

# Torque **Motors**

**TMB<sup>+</sup> DATA SHEETS**

***ETEL***

MOTOR PERFORMANCE		Winding codes	RA	SA	SB	UB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	39.6	39.6	39.6	39.5
<b>Ti</b>	Intermittent torque	Nm	29.5	29.1	29.1	28.0
<b>Tc</b>	Continuous torque	Nm	21.6	21.3	21.3	20.3
<b>Ts</b>	Standstill torque	Nm	17.3	17.0	17.0	16.2
<b>Ip</b>	Peak current	Arms	15.8	20.6	41.2	73.0
<b>Ii</b>	Intermittent current	Arms	9.57	12.2	24.4	40.8
<b>Ic</b>	Continuous current	Arms	6.06	7.73	15.5	25.8
<b>Is</b>	Standstill current	Arms	4.59	5.86	11.7	19.5
<b>ns</b>	Rated low speed	rpm	0.75	0.75	0.75	0.78
<b>nm</b>	Maximum speed without flux weakening	rpm	1570	2060	4120	4590
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	3570	4010	4590	4590
<b>ton,p</b>	Maximum ON time for peak cycle	s	6.4	5.9	5.9	4.7
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.9	2.9	2.9
<b>Pp</b>	Power dissipation @ Ip	W	3480	3610	3610	4070
<b>Pi</b>	Power dissipation @ Ii	W	1630	1610	1610	1580
<b>Pc</b>	Power dissipation @ Ic	W	652	643	643	633
<b>Td</b>	Max. detent torque (average to peak)	Nm	0.32	0.32	0.32	0.32

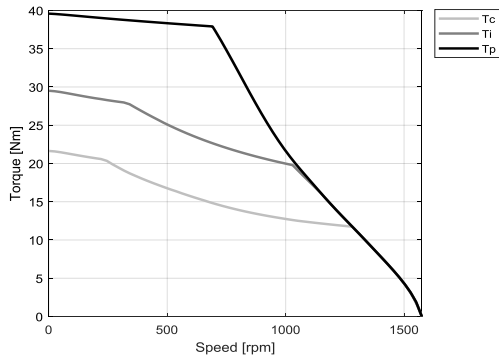
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	4.35	3.33	1.67	0.940
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	2.52	1.93	0.965	0.545
<b>Km</b>	Motor constant	Nm/√W	1.23	1.21	1.21	1.15
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	8.32	5.03	1.26	0.446
<b>Ld/Lq</b>	Electrical inductance (*)	mH	56.6 / 49.3	33.2 / 29.1	8.29 / 7.29	2.64 / 2.37
<b>Isc</b>	Maximum short-circuit current	Arms	4.67	6.11	12.2	21.6
<b>nb</b>	Base speed	rpm	1280	1730	3950	N/A
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	1030	1430	3300	N/A
<b>nb,p</b>	Base speed at peak duty cycle	rpm	691	945	2030	3670
<b>nn</b>	Rated speed	rpm	1150	1570	2510	2470
<b>Tn</b>	Rated torque	Nm	12.2	10.9	8.32	8.32
<b>In</b>	Rated current	Arms	3.32	3.93	6.25	11.1
<b>rth</b>	Thermal time constant	s	72.9	72.3	72.3	69.9
<b>Rth</b>	Thermal resistance	K/W	0.163	0.165	0.165	0.167
<b>2p</b>	Number of poles	-	22	22	22	22
<b>J</b>	Rotor inertia	kg·m²	0.000993	0.000993	0.000993	0.000993
<b>mr</b>	Rotor mass	kg	0.708	0.708	0.708	0.708
<b>ms</b>	Stator mass	kg	4.73	4.71	4.71	4.67

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.018	0.018	0.018	0.018
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	2.0	2.0	2.0	2.0
<b>Δpw</b>	Max. pressure drop at qw	bar	0.1	0.1	0.1	0.1

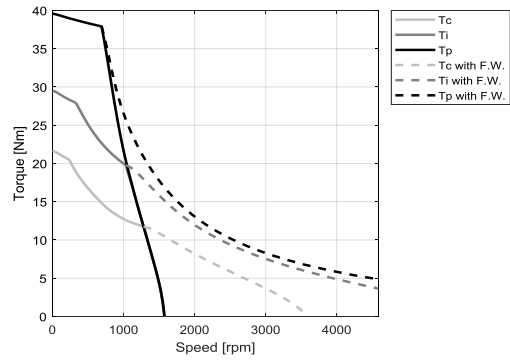
**Notes:** (\*) terminal to terminal.  
Hypotheses and tolerances are in ETEL Integration Manual.  
Please refer to ETEL Integration Manual for the mass of the optional cooling jacket and the possible additional pressure drop.

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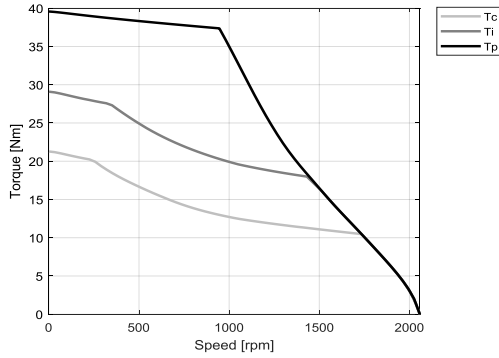
**RA - WATER COOLING**



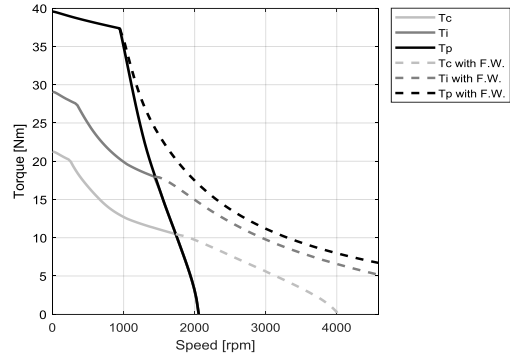
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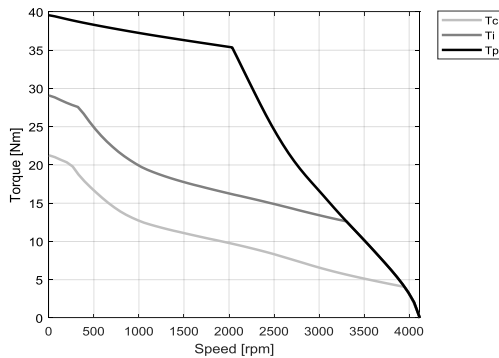
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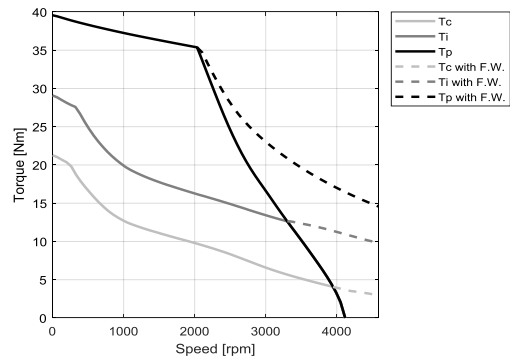
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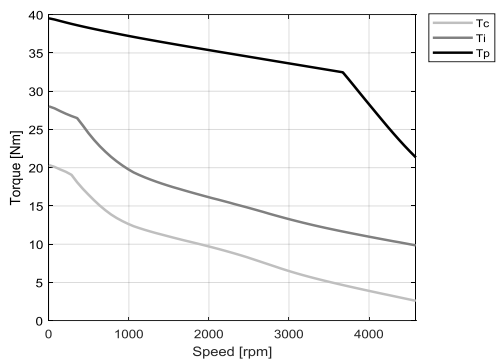
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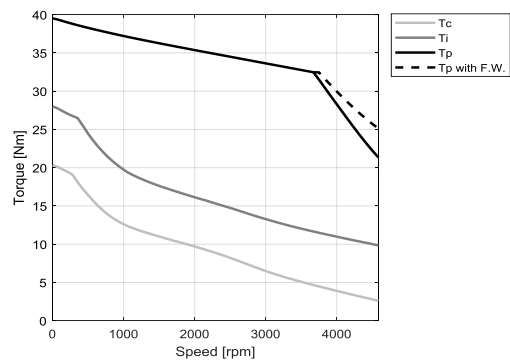
**SB - WATER COOLING**



**UB - WATER COOLING**



**UB - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	RA	SA	SB	UB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	66.1	66.1	66.1	66.1
<b>Ti</b>	Intermittent torque	Nm	53.1	52.4	52.4	50.5
<b>Tc</b>	Continuous torque	Nm	38.7	38.1	38.1	36.4
<b>Ts</b>	Standstill torque	Nm	30.9	30.3	30.3	28.8
<b>Ip</b>	Peak current	Arms	14.0	18.3	36.7	65.0
<b>Ii</b>	Intermittent current	Arms	10.1	12.9	25.8	43.1
<b>Ic</b>	Continuous current	Arms	6.39	8.16	16.3	27.3
<b>Is</b>	Standstill current	Arms	4.84	6.19	12.4	20.7
<b>ns</b>	Rated low speed	rpm	0.84	0.84	0.84	0.87
<b>nm</b>	Maximum speed without flux weakening	rpm	947	1240	2480	4390
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	2160	2540	3850	4590
<b>ton,p</b>	Maximum ON time for peak cycle	s	9.1	8.5	8.5	6.8
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.9	2.9	2.8
<b>Pp</b>	Power dissipation @ Ip	W	3780	3910	3910	4380
<b>Pi</b>	Power dissipation @ Ii	W	2560	2530	2530	2490
<b>Pc</b>	Power dissipation @ Ic	W	1020	1010	1010	996
<b>Td</b>	Max. detent torque (average to peak)	Nm	0.53	0.53	0.53	0.53

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	7.27	5.57	2.78	1.57
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	4.19	3.21	1.60	0.906
<b>Km</b>	Motor constant	Nm/√W	1.73	1.70	1.70	1.62
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	11.8	7.12	1.78	0.629
<b>Ld/Lq</b>	Electrical inductance (*)	mH	87.7 / 75.4	51.4 / 44.5	12.9 / 11.1	4.10 / 3.62
<b>Isc</b>	Maximum short-circuit current	Arms	5.02	6.55	13.1	23.2
<b>nb</b>	Base speed	rpm	764	1040	2310	N/A
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	604	868	1990	3830
<b>nb,p</b>	Base speed at peak duty cycle	rpm	414	580	1290	2350
<b>nn</b>	Rated speed	rpm	682	946	2050	2010
<b>Tn</b>	Rated torque	Nm	21.6	19.0	12.3	12.4
<b>In</b>	Rated current	Arms	3.43	3.97	5.43	9.68
<b>rth</b>	Thermal time constant	s	65.1	64.6	64.6	62.6
<b>Rth</b>	Thermal resistance	K/W	0.102	0.104	0.104	0.105
<b>2p</b>	Number of poles	-	22	22	22	22
<b>J</b>	Rotor inertia	kg·m²	0.00168	0.00168	0.00168	0.00168
<b>mr</b>	Rotor mass	kg	1.20	1.20	1.20	1.20
<b>ms</b>	Stator mass	kg	6.34	6.32	6.32	6.26

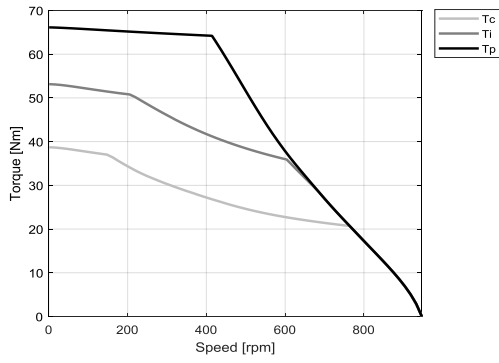
MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.025	0.025	0.025	0.025
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	3.2	3.2	3.2	3.1
<b>Δpw</b>	Max. pressure drop at qw	bar	0.1	0.1	0.1	0.1

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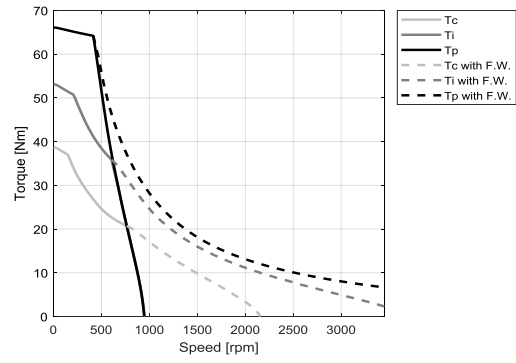
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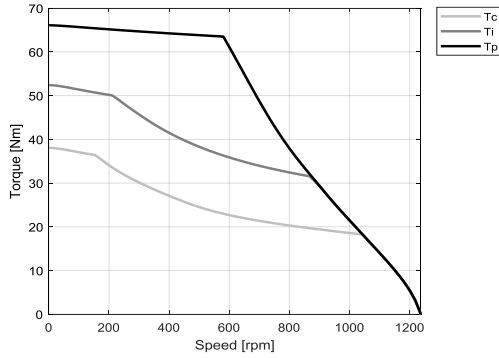
**RA - WATER COOLING**



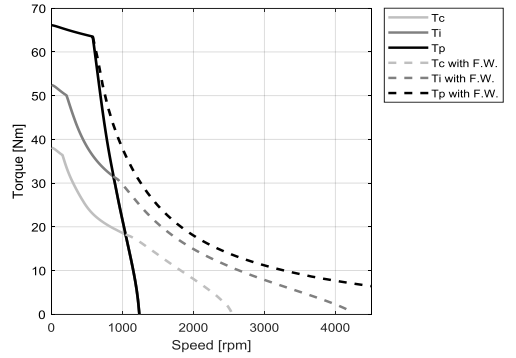
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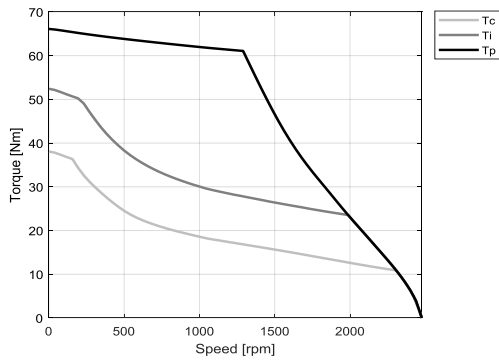
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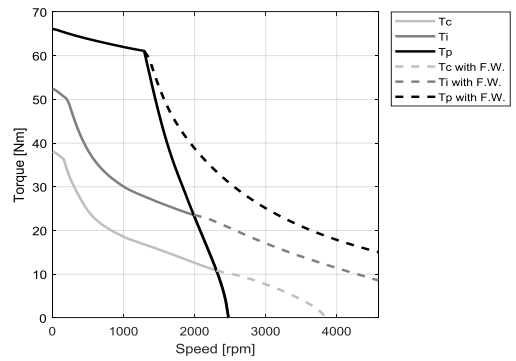
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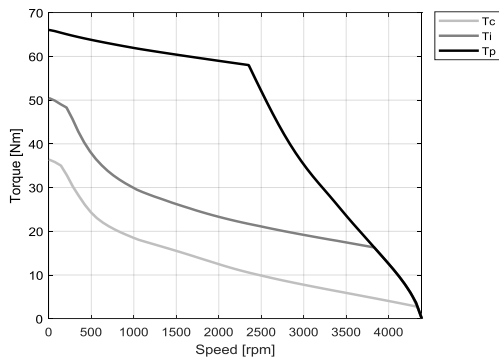
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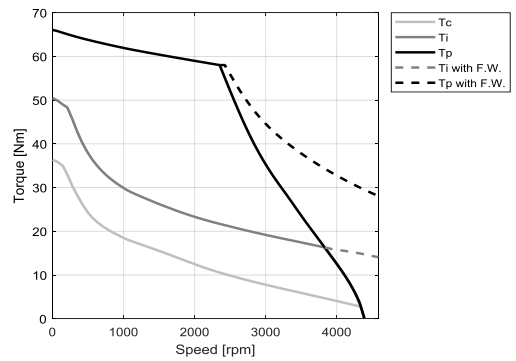
**SB - WATER COOLING**



**UB - WATER COOLING**



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MOTOR PERFORMANCE		Winding codes	RA	TA	SB	UB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	92.6	92.6	92.6	92.5
<b>Ti</b>	Intermittent torque	Nm	76.2	74.9	75.2	72.4
<b>Tc</b>	Continuous torque	Nm	55.4	54.3	54.6	52.2
<b>Ts</b>	Standstill torque	Nm	44.2	43.2	43.4	41.3
<b>Ip</b>	Peak current	Arms	13.6	23.0	35.6	63.1
<b>Ii</b>	Intermittent current	Arms	10.3	16.8	26.3	43.9
<b>Ic</b>	Continuous current	Arms	6.49	10.6	16.6	27.7
<b>Is</b>	Standstill current	Arms	4.92	8.06	12.6	21.0
<b>ns</b>	Rated low speed	rpm	0.86	0.87	0.87	0.89
<b>nm</b>	Maximum speed without flux weakening	rpm	676	1140	1770	3140
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	1440	2050	2780	3930
<b>ton,p</b>	Maximum ON time for peak cycle	s	9.8	8.8	9.1	7.3
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.8	2.8	2.8	2.8
<b>Pp</b>	Power dissipation @ Ip	W	4590	4840	4750	5300
<b>Pi</b>	Power dissipation @ Ii	W	3420	3400	3380	3330
<b>Pc</b>	Power dissipation @ Ic	W	1370	1360	1350	1330
<b>Td</b>	Max. detent torque (average to peak)	Nm	0.75	0.75	0.75	0.75

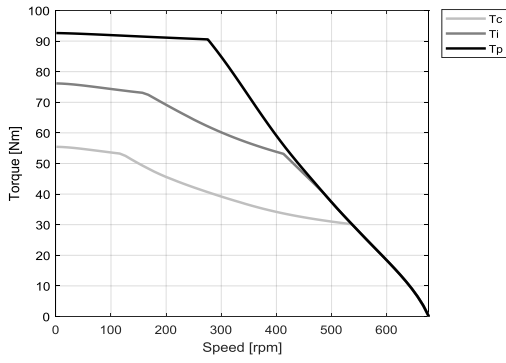
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	10.2	6.06	3.90	2.20
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	5.87	3.48	2.25	1.27
<b>Km</b>	Motor constant	Nm/√W	2.13	2.08	2.10	1.99
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	15.3	5.66	2.31	0.815
<b>Ld/Lq</b>	Electrical inductance (*)	mH	116 / 99.5	41.0 / 35.4	17.0 / 14.7	5.43 / 4.77
<b>Isc</b>	Maximum short-circuit current	Arms	5.30	8.93	13.9	24.5
<b>nb</b>	Base speed	rpm	537	995	1650	3070
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	413	852	1450	2740
<b>nb,p</b>	Base speed at peak duty cycle	rpm	276	556	938	1730
<b>nn</b>	Rated speed	rpm	475	909	1540	2100
<b>Tn</b>	Rated torque	Nm	31.7	24.1	16.8	12.6
<b>In</b>	Rated current	Arms	3.54	4.61	5.17	7.21
<b>rth</b>	Thermal time constant	s	63.6	62.8	63.0	61.2
<b>Rth</b>	Thermal resistance	K/W	0.0756	0.0760	0.0765	0.0775
<b>2p</b>	Number of poles	-	22	22	22	22
<b>J</b>	Rotor inertia	kg·m²	0.00236	0.00236	0.00236	0.00236
<b>mr</b>	Rotor mass	kg	1.69	1.69	1.69	1.69
<b>ms</b>	Stator mass	kg	8.18	8.15	8.16	8.08

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.033	0.033	0.033	0.033
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	4.3	4.2	4.2	4.2
<b>Δpw</b>	Max. pressure drop at qw	bar	0.1	0.1	0.1	0.1

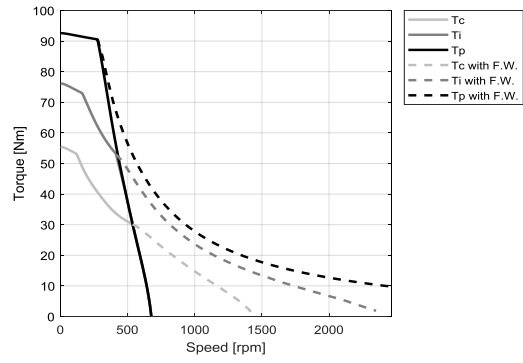
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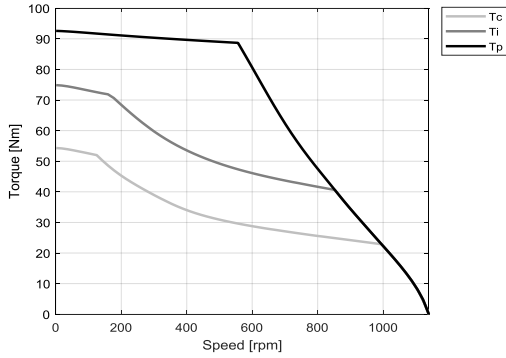
**RA - WATER COOLING**



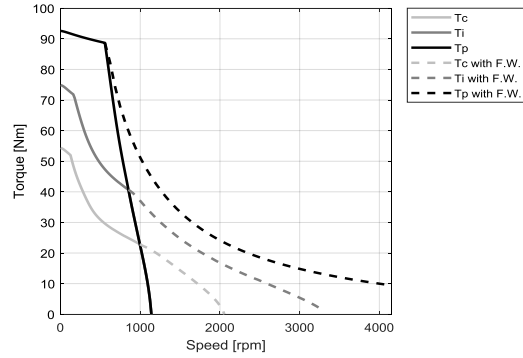
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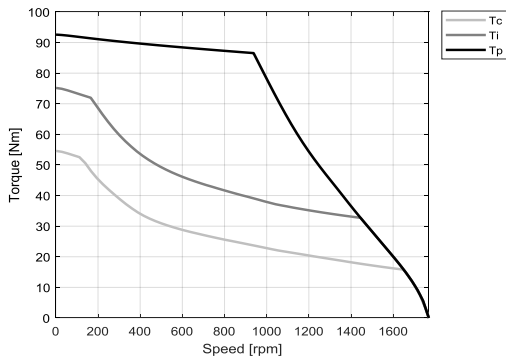
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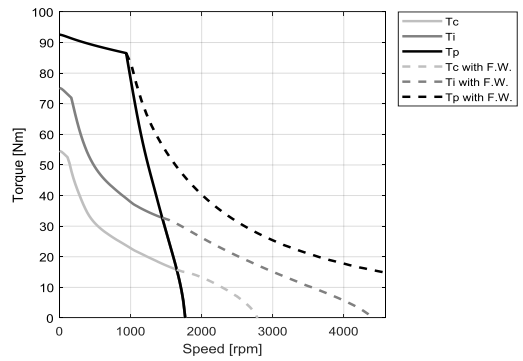
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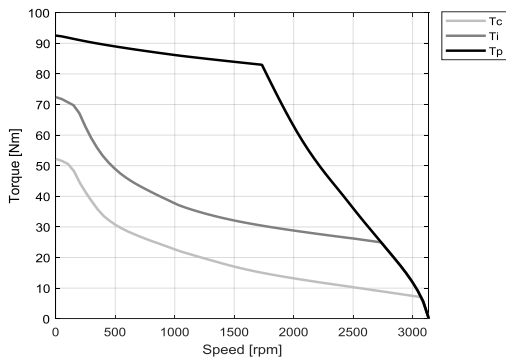
**SB - WATER COOLING**



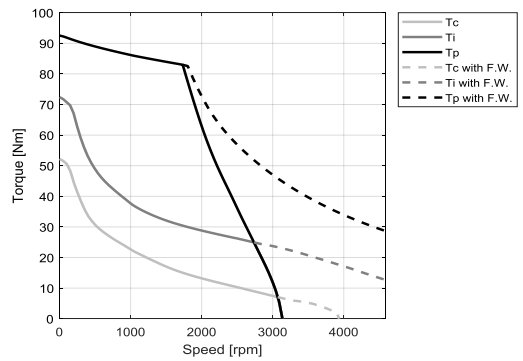
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MOTOR PERFORMANCE		Winding codes	RA	TA	SB	UB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	132	132	132	132
<b>Ti</b>	Intermittent torque	Nm	111	109	109	105
<b>Tc</b>	Continuous torque	Nm	80.9	79.2	79.6	76.2
<b>Ts</b>	Standstill torque	Nm	64.5	63.0	63.4	60.3
<b>Ip</b>	Peak current	Arms	13.4	22.6	35.0	62.0
<b>Ii</b>	Intermittent current	Arms	10.4	17.1	26.7	44.6
<b>Ic</b>	Continuous current	Arms	6.60	10.8	16.9	28.2
<b>Is</b>	Standstill current	Arms	5.00	8.19	12.8	21.4
<b>ns</b>	Rated low speed	rpm	0.91	0.92	0.92	0.94
<b>nm</b>	Maximum speed without flux weakening	rpm	473	798	1240	2190
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	1010	1490	2080	3220
<b>ton,p</b>	Maximum ON time for peak cycle	s	9.9	8.9	9.1	7.3
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.8	2.8	2.8	2.8
<b>Pp</b>	Power dissipation @ Ip	W	5960	6270	6160	6860
<b>Pi</b>	Power dissipation @ Ii	W	4750	4700	4690	4600
<b>Pc</b>	Power dissipation @ Ic	W	1900	1880	1880	1840
<b>Td</b>	Max. detent torque (average to peak)	Nm	1.1	1.1	1.1	1.1

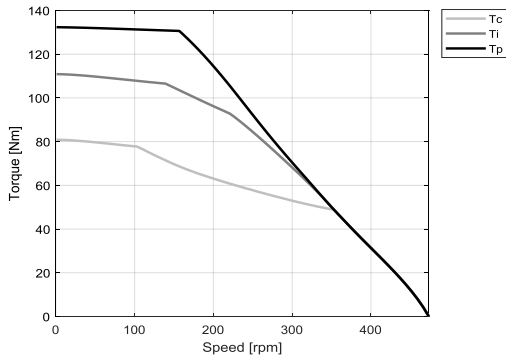
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	14.6	8.66	5.59	3.15
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	8.38	4.98	3.21	1.81
<b>Km</b>	Motor constant	Nm/√W	2.62	2.56	2.58	2.46
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	20.7	7.63	3.12	1.10
<b>Ld/Lq</b>	Electrical inductance (*)	mH	157 / 134	55.5 / 47.9	23.1 / 19.8	7.35 / 6.45
<b>Isc</b>	Maximum short-circuit current	Arms	5.59	9.42	14.6	25.9
<b>nb</b>	Base speed	rpm	353	674	1120	2090
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	221	570	994	1880
<b>nb,p</b>	Base speed at peak duty cycle	rpm	157	368	651	1230
<b>nn</b>	Rated speed	rpm	299	611	1040	1970
<b>Tn</b>	Rated torque	Nm	53.1	38.9	29.6	19.7
<b>In</b>	Rated current	Arms	4.15	5.12	6.18	7.71
<b>rth</b>	Thermal time constant	s	59.9	59.2	59.4	57.8
<b>Rth</b>	Thermal resistance	K/W	0.0533	0.0536	0.0539	0.0546
<b>2p</b>	Number of poles	-	22	22	22	22
<b>J</b>	Rotor inertia	kg·m²	0.00334	0.00334	0.00334	0.00334
<b>mr</b>	Rotor mass	kg	2.38	2.38	2.38	2.38
<b>ms</b>	Stator mass	kg	10.5	10.4	10.5	10.4

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.044	0.044	0.044	0.044
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	5.9	5.9	5.9	5.7
<b>Δpw</b>	Max. pressure drop at qw	bar	0.3	0.3	0.3	0.3

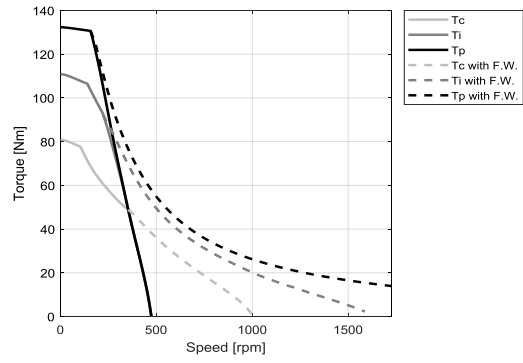
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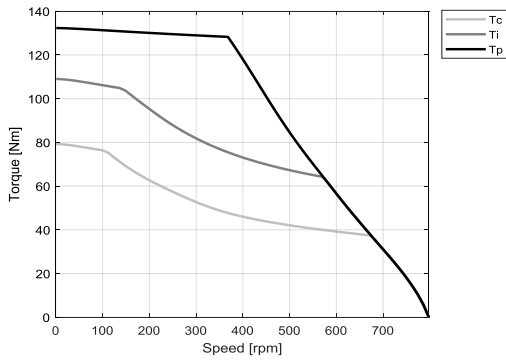
**RA - WATER COOLING**



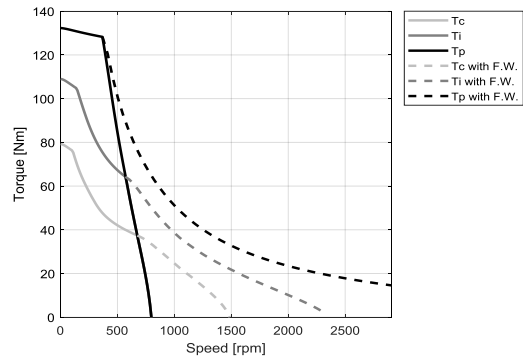
**RA - WATER COOLING**



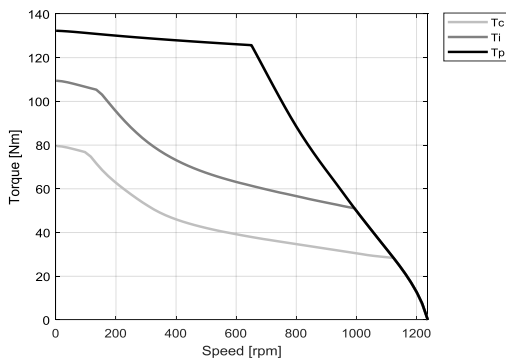
**TA - WATER COOLING**



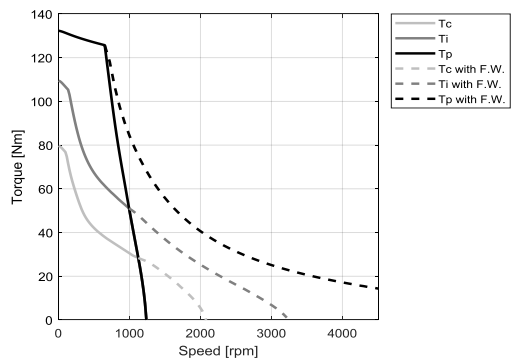
**TA - WATER COOLING**



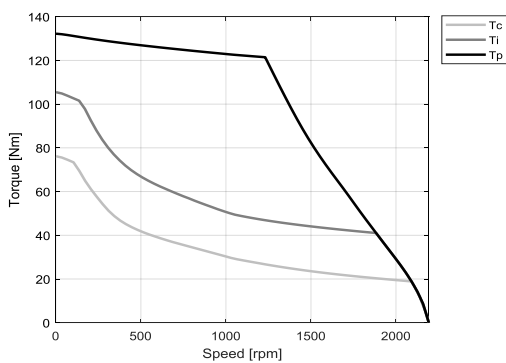
**SB - WATER COOLING**



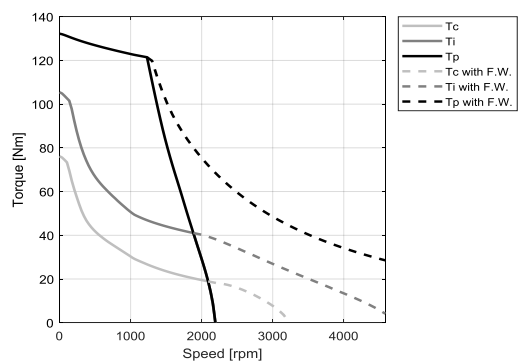
**SB - WATER COOLING**



**UB - WATER COOLING**



**UB - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	RA	TA	SB	UB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	199	198	198	198
<b>Ti</b>	Intermittent torque	Nm	166	163	164	158
<b>Tc</b>	Continuous torque	Nm	121	118	119	114
<b>Ts</b>	Standstill torque	Nm	96.2	94.0	94.6	89.9
<b>Ip</b>	Peak current	Arms	13.2	22.2	34.4	60.9
<b>Ii</b>	Intermittent current	Arms	10.3	16.9	26.4	44.0
<b>Ic</b>	Continuous current	Arms	6.52	10.7	16.7	27.8
<b>Is</b>	Standstill current	Arms	4.94	8.09	12.6	21.1
<b>ns</b>	Rated low speed	rpm	0.90	0.91	0.91	0.94
<b>nm</b>	Maximum speed without flux weakening	rpm	316	532	825	1460
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	720	1040	1460	2290
<b>ton,p</b>	Maximum ON time for peak cycle	s	9.0	8.0	8.3	6.5
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.7	2.7	2.7	2.7
<b>Pp</b>	Power dissipation @ Ip	W	8290	8710	8560	9520
<b>Pi</b>	Power dissipation @ Ii	W	6590	6520	6510	6360
<b>Pc</b>	Power dissipation @ Ic	W	2640	2610	2600	2540
<b>Td</b>	Max. detent torque (average to peak)	Nm	1.6	1.6	1.6	1.6

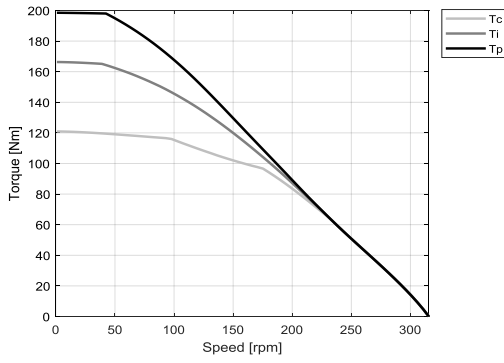
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	21.9	13.0	8.39	4.73
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	12.6	7.47	4.81	2.72
<b>Km</b>	Motor constant	Nm/√W	3.28	3.20	3.23	3.07
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	29.8	11.0	4.50	1.58
<b>Ld/Lq</b>	Electrical inductance (*)	mH	234 / 201	82.4 / 71.4	34.2 / 29.6	10.9 / 9.62
<b>Isc</b>	Maximum short-circuit current	Arms	5.65	9.51	14.8	26.1
<b>nb</b>	Base speed	rpm	175	419	713	1360
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	38.9	316	613	1220
<b>nb,p</b>	Base speed at peak duty cycle	rpm	42.4	200	399	790
<b>nn</b>	Rated speed	rpm	119	369	651	1280
<b>Tn</b>	Rated torque	Nm	110	68.9	54.8	36.3
<b>In</b>	Rated current	Arms	6.02	5.96	7.45	9.05
<b>rth</b>	Thermal time constant	s	60.3	59.7	59.7	58.3
<b>Rth</b>	Thermal resistance	K/W	0.0365	0.0367	0.0369	0.0374
<b>2p</b>	Number of poles	-	22	22	22	22
<b>J</b>	Rotor inertia	kg·m²	0.00506	0.00506	0.00506	0.00506
<b>mr</b>	Rotor mass	kg	3.61	3.61	3.61	3.61
<b>ms</b>	Stator mass	kg	15.1	15.1	15.1	14.9

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.063	0.063	0.063	0.063
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	8.2	8.1	8.1	7.9
<b>Δpw</b>	Max. pressure drop at qw	bar	0.4	0.4	0.4	0.4

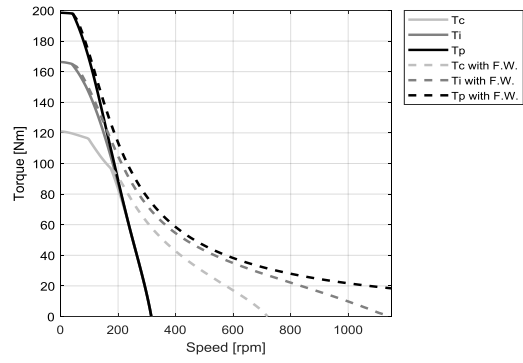
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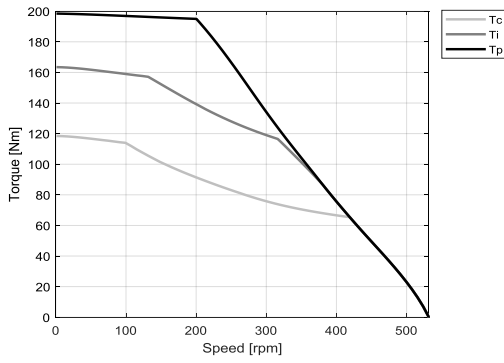
**RA - WATER COOLING**



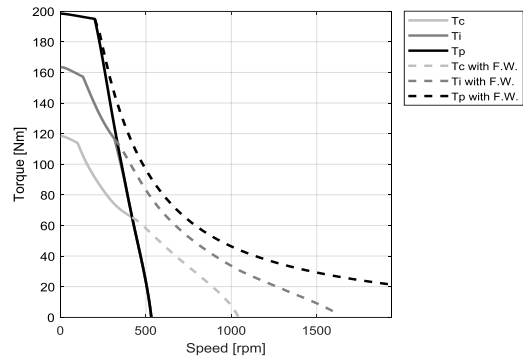
**RA - WATER COOLING**



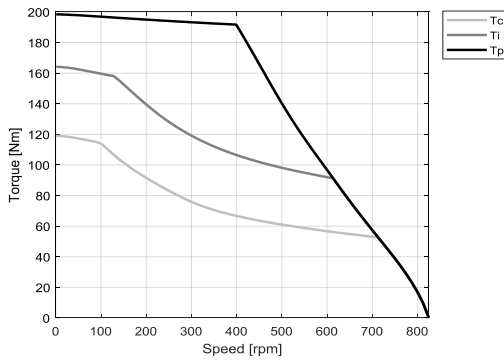
**TA - WATER COOLING**



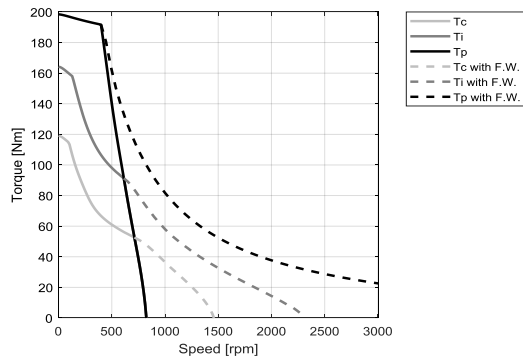
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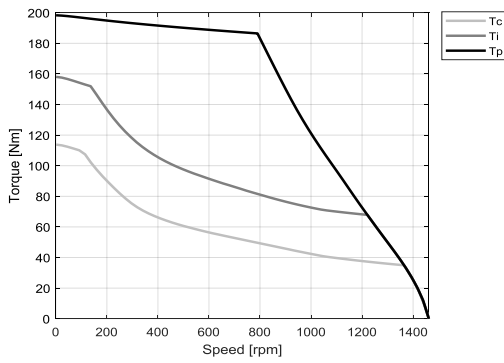
**SB - WATER COOLING**



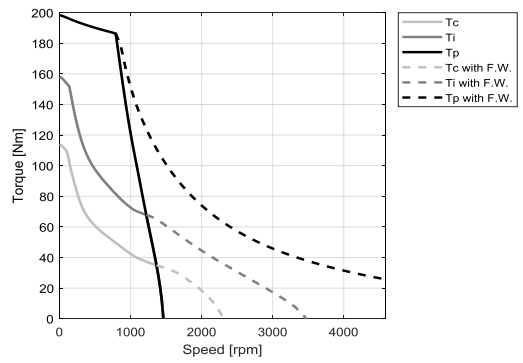
**SB - WATER COOLING**



**UB - WATER COOLING**



**UB - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	RA	TA	SB	UB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	247	265	265	264
<b>Ti</b>	Intermittent torque	Nm	211	216	217	209
<b>Tc</b>	Continuous torque	Nm	159	156	157	150
<b>Ts</b>	Standstill torque	Nm	126	124	124	118
<b>Ip</b>	Peak current	Arms	11.6	22.0	34.1	60.4
<b>Ii</b>	Intermittent current	Arms	9.38	16.5	25.8	43.0
<b>Ic</b>	Continuous current	Arms	6.38	10.5	16.3	27.2
<b>Is</b>	Standstill current	Arms	4.84	7.92	12.4	20.6
<b>ns</b>	Rated low speed	rpm	0.92	0.93	0.93	0.95
<b>nm</b>	Maximum speed without flux weakening	rpm	237	399	619	1100
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	561	826	1130	1780
<b>ton,p</b>	Maximum ON time for peak cycle	s	11	6.6	6.8	5.3
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	7.2	2.7	2.7	2.7
<b>Pp</b>	Power dissipation @ Ip	W	8300	11200	11100	12300
<b>Pi</b>	Power dissipation @ Ii	W	6730	8070	8070	7840
<b>Pc</b>	Power dissipation @ Ic	W	3270	3230	3230	3140
<b>Td</b>	Max. detent torque (average to peak)	Nm	2.1	2.1	2.1	2.1

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	29.2	17.3	11.2	6.32
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	16.8	9.95	6.42	3.62
<b>Km</b>	Motor constant	Nm/√W	3.81	3.72	3.75	3.57
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	39.3	14.5	5.92	2.09
<b>Ld/Lq</b>	Electrical inductance (*)	mH	310 / 268	109 / 95.4	45.4 / 39.5	14.5 / 12.8
<b>Isc</b>	Maximum short-circuit current	Arms	5.68	9.56	14.8	26.3
<b>nb</b>	Base speed	rpm	67.8	287	512	1000
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	0.00	123	423	885
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	107	267	564
<b>nn</b>	Rated speed	rpm	45.5	237	461	927
<b>Tn</b>	Rated torque	Nm	157	110	81.5	56.4
<b>In</b>	Rated current	Arms	6.37	7.18	8.22	10.3
<b>rth</b>	Thermal time constant	s	59.5	58.9	58.9	57.6
<b>Rth</b>	Thermal resistance	K/W	0.0275	0.0276	0.0277	0.0281
<b>2p</b>	Number of poles	-	22	22	22	22
<b>J</b>	Rotor inertia	kg·m²	0.00679	0.00679	0.00679	0.00679
<b>mr</b>	Rotor mass	kg	4.85	4.85	4.85	4.85
<b>ms</b>	Stator mass	kg	19.5	19.4	19.4	19.2

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.080	0.080	0.080	0.080
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	10	10	10	9.8
<b>Δpw</b>	Max. pressure drop at qw	bar	0.9	0.9	0.9	0.9

**Notes:** (\*) terminal to terminal.

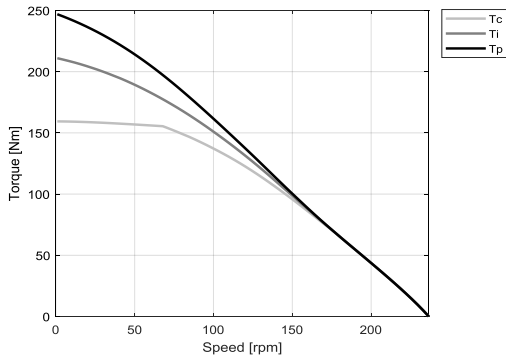
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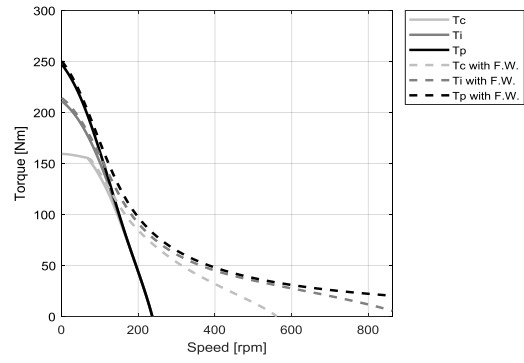
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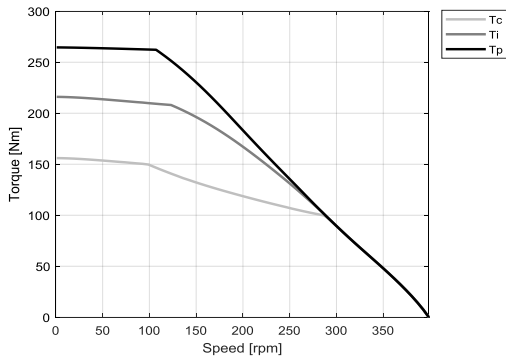
**RA - WATER COOLING**



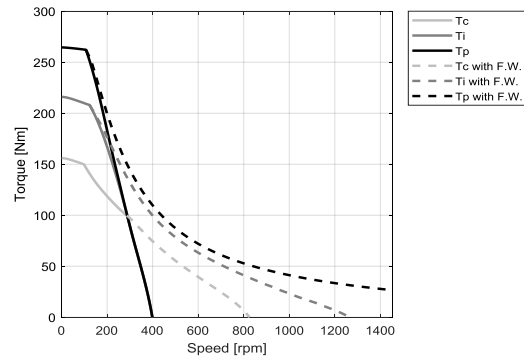
**RA - WATER COOLING**



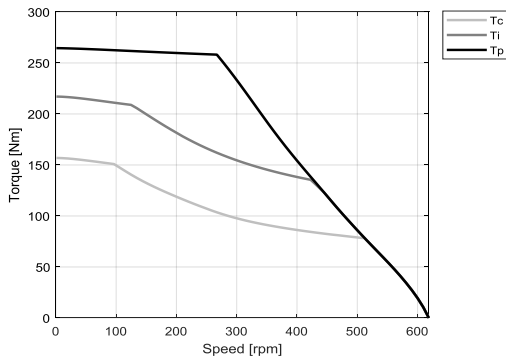
**TA - WATER COOLING**



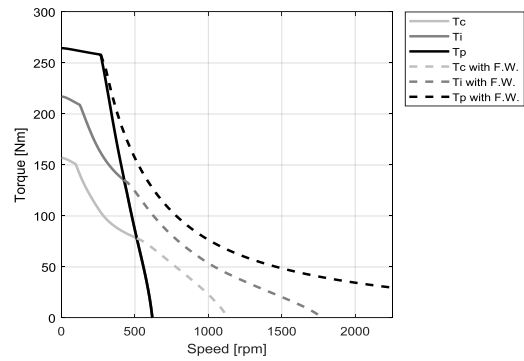
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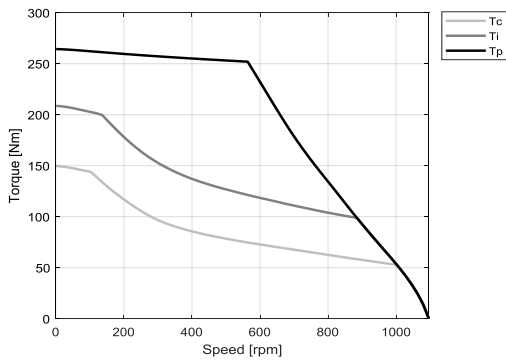
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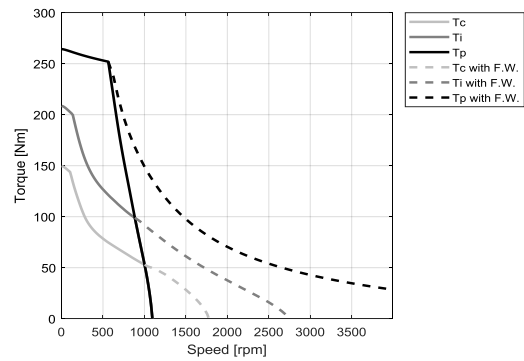
**SB - WATER COOLING**



**UB - WATER COOLING**



**UB - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	RA	RB	TB	VB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	67.7	67.7	67.8	67.8
<b>Ti</b>	Intermittent torque	Nm	46.3	46.3	46.7	47.7
<b>Tc</b>	Continuous torque	Nm	33.0	33.0	33.3	34.2
<b>Ts</b>	Standstill torque	Nm	26.1	26.1	26.4	27.1
<b>Ip</b>	Peak current	Arms	15.1	30.2	46.1	70.4
<b>Ii</b>	Intermittent current	Arms	8.23	16.5	25.4	40.2
<b>Ic</b>	Continuous current	Arms	5.20	10.4	16.1	25.4
<b>Is</b>	Standstill current	Arms	3.94	7.88	12.2	19.2
<b>ns</b>	Rated low speed	rpm	0.60	0.60	0.58	0.59
<b>nm</b>	Maximum speed without flux weakening	rpm	923	1850	2830	3370
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	2140	3080	3370	3370
<b>ton,p</b>	Maximum ON time for peak cycle	s	6.6	6.6	7.1	7.6
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	3.0	3.0	3.0	3.0
<b>Pp</b>	Power dissipation @ Ip	W	4710	4710	4530	4430
<b>Pi</b>	Power dissipation @ Ii	W	1740	1740	1720	1810
<b>Pc</b>	Power dissipation @ Ic	W	694	694	687	723
<b>Td</b>	Max. detent torque (average to peak)	Nm	0.50	0.50	0.50	0.50

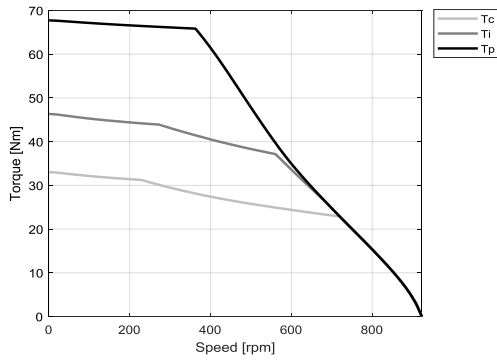
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	7.47	3.73	2.44	1.60
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	4.30	2.15	1.41	0.922
<b>Km</b>	Motor constant	Nm/√W	1.76	1.76	1.79	1.80
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	12.0	3.00	1.24	0.525
<b>Ld/Lq</b>	Electrical inductance (*)	mH	90.3 / 84.4	22.6 / 21.1	9.67 / 9.01	4.14 / 3.83
<b>Isc</b>	Maximum short-circuit current	Arms	5.00	10.0	15.3	23.4
<b>nb</b>	Base speed	rpm	720	1640	2760	N/A
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	561	1380	2290	N/A
<b>nb,p</b>	Base speed at peak duty cycle	rpm	363	873	1400	2200
<b>nn</b>	Rated speed	rpm	629	1510	2010	2020
<b>Tn</b>	Rated torque	Nm	24.0	16.0	13.1	13.1
<b>In</b>	Rated current	Arms	3.80	5.07	6.51	9.93
<b>rth</b>	Thermal time constant	s	90.8	90.8	93.8	92.4
<b>Rth</b>	Thermal resistance	K/W	0.153	0.153	0.155	0.147
<b>2p</b>	Number of poles	-	22	22	22	22
<b>J</b>	Rotor inertia	kg·m²	0.00273	0.00273	0.00273	0.00273
<b>mr</b>	Rotor mass	kg	1.00	1.00	1.00	1.00
<b>ms</b>	Stator mass	kg	7.68	7.68	7.74	7.77

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.026	0.026	0.026	0.026
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	2.2	2.2	2.1	2.3
<b>Δpw</b>	Max. pressure drop at qw	bar	0.1	0.1	0.1	0.1

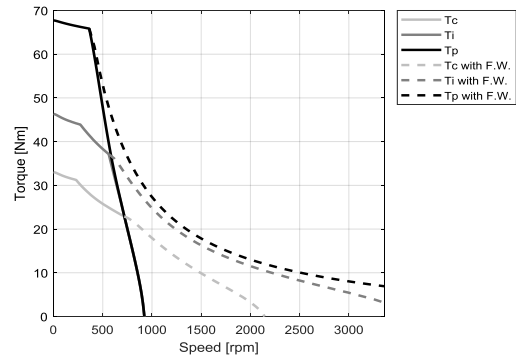
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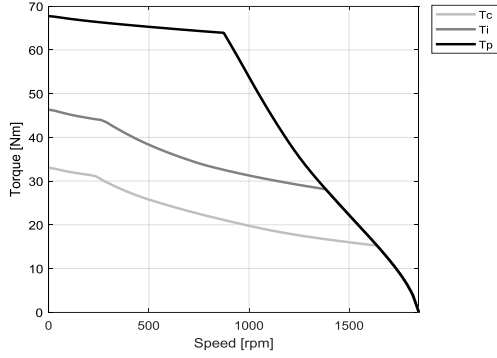
**RA - WATER COOLING**



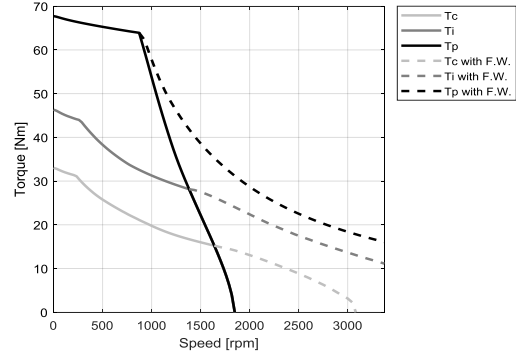
**RA - WATER COOLING**



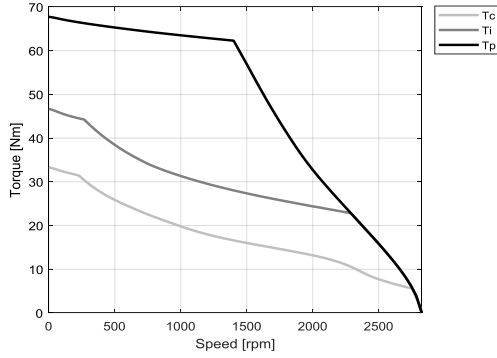
**RB - WATER COOLING**



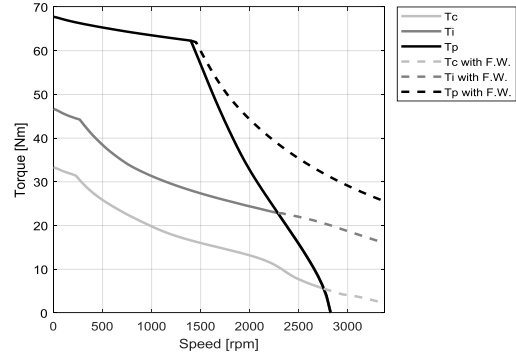
**RB - WATER COOLING**



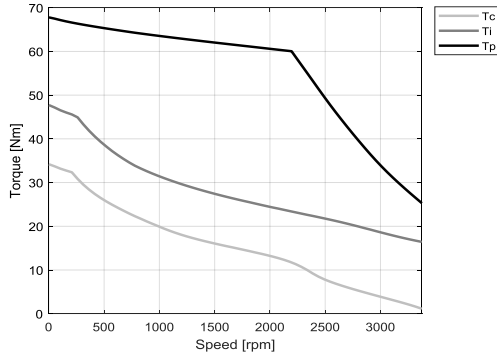
**TB - WATER COOLING**



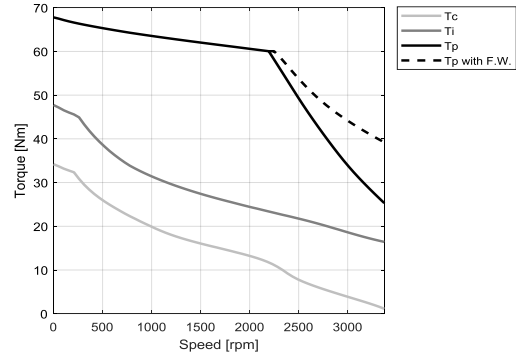
**TB - WATER COOLING**



**VB - WATER COOLING**



**VB - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	RA	RB	TB	VB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	118	118	118	118
<b>Ti</b>	Intermittent torque	Nm	84.9	84.9	85.7	87.7
<b>Tc</b>	Continuous torque	Nm	60.0	60.0	60.7	62.4
<b>Ts</b>	Standstill torque	Nm	47.1	47.1	47.7	49.2
<b>Ip</b>	Peak current	Arms	14.3	28.5	43.6	66.6
<b>Ii</b>	Intermittent current	Arms	8.76	17.5	27.1	42.9
<b>Ic</b>	Continuous current	Arms	5.54	11.1	17.2	27.1
<b>Is</b>	Standstill current	Arms	4.20	8.39	13.0	20.6
<b>ns</b>	Rated low speed	rpm	0.68	0.68	0.66	0.67
<b>nm</b>	Maximum speed without flux weakening	rpm	554	1110	1690	2590
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	1250	2050	2480	2770
<b>ton,p</b>	Maximum ON time for peak cycle	s	8.0	8.0	8.7	9.2
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	3.0	3.0	3.0	2.9
<b>Pp</b>	Power dissipation @ Ip	W	5640	5640	5410	5280
<b>Pi</b>	Power dissipation @ Ii	W	2710	2710	2680	2820
<b>Pc</b>	Power dissipation @ Ic	W	1080	1080	1070	1130
<b>Td</b>	Max. detent torque (average to peak)	Nm	0.84	0.84	0.84	0.84

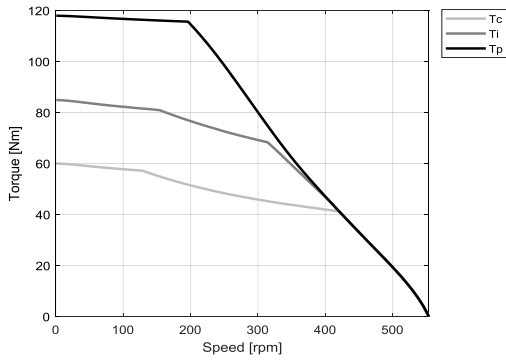
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	12.5	6.24	4.08	2.67
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	7.17	3.59	2.35	1.54
<b>Km</b>	Motor constant	Nm/√W	2.50	2.50	2.55	2.58
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	16.6	4.14	1.71	0.718
<b>Ld/Lq</b>	Electrical inductance (*)	mH	139 / 129	34.8 / 32.1	14.9 / 13.7	6.38 / 5.82
<b>Isc</b>	Maximum short-circuit current	Arms	5.41	10.8	16.5	25.3
<b>nb</b>	Base speed	rpm	419	977	1570	2570
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	314	834	1370	2260
<b>nb,p</b>	Base speed at peak duty cycle	rpm	196	532	874	1390
<b>nn</b>	Rated speed	rpm	362	897	1460	1530
<b>Tn</b>	Rated torque	Nm	43.3	28.7	22.2	21.4
<b>In</b>	Rated current	Arms	4.00	5.31	6.48	9.59
<b>rth</b>	Thermal time constant	s	79.7	79.7	82.1	81.0
<b>Rth</b>	Thermal resistance	K/W	0.0969	0.0969	0.0980	0.0929
<b>2p</b>	Number of poles	-	22	22	22	22
<b>J</b>	Rotor inertia	kg·m²	0.00458	0.00458	0.00458	0.00458
<b>mr</b>	Rotor mass	kg	1.69	1.69	1.69	1.69
<b>ms</b>	Stator mass	kg	10.1	10.1	10.2	10.2

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.037	0.037	0.037	0.037
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	3.4	3.4	3.3	3.5
<b>Δpw</b>	Max. pressure drop at qw	bar	0.1	0.1	0.1	0.1

