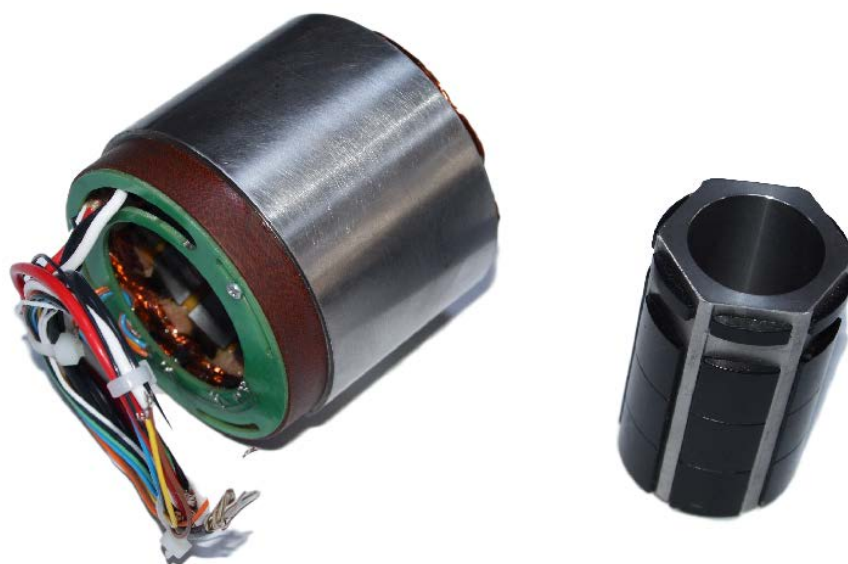




Permanent Magnet Synchronous Frameless Compact Motors KSO/H Series



Icpe

313 Splaiul Unirii

030138, București, România

tel./ fax +40213467233

email servo@icpe.ro

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

Societatea pe acțiuni Icpe

Splaiul Unirii 313, 030138-București
tel. 021 589 3300 | fax 021 589 3434
e-mail office@icpe.ro

RO 423140 I J40/21438/92
RO92 CARP 0452 P006 5844 R001
Patria Bank - Sucursala Tineretului



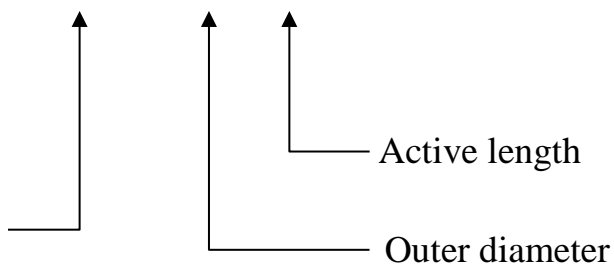
KSO/H Compact Frameless Series Quick Selection Guide

Model Number	Continuous Stall Torque Nm	Outer Diameter mm	Inner Diameter mm	Length Active/Total mm
KSO/H 036 013	0.08	35.81	10	12.7/34.1
KSO/H 036 025	0.15			25.4/46.8
KSO/H 036 038	0.23			38.1/59.5
KSO/H 036 051	0.3			50.8/72.2
KSO/H 056 019	0.36	55.7	15	19.05/42.9
KSO/H 056 038	0.68			38.1/91.9
KSO/H 056 057	0.98			57.15/80.9
KSO/H 056 076	1.28			76.2/99.9
KSO/H 082 019	0.81	81.28	25	19.05/39.8
KSO/H 082 038	1.57			38.1/58.8
KSO/H 082 057	2.32			57.15/77.8
KSO/H 082 076	3.03			76.2/96.8
KSO/H 127 025	4.29	127	35	25.4/50.8
KSO/H 127 051	8			50.8/76.2
KSO/H 127 076	11.1			76.2/101.6
KSO/H 127 102	14.1			101.6/127
KSO/H 127 127	17.2			127/152.4
KSO/H 127 153	20.2			152.4/177.8

KSO/H Compact Frameless Series Model Number

KSO/H 036 0130

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





Product Description

The frameless compact motors of KSO/H series are high performance 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 at minimal cost.

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. Frameless kit motors can be use as direct drive motors providing the advantages of lower cost, increased reliability and improved performance. These motors have an external diameter from 36 mm to 127 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, high performance 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 036 - Specifications

Parameter	Unit	KSO/H 036 013	KSO/H 036 025	KSO/H 036 038	KSO/H 036 051
External diameter	mm	35.81			
Inner diameter	mm	10			
Total length	mm	34.1	46.8	59.5	72.2
Continuous stall torque	Nm	0.08	0.15	0.23	0.3
Peak torque	Nm	0.32	0.6	0.92	1.2
Motor constant (K_M)	Nm/\sqrt{W}	0.023	0.041	0.05	0.057
Inertia	$Kg \cdot m^2$	$1 \cdot 10^{-6}$	$1.45 \cdot 10^{-6}$	$2.8 \cdot 10^{-6}$	$3.8 \cdot 10^{-6}$
Weight	Kg	0.075	0.14	0.2	0.25
Rated voltage*	V_{DC}	24			
Rated current** $\pm 10\%$	A	3.72	4.73	5.2	5.75
No load speed	rpm	12800	8700	6250	5300
Torque constant (K_T)	Nm/A_{RMS}	0.021	0.032	0.044	0.052
Back EMF constant (K_E)	$V_{peak}/Krpm$	1.89	2.79	3.88	4.58
Phase connection		Δ			
Electrical resistance $\pm 10\%$ (at 20°C)	Ω	0.56	0.6	0.75	0.83
Electrical inductance $\pm 20\%$	mH	0.37	0.38	0.49	0.5
Electric time constant $\pm 20\%$	ms	0.66	0.63	0.65	0.6
Thermal resistance	$^{\circ}C/W$	4.7	3.3	2.6	2.2
Number of poles		6			
Insulation class		F			

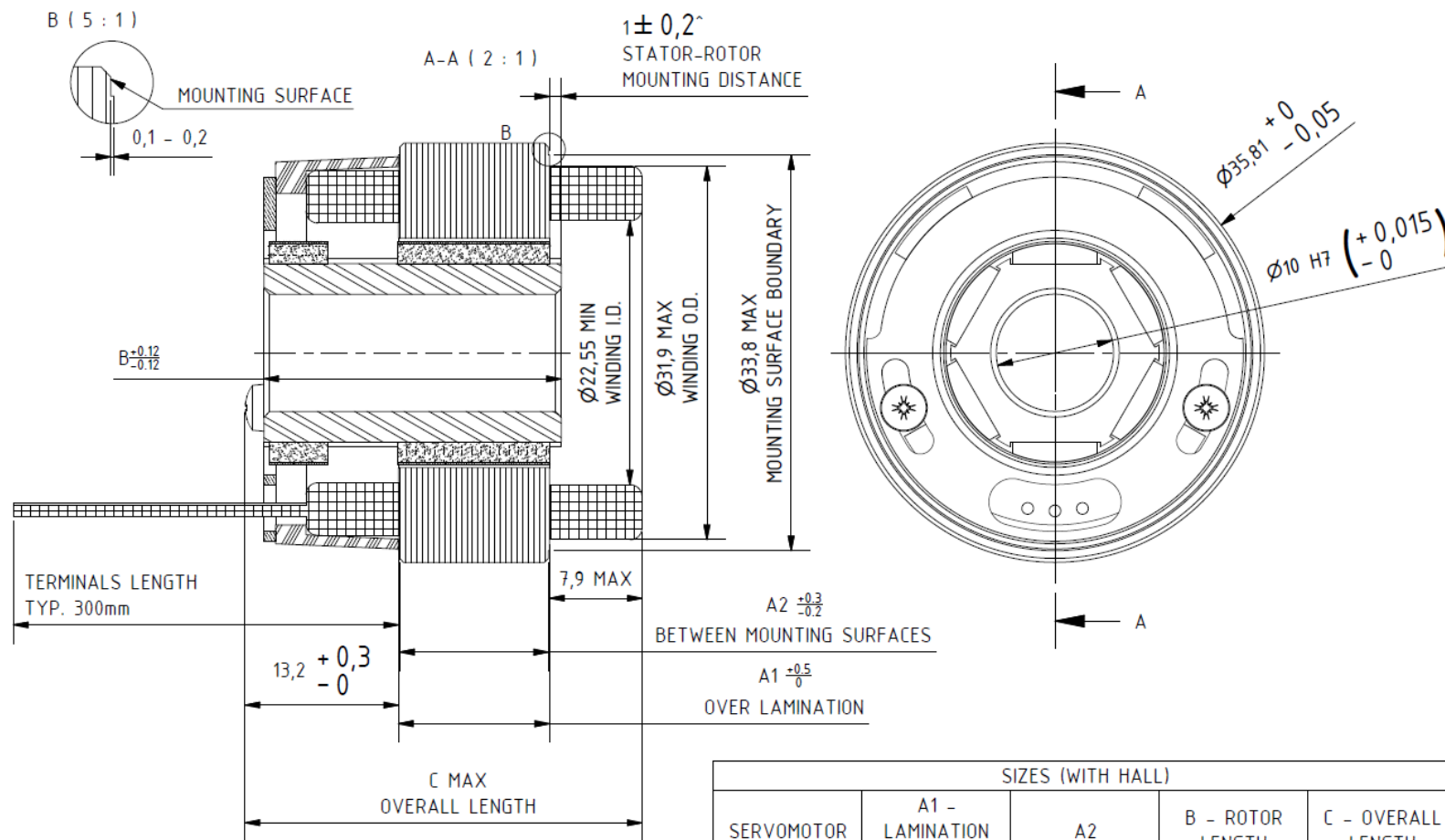
*, ** More voltage and current values available on request

