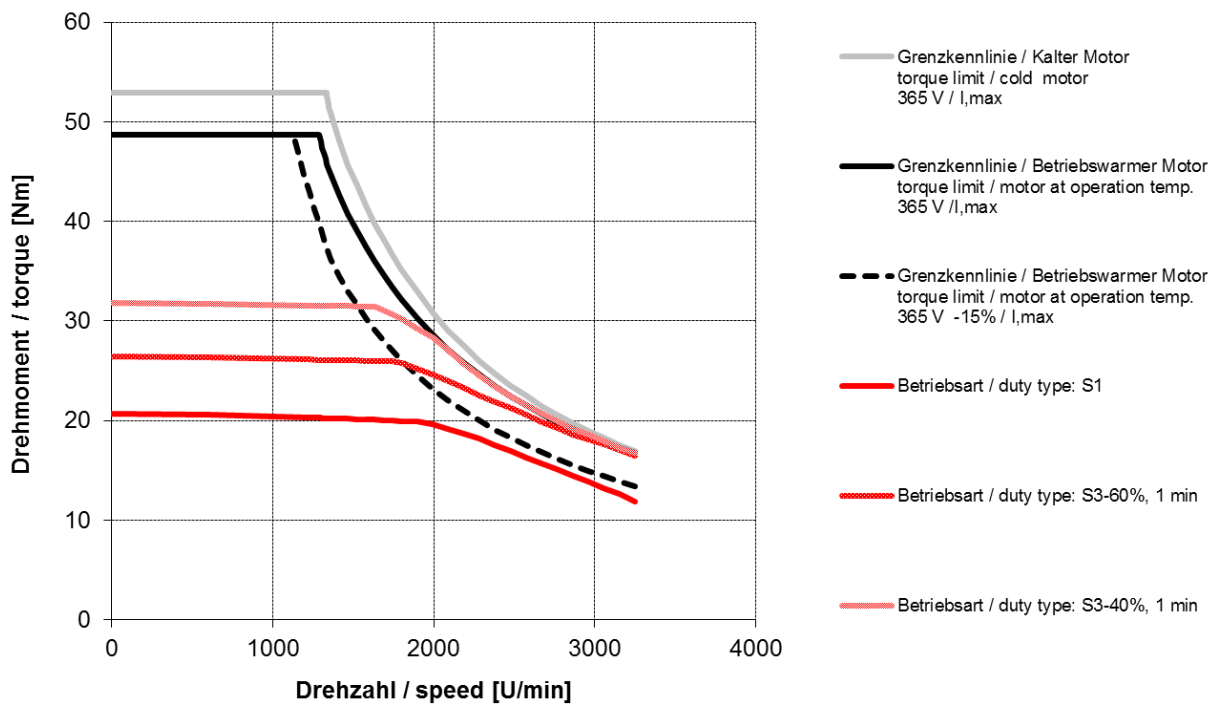
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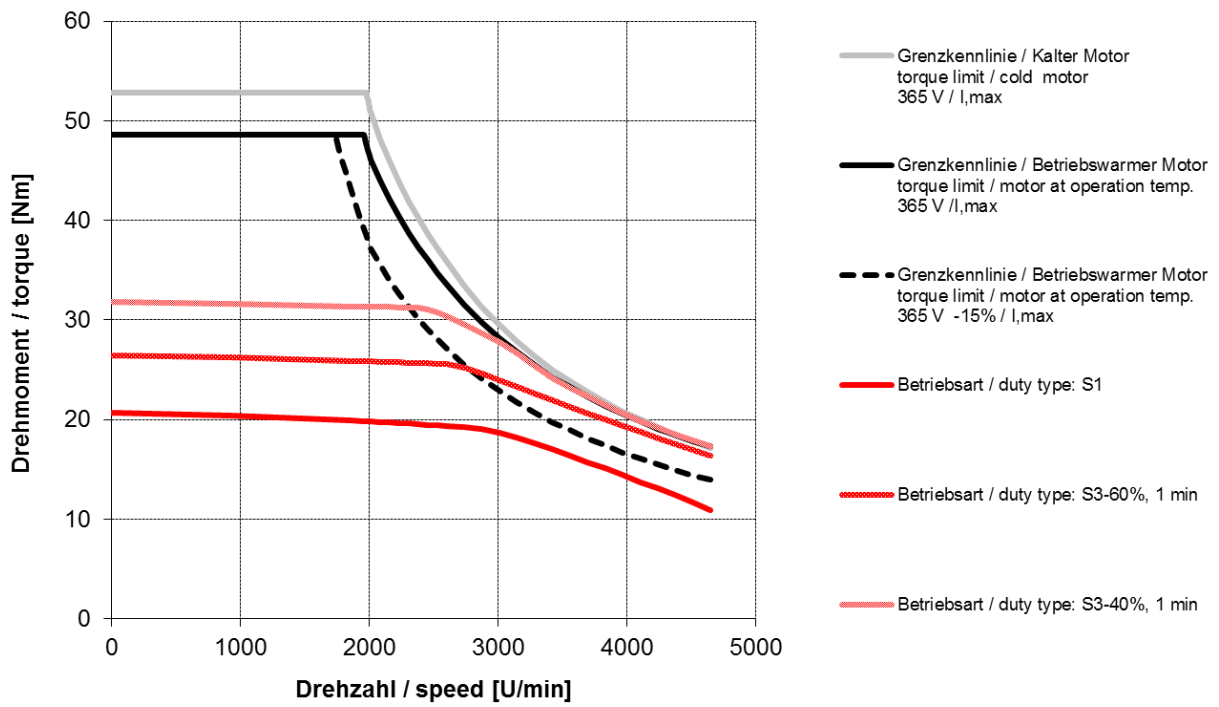
DSC1-056MO640-10-54



DSC1-056MO640-20-54



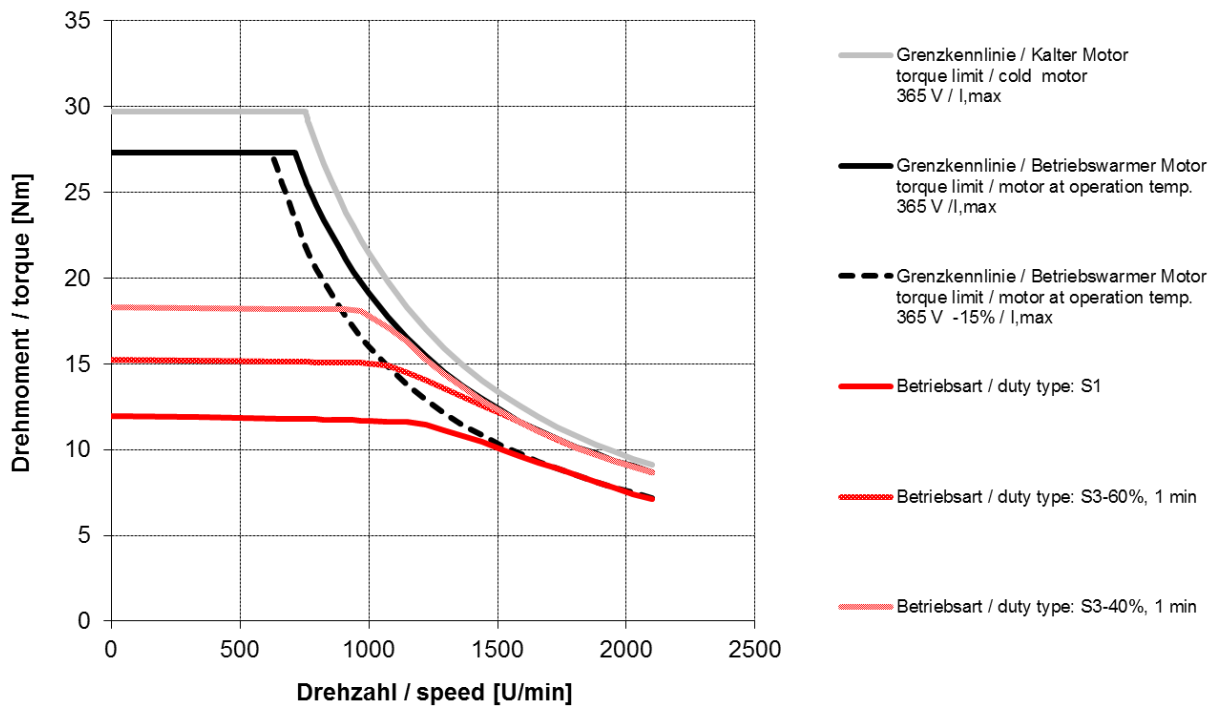
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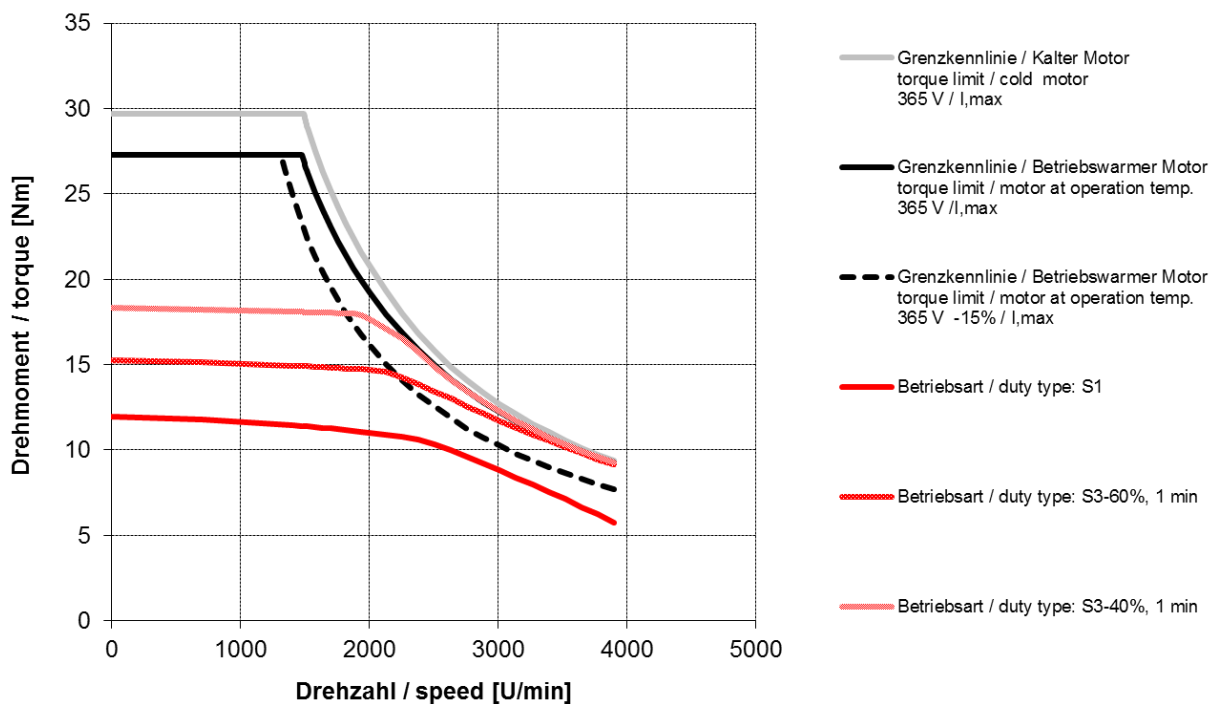
5.3. Characteristic curves DSC1-071

