

TURNING AIR INTO SOLUTIONS.

Fan & Blower

Twin City



TUBULAR CENTRIFUGAL INLINE FANS

MODEL TSL

CATALOGUE M1001
April 2015

CENTRIFUGAL INLINE FANS



Model

TSL



Model TSL
Arr. 9

The TSL is an inline centrifugal flow fan featuring the reliable performance of a centrifugal fan with the space saving advantages of an axial type fan. The TSL offers high efficiencies in the commonly selected area. The TSL has a higher and broader efficiency range compared to competitive tubular fans and square inline fans. Lower operating speed for a given performance provides longer and more reliable operation. Also, higher efficiency leads to quieter operation. The unique impeller design allows air to flow with a minimum of turbulence and losses. Extra-wide blade design delivers a larger air volume. A removable discharge cone facilitates maintenance and service. Applications with larger motors utilise a pivot-style motor base for ease of belt tension adjustments.

Standard Specifications

- High efficient open back plate aerofoil impeller, sizes 182 to 890 (patent number 5,171,128)
- Average bearing life (AFBMA L-50) exceeds 200,000 hours at maximum class RPM
- Shaft diameters sized so that maximum operating speed does not exceed 70% of first critical speed
- Impellers are statically and dynamically balanced prior to assembly. Fans with motors and drives mounted by Twin City Fan are test run as a complete assembly and rechecked for balance at the specified operating speed.

Capabilities & Features

- Class I, II, and III construction
- Arrangements 1, 4 and 9
- Horizontal and vertical mounting arrangement

Sizes

Sizes 122 to 150 with flat-blade backward inclined impeller
Sizes 182 to 890 with patented open back plate aerofoil impeller

Performance

Air volume flow to 105 m³/sec
Static pressures to 2250 Pa

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Twin City Fan & Blower certifies that the Model TSL fans 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. See Catalogue 1002 for sound ratings.

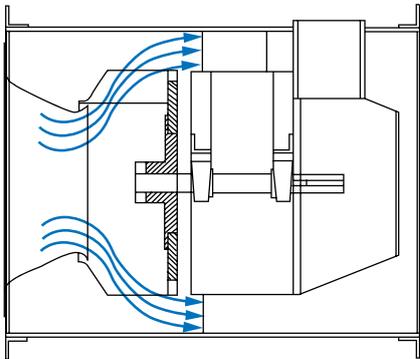


Model TSL is available with the UL/cUL 705 listing for electrical, File No. E158680.

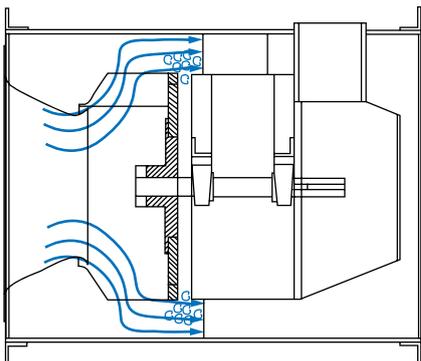
Model

TSL

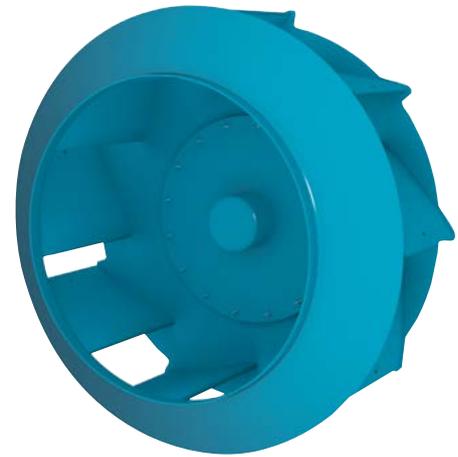
The TSL Tubular Centrifugal Fan employs a specially designed non-overloading aerofoil impeller. In a tubular centrifugal fan, the air turns 90° after leaving the impeller. Twin City Fan & Blower's unique impeller design with open back plate (patent number 5,171,128) allows this turn to be made with a minimum of turbulence and loss. Also, the extra-wide blade design helps deliver a larger air volume for a given impeller diameter. The TSL impeller improves overall efficiency and reduces overall sound levels.



Model TSL by Twin City Fan & Blower: Streamlined airflow makes use of the open back-plate impeller design.



Competition's Design: Turbulent airflow causes loss of efficiency.



TSL Impeller

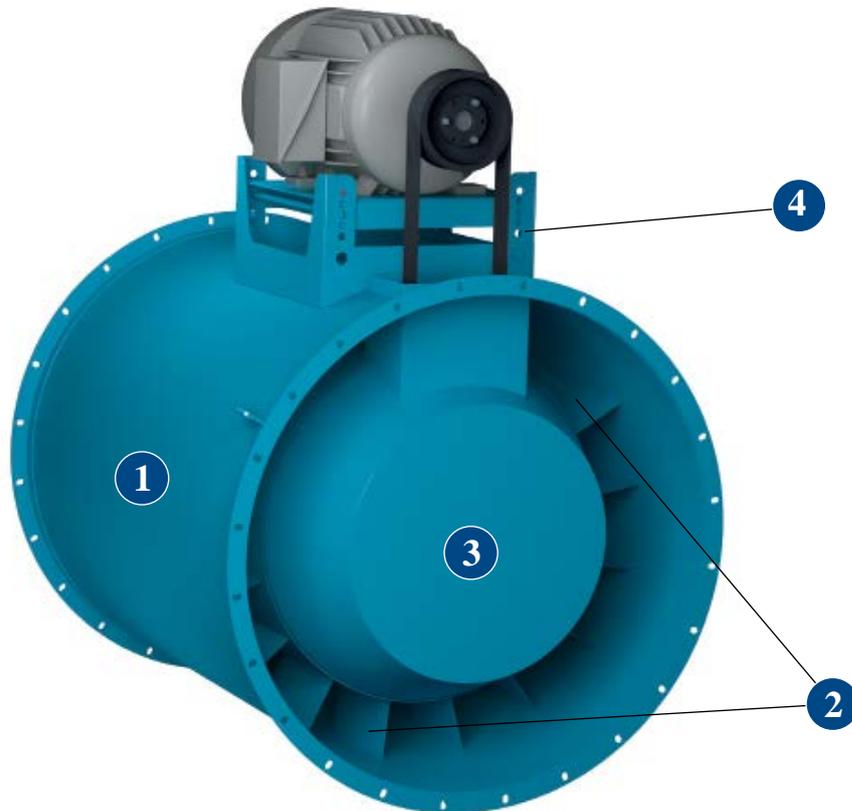


Performance Comparison — Size 365 TSL Impeller Diameter Tubular Centrifugal Fans

| PERFORMANCE | | TWIN CITY FAN TUBULAR CENTRIF. | | MANUFACTURER A TUBULAR CENTRIF. | | MANUFACTURER B TUBULAR CENTRIF. | | MANUFACTURER C TUBULAR CENTRIF. | | MANUFACTURER D TUBULAR CENTRIF. | |
|---------------------|------|-----------------------------------|------|------------------------------------|------|------------------------------------|------|------------------------------------|------|------------------------------------|------|
| m ³ /sec | Pa | RPM | kW | RPM | kW | RPM | kW | RPM | kW | RPM | kW |
| 8.2 | 375 | 774 | 4.85 | 799 | 5.45 | 876 | 5.74 | 840 | 5.74 | 775 | 7.01 |
| 6.9 | 250 | 646 | 2.83 | 670 | 3.21 | 734 | 3.36 | 670 | 4.33 | 640 | 4.1 |
| 5.0 | 500 | 686 | 3.43 | 698 | 3.58 | 715 | 3.43 | 790 | 6.04 | 775 | 5.37 |
| 9.4 | 750 | 977 | 10.2 | 1004 | 11.1 | 1080 | 11.3 | 1062 | 12.0 | N/A | N/A |
| 15.8 | 1750 | 1562 | 41.0 | 1610 | 45.1 | 1750 | 47.1 | 1700 | 48.5 | N/A | N/A |
| 15.1 | 190 | 1175 | 13.7 | 1234 | 17.0 | 1370 | 17.9 | 1230 | 14.0 | N/A | N/A |

ALL PERFORMANCE COMPARISONS ARE BASED ON MANUFACTURERS' PUBLISHED DATA.

CONSTRUCTION FEATURES



1

Housings

All fans are constructed of heavy-gauge steel and continuously welded for strength and rigidity. The tubular shape of the housing provides a streamlined airflow giving TSL fans much higher efficiencies when compared to square inline fans. All TSL fans are provided with punched inlet and outlet flanges as standard. A sealed belt tube is also standard.

2

Straightening Vanes

Straightening vanes convert tangential velocity pressure into useful static pressure potential, reducing turbulence and increasing efficiency. Extensive testing of various shapes and locations has resulted in the most efficient aerodynamic design of the straightening vanes. This efficient construction, coupled with the new impeller design, is responsible for the higher and broader efficiency range in the most commonly selected region of the fan curve.

3

Inner Cylinder

The inner tube is rigidly constructed to support the shaft and bearings. The removable discharge cone provides full access to the shaft, bearings, and fan sheave. It is strongly recommended that an access door be provided in the ductwork adjacent to the discharge end of the fan for such service.

A rectangular belt tube encloses the drive. The rectangular design allows a larger fan sheave to be placed closer to the bearings and thus increase the drive side bearing life.

4

Motor Mounting Platform

Heavy duty design for accepting larger motors. Catalogue drawings (pages 30-32) indicate the maximum frame size for different fan sizes. The motor mounting platform allows easy adjustment of belt tension. The motor mounting platform is offered in eight standard locations to allow for motor accessibility and space requirements. Motor bases allow for a large range of belt centres in case the v-belt drive has to be changed. See page 5 for available motor mounting locations.



STANDARD CONSTRUCTION

Model TSL fans are available for horizontal and vertical mounting. Built in sizes 122 to 890, and in several styles as illustrated below, a wide variety of operating requirements are easily handled.

Arrangement 9 is widely used for tubular fans. In Arrangement 9, the motor is supported by a motor platform welded directly to the fan housing. Arrangement 1 is also available.

Horizontal Construction

Horizontal Base Mounted (HBM) — Support legs are provided at each end of the fan for floor mounting.

Horizontal Ceiling Hung (HCH) — For duct mounted fans, four suspension clips are welded to the fan casing to allow ceiling suspension using hanger rods.

Vertical Construction

Vertical construction is available in sizes 122 to 542. Consult factory for larger sizes.

Floor or Ceiling Mounted — Four vertical brackets are welded to either end of the fan housing. Bracket location is determined by airflow direction and support details (see drawing below).

Roof Mounted — A curb cap provides weather-tight seal for roof curb mounted fans. A discharge cap and weather cover are also available for the up-blast style roof ventilator.



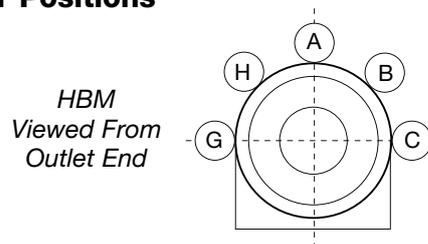
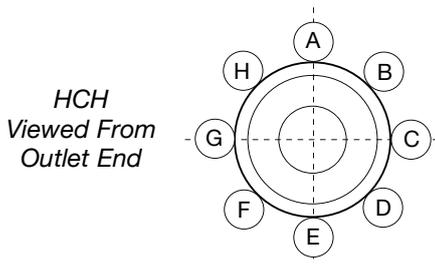
HBM – Horizontal Base Mount



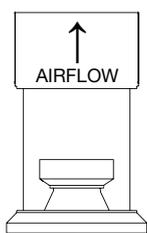
VRM – Vertical Roof Mount

MOUNTING ARRANGEMENTS

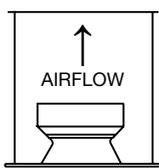
Motor Positions



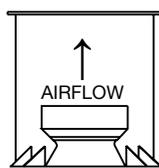
Discharge Designations for Vertical Flow Options



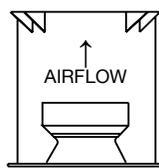
VRM
Vertical Roof Mount
(Usually Curb Mounted)



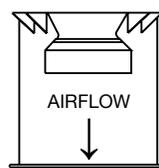
VUN
Vertical Up
No Brackets



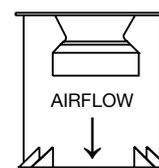
VUI
Discharge Up
Floor Mount
Support Brackets
On Inlet



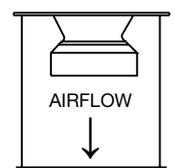
VUO
Discharge Up
Ceiling Hung
Support Brackets
On Outlet



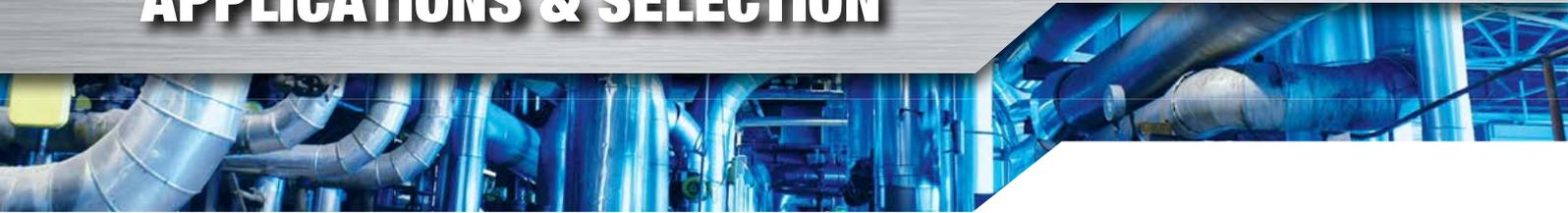
VDI
Discharge Down
Ceiling Hung
Support Brackets
On Inlet



VDO
Discharge Down
Floor Mount
Support Brackets
On Outlet



VDN
Vertical Down
No Brackets



Model

TSL

Tubular centrifugal fans such as the TSL are used primarily for low to medium pressure return air systems in heating, ventilating, and air conditioning applications. They are generally more compact than comparable scroll type centrifugal fans and often will fit into tight spaces or in overhead ductwork where other fans of the same duty may not. This is particularly true of the TSL inline fans, which were specifically engineered with a wider efficiency range. This allows selection of smaller fans while maintaining high efficiencies and low operating costs.

While there are many considerations that must be taken into account when selecting a fan for a particular application, the first and most obvious is the operating characteristic of the fan. The fan selected must be capable of moving the required amount of air against the calculated system static pressure. Fans selected at or just below the maximum static efficiency point (underlined figures in the performance tables) will provide the most efficient and quietest operation. This, however, does not necessarily mean that a fan selected at this point is the best fan for the job. The most efficient fan is usually the largest fan that can be chosen to provide stable operation for a given performance. Usually there is a trade-off between higher equipment cost versus lower operating cost. There

are also many site specific considerations such as physical size and quiet operation which must be evaluated before a final selection is made.

This is one area where the unique features of the TSL fan can provide a real advantage over other inline fans. A smaller TSL fan operating further down from the maximum efficiency figures may be selected without significantly increasing the power requirements, RPM, or sound power levels. This means you have less of a compromise to make between size and cost versus operating cost and quiet operation. With the TSL fan, you can have both high efficiency and lower first cost.

All of the features that give the standard TSL its high efficiency are utilised on all styles and arrangements that Twin City Fan & Blower offers. When supplied with a curb cap, discharge cap, and weather cover, the TSL fan becomes a quiet, efficient, and stable up-blast style roof exhauster. TSL fans can also be specified for many industrial applications, such as paint spray booths. These installations typically utilise special features such as clamshell or swing-out construction, which allow easy access for cleaning and maintenance.



Model

TSL

Swing-out Design

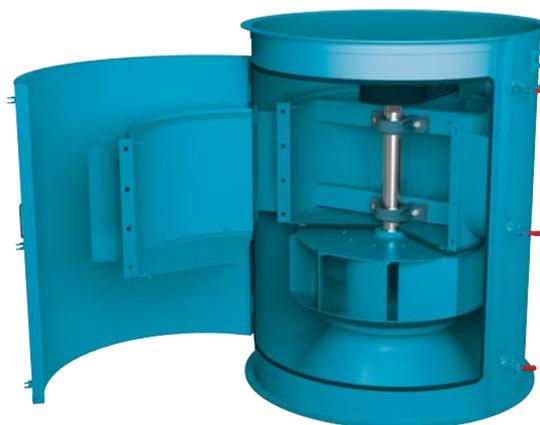
Provides full access to the impeller and inner casing. The entire impeller/shaft/bearing assembly is mounted on a large swing-out door. Since the inlet cone pivots with the door, fan performance is preserved. Ideal for systems requiring frequent cleaning without removal of ductwork. Swing-out construction is available for vertical mounting only. Available on sizes 182 and larger.



