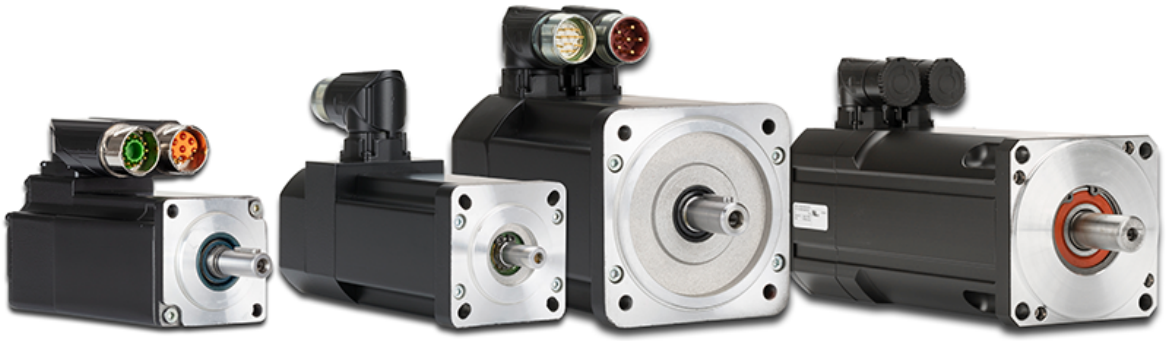
BUCHER automation

User Manual



60888215_03

JHN / JHQ / JQR / JL
Servo Motors

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1 Introduction

1.1 Document Information

This document is part of the product and must be read and understood before using the device. It contains important and safety-related information to ensure that the product is used properly and in accordance with its intended purpose.

For further information refer to the following information products:

– Application-oriented manuals
  Product-independent documentation

ⓘ Info

Further information

For further information on the noise immunity of a system, please refer to the Application Note 016 *EMC-Compatible Installation of the Electric Cabinet* available for download on www.bucherautomation.com.

1.2 Typographical conventions

This manual uses different typographical effects to support you in finding and classifying information. Below, there is an example of a step-by-step instruction:

✓ This symbol indicates requirements which have to be met before executing the following action.

► This sign or a numbering at the beginning of a paragraph marks an action instruction that must be executed by the user. Execute the instructions one after the other.

⇨ The target after a list of instructions indicates reactions to, or results of these actions.

ⓘ Info

Further information and practical tips

In the info box you will find helpful information and practical tips about your product.

2 Safety

2.1 Purpose

2.1.1 Intended use

Operate the device only in accordance with the intended conditions of use and within the limits set forth in the technical specifications.
Intended use of the product includes its operation in accordance with this manual.

The Servo motors are intended for industrial or commercial applications.

They are in conformity with the relevant parts of the harmonized standard series EN 60034. If there are higher requirements in special cases, for example for use in non-industrial or non-commercial systems, these conditions must be ensured on the system side during installation.

Typical areas of application include robotics and handling, machine tools, packaging and food machines and similar machines.

The Servo motors may only be operated within the operating ranges and ambient conditions (installation altitude, degree of protection, temperature range, electrical and mechanical data, etc.) specified in the documentation.

Before commissioning of the systems and machines where the Servo motors will be installed, the conformity of the system or machine with the Machinery Directive must be established.

The nominal AC voltage of the Servo motors is 170 V or 310 V. The winding insulation is designed for 750 V DC. However, the DC link voltage of the servo amplifier can also be up to 850 V DC, e.g. for brake operation.

The Servo motors therefore come under the EC Low Voltage Directive.

Systems and machines with converter-fed three-phase motors must meet the requirements of the EMC Directive. The system installer is responsible for carrying out the installation properly. Signal and power lines must be shielded. The converter manufacturer's instructions for EMC-compliant installation must be observed.

The Servo motors must not be placed in operation until after EMC-compliant installation of the entire system.

2.1.2 Usage other than intended

Use of the Servo motors outside of the application areas given here or under operating ranges and ambient conditions other than those described in the documentation is considered non-intended use.

Machinery Directive

The product is not a safety-related part as per Machinery Directive 2006/42/EC.

When used in safety functions, a higher-level safety system is required and an additional monitoring and protective device must be provided in accordance with the applicable safety provisions.

Therefore, do not use the Servo motors in technical systems for which a high level of failure safety is specified. The following application areas are considered non-intended use:

– Aerospace applications
– Machines specially constructed or used for a nuclear application whose failure may lead to the emission of radioactivity
– Medical devices that come in direct contact with the human body.
– Machines for transporting and lifting persons
– Special facilities for use at fairs and amusement parks
– Devices for household use

2.2 Warnings used in this document

⚠ DANGER



High risk

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING



Medium risk

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION



Low risk

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE



Material damage

Indicates a situation which, if not avoided, could result in malfunctions or material damage.

2.3 General Safety Instructions

⚠ DANGER



Danger due to high electrical voltage

Touching live parts may lead to severe injury or death.

► Carry out the following steps before starting work to ensure safety.

☑ Prepare for turning off the system. Inform everyone involved who will be affected by the process.

☑ Isolate the drive system from the power supply and secure it against being turned on again.

☑ Wait for the discharge time of the servo amplifier currently being used and check all power connections to ensure they are at zero potential.

☑ Ground according to requirements.

☑ Cover over neighboring live parts.

☑ Ensure the drives cannot move.

⚠ DANGER



Danger due to high operating voltage

The high operating voltage of the device leads to severe injury or death.

Observe the following rules throughout the **entire work process.**

► Do not remove any covers during operation and keep the switch cabinet doors closed.

► Check whether all live connections are safely protected against contact.

► Never open the device.

► Never touch the plug connections of the device for the voltage supply during operation.

⚠ DANGER



Risk of electric arc due to improper handling

Improper handling can result in an electric arc, which may lead to severe injury or death.

► Open the plug connections only in de-energized state.

► Install the device only in an environment where there is no risk of fire and corrosion, without any flammable gases or vapors.

► Observe the specified limit values for voltage.

► Wire according to regulations.

⚠ DANGER



Explosion hazard

The motor can become a source of ignition in potentially explosive areas.

- ► In potentially explosive areas, only use motors that have ATEX approval for the relevant protection zone.

⚠ DANGER



Risk of explosion due to ignitable sparks caused by stray and leakage currents in conductive motor parts.

The motor can become a source of ignition in potentially explosive areas if stray and leakage currents flow in conductive motor parts.
This can lead to overheating of surfaces or dangerous corrosion.

- ► Ensure that the voltage potentials are balanced to avoid flowing stray or leakage currents.
- ► Establish a connection to an equipotential bonding system.
- ► Ground the motor with a separate grounding cable measuring at least 4 mm^2 or higher to the PE bolt of the ATEX motor.
- ► Also observe the information in chapter Temperature sensor in the motor [▸ 19] and in the supplied ATEX user manual.

⚠ WARNING



Risk of fire due to improper operation of the motor.

In case of improper operation or due to an error, the motor may overheat and cause a fire that may lead to severe injury or death.

- ► Operate the motor according to the specification. Never exceed the maximum speed.
- ► Do not use any damaged motors or devices.
- ► Turn off the motor immediately if the temperature is too high.

⚠ WARNING



Risk of burns due to hot surfaces

The motor may become hot during operation and can cause burns if touched.

- ► Take protective measures to prevent inadvertent contact with the motor, e.g. protective covers.
- ► Make sure that no temperature-sensitive parts, e.g. connection cables, are attached or fastened to the motor.
- ► Ensure there is adequate heat dissipation and maintain the required distances during installation so as not to prevent or restrict ventilation.
- ► Allow the motor to cool off for a while before carrying out cleaning or maintenance work on motor.
- ► Wear personal protective equipment.

⚠ WARNING



Danger due to rotating parts

When the drive is running, there is risk of injury due to entanglement or being drawn in by open moving machine parts.

- ► Never reach into the rotating drive shaft.
- ► Always wear close-fitting clothes, no jewelry and no open, long hair.
- ► Do not wear gloves.
- ► Provide monitoring and protective devices in accordance with the applicable safety requirements.
- ► Before all work on the drive, de-energize it and ensure that the drive is no longer able to move.
- ► Ensure that even an unintended movement of the drive will not endanger persons or property.

⚠ WARNING



Risk of injury due to movable and forcibly ejected parts

Touching movable drive elements and the forcible ejection of parts that come loose, such as feather keys, may lead to severe injury or death.

- ► Operate the motor only with the drive element mounted or with the feather key protective cap included with delivery.
- ► Do not touch any movable parts.
- ► Wear safety goggles.

⚠ WARNING



Danger for persons with pacemakers and implants

Operating the device generates an electromagnetic field. Electric, magnetic and electromagnetic fields are a health risk in particular to persons with pacemakers and implants.

- ► If you belong to the above group of persons you must not be in the immediate vicinity of the device.
- ► Keep a minimum distance as specified below:
  300 mm from a de-energized device, for example when doing installation work;
  600 mm from an energized device running in normal operation.

⚠ WARNING



Risk of death due to falling loads during lifting and transport processes

Improperly performed lifting and transport processes as well as unsuitable or defective devices and tools can lead to severe or fatal injuries and material damage.

- ► Lifting devices, industrial trucks and load handling attachments must meet requirements.
- ► The load capacity of the lifting equipment and load handling attachments must be in line with the weight of the load being transported.
- ► Fasten and secure the load to be transported carefully to the lifting equipment.
- ► Do not stand in the swivel range of lifting equipment or under suspended loads.

NOTICE



Material damage due to loose power connection

Vibrations or insufficient tightening torques can lead to loose power connections. This can lead to fire damage, defects in the device or malfunctions.

- ► Tighten all power connections to the specified tightening torques.
- ► Check all power connections at regular intervals, especially after transport.

NOTICE



Damage to the motor due to an excessive application of force

- ► To avoid damage to the motor and especially the bearings, do not exert excessive (impact) force on the drive shaft.

See also

Protective conductor connector for ATEX motors [▶ 300]

3 Product description

3.1 System overview

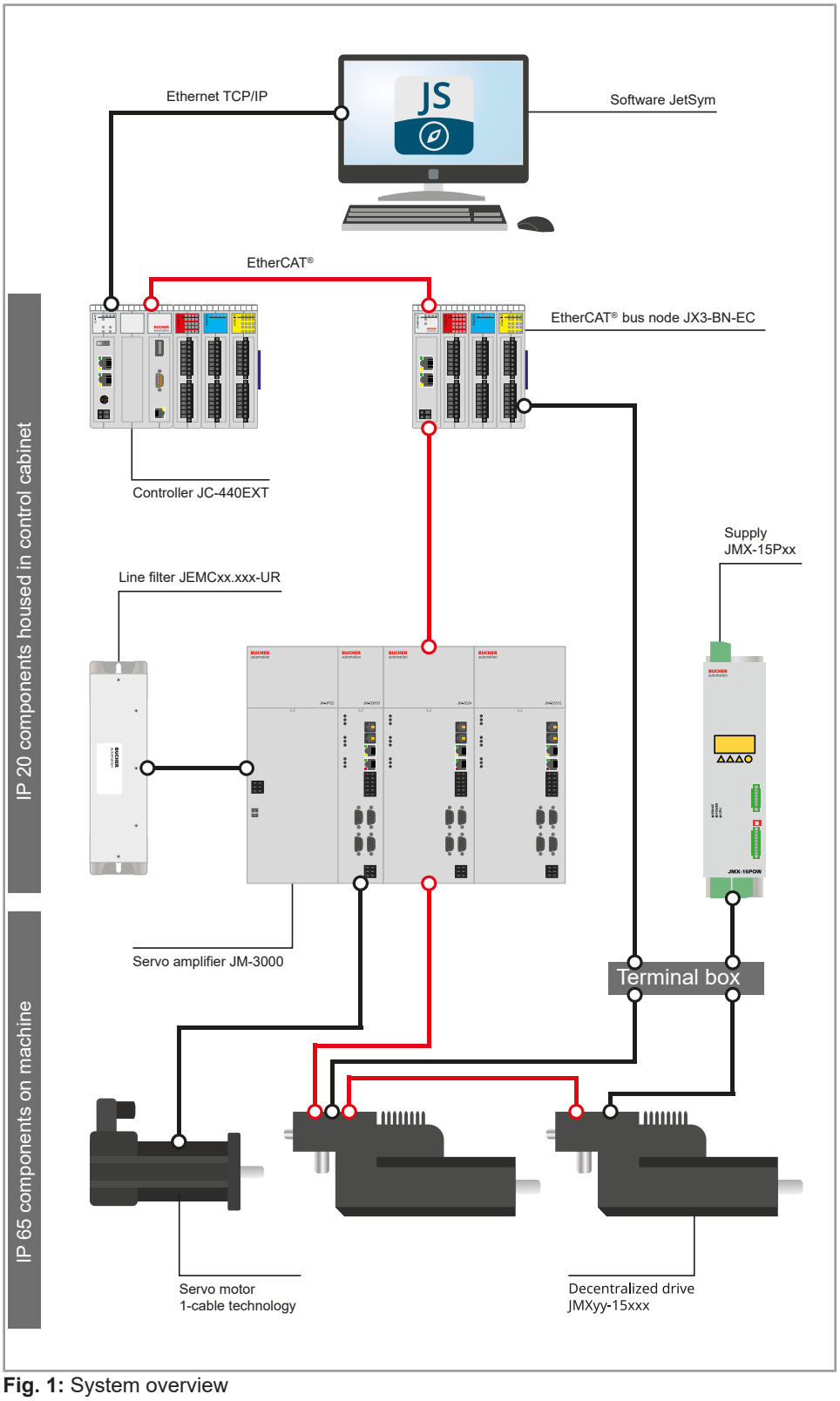


Fig. 1: System overview

3.2 Product features

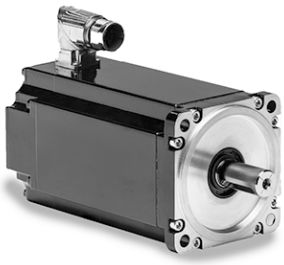
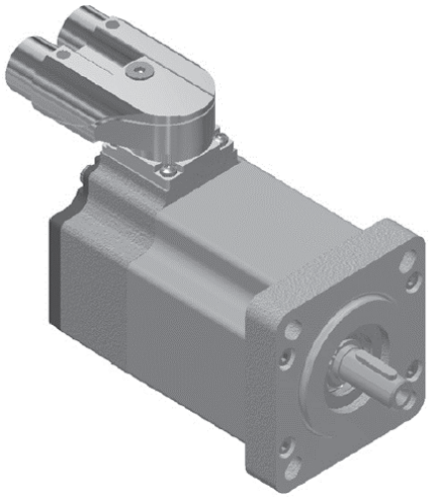
3.2.1 JHN series

Product example	Product features
 JHN5	– Compact geometries – Needle winding technology – High torque – Smaller machines possible – 1-cable or 2-cable technology

3.2.2 JHQ series

Product example	Product features
 JHQ2	– Replaces JL series – High torque – Available in a wide range of sizes – 1-cable or 2-cable technology

3.2.3 JQR series

Product example	Product features
 JQR	– Extremely compact thanks to segment winding technology – High torque – uniform behavior even at low loads and low speeds – 1-cable or 2-cable technology – 10-pole motors throughout
 JQR 20/21, 2-cable technology	

3.2.4 JL series

Product example	Product features
 JL5	– Proven, robust technology – Manually wound – Spectrum from 0.1 Nm (JL1) to 115 Nm (JL8) – 2-cable technology – 6-pole motors

3.3 Versions

3.3.1 Resolver

A 2-pole hollow shaft resolver is installed as standard in the motor as a feedback unit. The rotor of the resolver is firmly connected to the motor shaft. The resolver is used for electronic commutation.

In addition to commutation, the resolver is also used for speed value and position feedback. The resolver is a measuring system that continuously measures the angular position of the motor rotor.

The rotor position of the motor is evaluated and then provides the following information required for motor control:

– The actual speed value via angular velocity
– The actual position value per revolution
– 4096 pulses per revolution

The actual resolver does not contain any electronic components. It is characterized by its extremely robust design that is insensitive to temperature and impact. This makes it the ideal and reliable encoder for use in harsh environmental conditions. The motor needs to be referenced.

3.3.2 HIPERFACE®

The SinCos motor feedback system with the standardized High Performance Interface, or HIPERFACE® for short, is often used in digital drive technology because of its high and absolute position resolution. A reference run is not required. The properties of this system are as follows:

– Up to 1024 sine/cosine periods per revolution.
– Absolute positioning with a resolution of 32768 increments per revolution.
– In multiturn mode, 4096 revolutions can be measured.

Unlike the resolver, the SinCos motor feedback system with HIPERFACE® contains electronic components. Nevertheless, the system is characterized by its high temperature resistance and high interference immunity.

3.3.3 HIPERFACE DSL®

The SinCos motor feedback system HIPERFACE DSL® is a digital extension of the hybrid (digital/analog) HIPERFACE® system. Data transmission is fully digital. DSL is short for Digital Servo Link interface. The encoder signal and the voltage supply for the encoder are transmitted via two cables and wired in the power connector.

3.3.4 Temperature sensor in the motor

The temperature of the stator windings in the winding heads of the motor must be recorded and monitored in the servo amplifier. The monitoring system must be designed to protect the motor according to temperature class F.

If an early warning temperature threshold is reached, an increased temperature is indicated. If this temperature threshold is exceeded, the motor is switched off. This prevents thermal overload of the motor in continuous operation.

A KTY-83-110 temperature sensor is installed as standard for JetMove 2xx.

The PT1000 is the preferred choice for the new generation of drives or motors with HIPERFACE DSL® encoders. Only a PTC is available as the temperature sensor for sizes JL1 and JHQ12. Motors with a built-in thermal circuit breaker (140 °C) are only available as spare parts. The built-in thermal circuit breaker has a tolerance of ± 10 °C and can be operated up to a maximum temperature of 150 °C.

3.3.5 Holding brake

All motors are also available with a holding brake. If you supply 24 V DC to the holding brake, an electromagnet counteracts the spring force of the brake, thereby canceling the braking effect of the holding brake. The brake is a mere holding brake for keeping the motor shaft at a standstill. The holding brake is not approved for braking operations.

3.3.6 Gear unit

Due to the standardized interface, all common gear units, such as planetary gear units, can be attached to the Servo motors.

3.4 Nameplate

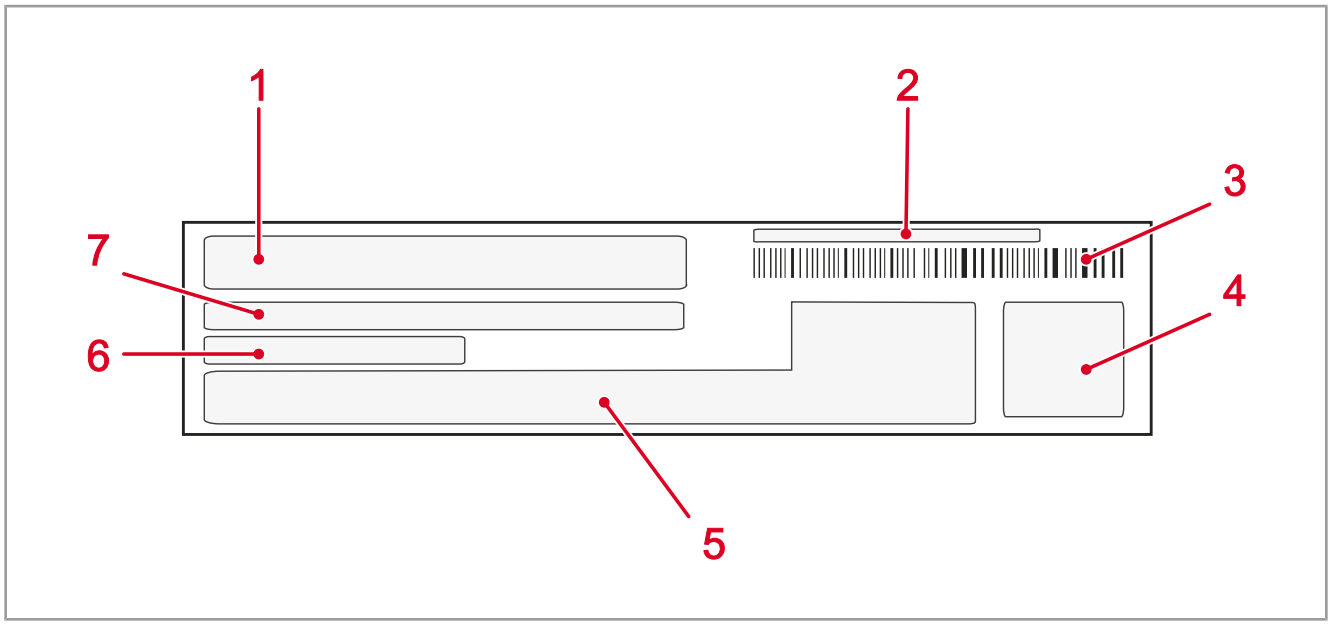


Fig. 2: Nameplate

1	Company logo
2	Serial number
3	Barcode
4	Approvals and certification marks
5	Power data
6	Item number
7	Model code number

NOTICE! Explosion-proof ATEX motors have additional labels on the motor.

See also

Order code [▶ 21]

Servo Motors	BR	BG	Mo		Kn		TS		IP									
Order code	JHN	3	0250	-	045	-	6	R	V	B	P	S	C	F	E	L	K	X

Series
JHN
JHQ
JQR
JL

Frame size
1, 12, 2, 20, 21, 22, 23, 24, 3, 30, 31, 4, 40, 41, 45, 5, 50, 51, 52, 6, 7, 71, 8

Holding torque
Value in Ncm
Example: 0250 means 2.5 Nm

Speed constant
Value in V/k min^{-1}
Example: 45 V/1000 min^{-1}

Thermal sensor
3 = Thermal circuit breaker 140 °C (only for spare part)
4 = PTC (for JL1 or JHQ12 only)
6 = KTY83-110 (for JetMove 2xx)
8 = PT-1000 (for JM-2000, JM-3000 and motors in 1-cable technology)

Shaft tolerance
R = Concentricity tolerance of the shaft ends according to DIN 42955R

Degree of protection
V = Degree of protection: IP65 (without shaft seal)
V1 = Degree of protection: IP64 (without shaft seal)
V4 = Degree of protection: IP67 with shaft seal (size 2 ... 8)

Brake
B = with motor holding brake DC 24 V

Keyway/feather key
P = Keyway/feather key DIN 6885

Electrical connection
_ = Vertical connector output
S-A = 90° angled (not rotatable) towards D end (only for spare parts)
S-B = 90° angled (not rotatable) towards ND end (only for spare parts)
S-X = 90° angled rotatable, preferred
SA-X = Rotatable 90° angle Y- or I-Tec (M17 quick-release). Mounted towards D end.
Can be rotated towards ND end by customer.
SB-X = Rotatable 90° angle Y- or I-Tec (M17 quick release). Mounted towards ND end. Can be rotated to D end by customer.
S3-x.xx = Cable gland and cable, cable length x.xx in m, e.g. 1.10 = 1.10 m, without connector
S4-x.xx = Cable gland and cable, cable length x.xx in m, e.g. 1.10 = 1.10 m, with connector
S-41-x.xx = Cable gland and cable, cable length x.xx in m, e.g. 1.10 = 1.10 m, with plug for central mounting

Connector type
_ = standard **Größe M23 x 1 für JHN2 ... JHN7, JHQ2 ... JHQ7, JL2 ... JL4:**

- Encoder and motor connector (2-cable technology)
- Motor connector (1-cable technology)

Servo Motors	BR	BG		Mo		Kn		TS		IP									
Order code	**JHN**	**3**	**-**	**0250**	**-**	**045**	**-**	**6**	**R**	**V**	**B**	**P**	**S**	**C**	**F**	**E**	**L**	**K**	**X**

_ = standard **Size M40 x 1.5 motor connector for:**

- JL5 ... JL8, JHQ8 (2-cable technology)
- JHQ8 (1-cable technology)

C1 Encoder and power connector size 1 (only for JL5)

Encoder type

Standard encoder type (without using a functional safety controller, e.g. JSC)

- = Resolver, 2-pole
F2 = JL series: HIPERFACE®, singleturn, size 2 = SKS36; from size 3 = SRS50
F3 = JL series: HIPERFACE®, multiturn, size 2 = SKM36; from size 3 = SRM50
F11 = JHN and JHQ series: HIPERFACE®, singleturn SEK34, SEK37 or SEK52
F12 = JHN and JHQ series: HIPERFACE®, multiturn SEL34, SEL37 or SEL52
F13 = JJHN and JHQ series: HIPERFACE®, singleturn SKS36 (from size 2)
F14 = JHN and JHQ series: HIPERFACE®, multiturn SKM36 (from size 2)
F15 = JHN and JHQ series: HIPERFACE®, singleturn SRS50 (from size 3)
F16 = JHN and JHQ series: HIPERFACE®, multiturn SRM50 (from size 3)
F17 = JHN and JHQ series: HIPERFACE DSL®, singleturn EES37 (HIPERFACE DSL® EES34 in preparation)
F18 = JHN and JHQ series: HIPERFACE DSL®, multiturn EEM37 (HIPERFACE DSL® EEM34 in preparation)
F19 = JHN and JHQ series: HIPERFACE DSL®, singleturn EKS36 (from size 2)
F20 = JHN and JHQ series: HIPERFACE DSL®, multiturn EKM36 (from size 2)

Encoder type when using a functional safety controller, e.g. JSC

Resolver, 2-pole, safely mounted
F17S = JHN and JHQ series: HIPERFACE DSL®, singleturn EES37 S
F18S = JHN and JHQ series: HIPERFACE DSL®, multiturn EEM37 S

Potentially explosive areas
E = Potentially explosive area (for JHQ-series possible)
E1 = Potentially explosive area, ATEX (Zone 2) ATEX Directive 2014/34/EU
II 3G Ex ec IIC T155°C Gc and II 3D Ex tc IIIC T135°C Dc

Bearings
L = Bearings
L1 = Reinforced bearings at D end

Cooling
- = Natural air cooling (standard design)
K1 = Forced ventilation at ND end

Weitere Optionen
X = Further options

3.4.2 Notes on operating the motors on safety controllers

– When motors with resolvers are used in combination with safety controllers, e.g. Bucher Automation Safety Control JSC, there is the option Y - safe encoder mounting according to EN 61800-5-2, Table D.8.
– The MTTFd value is 780 years at an ambient temperature of the motor of 85 °C.
– For the HDSL encoder EEM37 S, e.g., this would be the order code F18S.

3.4.3 Notes on operating the motors in potentially explosive areas

In potentially explosive areas, there are the following potential ignition sources:

Danger from sparks, flames, high surface temperatures, sound energy, electromagnetic waves and radiation

1. Do not unplug the drive during operation.
2. Limit electrical malfunctions, currents and speed.
3. Observe the hazard warning in chapter General Safety Instructions [▶ 12].

Danger from electrostatic discharge

1. Make sure you have suitable drive belts.
2. Observe the hazard warning in chapter Installation [▶ 287].

Danger from stray and leakage currents

1. Ensure balanced voltage potentials.
2. Observe the hazard warning in chapter General Safety Instructions [▶ 12] and in chapter Installation [▶ 287].

Danger due to inadmissible heating

1. Monitor the heat generated during operation by evaluating temperature sensors.
2. Observe the instructions in chapter Commissioning [▶ 301].
3. Avoid surfaces that are too hot by dissipating heat sufficiently.
4. Observe the warning in chapter General Safety Instructions [▶ 12].

Danger due to excessive layer of dust on the surface of the motor

1. Ensure that the motor is sufficiently cleaned.
2. Observe the hazard warning in chapter Maintenance [▶ 308].

3.4.4 Hardware revision

The hardware revision is either indicated in the product designation (Rev. B) or is also indicated in the Bucher Automation item number 6xxxxxxx_yy by the last two digits.

Example:

Revision index _00 means revision 0

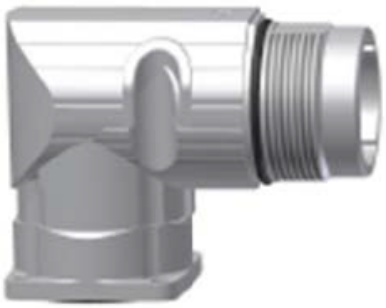
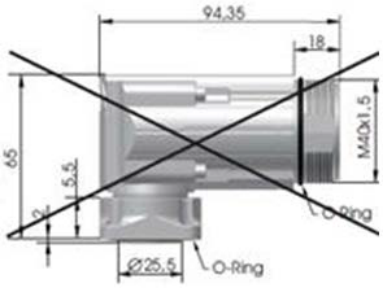
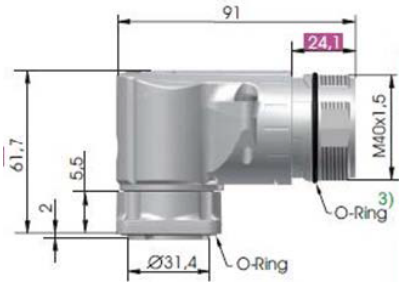
Revision index _02 means revision 2.

No revision index also means revision 2, as the first items in our ERP system were created without a revision index.

For Bucher Automation item numbers of motors without the _yy specification, the revision number on the nameplate is indicated by -Rxx.

Due to a change to the connector dimensions by the manufacturer, it was necessary to changeover to revision R02 for all motors.

The following table shows a comparison of the connector dimensions for revisions R01 and R02:

Motor connector	Revision R01	Revision R02
M23 x 1 in the S-X version	 Height 39 mm	 Height 41.5 mm
M40 x 1.5 in the S-X version	 Height 65 mm	 Height 61.7 mm

Tab. 1: Connector dimensions for revisions R01 and R02

3.5 Scope of delivery

Scope of delivery	Item number	Quantity
Motor		1
Protective dust cap for M23/M40 I/O connection		1
ATEX motors of the JHQ series: Printout of the user manual in English		1
USB stick with complete documentation	60888000	1

4 General technical data

4.1 Mechanical specifications

Parameter	Description		
Mounting orientation	B5, V1, V3		
Coating	Matt black, color type RAL 9005		
Ball bearing service life	> 20,000 operating hours		
Flange	Flange dimensions according to IEC standard, fit j6, accuracy to DIN 42955, tolerance class: R		
Degree of protection	IP65 (without shaft seal)		
Insulation class	F according to VDE 0350;	max. temperature: 155°C	
	ATEX guideline	max. temperature in potentially explosive atmosphere:	
		G (= gas)	D (= dusts)
		155°C	135 °C
Cooling	Natural air cooling		
Cooling plate	Length of cooling plate in mm = 2.5 x motor flange size in mm with a cooling plate thickness of 3.5 mm Cooling plate width = cooling plate length		
Ambient temperature	-15 ... +40 °C		
Thermal motor protection	KTY 83-110; alternatively PTC or PT-1000		
JHQ: Rotor	Rare earth permanent magnets. Excellent distribution of the rotor magnetic field to eliminate torque fluctuations at low speed		

Tab. 2: Mechanical specifications

4.1.1 Standard version of the JHN and JL series

- KTY83-110, only PTC is possible with JL1
- No brake
- Smooth shaft
- Two straight flange sockets for power and signal
- Resolver
- Reduced runout tolerance = R without shaft seal
- Degree of protection IP65
- Degree of protection IP64 for JL1 motors
- Motors with connection S3 and S4 possible

4.1.2 Standard version of the JHQ and JQR series

– KTY83-110
– No brake
– Smooth shaft
– Rotatable male connector S-X
– Resolver
– Runout tolerance = N
– Without shaft seal
– Degree of protection IP65
– Degree of protection IP64 for JHQ2, A-side

4.1.3 Cables and male connectors for ATEX motors

NOTICE! The cables and male connectors for connection to the ATEX motors must be suitable for an ambient temperature of at least 80°Celsius.

4.2 Compatibility of the series

The motors are supplied with Intercontec male connectors with thread tolerances according to DIN 13, class 6g – 6H. There are also Intercontec male connectors with the same tolerance on Bucher Automation servo cables. For motors with the cable without male connector option, the customer must select and install male connectors with this tolerance.

The wiring of the motor and encoder connectors of all series is identical.

Since the hole circle, centering and shaft are also the same within one flange size, series can be exchanged. For example, JHN4, JHQ4 and JL4.

4.3 Overview of flange sizes

The table below gives an overview of centering, hole circle, shaft, feather key size, continuous stall torque M_o and length with constant flange size.

Flange	JHN JL	JHQ JQR	Center-ing	Hole cir-cle	Shaft (x1)	With feather key	Feather key acc. to DIN 6885-A (x1)	JHN M_o/length	JHQ M_o/length	JQR M_o/length	JL M_o/length
1	37		25	41.5	6x20	2P9	2x2x10				0.1 – 0.2/ 81 – 111
12		40	30	46	8x25	3P9	3x3x12		0.18 – 0.32/ 63 – 77		
2	55	58	40	63	9x24	3P9	3x3x15	0.28 – 0.95/ 67 – 112	0.25 – 1.25/ 87 – 135		0.25 – 1.25/ 98 – 143
20		58	40	63	9x24	3P9	3x3x15			0.36 – 1.20 100 - 122	
21		58	40	63	14x30	5P9	5x5x20			1.4 133	
22		60	50	70	14x30	5P9	5x5x20		0.7 – 1.4/ 84 – 104		
23		70	60	75	11x23 14x30	4P9 5P9	4x4x15 5x5x20		0.6 – 3.0/ 112 – 182		
24		80	70	90	16x40	5P9	5x5x25		0.7 – 2.7/ 86 – 120		
3	86	91.3	80	100	14x30	5P9	5x5x20	1.15 – 4.8/ 82 – 172	1.35 – 4.5/ 122 – 180		0.65 – 3.0/ 109 – 181
30		91.3	80	100	14x30	5P9	5x5x22			2.6 – 3.5 111 - 123	
31		91.3	80	100	19x40	6P9	6x6x32			4.6 – 5.5 144 - 156	

Flange	JHN JL	JHQ JQR	Center-ing	Hole cir-cle	Shaft (x1)	With feather key	Feather key acc. to DIN 6885-A (x1)	JHN M_o/length	JHQ M_o/length	JQR M_o/length	JL M_o/length
4	98	100	95	115	19x40	6P9	6x6x32	5.1 – 11.3/ 113 – 203	4 – 10/ 150 – 214		5.3 – 7.5/ 176 – 221
40		100	95	115	19x40	6P9	6x6x32			4.5 – 10.2 132 - 186	
41		100	95	115	24x50	8P9	8x7x40			11.7 204	
45		116	110	130	19x40 24x50	6P9 8P9	6x6x32 8x7x40		6 – 14/ 168 – 233	6.5 – 19.0 140 - 230	
5	142	142	130	165	24x50	8P9	8x7x40	12 – 24/ 157 – 247	4.5 – 26/ 148 – 298		12 – 24/ 226 – 311
50	142	142	130	165	24x50	8P9	8x7x40			12.5 – 21.5 149 - 183	
51		142	130	165	28x58	8P9	8x7x40		29 – 38/ 338 – 405		
52		142	130	165	32x58	10P9	10x8x45			26.0 – 30.0 205 - 222	
6	190	190	180	215	24x50	8P9	8x7x40	18 – 44/ 158 – 258	20 – 28/ 195 – 218		19 – 29/ 242 – 317
7	190	190	180	215	28x58	8P9	8x7x40	30 – 60/ 181 – 271	36 – 42/ 240 – 263		32 – 40/ 264 – 294
71		190	180	215	38x80	10P9	10x8x70		56 – 80/ 308 – 414		
8	240	240	230	265	38x80 42x110	10P9 12P9	10x6x63 12x8x63		42 – 120/ 293 – 493		40 – 115/ 310 – 514

Tab. 3: Overview of flange sizes

Key:

M_0: Continuous stall torque in Nm

Length: With resolver without brake in mm

Length of shaft and feather key x1: May vary slightly between the JHN, JHQ, JQR and JL series. Please refer to the 2D drawing for details.

ⓘ Info

Further information

Further information on the servo motors can be found in the *Industrial Automation* catalog at www.bucherautomation.com under *Products* > *Catalogs*.

4.4 Possible encoder types

Type	Single/Multi-turn	JHN	JHQ	JQR	JL
Resolver	Size 15/21	JHN2 … 7	JHQ12 (size 8) JHQ12 … 8	JQR20 ... JQR52	JL1 (size 10) JL2 … 8
F11/F12	SEK/SEL37	JHN2 … 3	JHQ12 … 45	JQR20 ... JQR52	JL2
F11/F12	SEK/SEL37		JHQ5 ... 8 on request	JQR20 ... JQR52	
F13/F14	SKS/SKM36	JHN2 … 7	JHQ22 … 8	JQR20 ... JQR52	JL2
F15/F16	SRS/SRM50	JHN3 … 7	JHQ4 … 8	JQR30 ... JQR52	JL3 … 8
F17/F18	EES/EEM37	JHN2 … 7	JHQ12 ... 8	JQR20 ... JQR52	
F19/F20	EKS/EKM36	JHN3 … 7	JHQ22 … 8	JQR20 ... JQR52	

Tab. 4: Possible encoder types

NOTICE! Encoder types are partly dependent on the flange size.

4.5 Resolver

Parameter	Description
Input voltage	7 V
Input frequency	10 kHz
Number of poles	2
Gear ratio	0.5
Accuracy	± 10 arcmin

Tab. 5: Resolver properties

- The resolver is mounted and wired together with the JetMoves from Bucher Automation AG in such a way that the commutation offset equals 0°. The position values increase with positive setpoints when the motor shaft (front view of motor shaft) rotates clockwise.
- Different resolver sizes are used for different flange sizes. The electrical values are independent of the resolver size.
- The 2D drawings of the flange sizes JHNxx, JHQxx and JLxx show the dimensions for motors with resolvers. The length changes with the brake option or other encoder types.
- Bucher Automation AG provides 2D and 3D drawings of motors with resolvers or other encoder options on their homepage:

ⓘ Info

Further information

More information on this subject is available on our website.

4.6 Environmental conditions

Parameter	Description	Standards
Operating temperature	-15 … +40 °C	DIN EN 61131-2
Storage temperature	-10 … +40 °C	DIN EN 60068-2-1
Relative humidity	15 … 85 % at 40 °C, non-condensing	IEC 60068-2-78
Max. operating altitude	1000 m above sea level	DIN EN 61131-2
NOTICE! Operation at higher temperatures and altitudes inevitably leads to a reduction in performance. For detailed information, see chapter Torque reduction at ambient temperatures > 40 °C [▶ 31]**NOTICE! .**		
Installation location	The drives must not be used in an environment where there is risk of fire, corrosion or explosion. The drives can only be used / installed outdoors with a protective housing. They must not be exposed to rain or water jets.	
Corrosion immunity and chemical resistance	No special anti-corrosion precautions have been taken. The ambient air must not contain higher concentrations of acids, alkaline solutions, corrosive agents, salts, metal vapors and other corrosive or electroconductive contaminants.	
Degree of pollution – Electronics	Level 3	DIN EN 61131-2
	Occurrence of conductive impurities or dry non-conductive impurities that become conductive, since condensation may be expected.	

Tab. 6: Environmental conditions

4.7 Torque reduction at ambient temperatures > 40 °C

– The torque-speed diagrams of the servo motors are specified for an ambient temperature of up to 40° C.
– For higher ambient temperatures, the values from this diagram must be multiplied by a derating factor which can be taken from the derating table as a function of the temperature.
This also applies if the motor is mounted to a gear unit or if the mechanical flange is smaller than the calculated one.
– All torque data was also determined using cooling plates. The size of the cooling plates was calculated using the formula in chapter Installing the servo motor [▶ 288] .
– If the ambient temperature exceeds 40 °C, the derating factor is automatically taken into account in the calculations.
– A cooling device or a fan is needed when applying the motors at an ambient temperature greater than 80 °C.

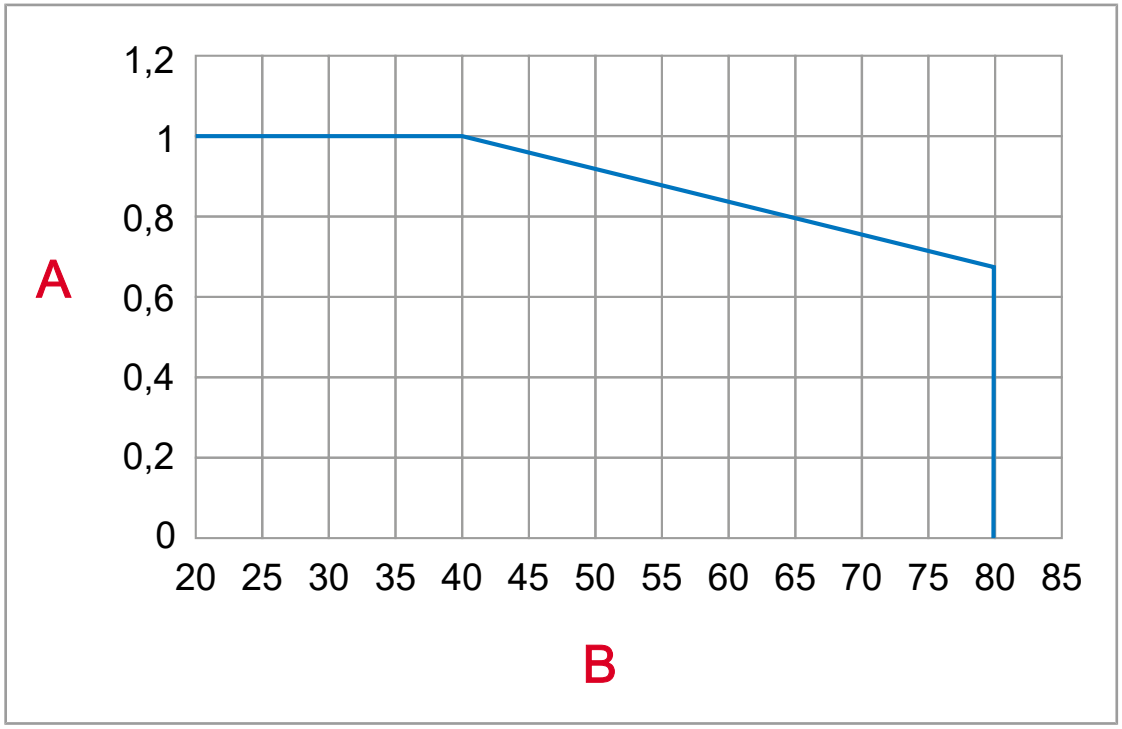


Fig. 3: Torque loss at temperatures above 40°

A	Derating factor
B	Ambient temperature in C°

Points	**P0**		**P1**						**P2**	
°C	20	30	**40**	50	60	65	70	75	**80**	80
Factor	1	1	**1**	0.93	0.845	0.8	0.76	0.72	**0.67**	0

Tab. 7: Derating factors

4.7.1 Derating for JHN and JL series

Derating for operation at altitudes higher than 1000 m above sea level and at standstill of the motor and a standard ambient temperature

	2000 m above sea level	**3000 m above sea level**	**4000 m above sea level**
Derating	6 %	11 %	17 %
To calculate the continuous stall torque, the permitted torque is to be derated using the following formula: $M_{red} = M_0 * \text{sqrt}(1-(H-1000)/(10000))$.			

Tab. 8: Derating

4.7.2 Derating for JHQ and JQR series

Derating depending on the altitude above sea level

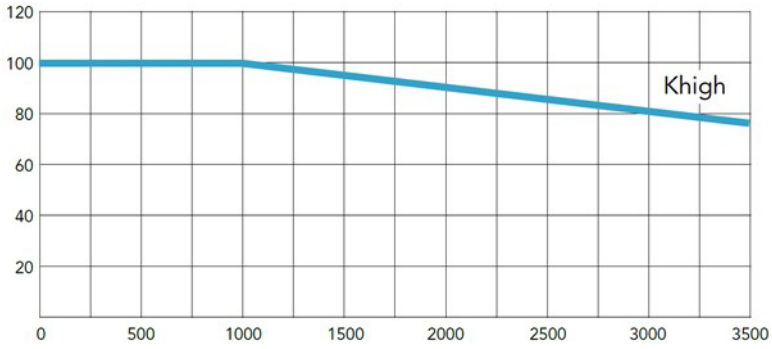


Fig. 4: Altitude above sea level

– y-axis: Available torque in % of the rated torque
– x-axis: Altitude above sea level

Derating depending on the ambient temperature

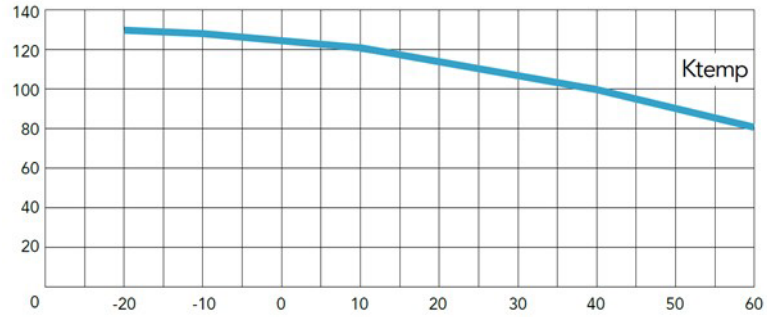


Fig. 5: Ambient temperature

– y-axis: Available torque in % of the rated torque
– x-axis: Ambient temperature

Derating depending on the duty cycle

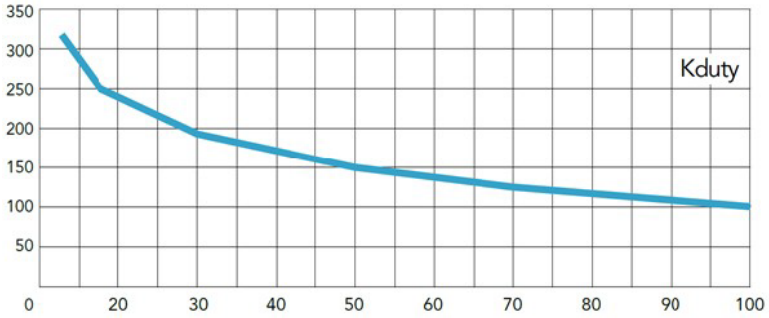


Fig. 6: Duty cycle

– y-axis: Available torque in % of the rated torque
– x-axis: Duty cycle in %

5 Technical Data

This chapter contains the electrical and mechanical data of the Servo motors.

ⓘ Info

CAD data

For CAD data go to www.bucherautomation.com and navigate to the product page > *Downloads*.

5.1 Flange size JHN2

5.1.1 Dimensions JHN2

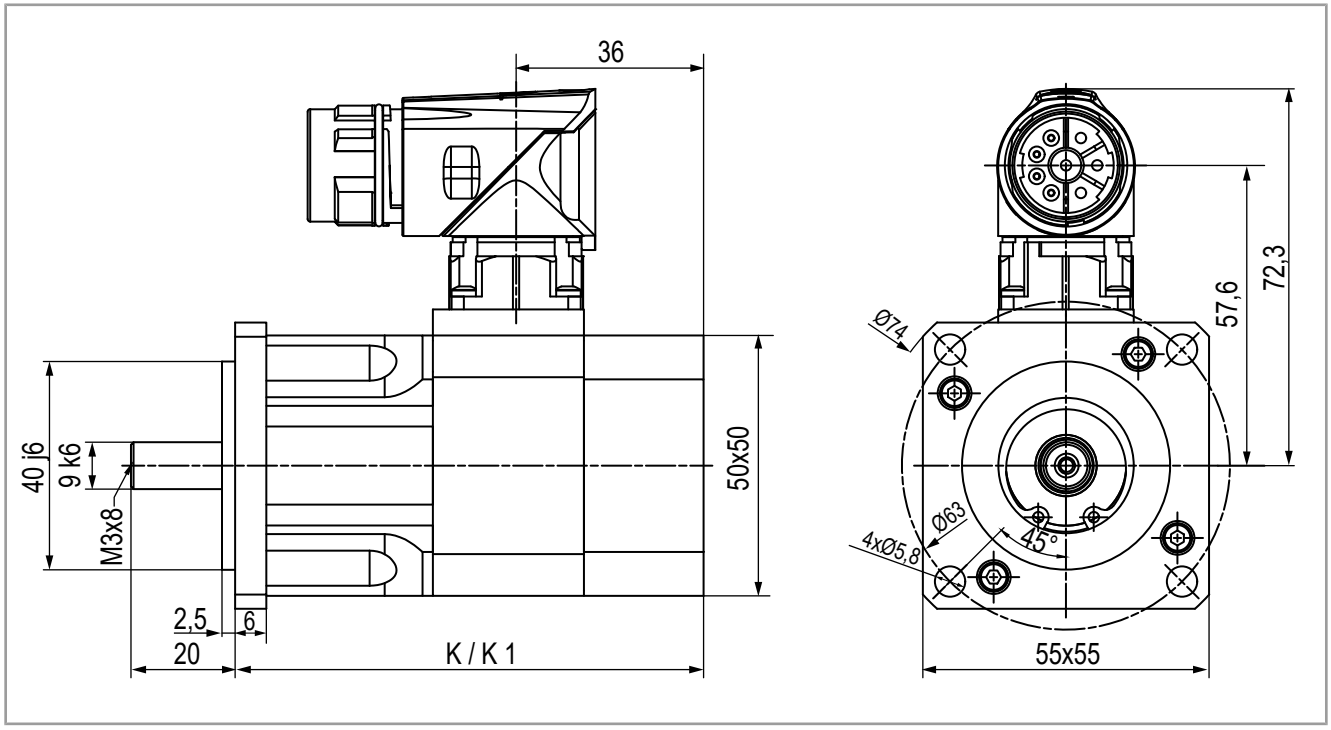


Fig. 7: Dimensions JHN2 in mm

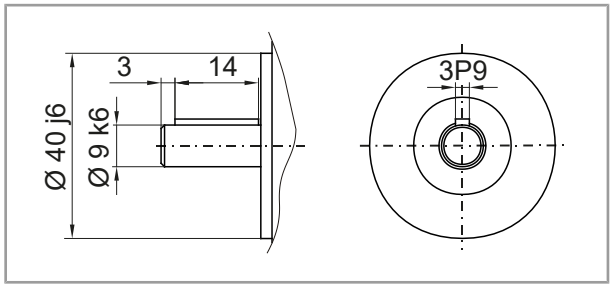


Fig. 8: Option with feather key 3x3x14

	P	K	K1	K	K1	K	K1
Type	**Resolver**			**EEx37**		**EKx36/SKx36**	
JHN2-0028	M23	67	105	90	128	94	128
JHN2-0054	M23	82	120	105	143	109	143
JHN2-0075	M23	97	135	120	158	124	158
JHN2-0095	M23	112	150	135	173	139	173

Tab. 9: Dimensions

Key:
P = Power connector size
K = Dimension without brake
K1 = Dimension with brake

5.1.2 Technical data of the brake for motor type JHN2

Parameter	Value
Holding torque M_{BR}	2 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +6 %) V
Rated power P_{BR}	11 W
Rotor inertia J_{BR}	0.068 kg*cm^2
Weight m_{BR}	0.44 kg

Tab. 10: Technical data of the brake for motor type JHN2

5.1.3 Performance data DC link voltage 48 V DC

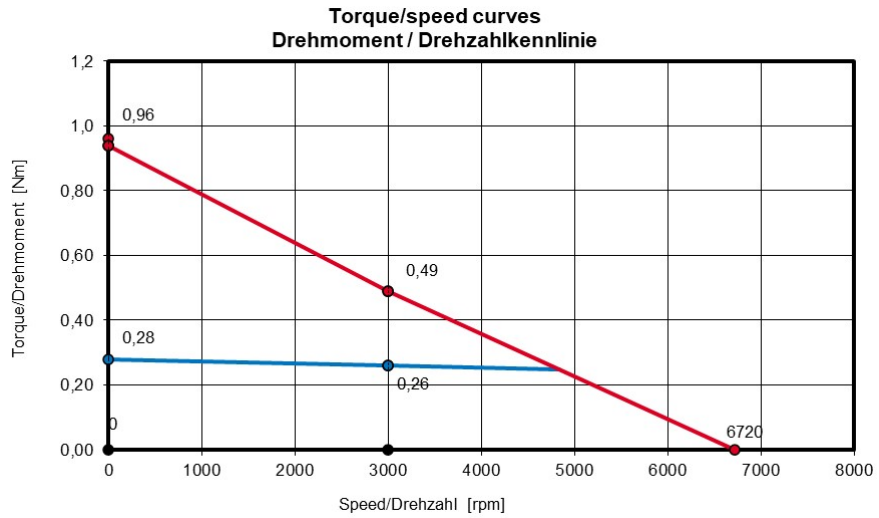
Motor type			JHN2-0028-005	JHN2-0054-006	JHN2-0075-006	JHN2-0095-008
Nominal speed	N_n	rpm	3000	3000	3000	3000
DC link voltage	U_{dc}	V	48.0	48.0	48.0	48.0
Rated AC supply servo amplifier	U_n	V	34.0	33.0	33.0	33.0
Rated motor voltage	U_m	V	25.0	25.0	25.0	32.0
Rated torque	M_n	Nm	0.26	0.51	0.71	0.91
Rated current	I_n	A	3.5	6.0	7.7	7.3
Continuous stall torque	M_o	Nm	0.28	0.54	0.75	0.95
Continuous stall current	I_o	A	3.5	6.0	7.7	7.3
Max. torque	M_{max}	Nm	0.96	2.2	3.0	3.8
Max. current	I_{max}	A	13.0	27	36	33
Max. speed	N_{max}	rpm	12000	12000	12000	12000
Voltage constant	K_E	V/1000	4.9	5.5	5.9	7.8
Torque constant	K_T	Nm/A	0.08	0.09	0.10	0.13
Winding resistance	R_{2ph}	Ω	2.2	0.99	0.66	0.82
Winding inductance	L_{2ph}	mH	2.2	1.24	0.89	1.18
Motor pole count	P_{mot}		6	6	6	6
Idling speed	N_o	rpm	6720	5930	5560	4180
Torque at I_{max}/U_n	M_z	Nm	0.94	2.1	3.0	3.7
Speed at I_{max}/U_n	N_z	rpm	0.00	70	690	0.00
Max. torque at n_n	M_x	Nm	0.49	1.0	1.5	1.1
Electrical time constant	T_{el}	ms	1.0	1.2	1.3	1.4
Mechanical time constant	T_{mech}	ms	2.9	1.5	1.1	0.94

Motor type			JHN2-0028-005	JHN2-0054-006	JHN2-0075-006	JHN2-0095-008
Thermal time constant	T_{th}	min	10.0	12.0	12.0	18.0
Rotor inertia without brake	J	kg*cm^2	0.05	0.07	0.09	0.11
Weight without brake	m	kg	0.74	0.93	1.1	1.3
Axial load	F_A	N	41	45	47	48
Radial load	F_R	N	216	234	246	254

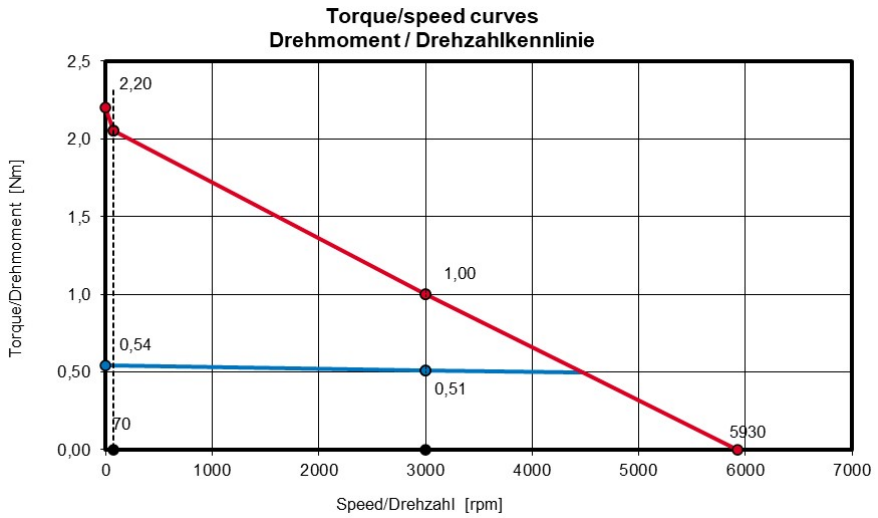
Torque speed characteristics

JHN2
48 V

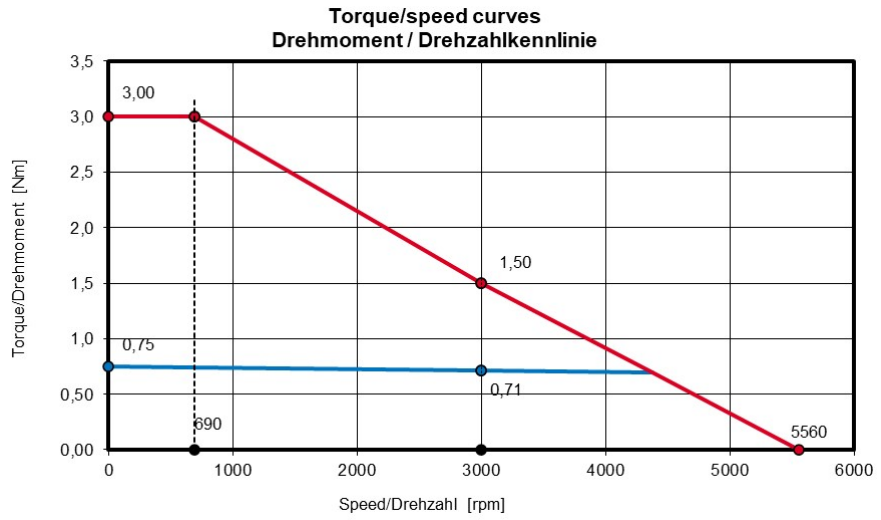
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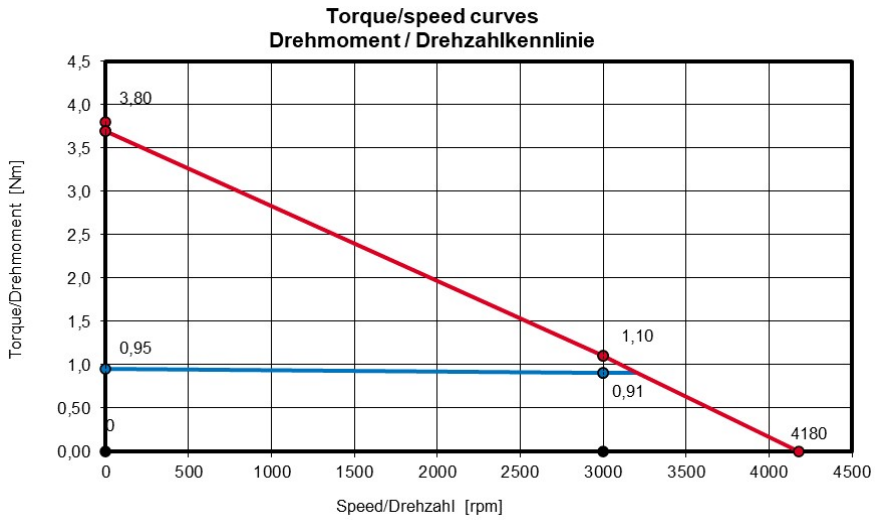


JHN2-0054-006



JHN2 48 V	JHN2-0075-006	JHN2-0095-008



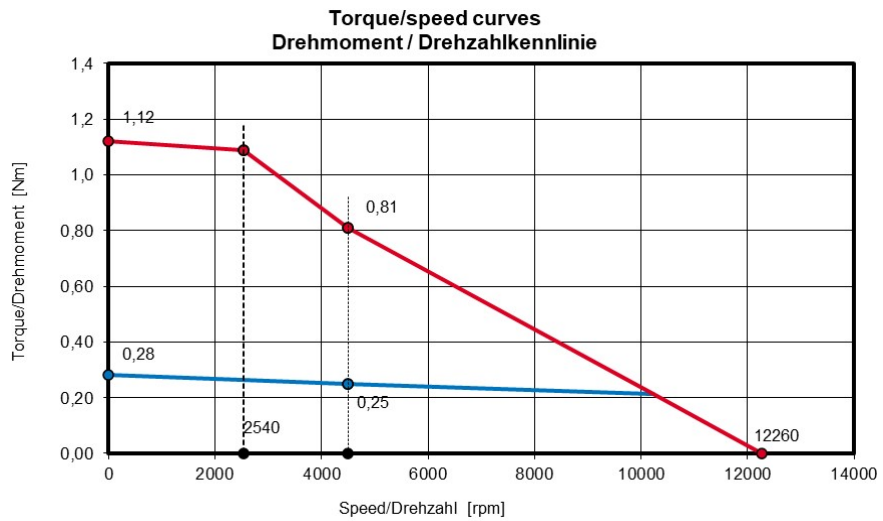
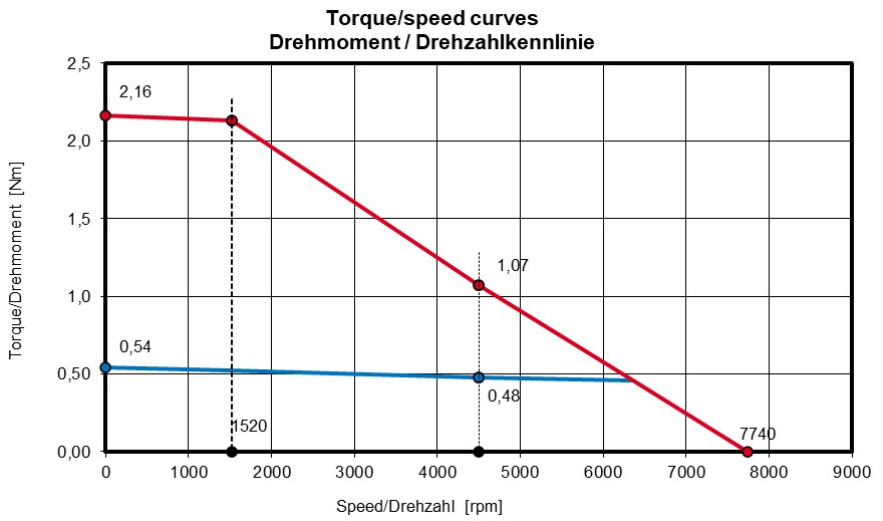
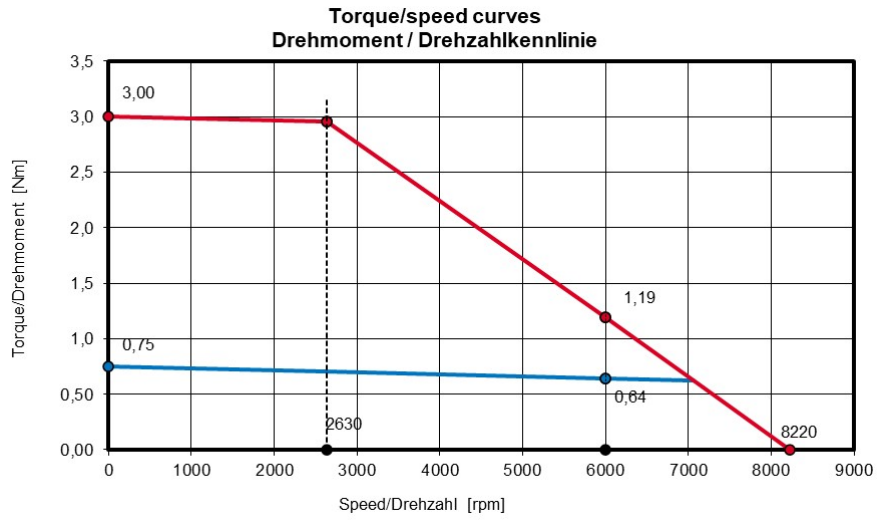
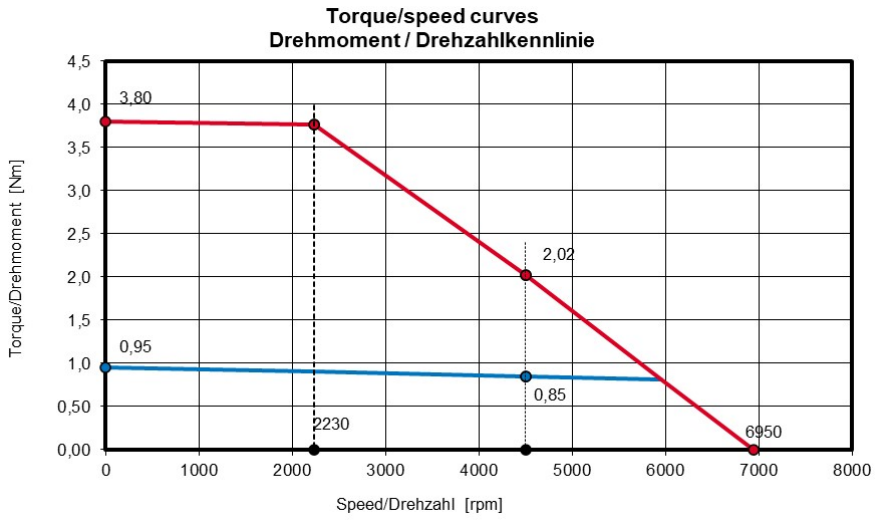


5.1.4 Performance data DC link voltage 320 V DC

Motor type			JHN2-0028-018	JHN2-0054-028	JHN2-0075-027	JHN2-0095-032
Nominal speed	N_n	rpm	4500	4500	6000	4500
DC link voltage	U_{dc}	V	320	320	320	320
Rated AC supply servo amplifier	U_n	V	220	220	220	220
Rated motor voltage	U_m	V	114	166	190	172
Rated torque	M_n	Nm	0.25	0.48	0.64	0.85
Rated current	I_n	A	0.96	1.12	1.57	1.70
Continuous stall torque	M_o	Nm	0.28	0.54	0.75	0.95
Continuous stall current	I_o	A	0.97	1.17	1.71	1.82
Max. torque	M_{max}	Nm	1.1	2.2	3.0	3.8

Motor type			JHN2-0028-018	JHN2-0054-028	JHN2-0075-027	JHN2-0095-032
Max. current	I_{max}	A	4.4	5.4	7.9	8.4
Max. speed	N_{max}	rpm	12000	12000	12000	12000
Voltage constant	K_E	V/1000	17.5	28.0	26.5	31.5
Torque constant	K_T	Nm/A	0.29	0.46	0.44	0.52
Winding resistance	R_{2ph}	Ω	28.3	25.9	13.4	13.1
Winding inductance	L_{2ph}	mH	28.4	32.3	18.0	19.0
Motor pole count	P_{mot}		6	6	6	6
Idling speed	N_o	rpm	12260	7740	8220	6950
Torque at I_{max}/U_n	M_z	Nm	1.1	2.1	3.0	3.8
Speed at I_{max}/U_n	N_z	rpm	2540	1520	2630	2230
Max. torque at n_n	M_x	Nm	0.81	1.1	1.2	2.0
Electrical time constant	T_{el}	ms	1.0	1.2	1.3	1.5
Mechanical time constant	T_{mech}	ms	2.9	1.5	1.1	0.92
Thermal time constant	T_{th}	min	10.0	12.0	12.0	18.0
Rotor inertia without brake	J	$kg*cm^2$	0.05	0.07	0.09	0.11
Weight without brake	m	kg	0.74	0.93	1.1	1.3
Axial load	F_A	N	41	45	47	48
Radial load	F_R	N	216	234	246	254

Torque speed characteristics

JHN2 320 V	JHN2-0028-018 	JHN2-0054-028 
JHN2 320 V	JHN2-0075-027 	JHN2-0095-032 

5.1.5 Performance data DC link voltage 560 V DC

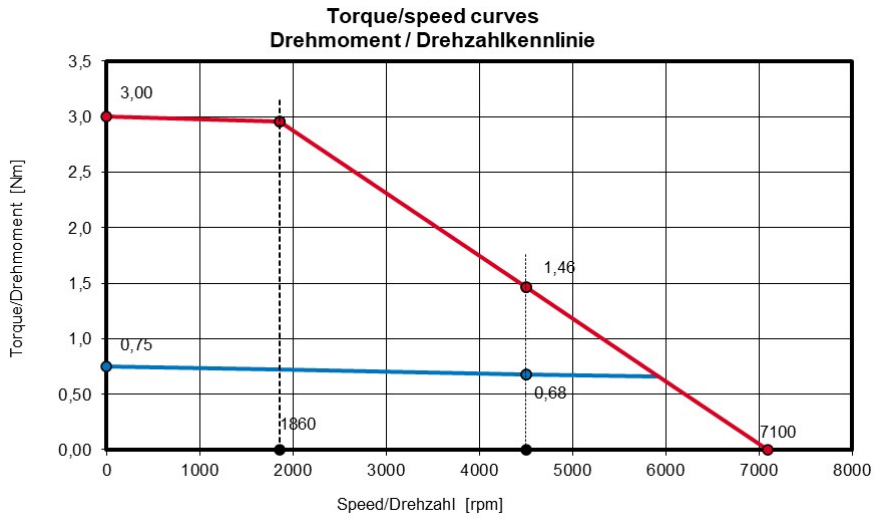
Motor type			JHN2-0075-053	JHN2-0075-030	JHN2-0095-050
Nominal speed	N_n	rpm	4500	8000	4500
DC link voltage	U_{dc}	V	560	560	560
Rated AC supply servo amplifier	U_n	V	380	380	380
Rated motor voltage	U_m	V	301	267	274
Rated torque	M_n	Nm	0.68	0.50	0.85
Rated current	I_n	A	0.83	1.14	1.07
Continuous stall torque	M_o	Nm	0.75	0.75	0.95
Continuous stall current	I_o	A	0.86	1.54	1.15
Max. torque	M_{max}	Nm	3.0	3.0	3.8
Max. current	I_{max}	A	3.9	7.1	5.3
Max. speed	N_{max}	rpm	12000	12000	12000
Voltage constant	K_E	V/1000	53.0	29.5	50.0
Torque constant	K_T	Nm/A	0.88	0.49	0.83
Winding resistance	R_{2ph}	Ω	54	17.0	33.6
Winding inductance	L_{2ph}	mH	72	22.7	48.5
Motor pole count	P_{mot}		6	6	6
Idling speed	N_o	rpm	7100	12780	7560
Torque at I_{max}/U_n	M_z	Nm	3.0	3.0	3.8
Speed at I_{max}/U_n	N_z	rpm	1860	4900	2590
Max. torque at n_n	M_x	Nm	1.5	1.8	2.4
Electrical time constant	T_{el}	ms	1.3	1.3	1.4
Mechanical time constant	T_{mech}	ms	1.1	1.1	0.93

Motor type			JHN2-0075-053	JHN2-0075-030	JHN2-0095-050
Thermal time constant	T_{th}	min	12.0	12.0	18.0
Rotor inertia without brake	J	kg*cm^2	0.09	0.09	0.11
Weight without brake	m	kg	1.1	1.1	1.3
Axial load	F_A	N	47	48	48
Radial load	F_R	N	246	254	254

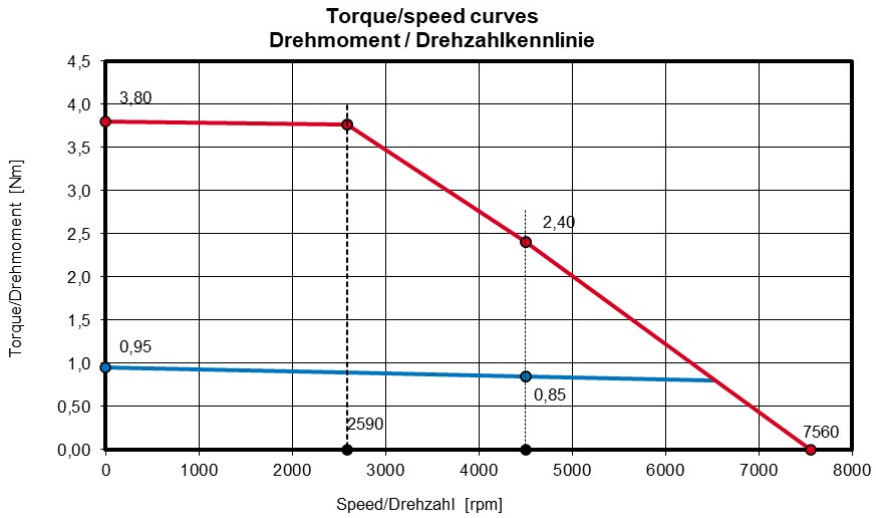
Torque speed characteristics

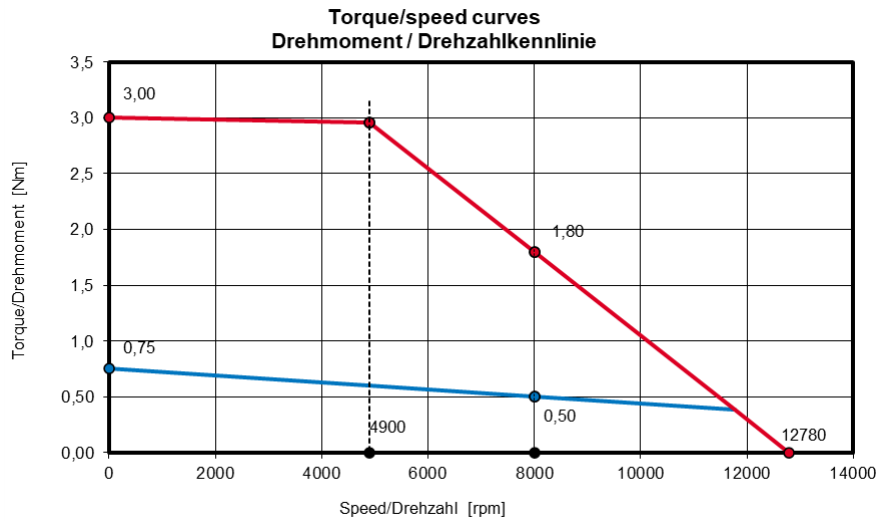
JHN2
560 V

JHN2-0075-053



JHN2-0095-050



JHN2 560 V	JHN2-0075-030 	

5.2 Flange size JHN3

5.2.1 Dimensions JHN3

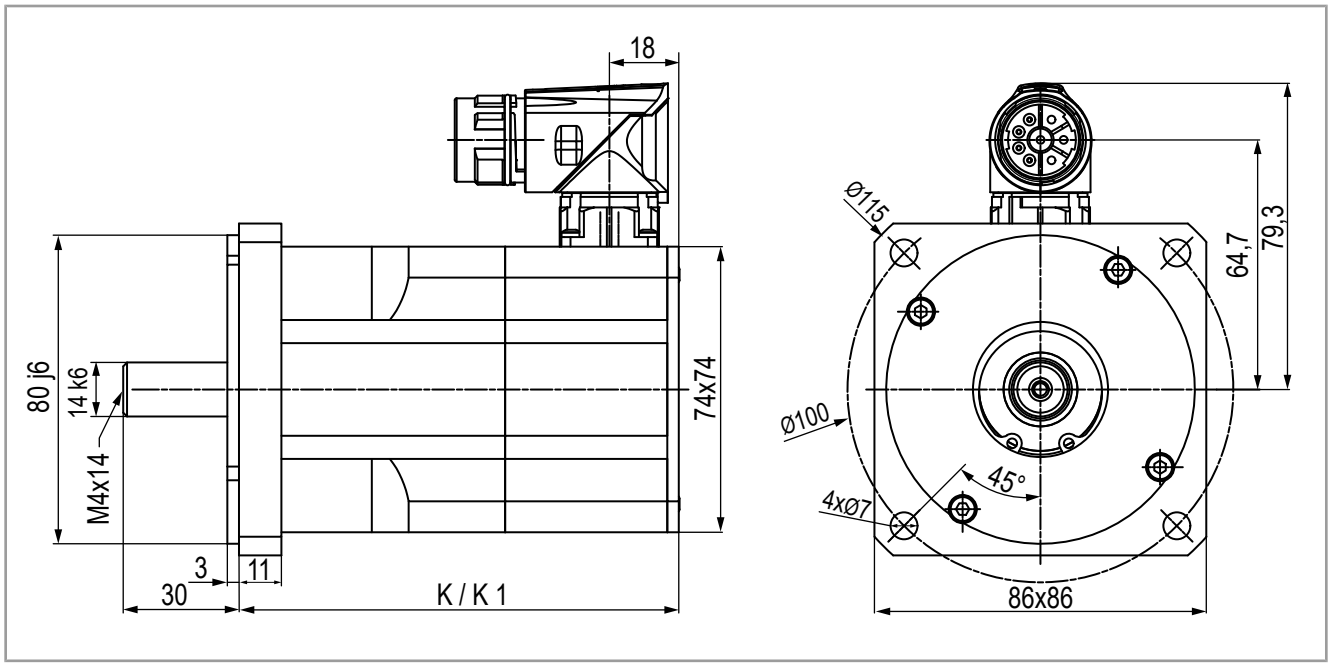


Fig. 9: Dimensions JHN3 in mm

	P	K	K1	K	K1	K	K1	K	K1
Type	**Resolver**			**EEx37**		**EKx36/SKx36**		**SRx50**	
JHN3-0115	M23	82	120	96	142	99	144	101.5	148
JHN3-0205	M23	100	138	114	160	117	162	119.5	166
JHN3-0350	M23	136	174	150	196	153	198	155.5	202
JHN3-0480	M23	172	210	186	232	189	234	191.5	238

Tab. 11: Dimensions

Key:
P = Power connector size
K = Dimension without brake
K1 = Dimension with brake

5.2.2 Technical data of the brake for motor type JHN3

Parameter	Value
Holding torque M_{BR}	4.5 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +6 %) V
Rated power P_{BR}	12 W
Rotor inertia J_{BR}	0.18 kg*cm^2
Weight m_{BR}	0.59 kg

Tab. 12: Technical data of the brake for motor type JHN2

5.2.3 Performance data DC link voltage 48 V DC

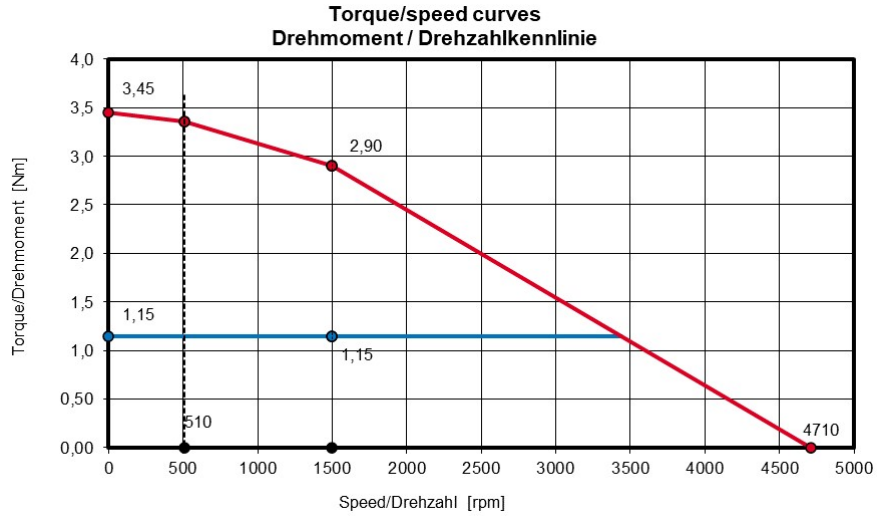
Motor type			JHN3-0115-007
Nominal speed	N_n	rpm	1500
DC link voltage	U_{dc}	V	48.0
Rated AC supply servo amplifier	U_n	V	33.0
Rated motor voltage	U_m	V	16.0
Rated torque	M_n	Nm	1.15
Rated current	I_n	A	11.3
Continuous stall torque	M_o	Nm	1.15
Continuous stall current	I_o	A	10.0
Max. torque	M_{max}	Nm	3.5
Max. current	I_{max}	A	44
Max. speed	N_{max}	rpm	12000
Voltage constant	K_E	V/1000	6.9
Torque constant	K_T	Nm/A	0.11
Winding resistance	R_{2ph}	Ω	0.34
Winding inductance	L_{2ph}	mH	0.75
Motor pole count	P_{mot}		10
Idling speed	N_o	rpm	4710
Torque at I_{max}/U_n	M_z	Nm	3.4
Speed at I_{max}/U_n	N_z	rpm	510
Max. torque at n_n	M_x	Nm	2.9
Electrical time constant	T_{el}	ms	2.2
Mechanical time constant	T_{mech}	ms	1.4

Motor type			JHN3-0115-007
Thermal time constant	T_{th}	min	21
Rotor inertia without brake	J	kg*cm^2	0.31
Weight without brake	m	kg	1.5
Axial load	F_A	N	54
Radial load	F_R	N	283

Torque speed characteristics

JHN3
48 V

JHN3-0115-007



5.2.4 Performance data DC link voltage 320 V DC

Motor type			JHN3-0115-035	JHN3-0205-025	JHN3-0205-045	JHN3-0350-035	JHN3-0350-050	JHN3-0480-060
Nominal speed	N_n	rpm	3000	6000	3000	6000	3000	3000

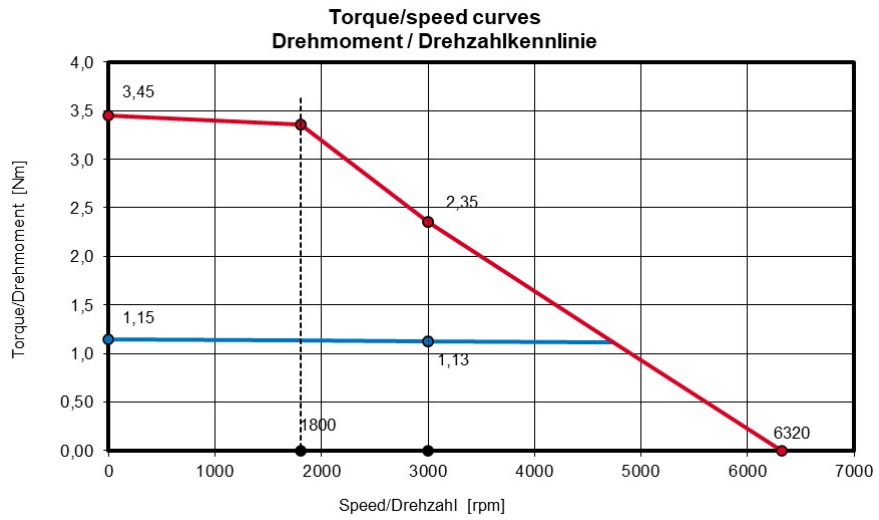
Motor type			JHN3-0115-035	JHN3-0205-025	JHN3-0205-045	JHN3-0350-035	JHN3-0350-050	JHN3-0480-060
DC link voltage	U_{dc}	V	320	320	320	320	320	320
Rated AC supply servo amplifier	U_n	V	220	220	220	220	220	220
Rated motor voltage	U_m	V	136	146	153	164	156	180
Rated torque	M_n	Nm	1.13	1.65	1.90	2.5	3.0	3.7
Rated current	I_n	A	2.3	5.5	3.1	6.8	4.3	4.5
Continuous stall torque	M_o	Nm	1.15	2.1	2.1	3.5	3.5	4.8
Continuous stall current	I_o	A	2.0	5.1	2.8	6.8	4.2	4.8
Max. torque	M_{max}	Nm	3.5	6.2	6.2	10.5	10.5	14.4
Max. current	I_{max}	A	9.2	21	12.7	25	19.4	17.3
Max. speed	N_{max}	rpm	12000	12000	12000	12000	12000	12000
Voltage constant	K_E	V/1000	34.5	24.5	44.5	31.0	50.0	60.0
Torque constant	K_T	Nm/A	0.57	0.41	0.74	0.51	0.83	0.99
Winding resistance	R_{2ph}	Ω	8.4	1.68	5.4	1.10	2.8	2.5
Winding inductance	L_{2ph}	mH	18.0	4.1	13.3	3.1	8.1	7.5
Motor pole count	P_{mot}		10	10	10	10	10	10
Idling speed	N_o	rpm	6320	8950	4920	7080	4390	3660
Torque at I_{max}/U_n	M_z	Nm	3.4	6.0	6.0	10.4	10.4	14.2
Speed at I_{max}/U_n	N_z	rpm	1800	3920	1720	3910	1870	2010
Max. torque at n_n	M_x	Nm	2.4	3.9	3.8	4.8	6.6	7.1
Electrical time constant	T_{el}	ms	2.1	2.4	2.5	2.8	2.9	3.0
Mechanical time constant	T_{mech}	ms	1.4	0.97	0.95	0.75	0.74	0.67
Thermal time constant	T_{th}	min	21	23	23	27	27	30
Rotor inertia without brake	J	$kg*cm^2$	0.31	0.55	0.55	1.0	1.0	1.5
Weight without brake	m	kg	1.5	2.0	2.0	2.9	2.9	3.8

Motor type			JHN3-0115-035	JHN3-0205-025	JHN3-0205-045	JHN3-0350-035	JHN3-0350-050	JHN3-0480-060
Axial load	F_A	N	54	62	62	68	68	75
Radial load	F_R	N	283	327	327	356	356	392

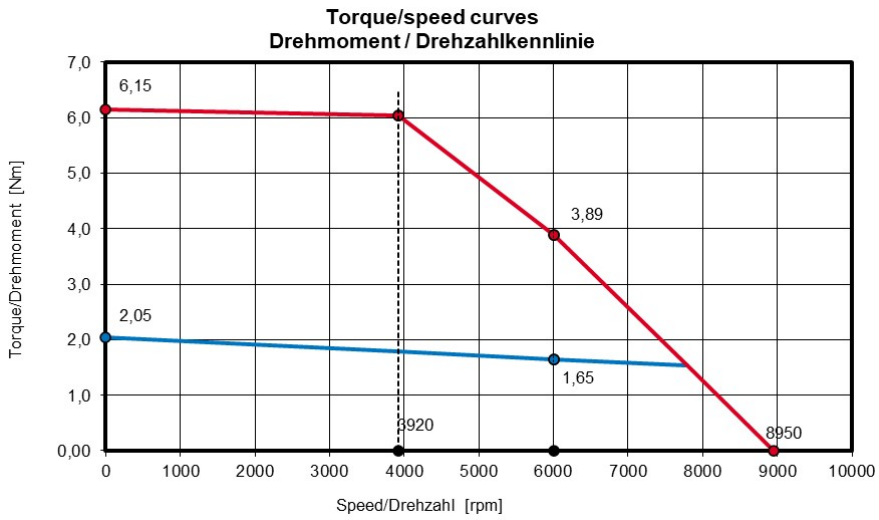
Torque speed characteristics

JHN3
320 V

JHN3-0115-035

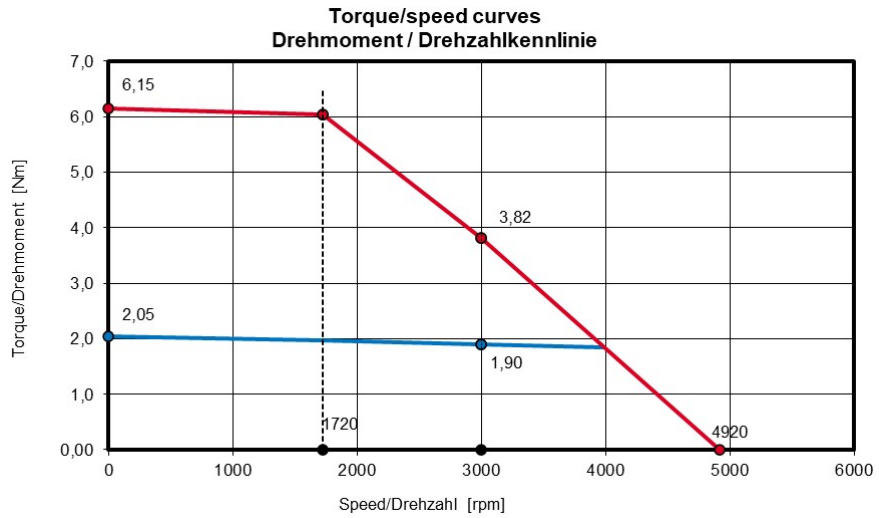


JHN3-0205-025

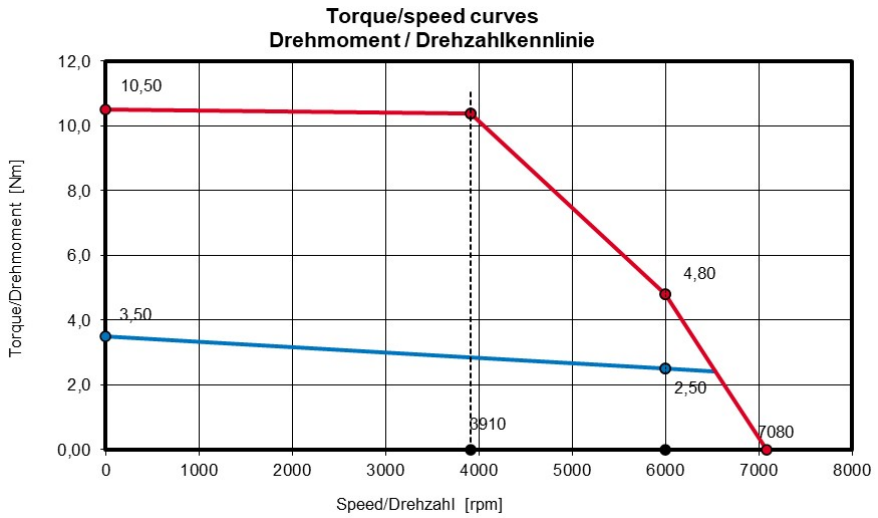


JHN3
320 V

JHN3-0205-045

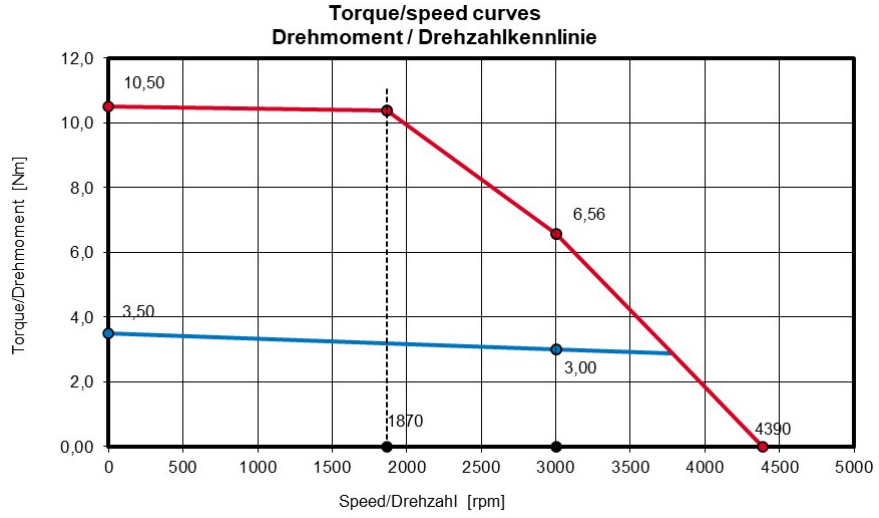


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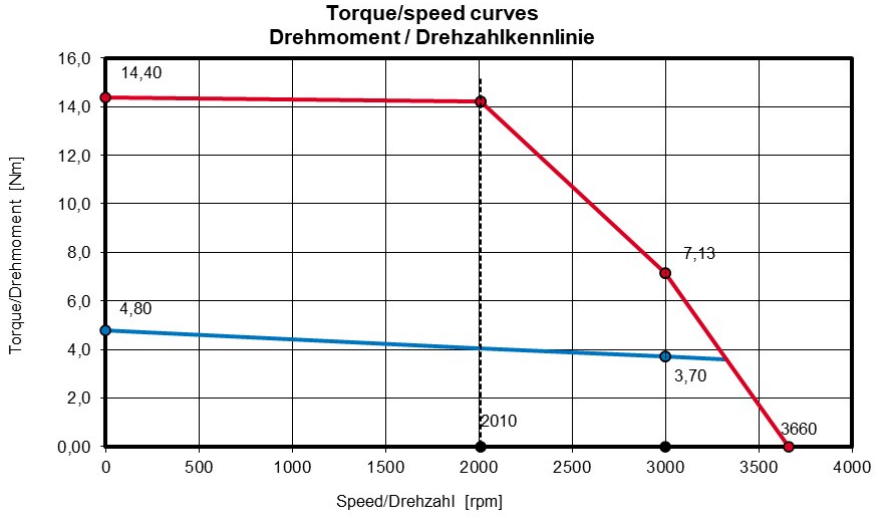


JHN3
320 V

JHN3-0350-050



JHN3-0480-060



5.2.5 Performance data DC link voltage 560 V DC

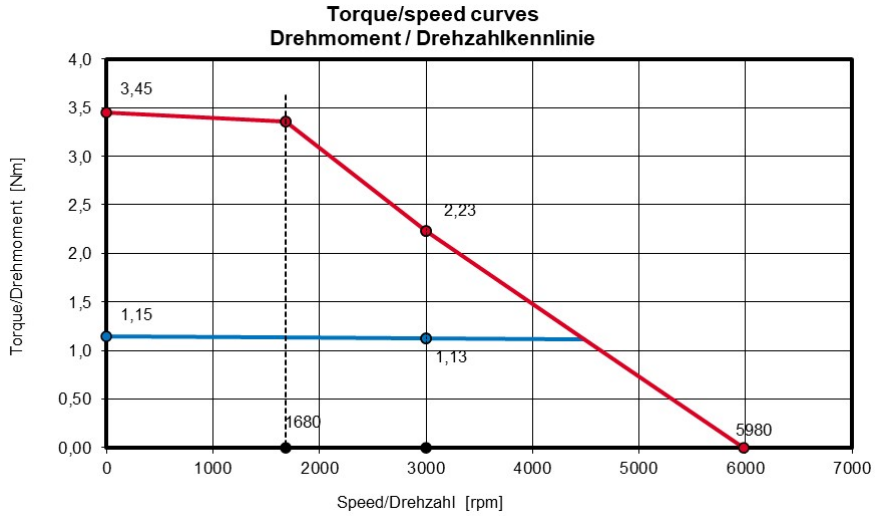
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Nominal speed	N_n	rpm	3000	6000	3000	6000	6000	4500	3000	3000
DC link voltage	U_{dc}	V	560	560	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	380	380	380	380	220	380	380	380
Rated motor voltage	U_m	V	248	269	273	231	264	301	278	310
Rated torque	M_n	Nm	1.13	1.01	1.90	1.65	2.5	2.8	3.0	3.7
Rated current	I_n	A	1.26	1.99	1.72	3.5	4.2	3.0	2.4	2.6
Continuous stall torque	M_o	Nm	1.15	1.15	2.1	2.1	3.5	3.5	3.5	4.8
Continuous stall current	I_o	A	1.10	1.78	1.57	3.2	4.2	3.0	2.4	2.8
Max. torque	M_{max}	Nm	3.5	3.5	6.2	6.2	10.5	10.5	10.5	14.4
Max. current	I_{max}	A	5.0	7.8	7.2	14.5	19.4	10.9	10.9	10.1
Max. speed	N_{max}	rpm	12000	12000	12000	12000	12000	12000	12000	12000
Voltage constant	K_E	V/1000	63.0	39.0	79.0	39.0	50.0	70.0	89.0	103.0
Torque constant	K_T	Nm/A	1.04	0.65	1.31	0.65	0.83	1.16	1.47	1.70
Winding resistance	R_{2ph}	Ω	27.8	10.7	17.3	4.2	2.8	5.5	8.9	7.5
Winding inductance	L_{2ph}	mH	59	23.0	42.4	10.2	8.1	15.9	25.5	22.7
Motor pole count	P_{mot}		10	10	10	10	10	10	10	10
Idling speed	N_o	rpm	5980	9680	4790	9720	7590	5420	4260	3680
Torque at I_{max}/U_n	M_z	Nm	3.4	3.4	6.0	6.0	10.4	10.4	10.4	14.2
Speed at I_{max}/U_n	N_z	rpm	1680	3230	1630	3940	4240	2900	1800	1990
Max. torque at n_n	M_x	Nm	2.2	1.9	3.6	4.1	6.1	4.9	6.2	7.1
Electrical time constant	T_{el}	ms	2.1	2.1	2.5	2.4	2.9	2.9	2.9	3.0
Mechanical time constant	T_{mech}	ms	1.4	1.4	0.96	0.96	0.74	0.73	0.74	0.68

Motor type			JHN3-0115-063	JHN3-0115-039	JHN3-0205-079	JHN3-0205-039	JHN3-0350-050	JHN3-0350-070	JHN3-0350-089	JHN3-0480-103
Thermal time constant	T_{th}	min	21	21	23	23	27	27	27	30
Rotor inertia without brake	J	kg*cm^2	0.31	0.31	0.55	0.55	1.0	1.0	1.0	1.5
Weight without brake	m	kg	1.5	1.5	2.0	2.0	2.9	2.9	2.9	3.8
Axial load	F_A	N	54	54	62	62	68	68	68	75
Radial load	F_R	N	283	283	327	327	356	356	356	392

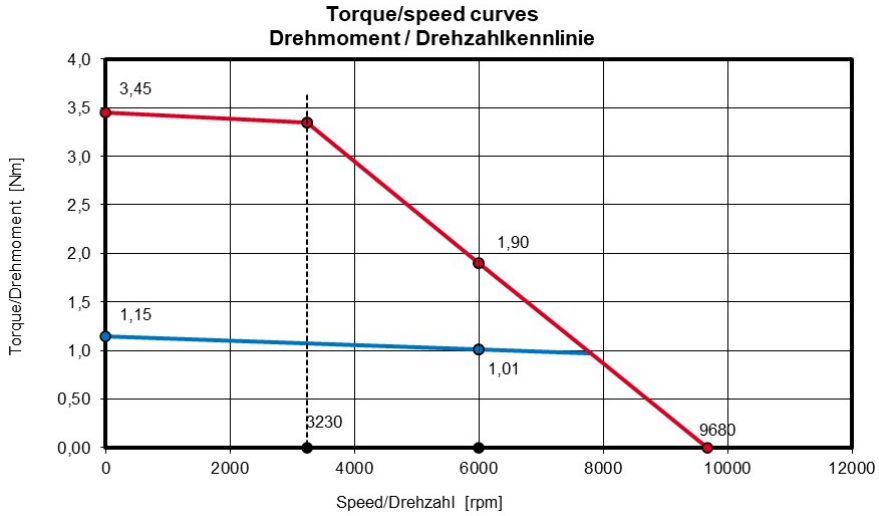
Torque speed characteristics

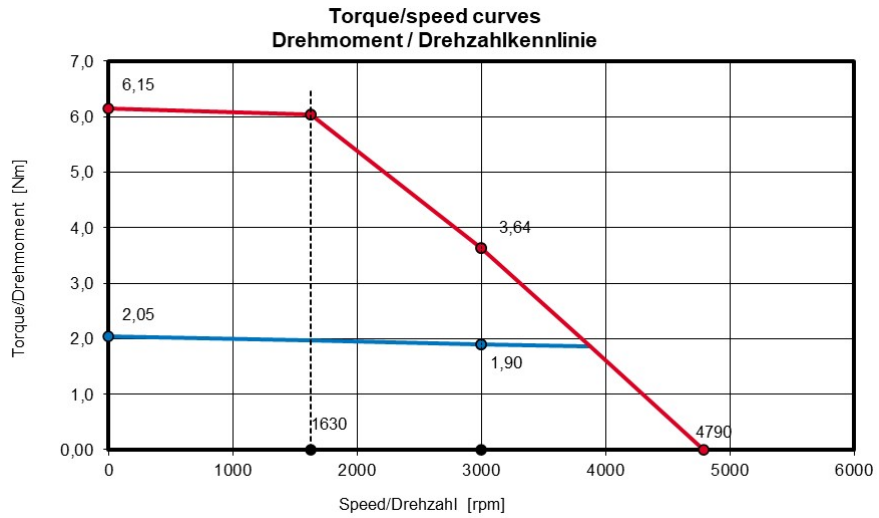
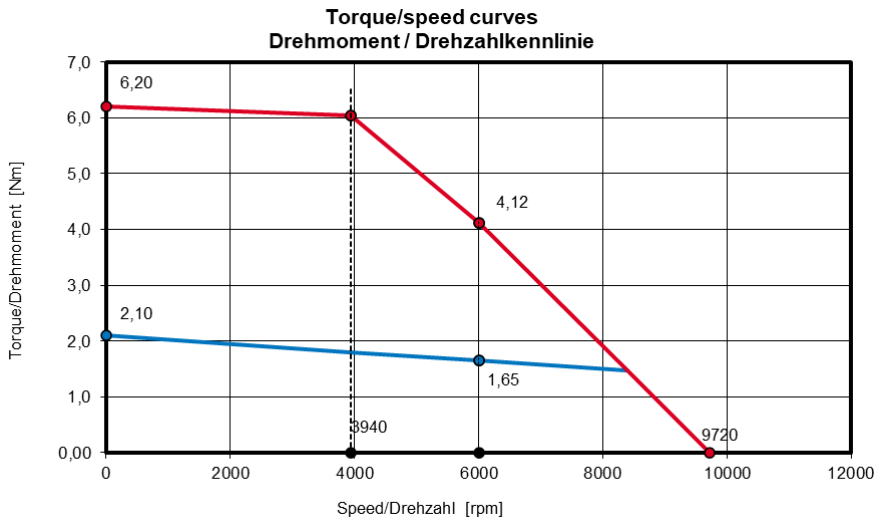
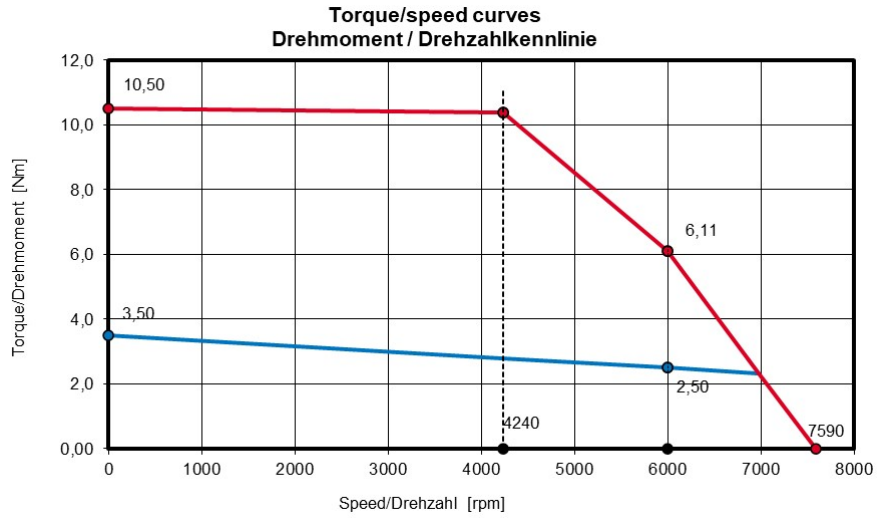
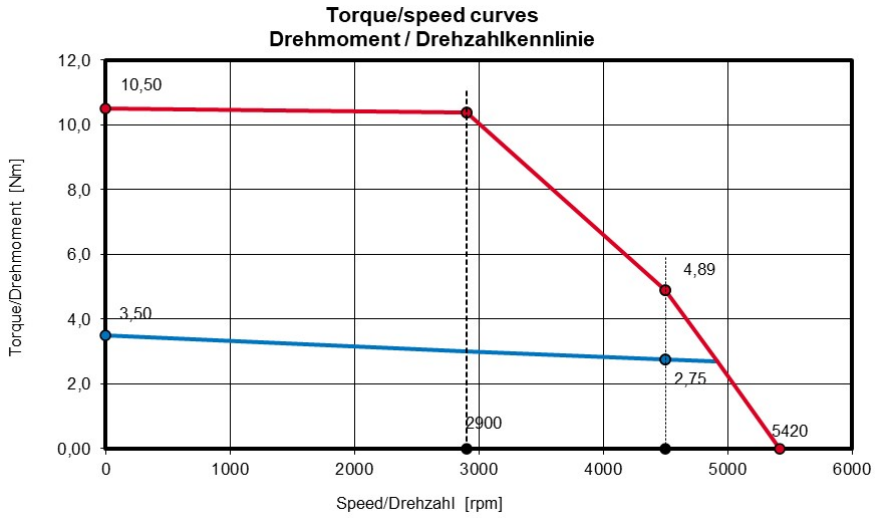
JHN3
560 V

JHN3-0115-063

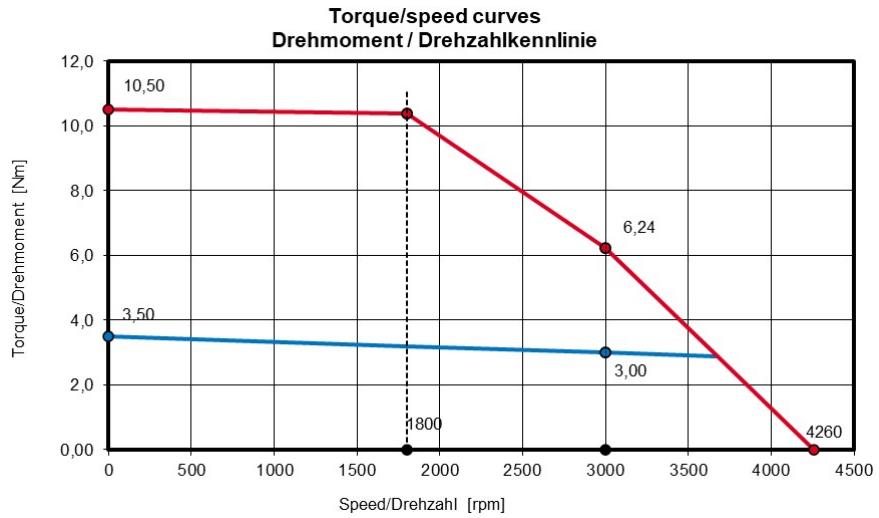


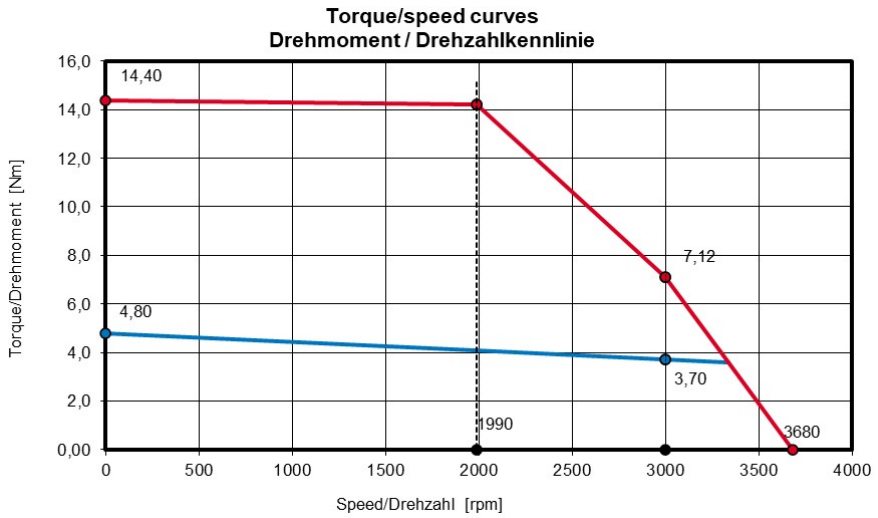
JHN3-0115-039



JHN3 560 V	JHN3-0205-079 	JHN3-0205-039 
JHN3 560 V	JHN3-0350-050 	JHN3-0350-070 

JHN3 560 V	JHN3-0350-089	JHN3-0480-103





5.3 Flange size JHN4

5.3.1 Dimensions JHN4

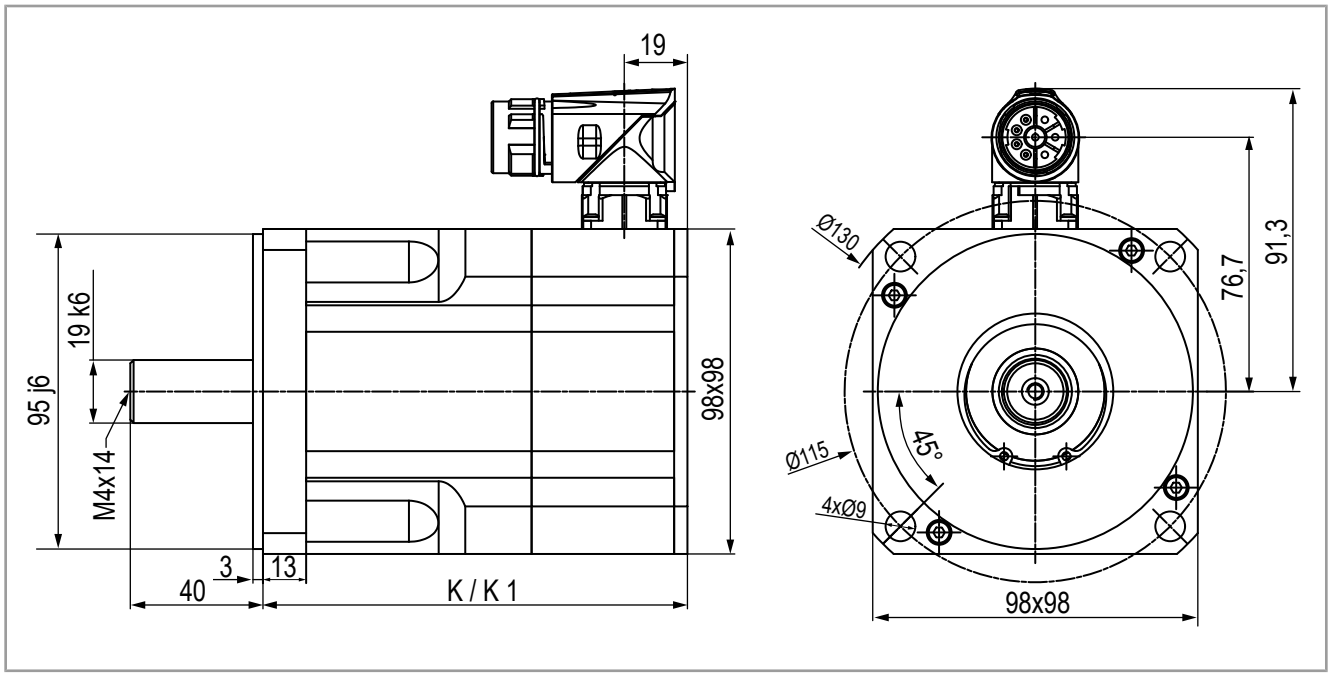


Fig. 10: Dimensions JHN4 in mm

	P	K	K1	K	K1	K	K1	K	K1
Type	**Resolver**			**EEx37**		**EKx36/SKx36**		**SRx50**	
JHN4-0510	M23	113	154	128	173	132	182.5	135	184
JHN4-0750	M23	143	184	158	203	162	212.5	165	214
JHN4-0960	M23	173	214	188	233	192	242.5	195	244
JHN4-1130	M23	203	244	218	263	222	272.5	225	274

Tab. 13: Dimensions

Key:
P = Power connector size
K = Dimension without brake
K1 = Dimension with brake

5.3.2 Technical data of the brake for motor type JHN4

Parameter	Value
Holding torque M_{BR}	9 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +6 %) V
Rated power P_{BR}	18 W
Rotor inertia J_{BR}	0.054 kg*cm^2
Weight m_{BR}	0.82 kg

Tab. 14: Technical data of the brake for motor type JHN2

5.3.3 Performance data DC link voltage 320 V DC

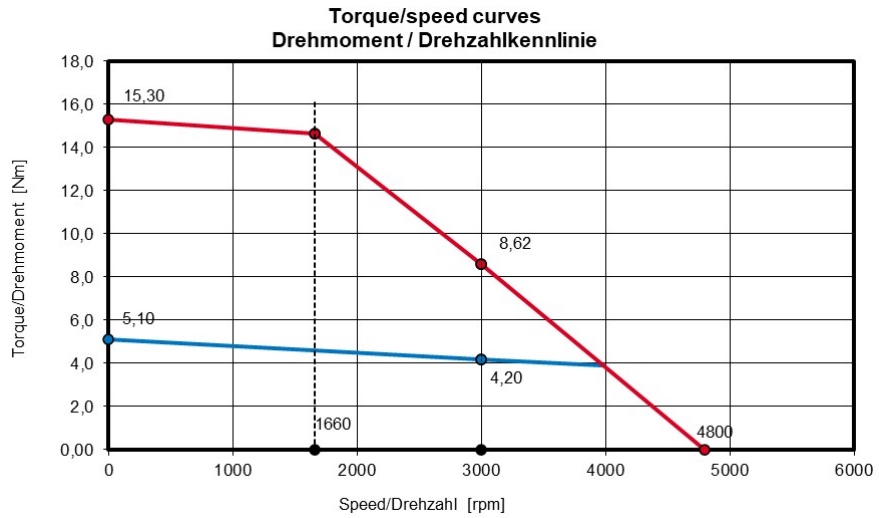
Motor type			JHN4-0510-046	JHN4-0510-032	JHN4-0750-051	JHN4-0960-054	JHN4-1130-062
Nominal speed	N_n	rpm	3000	4500	3000	3000	3000
DC link voltage	U_{dc}	V	320	320	320	320	320
Rated AC supply servo amplifier	U_n	V	220	220	220	220	220
Rated motor voltage	U_m	V	155	152	162	161	180
Rated torque	M_n	Nm	4.2	3.9	6.1	7.7	8.8
Rated current	I_n	A	7.0	9.9	8.8	10.8	10.7
Continuous stall torque	M_o	Nm	5.1	5.1	7.5	9.6	11.3
Continuous stall current	I_o	A	6.8	9.8	8.9	10.7	11.0
Max. torque	M_{max}	Nm	15.3	15.3	23	29	34
Max. current	I_{max}	A	31	45	41	49	41
Max. speed	N_{max}	rpm	9000	9000	9000	9000	9000
Voltage constant	K_E	V/1000	45.5	31.5	51.0	54.0	62.0
Torque constant	K_T	Nm/A	0.75	0.52	0.84	0.89	1.03
Winding resistance	R_{2ph}	Ω	1.24	0.61	0.79	0.62	0.61
Winding inductance	L_{2ph}	mH	6.8	3.3	4.8	3.6	3.8
Motor pole count	P_{mot}		10	10	10	10	10
Idling speed	N_o	rpm	4800	6940	4300	4060	3540
Torque at I_{max}/U_n	M_z	Nm	14.7	14.7	22	28	33
Speed at I_{max}/U_n	N_z	rpm	1660	2480	1740	1840	1970
Max. torque at n_n	M_x	Nm	8.6	8.4	12.7	16.6	16.0
Electrical time constant	T_{el}	ms	5.5	5.4	6.1	5.8	6.2
Mechanical time constant	T_{mech}	ms	0.77	0.79	0.63	0.60	0.57