Societatea pe acțiuni Icpe

Splaiul Unirii 313, 030138-București
tel 021 589 3300 | fax 021 589 3434
e-mail office@icpe.ro

RO 423140 | J40/21438/92
R092 CARP 0452 P006 5844 R001
Patria Bank - Sucursala Tineretului

Torque motor KSH 036 - Dimensions



NOTES;
[^]FOR KSH036013 ONLY THE STATOR-ROTOR MOUNTING TOLERANCE IS +/-0.1

SERVOMOTOR	SIZES (WITH HALL)			
	A1 - LAMINATION STACK	A2	B - ROTOR LENGTH	C - OVERALL LENGTH
KSH036013	12.9	12.7	25.4	34.8
KSH036025	25.6	25.4	38.1	47.5
KSH036038	38.3	38.1	50.8	60.2
KSH036051	51	50.8	63.5	72.9

* Dimension in mm

** Different stack length available on request

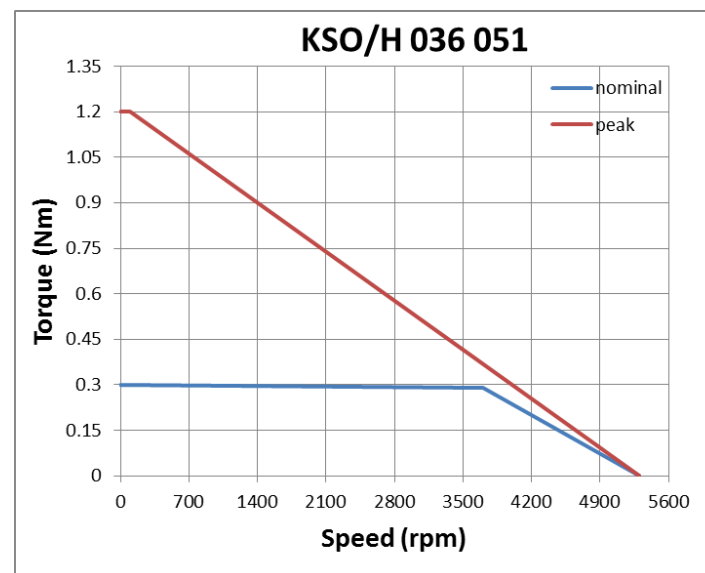
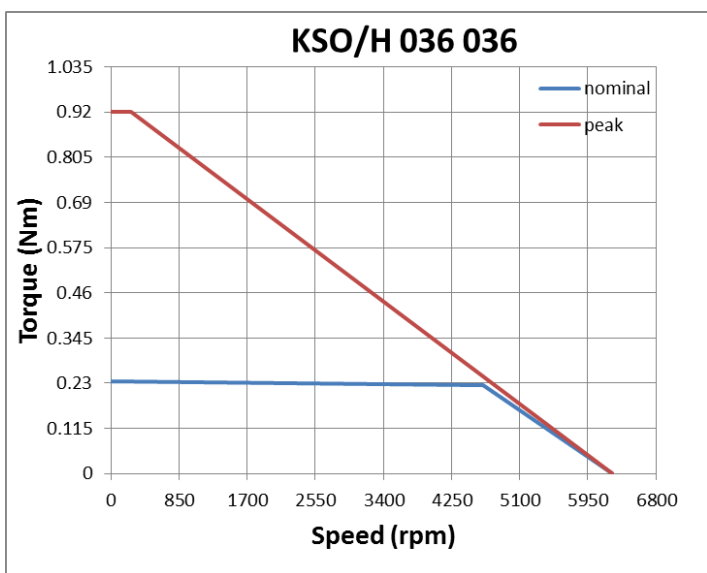
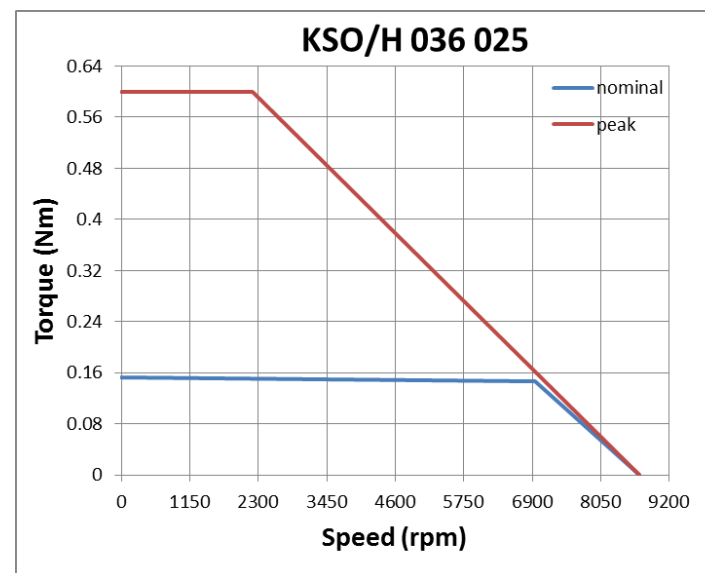
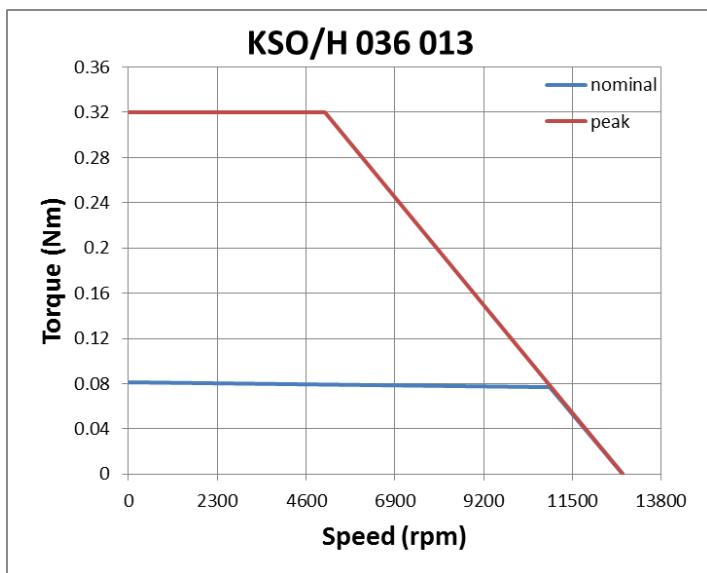
Societatea pe acțiuni Icpe

Splaiul Unirii 313, 030138-București
 Tel 021 589 3300 | Fax 021 589 3434
 e-mail office@icpe.ro

RO 423140 | J40/21438/92
 R092 CARP 0452 P006 5844 R001
 Patria Bank - Sucursala Tineretului



Torque motor KSO/H 036 - Performances



Societatea pe acțiuni Icpe

Splaiul Unirii 313, 030138-București
Tel: 021 589 3300 | Fax: 021 589 3434
e-mail: office@icpe.ro

RO 423140 | J40/21438/92
R092 CARP 0452 P006 5844 R001
Patria Bank - Sucursala Tineretului



Torque motor KSO/H 056 - Specifications

Parameter	Unit	KSO/H 056 019	KSO/H 056 038	KSO/H 056 057	KSO/H 056 078
External diameter	mm	55.7			
Inner diameter	mm	15			
Length	mm	42.9	61.9	80.96	99.9
Continuous stall torque	Nm	0.36	0.68	0.98	1.28
Peak torque	Nm	1.45	2.7	3.9	5.1
Motor constant	Nm/\sqrt{W}	0.098	0.15	0.19	0.2
Inertia	$Kg \cdot m^2$	$6.82 \cdot 10^{-6}$	$1.36 \cdot 10^{-5}$	$2.05 \cdot 10^{-5}$	$2.7 \cdot 10^{-5}$
Weight	Kg	0.27	0.52	0.77	1.02
Rated voltage*	V_{DC}	24			
Rated current** $\pm 10\%$	A	7.4	7	10.4	10.2
No load speed	rpm	5970	2980	3070	2300
Torque constant (K_T)	Nm/A_{RMS}	0.049	0.097	0.094	0.11
Back EMF constant (K_E)	$V_{peak}/Krpm$	4.36	8.71	8.46	11.27
Phase connection		Δ			
Electrical resistance $\pm 10\%$ (at 20°C)	Ω	0.25	0.4	0.23	0.3
Electrical inductance $\pm 20\%$	mH	0.37	0.7	0.43	0.57
Electric time constant $\pm 20\%$	ms	1.48	1.75	1.87	1.9
Thermal resistance	$^{\circ}C/W$	3.8	2.5	2	1.6
Number of poles		6			
Insulation class		F			

