



DS2[3]

Technical documentation

Three-phase synchronous motors DS2[3] 100-200, DS2+ 100-132

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Version 11/2025

1. Three-phase synchronous motor DS2[3] 100-200



The three-phase synchronous motors from the **DS2[3]** series are air-cooled or water-cooled permanent magnet synchronous motors. The motors are designed with an extremely high-power density, a very high degree of efficiency and high dynamics and are ideal for complex engineering applications due to a high overload capacity. The robust, compact motors are largely maintenance-free and provide a bonus for economical operation. Employing a liquid cooling system reduces the size of the motor and decreases noise emissions considerably.

1.1 General technical data

Design	IM B3	Frame size 100-200
	IM B5	Frame size 100-200 (not available for all cooling types)
	IM B35	Frame size 100-200 (not available for all cooling types)
Connection	Main connection	U V W (Terminal box)
	Control connection	Speedtec socket 12-pin connector, 17-pin connector with ENDAT interface, 9-pole at EnDat2.2 interface
	Thermal sensor	In the main connection
	Brake	Axial ventilation: Speedtec socket 8-pole Radial ventilation or water cooling: Terminal design
Thermal sensor	Linear thermal sensor	PT1000, the evaluation in the controller
Temperature rise	$\Delta\theta \leq 105\text{K}$	Insulation class F acc. to EN 60034
Environmental conditions for operating	Class 3K3/3Z12 DIN EN 60721-3-3, 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. (-15 to 40°C available on request)
	Class 1K2/1M1 DIN EN 60721-3-1, 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 long-term storage	Class 2K2/2M1 DIN EN 60721-3-2, 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
Shaft end	Cylindrical	According to DIN 748 without key Centering with internal thread acc. to DIN 332 form DE Also available with key DIN 6885 as an option
Bearing	DE-side	Standard = ball bearing; option = roller bearing
	NDE-side	Ball bearing, locating bearing
Vibration class	A	Standard: Accordant to DIN EN60034-14: 2004-09
	B	Option: Size100-160, at ball bearings only
Vibration proof up to	radial 3 g / axial 1 g**	Standard: 10 Hz - 55 Hz according to EN 60068-2-6
	radial 5 g / axial 1 g	on request
Concentricity	N	Standard: Normally accordant to DIN SPEC 42955 issue from 1981*
	R	Option: Size 100-160, reduced according to DIN SPEC 42955 issue from 1981 (with ball bearing, only)*
Surface	Black matt	RAL 9005
Actual speed encoder	2-pin resolver	Standard - chapter 3
	SinCos Encoder	Option - chapter 3; other encoders on request
Brake	Disk brakes of Baumüller	NDE-side mounting as a module, other brands on request
Approbations	CE,  us, UKCA	Standard (cURus not for integrated fans frame size 160)

*) Here DIN EN 50347:2003-09 is not applicable, as applicable for standard AC motors, only

**) If increased vibration loads are present, measurements on-site are required.

Technical data for fan cooled motors

Type of protection / cooling method	IP23/ IC06	Internally ventilated with fan
	IP54/ IC416	Surface-cooled with fan
External fan	Standard fan motor for radial ventilation on the NDE-side	Air conduction from NDE-side to DE-side IC 06: lateral air outlet at DE-side IC 416: axial air outlet at DE-side
	Filter	Optional: Flat or rectangular filter – chapter 3
	Standard fan motor for axial ventilation on the NDE-side	Air conduction from DE-side to NDE-side, lateral air outlet at NDE-side
Fan motor connection	Axial integrated fan for axial ventilation on the NDE-side	Air conduction from DE-side to NDE-side, lateral air outlet at NDE-side
	Mounted standard motor	Terminal box of standard motor
Terminal box	Integrated fan motor	Speedtec socket 6-pole
	NDE-side	Chapter 5
	DE-side	On request

Technical data for liquid cooled motors

Type of protection / cooling method	IP54/ IC3W7	Liquid cooled machine
Terminal box	NDE-side	Top
Coolant input temperature	10°C to 35°C	Consider how ambient temperature/humidity can affect the accumulation of condensed water, and how this phenomenon can be avoided.
Water connection	DE-side	lateral

1.2 General safety instructions

The motors in the standard version are not suitable for operation in salty or aggressive atmospheres, nor for outdoor installation. If the ambient air around ventilated motors is contaminated by dust particles or similar substances that cannot be reliably filtered out by the installed filter elements, the manufacturer must be consulted to find a solution.

Before commissioning the motor, application- and system-specific measures must be taken to reduce bearing currents. In this context, consultation with the motor manufacturer is necessary.

Note:

Assigning a motor to a specific protection class is based on a standardized short-term test procedure. This classification may differ significantly from actual environmental conditions at the place of use. Depending on environmental factors – such as the chemical composition of dust or the type of cooling media used at the site – the protection class may only provide limited information regarding the motor’s suitability (e.g., electrically conductive dust, aggressive coolant vapors or liquids). In such cases, the motor must be additionally protected by appropriate mechanical measures.

1.3 Bearing currents

The reduction of bearing currents requires the consideration of the entire variable speed drive system and the specific installation! Before commissioning the motor, suitable measures must be taken depending on the application and system to reduce bearing currents. In this case, the motor manufacturer or, in the case of third-party converters, the converter manufacturer must be consulted

By using ring cores, the cause of bearing current damage is reduced, i.e., the amplitude and slope of the common mode voltage at the converter output is reduced. Therefore, the use of cores is a preferred measure. For combinations with mono and axis units of the series bmaXX4xxx/5xxx we basically recommend using the following ring cores.

For applications **without** active mains rectifier unit bmaXX41xx/51xx:

Motor	Ring core type	Part no.	Core count
DS2-160	M113	00432023	2
DS3-160			
DS2-200	M114	00432022	3

For applications **with** active mains rectifier unit mains unit bmaXX41xx/51xx:

Motor	Ring core type	Part no.	Core count
DS2-160	M683	00434203	2
DS3-160			
DS2-200	M684	00434204	3

When using the ring cores, the three phases **without shielding** and **without PE** must be led through the cores.

1.4 Winding insulation

The motors are designed for operation with inverters having a DC link voltage of up to 640V. Operation at higher DC link voltages is possible.

When operating at higher DC link voltages, it must be ensured that voltage peaks exceeding 1200V at the motor terminals are avoided by appropriate measures. This can be achieved, for example, by using suitable filters in the motor supply line. In applications with braking functions, it must also be ensured during the braking process that voltages of 1200V or higher never occur at the motor terminals.

1.5 Definitions of power ratings

1.5.1 Definitions of power ratings for fan cooled motors

The performance values (torques) listed apply to continuous operation (S1) at rated speed with a maximum ambient temperature of 40 °C, and when the machines are installed at an altitude below 1000 m above sea level. If the motors are to be used in ambient temperatures above 40 °C or at altitudes higher than 1000 m above sea level, the required listed output power P_L (listed torque M_n) is determined by multiplying the required power P (torque M) by the correction factors k_1 and k_2 specified in the table below.

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 above sea level up to	1000 m	2000 m	3000 m	4000 m	5000 m
Correction factor k_2	1	1,07	1,16	1,27	1,55

At ambient temperatures above 40 °C and when motors are installed in enclosed housings, it is necessary to consult the manufacturer due to potentially required design measures for cooling.

If the ambient temperature decreases by approximately 10 °C for every 1000 m of altitude above 1000 m, no power correction is required (note the minimum operating temperature).

1.5.2 Definitions of power ratings for liquid cooled motors

The power ratings (torques) listed apply to continuous operation S1 at rated speed, provided that the cooling circuit requirements for water-cooled motors are met.

When operating the motors with higher coolant inlet temperatures, the reduction factors shown in the table below must be taken into account.

Coolant inlet temperature	25 °C	30 °C	35 °C	40 °C	45 °C
Percent of listed output (torque)	100 %	97 %	95 %	92 %	89 %

1.6 Liquid cooling

1.6.1 Coolant consistency

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
Sulfate - SO ₄ ²⁻	mg/l	< 200
Oil	mg/l	< 1
Permitted particle size of solid foreign objects, particles (e. g. sand)	mm	< 0,1

Clear, particle-free, and dirt-free water must be used as the coolant. Sufficient additives for corrosion protection and germ protection must be mixed in. The type and concentration of additives should follow the recommendations of the respective manufacturers and be suited to the specific environmental conditions.

Note:

A reduction in specific heat capacity – such as through the addition of glycol – results in a performance reduction depending on the mixing ratio. This should be clarified with the manufacturer.

The exact performance specifications and data sheets for oil-cooled drives are not included in this documentation and are available upon request only.

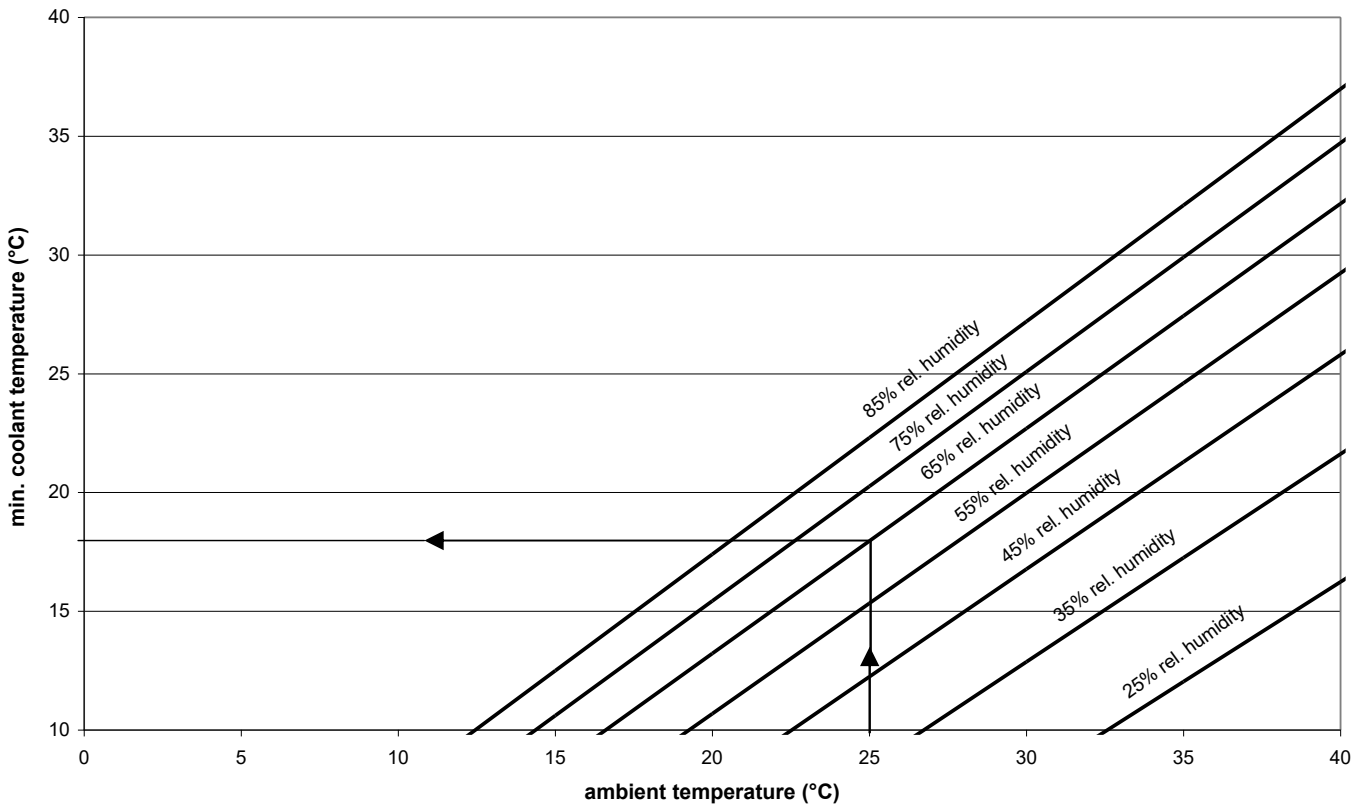
When using hydraulic oil (HLP 46), a nominal power reduction of 5 to 10% occurs compared to water cooling, depending on the motor's length and speed. This comparison assumes an inlet temperature of 35°C for both cooling media and an identical flow rate. The pressure drop is higher when using hydraulic oil. If the HLP 46 inlet temperature exceeds 35°C, additional derating applies for oil-cooled drives:

Oil cooled motors:

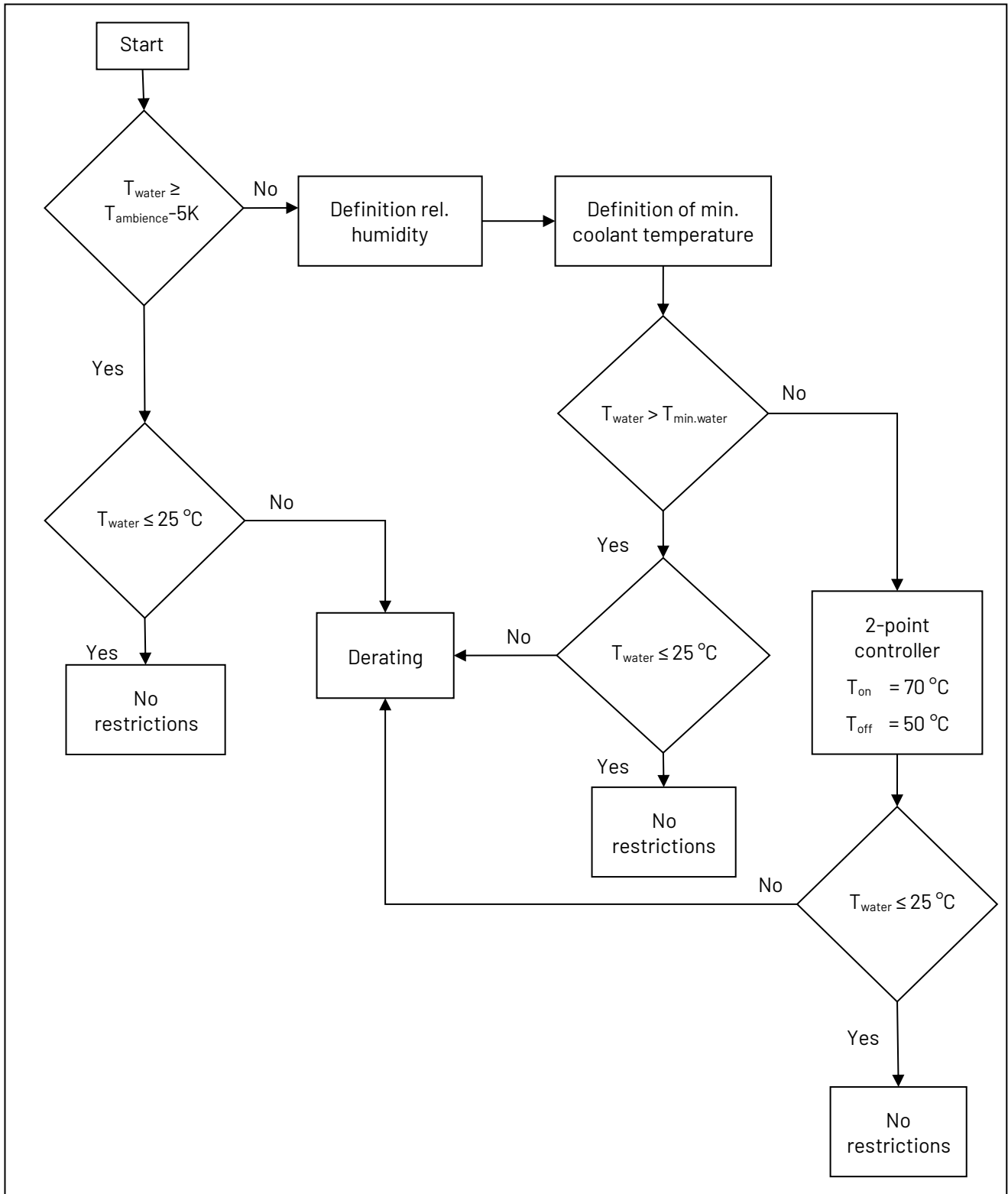
HLP46 inlet temperature	35 °C	40 °C	45 °C	50 °C
Percentage of listed output (torque)	100%	93%	88%	82%

These adjustment factors are valid for all motors up to a speed of 3,000 min⁻¹. For higher speeds, the operating point and the corresponding derating must be evaluated separately.

1.6.2 Coolant temperature



The permissible temperature of the coolant depends on the relative humidity during operation and the ambient temperature. For example, at an ambient temperature of 25°C and a relative humidity of 65%, a minimum coolant inlet temperature of 18°C is permissible. The characteristic curves shown in the diagram represent limit values. Therefore, in this example, a coolant inlet temperature higher than 18°C should be selected. If the minimum permissible coolant inlet temperature is undershot, the 2-point controller of the Baumüller drive electronics must be used to prevent condensation.



Note:

In the event of prolonged motor downtime, the coolant supply must be interrupted to prevent condensation. Furthermore, at ambient temperatures below 3°C and during extended periods of motor inactivity, the coolant must be drained to prevent frost damage. If antifreeze agents are used, consultation with the manufacturer is required.

1.6.3 Cooling volume flow rate

Motor	Flow rate [l/min]	Pressure drop $\pm 15\%$ [bar]	Temperature rise [K]	Max. coolant pressure [bar]	Connection (G internal thread)
DS2-100KO	7	0,4	4	6	2 x G 1/2"
DS2-100MO	7	0,4	5	6	2 x G 1/2"
DS2-100LO	7	0,4	6	6	2 x G 1/2"
DS2-100BO	7	0,4	7	6	2 x G 1/2"

Motor	Flow rate [l/min]	Pressure drop $\pm 15\%$ [bar]	Temperature rise [K]	Max. coolant pressure [bar]	Connection (G internal thread)
DS2-132KO	9	0,25	4	6	2 x G 1/2"
DS2-132MO	9	0,25	5	6	2 x G 1/2"
DS2-132LO	9	0,25	6	6	2 x G 1/2"
DS2-132BO	9	0,25	7	6	2 x G 1/2"

Motor	Flow rate [l/min]	Pressure drop $\pm 15\%$ [bar]	Temperature rise [K]	Max. coolant pressure [bar]	Connection (G internal thread)
DS3-160KO	10	0,1	7	6	2 x G 1/2"
DS3-160MO	10	0,1	8	6	2 x G 1/2"
DS3-160LO	10	0,1	9	6	2 x G 1/2"
DS3-160BO	10	0,1	10	6	2 x G 1/2"

Motor	Flow rate [l/min]	Pressure drop $\pm 15\%$ [bar]	Temperature rise [K]	Max. coolant pressure [bar]	Connection (G internal thread)
DS2-200KO	13	1,3	5	6	4 x G 1/4"
DS2-200MO	13	1,45	7	6	4 x G 1/4"
DS2-200LO	13	1,6	8	6	4 x G 1/4"

Depending on the motor temperature, which is detected via the temperature sensor, individual control of the inlet valve is possible.

Note:

The specified cooling air volume flows refer to the maximum speed of the respective motor lengths.

An individual cooling unit design based on the motor power loss ($PV = PN / \eta_N - PN$) is possible. The cooling unit must be dimensioned in such a way that the cooling capacity corresponds to the motor power loss, ensuring that 100% of the waste heat is dissipated via the cooling medium.

1.6.4 Materials that contact coolant

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

Motor	Cooling system	Connections	Seals
DS2-100	Cathodic dip painted aluminum	Galvanized steel	NBR seals
DS2-132			
DS3-160			
DS2-200	Stainless steel	brass	Vulcanized fiber

1.7 Noise intensity

The ventilated motors do not exceed the limit values specified in EN 60034. A converter clock frequency of > 6 kHz is recommended.

Motor	IP23 fan cooled	IP54 fan cooled	IP54 liquid cooled
DS2-100	69 ± 3 dBA	69 ± 3 dBA	60 ± 3 dBA
DS2-132	71 ± 3 dBA	71 ± 3 dBA	63 ± 3 dBA
DS2[3]-160	77 ± 3 dBA	77 ± 3 dBA	68 ± 3 dBA
DS2-200	80 ± 3 dBA	-	73 ± 3 dBA

Measurement Method:

The indication of the surface sound pressure level LPA is made in accordance with the envelope surface method as specified in DIN 45635-1, section 10 and following. The measurement was carried out using a sound level meter with A-weighting (dB(A)), in accordance with DIN IEC 651.

1.8 Motor data explanation

n_N	Rated speed [min^{-1}]
M_0	Nominal torque [Nm] with speeds ≥ 1 [min^{-1}] without time limit
I_0	nominal current [A] at M_0
$M_{0,max}$	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]
$K_{E/KALT}$	Voltage constant (EMF)[V/1000 min^{-1}]
f_N	Rated frequency [Hz]
J	Rotor inertia incl. resolver without holding brake [kgcm^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 field weakening option is pre assumed at the converters which are used.

The drive configurator **sizemaXX** is provided on www.baumueller.de to design the motors as well as the entire drive system.

1.9 Type code

DS2-XXXXXXXX-XX-X-XXX-X-XXX-XXX-XX-X-XXX	Type DS2- DS2+ DS3-
DS2- <u>XXX</u> XXXXXXXX-XX-X-XXX-X-XXX-XXX-XX-X-XXX	Size 100 132 160 200
DS2-XXX <u>XX</u> XXX-XX-X-XXX-X-XXX-XXX-XX-X-XXX	Lengths K0 M0 L0 B0
DS2-XXXXXX <u>XX</u> X-XX-X-XXX-X-XXX-XXX-XX-X-XXX	Protection class 23 - IP23 54 - IP54
DS2-XXXXXXXX <u>X</u> -XX-X-XXX-X-XXX-XXX-XX-X-XXX	Cooling type A - Axially fitted external fan I - Axially integrated external fan R - Radially fitted external fan W - Liquid cooled
DS2-XXXXXXXX- <u>XX</u> -X-XXX-X-XXX-XXX-XX-X-XXX	Rated speed class 05 - 500 min ⁻¹ 10 - 1000 min ⁻¹ 11 - 1100 min ⁻¹ 12 - 1200 min ⁻¹ 15 - 1500 min ⁻¹ 16 - 1600 min ⁻¹ 17 - 1700 min ⁻¹ 20 - 2000 min ⁻¹ 21 - 2100 min ⁻¹ 25 - 2500 min ⁻¹ 26 - 2600 min ⁻¹ 30 - 3000 min ⁻¹ 40 - 4000 min ⁻¹ 45 - 4500 min ⁻¹
DS2-XXXXXXXX-XXX- <u>X</u> -XXX-X-XXX-XXX-XX-X-XXX	U_{zk} - DC 5 - 540 V

DS2-XXXXXXXX -XX-X- <u>X</u> XX-X-XXX-XXX-XX-X-XXX	<p>Encoder</p> <ul style="list-style-type: none"> O - Without encoder A - Resolver D - SRS50 E - SRM50 F - ECN1313 G - EQN1325 H - ECN1325 I - EQN1337 M - Resolver (Safety) N - SRS50-S (Safety) Q - SRM50-S (Safety) X - EQI1331 Y - ECI1319 5 - ECN1325-S (Safety) 6 - EQN1337-S (Safety) p - ECI1319-S (Safety) q - EQI1331-S (Safety) t - SEK37 u - SEL37
DS2-XXXXXXXX -XX-X- <u>X</u> XX-X-XXX-XXX-XX-X-XXX	<p>Brake</p> <ul style="list-style-type: none"> O - Without brake B - With brake
DS2-XXXXXXXX -XX-X- <u>X</u> XX-X-XXX-XXX-XX-X-XXX	<p>Shaft option</p> <ul style="list-style-type: none"> A - Smooth shaft B - Shaft with key
DS2-XXXXXXXX -XX-X-XXX- <u>X</u> -XXX-XXX-XX-X-XXX	<p>Design</p> <ul style="list-style-type: none"> 1 - IM B3 2 - IM B5 7 - IM B35 8 - IM B35 flange 400 mm (BG 132)
DS2-XXXXXXXX -XX-X-XXX-X- <u>X</u> XX-XXX-XX-X-XXX	<p>Type main connection</p> <ul style="list-style-type: none"> M - Terminal box (with PT1000)
DS2-XXXXXXXX -XX-X-XXX-X- <u>X</u> XX-XXX-XX-X-XXX	<p>Position of main connection</p> <ul style="list-style-type: none"> T - Top L - Left with view direction to the DE-side on WE R - Right with view direction to the DE-side on WE
DS2-XXXXXXXX -XX-X-XXX-X- <u>X</u> XX-XXX-XX-X-XXX	<p>Main connection exit</p> <ul style="list-style-type: none"> T - Top B - Bottom L - Left with view direction to the DE-side on WE R - Right with view direction to the DE-side on WE N - NDE (B-side)

DS2-XXXXXXXX -XX-X-XXX-X-XXX- <u>X</u> XX-XX-X-XXX	<p>Bearing</p> <ul style="list-style-type: none"> K - Ball bearing DE-side R - Roller bearing DE-side H - Ball bearing DE-side with optional current insulated bearing on NDE-side S - Roller bearing DE-side with optional current insulated bearing on NDE-side
DS2-XXXXXXXX -XX-X-XXX-X-XXX- <u>X</u> X-XX-X-XXX	<p>Vibration class</p> <ul style="list-style-type: none"> A - Class A B - Class B
DS2-XXXXXXXX -XX-X-XXX-X-XXX- <u>X</u> X-XX-X-XXX	<p>Concentricity</p> <ul style="list-style-type: none"> N - Normal R - Reduced
DS2-XXXXXXXX -XX-X-XXX-X-XXX-XXX- <u>X</u> X-X-XXX	<p>Cooling position</p> <ul style="list-style-type: none"> O - Without fan T - Top B - Bottom L - Left with view direction to the DE-side on WE R - Right with view direction to the DE-side on WE A - Axial fan C - Left and right with view direction to the DE-side on WE
DS2-XXXXXXXX -XX-X-XXX-X-XXX-XXX- <u>X</u> X-X-XXX	<p>Cooling option</p> <ul style="list-style-type: none"> O - Without cooling option (for water cooling) A - Without filters (for axial fans) D - Flat filters with filter mats fine G - Rectangular filter with filter mat fine J - Flat filter with filter mat rough M - Rectangular filter with filter mat rough Q - Without filter version Δ/Y 265-345V / 460-600V R - Flat filter with filter mat fine version Δ/Y 265-345V / 460-600V S - Flat filter with filter mat rough version Δ/Y 265-345V / 460-600V T - Rectangular filter with filter mat fine version Δ/Y 265-345V / 460-600V U - Rectangular filter with filter mat rough version Δ/Y 265-345V / 460-600V
DS2-XXXXXXXX -XX-X-XXX-X-XXX-XXX-XX- <u>X</u> -XXX	<p>Gearbox or pump mounting</p> <ul style="list-style-type: none"> O - without gearbox and pump mounting
DS2-XXXXXXXX -XX-X-XXX-X-XXX-XXX-XX-X- <u>XXX</u>	<p>Special version</p> <ul style="list-style-type: none"> 000 - Without special version DA1 - Radial shaft seal ring EA0 - Electric name plate XXX - Special version (internal coding) <p>Special coding is alphanumeric</p>

