AMKmotion

MEMBER OF THE ARBURG FAMILY

SPINDASYN HOLLOW SHAFT MOTORS

with integrated heavy duty bearing

LINEAR

CONTENTS

SPINDASYN

Hollow shaft motors with integrated axial bearing for high forces:

SPINDASYN hollow shaft motors from AMK are the perfect choice for applications requiring high forces and extremely accurate linear positioning.

SPINDASYN is a pre-assembled turnkey solution. and consists of a powerful servo motor with an axial bearing and an integrated multiturn absolute encoder. Appropriate adapter flanges are available for mounting different screw and nut systems. Adaptation to match the application in question is accomplished through the selection of the motor and bearing from the SPINDASYN modular system and the pitch of the screw. The resulting mechatronic unit is ideally adapted to speed and force in each application.

The choice of motor design variants offering blind hollow shafts or hollow through shafts enables a cost-effective adaptation to your process. Motors with a blind hollow shaft are the perfect solution for applications requiring short strokes. Unlimited stroke lengths are possible in motors with hollow through-shafts. Hollow through-shaft motors also offer the possibility of routing energy or compressed air supply through the moving axis.
SPINDASYN motors are available with convection or liquid cooling. The liquid-cooled model enables technical solutions that achieve extremely short cycle times, something that is only possible with hydraulic and pneumatic systems at considerable expense. Very precise reproducible processes are made possible by the extremely dynamic position control.

The combined application of SKT motors and screw and nut systems is an economically superior alternative to hydraulic and linear motors in applications with high forces and varying speeds. The SKT solution enables construction and ongoing operating costs to be significantly reduced.

Our expertise – your benefit

Flexibility through a modular concept

The modular design of the SPINDASYN linear drives with regard to power range, spindle diameter and axial force allows specific adaptation to suit a variety of applications. There is also a model with the option of a hollow through-shaft or hollow shaft closed on one-side, for an unlimited or limited stroke.

Energy efficiency

The system offers significantly higher efficiencies compared to hydraulic systems and linear direct drives and as a result consistently achieves higher energy efficiency.

Compact design

The integrated screw enables the entire linear drive to be built with the most minimum dimensions. All of the functional elements such as the servo motor, bearings, DIN mounting for the screw nut, holding brake and encoder system are concentrated in a common housing as one compact unit.

High rigidity

The integrated bearing eliminates the need for shaft couplings and significantly reduces the required number of bearing points. The inherently rigid housing design and the substantial dimensioning of all power train components provides the entire system with extremely high rigidity.

High dynamic performance

The extremely compact design results in a correspondingly low mass moment of inertia. The servo motor achieves high power and acceleration ratings together with significant overload capacity. The rigid torsional connection to the screw nut allows very dynamic controller settings to be used.

Reduced design complexity

The ready-to-install unit consists of a servo motor, high duty bearing and multiturn absolute encoder. The encoder is prepared for direct connection to the screw nut.

IP54 protection rating

The IP54 protection rating makes these motors suitable for harsh environmental conditions.

Installation in any orientation.

The bearing seal design enables the unit to be mounted in any orientation. It may be necessary to re-lubricate the bearings depending on customer applications.

Maintenance-free operation

The use of high-torque motors and the sealed mechanical design ensure virtually maintenance-free operation and high availability. Integrated temperature sensors protect the motors from thermal overload. The permanently lubricated angular contact ball bearings and tapered roller bearings

Suitable for heavy-duty applications and high speeds

SPINDASYN hollow shaft motors are a more efficient alternative to existing hydraulic solutions or to linear drives when high loads have to be moved at varying speeds.

Highest power density provided by liquid cooling (optional)

Liquid-cooled motors are of a more compact design and offer higher dynamic performance due to less moving mass. This also makes the motors easier to handle during installation.

ADVANTAGES

- **Highest productivity**
- **Excellent process control**
- **High degree of accuracy**
- **Very high degree of efficiency**
- **Low energy consumption**

High performance and productivity for:

- Injection moulding machines
- Blow moulding machines
- Extruders
- Presses
- Tube bending machines
- Punching
- Assembly and joining presses
- Injection/dosing
- Pumps

Functional principle, application notes

Motor bearing sizing for SKT motors

A bearing service life curve is available for each motor type to aid selecting the correct size of motor. The example shows how the bearing life can be calculated for a particular application.

Example of an electric press:

Press force: Fp= 25kN
Stroke: Sv= 0.5m
Press stroke: Sp= 0.1m
Screw pitch: h= 20mm
Press cycle: t= 2s

Number of revolutions over

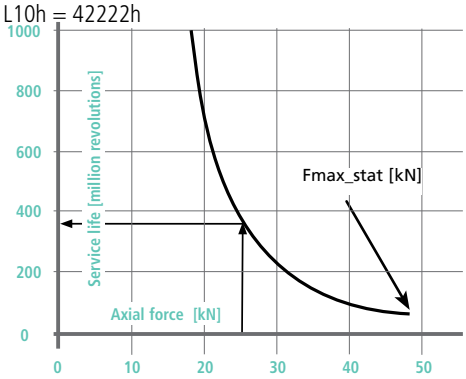
the pressing stroke:

A = Sp/h
A = 0.1m/0.02m
A = 5 revolutions

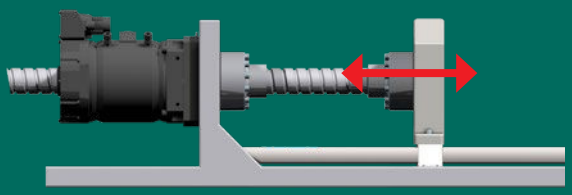
From the diagram:

L10 = 380 million revolutions at 25kN
Number of cycles: Z =L10/A
Z = 380 million/5
Z = 76 million cycles

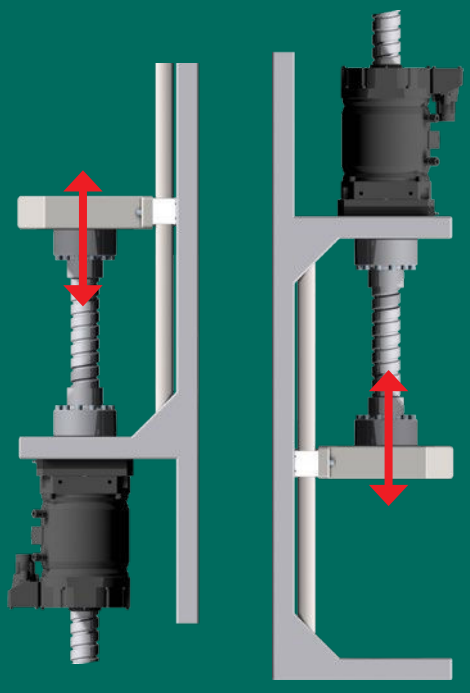
Service life: L10h = t * Z
L10h = 2s * 76 million
L10h = 152 million s
L10h = 42222h



Bearing life of A-bearing (L10) with different axial force Fa in [kN].



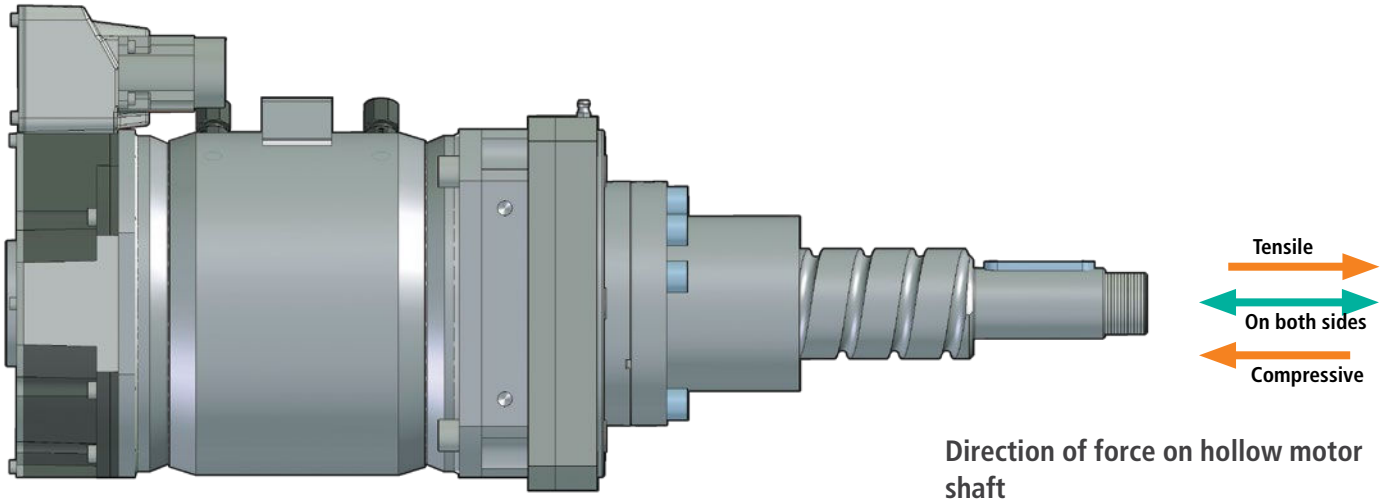
Horizontal arrangement. Hollow through-shaft, no limitation in stroke



Vertical arrangement e.g. lifting unit, press

Direction of force

SPINDASYN hollow shaft motors are designed for very high axial loads. With standard load bearings the force can act on the hollow motor shaft either as compressive or tensile forces. With heavy-duty bearings, there are bearings for both directions of force and bearings for which the direction of force must be observed. The full axial force can then only be applied in the specified direction D or Z. The direction of force is shown in the type code.



Direction of force on hollow motor shaft

D = Compressive, Z = Tensile, B = Ball bearings on both sides, R = Roller bearings on both sides

The direction of force refers to the hollow motor shaft (screw). It should be noted that the forces on the motor flange act in the opposite direction.

Anti-rotation device

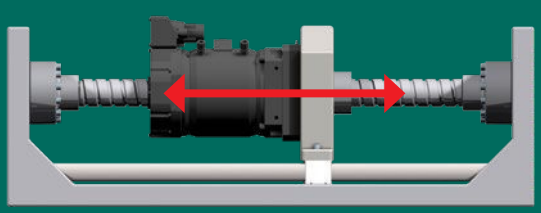
During linear movement, the motor torque acts in the opposite direction at the end of the screw. This torque must be supported by an appropriate linear guide.