Motor type			JHN4-0510-046	JHN4-0510-032	JHN4-0750-051	JHN4-0960-054	JHN4-1130-062
Thermal time constant	T_{th}	min	25	25	30	35	40
Rotor inertia without brake	J	kg*cm^2	2.0	2.0	3.3	4.5	5.7
Weight without brake	m	kg	3.9	3.9	5.2	6.5	7.8
Axial load	F_A	N	113	113	124	131	135
Radial load	F_R	N	595	595	653	689	713

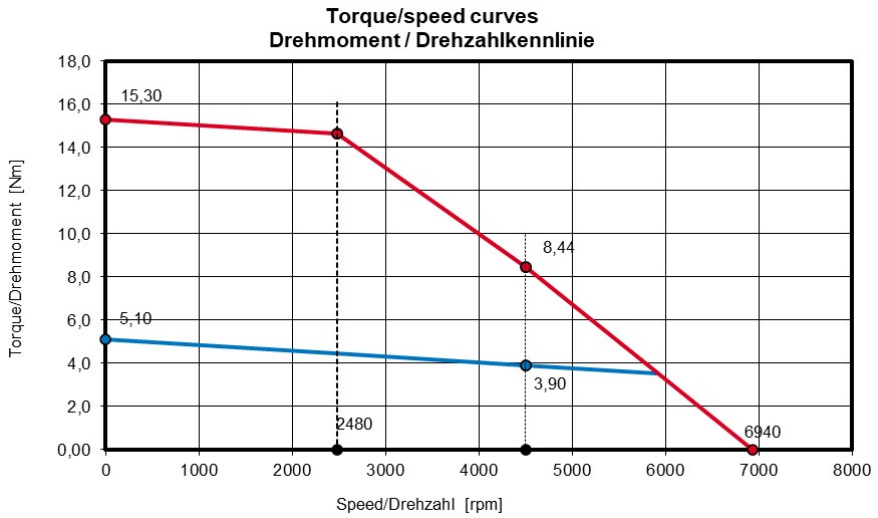
Torque speed characteristics

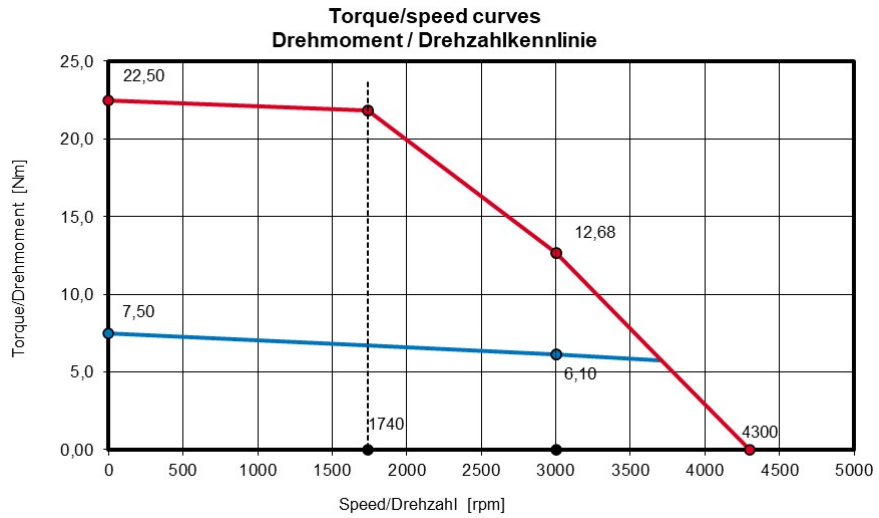
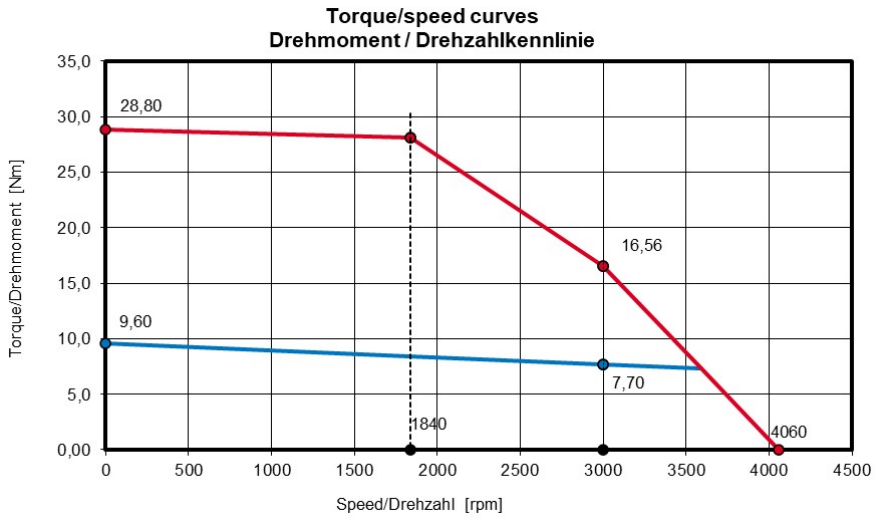
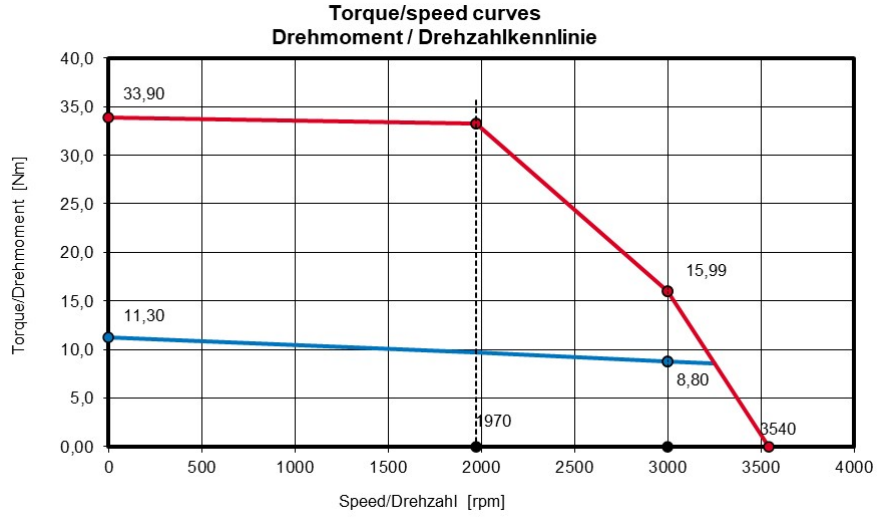
JHN4
320 V

JHN4-0510-046



JHN4-0510-032



JHN4 320 V	JHN4-0750-051  	JHN4-0960-054 
JHN4 320 V	JHN4-1130-062  	

5.3.4 Performance data DC link voltage 560 V DC

Motor type			JHN4-0510-081	JHN4-0510-046	JHN4-0750-051	JHN4-0750-062	JHN4-0750-087	JHN4-0960-097	JHN4-0960-068	JHN4-0960-054
Nominal speed	N_n	rpm	3000	6000	6000	4500	3000	3000	4500	6000
DC link voltage	U_{dc}	V	560	560	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	380	220	220	380	380	380	380	220
Rated motor voltage	U_m	V	276	273	284	278	277	289	275	262
Rated torque	M_n	Nm	4.2	3.4	4.8	5.5	6.1	7.7	6.3	5.0
Rated current	I_n	A	3.9	6.4	7.8	6.9	5.1	6.0	7.8	8.7
Continuous stall torque	M_o	Nm	5.1	5.1	7.5	7.5	7.5	9.6	9.6	9.6
Continuous stall current	I_o	A	3.8	6.8	8.9	7.3	5.2	6.0	8.5	10.7
Max. torque	M_{max}	Nm	15.3	15.3	23	23	23	29	29	29
Max. current	I_{max}	A	17.4	31	41	31	24	27	32	49
Max. speed	N_{max}	rpm	9000	9000	9000	9000	9000	9000	9000	9000
Voltage constant	K_E	V/1000	81.0	45.5	51.0	62.0	87.0	97.0	68.0	54.0
Torque constant	K_T	Nm/A	1.34	0.75	0.84	1.03	1.44	1.60	1.12	0.89
Winding resistance	R_{2ph}	Ω	4.0	1.24	0.79	1.15	2.3	2.0	0.97	0.62
Winding inductance	L_{2ph}	mH	21.7	6.8	4.8	7.1	13.5	11.9	5.8	3.6
Motor pole count	P_{mot}		10	10	10	10	10	10	10	10
Idling speed	N_o	rpm	4650	8310	7430	6110	4350	3910	5580	7020
Torque at I_{max}/U_n	M_z	Nm	14.7	14.7	22	22	22	28	28	28
Speed at I_{max}/U_n	N_z	rpm	1590	3050	3440	2700	1750	1750	3030	3930
Max. torque at n_n	M_x	Nm	8.2	7.4	10.7	12.3	12.8	15.2	15.7	13.5
Electrical time constant	T_{el}	ms	5.5	5.5	6.1	6.2	5.9	6.0	6.0	5.8
Mechanical time constant	T_{mech}	ms	0.78	0.77	0.63	0.62	0.62	0.60	0.60	0.60

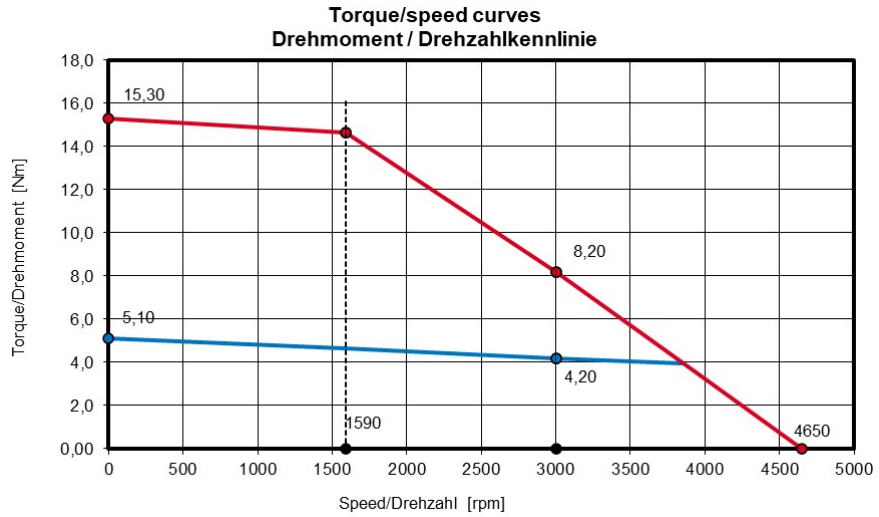
Motor type			JHN4-0510-081	JHN4-0510-046	JHN4-0750-051	JHN4-0750-062	JHN4-0750-087	JHN4-0960-097	JHN4-0960-068	JHN4-0960-054
Thermal time constant	T_{th}	min	25	25	30	30	30	35	35	35
Rotor inertia without brake	J	kg*cm^2	2.0	2.0	3.3	3.3	3.3	4.5	4.5	4.5
Weight without brake	m	kg	3.9	3.9	5.2	5.2	5.2	6.5	6.5	6.5
Axial load	F_A	N	113	113	124	124	124	131	131	131
Radial load	F_R	N	595	595	653	653	653	689	689	689

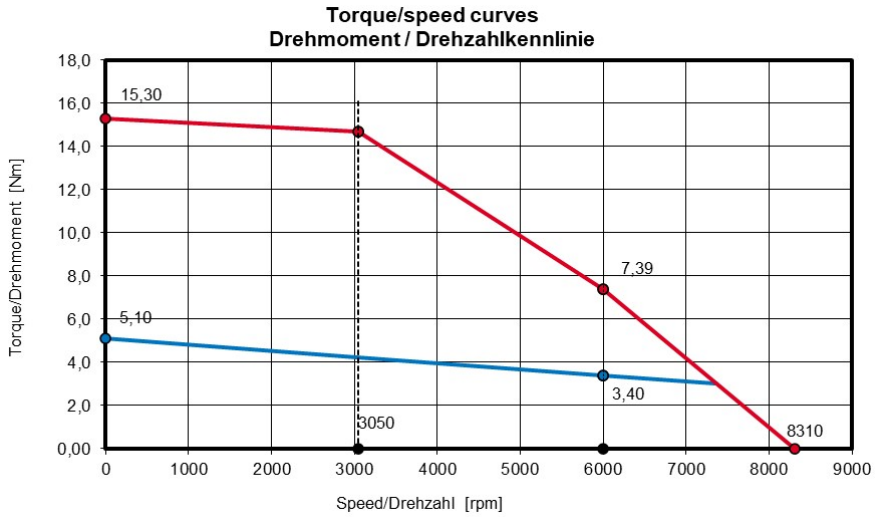
Motor type			JHN4-1130-091	JHN4-1130-062
Nominal speed	N_n	rpm	3000	5000
DC link voltage	U_{dc}	V	560	560
Rated AC supply servo amplifier	U_n	V	380	220
Rated motor voltage	U_m	V	266	248
Rated torque	M_n	Nm	8.8	6.6
Rated current	I_n	A	7.4	10.0
Continuous stall torque	M_o	Nm	11.3	11.3
Continuous stall current	I_o	A	7.5	11.0
Max. torque	M_{max}	Nm	34	34
Max. current	I_{max}	A	28	41
Max. speed	N_{max}	rpm	9000	9000
Voltage constant	K_E	V/1000	91.0	62.0
Torque constant	K_T	Nm/A	1.51	1.03
Winding resistance	R_{2ph}	Ω	1.42	0.61
Winding inductance	L_{2ph}	mH	8.9	3.8
Motor pole count	P_{mot}		10	10

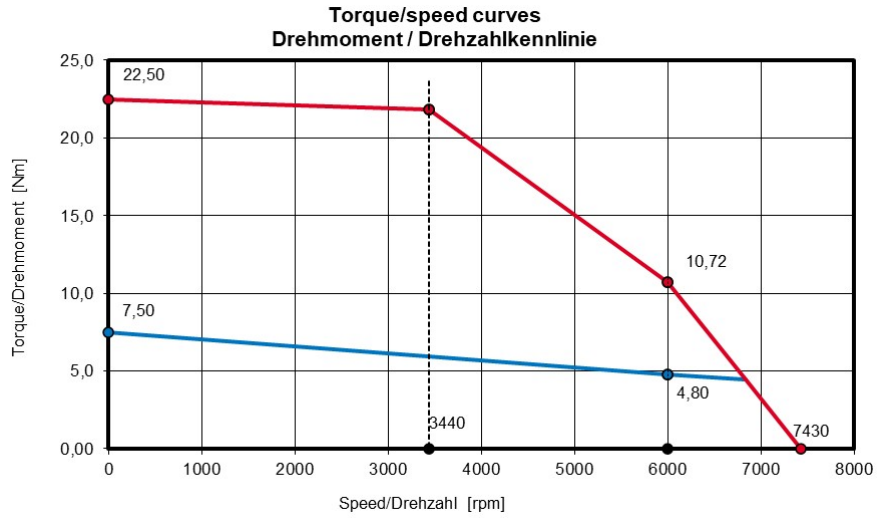
Motor type			**JHN4-1130-091**	**JHN4-1130-062**
Idling speed	N_o	rpm	4170	6430
Torque at I_{max}/U_n	M_z	Nm	33	33
Speed at I_{max}/U_n	N_z	rpm	2200	3540
Max. torque at n_n	M_x	Nm	23	21
Electrical time constant	T_{el}	ms	6.3	6.2
Mechanical time constant	T_{mech}	ms	0.62	0.57
Thermal time constant	T_{th}	min	40	40
Rotor inertia without brake	J	$kg*cm^2$	5.7	5.7
Weight without brake	m	kg	7.8	7.8
Axial load	F_A	N	135	135
Radial load	F_R	N	713	713

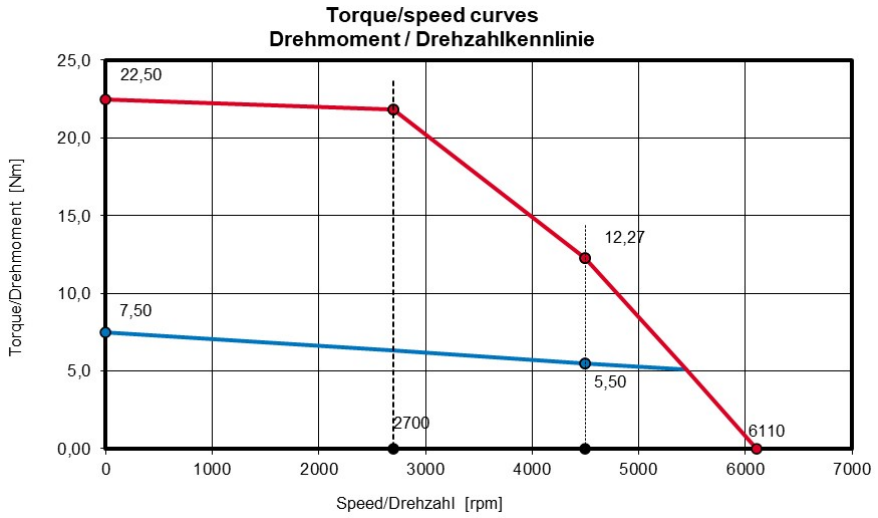
Torque speed characteristics

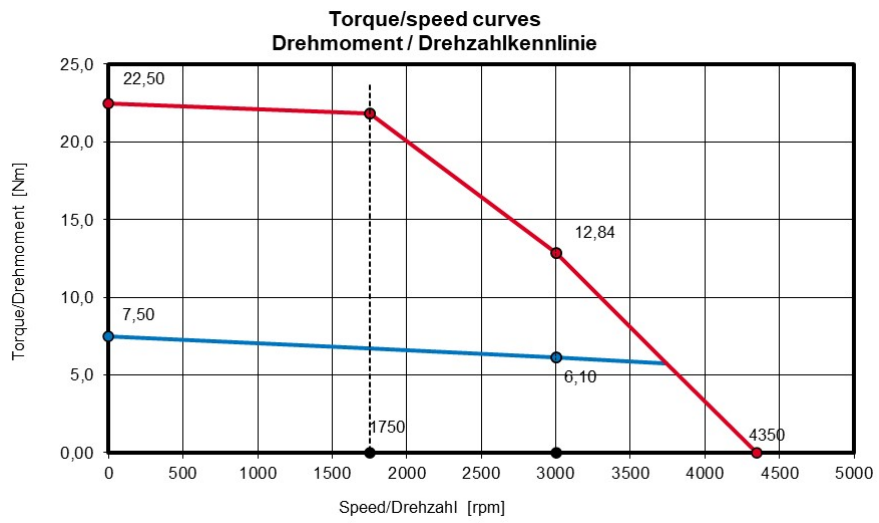
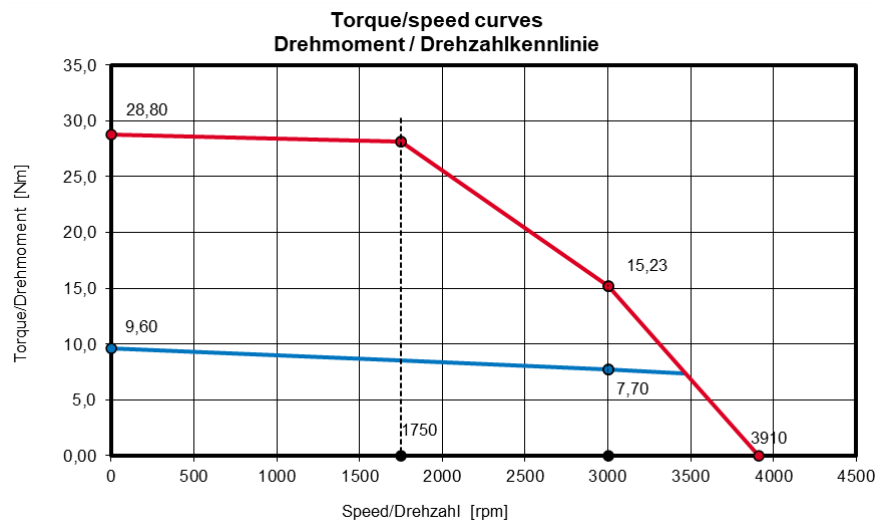
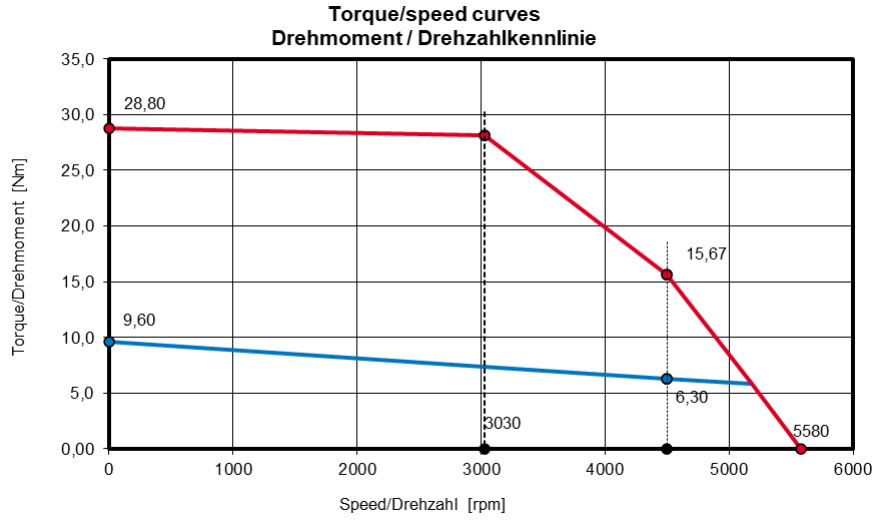
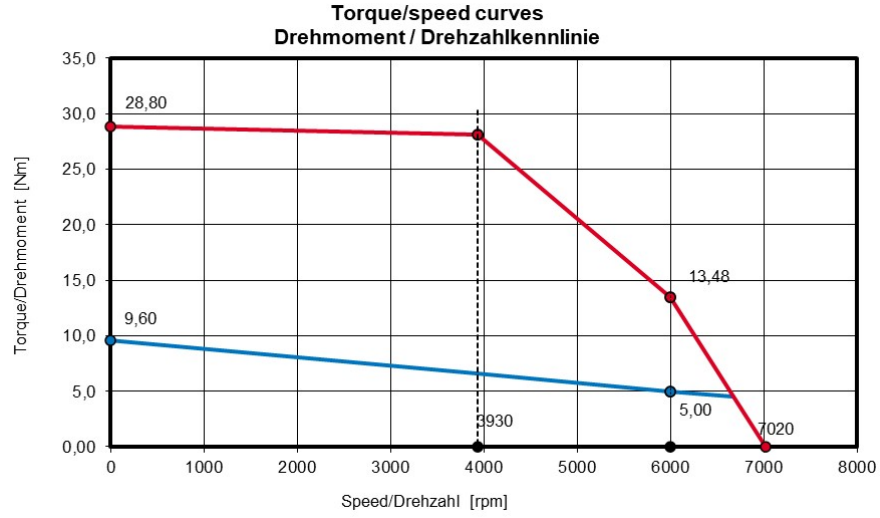
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JHN4 560 V	JHN4-0750-051	JHN4-0750-062



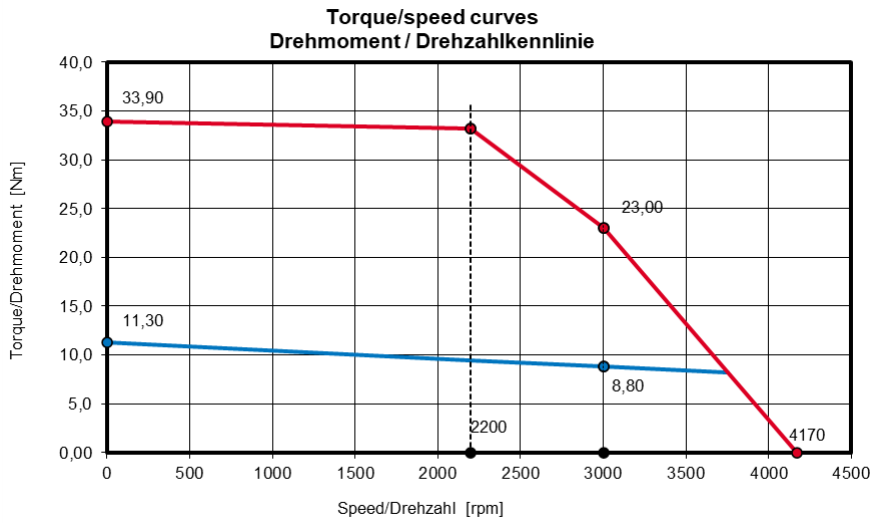


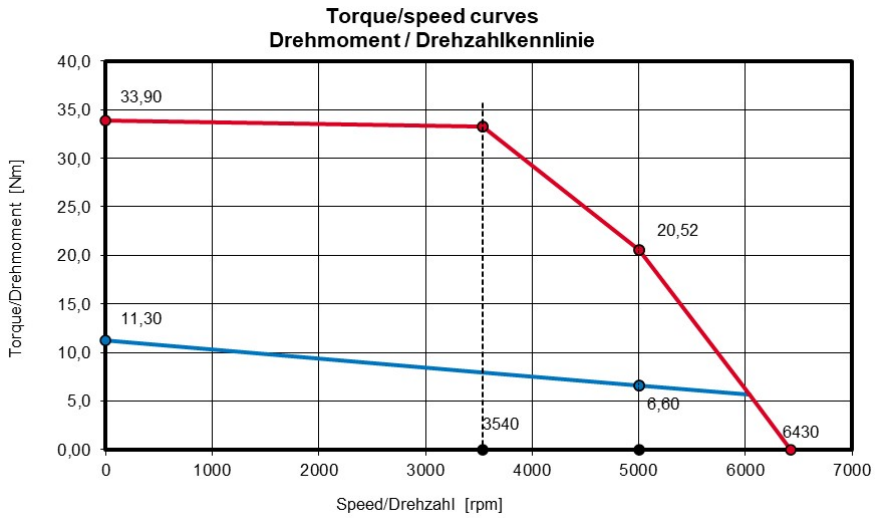




JHN4 560 V	JHN4-0750-087 	JHN4-0960-097 
JHN4 560 V	JHN4-0960-068 	JHN4-0960-054 

JHN4 560 V	JHN4-1130-091	JHN4-1130-062





5.4 Flange size JHN5

5.4.1 Dimensions JHN5

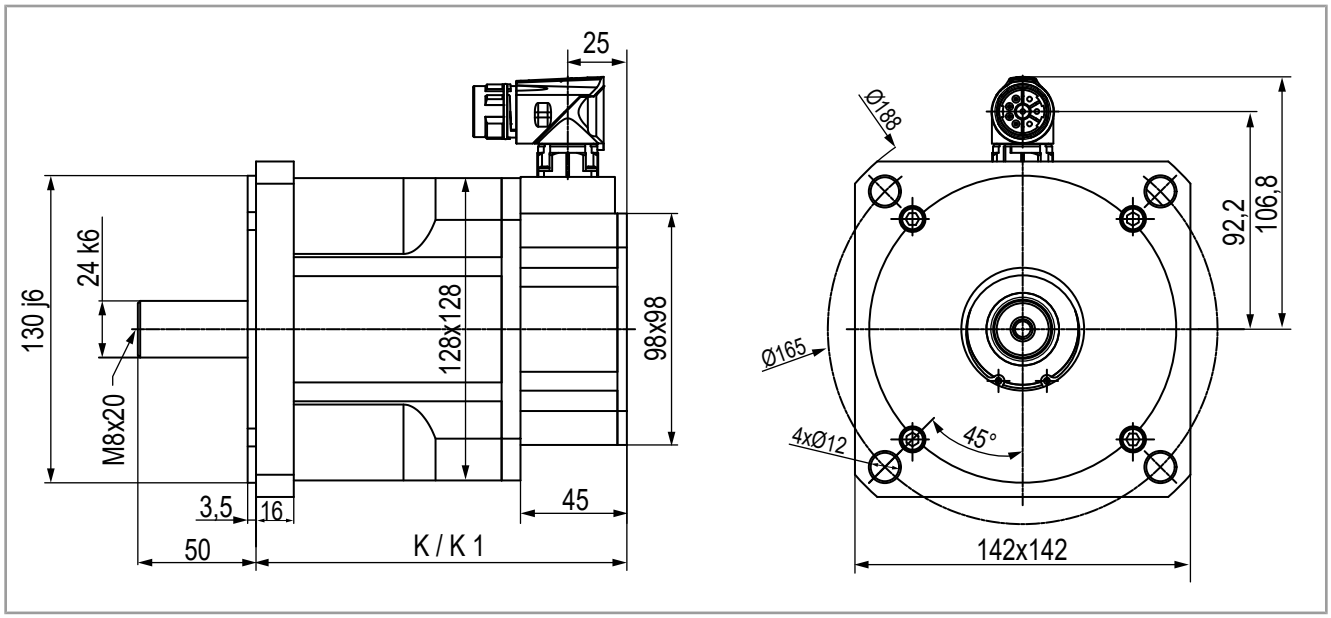


Fig. 11: Dimensions JHN5 in mm

	P	K	K1	K	K1	K	K1	K	K1
Type	**Resolver**			**EEx37**		**EKx36/SKx36**		**SRx50**	
JHN5-1200	M23	157	193	157	197	157	206	160	209
JHN5-1600	M23	187	223	187	227	187	236	190	239
JHN5-2000	M23	217	253	217	257	217	266	220	269
JHN5-2400	M23	247	283	247	287	247	296	250	299

Tab. 15: Dimensions

Key:
P = Power connector size
K = Dimension without brake
K1 = Dimension with brake

5.4.2 Technical data of the brake for motor type JHN5

Parameter	Value
Holding torque M_{BR}	18 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +6 %) V
Rated power P_{BR}	24 W
Rotor inertia J_{BR}	1.66 kg*cm^2
Weight m_{BR}	1.08 kg

Tab. 16: Technical data of the brake for motor type JHN2

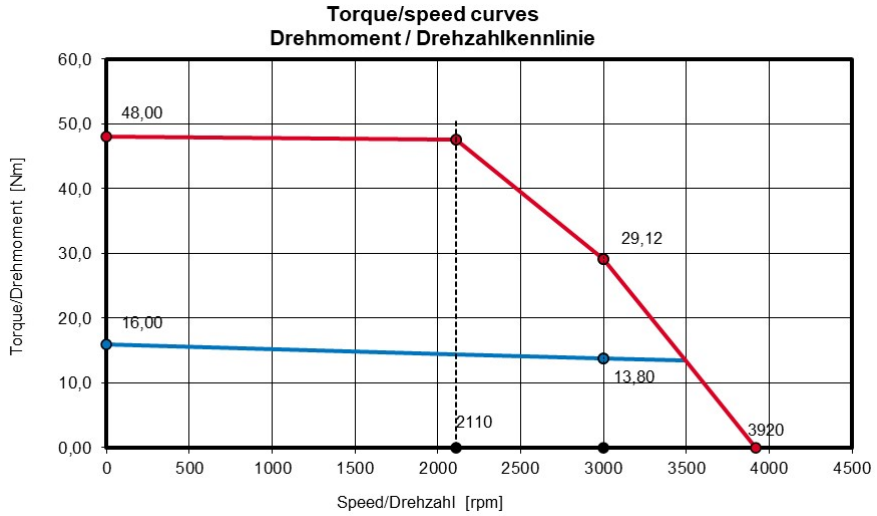
5.4.3 Performance data DC link voltage 320 V DC

Motor type			JHN5-1600-056
Nominal speed	N_n	rpm	3000
DC link voltage	U_{dc}	V	320
Rated AC supply servo amplifier	U_n	V	220
Rated motor voltage	U_m	V	173
Rated torque	M_n	Nm	13.8
Rated current	I_n	A	17.0
Continuous stall torque	M_o	Nm	16.0
Continuous stall current	I_o	A	17.3
Max. torque	M_{max}	Nm	48
Max. current	I_{max}	A	61
Max. speed	N_{max}	rpm	9000
Voltage constant	K_E	V/1000	56.0
Torque constant	K_T	Nm/A	0.93
Winding resistance	R_{2ph}	Ω	0.30
Winding inductance	L_{2ph}	mH	2.5
Motor pole count	P_{mot}		10
Idling speed	N_o	rpm	3920
Torque at I_{max}/U_n	M_z	Nm	48
Speed at I_{max}/U_n	N_z	rpm	2110
Max. torque at n_n	M_x	Nm	29
Electrical time constant	T_{el}	ms	8.3
Mechanical time constant	T_{mech}	ms	0.70

Motor type			JHN5-1600-056
Thermal time constant	T_{th}	min	55
Rotor inertia without brake	J	kg*cm^2	11.5
Weight without brake	m	kg	9.5
Axial load	F_A	N	136
Radial load	F_R	N	713

Torque speed characteristics

JHN5 320 V	JHN5-1600-056	



5.4.4 Performance data DC link voltage 560 V DC

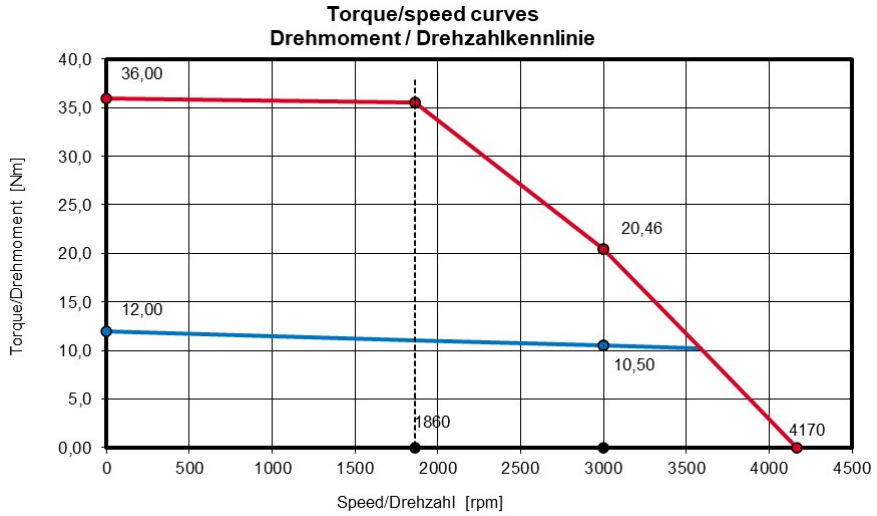
Motor type			JHN5-1200-091	JHN5-1200-063	JHN5-1600-096	JHN5-1600-077	JHN5-2000-104	JHN5-2400-104
Nominal speed	N_n	rpm	3000	4500	3000	4000	3000	3000
DC link voltage	U_{dc}	V	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	380	380	380	380	380	380
Rated motor voltage	U_m	V	291	283	296	301	297	296
Rated torque	M_n	Nm	10.5	9.4	13.8	11.9	16.0	20.0
Rated current	I_n	A	8.3	11.5	9.9	11.1	11.5	14.4
Continuous stall torque	M_o	Nm	12.0	12.0	16.0	16.0	20.0	24.0
Continuous stall current	I_o	A	8.0	11.5	10.1	12.6	11.6	14.0
Max. torque	M_{max}	Nm	36	36	48	48	60	72
Max. current	I_{max}	A	29	43	36	44	40	48
Max. speed	N_{max}	rpm	9000	9000	9000	9000	9000	9000
Voltage constant	K_E	V/1000	91.0	63.0	96.0	77.0	104.0	104.0
Torque constant	K_T	Nm/A	1.51	1.04	1.59	1.27	1.72	1.72
Winding resistance	R_{2ph}	Ω	1.33	0.65	0.88	0.57	0.72	0.56
Winding inductance	L_{2ph}	mH	10.9	5.3	7.5	4.9	6.3	5.0
Motor pole count	P_{mot}		10	10	10	10	10	10
Idling speed	N_o	rpm	4170	6020	3950	4930	3650	3650
Torque at I_{max}/U_n	M_z	Nm	36	35	48	48	59	71
Speed at I_{max}/U_n	N_z	rpm	1860	2730	2120	2650	2140	2200
Max. torque at n_n	M_x	Nm	20	19.2	29	25	33	41
Electrical time constant	T_{el}	ms	8.2	8.2	8.5	8.6	8.8	8.9
Mechanical time constant	T_{mech}	ms	0.80	0.82	0.70	0.70	0.64	0.61

Motor type			JHN5-1200-091	JHN5-1200-063	JHN5-1600-096	JHN5-1600-077	JHN5-2000-104	JHN5-2400-104
Thermal time constant	T_{th}	min	45	45	55	55	65	75
Rotor inertia without brake	J	kg*cm^2	7.9	7.9	11.5	11.5	15.1	18.7
Weight without brake	m	kg	7.4	7.4	9.5	9.5	11.6	13.7
Axial load	F_A	N	126	126	136	136	142	146
Radial load	F_R	N	665	665	713	713	746	770

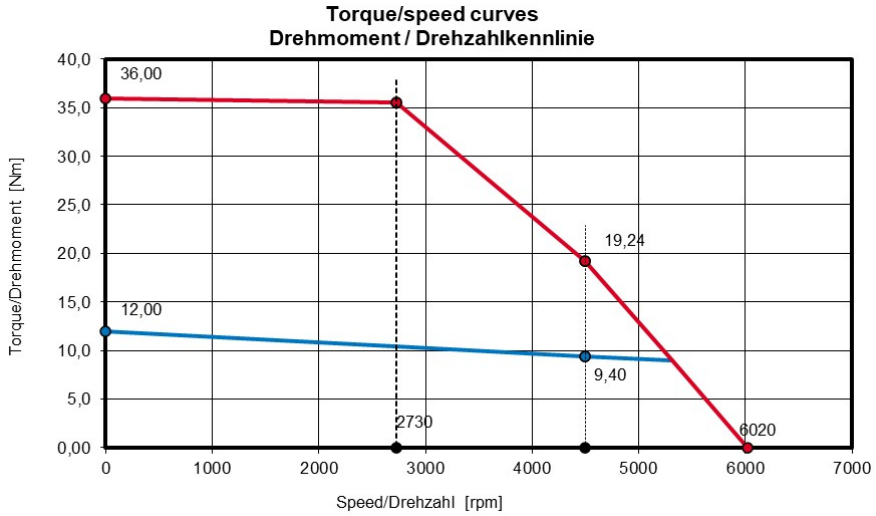
Torque speed characteristics

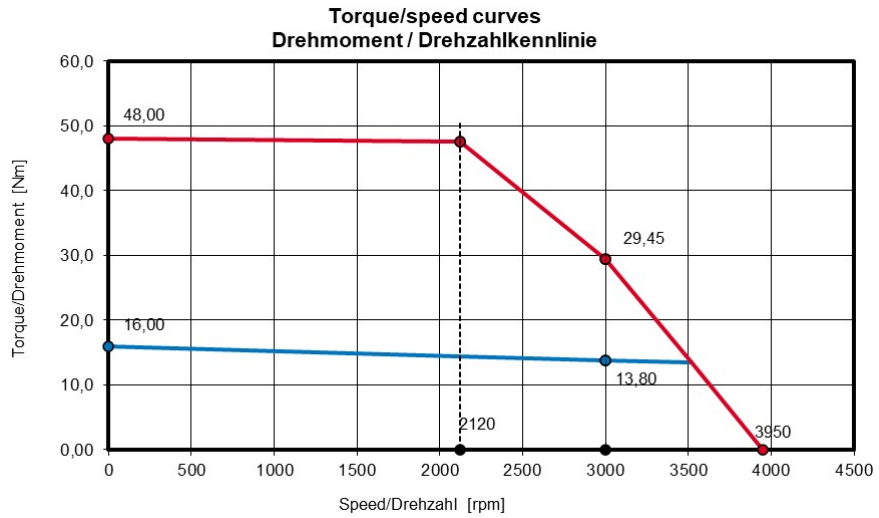
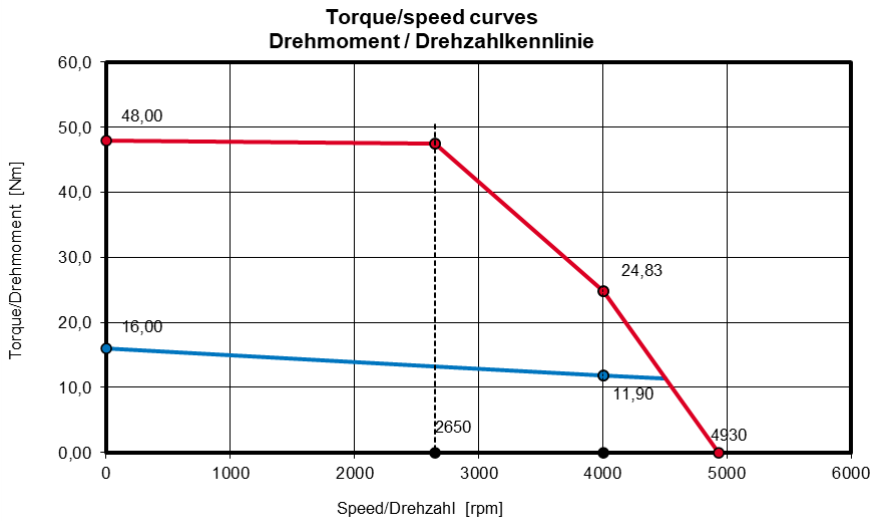
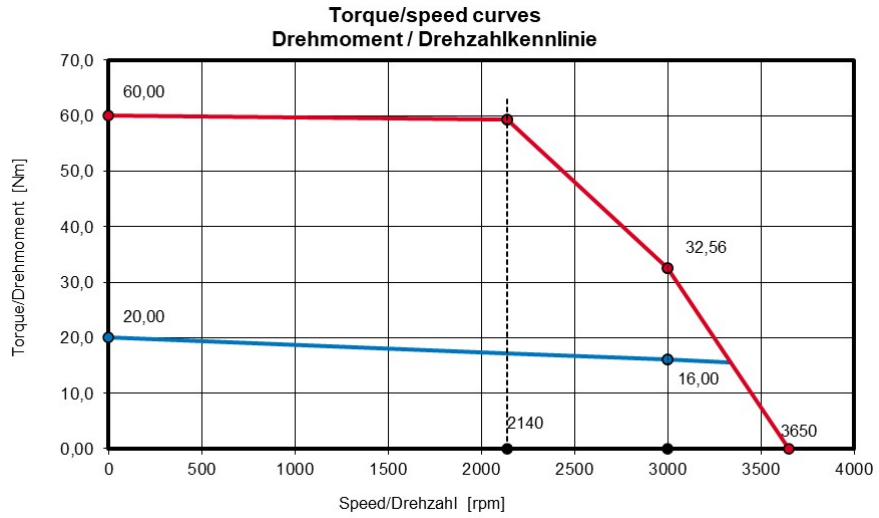
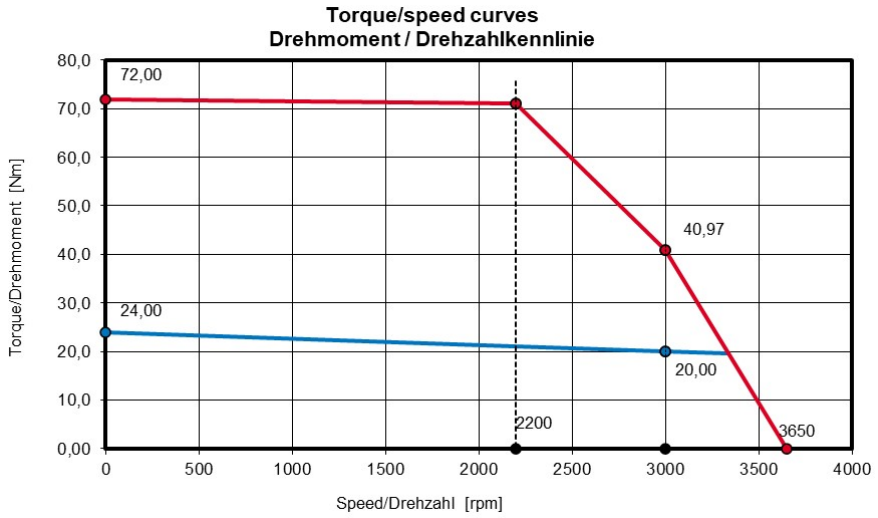
JHN5
560 V

JHN5-1200-091



JHN5-1200-063



JHN5 560 V	JHN5-1600-096 	JHN5-1600-077 
JHN5 560 V	JHN5-2000-104 	JHN5-2400-104 

5.5 Flange size JHN6

5.5.1 Dimensions JHN6

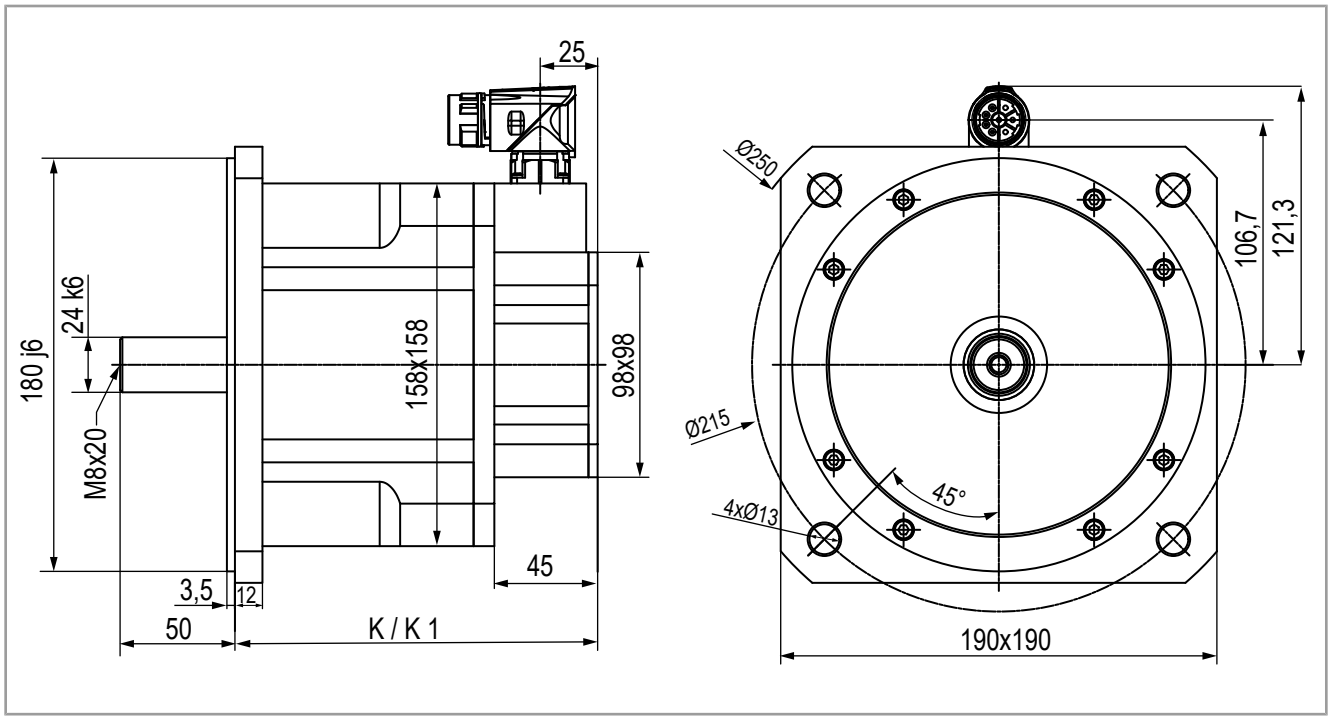


Fig. 12: Dimensions JHN6 in mm

	P	K	K1	K	K1	K	K1	K	K1
Type	**Resolver**			**EEx37**		**EKx36/SKx36**		**SRx50**	
JHN6-1800	M23	158	222	158	222	158	222	161	225
JHN6-2400	M23	183	247	183	247	183	247	186	250
JHN6-3000	M23	208	272	208	272	208	272	211	275
JHN6-3800	M23	233	297	233	297	233	297	236	300
JHN6-4400	M23	258	322	258	322	258	322	261	325

Tab. 17: Dimensions

Key:
P = Power connector size
K = Dimension without brake
K1 = Dimension with brake

5.5.2 Technical data of the brake for motor type JHN6

Parameter	Value
Holding torque M_{BR}	36 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +6 %) V
Rated power P_{BR}	26 W
Rotor inertia J_{BR}	5.56 kg*cm^2
Weight m_{BR}	2.86 kg

Tab. 18: Technical data of the brake for motor type JHN2

5.5.3 Performance data DC link voltage 560 V DC

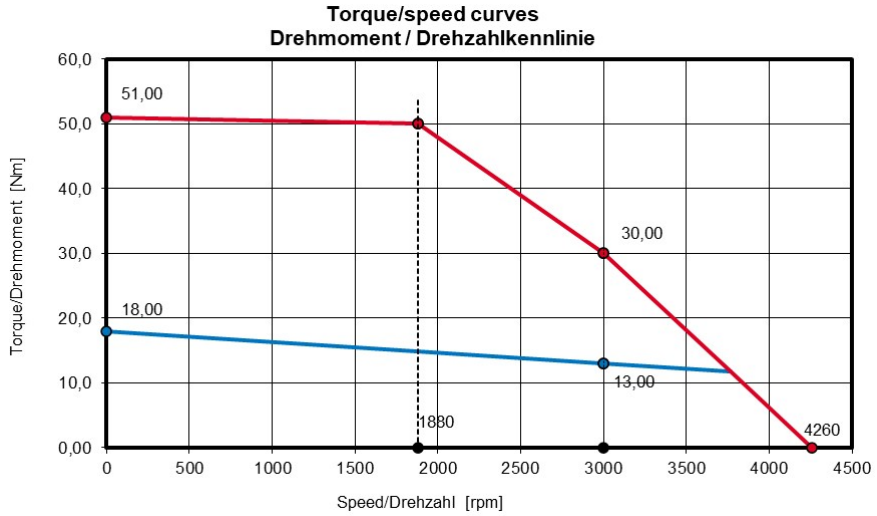
Motor type			JHN6-1800-089	JHN6-2400-095	JHN6-3000-142	JHN6-3000-102	JHN6-3000-070	JHN6-3800-096	JHN6-4400-150	JHN6-4400-094
Nominal speed	N_n	rpm	3000	3000	2000	3000	4500	3000	2000	3000
DC link voltage	U_{dc}	V	560	560	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	380	380	380	380	380	380	380	380
Rated motor voltage	U_m	V	274	269	288	284	255	277	308	267
Rated torque	M_n	Nm	13.0	17.0	25.3	21.0	15.0	25.0	36.5	30.0
Rated current	I_n	A	11.0	13.8	12.9	16.2	19.4	19.7	17.3	24.4
Continuous stall torque	M_o	Nm	18.0	24.0	30.0	30.0	30.0	38.0	44.0	44.0
Continuous stall current	I_o	A	12.2	15.3	12.8	17.8	25.9	23.9	17.7	28.3
Max. torque	M_{max}	Nm	51	72	90	90	90	114	132	132
Max. current	I_{max}	A	45	60	46	64	93	93	64	102
Max. speed	N_{max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000
Voltage constant	K_E	V/1000	89.0	95.0	142.0	102.0	70.0	96.0	150.0	94.0
Torque constant	K_T	Nm/A	1.47	1.57	2.4	1.69	1.16	1.59	2.5	1.55
Winding resistance	R_{2ph}	Ω	0.62	0.41	0.63	0.33	0.16	0.25	0.49	0.19
Winding inductance	L_{2ph}	mH	7.2	5.5	9.2	4.7	2.2	3.5	7.0	2.8
Motor pole count	P_{mot}		10	10	10	10	10	10	10	10
Idling speed	N_o	rpm	4260	4000	2670	3720	5420	3950	2530	4040
Torque at I_{max}/U_n	M_z	Nm	50	71	89	89	89	112	130	130
Speed at I_{max}/U_n	N_z	rpm	1880	1860	1380	1950	2870	1880	1290	2110
Max. torque at n_n	M_x	Nm	30	42	55	46	43	64	68	84
Electrical time constant	T_{el}	ms	11.6	13.4	14.6	14.2	13.9	14.0	14.3	14.7
Mechanical time constant	T_{mech}	ms	0.92	0.74	0.65	0.66	0.68	0.69	0.65	0.64

Motor type			JHN6-1800-089	JHN6-2400-095	JHN6-3000-142	JHN6-3000-102	JHN6-3000-070	JHN6-3800-096	JHN6-4400-150	JHN6-4400-094
Thermal time constant	T_{th}	min	42	47	52	52	52	57	62	62
Rotor inertia without brake	J	kg*cm^2	18.5	26	33	33	33	40	47	47
Weight without brake	m	kg	10.1	12.8	15.5	15.5	15.5	18.3	21	21
Axial load	F_A	N	121	130	136	136	136	141	145	145
Radial load	F_R	N	637	684	717	717	717	741	761	761

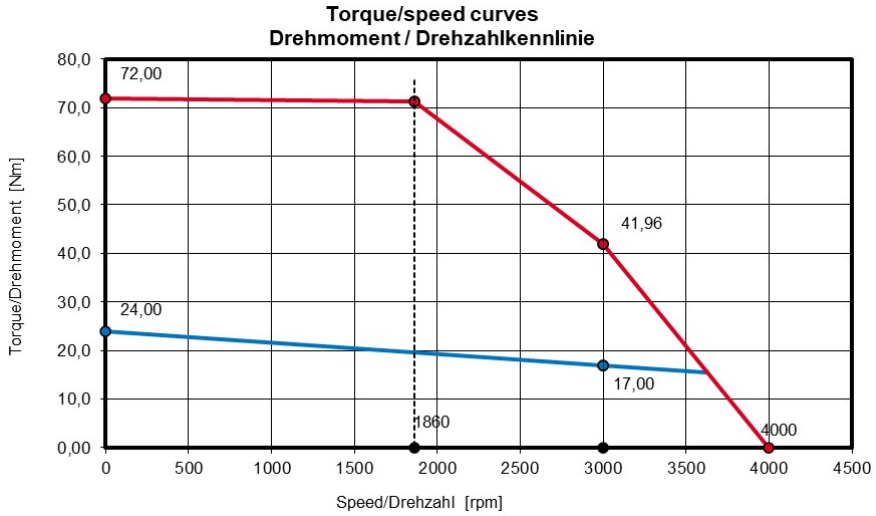
Torque speed characteristics

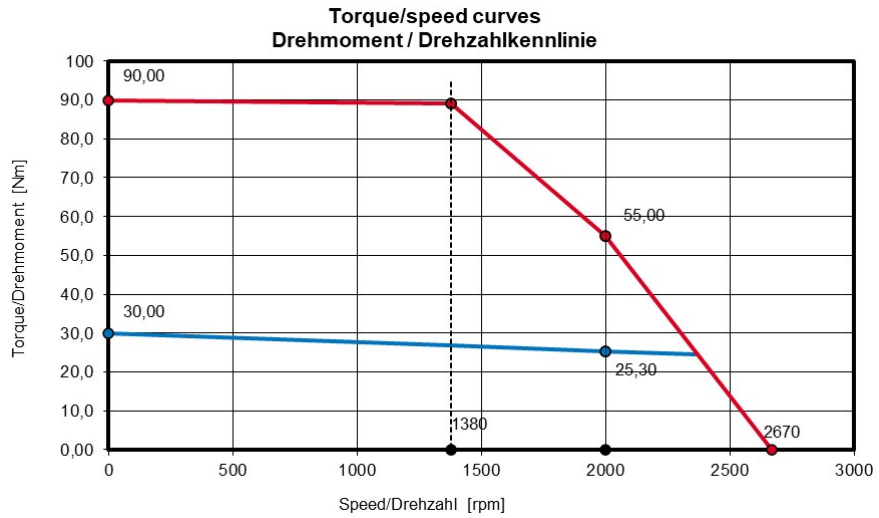
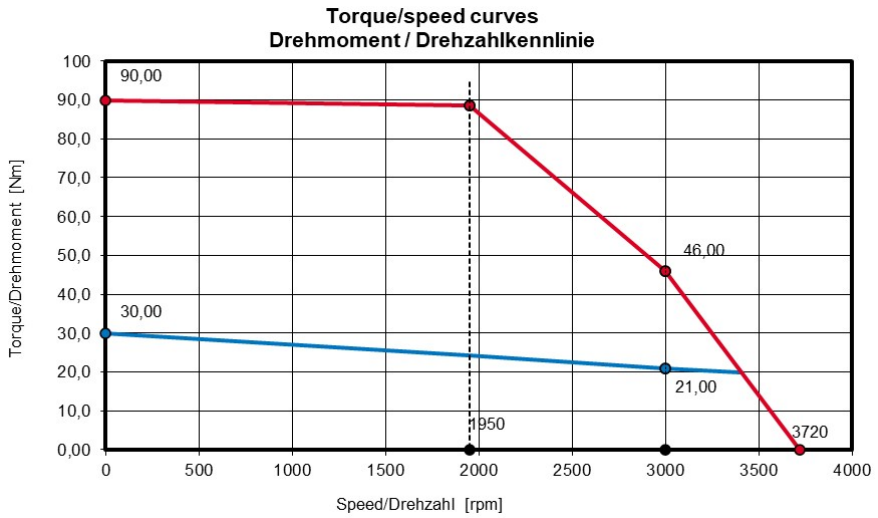
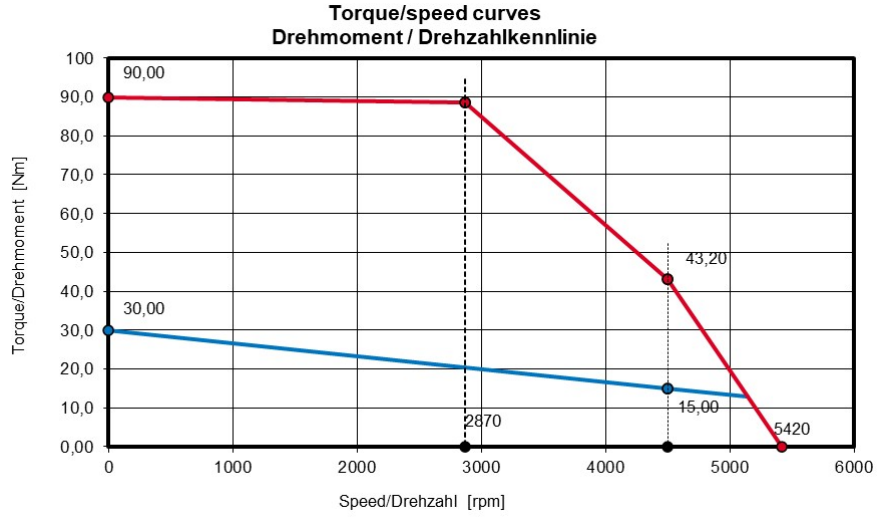
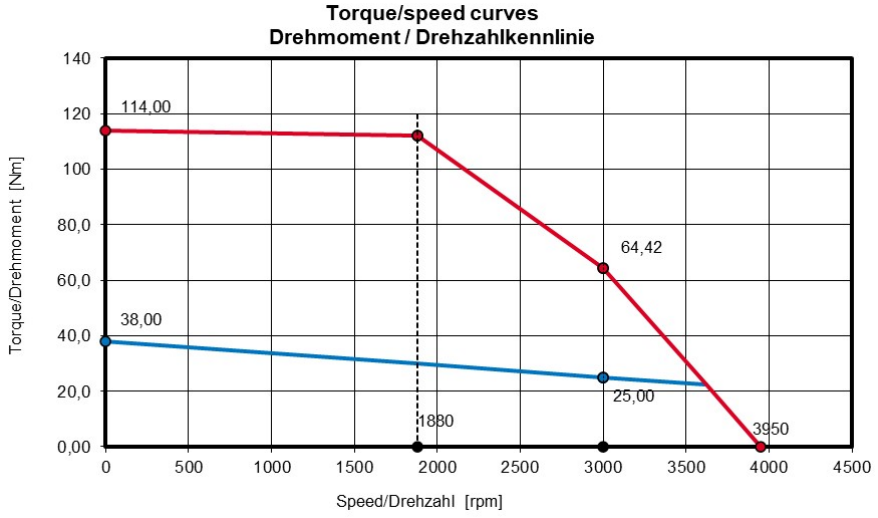
JHN6
560 V

JHN6-1800-089

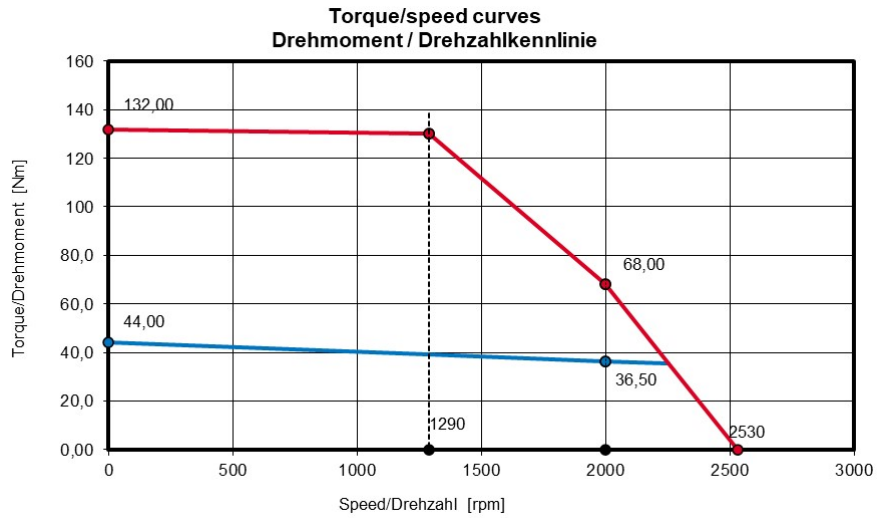


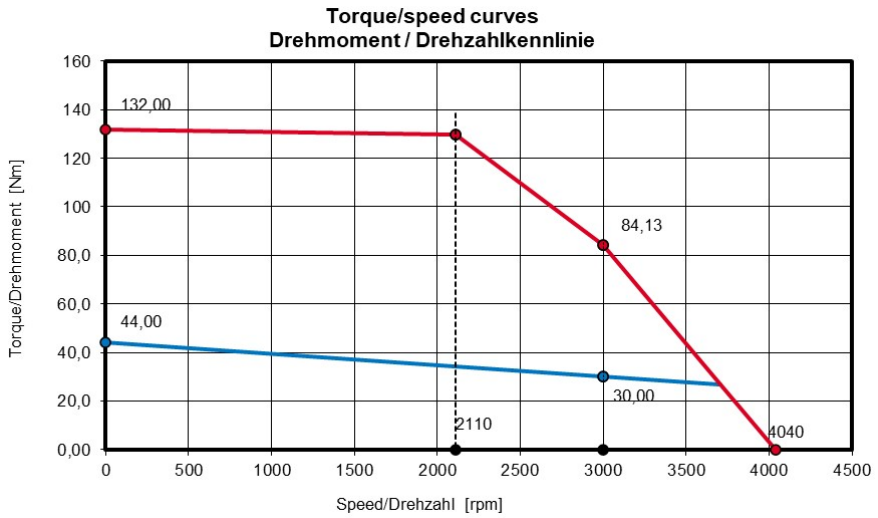
JHN6-2400-095



JHN6 560 V	JHN6-3000-142 	JHN6-3000-102 
JHN6 560 V	JHN6-3000-070 	JHN6-3800-096 

JHN6 560 V	JHN6-4400-150	JHN6-4400-094





5.6 Flange size JHN7

5.6.1 Dimensions JHN7

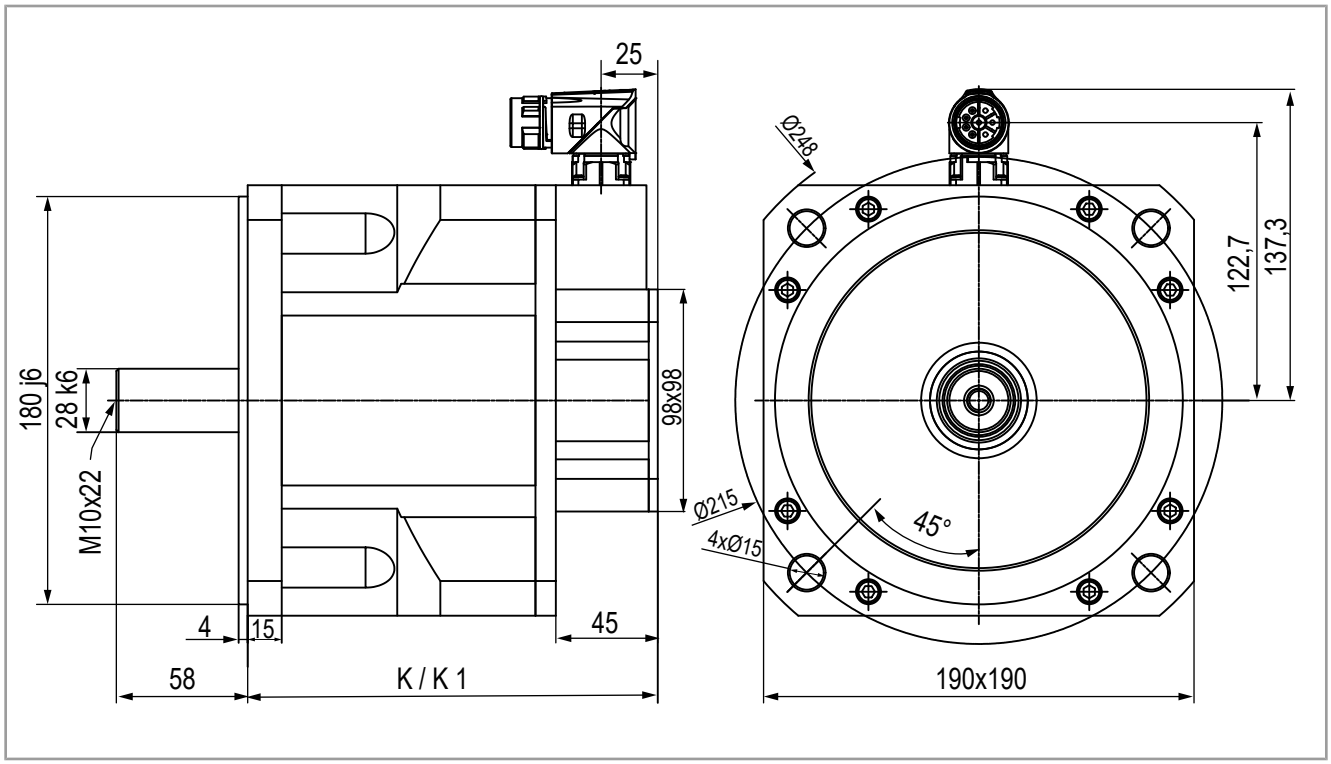


Fig. 13: Dimensions JHN7 in mm

	P	K	K1	K	K1	K	K1	K	K1
Type	**Resolver**			**EEx37**		**EKx36/SKx36**		**SRx50**	
JHN7-3000	M23	181	240	181	240	181	240	184	243
JHN7-4000	M23	211	270	211	270	211	270	214	273
JHN7-5000	M23	241	300	241	300	241	300	244	303
JHN7-6000	M23	271	330	271	330	271	330	274	333

Tab. 19: Dimensions

Key:
P = Power connector size
K = Dimension without brake
K1 = Dimension with brake

5.6.2 Technical data of brake for motor type JHN7

Parameter	Value
Holding torque M_{BR}	36 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +6 %) V
Rated power P_{BR}	26 W
Rotor inertia J_{BR}	5.56 kg*cm^2
Weight m_{BR}	2.86 kg

Tab. 20: Technical data of the brake for motor type JHN2

5.6.3 Performance data DC link voltage 560 V DC

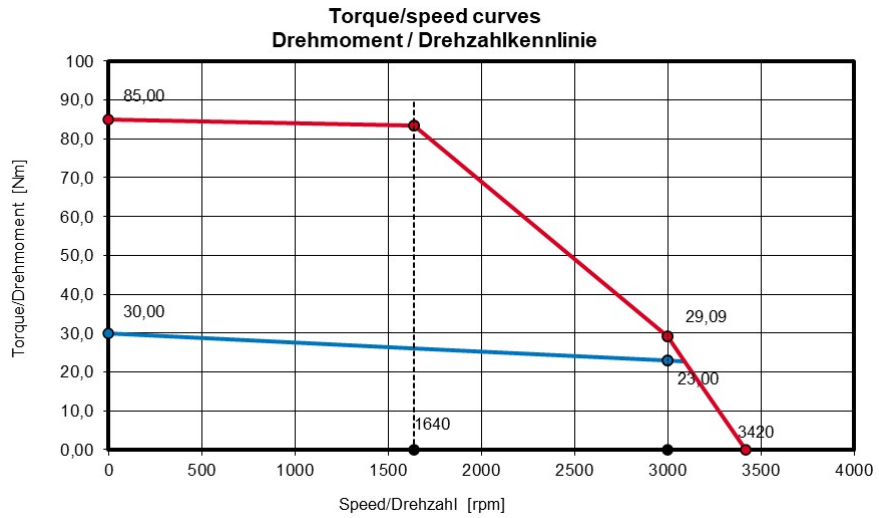
Motor type			JHN7-3000-111	JHN7-4000-092	JHN7-5000-133	JHN7-5000-096	JHN7-6000-121
Nominal speed	N_n	rpm	3000	3000	2000	3000	2500
DC link voltage	U_{dc}	V	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	380	380	380	380	380
Rated motor voltage	U_m	V	333	257	269	265	301
Rated torque	M_n	Nm	23.0	25.0	40.4	30.0	36.2
Rated current	I_n	A	15.5	20.1	21.8	24.4	20.7
Continuous stall torque	M_o	Nm	30.0	40.0	50	50	60
Continuous stall current	I_o	A	16.3	26.3	22.7	31.5	30.0
Max. torque	M_{max}	Nm	85	120	150	150	180
Max. current	I_{max}	A	58	90	79	109	102
Max. speed	N_{max}	rpm	6000	6000	6000	6000	6000
Voltage constant	K_E	V/1000	111.0	92.0	133.0	96.0	121.0
Torque constant	K_T	Nm/A	1.84	1.52	2.2	1.59	2.0
Winding resistance	R_{2ph}	Ω	0.41	0.17	0.25	0.13	0.16
Winding inductance	L_{2ph}	mH	6.4	3.1	4.9	2.6	3.3
Motor pole count	P_{mot}		10	10	10	10	10
Idling speed	N_o	rpm	3420	4130	2850	3950	3140
Torque at I_{max}/U_n	M_z	Nm	84	119	147	147	177
Speed at I_{max}/U_n	N_z	rpm	1640	2160	1510	2090	1750
Max. torque at n_n	M_x	Nm	29	77	104	90	99
Electrical time constant	T_{el}	ms	15.6	18.2	19.6	20	21
Mechanical time constant	T_{mech}	ms	1.0	0.88	0.79	0.79	0.74

Motor type			JHN7-3000-111	JHN7-4000-092	JHN7-5000-133	JHN7-5000-096	JHN7-6000-121
Thermal time constant	T_{th}	min	80	90	100	100	108
Rotor inertia without brake	J	kg*cm^2	50	69	88	88	107
Weight without brake	m	kg	16.5	22	27	27	32
Axial load	F_A	N	231	245	256	256	264
Radial load	F_R	N	1214	1291	1346	1346	1388

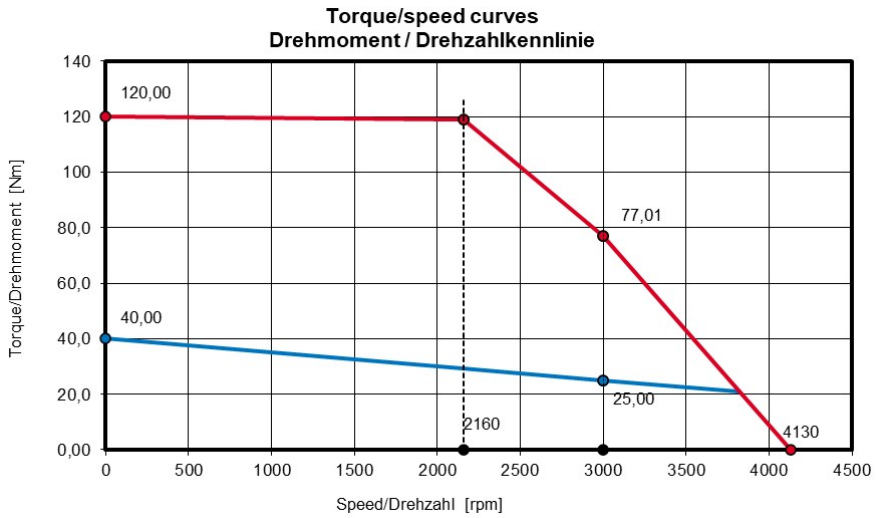
Torque speed characteristics

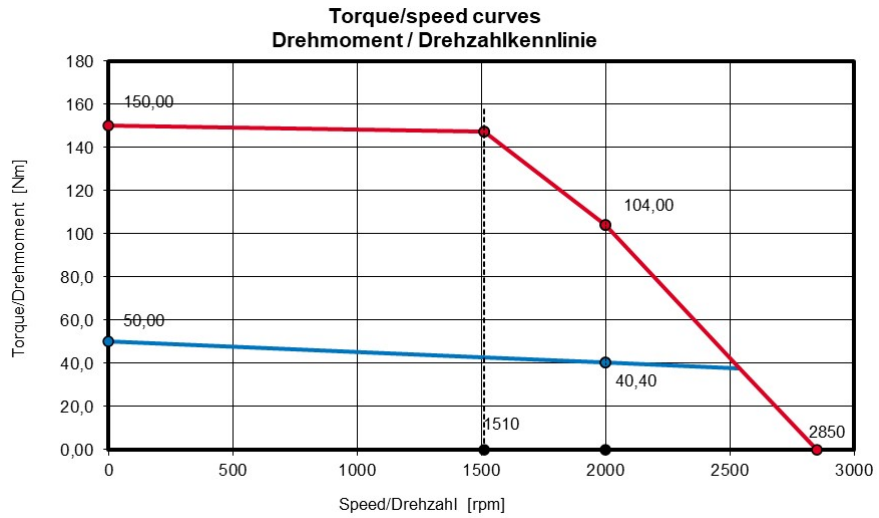
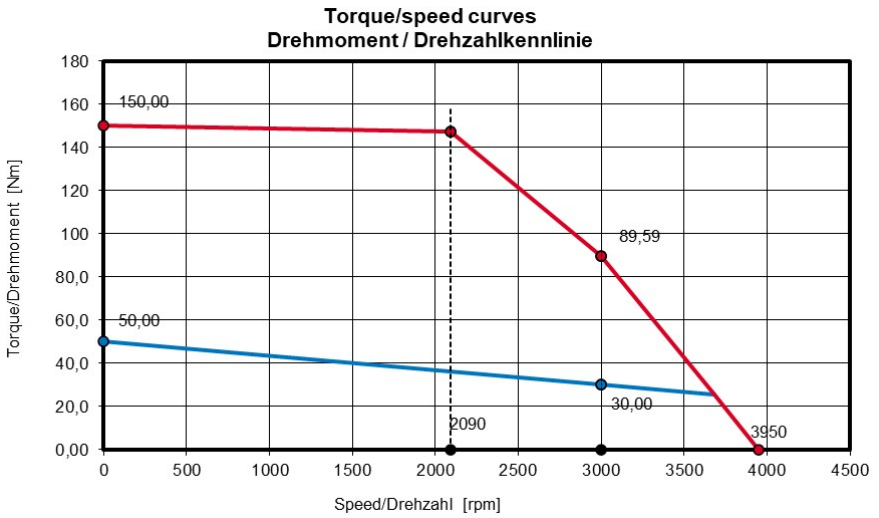
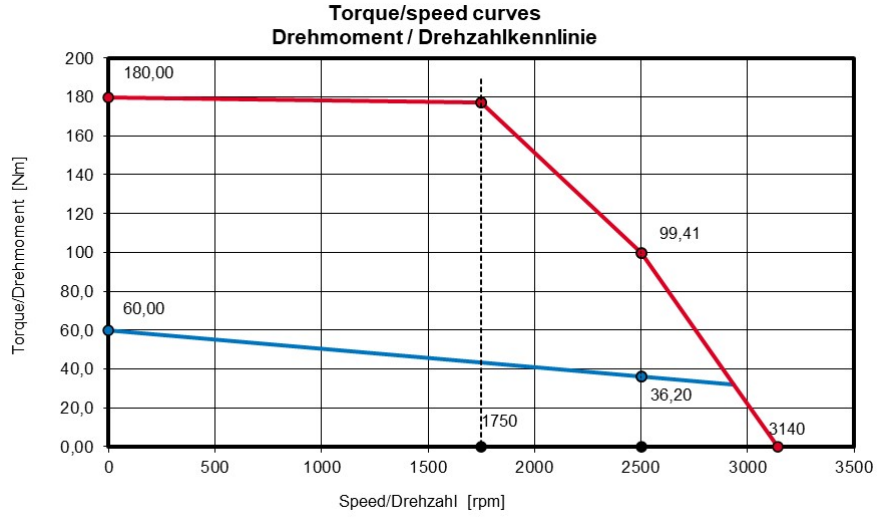
JHN7
560 V

JHN7-3000-111



JHN7-4000-092



JHN7 560 V	JHN7-5000-133 	JHN7-5000-096 
JHN7 560 V	JHN7-6000-121 	

5.7 Flange size JHQ12

5.7.1 Dimensions JHQ12

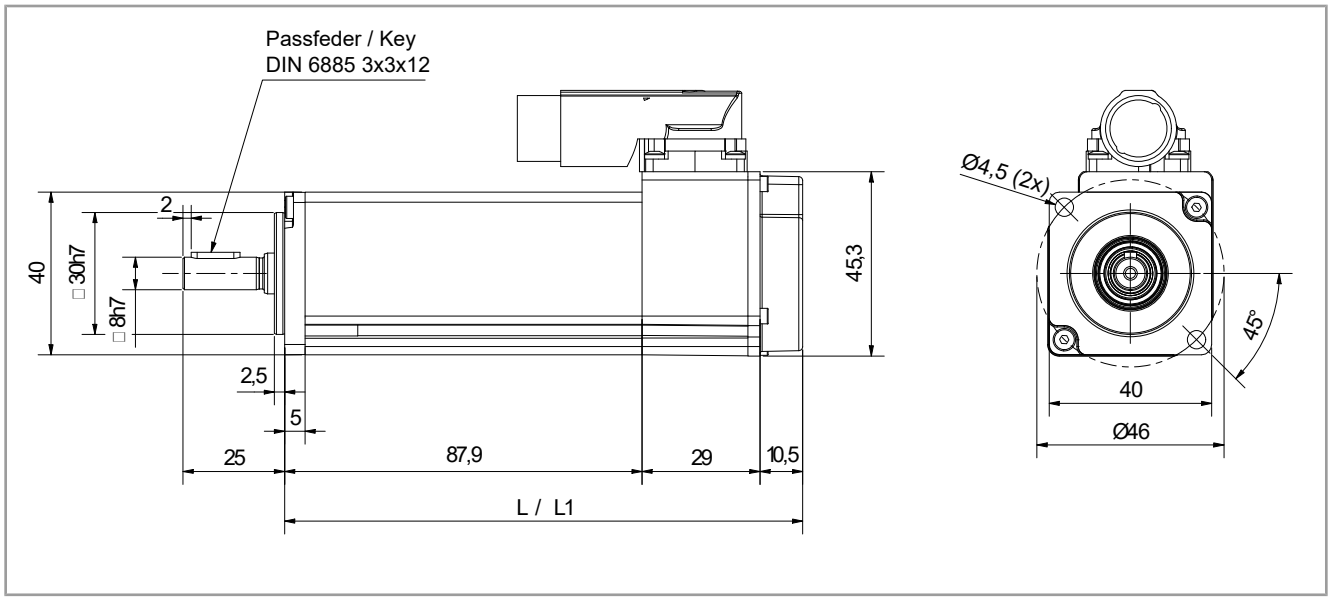


Fig. 14: Dimensions JHQ12 in mm

	P	L	L1	L	L1	L	L1
Type	**Resolver/SEx37**			**EEx37**		**SEx37**	
JHQ12-0018	Y/I	79	102	88.5	110.5	79	102
JHQ12-0032	Y/I	94	117	102.5	125.5	94	117

Tab. 21: Dimensions

Key:
P = Power connector size
L = Dimension without brake
L1 = Dimension with brake

5.7.2 Technical data of the brake for motor type JHQ12

Parameter	Value
Holding torque M_{BR}	0.4 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	8 W
Rotor inertia J_{BR}	0.013 kg*cm^2
Weight m_{BR}	0.08 kg

Tab. 22: Technical data of the brake for motor type JHQ12

5.7.3 Performance data DC link voltage 320 V DC

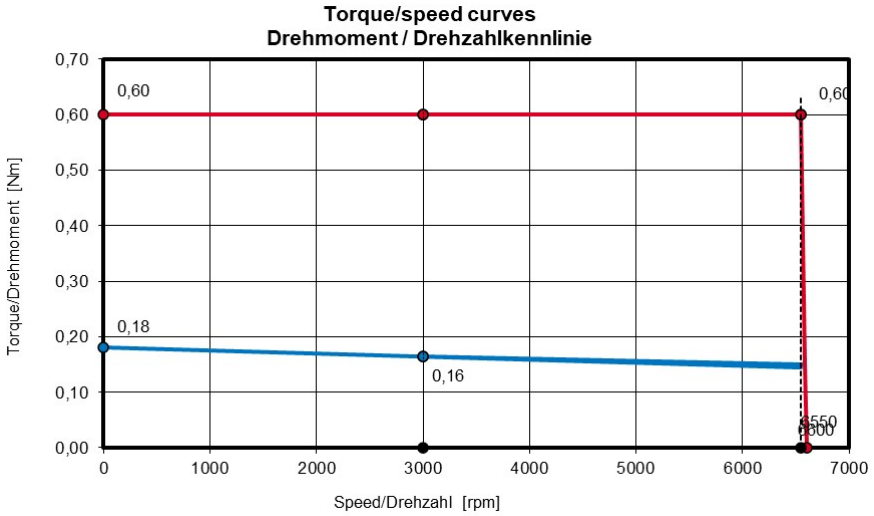
Motor type			JHQ12-0018-018	JHQ12-0032-028
Nominal speed	N_n	rpm	3000	3000
DC link voltage	U_{dc}	V	320	320
Rated AC supply servo amplifier	U_n	V	230	230
Rated motor voltage	U_m	V	54	85
Rated torque	M_n	Nm	0.16	0.32
Rated current	I_n	A	0.62	0.67
Continuous stall torque	M_o	Nm	0.18	0.32
Continuous stall current	I_o	A	0.62	0.68
Max. torque	M_{max}	Nm	0.60	1.0
Max. current	I_{max}	A	2.2	2.4
Max. speed	N_{max}	rpm	9000	9000
Voltage constant	K_E	V/1000	17.8	28.3
Torque constant	K_T	Nm/A	0.29	0.47
Winding resistance	R_{2ph}	Ω	29.1	44.4
Winding inductance	L_{2ph}	mH	22.1	48.9
Motor pole count	P_{mot}		8	8
Idling speed	N_o	rpm	6600	7400
Torque at I_{max}/U_n	M_z	Nm	0.60	1.0
Speed at I_{max}/U_n	N_z	rpm	6550	2800
Max. torque at n_n	M_x	Nm	0.60	0.96
Electrical time constant	T_{el}	ms	0.76	1.1
Mechanical time constant	T_{mech}	ms	1.2	1.0

Motor type			JHQ12-0018-018	JHQ12-0032-028
Thermal time constant	T_{th}	min	7.0	13.0
Rotor inertia without brake	J	kg*cm^2	0.02	0.03
Weight without brake	m	kg	0.40	0.50
Axial load	F_A	N	5.0	6.0
Radial load	F_R	N	50	60

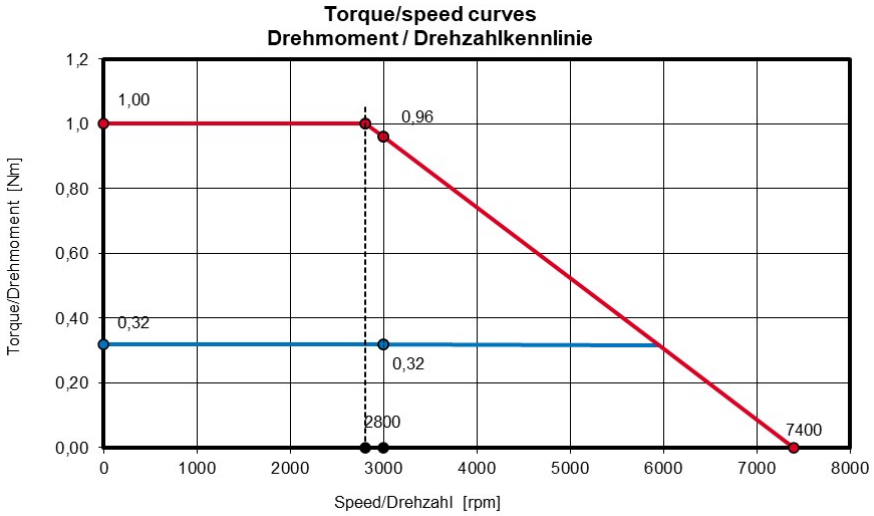
Torque speed characteristics

JHQ12
320 V

JHQ12-0018-018



JHQ12-0032-028



5.7.4 Performance data DC link voltage 560 V DC

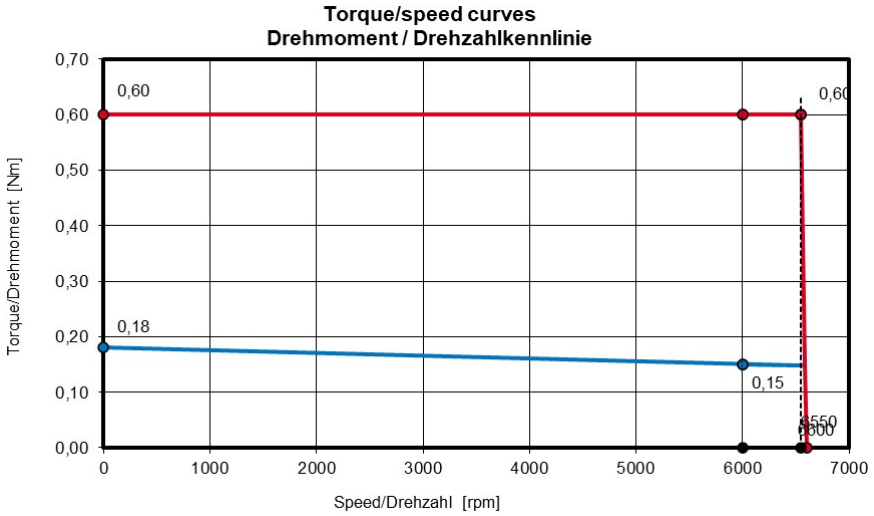
Motor type			JHQ12-0018-018	JHQ12-0032-028	JHQ12-0032-031
Nominal speed	N_n	rpm	6000	3000	6000
DC link voltage	U_{dc}	V	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400
Rated motor voltage	U_m	V	95	85	94
Rated torque	M_n	Nm	0.15	0.32	0.32
Rated current	I_n	A	0.52	0.67	0.61
Continuous stall torque	M_o	Nm	0.18	0.32	0.32
Continuous stall current	I_o	A	0.62	0.68	0.62
Max. torque	M_{max}	Nm	0.60	1.0	1.0
Max. current	I_{max}	A	2.2	2.4	2.5
Max. speed	N_{max}	rpm	9000	9000	6600
Voltage constant	K_E	V/1000	17.8	28.3	31.4
Torque constant	K_T	Nm/A	0.29	0.47	0.52
Winding resistance	R_{2ph}	Ω	29.1	44.4	45.7
Winding inductance	L_{2ph}	mH	22.1	48.9	48.9
Motor pole count	P_{mot}		8	8	8
Idling speed	N_o	rpm	6600	6900	7500
Torque at I_{max}/U_n	M_z	Nm	0.60	1.0	1.0
Speed at I_{max}/U_n	N_z	rpm	6550	5900	5500
Max. torque at n_n	M_x	Nm	0.60	1.0	0.94
Electrical time constant	T_{el}	ms	0.76	1.1	1.1
Mechanical time constant	T_{mech}	ms	1.2	1.0	0.88

Motor type			JHQ12-0018-018	JHQ12-0032-028	JHQ12-0032-031
Thermal time constant	T_{th}	min	7.0	13.0	13.0
Rotor inertia without brake	J	kg*cm^2	0.02	0.03	0.03
Weight without brake	m	kg	0.40	0.50	0.50
Axial load	F_A	N	5.0	6.0	6.0
Radial load	F_R	N	50	60	60

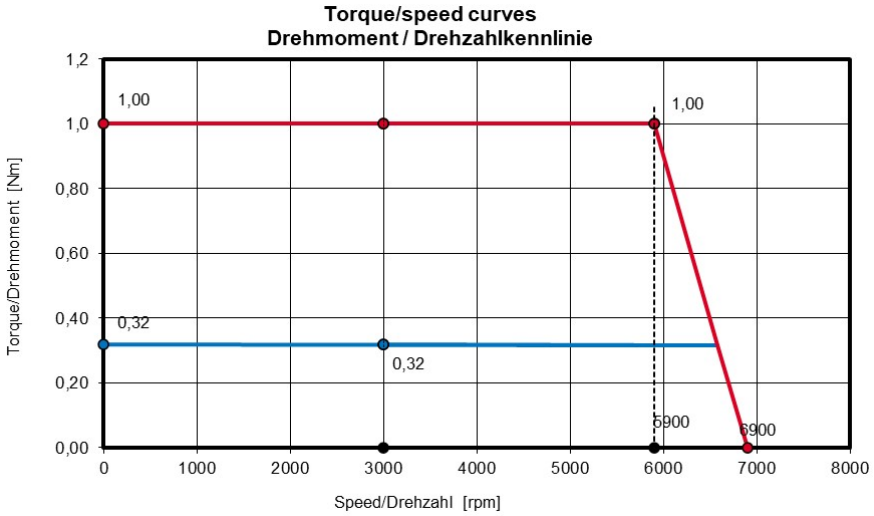
Torque speed characteristics

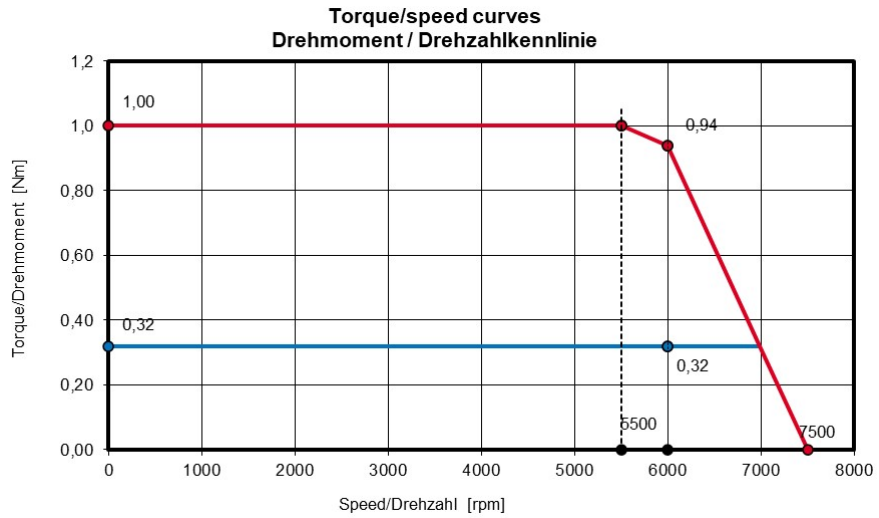
JHQ12
560 V

JHQ12-0018-018



JHQ12-0032-028



JHQ12 560 V	JHQ12-0032-031  	

5.8 Flange size JHQ2

5.8.1 Dimensions JHQ2

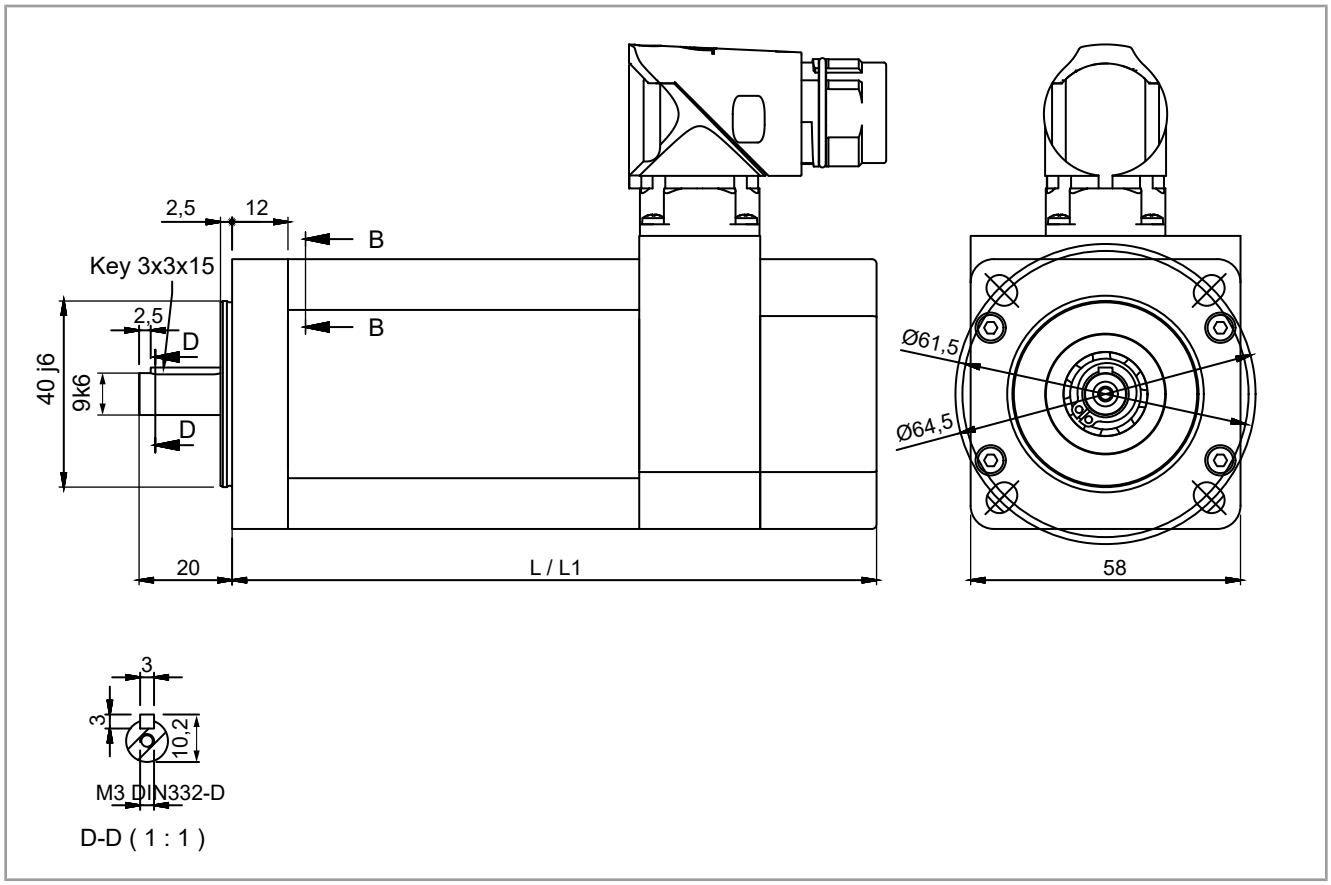


Fig. 15: Dimensions JHQ2 in mm

	P	L	L1	L	L1	L	L1
Type	**Resolver/SEx37**			**EEx37/EKx36**		**SKx36**	
JHQ2-0025	M23	86.5	116.5	102.5	132.5	102.5	132.5
JHQ2-0050	M23	98.5	128.5	114.5	144.5	114.5	144.5
JHQ2-0075	M23	110.5	140.5	126.5	156.5	126.5	156.5
JHQ2-0100	M23	122.5	152.5	138.5	168.5	138.5	168.5
JHQ2-0125	M23	134.5	164.5	150.5	180.5	150.5	180.5

Tab. 23: Dimensions

Key:
P = Power connector size
L = Dimension without brake
L1 = Dimension with brake

5.8.2 Technical data of the brake for motor type JHQ2

Parameter	Value
Holding torque M_{BR}	2.2 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	8.2 W
Rotor inertia J_{BR}	0.12 kg*cm^2
Weight m_{BR}	0.5 kg

Tab. 24: Technical data of the brake for motor type JHQ2

5.8.3 Performance data DC link voltage 48 V DC

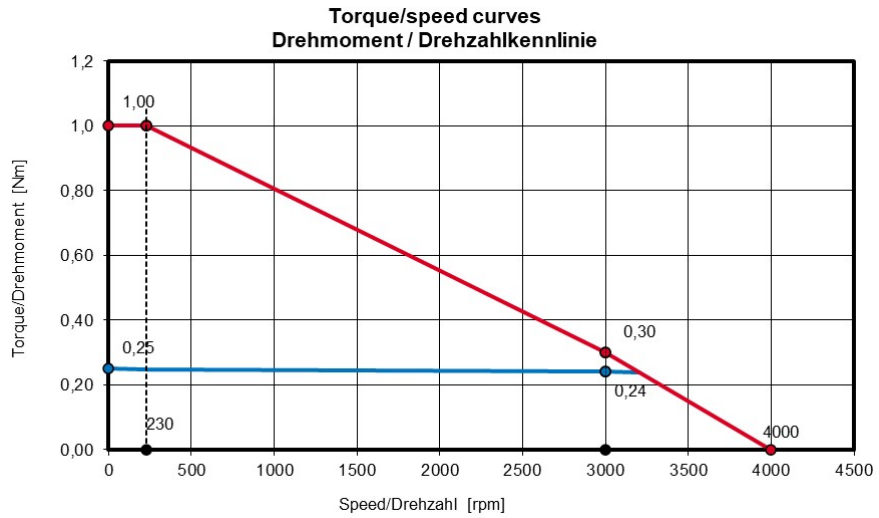
Motor type			JHQ2-0025-007	JHQ2-0050-007	JHQ2-0075-007	JHQ2-0100-007
Nominal speed	N_n	rpm	3000	3000	3000	3000
DC link voltage	U_{dc}	V	48.0	48.0	48.0	48.0
Rated AC supply servo amplifier	U_n	V	30.0	30.0	30.0	30.0
Rated motor voltage	U_m	V	22.0	22.0	22.0	22.0
Rated torque	M_n	Nm	0.24	0.49	0.73	0.97
Rated current	I_n	A	1.98	4.0	6.0	8.0
Continuous stall torque	M_o	Nm	0.25	0.50	0.75	1.00
Continuous stall current	I_o	A	2.1	4.1	6.2	8.3
Max. torque	M_{max}	Nm	1.0	2.0	3.0	4.0
Max. current	I_{max}	A	9.7	19.4	29	39
Max. speed	N_{max}	rpm	9000	9000	9000	9000
Voltage constant	K_E	V/1000	7.3	7.3	7.3	7.3
Torque constant	K_T	Nm/A	0.12	0.12	0.12	0.12
Winding resistance	R_{2ph}	Ω	3.5	1.24	0.70	0.52
Winding inductance	L_{2ph}	mH	3.3	1.70	1.10	0.78
Motor pole count	P_{mot}		8	8	8	8
Idling speed	N_o	rpm	4000	4000	4200	4200
Torque at I_{max}/U_n	M_z	Nm	1.0	2.0	3.0	4.0
Speed at I_{max}/U_n	N_z	rpm	230	1000	1250	1250
Max. torque at n_n	M_x	Nm	0.30	0.75	1.3	1.7
Electrical time constant	T_{el}	ms	0.95	1.4	1.6	1.5
Mechanical time constant	T_{mech}	ms	2.9	1.9	1.6	1.5

Motor type			JHQ2-0025-007	JHQ2-0050-007	JHQ2-0075-007	JHQ2-0100-007
Thermal time constant	T_{th}	min	31	34	36	38
Rotor inertia without brake	J	kg*cm^2	0.07	0.13	0.19	0.25
Weight without brake	m	kg	1.0	1.2	1.5	1.7
Axial load	F_A	N	11.0	12.0	13.0	14.0
Radial load	F_R	N	105	115	125	135

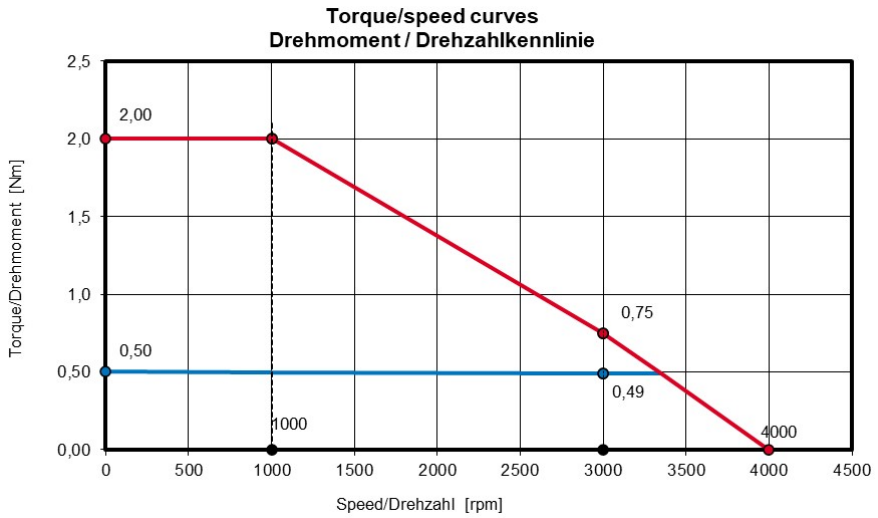
Torque speed characteristics

JHQ2
48 V

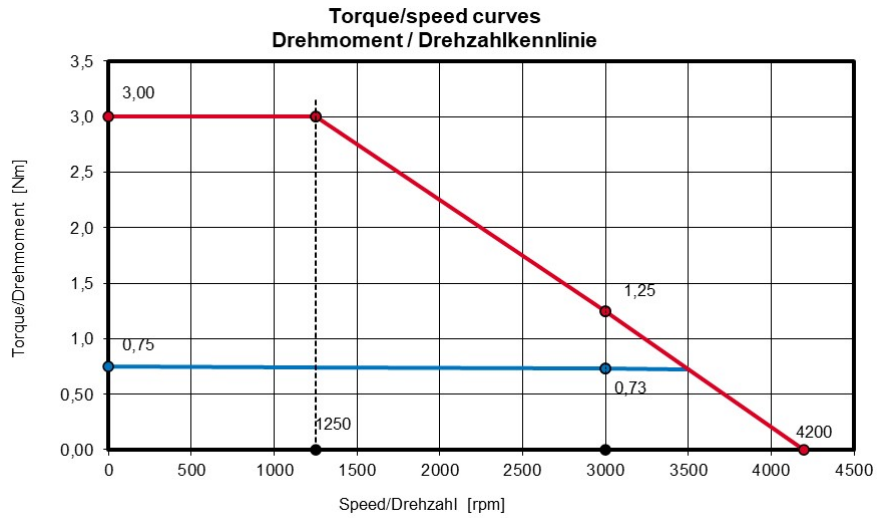
JHQ2-0025-007

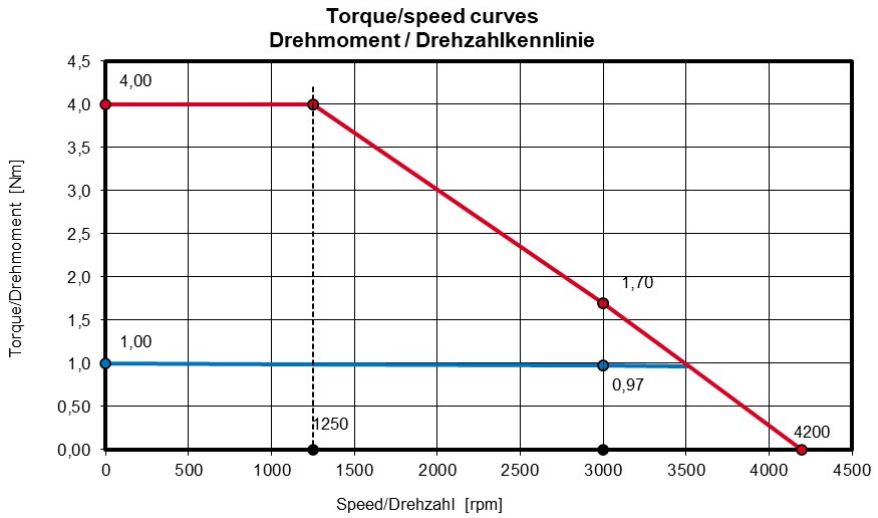


JHQ2-0050-007



JHQ2 48 V	JHQ2-0075-007	JHQ2-0100-007





5.8.4 Performance data DC link voltage 320 V DC

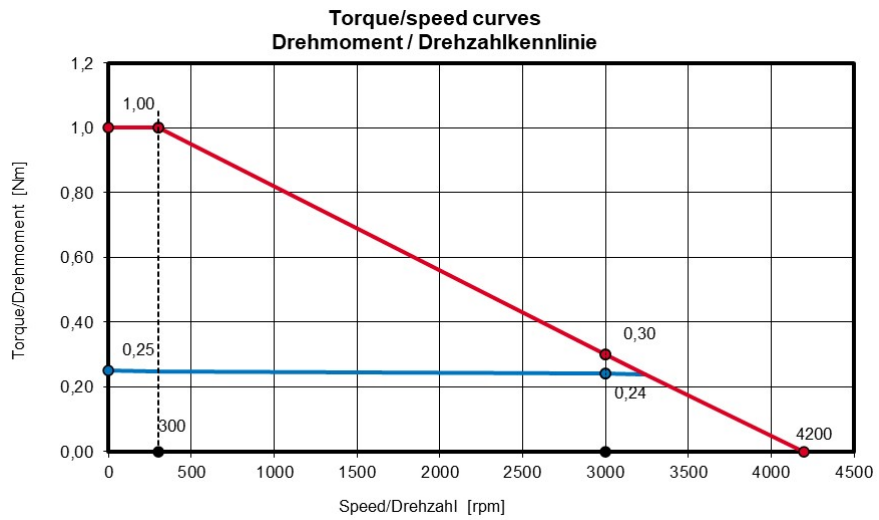
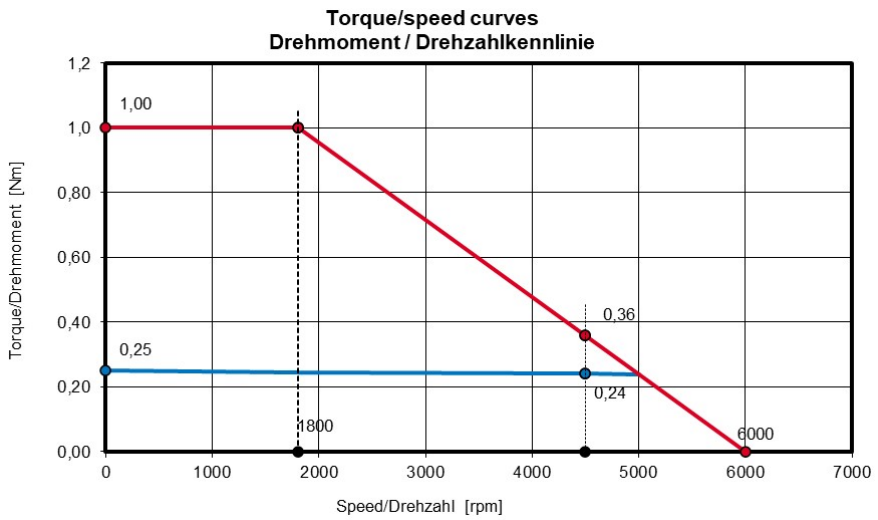
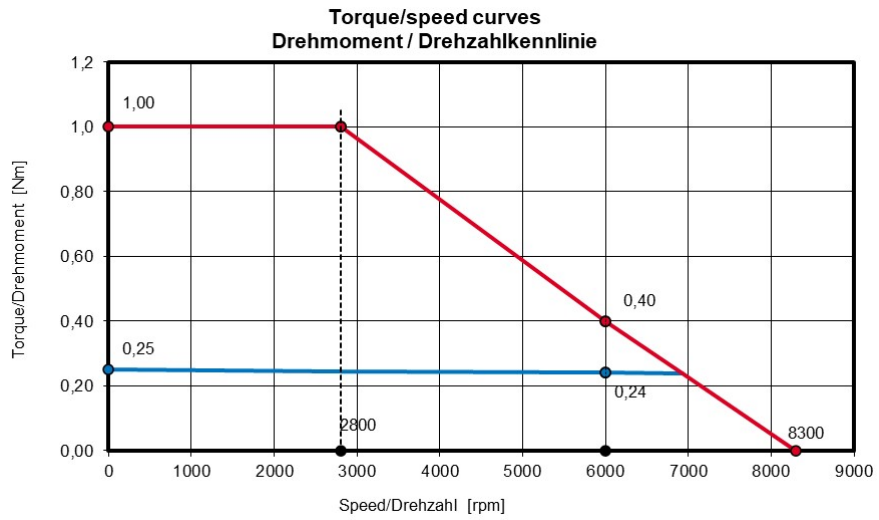
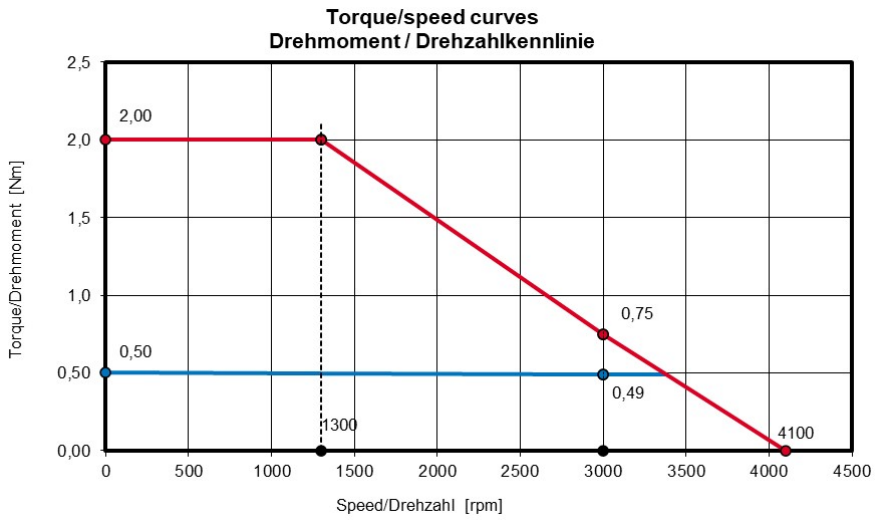
Motor type			JHQ2-0025-051	JHQ2-0025-035	JHQ2-0025-025	JHQ2-0050-051	JHQ2-0050-035	JHQ2-0050-025	JHQ2-0075-051	JHQ2-0075-035	JHQ2-0075-025
Nominal speed	N_n	rpm	3000	4500	6000	3000	4500	6000	3000	4500	6000
DC link voltage	U_{dc}	V	320	320	320	320	320	320	320	320	320
Rated AC supply servo amplifier	U_n	V	230	230	230	230	230	230	230	230	230
Rated motor voltage	U_m	V	152	152	152	152	152	152	152	152	152
Rated torque	M_n	Nm	0.24	0.24	0.24	0.49	0.48	0.47	0.73	0.71	0.70
Rated current	I_n	A	0.29	0.42	0.57	0.58	0.84	1.12	0.87	1.25	1.67
Continuous stall torque	M_o	Nm	0.25	0.25	0.25	0.50	0.50	0.50	0.75	0.75	0.75
Continuous stall current	I_o	A	0.30	0.44	0.60	0.60	0.88	1.19	0.89	1.32	1.79
Max. torque	M_{max}	Nm	1.0	1.0	1.0	2.0	2.0	2.0	3.0	3.0	3.0
Max. current	I_{max}	A	1.4	2.1	2.8	2.8	4.2	5.6	4.2	6.3	8.4

