Mixed Flow Fans

Belt and Direct Drive

Models QEI, QEID

Model #: QEID-40-90-C150-X
Serial #: 16057544 19J

GREENHECK
Building Value in Air.

BUILDING VALUE IN AIR.

November
2016

GREENHECK
Building Value in Air.

Mixed Flow Fans

Mixed flow inline fans can be used for supply, exhaust, or return air installations. Our **patented** design excels in commercial applications where low sound is critical. In addition, Greenheck's mixed flow fans are more efficient than comparably sized tubular centrifugal and vane axial fans, thus reducing the required motor horsepower and lowering operating costs.

Greenheck's mixed flow fans are the quietest tubular inline fans in the industry!

- Performance as cataloged is assured. All sizes are licensed to bear the AMCA Certified Sound (both inlet and outlet) and Air Performance Seal.

UL/cUL Listed	QEI	QEID
705 - Electrical	✓	✓
Emergency Smoke Evacuation	✓	✓
762 - Restaurant Grease Exhaust	✓	

- All sizes are tested before they leave the factory to ensure trouble-free operation at the jobsite.
- Compact size and a "Universal Mounting System" make tight space considerations and last minute mounting changes easy to handle at the jobsite.
- The belt drive models use air handling quality bearings that are 100% inspected for swivel torque, noise levels, and bore tolerances.
- These products are subjected to extensive life cycle testing, assuring many years of reliable performance.

Typical Mixed Flow Applications:

Recommended for any ventilation application that requires low sound and high efficiency, such as office buildings, parking garages, concert halls, libraries, and educational facilities.

Greenheck Fan Corporation certifies that the model QEI and QEID shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program.

For QEID performance showing AMCA licensed data for sound and air performance, please refer to the QEID Sound and Air Performance Supplement found on our website at www.greenheck.com.

c UL US LISTED *See page 10 for details.*

Model QEI-I/II – Belt Drive

- 17 sizes available (9 thru 60)
- Two classes of construction
- Volume Range: 500 - 116,000 cfm (850 - 197,000 m³/hr)
- Static Pressure
  Up to 5 in. wg (1245 Pa) Class I
  Up to 8 in. wg (1990 Pa) Class II

Model QEID – Direct Drive

- 15 sizes available (12 thru 54)
- 50 - 100% wheel widths
- Volume Range: 700 - 88,000 cfm (1190 - 149,500 m³/hr)
- Static Pressure: Up to 10 in. wg (2490 Pa)

Patented (QEI/QEID): USA Patent No. 7048499
China (P.R.) Patent No. CN1294361C
Mexico Patent No. 243465

Housing

Tubular housings are constructed of welded steel to eliminate air leakage. Integral straightening vanes are constructed from steel and welded into place.

Wheel – Mixed Flow

Fabricated wheels are constructed from steel. The blade profiles are angled and contoured for the most efficient and quiet performance.

Bearings (Belt Drive)

Standard bearings are premium air handling quality, grease lubricated, self-aligning, ball or roller type. Bearings are selected with a basic rating fatigue life L_{10} per ABMA standards, in excess of 80,000 hours (L_{50} at 400,000 hours) at the maximum operating speed for the QEI-I/II in the horizontal position.

Bolted Access Door

A bolted access door provides an opening through the fan housing for cleaning or visual inspection of the wheel. A hinged access door is available as an accessory.

Belt Guard (Belt Drive)

A totally enclosed belt guard provides protection from rotating pulleys and belts. Belt guards meet OSHA Standards.

Slip-Fit Duct Connection

Inlets and outlets are designed with extended collars for slip-fit duct connections as standard.

Adjustable Motor Bases (Belt Drive)

Rigid, heavy-gauge steel motor bases are welded to the fan housing and include heavy-duty adjustment screws for belt tensioning.

Extended Lube Lines

Belt drive units have nylon lubrication lines with grease fittings that allow bearing lubrication without disassembling the fan. Grease fittings are mounted on the outside of the fan housing. Direct drive units have extended lubrication lines for the motor bearings, if required. Smaller frame sized motors are typically sealed and not lubricatable.