Swing-out Design

Clamshell Design

Two clamshell style doors swing open to provide complete access to the interior of the fan for maintenance or cleaning without removal of ductwork. Heavy duty hinges, positive locking latches, and a full gasket provides a complete seal when doors are closed. An access door provides access to the bearings. Available on all fan sizes, typically vertical mount due to the weight of the doors.



Clamshell Design

Fumehood Exhaust Design

Twin City Fan Companies offers a specially modified version of the TSL fan designated as "TFE" (Tubular Fume Exhaust) for laboratory fume hood exhaust applications, available in sizes 122 to 542. The TFE fan consists of a vertically mounted TSL unit with a reinforced curb cap and a modified discharge cap. The discharge cap includes an outlet venturi to permit the outlet velocity to meet the specific roof exhaust requirements. TFE fans in a standard configuration utilize an extended discharge with optional stack extensions available. The heavy duty curb cap will permit stack extensions up to 3 m total height from the roof line without need for guide wires.

Refer to Twin City Fan Catalogue 1500 for selection and specifications.



Fumehood Exhaust Design
(Model TFE)

OPTIONS/ACCESSORIES



Support Legs,
Horizontal



Support Legs,
Vertical



Discharge Cap



Curb Cap



Shaft Seal



Inlet/Outlet
Screens



Belt Guard



Companion Flange

Support Legs — Horizontal Flow

For horizontal flow with floor mounting, support legs are welded to the fan flange with bolt holes aligned for connection of ductwork.

Support Legs — Vertical Flow

For vertical flow with either floor or ceiling mounting, support legs are welded to the fan housing for four-point support.

Suspension Clips

For horizontal flow with ceiling mounting, four clips of formed angle are welded to the fan housing for suspension via tie rods to the ceiling support structure.

Discharge Cap

TSL units can be provided with a discharge cap for rooftop mounting. Discharge caps are designed for vertical discharge with butterfly type dampers to seal out the weather when the fan is shut off and minimal flow obstruction when the fan is operating. See page 10, Table 2 for minimum flow rates.

Curb Cap

TSL units can be supplied with a curb cap, attached to the fan's inlet flange for curb mounting.

Shaft Seal

To limit the air entering the inner cylinder and avoid contact of airstream contaminants with the bearings and V-belt drive, a shaft seal can be provided. The shaft seal consists of a non-asbestos rubbing ring held in place by a cover plate at the impeller end of the inner cylinder. Please note that a shaft seal does not make the inner cylinder gas tight.

Inlet and Outlet Screens

Safety screening can be provided for installation in the fan inlet or outlet.

Belt Guard

Available in Arrangement 9 belt driven fans, the belt guard encloses the motor sheave and V-belts. The guard is easily removable for inspection and maintenance.

Companion Flanges

For ease of installation of adjacent ductwork, companion flanges can be provided. Flanges are rolled angle rings, drilled to match the fan's inlet or outlet flange.

Spark-Resistant Construction

TSL fans are available with spark-resistant construction (for ATEX, please enquire). Various grades of spark resistance are as dictated by AMCA: Types A, B, and C.

Vibration Isolation

TSL fans can be provided with spring or rubber-in-shear isolators as an option. Spring isolators can be provided for floor mount or ceiling hung orientation.

Weather Cover

For outdoor installations, the weather cover completely encloses the motor and V-belt drive from the elements. Provided with slots for ventilation, the cover is easily removable for inspection and maintenance. Weather covers are available for either horizontal or vertical flow fans.

Inlet Vanes

Variable inlet vanes provide economical, stable, and efficient air volume control for manual or motorized operation.

Variable inlet vanes are widely used to control air volumes at partial load conditions, resulting in substantial savings in energy. Inlet vane control offers wide range regulation, excellent operating cost savings, simplicity in operation, and long trouble-free operation at a relatively low initial cost.

Variable inlet vanes cause the air entering the fan to spin in the direction of impeller rotation, resulting in reduction in capacity, pressure, and brake horsepower. With the use of inlet vanes, the fan performance curve is repositioned from fully open to the closed position of inlet vanes as shown below.

Low maintenance, easy assembly, disassembly, and long life are prime features of this vane design. Blades are supported with fatigue resistant steel shafts and two needle roller bearings riding on a zone hardened surface to minimize the wear. Bearings are lubricated for life with high grade moisture-resistant grease and protected with special seals. The vane bearing housings are welded in position and stiffened with a welded-on support ring. The welded structure eliminates flutter and vibration while utilizing a cantilevered design.



Vibration Isolation



Weather Cover



Variable Inlet Vanes



Fan & Blower
Twin City

Table 1. Maximum RPM, Impeller Weights, and WR² (moment of inertia in kg-m²)

| FAN SIZE | CLASS I | | | CLASS II | | | CLASS III | | |
|----------|----------|-----------|-----------------------------------|----------|-----------|-----------------------------------|-----------|-----------|-----------------------------------|
| | MAX. RPM | WEIGHT kg | WR ² kg-m ² | MAX. RPM | WEIGHT kg | WR ² kg-m ² | MAX. RPM | WEIGHT kg | WR ² kg-m ² |
| 122 | 3583 | 6.4 | 0.08 | 4676 | 8.6 | 0.11 | — | — | — |
| 150 | 2927 | 9.1 | 0.18 | 3819 | 11.8 | 0.24 | — | — | — |
| 182 | 2237 | 14.5 | 0.39 | 2917 | 16.4 | 0.42 | 3689 | 25.9 | 0.63 |
| 200 | 2042 | 17.3 | 0.55 | 2662 | 18.6 | 0.59 | 3367 | 29.1 | 0.84 |
| 222 | 1835 | 28.2 | 0.97 | 2393 | 28.2 | 0.97 | 3026 | 41.8 | 1.47 |
| 245 | 1667 | 33.6 | 1.47 | 2173 | 33.6 | 1.47 | 2748 | 47.7 | 2.06 |
| 270 | 1486 | 39.1 | 2.15 | 1938 | 39.1 | 2.15 | 2441 | 55.0 | 2.99 |
| 300 | 1338 | 45.9 | 3.24 | 1745 | 54.1 | 4.00 | 2197 | 64.1 | 4.51 |
| 330 | 1216 | 55.9 | 4.8 | 1586 | 65.5 | 5.65 | 1998 | 83.2 | 7.54 |
| 365 | 1081 | 71.4 | 7.8 | 1410 | 82.3 | 9.10 | 1776 | 111 | 12.35 |
| 402 | 981 | 88.2 | 11.5 | 1279 | 98.2 | 13.53 | 1611 | 126 | 17.02 |
| 445 | 887 | 125 | 18.12 | 1157 | 149 | 23.7 | 1457 | 184 | 28.3 |
| 490 | 806 | 144 | 26.2 | 1051 | 175 | 34.6 | 1323 | 213 | 40.8 |
| 542 | 728 | 187 | 44.7 | 949 | 218 | 52.1 | 1195 | 262 | 63.5 |
| 600 | 658 | 238 | 71.9 | 858 | 261 | 78.1 | 1081 | 309 | 93.2 |
| 660 | 598 | 340 | 108 | 780 | 367 | 122 | 983 | 439 | 151 |
| 730 | 541 | 429 | 178 | 705 | 429 | 179 | 888 | 510 | 212 |
| 807 | 489 | 523 | 278 | 638 | 553 | 298 | 833 | 616 | 338 |
| 890 | 444 | 837 | 535 | 579 | 838 | 531 | 729 | 873 | 576 |

Table 2. Minimum Volume Required to Open Discharge Cap

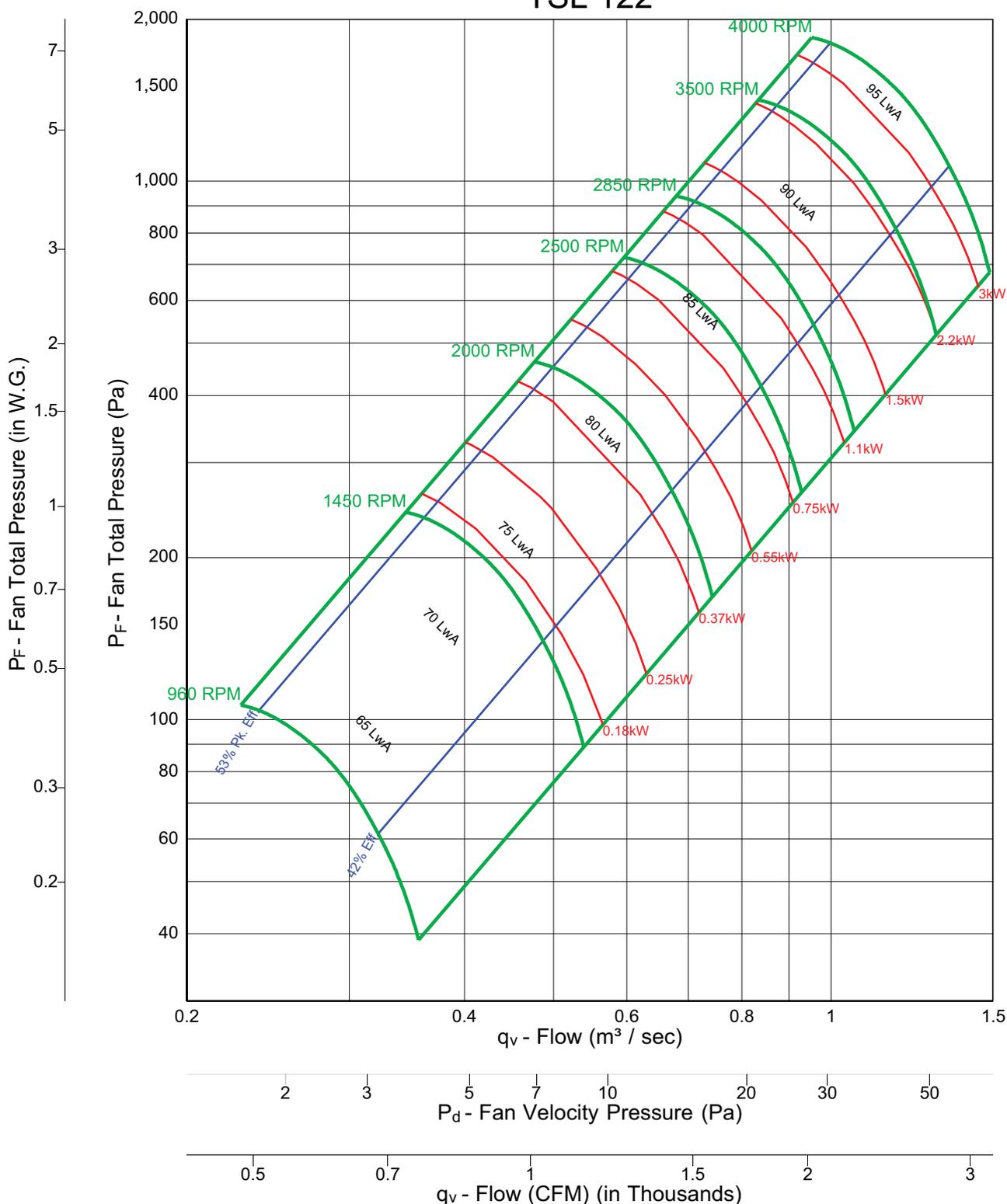
| SIZE | m ³ /sec |
|------|---------------------|
| 122 | 0.5 |
| 150 | 0.8 |
| 182 | 1.2 |
| 200 | 1.7 |
| 222 | 1.7 |
| 245 | 2.2 |
| 270 | 3.1 |
| 300 | 3.6 |
| 330 | 4.1 |
| 365 | 5.3 |
| 402 | 7.5 |
| 445 | 7.5 |
| 490 | 9.9 |
| 542 | 12.6 |

Table 3. Bare Fan Weights (kg)

| FAN SIZE | ARRANGEMENT I | | | ARRANGEMENT 9 | | |
|----------|---------------|----------|-----------|---------------|----------|-----------|
| | CLASS I | CLASS II | CLASS III | CLASS I | CLASS II | CLASS III |
| 122 | — | — | — | 100 | 109 | — |
| 150 | — | — | — | 109 | 118 | — |
| 182 | 161 | 178 | 196 | 124 | 136 | 150 |
| 200 | 180 | 198 | 218 | 150 | 165 | 172 |
| 222 | 209 | 230 | 253 | 164 | 180 | 198 |
| 245 | 246 | 270 | 297 | 184 | 203 | 223 |
| 270 | 309 | 340 | 374 | 223 | 245 | 272 |
| 300 | 477 | 525 | 577 | 355 | 381 | 429 |
| 330 | 659 | 725 | 797 | 459 | 505 | 556 |
| 365 | 727 | 800 | 880 | 568 | 625 | 687 |
| 402 | 905 | 995 | 1094 | 636 | 700 | 770 |
| 445 | 1121 | 1233 | 1356 | 864 | 950 | 1045 |
| 490 | 1364 | 1500 | 1650 | 1091 | 1200 | 1320 |
| 542 | 1682 | 1850 | 2035 | 1455 | 1600 | 1760 |
| 600 | 2364 | 2600 | 2860 | 1955 | 2150 | 2365 |
| 660 | 2955 | 3250 | 3575 | 2659 | 2925 | 3217 |
| 730 | 4091 | 4500 | 4950 | 3546 | 3900 | 4290 |
| 807 | 5000 | 5500 | 6277 | 4500 | 4950 | 5445 |
| 890 | 6591 | 7250 | 7975 | 5909 | 6500 | 7150 |



TSL 122



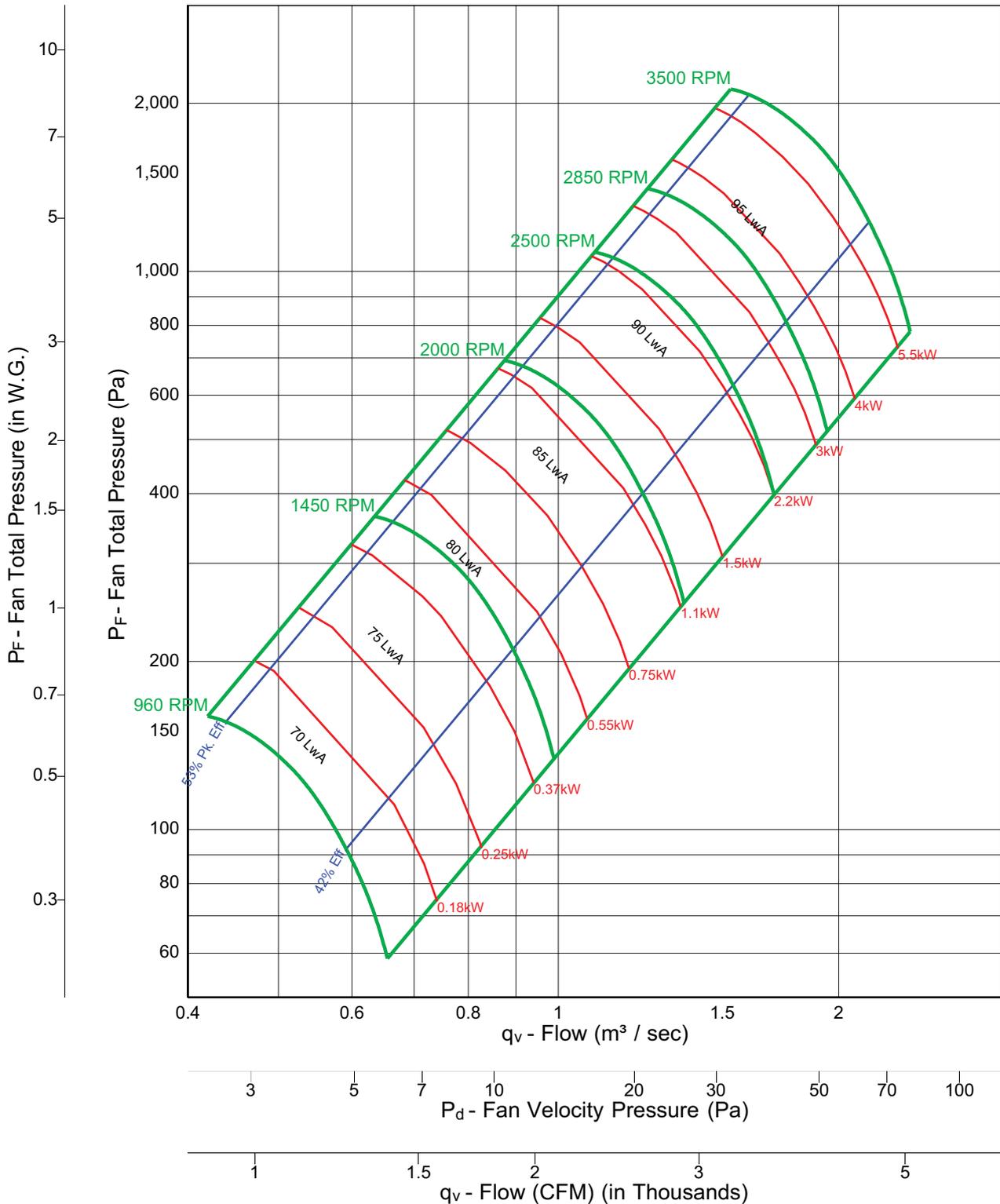
Fan Efficiency Grade = FEG 63



Notes:

1. Performance certified is for Installation Type B & D: Free or ducted inlet, ducted outlet.
2. Power rating (kW) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound power level ratings shown are in decibels, referred to 10 E-12 watts calculated per AMCA Standard 301.
5. Values shown are for inlet LwA sound power levels for Installation Type B: Free inlet, ducted outlet.
6. Ratings do not include the effects of duct end correction.
7. The A-weighted sound ratings shown have been calculated per AMCA Standard 301.

