

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

Project Number: 20396
 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 30 690</i>		Model- <i>YSD50</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>690</i>		Door length <i>25.3"</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>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: *60 Hz test

Test Conditions:
 T(wb) F: 57 Barometric pressure, recorded 29.29
 T(db) F: 76 Barometric Pressure, corrected 29.16 (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	24300	699	220.4	6.40	1159	20.9	0	41200	35.6	28
0.05	23000	699	220.4	6.46	1203	19.1	12	39100	32.5	31
0.10	21700	698	220.2	6.51	1231	17.7	25	37000	30	33
0.15	20200	697	219.0	6.49	1257	16.1	37	34400	27.3	37
0.20	18100	697	222.4	6.64	1291	14.0	50	30800	23.9	42
0.25	15700	696	220.1	6.60	1298	12.1	62	26700	20.6	49
0.30	12800	696	220.0	6.60	1303	9.8	75	21800	16.7	60
0.35	9500	696	220.6	6.59	1293	7.4	87	16200	12.5	80
0.40	5500	697	220.4	6.49	1235	4.5	100	9400	7.6	131