



ROYCECROSSGROUP



ROYCE CROSS GROUP

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

NAMEPLATE DATA			
Y3-280SM-4 FRAME	IEC TYPE	90 kW	1485 r/min
4 POLE	3 PHASE	415 VOLTS	50 Hz
ROYCE CROSS GROUP MANUFACTURER	147.0 AMPS	IP55 IP	
	S1 DUTY	F INS.CLASS	CONNECTION

MAJOR CONTENTS	UNIT	TEST VALUE
STATOR RESISTANCE OF PHASE	OHM	0.06504
NO LOAD CURRENT	AMP	35.13
NO LOAD INPUT	W	1961.6
CORE LOSS(Pfe)	W	1638.7
WINDAGE FRICTION LOSS(Pfw)	W	244.6
STATOR WINDING LOSS(Pcu1)	W	1404.9
ROTOR WINDING LOSS(Pcu2)	W	763.6
STRAY LOAD LOSS(Ps)	W	474.9
FULL LOAD CURRENT	AMP	147.27
LOCKED ROTOR CURRENT	AMP	882.51
LOCKED ROTOR CURRENT/FULL LOAD CURRENT	P.U.	6.00
FULL LOAD TORQUE	N.m	577.76
LOCKED ROTOR TORQUE	N.m	1179.64
LOCKED ROTOR TORQUE/FULL LOAD TORQUE	P.U.	2.04
PULL OUT TORQUE	N.m	1606.94
PULL OUT TORQUE/FULL LOAD TORQUE	P.U.	2.77
INPUT @ FULL LOAD	kW	94.53
EFFICIENCY @ FULL LOAD	%	95.21
POWER FACTOR @ FULL LOAD		0.89
FULL LOAD SLIP	%	0.835
FULL LOAD SPEED	r/min	1487.5
STATOR WINDING TEMPERATURE RISE	K	65
D.E. BEARINGS TEMPERATURE BY PT100	Deg. C	53.6
AMBIENT TEMPERATURE OF TESTING	Deg. C	26.0
NOISE	dB(A)	84
VIBRATION	mm/s	0.9

The data above is calculated as per IEC 34-2, all data at nominal Volts.

ROYCE CROSS GROUP Y3-280SM-4 90 kW 415 VOLTS 50 Hz	SERIAL NO.	0	
	DATE	0/01/1900	REV
	DRAWN		DOCUMENT NO.
	APPRVD		
	CHECKED		
		0	

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

ROYCE CROSS GROUP

Type	Y3-280SM-4	Poles	4	Power	90.0 kW
Voltage	415 V	Current	147 A	Frequency	50 Hz
Speed	1485 r/min	Duty	S1	Connection	△
Ins. class	F	Weight	0 kg		IP55

NO LOAD TEST

VOL	mul.	Hz	I01	I02	I03	mul.	W1	W2	mul.	
475.3	1	50	2.527	2.607	2.588	20	-783.6	951.7	20	88.0
447.5	1	50	2.092	2.146	2.117	20	-617.1	743.3	20	87.5
415.0	1	50	1.732	1.785	1.754	20	-475.2	573.2	20	86.9
357.9	1	50	1.355	1.415	1.361	20	-325.6	397.4	20	86.5
317.0	1	50	1.153	1.228	1.163	20	-245.7	305.7	20	86.3
271.0	1	50	0.955	1.028	0.968	20	-172.1	219.9	20	85.9
207.2	1	50	1.439	1.450	1.493	10	-175.0	239.4	10	85.5
176.3	1	50	1.238	1.238	1.223	10	-130.1	184.5	10	85.2
136.0	1	50	0.947	0.924	0.969	10	-62.3	104.0	10	84.9
104.1	1	50	0.721	0.725	0.729	10	-13.9	48.4	10	84.6

Initial Resistance immediately before no-load test: 0 Ω ambient temperature: 0.0 °C

Final Resistance immediately later no-load test: 0 Ω ambient temperature: 0.0 °C

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ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

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Type	Y3-280SM-4	Poles	4	Power	90.0	kW
Voltage	415 V	Current	147 A	Frequency	50.0	Hz
Speed	1485 r/min	Duty	S1	Connection		
Ins. class	F	Weight	0 kg		IP55	

LOCKED ROTOR TEST

VOL	mul.	Ik1	Ik2	Ik3	mul.	W1	W2	mul.	Torqure N. m
253.5	1.0	2.410	2.425	2.452	200.0	-124.1	654.0	200	357.48
224.5	1.0	2.100	2.106	2.125	200.0	-100.4	501.7	200	285.84
201.2	1.0	1.840	1.847	1.866	200.0	-81.5	392.1	200	221.44
182.6	1.0	1.643	1.648	1.666	200.0	-68.3	316.0	200	178.02
161.6	1.0	1.434	1.442	1.455	200.0	-54.8	244.1	200	136.77
138.3	1.0	2.415	2.429	2.445	100.0	-81.4	349.9	100	96.97
106.5	1.0	1.834	1.841	1.859	100.0	-48.6	203.2	100	55.72