2. Technical Data

2.1 DS2-100

2.1.1 DS2-100..23R

Mains voltage 3 AC 400V for converters with uncontrolled supply

n_N min ⁻¹	Motor	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$K_E/kalt$ V/1000 min ⁻¹	f_N Hz	J kgm ²	m kg	KLK S. 78
1000	DS2-100K023R-10-5	69	16,7	135	38,4	7	67	16,3	273	50	0,010	50	10
	DS2-100M023R-10-5	100	24,2	205	58	10	97	23,5	273		0,014	59	10
	DS2-100L023R-10-5	130	30,3	275	75	13	125	29,3	280		0,018	68	12
	DS2-100B023R-10-5	155	34,2	340	88	16	150	33	297		0,022	77	12
1500	DS2-100K023R-15-5	69	23,3	135	54	10	66	22,4	196	75	0,010	50	10
	DS2-100M023R-15-5	100	33,1	205	79	15	96	31,7	199		0,014	59	12
	DS2-100L023R-15-5	130	40,3	275	100	19	120	38,4	210		0,018	68	12
	DS2-100B023R-15-5	155	48,5	340	125	23	145	45,8	210		0,022	77	12
2000	DS2-100K023R-20-5	69	28,4	135	65	14	65	26,9	161	100	0,010	50	12
	DS2-100M023R-20-5	100	39,3	205	94	20	93	37	168		0,014	59	12
	DS2-100L023R-20-5	130	50	275	125	25	120	47,1	168		0,018	68	12
	DS2-100B023R-20-5	155	60	340	155	30	140	56	169		0,022	77	14
2500	DS2-100K023R-25-5	69	34,4	135	79	17	64	32,2	133	125	0,010	50	12
	DS2-100M023R-25-5	100	48,4	205	115	24	92	44,9	136		0,014	59	12
	DS2-100L023R-25-5	130	61	275	150	30	115	55	140		0,018	68	14
	DS2-100B023R-25-5	155	73	340	185	36	140	66	140		0,022	77	14
3000	DS2-100K023R-30-5	69	40,8	135	94	20	63	37,7	112	150	0,010	50	12
	DS2-100M023R-30-5	100	57	205	136	28	90	52	115		0,014	59	12
	DS2-100L023R-30-5	130	73	275	180	36	115	65	116		0,018	68	14
	DS2-100B023R-30-5	155	83	340	215	42	135	73	122		0,022	77	14

2.1.2 DS2-100..54R

Mains voltage 3 AC 400V for converters with uncontrolled supply

n_N min ⁻¹	Motor	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$K_E/kalt$ V/1000 min ⁻¹	f_N Hz	J kgm ²	m kg	KLK S. 78
1100	DS2-100K054R-11-5	48	11,8	120	33,8	5,3	46	11,4	273	55	0,010	52	10
	DS2-100M054R-11-5	72	17,8	180	51	7,8	68	16,9	273		0,014	61	10
	DS2-100L054R-11-5	96	23,2	240	66	10	89	21,6	280		0,018	70	10
	DS2-100B054R-11-5	120	27,5	295	78	13	110	25,2	297		0,022	79	12
1600	DS2-100K054R-16-5	48	16,5	120	47,1	7,6	45	15,6	196	80	0,010	52	10
	DS2-100M054R-16-5	72	24,4	180	69	11	66	22,6	199		0,014	61	10
	DS2-100L054R-16-5	96	30,9	240	88	14	86	27,9	210		0,018	70	12
	DS2-100B054R-16-5	120	38,9	295	110	18	105	34,4	210		0,022	79	12
2000	DS2-100K054R-20-5	48	20	120	57	9,4	45	18,8	161	100	0,010	52	10
	DS2-100M054R-20-5	72	29	180	82	14	65	26,3	168		0,014	61	12
	DS2-100L054R-20-5	96	38,7	240	110	18	84	34	168		0,018	70	12
	DS2-100B054R-20-5	120	48,3	295	136	21	100	41,3	169		0,022	79	12
2500	DS2-100K054R-25-5	48	24,3	120	69	11	44	22,4	133	125	0,010	52	10
	DS2-100M054R-25-5	72	35,7	180	101	17	63	31,6	136		0,014	61	12
	DS2-100L054R-25-5	96	46,4	240	132	21	81	39,5	140		0,018	70	12
	DS2-100B054R-25-5	120	58	295	165	26	98	47,9	140		0,022	79	12
3000	DS2-100K054R-30-5	48	28,8	120	82	14	43	26,1	112	150	0,010	52	12
	DS2-100M054R-30-5	72	42,2	180	120	19	62	36,4	115		0,014	61	12
	DS2-100L054R-30-5	96	56	240	160	25	79	45,9	116		0,018	70	12
	DS2-100B054R-30-5	120	67	295	190	29	93	52	122		0,022	79	14

2.1.3 DS2-100..54W/DS2+100..54W

Mains voltage 3 AC 400V for converters with uncontrolled supply

n_N min ⁻¹	Motor	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$K_E/kalt$ V/1000 min ⁻¹	f_N Hz	J kgm ²	m kg	KLK S. 78
1000	DS2-100K054W-10-5	61	15	130	36,5	6,3	60	14,8	273	50	0,010	35	10
	DS2-100M054W-10-5	94	23,2	195	55	9,7	93	22,9	273		0,014	45	10
	DS2-100L054W-10-5	130	30,9	260	71	13	125	30,7	280		0,018	55	12
	DS2-100B054W-10-5	165	37,4	320	84	17	160	37,2	297		0,022	65	12
1500	DS2-100K054W-15-5	61	20,9	130	51	9,4	60	20,3	196	75	0,010	35	10
	DS2-100M054W-15-5	94	31,7	195	75	14	92	31	199		0,014	45	12
	DS2-100L054W-15-5	130	41,3	260	95	20	125	40,5	210		0,018	55	12
	DS2-100B054W-15-5	165	53	320	119	25	160	52	210		0,022	65	12
2000	DS2-100K054W-20-5	61	21,6	130	52	11	54	20,7	190	100	0,010	35	12
	DS2-100M054W-20-5	94	37,7	195	89	19	90	36,4	168		0,014	45	12
	DS2-100L054W-20-5	130	52	260	119	26	125	50	168		0,018	55	12
	DS2-100B054W-20-5	165	66	320	147	33	160	64	169		0,022	65	14
2500	DS2-100K054W-25-5	61	30,8	130	75	15	58	29,2	133	125	0,010	35	12
	DS2-100M054W-25-5	94	46,3	195	110	23	89	44,1	136		0,014	45	12
	DS2-100L054W-25-5	130	62	260	142	32	120	59	140		0,018	55	14
	DS2-100B054W-25-5	165	79	320	180	41	155	76	140		0,022	65	14
3000	DS2-100K054W-30-5	61	36,6	130	89	18	57	34,1	112	150	0,010	35	12
	DS2-100M054W-30-5	94	55	195	129	27	87	51	115		0,014	45	12
	DS2-100L054W-30-5	130	74	260	170	37	120	70	116		0,018	55	14
	DS2-100B054W-30-5	165	91	320	205	47	150	86	122		0,022	65	14
4000	DS2+100K054W-40-5	61	46,5	130	115	23	54	42,5	86,2	200	0,010	35	12
	DS2+100M054W-40-5	94	68	195	165	35	82	62	90,8		0,014	45	14
	DS2+100L054W-40-5	130	101	260	235	48	115	92	83,9		0,018	55	16
	DS2+100B054W-40-5	165	117	325	265	60	140	107	93,2		0,022	65	16
4500	DS2+100K054W-45-5	61	54	130	134	25	54	48,2	74,5	225	0,010	35	12
	DS2+100M054W-45-5	94	80	195	195	39	82	72	76,9		0,014	45	14
	DS2+100L054W-45-5	130	114	260	265	53	110	101	74,5		0,018	55	16
	DS2+100B054W-45-5	165	133	325	305	66	140	119	81,5		0,022	65	16

2.2 DS2-132

2.2.1 DS2-132..23R

Mains voltage 3 AC 400V for converters with uncontrolled supply

n_N min ⁻¹	Motor	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$K_E/kalt$ V/1000 min ⁻¹	f_N Hz	J kgm ²	m kg	KLK S. 78
1000	DS2-132K023R-10-5	210	47,7	355	89	21	195	44,4	300	50	0,045	110	20
	DS2-132M023R-10-5	270	61	475	119	27	255	58	300		0,058	125	22
	DS2-132L023R-10-5	330	68	590	137	32	310	65	325		0,071	145	22
	DS2-132B023R-10-5	375	84	710	180	38	365	82	300		0,084	165	22
1500	DS2-132K023R-15-5	210	68	355	127	30	190	61	210	75	0,045	110	22
	DS2-132M023R-15-5	270	83	475	160	39	245	76	220		0,058	125	22
	DS2-132L023R-15-5	330	98	590	200	47	300	92	225		0,071	145	22
	DS2-132B023R-15-5	375	121	705	255	57	360	115	210		0,084	165	24
2000	DS2-132K023R-20-5	210	87	355	160	38	185	75	165	100	0,045	110	22
	DS2-132M023R-20-5	270	106	475	205	50	235	94	173		0,058	125	22
	DS2-132L023R-20-5	330	126	590	255	61	295	115	175		0,071	145	24
	DS2-132B023R-20-5	375	149	705	315	73	350	140	170		0,084	165	24
2500	DS2-132K023R-25-5	210	106	355	200	46	175	89	135	125	0,045	110	22
	DS2-132M023R-25-5	270	131	475	255	61	230	114	140		0,058	125	24
	DS2-132L023R-25-5	330	155	590	315	75	285	139	141		0,071	145	24
	DS2-132B023R-25-5	375	180	705	380	90	345	170	140		0,084	165	26
3000	DS2-132K023R-30-5	210	119	355	225	53	170	97	120	150	0,045	110	22
	DS2-132M023R-30-5	270	155	475	295	71	225	129	120		0,058	125	24
	DS2-132L023R-30-5	330	190	590	380	89	285	165	116		0,071	145	26
	DS2-132B023R-30-5	375	210	705	445	105	335	190	120		0,084	165	26

2.2.2 DS2-132..54A/R

Mains voltage 3 AC 400V for converters with uncontrolled supply

n_N min ⁻¹	Motor	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$K_E/kalt$ V/1000 min ⁻¹	f_N Hz	J kgm ²	m kg	KLK S. 78
1100	DS2-132K054A/R-11-5	130	29,3	305	76	14	120	27,3	300	55	0,045	110	20
	DS2-132M054A/R-11-5	175	39	405	101	18	160	35,7	300		0,058	125	20
	DS2-132L054A/R-11-5	215	45	505	117	22	195	40,4	325		0,071	145	20
	DS2-132B054A/R-11-5	260	59	610	150	26	230	52	300		0,084	165	22
1600	DS2-132K054A/R-16-5	130	41,8	305	108	20	115	37,6	210	80	0,045	110	20
	DS2-132M054A/R-16-5	175	53	405	138	25	150	46,5	220		0,058	125	22
	DS2-132L054A/R-16-5	215	65	505	170	31	185	55	225		0,071	145	22
	DS2-132B054A/R-16-5	260	84	605	215	36	215	69	210		0,084	165	22
2000	DS2-132K054A/R-20-5	130	53	305	138	24	115	46,3	165	100	0,045	110	22
	DS2-132M054A/R-20-5	175	68	405	175	30	145	57	173		0,058	125	22
	DS2-132L054A/R-20-5	215	84	505	215	37	175	68	175		0,071	145	22
	DS2-132B054A/R-20-5	260	103	605	265	43	205	81	170		0,084	165	22
2500	DS2-132K054A/R-25-5	130	65	305	170	28	110	54	135	125	0,045	110	22
	DS2-132M054A/R-25-5	175	84	405	215	36	140	67	140		0,058	125	22
	DS2-132L054A/R-25-5	215	103	505	265	43	165	79	141		0,071	145	22
	DS2-132B054A/R-25-5	260	125	605	325	50	190	91	140		0,084	165	24
3000	DS2-132K054A/R-30-5	130	73	305	190	33	105	58	120	150	0,045	110	22
	DS2-132M054A/R-30-5	175	98	405	250	41	130	74	120		0,058	125	22
	DS2-132L054A/R-30-5	215	125	505	325	49	155	90	116		0,071	145	24
	DS2-132B054A/R-30-5	260	146	605	380	55	175	99	120		0,084	165	24

2.2.3 DS2-132..54I

Mains voltage 3 AC 400V for converters with uncontrolled supply

n_N min ⁻¹	Motor	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$K_E/kalt$ V/1000 min ⁻¹	f_N Hz	J kgm ²	m kg	KLK S. 78
1100	DS2-132K054I-11-5	130	29,2	305	76	14	120	27,2	300	55	0,045	112	20
	DS2-132M054I-11-5	170	38,4	400	101	18	155	35,3	300		0,058	128	20
	DS2-132L054I-11-5	210	43,6	500	117	21	185	39,6	325		0,071	143	20
	DS2-132B054I-11-5	240	56	590	150	25	215	49,9	300		0,084	159	22
1600	DS2-132K054I-16-5	130	41,7	305	108	19	115	37,5	210	80	0,045	112	20
	DS2-132M054I-16-5	170	52	400	138	25	145	46,1	220		0,058	128	22
	DS2-132L054I-16-5	210	63	495	170	29	175	54	225		0,071	143	22
	DS2-132B054I-16-5	240	80	590	215	34	200	67	210		0,084	159	22
2000	DS2-132K054I-20-5	130	53	300	138	23	110	46,2	165	100	0,045	112	22
	DS2-132M054I-20-5	170	66	400	175	29	140	56	173		0,058	128	22
	DS2-132L054I-20-5	210	81	495	215	35	170	67	175		0,071	143	22
	DS2-132B054I-20-5	240	98	585	265	40	190	79	170		0,084	159	22
2500	DS2-132K054I-25-5	130	65	300	170	27	105	54	135	125	0,045	112	22
	DS2-132M054I-25-5	170	82	395	215	35	130	66	140		0,058	128	22
	DS2-132L054I-25-5	210	100	490	265	41	155	78	141		0,071	143	22
	DS2-132B054I-25-5	240	119	585	325	47	180	90	140		0,084	159	24
3000	DS2-132K054I-30-5	130	73	295	190	31	98	58	120	150	0,045	112	22
	DS2-132M054I-30-5	170	96	395	250	39	125	73	120		0,058	128	22
	DS2-132L054I-30-5	210	121	490	325	46	145	89	116		0,071	143	24
	DS2-132B054I-30-5	240	139	580	380	52	165	97	120		0,084	159	24

2.2.4 DS2-132..54W/DS2+132..54W

Mains voltage 3 AC 400V for converters with uncontrolled supply

n_N min ⁻¹	Motor	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$K_E/kalt$ V/1000 min ⁻¹	f_N Hz	J kgm ²	m kg	KLK S. 78
1000	DS2-132K054W-10-5	180	40,4	340	85	18	175	39,1	296	50	0,045	110	20
	DS2-132M054W-10-5	240	54	450	113	24	230	52	296		0,058	120	22
	DS2-132L054W-10-5	305	64	555	130	30	290	62	321		0,071	130	22
	DS2-132B054W-10-5	360	83	665	170	37	350	80	296		0,084	140	22
1500	DS2-132K054W-15-5	180	58	340	121	27	170	55	207	75	0,045	110	22
	DS2-132M054W-15-5	240	74	450	155	35	225	70	217		0,058	120	22
	DS2-132L054W-15-5	305	92	555	190	45	285	87	222		0,071	130	22
	DS2-132B054W-15-5	360	118	665	240	54	345	112	207		0,084	140	24
2000	DS2-132K054W-20-5	180	73	340	155	34	165	67	163	100	0,045	110	22
	DS2-132M054W-20-5	240	93	450	195	45	215	86	171		0,058	120	22
	DS2-132L054W-20-5	305	119	555	240	57	275	109	173		0,071	130	24
	DS2-132B054W-20-5	360	146	665	300	70	330	135	168		0,084	140	24
2500	DS2-132K054W-25-5	180	90	340	190	42	160	79	133	125	0,045	110	22
	DS2-132M054W-25-5	240	116	450	240	55	210	102	138		0,058	120	24
	DS2-132L054W-25-5	305	147	555	300	69	265	130	140		0,071	130	24
	DS2-132B054W-25-5	360	180	665	365	84	320	160	138		0,084	140	26
3000	DS2-132K054W-30-5	180	101	340	210	47	150	86	118	150	0,045	110	22
	DS2-132M054W-30-5	240	135	450	280	63	200	115	118		0,058	120	24
	DS2-132L054W-30-5	305	180	555	365	81	255	150	115		0,071	130	26
	DS2-132B054W-30-5	360	205	665	425	96	305	175	118		0,084	140	26
4000	DS2+132K054W-40-5	180	133	340	280	56	135	101	88,8	200	0,045	110	24
	DS2+132M054W-40-5	240	170	455	365	75	180	132	92,1		0,058	120	26
	DS2+132L054W-40-5	300	215	565	460	96	230	170	90,5		0,071	130	26
	DS2+132B054W-40-5	365	265	680	565	117	280	210	88,8		0,084	140	27
4500	DS2+132K054W-45-5	180	150	340	315	59	125	106	79	225	0,045	110	24
	DS2+132M054W-45-5	240	200	455	425	80	170	143	79		0,058	120	26
	DS2+132L054W-45-5	300	265	565	565	101	215	195	74		0,071	130	27
	DS2+132B054W-45-5	365	295	675	635	123	260	220	79		0,084	140	28

2.3 DS2[3]-160

2.3.1 DS2-160..23A/R

Mains voltage 3 AC 400V for converters with uncontrolled supply

n_N min ⁻¹	Motor	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$K_E/kalt$ V/1000 min ⁻¹	f_N Hz	J kgm ²	m kg	KLK S. 78
1000	DS2-160K023A/R-10-5	435	87	745	160	42	405	83	337	50	0,15	230	30
	DS2-160M023A/R-10-5	525	107	920	205	52	495	101	334		0,18	255	30
	DS2-160L023A/R-10-5	615	124	1110	245	60	570	116	336		0,22	285	32
	DS2-160B023A/R-10-5	695	143	1170	255	67	645	132	331		0,25	310	32
1500	DS2-160K023A/R-15-5	435	131	745	245	62	400	121	224	75	0,15	230	32
	DS2-160M023A/R-15-5	525	160	920	305	75	475	144	225		0,18	255	32
	DS2-160L023A/R-15-5	615	190	1100	375	87	555	170	218		0,22	285	32
	DS2-160B023A/R-15-5	695	195	1170	355	95	605	175	240		0,25	310	32
2000	DS2-160K023A/R-20-5	435	170	745	320	80	385	150	172	100	0,15	230	32
	DS2-160M023A/R-20-5	525	210	920	400	96	460	180	171		0,18	255	32
	DS2-160L023A/R-20-5	615	230	1100	455	109	520	200	179		0,22	285	32
	DS2-160B023A/R-20-5	695	265	1170	475	121	580	220	179		0,25	310	34
2500	DS2-160K023A/R-25-5	435	215	745	400	97	370	185	137	125	0,15	230	32
	DS2-160M023A/R-25-5	525	260	920	490	115	440	215	139		0,18	255	34
	DS2-160L023A/R-25-5	615	295	1100	585	131	500	240	140		0,22	285	34
	DS2-160B023A/R-25-5	695	320	1170	575	142	540	250	148		0,25	310	34
3000	DS2-160K023A/R-30-5	435	245	745	455	110	350	200	119	150	0,15	230	32
	DS2-160M023A/R-30-5	525	305	920	585	131	415	240	117		0,18	255	34
	DS2-160L023A/R-30-5	615	325	1100	645	144	460	250	127		0,22	285	34
	DS2-160B023A/R-30-5	640	325	1170	640	155	495	260	133		0,25	310	34

2.3.2 DS2-160..231

Mains voltage 3 AC 400V for converters with uncontrolled supply

n_N min ⁻¹	Motor	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$K_E/kalt$ V/1000 min ⁻¹	f_N Hz	J kgm ²	m kg	KLK S. 78
1000	DS2-160K0231-10-5	425	85	740	160	41	395	80	337	50	0,15	220	30
	DS2-160M0231-10-5	520	105	925	205	50	480	97	334		0,18	245	30
	DS2-160L0231-10-5	605	122	1100	245	58	555	112	336		0,22	275	32
	DS2-160B0231-10-5	685	141	1170	255	65	625	128	331		0,25	300	32
1500	DS2-160K0231-15-5	425	128	740	245	60	380	116	224	75	0,15	220	32
	DS2-160M0231-15-5	520	155	925	305	72	460	138	225		0,18	245	32
	DS2-160L0231-15-5	605	190	1100	375	83	530	165	218		0,22	275	32
	DS2-160B0231-15-5	685	195	1170	355	92	585	165	240		0,25	300	32
2000	DS2-160K0231-20-5	425	165	740	320	77	365	144	172	100	0,15	220	32
	DS2-160M0231-20-5	520	205	920	400	92	440	175	171		0,18	245	32
	DS2-160L0231-20-5	605	230	1100	455	104	495	190	179		0,22	275	32
	DS2-160B0231-20-5	685	260	1170	475	116	555	210	179		0,25	300	34
2500	DS2-160K0231-25-5	425	210	740	400	92	350	170	137	125	0,15	220	32
	DS2-160M0231-25-5	520	255	920	490	109	415	200	139		0,18	245	34
	DS2-160L0231-25-5	605	295	1100	585	124	470	230	140		0,22	275	34
	DS2-160B0231-25-5	685	315	1170	575	135	515	235	148		0,25	300	34
3000	DS2-160K0231-30-5	425	240	740	455	104	330	185	119	150	0,15	220	32
	DS2-160M0231-30-5	520	300	920	585	123	390	225	117		0,18	245	34
	DS2-160L0231-30-5	605	325	1100	645	136	430	235	127		0,22	275	34
	DS2-160B0231-30-5	640	325	1170	640	146	465	245	133		0,25	300	34

2.3.3 DS2-160..54A/R

Mains voltage 3 AC 400V for converters with uncontrolled supply

n_N min ⁻¹	Motor	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$K_E/kalt$ V/1000 min ⁻¹	f_N Hz	J kgm ²	m kg	KLK S. 78
1000	DS2-160K054A/R-10-5	325	68	700	160	30	285	59	337	50	0,15	230	30
	DS2-160M054A/R-10-5	405	85	875	205	37	355	75	334		0,18	255	30
	DS2-160L054A/R-10-5	480	101	1050	245	45	430	90	336		0,22	285	30
	DS2-160B054A/R-10-5	555	118	1110	255	52	500	107	331		0,25	310	32
1500	DS2-160K054A/R-15-5	325	103	700	245	41	265	82	224	75	0,15	230	30
	DS2-160M054A/R-15-5	405	127	875	305	52	330	104	225		0,18	255	32
	DS2-160L054A/R-15-5	480	155	1050	375	63	400	130	218		0,22	285	32
	DS2-160B054A/R-15-5	555	165	1110	355	74	470	139	240		0,25	310	32
2000	DS2-160K054A/R-20-5	325	134	700	320	51	245	100	172	100	0,15	230	32
	DS2-160M054A/R-20-5	405	165	875	400	64	305	127	171		0,18	255	32
	DS2-160L054A/R-20-5	480	190	1050	455	78	375	147	179		0,22	285	32
	DS2-160B054A/R-20-5	555	220	1110	475	92	440	175	179		0,25	310	32
2500	DS2-160K054A/R-25-5	325	170	700	400	59	225	115	137	125	0,15	230	32
	DS2-160M054A/R-25-5	405	205	875	490	74	285	145	139		0,18	255	32
	DS2-160L054A/R-25-5	480	240	1050	585	91	345	175	140		0,22	285	32
	DS2-160B054A/R-25-5	555	265	1110	575	107	410	195	148		0,25	310	34
3000	DS2-160K054A/R-30-5	325	195	700	455	65	205	122	119	150	0,15	230	32
	DS2-160M054A/R-30-5	405	245	875	585	82	260	160	117		0,18	255	32
	DS2-160L054A/R-30-5	480	265	1050	645	100	320	175	127		0,22	285	34
	DS2-160B054A/R-30-5	555	295	1110	640	117	375	200	133		0,25	310	34