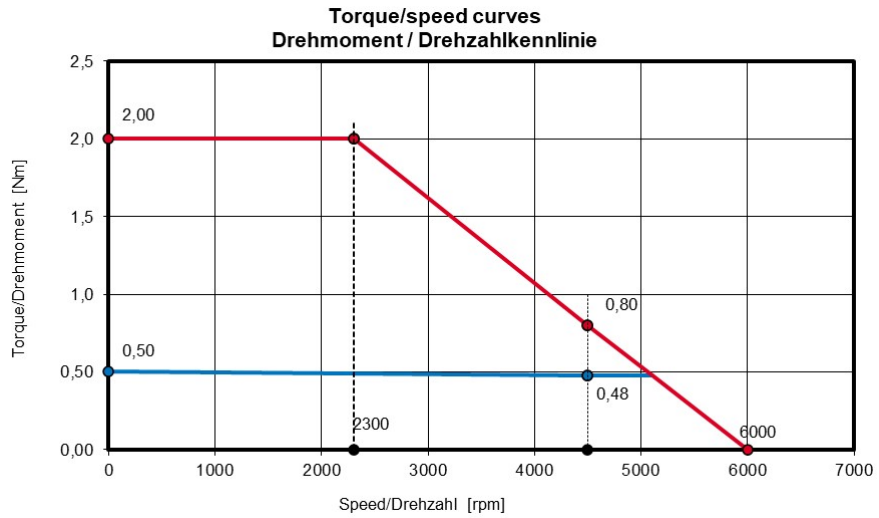
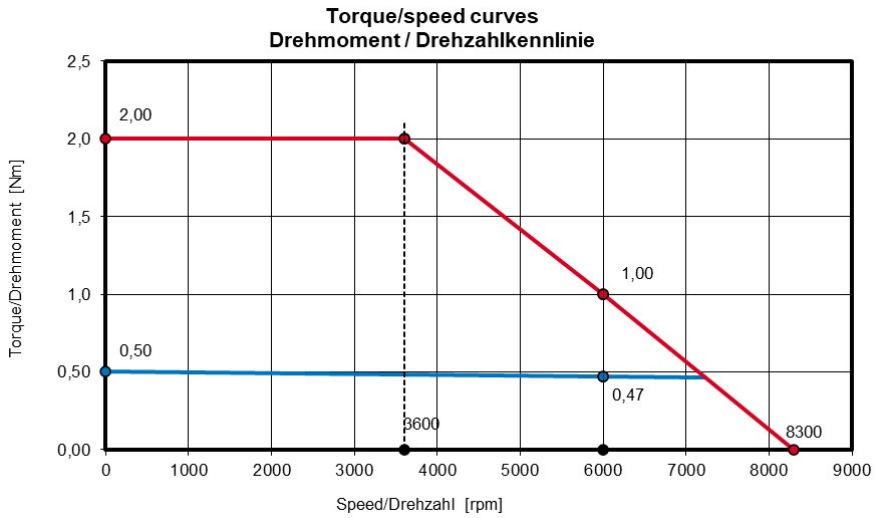
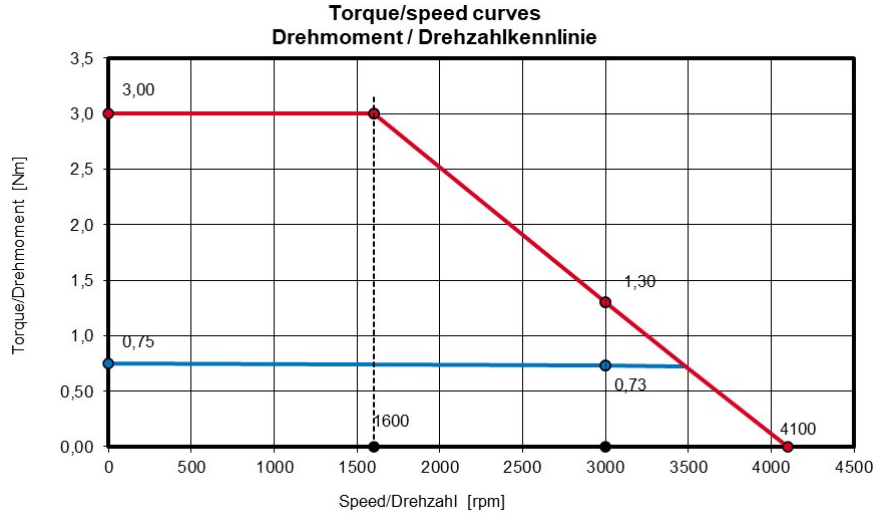
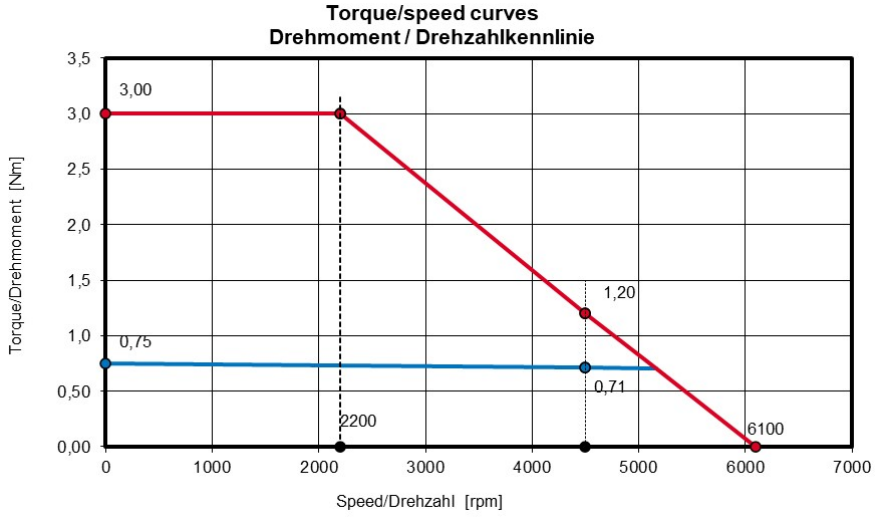
Motor type			JHQ2-0025-051	JHQ2-0025-035	JHQ2-0025-025	JHQ2-0050-051	JHQ2-0050-035	JHQ2-0050-025	JHQ2-0075-051	JHQ2-0075-035	JHQ2-0075-025
Max. speed	N_{max}	rpm	9000	9000	9000	9000	9000	9000	9000	9000	9000
Voltage constant	K_E	V/1000	51.3	34.6	25.1	51.3	34.6	25.1	51.3	34.6	25.1
Torque constant	K_T	Nm/A	0.84	0.57	0.42	0.84	0.57	0.42	0.84	0.57	0.42
Winding resistance	R_{2ph}	Ω	158	69	36.7	48.3	25.6	13.0	26.9	16.8	8.1
Winding inductance	L_{2ph}	mH	165	67	42.9	75	34.5	18.6	44.0	25.5	12.9
Motor pole count	P_{mot}		8	8	8	8	8	8	8	8	8
Idling speed	N_o	rpm	4200	6000	8300	4100	6000	8300	4100	6100	8300
Torque at I_{max}/U_n	M_z	Nm	1.0	1.0	1.0	2.0	2.0	2.0	3.0	3.0	3.0
Speed at I_{max}/U_n	N_z	rpm	300	1800	2800	1300	2300	3600	1600	2200	3600
Max. torque at n_n	M_x	Nm	0.30	0.36	0.40	0.75	0.80	1.0	1.3	1.2	1.5
Electrical time constant	T_{el}	ms	1.0	0.96	1.2	1.6	1.3	1.4	1.6	1.5	1.6
Mechanical time constant	T_{mech}	ms	0.69	2.6	2.5	1.5	1.8	1.7	1.2	1.7	1.5
Thermal time constant	T_{th}	min	31	31	31	34	34	34	36	36	36
Rotor inertia without brake	J	$kg*cm^2$	0.07	0.07	0.07	0.13	0.13	0.13	0.19	0.19	0.19
Weight without brake	m	kg	1.0	1.0	1.0	1.2	1.2	1.2	1.5	1.5	1.5
Axial load	F_A	N	11.0	11.0	11.0	12.0	12.0	12.0	13.0	13.0	13.0
Radial load	F_R	N	105	105	105	115	115	115	125	125	125

Motor type			JHQ2-0100-051	JHQ2-0100-035	JHQ2-0100-025	JHQ2-0125-051	JHQ2-0125-035	JHQ2-0125-025
Nominal speed	N_n	rpm	3000	4500	6000	3000	4500	6000
DC link voltage	U_{dc}	V	320	320	320	320	320	320
Rated AC supply servo amplifier	U_n	V	230	230	230	230	230	230
Rated motor voltage	U_m	V	152	152	152	152	152	152

Motor type			JHQ2-0100-051	JHQ2-0100-035	JHQ2-0100-025	JHQ2-0125-051	JHQ2-0125-035	JHQ2-0125-025
Rated torque	M_n	Nm	0.97	0.94	0.93	1.21	1.18	1.16
Rated current	I_n	A	1.15	1.65	2.2	1.44	2.1	2.8
Continuous stall torque	M_o	Nm	1.00	1.00	1.00	1.25	1.25	1.25
Continuous stall current	I_o	A	1.19	1.75	2.4	1.49	2.2	3.0
Max. torque	M_{max}	Nm	4.0	4.0	4.0	5.0	5.0	5.0
Max. current	I_{max}	A	5.6	8.4	11.2	7.0	10.5	14.0
Max. speed	N_{max}	rpm	9000	9000	9000	9000	9000	9000
Voltage constant	K_E	V/1000	51.3	34.6	25.1	51.3	34.6	25.1
Torque constant	K_T	Nm/A	0.84	0.57	0.42	0.84	0.57	0.42
Winding resistance	R_{2ph}	Ω	21.3	9.9	5.1	19.4	8.2	4.5
Winding inductance	L_{2ph}	mH	37.5	16.4	8.9	29.4	14.2	7.9
Motor pole count	P_{mot}		8	8	8	8	8	8
Idling speed	N_o	rpm	4100	6100	8300	4100	6100	8300
Torque at I_{max}/U_n	M_z	Nm	4.0	4.0	4.0	5.0	5.0	5.0
Speed at I_{max}/U_n	N_z	rpm	1400	2600	3900	1200	2400	3600
Max. torque at n_n	M_x	Nm	1.6	1.8	2.1	1.9	2.2	2.5
Electrical time constant	T_{el}	ms	1.8	1.7	1.7	1.5	1.7	1.8
Mechanical time constant	T_{mech}	ms	1.3	1.3	1.3	1.5	1.3	1.4
Thermal time constant	T_{th}	min	38	38	38	40	40	40
Rotor inertia without brake	J	$kg*cm^2$	0.25	0.25	0.25	0.31	0.31	0.31
Weight without brake	m	kg	1.7	1.7	1.7	2.0	2.0	2.0
Axial load	F_A	N	14.0	14.0	14.0	15.0	15.0	15.0
Radial load	F_R	N	135	135	135	145	145	145

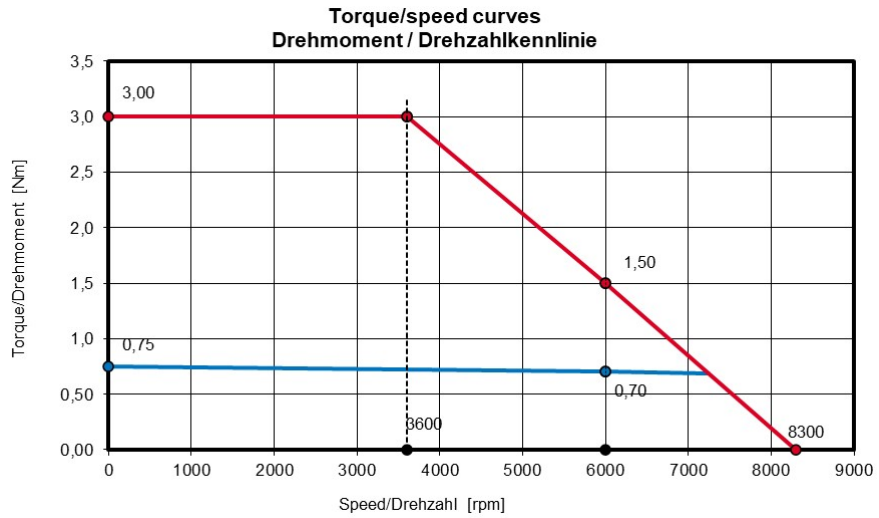
Torque speed characteristics

JHQ2 320 V	JHQ2-0025-051 	JHQ2-0025-035 
JHQ2 320 V	JHQ2-0025-025 	JHQ2-0050-051 

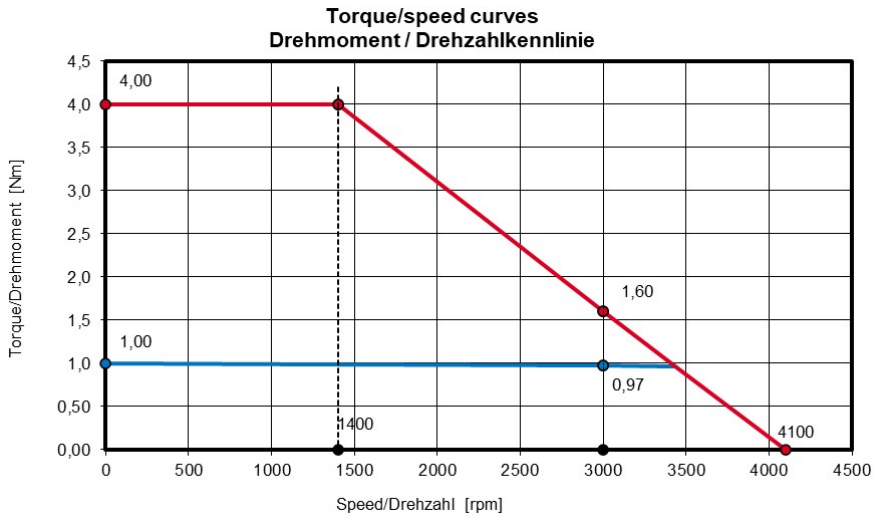
JHQ2 320 V	JHQ2-0050-035 	JHQ2-0050-025 
JHQ2 320 V	JHQ2-0075-051 	JHQ2-0075-035 

JHQ2
320 V

JHQ2-0075-025

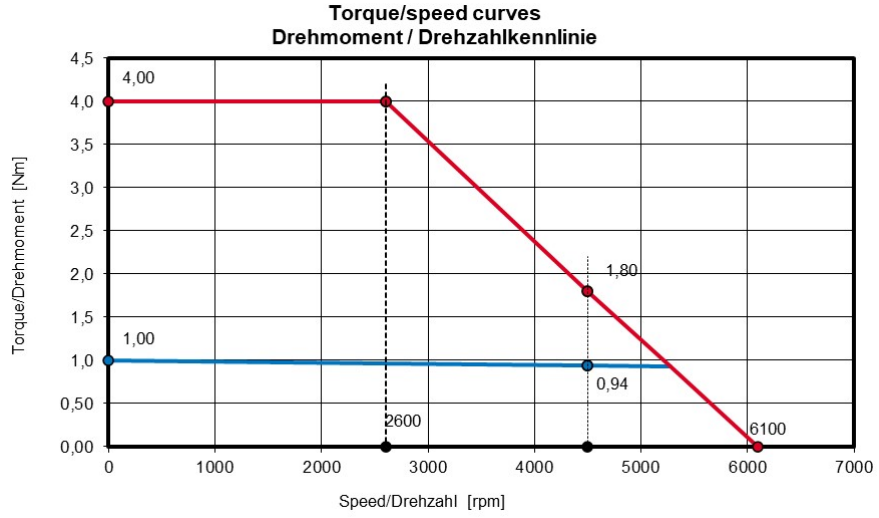


JHQ2-0100-051

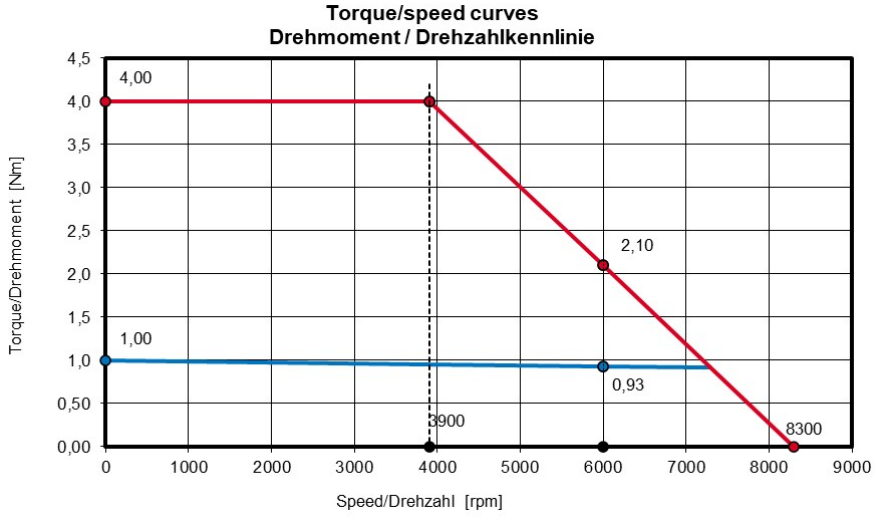


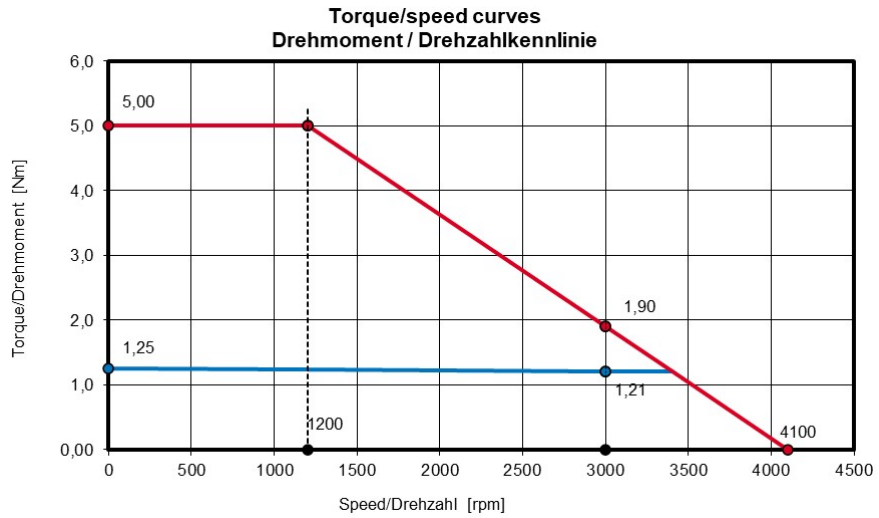
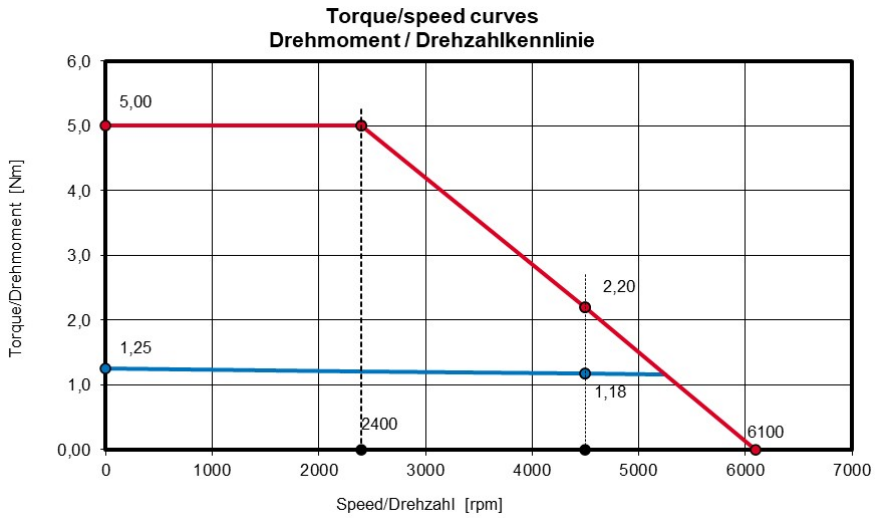
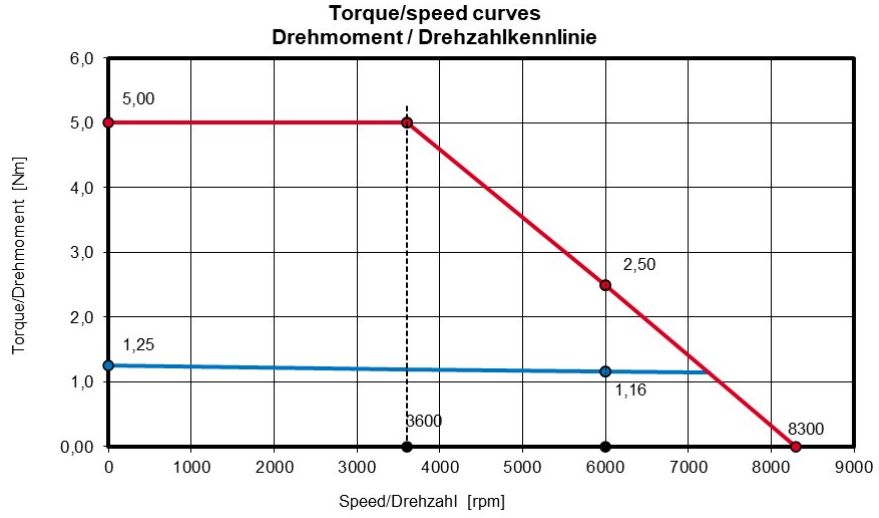
JHQ2
320 V

JHQ2-0100-035



JHQ2-0100-025



JHQ2 320 V	JHQ2-0125-051 	JHQ2-0125-035 
JHQ2 320 V	JHQ2-0125-025 	

5.8.5 Performance data DC link voltage 560 V DC

Motor type			JHQ2-0025-044	JHQ2-0050-088	JHQ2-0050-059	JHQ2-0050-044	JHQ2-0075-088	JHQ2-0075-059	JHQ2-0075-044	JHQ2-0100-088	JHQ2-0100-059
Nominal speed	N_n	rpm	6000	3000	4500	6000	3000	4500	6000	3000	4500
DC link voltage	U_{dc}	V	560	560	560	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400	400	400	400	400	400
Rated motor voltage	U_m	V	264	264	264	264	264	264	264	264	264
Rated torque	M_n	Nm	0.24	0.49	0.48	0.47	0.73	0.71	0.70	0.97	0.94
Rated current	I_n	A	0.33	0.34	0.49	0.65	0.50	0.73	0.96	0.67	0.97
Continuous stall torque	M_o	Nm	0.25	0.50	0.50	0.50	0.75	0.75	0.75	1.00	1.00
Continuous stall current	I_o	A	0.33	0.34	0.49	0.65	0.50	0.73	0.65	0.67	0.97
Max. torque	M_{max}	Nm	1.0	2.0	2.0	2.0	3.0	3.0	3.0	4.0	4.0
Max. current	I_{max}	A	1.7	1.6	2.6	3.3	2.5	3.6	5.0	3.3	4.8
Max. speed	N_{max}	rpm	9000	9000	9000	9000	9000	9000	9000	9000	9000
Voltage constant	K_E	V/1000	44.0	88.0	58.6	44.0	88.0	58.6	44.0	88.0	58.6
Torque constant	K_T	Nm/A	0.73	1.45	0.97	0.73	1.45	0.97	0.73	1.45	0.97
Winding resistance	R_{2ph}	Ω	110	145	64	38.9	81	51	24.2	64	31.3
Winding inductance	L_{2ph}	mH	129	226	89	56	132	78	38.8	112	53
Motor pole count	P_{mot}		8	8	8	8	8	8	8	8	8
Idling speed	N_o	rpm	8000	4050	6100	8500	4100	6100	8500	4050	6100
Torque at I_{max}/U_n	M_z	Nm	1.0	2.0	2.0	2.0	3.0	3.0	3.0	4.0	4.0
Speed at I_{max}/U_n	N_z	rpm	2850	1200	2500	3500	1500	2200	3400	1400	2500
Max. torque at n_n	M_x	Nm	0.40	0.70	0.92	1.0	1.3	1.2	1.5	1.6	1.8
Electrical time constant	T_{el}	ms	1.2	1.6	1.4	1.4	1.6	1.5	1.6	1.8	1.7
Mechanical time constant	T_{mech}	ms	2.5	1.5	1.5	1.6	1.3	1.8	1.5	1.3	1.4

Motor type			JHQ2-0025-044	JHQ2-0050-088	JHQ2-0050-059	JHQ2-0050-044	JHQ2-0075-088	JHQ2-0075-059	JHQ2-0075-044	JHQ2-0100-088	JHQ2-0100-059
Thermal time constant	T_{th}	min	31	34	34	34	36	36	36	38	38
Rotor inertia without brake	J	kg*cm^2	0.07	0.13	0.13	0.13	0.19	0.19	0.19	0.25	0.25
Weight without brake	m	kg	1.0	1.2	1.2	1.2	1.5	1.5	1.5	1.7	1.7
Axial load	F_A	N	11.0	12.0	12.0	12.0	13.0	13.0	13.0	14.0	14.0
Radial load	F_R	N	105	115	115	115	125	125	125	135	135

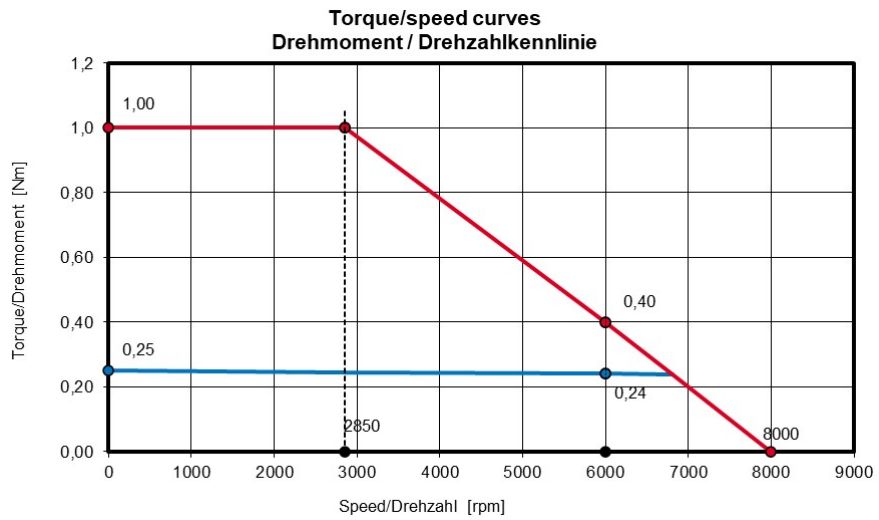
Motor type			JHQ2-0100-044	JHQ2-0125-088	JHQ2-0125-059	JHQ2-0125-044
Nominal speed	N_n	rpm	6000	3000	4500	6000
DC link voltage	U_{dc}	V	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400
Rated motor voltage	U_m	V	264	264	264	264
Rated torque	M_n	Nm	0.93	1.21	1.18	1.16
Rated current	I_n	A	1.28	0.83	1.22	1.59
Continuous stall torque	M_o	Nm	1.00	1.25	1.25	1.25
Continuous stall current	I_o	A	1.28	0.83	1.22	1.59
Max. torque	M_{max}	Nm	4.0	5.0	5.0	5.0
Max. current	I_{max}	A	6.6	4.1	6.0	8.3
Max. speed	N_{max}	rpm	9000	9000	9000	9000
Voltage constant	K_E	V/1000	44.0	88.0	58.6	44.0
Torque constant	K_T	Nm/A	0.73	1.45	0.97	0.73
Winding resistance	R_{2ph}	Ω	15.4	58	24.5	13.5
Winding inductance	L_{2ph}	mH	26.7	88	42.5	23.6
Motor pole count	P_{mot}		8	8	8	8

Motor type			**JHQ2-0100-044**	**JHQ2-0125-088**	**JHQ2-0125-059**	**JHQ2-0125-044**
Idling speed	N_o	rpm	8500	4050	6100	8500
Torque at I_{max}/U_n	M_z	Nm	4.0	5.0	5.0	5.0
Speed at I_{max}/U_n	N_z	rpm	3900	1200	2500	3600
Max. torque at n_n	M_x	Nm	2.2	2.0	2.3	2.6
Electrical time constant	T_{el}	ms	1.7	1.5	1.7	1.7
Mechanical time constant	T_{mech}	ms	1.3	1.5	1.4	1.4
Thermal time constant	T_{th}	min	38	40	40	40
Rotor inertia without brake	J	$kg*cm^2$	0.25	0.31	0.31	0.31
Weight without brake	m	kg	1.7	2.0	2.0	2.0
Axial load	F_A	N	14.0	15.0	15.0	15.0
Radial load	F_R	N	135	145	145	145

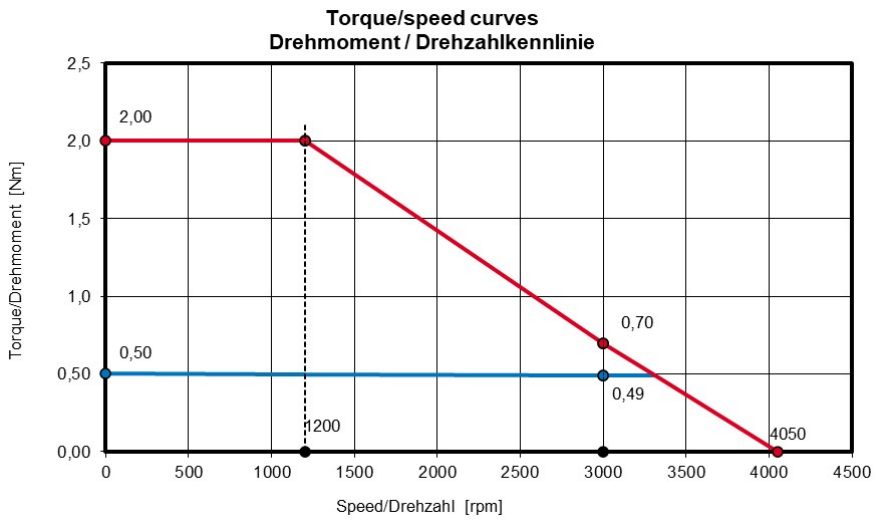
Torque speed characteristics

JHQ2
560 V

JHQ2-0025-044

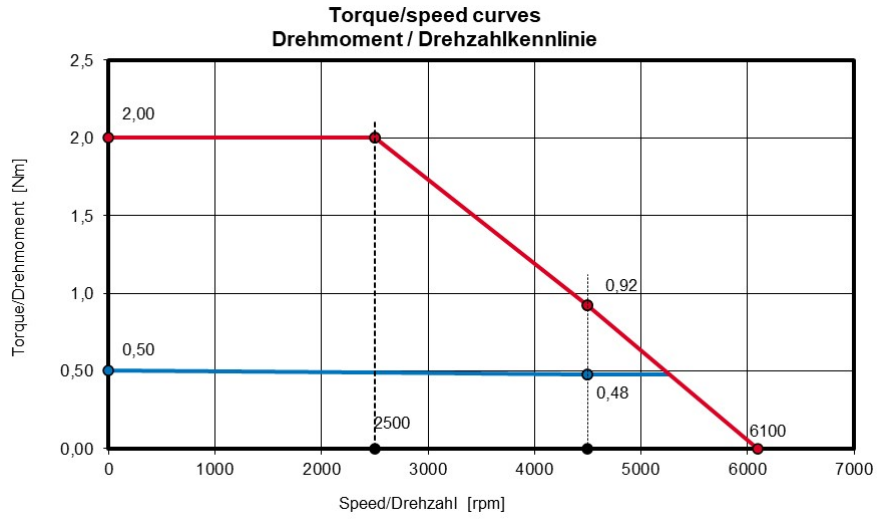


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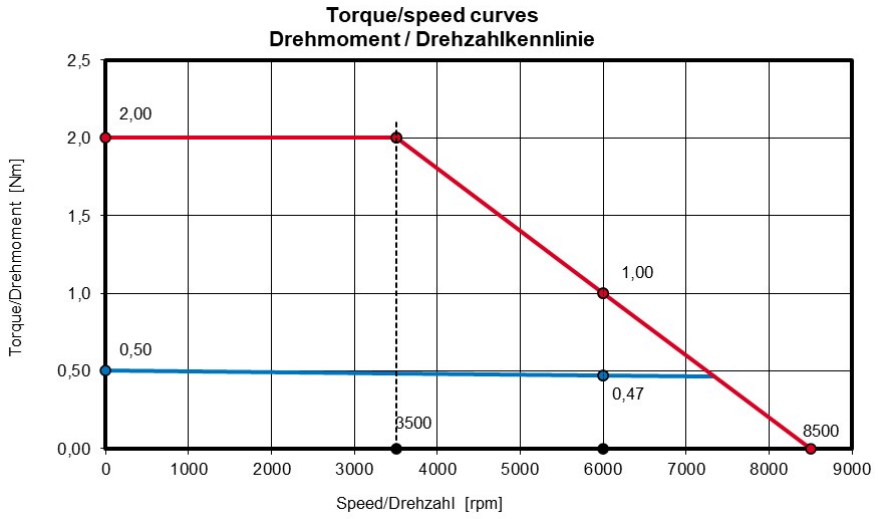


JHQ2
560 V

JHQ2-0050-059

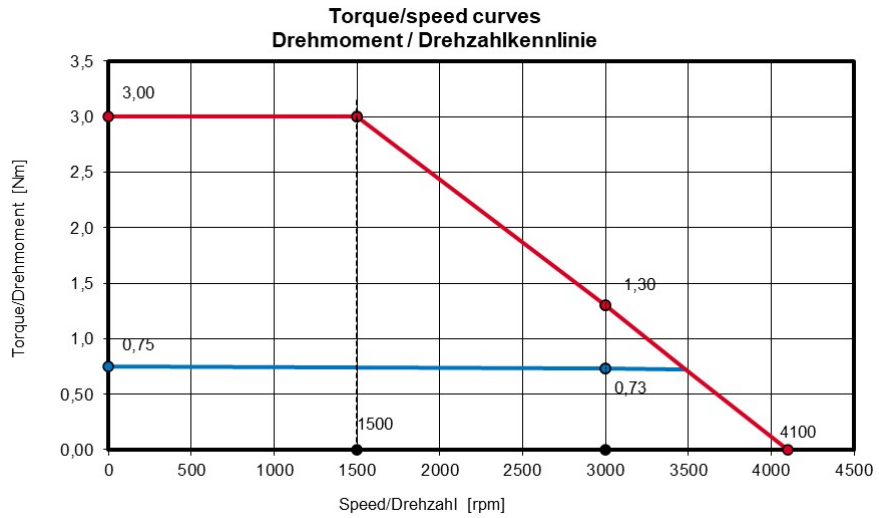


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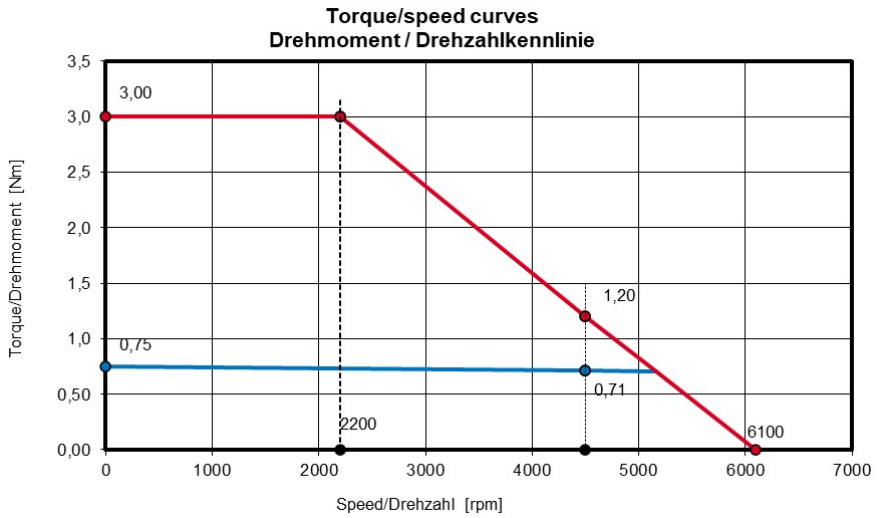


JHQ2
560 V

JHQ2-0075-088

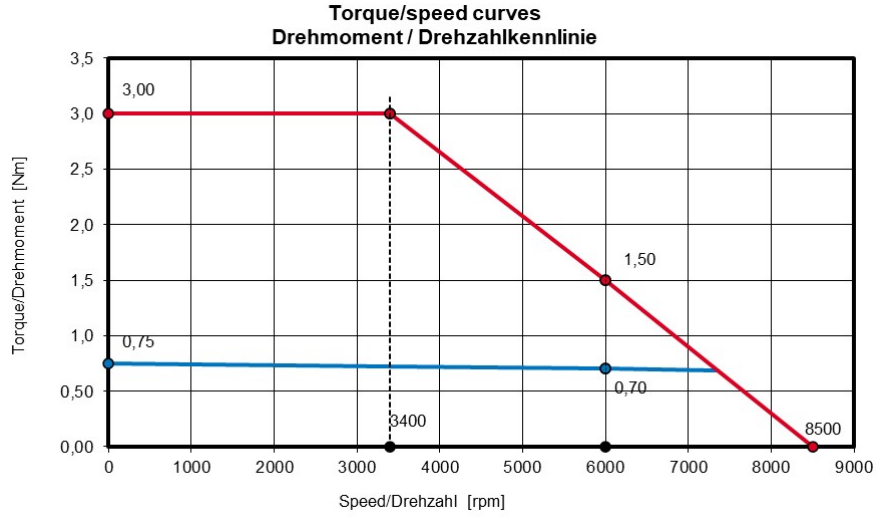


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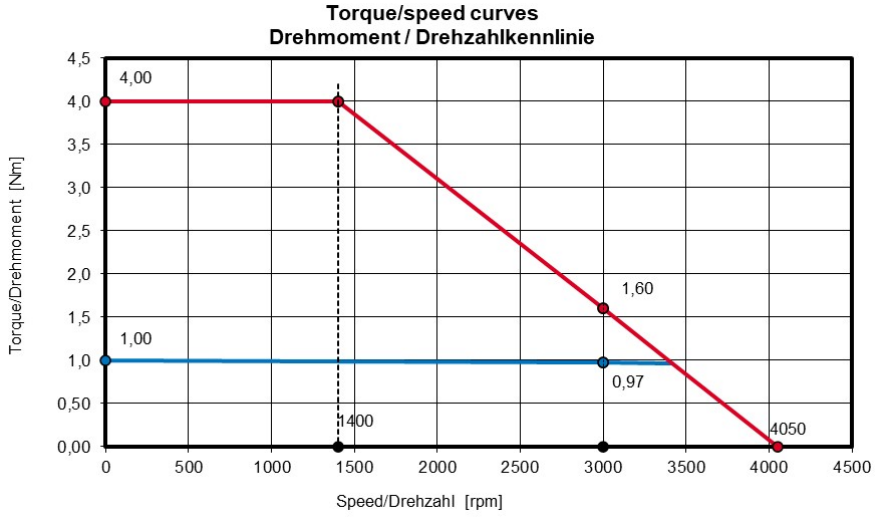


JHQ2
560 V

JHQ2-0075-044

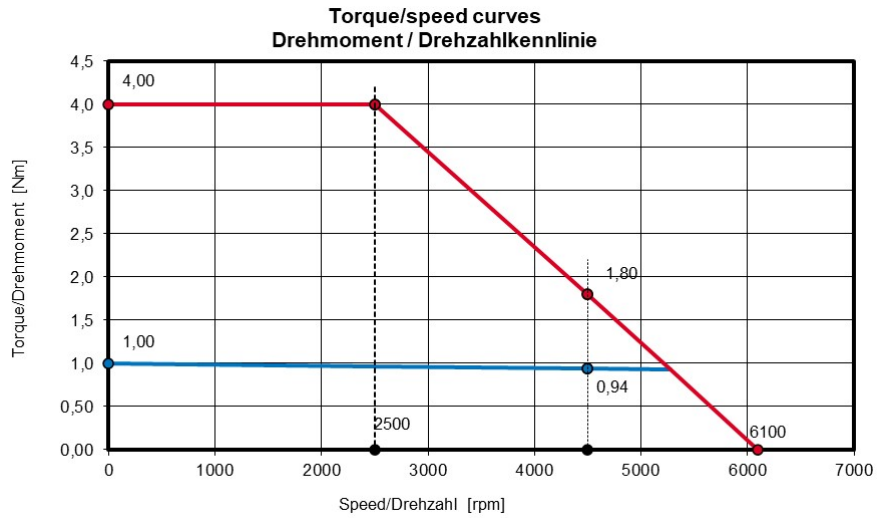


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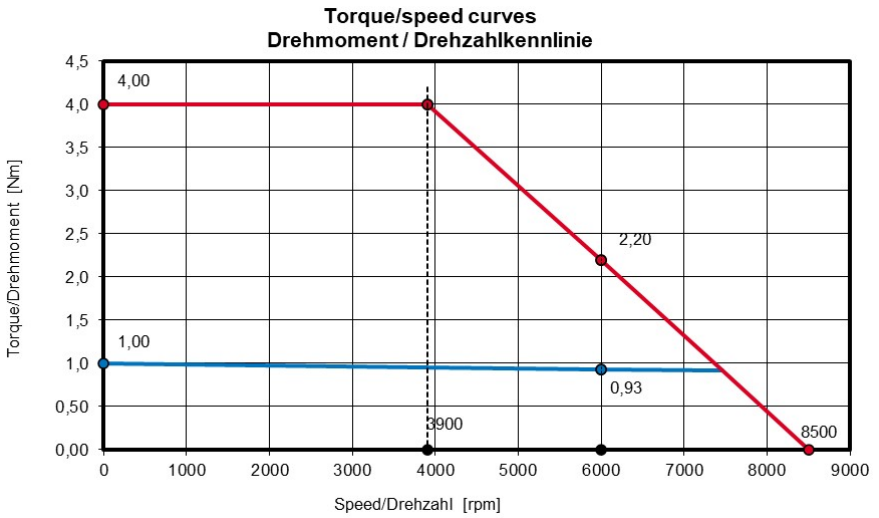


JHQ2
560 V

JHQ2-0100-059

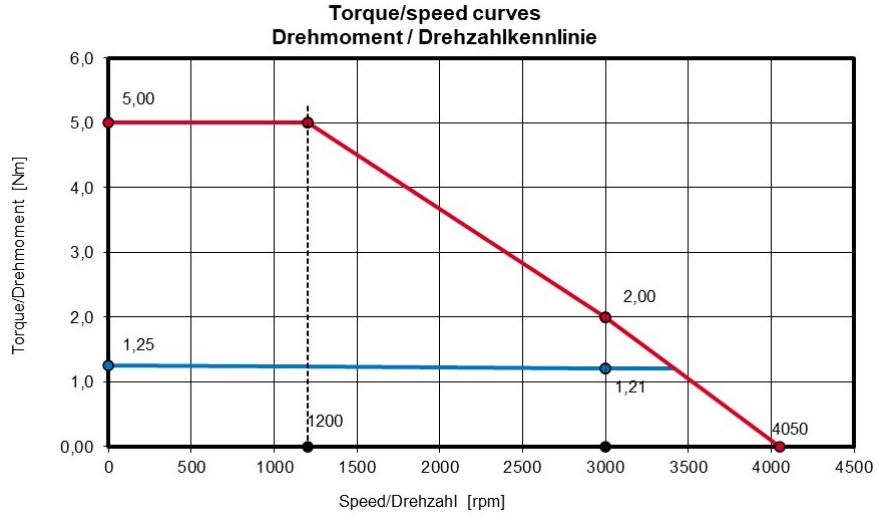


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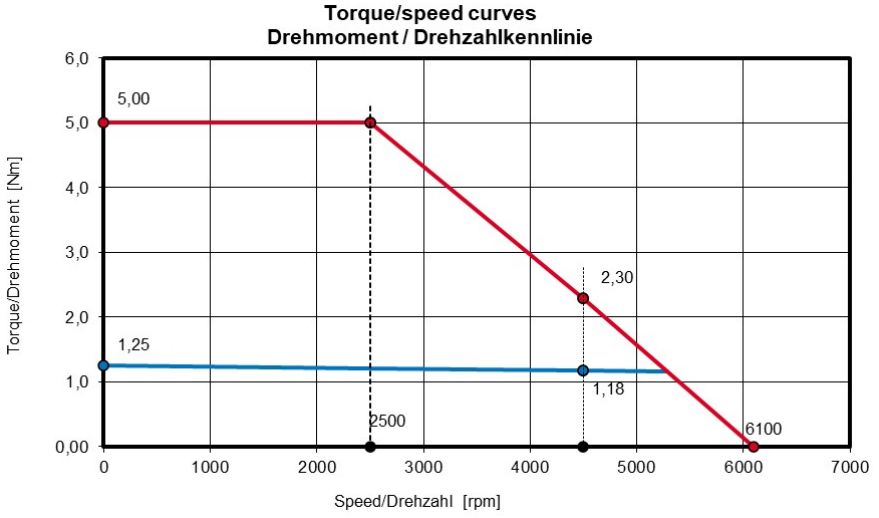


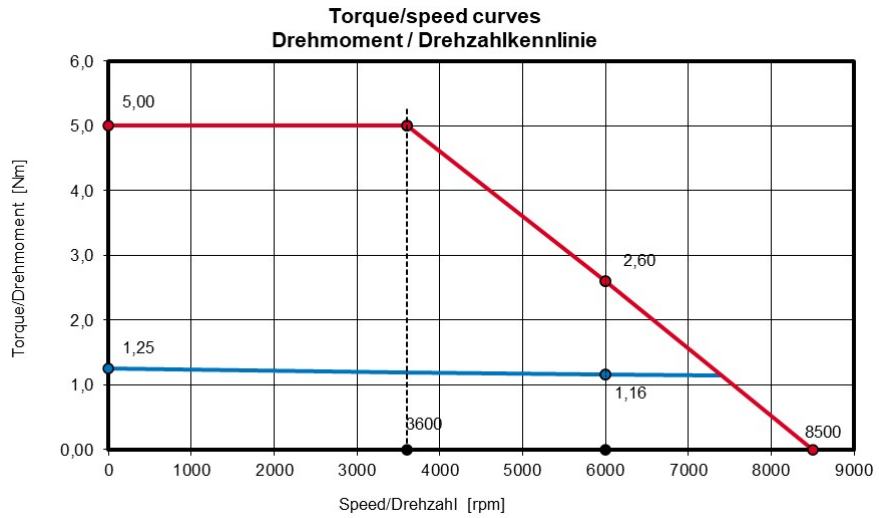
JHQ2
560 V

JHQ2-0125-088



JHQ2-0125-059



JHQ2 560 V	JHQ2-0125-059  	

5.9 Flange size JHQ22

5.9.1 Dimensions JHQ22

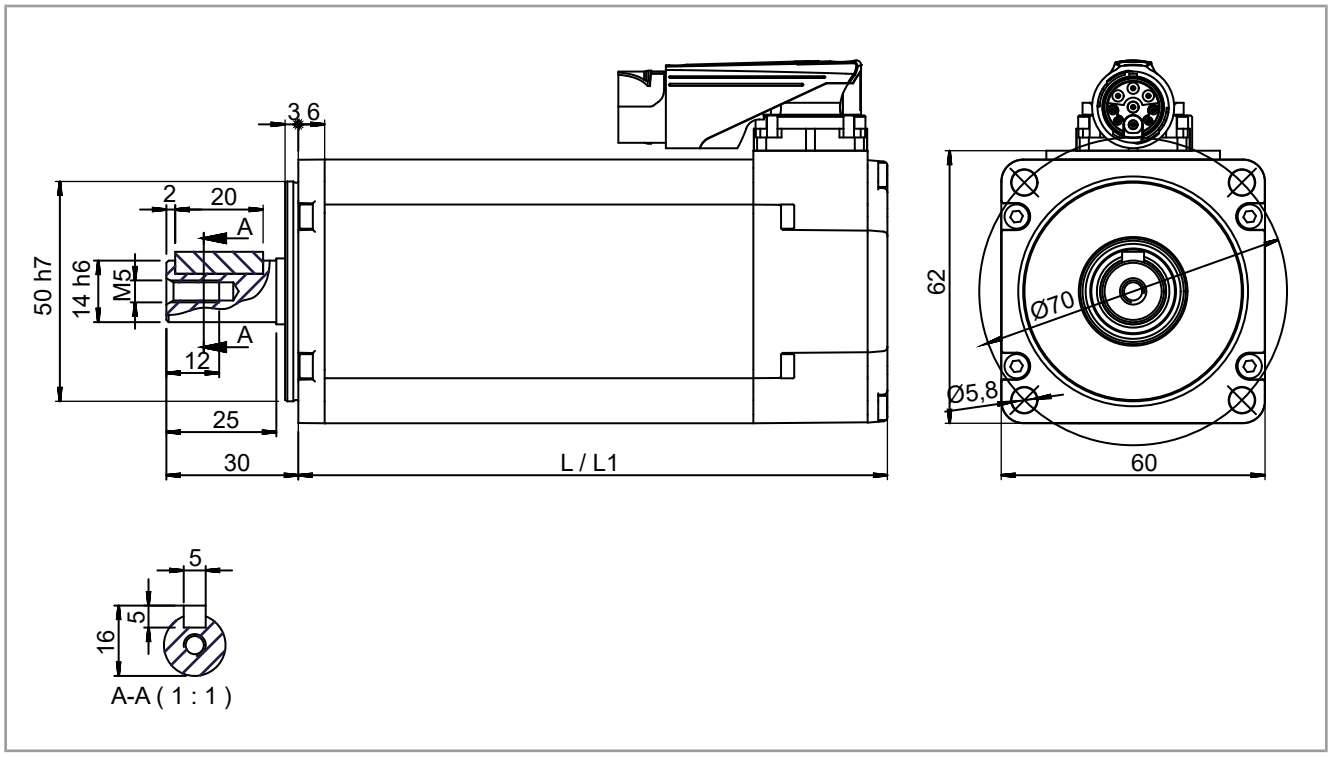


Fig. 16: Dimensions JHQ22 in mm

	P	L	L1	L	L1
Type	**Resolver/SEx37**			**EEx37/EKx36/SKx36**	
JHQ22-0070	Y/I	84.5	113.5	88.5	117.5
JHQ22-0140	Y/I	105	134	109	138

Tab. 25: Dimensions

Key:
P = Power connector size
L = Dimension without brake
L1 = Dimension with brake

5.9.2 Technical data of the brake for motor type JHQ22

Parameter	Value
Holding torque M_{BR}	0.4 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	8 W
Rotor inertia J_{BR}	0.013 kg*cm^2
Weight m_{BR}	0.08 kg

Tab. 26: Technical data of the brake for motor type JHQ22

5.9.3 Performance data DC link voltage 320 V DC

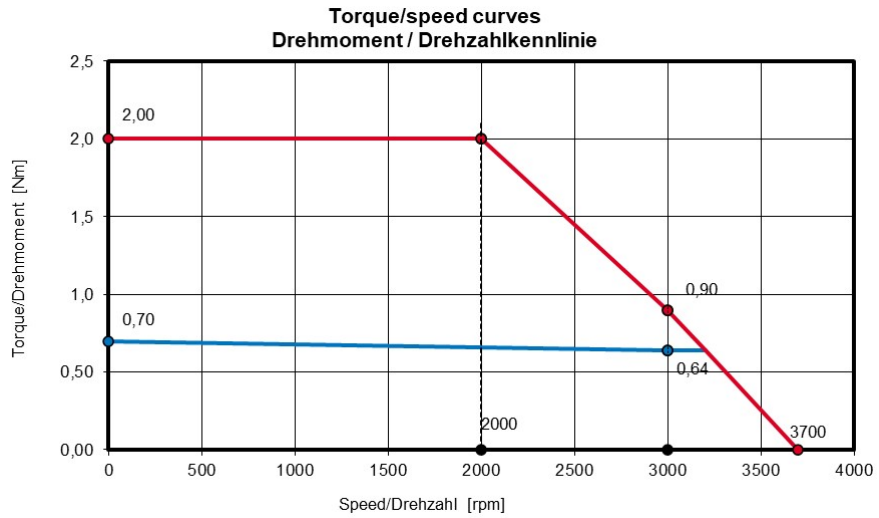
Motor type			JHQ22-0070-057	JHQ22-0070-028	JHQ22-0140-057	JHQ22-0140-028
Nominal speed	N_n	rpm	3000	6000	3000	6000
DC link voltage	U_{dc}	V	320	320	320	320
Rated AC supply servo amplifier	U_n	V	230	230	230	230
Rated motor voltage	U_m	V	170	170	170	170
Rated torque	M_n	Nm	0.64	0.60	1.27	1.10
Rated current	I_n	A	0.68	1.28	1.35	2.4
Continuous stall torque	M_o	Nm	0.70	0.70	1.40	1.40
Continuous stall current	I_o	A	0.75	1.49	1.49	3.0
Max. torque	M_{max}	Nm	2.0	2.0	4.8	4.8
Max. current	I_{max}	A	2.7	5.5	6.0	11.9
Max. speed	N_{max}	rpm	9000	9000	9000	9000
Voltage constant	K_E	V/1000	56.6	28.3	56.6	28.3
Torque constant	K_T	Nm/A	0.94	0.47	0.94	0.47
Winding resistance	R_{2ph}	Ω	33.4	10.2	15.0	3.9
Winding inductance	L_{2ph}	mH	33.7	10.0	15.0	5.0
Motor pole count	P_{mot}		10	10	10	10
Idling speed	N_o	rpm	3700	7250	3700	7250
Torque at I_{max}/U_n	M_z	Nm	2.0	2.0	4.8	4.8
Speed at I_{max}/U_n	N_z	rpm	2000	4450	2000	4550
Max. torque at n_n	M_x	Nm	0.90	1.2	2.2	2.7
Electrical time constant	T_{el}	ms	1.0	0.98	1.0	1.3
Mechanical time constant	T_{mech}	ms	1.4	1.8	1.2	1.3

Motor type			JHQ22-0070-057	JHQ22-0070-028	JHQ22-0140-057	JHQ22-0140-028
Thermal time constant	T_{th}	min	18.0	18.0	20	20
Rotor inertia without brake	J	kg*cm^2	0.22	0.22	0.41	0.41
Weight without brake	m	kg	0.80	0.80	0.80	0.80
Axial load	F_A	N	7.0	7.0	7.0	7.0
Radial load	F_R	N	62	62	62	62

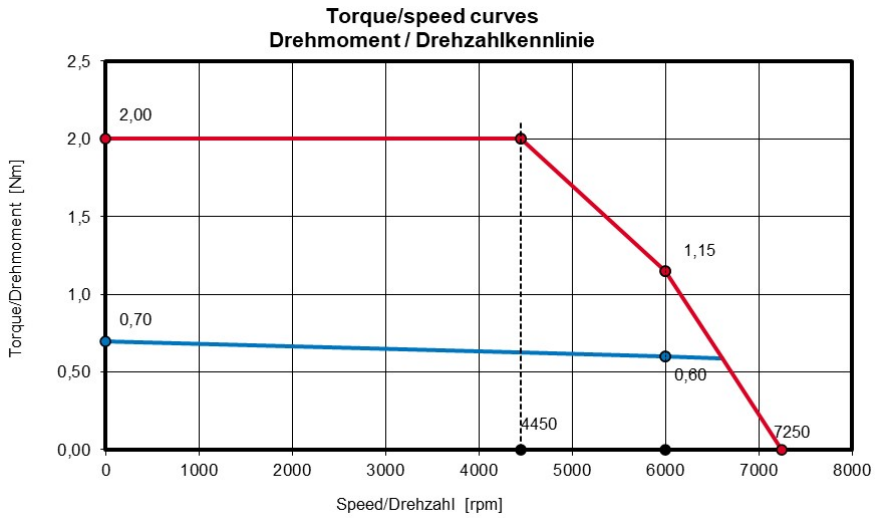
Torque speed characteristics

JHQ22
320 V

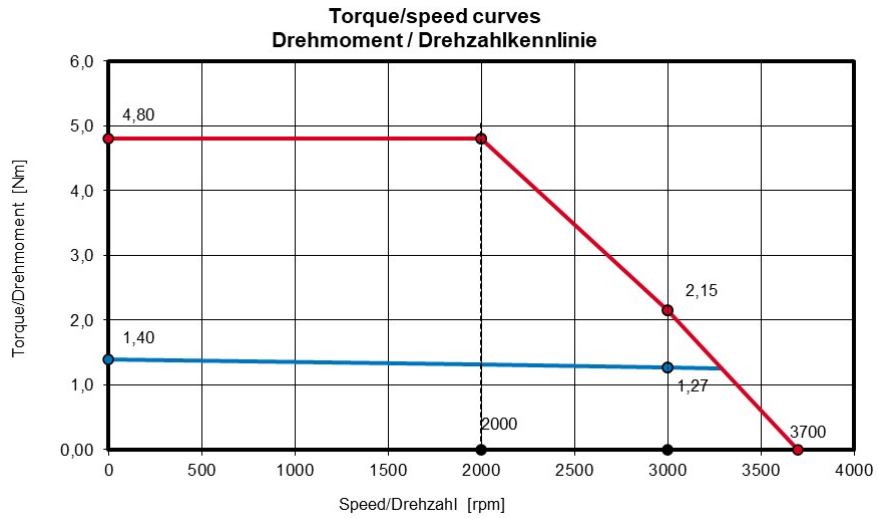
JHQ22-0070-057

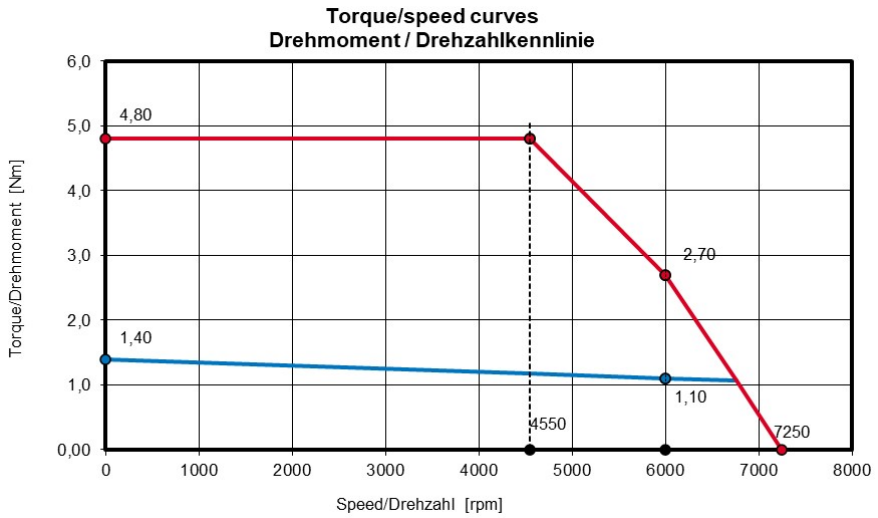


JHQ22-0070-028



JHQ22 320 V	JHQ22-0140-057	JHQ22-0140-028



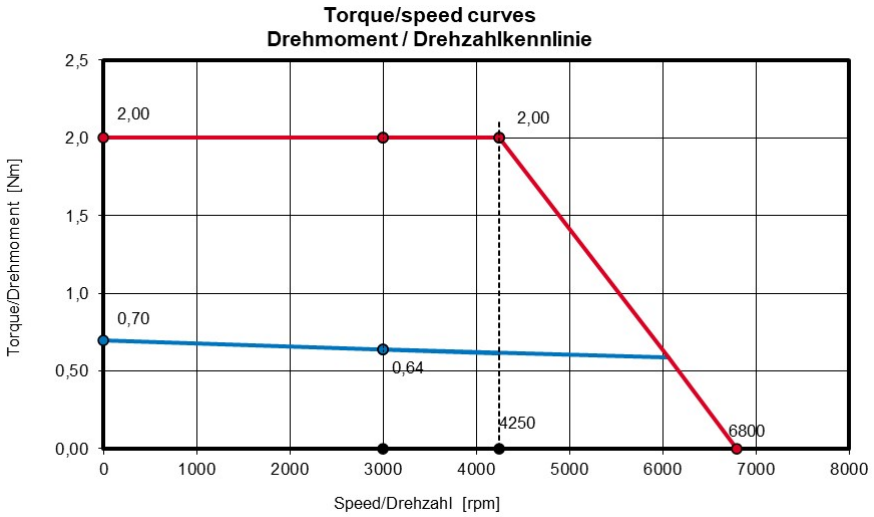
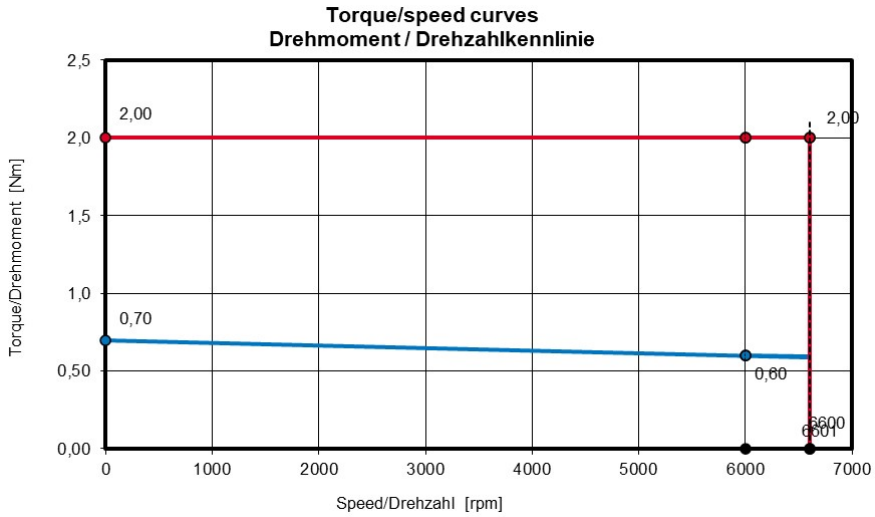
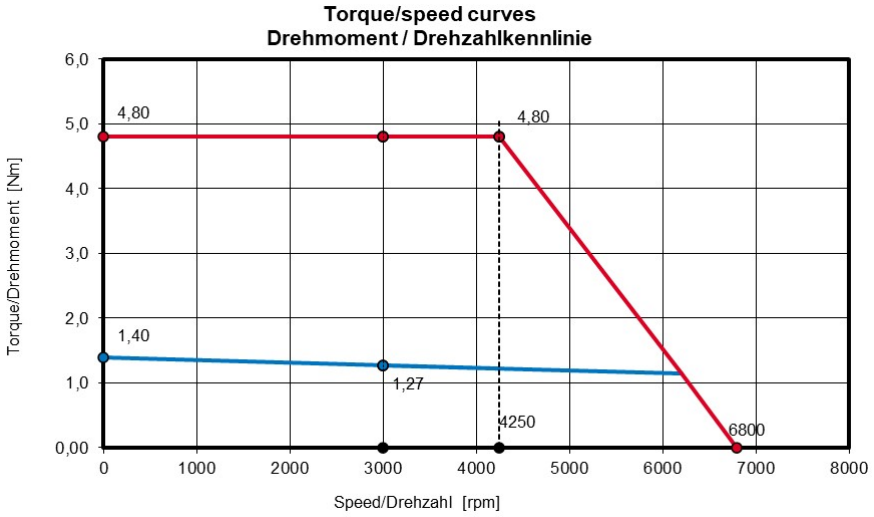
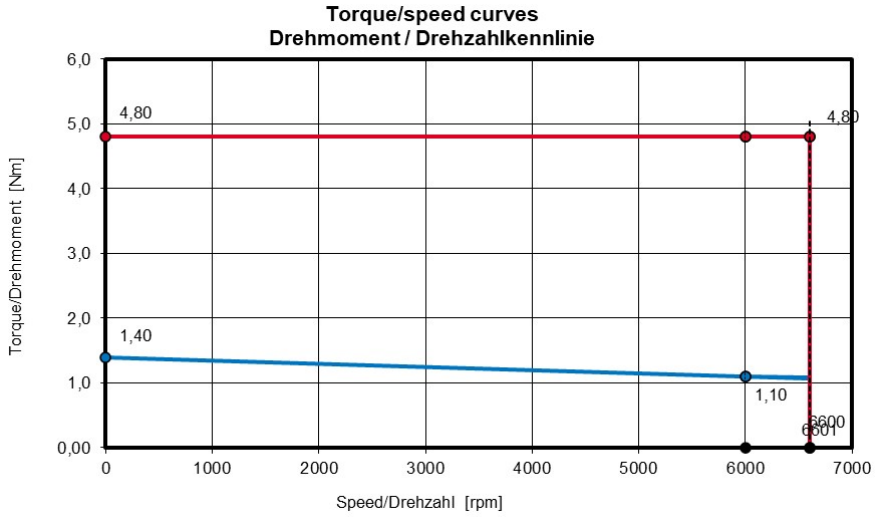


5.9.4 Performance data DC link voltage 560 V DC

Motor type			JHQ22-0070-057	JHQ22-0070-028	JHQ22-0140-057	JHQ22-0140-028
Nominal speed	N_n	rpm	3000	6000	3000	6000
DC link voltage	U_{dc}	V	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400
Rated motor voltage	U_m	V	170	170	170	170
Rated torque	M_n	Nm	0.64	0.60	1.27	1.10
Rated current	I_n	A	0.68	1.28	1.35	2.4
Continuous stall torque	M_o	Nm	0.70	0.70	1.40	1.40
Continuous stall current	I_o	A	0.75	1.49	1.49	3.0
Max. torque	M_{max}	Nm	2.0	2.0	4.8	4.8
Max. current	I_{max}	A	2.7	5.5	6.0	11.9

Motor type			JHQ22-0070-057	JHQ22-0070-028	JHQ22-0140-057	JHQ22-0140-028
Max. speed	N_{max}	rpm	9000	6600	9000	9000
Voltage constant	K_E	V/1000	56.6	28.3	56.6	28.3
Torque constant	K_T	Nm/A	0.94	0.47	0.94	0.47
Winding resistance	R_{2ph}	Ω	33.4	10.2	15.0	3.9
Winding inductance	L_{2ph}	mH	33.7	10.0	15.0	5.0
Motor pole count	P_{mot}		10	10	10	10
Idling speed	N_o	rpm	6800	6601	6800	6601
Torque at I_{max}/U_n	M_z	Nm	2.0	2.0	4.8	4.8
Speed at I_{max}/U_n	N_z	rpm	4250	6600	4250	6600
Max. torque at n_n	M_x	Nm	2.0	2.0	4.8	4.8
Electrical time constant	T_{el}	ms	1.0	0.98	1.0	1.3
Mechanical time constant	T_{mech}	ms	1.4	1.8	1.2	1.3
Thermal time constant	T_{th}	min	18.0	18.0	20	20
Rotor inertia without brake	J	$kg*cm^2$	0.22	0.22	0.41	0.41
Weight without brake	m	kg	0.80	0.80	0.80	0.80
Axial load	F_A	N	7.0	7.0	7.0	7.0
Radial load	F_R	N	62	62	62	62

Torque speed characteristics

JHQ22 560 V	JHQ22-0070-057 	JHQ22-0070-028 
JHQ22 560 V	JHQ22-0140-057 	JHQ22-0140-028 

5.10 Flange size JHQ23

5.10.1 Dimensions JHQ23

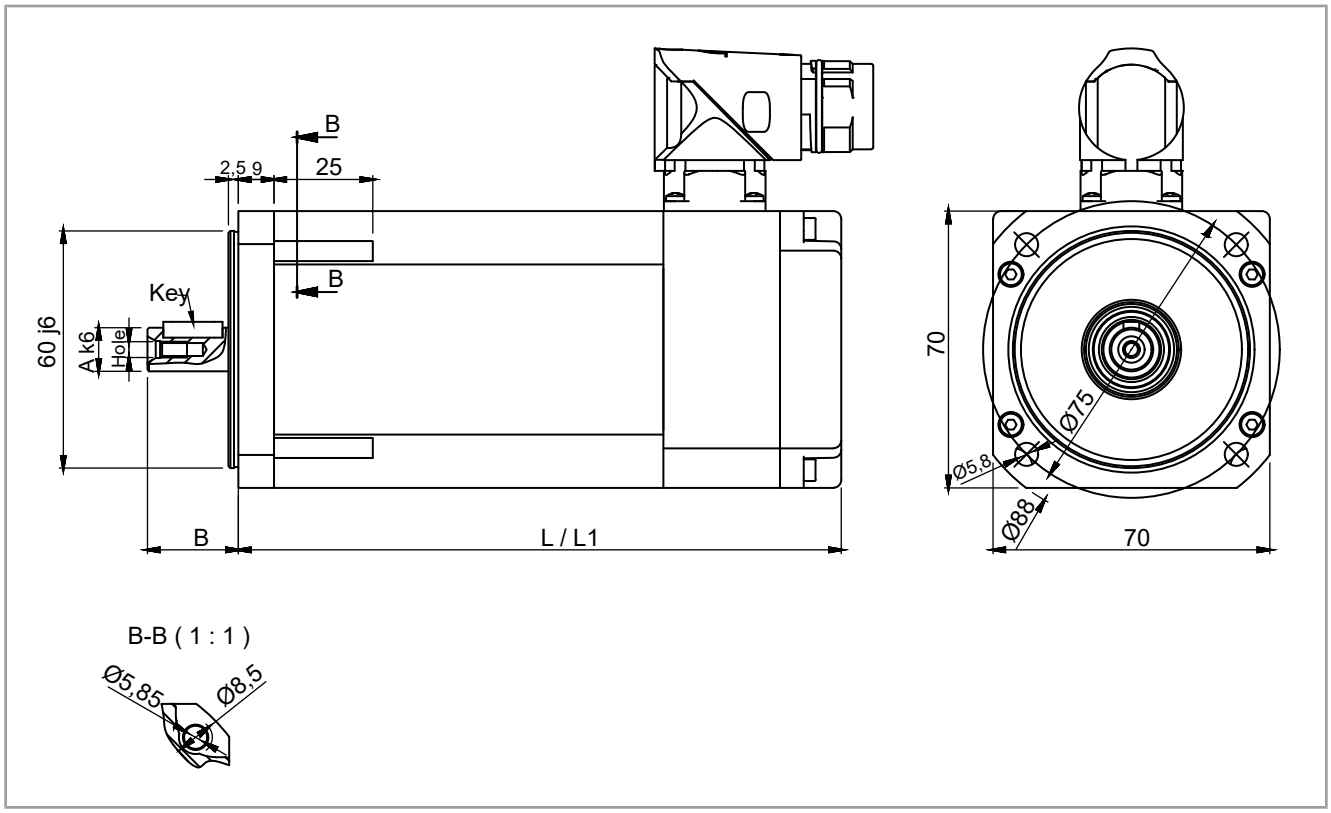


Fig. 17: Dimensions JHQ23 in mm

	P	L	L1	L	L1	Shaft (AxB)/ feather key/in-ternal thread (hole)
Type	**Resolver/SEx37**			**EEx37/EKx36/SKx36**		
JHQ23-0060	M23	112	147	122.5	157.5	Ø11x23/4x4x15/ M4 DIN 332-D
JHQ23-0120	M23	127	162	137.5	172.5	
JHQ23-0180	M23	142	177	152.5	187.5	
JHQ23-0240	M23	167	198	179.5	210.5	Ø14x30/5x5x20/ M5 DIN 332-D
JHQ23-0300	M23	182	213	194.5	225.5	

Tab. 27: Dimensions

Key:
P = Power connector size
L = Dimension without brake
L1 = Dimension with brake

5.10.2 Technical data of the brake for motor type JHQ23

Parameter	Value
Holding torque M_{BR}	3.2 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	10.8 W
Rotor inertia J_{BR}	0.38 kg*cm^2
Weight m_{BR}	0.6 kg

Tab. 28: Technical data of the brake for motor type JHQ23

5.10.3 Performance data DC link voltage 320 V DC

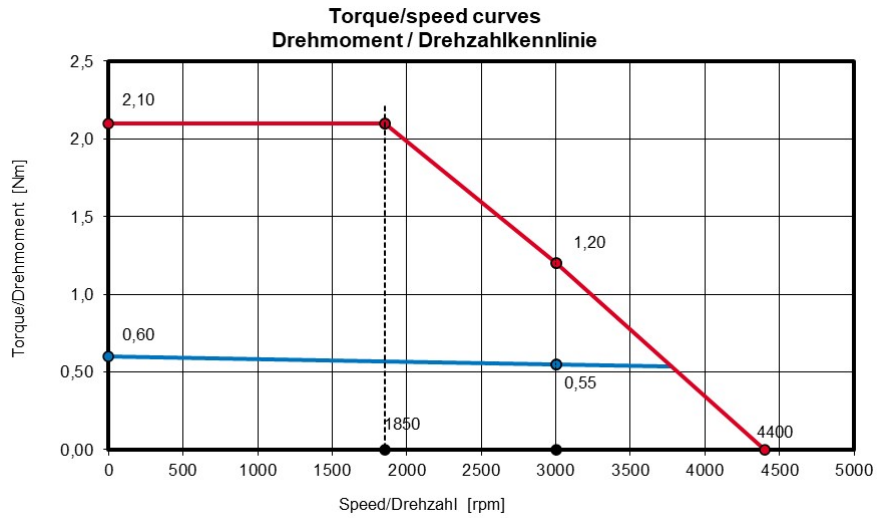
Motor type			JHQ23-0060-051	JHQ23-0060-025	JHQ23-0120-051	JHQ23-0120-025	JHQ23-0180-051	JHQ23-0180-025	JHQ23-0240-051	JHQ23-0240-025	JHQ23-0300-051
Nominal speed	N_n	rpm	3000	6000	3000	6000	3000	6000	3000	6000	3000
DC link voltage	U_{dc}	V	320	320	320	320	320	320	320	320	320
Rated AC supply servo amplifier	U_n	V	230	230	230	230	230	230	230	230	230
Rated motor voltage	U_m	V	152	152	152	152	152	152	152	152	152
Rated torque	M_n	Nm	0.55	0.50	1.10	1.00	1.65	1.50	2.2	2.0	2.7
Rated current	I_n	A	0.40	0.70	0.80	1.40	1.10	2.1	1.50	2.7	3.1
Continuous stall torque	M_o	Nm	0.60	0.60	1.20	1.20	1.80	1.80	2.4	2.4	3.0
Continuous stall current	I_o	A	0.70	1.40	1.40	2.9	2.1	4.3	2.8	5.8	3.5
Max. torque	M_{max}	Nm	2.1	2.1	4.2	4.2	6.3	6.3	8.5	8.5	10.5
Max. current	I_{max}	A	3.2	6.4	6.3	12.8	9.5	19.2	12.7	26	15.9
Max. speed	N_{max}	rpm	6600	6600	6600	6600	6600	6600	6600	6600	6600
Voltage constant	K_E	V/1000	51.3	25.1	51.3	25.1	51.3	25.1	51.3	25.1	51.3
Torque constant	K_T	Nm/A	0.85	0.42	0.85	0.42	0.85	0.42	0.85	0.42	0.85
Winding resistance	R_{2ph}	Ω	35.0	8.8	12.1	3.0	6.4	1.75	5.0	1.25	3.8
Winding inductance	L_{2ph}	mH	48.0	12.0	23.2	5.8	15.5	3.9	12.0	3.0	9.3
Motor pole count	P_{mot}		8	8	8	8	8	8	8	8	8
Idling speed	N_o	rpm	4400	6600	4500	6600	4500	6600	4500	6600	4500
Torque at I_{max}/U_n	M_z	Nm	2.1	2.1	4.2	4.2	6.3	6.3	8.5	8.5	10.5
Speed at I_{max}/U_n	N_z	rpm	1850	4700	2100	5000	2200	5000	2200	5000	2200
Max. torque at n_n	M_x	Nm	1.2	1.6	2.6	3.2	4.2	5.0	5.6	6.6	7.1
Electrical time constant	T_{el}	ms	1.4	1.4	1.9	1.9	2.4	2.2	2.4	2.4	2.4
Mechanical time constant	T_{mech}	ms	2.1	2.2	1.3	1.3	0.97	1.1	0.98	1.0	0.93

Motor type			JHQ23-0060-051	JHQ23-0060-025	JHQ23-0120-051	JHQ23-0120-025	JHQ23-0180-051	JHQ23-0180-025	JHQ23-0240-051	JHQ23-0240-025	JHQ23-0300-051
Thermal time constant	T_{th}	min	34	34	34	34	34	34	34	34	34
Rotor inertia without brake	J	kg*cm^2	0.25	0.25	0.44	0.44	0.63	0.63	0.82	0.82	1.0
Weight without brake	m	kg	2.0	2.0	2.2	2.2	2.6	2.6	3.6	3.6	3.8
Axial load	F_A	N	16.0	16.0	17.0	17.0	18.0	18.0	19.0	19.0	20
Radial load	F_R	N	155	155	165	165	175	175	185	185	195

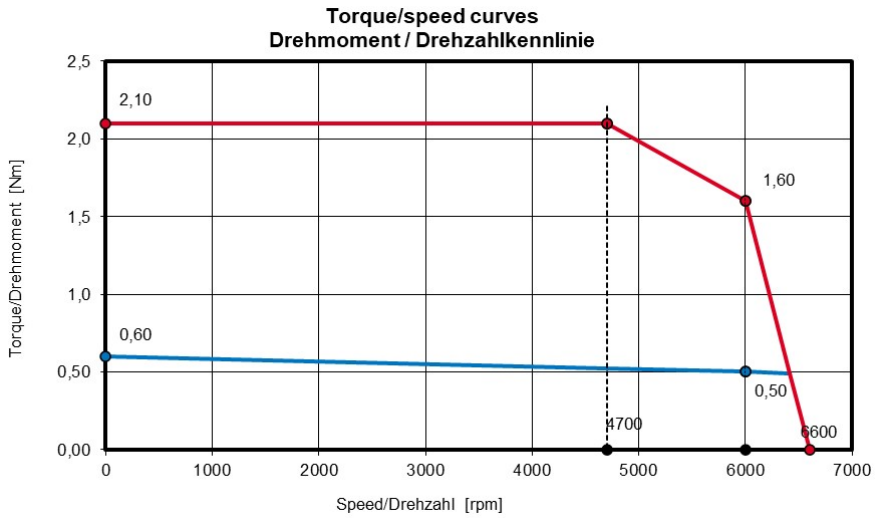
Torque speed characteristics

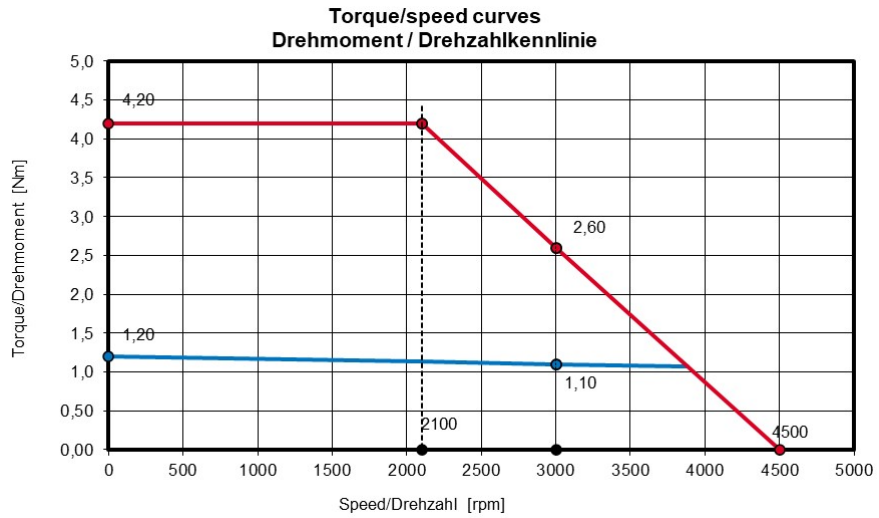
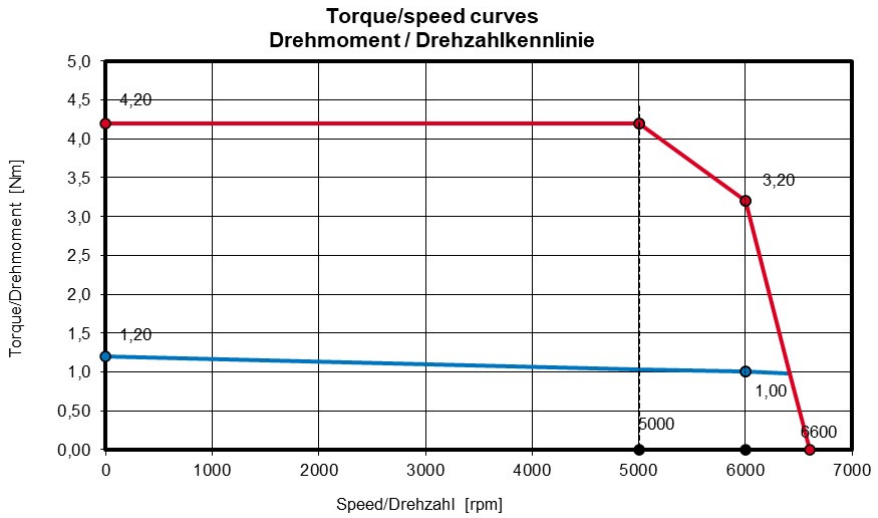
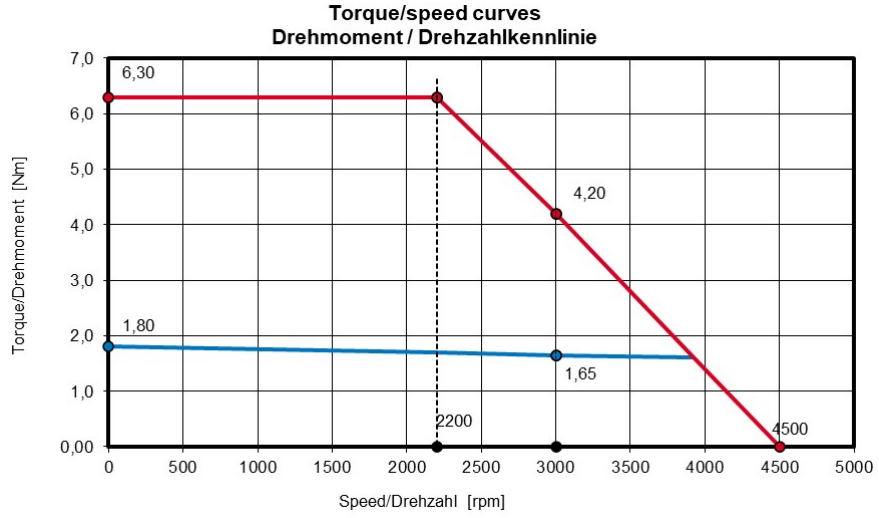
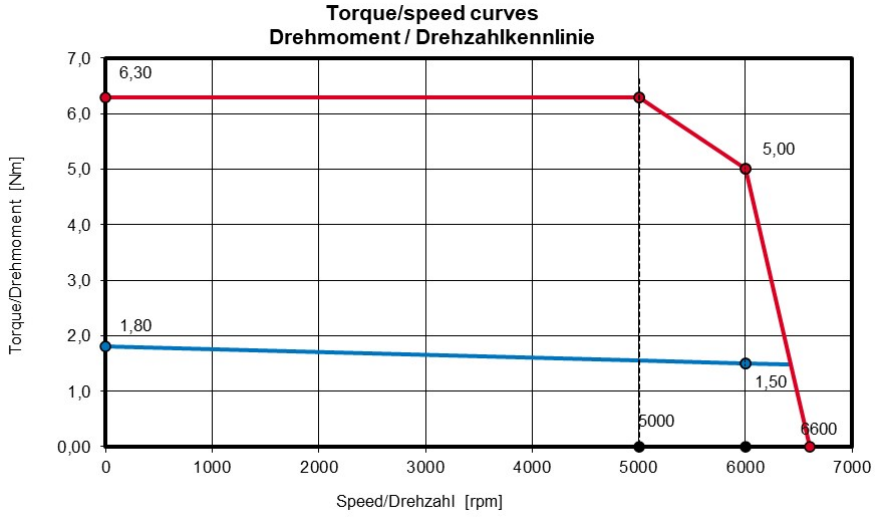
JHQ23 320 V

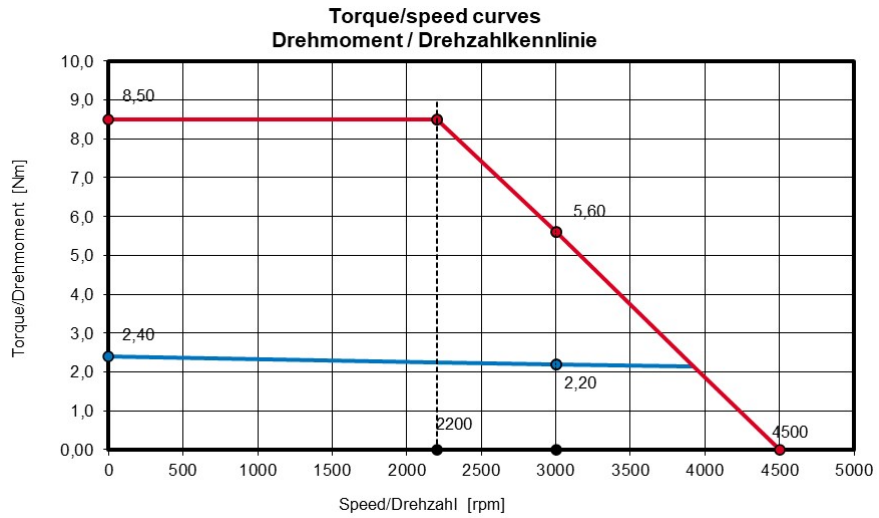
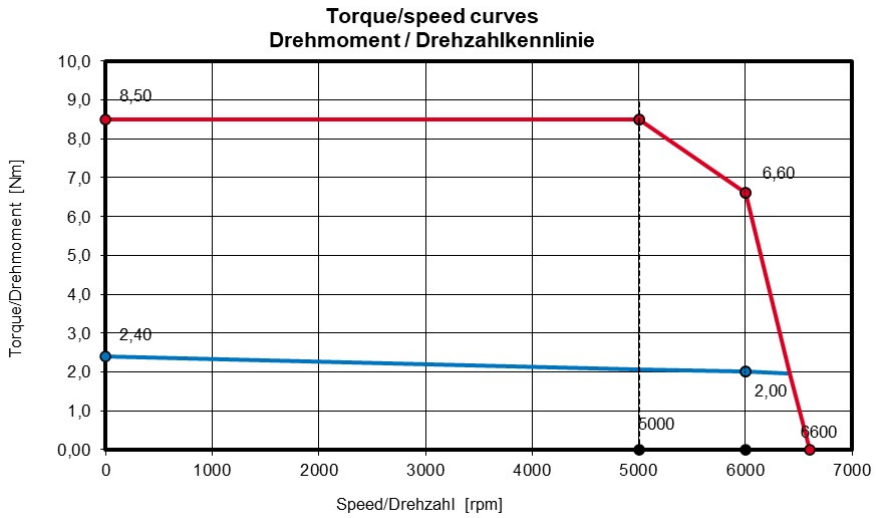
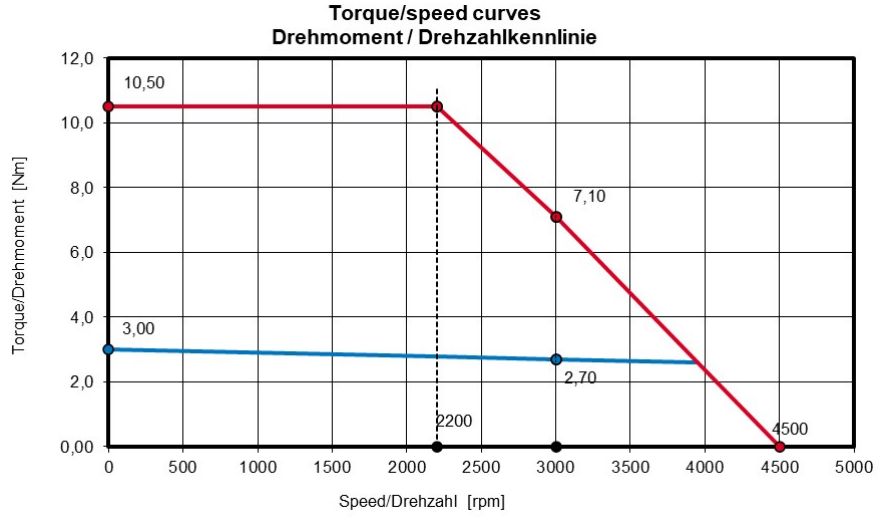
JHQ23-0060-051



JHQ23-0060-025



JHQ23 320 V	JHQ23-0120-051 	JHQ23-0120-025 
JHQ23 320 V	JHQ23-0180-051 	JHQ23-0180-025 

JHQ23 320 V	JHQ23-0240-051 	JHQ23-0240-025 
JHQ23 320 V	JHQ23-0300-051 	

5.10.4 Performance data DC link voltage 560 V DC

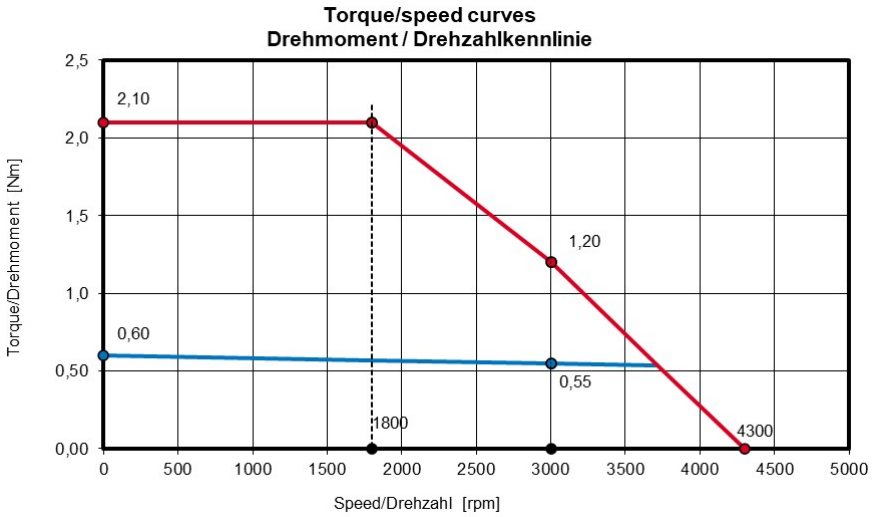
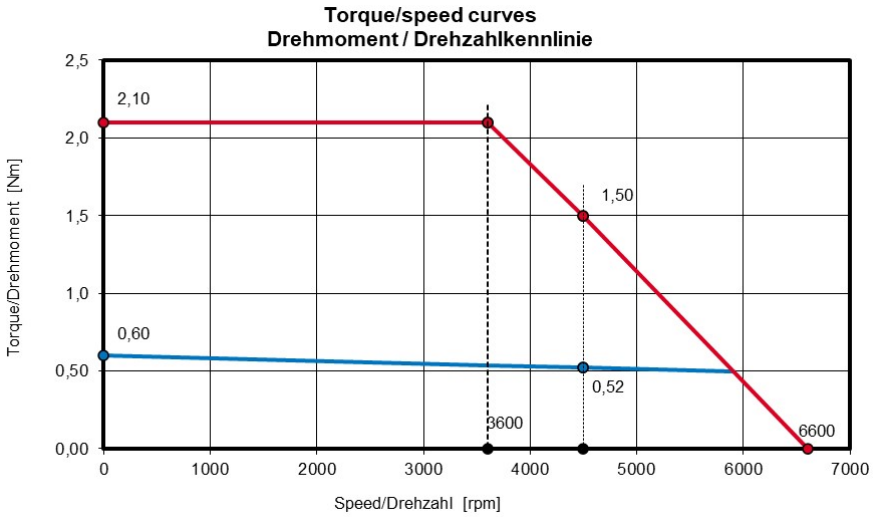
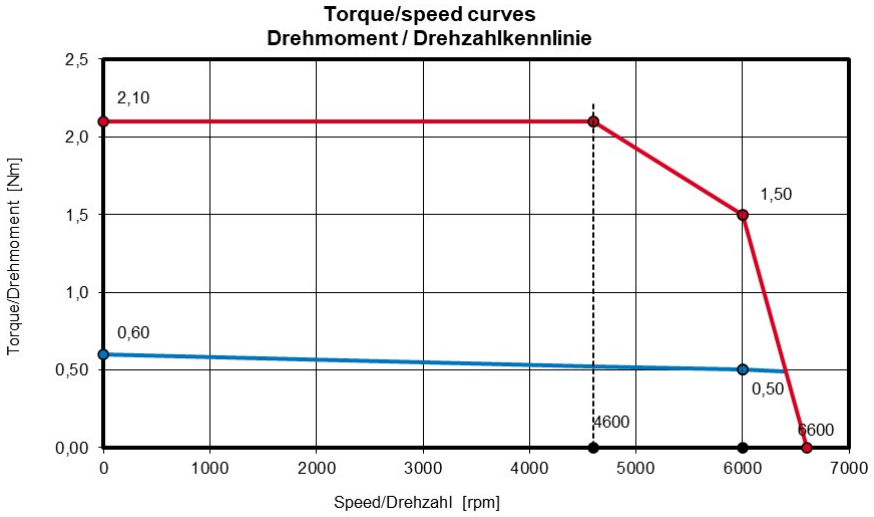
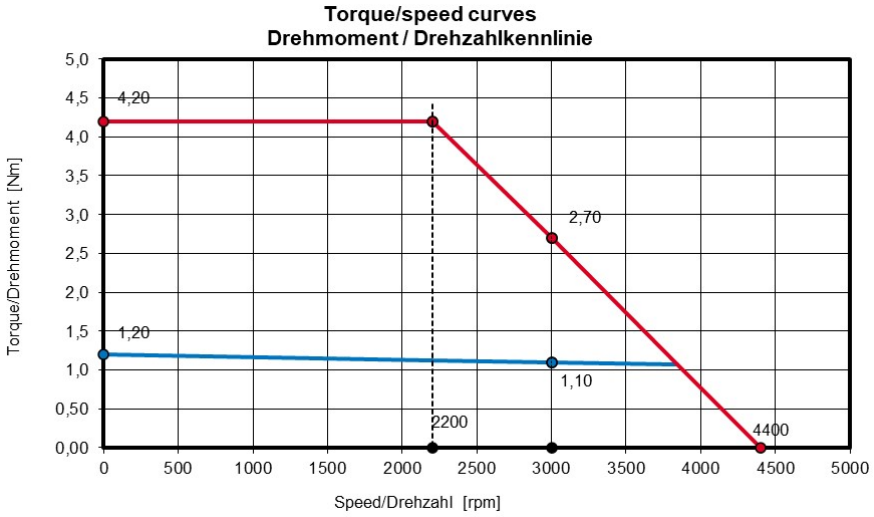
Motor type			JHQ23-0060-088	JHQ23-0060-059	JHQ23-0060-044	JHQ23-0120-088	JHQ23-0120-059	JHQ23-0120-044	JHQ23-0180-088	JHQ23-0180-059	JHQ23-0180-044
Nominal speed	N_n	rpm	3000	4500	6000	3000	4500	6000	3000	4500	6000
DC link voltage	U_{dc}	V	560	560	560	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400	400	400	400	400	400
Rated motor voltage	U_m	V	264	264	264	264	264	264	264	264	264
Rated torque	M_n	Nm	0.55	0.52	0.50	1.10	1.05	1.00	1.65	1.60	1.50
Rated current	I_n	A	0.40	0.54	0.70	0.80	1.08	1.40	1.10	1.65	2.1
Continuous stall torque	M_o	Nm	0.60	0.60	0.60	1.20	1.20	1.20	1.80	1.80	1.80
Continuous stall current	I_o	A	0.40	0.62	0.80	0.80	1.24	1.60	1.20	1.86	2.5
Max. torque	M_{max}	Nm	2.1	2.1	2.1	4.2	4.2	4.2	6.3	6.3	6.3
Max. current	I_{max}	A	1.8	2.7	3.6	3.6	5.4	7.2	5.4	7.9	10.8
Max. speed	N_{max}	rpm	6600	6600	6600	6600	6600	6600	6600	6600	6600
Voltage constant	K_E	V/1000	88.0	58.6	44.0	88.0	58.6	44.0	88.0	58.6	44.0
Torque constant	K_T	Nm/A	1.45	0.97	0.73	1.45	0.97	0.73	1.45	0.97	0.73
Winding resistance	R_{2ph}	Ω	105	38.2	26.3	36.2	16.6	9.0	19.2	11.1	5.3
Winding inductance	L_{2ph}	mH	144	57	36.1	70	33.3	17.4	46.4	24.7	11.6
Motor pole count	P_{mot}		8	8	8	8	8	8	8	8	8
Idling speed	N_o	rpm	4300	6600	6600	4400	6600	6600	4400	6600	6600
Torque at I_{max}/U_n	M_z	Nm	2.1	2.1	2.1	4.2	4.2	4.2	6.3	6.3	6.3
Speed at I_{max}/U_n	N_z	rpm	1800	3600	4600	2200	3500	5000	2200	3300	5000
Max. torque at n_n	M_x	Nm	1.2	1.5	1.5	2.7	2.8	3.2	4.3	4.2	5.0
Electrical time constant	T_{el}	ms	1.4	1.5	1.4	1.9	2.0	1.9	2.4	2.2	2.2
Mechanical time constant	T_{mech}	ms	2.2	1.8	2.1	1.3	1.3	1.3	0.99	1.3	1.1

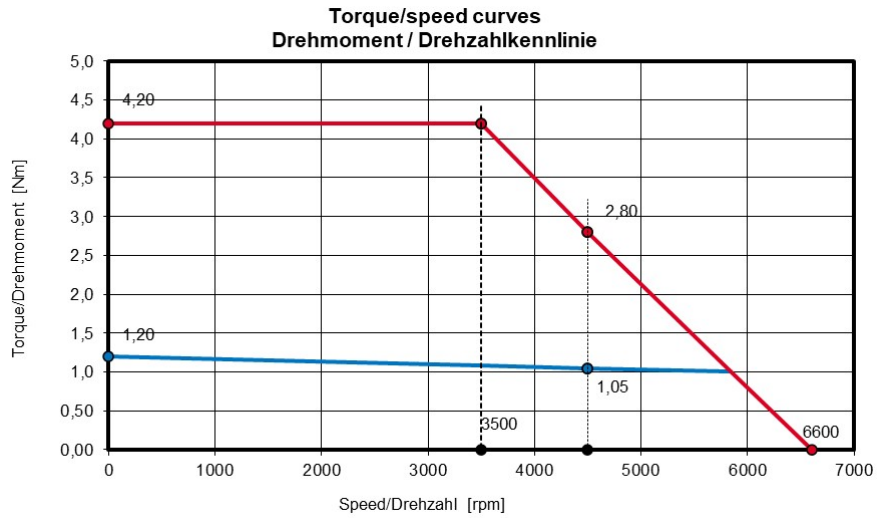
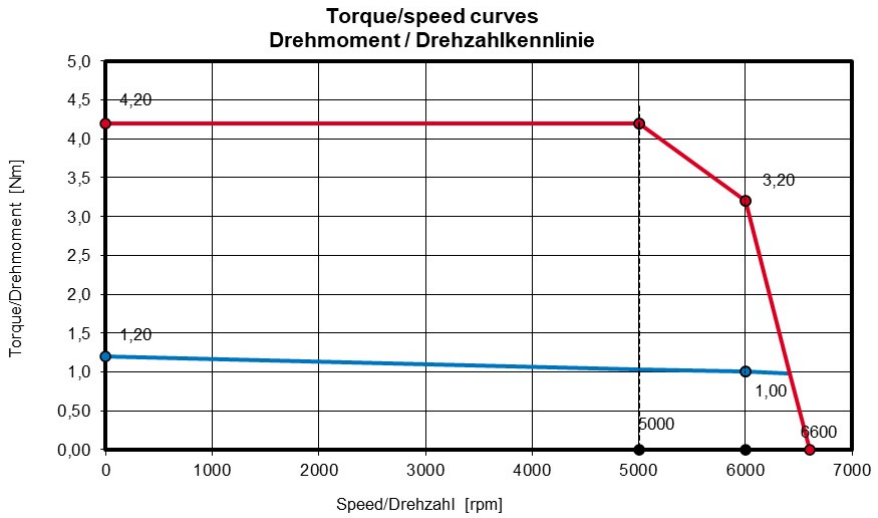
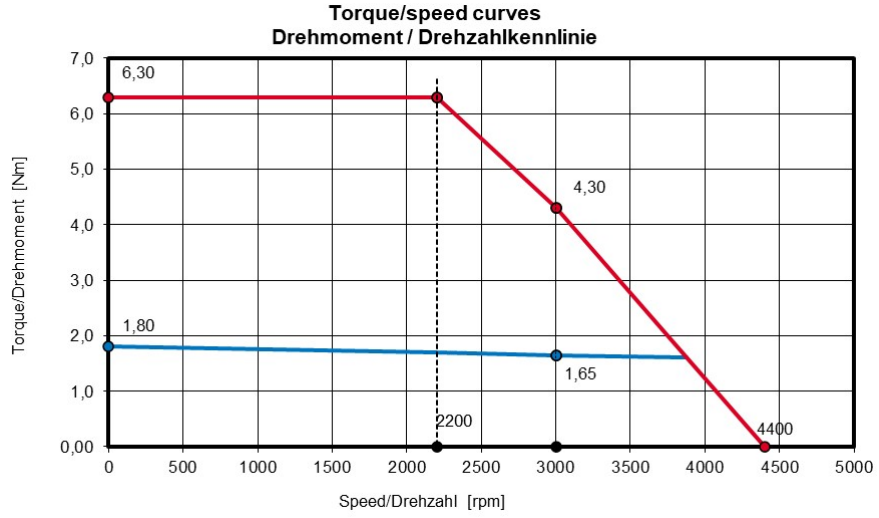
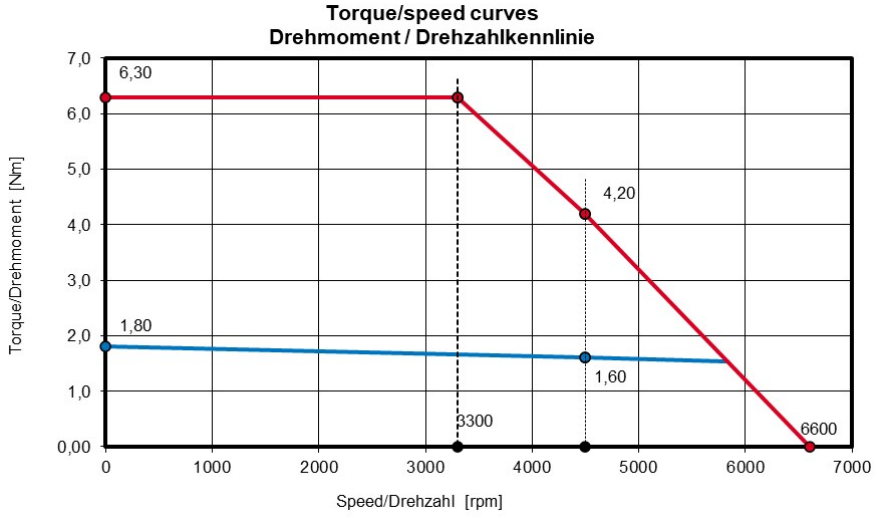
Motor type			JHQ23-0060-088	JHQ23-0060-059	JHQ23-0060-044	JHQ23-0120-088	JHQ23-0120-059	JHQ23-0120-044	JHQ23-0180-088	JHQ23-0180-059	JHQ23-0180-044
Thermal time constant	T_{th}	min	34	34	34	34	34	34	34	34	34
Rotor inertia without brake	J	kg*cm^2	0.25	0.25	0.25	0.44	0.44	0.44	0.63	0.63	0.63
Weight without brake	m	kg	2.0	2.0	2.0	2.2	2.2	2.2	2.6	2.6	2.6
Axial load	F_A	N	16.0	16.0	16.0	17.0	17.0	17.0	18.0	18.0	18.0
Radial load	F_R	N	155	155	155	165	165	165	175	175	175

Motor type			JHQ23-0240-088	JHQ23-0240-059	JHQ23-0240-044	JHQ23-0300-088	JHQ23-0300-059	JHQ23-0300-044
Nominal speed	N_n	rpm	3000	4500	6000	3000	4500	6000
DC link voltage	U_{dc}	V	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400	400	400
Rated motor voltage	U_m	V	264	264	264	264	264	264
Rated torque	M_n	Nm	2.2	2.1	2.0	2.7	2.6	2.4
Rated current	I_n	A	1.50	2.2	2.7	1.90	2.6	3.3
Continuous stall torque	M_o	Nm	2.4	2.4	2.4	3.0	3.0	3.0
Continuous stall current	I_o	A	1.70	2.5	3.3	2.1	3.1	4.1
Max. torque	M_{max}	Nm	8.5	8.5	8.5	10.5	10.5	10.5
Max. current	I_{max}	A	7.3	10.6	14.7	9.1	13.6	18.0
Max. speed	N_{max}	rpm	6600	6600	6600	6600	6600	6600
Voltage constant	K_E	V/1000	88.0	58.6	44.0	88.0	58.6	44.0
Torque constant	K_T	Nm/A	1.45	0.97	0.73	1.45	0.97	0.73
Winding resistance	R_{2ph}	Ω	15.0	7.7	3.8	11.5	5.3	2.9
Winding inductance	L_{2ph}	mH	36.0	18.5	9.0	28.0	13.4	7.0
Motor pole count	P_{mot}		8	8	8	8	8	8

Motor type			JHQ23-0240-088	JHQ23-0240-059	JHQ23-0240-044	JHQ23-0300-088	JHQ23-0300-059	JHQ23-0300-044
Idling speed	N_o	rpm	4400	6600	6600	4400	6600	6600
Torque at I_{max}/U_n	M_z	Nm	8.5	8.5	8.5	10.5	10.5	10.5
Speed at I_{max}/U_n	N_z	rpm	2200	3300	5000	2200	3600	5100
Max. torque at n_n	M_x	Nm	5.5	5.5	6.4	7.1	7.5	8.2
Electrical time constant	T_{el}	ms	2.4	2.4	2.4	2.4	2.5	2.4
Mechanical time constant	T_{mech}	ms	1.0	1.2	1.0	0.96	0.99	0.96
Thermal time constant	T_{th}	min	34	34	34	34	34	34
Rotor inertia without brake	J	$kg*cm^2$	0.82	0.82	0.82	1.0	1.0	1.0
Weight without brake	m	kg	3.6	3.6	3.6	3.8	3.8	3.8
Axial load	F_A	N	19.0	19.0	19.0	20	20	20
Radial load	F_R	N	185	185	185	195	195	195

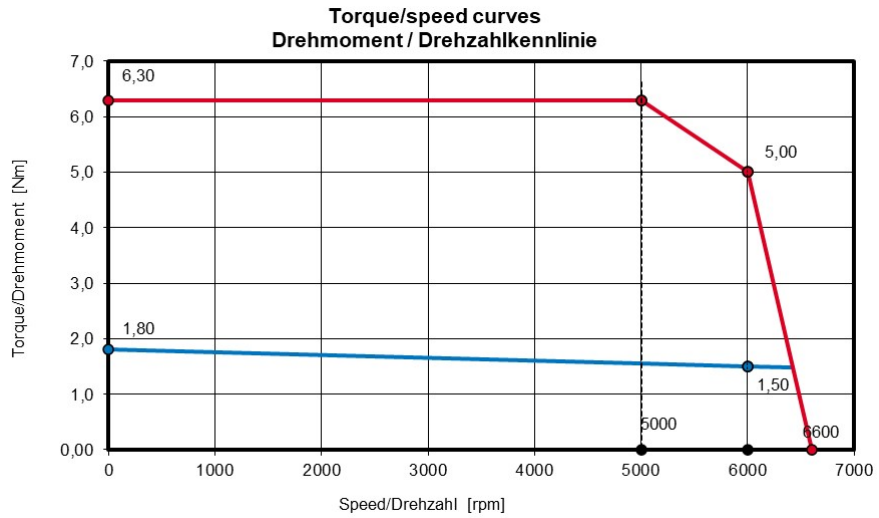
Torque speed characteristics

JHQ23 560 V	JHQ23-0060-088 	JHQ23-0060-059 
JHQ23 560 V	JHQ23-0060-044 	JHQ23-0120-088 

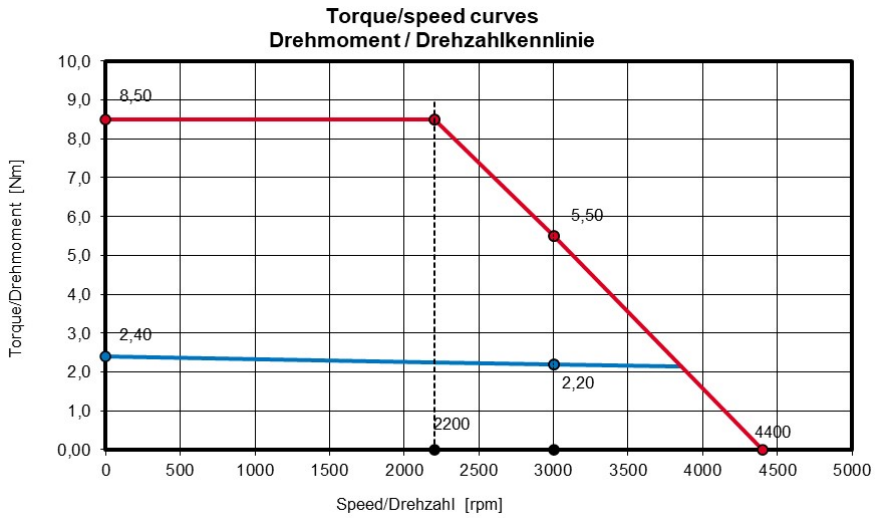
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JHQ23 560 V	JHQ23-0180-088 	JHQ23-0180-059 

JHQ23
560 V

JHQ23-0180-044

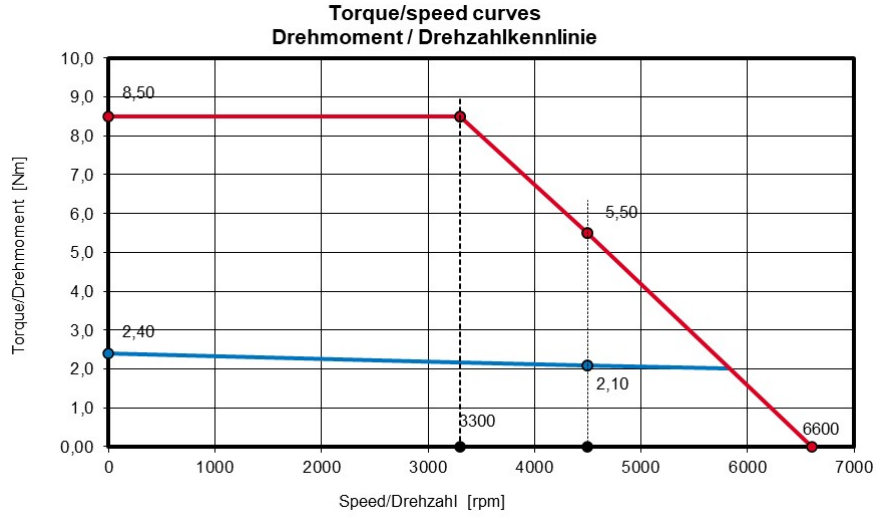


JHQ23-0240-088

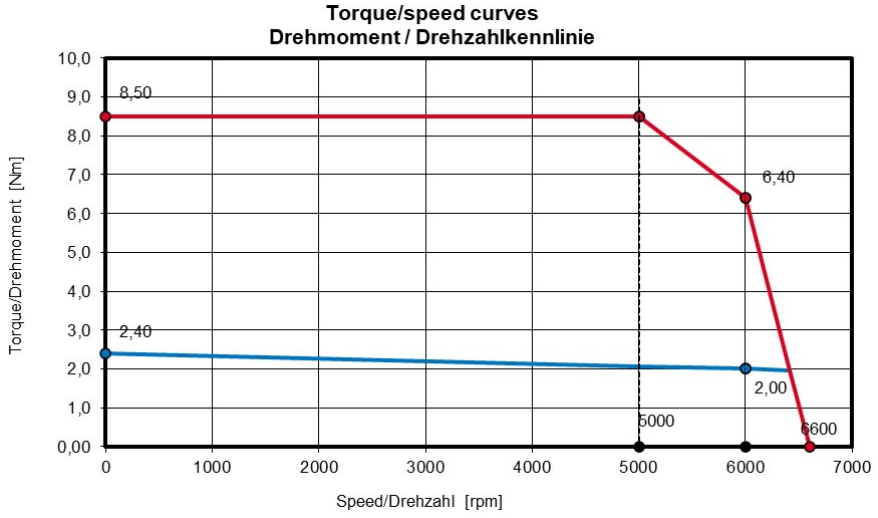


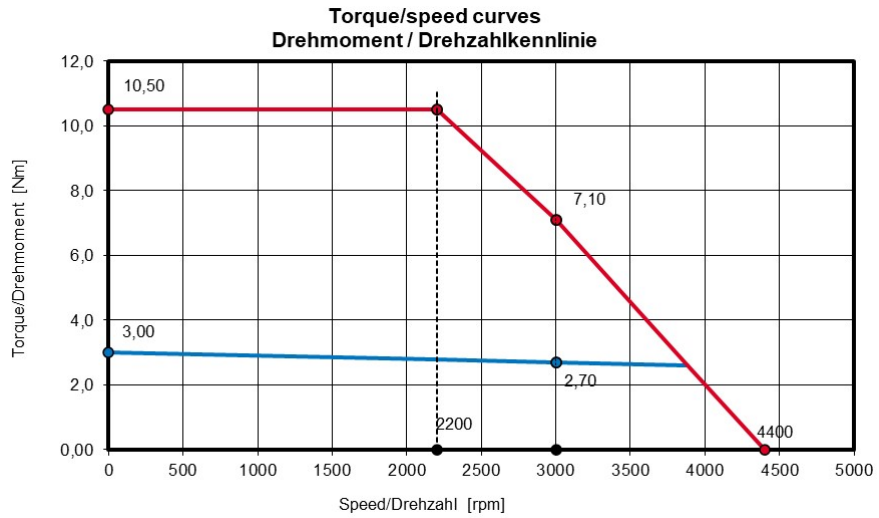
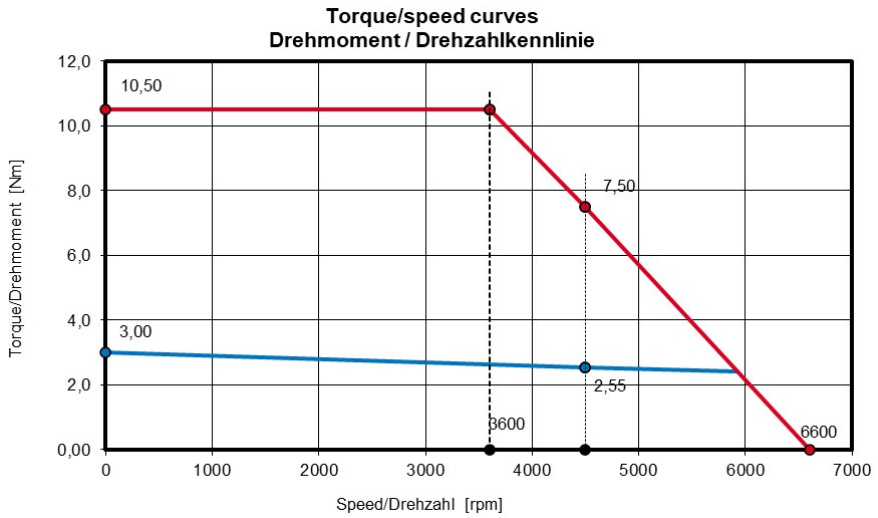
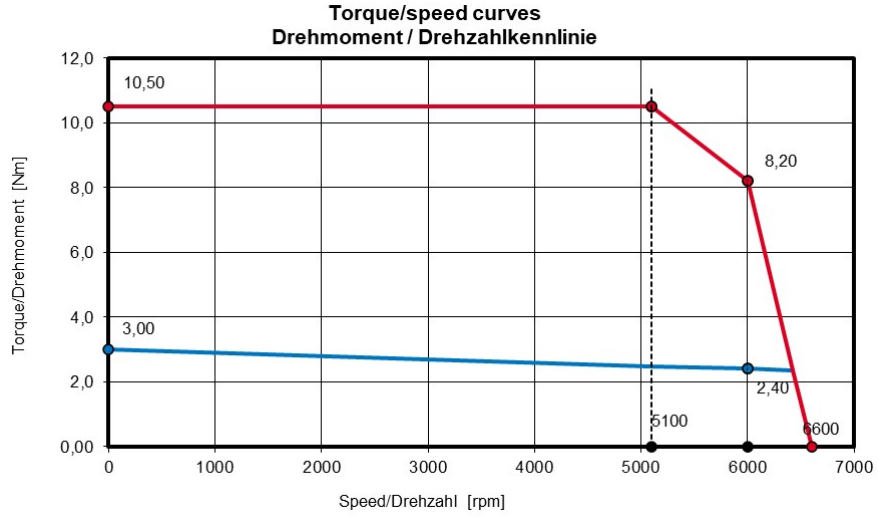
JHQ23
560 V