TSL 150



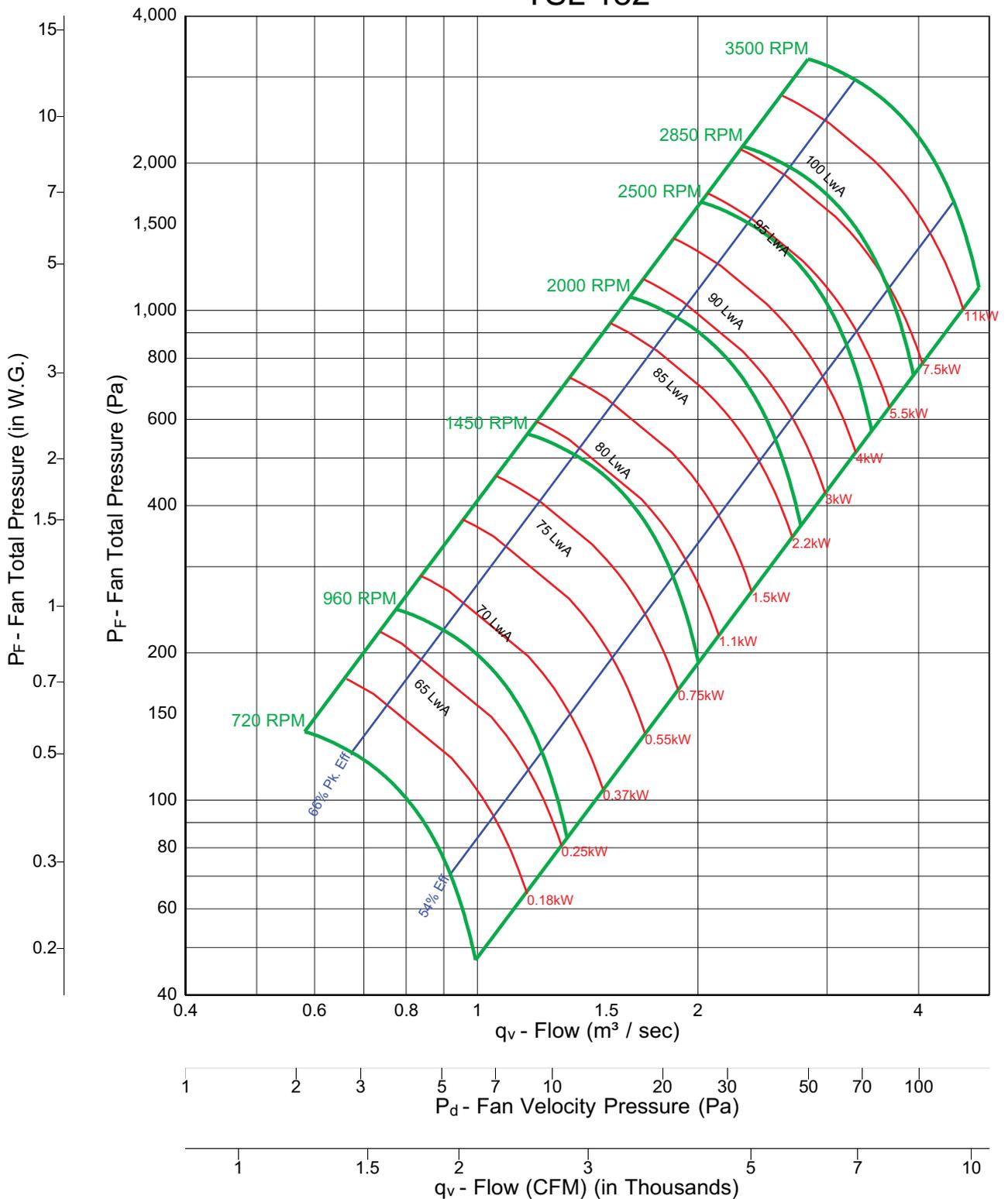
Fan Efficiency Grade = FEG 60



Notes:

1. Performance certified is for Installation Type B & D: Free or ducted inlet, ducted outlet.
2. Power rating (kW) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound power level ratings shown are in decibels, referred to 10 E-12 watts calculated per AMCA Standard 301.
5. Values shown are for inlet LwiA sound power levels for Installation Type B: Free inlet, ducted outlet.
6. Ratings do not include the effects of duct end correction.
7. The A-weighted sound ratings shown have been calculated per AMCA Standard 301.

TSL 182



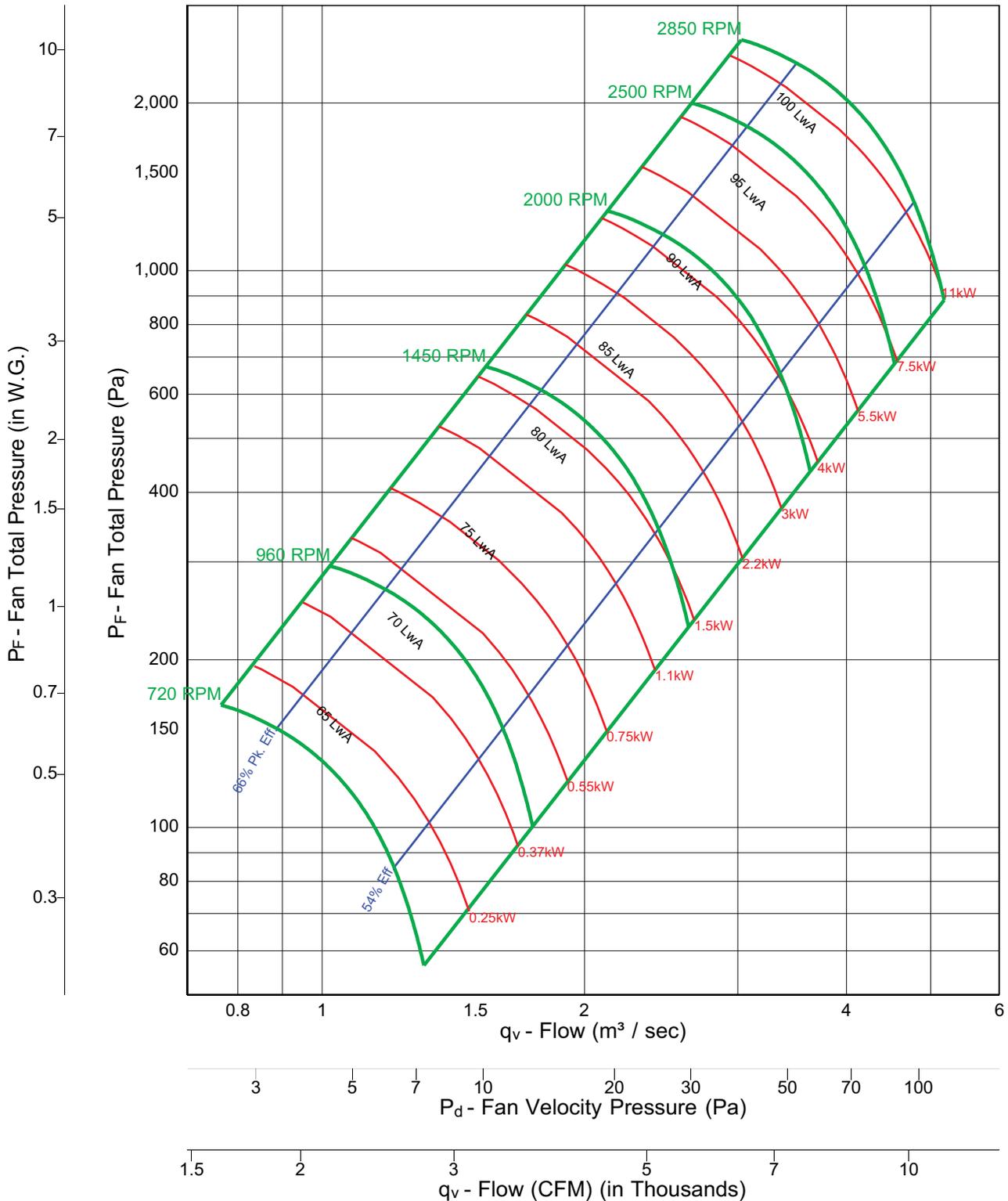
Fan Efficiency Grade = FEG 71



Notes:

1. Performance certified is for Installation Type B & D: Free or ducted inlet, ducted outlet.
2. Power rating (kW) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound power level ratings shown are in decibels, referred to 10 E-12 watts calculated per AMCA Standard 301.
5. Values shown are for inlet LwIA sound power levels for Installation Type B: Free inlet, ducted outlet.
6. Ratings do not include the effects of duct end correction.
7. The A-weighted sound ratings shown have been calculated per AMCA Standard 301.

TSL 200



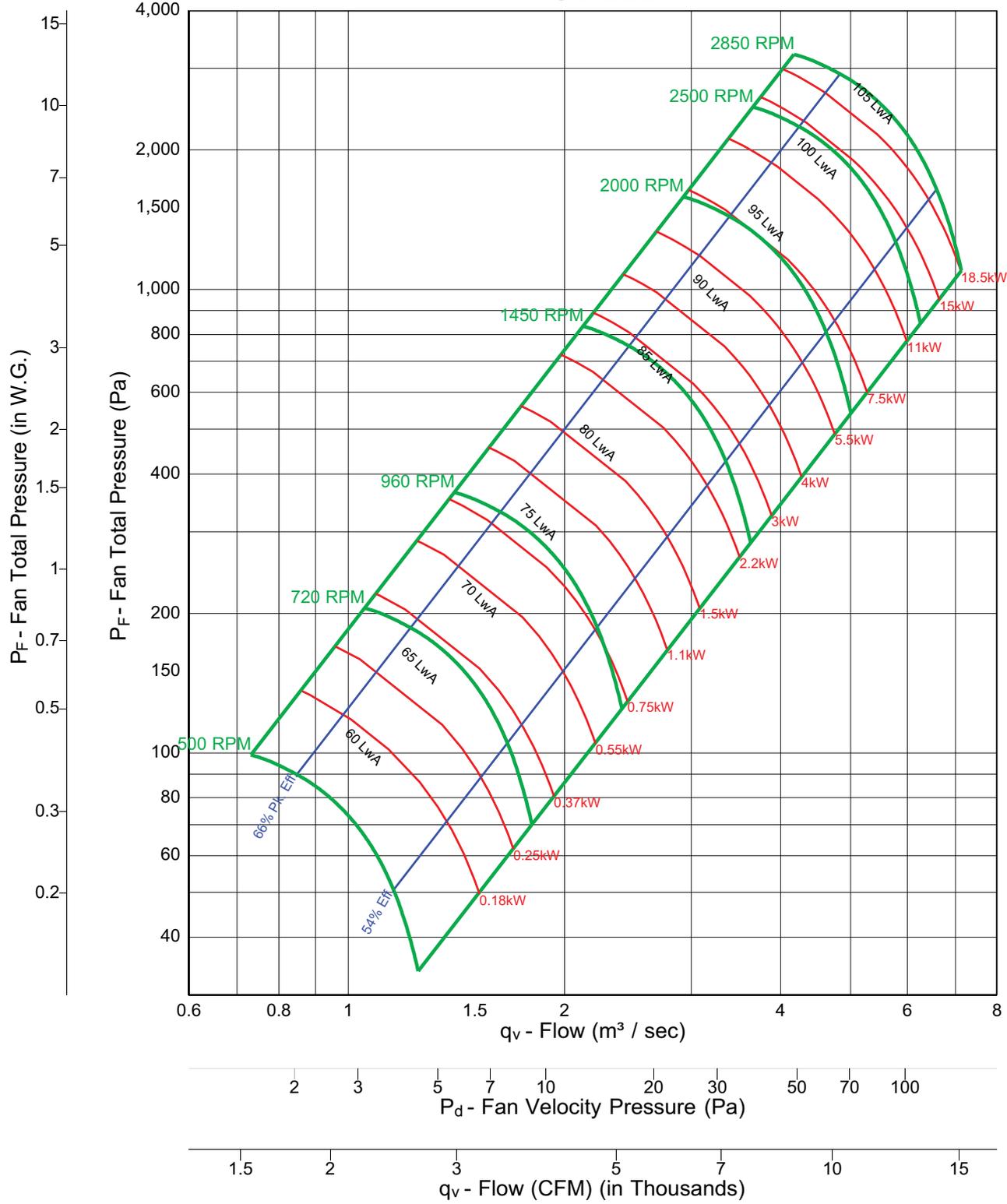
Fan Efficiency Grade = FEG 71



Notes:

1. Performance certified is for Installation Type B & D: Free or ducted inlet, ducted outlet.
2. Power rating (kW) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound power level ratings shown are in decibels, referred to 10 E-12 watts calculated per AMCA Standard 301.
5. Values shown are for inlet LwiA sound power levels for Installation Type B: Free inlet, ducted outlet.
6. Ratings do not include the effects of duct end correction.
7. The A-weighted sound ratings shown have been calculated per AMCA Standard 301.

TSL 222

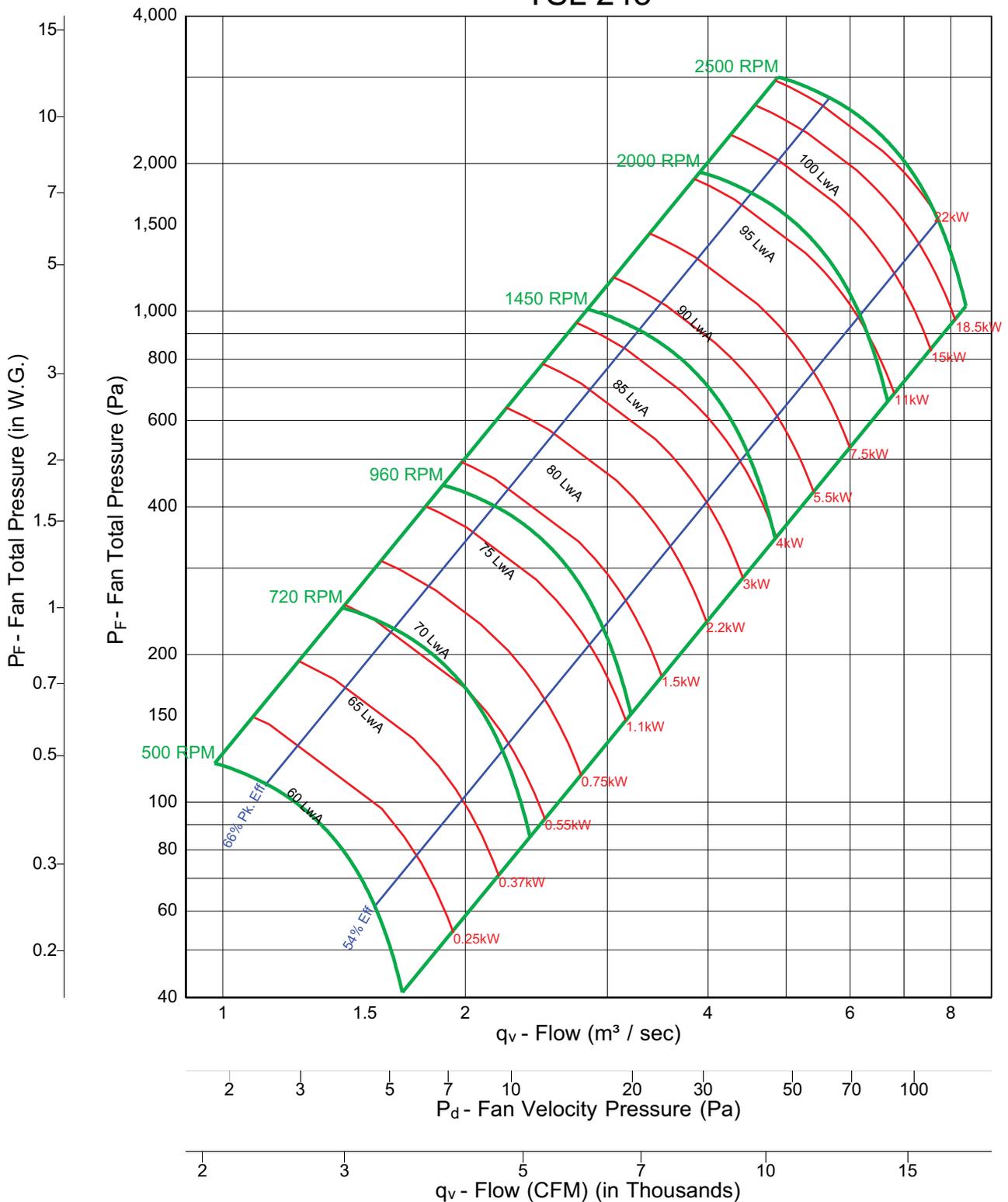


Fan Efficiency Grade = FEG 71



- Notes:**
1. Performance certified is for Installation Type B & D: Free or ducted inlet, ducted outlet.
 2. Power rating (kW) does not include transmission losses.
 3. Performance ratings do not include the effects of appurtenances (accessories).
 4. The sound power level ratings shown are in decibels, referred to 10 E-12 watts calculated per AMCA Standard 301.
 5. Values shown are for inlet LwA sound power levels for Installation Type B: Free inlet, ducted outlet.
 6. Ratings do not include the effects of duct end correction.
 7. The A-weighted sound ratings shown have been calculated per AMCA Standard 301.

