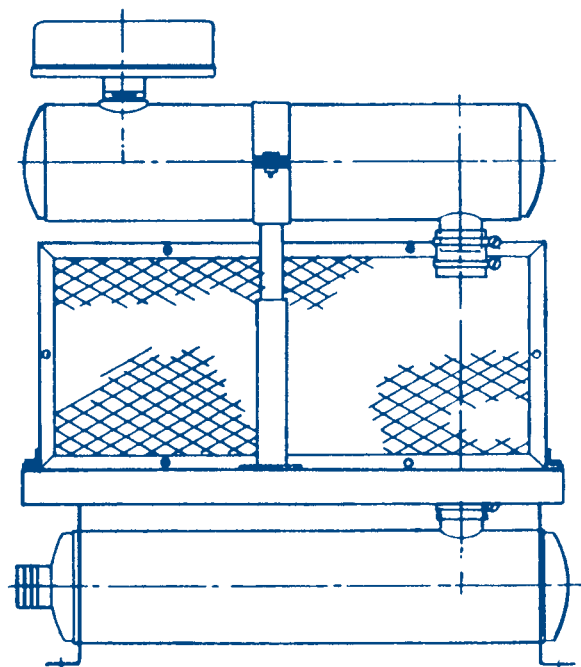


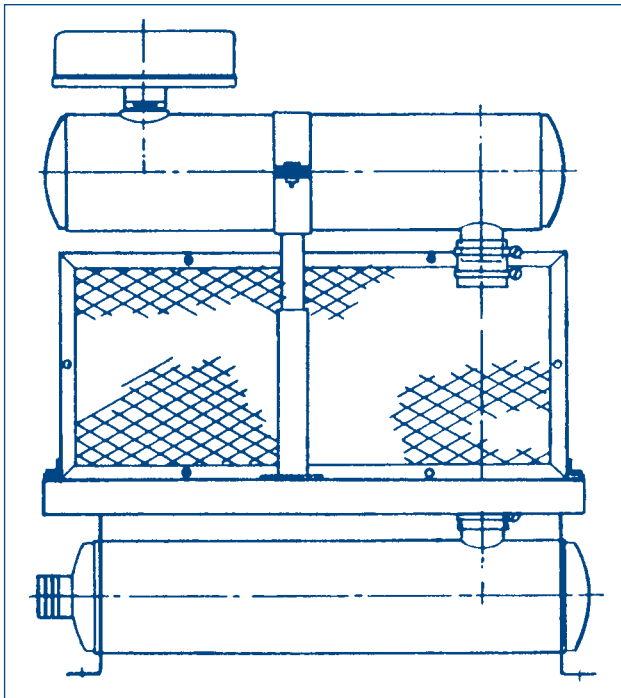


## Specialists in Industrial Silencing

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# PACKAGED DISCHARGE SILENCERS





The PD is a discharge silencer for blowers on which the blower, motor and belt guard are mounted as an integral part of the silencer. The PD is designed to facilitate package assembly thereby reducing labor and the overall cost of assembling smaller blower packages. The design also enables the package to be pretested and shipped to the jobsite without any disassembly.

The PD incorporates all the benefits of the D33H and D13H series silencers seen in Bulletin "D". The inlet is designed to accept a slip-on type flex connector. Intake filter silencers, intake silencers, flex connectors (with clamps), belt guards and intake silencer supports are also available from STODDARD SILENCERS, making the purchase of accessories for the PD easier. Blowers, motors and slide rails are not included; however, special flanges, pressure relief valve connections, special finishes and special materials of construction are available at an additional cost.

## Intake Silencers Size Selection Chart

| Silencer Size | 2      | 2½      | 3       | 4       | 5       | 6        |
|---------------|--------|---------|---------|---------|---------|----------|
| Inlet CFM     | 79-128 | 129-183 | 184-378 | 379-551 | 552-860 | 861-1235 |

## Discharge Silencers Size Selection Chart

| Discharge Silencer Size | ICFM Range at Blower Inlet |                 |                 |                  |                  |                  |
|-------------------------|----------------------------|-----------------|-----------------|------------------|------------------|------------------|
|                         | 4 PSIG<br>112°F            | 6 PSIG<br>134°F | 8 PSIG<br>156°F | 10 PSIG<br>178°F | 12 PSIG<br>200°F | 15 PSIG<br>233°F |
| 2                       | 90-148                     | 96-158          | 102-167         | 107-175          | 111-183          | 118-194          |
| 2½                      | 149-210                    | 159-224         | 168-237         | 176-249          | 184-260          | 195-275          |
| 3                       | 211-325                    | 225-347         | 238-367         | 250-385          | 261-402          | 276-426          |
| 4                       | 326-564                    | 348-601         | 368-636         | 386-667          | 403-697          | 427-738          |
| 5                       | 565-881                    | 602-939         | 637-994         | 668-1042         | 698-1090         | 739-1153         |
| 6                       | 882-1265                   | 940-1348        | 995-1427        | 1043-1497        | 1091-1565        | 1154-1656        |

