



Permanent Magnet Synchronous Frameless Torque Motors KSO/H Series



Icpe

313 Splaiul Unirii

030138, București, România

tel./ fax +40213467233

email servo@icpe.ro

web <http://www.icpe.ro/>



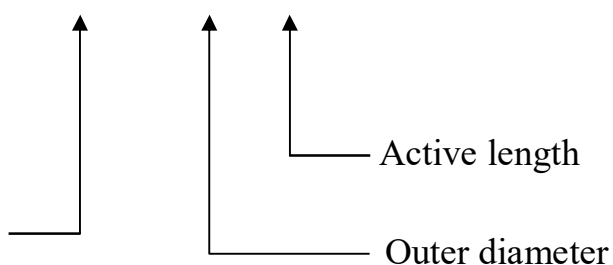
KSO/H Torque Frameless Series Quick Selection Guide

<i>Model Number</i>	<i>Continuous Stall Torque Nm</i>	<i>Outer Diameter mm</i>	<i>Inner Diameter mm</i>	<i>Length Active/Total mm</i>
KSO/H 170 010	3.5	170	74	9.9/31.6
KSO/H 170 025	9.1			25.9/47.6
KSO/H 170 050	15.3			50.9/72.6
KSO/H 170 075	21.3			75.9/97.6
KSO/H 170 100	27.6			100.9/122.6
KSO/H 230 010	8.7	230	130	9.9/31.6
KSO/H 230 025	21.7			25.9/47.6
KSO/H 230 050	41.1			50.9/72.6
KSO/H 230 075	65.6			75.9/97.6
KSO/H 230 100	83.6			100.9/122.6
KSO/H 275 010	12	275	172	9.9/32.6
KSO/H 275 025	31			25.9/48.6
KSO/H 275 050	60			50.9/73.6
KSO/H 275 075	89.4			75.9/98.6
KSO/H 275 100	116.6			100.9/123.6
KSO/H 330 010	20.5	330	210	9.9/32.6
KSO/H 330 025	49			25.9/48.6
KSO/H 330 050	100.5			50.9/73.6
KSO/H 330 075	150			75.9/98.6
KSO/H 330 100	202			100.9/123.6

KSO/H Torque Frameless Series Model Number

KSO/H 170 010

Permanent Magnet Synchronous
Torque Motors KSO/H Series
O – without Hall effect sensors
H – with Hall effect sensors





Product Description

The torque motors of KSO/H series are low speed brushless synchronous motors excited by rare earth permanent magnets located on the rotor. These motors are delivered as frameless kit (rotor and stator sets) and were optimized for high torque density, low cogging torque, compact design and improved efficiency.

The stator consists of a laminated steel core in whose slots is located a three phase star connected winding. The rotor consists of a magnetic steel ring on which there are placed high energy permanent magnets. A series of through holes have been incorporated in the stator and rotor core in order to provide a simple, effective and low cost method of coupling the motors with the payload. These motors have an external diameter from 175 mm to 330 mm and can be customized in order to be easily adapted to a wide range of applications.

The KSO/H series can be supplied with or without Hall effect sensors for commutation. The winding can be customized for different bus voltage values.

Features

- Frameless torque motors designed to be compact and cost effective
- Allow direct coupling with the payload, eliminating parts of mechanical transmission
- Maintenance free
- High energy NdFeB magnets maximize torque density
- Customized winding for different desired voltage

Applications

- Machine tools
- Laser scanning and printing
- Motion simulators
- Rotary stage
- Robots
- Tracking systems