TSL 245



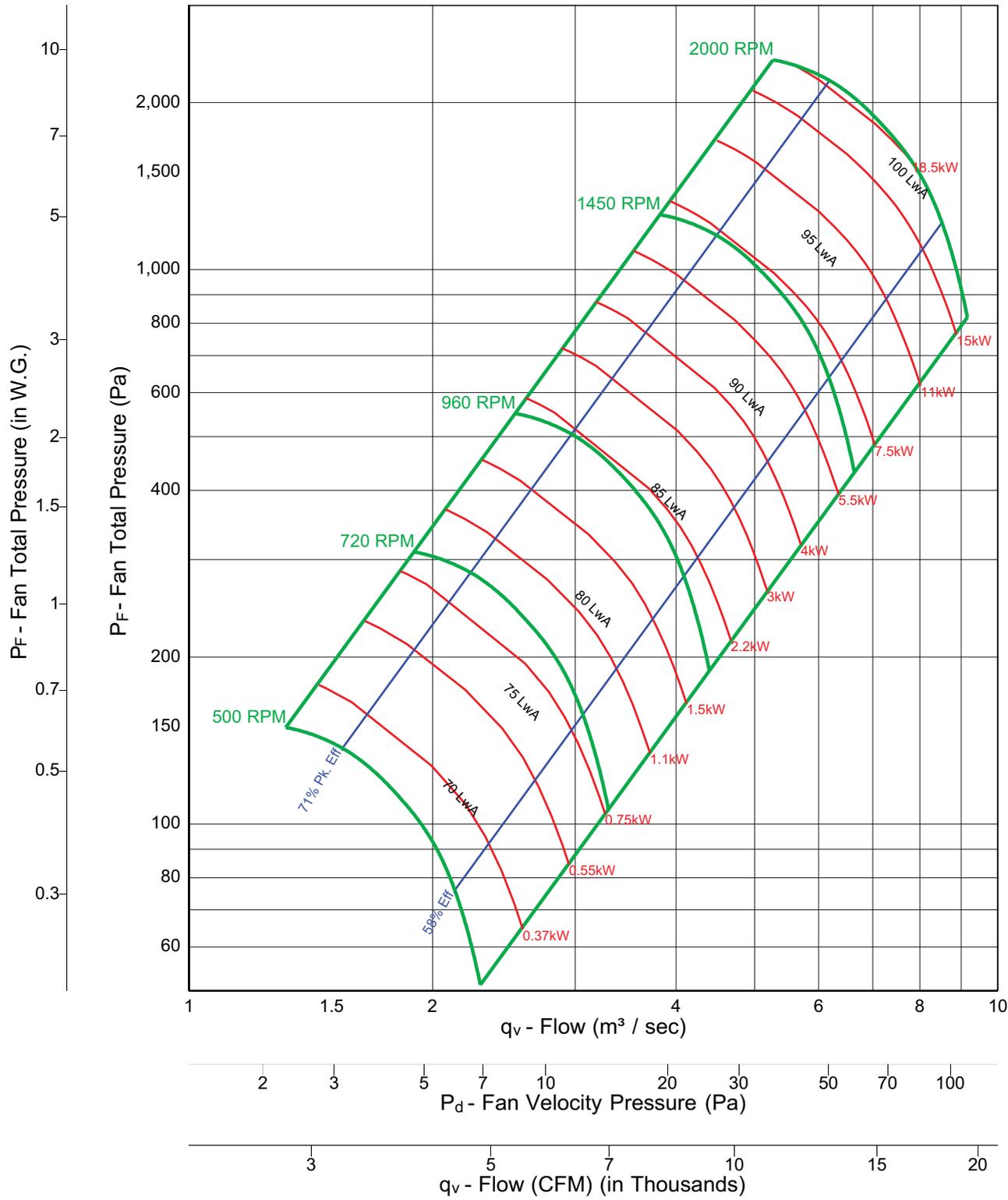
Fan Efficiency Grade = FEG 71



Notes:

1. Performance certified is for Installation Type B & D: Free or ducted inlet, ducted outlet.
2. Power rating (kW) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound power level ratings shown are in decibels, referred to 10 E-12 watts calculated per AMCA Standard 301.
5. Values shown are for inlet LwiA sound power levels for Installation Type B: Free inlet, ducted outlet.
6. Ratings do not include the effects of duct end correction.
7. The A-weighted sound ratings shown have been calculated per AMCA Standard 301.

TSL 270



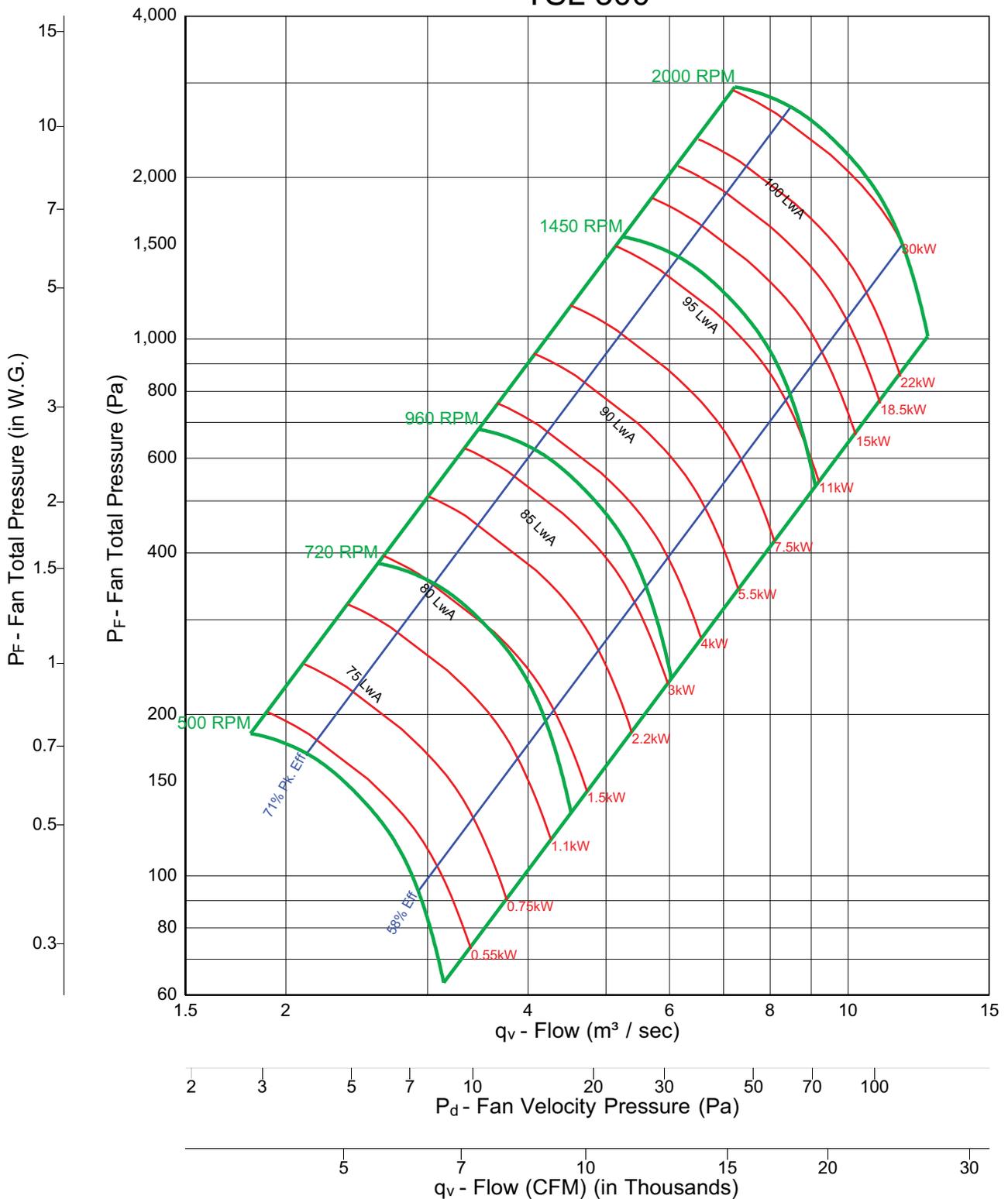
Fan Efficiency Grade = FEG 75



Notes:

1. Performance certified is for Installation Type B & D: Free or ducted inlet, ducted outlet.
2. Power rating (kW) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound power level ratings shown are in decibels, referred to 10 E-12 watts calculated per AMCA Standard 301.
5. Values shown are for inlet LwiA sound power levels for Installation Type B: Free inlet, ducted outlet.
6. Ratings do not include the effects of duct end correction.
7. The A-weighted sound ratings shown have been calculated per AMCA Standard 301.

TSL 300

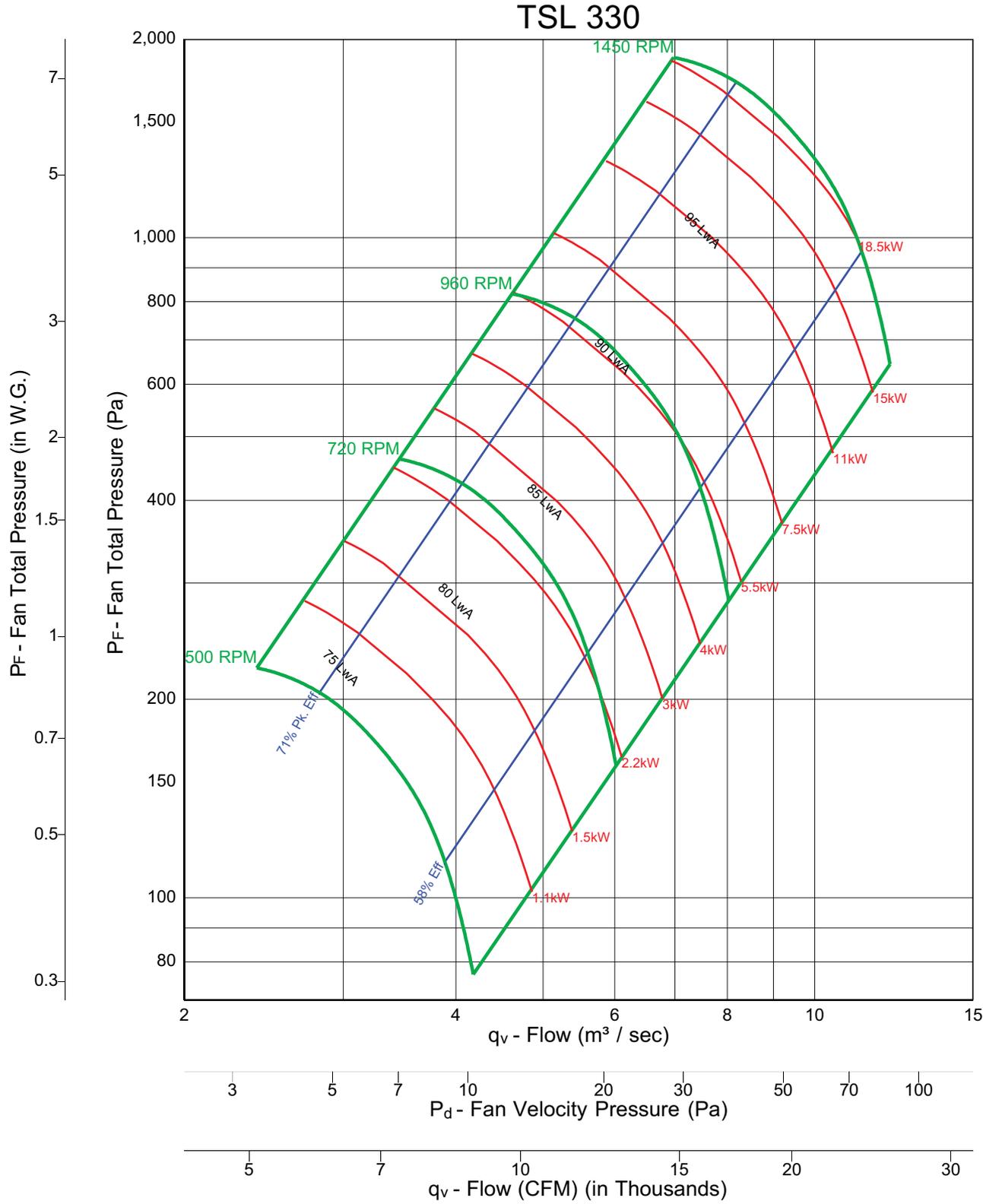


Fan Efficiency Grade = FEG 75



Notes:

1. Performance certified is for Installation Type B & D: Free or ducted inlet, ducted outlet.
2. Power rating (kW) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound power level ratings shown are in decibels, referred to 10 E-12 watts calculated per AMCA Standard 301.
5. Values shown are for inlet LwiA sound power levels for Installation Type B: Free inlet, ducted outlet.
6. Ratings do not include the effects of duct end correction.
7. The A-weighted sound ratings shown have been calculated per AMCA Standard 301.

