SKA ROTARY TABLE DIRECT DRIVE SERVOMOTORS

MOTORS

MOTOR POWER COMPANY

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All technical data in this catalog
may be changed without prior notice.

SEE IT BEFORE IT HAPPENS

MOTOR POWER COMPANY

WELCOME TO MOTOR POWER COMPANY

Directly driven Motor Power Company rotary tables provide versatile applications due to their backlash free structure. If necessary a compact servo system with high torque and high accuracy, SKA Rotary Table is the perfect answer for the ideal application. This complete series is provided with or without its perfectly coupling amplifier. Motor Power Company proposes not just components but complete motion solutions, combining direct drive motors with a series of drives with high flexibility and exceptional capabilities in a wide range of applications.

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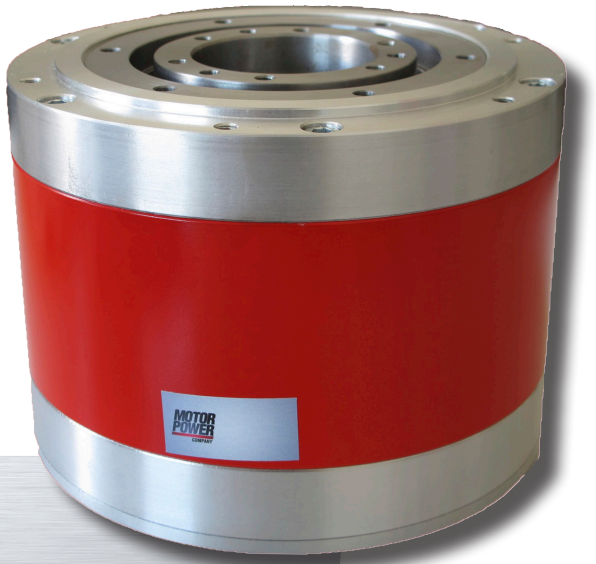
DIRECT DRIVE TECHNOLOGY



GEARLESS POWERFUL SOLUTION WITH HIGHER POSITION ACCURACY

- Instantaneous peak torque till 2400 Nm
- A high-speed operation up to 900 rpm
- Rated motor speed up to 600 rpm
- High-precision indexing with over 16,000,000 cpr, after interpulation
- Absolute accuracy till ±1 arc sec
- No backlash for a high-precision, high-speed operation with shorter settling time
- Improved positioning accuracy
- Uncomplicated and trouble-free usability drives
- Perfect matching between motor and drives with different network communication
- Analog encoder for increasing the final resolution
- Absolute encoder for the purest positional information
- Parameters to change: speed control, torque or positioning control

DIRECT DRIVE SYSTEM TECHNICAL IMPROVEMENTS

- Simplified machine structure, adjustement and maintenance
- Direct connection to load increases torsional stiffness
- Low noise level
- No maintenance for lubrication, ideal for cleaning room applications
- Compact design for reduced space requirement
- Easy wiring and piping using the motor's hollow shaft
- No limits due to backlash, friction or inertia
- SKA Rotary Table motor peak torque can provide 800% of continuous torque
- Reduction and control of energy costs
- Energy efficiency

APPLICATIONS

SKA Rotary Table is suitable for a wide variety of applications.

Semiconductor manufacturing

- Integrated circuit inspection
- Liquid crystal screen manufacture
- Electronic parts assembly
- Manipulators
- Electronic parts assembly
- LED die bonding machine

Packaging machinery

- Part unloaders
- Actuators
- Rotary tables
- Material handling
- Capping machines
- Labelling processes

Converting equipment

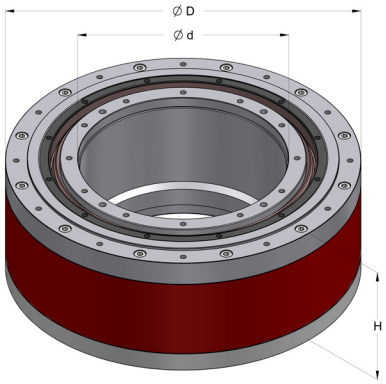
- Print registration stands

Alternative energy

- Solar energy
- Wind energy

SKA ROTARY TABLE DIRECT DRIVE SERVOMOTORS

PRODUCT LINEUP



	STALL TORQUE (Nm)	PEAK TORQUE (Nm)	RATED SPEED (Rpm)	POLES (nr)	INERTIA (kg cm^2)	WEIGHT (kg)	EXTERNAL DIAMETER D (mm)	HOLE DIAMETER d (mm)	HEIGHT H (mm)	RATED VOLTAGE (Vac)	DRIVE TYPE
SKA RT 148.30 19	8	35	400	14	68,5	15,3	179	60	127,5	230	FPRO 003 2 A
SKA RT 148.60 19	14	68	400	14	91,8	18,1	179	60	157,5	230	FPRO 006 2 A
SKA RT 148.90 19	20	103	400	14	114,2	22	179	60	187,5	230	FPRO 010 2 A
SKA RT 148.120 50	26	141	400	14	137,1	26,1	179	60	217,5	230	FPRO 010 2 A
SKA RT 245.30 42	41	128	350	28	542	42,9	290	135	136,5	400	FPRO 012 4 D
SKA RT 245.60 51	70	241	350	28	651	55,4	290	135	166,5	400	FPRO 012 4 D
SKA RT 245.90 51	93	330	350	28	777	67,8	290	135	196,5	400	FPRO 024 4 D
SKA RT 245.120 52	115	458	350	28	904	80,3	290	135	226,5	400	FPRO 024 4 D
SKA RT 245.120 65	115	458	350	28	904	80,3	290	135	226,5	400	FPRO 012 4 D
SKA RT 335.30 51	100	290	150	42	2847	73,1	390	190	138	400	FPRO 024 4 D
SKA RT 335.30 65	100	290	150	42	2847	73,1	390	190	138	400	FPRO 006 4 D
SKA RT 335.60 65	164	585	150	42	3629	94,1	390	190	168	400	FPRO 024 4 D
SKA RT 335.90 65	220	800	150	42	4411	115	390	190	198	400	FPRO 024 4 D
SKA RT 335.120 65	270	975	150	42	5193	136,1	390	190	228	400	FPRO 024 4 D
SKA RT 335.150 54	320	1200	150	42	5975	157	390	190	258	400	FPRO 012 4 D
SKA RT 335.150 65	320	1200	150	42	5975	157	390	190	258	400	FPRO 024 4 D
SKA RT 430.30 56	210	458	100	56	8698	105,7	490	290	150	400	FPRO 012 4 D
SKA RT 430.60 52	340	840	100	56	10637	133,7	490	290	180	400	FPRO 024 4 D
SKA RT 430.60 56	340	840	100	56	10637	133,7	490	290	180	400	FPRO 024 4 D
SKA RT 430.90 55	450	1200	70	56	12577	161,1	490	290	210	400	FPRO 006 4 D
SKA RT 430.90 56	450	1200	100	56	12577	161,1	490	290	210	400	FPRO 024 4 D
SKA RT 430.120 53	560	1600	100	56	14516	188,7	490	290	240	400	FPRO 024 4 D
SKA RT 430.150 66	660	1900	100	56	16455	215,7	490	290	270	400	FPRO 024 4 D
SKA RT 430.180 54	760	2400	100	56	18394	243,3	490	290	300	400	FPRO 024 4 D

MOTOR TYPE DESIGNATION

SKA RT	148	30	19	10	00	19
Servomotor Name	Model	Size	Winding code	Feedback	Degree of protection	Connectors
	1	2	3	4	5	6

1 Choose SKA ROTARY TABLE model among — 148 - 245 - 335 - 430

2 Choose SKA ROTARY TABLE size among

30-60-90-120 for model 148
30-60-90-120 for model 245
30-60-90-120-150 for model 335
30-60-90-120-150 -180 for model 430

3

Winding Code	19	42	50	51	52	53	54	55	56	65	66
Motor											
SKA RT 148.30	●	-		-	-	-	-	-	-	-	-
SKA RT 148.60	●	-		-	-	-	-	-	-	-	-
SKA RT 148.90	●	-		-	-	-	-	-	-	-	-
SKA RT 148.120	-	-	●	-	-	-	-	-	-	-	-
SKA RT 245.30	-	●	-	-	-	-	-	-	-	-	-
SKA RT 245.60	-	-	-	●	-	-	-	-	-	-	-
SKA RT 245.90	-	-	-	●	-	-	-	-	-	-	-
SKA RT 245.120	-	-	-	-	●	-	-	-	-	●	-
SKA RT 335.30	-	-	-	●	-	-	-	-	-	●	-
SKA RT 335.60	-	-	-	-	-	-	-	-	-	●	-
SKA RT 335.90	-	-	-	-	-	-	-	-	-	●	-
SKA RT 335.120	-	-	-	-	-	-	-	-	-	●	-
SKA RT 335.150	-	-	-	-	-	-	●	-	-	●	-
SKA RT 430.30	-	-	-	-	-	-	-	-	●	-	-
SKA RT 430.60	-	-	-	-	●	-	-	-	●	-	-
SKA RT 430.90	-	-	-	-	-	-	-	●	●	-	-
SKA RT 430.120	-	-	-	-	-	●	-	-	-	-	-
SKA RT 430.150	-	-	-	-	-	-	-	-	-	-	●
SKA RT 430.180	-	-	-	-	-	-	●	-	-	-	-

