



ACOUSTICAL CONTROL ENGINEERS

聲學控制工程



**RECTANGULAR ATTENUATOR
AND SPLITTER**

矩形片式消聲器

INTRODUCTION

Rectangular attenuators are designed for the effective attenuation of intake and extract openings on plant rooms, cooling towers etc., And noise within duct systems for supply, extract, discharge or fresh air inlet. Primary attenuation is installed for the control of plant and external noise. Secondary attenuation for the control of regenerated noise and crosstalk attenuation for the control of speech between offices, toilet areas etc.

A.C.E. Ltd. Standard Building Services attenuators are suitable for both high and low velocity systems and separate splitters are available for effective attenuation in existing ductwork or shafts.

CONSTRUCTIONAL SPECIFICATION

Cases are formed from galvanised sheet of specified gauge, but in no instance less than 0.8mm. Cases seams are lock formed and mastic sealed.

Sound absorbent elements are arranged within the case to form a series of central and side splitters of dimensions defined by the attenuator code. Splitter frames are formed from galvanised steel, and contain a fibrous infill that is non-shedding, non-combustible, non-hygroscopic and chemically inert. The infill is faced with perforated steel.

Sound absorbent elements have aerodynamic fairings on air entry and exit end of attenuator. Because both ends are aerodynamically shaped, the direction of airflow is not important and so simplifies installation.

Spigot connections are provided on both ends of attenuator.

SPECIAL CONSTRUCTIONS

1. Media Protection, Melinex or Glass Cloth (Note that melinex membrane degrades the high frequency insertion loss of attenuators. Refer to A.C.E. Ltd. For suitable selections)
2. Stainless Steel or Aluminum
3. Unplasticised Polyvinylchloride (UPVC)
4. Special paint finish
5. Angle Flange (Galvanised or Mild Steel)

介紹

矩形片式消聲器的設計是爲了有效地對工作間，冷卻塔等的進風口和出風口，以及送風，抽風，排氣或新風口的管道系統中的消聲工作。主要的消聲安裝是爲以消滅機房發出的噪音。次要的消聲安裝是爲以消滅辦公室，衛生間等內的再生噪音及串音。

ACE標準屋宇設備消聲器適用於高速和低速兩種系統，也能提供獨立的消聲片給已有的風管及樹井安裝。

制造規格

外殼由指定厚度的鍍鋅板組成，但厚度不能低於0.8mm。箱子接口爲扣式，接口處用膠進行密封。

消聲器內的消聲片按不同型號設計而排列，外殼爲鍍鋅板，吸音綿爲不易脫落，不易燃，不易濕及低化學腐蝕物料並以孔板作保護。

消聲片具有低風阻的進出口因兩端形狀符合氣流動力學，進出口形狀相同因此風流風向并不重要，這樣能有效避免錯誤的安裝。

消聲器兩端都提供紙口供安裝法蘭條

特別制造

1. 吸音物料保護，玻璃紙或玻璃布（注意：玻璃紙隔膜降低了消聲器的高頻插入損失。請向ACE諮詢，以便作出合適的選型。）
2. 不銹鋼或鋁
3. UPVC
4. 外殼油漆
5. 法蘭（鍍鋅或黑鐵）

ATTENUATOR TYPES

A wide range of attenuator type is available to fit all ducts without transitions and banks without major blank-off. Range is offered from splitter width of 50mm to 400mm and length from 600mm up to 3000mm. Each attenuator is designed and manufactured for the noise criteria, air performance and available space.

ACOUSTIC PERFORMANCE

Insertion losses, published here are static insertion loss which is measured without airflow through the attenuator. The flow of air through an attenuator does modify its attenuation. However, this change is less than 1dB for airway velocities up to 20m/s. Therefore no correction is included in this catalogue. Due to flanking, insertion losses are limited to a maximum of 55dB. For attenuation exceed 55dB, consult A.C.E.Ltd.for advise.

Pressure drop can be determined from loss factor which assumes an ideal flow condition in a duct to duct lay out. In actual flow conditions, pressure drop could be higher than catalogued depending on configuration.

QUICK ATTENUATOR SELECTION

Step 1:

Choose attenuator module width which is multiple of attenuator width

Step 2:

Select an attenuator type with minimum length which fulfill insertion loss required by system from ACE technical bulletin.