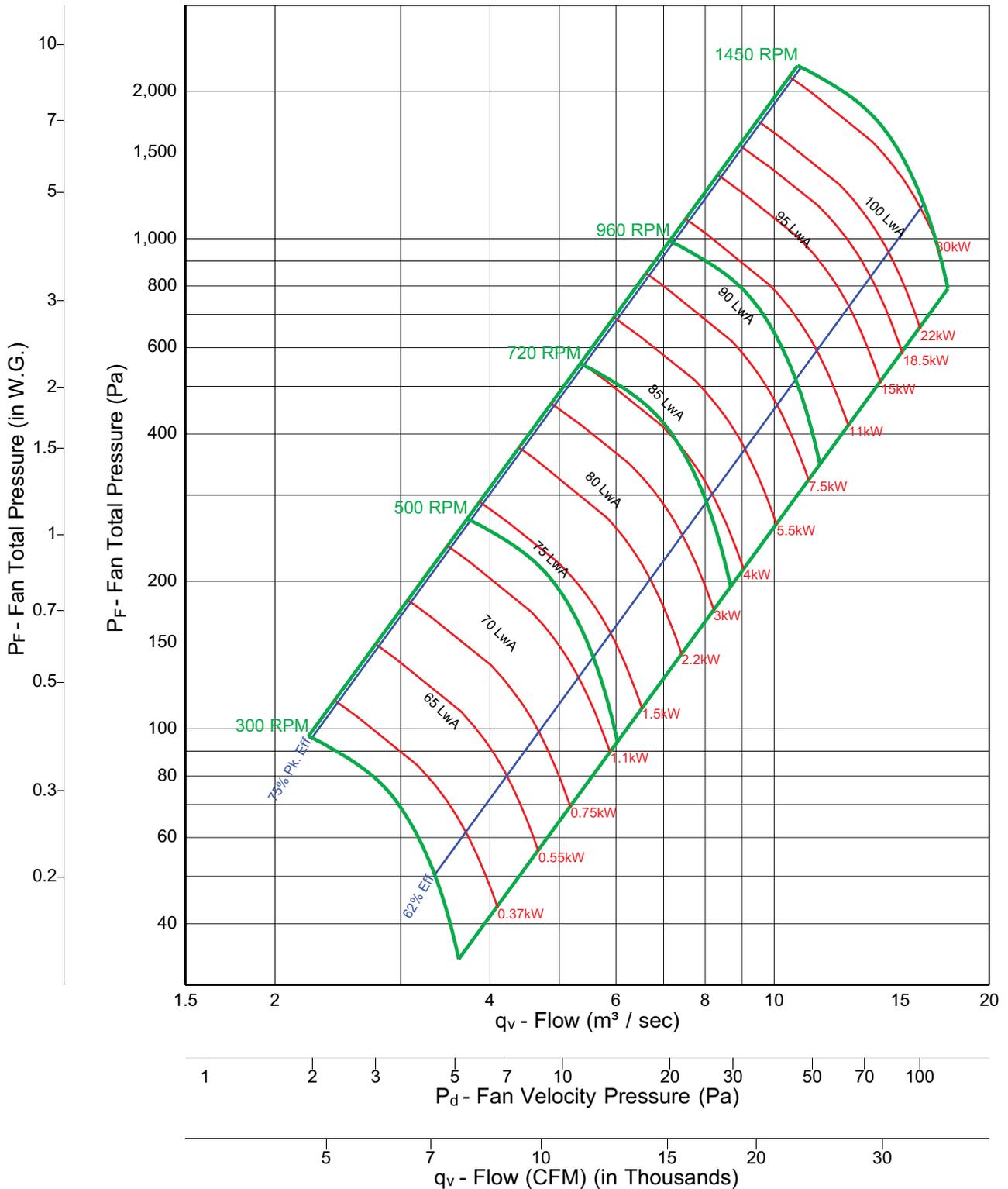


Fan Efficiency Grade = FEG 75



- Notes:**
1. Performance certified is for Installation Type B & D: Free or ducted inlet, ducted outlet.
 2. Power rating (kW) does not include transmission losses.
 3. Performance ratings do not include the effects of appurtenances (accessories).
 4. The sound power level ratings shown are in decibels, referred to 10 E-12 watts calculated per AMCA Standard 301.
 5. Values shown are for inlet LwA sound power levels for Installation Type B: Free inlet, ducted outlet.
 6. Ratings do not include the effects of duct end correction.
 7. The A-weighted sound ratings shown have been calculated per AMCA Standard 301.

TSL 365



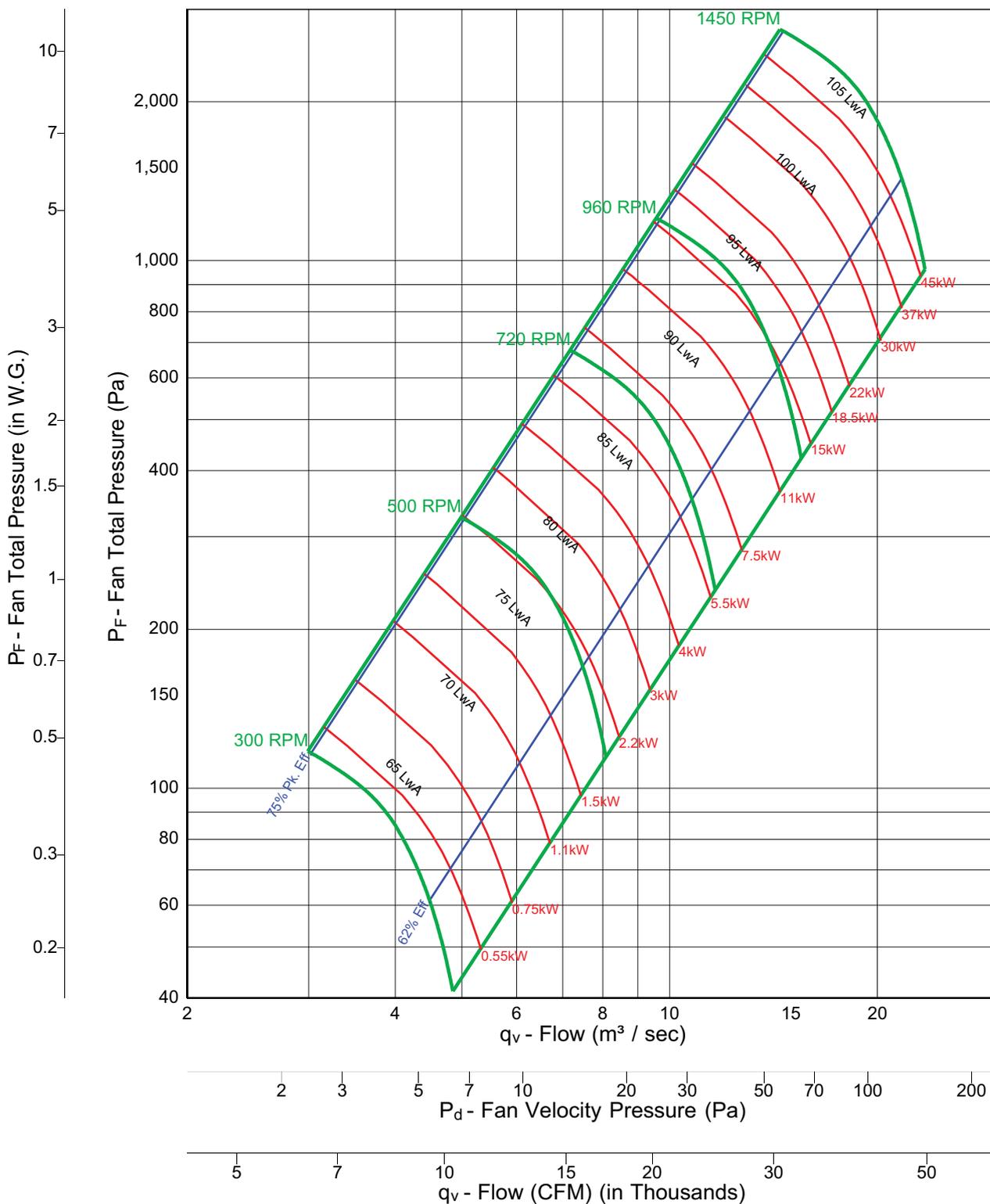
Fan Efficiency Grade = FEG 75



Notes:

1. Performance certified is for Installation Type B & D: Free or ducted inlet, ducted outlet.
2. Power rating (kW) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound power level ratings shown are in decibels, referred to 10 E-12 watts calculated per AMCA Standard 301.
5. Values shown are for inlet LwiA sound power levels for Installation Type B: Free inlet, ducted outlet.
6. Ratings do not include the effects of duct end correction.
7. The A-weighted sound ratings shown have been calculated per AMCA Standard 301.

TSL 402



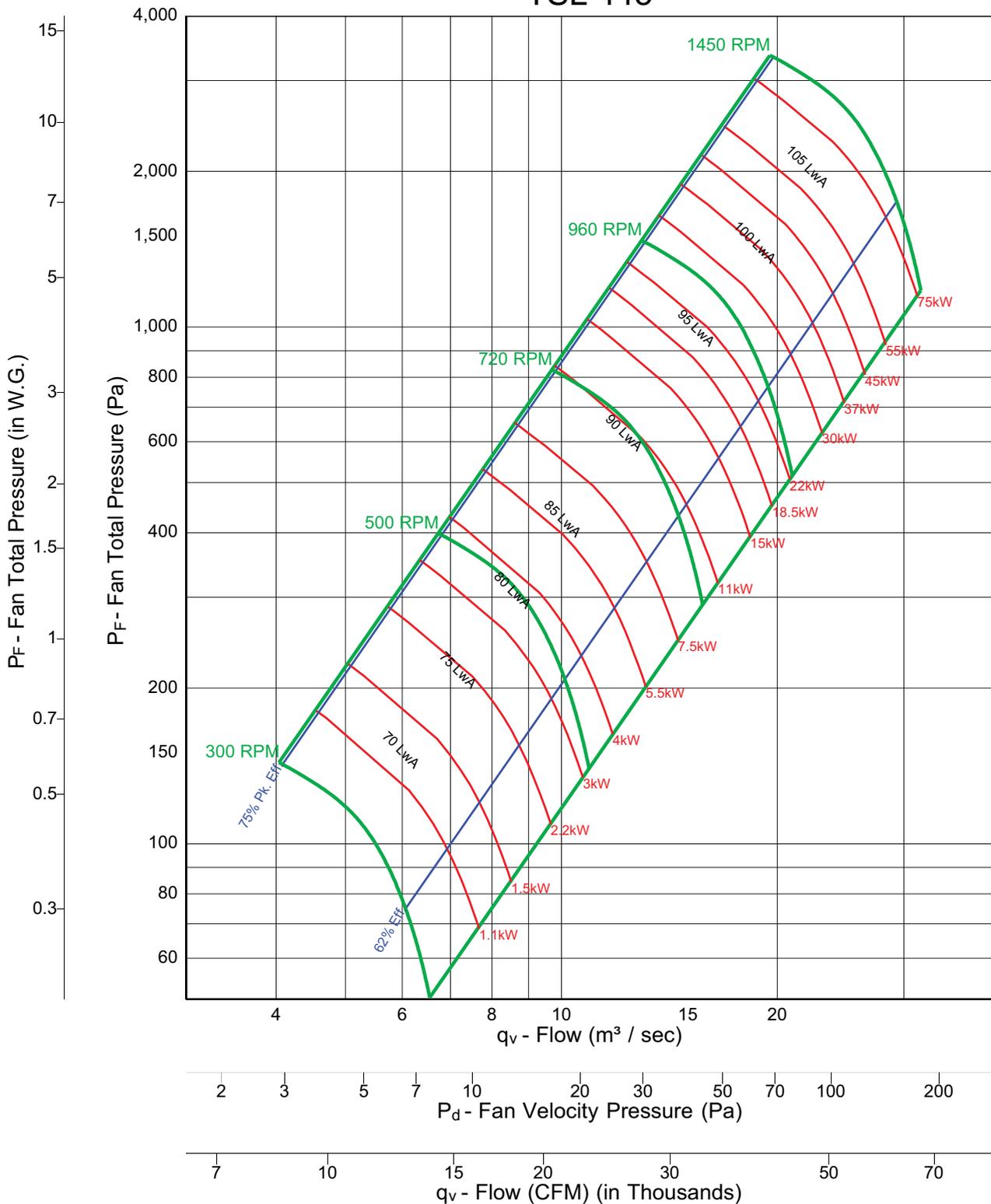
Fan Efficiency Grade = FEG 75



Notes:

1. Performance certified is for Installation Type B & D: Free or ducted inlet, ducted outlet.
2. Power rating (kW) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound power level ratings shown are in decibels, referred to 10 E-12 watts calculated per AMCA Standard 301.
5. Values shown are for inlet LwiA sound power levels for Installation Type B: Free inlet, ducted outlet.
6. Ratings do not include the effects of duct end correction.
7. The A-weighted sound ratings shown have been calculated per AMCA Standard 301.

TSL 445



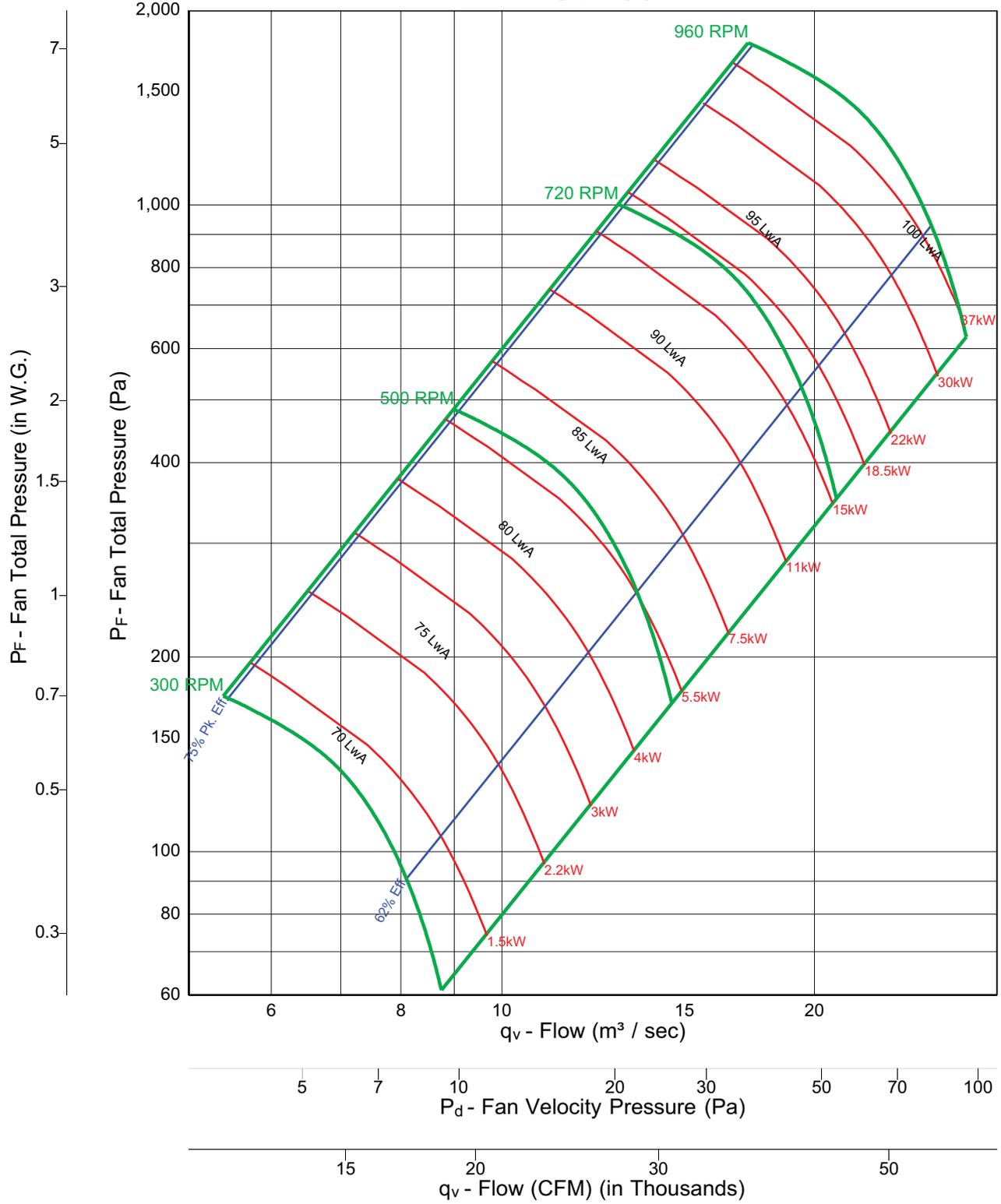
Fan Efficiency Grade = FEG 75



Notes:

1. Performance certified is for Installation Type B & D: Free or ducted inlet, ducted outlet.
2. Power rating (kW) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound power level ratings shown are in decibels, referred to 10 E-12 watts calculated per AMCA Standard 301.
5. Values shown are for inlet LwiA sound power levels for Installation Type B: Free inlet, ducted outlet.
6. Ratings do not include the effects of duct end correction.
7. The A-weighted sound ratings shown have been calculated per AMCA Standard 301.