Permatector™ Coating

Greenheck's Permatector coating is a thermosetting polyester urethane, electrostatically applied to provide uniform thickness and a clean appearance. Permatector coatings also provide excellent corrosion characteristics for general applications, both indoor and outdoor. For corrosive environments (i.e. coastal), see page 9 for information on our zinc-rich basecoat technology.

Model Number Nomenclature

The model number code provides a numbering system designed to identify the fan model, size and horsepower.

QEI D - 40 - 90 - C150 - X

QEI D* - 36 - I - 70 - A 30 - X

D = Direct Drive

Fan Size
9, 12, 15, 16, 18, 20, 22, 24, 27, 30, 33, 36, 40, 44, 49, 54, 60

Belt Drive available in sizes 9 through 60
Direct Drive available in sizes 12 through 54

Construction
I = Class I
II = Class II

Low Pressure available in sizes 12 through 36

** Blue text is specific to direct drive model QEID only*

Certifications
None
X - UL/cUL 705 Listed (Electrical Exhaust)
G - UL/cUL 762 Listed (Grease Exhaust)
HTUL - UL/cUL HT Listed (Emergency Smoke)

Motor Horsepower

4 = ¼	30 = 3	300 = 30
3 = ⅓	50 = 5	400 = 40
5 = ½	75 = 7½	500 = 50
7 = ¾	100 = 10	600 = 60
10 = 1	150 = 15	750 = 75
15 = 1½	200 = 20	1000 = 100
20 = 2	250 = 25	1250 = 125

RPM

A = 1770	C = 870	J = 1425	M = 3600
B = 1170	F = 690	K = 950	R = 2900

Percent Wheel Width
50 through 100

Belt Drive versus Direct Drive

GREENHECK
Building Value in Air.

Belt Drive Advantages

- Lower sound levels
- Motor out of the airstream for easy access
- Motor size may be changed to accommodate possible future air capacity requirements
- Final system balancing accomplished by changing drives

Direct Drive Advantages

- Fewer wear components and less maintenance, no shaft, bearings, pulleys, or belts
- More compact than equivalent belt drive size
- Motor in airstream for increased motor efficiency and cooling
- Equal loading between mounting brackets
- Final system balancing accomplished by adjusting the motor speed (ex. variable frequency drive use).

High Efficiencies = Lower Operating Costs

Example of Annual Operating Cost Savings

For a system performance requirement of 25,000 cfm at 2.5 inches of static pressure (wg) the corresponding operating power requirements are 13.97 Bhp with a QEI-I size 36 and 19.8 Bhp for a size 36 tubular centrifugal fan.

Formulas:

- Kilowatt-Hours = (Operating Power (Bhp) x 0.746 x Hours of Operation) / Motor Efficiency
- Operating Cost = Kilowatt-Hours x Power Cost per kW hour

Assumptions:

- Cost of electricity is $0.09 per kilowatt hour
- 3,120 annual hours of operation (12 hours per day, five days a week, 52 weeks a year)
- 93.0% motor efficiency (equal to NEMA Premium minimum efficiency for 15 and 20 hp, ODP, 1725 rpm motor)