● **available** - **not available**

4 Choose feedback for SKA ROTARY TABLE among

10- for incremental SinCos encoder
30- for absolute EnDat encoder

5 Choose degree of protection for SKA ROTARY TABLE among

00- for IP 42 Standard version
Flanges not sealed

01- for IP65 top flange (view A)

6 Choose connectors for SKA ROTARY TABLE

19- M23 connectors - PT 1000 on power connector
20- M23 connectors - PT 1000 on signal connector

FLEXI PRO DRIVE TYPE

FPRO	006	2A	AP	1	XXX
Drive Name	Rating	AC and Controller input Power Supply	Interface Options	Analog Input	Special Specification
	1	2	3	4	5

1

Rating		
	120/240 VAC	
	Cont. [A rms]	Peak [A rms]
1D5	1.5	4.5
003	3	9
4D5	4,5	18
006	6	18
008	8	28
010	10	28
013	13	28
020	20	48
024	24	48

Rating		
	400/480 VAC	
	Cont. [A rms]	Peak [A rms]
003	3	9
006	6	18
012	12	24
024	24	72
030	30	90

2

AC and Controller Input Power Supply	
2A	Input Single Phase 120L - L VAC +10% -15% 50/60Hz
	Input Single Phase 240L - L VAC +10% -15% 50/60Hz
	Input Three Phase 120 - 240L - L VAC +10% -15% 50/60Hz
4D	AC Input Power Supply:
	- Input Three Phase 400L - L VAC +10% -15% 50/60Hz
	- Input Three Phase 480L - L VAC +10% -15% 50/60Hz
	24VDC input for control board power supply

3

Interface Options

AF - Analog Voltage/Pulse Train Ref & CANopen® & USB & RS 232
EC - EtherCAT

4

Analog Input

1 - One Analog input, 16 bit
2 - Two Analog inputs, 14 bit each

MOTOR POWER COMPANY

SKA ROTARY TABLE

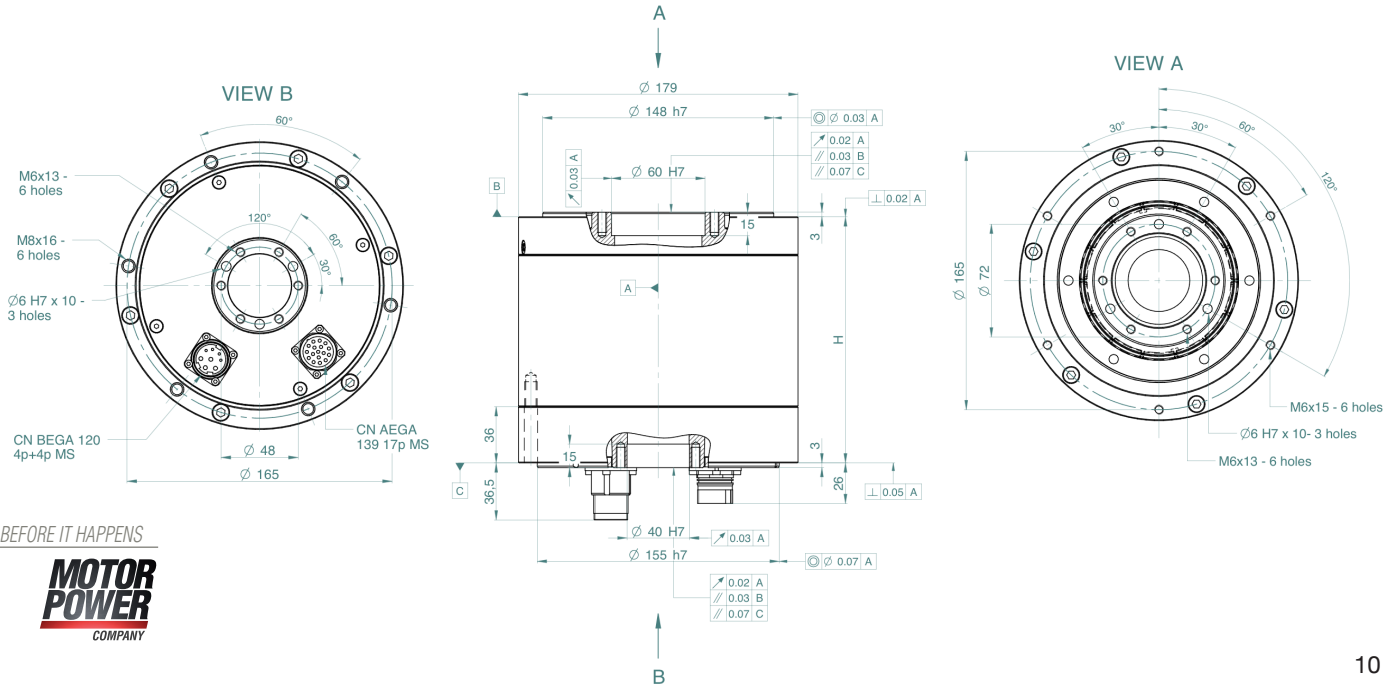
DIRECT DRIVE SERVOMOTORS RATINGS AND SPECIFICATIONS

SKA RT 148 RATINGS AND SPECIFICATIONS

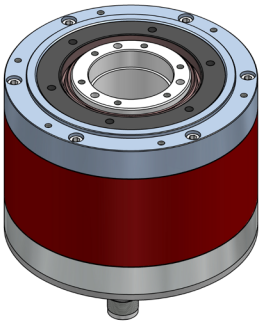
TIME RATING	Continuous	AMBIENT TEMPERATURE	0 to 40 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	20 to 80% RH (non condensing)
ENCLOSURE	Totally enclosed, self-cooled	POLES	14
ENCLOSURE RATING	IP 42 (standard)	THERMAL PROTECTION	PT 1000

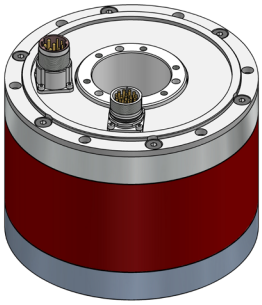
		SKA RT 148.30 19	SKA RT 148.60 19	SKA RT 148.90 19	SKA RT 148.120 50
Stall torque	Nm	8	14	20	26
Peak torque	Nm	35	68	103	141
Rated torque	Nm	6,8	11,6	16,3	21
Rated voltage	Vac	230	230	230	230
Stall current	Arms	2,02	3,53	5,04	4,62
Peak current	Arms	10,80	20,0	32,0	31,0
Rated current	Arms	1,76	3,01	4,23	3,85
Rated speed	rpm	400	400	400	400
Maximum speed	rpm	600	600	600	600
Torque constant ± 5%	Nm/Arms	3,97	3,97	3,97	5,62
Voltage constant ± 5%	Vrms/krpm	240	240	240	340
Phase/phase resistance ± 5%	Ohm	6,40	2,90	1,88	2,80
Phase/phase inductance	mH	20	12,30	9,50	14,80
Electrical time constant	msec	3,1	4,2	5,1	5,3
Thermal resistance	°C/W	1,75	1,26	0,95	0,76
Mechanical time constant	ms	4,17	2,52	2,04	1,82
Max. theoretical acceleration	rad/s²	5109	7440	9019	10284
Rotor inertia	Kg cm²	68,5	91,4	114,2	137,1
Motor height H	mm	127,5	157,5	187,5	217,5
Motor weight	Kg	15,3	18,1	22	26,1
Radial load	N(@30rpm)	4680	4680	4680	4680
Axial load	N(@60rpm)	4370	4370	4370	4370
Tilt moment	N(@15rpm)	150	150	150	150

Values and torque/speed specifications here detailed are obtained with the SKA Rotary Table coupled to FLEXI PRO drive, with a coil temperature of 100°C. All others data are with a coil temperature of 25°C. Output continuous rating with 370x370x10mm heat sink flange coupling and with top flange not sealed. Tilt moment, radial and axial load must be understood as separately applied on the motors. For different loads configuration, please, contact us.

