

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

Project Number: 23096
 Test Date: April 13, 2023

| | | | | | |
|----------------------------------|--|---------------------------------|--|------------------------------------|--|
| Fan: | | Motor: | | Shutter: | <i>Butterfly damper w/ electric opener</i> |
| Make- <i>Eurusfan</i> | | Make- <i>EURUS AgriTec</i> | | Material- <i>plastic</i> | |
| Model- <i>VFE2-56HO-A3PM-CBA</i> | | Model- <i>TFE5-100M6-70BXDV</i> | | # Doors- <i>2</i> | |
| Blade dia.- <i>56.4"</i> | | Hp- <i>1500 Watt</i> | | # Columns- <i>-</i> | |
| Orifice dia.- <i>56.8"</i> | | RPM- <i>690</i> | | Door length- <i>-</i> | |
| | | Volts- <i>380-480</i> | | Location- <i>exhaust</i> | |
| Blade: | | Amps- <i>3.2</i> | | | |
| Number- <i>3</i> | | Hz- <i>50 // 60</i> | | Guards: | |
| Shape- <i>propeller</i> | | Phase- <i>3</i> | | Description- <i>wire</i> | |
| Material- <i>plastic</i> | | S. F.- <i>-</i> | | Spacing- <i>2" / 4" concentric</i> | |
| Pitch- | | | | Location- <i>exhaust</i> | |
| Clearance- <i>0.2"</i> | | Housing: | | | |
| | | Material- <i>Fiberglass</i> | | Discharge Cone: | |
| Drive Sheaves: | | Intake area- <i>63" x 63"</i> | | Depth- <i>41</i> | |
| Drive dia.- <i>direct</i> | | Discharge- <i>56.8" dia.</i> | | Minor dia.- <i>56.8"</i> | |
| Axle dia.- <i>drive</i> | | Depth- <i>27.5</i> | | Major dia.- <i>68.5"</i> | |

Notes: *380 VAC, 3 phase 50 Hz input

Test Conditions:

T(wb) F: 56.9
 T(db) F: 74.2 Barometric Pressure 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 | 37700 | 690 | 380.3 | 2.30 | 1352 | 27.9 | 0 | 64100 | 47.4 | 21 |
| 0.05 | 36000 | 690 | 380.7 | 2.49 | 1461 | 24.7 | 12 | 61200 | 41.9 | 24 |
| 0.10 | 34400 | 690 | 381.1 | 2.65 | 1562 | 22.0 | 25 | 58400 | 37.4 | 27 |
| 0.15 | 32500 | 690 | 381.2 | 2.80 | 1652 | 19.7 | 37 | 55300 | 33.5 | 30 |
| 0.20 | 30400 | 690 | 381.6 | 2.95 | 1740 | 17.5 | 50 | 51700 | 29.7 | 34 |
| 0.25 | 28100 | 690 | 382.0 | 3.06 | 1810 | 15.5 | 62 | 47800 | 26.4 | 38 |
| 0.30 | 25400 | 690 | 382.0 | 3.13 | 1845 | 13.7 | 75 | 43100 | 23.4 | 43 |