TSL 490

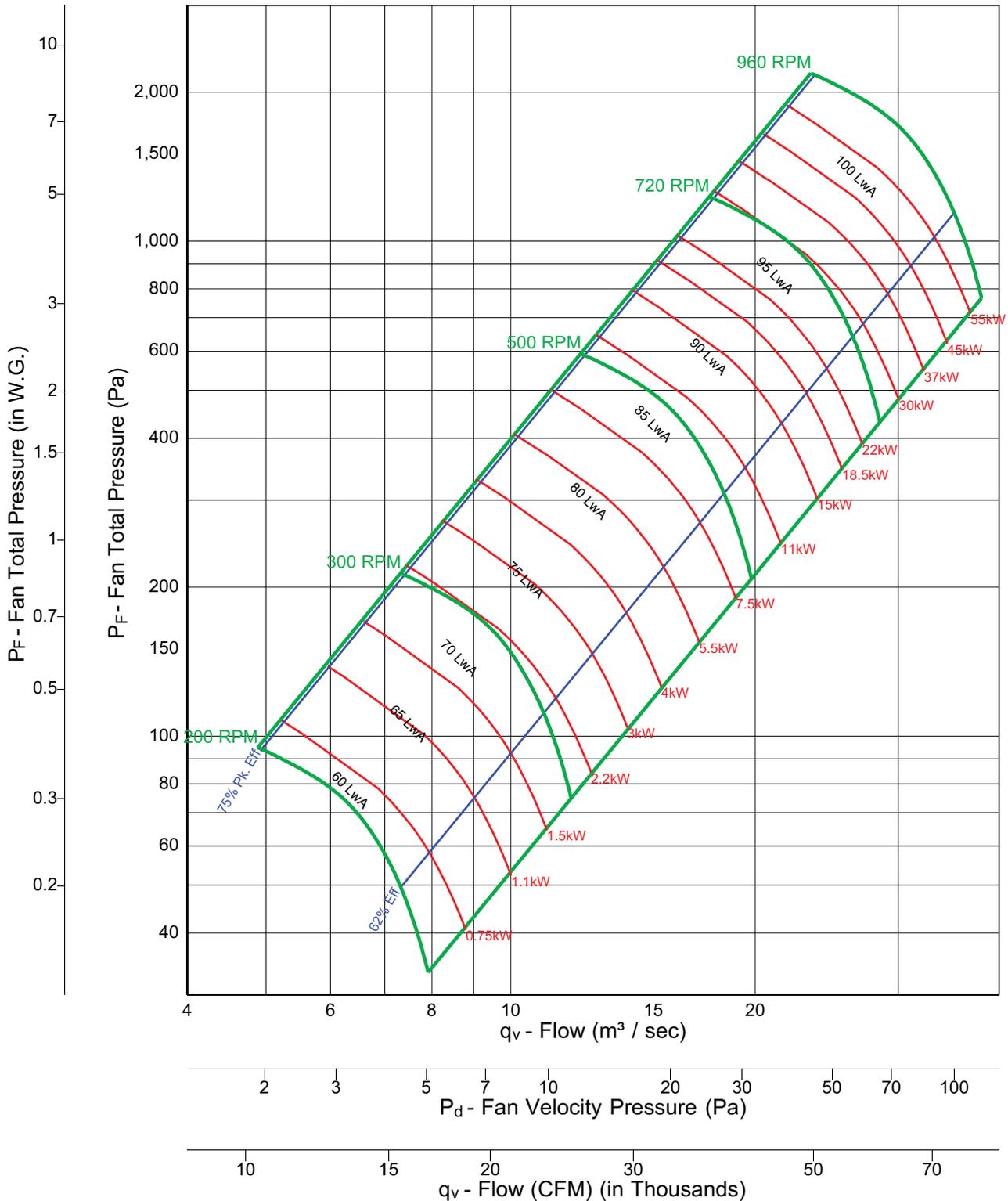


Fan Efficiency Grade = FEG 75



- Notes:**
1. Performance certified is for Installation Type B & D: Free or ducted inlet, ducted outlet.
 2. Power rating (kW) does not include transmission losses.
 3. Performance ratings do not include the effects of appurtenances (accessories).
 4. The sound power level ratings shown are in decibels, referred to 10 E-12 watts calculated per AMCA Standard 301.
 5. Values shown are for inlet LwiA sound power levels for Installation Type B: Free inlet, ducted outlet.
 6. Ratings do not include the effects of duct end correction.
 7. The A-weighted sound ratings shown have been calculated per AMCA Standard 301.

TSL 542



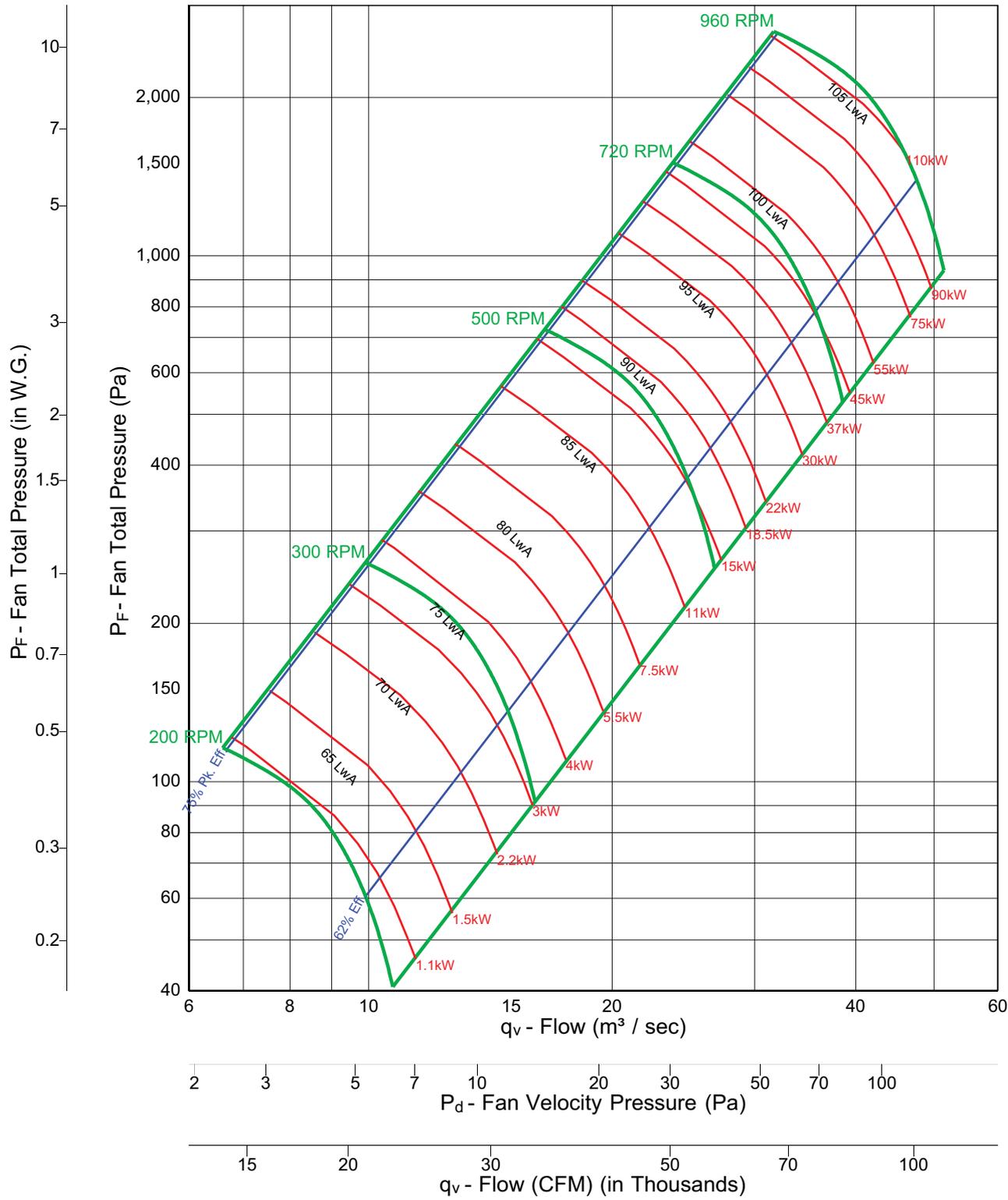
Fan Efficiency Grade = FEG 75



Notes:

1. Performance certified is for Installation Type B & D: Free or ducted inlet, ducted outlet.
2. Power rating (kW) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound power level ratings shown are in decibels, referred to 10 E-12 watts calculated per AMCA Standard 301.
5. Values shown are for inlet LwiA sound power levels for Installation Type B: Free inlet, ducted outlet.
6. Ratings do not include the effects of duct end correction.
7. The A-weighted sound ratings shown have been calculated per AMCA Standard 301.

TSL 600

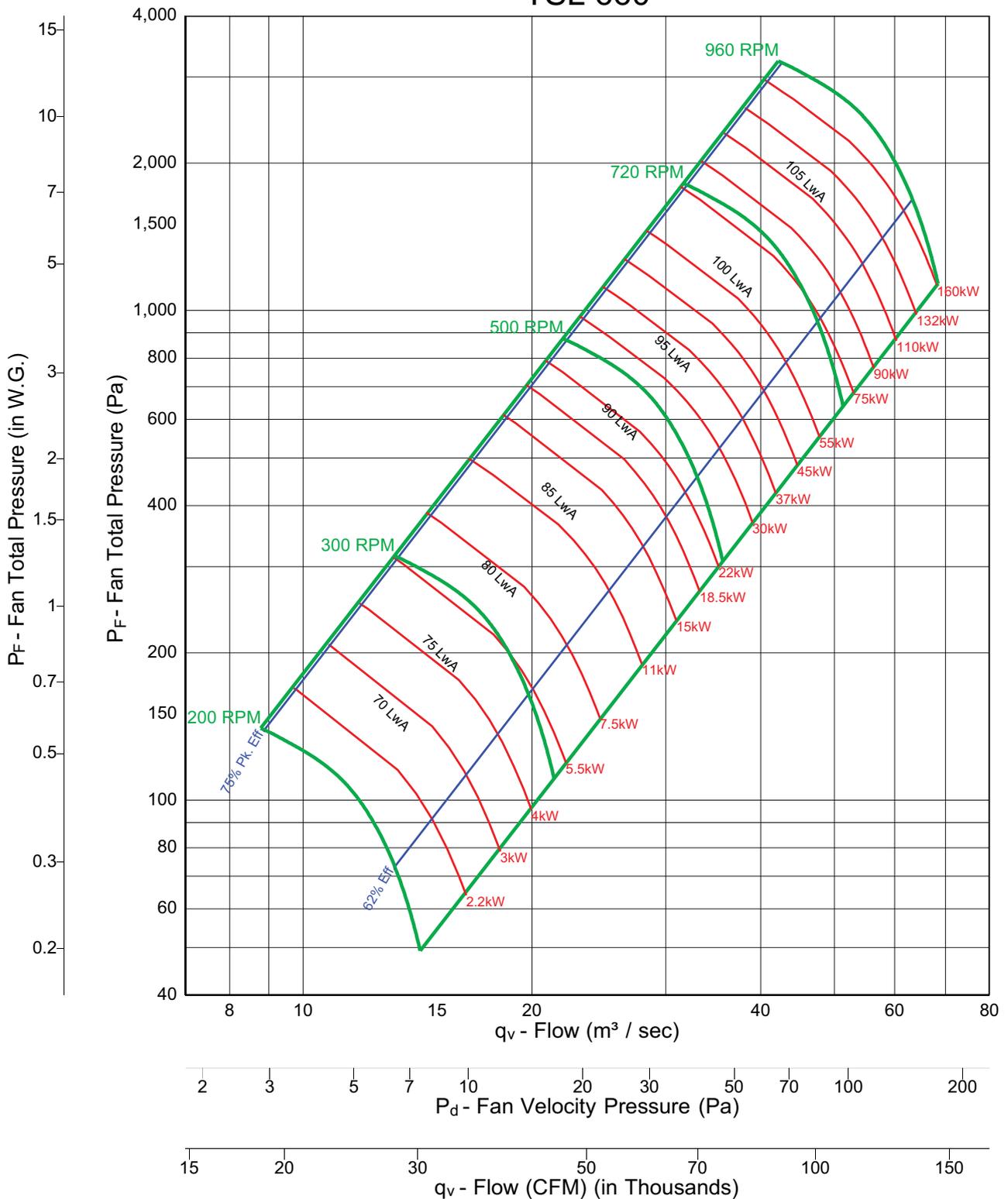


Fan Efficiency Grade = FEG 75



- Notes:**
1. Performance certified is for Installation Type B & D: Free or ducted inlet, ducted outlet.
 2. Power rating (kW) does not include transmission losses.
 3. Performance ratings do not include the effects of appurtenances (accessories).
 4. The sound power level ratings shown are in decibels, referred to 10 E-12 watts calculated per AMCA Standard 301.
 5. Values shown are for inlet LwiA sound power levels for Installation Type B: Free inlet, ducted outlet.
 6. Ratings do not include the effects of duct end correction.
 7. The A-weighted sound ratings shown have been calculated per AMCA Standard 301.

TSL 660



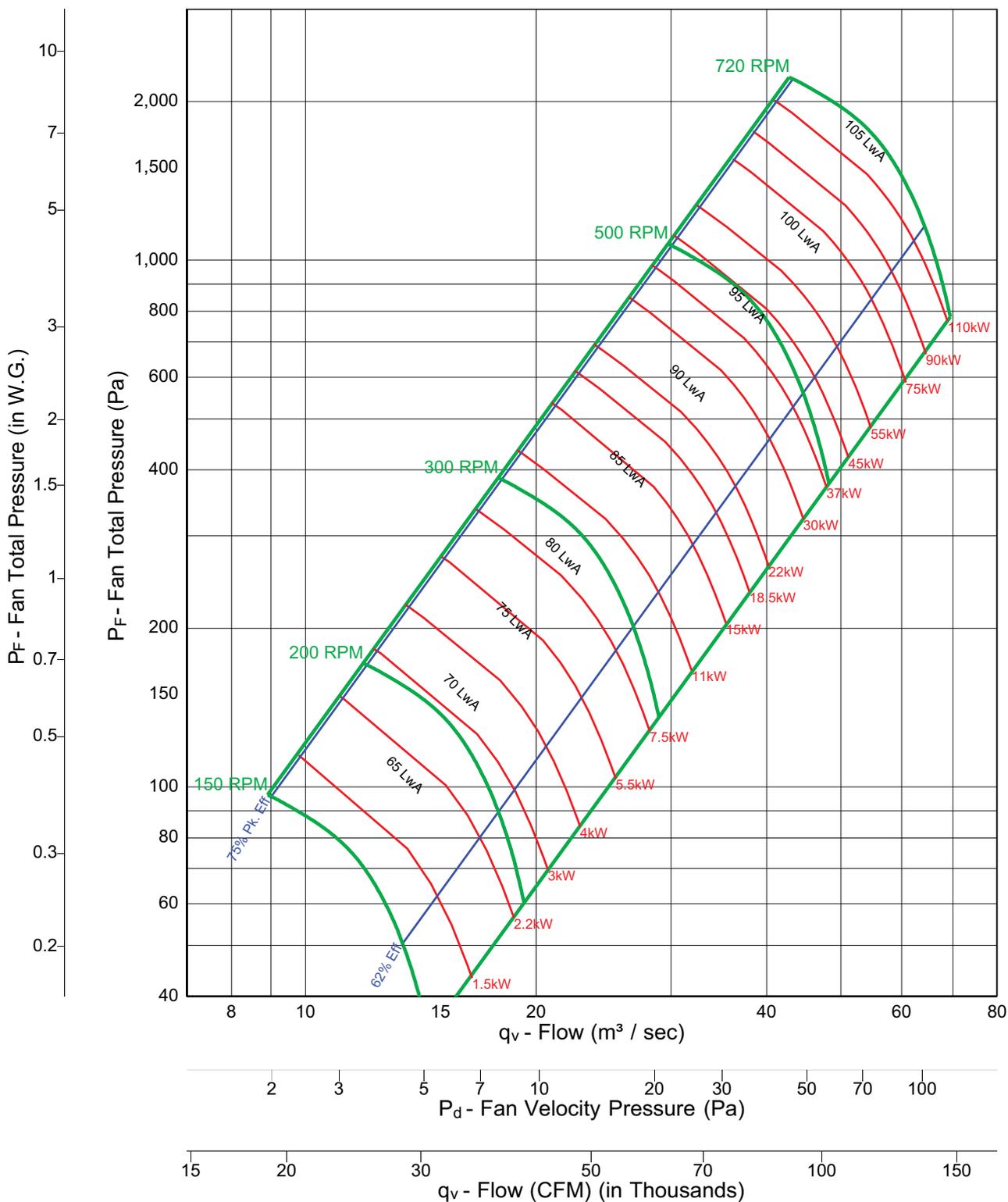
Fan Efficiency Grade = FEG 75



Notes:

1. Performance certified is for Installation Type B & D: Free or ducted inlet, ducted outlet.
2. Power rating (kW) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound power level ratings shown are in decibels, referred to 10 E-12 watts calculated per AMCA Standard 301.
5. Values shown are for inlet LwiA sound power levels for Installation Type B: Free inlet, ducted outlet.
6. Ratings do not include the effects of duct end correction.
7. The A-weighted sound ratings shown have been calculated per AMCA Standard 301.

