

An ISO 9001 Company

CHICAGO

Bulletin DFOB 100

SINGLE WIDTH BACKWARD INCLINED DESIGN 51 BI FANS



Widest Operating Range
More Efficient Than
Radial Bladed Fans
Construction to Class IV

CHICAGO BLOWER CORPORATION • GLENDALE HEIGHTS, ILLINOIS • USA

Chicago's Design 51 Single Width fan, a reliable industry staple for decades, is now readily available as a standard pre-engineered series with Backward Inclined wheels. Add up the features and you have one tough fan.

- **Sizes 135 to 807**
- **Pressures over 28" WG**
- **Volumes to 263,000 CFM**
- **Temperatures to 800°F**
- **Arrangements 1, 8, 9, 10**



This Class III fan is equipped with aluminum wheel for AMCA Type B spark resistant construction.

For construction details and options, use this code.



SINGLE WIDTH BACKWARD INCLINED DESIGN 51 BI FANS

More Efficient, Less Costly than Radial Bladed Fans

In addition, the large operating range makes the Design 51 BI ideal for low volume, medium pressure applications. Other manufacturers will have to select a radial bladed or narrow width blower for the same performance requirements. When compared

to the Design 51 BI, the radial bladed blower is less efficient and louder as well. Less efficiency means a higher horsepower motor. This in turn means higher electric bills, and a louder fan that will require expensive silencers or acoustical insulation to adhere to OSHA requirements.

Fan Construction to Match Your Airstream

Design 51 BI fans are available in all four construction classes to meet the specific application requirements, from light duty Class I fans for supply air to Class IV for harsh industrial environments. Construction classes comply with AMCA Publication 99.

Class I unitary base fan built to handle a light dust and fume environment with 304 stainless steel airstream.



CLASS I

Static Pressures to 7" W.G.

CLASS II

Static Pressures to 12" W.G.

CLASS III

Static Pressures to 19" W.G.

CLASS IV

Sizes 150 through 807. Static Pressures to 28" W.G.

Industry's Widest Operating Range

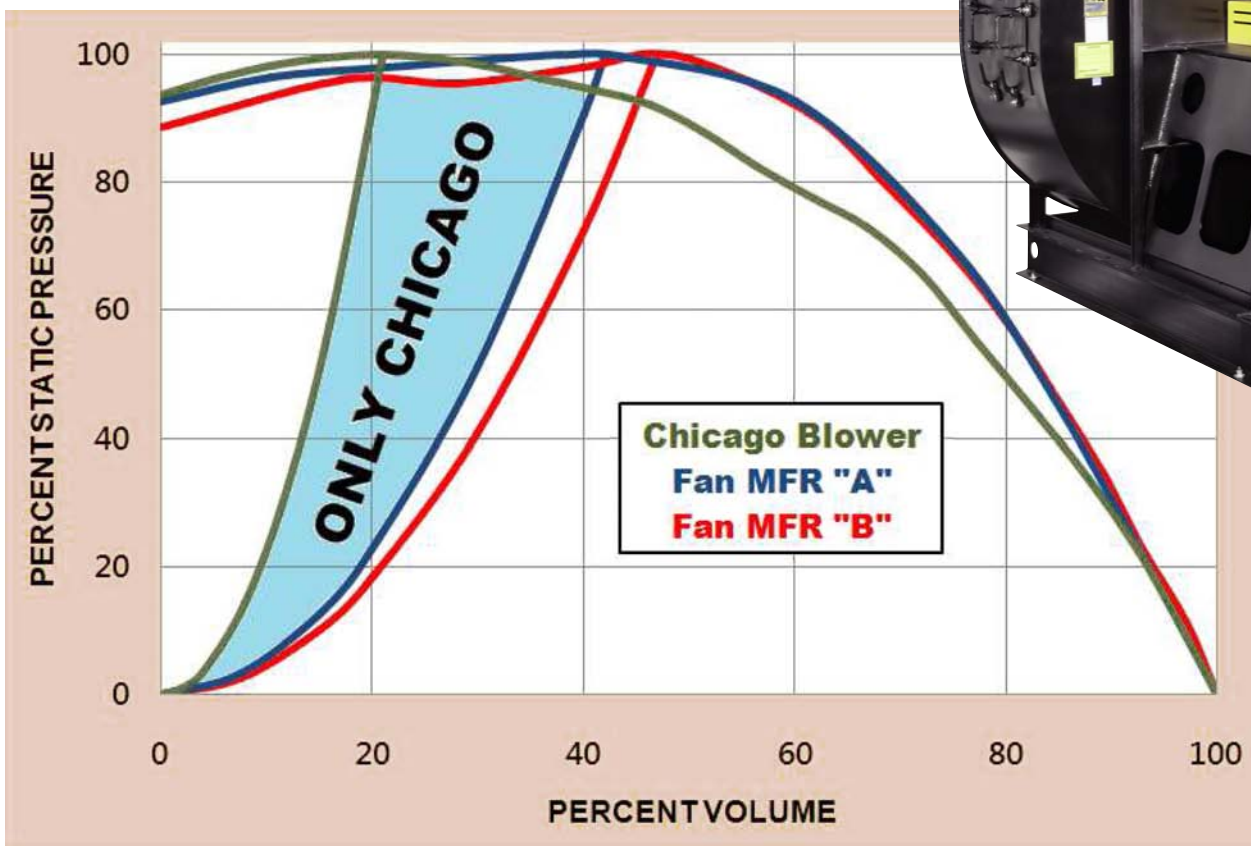
Chicago Blower's Design 51 Backward Inclined wheel has ideal characteristics for dust collectors and other variable pressure systems. The smooth, stable air flow over the performance range is the result of Chicago's tried and true wheel design with hyperbolically spun wheel cone. This allows variable pressure applications to remain in the stable area of the pressure curve longer with a large increase in static pressure.

