

# Linear Motors

**LMS DATA SHEETS**

***ETEL***

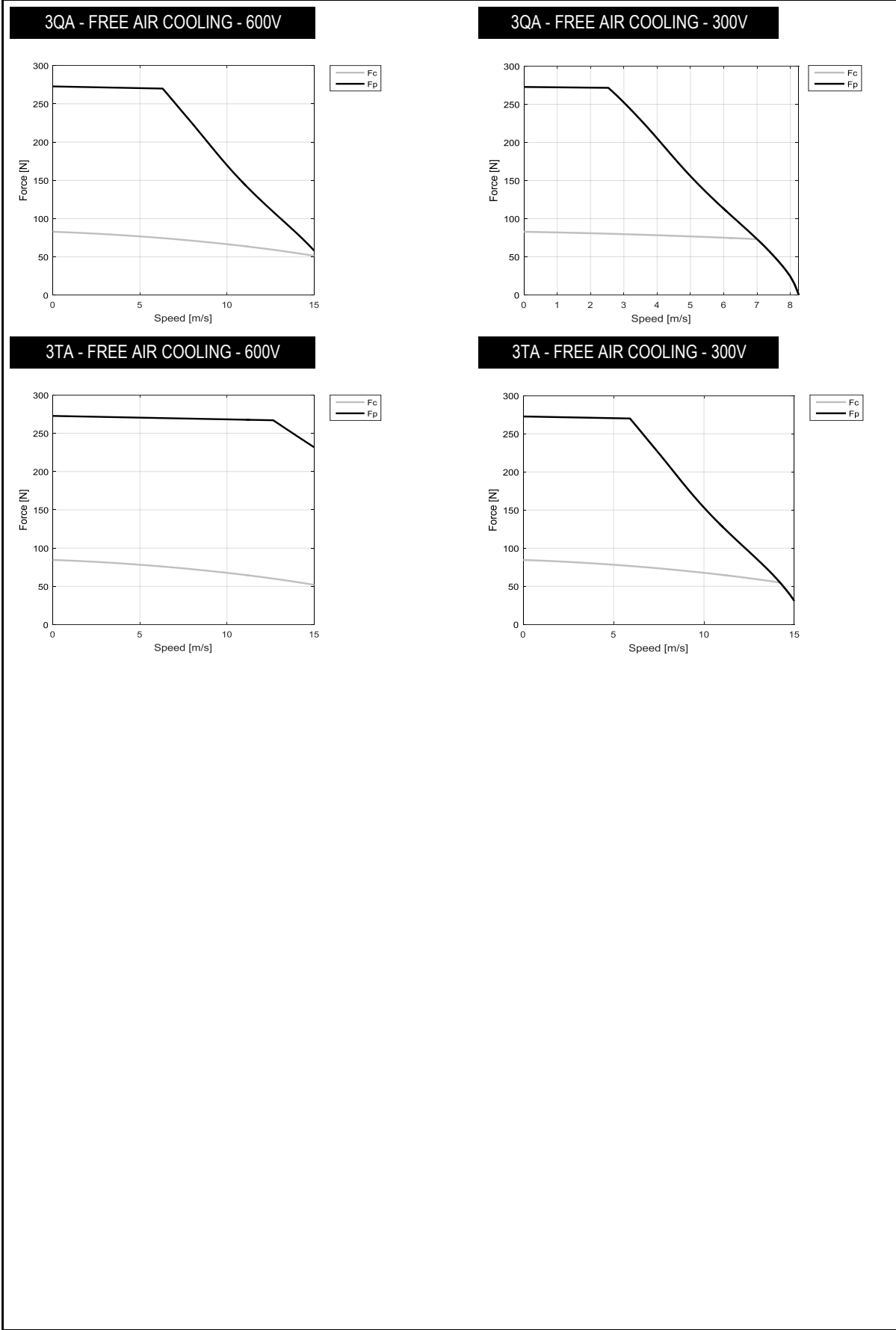
MOTOR PERFORMANCE		Winding codes	3QA	3TA		
		UNIT	FREE AIR COOLING	FREE AIR COOLING		
<b>Fp</b>	Peak force	N	273	273		
<b>Fc</b>	Continuous force	N	82.8	84.5		
<b>Fs</b>	Standstill force	N	63.8	65.3		
<b>Ip</b>	Peak current	Arms	16.3	30.6		
<b>Ic</b>	Continuous current	Arms	2.13	4.10		
<b>Is</b>	Standstill current	Arms	1.61	3.10		
<b>vs</b>	Rated low speed	mm/s	0.18	0.18		
<b>Pc</b>	Power dissipation @ Ic	W	51.4	51.8		
<b>Fd</b>	Max. detent force (average to peak)	N	7.4	7.4		
<b>Fa</b>	Attraction force	N	581	581		

MOTOR SETTING		UNIT				
<b>Kt</b>	Force constant	N/Arms	41.5	22.1		
<b>Ku</b>	Back EMF constant (*)	Vrms/(m/s)	25.2	13.4		
<b>Km</b>	Motor constant	N/√W	14.7	15.0		
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	5.29	1.44		
<b>L</b>	Electrical inductance (*)	mH	43.8	12.3		
<b>τth</b>	Thermal time constant	s	1770	1790		
<b>Rth</b>	Thermal resistance	K/W	2.13	2.11		
<b>2τp</b>	Magnetic period	mm	32	32		
<b>mw</b>	Magnetic way mass	kg/m	3.51	3.51		
<b>mm</b>	Motor mass	kg	0.793	0.810		

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600		
<b>Gm</b>	Mechanical gap	mm	0.90	0.90		
<b>Ss</b>	Stator exchange surface	m²	0.01	0.01		
<b>x</b>	Assumed stroke	m	0.29	0.29		
<b>θamb</b>	Ambient temperature	°C	20	20		
<b>θmax</b>	Maximum coil temperature	°C	130	130		

**Notes:** (\*) terminal to terminal.  
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MOTOR PERFORMANCE		Winding codes	3QA	3TA		
		UNIT	FREE AIR COOLING	FREE AIR COOLING		
<b>Fp</b>	Peak force	N	482	482		
<b>Fc</b>	Continuous force	N	132	136		
<b>Fs</b>	Standstill force	N	100	103		
<b>Ip</b>	Peak current	Arms	16.3	30.6		
<b>Ic</b>	Continuous current	Arms	2.00	3.87		
<b>Is</b>	Standstill current	Arms	1.52	2.93		
<b>vs</b>	Rated low speed	mm/s	0.16	0.16		
<b>Pc</b>	Power dissipation @ Ic	W	63.6	63.9		
<b>Fd</b>	Max. detent force (average to peak)	N	12	12		
<b>Fa</b>	Attraction force	N	978	978		

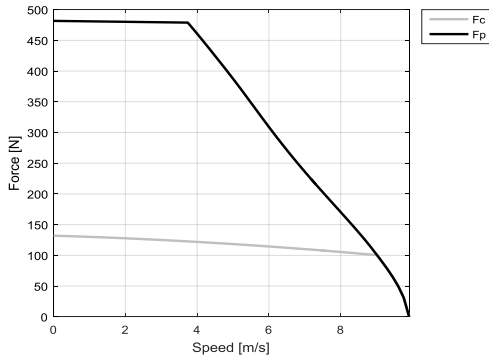
MOTOR SETTING		UNIT				
<b>Kt</b>	Force constant	N/Arms	69.5	37.0		
<b>Ku</b>	Back EMF constant (*)	Vrms/(m/s)	41.9	22.3		
<b>Km</b>	Motor constant	N/√W	20.9	21.4		
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	7.41	1.99		
<b>L</b>	Electrical inductance (*)	mH	68.4	19.3		
<b>rth</b>	Thermal time constant	s	2020	2040		
<b>Rth</b>	Thermal resistance	K/W	1.72	1.71		
<b>2tp</b>	Magnetic period	mm	32	32		
<b>mw</b>	Magnetic way mass	kg/m	6.19	6.19		
<b>mm</b>	Motor mass	kg	1.18	1.20		

