

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

Project Number: 12616
 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>53464-41</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>3.0" o.d.</i>	Discharge- <i>56.6"</i>	Minor dia.- <i>56.6"</i>
Axle dia.- <i>9.9" o.d.</i>	Depth- <i>10.5"</i>	Major dia.- <i>69.8"</i>
	<i>0</i>	

Notes: * 60 Hz test

Test Conditions:

T(wb): 65	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	33700	537	230.3	4.23	1264	26.6	0	57200	45.3	22
0.05	31900	536	229.4	4.42	1351	23.6	12	54300	40.2	25
0.10	30000	534	229.3	4.60	1435	20.9	25	51100	35.6	28
0.15	27800	533	230.5	4.80	1531	18.1	37	47200	30.8	32
0.20	25100	531	230.4	4.99	1609	15.6	50	42700	26.5	38
0.25	22200	530	230.2	5.15	1678	13.2	62	37700	22.4	45
0.30	14900	529	229.8	5.25	1716	8.7	75	25300	14.7	68