6109 Brittmoore • Houston, TX 77041 P: (832) 467-8200 • F: (832) 467-8203

#### SERVICE PROPOSAL FORM

**To:** Galveston ISD **Date:** 3/25/21

**Proposal:** AF20210325

**Attn:** Paul Byers Location: 4115 Ave O

**Job:** Kitchen fans

CFI Mechanical, Inc. ("CFI") proposes to install and/or furnish the following described material/labor for the above Project in accordance with the terms and conditions on the reverse side of this Service Proposal Form (this "Proposal"). Purchaser's execution and return of this Proposal, or Purchaser's written or verbal direction to CFI to proceed, or Purchaser's acceptance of any such material or labor furnished by CFI Mechanical, Inc., whichever occurs first, shall constitute Purchaser's agreement to and acceptance of this Proposal and the terms and conditions on the reverse side of this Proposal ("Terms").

Choice Partners #18/036 MC-02

Scope of Work: Change out 10 roof mounted exhaust fans and 8 roof mounted supply fans.

#### **Includes:**

- 1. We will pick up equipment needed for the project.
- 2. We will disconnect the 18 fans. One at a time.
- 3. We will demo the old fans and remove them from the site.
- 4. We will install the new Greenheck supply and exhaust fan in the same place as the old ones.
- 5. We will reconnect the existing electrical to the new fans. (We will be reusing the existing starters and overloads.)
- 6. We will startup and test the new fans.
- 7. This project comes with a 1-year parts and labor warranty.
- 8. We will clean up the site and get with the customer before leaving.

#### Price: \$ 73,757.00

#### Pricing above includes Choice Partners and P&P Bond

Exclusions: Overtime Labor, Roofing, Cutting, Patching, Painting, Ceiling Work, Asbestos Abatement, Hazardous Material Removal/Disposal, nCov Volatility (see below), and any other services, materials, labor or work not expressly outlined in the Scope of Work set forth above. This Proposal does not include responsibility for the design of the systems, obsolescence, safety test, removal and reinstallation of valve bodies and dampers, repair or replacement necessitated by freezing weather, electrical power failure, low voltage, burned-out main or branch fuses, low water pressure, vandalism, misuse or abuse of the system(s), negligence of others (including Purchaser), failure of Purchaser to properly operate the system(s), requirements of governmental, regulatory or insurance agencies, or other causes beyond control of Seller.

The price(s) shown above in the Scope of Work is due to CFI in full, lawful money of the United States of America within 30 days after date of invoice. Purchaser shall pay interest on any late payment from the date due until the date paid at the rate of 6% per annum, or the maximum rate allowed by law, whichever is less. Any alteration to, or deviation from this Proposal involving extra work, cost of materials or labor will become an extra charge (fixed price amount to be negotiated or on a time-and material basis at Seller's rates then in effect) over the sum stated in this Proposal. No additional work or repairs shall be required to be performed by Seller without a separate written agreement between Purchaser and Seller describing in detail the scope and costs of the work to be performed which is signed by both parties.

This Proposal, including any pricing contained in the Proposal, will only be valid for 30 days.

<u>nCov Volatility</u>: In addition, the Novel Coronavirus (nCov) has caused volatility, unavailability, delays, increased costs for the protection of workers and the general public, and uncertainty of labor, materials, equipment, and other commodities necessary for the Work. Therefore, this Proposal and any subsequent contract price for the Work or Project covered by or related to this Proposal shall be subject to time and cost adjustment for any delay or price increase arising out of or relating to the effects of the Novel Coronavirus (nCov) outbreak.

www.cfimechanical.com
THIS ABOVE PROPOSAL AND TERMS ARE ACCEPTED:

6109 Brittmoore • Houston, TX 77041 P: (832) 467-8200 • F: (832) 467-8203

	CFI MECHANICAL, INC				
("Purchaser")	("Seller")				
BY:	BY: Art Filkins				
TITLE: DATE:	TITLE: Service Sales DATE: 3/26/2021				

6109 Brittmoore • Houston, TX 77041 P: (832) 467-8200 • F: (832) 467-8203

#### TERMS AND CONDITIONS

The acceptance of this Proposal is expressly limited to the following terms and conditions (the "Terms"). No attempted acceptance which varies or adds to the Terms shall be effective and any such counter-proposal are hereby deemed rejected. Seller shall not be bound by terms additional to or different from those contained in these Terms t, unless such terms are expressly agreed to in writing and signed by Seller. These Terms represents the entire agreement between the parties and supersedes any prior or contemporaneous written or oral agreements, representations, or warranties.

- Purchaser shall provide Seller with timely access to areas and equipment and a safe environment in which to perform the Work, which shall be performed during normal working hours of Seller. Purchaser represents that it is not aware of any asbestos-containing or other hazardous materials at the Project, Seller has no responsibility or liability for the investigation, detection, testing, removal, remediation and/or encapsulation of any and all asbestos-containing or other hazardous materials at the site of the Project., Any investigation, detection, testing, removal, remediation and/or encapsulation of any and all asbestos-containing or other hazardous material will be the responsibility of and at the expense of Purchaser, the Owner or others, If Seller encounters any material believed to be asbestos-containing or other hazardous material, Seller may stop all work in the affected area until Purchaser notifies Seller in writing that it is safe to proceed. Seller shall have no responsibility or liability arising out of or related to, and PURCHASER HEREBY WAIVES AND RELEASES ANY CLAIMS OR CAUSES OF ACTION FOR, THE PRESENCE, GROWTH OR DEVELOPMENT OF MOLD OR MILDEW AT THE PROJECT, OR FOR THE REMEDIATION OF ANY SUCH MOLD OR MILDEW, OR ANY COSTS, EXPENSES, DAMAGES, OR LIABILITIES RELATED THERETO, EVEN IF SUCH MOLD OR MILDEW IS CAUSED IN WHOLE OR IN PART BY ANY DEFECTIVE LABOR OR MATERIAL FURNISHED HEREUNDER OR ANY BREACH OF THIS AGREEMENT.
- 2. Any Work found to be defective for a period of ninety (90) days from the date the material is installed or the Work is completed, shall at Seller's option, be repaired or replaced and such repair or replacement shall be Purchaser's sole and exclusive remedy. This warranty does not cover damage or defects caused by normal wear and tear, improper use or maintenance of the material by Purchaser, accident, fire, flood, natural disaster, act of vandalism or terrorism, or other causes beyond Seller's reasonable control. This warranty does not cover replacement of belts or filter maintenance. SELLER HEREBY EXPRESSLY DISCLAIMS ANY AND ALL IMPLIED OR STATUTORY WARRANTIES, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR INTENDED USE.
- 3. Purchaser and Seller hereby waive any and all claims for incidental, indirect, special, consequential, punitive or exemplary damages against the other party, arising out of or related to the Work hereunder or any breach of the Terms hereof. The Seller will not be liable for any delays, costs, loss or damages caused by or any delays due to fire, strikes, labor troubles, governmental regulations (including orders, recommendations or guidelines), the elements, virus, epidemic pandemic (including the Novel Coronavirus), transportation delays, or any other causes beyond its reasonable control.
- 4. TO THE FULLEST EXTENT PERMITTED BY LAW, PURCHASER SHALL DEFEND, INDEMNIFY AND HOLD HARMLESS SELLER, ITS AGENTS AND EMPLOYEES (EACH AN "INDEMNIFIED PARTY") FROM AND AGAINST ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES, INCLUDING BUT NOT LIMITED TO ATTORNEYS' FEES, ARISING OUT OF OR RESULTING FROM THE PERFORMANCE OF WORK HEREUNDER, PROVIDED THAT SUCH CLAIM, DAMAGE, LOSS OR EXPENSE IS CAUSED IN WHOLE OR IN PART BY AN ACTIVE OR PASSIVE ACT OR OMISSION OF PURCHASER, ANYONE DIRECTLY OR INDIRECTLY EMPLOYED BY PURCHASER, OR ANYONE FOR WHOSE ACTS PURCHASE MAY BE LIABLE, REGARDLESS OF WHETHER IT IS CAUSED IN PART BY THE NEGLIGENCE OF SELLER.
- NOTWITHSTANDING ANYTHING TO THE CONTRARY, SELLER'S TOTAL LIABILITY FOR WORK UNDER THE PROPOSAL OR FOR ANY OTHER WORK PROVIDED TO PURCHASER BY SELLER SHALL BE