Adjacent construction

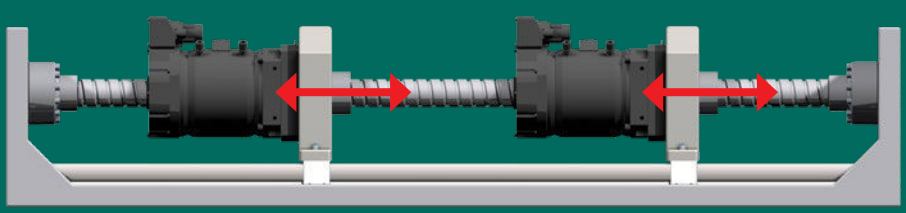
Radial loads or tilting moments reduce the service life of screw and nut systems. When designing the adjacent construction ensure that the motor is aligned with the screw and nut system and that no radial forces occur.

Screw and nut system

The SKT motors are suitable for screw and nut systems such as roller or ball screws. In general it can be said that roller screws can absorb higher forces on a smaller diameter, while ball screws have better dynamic properties and are more cost-effective.



One motor on a fixed screw



Several motors on one fixed screw, e.g. format adjustment

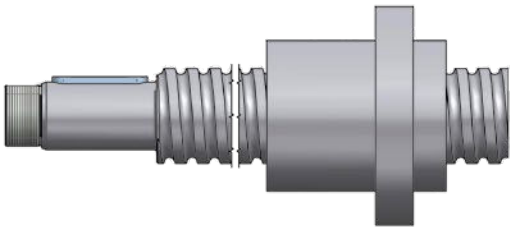
SPINDASYN hollow shaft motor in conjunction with a screw and nut system.

SKT rotating nut principle

The screw nut is directly connected to the hollow shaft of the motor. The rotary movement of the screw nut is converted into a linear movement of the screw, whereby the screw does not rotate but only moves in a linear direction. The direct drive of the screw nut has many advantages compared to systems using a rotating screw. This enables higher travel speeds to be achieved with the direct drive and the torsionally stiff connection of the screw nut delivers better dynamic performance. The negative effects on dynamic performance, torsional stiffness and accuracy that occur when using transmission components such as belts or couplings do not arise with the SKT principle. The motor bearings directly absorb high forces allowing for heavy duty applications. This enables machine designs to be greatly simplified. The SKT principle also facilitates new solutions such as arranging several SKT motors on a fixed screw.

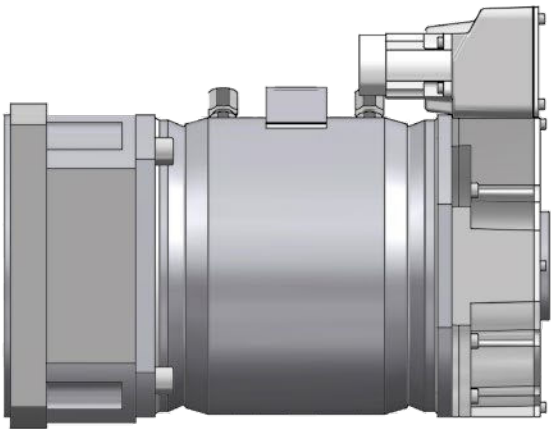
Motor flange to screw nut interface

The screw nut is mounted to the motor flange via a suitable adapter which must be ordered separately, with the exception of the SKT7 motor where the motor flange fits a flange nut design to DIN69051. The dimensions for selecting the screw nut can be found in the following overview.

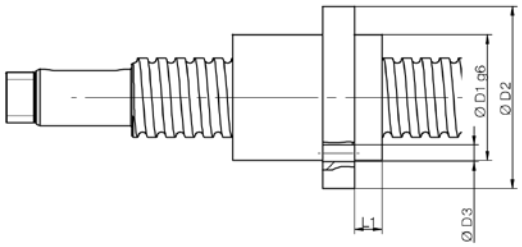


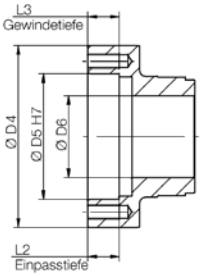
Screw and nut system

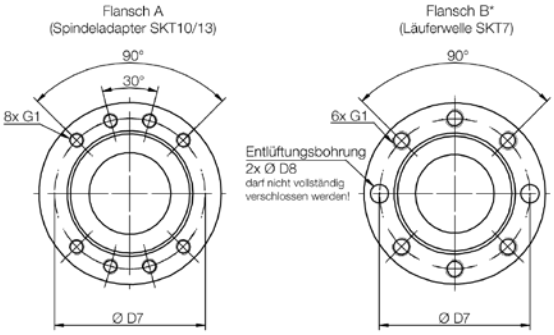
Adapter



Motor





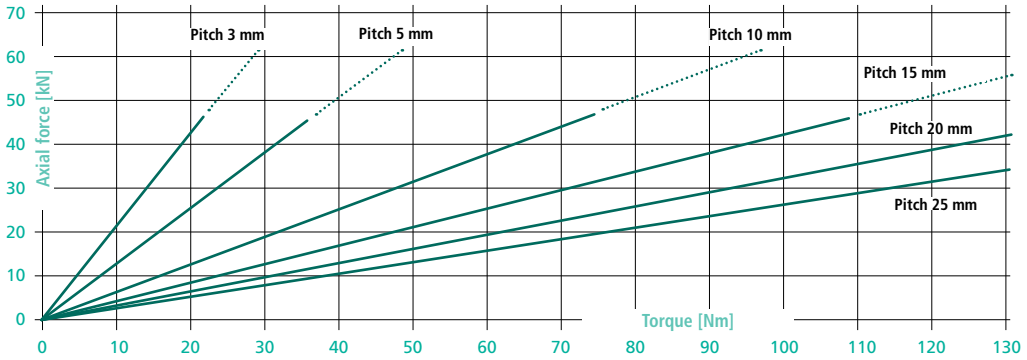


Motor type		Standard Adapter No.	J* [kgc-m^2]	Screw ø [mm]	Flange	D1=D5 [mm]	L1 [mm]	D2 [mm]	D3 [mm]	D4 [mm]	D6 [mm]	L2 [mm]	D7 [mm]	G1	L3 [mm]
Standard load applications	SKT7	–*	–	32	B*	50	min. 20 max. 49	max. 95	9.5	95	50	50	65	M8	20
	SKT10	AN10-01	103	63	A	95	max. 21	–	13.5	140	65	22	115	M12	20
	SKT13	AN13-01	616	100	A	150	max. 54	–	17.5	212	105	55	176	M16	20
Heavy-duty applications	SKT10	AS10-01	104	63	A	95	max. 24	–	13.5	140	65	25	115	M12	25
	SKT13	AS13-01	766	100	A	150	max. 74	–	17.5	212	105	75	186	M16	25

* Motor flange SKT7 is suitable for a flange nut to DIN69051, no adapter is necessary.

Overview for adjusting speed and axial force via the pitch of the screw

Axial forces SKT7 and SKT10 standard load

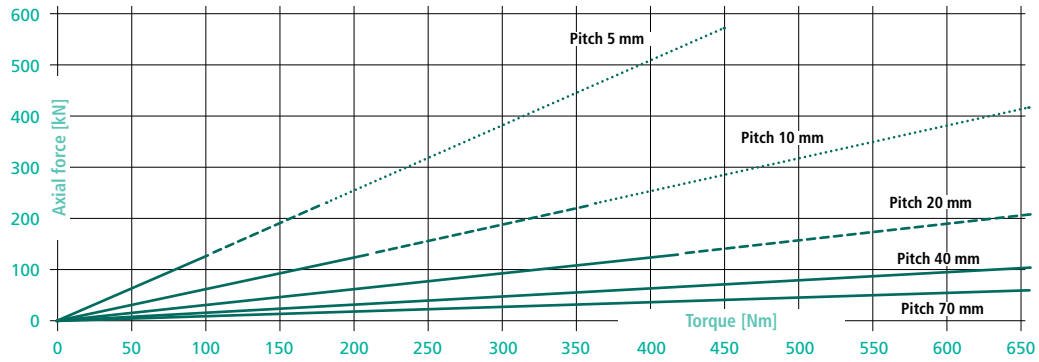


$$F = \frac{M \cdot 2\pi}{h}$$

F = Axial force [kN]
M = Torque [Nm]
h = Screw pitch [mm]

SKT7 and SKT10
> 48kN only SKT10

Axial forces SKT10 heavy duty, SKT13 standard and heavy duty

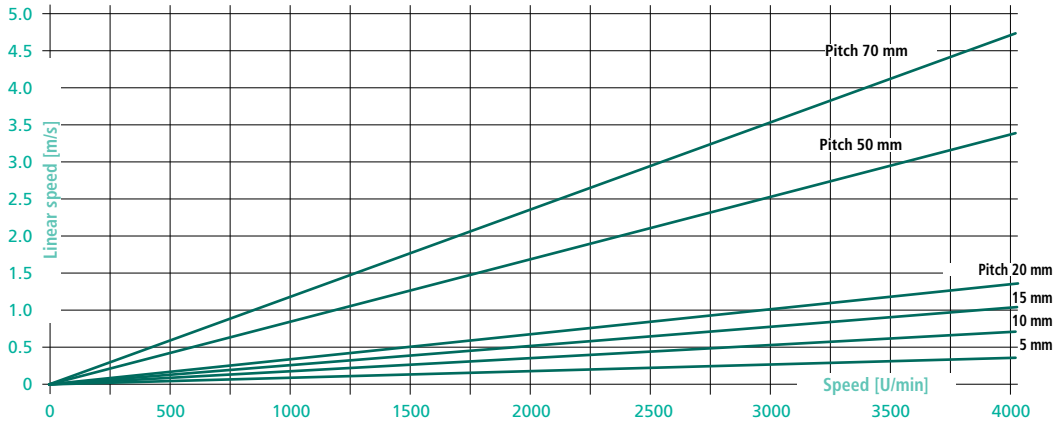


$$F = \frac{M \cdot 2\pi}{h}$$

F = Axial force [kN]
M = Torque [Nm]
h = Screw pitch [mm]

SKT10 heavy-duty and SKT13
>from 135-216 kN SKT10 heavy-duty and SKT13 heavy-duty
> 216kN only SKT13 heavy-duty

Linear speeds at different pitches



$$V = \frac{n \cdot h}{60 \cdot 1000}$$

V = Linear speed [m/s]
n = Speed [U/min]
h = Screw pitch [mm]