2.3.4 DS2-160..54I

Mains voltage 3 AC 400V for converters with uncontrolled supply

n_N min ⁻¹	Motor	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$K_E/kalt$ V/1000 min ⁻¹	f_N Hz	J kgm ²	m kg	KLK S. 78
1000	DS2-160K054I-10-5	325	69	695	160	30	280	60	337	50	0,15	220	30
	DS2-160M054I-10-5	400	85	870	205	37	350	74	334		0,18	245	30
	DS2-160L054I-10-5	470	100	1050	245	44	415	88	336		0,22	275	30
	DS2-160B054I-10-5	540	115	1110	255	50	480	103	331		0,25	300	32
1500	DS2-160K054I-15-5	325	104	690	245	41	260	83	224	75	0,15	220	30
	DS2-160M054I-15-5	400	126	870	305	51	325	103	225		0,18	245	32
	DS2-160L054I-15-5	470	155	1050	375	61	390	126	218		0,22	275	32
	DS2-160B054I-15-5	540	160	1110	355	71	450	133	240		0,25	300	32
2000	DS2-160K054I-20-5	325	136	690	320	51	240	100	172	100	0,15	220	32
	DS2-160M054I-20-5	400	165	865	400	63	300	125	171		0,18	245	32
	DS2-160L054I-20-5	470	185	1040	455	75	360	142	179		0,22	275	32
	DS2-160B054I-20-5	540	215	1110	475	88	420	165	179		0,25	300	32
2500	DS2-160K054I-25-5	325	170	690	400	58	220	116	137	125	0,15	220	32
	DS2-160M054I-25-5	400	205	865	490	73	275	143	139		0,18	245	32
	DS2-160L054I-25-5	470	240	1040	585	87	330	170	140		0,22	275	32
	DS2-160B054I-25-5	540	255	1110	575	101	385	185	148		0,25	300	34
3000	DS2-160K054I-30-5	325	195	690	455	64	205	122	119	150	0,15	220	32
	DS2-160M054I-30-5	400	245	865	585	80	255	155	117		0,18	245	32
	DS2-160L054I-30-5	470	265	1040	645	95	305	170	127		0,22	275	34
	DS2-160B054I-30-5	540	285	1110	640	110	350	185	133		0,25	300	34

2.3.5 DS3-160..54W

Mains voltage 3 AC 400V for converters with uncontrolled supply

n_N min ⁻¹	Motor	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$K_E/kalt$ V/1000 min ⁻¹	f_N Hz	J kgm ²	m kg	KLK S. 78
1000	DS3-160K054W-10-5	320	62	695	146	32	305	59	337	50	0,15	165	30
	DS3-160M054W-10-5	400	78	870	185	41	390	76	334		0,18	190	30
	DS3-160L054W-10-5	480	94	1030	215	49	465	91	336		0,22	215	32
	DS3-160B054W-10-5	575	114	1210	255	58	555	110	331		0,25	240	32
1500	DS3-160K054W-15-5	320	93	695	220	47	295	86	224	75	0,15	165	32
	DS3-160M054W-15-5	400	116	870	270	60	380	111	225		0,18	190	32
	DS3-160L054W-15-5	480	144	1030	335	72	460	137	218		0,22	215	32
	DS3-160B054W-15-5	575	155	1210	355	85	540	149	240		0,25	240	32
2000	DS3-160K054W-20-5	320	122	695	285	60	285	109	172	100	0,15	165	32
	DS3-160M054W-20-5	400	150	870	360	78	375	143	171		0,18	190	32
	DS3-160L054W-20-5	480	175	1030	405	93	445	165	179		0,22	215	32
	DS3-160B054W-20-5	575	210	1210	475	111	530	195	179		0,25	240	34
2500	DS3-160K054W-25-5	320	150	695	360	72	275	132	137	125	0,15	165	32
	DS3-160M054W-25-5	400	190	870	445	95	365	170	139		0,18	190	34
	DS3-160L054W-25-5	480	225	1030	520	115	440	205	140		0,22	215	34
	DS3-160B054W-25-5	575	255	1200	575	134	515	230	148		0,25	240	34
3000	DS3-160K054W-30-5	320	175	695	410	83	265	145	119	150	0,15	165	32
	DS3-160M054W-30-5	400	225	870	525	110	350	195	117		0,18	190	34
	DS3-160L054W-30-5	480	245	1030	575	131	420	220	127		0,22	215	34
	DS3-160B054W-30-5	575	280	1200	640	151	480	250	133		0,25	240	34

2.4 DS2-200

2.4.1 DS2-200..23A/R

Mains voltage 3 AC 400V for converters with uncontrolled supply

n_N min ⁻¹	Motor	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$K_E/kalt$ V/1000 min ⁻¹	f_N Hz	J kgm ²	m kg	KLK S.78
500	DS2-200K023A/R-05-5	755	83	1230	155	39	740	82	609	16,7	0,44	435	40
	DS2-200M023A/R-05-5	1050	111	1710	210	53	1010	110	629		0,61	545	40
	DS2-200L023A/R-05-5	1340	146	2190	275	69	1330	145	617		0,79	660	42
1000	DS2-200K023A/R-10-5	750	160	1220	300	76	730	155	316	33,3	0,44	435	42
	DS2-200M023A/R-10-5	1050	210	1710	400	103	985	205	331		0,61	545	42
	DS2-200L023A/R-10-5	1340	275	2190	515	133	1270	265	329		0,79	660	44
1500	DS2-200K023A/R-15-5	755	240	1230	450	114	730	230	210	50	0,44	435	42
	DS2-200M023A/R-15-5	1050	320	1710	600	153	970	300	219		0,61	545	44
	DS2-200L023A/R-15-5	1340	385	2190	725	189	1210	360	234		0,79	660	46
2000	DS2-200K023A/R-20-5	755	320	1230	600	149	710	300	156	66,7	0,44	435	44
	DS2-200M023A/R-20-5	1050	385	1710	725	186	890	350	182		0,61	545	46
	DS2-200L023A/R-20-5	1340	485	2190	910	235	1120	435	186		0,79	660	46
2700	DS2-200K023A/R-27-5	755	390	1230	725	180	640	340	130	90	0,44	435	44
	DS2-200M023A/R-27-5	1050	485	1590	820	225	800	405	144		0,61	545	46
	DS2-200L023A/R-27-5	1340	655	2190	1230	295	1040	535	138		0,79	660	46

2.4.2 DS2-200..54W

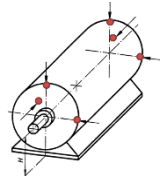
Mains voltage 3 AC 400V for converters with uncontrolled supply

n_N min ⁻¹	Motor	M_0 Nm	I_0 A	$M_{0,max}$ Nm	$I_{0,max}$ A	P_N kW	M_N Nm	I_N A	$K_E/kalt$ V/1000 min ⁻¹	f_N Hz	J kgm ²	m kg	KLK S.78
1000	DS2-200K054W10-5	570	118	1130	270	58	550	114	316	33,3	0,44	400	40
	DS2-200M054W10-5	820	165	1570	360	83	795	160	331		0,61	500	42
	DS2-200L054W10-5	1080	220	2010	465	109	1040	210	329		0,79	600	42
1500	DS2-200K054W15-5	570	180	1130	405	84	535	165	210	50	0,44	400	42
	DS2-200M054W15-5	820	245	1570	540	122	775	235	219		0,61	500	42
	DS2-200L054W15-5	1080	310	2010	655	154	980	285	234		0,79	600	44
2100	DS2-200K054W21-5	570	240	1130	540	112	510	215	156	70	0,44	400	42
	DS2-200M054W21-5	820	300	1570	655	153	695	270	182		0,61	500	44
	DS2-200L054W21-5	1080	385	2010	820	193	880	335	186		0,79	600	46
2700	DS2-200K054W27-5	570	285	1130	655	134	475	240	130	90	0,44	400	44
	DS2-200M054W27-5	820	375	1570	820	183	645	315	144		0,61	500	46
	DS2-200L054W27-5	1080	520	2010	1105	235	840	415	138		0,79	600	46

2.5 Vibration load

The vibration behavior of the overall system at the installation site – caused by drive elements, mounting conditions, alignment, and setup, as well as external vibrations – can lead to increased vibration levels on the motor. In some cases, complete balancing of the rotor together with the drive element may be necessary.

To ensure proper operation and service life, the specified vibration values, based on DIN ISO 10816, must not be exceeded at the designated measurement points on the motor.



Measuring points for the vibration measuring

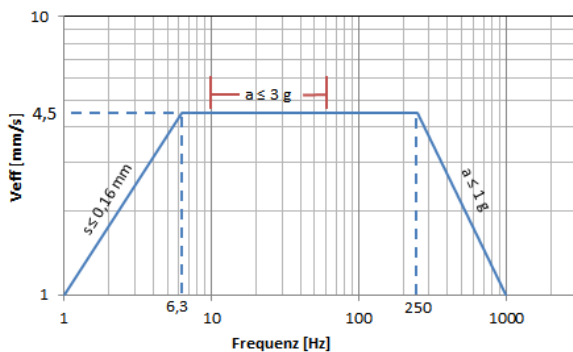
The specified maximum radial and axial vibration values must be observed simultaneously. They apply to substructures that can be classified as flexible. A substructure is considered flexible if the lowest natural frequency of the overall system (machine and foundation) in the measurement direction is at least 25% below the predominant excitation frequency. All other substructures can be considered rigid. In the case of rigid substructures, consultation with the manufacturer is required.

Maximum radial vibration load:

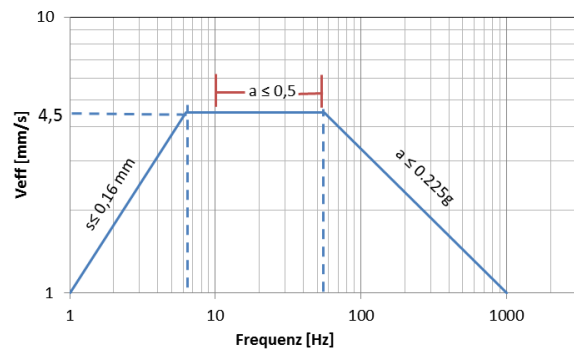
Peak vibration acceleration: $1\text{ g} > 250\text{ Hz}$
 Peak vibration displacement: $\leq 0.16\text{ mm} < 6.3\text{ Hz}$
 RMS vibration velocity: $\leq 4.5\text{ mm/s}$
 in the range of $6.3\text{ Hz} - 250\text{ Hz}$

Maximum axial vibration load:

Peak vibration acceleration: $0.225\text{ g} > 55\text{ Hz}$
 Peak vibration displacement: $\leq 0.16\text{ mm} < 6.3\text{ Hz}$
 RMS vibration velocity: $\leq 4.5\text{ mm/s}$
 in the range of $6.3\text{ Hz} - 55\text{ Hz}$



Measuring points for radial vibratory load



Measuring points for axial vibratory load

Additional vibration resistance:

Vibration acceleration of 3 g radial and 1 g axial in the frequency range from 10 Hz to 55 Hz

These specified vibrations can be additionally tolerated by the motor. However, the service life of wear parts (e.g., bearings) may be reduced.

Shock load:

If increased vibration loads occur in the form of shocks, measurements on the installed machine are required. Based on these results, design modifications or evaluations will be carried out in cooperation with Baumüller.

To assess vibration velocity, the measuring equipment must comply with the requirements of ISO 2954.

Vibration acceleration is evaluated in the time domain within a frequency band of 10 Hz to 2 kHz.

If significant vibration excitations above 2 kHz—such as gear mesh frequencies—are expected, the measurement range must be adjusted accordingly. The permissible maximum values remain unchanged.

2.6 Bearings and shaft load

All machines are equipped with rolling bearings. As standard, a floating bearing (deep groove ball bearing) is provided on the drive end, and a fixed bearing (deep groove ball bearing) on the non-drive end. For applications involving increased radial forces – for example, when using belt pulleys – the machines can be supplied with a roller bearing on the drive end. Please specify radial forces when placing an order.

Standard bearing configuration:

Size	ventilated		Liquid cooled	
	DE side	NDE side	DE side	NDE side
100	6209 2ZRC3	6209 2ZRC3	6209 2ZRC3	6306 2ZRC3
132	6212 2ZRC3	6212 2ZRC3	6312 2ZRC3	6310 2ZRC3
160	6313 2ZRC3	6311 2ZRC3	6313 2ZRC3	6311 2ZRC3
200	6315 2ZRC3	6313 2ZRC3	6315 2ZRC3	6313 2ZRC3

Bearing configuration roller bearing:

Size	ventilated	Liquid cooled
	DE side	DE side
100	NU 209E	NU 209E
132	NU 212E	NU 312E
160	NU 313E	NU 313E
200	NU 315E	NU 315E

The NDE side bearing of size 200 is electrically insulated as standard. An electrically insulated bearing for sizes 100–160 is optionally available (please observe the ordering designation).

Note:

For the "roller bearing on drive end (DE-side)" option, the rotor is equipped with a transport lock as standard. The transport lock must remain in place during transport and may only be removed immediately before mounting a driven element. If the machine is transported after a driven element has been mounted, suitable measures must be taken to secure the rotor both axially and radially.

Determination of radial forces F_R

When using pulleys, the radial load is calculated according to the following formula:

$$F_R = k \frac{2 \cdot 10^7 \cdot P_N}{n \cdot D} \text{ [N]}$$

P_N = nominal power in kW

n = rated speed in min^{-1}

D = pulley diameter in mm

The belt tightening factor k is approximately:

$k = 1.8 \dots 2.5$ for V-belt

$k = 2.2 \dots 3.5$ for flat belt

$k = 1,1 \dots 1,5$ for timing belt

(Observe specifications of the belt manufacturer)

To ensure reliable torque transmission, it is essential to utilize the full supporting length of the key. Failure to do so may result in excessive surface pressure on the key, which can lead to motor damage. The pulley must be mounted up to the shaft shoulder and may only be axially clamped using the following maximum tightening torques.

Gland	M5	M6	M8	M10	M12	M16	M20
Tightening torque	2,2 Nm	4 Nm	10 Nm	19 Nm	33 Nm	80 Nm	160 Nm

2.7 Radial force diagrams

All bearings are dimensioned for a service life of 20,000h L_{h10} . The load values specified below must not be exceeded. The specified permissible radial forces FR apply only for horizontal installation of the motor and without additional axial forces.

In addition, to achieve the grease service life of 20,000h F_{h10} , the specified average speeds must be adhered to under the following conditions:

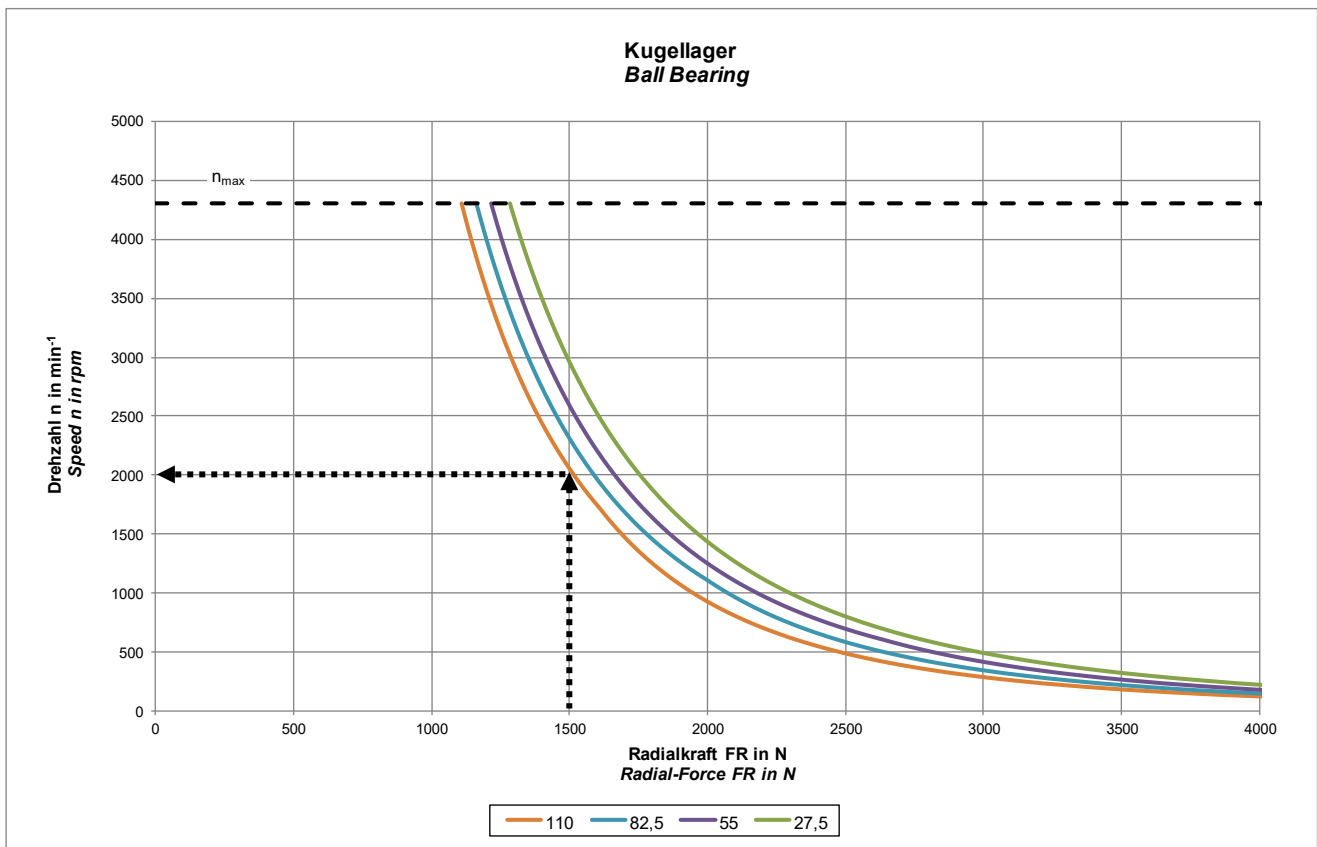
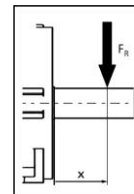
- Low-vibration applications
- Horizontal installation
- Oscillating bearing motion with a minimum pivot angle of 180°
- Average operating temperature < 90°C
- Average operating speed < 2000 min⁻¹ (Frame size 100-160) – Ball bearing version
- Average operating speed < 1500 min⁻¹ (Frame size 200) – Ball bearing version
- Average operating speed for roller bearing version: see notes in the characteristic curves

Axial loading of the motor shaft is strictly prohibited. Even when mounting couplings, pulleys, or similar components onto the motor shaft, no axial forces may occur! In such cases, the internal thread at the shaft end should be used as a mounting aid.

Example diagram:

Point of force application: x = 110 mm from the shaft shoulder

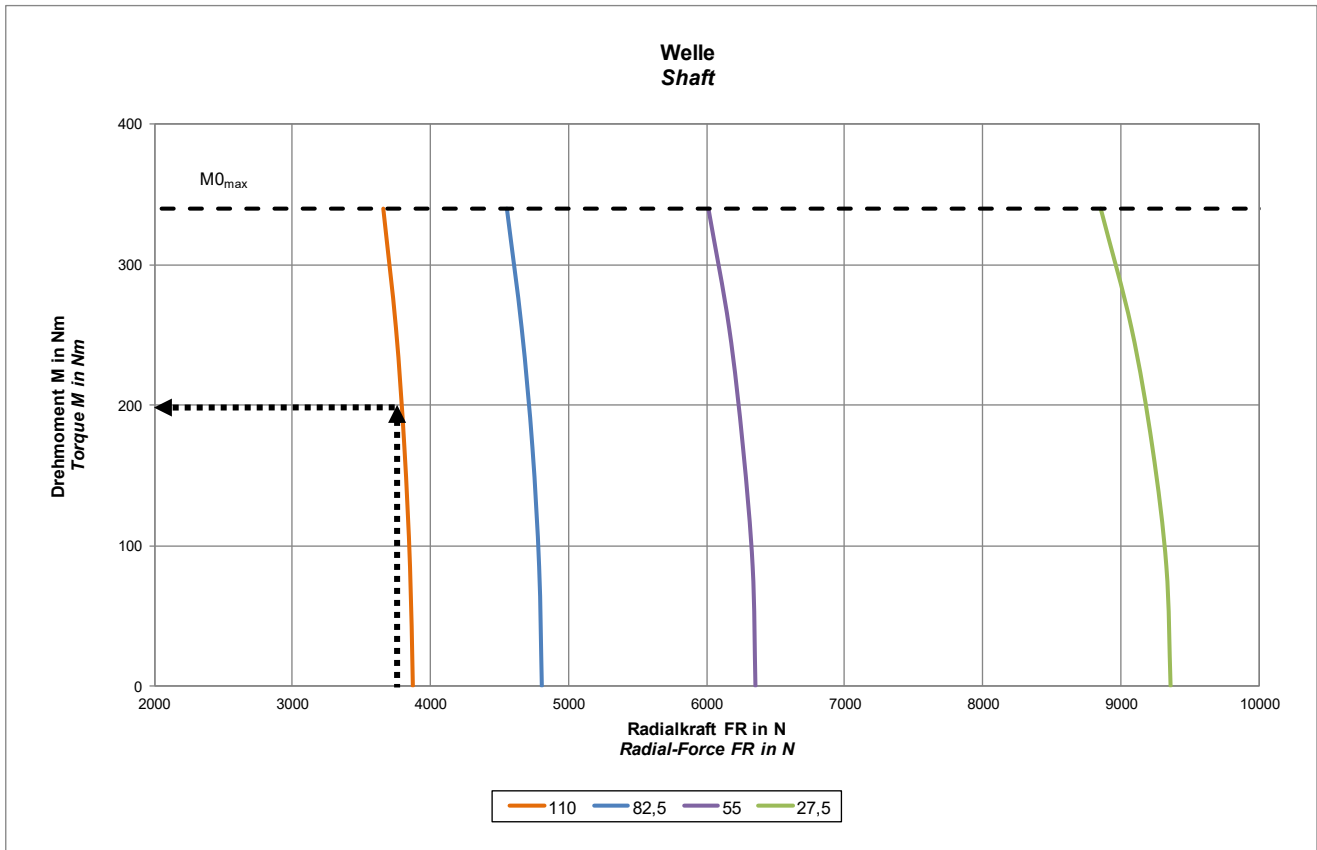
Bearing life: 20.000 h, shaft with keyway



Explanation of the example diagram:

The radial force FR from the application can be used to determine the maximum permissible rotational speed of the bearing from the "ball bearing" or "roller bearing" characteristic curve.

With a radial force of 1500 N applied at a point x = 110 mm from the shaft shoulder, the resulting maximum rotational speed is 2000 min⁻¹.



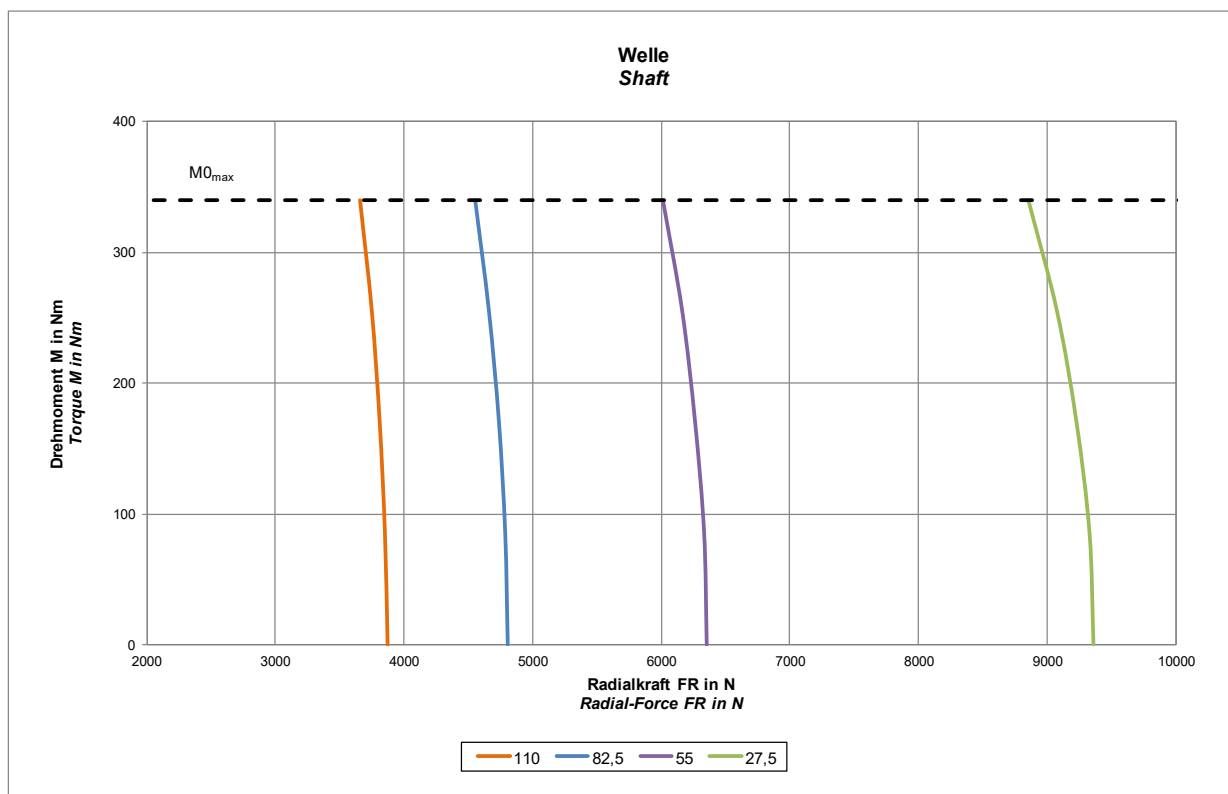
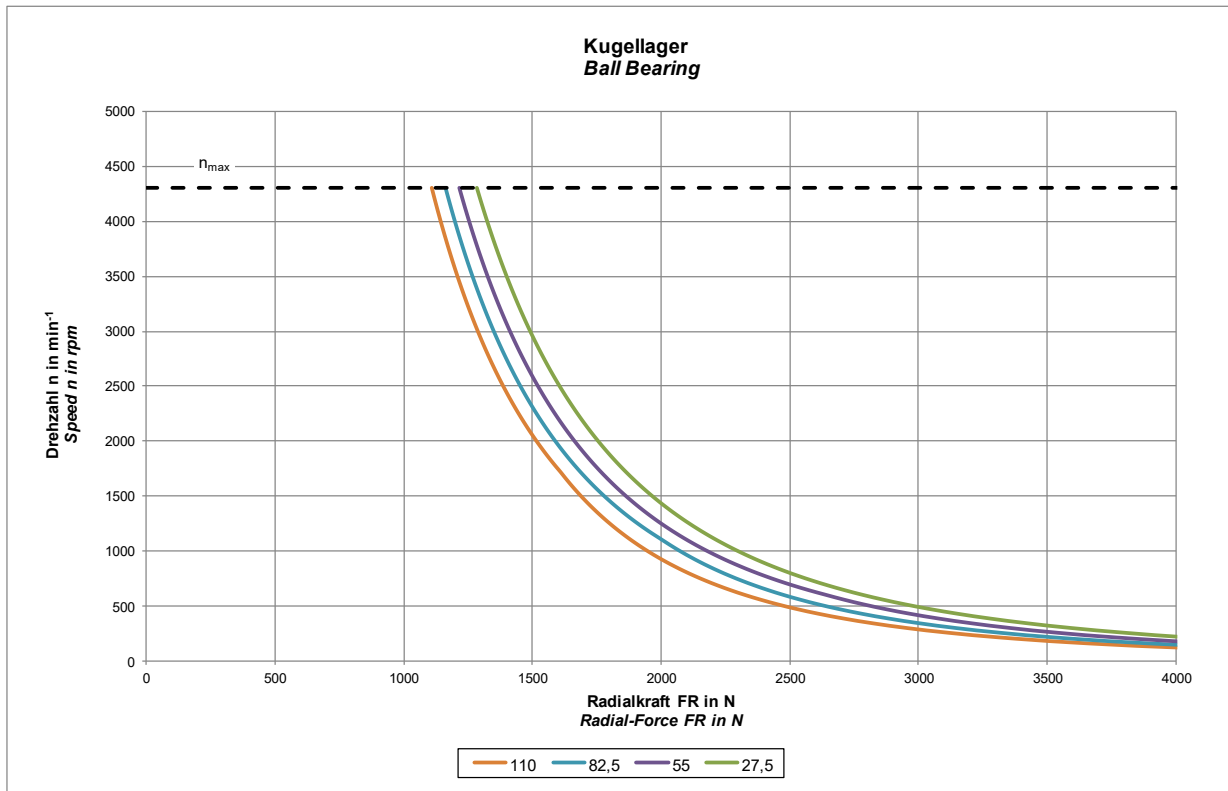
Explanation of the example diagram:

