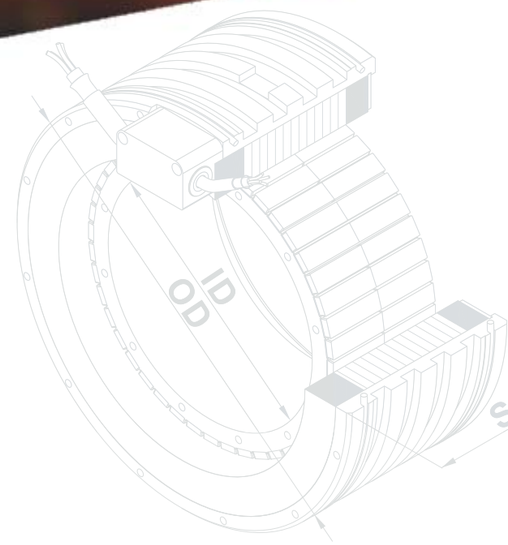
SOLPOWER MACHINE
ELECTRONIC CORP.

DPM

DIRECT DRIVE-STATOR AND ROTOR

SOL-POWER-DIRECT DRIVE-SERVO MOTOR SOL-POWER-DPM MOTOR



MANAGEMENT PHILOSOPHY

Quality

For providing excellent high-class servo motors, high precise detecting instrument and strict SOP to control product process, we strive for offeringhigh efficiency, quality and low after-care service rate so that we have motivation for continuous improvement.

Service

Based on the concept of credibility, we provide complete service network and satisfy standard and customized necessaries from customers to expand international market.

Innovation

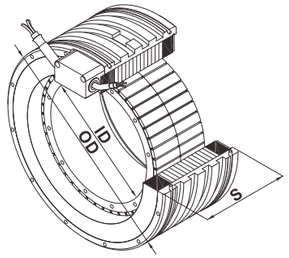
In order to create mutual beneficial solution between customers and us, we have steady technical core, vertical integrate research, development and technical process for providing outstanding products to upgrade industrial additional value.

COMPANY PROFILE

was founded in 1995.In consideration of world ranking of Taiwan tool machine export, the Forth and Fifth place, it was a pity that Taiwan tool machinery companies have no their own spindle motor controllers and the key components need to be imported. CHENG CHANG initially integrated high quality controllers and drivers and developed spindle motors including induction servo motors, synchronous servo motors, linear motors, DD motors and build-in stator and rotor specifically for general industrial machine. Owing to the outstanding product characteristics and quality, which is compared favorably with spindle motors made in Europe, America, and Japan to gain very good feedback from customers, our motors export to thirty nations including China, Germany, Japan, Italy, U.S.A., Switzerland, Korea, Poland, Indiain the world.

Since establishment, Cheng Chang Machine Electronic Corp. continually promote precision and stability of products to research and develop new products in the trend to expend international market for meeting a variety of markets and customers’necessary. We have insisted on the business management ideas, "quality, service, and innovation",for many years to improve technology and steady quality of products. In the future, we will keep putting in more efforts in research and development to create a resplendent future for transmission industry and to achieve the mission of Energy Efficiency and Carbon Reduction.

DATA OVERVIEW



- Designed for machine tool and other demanding applications
- Liquid cooling channels on housing
- 600 VDC bus voltage
- Very high continuous torque

TYPE	OD External Diameter (mm)	ID Internal Diameter (mm)	S Stator Length (mm)	Tc Continuous Torque Free Air convection (Nm)	Tcw Continuous Torque Water cooled (Nm)	Tp Peak Torque (Nm)
DPM-160-070	160	60	70	9	20	38.2
DPM-160-090	160	60	90	14	32	63.6
DPM-160-110	160	60	110	20	45	89.1
DPM-160-140	160	60	140	28	66	127
DPM-160-190	160	60	190	40	98	191
DPM-198-080	198	90	80	15	32	67.9
DPM-198-100	198	90	100	24	54	113
DPM-198-120	198	90	120	34	76	158
DPM-198-150	198	90	150	47	110	226
DPM-198-200	198	90	200	70	166	339
DPM-230-070	230	140	70	28	68	127
DPM-230-090	230	140	90	46	120	218
DPM-230-110	230	140	110	64	165	309
DPM-230-140	230	140	140	92	245	445
DPM-230-190	230	140	190	133	368	672
DPM-310-080	310	200	80	62	132	249
DPM-310-100	310	200	100	100	226	416
DPM-310-120	310	200	120	138	316	582
DPM-310-150	310	200	150	195	457	831
DPM-310-200	310	200	200	290	690	1250
DPM-385-090	385	265	90	113	230	424
DPM-385-110	385	265	110	182	395	707
DPM-385-130	385	265	130	248	556	990
DPM-385-160	385	265	160	345	800	1410
DPM-385-210	385	265	210	510	1210	2120

DPM 160 Series

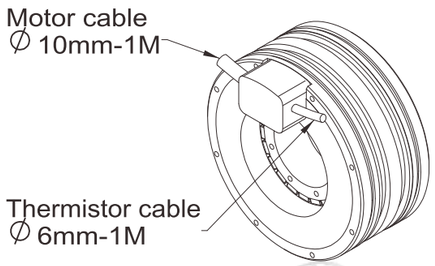
DPM 198 Series

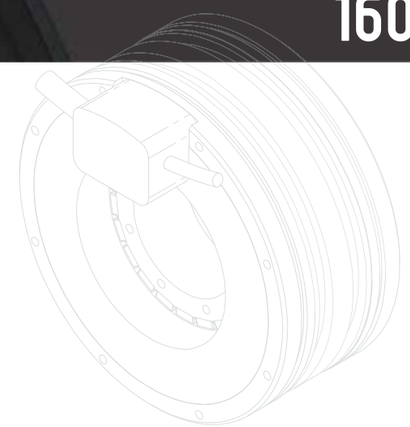
DPM 230 Series

DPM 310 Series

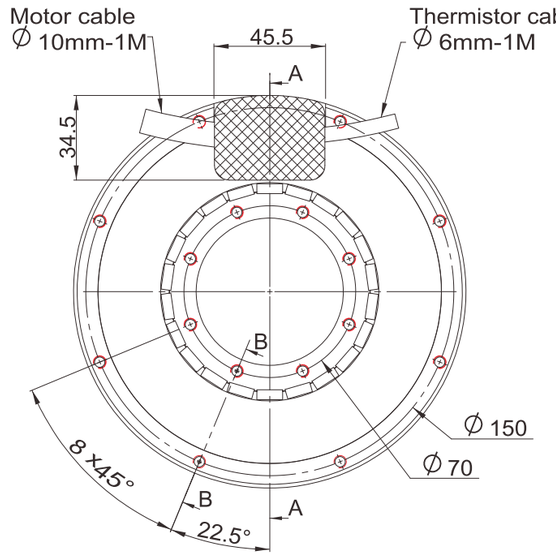
DPM 385 Series

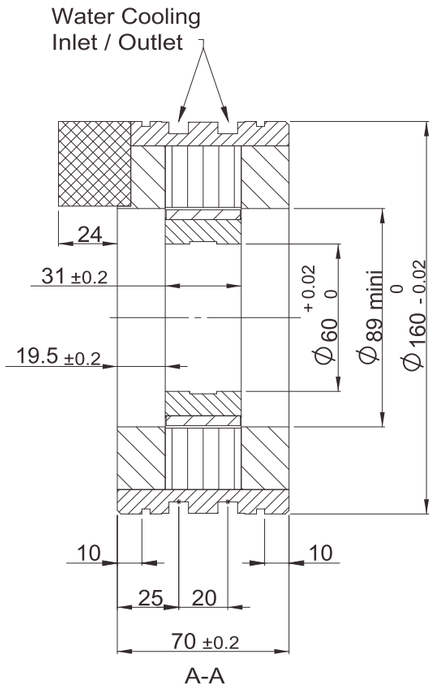
160-70

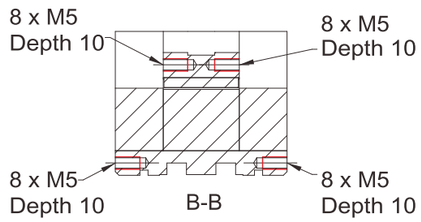




	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	38.1	38.1
Tc	Continuous torque	Nm	8.64	19
Ts	Stall torque	Nm	6.57	14.7
Kt	Torque constant	Nm/Arms	3.08	3.08
Ku	Back EMF constant(*)	Vrms/(rad/s)	1.78	1.78
Km	Motor constant	Nm/√ W	0.921	0.921
R20	Electrical resistance at 20℃ (*)	Ohm	7.51	7.51
L1	Electrical inductance(*)	Mh	33.7	32.6
Ip	Peak current	Arms	19.7	19.7
Ic	Continuous current	Arms	2.81	6.58
Is	Stall current	Arms	2.14	5.0
Pc	Max continuous power dissipation	W	129	705
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2300	120
Rth	Thermal resistance	K/W	0.82	0.153
2p	Number of poles	-	22	22
J	Rotor inertia	kgm²	9.8E-004	9.8E-004
Mr	Rotor mass	kg	0.73	0.73
Ms	Stator mass	kg	4.6	4.6
Td	Max Detent torque(average to peak)	Nm	0.2	0.2
ns	Stall speed	rpm	0.024	0.47
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	2
Δpw	Max pressure drop at qw	bar	--	1







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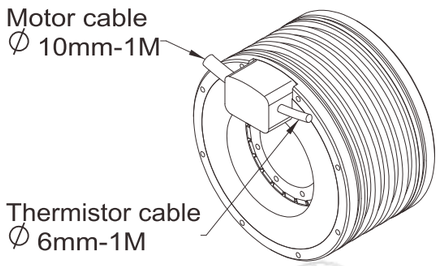
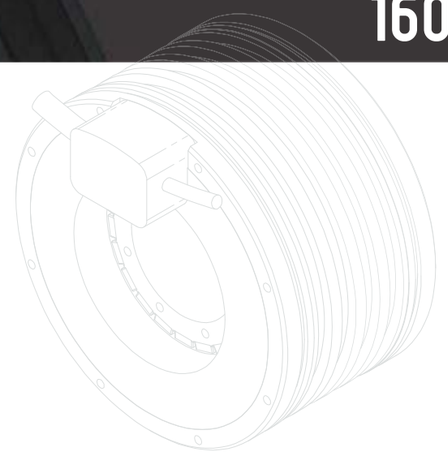
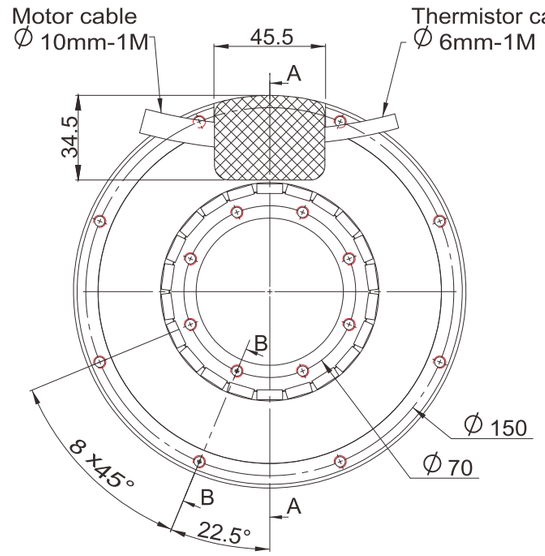
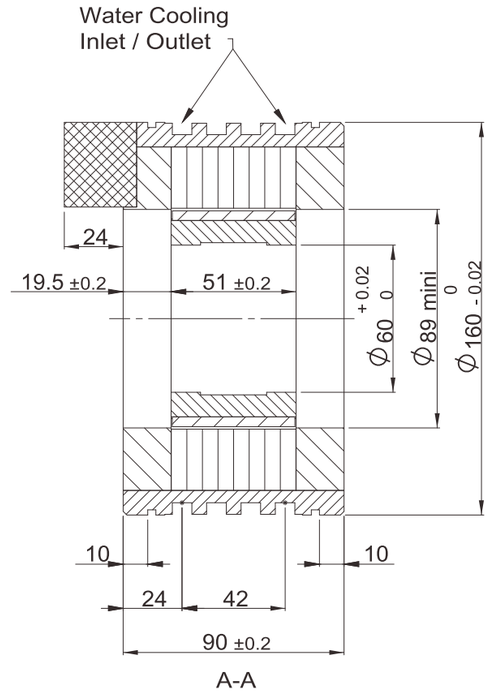
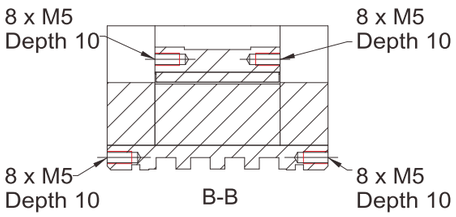




	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	63.5	63.5
Tc	Continuous torque	Nm	13.9	32
Ts	Stall torque	Nm	10.6	25.4
Kt	Torque constant	Nm/Arms	5.12	5.12
Ku	Back EMF constant(*)	Vrms/(rad/s)	2.95	2.95
Km	Motor constant	Nm/√ W	1.27	1.27
R20	Electrical resistance at 20℃ (*)	Ohm	10.2	10.2
L1	Electrical inductance(*)	Mh	56.2	54.3
Ip	Peak current	Arms	19.6	19.6
Ic	Continuous current	Arms	2.78	6.74
Is	Stall current	Arms	2.1	5.1
Pc	Max continuous power dissipation	W	170	1010
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2200	93
Rth	Thermal resistance	K/W	0.617	0.106
2p	Number of poles	-	22	22
J	Rotor inertia	kgm²	1.5E-003	1.5E-003
Mr	Rotor mass	kg	1.16	1.16
Ms	Stator mass	kg	6	6
Td	Max Detent torque(average to peak)	Nm	0.33	0.33
ns	Stall speed	rpm	0.025	0.59
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	2.9
Δpw	Max pressure drop at qw	bar	--	1