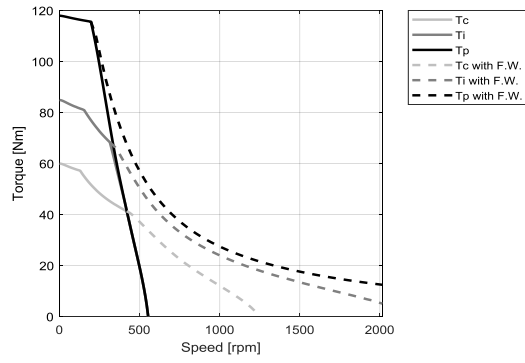
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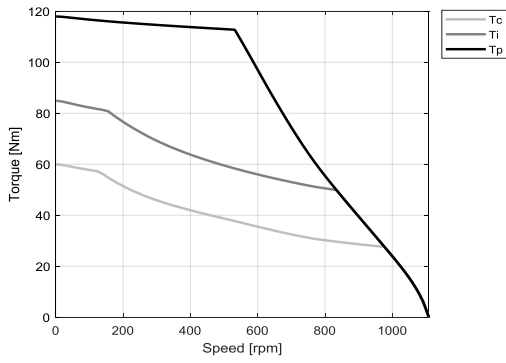
**RA - WATER COOLING**



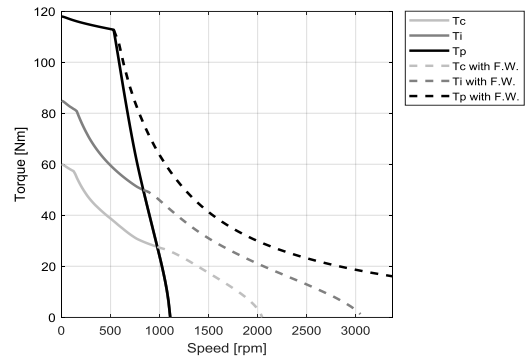
**RA - WATER COOLING**



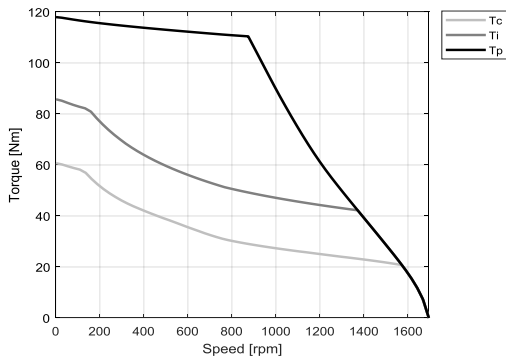
**RB - WATER COOLING**



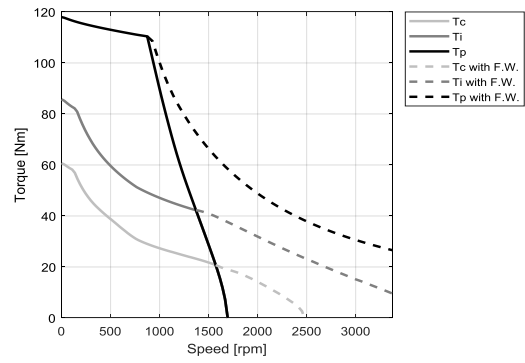
**RB - WATER COOLING**



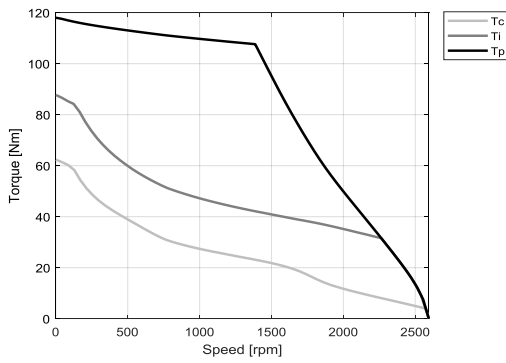
**TB - WATER COOLING**



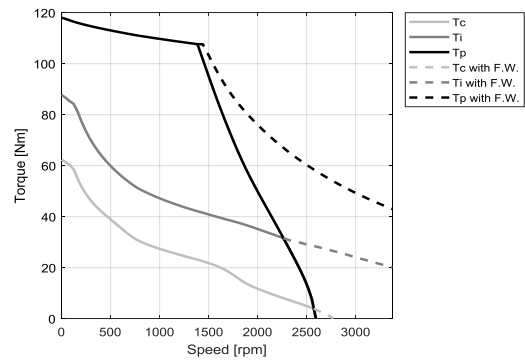
**TB - WATER COOLING**



**VB - WATER COOLING**



**VB - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	RA	RB	TB	VB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	165	165	165	165
<b>Ti</b>	Intermittent torque	Nm	122	122	124	127
<b>Tc</b>	Continuous torque	Nm	86.6	86.6	87.7	90.1
<b>Ts</b>	Standstill torque	Nm	68.0	68.0	68.9	71.0
<b>Ip</b>	Peak current	Arms	13.8	27.7	42.3	64.6
<b>Ii</b>	Intermittent current	Arms	8.97	17.9	27.8	44.0
<b>Ic</b>	Continuous current	Arms	5.67	11.3	17.6	27.8
<b>Is</b>	Standstill current	Arms	4.30	8.59	13.3	21.1
<b>ns</b>	Rated low speed	rpm	0.71	0.71	0.69	0.70
<b>nm</b>	Maximum speed without flux weakening	rpm	395	792	1210	1850
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	839	1430	1810	2080
<b>ton,p</b>	Maximum ON time for peak cycle	s	8.6	8.6	9.4	10
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	3.0	3.0	2.9	2.9
<b>Pp</b>	Power dissipation @ Ip	W	6720	6720	6420	6270
<b>Pi</b>	Power dissipation @ Ii	W	3610	3610	3580	3760
<b>Pc</b>	Power dissipation @ Ic	W	1450	1450	1430	1500
<b>Td</b>	Max. detent torque (average to peak)	Nm	1.2	1.2	1.2	1.2

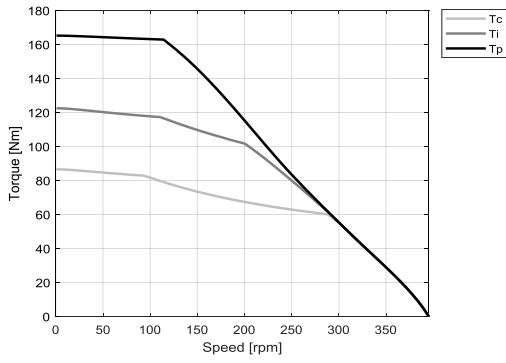
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	17.5	8.75	5.73	3.75
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	10.0	5.02	3.29	2.15
<b>Km</b>	Motor constant	Nm/√W	3.10	3.10	3.17	3.20
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	21.2	5.29	2.17	0.915
<b>Ld/Lq</b>	Electrical inductance (*)	mH	183 / 169	45.8 / 42.3	19.7 / 18.1	8.42 / 7.66
<b>Isc</b>	Maximum short-circuit current	Arms	5.75	11.5	17.6	26.8
<b>nb</b>	Base speed	rpm	288	696	1120	1830
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	200	594	990	1620
<b>nb,p</b>	Base speed at peak duty cycle	rpm	114	375	636	1020
<b>nn</b>	Rated speed	rpm	246	638	1050	1120
<b>Tn</b>	Rated torque	Nm	63.2	41.0	31.7	30.1
<b>In</b>	Rated current	Arms	4.13	5.36	6.49	9.45
<b>rth</b>	Thermal time constant	s	76.5	76.5	78.6	77.7
<b>Rth</b>	Thermal resistance	K/W	0.0716	0.0716	0.0725	0.0687
<b>2p</b>	Number of poles	-	22	22	22	22
<b>J</b>	Rotor inertia	kg·m²	0.00644	0.00644	0.00644	0.00644
<b>mr</b>	Rotor mass	kg	2.37	2.37	2.37	2.37
<b>ms</b>	Stator mass	kg	12.8	12.8	12.9	12.9

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.049	0.049	0.049	0.049
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	4.5	4.5	4.5	4.7
<b>Δpw</b>	Max. pressure drop at qw	bar	0.1	0.1	0.1	0.1

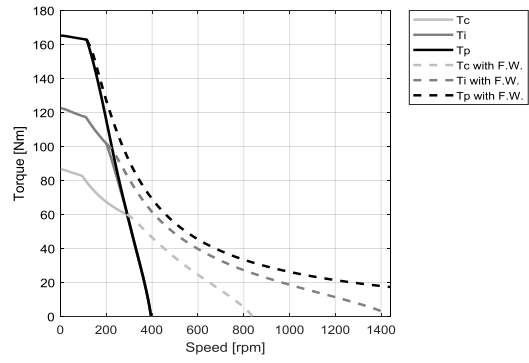
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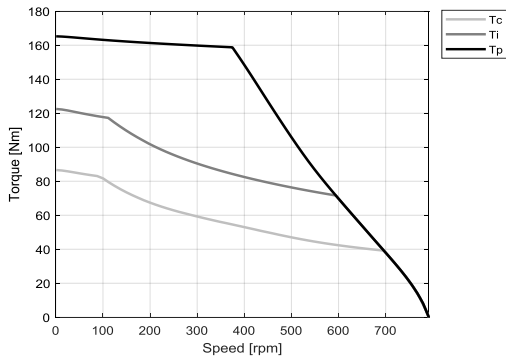
**RA - WATER COOLING**



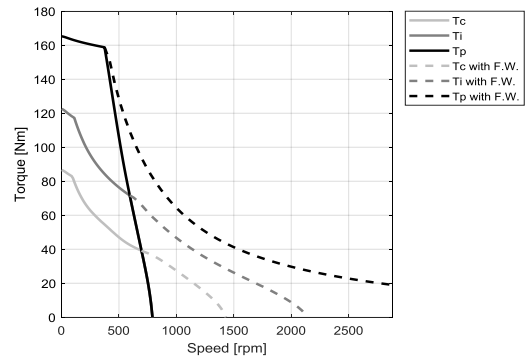
**RA - WATER COOLING**



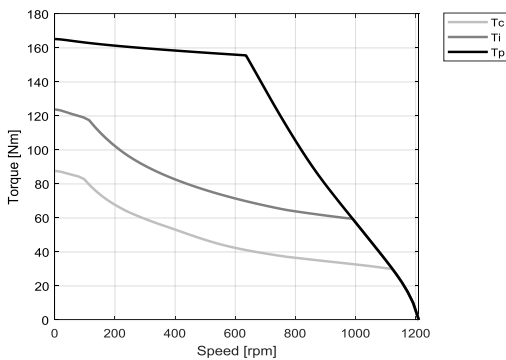
**RB - WATER COOLING**



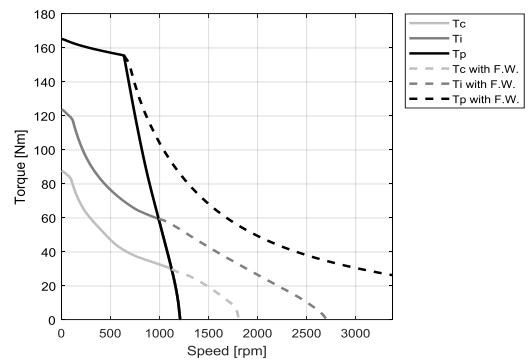
**RB - WATER COOLING**



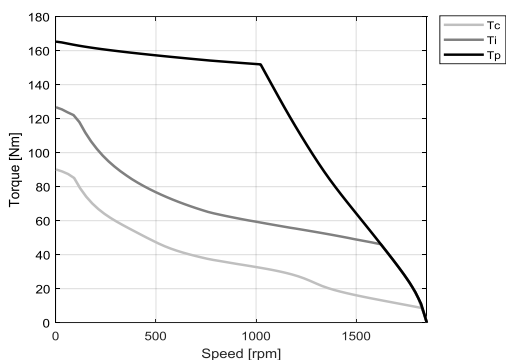
**TB - WATER COOLING**



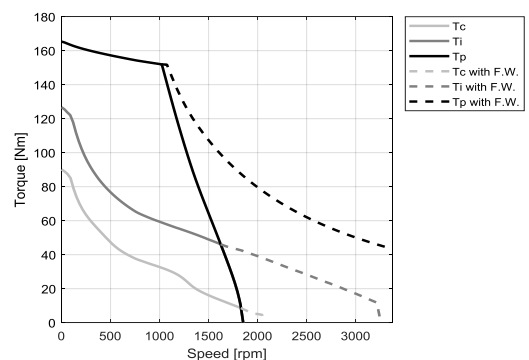
**TB - WATER COOLING**



**VB - WATER COOLING**



**VB - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	RA	RB	TB	VB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	236	236	236	236
<b>Ti</b>	Intermittent torque	Nm	180	180	182	186
<b>Tc</b>	Continuous torque	Nm	127	127	129	132
<b>Ts</b>	Standstill torque	Nm	99.6	99.6	101	104
<b>Ip</b>	Peak current	Arms	13.5	27.0	41.3	63.1
<b>Ii</b>	Intermittent current	Arms	9.15	18.3	28.5	45.0
<b>Ic</b>	Continuous current	Arms	5.79	11.6	18.0	28.5
<b>Is</b>	Standstill current	Arms	4.39	8.77	13.6	21.6
<b>ns</b>	Rated low speed	rpm	0.76	0.76	0.74	0.75
<b>nm</b>	Maximum speed without flux weakening	rpm	277	554	846	1290
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	593	1030	1450	1960
<b>ton,p</b>	Maximum ON time for peak cycle	s	8.9	8.9	9.7	10
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.9	2.9	2.9
<b>Pp</b>	Power dissipation @ Ip	W	8450	8450	8060	7860
<b>Pi</b>	Power dissipation @ Ii	W	4990	4990	4940	5190
<b>Pc</b>	Power dissipation @ Ic	W	2000	2000	1980	2080
<b>Td</b>	Max. detent torque (average to peak)	Nm	1.7	1.7	1.7	1.7

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	25.0	12.5	8.19	5.36
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	14.3	7.17	4.70	3.07
<b>Km</b>	Motor constant	Nm/√W	3.84	3.84	3.93	3.97
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	28.2	7.05	2.89	1.21
<b>Ld/Lq</b>	Electrical inductance (*)	mH	248 / 228	61.9 / 57.0	26.5 / 24.3	11.4 / 10.3
<b>Isc</b>	Maximum short-circuit current	Arms	6.08	12.2	18.6	28.4
<b>nb</b>	Base speed	rpm	176	469	766	1210
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	68.4	393	677	1100
<b>nb,p</b>	Base speed at peak duty cycle	rpm	38.6	244	441	727
<b>nn</b>	Rated speed	rpm	142	422	710	1140
<b>Tn</b>	Rated torque	Nm	103	69.2	53.9	43.8
<b>In</b>	Rated current	Arms	4.74	6.23	7.52	9.55
<b>rth</b>	Thermal time constant	s	71.7	71.7	73.5	72.7
<b>Rth</b>	Thermal resistance	K/W	0.0508	0.0508	0.0513	0.0487
<b>2p</b>	Number of poles	-	22	22	22	22
<b>J</b>	Rotor inertia	kg·m²	0.00912	0.00912	0.00912	0.00912
<b>mr</b>	Rotor mass	kg	3.35	3.35	3.35	3.35
<b>ms</b>	Stator mass	kg	16.3	16.3	16.4	16.5

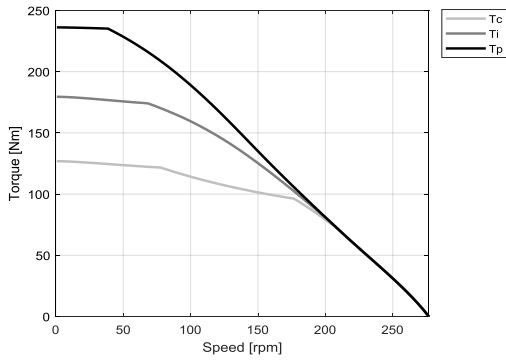
MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.066	0.066	0.066	0.066
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	6.2	6.2	6.2	6.5
<b>Δpw</b>	Max. pressure drop at qw	bar	0.3	0.3	0.3	0.3

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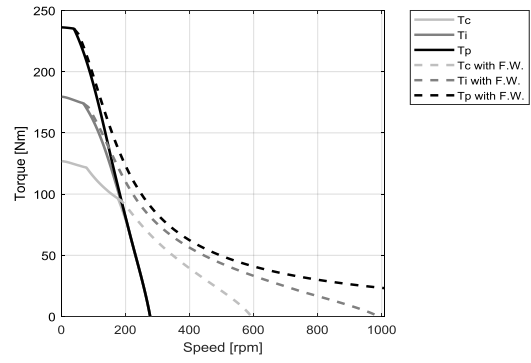
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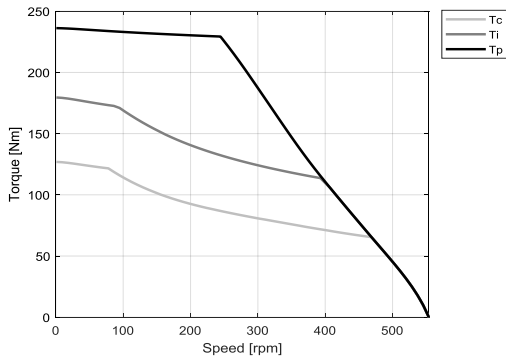
**RA - WATER COOLING**



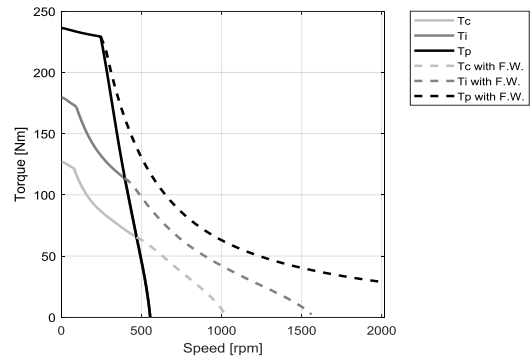
**RA - WATER COOLING**



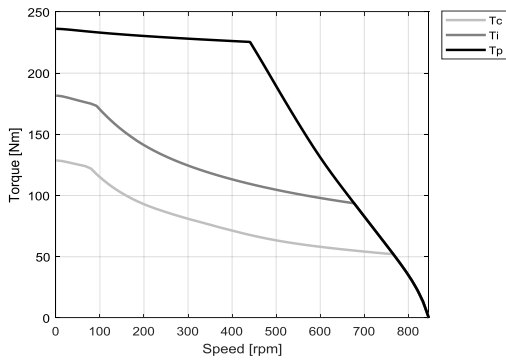
**RB - WATER COOLING**



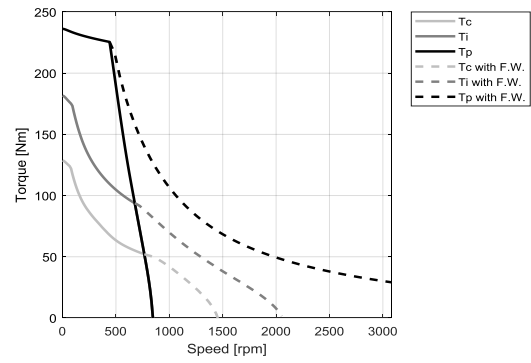
**RB - WATER COOLING**



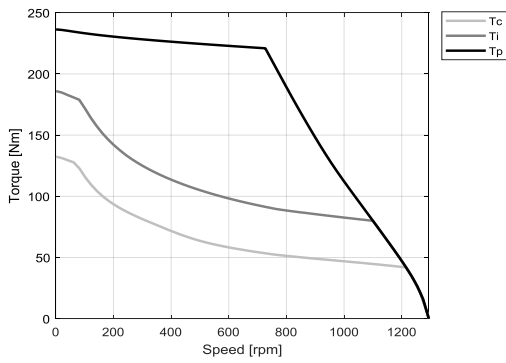
**TB - WATER COOLING**



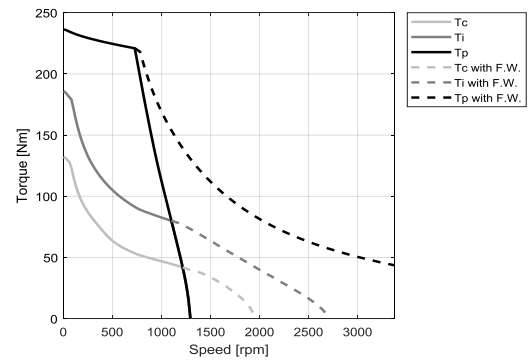
**TB - WATER COOLING**



**VB - WATER COOLING**



**VB - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	RA	RB	TB	VB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	319	354	354	354
<b>Ti</b>	Intermittent torque	Nm	265	271	274	281
<b>Tc</b>	Continuous torque	Nm	191	191	194	199
<b>Ts</b>	Standstill torque	Nm	149	149	152	157
<b>Ip</b>	Peak current	Arms	11.2	26.5	40.5	61.9
<b>Ii</b>	Intermittent current	Arms	8.78	18.2	28.4	44.9
<b>Ic</b>	Continuous current	Arms	5.76	11.5	17.9	28.4
<b>Is</b>	Standstill current	Arms	4.36	8.73	13.6	21.5
<b>ns</b>	Rated low speed	rpm	0.77	0.77	0.75	0.76
<b>nm</b>	Maximum speed without flux weakening	rpm	184	369	564	862
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	421	711	1010	1430
<b>ton,p</b>	Maximum ON time for peak cycle	s	14	8.3	9.1	9.7
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	6.4	2.9	2.9	2.9
<b>Pp</b>	Power dissipation @ Ip	W	8010	11600	11000	10700
<b>Pi</b>	Power dissipation @ Ii	W	6300	6960	6900	7240
<b>Pc</b>	Power dissipation @ Ic	W	2780	2780	2760	2890
<b>Td</b>	Max. detent torque (average to peak)	Nm	2.5	2.5	2.5	2.5

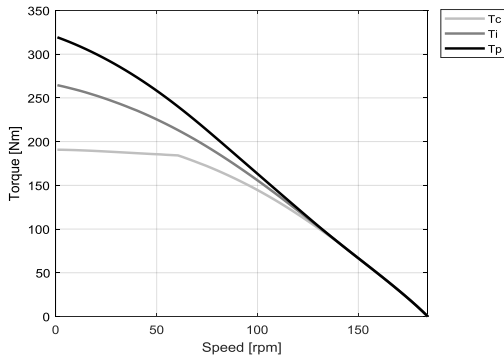
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	37.5	18.8	12.3	8.05
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	21.5	10.8	7.04	4.61
<b>Km</b>	Motor constant	Nm/√W	4.83	4.83	4.95	5.00
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	40.3	10.1	4.11	1.73
<b>Ld/Lq</b>	Electrical inductance (*)	mH	367 / 339	91.8 / 84.7	39.4 / 36.1	16.9 / 15.3
<b>Isc</b>	Maximum short-circuit current	Arms	6.15	12.3	18.8	28.7
<b>nb</b>	Base speed	rpm	60.5	288	490	790
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	0.00	220	420	707
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	127	267	464
<b>nn</b>	Rated speed	rpm	42.9	250	447	736
<b>Tn</b>	Rated torque	Nm	186	124	95.2	76.2
<b>In</b>	Rated current	Arms	5.74	7.44	8.72	10.8
<b>rth</b>	Thermal time constant	s	71.0	71.0	72.7	72.1
<b>Rth</b>	Thermal resistance	K/W	0.0348	0.0348	0.0352	0.0334
<b>2p</b>	Number of poles	-	22	22	22	22
<b>J</b>	Rotor inertia	kg·m²	0.0138	0.0138	0.0138	0.0138
<b>mr</b>	Rotor mass	kg	5.06	5.06	5.06	5.06
<b>ms</b>	Stator mass	kg	23.1	23.1	23.3	23.3

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.094	0.094	0.094	0.094
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	8.7	8.7	8.6	9.0
<b>Δpw</b>	Max. pressure drop at qw	bar	0.5	0.5	0.5	0.5

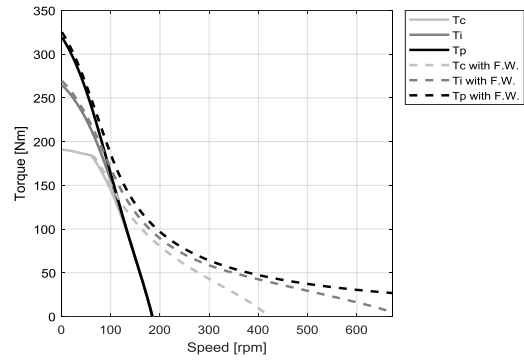
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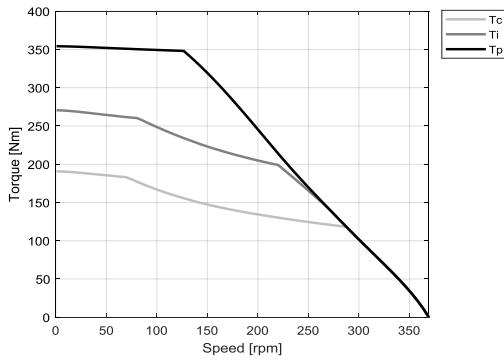
**RA - WATER COOLING**



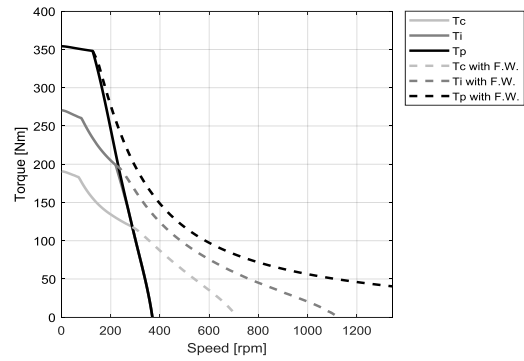
**RA - WATER COOLING**



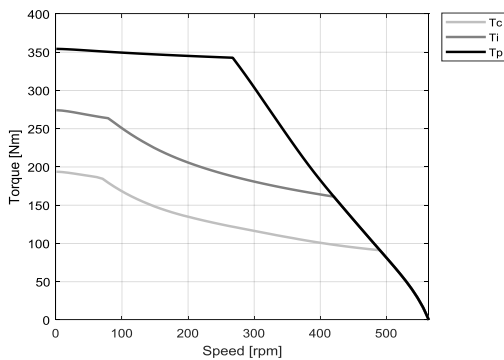
**RB - WATER COOLING**



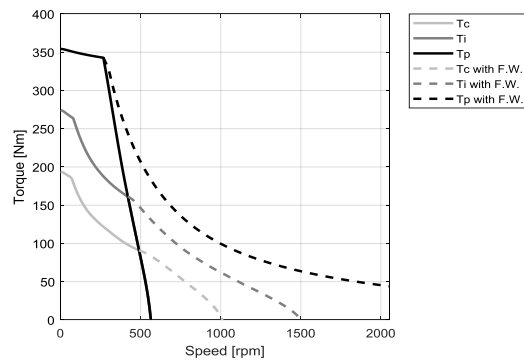
**RB - WATER COOLING**



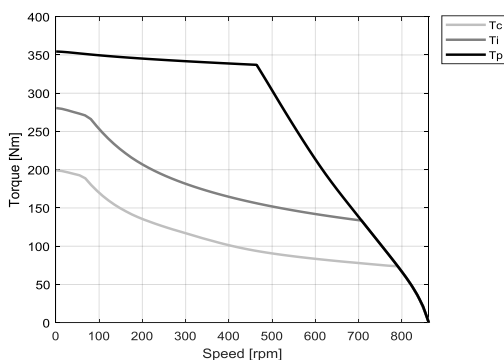
**TB - WATER COOLING**



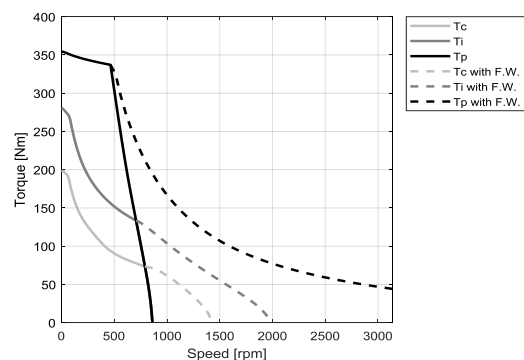
**TB - WATER COOLING**



**VB - WATER COOLING**



**VB - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	TA	RB	TB	VB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	472	472	472	473
<b>Ti</b>	Intermittent torque	Nm	364	358	364	372
<b>Tc</b>	Continuous torque	Nm	256	252	256	263
<b>Ts</b>	Standstill torque	Nm	201	197	201	207
<b>Ip</b>	Peak current	Arms	20.1	26.3	40.1	61.3
<b>Ii</b>	Intermittent current	Arms	14.0	17.9	28.0	44.2
<b>Ic</b>	Continuous current	Arms	8.84	11.3	17.7	28.0
<b>Is</b>	Standstill current	Arms	6.70	8.59	13.4	21.2
<b>ns</b>	Rated low speed	rpm	0.76	0.78	0.76	0.77
<b>nm</b>	Maximum speed without flux weakening	rpm	211	277	423	647
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	451	551	774	1110
<b>ton,p</b>	Maximum ON time for peak cycle	s	7.8	7.1	7.8	8.3
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.8	2.8	2.8	2.8
<b>Pp</b>	Power dissipation @ Ip	W	14100	14800	14100	13700
<b>Pi</b>	Power dissipation @ Ii	W	8630	8680	8630	9030
<b>Pc</b>	Power dissipation @ Ic	W	3450	3470	3450	3610
<b>Td</b>	Max. detent torque (average to peak)	Nm	3.4	3.4	3.4	3.4

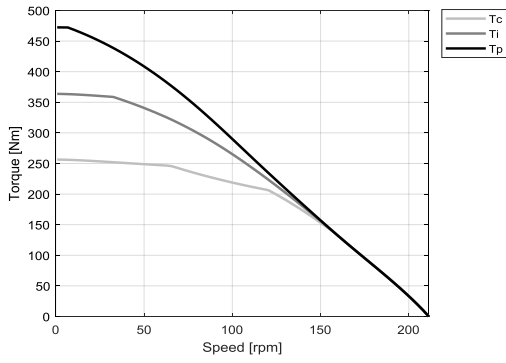
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	32.8	25.0	16.4	10.7
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	18.8	14.3	9.39	6.15
<b>Km</b>	Motor constant	Nm/√W	5.77	5.63	5.77	5.83
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	21.5	13.2	5.38	2.26
<b>Ld/Lq</b>	Electrical inductance (*)	mH	209 / 192	122 / 113	52.2 / 48.1	22.4 / 20.4
<b>Isc</b>	Maximum short-circuit current	Arms	9.44	12.4	18.9	28.8
<b>nb</b>	Base speed	rpm	120	195	351	579
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	32.5	116	289	508
<b>nb,p</b>	Base speed at peak duty cycle	rpm	6.78	59.3	176	329
<b>nn</b>	Rated speed	rpm	87.6	163	314	535
<b>Tn</b>	Rated torque	Nm	228	186	145	113
<b>In</b>	Rated current	Arms	8.01	8.35	9.91	11.9
<b>rth</b>	Thermal time constant	s	71.3	69.8	71.3	70.8
<b>Rth</b>	Thermal resistance	K/W	0.0265	0.0262	0.0265	0.0251
<b>2p</b>	Number of poles	-	22	22	22	22
<b>J</b>	Rotor inertia	kg·m²	0.0185	0.0185	0.0185	0.0185
<b>mr</b>	Rotor mass	kg	6.79	6.79	6.79	6.79
<b>ms</b>	Stator mass	kg	29.7	29.6	29.7	29.8

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.120	0.120	0.120	0.120
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	11	11	11	11
<b>Δpw</b>	Max. pressure drop at qw	bar	1.0	1.0	1.0	1.0

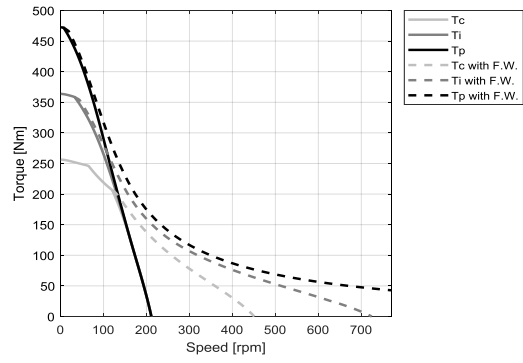
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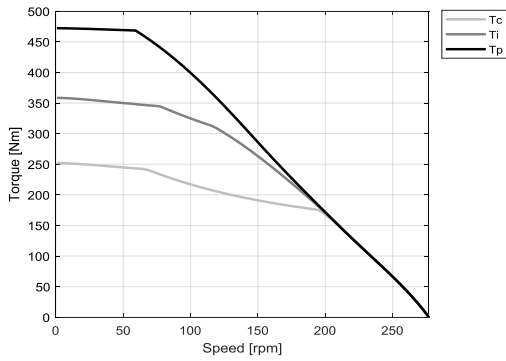
**TA - WATER COOLING**



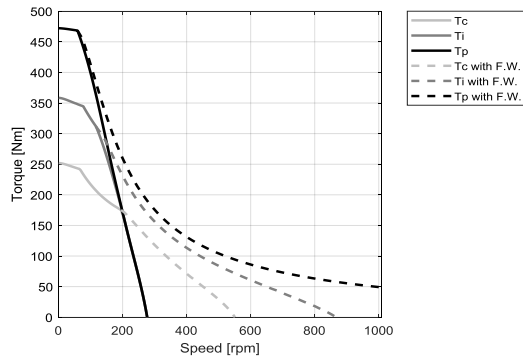
**TA - WATER COOLING**



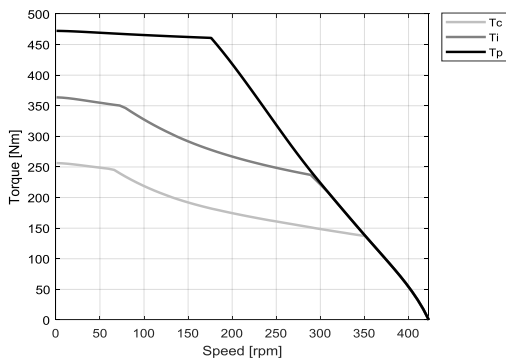
**RB - WATER COOLING**



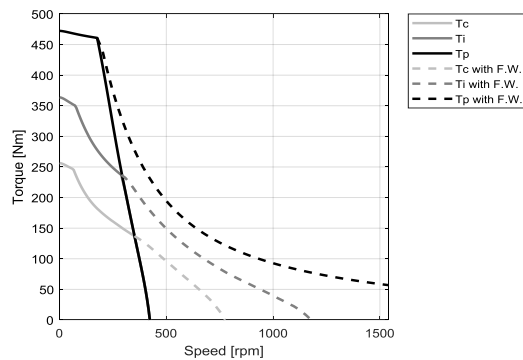
**RB - WATER COOLING**



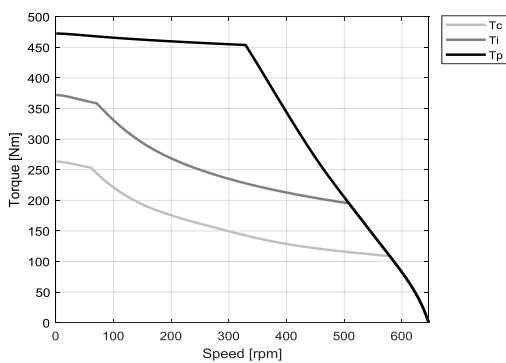
**TB - WATER COOLING**



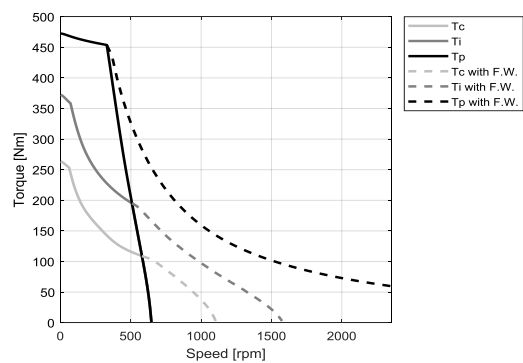
**TB - WATER COOLING**



**VB - WATER COOLING**



**VB - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	RA	TA	TB	UB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	128	128	128	128
<b>Ti</b>	Intermittent torque	Nm	94.6	98.1	98.1	94.0
<b>Tc</b>	Continuous torque	Nm	66.2	69.1	69.1	65.7
<b>Ts</b>	Standstill torque	Nm	51.5	54.0	54.0	51.0
<b>Ip</b>	Peak current	Arms	17.3	25.0	50.1	69.1
<b>Ii</b>	Intermittent current	Arms	11.3	17.2	34.3	44.6
<b>Ic</b>	Continuous current	Arms	7.12	10.9	21.7	28.2
<b>Is</b>	Standstill current	Arms	5.40	8.23	16.5	21.4
<b>ns</b>	Rated low speed	rpm	0.53	0.51	0.51	0.53
<b>nm</b>	Maximum speed without flux weakening	rpm	678	983	1970	2330
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	1690	2060	2330	2330
<b>ton,p</b>	Maximum ON time for peak cycle	s	5.9	7.0	7.0	5.7
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.9	2.9	2.8
<b>Pp</b>	Power dissipation @ Ip	W	4970	4550	4550	5060
<b>Pi</b>	Power dissipation @ Ii	W	2720	2790	2790	2720
<b>Pc</b>	Power dissipation @ Ic	W	1090	1110	1110	1090
<b>Td</b>	Max. detent torque (average to peak)	Nm	0.58	0.58	0.58	0.58

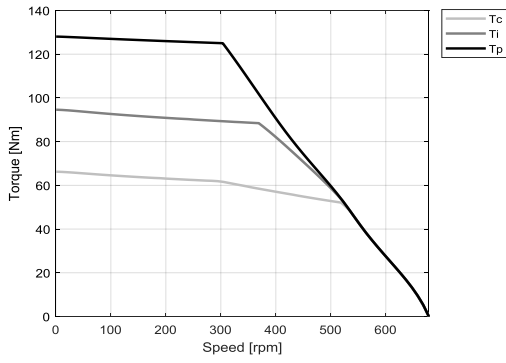
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	10.2	7.05	3.52	2.55
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	5.85	4.04	2.02	1.46
<b>Km</b>	Motor constant	Nm/√W	2.63	2.73	2.73	2.61
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	10.0	4.43	1.11	0.639
<b>Ld/Lq</b>	Electrical inductance (*)	mH	39.7 / 35.9	18.9 / 16.9	4.73 / 4.24	2.48 / 2.25
<b>Isc</b>	Maximum short-circuit current	Arms	7.74	11.2	22.4	31.0
<b>nb</b>	Base speed	rpm	519	817	1850	N/A
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	369	644	1560	N/A
<b>nb,p</b>	Base speed at peak duty cycle	rpm	304	504	1100	1540
<b>nn</b>	Rated speed	rpm	447	734	1380	1370
<b>Tn</b>	Rated torque	Nm	55.0	46.0	32.7	32.4
<b>In</b>	Rated current	Arms	6.18	7.53	11.2	15.3
<b>rth</b>	Thermal time constant	s	51.5	53.6	53.6	51.9
<b>Rth</b>	Thermal resistance	K/W	0.0971	0.0948	0.0948	0.0972
<b>2p</b>	Number of poles	-	44	44	44	44
<b>J</b>	Rotor inertia	kg·m²	0.00908	0.00908	0.00908	0.00908
<b>mr</b>	Rotor mass	kg	1.52	1.52	1.52	1.52
<b>ms</b>	Stator mass	kg	6.45	6.54	6.54	6.49

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.038	0.038	0.038	0.038
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	3.4	3.5	3.5	3.4
<b>Δpw</b>	Max. pressure drop at qw	bar	0.1	0.1	0.1	0.1

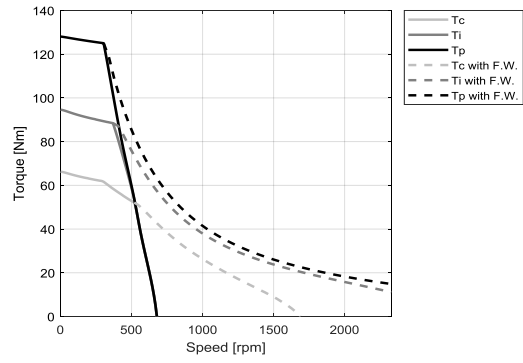
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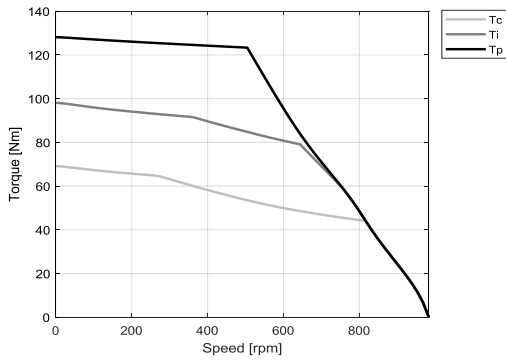
**RA - WATER COOLING**



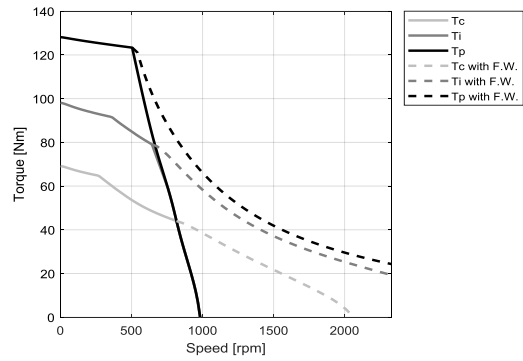
**RA - WATER COOLING**



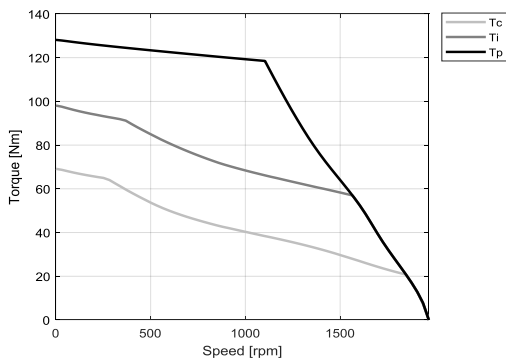
**TA - WATER COOLING**



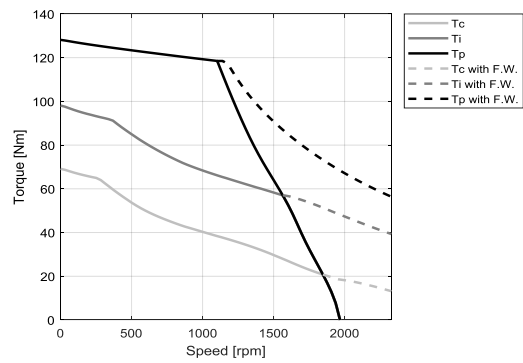
**TA - WATER COOLING**



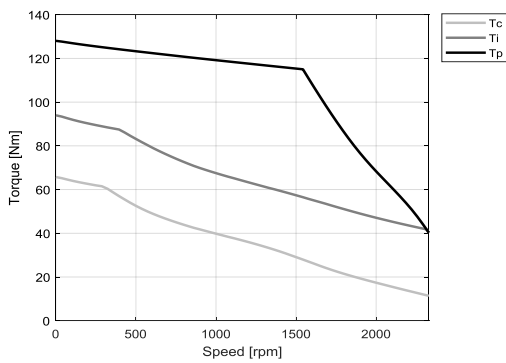
**TB - WATER COOLING**



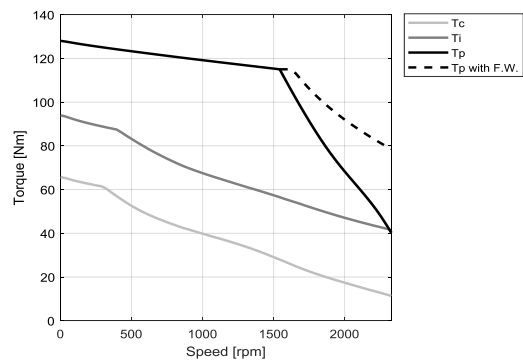
**TB - WATER COOLING**



**UB - WATER COOLING**



**UB - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	RA	TA	TB	UB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	223	223	223	223
<b>Ti</b>	Intermittent torque	Nm	175	182	182	174
<b>Tc</b>	Continuous torque	Nm	122	128	128	122
<b>Ts</b>	Standstill torque	Nm	94.9	99.8	99.8	94.6
<b>Ip</b>	Peak current	Arms	16.5	23.9	47.8	66.0
<b>Ii</b>	Intermittent current	Arms	12.0	18.3	36.7	47.8
<b>Ic</b>	Continuous current	Arms	7.58	11.6	23.2	30.2
<b>Is</b>	Standstill current	Arms	5.74	8.78	17.6	22.9
<b>ns</b>	Rated low speed	rpm	0.59	0.57	0.57	0.59
<b>nm</b>	Maximum speed without flux weakening	rpm	387	560	1120	1550
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	927	1210	1830	2190
<b>ton,p</b>	Maximum ON time for peak cycle	s	6.8	8.3	8.3	6.7
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.8	2.8	2.8	2.8
<b>Pp</b>	Power dissipation @ Ip	W	6460	5870	5870	6500
<b>Pi</b>	Power dissipation @ Ii	W	4450	4550	4550	4440
<b>Pc</b>	Power dissipation @ Ic	W	1780	1820	1820	1780
<b>Td</b>	Max. detent torque (average to peak)	Nm	1.0	1.0	1.0	1.0

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	17.8	12.3	6.14	4.44
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	10.3	7.08	3.54	2.56
<b>Km</b>	Motor constant	Nm/√W	3.80	3.97	3.97	3.79
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	14.6	6.37	1.59	0.917
<b>Ld/Lq</b>	Electrical inductance (*)	mH	64.7 / 57.9	30.8 / 27.3	7.71 / 6.82	4.04 / 3.62
<b>Isc</b>	Maximum short-circuit current	Arms	8.33	12.1	24.1	33.3
<b>nb</b>	Base speed	rpm	269	454	1010	1470
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	169	344	884	1290
<b>nb,p</b>	Base speed at peak duty cycle	rpm	149	278	645	912
<b>nn</b>	Rated speed	rpm	224	403	930	1040
<b>Tn</b>	Rated torque	Nm	106	87.2	59.2	52.9
<b>In</b>	Rated current	Arms	6.82	8.05	11.3	14.1
<b>rth</b>	Thermal time constant	s	45.9	47.6	47.6	46.1
<b>Rth</b>	Thermal resistance	K/W	0.0584	0.0571	0.0571	0.0584
<b>2p</b>	Number of poles	-	44	44	44	44
<b>J</b>	Rotor inertia	kg·m²	0.0152	0.0152	0.0152	0.0152
<b>mr</b>	Rotor mass	kg	2.56	2.56	2.56	2.56
<b>ms</b>	Stator mass	kg	8.68	8.81	8.81	8.73

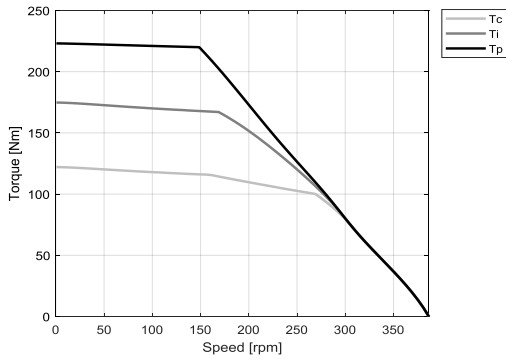
MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.056	0.056	0.056	0.056
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	5.6	5.7	5.7	5.5
<b>Δpw</b>	Max. pressure drop at qw	bar	0.2	0.2	0.2	0.2

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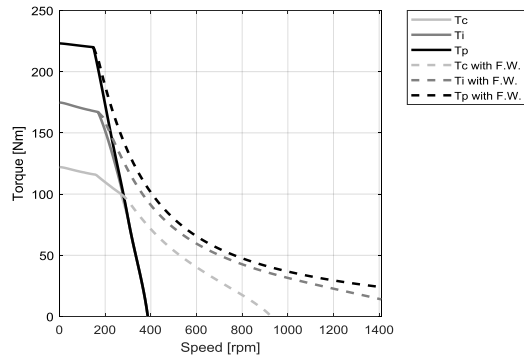
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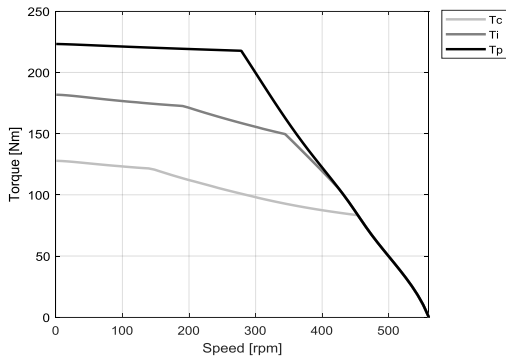
**RA - WATER COOLING**



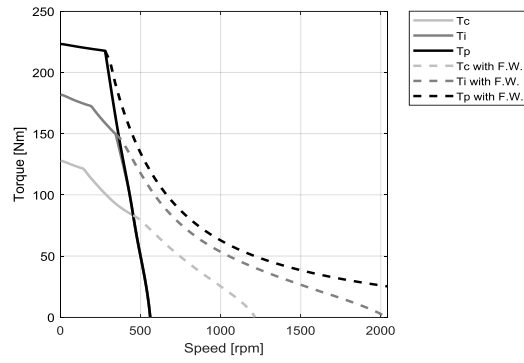
**RA - WATER COOLING**



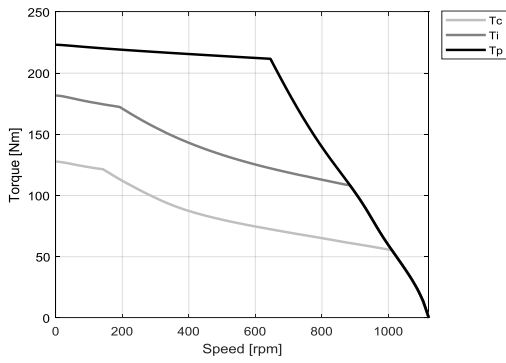
**TA - WATER COOLING**



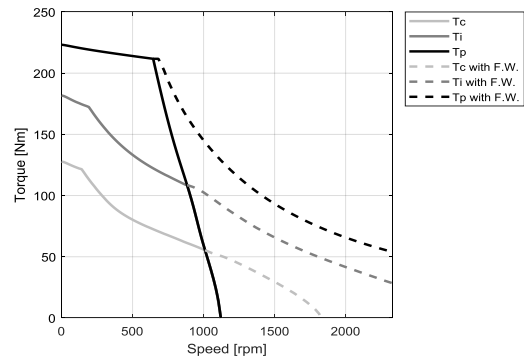
**TA - WATER COOLING**



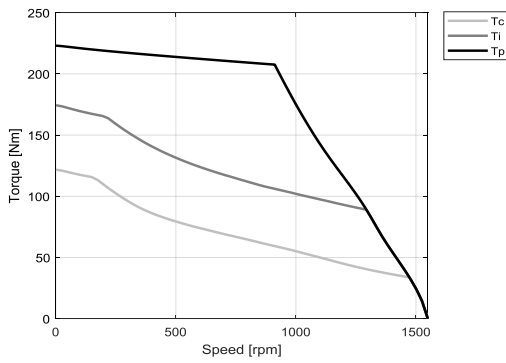
**TB - WATER COOLING**



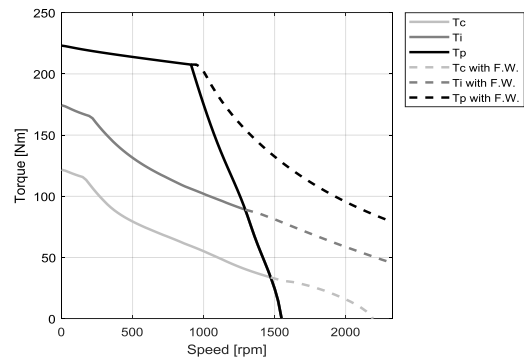
**TB - WATER COOLING**



**UB - WATER COOLING**



**UB - WATER COOLING**



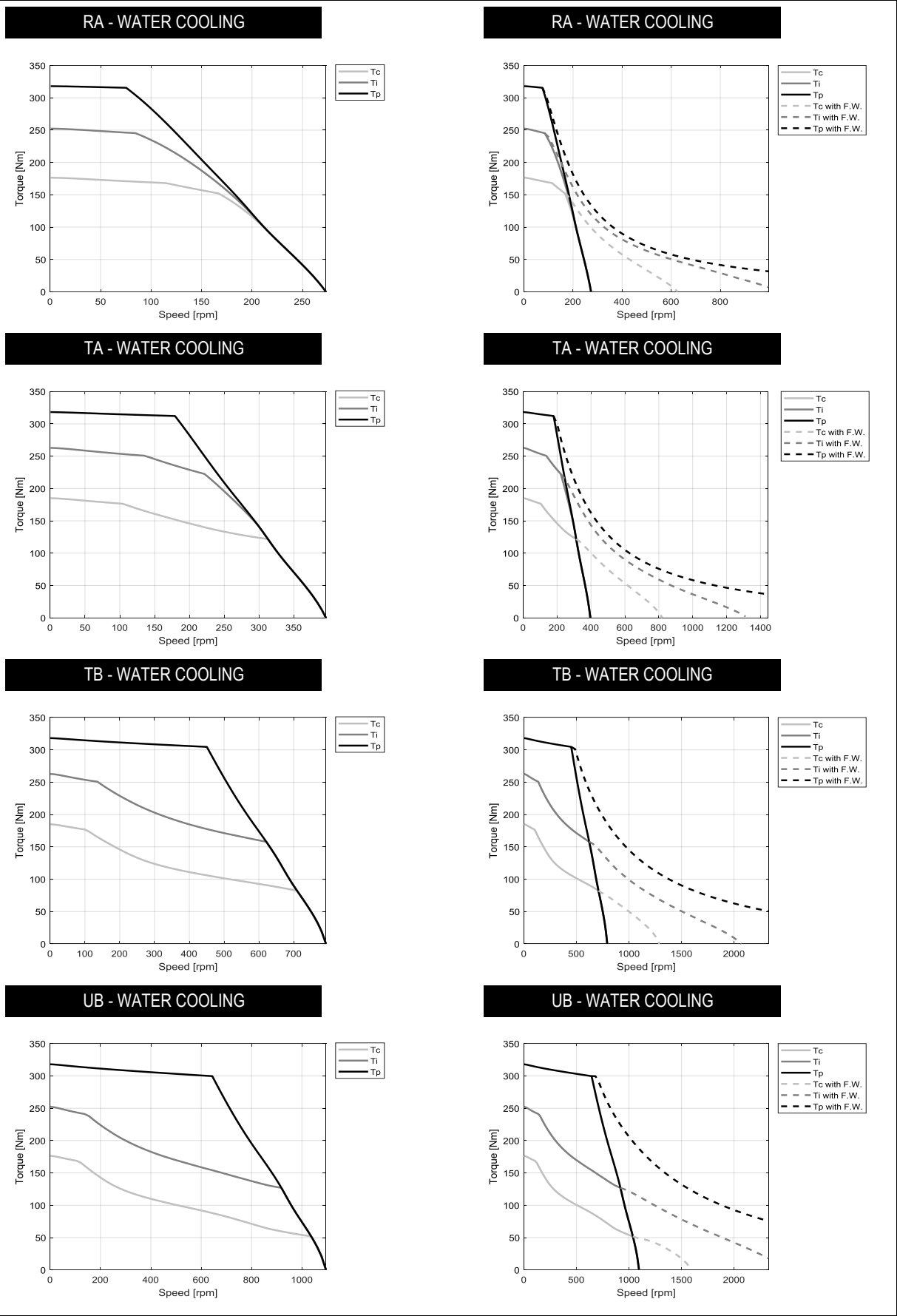
MOTOR PERFORMANCE		Winding codes	RA	TA	TB	UB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	318	318	318	318
<b>Ti</b>	Intermittent torque	Nm	252	263	263	252
<b>Tc</b>	Continuous torque	Nm	176	185	185	176
<b>Ts</b>	Standstill torque	Nm	137	145	145	137
<b>Ip</b>	Peak current	Arms	16.4	23.8	47.6	65.7
<b>Ii</b>	Intermittent current	Arms	12.2	18.7	37.3	48.7
<b>Ic</b>	Continuous current	Arms	7.70	11.8	23.6	30.8
<b>Is</b>	Standstill current	Arms	5.83	8.94	17.9	23.3
<b>ns</b>	Rated low speed	rpm	0.60	0.58	0.58	0.60
<b>nm</b>	Maximum speed without flux weakening	rpm	273	396	793	1100
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	626	820	1290	1590
<b>ton,p</b>	Maximum ON time for peak cycle	s	6.8	8.3	8.3	6.7
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.8	2.8	2.8	2.7
<b>Pp</b>	Power dissipation @ Ip	W	8370	7580	7580	8370
<b>Pi</b>	Power dissipation @ Ii	W	6020	6150	6150	6000
<b>Pc</b>	Power dissipation @ Ic	W	2410	2460	2460	2400
<b>Td</b>	Max. detent torque (average to peak)	Nm	1.4	1.4	1.4	1.4

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	25.3	17.5	8.75	6.34
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	14.5	10.0	5.01	3.63
<b>Km</b>	Motor constant	Nm/√W	4.72	4.95	4.95	4.73
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	19.2	8.34	2.09	1.20
<b>Ld/Lq</b>	Electrical inductance (*)	mH	87.4 / 78.2	41.7 / 36.8	10.4 / 9.21	5.46 / 4.89
<b>Isc</b>	Maximum short-circuit current	Arms	8.71	12.6	25.2	34.9
<b>nb</b>	Base speed	rpm	167	313	710	1040
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	84.6	222	621	918
<b>nb,p</b>	Base speed at peak duty cycle	rpm	75.3	179	450	644
<b>nn</b>	Rated speed	rpm	129	273	651	731
<b>Tn</b>	Rated torque	Nm	163	129	88.1	79.1
<b>In</b>	Rated current	Arms	7.39	8.27	11.6	14.5
<b>rth</b>	Thermal time constant	s	45.2	46.9	46.9	45.4
<b>Rth</b>	Thermal resistance	K/W	0.0425	0.0416	0.0416	0.0424
<b>2p</b>	Number of poles	-	44	44	44	44
<b>J</b>	Rotor inertia	kg·m²	0.0214	0.0214	0.0214	0.0214
<b>mr</b>	Rotor mass	kg	3.60	3.60	3.60	3.60
<b>ms</b>	Stator mass	kg	11.3	11.4	11.4	11.3

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.074	0.074	0.074	0.074
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	7.5	7.7	7.7	7.5
<b>Δpw</b>	Max. pressure drop at qw	bar	0.3	0.3	0.3	0.3