Tubular Centrifugal Fan

kW-Hours = (19.8 Bhp x 0.746 x 3120) / 0.93 = 49,554

Operating Cost = 49,554 x $0.09 = $4,460

QEI-I - Mixed Flow Fan

kW-Hours = (13.97 Bhp x 0.746 x 3120) / 0.93 = 34,963

Operating Cost = 34,963 x $0.09 = $3,147

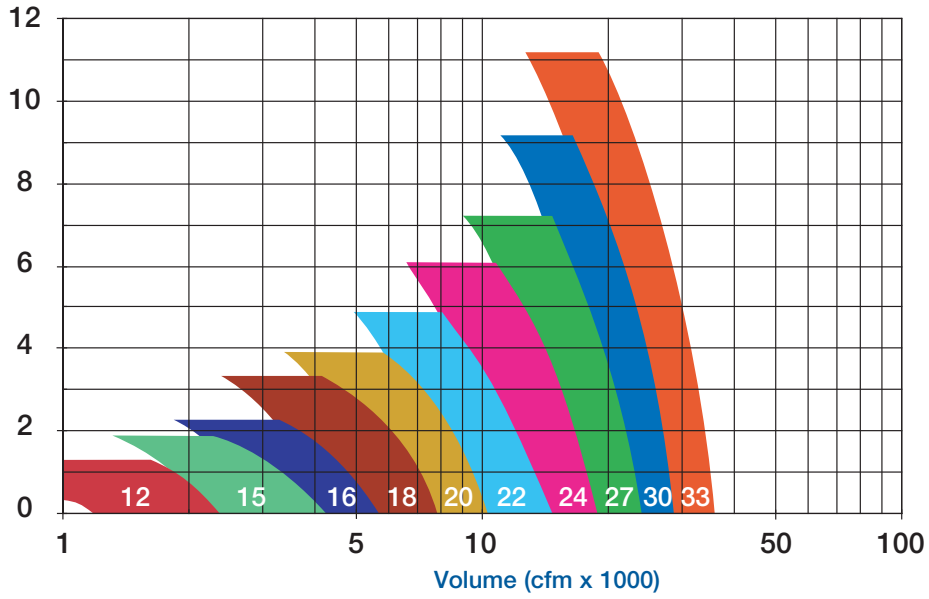
Annual Operating Cost Savings = $4,460 - $3,147 = $1,313

The quick select charts below and on the following page are a convenient method for sizing the fan required for a specific performance. Colored bands for a given size in each chart represent the entire operating range available for that size and speed.

For QEID performance pages showing AMCA Licensed data for sound and air performance please refer to the Model ***QEID Sound and Air Performance Supplement*** found at www.greenheck.com

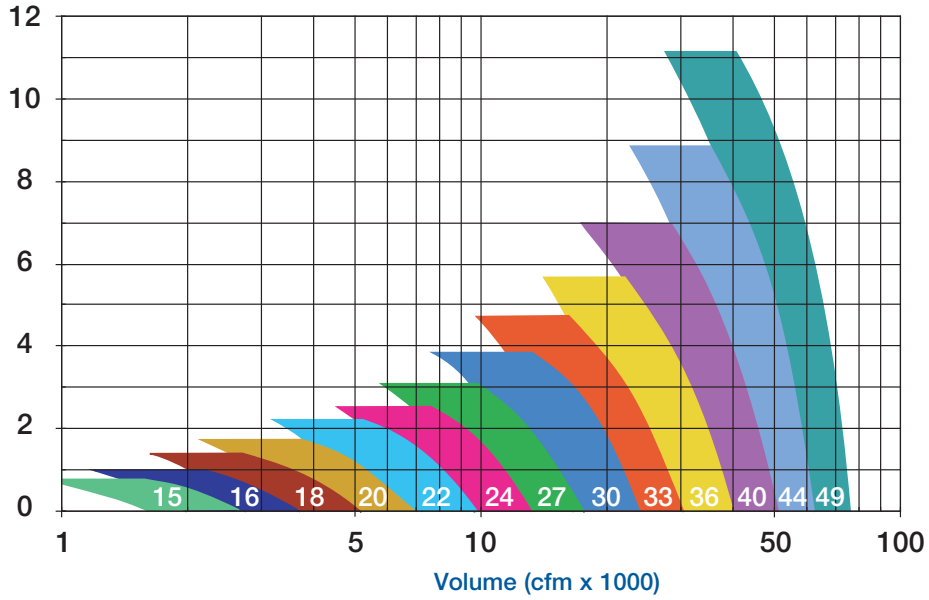
1770 RPM (60 Hz)