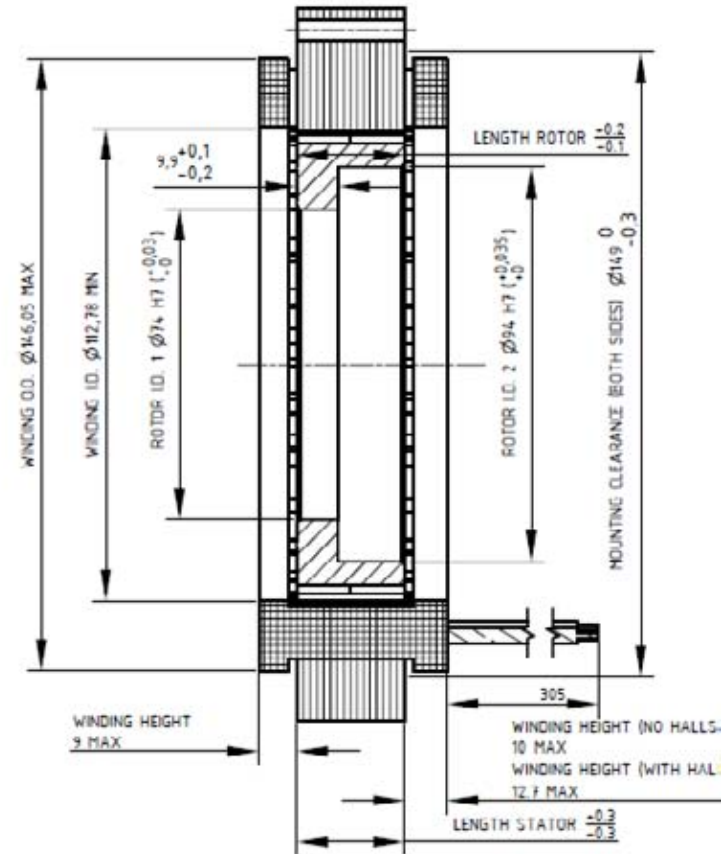
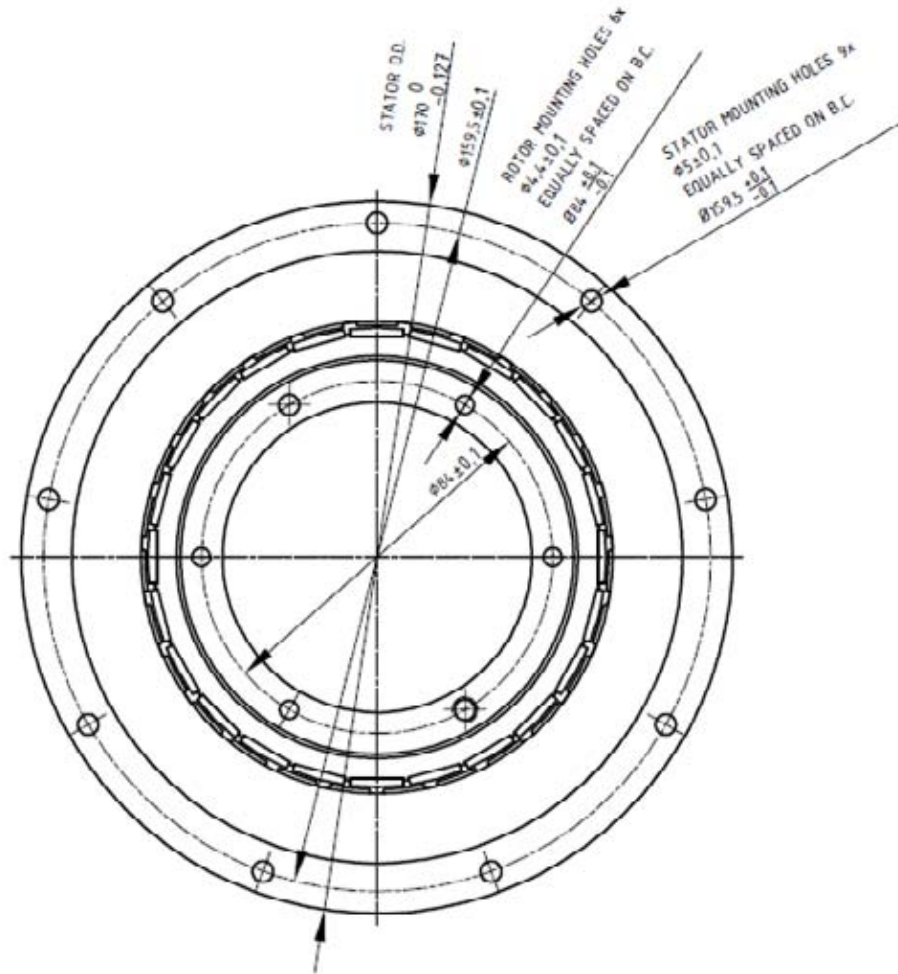
Torque motor KSO/H 170 Specifications

Parameter	Unit	KSO/H 170 010	KSO/H 170 025	KSO/H 170 050	KSO/H 170 075	KSO/H 170 100
External diameter	mm	170				
Inner diameter	mm	74				
Total length	mm	31.6	47.6	72.6	97.6	122.6
Continuous stall torque	Nm	3.5	9.1	15.3	21.3	27.6
Peak torque	Nm	14	36	61	85	110
Motor constant (K_M)	Nm/\sqrt{W}	0.62	1.25	1.96	2.45	2.96
Inertia	$Kg \cdot m^2$	$4.8 \cdot 10^{-4}$	$1.23 \cdot 10^{-3}$	$4.45 \cdot 10^{-3}$	$3.58 \cdot 10^{-3}$	$4.8 \cdot 10^{-3}$
Weight	Kg	1.25	3	5.8	8.6	11.4
Rated voltage*	V_{DC}	48				
Rated current** $\pm 10\%$	A	7.5	16.3	15.35	20.5	20
No load speed	rpm	1320	1100	610	590	440
Torque constant (K_T)	Nm/A_{RMS}	0.47	0.56	1	1.04	1.38
Back EMF constant (K_E)	$V_{peak}/Krpm$	39.5	47.4	84.67	88.38	117.5
Phase connection		Y				
Electrical resistance $\pm 10\%$ (at 20°C)	Ω	0.58	0.2	0.26	0.18	0.22
Electrical inductance $\pm 20\%$	mH	1.53	0.76	1.18	0.86	1.13
Number of poles		24				