- LIMITED TO AND SHALL NEVER EXCEED THE AMOUNT PAID TO SELLER UNDER THIS AGREEMENT.
- 6. If by any act or omission on Purchaser's part or any act beyond the reasonable control of Seller, the Seller's performance is delayed for a period of 90 days or more, Seller shall have the option of terminating the Work t, and in case of such termination after Seller has partially performed the Work, Purchaser agrees to pay Seller the portion of the total contract price attributable to the Work installed, ordered or delivered as of the date of termination, as well as any and all costs of termination, including but not limited to costs of terminating subcontracts or purchase orders, costs of work-in-progress, and costs of demobilization, and any and all delay damages incurred by Seller.
- 7. Purchaser shall be responsible for securing the Work from loss and protecting from damage and shall bear the risk of loss with respect to all material installed and all material delivered to the Project. Notwithstanding the foregoing, the title to all material shall remain in the Seller until payment in full is made by Purchaser. Purchaser shall insure such materials against loss or damage in amount and manner sufficient to protect the interest of the Seller, and Seller shall be named as an additional insured under such insurance.
- It is agreed the Seller reserves a contractual lien and security interest in all material furnished hereunder until the entire price to be paid and all other sums due Seller u have been fully paid. Purchaser shall execute such financing statements or other documents requested by Seller as necessary to perfect Seller's security interest. In the event of default in the making of any such payment, or in the event Purchaser becomes insolvent, makes an assignment for the benefit of creditors or in the event that a proceeding in bankruptcy or insolvency be instituted against Purchaser, or voluntarily by Purchaser, then at Seller's option, Seller, its agents, successors and assigns may, without notice or demand, resell the material or any part thereof at either public or private sale. If the unpaid balance due Seller under this agreement, including any interest due and damages resulting from Purchaser's default, including any attorneys' fees incurred and the expenses of resale, are not satisfied by proceeds of the sale, Purchaser agrees promptly to pay such deficiency. If there is a surplus from the proceeds of the sale after the payment of the above items, it shall be paid to Purchaser.
- In the event of any default by Seller t, Purchaser shall give Seller written notice of default, and shall give Seller five (5) days from the date of Seller's receipt of such notice to cure or commence and diligently pursue cure of such default.
- 10. The rights, duties and obligations of the parties hereunder shall be governed and construed in accordance with the laws of the State of Texas, excluding any conflicts or laws or rules which would refer its interpretation to the laws of another jurisdiction.
- At Seller's option, all claims, disputes, and other matters in question arising out of or relating to this Agreement, or the breach thereof, may be decided by arbitration, which shall be conducted in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then in effect, with a single arbitrator under regular track procedures unless otherwise elected by Seller. All arbitration proceedings or other legal proceedings will be in Houston, Texas. This agreement to arbitrate shall be specifically enforceable. It is agreed that the Work performed, and labor and/or materials furnished pursuant to this Agreement affects and involves interstate commerce. Any legal action against the Seller relating, or the breach of these Terms, shall be commenced within one (1) year from the date of the completion of the Work. The award rendered by the arbitrators shall be final and judgment may be entered upon it in accordance with the applicable law in the court having jurisdiction thereof.



Mark: EF-47

Model: CUE-120-A

# Model: CUE-120-A

Direct Drive Upblast Centrifugal Roof Exhaust

Fan

Previously: CUE-121-A

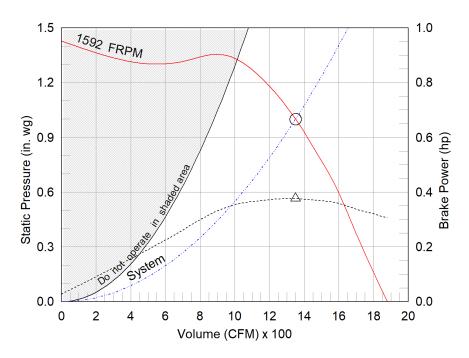
Dimensional						
Quantity	1					
Weight w/o Acc's (lb)	60					
Weight w/ Acc's (lb)	78					
Max T Motor Frame Size	56					
Standard Curb Cap Size (in.)	19 x 19					
Roof Opening (in.)	14.5 x 14.5					



OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performance					
Requested Volume (CFM)	1,350				
Actual Volume (CFM)	1,350				
Total External SP (in. wg)	1				
Fan RPM	1592				
Operating Power (hp)	0.38				
Elevation (ft)	105				
Airstream Temp.(F)	70				
Air Density (lb/ft3)	0.075				
Tip Speed (ft/min)	5,444				
Static Eff. (%)	56				

Motor	
Motor Mounted	Yes
Size (hp)	1/2
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP
Motor RPM	1725
Efficiency Rating	Standard
Windings	1
NEC FLA* (Amps)	9.8



Operating Bhp point

Operating point at Total External SP

Fan curve

System curve

----- Brake horsepower curve

## Notes:

All dimensions shown are in units of in. \*NEC FLA - based on tables 430.248 or 430.250 of National Electrical Code 2017. Actual motor FLA may vary, for sizing thermal overload, consult factory. LwA - A weighted sound power level, based on ANSI S1.4 dBA - A weighted sound pressure level, based on 11.5 dB

attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International

Sones - calculated using ANSI/AMCA 301 at 5 ft



## Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	80	80	86	72	67	66	61	52	79	68	15.8



Job: Galveston ISD Ball HS Kitchen Replacement

Mark: EF-47 Model: CUE-120-A

# Model: CUE-120-A

## Direct Drive Upblast Centrifugal Roof Exhaust Fan

#### **Standard Construction Features:**

 - Aluminum housing - Backward inclined aluminum wheel - Aluminum curb cap with prepunched mounting holes - Drain trough - Ball bearing motors (sizes 85-300 and all Vari Green), sleeve bearing motors (sizes 60-80) - Motor isolated on shock mounts - Corrosion resistant fasteners

#### **Selected Options & Accessories:**

PSC Motor

Standard Curb Cap Size - 19 in. Square
UL/cUL 762 Listed - "Power Ventilators for Rest. Exh. Appliances"
Switch, NEMA-3R, Toggle, Shipped with Unit
Junction Box Mounted & Wired

High Wind Rated (+/- 150 PSF Rating)

Florida Product Approval #FL13225.1 & Miami-Dade NOA #19-0717.02

Hinged Base (Attached)

High Temp Curb Seal Rated for Continuous Duty at 1500 F (Attached)
Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc
Non-Stick Coated Wheel (Teflon)

Solid State Speed Control, 10 Amp, Shipped Loose

Grease Trap with Absorbent Material Birdscreen: Aluminum, nom. 86% Free Area

Clean-out Port

Unit Warranty: 1 Yr (Standard)



Job: Galveston ISD Ball HS Kitchen Replacement

Mark: EF-48 Model: CUE-120-A

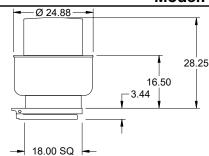
# Model: CUE-120-A

Direct Drive Upblast Centrifugal Roof Exhaust

Fan

Previously: CUE-121-A

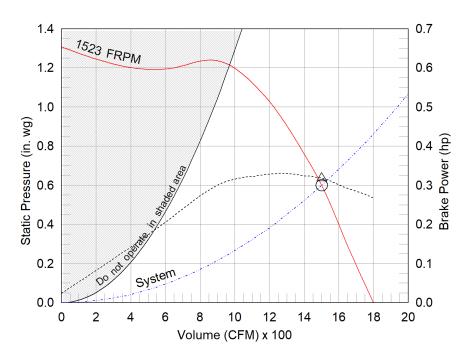
Dimensional						
Quantity	1					
Weight w/o Acc's (lb)	60					
Weight w/ Acc's (lb)	78					
Max T Motor Frame Size	56					
Standard Curb Cap Size (in.)	19 x 19					
Roof Opening (in.)	14.5 x 14.5					



OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performance					
Requested Volume (CFM)	1,500				
Actual Volume (CFM)	1,500				
Total External SP (in. wg)	0.6				
Fan RPM	1523				
Operating Power (hp)	0.32				
Elevation (ft)	105				
Airstream Temp.(F)	70				
Air Density (lb/ft3)	0.075				
Tip Speed (ft/min)	5,210				
Static Eff. (%)	45				

Motor	
Motor Mounted	Yes
Size (hp)	1/2
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP
Motor RPM	1725
Efficiency Rating	Standard
Windings	1
NEC FLA* (Amps)	9.8



Operating Bhp point

Operating point at Total External SP

Fan curve

System curve

----- Brake horsepower curve

## Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	78	78	85	70	65	65	59	51	78	66	14.5

#### Notes:

All dimensions shown are in units of in. \*NEC FLA - based on tables 430.248 or 430.250 of National Electrical Code 2017. Actual motor FLA may vary, for sizing thermal overload, consult factory. LwA - A weighted sound power level, based on ANSI S1.4 dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International

Sones - calculated using ANSI/AMCA 301 at 5 ft





Job: Galveston ISD Ball HS Kitchen Replacement

Mark: EF-48 Model: CUE-120-A

# Model: CUE-120-A

## Direct Drive Upblast Centrifugal Roof Exhaust Fan

#### **Standard Construction Features:**

- Aluminum housing - Backward inclined aluminum wheel - Aluminum curb cap with prepunched mounting holes - Drain trough - Ball bearing motors (sizes 85-300 and all Vari Green), sleeve bearing motors (sizes 60-80) - Motor isolated on shock mounts - Corrosion resistant fasteners

#### **Selected Options & Accessories:**

PSC Motor

Standard Curb Cap Size - 19 in. Square
UL/cUL 762 Listed - "Power Ventilators for Rest. Exh. Appliances"
Switch, NEMA-3R, Toggle, Shipped with Unit
Junction Box Mounted & Wired

High Wind Rated (+/- 150 PSF Rating)

Florida Product Approval #FL13225.1 & Miami-Dade NOA #19-0717.02

Hinged Base (Attached)

