

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

Project Number: 13592
 Test Date: November 20, 2013

Fan:	Motor:	Shutter: Butterfly damper
Make- <i>Chore-Time</i>	Make- <i>Marathon</i>	Material- <i>Poly</i>
Model- <i>54659-21</i>	Model- <i>5KCR48WN0800AT</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</i>	Door length -
	Volts- <i>230</i>	Location- <i>exhaust</i>
Blade:	Amps- <i>6.2</i>	
Number- <i>3</i>	Hz- <i>60</i>	Guards:
Shape- <i>propeller</i>	Phase- <i>1</i>	Description- <i>wire</i>
Material- <i>galvanized steel</i>	S. F.- <i>1.3</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>3.0" o.d.</i>	Discharge- <i>57.3" dia.</i>	Minor dia.- <i>56.6"</i>
Axle dia.- <i>9.9" o.d.</i>	Depth- <i>31.5"</i>	Major dia.- <i>69.8"</i>

Notes: 0

Test Conditions:

T(wb): 56	Barometric pressure, recorded	29.59
T(db): 79	Barometric Pressure, corrected	29.46

							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	33200	540	230.0	5.94	1364	24.3	0	56300	41.3	24
0.05	31500	539	229.7	6.34	1453	21.7	12	53500	36.8	27
0.10	29600	537	229.6	6.73	1538	19.2	25	50200	32.7	31
0.15	27300	536	229.9	7.12	1627	16.8	37	46400	28.5	35
0.20	24800	535	229.9	7.46	1703	14.6	50	42200	24.8	40
0.25	21800	533	230.3	7.76	1773	12.3	62	37100	20.9	48
0.30	16600	533	230.5	7.80	1784	9.3	75	28200	15.8	63