5.3.1. DSC1-071..64U..

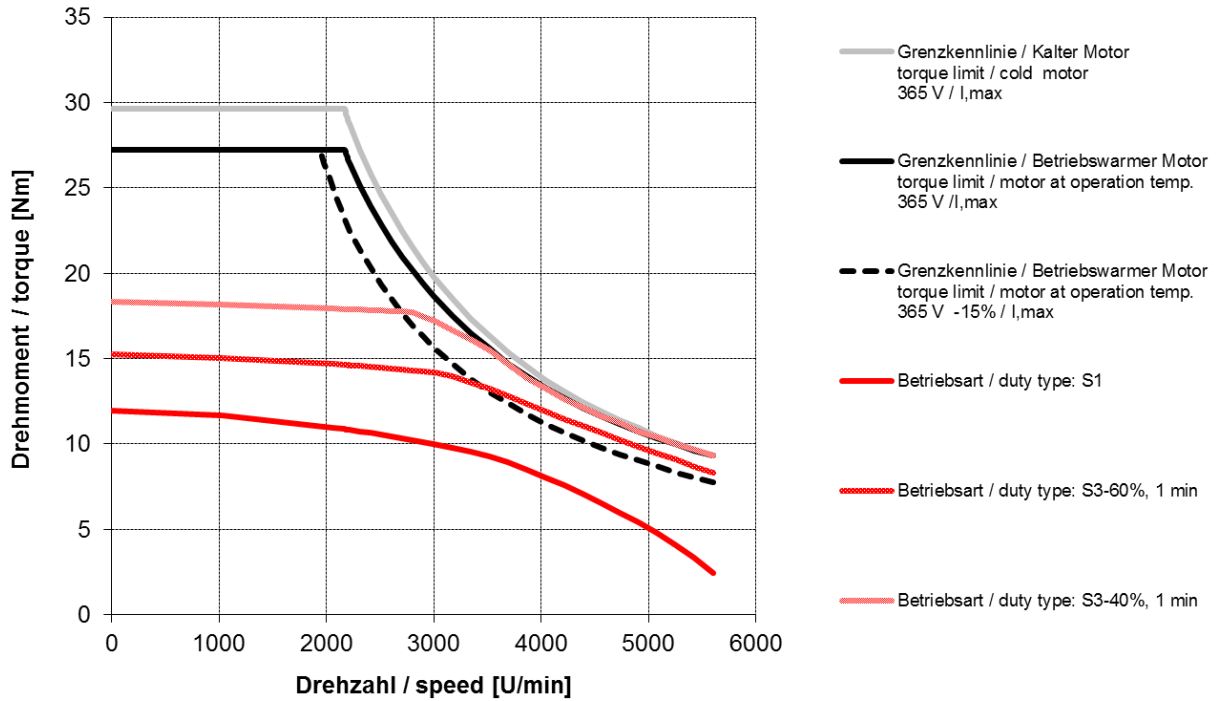
DSC1-071KO64U-10-54



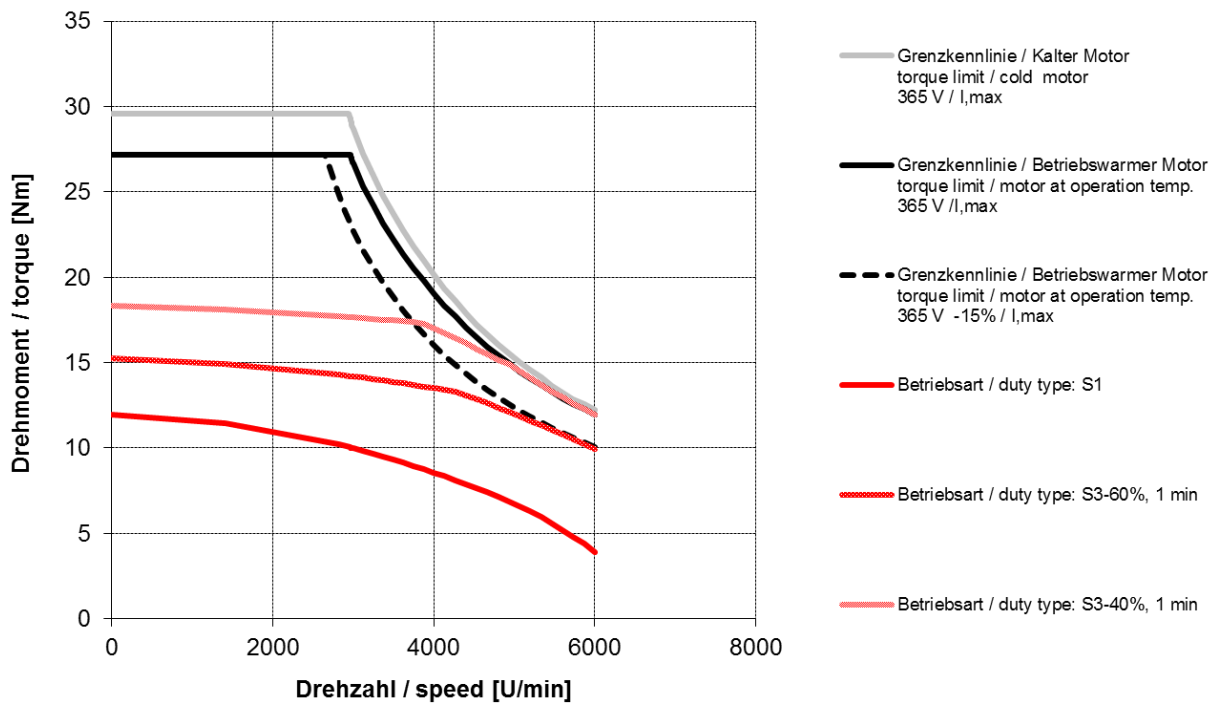
DSC1-071KO64U-20-54



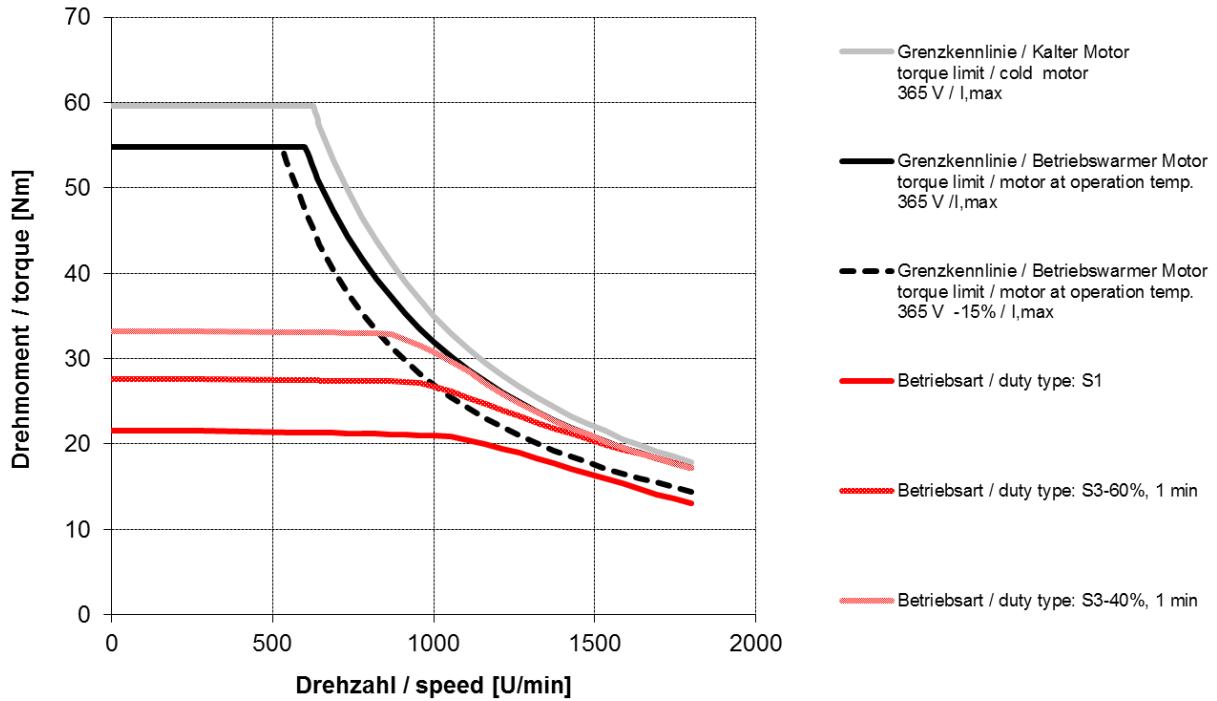
DSC1-071KO64U-30-54



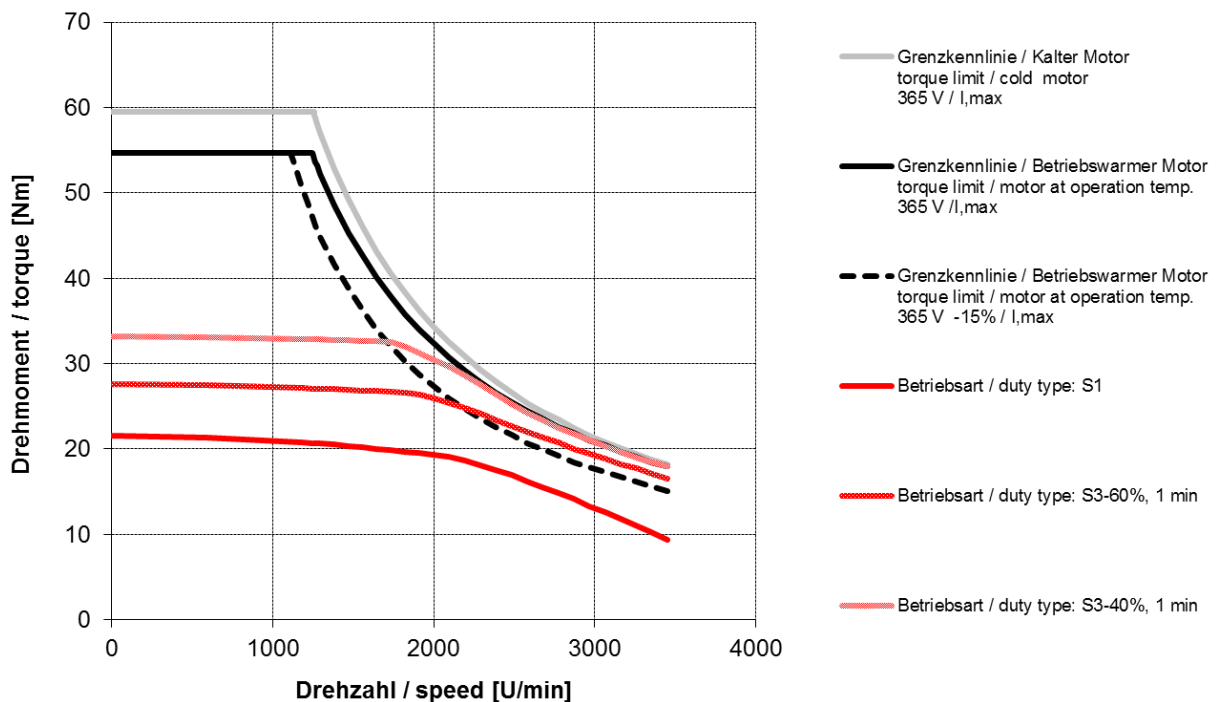
DSC1-071KO64U-40-54



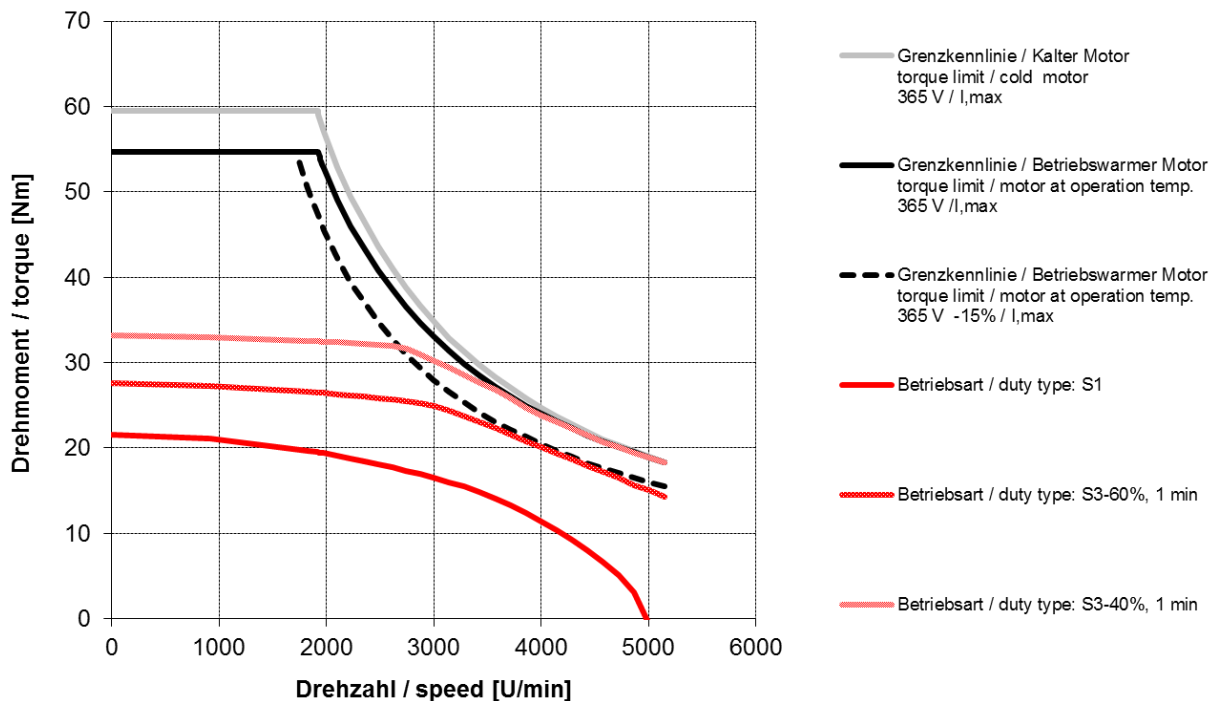
DSC1-071SO64U-10-54



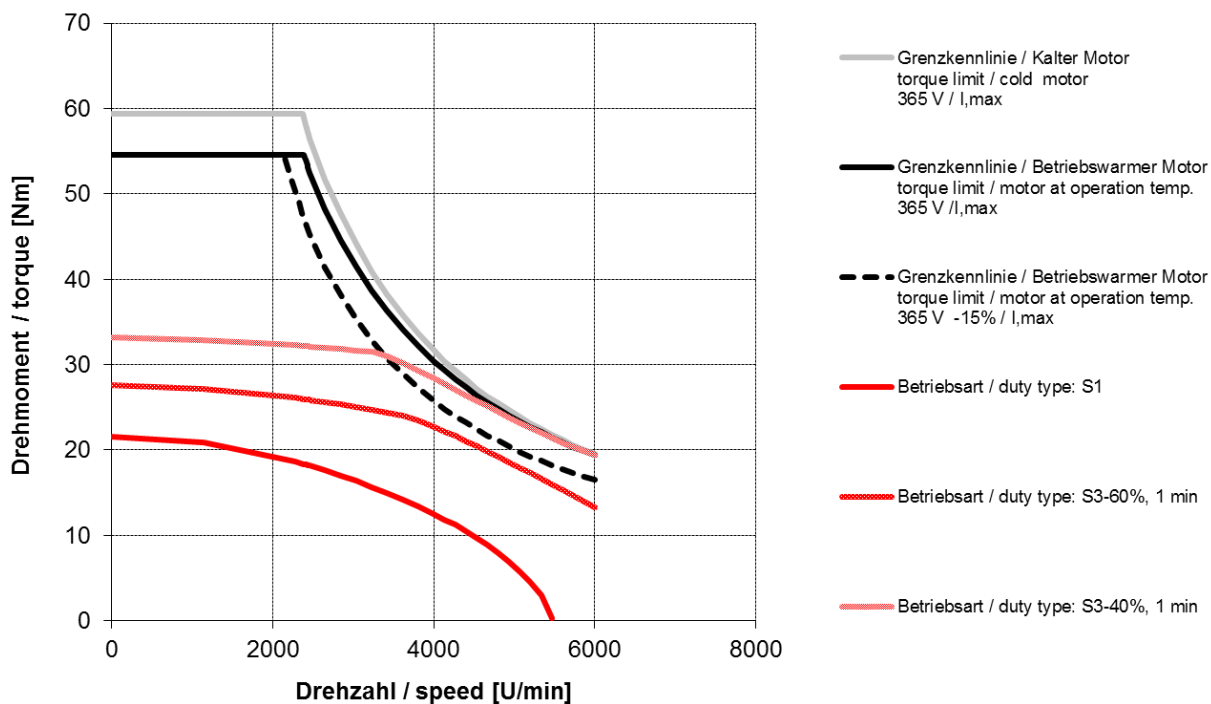
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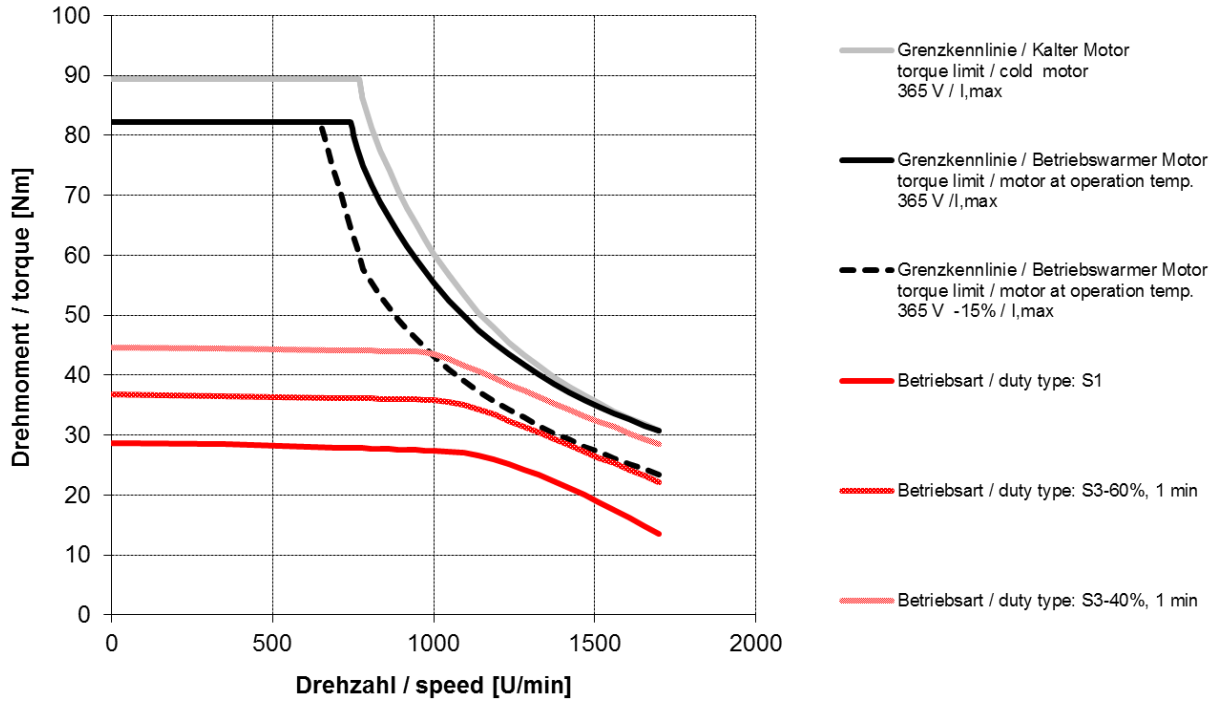
DSC1-071SO64U-30-54



