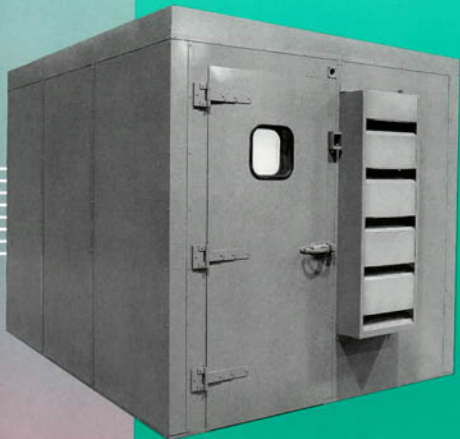


Lorraine Series

# AEROACOUSTIC®



## Silentroom®

ACOUSTIC ENCLOSURES AND PORTABLE PERSONNEL ROOMS



1-800-VIA-AERO  
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## INTRODUCTION

In modern production facilities, noise control is more of a concern now than ever before. As OSHA, state, and local regulations become stricter, manufacturers must modify their facilities to meet these requirements. The most fundamental approach to noise reduction in a plant is to erect a wall between the noise source and the receiver in one of the following ways:

1. an enclosure around the noise source or equipment
2. an enclosure around the receiver or employee
3. a barrier between the noise source and the receiver

The manufacturer must weigh the cost of an enclosure versus the production cost, maintenance cost, energy consumption and employee safety. The AEROACOUSTIC Corp. offers a line of acoustic panels for construction of barriers, partial enclosures and complete enclosures to solve these noise problems. The standard model 3P and 4P *Silentroom*<sup>®</sup> acoustic panels for normal temperature applications are of tongue and groove construction for easy assembly and disassembly. All enclosures are factory assembled and marked for ease of field installation. Each enclosure is supplied with the necessary panels, mullions, floor channels, safing pieces, joint insulation, acoustical sealant, screws/bolts (anchors by others), installation instructions and drawings to properly install an AEROACOUSTIC *Silentroom*<sup>®</sup>. There is no limitation to the size or configuration of the enclosure. Each one is custom designed to the specific requirements of the room application. As the physical dimensions of the enclosure are increased, the enclosure's supports are designed accordingly to handle the loading. A *Silentroom*<sup>®</sup> enclosure can be designed to handle almost any static and/or dynamic loading. This bulletin supplies information to select and custom design an enclosure to solve your noise problems. If a barrier alone will handle the required noise reduction, please refer to our bulletin B-234 - Sound Barrier Technology. Please contact the AEROACOUSTIC Engineering Department for any assistance required in designing or pricing an acoustic enclosure.

## HISTORY OF *Silentroom*<sup>®</sup> ACOUSTIC ENCLOSURES

30 YEARS AGO: The AEROACOUSTIC Corp. designed and built the first series of *Silentroom*<sup>®</sup> acoustic enclosure and personnel rooms. They were widely accepted as the standard acoustic rooms in the industry. As the years passed, The AEROACOUSTIC Corp. continually improved the *Silentroom*<sup>®</sup> design always keeping up with the latest in acoustic theories, materials and applications.


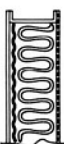


20 YEARS AGO: The AEROACOUSTIC Corp. introduced the *Silentroom*<sup>®</sup> high temperature enclosure for the gas turbine and jet engine industry. This specific *Silentroom*<sup>®</sup> HT is designed to operate at temperatures up to 1000°F and has been in major jet engine test facilities for over 20 years.

10 YEARS AGO: The AEROACOUSTIC Corp. introduced the *Silentroom*<sup>®</sup> 4PHT panel system. The primary purpose of this panel was to acoustically line the internal chamber of jet engine test cells, gas turbine exhaust plenums and gas/steam blowoff silencers. This panel was designed to achieve a high transmission loss and sound absorption coefficient and was certified by an independent testing laboratory. The model 4P/4PHT is so efficient with regard to its sound absorption that acoustic consultants specify the panel as much for sound absorption as for sound transmission.

TODAY: The AEROACOUSTIC Corp. acoustic design laboratory has developed and independently certified their most outstanding Sound Transmission Coefficients (STC) and Noise Reduction Coefficient (NRC). Our new *Silentroom*<sup>®</sup> 3P, 4P & 6P panels are our most innovative and up to date panels on the market. Due to the fact that our original *Silentroom*<sup>®</sup> panel systems were designed for the most severe acoustic applications and harsh operating conditions, the new redesigned panels will handle the less severe applications such as fans, blowers and compressors with far better acoustic results than before.

TOMORROW: The AEROACOUSTIC Corp.'s Research and Development Department has its goals set for the 21st century. The time and performance proven *Silentroom*<sup>®</sup> designs will be in the forefront of acoustic technology with our assurance and guarantee of constant improvement as new technology develops. The AEROACOUSTIC Corp., *Silentroom*<sup>®</sup> and all our products are a result of American ingenuity, design, construction, materials and technology.