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600		
<b>Gm</b>	Mechanical gap	mm	0.90	0.90		
<b>Ss</b>	Stator exchange surface	m²	0.01	0.01		
<b>x</b>	Assumed stroke	m	0.29	0.29		
<b>θamb</b>	Ambient temperature	°C	20	20		
<b>θmax</b>	Maximum coil temperature	°C	130	130		

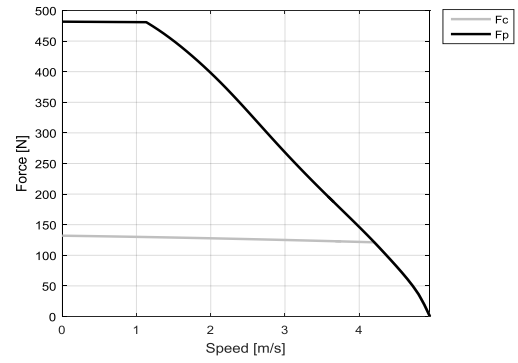
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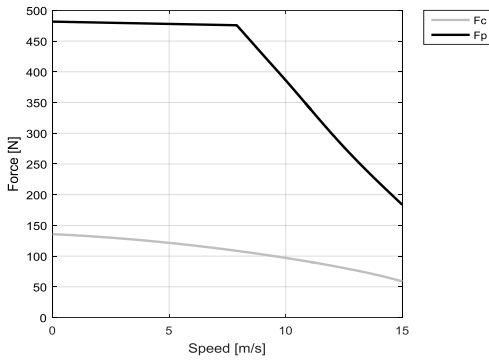
**3QA - FREE AIR COOLING - 600V**



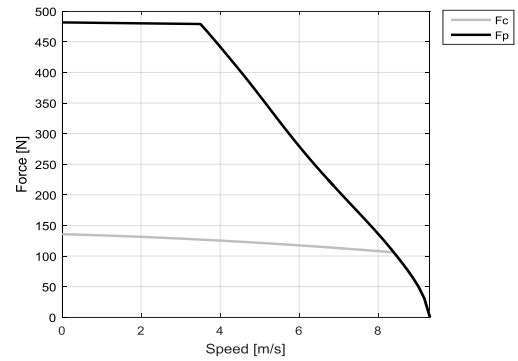
**3QA - FREE AIR COOLING - 300V**



**3TA - FREE AIR COOLING - 600V**



**3TA - FREE AIR COOLING - 300V**



MOTOR PERFORMANCE		Winding codes	3QA	3TA		
		UNIT	FREE AIR COOLING	FREE AIR COOLING		
<b>Fp</b>	Peak force	N	692	692		
<b>Fc</b>	Continuous force	N	178	184		
<b>Fs</b>	Standstill force	N	135	139		
<b>Ip</b>	Peak current	Arms	16.3	30.6		
<b>Ic</b>	Continuous current	Arms	1.92	3.73		
<b>Is</b>	Standstill current	Arms	1.46	2.83		
<b>vs</b>	Rated low speed	mm/s	0.15	0.14		
<b>Pc</b>	Power dissipation @ Ic	W	75.6	75.9		
<b>Fd</b>	Max. detent force (average to peak)	N	17	17		
<b>Fa</b>	Attraction force	N	1300	1300		

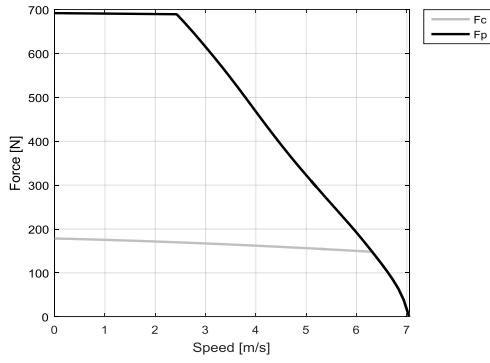
MOTOR SETTING		UNIT				
<b>Kt</b>	Force constant	N/Arms	97.7	52.0		
<b>Ku</b>	Back EMF constant (*)	Vrms/(m/s)	58.9	31.4		
<b>Km</b>	Motor constant	N/√W	25.8	26.6		
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	9.53	2.54		
<b>L</b>	Electrical inductance (*)	mH	96.2	27.1		
<b>rth</b>	Thermal time constant	s	2190	2210		
<b>Rth</b>	Thermal resistance	K/W	1.44	1.44		
<b>2tp</b>	Magnetic period	mm	32	32		
<b>mw</b>	Magnetic way mass	kg/m	7.96	7.96		
<b>mm</b>	Motor mass	kg	1.56	1.59		

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600		
<b>Gm</b>	Mechanical gap	mm	0.90	0.90		
<b>Ss</b>	Stator exchange surface	m²	0.02	0.02		
<b>x</b>	Assumed stroke	m	0.29	0.29		
<b>θamb</b>	Ambient temperature	°C	20	20		
<b>θmax</b>	Maximum coil temperature	°C	130	130		

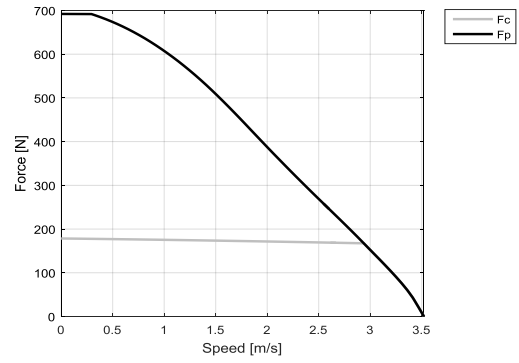
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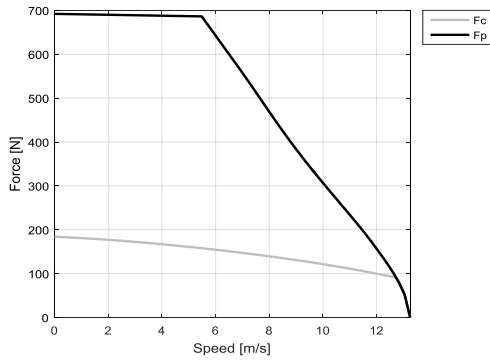
**3QA - FREE AIR COOLING - 600V**



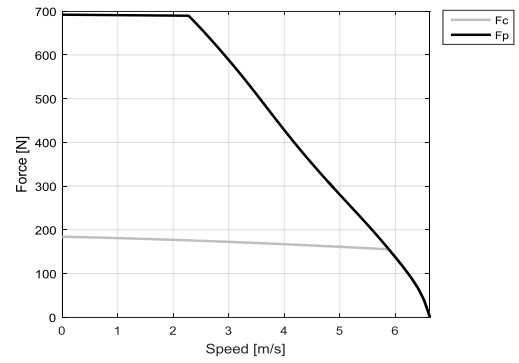
**3QA - FREE AIR COOLING - 300V**



**3TA - FREE AIR COOLING - 600V**



**3TA - FREE AIR COOLING - 300V**



MOTOR PERFORMANCE		Winding codes	3RA	3TA		
		UNIT	FREE AIR COOLING	FREE AIR COOLING		
<b>Fp</b>	Peak force	N	511	511		
<b>Fc</b>	Continuous force	N	156	156		
<b>Fs</b>	Standstill force	N	121	121		
<b>Ip</b>	Peak current	Arms	18.6	28.5		
<b>Ic</b>	Continuous current	Arms	2.48	3.82		
<b>Is</b>	Standstill current	Arms	1.88	2.89		
<b>vs</b>	Rated low speed	mm/s	0.16	0.16		
<b>Pc</b>	Power dissipation @ Ic	W	89.9	90.0		
<b>Fd</b>	Max. detent force (average to peak)	N	7.9	7.9		
<b>Fa</b>	Attraction force	N	1000	1000		

