



ROYCECROSSGROUP



ROYCE CROSS GROUP

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

NAMEPLATE DATA			
Y3-180L-4 FRAME	IEC TYPE	22 kW	1468 r/min
4 POLE	3 PHASE	415 VOLTS	50 Hz
ROYCE CROSS GROUP MANUFACTURER	38.2 AMPS	IP56 IP	
	S1 DUTY	F INS.CLASS	CONNECTION

MAJOR CONTENTS	UNIT	TEST VALUE
STATOR RESISTANCE OF PHASE	OHM	0.51096
NO LOAD CURRENT	AMP	12.94
NO LOAD INPUT	W	671.7
CORE LOSS(Pfe)	W	190.6
WINDAGE FRICTION LOSS(Pfw)	W	399.9
STATOR WINDING LOSS(Pcu1)	W	710.6
ROTOR WINDING LOSS(Pcu2)	W	392.7
STRAY LOAD LOSS(Ps)	W	115.1
FULL LOAD CURRENT	AMP	37.48
LOCKED ROTOR CURRENT	AMP	291.55
LOCKED ROTOR CURRENT/FULL LOAD CURRENT	P.U.	7.63
FULL LOAD TORQUE	N.m	142.49
LOCKED ROTOR TORQUE	N.m	359.93
LOCKED ROTOR TORQUE/FULL LOAD TORQUE	P.U.	2.52
PULL OUT TORQUE	N.m	424.65
PULL OUT TORQUE/FULL LOAD TORQUE	P.U.	2.97
INPUT @ FULL LOAD	kW	23.81
EFFICIENCY @ FULL LOAD	%	92.40
POWER FACTOR @ FULL LOAD		0.88
FULL LOAD SLIP	%	1.714
FULL LOAD SPEED	r/min	1474.3
STATOR WINDING TEMPERATURE RISE	K	63
D.E. BEARINGS TEMPERATURE BY PT100	Deg. C	—
AMBIENT TEMPERATURE OF TESTING	Deg. C	27.3
NOISE	dB(A)	73
VIBRATION	mm/s	0.9

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

	ROYCE CROSS GROUP	SERIAL NO.			

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Type	Y3-180L-4	Poles	4	Power	22.0 kW
Voltage	415 V	Current	38.2 A	Frequency	50 Hz
Speed	1468 r/min	Duty	S1	Connection	△
Ins. class	F	Weight	0 kg		IP56

NO LOAD TEST

VOL	mul.	Hz	I01	I02	I03	mul.	W1	W2	mul.	
447.0	1	50	2.946	2.922	2.977	5	-523.8	671.2	5	78.2
426.6	1	50	2.691	2.677	2.737	5	-448.7	588.5	5	78.0
415.6	1	50	2.560	2.596	2.623	5	-420.3	554.8	5	77.8
356.1	1	50	2.076	2.130	2.127	5	-282.5	401.1	5	77.6
311.1	1	50	1.786	1.843	1.797	5	-206.1	316.8	5	77.4
250.2	1	50	3.615	3.534	3.616	2	-268.8	521.3	2	77.1
205.3	1	50	2.885	2.963	3.071	2	-132.2	372.6	2	76.7
181.6	1	50	2.653	2.765	2.779	2	-86.2	321.4	2	76.5
152.0	1	50	2.313	2.441	2.402	2	-31.9	257.8	2	76.2
100.0	1	50	1.979	2.092	2.059	2	40.2	170.2	2	75.9

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Speed	1468 r/min	Duty	S1	Connection		
Ins. class	F	Weight	0 kg		IP56	

LOCKED ROTOR TEST

VOL	mul.	Ik1	Ik2	Ik3	mul.	W1	W2	mul.	Torqure N. m
367.3	1.0	2.483	2.486	2.490	100.0	-51.9	765.9	100	261.76
314.9	1.0	2.043	2.053	2.053	100.0	-44.1	538.5	100	177.09
271.3	1.0	1.696	1.697	1.698	100.0	-35.8	380.0	100	128.58
226.7	1.0	2.721	2.730	2.723	50.0	-59.3	504.8	50	83.40
180.7	1.0	2.070	2.080	2.084	50.0	-42.2	303.1	50	49.10
138.8	1.0	1.535	1.534	1.538	50.0	-26.6	169.4	50	27.44
102.8	1.0	2.781	2.790	2.796	20.0	-39.8	225.6	20	14.21

