ETEL

TMB+ Standard

CONVENTIONAL TORQUE MOTOR TMB+0450-200

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

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

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

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.

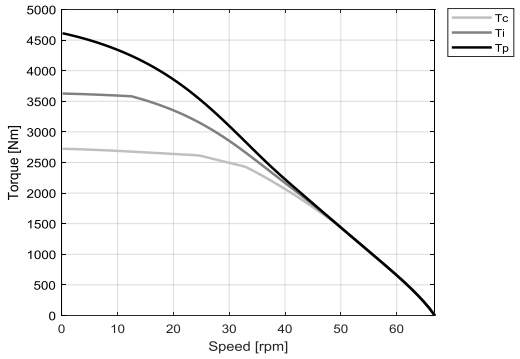
Caution: Any use of the motor beyond speed/torque limit could lead to hazardous voltage and serious injuries. Customer is responsible for setting safeties/limitations that will keep the motor in its safe operating area. ETEL cannot be held responsible if the motor is used in an improper way.

ETEL S.A. Zone Industrielle, CH-2112 Môtiers, Switzerland
T +41 (0)32 862 01 00 • F +41 (0)32 862 01 01 • etel@etel.ch • www.etel.ch

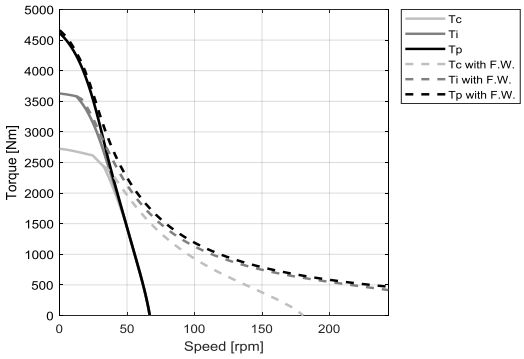
ETEL

CONVENTIONAL TORQUE MOTOR TMB+0450-200

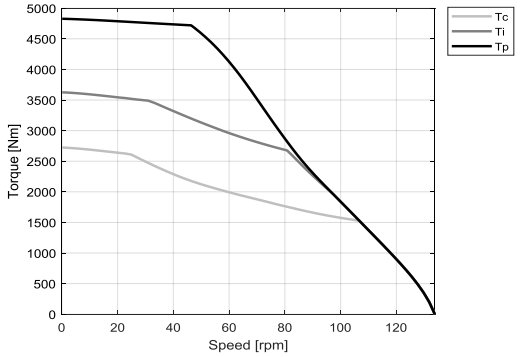
WB - WATER COOLING



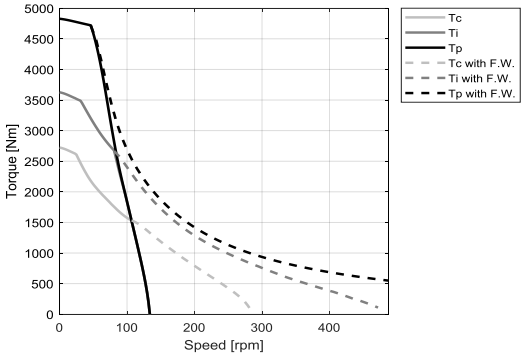
WB - WATER COOLING



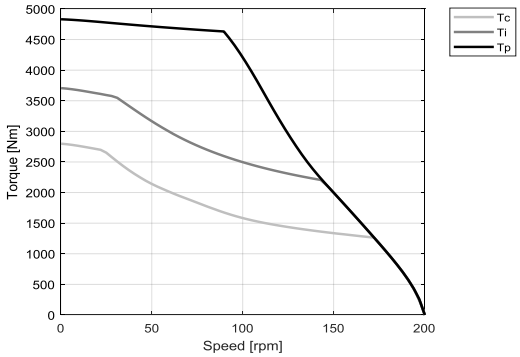
WD - WATER COOLING



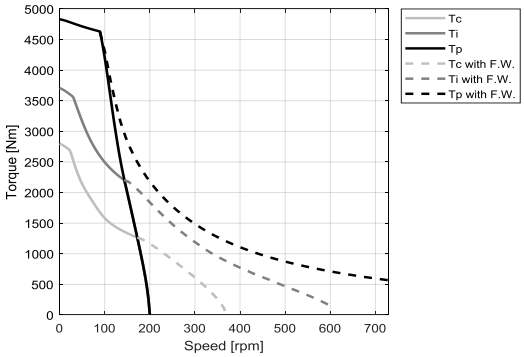
WD - WATER COOLING



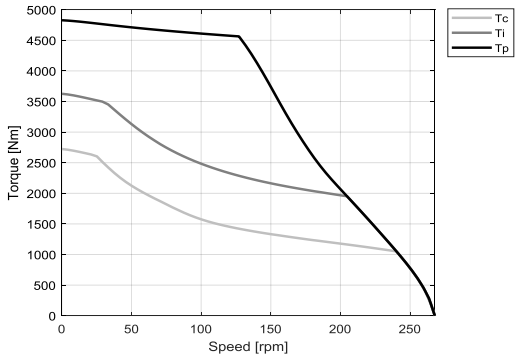
VH - WATER COOLING



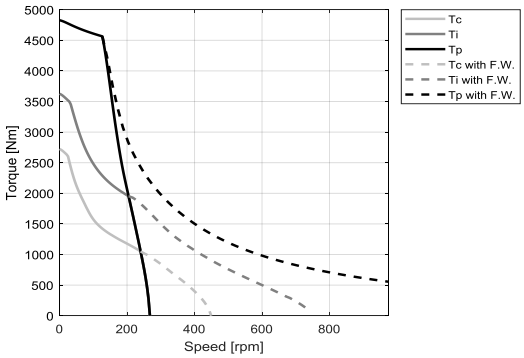
VH - WATER COOLING



WH - WATER COOLING



WH - WATER COOLING



ETEL S.A. Zone Industrielle, CH-2112 Môtiers, Switzerland
T +41 (0)32 862 01 00 • F +41 (0)32 862 01 01 • etel@etel.ch • www.etel.ch