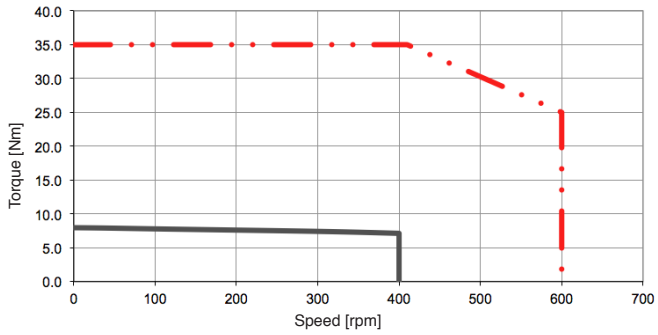


SKA RT 148 TORQUE AND SPEED CHARTS

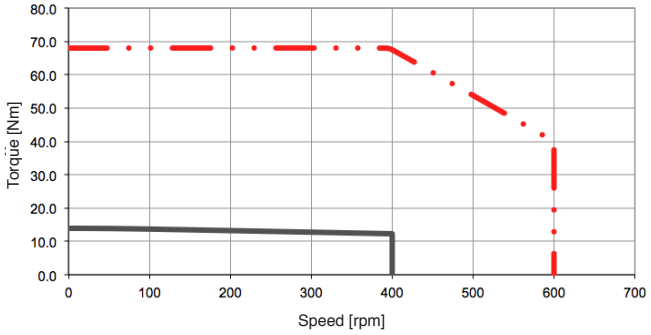




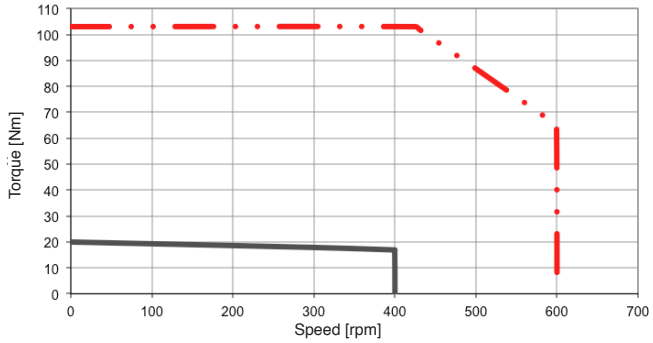
SKA RT 148.30 19



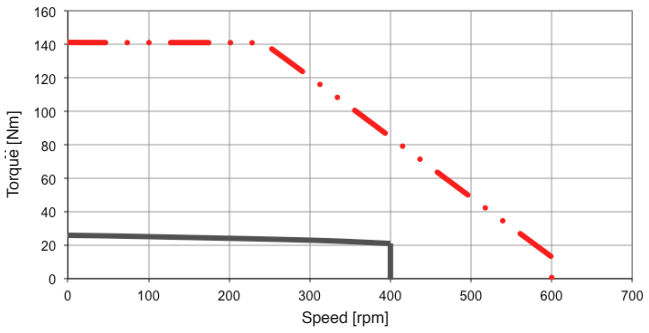
SKA RT 148.60 19



SKA RT 148.90 19



SKA RT 148.120 50



CONTINUOUS DUTY @ RATED VOLTAGE

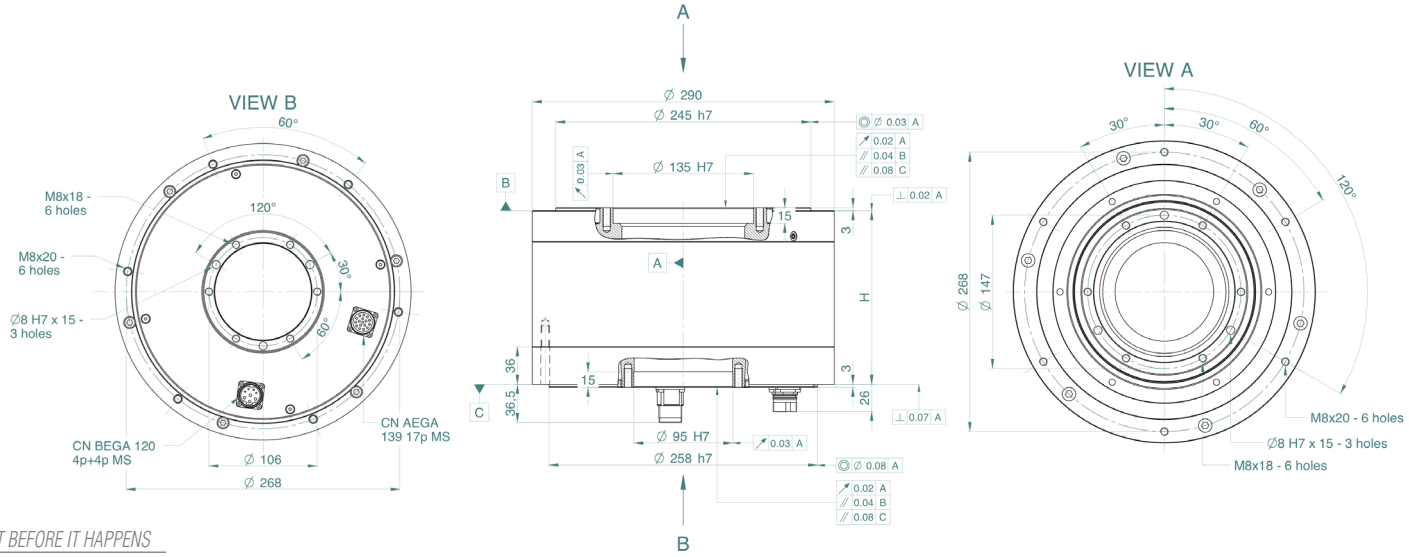
INTERMITTENT DUTY @ RATED VOLTAGE

SKA RT 245 RATINGS AND SPECIFICATIONS

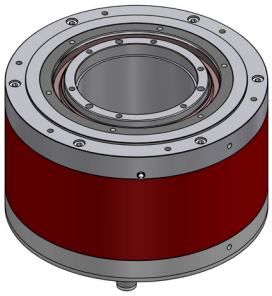
TIME RATING	Continuous	AMBIENT TEMPERATURE	0 to 40 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	20 to 80% RH (non condensing)
ENCLOSURE	Totally enclosed, self-cooled	POLES	28
ENCLOSURE RATING	IP 42 (standard)	THERMAL PROTECTION	PT 1000

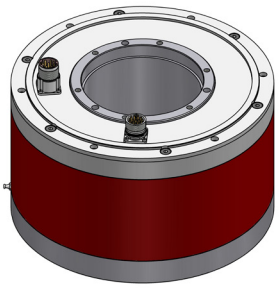
		SKA RT 245.30 42	SKA RT 245.60 51	SKA RT 245.90 51	SKA RT 245.120 52	SKA RT 245.120 65
Stall torque	Nm	41	70	93	115	115
Peak torque	Nm	128	241	330	458	458
Rated torque	Nm	36	57	76	90	90
Rated voltage	Vac	400	400	400	400	400
Stall current	Arms	6,20	7,42	9,86	7,32	6,05
Peak current	Arms	22,90	30,30	40,0	34,50	28,50
Rated current	Arms	5,60	6,23	8,30	5,90	4,87
Rated speed	rpm	350	350	350	300	290
Maximum speed	rpm	500	500	500	380	348
Torque constant ± 5%	Nm/Arms	6,62	9,43	9,43	15,72	19,02
Voltage constant ± 5%	Vrms/krpm	400	570	570	950	1150
Phase/phase resistance ± 5%	Ohm	2,56	2,38	1,59	3,23	4,74
Phase/phase inductance	mH	15,80	20	15	31	45,43
Electrical time constant	msec	6,2	8,4	9,5	9,6	9,6
Thermal resistance	°C/W	0,46	0,35	0,29	0,26	0,26
Mechanical time constant	ms	4,76	2,61	2,08	1,78	1,78
Max. theoretical acceleration	rad/s²	2362	3702	4247	5066	5066
Rotor inertia	Kg cm²	542	651	777	904	904
Motor height H	mm	136,5	166,5	196,5	226,5	226,5
Motor weight	Kg	42,9	55,4	67,8	80,3	80,3
Radial load	N(@30rpm)	6050	6050	6050	6050	6050
Axial load	N(@60rpm)	5460	5460	5460	5460	5460
Tilt moment	Nm(@15rpm)	300	300	300	300	300

Values and torque/speed specifications here detailed are obtained with the SKA Rotary Table coupled to FLEXI PRO drive, with a coil temperature of 100°C. All others data are with a coil temperature of 25°C. Output continuous rating with 610x610x20mm heat sink flange coupling and with top flange not sealed. Tilt moment, radial and axial load must be understood as separately applied on the motors. For different loads configuration, please, contact us.