*, ** More voltage and current values available on request



Torque motor KSO/H 170 Dimensions



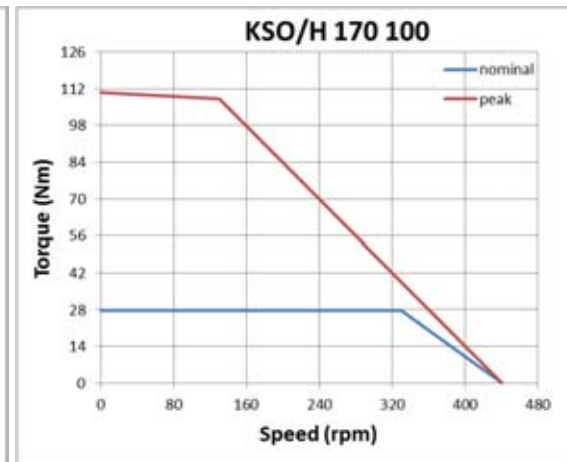
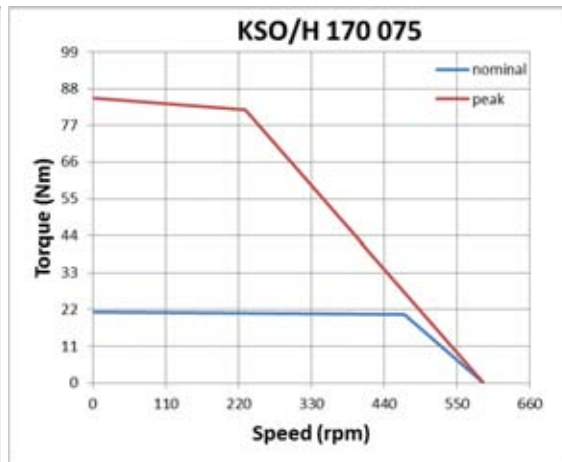
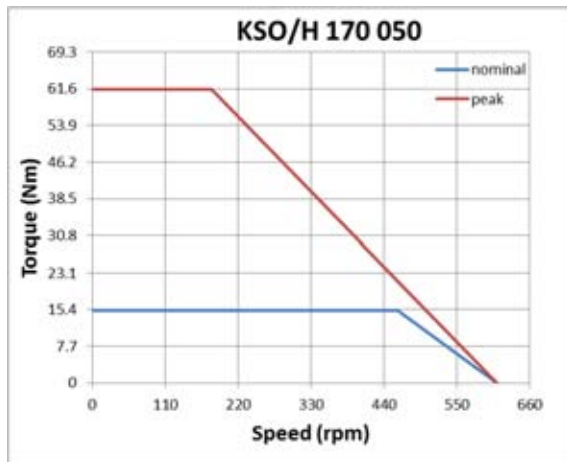
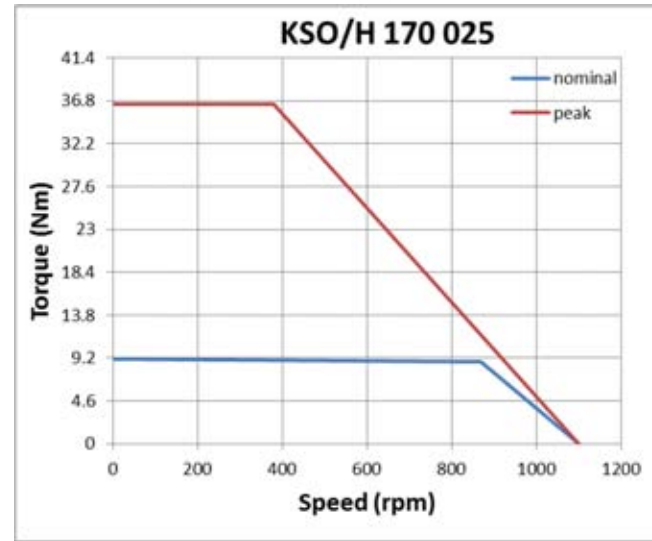
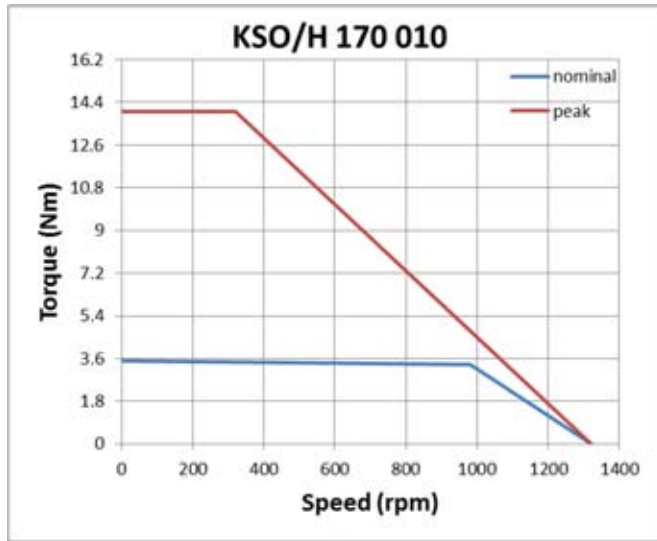
MODEL	LENGTH STATOR (mm)	LENGTH ROTOR NO HALLS (mm)	LENGTH ROTOR WITH HALLS (mm)
KSO/H 170010	9.9	9.9	13.1
KSO/H 170025	25.9	25.9	29.1
KSO/H 170050	50.9	50.9	54
KSO/H 170075	75.9	75.9	79.1
KSO/H 170100	100.9	100.9	104

