

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

Project Number: 20398
 Test Date: October 15, 2020

Fan:		Motor:		Shutter:	
Make- <i>Ya Suh Dar</i>		Make- <i>YSD</i>		Material- <i>plastic w/ alum. Frame</i>	
Model- <i>50" N-C300DL-AC 1.1 30 730</i>		Model- <i>50"C300DL-N</i>		# Doors- <i>14 per column</i>	
Blade dia.- <i>50"</i>		Hp- <i>1.1 kW</i>		# Columns- <i>2</i>	
Orifice dia.- <i>50.3"</i>		RPM- <i>730</i>		Door length <i>25.3"</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>2.9" concentric</i>	
Material- <i>fiberglass</i>				Location- <i>exhaust</i>	
Pitch- <i>30</i>					
Clearance- <i>0.2"</i>		Housing:		Discharge Cone:	
		Material- <i>Fiberglass</i>		Depth- <i>25.6"</i>	
Drive Sheaves:		Intake area- <i>50.7" x 50.9"</i>		Minor dia.- <i>50.3"</i>	
Drive dia.- <i>direct</i>		Discharge- <i>50.3"</i>		Major dia.- <i>55"</i>	
Axle dia.- <i>drive</i>		Depth- <i>32.5"</i>			

Notes: *50 Hz test

Test Conditions:
 T(wb) F: 57 Barometric pressure, recorded 29.30
 T(db) F: 76 Barometric Pressure, corrected 29.17 (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	25300	727	380.6	2.93	1204	21.0	0	42900	35.6	28
0.05	24000	726	380.6	2.97	1248	19.3	12	40800	32.7	31
0.10	22800	725	380.6	3.02	1283	17.8	25	38700	30.2	33
0.15	21400	724	380.6	3.05	1309	16.3	37	36300	27.8	36
0.20	19700	723	380.6	3.08	1335	14.7	50	33400	25	40
0.25	17300	723	380.6	3.10	1351	12.8	62	29300	21.7	46
0.30	15000	722	380.5	3.12	1363	11.0	75	25500	18.7	53
0.35	12000	722	380.6	3.12	1368	8.8	87	20400	14.9	67
0.40	8900	725	380.6	3.08	1339	6.6	100	15100	11.3	89