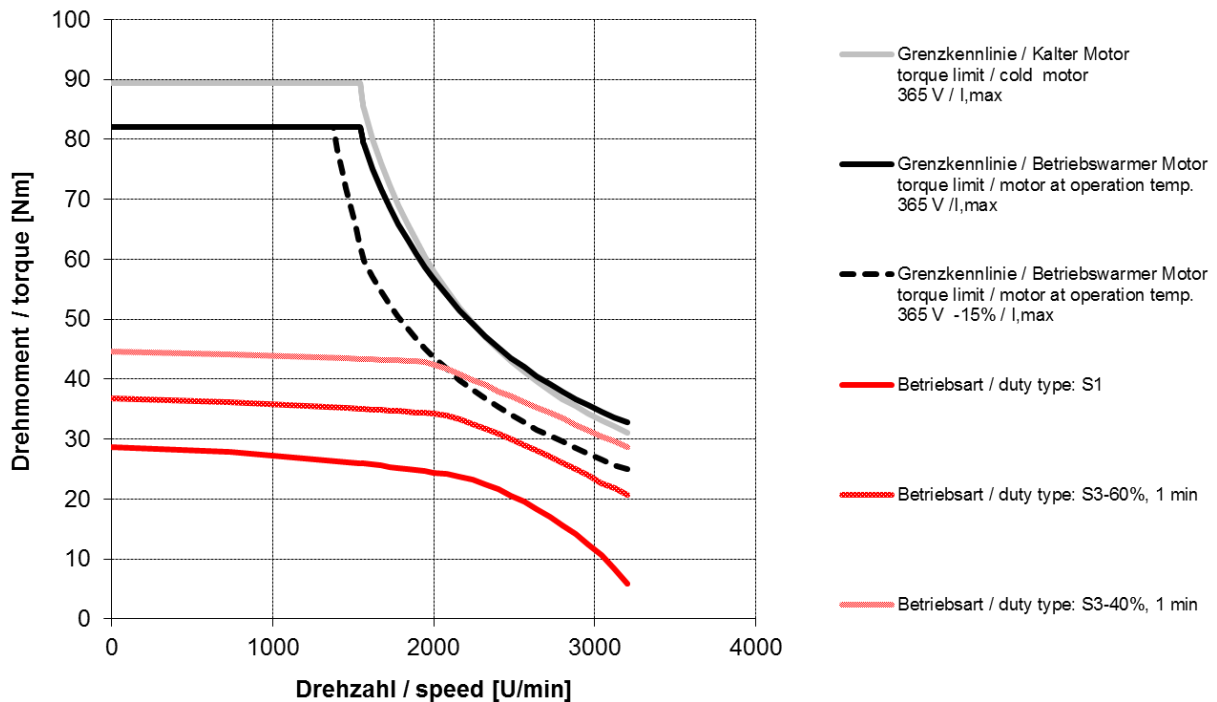
DSC1-071SO64U-40-54



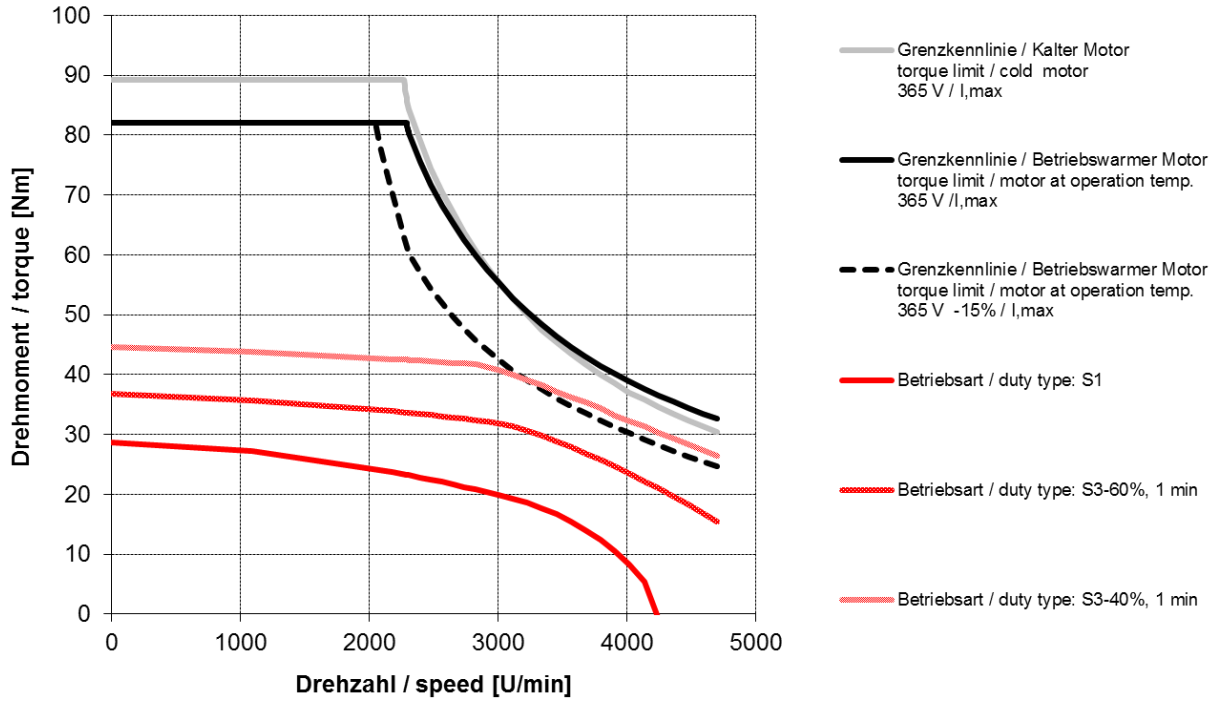
DSC1-071MO64U-10-54



DSC1-071MO64U-20-54

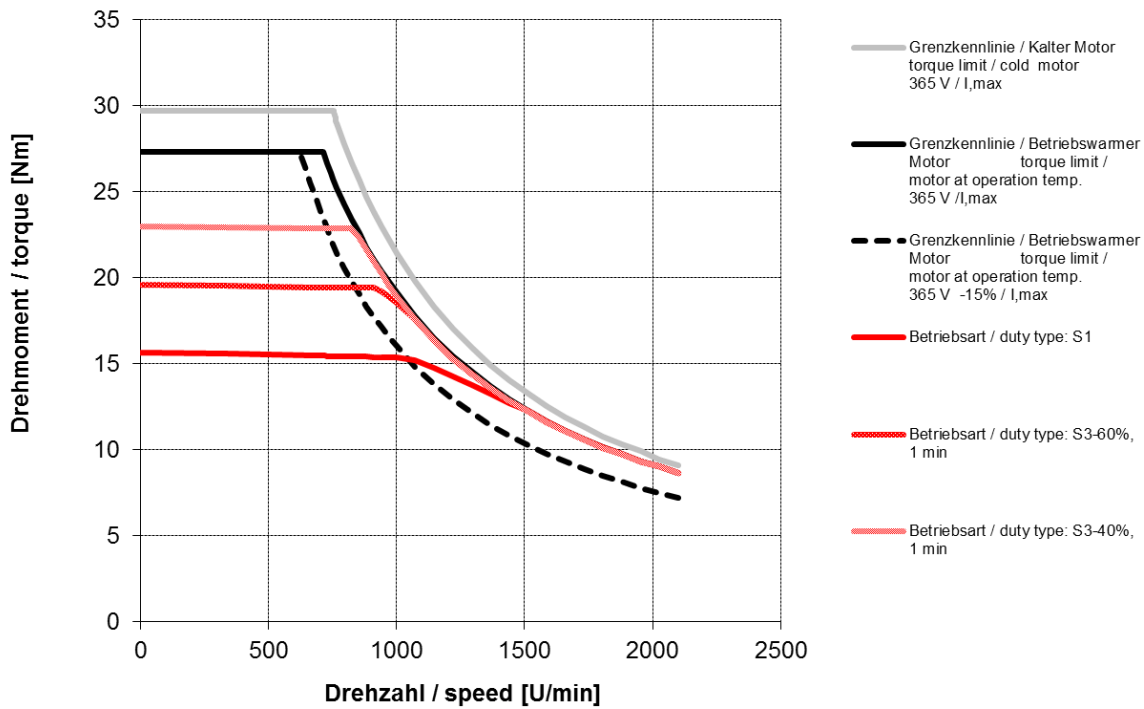


DSC1-071MO64U-30-54

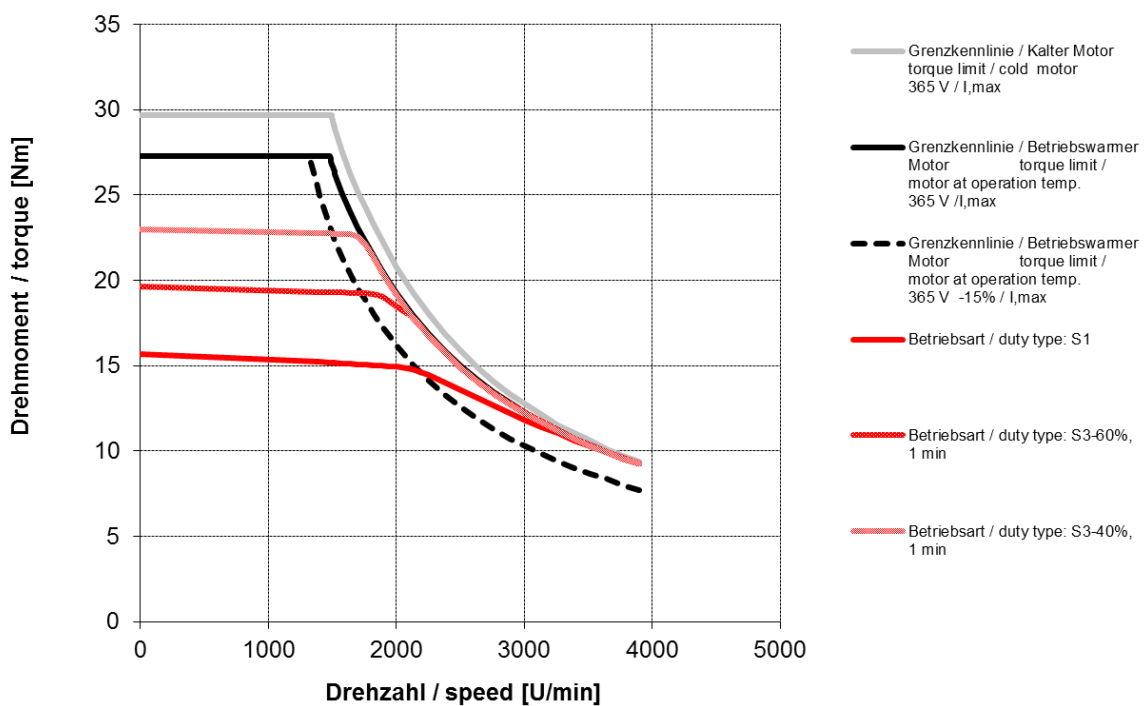


5.3.2. DSC1-071..640..

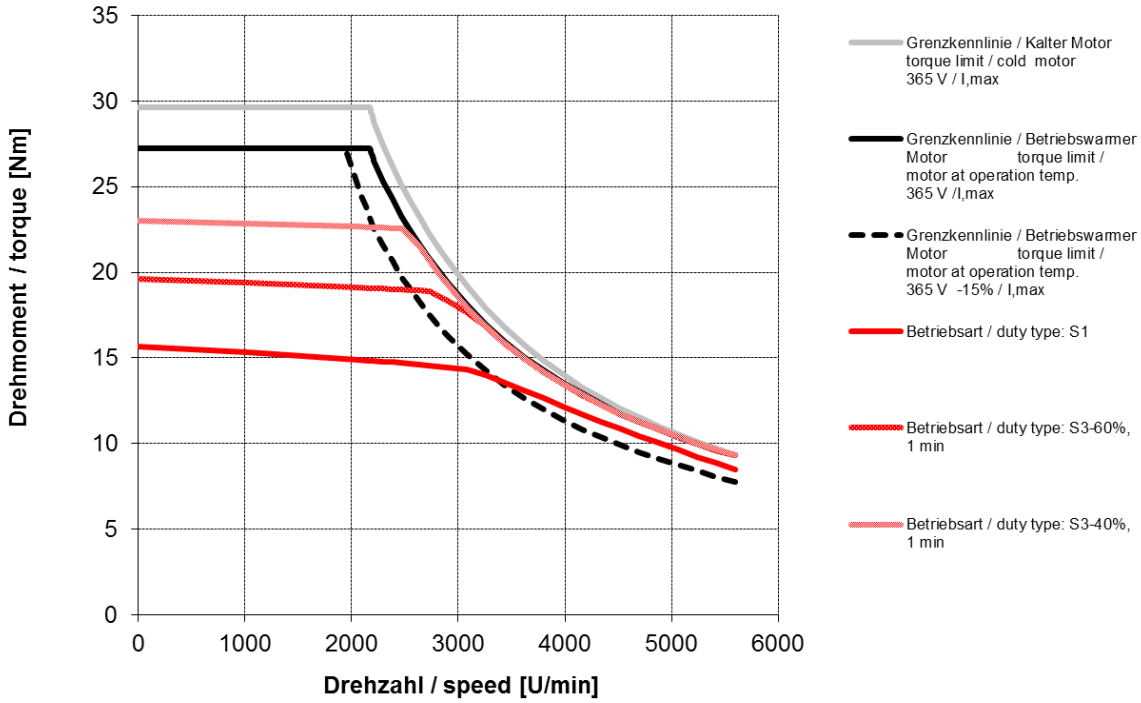
DSC1-071KO640-10-54



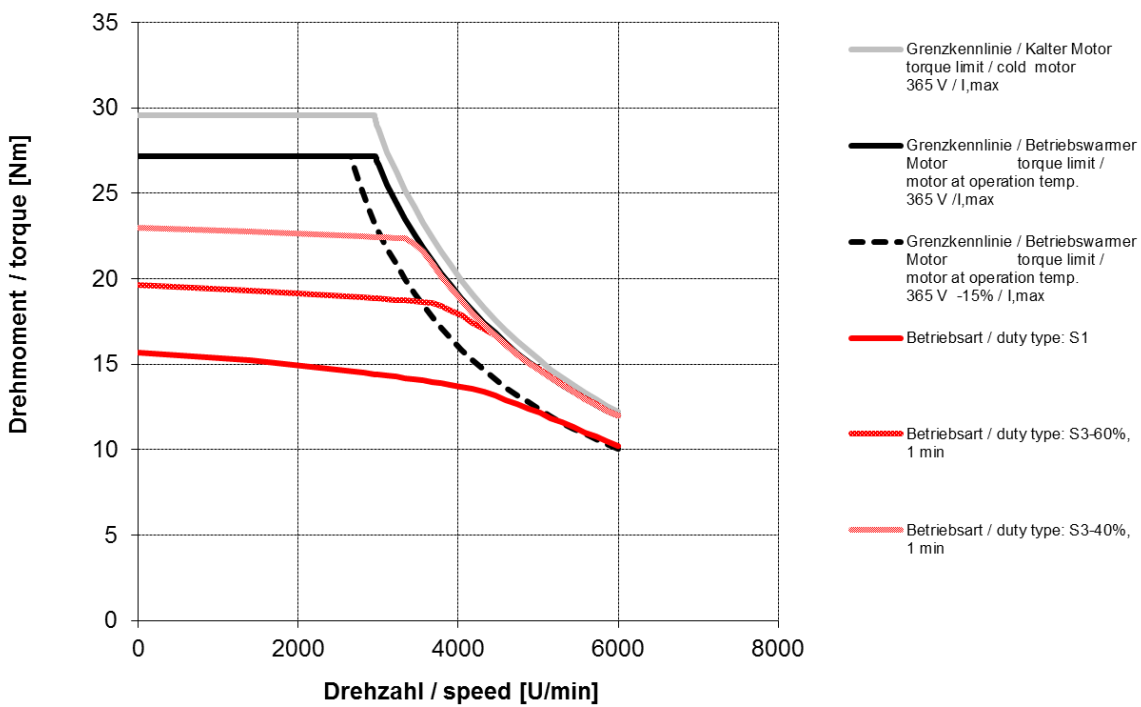
DSC1-071KO640-20-54



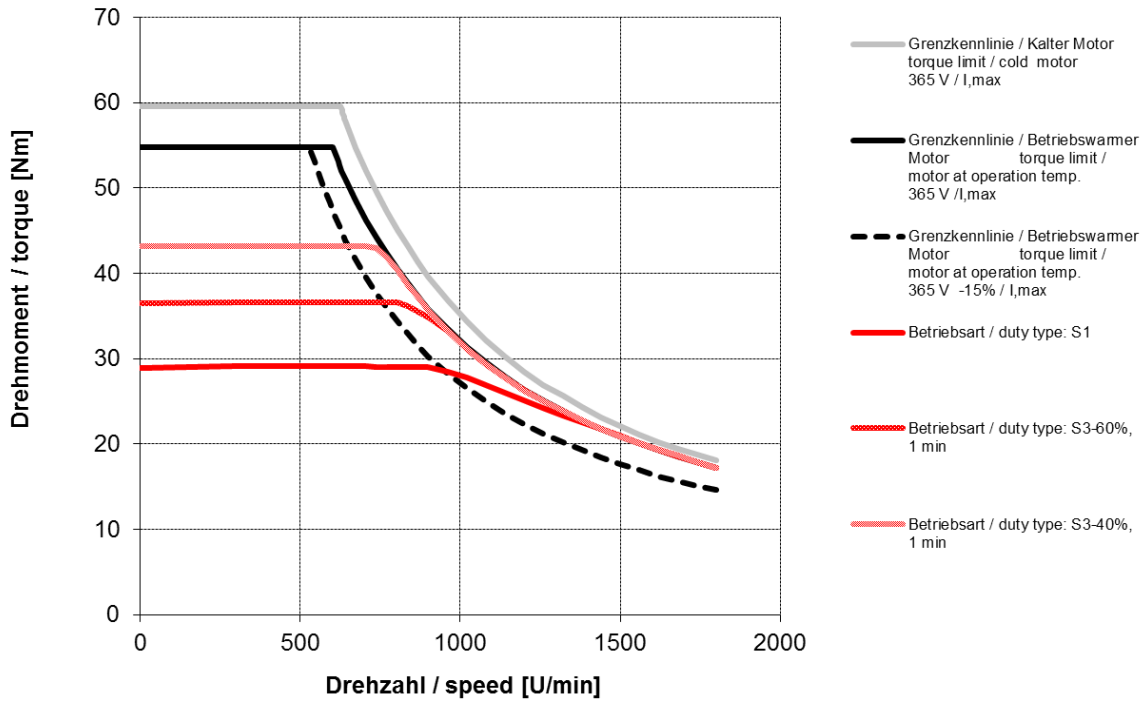
DSC1-071KO640-30-54



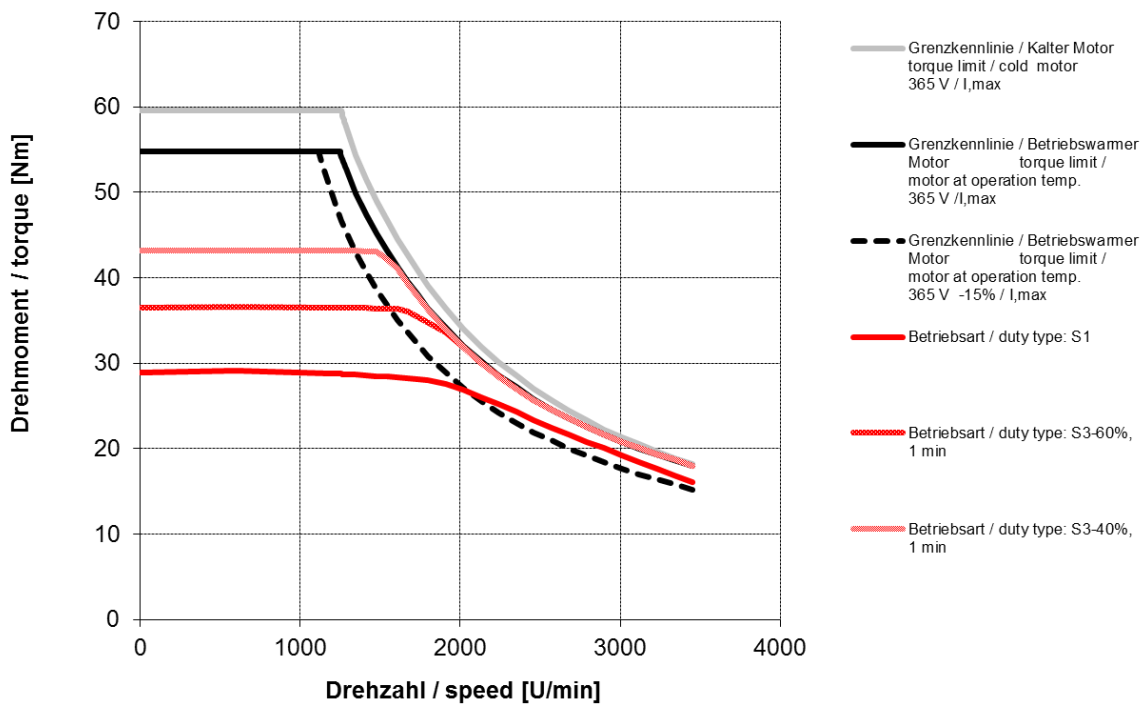
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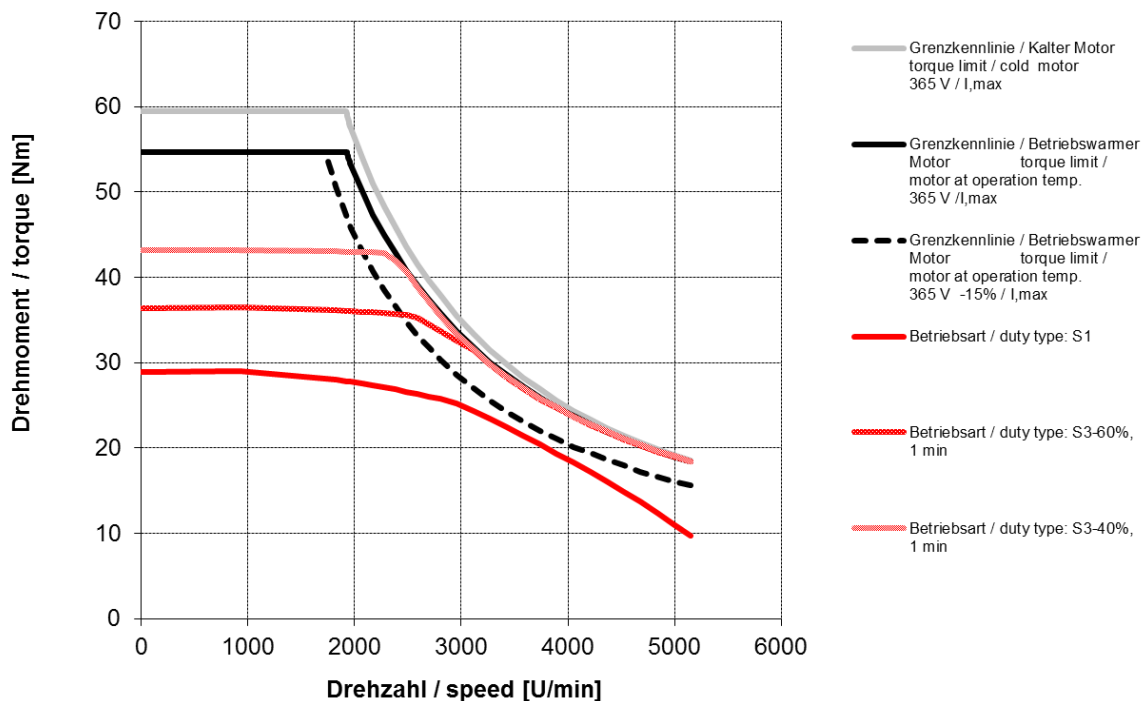
DSC1-071SO640-10-54



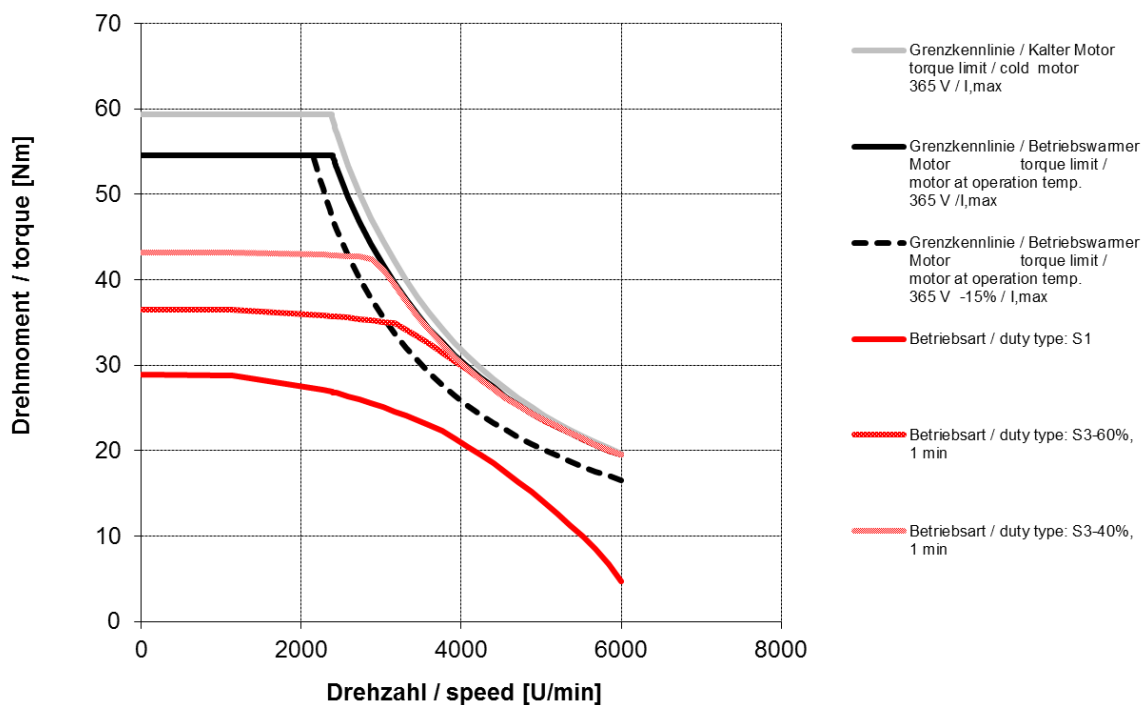
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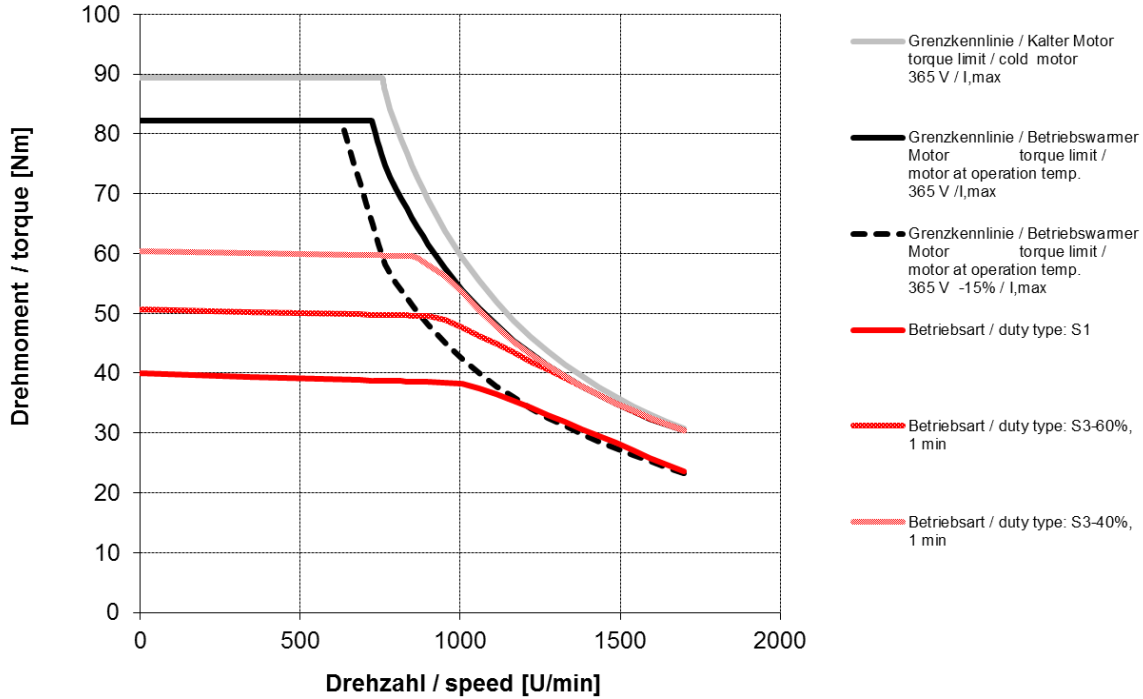
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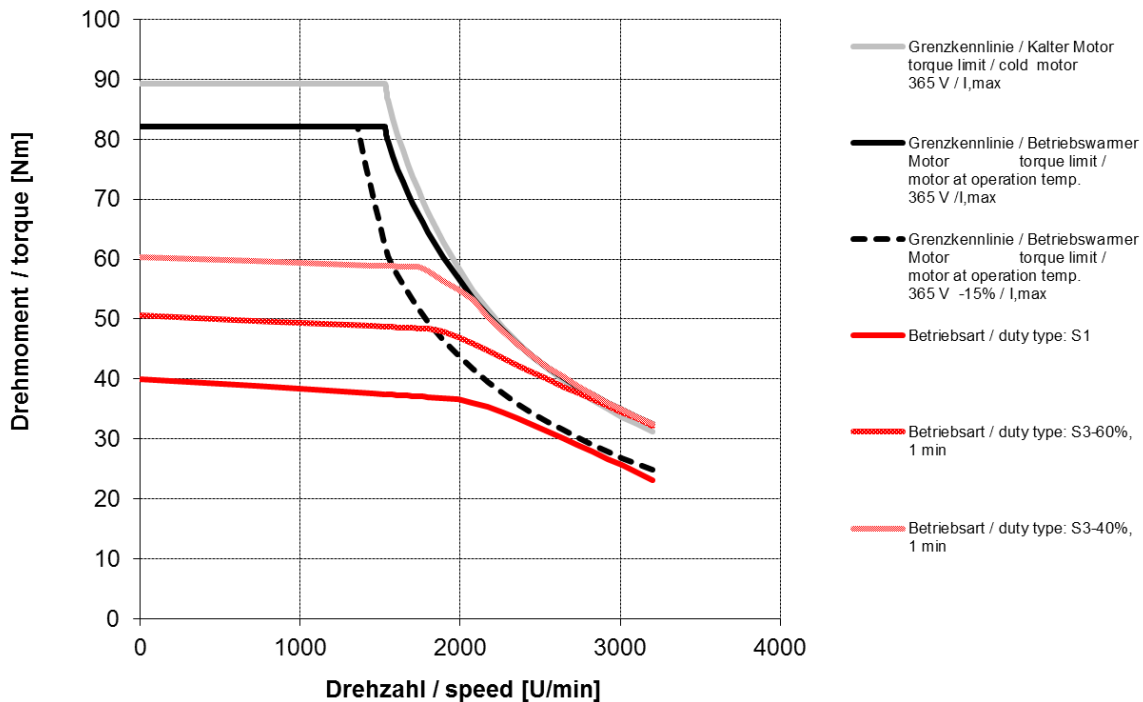
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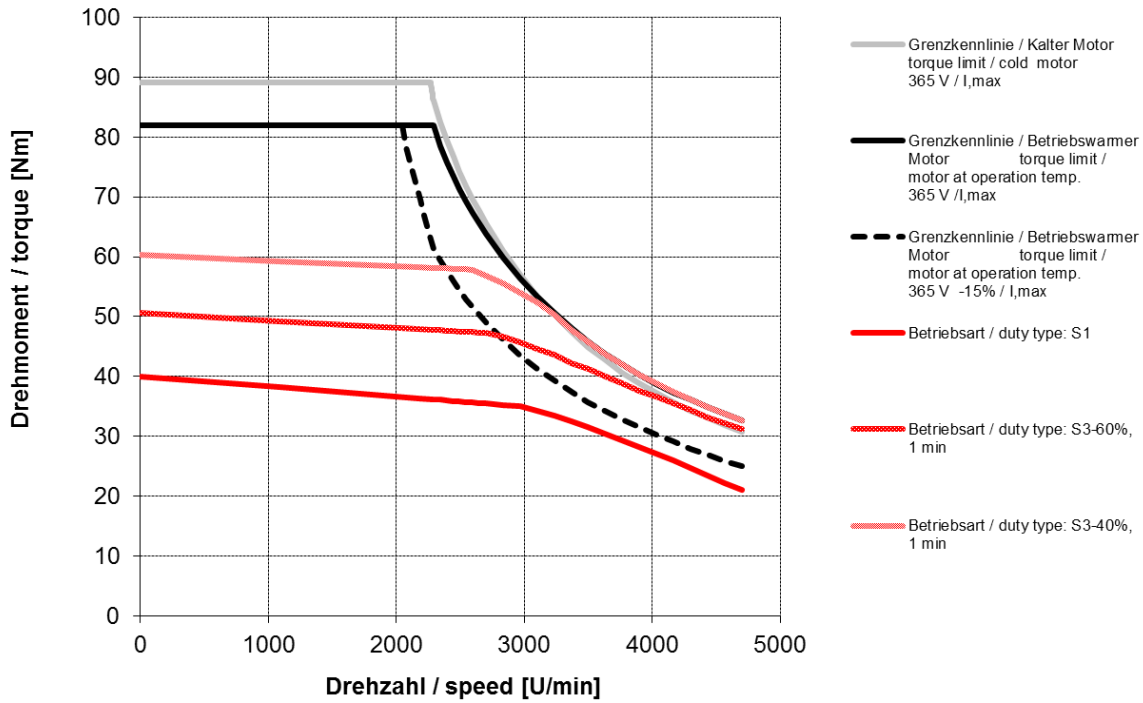
DSC1-071MO640-10-54



