

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

Project Number: 13567
 Test Date: October 24, 2013

Fan:	Motor:	Shutter: Butterfly damper
Make- <i>Chore-Time</i>	Make- <i>Marathon</i>	Material- <i>Poly</i>
Model- <i>54659-51</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 / powder coat steel</i>	Discharge Cone:
Drive Sheaves:	Intake area- <i>55.8" x 55.8"</i>	Depth- <i>34.8"</i>
Drive dia.- <i>3.45" o.d.</i>	Discharge- <i>57.3" dia.</i>	Minor dia.- <i>56.6"</i>
Axle dia.- <i>9.3" o.d.</i>	Depth- <i>31.5"</i>	Major dia.- <i>69.8"</i>

Notes: *50 Hz test

Test Conditions:

T(wb): 56	Barometric pressure, recorded	29.49
T(db): 77.5	Barometric Pressure, corrected	29.36

							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	32600	530	230.5	4.77	1302	25.0	0	55400	42.6	23
0.05	30900	528	229.4	4.92	1388	22.2	12	52400	37.8	26
0.10	28800	526	230.3	5.09	1470	19.6	25	49000	33.3	30
0.15	26500	524	229.6	5.25	1549	17.1	37	45000	29.1	34
0.20	23700	522	229.0	5.39	1618	14.6	50	40200	24.8	40
0.25	20100	521	230.6	5.51	1673	12.0	62	34100	20.4	49
0.30	14500	520	230.3	5.57	1704	8.5	75	24700	14.5	69