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Voltage	415 V			Current	38.2 A		Frequency	50 Hz	
Speed	1468 r/min			Duty	S1		Connection		
Ins. class	F			Weight	0 kg		IP56		

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	
10:30	415.2	3.760	3.746	3.774	10	860.6	1598.4	10	—	52.0	83.1	—	—	—	—	—	—	—	—	—	—	26.8
11:00	415.2	3.797	3.791	3.783	10	867.8	1613.4	10	—	58.1	90.5	—	—	—	—	—	—	—	—	—	—	26.9
11:30	415.2	3.801	3.787	3.817	10	876.0	1610.2	10	—	62.6	95.3	—	—	—	—	—	—	—	—	—	—	27.0
12:00	415.2	3.787	3.772	3.776	10	872.0	1603.4	10	—	64.8	96.7	—	—	—	—	—	—	—	—	—	—	27.0
12:30	415.3	3.760	3.746	3.772	10	872.2	1598.2	10	—	65.5	98.0	—	—	—	—	—	—	—	—	—	—	27.1
13:00	415.4	3.735	3.750	3.770	10	862.6	1599.6	10	—	64.8	97.7	—	—	—	—	—	—	—	—	—	—	27.3
13:30	415.2	3.758	3.750	3.746	10	858.2	1590.8	10	—	64.8	97.4	—	—	—	—	—	—	—	—	—	—	27.3
14:00	415.4	3.756	3.741	3.762	10	872.0	1597.0	10	—	64.3	97.1	—	—	—	—	—	—	—	—	—	—	27.2
最后三点平均值		37.521			A	24600.67		W	—	64.3	97.4	—	—	—	—	—	—	—	—	—	—	27.3

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)	47	60	74	88	103	115	129	142
RESISTANCE	0.3349	0.3337	0.3327	0.3315	0.3303	0.3296	0.3287	0.3279

WINDING RESISTANCE (COLD)

△	U1-V1	U1-W1	V1-W1	AVERAGE	MIN	AMBIENT TEM.
	0.27	0.2701	0.27	0.27003	0.27000	26.6 °C
Y	U1-U2	V1-V2	W1-W2	AVERAGE	MIN	AMBIENT TEM.
	0	0	0	0.000	0	0 °C

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Voltage	415	V	Current	38.2	A	Frequency	50.0	Hz
Speed	1468	r/min	Duty	S1	Connection			
Ins. class	F	Weight	0	kg		IP56		

LOAD TEST

V	Hz	A1 (unit)	A2 (unit)	A3 (unit)	mul.	W1 (unit)	W2 (unit)	mul.	r/min
415.1	49.99	2.631	2.646	2.641	20	609.5	1093.6	20	1459.0
415.0	49.99	2.213	2.211	2.226	20	514.3	919.5	20	1467.3
414.9	49.99	1.937	1.943	1.934	20	431.8	804.8	20	1472.5
415.1	49.99	1.512	1.503	1.513	20	307.4	623.2	20	1481.3
414.8	49.99	2.207	2.230	2.237	10	336.8	915.4	10	1489.5
414.9	49.99	3.218	3.193	3.256	5	152.4	1205.6	5	1496.8

% LOAD	OUTPUT W	INPUT W	AMPS A	Pcu1 W	SLIP %	Pcu2 W	Ps W	EFF %	P. F.
150	33000	36480.1	56.519	1615.9	2.937	1017.3	256.3	90.46	0.898
125	27500	30002.7	46.453	1091.6	2.259	648.1	172.4	91.66	0.899
100	22000	23808.9	37.479	710.6	1.714	392.7	115.1	92.40	0.884
75	16500	17785.7	29.119	428.9	1.145	196.7	69.6	92.77	0.850
50	11000	11937.5	21.626	236.6	0.626	72.1	38.3	92.15	0.768
25	5500	6240.2	15.518	121.8	0.145	8.6	19.3	88.14	0.559

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Load Curve

