

VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K160L-4	Poles	4	Power	15,0	kW	IE:3
Voltage	400 V	Current	27,8 A	Frequency	50	Hz	
Speed	1471 r/min	Duty	S1	Connecti	△		
Ins.class	F	Weight	180 kg		IP55		
MAJOR CONTENTS				TEST VALUE			
95,0 °C PHASE RESISTANCE OF WI	Ω						0,5638
NO LOAD CURRENT	A						13,034
NO LOAD INPUT	W						538,35
CORE LOSS(Pfe)	W						406,04
WINDAGE FRICTION LOSS(Pfw)	W						47,54
STATOR WINDING LOSS(Pcu1)	W						423,71
ROTOR WINDING LOSS(Pcu2)	W						301,38
STRAY LOAD LOSS(Ps)	W						134,07
LOCKED ROTOR CURRENT	A						238,683
LOCKED ROTOR INPUT @ FULL LOAD	W						71976
LOCKED ROTOR TORQUE	N.m						242,1
PULL OUT TORQUE	N.m						317,0
LOCKED ROTOR CURRENT/RATED CURF	P.U						8,58
LOCKED ROTOR TORQUE/RATED TORQI	P.U						2,48
PULL OUT TORQUE/RATED TORQUE	P.U						3,24
FULL LOAD TORQUE	N.m						97,4
FULL LOAD CURRENT	A						27,8
FULL LOAD SLIP	%						1,947
INPUT @ FULL LOAD	kW						16,313
FULL LOAD SPEED	r/min						1470,8
EFFICIENCY @ FULL LOAD	%						91,95
EFFICIENCY @ 75% LOAD	%						92,11
POWER FACTOR @ FULL LOAD							0,847
STATOR WINDING TEMPERATURE RISE	K						58
D.E. BEARINGS TEMPERATURE BY PT10	°C						47,0
STATOR WINDING TEMPERATURE	°C						72,2
High voltage test	V	1800				Imin	
Insulation resistance	MΩ						500
NOISE (LW)	dB(A)						72
VIBRATION	mm/s						0,8

VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

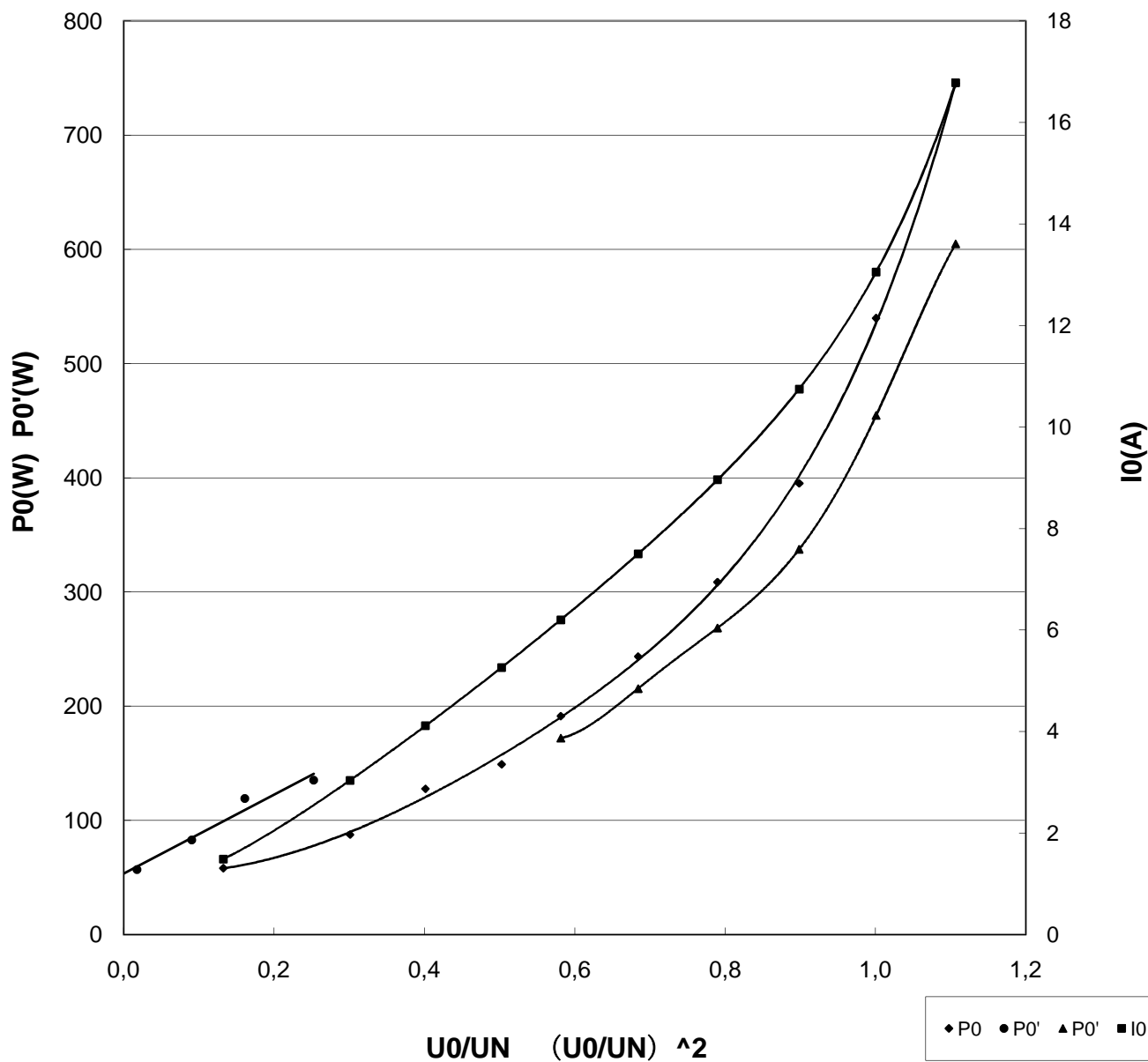
Type	K160L-4		Poles	4		Power	15,0 kW		IE:3		
Voltage	400	V	Current	27,8	A	Frequency	50 Hz				
Speed	1471	r/min	Duty	S1		Connection	△				
Ins.class	F		Weight	180	kg	IP55					
NO LOAD TEST											
VOL	mul.	HZ	I01	I02	I03	mul.	W1	W2	mul.	°C	Ω
442,7	1	50	3,388	3,281	3,400	5	-610,4	759,5	5	56,9	0,3324
400,3	1	50	2,587	2,560	2,685	5	-413,6	521,5	5	57,1	0,3327
359,4	1	50	2,119	2,110	2,220	5	-302,8	381,8	5	57,1	0,3327
315,9	1	50	4,405	4,424	4,617	2	-554,0	708,3	2	56,7	0,3322
273,7	1	50	3,681	3,707	3,860	2	-397,1	518,8	2	56,5	0,3320
232,5	1	50	3,047	3,068	3,186	2	-275,2	370,8	2	56,0	0,3314
201,1	1	50	2,588	2,607	2,697	2	-201,0	275,5	2	55,6	0,3310
160,5	1	50	4,066	4,085	4,189	1	-236,8	364,4	1	55,0	0,3303
120,4	1	50	3,002	3,020	3,091	1	-122,5	210,0	1	54,6	0,3298
52,9	1	50	1,474	1,464	1,515	1	-2,8	60,9	1	53,8	0,3290
data calculation of no load											
V%	U0/UN	I0	P0	(U0/UN)^2	P0cu1	P0'					
110,7%	1,11	16,782	745,3	1,225	140,43	604,87					
100,1%	1,00	13,053	539,7	1,002	85,02	454,63					
89,9%	0,90	10,748	395,1	0,807	57,65	337,40					
79,0%	0,79	8,964	308,6	0,624	40,04	268,52					
68,4%	0,68	7,499	243,4	0,468	28,00	215,44					
58,1%	0,58	6,201	191,2	0,338	19,11	172,11					
50,3%	0,50	5,261	149,0	0,253	13,74	135,28					
40,1%	0,40	4,113	127,6	0,161	8,38	119,21					
30,1%	0,30	3,038	87,5	0,091	4,57	82,89					
13,2%	0,13	1,484	58,1	0,018	1,09	57,01					
RESULTS AT: 400 V											
N.L.AMP	13,03	N.L.LOSS(W)	538,35	Pw(W)	47,5	Pe(W)	406,0				

VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K160L-4	Poles	4	Power	15,0	IE:3
Voltage	400 V	Current	27,8 A	Frequency	50,0	kW
Speed	1471 r/min	Duty	S1	Connection	Δ	Hz
Ins.class	F	Weight	180 kg		IP55	

No Load Curve



VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

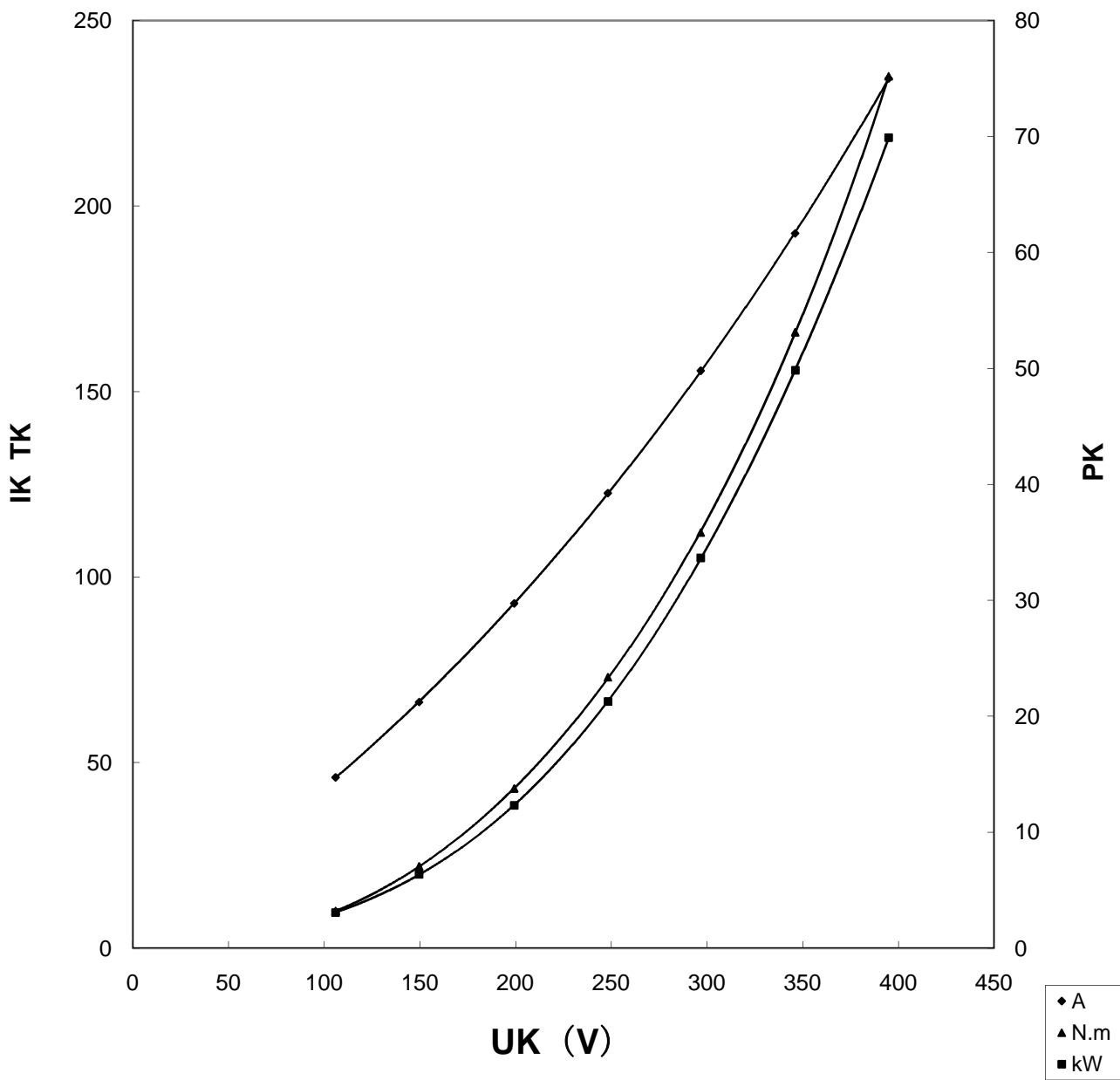
Type	K160L-4		Poles	4		Power	15,0		IE:3	kW
Voltage	400	V	Current	27,8	A	Frequency	50,0		Hz	
Speed	1471	r/min	Duty	S1		Connection	Δ			
Ins.class	F		Weight	180	kg		IP55			
LOCKED ROTOR TEST										
VOL	mul.	Ik1	Ik2	Ik3	mul.	W1	W2	mul.	Torque (kg.m)	
394,9	1,0	2,355	2,335	2,341	100	-64,9	763,9	100	23,98	
346,1	1,0	1,932	1,921	1,926	100	-50,4	548,7	100	16,94	
296,7	1,0	1,559	1,551	1,558	100	-40,6	377,2	100	11,43	
248,2	1,0	1,227	1,223	1,228	100	-32,4	245,0	100	7,45	
199,3	1,0	0,930	0,927	0,930	100	-23,7	146,9	100	4,39	
149,6	1,0	0,665	0,661	0,663	100	-14,0	77,7	100	2,24	
105,9	1,0	0,462	0,459	0,460	100	-7,3	38,0	100	1,02	
data calculation of locked rotor										
Uk	IK	PK	TK			LOGUk	LOGIk	LOGPk	LOGTk	
V	A	kW	N.m							
394,95	234,37	69,900	235,00			2,5965	2,3699	1,8445	2,3711	
346,11	192,63	49,830	166,00			2,5392	2,2847	1,6975	2,2201	
296,74	155,61	33,660	112,00			2,4724	2,1920	1,5271	2,0492	
248,21	122,61	21,260	73,00			2,3948	2,0885	1,3276	1,8633	
199,26	92,91	12,320	43,00			2,2994	1,9681	1,0906	1,6335	
149,58	66,31	6,370	22,00			2,1749	1,8216	0,8041	1,3424	
105,89	46,01	3,070	10,00			2,0249	1,6629	0,4871	1,0000	
performance collection of locked rotor										
	at rated volts		at rated current		at 2.5 times rated current		at 100V			
VOLTS (V)	400		63,870		151,3		100,0			
AMPS (A)	238,7		27,3		68,3		43,88			
INPUT (kW)	71,98				7,2		3,267			
TORQUE (N.m)	242,14									

VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K160L-4	Poles	4	Power	15,0	IE:3
Voltage	400 V	Current	27,8 A	Frequency	50,0	kW
Speed	1471 r/min	Duty	S1	Connection	Δ	Hz
Ins.class	F	Weight	180 kg			IP55

Locked Rotor Curve



VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

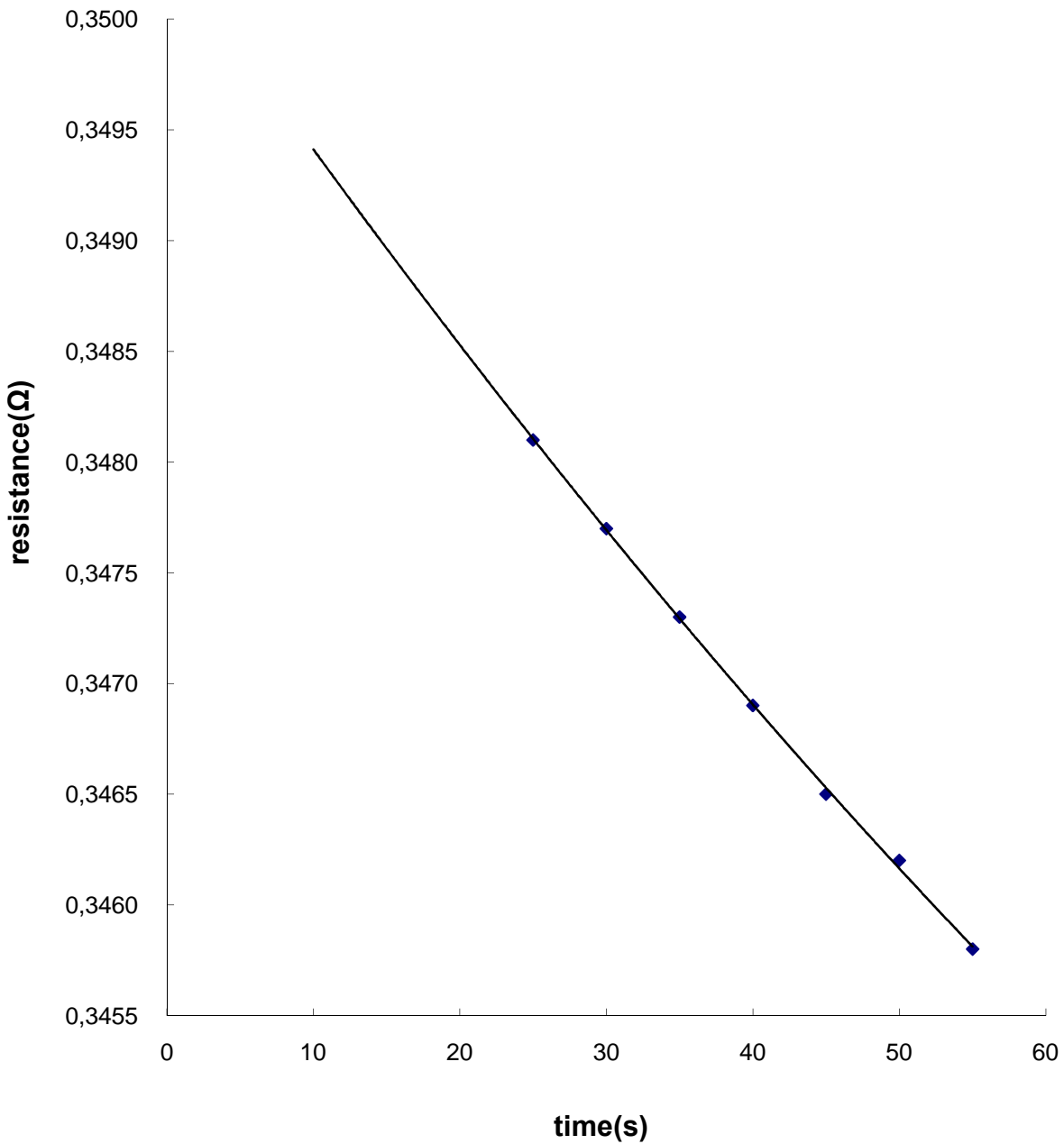
Type	K160L-4		Poles	4		Power	15	kW	IE:3													
Voltage	400	V	Current	27,8	A	Frequency	50	Hz														
Speed	1471	r/min	Duty	S1		Connection	Δ															
Ins.class	F		Weight	180	kg	IP55																
TEMPERATURE RISE TEST																						
TIME (h:min)	V	I1	I2	I3	mul.	W1	W2	mul.	T1 °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	
13,30	400,4	2,817	2,781	2,781	10	517,6	1122	10	48,2	—	72,9	69,6	—	—	—	—	—	—	—	—	—	11,6
14,00	400,2	2,823	2,785	2,786	10	519,6	1125	10	47,7	—	72,2	68,9	—	—	—	—	—	—	—	—	—	11,4
14,30	400,3	2,817	2,778	2,778	10	518,0	1119	10	47,5	—	72,0	68,7	—	—	—	—	—	—	—	—	—	11,9
15,00	400,3	2,818	2,780	2,780	10	518,0	1121	10	47,2	—	72,2	68,9	—	—	—	—	—	—	—	—	—	11,6
