

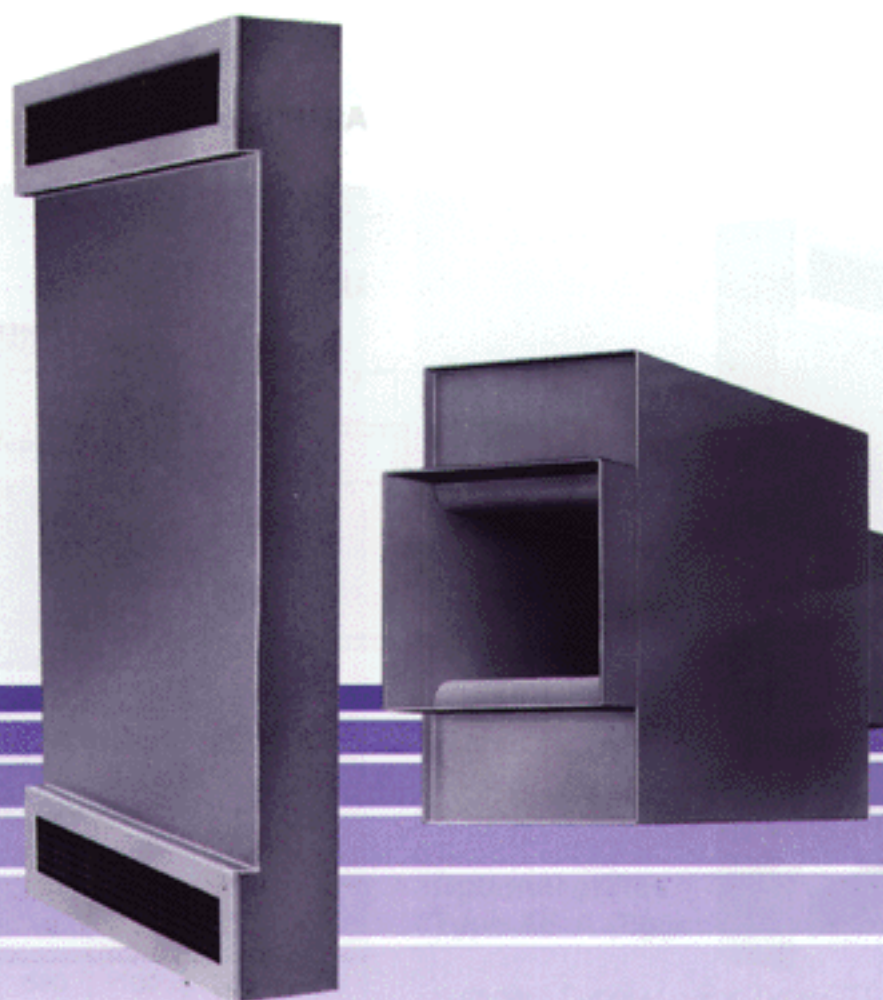
# Crosstalk Attenuator

Type CTS

for Duct Mounting

Type CTL · CTU · CTZ

for Ceiling and Wall Mounting



**TROX<sup>®</sup> TECHNIK**

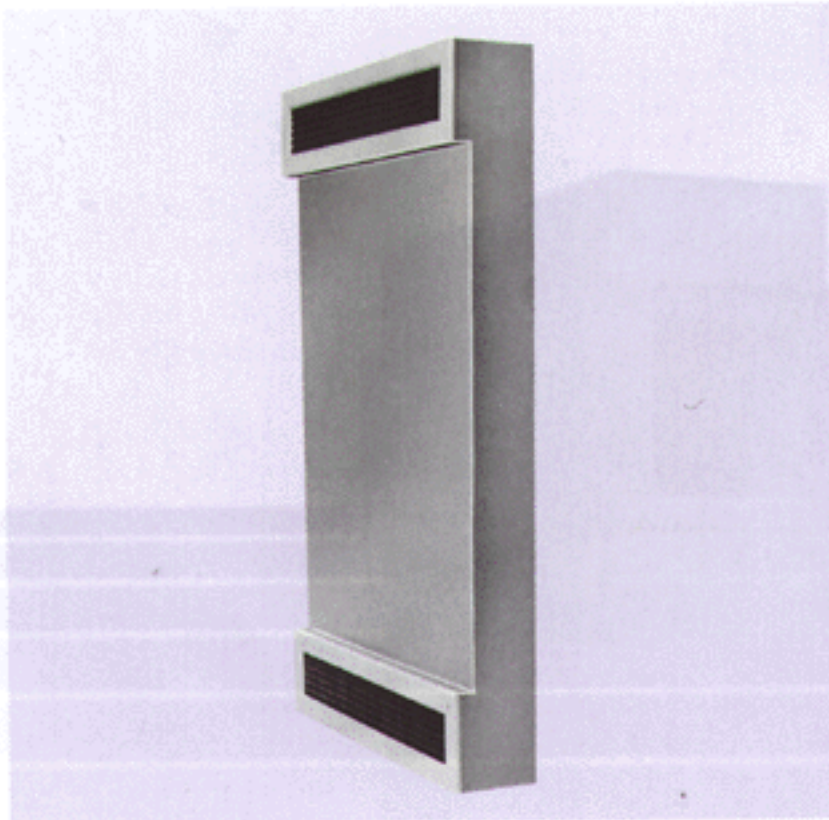
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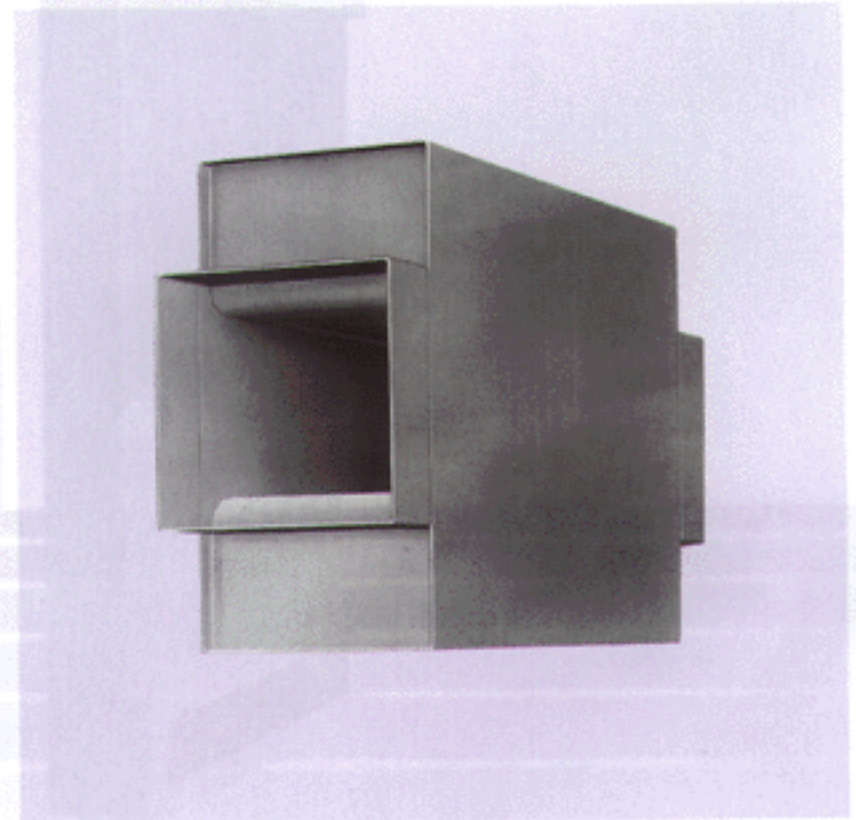
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**Attenuator Type CTU**



**Attenuator Type CTS**



Type CT attenuators have been designed to avoid noise interference between interconnected rooms. Airflow is permitted whilst noise transfer is limited.