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MOTOR PERFORMANCE		Winding codes	RA	TA	TB	UB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	460	461	461	460
<b>Ti</b>	Intermittent torque	Nm	370	386	386	371
<b>Tc</b>	Continuous torque	Nm	259	272	272	259
<b>Ts</b>	Standstill torque	Nm	202	213	213	202
<b>Ip</b>	Peak current	Arms	16.4	23.7	47.4	65.4
<b>Ii</b>	Intermittent current	Arms	12.4	19.0	38.0	49.6
<b>Ic</b>	Continuous current	Arms	7.82	12.0	24.0	31.3
<b>Is</b>	Standstill current	Arms	5.93	9.11	18.2	23.7
<b>ns</b>	Rated low speed	rpm	0.64	0.62	0.62	0.64
<b>nm</b>	Maximum speed without flux weakening	rpm	189	274	547	756
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	430	583	962	1220
<b>ton,p</b>	Maximum ON time for peak cycle	s	6.5	8.0	8.0	6.4
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.7	2.7	2.7	2.7
<b>Pp</b>	Power dissipation @ Ip	W	11300	10200	10200	11200
<b>Pi</b>	Power dissipation @ Ii	W	8400	8590	8590	8370
<b>Pc</b>	Power dissipation @ Ic	W	3360	3440	3440	3350
<b>Td</b>	Max. detent torque (average to peak)	Nm	2.1	2.1	2.1	2.1

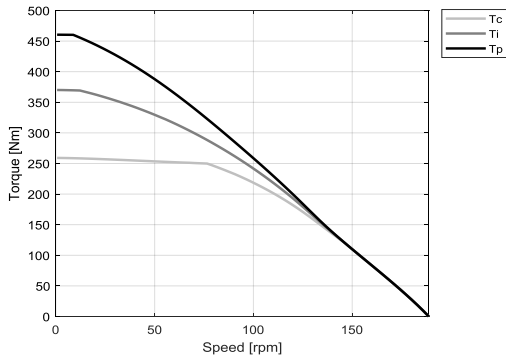
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	36.7	25.3	12.7	9.18
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	21.0	14.5	7.25	5.25
<b>Km</b>	Motor constant	Nm/√W	5.85	6.14	6.14	5.87
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	26.2	11.3	2.84	1.63
<b>Ld/Lq</b>	Electrical inductance (*)	mH	120 / 108	57.2 / 50.6	14.3 / 12.7	7.49 / 6.72
<b>Isc</b>	Maximum short-circuit current	Arms	9.20	13.3	26.6	36.8
<b>nb</b>	Base speed	rpm	76.5	195	472	681
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	12.1	98.8	407	608
<b>nb,p</b>	Base speed at peak duty cycle	rpm	8.81	99.0	298	436
<b>nn</b>	Rated speed	rpm	58.3	160	431	627
<b>Tn</b>	Rated torque	Nm	252	218	149	124
<b>In</b>	Rated current	Arms	7.79	9.73	13.3	15.5
<b>rth</b>	Thermal time constant	s	42.5	44.0	44.0	42.7
<b>Rth</b>	Thermal resistance	K/W	0.0294	0.0288	0.0288	0.0294
<b>2p</b>	Number of poles	-	44	44	44	44
<b>J</b>	Rotor inertia	kg·m²	0.0303	0.0303	0.0303	0.0303
<b>mr</b>	Rotor mass	kg	5.08	5.08	5.08	5.08
<b>ms</b>	Stator mass	kg	14.4	14.6	14.6	14.5

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.100	0.100	0.100	0.100
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	11	11	11	10
<b>Δpw</b>	Max. pressure drop at qw	bar	0.6	0.6	0.6	0.6

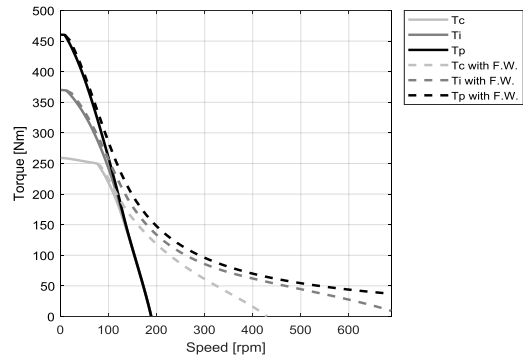
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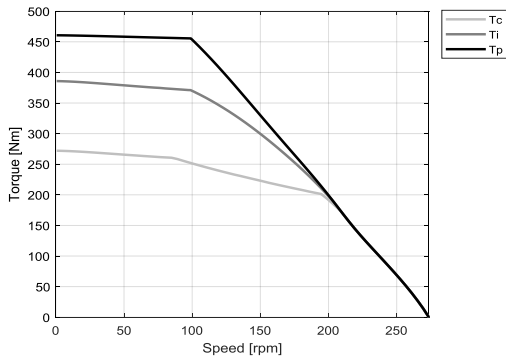
**RA - WATER COOLING**



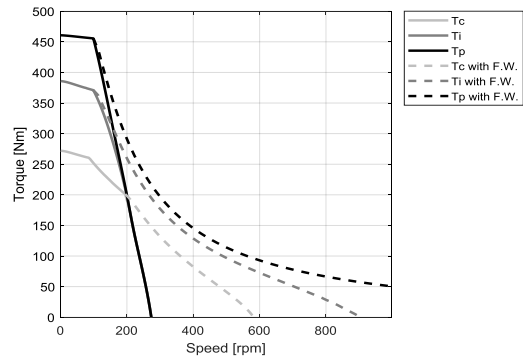
**RA - WATER COOLING**



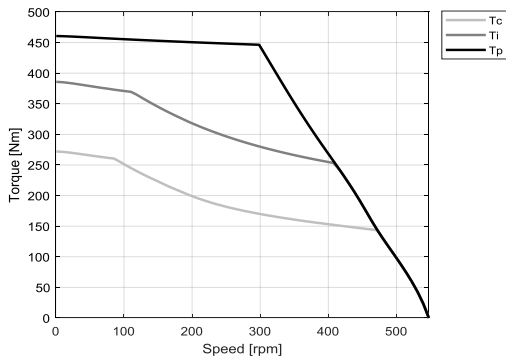
**TA - WATER COOLING**



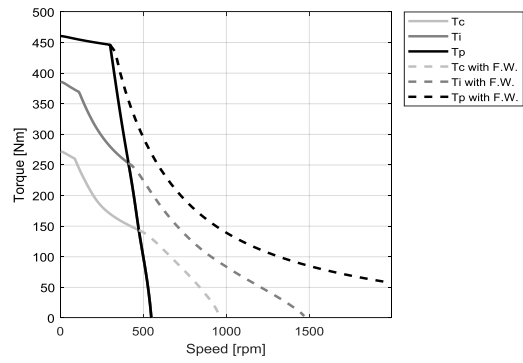
**TA - WATER COOLING**



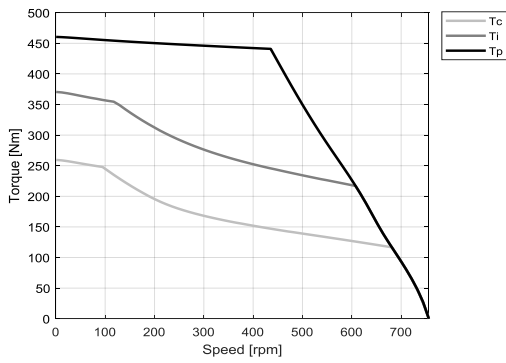
**TB - WATER COOLING**



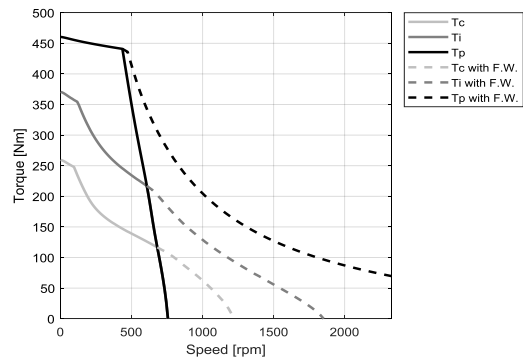
**TB - WATER COOLING**



**UB - WATER COOLING**



**UB - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	TA	UA	TB	UB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	698	697	698	697
<b>Ti</b>	Intermittent torque	Nm	578	554	578	554
<b>Tc</b>	Continuous torque	Nm	406	387	406	387
<b>Ts</b>	Standstill torque	Nm	317	301	317	301
<b>Ip</b>	Peak current	Arms	23.6	32.6	47.2	65.2
<b>Ii</b>	Intermittent current	Arms	18.7	24.3	37.3	48.7
<b>Ic</b>	Continuous current	Arms	11.8	15.4	23.6	30.8
<b>Is</b>	Standstill current	Arms	8.94	11.7	17.9	23.3
<b>ns</b>	Rated low speed	rpm	0.61	0.62	0.61	0.62
<b>nm</b>	Maximum speed without flux weakening	rpm	180	249	361	499
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	403	515	683	850
<b>ton,p</b>	Maximum ON time for peak cycle	s	6.8	5.4	6.8	5.4
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.7	2.7	2.7	2.7
<b>Pp</b>	Power dissipation @ Ip	W	14700	16200	14700	16200
<b>Pi</b>	Power dissipation @ Ii	W	11800	11500	11800	11500
<b>Pc</b>	Power dissipation @ Ic	W	4740	4600	4740	4600
<b>Td</b>	Max. detent torque (average to peak)	Nm	3.2	3.2	3.2	3.2

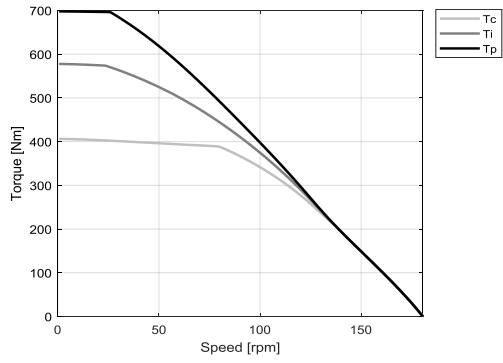
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	38.4	27.8	19.2	13.9
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	22.0	15.9	11.0	7.96
<b>Km</b>	Motor constant	Nm/√W	7.72	7.38	7.72	7.38
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	16.5	9.46	4.12	2.36
<b>Ld/Lq</b>	Electrical inductance (*)	mH	86.0 / 76.4	45.1 / 40.6	21.5 / 19.1	11.3 / 10.1
<b>Isc</b>	Maximum short-circuit current	Arms	13.4	18.5	26.8	37.1
<b>nb</b>	Base speed	rpm	79.8	171	294	428
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	23.5	84.7	229	367
<b>nb,p</b>	Base speed at peak duty cycle	rpm	26.0	73.5	170	260
<b>nn</b>	Rated speed	rpm	62.3	138	262	389
<b>Tn</b>	Rated torque	Nm	393	324	258	221
<b>In</b>	Rated current	Arms	11.7	13.1	15.0	18.0
<b>rth</b>	Thermal time constant	s	45.0	43.7	45.0	43.7
<b>Rth</b>	Thermal resistance	K/W	0.0196	0.0200	0.0196	0.0200
<b>2p</b>	Number of poles	-	44	44	44	44
<b>J</b>	Rotor inertia	kg·m²	0.0457	0.0457	0.0457	0.0457
<b>mr</b>	Rotor mass	kg	7.67	7.67	7.67	7.67
<b>ms</b>	Stator mass	kg	21.2	21.0	21.2	21.0

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.140	0.140	0.140	0.140
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	15	14	15	14
<b>Δpw</b>	Max. pressure drop at qw	bar	1.1	1.0	1.1	1.0

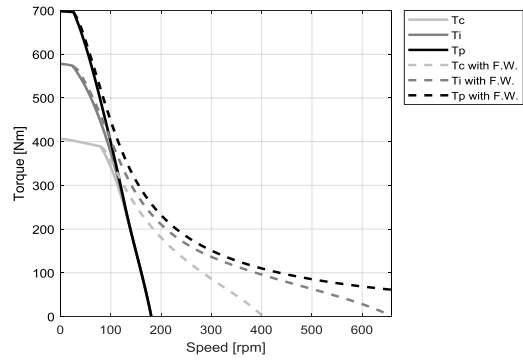
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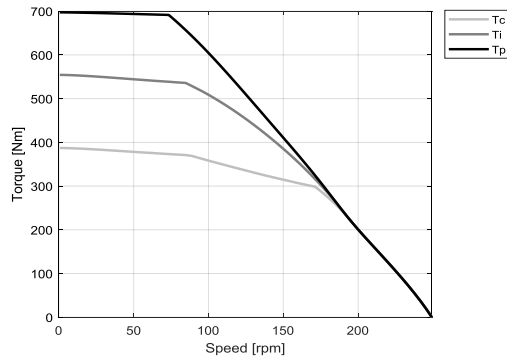
**TA - WATER COOLING**



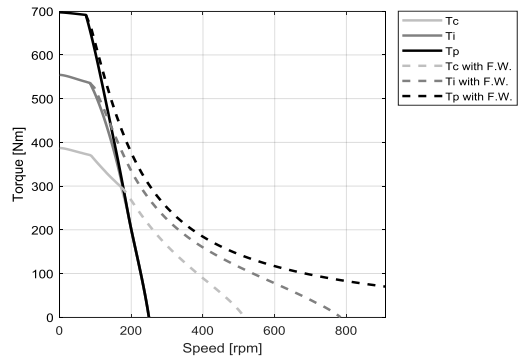
**TA - WATER COOLING**



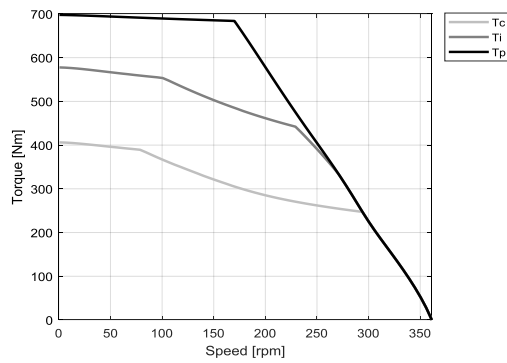
**UA - WATER COOLING**



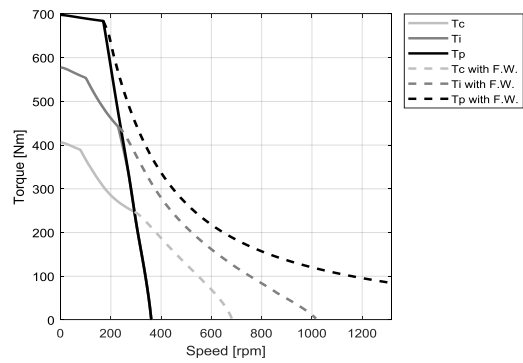
**UA - WATER COOLING**



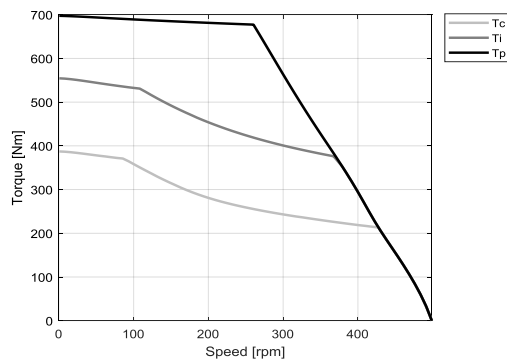
**TB - WATER COOLING**



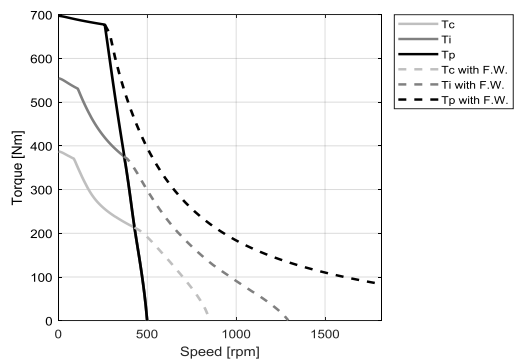
**TB - WATER COOLING**



**UB - WATER COOLING**



**UB - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	UA	TB	UB	
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	
<b>Tp</b>	Peak torque	Nm	934	935	934	
<b>Ti</b>	Intermittent torque	Nm	729	761	729	
<b>Tc</b>	Continuous torque	Nm	507	533	507	
<b>Ts</b>	Standstill torque	Nm	394	416	394	
<b>Ip</b>	Peak current	Arms	32.6	47.2	65.1	
<b>Ii</b>	Intermittent current	Arms	23.7	36.4	47.3	
<b>Ic</b>	Continuous current	Arms	15.0	23.0	29.9	
<b>Is</b>	Standstill current	Arms	11.3	17.4	22.7	
<b>ns</b>	Rated low speed	rpm	0.63	0.61	0.63	
<b>nm</b>	Maximum speed without flux weakening	rpm	186	269	372	
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	396	535	671	
<b>ton,p</b>	Maximum ON time for peak cycle	s	4.3	5.4	4.3	
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.7	2.7	2.7	
<b>Pp</b>	Power dissipation @ Ip	W	21300	19400	21300	
<b>Pi</b>	Power dissipation @ Ii	W	14000	14500	14000	
<b>Pc</b>	Power dissipation @ Ic	W	5620	5810	5620	
<b>Td</b>	Max. detent torque (average to peak)	Nm	4.2	4.2	4.2	

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	37.3	25.7	18.6	
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	21.3	14.7	10.7	
<b>Km</b>	Motor constant	Nm/√W	8.61	9.00	8.61	
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	12.5	5.45	3.12	
<b>Ld/Lq</b>	Electrical inductance (*)	mH	60.2 / 54.5	28.7 / 25.6	15.0 / 13.6	
<b>Isc</b>	Maximum short-circuit current	Arms	18.6	26.9	37.2	
<b>nb</b>	Base speed	rpm	89.8	206	305	
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	34.8	129	244	
<b>nb,p</b>	Base speed at peak duty cycle	rpm	18.8	103	171	
<b>nn</b>	Rated speed	rpm	70.8	175	273	
<b>Tn</b>	Rated torque	Nm	489	388	325	
<b>In</b>	Rated current	Arms	14.9	16.8	19.5	
<b>rth</b>	Thermal time constant	s	43.2	44.4	43.2	
<b>Rth</b>	Thermal resistance	K/W	0.0149	0.0147	0.0149	
<b>2p</b>	Number of poles	-	44	44	44	
<b>J</b>	Rotor inertia	kg·m²	0.0614	0.0614	0.0614	
<b>mr</b>	Rotor mass	kg	10.3	10.3	10.3	
<b>ms</b>	Stator mass	kg	27.0	27.3	27.0	

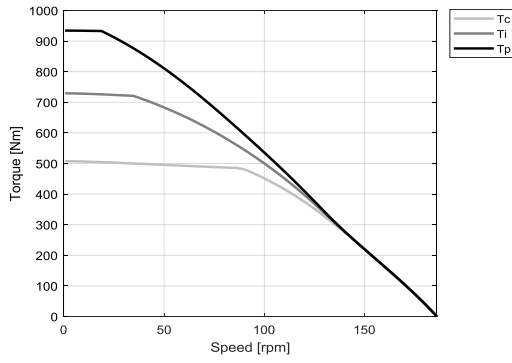
MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	
<b>Di</b>	Intermittent duty cycle	%	40	40	40	
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	
<b>Sr</b>	Rotor exchange surface	m²	0.175	0.175	0.175	
<b>θamb</b>	Ambient temperature	°C	20	20	20	
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	
<b>θw</b>	Inlet water temperature	°C	20	20	20	
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	
<b>qw</b>	Minimum water flow for Δθw	l/min	18	18	18	
<b>Δpw</b>	Max. pressure drop at qw	bar	2.0	2.1	2.0	

**Notes:** (\*) terminal to terminal.  
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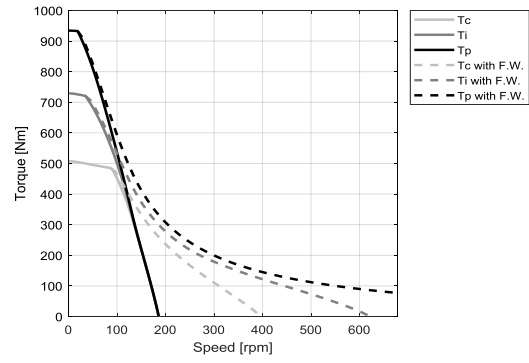
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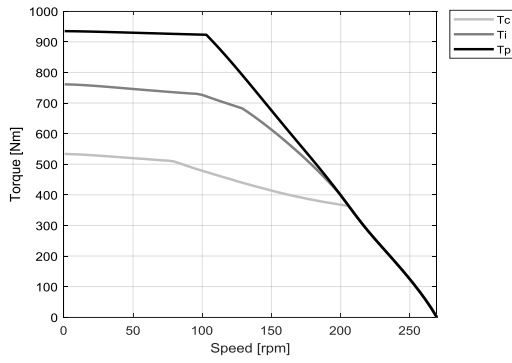
**UA - WATER COOLING**



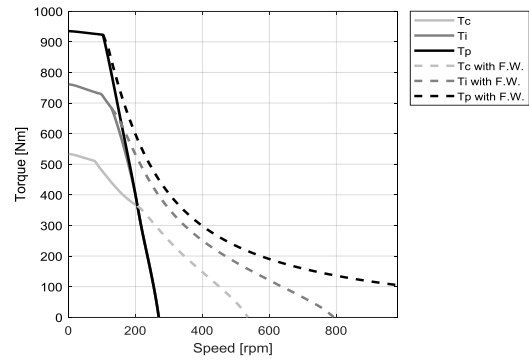
**UA - WATER COOLING**



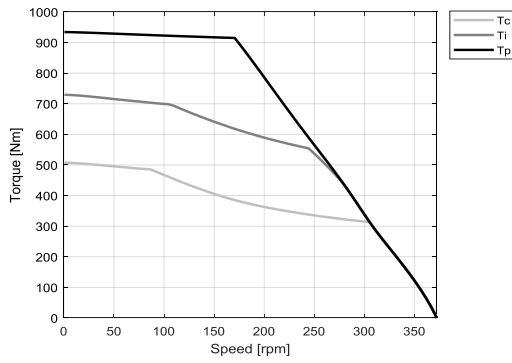
**TB - WATER COOLING**



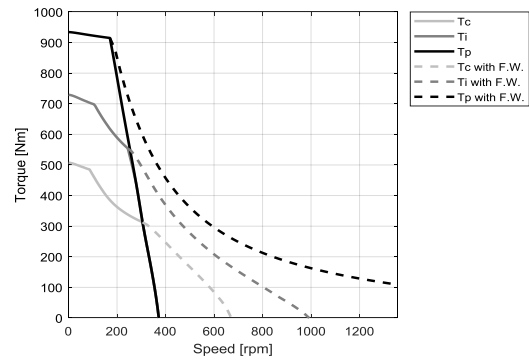
**TB - WATER COOLING**



**UB - WATER COOLING**



**UB - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	RA	UA	TB	UB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	286	286	286	286
<b>Ti</b>	Intermittent torque	Nm	192	187	193	187
<b>Tc</b>	Continuous torque	Nm	133	128	133	128
<b>Ts</b>	Standstill torque	Nm	103	99.2	103	99.2
<b>Ip</b>	Peak current	Arms	20.6	42.3	62.2	84.5
<b>Ii</b>	Intermittent current	Arms	11.9	23.5	36.1	47.0
<b>Ic</b>	Continuous current	Arms	7.50	14.9	22.9	29.7
<b>Is</b>	Standstill current	Arms	5.68	11.3	17.3	22.5
<b>ns</b>	Rated low speed	rpm	0.40	0.40	0.39	0.40
<b>nm</b>	Maximum speed without flux weakening	rpm	350	719	1060	1440
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	835	1290	1540	1540
<b>ton,p</b>	Maximum ON time for peak cycle	s	3.7	3.3	4.0	3.3
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.8	2.9	2.8
<b>Pp</b>	Power dissipation @ Ip	W	9410	10000	9130	10000
<b>Pi</b>	Power dissipation @ Ii	W	3930	3840	3870	3840
<b>Pc</b>	Power dissipation @ Ic	W	1570	1540	1550	1540
<b>Td</b>	Max. detent torque (average to peak)	Nm	0.71	0.71	0.71	0.71

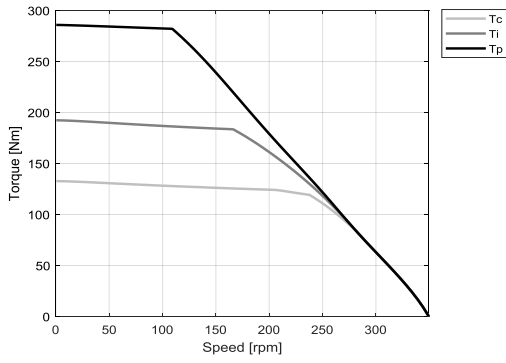
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	19.6	9.55	6.49	4.78
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	11.3	5.51	3.74	2.76
<b>Km</b>	Motor constant	Nm/√W	4.43	4.32	4.49	4.32
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	13.1	3.26	1.39	0.816
<b>Ld/Lq</b>	Electrical inductance (*)	mH	42.3 / 39.2	10.0 / 9.32	4.62 / 4.27	2.50 / 2.33
<b>Isc</b>	Maximum short-circuit current	Arms	9.37	19.3	28.4	38.5
<b>nb</b>	Base speed	rpm	238	612	971	1380
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	166	502	835	1200
<b>nb,p</b>	Base speed at peak duty cycle	rpm	109	343	562	783
<b>nn</b>	Rated speed	rpm	199	550	854	836
<b>Tn</b>	Rated torque	Nm	124	88.2	68.0	68.4
<b>In</b>	Rated current	Arms	7.39	10.8	12.7	17.3
<b>rth</b>	Thermal time constant	s	45.3	45.3	46.8	45.3
<b>Rth</b>	Thermal resistance	K/W	0.0670	0.0685	0.0681	0.0685
<b>2p</b>	Number of poles	-	66	66	66	66
<b>J</b>	Rotor inertia	kg·m²	0.0380	0.0380	0.0380	0.0380
<b>mr</b>	Rotor mass	kg	2.73	2.73	2.73	2.73
<b>ms</b>	Stator mass	kg	8.78	8.81	8.86	8.81

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.056	0.056	0.056	0.056
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	4.9	4.8	4.8	4.8
<b>Δpw</b>	Max. pressure drop at qw	bar	0.2	0.2	0.2	0.2

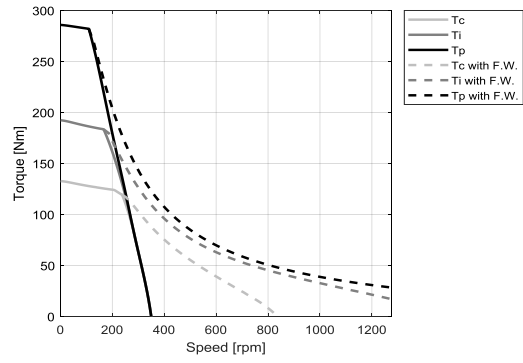
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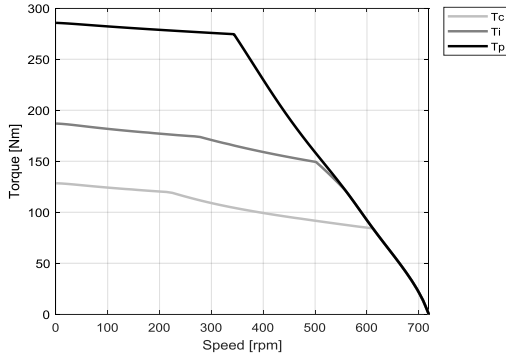
**RA - WATER COOLING**



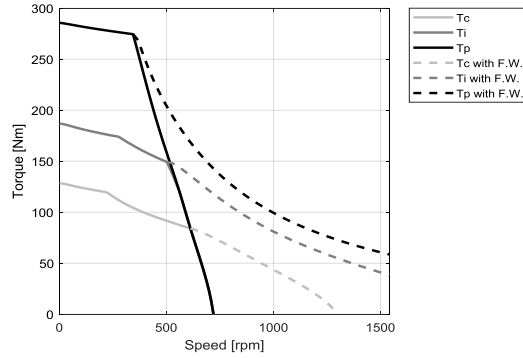
**RA - WATER COOLING**



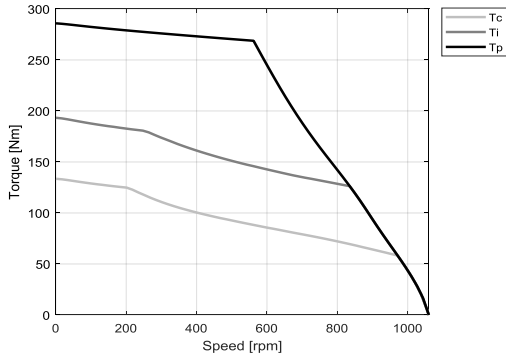
**UA - WATER COOLING**



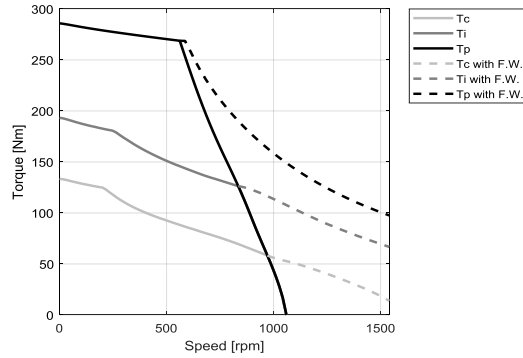
**UA - WATER COOLING**



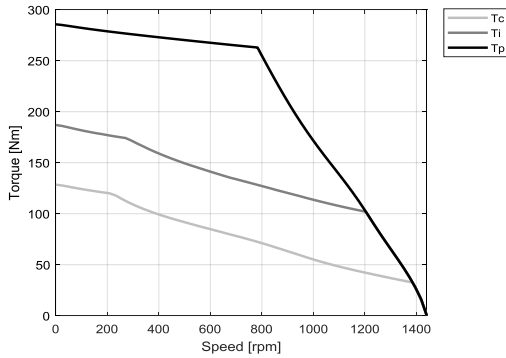
**TB - WATER COOLING**



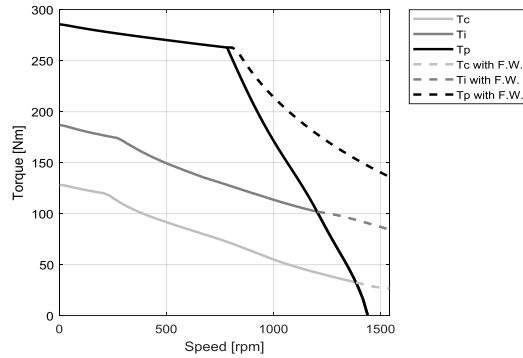
**TB - WATER COOLING**



**UB - WATER COOLING**



**UB - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	RA	TA	TB	UB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	498	499	499	498
<b>Ti</b>	Intermittent torque	Nm	363	366	366	354
<b>Tc</b>	Continuous torque	Nm	249	252	252	242
<b>Ts</b>	Standstill torque	Nm	192	194	194	186
<b>Ip</b>	Peak current	Arms	19.0	28.8	57.7	78.4
<b>Ii</b>	Intermittent current	Arms	12.6	19.3	38.6	50.3
<b>Ic</b>	Continuous current	Arms	7.97	12.2	24.4	31.8
<b>Is</b>	Standstill current	Arms	6.04	9.25	18.5	24.1
<b>ns</b>	Rated low speed	rpm	0.45	0.43	0.43	0.45
<b>nm</b>	Maximum speed without flux weakening	rpm	200	303	607	825
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	461	625	993	1220
<b>ton,p</b>	Maximum ON time for peak cycle	s	4.7	5.0	5.0	4.3
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.8	2.8	2.8	2.7
<b>Pp</b>	Power dissipation @ Ip	W	11400	10900	10900	11900
<b>Pi</b>	Power dissipation @ Ii	W	6400	6310	6310	6250
<b>Pc</b>	Power dissipation @ Ic	W	2560	2520	2520	2500
<b>Td</b>	Max. detent torque (average to peak)	Nm	1.2	1.2	1.2	1.2

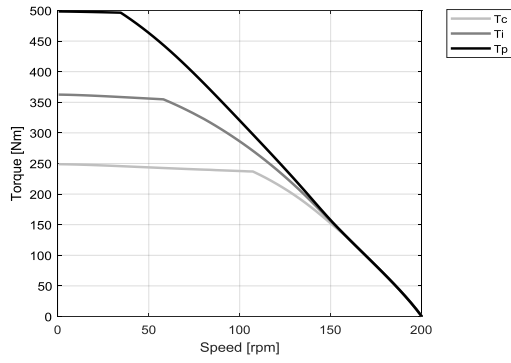
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	34.3	22.7	11.3	8.34
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	19.8	13.1	6.54	4.82
<b>Km</b>	Motor constant	Nm/√W	6.43	6.56	6.56	6.31
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	19.0	7.97	1.99	1.17
<b>Ld/Lq</b>	Electrical inductance (*)	mH	69.4 / 63.7	30.3 / 27.7	7.57 / 6.93	4.10 / 3.79
<b>Isc</b>	Maximum short-circuit current	Arms	9.99	15.1	30.2	41.1
<b>nb</b>	Base speed	rpm	107	232	538	772
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	58.0	152	467	679
<b>nb,p</b>	Base speed at peak duty cycle	rpm	34.6	119	325	460
<b>nn</b>	Rated speed	rpm	88.5	197	491	590
<b>Tn</b>	Rated torque	Nm	239	200	138	118
<b>In</b>	Rated current	Arms	7.91	10.0	14.1	16.6
<b>rth</b>	Thermal time constant	s	40.7	41.8	41.8	40.6
<b>Rth</b>	Thermal resistance	K/W	0.0404	0.0410	0.0410	0.0412
<b>2p</b>	Number of poles	-	66	66	66	66
<b>J</b>	Rotor inertia	kg·m²	0.0633	0.0633	0.0633	0.0633
<b>mr</b>	Rotor mass	kg	4.54	4.54	4.54	4.54
<b>ms</b>	Stator mass	kg	11.9	12.0	12.0	11.9

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.082	0.082	0.082	0.082
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	8.0	7.9	7.9	7.8
<b>Δpw</b>	Max. pressure drop at qw	bar	0.3	0.3	0.3	0.3

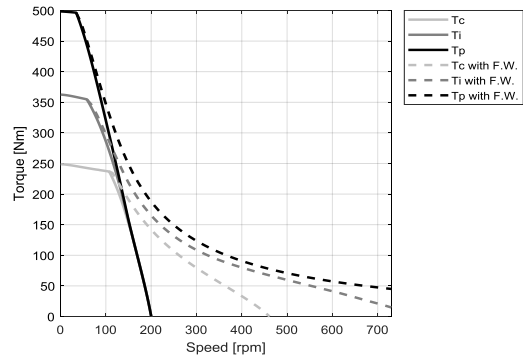
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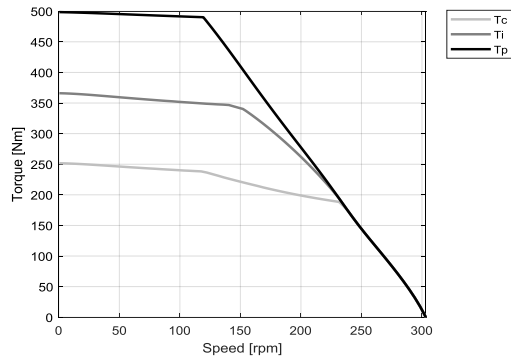
**RA - WATER COOLING**



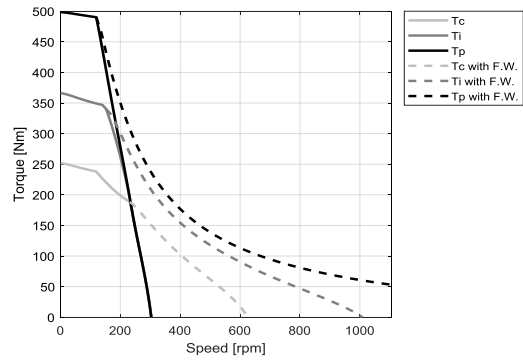
**RA - WATER COOLING**



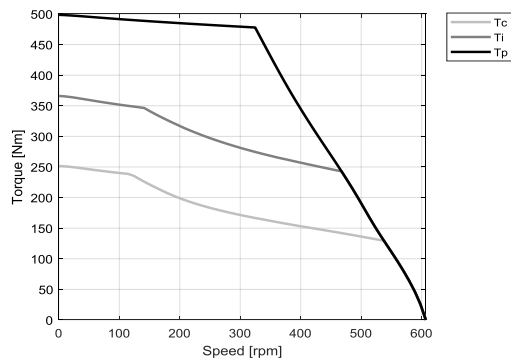
**TA - WATER COOLING**



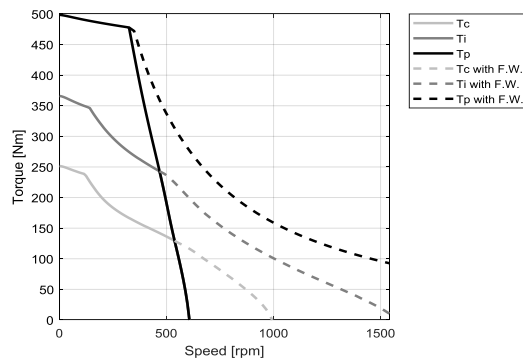
**TA - WATER COOLING**



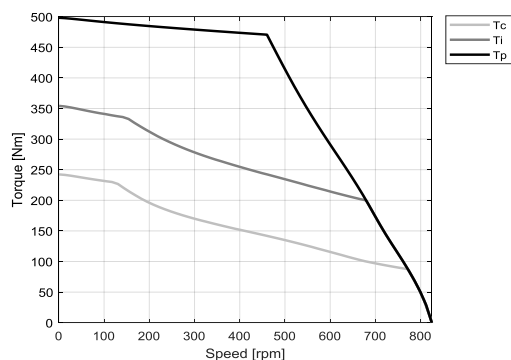
**TB - WATER COOLING**



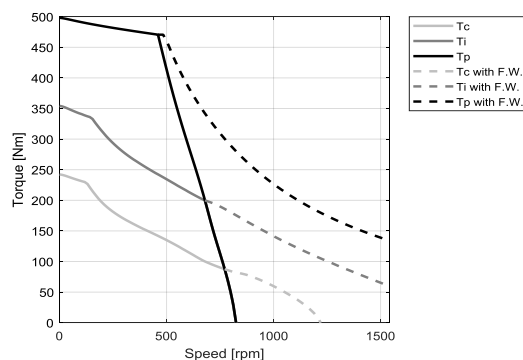
**TB - WATER COOLING**



**UB - WATER COOLING**



**UB - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	RA	UA	TB	UB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	685	710	711	710
<b>Ti</b>	Intermittent torque	Nm	528	518	534	518
<b>Tc</b>	Continuous torque	Nm	363	354	368	354
<b>Ts</b>	Standstill torque	Nm	279	272	284	272
<b>Ip</b>	Peak current	Arms	17.7	38.5	56.7	77.0
<b>Ii</b>	Intermittent current	Arms	12.8	25.6	39.4	51.3
<b>Ic</b>	Continuous current	Arms	8.09	16.2	24.9	32.4
<b>Is</b>	Standstill current	Arms	6.13	12.3	18.9	24.6
<b>ns</b>	Rated low speed	rpm	0.45	0.45	0.44	0.45
<b>nm</b>	Maximum speed without flux weakening	rpm	141	290	427	581
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	310	530	685	858
<b>ton,p</b>	Maximum ON time for peak cycle	s	5.6	4.4	5.2	4.4
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.8	2.7	2.8	2.7
<b>Pp</b>	Power dissipation @ Ip	W	12700	14900	13700	14900
<b>Pi</b>	Power dissipation @ Ii	W	8630	8430	8510	8430
<b>Pc</b>	Power dissipation @ Ic	W	3450	3370	3400	3370
<b>Td</b>	Max. detent torque (average to peak)	Nm	1.8	1.8	1.8	1.8

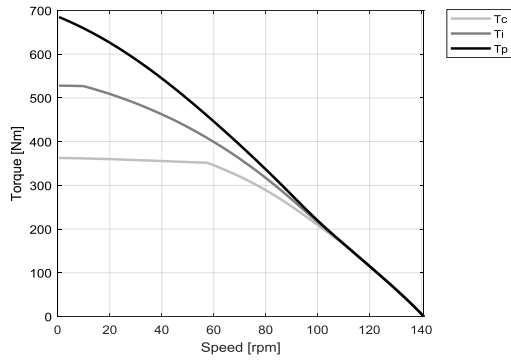
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	49.0	23.8	16.2	11.9
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	28.1	13.7	9.29	6.84
<b>Km</b>	Motor constant	Nm/√W	8.01	7.88	8.19	7.88
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	25.0	6.09	2.60	1.52
<b>Ld/Lq</b>	Electrical inductance (*)	mH	93.8 / 86.3	22.2 / 20.5	10.2 / 9.38	5.55 / 5.13
<b>Isc</b>	Maximum short-circuit current	Arms	10.5	21.6	31.8	43.2
<b>nb</b>	Base speed	rpm	57.5	231	372	538
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	9.84	166	320	472
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	115	220	318
<b>nn</b>	Rated speed	rpm	43.8	200	338	444
<b>Tn</b>	Rated torque	Nm	355	255	207	168
<b>In</b>	Rated current	Arms	8.06	12.1	14.7	16.4
<b>rth</b>	Thermal time constant	s	40.3	40.1	41.2	40.1
<b>Rth</b>	Thermal resistance	K/W	0.0294	0.0299	0.0298	0.0299
<b>2p</b>	Number of poles	-	66	66	66	66
<b>J</b>	Rotor inertia	kg·m²	0.0887	0.0887	0.0887	0.0887
<b>mr</b>	Rotor mass	kg	6.36	6.36	6.36	6.36
<b>ms</b>	Stator mass	kg	15.3	15.4	15.5	15.4

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.110	0.110	0.110	0.110
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	11	11	11	11
<b>Δpw</b>	Max. pressure drop at qw	bar	0.5	0.5	0.5	0.5

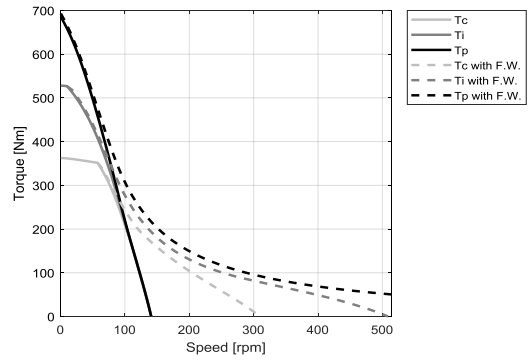
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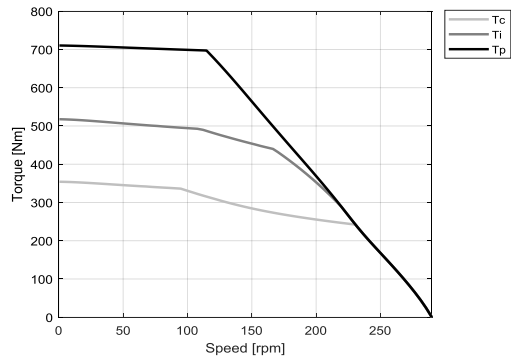
**RA - WATER COOLING**



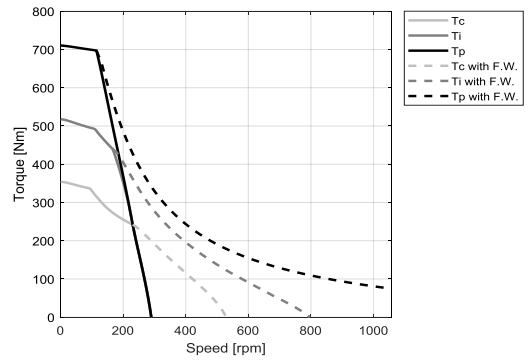
**RA - WATER COOLING**



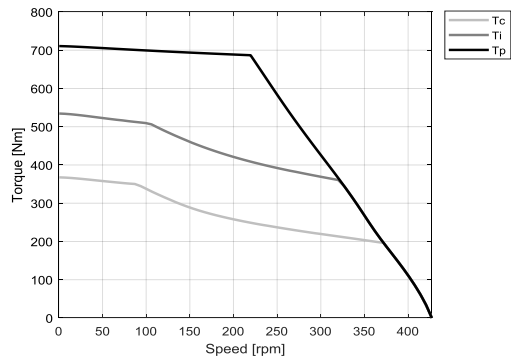
**UA - WATER COOLING**



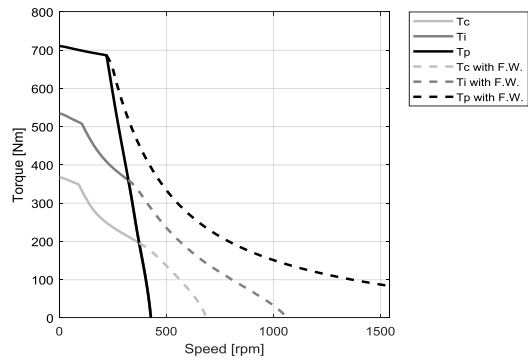
**UA - WATER COOLING**



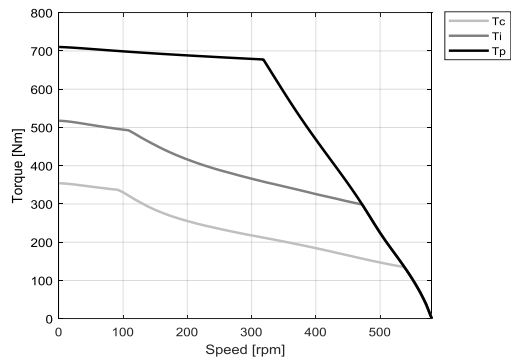
**TB - WATER COOLING**



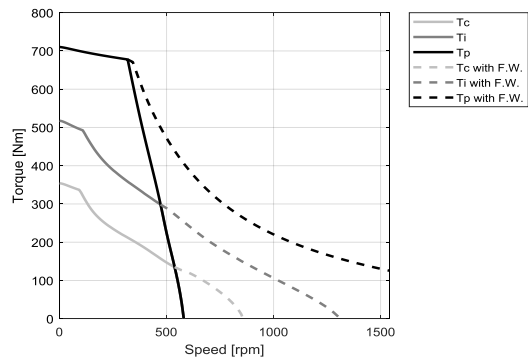
**TB - WATER COOLING**



**UB - WATER COOLING**



**UB - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	TA	UA	TB	UB
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	1030	1030	1030	1030
<b>Ti</b>	Intermittent torque	Nm	789	764	789	764
<b>Tc</b>	Continuous torque	Nm	543	523	543	523
<b>Ts</b>	Standstill torque	Nm	419	402	419	402
<b>Ip</b>	Peak current	Arms	28.0	38.0	55.9	76.0
<b>Ii</b>	Intermittent current	Arms	20.0	26.1	40.0	52.1
<b>Ic</b>	Continuous current	Arms	12.7	16.5	25.3	33.0
<b>Is</b>	Standstill current	Arms	9.58	12.5	19.2	25.0
<b>ns</b>	Rated low speed	rpm	0.47	0.48	0.47	0.48
<b>nm</b>	Maximum speed without flux weakening	rpm	147	200	295	401
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	299	377	503	626
<b>ton,p</b>	Maximum ON time for peak cycle	s	5.0	4.2	5.0	4.2
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.7	2.7	2.7	2.7
<b>Pp</b>	Power dissipation @ Ip	W	18000	19500	18000	19500
<b>Pi</b>	Power dissipation @ Ii	W	11800	11700	11800	11700
<b>Pc</b>	Power dissipation @ Ic	W	4730	4680	4730	4680
<b>Td</b>	Max. detent torque (average to peak)	Nm	2.5	2.5	2.5	2.5

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	46.9	34.5	23.5	17.3
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	26.9	19.8	13.5	9.90
<b>Km</b>	Motor constant	Nm/√W	10.2	9.81	10.2	9.81
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	14.2	8.26	3.54	2.07
<b>Ld/Lq</b>	Electrical inductance (*)	mH	56.2 / 51.7	30.4 / 28.3	14.0 / 12.9	7.61 / 7.06
<b>Isc</b>	Maximum short-circuit current	Arms	16.8	22.8	33.5	45.5
<b>nb</b>	Base speed	rpm	70.8	142	245	352
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	27.7	74.2	200	309
<b>nb,p</b>	Base speed at peak duty cycle	rpm	17.1	55.2	137	207
<b>nn</b>	Rated speed	rpm	56.5	116	219	321
<b>Tn</b>	Rated torque	Nm	525	432	342	287
<b>In</b>	Rated current	Arms	12.6	14.0	16.4	18.9
<b>rth</b>	Thermal time constant	s	38.9	37.9	38.9	37.9
<b>Rth</b>	Thermal resistance	K/W	0.0207	0.0207	0.0207	0.0207
<b>2p</b>	Number of poles	-	66	66	66	66
<b>J</b>	Rotor inertia	kg·m²	0.126	0.126	0.126	0.126
<b>mr</b>	Rotor mass	kg	9.01	9.01	9.01	9.01
<b>ms</b>	Stator mass	kg	20.0	19.8	20.0	19.8

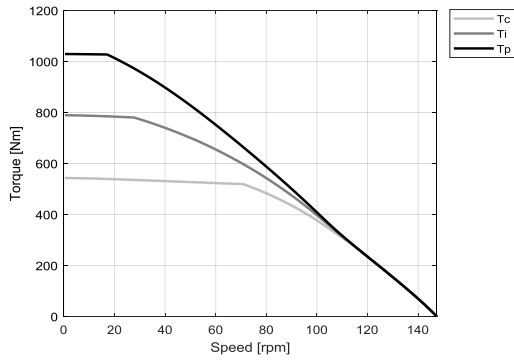
MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.140	0.140	0.140	0.140
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	15	15	15	15
<b>Δpw</b>	Max. pressure drop at qw	bar	1.1	1.1	1.1	1.1

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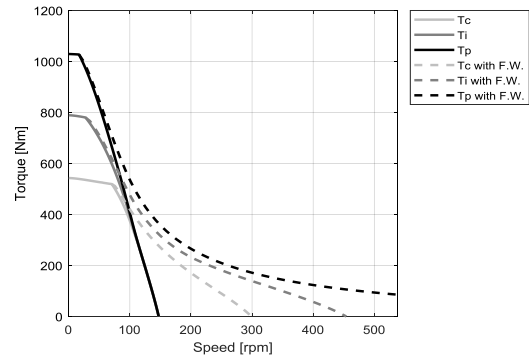
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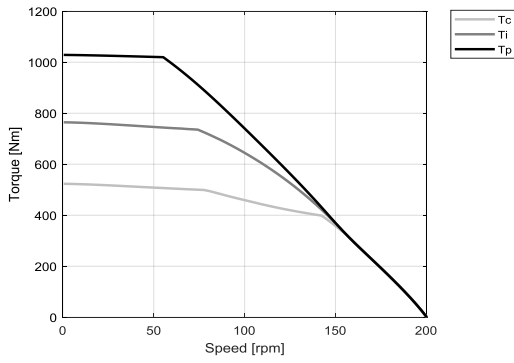
**TA - WATER COOLING**



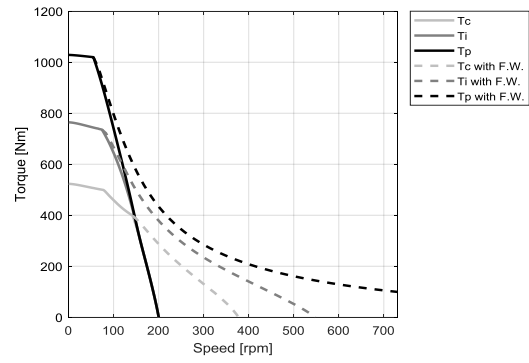
**TA - WATER COOLING**



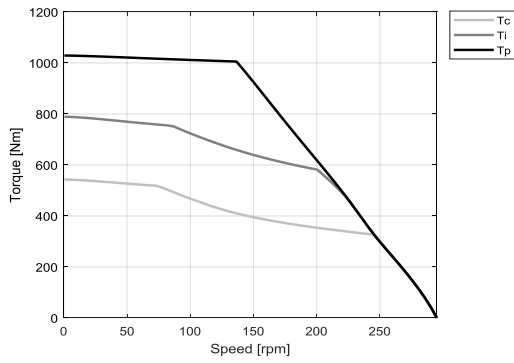
**UA - WATER COOLING**



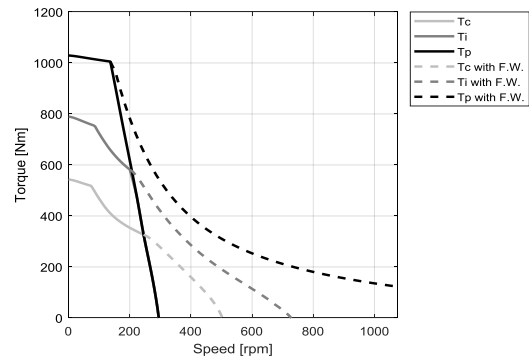
**UA - WATER COOLING**



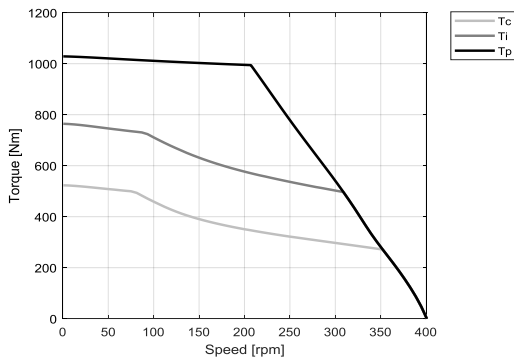
**TB - WATER COOLING**



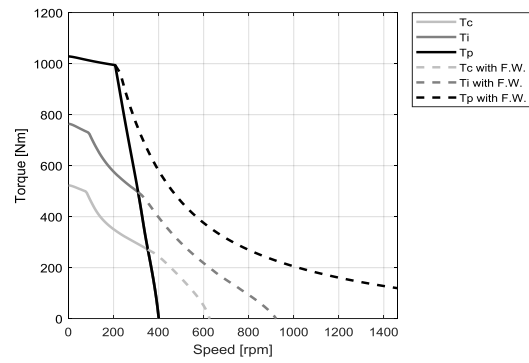
**TB - WATER COOLING**



**UB - WATER COOLING**



**UB - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	UA	TB	UB	
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	
<b>Tp</b>	Peak torque	Nm	1540	1560	1560	
<b>Ti</b>	Intermittent torque	Nm	1150	1190	1150	
<b>Tc</b>	Continuous torque	Nm	782	813	782	
<b>Ts</b>	Standstill torque	Nm	600	625	600	
<b>Ip</b>	Peak current	Arms	36.9	55.3	75.2	
<b>Ii</b>	Intermittent current	Arms	25.5	39.2	51.1	
<b>Ic</b>	Continuous current	Arms	16.1	24.8	32.3	
<b>Is</b>	Standstill current	Arms	12.2	18.8	24.5	
<b>ns</b>	Rated low speed	rpm	0.47	0.46	0.47	
<b>nm</b>	Maximum speed without flux weakening	rpm	132	195	264	
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	263	361	449	
<b>ton,p</b>	Maximum ON time for peak cycle	s	3.8	4.3	3.6	
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.7	2.7	2.7	
<b>Pp</b>	Power dissipation @ Ip	W	26500	25500	27600	
<b>Pi</b>	Power dissipation @ Ii	W	15900	16200	15900	
<b>Pc</b>	Power dissipation @ Ic	W	6380	6480	6380	
<b>Td</b>	Max. detent torque (average to peak)	Nm	3.9	3.9	3.9	

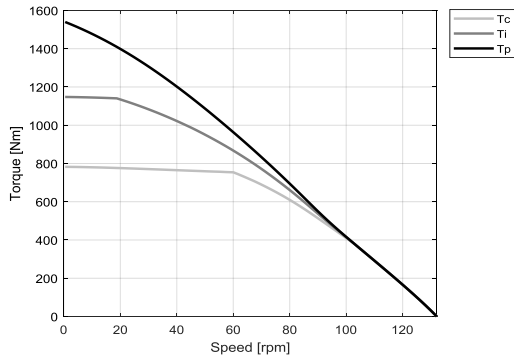
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	52.4	35.6	26.2	
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	30.0	20.4	15.0	
<b>Km</b>	Motor constant	Nm/√W	12.4	12.8	12.4	
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	12.0	5.13	2.99	
<b>Ld/Lq</b>	Electrical inductance (*)	mH	45.8 / 42.7	21.2 / 19.5	11.5 / 10.7	
<b>Isc</b>	Maximum short-circuit current	Arms	22.9	33.7	45.8	
<b>nb</b>	Base speed	rpm	60.0	145	216	
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	18.8	80.3	170	
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	64.7	112	
<b>nn</b>	Rated speed	rpm	47.1	122	191	
<b>Tn</b>	Rated torque	Nm	761	631	525	
<b>In</b>	Rated current	Arms	16.1	19.8	22.4	
<b>rth</b>	Thermal time constant	s	38.8	39.8	38.8	
<b>Rth</b>	Thermal resistance	K/W	0.0141	0.0140	0.0141	
<b>2p</b>	Number of poles	-	66	66	66	
<b>J</b>	Rotor inertia	kg·m²	0.189	0.189	0.189	
<b>mr</b>	Rotor mass	kg	13.6	13.6	13.6	
<b>ms</b>	Stator mass	kg	28.5	28.7	28.5	

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	
<b>Di</b>	Intermittent duty cycle	%	40	40	40	
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	
<b>Sr</b>	Rotor exchange surface	m²	0.210	0.210	0.210	
<b>θamb</b>	Ambient temperature	°C	20	20	20	
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	
<b>θw</b>	Inlet water temperature	°C	20	20	20	
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	
<b>qw</b>	Minimum water flow for Δθw	l/min	20	20	20	
<b>Δpw</b>	Max. pressure drop at qw	bar	2.0	2.1	2.0	

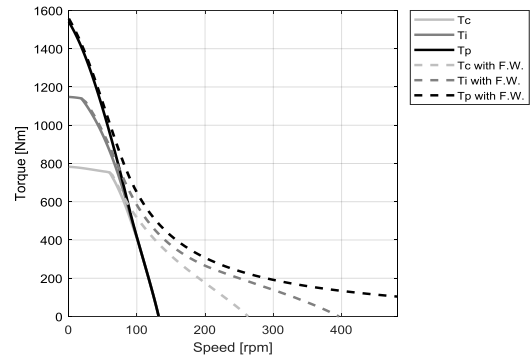
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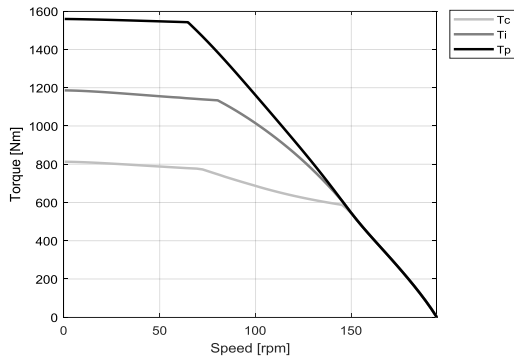
**UA - WATER COOLING**