MOTOR SETTING		UNIT				
<b>Kt</b>	Force constant	N/Arms	67.0	43.7		
<b>Ku</b>	Back EMF constant (*)	Vrms/(m/s)	40.1	26.2		
<b>Km</b>	Motor constant	N/√W	20.9	21.0		
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	6.81	2.88		
<b>L</b>	Electrical inductance (*)	mH	58.6	24.9		
<b>rth</b>	Thermal time constant	s	1990	2000		
<b>Rth</b>	Thermal resistance	K/W	1.22	1.22		
<b>2tp</b>	Magnetic period	mm	32	32		
<b>mw</b>	Magnetic way mass	kg/m	3.51	3.51		
<b>mm</b>	Motor mass	kg	1.50	1.52		

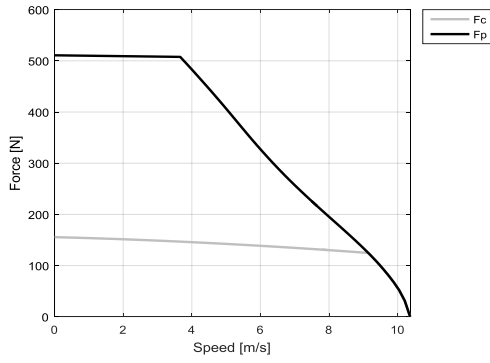
MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600		
<b>Gm</b>	Mechanical gap	mm	0.90	0.90		
<b>Ss</b>	Stator exchange surface	m <sup>2</sup>	0.02	0.02		
<b>x</b>	Assumed stroke	m	0.47	0.47		
<b>θamb</b>	Ambient temperature	°C	20	20		
<b>θmax</b>	Maximum coil temperature	°C	130	130		

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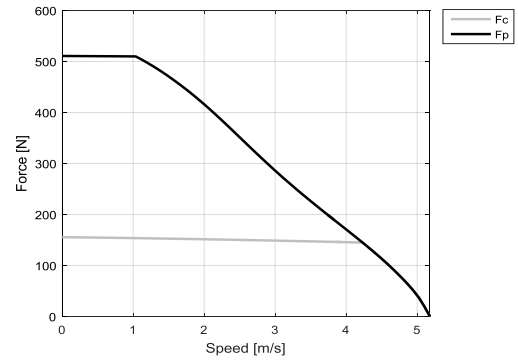
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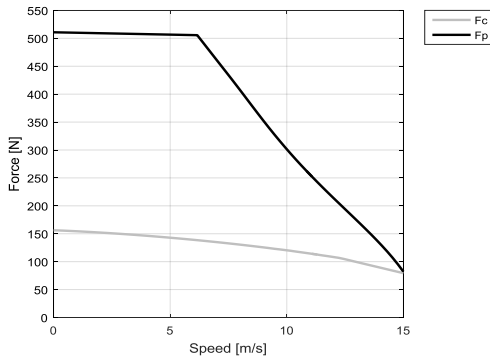
**3RA - FREE AIR COOLING - 600V**



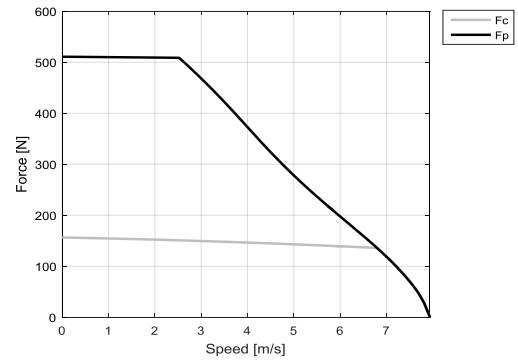
**3RA - FREE AIR COOLING - 300V**



**3TA - FREE AIR COOLING - 600V**



**3TA - FREE AIR COOLING - 300V**



MOTOR PERFORMANCE		Winding codes	3RA	3TA		
		UNIT	FREE AIR COOLING	FREE AIR COOLING		
<b>Fp</b>	Peak force	N	896	896		
<b>Fc</b>	Continuous force	N	244	247		
<b>Fs</b>	Standstill force	N	186	188		
<b>Ip</b>	Peak current	Arms	18.6	28.5		
<b>Ic</b>	Continuous current	Arms	2.30	3.56		
<b>Is</b>	Standstill current	Arms	1.74	2.69		
<b>vs</b>	Rated low speed	mm/s	0.14	0.14		
<b>Pc</b>	Power dissipation @ Ic	W	108	108		
<b>Fd</b>	Max. detent force (average to peak)	N	13	13		
<b>Fa</b>	Attraction force	N	1800	1800		

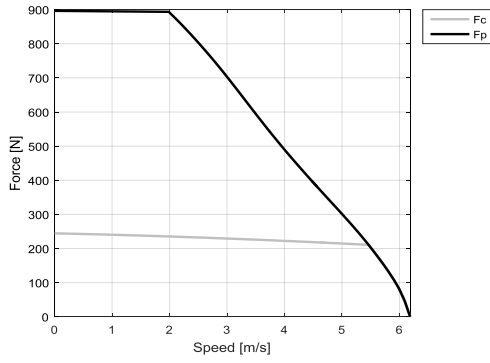
MOTOR SETTING		UNIT				
<b>Kt</b>	Force constant	N/Arms	112	73.2		
<b>Ku</b>	Back EMF constant (*)	Vrms/(m/s)	67.1	43.8		
<b>Km</b>	Motor constant	N/√W	29.7	30.0		
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	9.54	3.98		
<b>L</b>	Electrical inductance (*)	mH	91.6	39.0		
<b>rth</b>	Thermal time constant	s	2300	2310		
<b>Rth</b>	Thermal resistance	K/W	1.02	1.01		
<b>2tp</b>	Magnetic period	mm	32	32		
<b>mw</b>	Magnetic way mass	kg/m	6.19	6.19		
<b>mm</b>	Motor mass	kg	2.22	2.25		

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600		
<b>Gm</b>	Mechanical gap	mm	0.90	0.90		
<b>Ss</b>	Stator exchange surface	m²	0.03	0.03		
<b>x</b>	Assumed stroke	m	0.47	0.47		
<b>θamb</b>	Ambient temperature	°C	20	20		
<b>θmax</b>	Maximum coil temperature	°C	130	130		

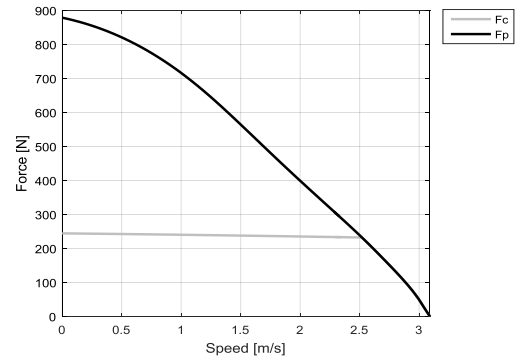
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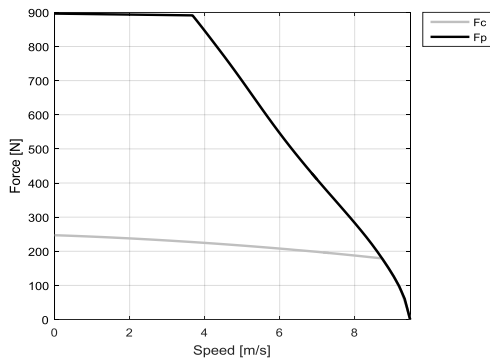
**3RA - FREE AIR COOLING - 600V**