# Silentroom® ACOUSTIC PANEL CONSTRUCTION

	<p><b>MODEL 3P</b></p> <p>THIS SERIES REPLACES THE PREVIOUS MODEL 2P AND ADDRESSES THE ASIAN AND EUROPEAN MARKET WHICH REQUIRES A 75mm PANEL. THE APPLICATION OF THIS PANEL SYSTEM INCLUDES OPEN-TOP ENCLOSURES, ENCLOSURES, SOUND BARRIERS AND PARTITIONS WHERE THE REQUIRED NOISE REDUCTION IS NOMINAL. THE MATERIALS OF CONSTRUCTION INCLUDE A 16 GAGE SOLID BACK COATED WITH A VISCOELASTIC FILM, THREE INCHES OF ACOUSTICAL FILL AND A 22 GAGE PERFORATED INTERIOR SURFACE.</p> <p>AVERAGE WEIGHT PER SQUARE FOOT IS 6.5 LBS</p>		<p><b>MODEL 4P</b></p> <p>THIS SERIES IS THE INDUSTRY STANDARD PANEL WHICH SATISFIES THE NOISE REDUCTION AND SOUND ABSORPTION FOR ALMOST ALL INDUSTRIAL APPLICATIONS: ENCLOSURES, ROOMS, PLENUMS, PARTITIONS AND SOUND BARRIERS. THE MATERIALS OF CONSTRUCTION INCLUDE A 16 GAGE SOLID BACK COATED WITH A VISCOELASTIC FILM, FOUR INCHES OF ACOUSTICAL FILL AND A 22 GAGE PERFORATED INTERIOR.</p> <p>AVERAGE WEIGHT PER SQUARE FOOT IS 7.0 LBS</p>
	<p><b>MODEL 4PHS</b></p> <p>THIS SERIES IS USED WHERE MAXIMUM EXTERIOR NOISE REDUCTION AND NO INTERIOR SOUND ABSORPTION IS REQUIRED. THE USE OF THIS PANEL INCLUDES ENCLOSURES, PARTITIONS, SOUND BARRIERS AND THERMAL PLENUMS. THE MATERIALS OF CONSTRUCTION INCLUDE A 16 GAGE SOLID EXTERIOR SURFACE, FOUR INCHES OF ACOUSTICAL FILL AND AN 18 GAGE INTERIOR SURFACE.</p> <p>AVERAGE WEIGHT PER SQUARE FOOT IS 7.5 LBS</p>		<p><b>MODEL 6P</b></p> <p>THIS SERIES IS DESIGNED FOR USE IN THE MOST SEVERE ACOUSTIC ENVIRONMENTS PROVIDING A HIGH NOISE REDUCTION WITH THE ADDITION OF SOUND ABSORPTION. THE PANELS ARE USED FOR ENCLOSURES, PLENUMS AND SOUND BARRIERS FOR EXCEPTIONALLY NOISY EQUIPMENT. THE MATERIALS OF CONSTRUCTION INCLUDE A 16 GAGE SOLID EXTERIOR SURFACE, SIX INCHES OF ACOUSTICAL FILL, A SOLID SEPTUM SHEET AND A 22 GAGE PERFORATED INTERIOR SURFACE.</p> <p>AVERAGE WEIGHT PER SQUARE FOOT IS 8.5 LBS</p>

## STANDARD CONSTRUCTION

The exterior surface, internal channels and interior surface of the panels are of galvanized construction with a 3# Owens-Corning 703 resin-bonded fiberglass acoustic fill. The fill is inert, vermin and moisture proof and has a flame spread classification of 15 and a smoke development rating of 0. The panels are available in any width and height equal to or less than 60" wide by 144" long.

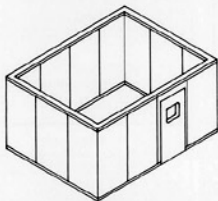
## ALTERNATE CONSTRUCTION

When a painted surface is required, the panels are constructed of galvanized. Galvanized sheets are coated by a special process and then heat treated after coating to produce a zinc-iron alloy and eliminate the spangle. The panel can be painted without surface preparation other than normal cleaning. For applications in the chemical, pharmaceutical and/or food industry, the panels can be constructed of T-304 or T-316 stainless steel. Also, the acoustic fill in the panel can be wrapped with a protective layer of mylar to prevent contamination of the fill.

## HI-TEMP CONSTRUCTION

When the temperature of the application is above 400°, the standard construction is not applicable. The panels can be constructed of either hot-rolled steel or T-409 stainless steel with a 6# US Gypsum mineral wool blanket acoustic fill and layer of glass cloth. If the panels are constructed of hot-rolled steel, they will be coated inside and out with a hi-temp aluminum silicone enamel. Either construction can withstand temperatures up to 1000°.

### OPEN-TOP ENCLOSURE



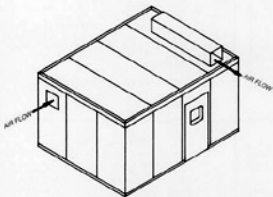
#### 10-15dB REDUCTION

THE AEROACOUSTIC OPEN-TOP ENCLOSURE IS CONSTRUCTED WITH A 3P OR 4P PANEL TEN FEET HIGH. THE ENCLOSURE CAN BE RAISED OFF THE GROUND FOR AMPLE VENTILATION. THE OPEN-TOP ENCLOSURE WILL ADEQUATELY SILENCE MOST MACHINERY IN THE 90-100 dBA RANGE.