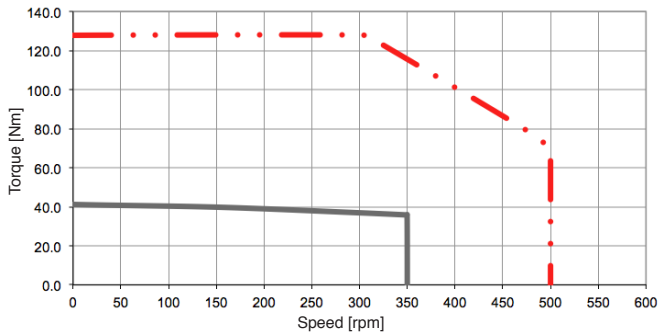


SKA RT 245 TORQUE AND SPEED CHARTS

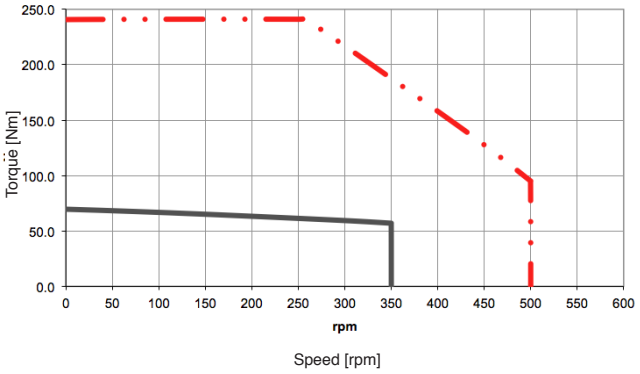




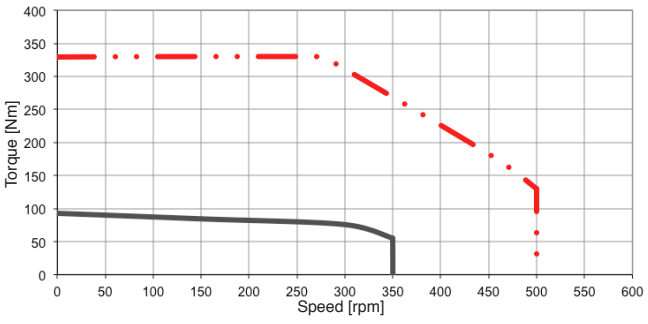
SKA RT 245.30 42



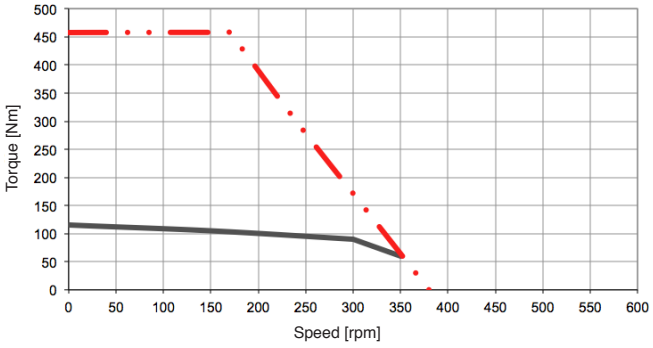
SKA RT 245.60 51



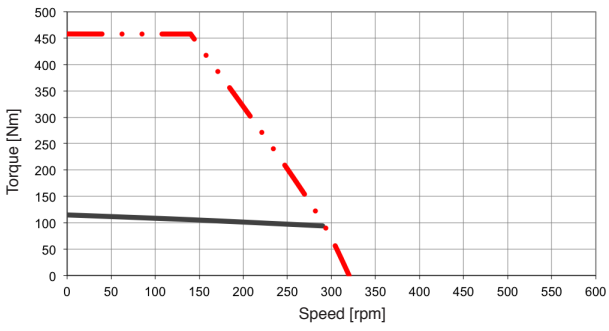
SKA RT 245.90 51



SKA RT 245.120 52



SKA RT 245.120 65



CONTINUOUS DUTY @ RATED VOLTAGE

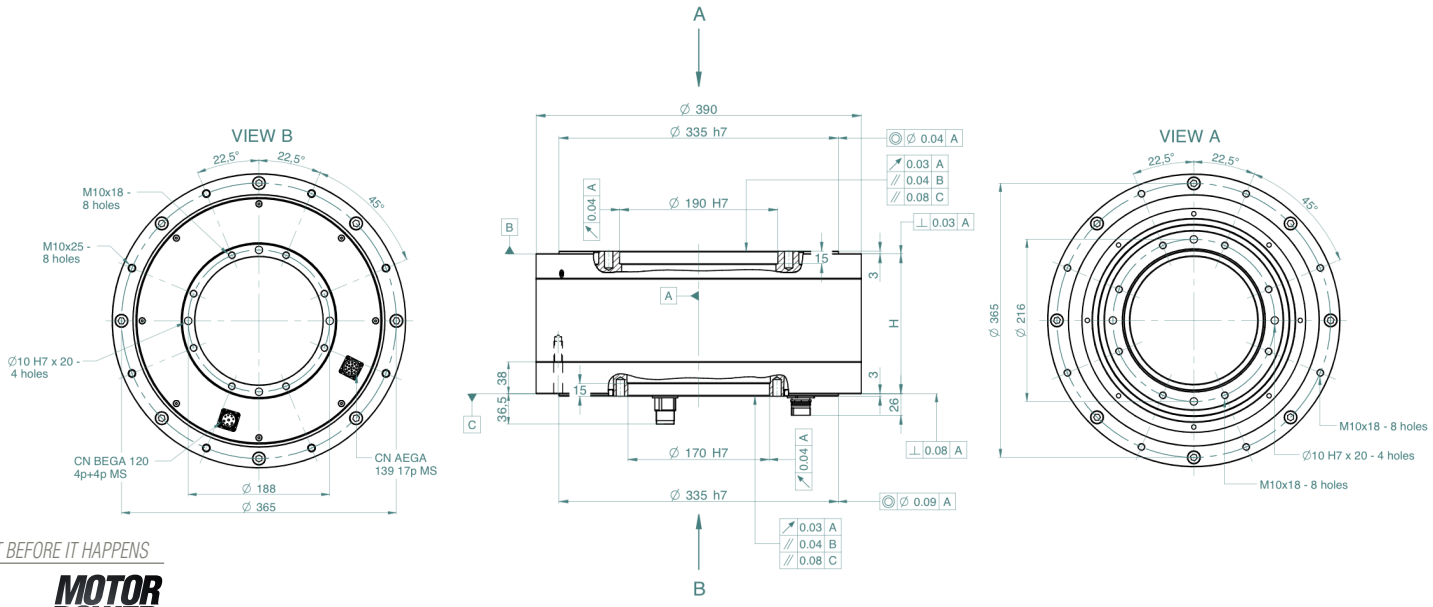
INTERMITTENT DUTY @ RATED VOLTAGE

SKA RT 335 RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	0 to 40 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	20 to 80% RH (non condensing)
ENCLOSURE	Totally enclosed, self-cooled	POLES	42
ENCLOSURE RATING	IP 42 (standard)	THERMAL PROTECTION	PT 1000

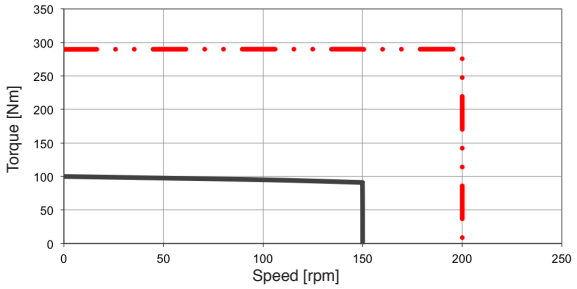
		SKA RT 335.30 51	SKA RT 335.30 65	SKA RT 335.60 65	SKA RT 335.90 65	SKA RT 335.120 65	SKA RT 335.150 54	SKA RT 335.150 65
Stall torque	Nm	100	100	164	220	270	320	320
Peak torque	Nm	290	290	535	800	975	1200	1200
Rated torque	Nm	87	87	136	167	206	232	232
Rated voltage	Vac	400	400	400	400	400	400	400
Stall current	Arms	10,61	5,26	8,62	11,56	14,19	6,14	16,82
Peak current	Arms	36,70	18,19	33,04	50,06	57,82	25,56	70
Rated current	Arms	9,50	4,71	7,36	9,04	11,15	4,59	12,56
Rated speed	rpm	150	150	150	150	150	110	150
Maximum speed	rpm	200	200	200	200	200	127	200
Torque constant ± 5%	Nm/Arms	9,43	19,02	19,02	19,02	19,02	52,11	19,02
Voltage constant ± 5%	Vrms/krpm	570	1150	1150	1150	1150	3150	1150
Phase/phase resistance ±5%	Ohm	1,60	6,50	2,96	2,07	1,44	8,10	1,08
Phase/phase inductance	mH	10,66	43,39	27,16	19,71	15,77	90,03	12
Electrical time constant	msec	6,7	6,7	9,2	9,5	11,0	11,1	11,1
Thermal resistance	°C/W	0,25	0,25	0,21	0,16	0,16	0,15	0,15
Mechanical time constant	ms	7,68	7,68	4,45	3,78	3,10	2,67	2,67
Max. theoretical acceleration	rad/s^2	1019	1019	1474	1814	1878	2008	2008
Rotor inertia	Kg cm^2	2847	2847	3629	4411	5193	5975	5975
Motor height H	mm	138	138	168	198	228	258	258
Motor weight	Kg	73,1	73,1	94,1	115	136	157	157
Radial load	N(@30rpm)	6900	6900	6900	6900	6900	6900	6900
Axial load	N(@60rpm)	6300	6300	6300	6300	6300	6300	6300
Tilt moment	Nm(@15rpm)	600	600	600	600	600	600	600

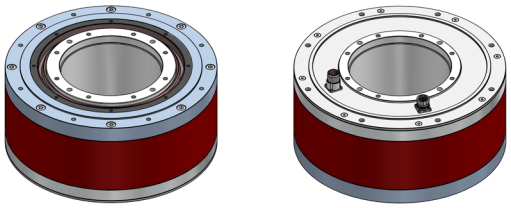
Values and torque/speed specifications here detailed are obtained with the SKA Rotary Table coupled to FLEXI PRO drive, with a coil temperature of 100°C. All others data are with a coil temperature of 25°C. Output continuous rating with 840x840x30mm heat sink flange coupling and with top flange not sealed. Tilt moment, radial and axial load must be understood as separately applied on the motors. For different loads configuration, please, contact us.



