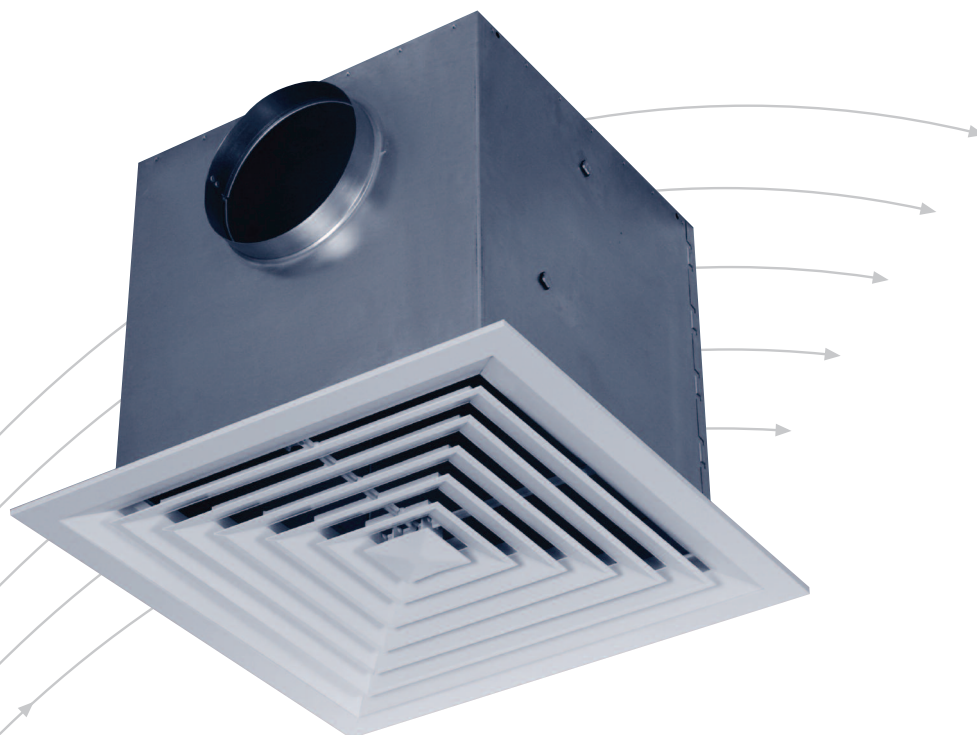


# Ceiling Diffuser

Type ADT



**TROX<sup>®</sup> TECHNİK**

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## 4-way core

Core is retained in border by 'twist-in' style spring clips; to facilitate removal grip core at upper left and lower right corners and turn in an anticlockwise direction see page 3.

To replace core reverse procedure.

## Description

Square louvred face, removable core, ceiling diffusers type ADT giving horizontal air discharge, are suitable for use in rooms with ceiling heights between 2.60 and 4.00m.

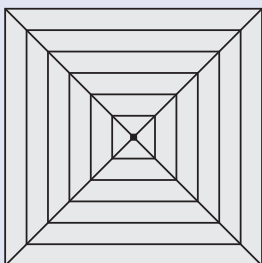
The recommended supply air temperature differential is  $\pm 10K$ . The ADT diffuser can be used for supply or extract air applications.

## 1/2/3-way core

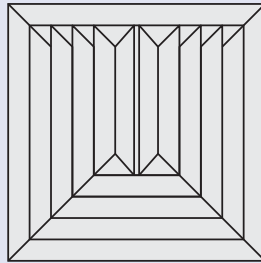
Core is retained in border by 'push-in' style spring clips. Core removal must be as follows: (i) position hands behind outer blades at core tube positions; (ii) lever core away by pushing against border (see Figure 1).

To replace core locate tubes at clip positions push firmly and evenly on face at tube positions to initially locate one side; then repeat for other side.

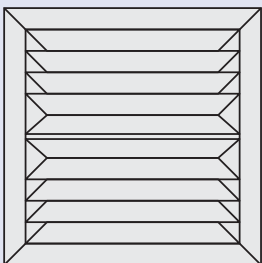
4-way face



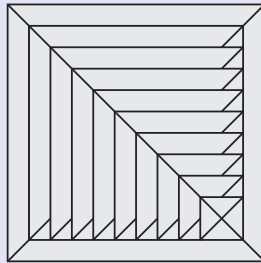
3-way face



2-way opposite face



2-way corner face



1-way face

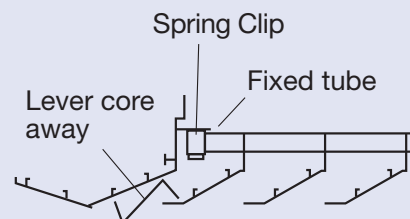
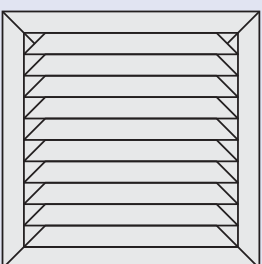