15,30	400,1	2,820	2,784	2,783	10	518,4	1122	10	47,0	—	72,2	68,9	—	—	—	—	—	—	—	—	—	12,0
The average of the last three		27,930		A		16390		W		47,0	—	72,1	68,9	—	—	—	—	—	—	—	—	11,8
T1 T2 : DE BEARING TEMPERATURE									T11 : CORE TEMPERATRE						T12: FRAME TEMPERATRE							
T3~T10 : DE WINDING TEMPERATURE									T13 : AMBIENT TEMPERATURE													
WINDING RESISTANCE (HOT) AT END OF TEMPERATURE RISE TEST																						
TIME (S)	25	30	35	40	45	50	55															
RESISTANCE (Ω)	0,34810	0,34770	0,34730	0,34690	0,34650	0,34620	0,34580															
WINDING RESISTANCE(COLD)																						
Δ	U1-V1		U1-W1		V1-W1		AVERAGE		MIN		AMBIENT TEM.											
	0,2786		0,2786		0,2783		0,27850		0,27830		9,5 °C											
Y	U1-U2		V1-V2		W1-W2		AVERAGE		MIN		AMBIENT TEM.											
											°C											
resistance value at 0 sec (Ω)		0,350343				calculation value of temp.rising				60,96		K										
30 S (Ω)		0,347700				calculation value of temp.rising				58,64		K										
full load curent		27,81 A				modify value of temp. rising				58,11		K										

VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K160L-4	Poles	4	output Power	15,0	IE:3
Voltage	400 V	Current	27,8 A	Frequency	50,0	kW
Speed	1471 r/min	Duty	S1	Connection	Δ	Hz
Ins.class	F	Weight	180 kg			

RESISTANCE CURVE



VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K160L-4		Poles	4		Power	15,0		kW		IE:3	
Voltage	400	V	Current	27,8	A	Frequency	50,0		Hz			
Speed	1471	r/min	Duty	S1		Connection	Δ					
Ins.class	F		Weight	180	kg	IP55						

LOAD TEST

V	HZ	I1	I2	I3	mul.	W1	W2	mul.	r/min	Resista nce Ω	Temper ature °C	Torqu e N.m
399,9	50,02	3,291	3,240	3,254	10	652,3	1311,1	10	1466,8	0,3417	65,0	117,24
399,9	50,03	3,063	3,012	3,022	10	589,4	1214,7	10	1469,7	0,3442	67,2	107,78
400,2	50,02	2,806	2,770	2,768	10	513,9	1117,8	10	1473,1	0,3441	67,1	97,48
400,3	50,02	4,500	4,384	4,439	5	688,6	1756,5	5	1480,3	0,3437	66,7	72,78
400,1	50,01	3,533	3,408	3,488	5	333,0	1318,7	5	1487,2	0,3425	65,7	48,44
400,0	50,01	2,783	2,681	2,802	5	-30,3	907,0	5	1493,5	0,3406	64,0	24,27
400,1	50,0	2,615	2,608	2,614	5,0	-397,8	525,1	5	1499,5	0,3404	63,8	0,68
400,1	50,0	2,616	2,610	2,610	5,0	-411,8	518,1	5	1500,0	0,3321	56,6	0,00

slope A= 0,01412

intercept B= 11,02

relative coefficient r= 0,999

LOAD %	P2 W	I A	P1 W	Pcu1s W	Ss %	Pcu2s W	Ps W	Pz W	N.m	EFF %	P.F
150,0	22500	40,00	24760,8	877,0	3,063	719,1	307,9	2357,6	147,7	90,87	0,893
125,0	18750	33,91	20531,8	630,2	2,525	492,2	212,1	1788,1	122,5	91,32	0,874
100,0	15000	27,81	16312,7	423,7	1,947	301,4	134,1	1312,7	97,4	91,95	0,847
75,0	11250	22,19	12214,1	269,9	1,438	165,9	74,6	964,0	72,7	92,11	0,794
50,0	7500	17,35	8222,6	164,9	0,928	71,0	32,8	722,3	48,2	91,21	0,684
25,0	3750	13,73	4332,9	103,3	0,481	18,4	8,1	583,3	23,9	86,55	0,456

VALIADIS S.A.

ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K160L-4	Poles	4	output Power	15,0	IE:3
Voltage	400 V	Current	27,8 A	Frequency	50,0	kW Hz
Speed	1471 r/min	Duty	S1	Connection	Δ	
Ins.class	F	Weight	180 kg			IP55

LOAD CURVE