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

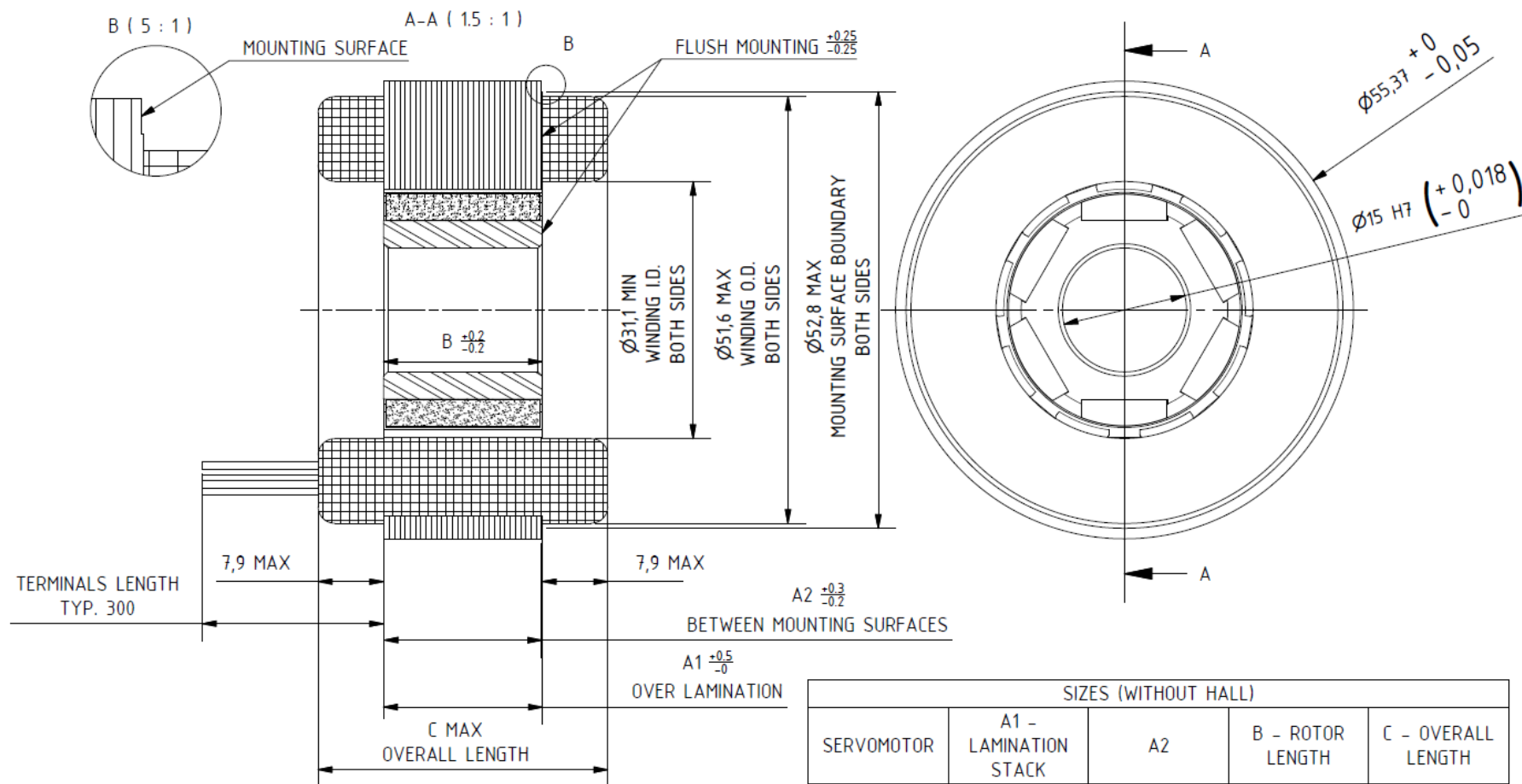
Societatea pe acțiuni Icpe

Splaiul Unirii 313, 030138-București
 tel 021 589 3300 | fax 021 589 3434
 e-mail office@icpe.ro

RO 423140 | J40/21438/92
 RO92 CARP 0452 P006 5844 R001
 Patria Bank - Sucursala Tineretului



Torque motor KSO 056 - Dimensions



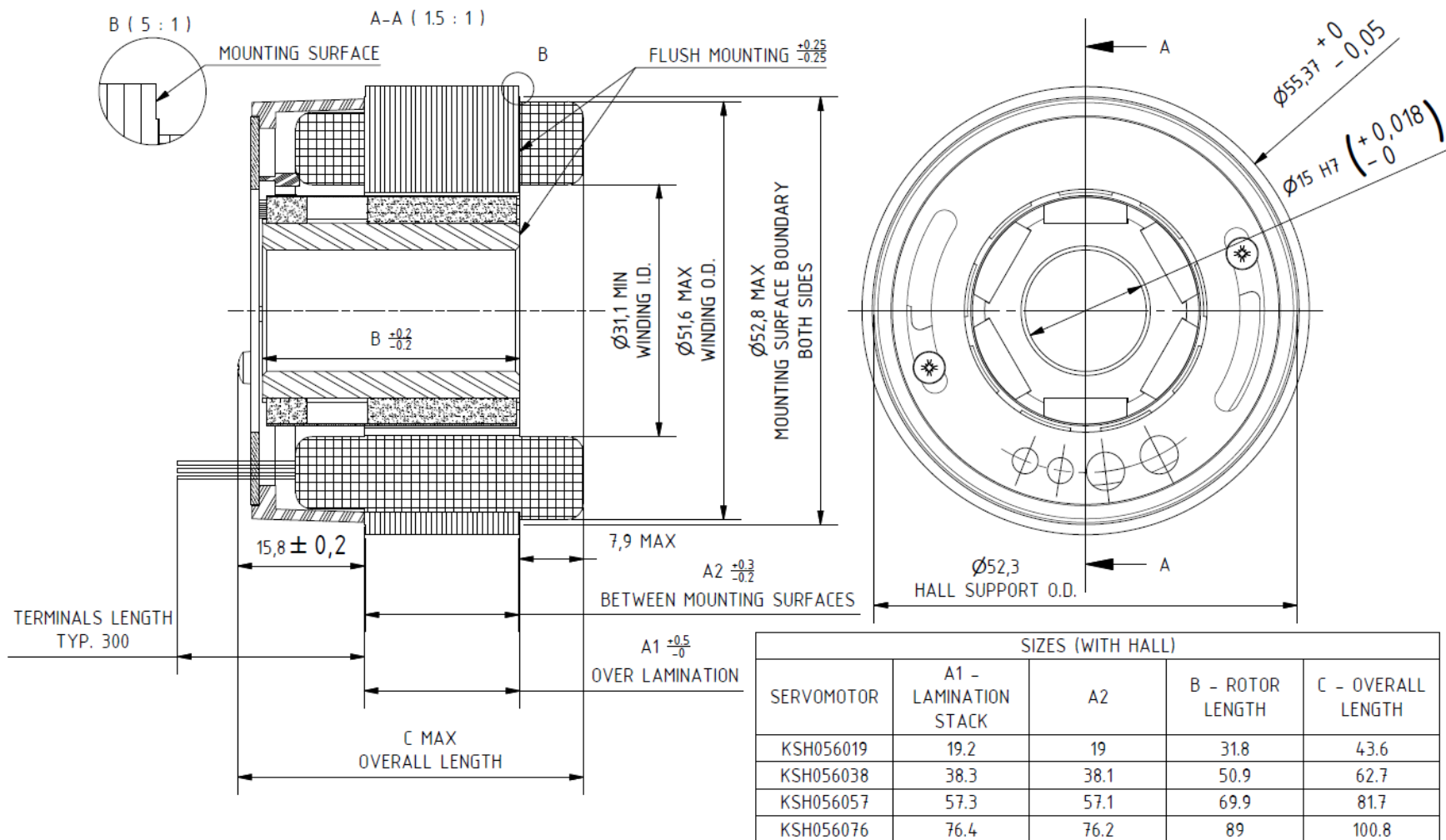
* Dimension in mm

** Different stack length available on request

Societatea pe acțiuni icpe

Splaiul Unirii 313, 030138-București
 Tel 021 589 3300 | Fax 021 589 3434
 e-mail office@icpe.ro

