

University of Illinois Department of Agricultural and Biological Engineering
 Bioenvironmental and Structural Systems Lab
 Final Report

Project Number: 12618
 Test Date: August 29, 2012

Fan:	Motor:	Shutter: Butterfly damper
Make- <i>Chore-Time</i>	Make- <i>Marathon</i>	Material- <i>Poly</i>
Model- <i>53464-52</i>	Model- <i>5K48WN4495A</i>	# Doors- <i>2</i>
Blade dia.- <i>56.8"</i>	Hp- <i>1.5</i>	# Columns- <i>-</i>
Orifice dia.- <i>57.3"</i>	RPM- <i>1725 // 1425</i>	Door length -
	Volts- <i>200-230/380-460//200</i>	Location- <i>exhaust</i>
Blade:	Amps- <i>5.9-5.5/2.9//5.9-5.8/9.5/2.9</i>	
Number- <i>3</i>	Hz- <i>60 // 50</i>	Guards:
Shape- <i>propeller</i>	Phase- <i>3</i>	Description- <i>wire</i>
Material- <i>galvanized steel</i>	S. F.- <i>-</i>	Spacing- <i>2" x 4" / 5.5" concentric</i>
Pitch- <i>-</i>		Location- <i>intake / exhaust</i>
Clearance- <i>0.2"</i>	Housing:	
	Material- <i>Poly</i>	Discharge Cone:
Drive Sheaves:	Intake area- <i>57.5" x 57.5"</i>	Depth- <i>34.8"</i>
Drive dia.- <i>3.45" o.d.</i>	Discharge- <i>56.6"</i>	Minor dia.- <i>56.6"</i>
Axle dia.- <i>9.3" o.d.</i>	Depth- <i>10.5"</i>	Major dia.- <i>69.8"</i>
	<i>0</i>	

Notes: * 50 Hz test

Test Conditions:

T(wb): 65	Barometric pressure, recorded	29.43
T(db): 79.5	Barometric Pressure, corrected	29.29

							SI Units			
Static Pressure (in.H2O)	Airflow (cfm)	rpm	Volts	Amps	Watts	cfm/Watt	Static Pressure (Pa)	Airflow (m ³ /hr.)	(m ³ /hr)/W	W/1000m ³ /hr
0.00	30200	538	230.0	4.30	1024	29.5	0	51400	50.2	20
0.05	28500	536	230.8	4.43	1094	26.1	12	48500	44.3	23
0.10	26500	534	230.1	4.53	1159	22.9	25	45100	38.9	26
0.15	24500	532	229.4	4.64	1221	20.1	37	41600	34.1	29
0.20	21900	531	230.5	4.76	1282	17.1	50	37200	29	34
0.25	18700	529	230.2	4.86	1334	14.0	62	31700	23.8	42
0.30	13100	528	229.6	4.93	1373	9.5	75	22200	16.2	62