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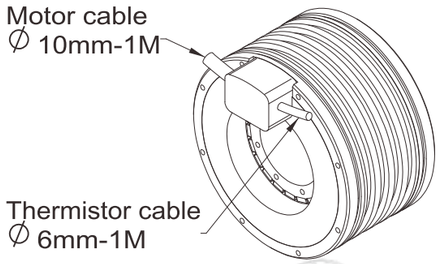
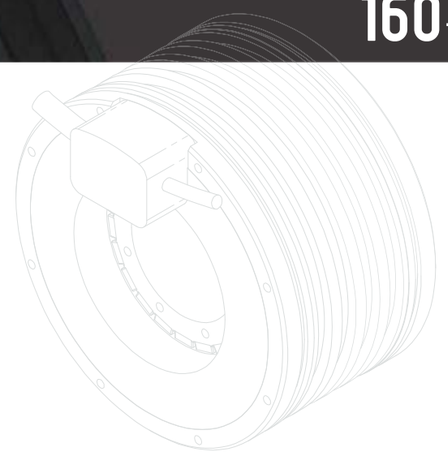
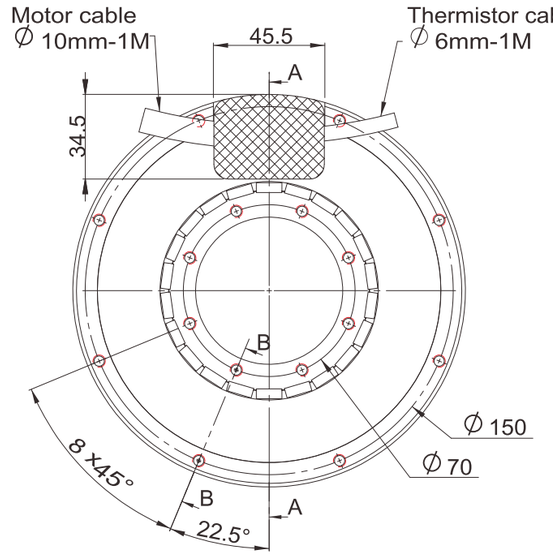
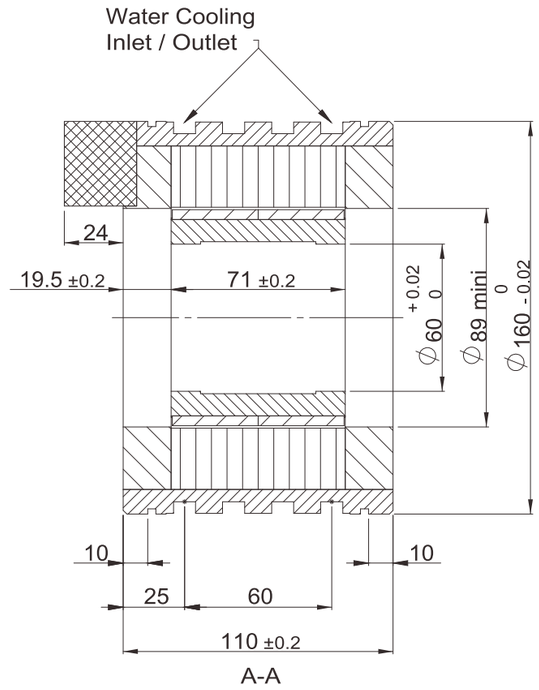
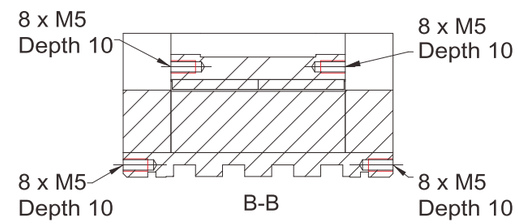




	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	88.8	88.8
Tc	Continuous torque	Nm	19.5	45.3
Ts	Stall torque	Nm	14.9	35.8
Kt	Torque constant	Nm/Arms	3.6	3.6
Ku	Back EMF constant(*)	Vrms/(rad/s)	2.06	2.06
Km	Motor constant	Nm/√ W	1.6	1.6
R20	Electrical resistance at 20℃ (*)	Ohm	3.26	3.26
L1	Electrical inductance(*)	Mh	19.5	18.8
Ip	Peak current	Arms	39.2	39.2
Ic	Continuous current	Arms	5.49	13.3
Is	Stall current	Arms	4.16	10.1
Pc	Max continuous power dissipation	W	212	1300
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2100	83
Rth	Thermal resistance	K/W	0.494	0.0828
2p	Number of poles	-	22	22
J	Rotor inertia	kgm²	2.2E-003	2.2E-003
Mr	Rotor mass	kg	1.65	1.65
Ms	Stator mass	kg	7.73	7.73
Td	Max Detent torque(average to peak)	Nm	0.46	0.46
ns	Stall speed	rpm	0.026	0.66
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	3.7
Δpw	Max pressure drop at qw	bar	--	1







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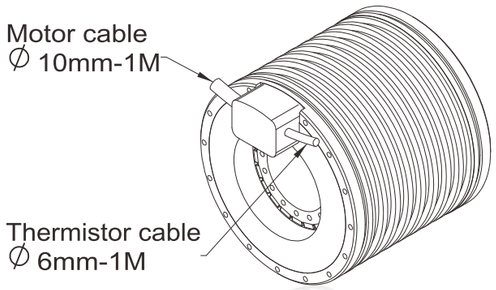
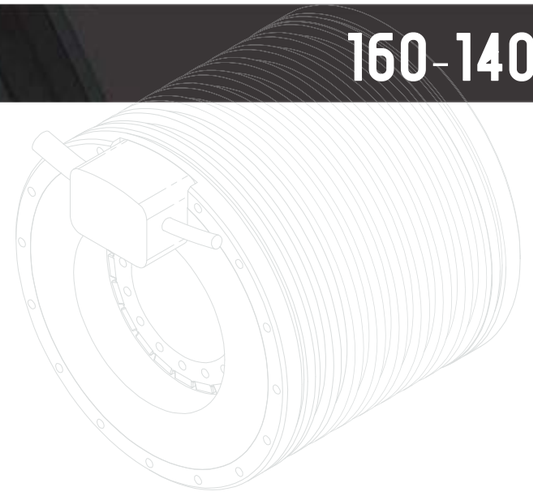
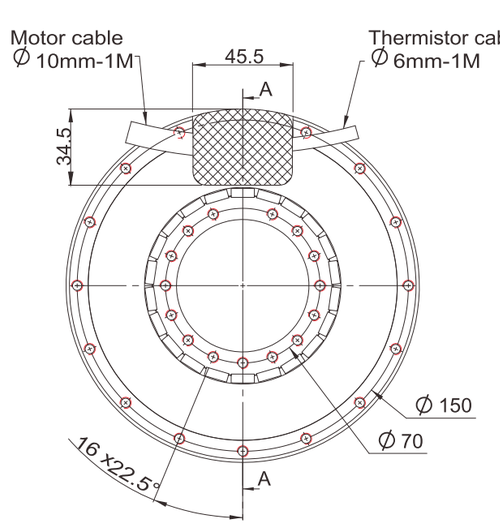
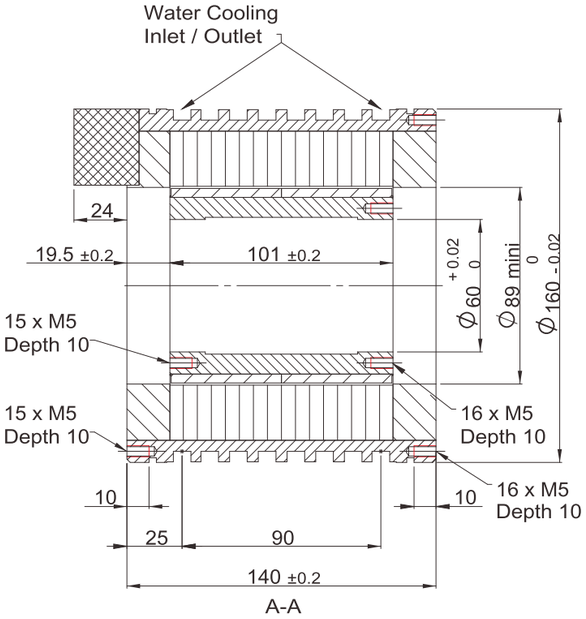




	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	126.9	126.9
Tc	Continuous torque	Nm	27.6	65.2
Ts	Stall torque	Nm	20.8	51.3
Kt	Torque constant	Nm/Arms	5.12	5.12
Ku	Back EMF constant(*)	Vrms/(rad/s)	2.96	2.96
Km	Motor constant	Nm/√ W	2	2
R20	Electrical resistance at 20℃ (*)	Ohm	4.1	4.1
L1	Electrical inductance(*)	Mh	27.8	26.9
Ip	Peak current	Arms	39.2	39.2
Ic	Continuous current	Arms	5.41	13.4
Is	Stall current	Arms	4.08	10.1
Pc	Max continuous power dissipation	W	275	1760
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2000	72
Rth	Thermal resistance	K/W	0.381	0.061
2p	Number of poles	-	22	22
J	Rotor inertia	kgm²	3.2E-003	3.2E-003
Mr	Rotor mass	kg	2.4	2.4
Ms	Stator mass	kg	9.85	9.85
Td	Max Detent torque(average to peak)	Nm	0.65	0.65
ns	Stall speed	rpm	0.027	0.76
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	5.1
Δpw	Max pressure drop at qw	bar	--	1





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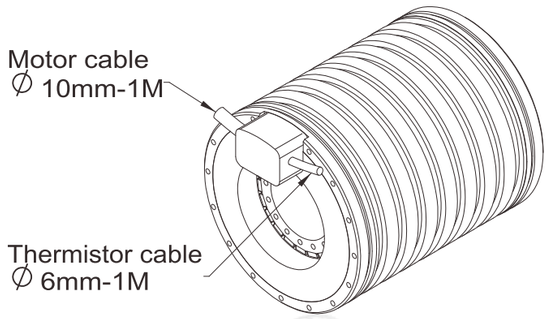
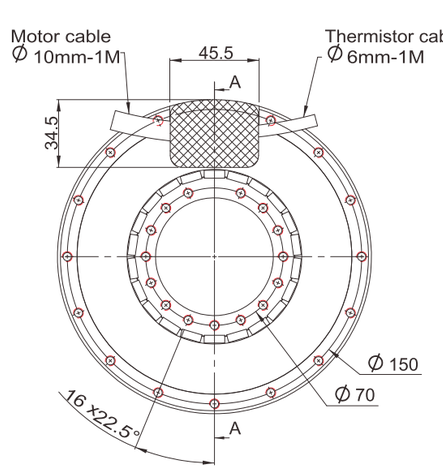
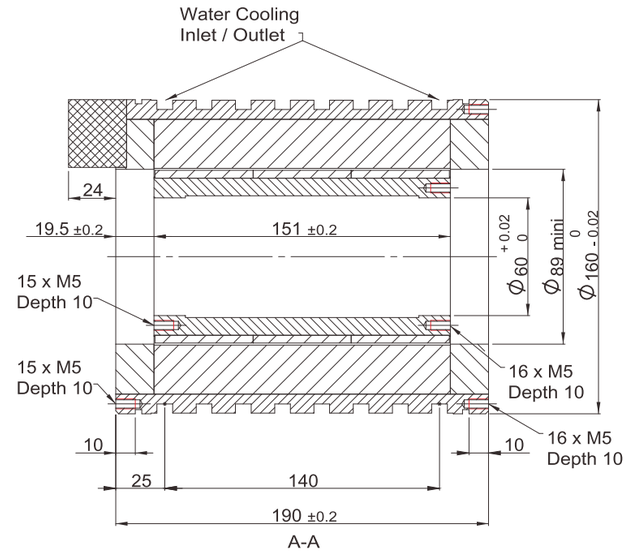


	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	190.7	190.7
Tc	Continuous torque	Nm	40.8	97.8
Ts	Stall torque	Nm	31	77.2
Kt	Torque constant	Nm/Arms	7.71	7.71
Ku	Back EMF constant(*)	Vrms/(rad/s)	4.47	4.47
Km	Motor constant	Nm/√ W	2.54	2.54
R20	Electrical resistance at 20℃ (*)	Ohm	6.16	6.16
L1	Electrical inductance(*)	Mh	42.1	40.6
Ip	Peak current	Arms	39.2	39.2
Ic	Continuous current	Arms	5.38	13.65
Is	Stall current	Arms	4.08	10.3
Pc	Max continuous power dissipation	W	380	2480
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2100	65
Rth	Thermal resistance	K/W	0.275	0.0433
2p	Number of poles	-	22	22
J	Rotor inertia	kgm²	4.8E-003	4.8E-003
Mr	Rotor mass	kg	3.6	3.6
Ms	Stator mass	kg	14.5	14.5
Td	Max Detent torque(average to peak)	Nm	0.98	0.98
ns	Stall speed	rpm	0.027	0.85
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	7.1
Δpw	Max pressure drop at qw	bar	--	1





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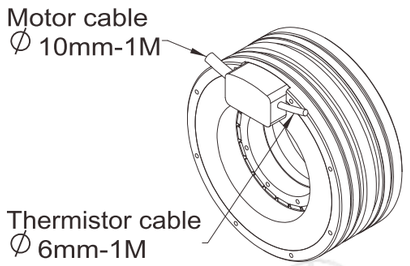
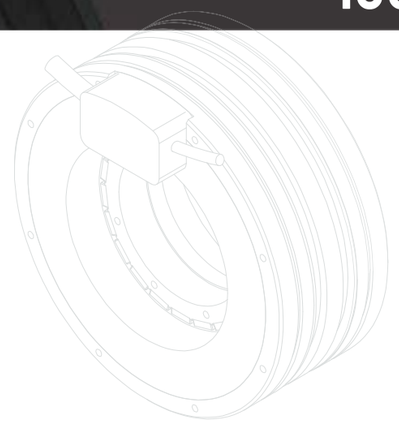
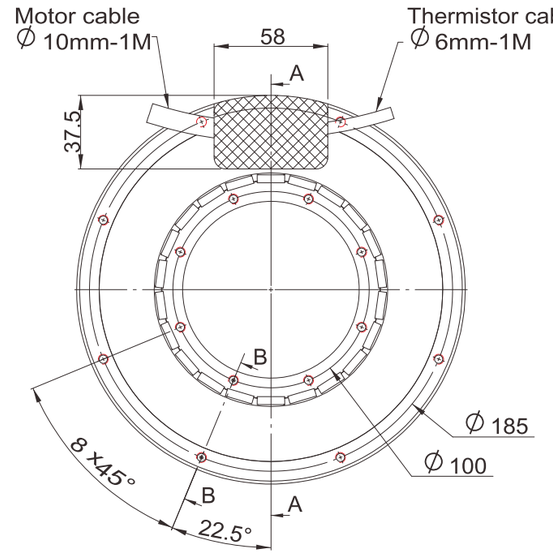
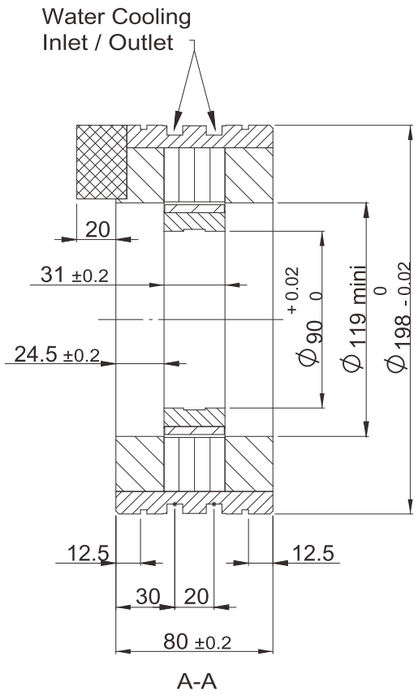
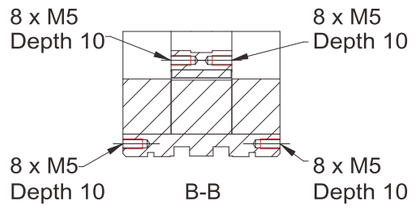