Torque motor KSH 056 - Dimensions



* Dimension in mm

** Different stack length available on request

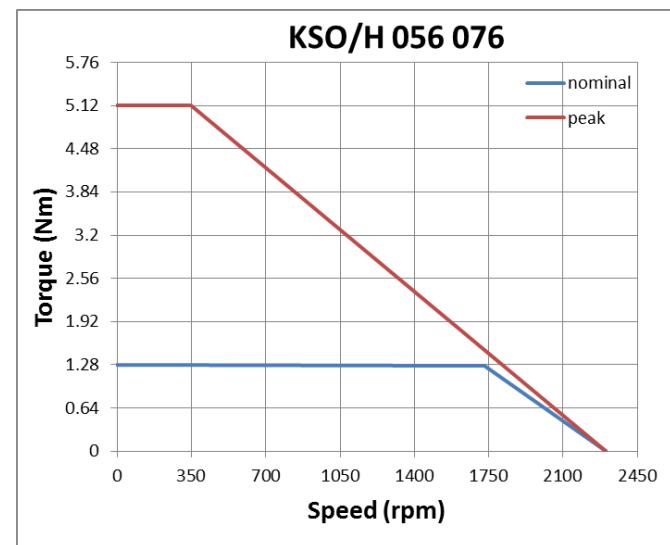
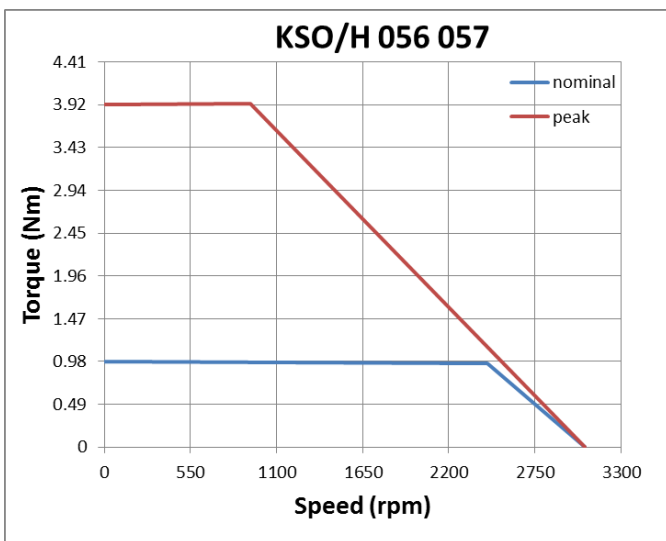
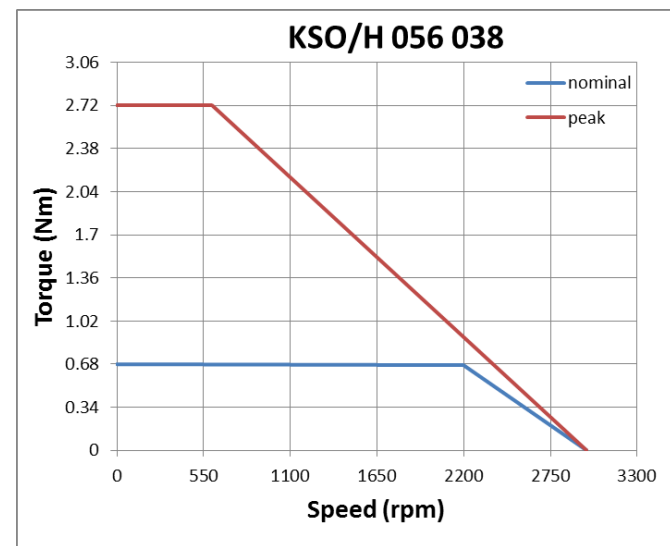
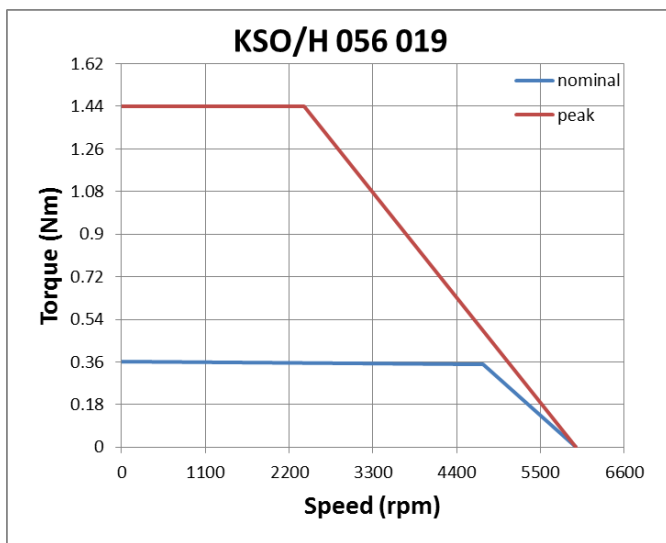
Societatea pe acțiuni icpe

Splaiul Unirii 313, 030138-București
 Tel: 021 589 3300 | Fax: 021 589 3434
 e-mail: office@icpe.ro

RO 423140 | J40/21438/92
 RO92 CARP 0452 P006 5844 R001
 Patria Bank - Sucursala Tineretului



Torque motor KSO/H 056 - Performances





Torque motor KSO/H 082 - Specifications

Parameter	Unit	KSO/H 082 019	KSO/H 082 038	KSO/H 082 057	KSO/H 082 076
External diameter	mm	81.28			
Inner diameter	mm	25			
Length	mm	39.8	58.8	77.8	96.8
Continuous stall torque	Nm	0.81	1.57	2.32	3.03
Peak torque	Nm	3.25	6.3	9.3	12.1
Motor constant	Nm/\sqrt{W}	0.19	0.3	0.4	0.5
Inertia	$Kg \cdot m^2$	$5.25 \cdot 10^{-5}$	$1.05 \cdot 10^{-4}$	$1.57 \cdot 10^{-4}$	$2.1 \cdot 10^{-4}$
Weight	Kg	0.66	1.25	1.85	2.45
Rated voltage*	V_{DC}	24			
Rated current** $\pm 10\%$	A	6.2	8.9	10.85	12.3
No load speed	rpm	2360	1740	1440	1250
Torque constant (K_T)	Nm/A_{RMS}	0.13	0.17	0.21	0.25
Back EMF constant (K_E)	$V_{peak}/Krpm$	11.65	15.83	19.13	22
Phase connection		Δ			
Electrical resistance $\pm 10\%$ (at 20°C)	Ω	0.47	0.32	0.27	0.25
Electrical inductance $\pm 20\%$	mH	1.2	1.03	0.97	0.95
Electric time constant $\pm 20\%$	ms	2.6	3.2	3.6	3.8
Thermal resistance	$^{\circ}C/W$	2.6	1.8	1.4	1.2
Number of poles		6			
Insulation class		F			

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

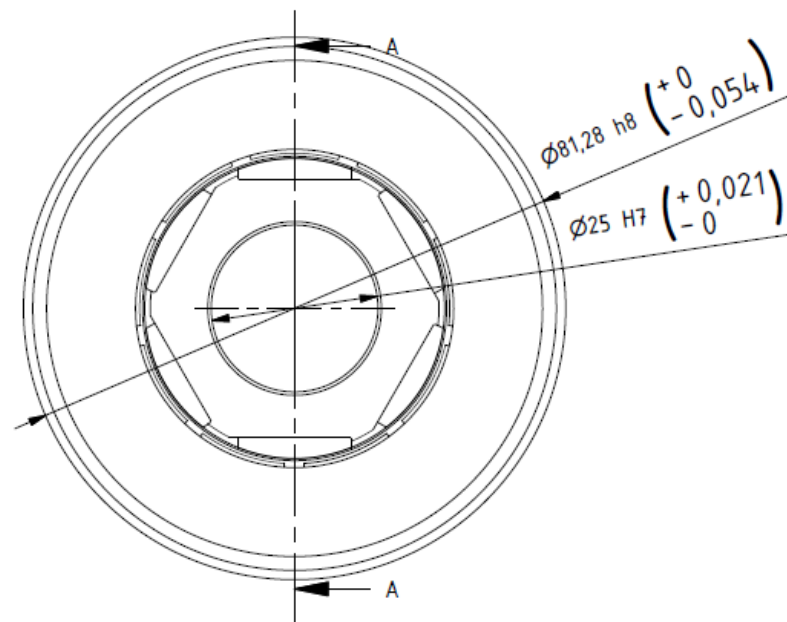
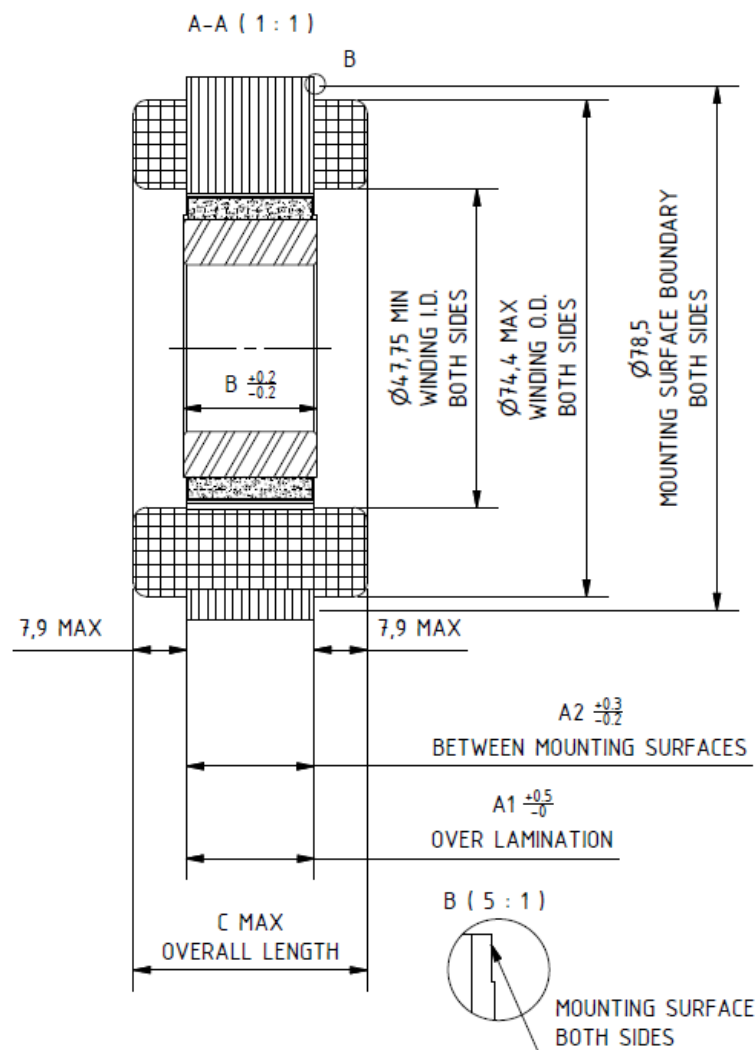
Societatea pe acțiuni icpe