* Dimension in mm

** Different stack length available on request



Torque motor KSO/H 170 Performances





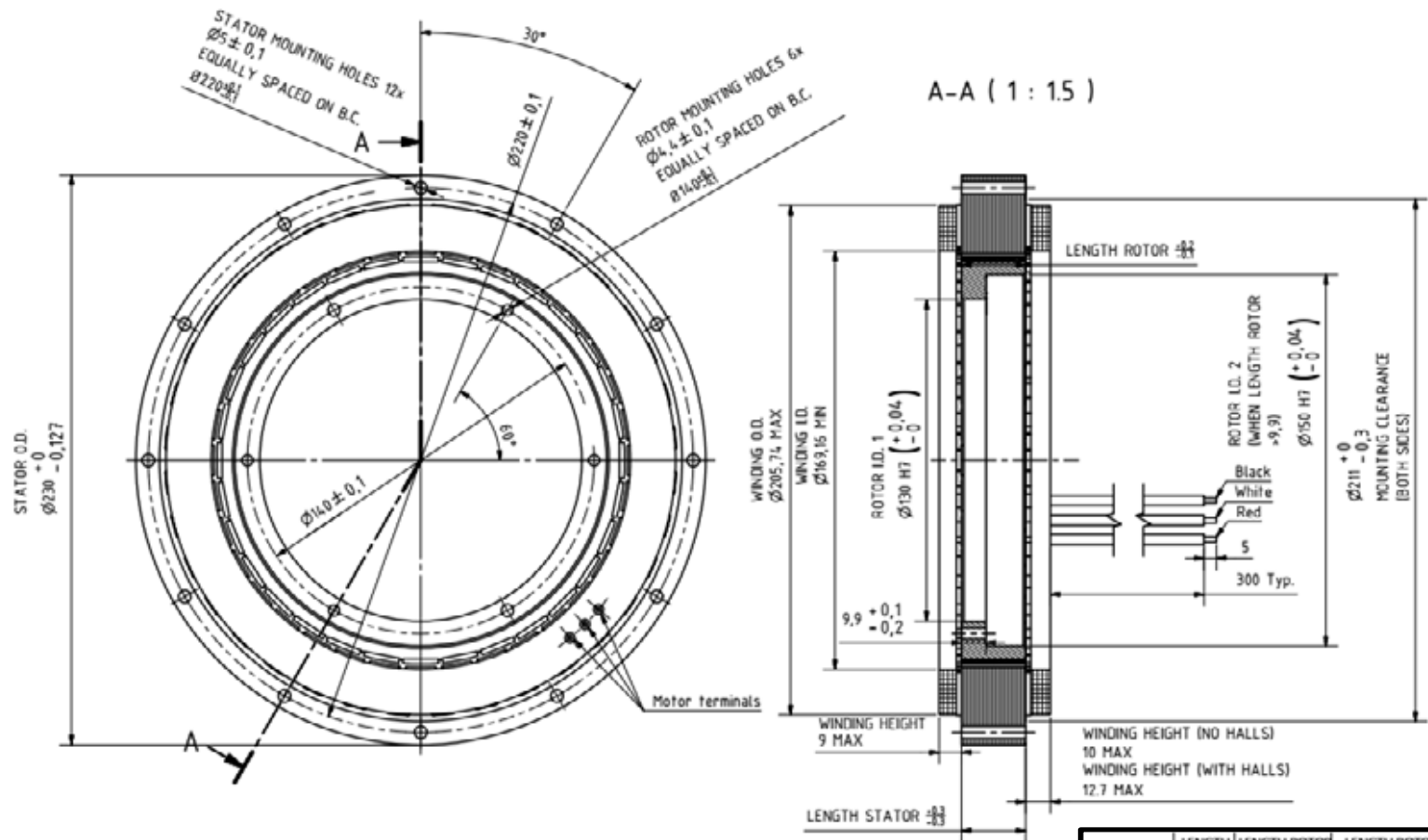
Torque motor KSO/H 230 Specifications

Parameter	Unit	KSO/H 230 010	KSO/H 230 025	KSO/H 230 050	KSO/H 230 075	KSO/H 230 100
External diameter	<i>mm</i>	230				
Inner diameter	<i>mm</i>	130				
Length	<i>mm</i>	31.6	47.6	72.6	97.6	122.6
Continuous stall torque	<i>Nm</i>	8.7	21.7	41.1	65.6	83.6
Peak torque	<i>Nm</i>	34.8	86.8	164.4	262.4	334.4
Motor constant	Nm/\sqrt{W}	0.9	1.9	2.95	3.77	4.5
Inertia	$Kg \cdot m^2$	$3.3 \cdot 10^{-3}$	$8.4 \cdot 10^{-3}$	$1.6 \cdot 10^{-2}$	$2.5 \cdot 10^{-2}$	$3.3 \cdot 10^{-2}$
Weight	<i>Kg</i>	1.8	4.35	8.3	12.25	16.2
Rated voltage*	V_{DC}	48				
Rated current** $\pm 10\%$	<i>A</i>	13	26.1	42	44.9	51.6
No load speed	<i>rpm</i>	940	740	630	420	380
Torque constant (K_T)	Nm/A_{RMS}	0.67	0.83	0.98	1.46	1.62
Back EMF constant (K_E)	$V_{peak}/Krpm$	56.67	70.6	83.26	124.15	137.5
Phase connection		Y				
Electrical resistance $\pm 10\%$ (at 20°C)	Ω	0.55	0.19	0.11	0.15	0.13
Electrical inductance $\pm 20\%$	<i>mH</i>	1.62	0.86	0.58	0.86	0.78
Number of poles		32				