**TYPICAL APPLICATIONS:**

- ROTARY BLOWERS WITH INLET AND OUTLET SILENCERS
- SMALL PUNCH PRESS
- SCREW MACHINES
- COMPRESSORS WITH INLET SILENCERS
- BOILER FEED PUMP
- SMALL FANS WITH INLET SILENCERS

### COMPLETE 3P ENCLOSURE



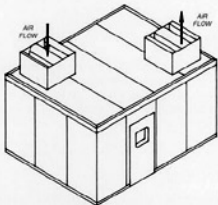
#### 15-20dB REDUCTION

THE AEROACOUSTIC *Silentroom*® CAN BE CONSTRUCTED OF 3P PANELS FOR LESS DEMANDING NOISE REQUIREMENTS. VENTILATION SYSTEMS, WHICH ARE FACTORY INSTALLED, ARE DESIGNED FOR AN AIR CHANGE EVERY TWO MINUTES. INLET AND OUTLET SILENCERS ARE BUILT INTO THE PANEL TO FACILITATE QUICK ASSEMBLY AND PROVIDE A STREAM-LINED COMPACT ENCLOSURE.

**TYPICAL APPLICATIONS:**

- GRANULATORS
- WIRE STRANDER
- WOODWORKING MACHINES

### COMPLETE 4P ENCLOSURE



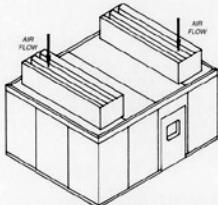
#### 20-25dB REDUCTION

A COMPLETE ENCLOSURE IS USED TO DEAL WITH MORE DIFFICULT NOISE PROBLEMS WITH LARGER MACHINERY. THE AEROACOUSTIC *Silentroom*® IS CONSTRUCTED OF OUR 4P PANELS WITH A HEAVY DUTY VENTILATION SYSTEM FOR THE REMOVAL OF GENERATED HEAT. THE VENTILATION SYSTEM INCLUDES A VANEAXIAL FAN, TRANSITION PIECE AND WALL OR ROOF-MOUNTED INLET AND OUTLET SILENCERS.

**TYPICAL APPLICATIONS:**

- ROOTS BLOWER
- MECHANICAL SPEED REDUCER
- SURFACE GRINDER

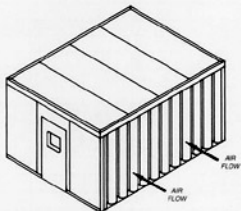
### COMPLETE 4P ENCLOSURE



#### 25-30dB REDUCTION

ANOTHER IDEAL INSTALLATION FOR THE AEROACOUSTIC *Silentroom*® IS A COMPLETE ENCLOSURE FOR OPEN INLET FANS AND COMPRESSORS. SILENCERS CAN BE ROOF OR WALL MOUNTED.

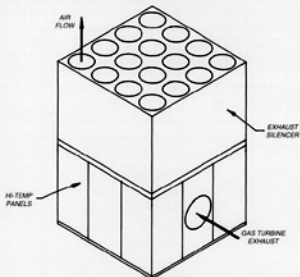
**TOTALLY ENCLOSED FAN ROOM**



**25-30dB REDUCTION**

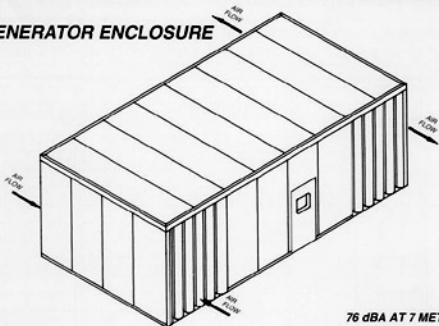
FOR MULTIPLE OPEN INLET FANS OR INSTALLATIONS WHERE ROOF MOUNTED SILENCERS ARE NOT PRACTICAL, A TOTALLY ENCLOSED FAN ROOM CAN BE INSTALLED FOR A 25-30dB REDUCTION. WITHIN THIS ENCLOSURE, AN ENTIRE WALL IS UTILIZED FOR SILENCING THE AIR INTAKE.

**GAS TURBINE EXHAUST TREATMENT**



AEROACOUSTIC PANELS CAN BE DESIGNED FOR HIGH TEMPERATURE APPLICATIONS. THE *Silentflow*<sup>®</sup> GAS TURBINE EXHAUST SILENCER HAS A DIFFUSER WHICH DISTRIBUTES THE EXHAUST GAS INTO A PLENUM CHAMBER BEFORE GOING INTO THE SILENCER SECTION. THIS PLENUM IS CONSTRUCTED OF 6" THICK PANELS DESIGNED TO WITHSTAND THE 1000° PLUS TEMPERATURES ASSOCIATED WITH GAS TURBINE EXHAUST. (FOR MORE DETAILS, SEE BULLETIN B-131)