Splaiul Unirii 313, 030138-București
 tel 021 589 3300 | fax 021 589 3434
 e-mail office@icpe.ro

RO 423140 | J40/21438/92
 RO92 CARP 0452 P006 5844 R001
 Patria Bank - Sucursala Tineretului



Torque motor KSO 082 - Dimensions



SIZES (WITH HALL)				
SERVOMOTOR	A1 - LAMINATION STACK	A2	B - ROTOR LENGTH	C - OVERALL LENGTH
KS0082019	19.2	19	20	35.5
KS0082038	38.3	38.1	39	54.6
KS0082057	57.3	57.1	58	73.6
KS0082076	76.4	76.2	77	92.7

* Dimension in mm

** Different stack length available on request

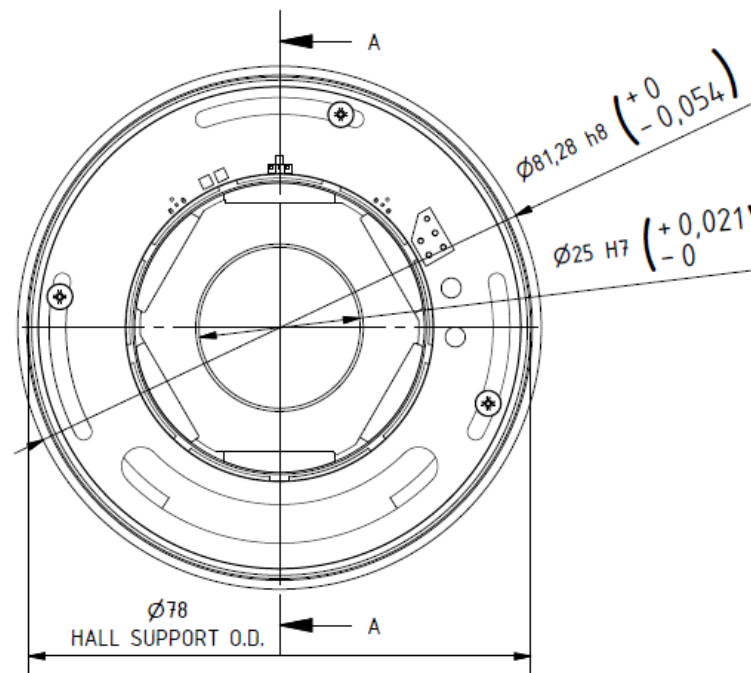
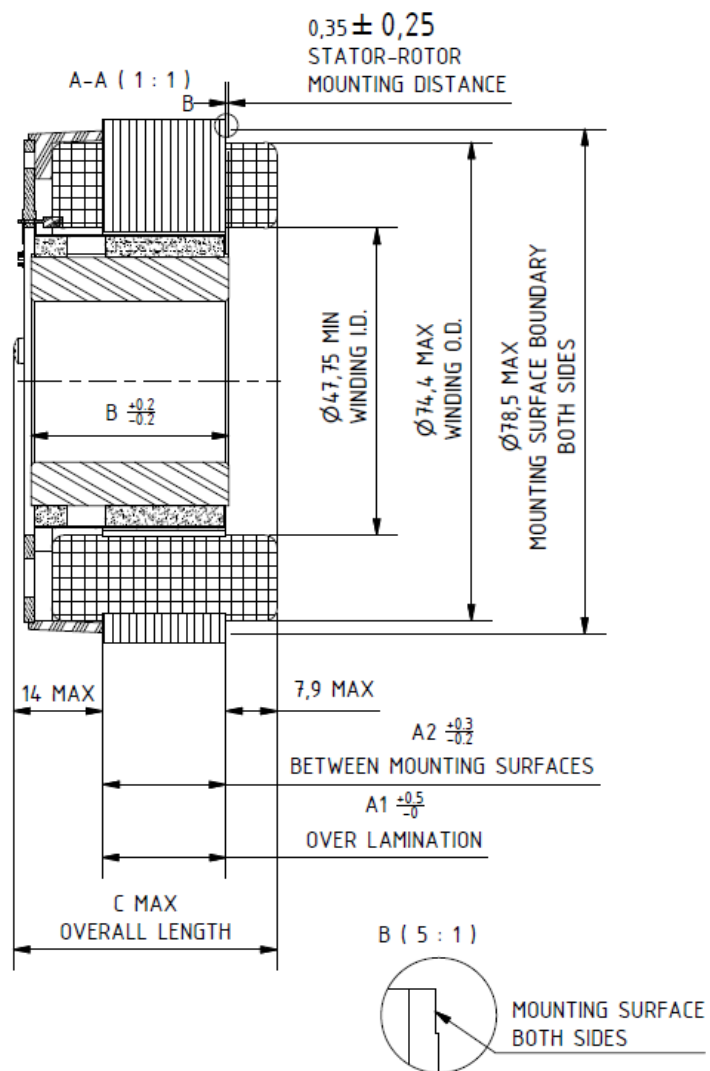
Societatea pe acțiuni icpe

Splaiul Unirii 313, 030138-București
 Tel: 021 589 3300 | Fax: 021 589 3434
 e-mail: office@icpe.ro

RO 423140 | J40/21438/92
 R092 CARP 0452 P006 5844 R001
 Patria Bank - Sucursala Tineretului



Torque motor KSH 082 - Dimensions



SIZES (WITH HALL)				
SERVOMOTOR	A1 - LAMINATION STACK	A2	B - ROTOR LENGTH	C - OVERALL LENGTH
KSH082019	19.2	19	30.7	41.6
KSH082038	38.3	38.1	49.7	60.7
KSH082057	57.3	57.1	68.7	79.7
KSH082076	76.4	76.2	87.7	98.8

* Dimension in mm

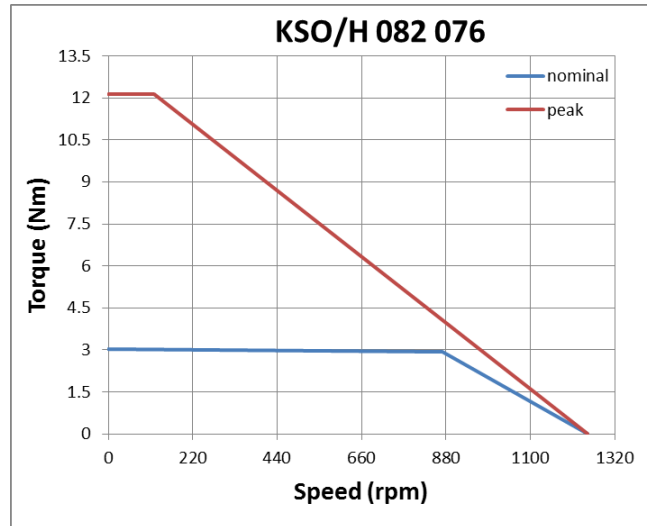
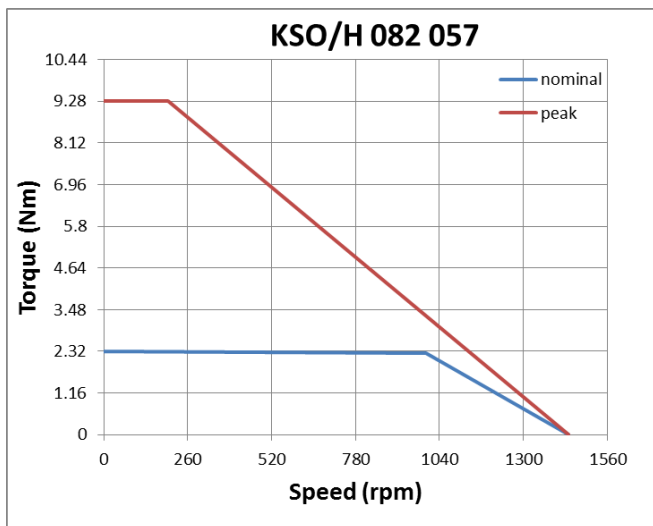
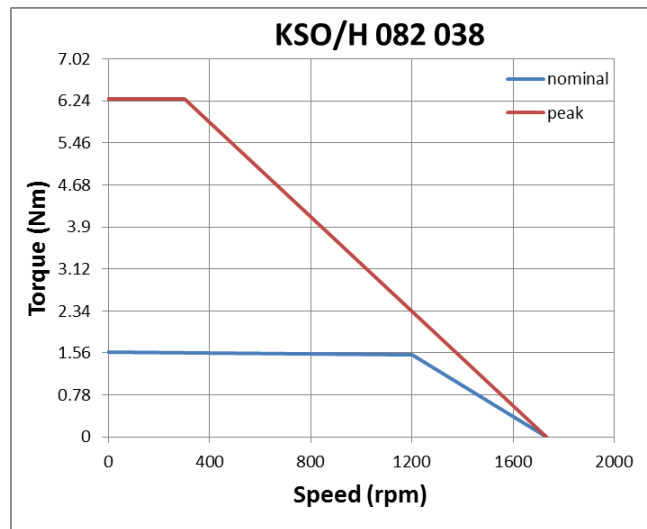
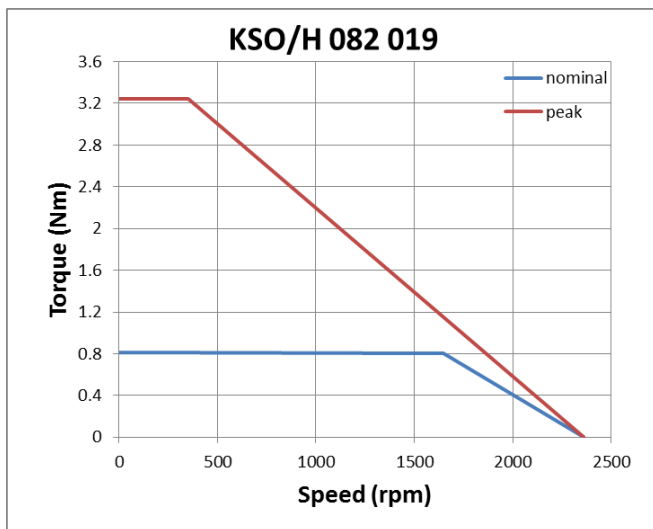
** Different stack length available on request