*, ** More voltage and current values available on request



Torque motor KSO/H 230 Dimensions



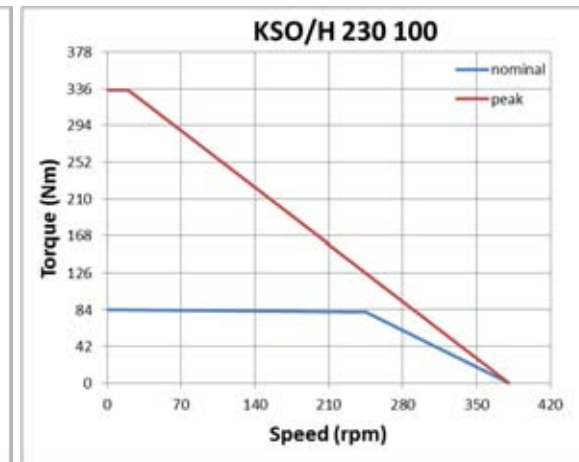
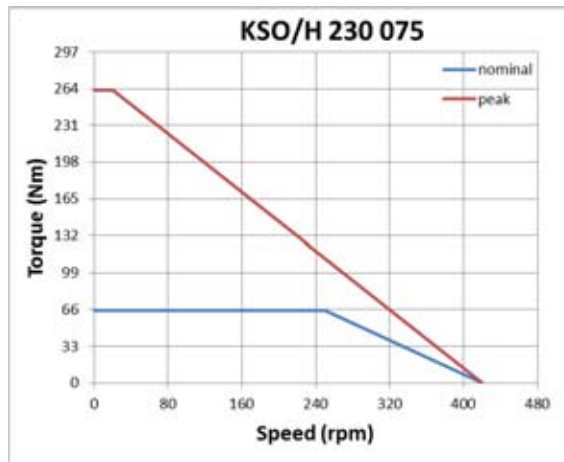
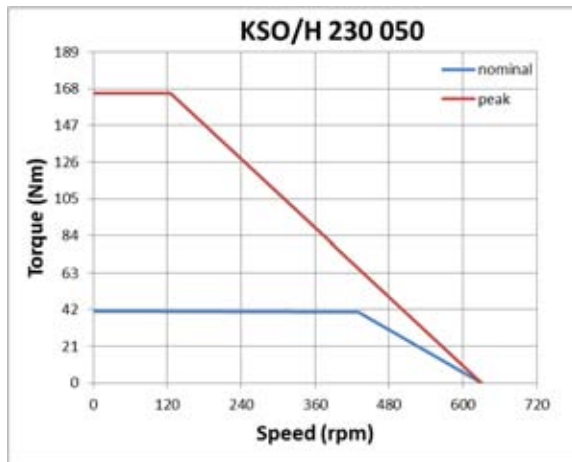
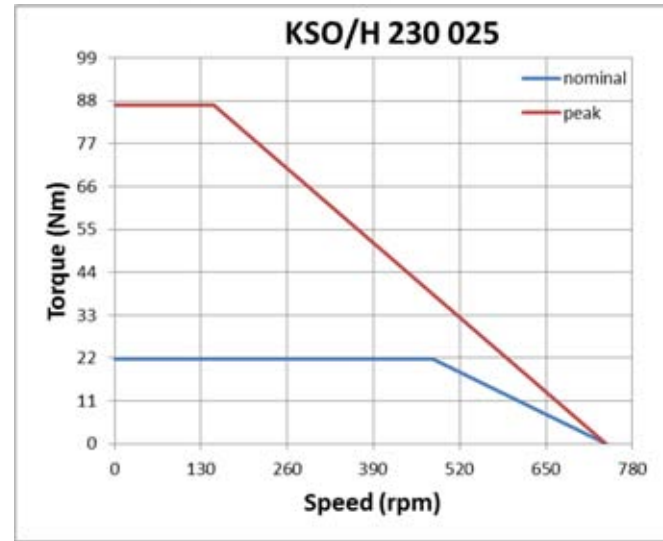
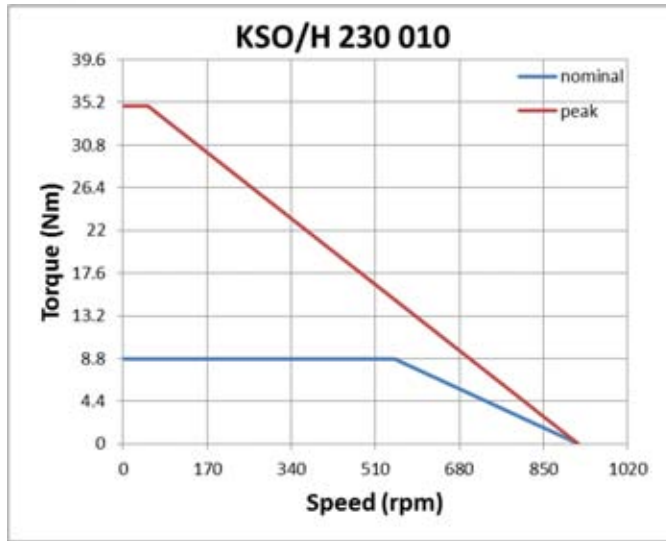
MODEL	LENGTH STATOR (mm)	LENGTH ROTOR NO HALLS (mm)	LENGTH ROTOR WITH HALLS (mm)
KSO/H 230010	9,9	9,9	13,1
KSO/H 230025	25,9	25,9	29,1
KSO/H 230050	50,9	50,9	54
KSO/H 230075	75,9	75,9	79,1
KSO/H 230100	100,9	100,9	104