**DIESEL GENERATOR ENCLOSURE**



**76 dBA AT 7 METERS**

THE AEROACOUSTIC *Silentroom*<sup>®</sup> ACOUSTIC ENCLOSURE IS A FUNDAMENTAL COMPONENT OF OUR DIESEL GENERATOR ENCLOSURE SYSTEM. THIS SYSTEM IS COMPRISED OF AN AEROACOUSTIC *Silentroom*<sup>®</sup> AND *Silentflow*<sup>®</sup> AIR INLET AND EXHAUST SILENCERS. THE SYSTEM UTILIZES THE DIESEL ENGINE RADIATOR FAN TO MOVE THE AIR THROUGH THE ENCLOSURE. PREVIOUS INSTALLATIONS PROVE THAT OUR STANDARD ENCLOSURE MEETS THE 76 dBA AT SEVEN METERS EPA REQUIREMENT FOR THIS TYPE OF EQUIPMENT. (FOR MORE DETAILS, SEE BULLETIN B-148)

## TABLE 1 TRANSMISSION LOSS OF *Silentroom*® ACOUSTIC PANELS

**Performance Certified by two (2) Independent Nationally Recognized Testing Laboratories  
in accordance with ASTM E90-90 and E413-87 Test Standards.**

1/1 OCTAVE BAND FREQUENCY HZ		63f			125			250			500			1000			2000			4000			8000f				
1/3 OCTAVE BAND FREQUENCY HZ		50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000		
MODEL	STC	SOUND TRANSMISSION LOSS IN DECIBELS																									
3P 3PHT PANEL	40	-	-	-	21	21	24	24	28	31	36	39	41	44	47	51	53	55	56	60	61	62	65	66	67	68	68
4P 4PHT PANEL	44	-	-	-	22	24	24	28	31	36	40	43	47	50	53	57	60	61	63	66	66	65	-	-	-	-	-
4P WINDOW PANEL	43	-	-	-	22	25	27	30	35	39	41	46	49	51	59	61	64	65	65	-	-	-	-	-	-	-	-
4PHT PANEL	53	-	-	-	22	29	30	36	45	47	50	53	59	60	60	61	62	65	66	68	-	-	-	-	-	-	-
4PWS WINDOW PANEL	48	-	-	-	23	27	30	36	45	47	50	53	59	60	60	61	62	65	66	68	-	-	-	-	-	-	-
4PWS DOOR PANEL	48	-	-	-	23	28	30	36	45	47	50	53	59	60	60	61	62	65	66	68	-	-	-	-	-	-	-
6P 6PHT PANEL	55	-	-	-	22	31	36	41	46	50	55	57	60	61	62	63	65	65	67	70	71	71	-	-	-	-	-

f - ESTIMATED VALUES PROVIDED FOR ACOUSTIC CALCULATIONS  
STC - SOUND TRANSMISSION CLASS

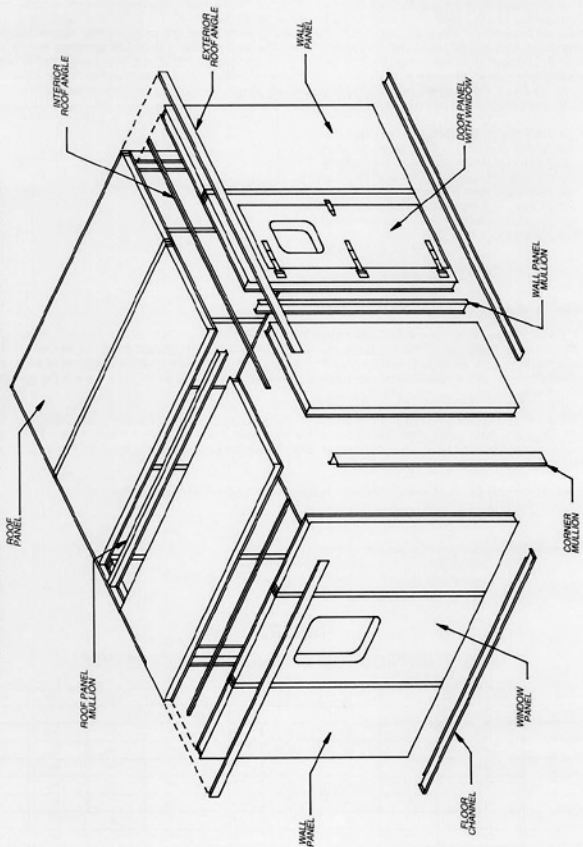
## TABLE 2 SOUND ABSORPTION COEFFICIENT OF *Silentroom*® ACOUSTIC PANELS

**Performance Certified by two (2) Independent Nationally Recognized Testing Laboratories  
in accordance with ASTM C423-90a and E795-91 Test Standards.**

1/1 OCTAVE BAND FREQUENCY HZ		63f			125			250			500			1000			2000			4000			8000f				
1/3 OCTAVE BAND FREQUENCY HZ		50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000		
MODEL	NRC	SOUND ABSORPTION COEFFICIENT IN SABINS/5 FT																									
3P PANEL	1.10	-	-	-	0.32	0.46	0.56	0.68	0.86	1.12	1.28	1.25	1.14	1.11	1.06	1.08	1.06	1.07	1.06	1.03	1.03	1.05	-	-	-	-	-
3PHT PANEL	1.10	-	-	-	0.25	0.35	0.43	0.55	0.66	0.83	1.11	1.20	1.17	1.11	1.09	1.06	1.05	1.03	1.00	1.02	1.00	1.02	1.00	1.02	1.04	-	-
4P PANEL	1.15	-	-	-	0.47	0.67	0.87	1.07	1.27	1.57	1.77	1.70	1.58	1.50	1.38	1.30	1.24	1.04	1.04	1.04	1.04	1.05	1.02	1.04	1.06	-	-
4PHT PANEL	1.05	-	-	-	0.55	0.79	1.09	1.39	1.69	2.09	2.39	2.20	2.08	1.98	1.85	1.75	1.64	1.44	1.44	1.44	1.44	1.45	1.42	1.44	1.46	-	-
4PWS PANEL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6P PANEL	0.95	-	-	-	0.26	0.37	0.47	0.57	0.67	0.77	0.87	0.97	1.07	1.06	1.00	1.00	1.00	0.99	0.99	0.97	0.97	0.99	0.97	0.97	1.00	-	-
6PHT PANEL	0.90	-	-	-	0.17	0.24	0.31	0.38	0.46	0.54	0.62	0.69	0.77	0.84	0.91	0.90	0.90	0.89	0.89	0.87	0.87	0.89	0.87	0.87	0.90	-	-