High Temp Curb Seal Rated for Continuous Duty at 1500 F (Attached) Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc Non-Stick Coated Wheel (Teflon)

Solid State Speed Control, 10 Amp, Shipped Loose

Grease Trap with Absorbent Material Birdscreen: Aluminum, nom. 86% Free Area

Clean-out Port

Unit Warranty: 1 Yr (Standard)



Galveston ISD Ball HS Kitchen Replacement

Mark: EF-49

Model: CUE-160-B

## Model: CUE-160-B

Direct Drive Upblast Centrifugal Roof Exhaust

Fan

Previously: CUE-161-B

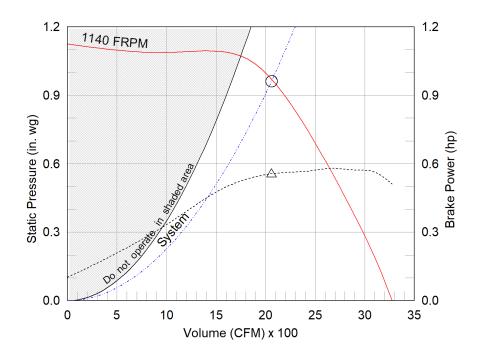
Dimensional						
Quantity	1					
Weight w/o Acc's (lb)	104					
Weight w/ Acc's (lb)	125					
Max T Motor Frame Size	145					
Standard Curb Cap Size (in.)	22 x 22					
Roof Opening (in.)	18.5 x 18.5					



OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performance					
Requested Volume (CFM)	2,100				
Actual Volume (CFM)	2,059				
Total External SP (in. wg)	0.961				
Fan RPM	1140				
Operating Power (hp)	0.55				
Elevation (ft)	105				
Airstream Temp.(F)	70				
Air Density (lb/ft3)	0.075				
Tip Speed (ft/min)	4,962				
Static Eff. (%)	56				

Motor	
Motor Mounted	Yes
Size (hp)	1
Voltage/Cycle/Phase	460/60/3
Enclosure	TEFC
Motor RPM	1140
Efficiency Rating	Standard
Windings	1



Operating Bhp point
Operating point at Total External SP
Fan curve

---- System curve

----- Brake horsepower curve

#### **Static Pressure Calculations**

External SP	1	in. wg
Direct Drive RPM Adjustment	-0.039	in. wg
Total External SP	0.961	in. wg

## Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	73	79	76	75	70	66	62	58	76	65	13.1

#### Notes:

All dimensions shown are in units of in.

\*Please consult factory for actual motor amp draw
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB
attenuation per Octave band at 5 ft - dBA levels are not

licensed by AMCA International Sones - calculated using ANSI/AMCA 301 at 5 ft The motor provided on this fan is inverter ready and meets NEMA MG1 Part 31.4.4.2





Job: Galveston ISD Ball HS Kitchen Replacement

Mark: EF-49 Model: CUE-160-B

# Model: CUE-160-B

## Direct Drive Upblast Centrifugal Roof Exhaust Fan

#### **Standard Construction Features:**

- Aluminum housing - Backward inclined aluminum wheel - Aluminum curb cap with prepunched mounting holes - Drain trough - Ball bearing motors (sizes 85-300 and all Vari Green), sleeve bearing motors (sizes 60-80) - Motor isolated on shock mounts - Corrosion resistant fasteners

### **Selected Options & Accessories:**

Unit Warranty: 1 Yr (Standard)

Motor VFD Rated without Shaft Grounding Protection
Standard Curb Cap Size - 22 in. Square
UL/cUL 762 Listed - "Power Ventilators for Rest. Exh. Appliances"
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
High Wind Rated (+/- 150 PSF Rating)
Florida Product Approval #FL13225.1 & Miami-Dade NOA #19-0717.02
Hinged Base (Attached)
High Temp Curb Seal Rated for Continuous Duty at 1500 F (Attached)
Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc
Non-Stick Coated Wheel (Teflon)
Grease Trap with Absorbent Material
Birdscreen: Aluminum, nom. 86% Free Area
Clean-out Port



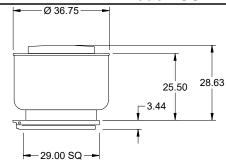
Job: Galveston ISD Ball HS Kitchen Replacement Mark: EF-50

Model: CUBE-200HP-30

# Model: CUBE-200HP-30

Belt Drive Upblast Centrifugal Roof Exhaust Fan

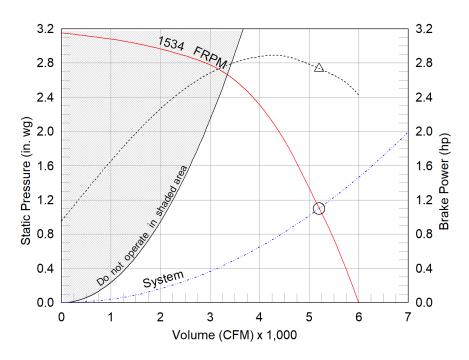
Dimensional							
Quantity	1						
Weight w/o Acc's (lb)	162						
Weight w/ Acc's (lb)	188						
Max T Motor Frame Size	184						
Standard Curb Cap Size (in.)	30 x 30						
Roof Opening (in.)	20.5 x 20.5						



OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performance	ce
Requested Volume (CFM)	5,200
Actual Volume (CFM)	5,200
Total External SP (in. wg)	1.1
Fan RPM	1534
Operating Power (hp)	2.73
Elevation (ft)	105
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Drive Loss (%)	4.5
Tip Speed (ft/min)	8,584
Static Eff. (%)	34

Motor	
Motor Mounted	Yes
Size (hp)	3
Voltage/Cycle/Phase	460/60/3
Enclosure	TEFC
Motor RPM	1725
Efficiency Rating	NEMA Premium
Windings	1
NEC FLA* (Amps)	4.8



Operating Bhp point

Operating point at Total External SP

Fan curve

System curve

----- Brake horsepower curve

### Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	82	80	92	83	82	79	74	70	88	77	27

#### Notes:

All dimensions shown are in units of in. \*NEC FLA - based on tables 430.248 or 430.250 of National Electrical Code 2017. Actual motor FLA may vary, for sizing thermal overload, consult factory. LwA - A weighted sound power level, based on ANSI S1.4

dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International

Sones - calculated using ANSI/AMCA 301 at 5 ft The motor provided on this fan is inverter ready and meets NEMA MG1 Part 31.4.4.2





Mark: EF-50

Model: CUBE-200HP-30

# Model: CUBE-200HP-30

## Belt Drive Upblast Centrifugal Roof Exhaust Fan

#### **Standard Construction Features:**

- Aluminum housing - Backward inclined aluminum wheel - Curb cap with prepunched mounting holes - Motor and drives isolated on shock mounts - Drain trough - Ball bearing motors - Adjustable motor pulley - Adjustable motor plate - Fan shaft mounted in ball bearing pillow blocks - Bearings meet or exceed temperature rating of fan - Static resistant belts - Corrosion resistant fasteners - Internal lifting lugs

#### **Selected Options & Accessories:**

NEMA Premium Efficient Motor - meets NEMA Table 12-12
Motor VFD Rated without Shaft Grounding Protection
Standard Curb Cap Size - 30 in. Square
UL/cUL 762 Listed - "Power Ventilators for Rest. Exh. Appliances"
Switch, NEMA-1, Toggle, Shipped with Unit
Junction Box Mounted & Wired
High Wind Rated (+/- 150 PSF Rating)
Florida Product Approval #FL13225.1 & Miami-Dade NOA #19-0717.02
Hinged Base (Attached)
High Temp Curb Seal Rated for Continuous Duty at 1500 F (Attached)
Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached

Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc Non-Stick Coated Wheel (Teflon)

Grease Trap with Absorbent Material Birdscreen: Aluminum, nom. 86% Free Area Heat Baffle (Attached)

Bearings with Grease Fittings, L10 life of 100,000 hrs (L50 avg. life 500,000 hrs)

Clean-out Port Unit Warranty: 1 Yr (Standard)



Mark: EF-51

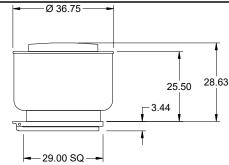
Model: CUBE-180HP-20

# Model: CUBE-180HP-20

Belt Drive Upblast Centrifugal Roof Exhaust

Fan

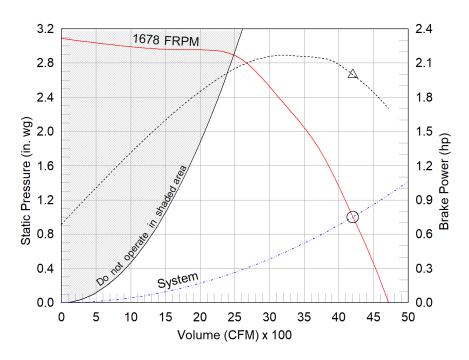
Dimensional							
Quantity	1						
Weight w/o Acc's (lb)	132						
Weight w/ Acc's (lb)	158						
Max T Motor Frame Size	184						
Standard Curb Cap Size (in.)	30 x 30						
Roof Opening (in.)	20.5 x 20.5						



OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performance	ce
Requested Volume (CFM)	4,200
Actual Volume (CFM)	4,200
Total External SP (in. wg)	1
Fan RPM	1678
Operating Power (hp)	2
Elevation (ft)	105
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Drive Loss (%)	4.9
Tip Speed (ft/min)	8,125
Static Eff. (%)	35

Motor	
Motor Mounted	Yes
Size (hp)	2
Voltage/Cycle/Phase	460/60/3
Enclosure	TEFC
Motor RPM	1725
Efficiency Rating	Standard
Windings	1
NEC FLA* (Amps)	3.4



Operating Bhp point

Operating point at Total External SP

Fan curve

System curve

----- Brake horsepower curve

## Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	88	83	88	87	78	77	76	69	87	76	26

#### Notes:

All dimensions shown are in units of in. \*NEC FLA - based on tables 430.248 or 430.250 of National Electrical Code 2017. Actual motor FLA may vary, for sizing thermal overload, consult factory. LwA - A weighted sound power level, based on ANSI S1.4

dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International

Sones - calculated using ANSI/AMCA 301 at 5 ft The motor provided on this fan is inverter ready and meets NEMA MG1 Part 31.4.4.2





Job: Galveston ISD Ball HS Kitchen Replacement

Mark: EF-51 Model: CUBE-180HP-20

# Model: CUBE-180HP-20

## Belt Drive Upblast Centrifugal Roof Exhaust Fan

#### **Standard Construction Features:**

- Aluminum housing - Backward inclined aluminum wheel - Curb cap with prepunched mounting holes - Motor and drives isolated on shock mounts - Drain trough - Ball bearing motors - Adjustable motor pulley - Adjustable motor plate - Fan shaft mounted in ball bearing pillow blocks - Bearings meet or exceed temperature rating of fan - Static resistant belts - Corrosion resistant fasteners - Internal lifting lugs

#### **Selected Options & Accessories:**

Unit Warranty: 1 Yr (Standard)

Motor VFD Rated without Shaft Grounding Protection Standard Curb Cap Size - 30 in. Square UL/cUL 762 Listed - "Power Ventilators for Rest. Exh. Appliances" Switch, NEMA-1, Toggle, Shipped with Unit Junction Box Mounted & Wired High Wind Rated (+/- 150 PSF Rating) Florida Product Approval #FL13225.1 & Miami-Dade NOA #19-0717.02 Hinged Base (Attached) High Temp Curb Seal Rated for Continuous Duty at 1500 F (Attached) Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc Non-Stick Coated Wheel (Teflon) Grease Trap with Absorbent Material Birdscreen: Aluminum, nom. 86% Free Area Heat Baffle (Attached) Bearings with Grease Fittings, L10 life of 100,000 hrs (L50 avg. life 500,000 hrs) Clean-out Port



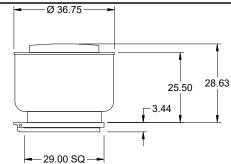
Job: Galveston ISD Ball HS Kitchen Replacement Mark: EF-52

Model: CUBE-180HP-20

# Model: CUBE-180HP-20

Belt Drive Upblast Centrifugal Roof Exhaust Fan

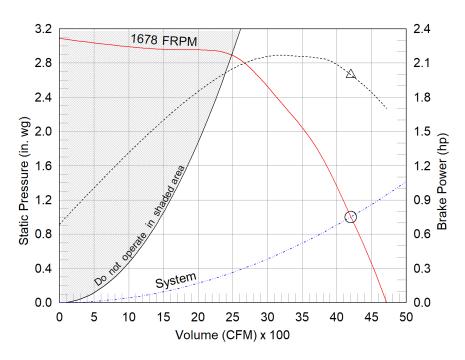
Dimensional							
Quantity	1						
Weight w/o Acc's (lb)	132						
Weight w/ Acc's (lb)	158						
Max T Motor Frame Size	184						
Standard Curb Cap Size (in.)	30 x 30						
Roof Opening (in.)	20.5 x 20.5						



OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performance	ce
Requested Volume (CFM)	4,200
Actual Volume (CFM)	4,200
Total External SP (in. wg)	1
Fan RPM	1678
Operating Power (hp)	2
Elevation (ft)	105
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Drive Loss (%)	4.9
Tip Speed (ft/min)	8,125
Static Eff. (%)	35

Motor	
Motor Mounted	Yes
Size (hp)	2
Voltage/Cycle/Phase	460/60/3
Enclosure	TEFC
Motor RPM	1725
Efficiency Rating	Standard
Windings	1
NEC FLA* (Amps)	3.4



Operating Bhp point

Operating point at Total External SP

Fan curve

System curve

----- Brake horsepower curve

## Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	88	83	88	87	78	77	76	69	87	76	26

#### Notes:

All dimensions shown are in units of in. \*NEC FLA - based on tables 430.248 or 430.250 of National Electrical Code 2017. Actual motor FLA may vary, for sizing thermal overload, consult factory. LwA - A weighted sound power level, based on ANSI S1.4

dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International

Sones - calculated using ANSI/AMCA 301 at 5 ft The motor provided on this fan is inverter ready and meets NEMA MG1 Part 31.4.4.2





Mark: EF-52

Model: CUBE-180HP-20

# Model: CUBE-180HP-20

## Belt Drive Upblast Centrifugal Roof Exhaust Fan

#### **Standard Construction Features:**

- Aluminum housing - Backward inclined aluminum wheel - Curb cap with prepunched mounting holes - Motor and drives isolated on shock mounts - Drain trough - Ball bearing motors - Adjustable motor pulley - Adjustable motor plate - Fan shaft mounted in ball bearing pillow blocks - Bearings meet or exceed temperature rating of fan - Static resistant belts - Corrosion resistant fasteners - Internal lifting lugs

#### **Selected Options & Accessories:**

Unit Warranty: 1 Yr (Standard)

Motor VFD Rated without Shaft Grounding Protection Standard Curb Cap Size - 30 in. Square UL/cUL 762 Listed - "Power Ventilators for Rest. Exh. Appliances" Switch, NEMA-1, Toggle, Shipped with Unit Junction Box Mounted & Wired High Wind Rated (+/- 150 PSF Rating) Florida Product Approval #FL13225.1 & Miami-Dade NOA #19-0717.02 Hinged Base (Attached) High Temp Curb Seal Rated for Continuous Duty at 1500 F (Attached) Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc Non-Stick Coated Wheel (Teflon) Grease Trap with Absorbent Material Birdscreen: Aluminum, nom. 86% Free Area Heat Baffle (Attached) Bearings with Grease Fittings, L10 life of 100,000 hrs (L50 avg. life 500,000 hrs) Clean-out Port



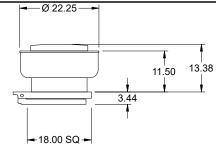
Job: Galveston ISD Ball HS Kitchen Replacement

Mark: EF-53 Model: CUE-080-D

# Model: CUE-080-D

Direct Drive Upblast Centrifugal Roof Exhaust

Fan

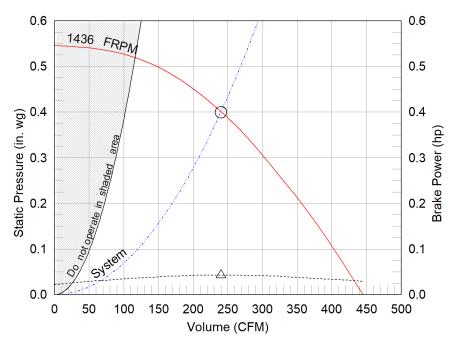


Dimension	al
Quantity	1
Weight w/o Acc's (lb)	31
Weight w/ Acc's (lb)	45
Standard Curb Cap Size (in.)	19 x 19
Roof Opening (in.)	12.5 x 12.5

OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performan	ce
Requested Volume (CFM)	240
Actual Volume (CFM)	240
Total External SP (in. wg)	0.4
Fan RPM	1436
Operating Power (hp)	0.04
Elevation (ft)	105
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	4,088
Static Eff. (%)	35

	lotor	Motor
	Mounted Yes	Motor Mounted
ater)	ize (hp) 1/20 (or greater)	Size (hp
1	e/Phase 230/60/1	Voltage/Cycle/Phase
	nclosure TEAO	Enclosure
	or RPM 1550	Motor RPN
d	/ Rating Standard	Efficiency Rating
	/indings 1	Winding
d	,	ļ,



Operating Bhp point

Operating point at Total External SP

Fan curve

System curve

----- Brake horsepower curve

## Notes:

All dimensions shown are in units of in. \*Please consult factory for actual motor amp draw

LwA - A weighted sound power level, based on ANSI S1.4 dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International

Sones - calculated using ANSI/AMCA 301 at 5 ft



## Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	68	73	66	59	57	55	48	43	64	53	6.6



Job: Galveston ISD Ball HS Kitchen Replacement

Mark: EF-53 Model: CUE-080-D

# Model: CUE-080-D

## Direct Drive Upblast Centrifugal Roof Exhaust Fan

#### **Standard Construction Features:**

- Aluminum housing - Backward curved composite (sizes 60-95) or aluminum (sizes 99-300) wheel - Aluminum curb cap with prepunched mounting holes - Drain trough - Ball bearing motors (sizes 85-300 and all Vari Green), sleeve bearing motors (sizes 60-80) - Motor isolated on shock mounts - Corrosion resistant fasteners

