



ROYCECROSSGROUP



ROYCE CROSS GROUP

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

NAMEPLATE DATA			
Y3-180M-4 FRAME	IEC TYPE	18.5 kW	1469 r/min
4 POLE	3 PHASE	415 VOLTS	50 Hz
ROYCE CROSS GROUP MANUFACTURER	32.4 AMPS	IP55 IP	
	S1 DUTY	F INS.CLASS	CONNECTION

MAJOR CONTENTS	UNIT	TEST VALUE
STATOR RESISTANCE OF PHASE	OHM	0.62631
NO LOAD CURRENT	AMP	12.73
NO LOAD INPUT	W	528.1
CORE LOSS(Pfe)	W	318.2
WINDAGE FRICTION LOSS(Pfw)	W	115.4
STATOR WINDING LOSS(Pcu1)	W	636.1
ROTOR WINDING LOSS(Pcu2)	W	370.7
STRAY LOAD LOSS(Ps)	W	99.1
FULL LOAD CURRENT	AMP	32.18
LOCKED ROTOR CURRENT	AMP	242.74
LOCKED ROTOR CURRENT/FULL LOAD CURRENT	P.U.	7.49
FULL LOAD TORQUE	N.m	120.10
LOCKED ROTOR TORQUE	N.m	294.94
LOCKED ROTOR TORQUE/FULL LOAD TORQUE	P.U.	2.45
PULL OUT TORQUE	N.m	334.11
PULL OUT TORQUE/FULL LOAD TORQUE	P.U.	2.78
INPUT @ FULL LOAD	kW	20.04
EFFICIENCY @ FULL LOAD	%	92.32
POWER FACTOR @ FULL LOAD		0.87
FULL LOAD SLIP	%	1.942
FULL LOAD SPEED	r/min	1470.9
STATOR WINDING TEMPERATURE RISE	K	61
D.E. BEARINGS TEMPERATURE BY PT100	Deg. C	58.3
AMBIENT TEMPERATURE OF TESTING	Deg. C	21.9
NOISE	dB(A)	71
VIBRATION	mm/s	1.3

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

ROYCE CROSS GROUP	SERIAL NO.	0		
				0

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Type	Y3-180M-4		Poles	4		Power	18.5 kW
Voltage	415	V	Current	32.4	A	Frequency	50 Hz
Speed	1469	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.	
476.1	1	50	4.158	4.135	4.226	5	-788.4	977.1	5	71.9
444.3	1	50	3.174	3.127	3.199	5	-560.2	694.3	5	71.9
415.3	1	50	2.554	2.526	2.570	5	-421.0	526.8	5	71.9
361.5	1	50	1.875	1.855	1.888	5	-263.0	339.9	5	71.9
304.9	1	50	3.616	3.629	3.658	2	-422.2	571.0	2	71.7
249.6	1	50	2.757	2.822	2.825	2	-249.4	371.7	2	71.6
205.9	1	50	2.282	2.265	2.315	2	-156.2	255.5	2	71.3
163.4	1	50	1.798	1.827	1.803	2	-89.5	174.7	2	71.1
138.6	1	50	1.518	1.579	1.602	2	-52.2	129.2	2	71.0
104.8	1	50	1.211	1.198	1.226	2	-14.6	82.8	2	70.8

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ROYCE CROSS GROUP

Type	Y3-180M	Poles	4	Power	18.5	kW
Voltage	415 V	Current	32.4 A	Frequency	50.0	Hz
Speed	1469 r/min	Duty	S1	Connection		
Ins. class	F	Weight	0 kg		IP55	

LOCKED ROTOR TEST

VOL	mul.	Ik1	Ik2	Ik3	mul.	W1	W2	mul.	Torqu N. m
413.7	1.0	2.409	2.416	2.422	100.0	-86.3	932.2	100	292.57
370.4	1.0	2.047	2.049	2.056	100.0	-72.5	705.0	100	216.68
326.7	1.0	1.712	1.716	1.721	100.0	-61.0	516.9	100	157.77
280.6	1.0	1.393	1.394	1.396	100.0	-49.1	356.5	100	108.84
223.9	1.0	2.059	2.062	2.068	50.0	-71.9	412.7	50	63.91
175.6	1.0	1.512	1.514	1.518	50.0	-47.1	233.0	50	34.95
136.8	1.0	2.816	2.824	2.827	20.0	-75.9	334.4	20	19.97
103.2	1.0	2.075	2.077	2.082	20.0	-43.3	184.8	20	16.98