Model QEID
12—33



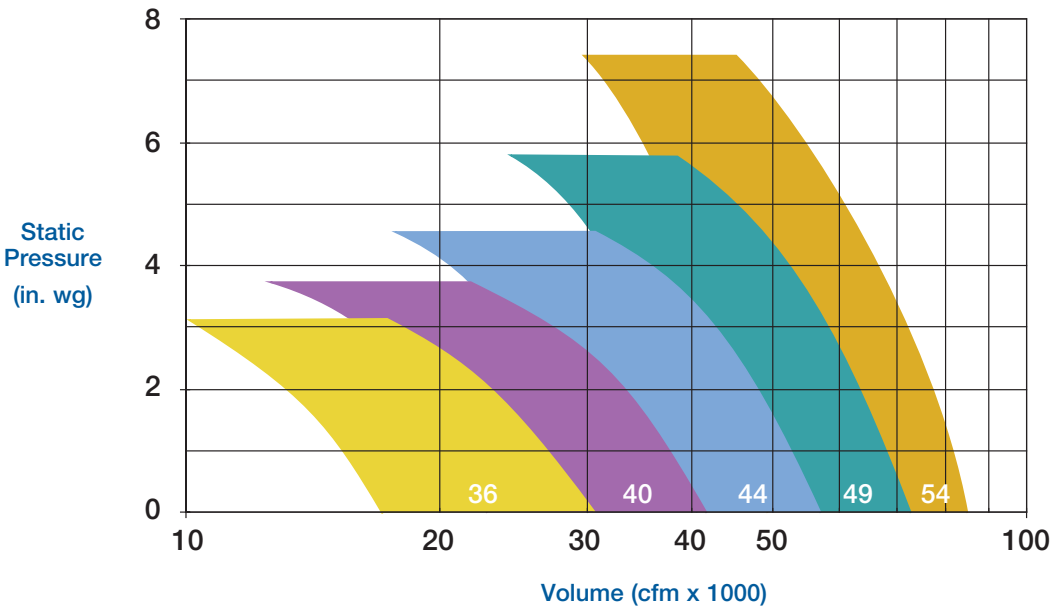
1170 RPM (60 Hz)

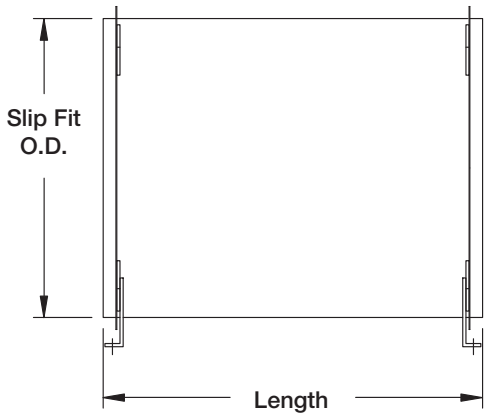
Model QEID
15—49



870 RPM (60 Hz)

Model QEID
36—54





*Length varies with motor frame size. Refer to Length table shown.

**Weight is for unit only and does not include motor.

Size	Slip Fit O.D.		Length*		Weight**	
	inches	*mm*	inches	*mm*	lbs.	*kg.*
12	17.13	*435*	25.0	*635*	100	*45*
15	20.88	*530*	25.0	*635*	140	*65*
16	23.00	*584*	26.0	*660*	170	*80*
18	25.38	*645*	29.0	*737*	200	*95*
20	27.81	*706*	34.0	*864*	250	*115*
22	30.88	*784*	35.5	*902*	370	*170*
24	34.00	*864*	41.5	*1054*	480	*220*
27	37.44	*951*	45.0	*1143*	570	*260*
30	41.63	*1057*	Refer to table below.		860	*390*
33	45.75	*1162*			1140	*520*
36	50.56	*1284*			1360	*620*
40	55.75	*1416*			1650	*750*
44	61.63	*1565*			2190	*995*
49	67.75	*1721*			2700	*1225*
54	75.00	*1905*			3130	*1420*

Length — inches *(millimeters)*						
Size	254/6 T	284/6 T	324/6 T	364/5 T	404/5 T	444/5 T
30	45.5 *(1156)*	50.0 *(1156)*	50.0 *(1156)*			
33	46.5 *(1181)*	54.0 *(1372)*	54.0 *(1372)*	54.0 *(1372)*		
36	50.5 *(1283)*	58.0 *(1473)*	58.0 *(1372)*	58.0 *(1372)*		
40		56.5 *(1435)*	61.0 *(1549)*	61.0 *(1549)*		
44			64.0 *(1626)*	64.0 *(1626)*	70.0 *(1778)*	
49				74.5 *(1892)*	74.5 *(1892)*	80.5 *(2045)*
54				77.0 *(1956)*	77.0 *(1956)*	83.0 *(2108)*