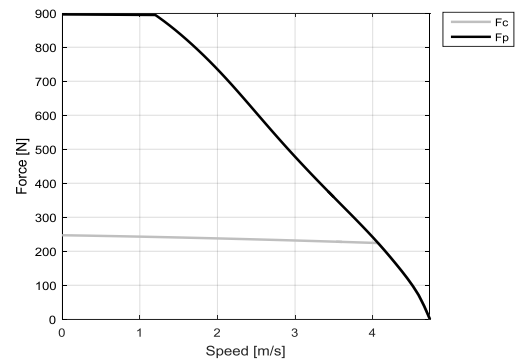
**3RA - FREE AIR COOLING - 300V**



**3TA - FREE AIR COOLING - 600V**



**3TA - FREE AIR COOLING - 300V**



MOTOR PERFORMANCE		Winding codes	3TA	3VA		
		UNIT	FREE AIR COOLING	FREE AIR COOLING		
<b>Fp</b>	Peak force	N	1280	1280		
<b>Fc</b>	Continuous force	N	348	335		
<b>Fs</b>	Standstill force	N	263	253		
<b>Ip</b>	Peak current	Arms	28.5	49.1		
<b>Ic</b>	Continuous current	Arms	3.55	5.88		
<b>Is</b>	Standstill current	Arms	2.69	4.46		
<b>vs</b>	Rated low speed	mm/s	0.13	0.13		
<b>Pc</b>	Power dissipation @ Ic	W	138	137		
<b>Fd</b>	Max. detent force (average to peak)	N	19	19		
<b>Fa</b>	Attraction force	N	2500	2500		

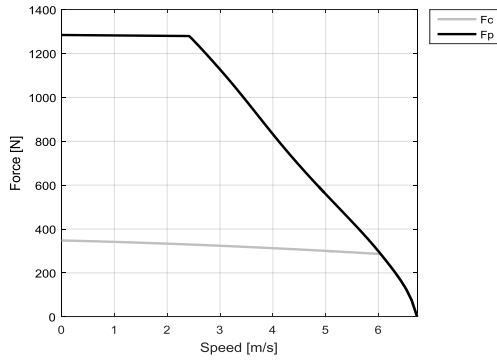
MOTOR SETTING		UNIT				
<b>Kt</b>	Force constant	N/Arms	103	59.8		
<b>Ku</b>	Back EMF constant (*)	Vrms/(m/s)	61.7	35.8		
<b>Km</b>	Motor constant	N/√W	37.3	35.9		
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	5.08	1.85		
<b>L</b>	Electrical inductance (*)	mH	54.6	18.5		
<b>rth</b>	Thermal time constant	s	2430	2410		
<b>Rth</b>	Thermal resistance	K/W	0.794	0.796		
<b>2tp</b>	Magnetic period	mm	32	32		
<b>mw</b>	Magnetic way mass	kg/m	7.96	7.96		
<b>mm</b>	Motor mass	kg	2.98	2.91		

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600		
<b>Gm</b>	Mechanical gap	mm	0.90	0.90		
<b>Ss</b>	Stator exchange surface	m²	0.04	0.04		
<b>x</b>	Assumed stroke	m	0.47	0.47		
<b>θamb</b>	Ambient temperature	°C	20	20		
<b>θmax</b>	Maximum coil temperature	°C	130	130		

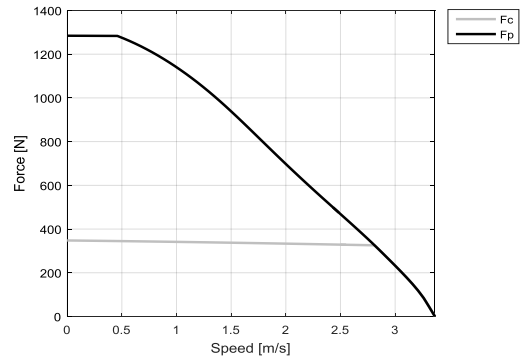
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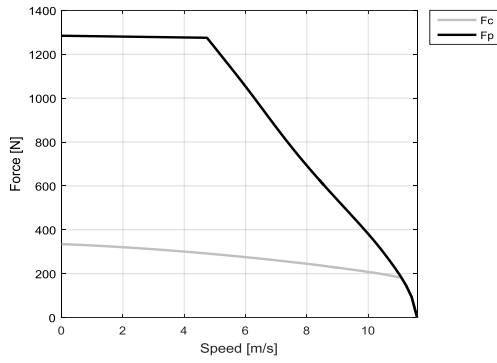
**3TA - FREE AIR COOLING - 600V**



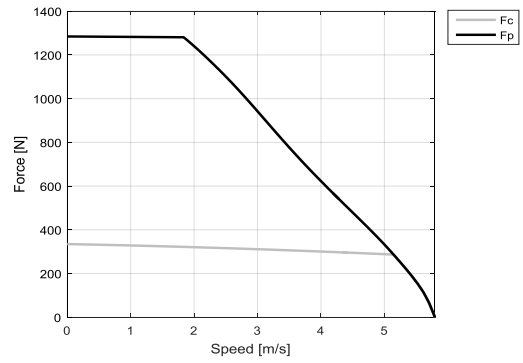
**3TA - FREE AIR COOLING - 300V**



**3VA - FREE AIR COOLING - 600V**



**3VA - FREE AIR COOLING - 300V**



MOTOR PERFORMANCE		Winding codes	3TA	3VA		
		UNIT	FREE AIR COOLING	FREE AIR COOLING		
<b>Fp</b>	Peak force	N	1870	1870		
<b>Fc</b>	Continuous force	N	458	439		
<b>Fs</b>	Standstill force	N	345	331		
<b>Ip</b>	Peak current	Arms	28.5	49.1		
<b>Ic</b>	Continuous current	Arms	3.28	5.41		
<b>Is</b>	Standstill current	Arms	2.48	4.10		
<b>vs</b>	Rated low speed	mm/s	0.12	0.12		
<b>Pc</b>	Power dissipation @ Ic	W	155	155		
<b>Fd</b>	Max. detent force (average to peak)	N	26	26		
<b>Fa</b>	Attraction force	N	3600	3600		

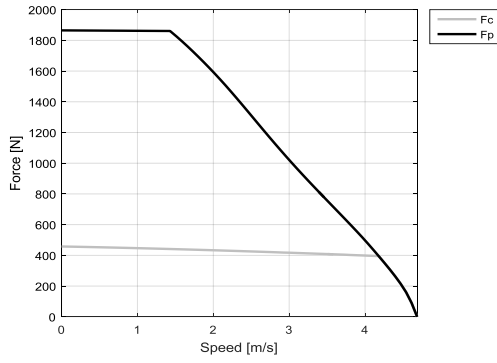
MOTOR SETTING		UNIT				
<b>Kt</b>	Force constant	N/Arms	148	85.8		
<b>Ku</b>	Back EMF constant (*)	Vrms/(m/s)	88.6	51.4		
<b>Km</b>	Motor constant	N/√W	46.5	44.6		
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	6.74	2.47		
<b>L</b>	Electrical inductance (*)	mH	78.7	26.7		
<b>τth</b>	Thermal time constant	s	2760	2740		
<b>Rth</b>	Thermal resistance	K/W	0.704	0.705		
<b>2τp</b>	Magnetic period	mm	32	32		
<b>mw</b>	Magnetic way mass	kg/m	12.6	12.6		
<b>mm</b>	Motor mass	kg	4.08	3.98		

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600		
<b>Gm</b>	Mechanical gap	mm	0.90	0.90		
<b>Ss</b>	Stator exchange surface	m²	0.04	0.04		
<b>x</b>	Assumed stroke	m	0.47	0.47		
<b>θamb</b>	Ambient temperature	°C	20	20		
<b>θmax</b>	Maximum coil temperature	°C	130	130		