The modular design of SPINDASYN hollow shaft motors

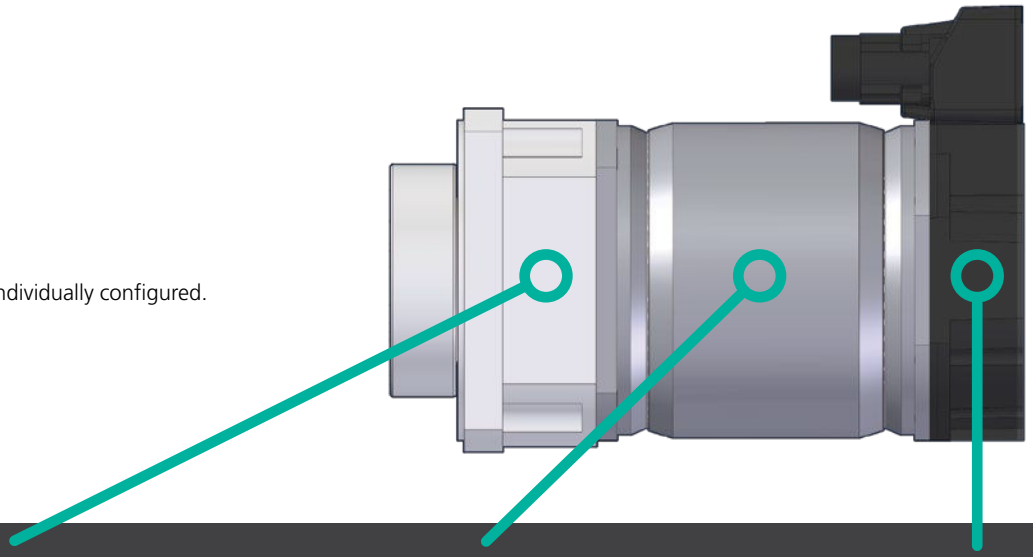
The SPINDASYN series is a modular system. The first step is to select the motors from various different sizes. Next adapt the SPINDASYN motor to the required forces, travel speeds, travel distances or cycle times by combining the individual motor components as required.

Motor bearings are selected for tasks that require high dynamic performance or superior power.

The active section of the motor can be convection- or liquid-cooled. The higher power density of liquid-cooled motors achieves faster cycle times.

A continuous hollow shaft at the motor face creates freedom for unlimited screw stroke lengths; this version is also equipped with a multiturn absolute encoder.

Options:
Your SPINDASYN individually configured.



Motor bearing face

Standard load bearing

- Permanently lubricated standard load bearings with application-dependent re-lubrication
- Good acceleration characteristics
- Capable of supporting high axial loads
- For compressive and tensile forces
- Seals on both sides of the bearings provide good protection against the ingress of dirt
- High rigidity and low friction

Heavy duty bearing

- For the highest forces with sizes SKT10 and SKT13
- Permanently lubricated heavy-duty bearings with application-dependent re-lubrication
- Capable of the highest axial loads
- Particularly suitable for high load threaded screws
- Static forces up to 570 kN
- Dynamic forces up to 210 kN
- High rigidity and low friction

Motor active section

Convection-cooled

- Various lengths depending on size
- High dynamic performance
- High maximum torque
- Smooth surface

Liquid-cooled

- Various lengths depending on size
- High dynamic performance
- High maximum torque
- Smooth surface
- Improved continuous torque for shorter cycle times
- Cooling circuit made from corrosion resistant stainless steel

Motor end face

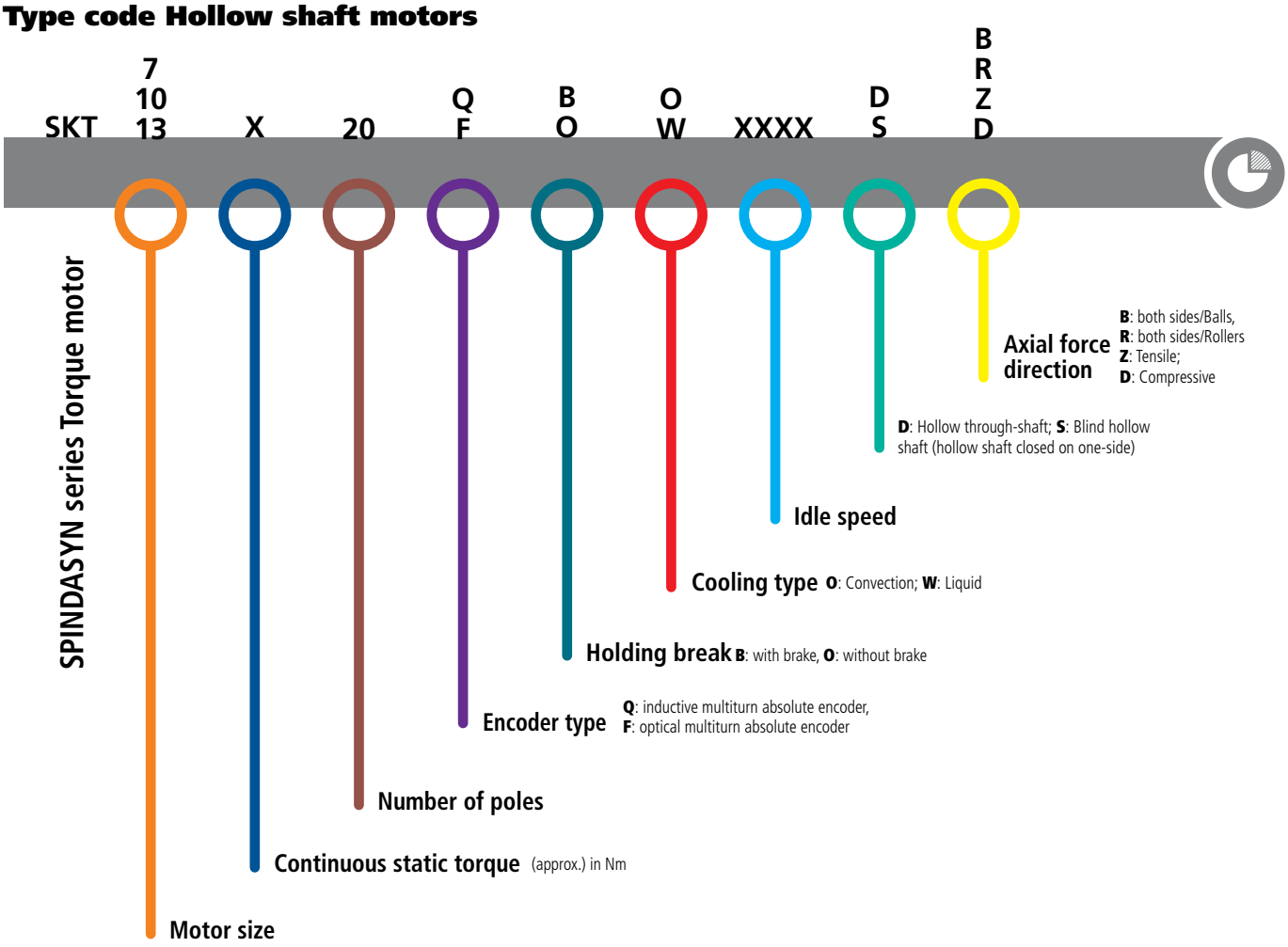
Hollow through-shaft

- No limitation in spindle stroke
- Compact overall lengths
- No venting of the hollow shaft necessary
- Multiturn absolute encoder
- Hollow shaft brake as an option

Blind hollow shaft

- Closed motor end face
- Ventilation of hollow shaft via A-side
- Multiturn absolute encoder
- Holding brake as an option

Type code Hollow shaft motors



SKT hollow shaft motors

	Motor type SKT	Convection cooled	Liquid cooled	Blind hollow shaft	Hollow through-shaft	Ø Hollow shaft	Direction of force B: On both sides Z: Tensile D: Compressive R: On both sides		Bearing axial forces		Static data		Rating data					Maximum data		Mechanical data			
									Fmax stat [kN]	Fmax dyn [kN]	Mo [Nm]	Io [A]	MN [Nm]	PN [kW]	IN [A]	nN [1/min]	kT [Nm/A]	Mmax [Nm]	Imax [A]	nmax [1/min]	J * [kgcm2]	L * [mm]	m * [kg]
Standard load applications	SKT7-17-20-xxO-3500	O	–	–	D	35	B		48	18	17	11.3	11.3	2.8	7.2	2,500	1.5	65	50	3,500	64	270	22
	SKT7-28-20-xxO-2600	O	–	S	D	35	B		48	18	32	15.2	19	4	9	2,000	2.1	130	75	4,000	90	330	28
	SKT7-40-20-xxO-2000	O	–	S	D	35	B		48	18	42	15.2	29	3	10.5	1,000	2.76	210	100	2,000	118	390	34
	SKT7-55-20-xxW-4000	–	W	S	D	35	B		48	18	60	40.2	45	12	30	2,500	1.49	116	99	5,000	90	327	34
	SKT10-54-20-xxO-1400	O	–	–	D	65	B		61	23	64	16	42	4.5	10.5	1,000	4	194	67	2,000	425	316	48
	SKT10-95-20-xxO-1400	O	–	S	D	65	B		61	23	90	23.4	73	6.1	19	800	3.85	360	105	3,000	494	436	67
	SKT10-100-20-xxW-3000	–	W	S	D	65	B		61	23	95	54.3	66	11	38	1,500	1.75	160	132	3,000	425	316	48
	SKT10-145-20-xxW-2000	–	W	S	D	65	B		61	23	160	66.6	120	18	50	1,500	2.4	310	200	2,500	569	436	65
	SKT13-200-20-xxW-2600	–	W	–	D	105	B		135	70	360	145.8	240	45	103	1,800	2.3	640	330	3,300	1,822	520	160
Heavy-duty applications	SKT10-100-20-xxW-3000	–	W	–	D	65	D, Z		216	85	95	54.3	66	11	38	1,500	1.75	160	132	3,000	458	357	55
	SKT10-145-20-xxW-2000	–	W	S	D	65	D, Z		216	85	160	66.6	120	18	50	1,500	2.4	310	200	2,500	610	477	71
	SKT13-200-20-xxW-2600	–	W	–	D	105	R	Compressive	570	210	360	145.8	240	45	103	1,800	2.3	640	330	3,300	2,399	600	191
						105		Tensile	380														
	SKT13-650-20-xxW-1200	–	W	–	D	105	R	Compressive	570	210	660	108.7	600	63	130	1,000	4.6	1,280	330	1,500	3,366	780	240
						105		Tensile	380														

x-apple-ql-id://3EFD5AFB-F63B-4987-941E-A7D02F2284FC/x-apple-ql-magic/preview0.pdf* Variants with a hollow through-shaft