Figure 1: 1/2/3-way core fixing detail

## Blanking Plates BP-ADT

ADT Diffusers may be reduced in active area eg 3-way, 2-way, 1-way discharge from a 4-way face, by the use of quadrants which are supplied loose, on request, for site installation.

## Fitting Blanking Plates

Quadrants are supplied loose for site installation to diffuser border to provide required discharge. Each quadrant is retained by 2 number push-on clips. Retaining clips should be fixed to quadrant (ie barbed end of clip) to enable push-fit onto border, see direction arrows shown below.

Note: If type AG opposed blade damper is fitted ensure damper adjuster is not obscured by blanking plate.

## Construction

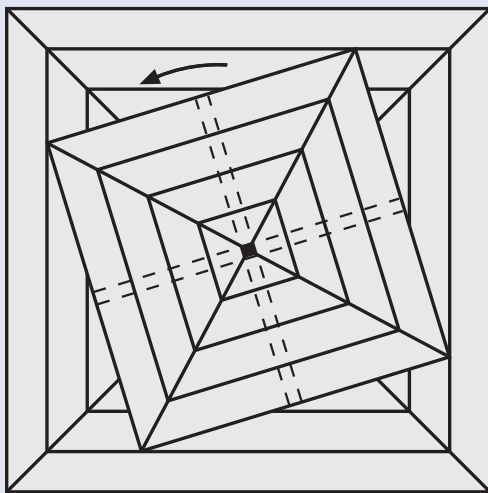
Types ADTF, ADTT, ADTA, ADTB, ADTM, ADTS and ADTH consist of peripheral border, removable diffuser core made up from fixed air control blades designed for horizontal air discharge.

## Materials

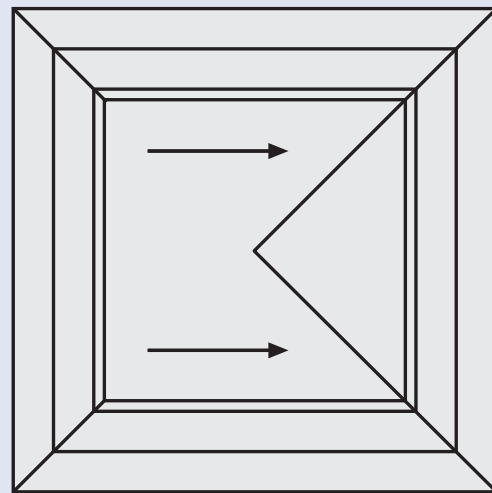
The diffuser face is from extruded aluminium sections standard finish, powder coated white RAL 9010 20% gloss, other RAL colours available on request. Optional rear mounted damper is a formed sheet steel casing with aluminium blades, blanking plates are sheet steel, all ancillaries are finished black RAL 9005 20% gloss.

## Note: (Applicable 1, 2 & 3-way core)

When removing the core care must be taken not to pull directly on single blades as this may result in damage to the core. Similarly when replacing the core do not push directly on single blades. 1, 2 & 3-way cores are fitted with retaining cables.



(Core removal)



(Core removed)

Blanking plate shown with fitting direction

# Dimensions

## Ceiling Diffuser Type ADTF

The type ADTF has a shaped flanged border for directly mounting to a closed flush ceiling (to maintain horizontal discharge).

## Ceiling Diffuser Type ADTA/ADTB

Type ADTA to locate in 'clip-in' ceiling to match bevelled edge tile with 'PIP' height = 27.5mm (ie SAS system 150) or 25mm (ie Burgess type 'A').

Type ADTB to locate in 'clip-in' ceiling to match square edged tile with 'PIP' height = 25mm (ie Burgess type 'B' or 'D').

## Ceiling Diffuser Type ADTT (\*ADTH)

The type ADTT has a flat flanged border to enable the diffuser face to be mounted on the back of an exposed 'T' bar or directly to a closed flush ceiling.

