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## Swirl diffusers

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# Fixed Blade Swirl Diffusers

## SDFC SDFS

### Introduction

Waterloo Air Products range of fixed blade swirl diffusers presents an attractive and aerodynamically efficient alternative to conventional circular or square ceiling air terminals.

The diffusers are designed to produce a horizontal, radial air pattern with a turbulent, high induction jet characteristic and are ideally suited for applications with high heating or cooling differentials.

Manufactured from aluminium with press formed blades, the units are available in a range of six ISO sizes in either circular (type SDFC) or square format (types SDFS) and can be supplied complete with a duct mounting collar for easy assembly.

The steel duct mounting collar can be used as a means of fixing and supporting the diffuser from rigid ductwork, or alternatively, ceiling support brackets (supplied as standard) can be fitted for use with flexible ducting.

### Product Description

**SDFC** Circular face swirl diffuser

**SDFS** Square face swirl diffuser

**DM\*\*\*** Duct collar

**WTP\*\*\*** Side entry plenum box  
(\* is replaced with nominal size)  
- see order example

**FDC1** Cord operated flap damper

**FDQ1** Quadrant operated flap damper

**LINED** 6mm Class O fire rated acoustic lining

**Please note the duct collar is not required when ordering diffusers with plenums.**

### Sizes

See table

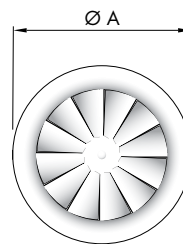
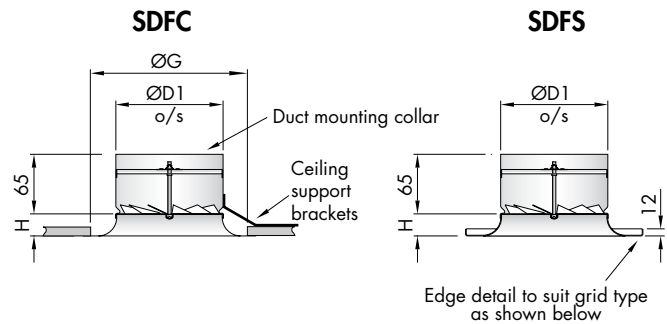
### Finishes

PPM9006 (RAL 9006 Matt Silver)

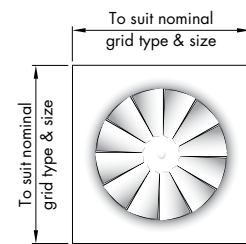
PPM9010 (RAL 9010 20% Gloss White)

PPG9010 (RAL 9010 Gloss White)

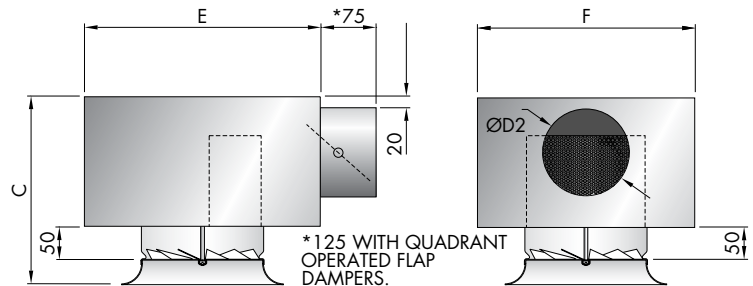
Other colours available on request



SDFC



SDFS

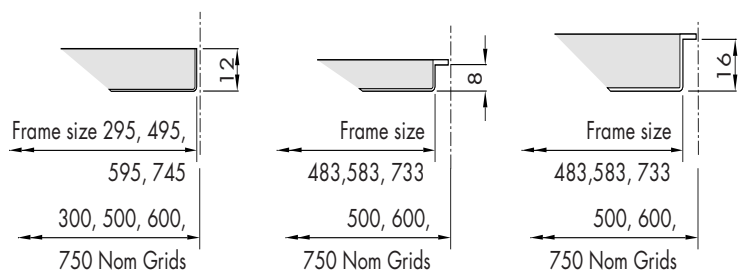


### SDFS Frame Styles and Grid Sizes

Exposed 'I' - E

Tegular frame - T8

Tegular frame - T16



Please note a 300x300 grid is only available for an exposed lay-in type, and with neck sizes up to 250Ø.