	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	67.6	67.6
Tc	Continuous torque	Nm	14.6	31.5
Ts	Stall torque	Nm	11	24.3
Kt	Torque constant	Nm/Arms	3.55	3.55
Ku	Back EMF constant(*)	Vrms/(rad/s)	2.04	2.04
Km	Motor constant	Nm/√ W	1.41	1.41
R20	Electrical resistance at 20℃ (*)	Ohm	4.24	4.24
L1	Electrical inductance(*)	Mh	21.9	21.3
Ip	Peak current	Arms	26.8	26.8
Ic	Continuous current	Arms	4.4	9.39
Is	Stall current	Arms	3.32	7.11
Pc	Max continuous power dissipation	W	177	809
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2600	150
Rth	Thermal resistance	K/W	0.604	0.133
2p	Number of poles	-	22	22
J	Rotor inertia	kgm²	2.6E-003	2.6E-003
Mr	Rotor mass	kg	1	1
Ms	Stator mass	kg	7.2	7.2
Td	Max Detent torque(average to peak)	Nm	0.57	0.57
ns	Stall speed	rpm	0.021	0.36
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	2.3
Δpw	Max pressure drop at qw	bar	--	1







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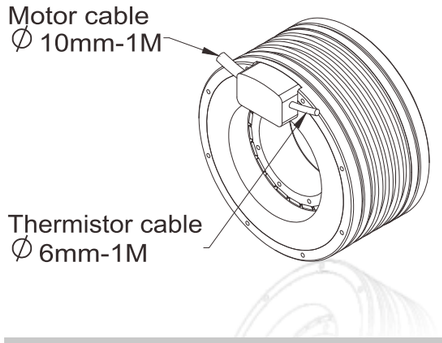
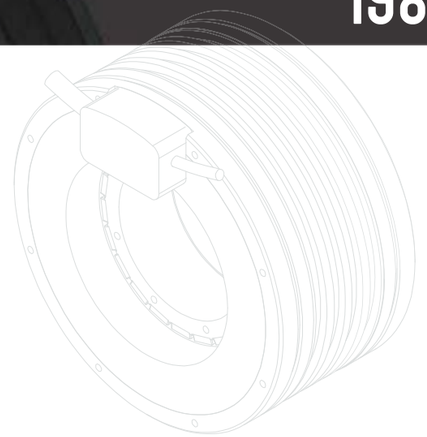
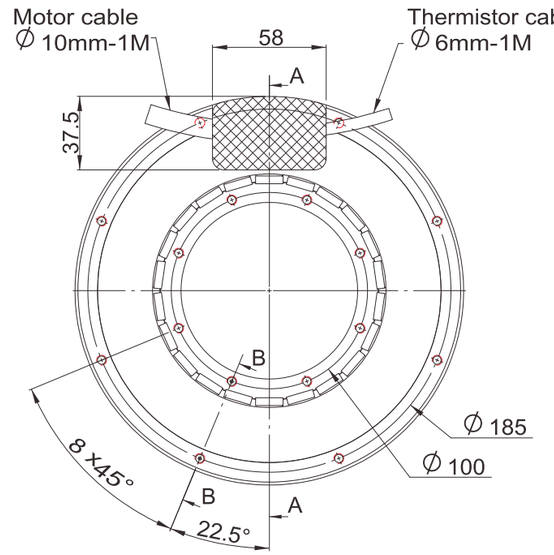
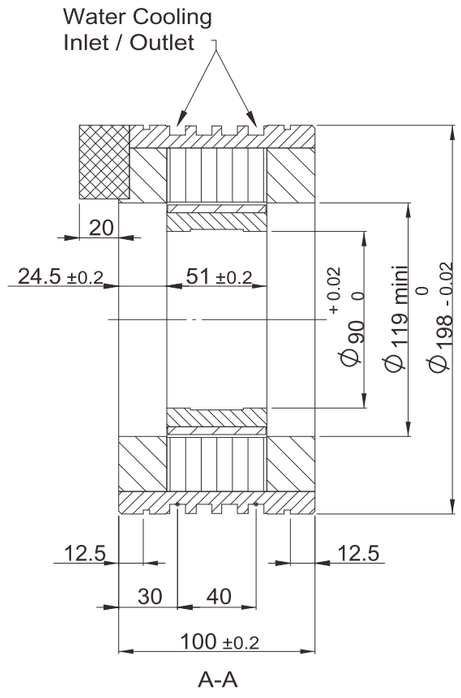
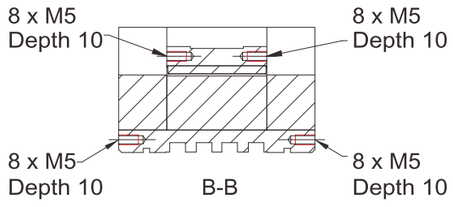


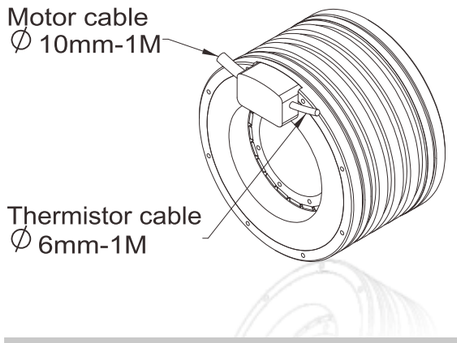


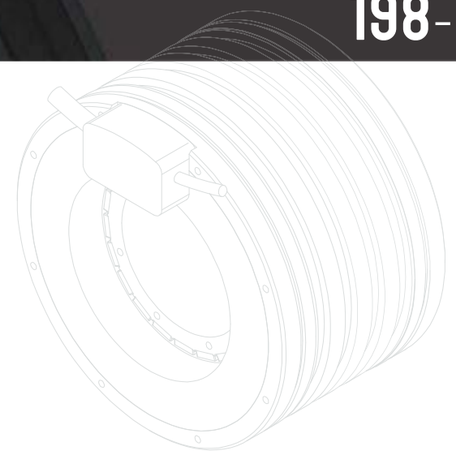
	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	113.1	113.1
Tc	Continuous torque	Nm	24	53.8
Ts	Stall torque	Nm	18.1	41.4
Kt	Torque constant	Nm/Arms	5.93	5.93
Ku	Back EMF constant(*)	Vrms/(rad/s)	3.44	3.44
Km	Motor constant	Nm/√ W	2.04	2.04
R20	Electrical resistance at 20℃ (*)	Ohm	5.77	5.77
L1	Electrical inductance(*)	Mh	37.3	36.2
Ip	Peak current	Arms	27	27
Ic	Continuous current	Arms	4.28	9.58
Is	Stall current	Arms	3.25	7.25
Pc	Max continuous power dissipation	W	230	1150
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2400	120
Rth	Thermal resistance	K/W	0.464	0.0938
2p	Number of poles	-	22	22
J	Rotor inertia	kgm²	4.4E-003	4.4E-003
Mr	Rotor mass	kg	1.64	1.64
Ms	Stator mass	kg	9.24	9.24
Td	Max Detent torque(average to peak)	Nm	0.95	0.95
ns	Stall speed	rpm	0.023	0.45
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	3.3
Δpw	Max pressure drop at qw	bar	--	1



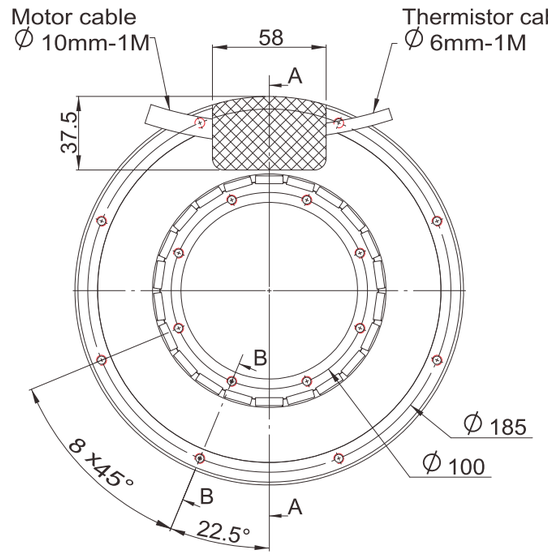


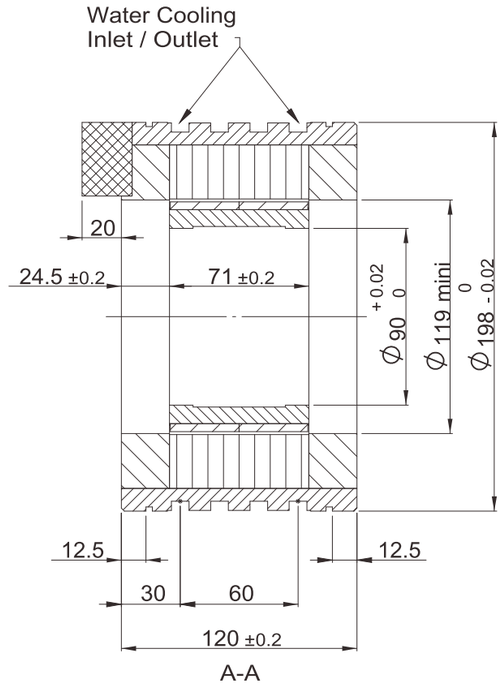


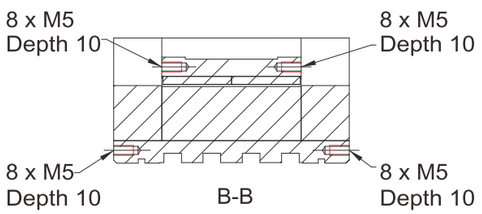




	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	157.5	157.5
Tc	Continuous torque	Nm	33.2	75.8
Ts	Stall torque	Nm	25.1	58.5
Kt	Torque constant	Nm/Arms	8.34	8.34
Ku	Back EMF constant(*)	Vrms/(rad/s)	4.8	4.8
Km	Motor constant	Nm/√ W	2.51	2.51
R20	Electrical resistance at 20℃ (*)	Ohm	7.2	7.2
L1	Electrical inductance(*)	Mh	51.4	49.9
Ip	Peak current	Arms	27	27
Ic	Continuous current	Arms	4.26	9.66
Is	Stall current	Arms	3.22	7.32
Pc	Max continuous power dissipation	W	283	1470
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2400	110
Rth	Thermal resistance	K/W	0.377	0.0734
2p	Number of poles	-	22	22
J	Rotor inertia	kgm²	6.2E-003	6.2E-003
Mr	Rotor mass	kg	2.4	2.4
Ms	Stator mass	kg	11.9	11.9
Td	Max Detent torque(average to peak)	Nm	1.3	1.3
ns	Stall speed	rpm	0.023	0.5
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	4.2
Δpw	Max pressure drop at qw	bar	--	1







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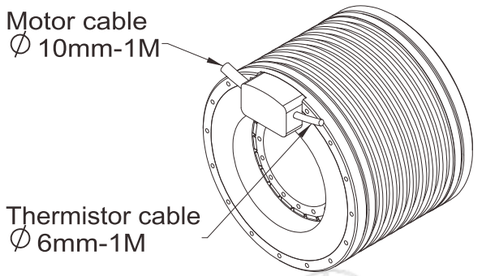
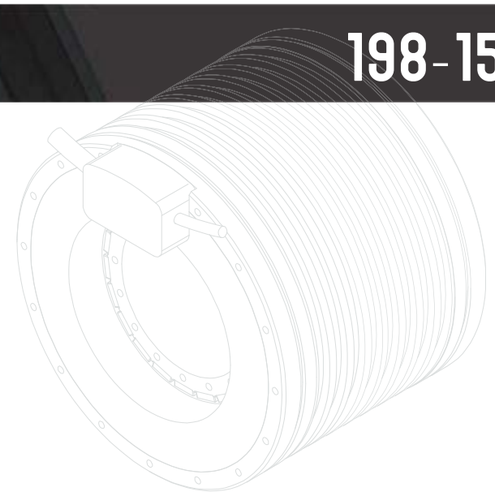
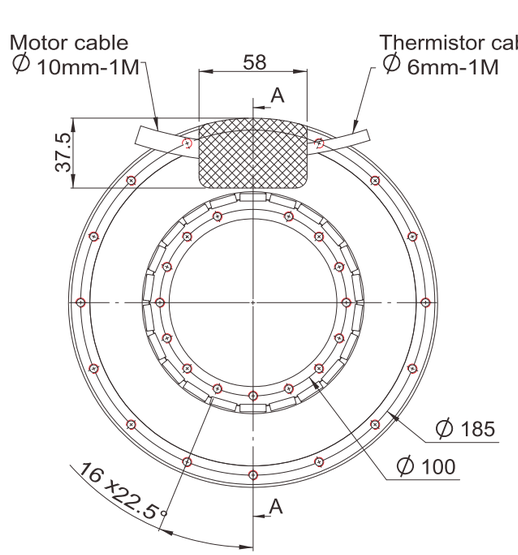
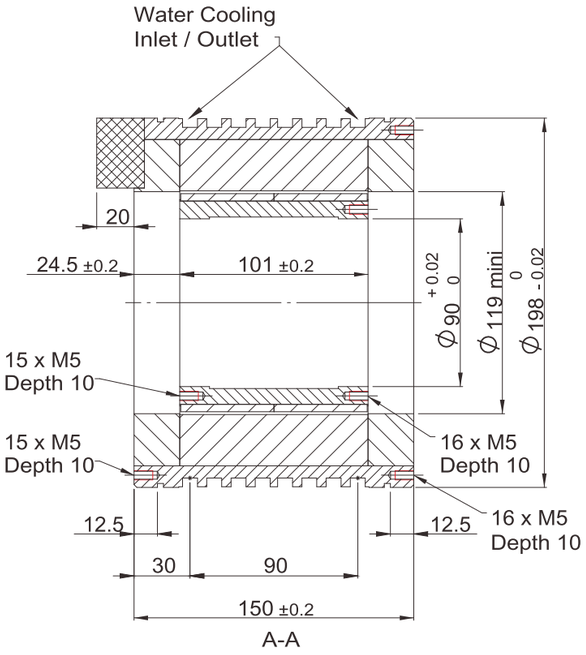