JHQ23-0240-059



JHQ23-0240-044



JHQ23 560 V	JHQ23-0300-088 	JHQ23-0300-059 
JHQ23 560 V	JHQ23-0300-044 	

5.11 Flange size JHQ24

5.11.1 Dimensions JHQ24

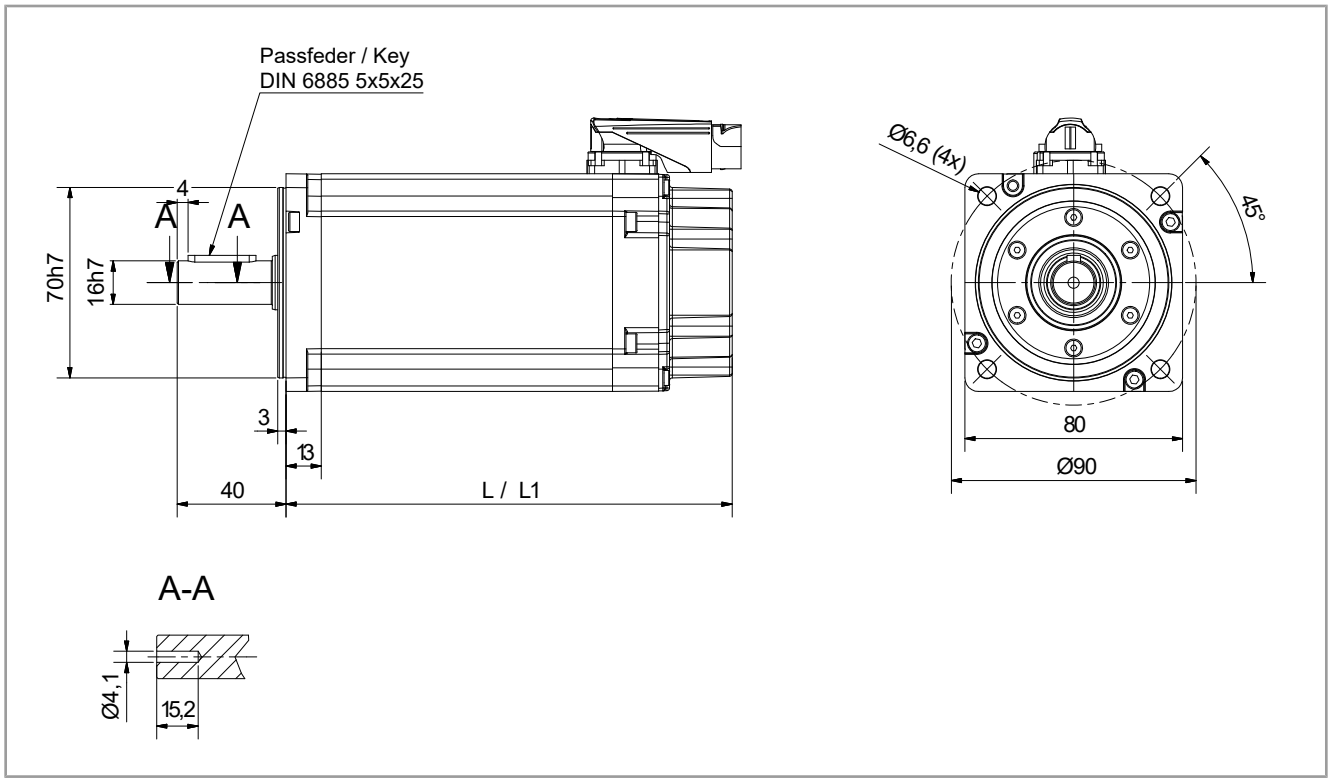


Fig. 18: Dimensions JHQ24 in mm

	P	L	L1	L	L1
Type	**Resolver/SEx37**			**EEx37/EKx36/SKx36**	
JHQ24-0070	Y/I	86	116	95	125
JHQ24-0140	Y/I	97.5	127.5	106.5	136.5
JHQ24-0270	Y/I	120	150	129	159

Tab. 29: Dimensions

Key:
P = Power connector size
L = Dimension without brake
L1 = Dimension with brake

5.11.2 Technical data of the brake for motor type JHQ24

Parameter	Value
Holding torque M_{BR}	0.4 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	8 W
Rotor inertia J_{BR}	0.013 kg*cm^2
Weight m_{BR}	0.08 kg

Tab. 30: Technical data of the brake for motor type JHQ24

5.11.3 Performance data DC link voltage 320 V DC

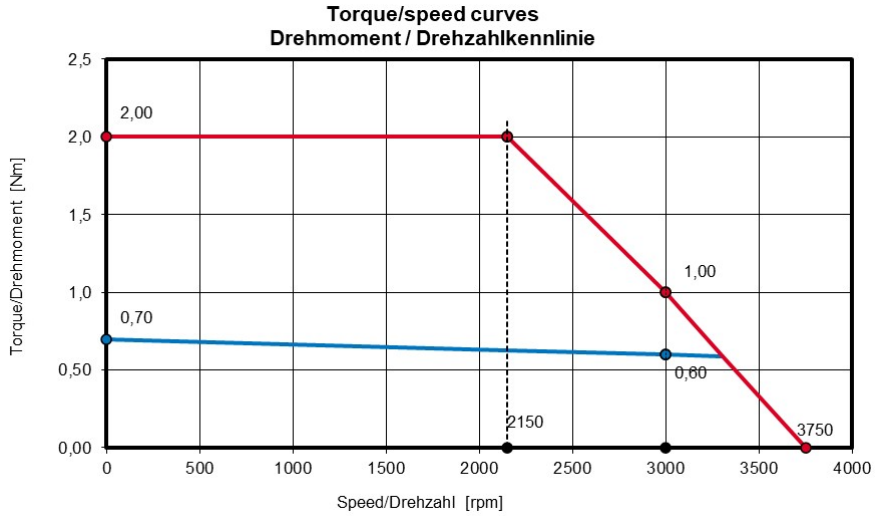
Motor type			JHQ24-0070-057	JHQ24-0070-028	JHQ24-0140-057	JHQ24-0140-028	JHQ24-0270-057	JHQ24-0270-028
Nominal speed	N_n	rpm	3000	6000	3000	6000	3000	6000
DC link voltage	U_{dc}	V	320	320	320	320	320	320
Rated AC supply servo amplifier	U_n	V	230	230	230	230	230	230
Rated motor voltage	U_m	V	170	170	170	170	170	170
Rated torque	M_n	Nm	0.60	0.40	1.20	0.90	2.4	1.90
Rated current	I_n	A	0.64	0.85	1.30	1.90	2.6	4.1
Continuous stall torque	M_o	Nm	0.70	0.70	1.40	1.40	2.7	2.7
Continuous stall current	I_o	A	0.75	1.50	1.50	3.0	2.9	4.3
Max. torque	M_{max}	Nm	2.0	2.0	4.2	4.2	8.5	8.5
Max. current	I_{max}	A	2.5	5.0	5.1	10.1	10.1	20
Max. speed	N_{max}	rpm	6600	6600	6600	6600	6600	6600
Voltage constant	K_E	V/1000	56.6	28.3	56.6	28.3	56.6	28.3
Torque constant	K_T	Nm/A	0.94	0.47	0.94	0.47	0.94	0.47
Winding resistance	R_{2ph}	Ω	33.5	8.4	9.7	2.4	4.5	0.93
Winding inductance	L_{2ph}	mH	28.3	7.1	13.2	3.3	8.4	1.60
Motor pole count	P_{mot}		10	10	10	10	10	10
Idling speed	N_o	rpm	3750	6600	3750	6600	3750	6601
Torque at I_{max}/U_n	M_z	Nm	2.0	2.0	4.2	4.2	8.5	8.5
Speed at I_{max}/U_n	N_z	rpm	2150	5250	2650	5800	2600	6000
Max. torque at n_n	M_x	Nm	1.0	1.5	3.0	4.0	5.8	8.5
Electrical time constant	T_{el}	ms	0.84	0.85	1.4	1.4	1.9	1.7
Mechanical time constant	T_{mech}	ms	5.5	5.5	2.2	2.1	1.5	1.3

Motor type			JHQ24-0070-057	JHQ24-0070-028	JHQ24-0140-057	JHQ24-0140-028	JHQ24-0270-057	JHQ24-0270-028
Thermal time constant	T_{th}	min	15.0	15.0	17.0	17.0	20	20
Rotor inertia without brake	J	kg*cm^2	0.83	0.83	1.1	1.1	1.7	1.7
Weight without brake	m	kg	1.7	1.7	2.1	2.1	2.6	2.6
Axial load	F_A	N	23	23	24	24	25	25
Radial load	F_R	N	230	230	240	240	250	250

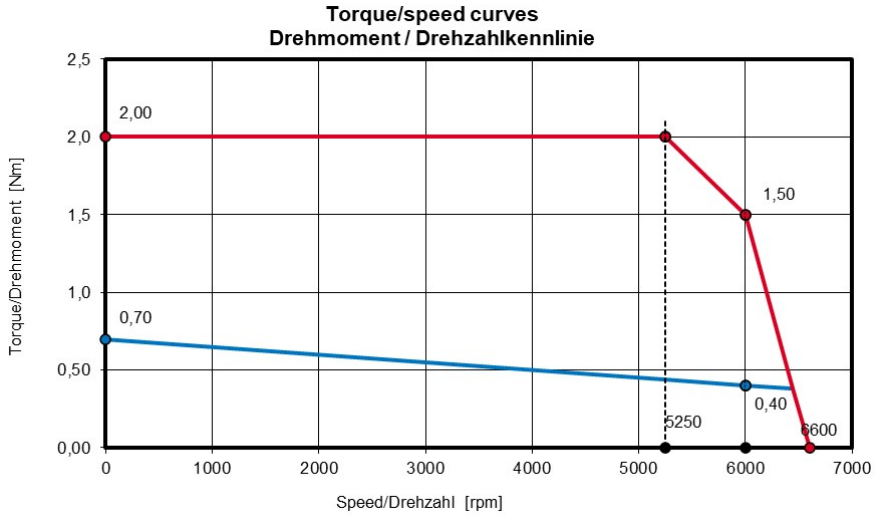
Torque speed characteristics

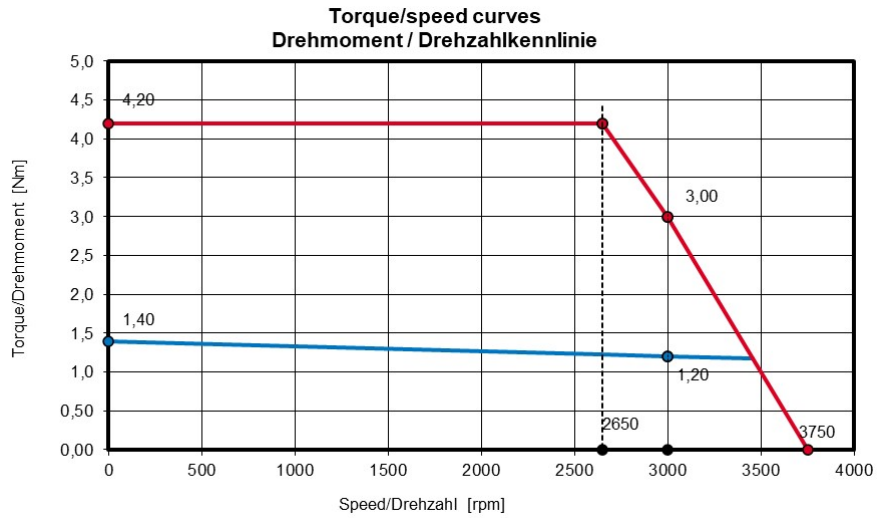
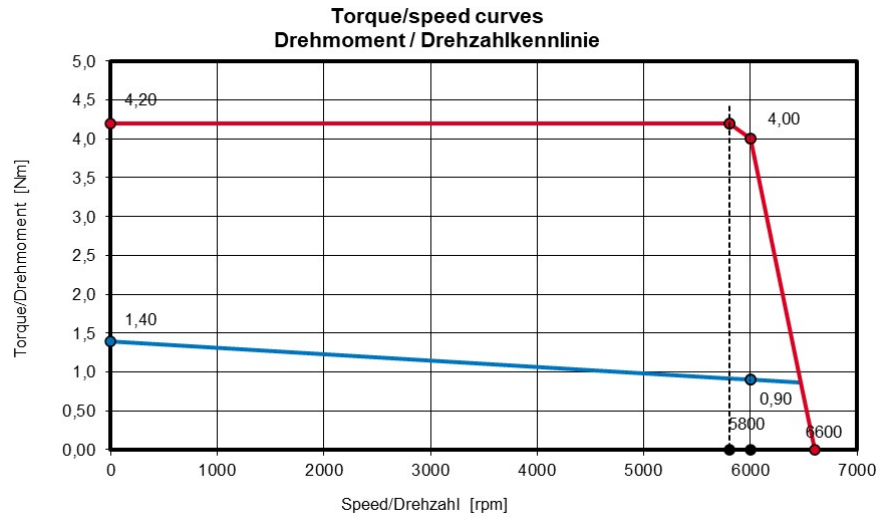
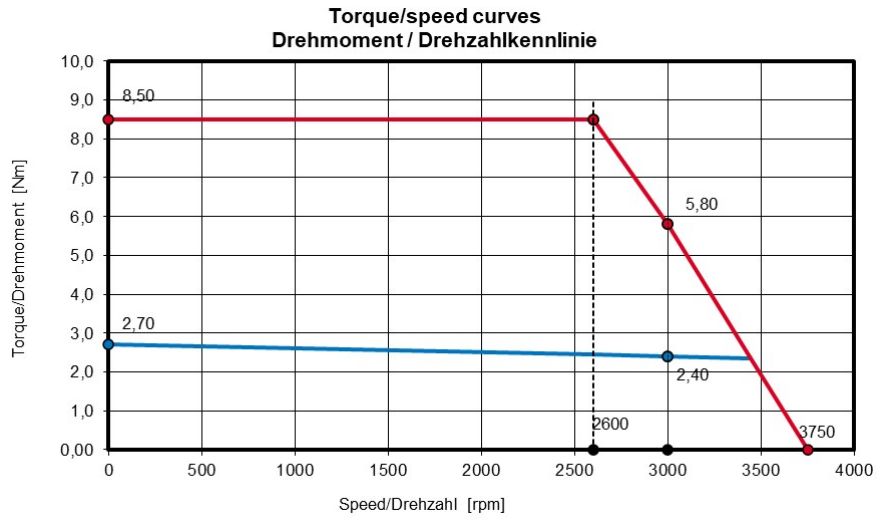
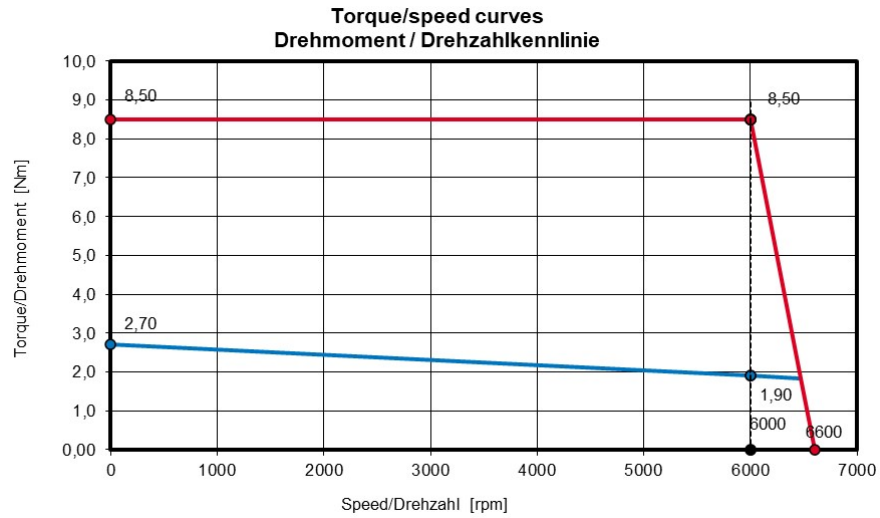
JHQ24
320 V

JHQ24-0070-057



JHQ24-0070-028



JHQ24 320 V	JHQ24-0140-057 	JHQ24-0140-028 
JHQ24 320 V	JHQ24-0270-057 	JHQ24-0270-028 

5.11.4 Performance data DC link voltage 560 V DC

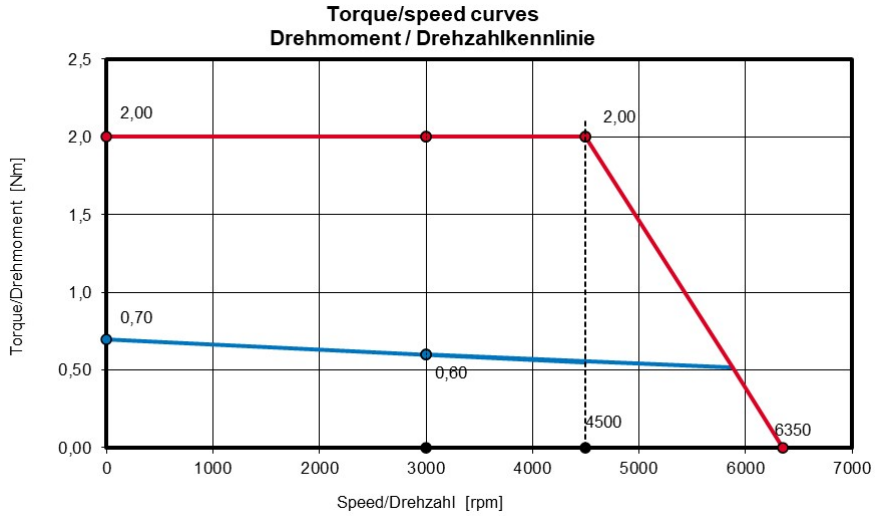
Motor type			JHQ24-0070 -057	JHQ24-0070 -028	JHQ24-0140 -057	JHQ24-0140 -028	JHQ24-0270 -057	JHQ24-0270 -028
Nominal speed	N_n	rpm	3000	6000	3000	6000	3000	6000
DC link voltage	U_{dc}	V	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400	400	400
Rated motor voltage	U_m	V	170	170	170	170	170	170
Rated torque	M_n	Nm	0.60	0.40	1.20	0.90	2.4	1.90
Rated current	I_n	A	0.64	0.85	1.30	1.90	2.6	4.1
Continuous stall torque	M_o	Nm	0.70	0.70	1.40	1.40	2.7	2.7
Continuous stall current	I_o	A	0.75	1.50	1.50	3.0	2.9	4.3
Max. torque	M_{max}	Nm	2.0	2.0	4.2	4.2	8.5	8.5
Max. current	I_{max}	A	2.5	5.0	5.1	10.1	10.1	20
Max. speed	N_{max}	rpm	6600	6600	6600	6600	6600	6600
Voltage constant	K_E	V/1000	56.6	28.3	56.6	28.3	56.6	28.3
Torque constant	K_T	Nm/A	0.94	0.47	0.94	0.47	0.94	0.47
Winding resistance	R_{2ph}	Ω	33.5	8.4	9.7	2.4	4.5	0.93
Winding inductance	L_{2ph}	mH	28.3	7.1	13.2	3.3	8.4	1.60
Motor pole count	P_{mot}		10	10	10	10	10	10
Idling speed	N_o	rpm	6350	6601	6600	6601	6400	6601
Torque at I_{max}/U_n	M_z	Nm	2.0	2.0	4.2	4.2	8.5	8.5
Speed at I_{max}/U_n	N_z	rpm	4500	6600	5000	6600	4800	6600
Max. torque at n_n	M_x	Nm	2.0	2.0	4.2	4.2	8.5	8.5
Electrical time constant	T_{el}	ms	0.84	0.85	1.4	1.4	1.9	1.7
Mechanical time constant	T_{mech}	ms	5.5	5.5	2.2	2.1	1.5	1.3

Motor type			JHQ24-0070 -057	JHQ24-0070 -028	JHQ24-0140 -057	JHQ24-0140 -028	JHQ24-0270 -057	JHQ24-0270 -028
Thermal time constant	T_{th}	min	15.0	15.0	17.0	17.0	20	20
Rotor inertia without brake	J	kg*cm^2	0.83	0.83	1.1	1.1	1.7	1.7
Weight without brake	m	kg	1.7	1.7	2.1	2.1	2.6	2.6
Axial load	F_A	N	23	23	24	24	25	25
Radial load	F_R	N	230	230	240	240	250	250

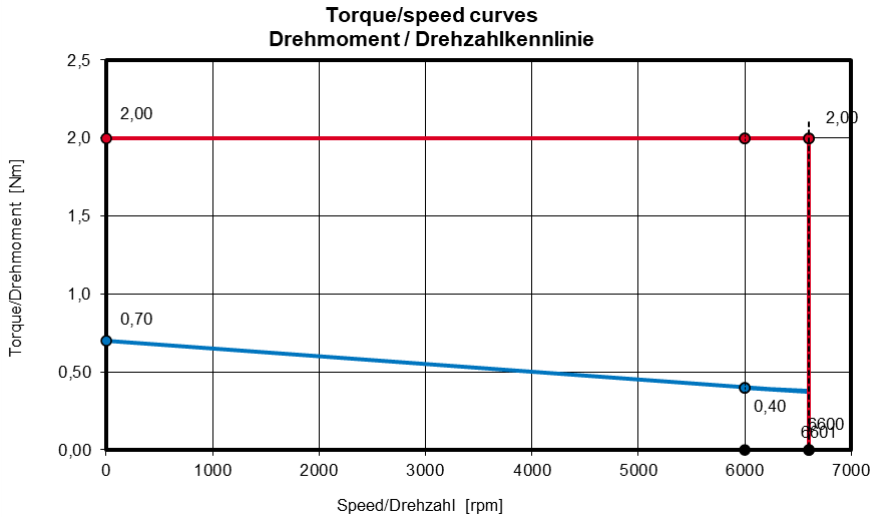
Torque speed characteristics

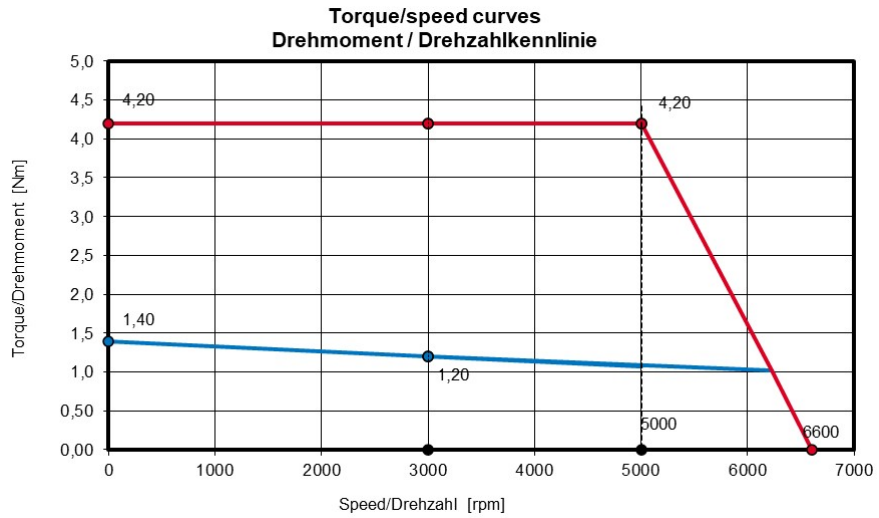
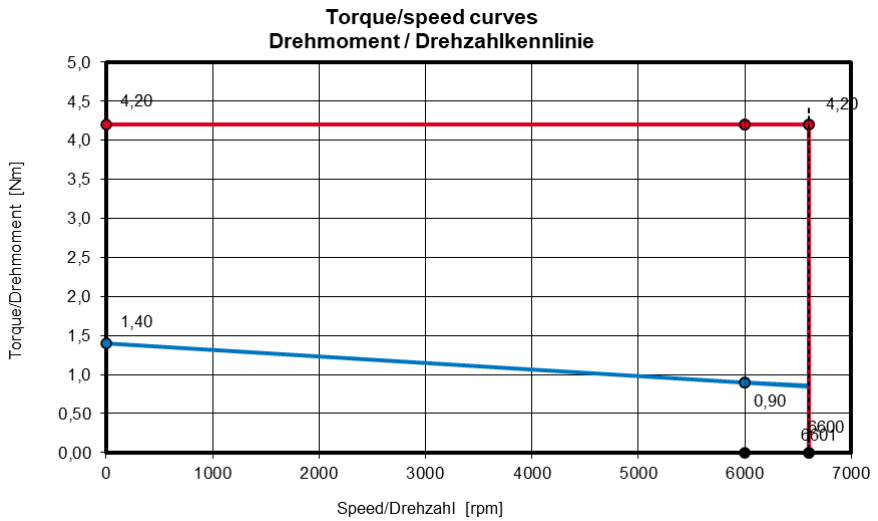
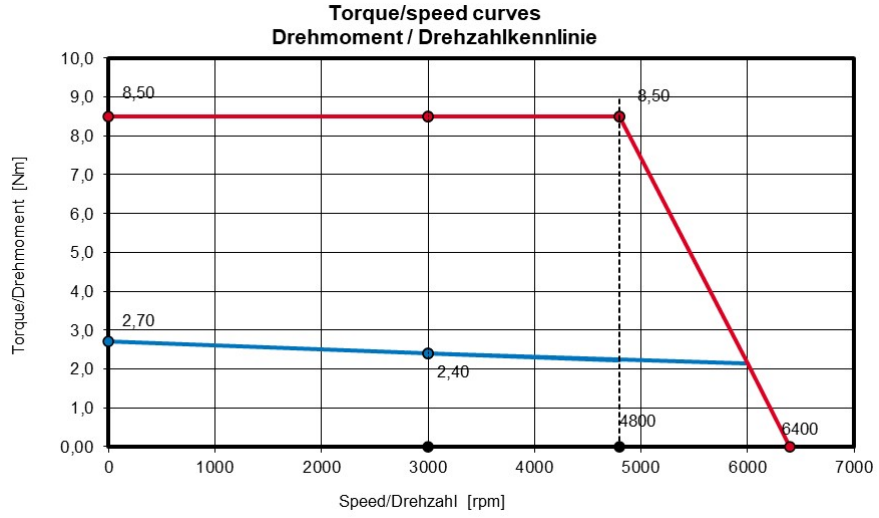
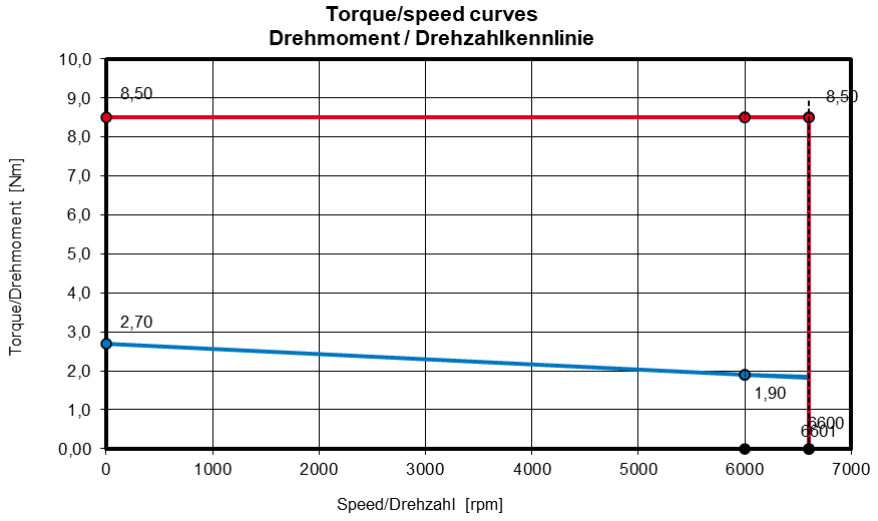
JHQ24
560 V

JHQ24-0070-057



JHQ24-0070-028



JHQ24 560 V	JHQ24-0140-057 	JHQ24-0140-028 
JHQ24 560 V	JHQ24-0270-057 	JHQ24-0270-028 

5.12 Flange size JHQ3

5.12.1 Dimensions JHQ3

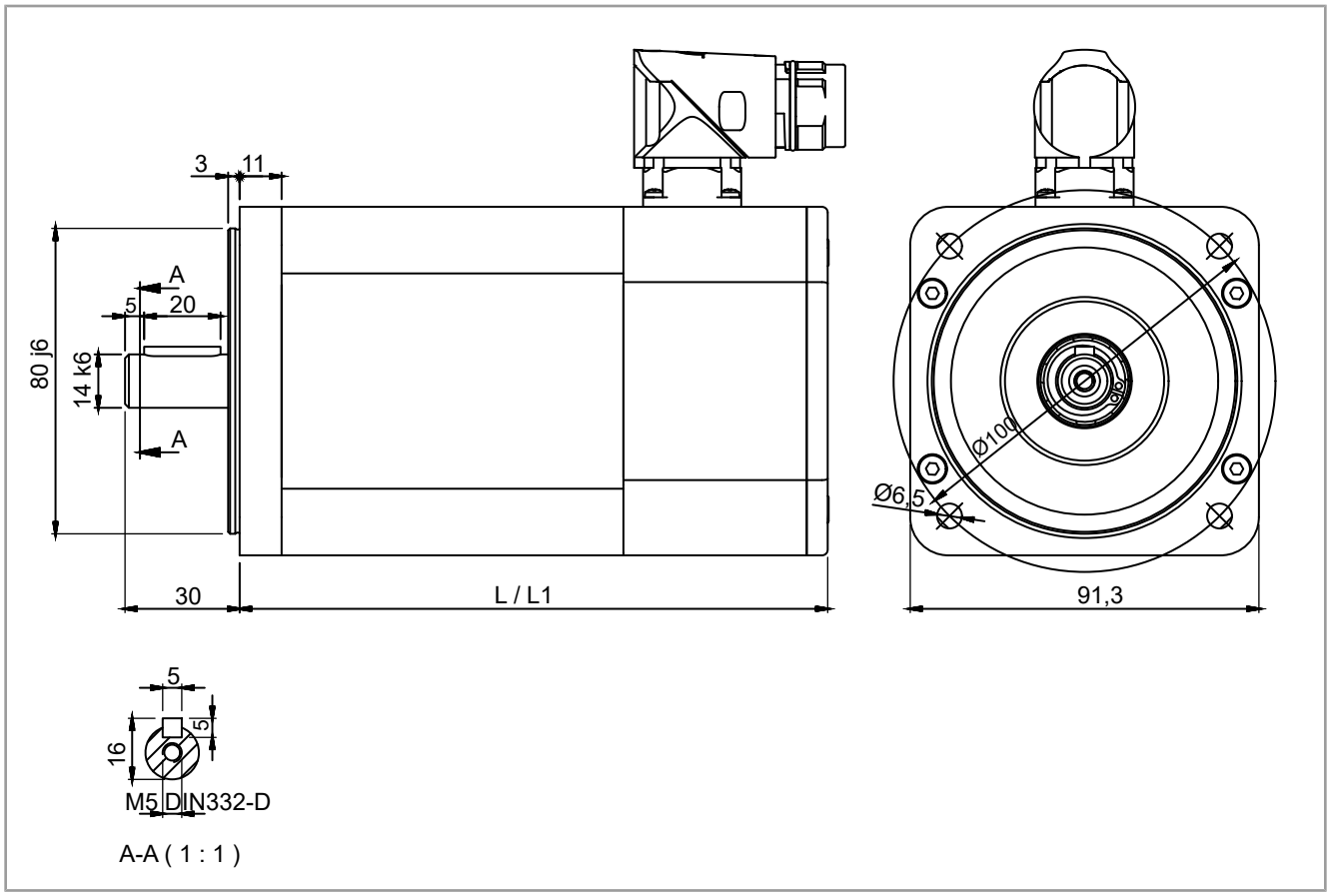


Fig. 19: Dimensions JHQ3 in mm

	P	L	L1	L	L1	L	L1
Type	**Resolver/SEx37**			**SKx36/EEx37/EKx36**		**SRx50**	
JHQ3-0135	M23	122	157	131.5	166.5	136.5	171.5
JHQ3-0260	M23	144.5	179.5	154	189	159	194
JHQ3-0350	M23	159.5	194.5	169	204	174	209
JHQ3-0450	M23	179.5	214.5	189	224	194	229

Tab. 31: Dimensions

Key:
P = Power connector size
L = Dimension without brake
L1 = Dimension with brake

5.12.2 Technical data of the brake for motor type JHQ3

Parameter	Value
Holding torque M_{BR}	3.2 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	10.8 W
Rotor inertia J_{BR}	0.38 kg*cm^2
Weight m_{BR}	0.6 kg

Tab. 32: Technical data of the brake for motor type JHQ3

5.12.3 Performance data DC link voltage 320 V DC

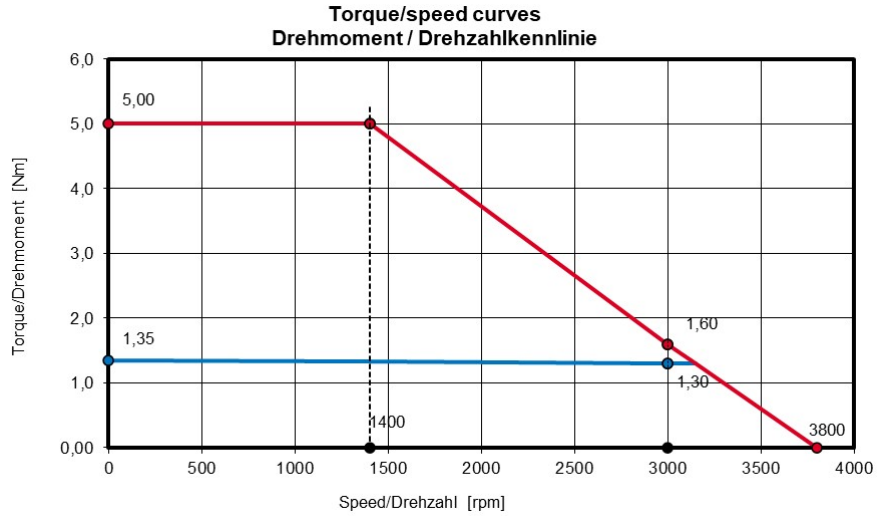
Motor type			JHQ3-0135-057	JHQ3-0135-028	JHQ3-0260-057	JHQ3-0260-050	JHQ3-0260-028	JHQ3-0350-057	JHQ3-0350-028	JHQ3-0450-057	JHQ3-0450-028
Nominal speed	N_n	rpm	3000	6000	3000	3000	6000	3000	6000	3000	6000
DC link voltage	U_{dc}	V	320	320	320	320	320	320	320	320	320
Rated AC supply servo amplifier	U_n	V	230	230	230	230	230	230	230	230	230
Rated motor voltage	U_m	V	170	170	170	170	170	170	170	170	170
Rated torque	M_n	Nm	1.30	1.00	2.5	2.5	1.70	3.1	2.0	3.9	2.3
Rated current	I_n	A	1.40	2.1	2.7	3.0	3.6	3.3	4.3	4.2	4.9
Continuous stall torque	M_o	Nm	1.35	1.35	2.6	2.6	2.6	3.5	3.5	4.5	4.5
Continuous stall current	I_o	A	1.40	2.9	2.8	3.1	5.5	3.7	7.5	4.8	9.6
Max. torque	M_{max}	Nm	5.0	5.0	10.0	10.0	10.0	14.0	14.0	18.0	18.0
Max. current	I_{max}	A	6.2	12.3	12.3	14.3	25	17.3	28	22	44
Max. speed	N_{max}	rpm	6600	6600	6600	6600	6600	6600	6600	6600	6600
Voltage constant	K_E	V/1000	56.6	28.3	56.6	50.0	28.3	56.6	28.3	56.6	28.3
Torque constant	K_T	Nm/A	0.94	0.47	0.94	0.83	0.47	0.94	0.47	0.94	0.47
Winding resistance	R_{2ph}	Ω	12.4	3.1	5.2	3.2	1.10	3.2	0.90	2.4	0.60
Winding inductance	L_{2ph}	mH	45.0	11.2	24.2	17.1	6.1	18.0	4.5	14.4	3.6
Motor pole count	P_{mot}		8	8	8	8	8	8	8	8	8
Idling speed	N_o	rpm	3800	6600	3800	4100	6600	3800	6600	3800	6600
Torque at I_{max}/U_n	M_z	Nm	5.0	5.0	10.0	10.0	10.0	14.0	14.0	18.0	18.0
Speed at I_{max}/U_n	N_z	rpm	1400	3200	1400	1950	3200	1400	3500	1400	3500
Max. torque at n_n	M_x	Nm	1.6	1.9	3.2	6.0	3.8	5.0	5.3	6.0	6.4
Electrical time constant	T_{el}	ms	3.6	3.6	4.7	5.3	5.5	5.6	5.0	6.0	6.0
Mechanical time constant	T_{mech}	ms	1.1	1.1	0.90	0.71	0.76	0.69	0.77	0.66	0.66

Motor type			JHQ3-0135-057	JHQ3-0135-028	JHQ3-0260-057	JHQ3-0260-050	JHQ3-0260-028	JHQ3-0350-057	JHQ3-0350-028	JHQ3-0450-057	JHQ3-0450-028
Thermal time constant	T_{th}	min	31	31	34	34	34	36	36	39	39
Rotor inertia without brake	J	kg*cm^2	0.47	0.47	0.88	0.88	0.88	1.1	1.1	1.4	1.4
Weight without brake	m	kg	3.5	3.5	4.4	4.4	4.4	5.0	5.0	5.8	5.8
Axial load	F_A	N	22	22	24	24	24	25	25	26	26
Radial load	F_R	N	220	220	235	235	235	245	245	255	255

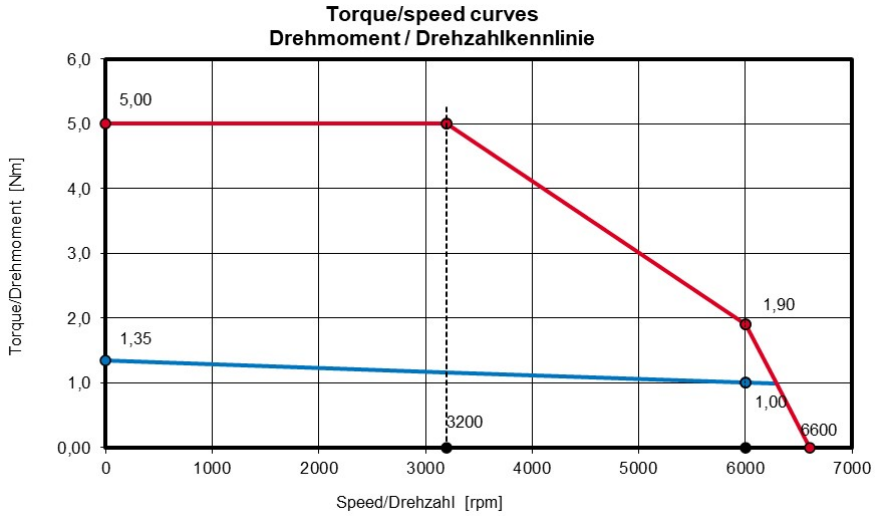
Torque speed characteristics

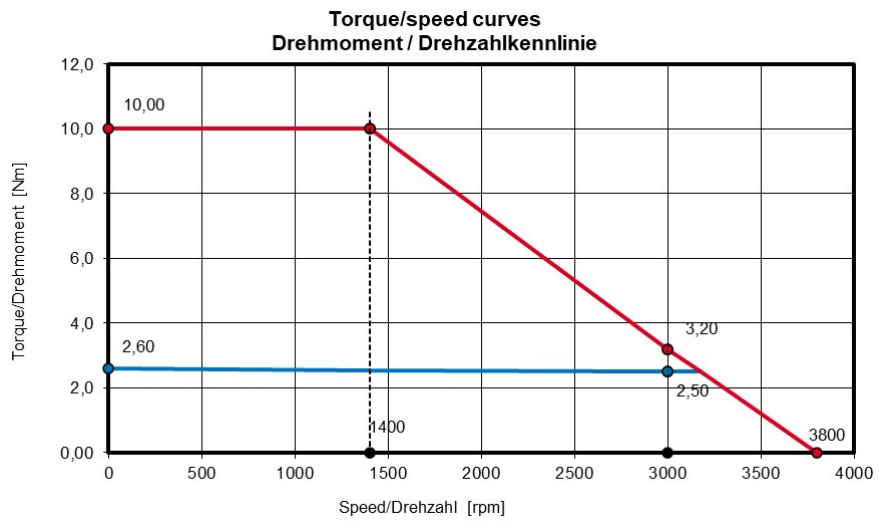
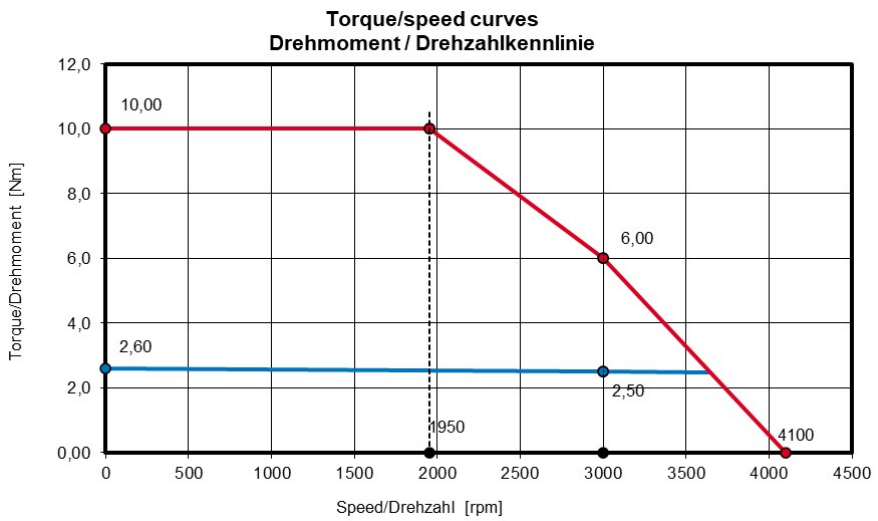
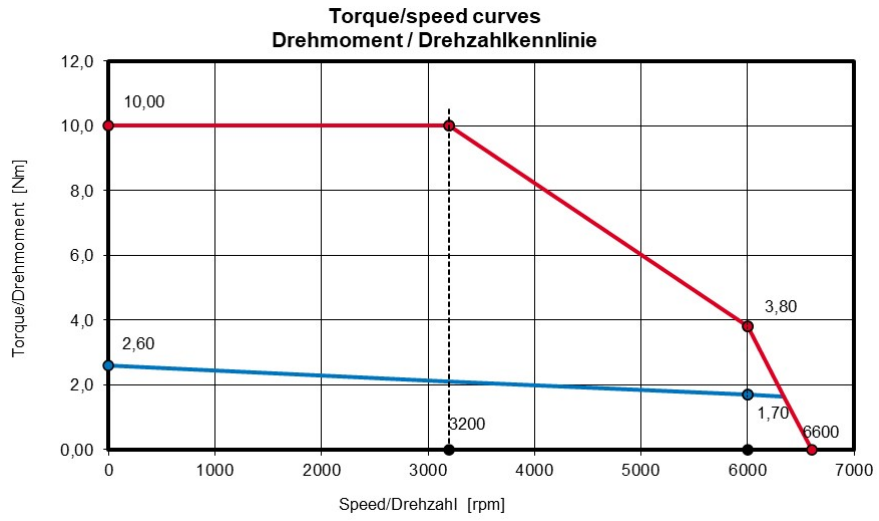
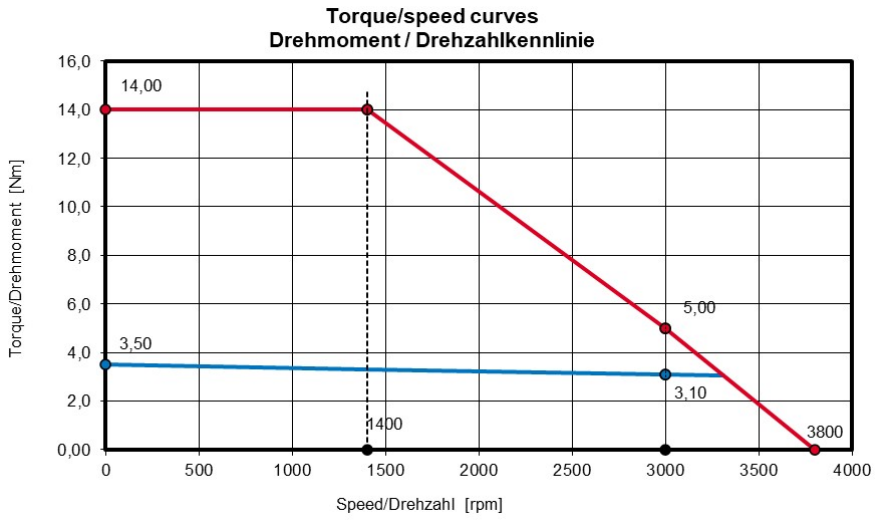
JHQ3
320 V

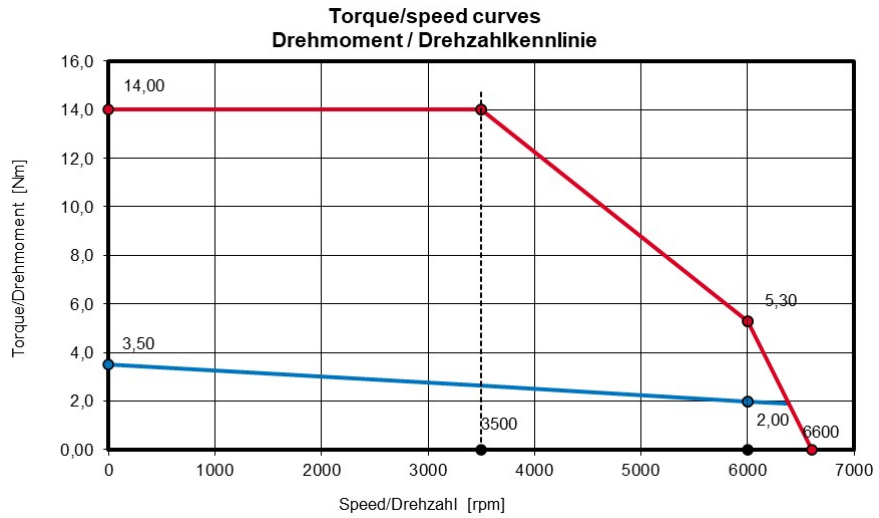
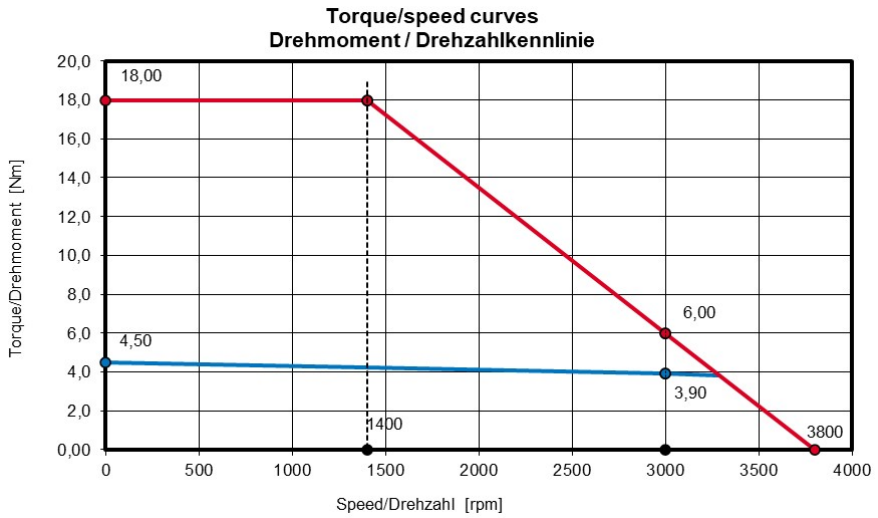
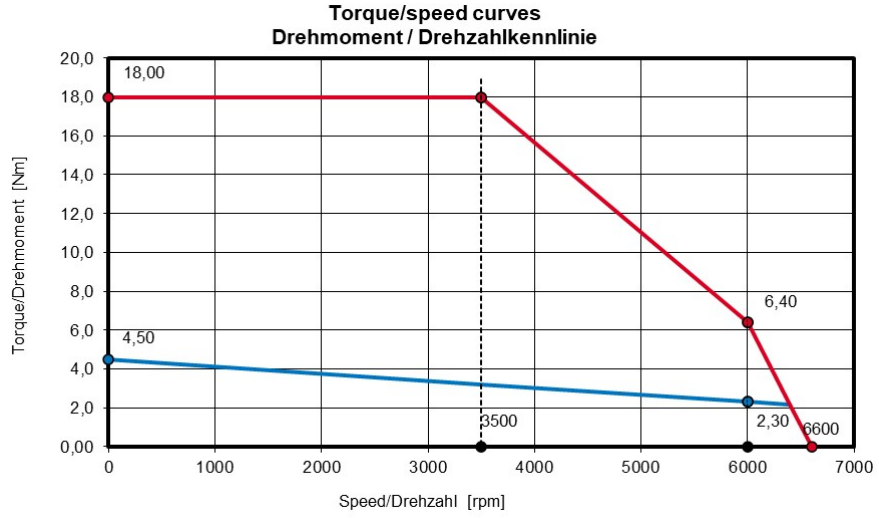
JHQ3-0135-057



JHQ3-0135-028



JHQ3 320 V	JHQ3-0260-057 	JHQ3-0260-050 
JHQ3 320 V	JHQ3-0260-028 	JHQ3-0350-057 

JHQ3 320 V	JHQ3-0350-028  	JHQ3-0450-057 
JHQ3 320 V	JHQ3-0450-028  	

5.12.4 Performance data DC link voltage 560 V DC

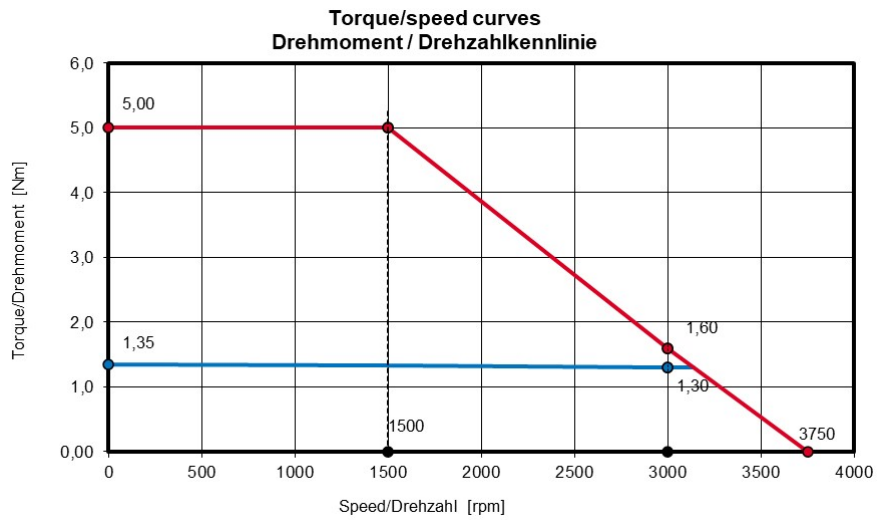
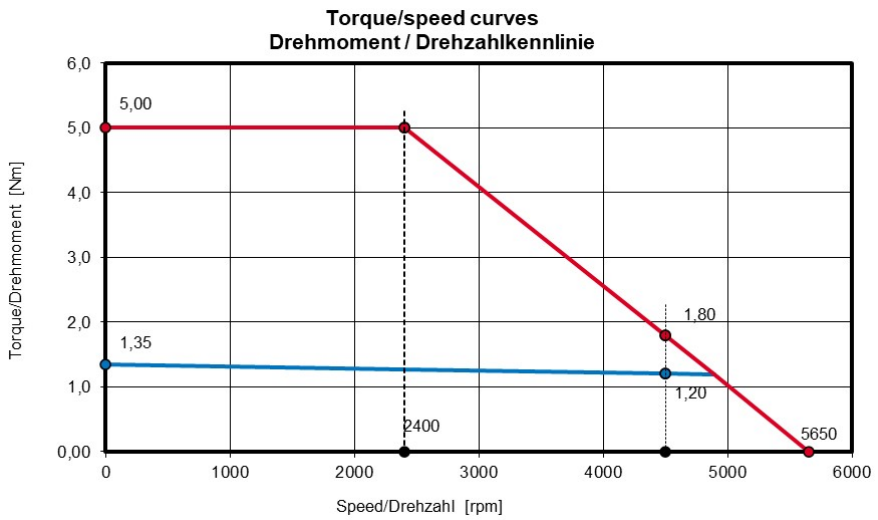
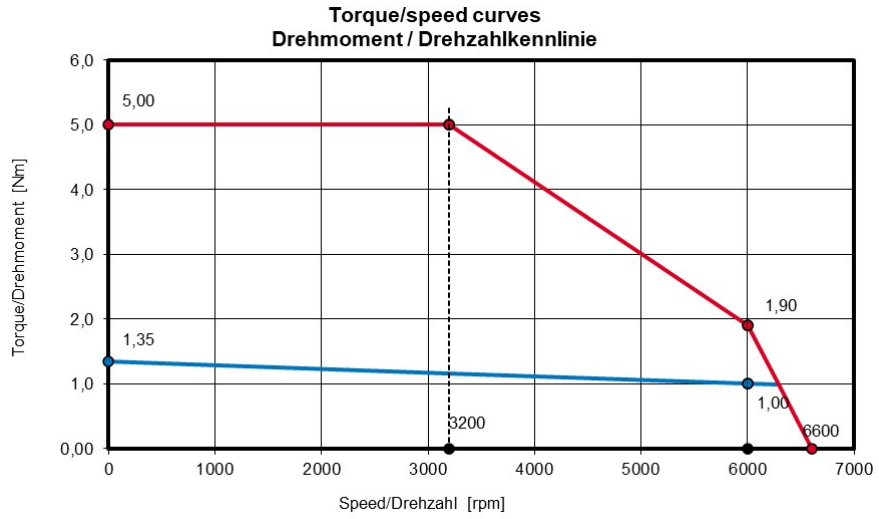
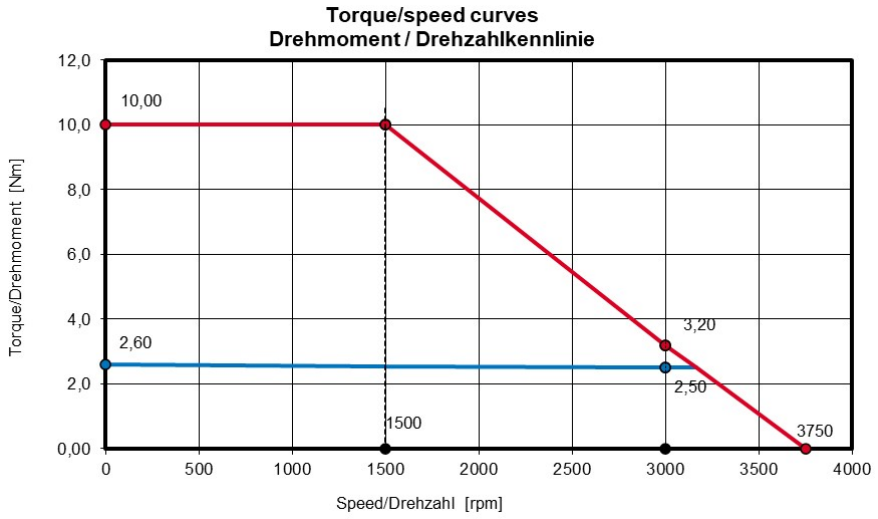
Motor type			JHQ3-0135-098	JHQ3-0135-066	JHQ3-0135-049	JHQ3-0260-098	JHQ3-0260-066	JHQ3-0260-049	JHQ3-0350-098	JHQ3-0350-066	JHQ3-0350-049
Nominal speed	N_n	rpm	3000	4500	6000	3000	4500	6000	3000	4500	6000
DC link voltage	U_{dc}	V	560	560	560	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400	400	400	400	400	400
Rated motor voltage	U_m	V	296	296	296	296	296	296	296	296	296
Rated torque	M_n	Nm	1.30	1.20	1.00	2.5	2.1	1.70	3.1	2.6	2.0
Rated current	I_n	A	0.80	1.10	1.20	1.50	1.90	2.1	1.90	2.4	2.5
Continuous stall torque	M_o	Nm	1.35	1.35	1.35	2.6	2.6	2.6	3.5	3.5	3.5
Continuous stall current	I_o	A	0.80	1.20	1.70	1.60	2.4	3.2	2.1	3.2	4.3
Max. torque	M_{max}	Nm	5.0	5.0	5.0	10.0	10.0	10.0	14.0	14.0	14.0
Max. current	I_{max}	A	3.6	5.4	7.1	7.1	10.7	14.3	10.0	15.0	20
Max. speed	N_{max}	rpm	6600	6600	6600	6600	6600	6600	6600	6600	6600
Voltage constant	K_E	V/1000	98.4	66.0	49.2	98.4	66.0	49.2	98.4	66.0	49.2
Torque constant	K_T	Nm/A	1.63	1.09	0.81	1.63	1.09	0.81	1.63	1.09	0.81
Winding resistance	R_{2ph}	Ω	37.4	16.6	9.4	15.3	6.3	3.4	9.5	4.4	2.7
Winding inductance	L_{2ph}	mH	135	60	33.8	73	30.0	18.2	54	23.4	13.5
Motor pole count	P_{mot}		8	8	8	8	8	8	8	8	8
Idling speed	N_o	rpm	3750	5650	6600	3750	5650	6600	3750	5650	6600
Torque at I_{max}/U_n	M_z	Nm	5.0	5.0	5.0	10.0	10.0	10.0	14.0	14.0	14.0
Speed at I_{max}/U_n	N_z	rpm	1500	2400	3200	1500	2500	3100	1500	2300	3000
Max. torque at n_n	M_x	Nm	1.6	1.8	1.9	3.2	3.6	3.8	4.4	4.5	4.7
Electrical time constant	T_{el}	ms	3.6	3.6	3.6	4.8	4.8	5.4	5.7	5.3	5.0
Mechanical time constant	T_{mech}	ms	1.1	1.1	1.2	0.88	0.81	0.79	0.68	0.70	0.77

Motor type			JHQ3-0135-098	JHQ3-0135-066	JHQ3-0135-049	JHQ3-0260-098	JHQ3-0260-066	JHQ3-0260-049	JHQ3-0350-098	JHQ3-0350-066	JHQ3-0350-049
Thermal time constant	T_{th}	min	31	31	31	34	34	34	36	36	36
Rotor inertia without brake	J	kg*cm^2	0.47	0.47	0.47	0.88	0.88	0.88	1.1	1.1	1.1
Weight without brake	m	kg	3.5	3.5	3.5	4.4	4.4	4.4	5.0	5.0	5.0
Axial load	F_A	N	22	22	22	24	24	24	25	25	25
Radial load	F_R	N	220	220	220	235	235	235	245	245	245

Motor type			JHQ3-0450-098	JHQ3-0450-066	JHQ3-0450-049
Nominal speed	N_n	rpm	3000	4500	6000
DC link voltage	U_{dc}	V	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400
Rated motor voltage	U_m	V	296	296	296
Rated torque	M_n	Nm	3.9	3.2	2.3
Rated current	I_n	A	2.4	2.9	2.8
Continuous stall torque	M_o	Nm	4.5	4.5	4.5
Continuous stall current	I_o	A	2.8	4.1	5.6
Max. torque	M_{max}	Nm	18.0	18.0	18.0
Max. current	I_{max}	A	12.7	19.0	25
Max. speed	N_{max}	rpm	6600	6600	6600
Voltage constant	K_E	V/1000	98.4	66.0	49.2
Torque constant	K_T	Nm/A	1.63	1.09	0.81
Winding resistance	R_{2ph}	Ω	7.0	3.2	1.90
Winding inductance	L_{2ph}	mH	43.2	17.8	10.8
Motor pole count	P_{mot}		8	8	8

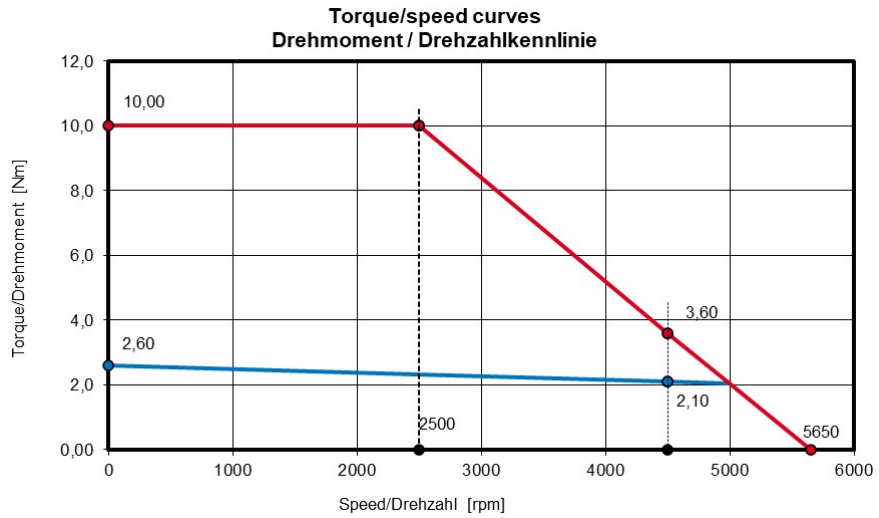
Motor type			**JHQ3-0450-098**	**JHQ3-0450-066**	**JHQ3-0450-049**
Idling speed	N_o	rpm	3750	5650	6600
Torque at I_{max}/U_n	M_z	Nm	18.0	18.0	18.0
Speed at I_{max}/U_n	N_z	rpm	1500	2400	2900
Max. torque at n_n	M_x	Nm	5.8	6.0	6.2
Electrical time constant	T_{el}	ms	6.2	5.6	5.7
Mechanical time constant	T_{mech}	ms	0.64	0.65	0.70
Thermal time constant	T_{th}	min	39	39	39
Rotor inertia without brake	J	$kg*cm^2$	1.4	1.4	1.4
Weight without brake	m	kg	5.8	5.8	5.8
Axial load	F_A	N	26	26	26
Radial load	F_R	N	255	255	255

Torque speed characteristics

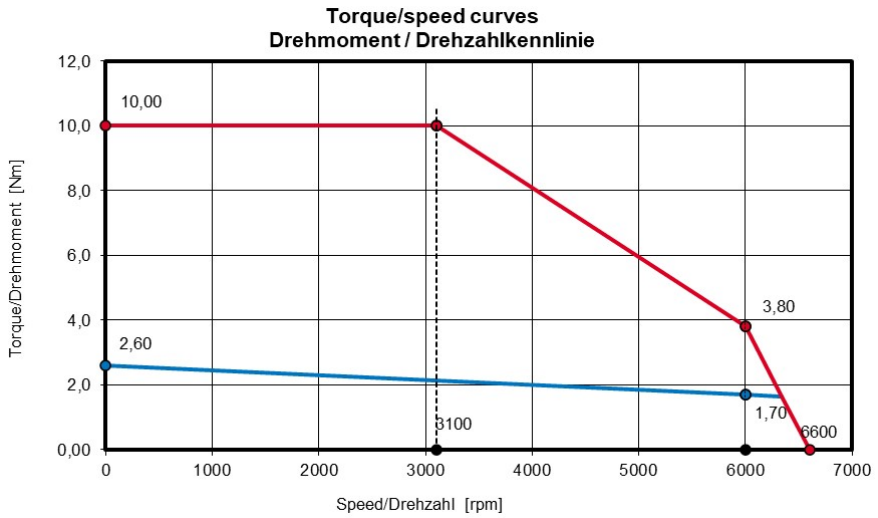
JHQ3 560 V	JHQ3-0135-098 	JHQ3-0135-066 
JHQ3 560 V	JHQ3-0135-049 	JHQ3-0260-098 

JHQ3
560 V

JHQ3-0260-066

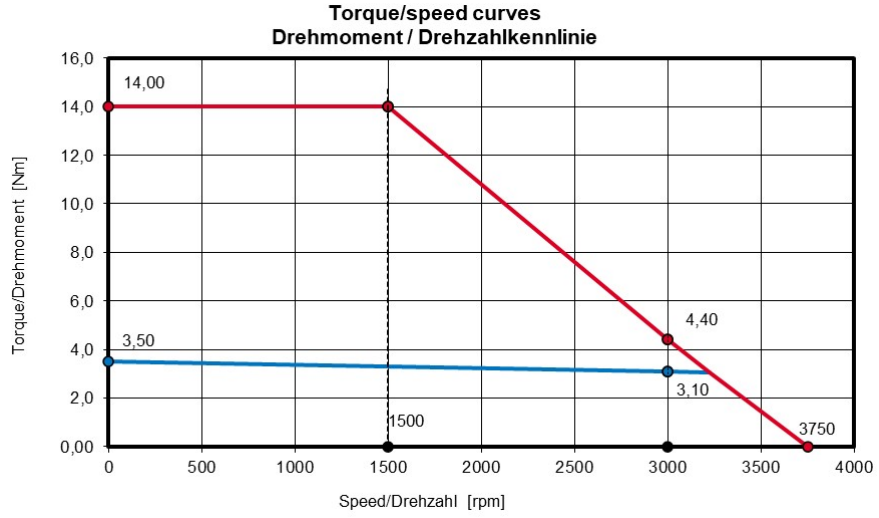


JHQ3-0260-049

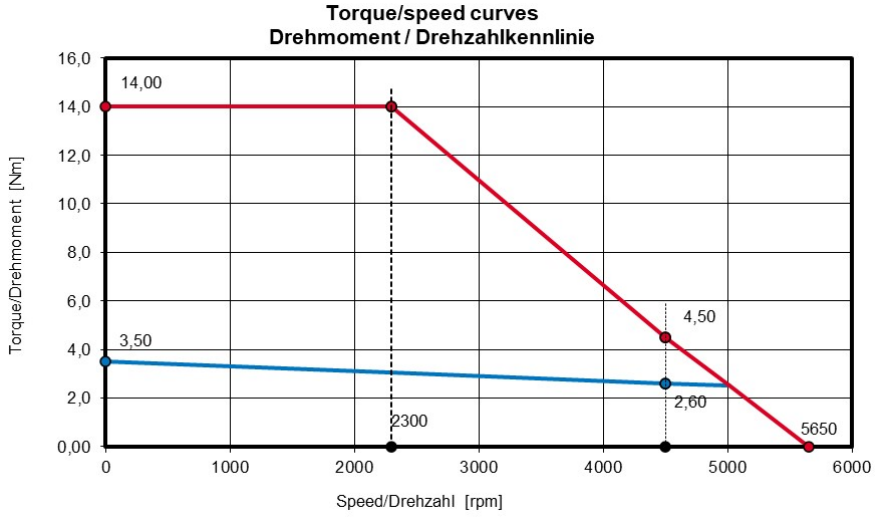


JHQ3
560 V

JHQ3-0350-098

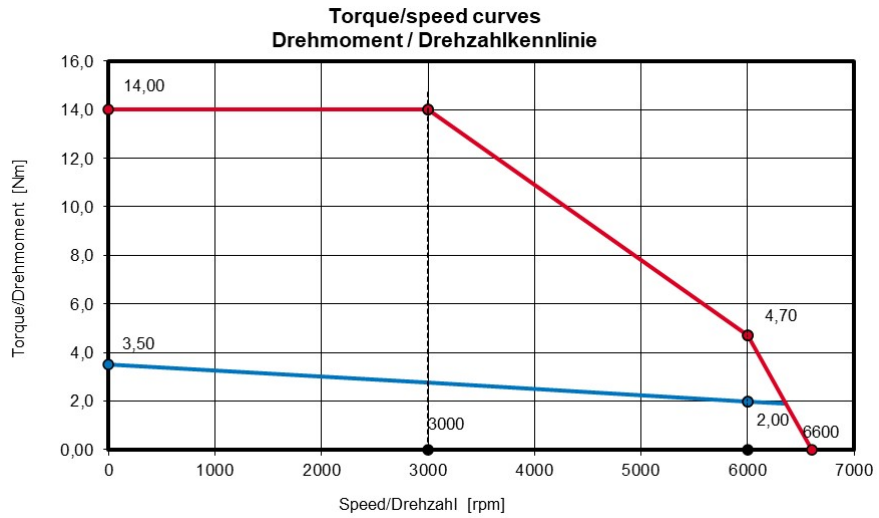


JHQ3-0350-066

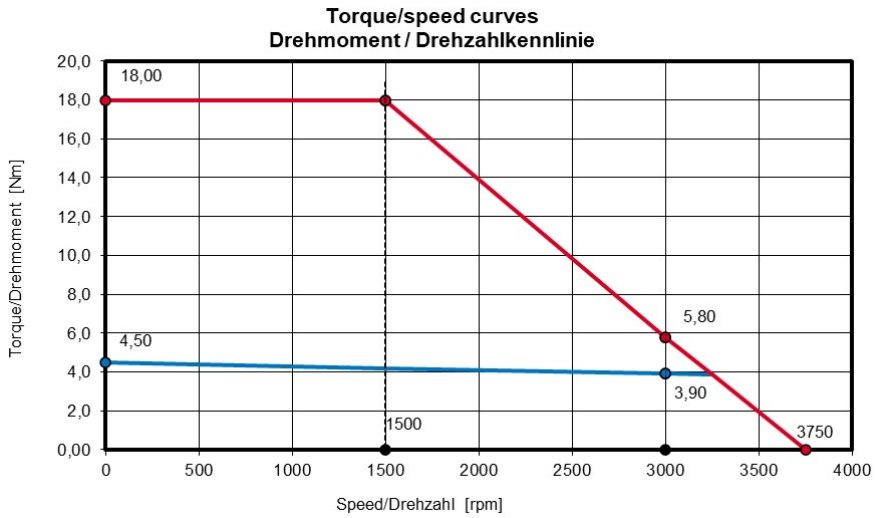


JHQ3
560 V

JHQ3-0350-049

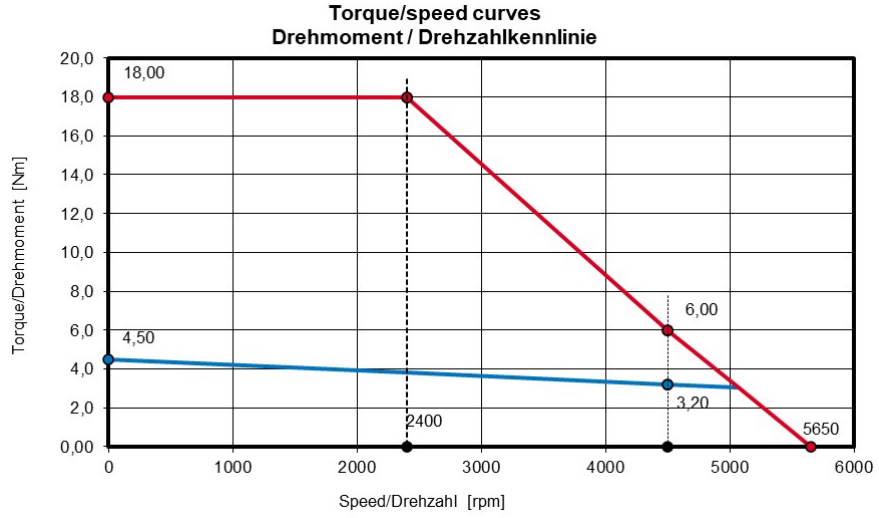


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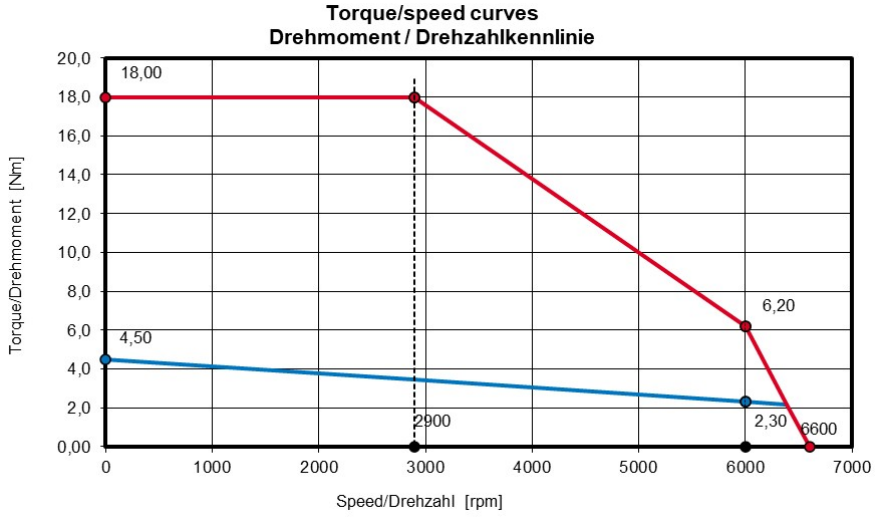


JHQ3
560 V

JHQ3-0450-066



JHQ3-0450-049



5.13 Flange size JHQ4

5.13.1 Dimensions JHQ4

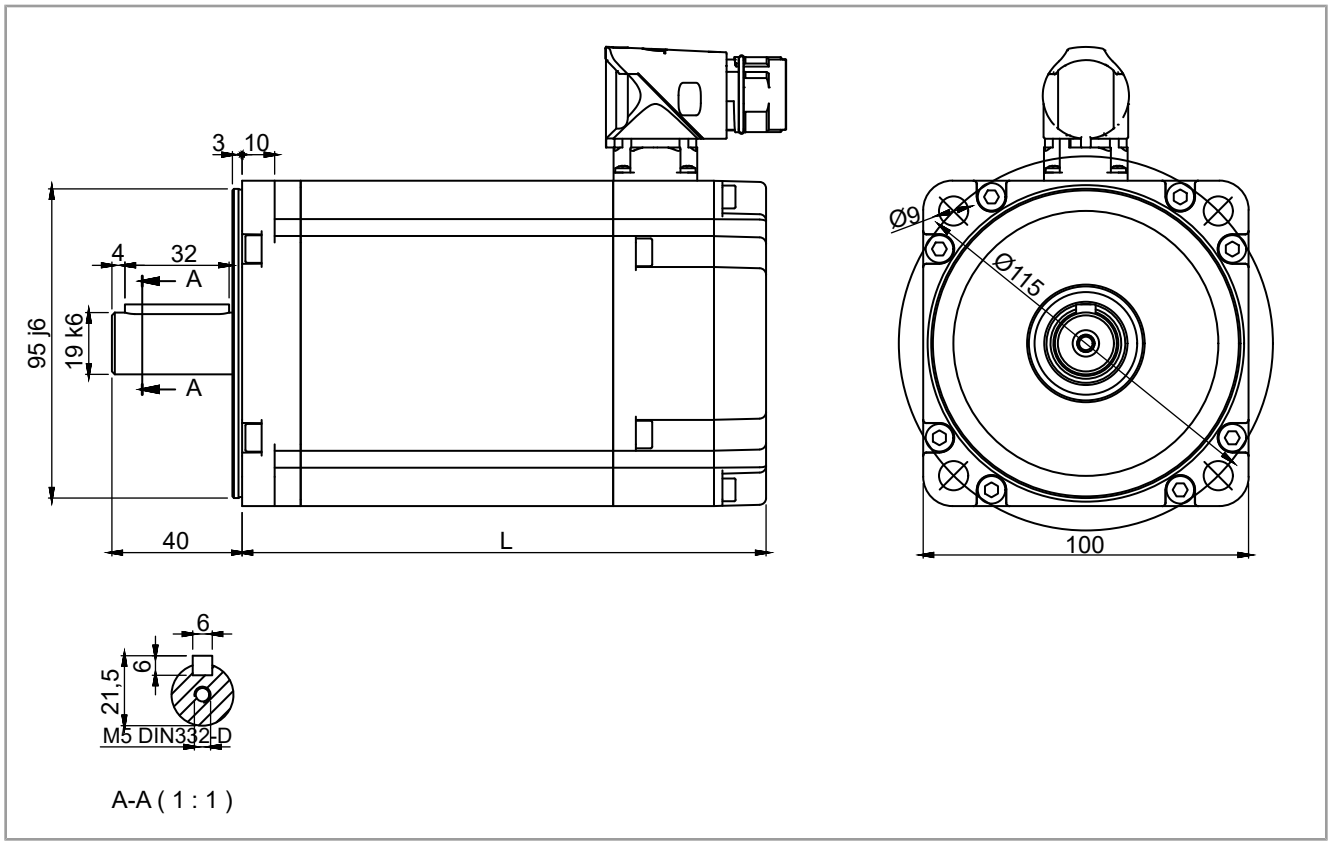


Fig. 20: Dimensions JHQ4 in mm

	P	L	L1	L	L1	L	L1
Type	**Resolver/SEx37**			**EKx36**		**EEx37/SKx36/SRx50**	
JHQ4-0400	M23	150	182	161	193	161	193
JHQ4-0600	M23	170	202	181	213	181	213
JHQ4-0800	M23	194	226	205	237	205	237
JHQ4-1000	M23	214	246	225	257	225	257

Tab. 33: Dimensions

Key:
P = Power connector size
L = Dimension without brake
L1 = Dimension with brake

5.13.2 Technical data of the brake for motor type JHQ4

Parameter	Value
Holding torque M_{BR}	7.5 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	18 W
Rotor inertia J_{BR}	0.54 kg*cm^2
Weight m_{BR}	0.9 kg

Tab. 34: Technical data of the brake for motor type JHQ4

5.13.3 Performance data DC link voltage 320 V DC

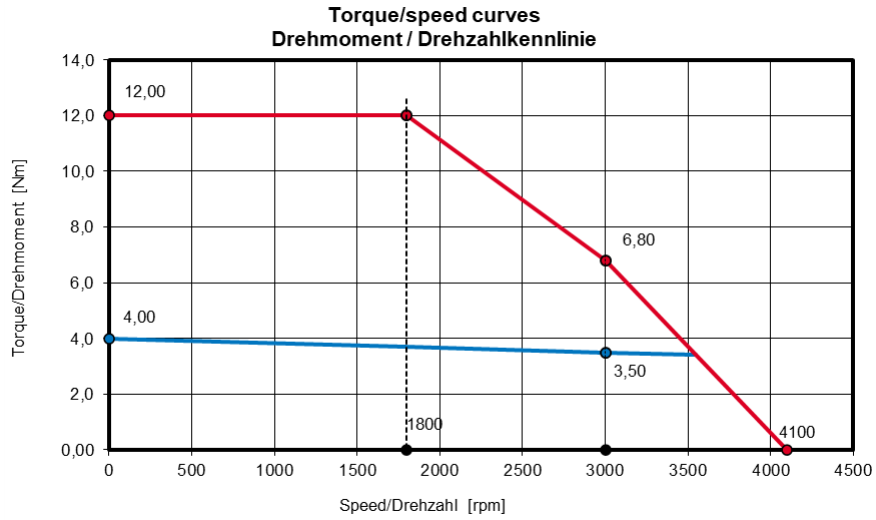
Motor type			JHQ4-0400-057	JHQ4-0600-057	JHQ4-0800-057	JHQ4-1000-057
Nominal speed	N_n	rpm	3000	3000	3000	3000
DC link voltage	U_{dc}	V	320	320	320	320
Rated AC supply servo amplifier	U_n	V	230	230	230	230
Rated motor voltage	U_m	V	170	170	170	170
Rated torque	M_n	Nm	3.5	5.3	7.5	8.8
Rated current	I_n	A	3.7	5.6	8.0	9.4
Continuous stall torque	M_o	Nm	4.0	6.0	8.0	10.0
Continuous stall current	I_o	A	4.3	6.4	8.6	10.7
Max. torque	M_{max}	Nm	12.0	18.0	24	30
Max. current	I_{max}	A	20	30	40	50
Max. speed	N_{max}	rpm	6600	6600	6600	6600
Voltage constant	K_E	V/1000	56.6	56.6	56.6	56.6
Torque constant	K_T	Nm/A	0.94	0.94	0.94	0.94
Winding resistance	R_{2ph}	Ω	1.78	1.16	0.83	0.63
Winding inductance	L_{2ph}	mH	12.2	8.0	7.3	5.8
Motor pole count	P_{mot}		8	8	8	8
Idling speed	N_o	rpm	4100	4100	4100	4100
Torque at I_{max}/U_n	M_z	Nm	12.0	18.0	24	30
Speed at I_{max}/U_n	N_z	rpm	1800	1800	1800	1800
Max. torque at n_n	M_x	Nm	6.8	10.0	12.0	15.0
Electrical time constant	T_{el}	ms	6.9	6.9	8.8	9.2
Mechanical time constant	T_{mech}	ms	0.66	0.61	0.57	0.53

Motor type			JHQ4-0400-057	JHQ4-0600-057	JHQ4-0800-057	JHQ4-1000-057
Thermal time constant	T_{th}	min	25	30	30	35
Rotor inertia without brake	J	kg*cm^2	1.9	2.7	3.5	4.3
Weight without brake	m	kg	4.7	5.3	6.2	7.2
Axial load	F_A	N	56	58	60	62
Radial load	F_R	N	560	580	600	620

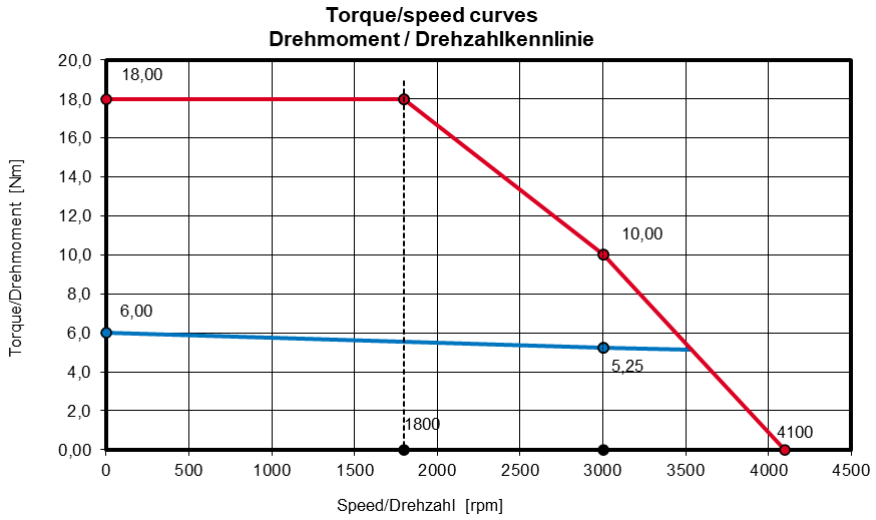
Torque speed characteristics

JHQ4
320 V

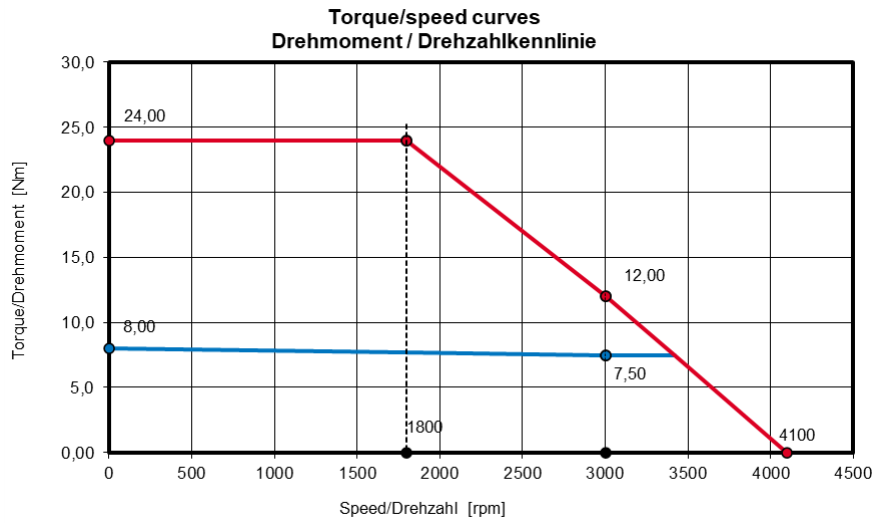
JHQ4-0400-057

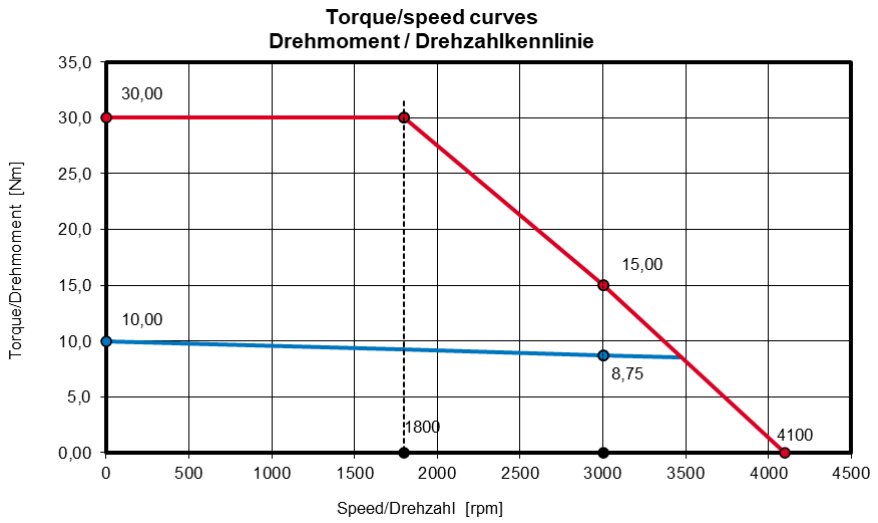


JHQ4-0600-057



JHQ4 320 V	JHQ4-0800-057	JHQ4-1000-057





5.13.4 Performance data DC link voltage 560 V DC

Motor type			JHQ4-0400-098	JHQ4-0400-066	JHQ4-0400-049	JHQ4-0600-098	JHQ4-0600-066	JHQ4-0600-049	JHQ4-0800-098	JHQ4-0800-066	JHQ4-0800-049
Nominal speed	N_n	rpm	3000	4500	6000	3000	4500	6000	3000	4500	6000
DC link voltage	U_{dc}	V	560	560	560	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400	400	400	400	400	400
Rated motor voltage	U_m	V	296	296	296	296	296	296	296	296	296
Rated torque	M_n	Nm	3.5	3.1	2.4	5.3	4.7	3.6	7.5	6.2	4.8
Rated current	I_n	A	2.1	2.9	2.9	3.2	4.3	4.4	4.6	5.7	5.9
Continuous stall torque	M_o	Nm	4.0	4.0	4.0	6.0	6.0	6.0	8.0	8.0	8.0
Continuous stall current	I_o	A	2.5	3.7	4.9	3.7	5.5	7.4	4.9	7.4	9.8
Max. torque	M_{max}	Nm	12.0	12.0	12.0	18.0	18.0	18.0	24	24	24

Motor type			JHQ4-0400-098	JHQ4-0400-066	JHQ4-0400-049	JHQ4-0600-098	JHQ4-0600-066	JHQ4-0600-049	JHQ4-0800-098	JHQ4-0800-066	JHQ4-0800-049
Max. current	I_{max}	A	11.6	17.3	23	17.4	26	35	23	35	46
Max. speed	N_{max}	rpm	6600	6600	6600	6600	6600	6600	6600	6600	6600
Voltage constant	K_E	V/1000	98.4	66.0	49.2	98.4	66.0	49.2	98.4	66.0	49.2
Torque constant	K_T	Nm/A	1.63	1.09	0.81	1.63	1.09	0.81	1.63	1.09	0.81
Winding resistance	R_{2ph}	Ω	5.4	2.4	1.35	3.5	1.50	0.88	2.5	1.10	0.63
Winding inductance	L_{2ph}	mH	36.5	16.5	9.1	24.0	10.8	6.0	21.8	9.7	5.5
Motor pole count	P_{mot}		8	8	8	8	8	8	8	8	8
Idling speed	N_o	rpm	4300	6100	6600	4200	6100	6600	4200	6100	6600
Torque at I_{max}/U_n	M_z	Nm	12.0	12.0	12.0	18.0	18.0	18.0	24	24	24
Speed at I_{max}/U_n	N_z	rpm	1800	2700	3800	1800	2700	3800	1800	2500	3300
Max. torque at n_n	M_x	Nm	6.5	6.5	7.0	9.0	10.0	11.0	12.0	12.0	13.0
Electrical time constant	T_{el}	ms	6.8	6.9	6.8	6.9	7.2	6.8	8.7	8.8	8.7
Mechanical time constant	T_{mech}	ms	0.66	0.65	0.66	0.61	0.58	0.62	0.57	0.56	0.57
Thermal time constant	T_{th}	min	25	25	25	30	30	30	30	30	30
Rotor inertia without brake	J	$kg*cm^2$	1.9	1.9	1.9	2.7	2.7	2.7	3.5	3.5	3.5
Weight without brake	m	kg	4.7	4.7	4.7	5.3	5.3	5.3	6.2	6.2	6.2
Axial load	F_A	N	56	56	56	58	58	58	60	60	60
Radial load	F_R	N	560	560	560	580	580	580	600	600	600

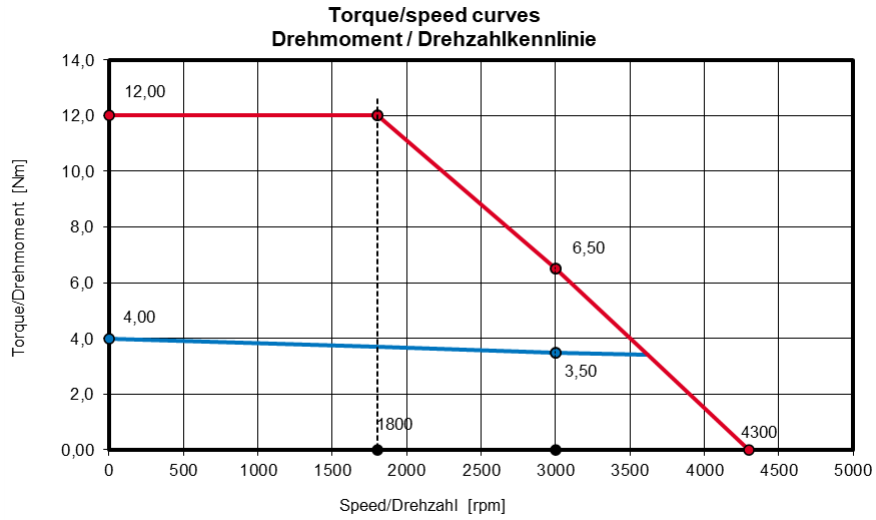
Motor type			JHQ4-1000-098	JHQ4-1000-066	JHQ4-1000-049
Nominal speed	N_n	rpm	3000	4500	6000
DC link voltage	U_{dc}	V	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400
Rated motor voltage	U_m	V	296	296	296
Rated torque	M_n	Nm	8.8	7.7	6.0
Rated current	I_n	A	5.4	7.1	7.4
Continuous stall torque	M_o	Nm	10.0	10.0	10.0
Continuous stall current	I_o	A	6.1	9.2	12.3
Max. torque	M_{max}	Nm	30	30	30
Max. current	I_{max}	A	29	43	58
Max. speed	N_{max}	rpm	6600	6600	6600
Voltage constant	K_E	V/1000	98.4	66.0	49.2
Torque constant	K_T	Nm/A	1.63	1.09	0.81
Winding resistance	R_{2ph}	Ω	1.90	0.90	0.48
Winding inductance	L_{2ph}	mH	17.4	7.8	4.4
Motor pole count	P_{mot}		8	8	8
Idling speed	N_o	rpm	4200	6100	6600
Torque at I_{max}/U_n	M_z	Nm	30	30	30
Speed at I_{max}/U_n	N_z	rpm	1800	2400	3300
Max. torque at n_n	M_x	Nm	15.0	14.0	16.0
Electrical time constant	T_{el}	ms	9.2	8.7	9.1
Mechanical time constant	T_{mech}	ms	0.53	0.56	0.54
Thermal time constant	T_{th}	min	35	35	35
Rotor inertia without brake	J	$kg*cm^2$	4.3	4.3	4.3

Motor type			JHQ4-1000-098	JHQ4-1000-066	JHQ4-1000-049
Weight without brake	m	kg	7.2	7.2	7.2
Axial load	F_A	N	62	62	62
Radial load	F_R	N	620	620	620

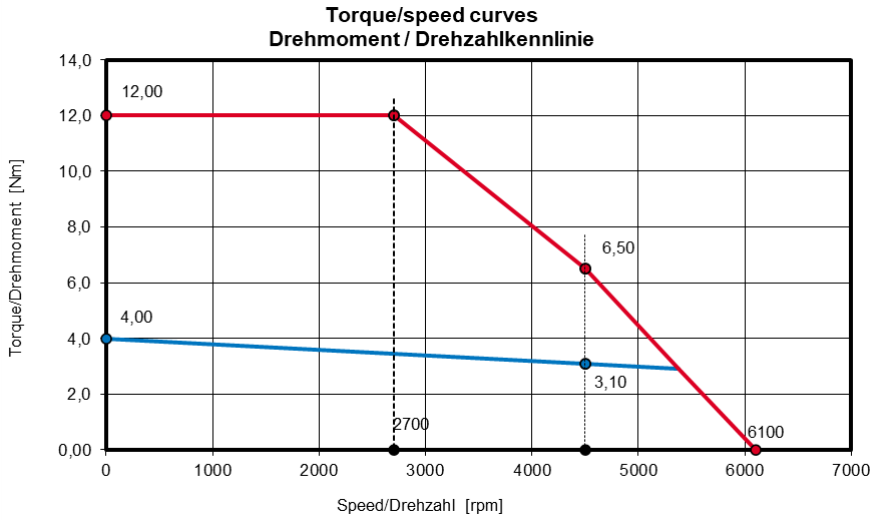
Torque speed characteristics

JHQ4
560 V

JHQ4-0400-098

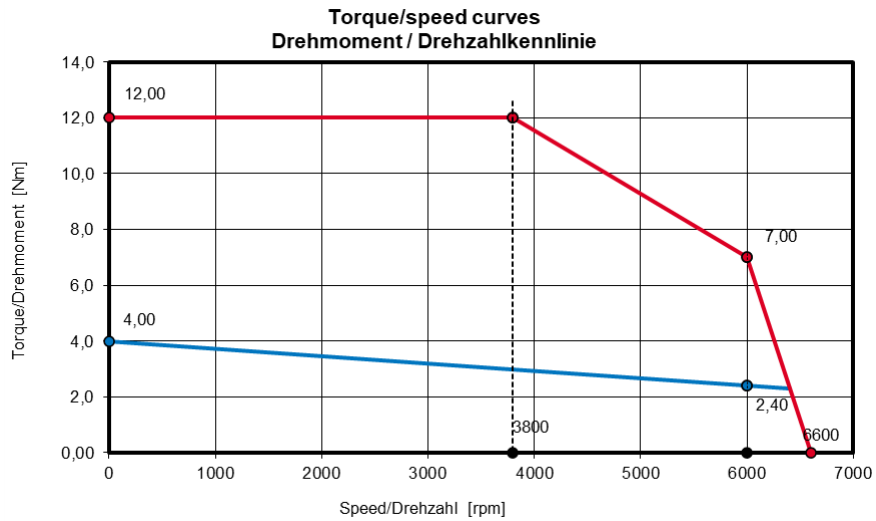


JHQ4-0400-066

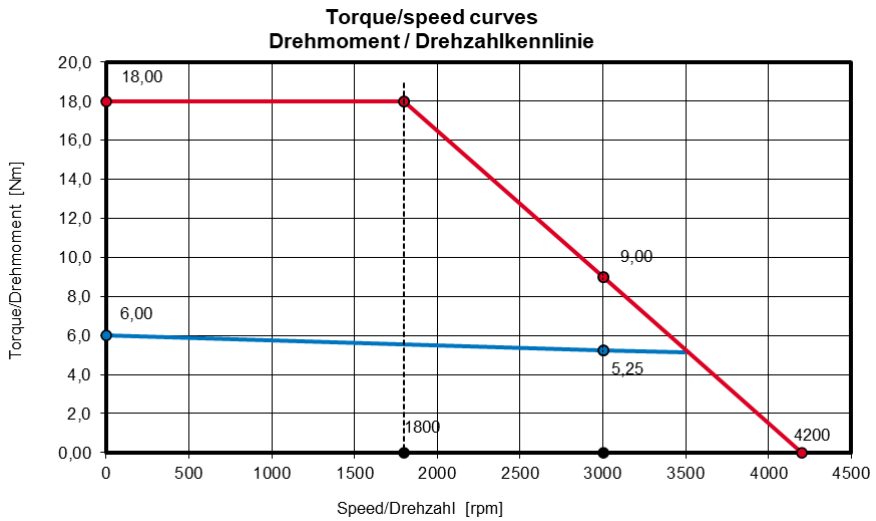


JHQ4
560 V

JHQ4-0400-049

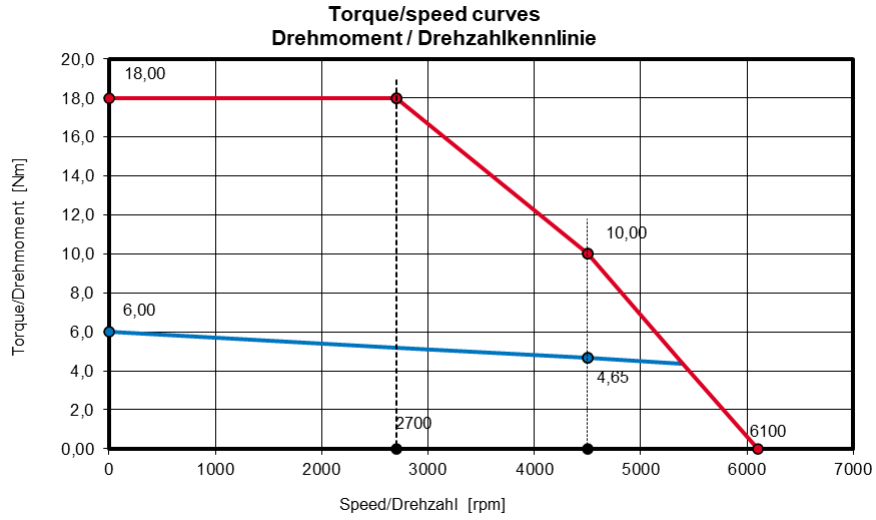


JHQ4-0600-098

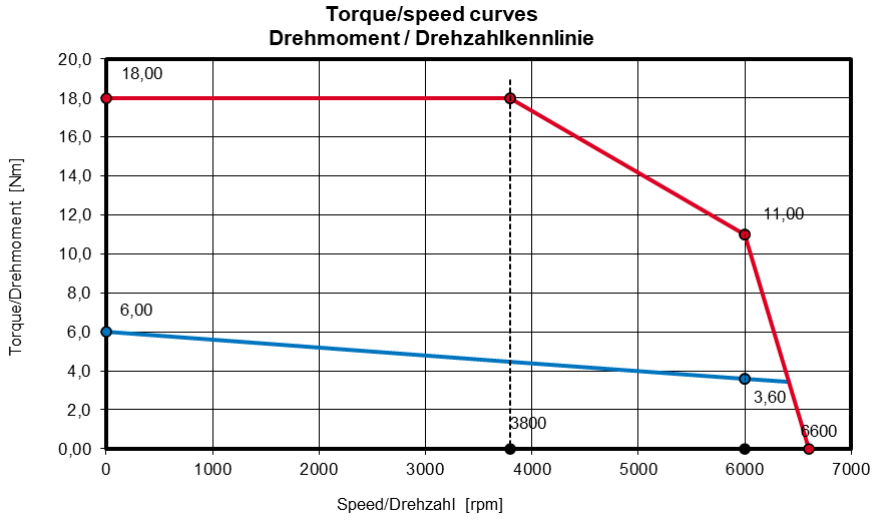


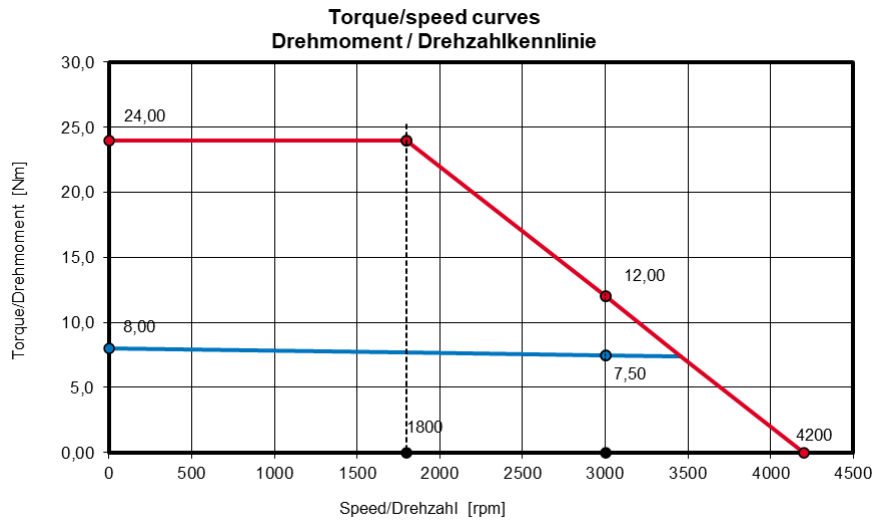
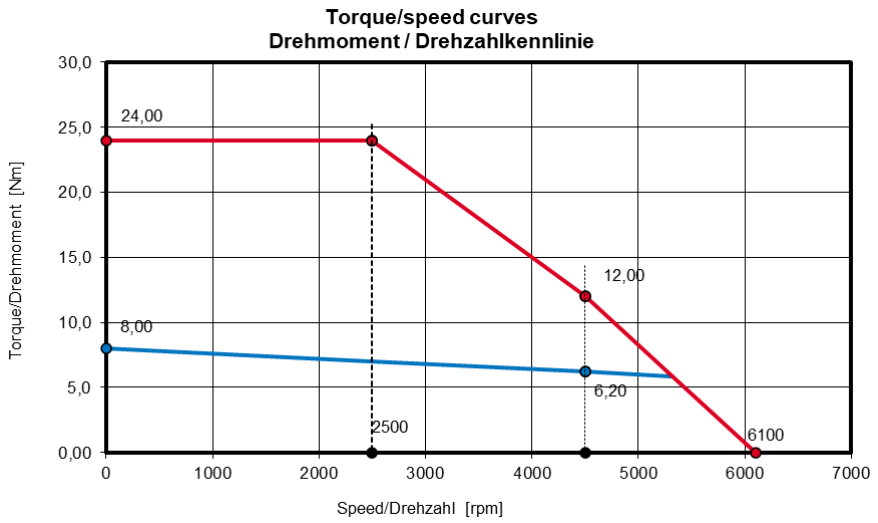
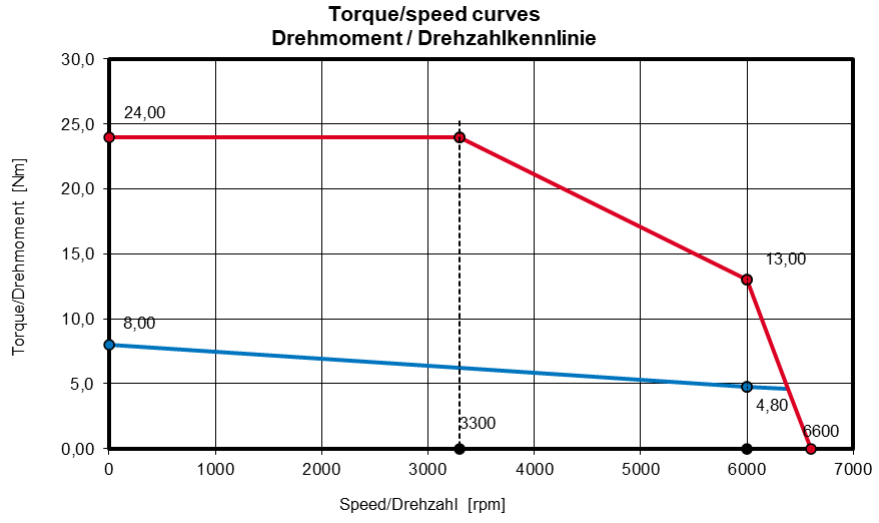
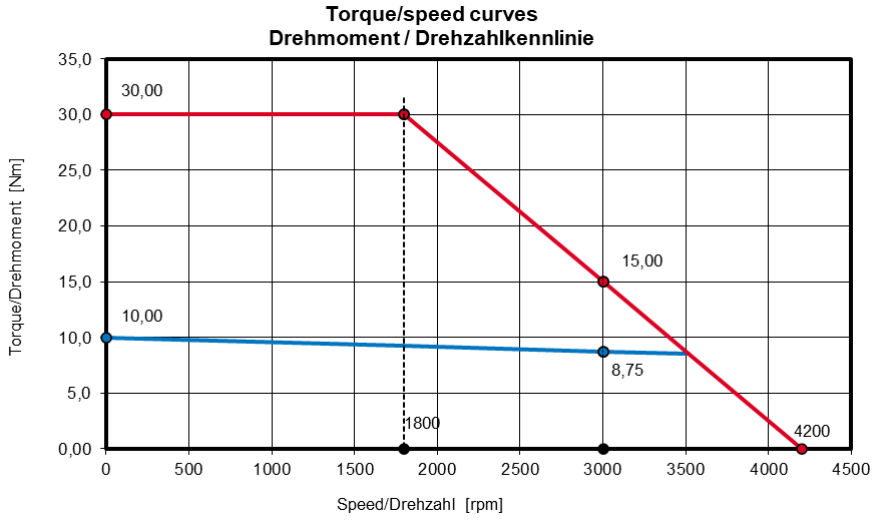
JHQ4
560 V

JHQ4-0600-066

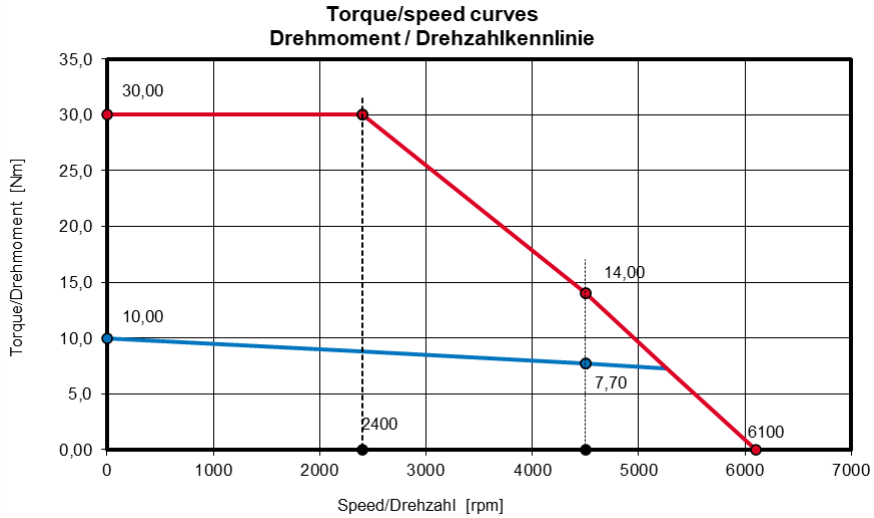


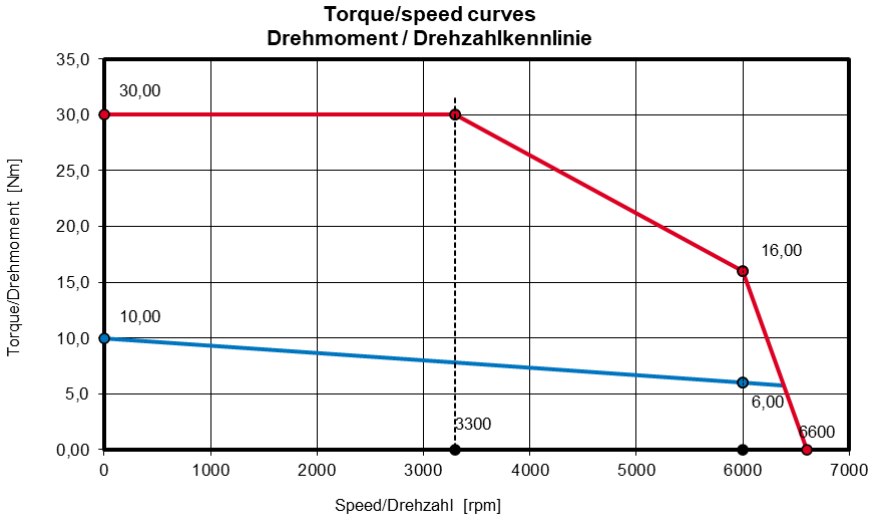
JHQ4-0600-049



JHQ4 560 V	JHQ4-0800-098 	JHQ4-0800-066 
JHQ4 560 V	JHQ4-0800-049 	JHQ4-1000-098 

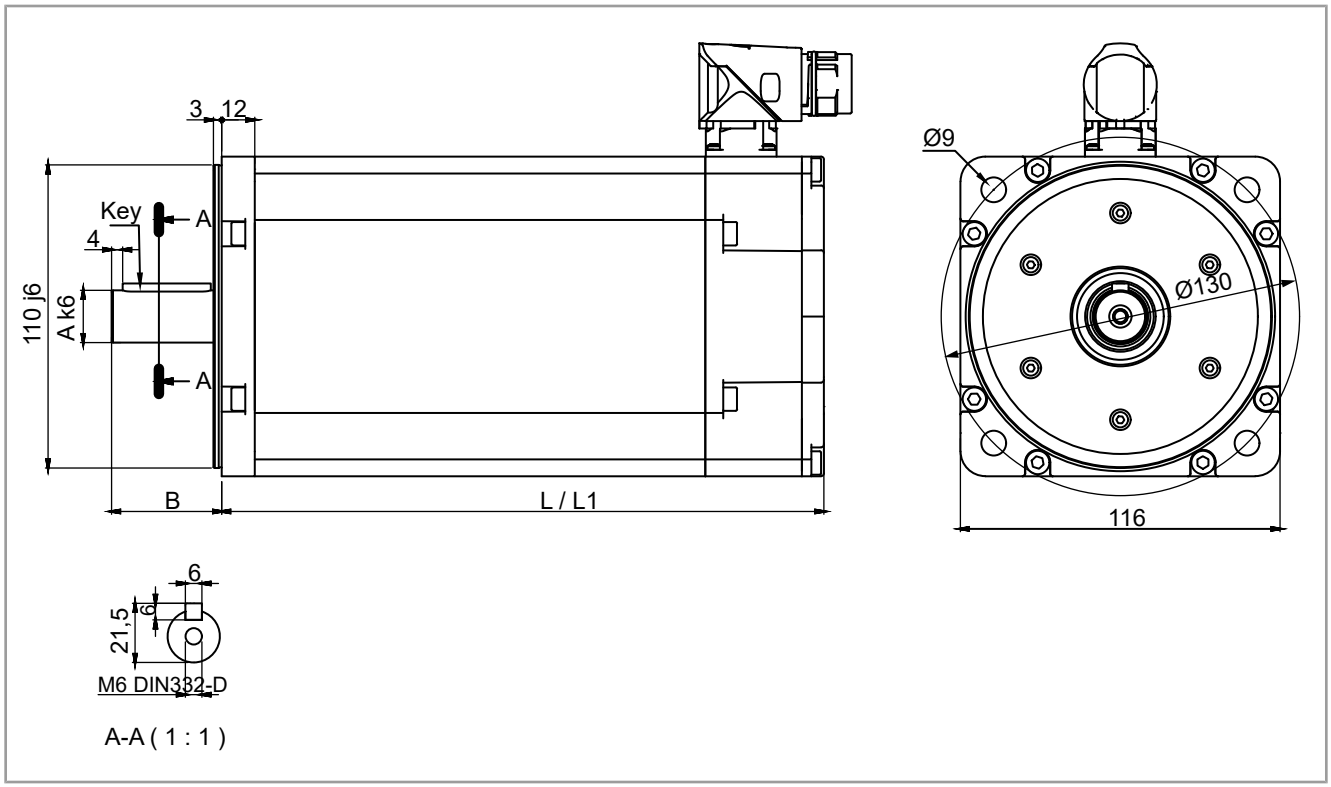
JHQ4 560 V	JHQ4-1000-066	JHQ4-1000-049





5.14 Flange size JHQ45

5.14.1 Dimensions JHQ45



Dimensions JHQ45 in mm

	P	L	L1	L	L1	L	L1	Shaft (AxB)/ feather key/inter-nal thread
Type	**Resolver/SEx37**			**EKx36/EEx37**		**SKx36/SRx50**		
JHQ45-0600	M23	168	204.5	167	203.5	168	204.5	Ø19x40/ 6x6x32/ M6x16
JHQ45-0800	M23	183	219.5	182	218.5	183	219.5	
JHQ45-1000	M23	198	234.5	197	233.5	198	234.5	
JHQ45-1200	M23	213	249.5	212	248.5	213	249.5	Ø24x50/ 8x7x40/ M8x19
JHQ45-1400	M23	233	269.5	232	268.5	233	269.5	

