

**Motor Winding**

**Basic Motor Constants**

	TT-4203				TT-4204				TT-4205				TT-4206				TT-4207				TT-4208				TT-4209			
	A	B	C	D	A	B	C	E	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
Power, P (hp)	2	2.25	2.25	/	2.3	2.4	2.5	2.2	2.75	3	3	3	3	3.1	3.1	3.1	2.8	3.4	3.4	3.6	3.2	3.5	3.8	3.8	3	3.4	3.6	3.8
Power, P (W)	1492	1678	1678	/	1716	1790	1865	1641	2051	2238	2238	2238	2238	2313	2313	2313	2089	2536	2536	2686	2387	2611	2835	2835	2238	2536	2686	2835
Max Speed, Nmax (rpm)	2,500	3,200	3,600	3,600	1,950	2,400	3,200	1,400	1,550	1,950	2,600	3,200	1,300	1,600	2,100	2,800	1,100	1,400	1,850	2,600	975	1,200	1,600	2,400	875	1,000	1,400	2,100
Cont. Torque Mo (lb-ft)	8.0	7.7	7.0	6.6	10.5	10.5	10.0	11.0	13.0	12.5	12.0	11.5	15.5	15.5	14.5	14.0	18.0	18.0	17.0	16.2	20.0	20.0	19.0	18.0	22.0	22.0	21.0	20.0
Cont. Torque Mo (Nm)	10.8	10.4	9.5	8.95	14.2	14.2	13.6	14.9	17.6	17	16.3	15.6	21	21	19.7	19	24.4	24.4	23.1	21.9	27	27	26	24	30	30	28	27
Peak Torque, Mmax (lb-ft)	39	33	25	17	53	44	34	55	65	55	42	28	79	66	51	34	92	77	59	40	105	88	68	46	119	95	76	51
Peak Torque, Mmax (Nm)	52.9	44.7	33.9	23	72	60	46	74.6	88	75	57	38	107	90	69	46	125	104	80	54	142	119	92	62	161	129	103	69
Current @ Cont. Torque, Io (A)	21.3	25.7	31.1	44.0	21.0	26.3	33.3	15.7	20.8	25.0	32.0	46.0	20.7	25.8	32.2	46.7	20.6	25.7	32.4	46.3	20.0	25.0	31.7	44.9	19.5	24.4	31.1	44.4
Current @ Peak Torque, Ip (A)	120	120	120	120	120	120	120	90	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
Max Terminal Voltage, Vt (V)	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140
Back EMF Const, Ke (V/krpm)	53.2	42.6	31.9	21.3	71.0	56.8	42.6	99.4	88.9	71.0	53.2	35.5	106.5	85.2	63.9	42.6	124.2	99.4	74.5	49.7	142.0	113.1	85.2	56.8	160.0	127.9	95.8	63.9
Torque Const., Kt (lb-ft/A)	0.375	0.300	0.225	0.150	0.500	0.400	0.300	0.700	0.626	0.500	0.375	0.250	0.750	0.600	0.450	0.300	0.875	0.700	0.525	0.350	1.000	0.800	0.600	0.400	1.127	0.901	0.675	0.450
Torque Const., Kt (Nm/A)	0.509	0.407	0.305	0.203	0.68	0.54	0.41	0.949	0.849	0.678	0.509	0.339	1.017	0.814	0.61	0.407	1.187	0.95	0.712	0.475	1.36	1.08	0.81	0.54	1.528	1.22	0.915	0.61
DC Resistance, R (Ω)	0.243	0.154	0.092	0.038	0.285	0.181	0.107	0.5	0.327	0.208	0.125	0.052	0.369	0.234	0.14	0.059	0.41	0.26	0.156	0.065	0.453	0.287	0.172	0.072	0.494	0.314	0.188	0.079
Inductance, L (mH)	1.03	0.66	0.37	0.16	1.37	0.88	0.49	2.68	1.71	1.1	0.62	0.275	2.06	1.32	0.74	0.33	2.39	1.53	0.86	0.38	2.73	1.75	0.98	0.44	3.08	1.97	1.11	0.49