	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	224.7	224.7
Tc	Continuous torque	Nm	47.2	109.9
Ts	Stall torque	Nm	35.7	85
Kt	Torque constant	Nm/Arms	11.8	11.8
Ku	Back EMF constant(*)	Vrms/(rad/s)	6.86	6.86
Km	Motor constant	Nm/√ W	3.14	3.14
R20	Electrical resistance at 20℃ (*)	Ohm	9.57	9.57
L1	Electrical inductance(*)	Mh	74.8	71.5
Ip	Peak current	Arms	27	27
Ic	Continuous current	Arms	4.19	9.5
Is	Stall current	Arms	3.16	7.4
Pc	Max continuous power dissipation	W	362	1980
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2300	93
Rth	Thermal resistance	K/W	0.294	0.0544
2p	Number of poles	-	22	22
J	Rotor inertia	kgm²	8.9E-003	8.9E-003
Mr	Rotor mass	kg	3.5	3.5
Ms	Stator mass	kg	15	15
Td	Max Detent torque(average to peak)	Nm	1.9	1.9
ns	Stall speed	rpm	0.024	0.59
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	5.7
Δpw	Max pressure drop at qw	bar	--	1





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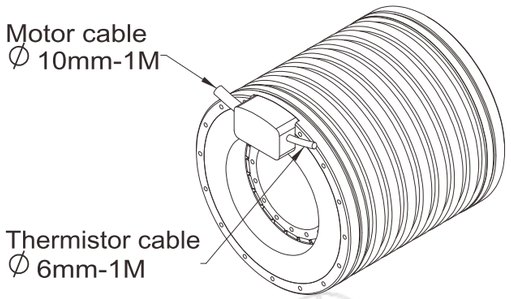
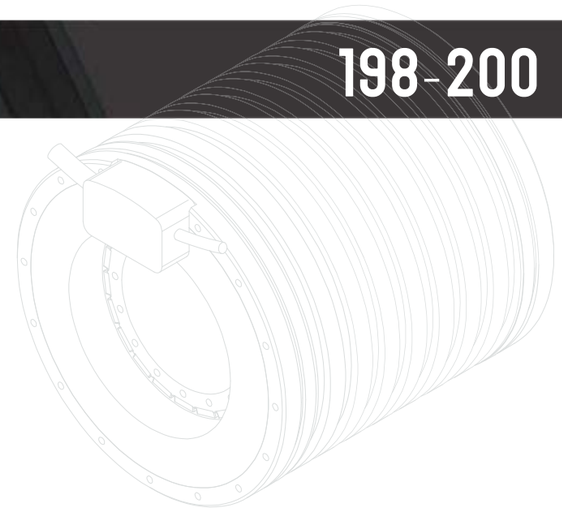
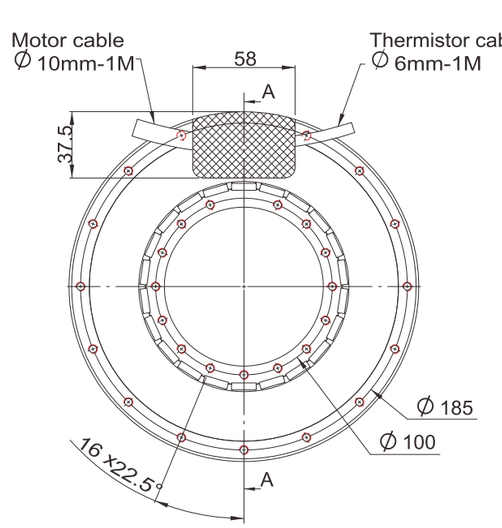
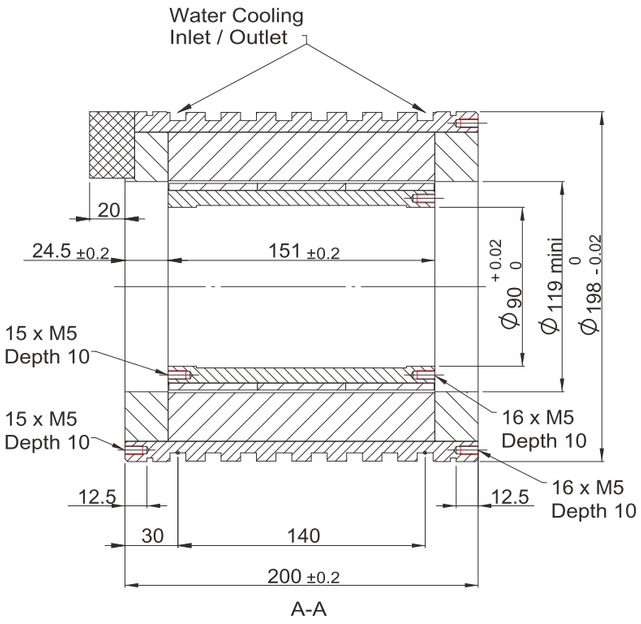




	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	338.9	338.9
Tc	Continuous torque	Nm	70.1	165.7
Ts	Stall torque	Nm	53.2	127.9
Kt	Torque constant	Nm/Arms	17.8	17.8
Ku	Back EMF constant(*)	Vrms/(rad/s)	10	10
Km	Motor constant	Nm/√ W	4	4
R20	Electrical resistance at 20℃ (*)	Ohm	13	13
L1	Electrical inductance(*)	Mh	110.9	107.9
Ip	Peak current	Arms	26.8	26.8
Ic	Continuous current	Arms	4.18	9.86
Is	Stall current	Arms	3.14	7.45
Pc	Max continuous power dissipation	W	494	2770
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2300	83
Rth	Thermal resistance	K/W	0.215	0.0388
2p	Number of poles	-	22	22
J	Rotor inertia	kgm²	1.2E-002	1.2E-002
Mr	Rotor mass	kg	5	5
Ms	Stator mass	kg	21	21
Td	Max Detent torque(average to peak)	Nm	2.9	2.9
ns	Stall speed	rpm	0.024	0.66
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	8
Δpw	Max pressure drop at qw	bar	--	1





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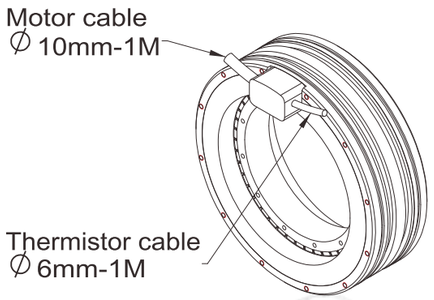
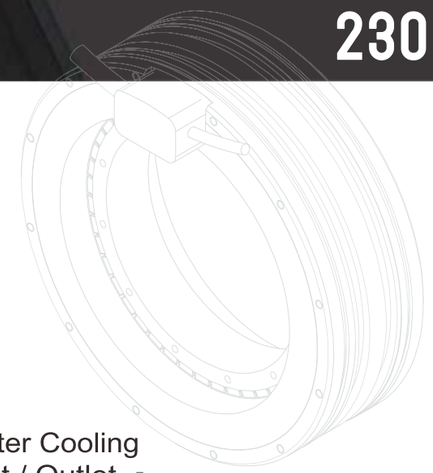
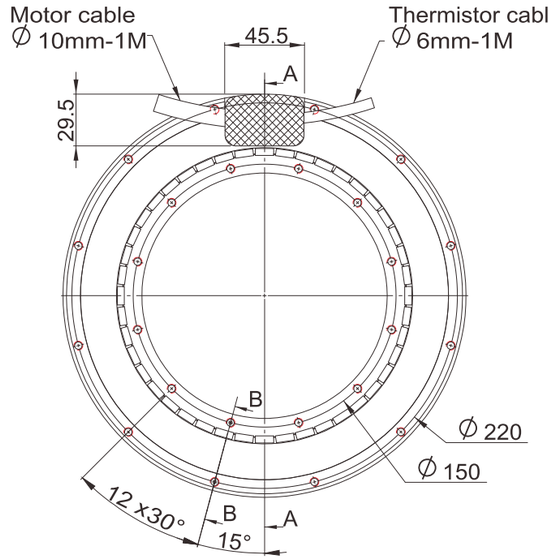
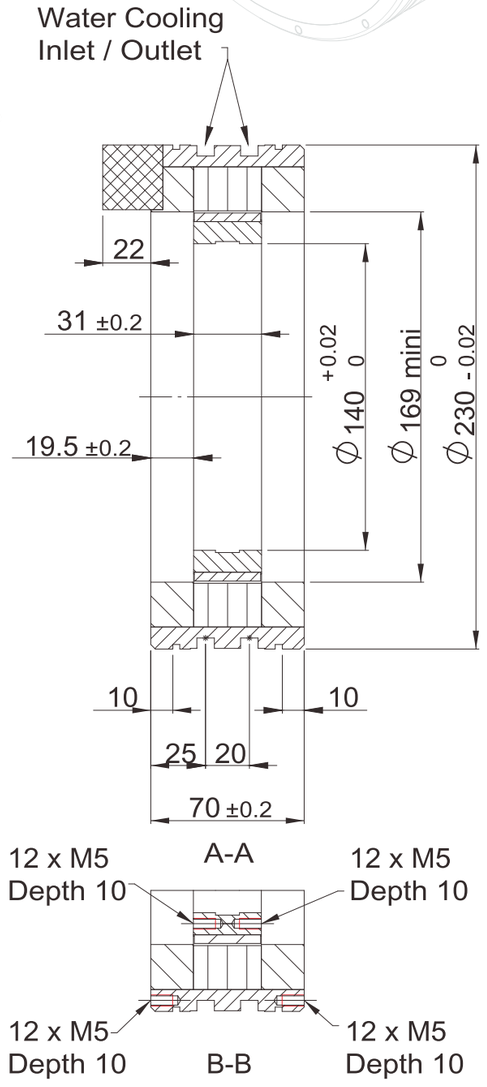
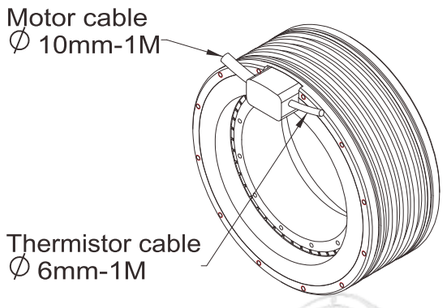




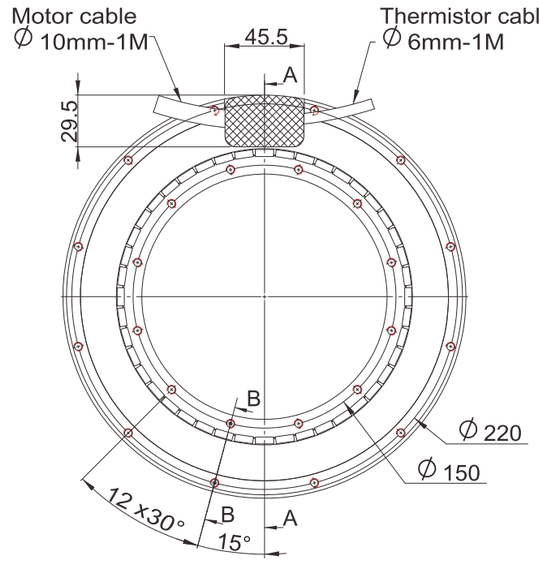
	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	126.7	126.7
Tc	Continuous torque	Nm	27.3	67.1
Ts	Stall torque	Nm	20.8	52.8
Kt	Torque constant	Nm/Arms	6.37	6.37
Ku	Back EMF constant(*)	Vrms/(rad/s)	3.68	3.68
Km	Motor constant	Nm/√ W	2.42	2.42
R20	Electrical resistance at 20℃ (*)	Ohm	4.66	4.66
L1	Electrical inductance(*)	Mh	17.2	16.3
Ip	Peak current	Arms	28	28
Ic	Continuous current	Arms	4.33	10.9
Is	Stall current	Arms	3.2	8.46
Pc	Max continuous power dissipation	W	185	1260
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2000	85
Rth	Thermal resistance	K/W	0.534	0.0851
2p	Number of poles	-	44	44
J	Rotor inertia	kgm²	8.4E-003	8.4E-003
Mr	Rotor mass	kg	1.5	1.5
Ms	Stator mass	kg	6	6
Td	Max Detent torque(average to peak)	Nm	0.6	0.6
ns	Stall speed	rpm	0.014	0.32
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	3.6
Δpw	Max pressure drop at qw	bar	--	1

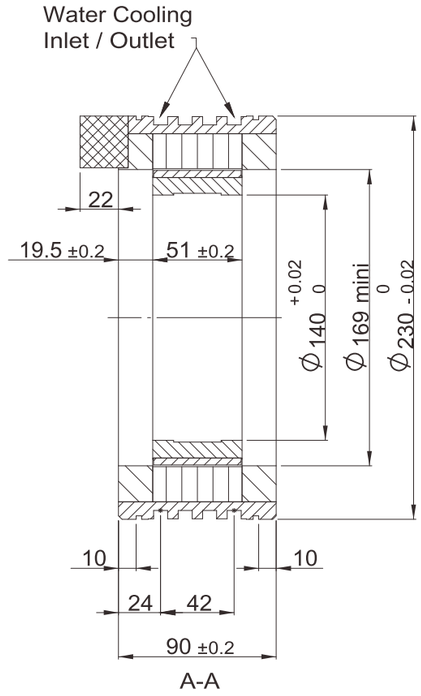


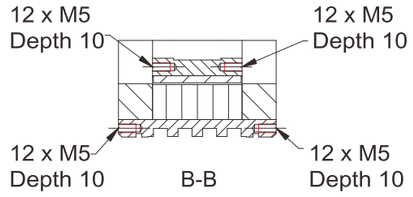




	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	217.7	217.7
Tc	Continuous torque	Nm	46	117.7
Ts	Stall torque	Nm	35	92.9
Kt	Torque constant	Nm/Arms	10.7	10.7
Ku	Back EMF constant(*)	Vrms/(rad/s)	6.32	6.32
Km	Motor constant	Nm/√ W	3.48	3.48
R20	Electrical resistance at 20℃ (*)	Ohm	6.52	6.52
L1	Electrical inductance(*)	Mh	29.5	27.9
Ip	Peak current	Arms	27.7	27.7
Ic	Continuous current	Arms	4.27	11.4
Is	Stall current	Arms	3.21	8.69
Pc	Max continuous power dissipation	W	249	1860
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	1900	69
Rth	Thermal resistance	K/W	0.398	0.0579
2p	Number of poles	-	44	44
J	Rotor inertia	kgm²	1.3E-002	1.3E-002
Mr	Rotor mass	kg	2.5	2.5
Ms	Stator mass	kg	8	8
Td	Max Detent torque(average to peak)	Nm	1	1
ns	Stall speed	rpm	0.014	0.39
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	5.3
Δpw	Max pressure drop at qw	bar	--	1