* Dimension in mm

** Different stack length available on request



Torque motor KSO/H 230 Performances





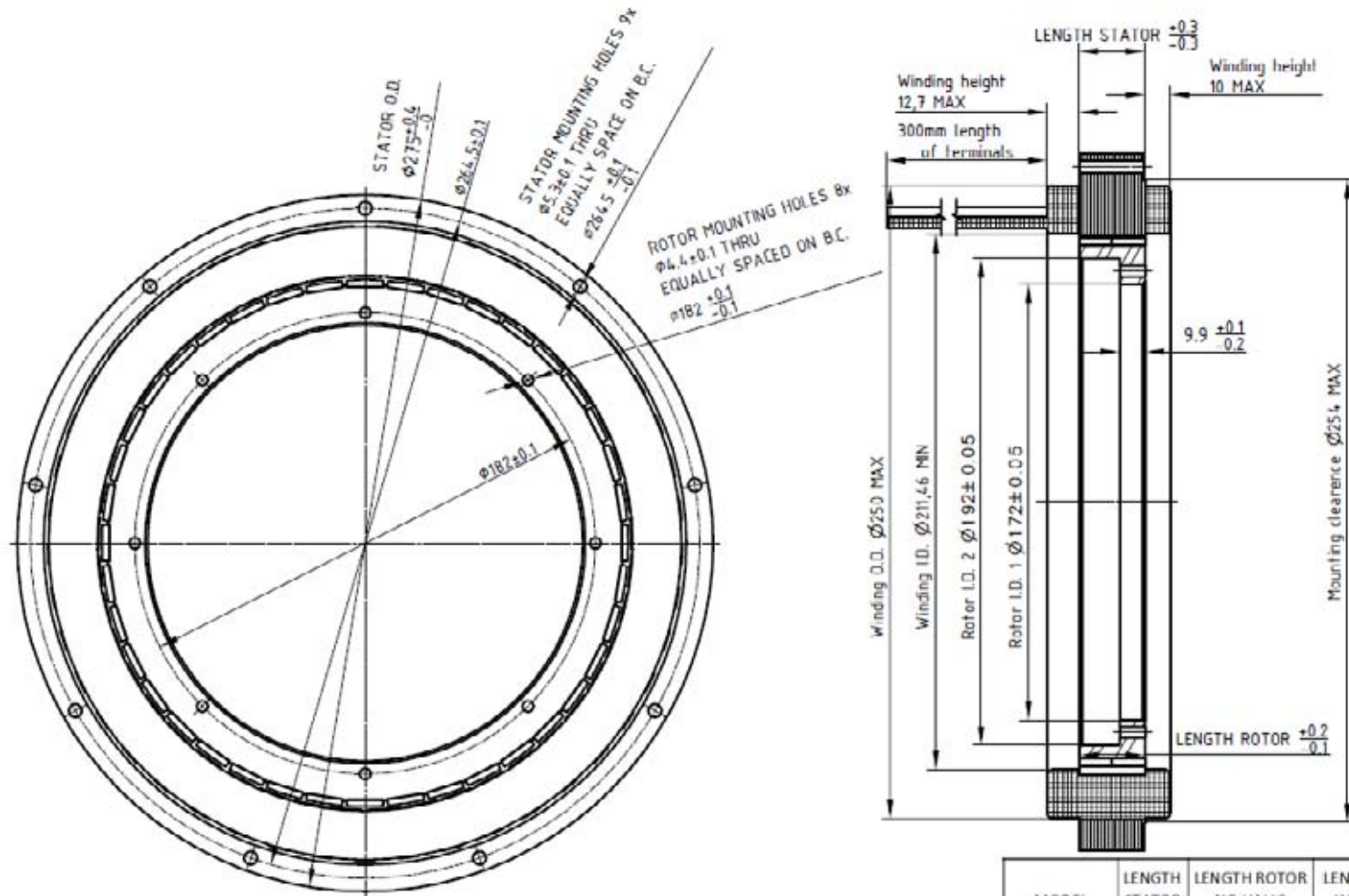
Torque motor KSO/H 275 Specifications

Parameter	Unit	KSO/H 275 010	KSO/H 275 025	KSO/H 275 050	KSO/H 275 075	KSO/H 275 100
External diameter	<i>mm</i>	270				
Inner diameter	<i>mm</i>	172				
Length	<i>mm</i>	32.6	48.6	73.6	98.6	123.6
Continuous stall torque	<i>Nm</i>	12	31	60	89.4	116.6
Peak torque	<i>Nm</i>	48	124	240	358	466
Motor constant	<i>Nm/√W</i>	1.42	3	4.6	5.9	6.9
Inertia	<i>Kg·m²</i>	$3.63 \cdot 10^{-3}$	$9.5 \cdot 10^{-3}$	$1.8 \cdot 10^{-2}$	$2.7 \cdot 10^{-2}$	$3.6 \cdot 10^{-2}$
Weight	<i>Kg</i>	2.3	5.5	10.5	15.6	20.6
Rated voltage*	<i>V_{DC}</i>	48				
Rated current** ±10%	<i>A</i>	15.3	26.4	34.65	41.5	50.9
No load speed	<i>rpm</i>	780	520	350	280	260
Torque constant (K _T)	<i>Nm/A_{RMS}</i>	0.78	1.17	1.73	2.15	2.29
Back EMF constant (K _E)	<i>V_{peak}/Krpm</i>	66.9	100	147.5	183.2	194.9
Phase connection		Y				
Electrical resistance ±10% (at 20°C)	<i>Ω</i>	0.3	0.15	0.14	0.13	0.11
Electrical inductance ±20%	<i>mH</i>	0.85	0.64	0.68	0.7	0.6
Number of poles		40				