### **Selected Options & Accessories:**

Unit Warranty: 1 Yr (Standard)

Standard Curb Cap Size - 19 in. Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-3R, Toggle, Shipped with Unit
Junction Box Mounted & Wired
High Wind Rated (+/- 150 PSF Rating)
Florida Product Approval #FL13225.1 & Miami-Dade NOA #19-0717.02
Hinged Base (Attached)
Foam Curb Seal (Attached)
Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc
Solid State Speed Control, 6 Amp, Shipped Loose
Birdscreen: Aluminum, nom. 86% Free Area
Composite Wheel Material



**Job:** Galveston ISD Ball HS Kitchen Replacement **Mark:** EF-55

Model: CUE-099-A

# Model: CUE-099-A

Direct Drive Upblast Centrifugal Roof Exhaust Fan

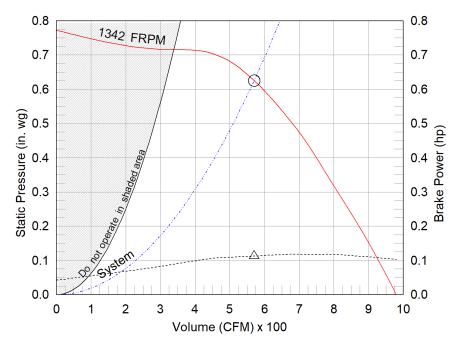
Dimension	al
Quantity	1
Weight w/o Acc's (lb)	45
Weight w/ Acc's (lb)	63
Max T Motor Frame Size	56
Standard Curb Cap Size (in.)	19 x 19
Roof Opening (in.)	14.5 x 14.5



OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performano	ce
Requested Volume (CFM)	570
Actual Volume (CFM)	570
Total External SP (in. wg)	0.625
Fan RPM	1342
Operating Power (hp)	0.11
Elevation (ft)	105
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	3,931
Static Eff. (%)	50

Motor	
Motor Mounted	Yes
Size (hp)	1/4
Voltage/Cycle/Phase	115/60/1
Enclosure	ODP
Motor RPM	1725
Efficiency Rating	Standard
Windings	1
NEC FLA* (Amps)	5.8



riangle Operating Bhp point

Operating point at Total External SP

Fan curve

----- System curve

----- Brake horsepower curve

### Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	71	70	67	61	59	57	53	44	65	54	7.0

#### Notes:

All dimensions shown are in units of in.

\*NEC FLA - based on tables 430.248 or 430.250 of
National Electrical Code 2017. Actual motor FLA may vary,
for sizing thermal overload, consult factory.

LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB
attenuation per Octave band at 5 ft - dBA levels are not
licensed by AMCA International

Sones - calculated using ANSI/AMCA 301 at 5 ft





Job: Galveston ISD Ball HS Kitchen Replacement

Mark: EF-55 Model: CUE-099-A

# Model: CUE-099-A

## Direct Drive Upblast Centrifugal Roof Exhaust Fan

#### **Standard Construction Features:**

 - Aluminum housing - Backward inclined aluminum wheel - Aluminum curb cap with prepunched mounting holes - Drain trough - Ball bearing motors (sizes 85-300 and all Vari Green), sleeve bearing motors (sizes 60-80) - Motor isolated on shock mounts - Corrosion resistant fasteners

#### **Selected Options & Accessories:**

PSC Motor

Standard Curb Cap Size - 19 in. Square
UL/cUL 762 Listed - "Power Ventilators for Rest. Exh. Appliances"
Switch, NEMA-3R, Toggle, Shipped with Unit
Junction Box Mounted & Wired
High Wind Rated (+/- 150 PSF Rating)

Florida Product Approval #FL13225.1 & Miami-Dade NOA #19-0717.02 Hinged Base (Attached)

High Temp Curb Seal Rated for Continuous Duty at 1500 F (Attached)
Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc
Non-Stick Coated Wheel (Teflon)
Solid State Speed Control, 6 Amp, Shipped Loose

Grease Trap with Absorbent Material
Birdscreen: Aluminum, nom. 86% Free Area

Clean-out Port Unit Warranty: 1 Yr (Standard)



Job: Galveston ISD Ball HS Kitchen Replacement

Mark: EF-56 Model: CUE-090-D

# Model: CUE-090-D

Direct Drive Upblast Centrifugal Roof Exhaust

Fan

<b>-</b> Ø 22.25	
	11.50 13.38
	-3.44 <sup>11.50</sup> 13.38
	†
10.00.00	
→ 18.00 SQ -	_

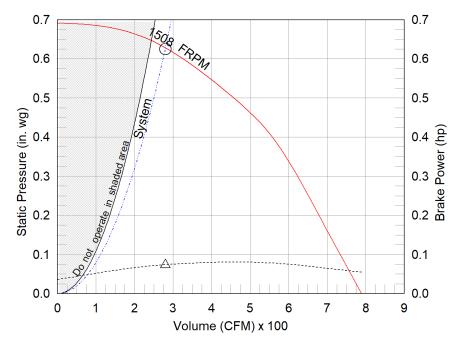
Dillielision	aı
Quantity	1
Weight w/o Acc's (lb)	28
Weight w/ Acc's (lb)	42
Standard Curb Cap Size (in.)	19 x 19
Roof Opening (in.)	12.5 x 12.5

Dimonsional

OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performance				
Requested Volume (CFM)	280			
Actual Volume (CFM)	280			
Total External SP (in. wg)	0.625			
Fan RPM	1508			
Operating Power (hp)	0.07			
Elevation (ft)	105			
Airstream Temp.(F)	70			
Air Density (lb/ft3)	0.075			
Tip Speed (ft/min)	4,294			
Static Eff. (%)	37			

Motor	
Motor Mounted	Yes
Size (hp)	1/15 (or greater)
Voltage/Cycle/Phase	230/60/1
Enclosure	TEAO
Motor RPM	1550
Efficiency Rating	Standard
Windings	1



Operating Bhp point

Operating point at Total External SP

Fan curve

System curve

----- Brake horsepower curve

## Notes:

All dimensions shown are in units of in.

\*Please consult factory for actual motor amp draw LwA - A weighted sound power level, based on ANSI S1.4 dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not

licensed by AMCA International
Sones - calculated using ANSI/AMCA 301 at 5 ft



## Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	81	75	66	62	58	53	48	42	66	54	7.7



Job: Galveston ISD Ball HS Kitchen Replacement

Mark: EF-56 Model: CUE-090-D

# Model: CUE-090-D

## Direct Drive Upblast Centrifugal Roof Exhaust Fan

#### **Standard Construction Features:**

- Aluminum housing - Backward curved composite (sizes 60-95) or aluminum (sizes 99-300) wheel - Aluminum curb cap with prepunched mounting holes - Drain trough - Ball bearing motors (sizes 85-300 and all Vari Green), sleeve bearing motors (sizes 60-80) - Motor isolated on shock mounts - Corrosion resistant fasteners

### **Selected Options & Accessories:**

Unit Warranty: 1 Yr (Standard)

Standard Curb Cap Size - 19 in. Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-3R, Toggle, Shipped with Unit
Junction Box Mounted & Wired
High Wind Rated (+/- 150 PSF Rating)
Florida Product Approval #FL13225.1 & Miami-Dade NOA #19-0717.02
Hinged Base (Attached)
Foam Curb Seal (Attached)
Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc
Solid State Speed Control, 6 Amp, Shipped Loose
Birdscreen: Aluminum, nom. 86% Free Area
Composite Wheel Material



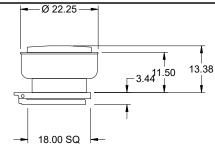
Mark: EF-57

Model: CUE-090-D

# Model: CUE-090-D

Direct Drive Upblast Centrifugal Roof Exhaust Fan

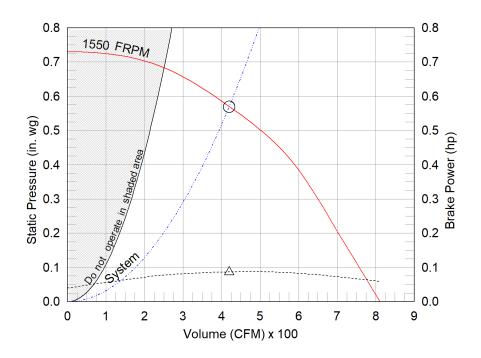
Dimensional				
Quantity	1			
Weight w/o Acc's (lb)	28			
Weight w/ Acc's (lb)	42			
Standard Curb Cap Size (in.)	19 x 19			
Roof Opening (in.)	12.5 x 12.5			



OVERALL HEIGHT MAY BE GREATER DEPENDING ON MOTOR, ADAPTER, AND/OR HINGE BASE.