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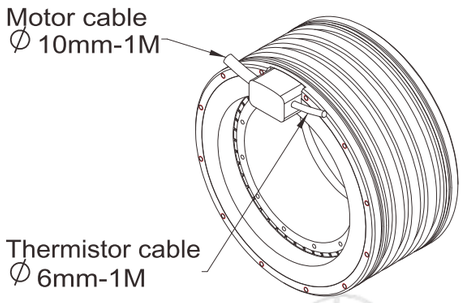
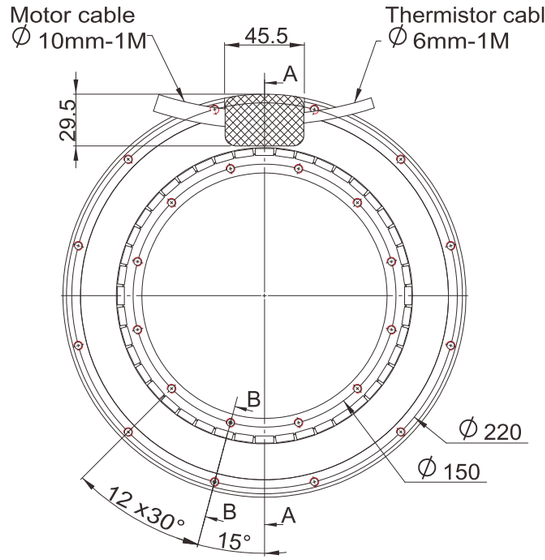
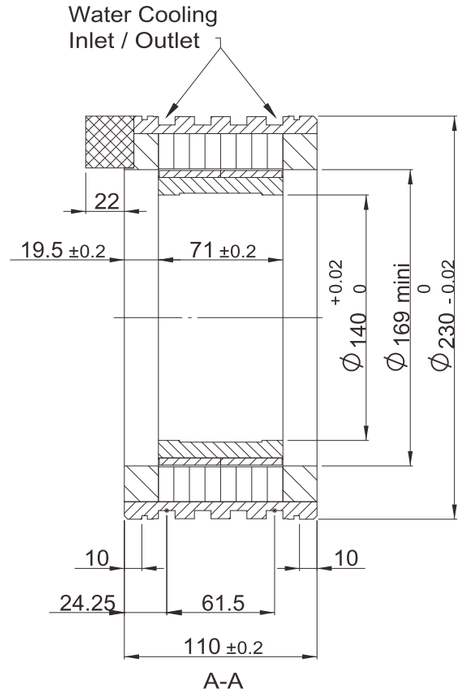
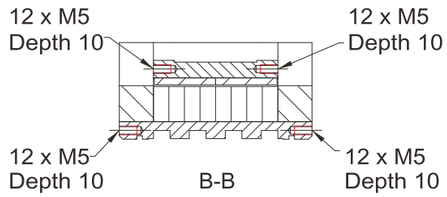
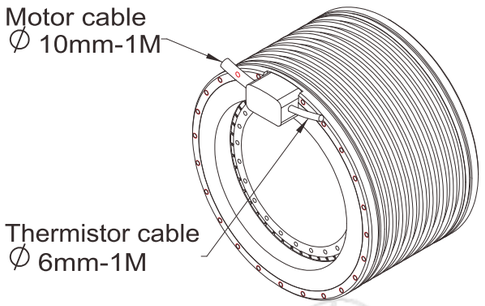


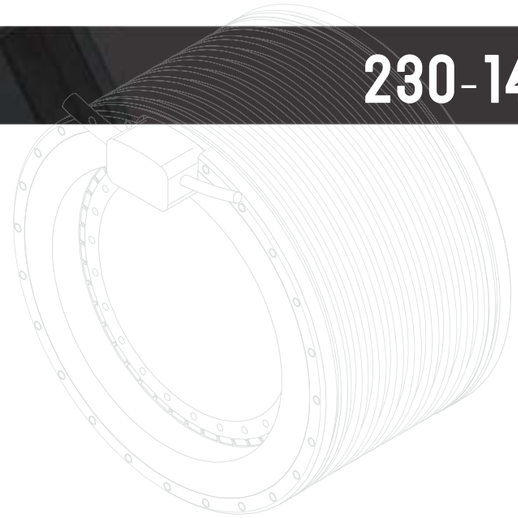
	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	308.9	308.9
Tc	Continuous torque	Nm	64.5	166.9
Ts	Stall torque	Nm	49	131.9
Kt	Torque constant	Nm/Arms	15.3	15.3
Ku	Back EMF constant(*)	Vrms/(rad/s)	8.8	8.8
Km	Motor constant	Nm/√ W	4.35	4.35
R20	Electrical resistance at 20℃ (*)	Ohm	8.42	8.42
L1	Electrical inductance(*)	Mh	41.6	39.3
Ip	Peak current	Arms	27.8	27.8
Ic	Continuous current	Arms	4.21	11.4
Is	Stall current	Arms	3.17	8.69
Pc	Max continuous power dissipation	W	312	2400
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2000	64
Rth	Thermal resistance	K/W	0.317	0.0448
2p	Number of poles	-	44	44
J	Rotor inertia	kgm²	2.1E-002	2.1E-002
Mr	Rotor mass	kg	3.5	3.5
Ms	Stator mass	kg	11	11
Td	Max Detent torque(average to peak)	Nm	1.5	1.5
ns	Stall speed	rpm	0.014	0.43
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	6.9
Δpw	Max pressure drop at qw	bar	--	1



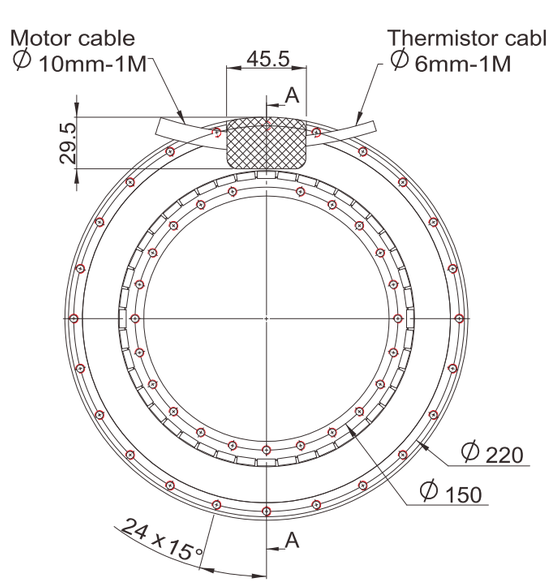


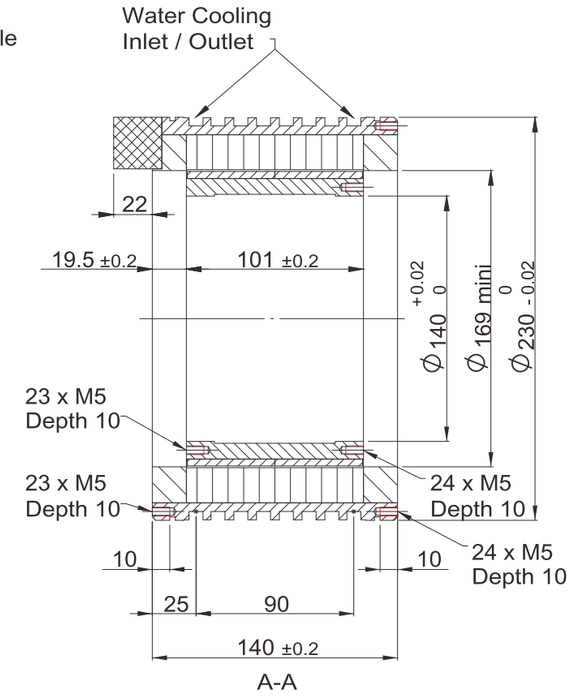




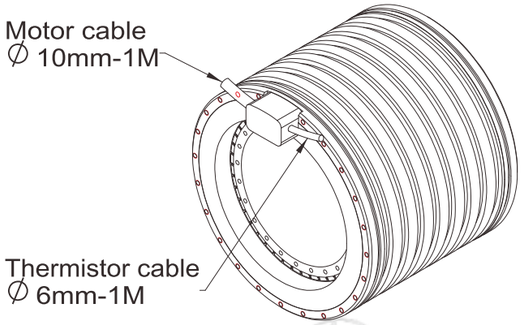


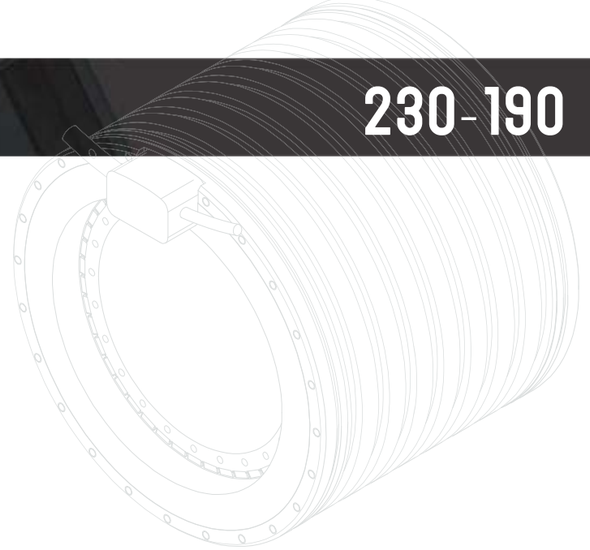
	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	444.7	444.7
Tc	Continuous torque	Nm	91.8	243.9
Ts	Stall torque	Nm	69.4	191.7
Kt	Torque constant	Nm/Arms	10.9	10.9
Ku	Back EMF constant(*)	Vrms/(rad/s)	6.46	6.46
Km	Motor constant	Nm/√ W	5.43	5.43
R20	Electrical resistance at 20℃ (*)	Ohm	2.8	2.8
L1	Electrical inductance(*)	Mh	15	14.1
Ip	Peak current	Arms	56	56
Ic	Continuous current	Arms	8.3	23.2
Is	Stall current	Arms	6.2	17.5
Pc	Max continuous power dissipation	W	407	3310
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	1800	56
Rth	Thermal resistance	K/W	0.243	0.0325
2p	Number of poles	-	44	44
J	Rotor inertia	kgm²	2.8E-002	2.8E-002
Mr	Rotor mass	kg	5	5
Ms	Stator mass	kg	13.5	13.5
Td	Max Detent torque(average to peak)	Nm	2.1	2.1
ns	Stall speed	rpm	0.015	0.49
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	9.5
Δpw	Max pressure drop at qw	bar	--	1



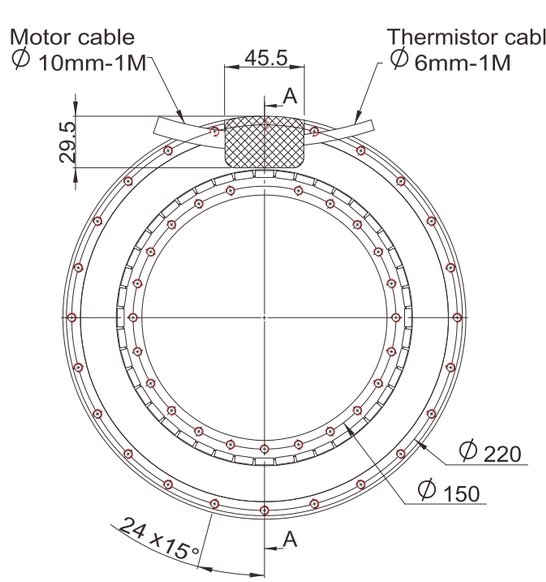


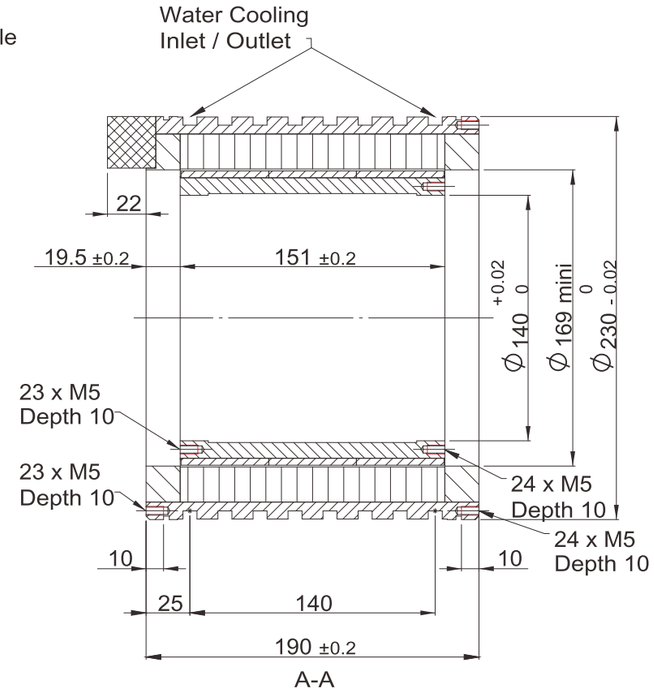
230-190





	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	671.5	671.5
Tc	Continuous torque	Nm	137.6	367.6
Ts	Stall torque	Nm	103.8	289.8
Kt	Torque constant	Nm/Arms	16.8	16.8
Ku	Back EMF constant(*)	Vrms/(rad/s)	9.79	9.79
Km	Motor constant	Nm/√ W	6.9	6.9
R20	Electrical resistance at 20℃ (*)	Ohm	4.01	4.01
L1	Electrical inductance(*)	Mh	22.7	21.4
Ip	Peak current	Arms	56.1	56.1
Ic	Continuous current	Arms	8.23	23.26
Is	Stall current	Arms	6.24	17.65
Pc	Max continuous power dissipation	W	566	4670
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	1900	52
Rth	Thermal resistance	K/W	0.175	0.023
2p	Number of poles	-	44	44
J	Rotor inertia	kgm²	4.4E-002	4.4E-002
Mr	Rotor mass	kg	7.6	7.6
Ms	Stator mass	kg	20	20
Td	Max Detent torque(average to peak)	Nm	3.2	3.2
ns	Stall speed	rpm	0.014	0.53
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	13
Δpw	Max pressure drop at qw	bar	--	2