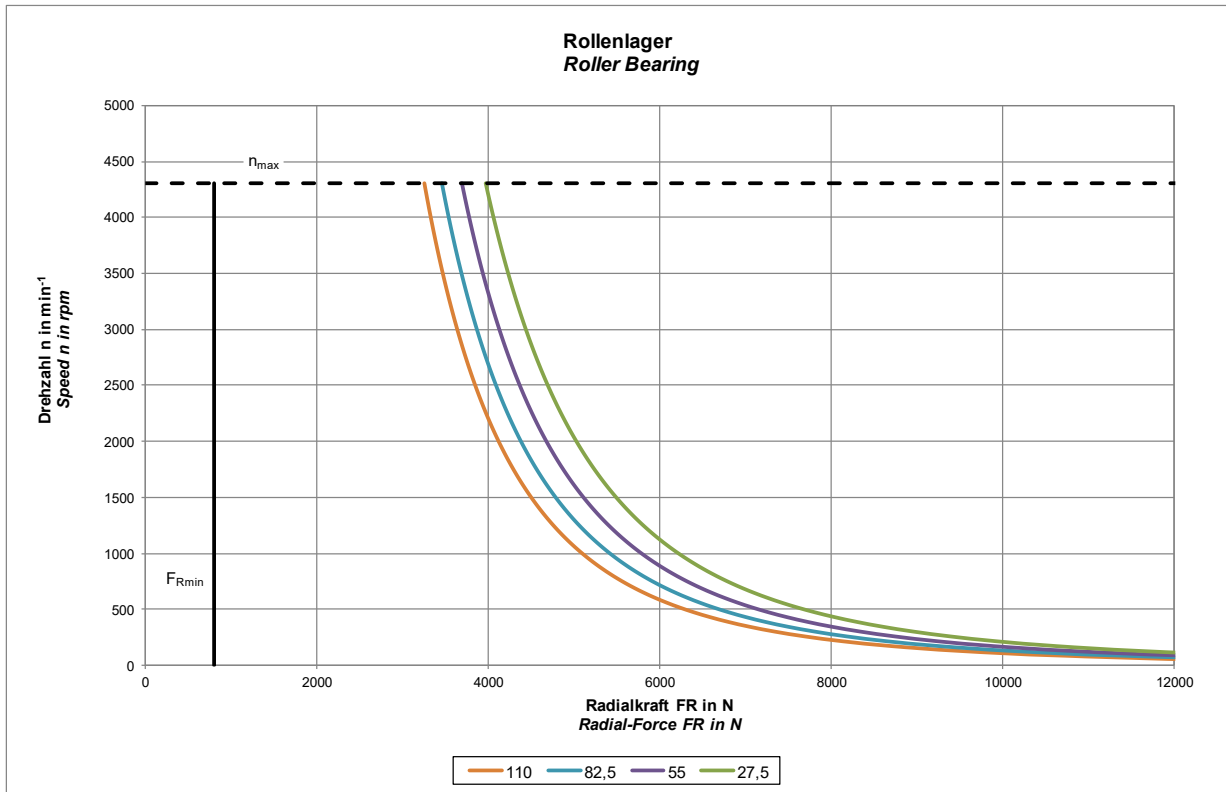
The maximum transferable torque can be determined from the "shaft" characteristic curve.

With a radial force of 3770 N applied at a point $x = 110$ mm from the shaft shoulder, the transferable torque is 200 Nm.

2.8 Diagrams DS2-100

2.8.1 DS2-100..R

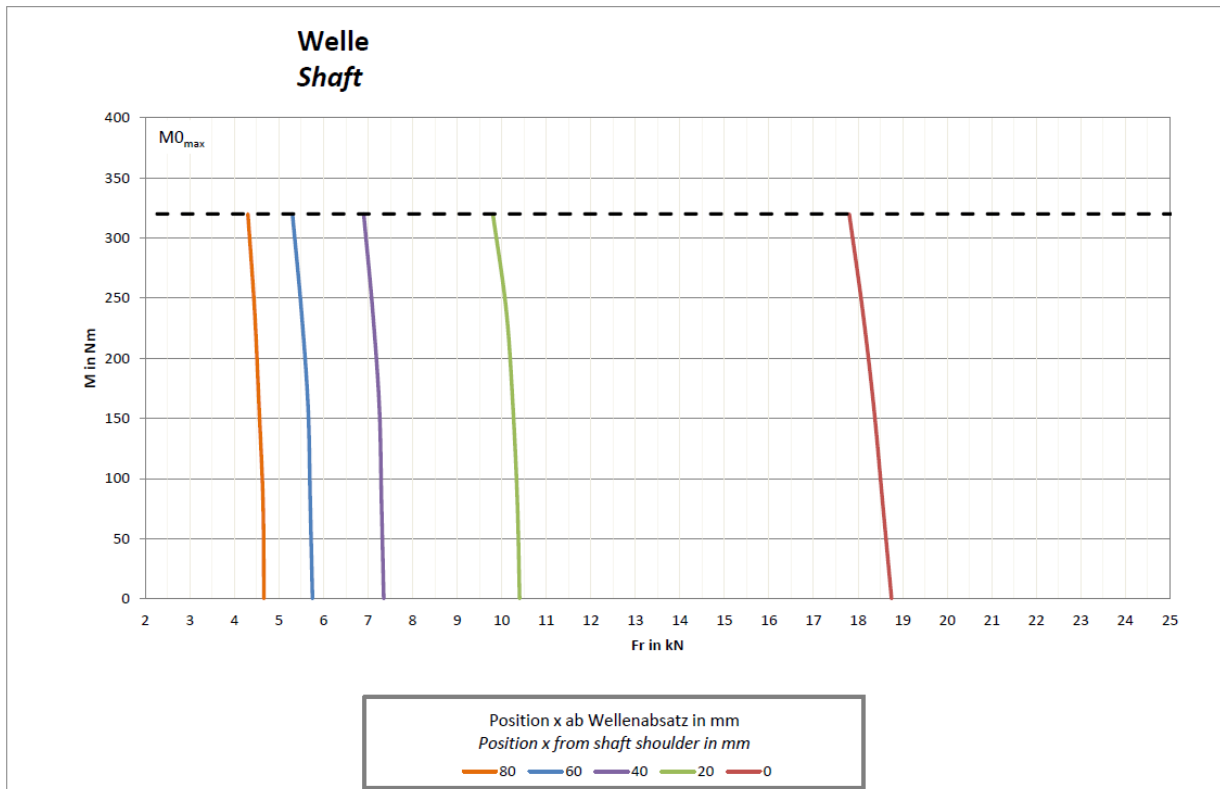
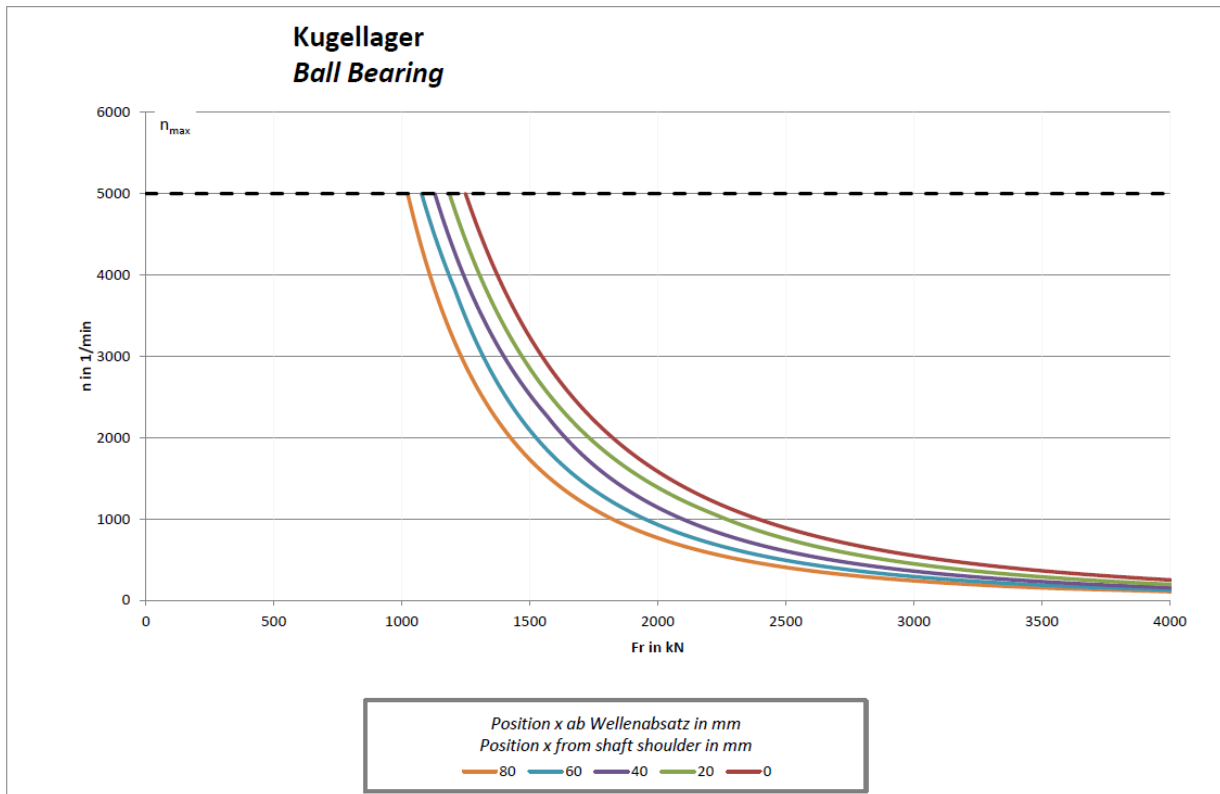


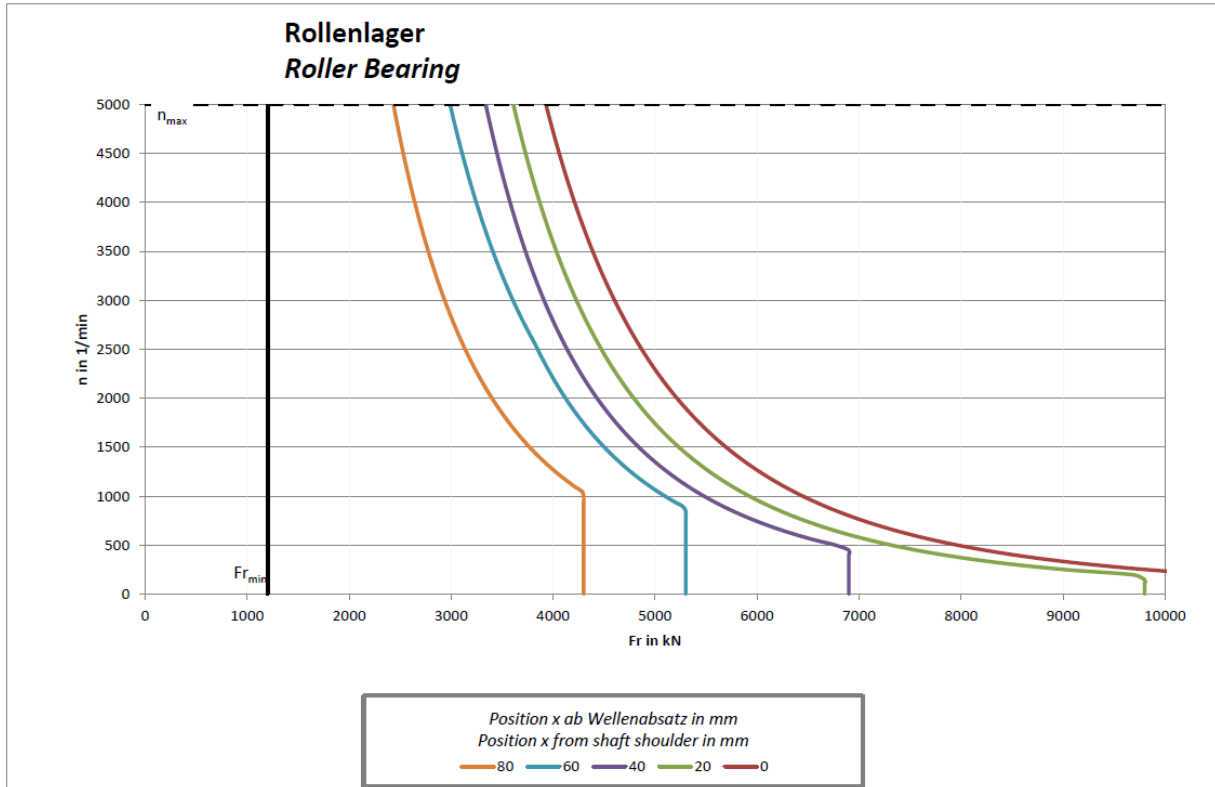


Hinweis: 20.000h Fettgebrauchsdauer bei $n_{\text{mittel}} \leq 1400 \text{ min}^{-1}$

Note: 20,000h grease service life at $n_{\text{effective}} \leq 1400 \text{ rpm}$

2.8.2 DS2-100..W / DS2+100..W



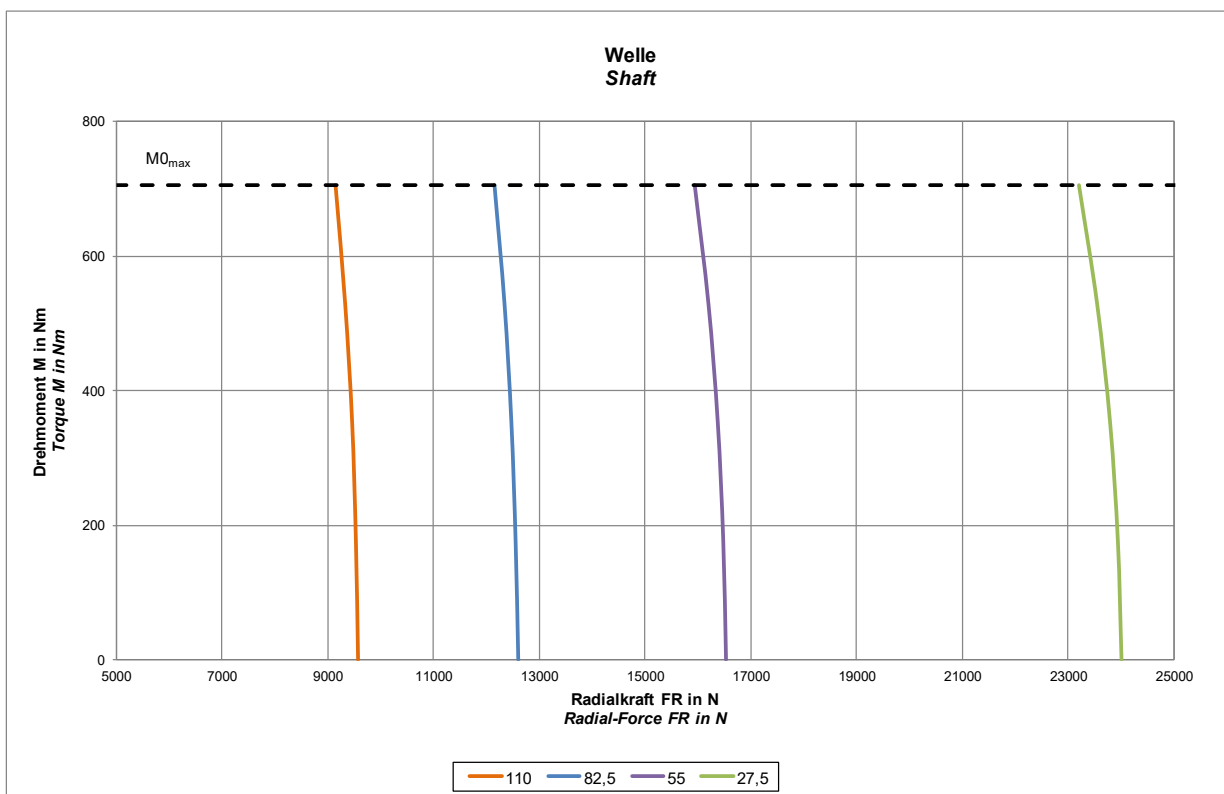
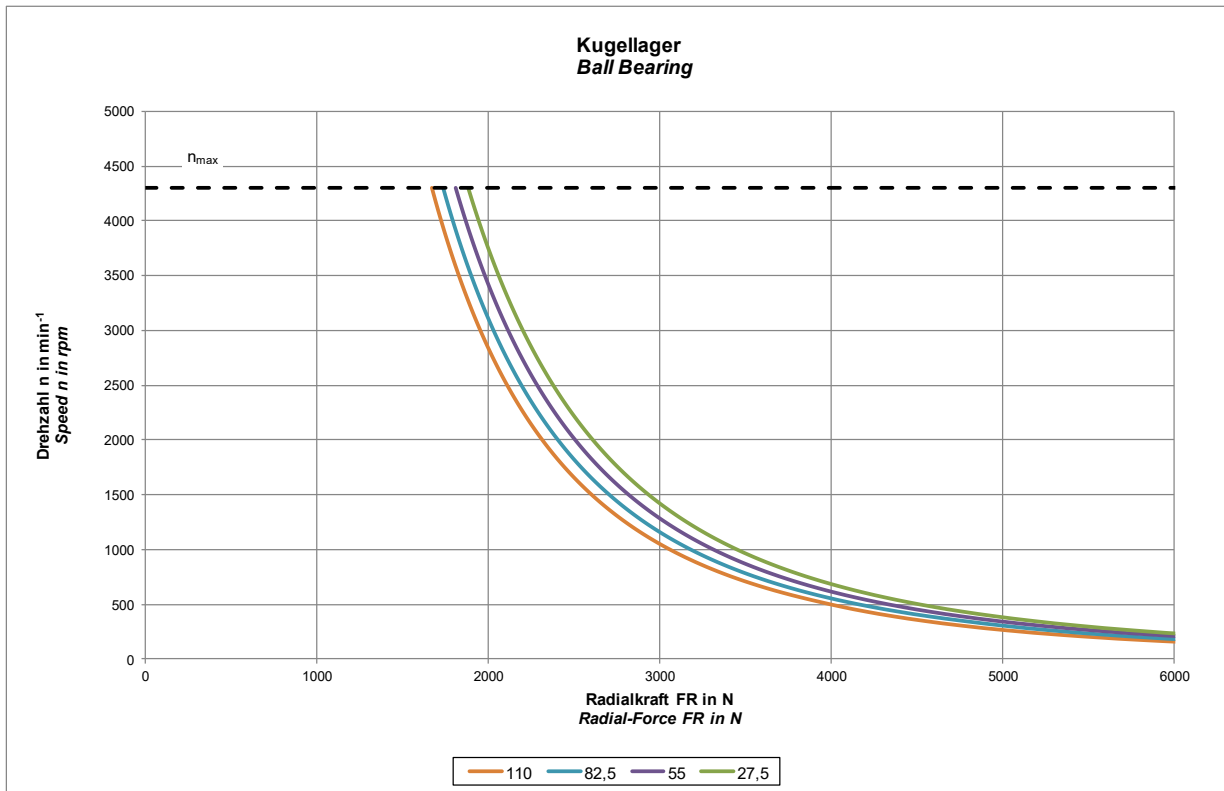


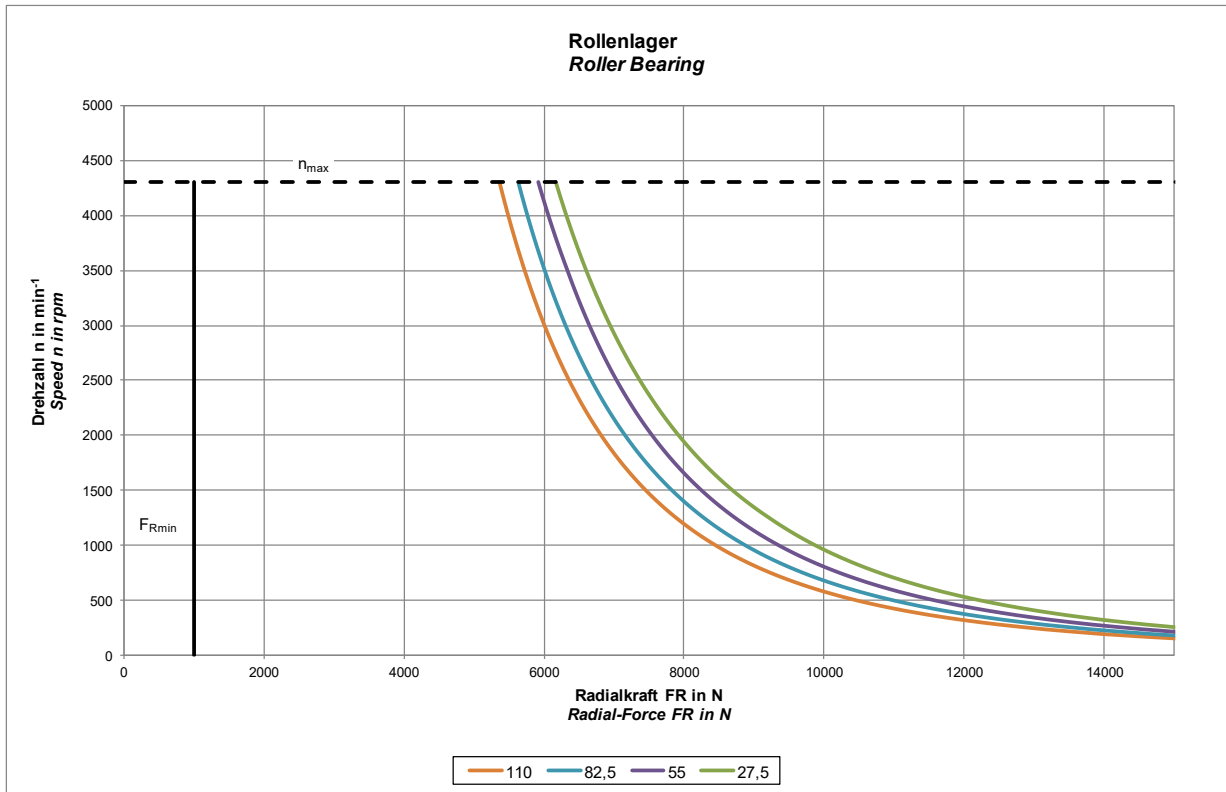
Hinweis: 20.000h Fettgebrauchsdauer bei $n_{\text{mittel}} \leq 1400 \text{ min}^{-1}$

Note: 20,000h grease service life at $n_{\text{effective}} \leq 1400 \text{ rpm}$