*, ** More voltage and current values available on request



Torque motor KSO/H 275 Dimensions



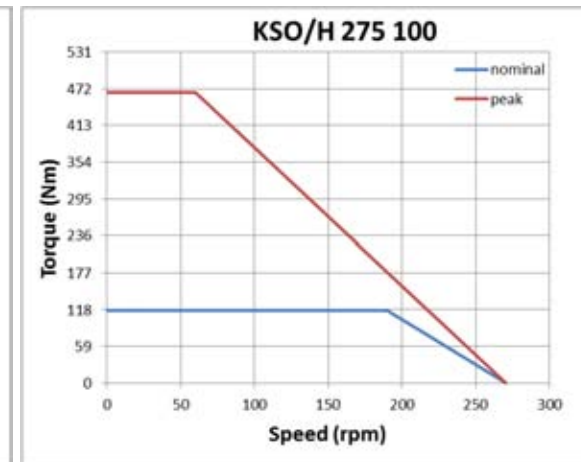
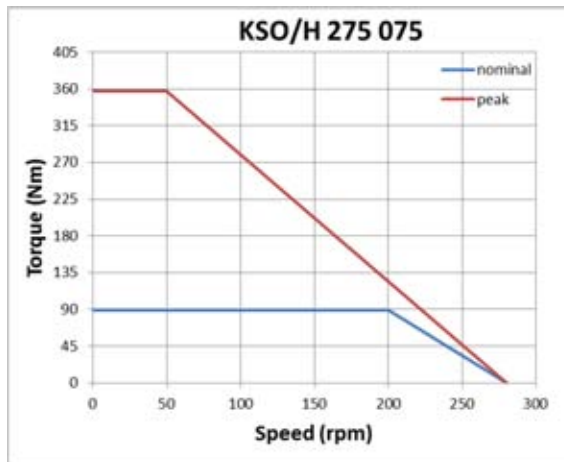
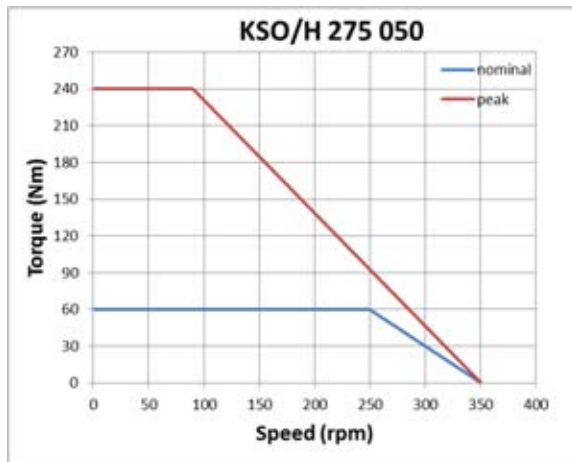
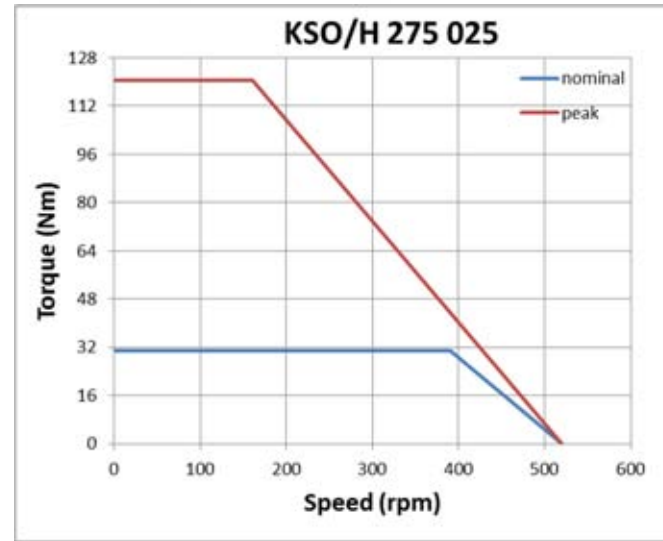
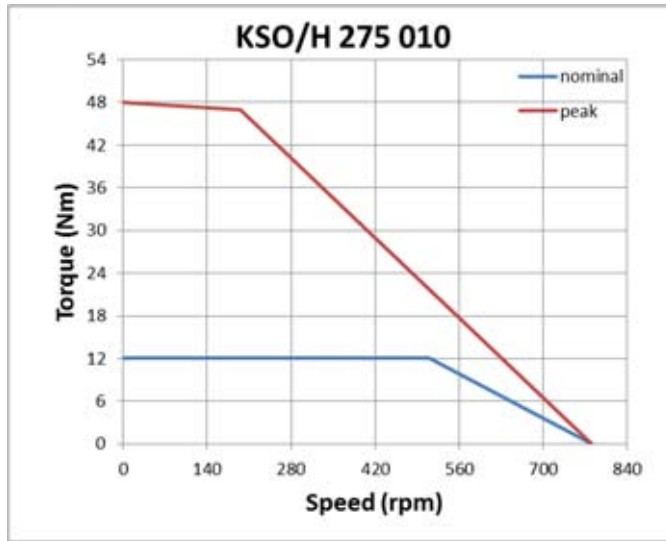
MODEL	LENGTH STATOR (mm)	LENGTH ROTOR NO HALLS (mm)	LENGTH ROTOR WITH HALLS (mm)
KSO/H 275010	9.9	9.9	13.1
KSO/H 275025	25.9	25.9	29.1
KSO/H 275050	50.9	50.9	54
KSO/H 275075	75.9	75.9	79.1
KSO/H 275100	100.9	100.9	104