DSC1-071MO640-20-54

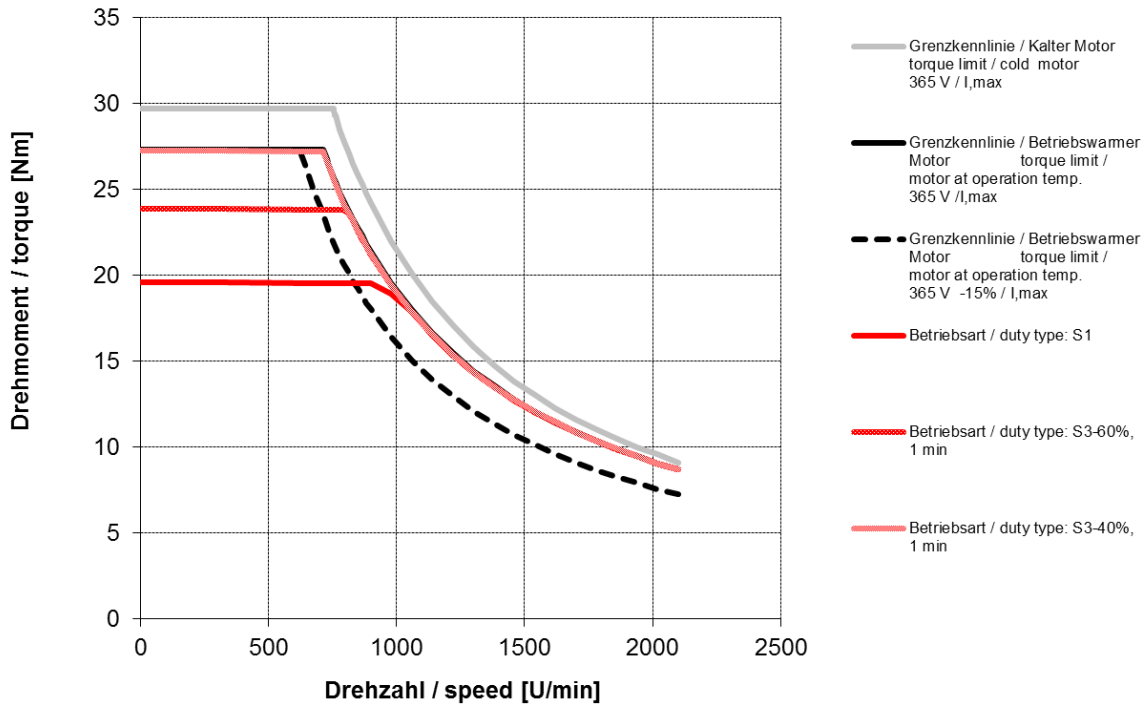


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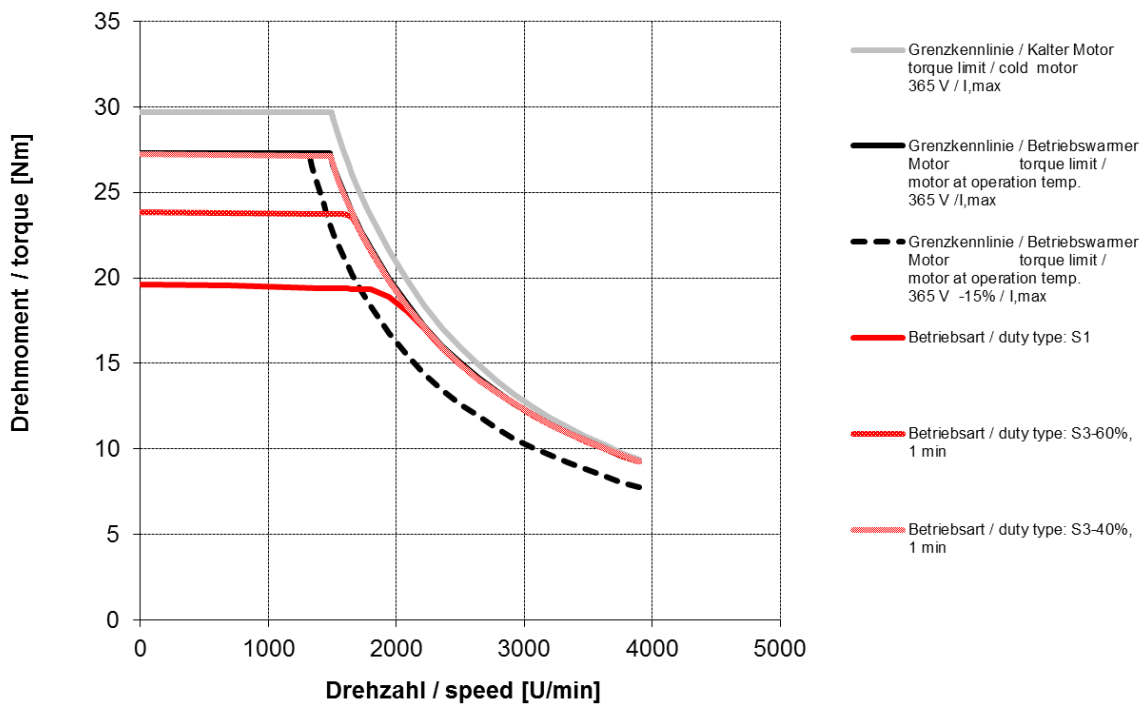


5.3.3. DSC1-071..64W..

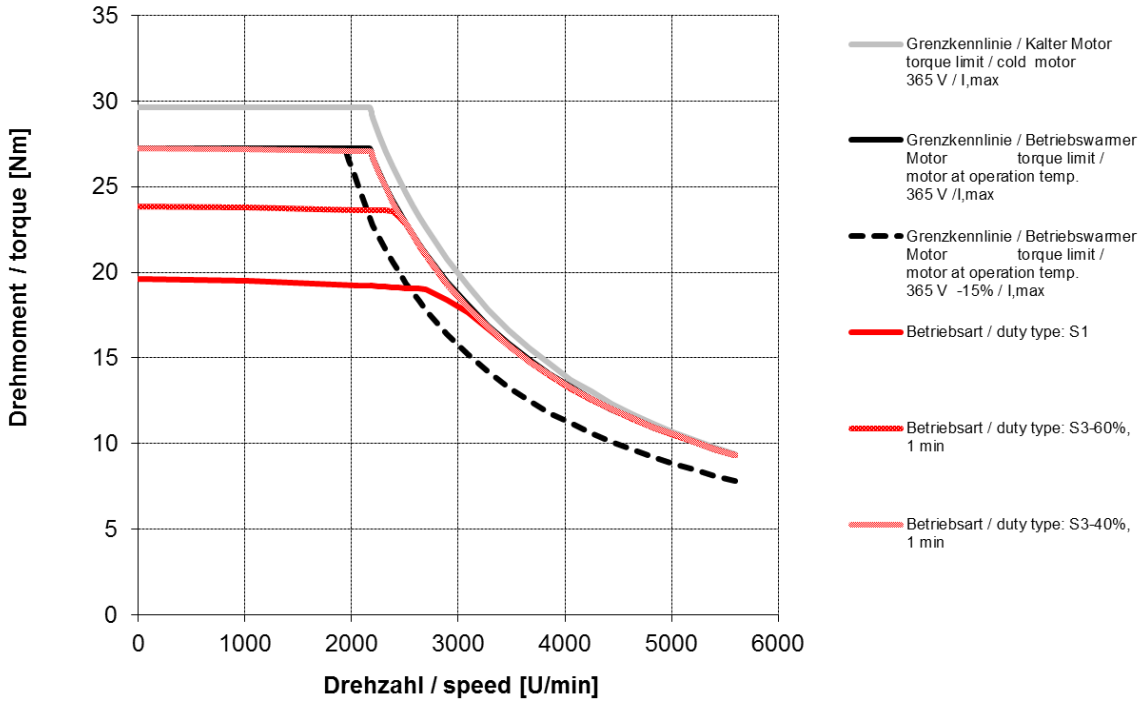
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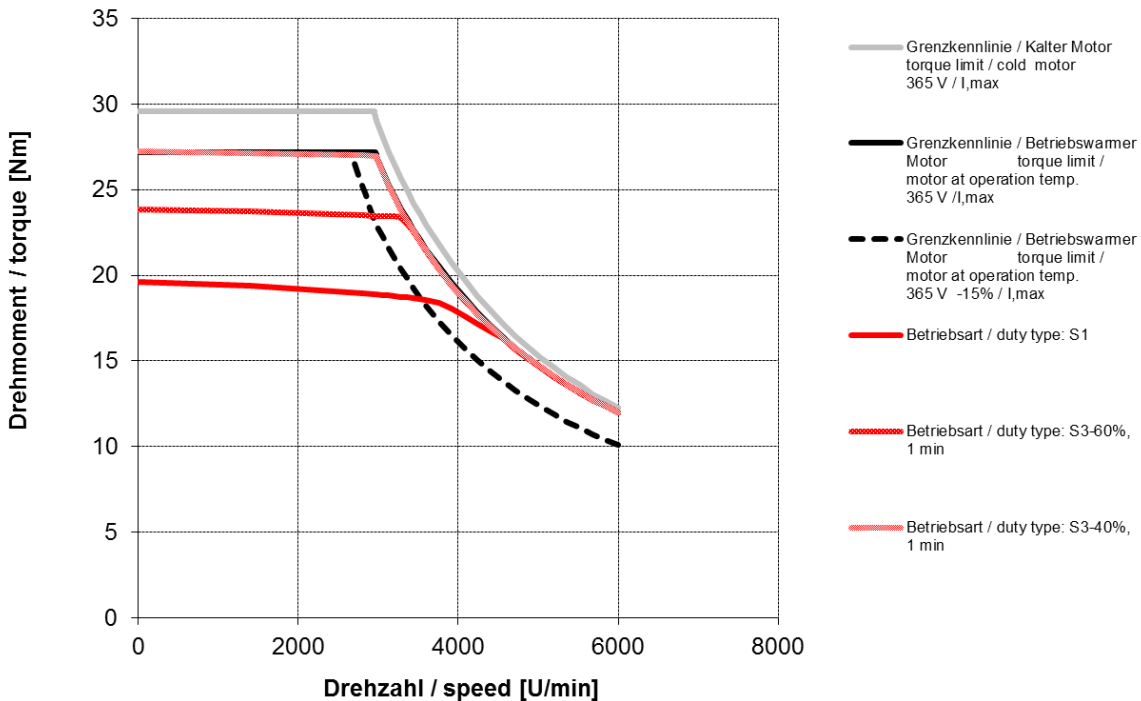
DSC1-071KO64W-20-54