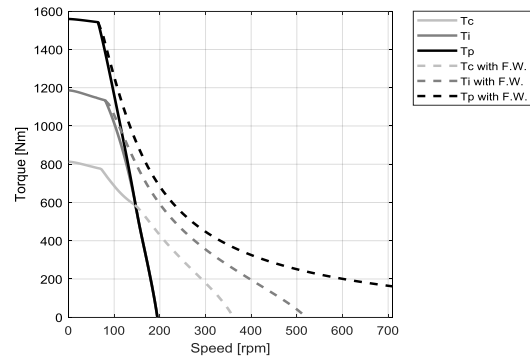
**UA - WATER COOLING**



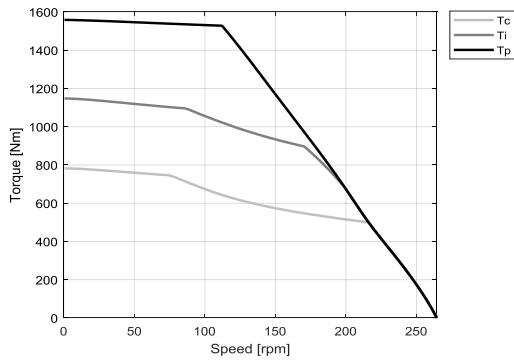
**TB - WATER COOLING**



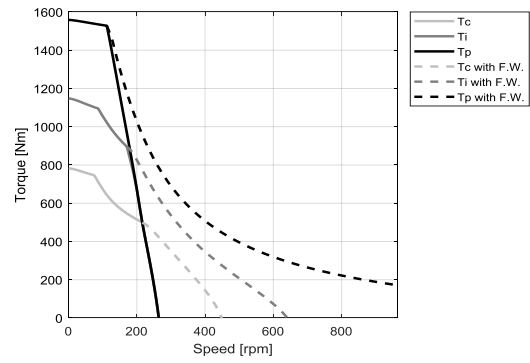
**TB - WATER COOLING**



**UB - WATER COOLING**



**UB - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	TB	UB		
		UNIT	WATER COOLING	WATER COOLING		
<b>Tp</b>	Peak torque	Nm	2090	2090		
<b>Ti</b>	Intermittent torque	Nm	1560	1510		
<b>Tc</b>	Continuous torque	Nm	1070	1020		
<b>Ts</b>	Standstill torque	Nm	817	781		
<b>Ip</b>	Peak current	Arms	55.1	74.8		
<b>Ii</b>	Intermittent current	Arms	38.1	49.5		
<b>Ic</b>	Continuous current	Arms	24.1	31.3		
<b>Is</b>	Standstill current	Arms	18.3	23.7		
<b>ns</b>	Rated low speed	rpm	0.46	0.47		
<b>nm</b>	Maximum speed without flux weakening	rpm	145	197		
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	281	353		
<b>ton,p</b>	Maximum ON time for peak cycle	s	3.5	2.9		
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.7	2.7		
<b>Pp</b>	Power dissipation @ Ip	W	33200	36000		
<b>Pi</b>	Power dissipation @ Ii	W	19700	19300		
<b>Pc</b>	Power dissipation @ Ic	W	7880	7710		
<b>Td</b>	Max. detent torque (average to peak)	Nm	5.2	5.2		

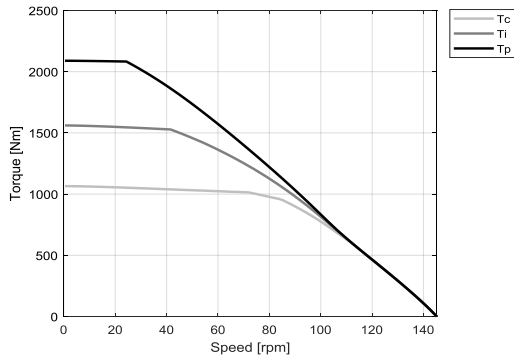
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	47.7	35.1		
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	27.3	20.1		
<b>Km</b>	Motor constant	Nm/√W	15.0	14.4		
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	6.78	3.95		
<b>Ld/Lq</b>	Electrical inductance (*)	mH	28.3 / 26.3	15.3 / 14.4		
<b>Isc</b>	Maximum short-circuit current	Arms	33.8	46.0		
<b>nb</b>	Base speed	rpm	83.9	148		
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	41.5	87.4		
<b>nb,p</b>	Base speed at peak duty cycle	rpm	24.3	61.5		
<b>nn</b>	Rated speed	rpm	64.7	125		
<b>Tn</b>	Rated torque	Nm	1020	801		
<b>In</b>	Rated current	Arms	23.9	25.4		
<b>rth</b>	Thermal time constant	s	39.4	38.6		
<b>Rth</b>	Thermal resistance	K/W	0.0105	0.0105		
<b>2p</b>	Number of poles	-	66	66		
<b>J</b>	Rotor inertia	kg·m²	0.252	0.252		
<b>mr</b>	Rotor mass	kg	18.0	18.0		
<b>ms</b>	Stator mass	kg	37.0	36.8		

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600		
<b>Di</b>	Intermittent duty cycle	%	40	40		
<b>Dp</b>	Peak duty cycle	%	5.0	5.0		
<b>Sr</b>	Rotor exchange surface	m²	0.275	0.275		
<b>θamb</b>	Ambient temperature	°C	20	20		
<b>θmax</b>	Maximum coil temperature	°C	130	130		
<b>θw</b>	Inlet water temperature	°C	20	20		
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0		
<b>qw</b>	Minimum water flow for Δθw	l/min	25	24		
<b>Δpw</b>	Max. pressure drop at qw	bar	3.7	3.6		

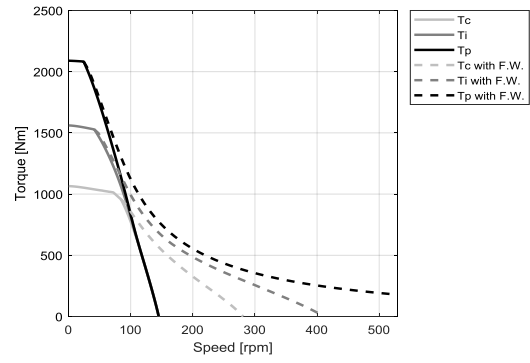
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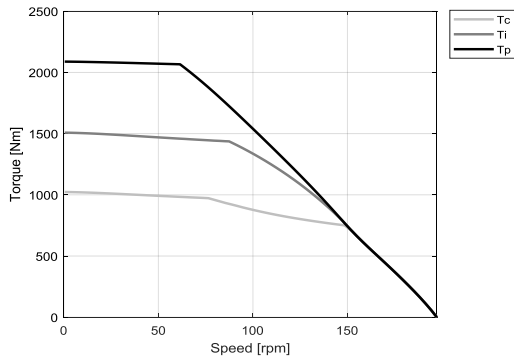
**TB - WATER COOLING**



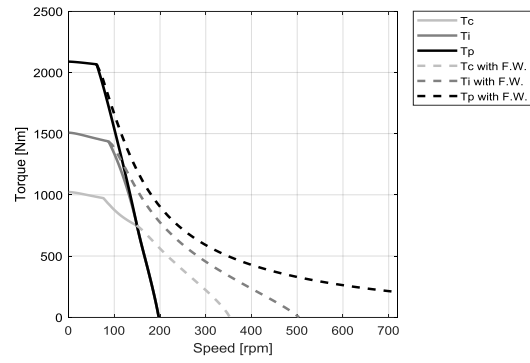
**TB - WATER COOLING**



**UB - WATER COOLING**



**UB - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	SA	SB	UB	UD
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	260	260	260	260
<b>Ti</b>	Intermittent torque	Nm	188	188	190	190
<b>Tc</b>	Continuous torque	Nm	137	137	139	139
<b>Ts</b>	Standstill torque	Nm	110	110	111	111
<b>Ip</b>	Peak current	Arms	17.3	34.5	53.9	108
<b>Ii</b>	Intermittent current	Arms	10.0	20.0	31.8	63.6
<b>Ic</b>	Continuous current	Arms	6.32	12.6	20.1	40.2
<b>Is</b>	Standstill current	Arms	4.79	9.58	15.2	30.5
<b>ns</b>	Rated low speed	rpm	0.24	0.24	0.24	0.24
<b>nm</b>	Maximum speed without flux weakening	rpm	259	518	809	1620
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	792	1190	1480	1650
<b>ton,p</b>	Maximum ON time for peak cycle	s	8.5	8.5	9.0	9.0
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	3.0	3.0	3.0	3.0
<b>Pp</b>	Power dissipation @ Ip	W	8410	8410	8240	8240
<b>Pi</b>	Power dissipation @ Ii	W	3550	3550	3620	3620
<b>Pc</b>	Power dissipation @ Ic	W	1420	1420	1450	1450
<b>Td</b>	Max. detent torque (average to peak)	Nm	1.1	1.1	1.1	1.1

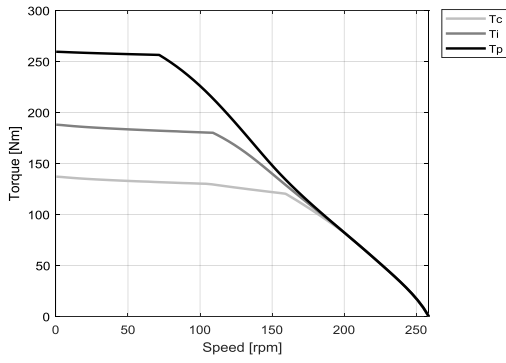
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	26.6	13.3	8.52	4.26
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	15.3	7.67	4.91	2.46
<b>Km</b>	Motor constant	Nm/√W	5.34	5.34	5.38	5.38
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	16.6	4.15	1.67	0.418
<b>Ld/Lq</b>	Electrical inductance (*)	mH	150 / 133	37.5 / 33.2	15.4 / 13.5	3.84 / 3.38
<b>Isc</b>	Maximum short-circuit current	Arms	5.37	10.7	16.8	33.5
<b>nb</b>	Base speed	rpm	159	407	704	N/A
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	109	320	574	1340
<b>nb,p</b>	Base speed at peak duty cycle	rpm	71.6	228	392	836
<b>nn</b>	Rated speed	rpm	134	358	641	962
<b>Tn</b>	Rated torque	Nm	125	96.1	70.2	53.4
<b>In</b>	Rated current	Arms	5.92	8.69	9.75	15.2
<b>rth</b>	Thermal time constant	s	111	111	112	112
<b>Rth</b>	Thermal resistance	K/W	0.0748	0.0748	0.0733	0.0733
<b>2p</b>	Number of poles	-	44	44	44	44
<b>J</b>	Rotor inertia	kg·m²	0.0242	0.0242	0.0242	0.0242
<b>mr</b>	Rotor mass	kg	2.12	2.12	2.12	2.12
<b>ms</b>	Stator mass	kg	13.0	13.0	13.1	13.1

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.056	0.056	0.056	0.056
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	4.4	4.4	4.5	4.5
<b>Δpw</b>	Max. pressure drop at qw	bar	0.1	0.1	0.1	0.1

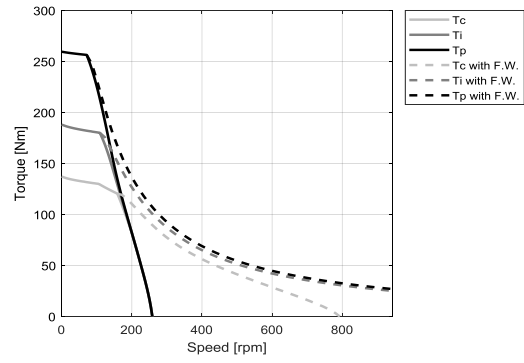
**Notes:** (\*) terminal to terminal.  
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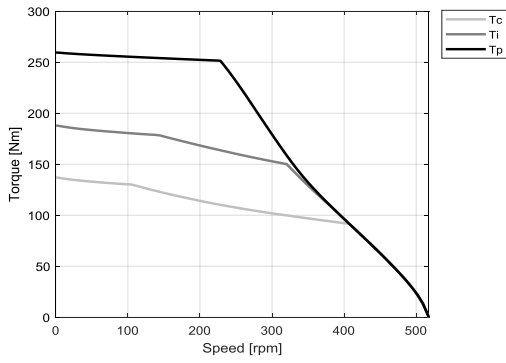
**SA - WATER COOLING**



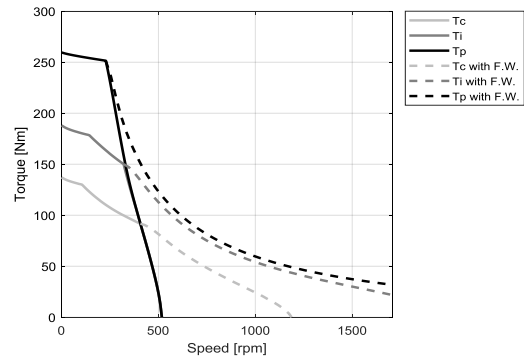
**SA - WATER COOLING**



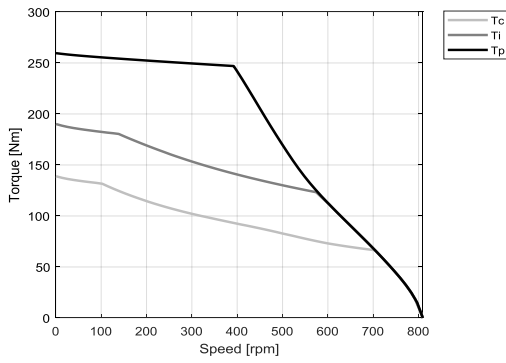
**SB - WATER COOLING**



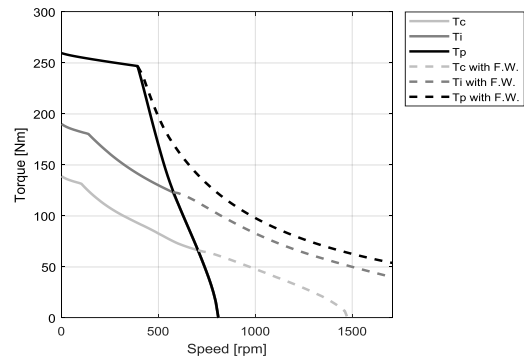
**SB - WATER COOLING**



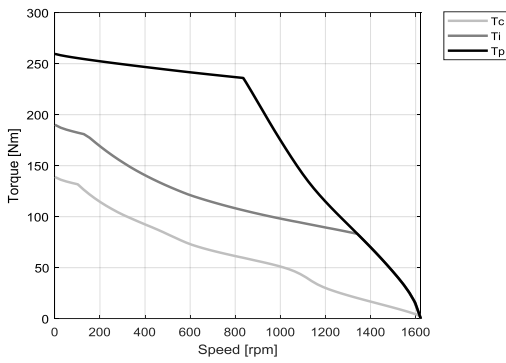
**UB - WATER COOLING**



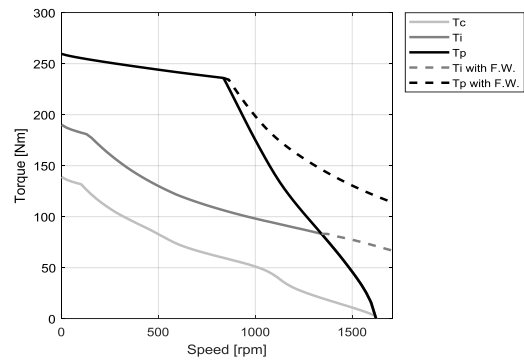
**UB - WATER COOLING**



**UD - WATER COOLING**



**UD - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	SA	UA	UB	UD
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	434	434	434	434
<b>Ti</b>	Intermittent torque	Nm	342	346	346	346
<b>Tc</b>	Continuous torque	Nm	248	251	251	251
<b>Ts</b>	Standstill torque	Nm	198	201	201	201
<b>Ip</b>	Peak current	Arms	15.3	23.9	47.8	95.6
<b>Ii</b>	Intermittent current	Arms	10.6	17.0	33.9	67.8
<b>Ic</b>	Continuous current	Arms	6.73	10.7	21.4	42.9
<b>Is</b>	Standstill current	Arms	5.10	8.12	16.2	32.5
<b>ns</b>	Rated low speed	rpm	0.28	0.28	0.28	0.28
<b>nm</b>	Maximum speed without flux weakening	rpm	155	243	486	973
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	466	601	959	1290
<b>ton,p</b>	Maximum ON time for peak cycle	s	12	13	13	13
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	3.0	2.9	2.9	2.9
<b>Pp</b>	Power dissipation @ Ip	W	8810	8610	8610	8610
<b>Pi</b>	Power dissipation @ Ii	W	5560	5660	5660	5660
<b>Pc</b>	Power dissipation @ Ic	W	2220	2270	2270	2270
<b>Td</b>	Max. detent torque (average to peak)	Nm	1.9	1.9	1.9	1.9

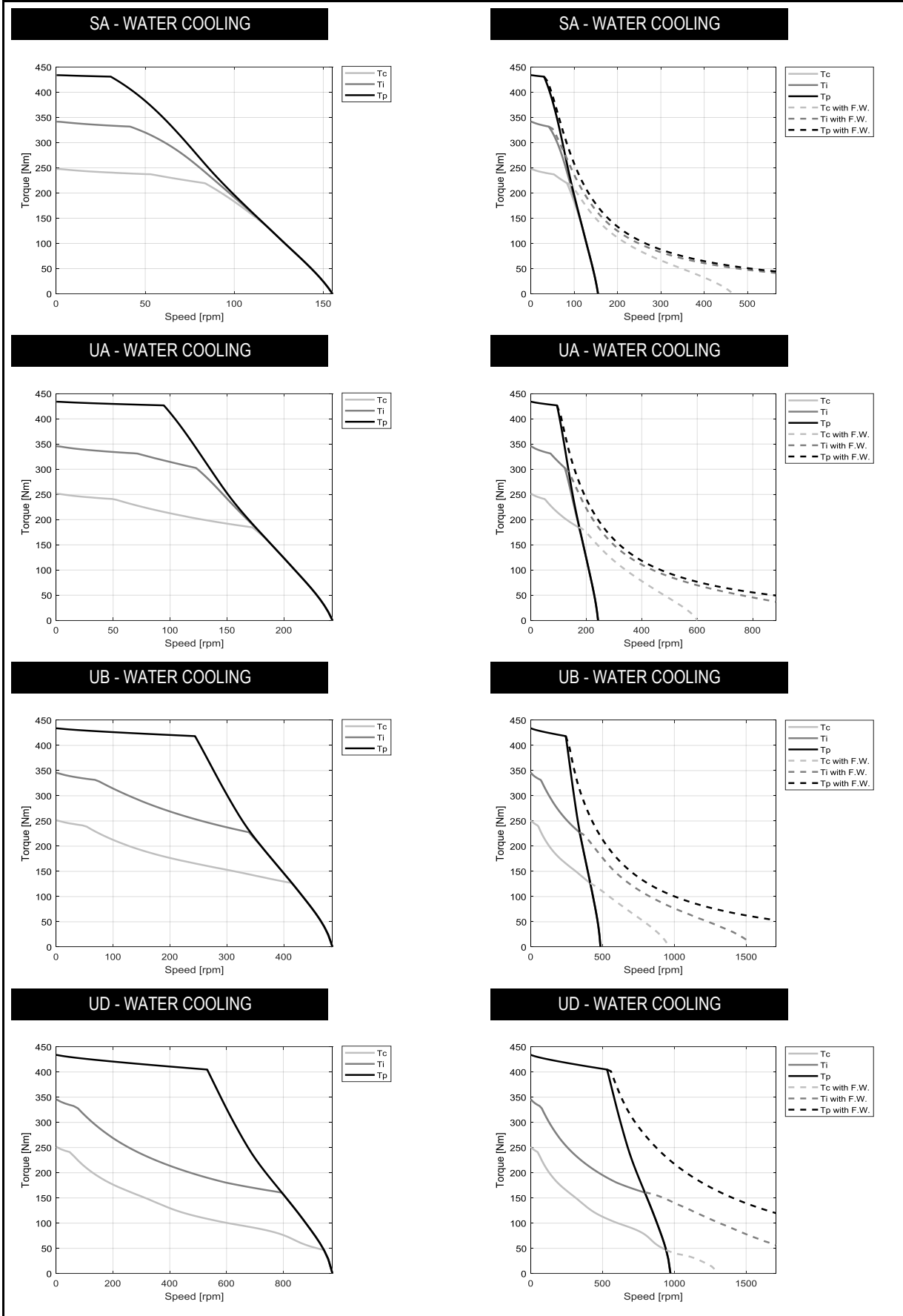
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	44.5	28.5	14.2	7.12
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	25.6	16.4	8.18	4.09
<b>Km</b>	Motor constant	Nm/√W	7.58	7.65	7.65	7.65
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	23.0	9.25	2.31	0.578
<b>Ld/Lq</b>	Electrical inductance (*)	mH	234 / 204	95.8 / 83.0	24.0 / 20.7	5.99 / 5.19
<b>Isc</b>	Maximum short-circuit current	Arms	5.74	8.97	17.9	35.9
<b>nb</b>	Base speed	rpm	83.5	172	414	943
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	41.5	123	339	795
<b>nb,p</b>	Base speed at peak duty cycle	rpm	30.6	94.5	244	532
<b>nn</b>	Rated speed	rpm	66.4	148	373	726
<b>Tn</b>	Rated torque	Nm	229	193	136	87.7
<b>In</b>	Rated current	Arms	6.39	8.08	11.0	14.7
<b>rth</b>	Thermal time constant	s	97.7	98.1	98.1	98.1
<b>Rth</b>	Thermal resistance	K/W	0.0473	0.0464	0.0464	0.0464
<b>2p</b>	Number of poles	-	44	44	44	44
<b>J</b>	Rotor inertia	kg·m²	0.0405	0.0405	0.0405	0.0405
<b>mr</b>	Rotor mass	kg	3.54	3.54	3.54	3.54
<b>ms</b>	Stator mass	kg	17.5	17.5	17.5	17.5

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.082	0.082	0.082	0.082
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	6.9	7.1	7.1	7.1
<b>Δpw</b>	Max. pressure drop at qw	bar	0.3	0.3	0.3	0.3

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MOTOR PERFORMANCE		Winding codes	SA	SB	SD	UD
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	608	608	608	608
<b>Ti</b>	Intermittent torque	Nm	491	491	491	497
<b>Tc</b>	Continuous torque	Nm	356	356	356	362
<b>Ts</b>	Standstill torque	Nm	285	285	285	289
<b>Ip</b>	Peak current	Arms	14.9	29.8	59.6	93.1
<b>Ii</b>	Intermittent current	Arms	10.9	21.8	43.5	69.4
<b>Ic</b>	Continuous current	Arms	6.88	13.8	27.5	43.9
<b>Is</b>	Standstill current	Arms	5.21	10.4	20.8	33.2
<b>ns</b>	Rated low speed	rpm	0.29	0.29	0.29	0.29
<b>nm</b>	Maximum speed without flux weakening	rpm	111	222	444	695
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	321	490	784	943
<b>ton,p</b>	Maximum ON time for peak cycle	s	13	13	13	14
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.9	2.9	2.9
<b>Pp</b>	Power dissipation @ Ip	W	10600	10600	10600	10400
<b>Pi</b>	Power dissipation @ Ii	W	7420	7420	7420	7560
<b>Pc</b>	Power dissipation @ Ic	W	2970	2970	2970	3020
<b>Td</b>	Max. detent torque (average to peak)	Nm	2.6	2.6	2.6	2.6

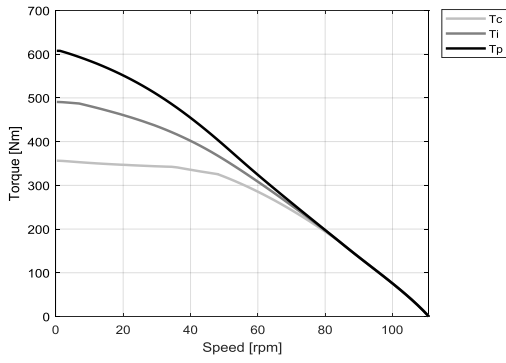
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	62.4	31.2	15.6	9.98
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	35.8	17.9	8.95	5.73
<b>Km</b>	Motor constant	Nm/√W	9.38	9.38	9.38	9.48
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	29.5	7.38	1.84	0.740
<b>Ld/Lq</b>	Electrical inductance (*)	mH	310 / 270	77.6 / 67.4	19.4 / 16.9	7.94 / 6.86
<b>Isc</b>	Maximum short-circuit current	Arms	6.06	12.1	24.2	37.9
<b>nb</b>	Base speed	rpm	48.1	167	393	671
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	6.90	124	332	573
<b>nb,p</b>	Base speed at peak duty cycle	rpm	1.24	89.6	232	388
<b>nn</b>	Rated speed	rpm	32.8	145	361	536
<b>Tn</b>	Rated torque	Nm	343	251	164	125
<b>In</b>	Rated current	Arms	6.84	9.37	12.0	14.7
<b>rth</b>	Thermal time constant	s	94.1	94.1	94.1	94.6
<b>Rth</b>	Thermal resistance	K/W	0.0350	0.0350	0.0350	0.0343
<b>2p</b>	Number of poles	-	44	44	44	44
<b>J</b>	Rotor inertia	kg·m²	0.0567	0.0567	0.0567	0.0567
<b>mr</b>	Rotor mass	kg	4.96	4.96	4.96	4.96
<b>ms</b>	Stator mass	kg	22.2	22.2	22.2	22.3

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.110	0.110	0.110	0.110
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	9.3	9.3	9.3	9.4
<b>Δpw</b>	Max. pressure drop at qw	bar	0.4	0.4	0.4	0.4

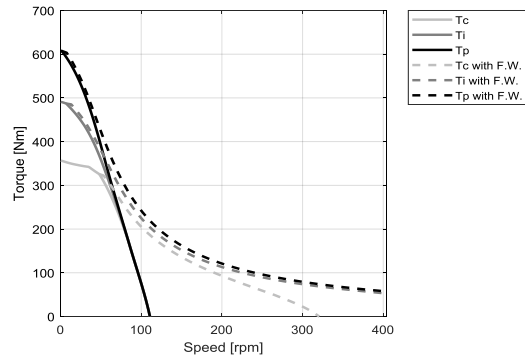
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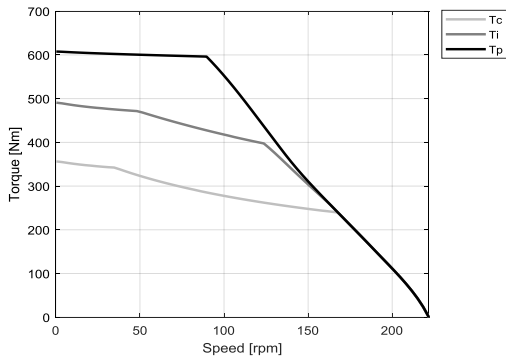
**SA - WATER COOLING**



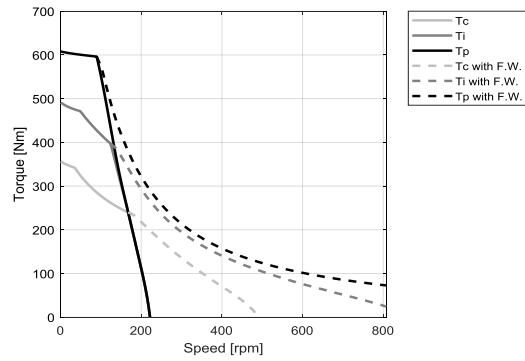
**SA - WATER COOLING**



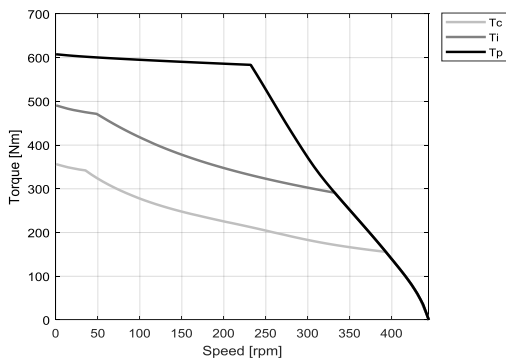
**SB - WATER COOLING**



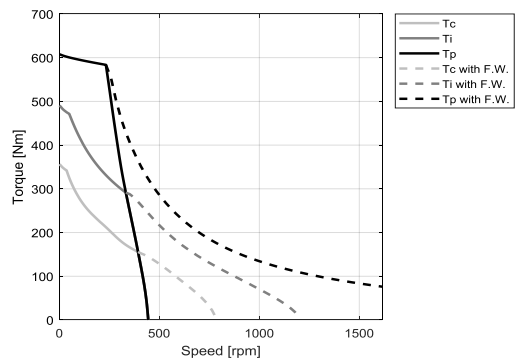
**SB - WATER COOLING**



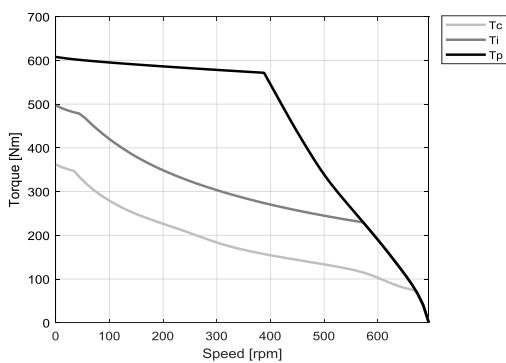
**SD - WATER COOLING**



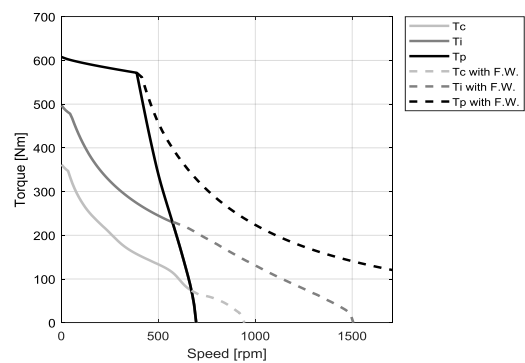
**SD - WATER COOLING**



**UD - WATER COOLING**



**UD - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	UA	SB	UB	UD
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	869	868	869	869
<b>Ti</b>	Intermittent torque	Nm	726	717	726	726
<b>Tc</b>	Continuous torque	Nm	529	521	529	529
<b>Ts</b>	Standstill torque	Nm	424	416	424	424
<b>Ip</b>	Peak current	Arms	22.8	29.2	45.6	91.3
<b>Ii</b>	Intermittent current	Arms	17.7	22.2	35.5	70.9
<b>Ic</b>	Continuous current	Arms	11.2	14.1	22.4	44.9
<b>Is</b>	Standstill current	Arms	8.50	10.7	17.0	34.0
<b>ns</b>	Rated low speed	rpm	0.31	0.31	0.31	0.31
<b>nm</b>	Maximum speed without flux weakening	rpm	121	155	243	486
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	300	352	485	806
<b>ton,p</b>	Maximum ON time for peak cycle	s	15	14	15	15
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.9	2.9	2.9
<b>Pp</b>	Power dissipation @ Ip	W	13200	13600	13200	13200
<b>Pi</b>	Power dissipation @ Ii	W	10500	10300	10500	10500
<b>Pc</b>	Power dissipation @ Ic	W	4190	4120	4190	4190
<b>Td</b>	Max. detent torque (average to peak)	Nm	3.8	3.8	3.8	3.8

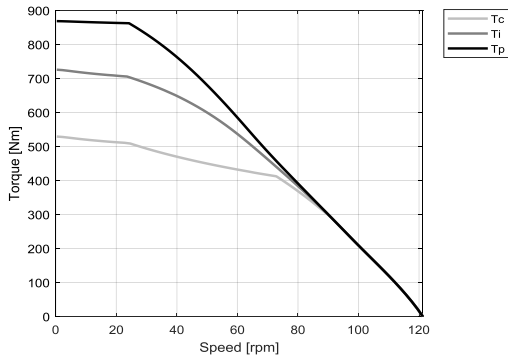
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	57.1	44.6	28.6	14.3
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	32.7	25.6	16.4	8.18
<b>Km</b>	Motor constant	Nm/√W	11.7	11.6	11.7	11.7
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	15.8	9.85	3.94	0.986
<b>Ld/Lq</b>	Electrical inductance (*)	mH	172 / 148	105 / 91.2	43.1 / 37.1	10.8 / 9.26
<b>Isc</b>	Maximum short-circuit current	Arms	9.96	12.8	19.9	39.8
<b>nb</b>	Base speed	rpm	72.7	109	197	443
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	23.5	69.9	159	389
<b>nb,p</b>	Base speed at peak duty cycle	rpm	24.2	49.8	113	272
<b>nn</b>	Rated speed	rpm	58.6	92.0	175	411
<b>Tn</b>	Rated torque	Nm	434	387	320	210
<b>In</b>	Rated current	Arms	9.10	10.1	12.8	16.9
<b>rth</b>	Thermal time constant	s	88.4	88.0	88.4	88.4
<b>Rth</b>	Thermal resistance	K/W	0.0243	0.0247	0.0243	0.0243
<b>2p</b>	Number of poles	-	44	44	44	44
<b>J</b>	Rotor inertia	kg·m²	0.0804	0.0804	0.0804	0.0804
<b>mr</b>	Rotor mass	kg	7.02	7.02	7.02	7.02
<b>ms</b>	Stator mass	kg	28.8	28.7	28.8	28.8

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.140	0.140	0.140	0.140
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	13	13	13	13
<b>Δpw</b>	Max. pressure drop at qw	bar	0.9	0.9	0.9	0.9

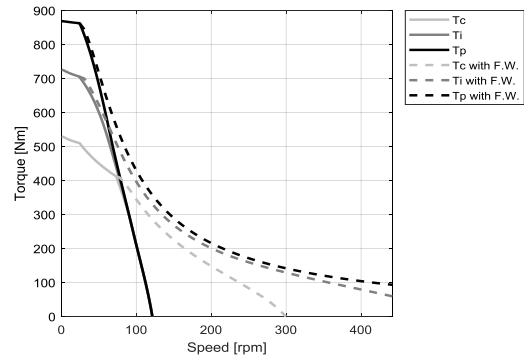
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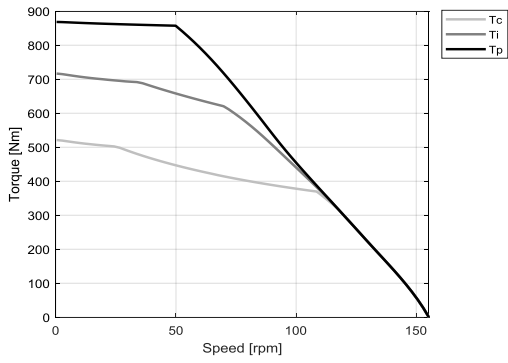
**UA - WATER COOLING**



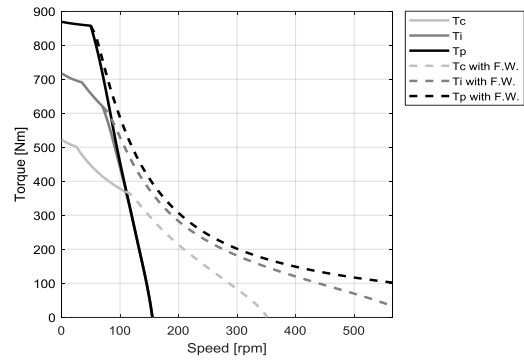
**UA - WATER COOLING**



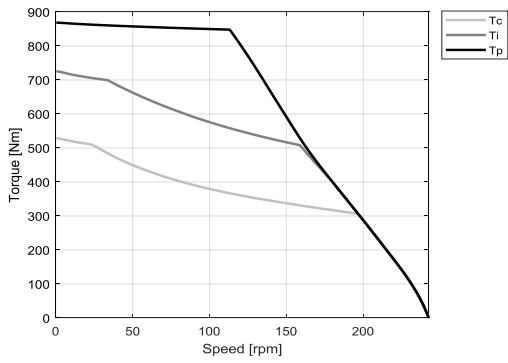
**SB - WATER COOLING**



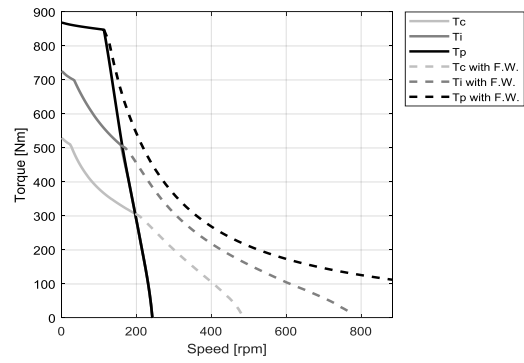
**SB - WATER COOLING**



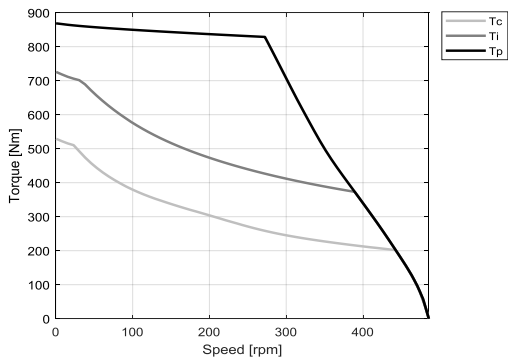
**UB - WATER COOLING**



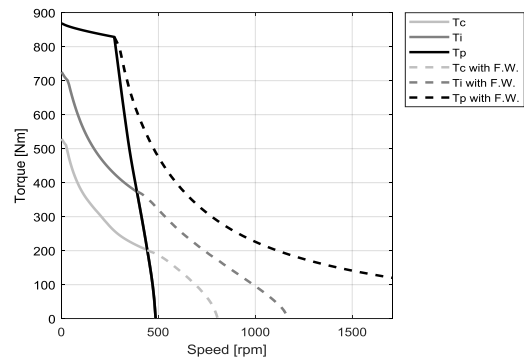
**UB - WATER COOLING**



**UD - WATER COOLING**



**UD - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	UA	SB	UB	UD
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	1220	1300	1300	1300
<b>Ti</b>	Intermittent torque	Nm	1040	1080	1090	1090
<b>Tc</b>	Continuous torque	Nm	795	783	795	795
<b>Ts</b>	Standstill torque	Nm	636	625	636	636
<b>Ip</b>	Peak current	Arms	20.1	28.9	45.1	90.2
<b>Ii</b>	Intermittent current	Arms	16.2	22.1	35.3	70.6
<b>Ic</b>	Continuous current	Arms	11.2	14.0	22.3	44.6
<b>Is</b>	Standstill current	Arms	8.45	10.6	16.9	33.8
<b>ns</b>	Rated low speed	rpm	0.31	0.31	0.31	0.31
<b>nm</b>	Maximum speed without flux weakening	rpm	80.8	103	162	324
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	220	257	348	581
<b>ton,p</b>	Maximum ON time for peak cycle	s	19	13	14	14
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	13	2.9	2.8	2.8
<b>Pp</b>	Power dissipation @ Ip	W	14400	18900	18400	18400
<b>Pi</b>	Power dissipation @ Ii	W	11600	14400	14600	14600
<b>Pc</b>	Power dissipation @ Ic	W	5860	5750	5860	5860
<b>Td</b>	Max. detent torque (average to peak)	Nm	5.6	5.6	5.6	5.6

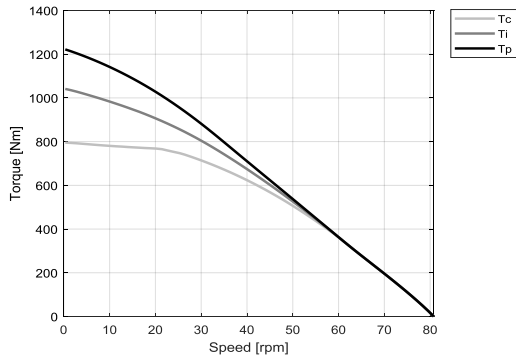
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	85.7	67.0	42.9	21.4
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	49.1	38.4	24.6	12.3
<b>Km</b>	Motor constant	Nm/√W	14.7	14.6	14.7	14.7
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	22.5	14.1	5.63	1.41
<b>Ld/Lq</b>	Electrical inductance (*)	mH	257 / 221	157 / 136	64.2 / 55.3	16.0 / 13.8
<b>Isc</b>	Maximum short-circuit current	Arms	10.0	12.8	20.1	40.1
<b>nb</b>	Base speed	rpm	25.3	56.6	120	284
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	0.00	11.5	86.6	242
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	10.7	60.4	171
<b>nn</b>	Rated speed	rpm	14.6	43.7	104	260
<b>Tn</b>	Rated torque	Nm	774	673	548	378
<b>In</b>	Rated current	Arms	11.1	12.0	14.7	19.9
<b>rth</b>	Thermal time constant	s	88.1	87.6	88.1	88.1
<b>Rth</b>	Thermal resistance	K/W	0.0167	0.0170	0.0167	0.0167
<b>2p</b>	Number of poles	-	44	44	44	44
<b>J</b>	Rotor inertia	kg·m²	0.121	0.121	0.121	0.121
<b>mr</b>	Rotor mass	kg	10.6	10.6	10.6	10.6
<b>ms</b>	Stator mass	kg	40.9	40.7	40.9	40.9

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.210	0.210	0.210	0.210
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	18	18	18	18
<b>Δpw</b>	Max. pressure drop at qw	bar	1.8	1.7	1.8	1.8

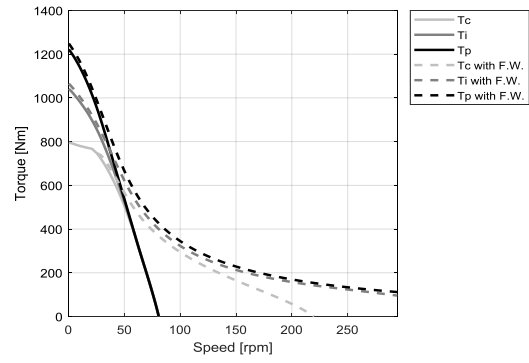
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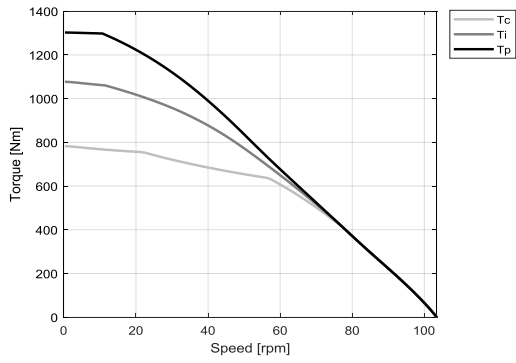
**UA - WATER COOLING**



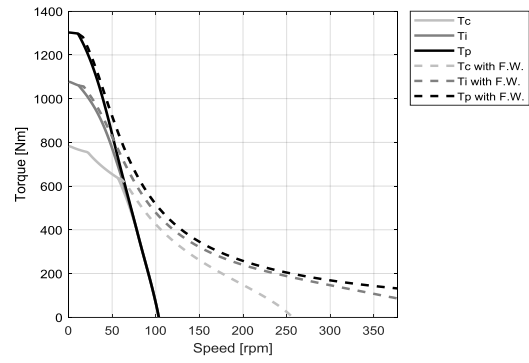
**UA - WATER COOLING**



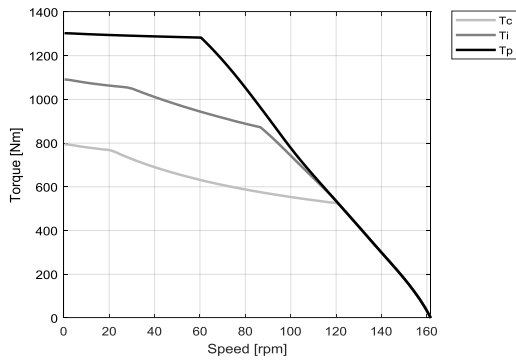
**SB - WATER COOLING**



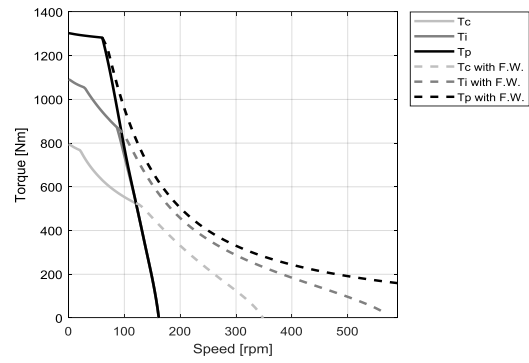
**SB - WATER COOLING**



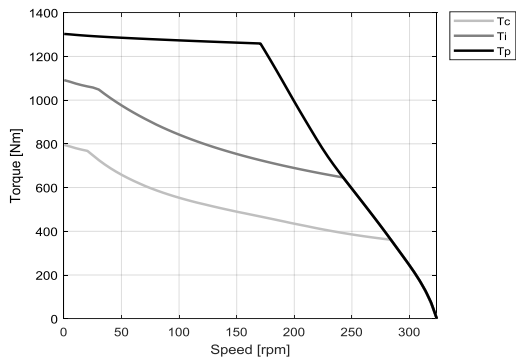
**UB - WATER COOLING**



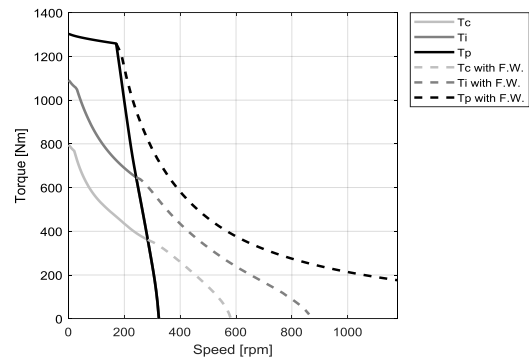
**UB - WATER COOLING**



**UD - WATER COOLING**



**UD - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	SB	UB	SD	UD
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	1590	1740	1740	1740
<b>Ti</b>	Intermittent torque	Nm	1360	1450	1430	1450
<b>Tc</b>	Continuous torque	Nm	1040	1050	1040	1050
<b>Ts</b>	Standstill torque	Nm	825	840	825	840
<b>Ip</b>	Peak current	Arms	24.6	44.7	57.3	89.5
<b>Ii</b>	Intermittent current	Arms	20.0	34.8	43.6	69.6
<b>Ic</b>	Continuous current	Arms	13.8	22.0	27.6	44.0
<b>Is</b>	Standstill current	Arms	10.4	16.7	20.9	33.4
<b>ns</b>	Rated low speed	rpm	0.32	0.32	0.32	0.32
<b>nm</b>	Maximum speed without flux weakening	rpm	77.6	121	155	243
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	203	275	327	458
<b>ton,p</b>	Maximum ON time for peak cycle	s	18	12	11	12
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	12	2.8	2.8	2.8
<b>Pp</b>	Power dissipation @ Ip	W	17700	23600	24300	23600
<b>Pi</b>	Power dissipation @ Ii	W	14300	18400	18000	18400
<b>Pc</b>	Power dissipation @ Ic	W	7220	7350	7220	7350
<b>Td</b>	Max. detent torque (average to peak)	Nm	7.5	7.5	7.5	7.5

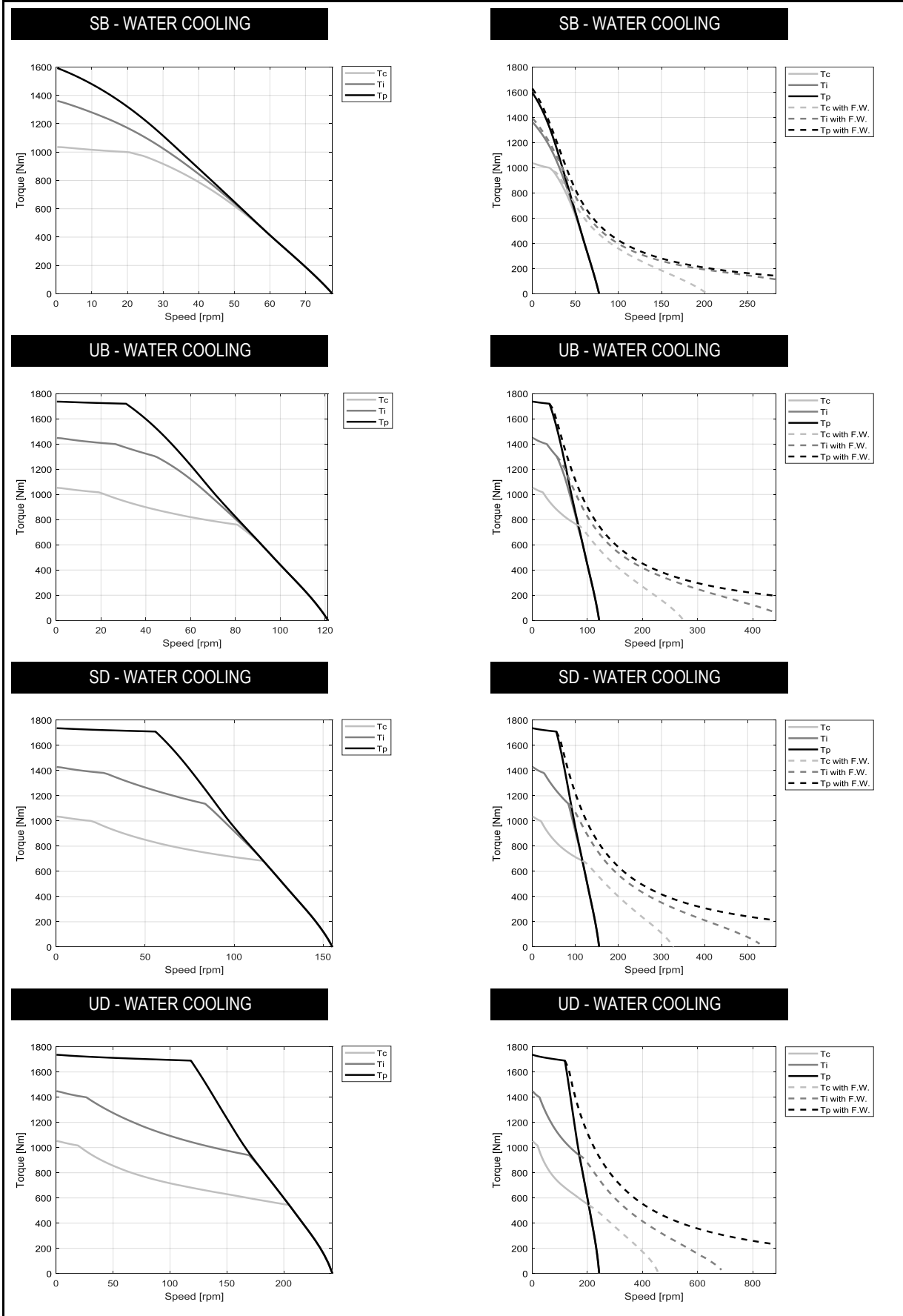
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	89.3	57.2	44.7	28.6
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	51.2	32.7	25.6	16.4
<b>Km</b>	Motor constant	Nm/√W	17.0	17.2	17.0	17.2
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	18.5	7.37	4.61	1.84
<b>Ld/Lq</b>	Electrical inductance (*)	mH	208 / 182	85.3 / 73.8	52.1 / 45.4	21.3 / 18.5
<b>Isc</b>	Maximum short-circuit current	Arms	12.9	20.1	25.8	40.3
<b>nb</b>	Base speed	rpm	24.3	80.9	116	205
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	0.00	43.8	83.6	169
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	31.2	55.8	118
<b>nn</b>	Rated speed	rpm	14.2	67.6	99.9	184
<b>Tn</b>	Rated torque	Nm	1010	796	714	575
<b>In</b>	Rated current	Arms	13.7	16.2	18.3	22.6
<b>rth</b>	Thermal time constant	s	86.0	86.4	86.0	86.4
<b>Rth</b>	Thermal resistance	K/W	0.0128	0.0125	0.0128	0.0125
<b>2p</b>	Number of poles	-	44	44	44	44
<b>J</b>	Rotor inertia	kg·m²	0.161	0.161	0.161	0.161
<b>mr</b>	Rotor mass	kg	14.0	14.0	14.0	14.0
<b>ms</b>	Stator mass	kg	52.3	52.5	52.3	52.5

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.275	0.275	0.275	0.275
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	23	23	23	23
<b>Δpw</b>	Max. pressure drop at qw	bar	3.3	3.3	3.3	3.3

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MOTOR PERFORMANCE		Winding codes	TA	VA	VB	TF
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	440	441	441	440
<b>Ti</b>	Intermittent torque	Nm	315	317	317	315
<b>Tc</b>	Continuous torque	Nm	231	230	230	231
<b>Ts</b>	Standstill torque	Nm	186	184	184	186
<b>Ip</b>	Peak current	Arms	25.3	40.1	80.3	152
<b>Ii</b>	Intermittent current	Arms	13.8	22.9	45.8	83.0
<b>Ic</b>	Continuous current	Arms	8.75	14.5	28.9	52.5
<b>Is</b>	Standstill current	Arms	6.63	11.0	21.9	39.8
<b>ns</b>	Rated low speed	rpm	0.19	0.20	0.20	0.19
<b>nm</b>	Maximum speed without flux weakening	rpm	211	358	716	1270
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	760	952	1300	1300
<b>ton,p</b>	Maximum ON time for peak cycle	s	5.8	6.2	6.2	5.8
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.9	2.9	2.9
<b>Pp</b>	Power dissipation @ Ip	W	13300	11800	11800	13300
<b>Pi</b>	Power dissipation @ Ii	W	4950	4820	4820	4950
<b>Pc</b>	Power dissipation @ Ic	W	1980	1930	1930	1980
<b>Td</b>	Max. detent torque (average to peak)	Nm	1.2	1.2	1.2	1.2

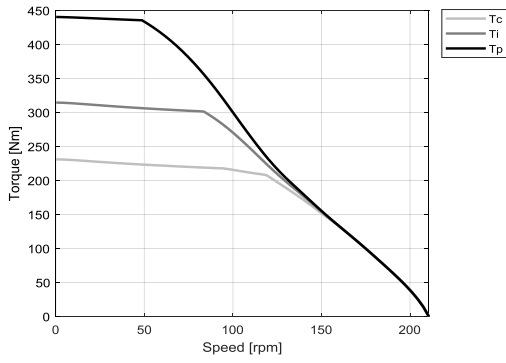
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	32.6	19.2	9.61	5.44
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	18.8	11.1	5.55	3.14
<b>Km</b>	Motor constant	Nm/√W	7.67	7.56	7.56	7.67
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	12.1	4.31	1.08	0.336
<b>Ld/Lq</b>	Electrical inductance (*)	mH	99.0 / 87.9	30.5 / 27.9	7.62 / 6.97	2.75 / 2.44
<b>Isc</b>	Maximum short-circuit current	Arms	6.65	12.7	25.5	39.9
<b>nb</b>	Base speed	rpm	119	260	612	N/A
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	83.5	197	492	964
<b>nb,p</b>	Base speed at peak duty cycle	rpm	48.7	148	349	599
<b>nn</b>	Rated speed	rpm	99.4	226	555	802
<b>Tn</b>	Rated torque	Nm	216	185	126	95.1
<b>In</b>	Rated current	Arms	8.54	11.7	15.7	21.5
<b>rth</b>	Thermal time constant	s	93.8	89.4	89.4	93.8
<b>Rth</b>	Thermal resistance	K/W	0.0537	0.0549	0.0549	0.0537
<b>2p</b>	Number of poles	-	66	66	66	66
<b>J</b>	Rotor inertia	kg·m²	0.0647	0.0647	0.0647	0.0647
<b>mr</b>	Rotor mass	kg	3.27	3.27	3.27	3.27
<b>ms</b>	Stator mass	kg	19.7	19.4	19.4	19.7

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.079	0.079	0.079	0.079
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	6.2	6.0	6.0	6.2
<b>Δpw</b>	Max. pressure drop at qw	bar	0.2	0.2	0.2	0.2

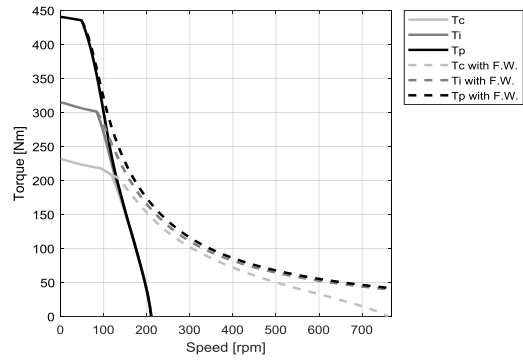
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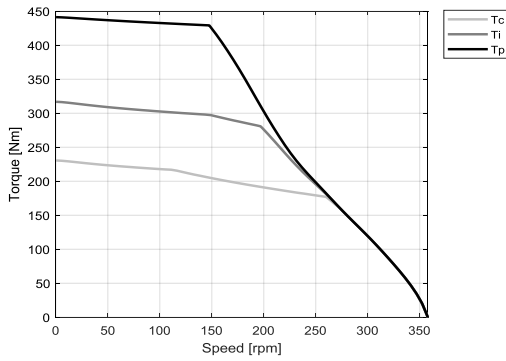
**TA - WATER COOLING**



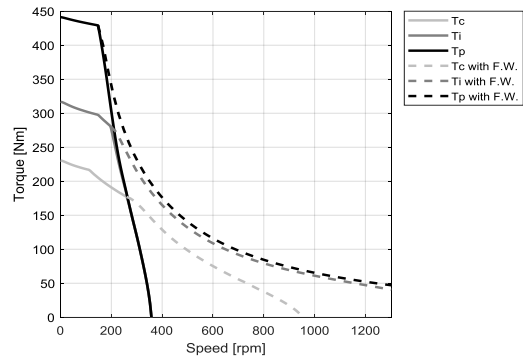
**TA - WATER COOLING**



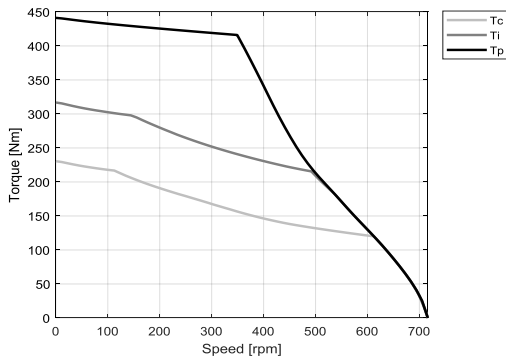
**VA - WATER COOLING**



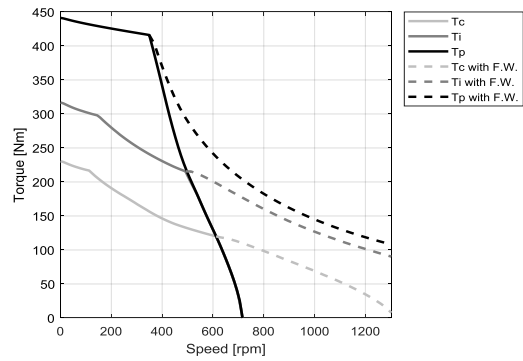
**VA - WATER COOLING**



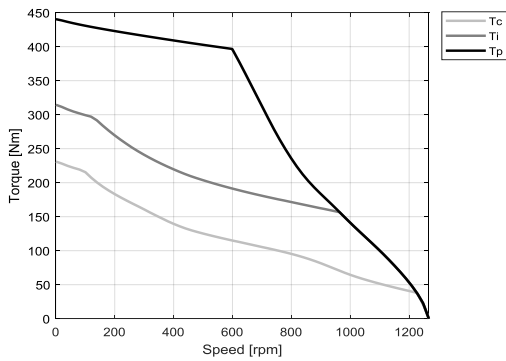
**VB - WATER COOLING**



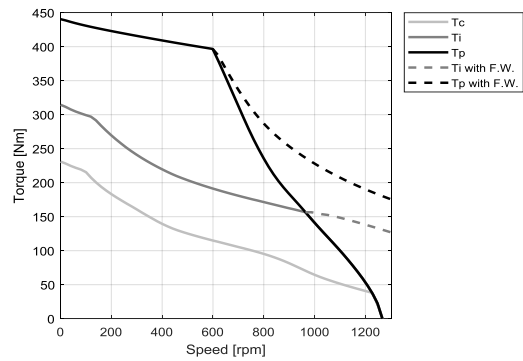
**VB - WATER COOLING**



**TF - WATER COOLING**



**TF - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	TA	VA	VB	TF
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	736	735	735	736
<b>Ti</b>	Intermittent torque	Nm	567	538	538	567
<b>Tc</b>	Continuous torque	Nm	415	390	390	415
<b>Ts</b>	Standstill torque	Nm	333	311	311	333
<b>Ip</b>	Peak current	Arms	22.5	40.4	80.9	135
<b>Ii</b>	Intermittent current	Arms	14.7	24.3	48.5	87.9
<b>Ic</b>	Continuous current	Arms	9.27	15.3	30.7	55.6
<b>Is</b>	Standstill current	Arms	7.02	11.6	23.3	42.1
<b>ns</b>	Rated low speed	rpm	0.21	0.22	0.22	0.21
<b>nm</b>	Maximum speed without flux weakening	rpm	126	226	453	756
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	413	598	901	1150
<b>ton,p</b>	Maximum ON time for peak cycle	s	8.6	6.3	6.3	8.6
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.8	2.8	2.9
<b>Pp</b>	Power dissipation @ Ip	W	14100	16600	16600	14100
<b>Pi</b>	Power dissipation @ Ii	W	7740	7560	7560	7740
<b>Pc</b>	Power dissipation @ Ic	W	3100	3020	3020	3100
<b>Td</b>	Max. detent torque (average to peak)	Nm	2.0	2.0	2.0	2.0

