

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

Project Number: 12617
 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>53464-51</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</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): 65.5	Barometric pressure, recorded	29.43
T(db): 80	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	33400	531	230.2	4.71	1256	26.6	0	56800	45.2	22
0.05	31400	529	229.0	4.86	1342	23.4	12	53300	39.7	25
0.10	29500	527	229.8	5.02	1418	20.8	25	50100	35.3	28
0.15	27200	525	230.7	5.18	1499	18.1	37	46200	30.8	32
0.20	24500	522	229.7	5.32	1572	15.6	50	41600	26.5	38
0.25	20200	521	230.6	5.48	1643	12.3	62	34400	20.9	48
0.30	14300	520	230.5	5.53	1668	8.6	75	24400	14.6	68