

ROYCE CROSS GROUP

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

NAMEPLATE DATA			
Y3-160M-4 FRAME	IEC TYPE	11 kW	1471 r/min
4 POLE	3 PHASE	415 VOLTS	50 Hz
ROYCE CROSS GROUP MANUFACTURER	20.0 AMPS	IP55 IP	
	S1 DUTY	F INS.CLASS	CONNECTION

MAJOR CONTENTS	UNIT	TEST VALUE
STATOR RESISTANCE OF PHASE	OHM	0.9561
NO LOAD CURRENT	AMP	9.07
NO LOAD INPUT	W	469.6
CORE LOSS(Pfe)	W	340.8
WINDAGE FRICTION LOSS(Pfw)	W	58.3
STATOR WINDING LOSS(Pcu1)	W	359.2
ROTOR WINDING LOSS(Pcu2)	W	216.6
STRAY LOAD LOSS(Ps)	W	60.6
FULL LOAD CURRENT	AMP	19.98
LOCKED ROTOR CURRENT	AMP	136.16
LOCKED ROTOR CURRENT/FULL LOAD CURRENT	P.U.	6.81
FULL LOAD TORQUE	N.m	71.39
LOCKED ROTOR TORQUE	N.m	157.26
LOCKED ROTOR TORQUE/FULL LOAD TORQUE	P.U.	2.20
PULL OUT TORQUE	N.m	199.13
PULL OUT TORQUE/FULL LOAD TORQUE	P.U.	2.79
INPUT @ FULL LOAD	kW	12.04
EFFICIENCY @ FULL LOAD	%	91.40
POWER FACTOR @ FULL LOAD		0.84

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Type	Y3-160M-4		Poles	4		Power	11.0 kW	
Voltage	415	V	Current	20	A	Frequency	50 Hz	
Speed	1471	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.
512.1	1	50	3.544	3.569	3.558	5	-914.6	1171.5	5 60.6
457.0	1	50	2.356	2.372	2.358	5	-552.8	688.1	5 60.7
415.3	1	50	1.815	1.821	1.816	5	-385.9	480.0	5 60.8
365.5	1	50	1.424	1.425	1.426	5	-263.3	331.7	5 60.8
317.1	1	50	2.925	2.894	2.920	2	-462.4	589.8	2 60.5
251.5	1	50	2.199	2.171	2.192	2	-267.6	357.8	2 60.3
206.8	1	50	1.760	1.734	1.757	2	-166.6	242.6	2 60.1
167.2	1	50	1.395	1.372	1.387	2	-99.8	161.1	2 59.6
86.1	1	50	0.725	0.704	0.718	2	-14.2	51.0	2 58.5

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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	0.00	0
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Type	Y3-160M-4	Poles	4	Power	11.0	kW
Voltage	415 V	Current	20 A	Frequency	50.0	Hz
Speed	1471 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
413.4	1.0	1.354	1.356	1.353	100.0	-65.5	589.3	100	155.84
370.9	1.0	1.160	1.160	1.157	100.0	-55.3	450.4	100	119.12
308.3	1.0	1.801	1.802	1.797	50.0	-85.4	573.5	50	75.24
250.5	1.0	1.369	1.371	1.366	50.0	-60.6	348.2	50	46.57
196.3	1.0	1.009	1.009	1.007	50.0	-39.7	198.2	50	25.97
141.6	1.0	1.732	1.748	1.729	20.0	-55.2	244.2	20	12.54
106.3	1.0	1.276	1.293	1.273	20.0	-30.9	134.7	20	7.17

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Type	Y3-160M-4			Poles	4		Power	11 kW	
Voltage	415 V			Current	20 A		Frequency	50 Hz	
Speed	1471 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	
18:00	414.9	2.018	2.022	2.017	10	363.0	856.3	10	36.0	—	63.7	61.9	—	—	—	—	—	—	—	—	—	16.2
18:30	415.0	2.021	2.024	2.020	10	364.0	857.2	10	38.0	—	66.3	64.4	—	—	—	—	—	—	—	—	—	15.8
19:00	415.1	2.015	2.020	2.015	10	362.9	855.8	10	39.5	—	68.3	66.2	—	—	—	—	—	—	—	—	—	15.7
19:30	414.9	2.011	2.015	2.011	10	362.8	853.1	10	40.0	—	69.0	67.0	—	—	—	—	—	—	—	—	—	15.6
20:00	414.9	2.004	2.007	2.004	10	359.9	850.2	10	39.2	—	68.9	67.0	—	—	—	—	—	—	—	—	—	15.5
最后三点平均值		20.112			A	12149.11		W	39.2	—	68.7	66.7	—	—	—	—	—	—	—	—	—	15.6

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)	51	67	79	94	111	132	148	168
RESISTANCE	0.5749	0.5735	0.5726	0.5717	0.5708	0.5697	0.5689	0.5681

WINDING RESISTANCE (COLD)

△	U1-V1	U1-W1	V1-W1	AVERAGE	MIN	AMBIENT TEM.
	0.4836	0.4844	0.4841	0.48403	0.48360	15.6 °C
Y	U1-U2	V1-V2	W1-W2	AVERAGE	MIN	AMBIENT TEM.
	0	0	0	0.000	0	0 °C