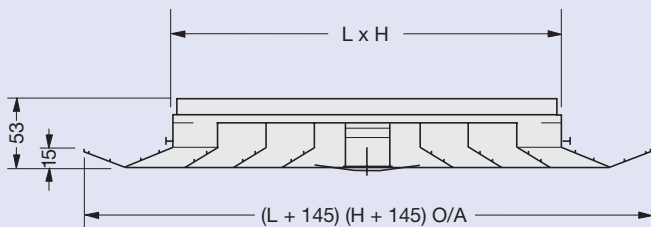
## Ceiling Diffuser Type ADTM - ADTS

The types ADTM and ADTS each have a border designed to lay into an exposed Threadline support bar system.

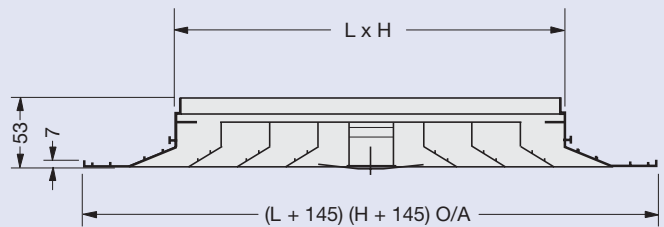
Type ADTM to 'lay-on' threadline ceiling 'T' support bar 15mm wide x 16mm deep (dimension Z)

Type ADTS to 'lay-on' threadline ceiling 'T' support bar 15mm wide x 8mm deep (dimension Z)

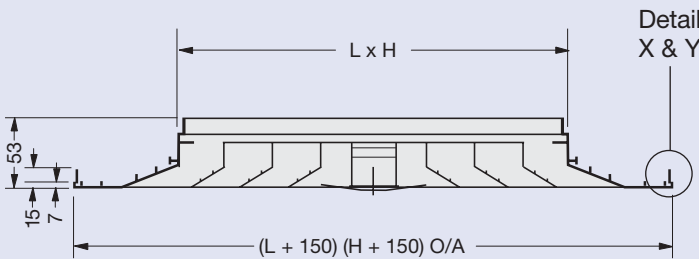
Standard nom (L x H) sizes 150/450.



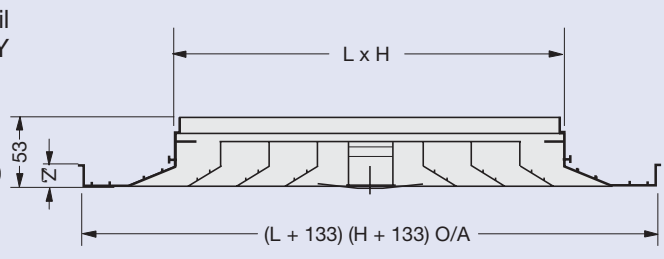
Type ADTF: to fit over ceiling opening size (L+100) (H+100)



Type ADTT: to 'lay-on' ceiling 'T' supports.  
Type \*ADTH (size 375 only): 495 O/A to 'lay-on' 500 square ceiling 'T' supports

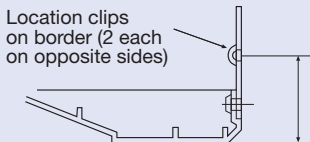


Type ADTA/ADTB



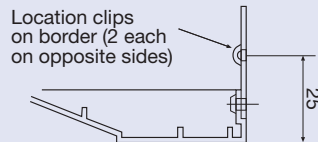
Type ADTM/ADTS

### Detail X ADTA 'PIP' heights



Standard 'PIP' heights:  
25mm or 27.5mm  
NB: Non-standard heights available on request

### Detail Y ADTB 'PIP' heights



Standard 'PIP' height:  
25mm  
NB: Non-standard heights available on request

Type	Nominal duct size L x H						
	150	225	300	375	450	525	600
ADTF	•	•	•	•	•	•	•
ADTB/ADTA	•	•	•	•	•	•	
ADTT	•	•	•	•	•	•	
ADTH*				•			
ADTM/ADTS	•				•		

\*Overall face 495mm lay on 500 mm square ceiling "T" supports

### Full Plenum Type AKV

Type AKV-ADT-(ZH/AH)-0-0 - Supply (-ZH) or extract (-AH) removable core diffuser to fit side entry Plenum ('X' = 40)

Type AKV-ADT-(ZH/AH)-0-AGF - As above but including type AGF opposed blade volume control damper on diffuser (manually adjustable with core removed) ('X' = 40)

Type AKV-ADT-(ZH/AH)-0-M - As above but including 'M' type balancing flap damper in spigot (manually adjustable with core removed) ('X' = 75)

Type AKV-ADT-(ZH/AH)-D-(0/AGF/M) - As above but including internal lining (-D)

### Reduced Plenum Type AKV

Type AKV-ADT-ZH reduced effective active plenum  
As standard AKV-ADT-ZH-(O/D)-(O/AGP/M) but with transformation down to reduced effective plenum size to suit specified air volumes.