### **Type CTL · CTU · CTZ**

Types CTL, CTU and CTZ are used as air transfer attenuators between adjoining areas where the acoustic integrity of a common partition or ceiling needs to be maintained.

### **Type CTS**

Type CTS is designed for in-line duct mounting in a ventilation system where rooms are served by branches off a common duct. Casing construction conforms with DW 142 Class B ductwork code.

## Construction - Types CTL · CTU · CTZ

Casings are manufactured from galvanised sheet metal 1mm thick to BS 2989 grade Z2 G275, with spot welded seams. The acoustic lining complies with Class O Building Regulations and has a glass tissue facing for erosion protection. The units may be supplied with one or two type AE-A eggcrate grilles in natural anodised aluminium. Colour paint finishes are available to order.

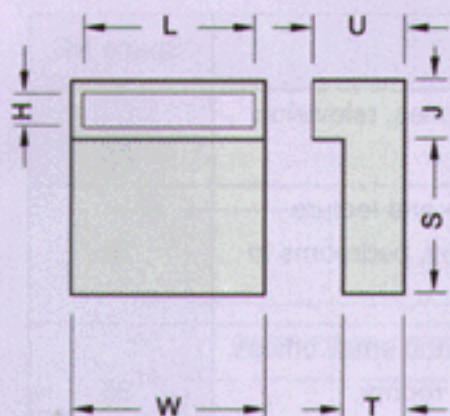
## Type CTS

Casings are manufactured from galvanised sheet metal 1mm thick to BS 2989 grade Z2 G275, with either stand up or lock

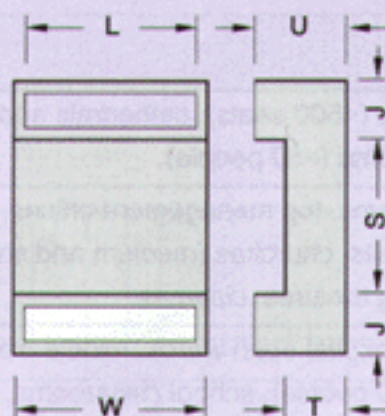
formed seams, with a mastic sealant; the construction complies with DW 142 Class B code. Spigot connections are supplied as standard.

The splitters contain acoustic infill which complies with Class O Building Regulations. The infill has a glass tissue facing and is contained behind perforated metal; this dual protection prevents damage and fibre erosion up to 30 m/s airway velocity. The splitters are radiussed at both ends to minimise air pressure loss and regenerated noise.

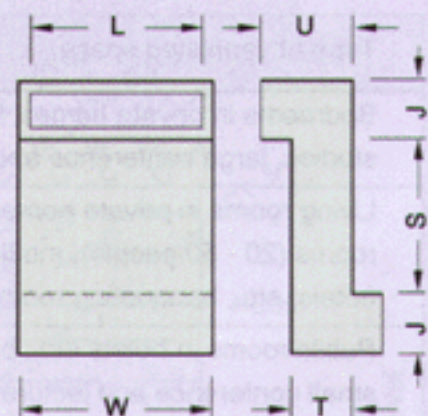
Type CTL



Type CTU



Type CTZ



## Dimensions

Unit Size	H	L	J	W	T	U	S
1	100	550	140	590	100	120	760
2	100	700	140	740	100	120	760
3	100	900	140	940	100	120	760
4	100	1000	140	1040	100	120	760
5	100	1200	140	1240	100	120	760