SKT7 convection-cooled

with hollow through-shaft or blind hollow shaft

Features

- Torque motor with broad, linear current-torque rise
- Speeds matched to screw and nut systems
- Anti-backlash bearing
- Very ridged radial coupling between hollow motor shaft and nut
- Very high axial rigidity
- Customised flanges possible
- Permanently lubricated, sealed bearings
- Suitable for radial and axial loads
- Option of lubrication of screw nut on fixed part
- Direction of force on both sides
- Brake option for vertical axes

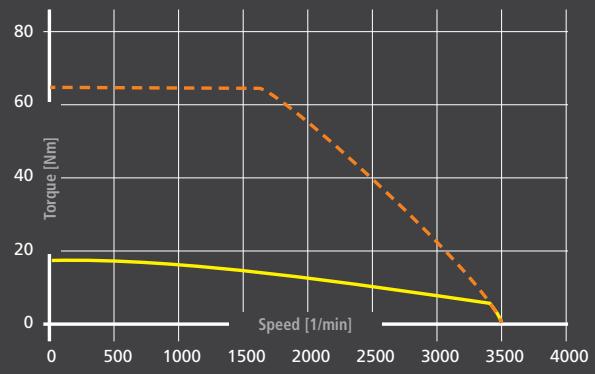
Applications

- Standard load
- Short travel or unlimited stroke

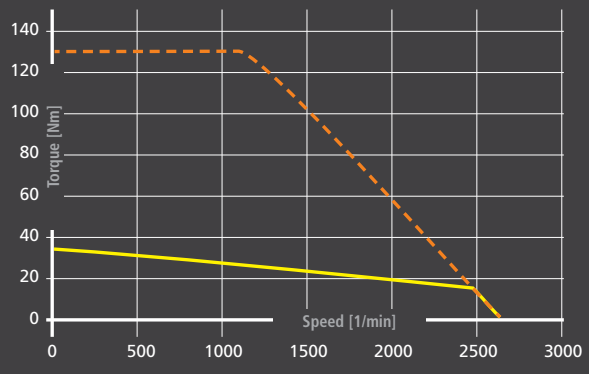
Equipment

	Standard	Option
Brake	–	18 Nm
Encoder	Q, multiturn, inductive	F, multiturn, optical

Characteristic curves

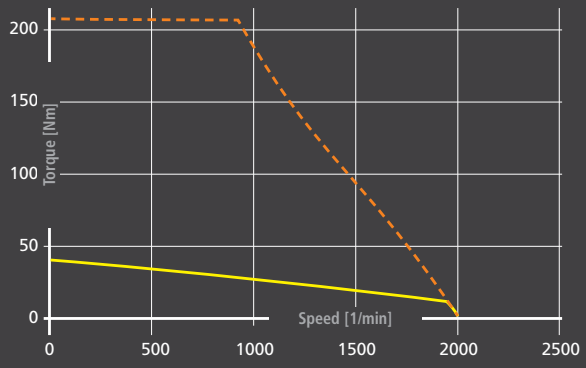


SKT7-17-20-xxO-3500

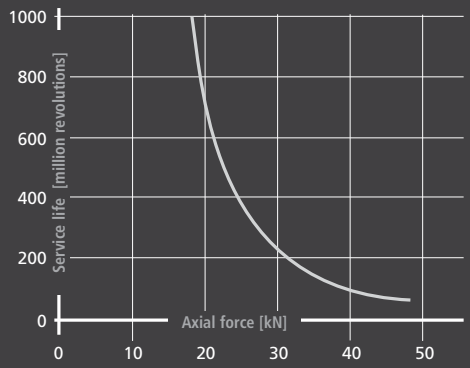


SKT7-28-20-xxO-2600

Maximum moment — Continuous thermal moment



SKT7-40-20-xxO-2000



Bearing service life (L10) Characteristic curve

SKT7 liquid-cooled

with hollow through-shaft or blind hollow shaft

Features

- Torque motor with broad, linear current-torque rise
- Speeds matched to screw and nut systems
- Anti-backlash bearing
- Very ridged radial coupling between hollow motor shaft and nut
- Very high axial rigidity
- Customised flanges possible
- Permanently lubricated, sealed bearings
- Suitable for radial and axial loads
- Option of lubrication of screw nut on fixed part
- Direction of force on both sides
- Brake option for vertical axes

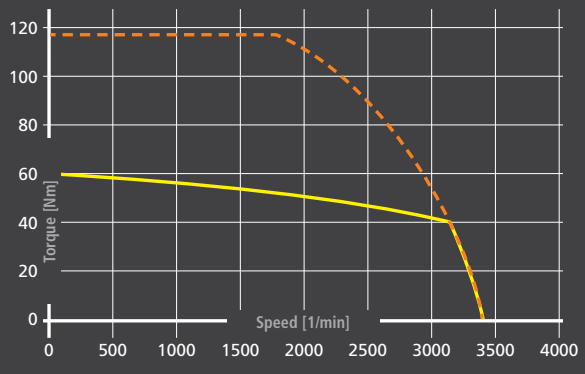
Applications

- Standard load
- Short travel or unlimited stroke

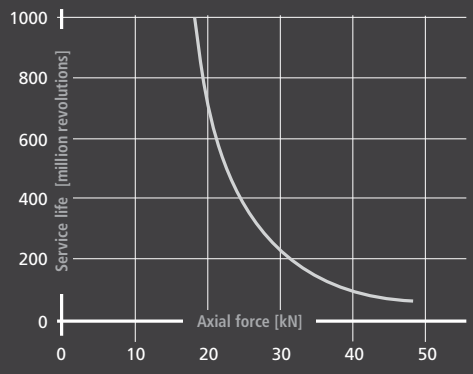
Equipment

	Standard	Option
Brake	–	18/50* Nm * Brake for hollow through-shaft
Encoder	Q, multiturn, inductive	F, multiturn, optical

Characteristic curves



SKT7-55-20-xxW-4000



Bearing service life (L10) Characteristic curve

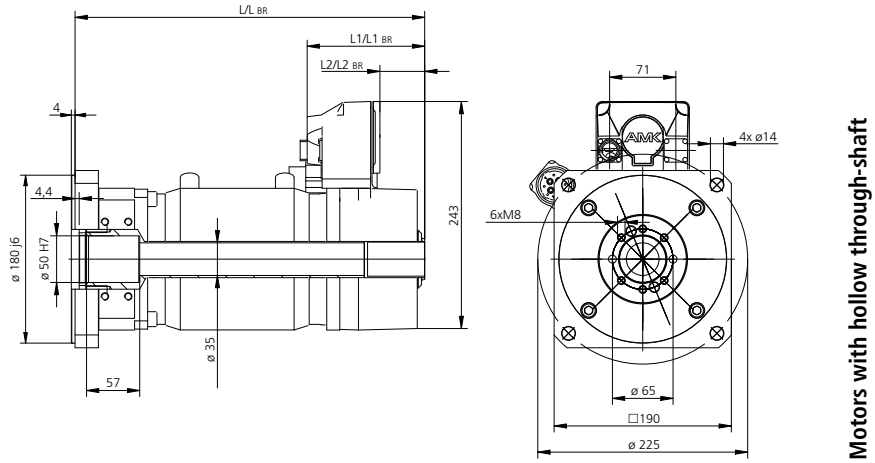
Maximum moment — Continuous thermal moment

Technical data

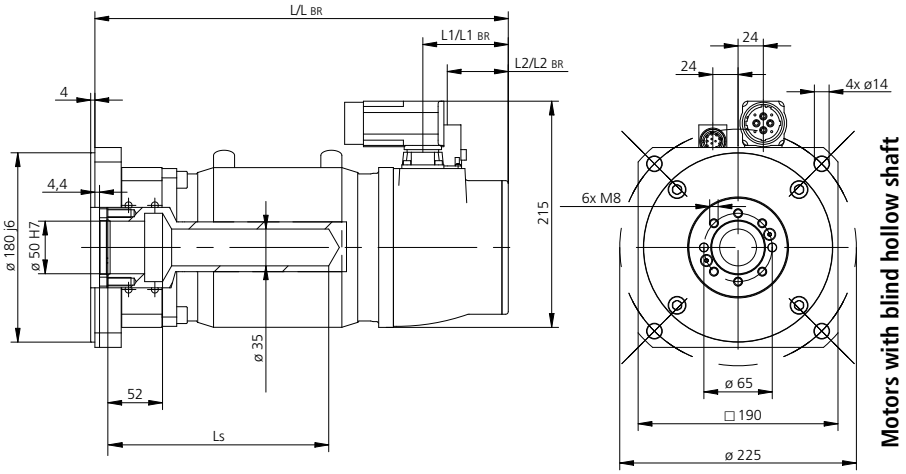
Motor type	Blind hollow shaft	Hollow through-shaft	Bearing axial forces		Static data		Rating data					Maximum data		Mechanical data									
			$F_{max\ stat}$ [kN]	$F_{max\ dyn}$ [kN]	M_0 [Nm]	I_0 [A]	M_N [Nm]	P_N [kW]	I_N [A]	n_N [^{1}/min]	k_T [Nm/A]	M_{max} [Nm]	I_{max} [A]	n_{max} [^{1}/min]	J [kgcm^2]	L_S [mm]	L [mm]	L1 [mm]	L2 [mm]	L_{BR} [mm]	$L1_{BR}$ [mm]	$L2_{BR}$ [mm]	m [kg]	m_{BR} [kg]
SKT7-55-20-xxW-4000	S	–	48	18	60	40.2	45	12	30	2,500	1.49	116	99	5,000	75	210	362	50	27	393	81	58	34	36
	–	D													90	∞	327	86	8	367	126	48	34	38

Dimensions

Flange connection Screw nut see page 8, Legend on page 31, All dimensions in mm.