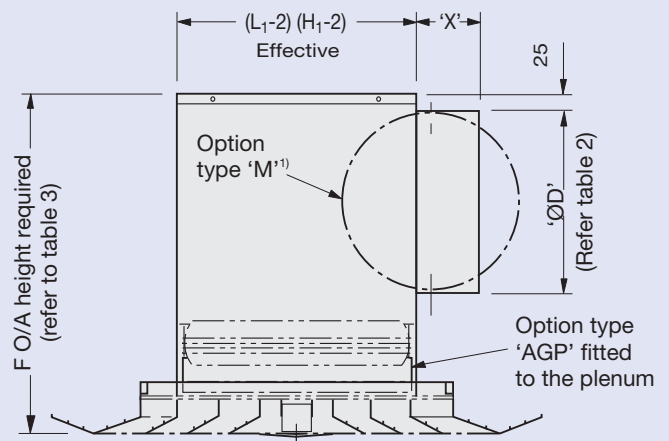
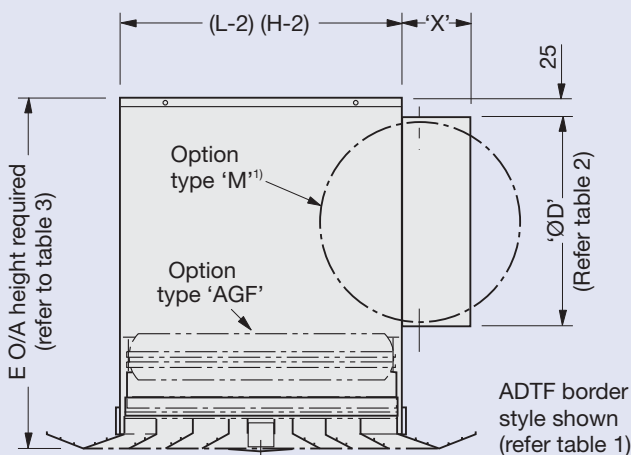
Note AGP opposed blade volume control damper is fitted to the plenum.

### Notes:

- 1) All plenums are supplied loose for site assembly by others.
- 2) Fitting details are shown on page 7.
- 3) Holes (4) provided at top edge of plenum for hanging by others.
- 4) Plenum can be internally lined - code D (lining material 12mm black faced class 0 foam).

### Materials

Plenum boxes are from formed pre galvanised sheet steel, optional spigot damper is pre galvanised perforated sheet steel. Plenum boxes can be internally lined with 12mm black faced foam with a class O rating. Plenum boxes can be supplied unpainted or as standard painted black RAL 9005 20% gloss, the extent of painting can be, inside and out, outside or inside only, other RAL colours available on request.



**Table 1 Available spigot sizes <sup>3)</sup>**

ØDmm		
Subject to limitations as shown in table 2 & as noted		
98	198	348
123	222	398
138	248	448
148	278	498
158	298	558
178	313	

**Table 2 Maximum Spigot Sizes**

LxH Nom.	Max ØDmm	Available for diffusers type
150	148	ADT / F / A / B / T / M / S
225	222	ADT / F / A / B / T
300	298	ADT / F / A / B / T
375	353	ADT / F / A / B / T / H
450	448 <sup>2)</sup>	ADT / F / A / B / T / M / S
525	498 <sup>2)</sup>	ADT / F / A / B / T
600	558 <sup>2)</sup>	ADT / F / A / B / T

**Table 3 Overall height diffuser + plenum**

Plenum	Option	E min	E max	F min	F max
AKV-ADT	'O' & 'M'	D+102	1000	D+132	1000
AKV-ADT	AGF/AGP	D+154	1000	D+184	1000

**Table 4 Reduced plenum sizes**

LxH Nominal	L1xH1 Effective plenum sizes					
225	150					
300	225	150				
375	300	225	150			
450	375	300	225	150		
525	450	375	300	225	150	
600	525	450	375	300	225	150

### Notes

- 1) Also available with cord operated damper type MC
- 2) 398 is maximum ØD for type M or MC dampers
- 3) For performance guidance information on spigot size selection see page 9

# Dimensions

## Top Entry Plenum Boxes

### Full Plenum Type AKV

Type AKV-ADT-ZV or AKV-ADT-AV

Supply (-ZV) or extract (-AV) removable core diffuser to fit top entry plenum.