Tab. 35: Dimensions

Key:
P = Power connector size
L = Dimension without brake
L1 = Dimension with brake

5.14.2 Technical data of the brake for motor type JHQ45

Parameter	Value
Holding torque M_{BR}	12 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	18.7 W
Rotor inertia J_{BR}	1.8 kg*cm^2
Weight m_{BR}	1.5 kg

Tab. 36: Technical data of the brake for motor type JHQ45

5.14.3 Performance data DC link voltage 560 V DC

Motor type			JHQ45-0600-098	JHQ45-0600-066	JHQ45-0800-098	JHQ45-0800-066	JHQ45-1000-098	JHQ45-1000-066	JHQ45-1200-098	JHQ45-1200-066
Nominal speed	N_n	rpm	3000	4500	3000	4500	3000	4500	3000	4500
DC link voltage	U_{dc}	V	560	560	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400	400	400	400	400
Rated motor voltage	U_m	V	296	296	296	296	296	296	296	296
Rated torque	M_n	Nm	5.5	4.7	7.0	6.0	8.5	7.1	10.1	8.3
Rated current	I_n	A	3.4	4.3	4.3	5.5	5.2	6.5	6.2	7.6
Continuous stall torque	M_o	Nm	6.0	6.0	8.0	8.0	10.0	10.0	12.0	12.0
Continuous stall current	I_o	A	3.7	5.5	4.9	7.3	6.1	9.2	7.4	11.0
Max. torque	M_{max}	Nm	29	29	38	38	48	48	57	57
Max. current	I_{max}	A	21	32	28	42	35	53	42	63
Max. speed	N_{max}	rpm	6600	6600	6600	6600	6600	6600	6600	6600
Voltage constant	K_E	V/1000	98.4	66.0	98.4	66.0	98.4	66.0	98.4	66.0
Torque constant	K_T	Nm/A	1.63	1.09	1.63	1.09	1.63	1.09	1.63	1.09
Winding resistance	R_{2ph}	Ω	3.2	1.44	2.3	1.04	1.74	0.78	1.32	0.59
Winding inductance	L_{2ph}	mH	12.5	5.6	9.9	4.5	7.9	3.6	6.5	2.9
Motor pole count	P_{mot}		10	10	10	10	10	10	10	10
Idling speed	N_o	rpm	4000	5400	4000	5400	4000	5400	4000	5400
Torque at I_{max}/U_n	M_z	Nm	29	29	38	38	48	48	57	57
Speed at I_{max}/U_n	N_z	rpm	2100	3250	2000	3150	2100	3200	2100	3200
Max. torque at n_n	M_x	Nm	15.5	15.0	19.0	19.0	25	24	30	30
Electrical time constant	T_{el}	ms	3.9	3.9	4.3	4.3	4.5	4.6	4.9	4.9
Mechanical time constant	T_{mech}	ms	1.6	1.6	1.6	1.6	1.4	1.4	1.3	1.3

Motor type			JHQ45-0600-098	JHQ45-0600-066	JHQ45-0800-098	JHQ45-0800-066	JHQ45-1000-098	JHQ45-1000-066	JHQ45-1200-098	JHQ45-1200-066
Thermal time constant	T_{th}	min	31	31	32	32	34	34	37	37
Rotor inertia without brake	J	kg*cm^2	7.8	7.8	10.4	10.4	12.4	12.4	14.9	14.9
Weight without brake	m	kg	7.1	7.1	8.0	8.0	8.9	8.9	10.0	10.0
Axial load	F_A	N	58	58	60	60	68	68	70	70
Radial load	F_R	N	580	580	600	600	680	680	700	700

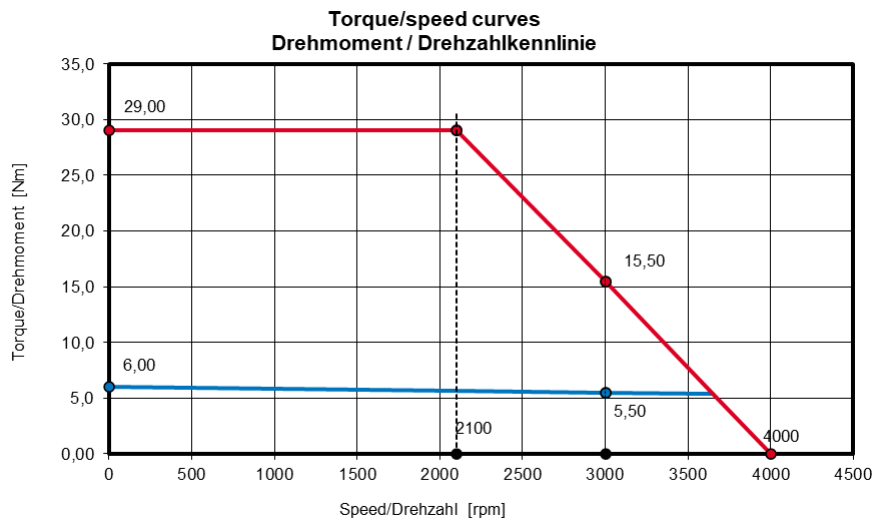
Motor type			JHQ45-1400-098	JHQ45-1400-066
Nominal speed	N_n	rpm	3000	4500
DC link voltage	U_{dc}	V	560	560
Rated AC supply servo amplifier	U_n	V	400	400
Rated motor voltage	U_m	V	296	296
Rated torque	M_n	Nm	11.8	9.7
Rated current	I_n	A	7.2	8.9
Continuous stall torque	M_o	Nm	14.0	14.0
Continuous stall current	I_o	A	8.6	12.8
Max. torque	M_{max}	Nm	70	70
Max. current	I_{max}	A	51	77
Max. speed	N_{max}	rpm	6600	6600
Voltage constant	K_E	V/1000	98.4	66.0
Torque constant	K_T	Nm/A	1.63	1.09
Winding resistance	R_{2ph}	Ω	1.15	0.52
Winding inductance	L_{2ph}	mH	5.7	2.6
Motor pole count	P_{mot}		10	10

Motor type			**JHQ45-1400-098**	**JHQ45-1400-066**
Idling speed	N_o	rpm	4000	5400
Torque at I_{max}/U_n	M_z	Nm	70	70
Speed at I_{max}/U_n	N_z	rpm	2000	3000
Max. torque at n_n	M_x	Nm	35	35
Electrical time constant	T_{el}	ms	5.0	5.0
Mechanical time constant	T_{mech}	ms	1.4	1.4
Thermal time constant	T_{th}	min	41	41
Rotor inertia without brake	J	$kg*cm^2$	18.2	18.2
Weight without brake	m	kg	11.3	11.3
Axial load	F_A	N	72	72
Radial load	F_R	N	720	720

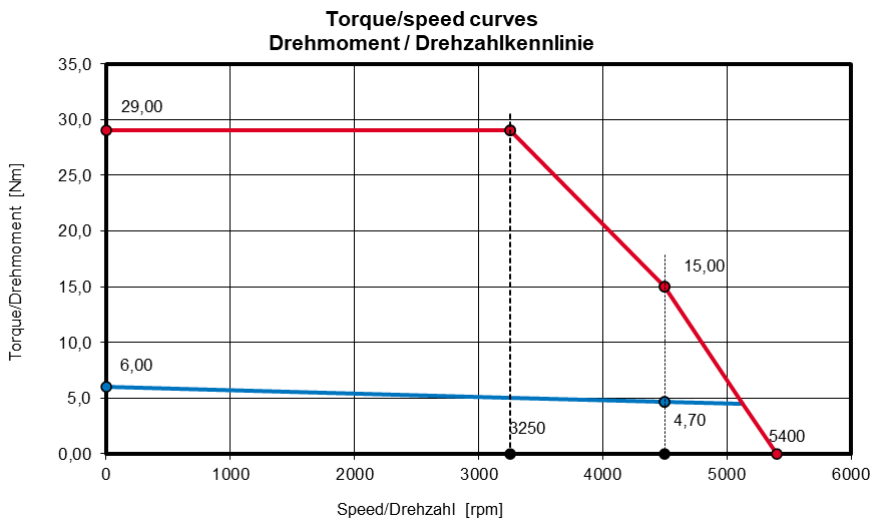
Torque speed characteristics

JHQ45
560 V

JHQ45-0600-098

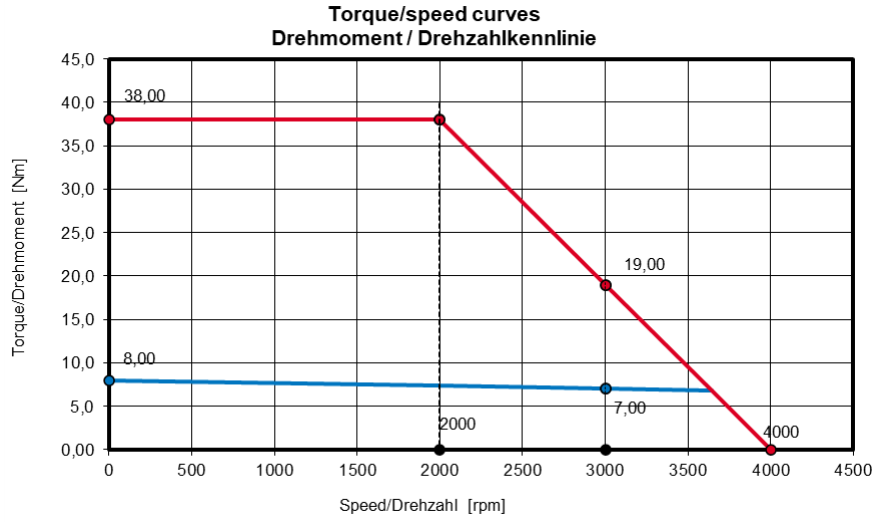


JHQ45-0600-066

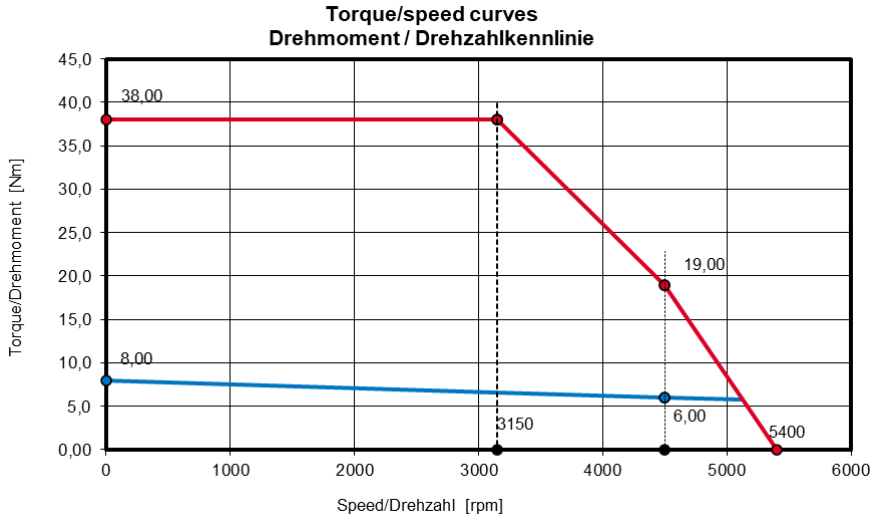


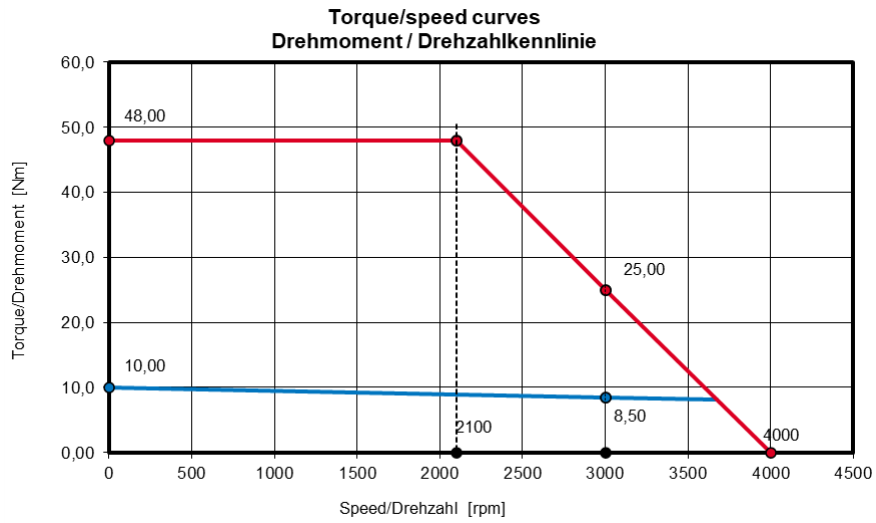
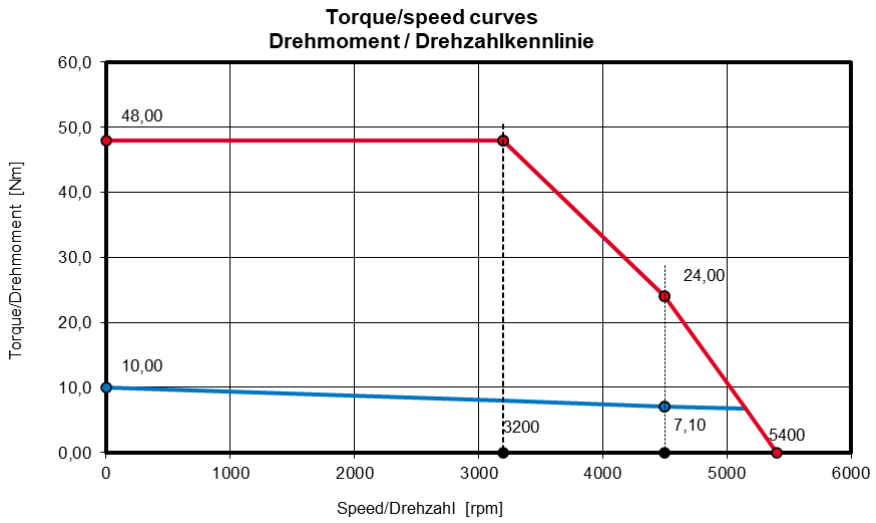
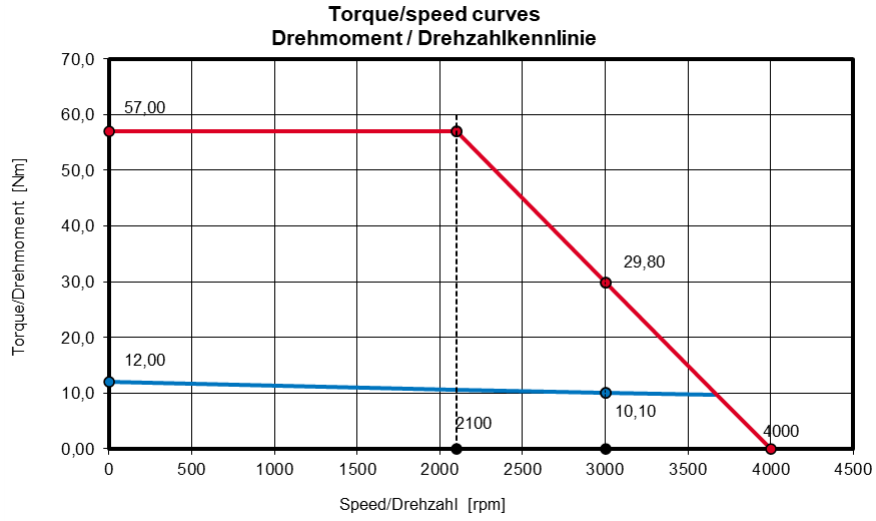
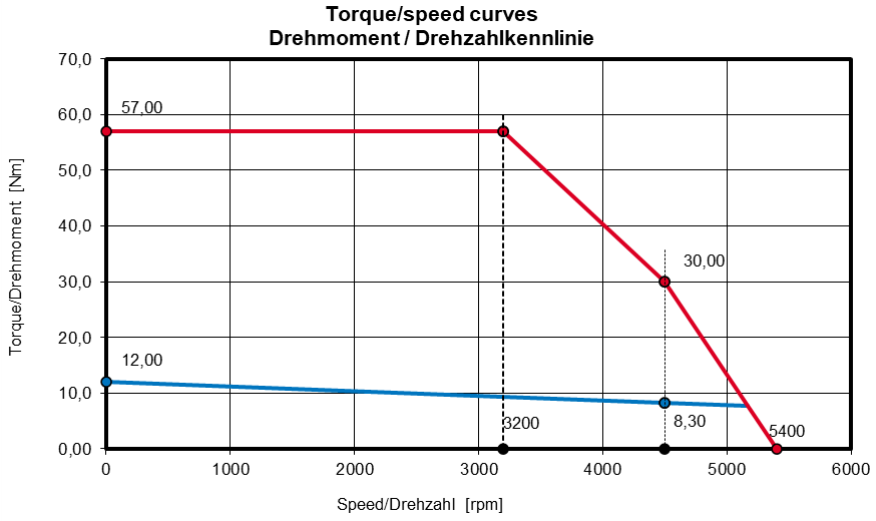
JHQ45
560 V

JHQ45-0800-098

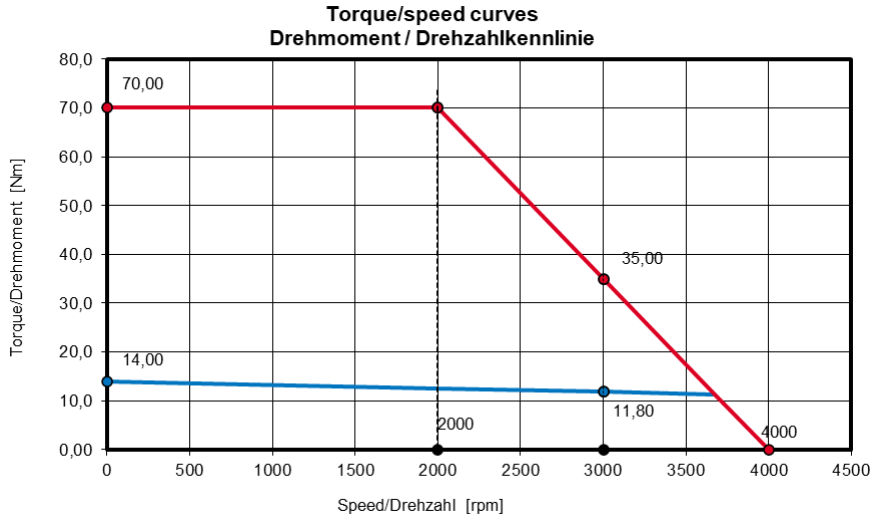


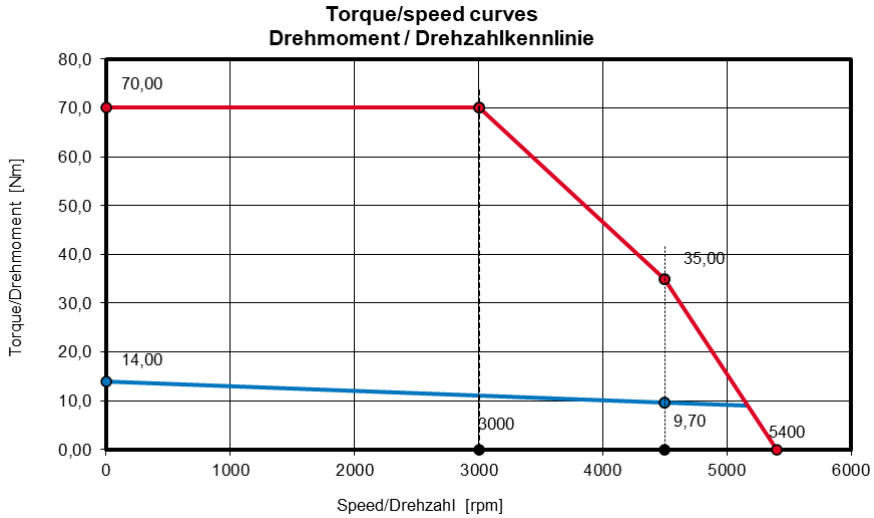
JHQ45-0800-066



JHQ45 560 V	JHQ45-1000-098 	JHQ45-1000-066 
JHQ45 560 V	JHQ45-1200-098 	JHQ45-1200-066 

JHQ45 560 V	JHQ45-1400-098	JHQ45-1400-066





5.15 Flange size JHQ5

5.15.1 Dimensions JHQ5

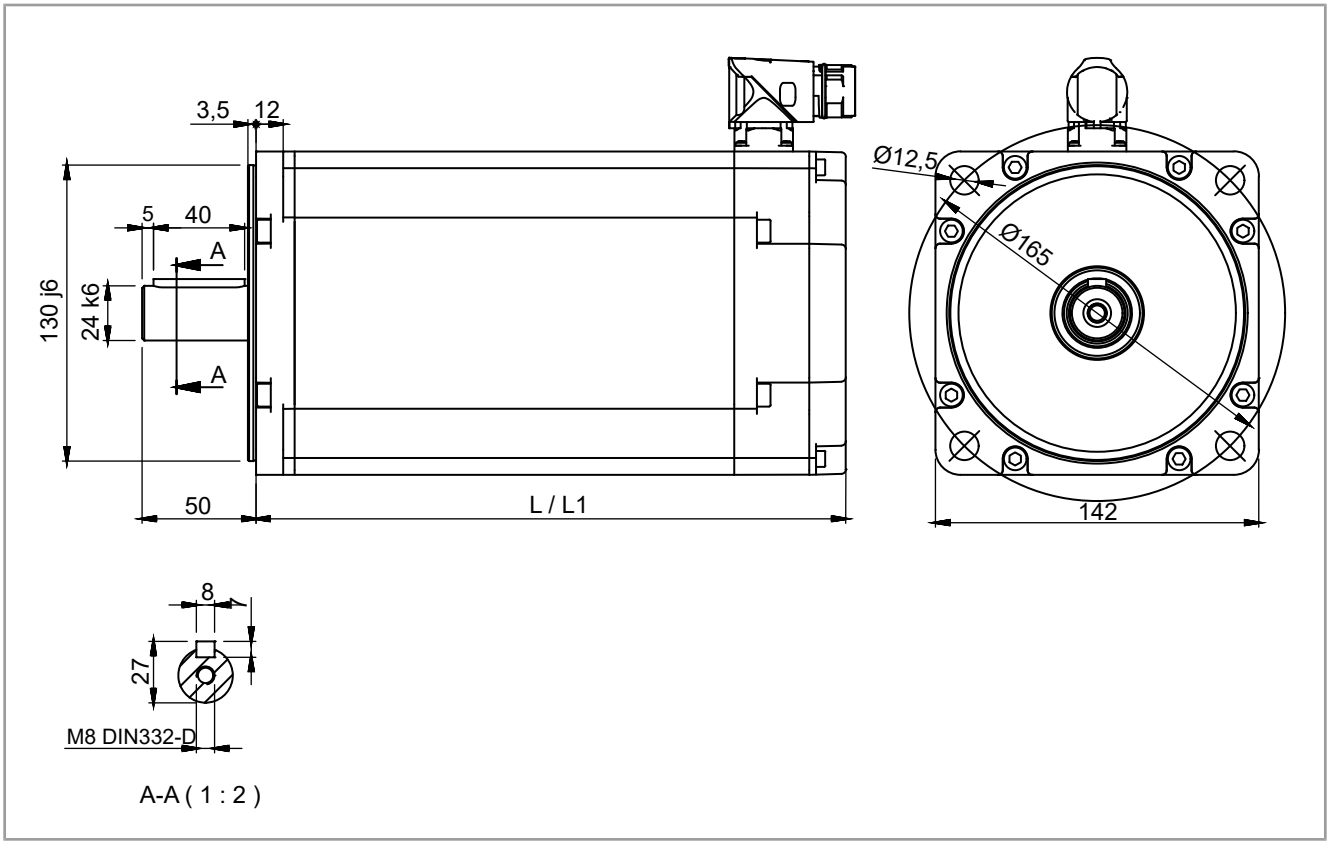


Fig. 21: Dimensions JHQ5 in mm

	P	L	L1	L	L1	L	L1
Type	**Resolver/SEx37**			**EKx36/EEx37**		**SKx36/SRx50**	
JHQ5-0450	M23	148	183	159	194	159	194
JHQ5-0900	M23	173	208	184	219	184	219
JHQ5-1250	M23	198	228	209	239	209	239
JHQ5-1600	M23	223	253	234	264	234	264
JHQ5-2000	M23	248	273	259	284	259	284
JHQ5-2600	M23	298	318	309	329	309	329
JHQ5-2900*	M23	337.5	372.5	337.5	372.5	337.5	372.5

Tab. 37: Dimensions

Key:
P = Power connector size
L = Dimension without brake
L1 = Dimension with brake

***Motor with a diameter of 24 mm at the shaft end:**

– A maximum pulse torque M_I = 96.6 Nm is permitted.
– A maximum radial load F_R = 740 N is permitted.
– A maximum axial load F_A = 10 % of the radial load is permitted.

5.15.2 Technical data of the brake for motor type JHQ5

Parameter	Value
Holding torque M_{BR}	15 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	24 W
Rotor inertia J_{BR}	1.66 kg*cm^2
Weight m_{BR}	2 kg

Tab. 38: Technical data of the brake for motor type JHQ5

5.15.3 Performance data DC link voltage 320 V DC

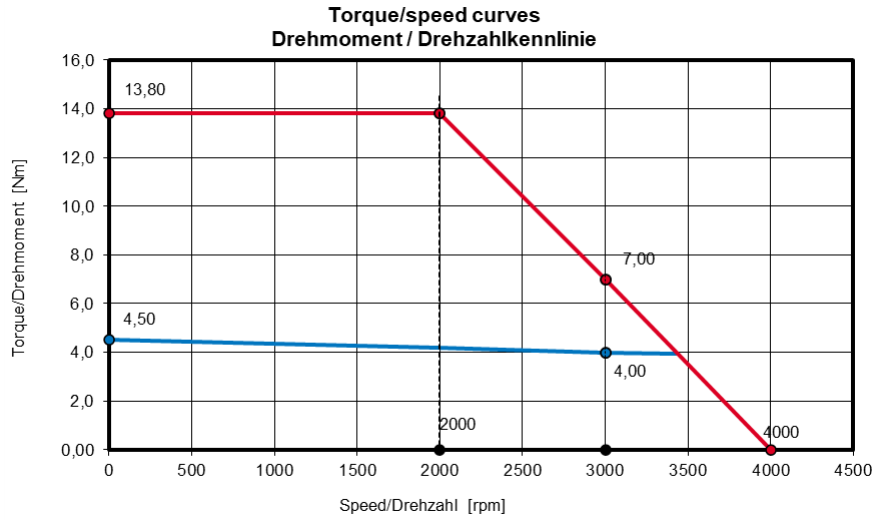
Motor type			JHQ5-0450-057	JHQ5-0900-057	JHQ5-1250-057
Nominal speed	N_n	rpm	3000	3000	3000
DC link voltage	U_{dc}	V	320	320	320
Rated AC supply servo amplifier	U_n	V	230	230	230
Rated motor voltage	U_m	V	170	170	170
Rated torque	M_n	Nm	4.0	7.7	11.6
Rated current	I_n	A	4.3	8.2	12.4
Continuous stall torque	M_o	Nm	4.5	9.0	12.5
Continuous stall current	I_o	A	4.8	9.6	13.4
Max. torque	M_{max}	Nm	13.8	28	41
Max. current	I_{max}	A	18.1	36	55
Max. speed	N_{max}	rpm	6600	6600	6600
Voltage constant	K_E	V/1000	56.6	56.6	56.6
Torque constant	K_T	Nm/A	0.94	0.94	0.94
Winding resistance	R_{2ph}	Ω	1.91	0.68	0.35
Winding inductance	L_{2ph}	mH	11.6	6.1	3.8
Motor pole count	P_{mot}		8	8	8
Idling speed	N_o	rpm	4000	4000	4000
Torque at I_{max}/U_n	M_z	Nm	13.8	28	41
Speed at I_{max}/U_n	N_z	rpm	2000	2000	2100
Max. torque at n_n	M_x	Nm	7.0	14.0	24
Electrical time constant	T_{el}	ms	6.1	9.0	10.9
Mechanical time constant	T_{mech}	ms	1.4	0.80	0.57

Motor type			JHQ5-0450-057	JHQ5-0900-057	JHQ5-1250-057
Thermal time constant	T_{th}	min	33	37	40
Rotor inertia without brake	J	kg*cm^2	3.6	6.0	8.2
Weight without brake	m	kg	7.5	9.5	11.5
Axial load	F_A	N	61	65	68
Radial load	F_R	N	610	650	680

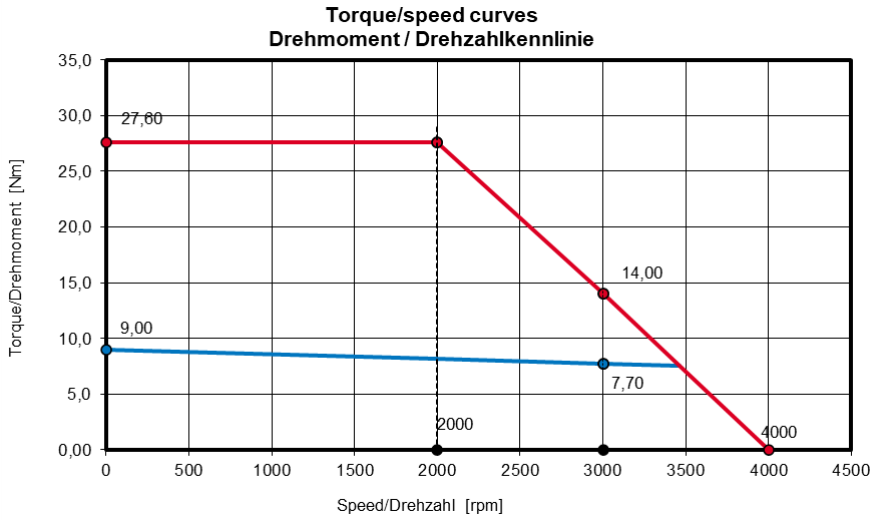
Torque speed characteristics

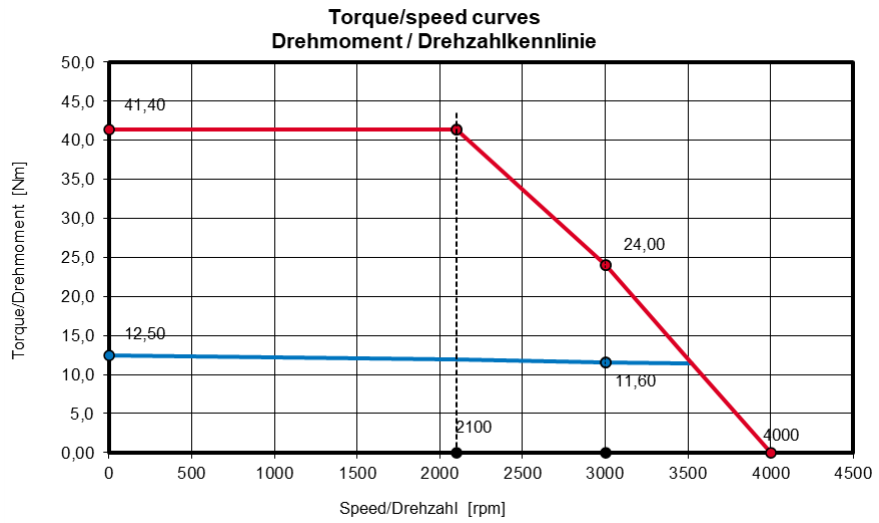
JHQ5
320 V

JHQ5-0450-057



JHQ5-0900-057



JHQ5 320 V	JHQ5-1250-057  	

5.15.4 Performance data DC link voltage 560 V DC

Motor type			JHQ5-0450-098	JHQ5-0450-066	JHQ5-0900-098	JHQ5-0900-066	JHQ5-1250-098	JHQ5-1250-066	JHQ5-1600-148	JHQ5-1600-098	JHQ5-1600-066
Nominal speed	N_n	rpm	3000	4500	3000	4500	3000	4500	2000	3000	4500
DC link voltage	U_{dc}	V	560	560	560	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400	400	400	400	400	400
Rated motor voltage	U_m	V	296	296	296	296	296	296	296	296	296
Rated torque	M_n	Nm	4.0	3.9	7.7	7.3	11.6	9.5	15.1	13.9	12.7
Rated current	I_n	A	2.5	3.6	4.7	6.7	7.1	8.7	6.2	8.5	11.7
Continuous stall torque	M_o	Nm	4.5	4.5	9.0	9.0	12.5	12.5	16.0	16.0	16.0
Continuous stall current	I_o	A	2.8	4.1	5.5	8.3	7.7	11.5	6.5	9.8	14.7
Max. torque	M_{max}	Nm	13.8	13.8	28	28	41	41	55	55	55

Motor type			JHQ5-0450-098	JHQ5-0450-066	JHQ5-0900-098	JHQ5-0900-066	JHQ5-1250-098	JHQ5-1250-066	JHQ5-1600-148	JHQ5-1600-098	JHQ5-1600-066
Max. current	I_{max}	A	9.8	14.7	19.7	29	30	44	26	39	59
Max. speed	N_{max}	rpm	6600	6600	6600	6600	6600	6600	6600	6600	6600
Voltage constant	K_E	V/1000	98.4	66.0	98.4	66.0	98.4	66.0	147.7	98.4	66.0
Torque constant	K_T	Nm/A	1.63	1.09	1.63	1.09	1.63	1.09	2.4	1.63	1.09
Winding resistance	R_{2ph}	Ω	5.1	2.2	2.2	0.79	1.13	0.51	1.73	0.75	0.34
Winding inductance	L_{2ph}	mH	40.3	19.3	21.5	8.7	12.5	5.0	20.9	8.2	4.1
Motor pole count	P_{mot}		8	8	8	8	8	8	8	8	8
Idling speed	N_o	rpm	3900	6000	3900	6000	3900	6000	2600	3900	6000
Torque at I_{max}/U_n	M_z	Nm	13.8	13.8	28	28	41	41	55	55	55
Speed at I_{max}/U_n	N_z	rpm	1800	2700	1800	3000	2100	3300	1350	2200	3200
Max. torque at n_n	M_x	Nm	6.5	6.0	12.5	14.0	22	24	27	32	30
Electrical time constant	T_{el}	ms	7.9	8.7	10.0	11.0	11.1	9.8	12.1	10.9	12.1
Mechanical time constant	T_{mech}	ms	1.2	1.2	0.85	0.69	0.60	0.61	0.54	0.52	0.53
Thermal time constant	T_{th}	min	33	33	37	37	40	40	43	43	43
Rotor inertia without brake	J	$kg*cm^2$	3.6	3.6	6.0	6.0	8.2	8.2	10.7	10.7	10.7
Weight without brake	m	kg	7.5	7.5	9.5	9.5	11.5	11.5	13.5	13.5	13.5
Axial load	F_A	N	61	61	65	65	68	68	70	70	70
Radial load	F_R	N	610	610	650	650	680	680	700	700	700

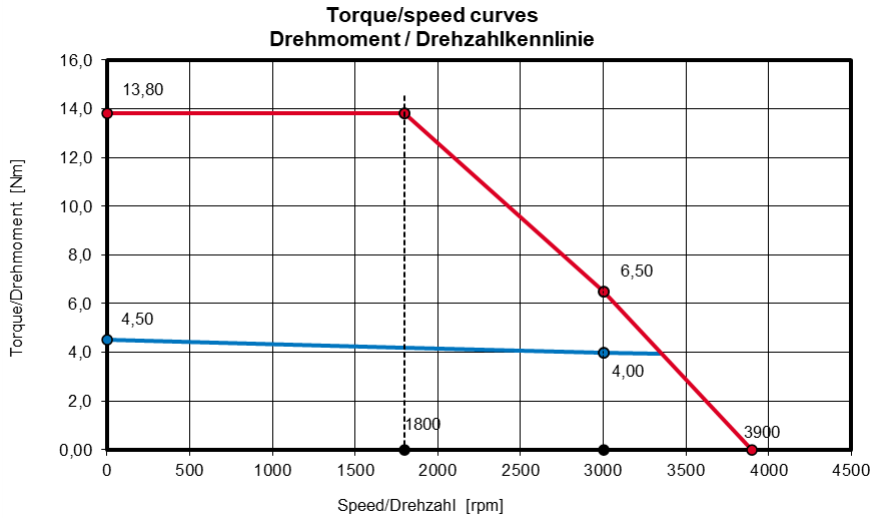
Motor type			JHQ5-2000-148	JHQ5-2000-098	JHQ5-2000-066	JHQ5-2600-148	JHQ5-2600-098	JHQ5-2600-066	JHQ5-2900-098	JHQ5-2900-066
Nominal speed	N_n	rpm	2000	3000	4500	2000	3000	4500	3000	4500
DC link voltage	U_{dc}	V	560	560	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400	400	400	400	400
Rated motor voltage	U_m	V	296	296	296	296	296	296	296	296
Rated torque	M_n	Nm	18.5	17.5	14.6	22.4	18.9	14.7	20.3	15.3
Rated current	I_n	A	7.6	10.7	13.4	9.2	11.6	13.5	12.5	14.1
Continuous stall torque	M_o	Nm	20.0	20.0	20.0	26.0	26.0	26.0	29.0	29.0
Continuous stall current	I_o	A	8.2	12.3	18.4	10.6	16.0	23.9	17.8	26.7
Max. torque	M_{max}	Nm	69	69	69	97	97	97	97	97
Max. current	I_{max}	A	33	49	73	46	69	103	68	102
Max. speed	N_{max}	rpm	6600	6600	6600	6600	6600	6600	6600	6600
Voltage constant	K_E	V/1000	147.7	98.4	66.0	147.7	98.4	66.0	98.4	66.0
Torque constant	K_T	Nm/A	2.4	1.63	1.09	2.5	1.63	1.09	1.63	1.09
Winding resistance	R_{2ph}	Ω	1.18	0.56	0.26	0.91	0.41	0.19	0.34	0.16
Winding inductance	L_{2ph}	mH	14.2	6.3	3.2	11.2	5.0	2.4	4.3	2.0
Motor pole count	P_{mot}		8	8	8	8	8	8	8	8
Idling speed	N_o	rpm	2600	3900	6000	2600	3900	6000	3900	6000
Torque at I_{max}/U_n	M_z	Nm	69	69	69	97	97	97	97	110
Speed at I_{max}/U_n	N_z	rpm	1350	2200	3200	1350	2200	3100	2200	3200
Max. torque at n_n	M_x	Nm	33	36	38	50	53	50	60	60
Electrical time constant	T_{el}	ms	12.0	11.3	12.3	12.3	12.2	12.6	12.6	12.5
Mechanical time constant	T_{mech}	ms	0.45	0.48	0.50	0.48	0.49	0.51	0.46	0.48
Thermal time constant	T_{th}	min	46	46	46	49	49	49	51	51
Rotor inertia without brake	J	$kg*cm^2$	13.1	13.1	13.1	18.4	18.4	18.4	21	21

Motor type			JHQ5-2000-148	JHQ5-2000-098	JHQ5-2000-066	JHQ5-2600-148	JHQ5-2600-098	JHQ5-2600-066	JHQ5-2900-098	JHQ5-2900-066
Weight without brake	m	kg	15.5	15.5	15.5	19.5	19.5	19.5	23	23
Axial load	F_A	N	72	72	72	74	74	74	74	76
Radial load	F_R	N	720	720	720	740	740	740	740	760

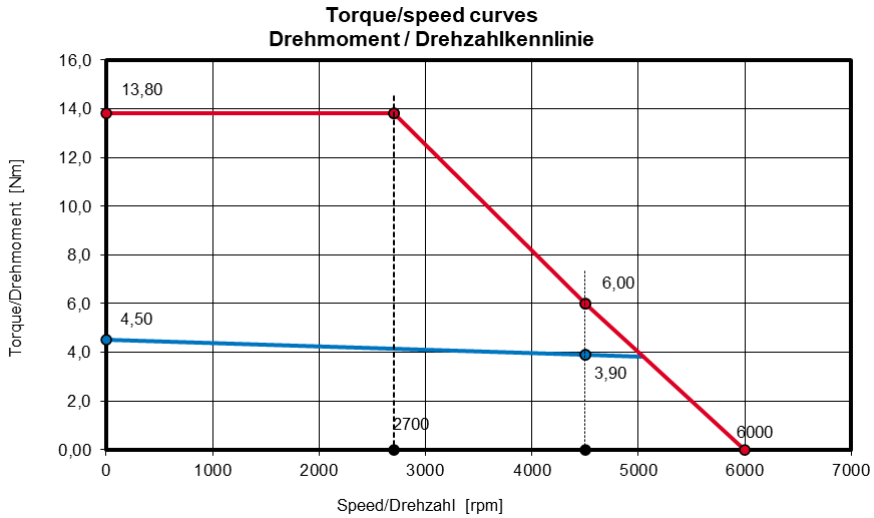
Torque speed characteristics

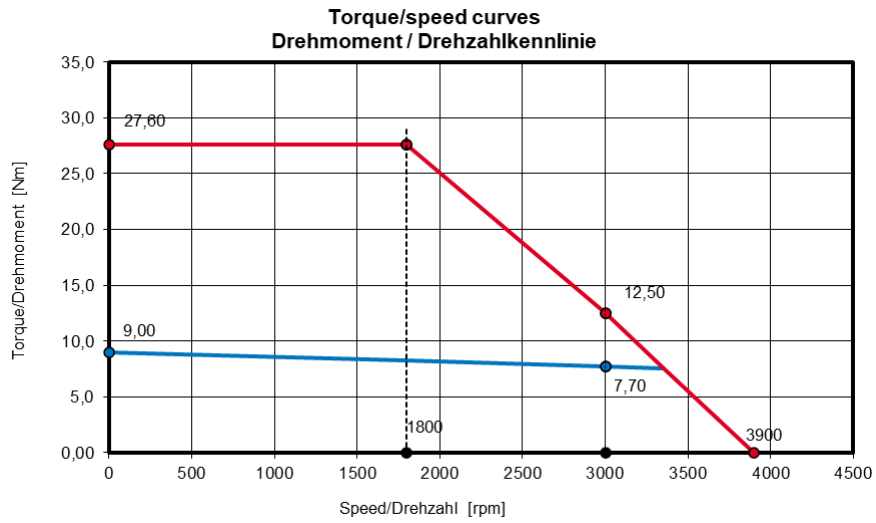
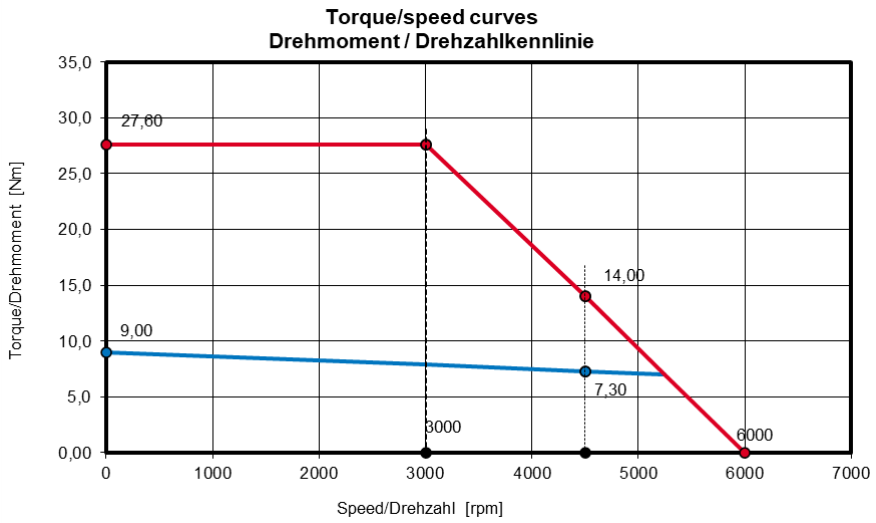
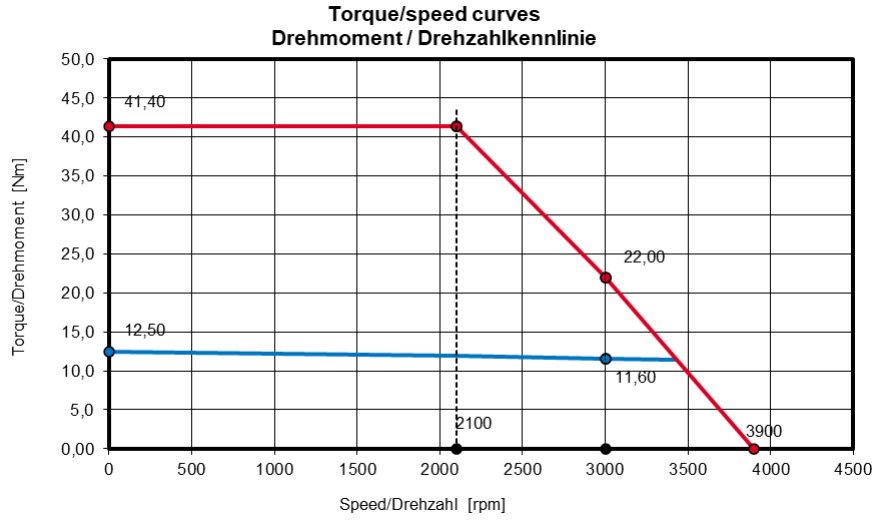
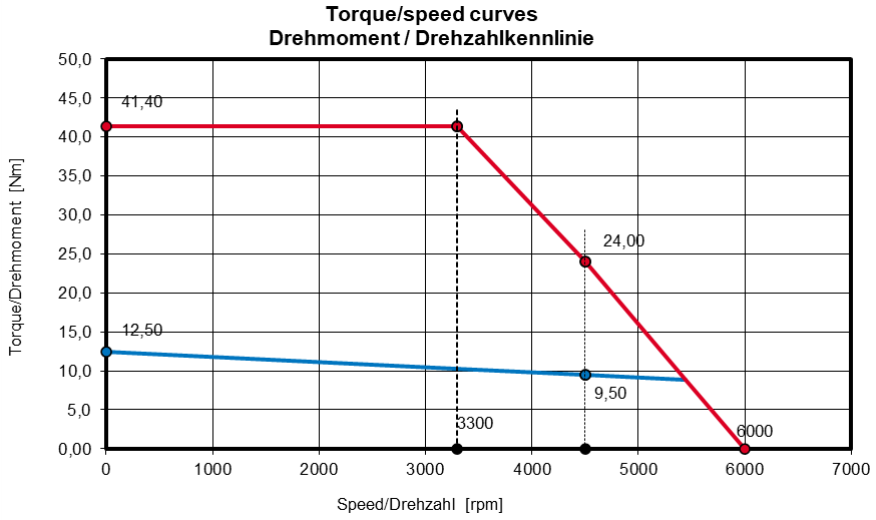
JHQ5
560 V

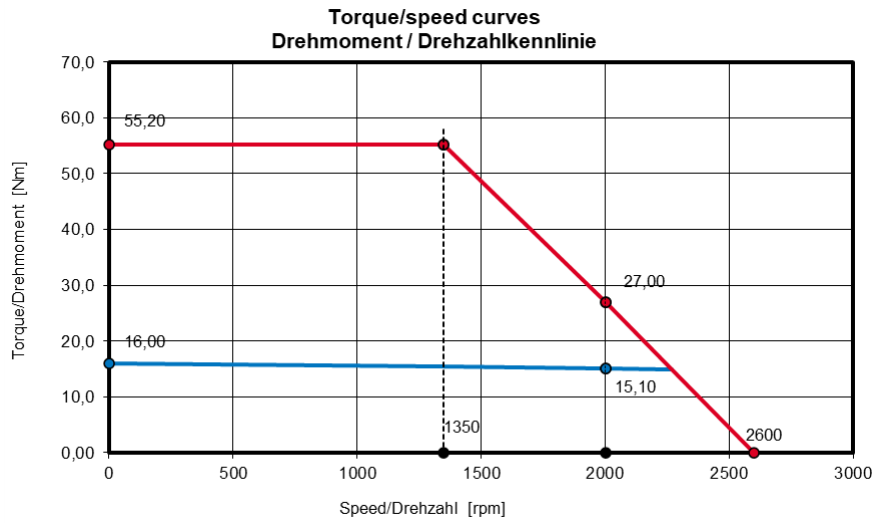
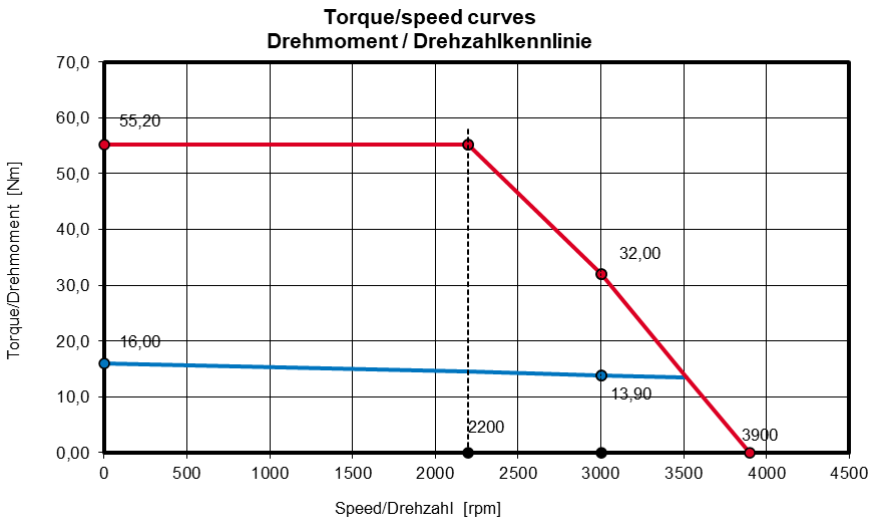
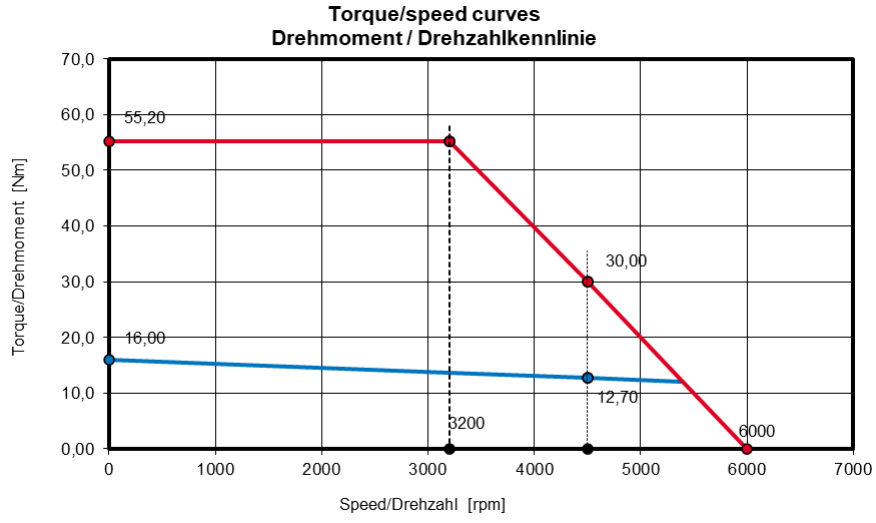
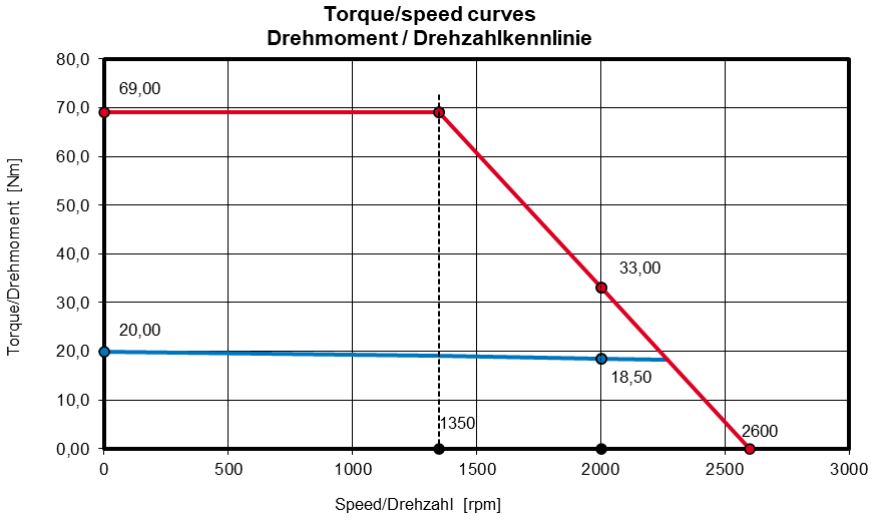
JHQ5-0450-098



JHQ5-0450-066

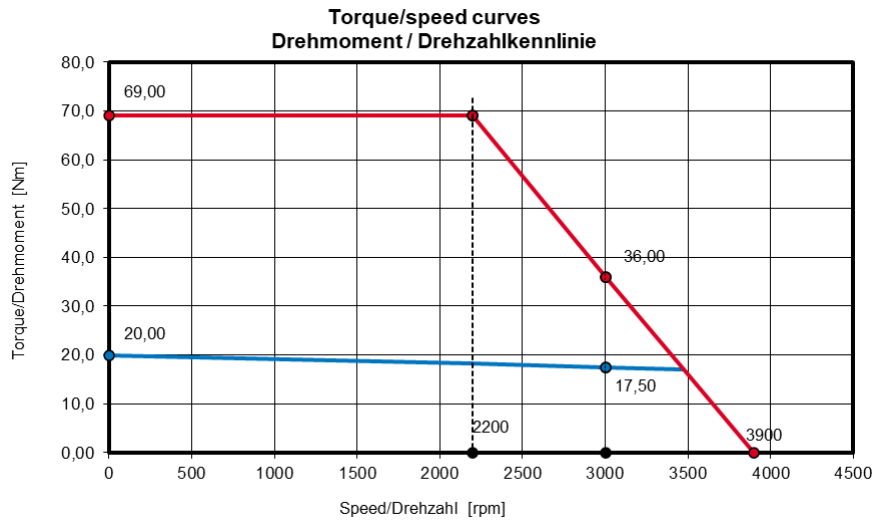


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JHQ5 560 V	JHQ5-1250-098 	JHQ5-1250-066 

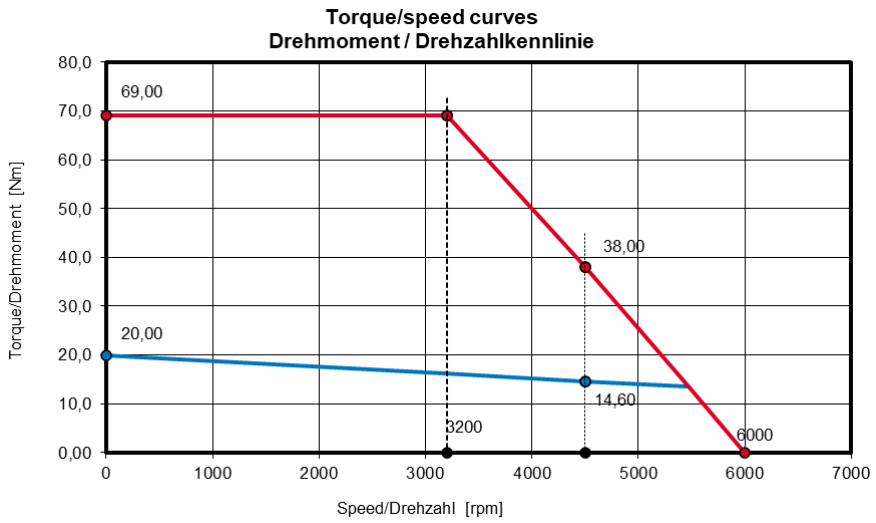
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JHQ5
560 V

JHQ5-2000-098

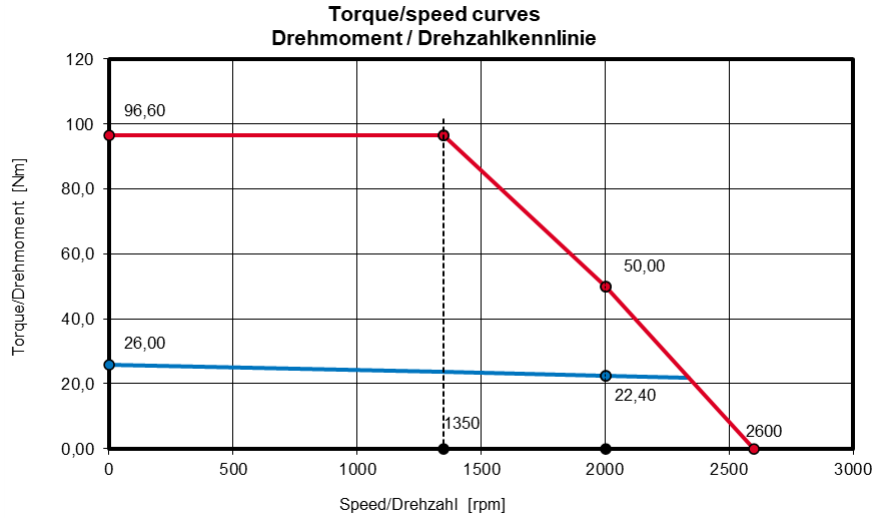


JHQ5-2000-066

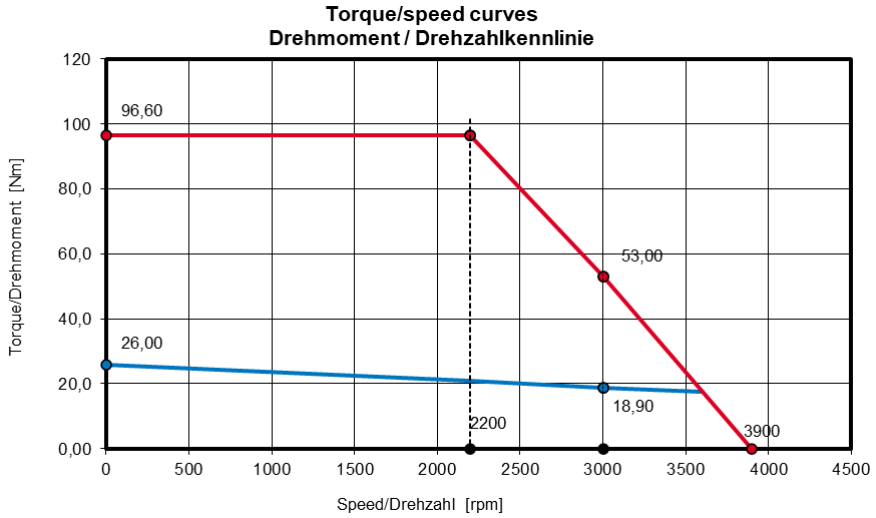


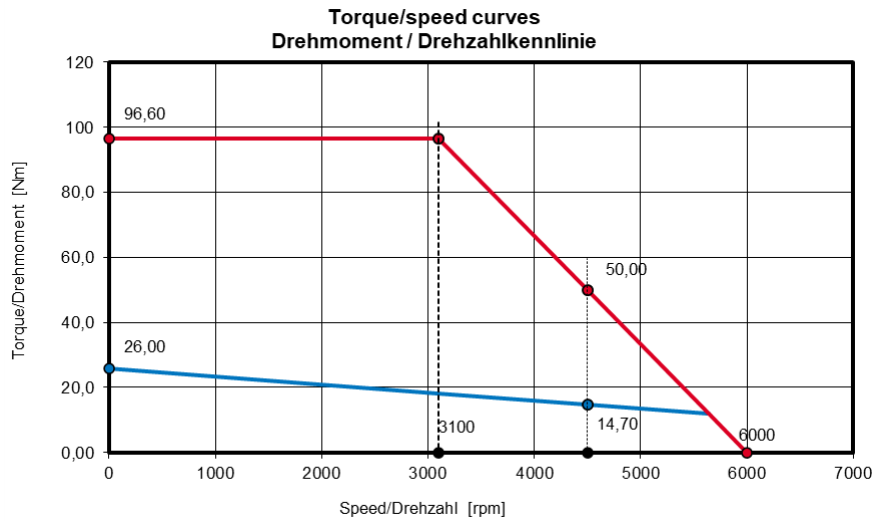
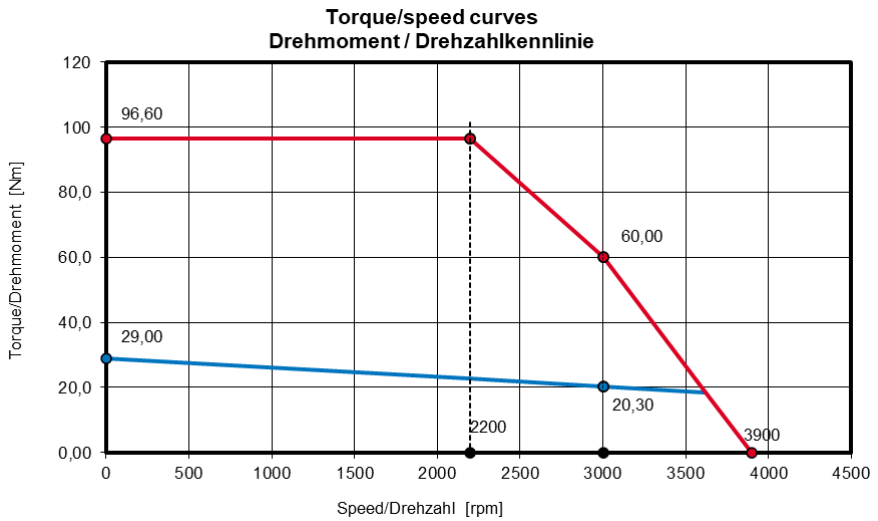
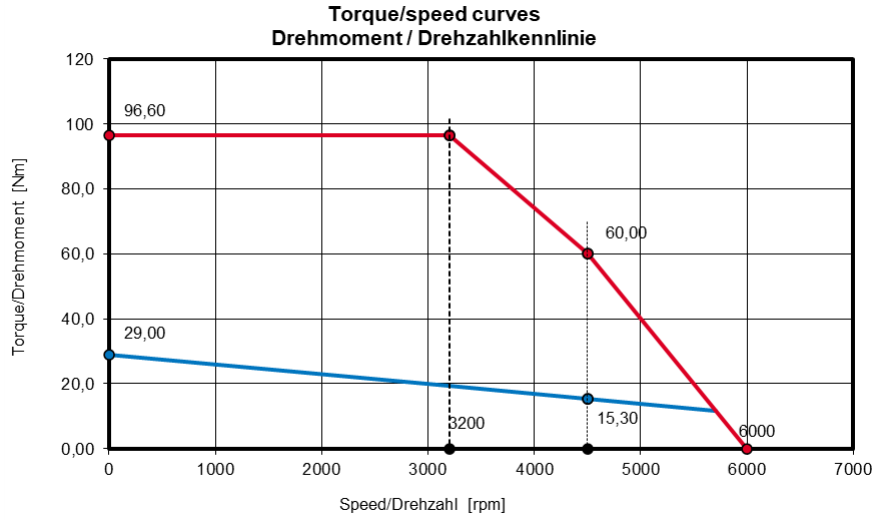
JHQ5
560 V

JHQ5-2600-148



JHQ5-2600-098



JHQ5 560 V	JHQ5-2600-066 	JHQ5-2900-098 
JHQ5 560 V	JHQ5-2900-066 	

5.16 Flange size JHQ51

5.16.1 Dimensions JHQ51

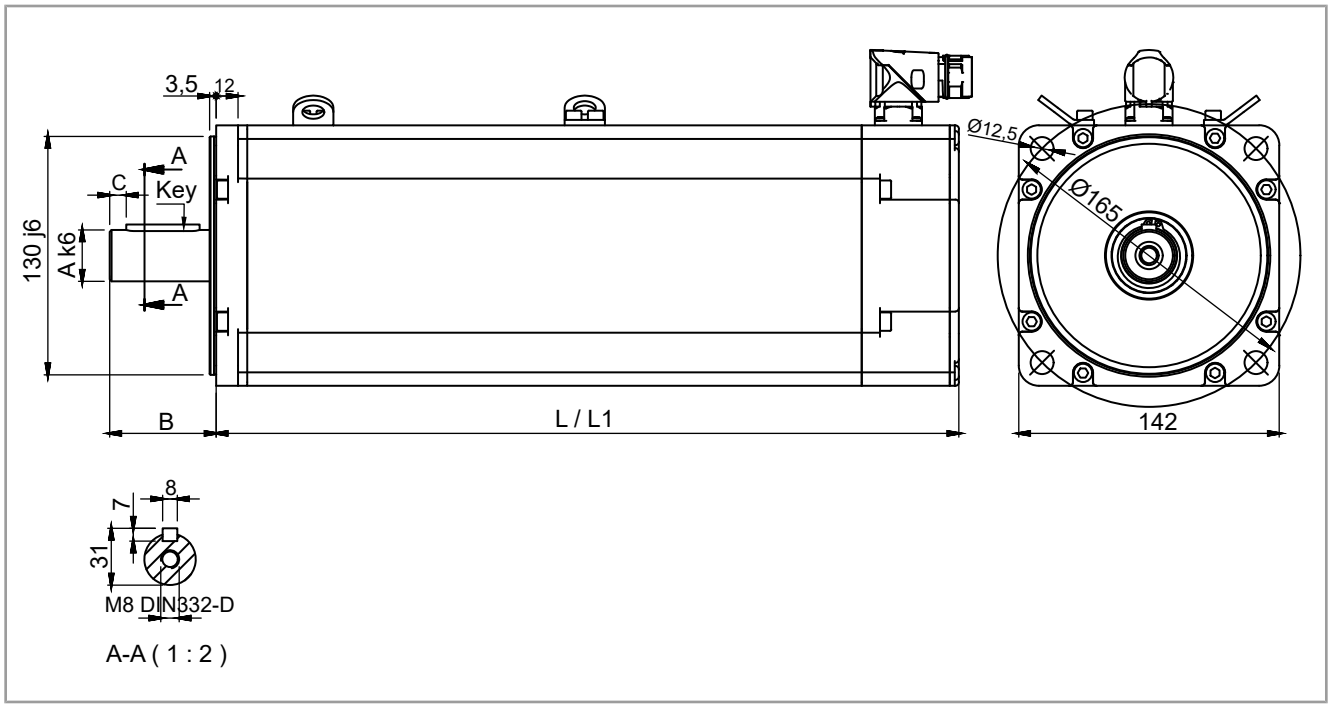


Fig. 22: Dimensions JHQ51 in mm

	P	L	L1	L	L1	L	L1	Mmax	Shaft (AxB)/ feather key/C/ internal thread
Type	**Resolver/SEx37**			**SKx36/SRx50**		**EEx37/EKx36**		**Nm**	**mm**
JHQ51-2900	M23	337.5	372.5	337.5	372.5	337.5	372.5	110	Ø28x58 /8x7x40 /9/M8 DIN 332-D
JHQ51-3800*	M23	405	440	405	440	405	440	151	

Tab. 39: Key

Key:
P = Power connector size
L = Dimension without brake
L1 = Dimension with brake

***Connector size M40:**
Only for motors with a standstill torque M_o = 38 Nm and the rated speed n_n = 4500 rpm.

5.16.2 Technical data of the brake for motor type JHQ51

Parameter	Value
Holding torque M_{BR}	24 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	24 W
Rotor inertia J_{BR}	1.66 kg*cm^2
Weight m_{BR}	2 kg

Tab. 40: Technical data of the brake for motor type JHQ51

5.16.3 Performance data DC link voltage 560 V DC

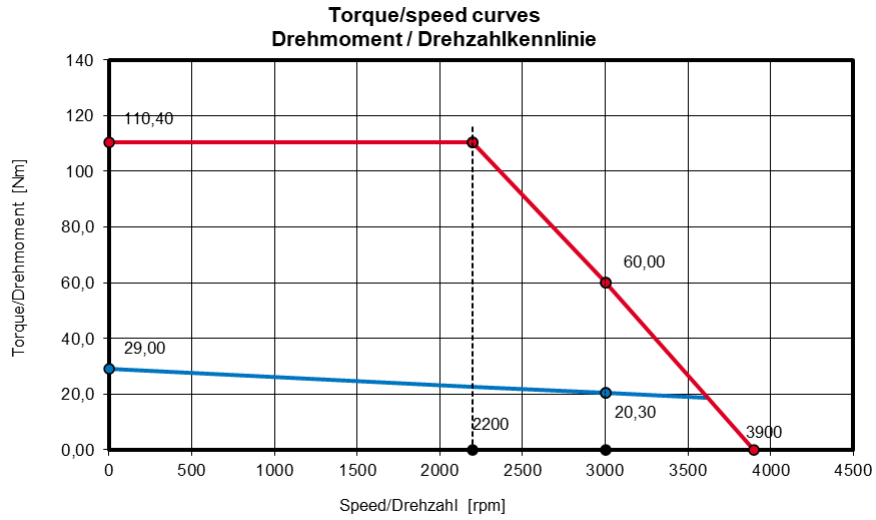
Motor type			JHQ51-2900-098	JHQ51-2900-066	JHQ51-3800-098	JHQ51-3800-066
Nominal speed	N_n	rpm	3000	4500	3000	4500
DC link voltage	U_{dc}	V	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400
Rated motor voltage	U_m	V	296	296	296	296
Rated torque	M_n	Nm	20.3	15.3	24.1	16.8
Rated current	I_n	A	12.5	14.1	14.8	15.5
Continuous stall torque	M_o	Nm	29.0	29.0	38.0	38.0
Continuous stall current	I_o	A	17.8	26.7	23.3	35.0
Max. torque	M_{max}	Nm	110	110	151	151
Max. current	I_{max}	A	79	117	108	161
Max. speed	N_{max}	rpm	6600	6600	6600	6600
Voltage constant	K_E	V/1000	98.4	66.0	98.4	66.0
Torque constant	K_T	Nm/A	1.63	1.09	1.63	1.09
Winding resistance	R_{2ph}	Ω	0.34	0.16	0.26	0.11
Winding inductance	L_{2ph}	mH	4.3	2.0	3.2	1.40
Motor pole count	P_{mot}		8	8	8	8
Idling speed	N_o	rpm	3900	6000	3900	6000
Torque at I_{max}/U_n	M_z	Nm	110	110	151	151
Speed at I_{max}/U_n	N_z	rpm	2200	3200	2200	3200
Max. torque at n_n	M_x	Nm	60	60	84	84
Electrical time constant	T_{el}	ms	12.6	12.5	12.3	12.7
Mechanical time constant	T_{mech}	ms	0.46	0.48	0.48	0.45

Motor type			JHQ51-2900-098	JHQ51-2900-066	JHQ51-3800-098	JHQ51-3800-066
Thermal time constant	T_{th}	min	51	51	55	55
Rotor inertia without brake	J	kg*cm^2	21	21	28	28
Weight without brake	m	kg	23	23	29	29
Axial load	F_A	N	76	76	80	80
Radial load	F_R	N	760	760	800	800

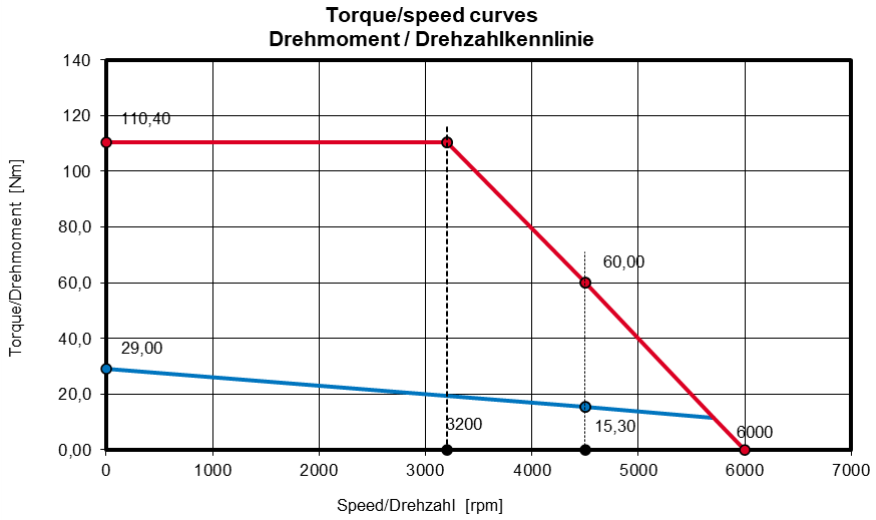
Torque speed characteristics

JHQ51
560 V

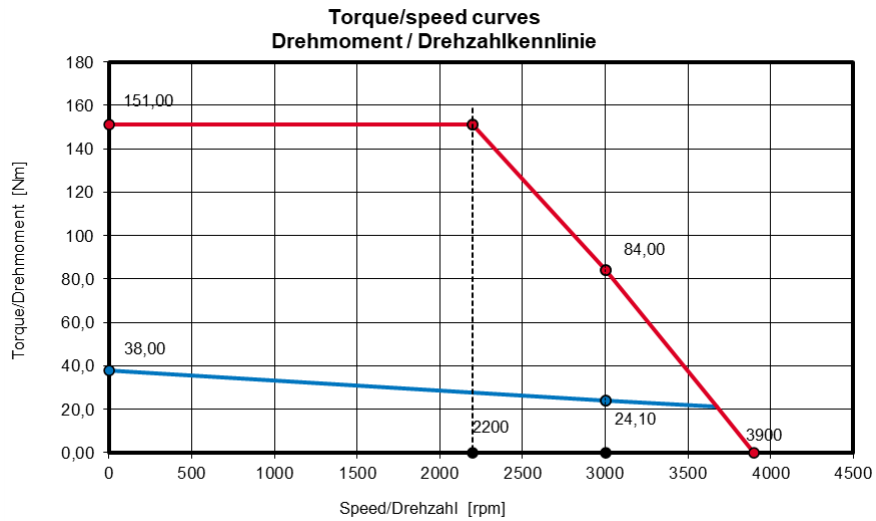
JHQ51-2900-098

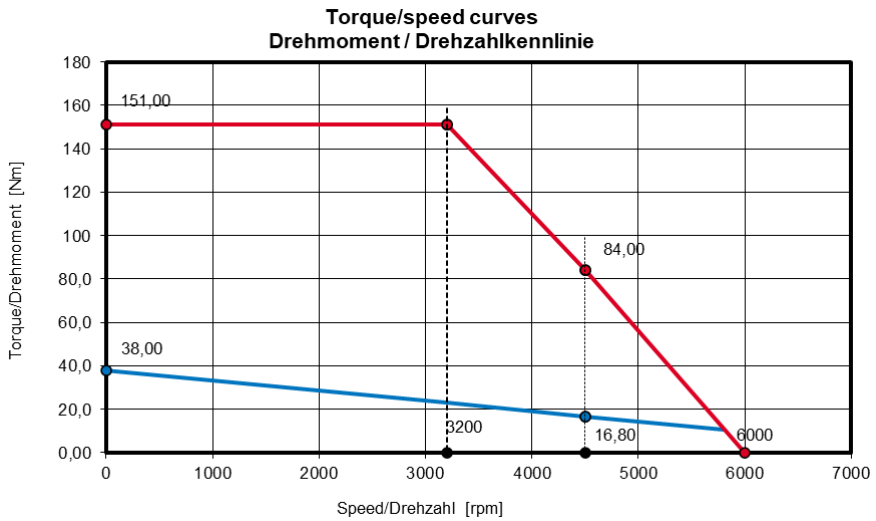


JHQ51-2900-066



JHQ51 560 V	JHQ51-3800-098	JHQ51-3800-066





5.17 Flange size JHQ6

5.17.1 Dimensions JHQ6

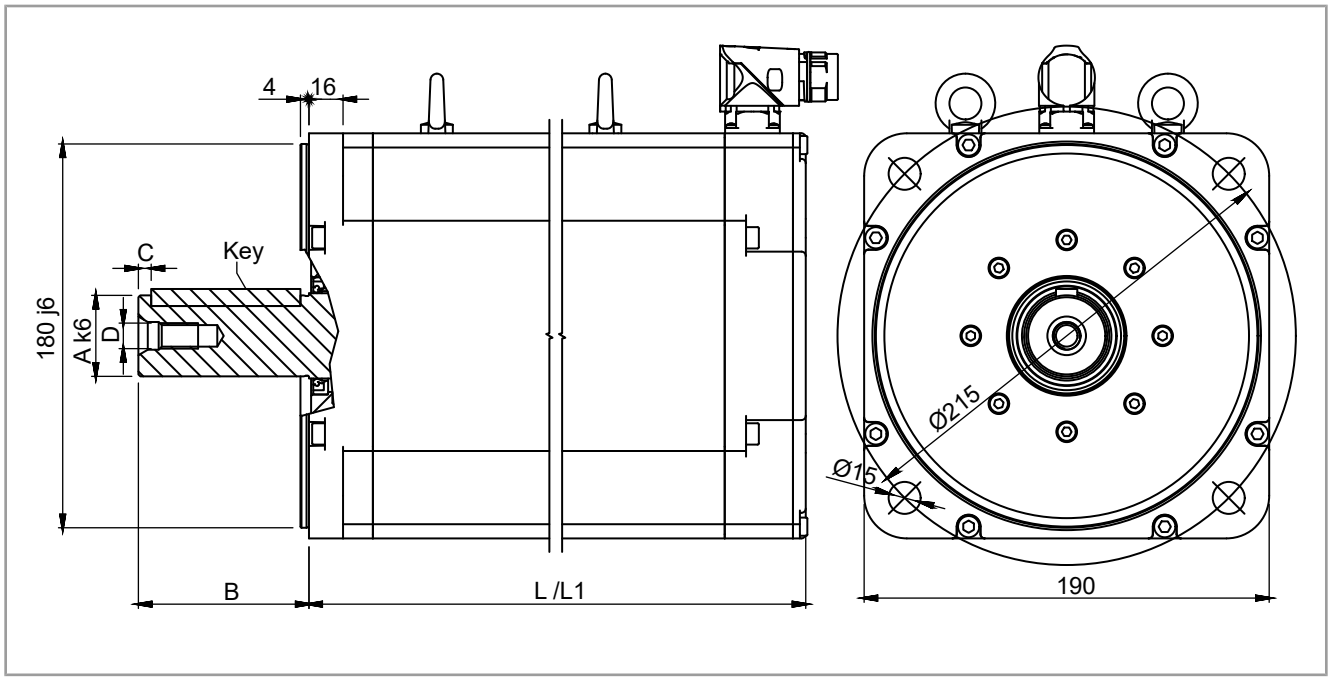


Fig. 23: Dimensions JHQ6 in mm

	P	L	L1	L	L1	L	L1	Shaft (AxB)/D/ feather key/C
Type	**Resolver/SEx37/SKx36**			**SRx50**		**EEx37/EKx36**		**mm**
JHQ6-2000	M23	195	225	223	253	195	225	Ø24x50/ M8 DIN 332-D/ 8x7x40/ 5
JHQ6-2800	M23	217.5	247.5	245.5	275.5	217.5	247.5	

Tab. 41: Dimensions

Key:
P = Power connector size
L = Dimension without brake
L1 = Dimension with brake

5.17.2 Technical data of the brake for motor type JHQ6

Parameter	Value
Holding torque M_{BR}	48 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	20.4 W
Rotor inertia J_{BR}	32 kg*cm^2
Weight m_{BR}	5 kg

Tab. 42: Technical data of the brake for motor type JHQ6

5.17.3 Performance data DC link voltage 560 V DC

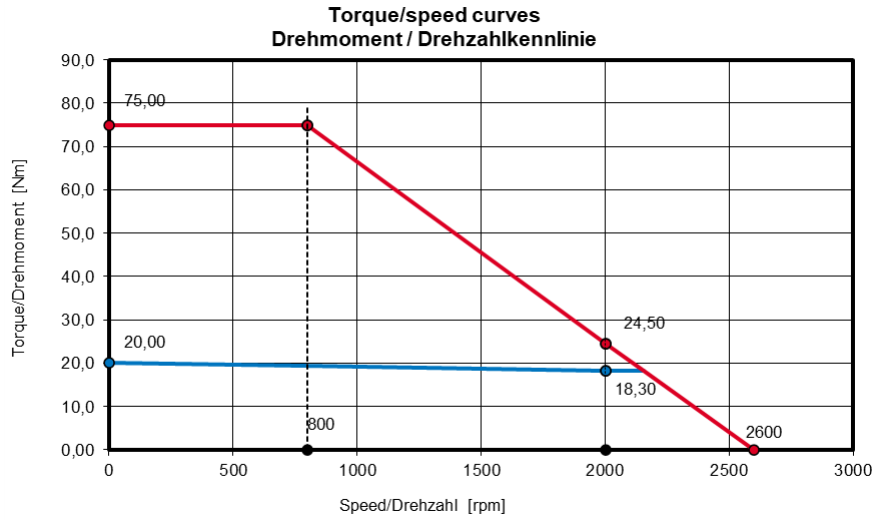
Motor type			JHQ6-2000-148	JHQ6-2000-098	JHQ6-2000-066	JHQ6-2800-148	JHQ6-2800-098	JHQ6-2800-066
Nominal speed	N_n	rpm	2000	3000	4500	2000	3000	4500
DC link voltage	U_{dc}	V	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400	400	400
Rated motor voltage	U_m	V	296	296	296	296	296	296
Rated torque	M_n	Nm	18.3	16.1	11.1	24.7	22.0	16.0
Rated current	I_n	A	7.5	9.9	10.2	10.1	13.5	14.7
Continuous stall torque	M_o	Nm	20.0	20.0	20.0	28.0	28.0	28.0
Continuous stall current	I_o	A	8.2	12.3	18.3	11.4	17.2	25.7
Max. torque	M_{max}	Nm	75	75	75	97	97	97
Max. current	I_{max}	A	44	66	97	56	85	118
Max. speed	N_{max}	rpm	4000	4000	5000	4000	4000	5000
Voltage constant	K_E	V/1000	147.7	98.4	66.0	147.7	98.4	66.0
Torque constant	K_T	Nm/A	2.5	1.63	1.09	2.5	1.63	1.09
Winding resistance	R_{2ph}	Ω	1.78	0.79	0.31	0.90	0.40	0.17
Winding inductance	L_{2ph}	mH	18.7	8.3	3.1	14.2	6.3	2.3
Motor pole count	P_{mot}		10	10	10	10	10	10
Idling speed	N_o	rpm	2600	3850	5700	2600	3850	5700
Torque at I_{max}/U_n	M_z	Nm	75	75	75	97	97	97
Speed at I_{max}/U_n	N_z	rpm	800	1300	2125	700	1200	2125
Max. torque at n_n	M_x	Nm	25	23	28	32	33	43
Electrical time constant	T_{el}	ms	10.5	10.5	10.0	15.8	15.8	13.5
Mechanical time constant	T_{mech}	ms	1.7	1.7	1.5	1.2	1.2	1.1

Motor type			JHQ6-2000-148	JHQ6-2000-098	JHQ6-2000-066	JHQ6-2800-148	JHQ6-2800-098	JHQ6-2800-066
Thermal time constant	T_{th}	min	32	32	32	37	37	37
Rotor inertia without brake	J	kg*cm^2	33	33	33	46	46	46
Weight without brake	m	kg	17.0	17.0	17.0	21	21	21
Axial load	F_A	N	86	86	86	93	93	93
Radial load	F_R	N	860	860	860	930	930	930

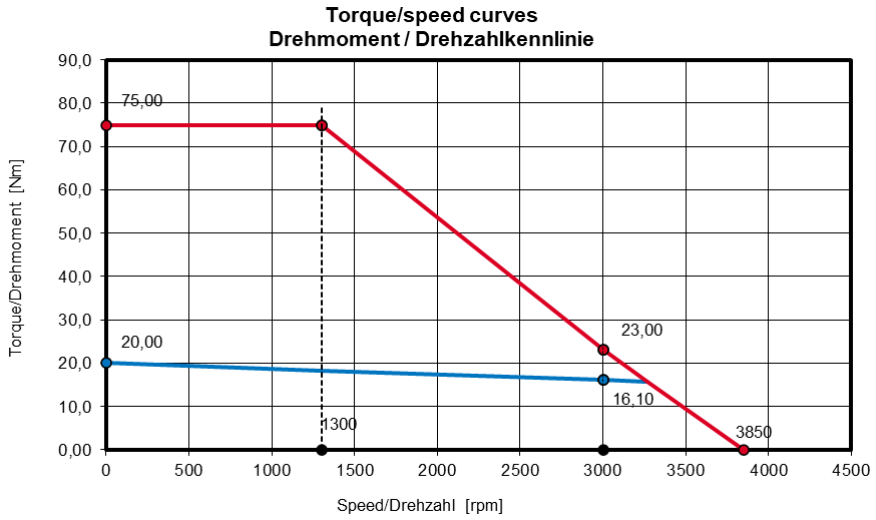
Torque speed characteristics

JHQ6
560 V

JHQ6-2000-148

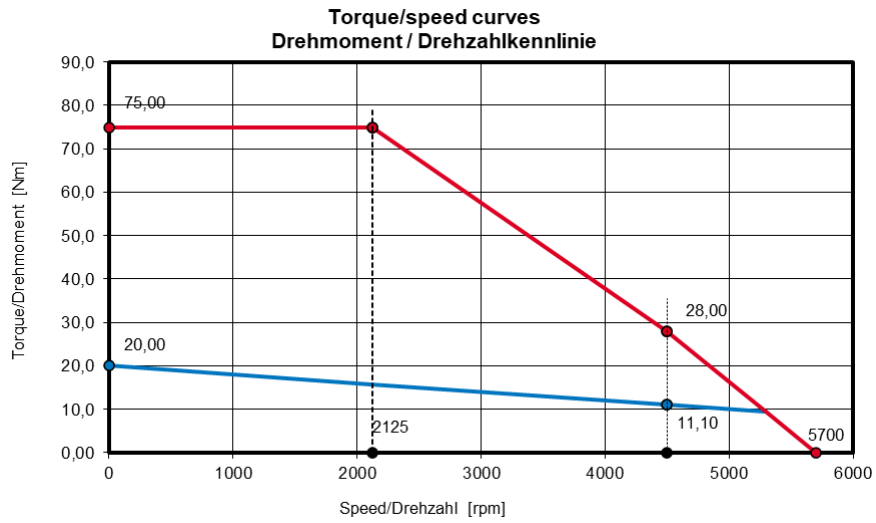


JHQ6-2000-098

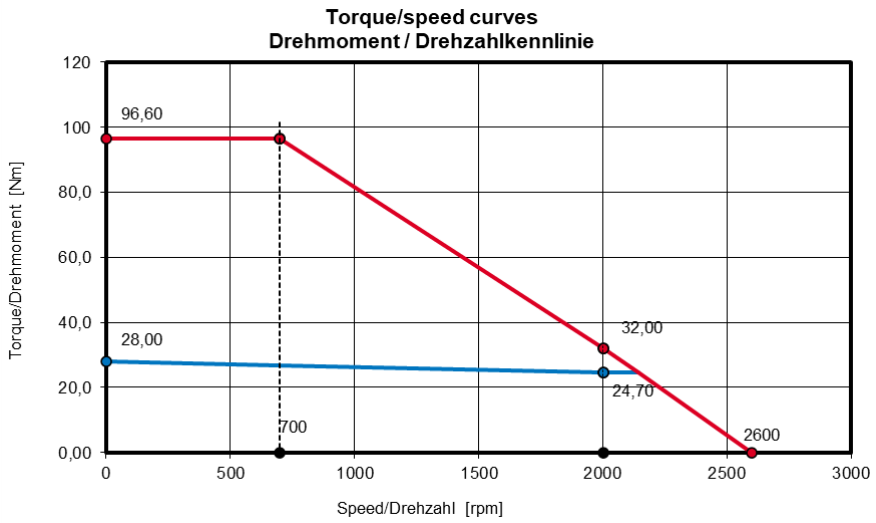


JHQ6
560 V

JHQ6-2000-066

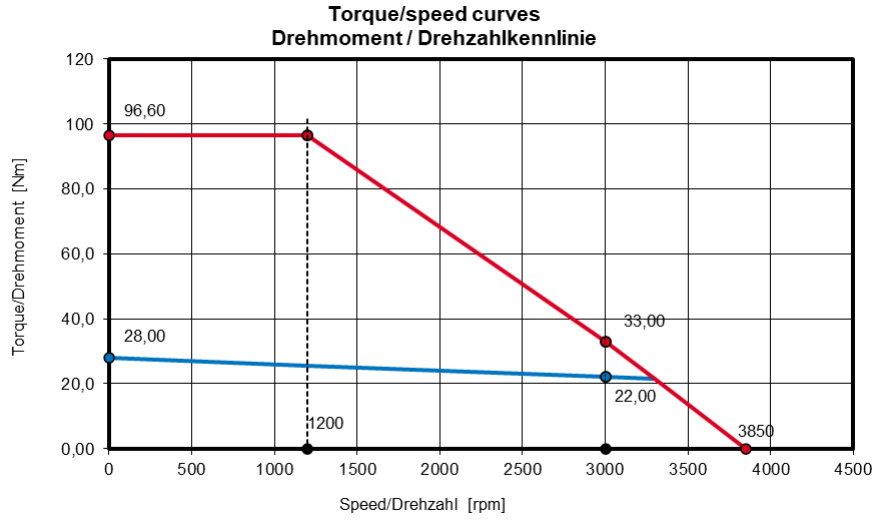


JHQ6-2800-148

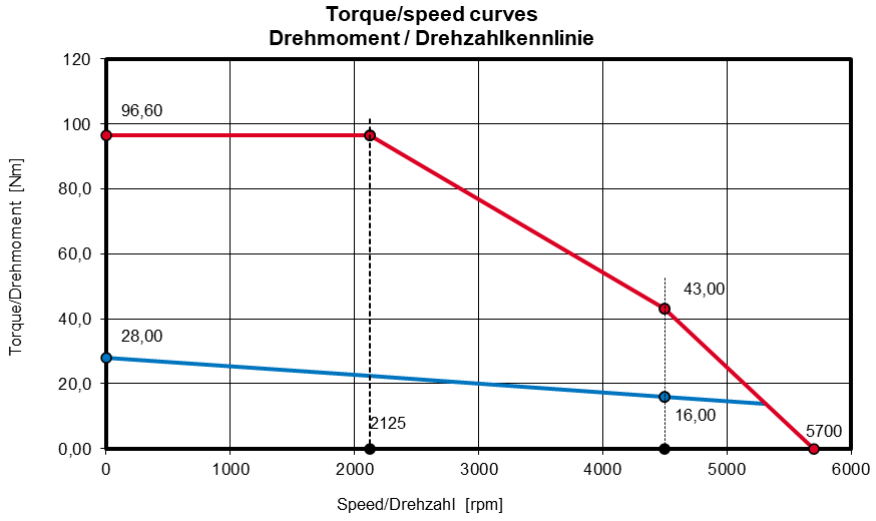


JHQ6
560 V

JHQ6-2800-098



JHQ6-2800-066



5.18 Flange size JHQ7

5.18.1 Dimensions JHQ7

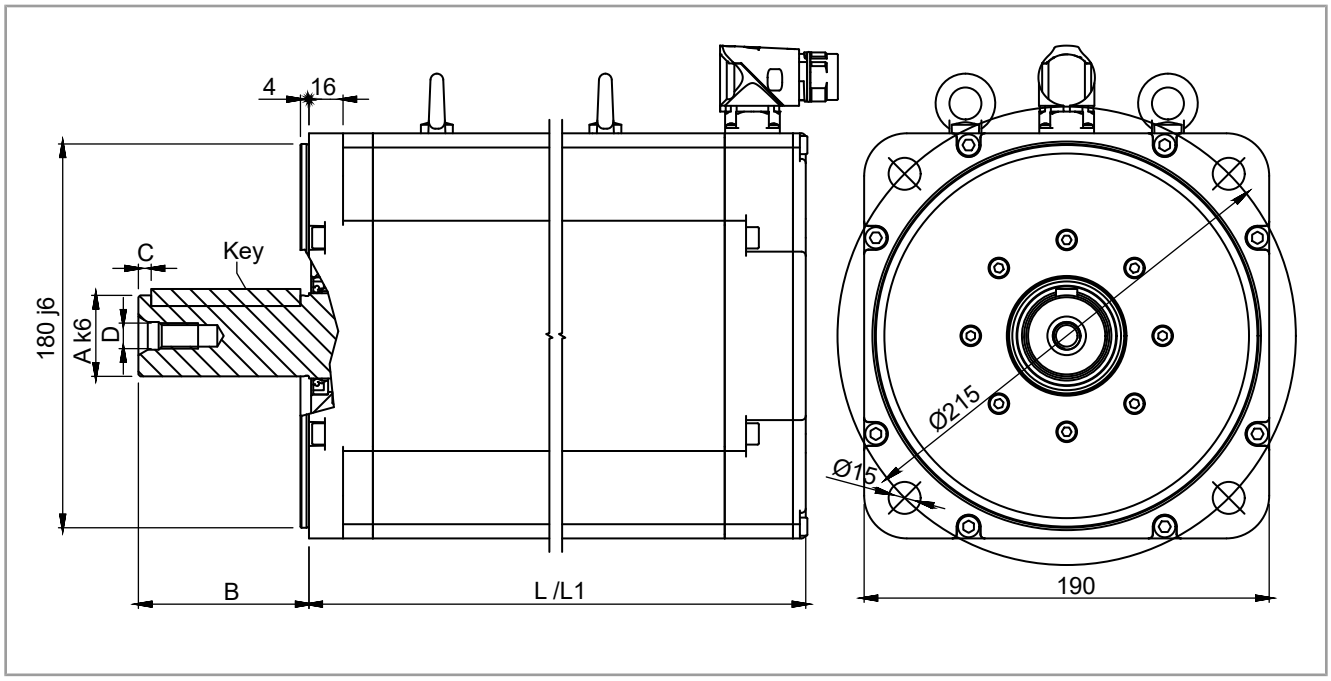


Fig. 24: Dimensions JHQ7 in mm

	P	L	L1	L	L1	L	L1	Shaft (AxB)/D/ feather key/C
Type	**Resolver/SEx37/SKx36**			**SRx50**		**EEx37/EKx36**		**mm**
JHQ7-3600	M23	240	270	268	298	240	270	Ø28x58/ M10 DIN 332-D/ 8x7x40/9
JHQ7-4200	M23	262.5	292.5	290.5	320.5	262.5	292.5	

Tab. 43: Dimensions

Key:
P = Power connector size
L = Dimension without brake
L1 = Dimension with brake

5.18.2 Technical data of the brake for motor type JHQ7

Parameter	Value
Holding torque M_{BR}	48 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	20.4 W
Rotor inertia J_{BR}	32 kg*cm^2
Weight m_{BR}	5 kg

Tab. 44: Technical data of the brake for motor type JHQ7

5.18.3 Performance data DC link voltage 560 V DC

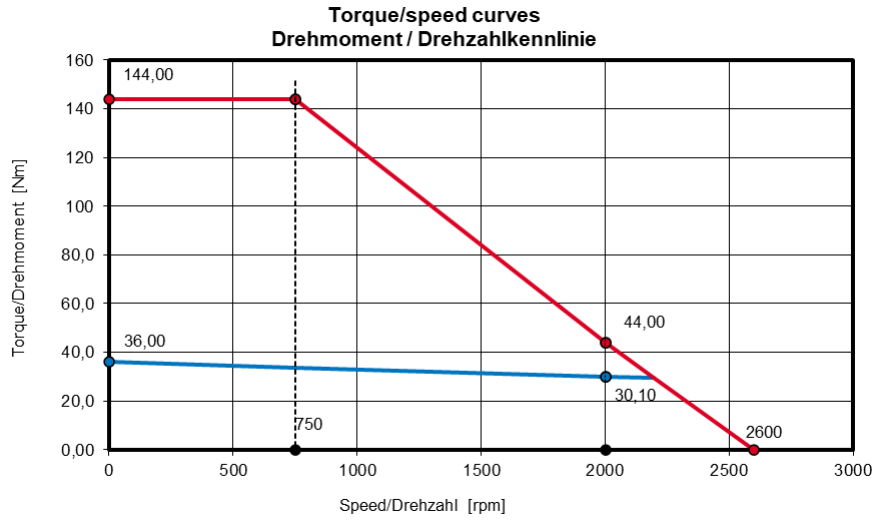
Motor type			JHQ7-3600-148	JHQ7-3600-098	JHQ7-4200-148	JHQ7-4200-098
Nominal speed	N_n	rpm	2000	3000	2000	3000
DC link voltage	U_{dc}	V	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400
Rated motor voltage	U_m	V	296	296	296	296
Rated torque	M_n	Nm	30.1	28.0	36.1	32.5
Rated current	I_n	A	12.3	17.2	14.8	19.9
Continuous stall torque	M_o	Nm	36.0	36.0	42.0	42.0
Continuous stall current	I_o	A	14.7	22.1	17.2	25.8
Max. torque	M_{max}	Nm	144	144	151	151
Max. current	I_{max}	A	84	126	88	133
Max. speed	N_{max}	rpm	4000	4000	4000	4000
Voltage constant	K_E	V/1000	147.7	98.4	147.7	98.4
Torque constant	K_T	Nm/A	2.5	1.63	2.5	1.63
Winding resistance	R_{2ph}	Ω	0.63	0.28	0.50	0.22
Winding inductance	L_{2ph}	mH	11.0	4.9	8.8	3.9
Motor pole count	P_{mot}		10	10	10	10
Idling speed	N_o	rpm	2600	3800	2600	3800
Torque at I_{max}/U_n	M_z	Nm	144	144	151	151
Speed at I_{max}/U_n	N_z	rpm	750	1200	750	1200
Max. torque at n_n	M_x	Nm	44	42	59	56
Electrical time constant	T_{el}	ms	17.5	17.5	17.6	17.7
Mechanical time constant	T_{mech}	ms	1.1	1.1	1.1	1.1

Motor type			JHQ7-3600-148	JHQ7-3600-098	JHQ7-4200-148	JHQ7-4200-098
Thermal time constant	T_{th}	min	41	41	46	46
Rotor inertia without brake	J	kg*cm^2	60	60	74	74
Weight without brake	m	kg	25	25	30	30
Axial load	F_A	N	100	100	107	107
Radial load	F_R	N	1000	1000	1070	1070

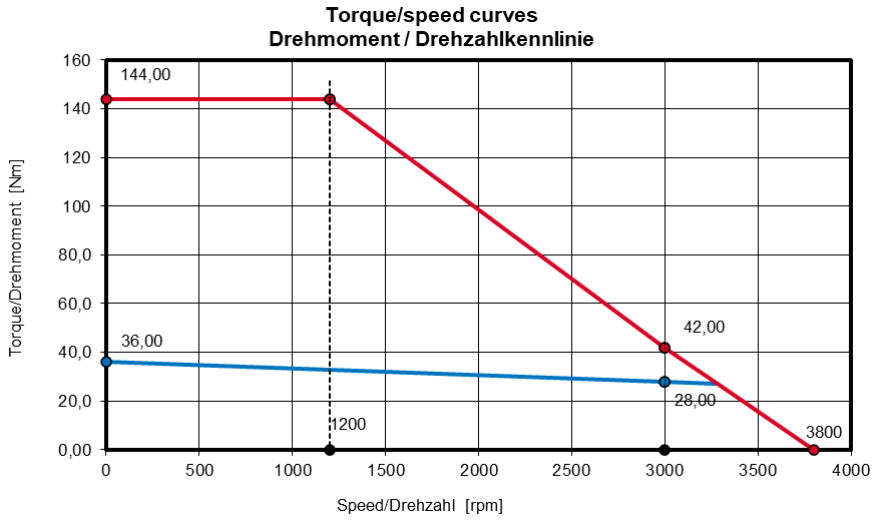
Torque speed characteristics

JHQ7
560 V

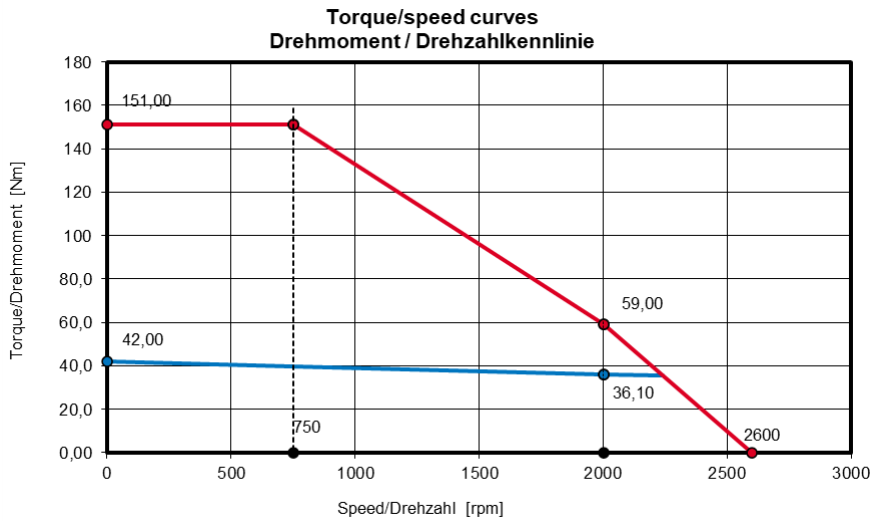
JHQ7-3600-148

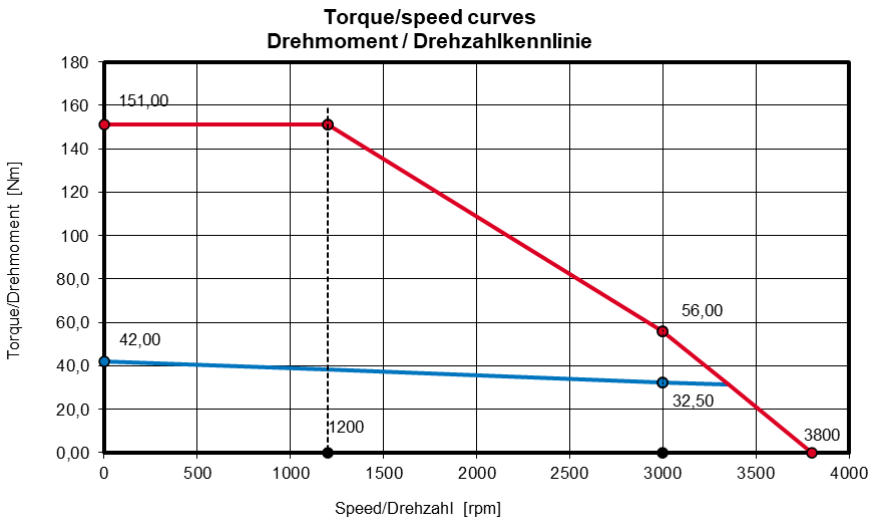


JHQ7-3600-098



JHQ7 560 V	JHQ7-4200-148	JHQ7-4200-098





5.19 Flange size JHQ71

5.19.1 Dimensions JHQ71

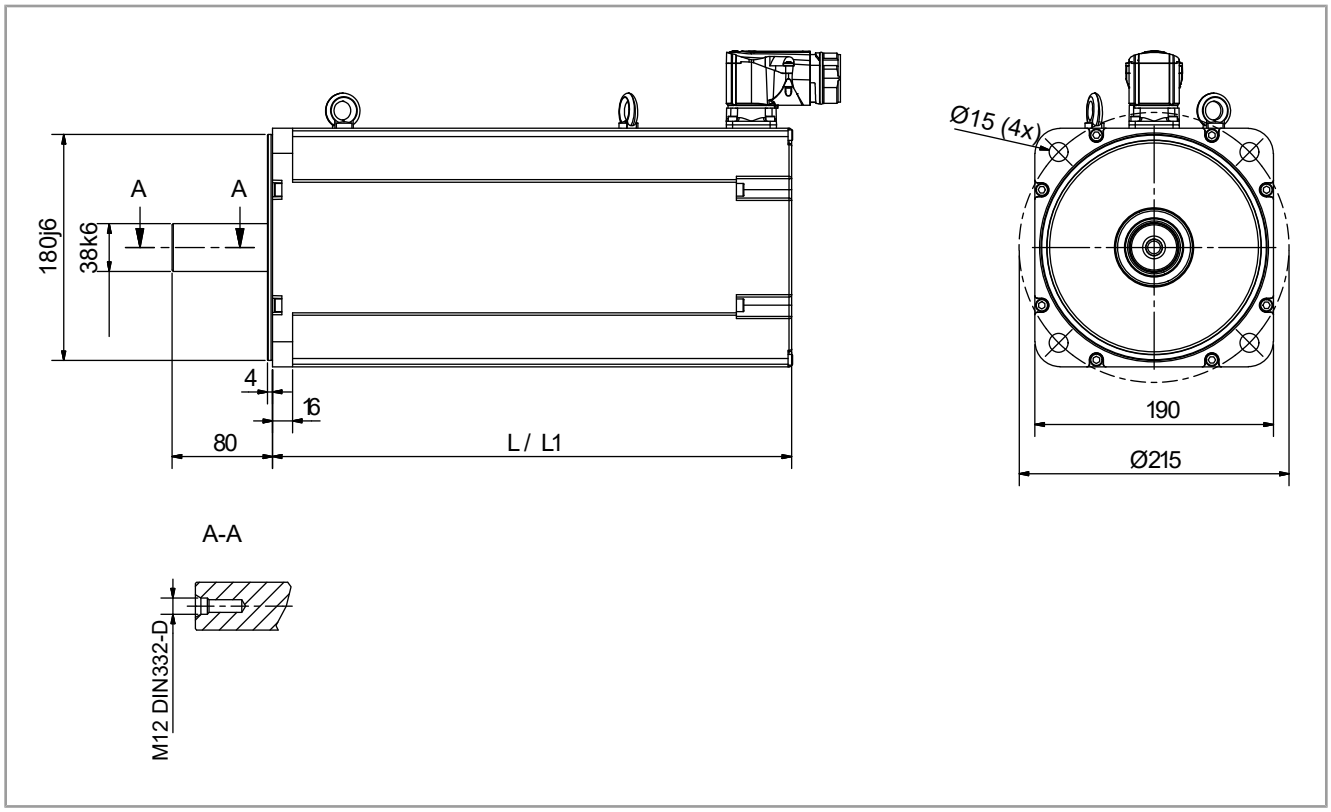


Fig. 25: Dimensions JHQ71 in mm

	P	L	L1	L	L1	L	L1	Shaft (AxB)/ feather key
Type	**Resolver/SEx37/SKx36**			**SRx50**		**EEx37/EKx36**		**mm**
JHQ71-5600	M23[1] M40	307.5[2]	337.5[2]	307.5[3]	337.5[2]	307.5[2]	337.5[2]	Ø38x80/ 10x8x70
JHQ71-6800	M40	368.5	398.5	368.5	398.5	368.5	398.5	
JHQ71-8000	M40	413.5	443.5	413.5	443.5	413.5	443.5	

Tab. 45: Dimensions

Key:
P = Power connector size
L = Dimension without brake
L1 = Dimension with brake

[1])Connector size M23 only for motors with a standstill torque M_o = 56 Nm and the rated speed n_n = 2000 rpm, M_{max} = 230 Nm.

[2])With connector size M40, the motor has an additional length of +16 mm.

[3])With connector size M40, the motor has an additional length of +12 mm.