\* - ABSORPTION COEFFICIENTS ARE NOT AVAILABLE FOR A PANEL WITH SOLID SHEETS ON BOTH SIDES  
f - ESTIMATED VALUES PROVIDED FOR ACOUSTIC CALCULATIONS  
NRC - NOISE REDUCTION COEFFICIENT

# TYPICAL *Silentroom*® ACOUSTIC ENCLOSURE ASSEMBLY



## *Silentroom*<sup>®</sup> DESIGN AND PERFORMANCE

As stated previously, an enclosure can be designed to isolate the equipment or the employee. A relatively small enclosure which isolates the employee from the noise source(s) is often more cost effective than to enclose large or numerous pieces of equipment. The enclosure also serves as protection against a harsh working environment. However, the interaction of the employee with the equipment must be taken into consideration. The enclosure may decrease production or affect the safety of the employee. The other choice is to isolate the noise source with a complete *Silentroom*<sup>®</sup> acoustical enclosure. This approach has the greatest noise reduction potential of all possible noise abatement solutions. In general, there is no inherent disadvantage in an enclosure except for the initial cost of installation. However, the most important factor is to properly design the room for the specific requirements of the equipment and the employee. The following criteria must be taken into consideration when designing an enclosure:

1. Accessibility for production and maintenance
2. Access doors for controls, personnel or equipment
3. Proper ventilation to prevent heat build-up
4. Viewing or observation windows
5. Power supply to equipment/receptacles
6. Lighting requirements - standard/explosion-proof
7. Enclosure with floor and/or vibration isolators
8. Penetrations -
  - A. intake duct / in-feed
  - B. discharge duct / out-feed
  - C. conduit / piping
  - D. ventilation / silencers

An equipment enclosure can be divided into two cases:

**Case I: close-fitting** - a close fitting enclosure is described as a room with a wall within one source dimension from the noise source. The basic idea of this application is that the acoustic enclosure and the equipment must be considered as a dynamically coupled vibrating system. This can greatly modify the amount of sound power radiated by the noise source. Because of this result, a safety factor of 10 should be used in the following insertion loss calculations.

**Case II: large-room** - a large-room enclosure is described as a room with a wall greater than one source dimension from the noise source. The concept behind the large enclosure is to create a diffuse sound field within the air space between the noise source and the walls. A safety factor of 5 should be used in the following insertion loss calculations.

The expected insertion loss of an enclosure can be approximated by the following equation:

$$IL = TL + 10\log(\alpha) - SF$$

where: *IL* = insertion loss (per octave band)  
*TL* = transmission loss of acoustic panel from Table 1  
*α* = sound absorption coefficient of acoustic panel from Table 2  
*SF* = safety factor (stated above)

**TABLE 3**  
**INSERTION LOSS OF *Silentroom*<sup>®</sup> ENCLOSURE**

OCTAVE BAND CENTER FREQUENCY HZ		63	125	250	500	1000	2000	4000	8000
MODEL	APPLICATION	INSERTION LOSS IN DECIBELS							
3P, 3PHT	CASE I	6	10	17	29	36	45	51	50
	CASE II	11	15	22	34	41	50	56	55
4P, 4PHT	CASE I	8	11	21	32	41	50	55	54
	CASE II	13	16	26	37	46	55	60	59
4PHS	CASE I	12	19	30	43	50	51	56	56
	CASE II	17	24	35	48	55	56	61	61
6P, 6PHT	CASE I	6	16	32	46	51	55	60	59
	CASE II	11	21	37	51	56	60	65	64