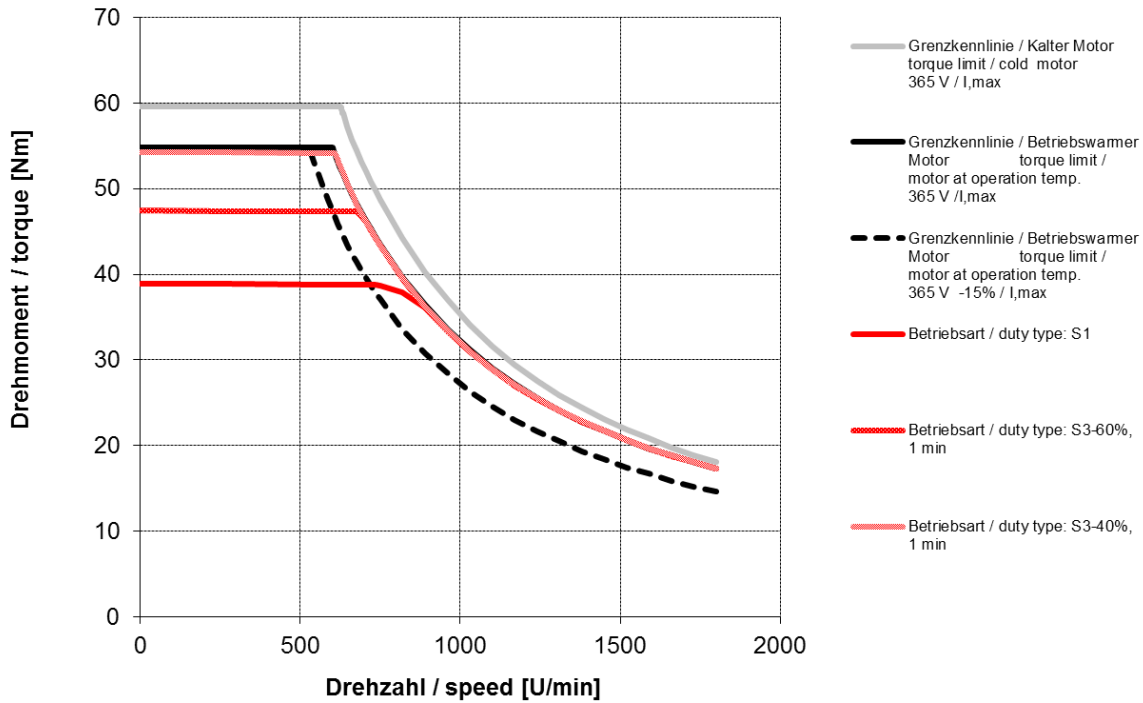
DSC1-071KO64W-30-54



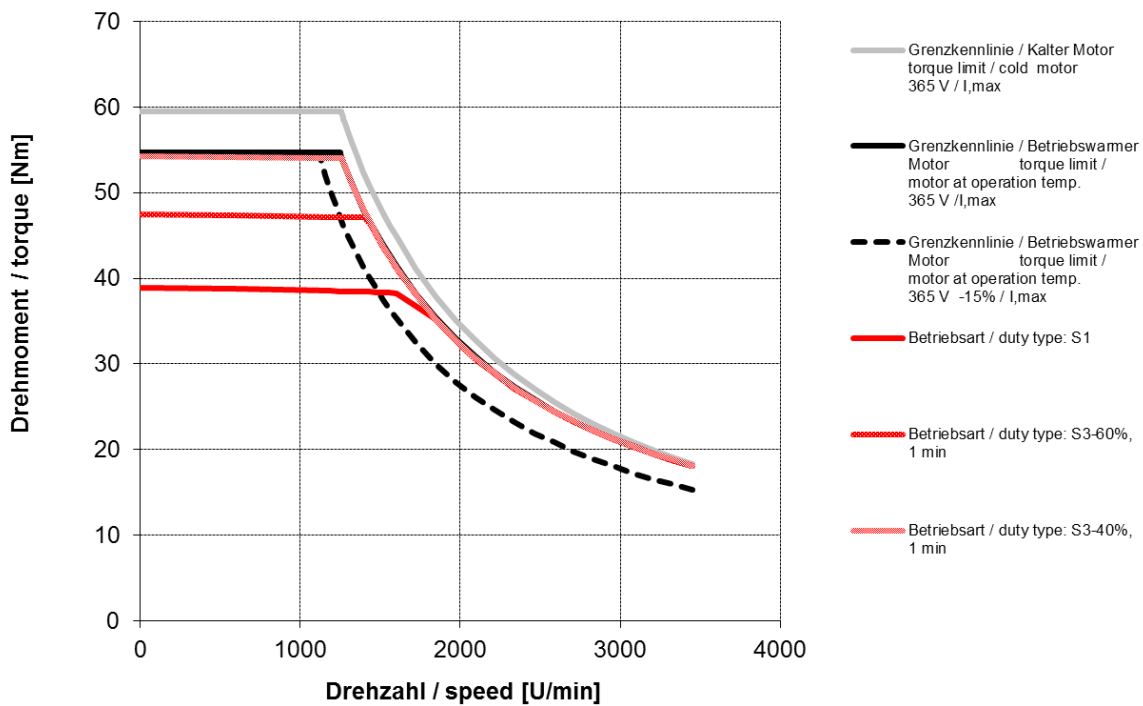
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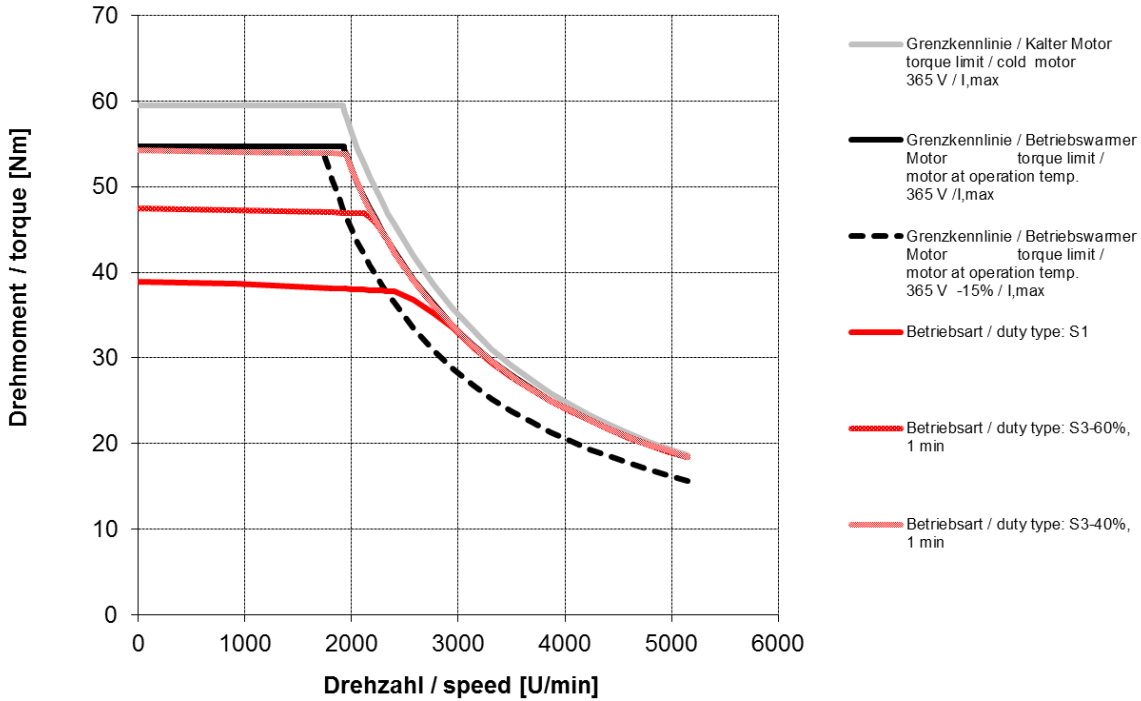
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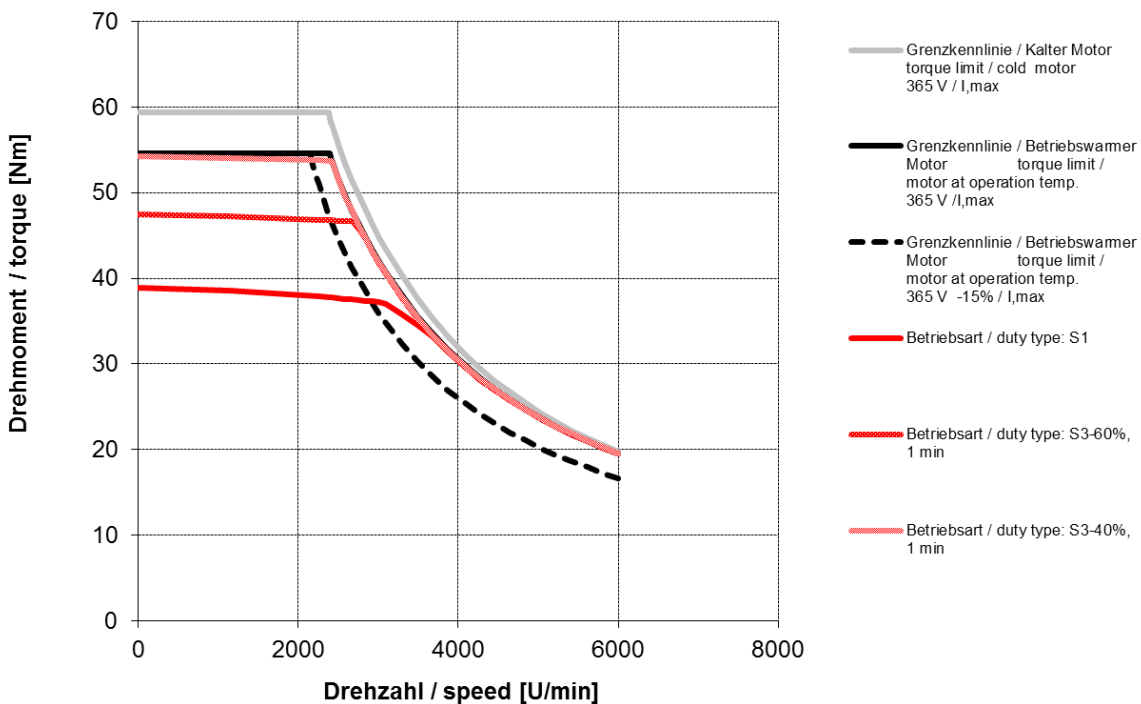
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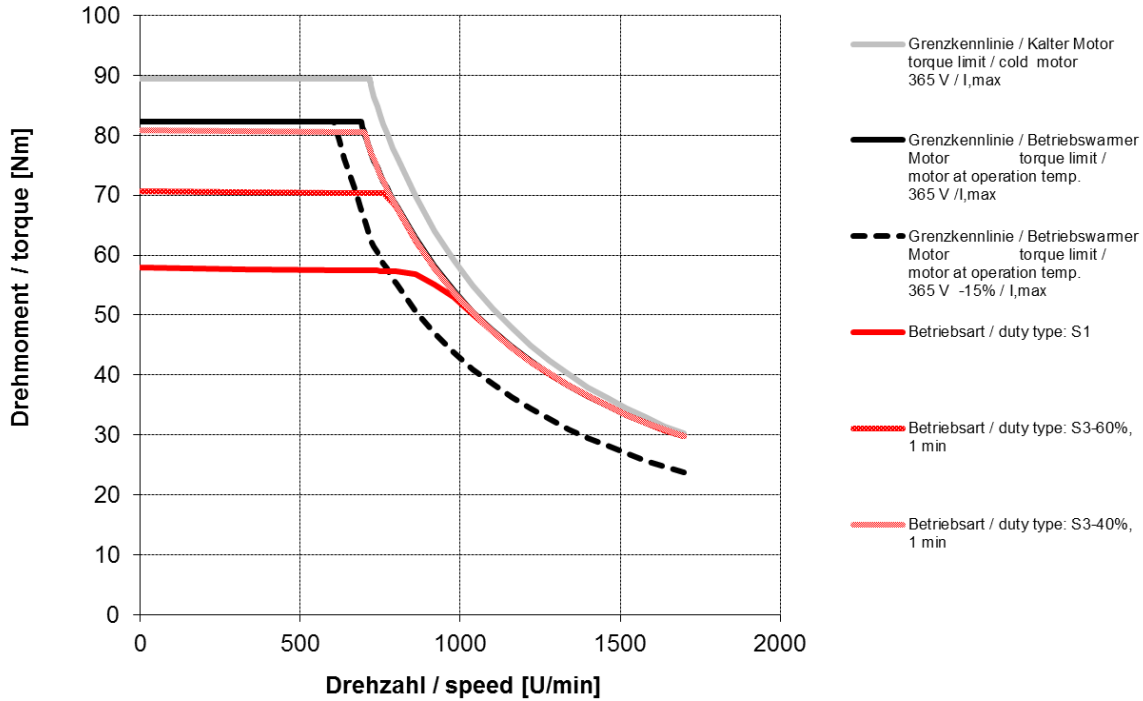
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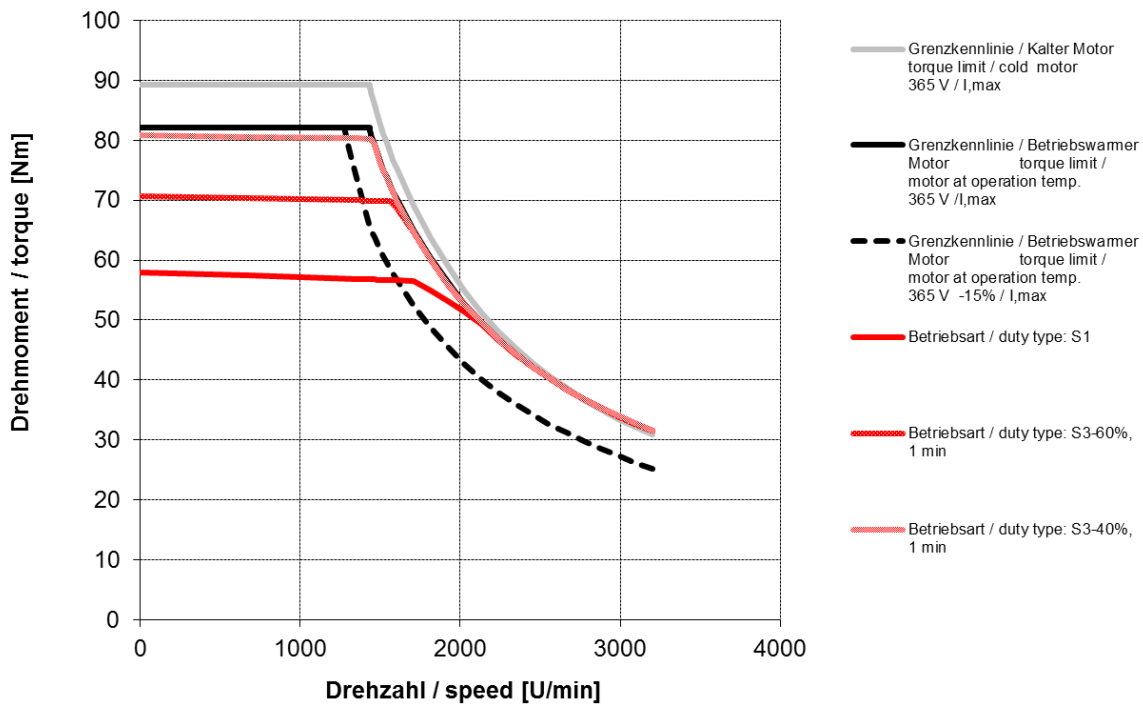
DSC1-071SO64W-40-54



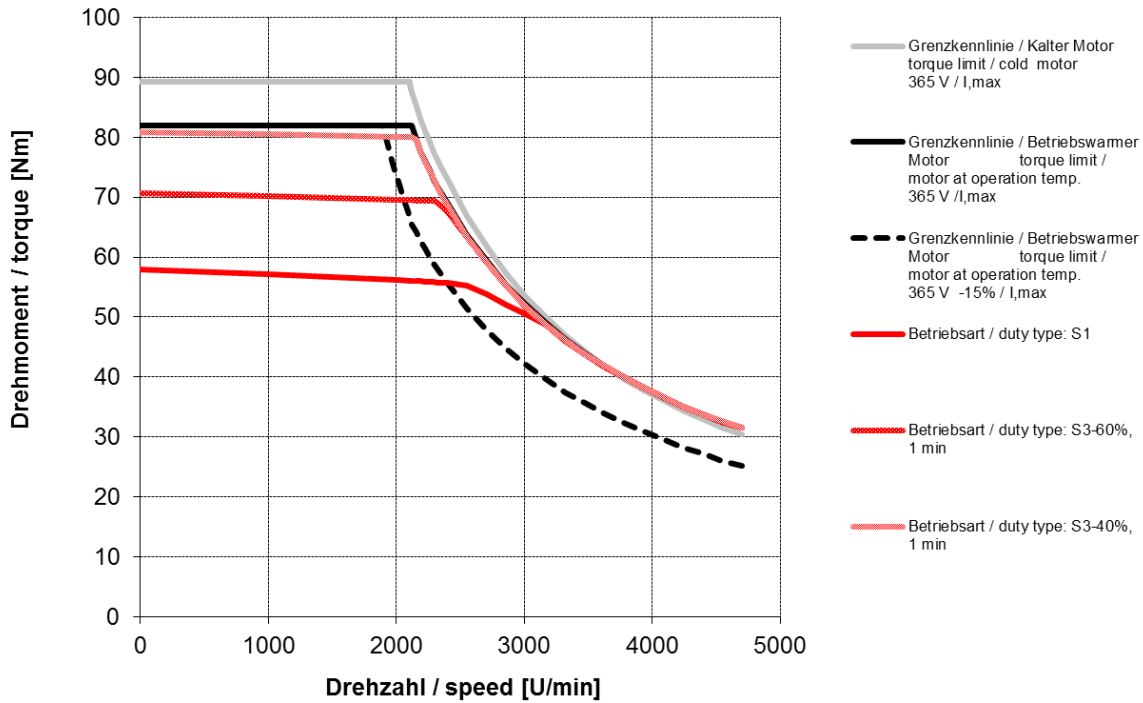
DSC1-071MO64W-10-54



DSC1-071MO64W-20-54



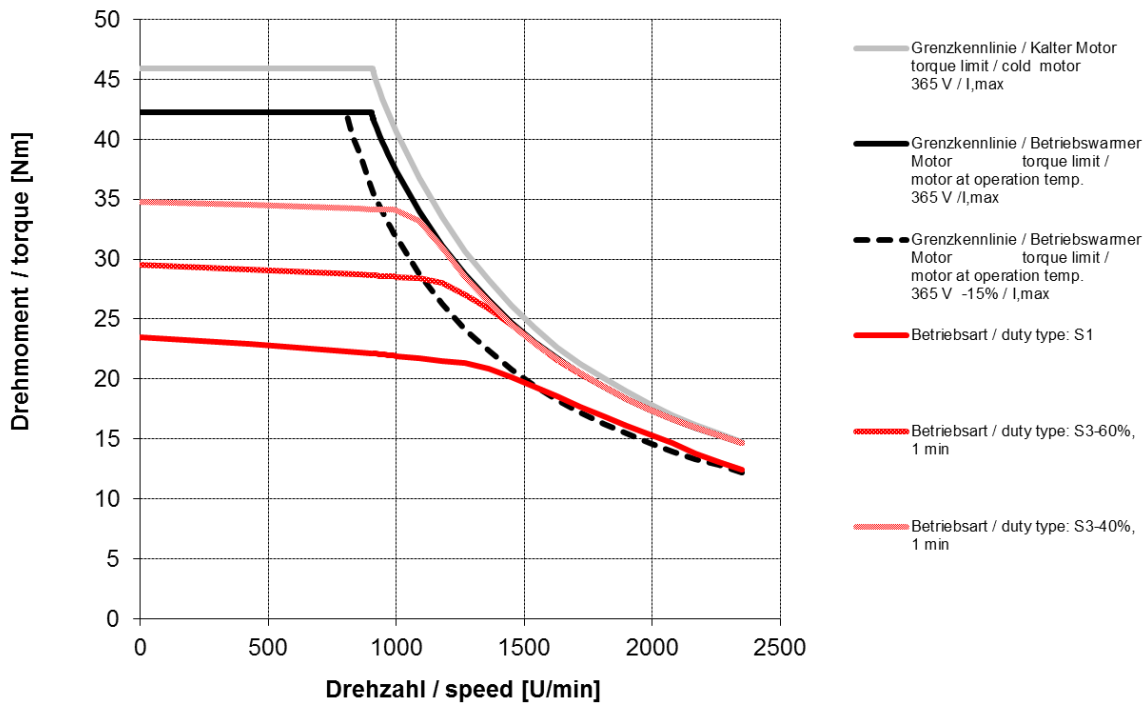
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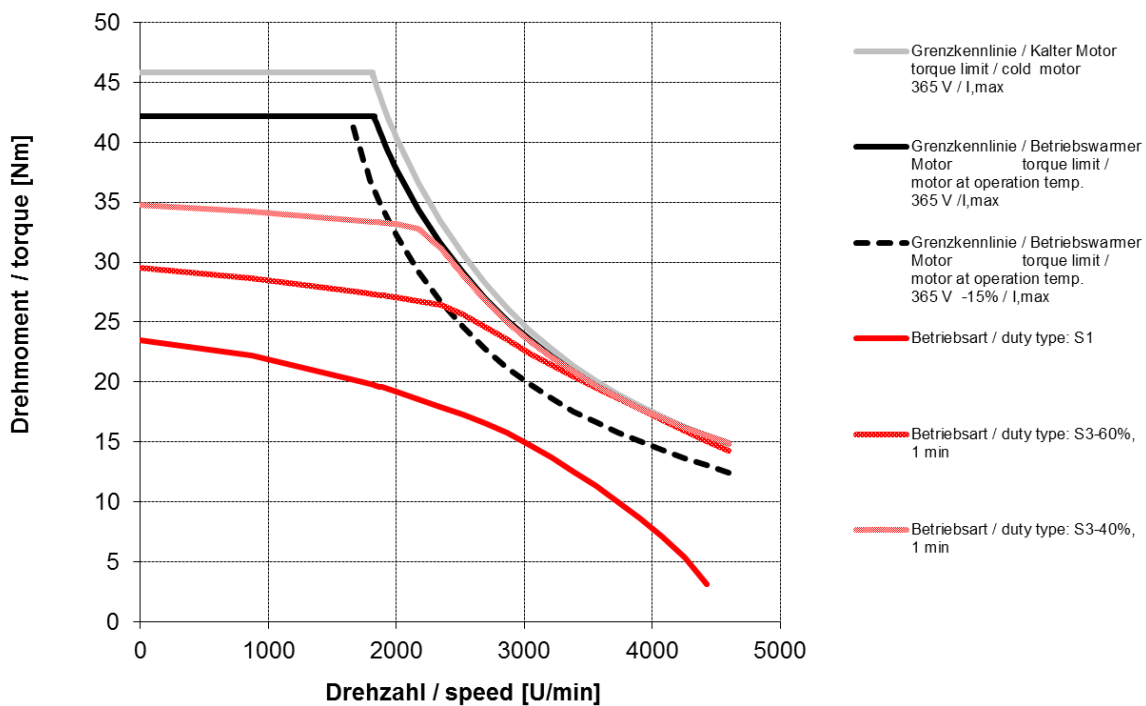
5.4. Characteristic curves DSC1-100