TSL 730



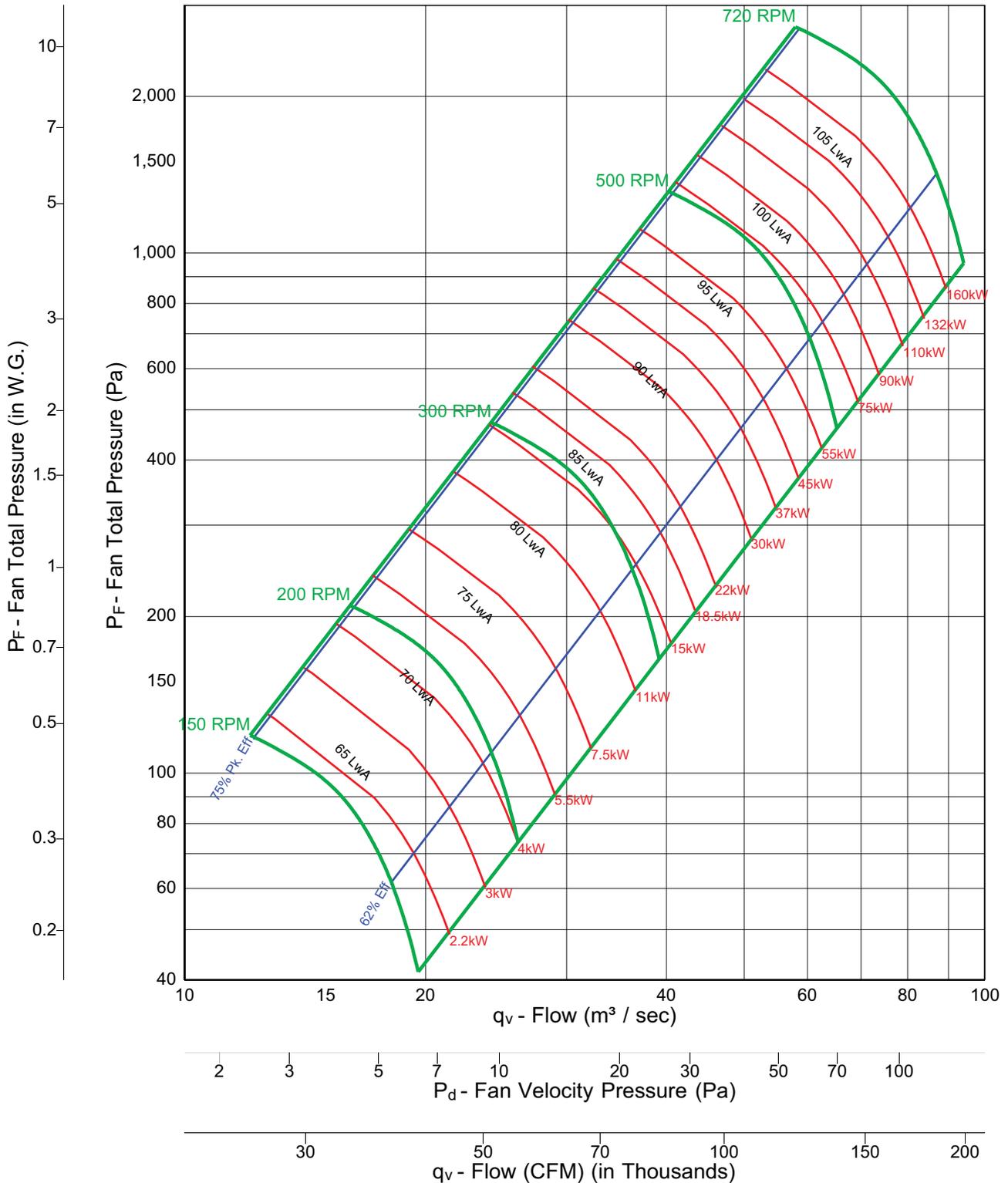
Fan Efficiency Grade = FEG 75



Notes:

1. Performance certified is for Installation Type B & D: Free or ducted inlet, ducted outlet.
2. Power rating (kW) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound power level ratings shown are in decibels, referred to 10 E-12 watts calculated per AMCA Standard 301.
5. Values shown are for inlet LwIA sound power levels for Installation Type B: Free inlet, ducted outlet.
6. Ratings do not include the effects of duct end correction.
7. The A-weighted sound ratings shown have been calculated per AMCA Standard 301.

TSL 807



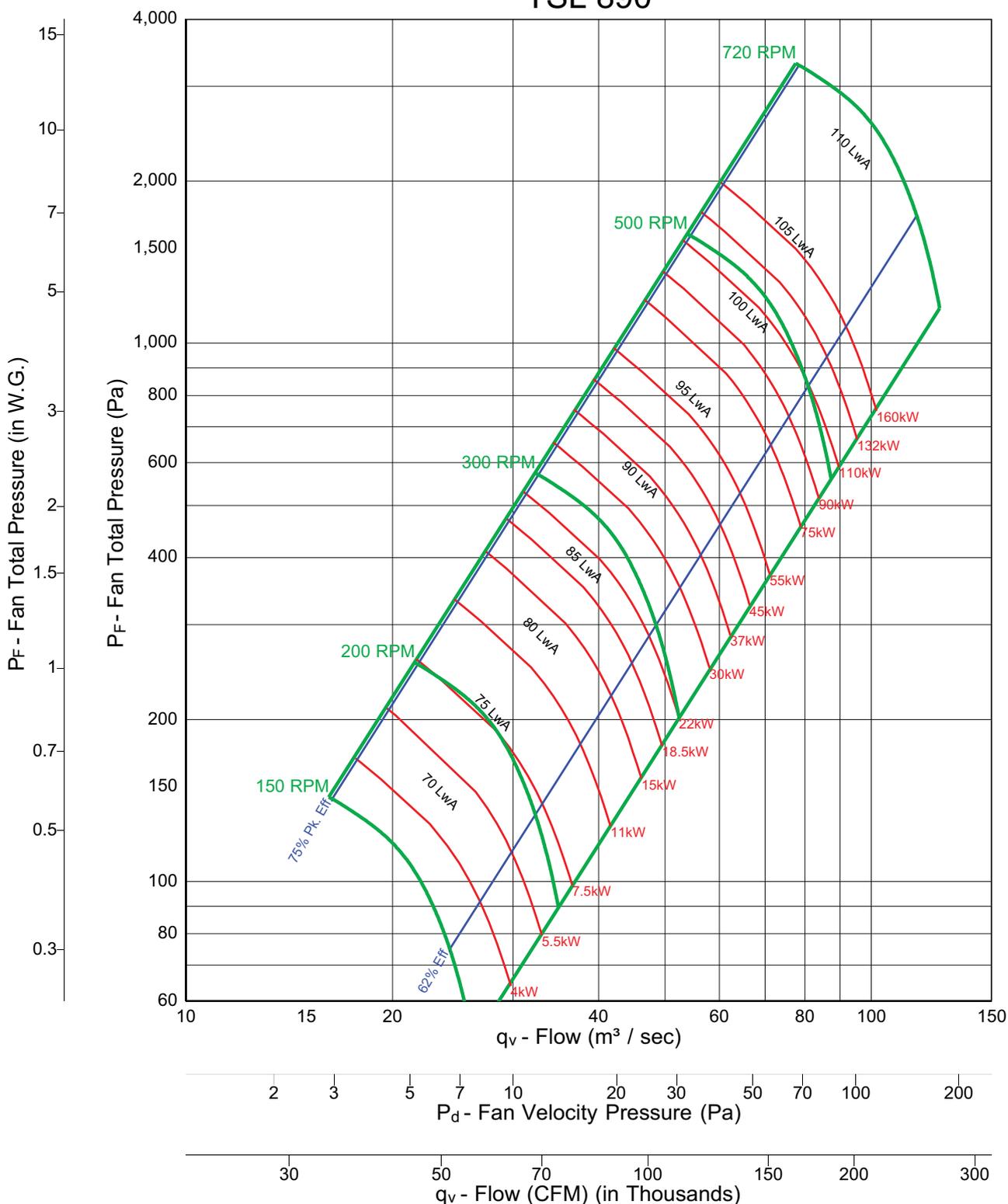
Fan Efficiency Grade = FEG 75



Notes:

1. Performance certified is for Installation Type B & D: Free or ducted inlet, ducted outlet.
2. Power rating (kW) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound power level ratings shown are in decibels, referred to 10 E-12 watts calculated per AMCA Standard 301.
5. Values shown are for inlet LwA sound power levels for Installation Type B: Free inlet, ducted outlet.
6. Ratings do not include the effects of duct end correction.
7. The A-weighted sound ratings shown have been calculated per AMCA Standard 301.

TSL 890



Fan Efficiency Grade = FEG 75

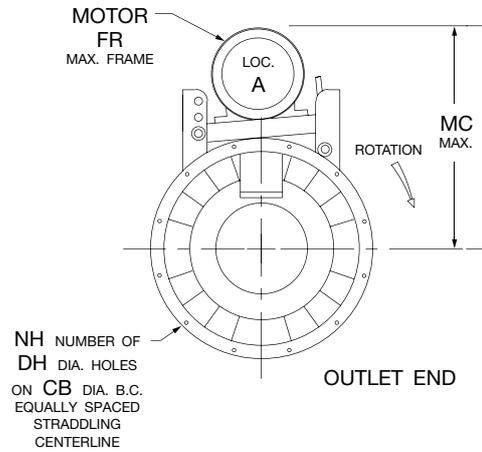
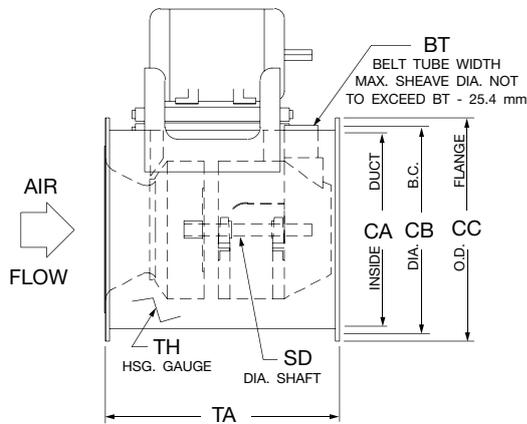


Notes:

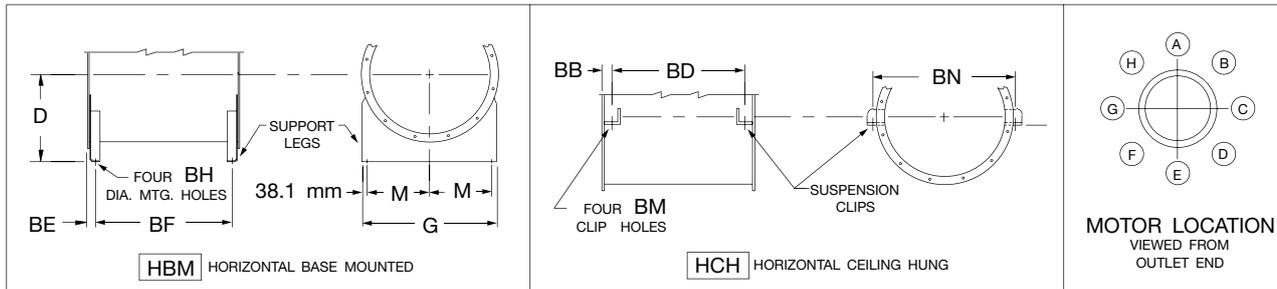
1. Performance certified is for Installation Type B & D: Free or ducted inlet, ducted outlet.
2. Power rating (kW) does not include transmission losses.
3. Performance ratings do not include the effects of appurtenances (accessories).
4. The sound power level ratings shown are in decibels, referred to 10 E-12 watts calculated per AMCA Standard 301.
5. Values shown are for inlet LwiA sound power levels for Installation Type B: Free inlet, ducted outlet.
6. Ratings do not include the effects of duct end correction.
7. The A-weighted sound ratings shown have been calculated per AMCA Standard 301.

DIMENSIONAL DATA

Horizontal



HOR - HORIZONTAL DISCHARGE

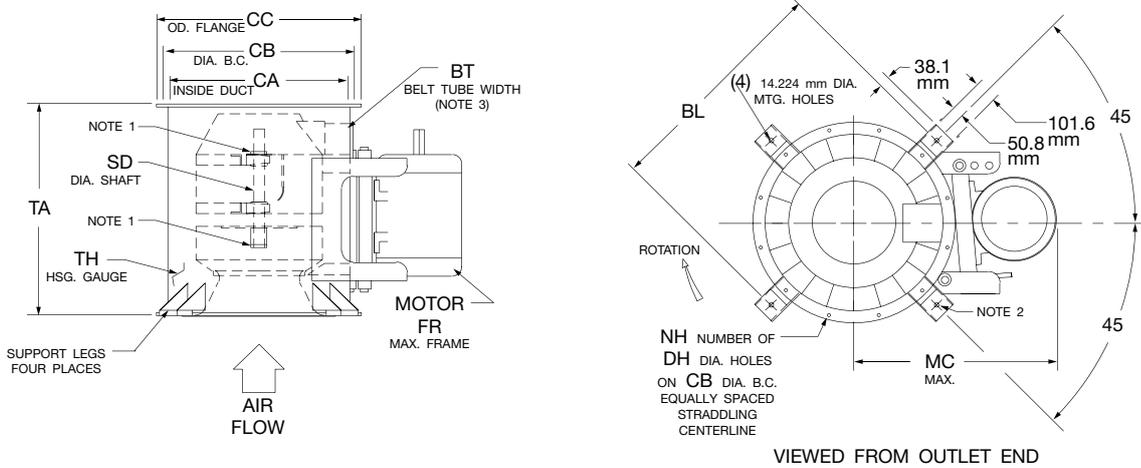


| SIZE | BB | BD | BE | BF | BH | BM | BN | BT | CA | CB | CC | D | DH | FR | G | M | MC | NH | SD | | | TA | TH |
|------|----|------|----|------|----|----|------|-----|------|------|------|------|----|------|------|------|------|----|------|-------|--------|------|-----|
| | | | | | | | | | | | | | | | | | | | CL I | CL II | CL III | | |
| 122 | 25 | 591 | 27 | 588 | 11 | 14 | 502 | 133 | 421 | 470 | 502 | 305 | 14 | 112M | 502 | 213 | 588 | 8 | 25 | 25 | — | 641 | 3 |
| 150 | 25 | 705 | 27 | 702 | 11 | 14 | 597 | 165 | 514 | 562 | 594 | 356 | 14 | 132M | 594 | 259 | 654 | 8 | 25 | 30 | — | 756 | 3 |
| 182 | 38 | 718 | 27 | 741 | 11 | 14 | 705 | 165 | 627 | 679 | 711 | 406 | 18 | 160L | 711 | 318 | 875 | 12 | 30 | 36 | 36 | 794 | 2.5 |
| 200 | 38 | 800 | 27 | 824 | 14 | 14 | 765 | 184 | 687 | 740 | 770 | 457 | 21 | 160L | 770 | 347 | 919 | 12 | 36 | 36 | 36 | 876 | 2.5 |
| 222 | 38 | 902 | 33 | 913 | 14 | 14 | 842 | 203 | 764 | 816 | 848 | 508 | 21 | 180L | 848 | 386 | 994 | 12 | 36 | 36 | 36 | 978 | 2.5 |
| 245 | 38 | 1035 | 33 | 1046 | 14 | 21 | 921 | 227 | 842 | 892 | 924 | 533 | 21 | 225M | 924 | 424 | 1108 | 12 | 36 | 49 | 49 | 1111 | 2.5 |
| 270 | 38 | 1124 | 33 | 1135 | 14 | 21 | 1007 | 248 | 927 | 978 | 1010 | 584 | 21 | 225M | 1010 | 467 | 1179 | 12 | 43 | 49 | 56 | 1200 | 2.5 |
| 300 | 38 | 1257 | 33 | 1267 | 14 | 21 | 1111 | 278 | 1030 | 1096 | 1140 | 635 | 21 | 225M | 1140 | 532 | 1254 | 16 | 49 | 56 | 62 | 1334 | 3 |
| 330 | 38 | 1391 | 33 | 1400 | 14 | 21 | 1216 | 305 | 1134 | 1200 | 1245 | 686 | 21 | 225M | 1245 | 584 | 1291 | 16 | 49 | 56 | 62 | 1467 | 3 |
| 365 | 51 | 1530 | 40 | 1553 | 14 | 21 | 1335 | 337 | 1254 | 1321 | 1365 | 737 | 21 | 225M | 1365 | 645 | 1365 | 16 | 49 | 62 | 62 | 1632 | 3 |
| 402 | 51 | 1695 | 43 | 1711 | 21 | 21 | 1462 | 375 | 1381 | 1461 | 1518 | 838 | 21 | 250M | 1518 | 721 | 1569 | 16 | 56 | 62 | 75 | 1797 | 3 |
| 445 | 51 | 1896 | 43 | 1911 | 21 | 21 | 1610 | 413 | 1529 | 1607 | 1664 | 914 | 21 | 280M | 1664 | 794 | 1695 | 16 | 62 | 68 | 87 | 1997 | 3 |
| 490 | 51 | 2092 | 43 | 2108 | 21 | 21 | 1764 | 457 | 1683 | 1762 | 1819 | 991 | 21 | 280M | 1819 | 871 | 1783 | 24 | 68 | 75 | 87 | 2194 | 3 |
| 542 | 51 | 2327 | 62 | 2305 | 21 | 27 | 1945 | 505 | 1864 | 1956 | 2026 | 1092 | 21 | 280M | 2026 | 975 | 1880 | 24 | 75 | 87 | 100 | 2429 | 3 |
| 600 | 64 | 2556 | 62 | 2559 | 21 | 27 | 2169 | 562 | 2062 | 2153 | 2223 | 1194 | 21 | 280M | 2223 | 1073 | 1992 | 24 | 75 | 87 | 100 | 2683 | 3 |
| 660 | 64 | 2829 | 62 | 2832 | 27 | 27 | 2376 | 616 | 2268 | 2359 | 2429 | 1321 | 21 | 280M | 2429 | 1176 | 2102 | 24 | 87 | 100 | 100 | 2956 | 3 |
| 730 | 64 | 3137 | 62 | 3140 | 27 | 27 | 2615 | 683 | 2508 | 2651 | 2721 | 1448 | 21 | 280M | 2721 | 1322 | 2229 | 24 | 87 | 100 | 113 | 3264 | 3 |
| 807 | 65 | 3480 | 62 | 3486 | 27 | 27 | 2934 | 749 | 2775 | 2912 | 2988 | 1575 | 21 | 280M | 2988 | 1456 | 2369 | 24 | 100 | 113 | 125 | 3610 | 5 |
| 890 | 65 | 3839 | 62 | 3845 | 27 | 27 | 3215 | 829 | 3056 | 3202 | 3270 | 1740 | 21 | 280M | 3270 | 1597 | 2516 | 24 | 100 | 125 | 138 | 3969 | 5 |