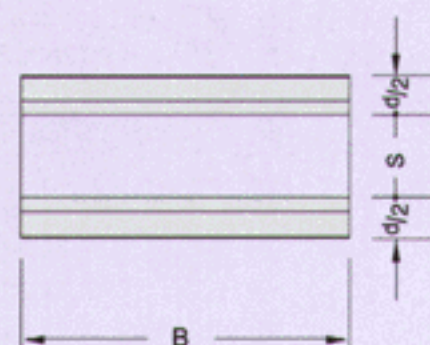
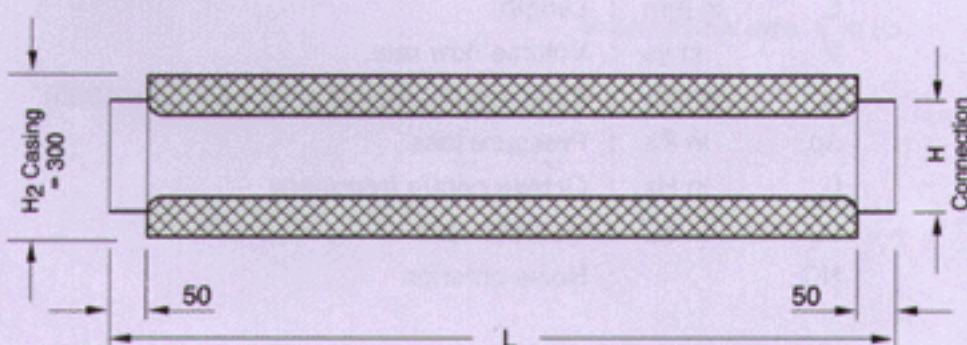
## Optional grilles

### Type AE-A (Eggcrate pattern)

Standard Supply : For Type CTL One no.  
For Type CTU · CTZ Two no.



## Type CTS



# Performance · Design Criteria · Nomenclature

## Attenuator Performance

### Type CTL · CTU · CTZ

The acoustic performance of Type CTL, CTU and CTZ is designed to maintain the acoustic integrity of a single thickness brick wall. Selection procedure is accordingly independent of source noise levels and noise requirements in the receiving room.

Pressure loss data includes an allowance for the use of standard Type AE-A grilles. Alternative grille types are likely to increase resistance to airflow.

Table 2 incorporates guide figures for maximum pressure loss against design noise level requirements, in order to limit attenuator self noise. These are shown as space noise criterion (NC) levels with 8dB room absorption.

### Type CTS

The acoustic performance of Type CTS is derived from tests meeting the requirements of BS 4718 : 1971.

No deviations of insertion loss with airflow were recorded over the velocities employed in this brochure. Static Insertion Loss figures are given in Table 4.

The Total Noise Reduction figures shown in Table 3 give an indication of the total room to room noise reduction that could be expected with a typical duct layout. (Similar to Sound Reduction Index for a partition.)

Table 5 incorporates guide figures for maximum duct velocity against design noise level requirements, in order to limit attenuator self noise. These are shown as space noise criterion (NC) levels with 8dB room absorption. Full regenerated noise data for CTS attenuators, is available on request.

Pressure loss data assumes that the airflow to the attenuator is uniform over the face, in a duct-to-duct layout. Units installed in situations leading to poor inlet or discharge conditions could incur pressure losses higher than catalogued.

**Table 1 : Recommended Design Criteria for Various Area Functions (According to CIBS)**

Type of ventilated space	Space NC
Bedrooms in private homes, live theatres (<500 seats), cathedrals and large churches, television studios, large conference and lecture rooms (>50 people).	25
Living rooms in private homes, board rooms, top management offices, conference and lecture rooms (20 - 50 people), multi-purpose halls, churches (medium and small), libraries, bedrooms in hotels, etc., banqueting rooms, operating theatres, cinemas.	30
Public rooms in hotels etc., ballrooms, hospital open wards, middle management and small offices, small conference and lecture rooms (<20 people), school classrooms, small court rooms, museums, libraries, banking halls, small restaurants, cocktail bars, quality shops.	35
Toilets and washrooms, large open offices, drawing offices, reception areas (offices), halls, corridors, lobbies in hotels, hospitals etc., laboratories, recreation rooms, post offices, large restaurants, bars and night clubs, department stores, shops, gymnasia.	40
Kitchens in hotels, hospitals, etc., laundry rooms, computer rooms, office equipment rooms, cafeteria, canteens, supermarkets, swimming pools, covered garages in hotels, offices etc., bowling alleys.	45