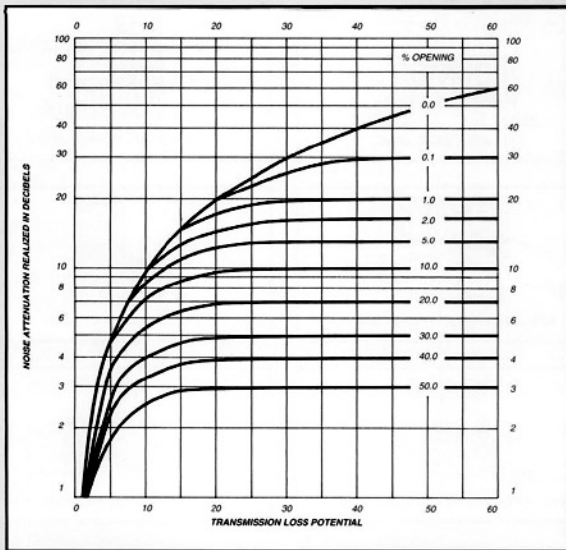
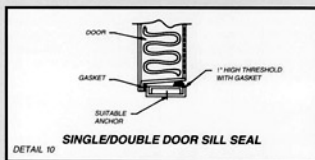
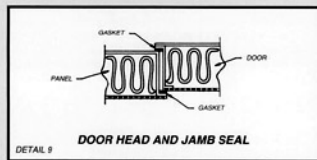
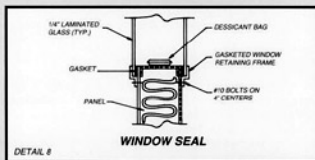
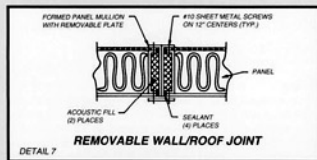
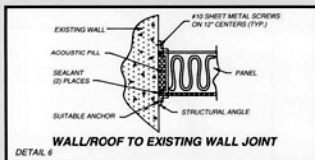
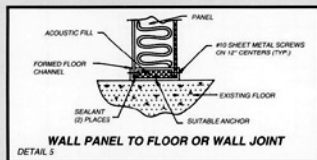
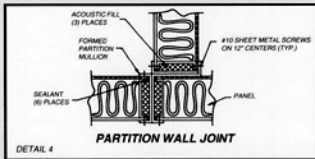
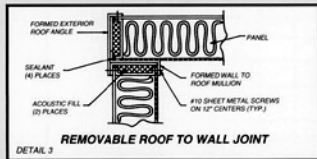
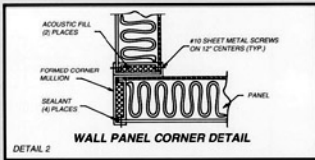
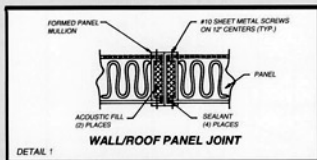


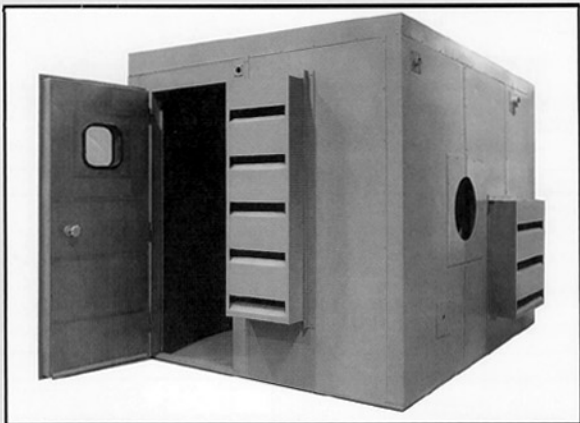
Fig. 1 Realized attenuation versus percentage of open surface area

The insertion losses listed in Table 3 are based upon a complete acoustic enclosure around a noise source with minimum leakage and a hard surface floor. The attenuation of an enclosure is highly dependent on leakage paths that allow the sound to bypass the walls of the enclosure. The importance of leakage is illustrated in Fig. 1 which describes the relationship of percentage of the enclosure open surface area versus the available attenuation. A leakage of only 1% of the enclosure surface area, limits the available attenuation to 20 dB. There must be no leaks if the noise is to be contained within the enclosure. All joints, seams and penetrations must be sealed to maintain the acoustic integrity of the enclosure. Also, all access doors must have properly fitted seals and handles so as to provide an airtight seal. If a complete enclosure requires a ventilation system, the intake and discharge openings must have the same attenuation as the enclosure. Comparable attenuation is accomplished by use of lined labyrinth duct or absorptive baffle silencers. The example shown on the previous page is an approximation of the enclosure's performance and is accurate enough for most applications. For a more complicated installation, the complete application details should be forwarded to the AEROACOUSTIC Engineering Department to determine the proper panel system and accessories required to meet the specified noise reduction.