2.9 Diagrams DS2-132

2.9.1 DS2-132..A/R

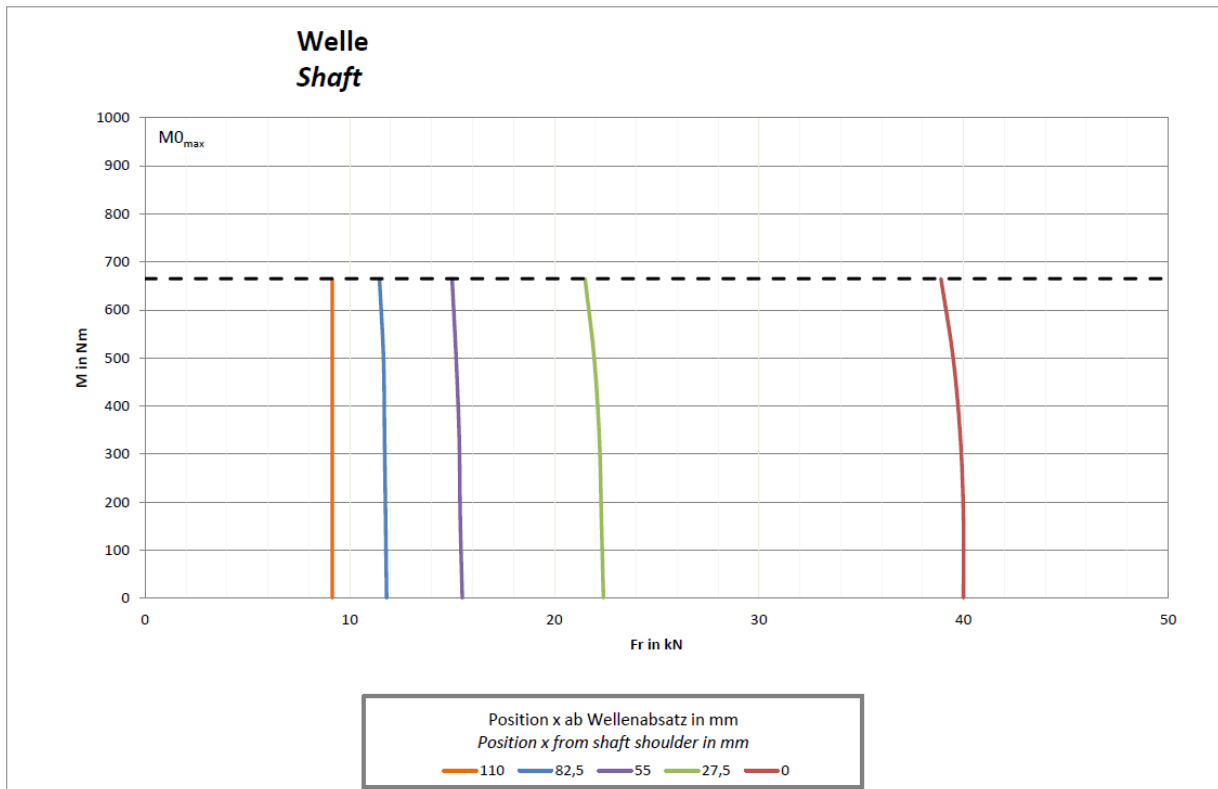
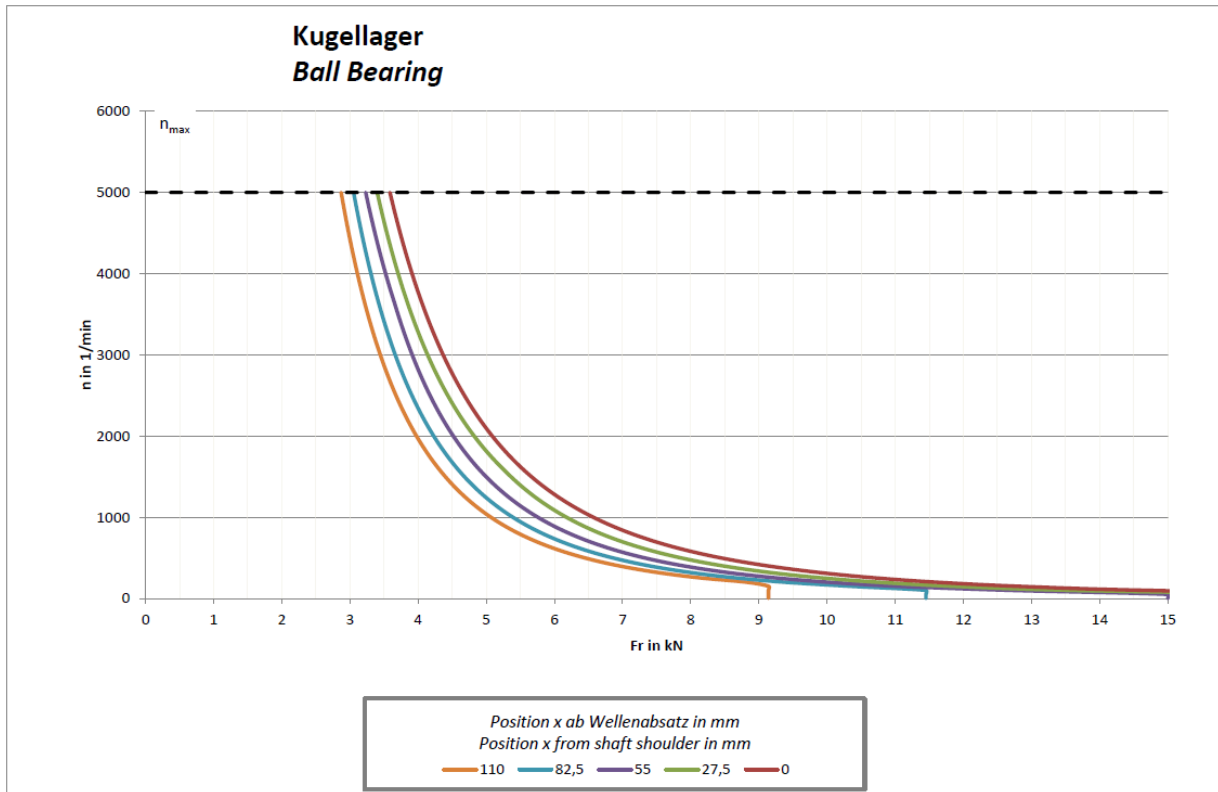


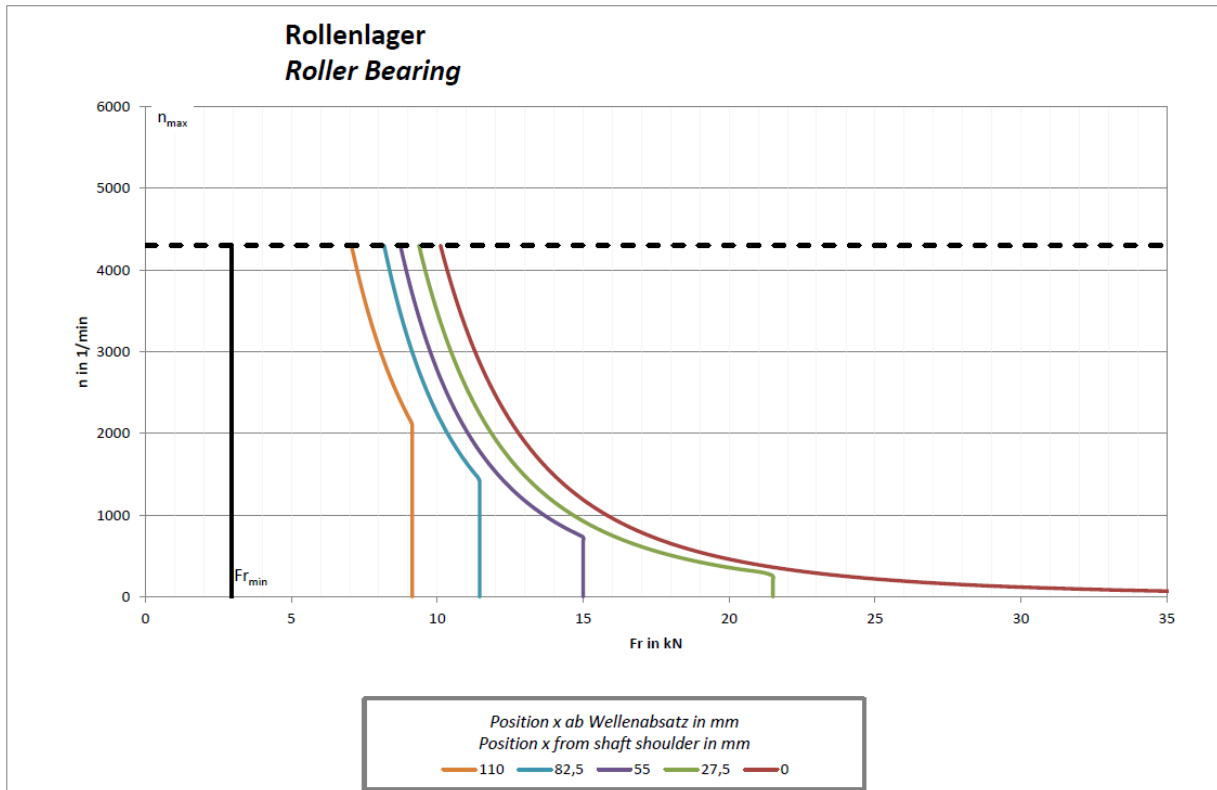


Hinweis: 20.000h Fettgebrauchsdauer bei $n_{\text{mittel}} \leq 1100 \text{ min}^{-1}$

Note: 20,000h grease service life at $n_{\text{effective}} \leq 1100 \text{ rpm}$

2.9.2 DS2-132..W / DS2+132..W

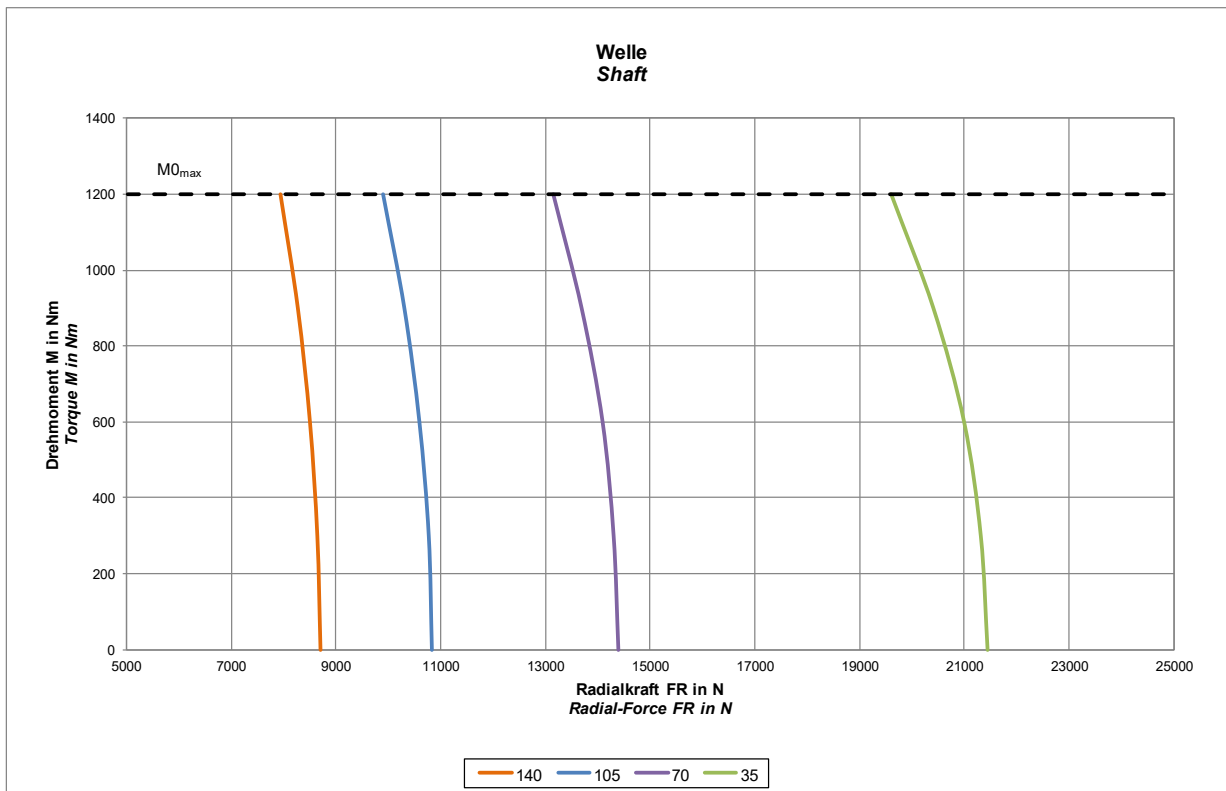
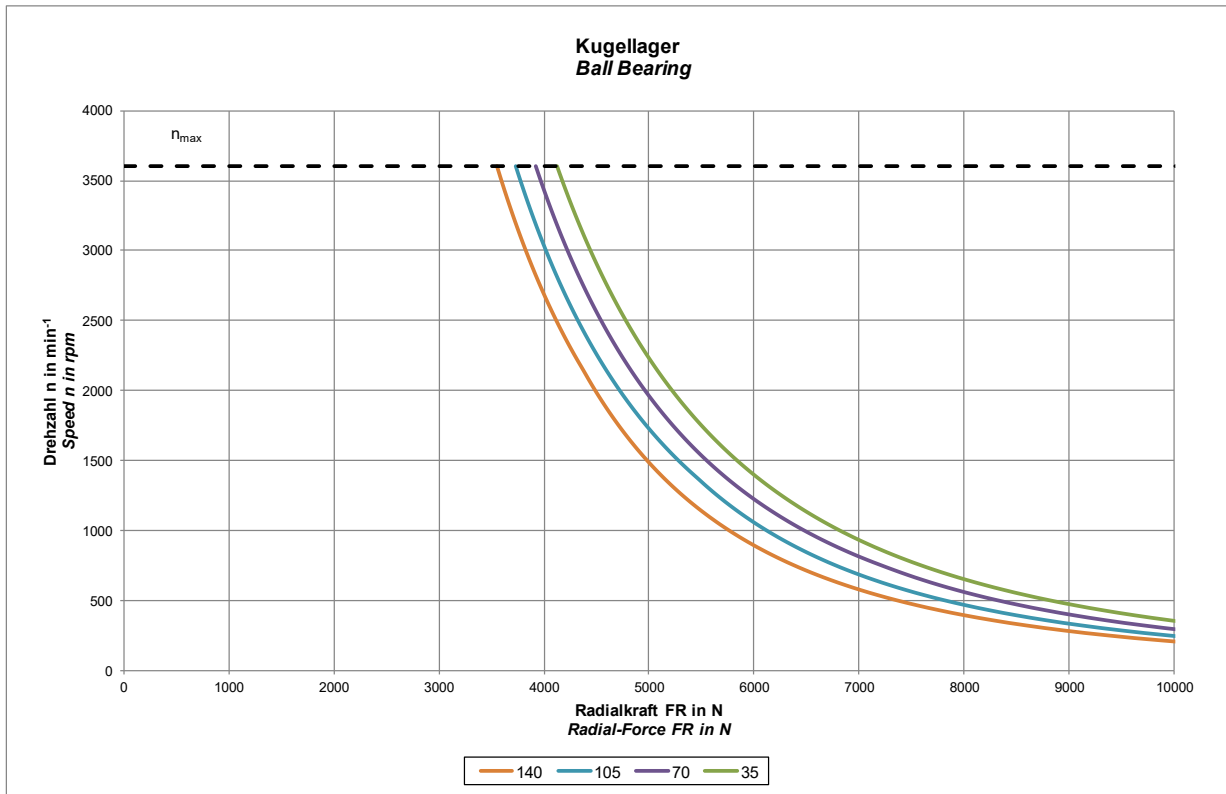


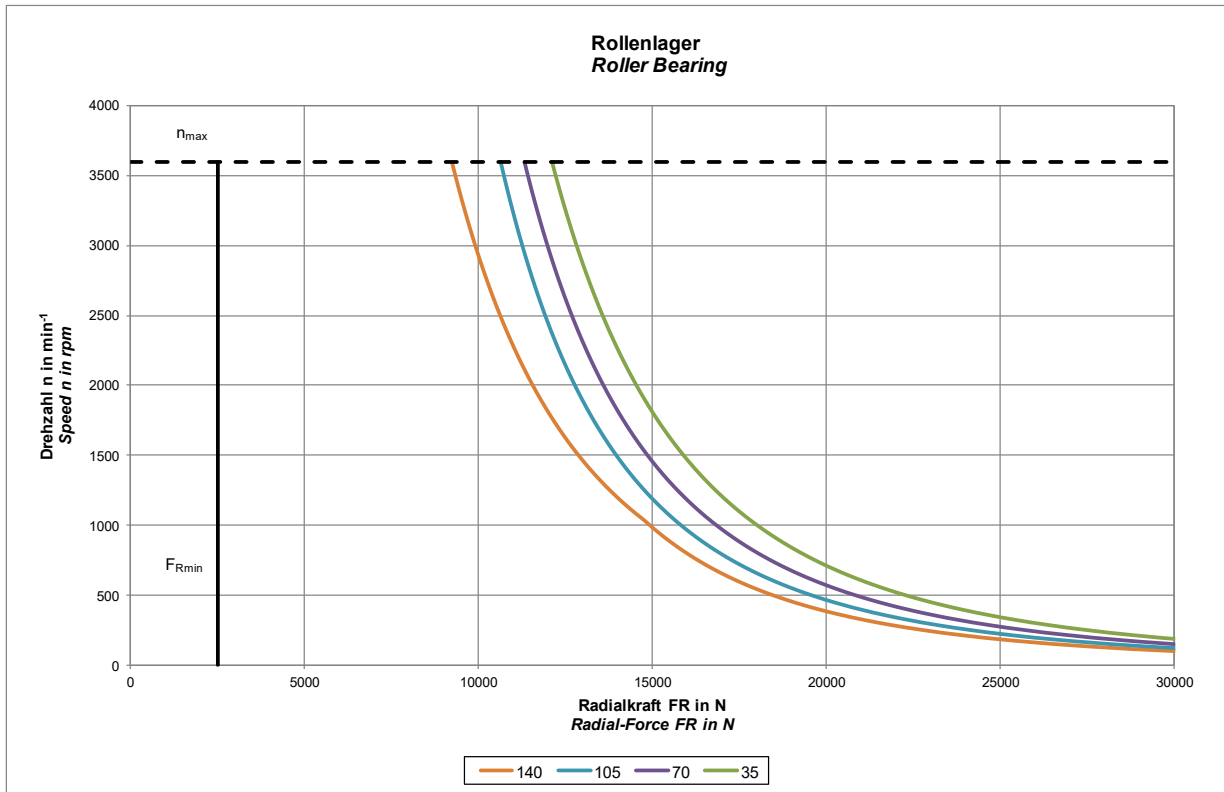


Hinweis: 20.000h Fettgebrauchsdauer bei $n_{\text{mittel}} \leq 1000 \text{ min}^{-1}$

Note: 20,000h grease service life at $n_{\text{effective}} \leq 1000 \text{ rpm}$

2.10 Diagrams DS2[3]-160

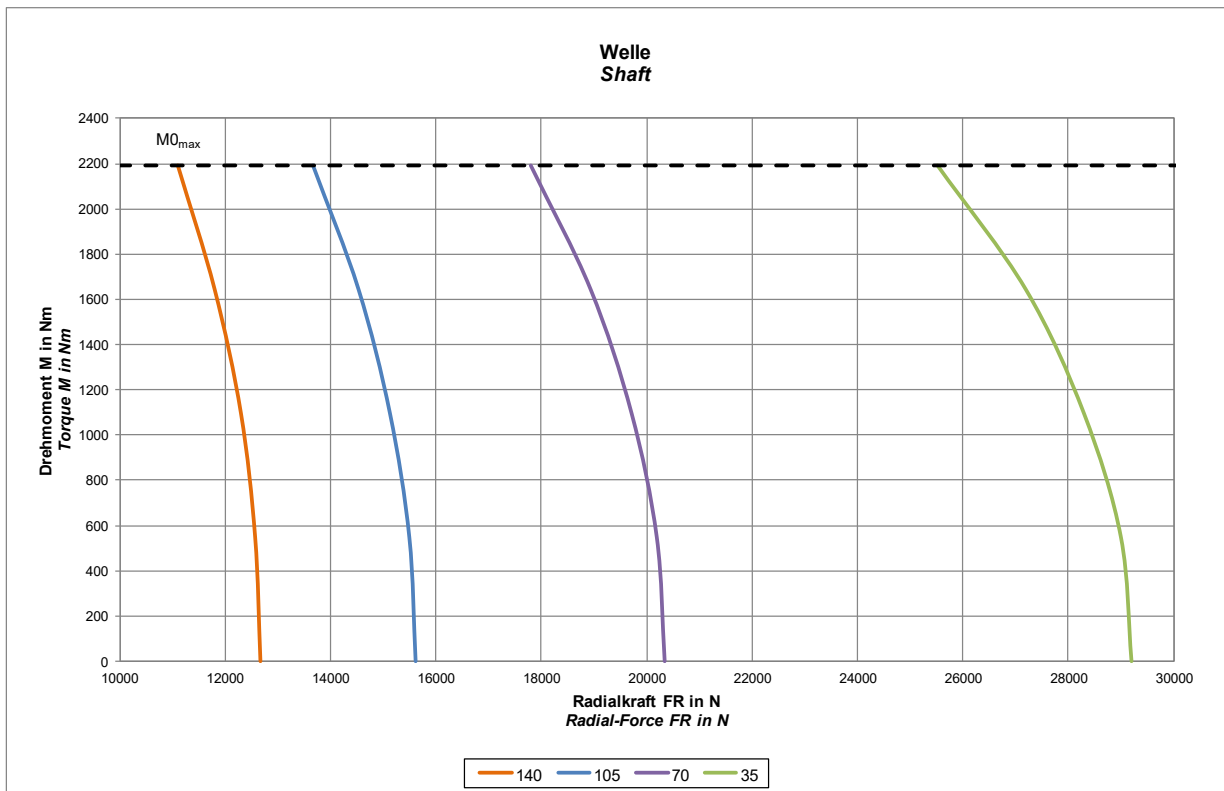
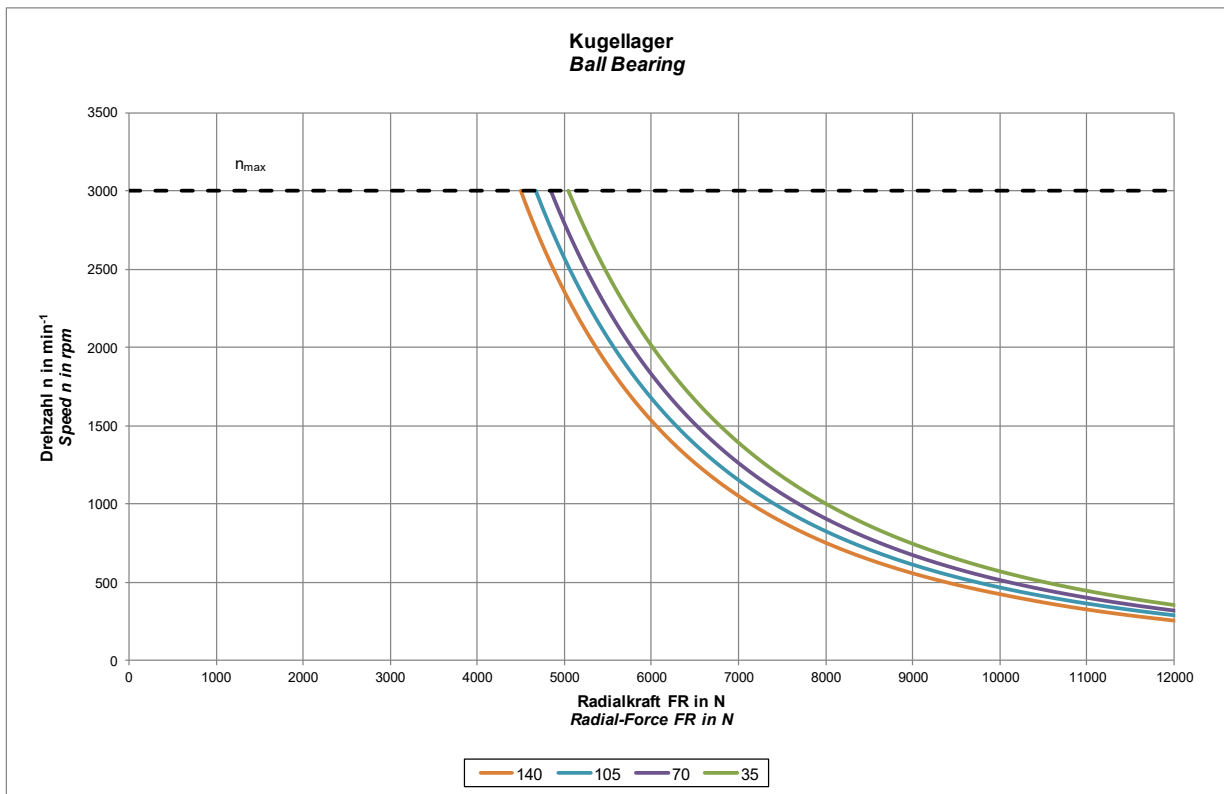


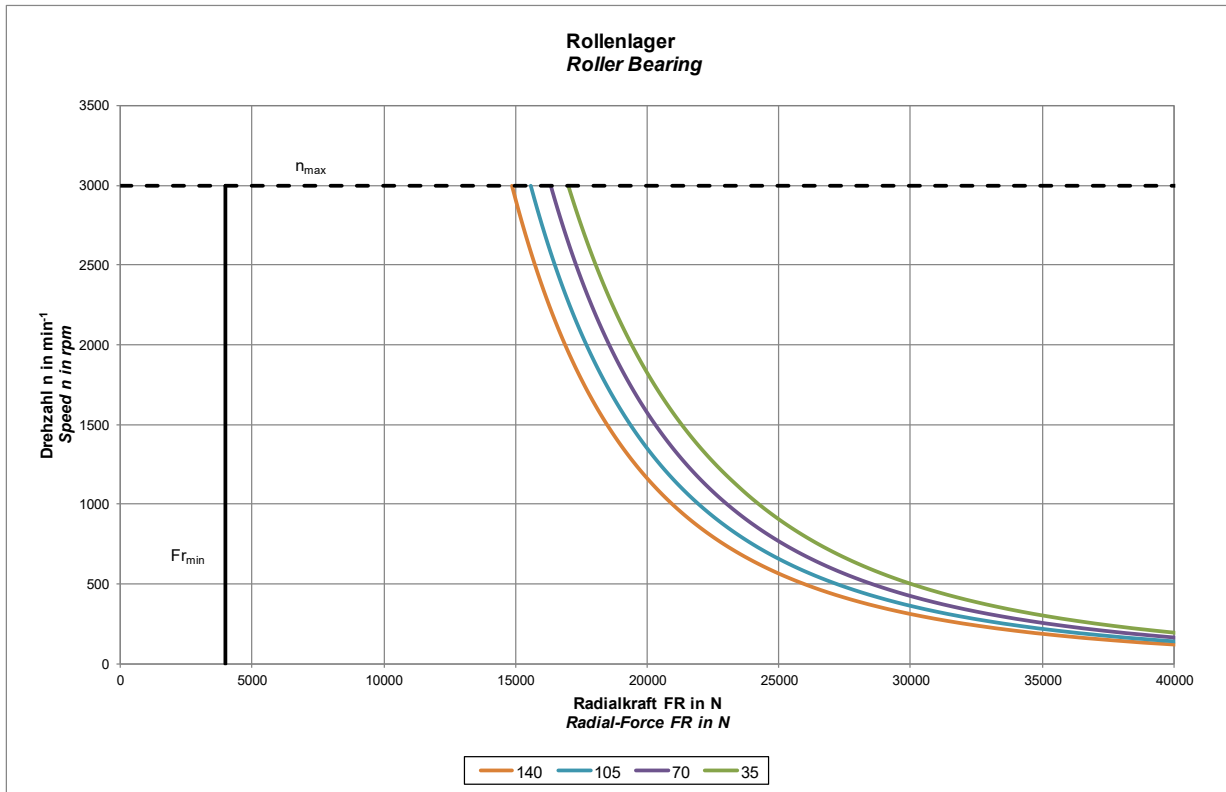


Hinweis: 20.000h Fettgebrauchsdauer bei $n_{\text{mittel}} \leq 900 \text{ min}^{-1}$

Note: 20,000h grease service life at $n_{\text{effective}} \leq 900 \text{ rpm}$

2.11 Diagrams DS2-200





Hinweis: 20.000h Fettgebrauchsdauer bei $n_{\text{mittel}} \leq 800 \text{ min}^{-1}$

Note: 20,000h grease service life at $n_{\text{effective}} \leq 800 \text{ rpm}$

3. Motor components (options)

3.1 Holding brake

Motor	Brake type	Brake torque M_B [Nm]	Input power [W]	Current at 24 VDC [A]	Max. perm. Switching energy [kJ]	Engaging time [s]	Dis-engaging time [s]	Inertia [kgm ²]	Max. perm. speed [min ⁻¹]	Weight [kg]
DS2-100	SB 50	50	96	3,7	10	0,12	0,16	0,0005	4000	5
DS2-100	SB 100	100	106	4,0	15	0,18	0,25	0,0015	3500	9,5
DS2-132	SB 200	200	170	6,5	20	0,225	0,3	0,0040	3000	13
DS2-160 ¹⁾	SB 360	320	190	7,3	30	0,35	0,3	0,0090	3000	29
DS3-160	On request									
DS2-200										

¹⁾ with radial fan on request

For use as a **holding brake** the following must be observed:

- **3 emergency stops** (individual braking operations) per hour are possible if evenly distributed
- Switching times values are valid for switching on the AC side, in a cold state, with basic air gap and holding brake
- Disengaging time - Time until the brake has completely disengaged (brake without torque)
- Engaging time - Time until the brake torque is reached
- All information is valid for installation on a horizontal shaft.
- The supplier must be contacted before vertical installation.
- Requirements other than those indicated can be catered for on request

Brake time / switching energy

It is necessary to check that the brake is suited for this application. For this the switching energy must be determined.

