MONOXIVENT®
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Exhaust System CFM Calculation

$$CFM = \frac{\text{Cubic Inches}}{\text{Conversion Factor}} \text{ x Efficiency Factor x Constant x } \frac{\text{Exhaust Temp.}}{\text{Ambient Temp.}} \text{ x } \frac{rpm}{2}$$

$$CFM = \frac{in3}{1728} \text{ x } 0.80 \text{ x } 1.06 \text{ x } \frac{(459 + TE)}{(459 + TI)} \text{ x } \frac{rpm}{2}$$

Conversion Factor = 1728 cubic inches / cubic foot

Efficiency Factor = airflow efficiency less frictional losses

Efficiency = 0.80 for standard diesel engines

Efficiency = 0.90 for diesel engines with turbo charger

NOTE: Turbo-charger reduces exhaust temperature for diesel engines
Turbo-charger increases exhaust temperature for gasoline engines.

Temperature measured in °F convert to (°K) Absolute scale = °F + 460 = °K

$\frac{rpm}{2}$: for a 4 cycle engine

Note: For 2 cycle engines, do not divide in half.
Calculation indicates exhaust volume (cfm) generated by the engine.

General Guidelines:

Cars . . . . 235 cfm

Trucks . . . . 600 cfm

Engines > 900 cubic inches . . . . Utilize calculations x2

Airflow design value: cfm = engine idle exhaust volume x 2

To prevent engine exhaust from overwhelming fan sizing, design airflow must exceed engine cfm generated by a minimum of 20% at maximum rpm.

Sample:
13.5 liter or 823 c.i. Diesel Engine; Operating @ 2300 rpm with 1200 degree exhaust

$$CFM = \frac{823}{1728} \text{ x } 0.90 \text{ x } 1.06 \text{ x } \frac{(459+1200)}{(459+70)} \text{ x } \frac{rpm}{2}$$

.476 x 0.90 x 1.06 x 3.15 x 1150 = 1,644 cfm (20% Safety Factor) = 1973 cfm