### Nomenclature :

B	in mm	: Width
H	in mm	: Height
L	in mm	: Length
V	in l/s	: Volume flow rate.
$v_t$	in m/s	: Face velocity based on $V \div (B \times H \times 1000)$
$\Delta p$	in Pa	: Pressure loss
$f_m$	in Hz	: Octave centre frequency
$D_e$	in dB	: Insertion loss
NC		: Noise criterion

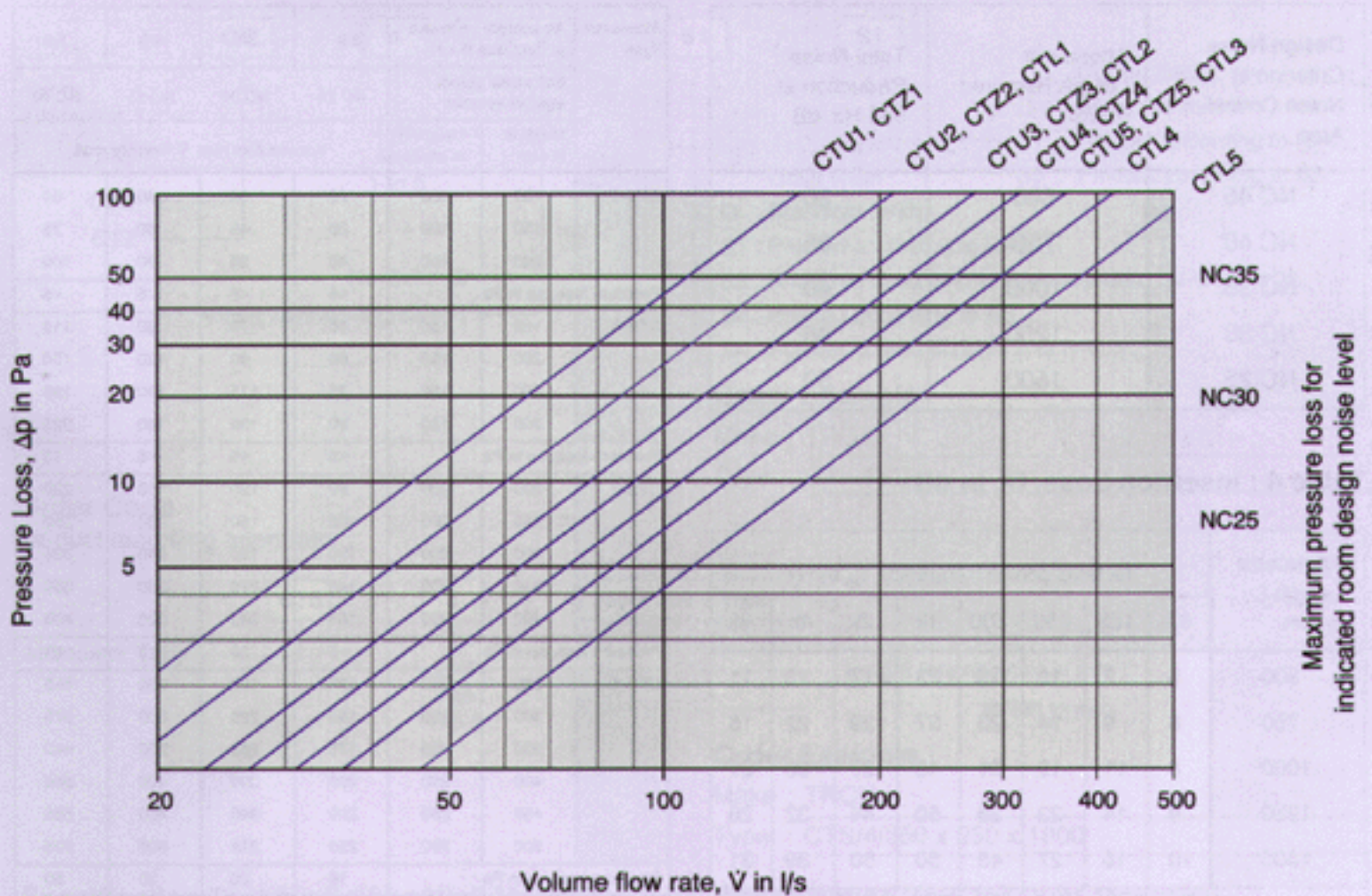
# Attenuator Selection

Type CTL · CTU · CTZ

## Method of Selection

1. Select a suitable design NC level from Table 1.
2. For required volume flow rate, select from Table 2 a unit size for an acceptable pressure loss (typically 20Pa).
3. Ensure that the pressure loss is kept within the guide limit for the design room NC level.
4. Check unit dimensions on page 3.

**Table 2 : Maximum Pressure Loss for Indicated Room Design Noise Level Requirements.**



# Attenuator Selection Criteria - Nomenclature

## Type CTS

### Quick Selection

The quick selection method provides an attenuator selection for the control of speech crosstalk between rooms linked by a common duct system. The noise source has been taken as a "voice as loud as possible without strain" – approximately NC75/80dBA in a typical office environment. Attenuator length required depends upon the design background noise level for the receiving room.

1. Select a suitable design NC level from Table 1.
2. From Table 3 select the attenuator length shown against the NC level appropriate for the type of room being considered.