Societatea pe acțiuni icpe

Splaiul Unirii 313, 030138-București
Tel 021 589 3300 | Fax 021 589 3434
e-mail office@icpe.ro



Torque motor KSO/H 082 - Performances



Societatea pe acțiuni icpe

Splaiul Unirii 313, 030138-București
Tel: 021 589 3300 | Fax: 021 589 3434
e-mail: office@icpe.ro

RO 423140 | J40/21438/92
R092 CARP 0452 P006 5844 R001
Patria Bank - Sucursala Tineretului



Torque motor KSO/H 127 - Specifications

Parameter	Unit	KSO/H 127 025	KSO/H 127 051	KSO/H 127 076	KSO/H 127 102	KSO/H 127 127	KSO/H 127 153	
External diameter	mm	127						
Inner diameter	mm	35						
Length	mm	50.8	76.2	101.6	127	152.4	177.8	
Continuous stall torque	Nm	4.29	8	11.1	14.1	17.2	20.2	
Peak torque	Nm	17.5	32	44.5	56.5	68.8	80.8	
Motor constant	Nm/\sqrt{W}	0.54	0.89	1.16	1.4	1.62	1.82	
Inertia	$Kg \cdot m^2$	$3.44 \cdot 10^{-4}$	$6.9 \cdot 10^{-4}$	$1.3 \cdot 10^{-3}$	$1.38 \cdot 10^{-3}$	$1.77 \cdot 10^{-3}$	$2.08 \cdot 10^{-3}$	
Weight	Kg	2.18	4.12	6	8	9.95	11.88	
Rated voltage*	V_{DC}	40						
Rated current** $\pm 10\%$	A	23.4	40.8	47	59.7	74.9	85.5	
No load speed	<i>rpm</i>	2790	2600	2170	2170	2230	2170	
Torque constant (K_T)	$Nm/ARMS$	0.18	0.19	0.23	0.23	0.23	0.23	
Back EMF constant (K_E)	$V_{peak}/Krpm$	16.3	17.46	20.9	20.9	20.37	20.95	
Phase connection		Δ						
Electrical resistance $\pm 10\%$ (at 20°C)	Ω	0.11	0.046	0.039	0.027	0.02	0.016	
Electrical inductance $\pm 20\%$	<i>mH</i>	0.63	0.34	0.32	0.23	0.17	0.15	
Electric time constant $\pm 20\%$	<i>ms</i>	5.7	7.4	8.2	8.5	8.5	9.4	
Thermal resistance	$^{\circ}C/W$	0.85	0.66	0.58	0.51	0.45	0.4	
Number of poles		8						
Insulation class		F						

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

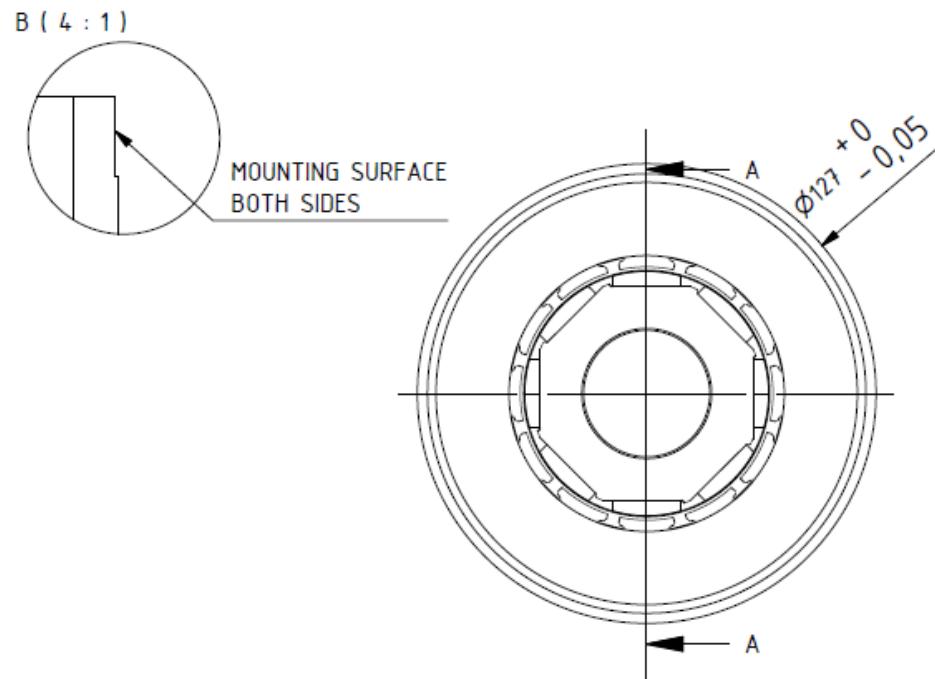
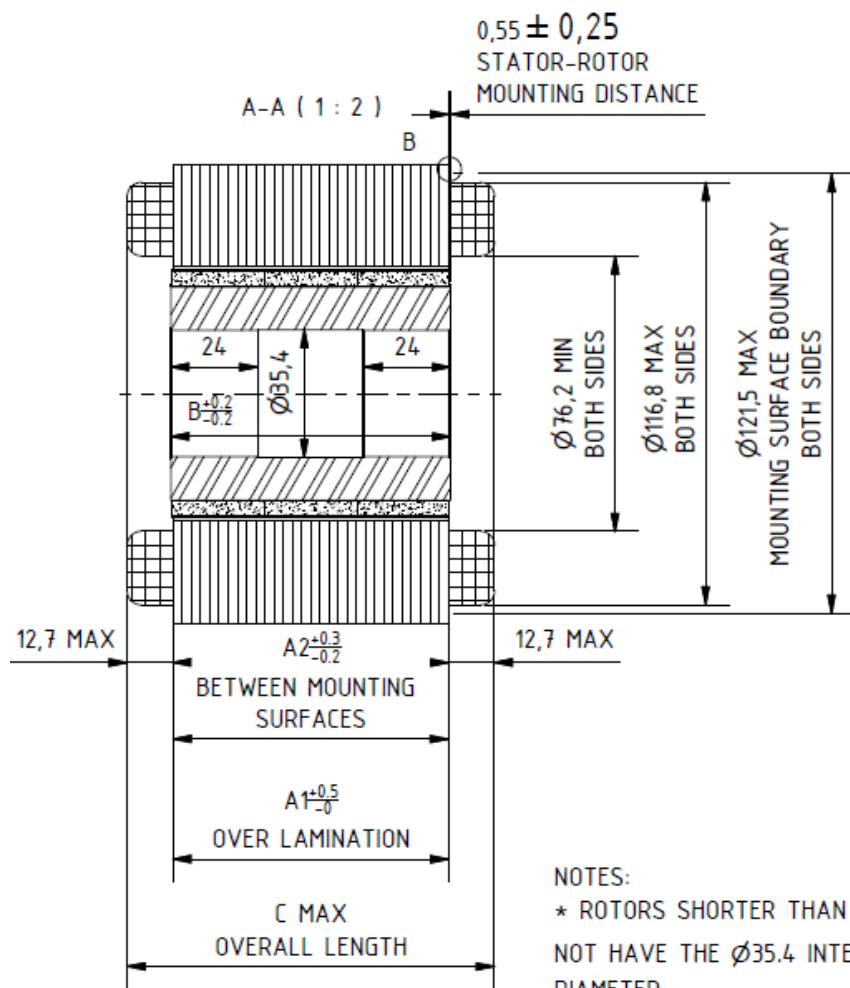
Societatea pe acțiuni icpe

Splaiul Unirii 313, 030138-București
 tel 021 589 3300 | fax 021 589 3434
 e-mail office@icpe.ro

RO 423140 | J40/21438/92
 RO92 CARP 0452 P006 5844 R001
 Patria Bank - Sucursala Tineretului



Torque motor KSO127 - Dimensions



NOTES:
 * ROTORS SHORTER THAN 52 MM DO NOT HAVE THE Ø35.4 INTERNAL DIAMETER

SIZES (WITHOUT HALL)				
SERVOMOTOR	A1 - LAMINATION STACK	A2	B - ROTOR LENGTH	C - OVERALL LENGTH
KSO127025	25.6	25.4	26.5	51.5
KSO127051	51	50.8	52	76.9
KSO127076	76.4	76.2	77.5	102.3
KSO127102	101.8	101.6	103	127.7
KSO127127	127.2	127	128.5	153.1
KSO127153	152.6	152.4	154	178.5