SKA RT 335 TORQUE AND SPEED CHARTS

SKA RT 335.30 51

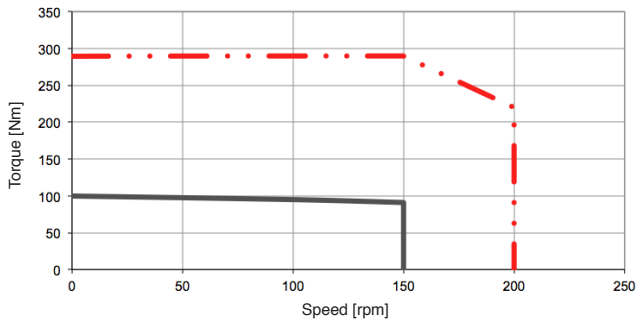




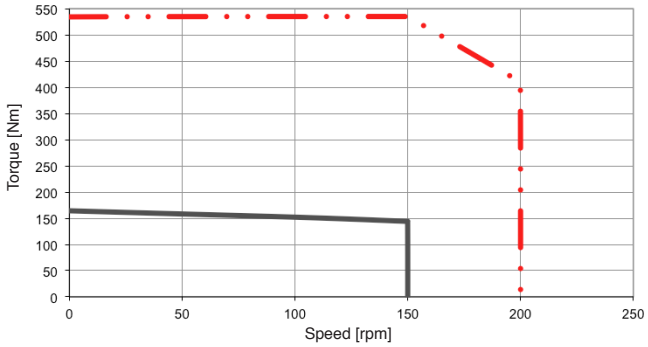
CONTINUOUS DUTY @ RATED VOLTAGE

INTERMITTENT DUTY @ RATED VOLTAGE

SKA RT 335.30 65



SKA RT 335.60 65



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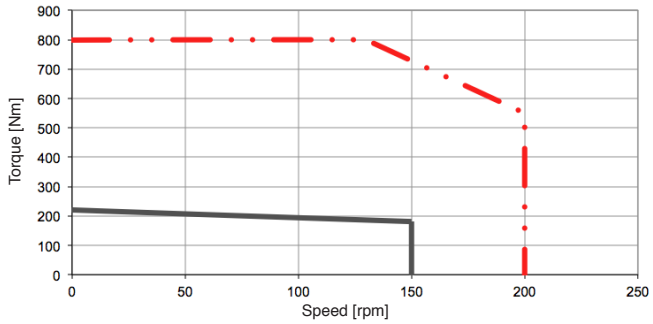

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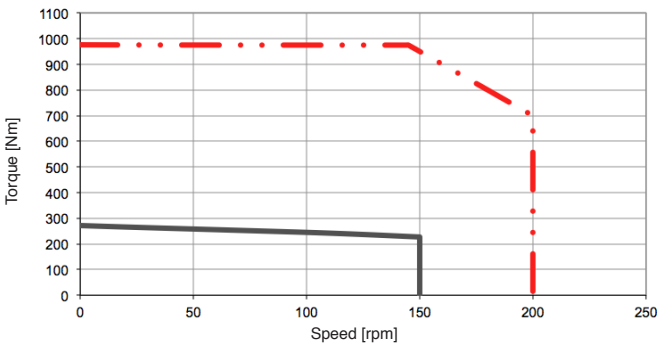
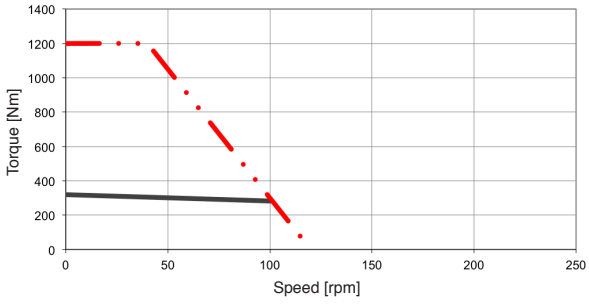
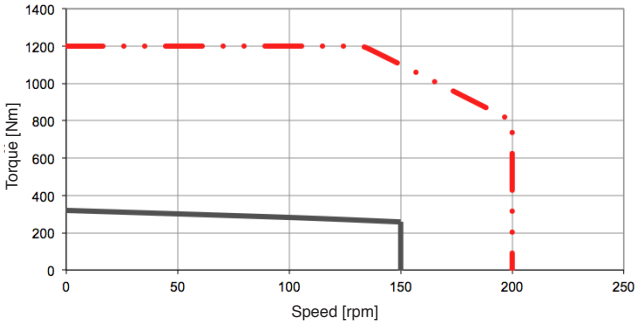


SKA RT 335.150 54



SKA RT 335.150 65

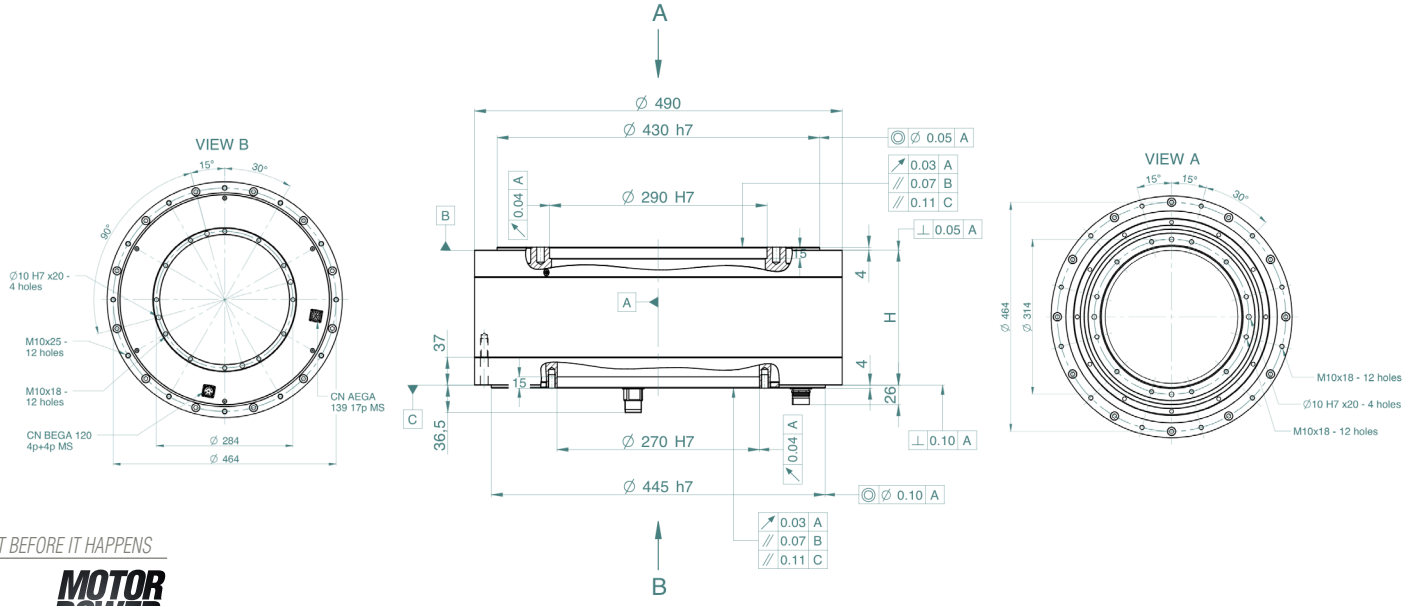


SKA RT 430 RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	0 to 40 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	20 to 80% RH (non condensing)
ENCLOSURE	Totally enclosed, self-cooled	POLES	56
ENCLOSURE RATING	IP 42 (standard)	THERMAL PROTECTION	PT 1000

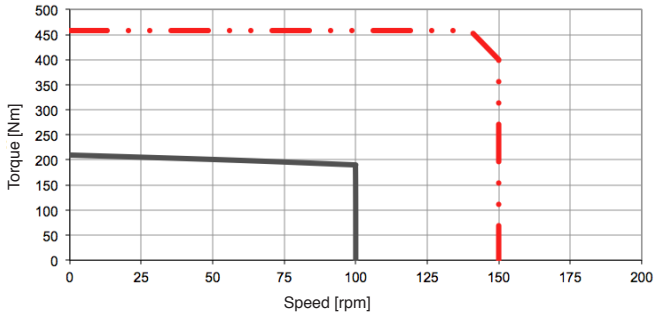
		SKA RT 430.30 56	SKA RT 430.60 52	SKA RT 430.60 56	SKA RT 430.90 55	SKA RT 430.90 56	SKA RT 430.120 53	SKA RT 430.150 66	SKA RT 430.180 54
Stall torque	Nm	210	340	340	450	450	560	660	760
Peak torque	Nm	458	840	840	1200	1200	1600	1900	2400
Rated torque	Nm	175	268	268	332	332	450	520	680
Rated voltage	Vac	400	400	400	400	400	400	400	400
Stall current	Arms	9,07	21,63	14,68	4,77	19,43	17,82	17,73	14,58
Peak current	Arms	27	70	47,5	17,19	70	70	70	63,5
Rated current	Arms	7,78	17,56	11,92	3,63	14,77	14,75	14,39	13,44
Rated speed	rpm	100	100	100	60	100	100	100	100
Maximum speed	rpm	150	150	150	70	150	150	150	110
Torque constant ± 5%	Nm/Arms	23,16	15,72	23,16	94,29	23,16	31,43	37,22	52,11
Voltage constant ± 5%	Vrms/krpm	1400	950	1400	5700	1400	1900	2250	3150
Phase/phase resistance ± 5%	Ohm	3,25	0,68	1,47	16,16	0,98	1,37	1,64	2,50
Phase/phase inductance	mH	22,80	6,68	14,50	162	9,80	16	20	32
Electrical time constant	msec	7,0	9,9	9,9	10,0	10,1	11,7	12,2	12,8
Thermal resistance	°C/W	0,17	0,14	0,14	0,12	0,12	0,10	0,09	0,09
Mechanical time constant	ms	7,91	4,37	4,37	3,43	3,43	3,01	2,92	2,54
Max. theoretical acceleration	rad/s²	527	790	790	954	954	1102	1155	1305
Rotor inertia	Kg cm²	8698	10637	10637	12577	12577	14516	16455	18394
Motor height H	mm	150	180	180	210	210	240	270	300
Motor weight	kg	105,7	133,7	133,7	161,1	161,1	188,7	215,7	243,3
Radial load	N(@30rpm)	7700	7700	7700	7700	7700	7700	7700	7700
Axial load	N(@60rpm)	6700	6700	6700	6700	6700	6700	6700	6700
Tilt moment	Nm(@15rpm)	800	800	800	800	800	800	800	800

