Test report - ELP2P3D

Object of test: Three-phase electric squirell-cage motor
Kind of test: Determination of efficiency acc. To CSA C390-10 - clause 5.1
Test report no: 148/I/11

Frame: 184T **Type:** ELP **Serial no:** AC068960

MOTOR DESCRIPTION:

Manufacturer:	US Motors / FME Indukta S.A.	
Rated power:	2	[Hp]
Number of poles:	6	
Rated voitage:	460	[V]
Rated current:	3	[A]
Speed:	1170	[RPM]
Frequency:	60	[Hz]
Power factor:	0.72	[-]
Nominal efficiency"f":	88.5	[%]
Number of phases:	3	
Time rating:	S1	
Service factor:	1.4	
NEMA design:	B	
KVA code:	I	
Insulation class:	F	
Max. amb. temperature:	40	[°C]

TESTING SCHEDULE

1) Winding resistance measurements (clause 7.1.2)
2) Heat-run test for S.F 1.0 (clause 7.1.3)
3) Load test (clause 7.1.4)
4) No-load test. (clause 7.1.7)
5) Determination of efficiency (clause 7.2.6)

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A.7.1.2 Temperature measurement

Cold winding temperature, tdet cold (°C)	23
Cold stator winding resistance, Rcold (W).	6.00272

A.7.1.3 Heat-run test

Stator winding resistance, Rhr, (W).	6.49934
Stator winding temperature, tres hr, (°C)	44.3
Ambient temperature, tamb hr, °C)	23.4

A.7.1.4 Load test

% of full load	143	120	100	73	51	20
Torque output, Tlt (i), (Nm)	17.43	14.56	12.13	8.91	6.23	2.43
Power input, Pin lt (i), (kW)	2.4447	2.0267	1.6874	1.2442	0.8916	0.3987
each line current, Ia lt(i), Ib lt(i), Ic lt(i) (A)	3.895	3.292	2.838	2.305	1.963	1.614
Rotational speed, nlt (i), (RPM)	1149.0	1159.0	1167.0	1177.0	1184.0	1194.0
Stator winding temperature, tdet lt (i), (°C)	44.3	44.8	44.7	44.4	43.8	43.2
Ambient temperature, tamb lt (i), (°C)	24.7	24.7	24.7	24.7	24.7	24.7
each line-to-line voltage, Va-b lt(i), Vb-c lt(i), Vc-a lt(i) (V)	459.97	460.13	460.57	460.40	460.27	460.83
Frequency, flt (i), (Hz)	60.00	60.00	60.00	60.01	60.02	60.02

A.7.1.5 Dynamometer correction test

	No			Tdyno cf, (Nm)	0	
Tlt corr =	17.43	14.56	12.13	8.91	6.23	2.43

A.7.1.7 No-Load test

% of nominal voltage,	105	100	95	50	35	24
each line-to-line voltage, Va-b lt(i), Vb-c lt(i), Vc-a lt(i) (V)	483.43	460.10	437.43	230.37	161.57	112.27
each line current, Ia lt(i), Ib lt(i), Ic lt(i) (A)	1.653	1.543	1.441	0.688	0.476	0.343
(c) power input, Pin nl (i), (kW)	0.08949	0.08244	0.07671	0.029521	0.020449	0.01646
(d-1) stator winding temperature, tdet nl (i), (°C)	34.2	34.2	34	33.7	33.2	32.8
(h) frequency, fnl (i), (Hz)	60.01	60.01	60.01	60.01	60.02	60.02

A 7.2 Calculation

% of full load	130	115	100	75	50	25
Power output corrected, Pcorr out lt(I), (HP)	2.60	2.30	2.00	1.50	1.00	0.50
Power output corrected, Pcorr out lt(I), (kW)	1.94	1.72	1.49	1.12	0.75	0.37
Line current, Iavg lt(i) (A)	3.89	3.29	2.84	2.31	1.96	1.61
Slip per unit corrected, Scorr lt(i)	0.0428	0.0344	0.0277	0.0194	0.0137	0.0053
Power input, Pin lt (i), (kW)	2.445	2.027	1.687	1.244	0.892	0.399
Core loss, Pcore(i), (kW)	0.046	0.046	0.046	0.047	0.047	0.048
Windage-friction loss Pwind-frict, (kW)	0.012	0.012	0.012	0.012	0.012	0.012
Stray-load losses, Pstray-load lt(i) (kW)	0.039	0.027	0.019	0.010	0.005	0.001
Stator winding correction, Pcorr stator lt(i) (kW)	0.149	0.106	0.079	0.052	0.038	0.026
Rotor winding correction, Pcorr rotor lt(i) (kW)	0.096	0.064	0.043	0.022	0.011	0.002
Power Factor, PF lt(i), (%)	78.789	77.255	74.534	67.680	56.965	30.942
Efficiency, Eff lt, (%)	86.033	87.377	88.177	88.480	87.322	77.972
					γ =	0.994

Summary: Parameters of tested motor are in compliance with requirements.

Date of testing: 6-Oct-11

Measurements made dy:	D Formas	M Ptaszkis	G Tlałka
Test Report written by:	T Dobosz	**Approved by:**	A Opitek

Appendices:

1) List of measurement instruments used in tests.