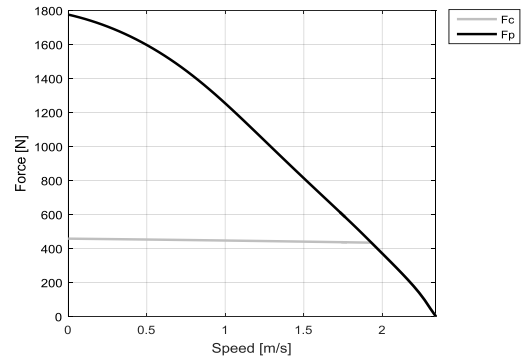
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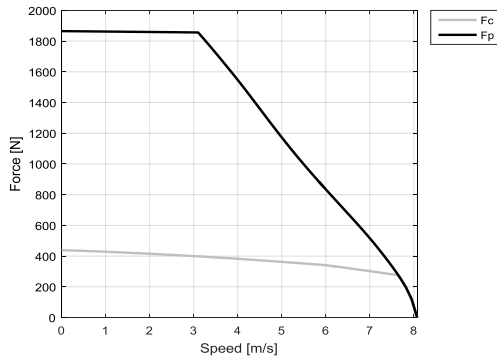
**3TA - FREE AIR COOLING - 600V**



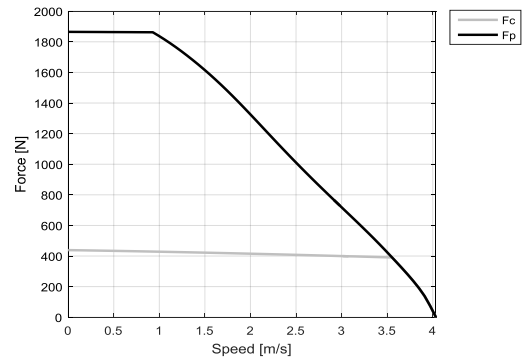
**3TA - FREE AIR COOLING - 300V**



**3VA - FREE AIR COOLING - 600V**



**3VA - FREE AIR COOLING - 300V**



MOTOR PERFORMANCE		Winding codes	3RA	3TA		
		UNIT	FREE AIR COOLING	FREE AIR COOLING		
<b>Fp</b>	Peak force	N	748	748		
<b>Fc</b>	Continuous force	N	220	221		
<b>Fs</b>	Standstill force	N	170	171		
<b>Ip</b>	Peak current	Arms	17.7	27.1		
<b>Ic</b>	Continuous current	Arms	2.34	3.61		
<b>Is</b>	Standstill current	Arms	1.77	2.73		
<b>vs</b>	Rated low speed	mm/s	0.15	0.15		
<b>Pc</b>	Power dissipation @ Ic	W	120	120		
<b>Fd</b>	Max. detent force (average to peak)	N	9.8	9.8		
<b>Fa</b>	Attraction force	N	1600	1600		

MOTOR SETTING		UNIT				
<b>Kt</b>	Force constant	N/Arms	100	65.4		
<b>Ku</b>	Back EMF constant (*)	Vrms/(m/s)	60.0	39.2		
<b>Km</b>	Motor constant	N/√W	25.6	25.7		
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	10.2	4.31		
<b>L</b>	Electrical inductance (*)	mH	83.4	35.5		
<b>rth</b>	Thermal time constant	s	2130	2140		
<b>Rth</b>	Thermal resistance	K/W	0.913	0.912		
<b>2tp</b>	Magnetic period	mm	32	32		
<b>mw</b>	Magnetic way mass	kg/m	3.51	3.51		
<b>mm</b>	Motor mass	kg	2.19	2.23		

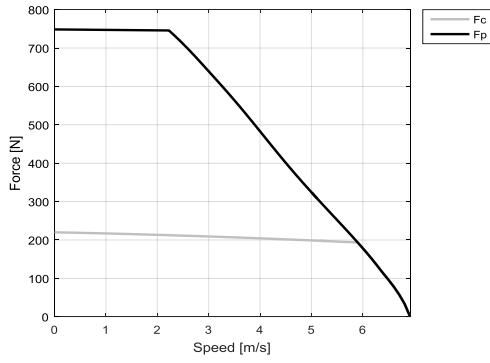
MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600		
<b>Gm</b>	Mechanical gap	mm	0.90	0.90		
<b>Ss</b>	Stator exchange surface	m²	0.03	0.03		
<b>x</b>	Assumed stroke	m	0.51	0.51		
<b>θamb</b>	Ambient temperature	°C	20	20		
<b>θmax</b>	Maximum coil temperature	°C	130	130		

**Notes:** (\*) terminal to terminal.  
Hypotheses and tolerances are in ETEL handbook.

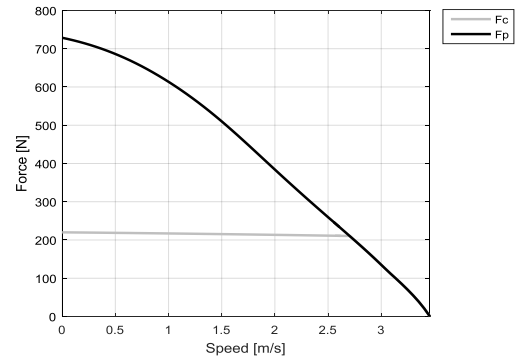
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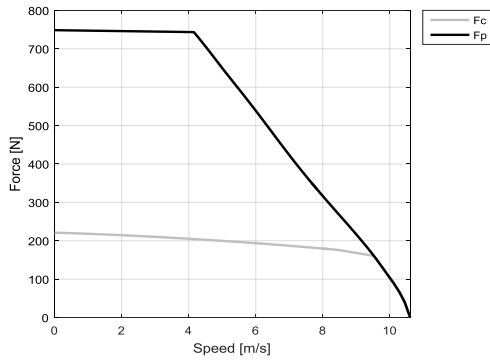
**3RA - FREE AIR COOLING - 600V**



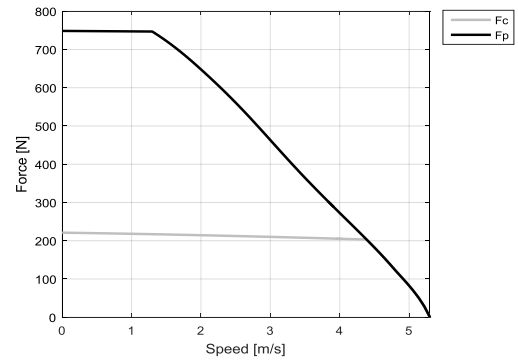
**3RA - FREE AIR COOLING - 300V**



**3TA - FREE AIR COOLING - 600V**



**3TA - FREE AIR COOLING - 300V**



MOTOR PERFORMANCE		Winding codes	3RA	3TA		
		UNIT	FREE AIR COOLING	FREE AIR COOLING		
<b>Fp</b>	Peak force	N	1310	1310		
<b>Fc</b>	Continuous force	N	356	360		
<b>Fs</b>	Standstill force	N	271	274		
<b>Ip</b>	Peak current	Arms	17.7	27.1		
<b>Ic</b>	Continuous current	Arms	2.24	3.47		
<b>Is</b>	Standstill current	Arms	1.69	2.63		
<b>vs</b>	Rated low speed	mm/s	0.13	0.13		
<b>Pc</b>	Power dissipation @ Ic	W	154	154		
<b>Fd</b>	Max. detent force (average to peak)	N	17	17		
<b>Fa</b>	Attraction force	N	2600	2600		

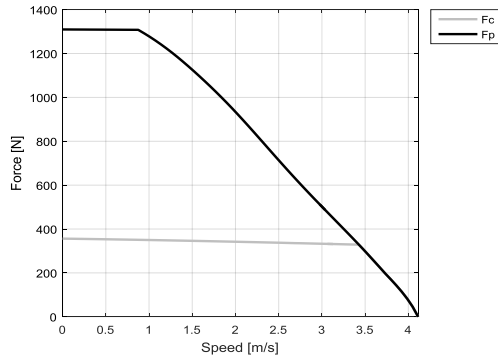
MOTOR SETTING		UNIT				
<b>Kt</b>	Force constant	N/Arms	169	110		
<b>Ku</b>	Back EMF constant (*)	Vrms/(m/s)	101	65.9		
<b>Km</b>	Motor constant	N/√W	36.4	36.8		
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	14.3	5.97		
<b>L</b>	Electrical inductance (*)	mH	140	59.4		
<b>τth</b>	Thermal time constant	s	2420	2440		
<b>Rth</b>	Thermal resistance	K/W	0.713	0.712		
<b>2τp</b>	Magnetic period	mm	32	32		
<b>mw</b>	Magnetic way mass	kg/m	6.19	6.19		
<b>mm</b>	Motor mass	kg	3.25	3.30		