Determination of the braking time [t_B]

t _B	$t_B = \frac{\sum J \cdot \Delta n}{9,55 \cdot (M_B \pm M_L)} + t_0$ in s
∑J	Total moment of inertia in kgm ² = J _{mot} + J _{add} (referred to motor shaft)
J _{mot}	Motor moment of inertia in kgm ²
J _{zus}	Additional moment of inertia in kgm ² (referred to motor shaft)
Δn	Motor speed in rpm
M _B	Brake torque in Nm
M _L	Load torque in Nm (positively calculated if it decelerates, negatively calculated if it accelerates)
t ₀	Time in s from the switching instant to the full extent of the braking torque (response time)
l	Number of cycles per hour

Determining the switching energy [W _R]	Determining the switching capacity [P _R]
$W_R = \frac{\sum J \cdot \Delta n^2}{182,4} \cdot \frac{M_B}{(M_B \pm M_L)}$ in $\frac{\text{joules}}{\text{switching operation}}$	$P_R = \frac{W_R \cdot i}{1000}$ in $\frac{\text{kJ}}{\text{h}}$

W_{Rzul} ≤ value from table

In most cases, t₀ is negligibly small. If this is not the case and a reduction of time t₀ is desired, it can be achieved by interrupting the magnetic circuit on the DC side. However, this measure must be specified prior to the design of the brake motor.

3.1.1 Brake supply

Standard:	Normal voltage 24 V DC Supply with transformer and rectifier
Option:	Normal voltage 104 and 176 V DC Supply using brake supply unit. The brake supply unit must be order separately.

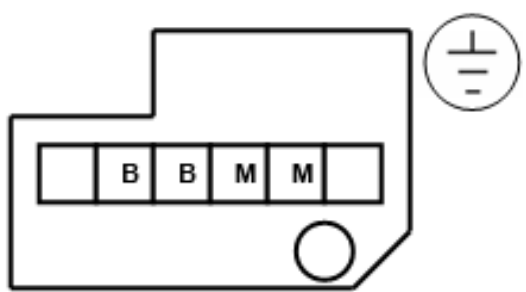
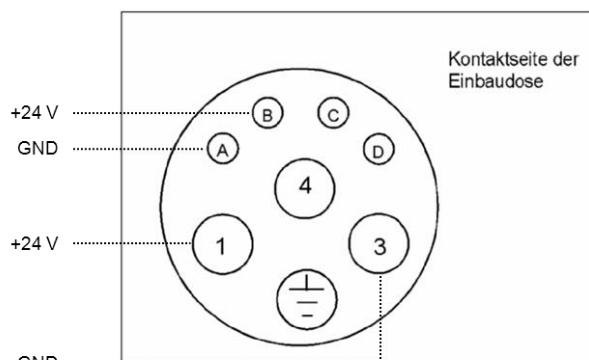
The brakes are equipped with a micro switch (normally closed contact). The silver contacts are coated with a layer of gold, allowing for two operating ranges. The gold layer can be irreversibly burned off if its maximum load capacity is exceeded. In such a case, the contact material "gold layer" can no longer be used.

Electrical data of the switches:

Contact material	Min. load	Ideal range of use		Max. load
Gold coat	0 mA; 0 V up to 3 Mio. cycles	0 mA; 0 V up to 3 Mio. cycles	10 mA; 12 V up to 1 Mio. cycles	Gold coat
Argent	10 mA; 12 V up to 3 Mio. cycles	100 mA; 12 V up to 3Mio. cycles	5 A; 30 V up to 50.000 cycles	Argent

The brakes can be executed optional with hand ventilation and lock.

3.1.2 Brake connection

DS2-100-160 with radial external cooling or liquid cooling	DS2-132-160 with axial external cooling																				
 <p style="margin-top: 10px;">B – brake M – micro switch</p>	<div style="text-align: right; margin-bottom: 10px;">Kontaktseite der Einbaudose</div>  <div style="text-align: right; margin-top: 10px;">B Bremse M Mikroschalter</div> <table border="1" style="margin-top: 10px; width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td>Pin</td> <td>A</td> <td>B</td> <td>C</td> <td>D</td> </tr> <tr> <td>Signal</td> <td>M</td> <td>M</td> <td></td> <td></td> </tr> <tr> <td>Pin</td> <td>1</td> <td></td> <td>3</td> <td>4</td> </tr> <tr> <td>Signal</td> <td>B</td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td>B</td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> </tr> </table>	Pin	A	B	C	D	Signal	M	M			Pin	1		3	4	Signal	B		B	
Pin	A	B	C	D																	
Signal	M	M																			
Pin	1		3	4																	
Signal	B		B																		

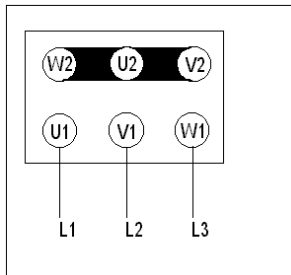
3.2 Fan data

3.2.1 Standard fan motors

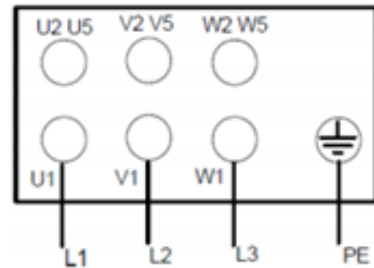
Blower connection for standard fan motors via terminal box

Connection diagram:

FCA 56A-2
FCA 80B-2



FCA 63B-2
FCA 71B-2



U V W power connection

Standard fan motor for radial ventilation – cURus approved

Δ/Y 200-265 V / 345-460V - 50 // 60Hz

Size	Power [kW]	Rated current [A]	Fan motor	Rated input power [kW]	Volume flow rate [m ³ /min]	Stat. pressure [Pa]	Speed [min ⁻¹]	Spec. ratio
100	0,08 // 0,12	0,4 / 0,23 // 0,61 / 0,35	FCA 56A-2	0,12	4,8	438	2880	1

200-400 V // 230-460V - 50 // 60Hz - IE3

132	0,25 // 0,25	1,3 / 0,65 // 1,1 / 0,55	FCA 63B-2	0,28	6,4	824	2825	1
160	0,55 // 0,55	2,7 / 1,35 // 2,4 / 1,2	FCA 71B-2	0,61	14,6	970	2825	1

Δ/Y 265-345V / 460-600V - 50 // 60Hz

100	0,08 // 0,12	0,3 / 0,18 // 0,46 / 0,26	FCA 56A-2	0,12	4,8	438	2880	1
-----	--------------	---------------------------	-----------	------	-----	-----	------	---

Δ/Y 230/400V / 265/460V - 50 // 60Hz- IE3

200	1,10 // 1,32	4,02 / 2,31 // 4,12 / 2,38	FCA 80B-2	0,54	14,5	1048	2962	1
-----	--------------	----------------------------	-----------	------	------	------	------	---

The nominal currents are max. values.

Standard fan motor for axial ventilation – cURus approved

Δ/Y 200-265 V / 345-460V - 50 // 60Hz

Size	Power [kW]	Rated current [A]	Fan motor	Rated input power [kW]	Volume flow rate [m ³ /min]	Stat. pressure [Pa]	Speed [min ⁻¹]	Spec. ratio
132	0,08 // 0,12	0,4 / 0,23 // 0,61 / 0,35	FCA 56A-2	0,16	5,15	514	2800	1

200-400 V // 230-460V - 50 // 60Hz - IE3

160	0,25 // 0,25	1,3 / 0,65 // 1,1 / 0,55	FCA 63B-2	0,28	6,4	824	2825	1
200	0,55 // 0,55	2,7 / 1,35 // 2,4 / 1,2	FCA 71B-2	0,61	14,6	970	2825	1

Δ/Y 265-345V / 460-600V - 50 // 60Hz

132	0,08 // 0,12	0,3 / 0,18 // 0,46 / 0,26	FCA 56A-2	0,16	5,15	514	2800	1
-----	--------------	---------------------------	-----------	------	------	-----	------	---

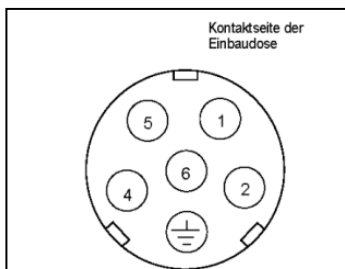
The nominal currents are max. values.

3.2.2 Integrated axial blowers

Ventilation connections for integrated axial blowers

Connection diagram:

Y 400V // 480V - 50 // 60Hz



Pin	1	2	4	5
Signal	V	W		U
Pin	6	⊥		
Signal		⊥		

Size	Power [kW]	Rated current [A]	Approbation
132	0,15 // 0,24	0,26 // 0,33	UL + CE
160	0,47 // 0,54	0,7 // 0,75	CE

The nominal currents are max. values.

3.2.3 Filter

Flat filter							
<p>Filter zur B-Seite Ansicht von A-Seite</p>		Dimensions for fan mounting at top or on the side					
		Size	Fan type	A	ØB	D	E
<p>Filter zur B-Seite Ansicht von A-Seite</p>		100	BFB 398	197	187	177	77
		132	BFB 519	264	210	214	105
		160	BFB 635	279	240	237	124
		200	BFB 752	343	284	271	124

Note:

For IP54 motors, coarse filter mats are preferably used, while for IP23 motors, fine filter mats are applied. If there are no space constraints, the rectangular filter is preferable to the flat filter. This is primarily due to the filter dimensions, which allow for less frequent maintenance of the rectangular filter compared to the flat filter

3.2.4 Fan connection

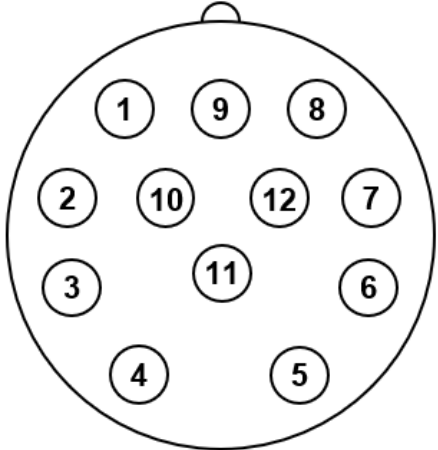
Connection dimensions for fan motors:

	Terminal box dimensions			Cable inlet	Terminal
	Length [mm]	Width [mm]	Height [mm]		
FCA 56A-2	85	85	42	M16x1.5	M4
FCA 63B-2	101	101	42	M16x1.5	M4
FCA 71B-2	101	101	42	M16x1.5	M4
FCA 80B-2	101	101	42	M16x1.5	M4
FCA 100LA-2	101	101	42	M16x1.5	M4

3.3 Encoder

3.3.1 Resolver

	Resolver
BM type code indication	A
Pole pair count	1
Transmission ratio	$0,5 \pm 0,05$
Frequency	5 kHz
Nominal input voltage	7 Vrms
Effective input power at no-load speed	112 mW
Current consumption at no-load speed	50 mA
Max. output voltage at no-load speed	$3,5 \text{ V} \pm 10\%$
Voltage constant	61 mV/°
Phase shift	$0^\circ \pm 3^\circ$
Zero voltage	30 mV
Angle error in relation to $(\Delta\varphi_{\max} + \Delta\varphi_{\min})/2$	$\pm 6'$
Shock according to DIN EN 60068-2-27 (11ms)	$\leq 101 \text{ g}$
Vibration according to DIN EN 60068-2-6 (55-2000 Hz)	$\leq 50 \text{ g}$

Resolver connection	Pin	Signal
	1	cos -
	2	-
	3	-
	4	-
	5	sin -
	6	sin +
	7	-
	8	cos +
	9	-
	10	ref +
	11	-
	12	ref -

View of contact side of the socket

Note:

Use only at low demands on the true running characteristics of the motor. The technical data was specified by the encoder manufacturer, and we assume no liability for its correctness.



3.3.2 Resolver Safety

	Resolver Safety
BM type code indication	M
Pole pair count	1
Transmission ratio	0,5 ± 0,05
Frequency	5 kHz
Safety integrity level	SIL 3 (IEC 61508) with b maXX5000
Performance Level	PL e (EN ISO 13849) with b maxx5000
Maximum angular speed	100.000 rad/s ²
Active input power in no-load operation	7 Vrms
Rated input voltage	112 mW
Current consumption in no-load	50 mA
max. output voltage in no-load	3,5 V ± 10%
Voltage constant	61 mV/°
Phase shift	0° ± 3°
Zero voltage	30 mV
Angular error regarding $(\Delta\varphi_{\max} + \Delta\varphi_{\min})/2$	± 6'
Shock according to DIN EN 60068-2-27 (11ms)	≤ 101 g
Vibration according to DIN EN 60068-2-6 (55-2000 Hz)	≤ 50 g

Resolver connection	Pin	Signal
	1	cos -
	2	-
	3	-
	4	-
	5	sin -
	6	sin +
	7	-
	8	cos +
	9	-
	10	ref +
	11	-
	12	ref -

View of contact side of the socket

Note:

Use at low requirements to the concentricity properties of the motor, only. The technical data was specified by the encoder manufacturer, and we assume no liability for its correctness. The configuration options of the safety encoders with different motor variants are available on request.

Limitation:

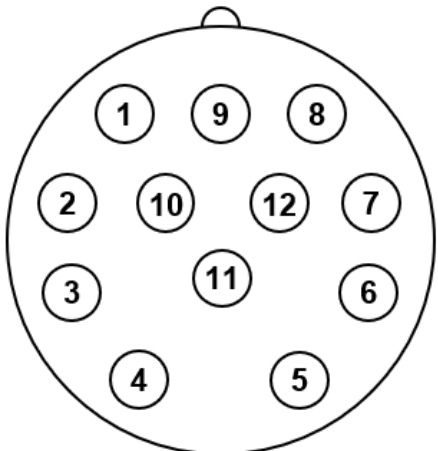
The combination of roller bearings, axial ventilation, and/or brake attachment is only available upon request.

3.3.3 SEK/SEL37(SICK)

	SEK37	SEL37
BM type code indication	t	u
Number of sine-, cosine periods per revolution	16	
Measuring step at interpolation of the sine-, cosine periods such as with 12 bits	20"	

Three-phase synchronous motor DS2[3]-100-200

Number of absolute completed revolutions	1	4.096
Code type for the absolute value	binary	
Error limits at the evaluation of the sine-, cosine periods; integral non-linearity	+/- 288"	
Non-linearity within a sine-, cosine period, differential non-linearity at nominal position +/- 0.1mm	+/- 144"	
Operating speed up to which the absolute position can be made	6.000 min ⁻¹	
Maximum operating speed	12.000 min ⁻¹	
Output signal	serial RS 485, asynchronous, half duplex	
Operating voltage range	7-12 V	
max. operating current without load	50 mA	
Shock according to DIN EN 60068-2-27(10ms)	100 g	
Vibration according to DIN EN 60068-2-6(10-2000 Hz)	50 g	

SEK/SEL37 Connection	Pin	Signal	Assignment option PT1000 (R1/R2) at encoder socket
	1	cos -	cos -
	2	+ 485	+ 485
	3	-	R1
	4	-	R2
	5	sin +	sin +
	6	sin -	sin -
	7	- 485	- 485
	8	cos +	cos +
	9	-	-
	10	GND	GND
	11	-	-
	12	+ U	+ U

View of contact side of the socket

Note:

SEK/SEL37 - with mechanical adaption	Mechanical offset 0° (identical to SEK/SEL52)
--------------------------------------	---

This encoder is a component susceptible to ESD. The technical data was specified by the encoder manufacturer, and we assume no liability for its correctness.

Limitation:

Only for motor with frame size 100 and 132 available.

3.3.4 SRS/SRM50 (SICK)

	SRS50	SRM50
BM type code indication	D	E
Number of sine, cosine periods per revolution	1.024	
Number of increments per revolution	32.768	
Number of absolute resolved revolutions	1	4.096
Code type for the absolute value	binary	
Output frequency of the sine and cosine signals	0-200 kHz	
Error limits at the evaluation of the sine-, cosine periods; integral non-linearity	+/- 45"	
Non-linearity within a sine-, cosine period, differential non-linearity at nominal position +/- 0.1mm	+/- 7"	
Operating speed up to which the absolute position can be made	6.000 min ⁻¹	
Maximum operating speed	12.000 min ⁻¹	
Output signals; 2 x 90° offset sinusoidal signals	1 V _{SS}	
Output signal	serial RS 485, asynchronous, half duplex	
Operating voltage range	7-12 V	
max. operating current without load	80 mA	
Shock according to DIN EN 60068-2-27 (10ms)	100 g	
Vibration according to EN 60068-2-6 (10-2000 Hz)	20 g	

SRS/SRM50 connection	Pin	Signal
	1	cos -
	2	+ 485
	3	-
	4	-
	5	sin +
	6	sin -
	7	- 485
	8	cos +
	9	-
	10	GND
	11	-
	12	+ U

View of contact side of the socket

Note:

This encoder is a component susceptible to ESD. The technical data was specified by the encoder manufacturer, and we assume no liability for its correctness.



3.3.5 SRS/SRM50-S (SICK)

	SRS50-S	SRM50-S
BM type code indication	N	Q
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 the absolutely completed revolutions	1	4.096
Code type of the absolute value	binary	
Output frequency of the sine-, cosine signals	0-200 kHz	
Error limits at the evaluation of the sine-, cosine signals, integral non-linearity	+/- 45"	
Non-linearity within a sine-, cosine period, differential non-linearity	+/- 7"	
Operating speed up to which the absolute position can be made	6.000 min ⁻¹	
Maximum operating speed	12.000 min ⁻¹	
Output signals; 2x90° shifted sine-shaped signals	1 V _{SS}	
Output signal	serial RS 485, asynchronous, half duplex	
Operating voltage range	7-12 V	
max. operating current without load	80 mA	
Shock according to DIN EN 60068-2-27 (10ms)	100 g	
Vibration according to DIN EN 60068-2-6 (10-2000 Hz)	20 g	

SRS/SRM50-S connection	Pin	Signal
	1	cos -
	2	+ 485
	3	-
	4	-
	5	sin +
	6	sin -
	7	- 485
	8	cos +
	9	-
	10	GND
	11	-
	12	+ U

View of contact side of the socket

Note:

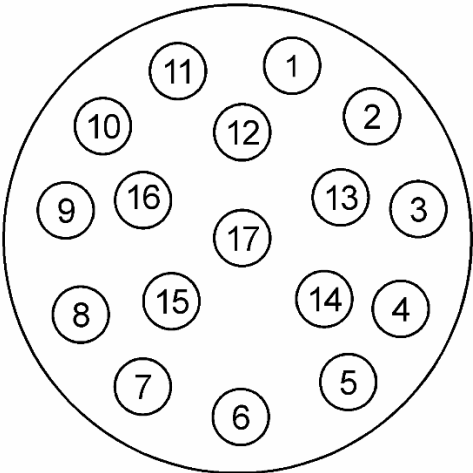
This encoder is a component susceptible to ESD. The technical data was specified by the encoder manufacturer, and we assume no liability for its correctness. The configuration options for the safety encoders with various motor variants can be found in the product configurator.

Limitation:

The combination of roller bearings, axial ventilation, and/or brake attachment is only available upon request.

3.3.6 ECN1313/EQN1325 (Heidenhain)

	ECN1313	EQN1325
BM type code indication	F	G
Number of sine and cosine periods per revolution	2.048	
System accuracy	± 20"	
Number of absolute completed revolutions	1	4.096 (12 bit)
Code type for the absolute value	EnDat 2.1	
Sampling limit frequency or limit frequency	0-200 kHz	
Position values/revolution	8.192 (13 bit)	
Maximum speed at which the absolute position can be defined	12.000 min ⁻¹	
Maximum operating speed	12.000 min ⁻¹	
Operating voltage range	3,6-14 V	
max. operating current without load	≤ 160 mA	
Shock 6ms according to DIN EN 60068-2-27 (6ms)	≤ 204 g	
Vibration according to DIN EN 60068-2-6 (55-2000 Hz)	≤ 31 g	

ECN1313/EQN1325 connection	Pin	Signal
	1	U _p
	2	-
	3	-
	4	0V
	5	-
	6	-
	7	U _p
	8	Clock
	9	Clock inv.
	10	0V
	11	-
	12	B +
	13	B -
	14	Data
	15	A +
	16	A -
	17	Data inv.

View of contact side of the socket

Note:

This encoder is a component susceptible to ESD. The technical data was specified by the encoder manufacturer, and we assume no liability for its correctness.

3.3.7 ECI1319/EQI1331 (Heidenhain)

	ECI1319	EQI1331
BM type code indication	Y	X
Number of lines	-	
System accuracy	± 65"	
Number of absolute completed revolutions	1	4.096 (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	15.000 min ⁻¹	
Maximum operating speed	15.000 min ⁻¹	12.000 min ⁻¹
Operating voltage range	3,6...14 V	
max. operating current without load	95 mA	
Shock according to DIN EN 60068-2-27 (6ms)	≤ 203 g	
Vibration according to DIN EN 60068-2-6 (55-2000 Hz)	≤ 40 g	

ECI1319/EQI1331 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 contact side of the socket

Note:

This encoder is a component susceptible to ESD. The technical data was specified by the encoder manufacturer, and we assume no liability for its correctness.



3.3.8 ECI1319-S/EQI1331-S (Heidenhain)

	ECI1319-S	EQI1331-S
BM type code indication	p	q
Safety integrity level	SIL 2 nach EN 61508	
Category	3 (EN ISO 13849)	
Performance Level	PL d (EN ISO 13849)	
Maximum angular acceleration	100.000 rad/s ²	
Number of sine-, cosine periods per revolution	-	
System accuracy	± 65"	
Number of absolute completed revolutions	1	4.096 (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	15.000 min ⁻¹	
Maximum operating speed	15.000 min ⁻¹	12.000 min ⁻¹
Operating voltage range	3,6...14 V	
max. operating current without load	95 mA	
Shock according to DIN EN 60068-2-27 (10ms)	≤ 203 g	
Vibration according to DIN EN 60068-2-6 (55-2000 Hz)	≤ 40 g	

ECI1319-S/EQI1331-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 contact side of the socket

Note:

This encoder is a component susceptible to ESD. The technical data was specified by the encoder manufacturer, and we assume no liability for its correctness. The configuration options for the safety encoders with various motor variants can be found in the product configurator.

Limitation:

The combination of roller bearings, axial ventilation, and/or brake attachment is only available upon request.

3.3.9 ECN1325/EQN1337 (Heidenhain)

	ECN1325	EQN1337
BM type code indication	H	I
Number of sine and cosine periods per revolution	2.048	
System accuracy	± 20"	
Number of absolute completed revolutions	1	4.096 (12 bit)
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 min ⁻¹	
Maximum operating speed	12.000 min ⁻¹	
Operating voltage range	3,6...14 V	
max. operating current without load	≤ 160 mA	
Shock 6ms according to DIN EN 60068-2-27(6ms)	≤ 203 g	
Vibration according to DIN EN 60068-2-6(55-2000 Hz)	≤ 30 g	

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 of contact side of the socket

Note:

This encoder is a component susceptible to ESD. The technical data was specified by the encoder manufacturer, and we assume no liability for its correctness.



3.3.10 ECN1325-S/EQN1337-S (Heidenhain)

	ECN1325-S	EQN1337-S
BM type code indication	5	6
Safety integrity level	SIL 2 acc. to EN 61508	
Category	3 (EN ISO 13849)	
Performance level	PL d (EN ISO 13849)	
Maximum angular speed	50.000 rad/s ²	
Number of sine and cosine periods per revolution	2.048	
System accuracy	± 20"	
Number of absolute completed revolutions	1	4.096 (12 bit)
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 min ⁻¹	
Maximum operating speed	12.000 min ⁻¹	
Operating voltage range	3,6...14 V	
max. operating current without load	≤ 160 mA	
Shock 6ms according to DIN EN 60068-2-27(6ms)	≤ 203 g	
Vibration according to DIN EN 60068-2-6(55-2000 Hz)	≤ 30 g	

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 contact side of the socket

Note:

This encoder is a component susceptible to ESD. The technical data was specified by the encoder manufacturer, and we assume no liability for its correctness. The configuration options for the safety encoders with various motor variants can be found in the product configurator.