Motors with hollow through-shaft



Motors with blind hollow shaft

SKT10 convection-cooled

with hollow through-shaft or blind hollow shaft

Features

- Torque motor with broad, linear current-torque rise
- Speeds matched to screw and nut systems
- Anti-backlash bearing
- Very ridged radial coupling between hollow motor shaft and nut
- Very high axial rigidity
- Customised flanges possible
- Sealed bearings with possibility of re-lubrication
- Ball bearing for medium loads and high speeds
- Option of lubrication of screw nut on fixed part
- Direction of force on both sides
- Brake option for vertical axes

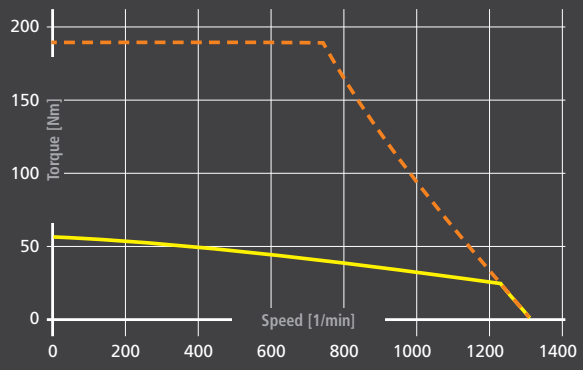
Applications

- Standard and medium loads
- Short travel or unlimited stroke

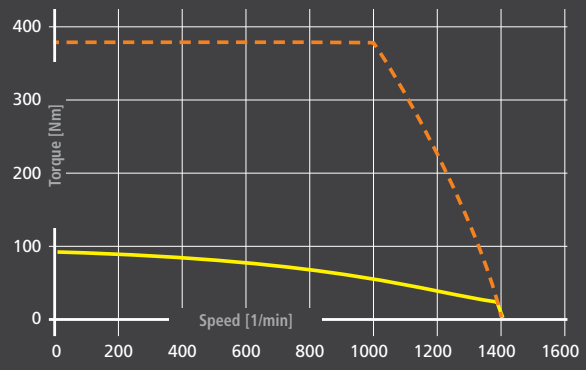
Equipment

	Standard	Option
Brake	–	120 Nm
Encoder	Q, multiturn, inductive	F, multiturn, optical

Characteristic curves



SKT10-54-20-xxO-1400



SKT10-95-20-xxO-1400

Maximum moment — Continuous thermal moment

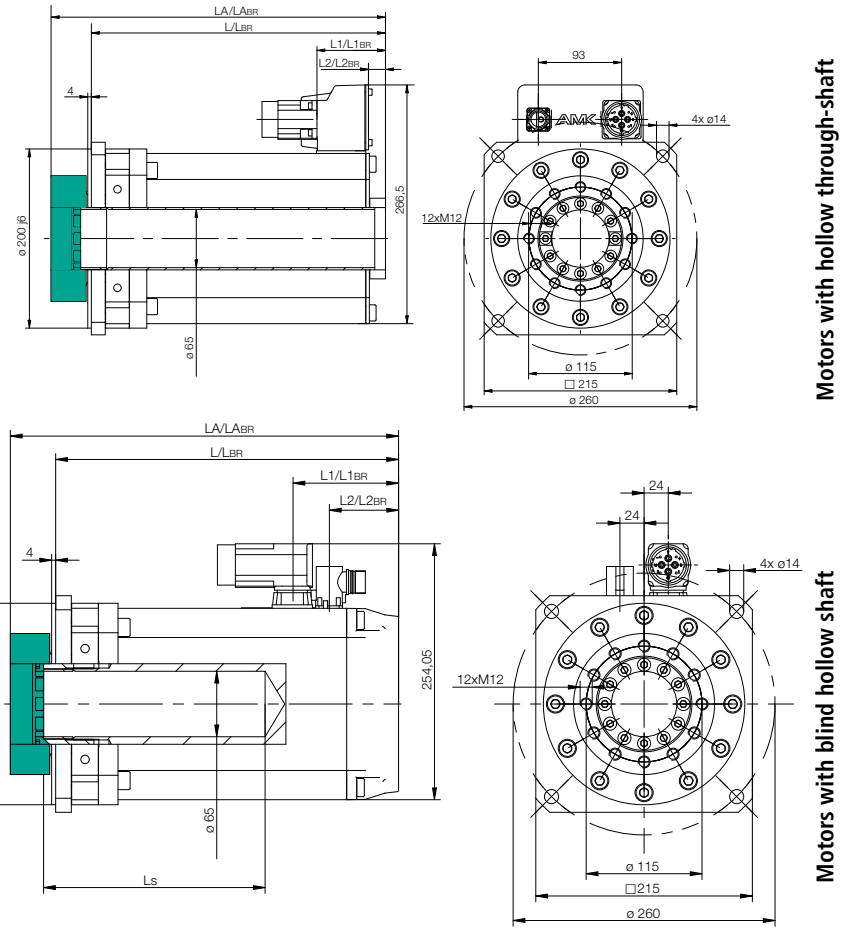
Technical data

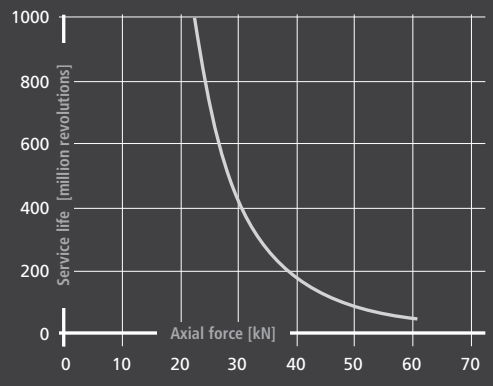
Motor type	Blind hollow shaft	Hollow through-shaft	Bearing axial forces		Static data		Rating data					Maximum data		Mechanical data											
			$F_{max\ stat}$ [kN]	$F_{max\ dyn}$ [kN]	M_0 [Nm]	I_0 [A]	M_N [Nm]	P_N [kW]	I_N [A]	n_N [^{1}/min]	k_T [Nm/A]	M_{max} [Nm]	I_{max} [A]	n_{max} [^{1}/min]	J [kgcm^2]	L_S [mm]	L [mm]	LA [mm]	L1 [mm]	L2 [mm]	L_{BR} [mm]	LA_{BR} [mm]	$L1_{BR}$ [mm]	$L2_{BR}$ [mm]	m [kg]	m_{BR} [kg]
SKT10-54-20-xxO-1400	–	D	61	23	64	16	42	4.5	10.5	1,000	4	194	67	2,000	425	∞	316	361	65	7	402	447	151	93	48	65
SKT10-95-20-xxO-1400	S	–	61	23	90	23.4	73	6.1	19	800	3.85	360	105	3,000	490	370	460	505	106	69	521	566	167	130	67	76
	–	D													494	∞	436	481	65	7	522	567	151	93	67	84

Dimensions

*Flange connection Screw nut see page 8, Legend on page 31, All dimensions in mm.

*Flange connection

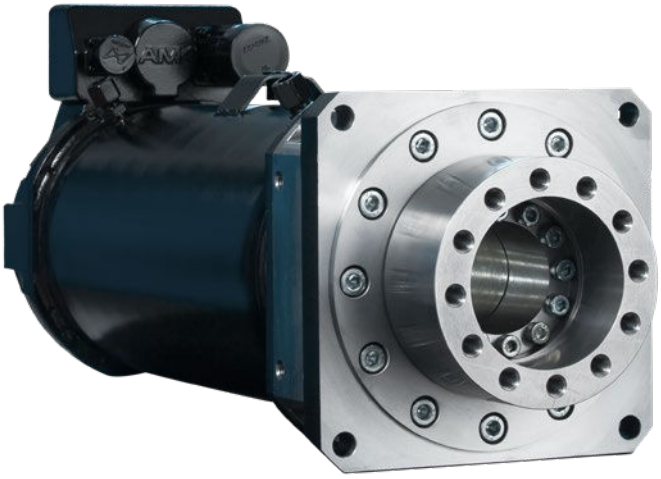




Bearing service life (L10) Characteristic curve

SKT10 liquid-cooled

with hollow through-shaft or blind hollow shaft



Features

- Torque motor with broad, linear current-torque rise
- Speeds matched to screw and nut systems
- Anti-backlash bearing
- Very ridged radial coupling between hollow motor shaft and nut
- Very high axial rigidity
- Customised flanges possible
- Sealed bearings with possibility of re-lubrication
- Ball bearing for medium loads and high speeds
- Option of lubrication of screw nut on fixed part
- Direction of force on both sides
- Brake option for vertical axes

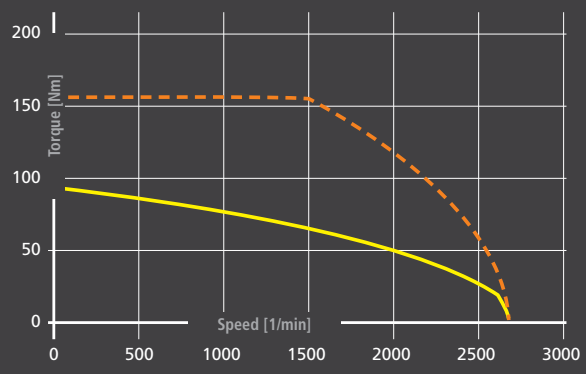
Applications

- Standard and medium loads
- Short travel or unlimited stroke

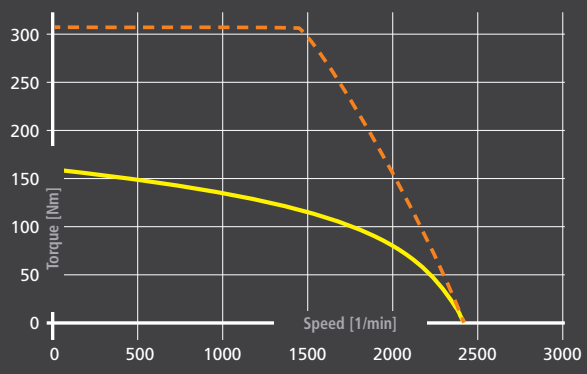
Equipment

	Standard	Option
Brake	–	120 Nm
Encoder	Q, multiturn, inductive	F, multiturn, optical