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600		
<b>Gm</b>	Mechanical gap	mm	0.90	0.90		
<b>Ss</b>	Stator exchange surface	m <sup>2</sup>	0.04	0.04		
<b>x</b>	Assumed stroke	m	0.51	0.51		
<b>θamb</b>	Ambient temperature	°C	20	20		
<b>θmax</b>	Maximum coil temperature	°C	130	130		

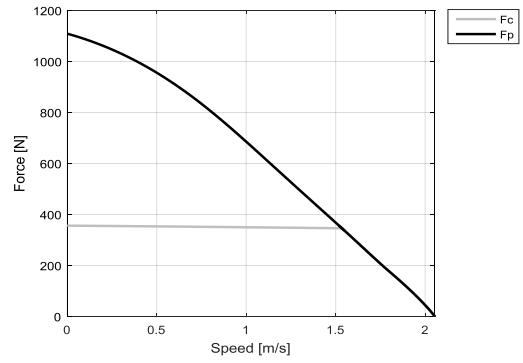
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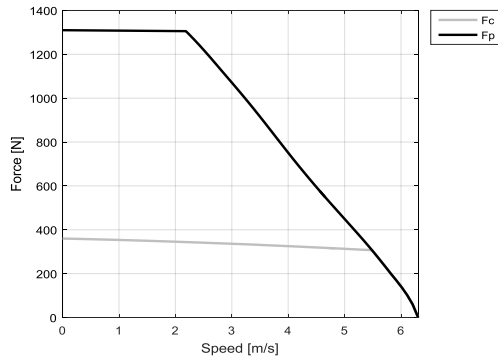
**3RA - FREE AIR COOLING - 600V**



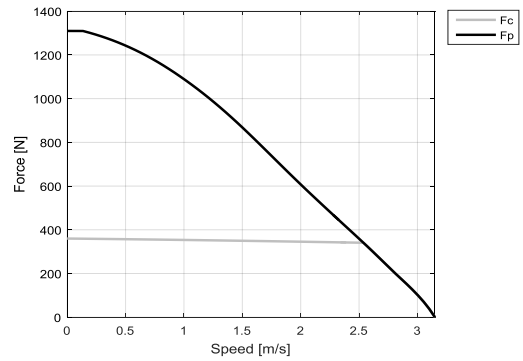
**3RA - FREE AIR COOLING - 300V**



**3TA - FREE AIR COOLING - 600V**



**3TA - FREE AIR COOLING - 300V**



MOTOR PERFORMANCE		Winding codes	3TA	3VA		
		UNIT	FREE AIR COOLING	FREE AIR COOLING		
<b>Fp</b>	Peak force	N	1870	1870		
<b>Fc</b>	Continuous force	N	497	478		
<b>Fs</b>	Standstill force	N	376	361		
<b>Ip</b>	Peak current	Arms	27.1	46.7		
<b>Ic</b>	Continuous current	Arms	3.38	5.60		
<b>Is</b>	Standstill current	Arms	2.56	4.24		
<b>vs</b>	Rated low speed	mm/s	0.12	0.12		
<b>Pc</b>	Power dissipation @ Ic	W	187	187		
<b>Fd</b>	Max. detent force (average to peak)	N	23	23		
<b>Fa</b>	Attraction force	N	3600	3600		

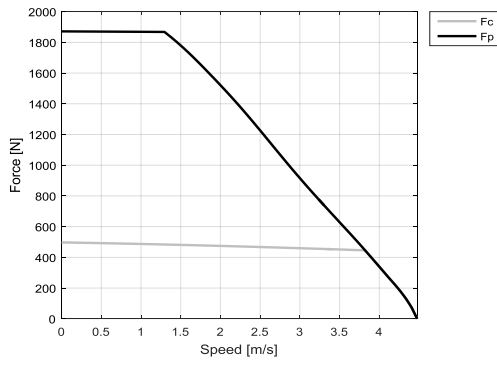
MOTOR SETTING		UNIT				
<b>Kt</b>	Force constant	N/Arms	155	90.2		
<b>Ku</b>	Back EMF constant (*)	Vrms/(m/s)	92.8	53.9		
<b>Km</b>	Motor constant	N/√W	45.9	44.2		
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	7.63	2.78		
<b>L</b>	Electrical inductance (*)	mH	83.4	28.2		
<b>rth</b>	Thermal time constant	s	2590	2570		
<b>Rth</b>	Thermal resistance	K/W	0.584	0.585		
<b>2tp</b>	Magnetic period	mm	32	32		
<b>mw</b>	Magnetic way mass	kg/m	7.96	7.96		
<b>mm</b>	Motor mass	kg	4.36	4.26		

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600		
<b>Gm</b>	Mechanical gap	mm	0.90	0.90		
<b>Ss</b>	Stator exchange surface	m²	0.05	0.05		
<b>x</b>	Assumed stroke	m	0.51	0.51		
<b>θamb</b>	Ambient temperature	°C	20	20		
<b>θmax</b>	Maximum coil temperature	°C	130	130		

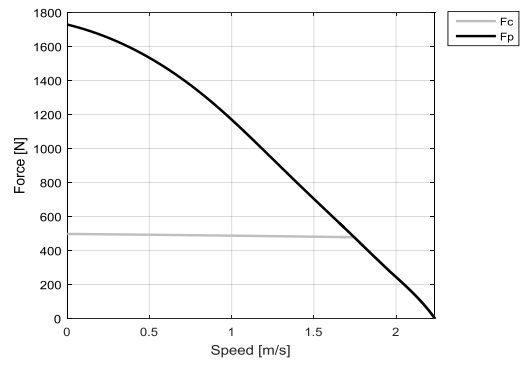
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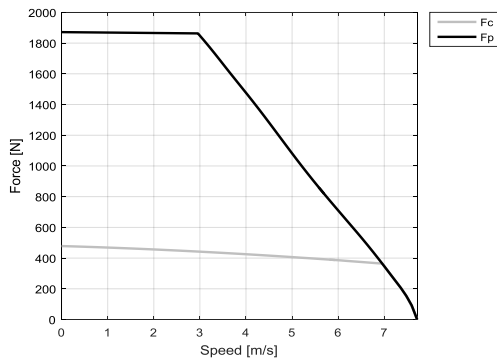
**3TA - FREE AIR COOLING - 600V**



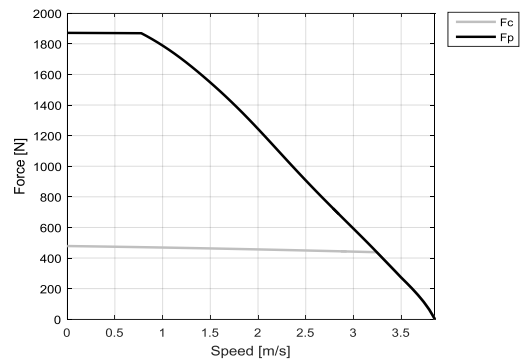
**3TA - FREE AIR COOLING - 300V**



**3VA - FREE AIR COOLING - 600V**



**3VA - FREE AIR COOLING - 300V**



MOTOR PERFORMANCE		Winding codes	3TA	3VA		
		UNIT	FREE AIR COOLING	FREE AIR COOLING		
<b>Fp</b>	Peak force	N	2720	2720		
<b>Fc</b>	Continuous force	N	672	644		
<b>Fs</b>	Standstill force	N	507	485		
<b>Ip</b>	Peak current	Arms	27.1	46.7		
<b>Ic</b>	Continuous current	Arms	3.23	5.33		
<b>Is</b>	Standstill current	Arms	2.44	4.04		
<b>vs</b>	Rated low speed	mm/s	0.11	0.11		
<b>Pc</b>	Power dissipation @ Ic	W	226	225		
<b>Fd</b>	Max. detent force (average to peak)	N	33	33		
<b>Fa</b>	Attraction force	N	5200	5200		