3. Using Table 5, select a cross section for the required volume flow rate and pressure loss/velocity.

### Full Selection

When an attenuator performance requirement has been established following accurate acoustic analysis of source noise, transmission path and receiving room requirements, a suitable CTS attenuator can be selected as follows.

1. From Table 4 select an attenuator length to meet the required insertion loss.
2. Check the Self Noise guide on Table 5 to determine the maximum velocity for the room NC level required (consult Table 1).
3. Using Table 5, select a cross section for the required volume flow rate and pressure loss/velocity.

Performance and volume flow requirements higher than shown in Tables 4 and 5 should be referred to Trox Acoustics for selection.

**Table 3 : Quick Selection**

Design Noise Criterion in Noise Critical Area	Attenuator Length Required (mm)	Total Noise Reduction at 500 Hz, dB
NC 45	500	30
NC 40	750	35
NC 35	1000	40
NC 30	1250	45
NC 25	1500	50

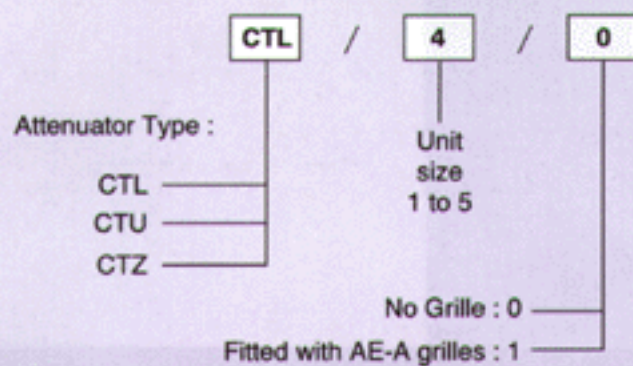
**Table 4 : Insertion Loss,  $D_e$  in dB**

Attenuator Length L in mm	Octave centre frequency, $f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
500	5	7	10	15	23	17	13	11
750	6	9	14	23	37	29	22	16
1000	8	11	19	31	48	37	28	21
1250	9	14	23	38	50	44	32	26
1500	10	16	27	45	50	50	39	31