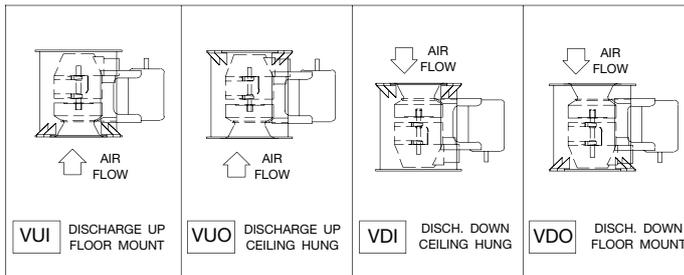
AC14028B

DIMENSIONS ARE SUBJECT TO CHANGE. CERTIFIED DRAWINGS AVAILABLE ON REQUEST.

Vertical



VUI - VERTICAL UP DISCHARGE WITH FLOOR MOUNT SUPPORT LEGS (SEE NOTE 2)



NOTES:

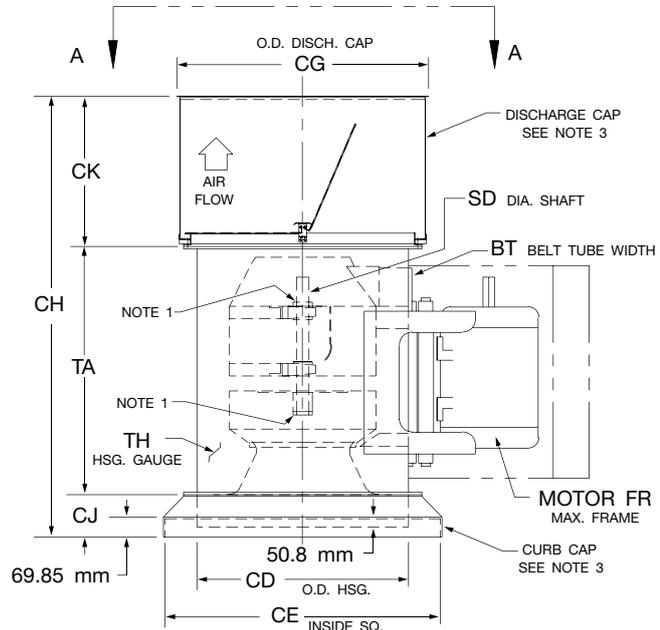
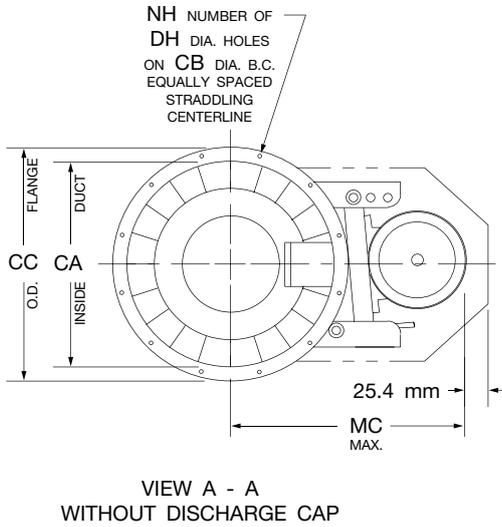
1. Two locking collars are included to prevent shifting of components.
2. Support legs shown are provided as an accessory.
3. Maximum sheave diameter not to exceed "BT" - 25.4 mm.

| SIZE | BL | BT | CA | CB | CC | DH | FR | MC | NH | SD | | | TA | TH |
|------|------|-----|------|------|------|----|------|------|----|------|-------|--------|------|----|
| | | | | | | | | | | CL I | CL II | CL III | | |
| 122 | 552 | 133 | 421 | 470 | 502 | 14 | 112M | 588 | 8 | 25 | 25 | — | 641 | 3 |
| 150 | 645 | 165 | 514 | 562 | 594 | 14 | 132M | 654 | 8 | 25 | 30 | — | 756 | 3 |
| 182 | 838 | 165 | 627 | 679 | 711 | 18 | 160L | 875 | 12 | 30 | 36 | 36 | 794 | 3 |
| 200 | 899 | 184 | 687 | 740 | 770 | 21 | 160L | 919 | 12 | 36 | 36 | 36 | 876 | 3 |
| 222 | 965 | 203 | 764 | 816 | 848 | 21 | 180L | 994 | 12 | 36 | 36 | 36 | 978 | 3 |
| 245 | 1051 | 227 | 842 | 892 | 924 | 21 | 225M | 1108 | 12 | 36 | 49 | 49 | 1111 | 3 |
| 270 | 1137 | 248 | 927 | 978 | 1010 | 21 | 225M | 1179 | 12 | 43 | 49 | 56 | 1200 | 3 |
| 300 | 1267 | 278 | 1030 | 1096 | 1140 | 21 | 225M | 1254 | 16 | 49 | 56 | 62 | 1334 | 3 |
| 330 | 1372 | 305 | 1134 | 1200 | 1245 | 21 | 225M | 1291 | 16 | 49 | 56 | 62 | 1467 | 3 |
| 365 | 1492 | 337 | 1254 | 1321 | 1365 | 21 | 225M | 1365 | 16 | 49 | 62 | 62 | 1632 | 3 |
| 402 | 1645 | 375 | 1381 | 1461 | 1518 | 21 | 250M | 1569 | 16 | 56 | 62 | 75 | 1797 | 3 |
| 445 | 1791 | 413 | 1529 | 1607 | 1664 | 21 | 280M | 1695 | 16 | 62 | 68 | 87 | 1997 | 3 |
| 490 | 1946 | 457 | 1683 | 1762 | 1819 | 21 | 280M | 1783 | 24 | 68 | 75 | 87 | 2194 | 3 |
| 542 | 2153 | 505 | 1864 | 1956 | 2026 | 21 | 280M | 1880 | 24 | 75 | 87 | 100 | 2429 | 3 |

AC14029

DIMENSIONS ARE SUBJECT TO CHANGE. CERTIFIED DRAWINGS AVAILABLE ON REQUEST.

Vertical w/ Curb & Discharge Cap



VRM - VERTICAL DISCHARGE WITH DISCHARGE CAP AND CURB CAP

NOTES:

1. Two locking collars are included to prevent shifting of components.
2. Maximum sheave diameter not to exceed BT - 25.4 mm.
3. Discharge cap and curb cap are optional accessories.

| SIZE | BT | CA | CB | CC | CD | CE | CG | CH | CJ | CK | DH | FR | MC | NH | SD | | | TA | TH |
|------|-----|------|------|------|------|------|------|------|-----|------|----|------|------|----|------|-------|--------|------|-----|
| | | | | | | | | | | | | | | | CL I | CL II | CL III | | |
| 122 | 133 | 421 | 470 | 502 | 427 | 603 | 686 | 1162 | 140 | 381 | 14 | 112M | 588 | 8 | 25 | 25 | — | 641 | 3 |
| 150 | 165 | 514 | 562 | 594 | 521 | 695 | 762 | 1289 | 152 | 381 | 14 | 132M | 654 | 8 | 25 | 30 | — | 756 | 3 |
| 182 | 165 | 627 | 679 | 711 | 632 | 886 | 864 | 1419 | 168 | 457 | 18 | 160L | 875 | 12 | 30 | 36 | 36 | 794 | 2.5 |
| 200 | 184 | 687 | 740 | 770 | 692 | 949 | 1016 | 1581 | 171 | 533 | 21 | 160L | 919 | 12 | 36 | 36 | 36 | 876 | 2.5 |
| 222 | 203 | 764 | 816 | 848 | 768 | 1026 | 1016 | 1683 | 171 | 533 | 21 | 180L | 994 | 12 | 36 | 36 | 36 | 978 | 2.5 |
| 245 | 227 | 842 | 892 | 924 | 846 | 1102 | 1168 | 1899 | 178 | 610 | 21 | 225M | 1108 | 12 | 36 | 49 | 49 | 1111 | 2.5 |
| 270 | 248 | 927 | 978 | 1010 | 932 | 1187 | 1168 | 1994 | 184 | 610 | 21 | 225M | 1179 | 12 | 43 | 49 | 56 | 1200 | 2.5 |
| 300 | 278 | 1030 | 1096 | 1140 | 1037 | 1295 | 1346 | 2216 | 197 | 686 | 21 | 225M | 1254 | 16 | 49 | 56 | 62 | 1334 | 3 |
| 330 | 305 | 1134 | 1200 | 1245 | 1140 | 1400 | 1499 | 2426 | 197 | 762 | 21 | 225M | 1291 | 16 | 49 | 56 | 62 | 1467 | 3 |
| 365 | 337 | 1254 | 1321 | 1365 | 1261 | 1521 | 1524 | 2591 | 197 | 762 | 21 | 225M | 1365 | 16 | 49 | 62 | 62 | 1632 | 3 |
| 402 | 375 | 1381 | 1461 | 1518 | 1388 | 1648 | 1702 | 2838 | 203 | 838 | 21 | 250M | 1569 | 16 | 56 | 62 | 75 | 1797 | 3 |
| 445 | 413 | 1529 | 1607 | 1664 | 1535 | 1769 | 1854 | 3128 | 216 | 914 | 21 | 280M | 1695 | 16 | 62 | 68 | 87 | 1997 | 3 |
| 490 | 457 | 1683 | 1762 | 1819 | 1689 | 1981 | 2032 | 3439 | 229 | 1016 | 21 | 280M | 1783 | 24 | 68 | 75 | 87 | 2194 | 3 |
| 542 | 505 | 1863 | 1956 | 2026 | 1870 | 2254 | 2197 | 3924 | 235 | 1261 | 21 | 280M | 1880 | 24 | 75 | 87 | 100 | 2429 | 3 |

AC14029D

DIMENSIONS ARE SUBJECT TO CHANGE. CERTIFIED DRAWINGS AVAILABLE ON REQUEST.

TYPICAL SPECIFICATIONS

Model

TSL



Fans shall be model TSL Tubular Centrifugal Inline Fans, of the non-overloading design, as manufactured by Twin City Fan Companies.

Fans shall be designed for maximum efficiency. Fans shall have a sharply rising pressure characteristic extending through the operating range and continuing to rise well beyond the efficiency peak to assure quiet and stable operation under all conditions. Power characteristics shall be truly self-limiting and shall reach a peak in the normal selection area.

PERFORMANCE — Fans shall be tested in accordance with AMCA 211 and AMCA 311 test codes for air moving devices and shall be guaranteed by the manufacturer to deliver rated published performance levels. Fans shall be licensed to bear the AMCA certified ratings seal for both sound and air.

HOUSING — Housings shall be cylindrical and welded steel throughout. Inlets shall be fully streamlined. Housings shall be suitably braced to prevent vibration or pulsation.

IMPELLER — Impeller diameters shall be in accordance with the standard sizes adopted by AMCA Standard 99-2414 for centrifugal tubular type fans. Fan impeller sizes 122 and 150 shall have single thickness plate-type blades. Fan impeller sizes 182 and larger shall have die-formed aerofoil blades designed for maximum efficiency and quiet operation. Blades shall be continuously welded to the back plate and impeller cone. Partial welding is not acceptable. The impeller shall be specifically designed for inline fans to offer a higher and broader efficiency range. The back plate of the impeller shall be designed to offer lower resistance to the air leaving the impeller. Impellers shall be statically and dynamically balanced and the complete fan assembly shall be test balanced at or near the operating speed at the factory prior to shipment.

SHAFT — Shafts shall be AISI 1040 or 1045 hot rolled steel, accurately turned, ground, polished, and ring gauged for accuracy. Shafts shall be sized for the first critical speed of at least 1.43 times the maximum speed.

BEARINGS — Bearings shall be heavy duty, grease lubricated, anti-friction ball or roller, self-aligning, pillow block type and selected for an average bearing life (AFBMA L-50) in excess of 200,000 hours at the maximum fan RPM. Bearings shall be equipped with extended lubrication lines with grease fittings outside of the fan housing.

DRIVE — Motor sheaves shall be cast iron, variable pitch on applications 15 kW and smaller, and fixed pitch on 18 kW and larger.

INLET VANES — Inlet vanes, where specified, shall be of the external type for sizes 122 & 150 and nested for sizes 182 and larger. Inlet vanes shall be designed for economical, stable, and efficient air volume control at partial load conditions.

ACCESSORIES — When specified, accessories such as belt guards (standard or OSHA), weather covers, bolted or quick-opening access doors, inlet and outlet companion flanges, and other accessories as required by the application shall be provided by Twin City Fan & Blower to maintain one source responsibility.

FINISH AND COATING — The entire fan assembly, excluding the shaft, shall be thoroughly degreased and de-burred before application of a rust-preventative primer. After the fan is completely assembled, a finish coat of paint shall be applied to the entire assembly. The fan shaft shall be coated with a petroleum-based rust protectant. Aluminium components shall be unpainted.

FACTORY RUN TEST — All fans with motors and drives mounted by Twin City Fan shall be completely assembled and test run as a unit at the specified operating speed prior to shipment. Each impeller shall be statically and dynamically balanced in accordance with ANSI/AMCA 204-96 "Balance Quality and Vibration Levels for Fans" to Fan Application Category BV-3, Balance Quality Grade G6.3. Balance readings shall be taken by electronic type equipment in the axial, vertical, and horizontal directions on each of the bearings. Records shall be maintained and a written copy shall be available upon request.

GUARANTEE — The manufacturer shall guarantee the workmanship and materials for its TSL Tubular Centrifugal Inline Fans for at least one (1) year from start-up or eighteen (18) months from shipment, whichever occurs first.

INDUSTRIAL & COMMERCIAL FANS

Centrifugal Fans | Utility Sets | Plenum & Plug Fans | Inline Centrifugal Fans
Mixed Flow Fans | Tubeaxial & Vaneaxial Fans | Propeller Wall Fans | Propeller Roof Ventilators
Centrifugal Roof & Wall Exhausters | Ceiling Ventilators | Gravity Ventilators | Duct Blowers
Radial Bladed Fans | Radial Tip Fans | High Efficiency Industrial Fans | Pressure Blowers
Laboratory Exhaust Fans | Filtered Supply Fans | Mancoolers | Fiberglass Fans | Custom Fans

Fan & Blower
Twin City



TWIN CITY FAN & BLOWER | WWW.TCF.COM

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