## Silencer Model Selection Chart

| If Blower RPM Is | Blower Gear Size  |      |      |      |      |      |      |      |      |
|------------------|---|------|------|------|------|------|------|------|------|
|                  | 2   | 2½   | 3    | 4    | 4½   | 5    | 6    | 7    | 8    |
| AT OR ABOVE      | 6297  | 5038 | 4198 | 3148 | 2798 | 2519 | 2099 | 1799 | 1574 |
|                  | Use D33R Intake Silencer & PD33 Discharge Silencer (PD33 Package) |      |      |      |      |      |      |      |      |
| BETWEEN (MAX)    | 6298  | 5039 | 4199 | 3149 | 2799 | 2520 | 2100 | 1800 | 1575 |
| (Min)            | 5151  | 4124 | 3434 | 2944 | 2579 | 2059 | 1719 | 1469 | 1284 |
|                  | Use D13R Intake Silencer & PD33 Discharge Silencer (PD46 Package) |      |      |      |      |      |      |      |      |
| AT OR BELOW      | 5152  | 4125 | 3435 | 2945 | 2580 | 2060 | 1720 | 1470 | 1285 |
|                  | Use D13R Intake Silencer & PD13 Discharge Silencer (PD13 Package) |      |      |      |      |      |      |      |      |

# Silencer Pressure Drop Calculations

## Intake Silencer Pressure Drop Calculations

1. Determine inlet velocity based on size from selection chart.

$$\text{Inlet Velocity FPM} = \frac{\text{Inlet CFM} \times 186.4}{(\text{Silencer Size})^2} = \text{(Feet Per Minute)}$$

Note: Inlet CFM refers to inlet capacity of blower

$$\text{Inlet Velocity} = \left( \frac{\text{Inlet CFM} \times 186.4}{(\text{Silencer Size})^2} \right) \times 186.4 = \text{Feet Per Minute}$$

2. Convert inlet velocity to velocity pressure

$$\text{Velocity Pressure} = \left( \frac{\text{Inlet Velocity}}{4000} \right)^2 = \text{(Inches of Water)}$$

Note: Inlet velocity was determined in step one above.

$$\text{Velocity Pressure} = \left( \frac{\text{Inlet Velocity}}{4000} \right)^2 = \text{Inches of water}$$

3. Calculate pressure drop across silencer size selected.

$$\text{Pressure Drop} = \text{Velocity Pressure} \times \text{Friction Factor} = \text{(Inches of Water)}$$

Note: Velocity pressure determined in step two above.

$$\text{Pressure Drop} = \text{Velocity Pressure} \times 4.2 = \text{Inches of water.}$$

## Discharge Silencer Pressure Drop Calculations

(Data Required - Blower ICFM, Discharge Pressure & Temperature)

1. Determine Discharge velocity in feet per minute for silencer size selected from sizing chart.

$$\text{Discharge Velocity} = \frac{5.17 \times \text{ICFM} \times (460 + \text{Discharge Temp. } ^\circ\text{F})}{(\text{Silencer Size})^2 \times (14.7 + \text{Discharge Press. PSIG})}$$

$$\text{Discharge Velocity} = \frac{5.17 \times \text{ICFM} \times (460 + \text{Discharge Temp. } ^\circ\text{F})}{(\text{Silencer Size})^2 \times (14.7 + \text{Discharge Press. PSIG})}$$

$$\text{Discharge Velocity} = \text{FPM}$$

2. Convert Discharge Velocity (FPM) to Velocity Pressure. (inches of water)

$$\text{Velocity Pressure} = \left( \frac{\text{Discharge Velocity}}{4000} \right)^2$$

$$\text{Velocity Pressure} = \left( \frac{\text{Discharge Velocity}}{4000} \right)^2$$

$$\text{Velocity Pressure} = \text{Inches of water}$$

3. Determine Discharge Silencer Pressure Drop - (inches of water)

$$\text{Pressure Drop} = \text{Velocity Pressure} \times 151 \times \frac{(14.7 + \text{Disch. Press. PSIG})}{(460 + \text{Disch. Temp. } ^\circ\text{F})}$$

$$\text{Pressure Drop} = \text{Velocity Pressure} \times 151 \times \frac{(14.7 + \text{Disch. Press. PSIG})}{(460 + \text{Disch. Temp. } ^\circ\text{F})}$$

$$\text{Pressure Drop} = \text{Inches of water}$$