

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

Project Number: 20390
 Test Date: October 13, 2020

Fan:		Motor:		Shutter:	
Make- <i>Ya Suh Dar</i>		Make- <i>Ya Suh Dar</i>		Material- <i>plastic w/ alum. Frame</i>	
Model- <i>57" K300DL-AC 1.5 30 730</i>		Model- <i>AC1.5 kW</i>		# Doors- <i>16 per column</i>	
Blade dia.- <i>56.5"</i>		Hp- <i>1.5 kW</i>		# Columns- <i>3</i>	
Orifice dia.- <i>57"</i>		RPM- <i>730</i>		Door length- <i>19.6", 18", 19.6"</i>	
		Volts- <i>380</i>		Location- <i>intake</i>	
		Amps- <i>-</i>			
Blade:		Hz- <i>50</i>		Guards:	
Number- <i>3</i>		Phase- <i>3</i>		Description- <i>wire</i>	
Shape- <i>propeller</i>		S. F.- <i>-</i>		Spacing- <i>7.1" concentric</i>	
Material- <i>fiberglass</i>				Location- <i>exhaust</i>	
Pitch- <i>30</i>					
Clearance- <i>0.3"</i>		Housing:		Discharge Cone:	
		Material- <i>Fiberglass</i>		Depth- <i>36.5"</i>	
Drive Sheaves:		Intake area- <i>58.8" x 58.8"</i>		Minor dia.- <i>57"</i>	
Drive dia.- <i>direct</i>		Discharge- <i>57" dia.</i>		Major dia.- <i>67.3"</i>	
Axle dia.- <i>drive</i>		Depth- <i>25"</i>			

Notes: *50 Hz test

Test Conditions:
 T(wb) F: 56 Barometric pressure, recorded 29.37
 T(db) F: 77.5 Barometric Pressure, corrected 29.24 (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	32400	728	380.8	3.99	1557	20.8	0	55000	35.3	28
0.05	31000	729	380.8	4.04	1605	19.3	12	52700	32.8	30
0.10	29500	726	380.8	4.08	1653	17.8	25	50100	30.3	33
0.15	27800	725	380.8	4.13	1688	16.5	37	47300	28	36
0.20	25900	725	380.8	4.16	1715	15.1	50	44000	25.7	39
0.25	23200	724	380.8	4.18	1732	13.4	62	39400	22.8	44
0.30	19900	724	380.8	4.17	1729	11.5	75	33800	19.5	51
0.35	16000	724	380.8	4.16	1722	9.3	87	27200	15.8	63
0.40	11800	731	380.8	4.12	1689	7.0	100	20100	11.9	84