Type AKV-ADT-(ZV/AV)-O-AGF

As above but including type AGF opposed blade volume control damper on diffuser (manually adjustable with core removed).

Type AKV-ADT-ZV-D or AKV-ADT-AV-D

As above but plenum internally lined (-D).

### Reduced Plenum Type AKV-ADT-ZV or AKV-ADT-AV

Supply (-ZV) or extract (-AV) removable core diffuser to fit top entry plenum reduced to suit required air volumes etc.

Note AGP opposed blade volume control damper is fitted to the plenum.

### Notes:

- 1) Reduced plenum L1xH1 size is mounted on a transformation tray to suit LxH diffuser size.
- 2) All plenums / transformation assemblies are supplied loose for site assembly by others, using clips supplied, or rivets, supplied by others. (Refer to page 7 for fixing details).
- 3) Holes (4) provided at top edge of plenum for hanging by others.
- 4) Plenums can be internally lined - code D (lining material 12mm black faced class 0 foam).

### Materials

Plenum boxes are from formed pre galvanised sheet steel, Plenum boxes can be internally lined with 12mm black foam with a class O rating. Plenum boxes can be supplied unpainted or as standard painted black RAL 9005 20% gloss, the extent of painting can be, inside and out, outside or inside only, other RAL colours on request.

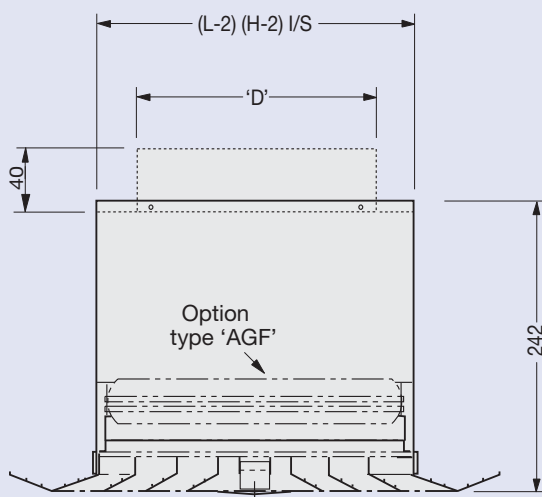


Table 5 Available spigot sizes <sup>1)</sup>

ØDmm		
Subject to limitations as shown in table 6 & as noted		
98	198	348
123	222	398
138	248	448
148	278	498
158	298	558
178	313	

Table 6 Maximum Spigot Sizes

LxH Nom.	Max ØDmm	Available for diffusers type
150	123	ADT / F / A / B / T / M / S
225	198	ADT / F / A / B / T
300	278	ADT / F / A / B / T
375	353	ADT / F / A / B / T / H
450	398	ADT / F / A / B / T / M / S
525	498	ADT / F / A / B / T
600	558	ADT / F / A / B / T