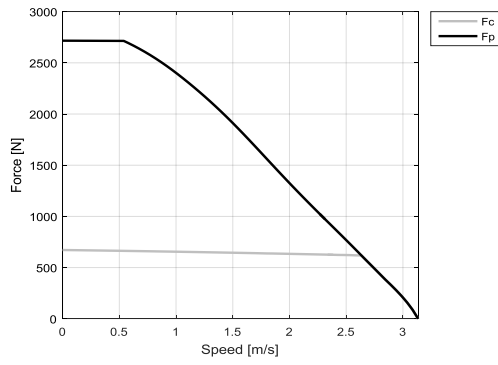
MOTOR SETTING		UNIT				
<b>Kt</b>	Force constant	N/Arms	222	129		
<b>Ku</b>	Back EMF constant (*)	Vrms/(m/s)	132	76.9		
<b>Km</b>	Motor constant	N/√W	57.1	54.8		
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	10.1	3.70		
<b>L</b>	Electrical inductance (*)	mH	120	40.5		
<b>rth</b>	Thermal time constant	s	2900	2880		
<b>Rth</b>	Thermal resistance	K/W	0.484	0.485		
<b>2tp</b>	Magnetic period	mm	32	32		
<b>mw</b>	Magnetic way mass	kg/m	12.6	12.6		
<b>mm</b>	Motor mass	kg	5.97	5.83		

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600		
<b>Gm</b>	Mechanical gap	mm	0.90	0.90		
<b>Ss</b>	Stator exchange surface	m <sup>2</sup>	0.06	0.06		
<b>x</b>	Assumed stroke	m	0.51	0.51		
<b>θamb</b>	Ambient temperature	°C	20	20		
<b>θmax</b>	Maximum coil temperature	°C	130	130		

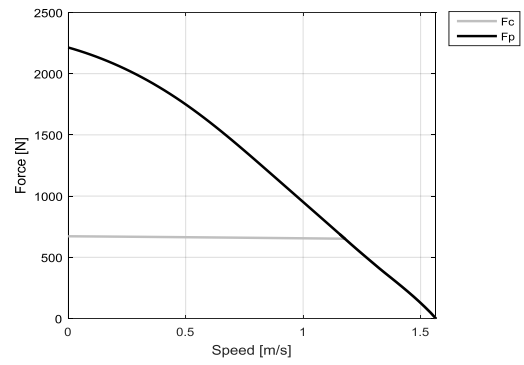
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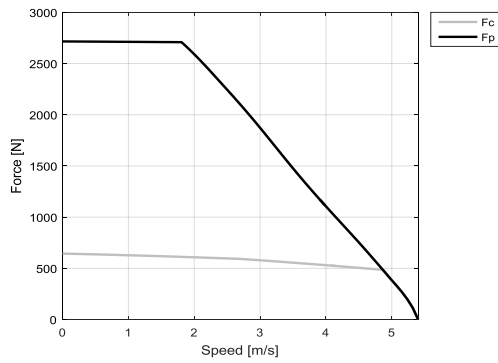
**3TA - FREE AIR COOLING - 600V**



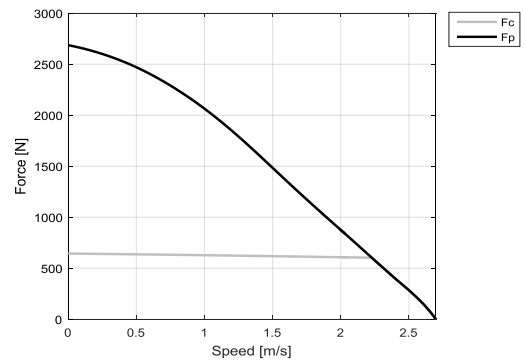
**3TA - FREE AIR COOLING - 300V**



**3VA - FREE AIR COOLING - 600V**



**3VA - FREE AIR COOLING - 300V**



MOTOR PERFORMANCE		Winding codes	3TA	3VA		
		UNIT	FREE AIR COOLING	FREE AIR COOLING		
<b>Fp</b>	Peak force	N	1790	1790		
<b>Fc</b>	Continuous force	N	485	467		
<b>Fs</b>	Standstill force	N	368	354		
<b>Ip</b>	Peak current	Arms	27.1	46.7		
<b>Ic</b>	Continuous current	Arms	3.51	5.83		
<b>Is</b>	Standstill current	Arms	2.66	4.42		
<b>vs</b>	Rated low speed	mm/s	0.13	0.13		
<b>Pc</b>	Power dissipation @ Ic	W	211	210		
<b>Fd</b>	Max. detent force (average to peak)	N	20	20		
<b>Fa</b>	Attraction force	N	3410	3410		

MOTOR SETTING		UNIT				
<b>Kt</b>	Force constant	N/Arms	147	85.2		
<b>Ku</b>	Back EMF constant (*)	Vrms/(m/s)	88.2	51.2		
<b>Km</b>	Motor constant	N/√W	42.5	40.9		
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	7.96	2.89		
<b>L</b>	Electrical inductance (*)	mH	78.4	26.5		
<b>τth</b>	Thermal time constant	s	2450	2430		
<b>Rth</b>	Thermal resistance	K/W	0.519	0.520		
<b>2τp</b>	Magnetic period	mm	32	32		
<b>mw</b>	Magnetic way mass	kg/m	6.19	6.19		
<b>mm</b>	Motor mass	kg	4.35	4.23		

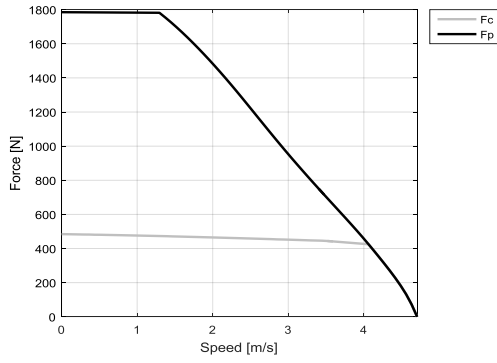
MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600		
<b>Gm</b>	Mechanical gap	mm	0.90	0.90		
<b>Ss</b>	Stator exchange surface	m <sup>2</sup>	0.06	0.06		
<b>x</b>	Assumed stroke	m	0.69	0.69		
<b>θamb</b>	Ambient temperature	°C	20	20		
<b>θmax</b>	Maximum coil temperature	°C	130	130		

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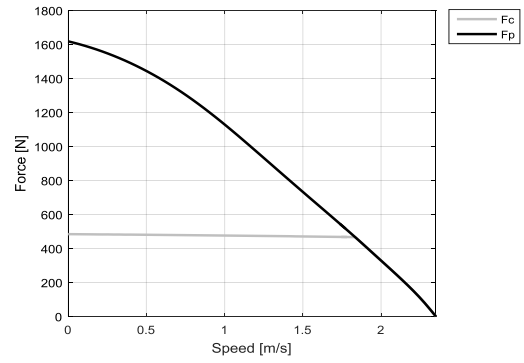
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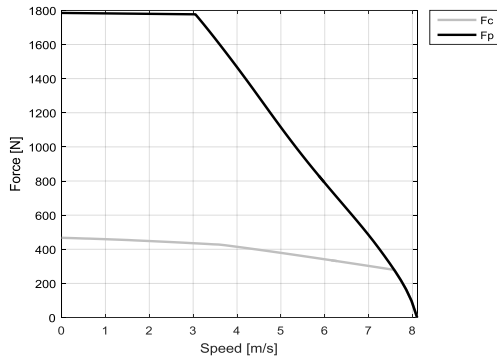
**3TA - FREE AIR COOLING - 600V**



