

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

Project Number: 14347
 Test Date: June 25, 2014

Fan:	Motor:	Shutter:
Make- <i>Huynh Thao M.E.R</i>	Make- <i>Enertech Electric Mot</i>	Material- <i>plastic</i>
Model- <i>48" cone fan</i>	Model- <i>ESS 802-4</i>	# Doors- <i>15 per column</i>
Blade dia.- <i>47.6" (1209mm)</i>	Hp- <i>0.75 kW</i>	# Columns- <i>2</i>
Orifice dia.- <i>48.6" (1234mm)</i>	RPM- <i>1320</i>	Door length <i>26" (660)</i>
	Volts- <i>220</i>	Location- <i>intake</i>
Blade:	Amps- <i>5.33</i>	
Number- <i>3</i>	Hz- <i>50</i>	Guards:
Shape- <i>propeller</i>	Phase- <i>1</i>	Description- <i>wire</i>
Material- <i>cast aluminum</i>	S. F.- <i>-</i>	Spacing- <i>2" concentric (51)</i>
Pitch- <i>-</i>		Location- <i>exhaust</i>
Clearance- <i>0.4" (10mm)</i>	Housing:	
	Material- <i>fiberglass</i>	Discharge Cone:
Drive Sheaves:	Intake area- <i>51.6" x 51.8" (1310x1</i>	Depth- <i>24.4" (620)</i>
Drive dia.- <i>4.3" o.d. (109mm)</i>	Discharge- <i>48.6" dia. (1234)</i>	Minor dia.- <i>48.6" (1234)</i>
Axle dia.- <i>10.3" o.d. (261mm)</i>	Depth- <i>24" top (610)</i>	Major dia.- <i>57.5" (1460)</i>
	<i>18.7" bottom (475)</i>	

Notes: 0

Test Conditions:

T(wb) F: 65.5	Barometric pressure, recorded	29.36
T(db) F: 78	Barometric Pressure, corrected	29.23 (In. Hg)

Static Pressure (in.H2O)	Airflow (cfm)	rpm	Volts	Amps	Watts	cfm/Watt	SI Units			
							Static Pressure (Pa)	Airflow (m ³ /hr.)	(m ³ /hr)/W	W/1000m ³ /hr
0.00	21400	563	220.8	4.60	984	21.7	0	36300	36.9	27
0.05	19800	560	220.3	4.78	1020	19.4	12	33700	33	30
0.10	17900	557	219.9	4.90	1055	17.0	25	30500	28.9	35
0.15	15600	555	219.5	5.02	1072	14.5	37	26500	24.7	40
0.20	10300	556	219.5	4.92	1055	9.7	50	17500	16.5	60
0.25	6000	554	219.4	5.02	1073	5.6	62	10200	9.5	105
0.30	2700	550	220.8	5.26	1126	2.4	75	4600	4.1	243