Performan	ce
Requested Volume (CFM)	440
Actual Volume (CFM)	420
Total External SP (in. wg)	0.569
Fan RPM	1550
Operating Power (hp)	0.09
Elevation (ft)	105
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	4,413
Static Eff. (%)	43

Motor	
Motor Mounted	Yes
Size (hp)	1/15 (or greater)
Voltage/Cycle/Phase	230/60/1
Enclosure	TEAO
Motor RPM	1550
Efficiency Rating	Standard
Windings	1



Operating Bhp point
Operating point at Total External SP
Fan curve

----- System curve ----- Brake horsepower curve

## **Static Pressure Calculations**

External SP	0.625	in. wg
Direct Drive RPM Adjustment	-0.056	in. wg
Total External SP	0.569	in. wg

## Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	79	74	68	62	58	54	50	43	66	54	7.6

#### Notes:

All dimensions shown are in units of in.
\*Please consult factory for actual motor amp draw
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB
attenuation per Octave band at 5 ft - dBA levels are not
licensed by AMCA International

Sones - calculated using ANSI/AMCA 301 at 5 ft





Job: Galveston ISD Ball HS Kitchen Replacement

Mark: EF-57 Model: CUE-090-D

# Model: CUE-090-D

## Direct Drive Upblast Centrifugal Roof Exhaust Fan

#### **Standard Construction Features:**

- Aluminum housing - Backward curved composite (sizes 60-95) or aluminum (sizes 99-300) wheel - Aluminum curb cap with prepunched mounting holes - Drain trough - Ball bearing motors (sizes 85-300 and all Vari Green), sleeve bearing motors (sizes 60-80) - Motor isolated on shock mounts - Corrosion resistant fasteners

### **Selected Options & Accessories:**

Unit Warranty: 1 Yr (Standard)

Standard Curb Cap Size - 19 in. Square
UL/cUL 705 Listed - "Power Ventilators"
Switch, NEMA-3R, Toggle, Shipped with Unit
Junction Box Mounted & Wired
High Wind Rated (+/- 150 PSF Rating)
Florida Product Approval #FL13225.1 & Miami-Dade NOA #19-0717.02
Hinged Base (Attached)
Foam Curb Seal (Attached)
Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc
Solid State Speed Control, 6 Amp, Shipped Loose
Birdscreen: Aluminum, nom. 86% Free Area
Composite Wheel Material



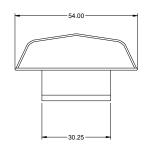
Mark: SF-19

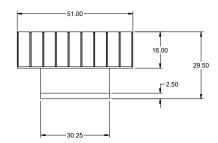
Model: RCS3-20-608-A5

# Model: RCS3-20-608-A5

Propeller Hooded Roof Direct Drive Supply Fan

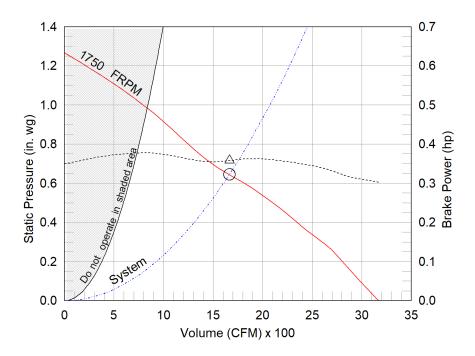
Dimensional				
Quantity	1			
Weight w/o Acc's (lb)	158			
Weight w/ Acc's (lb)	166			
Max T Motor Frame Size	145			
Roof Opening (in.)	22.5 x 22.5			





Performance				
Requested Volume (CFM)	1,605			
Actual Volume (CFM)	1,665			
Total External SP (in. wg)	0.646			
Fan RPM	1750			
Operating Power (hp)	0.36			
Elevation (ft)	105			
Airstream Temp.(F)	70			
Air Density (lb/ft3)	0.075			
Tip Speed (ft/min)	9,163			
Static Eff. (%)	47			

Motor	
Motor Mounted	Yes
Size (hp)	1/2
Voltage/Cycle/Phase	115/60/1
Enclosure	TEFC
Motor RPM	1750
Efficiency Rating	Standard
Windings	1



Operating Bhp point Operating point at Total External SP Fan curve

System curve ----- Brake horsepower curve

#### **Static Pressure Calculations**

External SP	0.6	in. wg
Direct Drive RPM Adjustment	0.046	in. wg
Total External SP	0.646	in. wg

## Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	77	84	94	84	84	81	75	69	90	78	29

#### Notes:

All dimensions shown are in units of in. \*Please consult factory for actual motor amp draw LwA - A weighted sound power level, based on ANSI S1.4 dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International Sones - calculated using AMCA 301 at 5 ft





Mark: SF-19

Model: RCS3-20-608-A5

# Model: RCS3-20-608-A5

Propeller Hooded Roof Direct Drive Supply Fan

#### **Standard Construction Features:**

- Base and hoods of galvanized steel - Drive frames and fan panels of fabricated steel - Wire mesh birdscreens - Ball bearing motors - Cast aluminum airfoil blade propeller - Corrosion resistant fasteners - Due to shipping size limitations, hoods will be shipped knocked down. Hood assembly requires no special tools or training. Complete illustrated assembly and installation instructions are packed with each fan.

## **Selected Options & Accessories:**

Hood

Switch, NEMA-3R, Toggle, Shipped with Unit
Junction Box Mounted & Wired
High Wind Rated (+/- 40 PSF Rating)
Florida Product Approval #FL12917.1 & Miami-Dade NOA #16-0209.03
Cast Aluminum Propeller
Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc
Aluminum Construction
Tie Down Points/Lifting Lugs
Unit Warranty: 1 Yr (Standard)



Mark: SF-20

Model: RCS3-24-617-A20

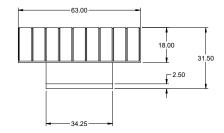
# Model: RCS3-24-617-A20

Propeller Hooded Roof Direct Drive Supply

Fan

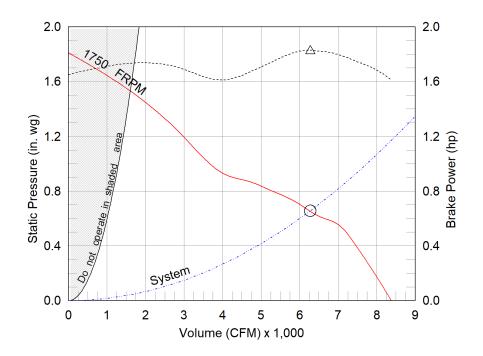
Dimensional								
Quantity	1							
Weight w/o Acc's (lb)	208							
Weight w/ Acc's (lb)	215							
Max T Motor Frame Size	184							
Roof Opening (in.)	26.5 x 26.5							





Performano	ce
Requested Volume (CFM)	6,000
Actual Volume (CFM)	6,276
Total External SP (in. wg)	0.657
Fan RPM	1750
Operating Power (hp)	1.82
Elevation (ft)	105
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	10,996
Static Eff. (%)	36

Motor	
Motor Mounted	Yes
Size (hp)	2
Voltage/Cycle/Phase	460/60/3
Enclosure	TEFC
Motor RPM	1750
Efficiency Rating	Standard
Windings	1



Operating Bhp point Operating point at Total External SP Fan curve

System curve

----- Brake horsepower curve

#### **Static Pressure Calculations**

External SP	0.6	in. wg
Direct Drive RPM Adjustment	0.057	in. wg
Total External SP	0.657	in. wg

## Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	86	94	99	93	94	91	84	79	98	87	48

#### Notes:

All dimensions shown are in units of in. \*Please consult factory for actual motor amp draw LwA - A weighted sound power level, based on ANSI S1.4 dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not

licensed by AMCA International Sones - calculated using AMCA 301 at 5 ft





Mark: SF-20

Model: RCS3-24-617-A20

# Model: RCS3-24-617-A20

Propeller Hooded Roof Direct Drive Supply Fan

#### **Standard Construction Features:**

- Base and hoods of galvanized steel - Drive frames and fan panels of fabricated steel - Wire mesh birdscreens - Ball bearing motors - Cast aluminum airfoil blade propeller - Corrosion resistant fasteners - Due to shipping size limitations, hoods will be shipped knocked down. Hood assembly requires no special tools or training. Complete illustrated assembly and installation instructions are packed with each fan.