5.19.2 Technical data of the brake for motor type JHQ71

Parameter	Value
Holding torque M_{BR}	48 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	20.4 W
Rotor inertia J_{BR}	32 kg*cm^2
Weight m_{BR}	5 kg

Tab. 46: Technical data of the brake for motor type JHQ71

5.19.3 Performance data DC link voltage 560 V DC

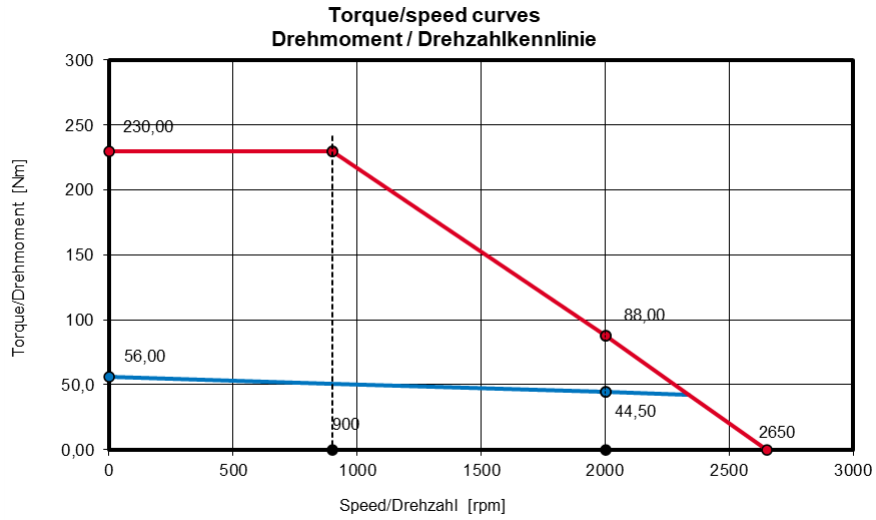
Motor type			JHQ71-5600-148	JHQ71-5600-098	JHQ71-6800-148	JHQ71-6800-098	JHQ71-8000-148	JHQ71-8000-098
Nominal speed	N_n	rpm	2000	3000	2000	3000	2000	3000
DC link voltage	U_{dc}	V	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400	400	400
Rated motor voltage	U_m	V	296	296	296	296	296	296
Rated torque	M_n	Nm	44.5	37.0	51	40.9	58	44.0
Rated current	I_n	A	18.2	22.7	20.8	25.1	23.6	27.0
Continuous stall torque	M_o	Nm	56	56	68	68	80	80
Continuous stall current	I_o	A	22.9	34.4	27.8	41.7	32.7	49.1
Max. torque	M_{max}	Nm	230	230	322	322	396	396
Max. current	I_{max}	A	134	201	188	282	231	347
Max. speed	N_{max}	rpm	4000	4000	4000	4000	4000	4000
Voltage constant	K_E	V/1000	147.7	98.4	147.7	98.4	147.7	98.4
Torque constant	K_T	Nm/A	2.5	1.63	2.5	1.63	2.5	1.63
Winding resistance	R_{2ph}	Ω	0.31	0.15	0.23	0.10	0.18	0.08
Winding inductance	L_{2ph}	mH	5.6	2.7	4.7	2.1	4.1	1.80
Motor pole count	P_{mot}		10	10	10	10	10	10
Idling speed	N_o	rpm	2650	3900	2650	3900	2550	3900
Torque at I_{max}/U_n	M_z	Nm	230	230	322	322	396	396
Speed at I_{max}/U_n	N_z	rpm	900	1300	800	1200	750	1170
Max. torque at n_n	M_x	Nm	88	82	114	110	122	127
Electrical time constant	T_{el}	ms	18.1	18.0	20	21	23	23
Mechanical time constant	T_{mech}	ms	0.92	1.00	0.87	0.85	0.82	0.82

Motor type			JHQ71-5600-148	JHQ71-5600-098	JHQ71-6800-148	JHQ71-6800-098	JHQ71-8000-148	JHQ71-8000-098
Thermal time constant	T_{th}	min	56	56	65	65	74	74
Rotor inertia without brake	J	kg*cm^2	102	102	130	130	158	158
Weight without brake	m	kg	38	38	47	47	55	55
Axial load	F_A	N	114	114	121	121	128	128
Radial load	F_R	N	1140	1140	1210	1210	1280	1280

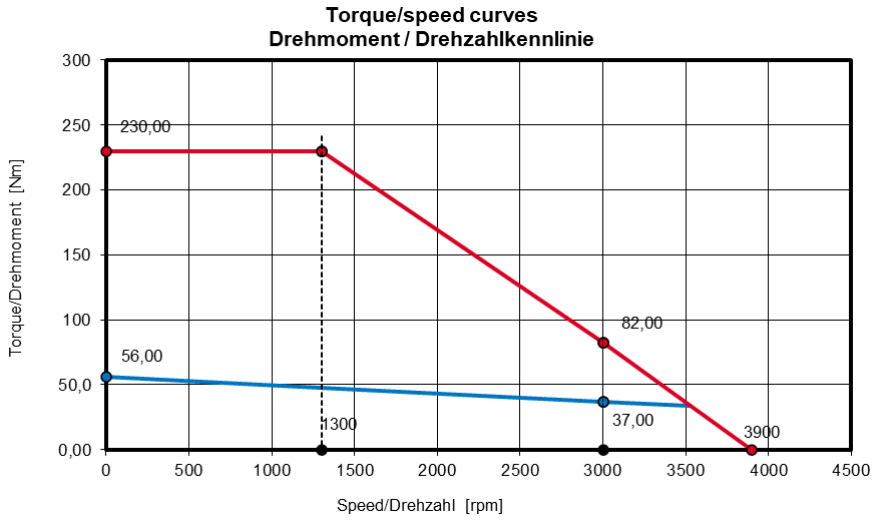
Torque speed characteristics

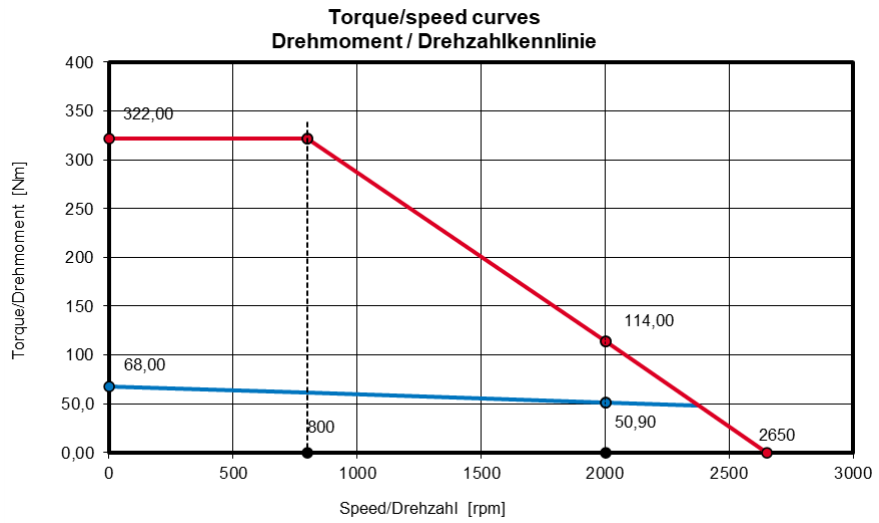
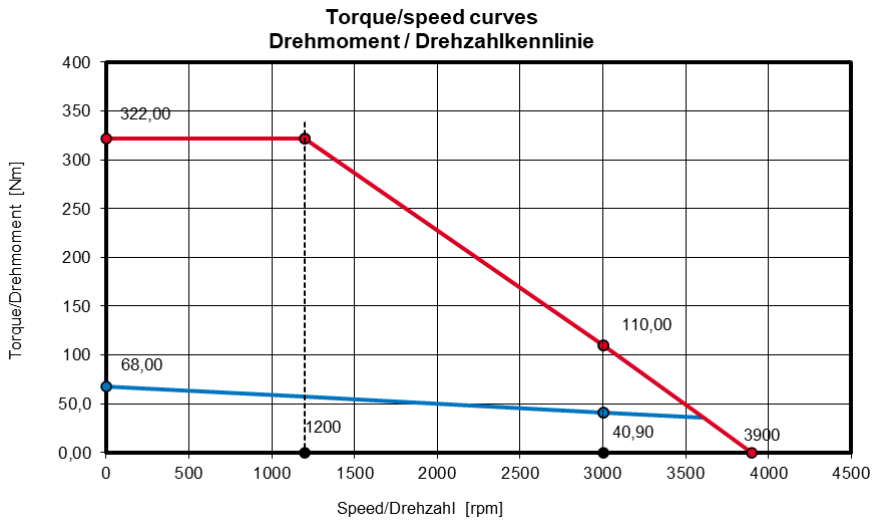
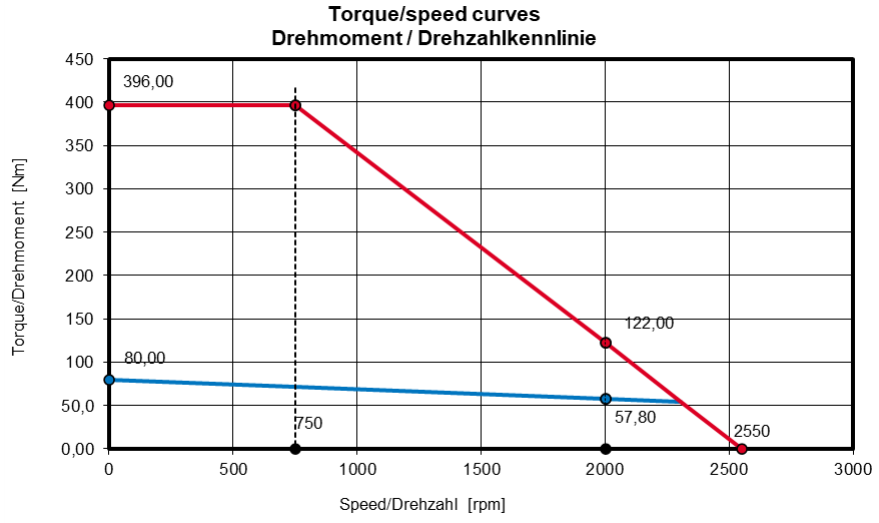
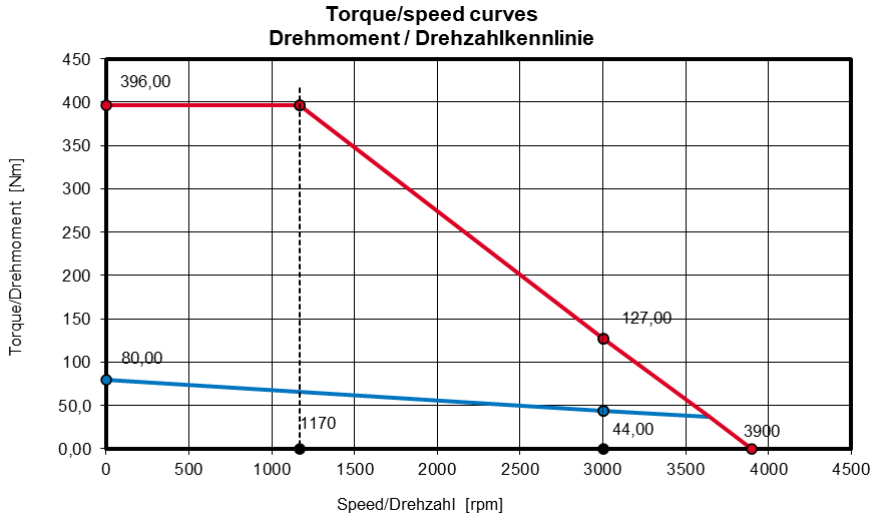
JHQ71
560 V

JHQ71-5600-148



JHQ71-5600-098



JHQ71 560 V	JHQ71-6800-148 	JHQ71-6800-098 
JHQ71 560 V	JHQ71-8000-148 	JHQ71-8000-098 

5.20 Flange size JHQ8

5.20.1 Dimensions JHQ8

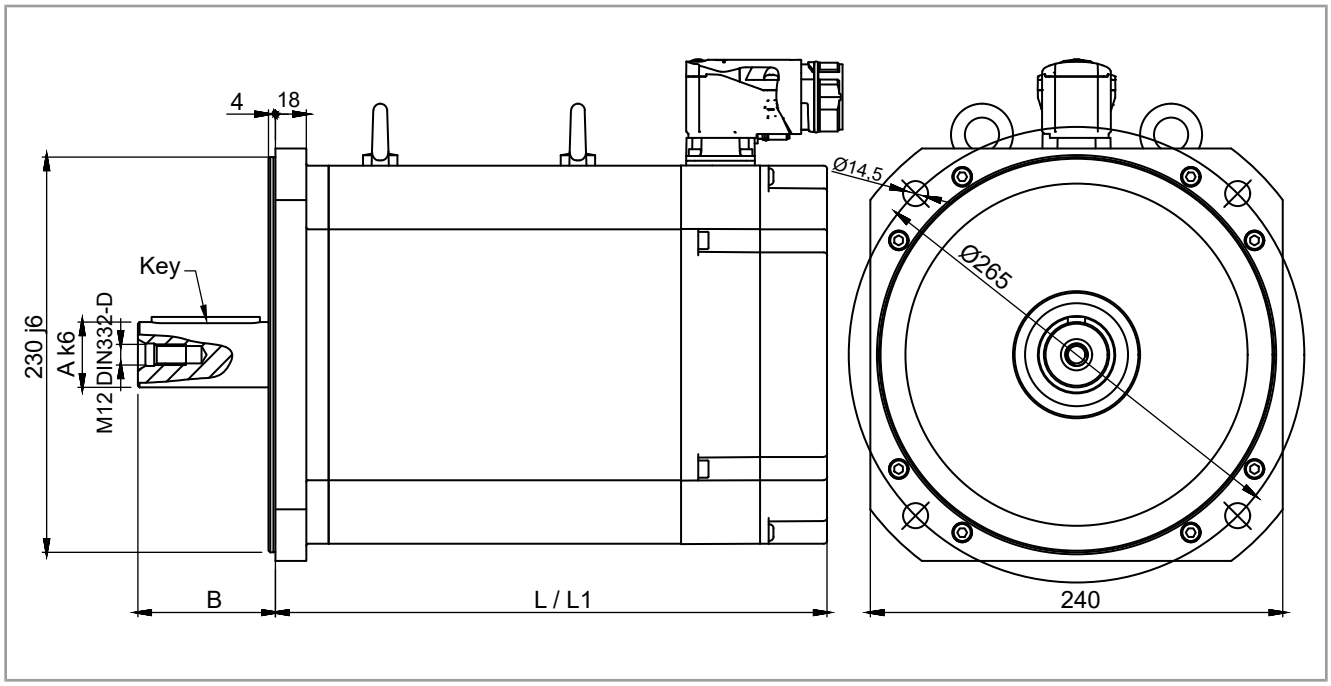


Fig. 26: Dimensions JHQ8 in mm

	P	L	L1	L	L1	L	L1	Shaft/ feather key/inter- nal thread
Type	**Resolver/SEx37**			**SKx36/SRx50**		**EEx37/EKx36**		**mm**
JHQ8-4200	M40	293	343	321	371	321	371	Ø38x80/10x8x63
JHQ8-5800	M40	333	383	361	411	361	411	
JHQ8-7300	M40	373	423	401	451	401	451	
JHQ8-8100	M40	393	443	421	471	421	471	Ø42x110/12x8x63
JHQ8-9800	M40	433	483	461	511	461	511	
JHQ8-12000	M40	493	543	521	571	521	571	

Tab. 47: Dimensions

Key:
P = Power connector size
L = Dimension without brake
L1 = Dimension with brake

5.20.2 Technical data of the brake for motor type JHQ8

Parameter	Value
Holding torque M_{BR}	145 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	50 W
Rotor inertia J_{BR}	53 kg*cm^2
Weight m_{BR}	7 kg

Tab. 48: Technical data of the brake for motor type JHQ8

5.20.3 Performance data DC link voltage 560 V DC

Motor type			JHQ8-4200-148	JHQ8-4200-098	JHQ8-5800-148	JHQ8-5800-098	JHQ8-7300-148	JHQ8-7300-098	JHQ8-8100-148	JHQ8-8100-098
Nominal speed	N_n	rpm	2000	3000	2000	3000	2000	3000	2000	3000
DC link voltage	U_{dc}	V	560	560	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400	400	400	400	400
Rated motor voltage	U_m	V	296	296	296	296	296	296	296	296
Rated torque	M_n	Nm	32.5	27.5	43.0	38.2	54	48.9	60	54
Rated current	I_n	A	13.3	16.9	17.6	23.4	21.9	30.0	24.6	32.8
Continuous stall torque	M_o	Nm	42.0	42.0	58	58	73	73	81	81
Continuous stall current	I_o	A	17.2	25.8	23.7	35.6	29.9	44.8	33.1	49.7
Max. torque	M_{max}	Nm	120	120	162	162	204	204	231	231
Max. current	I_{max}	A	60	90	84	127	109	163	121	181
Max. speed	N_{max}	rpm	3600	3600	3600	3600	3600	3600	3600	3600
Voltage constant	K_E	V/1000	147.7	98.4	147.7	98.4	147.7	98.4	147.7	98.4
Torque constant	K_T	Nm/A	2.4	1.63	2.4	1.63	2.4	1.63	2.4	1.63
Winding resistance	R_{2ph}	Ω	0.53	0.23	0.36	0.13	0.24	0.10	0.22	0.10
Winding inductance	L_{2ph}	mH	12.7	5.4	8.6	3.2	7.3	2.6	6.5	2.9
Motor pole count	P_{mot}		6	6	6	6	6	6	6	6
Idling speed	N_o	rpm	2700	3600	2750	3600	2750	3600	2750	3600
Torque at I_{max}/U_n	M_z	Nm	120	120	162	162	204	204	231	231
Speed at I_{max}/U_n	N_z	rpm	1350	2100	1350	2300	1350	2300	1300	2000
Max. torque at n_n	M_x	Nm	65	69	92	110	110	135	126	125
Electrical time constant	T_{el}	ms	24	23	24	25	30	26	30	29
Mechanical time constant	T_{mech}	ms	1.0	0.98	0.94	0.76	0.80	0.74	0.81	0.82

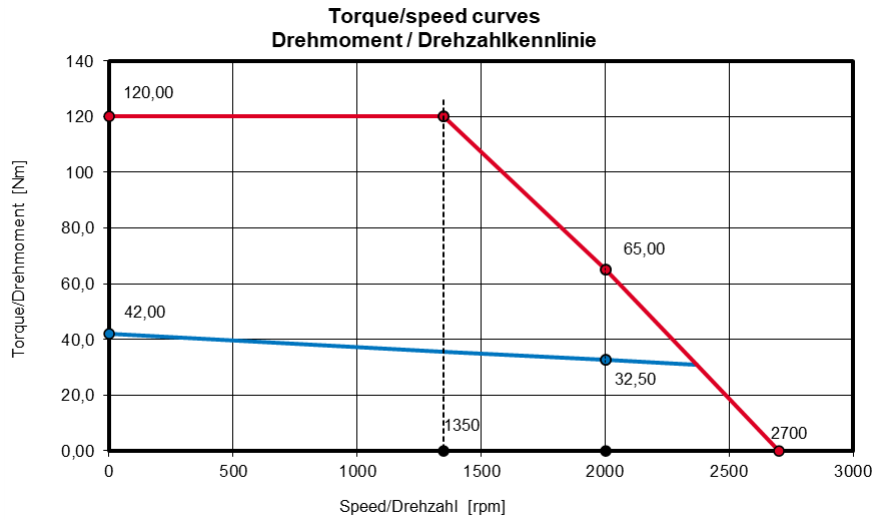
Motor type			JHQ8-4200-148	JHQ8-4200-098	JHQ8-5800-148	JHQ8-5800-098	JHQ8-7300-148	JHQ8-7300-098	JHQ8-8100-148	JHQ8-8100-098
Thermal time constant	T_{th}	min	65	65	90	90	114	114	70	70
Rotor inertia without brake	J	kg*cm^2	65	65	90	90	114	114	126	126
Weight without brake	m	kg	48	48	55	55	62	62	67	67
Axial load	F_A	N	315	315	323	323	332	332	332	332
Radial load	F_R	N	3150	3150	3230	3230	3320	3320	3320	3320

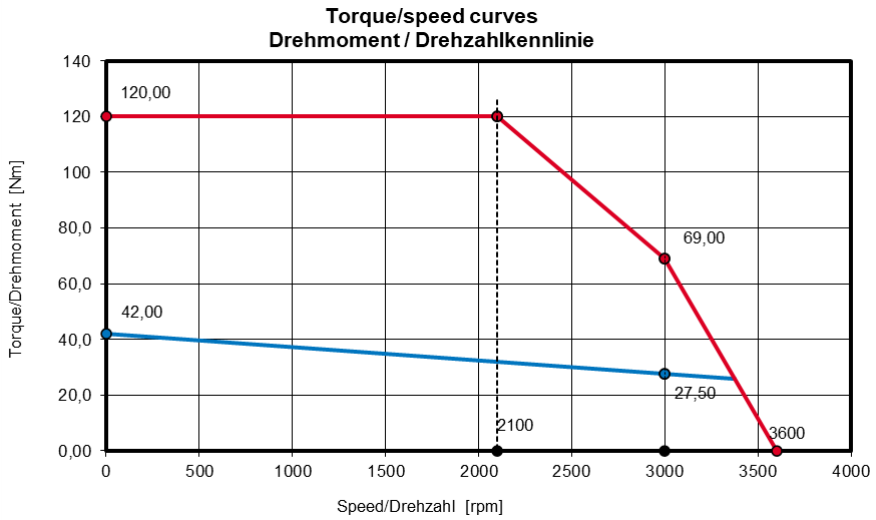
Motor type			JHQ8-9800-148	JHQ8-9800-098	JHQ8-12000-148	JHQ8-12000-098
Nominal speed	N_n	rpm	2000	3000	2000	3000
DC link voltage	U_{dc}	V	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400
Rated motor voltage	U_m	V	296	296	296	296
Rated torque	M_n	Nm	73	61	86	67
Rated current	I_n	A	29.7	37.1	35.0	41.1
Continuous stall torque	M_o	Nm	98	98	120	120
Continuous stall current	I_o	A	40.1	60	49.1	74
Max. torque	M_{max}	Nm	280	280	345	345
Max. current	I_{max}	A	145	217	181	271
Max. speed	N_{max}	rpm	3600	3600	3600	3600
Voltage constant	K_E	V/1000	147.7	98.4	147.7	98.4
Torque constant	K_T	Nm/A	2.4	1.63	2.4	1.63
Winding resistance	R_{2ph}	Ω	0.17	0.08	0.12	0.05
Winding inductance	L_{2ph}	mH	4.9	2.2	3.9	1.70
Motor pole count	P_{mot}		6	6	6	6

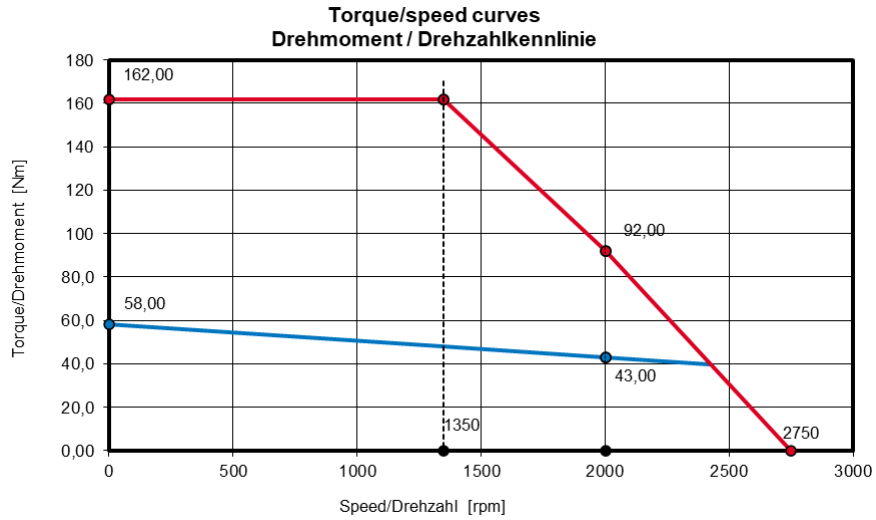
Motor type			**JHQ8-9800-148**	**JHQ8-9800-098**	**JHQ8-12000-148**	**JHQ8-12000-098**
Idling speed	N_o	rpm	2750	3600	2750	3600
Torque at I_{max}/U_n	M_z	Nm	280	280	345	345
Speed at I_{max}/U_n	N_z	rpm	1400	2200	1400	2200
Max. torque at n_n	M_x	Nm	165	165	210	210
Electrical time constant	T_{el}	ms	29	28	33	34
Mechanical time constant	T_{mech}	ms	0.74	0.78	0.67	0.63
Thermal time constant	T_{th}	min	80	80	90	90
Rotor inertia without brake	J	$kg*cm^2$	150	150	192	192
Weight without brake	m	kg	76	76	92	92
Axial load	F_A	N	334	334	340	340
Radial load	F_R	N	3340	3340	3400	3400

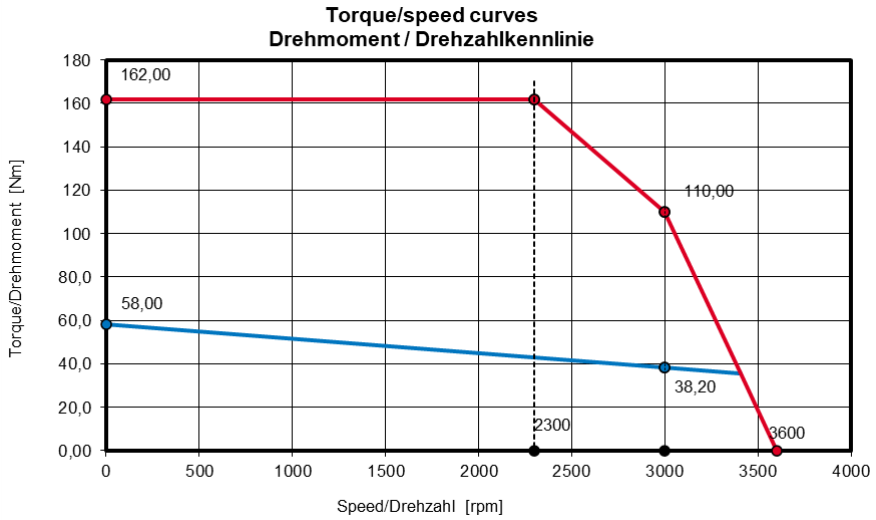
Torque speed characteristics

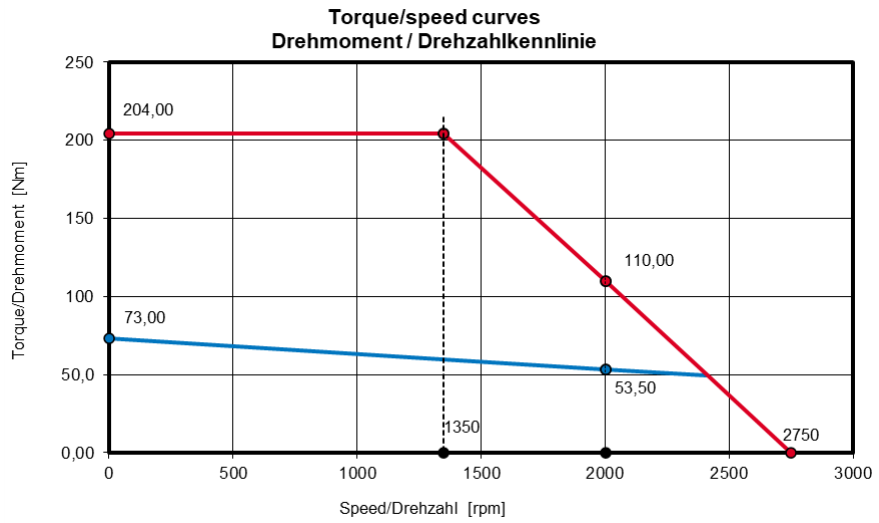
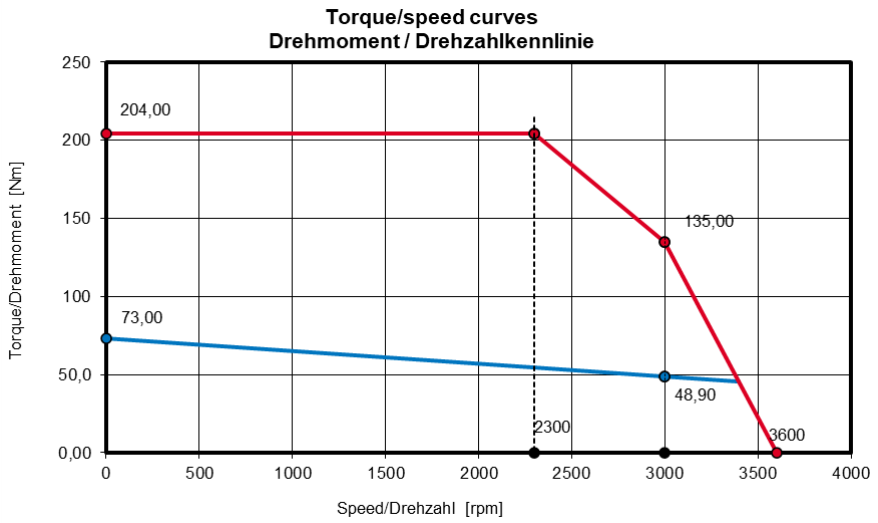
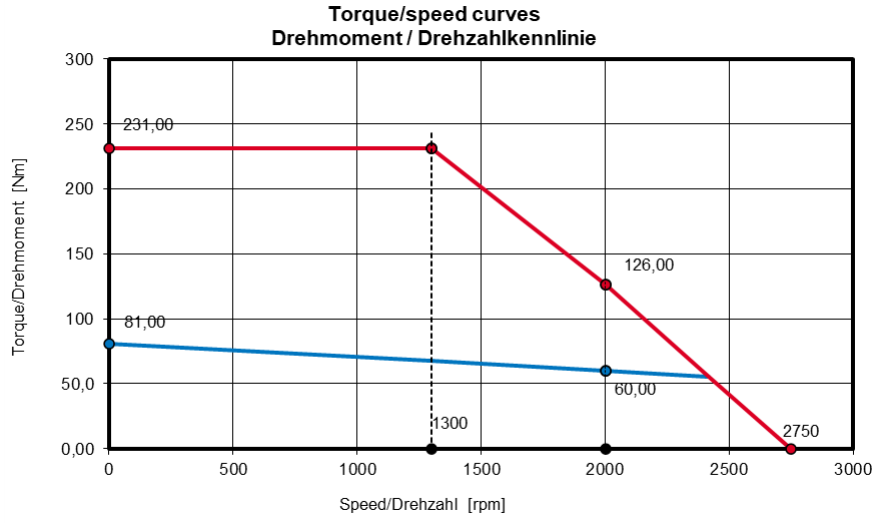
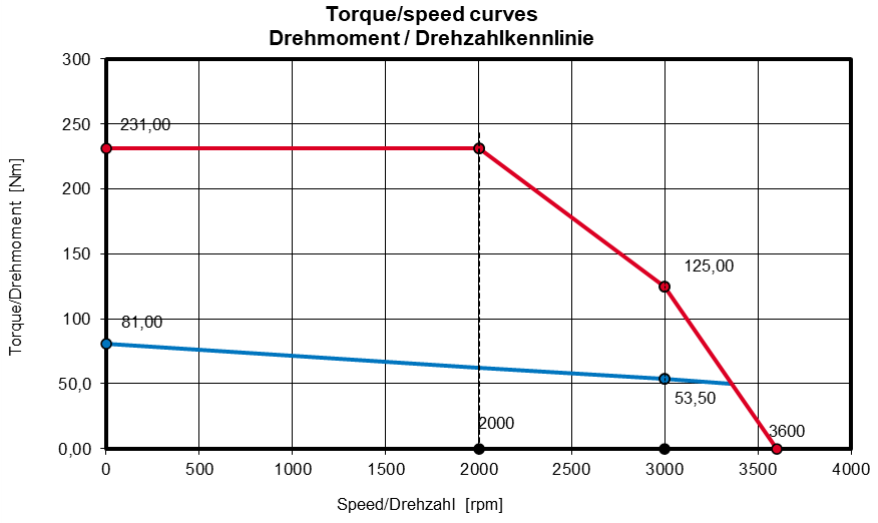
JHQ8 560 V	JHQ8-4200-148	JHQ8-4200-098
JHQ8 560 V	JHQ8-5800-148	JHQ8-5800-098

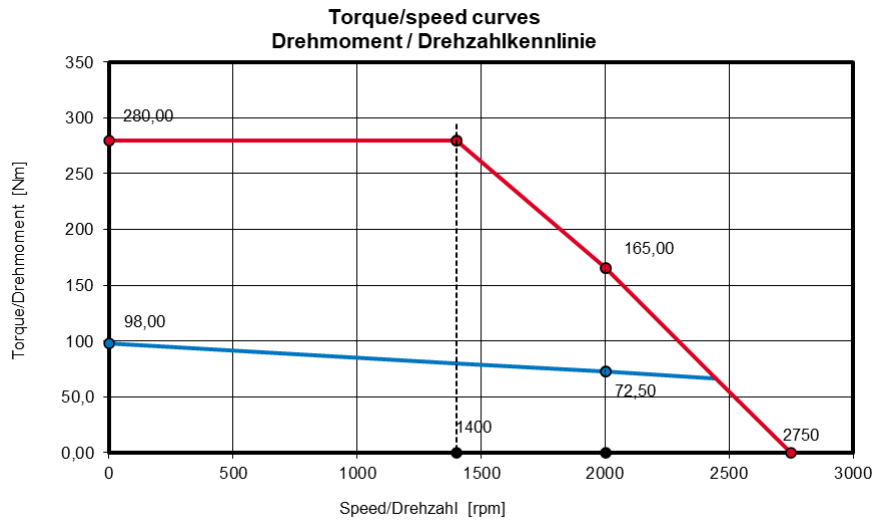
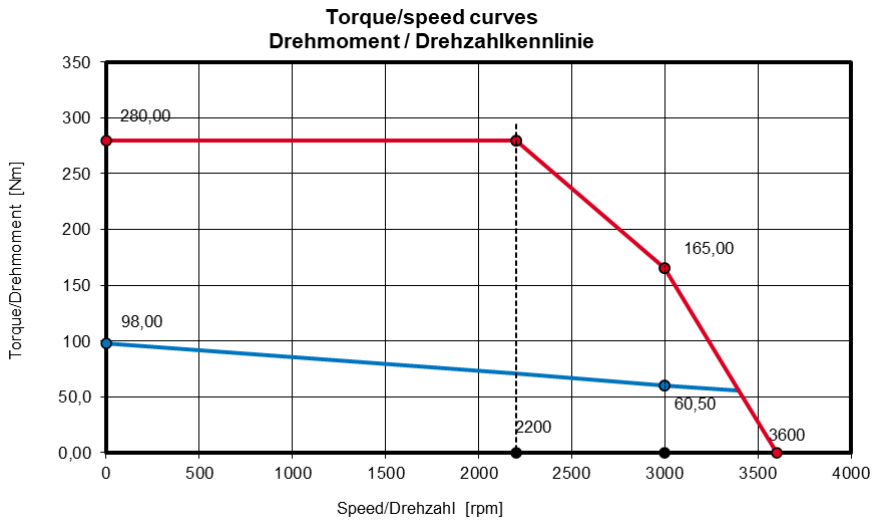
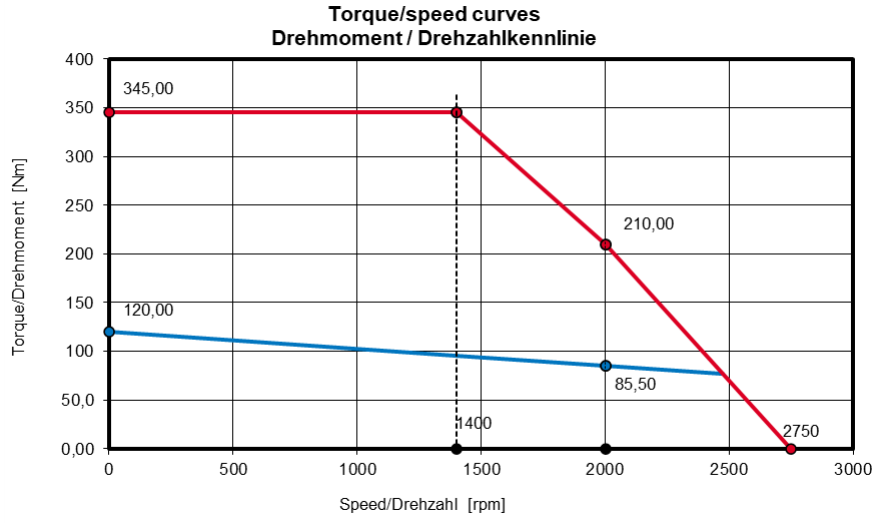
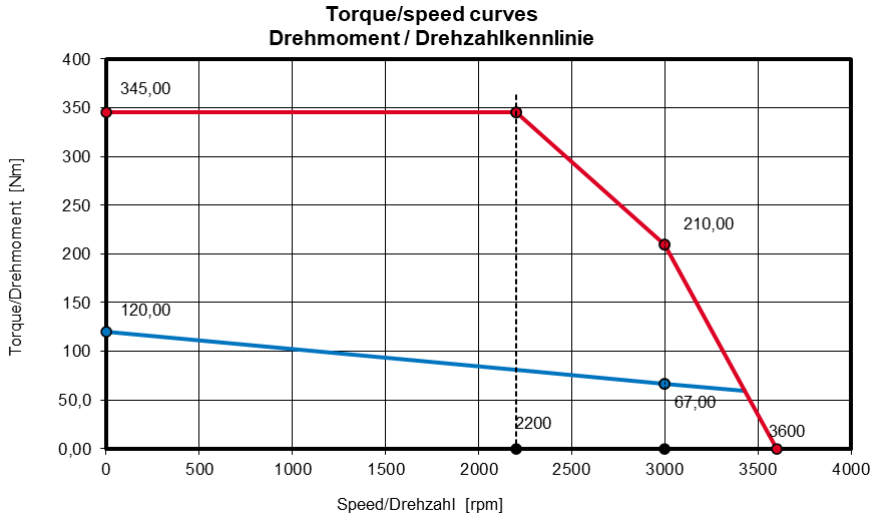








JHQ8 560 V	JHQ8-7300-148 	JHQ8-7300-098 
JHQ8 560 V	JHQ8-8100-148 	JHQ8-8100-098 

JHQ8 560 V	JHQ8-9800-148 	JHQ8-9800-098 
JHQ8 560 V	JHQ8-12000-148 	JHQ8-12000-098 

5.21 JQR

5.21.1 Dimensions JQR20 and JQR21

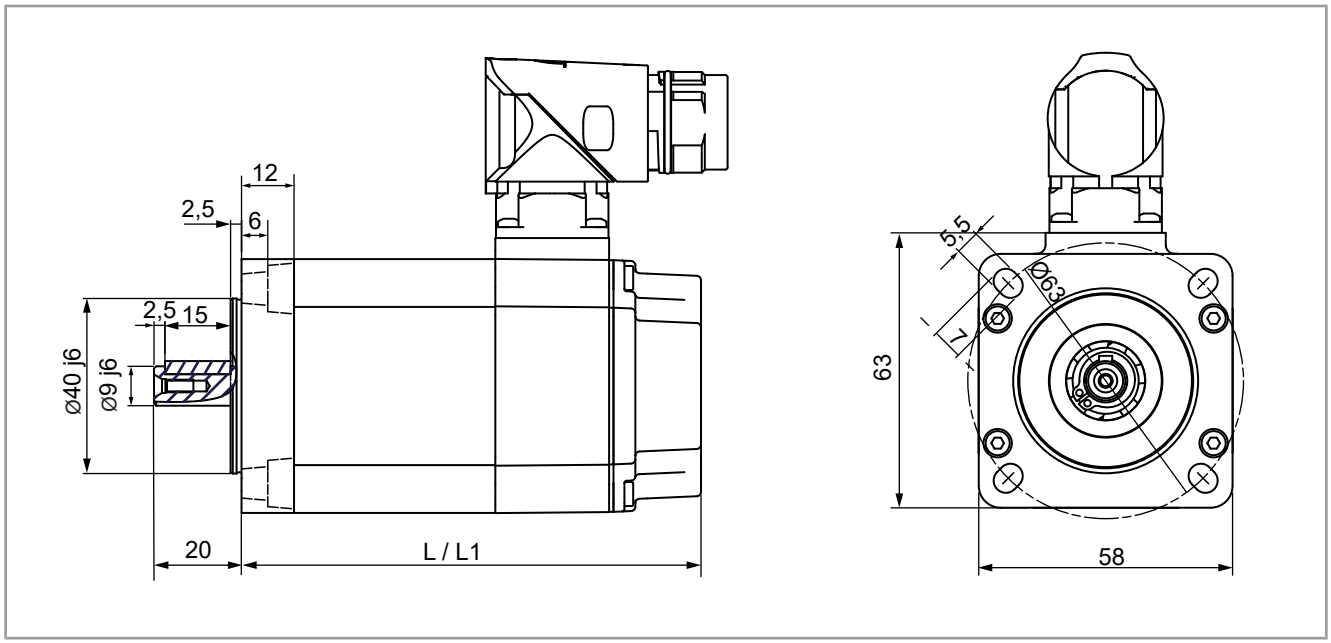


Fig. 27: Dimensions JQR20 in mm

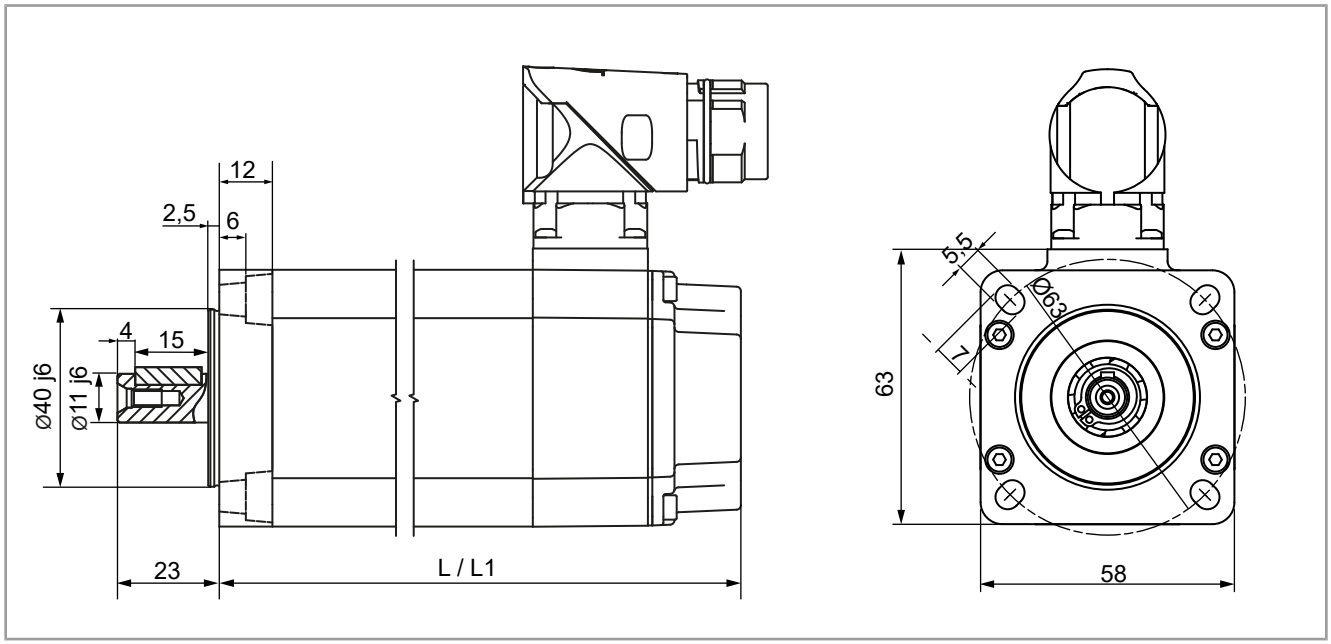


Fig. 28: Dimensions JQR21 in mm

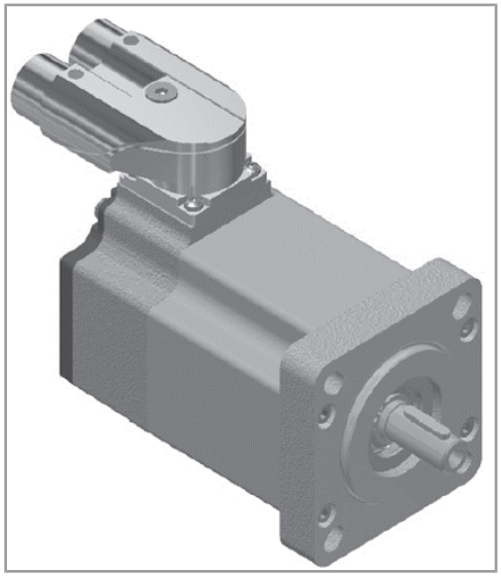


Fig. 29: JQR 20/21, 2-cable technology with Y-Tec male connector

	P		L	L1	L	L1
	Resolver/ HIPER-FACE	HIPER-FACE DSL®				
Type	**Resolver/SEx37**				**EEx37/EKx36/SKx36**	
JQR20-0036	Y-Tec	M23	89	117.5	105	133.5
JQR20-0065	Y-Tec	M23	100	128.5	116	144.5
JQR20-0095	Y-Tec	M23	111	139.5	127	155.5
JQR20-0120	Y-Tec	M23	122	150.5	138	166.5
JQR21-0140	Y-Tec	M23	133	161.5	149	177.5

Tab. 49: Dimensions

Key:
P = Power connector size
L = Dimension without brake
L1 = Dimension with brake

5.21.2 Technical data of the brake for motor type JQR20 and JQR21

Parameter	Value
Holding torque M_{BR}	2.1 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	8.2 W
Rotor inertia J_{BR}	0.12 kg*cm^2
Weight m_{BR}	0.45 kg

Tab. 50: Technical data of the brake for motor type JQR20

Parameter	Value
Holding torque M_{BR}	1.5 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	8.2 W
Rotor inertia J_{BR}	0.12 kg*cm^2
Weight m_{BR}	0.45 kg

Tab. 51: Technical data of the brake for motor type JQR21

5.21.3 Performance data JQR20 and JQR21

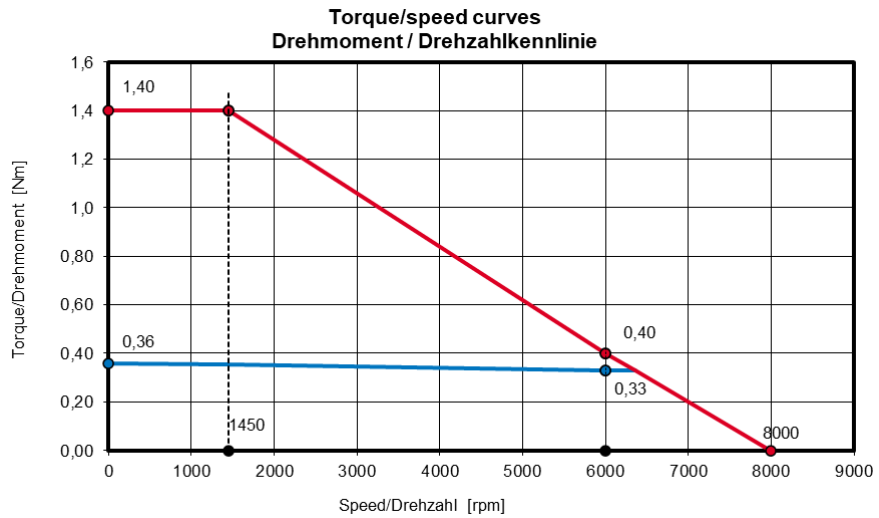
Motor type			JQR20-0036-044	JQR20-0065-044	JQR20-0065-059	JQR20-0095-044	JQR20-0095-059	JQR20-0120-044	JQR20-0120-059	JQR21-0140-044	JQR21-0140-059
Nominal speed	N_n	rpm	6000	6000	4500	6000	4500	6000	4500	6000	4500
DC link voltage	U_{dc}	V	560	560	560	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400	400	400	400	400	400
Rated motor voltage	U_m	V	264	264	264	264	264	264	264	264	264
Rated torque	M_n	Nm	0.33	0.61	0.64	0.80	0.90	1.00	1.10	1.15	1.30
Rated current	I_n	A	0.45	0.84	0.65	1.10	0.93	1.37	1.13	1.58	1.34
Continuous stall torque	M_o	Nm	0.36	0.65	0.65	0.95	0.95	1.20	1.20	1.40	1.40
Continuous stall current	I_o	A	0.49	0.89	0.67	1.31	0.98	1.65	1.24	1.92	1.44
Max. torque	M_{max}	Nm	1.4	2.6	2.6	3.8	3.8	4.8	4.8	5.6	5.6
Max. current	I_{max}	A	3.0	5.1	3.8	6.9	5.2	8.3	6.2	9.3	7.0
Max. speed	N_{max}	rpm	9000	9000	9000	9000	9000	9000	9000	9000	9000
Voltage constant	K_E	V/1000	44.0	44.0	58.6	44.0	58.6	44.0	58.6	44.0	58.6
Torque constant	K_T	Nm/A	0.73	0.73	0.97	0.73	0.97	0.73	0.97	0.73	0.97
Winding resistance	R_{2ph}	Ω	94	29.3	57	18.6	30.3	11.1	22.8	8.7	16.9
Winding inductance	L_{2ph}	mH	99	41.1	79	28.5	47.2	18.8	37.2	15.3	29.2
Motor pole count	P_{mot}		10	10	10	10	10	10	10	10	10
Idling speed	N_o	rpm	8000	8000	6050	8000	6100	8000	6200	8000	6100
Torque at I_{max}/U_n	M_z	Nm	1.4	2.6	2.6	3.8	3.8	4.8	4.8	5.6	5.6
Speed at I_{max}/U_n	N_z	rpm	1450	2750	1750	3000	2250	3750	2500	4000	2750
Max. torque at n_n	M_x	Nm	0.40	1.2	1.0	1.7	1.7	2.6	2.2	3.1	2.8
Electrical time constant	T_{el}	ms	1.1	1.4	1.4	1.5	1.6	1.7	1.6	1.8	1.7
Mechanical time constant	T_{mech}	ms	2.1	1.1	1.2	0.91	0.84	0.69	0.80	0.65	0.72

Motor type			JQR20-0036-044	JQR20-0065-044	JQR20-0065-059	JQR20-0095-044	JQR20-0095-059	JQR20-0120-044	JQR20-0120-059	JQR21-0140-044	JQR21-0140-059
Thermal time constant	T_{th}	min	9.0	11.0	11.0	13.0	13.0	15.0	15.0	17.0	17.0
Rotor inertia without brake	J	kg*cm^2	0.07	0.11	0.11	0.15	0.15	0.19	0.19	0.23	0.23
Weight without brake	m	kg	0.68	0.86	0.86	1.0	1.0	1.2	1.2	1.4	1.4
Axial load	F_A	N	9.0	10.0	10.0	10.0	11.0	11.0	11.0	13.0	13.0
Radial load	F_R	N	85	95	100	100	105	105	110	125	130

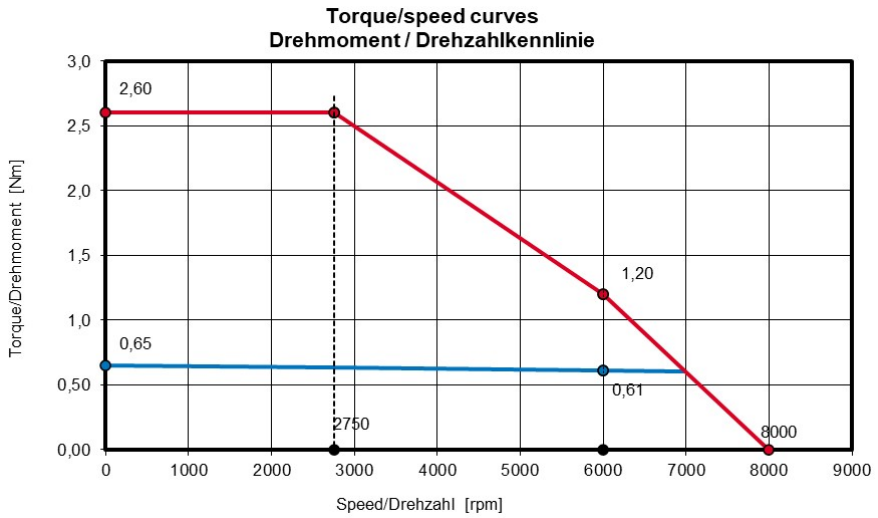
Torque speed characteristics

JQR20

JQR20-0036-044

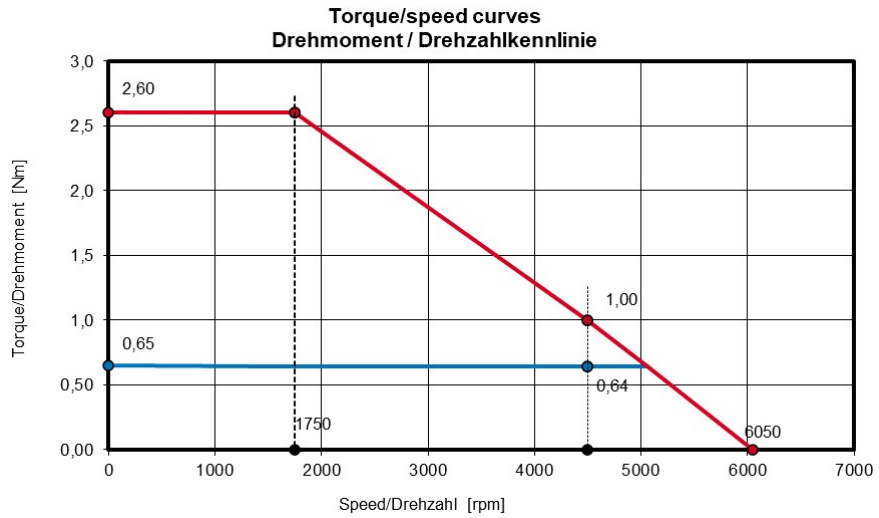


JQR20-0065-044

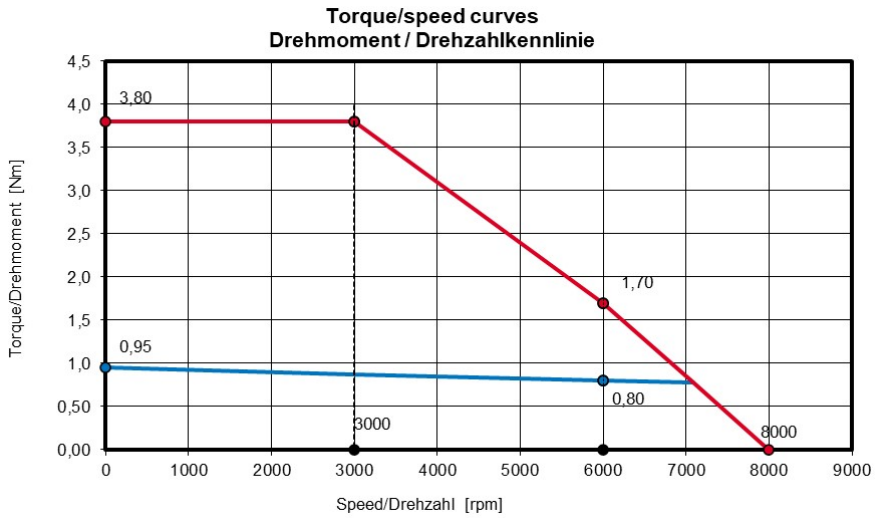


JQR20

JQR20-0065-059

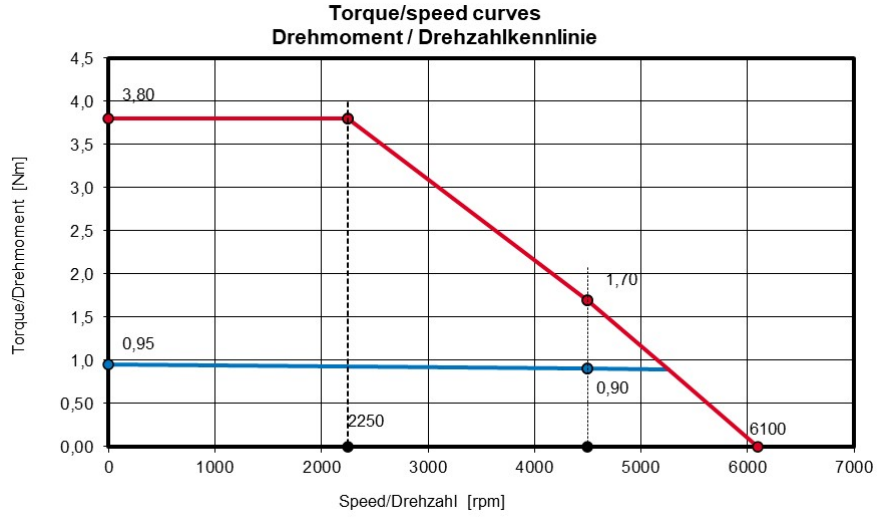


JQR20-0095-044

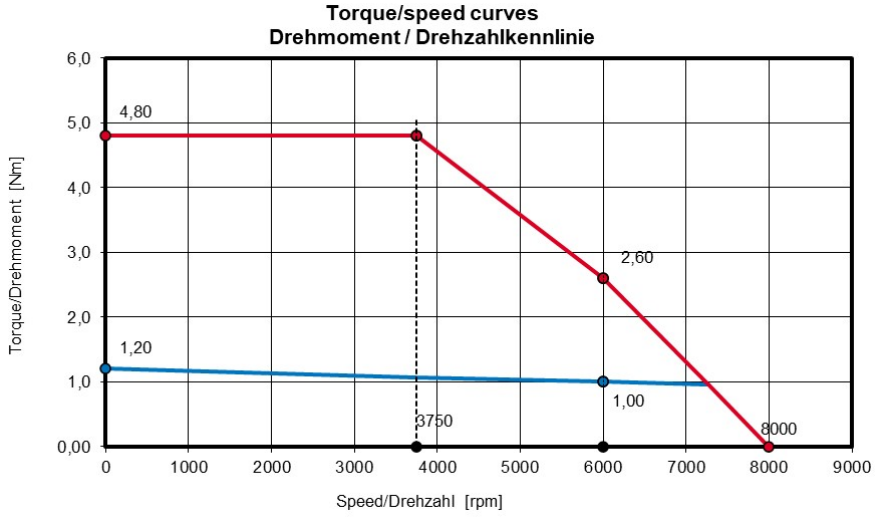


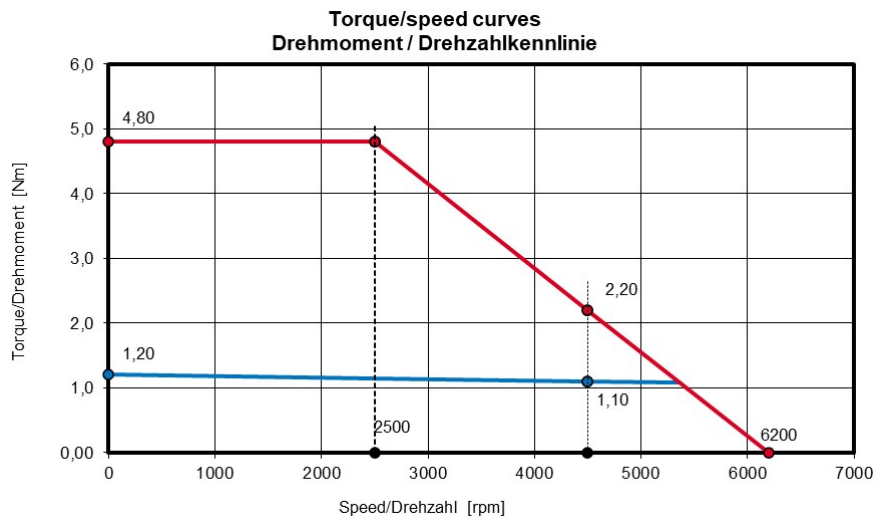
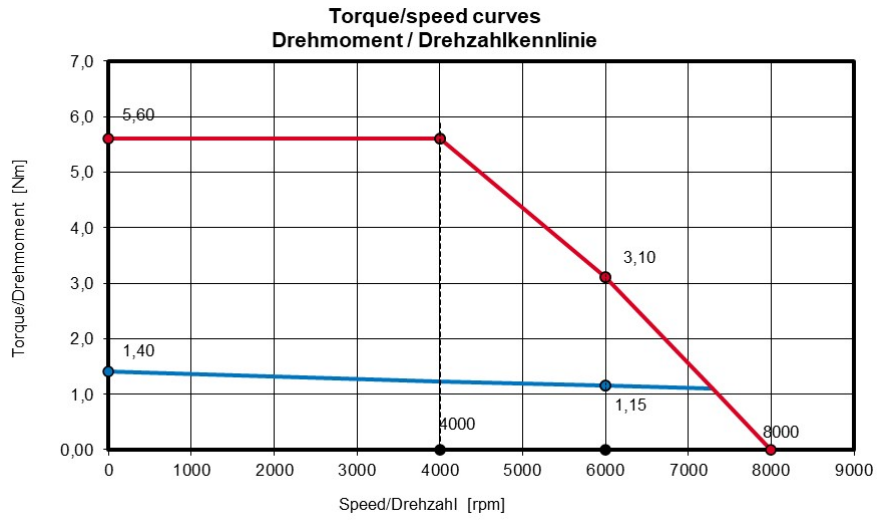
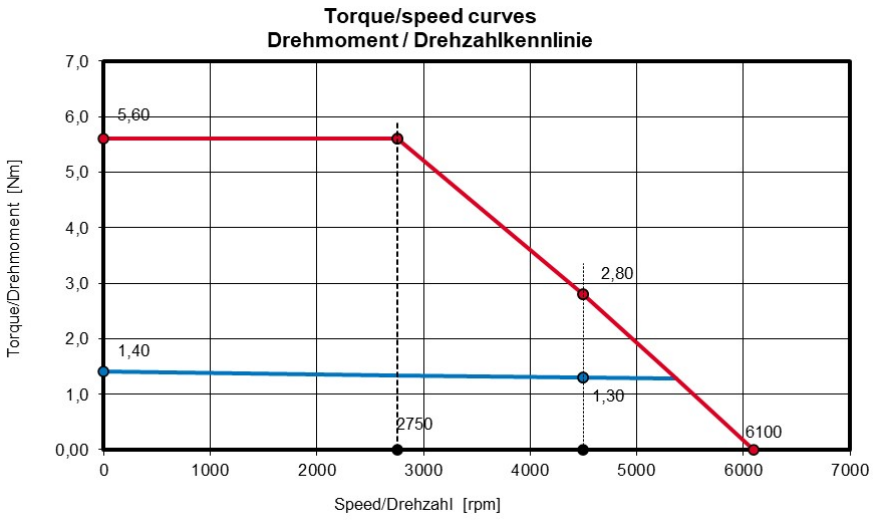
JQR20

JQR20-0095-059



JQR20-0120-044



JQR20	JQR20-0120-059  	
JQR21	JQR21-0140-044  	JQR21-0140-059 

5.21.4 Dimensions JQR30 and JQR31

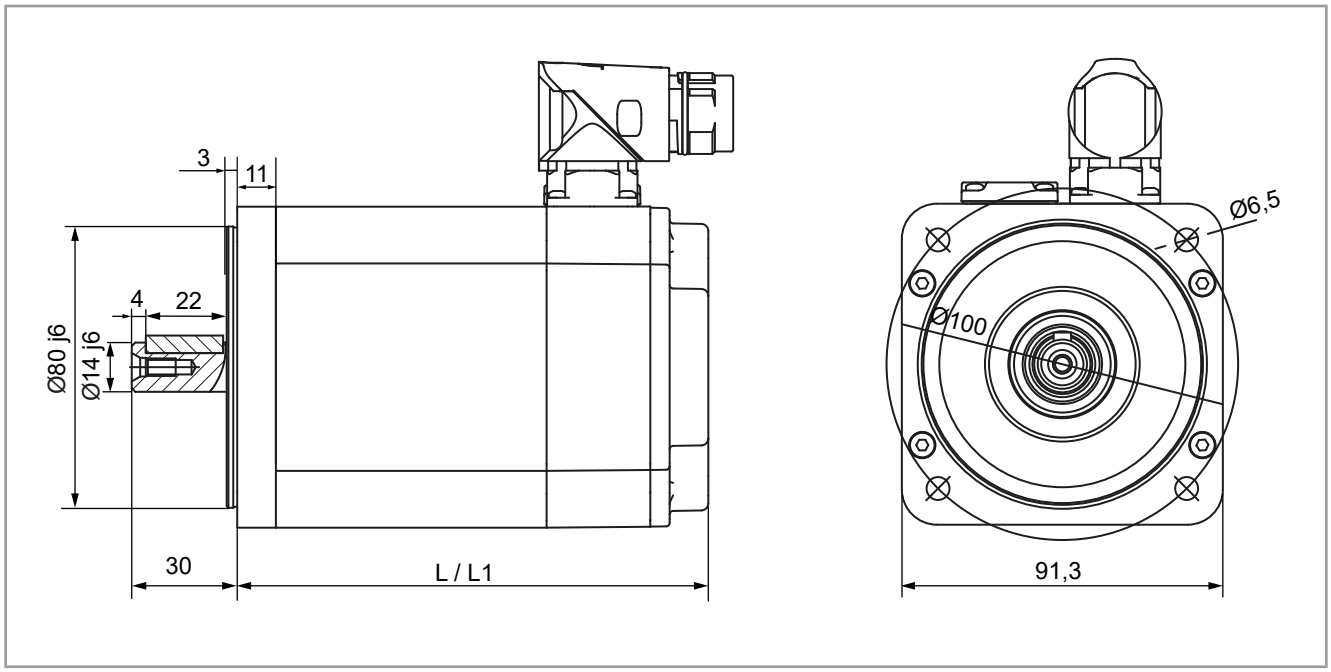


Fig. 30: Dimensions JQR30 in mm

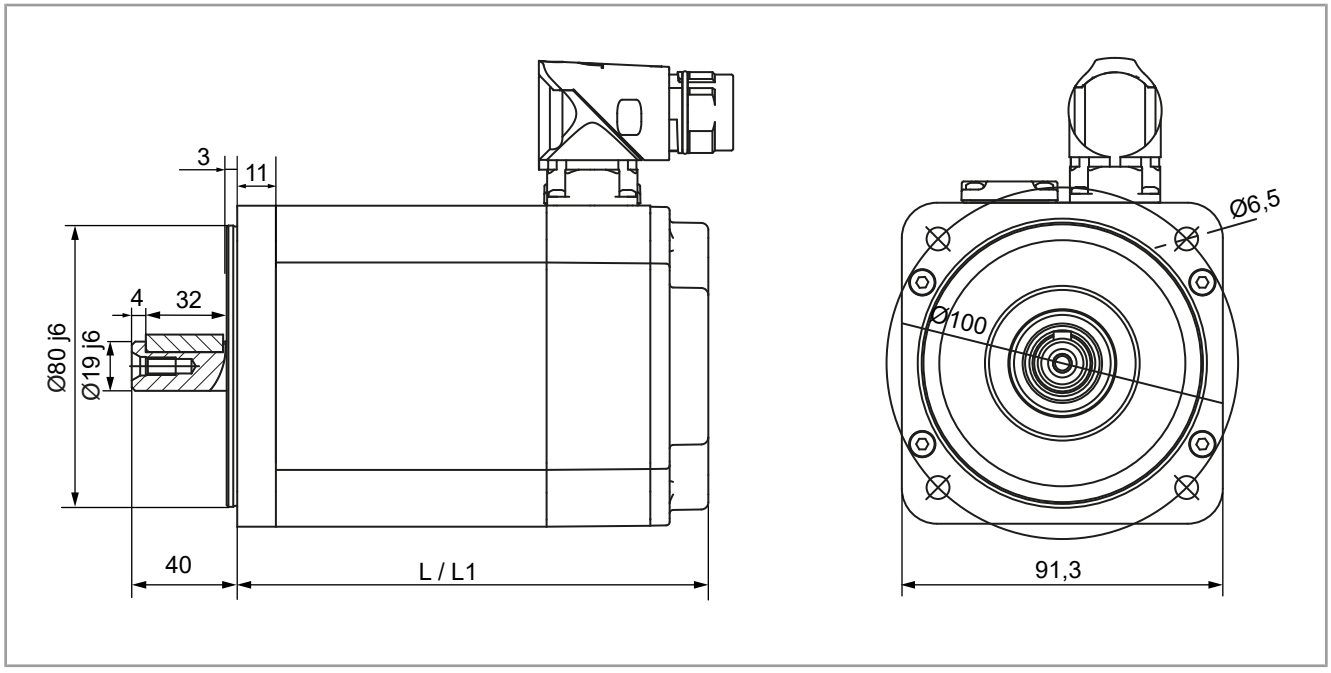


Fig. 31: Dimensions JQR31 in mm

	P	L	L1	L	L1
Type	**Resolver**			**EEx37/EKx36/SKx36**	
JQR30-0260	M23	111	141	122	152
JQR30-0350	M23	123	153	134	164
JQR31-0460	M23	144	183	155	194
JQR31-0550	M23	156	195	167	206

Tab. 52: Dimensions

Key:
P = Power connector size
L = Dimension without brake
L1 = Dimension with brake

5.21.5 Technical data of the brake for motor type JQR30 and JQR31

Parameter	Value
Holding torque M_{BR}	3.2 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	10.8 W
Rotor inertia J_{BR}	0.38 kg*cm^2
Weight m_{BR}	0.6 kg

Tab. 53: Technical data of the brake for motor type JQR30

Parameter	Value
Holding torque M_{BR}	8 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	19.9 W
Rotor inertia J_{BR}	0.69 kg*cm^2
Weight m_{BR}	1.1 kg

Tab. 54: Technical data of the brake for motor type JQR31

5.21.6 Performance data JQR30 and JQR31

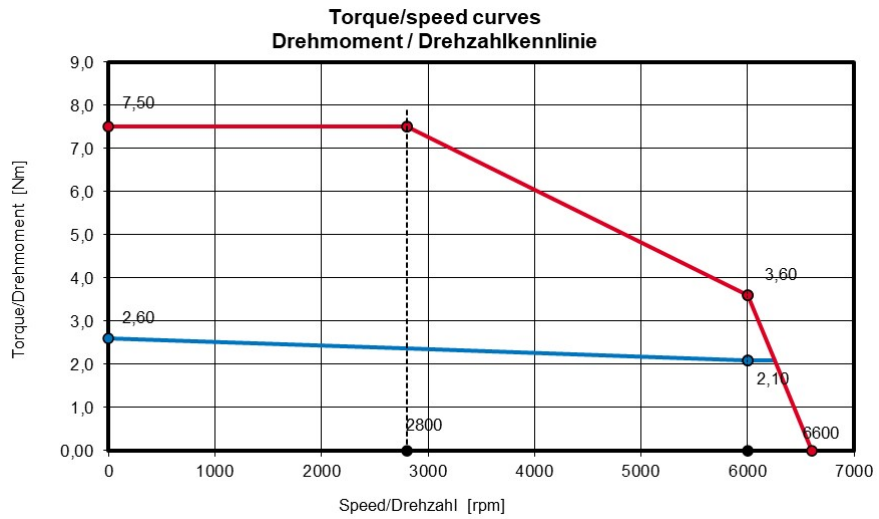
Motor type			JQR30-0260-044	JQR30-0260-088	JQR30-0350-044	JQR30-0350-088	JQR31-0460-044	JQR31-0460-088	JQR31-0550-044	JQR31-0550-088
Nominal speed	N_n	rpm	6000	3000	6000	3000	6000	3000	6000	3000
DC link voltage	U_{dc}	V	560	560	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400	400	400	400	400
Rated motor voltage	U_m	V	264	264	264	264	264	264	264	264
Rated torque	M_n	Nm	2.1	2.5	2.6	3.3	3.1	4.1	3.2	4.6
Rated current	I_n	A	2.9	1.70	3.6	2.3	4.3	2.8	4.4	3.2
Continuous stall torque	M_o	Nm	2.6	2.6	3.5	3.5	4.6	4.6	5.5	5.5
Continuous stall current	I_o	A	3.6	1.80	4.8	2.4	6.3	3.2	7.6	3.8
Max. torque	M_{max}	Nm	7.5	7.5	11.3	11.3	15.0	15.0	18.7	18.7
Max. current	I_{max}	A	15.2	7.6	22	11.1	29	14.5	35	17.4
Max. speed	N_{max}	rpm	6600	6600	6600	6600	6600	6600	6600	6600
Voltage constant	K_E	V/1000	44.0	88.0	44.0	88.0	44.0	88.0	44.0	88.0
Torque constant	K_T	Nm/A	0.73	1.45	0.73	1.45	0.73	1.45	0.73	1.45
Winding resistance	R_{2ph}	Ω	3.5	14.6	1.95	8.0	1.36	5.4	1.06	4.3
Winding inductance	L_{2ph}	mH	16.2	67	10.2	41.3	7.4	29.7	5.7	22.9
Motor pole count	P_{mot}		10	10	10	10	10	10	10	10
Idling speed	N_o	rpm	6600	4100	6600	4200	6600	4150	6600	4200
Torque at I_{max}/U_n	M_z	Nm	7.5	7.5	11.3	11.3	15.0	15.0	18.7	18.7
Speed at I_{max}/U_n	N_z	rpm	2800	1250	3150	1450	3350	1350	3350	1550
Max. torque at n_n	M_x	Nm	3.6	2.8	5.6	5.0	7.5	6.0	10.0	8.5
Electrical time constant	T_{el}	ms	4.6	4.6	5.2	5.1	5.4	5.5	5.4	5.4
Mechanical time constant	T_{mech}	ms	0.91	0.96	0.70	0.72	0.67	0.67	0.62	0.63

Motor type			JQR30-0260-044	JQR30-0260-088	JQR30-0350-044	JQR30-0350-088	JQR31-0460-044	JQR31-0460-088	JQR31-0550-044	JQR31-0550-088
Thermal time constant	T_{th}	min	18.0	18.0	20	20	21	21	22	22
Rotor inertia without brake	J	kg*cm^2	0.80	0.80	1.1	1.1	1.5	1.5	1.8	1.8
Weight without brake	m	kg	2.6	2.6	3.2	3.2	3.9	3.9	4.4	4.4
Axial load	F_A	N	13.0	22	14.0	24	31	58	34	66
Radial load	F_R	N	130	220	140	235	310	580	340	660

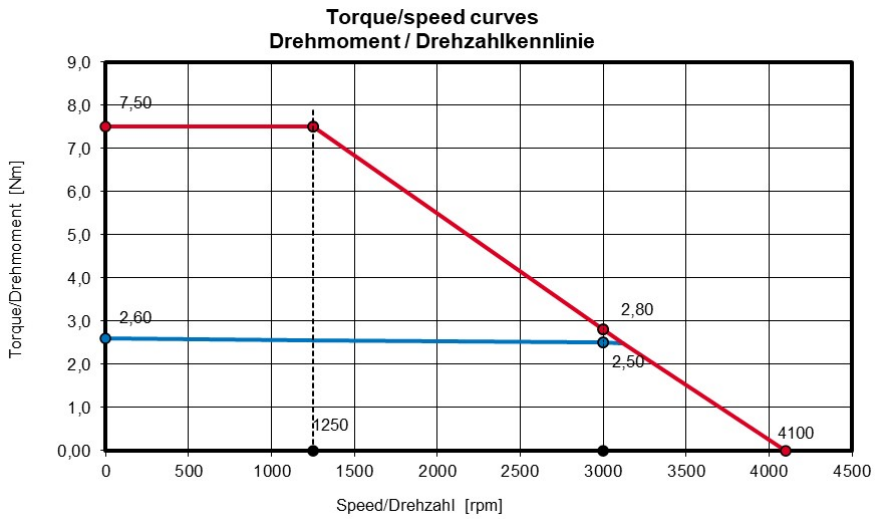
Torque speed characteristics

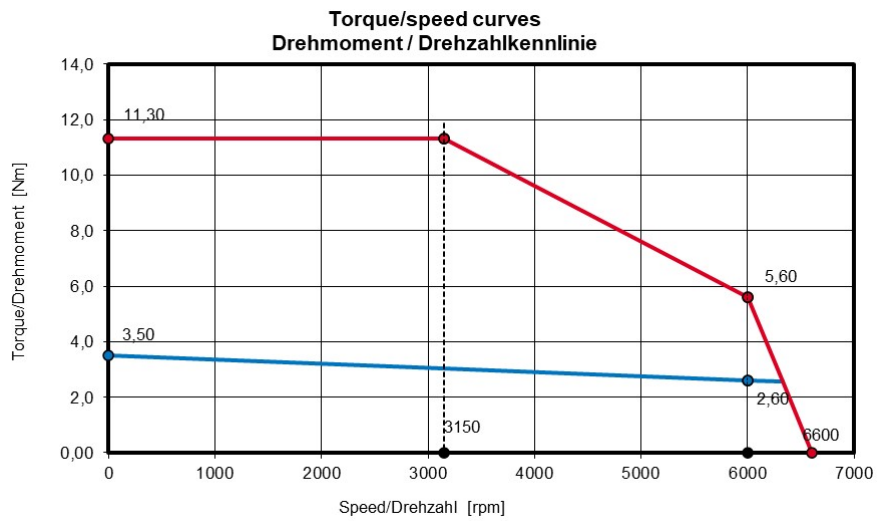
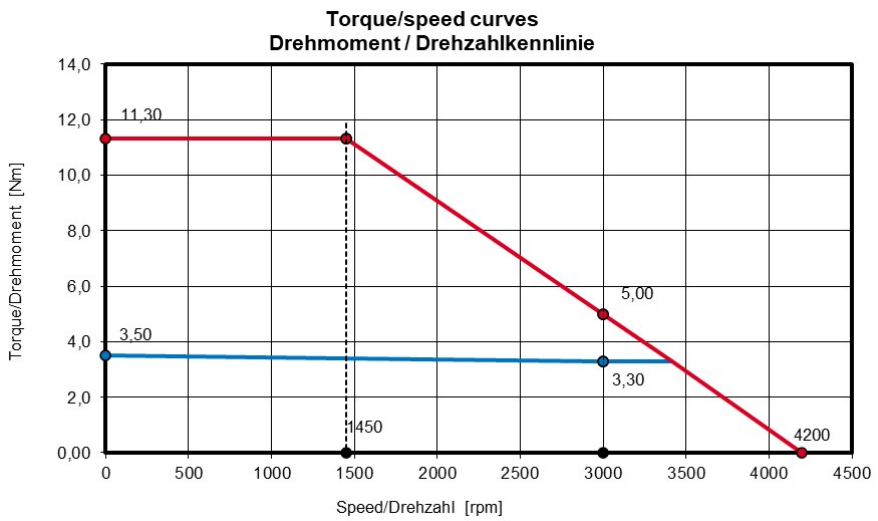
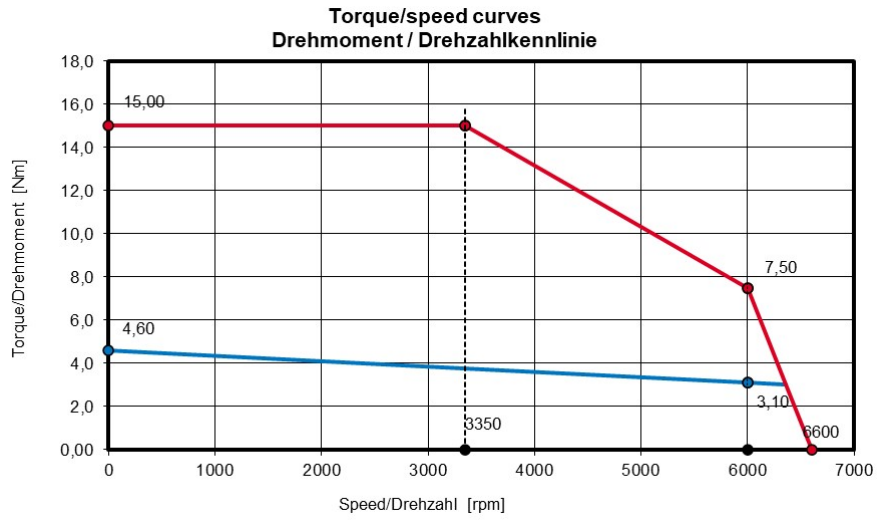
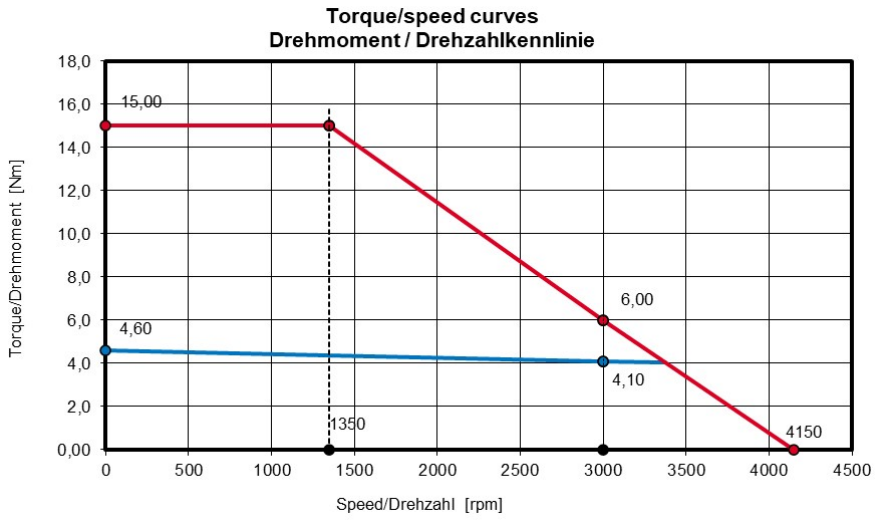
JQR30

JQR30-0260-044

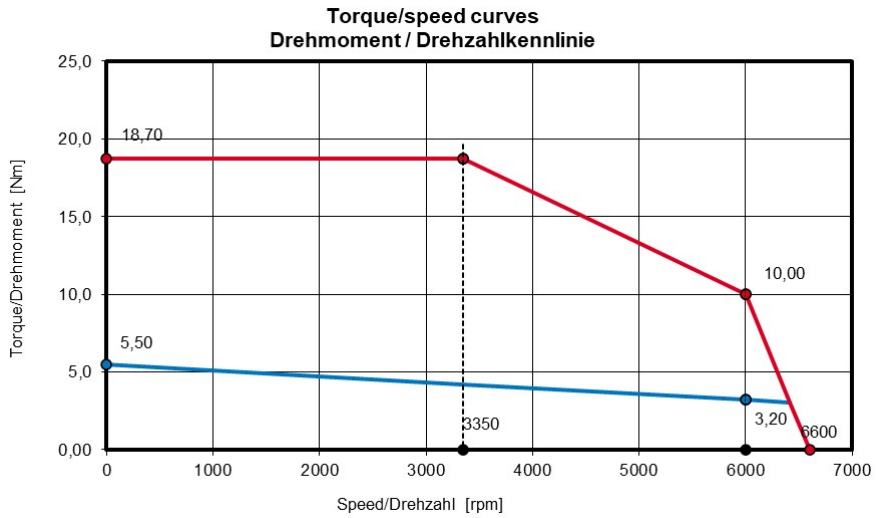


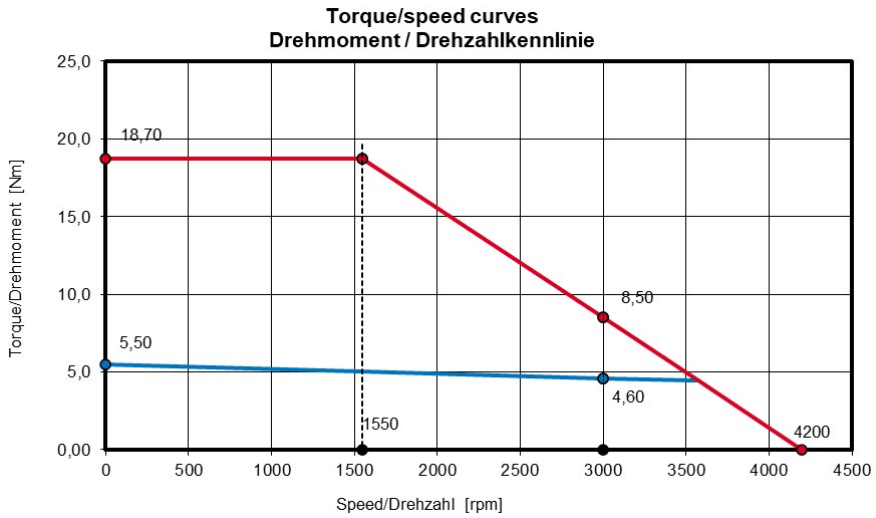
JQR30-0260-088



JQR30	JQR30-0350-044 	JQR30-0350-088 
JQR31	JQR31-0460-044 	JQR31-0460-088 

JQR31	JQR31-0550-044	JQR31-0550-088





5.21.7 Dimensions JQR40 and JQR41

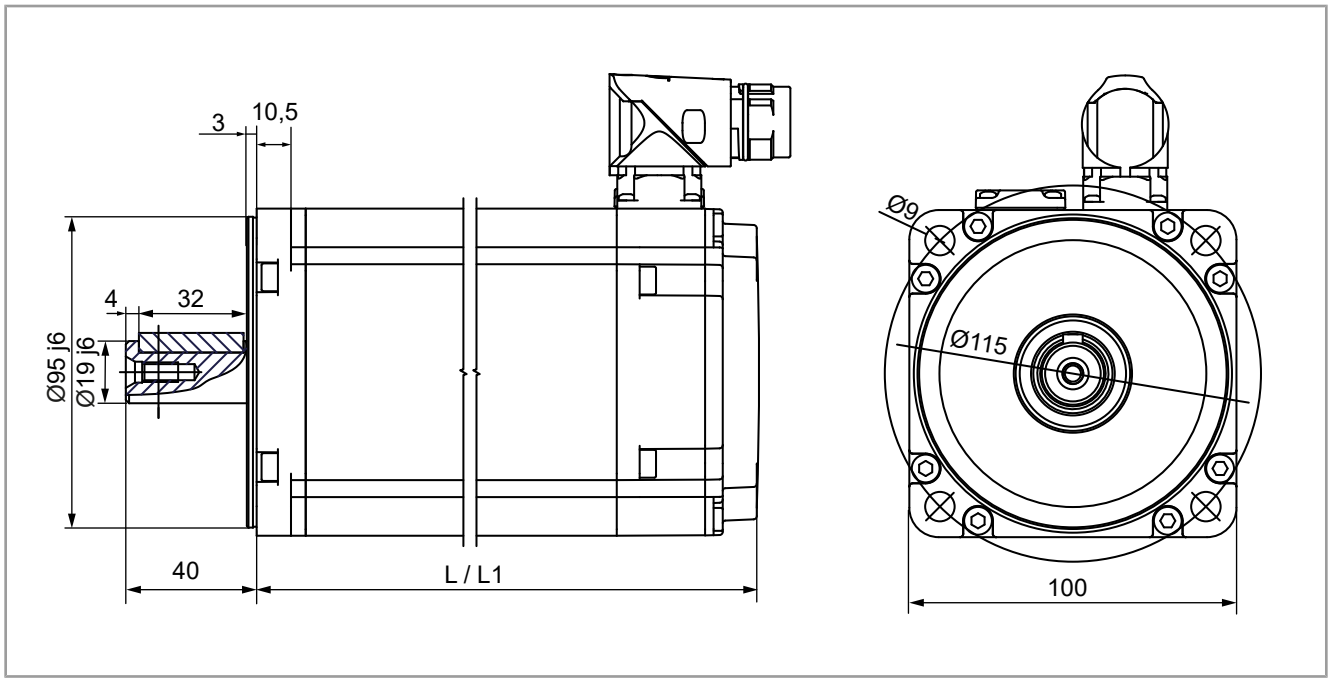


Fig. 32: Dimensions JQR40 in mm

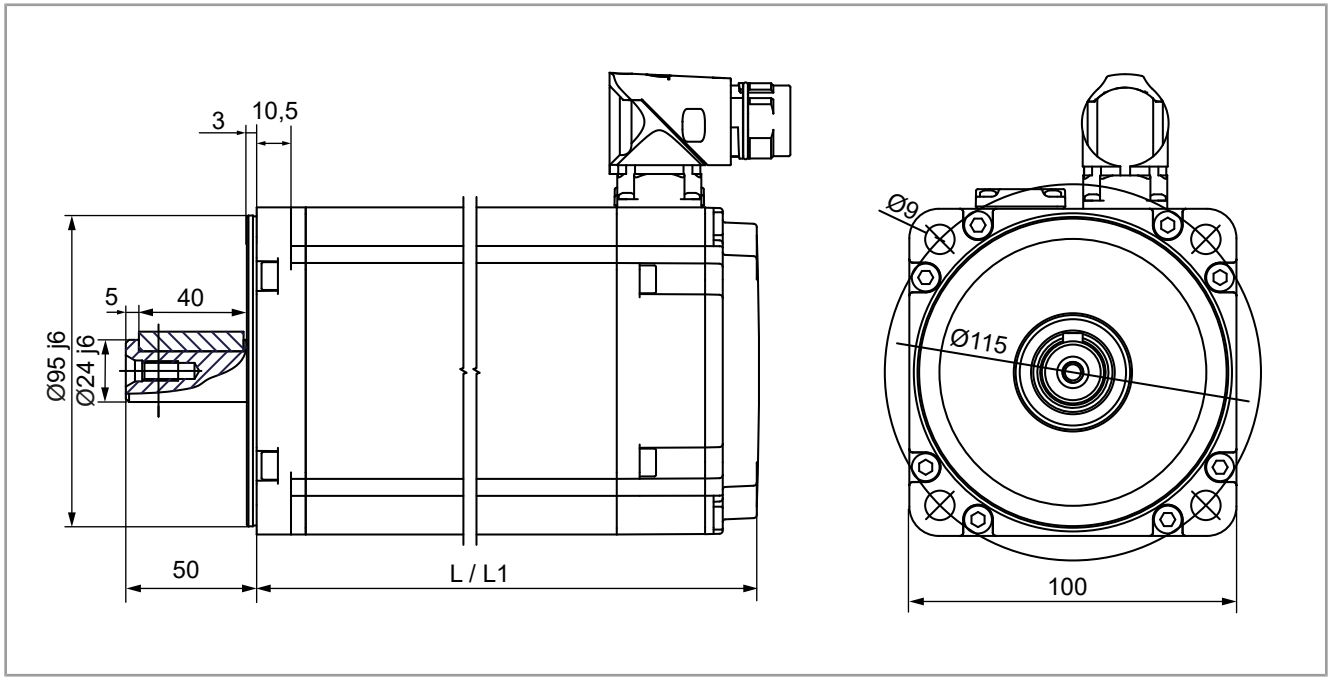


Fig. 33: Dimensions JQR41 in mm

	P	L	L1	L	L1	L	L1
Type	**Resolver**			**EEx37**		**EKx36/SKx36**	
JQR40-0450	M23	132	170	144	182	150	188
JQR40-0640	M23	150	188	162	200	168	206
JQR40-0840	M23	168	206	180	218	186	224
JQR40-1000	M23	186	229	198	241	204	247
JQR41-1200	M23	204	247	216	259	222	265

Tab. 55: Dimensions

Key:
P = Power connector size
L = Dimension without brake
L1 = Dimension with brake

5.21.8 Technical data of the brake for motor type JQR40 and JQR41

Parameter	Value
Holding torque M_{BR}	8 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	19.9 W
Rotor inertia J_{BR}	0.69 kg*cm^2
Weight m_{BR}	1.1 kg

Tab. 56: Technical data of the brake for motor type JQR40

Parameter	Value
Holding torque M_{BR}	15 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	24 W
Rotor inertia J_{BR}	1.66 kg*cm^2
Weight m_{BR}	1.1 kg

Tab. 57: Technical data of the brake for motor type JQR41

5.21.9 Performance data JQR40 and JQR41

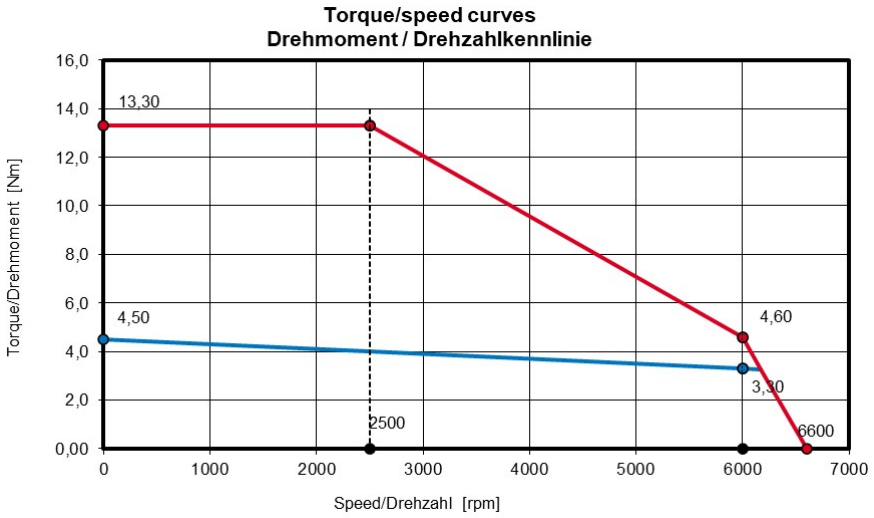
Motor type			JQR40-0450-049	JQR40-0450-098	JQR40-0640-049	JQR40-0640-098	JQR40-0840-049	JQR40-0840-098	JQR40-1000-049	JQR40-1000-098	JQR41-1200-049	JQR41-1200-098
Nominal speed	N_n	rpm	6000	3000	6000	3000	6000	3000	6000	3000	6000	3000
DC link voltage	U_{dc}	V	560	560	560	560	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400	400	400	400	400	400	400
Rated motor voltage	U_m	V	296	296	296	296	296	296	296	296	296	296
Rated torque	M_n	Nm	3.3	3.9	3.9	5.2	4.2	6.4	4.4	7.4	4.4	8.3
Rated current	I_n	A	4.1	2.4	4.8	3.2	5.2	3.9	5.4	4.5	5.6	5.1
Continuous stall torque	M_o	Nm	4.5	4.5	6.4	6.4	8.4	8.4	10.2	10.2	11.7	11.7
Continuous stall current	I_o	A	5.5	2.8	7.9	3.9	10.3	5.2	7.6	7.6	14.4	7.2
Max. torque	M_{max}	Nm	13.3	13.3	20	20	28	28	35	35	43	43
Max. current	I_{max}	A	25	12.4	37	18.6	50	25	62	31	75	37
Max. speed	N_{max}	rpm	6600	6600	6600	6600	6600	6600	6600	6600	6600	6600
Voltage constant	K_E	V/1000	49.2	98.4	49.2	98.4	49.2	98.4	49.2	98.4	49.2	98.4
Torque constant	K_T	Nm/A	0.81	1.63	0.81	1.63	0.81	1.63	0.81	1.63	0.81	1.63
Winding resistance	R_{2ph}	Ω	1.70	5.8	0.96	3.8	0.69	2.8	0.53	2.1	0.43	1.66
Winding inductance	L_{2ph}	mH	11.9	42.0	7.5	29.1	5.4	21.8	4.3	17.1	3.5	14.1
Motor pole count	P_{mot}		10	10	10	10	10	10	10	10	10	10
Idling speed	N_o	rpm	6600	4000	6600	3950	6600	4000	6600	3950	6600	3950
Torque at I_{max}/U_n	M_z	Nm	13.3	13.3	20	20	28	28	35	35	43	43
Speed at I_{max}/U_n	N_z	rpm	2500	1350	2650	1300	2750	1350	2700	1350	2700	1350
Max. torque at n_n	M_x	Nm	4.6	4.8	7.5	7.5	11.0	10.0	13.5	12.5	16.0	15.5
Electrical time constant	T_{el}	ms	7.0	7.2	7.8	7.7	7.8	7.8	8.1	8.0	8.1	8.5
Mechanical time constant	T_{mech}	ms	0.89	0.76	0.66	0.64	0.58	0.58	0.56	0.56	0.54	0.52

Motor type			JQR40-0450-049	JQR40-0450-098	JQR40-0640-049	JQR40-0640-098	JQR40-0840-049	JQR40-0840-098	JQR40-1000-049	JQR40-1000-098	JQR41-1200-049	JQR41-1200-098
Thermal time constant	T_{th}	min	24	24	25	25	26	26	27	27	27	27
Rotor inertia without brake	J	kg*cm^2	2.0	2.0	2.6	2.6	3.2	3.2	4.0	4.0	4.8	4.8
Weight without brake	m	kg	4.4	4.4	5.3	5.3	6.2	6.2	7.1	7.1	8.1	8.1
Axial load	F_A	N	38	56	40	58	41	60	42	62	45	68
Radial load	F_R	N	380	560	395	580	410	600	420	620	450	680

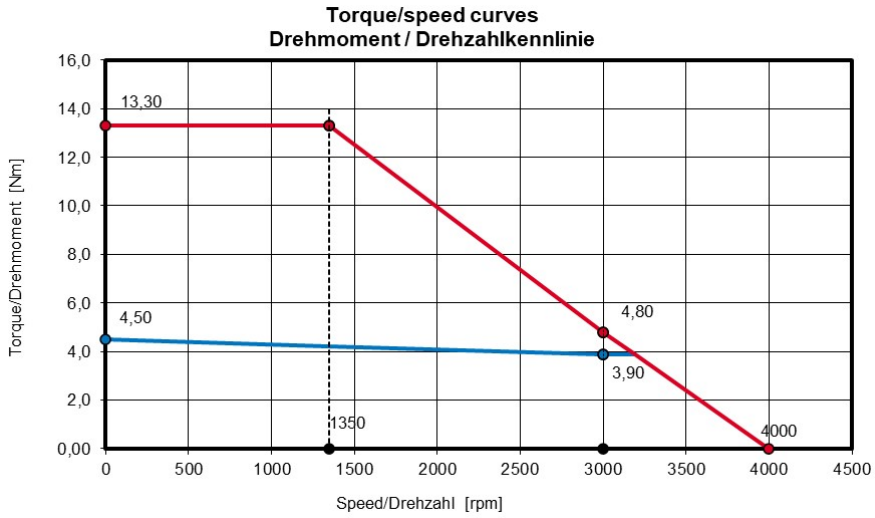
Torque speed characteristics

JQR40

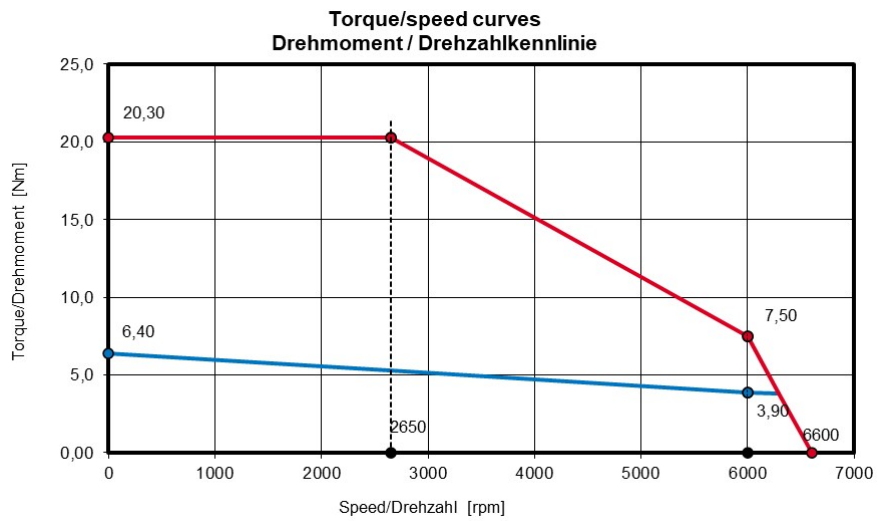
JQR40-0450-049

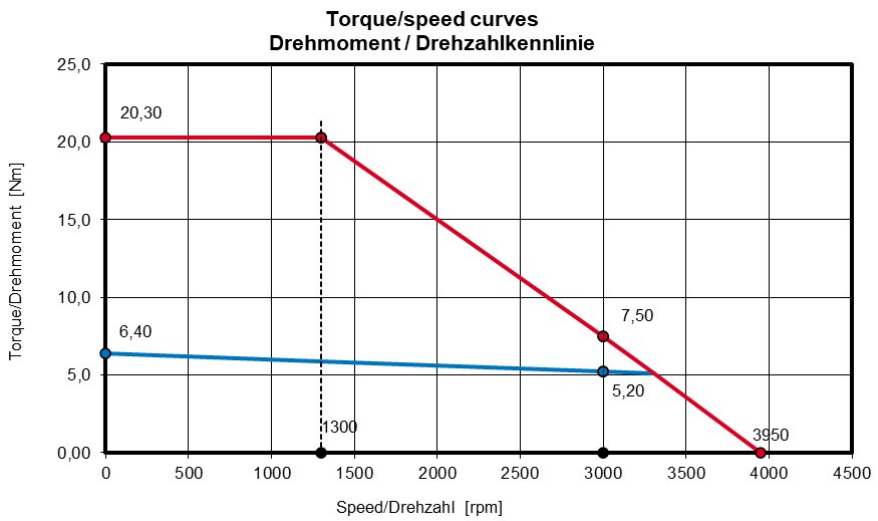


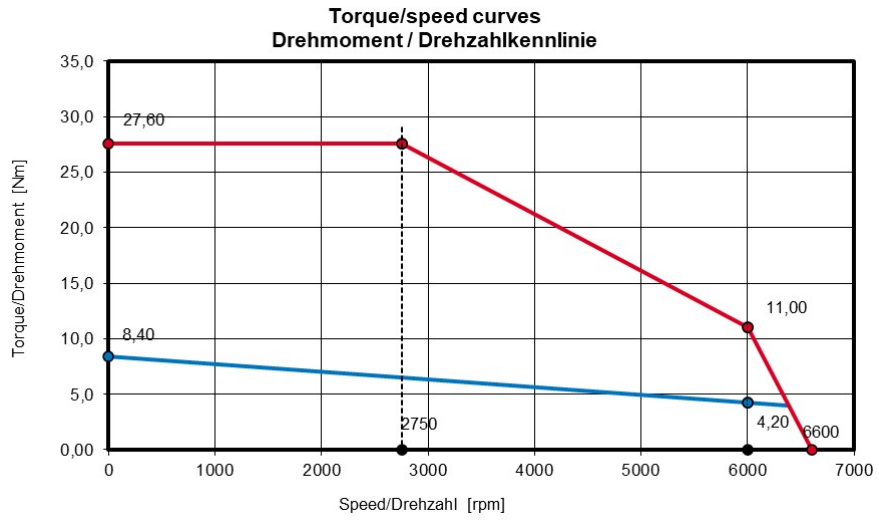
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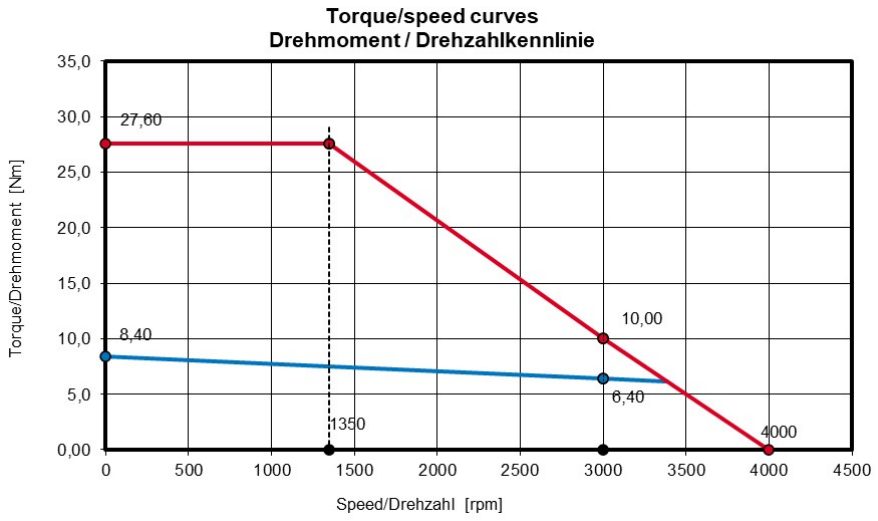


JQR40	JQR40-0640-049	JQR40-0640-098
JQR40	JQR40-0840-049	JQR40-0840-098

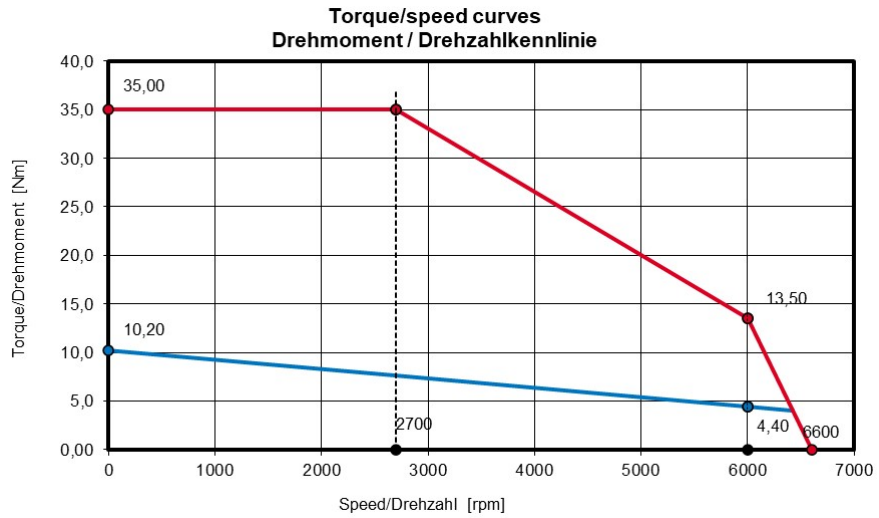


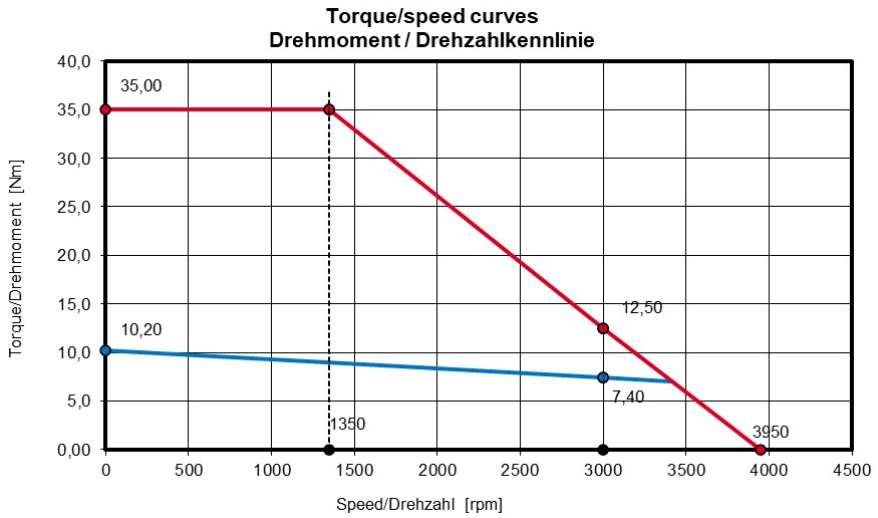


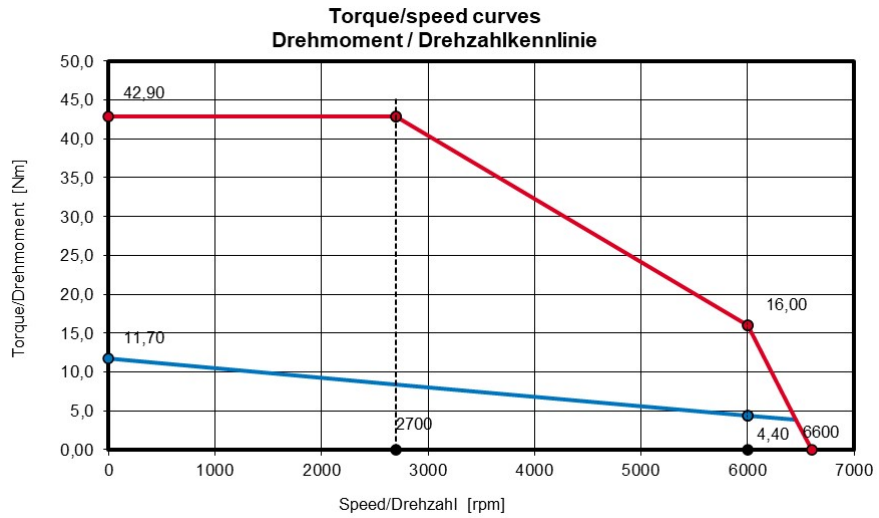


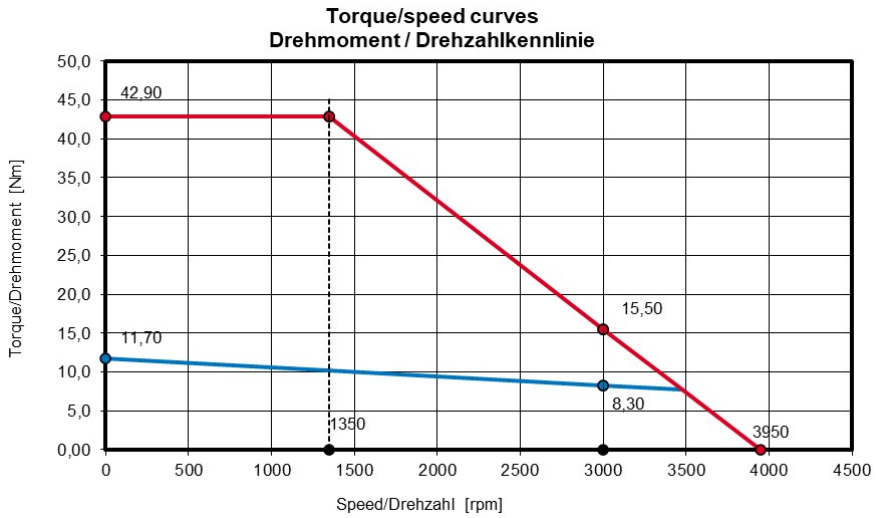


JQR40	JQR40-1000-049	JQR40-1000-098
JQR41	JQR41-1200-049	JQR41-1200-098









5.21.10 Dimensions JQR45

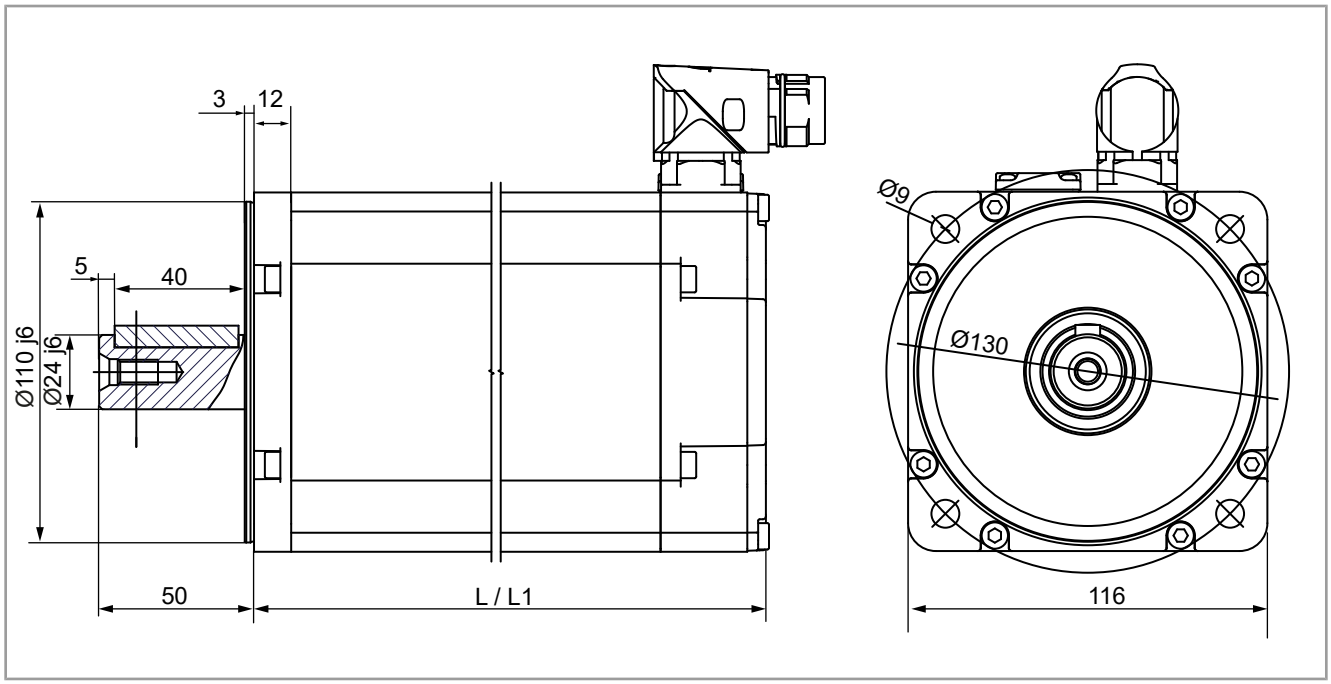


Fig. 34: Dimensions JQR45 in mm

	P	L	L1	L	L1
Type	**Resolver/EEx37**			**EKx36/SKx36**	
JQR45-0650	M23	140	180	148	188
JQR45-1200	M23	170	210	178	218
JQR45-1600	M23	200	240	208	248
JQR45-1900	M23	230	270	238	278

Tab. 58: Dimensions

Key:
P = Power connector size
L = Dimension without brake
L1 = Dimension with brake

5.21.11 Technical data of the brake for motor type JQR45

Parameter	Value
Holding torque M_{BR}	17 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	18.7 W
Rotor inertia J_{BR}	3.6 kg*cm^2
Weight m_{BR}	1.5 kg

Tab. 59: Technical data of the brake for motor type JQR45

5.21.12 Performance data JQR45

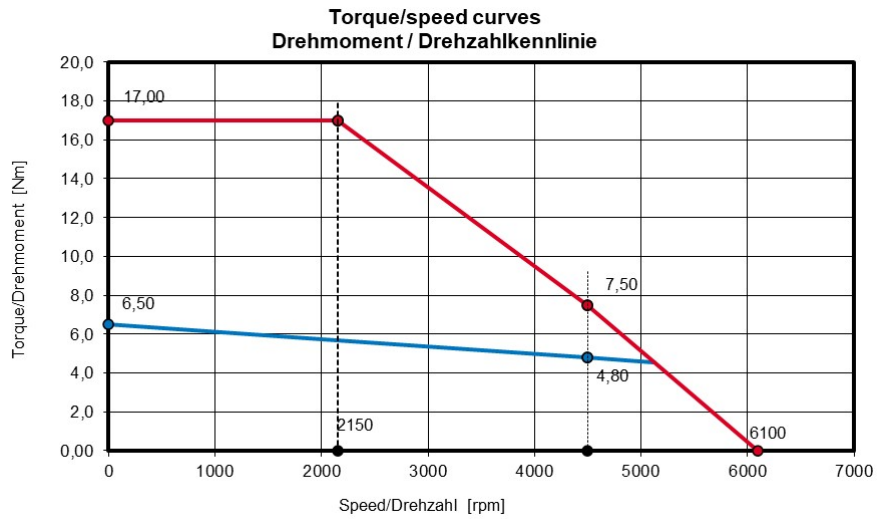
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Nominal speed	N_n	rpm	4500	3000	4500	3000	4500	3000	4500	3000
DC link voltage	U_{dc}	V	560	560	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400	400	400	400	400
Rated motor voltage	U_m	V	296	296	296	296	296	296	296	296
Rated torque	M_n	Nm	4.8	5.6	6.6	9.0	8.4	11.8	8.9	13.2
Rated current	I_n	A	4.4	3.4	6.1	5.5	7.7	7.2	8.2	8.1
Continuous stall torque	M_o	Nm	6.5	6.5	11.5	11.5	15.5	15.5	19.0	19.0
Continuous stall current	I_o	A	6.0	4.0	10.6	7.1	14.2	9.5	17.5	11.7
Max. torque	M_{max}	Nm	17.0	17.0	34	34	51	51	68	68
Max. current	I_{max}	A	24	16.0	47	31	69	46	90	60
Max. speed	N_{max}	rpm	6600	6600	6600	6600	6600	6600	6600	6600
Voltage constant	K_E	V/1000	66.0	98.4	66.0	98.4	66.0	98.4	66.0	98.4
Torque constant	K_T	Nm/A	1.09	1.63	1.09	1.63	1.09	1.63	1.09	1.63
Winding resistance	R_{2ph}	Ω	1.62	4.0	0.63	1.55	0.42	0.90	0.29	0.68
Winding inductance	L_{2ph}	mH	14.3	33.6	6.4	15.1	4.4	9.6	3.3	7.3
Motor pole count	P_{mot}		4500	10	10	10	10	10	10	10
Idling speed	N_o	rpm	6100	4000	6100	4050	6100	4100	6100	4100
Torque at I_{max}/U_n	M_z	Nm	17.0	17.0	34	34	51	51	68	68
Speed at I_{max}/U_n	N_z	rpm	2150	1350	2300	1400	2300	1500	2300	1550
Max. torque at n_n	M_x	Nm	7.5	6.5	16.0	13.5	23	22	30	29
Electrical time constant	T_{el}	ms	8.8	8.4	10.2	9.7	10.5	10.7	11.4	10.7
Mechanical time constant	T_{mech}	ms	0.42	0.47	0.17	0.18	0.11	0.11	0.08	0.08

Motor type			JQR45-0650-066	JQR45-0650-098	JQR45-1200-066	JQR45-1200-098	JQR45-1600-066	JQR45-1600-098	JQR45-1900-066	JQR45-1900-098
Thermal time constant	T_{th}	min	28	28	30	30	31	31	32	32
Rotor inertia without brake	J	kg*cm^2	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Weight without brake	m	kg	5.3	5.3	7.2	7.2	9.1	9.1	11.0	11.0
Axial load	F_A	N	49	60	51	64	53	68	56	70
Radial load	F_R	N	490	595	510	640	530	675	560	700