Characteristic curves



SKT10-100-20-xxW-3000



SKT10-145-20-xxW-2000

Maximum moment — Continuous thermal moment

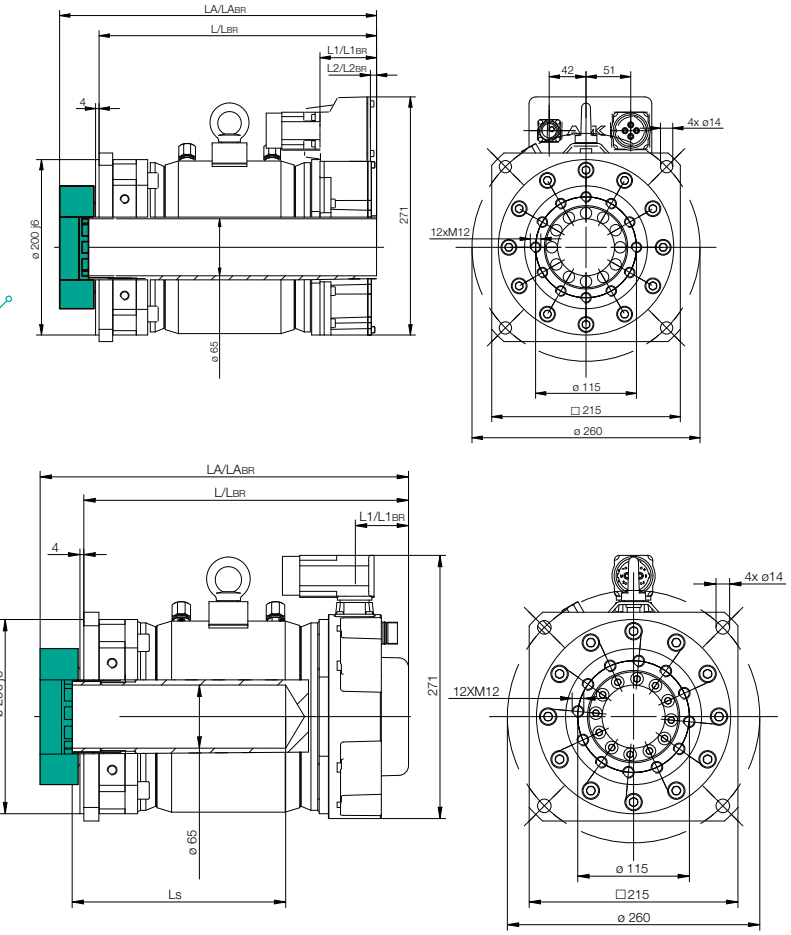
Technical data

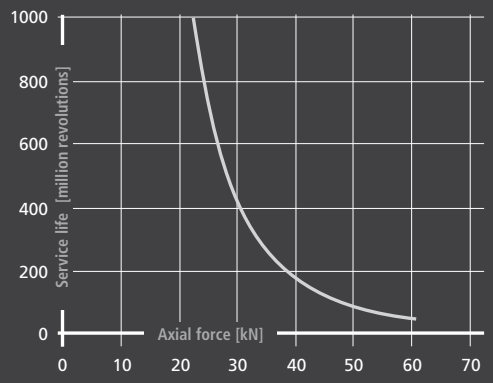
Motor type	Blind hollow shaft	Hollow through-shaft	Bearing axial forces		Static data		Rating data					Maximum data		Mechanical data											
			$F_{max\ stat}$ [kN]	$F_{max\ dyn}$ [kN]	M_0 [Nm]	I_0 [A]	M_N [Nm]	P_N [kW]	I_N [A]	n_N [1/min]	k_T [Nm/A]	M_{max} [Nm]	I_{max} [A]	n_{max} [1/min]	J [kgcm²]	L_S [mm]	L [mm]	LA [mm]	L1 [mm]	L2 [mm]	L_{BR} [mm]	LA_{BR} [mm]	$L1_{BR}$ [mm]	$L2_{BR}$ [mm]	m [kg]	m_{BR} [kg]
SKT10-100-20-xxW-3000	–	D	61	23	95	54.3	66	11	38	1,500	1.75	160	132	3,000	340	250	334	379	56	48	420	465	117	109	48	57
															425	∞	316	361	65	7	402	457	151	93	48	65
SKT10-145-20-xxW-2000	S	–	61	23	160	66.6	120	18	50	1,500	2.4	310	200	2,500	490	370	454	499	56	48	540	585	117	109	64	74
	–	D													569	∞	436	481	65	7	522	567	151	93	65	82

Dimensions

*Flange connection Screw nut see page 8, Legend on page 31, All dimensions in mm.

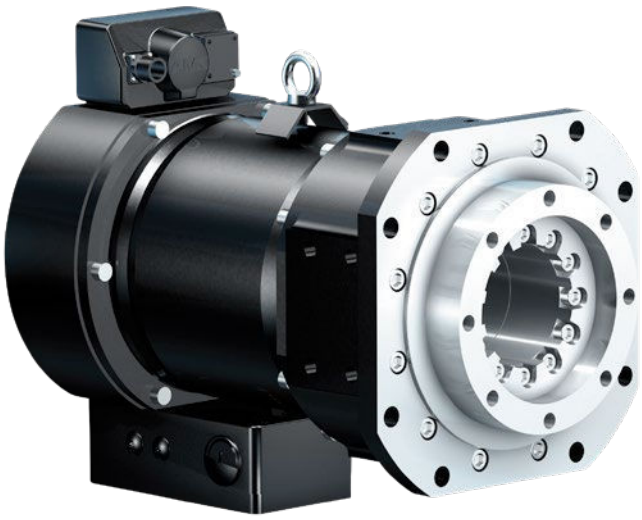
*Flange connection





Bearing service life (L10) Characteristic curve

SKT13 liquid-cooled
with hollow through-shaft



Features

- Torque motor with broad, linear current-torque rise
- Speeds matched to screw and nut systems
- Anti-backlash bearing
- Very ridged radial coupling between hollow motor shaft and nut
- Very high axial rigidity
- Customised flanges possible
- Sealed bearings with possibility of re-lubrication
- Ball bearing for medium loads and high speeds
- Option of lubrication of screw nut on fixed part
- Direction of force on both sides
- Brake option for vertical loads

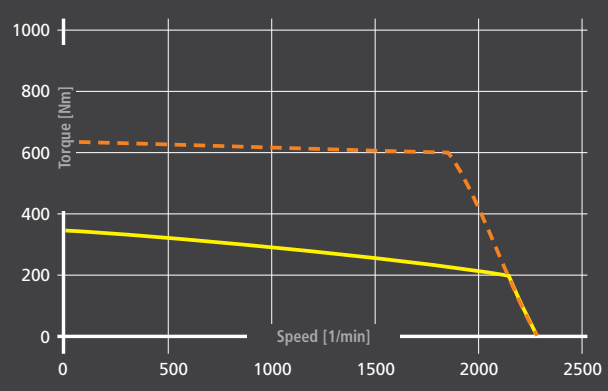
Applications

- Standard and medium loads
- Short travel or unlimited stroke

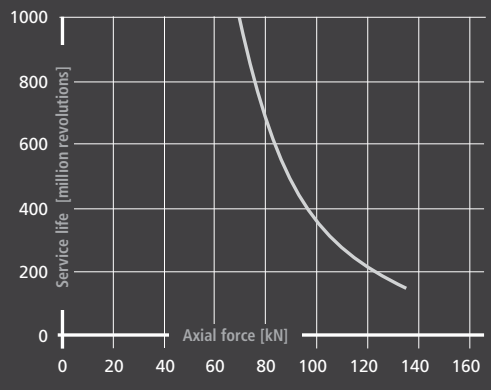
Equipment

	Standard	Option
Brake	–	250 Nm
Encoder	Q, multiturn, inductive	F, multiturn, optical

Characteristic curves



SKT13-200-20-xxW-2600



Bearing service life (L10) Characteristic curve

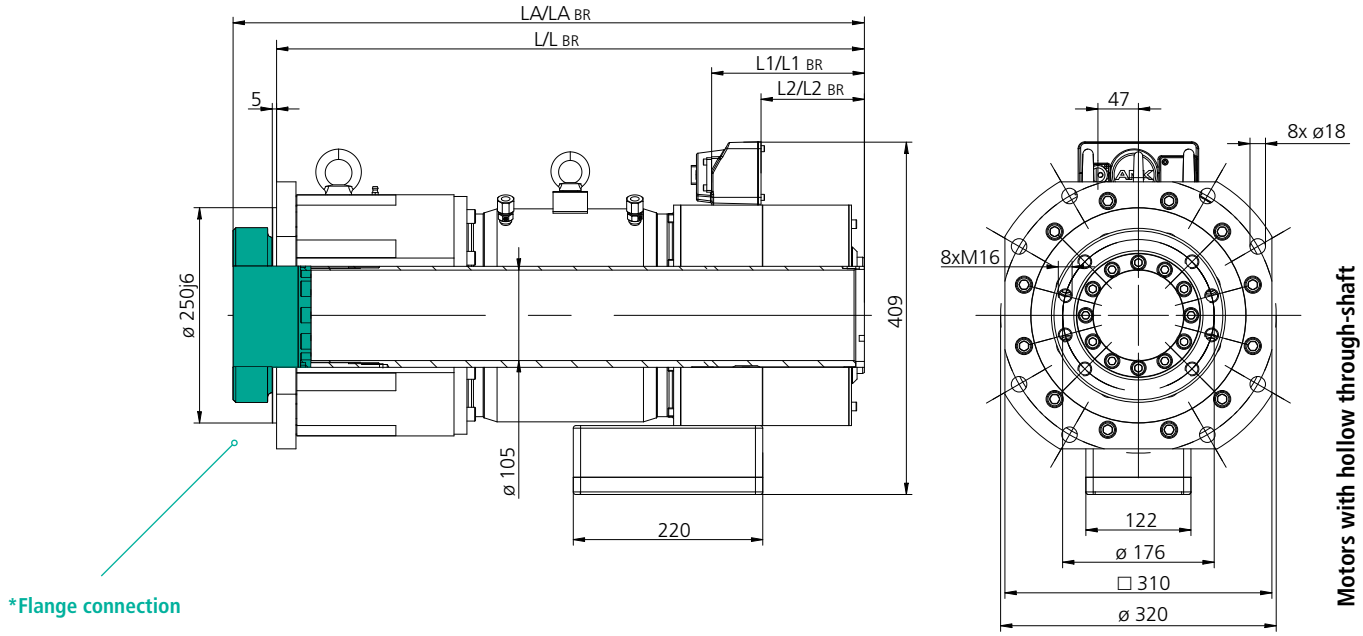
Maximum moment — Continuous thermal moment

Technical data

Motor type	Hollow through-shaft	Bearing axial forces		Static data		Rating data					Maximum data		Mechanical data											
		$F_{max\ stat}$ [kN]	$F_{max\ dyn}$ [kN]	M_0 [Nm]	I_0 [A]	M_N [Nm]	P_N [kW]	I_N [A]	n_N [1/min]	k_T [Nm/A]	M_{max} [Nm]	I_{max} [A]	n_{max} [1/min]	J [kgcm²]	L [mm]	LA [mm]	L1 [mm]	L2 [mm]	L_{BR} [mm]	LA_{BR} [mm]	$L1_{BR}$ [mm]	$L2_{BR}$ [mm]	m [kg]	m_{BR} [kg]
SKT13-200-20-xxW-2600	D	135	70	360	145.8	240	45	103	1,800	2.3	640	330	3,300	1,822	520	560	85	27	630	670	195	137	160	180

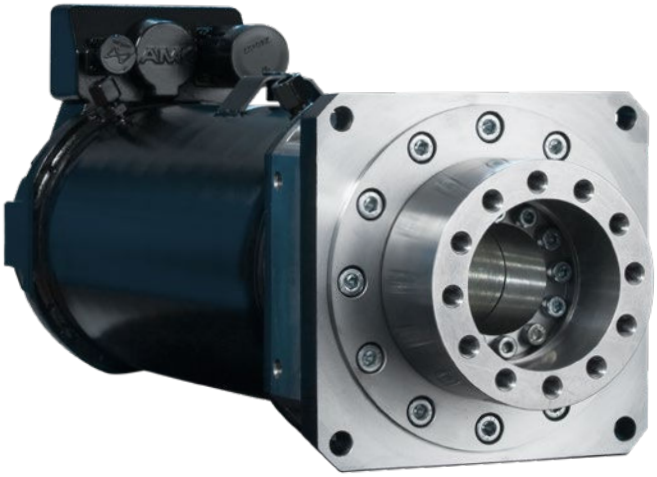
Dimensions

*Flange connection Screw nut see page 8, Legend on page 31, All dimensions in mm.