* Dimension in mm

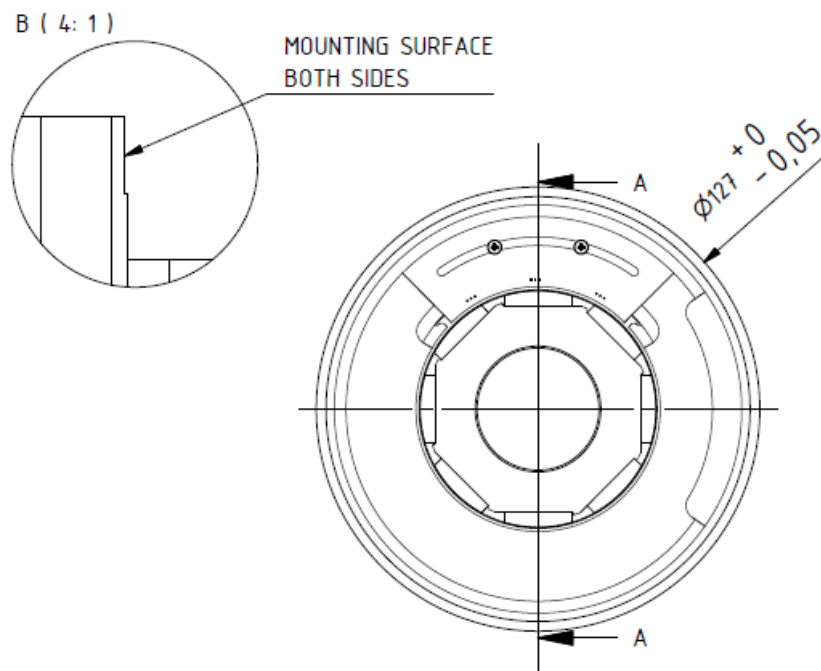
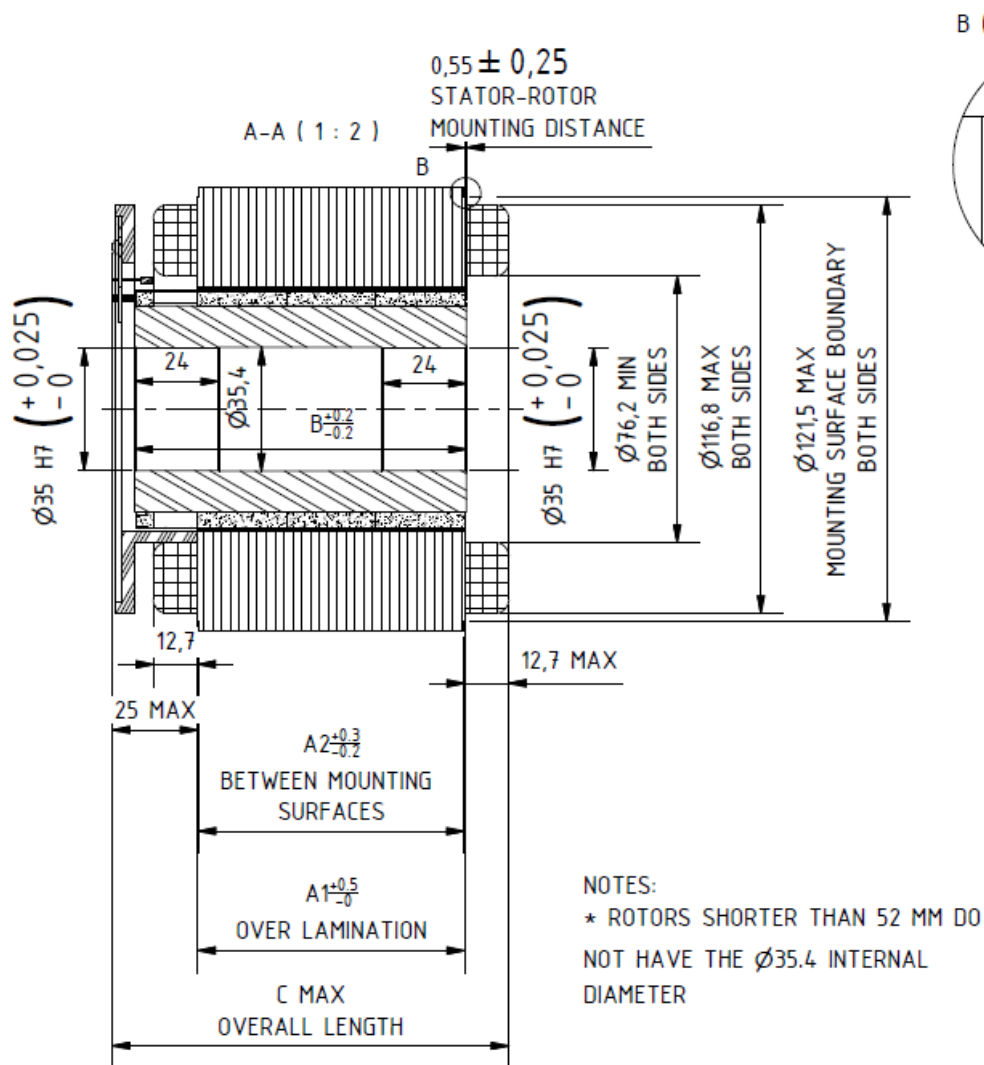
** Different stack length available on request

Societatea pe acțiuni Icpe

Splaiul Unirii 313, 030138-București
 Tel: 021 589 3300 | Fax: 021 589 3434
 e-mail: office@icpe.ro

RO 423140 | J40/21438/92
 R092 CARP 0452 P006 5844 R001
 Patria Bank - Sucursala Tineretului

Torque motor KSH 127 - Dimensions



NOTES:
* ROTORS SHORTER THAN 52 MM DO NOT HAVE THE Ø35.4 INTERNAL DIAMETER

SIZES (WITH HALL)				
SERVOMOTOR	A1 - LAMINATION STACK	A2	B - ROTOR LENGTH	C - OVERALL LENGTH
KSH127025	25.6	25.4	44	63.8
KSH127051	51	50.8	69.5	89.2
KSH127076	76.4	76.2	95	114.6
KSH127102	101.8	101.6	120.5	140
KSH127127	127.2	127	146	165.4
KSH127153	152.6	152.4	171.5	190.8