## **Selected Options & Accessories:**

Hood

Switch, NEMA-3R, Toggle, Shipped with Unit
Junction Box Mounted & Wired
High Wind Rated (+/- 40 PSF Rating)
Florida Product Approval #FL12917.1 & Miami-Dade NOA #16-0209.03
Cast Aluminum Propeller
Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc
Aluminum Construction
Tie Down Points/Lifting Lugs
Unit Warranty: 1 Yr (Standard)



Mark: SF-21

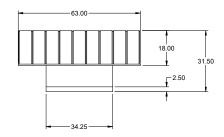
Model: RCS3-24-617-A20

# Model: RCS3-24-617-A20

Propeller Hooded Roof Direct Drive Supply Fan

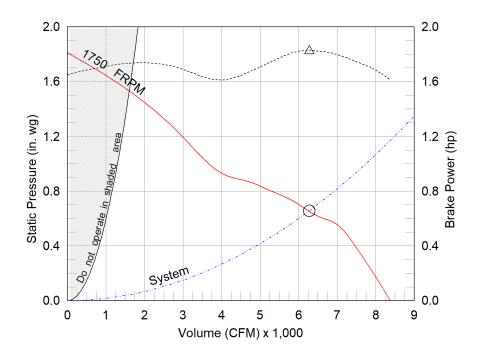
Dimensional									
Dimensional									
Quantity	1								
Weight w/o Acc's (lb)	208								
Weight w/ Acc's (lb)	215								
Max T Motor Frame Size	184								
Roof Opening (in.)	26.5 x 26.5								





Performance	ce
Requested Volume (CFM)	6,000
Actual Volume (CFM)	6,276
Total External SP (in. wg)	0.657
Fan RPM	1750
Operating Power (hp)	1.82
Elevation (ft)	105
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	10,996
Static Eff. (%)	36

Motor	
Motor Mounted	Yes
Size (hp)	2
Voltage/Cycle/Phase	460/60/3
Enclosure	TEFC
Motor RPM	1750
Efficiency Rating	Standard
Windings	1



Operating Bhp point Operating point at Total External SP Fan curve

System curve

----- Brake horsepower curve

#### **Static Pressure Calculations**

External SP	0.6	in. wg
Direct Drive RPM Adjustment	0.057	·
Total External SP	0.657	in. wg

## Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	86	94	99	93	94	91	84	79	98	87	48

#### Notes:

All dimensions shown are in units of in. \*Please consult factory for actual motor amp draw LwA - A weighted sound power level, based on ANSI S1.4 dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International Sones - calculated using AMCA 301 at 5 ft





Mark: SF-21

Model: RCS3-24-617-A20

# Model: RCS3-24-617-A20

Propeller Hooded Roof Direct Drive Supply Fan

#### **Standard Construction Features:**

- Base and hoods of galvanized steel - Drive frames and fan panels of fabricated steel - Wire mesh birdscreens - Ball bearing motors - Cast aluminum airfoil blade propeller - Corrosion resistant fasteners - Due to shipping size limitations, hoods will be shipped knocked down. Hood assembly requires no special tools or training. Complete illustrated assembly and installation instructions are packed with each fan.

## **Selected Options & Accessories:**

Hood

Switch, NEMA-3R, Toggle, Shipped with Unit Junction Box Mounted & Wired Cast Aluminum Propeller Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc Aluminum Construction Tie Down Points/Lifting Lugs Unit Warranty: 1 Yr (Standard)



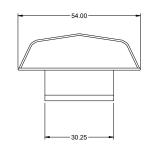
Mark: SF-22

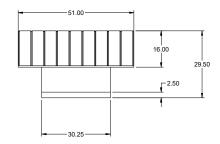
**Model:** RCS3-20-620-A10

# Model: RCS3-20-620-A10

Propeller Hooded Roof Direct Drive Supply Fan

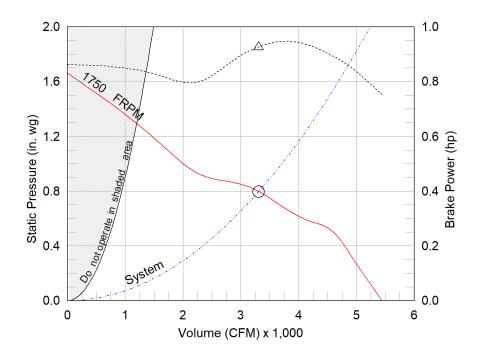
Dimensional								
Quantity	1							
Weight w/o Acc's (lb)	166							
Weight w/ Acc's (lb)	173							
Max T Motor Frame Size	145							
Roof Opening (in.)	22.5 x 22.5							





Performance						
Requested Volume (CFM)	3,100					
Actual Volume (CFM)	3,305					
Total External SP (in. wg)	0.796					
Fan RPM	1750					
Operating Power (hp)	0.93					
Elevation (ft)	105					
Airstream Temp.(F)	70					
Air Density (lb/ft3)	0.075					
Tip Speed (ft/min)	9,163					
Static Eff. (%)	45					

Motor	
Motor Mounted	Yes
Size (hp)	1
Voltage/Cycle/Phase	460/60/3
Enclosure	TEFC
Motor RPM	1750
Efficiency Rating	Standard
Windings	1



Operating Bhp point
Operating point at Total External SP
Fan curve

System curve
Brake horsepower curve

**Static Pressure Calculations** 

External SP	0.7	in. wg
Direct Drive RPM Adjustment	0.096	in. wg
Total External SP	0.796	in. wg

## Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	84	91	93	87	85	83	78	74	91	79	31

#### Notes:

All dimensions shown are in units of in.
\*Please consult factory for actual motor amp draw
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB
attenuation per Octave band at 5 ft - dBA levels are not
licensed by AMCA International

licensed by AMCA International Sones - calculated using AMCA 301 at 5 ft





Mark: SF-22

Model: RCS3-20-620-A10

# Model: RCS3-20-620-A10

Propeller Hooded Roof Direct Drive Supply Fan

#### **Standard Construction Features:**

- Base and hoods of galvanized steel - Drive frames and fan panels of fabricated steel - Wire mesh birdscreens - Ball bearing motors - Cast aluminum airfoil blade propeller - Corrosion resistant fasteners - Due to shipping size limitations, hoods will be shipped knocked down. Hood assembly requires no special tools or training. Complete illustrated assembly and installation instructions are packed with each fan.

## **Selected Options & Accessories:**

Hood

Switch, NEMA-3R, Toggle, Shipped with Unit
Junction Box Mounted & Wired
Cast Aluminum Propeller
Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc
Aluminum Construction
Tie Down Points/Lifting Lugs
Unit Warranty: 1 Yr (Standard)



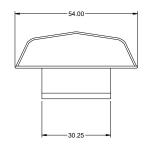
Mark: SF-23

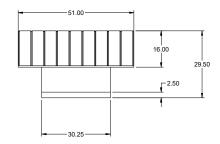
Model: RCS3-20-608-A5

# Model: RCS3-20-608-A5

Propeller Hooded Roof Direct Drive Supply Fan

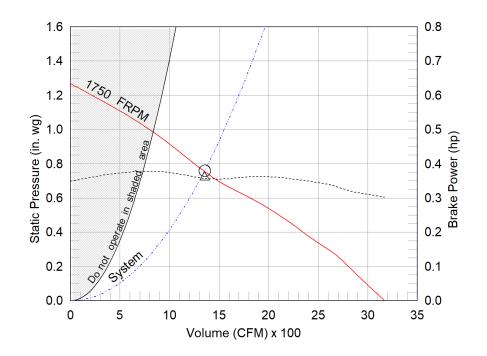
Dimensional							
Quantity	1						
Weight w/o Acc's (lb)	158						
Weight w/ Acc's (lb)	166						
Max T Motor Frame Size	145						
Roof Opening (in.)	22.5 x 22.5						





Performance						
Requested Volume (CFM)	1,300					
Actual Volume (CFM)	1,354					
Total External SP (in. wg)	0.76					
Fan RPM	1750					
Operating Power (hp)	0.36					
Elevation (ft)	105					
Airstream Temp.(F)	70					
Air Density (lb/ft3)	0.075					
Tip Speed (ft/min)	9,163					
Static Eff. (%)	45					

Motor	
Motor Mounted	Yes
Size (hp)	1/2
Voltage/Cycle/Phase	115/60/1
Enclosure	TEFC
Motor RPM	1750
Efficiency Rating	Standard
Windings	1



Operating Bhp point
Operating point at Total External SP
Fan curve

System curve
Brake horsepower curve

#### **Static Pressure Calculations**

External SP	0.7	in. wg
Direct Drive RPM Adjustment	0.06	in. wg
Total External SP	0.76	in. wg

## Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	76	84	96	84	83	80	74	69	90	79	30

#### Notes:

All dimensions shown are in units of in.

\*Please consult factory for actual motor amp draw
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB
attenuation per Octave band at 5 ft - dBA levels are not
licensed by AMCA International
Sones - calculated using AMCA 301 at 5 ft





SD Ball HS Kitchen Replacement Mark: SF-23

Model: RCS3-20-608-A5

# Model: RCS3-20-608-A5

Propeller Hooded Roof Direct Drive Supply Fan

#### **Standard Construction Features:**

- Base and hoods of galvanized steel - Drive frames and fan panels of fabricated steel - Wire mesh birdscreens - Ball bearing motors - Cast aluminum airfoil blade propeller - Corrosion resistant fasteners - Due to shipping size limitations, hoods will be shipped knocked down. Hood assembly requires no special tools or training. Complete illustrated assembly and installation instructions are packed with each fan.