5.4.1. DSC1-100..64U..

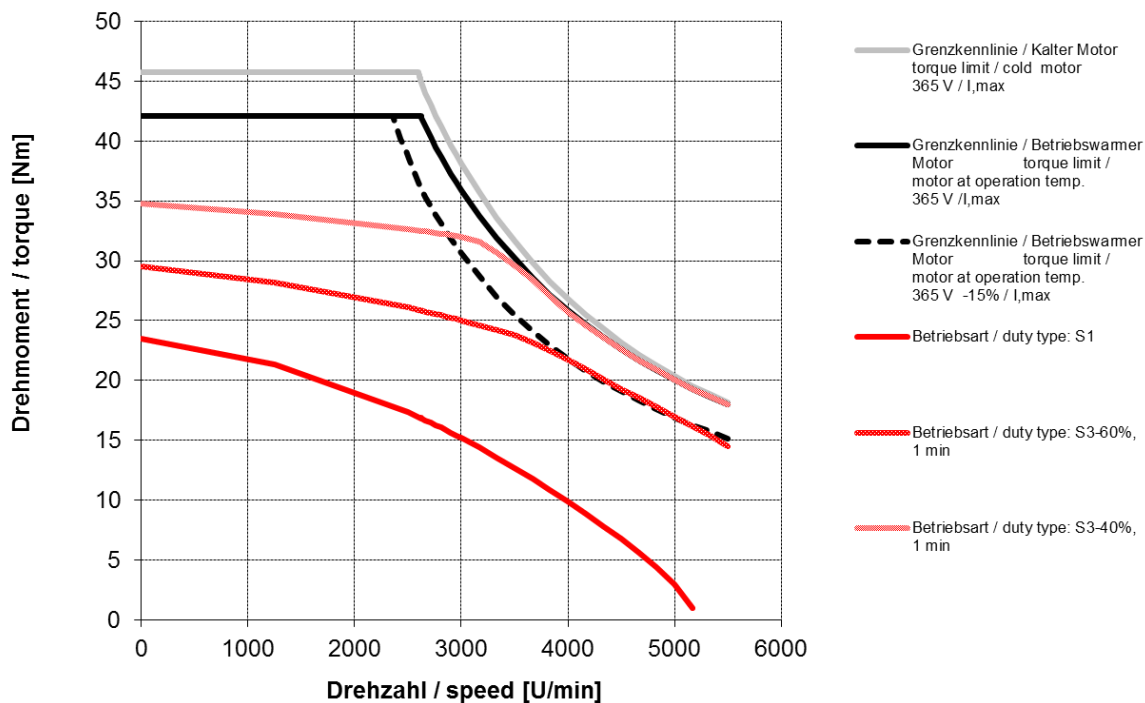
DSC1-100KO64U-10-54



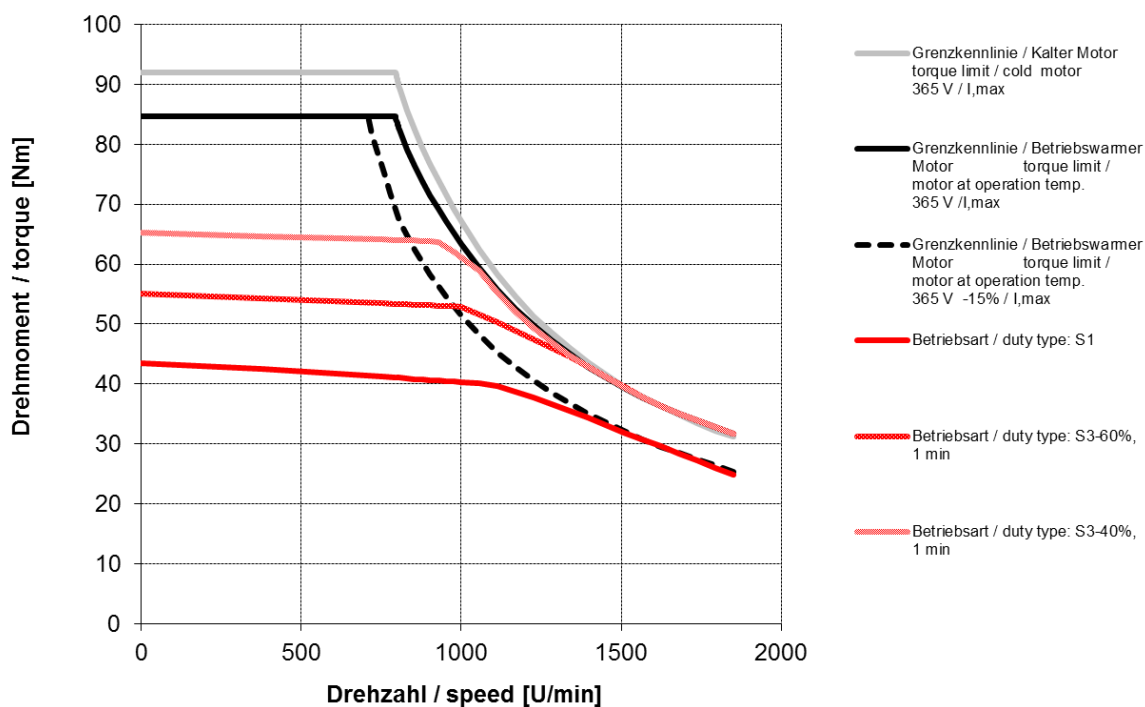
DSC1-100KO64U-20-54



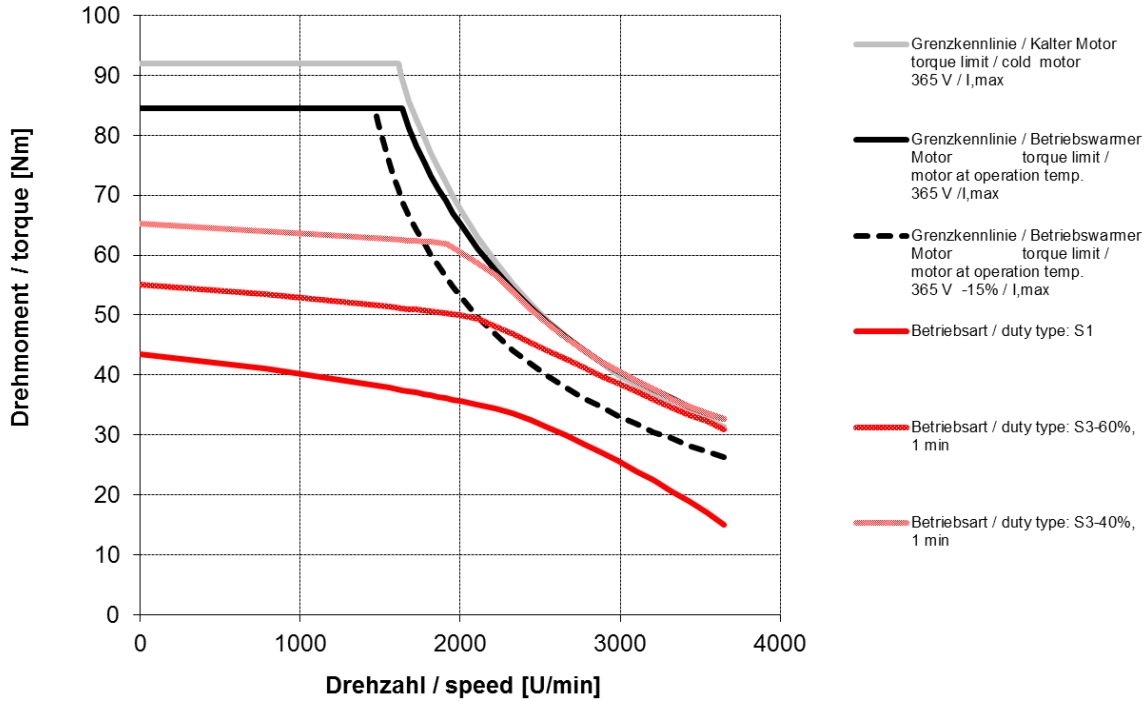
DSC1-100KO64U-30-54



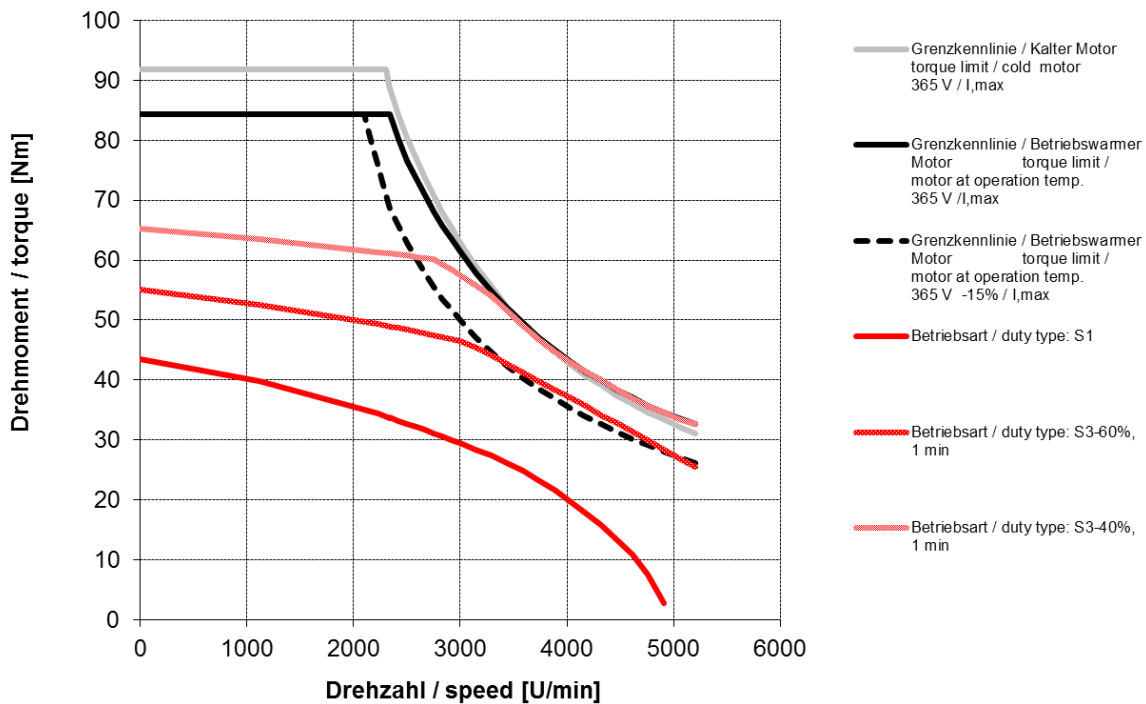
DSC1-100SO64U-10-54



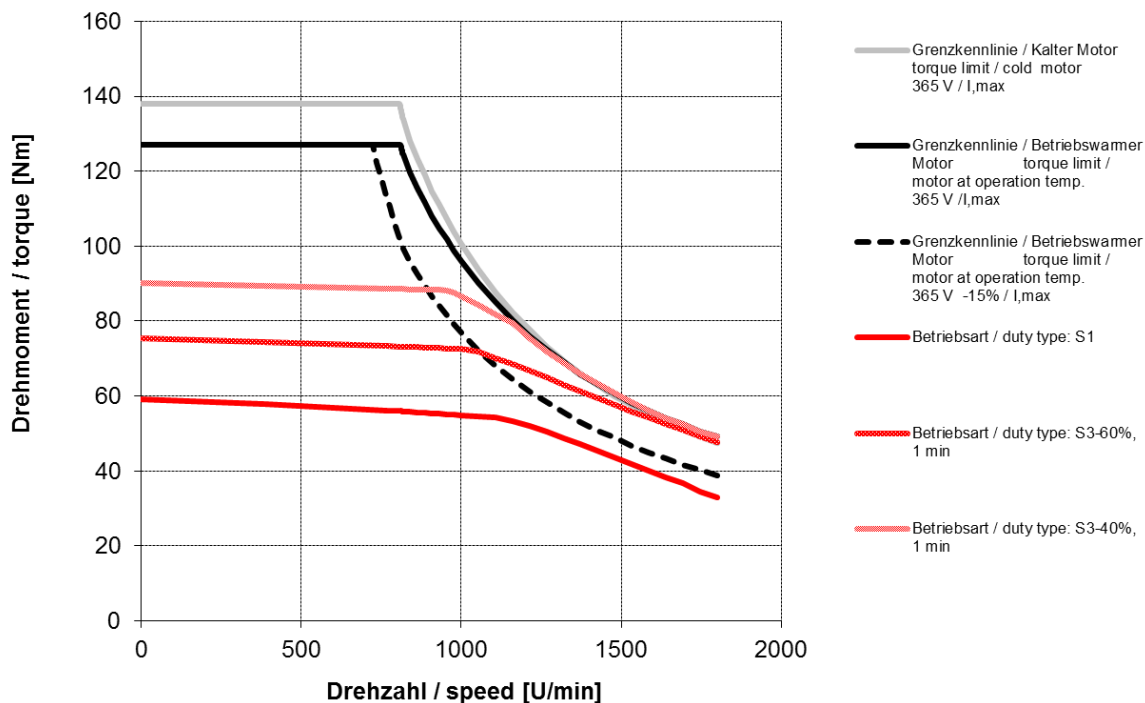
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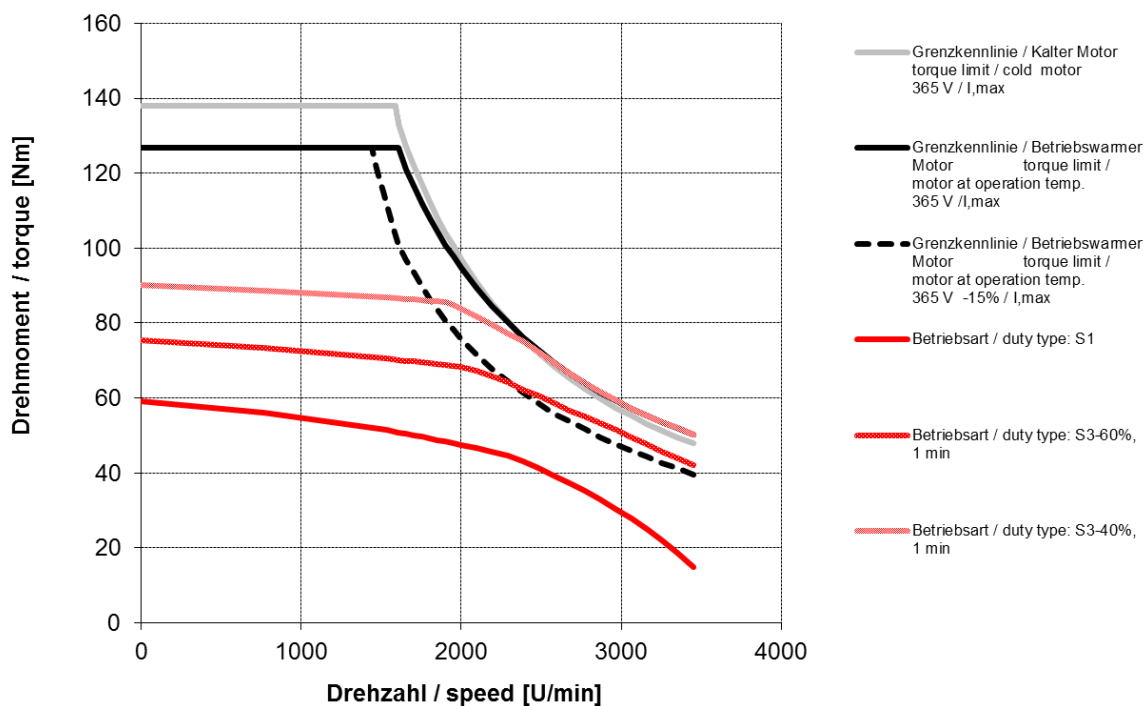
DSC1-100SO64U-30-54



