

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

Project Number: 20400
 Test Date: October 20, 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 30 690</i>		Model- <i>AC1.5KW690</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>690</i>		Door length <i>19.6", 18", 19.6"</i>	
		Volts- <i>220</i>		Location- <i>intake</i>	
		Amps- <i>-</i>			
Blade:		Hz- <i>60</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: 0

Test Conditions:

T(wb) F: 55	Barometric pressure, recorded	29.43
T(db) F: 72	Barometric Pressure, corrected	29.31 (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	30500	689	229.5	5.60	1379	22.1	0	51800	37.5	27
0.05	28900	688	229.5	5.71	1427	20.2	12	49000	34.4	29
0.10	27300	686	229.5	5.79	1468	18.6	25	46300	31.6	32
0.15	25100	685	229.2	5.87	1502	16.7	37	42700	28.4	35
0.20	22800	685	229.5	5.91	1521	15.0	50	38700	25.4	39
0.25	19400	685	229.5	5.91	1521	12.7	62	32900	21.6	46
0.30	16200	685	229.5	5.90	1519	10.6	75	27500	18.1	55
0.35	11400	685	229.5	5.83	1490	7.6	87	19300	13	77
0.40	6600	688	229.9	5.61	1392	4.7	100	11200	8	125