Weight, M (lbs)	50
Weight, M (kg)	23
Inertia, Jm (lb.ft.sec <sup>2</sup> )	0.0063
Inertia, JM (kg.m <sup>2</sup> )	0.0085
Static Friction, Tf (lb.ft)	0.3
Static Friction, Tf (Nm)	0.41
Viscous Damping, F1 (lb.ft/krpm)	0.08
Viscous Damping, F1 (Nm/krpm)	0.11

Weight, M (lbs)	58
Weight, M (kg)	26
Inertia, Jm (lb.ft.sec <sup>2</sup> )	0.0082
Inertia, JM (kg.m <sup>2</sup> )	0.011
Static Friction, Tf (lb.ft)	0.35
Static Friction, Tf (Nm)	0.47
Viscous Damping, F1 (lb.ft/krpm)	0.1
Viscous Damping, F1 (Nm/krpm)	0.14

**Tachogenerator Option**

	TGF2030-147	TGF2030-147	TGF2030-147	TGF2030-147	TGF2030-147	TGF2030-147
Tachogenerator Model	TGF2030-147	TGF2030-147	TGF2030-147	TGF2030-147	TGF2030-147	TGF2030-147
Voltage, Kg (V/krpm)	19v / 57v / 38v / 47v	19v / 57v / 38v / 47v	19v / 57v / 38v / 47v	19v / 57v / 38v / 47v	19v / 57v / 38v / 47v	19v / 57v / 38v / 47v
Ripple (pk-pk/avg)	2%	2%	2%	2%	2%	2%
Inertia, Jt (oz-in-sec <sup>2</sup> )	0.009	0.009	0.009	0.009	0.009	0.009
Inertia, Jt (kg.cm <sup>2</sup> )	0.64	0.64	0.64	0.64	0.64	0.64
Weight, Mt (oz)	23	23	23	23	23	23
Weight, Mt (grams)	640	640	640	640	640	640

**Encoder Option**

Encoder Type	Incremental (A quad B with index Z & complements)
Power Supply	5V DC ± 5%, 200mA max
Output	Line Driver, 20mA Max source/sink
Resolution (ppr)	1024 / 2048 / 4096
Frequency Response	200 kHz max

**Brake Option**

Brake Open Voltage	115Vac / 90Vdc / 24Vdc
Power (Watts)	26 / 26 / 28
Brake Static Torque (lb.ft)	14.75
Brake Static Torque (Nm)	20
Weight (brake + housing) lbs	29
Weight (brake + housing) Kg	13

**Brake Option**

	115Vac / 90Vdc / 24Vdc	115Vac / 90Vdc / 24Vdc	115Vac / 90Vdc / 24Vdc	115Vac / 90Vdc / 24Vdc	115Vac / 90Vdc / 24Vdc	115Vac / 90Vdc / 24Vdc
Brake Open Voltage	115Vac / 90Vdc / 24Vdc	115Vac / 90Vdc / 24Vdc	115Vac / 90Vdc / 24Vdc	115Vac / 90Vdc / 24Vdc	115Vac / 90Vdc / 24Vdc	115Vac / 90Vdc / 24Vdc
Power (Watts)	26 / 26 / 28	26 / 26 / 28	26 / 26 / 28	26 / 26 / 28	26 / 26 / 28	26 / 26 / 28
Brake Static Torque (lb.ft)	14.75	14.75	14.75	14.75	14.75	14.75
Brake Static Torque (Nm)	20	20	20	20	20	20
Weight (brake + housing) lbs	29	29	29	29	29	29
Weight (brake + housing) Kg	13	13	13	13	13	13

**Brake Option**

	B1	B2	B3
Code	B1	B2	B3
Brake Open Voltage	115V a.c	90V d.c.	24V d.c
Power (Watts)	26	26	28
Brake Static Torque (lb.ft)	14.75	14.75	14.75
Brake Static Torque (Nm)	20	20	20
Weight (brake + housing) lbs	29	29	29
Weight (brake + housing) Kg	13	13	13