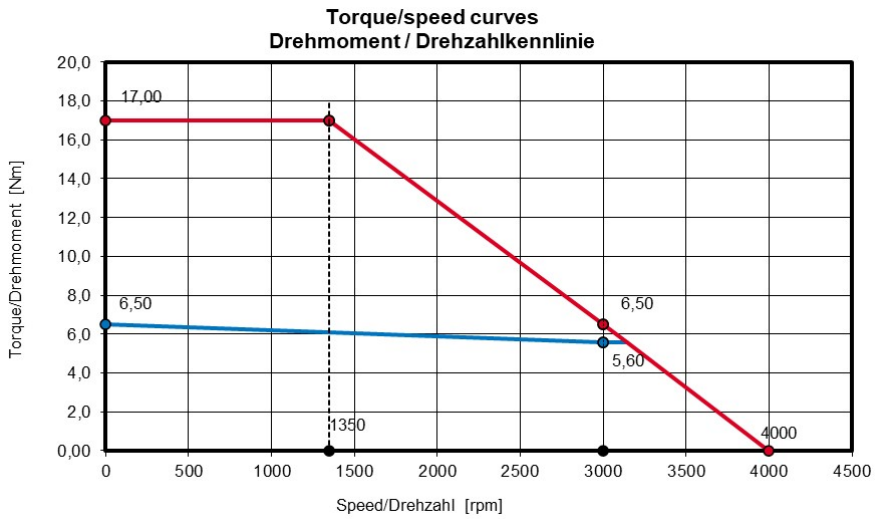
Torque speed characteristics

JQR45

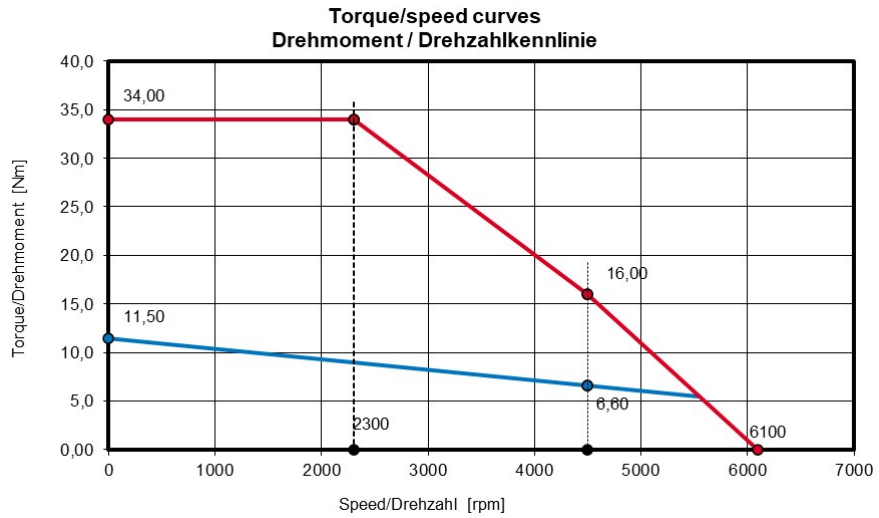
JQR45-0650-066

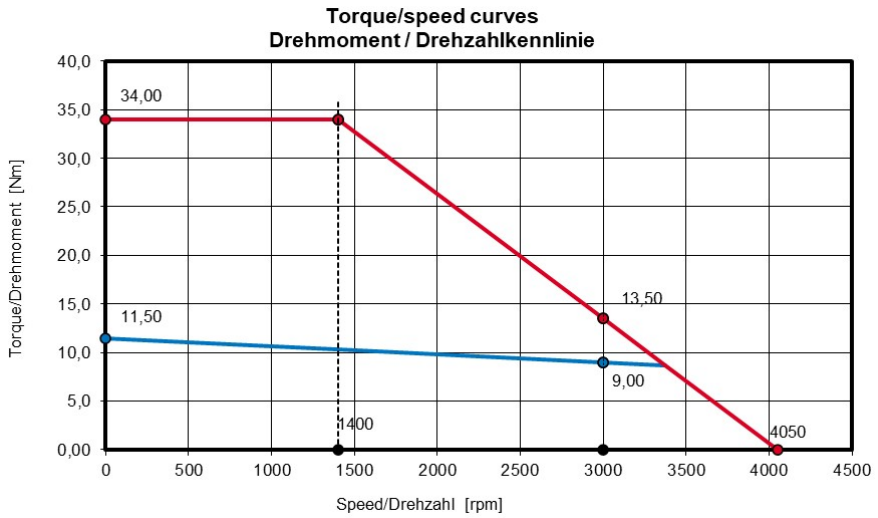


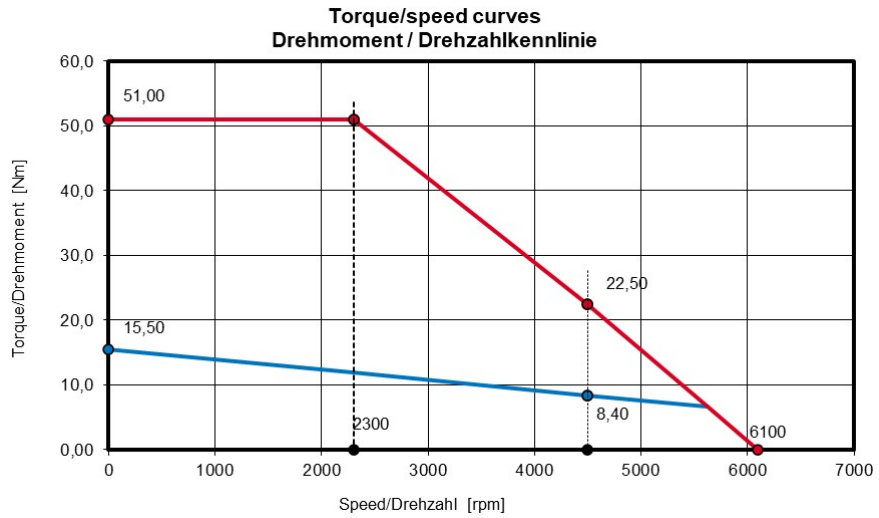
JQR45-0650-098

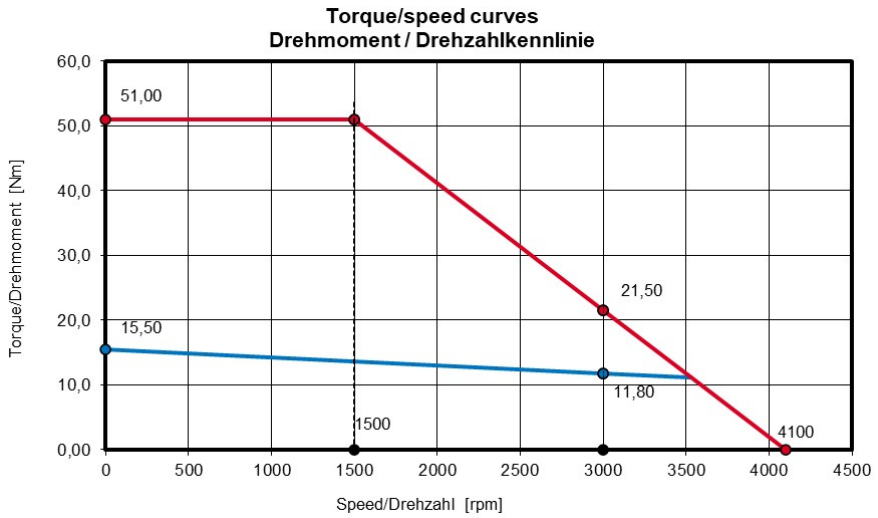


JQR45	JQR45-1200-066	JQR45-1200-098
JQR45	JQR45-1600-066	JQR45-1600-098

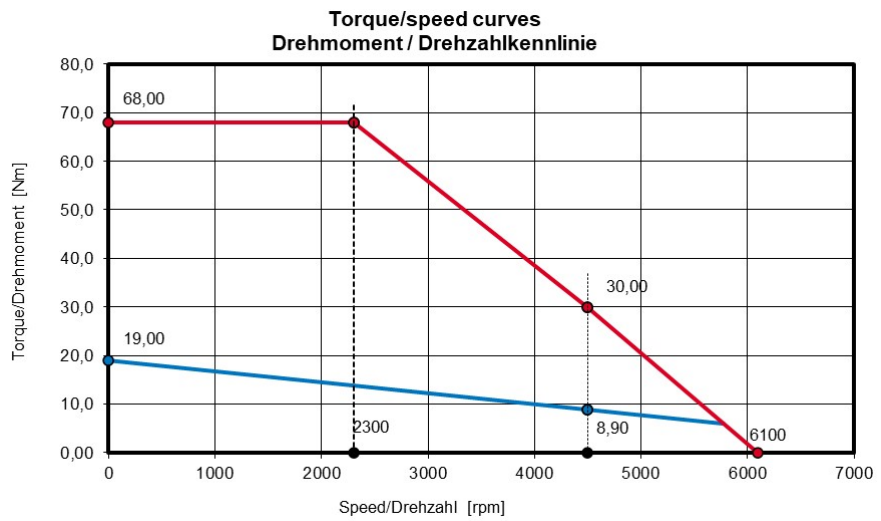


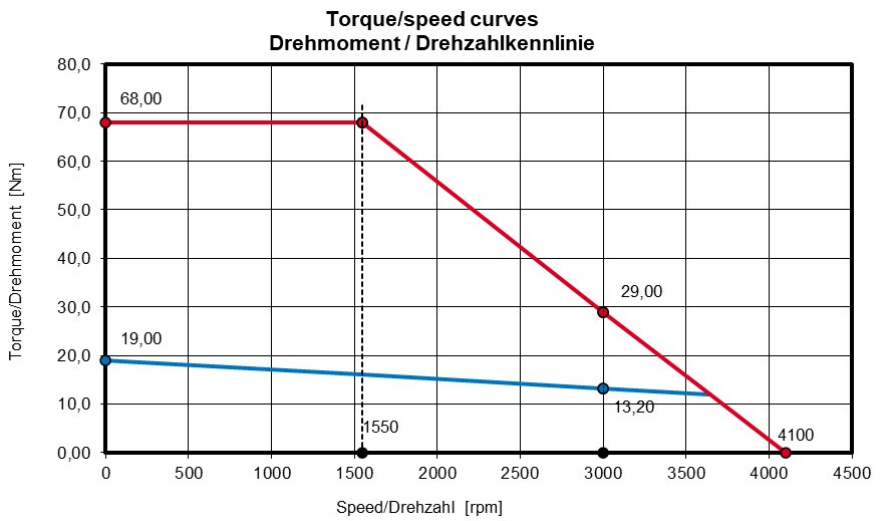






JQR45	JQR45-1900-066	JQR45-1900-098





5.21.13 Dimensions JQR50 and JQR52

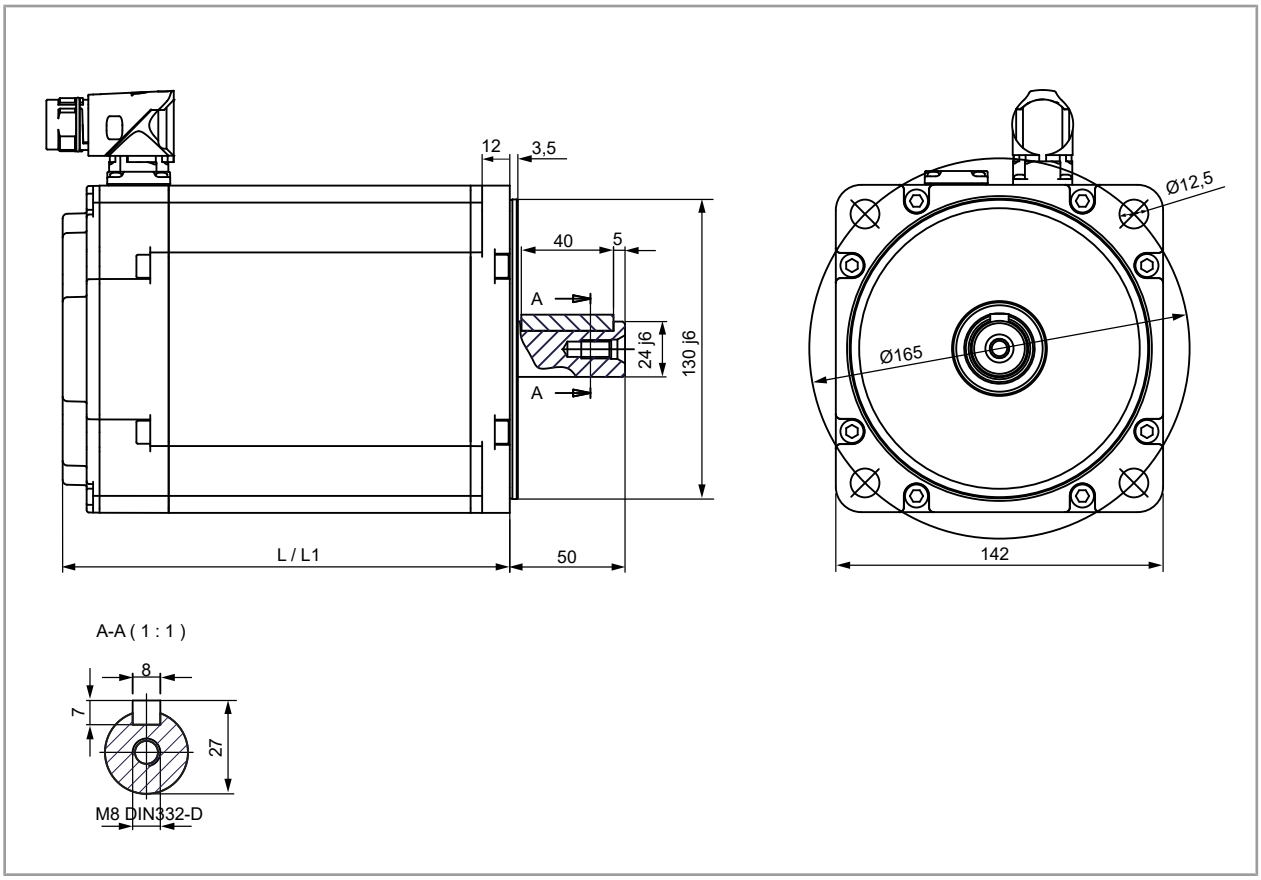


Fig. 35: Dimensions JQR50 in mm

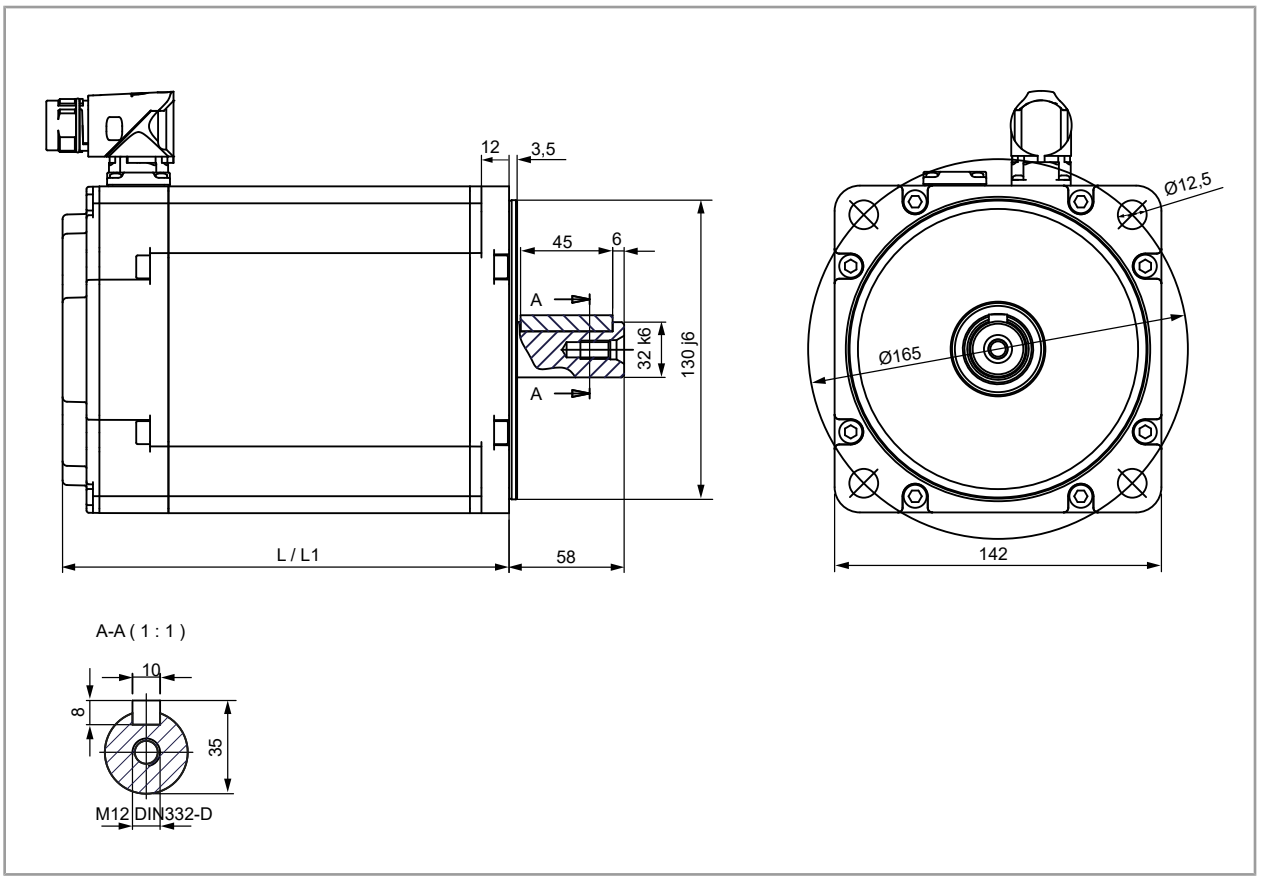


Fig. 36: Dimensions JQR52 in mm

	P	L	L1	L	L1
Type	**Resolver**			**EEx37/EKx36/SKx36**	
JQR50-1250	M23	149	189	160	200
JQR50-1700	M23	166	206	177	217
JQR50-2150	M23	183	234	194	245
JQR52-2600	M23	205	251	216	262
JQR52-3000	M23	222	268	233	279

Tab. 60: Dimensions

Key:
P = Power connector size
L = Dimension without brake
L1 = Dimension with brake

5.21.14 Technical data of the brake for motor type JQR50 and JQR52

Parameter	Value
Holding torque M_{BR}	15 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	24 W
Rotor inertia J_{BR}	1.66 kg*cm^2
Weight m_{BR}	1.4kg

Tab. 61: Technical data of the brake for motor type JQR50

Parameter	Value
Holding torque M_{BR}	33 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +10 %) V
Rated power P_{BR}	24 W
Rotor inertia J_{BR}	9.5 kg*cm^2
Weight m_{BR}	3.5 kg

Tab. 62: Technical data of the brake for motor type JQR52

5.21.15 Performance data JQR50 and JQR52

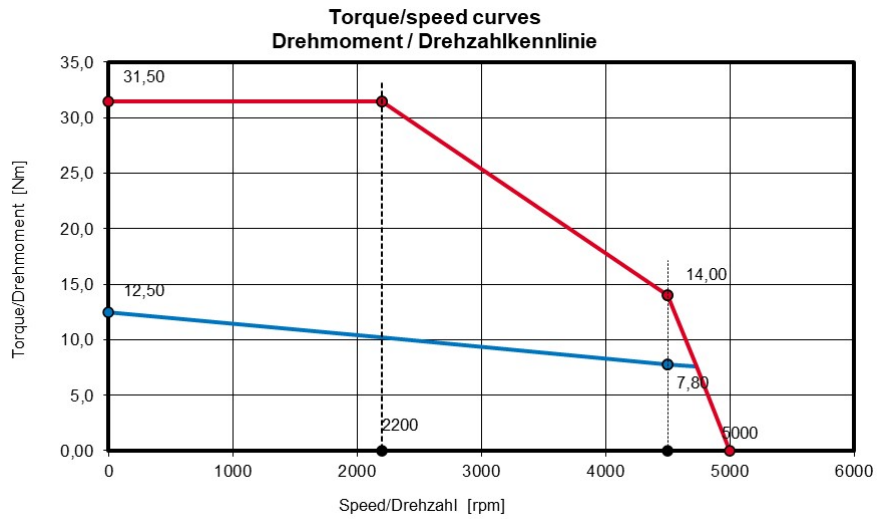
Motor type			JQR50-1250-066	JQR50-1250-098	JQR50-1700-066	JQR50-1700-098	JQR50-2150-066	JQR50-2150-098	JQR52-2600-098	JQR52-3000-098
Nominal speed	N_n	rpm	4500	3000	4500	3000	4500	3000	3000	3000
DC link voltage	U_{dc}	V	560	560	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	400	400	400	400	400	400	400	400
Rated motor voltage	U_m	V	296	296	296	296	296	296	296	296
Rated torque	M_n	Nm	7.8	9.5	9.7	12.3	10.9	14.8	17.4	19.6
Rated current	I_n	A	7.1	5.8	8.9	7.6	10.0	9.1	10.7	12.0
Continuous stall torque	M_o	Nm	12.5	12.5	17.0	17.0	21.5	21.5	26.0	30.0
Continuous stall current	I_o	A	11.5	7.7	15.6	10.4	19.7	13.2	16.0	18.4
Max. torque	M_{max}	Nm	32	32	47	47	63	63	79	95
Max. current	I_{max}	A	40	27	59	40	78	52	64	76
Max. speed	N_{max}	rpm	5000	5000	5000	5000	5000	5000	5000	5000
Voltage constant	K_E	V/1000	66.0	98.4	66.0	98.4	66.0	98.4	98.4	98.4
Torque constant	K_T	Nm/A	1.09	1.63	1.09	1.63	1.09	1.63	1.63	1.63
Winding resistance	R_{2ph}	Ω	0.65	1.33	0.34	0.81	0.26	0.40	0.40	0.36
Winding inductance	L_{2ph}	mH	7.7	15.7	4.3	10.2	3.4	5.6	5.6	5.1
Motor pole count	P_{mot}		10	10	10	10	10	10	10	10
Idling speed	N_o	rpm	5000	4100	5000	4100	5000	4100	4050	4050
Torque at I_{max}/U_n	M_z	Nm	32	32	47	47	63	63	79	95
Speed at I_{max}/U_n	N_z	rpm	2200	1550	2650	1800	2600	1800	1800	1750
Max. torque at n_n	M_x	Nm	14.0	14.0	28	23	30	31	38	42
Electrical time constant	T_{el}	ms	11.8	11.8	12.6	12.6	13.1	14.0	14.0	14.2
Mechanical time constant	T_{mech}	ms	0.64	0.59	0.49	0.52	0.49	0.34	0.47	0.49

Motor type			JQR50-1250-066	JQR50-1250-098	JQR50-1700-066	JQR50-1700-098	JQR50-2150-066	JQR50-2150-098	JQR52-2600-098	JQR52-3000-098
Thermal time constant	T_{th}	min	38	38	40	40	42	42	43	45
Rotor inertia without brake	J	kg*cm^2	6.8	6.8	9.8	9.8	12.9	12.9	17.9	21
Weight without brake	m	kg	8.1	8.1	9.9	9.9	11.7	11.7	13.5	15.0
Axial load	F_A	N	57	61	59	66	62	70	145	151
Radial load	F_R	N	565	610	590	660	620	700	1450	1510

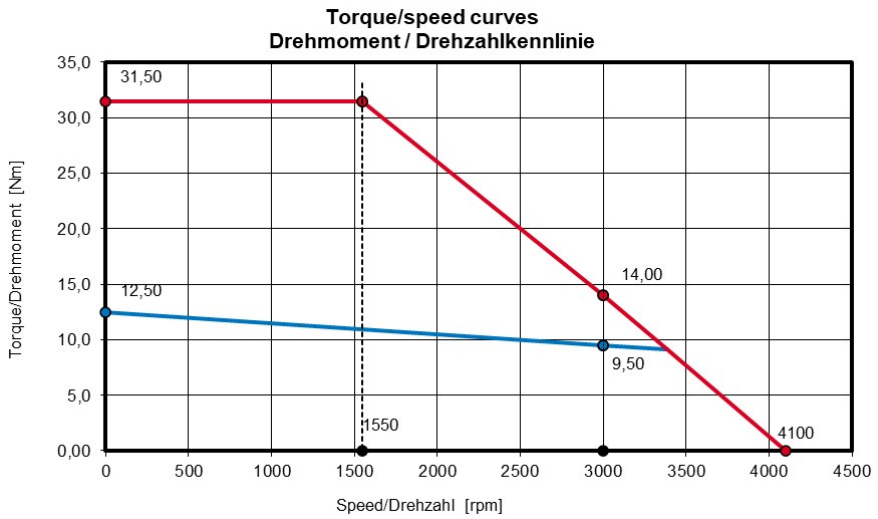
Torque speed characteristics

JQR50

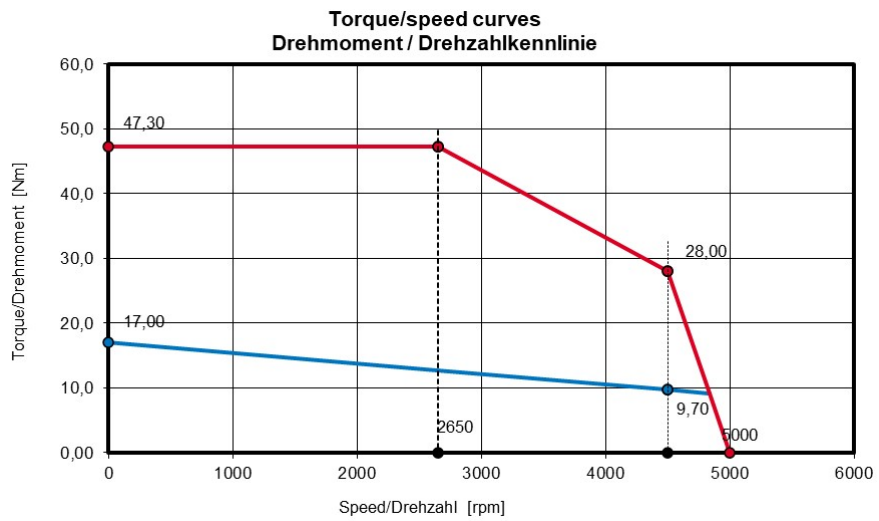
JQR50-1250-066

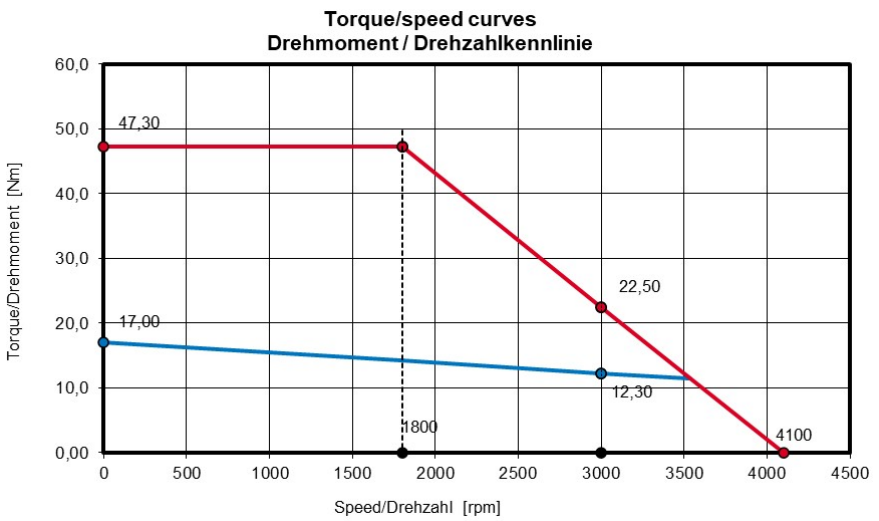


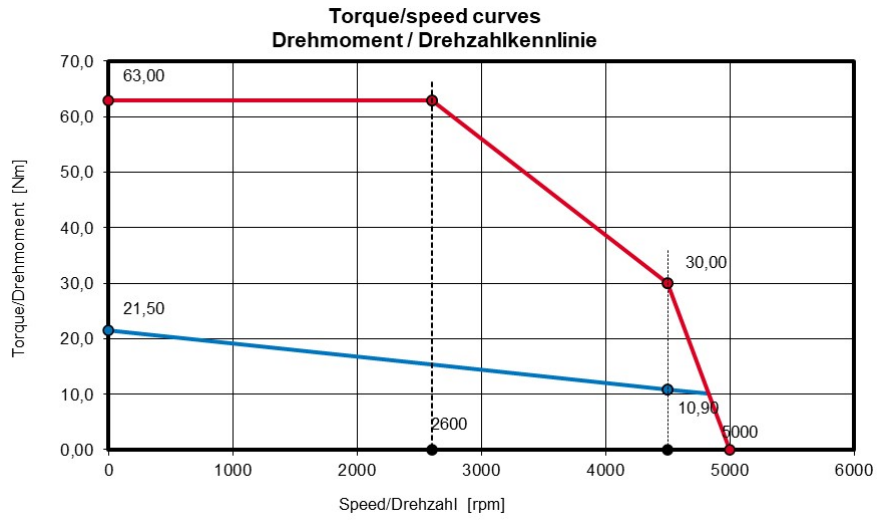
JQR50-1250-098

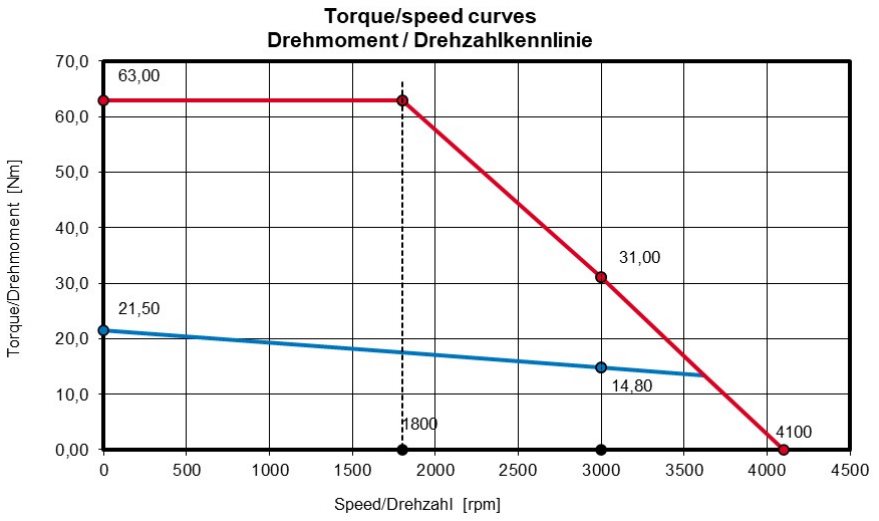


JQR50	JQR50-1700-066	JQR50-1700-098
JQR50	JQR50-2150-066	JQR50-2150-098

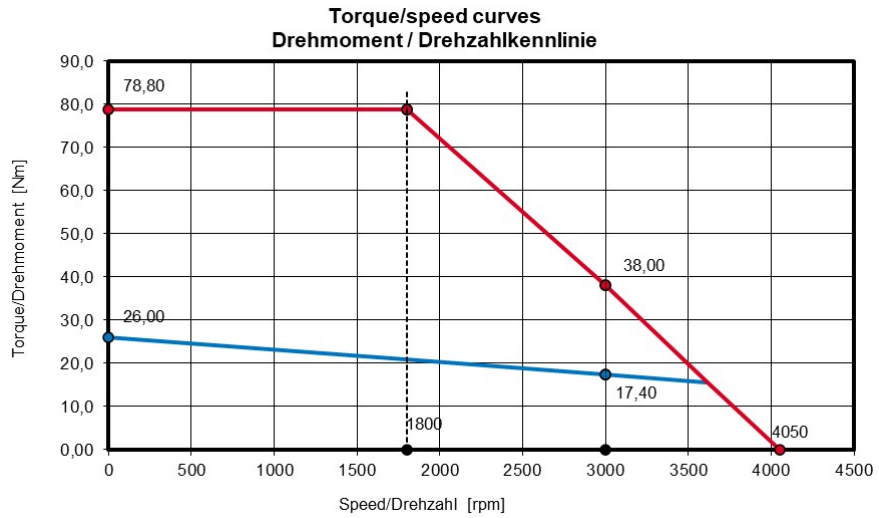


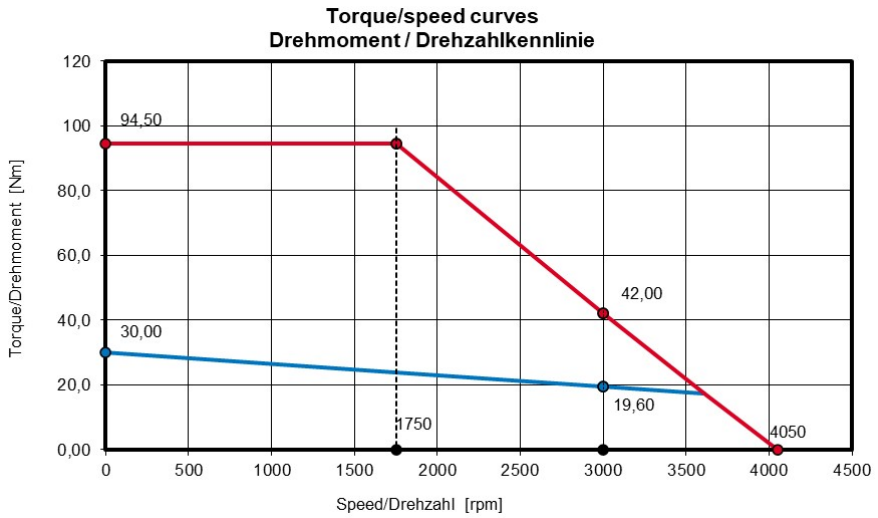






JQR52	JQR52-2600-098	JQR52-3000-098





5.22 Flange size JL1

5.22.1 Dimensions JL1

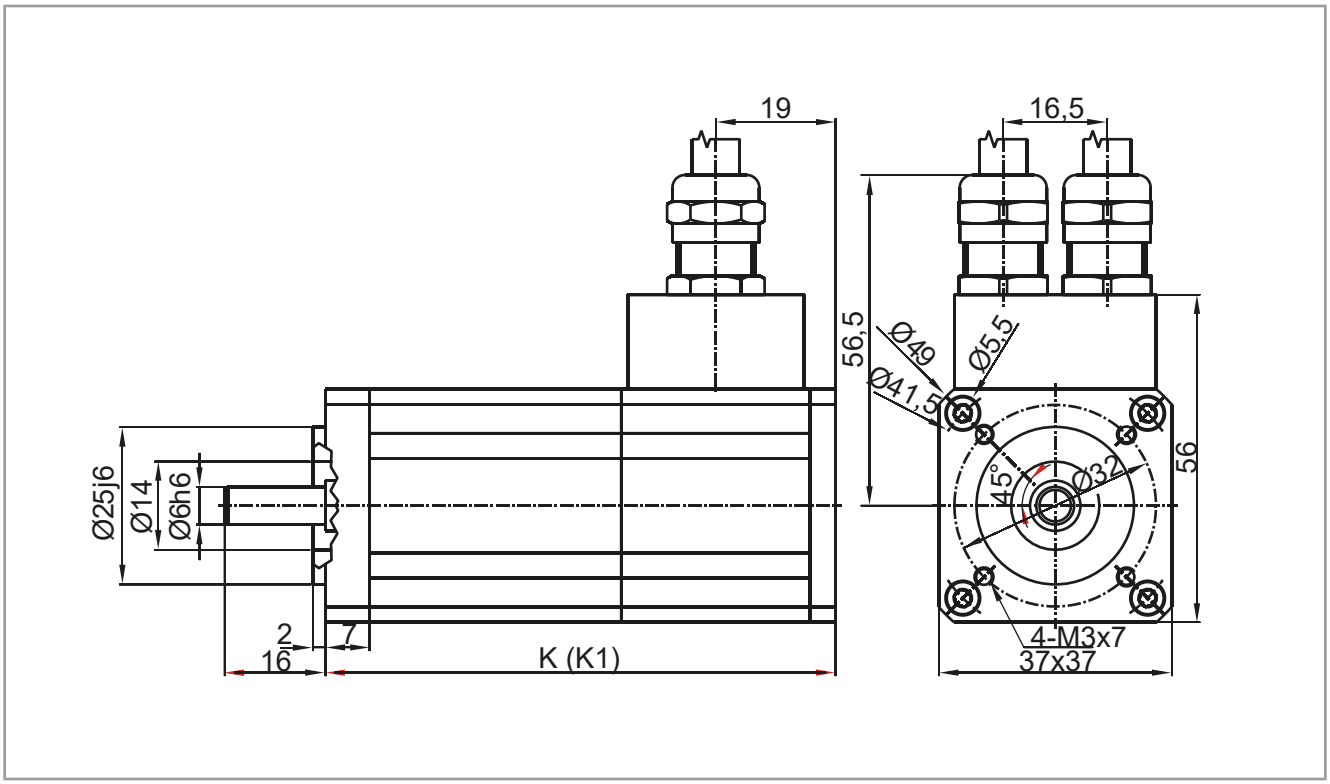


Fig. 37: Dimensions in mm

5.22.2 Technical data of the brake for motor type JL1

Parameter	Value
Holding torque M_{BR}	0.4 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +6 %) V
Rated power P_{BR}	8 W
Rotor inertia J_{BR}	0.013 kg*cm^2
Weight m_{BR}	0.08 kg

Tab. 63: Technical data of the brake for motor type JL1

5.22.3 Performance data DC link voltage 24 V DC

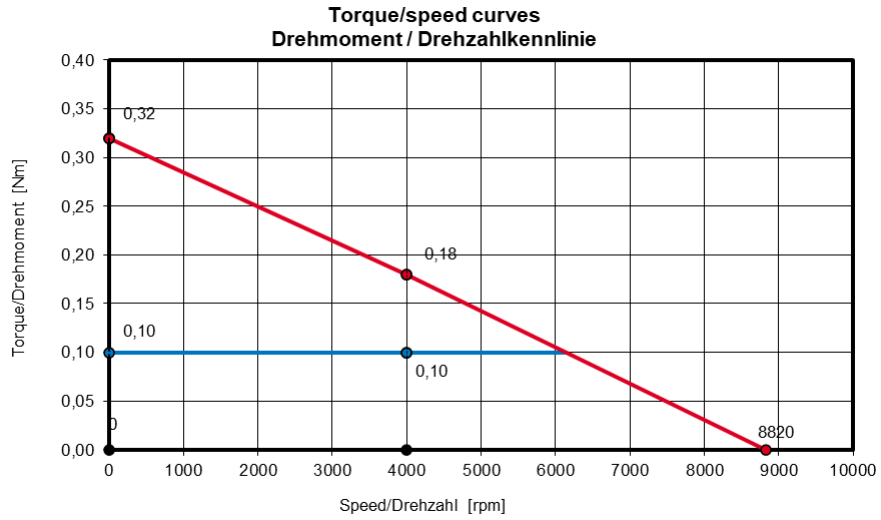
Motor type			JL1-0010-002
Nominal speed	N_n	rpm	4000
DC link voltage	U_{dc}	V	24.0
Rated AC supply servo amplifier	U_n	V	15.0
Rated motor voltage	U_m	V	12.0
Rated torque	M_n	Nm	0.10
Rated current	I_n	A	3.8
Continuous stall torque	M_o	Nm	0.10
Continuous stall current	I_o	A	3.6
Max. torque	M_{max}	Nm	0.32
Max. current	I_{max}	A	12.0
Max. speed	N_{max}	rpm	12000
Voltage constant	K_E	V/1000	1.7
Torque constant	K_T	Nm/A	0.03
Winding resistance	R_{2ph}	Ω	1.04
Winding inductance	L_{2ph}	mH	0.30
Motor pole count	P_{mot}		6
Idling speed	N_o	rpm	8820
Torque at I_{max}/U_n	M_z	Nm	0.32
Speed at I_{max}/U_n	N_z	rpm	0.00
Max. torque at n_n	M_x	Nm	0.18
Electrical time constant	T_{el}	ms	0.29
Mechanical time constant	T_{mech}	ms	13.7

Motor type			JL1-0010-002
Thermal time constant	T_{th}	min	18.0
Rotor inertia without brake	J	kg*cm^2	0.06
Weight without brake	m	kg	0.37
Axial load	F_A	N	31
Radial load	F_R	N	161

Torque speed characteristics

JL1
24 V

JL1-0010-002



5.22.4 Performance data DC link voltage 48 V DC

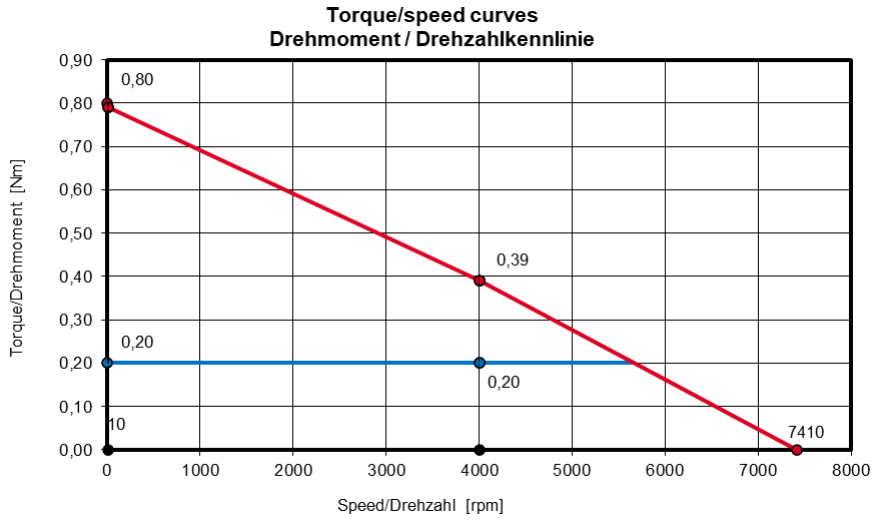
Motor type			JL1-0020-004	JL1-0030-005
Nominal speed	N_n	rpm	4000	4000
DC link voltage	U_{dc}	V	48.0	48.0
Rated AC supply servo amplifier	U_n	V	30.0	30.0
Rated motor voltage	U_m	V	23.0	26.0
Rated torque	M_n	Nm	0.20	0.29
Rated current	I_n	A	3.2	3.8
Continuous stall torque	M_o	Nm	0.20	0.30
Continuous stall current	I_o	A	3.0	3.8
Max. torque	M_{max}	Nm	0.80	1.2
Max. current	I_{max}	A	12.9	16.2
Max. speed	N_{max}	rpm	12000	12000
Voltage constant	K_E	V/1000	4.0	4.8
Torque constant	K_T	Nm/A	0.07	0.08
Winding resistance	R_{2ph}	Ω	1.92	1.43
Winding inductance	L_{2ph}	mH	0.50	0.40
Motor pole count	P_{mot}		6	6
Idling speed	N_o	rpm	7410	6200
Torque at I_{max}/U_n	M_z	Nm	0.79	1.2
Speed at I_{max}/U_n	N_z	rpm	10.0	440
Max. torque at n_n	M_x	Nm	0.39	0.48
Electrical time constant	T_{el}	ms	0.26	0.28
Mechanical time constant	T_{mech}	ms	6.1	3.9

Motor type			JL1-0020-004	JL1-0030-005
Thermal time constant	T_{th}	min	20	22
Rotor inertia without brake	J	kg*cm^2	0.08	0.10
Weight without brake	m	kg	0.45	0.53
Axial load	F_A	N	33	35
Radial load	F_R	N	174	182

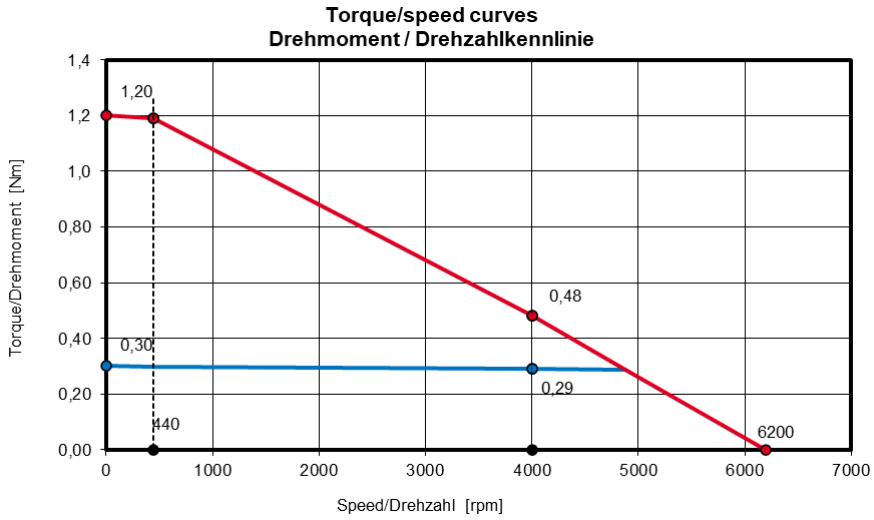
Torque speed characteristics

JL1
48 V

JL1-0020-004



JL1-0030-005

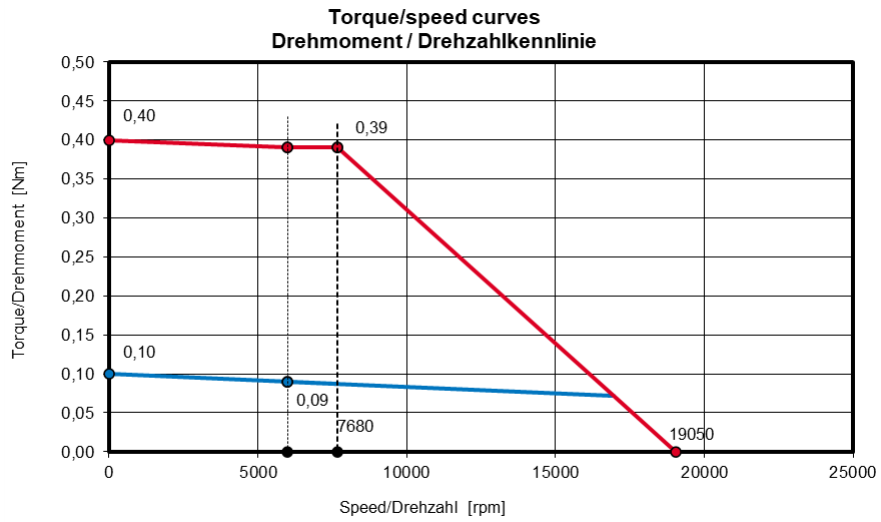
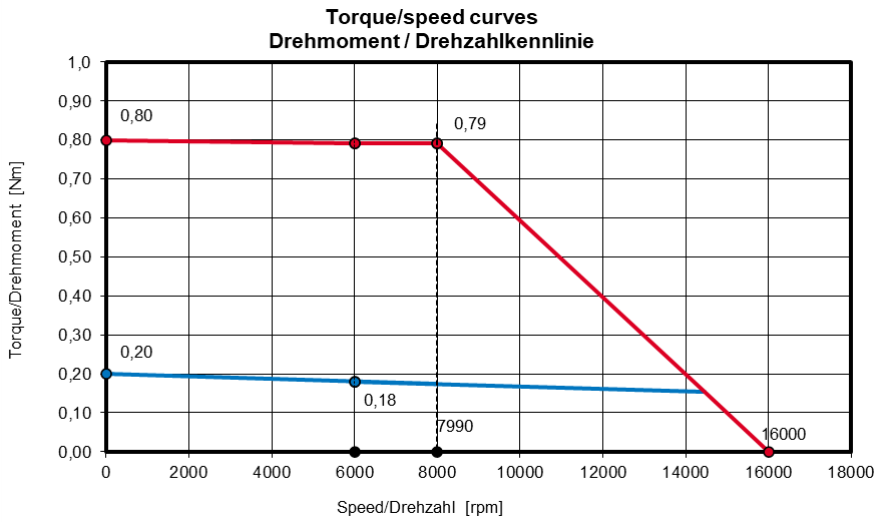


5.22.5 Performance data DC link voltage 320 V DC

Motor type			JL1-0010-010	JL1-0020-012	JL1-0030-019
Nominal speed	N_n	rpm	6000	6000	?
DC link voltage	U_{dc}	V	320	320	
Rated AC supply servo amplifier	U_n	V	200	200	
Rated motor voltage	U_m	V	90	96	
Rated torque	M_n	Nm	0.09	0.18	
Rated current	I_n	A	0.56	0.92	
Continuous stall torque	M_o	Nm	0.10	0.20	
Continuous stall current	I_o	A	0.58	0.97	
Max. torque	M_{max}	Nm	0.40	0.80	
Max. current	I_{max}	A	2.5	4.2	
Max. speed	N_{max}	rpm	12000	12000	
Voltage constant	K_E	V/1000	10.5	12.5	
Torque constant	K_T	Nm/A	0.17	0.21	
Winding resistance	R_{2ph}	Ω	38.9	18.9	
Winding inductance	L_{2ph}	mH	9.2	4.5	
Motor pole count	P_{mot}		6	6	
Idling speed	N_o	rpm	19050	16000	
Torque at I_{max}/U_n	M_z	Nm	0.39	0.79	
Speed at I_{max}/U_n	N_z	rpm	7680	7990	
Max. torque at n_n	M_x	Nm	0.39	0.79	
Electrical time constant	T_{el}	ms	0.24	0.24	
Mechanical time constant	T_{mech}	ms	13.4	6.1	

Motor type			JL1-0010-010	JL1-0020-012	JL1-0030-019
Thermal time constant	T_{th}	min	18.0	20	
Rotor inertia without brake	J	kg*cm^2	0.06	0.08	
Weight without brake	m	kg	0.37	0.45	
Axial load	F_A	N	31	33	
Radial load	F_R	N	161	174	

Torque speed characteristics

JL1 320 V	JL1-0010-010 	JL1-0020-012 
JL1 320 V	JL1-0030-019 ?	

5.23 Flange size JL2

5.23.1 Dimensions JL2

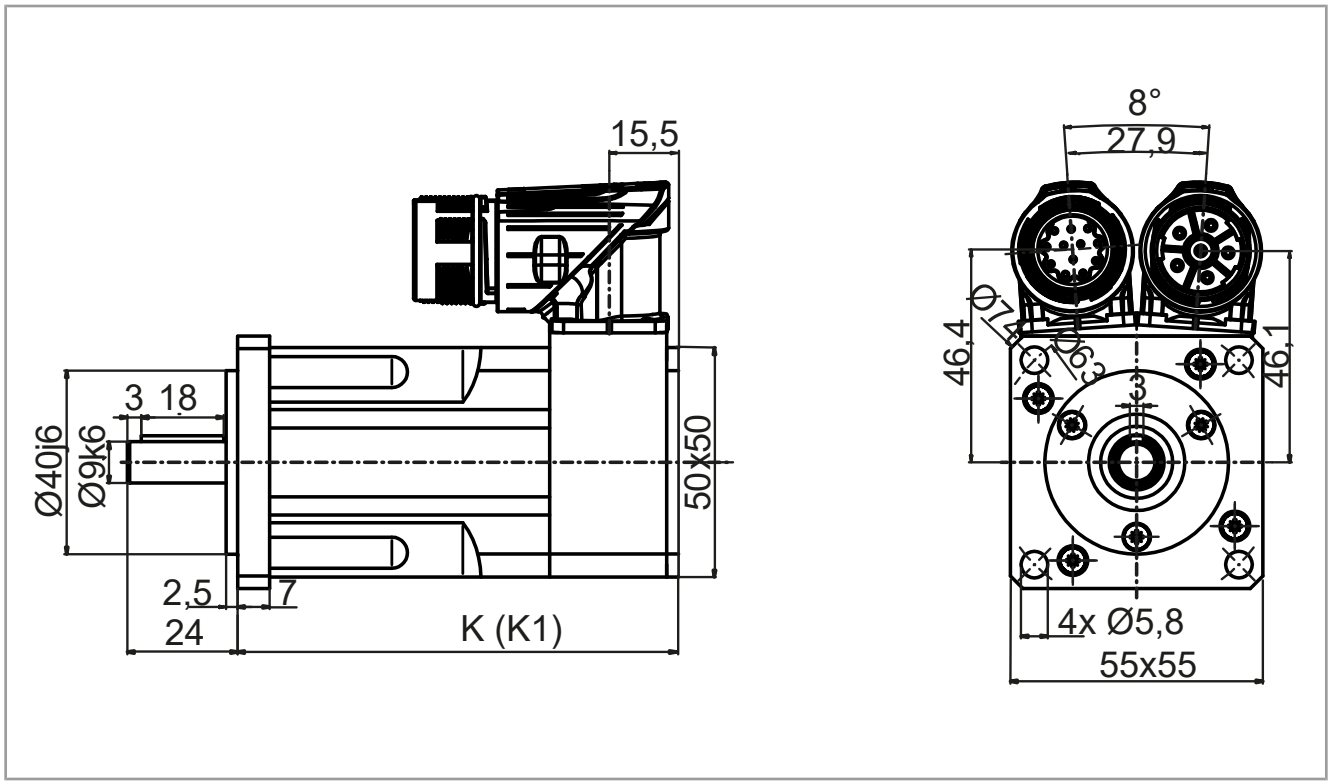


Fig. 38: Dimensions in mm

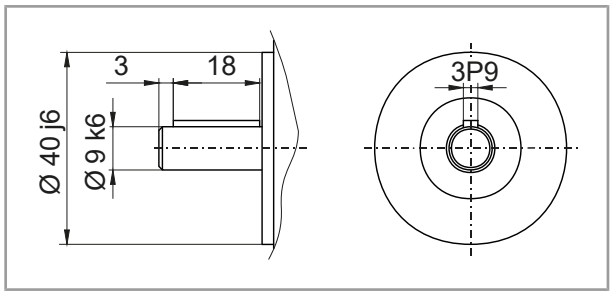


Fig. 39: Option with feather key 3x3x18

	P	K	K1	K	K1
Type	**Resolver**			**SKx36**	
JL2-0020	M23	98	131	109	142
JL2-0040	M23	113	146	124	157
JL2-0060	M23	128	161	139	172
JL2-0080	M23	143	176	154	187

Tab. 64: Dimensions

Key:
P = Power connector size
K = Dimension without brake
K1 = Dimension with brake

5.23.2 Technical data of the brake for motor type JL2

Parameter	Value
Holding torque M_{BR}	2 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +6 %) V
Rated power P_{BR}	11 W
Rotor inertia J_{BR}	0.068 kg*cm^2
Weight m_{BR}	0.15 kg

Tab. 65: Technical data of the brake for motor type JL2

5.23.3 Performance data DC link voltage 70 V DC

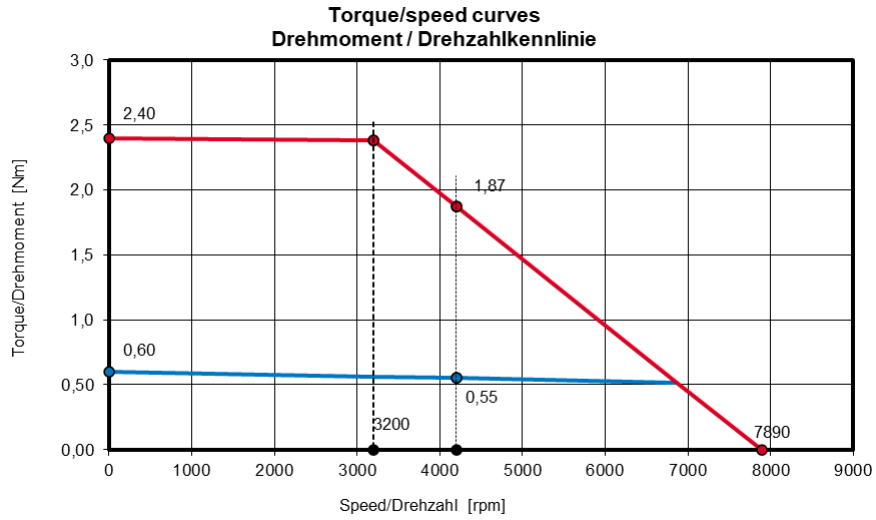
Motor type			JL2-0060-005
Nominal speed	N_n	rpm	4200
DC link voltage	U_{dc}	V	70
Rated AC supply servo amplifier	U_n	V	44.0
Rated motor voltage	U_m	V	29.0
Rated torque	M_n	Nm	0.55
Rated current	I_n	A	6.3
Continuous stall torque	M_o	Nm	0.60
Continuous stall current	I_o	A	6.5
Max. torque	M_{max}	Nm	2.4
Max. current	I_{max}	A	28
Max. speed	N_{max}	rpm	12000
Voltage constant	K_E	V/1000	5.5
Torque constant	K_T	Nm/A	0.09
Winding resistance	R_{2ph}	Ω	0.67
Winding inductance	L_{2ph}	mH	0.60
Motor pole count	P_{mot}		6
Idling speed	N_o	rpm	7890
Torque at I_{max}/U_n	M_z	Nm	2.4
Speed at I_{max}/U_n	N_z	rpm	3200
Max. torque at n_n	M_x	Nm	1.9
Electrical time constant	T_{el}	ms	0.90
Mechanical time constant	T_{mech}	ms	1.5

Motor type			JL2-0060-005
Thermal time constant	T_{th}	min	20
Rotor inertia without brake	J	kg*cm^2	0.11
Weight without brake	m	kg	1.2
Axial load	F_A	N	47
Radial load	F_R	N	245

Torque speed characteristics

JL2
70 V

JL2-0060-005



5.23.4 Performance data DC link voltage 320 V DC

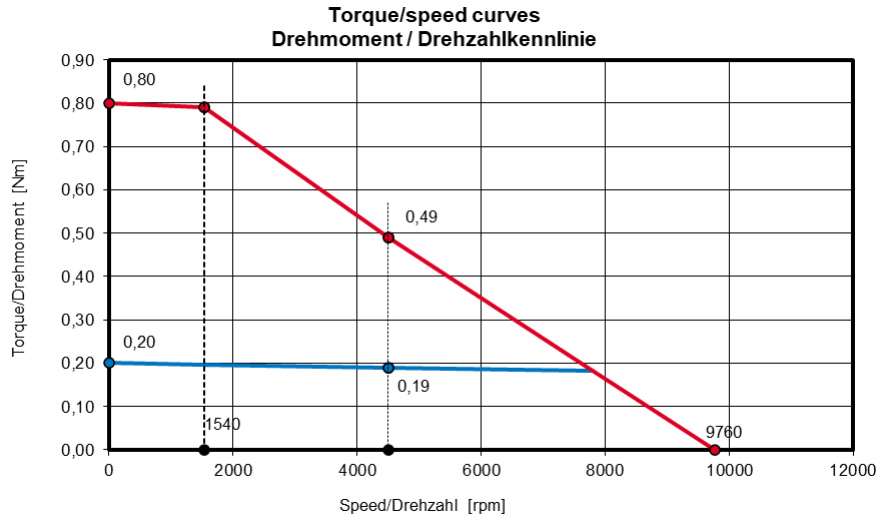
Motor type			JL2-0020-020	JL2-0020-008	JL2-0040-026	JL2-0040-008	JL2-0060-031	JL2-0060-008	JL2-0080-025
Nominal speed	N_n	rpm	4500	6000	4500	6000	4500	6000	4500
DC link voltage	U_{dc}	V	320	320	320	320	320	320	320
Rated AC supply servo amplifier	U_n	V	200	200	200	200	200	200	200
Rated motor voltage	U_m	V	134	66	147	61	163	58	138
Rated torque	M_n	Nm	0.19	0.18	0.36	0.35	0.55	0.53	0.72
Rated current	I_n	A	0.60	1.45	0.88	2.6	1.18	4.1	1.76
Continuous stall torque	M_o	Nm	0.20	0.20	0.40	0.40	0.60	0.60	0.80
Continuous stall current	I_o	A	0.59	1.47	0.93	2.8	1.23	4.4	1.86
Max. torque	M_{max}	Nm	0.80	0.80	1.6	1.6	2.4	2.4	3.2
Max. current	I_{max}	A	2.5	6.3	4.0	12.1	5.3	18.7	8.0
Max. speed	N_{max}	rpm	12000	12000	12000	12000	12000	12000	12000
Voltage constant	K_E	V/1000	20.5	8.2	26.0	8.6	30.0	8.3	26.0
Torque constant	K_T	Nm/A	0.34	0.14	0.43	0.14	0.49	0.14	0.43
Winding resistance	R_{2ph}	Ω	54	8.7	26.3	2.6	19.9	1.41	9.3
Winding inductance	L_{2ph}	mH	32.0	5.1	21.4	2.2	17.2	1.30	9.0
Motor pole count	P_{mot}		6	6	6	6	6	6	6
Idling speed	N_o	rpm	9760	24040	7690	23150	6780	23960	7650
Torque at I_{max}/U_n	M_z	Nm	0.79	0.78	1.6	1.6	2.4	2.4	3.2
Speed at I_{max}/U_n	N_z	rpm	1540	11610	2420	14390	2170	15700	3600
Max. torque at n_n	M_x	Nm	0.49	0.78	0.95	1.6	1.2	2.4	2.5
Electrical time constant	T_{el}	ms	0.59	0.59	0.82	0.85	0.87	0.92	0.97
Mechanical time constant	T_{mech}	ms	4.9	4.9	2.0	1.8	1.5	1.4	1.1

Motor type			JL2-0020-020	JL2-0020-008	JL2-0040-026	JL2-0040-008	JL2-0060-031	JL2-0060-008	JL2-0080-025
Thermal time constant	T_{th}	min	10.0	10.0	15.0	15.0	20	20	22
Rotor inertia without brake	J	kg*cm^2	0.06	0.06	0.08	0.08	0.11	0.11	0.13
Weight without brake	m	kg	0.90	0.90	1.1	1.1	1.2	1.2	1.4
Axial load	F_A	N	43	43	45	45	47	47	48
Radial load	F_R	N	225	225	237	237	245	245	252

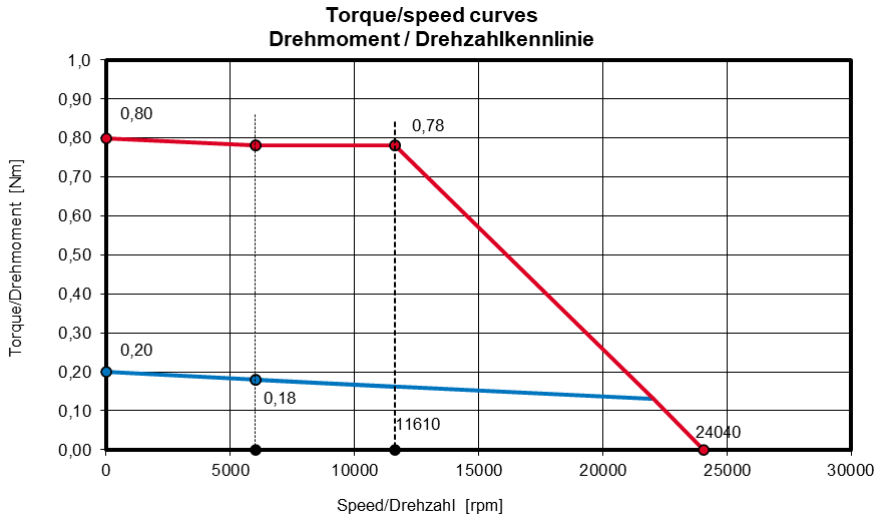
Torque speed characteristics

JL2
320 V

JL2-0020-020

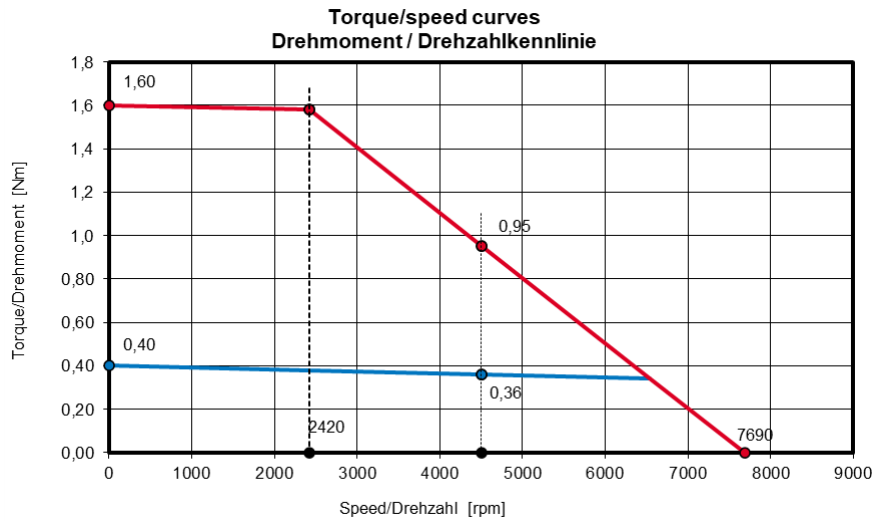


JL2-0020-008

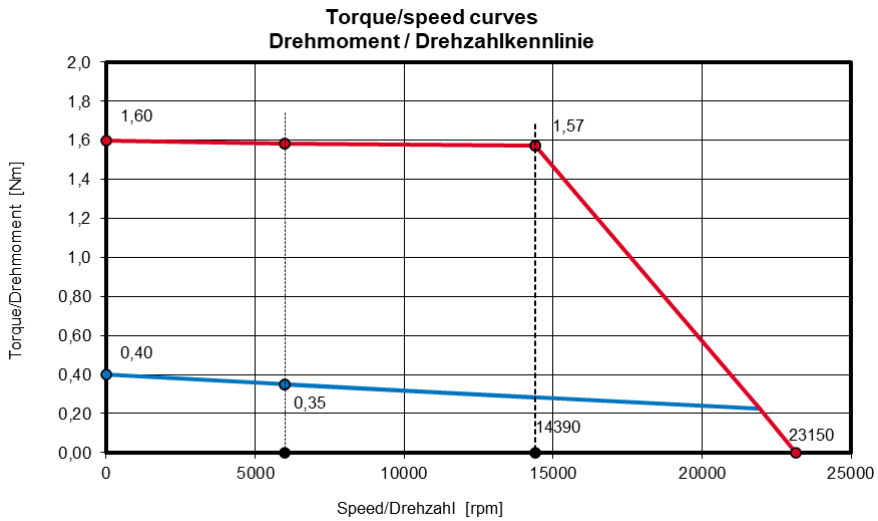


JL2
320 V

JL2-0040-026

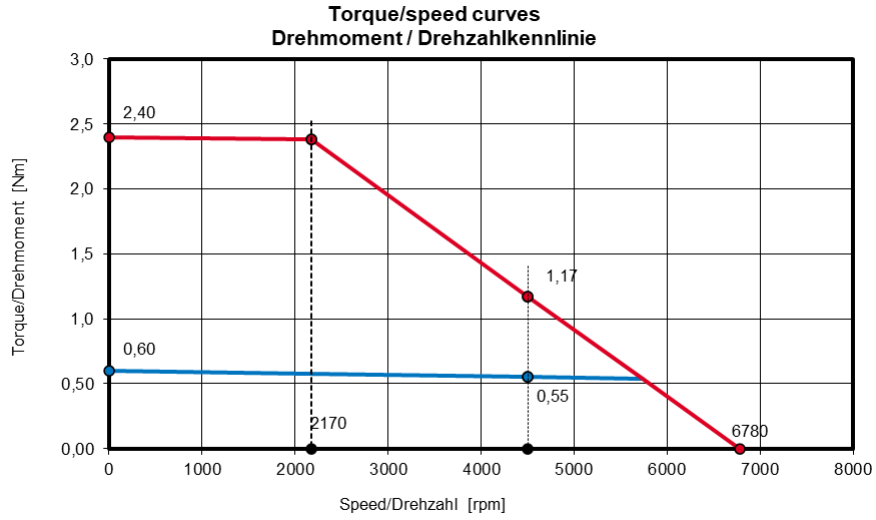


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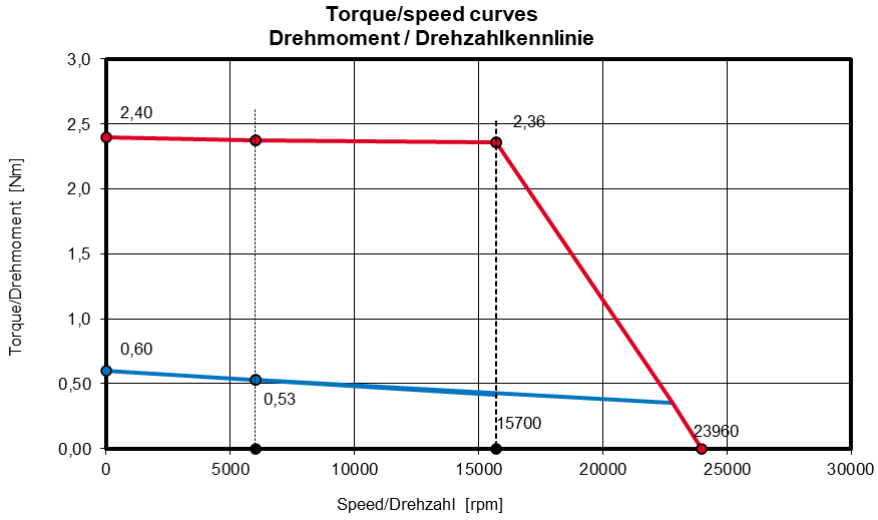


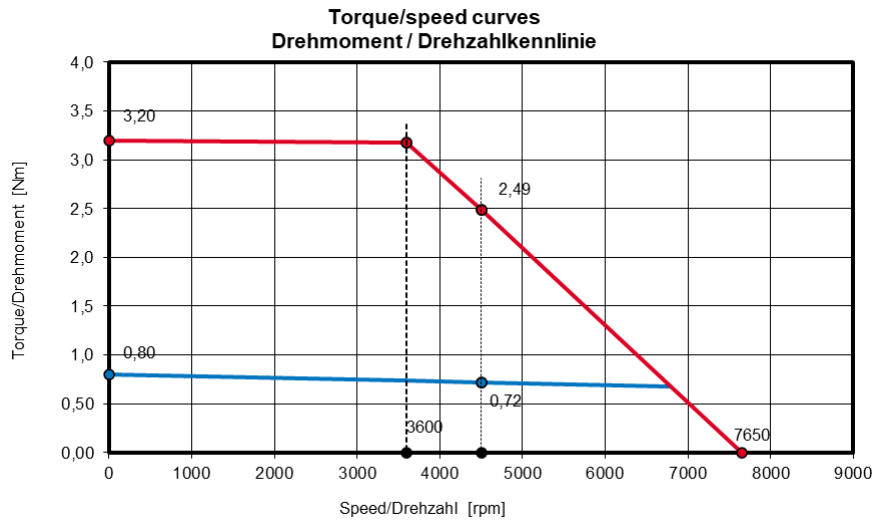
JL2
320 V

JL2-0060-031



JL2-0060-008



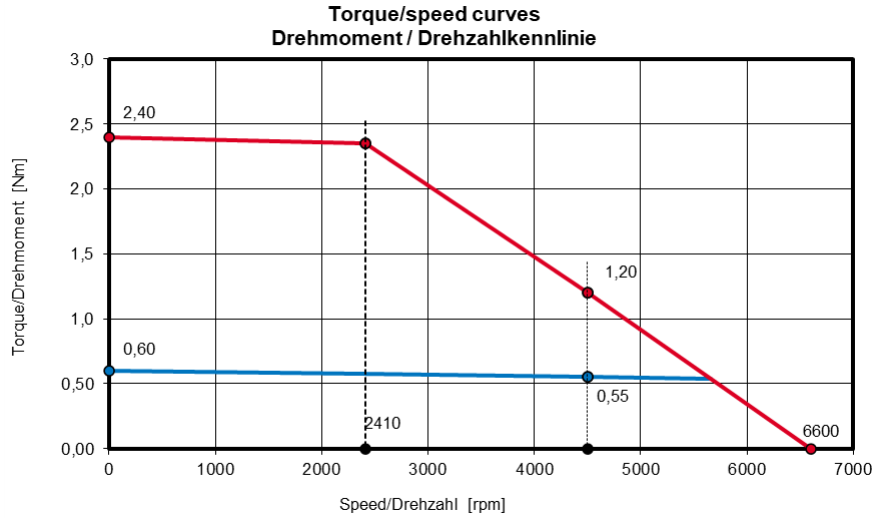
JL2 320 V	JL2-0080-025 	

5.23.5 Performance data DC link voltage 560 V DC

Motor type			**JL2-0060-049**
Nominal speed	N_n	rpm	4500
DC link voltage	U_{dc}	V	560
Rated AC supply servo amplifier	U_n	V	330
Rated motor voltage	U_m	V	271
Rated torque	M_n	Nm	0.55
Rated current	I_n	A	0.70
Continuous stall torque	M_o	Nm	0.60
Continuous stall current	I_o	A	0.73
Max. torque	M_{max}	Nm	2.4

Motor type			**JL2-0060-049**
Max. current	I_{max}	A	3.1
Max. speed	N_{max}	rpm	12000
Voltage constant	K_E	V/1000	50.0
Torque constant	K_T	Nm/A	0.83
Winding resistance	R_{2ph}	Ω	51
Winding inductance	L_{2ph}	mH	45.5
Motor pole count	P_{mot}		6
Idling speed	N_o	rpm	6600
Torque at I_{max}/U_n	M_z	Nm	2.4
Speed at I_{max}/U_n	N_z	rpm	2410
Max. torque at n_n	M_x	Nm	1.2
Electrical time constant	T_{el}	ms	0.90
Mechanical time constant	T_{mech}	ms	1.4
Thermal time constant	T_{th}	min	20
Rotor inertia without brake	J	$kg*cm^2$	0.11
Weight without brake	m	kg	1.2
Axial load	F_A	N	47
Radial load	F_R	N	245

Torque speed characteristics

JL2 560 V	JL2-0060-049 	

5.24 Flange size JL3

5.24.1 Dimensions JL3

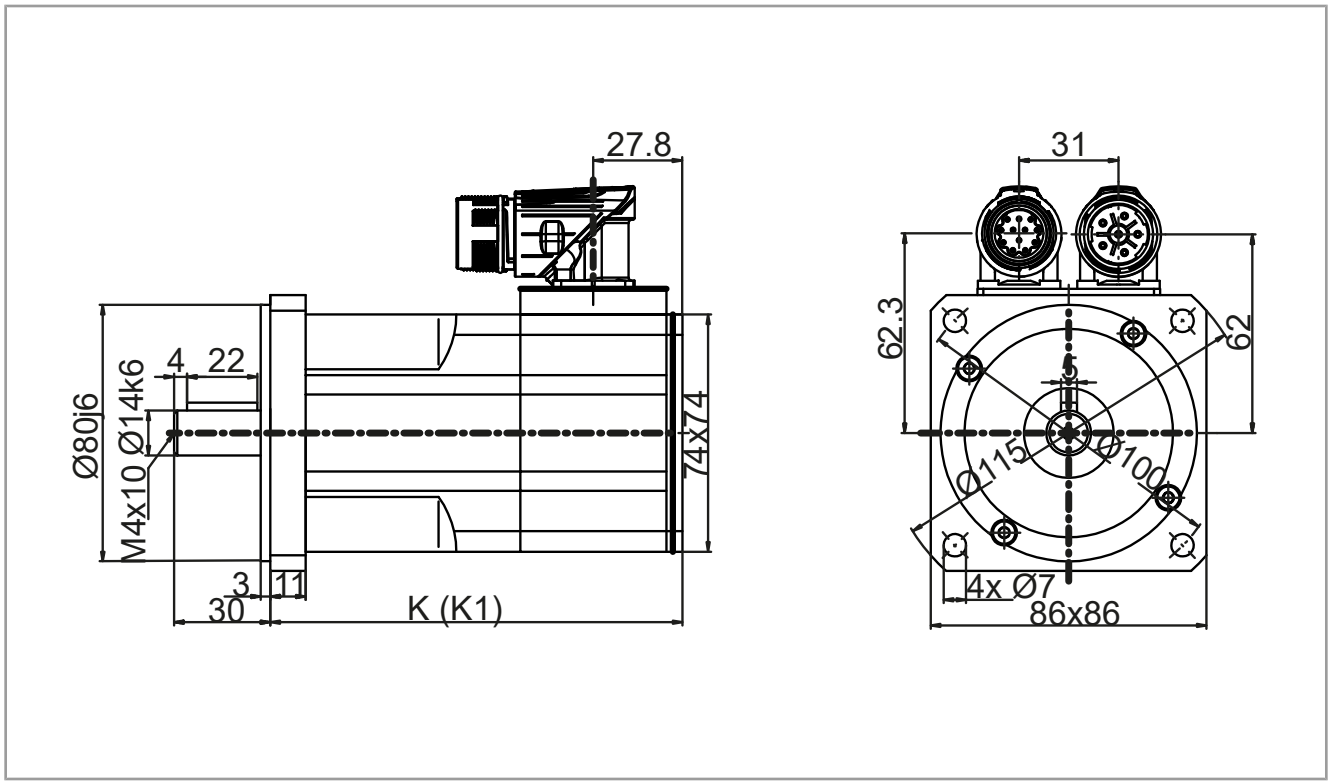


Fig. 40: Dimensions JL3 in mm

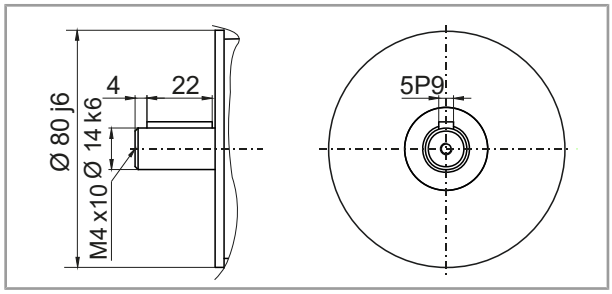


Fig. 41: Option with feather key 5x5x22

	P	K	K1	K	K1
Type	**Resolver**			**SRx50**	
JL3-0065	M23	109	142	128.5	161.5
JL3-0130	M23	127	160	146.5	179.5
JL3-0250	M23	163	196	182.5	215.5
JL3-0300	M23	181	214	200.5	233.5

Tab. 66: Dimensions

Key:
P = Power connector size
K = Dimension without brake
K1 = Dimension with brake

5.24.2 Technical data of the brake for motor type JL3

Parameter	Value
Holding torque M_{BR}	4.5 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +6 %) V
Rated power P_{BR}	12 W
Rotor inertia J_{BR}	0.18 kg*cm^2
Weight m_{BR}	0.47 kg

Tab. 67: Technical data of the brake for motor type JL3

5.24.3 Performance data DC link voltage 320 V DC

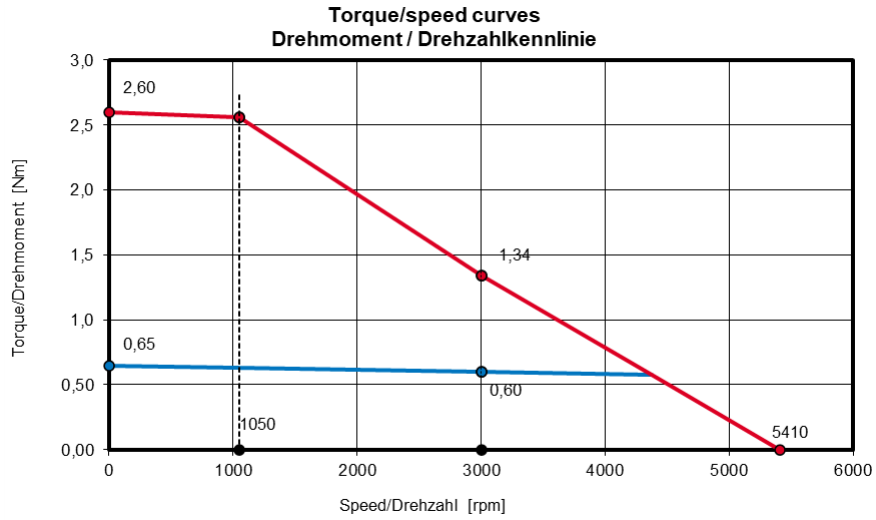
Motor type			JL3-0065-036	JL3-0130-026	JL3-0250-050	JL3-0250-025	JL3-0250-015	JL3-0300-046	JL3-0300-026
Nominal speed	N_n	rpm	3000	4500	3000	4500	4500	3000	4500
DC link voltage	U_{dc}	V	320	320	320	320	320	320	320
Rated AC supply servo amplifier	U_n	V	200	200	200	200	200	200	200
Rated motor voltage	U_m	V	150	137	170	127	73	165	124
Rated torque	M_n	Nm	0.60	1.05	2.2	2.0	2.0	2.5	2.1
Rated current	I_n	A	1.04	2.5	2.7	4.9	8.5	3.2	5.2
Continuous stall torque	M_o	Nm	0.65	1.30	2.5	2.5	2.5	3.0	3.0
Continuous stall current	I_o	A	1.06	2.9	3.0	5.8	10.1	3.7	7.0
Max. torque	M_{max}	Nm	2.6	5.2	10.0	10.0	10.0	12.0	12.0
Max. current	I_{max}	A	4.6	12.5	13.0	25	43	15.8	30
Max. speed	N_{max}	rpm	12000	12000	12000	12000	12000	12000	12000
Voltage constant	K_E	V/1000	37.0	27.0	50.0	26.0	15.0	49.5	26.0
Torque constant	K_T	Nm/A	0.61	0.45	0.83	0.43	0.25	0.82	0.43
Winding resistance	R_{2ph}	Ω	28.2	4.2	5.4	1.38	0.46	3.7	1.01
Winding inductance	L_{2ph}	mH	33.3	7.2	11.7	3.1	1.00	8.6	2.4
Motor pole count	P_{mot}		6	6	6	6	6	6	6
Idling speed	N_o	rpm	5410	7370	4000	7680	13310	4030	7680
Torque at I_{max}/U_n	M_z	Nm	2.6	5.1	9.9	9.9	9.9	11.9	11.9
Speed at I_{max}/U_n	N_z	rpm	1050	3860	1900	4690	8870	2180	4990
Max. torque at n_n	M_x	Nm	1.3	4.2	4.9	9.9	9.9	7.1	11.9
Electrical time constant	T_{el}	ms	1.2	1.7	2.2	2.2	2.2	2.3	2.4
Mechanical time constant	T_{mech}	ms	6.5	2.4	1.9	1.8	1.8	1.4	1.4

Motor type			JL3-0065-036	JL3-0130-026	JL3-0250-050	JL3-0250-025	JL3-0250-015	JL3-0300-046	JL3-0300-026
Thermal time constant	T_{th}	min	25	30	32	32	32	33	33
Rotor inertia without brake	J	kg*cm^2	0.50	0.65	1.4	1.4	1.4	1.5	1.5
Weight without brake	m	kg	1.8	2.3	3.2	3.2	3.2	3.7	3.7
Axial load	F_A	N	70	75	80	80	80	82	82
Radial load	F_R	N	370	393	422	422	422	431	431

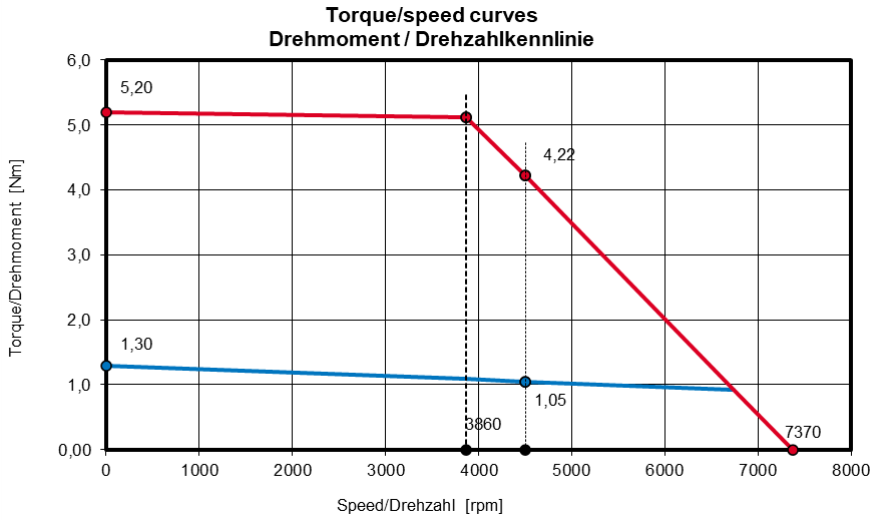
Torque speed characteristics

JL3
320 V

JL3-0065-036

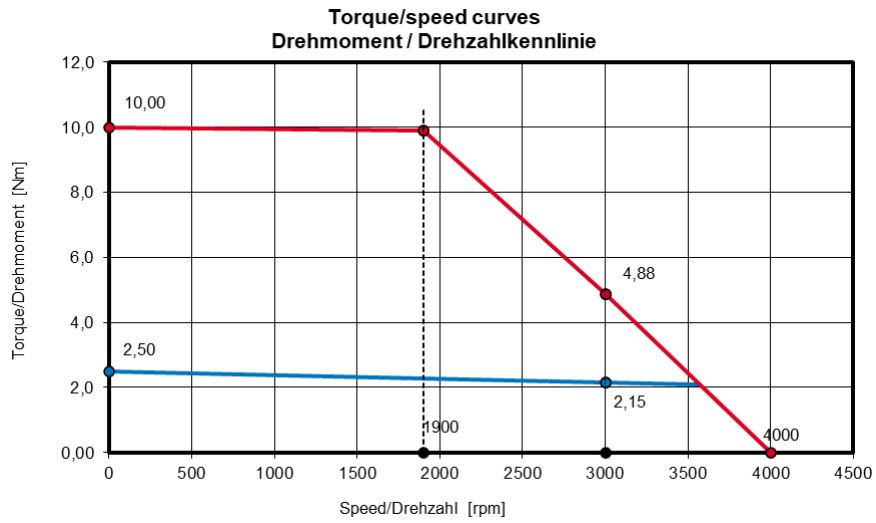


JL3-0130-026

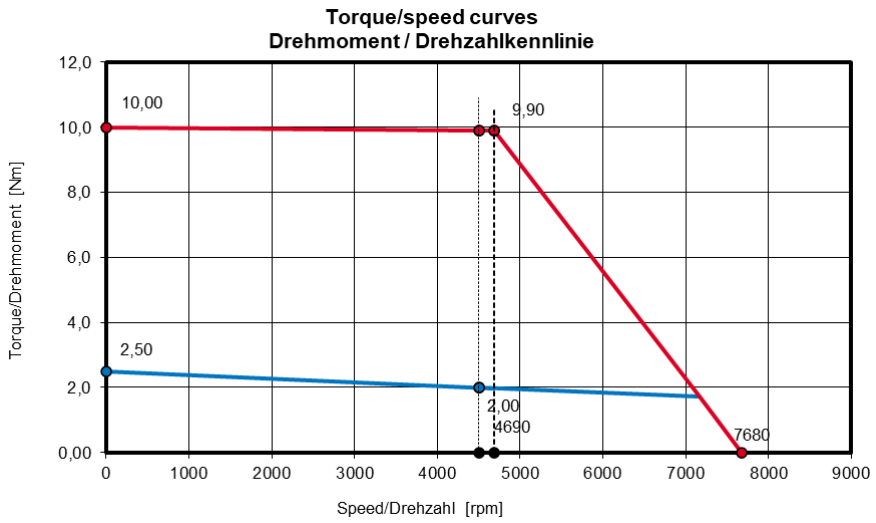


JL3
320 V

JL3-0250-050

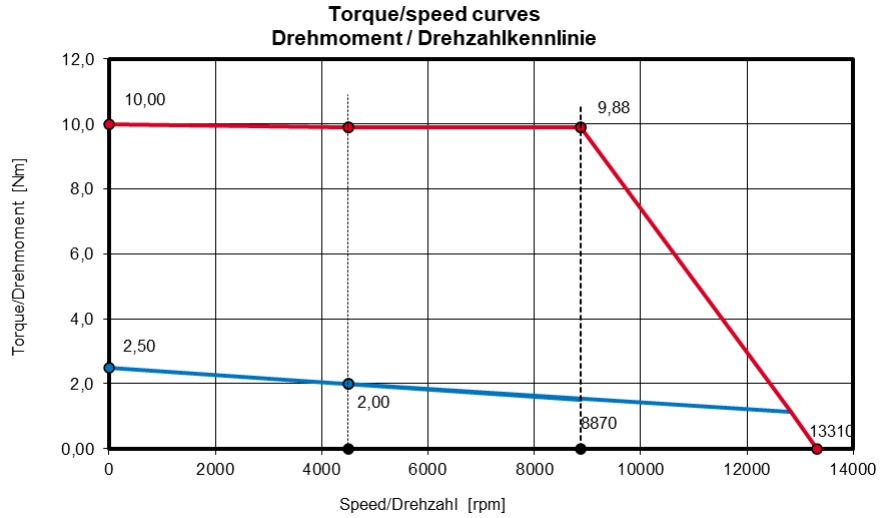


JL3-0250-025

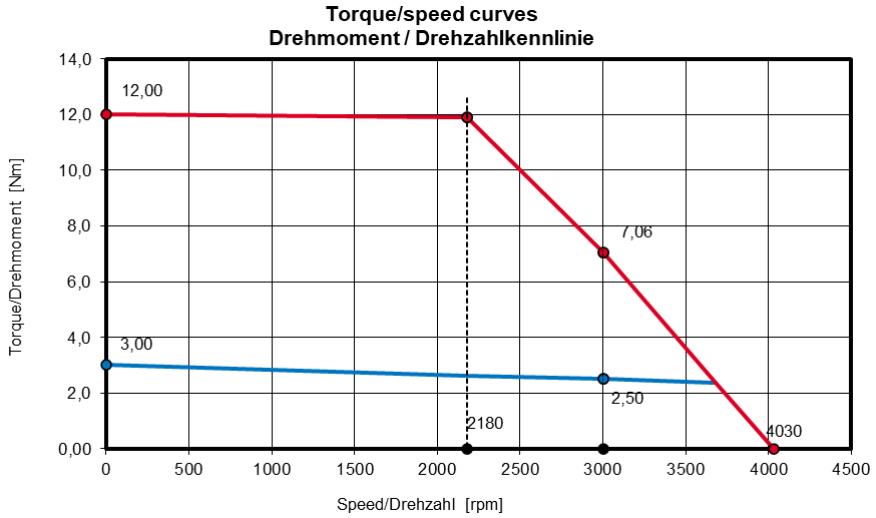


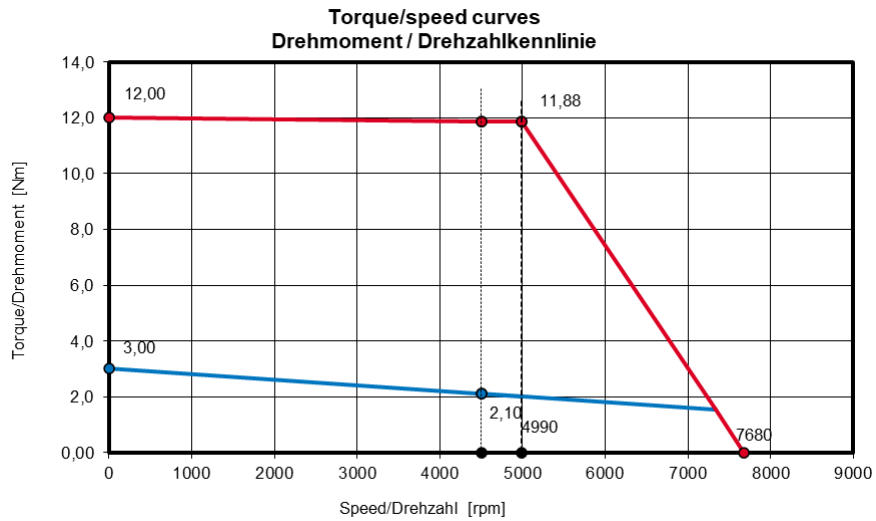
JL3
320 V

JL3-0250-015



JL3-0300-046



JL3 320 V	JL3-0300-026 	

5.24.4 Performance data DC link voltage 560 V DC

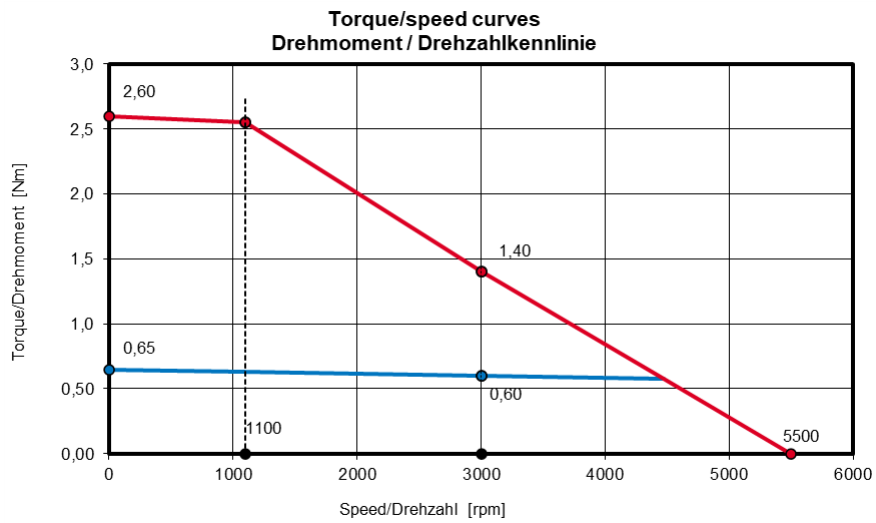
Motor type			JL3-0065-059	JL3-0130-077	JL3-0130-047	JL3-0250-083	JL3-0300-068
Nominal speed	N_n	rpm	3000	3000	6000	3000	4000
DC link voltage	U_{dc}	V	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	330	330	330	330	330
Rated motor voltage	U_m	V	244	279	309	286	305
Rated torque	M_n	Nm	0.60	1.15	1.00	2.2	2.3
Rated current	I_n	A	0.64	0.95	1.40	1.62	2.0
Continuous stall torque	M_o	Nm	0.65	1.30	1.30	2.5	3.0
Continuous stall current	I_o	A	0.65	1.01	1.67	1.80	2.6
Max. torque	M_{max}	Nm	2.6	5.2	5.2	10.0	12.0

Motor type			JL3-0065-059	JL3-0130-077	JL3-0130-047	JL3-0250-083	JL3-0300-068
Max. current	I_{max}	A	2.8	4.3	7.2	7.7	11.0
Max. speed	N_{max}	rpm	12000	12000	12000	12000	12000
Voltage constant	K_E	V/1000	60.0	78.0	47.0	84.0	71.0
Torque constant	K_T	Nm/A	0.99	1.29	0.78	1.39	1.17
Winding resistance	R_{2ph}	Ω	75	34.5	12.7	15.0	7.5
Winding inductance	L_{2ph}	mH	88	62	21.5	33.2	17.6
Motor pole count	P_{mot}		6	6	6	6	6
Idling speed	N_o	rpm	5500	4230	7020	3930	4630
Torque at I_{max}/U_n	M_z	Nm	2.6	5.1	5.1	9.9	11.9
Speed at I_{max}/U_n	N_z	rpm	1100	1570	3610	1840	2660
Max. torque at n_n	M_x	Nm	1.4	2.4	1.7	4.6	4.4
Electrical time constant	T_{el}	ms	1.2	1.8	1.7	2.2	2.3
Mechanical time constant	T_{mech}	ms	6.6	2.3	2.4	1.9	1.4
Thermal time constant	T_{th}	min	25	30	30	32	33
Rotor inertia without brake	J	$kg*cm^2$	0.50	0.65	0.65	1.4	1.5
Weight without brake	m	kg	1.8	2.3	2.3	3.2	3.7
Axial load	F_A	N	70	75	75	80	82
Radial load	F_R	N	370	393	393	422	431

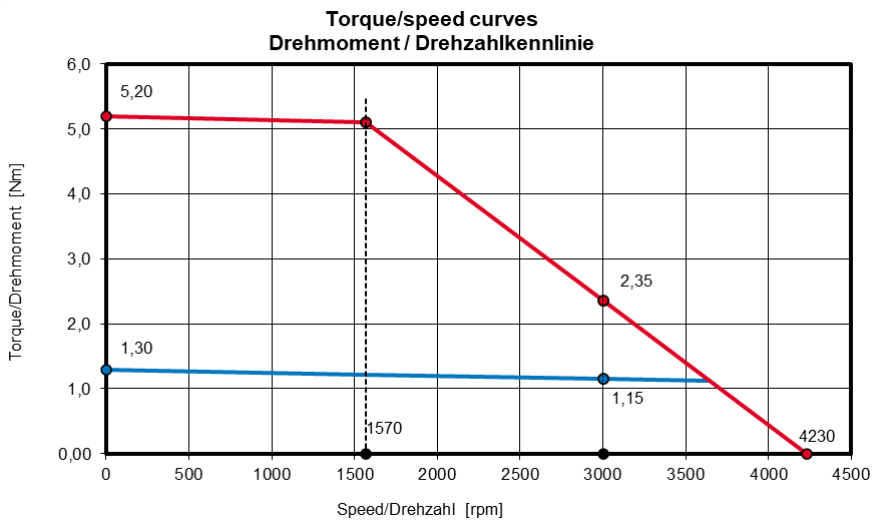
Torque speed characteristics

JL3
560 V

JL3-0065-059

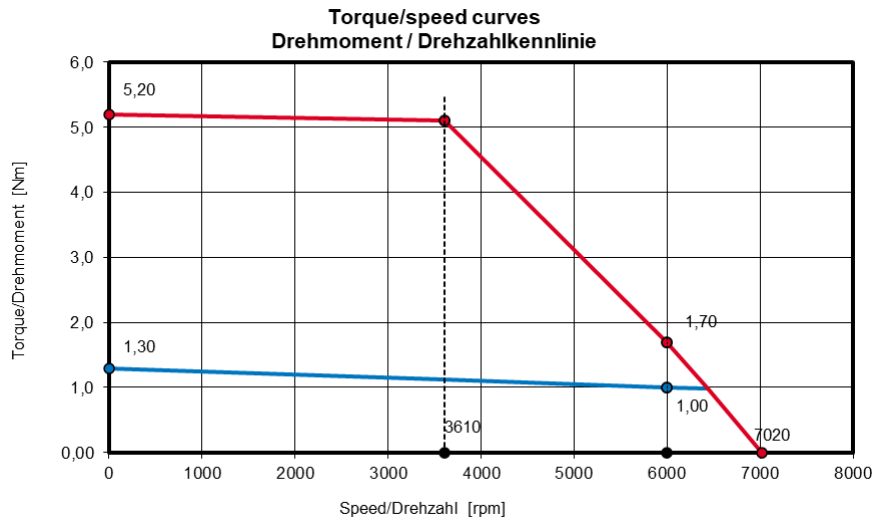


JL3-0130-077

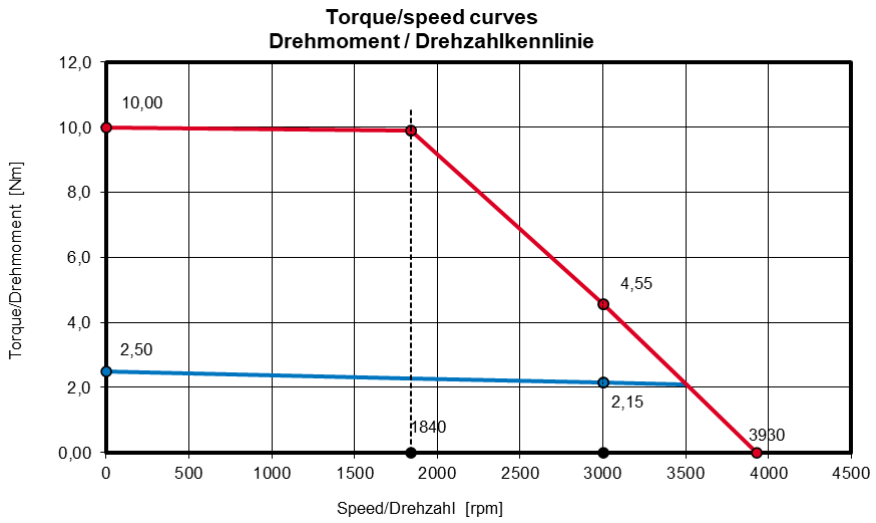


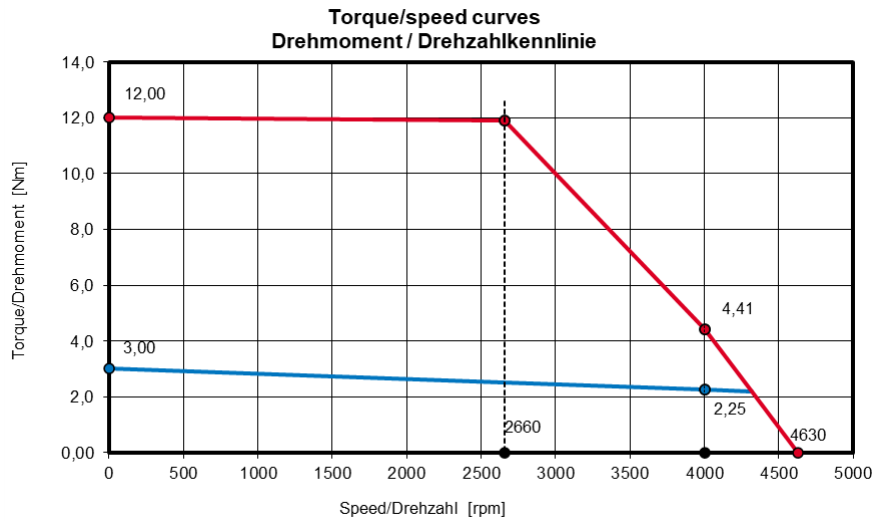
JL3
560 V

JL3-0130-047



JL3-0250-083



JL3 560 V	JL3-0300-068  	

5.25 Flange size JL4

5.25.1 Dimensions JL4

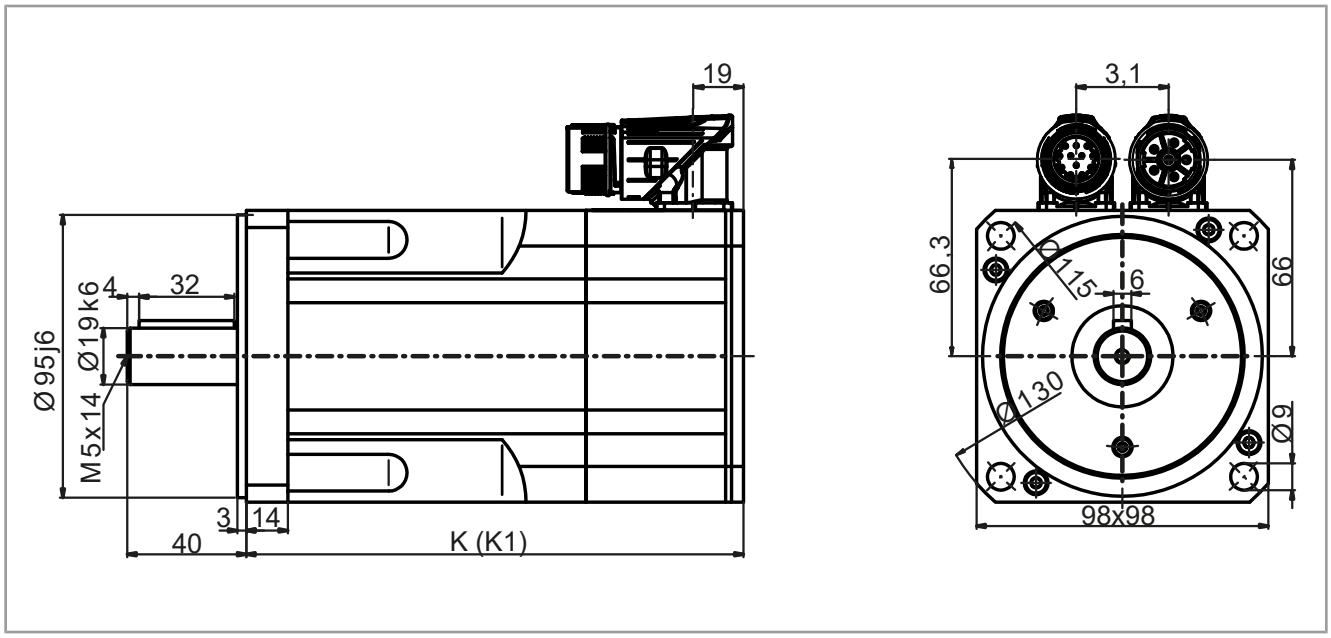


Fig. 42: Dimensions in mm

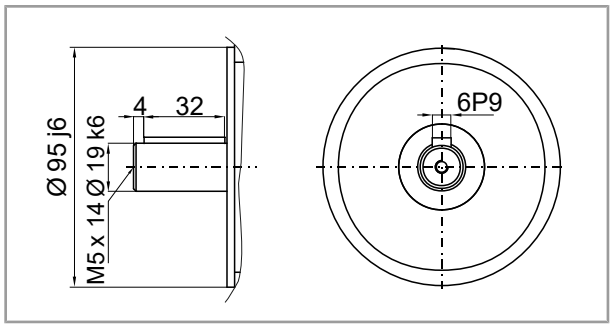


Fig. 43: Option with feather key 6x6x32

	P	K	K1	K	K1
Type	**Resolver**			**SRx50**	
JL4-0530	M23	176	208	197	229
JL4-0750	M23	221	253	242	274

Tab. 68: Dimensions

Key:
P = Power connector size
K = Dimension without brake
K1 = Dimension with brake

5.25.2 Technical data of the brake for motor type JL4

Parameter	Value
Holding torque M_{BR}	9 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +6 %) V
Rated power P_{BR}	18 W
Rotor inertia J_{BR}	0.54 kg*cm^2
Weight m_{BR}	0.82 kg

Tab. 69: Technical data of the brake for motor type JL4

5.25.3 Performance data DC link voltage 320 V DC

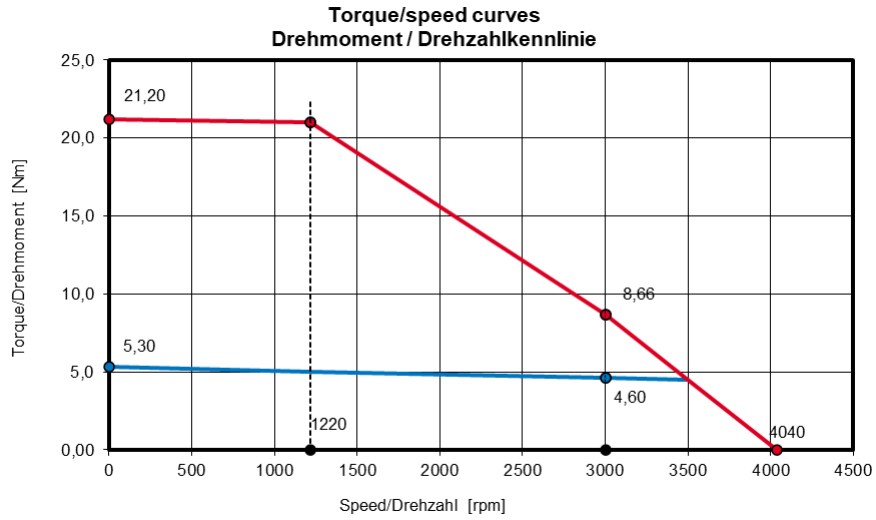
Motor type			JL4-0530-048	JL4-0530-032	JL4-0750-053	JL4-0750-044
Nominal speed	N_n	rpm	3000	4500	3000	3000
DC link voltage	U_{dc}	V	320	320	320	320
Rated AC supply servo amplifier	U_n	V	200	200	200	200
Rated motor voltage	U_m	V	169	171	164	141
Rated torque	M_n	Nm	4.6	4.1	6.4	6.4
Rated current	I_n	A	5.9	7.7	8.1	9.4
Continuous stall torque	M_o	Nm	5.3	5.3	7.5	7.5
Continuous stall current	I_o	A	6.5	9.3	9.1	10.5
Max. torque	M_{max}	Nm	21	21	30	30
Max. current	I_{max}	A	39	56	54	63
Max. speed	N_{max}	rpm	12000	12000	12000	12000
Voltage constant	K_E	V/1000	49.5	34.5	50.0	43.0
Torque constant	K_T	Nm/A	0.82	0.57	0.83	0.71
Winding resistance	R_{2ph}	Ω	1.66	0.81	0.87	0.64
Winding inductance	L_{2ph}	mH	9.8	4.7	5.6	4.1
Motor pole count	P_{mot}		6	6	6	6
Idling speed	N_o	rpm	4040	5800	4000	4640
Torque at I_{max}/U_n	M_z	Nm	21	21	30	30
Speed at I_{max}/U_n	N_z	rpm	1220	1930	1550	1870
Max. torque at n_n	M_x	Nm	8.7	8.4	14.6	19.0
Electrical time constant	T_{el}	ms	5.9	5.8	6.4	6.4
Mechanical time constant	T_{mech}	ms	1.1	1.1	0.91	0.91

Motor type			JL4-0530-048	JL4-0530-032	JL4-0750-053	JL4-0750-044
Thermal time constant	T_{th}	min	64	64	66	66
Rotor inertia without brake	J	kg*cm^2	2.7	2.7	4.2	4.2
Weight without brake	m	kg	5.6	5.6	7.7	7.7
Axial load	F_A	N	128	128	135	135
Radial load	F_R	N	676	676	711	711

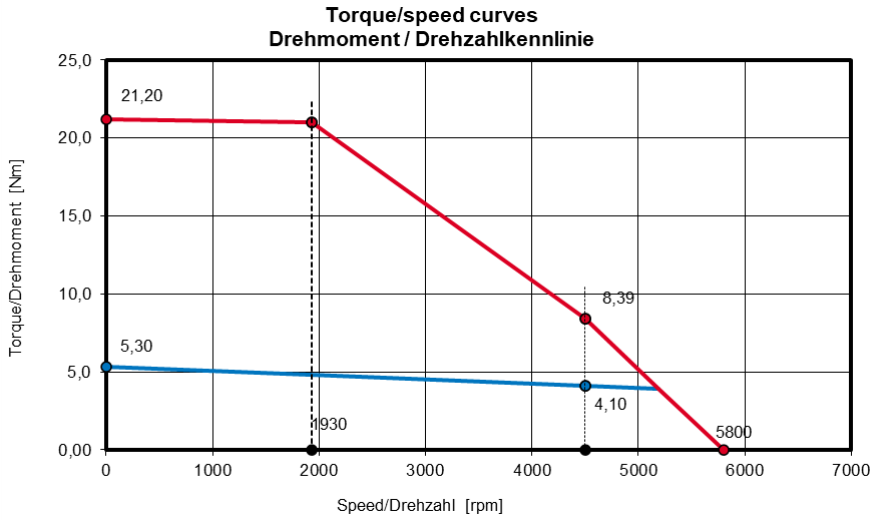
Torque speed characteristics

JL4
320 V

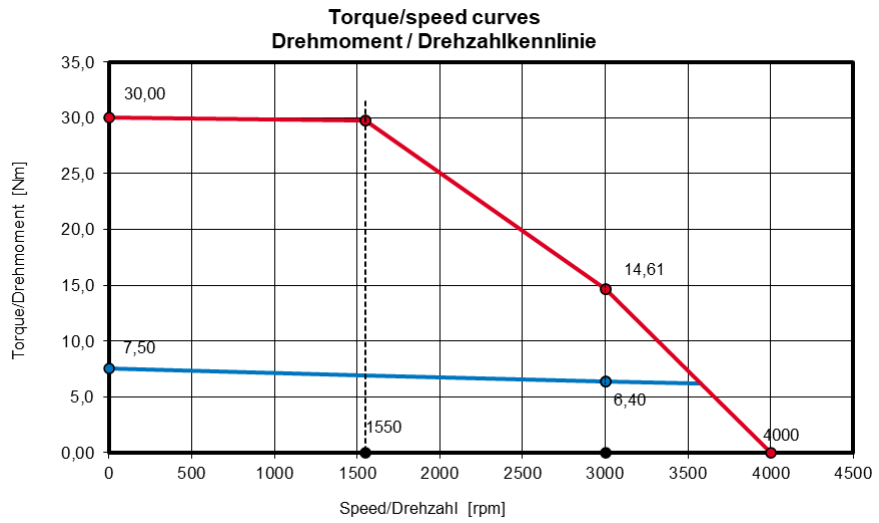
JL4-0530-048

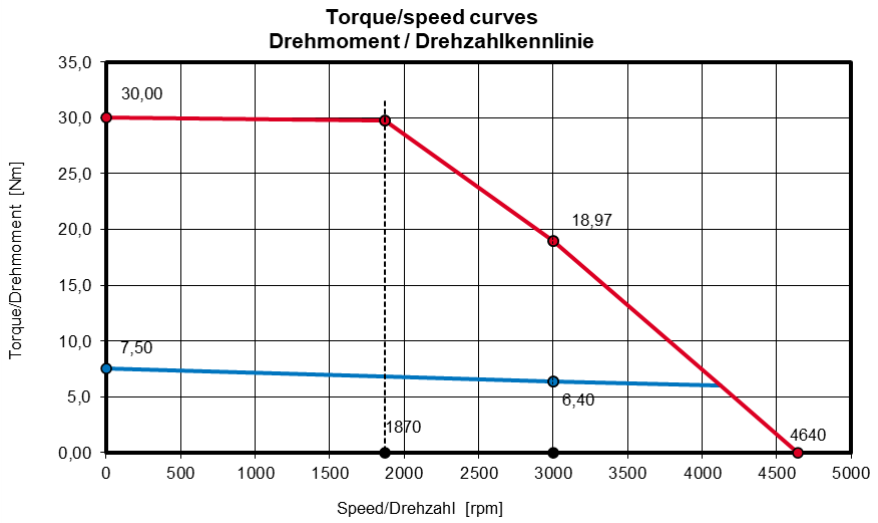


JL4-0530-032



JL4 320 V	JL4-0750-053	JL4-0750-044





5.25.4 Performance data DC link voltage 560 V DC

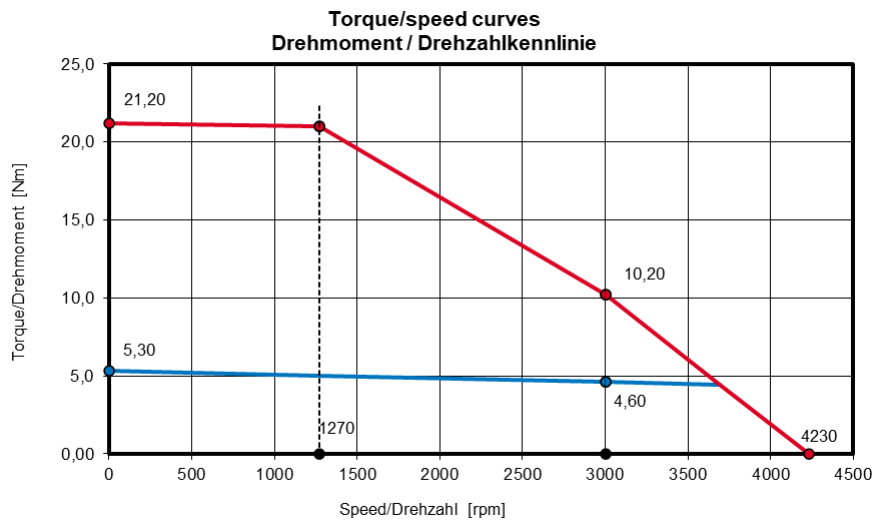
Motor type			**JL4-0530-080**	**JL4-0750-127**	**JL4-0750-096**
Nominal speed	N_n	rpm	3000	2000	3000
DC link voltage	U_{dc}	V	560	560	560
Rated AC supply servo amplifier	U_n	V	330	330	330
Rated motor voltage	U_m	V	267	284	308
Rated torque	M_n	Nm	4.6	6.7	6.4
Rated current	I_n	A	3.8	3.3	4.4
Continuous stall torque	M_o	Nm	5.3	7.5	7.5
Continuous stall current	I_o	A	4.1	3.6	4.8
Max. torque	M_{max}	Nm	21	30	30