Values and torque/speed specifications here detailed are obtained with the SKA Rotary Table coupled to FLEXI PRO drive, with a coil temperature of 100°C. All others data are for coil a temperature of 25°C. Output continuous rating with 1000x1000x30mm heat sink flange coupling with top flange not sealed. Tilt moment, radial and axial load must be understood as separately applied on the motors. For different loads configuration, please, contact us.

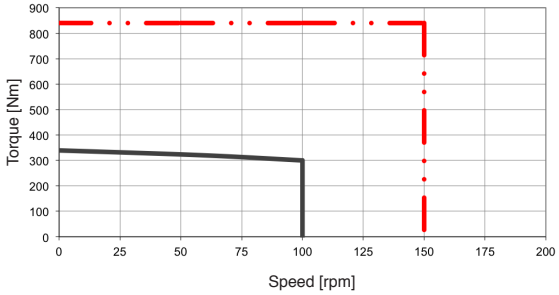


SKA RT 430 TORQUE AND SPEED CHARTS

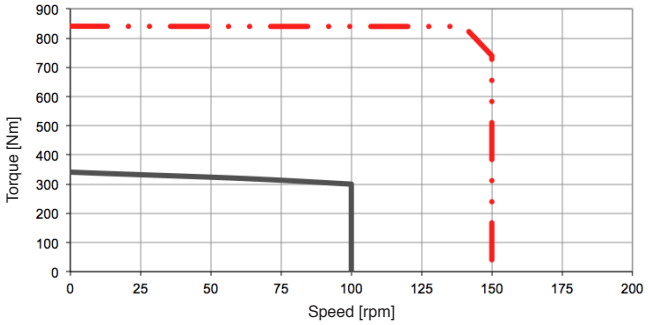
SKA RT 430.30 56



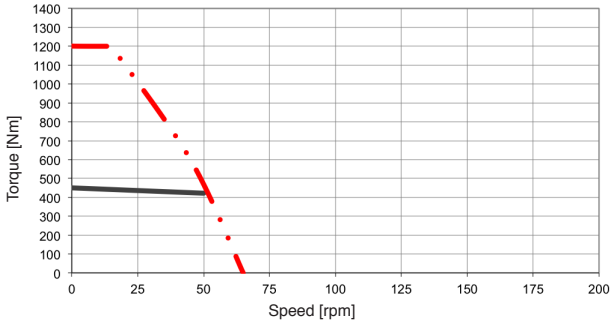
SKA RT 430.60 52



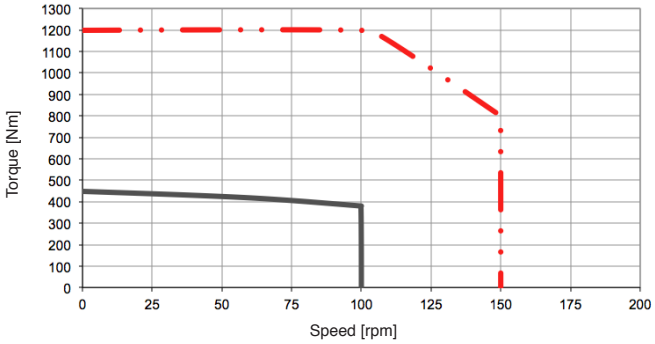
SKA RT 430.60 56



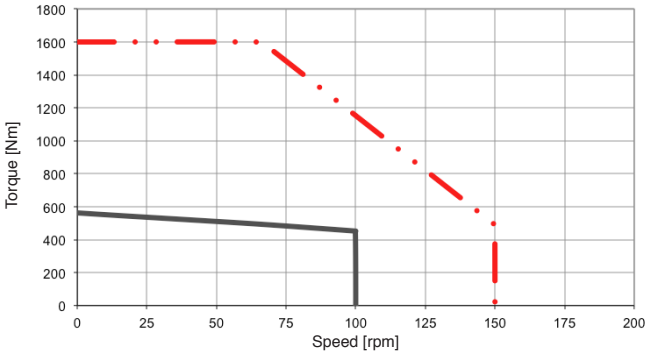
SKA RT 430.90 55



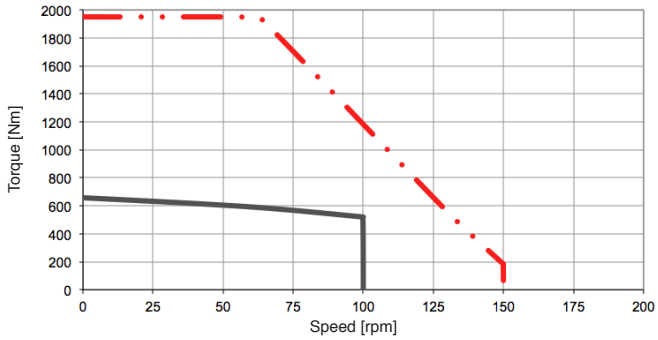
SKA RT 430.90 56



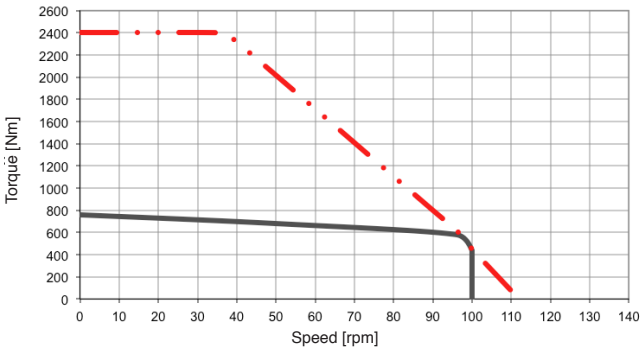
SKA RT 430.120 53



SKA RT 430.150 66



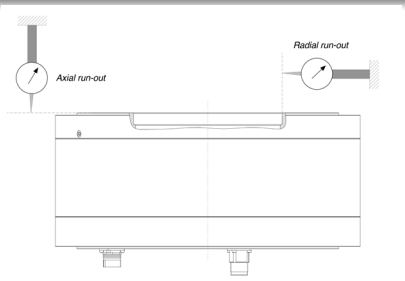
SKA RT 430.180 54



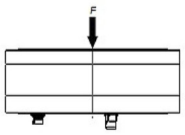
CONTINUOUS DUTY @ RATED VOLTAGE

INTERMITTENT DUTY @ RATED VOLTAGE

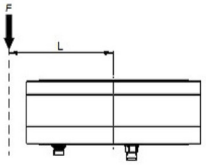
RUNOUT AND LOAD



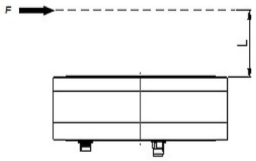
		SKA RT 148	SKA RT 245	SKA RT 335	SKA RT 430
Axial run-out	mm	0,02	0,02	0,03	0,03
Radial run-out	mm	0,03	0,03	0,04	0,04



Force: F
Radial load: F_r=0
Thrust load: F_a=F
Tilt moment: M=0



Force: F
Radial load: F_r=0
Thrust load: F_a=F
Tilt moment: M=F x L



Force: F
Radial load: F_r=F
Thrust load: F_a=0
Tilt moment: M=F x L

RELUBRICATION MAINTENANCE

The relubrication interval depends on the environment and the type of application. As standard the SKA RT bearing should be relubricated every 5000 hours of operation.
The grease quantity (grams) is calculated by this formula:
3720 * X

Where X depending in which time the bearing reach 5000h of operation.
X weeks = 0.002 X months = 0.003 X annual = 0.004 X two-year or three-year = 0.005
In case of 8 hours of operation per day, we have: 3720 * 0.005 = 19 grams

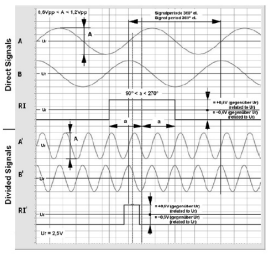
Relubrication must be applied using one of the two M6 radial holes on the front flange. The holes are closed by grub screw.
The operator must remove the grain, and apply a M6 Grease nipple (not provided). Once the grease is applied, the grease nipple must be removed, and the hole must be close again with M6 grub screw.