In the typical performance curve below, Chicago's Design 51 BI has the largest operating area of over 80%, illustrated by the blue section of the performance curve. The stall area



Class III wheel designed for hostile dust collection systems

takes up less than 20% of the curve. Fan Manufacturers' A and B stable operating range is a full 30% less than Chicago, as illustrated by the blue and red performance curves.



Chicago's fan.net Selection Program



Refer to Chicago's fan.net for performance, fan curves and sound data.

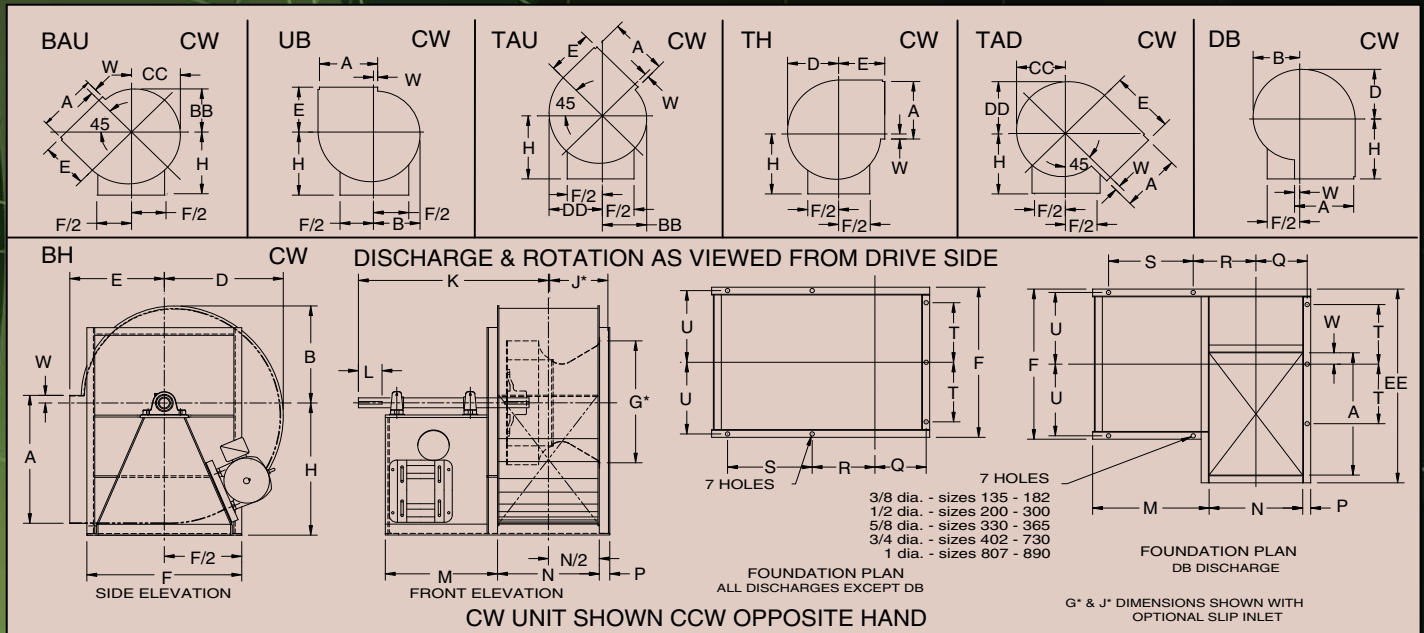
For software and assistance, contact your local Chicago Blower Sales Engineer.