* Dimension in mm

** Different stack length available on request

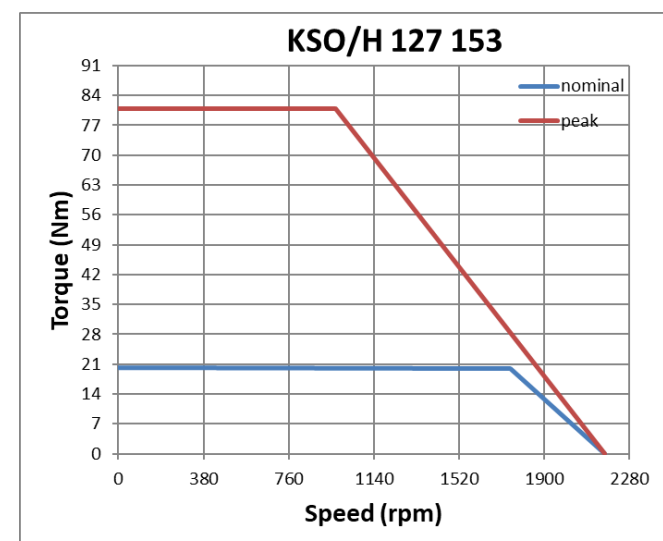
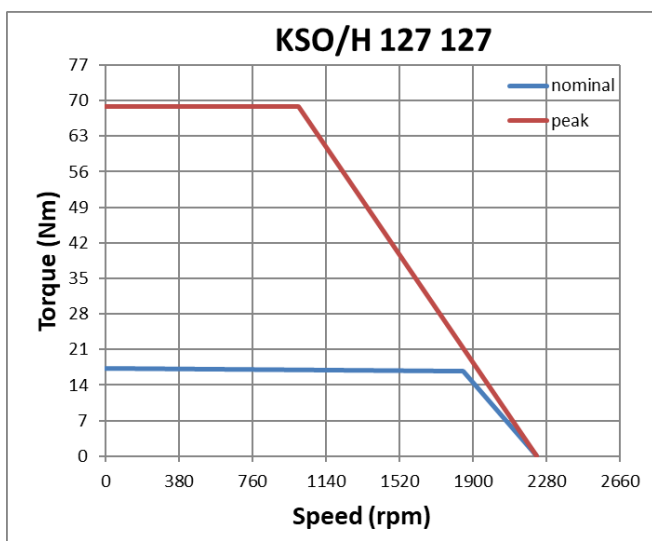
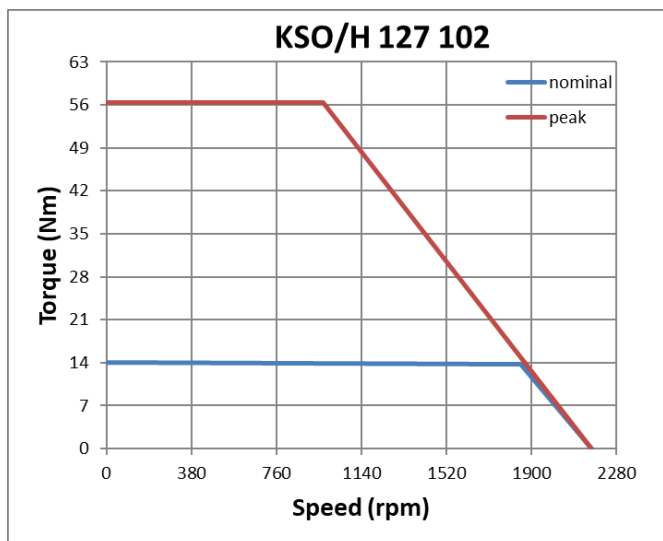
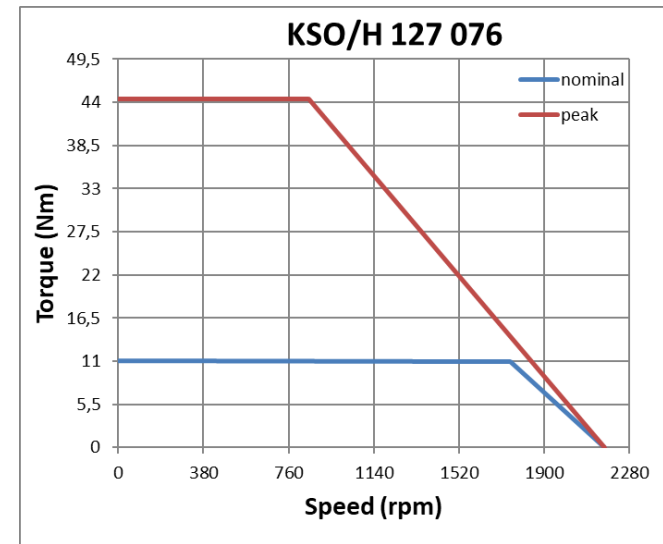
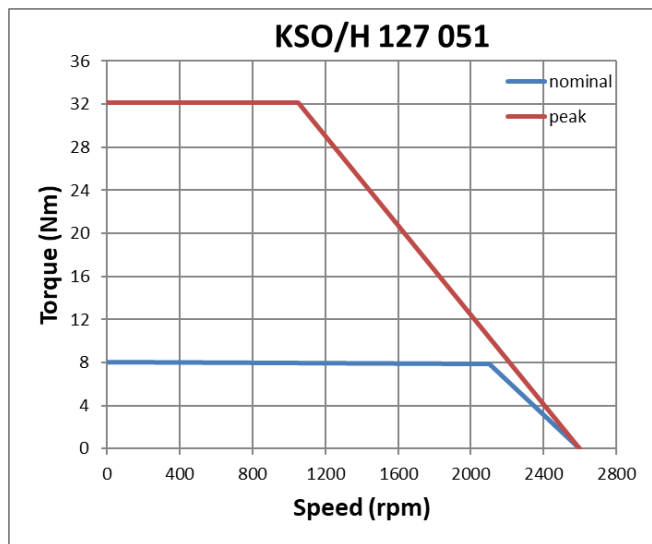
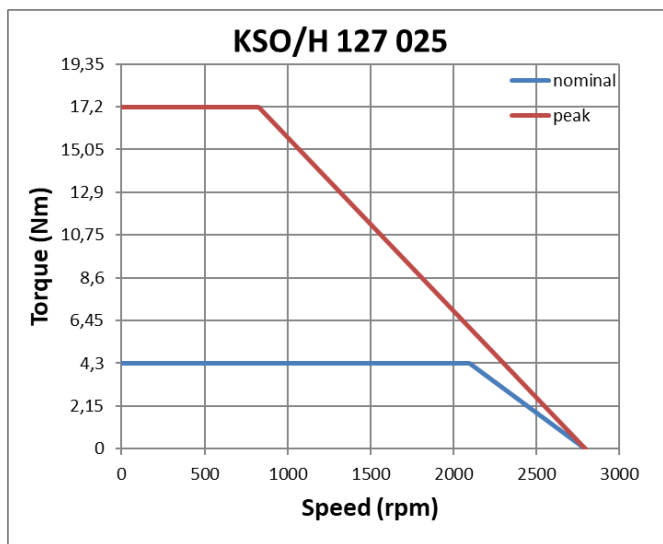
Societatea pe acțiuni Icpe

Splaiul Unirii 313, 030138-București
Tel: 021 589 3300 | Fax: 021 589 3434
e-mail: office@icpe.ro

RO 423140 | J40/21438/92
R092 CARP 0452 P006 5844 R001
Patria Bank - Sucursala Tineretului



Torque motor KSO/H 127 - Performances

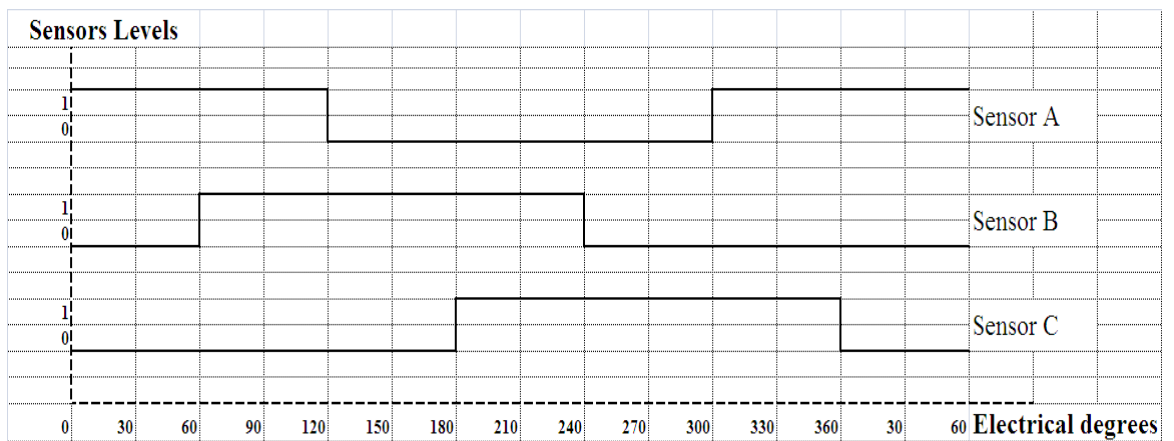
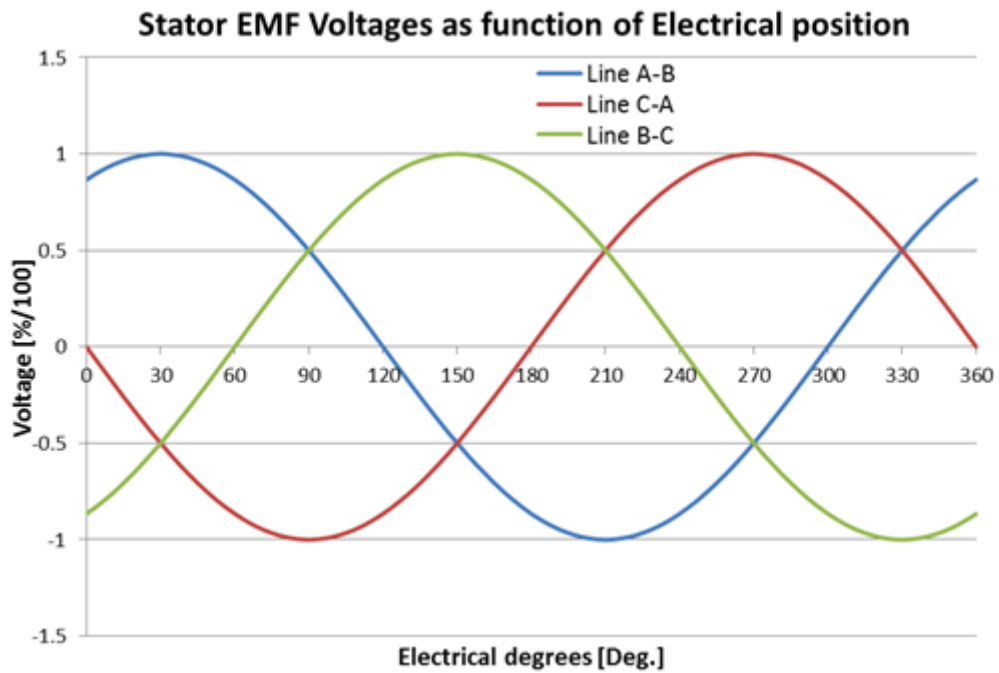


Societatea pe acțiuni Icpe

Splaiul Unirii 313, 030138-București
Tel: 021 589 3300 | Fax: 021 589 3434
e-mail: office@icpe.ro

RO 423140 | J40/21438/92
R092 CARP 0452 P006 5844 R001
Patria Bank - Sucursala Tineretului

Terminals connections and commutation logic



		Motor excitation sequence and hall						
		Definitions are for ClockWise rotation						
Step		1	2	3	4	5	6	1
Stator Leads	A (RED)	+	+	-	-	-	-	+
	B (WHT)	-	+	+	-	-	-	-
	C (BLK)	-	-	+	+	+	+	-
Hall Sensors Leads	A (BRN)	1	1	0	0	0	1	1
	B (ORG)	0	1	1	1	0	0	0
	C (VEL)	0	0	0	1	1	1	0
Hall sensors Supply Leads	+ BLUE	+	+	+	+	+	+	+
	- GREEN	-	-	-	-	-	-	-