* Dimension in mm

** Different stack length available on request



Torque motor KSO/H 275 Performances





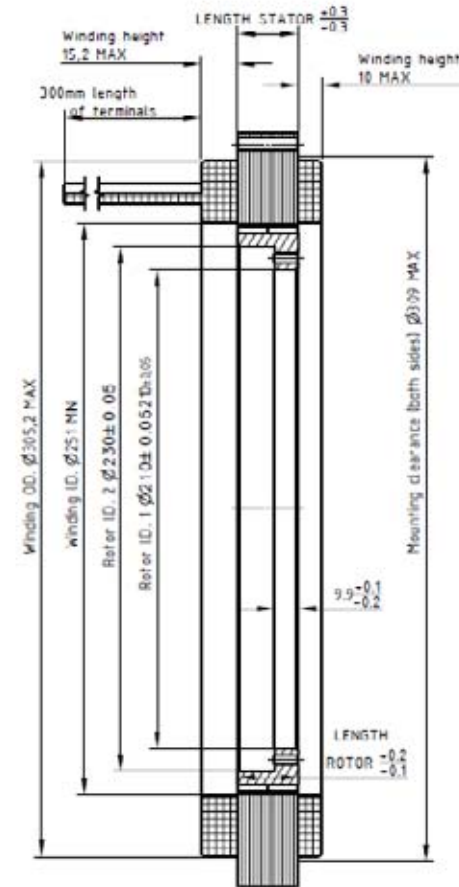
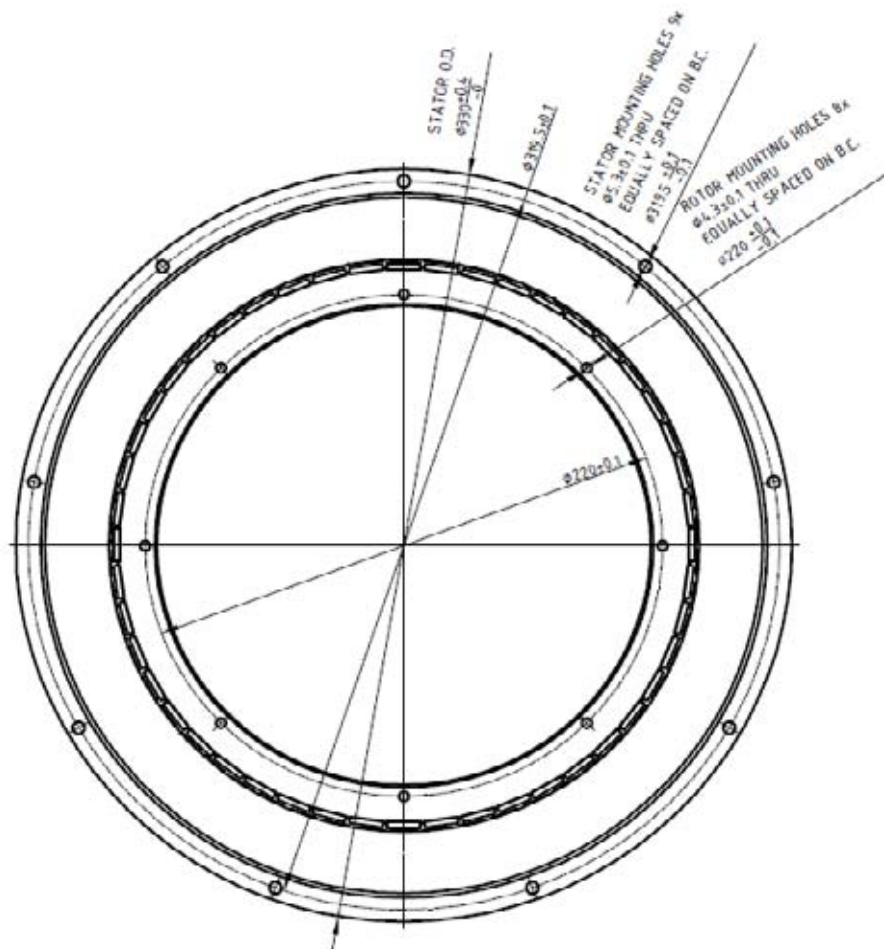
Torque motor KSO/H 330 Specifications

Parameter	Unit	KSO/H 330 010	KSO/H 330 025	KSO/H 330 050	KSO/H 330 075	KSO/H 330 100
External diameter	<i>mm</i>	330				
Inner diameter	<i>mm</i>	210				
Length	<i>mm</i>	32.6	48.6	73.6	98.6	123.6
Continuous stall torque	<i>Nm</i>	20.5	49	100.4	150	201.9
Peak torque	<i>Nm</i>	82	196	402	600	808
Motor constant	Nm/\sqrt{W}	2	4.3	6.9	8.6	10.13
Inertia	$Kg \cdot m^2$	$1.3 \cdot 10^{-2}$	$3.4 \cdot 10^{-2}$	$6.7 \cdot 10^{-2}$	0.1	0.13
Weight	<i>Kg</i>	3.45	7.9	15.3	22.4	29.7
Rated voltage*	V_{DC}	48				
Rated current** $\pm 10\%$	<i>A</i>	21	27.7	32.47	37.2	37.65
No load speed	<i>rpm</i>	630	340	190	150	110
Torque constant (K_T)	Nm/A_{RMS}	0.97	1.77	3.1	4	5.36
Back EMF constant (K_E)	$V_{peak}/Krpm$	83.12	150.5	263	343.15	456.17
Phase connection		Y				
Electrical resistance $\pm 10\%$ (at 20°C)	Ω	0.23	0.17	0.2	0.22	0.28
Electrical inductance $\pm 20\%$	<i>mH</i>	0.92	1.04	1.55	1.75	2.3
Number of poles		48				

*, ** More voltage and current values available on request



Torque motor KSO/H 330 Dimensions



MODEL	LENGTH STATOR (mm)	LENGTH ROTOR NO HALLS (mm)	LENGTH ROTOR WITH HALLS (mm)
KSO/H 330010	9.9	9.9	13.1
KSO/H 330025	25.9	25.9	29.1
KSO/H 330050	50.9	50.9	54
KSO/H 330075	75.9	75.9	79.1
KSO/H330100	100.9	100.9	104

* Dimension in mm

** Different stack length available on request



Torque motor KSO/H 330 Performances

