

Test report - ELP7P3D

Object of test: Three-phase electric squirrel-cage motor
Kind of test: Determination of efficiency acc. To CSA C390-10 - clause 5.1
Test report no: 139/I/11

Frame: 254T

Type: ELP

Serial no: AC082115

MOTOR DESCRIPTION:

Manufacturer: US Motors / FME Indukta S.A.
Rated power: 7.5 [Hp]
Number of poles: 6
Rated voltage: 460 [V]
Rated current: 10.4 [A]
Speed: 1185 [RPM]
Frequency: 60 [Hz]
Power factor: 0.74 [-]
Nominal efficiency" η ": 91.0 [%]
Number of phases: 3
Time rating: S1
Service factor: 1.3
NEMA design: A
KVA code: K
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)

Test report - ELP7P3D

Frame: 254T

Type: ELP

Serial no: AC082115

A.7.1.2 Temperature measurement

Cold winding temperature, $t_{det\ cold}$ (°C) 24
Cold stator winding resistance, R_{cold} (W). 0.90981

A.7.1.3 Heat-run test

Stator winding resistance, R_{hr} (W). 1.00138
Stator winding temperature, $t_{res\ hr}$ (°C) 50.0
Ambient temperature, $t_{amb\ hr}$ (°C) 28.2

A.7.1.4 Load test

% of full load
Torque output, T_{lt} (i), (Nm)
Power input, $P_{in\ lt}$ (i), (kW)
each line current, I_a lt(i), I_b lt(i), I_c lt(i) (A)
Rotational speed, n_{lt} (i), (RPM)
Stator winding temperature, $t_{det\ lt}$ (i), (°C)
Ambient temperature, $t_{amb\ lt}$ (i), (°C)
each line-to-line voltage, V_{a-b} lt(i), V_{b-c} lt(i), V_{c-a} lt(i) (V)
Frequency, f_{lt} (i), (Hz)

136	120	101	75	51	19
61.38	53.90	45.39	33.89	22.82	8.71
8.3483	7.3255	6.1791	4.676	3.22111	1.40127
13.695	12.055	10.667	9.025	7.690	6.593
1175.0	1178.0	1182.0	1187.0	1192.0	1197.0
50.9	51.2	51.1	50.8	50.4	50
27.8	27.8	27.8	27.8	27.8	27.8
459.67	459.57	459.72	460.32	459.94	460.09
59.99	59.99	60.00	60.01	60.02	60.01
No	T _{dyno cf} , (Nm)				0
61.38	53.90	45.39	33.89	22.82	8.71

A.7.1.5 Dynamometer correction test

T_{lt corr} =

A.7.1.7 No-Load test

% of nominal voltage,
each line-to-line voltage, V_{a-b} lt(i), V_{b-c} lt(i), V_{c-a} lt(i) (V)
each line current, I_a lt(i), I_b lt(i), I_c lt(i) (A)
(c) power input, $P_{in\ nl}$ (i), (kW)
(d-1) stator winding temperature, $t_{det\ nl}$ (i), (°C)
(h) frequency, f_{nl} (i), (Hz)

105	100	95	50	35	24
483.56	460.74	437.26	230.85	161.90	112.28
6.947	6.422	5.944	2.836	1.969	1.406
0.35834	0.31742	0.28118	0.12314	0.07922	0.07163
43.2	43.1	43	42.6	42.2	41.8
60.02	60.02	60.02	60.02	60.02	60.01

A 7.2 Calculation

% of full load
Power output corrected, $P_{corr\ out\ lt}$ (i), (HP)
Power output corrected, $P_{corr\ out\ lt}$ (i), (kW)
Line current, $I_{avg\ lt}$ (i) (A)
Slip per unit corrected, $S_{corr\ lt}$ (i)
Power input, $P_{in\ lt}$ (i), (kW)
Core loss, P_{core} (i), (kW)
Windage-friction loss $P_{wind-frict}$, (kW)
Stray-load losses, $P_{stray-load\ lt}$ (i) (kW)
Stator winding correction, $P_{corr\ stator\ lt}$ (i) (kW)
Rotor winding correction, $P_{corr\ rotor\ lt}$ (i) (kW)
Power Factor, $PF\ lt$ (i), (%)
Efficiency, $Eff\ lt$, (%)

130	115	100	75	50	25
9.75	8.63	7.50	5.63	3.75	1.88
7.28	6.44	5.60	4.20	2.80	1.40
13.69	12.06	10.67	9.03	7.69	6.59
0.0204	0.0179	0.0149	0.0109	0.0069	0.0027
8.348	7.326	6.179	4.676	3.221	1.401
0.194	0.195	0.197	0.199	0.201	0.203
0.051	0.051	0.051	0.051	0.051	0.051
0.116	0.089	0.063	0.035	0.016	0.002
0.279	0.216	0.169	0.121	0.088	0.065
0.160	0.124	0.086	0.048	0.020	0.003
76.566	76.340	72.747	64.984	52.582	26.671
90.425	90.788	90.838	90.290	88.333	76.859
					$\gamma =$ 0.986

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

Date of testing: 13-Jun-11

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

Appendices:

1) List of measurement instruments used in tests.