## **Selected Options & Accessories:**

Hood

Switch, NEMA-3R, Toggle, Shipped with Unit Junction Box Mounted & Wired Cast Aluminum Propeller Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc Aluminum Construction Tie Down Points/Lifting Lugs Unit Warranty: 1 Yr (Standard)



Mark: SF-24

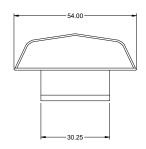
Model: RCS3-20-614-A7

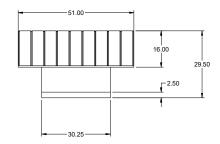
# Model: RCS3-20-614-A7

Propeller Hooded Roof Direct Drive Supply

Fan
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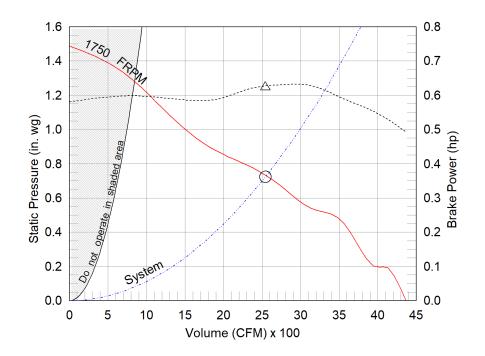
Dimensional					
Quantity	1				
Weight w/o Acc's (lb)	154				
Weight w/ Acc's (lb)	155				
Max T Motor Frame Size	145				
Roof Opening (in.)	22.5 x 22.5				





Performance						
Requested Volume (CFM)	2,500					
Actual Volume (CFM)	2,541					
Total External SP (in. wg)	0.723					
Fan RPM	1750					
Operating Power (hp)	0.62					
Elevation (ft)	105					
Airstream Temp.(F)	70					
Air Density (lb/ft3)	0.075					
Tip Speed (ft/min)	9,163					
Static Eff. (%)	46					

Motor	
Motor Mounted	Yes
Size (hp)	3/4
Voltage/Cycle/Phase	460/60/3
Enclosure	TEFC
Motor RPM	1750
Efficiency Rating	Standard
Windings	1



Operating Bhp point Operating point at Total External SP Fan curve

System curve

----- Brake horsepower curve

#### **Static Pressure Calculations**

External SP	0.7	in. wg
Direct Drive RPM Adjustment	0.023	in. wg
Total External SP	0.723	in. wg

## Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	82	87	96	87	85	81	76	71	92	80	33

#### Notes:

All dimensions shown are in units of in. \*Please consult factory for actual motor amp draw LwA - A weighted sound power level, based on ANSI S1.4 dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International Sones - calculated using AMCA 301 at 5 ft





Mark: SF-24

Model: RCS3-20-614-A7

# Model: RCS3-20-614-A7

Propeller Hooded Roof Direct Drive Supply Fan

#### **Standard Construction Features:**

- Base and hoods of galvanized steel - Drive frames and fan panels of fabricated steel - Wire mesh birdscreens - Ball bearing motors - Cast aluminum airfoil blade propeller - Corrosion resistant fasteners - Due to shipping size limitations, hoods will be shipped knocked down. Hood assembly requires no special tools or training. Complete illustrated assembly and installation instructions are packed with each fan.

## **Selected Options & Accessories:**

Hood

Switch, NEMA-3R, Toggle, Shipped with Unit Junction Box Mounted & Wired Cast Aluminum Propeller Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc Aluminum Construction Unit Warranty: 1 Yr (Standard)



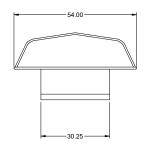
Mark: SF-25

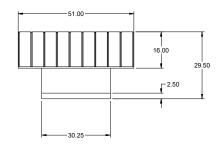
Model: RCS3-20-614-A7

# Model: RCS3-20-614-A7

Propeller Hooded Roof Direct Drive Supply Fan

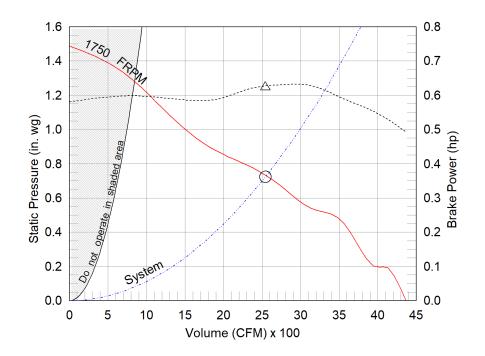
Dimensional				
Quantity	1			
Weight w/o Acc's (lb)	154			
Weight w/ Acc's (lb)	155			
Max T Motor Frame Size	145			
Roof Opening (in.)	22.5 x 22.5			





Performance				
Requested Volume (CFM)	2,500			
Actual Volume (CFM)	2,541			
Total External SP (in. wg)	0.723			
Fan RPM	1750			
Operating Power (hp)	0.62			
Elevation (ft)	105			
Airstream Temp.(F)	70			
Air Density (lb/ft3)	0.075			
Tip Speed (ft/min)	9,163			
Static Eff. (%)	46			

Motor	
Motor Mounted	Yes
Size (hp)	3/4
Voltage/Cycle/Phase	460/60/3
Enclosure	TEFC
Motor RPM	1750
Efficiency Rating	Standard
Windings	1



Operating Bhp point Operating point at Total External SP Fan curve

System curve

----- Brake horsepower curve

#### **Static Pressure Calculations**

External SP	0.7	in. wg
Direct Drive RPM Adjustment	0.023	_
Total External SP	0.723	in. wg

## Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	82	87	96	87	85	81	76	71	92	80	33

#### Notes:

All dimensions shown are in units of in. \*Please consult factory for actual motor amp draw LwA - A weighted sound power level, based on ANSI S1.4 dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International Sones - calculated using AMCA 301 at 5 ft





Mark: SF-25

Model: RCS3-20-614-A7

# Model: RCS3-20-614-A7

Propeller Hooded Roof Direct Drive Supply Fan

#### **Standard Construction Features:**

- Base and hoods of galvanized steel - Drive frames and fan panels of fabricated steel - Wire mesh birdscreens - Ball bearing motors - Cast aluminum airfoil blade propeller - Corrosion resistant fasteners - Due to shipping size limitations, hoods will be shipped knocked down. Hood assembly requires no special tools or training. Complete illustrated assembly and installation instructions are packed with each fan.

## **Selected Options & Accessories:**

Hood

Switch, NEMA-3R, Toggle, Shipped with Unit Junction Box Mounted & Wired Cast Aluminum Propeller Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc Aluminum Construction Unit Warranty: 1 Yr (Standard)



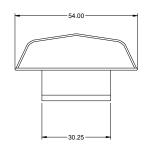
Mark: SF-26

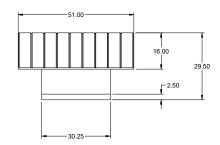
Model: RCS3-20-604-A4

# Model: RCS3-20-604-A4

Propeller Hooded Roof Direct Drive Supply Fan

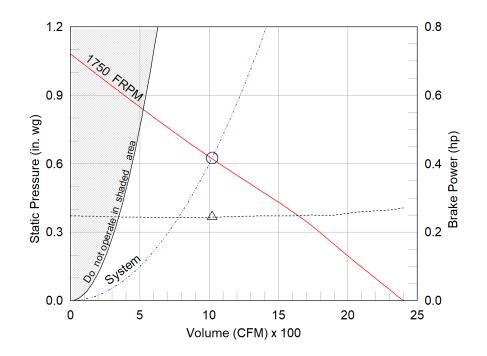
Dimensional				
Quantity	1			
Weight w/o Acc's (lb)	155			
Weight w/ Acc's (lb)	157			
Max T Motor Frame Size	145			
Roof Opening (in.)	22.5 x 22.5			





Performance	ce
Requested Volume (CFM)	1,000
Actual Volume (CFM)	1,021
Total External SP (in. wg)	0.625
Fan RPM	1750
Operating Power (hp)	0.24
Elevation (ft)	105
Airstream Temp.(F)	70
Air Density (lb/ft3)	0.075
Tip Speed (ft/min)	9,163
Static Eff. (%)	41

Motor	
Motor Mounted	Yes
Size (hp)	1/4
Voltage/Cycle/Phase	115/60/1
Enclosure	TEFC
Motor RPM	1750
Efficiency Rating	Standard
Windings	1



Operating Bhp point Operating point at Total External SP Fan curve

System curve ----- Brake horsepower curve

#### **Static Pressure Calculations**

External SP	0.6 in. wg
Direct Drive RPM Adjustment	0.025 in. wg
Total External SP	0.625 in. wg

## Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	71	79	89	80	81	78	71	66	86	74	22

#### Notes:

All dimensions shown are in units of in. \*Please consult factory for actual motor amp draw LwA - A weighted sound power level, based on ANSI S1.4 dBA - A weighted sound pressure level, based on 11.5 dB attenuation per Octave band at 5 ft - dBA levels are not licensed by AMCA International Sones - calculated using AMCA 301 at 5 ft





Mark: SF-26

Model: RCS3-20-604-A4

# Model: RCS3-20-604-A4

Propeller Hooded Roof Direct Drive Supply Fan

#### **Standard Construction Features:**

- Base and hoods of galvanized steel - Drive frames and fan panels of fabricated steel - Wire mesh birdscreens - Ball bearing motors - Cast aluminum airfoil blade propeller - Corrosion resistant fasteners - Due to shipping size limitations, hoods will be shipped knocked down. Hood assembly requires no special tools or training. Complete illustrated assembly and installation instructions are packed with each fan.

## **Selected Options & Accessories:**

Hood

Switch, NEMA-3R, Toggle, Shipped with Unit Junction Box Mounted & Wired Cast Aluminum Propeller Coated with Permatector, Concrete Gray-RAL 7023, Fan And Attached Acc Aluminum Construction Unit Warranty: 1 Yr (Standard)