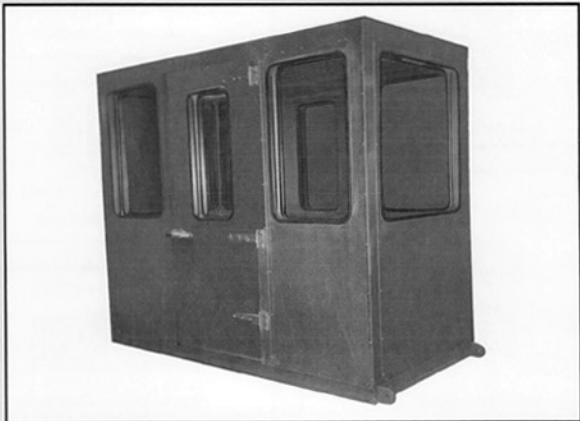
# STANDARD PANEL CONNECTIONS \*



\* ENCLOSURE HEIGHT AND/OR WIDTH NOT TO EXCEED 12 FEET

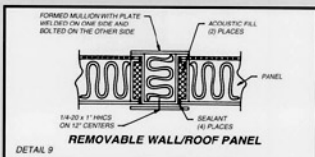
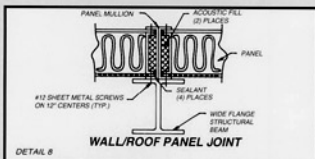
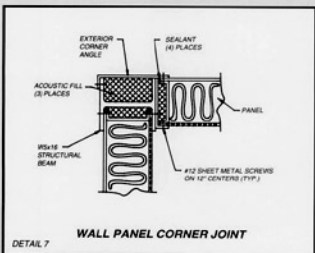
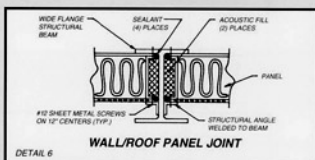
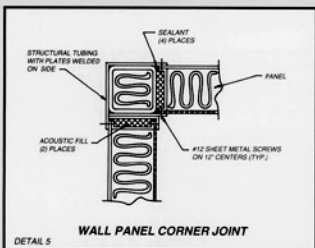
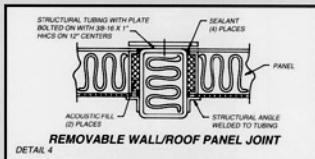
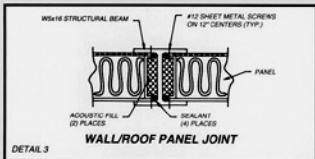
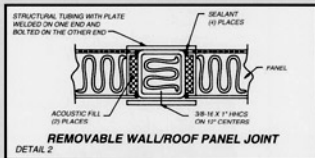
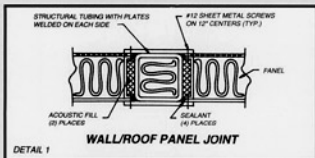


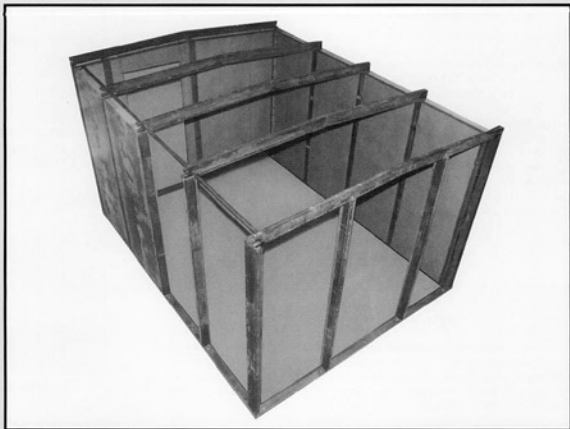
*Fig. 2 Complete acoustic enclosure with personnel door, penetrations and ventilation system with acoustic louvers.*



*Fig. 3 Portable personnel room with personnel doors, observation windows and air conditioning.*

# STRUCTURAL PANEL CONNECTIONS \*





*Fig. 4 Tubular steel framework for acoustic enclosure with all wall and roof panels to be removable*



*Fig. 5 Complete acoustic enclosure designed for 100 mph wind load with all wall and roof panels removable, tubular steel framework, sloped roof and acoustic louvers for air intake*

## ACCESS DOORS

The *Silentroom*® enclosures can be furnished with a wide variety of personnel, equipment and access doors. The standard single door has been certified by an independent testing laboratory for sound transmission loss. The single personnel door is 34" wide by 80" high clear and the double equipment door is 72" wide by 80" high clear. The door's thickness and construction is typical to the panel as to maintain the acoustic integrity of the enclosure. The standard door hardware includes a zinc-plated positive pressure latch with an adjustable strike (Fig. 6), an inside push-rod release, three triple-layered zinc-plated strap hinges (Fig. 7), and a double silicone rubber seal around the perimeter of the door and frame. The doors are also available with a 16" wide by 20" high double-pane 1/4" laminated safety glass viewing window. All *Silentroom*® door panels are shipped complete with the door factory mounted in the panel. Special door sizes, hardware and window sizes are available upon request.



Fig. 6 Standard Door Latch

## PENETRATIONS

In most enclosure installations, there are one or more penetrations in the walls or ceiling to accommodate conduit, piping, ductwork, silencers or equipment entering or exiting the room. Any number of types of penetrations can be supplied; round or rectangular, split, sleeved or threaded. The location of the penetration is critical with respect to erection of the enclosure.



Fig. 7 Standard Strap Hinge

**Split** - The normal practice is to use a split penetration which is located on the joint of two panels. Each panel will have a cutout and straddle the object which is entering the room. Once the panels are installed, the opening around the object must be properly safed off to maintain the acoustic integrity of the enclosure. The required safing pieces, self-tapping screws, acoustic sealant and loose acoustic fill are supplied with the room. To install the interior safing pieces, pack the voids with the acoustic fill, install the external safing pieces and caulk the joints with the acoustic sealant. From a maintenance stand point, this type of penetration is the most efficient because the panels may be removed without disconnecting the object. (Fig. 8)

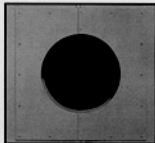


Fig. 8 Split Penetration

**Sleeved** - A sleeve can be installed permanently in the panel to allow conduit, piping or ductwork to penetrate the panel. The sleeve is supplied with minimum clearance and all gaps must be sealed after installation. However, the panel cannot be removed without disconnecting the object which penetrates the panel.