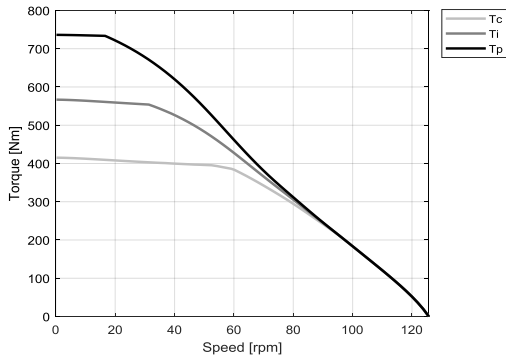
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	54.7	30.4	15.2	9.11
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	31.6	17.5	8.77	5.26
<b>Km</b>	Motor constant	Nm/√W	10.9	10.1	10.1	10.9
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	16.9	6.03	1.51	0.470
<b>Ld/Lq</b>	Electrical inductance (*)	mH	155 / 136	47.9 / 43.1	12.0 / 10.8	4.31 / 3.77
<b>Isc</b>	Maximum short-circuit current	Arms	7.12	12.8	25.6	42.7
<b>nb</b>	Base speed	rpm	59.2	156	381	701
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	31.3	110	303	577
<b>nb,p</b>	Base speed at peak duty cycle	rpm	16.6	75.4	206	377
<b>nn</b>	Rated speed	rpm	47.6	134	345	599
<b>Tn</b>	Rated torque	Nm	397	308	210	155
<b>In</b>	Rated current	Arms	9.19	12.1	16.1	20.3
<b>rth</b>	Thermal time constant	s	86.1	82.4	82.4	86.1
<b>Rth</b>	Thermal resistance	K/W	0.0339	0.0346	0.0346	0.0339
<b>2p</b>	Number of poles	-	66	66	66	66
<b>J</b>	Rotor inertia	kg·m²	0.108	0.108	0.108	0.108
<b>mr</b>	Rotor mass	kg	5.47	5.47	5.47	5.47
<b>ms</b>	Stator mass	kg	25.7	25.3	25.3	25.7

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.110	0.110	0.110	0.110
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	9.7	9.4	9.4	9.7
<b>Δpw</b>	Max. pressure drop at qw	bar	0.3	0.3	0.3	0.3

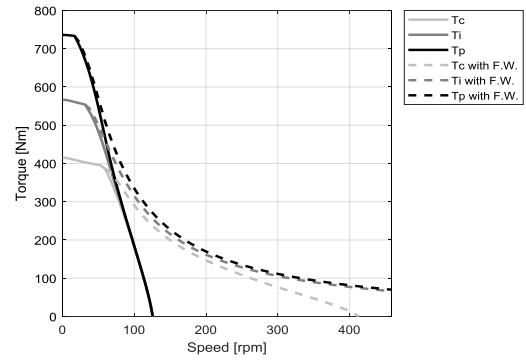
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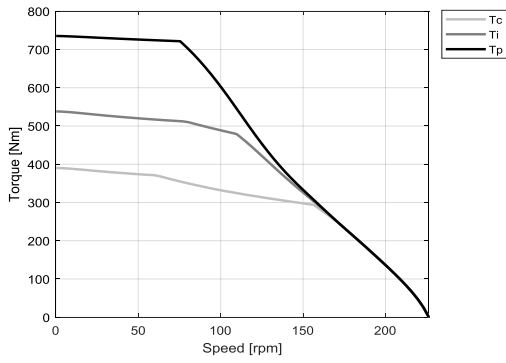
**TA - WATER COOLING**



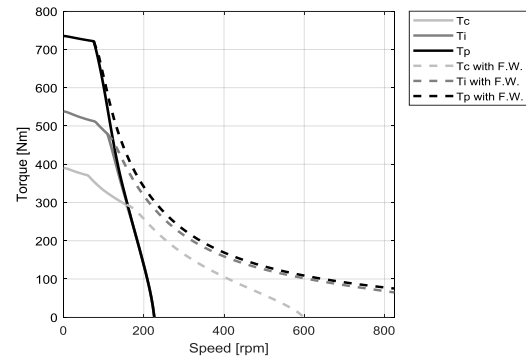
**TA - WATER COOLING**



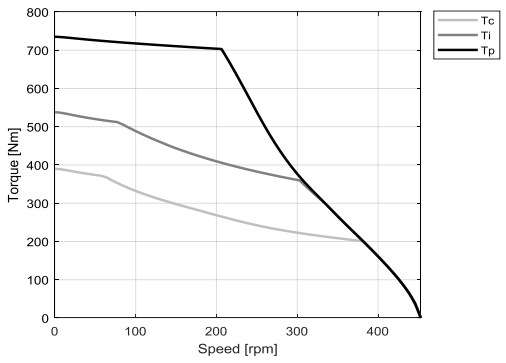
**VA - WATER COOLING**



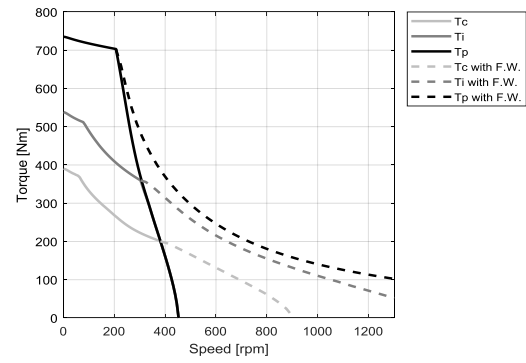
**VA - WATER COOLING**



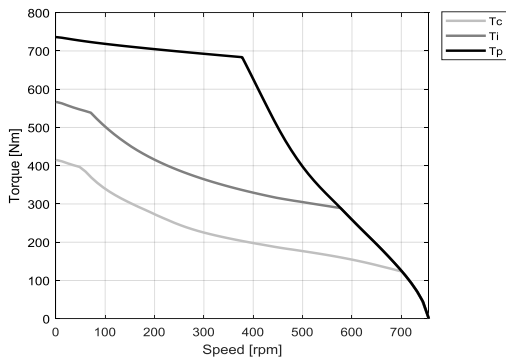
**VB - WATER COOLING**



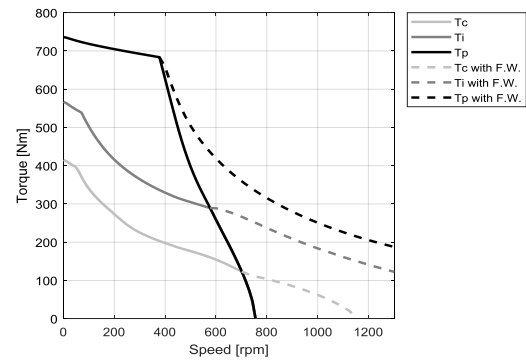
**VB - WATER COOLING**



**TF - WATER COOLING**



**TF - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	TA	VA	VB	TF
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	990	1030	1030	1030
<b>Ti</b>	Intermittent torque	Nm	811	770	770	811
<b>Tc</b>	Continuous torque	Nm	596	560	560	596
<b>Ts</b>	Standstill torque	Nm	478	447	447	478
<b>Ip</b>	Peak current	Arms	20.3	39.7	79.4	132
<b>Ii</b>	Intermittent current	Arms	14.9	24.7	49.5	89.6
<b>Ic</b>	Continuous current	Arms	9.45	15.6	31.3	56.7
<b>Is</b>	Standstill current	Arms	7.16	11.9	23.7	42.9
<b>ns</b>	Rated low speed	rpm	0.21	0.22	0.22	0.21
<b>nm</b>	Maximum speed without flux weakening	rpm	89.7	162	323	540
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	279	405	637	839
<b>ton,p</b>	Maximum ON time for peak cycle	s	11	6.5	6.5	9.0
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.8	2.8	2.9
<b>Pp</b>	Power dissipation @ Ip	W	14600	20400	20400	17400
<b>Pi</b>	Power dissipation @ Ii	W	10300	10100	10100	10300
<b>Pc</b>	Power dissipation @ Ic	W	4140	4040	4040	4140
<b>Td</b>	Max. detent torque (average to peak)	Nm	2.7	2.7	2.7	2.7

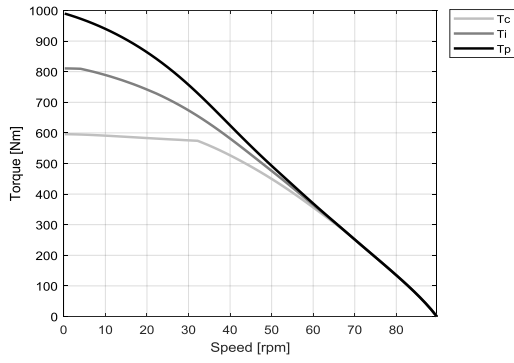
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	76.7	42.6	21.3	12.8
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	44.2	24.6	12.3	7.37
<b>Km</b>	Motor constant	Nm/√W	13.4	12.5	12.5	13.4
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	21.8	7.77	1.94	0.606
<b>Ld/Lq</b>	Electrical inductance (*)	mH	207 / 180	63.7 / 57.2	15.9 / 14.3	5.74 / 5.01
<b>Isc</b>	Maximum short-circuit current	Arms	7.49	13.5	27.0	44.9
<b>nb</b>	Base speed	rpm	32.2	106	271	499
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	4.01	62.7	215	417
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	41.2	143	273
<b>nn</b>	Rated speed	rpm	24.6	89.2	244	432
<b>Tn</b>	Rated torque	Nm	580	453	306	225
<b>In</b>	Rated current	Arms	9.40	12.6	16.4	20.6
<b>rth</b>	Thermal time constant	s	84.9	81.5	81.5	84.9
<b>Rth</b>	Thermal resistance	K/W	0.0251	0.0256	0.0256	0.0251
<b>2p</b>	Number of poles	-	66	66	66	66
<b>J</b>	Rotor inertia	kg·m²	0.152	0.152	0.152	0.152
<b>mr</b>	Rotor mass	kg	7.66	7.66	7.66	7.66
<b>ms</b>	Stator mass	kg	32.2	31.7	31.7	32.2

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.150	0.150	0.150	0.150
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	13	13	13	13
<b>Δpw</b>	Max. pressure drop at qw	bar	0.5	0.5	0.5	0.5

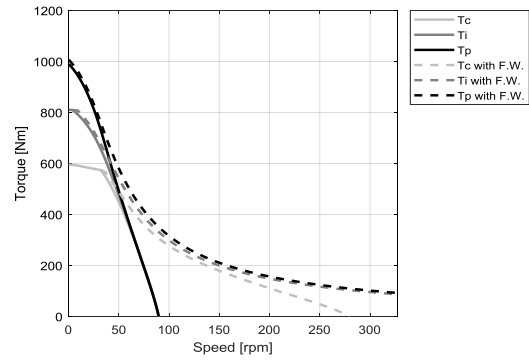
**Notes:** (\*) terminal to terminal.  
Hypotheses and tolerances are in ETEL Integration Manual.  
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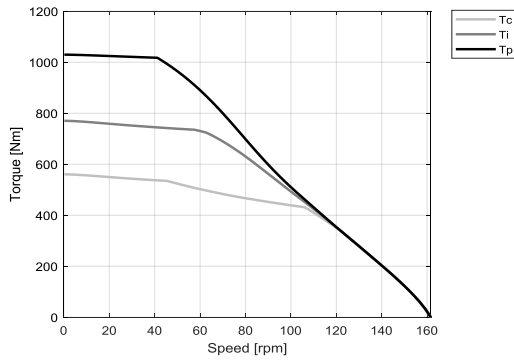
**TA - WATER COOLING**



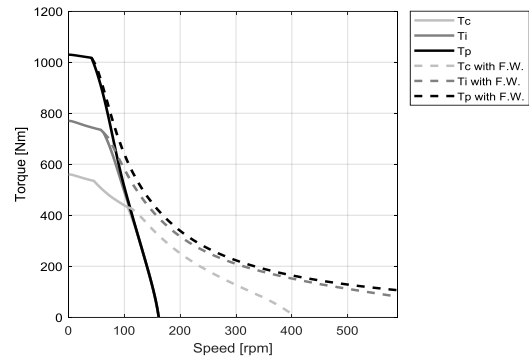
**TA - WATER COOLING**



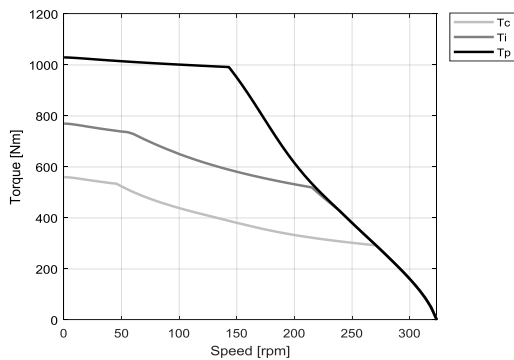
**VA - WATER COOLING**



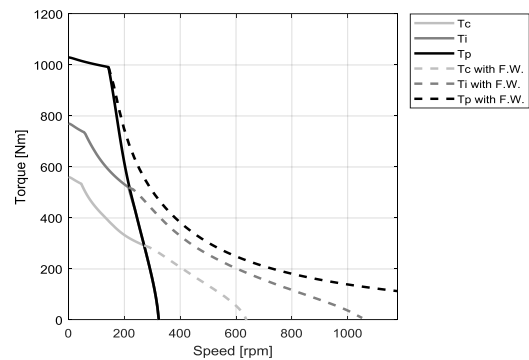
**VA - WATER COOLING**



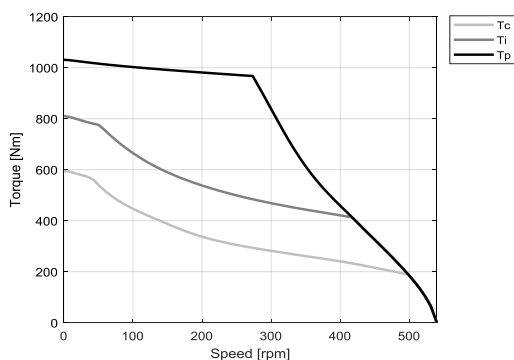
**VB - WATER COOLING**



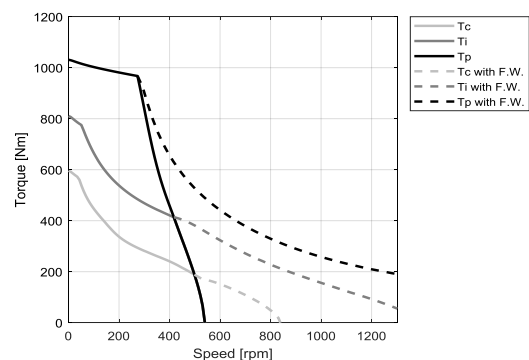
**VB - WATER COOLING**



**TF - WATER COOLING**



**TF - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	UA	TB	VB	TF
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	1390	1470	1470	1470
<b>Ti</b>	Intermittent torque	Nm	1160	1180	1120	1180
<b>Tc</b>	Continuous torque	Nm	853	870	818	870
<b>Ts</b>	Standstill torque	Nm	684	699	653	699
<b>Ip</b>	Peak current	Arms	25.7	43.2	77.7	129
<b>Ii</b>	Intermittent current	Arms	19.7	30.4	50.4	91.2
<b>Ic</b>	Continuous current	Arms	12.5	19.2	31.9	57.7
<b>Is</b>	Standstill current	Arms	9.46	14.6	24.1	43.7
<b>ns</b>	Rated low speed	rpm	0.23	0.22	0.23	0.22
<b>nm</b>	Maximum speed without flux weakening	rpm	83.8	126	226	378
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	234	311	468	666
<b>ton,p</b>	Maximum ON time for peak cycle	s	12	9.2	6.6	9.2
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	3.1	2.8	2.8	2.8
<b>Pp</b>	Power dissipation @ Ip	W	18400	22300	26000	22300
<b>Pi</b>	Power dissipation @ Ii	W	14100	14300	13900	14300
<b>Pc</b>	Power dissipation @ Ic	W	5710	5720	5570	5720
<b>Td</b>	Max. detent torque (average to peak)	Nm	3.9	3.9	3.9	3.9

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	82.3	54.9	30.5	18.3
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	47.3	31.6	17.5	10.5
<b>Km</b>	Motor constant	Nm/√W	16.1	16.6	15.4	16.6
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	17.4	7.33	2.61	0.814
<b>Ld/Lq</b>	Electrical inductance (*)	mH	158 / 139	70.3 / 61.2	21.7 / 19.4	7.81 / 6.80
<b>Isc</b>	Maximum short-circuit current	Arms	10.5	15.7	28.3	47.2
<b>nb</b>	Base speed	rpm	28.7	81.0	183	334
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	0.00	40.1	141	284
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	32.5	92.0	191
<b>nn</b>	Rated speed	rpm	21.4	67.4	162	307
<b>Tn</b>	Rated torque	Nm	831	690	492	382
<b>In</b>	Rated current	Arms	12.4	14.9	18.3	23.8
<b>rth</b>	Thermal time constant	s	79.6	81.0	77.9	81.0
<b>Rth</b>	Thermal resistance	K/W	0.0177	0.0177	0.0181	0.0177
<b>2p</b>	Number of poles	-	66	66	66	66
<b>J</b>	Rotor inertia	kg·m²	0.215	0.215	0.215	0.215
<b>mr</b>	Rotor mass	kg	10.9	10.9	10.9	10.9
<b>ms</b>	Stator mass	kg	40.6	40.9	40.3	40.9

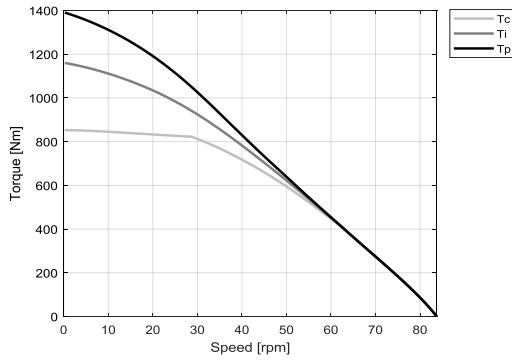
MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.200	0.200	0.200	0.200
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	18	18	17	18
<b>Δpw</b>	Max. pressure drop at qw	bar	1.1	1.1	1.0	1.1

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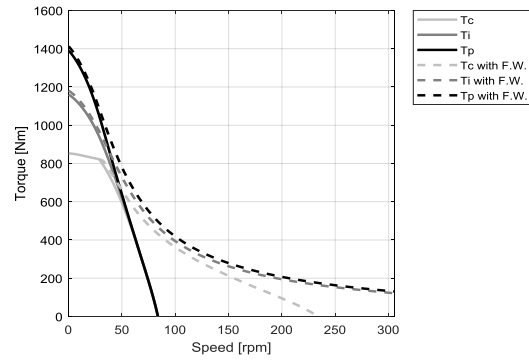
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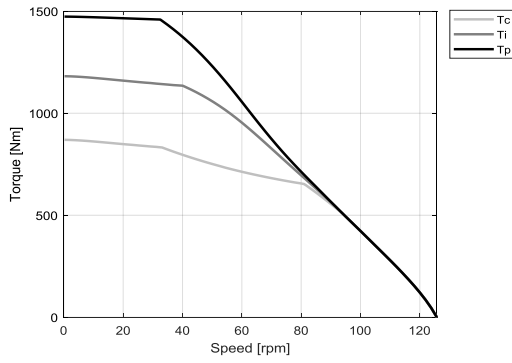
**UA - WATER COOLING**



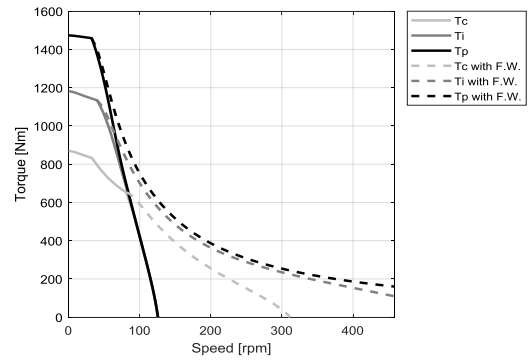
**UA - WATER COOLING**



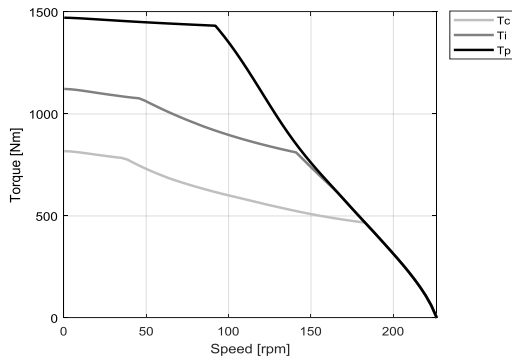
**TB - WATER COOLING**



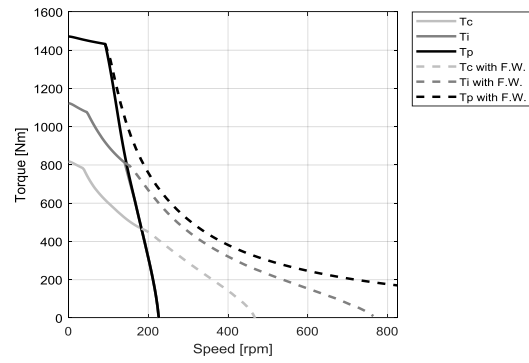
**TB - WATER COOLING**



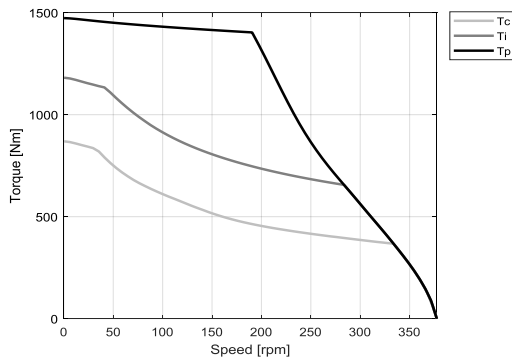
**VB - WATER COOLING**



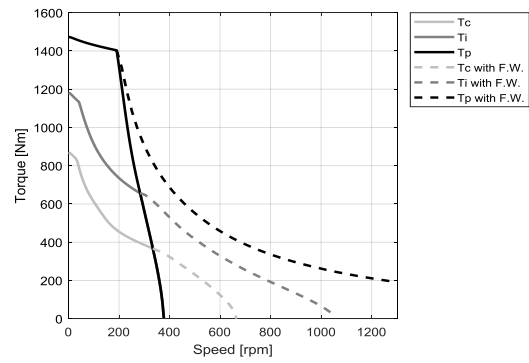
**VB - WATER COOLING**



**TF - WATER COOLING**



**TF - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	TB	VB	TF	UF
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	2200	2210	2210	2210
<b>Ti</b>	Intermittent torque	Nm	1770	1680	1770	1740
<b>Tc</b>	Continuous torque	Nm	1300	1220	1300	1280
<b>Ts</b>	Standstill torque	Nm	1050	976	1050	1020
<b>Ip</b>	Peak current	Arms	42.1	76.4	127	170
<b>Ii</b>	Intermittent current	Arms	30.1	49.8	90.3	117
<b>Ic</b>	Continuous current	Arms	19.0	31.5	57.1	74.1
<b>Is</b>	Standstill current	Arms	14.4	23.9	43.3	56.2
<b>ns</b>	Rated low speed	rpm	0.22	0.23	0.22	0.22
<b>nm</b>	Maximum speed without flux weakening	rpm	83.8	151	252	336
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	222	335	480	582
<b>ton,p</b>	Maximum ON time for peak cycle	s	8.6	5.8	8.3	7.3
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.8	2.8	2.8	2.8
<b>Pp</b>	Power dissipation @ Ip	W	30200	36000	30800	32600
<b>Pi</b>	Power dissipation @ Ii	W	19900	19300	19900	19800
<b>Pc</b>	Power dissipation @ Ic	W	7960	7720	7960	7930
<b>Td</b>	Max. detent torque (average to peak)	Nm	5.9	5.9	5.9	5.9

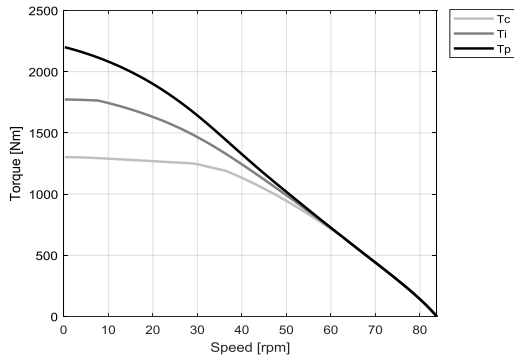
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	82.4	45.8	27.5	20.6
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	47.3	26.3	15.8	11.8
<b>Km</b>	Motor constant	Nm/√W	20.7	19.3	20.7	20.2
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	10.5	3.75	1.17	0.693
<b>Ld/Lq</b>	Electrical inductance (*)	mH	105 / 91.6	32.3 / 29.0	11.6 / 10.2	6.54 / 5.78
<b>Isc</b>	Maximum short-circuit current	Arms	15.8	28.5	47.5	63.3
<b>nb</b>	Base speed	rpm	36.3	110	214	296
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	7.71	74.9	174	252
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	45.3	118	166
<b>nn</b>	Rated speed	rpm	25.3	93.4	194	272
<b>Tn</b>	Rated torque	Nm	1260	886	659	573
<b>In</b>	Rated current	Arms	18.9	22.2	27.0	31.5
<b>rth</b>	Thermal time constant	s	82.4	79.5	82.4	81.1
<b>Rth</b>	Thermal resistance	K/W	0.0122	0.0124	0.0122	0.0122
<b>2p</b>	Number of poles	-	66	66	66	66
<b>J</b>	Rotor inertia	kg·m²	0.323	0.323	0.323	0.323
<b>mr</b>	Rotor mass	kg	16.3	16.3	16.3	16.3
<b>ms</b>	Stator mass	kg	57.3	56.4	57.3	57.0

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.280	0.280	0.280	0.280
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	25	24	25	25
<b>Δpw</b>	Max. pressure drop at qw	bar	2.1	2.0	2.1	2.1

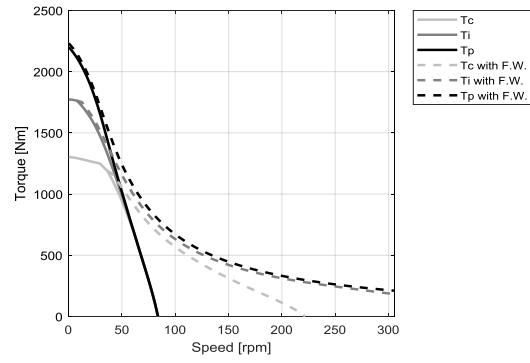
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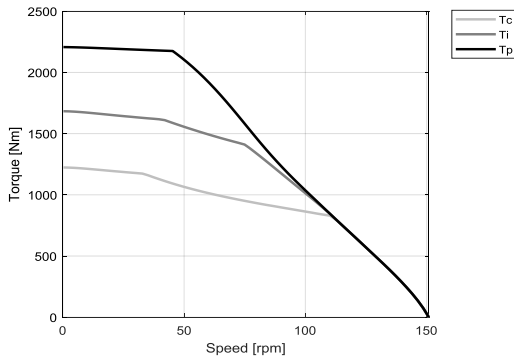
**TB - WATER COOLING**



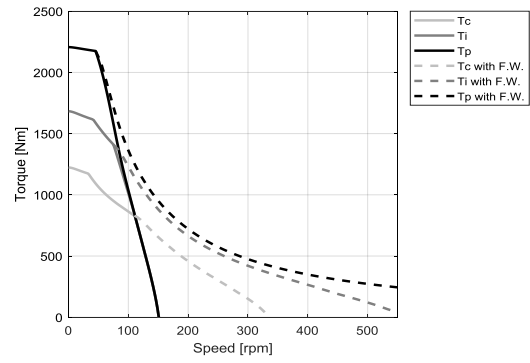
**TB - WATER COOLING**



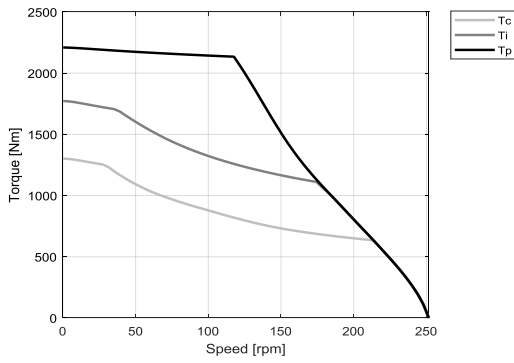
**VB - WATER COOLING**



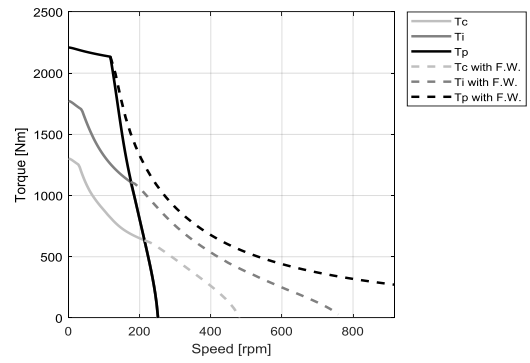
**VB - WATER COOLING**



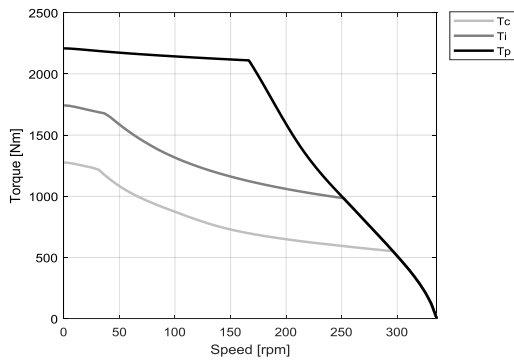
**TF - WATER COOLING**



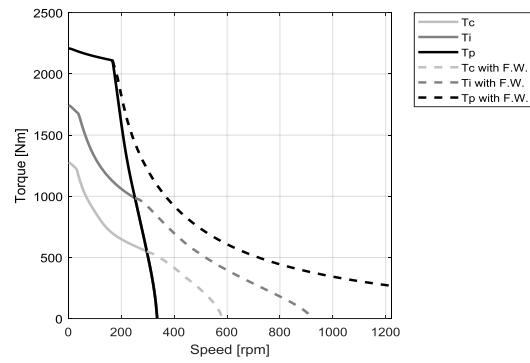
**TF - WATER COOLING**



**UF - WATER COOLING**



**UF - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	UB	VB	TF	UF
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	2890	2940	2950	2940
<b>Ti</b>	Intermittent torque	Nm	2310	2220	2350	2310
<b>Tc</b>	Continuous torque	Nm	1680	1610	1720	1680
<b>Ts</b>	Standstill torque	Nm	1350	1280	1380	1350
<b>Ip</b>	Peak current	Arms	54.1	75.8	126	168
<b>Ii</b>	Intermittent current	Arms	38.4	48.8	88.8	115
<b>Ic</b>	Continuous current	Arms	24.3	30.9	56.1	72.8
<b>Is</b>	Standstill current	Arms	18.4	23.4	42.5	55.1
<b>ns</b>	Rated low speed	rpm	0.23	0.23	0.22	0.23
<b>nm</b>	Maximum speed without flux weakening	rpm	83.8	113	189	252
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	212	262	380	459
<b>ton,p</b>	Maximum ON time for peak cycle	s	6.8	4.8	6.9	6.0
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.7	2.7	2.8	2.7
<b>Pp</b>	Power dissipation @ Ip	W	38900	46400	39800	42100
<b>Pi</b>	Power dissipation @ Ii	W	24700	23900	24800	24700
<b>Pc</b>	Power dissipation @ Ic	W	9870	9570	9930	9870
<b>Td</b>	Max. detent torque (average to peak)	Nm	7.8	7.8	7.8	7.8

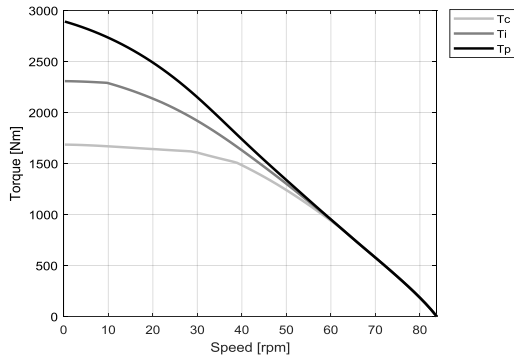
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	82.5	61.1	36.7	27.5
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	47.3	35.1	21.0	15.8
<b>Km</b>	Motor constant	Nm/√W	23.5	22.5	24.2	23.5
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	8.20	4.92	1.54	0.911
<b>Ld/Lq</b>	Electrical inductance (*)	mH	78.2 / 69.5	42.9 / 38.8	15.5 / 13.6	8.69 / 7.72
<b>Isc</b>	Maximum short-circuit current	Arms	21.2	28.6	47.6	63.5
<b>nb</b>	Base speed	rpm	38.2	71.7	154	215
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	9.71	33.9	120	178
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	17.5	79.6	117
<b>nn</b>	Rated speed	rpm	26.5	58.4	138	196
<b>Tn</b>	Rated torque	Nm	1620	1330	971	841
<b>In</b>	Rated current	Arms	24.1	25.3	29.7	34.3
<b>rth</b>	Thermal time constant	s	80.4	78.9	81.7	80.4
<b>Rth</b>	Thermal resistance	K/W	0.00916	0.00935	0.00919	0.00916
<b>2p</b>	Number of poles	-	66	66	66	66
<b>J</b>	Rotor inertia	kg·m²	0.434	0.434	0.434	0.434
<b>mr</b>	Rotor mass	kg	21.9	21.9	21.9	21.9
<b>ms</b>	Stator mass	kg	72.6	71.9	73.0	72.6

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.360	0.360	0.360	0.360
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	31	30	31	31
<b>Δpw</b>	Max. pressure drop at qw	bar	3.8	3.6	3.8	3.8

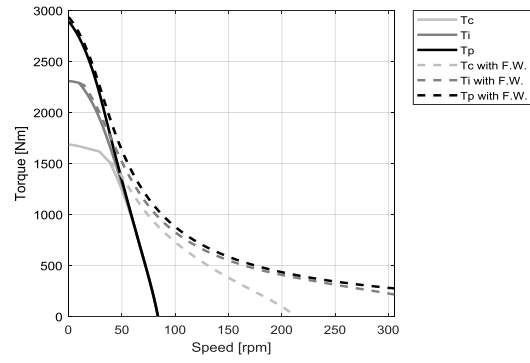
**Notes:** (\*) terminal to terminal.  
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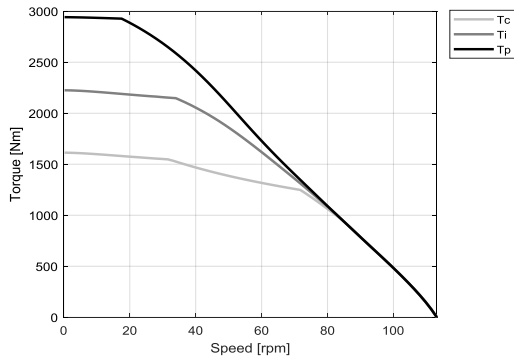
**UB - WATER COOLING**



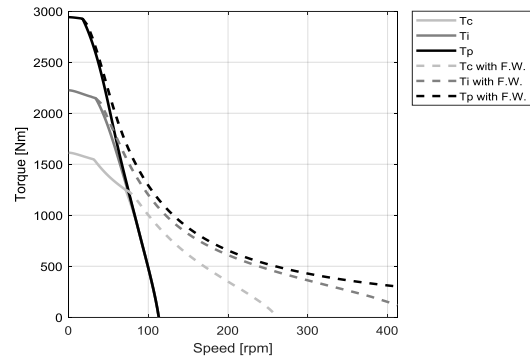
**UB - WATER COOLING**



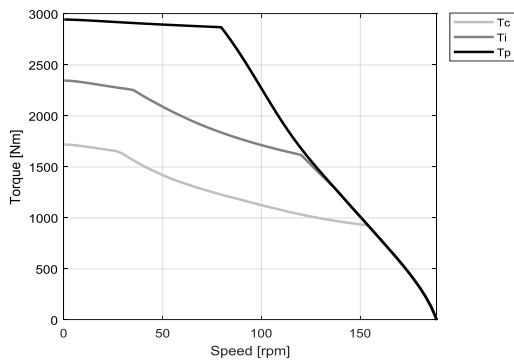
**VB - WATER COOLING**



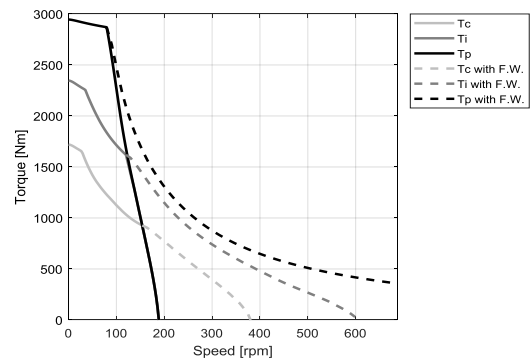
**VB - WATER COOLING**



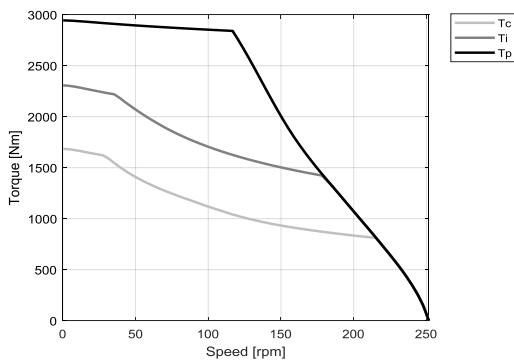
**TF - WATER COOLING**



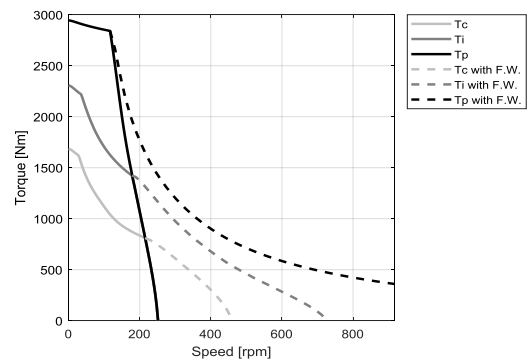
**TF - WATER COOLING**



**UF - WATER COOLING**



**UF - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	VA	WB	WD	WH
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	719	718	718	718
<b>Ti</b>	Intermittent torque	Nm	496	486	486	486
<b>Tc</b>	Continuous torque	Nm	375	366	366	366
<b>Ts</b>	Standstill torque	Nm	307	298	298	298
<b>Ip</b>	Peak current	Arms	43.8	117	235	469
<b>Ii</b>	Intermittent current	Arms	19.0	48.9	97.8	196
<b>Ic</b>	Continuous current	Arms	12.0	30.9	61.9	124
<b>Is</b>	Standstill current	Arms	9.11	23.4	46.9	93.7
<b>ns</b>	Rated low speed	rpm	0.10	0.10	0.10	0.10
<b>nm</b>	Maximum speed without flux weakening	rpm	167	448	897	1010
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	610	973	1010	1010
<b>ton,p</b>	Maximum ON time for peak cycle	s	3.0	2.4	2.4	2.4
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.9	2.9	2.9
<b>Pp</b>	Power dissipation @ Ip	W	28800	31300	31300	31300
<b>Pi</b>	Power dissipation @ Ii	W	6150	6080	6080	6080
<b>Pc</b>	Power dissipation @ Ic	W	2460	2430	2430	2430
<b>Td</b>	Max. detent torque (average to peak)	Nm	2.0	2.0	2.0	2.0

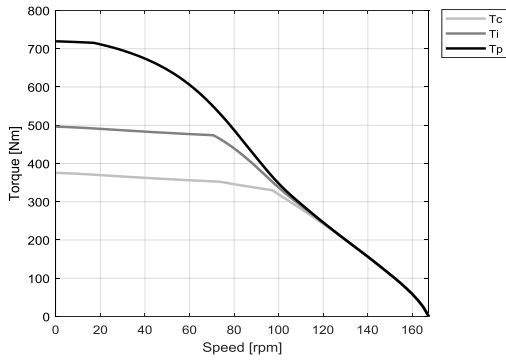
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	41.1	15.4	7.68	3.84
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	23.7	8.86	4.43	2.22
<b>Km</b>	Motor constant	Nm/√W	11.9	11.5	11.5	11.5
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	7.96	1.19	0.297	0.0743
<b>Ld/Lq</b>	Electrical inductance (*)	mH	77.6 / 63.8	10.8 / 9.08	2.71 / 2.27	0.678 / 0.567
<b>Isc</b>	Maximum short-circuit current	Arms	8.02	21.4	42.9	85.8
<b>nb</b>	Base speed	rpm	97.1	358	856	N/A
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	70.7	277	656	N/A
<b>nb,p</b>	Base speed at peak duty cycle	rpm	16.9	171	387	879
<b>nn</b>	Rated speed	rpm	82.1	318	592	590
<b>Tn</b>	Rated torque	Nm	344	218	153	153
<b>In</b>	Rated current	Arms	11.4	17.4	24.9	49.9
<b>rth</b>	Thermal time constant	s	135	132	132	132
<b>Rth</b>	Thermal resistance	K/W	0.0433	0.0438	0.0438	0.0438
<b>2p</b>	Number of poles	-	88	88	88	88
<b>J</b>	Rotor inertia	kg·m²	0.160	0.160	0.160	0.160
<b>mr</b>	Rotor mass	kg	4.83	4.83	4.83	4.83
<b>ms</b>	Stator mass	kg	31.1	31.0	31.0	31.0

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.110	0.110	0.110	0.110
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	7.7	7.6	7.6	7.6
<b>Δpw</b>	Max. pressure drop at qw	bar	0.2	0.2	0.2	0.2

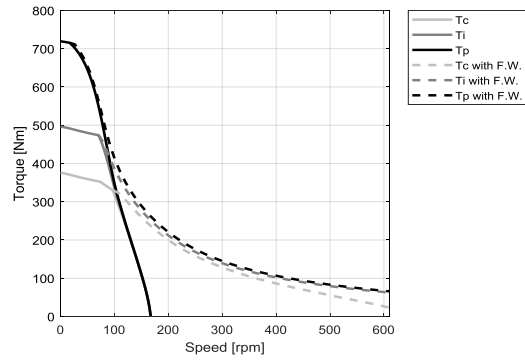
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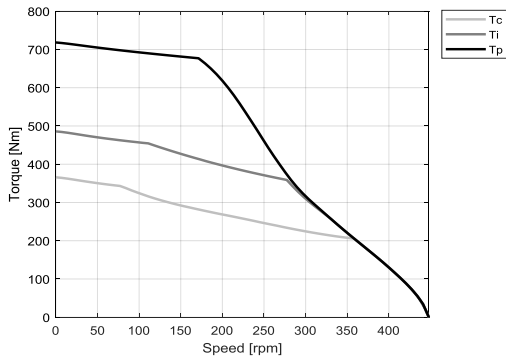
**VA - WATER COOLING**



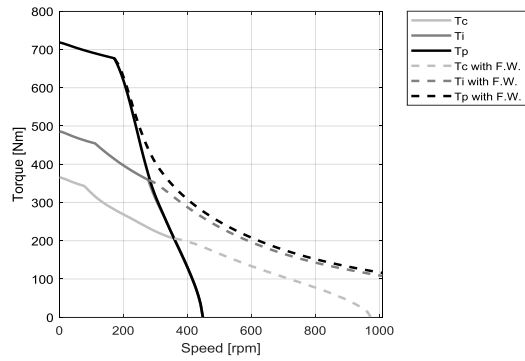
**VA - WATER COOLING**



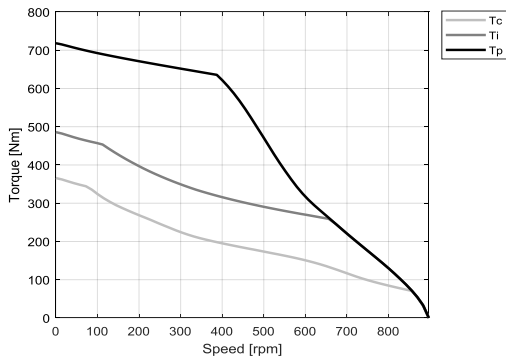
**WB - WATER COOLING**



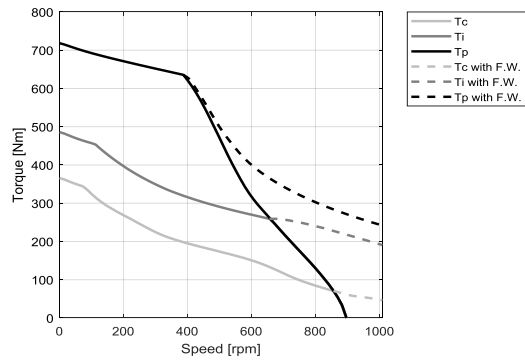
**WB - WATER COOLING**



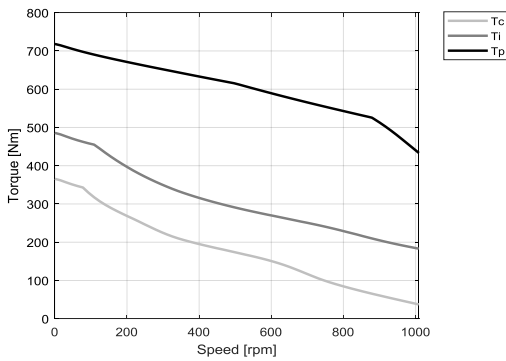
**WD - WATER COOLING**



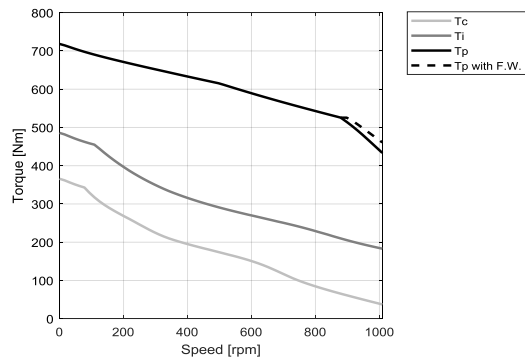
**WD - WATER COOLING**



**WH - WATER COOLING**



**WH - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	VA	WB	WD	WH
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	1210	1210	1210	1210
<b>Ti</b>	Intermittent torque	Nm	890	871	871	871
<b>Tc</b>	Continuous torque	Nm	672	655	655	655
<b>Ts</b>	Standstill torque	Nm	549	533	533	533
<b>Ip</b>	Peak current	Arms	37.2	99.4	199	398
<b>Ii</b>	Intermittent current	Arms	20.2	51.9	104	208
<b>Ic</b>	Continuous current	Arms	12.8	32.8	65.7	131
<b>Is</b>	Standstill current	Arms	9.67	24.9	49.8	99.5
<b>ns</b>	Rated low speed	rpm	0.11	0.11	0.11	0.11
<b>nm</b>	Maximum speed without flux weakening	rpm	100	268	536	963
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	360	632	847	963
<b>ton,p</b>	Maximum ON time for peak cycle	s	6.4	5.4	5.4	5.4
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.9	2.9	2.9
<b>Pp</b>	Power dissipation @ Ip	W	26600	28700	28700	28700
<b>Pi</b>	Power dissipation @ Ii	W	9690	9560	9560	9560
<b>Pc</b>	Power dissipation @ Ic	W	3880	3830	3830	3830
<b>Td</b>	Max. detent torque (average to peak)	Nm	3.3	3.3	3.3	3.3

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	68.8	25.7	12.9	6.43
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	39.7	14.8	7.42	3.71
<b>Km</b>	Motor constant	Nm/√W	16.8	16.3	16.3	16.3
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	11.1	1.66	0.416	0.104
<b>Ld/Lq</b>	Electrical inductance (*)	mH	122 / 98.8	17.1 / 14.1	4.26 / 3.51	1.07 / 0.878
<b>Isc</b>	Maximum short-circuit current	Arms	8.54	22.8	45.7	91.3
<b>nb</b>	Base speed	rpm	49.9	213	486	N/A
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	29.9	165	396	933
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.974	107	248	528
<b>nn</b>	Rated speed	rpm	40.3	189	438	437
<b>Tn</b>	Rated torque	Nm	641	390	251	252
<b>In</b>	Rated current	Arms	12.6	18.0	23.4	46.9
<b>rth</b>	Thermal time constant	s	122	120	120	120
<b>Rth</b>	Thermal resistance	K/W	0.0272	0.0275	0.0275	0.0275
<b>2p</b>	Number of poles	-	88	88	88	88
<b>J</b>	Rotor inertia	kg·m²	0.268	0.268	0.268	0.268
<b>mr</b>	Rotor mass	kg	8.11	8.11	8.11	8.11
<b>ms</b>	Stator mass	kg	40.3	40.0	40.0	40.0

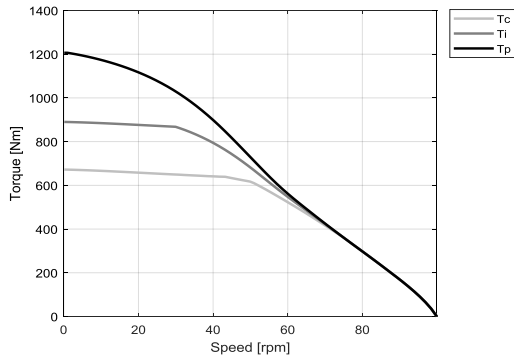
MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.150	0.150	0.150	0.150
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	12	12	12	12
<b>Δpw</b>	Max. pressure drop at qw	bar	0.4	0.4	0.4	0.4

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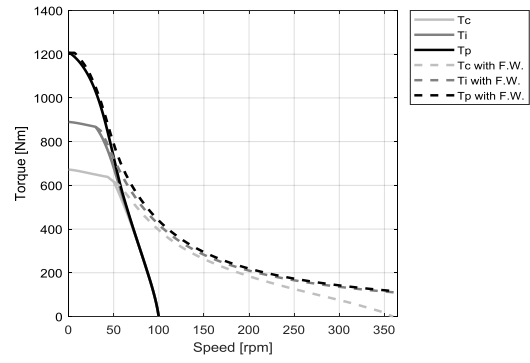
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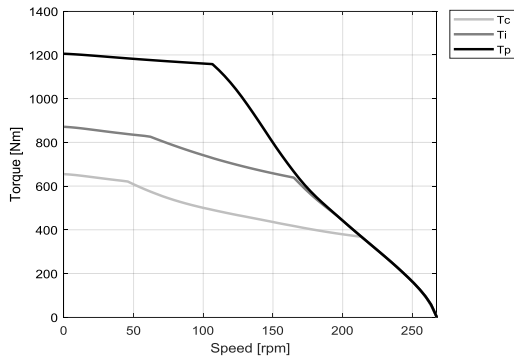
**VA - WATER COOLING**



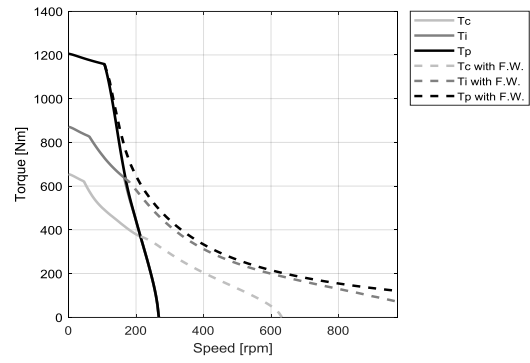
**VA - WATER COOLING**



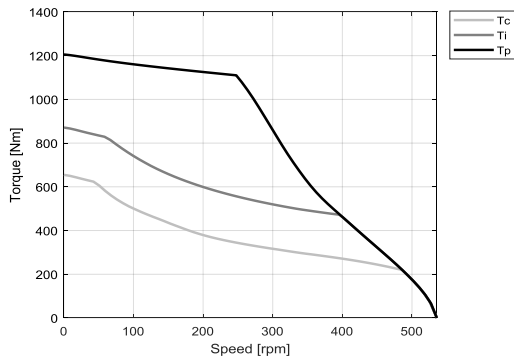
**WB - WATER COOLING**



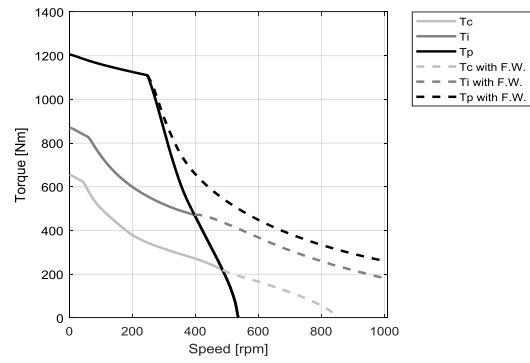
**WB - WATER COOLING**



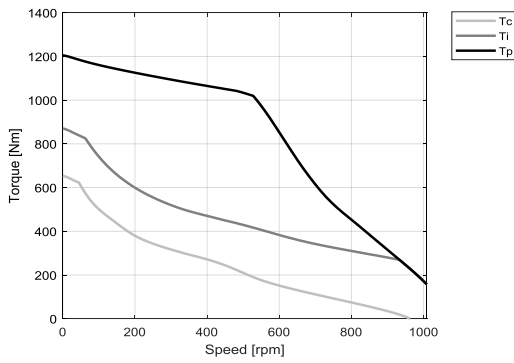
**WD - WATER COOLING**



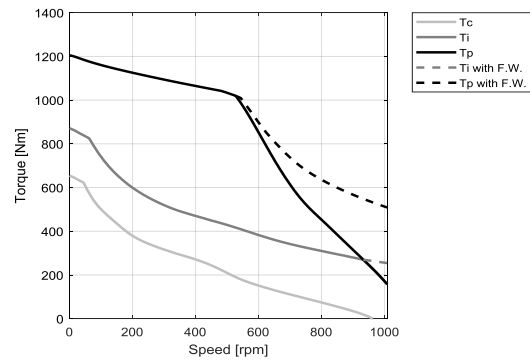
**WD - WATER COOLING**



**WH - WATER COOLING**



**WH - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	VA	WB	WD	WH
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	1590	1690	1690	1690
<b>Ti</b>	Intermittent torque	Nm	1270	1250	1250	1250
<b>Tc</b>	Continuous torque	Nm	964	939	939	939
<b>Ts</b>	Standstill torque	Nm	788	765	765	765
<b>Ip</b>	Peak current	Arms	30.4	95.8	192	383
<b>Ii</b>	Intermittent current	Arms	20.6	52.9	106	212
<b>Ic</b>	Continuous current	Arms	13.0	33.5	67.0	134
<b>Is</b>	Standstill current	Arms	9.86	25.4	50.7	101
<b>ns</b>	Rated low speed	rpm	0.11	0.12	0.12	0.12
<b>nm</b>	Maximum speed without flux weakening	rpm	71.4	191	383	767
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	239	438	619	767
<b>ton,p</b>	Maximum ON time for peak cycle	s	12	6.0	6.0	6.0
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.8	2.8	2.8	2.8
<b>Pp</b>	Power dissipation @ Ip	W	21900	33800	33800	33800
<b>Pi</b>	Power dissipation @ Ii	W	13000	12800	12800	12800
<b>Pc</b>	Power dissipation @ Ic	W	5180	5110	5110	5110
<b>Td</b>	Max. detent torque (average to peak)	Nm	4.6	4.6	4.6	4.6

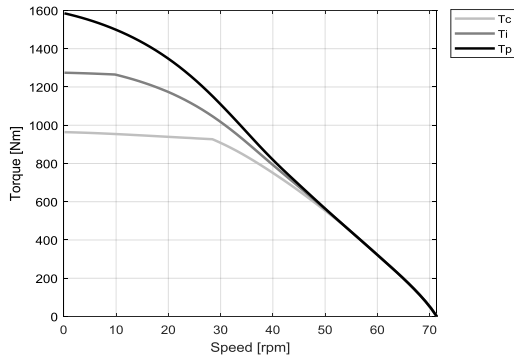
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	96.5	36.1	18.0	9.02
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	55.6	20.8	10.4	5.19
<b>Km</b>	Motor constant	Nm/√W	20.8	20.1	20.1	20.1
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	14.4	2.14	0.536	0.134
<b>Ld/Lq</b>	Electrical inductance (*)	mH	163 / 131	22.7 / 18.7	5.69 / 4.67	1.42 / 1.17
<b>Isc</b>	Maximum short-circuit current	Arms	8.96	24.0	47.9	95.9
<b>nb</b>	Base speed	rpm	28.4	152	346	N/A
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	9.79	116	287	663
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	71.6	179	387
<b>nn</b>	Rated speed	rpm	22.7	134	317	319
<b>Tn</b>	Rated torque	Nm	935	566	365	362
<b>In</b>	Rated current	Arms	12.9	18.4	23.7	47.0
<b>rth</b>	Thermal time constant	s	120	118	118	118
<b>Rth</b>	Thermal resistance	K/W	0.0202	0.0204	0.0204	0.0204
<b>2p</b>	Number of poles	-	88	88	88	88
<b>J</b>	Rotor inertia	kg·m²	0.377	0.377	0.377	0.377
<b>mr</b>	Rotor mass	kg	11.4	11.4	11.4	11.4
<b>ms</b>	Stator mass	kg	50.1	49.8	49.8	49.8