Class IV Arrangement 10 Design 51 BI Fan

CLASS IV – Arrangements 1 and 9

SINGLE WIDTH DESIGN 51 BI FANS



Dimensions in Inches –
 (For CLASSES I, II, III See D/51 Single Width Bulletin)

| Fan Size | Wheel Dia. | Shaft @ Bearing | A | B | D | E | | | F | H | | | | | | | |
|----------|------------|-----------------|----------|----------|----------|------------------------|----------|--------|----------|----------|----------|----|----------|----------|---------|---------|--------|
| | | | | | | TH/BH BAU/TAU UB | TAD | | | BH | UB | TH | BAU | TAU | TAD | DB | |
| 150 | 14-9/16 | 1-15/16 | 15-13/16 | 11-1/2 | 13-3/4 | 12-1/16 | 17-7/8 | 19-3/8 | | | | | 20-1/4 | | | | |
| 165 | 16-3/16 | 1-15/16 | 17-3/16 | 12-3/4 | 15-1/4 | 12-7/8 | 18-1/4 | 20-1/2 | | | | | 23-1/4 | | | | |
| 182 | 17-13/16 | 1-15/16 | 19-1/8 | 14 | 16-3/4 | 13-7/8 | 20 | 22-1/2 | | | | | 23-1/4 | | | | |
| 200 | 19-11/16 | 2-3/16 | 20-3/4 | 15-3/4 | 18-3/4 | 15-3/8 | 22 | 25-1/2 | | | | | 23-5/8 | | | | |
| 222 | 21-9/16 | 2-3/16 | 23-7/16 | 17-3/16 | 20-7/16 | 16-5/16 | 24 | 27-3/8 | | | | | 25-13/16 | | | | |
| 245 | 24 | 2-3/16 | 25-9/16 | 19 | 22-11/16 | 18 | 28-13/16 | 33 | 25-7/8 | 24-9/16 | 24-7/8 | | 24-5/8 | 24-7/8 | 24-9/16 | 24-7/8 | |
| 270 | 26-7/16 | 2-7/16 | 28-3/16 | 20-7/8 | 24-15/16 | 19-1/4 | 30-13/16 | 35-1/2 | 28-1/4 | 25-7/16 | 23-7/8 | | 27 | 23-7/8 | 25-1/4 | 23-7/8 | |
| 300 | 29-1/8 | 2-11/16 | 31-9/16 | 22-15/16 | 27-3/8 | 20-7/8 | 33-7/8 | 38-3/4 | 30-7/8 | 28-3/8 | 28-3/8 | | 29-5/8 | 28-3/8 | 24-7/8 | 28-3/8 | 23-7/8 |
| 330 | 32-3/8 | 2-11/16 | 34-3/8 | 25-3/8 | 30-5/16 | 22-9/16 | 35-11/16 | 41-7/8 | 34-1/2 | 30-13/16 | 28-1/8 | | 32-13/16 | 28-1/8 | 29 | 28-1/8 | 28-1/8 |
| 365 | 35-9/16 | 2-15/16 | 38-5/16 | 27-7/8 | 33-1/4 | 24-5/8 | 38-15/16 | 45-1/4 | 37-3/4 | 33-3/4 | 28-5/16 | | 35-15/16 | 30-11/16 | 31-7/8 | 26-1/8 | |
| 402 | 39-3/8 | 2-15/16 | 42 | 30-3/4 | 36-3/4 | 27-1/2 | 42-3/8 | 51-1/4 | 41-7/8 | 37-1/4 | 31-1/4 | | 39-11/16 | 33-13/16 | 34-5/8 | 28 | |
| 445 | 43-7/16 | 3-3/16 | 46-1/2 | 33-7/8 | 40-1/2 | 30-1/16 | 45-3/8 | 54-3/4 | 45-7/8 | 41 | 34-3/8 | | 43-5/8 | 37-3/16 | 37-1/8 | 30-9/16 | |
| 490 | 48 | 3-7/16 | 51-1/16 | 37-3/8 | 44-11/16 | 32-15/16 | 48-13/16 | 59-1/2 | 50-5/16 | 45-3/16 | 37-13/16 | | 48-1/8 | 41 | 39-5/8 | 33-7/16 | |
| 540 | 52-7/8 | 3-11/16 | 56-13/16 | 41-1/16 | 49-3/16 | 36 | 53-3/16 | 63-1/4 | 55-3/8 | 49-11/16 | 41-9/16 | | 53-1/8 | 45-1/16 | 43-3/8 | 36-1/2 | |
| 600 | 58-1/2 | 3-15/16 | 62-13/16 | 45-3/8 | 54-5/16 | 39-9/16 | 57-13/16 | 69-1/8 | 60-7/8 | 54-13/16 | 45-7/8 | | 58-3/8 | 49-3/4 | 47-1/16 | 40-1/16 | |
| 660 | 64-3/4 | 4-3/16 | 68-11/16 | 50-3/16 | 60-1/8 | 44-1/16 | 63-5/16 | 75-7/8 | 67 | 60/58 | 50-11/16 | | 64-9/16 | 54-15/16 | 51-1/15 | 44-9/16 | |
| 730 | 71-3/16 | 5-3/16 | 76-3/8 | 55-1/8 | 66 | 48-1/8 | 69-1/16 | 82 | 73-5/16 | 66-1/2 | 55-5/8 | | 70-7/8 | 60-5/16 | 56-1/8 | 48-5/8 | |
| 807 | 78-3/4 | 4-15/16 | 84-1/2 | 60-15/16 | 73 | 53-3/8 | 81-1/2 | 93-5/8 | 81-11/16 | 73-7/16 | 61-3/8 | | 78-1/4 | 66-5/8 | 65-3/4 | 53-7/8 | |