Step 3:

Determine attenuator face velocity by dividing air flow through attenuator by attenuator cross section area.

Step 4:

Calculate pressure drop across attenuator by the following formula.

$$P=Kv^2$$

where P=Pressure drop(Pa)

V=Attenuator face velocity (m/s)

K=Loss factor(Refer Ace technical bulletin)

Step 5:

If attenuator pressure drop exceed allowable maximum, repeat step 2 to 4 by selecting different attenuator type or longer length until a suitable attenuator is selected.

消聲器類型

大量的消聲器型號能配合幾乎任何風管而不需變管，消聲片闊度由50mm至400mm，長度由600mm至3000mm，每祇消聲器均根據噪音標準，風量及空間而制造。

聲學性能

插入損失，在此列出的是靜態插入損失，是在無氣流通過時測量。空氣流經消聲器確實改變其插入損失。然而，在氣流速度高達20米/秒時改變不到一分貝。因此，說明書內沒有改正系數，而由于消聲器外殼的聲音等，插入損失最多限制在55分貝之內。如果需大於55分貝的消聲量，請向ACE諮詢。

壓力阻可以由壓阻系數計算，壓阻系數為在理想的風管氣流，在實際流動環境中，壓阻可能比說明書上情況下每祇消聲器的壓力損耗高，這取決于風管的排列。

消聲器速選

步驟1:

選擇消聲器單元闊度，消聲器闊度需為單元闊度的倍數。

步驟2:

選擇長度最短的消聲器并能達到需求的插入損失。

步驟3:

將風量除以消聲器面積以計算消聲器面風速。

步驟4:

用以下公式計算消聲器壓阻

$$P=Kv^2$$

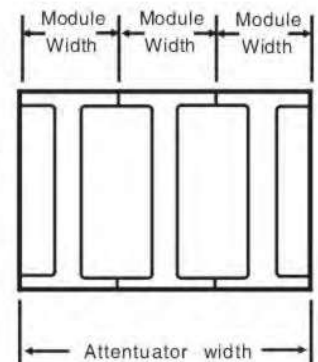
其中P=壓阻 (Pa)

V=消聲器表風速 (米/秒)

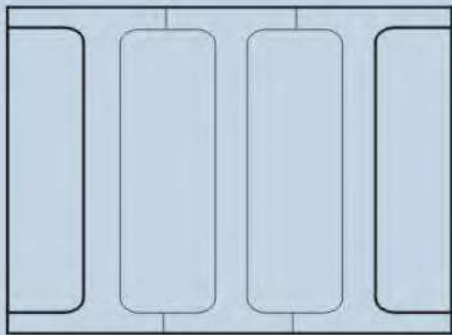
K=壓阻系數 (參考ACE技術說明書)

步驟5:

如果消聲器壓阻超過最大允許值，重復步驟2至4，選擇不同長度或消聲片闊度的消聲器。



NOMENCLATURE

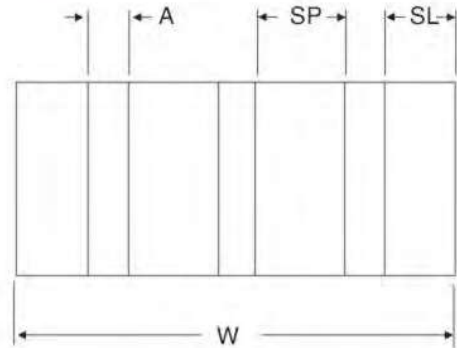


Key:
 L=Length
 W=Width
 H=Height
 SP=Splitter
 SL=Sidelining
 A=Airway

Suffix:
 Hor=Horizontal Splitters
 Ver=Vertical Splitters
 Ce=Casing ends wrapped in heavy duty polythene
 Me=Melinex wrapped infill
 X=Special Features



系統命名法



關鍵詞：

L=長度
 W=寬度
 H=高度
 SP=分解器
 SL=側襯
 A=通氣道

下標：

Hor=卧式分解器
 Ver=立式分解器
 Ce=用重型聚乙烯包裹的套管端
 Me=用聚酯薄膜包裹的填實空隙
 X=特殊特徵