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.200	0.200	0.200	0.200
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	16	16	16	16
<b>Δpw</b>	Max. pressure drop at qw	bar	0.7	0.7	0.7	0.7

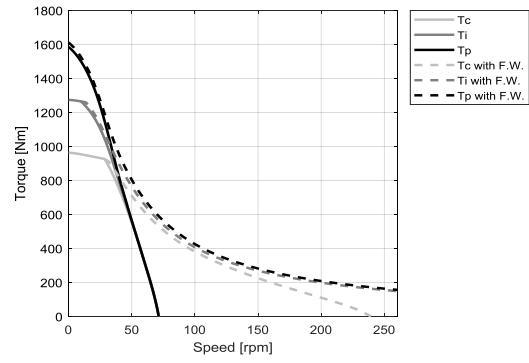
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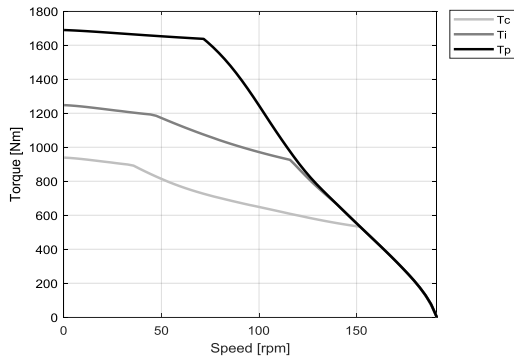
**VA - WATER COOLING**



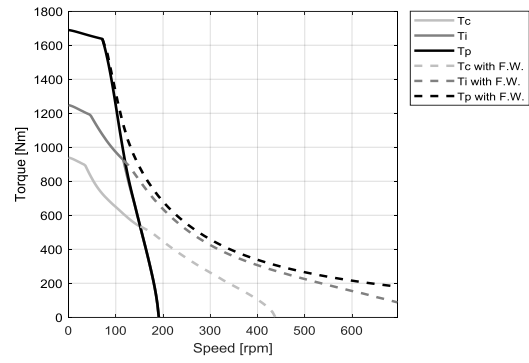
**VA - WATER COOLING**



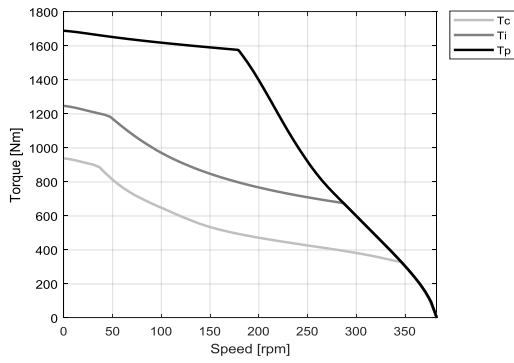
**WB - WATER COOLING**



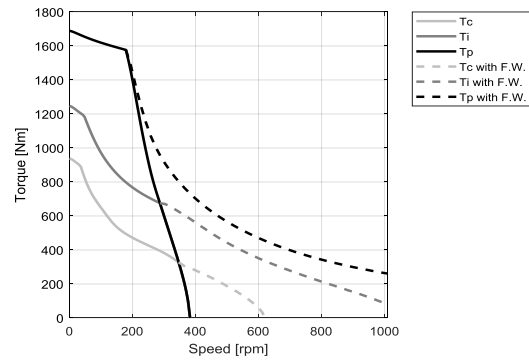
**WB - WATER COOLING**



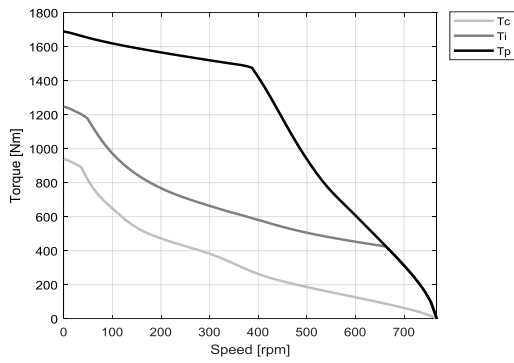
**WD - WATER COOLING**



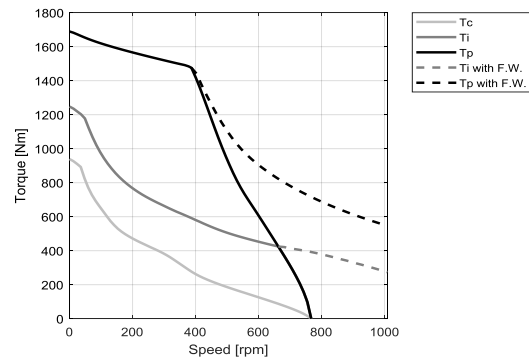
**WD - WATER COOLING**



**WH - WATER COOLING**



**WH - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	WA	WB	WD	WH
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	2230	2420	2420	2420
<b>Ti</b>	Intermittent torque	Nm	1820	1820	1820	1820
<b>Tc</b>	Continuous torque	Nm	1370	1370	1370	1370
<b>Ts</b>	Standstill torque	Nm	1120	1120	1120	1120
<b>Ip</b>	Peak current	Arms	38.3	93.3	187	373
<b>Ii</b>	Intermittent current	Arms	27.0	54.1	108	216
<b>Ic</b>	Continuous current	Arms	17.1	34.2	68.4	137
<b>Is</b>	Standstill current	Arms	13.0	25.9	51.8	104
<b>ns</b>	Rated low speed	rpm	0.12	0.12	0.12	0.12
<b>nm</b>	Maximum speed without flux weakening	rpm	66.8	134	268	536
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	199	315	491	774
<b>ton,p</b>	Maximum ON time for peak cycle	s	12	6.3	6.3	6.3
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.8	2.8	2.8	2.8
<b>Pp</b>	Power dissipation @ Ip	W	27600	42400	42400	42400
<b>Pi</b>	Power dissipation @ Ii	W	17800	17800	17800	17800
<b>Pc</b>	Power dissipation @ Ic	W	7120	7120	7120	7120
<b>Td</b>	Max. detent torque (average to peak)	Nm	6.6	6.6	6.6	6.6

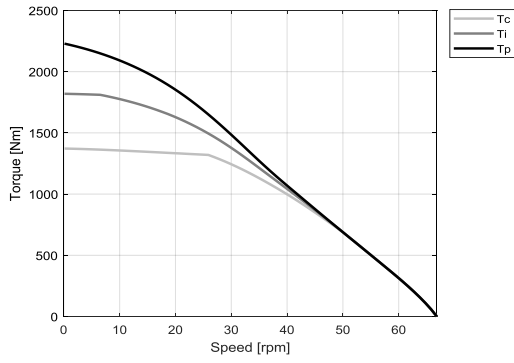
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	103	51.6	25.8	12.9
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	59.4	29.7	14.8	7.42
<b>Km</b>	Motor constant	Nm/√W	24.9	24.9	24.9	24.9
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	11.5	2.88	0.719	0.180
<b>Ld/Lq</b>	Electrical inductance (*)	mH	124 / 101	31.0 / 25.3	7.75 / 6.33	1.94 / 1.58
<b>Isc</b>	Maximum short-circuit current	Arms	12.6	25.1	50.2	100
<b>nb</b>	Base speed	rpm	25.9	101	233	514
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	6.52	73.1	196	450
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	41.7	123	275
<b>nn</b>	Rated speed	rpm	20.2	86.7	213	314
<b>Tn</b>	Rated torque	Nm	1330	926	625	495
<b>In</b>	Rated current	Arms	17.0	21.3	27.8	44.6
<b>rth</b>	Thermal time constant	s	111	111	111	111
<b>Rth</b>	Thermal resistance	K/W	0.0144	0.0144	0.0144	0.0144
<b>2p</b>	Number of poles	-	88	88	88	88
<b>J</b>	Rotor inertia	kg·m²	0.533	0.533	0.533	0.533
<b>mr</b>	Rotor mass	kg	16.1	16.1	16.1	16.1
<b>ms</b>	Stator mass	kg	62.9	62.9	62.9	62.9

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.260	0.260	0.260	0.260
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	22	22	22	22
<b>Δpw</b>	Max. pressure drop at qw	bar	1.4	1.4	1.4	1.4

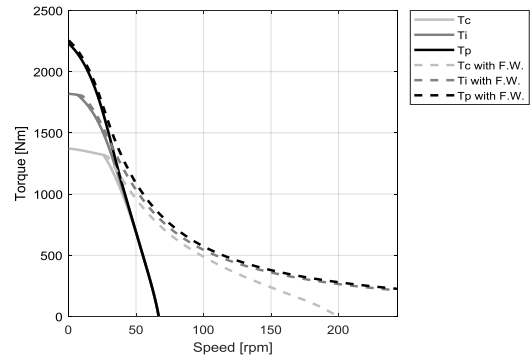
**Notes:** (\*) terminal to terminal.  
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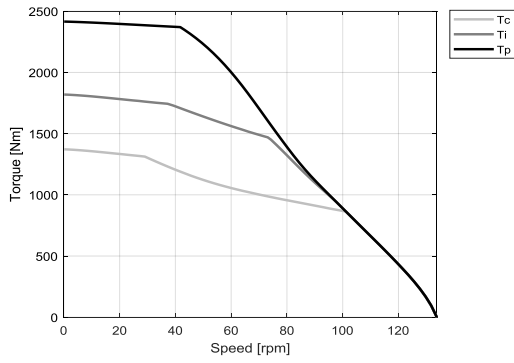
**WA - WATER COOLING**



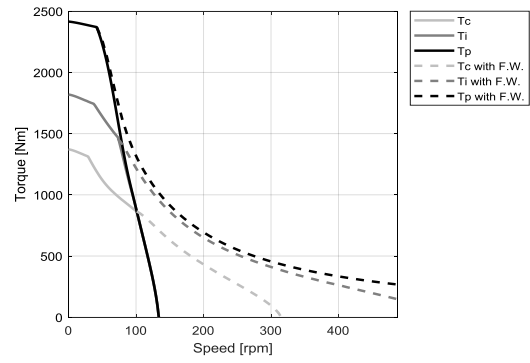
**WA - WATER COOLING**



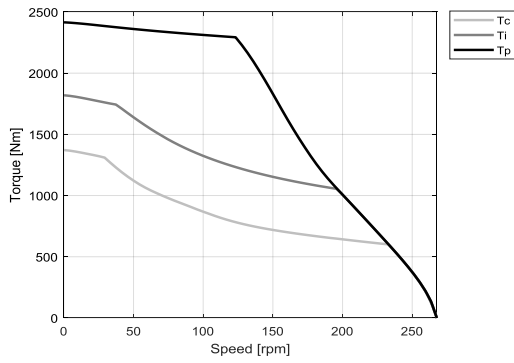
**WB - WATER COOLING**



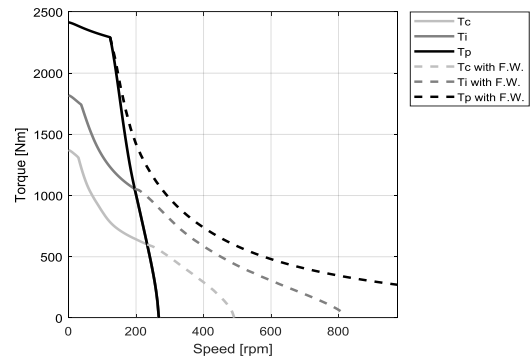
**WB - WATER COOLING**



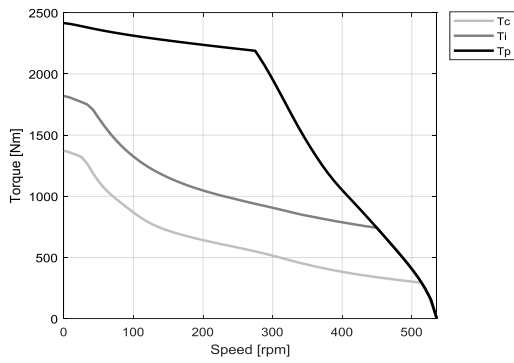
**WD - WATER COOLING**



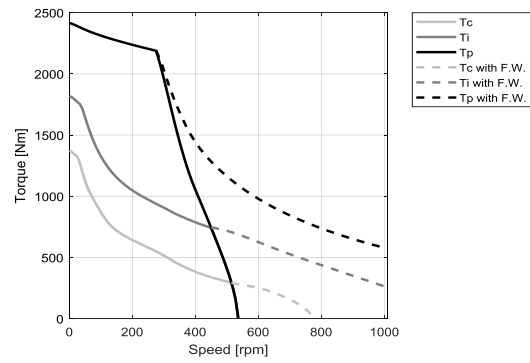
**WD - WATER COOLING**



**WH - WATER COOLING**



**WH - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	VB	VD	WD	WH
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	3510	3630	3620	3620
<b>Ti</b>	Intermittent torque	Nm	2790	2790	2730	2730
<b>Tc</b>	Continuous torque	Nm	2110	2110	2060	2060
<b>Ts</b>	Standstill torque	Nm	1730	1730	1680	1680
<b>Ip</b>	Peak current	Arms	63.1	137	183	365
<b>Ii</b>	Intermittent current	Arms	41.8	83.5	107	215
<b>Ic</b>	Continuous current	Arms	26.4	52.8	67.9	136
<b>Is</b>	Standstill current	Arms	20.0	40.0	51.4	103
<b>ns</b>	Rated low speed	rpm	0.12	0.12	0.12	0.12
<b>nm</b>	Maximum speed without flux weakening	rpm	66.6	133	178	357
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	189	299	359	567
<b>ton,p</b>	Maximum ON time for peak cycle	s	8.8	6.8	5.7	5.7
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.8	2.8	2.8	2.8
<b>Pp</b>	Power dissipation @ Ip	W	45400	54000	58000	58000
<b>Pi</b>	Power dissipation @ Ii	W	25300	25300	24900	24900
<b>Pc</b>	Power dissipation @ Ic	W	10100	10100	9970	9970
<b>Td</b>	Max. detent torque (average to peak)	Nm	9.8	9.8	9.8	9.8

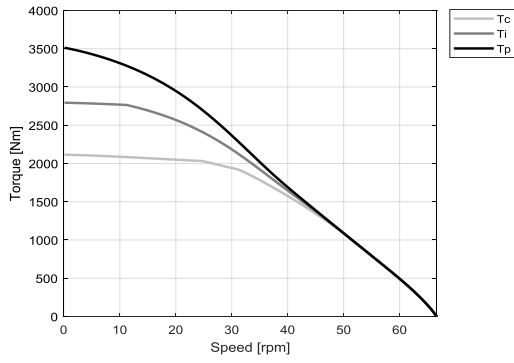
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	104	51.9	38.8	19.4
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	59.5	29.8	22.3	11.1
<b>Km</b>	Motor constant	Nm/√W	32.2	32.2	31.2	31.2
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	6.93	1.73	1.03	0.258
<b>Ld/Lq</b>	Electrical inductance (*)	mH	82.7 / 66.8	20.7 / 16.7	11.6 / 9.50	2.89 / 2.37
<b>Isc</b>	Maximum short-circuit current	Arms	18.9	37.8	50.5	101
<b>nb</b>	Base speed	rpm	31.1	105	149	332
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	11.2	78.6	119	285
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	47.8	73.2	177
<b>nn</b>	Rated speed	rpm	22.5	91.2	134	281
<b>Tn</b>	Rated torque	Nm	2040	1300	1080	744
<b>In</b>	Rated current	Arms	26.2	29.3	31.8	44.3
<b>rth</b>	Thermal time constant	s	114	114	113	113
<b>Rth</b>	Thermal resistance	K/W	0.00977	0.00977	0.00989	0.00989
<b>2p</b>	Number of poles	-	88	88	88	88
<b>J</b>	Rotor inertia	kg·m²	0.805	0.805	0.805	0.805
<b>mr</b>	Rotor mass	kg	24.3	24.3	24.3	24.3
<b>ms</b>	Stator mass	kg	88.1	88.1	87.4	87.4

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.370	0.370	0.370	0.370
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	32	32	31	31
<b>Δpw</b>	Max. pressure drop at qw	bar	2.8	2.8	2.7	2.7

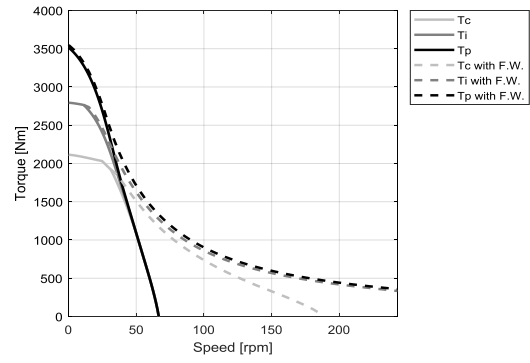
**Notes:** (\*) terminal to terminal.  
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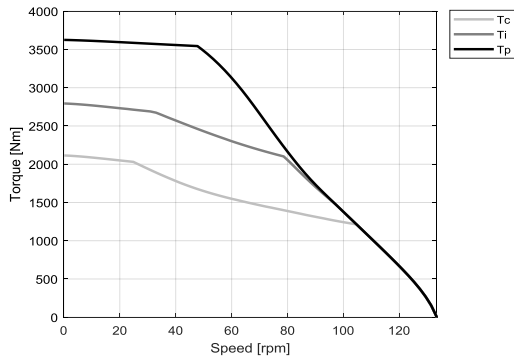
**VB - WATER COOLING**



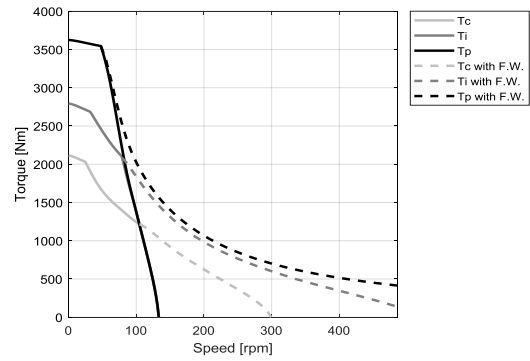
**VB - WATER COOLING**



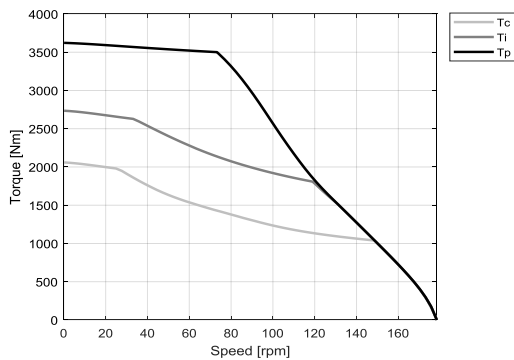
**VD - WATER COOLING**



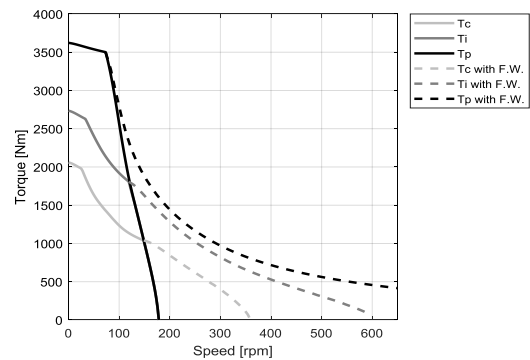
**VD - WATER COOLING**



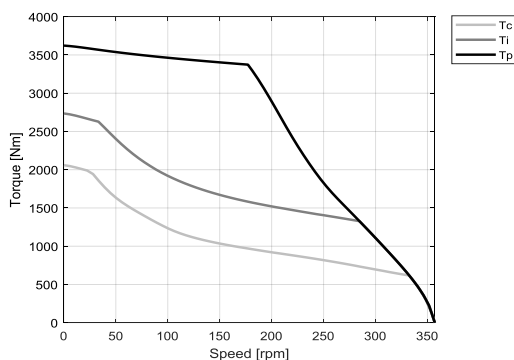
**WD - WATER COOLING**



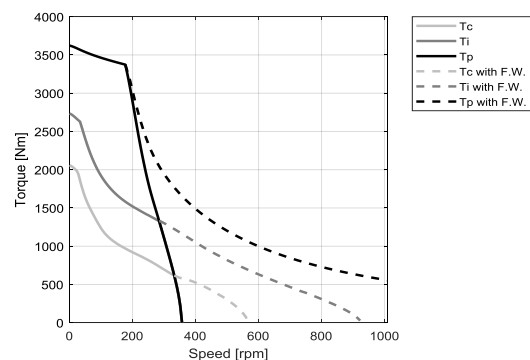
**WD - WATER COOLING**



**WH - WATER COOLING**



**WH - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	WB	WD	VH	WH
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	4610	4830	4830	4830
<b>Ti</b>	Intermittent torque	Nm	3630	3630	3710	3630
<b>Tc</b>	Continuous torque	Nm	2720	2720	2800	2720
<b>Ts</b>	Standstill torque	Nm	2220	2220	2280	2220
<b>Ip</b>	Peak current	Arms	80.7	181	270	362
<b>Ii</b>	Intermittent current	Arms	52.8	106	164	211
<b>Ic</b>	Continuous current	Arms	33.4	66.8	104	134
<b>Is</b>	Standstill current	Arms	25.3	50.6	78.8	101
<b>ns</b>	Rated low speed	rpm	0.12	0.12	0.12	0.12
<b>nm</b>	Maximum speed without flux weakening	rpm	66.8	134	200	268
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	181	286	370	449
<b>ton,p</b>	Maximum ON time for peak cycle	s	6.9	4.7	5.6	4.7
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.7	2.7	2.7	2.7
<b>Pp</b>	Power dissipation @ Ip	W	58000	74500	69200	74500
<b>Pi</b>	Power dissipation @ Ii	W	31200	31200	31800	31200
<b>Pc</b>	Power dissipation @ Ic	W	12500	12500	12700	12500
<b>Td</b>	Max. detent torque (average to peak)	Nm	13	13	13	13

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	103	51.7	34.6	25.9
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	59.4	29.7	19.8	14.8
<b>Km</b>	Motor constant	Nm/√W	36.3	36.3	37.5	36.3
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	5.43	1.36	0.569	0.339
<b>Ld/Lq</b>	Electrical inductance (*)	mH	61.5 / 50.9	15.4 / 12.7	6.88 / 5.59	3.84 / 3.18
<b>Isc</b>	Maximum short-circuit current	Arms	25.3	50.7	75.8	101
<b>nb</b>	Base speed	rpm	32.5	107	172	240
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	12.5	80.8	143	205
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	46.4	89.6	127
<b>nn</b>	Rated speed	rpm	23.4	93.9	157	221
<b>Tn</b>	Rated torque	Nm	2620	1620	1310	1110
<b>In</b>	Rated current	Arms	33.1	36.1	43.1	49.1
<b>rth</b>	Thermal time constant	s	113	113	114	113
<b>Rth</b>	Thermal resistance	K/W	0.00749	0.00749	0.00741	0.00749
<b>2p</b>	Number of poles	-	88	88	88	88
<b>J</b>	Rotor inertia	kg·m²	1.08	1.08	1.08	1.08
<b>mr</b>	Rotor mass	kg	32.6	32.6	32.6	32.6
<b>ms</b>	Stator mass	kg	111	111	112	111

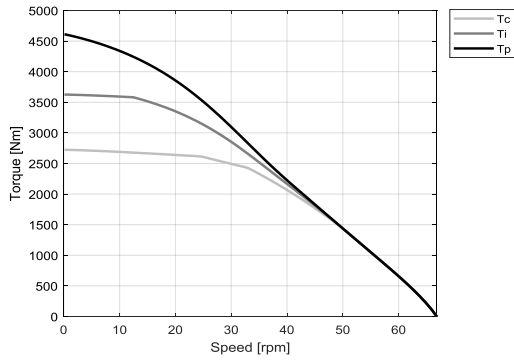
MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.480	0.480	0.480	0.480
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	39	39	40	39
<b>Δpw</b>	Max. pressure drop at qw	bar	4.5	4.5	4.6	4.5

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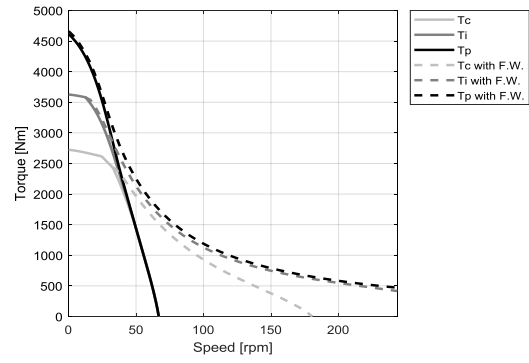
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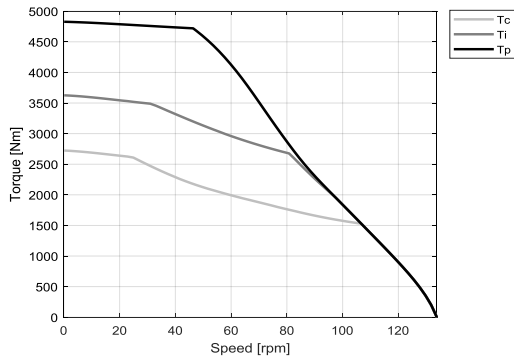
**WB - WATER COOLING**



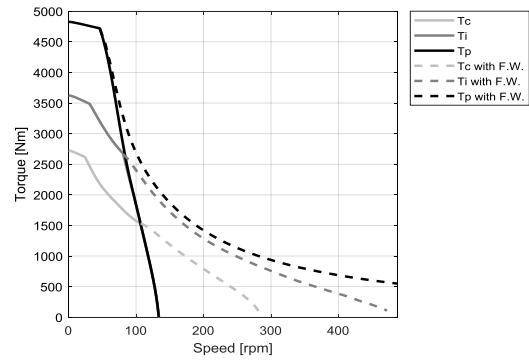
**WB - WATER COOLING**



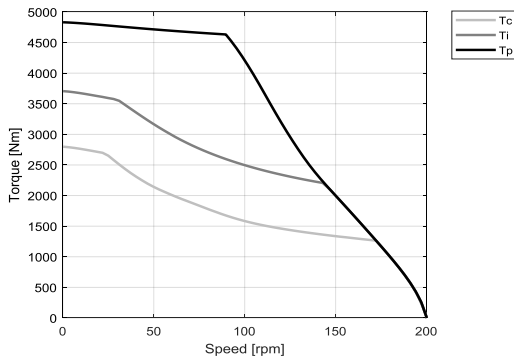
**WD - WATER COOLING**



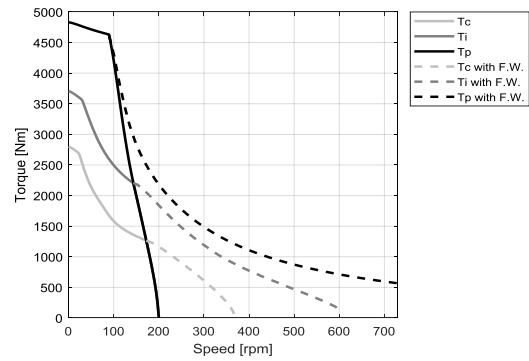
**WD - WATER COOLING**



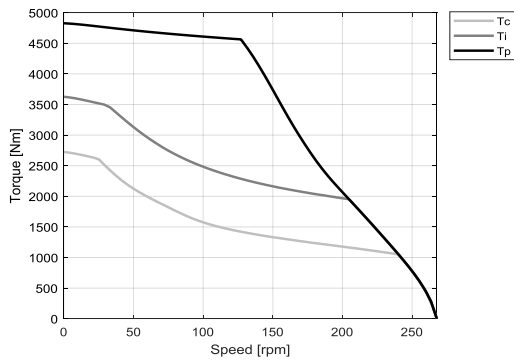
**VH - WATER COOLING**



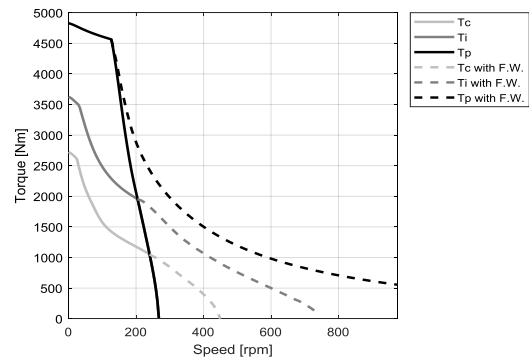
**VH - WATER COOLING**



**WH - WATER COOLING**



**WH - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	WA	WB	WD	WH
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	1730	1730	1730	1730
<b>Ti</b>	Intermittent torque	Nm	1340	1340	1340	1340
<b>Tc</b>	Continuous torque	Nm	1010	1010	1000	1000
<b>Ts</b>	Standstill torque	Nm	817	817	818	818
<b>Ip</b>	Peak current	Arms	38.1	76.3	153	305
<b>Ii</b>	Intermittent current	Arms	23.8	47.6	94.6	189
<b>Ic</b>	Continuous current	Arms	15.1	30.1	59.8	120
<b>Is</b>	Standstill current	Arms	11.4	22.8	45.7	91.3
<b>ns</b>	Rated low speed	rpm	0.10	0.10	0.10	0.10
<b>nm</b>	Maximum speed without flux weakening	rpm	81.1	162	325	651
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	290	435	621	774
<b>ton,p</b>	Maximum ON time for peak cycle	s	11	11	11	11
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.9	4.2	4.2
<b>Pp</b>	Power dissipation @ Ip	W	22500	22500	22500	22500
<b>Pi</b>	Power dissipation @ Ii	W	11200	11200	11000	11000
<b>Pc</b>	Power dissipation @ Ic	W	4480	4480	4390	4390
<b>Td</b>	Max. detent torque (average to peak)	Nm	5.0	5.0	5.0	5.0

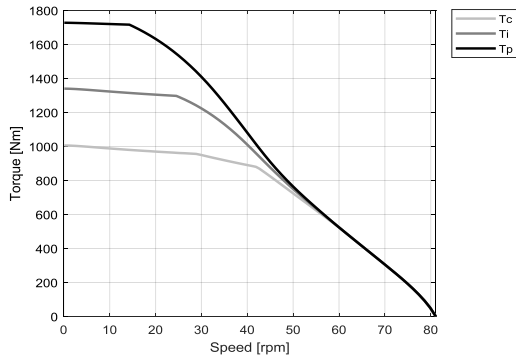
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	84.9	42.5	21.2	10.6
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	48.9	24.5	12.2	6.12
<b>Km</b>	Motor constant	Nm/√W	22.8	22.8	22.8	22.8
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	9.26	2.31	0.579	0.145
<b>Ld/Lq</b>	Electrical inductance (*)	mH	135 / 109	33.8 / 27.3	8.45 / 6.84	2.11 / 1.71
<b>Isc</b>	Maximum short-circuit current	Arms	9.49	19.0	38.0	75.9
<b>nb</b>	Base speed	rpm	41.9	117	279	638
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	24.5	88.4	221	524
<b>nb,p</b>	Base speed at peak duty cycle	rpm	14.3	63.7	149	316
<b>nn</b>	Rated speed	rpm	34.0	102	254	380
<b>Tn</b>	Rated torque	Nm	925	675	428	329
<b>In</b>	Rated current	Arms	14.2	19.0	23.5	37.2
<b>rth</b>	Thermal time constant	s	136	136	136	136
<b>Rth</b>	Thermal resistance	K/W	0.0235	0.0235	0.0235	0.0235
<b>2p</b>	Number of poles	-	88	88	88	88
<b>J</b>	Rotor inertia	kg·m²	0.470	0.470	0.470	0.470
<b>mr</b>	Rotor mass	kg	9.77	9.77	9.77	9.77
<b>ms</b>	Stator mass	kg	49.8	49.8	49.8	49.8

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.180	0.180	0.180	0.180
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	14	14	14	14
<b>Δpw</b>	Max. pressure drop at qw	bar	0.5	0.5	0.5	0.5

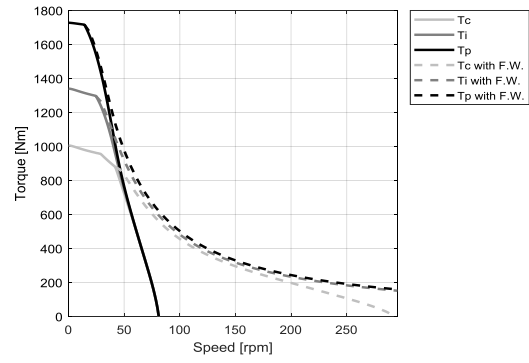
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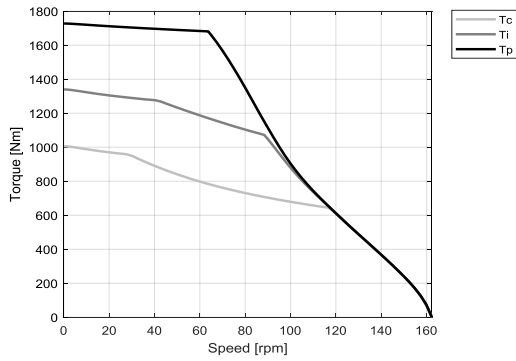
**WA - WATER COOLING**



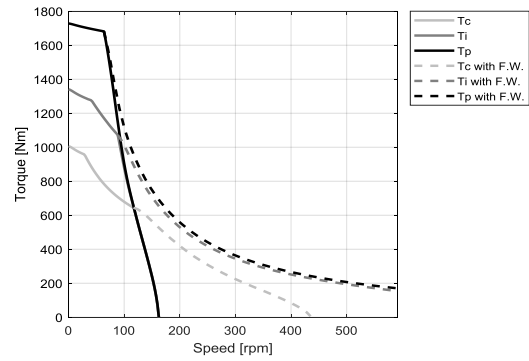
**WA - WATER COOLING**



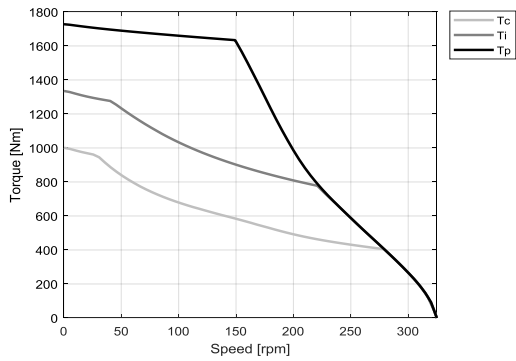
**WB - WATER COOLING**



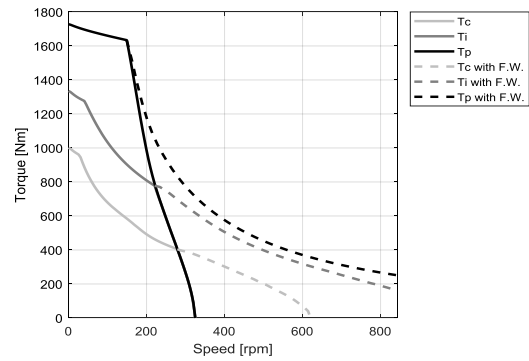
**WB - WATER COOLING**



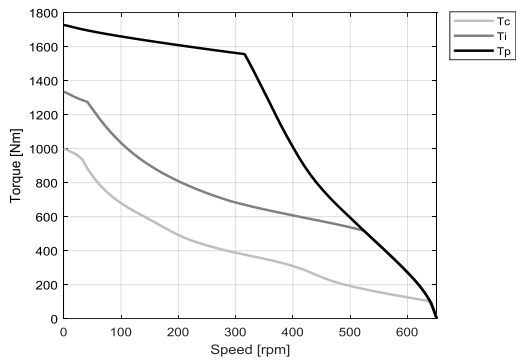
**WD - WATER COOLING**



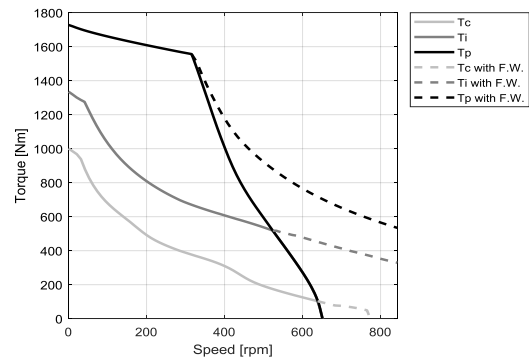
**WD - WATER COOLING**



**WH - WATER COOLING**



**WH - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	WA	WB	WD	WH
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	2420	2420	2420	2420
<b>Ti</b>	Intermittent torque	Nm	1930	1930	1900	1900
<b>Tc</b>	Continuous torque	Nm	1450	1450	1420	1420
<b>Ts</b>	Standstill torque	Nm	1180	1180	1180	1180
<b>Ip</b>	Peak current	Arms	36.8	73.6	147	294
<b>Ii</b>	Intermittent current	Arms	24.4	48.8	94.6	189
<b>Ic</b>	Continuous current	Arms	15.4	30.8	59.8	120
<b>Is</b>	Standstill current	Arms	11.7	23.4	46.7	93.4
<b>ns</b>	Rated low speed	rpm	0.10	0.10	0.10	0.10
<b>nm</b>	Maximum speed without flux weakening	rpm	57.9	116	232	465
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	199	295	447	596
<b>ton,p</b>	Maximum ON time for peak cycle	s	12	12	12	12
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.9	7.8	7.8
<b>Pp</b>	Power dissipation @ Ip	W	26500	26500	26500	26500
<b>Pi</b>	Power dissipation @ Ii	W	15000	15000	13700	13700
<b>Pc</b>	Power dissipation @ Ic	W	5990	5990	5500	5500
<b>Td</b>	Max. detent torque (average to peak)	Nm	7.0	7.0	7.0	7.0

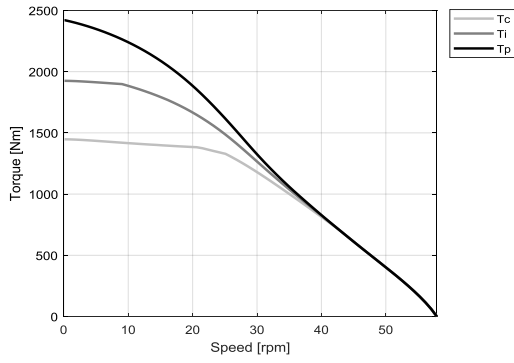
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	119	59.6	29.8	14.9
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	68.5	34.2	17.1	8.56
<b>Km</b>	Motor constant	Nm/√W	28.3	28.3	28.3	28.3
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	11.8	2.96	0.740	0.185
<b>Ld/Lq</b>	Electrical inductance (*)	mH	180 / 144	44.9 / 36.1	11.2 / 9.15	2.80 / 2.29
<b>Isc</b>	Maximum short-circuit current	Arms	10.0	20.0	40.1	80.1
<b>nb</b>	Base speed	rpm	24.7	82.9	199	454
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	9.05	61.0	159	379
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.164	42.7	108	233
<b>nn</b>	Rated speed	rpm	18.7	71.7	181	278
<b>Tn</b>	Rated torque	Nm	1390	975	623	474
<b>In</b>	Rated current	Arms	15.3	19.4	24.0	37.5
<b>rth</b>	Thermal time constant	s	134	134	134	134
<b>Rth</b>	Thermal resistance	K/W	0.0175	0.0175	0.0175	0.0175
<b>2p</b>	Number of poles	-	88	88	88	88
<b>J</b>	Rotor inertia	kg·m²	0.659	0.659	0.659	0.659
<b>mr</b>	Rotor mass	kg	13.7	13.7	13.7	13.7
<b>ms</b>	Stator mass	kg	62.1	62.1	62.1	62.1

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.240	0.240	0.240	0.240
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	19	19	17	17
<b>Δpw</b>	Max. pressure drop at qw	bar	0.7	0.7	0.7	0.7

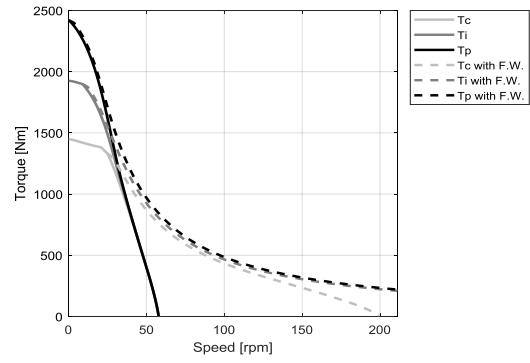
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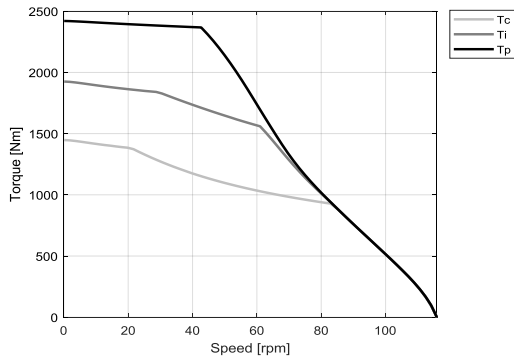
**WA - WATER COOLING**



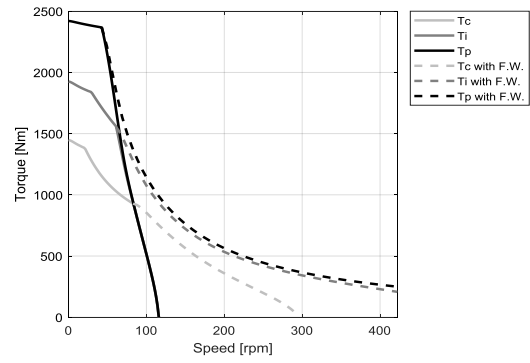
**WA - WATER COOLING**



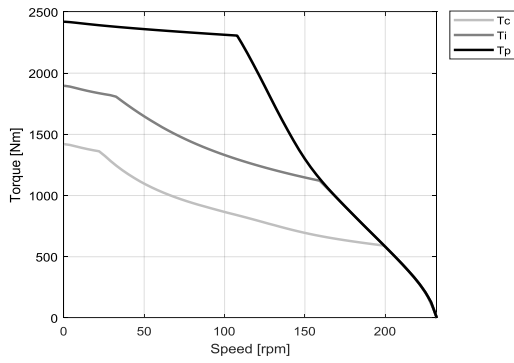
**WB - WATER COOLING**



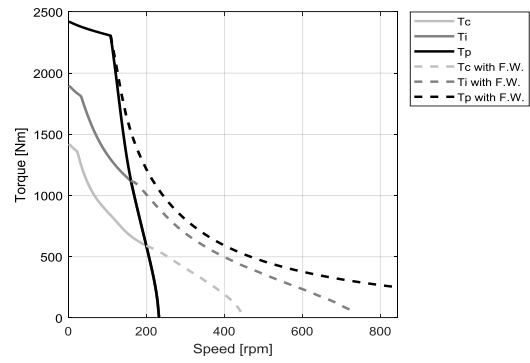
**WB - WATER COOLING**



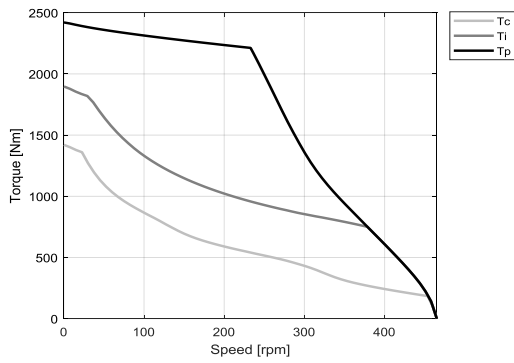
**WD - WATER COOLING**



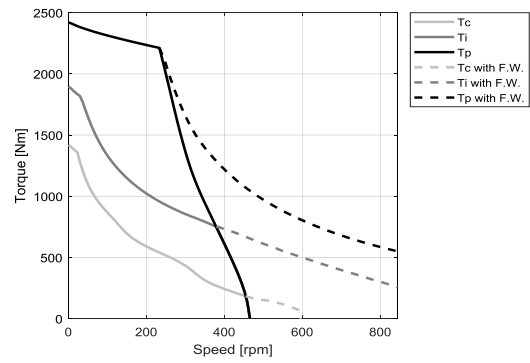
**WD - WATER COOLING**



**WH - WATER COOLING**



**WH - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	WA	WB	WD	WH
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	3120	3460	3460	3460
<b>Ti</b>	Intermittent torque	Nm	2700	2820	2740	2740
<b>Tc</b>	Continuous torque	Nm	2120	2120	2050	2050
<b>Ts</b>	Standstill torque	Nm	1730	1730	1740	1740
<b>Ip</b>	Peak current	Arms	28.7	71.7	143	287
<b>Ii</b>	Intermittent current	Arms	22.9	50.0	94.6	189
<b>Ic</b>	Continuous current	Arms	15.8	31.6	59.8	120
<b>Is</b>	Standstill current	Arms	12.0	24.0	47.9	95.8
<b>ns</b>	Rated low speed	rpm	0.11	0.11	0.11	0.11
<b>nm</b>	Maximum speed without flux weakening	rpm	40.5	81.1	162	325
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	145	213	339	515
<b>ton,p</b>	Maximum ON time for peak cycle	s	27	13	13	13
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	18	2.9	11	11
<b>Pp</b>	Power dissipation @ Ip	W	20600	33100	33100	33100
<b>Pi</b>	Power dissipation @ Ii	W	16500	20900	17900	17900
<b>Pc</b>	Power dissipation @ Ic	W	8350	8350	7160	7160
<b>Td</b>	Max. detent torque (average to peak)	Nm	10	10	10	10

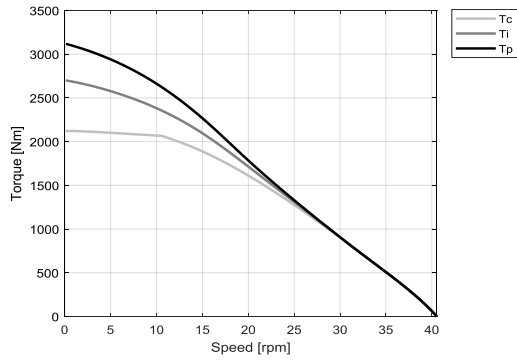
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	170	85.2	42.6	21.3
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	97.9	48.9	24.5	12.2
<b>Km</b>	Motor constant	Nm/√W	35.0	35.0	35.0	35.0
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	15.8	3.94	0.985	0.246
<b>Ld/Lq</b>	Electrical inductance (*)	mH	244 / 195	61.0 / 48.7	15.2 / 12.5	3.81 / 3.13
<b>Isc</b>	Maximum short-circuit current	Arms	10.5	21.1	42.1	84.3
<b>nb</b>	Base speed	rpm	10.5	54.3	135	301
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	0.00	35.2	108	256
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	24.6	74.1	166
<b>nn</b>	Rated speed	rpm	6.88	46.0	121	279
<b>Tn</b>	Rated torque	Nm	2090	1540	1050	654
<b>In</b>	Rated current	Arms	15.8	21.7	28.0	36.0
<b>rth</b>	Thermal time constant	s	126	126	126	126
<b>Rth</b>	Thermal resistance	K/W	0.0123	0.0123	0.0123	0.0123
<b>2p</b>	Number of poles	-	88	88	88	88
<b>J</b>	Rotor inertia	kg·m²	0.933	0.933	0.933	0.933
<b>mr</b>	Rotor mass	kg	19.4	19.4	19.4	19.4
<b>ms</b>	Stator mass	kg	78.8	78.8	78.8	78.8

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.320	0.320	0.320	0.320
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	26	26	22	22
<b>Δpw</b>	Max. pressure drop at qw	bar	1.5	1.5	1.2	1.2

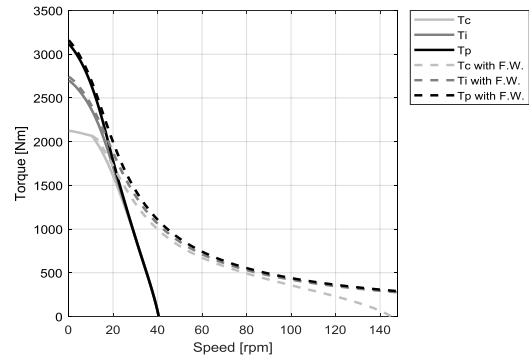
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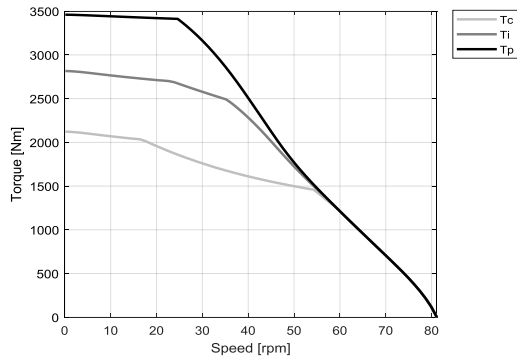
**WA - WATER COOLING**



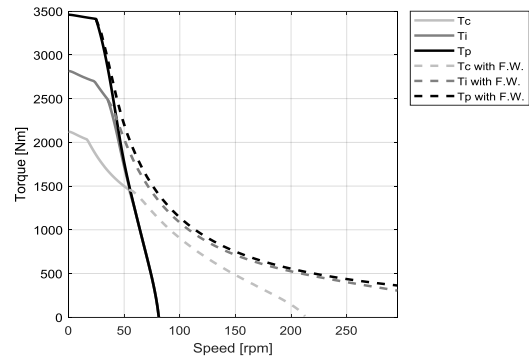
**WA - WATER COOLING**



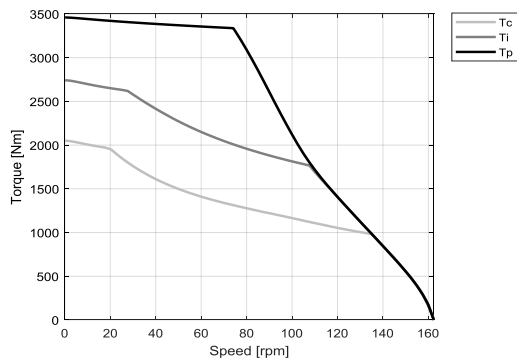
**WB - WATER COOLING**



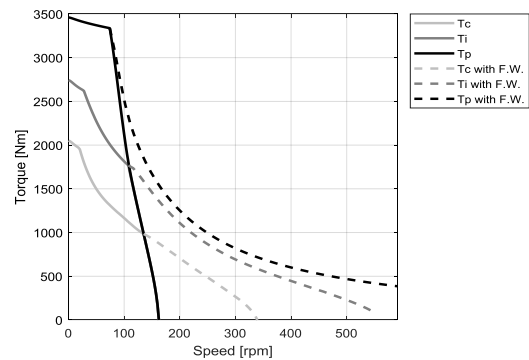
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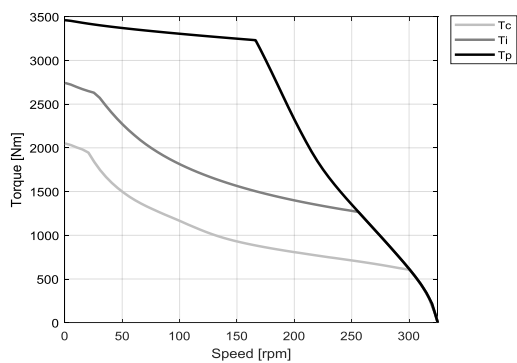
**WD - WATER COOLING**



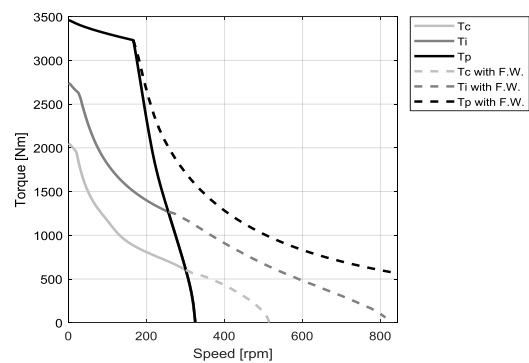
**WD - WATER COOLING**



**WH - WATER COOLING**



**WH - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	WB	UD	WD	WH
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	5190	5190	5190	5190
<b>Ti</b>	Intermittent torque	Nm	4240	4150	4130	4130
<b>Tc</b>	Continuous torque	Nm	3190	3110	3090	3090
<b>Ts</b>	Standstill torque	Nm	2600	2530	2610	2610
<b>Ip</b>	Peak current	Arms	70.7	97.5	141	283
<b>Ii</b>	Intermittent current	Arms	49.8	66.2	94.6	189
<b>Ic</b>	Continuous current	Arms	31.5	41.9	59.8	120
<b>Is</b>	Standstill current	Arms	23.9	31.7	47.8	95.5
<b>ns</b>	Rated low speed	rpm	0.11	0.11	0.11	0.11
<b>nm</b>	Maximum speed without flux weakening	rpm	54.1	74.6	108	217
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	156	190	244	386
<b>ton,p</b>	Maximum ON time for peak cycle	s	12	10	12	12
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.8	2.8	9.4	9.4
<b>Pp</b>	Power dissipation @ Ip	W	45700	48800	45700	45700
<b>Pi</b>	Power dissipation @ Ii	W	29300	28800	25400	25400
<b>Pc</b>	Power dissipation @ Ic	W	11700	11500	10100	10100
<b>Td</b>	Max. detent torque (average to peak)	Nm	15	15	15	15

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	128	92.8	63.9	32.0
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	73.4	53.2	36.7	18.3
<b>Km</b>	Motor constant	Nm/√W	44.1	42.8	44.1	44.1
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	5.62	3.14	1.40	0.351
<b>Ld/Lq</b>	Electrical inductance (*)	mH	90.7 / 72.8	47.7 / 39.0	22.7 / 18.7	5.67 / 4.66
<b>Isc</b>	Maximum short-circuit current	Arms	21.2	29.3	42.5	85.0
<b>nb</b>	Base speed	rpm	29.0	49.8	83.4	192
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	10.3	31.3	64.1	161
<b>nb,p</b>	Base speed at peak duty cycle	rpm	6.13	20.2	43.8	107
<b>nn</b>	Rated speed	rpm	22.7	42.1	73.0	177
<b>Tn</b>	Rated torque	Nm	2770	2280	1900	1220
<b>In</b>	Rated current	Arms	27.1	29.1	34.0	43.5
<b>rth</b>	Thermal time constant	s	127	125	127	127
<b>Rth</b>	Thermal resistance	K/W	0.00847	0.00859	0.00847	0.00847
<b>2p</b>	Number of poles	-	88	88	88	88
<b>J</b>	Rotor inertia	kg·m²	1.41	1.41	1.41	1.41
<b>mr</b>	Rotor mass	kg	29.2	29.2	29.2	29.2
<b>ms</b>	Stator mass	kg	110	109	110	110

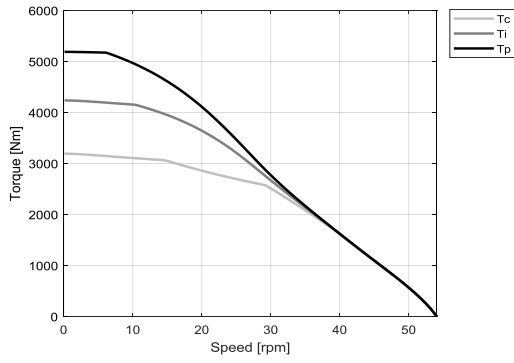
MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.450	0.450	0.450	0.450
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	37	36	32	32
<b>Δpw</b>	Max. pressure drop at qw	bar	2.9	2.8	2.3	2.3

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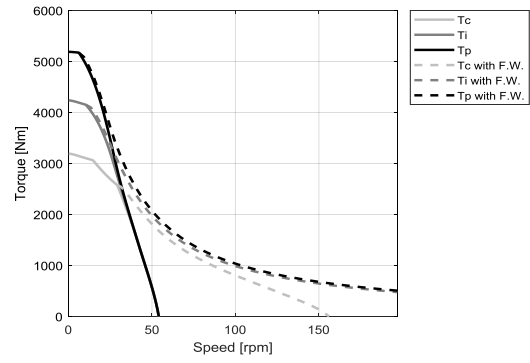
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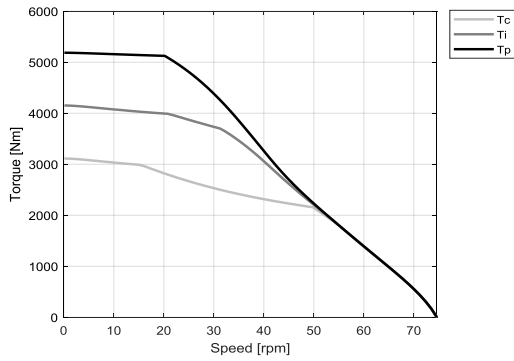
**WB - WATER COOLING**