DSC1-100MO64U-10-54

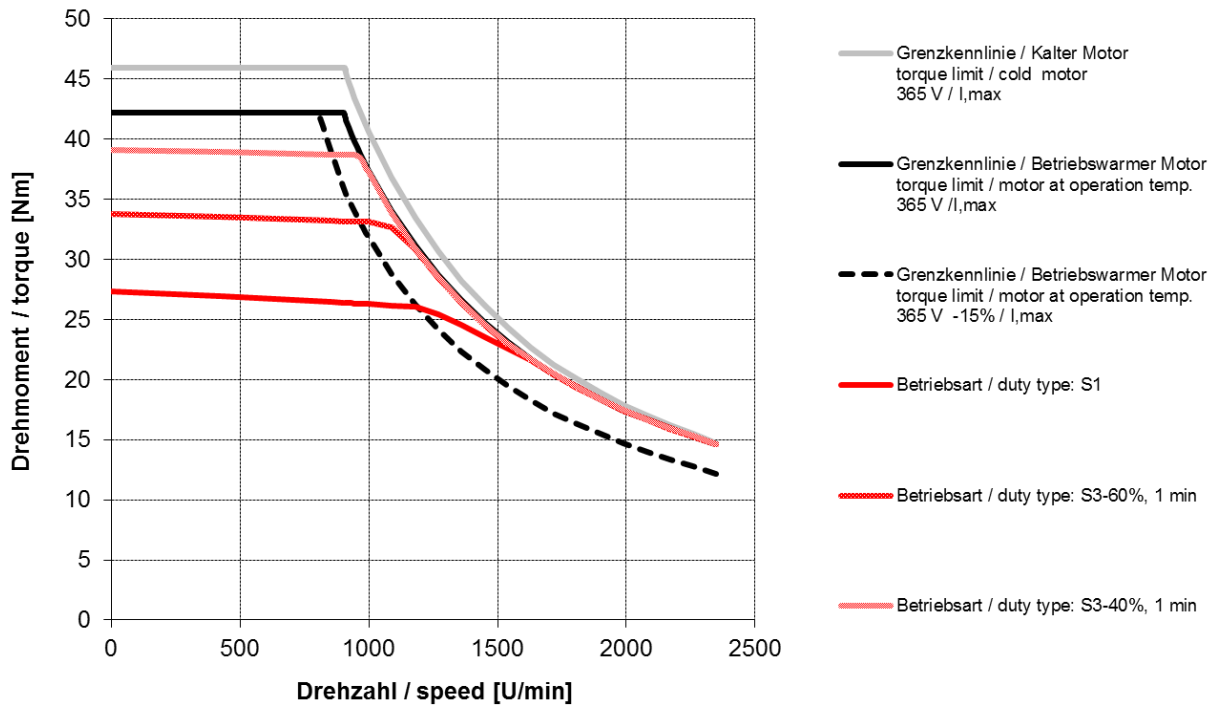


DSC1-100MO64U-20-54

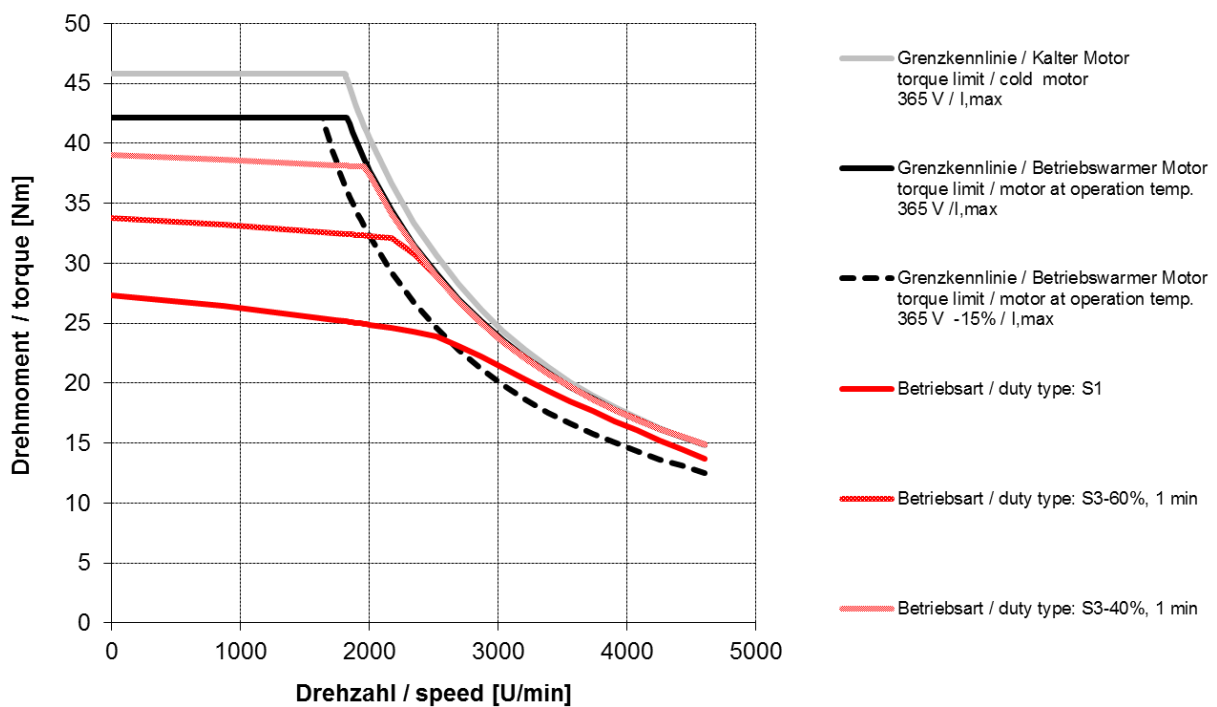


5.4.2. DSC1-100..640..

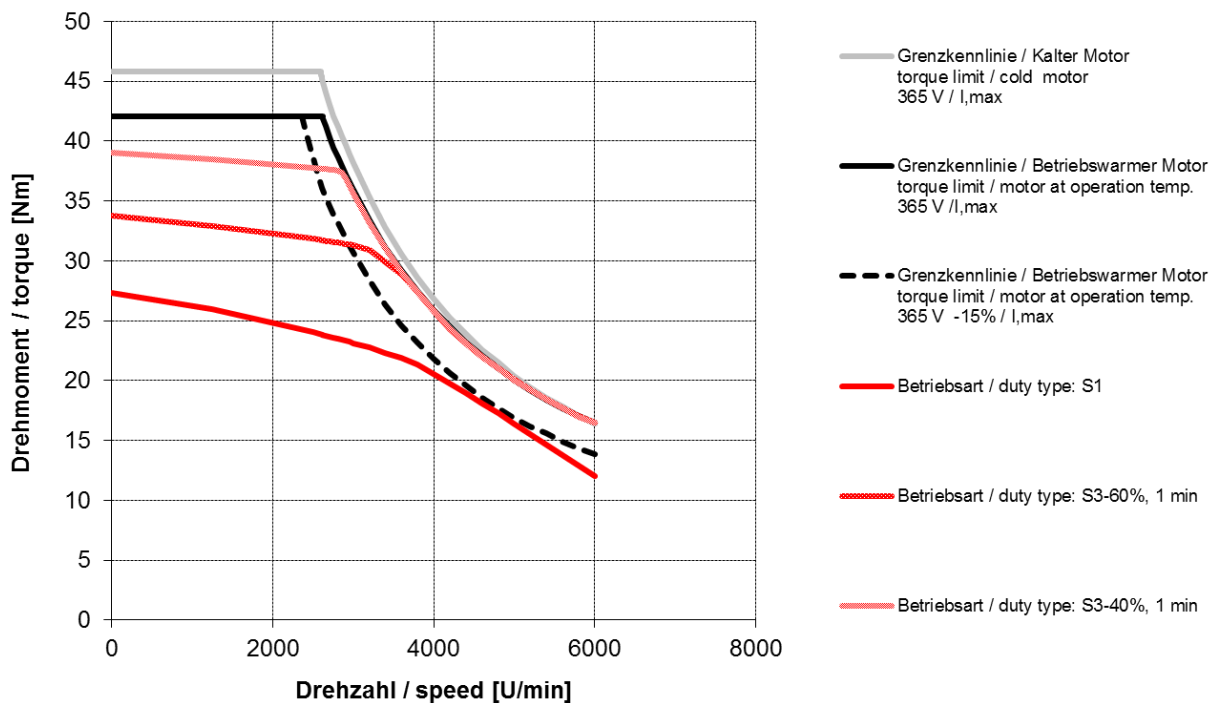
DSC1-100KO640-10-54



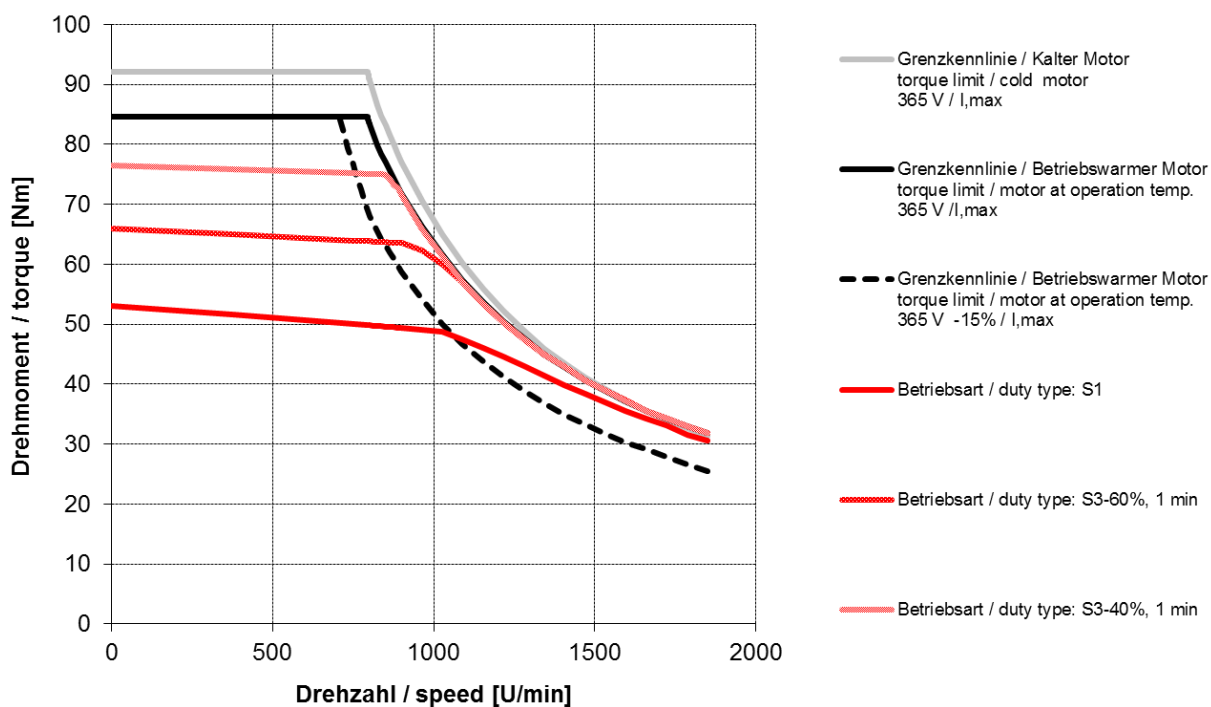
DSC1-100KO640-20-54



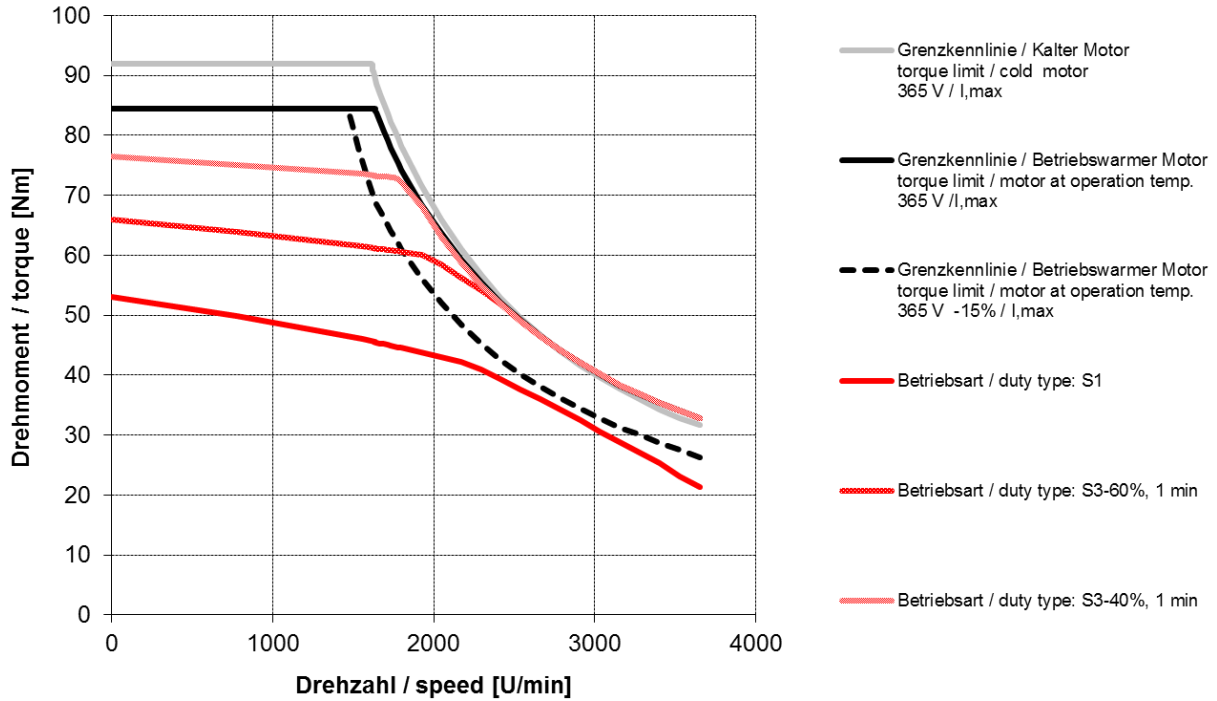
DSC1-100KO640-30-54



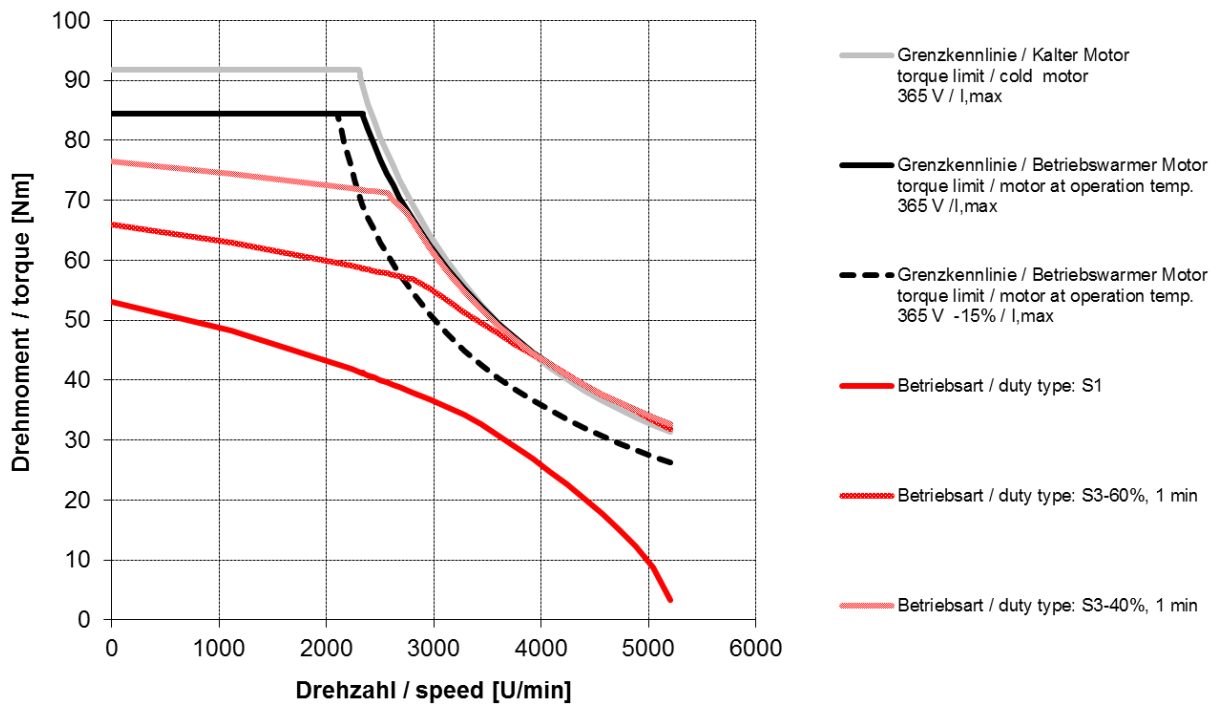
DSC1-100SO640-10-54



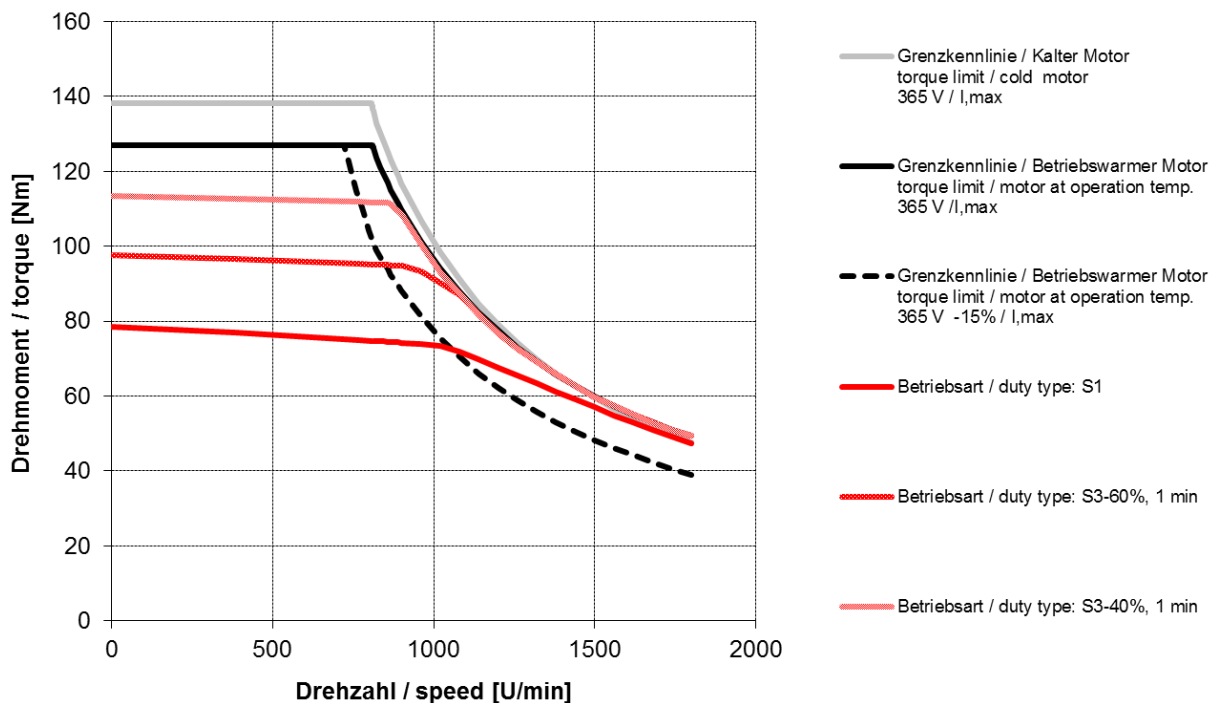
DSC1-100SO640-20-54



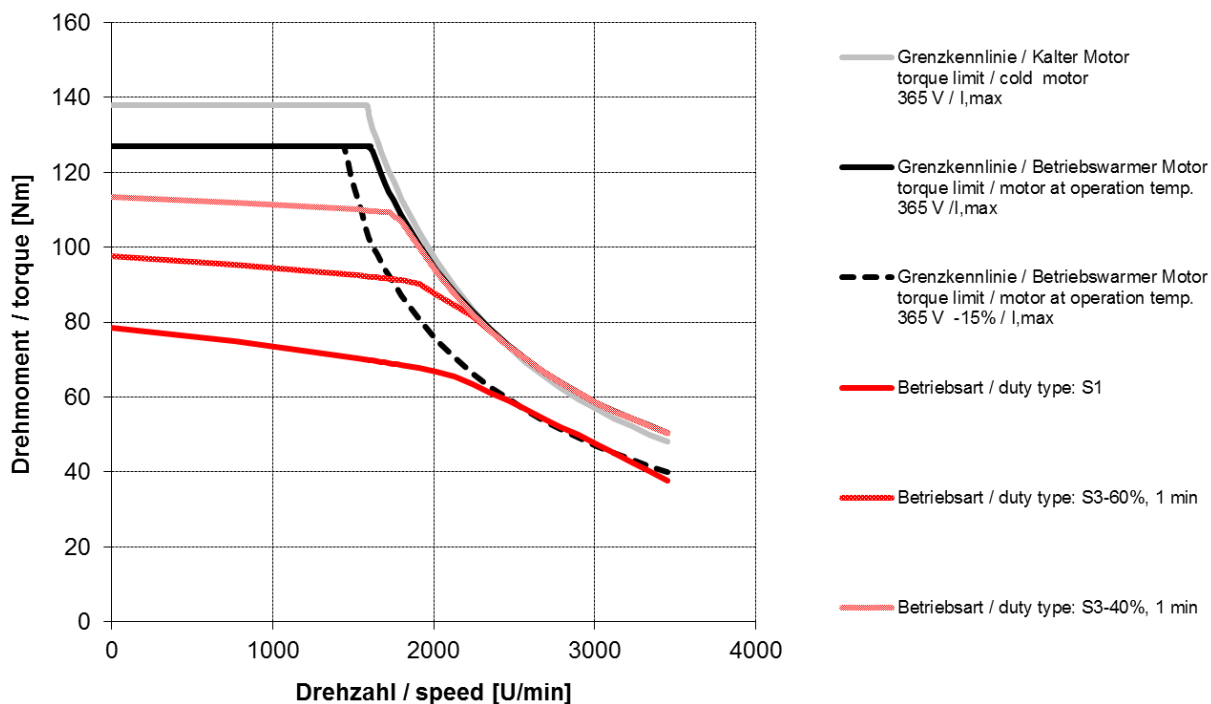
DSC1-100SO640-30-54



DSC1-100MO64O-10-54

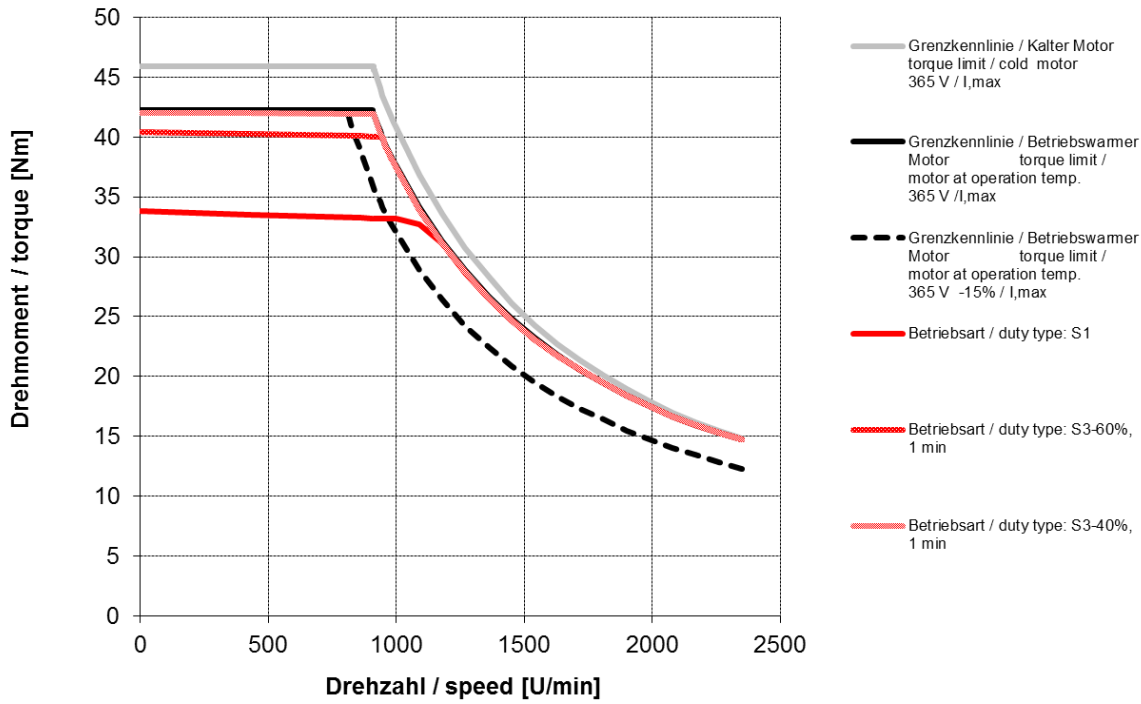


DSC1-100MO64O-20-54

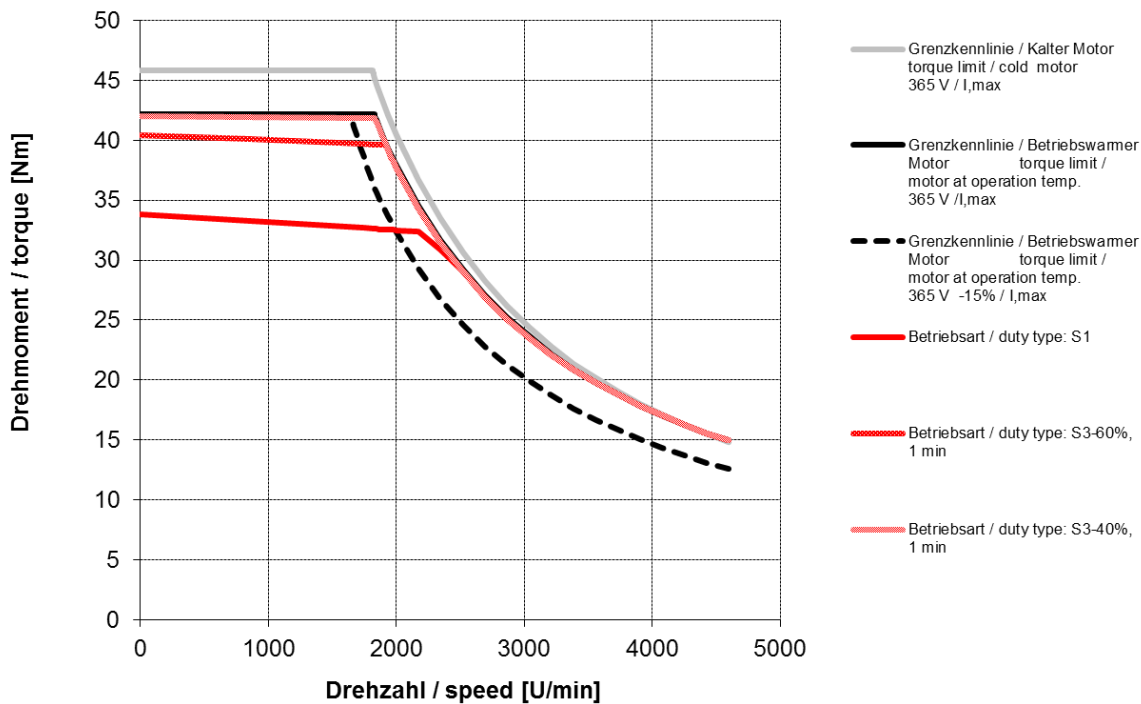


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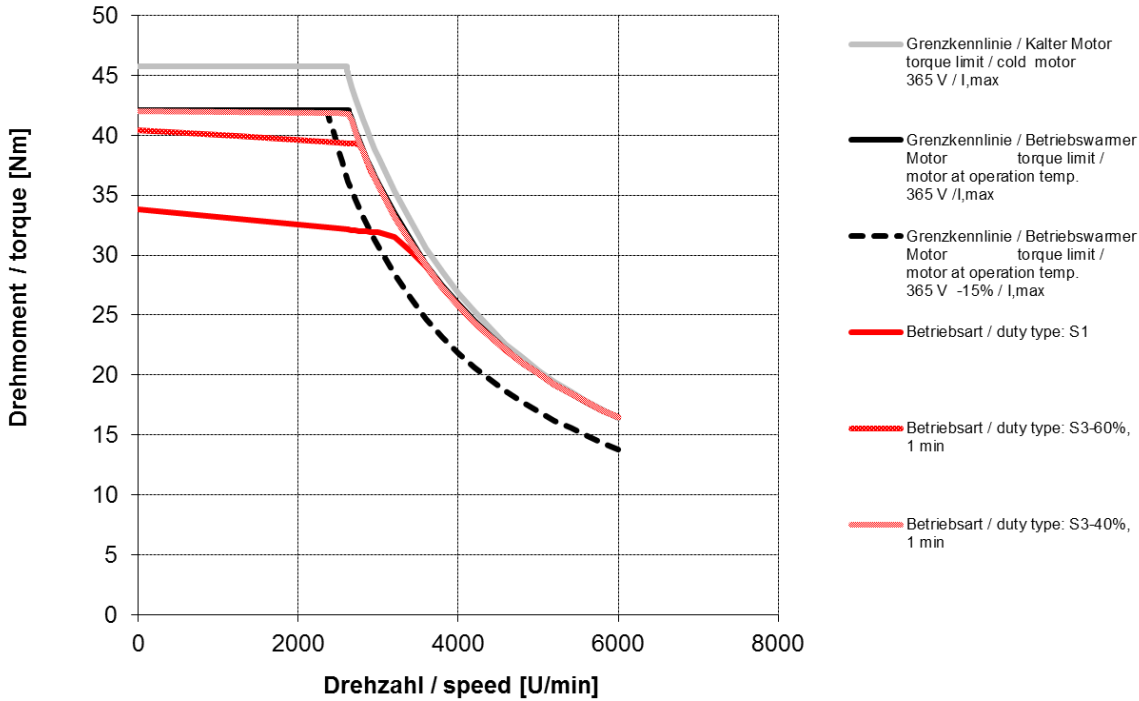
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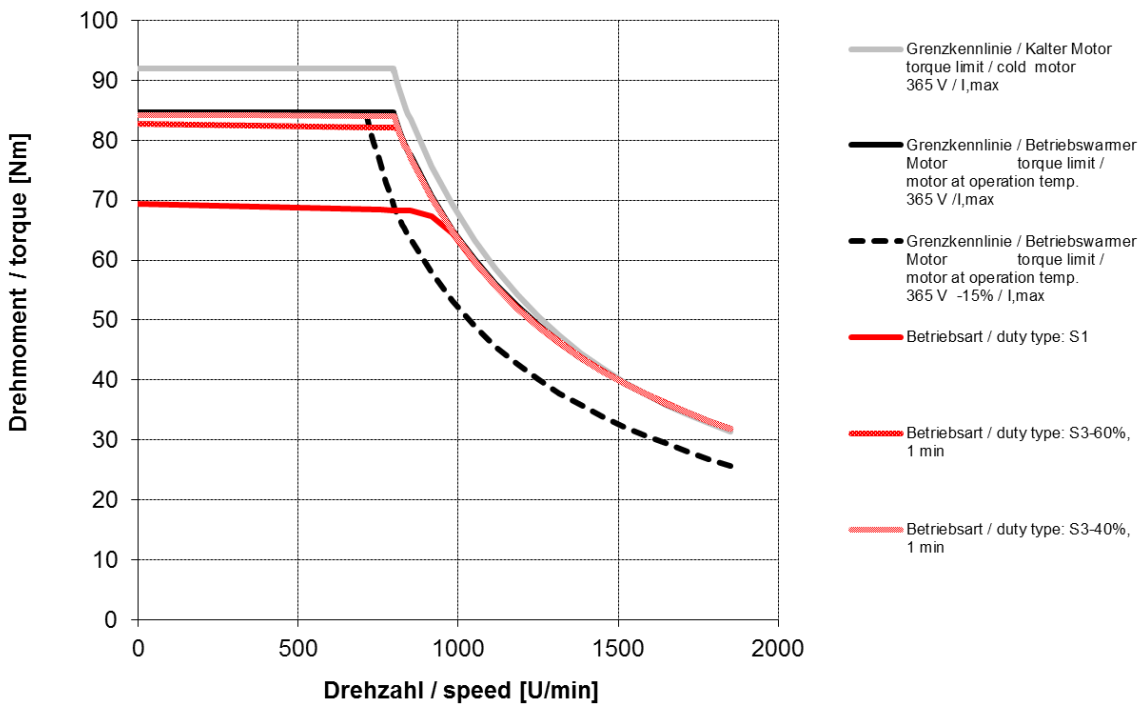
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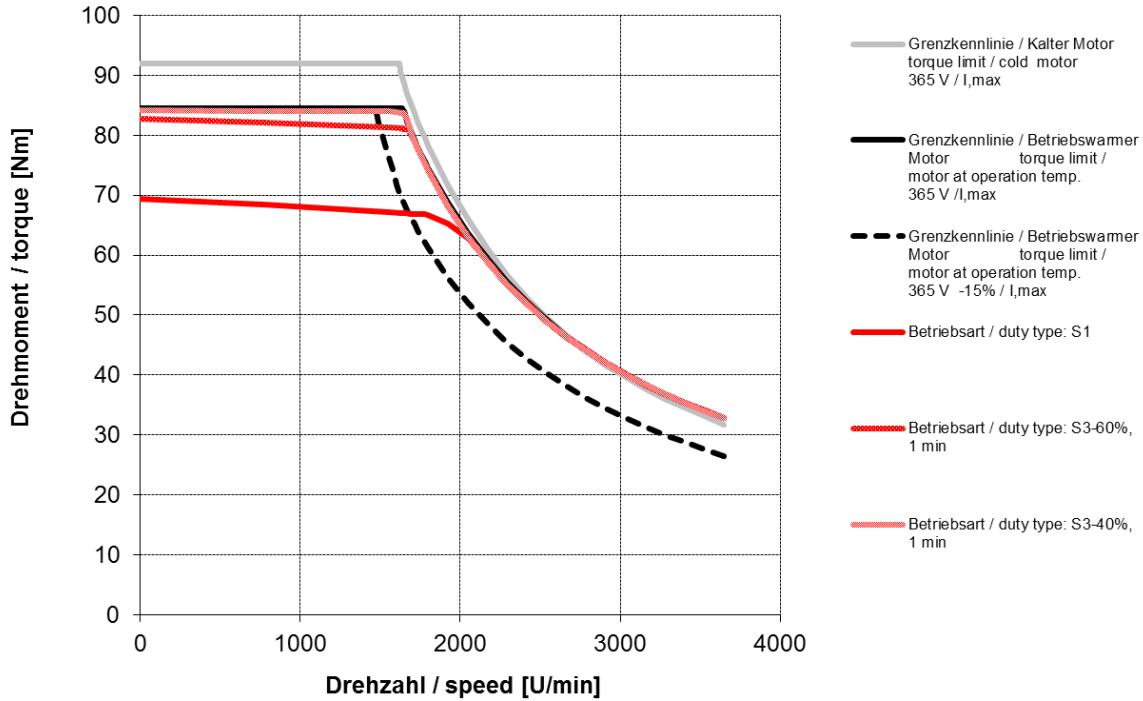
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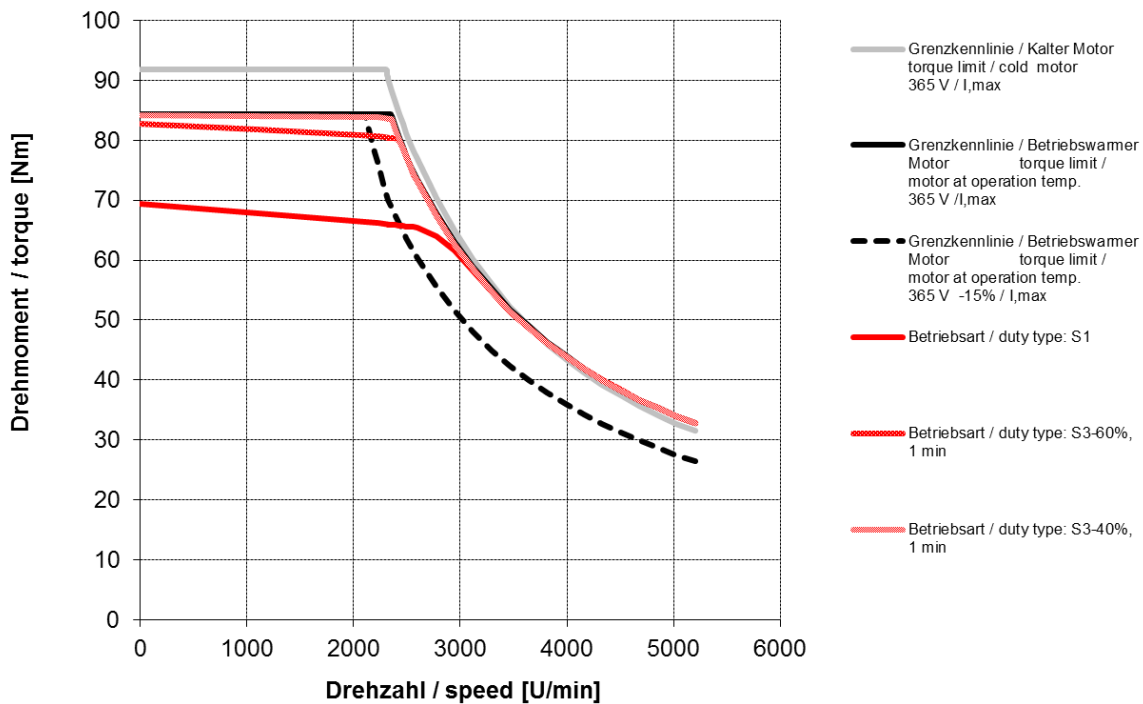
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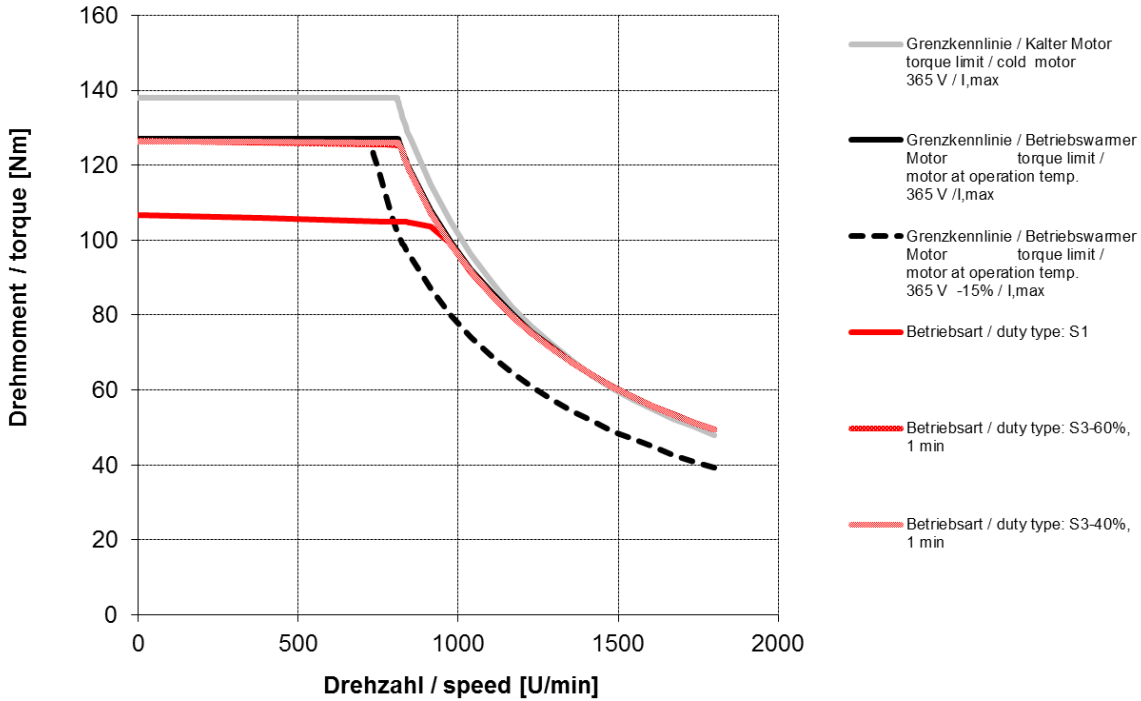
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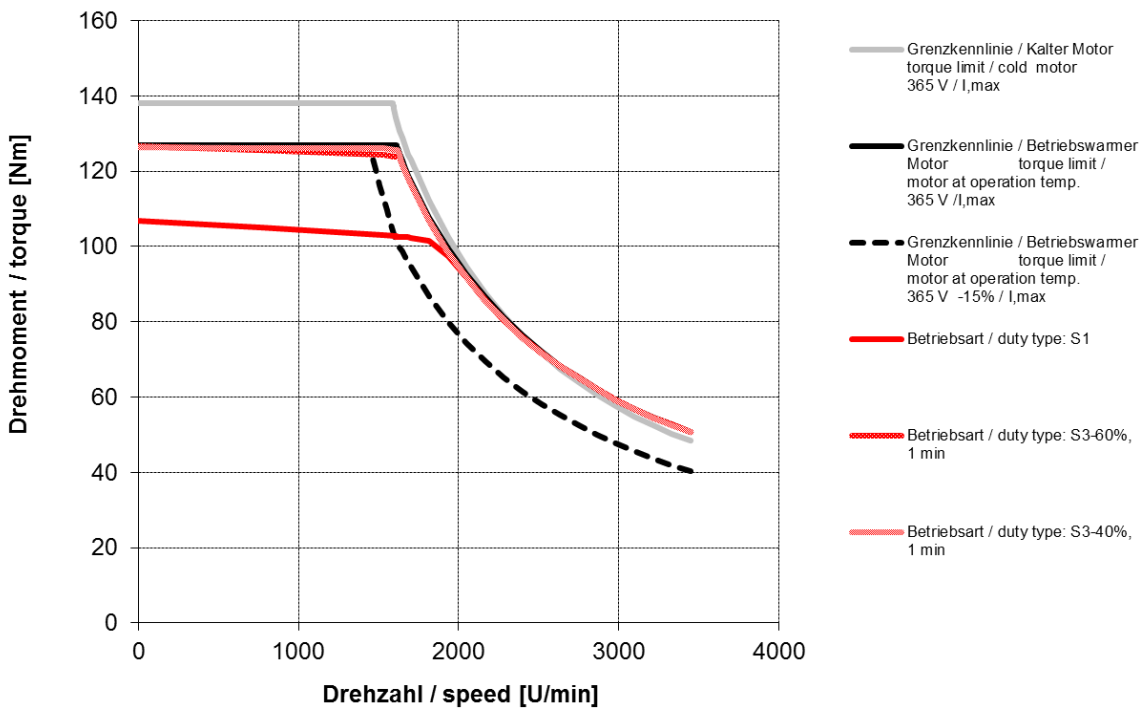
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DSC1-100MO64W-10-54



DSC1-100MO64W-20-54



6. Commissioning and maintenance instructions

For information on commissioning the motors, please request a copy of our commissioning and maintenance instructions, quotation number 00682,

7. Declaration of Conformity

This chapter contains general information on EC Directives, the CE marking and the Declaration of Conformity,

7.1. What is an EC Directive?

EC Directives stipulate specific requirements, The Directives are compiled by the corresponding organisations within the EU and transposed by all EU member states into national law to guarantee free trade within the European Union,

An EC Directive only outlines basic minimum requirements, More detailed requirements are included in standards to which the Directive makes direct reference,

7.2. What does the CE marking signify?

a) The CE marking symbolises conformity to all the obligations incumbent on manufacturers for the product by virtue of the Community Directives providing for its affixing,

b) The CE marking affixed to industrial products symbolises the fact that the natural or legal person having affixed or been responsible for affixing the said marking has verified that the product conforms to all Community provisions for total harmonisation which apply to it and has been the subject of the appropriate conformity evaluation procedures,

Council Decision 93/465/EEC, appendix I B, a) + c)

We affix the CE marking to the device and include it in the documentation as soon as we have established that the product fulfils the requirements outlined in the relevant Directives,

If this Baumüller product is used in your machine as specified, you can assume that the product satisfies the requirements stipulated in 2006/95/EC,

Correct installation is a decisive factor in ensuring that this product complies with 89/336/EEC (EMC Directive), Since you are installing the product yourself, you are also responsible for ensuring compliance with 89/336/EEC,

We will provide you with assistance in the form of EMC information, which can be found in the corresponding technical instructions, Once you have satisfied all the requirements outlined in this documentation and the technical instructions, you can assume (or "suppose") that the product meets all the requirements stipulated in the EMC Directive,

Please remember to observe all binding national, local and system-specific regulations as well,

In order for you to operate your machine within the EU, the following must be available:

- Mark of conformity (CE symbol)
- Declaration(s) of Conformity relating to the relevant Directive(s) for the machine

7.3. Definition of terms in the Declaration of Conformity

A Declaration of Conformity based on this documentation is a declaration that the electrical equipment brought into circulation meets all the basic health and safety regulations that currently apply,

By including the Declaration of Conformity in this chapter, Baumüller Nürnberg GmbH declares that the product complies with all the relevant basic health and safety regulations from the Directives and standards listed in the Declaration of Conformity,