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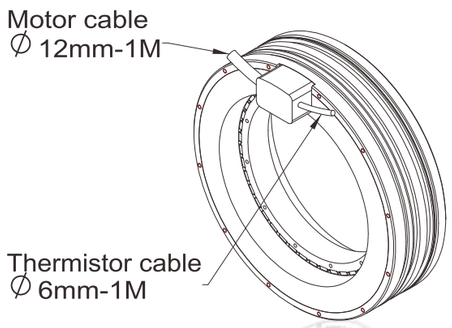
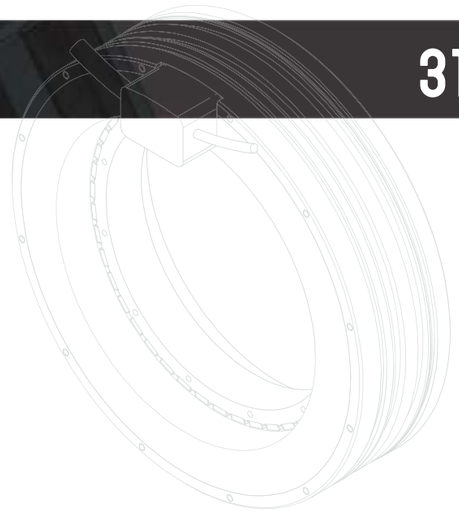
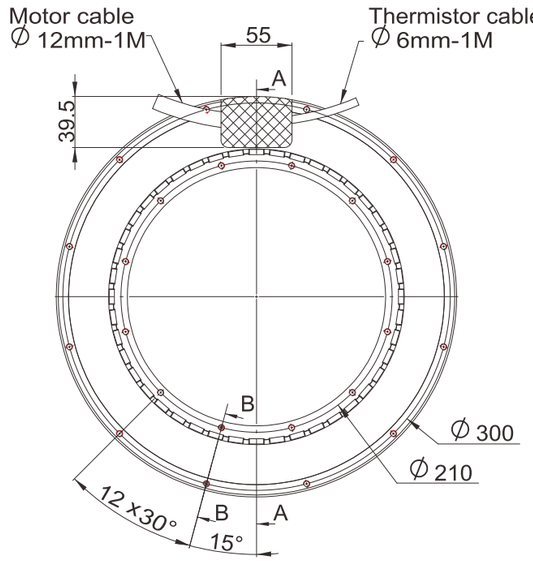
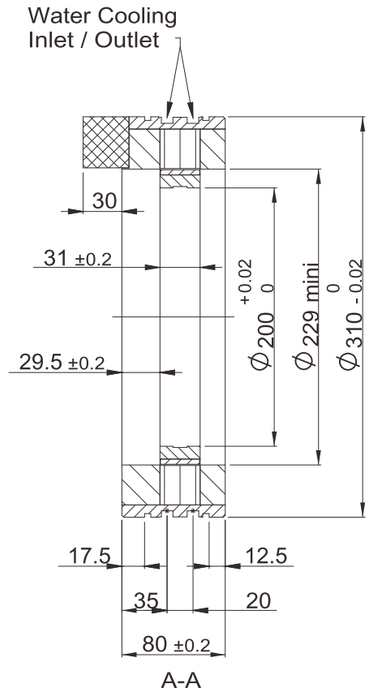
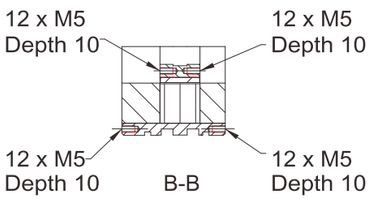


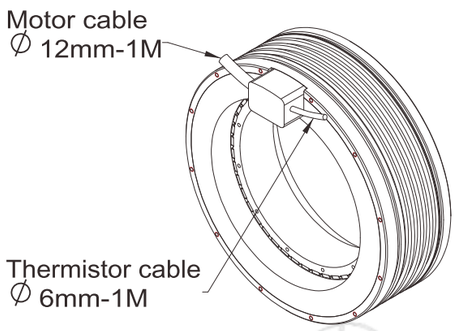


	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	248.7	248.7
Tc	Continuous torque	Nm	61.5	131.8
Ts	Stall torque	Nm	47	103.9
Kt	Torque constant	Nm/Arms	8.4	8.4
Ku	Back EMF constant(*)	Vrms/(rad/s)	4.9	4.9
Km	Motor constant	Nm/√ W	4.3	4.3
R20	Electrical resistance at 20℃ (*)	Ohm	2.58	2.58
L1	Electrical inductance(*)	Mh	17.4	16.6
Ip	Peak current	Arms	45.8	45.8
Ic	Continuous current	Arms	7.6	16.9
Is	Stall current	Arms	5.75	12.85
Pc	Max continuous power dissipation	W	323	1610
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2800	170
Rth	Thermal resistance	K/W	0.341	0.0667
2p	Number of poles	-	44	44
J	Rotor inertia	kgm²	2.2E-002	2.2E-002
Mr	Rotor mass	kg	2	2
Ms	Stator mass	kg	13	13
Td	Max Detent torque(average to peak)	Nm	1.1	1.1
ns	Stall speed	rpm	0.0099	0.16
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	4.6
Δpw	Max pressure drop at qw	bar	--	1

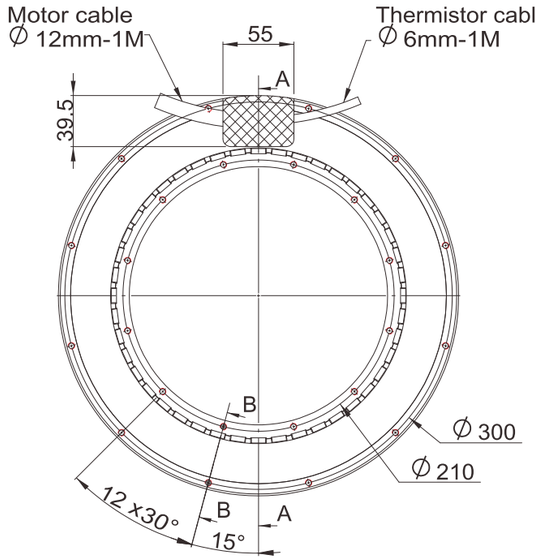


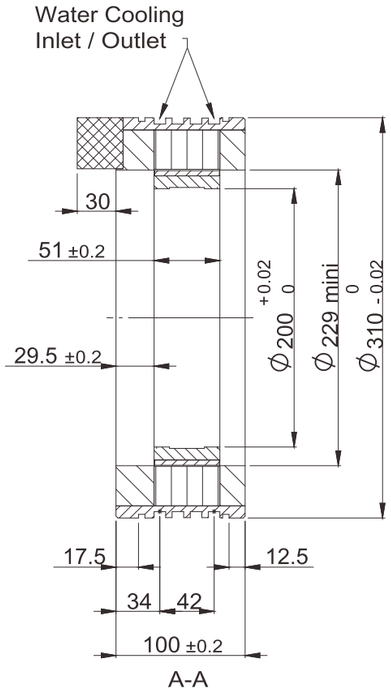


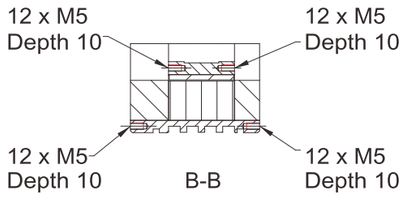




	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	415.7	415.7
Tc	Continuous torque	Nm	100.8	224.8
Ts	Stall torque	Nm	76.5	176.7
Kt	Torque constant	Nm/Arms	14	14
Ku	Back EMF constant(*)	Vrms/(rad/s)	8	8
Km	Motor constant	Nm/√ W	6.15	6.15
R20	Electrical resistance at 20℃ (*)	Ohm	3.52	3.52
L1	Electrical inductance(*)	Mh	29	27.7
Ip	Peak current	Arms	45.6	45.6
Ic	Continuous current	Arms	7.42	17.35
Is	Stall current	Arms	5.63	13.18
Pc	Max continuous power dissipation	W	417	2290
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2700	140
Rth	Thermal resistance	K/W	0.264	0.0469
2p	Number of poles	-	44	44
J	Rotor inertia	kgm²	3.8E-002	3.8E-002
Mr	Rotor mass	kg	3.5	3.5
Ms	Stator mass	kg	17	17
Td	Max Detent torque(average to peak)	Nm	1.9	1.9
ns	Stall speed	rpm	0.01	0.2
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	6.6
Δpw	Max pressure drop at qw	bar	--	1







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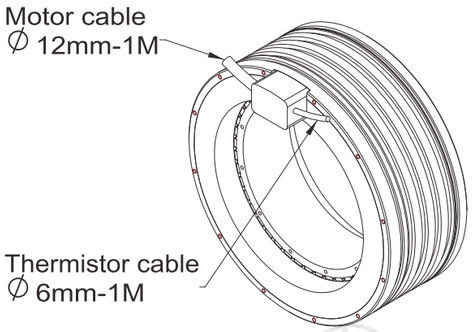
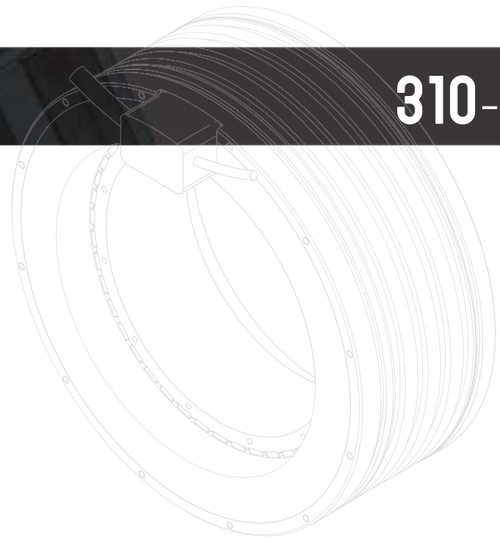
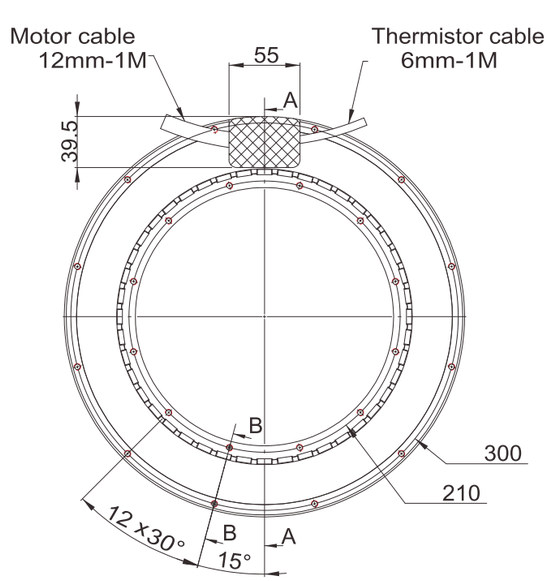
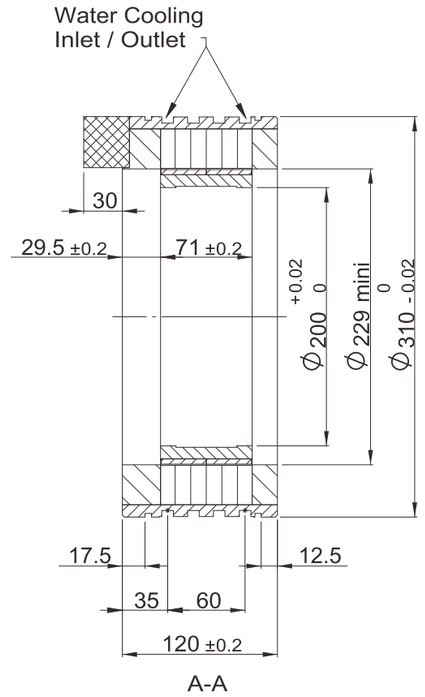
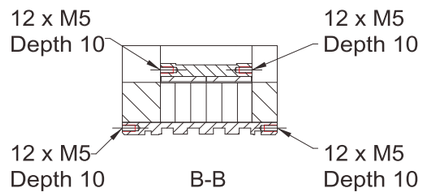




	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	581.8	581.8
Tc	Continuous torque	Nm	137.7	314.7
Ts	Stall torque	Nm	104.9	247.9
Kt	Torque constant	Nm/Arms	15.5	15.5
Ku	Back EMF constant(*)	Vrms/(rad/s)	9	9
Km	Motor constant	Nm/√ W	7.62	7.62
R20	Electrical resistance at 20℃ (*)	Ohm	2.8	2.8
L1	Electrical inductance(*)	Mh	25.4	24.3
Ip	Peak current	Arms	57.8	57.8
Ic	Continuous current	Arms	9.15	21.5
Is	Stall current	Arms	6.94	16.68
Pc	Max continuous power dissipation	W	511	2930
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2600	130
Rth	Thermal resistance	K/W	0.215	0.0367
2p	Number of poles	-	44	44
J	Rotor inertia	kgm²	5.4E-002	5.4E-002
Mr	Rotor mass	kg	4.83	4.83
Ms	Stator mass	kg	21.2	21.2
Td	Max Detent torque(average to peak)	Nm	2.6	2.6
ns	Stall speed	rpm	0.01	0.22
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	8.4
Δpw	Max pressure drop at qw	bar	--	1







