

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

Project Number: 24590
 Test Date: November 18, 2024

Fan:	Motor:	Shutter:
Make- <i>Better Air</i>	Make- <i>NA Pacific</i>	Material- <i>plastic</i>
Model- <i>FW60-EC-02</i>	Model- <i>GFP-160-3 230S-650</i>	# Doors- <i>19 per column</i>
Blade dia.- <i>60"</i>	Hp- <i>3.0 (2.2)</i>	# Columns- <i>3</i>
Orifice dia.- <i>61"</i>	RPM- <i>200-575</i>	Door length <i>20.6"</i>
	Volts- <i>230</i>	Location- <i>intake</i>
Blade:	Amps- <i>16.5</i>	
Number- <i>3</i>	Hz- <i>50 // 60</i>	Guards:
Shape- <i>propeller</i>	Phase- <i>1</i>	Description- <i>wire</i>
Material- <i>poly w/ alum. Hub</i>	S. F.- <i>1.2</i>	Spacing- <i>2" concentric</i>
Pitch- <i>42.5 deg.</i>		Location- <i>exhaust</i>
Clearance- <i>0.5"</i>	Housing:	
	Material- <i>Fiberglass</i>	Discharge Cone:
Drive Sheaves:	Intake area- <i>61.8" x 61.8"</i>	Depth- <i>34</i>
Drive dia.- <i>direct</i>	Discharge- <i>61" dia.</i>	Minor dia.- <i>61"</i>
Axle dia.- <i>drive</i>	Depth- <i>34.8" top</i>	Major dia.- <i>66"</i>
	<i>30.5" bottom</i>	

Notes: 230VAC, 1 phase, 60 Hz input. Phason FC-1T-1VDC.
 650 rpm max speed setting

Test Conditions:

T(wb) F: 59.7
 T(db) F: 72.1
 Barometric Pressure 29.10 (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
100 % speed setting										
0.00	Above chamber capacity									
0.05	39900	653	229.6	15.37	2452	16.3	12	67800	27.7	36
0.10	37700	653	228.7	15.89	2533	14.9	25	64100	25.3	40
0.15	35400	653	228.7	16.18	2583	13.7	37	60100	23.3	43
0.20	32500	653	228.7	16.14	2577	12.6	50	55300	21.4	47
0.25	28400	653	230.9	15.64	2505	11.3	62	48300	19.3	52
0.30	24100	653	231.3	15.20	2429	9.9	75	40900	16.8	59
90%										
0.00	40500	627	230.3	13.22	2058	19.7	0	68800	33.4	30
0.05	38200	628	230.2	13.70	2141	17.8	12	64900	30.3	33
0.10	35700	628	230.0	14.07	2207	16.2	25	60700	27.5	36
0.15	33100	628	229.7	14.29	2234	14.8	37	56200	25.2	40
0.20	29600	627	228.9	14.08	2193	13.5	50	50300	22.9	44
0.25	25200	626	228.8	13.65	2119	11.9	62	42800	20.2	50
85%										
0.00	37900	592	229.5	11.53	1753	21.6	0	64300	36.7	27
0.05	35500	592	230.4	11.87	1821	19.5	12	60200	33.1	30
0.10	33000	592	230.4	12.16	1865	17.7	25	56100	30.1	33
0.15	29700	593	230.4	12.15	1873	15.8	37	50400	26.9	37
0.20	25200	592	229.5	11.89	1812	13.9	50	42800	23.6	42
0.25	20300	592	229.9	11.47	1744	11.6	62	34400	19.7	51
80%										
0.00	35400	556	230.3	9.80	1461	24.2	0	60200	41.2	24
0.05	33100	557	230.4	10.15	1521	21.7	12	56200	36.9	27
0.10	29800	557	230.9	10.31	1549	19.2	25	50600	32.7	31
0.15	25900	558	230.9	10.14	1522	17.0	37	43900	28.9	35
0.20	20900	558	231.2	9.81	1469	14.3	50	35600	24.2	41
0.25	16100	559	230.8	9.85	1478	10.9	62	27300	18.5	54
70%										
0.00	29900	483	231.6	6.73	952	31.4	0	50800	53.3	19
0.05	26400	484	231.6	6.94	987	26.7	12	44800	45.4	22
0.10	22500	485	231.5	6.91	984	22.8	25	38100	38.8	26
0.15	17000	487	231.7	6.73	960	17.7	37	28800	30	33
0.20	11100	488	231.6	7.05	1012	11.0	50	18900	18.7	53