Limitation:

The combination of roller bearings, axial ventilation, and/or brake attachment is only available upon request.

3.4 Encoder cable 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 draggable cable is suitable for mobile applications such as drag chains, for example. Unlike non-draggable 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-draggable for resolver/ SinCos Hyperface®-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 - draggable for resolver/ SinCos Hyperface®-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-draggable 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 - draggable 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 - draggable 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

	Draggable	Non-draggable
Limit temperature	on the surface	on the surface
Static use/minimal movement	- 40 °C bis + 80 °C	- 30 °C bis + 80 °C
Permanent movement	- 30 °C bis + 80 °C	- 5 °C bis + 70 °C

Operating temperature of encoder cable EnDat® 2.2

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

Routing of cable on motor

The cables must not touch the surface of the motor.

3.4.3 Order information for encoder cable

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

Not draggable, prefabricated		Draggable, prefabricated		
Cable 5 x (2x0.14mm ²) + 2 x 0.5 mm ² with plug connector		Cable 5 x (2x0.14mm ²) + 2 x 0.5 mm ² with plug connector		
Length [m]	Art. No.	Length [m]	Art. No.	Art. No. (Speedtec)
1	243601	3	246658	448944
2	211338	4	243379	448945
3	219333	5	239540	448948
4	231166	6	242954	448946
5	209879	8	239541	448949
6	220197	10	239542	448956
7	216455	15	239543	448962
8	220429	20	239544	448967
10	210052	25	239545	448970
15	215716	30	239546	448971
20	218568	35	239547	448973
25	218569	40	240520	448976
30	217094	45	240521	448978
35	216444	50	240522	448980
40	217095	55	244033	448981
45	217567	60	245484	448982
50	217568			
55	217569			
60	217570			
70	232088			

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

Not draggable, prefabricated		Draggable, prefabricated		
Cable 5 x (2x0.14mm ²) + 2 x 0.5 mm ² with plug connector		Cable 5 x (2x0.14mm ²) + 2 x 0.5 mm ² with plug connector		
Length [m]	Art. No.	Length [m]	Art. No.	Art. No. (Speedtec)
2	383152	2	393889	448816
3	383923	3	369864	448817
5	393885	5	394014	448818
7	389445	7	389807	448819
8	380138	8	393890	448820
9	389446	9	389808	448821
10	393886	10	393891	448822
15	388505	15	393892	448823
20	388418	17	371494	448824
25	393887	20	393893	448825
30	393888	25	393894	448826
35	387958	30	380358	448827
40	382006	35	391216	448828
50	388419	40	382005	448830
70	384473	50	378022	448832
90	387391			

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

Draggable, prefabricated		
cable 1x4x0.14 + 4x0.34 PUR Ø 6mm with plug connector		
<u>Length [m]</u>	<u>Art. No.</u>	<u>Art. No. (Speedtec)</u>
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 cable 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 – draggable for resolver

- Li9YC, 1x(2 x 0,25) + Li9Y, 2 x (2x0,25) + Li9YC11Y, 1 x (2 x 0,34), copper strand, twisted pairs
- PUR sheet, 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), $r > 10 \times D$ (flexible use)

Technical description – draggable for SinCos Hiperface®-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 sheet, 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), $r > 10 \times D$ (flexible use)

Technical description – draggable 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 sheet, 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), $r > 10 \times D$ (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: round metal 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 bis + 80 °C
Permanent movement	- 20 °C bis + 60 °C

Routing of cable on motor

The cables must not touch the surface of the motor.

3.5.3 Order information for encoder cable

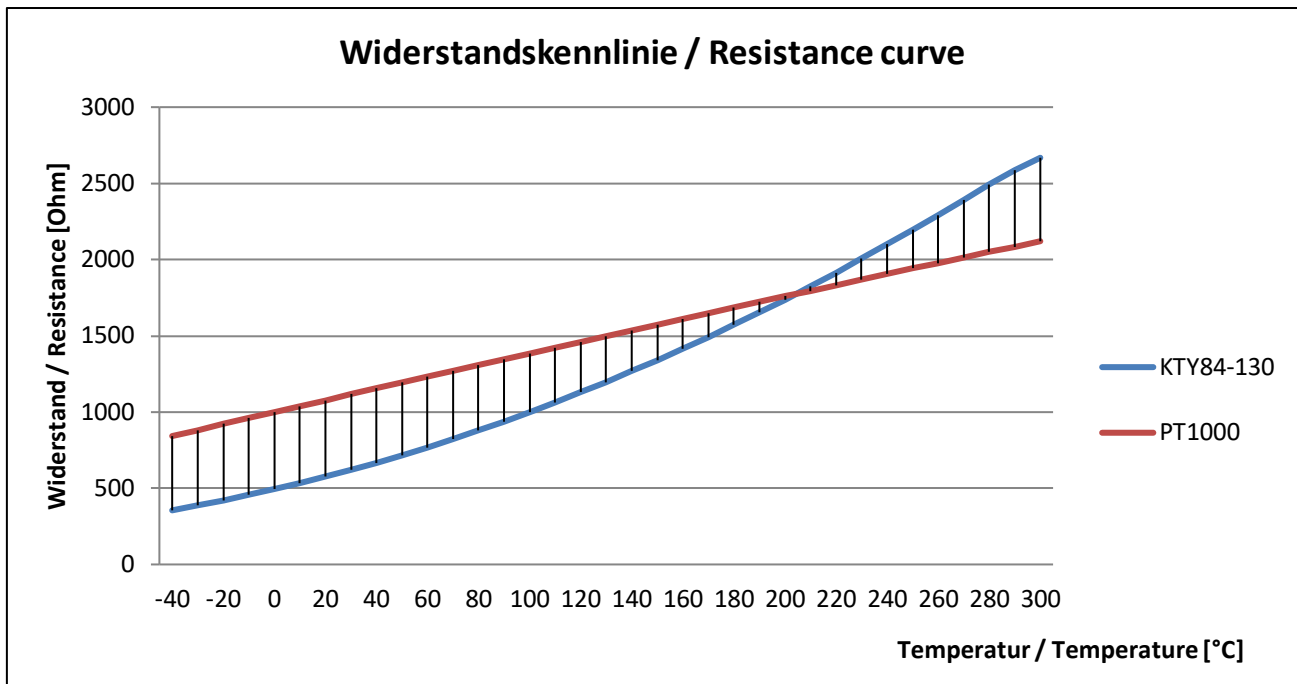
Encoder cable – prefabricated with plug

For resolver			For SinCos Hiperface®-interface		
Length [m]	Art. No.	Art. No. (Speedtec)	Length [m]	Art. No.	Art. No. (Speedtec)
1	429914	448746	1	429958	448761
2	429915	448747	2	429959	448762
3	429916	448748	3	429960	448763
5	429917	448749	5	429961	448764
7	429918	448750	7	429962	448765
10	429919	448751	10	429963	448766
15	429920	448752	15	429964	448767
20	429921	448753	20	429965	448768
25	429922	448754	25	429966	448769
30	429923	448755	30	429967	448770
35	429924	448756	35	429968	448772
40	429925	448757	40	429969	448773
50	429926	448758	50	429970	448774
75	429927	448759	75	429971	448775

For SinCos- and TTL-incremental encoder			For SinCos EnDat® 2.1-interface		
Length [m]	Art. No.	Art. No. (Speedtec)	Length [m]	Art. No.	Art. No. (Speedtec)
1	430015	448777	1	429986	448796
2	430016	448778	2	429987	448797
3	430017	448779	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

3.6 Temperature sensor

The motors are equipped as standard with a temperature sensor in the stator winding. This allows for evaluation in the motor controller. The connection is made via the terminal box.



The PT1000 temperature sensor continuously monitors the motor temperature. When the sensor is supplied with a measuring current of 2 mA, the resistance characteristic shown above applies.

Additional PTC thermistors or thermal switches can be installed upon request.

4. Dimension drawings

4.1 Dimension drawings DS2-100

<p>DS2-100..23R</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>L</th> <th>L1</th> <th>L2</th> <th>L3</th> <th>L4</th> <th>L5</th> </tr> </thead> <tbody> <tr> <td>DS2-100KO</td> <td>100</td> <td>393</td> <td>424</td> <td>268</td> <td>161</td> <td>485</td> </tr> <tr> <td>DS2-100MO</td> <td>150</td> <td>443</td> <td>474</td> <td>318</td> <td>211</td> <td>535</td> </tr> <tr> <td>DS2-100LO</td> <td>200</td> <td>493</td> <td>524</td> <td>368</td> <td>261</td> <td>585</td> </tr> <tr> <td>DS2-100BO</td> <td>250</td> <td>543</td> <td>574</td> <td>418</td> <td>311</td> <td>635</td> </tr> </tbody> </table>		L	L1	L2	L3	L4	L5	DS2-100KO	100	393	424	268	161	485	DS2-100MO	150	443	474	318	211	535	DS2-100LO	200	493	524	368	261	585	DS2-100BO	250	543	574	418	311	635	<p>IM B5 / IM B35 / IM B3</p>
	L	L1	L2	L3	L4	L5																														
DS2-100KO	100	393	424	268	161	485																														
DS2-100MO	150	443	474	318	211	535																														
DS2-100LO	200	493	524	368	261	585																														
DS2-100BO	250	543	574	418	311	635																														
<p>Hinweis: bei Bremsenanbau L1; L2 +98mm</p>	<p>Note: with brake L1; L2 +98mm</p>																																			

<p>DS2-100..54R</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>L</th> <th>L1</th> <th>L2</th> <th>L3</th> <th>L4*</th> <th>L5</th> <th>L6</th> </tr> </thead> <tbody> <tr> <td>DS2-100KO</td> <td>100</td> <td>393</td> <td>424</td> <td>273</td> <td>323</td> <td>160</td> <td>484</td> </tr> <tr> <td>DS2-100MO</td> <td>150</td> <td>443</td> <td>474</td> <td>323</td> <td>373</td> <td>210</td> <td>534</td> </tr> <tr> <td>DS2-100LO</td> <td>200</td> <td>493</td> <td>524</td> <td>373</td> <td>423</td> <td>260</td> <td>584</td> </tr> <tr> <td>DS2-100BO</td> <td>250</td> <td>543</td> <td>574</td> <td>423</td> <td>473</td> <td>310</td> <td>634</td> </tr> </tbody> </table>		L	L1	L2	L3	L4*	L5	L6	DS2-100KO	100	393	424	273	323	160	484	DS2-100MO	150	443	474	323	373	210	534	DS2-100LO	200	493	524	373	423	260	584	DS2-100BO	250	543	574	423	473	310	634	<p>IM B5 / IM B3</p>
	L	L1	L2	L3	L4*	L5	L6																																		
DS2-100KO	100	393	424	273	323	160	484																																		
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DS2-100LO	200	493	524	373	423	260	584																																		
DS2-100BO	250	543	574	423	473	310	634																																		
<p>Hinweis: bei Bremsenanbau L1; L2 +98mm</p>	<p>Note: with brake L1; L2 +98mm</p>																																								

4.2 Dimension drawings DS2-132

DS2-132..23R IM B5 / IM B35 / IM B3

	L	L1	L2	L3	L4	L5
DS2-132KO	134	525	556	380	187	603
DS2-132MO	184	575	606	410	237	653
DS2-132LO	234	625	656	460	287	703
DS2-132BO	284	675	706	510	337	753

Hinweis: bei Bremsenanbau L1; L2 +108mm **Note:** with brake L1; L2 +108mm

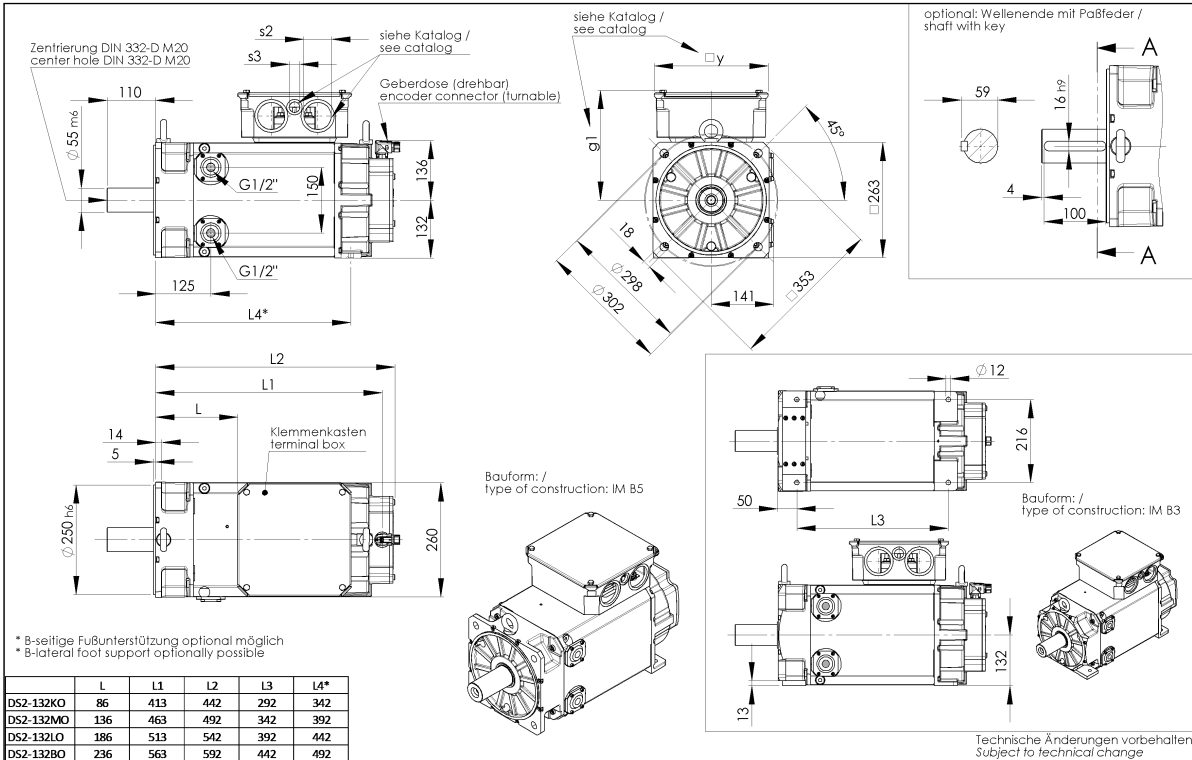
DS2-132..54R IM B5 / IM B35 / IM B3

	L	L1	L2	L3	L4*	L5	L6
DS2-132KO	134	525	556	365	428	194	610
DS2-132MO	184	575	606	415	478	244	660
DS2-132LO	234	625	656	465	528	294	710
DS2-132BO	284	675	706	515	578	344	760

Hinweis: bei Bremsenanbau L1; L2 +108mm **Note:** with brake L1; L2 +108mm

DS2-132..54W / DS2+132..54W

IM B5 / IM B3



Hinweis: bei Bremsenanbau L1; L2 +140mm

Note: with brake L1; L2 +140mm

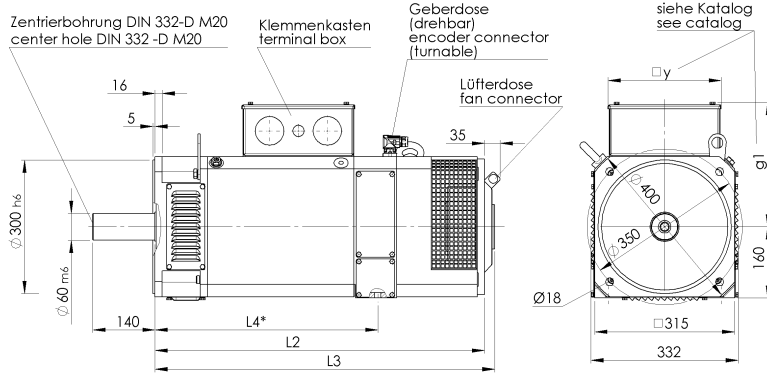
4.3 Dimension drawings DS2-160 / DS3-160

<p>DS2-160..23R</p> <p style="font-size: small;">* B-seitige Fußunterstützung optional möglich * B-lateral foot support optionally possible</p> <table border="1" style="font-size: x-small; border-collapse: collapse; width: 100%;"> <thead> <tr> <th>Motorbauformen motor size</th> <th>L1</th> <th>L2</th> <th>L4 (B5)</th> <th>L4 (B3)</th> <th>L5</th> <th>L6</th> </tr> </thead> <tbody> <tr> <td>DS2-160 KO</td> <td>400</td> <td>696</td> <td>452</td> <td>388</td> <td>788</td> <td>319</td> </tr> <tr> <td>DS2-160 MO</td> <td>450</td> <td>746</td> <td>502</td> <td>438</td> <td>838</td> <td>369</td> </tr> <tr> <td>DS2-160 LO</td> <td>500</td> <td>796</td> <td>552</td> <td>488</td> <td>888</td> <td>419</td> </tr> <tr> <td>DS2-160 BO</td> <td>550</td> <td>846</td> <td>602</td> <td>538</td> <td>938</td> <td>469</td> </tr> </tbody> </table>	Motorbauformen motor size	L1	L2	L4 (B5)	L4 (B3)	L5	L6	DS2-160 KO	400	696	452	388	788	319	DS2-160 MO	450	746	502	438	838	369	DS2-160 LO	500	796	552	488	888	419	DS2-160 BO	550	846	602	538	938	469	<p style="text-align: center;">IM B5 / IM B3</p> <p style="font-size: x-small; text-align: right;">Technische Änderungen vorbehalten Subject to technical change</p>
Motorbauformen motor size	L1	L2	L4 (B5)	L4 (B3)	L5	L6																														
DS2-160 KO	400	696	452	388	788	319																														
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DS2-160 BO	550	846	602	538	938	469																														
<p>Hinweis: Bremsenanbau auf Anfrage</p>	<p>Note: brake mounting on request</p>																																			

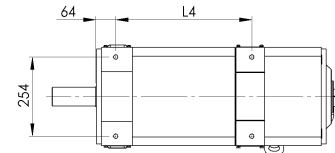
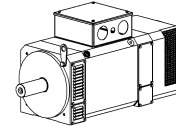
<p>DS2-160..23A</p> <p style="font-size: small;">* B-seitige Fußunterstützung optional möglich * B-lateral foot support optionally possible</p> <table border="1" style="font-size: x-small; border-collapse: collapse; width: 100%;"> <thead> <tr> <th>Motorbauformen motor size</th> <th>L1</th> <th>L2</th> <th>L3</th> <th>L4 (B5)</th> <th>L4 (B3)</th> </tr> </thead> <tbody> <tr> <td>DS2-160 KO</td> <td>400</td> <td>692</td> <td>876</td> <td>452</td> <td>388</td> </tr> <tr> <td>DS2-160 MO</td> <td>450</td> <td>742</td> <td>926</td> <td>502</td> <td>438</td> </tr> <tr> <td>DS2-160 LO</td> <td>500</td> <td>792</td> <td>976</td> <td>552</td> <td>488</td> </tr> <tr> <td>DS2-160 BO</td> <td>550</td> <td>842</td> <td>1026</td> <td>602</td> <td>538</td> </tr> </tbody> </table>	Motorbauformen motor size	L1	L2	L3	L4 (B5)	L4 (B3)	DS2-160 KO	400	692	876	452	388	DS2-160 MO	450	742	926	502	438	DS2-160 LO	500	792	976	552	488	DS2-160 BO	550	842	1026	602	538	<p style="text-align: center;">IM B5 / IM B3</p> <p style="font-size: x-small; text-align: right;">Technische Änderungen vorbehalten Subject to technical change</p>
Motorbauformen motor size	L1	L2	L3	L4 (B5)	L4 (B3)																										
DS2-160 KO	400	692	876	452	388																										
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DS2-160 BO	550	842	1026	602	538																										
<p>Hinweis: bei Bremsenanbau L2; L3 +175mm</p>	<p>Note: with brake L2; L3 +175mm</p>																														

DS2-160..231

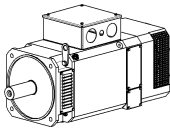
IM B5 / IM B3



Bauform IM B3
Type of construction IM B3



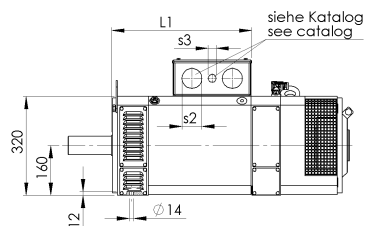
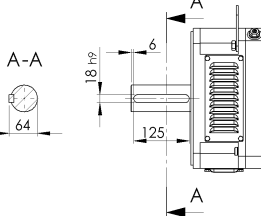
Bauform IM B5
Type of construction IM B5



* B-seitige Fußunterstützung optional möglich
* B-lateral foot support optionally possible

Motorbauformen motor size	L1	L2	L3	L4 (B5)	L4 (B3)
DS2-160 KO	400	692	715	452	388
DS2-160 MO	450	742	765	502	438
DS2-160 LO	500	792	815	552	488
DS2-160 BO	550	842	865	602	538

Wellenende optional mit Paßfeder
optional shaft with key



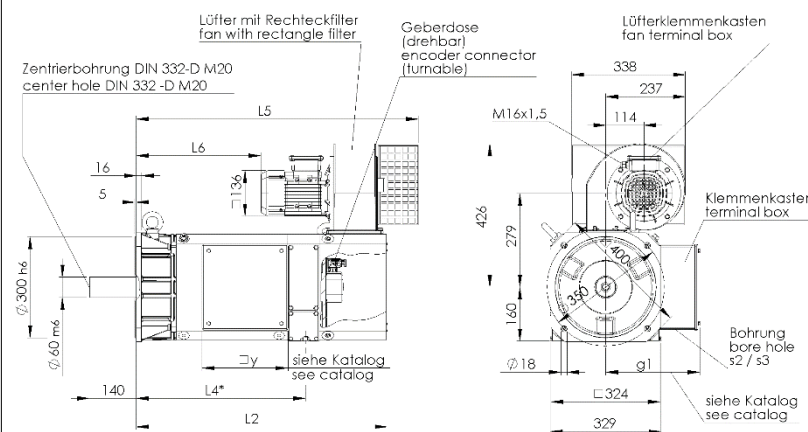
Technische Änderungen vorbehalten
Subject to technical change

Hinweis: bei Bremsenanbau L2; L3 +175mm

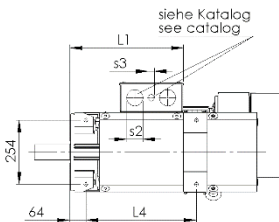
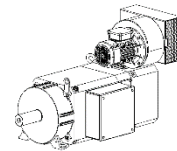
Note: with brake L2; L3 +175mm

DS2-160..54R

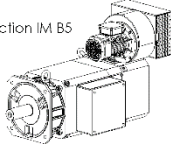
IM B5 / IM B3



Bauform IM B3
Type of construction IM B3



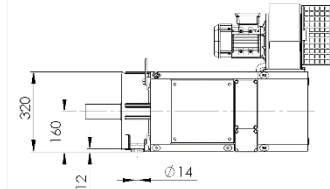
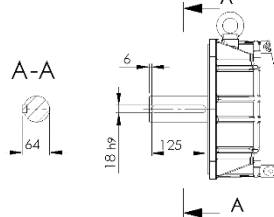
Bauform IM B5
Type of construction IM B5



* B-seitige Fußunterstützung optional möglich
* B-lateral foot support optionally possible

Motorbauformen motor size	L1	L2	L4 (B5)	L4 (B3)	L5	L6
DS2-160 KO	400	696	452	388	788	319
DS2-160 MO	450	746	502	438	838	369
DS2-160 LO	500	796	552	488	888	419
DS2-160 BO	550	846	602	538	938	469

Wellenende optional mit Paßfeder
optional shaft with key



Technische Änderungen vorbehalten
Subject to technical change

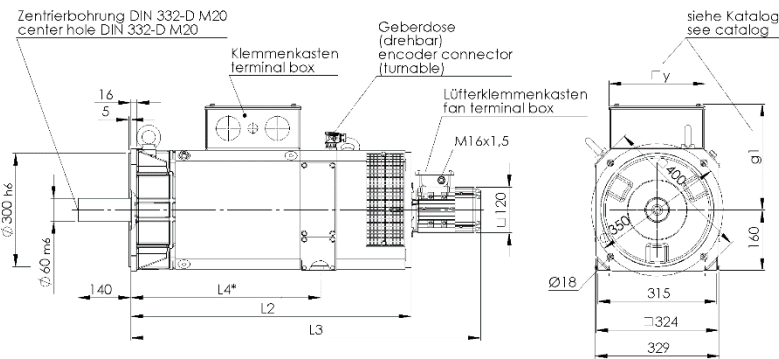
Hinweis: Bremsenanbau auf Anfrage

Note: brake mounting on request

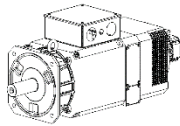
Three-phase synchronous motor DS2[3]-100-200

DS2-160..54A

IM B5 / IM B3



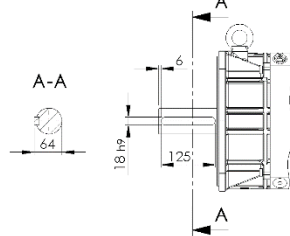
Bauform IM B5
Type of construction IM B5



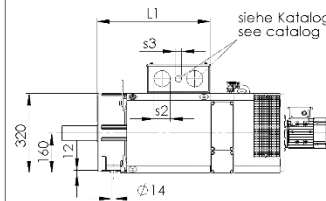
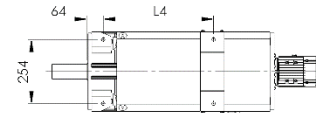
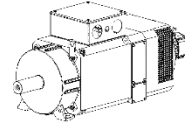
- * 8-seitige Fußunterstützung optional möglich
- * 8-lateral foot support optionally possible