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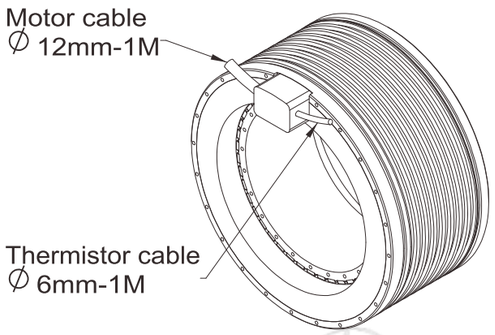
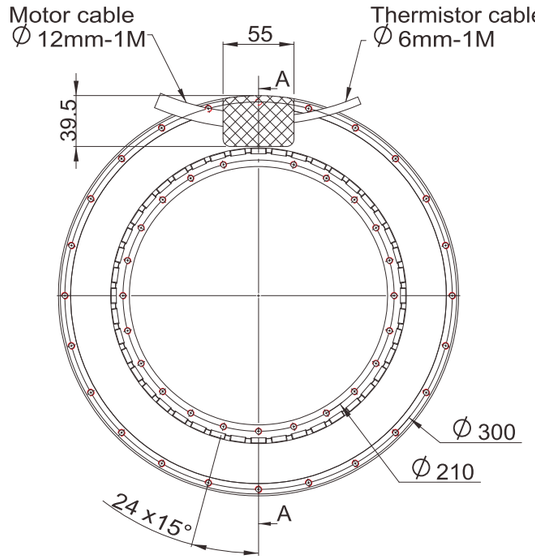
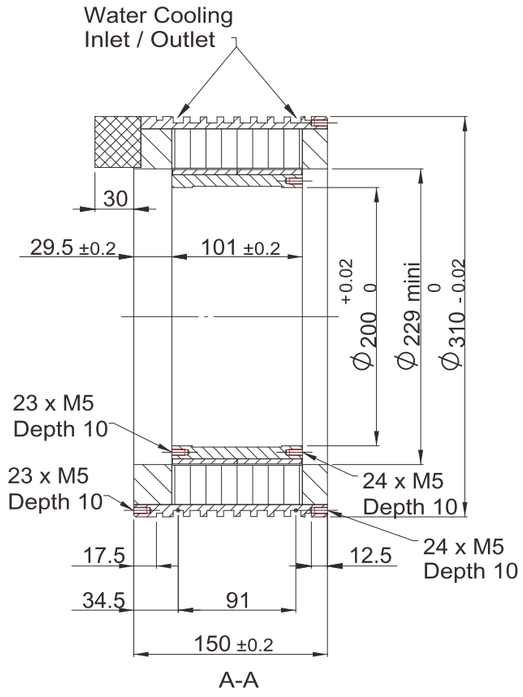


	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	830.9	830.9
Tc	Continuous torque	Nm	194.7	455.7
Ts	Stall torque	Nm	147.6	358.6
Kt	Torque constant	Nm/Arms	28	28
Ku	Back EMF constant(*)	Vrms/(rad/s)	16.2	16.2
Km	Motor constant	Nm/√ W	9.53	9.53
R20	Electrical resistance at 20℃ (*)	Ohm	5.85	5.85
L1	Electrical inductance(*)	Mh	58	55.2
Ip	Peak current	Arms	45.8	45.8
Ic	Continuous current	Arms	7.16	17.68
Is	Stall current	Arms	5.42	13.38
Pc	Max continuous power dissipation	W	651	3960
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2500	110
Rth	Thermal resistance	K/W	0.169	0.0272
2p	Number of poles	-	44	44
J	Rotor inertia	kgm²	7.8E-002	7.8E-002
Mr	Rotor mass	kg	7	7
Ms	Stator mass	kg	27.5	27.5
Td	Max Detent torque(average to peak)	Nm	3.8	3.8
ns	Stall speed	rpm	0.011	0.25
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	11
Δpw	Max pressure drop at qw	bar	--	1





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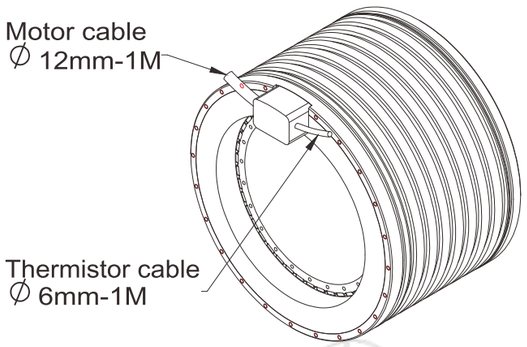
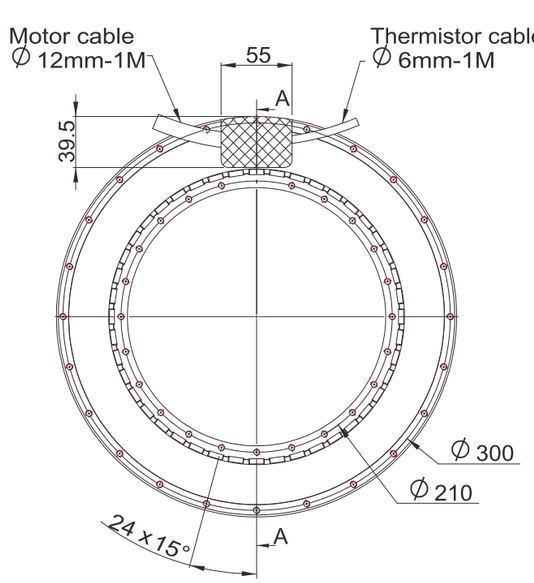
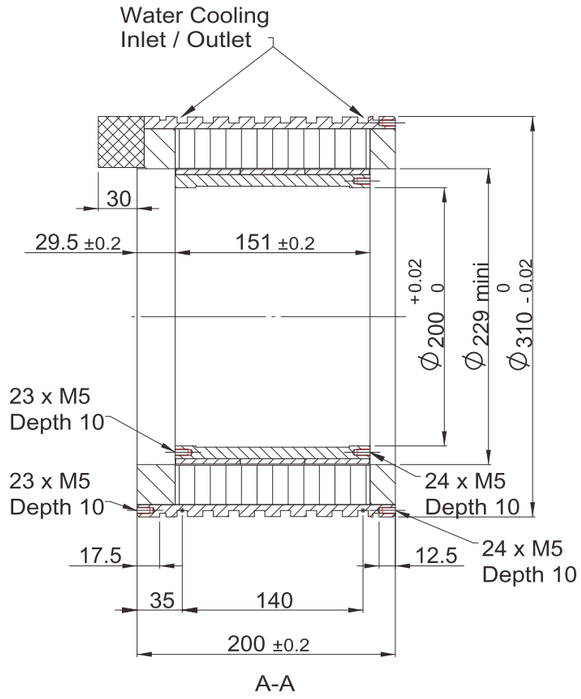


	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	1249.9	1249.9
Tc	Continuous torque	Nm	289.8	688.8
Ts	Stall torque	Nm	220.8	542.7
Kt	Torque constant	Nm/Arms	42.4	42.4
Ku	Back EMF constant(*)	Vrms/(rad/s)	24.4	24.4
Km	Motor constant	Nm/√ W	12	12
R20	Electrical resistance at 20℃ (*)	Ohm	8.06	8.06
L1	Electrical inductance(*)	Mh	87.3	82.9
Ip	Peak current	Arms	45.6	45.6
Ic	Continuous current	Arms	7.13	17.89
Is	Stall current	Arms	5.4	13.49
Pc	Max continuous power dissipation	W	886	5550
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2600	99
Rth	Thermal resistance	K/W	0.124	0.0194
2p	Number of poles	-	44	44
J	Rotor inertia	kgm²	1.0E-001	1.0E-001
Mr	Rotor mass	kg	10.5	10.5
Ms	Stator mass	kg	39	39
Td	Max Detent torque(average to peak)	Nm	5.6	5.6
ns	Stall speed	rpm	0.011	0.28
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	16
Δpw	Max pressure drop at qw	bar	--	1





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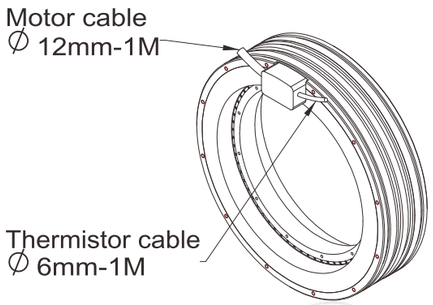
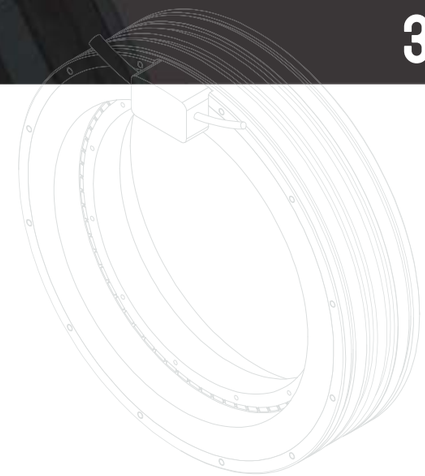
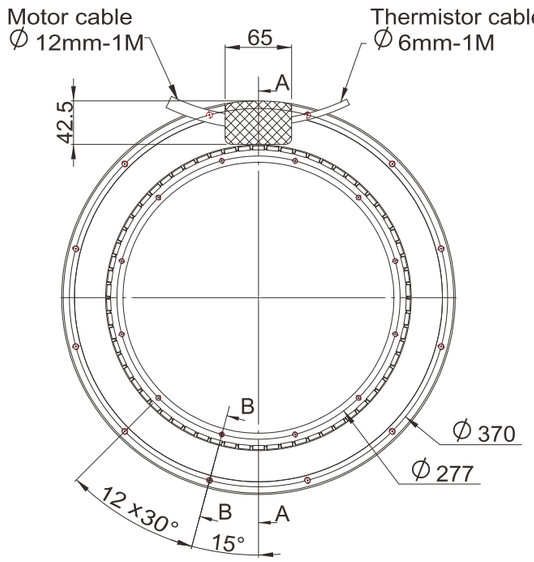
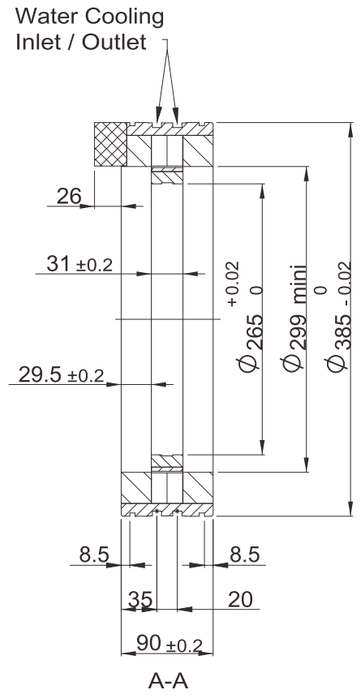
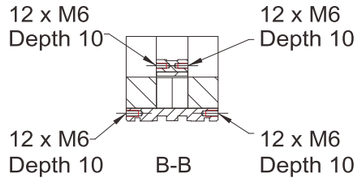




	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	423.9	423.9
Tc	Continuous torque	Nm	111	229
Ts	Stall torque	Nm	85.3	181.7
Kt	Torque constant	Nm/Arms	17.5	17.5
Ku	Back EMF constant(*)	Vrms/(rad/s)	10	10
Km	Motor constant	Nm/√ W	6.7	6.7
R20	Electrical resistance at 20℃ (*)	Ohm	4.7	4.7
L1	Electrical inductance(*)	Mh	27.3	26.6
Ip	Peak current	Arms	37.8	37.8
Ic	Continuous current	Arms	6.42	14.28
Is	Stall current	Arms	4.86	10.78
Pc	Max continuous power dissipation	W	412	2060
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	3000	160
Rth	Thermal resistance	K/W	0.251	0.0521
2p	Number of poles	-	66	66
J	Rotor inertia	kgm²	6.4E-002	6.4E-002
Mr	Rotor mass	kg	3.5	3.5
Ms	Stator mass	kg	19	19
Td	Max Detent torque(average to peak)	Nm	2.6	2.6
ns	Stall speed	rpm	0.0061	0.11
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	5.9
Δpw	Max pressure drop at qw	bar	--	1







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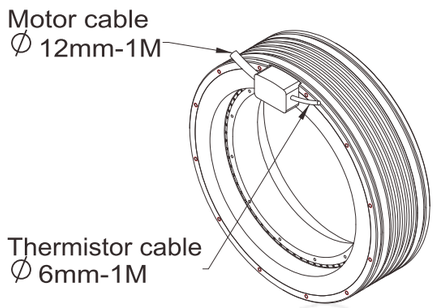
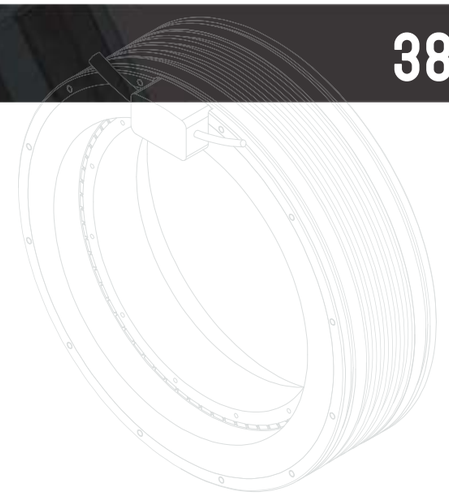
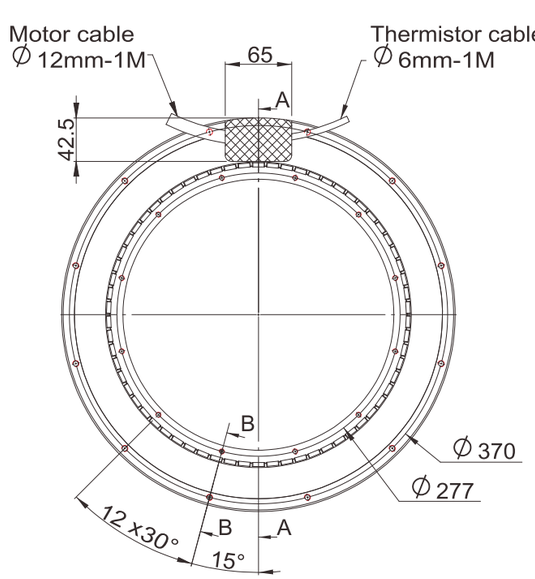
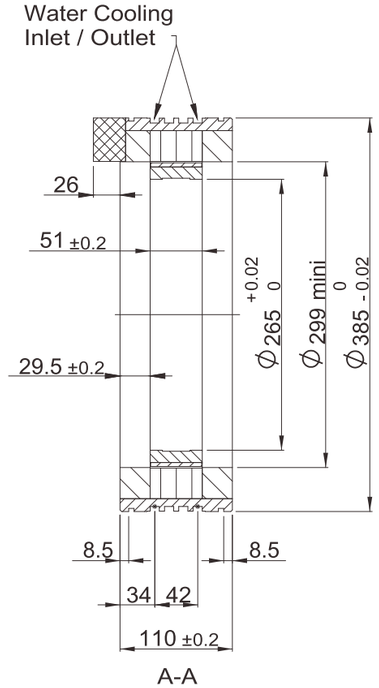
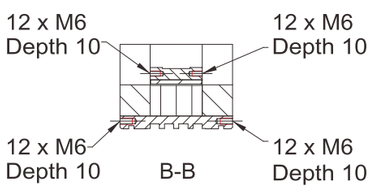