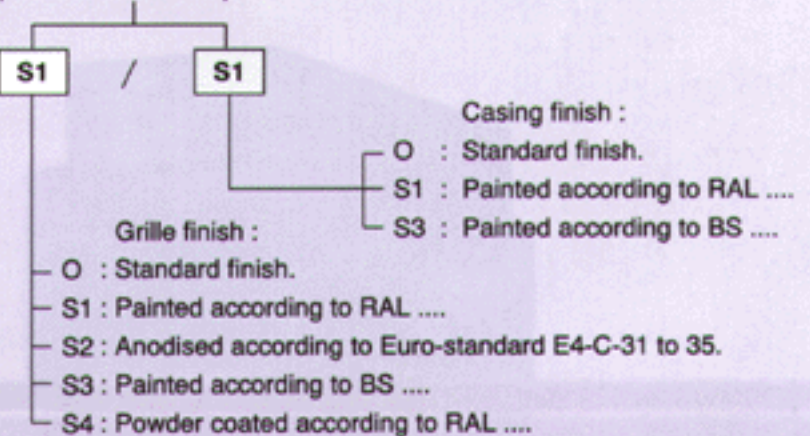
**Table 5 : Sizing**

Attenuator Type	Air velocity, $v_1$ in m/s at duct size B x H		2.0	3.0	4.0	5.0
	Self noise guide against velocity		NC 25	NC 30	NC 35	NC 40
	Width B, in mm	Height H, in mm	Volume flow rate, $\dot{V}$ litres/second			
CTS-1	100	100	20	30	40	50
	150	100	30	45	60	75
	200	100	40	60	80	100
Pressure loss, $\Delta p$ in Pa			<5	<5	<5	<5
CTS-2	150	150	45	70	90	115
	200	150	60	90	120	150
	250	150	75	115	150	190
	300	150	90	135	180	225
Pressure loss, $\Delta p$ in Pa			<5	<5	<5	10
CTS-3	200	200	80	120	160	200
	250	200	100	150	200	250
	300	200	120	180	240	300
	350	200	140	210	280	350
	400	200	160	240	320	400
Pressure loss, $\Delta p$ in Pa			<5	10	15	25
CTS-4	250	250	125	190	250	315
	300	250	150	225	300	375
	350	250	175	265	350	440
	400	250	200	300	400	500
	450	250	225	340	450	565
	500	250	250	375	500	625
Pressure loss, $\Delta p$ in Pa			10	20	35	50
CTS-5	300	300	180	270	360	450
	350	300	210	315	420	525
	400	300	240	360	480	600
	450	300	270	405	540	675
	500	300	300	450	600	750
	550	300	330	495	660	825
	600	300	360	540	720	900
Pressure loss, $\Delta p$ in Pa			15	30	55	85

## Order Code for ceiling/wall mounting attenuator :



These codes do not need to be completed for standard products

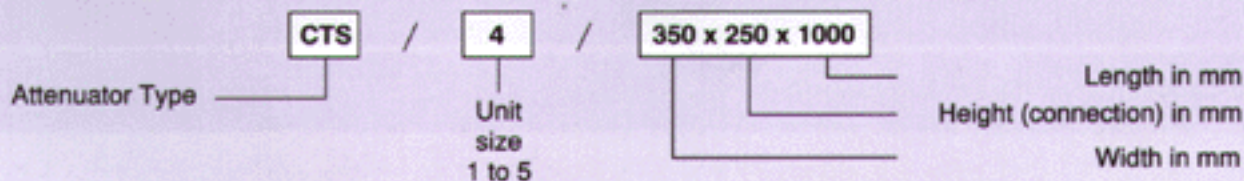


### Order Example

Make : TROX

Type : CTL-4 / 1

## Order Code for duct mounting attenuator :



### Order Example

Make : TROX

Type : CTS/4/350 x 250 x 1000

### Specification Text for Ceiling/Wall Mounting Attenuator Type CTL · CTU · CTZ

Type CTL, CTU or CTZ crosstalk attenuator incorporating erosion protected Class O acoustic infill. The casing is manufactured from 1mm thick galvanised sheet metal to BS 2989 grade Z2 G275 with spot welded seams.

Attenuators may be supplied with standard eggcrate pattern grilles if required.

### Specification Text for Duct Mounting Attenuator Type CTS

Type CTS crosstalk attenuator, incorporating aerodynamic side liners with erosion protected Class O acoustic infill covered by perforated sheet metal. The attenuator casing is manufactured to DW 142 Class B medium pressure construction from 1mm thick galvanised sheet metal to BS 2989 grade Z2 G275. The attenuators are provided with spigot end connections.