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ROYCE CROSS GROUP

Type	Y3-180M		Poles	4		Power	18.5	kW	
Voltage	415	V	Current	32.4	A	Frequency	50	Hz	
Speed	1469	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	
10:30	415.4	3.239	3.235	3.243	10	684.2	1379.4	10	49.4	—	75.6	75.1	—	—	—	—	—	—	—	—	—	19.7
11:00	415.6	3.243	3.237	3.247	10	684.6	1380.2	10	52.9	—	80.1	79.6	—	—	—	—	—	—	—	—	—	20.5
11:30	415.5	3.252	3.243	3.243	10	688.8	1383.0	10	54.5	—	83.4	82.9	—	—	—	—	—	—	—	—	—	20.4
12:00	415.0	3.252	3.247	3.245	10	689.8	1382.4	10	55.5	—	85.0	84.5	—	—	—	—	—	—	—	—	—	20.8
12:30	415.5	3.254	3.237	3.254	10	694.0	1378.6	10	56.9	—	86.3	85.8	—	—	—	—	—	—	—	—	—	21.1
13:00	415.6	3.258	3.237	3.254	10	694.6	1380.8	10	58.1	—	87.7	87.2	—	—	—	—	—	—	—	—	—	22.1
13:30	415.7	3.249	3.241	3.258	10	691.2	1381.6	10	57.0	—	88.0	87.4	—	—	—	—	—	—	—	—	—	21.6
14:00	415.6	3.241	3.232	3.249	10	690.0	1377.8	10	58.3	—	88.4	87.8	—	—	—	—	—	—	—	—	—	22.1
最后三点平均值	32.465		A		20720		W		58.3	—	88.0	87.5	—	—	—	—	—	—	—	—	—	21.9

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)	41	58	76	97	114	133	155	182
RESISTANCE	0.4022	0.4010	0.3999	0.3987	0.3979	0.3971	0.3963	0.3955

WINDING RESISTANCE (COLD)

△	U1-V1	U1-W1	V1-W1	AVERAGE	MIN	AMBIENT TEM.
	0.3219	0.3215	0.3215	0.32163	0.32150	19.2 °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	Y3-180M-4	Poles	4	output Power	18.5	kW		
Voltage	415	V	Current	32.4	A	Frequency	50.0	Hz
Speed	1469	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
415.1	50.00	2.448	2.443	2.452	20	541.8	1018.6	20	1450.2
415.1	49.99	2.050	2.050	2.055	20	448.2	854.8	20	1460.0
414.8	50.00	1.662	1.655	1.660	20	347.6	689.9	20	1469.9
415.0	50.00	1.503	1.499	1.507	20	302.3	625.2	20	1473.8
414.9	49.99	2.596	2.577	2.602	10	479.3	1071.8	10	1478.9
414.8	49.99	1.957	1.939	1.951	10	255.4	790.3	10	1486.9
415.0	49.99	1.748	1.727	1.748	10	168.6	688.1	10	1489.9

% LOAD	OUTPUT W	INPUT W	AMPS A	Pcu1 W	SLIP %	Pcu2 W	Ps W	EFF %	P. F.
150	27750	30801.6	48.335	1435.5	3.300	958.7	223.7	90.09	0.887
125	23125	25302.1	39.847	975.6	2.572	617.1	150.7	91.40	0.883
100	18500	20039.6	32.176	636.1	1.942	370.7	99.1	92.32	0.866
75	13875	14931.4	24.859	379.7	1.326	188.1	54.9	92.93	0.836
50	9250	10014.6	18.922	220.0	0.814	77.1	33.8	92.37	0.736
25	4625	5203.5	13.679	115.0	0.297	14.1	15.8	88.88	0.529

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Voltage	415 V	Current	32.4 A	Frequency	50.0	Hz
Speed	1469 r/min	Duty	S1	Connection		
Ins. class	F	Weight	0 kg			IP55

Load Curve