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Type	Y3-160M-4	Poles	4	output Power	11.0	kW		
Voltage	415	V	Current	20	A	Frequency	50.0	Hz
Speed	1471	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	2.949	2.957	2.949	10	620.7	1258.9	10	1457.1
415.3	50.01	2.476	2.483	2.475	10	496.2	1058.5	10	1464.8
415.0	50.02	2.038	2.045	2.037	10	368.1	868.3	10	1472.1
415.1	50.02	1.654	1.660	1.653	10	238.4	697.0	10	1478.8
415.3	50.01	1.444	1.449	1.442	10	157.6	597.5	10	1482.7
415.0	50.02	2.643	2.655	2.655	5	209.8	1068.0	5	1485.1
415.3	50.02	2.145	2.155	2.150	5	-71.1	759.6	5	1491.1

% LOAD	OUTPUT W	INPUT W	AMPS A	Pcu1 W	SLIP %	Pcu2 W	Ps W	EFF %	P. F.
150	16500	18267.1	28.754	743.6	2.904	499.1	125.4	90.33	0.884
125	13750	15101.5	24.172	525.5	2.376	338.3	88.6	91.05	0.869
100	11000	12035.4	19.984	359.2	1.911	216.6	60.6	91.40	0.838
75	8250	9047.7	16.199	236.0	1.451	122.9	39.7	91.18	0.777
50	5500	6134.6	12.989	151.7	1.034	58.4	25.4	89.66	0.657
25	2750	3285.3	10.616	101.4	0.631	17.9	17.0	83.71	0.431

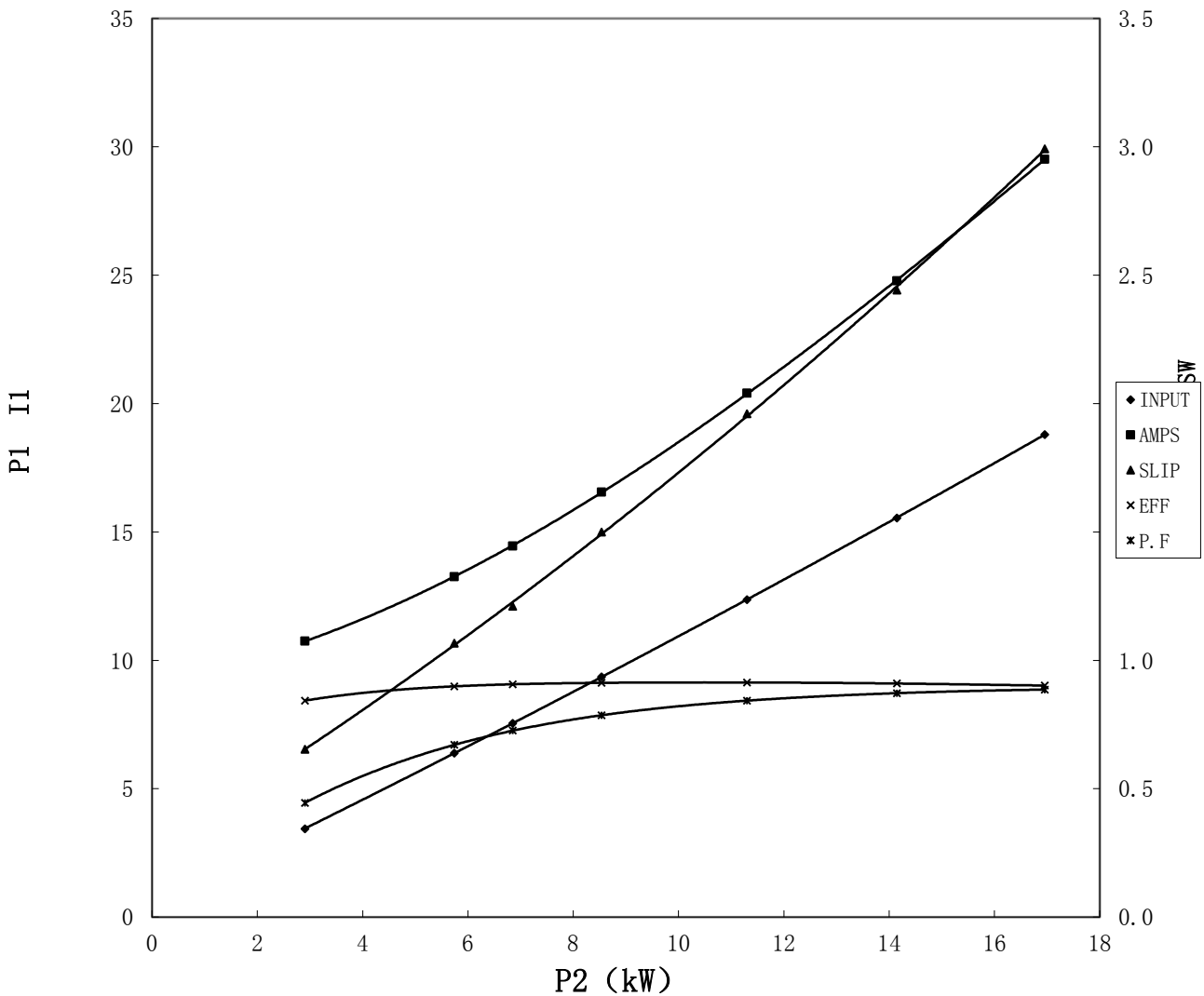
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Type	Y3-160M-4	Poles	4	output Power	11.0	kW
Voltage	415 V	Current	20 A	Frequency	50.0	Hz
Speed	1471 r/min	Duty	S1	Connection		
Ins. class	F	Weight	0 kg		IP55	

Load Curve



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