| Fan Size | G | J | K | L | M | N | P | Q | R | S | T | U | W | BB | CC | DD | EE |
|----------|---------|----------|----------|-------|---------|----------|-------|----------|----------|---------|----------|----------|---------|----------|----------|----------|-----------|
| 150 | 15-7/16 | 7-7/16 | 29-5/8 | 3 | 19-3/4 | 11-3/4 | 1-1/2 | 6-3/4 | 9-3/8 | 12-3/4 | 6-3/16 | 9-1/16 | 1-15/32 | 10-1/2 | 12-1/2 | 14-5/8 | 25-17/32 |
| 165 | 16-9/16 | 8-1/8 | 30-25/32 | 3-1/2 | 19-3/4 | 13-1/16 | 1-1/2 | 7-13/32 | 10-1/32 | 12-3/4 | 6-3/4 | 9-5/8 | 1-9/32 | 11-9/16 | 13-13/16 | 16-3/16 | 27-21/32 |
| 182 | 18-9/16 | 8-3/4 | 34-13/16 | 3-1/2 | 23-1/8 | 14-3/8 | 1-1/2 | 8-1/16 | 10-11/16 | 16-1/8 | 7-3/4 | 10-5/8 | 1-5/8 | 12-3/4 | 15-3/16 | 17-13/16 | 30-1/4 |
| 200 | 20-9/16 | 9-1/2 | 32-7/16 | 3-1/2 | 20 | 15-7/8 | 2 | 9-1/16 | 11-15/16 | 12 | 8-3/4 | 11-3/8 | 1-3/8 | 14-5/16 | 17 | 19-7/8 | 34-1/8 |
| 222 | 22-9/16 | 10-1/4 | 34-7/16 | 4-1/4 | 20-1/8 | 17-3/8 | 2 | 9-13/16 | 12-11/16 | 12-1/8 | 9-11/16 | 12-13/16 | 2-7/32 | 15-5/8 | 18-9/16 | 21-3/4 | 36-29/32 |
| 245 | 24-9/16 | 11-1/4 | 35-1/16 | 4-1/4 | 20-1/8 | 19-3/8 | 2 | 10-13/16 | 13-11/16 | 12-1/8 | 12-1/2 | 15-5/8 | 1-31/32 | 17-5/16 | 20-5/8 | 24-1/8 | 42-3/32 |
| 270 | 27-9/16 | 12-3/4 | 38-9/32 | 4-1/4 | 22-3/8 | 21-5/16 | 2 | 11-25/32 | 14-21/32 | 14-3/8 | 13-3/4 | 16-7/8 | 2-3/16 | 19 | 22-5/8 | 26-1/2 | 45-3/4 |
| 300 | 30-9/16 | 13-13/16 | 41-3/16 | 4-3/4 | 23-3/16 | 23-1/2 | 2 | 12-7/8 | 15-3/4 | 15-3/16 | 15-3/8 | 18-1/2 | 2-15/16 | 20-7/8 | 24-7/8 | 29-1/8 | 50 |
| 330 | 33-9/16 | 15-1/8 | 44-11/16 | 4-3/4 | 25-7/8 | 26-1/8 | 2-1/2 | 14-7/16 | 17-9/16 | 16-7/8 | 16-7/16 | 19-13/16 | 2-5/8 | 23-1/16 | 27-9/16 | 32-5/16 | 55-3/16 |