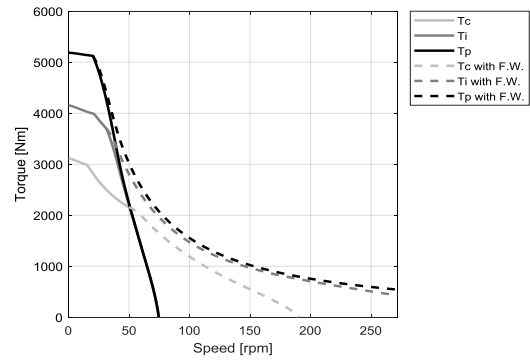
**WB - WATER COOLING**



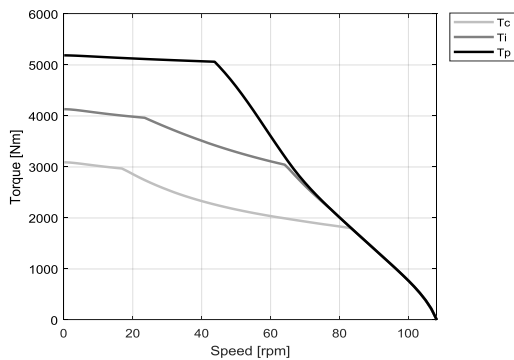
**UD - WATER COOLING**



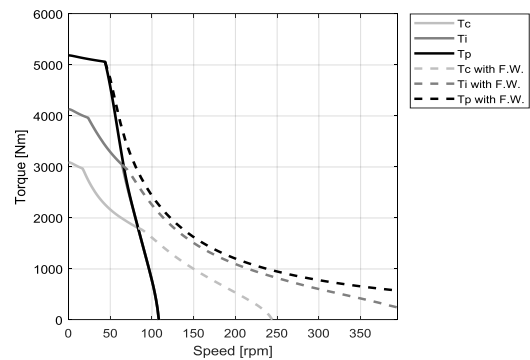
**UD - WATER COOLING**



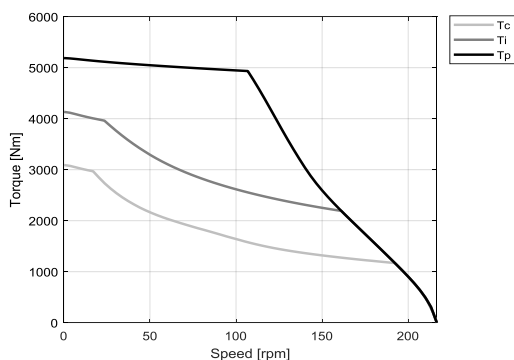
**WD - WATER COOLING**



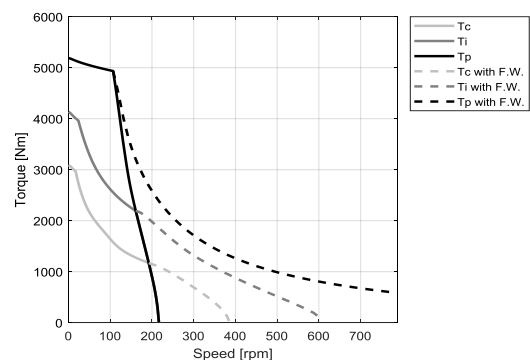
**WD - WATER COOLING**



**WH - WATER COOLING**



**WH - WATER COOLING**



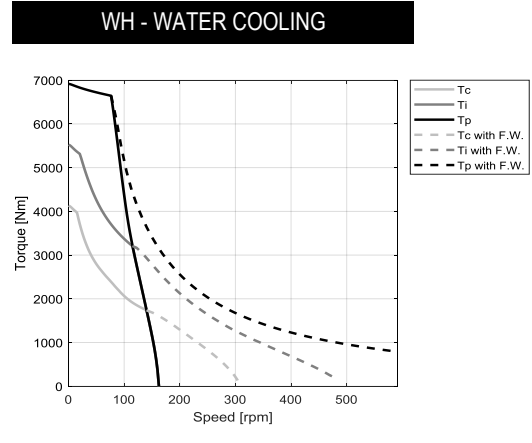
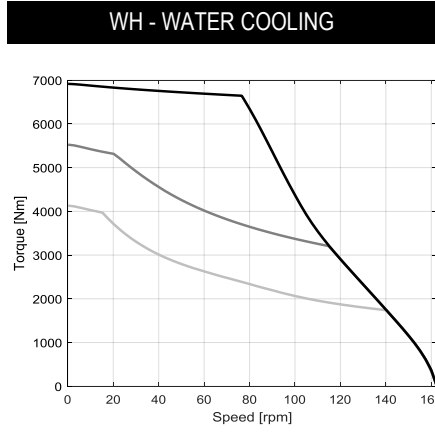
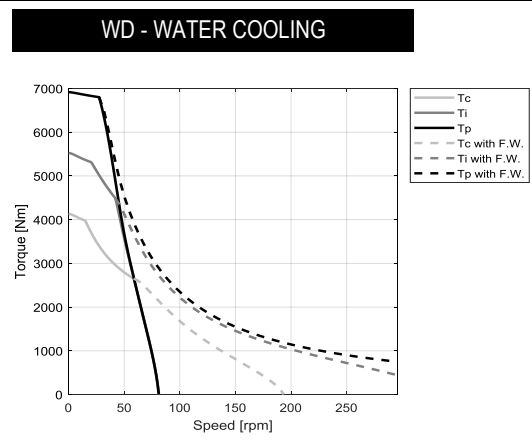
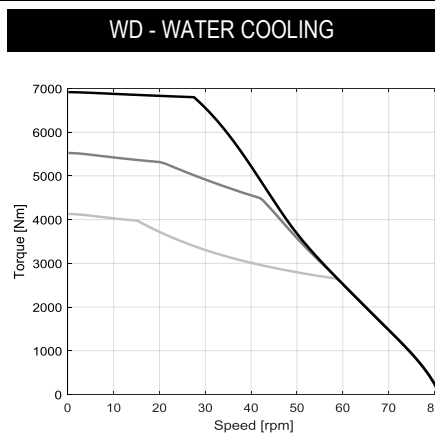
MOTOR PERFORMANCE		Winding codes	WD	WH		
		UNIT	WATER COOLING	WATER COOLING		
<b>Tp</b>	Peak torque	Nm	6920	6920		
<b>Ti</b>	Intermittent torque	Nm	5520	5520		
<b>Tc</b>	Continuous torque	Nm	4130	4130		
<b>Ts</b>	Standstill torque	Nm	3450	3450		
<b>Ip</b>	Peak current	Arms	140	280		
<b>Ii</b>	Intermittent current	Arms	94.6	189		
<b>Ic</b>	Continuous current	Arms	59.8	120		
<b>Is</b>	Standstill current	Arms	47.1	94.3		
<b>ns</b>	Rated low speed	rpm	0.11	0.11		
<b>nm</b>	Maximum speed without flux weakening	rpm	81.2	162		
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	193	308		
<b>ton,p</b>	Maximum ON time for peak cycle	s	10	10		
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	6.7	6.7		
<b>Pp</b>	Power dissipation @ Ip	W	58500	58500		
<b>Pi</b>	Power dissipation @ Ii	W	33100	33100		
<b>Pc</b>	Power dissipation @ Ic	W	13200	13200		
<b>Td</b>	Max. detent torque (average to peak)	Nm	20	20		

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	85.3	42.7		
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	48.9	24.5		
<b>Km</b>	Motor constant	Nm/√W	51.4	51.4		
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	1.84	0.459		
<b>Ld/Lq</b>	Electrical inductance (*)	mH	30.1 / 24.8	7.53 / 6.20		
<b>Isc</b>	Maximum short-circuit current	Arms	42.6	85.3		
<b>nb</b>	Base speed	rpm	58.5	140		
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	41.9	115		
<b>nb,p</b>	Base speed at peak duty cycle	rpm	27.5	76.5		
<b>nn</b>	Rated speed	rpm	50.5	128		
<b>Tn</b>	Rated torque	Nm	2790	1810		
<b>In</b>	Rated current	Arms	37.8	48.0		
<b>rth</b>	Thermal time constant	s	127	127		
<b>Rth</b>	Thermal resistance	K/W	0.00642	0.00642		
<b>2p</b>	Number of poles	-	88	88		
<b>J</b>	Rotor inertia	kg·m²	1.89	1.89		
<b>mr</b>	Rotor mass	kg	39.2	39.2		
<b>ms</b>	Stator mass	kg	140	140		

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600		
<b>Di</b>	Intermittent duty cycle	%	40	40		
<b>Dp</b>	Peak duty cycle	%	5.0	5.0		
<b>Sr</b>	Rotor exchange surface	m²	0.580	0.580		
<b>θamb</b>	Ambient temperature	°C	20	20		
<b>θmax</b>	Maximum coil temperature	°C	130	130		
<b>θw</b>	Inlet water temperature	°C	20	20		
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0		
<b>qw</b>	Minimum water flow for Δθw	l/min	41	41		
<b>Δpw</b>	Max. pressure drop at qw	bar	4.0	4.0		

**Notes:** (\*) terminal to terminal.  
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MOTOR PERFORMANCE		Winding codes	UB	WB	WC	WL
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	3830	3880	3880	3880
<b>Ti</b>	Intermittent torque	Nm	2790	2840	2840	2840
<b>Tc</b>	Continuous torque	Nm	2070	2110	2110	2110
<b>Ts</b>	Standstill torque	Nm	1670	1710	1710	1710
<b>Ip</b>	Peak current	Arms	54.4	81.7	122	490
<b>Ii</b>	Intermittent current	Arms	30.0	44.7	67.1	268
<b>Ic</b>	Continuous current	Arms	19.0	28.3	42.4	170
<b>Is</b>	Standstill current	Arms	14.4	21.4	32.1	129
<b>ns</b>	Rated low speed	rpm	0.067	0.065	0.065	0.065
<b>nm</b>	Maximum speed without flux weakening	rpm	51.1	74.1	111	446
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	186	244	308	534
<b>ton,p</b>	Maximum ON time for peak cycle	s	8.1	8.3	8.3	8.3
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	3.0	2.9	2.9	2.9
<b>Pp</b>	Power dissipation @ Ip	W	39200	39900	39900	39900
<b>Pi</b>	Power dissipation @ Ii	W	14800	14800	14800	14800
<b>Pc</b>	Power dissipation @ Ic	W	5900	5930	5930	5930
<b>Td</b>	Max. detent torque (average to peak)	Nm	10	10	10	10

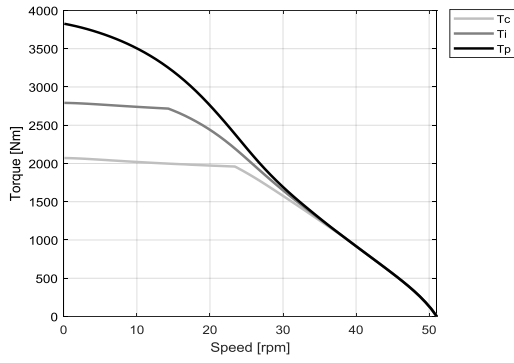
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	135	93.0	62.0	15.5
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	77.7	53.6	35.7	8.93
<b>Km</b>	Motor constant	Nm/√W	39.7	40.7	40.7	40.7
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	7.68	3.47	1.54	0.0964
<b>Ld/Lq</b>	Electrical inductance (*)	mH	107 / 90.2	50.8 / 42.3	22.6 / 18.8	1.41 / 1.18
<b>Isc</b>	Maximum short-circuit current	Arms	12.7	18.4	27.7	111
<b>nb</b>	Base speed	rpm	23.4	45.1	78.7	438
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	14.3	30.3	59.1	353
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	19.3	40.5	207
<b>nn</b>	Rated speed	rpm	19.7	38.3	68.6	254
<b>Tn</b>	Rated torque	Nm	1970	1760	1480	730
<b>In</b>	Rated current	Arms	18.8	23.6	28.4	56.4
<b>rth</b>	Thermal time constant	s	136	140	140	140
<b>Rth</b>	Thermal resistance	K/W	0.0179	0.0179	0.0179	0.0179
<b>2p</b>	Number of poles	-	132	132	132	132
<b>J</b>	Rotor inertia	kg·m²	1.66	1.66	1.66	1.66
<b>mr</b>	Rotor mass	kg	14.8	14.8	14.8	14.8
<b>ms</b>	Stator mass	kg	80.9	81.6	81.6	81.6

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.280	0.280	0.280	0.280
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	18	19	19	19
<b>Δpw</b>	Max. pressure drop at qw	bar	0.7	0.7	0.7	0.7

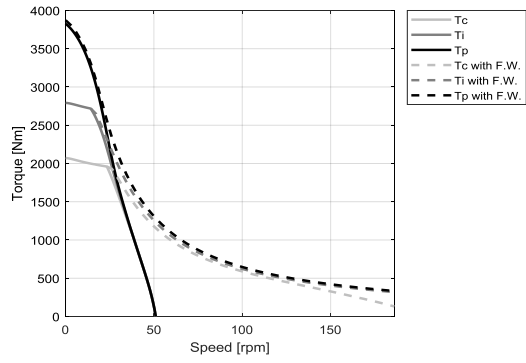
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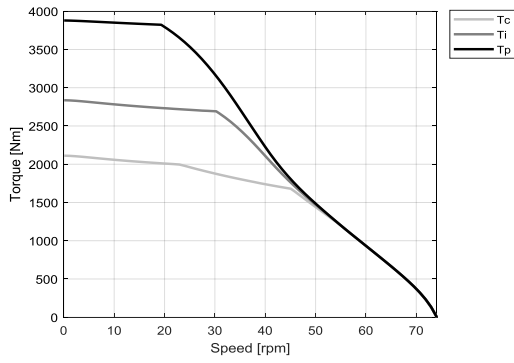
**UB - WATER COOLING**



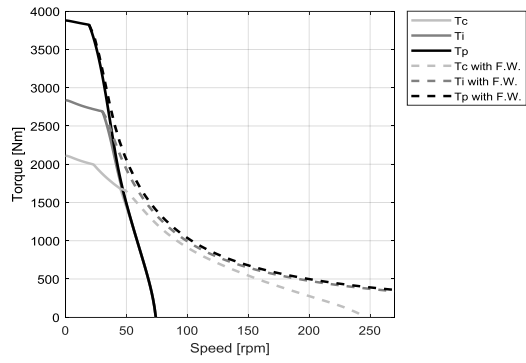
**UB - WATER COOLING**



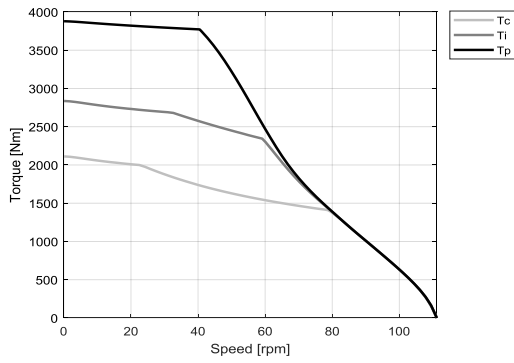
**WB - WATER COOLING**



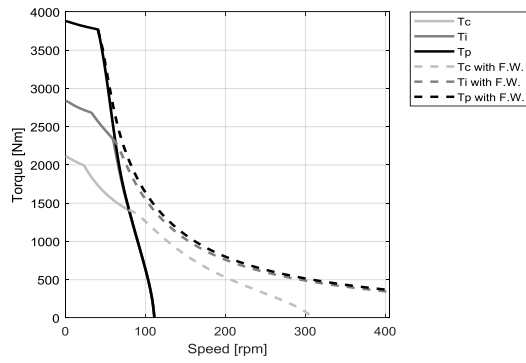
**WB - WATER COOLING**



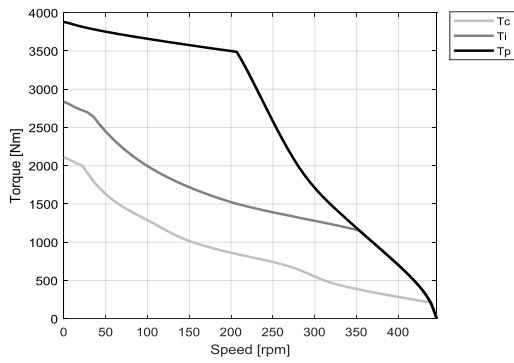
**WC - WATER COOLING**



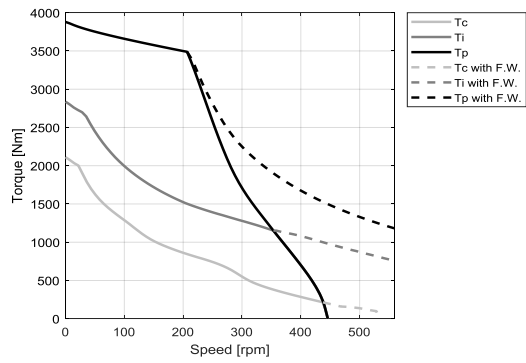
**WC - WATER COOLING**



**WL - WATER COOLING**



**WL - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	UB	WC	WF	WL
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	4990	5430	5430	5430
<b>Ti</b>	Intermittent torque	Nm	4000	4070	4070	4070
<b>Tc</b>	Continuous torque	Nm	2970	3030	3030	3030
<b>Ts</b>	Standstill torque	Nm	2390	2450	2450	2450
<b>Ip</b>	Peak current	Arms	44.5	118	236	472
<b>Ii</b>	Intermittent current	Arms	30.5	68.4	137	273
<b>Ic</b>	Continuous current	Arms	19.3	43.2	86.5	173
<b>Is</b>	Standstill current	Arms	14.6	32.8	65.5	131
<b>ns</b>	Rated low speed	rpm	0.068	0.066	0.066	0.066
<b>nm</b>	Maximum speed without flux weakening	rpm	36.5	79.4	159	319
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	133	207	305	400
<b>ton,p</b>	Maximum ON time for peak cycle	s	15	9.3	9.3	9.3
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.9	2.9	2.9
<b>Pp</b>	Power dissipation @ Ip	W	32000	46600	46600	46600
<b>Pi</b>	Power dissipation @ Ii	W	19600	19600	19600	19600
<b>Pc</b>	Power dissipation @ Ic	W	7830	7860	7860	7860
<b>Td</b>	Max. detent torque (average to peak)	Nm	14	14	14	14

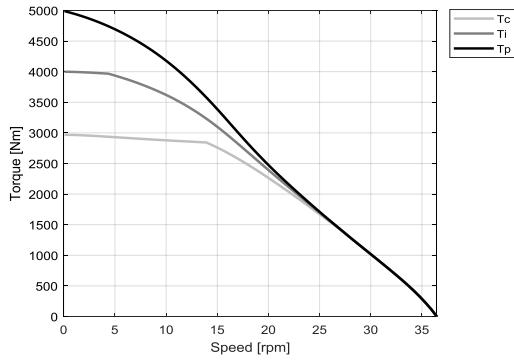
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	189	86.9	43.5	21.7
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	109	50.0	25.0	12.5
<b>Km</b>	Motor constant	Nm/√W	49.2	50.5	50.5	50.5
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	9.85	1.97	0.493	0.123
<b>Ld/Lq</b>	Electrical inductance (*)	mH	142 / 120	30.0 / 24.9	7.49 / 6.24	1.87 / 1.56
<b>Isc</b>	Maximum short-circuit current	Arms	13.4	29.2	58.4	117
<b>nb</b>	Base speed	rpm	13.9	56.2	136	312
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	4.34	41.1	107	257
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	26.7	70.2	153
<b>nn</b>	Rated speed	rpm	11.0	48.7	124	186
<b>Tn</b>	Rated torque	Nm	2870	2100	1340	1040
<b>In</b>	Rated current	Arms	19.2	28.5	35.5	56.2
<b>rth</b>	Thermal time constant	s	134	138	138	138
<b>Rth</b>	Thermal resistance	K/W	0.0134	0.0134	0.0134	0.0134
<b>2p</b>	Number of poles	-	132	132	132	132
<b>J</b>	Rotor inertia	kg·m²	2.32	2.32	2.32	2.32
<b>mr</b>	Rotor mass	kg	20.8	20.8	20.8	20.8
<b>ms</b>	Stator mass	kg	98.7	99.5	99.5	99.5

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.360	0.360	0.360	0.360
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	24	25	25	25
<b>Δpw</b>	Max. pressure drop at qw	bar	1.1	1.1	1.1	1.1

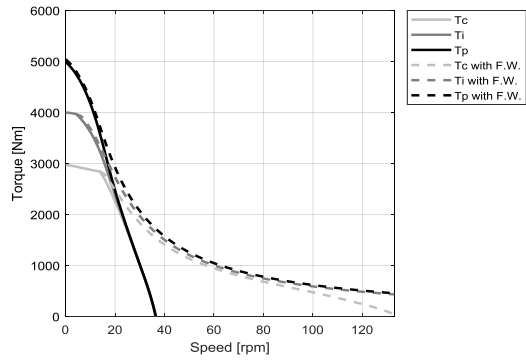
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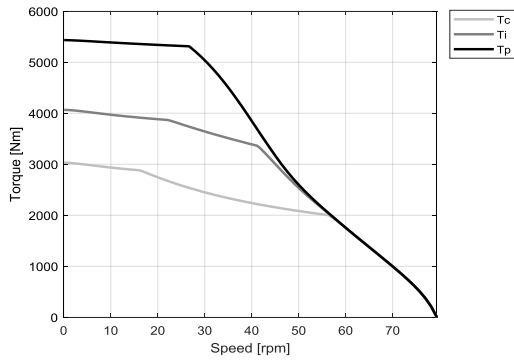
**UB - WATER COOLING**



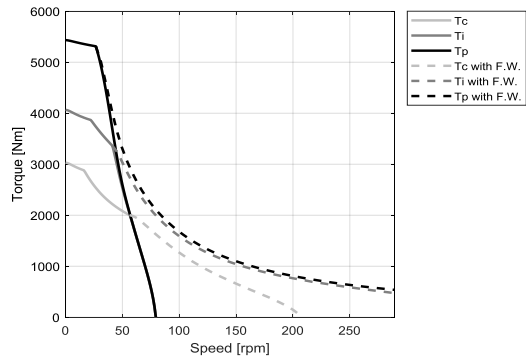
**UB - WATER COOLING**



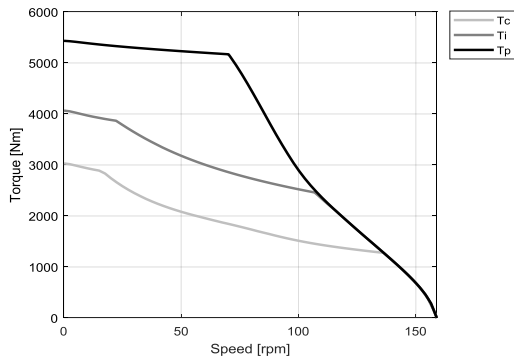
**WC - WATER COOLING**



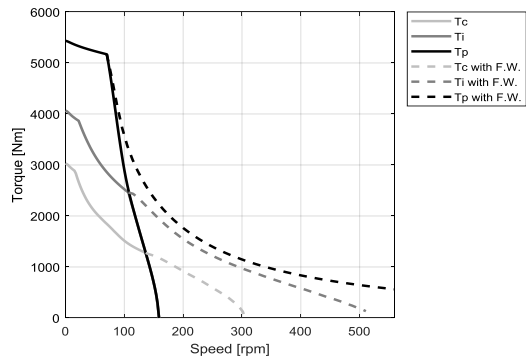
**WC - WATER COOLING**



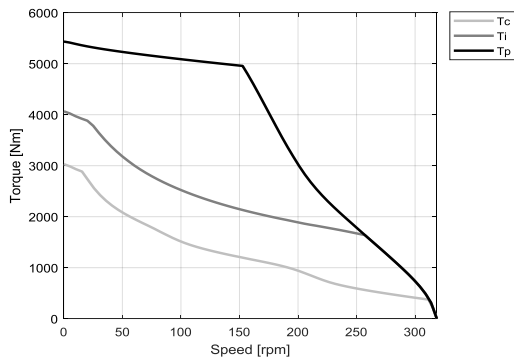
**WF - WATER COOLING**



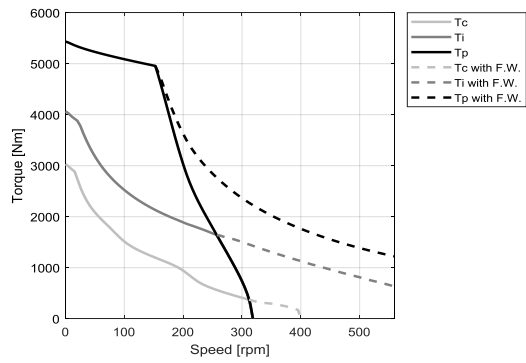
**WF - WATER COOLING**



**WL - WATER COOLING**



**WL - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	WB	WD	WF	WL
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	7630	7770	7770	7770
<b>Ti</b>	Intermittent torque	Nm	5930	5930	5930	5930
<b>Tc</b>	Continuous torque	Nm	4430	4430	4430	4430
<b>Ts</b>	Standstill torque	Nm	3580	3580	3580	3580
<b>Ip</b>	Peak current	Arms	73.2	153	230	459
<b>Ii</b>	Intermittent current	Arms	46.5	92.9	139	279
<b>Ic</b>	Continuous current	Arms	29.4	58.8	88.2	176
<b>Is</b>	Standstill current	Arms	22.3	44.5	66.8	134
<b>ns</b>	Rated low speed	rpm	0.069	0.069	0.069	0.069
<b>nm</b>	Maximum speed without flux weakening	rpm	37.0	74.1	111	223
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	118	180	237	352
<b>ton,p</b>	Maximum ON time for peak cycle	s	11	9.8	9.8	9.8
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.9	2.9	2.9
<b>Pp</b>	Power dissipation @ Ip	W	52700	58000	58000	58000
<b>Pi</b>	Power dissipation @ Ii	W	27100	27100	27100	27100
<b>Pc</b>	Power dissipation @ Ic	W	10800	10800	10800	10800
<b>Td</b>	Max. detent torque (average to peak)	Nm	21	21	21	21

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	186	93.2	62.2	31.1
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	107	53.6	35.7	17.9
<b>Km</b>	Motor constant	Nm/√W	62.6	62.6	62.6	62.6
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	5.91	1.48	0.657	0.164
<b>Ld/Lq</b>	Electrical inductance (*)	mH	91.6 / 76.0	22.9 / 19.0	10.2 / 8.44	2.54 / 2.11
<b>Isc</b>	Maximum short-circuit current	Arms	20.5	40.9	61.4	123
<b>nb</b>	Base speed	rpm	17.4	55.2	92.4	207
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	7.17	40.9	72.3	173
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	26.5	48.0	109
<b>nn</b>	Rated speed	rpm	12.8	47.7	82.8	188
<b>Tn</b>	Rated torque	Nm	4230	2890	2250	1420
<b>In</b>	Rated current	Arms	29.1	36.0	41.0	53.6
<b>rth</b>	Thermal time constant	s	132	132	132	132
<b>Rth</b>	Thermal resistance	K/W	0.00955	0.00955	0.00955	0.00955
<b>2p</b>	Number of poles	-	132	132	132	132
<b>J</b>	Rotor inertia	kg·m²	3.29	3.29	3.29	3.29
<b>mr</b>	Rotor mass	kg	29.4	29.4	29.4	29.4
<b>ms</b>	Stator mass	kg	124	124	124	124

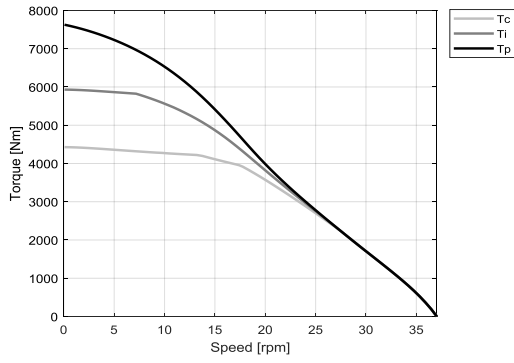
MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.490	0.490	0.490	0.490
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	34	34	34	34
<b>Δpw</b>	Max. pressure drop at qw	bar	2.2	2.2	2.2	2.2

**Notes:** (\*) terminal to terminal.  
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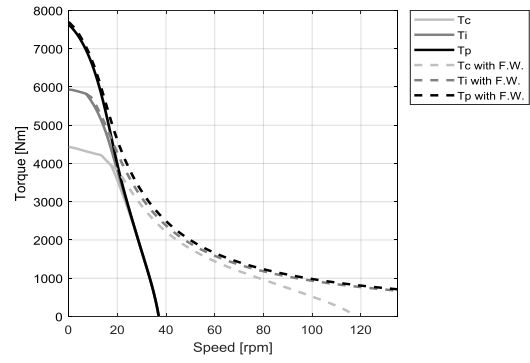
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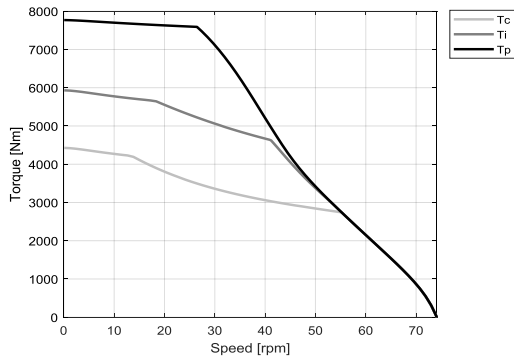
**WB - WATER COOLING**



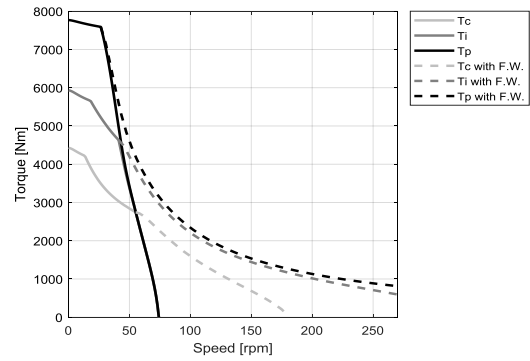
**WB - WATER COOLING**



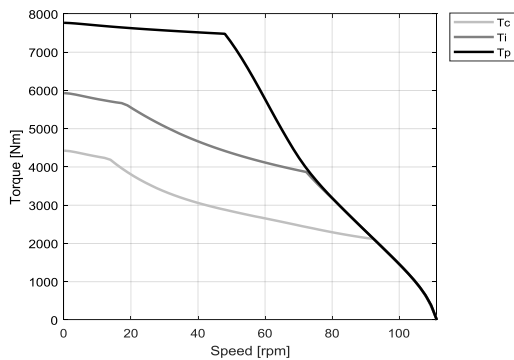
**WD - WATER COOLING**



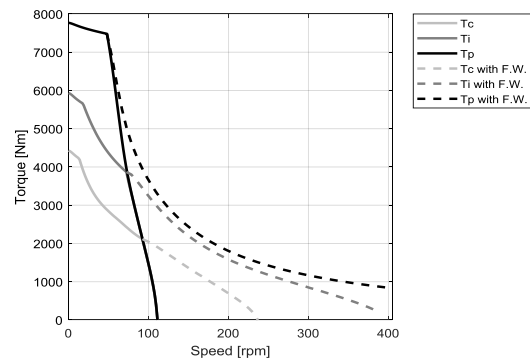
**WD - WATER COOLING**



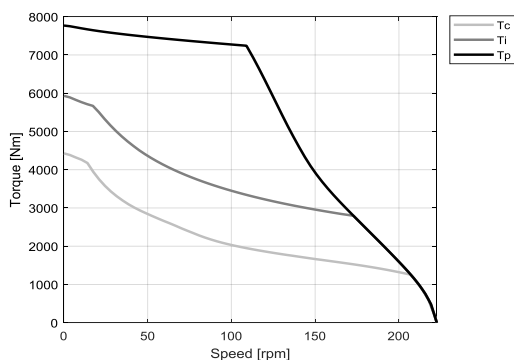
**WF - WATER COOLING**



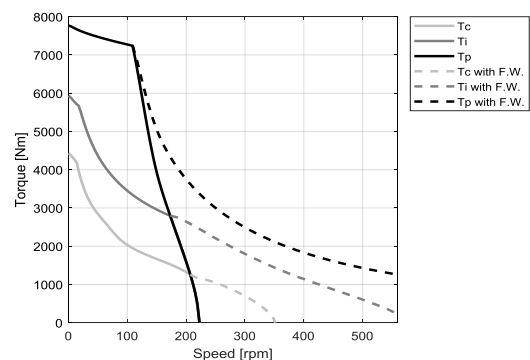
**WF - WATER COOLING**



**WL - WATER COOLING**



**WL - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	UF	UL	WL	
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	
<b>Tp</b>	Peak torque	Nm	11600	11600	11600	
<b>Ti</b>	Intermittent torque	Nm	8760	8760	8920	
<b>Tc</b>	Continuous torque	Nm	6510	6510	6660	
<b>Ts</b>	Standstill torque	Nm	5250	5250	5380	
<b>Ip</b>	Peak current	Arms	156	312	452	
<b>Ii</b>	Intermittent current	Arms	92.7	185	278	
<b>Ic</b>	Continuous current	Arms	58.6	117	176	
<b>Is</b>	Standstill current	Arms	44.4	88.9	133	
<b>ns</b>	Rated low speed	rpm	0.070	0.070	0.068	
<b>nm</b>	Maximum speed without flux weakening	rpm	51.1	102	148	
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	133	210	263	
<b>ton,p</b>	Maximum ON time for peak cycle	s	7.9	7.9	9.0	
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.8	2.8	2.8	
<b>Pp</b>	Power dissipation @ Ip	W	85500	85500	80000	
<b>Pi</b>	Power dissipation @ Ii	W	37800	37800	38000	
<b>Pc</b>	Power dissipation @ Ic	W	15100	15100	15200	
<b>Td</b>	Max. detent torque (average to peak)	Nm	31	31	31	

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	135	67.7	46.7	
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	77.7	38.9	26.8	
<b>Km</b>	Motor constant	Nm/√W	76.4	76.4	78.7	
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	2.09	0.523	0.234	
<b>Ld/Lq</b>	Electrical inductance (*)	mH	31.8 / 26.9	7.96 / 6.73	3.78 / 3.16	
<b>Isc</b>	Maximum short-circuit current	Arms	42.7	85.4	124	
<b>nb</b>	Base speed	rpm	33.8	85.5	132	
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	21.0	66.8	109	
<b>nb,p</b>	Base speed at peak duty cycle	rpm	11.4	43.2	69.8	
<b>nn</b>	Rated speed	rpm	28.7	76.9	121	
<b>Tn</b>	Rated torque	Nm	4890	3270	2640	
<b>In</b>	Rated current	Arms	42.6	54.4	64.4	
<b>rth</b>	Thermal time constant	s	130	130	133	
<b>Rth</b>	Thermal resistance	K/W	0.00663	0.00663	0.00661	
<b>2p</b>	Number of poles	-	132	132	132	
<b>J</b>	Rotor inertia	kg·m²	4.95	4.95	4.95	
<b>mr</b>	Rotor mass	kg	44.3	44.3	44.3	
<b>ms</b>	Stator mass	kg	167	167	169	

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	
<b>Di</b>	Intermittent duty cycle	%	40	40	40	
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	
<b>Sr</b>	Rotor exchange surface	m²	0.690	0.690	0.690	
<b>θamb</b>	Ambient temperature	°C	20	20	20	
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	
<b>θw</b>	Inlet water temperature	°C	20	20	20	
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	
<b>qw</b>	Minimum water flow for Δθw	l/min	47	47	48	
<b>Δpw</b>	Max. pressure drop at qw	bar	3.9	3.9	4.0	

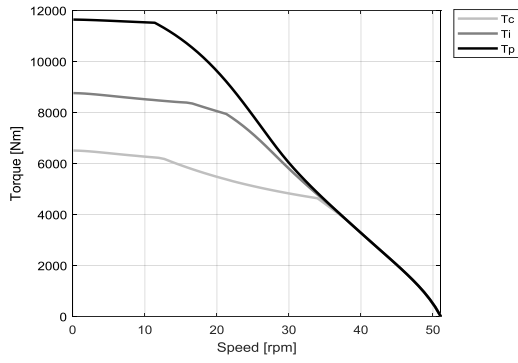
**Notes:** (\*) terminal to terminal.

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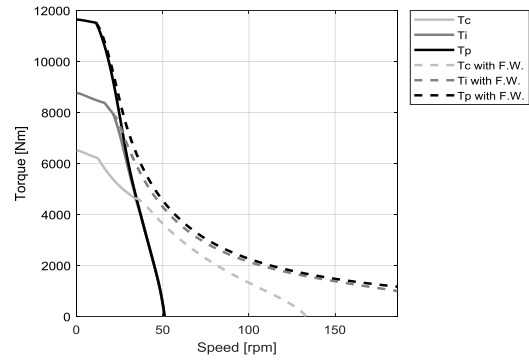
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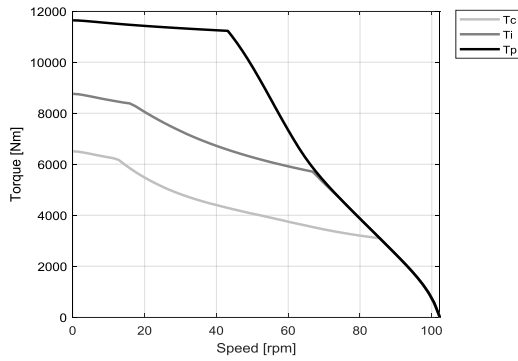
**UF - WATER COOLING**



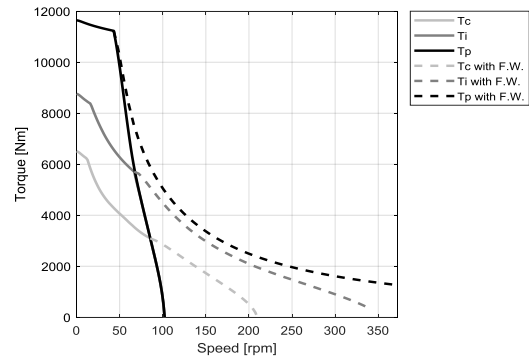
**UF - WATER COOLING**



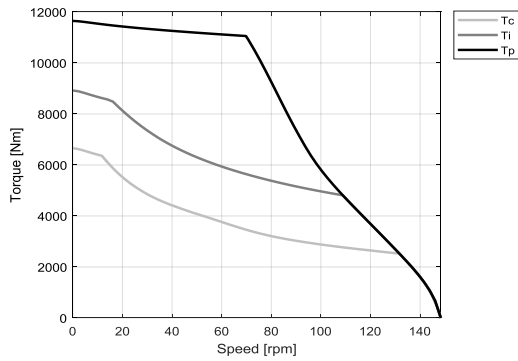
**UL - WATER COOLING**



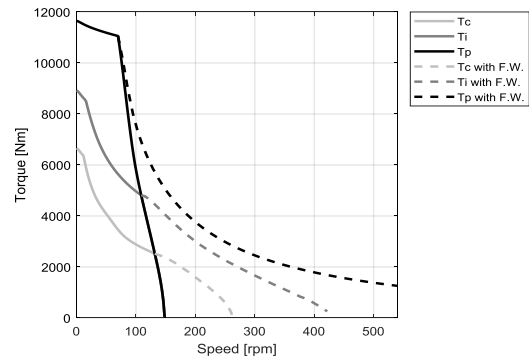
**UL - WATER COOLING**



**WL - WATER COOLING**



**WL - WATER COOLING**



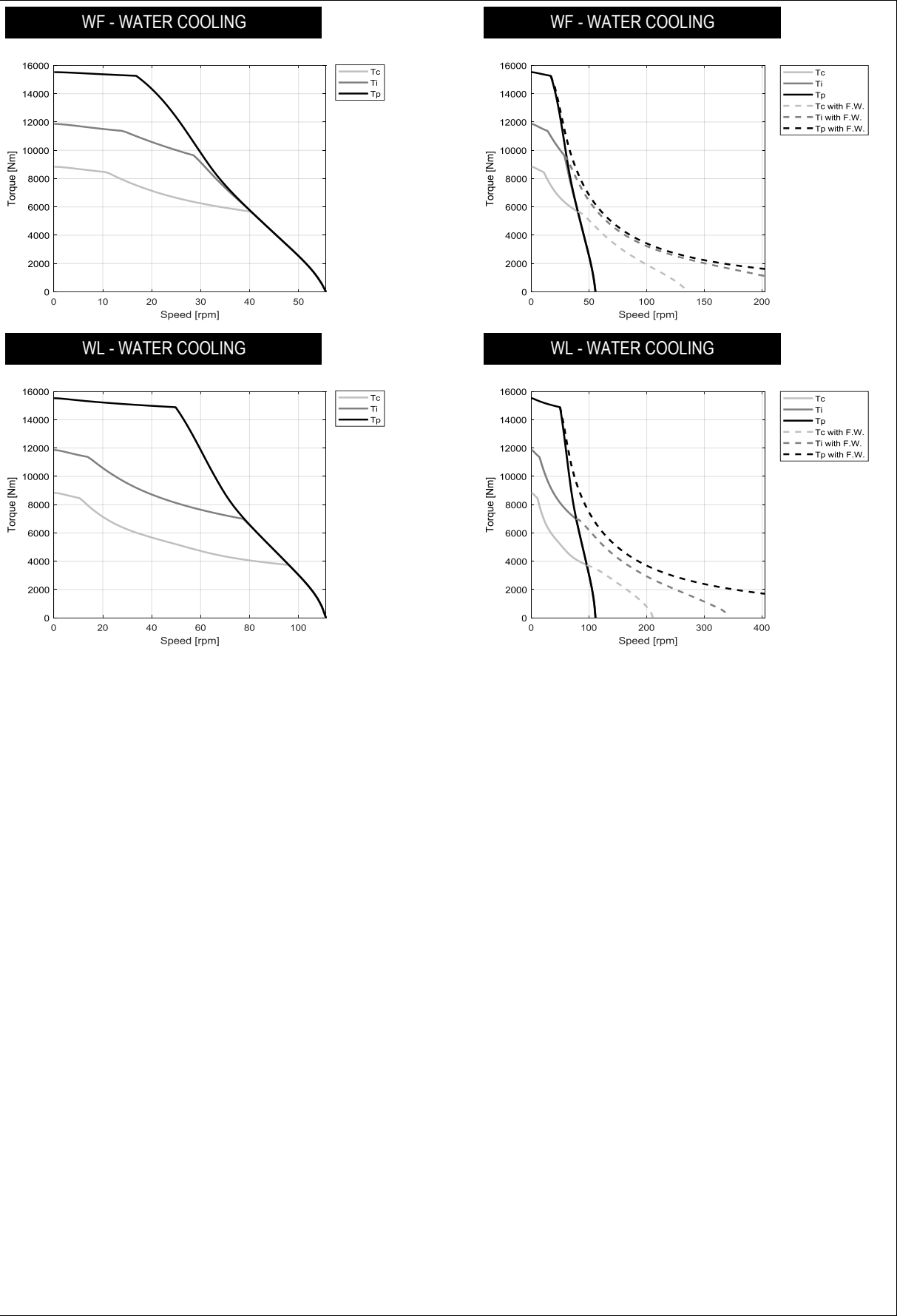
MOTOR PERFORMANCE		Winding codes	WF	WL		
		UNIT	WATER COOLING	WATER COOLING		
<b>Tp</b>	Peak torque	Nm	15500	15500		
<b>Ti</b>	Intermittent torque	Nm	11900	11900		
<b>Tc</b>	Continuous torque	Nm	8840	8840		
<b>Ts</b>	Standstill torque	Nm	7140	7140		
<b>Ip</b>	Peak current	Arms	224	448		
<b>Ii</b>	Intermittent current	Arms	138	275		
<b>Ic</b>	Continuous current	Arms	87.0	174		
<b>Is</b>	Standstill current	Arms	65.9	132		
<b>ns</b>	Rated low speed	rpm	0.069	0.069		
<b>nm</b>	Maximum speed without flux weakening	rpm	55.6	111		
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	135	211		
<b>ton,p</b>	Maximum ON time for peak cycle	s	7.8	7.8		
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.8	2.8		
<b>Pp</b>	Power dissipation @ Ip	W	102000	102000		
<b>Pi</b>	Power dissipation @ Ii	W	48200	48200		
<b>Pc</b>	Power dissipation @ Ic	W	19300	19300		
<b>Td</b>	Max. detent torque (average to peak)	Nm	41	41		

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	125	62.3		
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	71.4	35.7		
<b>Km</b>	Motor constant	Nm/√W	91.8	91.8		
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	1.23	0.306		
<b>Ld/Lq</b>	Electrical inductance (*)	mH	20.1 / 16.9	5.03 / 4.22		
<b>Isc</b>	Maximum short-circuit current	Arms	62.2	124		
<b>nb</b>	Base speed	rpm	40.0	96.1		
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	28.5	77.3		
<b>nb,p</b>	Base speed at peak duty cycle	rpm	16.8	49.8		
<b>nn</b>	Rated speed	rpm	34.5	87.6		
<b>Tn</b>	Rated torque	Nm	5970	3890		
<b>In</b>	Rated current	Arms	55.3	70.5		
<b>rth</b>	Thermal time constant	s	131	131		
<b>Rth</b>	Thermal resistance	K/W	0.00500	0.00500		
<b>2p</b>	Number of poles	-	132	132		
<b>J</b>	Rotor inertia	kg·m²	6.64	6.64		
<b>mr</b>	Rotor mass	kg	59.5	59.5		
<b>ms</b>	Stator mass	kg	211	211		

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600		
<b>Di</b>	Intermittent duty cycle	%	40	40		
<b>Dp</b>	Peak duty cycle	%	5.0	5.0		
<b>Sr</b>	Rotor exchange surface	m²	0.880	0.880		
<b>θamb</b>	Ambient temperature	°C	20	20		
<b>θmax</b>	Maximum coil temperature	°C	130	130		
<b>θw</b>	Inlet water temperature	°C	20	20		
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0		
<b>qw</b>	Minimum water flow for Δθw	l/min	60	60		
<b>Δpw</b>	Max. pressure drop at qw	bar	6.2	6.2		

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MOTOR PERFORMANCE		Winding codes	WB	WD	WH	WP
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	6890	6890	6890	6890
<b>Ti</b>	Intermittent torque	Nm	4900	4900	4900	4900
<b>Tc</b>	Continuous torque	Nm	3650	3650	3650	3650
<b>Ts</b>	Standstill torque	Nm	2950	2950	2950	2950
<b>Ip</b>	Peak current	Arms	87.1	174	348	697
<b>Ii</b>	Intermittent current	Arms	44.4	88.8	178	355
<b>Ic</b>	Continuous current	Arms	28.1	56.1	112	225
<b>Is</b>	Standstill current	Arms	21.3	42.5	85.1	170
<b>ns</b>	Rated low speed	rpm	0.047	0.047	0.047	0.047
<b>nm</b>	Maximum speed without flux weakening	rpm	42.8	85.6	171	343
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	156	245	332	415
<b>ton,p</b>	Maximum ON time for peak cycle	s	6.6	6.6	6.6	6.6
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.9	2.9	2.9
<b>Pp</b>	Power dissipation @ Ip	W	61800	61800	61800	61800
<b>Pi</b>	Power dissipation @ Ii	W	19500	19500	19500	19500
<b>Pc</b>	Power dissipation @ Ic	W	7790	7790	7790	7790
<b>Td</b>	Max. detent torque (average to peak)	Nm	18	18	18	18

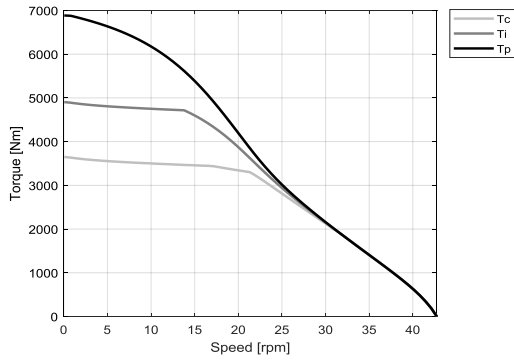
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	161	80.6	40.3	20.1
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	92.8	46.4	23.2	11.6
<b>Km</b>	Motor constant	Nm/√W	61.1	61.1	61.1	61.1
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	4.63	1.16	0.289	0.0723
<b>Ld/Lq</b>	Electrical inductance (*)	mH	67.9 / 56.8	17.0 / 14.2	4.24 / 3.55	1.06 / 0.888
<b>Isc</b>	Maximum short-circuit current	Arms	17.9	35.9	71.7	143
<b>nb</b>	Base speed	rpm	21.3	58.7	144	336
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	13.8	43.9	109	266
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.809	28.9	71.3	152
<b>nn</b>	Rated speed	rpm	17.5	51.0	130	200
<b>Tn</b>	Rated torque	Nm	3430	2630	1680	1260
<b>In</b>	Rated current	Arms	27.5	39.3	48.5	75.0
<b>rth</b>	Thermal time constant	s	146	146	146	146
<b>Rth</b>	Thermal resistance	K/W	0.0136	0.0136	0.0136	0.0136
<b>2p</b>	Number of poles	-	176	176	176	176
<b>J</b>	Rotor inertia	kg·m²	4.94	4.94	4.94	4.94
<b>mr</b>	Rotor mass	kg	24.8	24.8	24.8	24.8
<b>ms</b>	Stator mass	kg	115	115	115	115

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.410	0.410	0.410	0.410
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	24	24	24	24
<b>Δpw</b>	Max. pressure drop at qw	bar	1.1	1.1	1.1	1.1

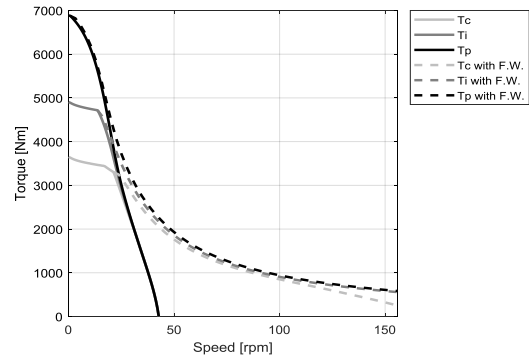
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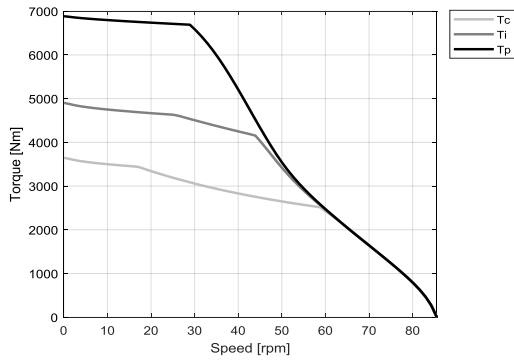
**WB - WATER COOLING**



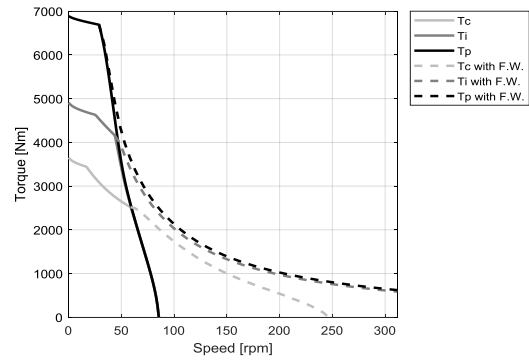
**WB - WATER COOLING**



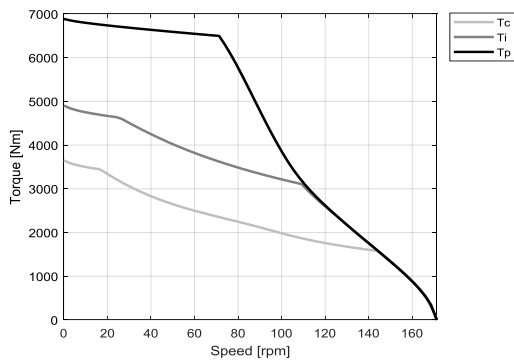
**WD - WATER COOLING**



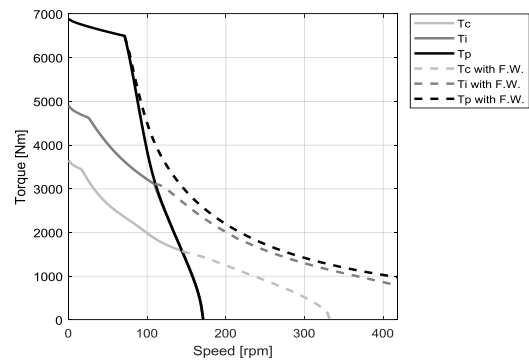
**WD - WATER COOLING**



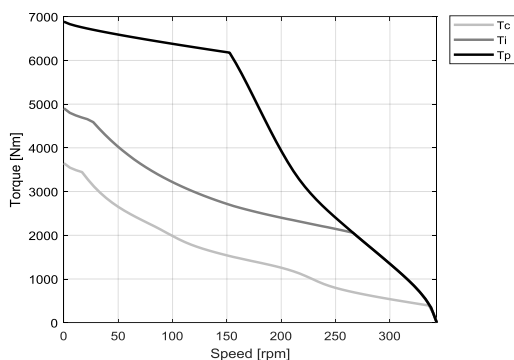
**WH - WATER COOLING**



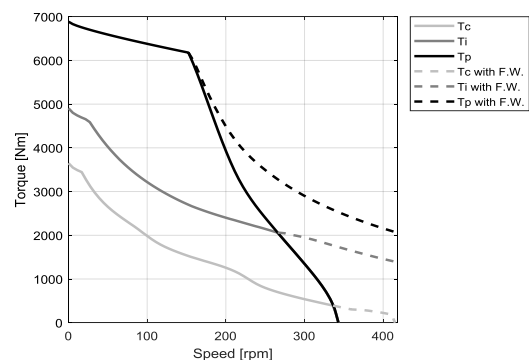
**WH - WATER COOLING**



**WP - WATER COOLING**



**WP - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	WB	WD	WH	WP
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	9120	9650	9650	9650
<b>Ti</b>	Intermittent torque	Nm	7030	7030	7030	7030
<b>Tc</b>	Continuous torque	Nm	5230	5230	5230	5230
<b>Ts</b>	Standstill torque	Nm	4230	4230	4230	4230
<b>Ip</b>	Peak current	Arms	72.8	167	335	670
<b>Ii</b>	Intermittent current	Arms	45.2	90.5	181	362
<b>Ic</b>	Continuous current	Arms	28.6	57.2	114	229
<b>Is</b>	Standstill current	Arms	21.7	43.3	86.7	173
<b>ns</b>	Rated low speed	rpm	0.047	0.047	0.047	0.047
<b>nm</b>	Maximum speed without flux weakening	rpm	30.5	61.1	122	245
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	111	165	238	315
<b>ton,p</b>	Maximum ON time for peak cycle	s	12	7.5	7.5	7.5
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.9	2.9	2.9
<b>Pp</b>	Power dissipation @ Ip	W	52300	71700	71700	71700
<b>Pi</b>	Power dissipation @ Ii	W	25800	25800	25800	25800
<b>Pc</b>	Power dissipation @ Ic	W	10300	10300	10300	10300
<b>Td</b>	Max. detent torque (average to peak)	Nm	26	26	26	26

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	226	113	56.5	28.2
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	130	65.0	32.5	16.2
<b>Km</b>	Motor constant	Nm/√W	75.8	75.8	75.8	75.8
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	5.92	1.48	0.370	0.0924
<b>Ld/Lq</b>	Electrical inductance (*)	mH	90.0 / 75.4	22.5 / 18.8	5.63 / 4.71	1.41 / 1.18
<b>Isc</b>	Maximum short-circuit current	Arms	18.9	37.9	75.8	152
<b>nb</b>	Base speed	rpm	13.9	42.2	104	240
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	6.24	30.8	79.6	194
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	18.7	51.4	113
<b>nn</b>	Rated speed	rpm	10.5	36.6	93.7	143
<b>Tn</b>	Rated torque	Nm	4950	3700	2390	1830
<b>In</b>	Rated current	Arms	28.2	38.8	48.5	76.1
<b>rth</b>	Thermal time constant	s	144	144	144	144
<b>Rth</b>	Thermal resistance	K/W	0.0102	0.0102	0.0102	0.0102
<b>2p</b>	Number of poles	-	176	176	176	176
<b>J</b>	Rotor inertia	kg·m²	6.96	6.96	6.96	6.96
<b>mr</b>	Rotor mass	kg	34.9	34.9	34.9	34.9
<b>ms</b>	Stator mass	kg	139	139	139	139

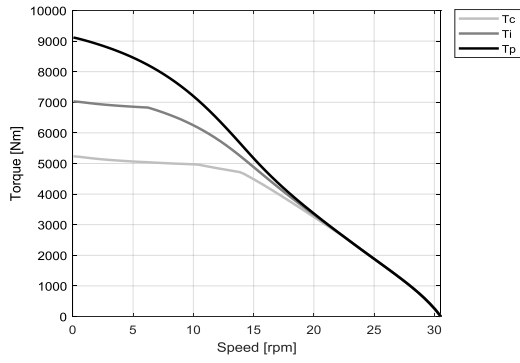
MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.520	0.520	0.520	0.520
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	32	32	32	32
<b>Δpw</b>	Max. pressure drop at qw	bar	1.6	1.6	1.6	1.6

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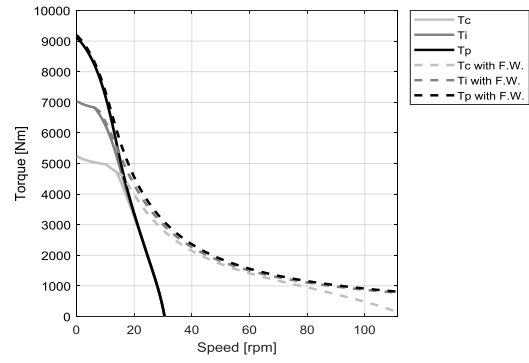
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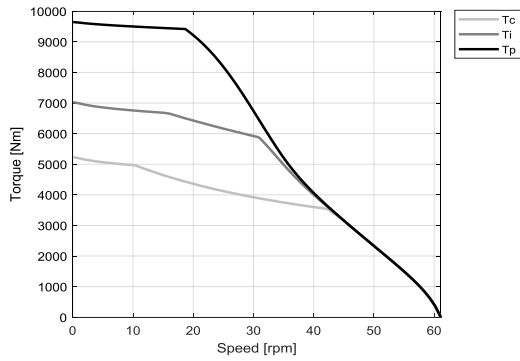
**WB - WATER COOLING**



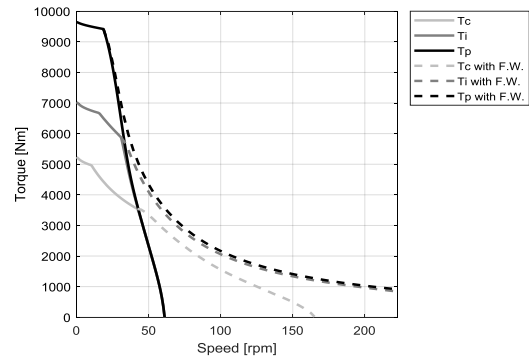
**WB - WATER COOLING**



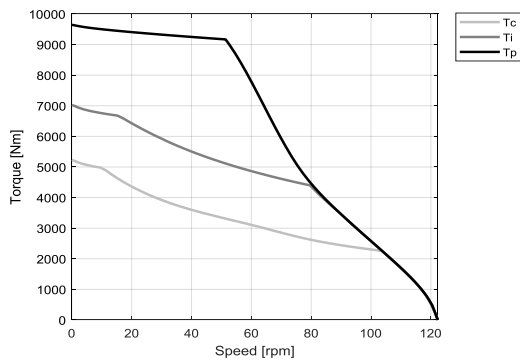
**WD - WATER COOLING**



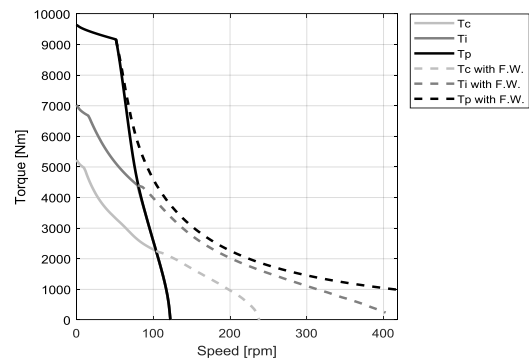
**WD - WATER COOLING**



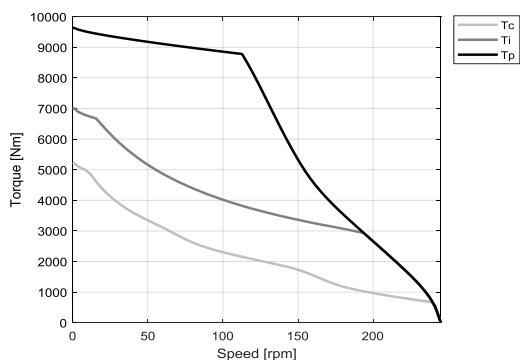
**WH - WATER COOLING**



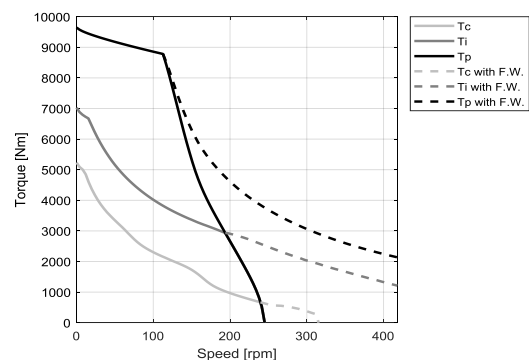
**WH - WATER COOLING**



**WP - WATER COOLING**



**WP - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	UD	WD	WH	WP
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	13000	13800	13800	13800
<b>Ti</b>	Intermittent torque	Nm	9980	10200	10200	10200
<b>Tc</b>	Continuous torque	Nm	7410	7570	7570	7570
<b>Ts</b>	Standstill torque	Nm	5970	6120	6120	6120
<b>Ip</b>	Peak current	Arms	97.7	164	328	656
<b>Ii</b>	Intermittent current	Arms	61.0	91.2	182	365
<b>Ic</b>	Continuous current	Arms	38.6	57.7	115	231
<b>Is</b>	Standstill current	Arms	29.2	43.7	87.4	175
<b>ns</b>	Rated low speed	rpm	0.046	0.046	0.046	0.046
<b>nm</b>	Maximum speed without flux weakening	rpm	29.5	42.8	85.7	172
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	94.7	118	183	268
<b>ton,p</b>	Maximum ON time for peak cycle	s	10	7.5	7.5	7.5
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.9	2.9	2.9
<b>Pp</b>	Power dissipation @ Ip	W	70200	91300	91300	91300
<b>Pi</b>	Power dissipation @ Ii	W	34600	34800	34800	34800
<b>Pc</b>	Power dissipation @ Ic	W	13800	13900	13900	13900
<b>Td</b>	Max. detent torque (average to peak)	Nm	37	37	37	37

