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

**Project Number:** 19120
**Test Date:** January 30, 2019

**Fan:**
Make- *DACS*
Model- *MagFan 1.2 - 30 610*
Blade dia.- *56.3" (1430)*
Orifice dia.- *56.8" (1442)*

**Blade:**
Number- *3*
Shape- *propeller*
Material- *poly*
Pitch- -
Clearance- *0.4" (10 mm)*

**Drive Sheaves:**
Drive dia.- *direct*
Axle dia.- *drive*

**Motor:**
Make- *DACS*
Model- *3002009*
Hp- *1.2 kW*
RPM- *670*
Volts- *230*
Amps- *see note*
Hz- -
Phase- *3*
S. F.- *S1*

**Housing:**
Material- *poly*
Intake area- *61.5" x 61.5" (1562x1*
Discharge- *56.8" (1442)*
Depth- *12" (305)*

**Shutter:**
Material- *Plastic*
# Doors- *1*
# Columns- *1*
Door length *1800 mm*
Location- *intake*

**Guards:**
Description- *wire*
Spacing- *1.6" x 2.9" / 5.4" concentric*
Location- *intake / exhaust*

**Discharge Cone:**
Depth- *47"*
Minor dia.- *56.8"*
Major dia.- *68.5"*

**Notes:** *230 V single phase, 60 Hz input to controller. Roll door housing with bell mouth intake frame*
*MagDrive 2000 1.2 kW speed controller, 1004992012S, rated 7.1 Amp 1 phase*

**Test Conditions:**

| | | | | |
|---|---|---|---|---|
| T(wb) F: | 52 | Barometric pressure, recorded | 29.64 | |
| T(db) F: | 76.5 | Barometric Pressure, corrected | 29.51 | (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** | **33900** | 611 | 230.9 | 3.48 | 802 | **42.3** | 0 | 57600 | 71.9 | 14 |
| **0.05** | **31700** | 611 | 230.8 | 3.98 | 918 | **34.5** | 12 | 53900 | 58.7 | 17 |
| **0.10** | **29200** | 611 | 230.3 | 4.47 | 1028 | **28.5** | 25 | 49700 | 48.3 | 21 |
| **0.15** | **27400** | 611 | 230.3 | 4.82 | 1107 | **24.8** | 37 | 46600 | 42.1 | 24 |
| **0.20** | **25300** | 611 | 229.9 | 5.14 | 1180 | **21.4** | 50 | 43000 | 36.4 | 27 |
| **0.25** | **22100** | 610 | 229.8 | 5.34 | 1228 | **18.0** | 62 | 37500 | 30.5 | 33 |
| **0.30** | **16000** | 611 | 230.4 | 5.12 | 1177 | **13.6** | 75 | 27200 | 23.1 | 43 |