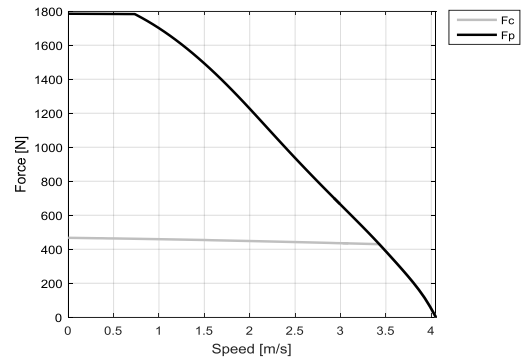
**3TA - FREE AIR COOLING - 300V**



**3VA - FREE AIR COOLING - 600V**



**3VA - FREE AIR COOLING - 300V**



MOTOR PERFORMANCE		Winding codes	3RB	3TB		
		UNIT	FREE AIR COOLING	FREE AIR COOLING		
<b>Fp</b>	Peak force	N	2560	2560		
<b>Fc</b>	Continuous force	N	656	666		
<b>Fs</b>	Standstill force	N	495	503		
<b>Ip</b>	Peak current	Arms	35.4	54.2		
<b>Ic</b>	Continuous current	Arms	4.43	6.89		
<b>Is</b>	Standstill current	Arms	3.36	5.22		
<b>vs</b>	Rated low speed	mm/s	0.12	0.12		
<b>Pc</b>	Power dissipation @ Ic	W	258	258		
<b>Fd</b>	Max. detent force (average to peak)	N	28	28		
<b>Fa</b>	Attraction force	N	4770	4770		

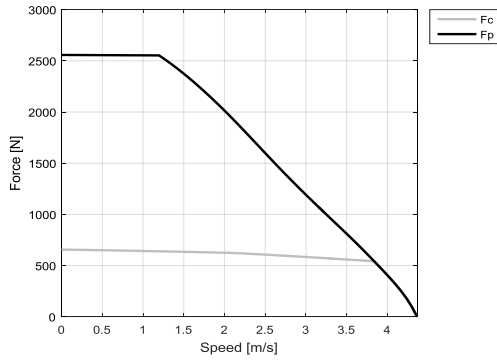
MOTOR SETTING		UNIT				
<b>Kt</b>	Force constant	N/Arms	158	103		
<b>Ku</b>	Back EMF constant (*)	Vrms/(m/s)	95.1	62.1		
<b>Km</b>	Motor constant	N/√W	52.2	52.9		
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	6.13	2.54		
<b>L</b>	Electrical inductance (*)	mH	64.7	27.5		
<b>rth</b>	Thermal time constant	s	2630	2640		
<b>Rth</b>	Thermal resistance	K/W	0.424	0.423		
<b>2tp</b>	Magnetic period	mm	32	32		
<b>mw</b>	Magnetic way mass	kg/m	7.96	7.96		
<b>mm</b>	Motor mass	kg	5.67	5.75		

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600	600		
<b>Gm</b>	Mechanical gap	mm	0.90	0.90		
<b>Ss</b>	Stator exchange surface	m <sup>2</sup>	0.08	0.08		
<b>x</b>	Assumed stroke	m	0.69	0.69		
<b>θamb</b>	Ambient temperature	°C	20	20		
<b>θmax</b>	Maximum coil temperature	°C	130	130		

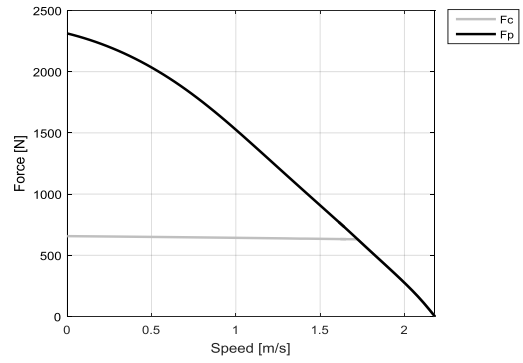
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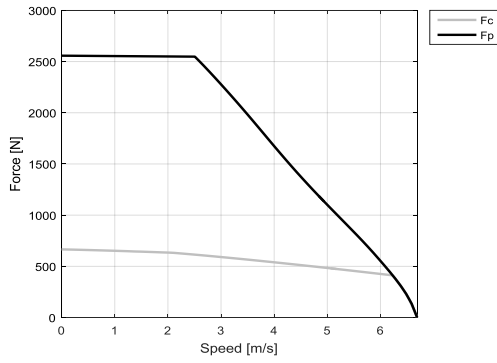
**3RB - FREE AIR COOLING - 600V**



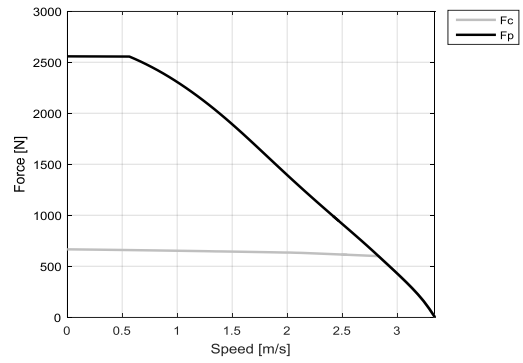
**3RB - FREE AIR COOLING - 300V**



**3TB - FREE AIR COOLING - 600V**



**3TB - FREE AIR COOLING - 300V**



MOTOR PERFORMANCE		Winding codes	3TB			
		UNIT	FREE AIR COOLING			
<b>Fp</b>	Peak force	N	3640			
<b>Fc</b>	Continuous force	N	908			
<b>Fs</b>	Standstill force	N	685			
<b>Ip</b>	Peak current	Arms	54.2			
<b>Ic</b>	Continuous current	Arms	6.58			
<b>Is</b>	Standstill current	Arms	4.98			
<b>vs</b>	Rated low speed	mm/s	0.11			
<b>Pc</b>	Power dissipation @ Ic	W	312			
<b>Fd</b>	Max. detent force (average to peak)	N	40			
<b>Fa</b>	Attraction force	N	6820			

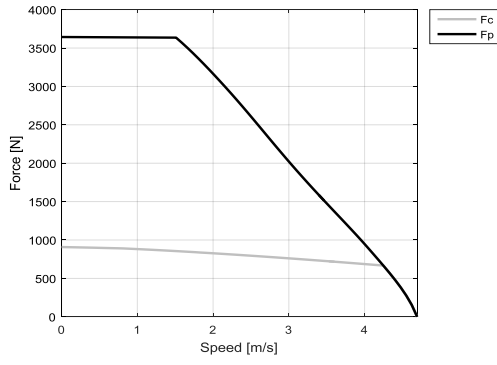
MOTOR SETTING		UNIT				
<b>Kt</b>	Force constant	N/Arms	148			
<b>Ku</b>	Back EMF constant (*)	Vrms/(m/s)	88.5			
<b>Km</b>	Motor constant	N/√W	65.8			
<b>R20</b>	Electrical resistance at 20°C (*)	Ohm	3.37			
<b>L</b>	Electrical inductance (*)	mH	39.6			
<b>rth</b>	Thermal time constant	s	2910			
<b>Rth</b>	Thermal resistance	K/W	0.349			
<b>2tp</b>	Magnetic period	mm	32			
<b>mw</b>	Magnetic way mass	kg/m	12.6			
<b>mm</b>	Motor mass	kg	7.86			

MOTOR ENVIRONMENT		UNIT				
<b>Udc</b>	Nominal DC bus voltage	VDC	600			
<b>Gm</b>	Mechanical gap	mm	0.90			
<b>Ss</b>	Stator exchange surface	m²	0.09			
<b>x</b>	Assumed stroke	m	0.69			
<b>θamb</b>	Ambient temperature	°C	20			
<b>θmax</b>	Maximum coil temperature	°C	130			

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Hypotheses and tolerances are in ETEL handbook.

**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.

**3TB - FREE AIR COOLING - 600V**



**3TB - FREE AIR COOLING - 300V**