SKT10 liquid-cooled

with hollow through-shaft or blind hollow shaft



Features

- Torque motor with broad, linear current-torque rise
- Speeds matched to screw and nut systems
- Anti-backlash bearing
- Very ridged radial coupling between hollow motor shaft and nut
- Very high axial rigidity
- Customised flanges possible
- Sealed bearings with possibility of re-lubrication
- Roller bearings for medium loads and high speeds
- Option of lubrication of screw nut on fixed part
- Direction of force tensile or compressive
- Brake option for vertical axes

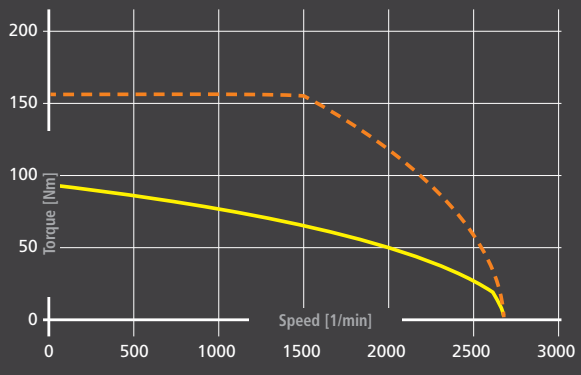
Applications

- Heavy-duty
- Short travel or unlimited stroke

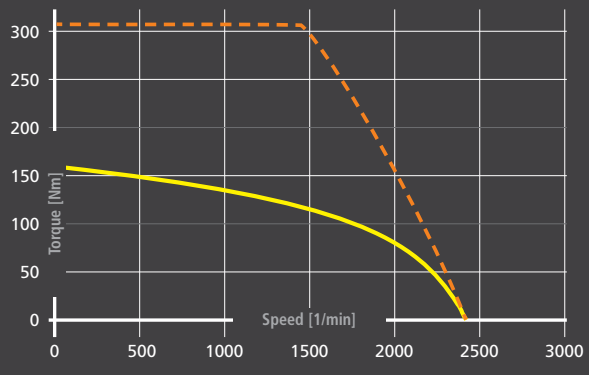
Equipment

	Standard	Option
Brake	–	250 Nm
Encoder	Q, multiturn, inductive	F, multiturn, optical

Characteristic curves



SKT10-100-20-xxW-3000



SKT10-145-20-xxW-2000

Maximum moment Continuous thermal moment

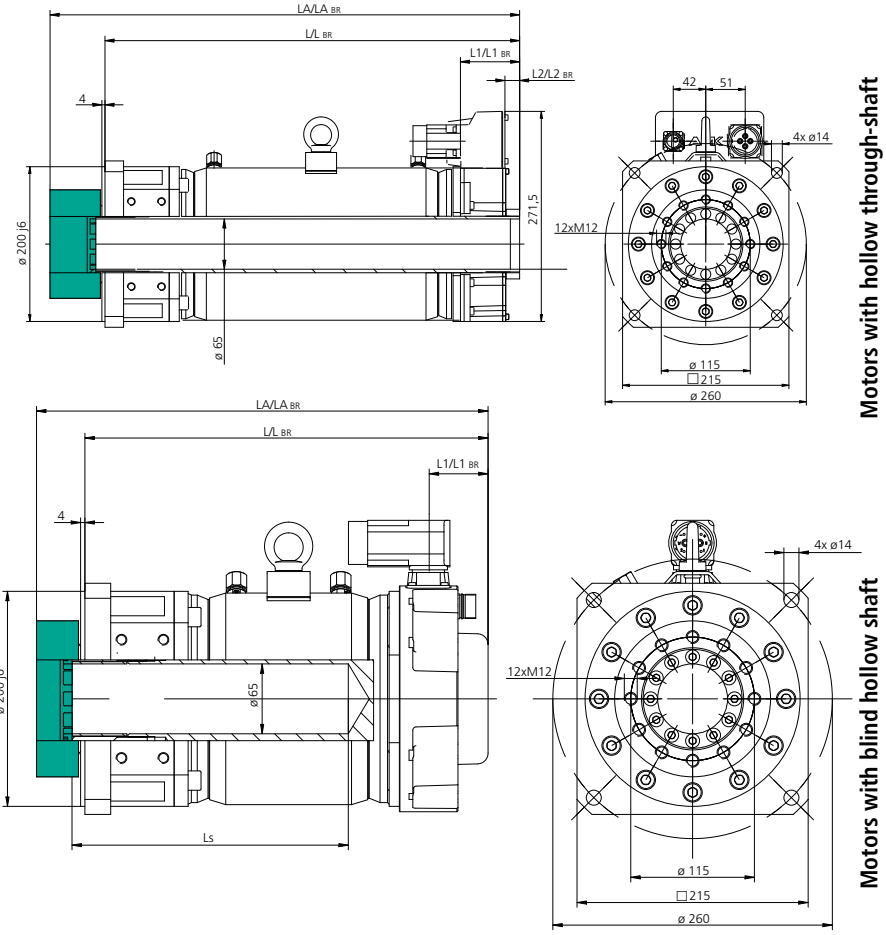
Technical data

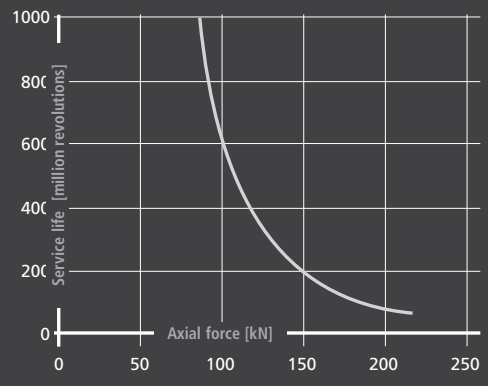
Motor type	Blind hollow shaft	Hollow through-shaft	Bearing axial forces		Static data		Rating data					Maximum data		Mechanical data										
			$F_{max\ stat}$ [kN]	$F_{max\ dyn}$ [kN]	M_0 [Nm]	I_0 [A]	M_N [Nm]	P_N [kW]	I_N [A]	n_N [^{1}/min]	k_T [Nm/A]	M_{max} [Nm]	I_{max} [A]	n_{max} [^{1}/min]	J [kgcm^2]	L_S [mm]	L [mm]	LA [mm]	L1 [mm]	L2 [mm]	L_{BR} [mm]	LA_{BR} [mm]	$L1_{BR}$ [mm]	$L2_{BR}$ [mm]	m [kg]	m_{BR} [kg]
SKT10-100-20-xxW-3000	–	D	216	85	95	54.3	66	11	38	1,500	1.75	160	132	3,000	458	∞	357	402	65	7	443	488	151	49	55	70
SKT10-145-20-xxW-2000	S	–	216	85	160	66.6	120	18	50	1,500	2.4	310	200	2,500	499	405	495	540	56	48	557	602	117	68	70	79
	–	D													610	∞	477	522	65	7	563	608	151	67	71	88

Dimensions

*Flange connection Screw nut see page 8, Legend on page 31, All dimensions in mm.

*Flange connection





Bearing service life (L10) Characteristic curve

SKT13 liquid-cooled
with hollow through-shaft

Features

- Torque motor with broad, linear current-torque rise
- Speeds matched to screw and nut systems
- Anti-backlash bearing
- Very ridged radial coupling between hollow motor shaft and nut
- Very high axial rigidity
- Customised flanges possible
- Sealed bearings with possibility of re-lubrication
- Roller bearings for medium loads and high speeds
- Option of lubrication of screw nut on fixed part
- Direction of force tensile 380 kN or compressive 570 kN
- Brake option for vertical axes

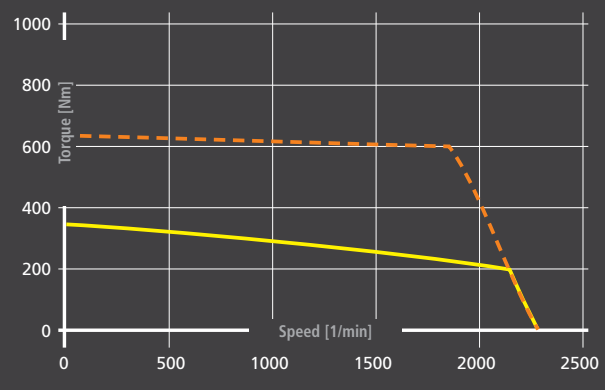
Applications

- Heavy-duty
- Short travel or unlimited stroke

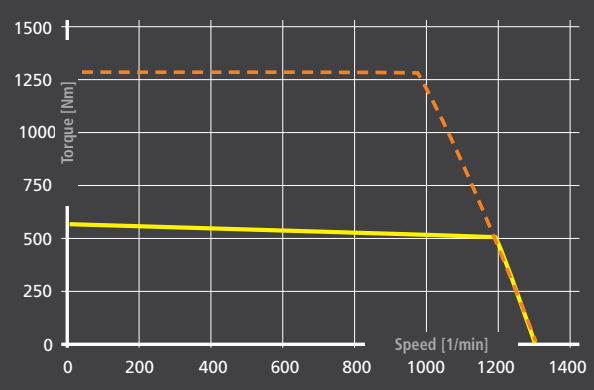
Equipment

	Standard	Option
Brake	–	250 Nm
Encoder	Q, multiturn, inductive	F, multiturn, optical