Motor type			**JL4-0530-080**	**JL4-0750-127**	**JL4-0750-096**
Max. current	I_{max}	A	25	22	29
Max. speed	N_{max}	rpm	12000	12000	12000
Voltage constant	K_E	V/1000	82.0	126.0	94.0
Torque constant	K_T	Nm/A	1.29	2.1	1.55
Winding resistance	R_{2ph}	Ω	4.2	5.5	3.0
Winding inductance	L_{2ph}	mH	24.0	34.9	19.2
Motor pole count	P_{mot}		6	6	6
Idling speed	N_o	rpm	4230	2610	3510
Torque at I_{max}/U_n	M_z	Nm	21	30	30
Speed at I_{max}/U_n	N_z	rpm	1270	890	1320
Max. torque at n_n	M_x	Nm	10.2	12.9	10.1
Electrical time constant	T_{el}	ms	5.7	6.3	6.4
Mechanical time constant	T_{mech}	ms	1.0	0.91	0.89
Thermal time constant	T_{th}	min	64	66	66
Rotor inertia without brake	J	$kg*cm^2$	2.7	4.2	4.2
Weight without brake	m	kg	5.6	7.7	7.7
Axial load	F_A	N	128	135	135
Radial load	F_R	N	676	711	711

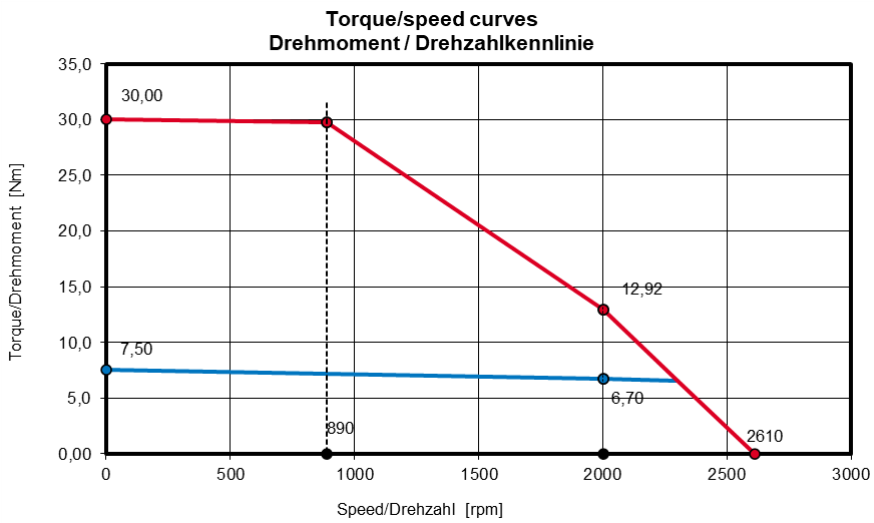
Torque speed characteristics

JL4
560 V

JL4-0530-080

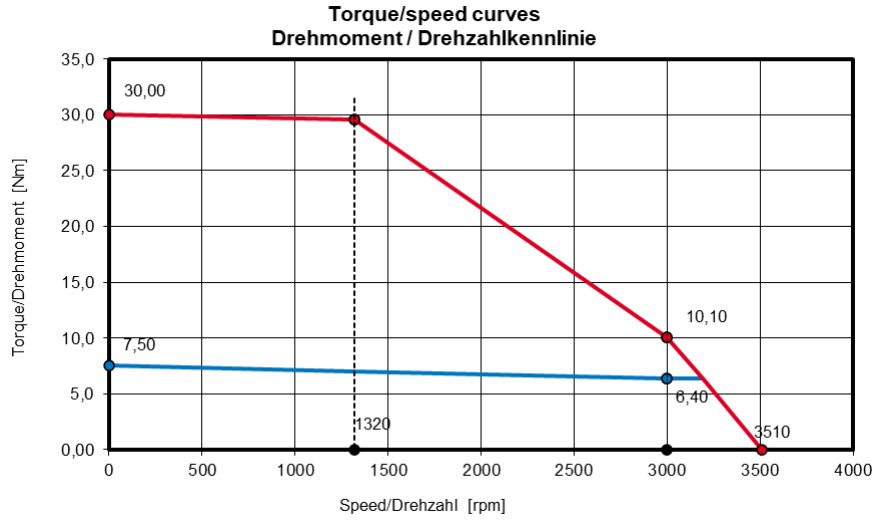


JL4-0750-127



JL4
560 V

JL4-0750-096



5.26 Flange size JL5

5.26.1 Dimensions JL5

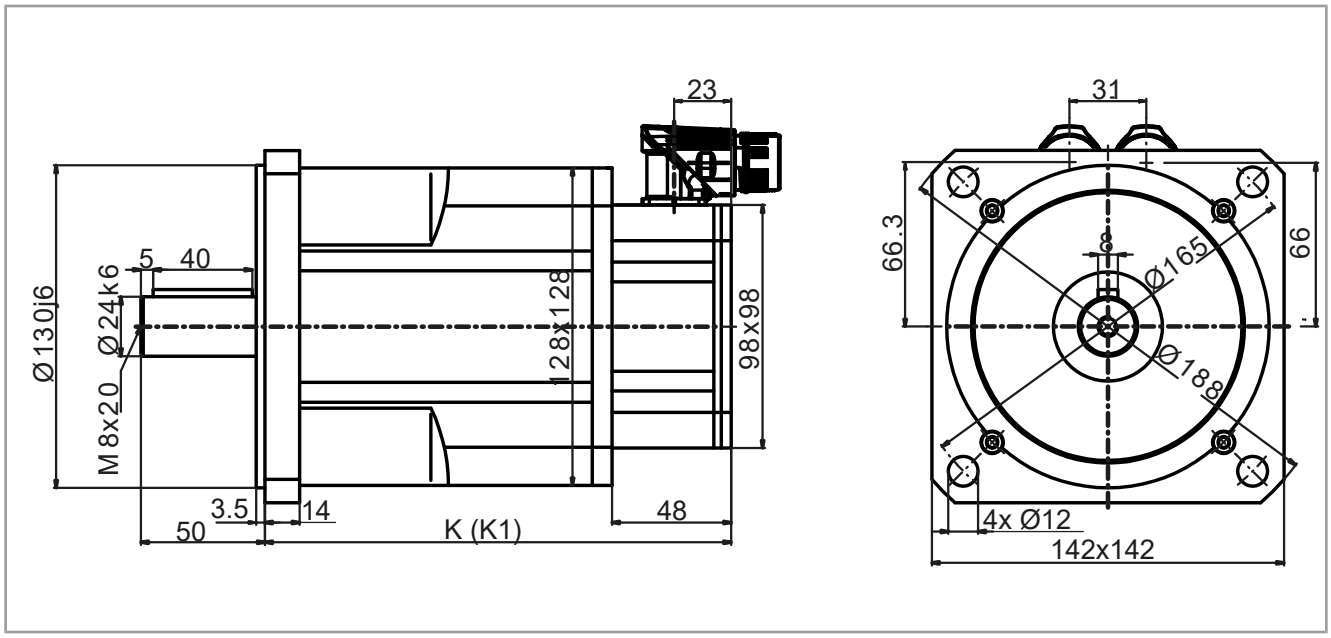


Fig. 44: Dimensions in mm

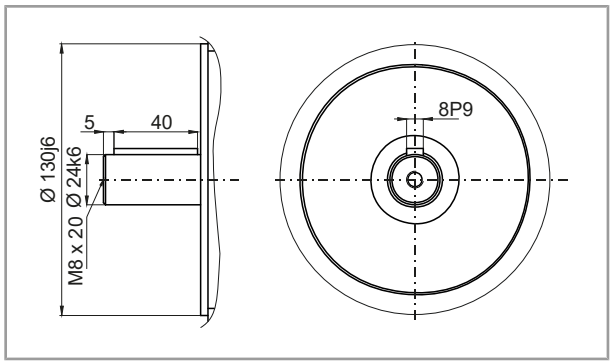


Fig. 45: Option with feather key 8x7x40

	P		K	K1	K	K1	K	K1	K	K1
Type	with option C1	without option C1	**Resolver (C1)**		**SRx50 (C1)**		**Resolver**		**SRx50**	
JL5-1050	M23	M40	219	262	222	265	226	269	229	272
JL5-1350	M23	M40	236	279	239	282	243	286	246	289
JL5-1700	M23	M40	270	313	273	316	277	320	280	323
JL5-2200	M23	M40	304	347	307	350	311	354	314	357

Tab. 70: Dimensions

Key:
P = Power connector size
K = Dimension without brake
K1 = Dimension with brake

5.26.2 Technical data of the brake for motor type JL5

Parameter	Value
Holding torque M_{BR}	18 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +6 %) V
Rated power P_{BR}	24 W
Rotor inertia J_{BR}	1.66 kg*cm^2
Weight m_{BR}	1.8 kg

Tab. 71: Technical data of the brake for motor type JL5

5.26.3 Performance data DC link voltage 320 V DC

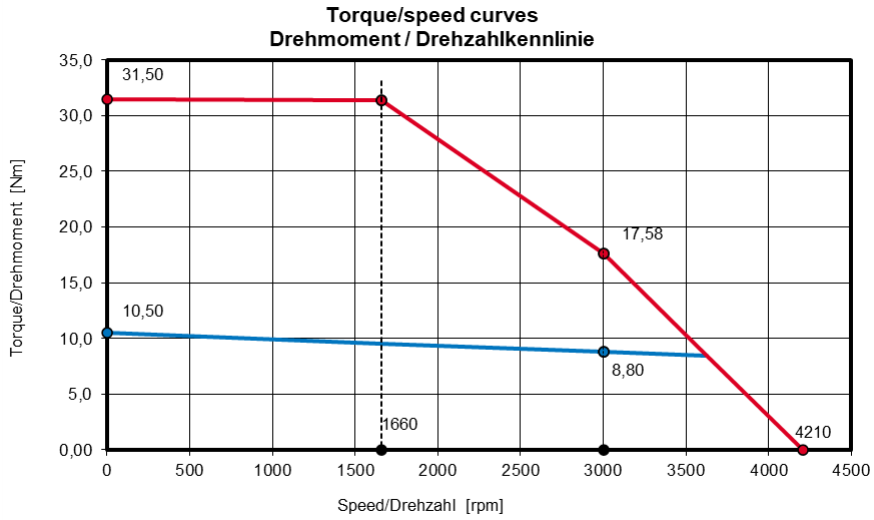
Motor type			JL5-1050-044	JL5-1050-053	JL5-1350-045	JL5-1350-053	JL5-1700-049
Nominal speed	N_n	rpm	3000	3000	3000	3000	3000
DC link voltage	U_{dc}	V	320	320	320	320	320
Rated AC supply servo amplifier	U_n	V	200	200	200	200	200
Rated motor voltage	U_m	V	158	172	156	173	160
Rated torque	M_n	Nm	8.8	8.8	11.0	11.0	14.5
Rated current	I_n	A	11.5	10.5	14.5	13.1	18.5
Continuous stall torque	M_o	Nm	10.5	10.5	13.5	13.5	17.0
Continuous stall current	I_o	A	13.4	12.2	17.4	15.7	21.2
Max. torque	M_{max}	Nm	32	32	41	41	51
Max. current	I_{max}	A	67	61	87	78	106
Max. speed	N_{max}	rpm	9000	9000	9000	9000	9000
Voltage constant	K_E	V/1000	47.5	52.0	47.0	52.0	48.5
Torque constant	K_T	Nm/A	0.79	0.86	0.78	0.86	0.80
Winding resistance	R_{2ph}	Ω	0.51	0.61	0.38	0.48	0.28
Winding inductance	L_{2ph}	mH	4.6	5.5	3.6	4.5	2.9
Motor pole count	P_{mot}		6	6	6	6	6
Idling speed	N_o	rpm	4210	3840	4260	3840	4120
Torque at I_{max}/U_n	M_z	Nm	31	31	40	40	51
Speed at I_{max}/U_n	N_z	rpm	1660	1510	1640	1450	1690
Max. torque at n_n	M_x	Nm	17.6	15.0	23	18.6	28
Electrical time constant	T_{el}	ms	9.0	9.0	9.5	9.4	10.4
Mechanical time constant	T_{mech}	ms	0.89	0.89	0.79	0.81	0.72

Motor type			JL5-1050-044	JL5-1050-053	JL5-1350-045	JL5-1350-053	JL5-1700-049
Thermal time constant	T_{th}	min	50	50	55	55	60
Rotor inertia without brake	J	kg*cm^2	6.2	6.2	7.3	7.3	9.5
Weight without brake	m	kg	10.0	10.0	11.2	11.2	13.7
Axial load	F_A	N	139	139	142	142	147
Radial load	F_R	N	733	733	748	748	772

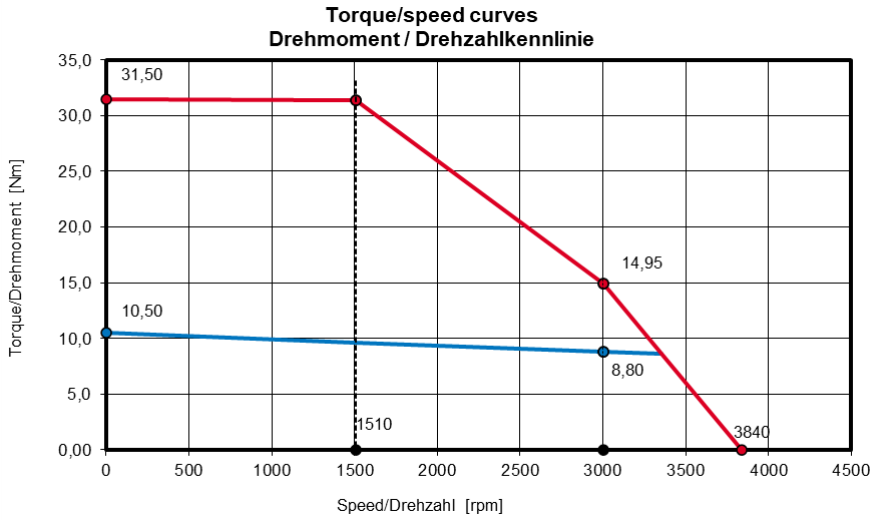
Torque speed characteristics

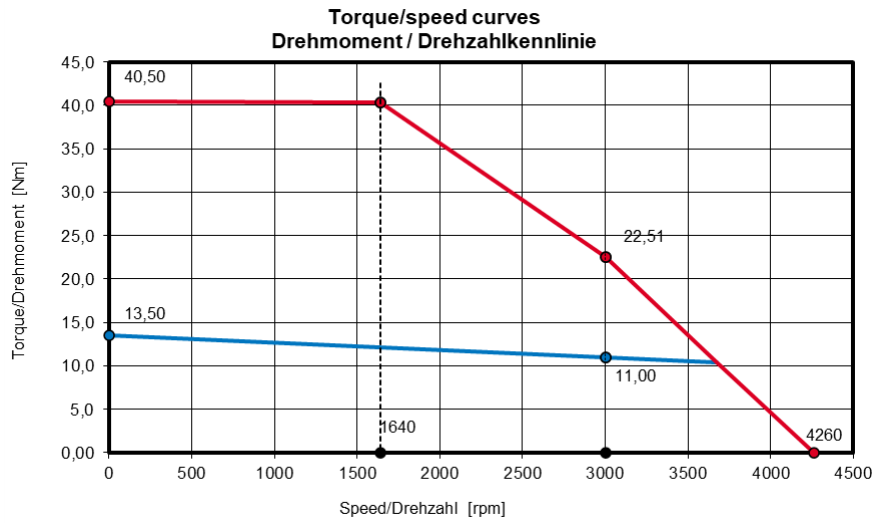
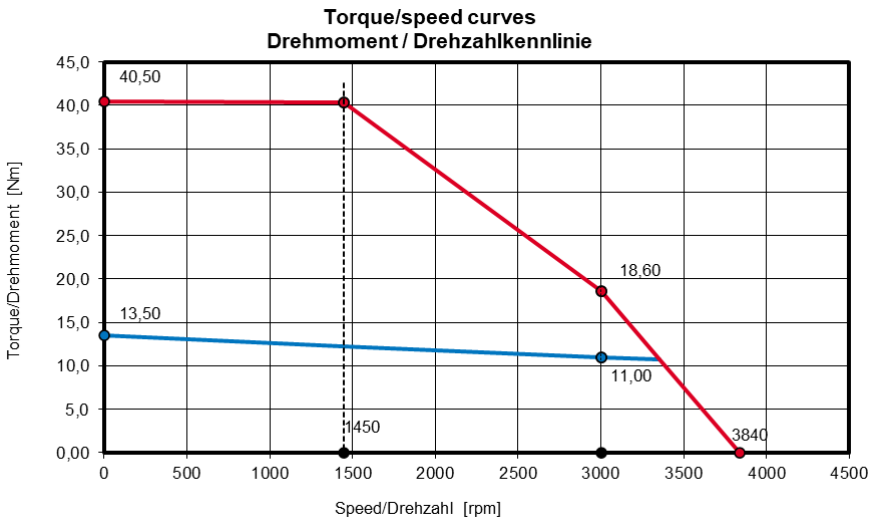
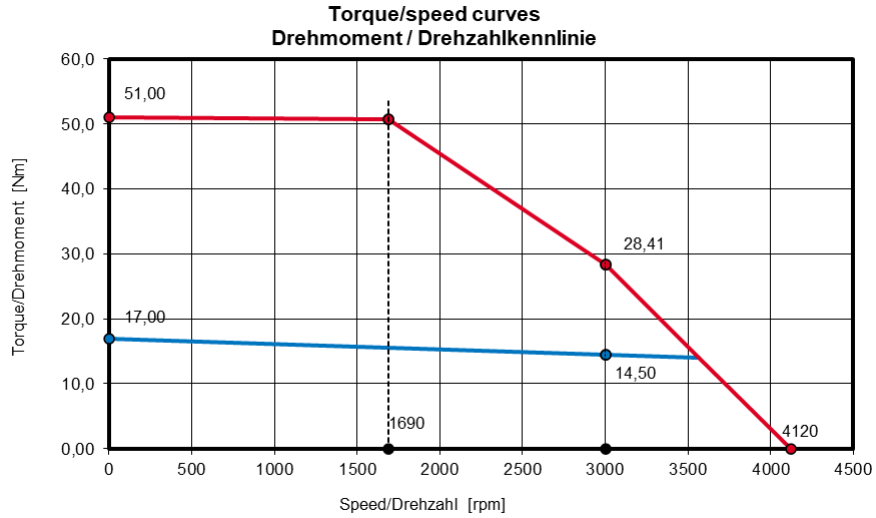
JL5
320 V

JL5-1050-044



JL5-1050-053



JL5 320 V	JL5-1350-045 	JL5-1350-053 
JL5 320 V	JL5-1700-049 	

5.26.4 Performance data DC link voltage 560 V DC

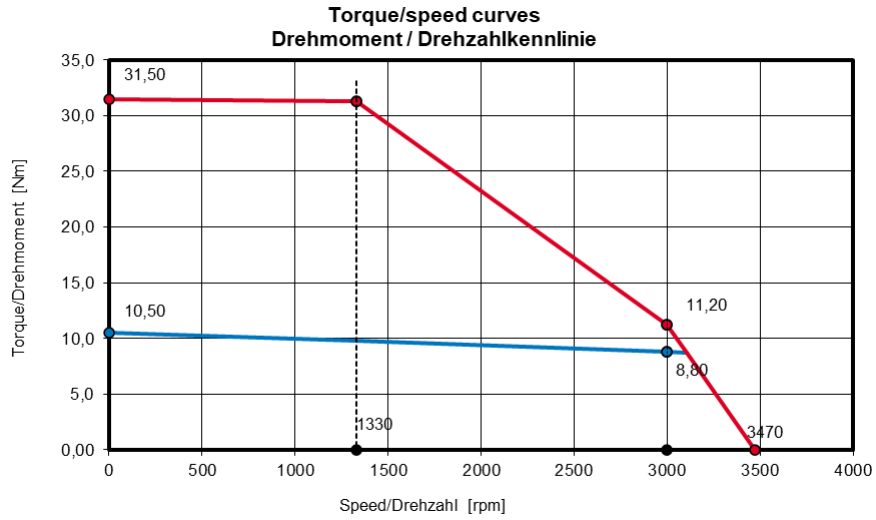
Motor type			JL5-1050-092	JL5-1350-028	JL5-1350-070	JL5-1350-092	JL5-1700-091	JL5-2200-081
Nominal speed	N_n	rpm	3000	10000	3000	3000	3000	3000
DC link voltage	U_{dc}	V	560	560	560	560	560	560
Rated AC supply servo amplifier	U_n	V	330	330	330	330	330	330
Rated motor voltage	U_m	V	315	290	242	292	297	262
Rated torque	M_n	Nm	8.8	5.0	11.0	11.0	14.5	17.0
Rated current	I_n	A	5.8	11.6	9.5	7.7	10.0	13.0
Continuous stall torque	M_o	Nm	10.5	12.0	13.5	13.5	17.0	22.0
Continuous stall current	I_o	A	6.7	26.4	11.2	9.3	11.4	16.4
Max. torque	M_{max}	Nm	32	30	41	41	51	66
Max. current	I_{max}	A	33	109	56	46	57	82
Max. speed	N_{max}	rpm	9000	12000	9000	9000	9000	9000
Voltage constant	K_E	V/1000	95.0	27.5	73.0	88.0	90.0	81.0
Torque constant	K_T	Nm/A	1.57	0.45	1.21	1.46	1.49	1.34
Winding resistance	R_{2ph}	Ω	2.1	0.23	0.95	1.36	0.95	0.54
Winding inductance	L_{2ph}	mH	18.4	2.2	9.0	13.0	10.0	5.9
Motor pole count	P_{mot}		6	6	6	6	6	6
Idling speed	N_o	rpm	3470	11990	4520	3750	3670	4070
Torque at I_{max}/U_n	M_z	Nm	31	30	40	40	50	66
Speed at I_{max}/U_n	N_z	rpm	1330	3950	1710	1400	1480	1750
Max. torque at n_n	M_x	Nm	11.2	10.6	24	17.5	22	38
Electrical time constant	T_{el}	ms	9.0	9.6	9.5	9.6	10.5	10.9
Mechanical time constant	T_{mech}	ms	0.89	1.4	0.82	0.81	0.71	0.61

Motor type			JL5-1050-092	JL5-1350-028	JL5-1350-070	JL5-1350-092	JL5-1700-091	JL5-2200-081
Thermal time constant	T_{th}	min	50	55	55	55	60	75
Rotor inertia without brake	J	kg*cm^2	6.2	7.3	7.3	7.3	9.5	11.7
Weight without brake	m	kg	10.0	11.2	11.2	11.2	13.7	16.2
Axial load	F_A	N	139	142	142	142	147	150
Radial load	F_R	N	733	748	748	748	772	790

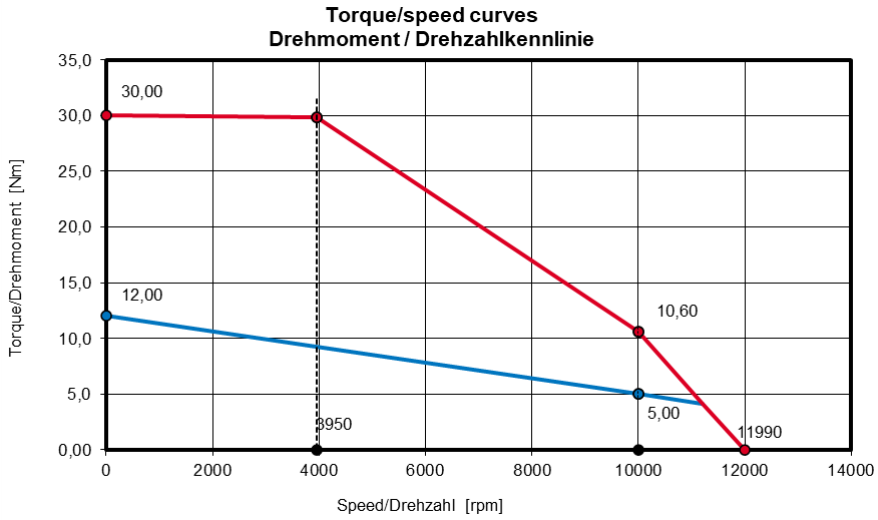
Torque speed characteristics

JL5
560 V

JL5-1050-092

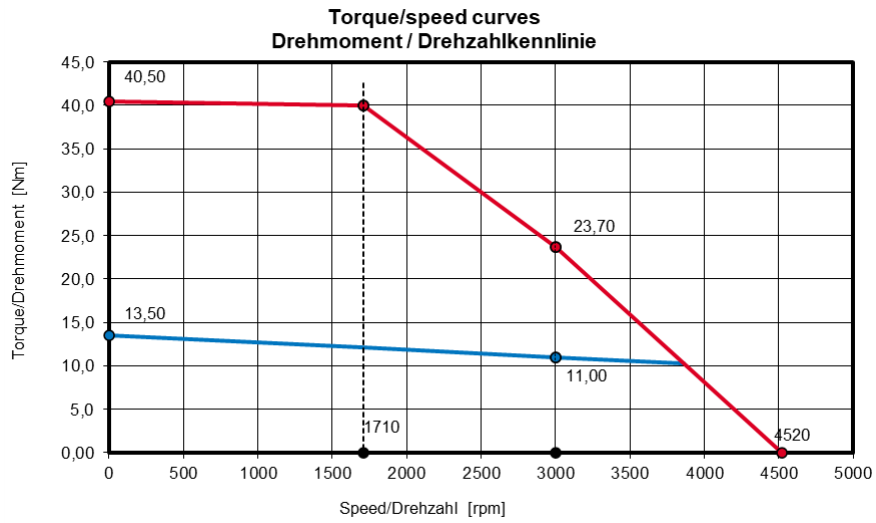


JL5-1350-028

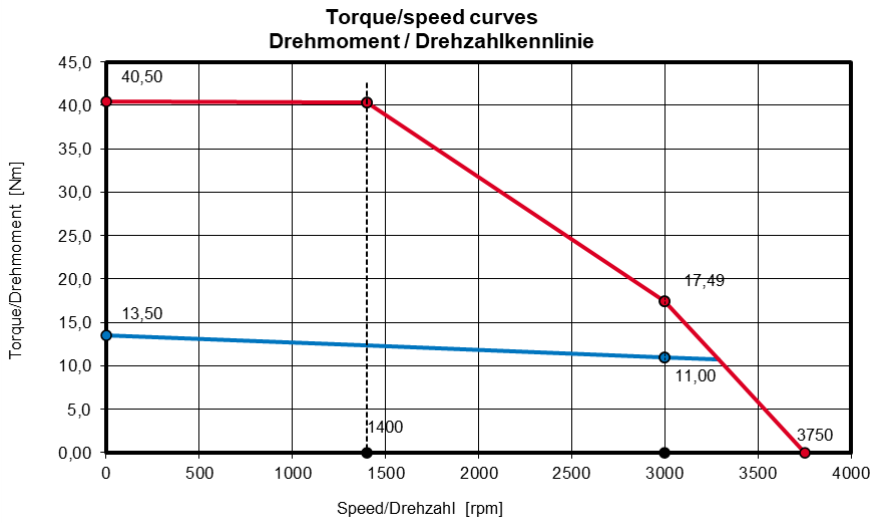


JL5
560 V

JL5-1350-070

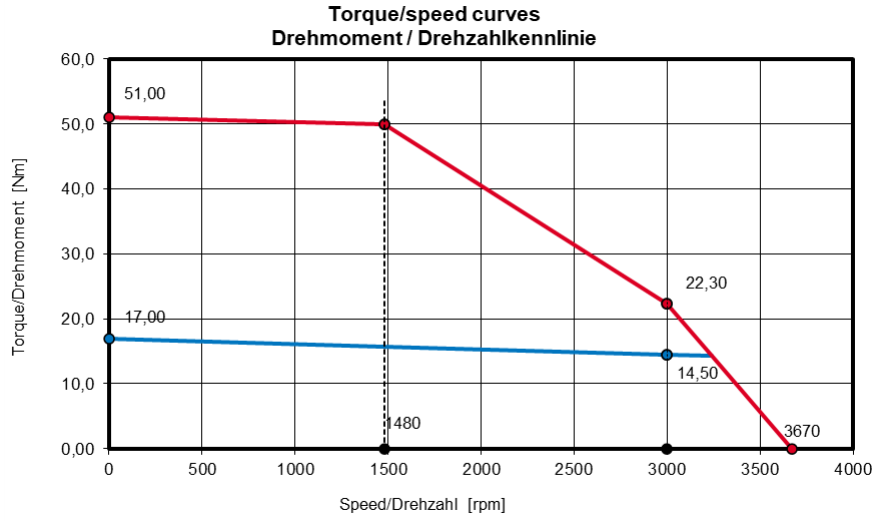


JL5-1350-092

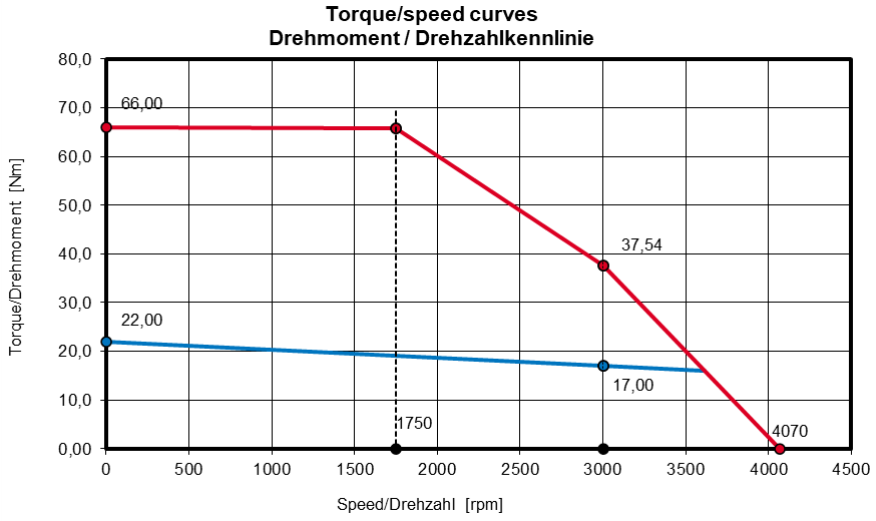


JL5
560 V

JL5-1700-091



JL5-2200-081



5.27 Flange size JL6

5.27.1 Dimensions JL6

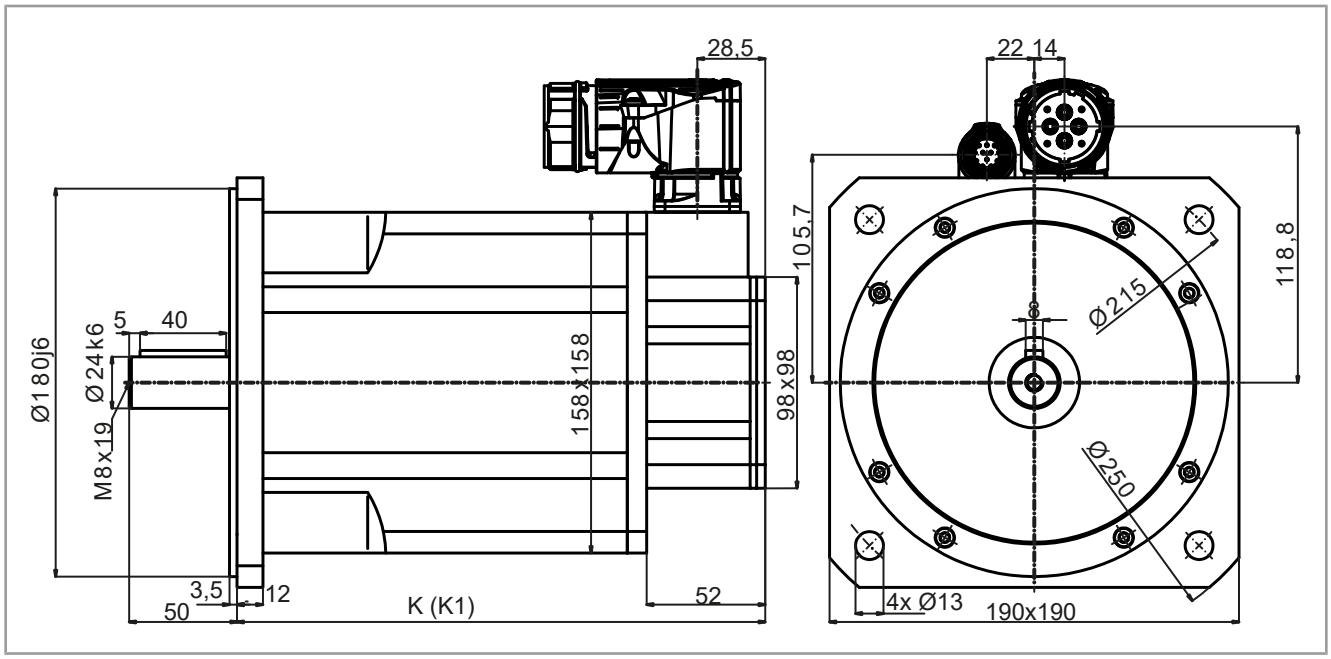


Fig. 46: Dimensions in mm

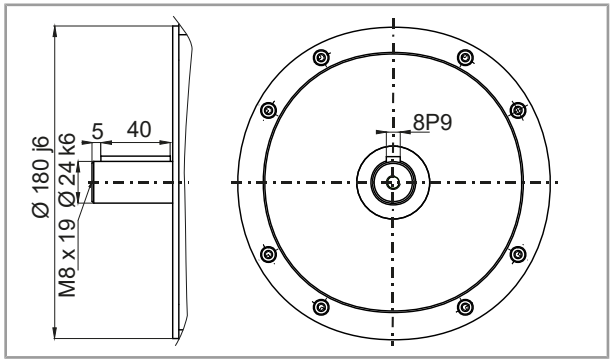


Fig. 47: Option with feather key 8x7x40

	P	K	K1	K	K1
Type	**Resolver**			**SRx50**	
JL6-1900	M40	242	295	245	298
JL6-2200	M40	259	312	262	315
JL6-2900	M40	317	370	320	366

Tab. 72: Dimensions

Key:
P = Power connector size
K = Dimension without brake
K1 = Dimension with brake

5.27.2 Technical data of the brake for motor type JL6

Parameter	Value
Holding torque M_{BR}	36 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +6 %) V
Rated power P_{BR}	26 W
Rotor inertia J_{BR}	5.56 kg*cm^2
Weight m_{BR}	2.86 kg

Tab. 73: Technical data of the brake for motor type JL6

5.27.3 Performance data DC link voltage 320 V DC

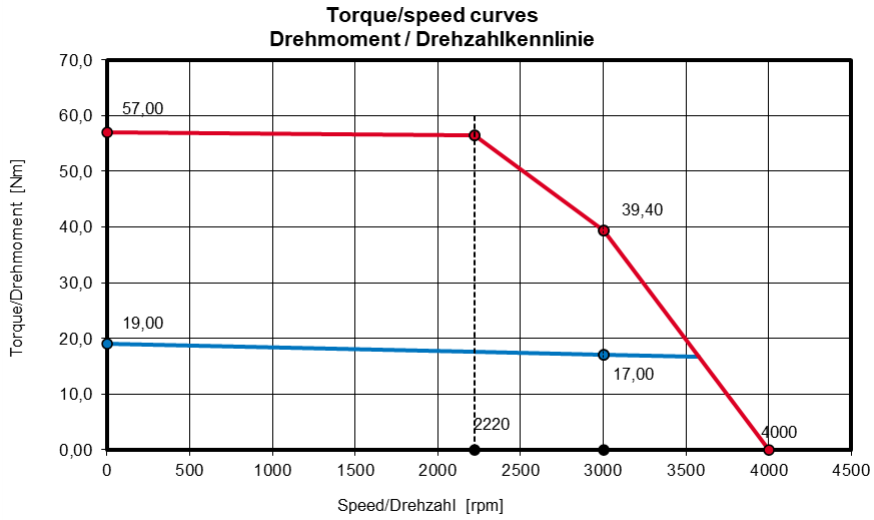
Motor type			JL6-1900-049	JL6-2200-051	JL6-2900-047
Nominal speed	N_n	rpm	3000	3000	3000
DC link voltage	U_{dc}	V	320	320	320
Rated AC supply servo amplifier	U_n	V	200	200	200
Rated motor voltage	U_m	V	160	166	146
Rated torque	M_n	Nm	17.0	19.0	24.0
Rated current	I_n	A	21.3	22.9	32.2
Continuous stall torque	M_o	Nm	19.0	22.0	29.0
Continuous stall current	I_o	A	23.0	25.6	37.7
Max. torque	M_{max}	Nm	57	66	87
Max. current	I_{max}	A	97	108	159
Max. speed	N_{max}	rpm	6000	6000	6000
Voltage constant	K_E	V/1000	50.0	52.0	46.5
Torque constant	K_T	Nm/A	0.83	0.86	0.77
Winding resistance	R_{2ph}	Ω	0.15	0.13	0.07
Winding inductance	L_{2ph}	mH	2.3	2.1	1.20
Motor pole count	P_{mot}		6	6	6
Idling speed	N_o	rpm	4000	3840	4300
Torque at I_{max}/U_n	M_z	Nm	56	65	86
Speed at I_{max}/U_n	N_z	rpm	2220	2160	2580
Max. torque at n_n	M_x	Nm	39	43	73
Electrical time constant	T_{el}	ms	15.3	16.2	17.1
Mechanical time constant	T_{mech}	ms	0.71	0.65	0.67

Motor type			JL6-1900-049	JL6-2200-051	JL6-2900-047
Thermal time constant	T_{th}	min	53	60	70
Rotor inertia without brake	J	kg*cm^2	18.7	22	33
Weight without brake	m	kg	18.2	20	27
Axial load	F_A	N	141	142	147
Radial load	F_R	N	741	748	771

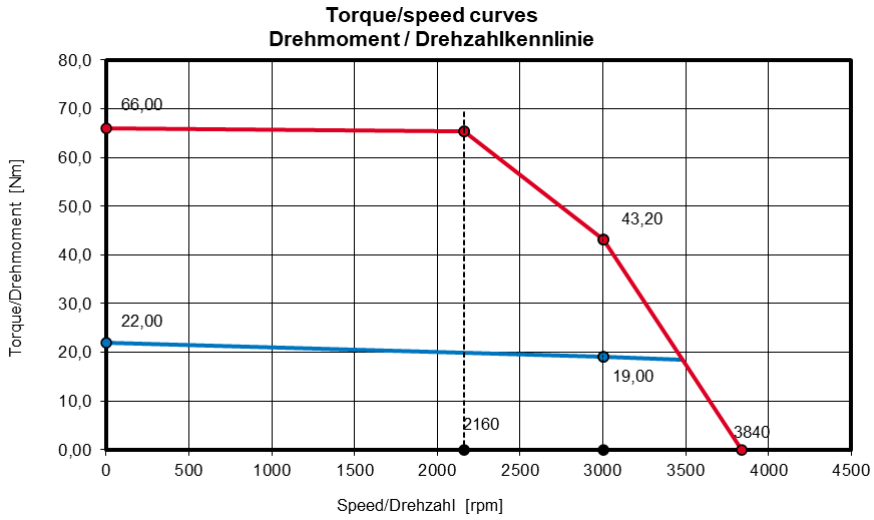
Torque speed characteristics

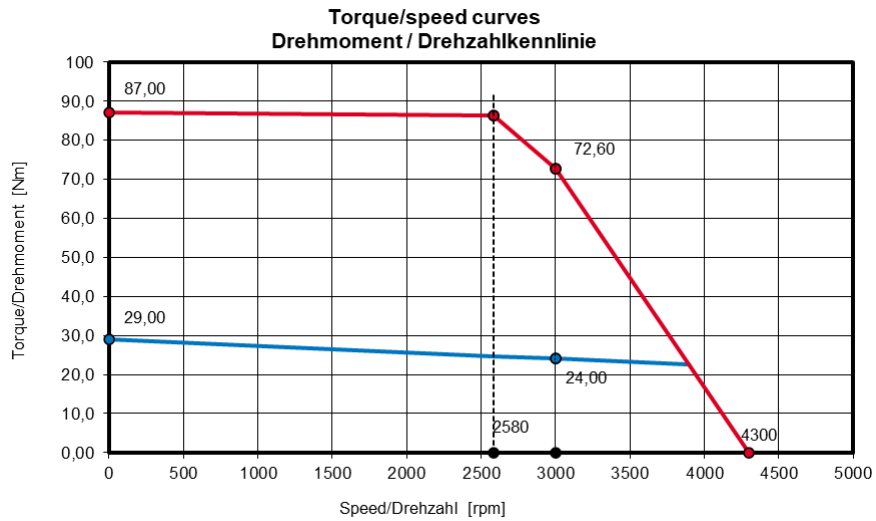
JL6
320 V

JL6-1900-049



JL6-2200-051



JL6 320 V	JL6-2900-047 	

5.27.4 Performance data DC link voltage 560 V DC

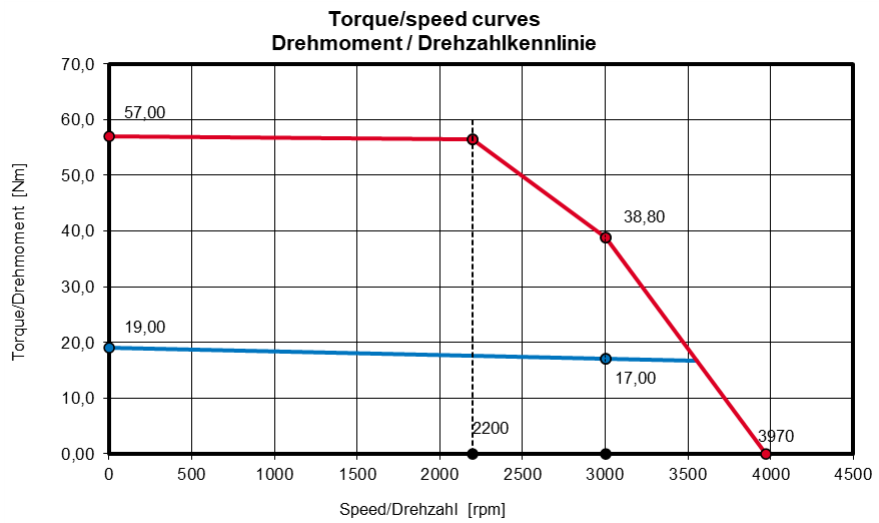
Motor type			JL6-1900-084	JL6-2200-088	JL6-2900-072	JL6-2900-140
Nominal speed	N_n	rpm	3000	3000	4500	2000
DC link voltage	U_{dc}	V	560	560	560	560
Rated AC supply servo amplifier	U_n	V	330	330	350	330
Rated motor voltage	U_m	V	266	290	335	299
Rated torque	M_n	Nm	17.0	19.0	6.0	29.0
Rated current	I_n	A	12.8	13.1	5.7	12.9
Continuous stall torque	M_o	Nm	19.0	22.0	29.0	29.0
Continuous stall current	I_o	A	13.8	14.6	23.7	12.6
Max. torque	M_{max}	Nm	57	66	87	87

Motor type			**JL6-1900-084**	**JL6-2200-088**	**JL6-2900-072**	**JL6-2900-140**
Max. current	I_{max}	A	59	62	100	53
Max. speed	N_{max}	rpm	6000	6000	6000	6000
Voltage constant	K_E	V/1000	83.0	91.0	74.0	139.0
Torque constant	K_T	Nm/A	1.37	1.51	1.22	2.3
Winding resistance	R_{2ph}	Ω	0.42	0.41	0.16	0.58
Winding inductance	L_{2ph}	mH	6.3	6.4	3.0	10.4
Motor pole count	P_{mot}		6	6	6	6
Idling speed	N_o	rpm	3970	3620	4730	2370
Torque at I_{max}/U_n	M_z	Nm	56	65	86	86
Speed at I_{max}/U_n	N_z	rpm	2200	2030	2670	1370
Max. torque at n_n	M_x	Nm	39	38	26	49
Electrical time constant	T_{el}	ms	15.0	15.6	18.8	17.9
Mechanical time constant	T_{mech}	ms	0.72	0.67	0.61	0.62
Thermal time constant	T_{th}	min	53	60	70	70
Rotor inertia without brake	J	$kg*cm^2$	18.7	22	33	33
Weight without brake	m	kg	18.2	20	27	27
Axial load	F_A	N	141	142	147	147
Radial load	F_R	N	741	748	771	771

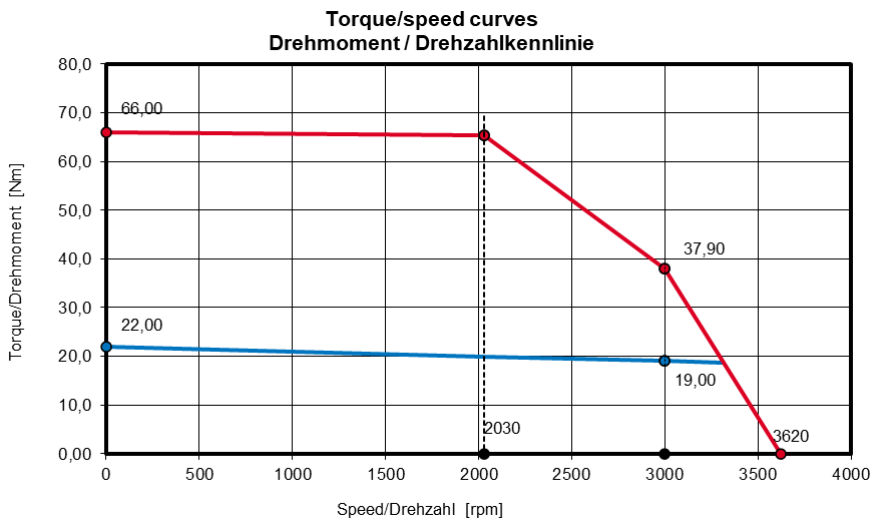
Torque speed characteristics

JL6
560 V

JL6-1900-084

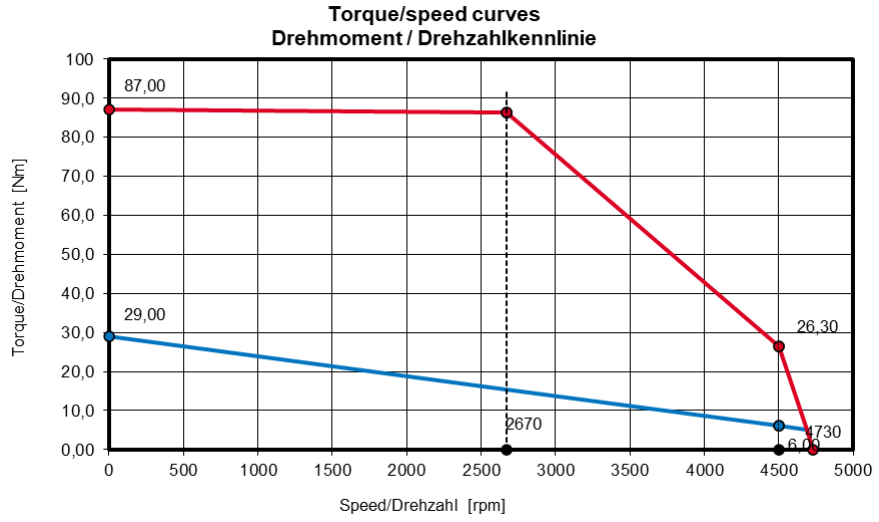


JL6-2200-088

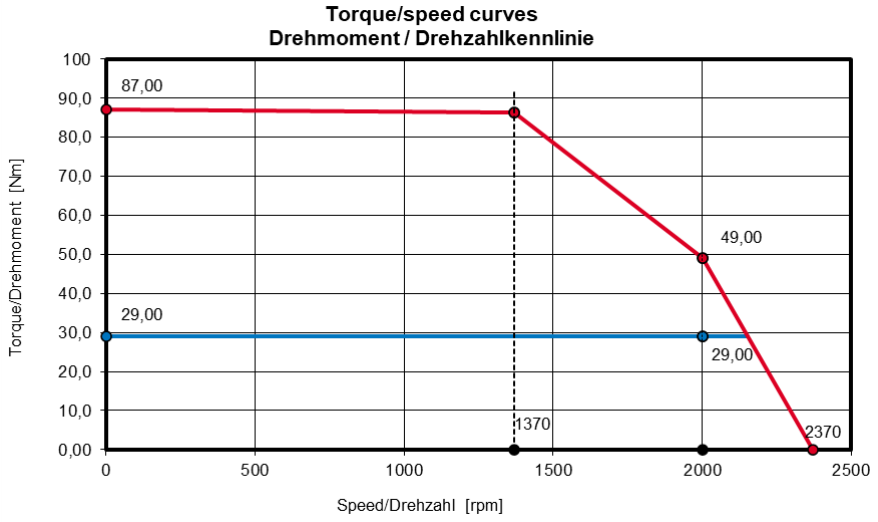


JL6
560 V

JL6-2900-072



JL6-2900-140



5.28 Flange size JL7

5.28.1 Dimensions JL7

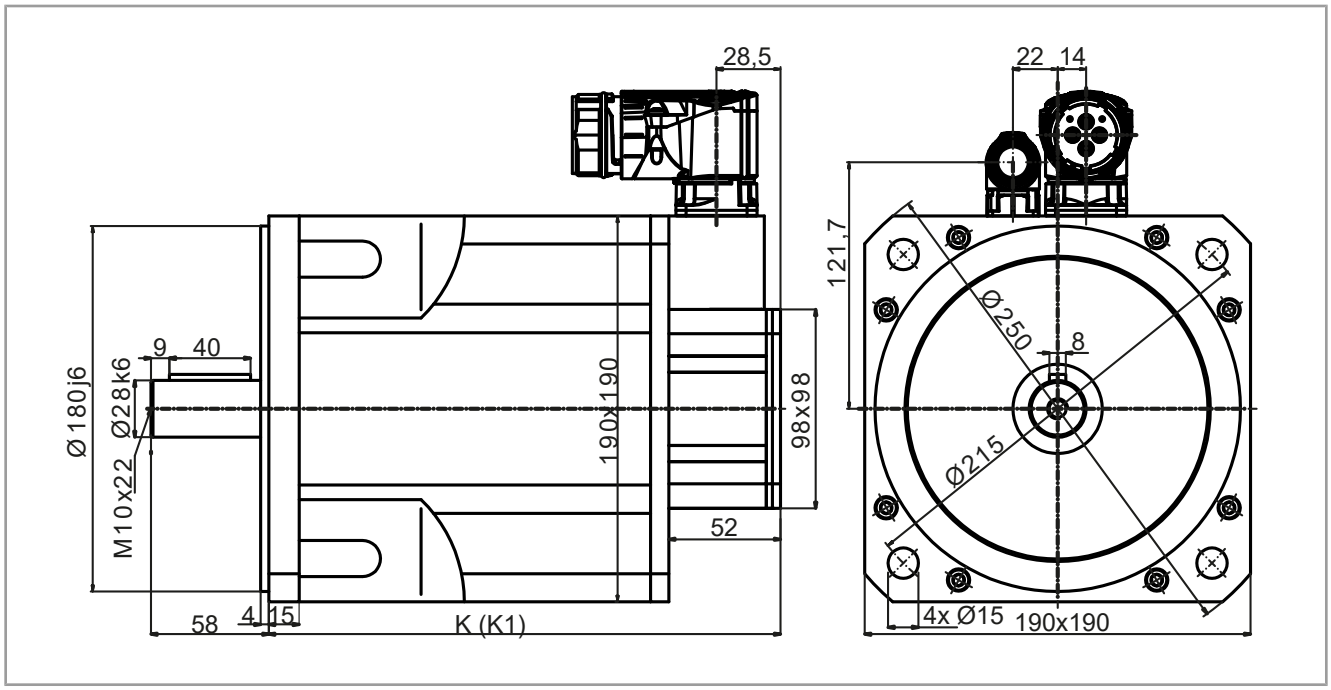


Fig. 48: Dimensions in mm

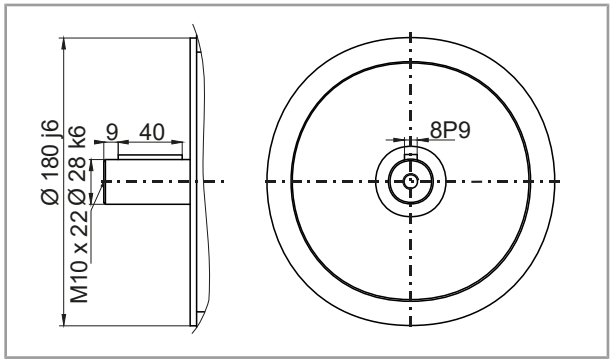


Fig. 49: Option with feather key 8x7x40

	P	K	K1	K	K1
Type	**Resolver**			**SRx50**	
JL7-3200	M40	264	318	267	321
JL7-4000	M40	294	348	297	351

Tab. 74: Dimensions

Key:
P = Power connector size
K = Dimension without brake
K1 = Dimension with brake

5.28.2 Technical data of the brake for motor type JL7

Parameter	Value
Holding torque M_{BR}	36 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +6 %) V
Rated power P_{BR}	26 W
Rotor inertia J_{BR}	5.56 kg*cm^2
Weight m_{BR}	3.25 kg

Tab. 75: Technical data of the brake for motor type JL7

5.28.3 Performance data DC link voltage 320 V DC

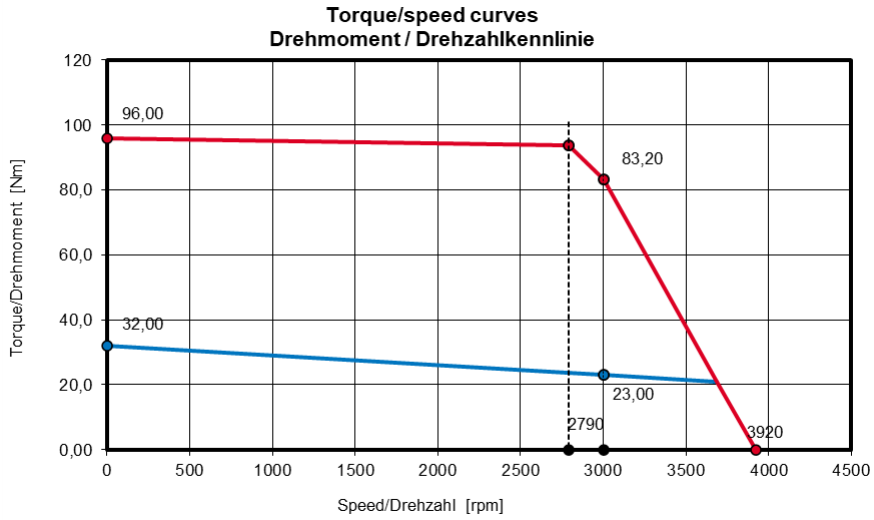
Motor type			JL7-3200-051	JL7-4000-051
Nominal speed	N_n	rpm	3000	3000
DC link voltage	U_{dc}	V	320	320
Rated AC supply servo amplifier	U_n	V	200	200
Rated motor voltage	U_m	V	158	170
Rated torque	M_n	Nm	23.0	26.0
Rated current	I_n	A	29.9	31.8
Continuous stall torque	M_o	Nm	32.0	40.0
Continuous stall current	I_o	A	37.9	44.0
Max. torque	M_{max}	Nm	96	120
Max. current	I_{max}	A	148	172
Max. speed	N_{max}	rpm	6000	6000
Voltage constant	K_E	V/1000	51.0	55.0
Torque constant	K_T	Nm/A	0.84	0.91
Winding resistance	R_{2ph}	Ω	0.09	0.07
Winding inductance	L_{2ph}	mH	0.90	0.80
Motor pole count	P_{mot}		6	6
Idling speed	N_o	rpm	3920	3630
Torque at I_{max}/U_n	M_z	Nm	94	117
Speed at I_{max}/U_n	N_z	rpm	2790	2640
Max. torque at n_n	M_x	Nm	83	91
Electrical time constant	T_{el}	ms	10.0	11.4
Mechanical time constant	T_{mech}	ms	0.86	0.67

Motor type			JL7-3200-051	JL7-4000-051
Thermal time constant	T_{th}	min	67	72
Rotor inertia without brake	J	kg*cm^2	39	46
Weight without brake	m	kg	26	32
Axial load	F_A	N	260	267
Radial load	F_R	N	1370	1406

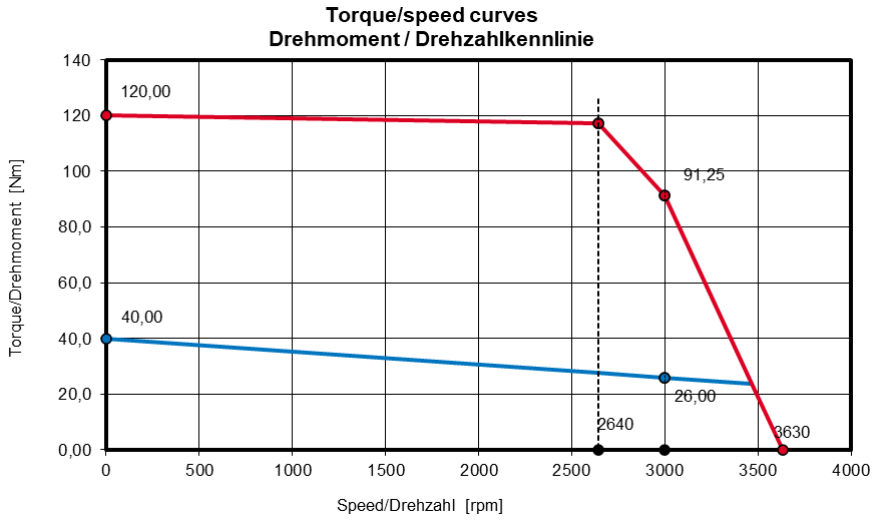
Torque speed characteristics

JL7
320 V

JL7-3200-051



JL7-4000-051



5.28.4 Performance data DC link voltage 560 V DC

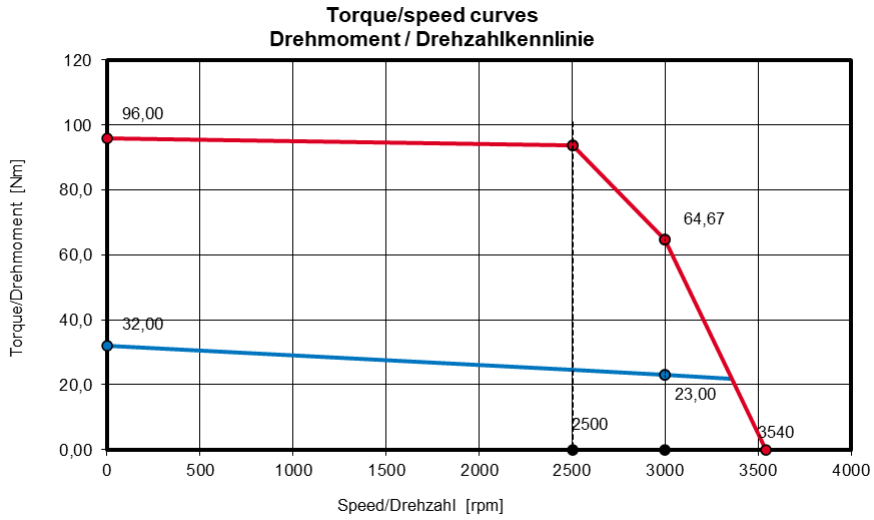
Motor type			JL7-3200-090	JL7-4000-103
Nominal speed	N_n	rpm	3000	3000
DC link voltage	U_{dc}	V	560	560
Rated AC supply servo amplifier	U_n	V	330	330
Rated motor voltage	U_m	V	289	302
Rated torque	M_n	Nm	23.0	26.0
Rated current	I_n	A	16.4	17.9
Continuous stall torque	M_o	Nm	32.0	40.0
Continuous stall current	I_o	A	20.8	24.7
Max. torque	M_{max}	Nm	96	120
Max. current	I_{max}	A	81	96
Max. speed	N_{max}	rpm	6000	6000
Voltage constant	K_E	V/1000	93.0	98.0
Torque constant	K_T	Nm/A	1.54	1.62
Winding resistance	R_{2ph}	Ω	0.29	0.23
Winding inductance	L_{2ph}	mH	3.2	2.7
Motor pole count	P_{mot}		6	6
Idling speed	N_o	rpm	3540	3360
Torque at I_{max}/U_n	M_z	Nm	94	117
Speed at I_{max}/U_n	N_z	rpm	2500	2410
Max. torque at n_n	M_x	Nm	65	69
Electrical time constant	T_{el}	ms	11.0	11.7
Mechanical time constant	T_{mech}	ms	0.83	0.69

Motor type			JL7-3200-090	JL7-4000-103
Thermal time constant	T_{th}	min	67	72
Rotor inertia without brake	J	kg*cm^2	39	46
Weight without brake	m	kg	26	32
Axial load	F_A	N	260	267
Radial load	F_R	N	1370	1406

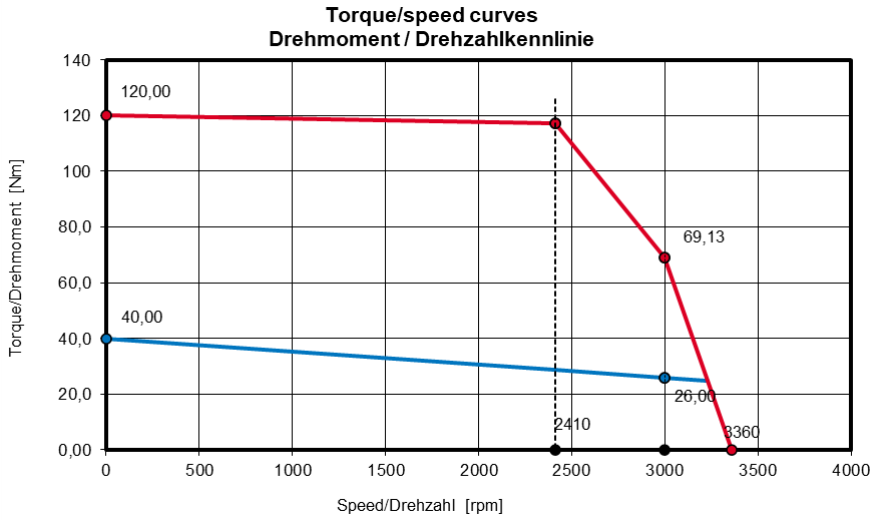
Torque speed characteristics

JL7
560 V

JL7-3200-090



JL7-4000-103



5.29 Flange size JL8

5.29.1 Dimensions JL8

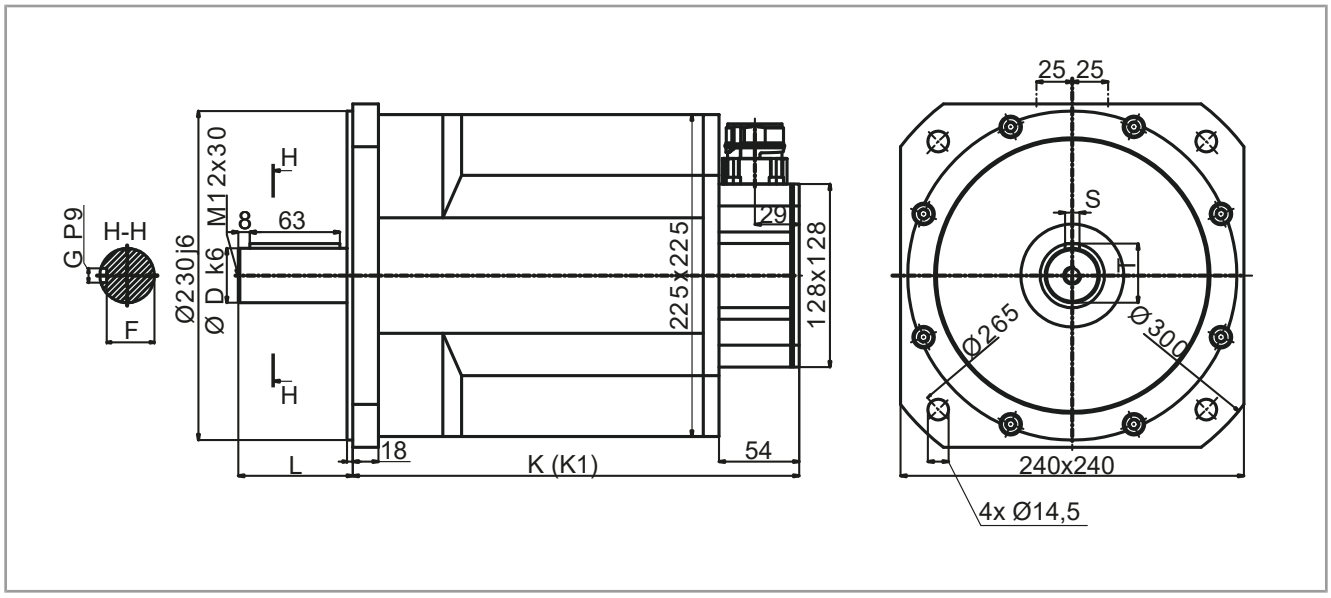


Fig. 50: Dimensions in mm

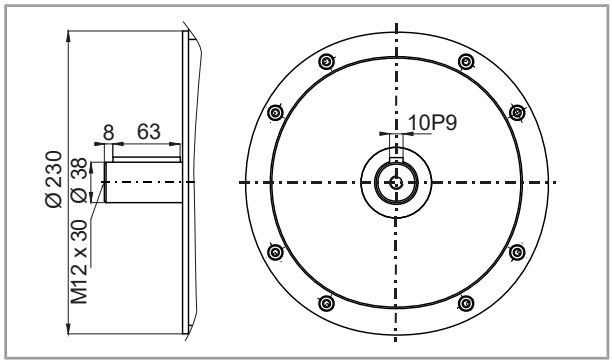


Fig. 51: Option with feather key 10x8x63 for JL8-4000 ... JL8-6800

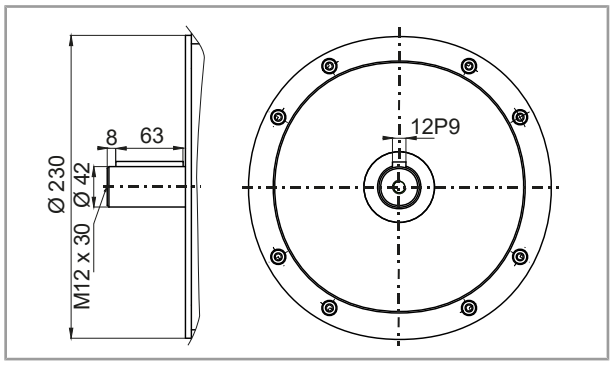


Fig. 52: Option with feather key 12x8x63 for JL8-9300 ... JL8-11500

	P	K	K1	K	K1	Mmax	Shaft (DxL)/ feather key/ S/T / G/F
Type		**Resolver**		**SRx50**		**Nm**	**mm**
JL8-4000	M40	310	378	312	380	40	Ø38x80
JL8-6800	M40	378	446	380	448	68	10x8x63

	P	K	K1	K	K1	Mmax	Shaft (DxL)/ feather key/ S/T / G/F
							10/41.3 / 10/33.3
JL8-9300	M40	446	514	448	516	93	Ø42x110
JL8-11500	M40	514	582	516	584	115	12x8x63 12/45.1 / 12/37.1

Tab. 76: Dimensions

Key:
P = Power connector size
K = Dimension without brake
K1 = Dimension with brake

5.29.2 Technical data of the brake for motor type JL8

Parameter	Value
Holding torque M_{BR}	145 Nm
Supply voltage U_{BR}	24 V DC (-10 % … +6 %) V
Rated power P_{BR}	50 W
Rotor inertia J_{BR}	53.0 kg*cm^2
Weight m_{BR}	9.5 kg

Tab. 77: Technical data of the brake for motor type JL8

5.29.3 Performance data DC link voltage 560 V DC

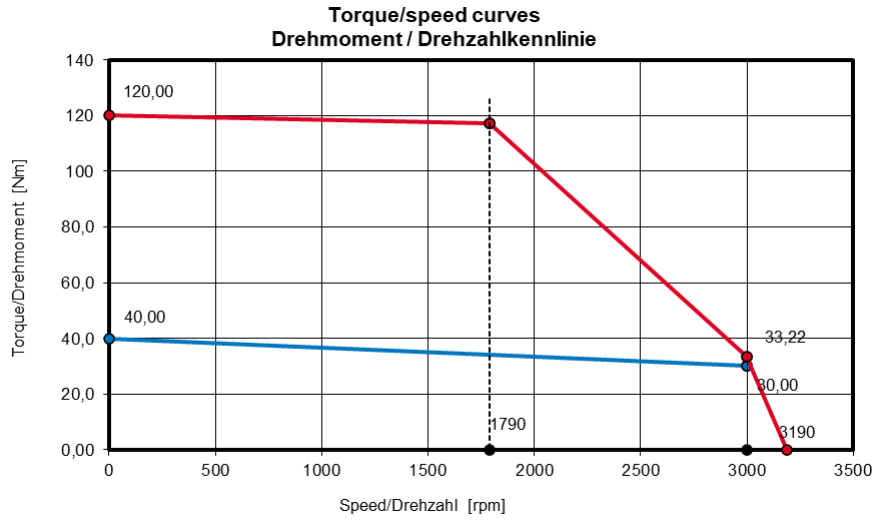
Motor type			JL8-4000-111	JL8-6800-162	JL8-9300-170	JL8-11500-165
Nominal speed	N_n	rpm	3000	2000	2000	2000
DC link voltage	U_{dc}	V	560	560	560	560
Rated AC supply servo amplifier	U_n	V	355	355	355	355
Rated motor voltage	U_m	V	352	341	353	341
Rated torque	M_n	Nm	30.0	56	70	85
Rated current	I_n	A	17.8	22.0	25.3	32.4
Continuous stall torque	M_o	Nm	40.0	68	93	115
Continuous stall current	I_o	A	21.8	25.4	33.1	42.1
Max. torque	M_{max}	Nm	120	204	279	345
Max. current	I_{max}	A	85	99	129	164
Max. speed	N_{max}	rpm	3600	3600	3600	3600
Voltage constant	K_E	V/1000	111.0	162.0	170.0	165.0
Torque constant	K_T	Nm/A	1.84	2.7	2.8	2.7
Winding resistance	R_{2ph}	Ω	0.25	0.24	0.15	0.11
Winding inductance	L_{2ph}	mH	5.7	6.3	4.8	3.4
Motor pole count	P_{mot}		6	6	6	6
Idling speed	N_o	rpm	3190	2190	2090	2150
Torque at I_{max}/U_n	M_z	Nm	117	201	278	342
Speed at I_{max}/U_n	N_z	rpm	1790	1320	1310	1410
Max. torque at n_n	M_x	Nm	33	81	76	139
Electrical time constant	T_{el}	ms	23	26	32	31
Mechanical time constant	T_{mech}	ms	0.98	0.66	0.50	0.49

Motor type			JL8-4000-111	JL8-6800-162	JL8-9300-170	JL8-11500-165
Thermal time constant	T_{th}	min	47	65	79	90
Rotor inertia without brake	J	kg*cm^2	76	114	153	190
Weight without brake	m	kg	41	56	73	89
Axial load	F_A	N	323	337	337	346
Radial load	F_R	N	1702	1775	1775	1823

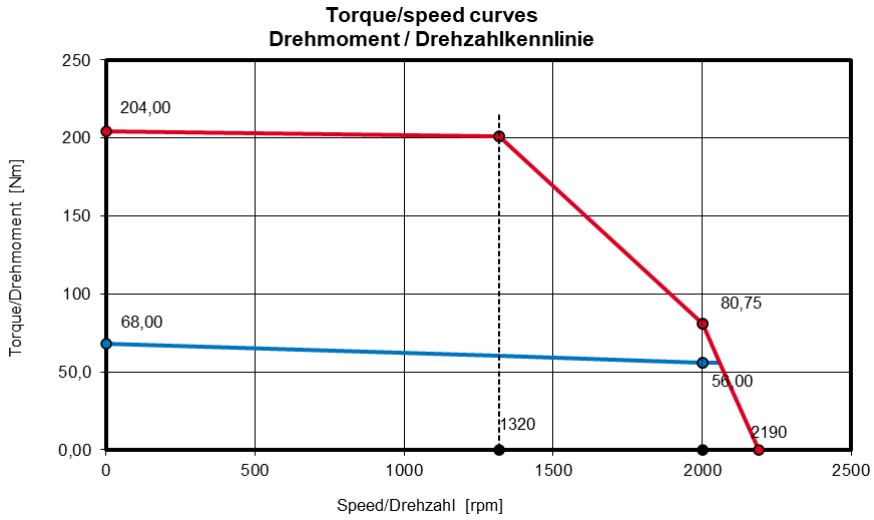
Torque speed characteristics

JL8
560 V

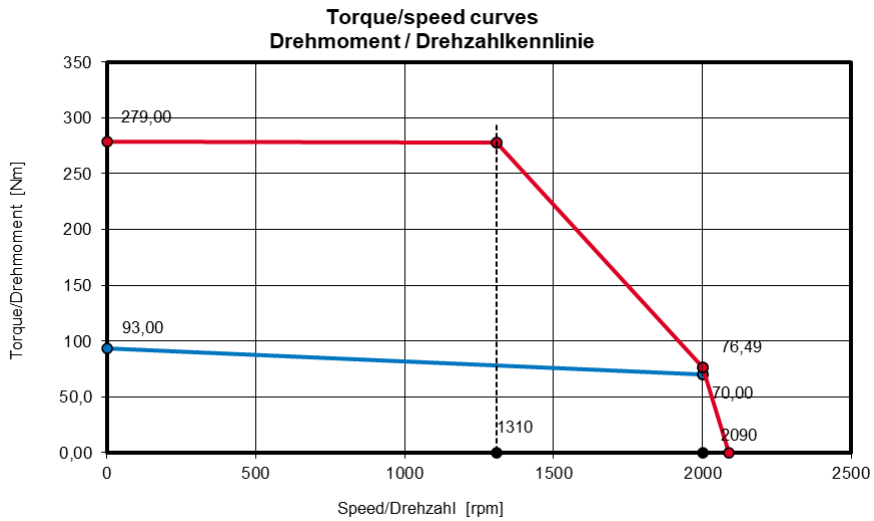
JL8-4000-111

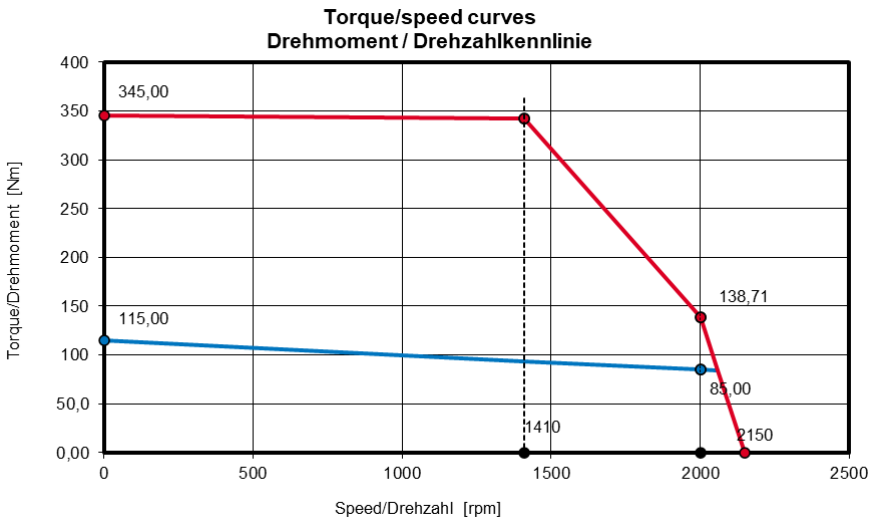


JL8-6800-162



JL8 560 V	JL8-9300-170	JL8-11500-165





6 Installation

This chapter describes how to install the Servo motors.

⚠ DANGER



Risk of explosion due to ignitable sparks caused by stray and leakage currents in conductive motor parts.

The motor can become a source of ignition in potentially explosive areas if stray and leakage currents flow in conductive motor parts.
This can lead to overheating of surfaces or dangerous corrosion.

- ► Ensure that the voltage potentials are balanced to avoid flowing stray or leakage currents.
- ► Establish a connection to an equipotential bonding system.
- ► Ground the motor with a separate grounding cable measuring at least 4 mm^2 or higher to the PE bolt of the ATEX motor.
- ► Also observe the information in chapter Temperature sensor in the motor [▶ 19] and in the supplied ATEX user manual.

⚠ DANGER



Explosion hazard due to electrostatic charge

When using belt pulleys/timing belt pulleys, unsuitable belts cause an electrostatic charge which can cause an explosion.

- ► Only use belts that do not cause an electrostatic charge.

⚠ CAUTION



Possible risk of personal injuries and material damage due to failure to comply with the safety instructions

- ► Before assembling the device, read and comply with the safety precautions and restrictions on usage provided in the safety chapter.
- ► All work on the device must be carried out only by authorized and qualified personnel.

NOTICE



Damaged Servo motors

Damaged Servo motors can cause considerable material damage.

- ► Check the servo motor for external damage and incorrect connections.
- ► Install only completely intact Servo motors.

NOTICE



Damage to the motor due to an excessive application of force

► To avoid damage to the motor and especially the bearings, do not exert excessive (impact) force on the drive shaft.

NOTICE



Improper installation of the motor will considerably shorten its service life.

An offset when aligning the clutch will produce intolerable vibrations and damage ball bearings and the clutch.
Excessive radial and/or axial loads on the motor shaft will considerably shorten the service life of the motor.

► Only use suitable tools when mounting the power output elements. Observe the instructions of the manufacturer.

► Ensure that the clutch is aligned correctly. Observe the instructions of the clutch manufacturer.

► When using timing belts, observe the permissible radial forces F_R.

► Avoid an axial load on the motor shaft.

See also

Protective conductor connector for ATEX motors [▶ 300]

6.1 Installing the servo motor

Cooling plate

All torque data of the motors was determined using cooling plates. The following formula was used to calculate the 3.5 mm thick cooling plates:

Cooling plate length in mm = 2.5 x flange size in mm

Example of a JL2-0040-... motor

With a flange size of 55 mm, the cooling plate length of 2.5 x 55 mm = 137.5 mm. This results in a cooling plate with the following dimensions: 137.5 mm x 137.5 mm x 3.5 mm

Preliminary work

► First check the motor for any transport or bearing damage and immediately report any damaged machine parts and corrosion damage to the shaft and flange to Bucher Automation AG .

Rotor

The rotor must be easy to turn by hand.

1. Release an existing brake electrically beforehand.
2. Listen for any grinding noises.

The rotor of the motor was electronically balanced during manufacture.

► Remove any corrosion protection before pulling your power output elements onto the shaft end

Power output elements

1. Use the tightening thread provided in the motor shaft to tighten clutches, gears or belt pulleys.
2. If possible, heat the power output elements.

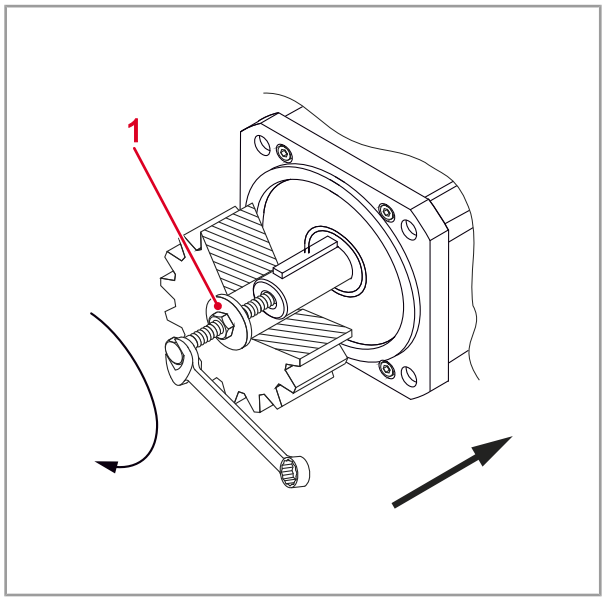


Fig. 53: Installation

1	Spacer washer

Install

1. Check the power output elements (clutch, gear unit, belt pulley) for tight fit and correct set-up.
2. Under all circumstances avoid a hyperstatic arrangement of the motor shaft bearings, for example, by using a rigid coupling and an external additional bearing (e.g. in the gear unit).

Installation positions

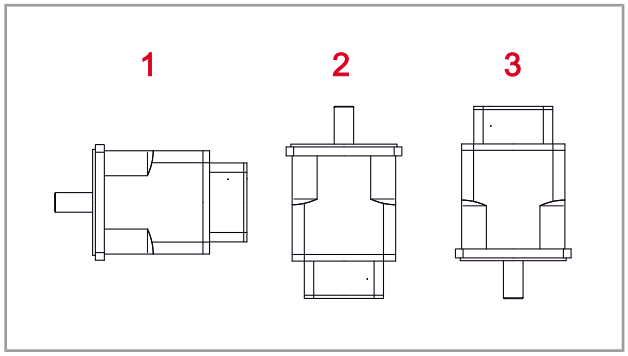


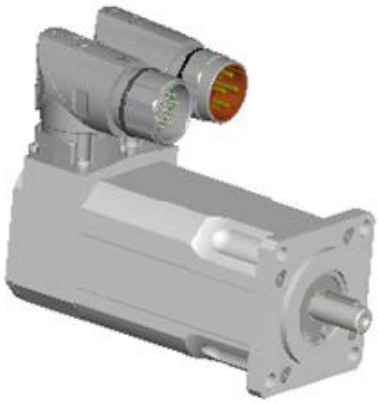
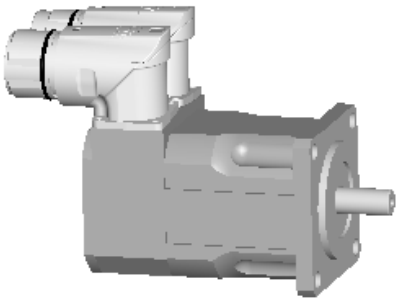
Fig. 54: Possible installation positions

1	IM B 5 (B5)
2	IM V 1 (V1)
3	IM V 3 (V3)

1. If you install the shaft end pointing upwards, installation position V1, make sure that no liquid can enter the bearing.
2. Ensure to allow for unimpeded ventilation of the motor. Observe the permissible ambient and flange temperature.
   The rated data of the motor is achieved as long as the flange temperature does not exceed 65 °C during operation.

6.1.1 Changing the outlet direction of the rotatable male connector S-X

1. Recognize the rotatable male connector on the motor

Figures	 Motor with rotatable male connector S-X pointing to the A side.	 Motor with elbow male connector pointing to the B side (S-B).
Product features	– The S-X version is higher than the S-A or S-B versions. – No screws need to be screwed on for the S-X version! – The customer can change the direction of the male connector by max. +/- 180 degrees.	– With the S-A version, the screws and nameplate must be replaced by Bucher Automation. – The male connector cannot be rotated as with the S-X variant.

Tab. 78: Comparison of motor S-X with motor S-B



Fig. 55: Mating connector screwed to motor connector

2. Screw the mating connector to the motor connector of the S-X version to have a larger lever arm for turning the outlet direction.

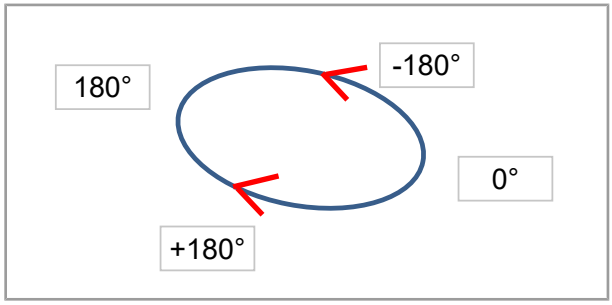


Fig. 56: Change the outlet direction

3. Change the outlet direction by turning to the left or right by max. +/- 180°.

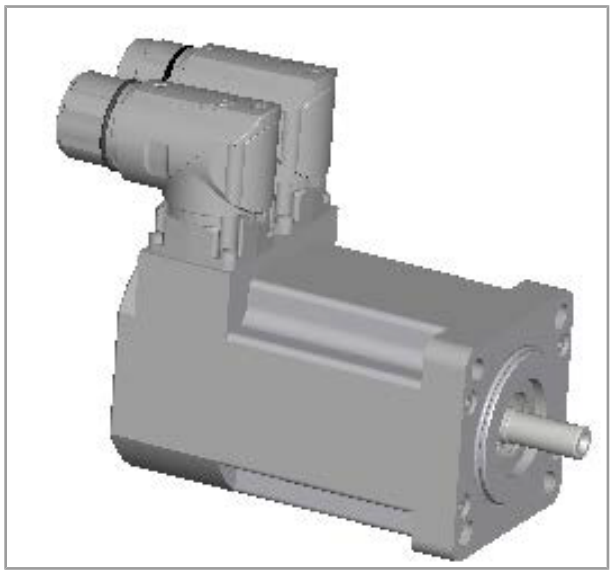


Fig. 57: Outlet direction rotated

4. Position of the male connector S-X with outlet direction pointing to the B side.

6.2 Dismantling the servo motor

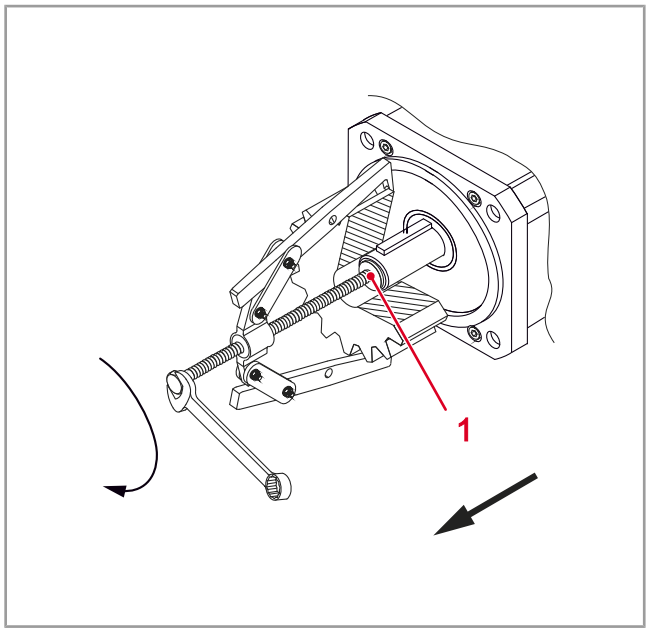


Fig. 58: Dismantling

1	Spacer screw

► Please use a puller for dismantling.

7 Electrical connection

7.1 Explanations on motor connections and cabling

Power connector

This is the new designation for the former motor connector as opposed to the encoder connector.

Motor connector

This refers to the entirety of power and encoder connectors. Please refer to the following explanations on 1-cable technology.

1-cable technology

With 1-cable technology, the motor power is transmitted together with the encoder signal in a hybrid cable.

2-cable technology

With 2-cable technology, the servo motor has two connectors, one encoder connector and one power connector. The encoder is connected to the encoder connector. The load current of the motor is fed through the power connector.

HIPERFACE DSL®

With HIPERFACE DSL®, the encoder signal (DSL) is transmitted modulated to the voltage supply, meaning only two wires are required. These two wires are routed in one cable – in addition to the brake signal and the motor power. The HIPERFACE-DSL® interface can therefore be recognized by the fact that the motor only has one male connector.

Cable cross-section

The cable cross-section must be designed according to the continuous rated current of the motor. Also observe the ambient conditions, the mode of installation and the local regulations.

You can either order prefabricated cables from Bucher Automation AG or opt for self-made cables.

For the JL1 motor and some JHN2 motors:

The length of the cable is specified in meters in the order designation, e.g. S3-1.00 or S4-1.00 for a cable length of 1.00 m.

Power and encoder mating connector

You can order the appropriate power and encoder mating connector from Bucher Automation AG .

7.2 Connection for 1-cable technology

Requirement

This type of connection requires an evaluation option for HIPERFACE DSL® encoders!

- ► ONLY use the 1-cable technology with servo amplifiers that can also evaluate HIPERFACE-DSL® encoders – HDSL encoders for short – e.g. JM-100x, JM-3000 with the TD option or JM-2000 with encoder option "H".

Version

- – If 1-cable technology is applied, the motor temperature sensor has already been wired to the HDSL encoder by the motor manufacturer.
- – In a hybrid cable the conductors for the encoder signal and the motor cables are integrated.
- – A motor connector is the term used to describe the entirety of a power and encoder connector.

7.2.1 Connection with HIPERFACE DSL® encoder

NOTICE

- ► Avoid contact between the DSL shield and the overall shield.
- ► Attach the DSL shield to the motor (pin 5) and to the respective pin of the servo amplifier.

Pin assignment of M17 motor connector

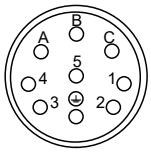


Fig. 59: 9-pole, orange, pins



Fig. 60: M17 I-Tec connector

Pin	Signal
A	Phase 1
B	Phase 2
C	Phase 3
⏚	Protective conductor PE
1	Brake+
2	Brake-
3	DSL+
4	DSL-
5	DSL shield
Housing	Place the overall shield and shield of the motor holding brake wire pair on the connector enclosure.

Tab. 79: Pin assignment of I-Tec motor connector

Pin assignment of M23 motor connector

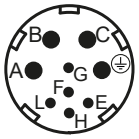


Fig. 61: 9-pole, pins



Fig. 62: M23 connector

Pin	Signal
A	Phase 1
B	Phase 2
C	Phase 3
⏚	Protective conductor PE
G	Brake+
F	Brake-
E	DSL+
H	DSL-
L	DSL shield

Pin	Signal
Housing	Place the overall shield and shield of the motor holding brake wire pair on the connector enclosure.

Tab. 80: Pin assignment of M23 motor connector

Pin assignment of M40 motor connector

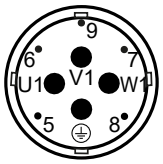


Fig. 63: 9-pole, pins



Fig. 64: M40 connector

Pin	Signal
U1	Phase 1
V1	Phase 2
W1	Phase 3
⏚	Protective conductor PE
6	Brake+
5	Brake-
7	DSL+
8	DSL-
9	DSL shield
Housing	Place the overall shield and shield of the motor holding brake wire pair on the connector enclosure.

Tab. 81: Pin assignment of M40 motor connector

7.3 Connection for 2-cable technology

7.3.1 Cable without male connector

– The motor has two cable glands with cables for the power and encoder cables.
– The length of the cable must be specified in meters in the order according to the type designation S3-x.xx and is only possible for the small flange sizes 1 to 3 from the JL and JHN series.
– The cable ends are without male connectors, see the following figure.

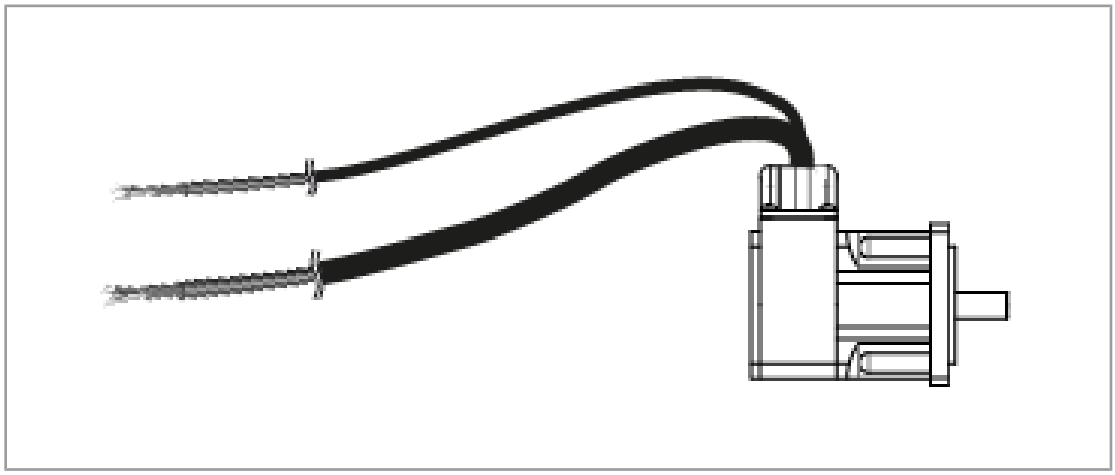


Fig. 65: Motor with two cables without male connector

Power cable signal	Wire number/color
Phase U	1
Phase V	2
Phase W	3
Protective conductor PE	Green/yellow
Brake+	4
Brake-	5

Tab. 82: Wire assignment of the power connection

Resolver cable signal	Wire color with option S3-x.xx	Pin assignment with option S4-x.xx
S1 (cosine+)	Brown	1
S3 (cosine-)	White	2
S4 (sine-)	Green	3
S2 (sine+)	Yellow	4
R1 (exciter winding+)	Pink	5
R2 (exciter winding-)	Gray	6
Thermal switch+	Blue	7
Thermal switch-	Red	8
Not assigned		9 - 12

Tab. 83: Wire assignment of the encoder connection

7.3.2 Cable with male connectors

– The motor has two cable glands with cables for the power and encoder cables.
– The length of the cable must be specified in meters in the order according to the type designation S4-x.xx.
– The cable ends are with corresponding male connectors, see the following figure.

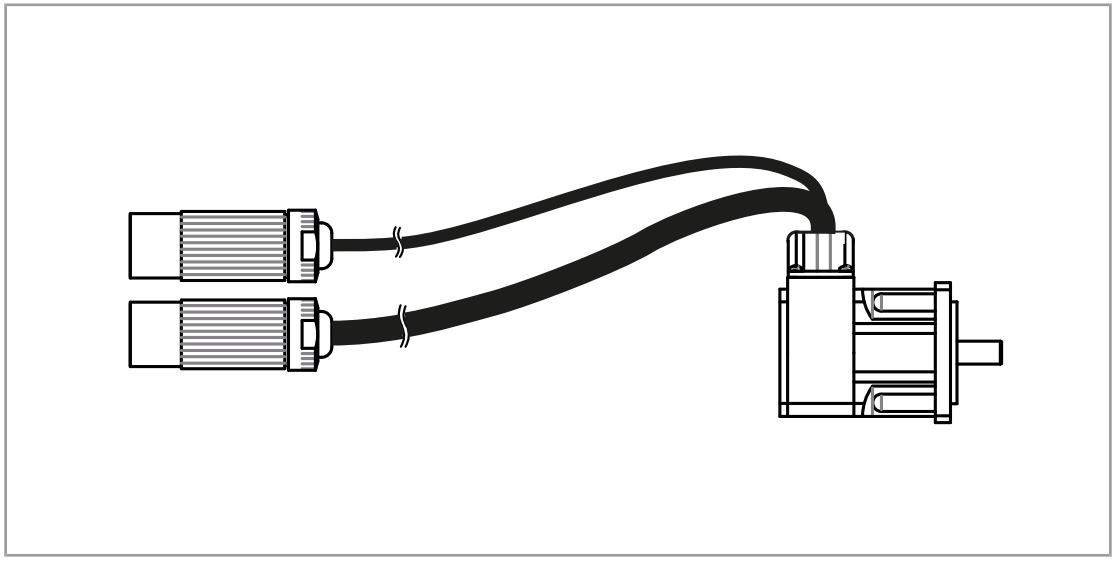


Fig. 66: Motor with two cables with male connectors

Pin assignment of power connector

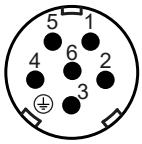


Fig. 67: 6-pole, pins



Fig. 68: M23 connector

Pin	Signal
1	Phase 1
5	Phase 2
2	Phase 3
⏚	Protective conductor PE
6	Brake+
4	Brake-
Housing	Place the overall shield and shield of the motor holding brake wire pair on the connector enclosure.

Tab. 84: Pin assignment of M23 power connector

Pin assignment of encoder connector



Fig. 69: 12-pole, pins



Fig. 70: M23 encoder connector

Pin	Resolver signal
1	S1 (cosine+)
2	S3 (cosine-)
3	S4 (sine-)
4	S2 (sine+)
5	R1R (exciter winding+)
6	R2L (exciter winding-)
7	Th1 (PTC)
8	Th2 (PTC)
9	-
10	-
11	-
12	-
Housing	Place the overall shield on the connector enclosure.

Tab. 85: Pin assignment of encoder connector

7.4 Connection with male connector without cable

7.4.1 Connection with Y-Tec connector

Notice

– Y-Tec or I-Tec male connectors are only possible up to flange size 24.

– JHQ12, 22, 24 have these male connectors with order code SA-X or SB-X as standard and can be rotated 300°.

– JQR20 has an M23 male connector instead of the I-Tec connector with 1-cable technology. With 2-cable technology, a Y-Tec male connector.

Pin assignment of Y-Tec power connector

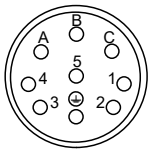


Fig. 71: 9-pole, orange, pins



Fig. 72: M17 Y-Tec connector

Pin	Signal
A	Phase 1
B	Phase 2
C	Phase 3
⏚	Protective conductor PE
1	Brake+
2	Brake-
Housing	Place the overall shield and shield of the motor holding brake wire pair on the connector enclosure.

Tab. 86: Pin assignment of Y-Tec power connector

Pin assignment of Y-Tec encoder connector

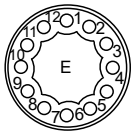


Fig. 73: 12-pole, green, pins



Fig. 74: M17 Y-Tec connector

Pin	Resolver signal	Signal HIPERFACE®
1	S1 (cosine+)	-
2	S3 (cosine-)	-
3	S4 (sine-)	Sine+
4	S2 (sine+)	Sine-
5	R1R (exciter winding+)	Cosine+
6	R2L (exciter winding-)	Cosine-
7	Th1 (PTC)	Data– (RS-485)
8	Th2 (PTC)	Data+ (RS-485)
9	-	0 V
10	-	Voltage supply (7 … 12 V)
11	-	Thermal sensor+

Pin	Resolver signal	Signal HIPERFACE®
12	-	Thermal sensor-
Housing	Place the overall shield on the connector enclosure.	

NOTICE! HIPERFACE® encoder: With JM-2xx, pin 12 must be bridged with pin 9 in the encoder connector.NOTICE! A 9-pole sub-D connector must be fitted at the other end of the cable.

NOTICE! JM-D203 must be fitted with a 15-pole sub-D connector.

7.4.2 Connection with HIPERFACE® encoder

Pin assignment of M23 power connector

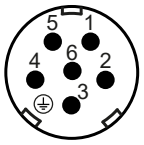


Fig. 75: 6-pole, pins



Fig. 76: M23 connector

Pin	Signal
1	Phase 1
5	Phase 2
2	Phase 3
⏚	Protective conductor PE
6	Brake+
4	Brake-
Housing	Place the overall shield and shield of the motor holding brake wire pair on the connector enclosure.

Tab. 87: Pin assignment of M23 power connector

Pin assignment of M40 power connector

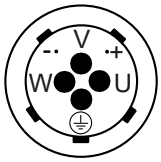


Fig. 77: 6-pole, pins



Fig. 78: M40 connector

Pin	Signal
U	Phase 1
V	Phase 2
W	Phase 3
⏚	Protective conductor PE
+	Brake+
-	Brake-
Housing	Place the overall shield and shield of the motor holding brake wire pair on the connector enclosure.

Tab. 88: Pin assignment of M40 power connector

Pin assignment of M23 encoder connector



Fig. 79: 12-pole, pins



Fig. 80: M23 connector

Pin	Resolver signal	Signal HIPERFACE®
1	S1 (cosine+)	-
2	S3 (cosine-)	-
3	S4 (sine-)	Sine+
4	S2 (sine+)	Sine-
5	R1R (exciter winding+)	Cosine+
6	R2L (exciter winding-)	Cosine-
7	Th1 (PTC)	Data– (RS-485)
8	Th2 (PTC)	Data+ (RS-485)
9	-	0 V
10	-	Voltage supply (7 … 12 V)
11	-	Thermal sensor+
12	-	Thermal sensor-
Housing	Place the overall shield on the connector enclosure.	

Tab. 89: Pin assignment of M23 encoder connector

NOTICE! HIPERFACE® encoder: With JM-2xx, pin 12 must be bridged with pin 9 in the encoder connector.NOTICE! A 9-pole sub-D connector must be fitted at the other end of the cable.

NOTICE! JM-D203 must be fitted with a 15-pole sub-D connector.

7.5 Protective conductor connector for ATEX motors

⚠ DANGER



Risk of explosion due to ignitable sparks caused by stray and leakage currents in conductive motor parts.

The motor can become a source of ignition in potentially explosive areas if stray and leakage currents flow in conductive motor parts.
This can lead to overheating of surfaces or dangerous corrosion.

- ► Ensure that the voltage potentials are balanced to avoid flowing stray or leakage currents.
- ► Establish a connection to an equipotential bonding system.
- ► Ground the motor with a separate grounding cable measuring at least 4 mm^2 or higher to the PE bolt of the ATEX motor.
- ► Also observe the information in chapter Temperature sensor in the motor [▶ 19] and in the supplied ATEX user manual.

ATEX motors have an additional grounding screw on the motor to which the grounding cable must be connected. The connection point is marked with the grounding symbol ⏚.

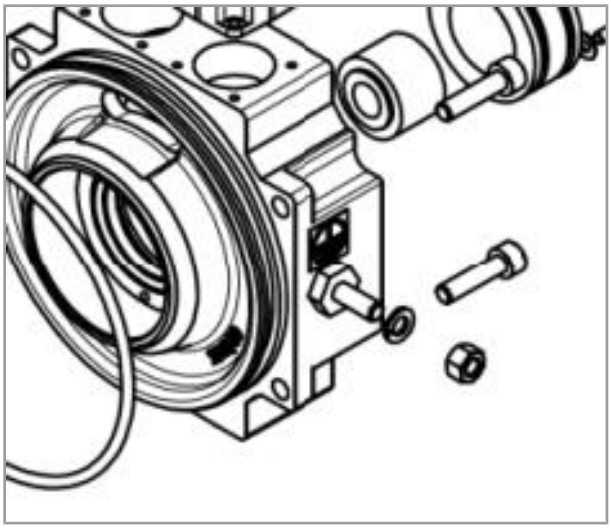


Fig. 81: Connection of grounding screw for ATEX motors

See also

- Protective conductor connector for ATEX motors [▶ 300]

7.6 Commissioning

⚠ DANGER



Danger due to high electrical voltage

Touching live parts may lead to severe injury or death.

► Carry out the following steps before starting work to ensure safety.

☑ Prepare for turning off the system. Inform everyone involved who will be affected by the process.

☑ Isolate the drive system from the power supply and secure it against being turned on again.

☑ Wait for the discharge time of the servo amplifier currently being used and check all power connections to ensure they are at zero potential.

☑ Ground according to requirements.

☑ Cover over neighboring live parts.

☑ Ensure the drives cannot move.

Activities required for initial commissioning

1. Disconnect the drive as instructed before starting work.
2. Pay attention to the main circuit and any auxiliary circuits.

Requirements for successful commissioning

NOTICE



Protection against overheating

Without monitoring the temperature in the motor by means of suitable sensors, the motor can become too hot.

- ► Integrate the thermistor of the motor into the monitoring system of the servo amplifiers.
- ► Never operate the motor without integrating and evaluating the built-in temperature sensor. To this end, route the temperature sensor in the encoder connector of the motor to the respective input of the servo amplifier.

☑ If the permissible resistance is exceeded when evaluating the temperature sensor, the servo amplifier must switch off with the message *Motor temperature error*. For more detailed information, refer to the ATEX user manual.

NOTICE



Incorrect settings can lead to unsafe and oscillating behavior, overheating and destruction of the drive.

- ► Check the drive using the following points before switching it on for the first time.

☑ Commissioning of the motor is prohibited until the motor has been installed in the system.

☑ Referring to the nameplates and wiring diagrams of the motor and servo amplifier, compare the continuous rated current and the AC rated voltage of the devices.

☑ Is the protective conductor (PE) connected and are the motor and servo amplifier grounded? Grounding is also required for short functional tests!

☑ Are all the cables and male connectors on the entire drive system safely installed and mounted according to the wiring diagrams?

☑ Have the control circuit parameters been set? Otherwise, the drive may start to oscillate.

☑ Has it been checked before switching on the drive whether the safety devices function properly?

☑ Have all necessary protection measures against accidental contact with live or moving parts been taken?

☑ Have the correct number of motor poles and of resolver poles been set in the digital servo amplifier?

During commissioning

⚠ DANGER



Danger due to high operating voltage

The high operating voltage of the device leads to severe injury or death.

Observe the following rules throughout the **entire work process.**

- ► Do not remove any covers during operation and keep the switch cabinet doors closed.
- ► Check whether all live connections are safely protected against contact.
- ► Never open the device.
- ► Never touch the plug connections of the device for the voltage supply during operation.

⚠ WARNING



Danger due to rotating parts

When the drive is running, there is risk of injury due to entanglement or being drawn in by open moving machine parts.

- ► Never reach into the rotating drive shaft.
- ► Always wear close-fitting clothes, no jewelry and no open, long hair.
- ► Do not wear gloves.
- ► Provide monitoring and protective devices in accordance with the applicable safety requirements.
- ► Before all work on the drive, de-energize it and ensure that the drive is no longer able to move.
- ► Ensure that even an unintended movement of the drive will not endanger persons or property.

Continue the commissioning process by following the steps below:

1. Check proper functioning of the holding brake, if present (apply 24 V DC, brake must be released).
2. Check to see whether the rotor of the motor can be turned easily (a possibly existing brake must be released beforehand). Listen for any grinding noises.
3. Carry out any other checks specific to or required for your system.
4. Commission the drive in accordance with the user manual for the servo amplifier and the servo motor.
5. When using multi-axis systems, commission each servo amplifier/motor drive unit individually.

At the end of commissioning

⚠ WARNING



Danger due to residual voltage

Capacitors in the servo amplifier can cause dangerous residual voltages that remain for some time after the operating voltage has been switched off, which may lead to severe injury or death.

- ► To be on the safe side, measure the voltage in the DC link of the servo amplifier and wait until the voltage has dropped below 40 V DC.
- ► **Always** wait for the waiting time specified in the user manual of the servo amplifier after switching off before disconnecting the device from the mains or unplugging connectors.
- ► **Always** wait for the waiting time specified in the user manual of the servo amplifier after switching off before disconnecting the connecting terminals and touching the contacts.

► After commissioning, reinstall the protective cover provided and check that all live connections are securely protected against contact.

8 Faults

This section contains an overview of possible faults and how to eliminate them for the Servo motors.

Problem	Cause	Solution
Motor is humming		– Deactivate the ENABLE signal **immediately** to prevent the motor winding from overheating! – Wait until the motor has cooled down. – Check the motor and control parameters.
Controller and motor not working	The servo amplifier is not enabled	– Activate the ENABLE signal.
	There is insufficient protection against faults.	– To prevent faults caused by the motor, encoder or brake lines from being transmitted to the voltage supply of the controller or to other sensitive sensors, proceed as follows: – Use servo cables from Bucher Automation . – Use a separate power supply unit for the brake supply voltage.
Motor not rotating	Motor phases are reversed.	– Connect the motor phases correctly.
	Brake is not released.	– Check the brake control.
	Drive is mechanically blocked.	– Check the mechanics.
Motor does not follow the setpoint	Setpoint line is interrupted.	– Check the setpoint line.
Motor overspeed	Motor phases are reversed.	– Connect the motor phases correctly.
Motor vibrates	Resolver cable shielding has been interrupted.	– Replace the resolver cable
	Gain factor is too high.	– Use the motor default values.
Brake does not engage	Brake is defective	– Replace the motor.
	Motor shaft is axially overloaded	– Check and reduce the axial load. – If the bearings are damaged, replace the motor.
	Required holding torque is too high	– Check the dimensioning.
Unusual bearing noises		– Return the motor to Bucher Automation - the bearings will be replaced.

Problem	Cause	Solution
Unusual motor noises		– Take the motor out of operation. – Remove the motor. – Check smooth running of the motor shaft by hand. – If there is still unusual noise, return the motor to Bucher Automation.
Error messages		
Brake	Short circuit in the voltage supply line of the motor holding brake	– Eliminate the short circuit.
	Defective motor holding brake	– Replace the motor.
Output stage	Motor cable has a short circuit or ground fault	– Replace the cables.
	Motor has a short circuit or ground fault	– Replace the motor.
Resolver	Resolver connector is not connected correctly	– Check the plug connection
	Resolver cable is interrupted, crushed or similar	– Check the cables.
Motor temperature		– Deactivate the ENABLE signal **immediately** to prevent the motor winding from overheating! – Check whether the motor enclosure temperature is greater than 80 °C.
	The motor enclosure temperature is higher than 100 °C and the motor overheats during continuous operation	– Use the oscilloscope function to record measurements of the motor function in a JetSym motion profile and send them to Bucher Automation. – Allow the motor to cool down.
	The encoder cable is loose or interrupted With Bucher Automation motors, the temperature sensor is transmitted to the converter via the encoder cable.	– Check the male connector. – Insert a new encoder cable, if necessary. – After the error has been rectified, reactivate the ENABLE signal.

Tab. 90: Faults and solutions

9 Service

9.1 Technical Support

In case of questions, suggestions, or issues, please contact our experts from Technical Support. You may reach out by phone or through the contact form on our homepage:

Technical Support | www.bucherautomation.com

Or email us:

support@bucherautomation.com

Please supply the following information when contacting Technical Support:

– Hardware revision and serial number
  The hardware revision and serial number is printed on the nameplate of the product.

10 Maintenance

⚠ DANGER



Electric shock

The high electrical voltage of the device / plant can lead to serious injury.

- ► Only fully trained electricians may perform troubleshooting, repair or servicing work.
- ► Always disconnect the device / plant from the mains supply before performing any work by turning off the main switch or unplugging the mains plug.
- ► Secure against accidental reconnection.

⚠ DANGER



Explosion hazard due to dust deposits

The motor may become a source of ignition in potentially explosive areas if it is not regularly serviced and cleaned. Dust deposits must not ignite on the surfaces.

- ► The surface temperature of the motor must be significantly lower than the glow temperature of deposited dust.
- ► Carry out regular maintenance and observe the service intervals.
- ► Clean the motor and prevent dust deposits of > 5 mm.
- ► Clean existing air ducts regularly depending on the ambient conditions.

Maintenance plan

Part	Maintenance interval	Maintenance work
Ball bearing	Every 2,500 operating hours or at least once a year	– Check for unusual noises – If necessary, return the motor to Bucher Automation to replace the bearings
	After 20000 h	– Have it replaced by Bucher Automation

Tab. 91: Maintenance plan

10.1 Cleaning

NOTICE



Material damage due to incorrect cleaning

Use of the wrong cleaning agents can lead to significant material damage.

- ► Use **only** isopropanol for cleaning.
- ► Do not use any aggressive cleaning agents to clean the device.
- ► Just wipe off the housing with a moist cloth to prevent damage to the electrical system.
- ► Do not use a high-pressure cleaner or any sprayed water to clean the device!

10.2 Repairs

Defective components can cause dangerous malfunctions and compromise safety.
Only the manufacturer is authorized to perform repair work.
It is forbidden to open the product.

Product modifications

Modifications and alterations to the product and its functions are not allowed. The manufacturer exempts from liability for any modifications made to the product.

The original parts are specifically designed for the product. Parts and equipment from other manufacturers must not be used.

The manufacturer exempts from liability for any damage resulting from the use of non-original parts and equipment is excluded.

10.3 Storage and Shipment

Storage

When storing the product, observe the environmental conditions given in chapter “Technical specifications”.

Shipment and packaging

The product contains electrostatically sensitive components which can be damaged if not handled properly. Damages to the product can impair its reliability.

To protect the product from impact or shock, it must be shipped in its original packaging, or in an appropriate protective ESD packaging.
If the packaging is damaged, inspect the device for any visible damage, and immediately inform your freight forwarder and Bucher Automation AG of the damage caused during shipment. It is strictly forbidden to use a product that has been damaged or dropped.

10.4 Return and Disposal

The WEEE icon (crossed-out wheeled bin) says that end users must not dispose of waste electrical and electronic equipment together with household waste, but separately in an appropriate way. Applicable local environmental directives and regulations must be complied with.



Fig. 82: WEEE icon – crossed out wheeled bin

Disposal options

To do so, you may either resort to professional disposal service providers or return waste electronics to Bucher Automation AG.

Find detailed information along with the required Return Delivery Form on our website.

Batteries

Prior to disposing of waste electronics, remove any batteries where this is possible in a safe and non-destructive way. Dispose of batteries properly.

Personal data

It is the responsibility of the end user to delete any personal data stored on waste electric and electronic equipment prior to disposal.

Packaging material

The product's packaging materials must not be disposed of together with household waste. Find detailed information on how to return packaging material to Bucher Automation AG on our website.

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