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Type	Y3-280SM-4			Poles	4		Power	90	kW		
Voltage	415 V			Current	147	A		Frequency	50	Hz	
Speed	1485 r/min			Duty	S1		Connection				
Ins. class	F			Weight	0 kg		IP55				

TEMPERATURE RISE TEST

TIME (h:min)	V	I1	I2	I3	mul.	W1	W2	mul.	T1 °C	T2 °C	T3 °C	T4 °C	T5 °C	T6 °C	T7 °C	T8 °C	T9 °C	T10 °C	T11 °C	T12 °C	T13 °C	
11:00	415.1	2.973	2.969	2.998	50	621.0	1272.0	50	53.0	—	92.8	89.8	—	—	—	—	—	—	—	—	—	25.7
11:30	415.2	2.941	2.953	2.971	50	613.6	1265.2	50	51.9	—	93.6	90.7	—	—	—	—	—	—	—	—	—	25.7
12:00	415.3	2.978	2.971	3.010	50	626.0	1273.0	50	52.1	—	95.8	92.8	—	—	—	—	—	—	—	—	—	25.8
12:30	415.3	2.961	2.961	3.005	50	624.0	1269.6	50	52.8	—	96.9	93.9	—	—	—	—	—	—	—	—	—	25.8
13:00	415.2	2.927	2.927	2.971	50	613.6	1254.0	50	53.2	—	98.3	95.2	—	—	—	—	—	—	—	—	—	25.9
13:30	415.3	2.962	2.973	2.991	50	619.8	1274.0	50	53.7	—	98.1	95.1	—	—	—	—	—	—	—	—	—	25.9
14:00	415.3	2.929	2.921	2.955	50	611.6	1251.2	50	53.6	—	98.5	95.3	—	—	—	—	—	—	—	—	—	26.1
最后三点平均值	147.535		A		93736.67		W		53.6	—	98.3	95.2	—	—	—	—	—	—	—	—	—	26.0

T1 T2: DE BEARING TEMPERATURE
T3~T10: DE WINDING TEMPERATURE

T11: CORE TEMPERATRE
T13: AMBIENT TEMPERATURE

T12: FRAME TEMPERATRE

WINDING RESISTANCE (HOT) AT END OF TEMPERATURE RISE TEST

TIME (S)	53	86	114	140	173	209	240	268
RESISTANCE	0.04304	0.04290	0.04279	0.04269	0.04259	0.04248	0.04243	0.04235

WINDING RESISTANCE (COLD)

△	U1-V1	U1-W1	V1-W1	AVERAGE	MIN	AMBIENT TEM.
	0.03415	0.03415	0.03418	0.03416	0.03415	25 °C
Y	U1-U2	V1-V2	W1-W2	AVERAGE	MIN	AMBIENT TEM.
	0	0	0	0.000	0	0 °C

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Type	Y3-280SM-4	Poles	4	output Power	90.0	kW		
Voltage	415	V	Current	147	A	Frequency	50.0	Hz
Speed	1485	r/min	Duty	S1	Connection			
Ins. class	F	Weight	0	kg		IP55		

LOAD TEST

V	Hz	A1 (unit)	A2 (unit)	A3 (unit)	mul.	W1 (unit)	W2 (unit)	mul.	r/min
414.9	50.02	2.182	2.182	2.208	100	478.2	946.2	100	1479.9
415.1	50.02	1.803	1.803	1.821	100	394.5	780.4	100	1484.2
414.9	50.01	1.460	1.460	1.478	100	307.6	632.8	100	1487.8
415.1	50.02	2.270	2.270	2.287	50	414.3	976.0	50	1491.2
414.9	50.00	1.724	1.724	1.733	50	226.7	725.6	50	1494.3
415.1	50.01	1.267	1.267	1.276	50	20.2	481.8	50	1497.2

% LOAD	OUTPUT W	INPUT W	AMPS A	Pcu1 W	SLIP %	Pcu2 W	Ps W	EFF %	P. F.
150	135000	142983.3	219.874	3131.6	1.381	1909.3	1059.0	94.42	0.905
125	112500	118537.5	182.539	2158.4	1.102	1264.1	731.7	94.91	0.903
100	90000	94526.7	147.268	1404.9	0.835	763.6	474.9	95.21	0.893
75	67500	70982.4	115.751	867.9	0.637	436.2	295.0	95.09	0.853
50	45000	47704.2	86.449	484.1	0.380	173.0	163.8	94.33	0.768
25	22500	24775.5	63.155	258.4	0.204	46.6	87.3	90.82	0.546

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