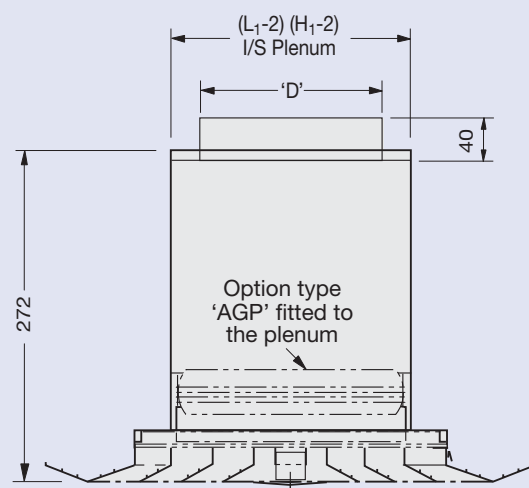


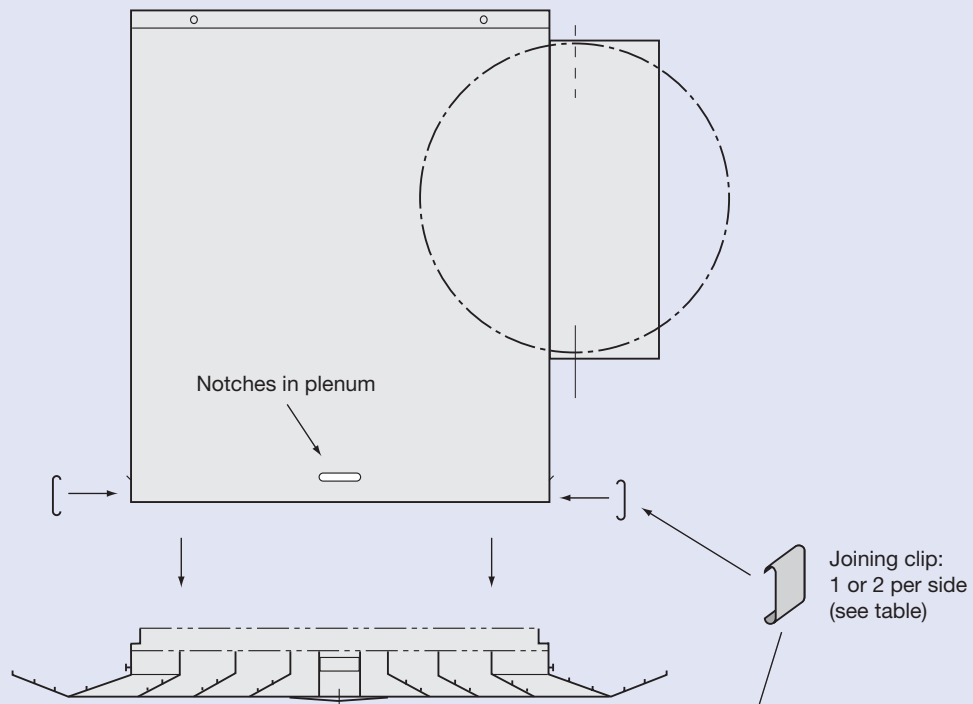
Table 7 Reduced plenum

LxH Nominal	L1xH1 Effective plenum sizes					
225	150					
300	225	150				
375	300	225	150			
450	375	300	225	150		
525	450	375	300	225	150	
600	525	450	375	300	225	150

### Notes

- 1) For performance guidance information on spigot size selection see page 9

# Plenum Assembly Details



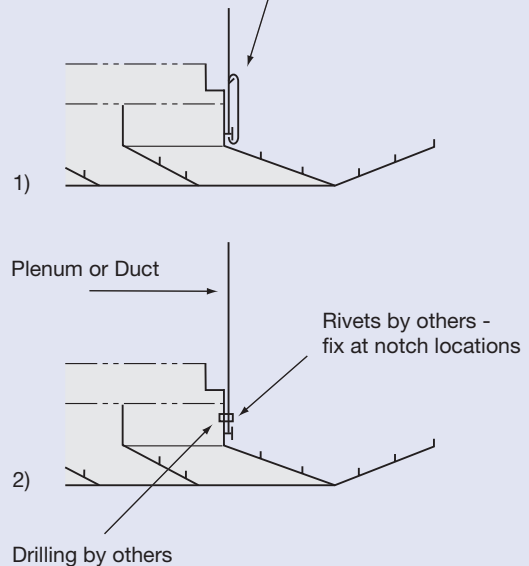
## Diffuser/plenum assembly

Note: Assembly must be carried out prior to installation of plenum in ceiling.

- 1) Plenum positioned over diffuser such that bottom edge seats within extruded ledge on border. Joining clips positioned over notch in plenum then pushed over lower nib on border as shown.
- 2) Alternatively, plenum may be riveted to border (rivets by others).

Note: Joining clips supplied in separate package which consists of total quantity required on contract

ADT Size	Joining Clip Quantity
150 - 375	4
450 - 600	8



# Nomenclature · Performance Data · Diffuser Only

## Nomenclature:

$\dot{V}$ in l/s	Volume flow per diffuser
L in m	Distance from the outlet where the maximum time average air velocity is 0.5 m/s
Lx	Short side throw - 3-way core
Ly	Long side throw - 3-way core
$v_k$ in m/s	Diffuser neck velocity
$\Delta p_t$ in Pa	Total pressure drop
$L_{pNC}$	NC rating of room sound pressure level based on an assumed 8dB room attenuation.