SDFC Size	Diffuser + Collar	Plenum
125 Ø	0.3 kg	1.6 kg
160 Ø	0.4 kg	1.9 kg
200 Ø	0.6 kg	4.5 kg
250 Ø	0.7 kg	5.1 kg
315 Ø	1.0 kg	7.4 kg
400 Ø	1.5 kg	9.5 kg
SDFS Grid Size	Diffuser + Collar	Plenum
300 x 300	1.1 kg	For plenum weights use data above based on nominal neck size
500 x 500	1.5 kg	
600 x 600	2.1 kg	
750 x 750	3.2 kg	

### Order Example

**SDFS-250/T16/500/PPM9010 /DM /WTP/FDC1/LINED**

Type \_\_\_\_\_

Nominal Size \_\_\_\_\_

Frame Style & Grid (if square diffuser) \_\_\_\_\_

Colour Finish \_\_\_\_\_

Duct Collar (DM) or Plenum (WTP) \_\_\_\_\_

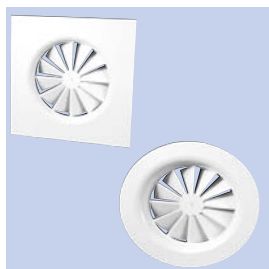
Plenum Spigot Damper (if required) \_\_\_\_\_

Acoustic Plenum Lining (if required) \_\_\_\_\_

Nom. Size	ØA	Available Grid Sizes for SDFS	C	ØD1	ØD2	E	F	ØG	H
125	200	300, 500, 600 or 750	215	123	97	320	300	160	25
160	250	300, 500, 600 or 750	240	158	122	320	300	200	25
200	300	300, 500, 600 or 750	275	198	157	420	400	250	25
250	350	300, 500, 600 or 750	315	248	197	420	400	300	25
315	450	500, 600 or 750	370	313	247	520	500	370	30
400	535	500, 600 or 750	435	397	312	580	560	460	30

# Fixed Blade Swirl Diffusers

## SDFC SDFS



### Selection Criteria

Jet throw data is expressed in metres and is based on a terminal velocity of 0.5m/s and a 10°C cooling differential. For isothermal or 10°C heating conditions apply a factor of 1.15 to the throws.

NR levels are based on sound pressure levels with an assumed 8dB room absorption factor allowed.

Pressure loss data is shown in terms of static pressure loss (Pa) based on a diffuser fitted with a DM collar, or for a diffuser installed in a WTP plenum.