| 365 | 36-9/16 | 16-7/16 | 46 | 4-3/4 | 25-7/8 | 28-3/4 | 2-1/2 | 15-3/4 | 18-7/8 | 16-7/8 | 18-1/8 | 21-1/2 | 3-7/16 | 25-5/16 | 30-3/16 | 35-7/16 | 60 |
| 402 | 41-9/16 | 17-15/16 | 48-3/8 | 5-1/4 | 25 | 31-3/4 | 3 | 17-5/8 | 20-7/8 | 16 | 20-5/8 | 24-3/8 | 3-3/8 | 27-15/16 | 33-3/8 | 39-3/16 | 67-1/4 |
| 445 | 44-9/16 | 19-9/16 | 54-5/16 | 5-1/4 | 29-5/16 | 35 | 3 | 19-1/4 | 22-1/2 | 20-5/16 | 22-3/8 | 26-1/8 | 3-7/8 | 30-3/4 | 36-3/4 | 43-1/8 | 73 |
| 490 | 49-9/16 | 21-7/16 | 58-31/32 | 6-1/2 | 31-7/8 | 38-11/16 | 3 | 21-3/32 | 24-11/32 | 21-7/8 | 24-3/4 | 28-1/2 | 4 | 33-7/8 | 40-1/2 | 47-5/8 | 79-13/16 |
| 540 | 53-5/8 | 24-1/16 | 66-9/16 | 7-3/4 | 36-1/4 | 42-7/8 | 3 | 23-3/16 | 26-7/16 | 26-1/8 | 26-5/8 | 30-3/8 | 4-31/32 | 37-1/4 | 44-9/16 | 52-3/8 | 86-15/32 |
| 600 | 59-3/8 | 26-3/8 | 73-3/8 | 7-3/4 | 41 | 47-1/2 | 3 | 25-1/2 | 28-3/4 | 30-5/8 | 29-9/16 | 33-5/16 | 5-15/32 | 41-1/8 | 49-3/16 | 57-7/8 | 94-29/32 |
| 660 | 65-7/8 | 29-3/8 | 79 | 7-3/4 | 44-1/8 | 52-1/2 | 3 | 28 | 31-1/4 | 33-3/4 | 32-15/16 | 36-11/16 | 5/3/16 | 45-1/2 | 54-7/16 | 64-1/16 | 104-7/16 |
| 730 | 71-7/8 | 35 | 81-5/8 | 7-3/4 | 43-3/4 | 57-3/4 | 3 | 30-5/8 | 33-7/8 | 33-3/4 | 36 | 39-3/4 | 6-9/16 | 50 | 59-13/16 | 70-3/8 | 113-13/16 |
| 807 | 79-1/2 | 38-7/16 | 85-11/16 | 7-3/4 | 44-3/4 | 63-7/8 | 4 | 34-7/16 | 37-15/16 | 32-3/4 | 40-13/16 | 45-5/16 | 7-5/16 | 55-1/4 | 66-1/8 | 77-3/4 | 128 |

DO NOT USE FOR CONSTRUCTION UNLESS CERTIFIED BY CHICAGO BLOWER CORPORATION.

AUTOCAD DRAWINGS ARE AVAILABLE UPON REQUEST.



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