7.4. Declaration of Conformity



EU-Konformitätserklärung

gemäß

- Richtlinie 2014/35/EU
(Niederspannungsrichtlinie)

Richtlinie 2014/30/EU
(EMV-Richtlinie)

ausschließlich mit Geber, wenn im Motor integriert

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Hiermit erklären wir, dass die nachfolgend genannten Produkte aufgrund ihrer Konzeption, Konstruktion und Bauart in der von uns in Verkehr gebrachten Ausführung den Anforderungen der oben genannten Richtlinien einschließlich der zum Zeitpunkt der Erklärung geltenden Änderungen entsprechen.

Hinweise:

1. Bei Umbau oder Änderungen am Produkt verliert diese Erklärung mit sofortiger Wirkung ihre Gültigkeit.
2. Diese Erklärung bescheinigt die Übereinstimmung mit der genannten Richtlinie, stellt aber keine Zusicherung von darüber hinaus gehenden Produkteigenschaften dar.
3. Die alleinige Verantwortung für die Erstellung der Konformitätserklärung trägt der Hersteller.

Angewandte harmonisierte Normen:

- DIN EN 60034-1:2010
Drehende elektrische Maschinen – Teil 1:
Bemessung und Betriebsverhalten
- DIN EN 60034-5:2007-09
Drehende elektrische Maschinen – Teil 5:
Schutzarten aufgrund der Gesamtkonstruktion von
drehenden elektrischen Maschinen (IP-Code) – Einteilung
- DIN EN 60034-6:1996-08
Drehende elektrische Maschinen – Teil 6:
Einteilung der Kühlverfahren (IC-Code)

(Wird fortgesetzt auf der nächsten Seite ...)

EU-Declaration of Conformity

according

- Directive 2014/35/EU
(Low-voltage-directive)

Directive 2014/30/EU
(EMC-directive)

only if there is a electronic feedback-device
integrated in the motor

Manufacturer

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We declare, that the products referred to in the following conform in their concept, construction and design as lauched by us to the above mentioned directives and their respective changes which were valid at the point of declaration.

Notes:

1. By modifying or alternating the device(s) this declaration immediately becomes invalid.
2. This declaration confirms the compliance with the directive listed, but it is no covenant of any further product properties.
3. Only the manufacturer is responsible for the declaration of conformity.

Applied harmonised standards:

- DIN EN 60034-1:2010
Rotating electrical machines – Part 1:
Rating and performance
- DIN EN 60034-5:2007-09
Rotating electrical machines – Part 5:
Degree of protection provided by the integral design of
rotating electrical machines (IP-Code) – Classification
- DIN EN 60034-6:1996-08
Rotating electrical machines – Part 6:
Methods of cooling (IC-Code)

(To be continued on the next page ...)

(... Fortsetzung von der vorherigen Seite)

- DIN EN 60034-9:2008-01
Drehende elektrische Maschinen – Teil 9:
Geräuschgrenzwerte
- DIN EN 60034-14:2008-03
Drehende elektrische Maschinen – Teil 14:
Mechanische Schwingungen von bestimmten Maschinen
mit einer Achshöhe von 56 mm und höher – Messung,
Bewertung und Grenzwerte der Schwingstärke
- DIN EN 61800-5-1:2015
Elektrische Leistungsantriebssysteme mit einstellbarer
Drehzahl – Teil 5-1:
Anforderungen an die Sicherheit – Elektrische, thermische
und energetische Anforderungen
- EN 60204-1:2006+A1:2009
Sicherheit von Maschinen - Elektrische Ausrüstung von
Maschinen - Teil 1:
Allgemeine Anforderungen

(... continued from the previous page)

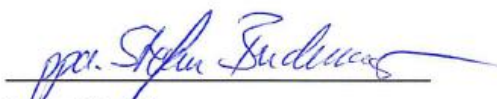
- DIN EN 60034-9:2008-01
Rotating electrical machines – Part 9:
Noise limits
- DIN EN 60034-14:2008-03
Rotating electrical machines – Part 14:
Mechanical vibration of certain machines with shaft
heights 56 mm and higher – Measurement, evaluation
and limits of vibration severity
- DIN EN 61800-5-1:2015-
Adjustable speed electrical power drive systems –
Part 5-1:
Safety requirements – Electrical, thermal and energy
- EN 60204-1:2006+A1:2009
Safety of machinery - Electrical equipment of
machines - Part 1:
General requirements

Produkt / Product	Jahr der erstmaligen CE-Kennzeichnung / Year of first CE marking
DSC1-045XXXXX-XX-XX-XXX-XXX-X-XX-X-XXX	2013
DSC1-056XXXXX-XX-XX-XXX-XXX-X-XX-X-XXX	
DSC1-071XXXXX-XX-XX-XXX-XXX-X-XX-X-XXX	
DSC1-100XXXXX-XX-XX-XXX-XXX-X-XX-X-XXX	

Nürnberg, 31.05.2016



Leiter Entwicklung Motoren
Head of Motor Development



Bereichsleiter Motoren
Business Unit Manager Motors

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be in motion

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