FEEDBACK SPECIFICATIONS

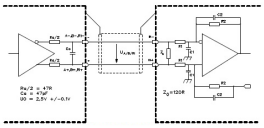
INCREMENTAL ENCODER

Motor size		148	245	335	430
Nominal voltage	Vdc	4 to 7			
Nominal current @5Vdc (without load)	mA	≤ 220			
Maximum frequency	kHz	400			
Output signal		Sine 1 Vpp			
Zero impulse	pulse/turn	1			
N° of periods per revolution	periods/rev	8192	16384	23040	32768
Accuracy	arc sec	11	5,5	4	3
Resolution	cpr	Function of interpolator			

Output signals sine, 1Vpp



Recommended configuration of the subsequent electronics



A, B, RI: direct signal output without dividing factor

A', B', RI': divided signal output

ABSOLUTE EnDat ENCODER

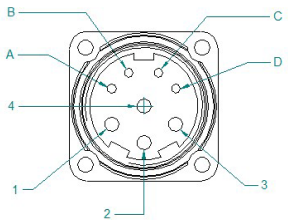
Motor size		148	245	335	430
Nominal voltage	Vdc	3,6 to 14			
Nominal current @5Vdc	mA	300			
Maximum frequency	MHz	16			
Absolute interface		Endat 2.2 22			
Number of bits (singleturn)		22	23	23	24
Absolute resolution per revolution	increments/rev	4.194.304	8.388.608	8.388.608	16.777.216
Accuracy	arc sec	3	1,5	1	1

WIRING MOTOR CONNECTIONS
for incremental encoder

CONNECTORS TYPE 19

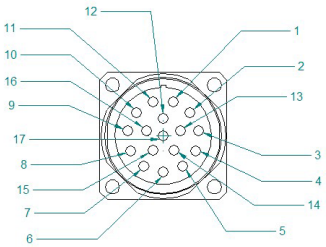
POWER CONNECTOR

PIN	FUNCTION
1	Phase U
2	PE
3	Phase W
4	Phase V
A	N.C.
B	N.C.
C	PT 1000 (+)
D	PT 1000 (-)



FEEDBACK CONNECTOR

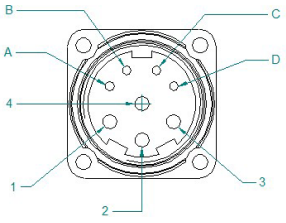
PIN	FEEDBACK FUNCTION
1	N.C.
2	N.C.
3	0 Vdc
4	+ 5Vdc
5	Sin/A
6	Sin A
7	Ref R -
8	Ref R +
9	N.C.
10	Shield
11	Cos/B
12	Cos B
13	+5Vdc **Sense
14	0Vdc **Sense
15	N.C.
16	Reserved: do not connect
17	Reserved: do not connect



CONNECTORS TYPE 20

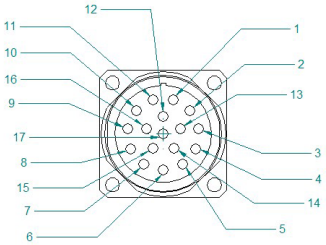
POWER CONNECTOR

PIN	FUNCTION
1	Phase U
2	PE
3	Phase W
4	Phase V
A	N.C.
B	N.C.
C	N.C.
D	N.C.



FEEDBACK CONNECTOR

PIN	FEEDBACK FUNCTION
1	PT 1000 (+)
2	PT 1000 (-)
3	0 Vdc
4	+ 5Vdc
5	Sin/A
6	Sin A
7	Ref R -
8	Ref R +
9	N.C.
10	Shield
11	Cos/B
12	Cos B
13	+5Vdc **Sense
14	0Vdc **Sense
15	N.C.
16	Reserved: do not connect
17	Reserved: do not connect

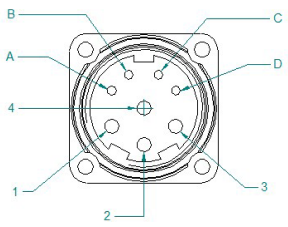


WIRING MOTOR CONNECTIONS
for absolute encoder

CONNECTORS TYPE 19

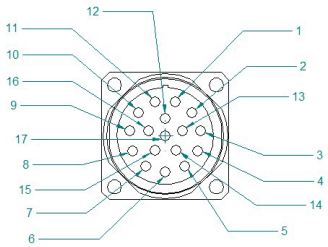
POWER CONNECTOR

PIN	FUNCTION
1	Phase U
2	PE
3	Phase W
4	Phase V
A	N.C.
B	N.C.
C	PT 1000 (+)
D	PT 1000 (-)



FEEDBACK CONNECTOR

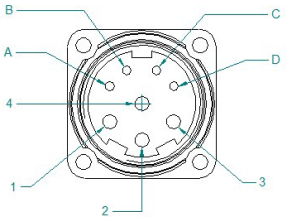
PIN	FEEDBACK FUNCTION
1	+ 5Vdc **Sense
2	N.C.
3	N.C.
4	0Vdc **Sense
5	N.C.
6	N.C.
7	+ 5Vdc
8	Clock +
9	Clock -
10	0Vdc
11	Shield
12	-
13	-
14	Data +
15	-
16	-
17	Data -



CONNECTORS TYPE 20

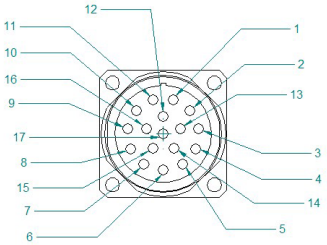
POWER CONNECTOR

PIN	FUNCTION
1	Phase U
2	PE
3	Phase W
4	Phase V
A	N.C.
B	N.C.
C	N.C.
D	N.C.



FEEDBACK CONNECTOR

PIN	FEEDBACK FUNCTION
1	+ 5Vdc **Sense
2	PT 1000 (+)
3	PT 1000 (-)
4	0Vdc **Sense
5	N.C.
6	N.C.
7	+5Vdc
8	Clock +
9	Clock -
10	0Vdc
11	Shield
12	-
13	-
14	Data +
15	-
16	-
17	Data -



CABLES SPECIFICATIONS

SIGNAL CABLES for incremental encoder

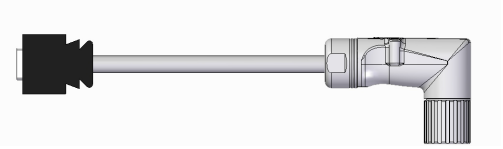
PIN/SUMITOMO 26	FUNCTION	PIN/M23
12	PT 1000 (+)	1
25	PT 1000 (-)	2
24	0 Vdc	3
11	+5 Vdc	4
22	SIN/	5
9	SIN	6
16	Ref R-	7
3	Ref R+	8
-	-	9
26	Shield	10
23	COS/	11
10	COS	12
-	-	13
-	-	14
-	-	15
	-	16
	-	17

All signal cables are for static laying.
For dynamic laying cables, please contact our front office.

Signal SUMITOMO cable for FLEXI PRO

Lenght (mm)	Order code
3000	003108020059
5000	003108020060
10000	003108020061

Signal SUMITOMO cable for FLEXI PRO with M23 90° connector



Lenght (mm)	Order code
3000	003108020069
5000	003108020070
10000	003108020071

COLOUR	FUNCTION	PIN/M23
Grey/Pink	PT 1000 (+)	1
White/Yellow	PT 1000 (-)	2
White	0 Vdc	3
Brown	+5 Vdc	4
Yellow	SIN/	5
Green	SIN	6
Grey	Ref R-	7
Pink	Ref R+	8
White/Green	-	9
Shield1	Shield	10
Black	COS/	11
Violet	COS	12
Red/Blue	-	13
Brown/Green	-	14
Yellow/Brown	-	15
Red	-	16
Blue	-	17

Signal free wire cable for general purpose

Lenght (mm)	Order code
3000	003108010500
5000	003108010502
10000	003108010504

Signal free wire cable for general purpose with M23 90° connector

Lenght (mm)	Order code
3000	003108020072
5000	003108020073
10000	003108020074

CABLES SPECIFICATIONS

SIGNAL CABLES for absolute encoder

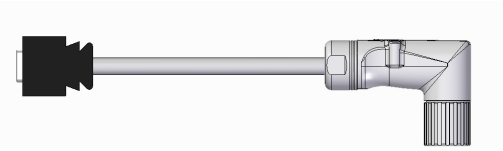
PIN/SUMITOMO 26	FUNCTION	PIN/M23
-	-	1
12	PT 1000 (+)	2
25	PT 1000 (-)	3
-	-	4
-	-	5
-	-	6
11	+5Vdc	7
2	Clock+	8
15	Clock-	9
24	0Vdc	10
26	Shield	11
-	-	12
-	-	13
1	DATA+	14
-	-	15
-	-	16
14	DATA-	17

All signal cables are for static laying.
For dynamic laying cables, please contact our front office.