Motorbauformen motor size	L1	L2	L3	L4 (B5)	L4 (B3)
DS2-160 KO	400	692	876	452	388
DS2-160 MO	450	742	926	502	438
DS2-160 LO	500	792	976	552	488
DS2-160 BO	550	842	1026	602	538

Wellenende optional mit Paßfeder
optional shaft with key



Bauform IM B3
Type of construction IM B3



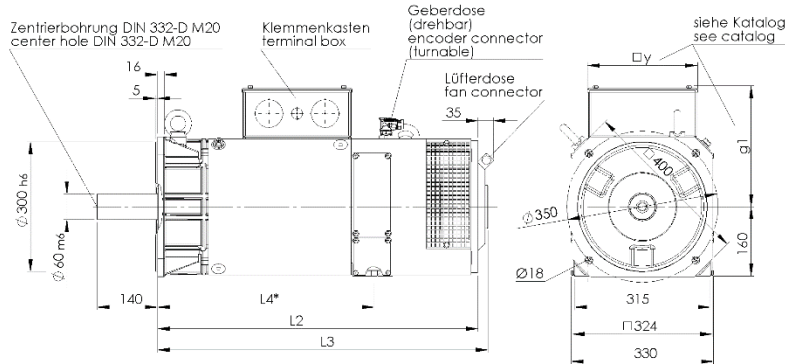
Technische Änderungen vorbehalten
Subject to technical change

Hinweis: bei Bremsenanbau L2; L3 +175mm

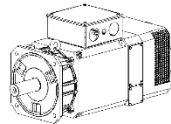
Note: with brake L2; L3 +175mm

DS2-160..54I

IM B5 / IM B3



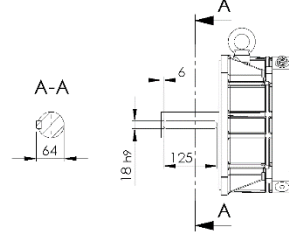
Bauform IM B5
Type of construction IM B5



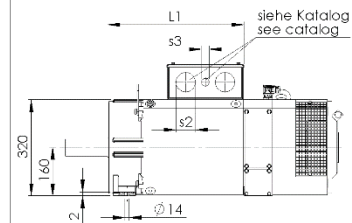
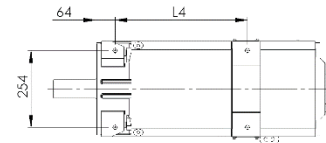
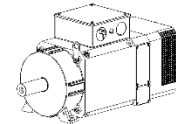
- * 8-seitige Fußunterstützung optional möglich
- * 8-lateral foot support optionally possible

Motorbauformen motor size	L1	L2	L3	L4 (B5)	L4 (B3)
DS2-160 KO	400	692	715	452	388
DS2-160 MO	450	742	765	502	438
DS2-160 LO	500	792	815	552	488
DS2-160 BO	550	842	865	602	538

Wellenende optional mit Paßfeder
optional shaft with key



Bauform IM B3
Type of construction IM B3



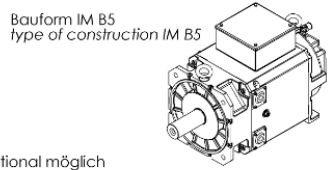
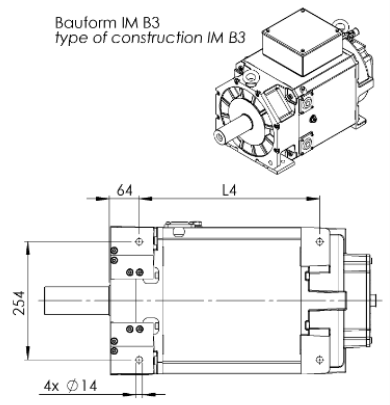
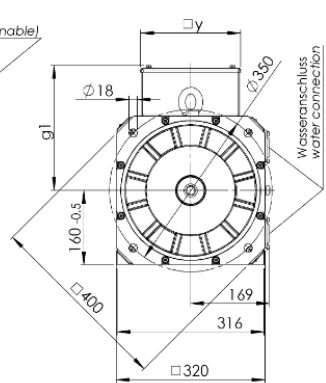
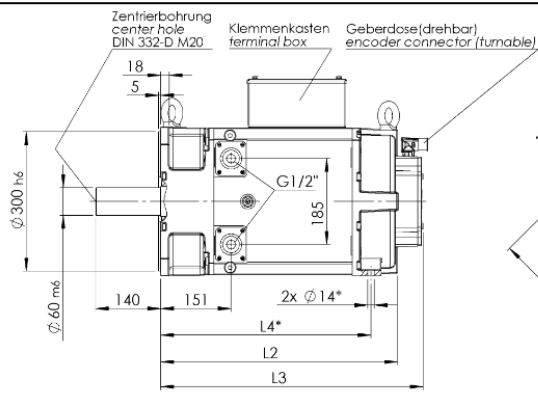
Technische Änderungen vorbehalten
Subject to technical change

Hinweis: bei Bremsenanbau L2; L3 +175mm

Note: with brake L2; L3 +175mm

DS3-160..54W

IM B5 / IM B3

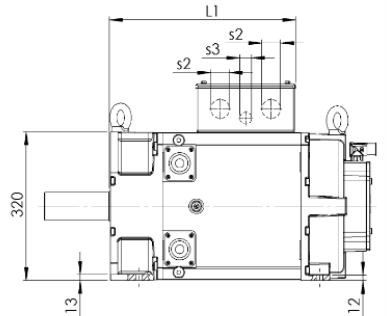
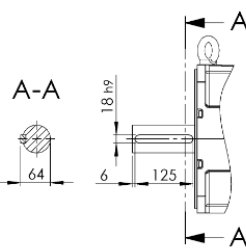


gezeichnet Baulänge KO
drawn overall length KO

* B-seitige Fußunterstützung optional möglich
* N-side foot support optionally possible

Baulänge overall length	L1	L2	L3	L4* (B5)	L4 (B3)
DS3-160 KO	400	510	564	452	388
DS3-160 MO	450	560	614	502	438
DS3-160 LO	500	610	664	552	488
DS3-160 BO	550	660	714	602	538

Wellenende optional mit Passfeder
optional with shaft key

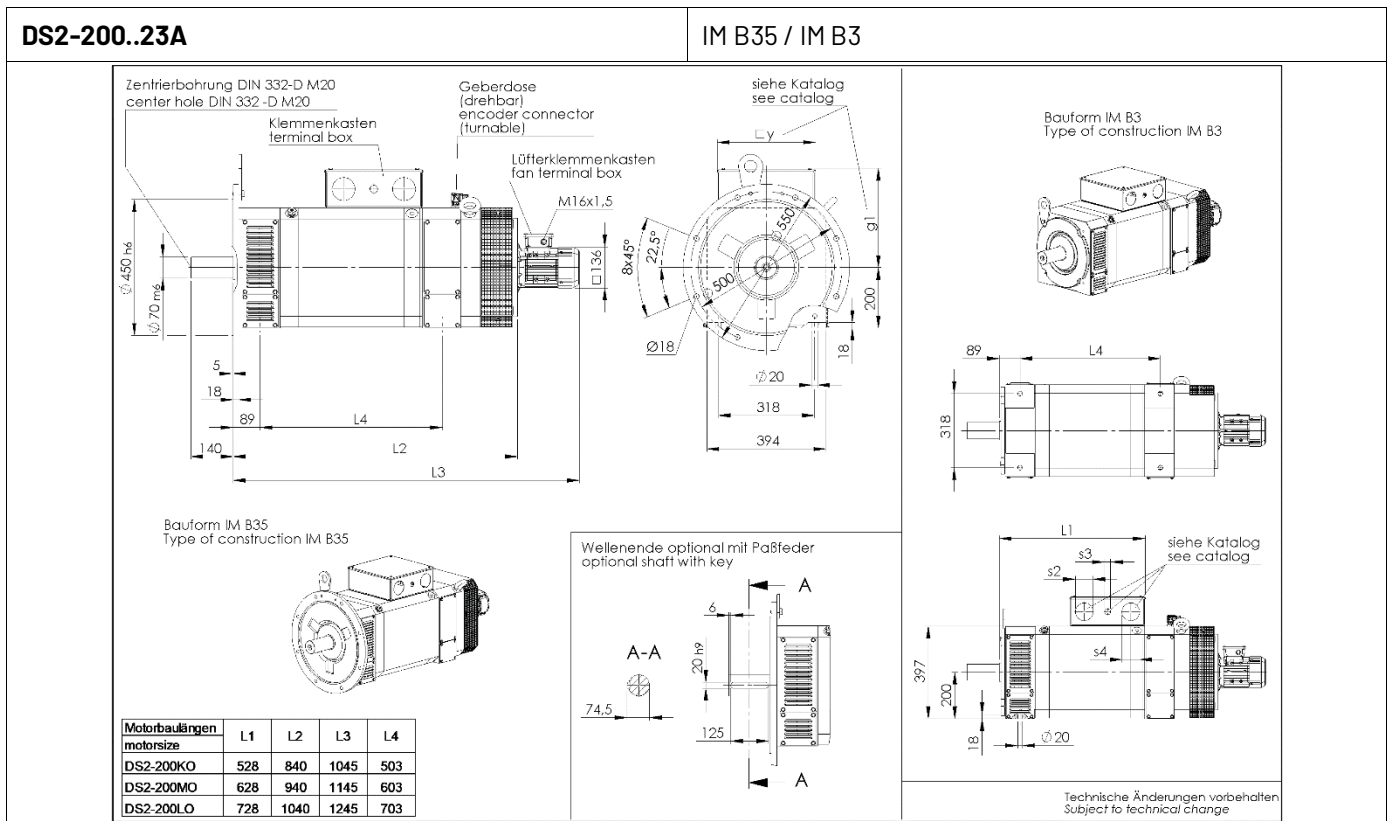
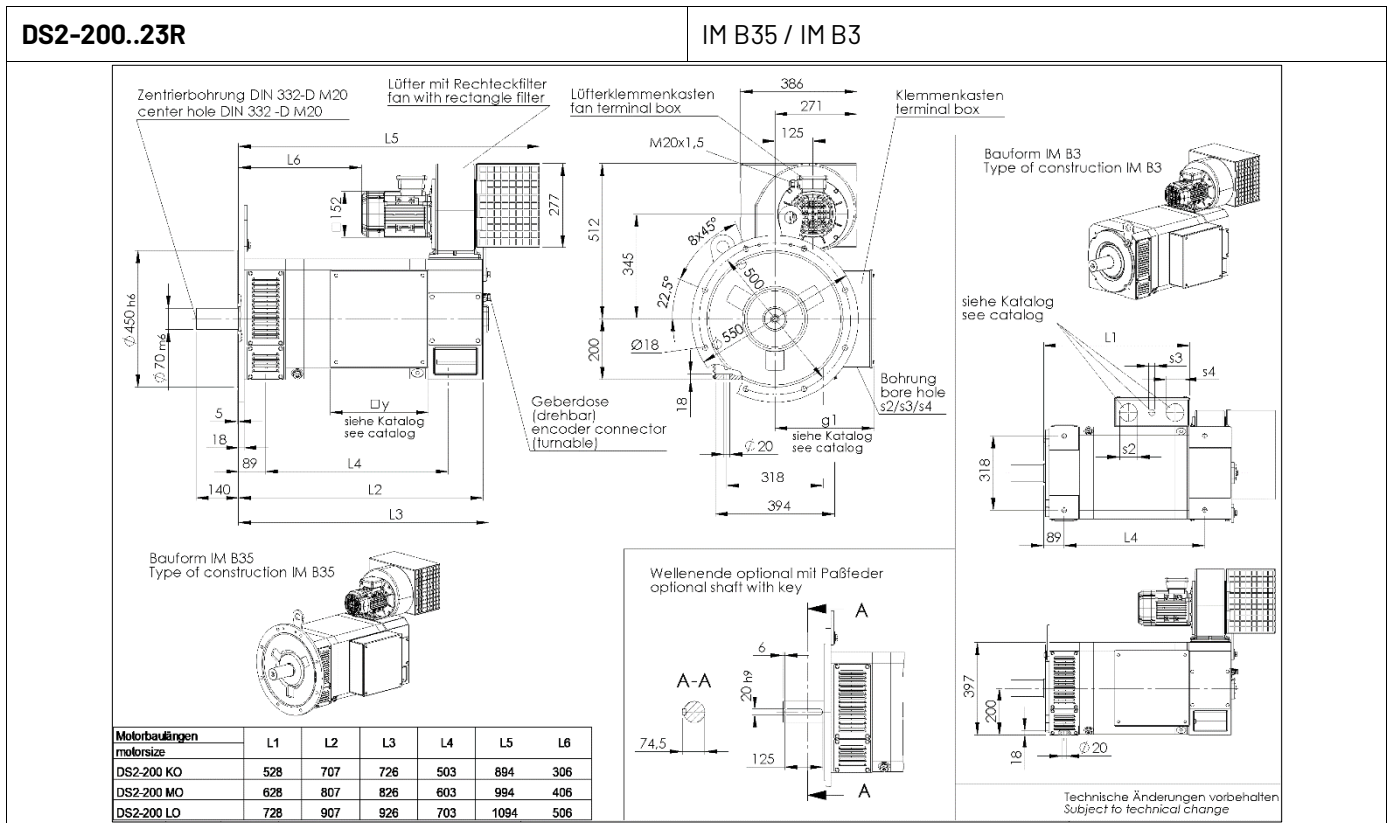


Technische Änderungen vorbehalten
Subject to technical change

Hinweis:

Note:

4.4 Dimension drawings DS2-200



DS2-200..54W

IM B5 / IM B35

Zentrierbohrung DIN 332-D M20
center hole DIN 332 -D M20

199 L1
175
5 18
140 L2
L3
L4*

Geberdose (drehbar)
encoder connector (turnable)

siehe Katalog
see catalog

Klemmenkasten
terminal box

Ablauf G1/4"
water out G1/4"

8x45°
72.5°
550
Ø 18
*Ø 20
394
470
200
18

Zulauf G1/4"
water in G1/4"

Bauform IM B5
Type of construction IM B5

89 L4
318

siehe Katalog
see catalog

s3
s4
397
18
Ø 20

Wellenende optional mit Paßfeder
optional shaft with key

A-A
6
20 m9
125
74,5

* B-seitige Fußunterstützung optional möglich
* B-lateral foot support optionally possible

Motorbauängen motorsize	L1	L2	L3	L4 (B5)	L4 (B35)
DS2-200 KO	528	675	726	592	503
DS2-200 MO	628	775	826	692	603
DS2-200 LO	728	875	926	792	703

Technische Änderungen vorbehalten
Subject to technical change

DS2-200..54W

IM B3

89 L4
318

L1
s2
s3
199
175
140 L2
L3

siehe Katalog
see catalog

Geberdose (drehbar)
encoder connector (turnable)

Zentrierbohrung DIN 332-D M20
center hole DIN 332 -D M20

Klemmenkasten
terminal box

Zulauf G1/4"
water in G1/4"

siehe Katalog
see catalog

Ablauf G1/4"
water out G1/4"

397
200
18
Ø 20
318
394
470

Wellenende optional mit Paßfeder
optional shaft with key

A-A
6
20 m9
125
74,5

Bauform IM B3
Type of construction IM B3

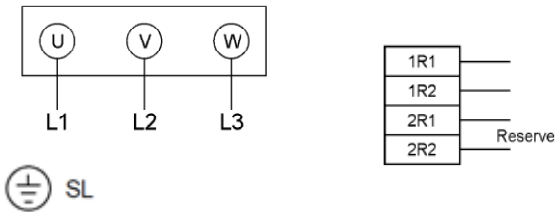
Motorbauängen motorsize	L1	L2	L3	L4
DS2-200 KO	528	675	726	503
DS2-200 MO	628	775	826	603
DS2-200 LO	728	875	926	703

Technische Änderungen vorbehalten
Subject to technical change

5. Device connection

5.1 Main connection – terminal box

5.1.1 Terminal designation

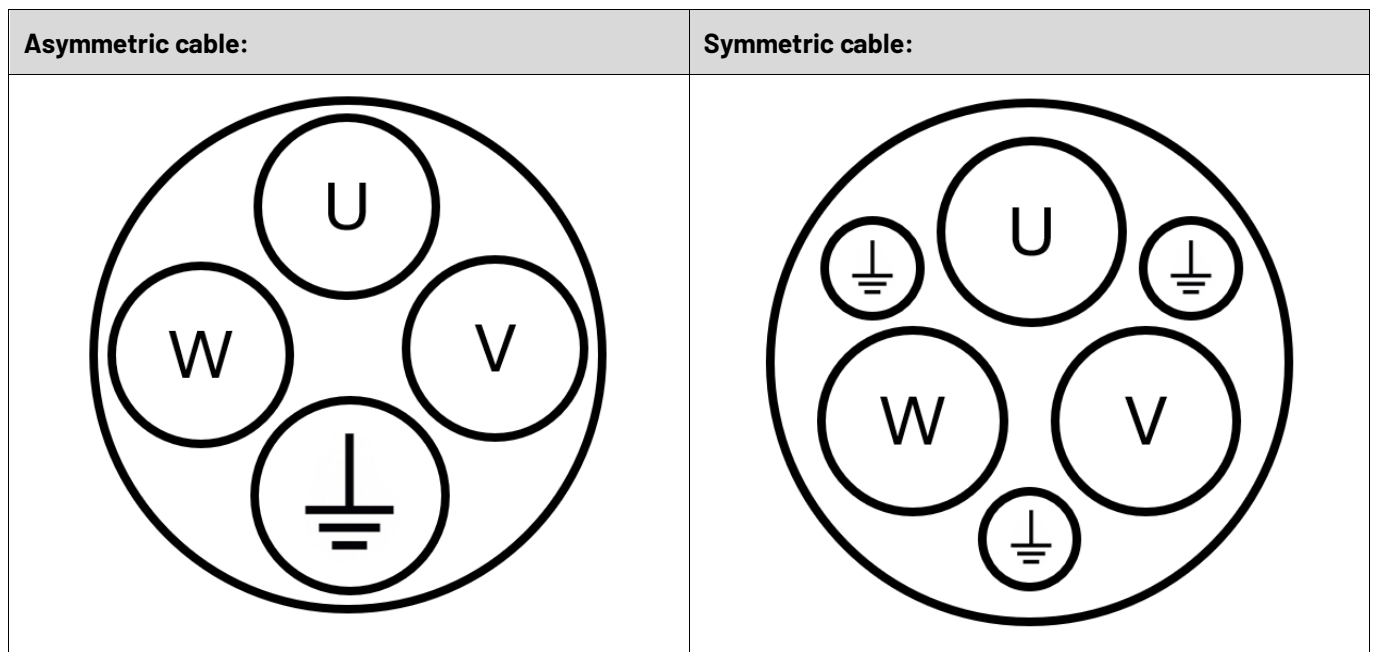


Wiring diagram

U V W	Power connection
1R1/1R2	Temperature sensor (PT1000)
2R1/2R2	Spare temperature sensor (PT1000)
SL	Protective earth (PE)

5.1.2 Cables for terminal box connection

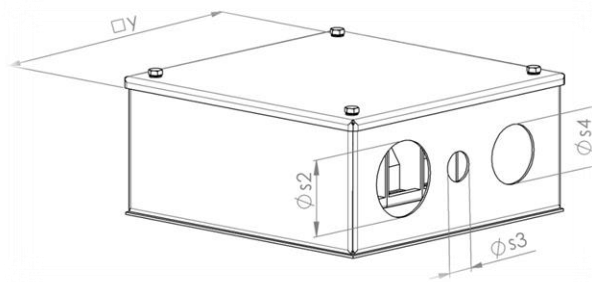
The terminal boxes of our motors are designed for use with asymmetrical connection cables.



The use of symmetrical connection cables is available upon request.

5.1.3 Terminal box dimensions

Depending on the motor rated currents, the terminal box sizes may vary. EMC cable glands must be used for the cable entries.



No.	Cable entry fitting		Cable entry fitting	Hole	
	y [mm]	g1 [mm] compare dimensions chapter 4		s2 [mm]	s3 [mm]
10	197	206	3 x M8	1 x M25x1,5	1 x M25x1,5
12	197	206	3 x M8	1 x M40x1,5	1 x M25x1,5
14	197	206	3 x M8	1 x M63x1,5	1 x M25x1,5
16	243	228	3 x M8	2 x M63x1,5	1 x M25x1,5
20	258	250	3 x M8	2 x M25x1,5	1 x M25x1,5
22	258	250	3 x M8	2 x M40x1,5	1 x M25x1,5
24	258	250	3 x M8	2 x M63x1,5	1 x M25x1,5
26	258	250	3 x M10	2 x M63x1,5	1 x M25x1,5
27	318	302	3 x M10	2 x M75x1,5	1 x M25x1,5
28	318	302	3 x M12	2 x M75x1,5	1 x M25x1,5

No.	Cable entry fitting		Cable entry fitting	Hole		
	y [mm]	g1 [mm] compare dimensions chapter 4		s2 [mm]	s3 [mm]	s4 [mm]
30	215	270	3 x M6	2 x Ø40,5	1 x Ø25,5	-
32	255	280	3 x M10	2 x Ø64	1 x Ø25,5	-
34	315	290	3 x M12	2 x Ø76 ¹⁾	1 x Ø25,5	-
40	295	328	3 x M10	1 x Ø64	1 x Ø25,5	-
42	295	328	3 x M10	2 x Ø64	1 x Ø25,5	-
44	325	328	3 x M12	2 x Ø76 ¹⁾	1 x Ø25,5	-
46	365	363	3 x M16	6 x Ø51	1 x Ø25,5	2 x Ø40,5

¹⁾ Cable shield routed to the housing in the terminal box using a cable lug.

5.1.4 Position of terminal box

The terminal box is on the N-side. The following terminal box positions are possible:

- Terminal box on top
- Terminal box on the left (with view to the DE-side on the shaft end)
- Terminal box on the right (with view to the DE-side on the shaft end)

The following directions of the main connection in dependence with the terminal box position can be configured (refer to product configurator).

Frame size 100-132:

Cooling type	Position terminal box	Outlet direction main connection				
		Top	Bottom	Left ³⁾	Right ³⁾	NDE-side
Radially fitted external fan ¹⁾	Top	-	-	☒	☒	☒ ²⁾
	left ³⁾	☒	☒	-	-	☒
	right ³⁾	☒	☒	-	-	☒
Water cooling	Top	-	-	☒	☒ ²⁾	☒
	left ³⁾	-	-	-	-	-
	right ³⁾	-	-	-	-	-
Axially fitted external fan	Top	-	-	☒	☒ ²⁾	-
	left ³⁾	☒	☒	-	-	-
	right ³⁾	☒	☒	-	-	-

¹⁾ The position of the terminal box of motors with a radial fan is dependent of the cooling system position. (such as position of the terminal box „above“ is not possible if position cooling „above“)

²⁾ Preferred version

³⁾ View to the DE-side on the shaft end

Frame size 160-200:

Cooling type	Position terminal box	Outlet direction main connection			
		Top	Bottom	Left ³⁾	Right ³⁾
Radially fitted external fan ¹⁾	Top	-	-	☒	☒
	left ³⁾	☒	☒	-	-
	right ³⁾	☒	☒ ²⁾	-	-
Water cooling	Top	-	-	☒	☒ ²⁾
	left ³⁾	-	-	-	-
	right ³⁾	-	-	-	-
Axially fitted external fan	Top	-	-	☒	☒ ²⁾
	left ³⁾	☒	☒	-	-
	right ³⁾	☒	☒	-	-

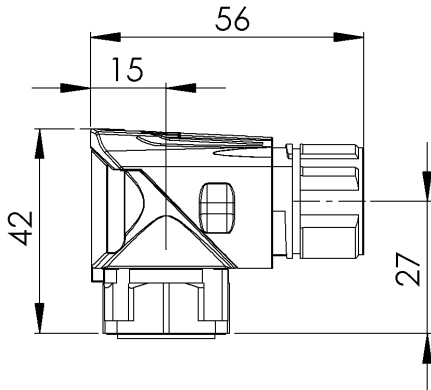
¹⁾ The position of the terminal box of motors with a radial fan is dependent of the cooling system position. (such as position of the terminal box „above“ is not possible if position cooling „above“)

²⁾ Preferred version

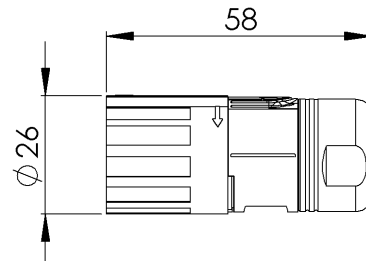
³⁾ View to the DE-side on the shaft end

5.2 Encoder Connection

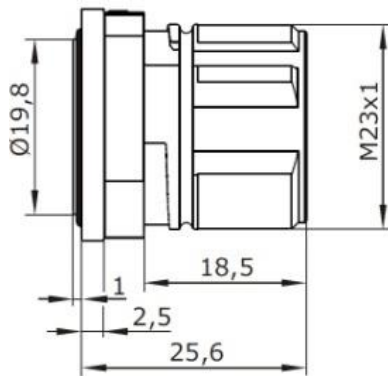
Speedtec - angle built-in socket can turn



Speedtec - mating connector

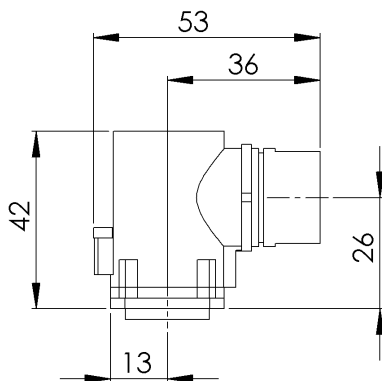


Speedtec - streight socket



Angle built in socket can turn for ECN1325/EQN1337

(Mating connector not available separately)



6. Commissioning and maintenance instructions

For the commissioning of the motors, please use our corresponding commissioning and maintenance instructions (TAM). These can be found in the download section of our website:

<https://www.baumueller.com/de/download>

Under the document type "Technical Documentation," the TAMs are listed along with the other documentation.

For DS2 motor, this would be TAM 00713.