Characteristic curves

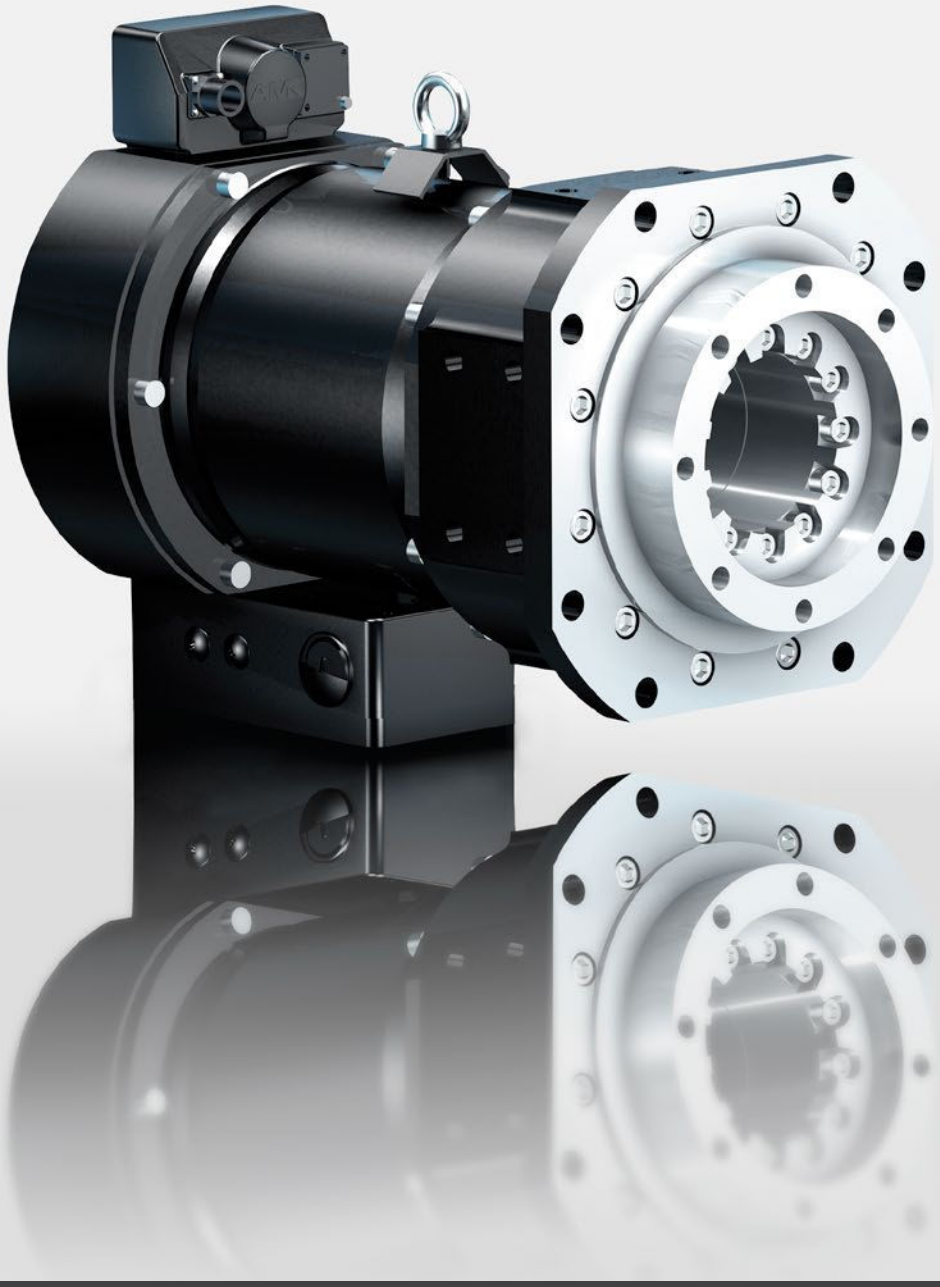


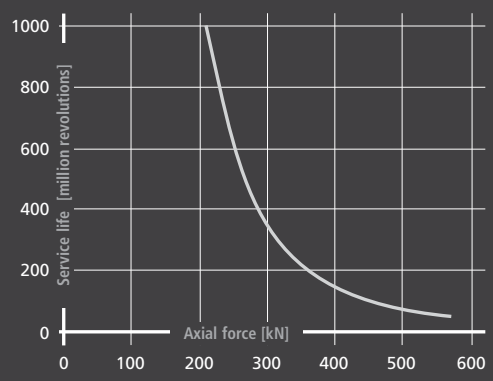
SKT13-200-20-xxW-2600



SKT13-650-20-xxW-1200

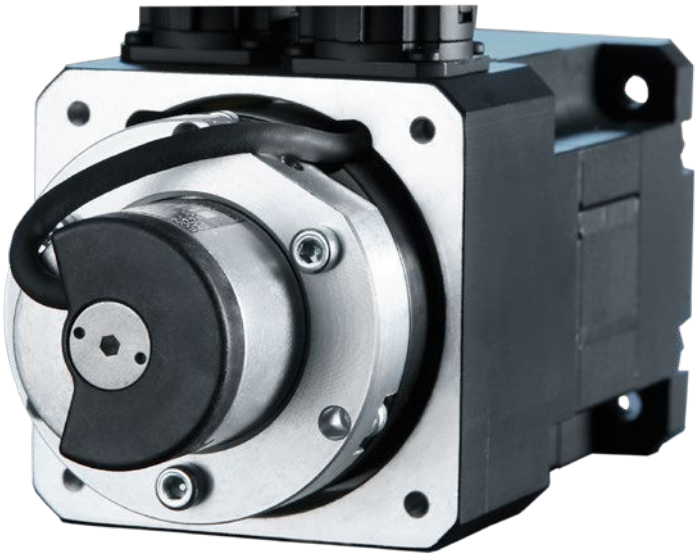
Maximum moment — Continuous thermal moment





Bearing service life (L10) Characteristic curve

Position encoder

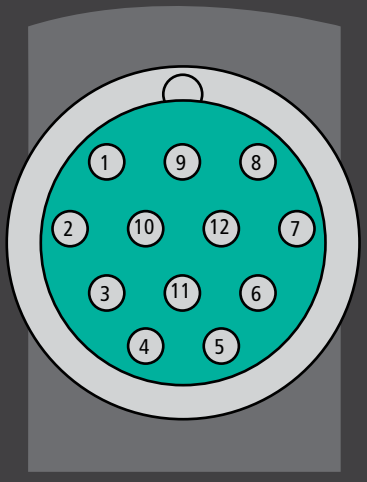


Encoder - Overview

The motors can be equipped with various different position encoders.

Type	Design	Max.speed [1/min]
F	Optical absolute encoder EnDAT 2.1, multiturn 512 periods/revolutions 13bit resolution/resolution Multiturn resolution 4096 revolutions ± 25¨ system accuracy	12,000
Q	Inductive absolute encoder EnDAT 2.1, multiturn Hollow through-shaft: 18bit/16 periods/revolutions Blind hollow shaft: 19bit/32 periods/revolutions Multiturn resolution 4096 revolutions ±480¨/280¨ system accuracy	12,000

Connector pin assignment motor side



PIN Motor connector	Q/F encoder	
	Signal	Meaning
1	G2N	Channel 2 not inverted
2	G2I	Channel 2 inverted
3	G1N	Channel 1 not inverted
4	G1I	Channel 1 inverted
5	05P	Supply 5 Vdc, max. 250 mA
6	GND	Reference for supply
7	CLK+	EnDat encoder interface
8	CLK-	EnDat encoder interface
9	DAT+	EnDat encoder interface
10	DAT-	EnDat encoder interface
11	05P	Supply 5 Vdc, max. 250 mA
12	GND	Reference for supply
Shield		Connector housing

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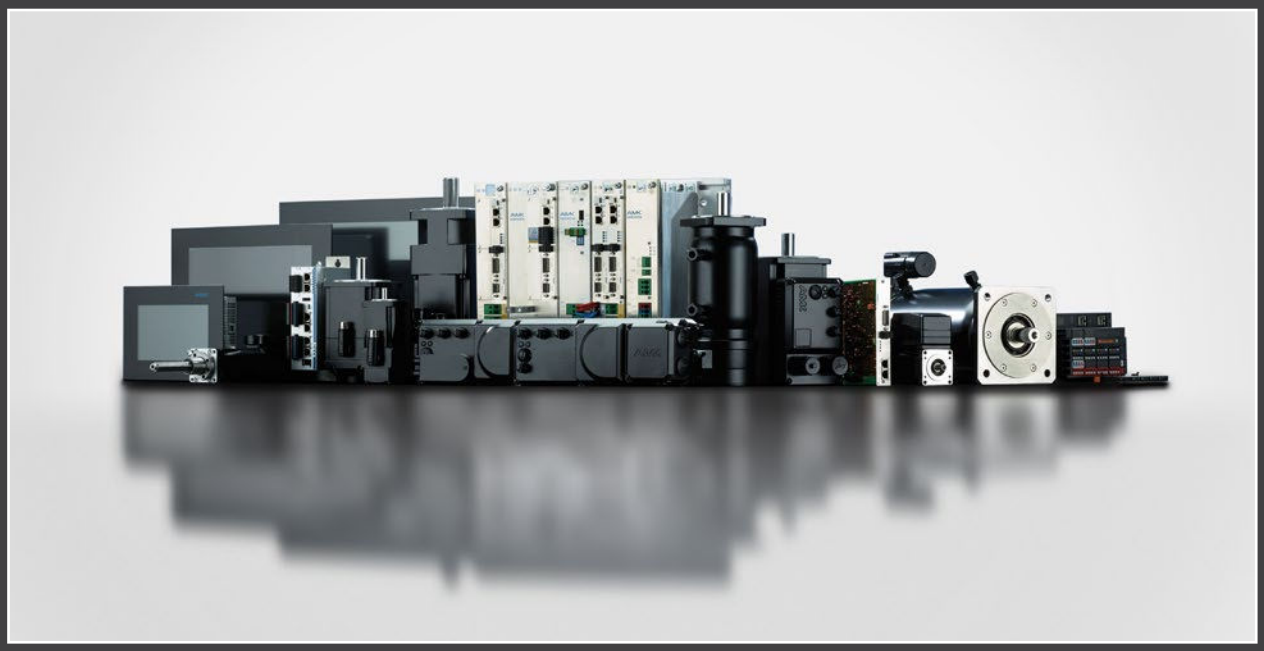

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