	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	706.5	706.5
Tc	Continuous torque	Nm	180.2	393.2
Ts	Stall torque	Nm	138.3	313.2
Kt	Torque constant	Nm/Arms	29.6	29.6
Ku	Back EMF constant(*)	Vrms/(rad/s)	17	17
Km	Motor constant	Nm/√ W	9.6	9.6
R20	Electrical resistance at 20℃ (*)	Ohm	6.43	6.43
L1	Electrical inductance(*)	Mh	45.6	44.3
Ip	Peak current	Arms	37.8	37.8
Ic	Continuous current	Arms	6.21	14.68
Is	Stall current	Arms	4.7	11.17
Pc	Max continuous power dissipation	W	521	2990
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2900	130
Rth	Thermal resistance	K/W	0.196	0.0359
2p	Number of poles	-	66	66
J	Rotor inertia	kgm²	1.1E-001	1.1E-001
Mr	Rotor mass	kg	5.6	5.6
Ms	Stator mass	kg	24.8	24.8
Td	Max Detent torque(average to peak)	Nm	4.4	4.4
ns	Stall speed	rpm	0.0063	0.14
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	8.6
Δpw	Max pressure drop at qw	bar	--	1







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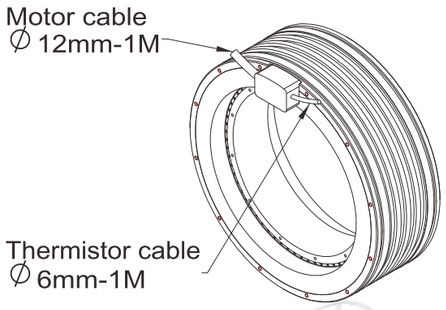
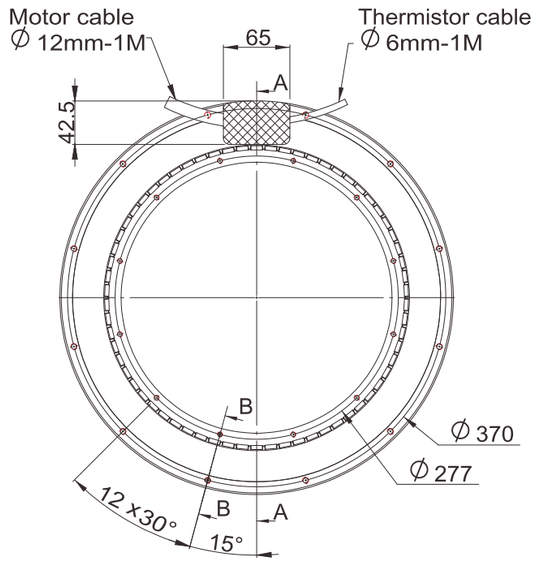
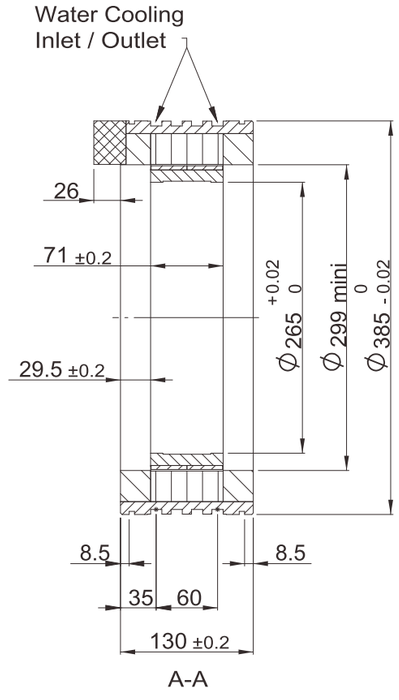
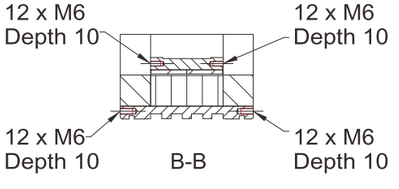


	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	989.8	989.8
Tc	Continuous torque	Nm	246.8	553.7
Ts	Stall torque	Nm	188.7	440.9
Kt	Torque constant	Nm/Arms	20.7	20.7
Ku	Back EMF constant(*)	Vrms/(rad/s)	12.2	12.2
Km	Motor constant	Nm/√ W	11.8	11.8
R20	Electrical resistance at 20℃ (*)	Ohm	2.05	2.05
L1	Electrical inductance(*)	Mh	16.2	15.48
Ip	Peak current	Arms	75.6	75.6
Ic	Continuous current	Arms	12.3	29.7
Is	Stall current	Arms	9.2	22.56
Pc	Max continuous power dissipation	W	631	3880
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2900	120
Rth	Thermal resistance	K/W	0.161	0.0277
2p	Number of poles	-	66	66
J	Rotor inertia	kgm²	1.4E-001	1.4E-001
Mr	Rotor mass	kg	7.9	7.9
Ms	Stator mass	kg	31	31
Td	Max Detent torque(average to peak)	Nm	6.1	6.1
ns	Stall speed	rpm	0.0063	0.15
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	11
Δpw	Max pressure drop at qw	bar	--	1







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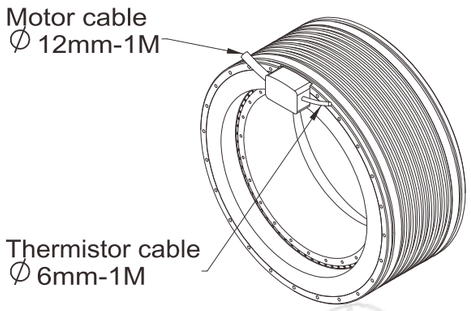
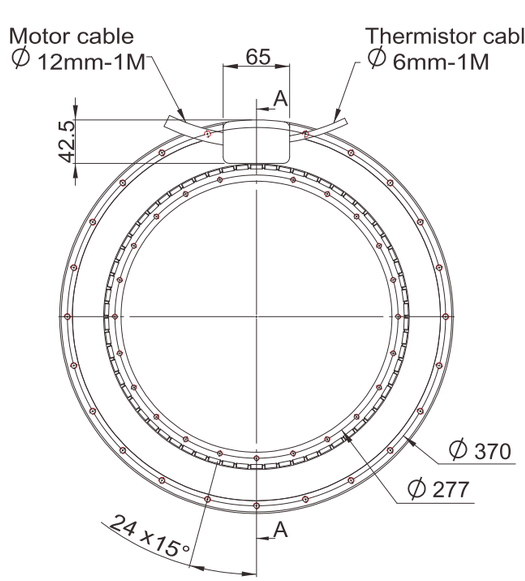
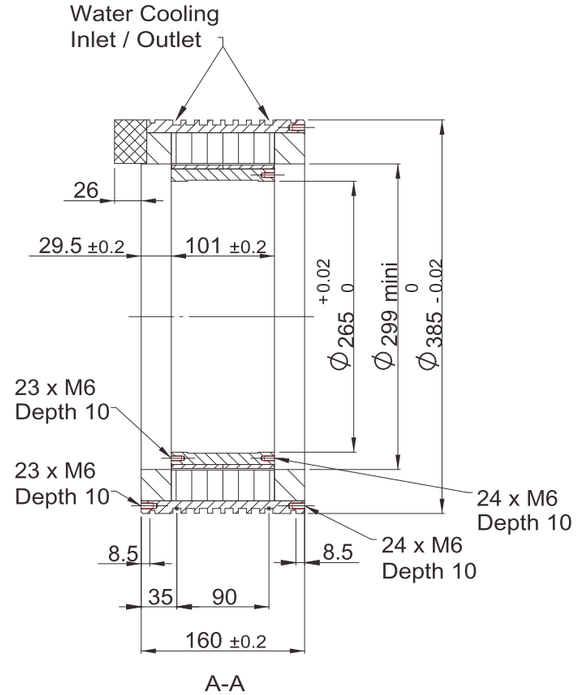


	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	1410.5	1410.5
Tc	Continuous torque	Nm	343.8	799.6
Ts	Stall torque	Nm	262	636
Kt	Torque constant	Nm/Arms	29.6	29.6
Ku	Back EMF constant(*)	Vrms/(rad/s)	17	17
Km	Motor constant	Nm/√ W	14.5	14.5
R20	Electrical resistance at 20℃ (*)	Ohm	2.73	2.73
L1	Electrical inductance(*)	Mh	22.7	22
Ip	Peak current	Arms	75.5	75.5
Ic	Continuous current	Arms	11.6	30
Is	Stall current	Arms	8.95	22.87
Pc	Max continuous power dissipation	W	796	5290
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2800	100
Rth	Thermal resistance	K/W	0.128	0.0203
2p	Number of poles	-	66	66
J	Rotor inertia	kgm²	2.0E-001	2.0E-001
Mr	Rotor mass	kg	11.2	11.2
Ms	Stator mass	kg	38.9	38.9
Td	Max Detent torque(average to peak)	Nm	8.7	8.7
ns	Stall speed	rpm	0.0066	0.18
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	15
Δpw	Max pressure drop at qw	bar	--	2





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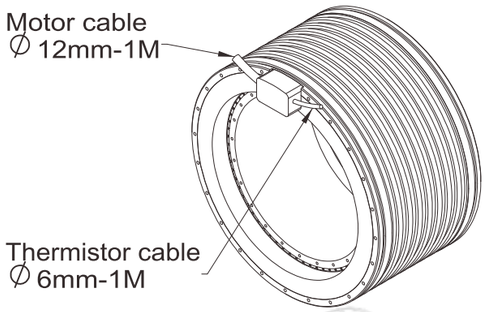
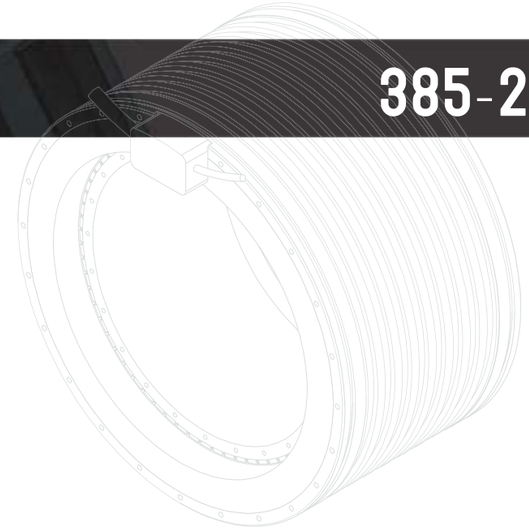
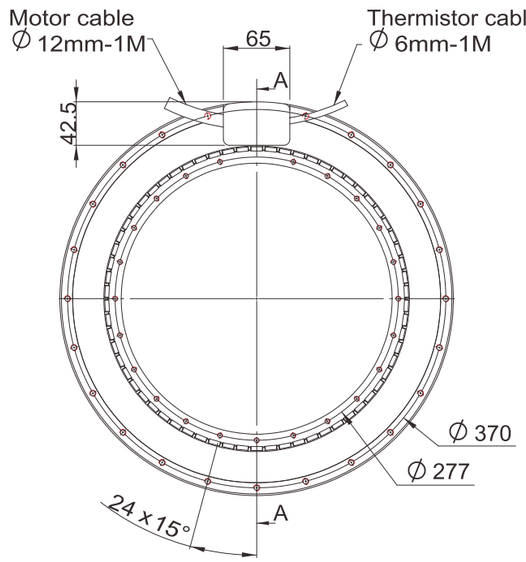
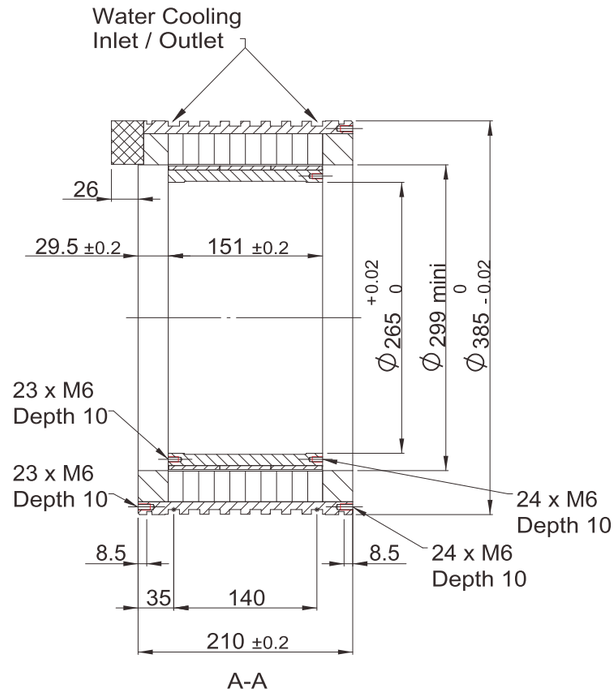




	PERFORMANCES	UNIT	FREE AIR CONVECTION	WATER COOLING
Tp	Peak torque	Nm	2120.5	2120.5
Tc	Continuous torque	Nm	508.5	1210.6
Ts	Stall torque	Nm	388.4	961.5
Kt	Torque constant	Nm/Arms	28.8	28.8
Ku	Back EMF constant(*)	Vrms/(rad/s)	16.6	16.6
Km	Motor constant	Nm/√ W	18.6	18.6
R20	Electrical resistance at 20℃ (*)	Ohm	1.62	1.62
L1	Electrical inductance(*)	Mh	14.5	14.1
Ip	Peak current	Arms	117.5	117.5
Ic	Continuous current	Arms	17.8	46.7
Is	Stall current	Arms	13.5	35.3
Pc	Max continuous power dissipation	W	1070	7490
Udc	Nominal input voltage	VDC	600	600
τth	Thermal time constant	s	2800	95
Rth	Thermal resistance	K/W	0.0944	0.0144
2p	Number of poles	-	66	66
J	Rotor inertia	kgm²	3.1E-001	3.1E-001
Mr	Rotor mass	kg	16.7	16.7
Ms	Stator mass	kg	54.5	54.5
Td	Max Detent torque(average to peak)	Nm	13	13
ns	Stall speed	rpm	0.0065	0.19
Δθw	Water temperature difference for Pc	K	--	5
qw	Minimum water flow for Δ θw	l/min	--	22
Δpw	Max pressure drop at qw	bar	--	3





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