Signal SUMITOMO cable for FLEXI PRO

Lenght (mm)	Order code
3000	003108007348
5000	003108007350
10000	003108007352

Signal SUMITOMO cable for FLEXI PRO with M23 90° connector



Lenght (mm)	Order code
3000	003108007354
5000	003108007356
10000	003108007358

COLOUR	FUNCTION	PIN/M23
Grey/Pink	-	1
White/Yellow	PT 1000 (+)	2
White	PT 1000 (-)	3
Brown	-	4
Yellow	-	5
Green	-	6
Grey	+5Vdc	7
Pink	Clock+	8
White/Green	Clock-	9
Black	0Vdc	10
Shield1	Shield	11
Violet	-	12
Red/Blue	-	13
Brown/Green	DATA+	14
Yellow/Brown	-	15
Red	-	16
Blue	DATA-	17

Signal free wire cable for general purpose

Lenght (mm)	Order code
3000	003108011128
5000	003108011130
10000	003108011132

Signal free wire cable for general purpose with M23 90° connector

Lenght (mm)	Order code
3000	003108011134
5000	003108011136
10000	003108011138

CABLES SPECIFICATIONS

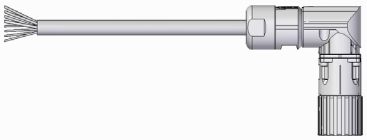
POWER CABLES

FUNCTION	PIN/M23
Phase U	1
Phase V	4
Phase W	3
PE	2
N.C.	A
N.C.	B
PT 1000 (+)	C
PT 1000 (-)	D

Power free wire cable

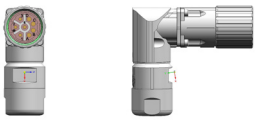
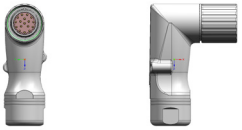
SKA RT 148 - 245		SKA RT 335 - 430	
Lenght (mm)	Order code	Lenght (mm)	Order code
3000	003108007314	3000	003108005080
5000	003108007302	5000	003108005104
10000	003108007316	10000	003108005106

Power free wire cable
with M23 90° connector



SKA RT 148 - 245		SKA RT 335 - 430	
Lenght (mm)	Order code	Lenght (mm)	Order code
3000	003108020075	3000	003108005108
5000	003108020076	5000	003108020014
10000	003108020077	10000	003108005110

FLYING CONNECTORS M23

Straight power connector pin included BSTA108NN00580236000 + 4 PIN 60.003.11 FM/2mm CRIMP.0,35-2,5 SPRING + 4 PIN 60.001.11 FM/1mm CRIMP.0,14-1 SPRING	order code 007117000472	
Straight signal connenctor pin included ASTA014NN00410235000 17p/FM + 17 PIN 60.011.11 FM/1mm CRIMP.0,14-1	order code 007117000462	
90° power connector pin included BSDA108NN00420200000 + 4 PIN 60.003.11 FM/2mm CRIMP.0,35-2,5 SPRING + 4 PIN 60.001.11 FM/1mm CRIMP.0,14-1 SPRING	order code 007117002055	
90° signal connenctor pin included ASDA014NN00480150000 + 17 PIN 60.011.11 FM/1mm CRIMP.0,14-1	order code 007117002056	

FLEXI PRO SERVO DRIVE

The FLEXI PRO series features a high-performance digital servo drive offering advanced functionality, high power density and seamless commissioning in a superior package. The innovative hardware design and software algorithms boast outstanding performance in one of the smallest footprints in the market.

FEATURES

- **MULTIFEEDBACK**
- **DIGITAL I/O: 11 DIGITAL INPUT AND 6 OUTPUT CUSTOMIZABLE WITH SEVERAL BUILT-IN FUNCTIONS AND INTERNAL SCRIPT**
- **CONTROL: HD ADVANCED CONTROL LOOP WITH ADAPTIVE GAINS**
- **SERVO MODES: TORQUE, VELOCITY AND POSITION WITH S-CURVE PROFILE**
- **STO SIL 2**
- **INTEGRATED SUPPORT FOR EXTERNAL BRAKING RESISTOR**
- **COMPLETE MOTOR DATABASE**

BENEFITS

> INTELLIGENT AUTO-TUNING - MINIMIZES POSITION ERROR AND SETTLING TIME TO ALMOST ZERO

Engineering experience and expertise has been implemented in a sophisticated Auto-Tuning function that performs optimal configurations for a difference-making performance

> NEW CURRENT LOOP DESIGN - ACHIEVES AN INDUSTRY-LEADING FREQUENCY RESPONSE OF UP TO 3.0 KHZ

Rapid control loop sample rates and flexible filtering options provide a faster response, and ensure maximum machine accuracy and throughput

> INNOVATIVE ANTI-VIBRATION ALGORITHM - ELIMINATES MECHANICAL RESONANCE

An active-non-linear algorithm eliminates vibration in highly flexible resonant systems. Commissioning is easy since only few gain parameters are required

INTERFACE

- **USB WITH DAISY CHAIN CAPABILITY**
- **PULSE & DIRECTION**
- **ANALOG VELOCITY AND TORQUE COMMAND ± 10V**

CANopen

EtherCAT

PROFINET

FLEXIBLE AND COMPREHENSIVE

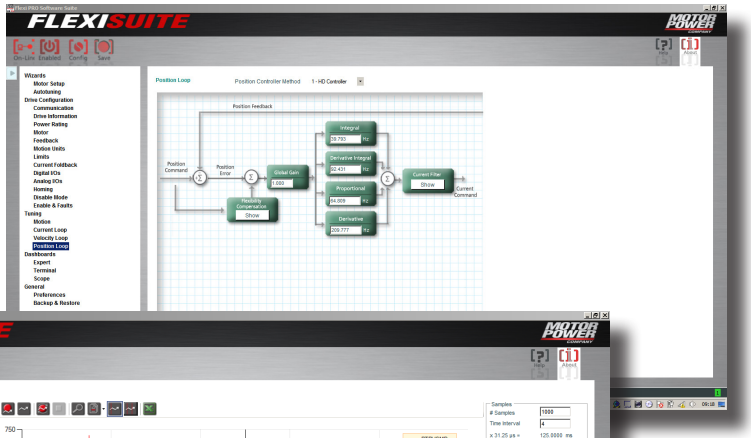
PRODUCT DATA

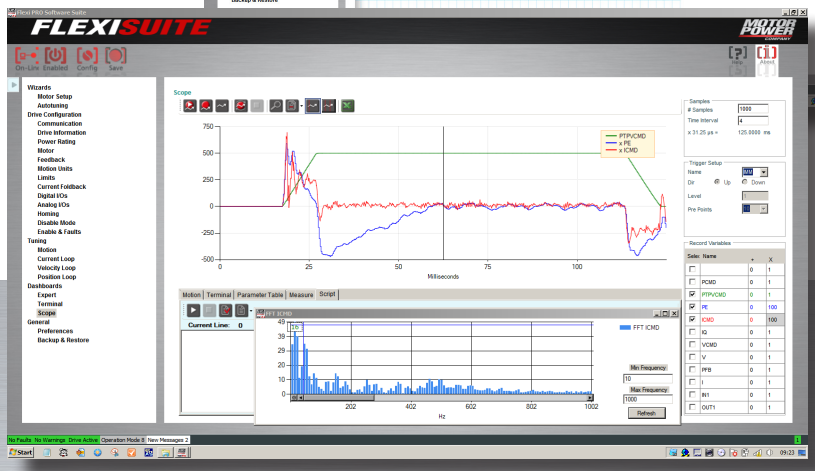
FEATURE	UNITS	FPRO 1D5	FPRO 003	FPRO 4D5	FPRO 006	FPRO 008	FPRO 010	FPRO 013	FPRO 020	FPRO 024	FPRO 003	FPRO 006	FPRO 012	FPRO 024	FPRO 030
Input Voltage	VAC	120/240 VAC Single Phase		240 VAC Single or Three Phase					120/240 VAC Three Phase		400/480 VAC Three Phase				
Max Continuos power output	W	350	700	1000	1400	1800	2300	3000	4500	5500	1100	2200	4400	9000	11000
Efficiency at rated Power	%	> 90													
Auxiliary Supply Voltage		120 .. 240 Vac									24 Vdc				
Continuous current rms	A rms	1,5	3	4,5	6	8	10	13	20	24	3	6	12	24	30
Peak current	A rms	4,5	9	18	18	28	28	28	48	48	9	18	24	72	90
Ambient Operating Temperature	°C	0 to + 45													
Maximum Humidity	%	90% not condensing													
Vibration		0.6G 10-60 Hz													
Shock		1 G													
Mounting Method		Wall Mount													
Dimensions	WxDxH mm	43x144x150		55x167x150		62x182x170			117x194x234		110x193x163		FPRO 012 117x194x234		
													FPRO 024 - FPRO 030 147x209x353		
Weight	Kg	0,7	0,75	0,97	0,97	1,15	1,15	1,15	3,2	3,2	2,1	2,1	3,2	10,5	10,5

FLEXI PRO SUITE

> SIMPLIFIES SETUP, TESTING AND TUNING

User-friendly FLEXI SUITE software provides step-by-step guidance through the setup and tuning process. Setup and testing are intuitive thanks to auto-tuning functions and graphic representations of control loops





SEE IT BEFORE IT HAPPENS

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All technical data in this catalog
may be changed without prior notice.

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MOTOR POWER COMPANY

motorpowerco.com

MOTORS

MOTION CONTROL

MECHATRONICS

Catalogue 4.2/04.2019

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