**Threaded** - A threaded nipple can be installed directly in the panel to allow conduit or piping to enter/exit the room. As with the sleeved penetration, the panel cannot be removed without first disconnecting the conduit/piping. (Fig. 9)

If a penetration is required after fabrication and installation of an enclosure, a complete penetration kit is available from The AEROACOUSTIC Corp. The kit includes an internal acoustic collar, external safing pieces, channels, acoustic fill, acoustic sealant, self-tapping screws and instructions to properly install the penetration kit.



Fig. 9 Threaded Penetration

## VIEWING WINDOWS

The AEROACOUSTIC Corp. offers two standard window sizes for the *Silentroom*<sup>®</sup> enclosures which have been certified by an independent testing laboratory for sound transmission loss. The small viewing window is 16" wide by 20" high (Fig. 10) and the large observation window is 28" wide by 36" high (Fig. 11). Both window sizes are constructed of double-pane 1/4" laminated safety glass held in place by a frame and silicone rubber gasket. Each window has a desiccant bag installed between the two panes of glass to prevent internal fogging of the windows. Special window sizes are available upon request; however, square window sizes are not recommended due to acoustical properties.

Fig. 10 Viewing window with extruded neoprene seal

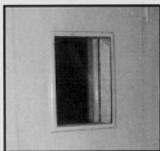


Fig. 11 Observation window with flanged and gasketed seal

## VENTILATION

The *Silentroom*<sup>®</sup> enclosures can be supplied with several different variations of ventilation systems. The standard system consists of a fan, an inlet silencer and a discharge silencer. The silencers are used to maintain the acoustic integrity of the room. In a personnel or control room, the required CFM is based upon an air change every two minutes. In an equipment room, the required CFM is based upon the type of equipment and how much heat is being generated which has to be removed. An improperly designed ventilation system could cause serious damage to the motor, fan, compressor or whatever equipment is in the room. Please consult The AEROACOUSTIC Corp. Engineering Department for assistance in designing a ventilation system for an enclosure.

## ACCESSORIES

The enclosures can also be supplied with a floor, vibration isolators, lighting, power receptacles or air conditioning. If any of these items are required, please contact our Engineering Department for assistance in design and pricing.

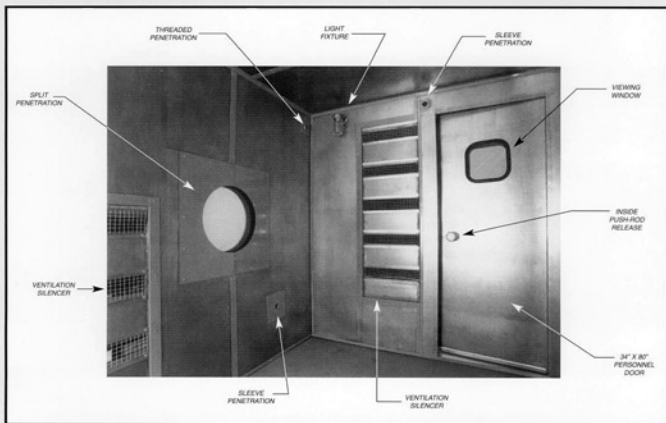


Fig. 12 Internal view of a complete enclosure with an array of available enclosure accessories.

It is The AEROACOUSTIC Corp.'s long standing policy to comply with all new OSHA, Federal, State and Local Municipal Noise Criteria Regulations as they become effective. Therefore we continuously review and improve our product performance levels. We reserve the right to change designs and specifications without prior notice.

*How to Select Industrial Silencers*

*How to Silence Your fan*

*Silentflow® Splitter Silencers*

*Silentflow® Louvers*

*Silentflow® Vaneaxial Silencers*

*Blowoff Silencers*

*Silentstack™ Stack Stuffer Silencers*

*Sound Barrier Technology*

*Silentflow® Electric Motor Silencers*

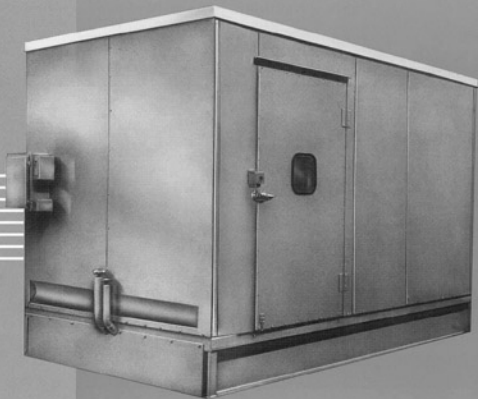
*Silentroom® Enclosures for Diesel Powered Equipment*

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SALES & MANUFACTURING  
3300 Corporation Way  
Darlington, SC 29532  
Tel 843-398-1006  
Fax 843-398-0660

THE  
**AEROACOUSTIC**  
CORP.

1-800-VIA-AERO  
[www.aeroacoustic.com](http://www.aeroacoustic.com)

SALES & ENGINEERING & MFG.  
169-193 Highland Parkway  
Roselle, New Jersey 07203  
Tel 908-241-8600  
Fax 908-241-8818