### Selection Example

#### SDFC/315

Air flow rate 120 l/s

#### Ducted Diffuser

Jet throw 1.9m  
Static Pressure Loss 25 Pa  
Noise level NR 30

#### Plenum Mounted Diffuser

Jet throw 1.9m  
Static Pressure Loss 31 Pa  
Noise level NR 32

### Performance Table

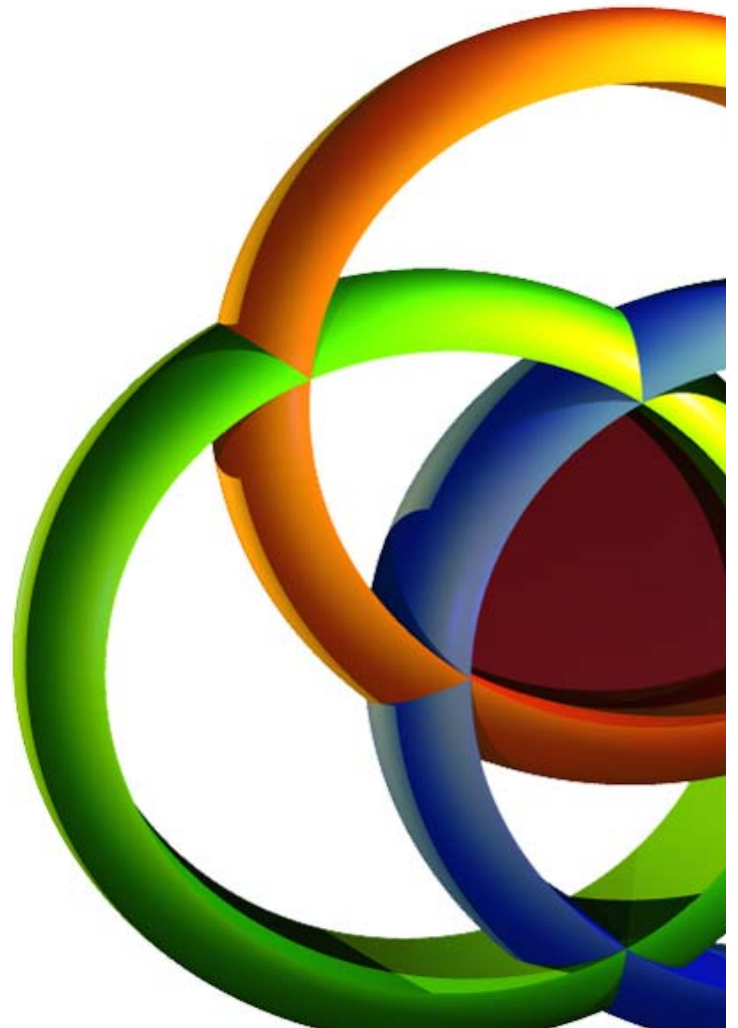
SDFC SDFS	Supply Air Volume																				
	m³/h	36	72	108	144	180	216	252	288	324	360	432	504	576	648	720	810	900	990	1080	
Diameter	l/s	10	20	30	40	50	60	70	80	90	100	120	140	160	180	200	225	250	275	300	
125	Jet Throw	0.3	0.5																		
	Lw Duct	20	34																		
	Lw Plenum	22	36																		
	Ps Duct	16	47																		
	Ps Plenum	20	59																		
160	Jet Throw		0.4	0.6	1.0	1.3															
	Lw Duct		-	24	33	39															
	Lw Plenum		-	26	35	41															
	Ps Duct		10	21	25	55															
	Ps Plenum		12	26	31	69															
200	Jet Throw		0.4	0.6	0.9	1.3	1.5	1.8													
	Lw Duct		-	-	20	27	32	36													
	Lw Plenum		-	-	22	29	34	38													
	Ps Duct		4	9	15	22	30	40													
	Ps Plenum		5	11	19	28	38	50													
250	Jet Throw				0.6	1.0	1.3	1.4	1.6	1.8	2.1	2.3									
	Lw Duct				-	-	-	21	24	28	31	37									
	Lw Plenum				-	-	20	23	26	30	33	39									
	Ps Duct				5	8	11	15	19	24	29	40									
	Ps Plenum				6	10	14	19	24	30	36	50									
315	Jet Throw					0.8	1.0	1.2	1.3	1.4	1.6	1.9	2.2	2.4							
	Lw Duct					-	-	-	-	22	25	30	35	38							
	Lw Plenum					-	-	-	20	24	27	32	37	40							
	Ps Duct					5	7	9	11	14	17	25	33	41							
	Ps Plenum					6	9	11	14	17	21	31	41	51							
400	Jet Throw										1.0	1.2	1.3	1.7	2.2	2.4	2.6	3.0	3.4	3.6	
	Lw Duct										-	-	-	-	-	22	25	28	30	33	
	Lw Plenum										-	-	-	-	20	24	27	30	32	35	
	Ps Duct										3	5	6	8	11	13	17	20	24	29	
	Ps Plenum										4	6	8	10	14	16	21	25	30	36	

For exhaust applications add 3dB to the NR level and multiply pressure loss by 1.1

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