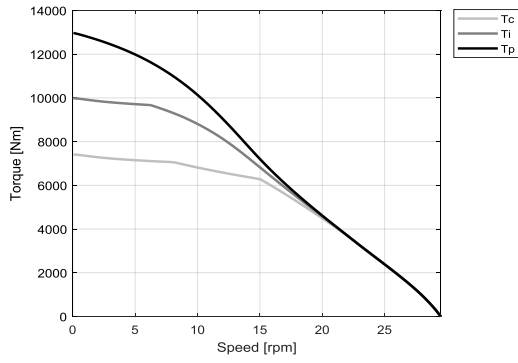
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	234	162	80.8	40.4
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	135	92.8	46.4	23.2
<b>Km</b>	Motor constant	Nm/√W	91.4	94.0	94.0	94.0
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	4.39	1.97	0.492	0.123
<b>Ld/Lq</b>	Electrical inductance (*)	mH	64.3 / 54.7	30.6 / 25.6	7.64 / 6.41	1.91 / 1.60
<b>Isc</b>	Maximum short-circuit current	Arms	27.5	39.8	79.7	159
<b>nb</b>	Base speed	rpm	14.9	28.2	70.5	160
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	6.21	18.9	54.2	131
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	9.01	34.7	80.1
<b>nn</b>	Rated speed	rpm	11.7	24.1	62.9	140
<b>Tn</b>	Rated torque	Nm	6620	5620	3930	2490
<b>In</b>	Rated current	Arms	35.1	41.2	55.1	72.0
<b>rth</b>	Thermal time constant	s	147	150	150	150
<b>Rth</b>	Thermal resistance	K/W	0.00731	0.00728	0.00728	0.00728
<b>2p</b>	Number of poles	-	176	176	176	176
<b>J</b>	Rotor inertia	kg·m²	9.99	9.99	9.99	9.99
<b>mr</b>	Rotor mass	kg	50.1	50.1	50.1	50.1
<b>ms</b>	Stator mass	kg	172	174	174	174

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.680	0.680	0.680	0.680
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	10	10	10	10
<b>qw</b>	Minimum water flow for Δθw	l/min	22	22	22	22
<b>Δpw</b>	Max. pressure drop at qw	bar	0.9	0.9	0.9	0.9

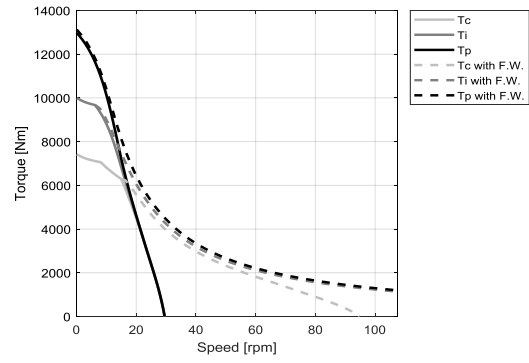
**Notes:** (\*) terminal to terminal.  
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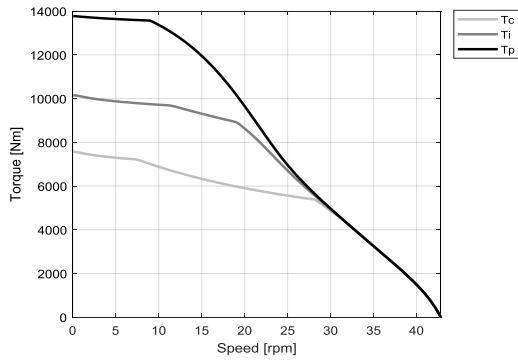
**UD - WATER COOLING**



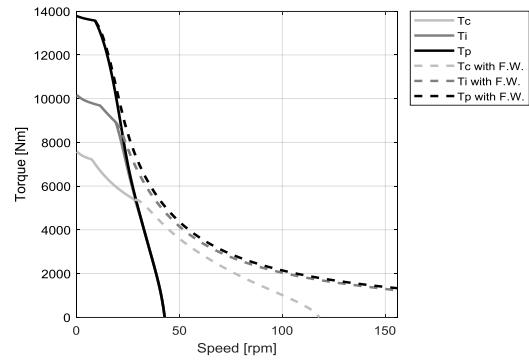
**UD - WATER COOLING**



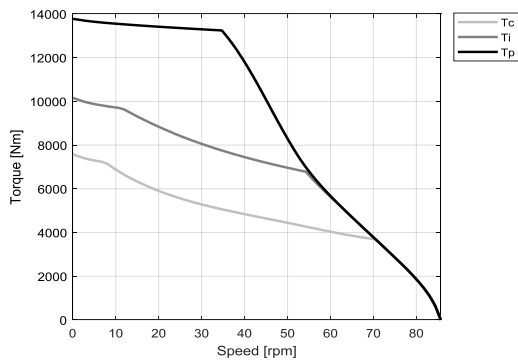
**WD - WATER COOLING**



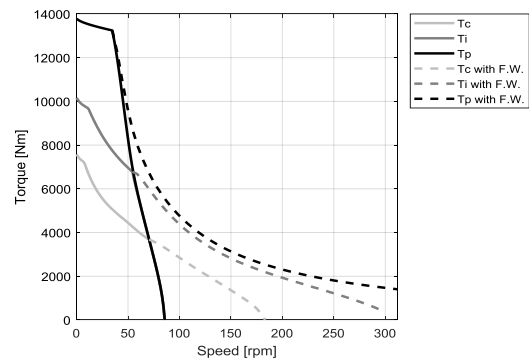
**WD - WATER COOLING**



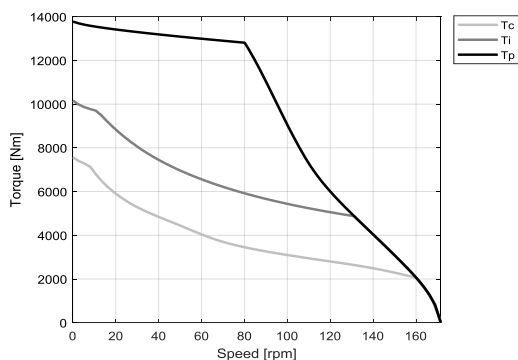
**WH - WATER COOLING**



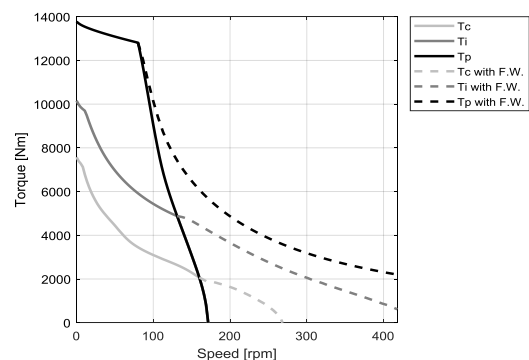
**WH - WATER COOLING**



**WP - WATER COOLING**



**WP - WATER COOLING**



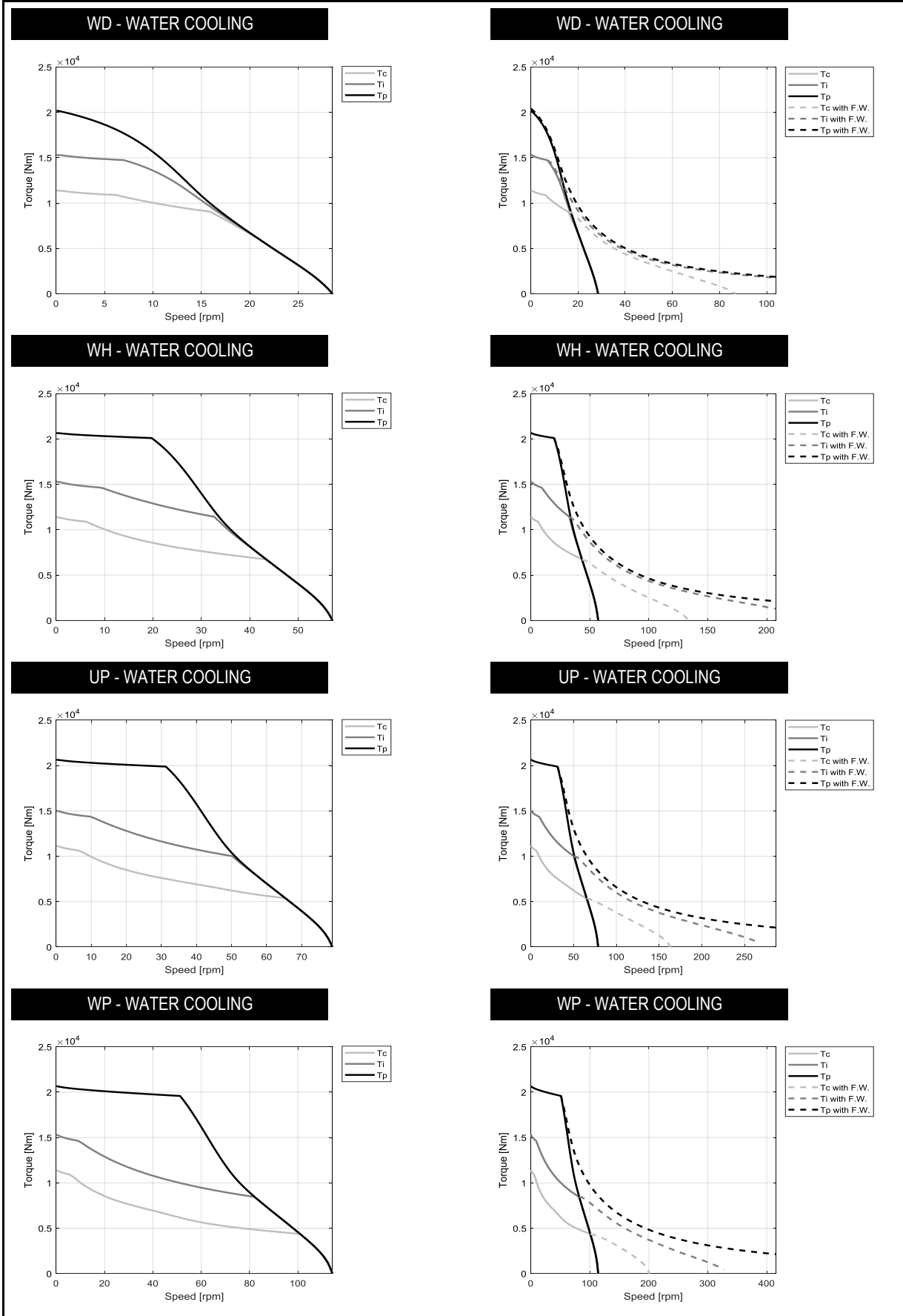
MOTOR PERFORMANCE		Winding codes	WD	WH	UP	WP
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	20200	20700	20600	20700
<b>Ti</b>	Intermittent torque	Nm	15300	15300	15000	15300
<b>Tc</b>	Continuous torque	Nm	11400	11400	11100	11400
<b>Ts</b>	Standstill torque	Nm	9200	9200	8970	9200
<b>Ip</b>	Peak current	Arms	152	321	442	641
<b>Ii</b>	Intermittent current	Arms	90.8	182	243	363
<b>Ic</b>	Continuous current	Arms	57.4	115	153	230
<b>Is</b>	Standstill current	Arms	43.5	87.0	116	174
<b>ns</b>	Rated low speed	rpm	0.045	0.045	0.046	0.045
<b>nm</b>	Maximum speed without flux weakening	rpm	28.5	57.1	78.8	114
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	86.7	133	163	201
<b>ton,p</b>	Maximum ON time for peak cycle	s	8.4	7.0	6.1	7.0
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.8	2.8	2.8	2.8
<b>Pp</b>	Power dissipation @ Ip	W	109000	124000	132000	124000
<b>Pi</b>	Power dissipation @ Ii	W	48800	48800	48500	48800
<b>Pc</b>	Power dissipation @ Ic	W	19500	19500	19400	19500
<b>Td</b>	Max. detent torque (average to peak)	Nm	55	55	55	55

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	243	121	88.0	60.6
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	139	69.6	50.5	34.8
<b>Km</b>	Motor constant	Nm/√W	118	118	115	118
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	2.81	0.702	0.392	0.176
<b>Ld/Lq</b>	Electrical inductance (*)	mH	45.4 / 38.3	11.4 / 9.58	5.97 / 5.11	2.84 / 2.40
<b>Isc</b>	Maximum short-circuit current	Arms	40.2	80.4	111	161
<b>nb</b>	Base speed	rpm	15.9	43.4	65.3	101
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	6.96	32.7	50.1	81.8
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	19.7	31.2	51.3
<b>nn</b>	Rated speed	rpm	13.0	37.8	58.4	92.5
<b>Tn</b>	Rated torque	Nm	9500	7080	5710	4570
<b>In</b>	Rated current	Arms	47.5	66.6	73.1	85.9
<b>rth</b>	Thermal time constant	s	152	152	149	152
<b>Rth</b>	Thermal resistance	K/W	0.00504	0.00504	0.00506	0.00504
<b>2p</b>	Number of poles	-	176	176	176	176
<b>J</b>	Rotor inertia	kg·m²	14.9	14.9	14.9	14.9
<b>mr</b>	Rotor mass	kg	74.4	74.4	74.4	74.4
<b>ms</b>	Stator mass	kg	235	235	233	235

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.950	0.950	0.950	0.950
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	10	10	10	10
<b>qw</b>	Minimum water flow for Δθw	l/min	30	30	30	30
<b>Δpw</b>	Max. pressure drop at qw	bar	1.7	1.7	1.7	1.7

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MOTOR PERFORMANCE		Winding codes	WH	UP	WP	
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	
<b>Tp</b>	Peak torque	Nm	27500	27500	27500	
<b>Ti</b>	Intermittent torque	Nm	20400	20000	20400	
<b>Tc</b>	Continuous torque	Nm	15100	14800	15100	
<b>Ts</b>	Standstill torque	Nm	12200	11900	12200	
<b>Ip</b>	Peak current	Arms	317	437	634	
<b>Ii</b>	Intermittent current	Arms	180	240	360	
<b>Ic</b>	Continuous current	Arms	114	152	227	
<b>Is</b>	Standstill current	Arms	86.2	115	172	
<b>ns</b>	Rated low speed	rpm	0.045	0.046	0.045	
<b>nm</b>	Maximum speed without flux weakening	rpm	42.8	59.1	85.7	
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	106	130	163	
<b>ton,p</b>	Maximum ON time for peak cycle	s	6.0	5.2	6.0	
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.8	2.8	2.8	
<b>Pp</b>	Power dissipation @ Ip	W	157000	169000	157000	
<b>Pi</b>	Power dissipation @ Ii	W	61900	61500	61900	
<b>Pc</b>	Power dissipation @ Ic	W	24800	24600	24800	
<b>Td</b>	Max. detent torque (average to peak)	Nm	73	73	73	

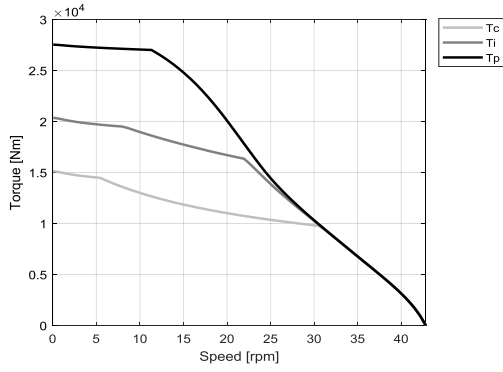
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	162	117	80.9	
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	92.8	67.3	46.4	
<b>Km</b>	Motor constant	Nm/√W	138	134	138	
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	0.919	0.514	0.230	
<b>Ld/Lq</b>	Electrical inductance (*)	mH	15.1 / 12.8	7.93 / 6.83	3.77 / 3.20	
<b>Isc</b>	Maximum short-circuit current	Arms	80.8	111	162	
<b>nb</b>	Base speed	rpm	30.6	46.6	73.5	
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	22.0	35.0	57.9	
<b>nb,p</b>	Base speed at peak duty cycle	rpm	11.3	20.4	36.3	
<b>nn</b>	Rated speed	rpm	26.3	40.8	66.9	
<b>Tn</b>	Rated torque	Nm	10200	8690	6770	
<b>In</b>	Rated current	Arms	72.5	83.4	94.3	
<b>rth</b>	Thermal time constant	s	151	148	151	
<b>Rth</b>	Thermal resistance	K/W	0.00382	0.00383	0.00382	
<b>2p</b>	Number of poles	-	176	176	176	
<b>J</b>	Rotor inertia	kg·m²	20.0	20.0	20.0	
<b>mr</b>	Rotor mass	kg	100	100	100	
<b>ms</b>	Stator mass	kg	294	291	294	

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	
<b>Di</b>	Intermittent duty cycle	%	40	40	40	
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	
<b>Sr</b>	Rotor exchange surface	m²	1.200	1.200	1.200	
<b>θamb</b>	Ambient temperature	°C	20	20	20	
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	
<b>θw</b>	Inlet water temperature	°C	20	20	20	
<b>Δθw</b>	Water temperature difference for Pc	K	10	10	10	
<b>qw</b>	Minimum water flow for Δθw	l/min	39	38	39	
<b>Δpw</b>	Max. pressure drop at qw	bar	2.6	2.5	2.6	

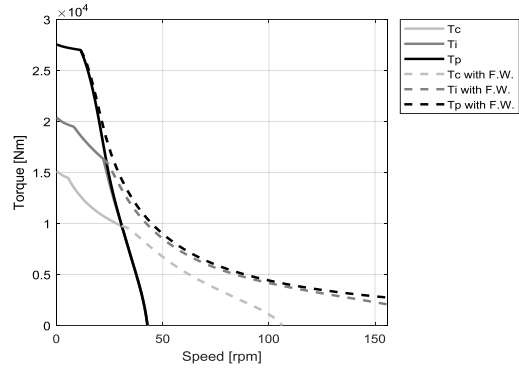
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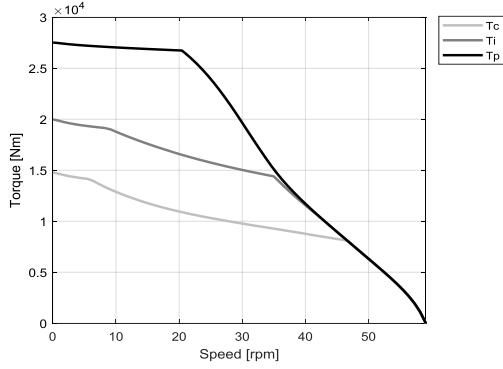
**WH - WATER COOLING**



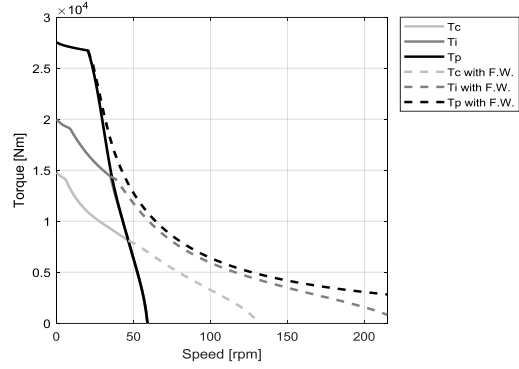
**WH - WATER COOLING**



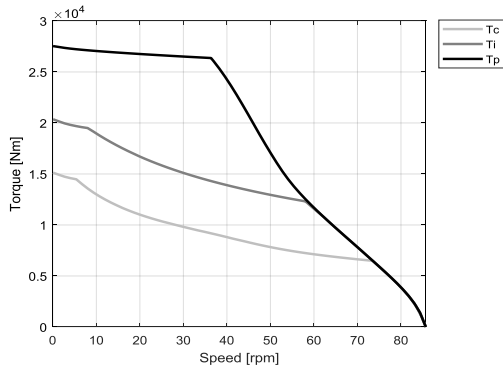
**UP - WATER COOLING**



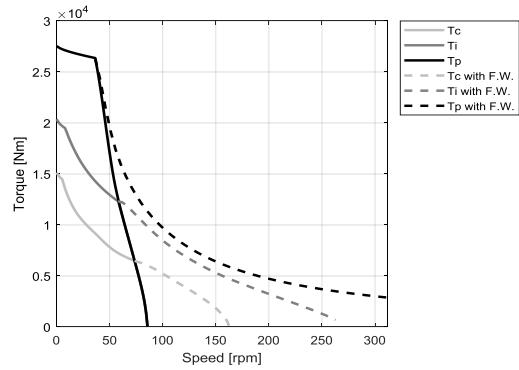
**UP - WATER COOLING**



**WP - WATER COOLING**



**WP - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	WB	WD	UJ	WT
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	9840	10500	10500	10500
<b>Ti</b>	Intermittent torque	Nm	7440	7440	7310	7440
<b>Tc</b>	Continuous torque	Nm	5530	5530	5410	5530
<b>Ts</b>	Standstill torque	Nm	4460	4460	4350	4460
<b>Ip</b>	Peak current	Arms	73.7	173	298	865
<b>Ii</b>	Intermittent current	Arms	43.8	87.6	146	438
<b>Ic</b>	Continuous current	Arms	27.7	55.4	92.6	277
<b>Is</b>	Standstill current	Arms	21.0	42.0	70.2	210
<b>ns</b>	Rated low speed	rpm	0.032	0.032	0.032	0.032
<b>nm</b>	Maximum speed without flux weakening	rpm	28.1	56.2	96.8	282
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	102	199	261	334
<b>ton,p</b>	Maximum ON time for peak cycle	s	11	6.5	5.7	6.5
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.9	2.9	2.9
<b>Pp</b>	Power dissipation @ Ip	W	53000	76400	81200	76400
<b>Pi</b>	Power dissipation @ Ii	W	23700	23700	23500	23700
<b>Pc</b>	Power dissipation @ Ic	W	9490	9490	9380	9490
<b>Td</b>	Max. detent torque (average to peak)	Nm	27	27	27	27

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	245	123	71.2	24.5
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	141	70.7	41.0	14.1
<b>Km</b>	Motor constant	Nm/√W	83.3	83.3	81.2	83.3
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	5.79	1.45	0.512	0.0579
<b>Ld/Lq</b>	Electrical inductance (*)	mH	85.1 / 71.7	21.3 / 17.9	7.16 / 6.12	0.851 / 0.717
<b>Isc</b>	Maximum short-circuit current	Arms	17.4	34.9	60.1	174
<b>nb</b>	Base speed	rpm	11.7	33.5	69.5	274
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	6.32	24.3	52.4	206
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	15.9	36.0	123
<b>nn</b>	Rated speed	rpm	9.68	28.8	60.5	177
<b>Tn</b>	Rated torque	Nm	5340	4700	3720	1970
<b>In</b>	Rated current	Arms	27.5	47.9	62.0	96.8
<b>rth</b>	Thermal time constant	s	172	172	169	172
<b>Rth</b>	Thermal resistance	K/W	0.0112	0.0112	0.0113	0.0112
<b>2p</b>	Number of poles	-	220	220	220	220
<b>J</b>	Rotor inertia	kg·m²	17.0	17.0	17.0	17.0
<b>mr</b>	Rotor mass	kg	55.5	55.5	55.5	55.5
<b>ms</b>	Stator mass	kg	203	203	202	203

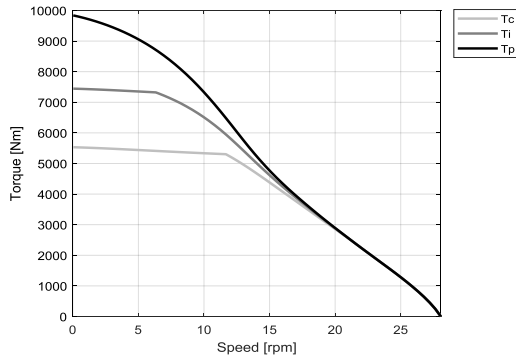
MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.600	0.600	0.600	0.600
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	30	30	29	30
<b>Δpw</b>	Max. pressure drop at qw	bar	1.5	1.5	1.4	1.5

**Notes:** (\*) terminal to terminal.  
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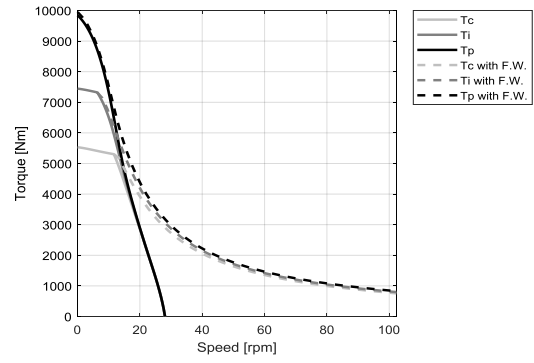
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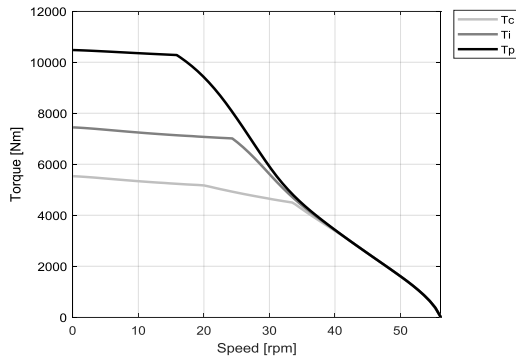
**WB - WATER COOLING**



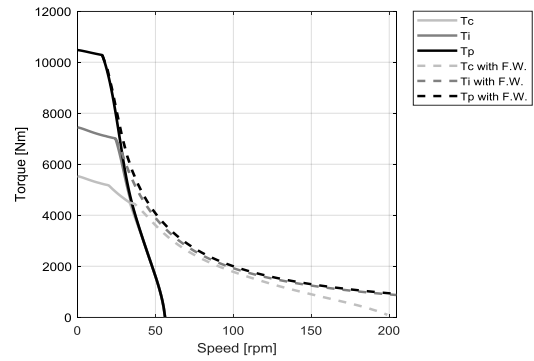
**WB - WATER COOLING**



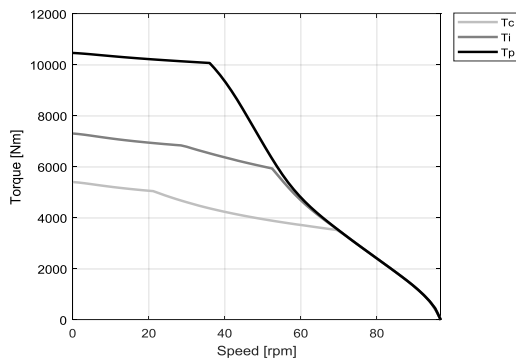
**WD - WATER COOLING**



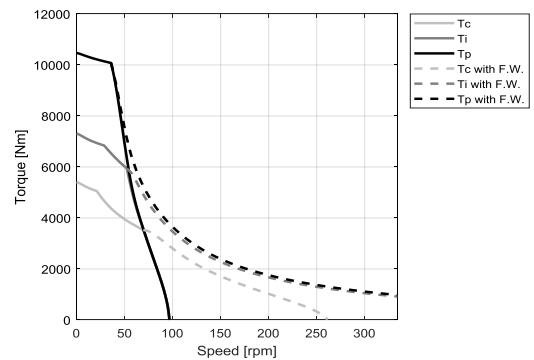
**WD - WATER COOLING**



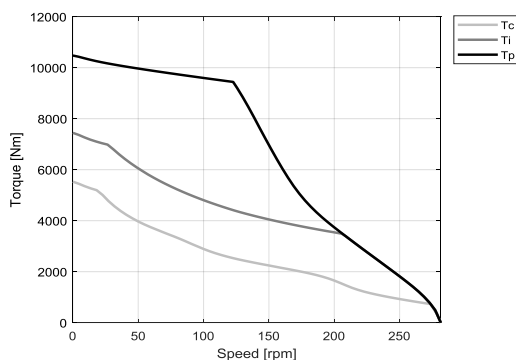
**UJ - WATER COOLING**



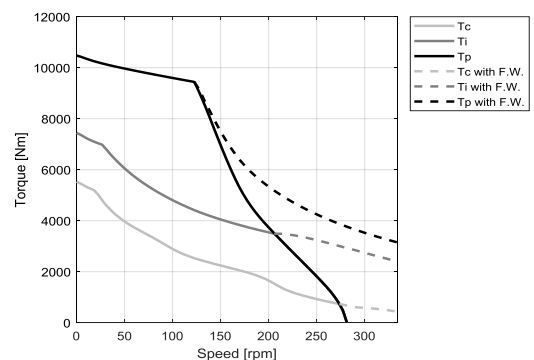
**UJ - WATER COOLING**



**WT - WATER COOLING**



**WT - WATER COOLING**



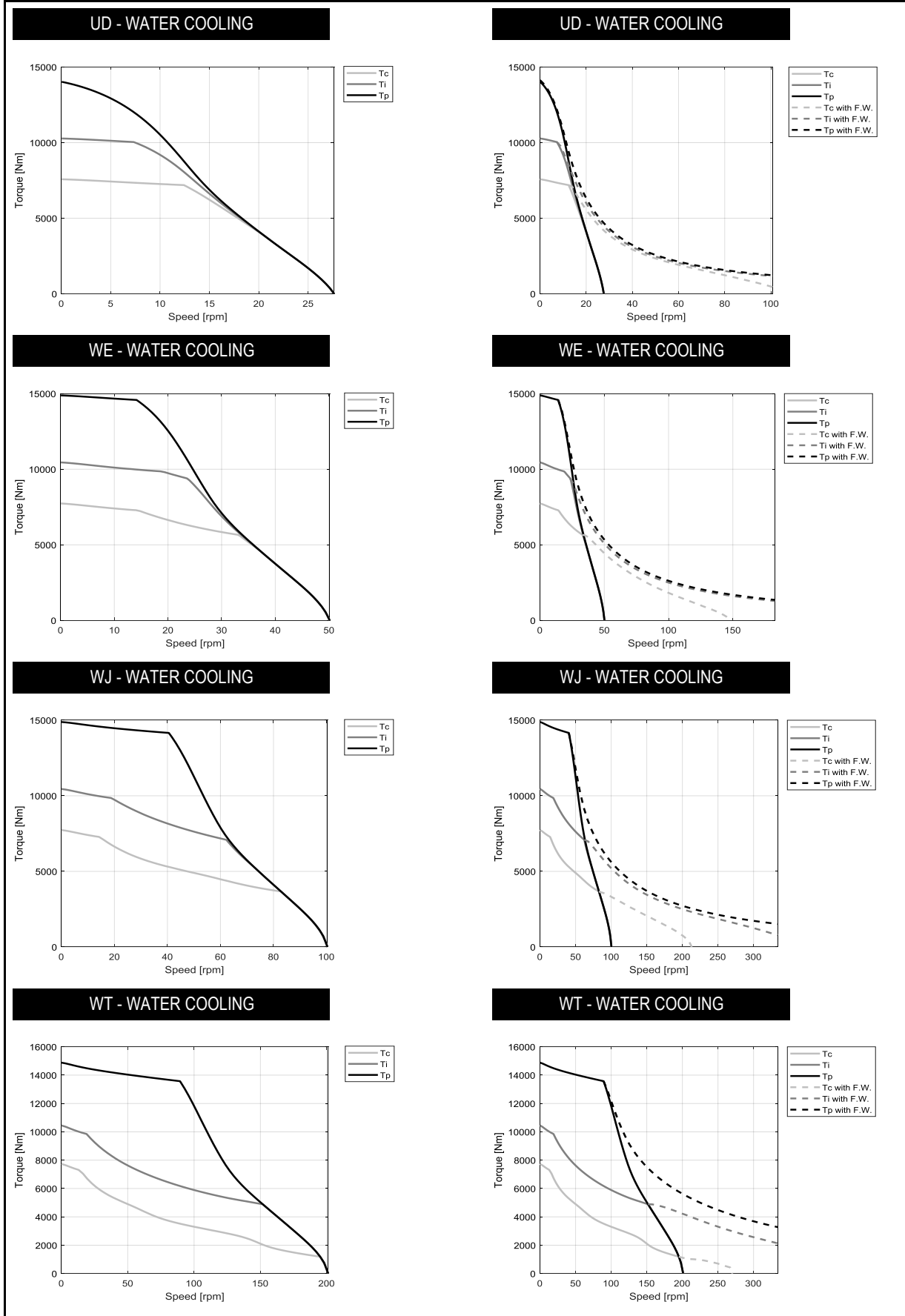
MOTOR PERFORMANCE		Winding codes	UD	WE	WJ	WT
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	14000	14900	14900	14900
<b>Ti</b>	Intermittent torque	Nm	10300	10500	10500	10500
<b>Tc</b>	Continuous torque	Nm	7580	7730	7730	7730
<b>Ts</b>	Standstill torque	Nm	6080	6220	6220	6220
<b>Ip</b>	Peak current	Arms	103	216	432	865
<b>Ii</b>	Intermittent current	Arms	57.7	108	216	431
<b>Ic</b>	Continuous current	Arms	36.5	68.2	136	273
<b>Is</b>	Standstill current	Arms	27.7	51.6	103	207
<b>ns</b>	Rated low speed	rpm	0.031	0.031	0.031	0.031
<b>nm</b>	Maximum speed without flux weakening	rpm	27.6	50.1	100	201
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	101	147	213	270
<b>ton,p</b>	Maximum ON time for peak cycle	s	9.2	6.2	6.2	6.2
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.9	2.9	2.9
<b>Pp</b>	Power dissipation @ Ip	W	73800	98100	98100	98100
<b>Pi</b>	Power dissipation @ Ii	W	29200	29300	29300	29300
<b>Pc</b>	Power dissipation @ Ic	W	11700	11700	11700	11700
<b>Td</b>	Max. detent torque (average to peak)	Nm	38	38	38	38

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	250	138	68.8	34.4
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	144	79.2	39.6	19.8
<b>Km</b>	Motor constant	Nm/√W	101	103	103	103
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	4.11	1.18	0.296	0.0740
<b>Ld/Lq</b>	Electrical inductance (*)	mH	59.3 / 51.4	18.0 / 15.5	4.51 / 3.86	1.13 / 0.966
<b>Isc</b>	Maximum short-circuit current	Arms	25.4	46.1	92.2	184
<b>nb</b>	Base speed	rpm	12.4	33.1	82.8	195
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	7.33	23.6	62.2	152
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	14.1	40.5	89.4
<b>nn</b>	Rated speed	rpm	10.4	28.4	74.0	130
<b>Tn</b>	Rated torque	Nm	7250	5940	3920	2740
<b>In</b>	Rated current	Arms	36.1	51.6	65.3	93.9
<b>rth</b>	Thermal time constant	s	174	178	178	178
<b>Rth</b>	Thermal resistance	K/W	0.00901	0.00898	0.00898	0.00898
<b>2p</b>	Number of poles	-	220	220	220	220
<b>J</b>	Rotor inertia	kg·m²	23.4	23.4	23.4	23.4
<b>mr</b>	Rotor mass	kg	76.2	76.2	76.2	76.2
<b>ms</b>	Stator mass	kg	242	243	243	243

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.740	0.740	0.740	0.740
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	5.0	5.0	5.0	5.0
<b>qw</b>	Minimum water flow for Δθw	l/min	36	37	37	37
<b>Δpw</b>	Max. pressure drop at qw	bar	1.9	1.9	1.9	1.9

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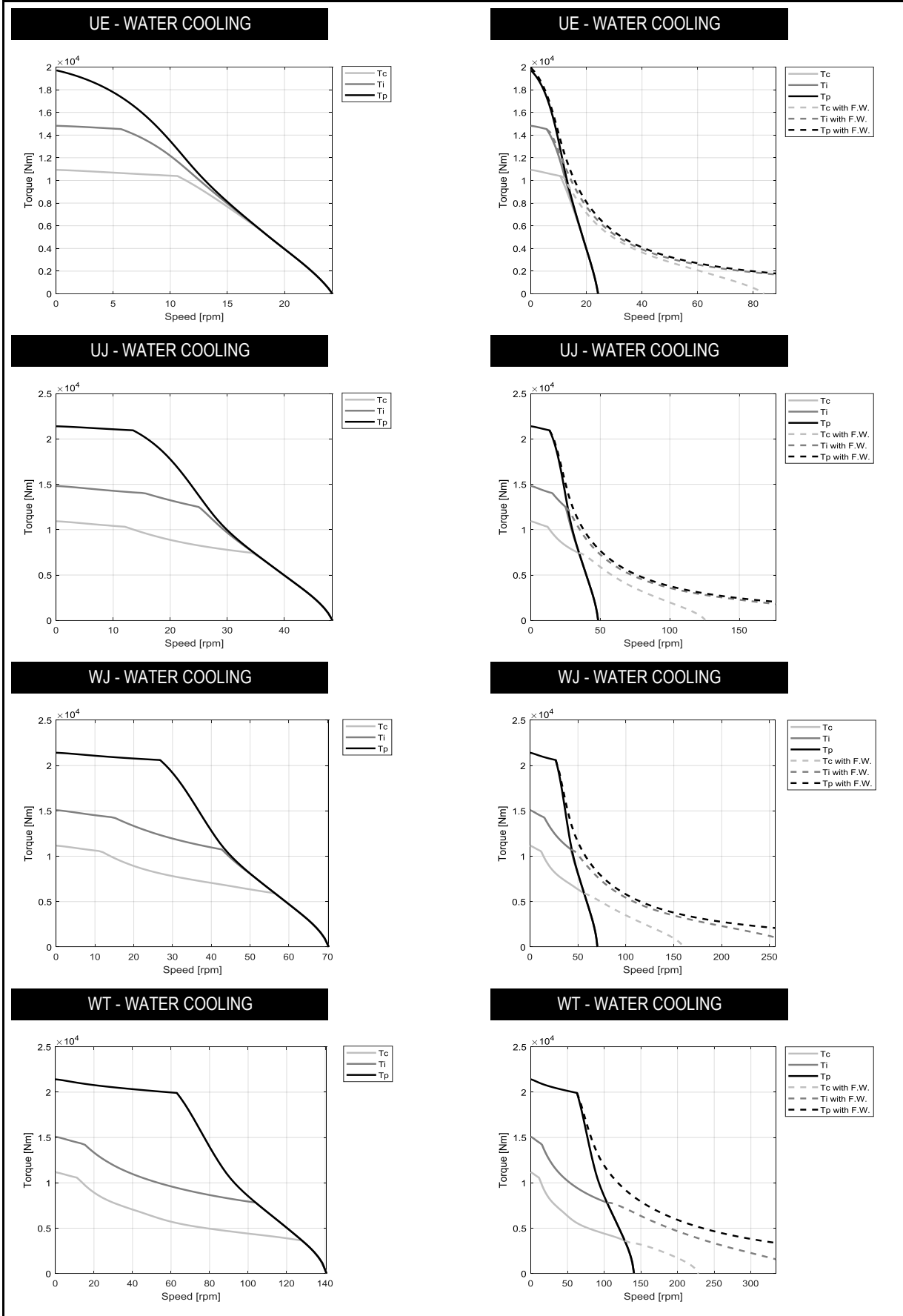
MOTOR PERFORMANCE		Winding codes	UE	UJ	WJ	WT
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	19700	21400	21400	21400
<b>Ti</b>	Intermittent torque	Nm	14800	14800	15100	15100
<b>Tc</b>	Continuous torque	Nm	10900	10900	11200	11200
<b>Ts</b>	Standstill torque	Nm	8760	8760	8980	8980
<b>Ip</b>	Peak current	Arms	121	298	432	865
<b>Ii</b>	Intermittent current	Arms	72.5	145	217	433
<b>Ic</b>	Continuous current	Arms	45.8	91.7	137	274
<b>Is</b>	Standstill current	Arms	34.7	69.4	104	208
<b>ns</b>	Rated low speed	rpm	0.030	0.030	0.029	0.029
<b>nm</b>	Maximum speed without flux weakening	rpm	24.2	48.4	70.3	141
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	84.0	126	160	229
<b>ton,p</b>	Maximum ON time for peak cycle	s	10	5.0	5.7	5.7
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.9	2.9	2.9	2.9
<b>Pp</b>	Power dissipation @ Ip	W	87100	140000	131000	131000
<b>Pi</b>	Power dissipation @ Ii	W	39200	39200	39300	39300
<b>Pc</b>	Power dissipation @ Ic	W	15700	15700	15700	15700
<b>Td</b>	Max. detent torque (average to peak)	Nm	54	54	54	54

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	286	143	98.5	49.2
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	164	82.0	56.6	28.3
<b>Km</b>	Motor constant	Nm/√W	125	125	128	128
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	3.51	0.877	0.394	0.0985
<b>Ld/Lq</b>	Electrical inductance (*)	mH	51.5 / 44.8	12.9 / 11.2	6.12 / 5.26	1.53 / 1.32
<b>Isc</b>	Maximum short-circuit current	Arms	33.5	66.9	97.1	194
<b>nb</b>	Base speed	rpm	10.6	34.3	56.4	128
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	5.68	25.0	42.7	104
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	13.5	26.8	63.0
<b>nn</b>	Rated speed	rpm	8.77	29.7	49.6	117
<b>Tn</b>	Rated torque	Nm	10500	7810	6380	3960
<b>In</b>	Rated current	Arms	45.4	63.5	73.6	93.8
<b>rth</b>	Thermal time constant	s	184	184	188	188
<b>Rth</b>	Thermal resistance	K/W	0.00648	0.00648	0.00646	0.00646
<b>2p</b>	Number of poles	-	220	220	220	220
<b>J</b>	Rotor inertia	kg·m²	32.9	32.9	32.9	32.9
<b>mr</b>	Rotor mass	kg	107	107	107	107
<b>ms</b>	Stator mass	kg	298	298	300	300

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	0.940	0.940	0.940	0.940
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	10	10	10	10
<b>qw</b>	Minimum water flow for Δθw	l/min	24	24	25	25
<b>Δpw</b>	Max. pressure drop at qw	bar	1.1	1.1	1.1	1.1

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MOTOR PERFORMANCE		Winding codes	WE	UJ	WJ	WT
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	WATER COOLING
<b>Tp</b>	Peak torque	Nm	30700	32200	32200	32200
<b>Ti</b>	Intermittent torque	Nm	22700	22300	22700	22700
<b>Tc</b>	Continuous torque	Nm	16800	16400	16800	16800
<b>Ts</b>	Standstill torque	Nm	13500	13100	13500	13500
<b>Ip</b>	Peak current	Arms	188	293	426	851
<b>Ii</b>	Intermittent current	Arms	108	144	216	432
<b>Ic</b>	Continuous current	Arms	68.2	91.1	136	273
<b>Is</b>	Standstill current	Arms	51.7	69.0	103	207
<b>ns</b>	Rated low speed	rpm	0.028	0.029	0.028	0.028
<b>nm</b>	Maximum speed without flux weakening	rpm	23.4	32.3	46.9	93.8
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	76.4	91.7	116	175
<b>ton,p</b>	Maximum ON time for peak cycle	s	8.2	4.5	5.2	5.2
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.8	2.8	2.8	2.8
<b>Pp</b>	Power dissipation @ Ip	W	135000	193000	180000	180000
<b>Pi</b>	Power dissipation @ Ii	W	55200	54900	55200	55200
<b>Pc</b>	Power dissipation @ Ic	W	22100	22000	22100	22100
<b>Td</b>	Max. detent torque (average to peak)	Nm	81	81	81	81

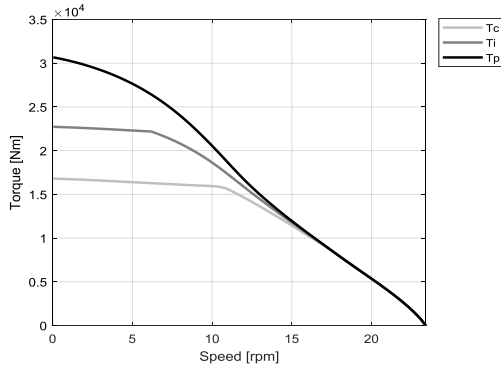
MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	296	214	148	73.9
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	170	123	84.8	42.4
<b>Km</b>	Motor constant	Nm/√W	161	156	161	161
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	2.25	1.25	0.562	0.140
<b>Ld/Lq</b>	Electrical inductance (*)	mH	36.3 / 31.4	19.1 / 16.7	9.09 / 7.86	2.27 / 1.96
<b>Isc</b>	Maximum short-circuit current	Arms	49.0	67.6	98.0	196
<b>nb</b>	Base speed	rpm	10.9	20.0	34.5	81.4
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	6.18	12.3	25.4	64.4
<b>nb,p</b>	Base speed at peak duty cycle	rpm	0.00	3.22	14.6	40.0
<b>nn</b>	Rated speed	rpm	8.87	16.7	29.9	74.2
<b>Tn</b>	Rated torque	Nm	16000	13600	11300	7270
<b>In</b>	Rated current	Arms	67.4	75.7	87.4	112
<b>rth</b>	Thermal time constant	s	192	188	192	192
<b>Rth</b>	Thermal resistance	K/W	0.00449	0.00450	0.00449	0.00449
<b>2p</b>	Number of poles	-	220	220	220	220
<b>J</b>	Rotor inertia	kg·m²	48.5	48.5	48.5	48.5
<b>mr</b>	Rotor mass	kg	158	158	158	158
<b>ms</b>	Stator mass	kg	399	397	399	399

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	600
<b>Di</b>	Intermittent duty cycle	%	40	40	40	40
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	5.0
<b>Sr</b>	Rotor exchange surface	m²	1.300	1.300	1.300	1.300
<b>θamb</b>	Ambient temperature	°C	20	20	20	20
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	130
<b>θw</b>	Inlet water temperature	°C	20	20	20	20
<b>Δθw</b>	Water temperature difference for Pc	K	10	10	10	10
<b>qw</b>	Minimum water flow for Δθw	l/min	34	34	34	34
<b>Δpw</b>	Max. pressure drop at qw	bar	1.9	1.9	1.9	1.9

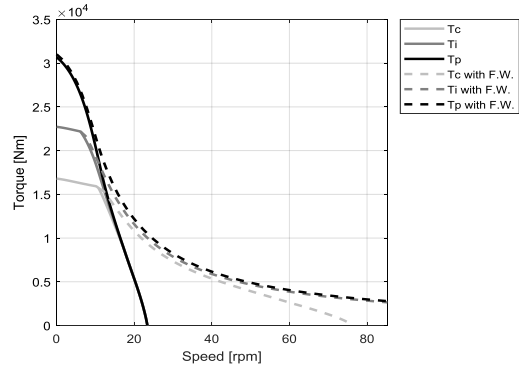
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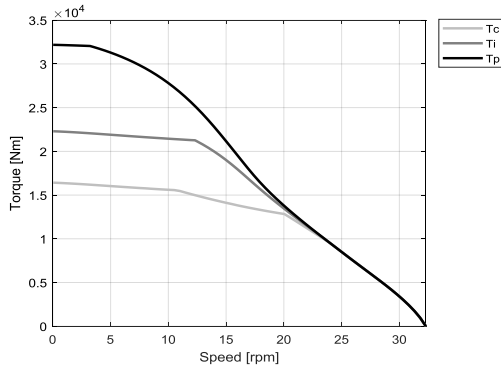
**WE - WATER COOLING**



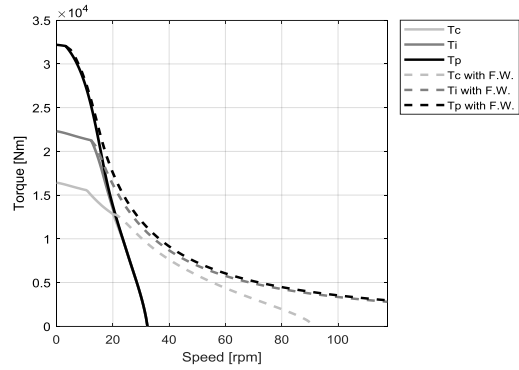
**WE - WATER COOLING**



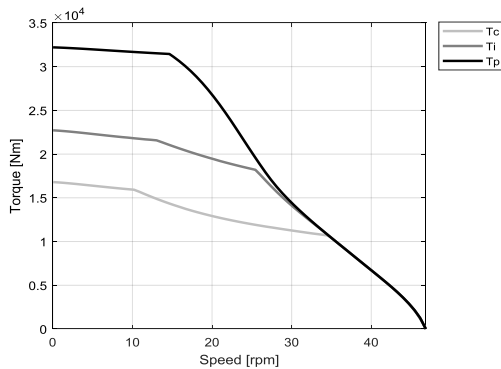
**UJ - WATER COOLING**



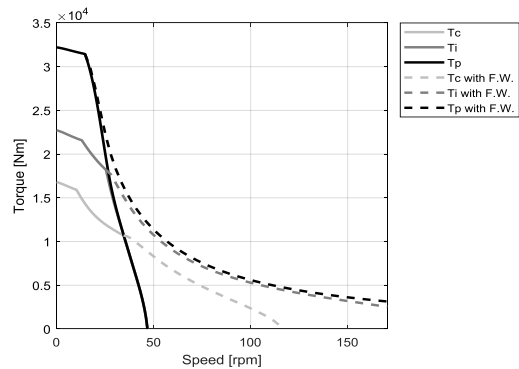
**UJ - WATER COOLING**



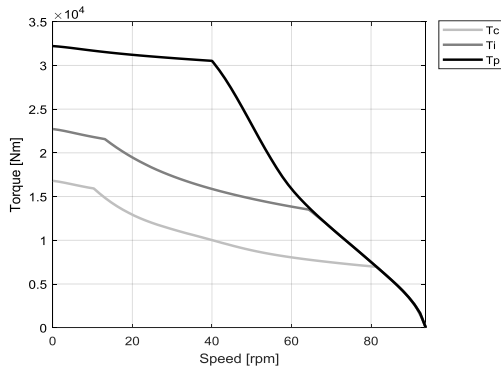
**WJ - WATER COOLING**



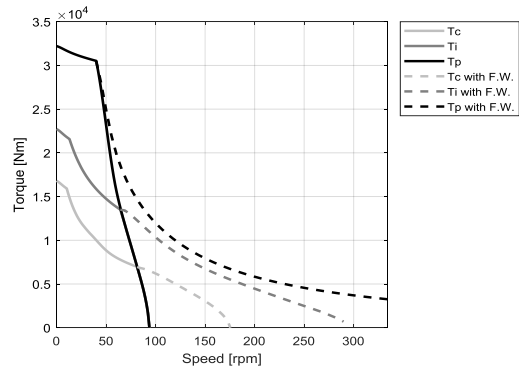
**WJ - WATER COOLING**



**WT - WATER COOLING**



**WT - WATER COOLING**



MOTOR PERFORMANCE		Winding codes	WJ	UT	WT	
		UNIT	WATER COOLING	WATER COOLING	WATER COOLING	
<b>Tp</b>	Peak torque	Nm	42900	42900	42900	
<b>Ti</b>	Intermittent torque	Nm	30200	29600	30200	
<b>Tc</b>	Continuous torque	Nm	22300	21800	22300	
<b>Ts</b>	Standstill torque	Nm	17900	17400	17900	
<b>Ip</b>	Peak current	Arms	421	580	841	
<b>Ii</b>	Intermittent current	Arms	214	285	427	
<b>Ic</b>	Continuous current	Arms	135	180	270	
<b>Is</b>	Standstill current	Arms	102	137	205	
<b>ns</b>	Rated low speed	rpm	0.029	0.029	0.029	
<b>nm</b>	Maximum speed without flux weakening	rpm	35.1	48.5	70.3	
<b>nm,FW</b>	Maximum speed with flux weakening	rpm	92.1	113	142	
<b>ton,p</b>	Maximum ON time for peak cycle	s	4.5	3.8	4.5	
<b>ton,i</b>	Maximum ON time for intermittent cycle	s	2.8	2.8	2.8	
<b>Pp</b>	Power dissipation @ Ip	W	228000	245000	228000	
<b>Pi</b>	Power dissipation @ Ii	W	70100	69700	70100	
<b>Pc</b>	Power dissipation @ Ic	W	28000	27900	28000	
<b>Td</b>	Max. detent torque (average to peak)	Nm	110	110	110	

MOTOR SETTING		UNIT				
<b>Kt</b>	Torque constant	Nm/Arms	197	143	98.6	
<b>Ku</b>	Back EMF constant (*)	Vrms/(rad/s)	113	82.0	56.6	
<b>Km</b>	Motor constant	Nm/√W	188	182	188	
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	0.735	0.411	0.184	
<b>Ld/Lq</b>	Electrical inductance (*)	mH	12.1 / 10.5	6.34 / 5.59	3.01 / 2.62	
<b>Isc</b>	Maximum short-circuit current	Arms	98.5	136	197	
<b>nb</b>	Base speed	rpm	24.0	37.2	59.3	
<b>nb,i</b>	Base speed at intermittent duty cycle	rpm	16.4	27.3	45.8	
<b>nb,p</b>	Base speed at peak duty cycle	rpm	7.72	15.2	28.1	
<b>nn</b>	Rated speed	rpm	20.5	32.2	53.7	
<b>Tn</b>	Rated torque	Nm	16500	13900	10700	
<b>In</b>	Rated current	Arms	97.0	110	122	
<b>rth</b>	Thermal time constant	s	191	188	191	
<b>Rth</b>	Thermal resistance	K/W	0.00340	0.00342	0.00340	
<b>2p</b>	Number of poles	-	220	220	220	
<b>J</b>	Rotor inertia	kg·m²	64.7	64.7	64.7	
<b>mr</b>	Rotor mass	kg	211	211	211	
<b>ms</b>	Stator mass	kg	495	492	495	

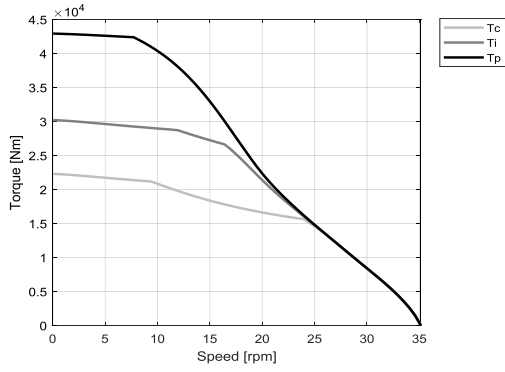
MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600	600	
<b>Di</b>	Intermittent duty cycle	%	40	40	40	
<b>Dp</b>	Peak duty cycle	%	5.0	5.0	5.0	
<b>Sr</b>	Rotor exchange surface	m²	1.600	1.600	1.600	
<b>θamb</b>	Ambient temperature	°C	20	20	20	
<b>θmax</b>	Maximum coil temperature	°C	130	130	130	
<b>θw</b>	Inlet water temperature	°C	20	20	20	
<b>Δθw</b>	Water temperature difference for Pc	K	10	10	10	
<b>qw</b>	Minimum water flow for Δθw	l/min	44	44	44	
<b>Δpw</b>	Max. pressure drop at qw	bar	2.9	2.9	2.9	

**Notes:** (\*) terminal to terminal.  
Hypotheses and tolerances are in ETEL Integration Manual.  
Please refer to ETEL Integration Manual for the mass of the optional cooling jacket and the possible additional pressure drop.

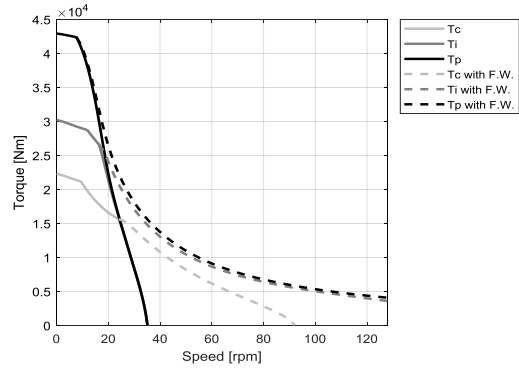
**Caution:** Any use of the motor beyond speed/torque limit could lead to hazardous voltage and serious injuries. Customer is responsible for setting safeties/limitations that will keep the motor in its safe operating area. ETEL cannot be held responsible if the motor is used in an improper way.



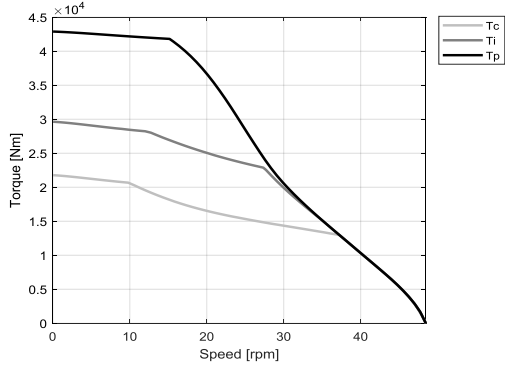
**WJ - WATER COOLING**



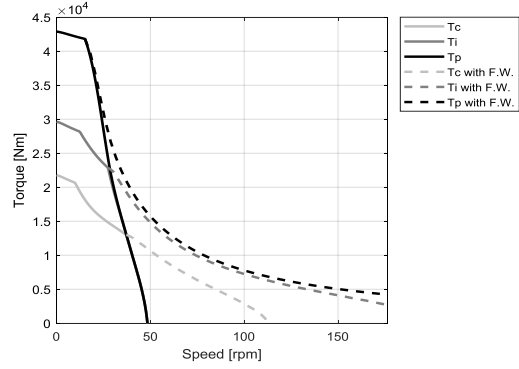
**WJ - WATER COOLING**



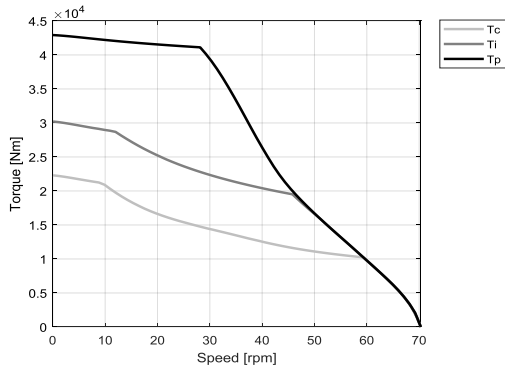
**UT - WATER COOLING**



**UT - WATER COOLING**



**WT - WATER COOLING**



**WT - WATER COOLING**

