

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

Project Number: 13568
 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>54659-52</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 / 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): 56.5	Barometric pressure, recorded	29.51
T(db): 78	Barometric Pressure, corrected	29.38

							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	29700	535	230.3	4.31	1047	28.3	0	50400	48.2	21
0.05	28000	533	229.9	4.42	1118	25.1	12	47600	42.6	23
0.10	26000	532	229.2	4.53	1185	22.0	25	44200	37.3	27
0.15	23700	530	230.3	4.67	1255	18.9	37	40300	32.1	31
0.20	21200	529	229.8	4.78	1313	16.2	50	36000	27.4	36
0.25	18200	528	229.5	4.85	1355	13.4	62	30900	22.8	44
0.30	13700	527	230.3	4.91	1384	9.9	75	23200	16.8	60