## Note:

The throw distance L should be between 75% and 100% of the distance to the nearest wall or 50% of the diffuser spacing dimension, based on a ceiling height of 2.7 - 2.9m.  
 If selecting using blanking plates the selected diffuser nominal size should be based on the following:  
 3-way selection - 133% of design volume.  
 2-way corner selection - 200% of design volume.  
 Use the volume based on the 4-way discharge performance data shown in the table below

**Table 8: Diffuser Type ADTF performance data (without plenum damper, if fitted, 100% open)**

Nominal L x H	$v_k$ – m/s	1.0			1.5			2.0			2.5		
		$\Delta p_t$ in Pa			$\Delta p_t$ in Pa			$\Delta p_t$ in Pa			$\Delta p_t$ in Pa		
		$\dot{V}$ in l/s	L in m	$L_{pNC}$	$\dot{V}$ in l/s	L in m	$L_{pNC}$	$\dot{V}$ in l/s	L in m	$L_{pNC}$	$\dot{V}$ in l/s	L in m	$L_{pNC}$
150x150	4-way	25	0.8	<	36	1.0	<	50	1.5	22	60	2.1	27
	3-way-Lx		0.8			1.0			1.5			2.1	
	3-way-Ly		0.9			1.5			2.1			2.7	
	2-way		0.9			1.8			2.4			3.4	
	1-way		1.5			2.7			3.4			3.7	
225x225	4-way	55	1.2	<	80	1.5	<	105	2.1	19	130	2.7	26
	3-way-Lx		1.2			1.5			2.1			2.7	
	3-way-Ly		1.3			2.1			2.7			3.4	
	2-way		1.5			2.4			3.1			4.0	
	1-way		2.1			3.4			4.3			4.6	
300x300	4-way	95	1.5	<	140	2.2	<	190	3.1	22	240	3.7	28
	3-way-Lx		1.5			2.1			3.1			3.7	
	3-way-Ly		1.8			2.1			3.7			4.3	
	2-way		2.1			3.1			4.0			4.6	
	1-way		3.1			4.3			4.9			5.5	
375x375	4-way	150	1.8	<	225	2.7	<	300	3.7	24	375	4.3	30
	3-way-Lx		1.8			2.7			3.7			4.3	
	3-way-Ly		2.4			3.4			4.3			4.9	
	2-way		2.7			4.0			4.6			5.2	
	1-way		3.7			4.6			5.5			6.1	
450x450	4-way	210	2.1	<	320	3.4	<	425	4.3	25	530	4.6	32
	3-way-Lx		2.1			3.4			4.3			4.6	
	3-way-Ly		2.7			4.0			4.6			5.2	
	2-way		3.1			4.3			4.9			5.5	
	1-way		4.3			5.2			6.1			6.7	
525x525	4-way	290	2.7	<	430	4.0	18	575	4.6	27	720	5.2	32
	3-way-Lx		2.7			4.0			4.6			5.2	
	3-way-Ly		3.4			4.3			5.2			5.8	
	2-way		3.6			4.6			5.5			6.1	
	1-way		4.6			5.5			6.4			7.3	
600x600	4-way	375	3.1	<	560	4.3	19	750	4.9	28	940	5.5	34
	3-way-Lx		3.1			4.3			4.9			5.5	
	3-way-Ly		3.7			4.6			5.5			6.1	
	2-way		4.0			4.9			5.8			6.4	
	1-way		4.9			6.1			7.0			7.6	

< indicates values less than 15

# Performance Data · Diffuser with Plenum Box

## Type AKV (side entry spigot)

Performance is based on sizes and spigot sizes shown in Table 9 below.

**Table 9**

Nominal L x H	150	225	300	375	450	525	600
Spigot ØD	123	198	248	313	313	313	313/398
Height E min	277	352	402	467	467	467	467/552

**Table 10 - Noise level correction for plenum (damper 100% open)**

Function	Size	150x150	225x225	300x300	375x375	450x450	525x525	600x600 <sup>1)</sup>	600x600 <sup>2)</sup>
Supply	$\Delta L_{pNC}$	+11	+7	+9	+9	+10	+13	+16	+11
Extract	$\Delta L_{pNC}$	+11	+6	+5	+7	+9	+10	+12	+8

1) with 313 Ø spigot

2) with 398 Ø spigot

**Table 11 - Total pressure drop correction for plenum (damper 100% open)**

Function	Size	150x150	225x225	300x300	375x375	450x450	525x525	600x600 <sup>1)</sup>	600x600 <sup>2)</sup>
Supply	F	x2.2	x1.6	x1.6	x1.7	x2.4	x3.7	x5.0	x3.2
Extract	F	x2.2	x1.6	x1.7	x2.0	x2.6	x3.2	x4.3	x2.7

1) with 313 Ø spigot

2) with 398 Ø spigot

## Example

Data given:

Supply diffuser ADTF-AG 300 x 300 plenum AKV 300 x 248 x 402

$\dot{V} = 190$  l/s damper 100% open

Required:

Space noise level  $L_{pNC}$  and Total pressure drop  $\Delta p_t$

From table 8 diffuser only  $L_{pNC} = 22$ dB

From table 8 diffuser only  $\Delta p_t = 24$ Pa

Correction from table 10  $L_{pNC} = 22+9$

Correction from table 11  $\Delta p_t = 24 \times 1.6$

$= 31$ dB

$= 38$ Pa

## General guidance on changing spigot diameter ØD with damper 100% open

Spigot velocity m/s	2.5	3	3.5	4.0
Approx $L_{pNC}$	25	30	35	40

## Type AKV (Top entry spigot)

The effect on performance is small providing spigot velocities do not exceed 3.5 to 4.0 m/s

# Order Details

## Specification Text

Square louvred face ceiling diffuser for horizontal discharge, comprising a removable core which can have either 4, 3, 2 or 1-way discharge face. Core located in the border by spring clips. The diffuser border can, on request, be suitable for integration into various types of ceiling construction. Additionally can be supplied with quadrant plates for site fitting to reduce the active face of the diffuser whilst maintaining a 4-way face.

If required can be supplied with a side entry plenum box with an optional flow rate control damper in the entry spigot or in the body of the plenum. Alternatively top entry plenum box is available with an optional control damper in the body of the plenum.

Both top and side entry plenum boxes are available in a reduced size with respect to the diffuser face perimeter to suit lower flow rates. Plenum boxes can be, on request, internally lined with black foam.

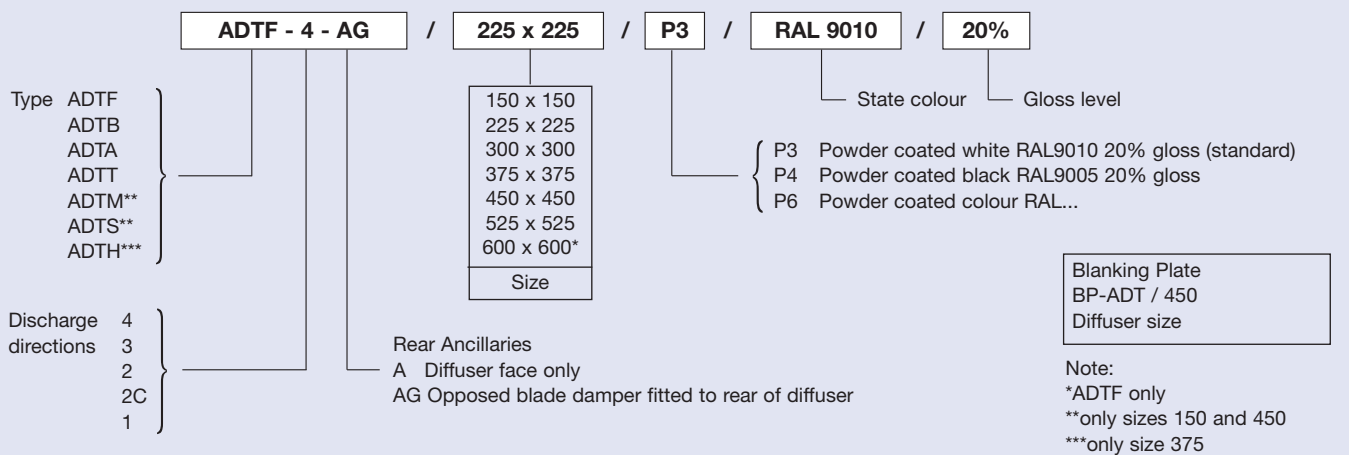
All plenum boxes are supplied separately with fixings to allow site fitting of the diffuser face by others.

## Materials

The diffuser face is from extruded aluminium sections. Standard finish powder coated white RAL9010 20% gloss, other RAL colours available on request. Optional rear mounted damper is a formed sheet steel casing with aluminium blades, blanking plates are sheet steel, all ancillaries are finished black RAL 9005 20% gloss.

Plenum boxes are from formed pre galvanised sheet steel, optional spigot damper is pre galvanised perforated sheet steel. Plenum boxes can be internally lined with 12mm black faced foam with a class O rating. Plenum boxes can be supplied unpainted or as standard painted black RAL 9005 20% gloss, the extent of painting can be, inside and out, outside or inside only, other RAL colours available on request.

## Order Code - Diffuser



## Order Code - Plenum Box

