

Bioenvironmental and Structural Systems Lab  
Fan Description FormProject Number: 94270 Series/Test:     /    Test Date: August 26, 1994 File Name:                     

## Fan

Make: Airstream  
Model #: BF-4810G-SW  
Serial #: -  
Manufacturer: GSI  
Blade Size: 50"  
Orifice Dia.: 50.5"

## Motor

Make: Magnetek  
Model #: 181617  
Serial #: -  
H.P.: 1.0  
Amps: 4.3/8.6  
Volts: 230/115  
RPM: 1725  
S.F.: 1.4

## Blade

Number: 3  
Shape: propeller  
Material: galv. steel  
Pitch: 35.4 deg.  
Clearance: .3"  
Hub Diameter: -Drive Pulley Dia.: AK39  
Axle Pulley Dia.: AK104  
Center Spacing: -

## Housing

Material: galv. steel  
Intake Area: 55" x 54.5"  
Discharge Area: 52" x 51.5"  
Depth: 34.5" top  
19" bottom

## Shutter

Material: aluminum  
Number Doors: 18 per row  
Number Rows: 2  
Door Length: 26.7"  
Location: intake

## Guards

Description: welded wire  
Spacing: 1" x 2"  
Location: exhaust

## Other Attachments

## Test Instrumentation:

Static Pressure across fan (in. H<sub>2</sub>O): Meriam Instrument 40HE35WM manometer  
Pressure drop across nozzles (in. H<sub>2</sub>O): Meriam Instrument 40HE35WM manometer  
Total Pressure: not measured  
Voltage (Volts): Valhalla Scientific 2101 digital power Analyzer  
Current (Amps): Valhalla Scientific 2101 digital power Analyzer  
Power (Watts): Valhalla Scientific 2101 digital power Analyzer  
Fan speed (rpm): Shimpo DT-301 digital stroboscope  
Air temperature (°F): Psychrodyne model 3312-20 psychrometer  
Barometric Pressure (in. Hg): Princo 469 Fortin, mercurial barometer

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

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|        |             |        |          |        |         |
|--------|-------------|--------|----------|--------|---------|
| Fan:   |             | Motor: |          |        |         |
| Make-  | Airstream   | Make-  | Magnetek | hp-    | 1       |
| Model- | BF-4810G-SW | Model- | 181617   | Amps-  | 4.3/8.6 |
| Size-  | 48"         | RPM-   | 1725     | Volts- | 230/115 |

Attachments: Galvanized steel slant wall housing, guard and aluminum shutter

Notes:

Test Conditions:

|        |    |                                |       |
|--------|----|--------------------------------|-------|
| T(wb): | 66 | Barometric pressure, recorded  | 29.46 |
| T(db): | 78 | Barometric Pressure, corrected | 29.33 |

| #<br>Nozzle | Size<br>(inch) | Pressure<br>Drop | Static<br>Pressure | Airflow<br>(cfm) | rpm | Volts | Amps | Watts | cfm/Watt |
|-------------|----------------|------------------|--------------------|------------------|-----|-------|------|-------|----------|
| 10          | 8              | 2.29             | 0.00               | 21280            | 626 | 230.6 | 5.09 | 1121  | 19.0     |
| 10          | 8              | 2.05             | 0.04               | 20132            | 625 | 230.1 | 5.18 | 1137  | 17.7     |
| 10          | 8              | 1.99             | 0.05               | 19860            | 625 | 230.5 | 5.19 | 1140  | 17.4     |
| 10          | 8              | 1.74             | 0.10               | 18543            | 624 | 230.5 | 5.26 | 1160  | 16.0     |
| 10          | 8              | 1.59             | 0.13               | 17751            | 624 | 230.5 | 5.28 | 1157  | 15.3     |
| 10          | 8              | 1.48             | 0.15               | 17096            | 624 | 230.5 | 5.28 | 1162  | 14.7     |
| 10          | 8              | 1.20             | 0.20               | 15416            | 624 | 230.5 | 5.32 | 1168  | 13.2     |
| 10          | 8              | 0.90             | 0.25               | 13344            | 623 | 230.0 | 5.34 | 1175  | 11.4     |