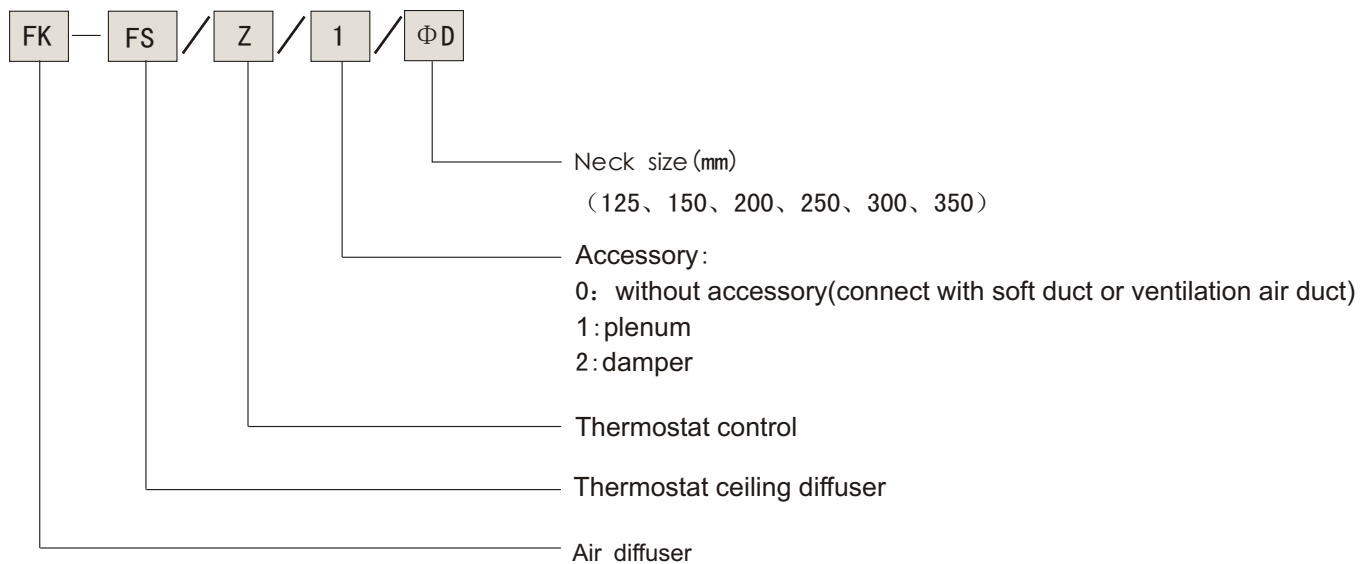


## 1, General description

Common supply air ceiling diffuser supply air horizontal the ceiling in order to satisfied with supply cold air in Summer , but in Winter need to supply warm air ,because of the air stream construction of ceiling diffuser which make warm air is hard to send down with rapidly and efficient convection. There will be short circuit of air stream when use ceiling extract air.

In order to solve the above question, we developed thermostat ceiling diffuser series product: it can recognise supply air temperature automatically when season changes , according the temperature to adjust the height between inner core and frame to change the air discharge . As that it is possible for you to design your project perfectly.

## 2, Symbol Explanation



Example:FK-FS/W/250 means Thermostat square ceiling diffuser whose neck size is 252mm, and with plenum box.

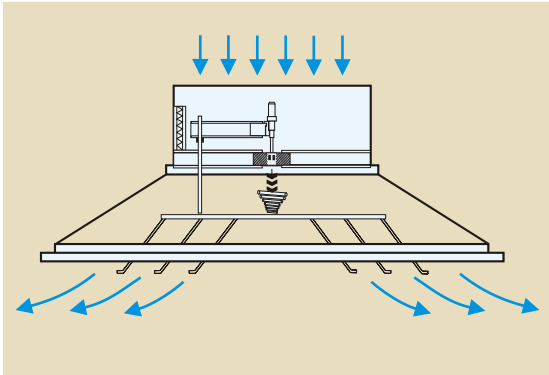
## 3, Charictristic

Thermostat ceiling diffuser

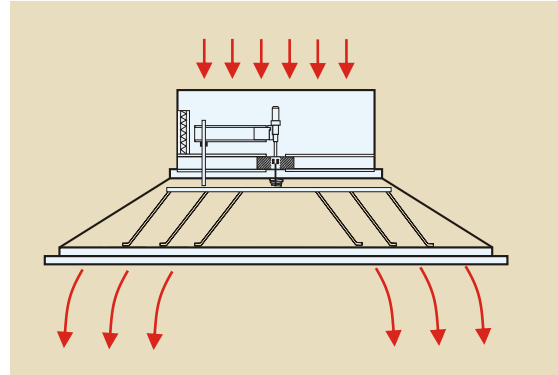


- For different types of air ,the inner guide blade can move upward or downward automatically in order to change the air discharge.
- The frame and inner core can be easily installed and debug with dismantle structure.
- Plenum box are available.
- Thermostat control system works credible ,no need to maintenance.

## 4, Two types of air



Cold air supply

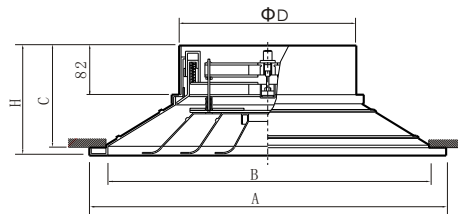


Warm air supply

### Characteristic

- (1) For cold air, when temperature  $\leq 17^{\circ}\text{C}$ , guide blade can move vertical downward 10-11mm, as that cold air will supply horizontal the ceiling.
- (2) The frame and guide blade can be easily installed and debug with dismantle structure.
- (3) The better induction inner can mix the air stream's temperature fastly.
- (4) Compared to the air velocity at the neck, the exit is slower and preventing dirt wind product.
- (5) Control device of thermostat works credibly, quietly.

## 5, Size



Size of thermostat ceiling diffuser

in: mm

Size	$\Phi D$	A	B	C	H
$\Phi 125$	127	325	275	142	152
$\Phi 150$	152	350	300	142	152
$\Phi 200$	202	400	350	142	152
$\Phi 250$	252	450	400	142	152
$\Phi 300$	302	500	450	142	152
$\Phi 350$	352	550	500	142	152

## 6, Technical parameter

Size	Air velocity of Neck (m/s)		2.0	2.5	3.0	3.5	4.0	4.5	5.0	6.0
Φ125 (mm)	Air volume(m <sup>3</sup> /h)		91	114	137	159	182	205	228	273
	Static pressure lost (Pa)	V	7	12	16	22	29	38	46	66
		H	5	9	12	15	20	25	30	39
	Diffuse Radius (m)	H	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.4
	Max throw (m)	V	2.0	2.6	3.1	3.6	4.2	4.8	5.2	6.4
	Noise dB (A)		19	22	27	29	32	36	39	42
Φ150 (mm)	Air volume(m <sup>3</sup> /h)		131	163	196	228	261	294	326	392
	Static pressure lost (Pa)	V	7	12	16	22	29	38	46	66
		H	5	9	12	14	20	25	30	39
	Diffuse Radius (m)	H	0.88	1.08	1.36	1.52	1.8	2.16	2.22	2.59
	Max throw (m)	V	2.5	3.1	3.7	4.4	5.0	5.7	6.4	7.5
	Noise dB (A)		19	23	29	32	34	37	40	43
Φ200 (mm)	Air volume(m <sup>3</sup> /h)		231	288	346	403	461	519	576	692
	Static pressure lost (Pa)	V	7	12	16	22	29	38	46	66
		H	5	9	12	14	20	25	30	39
	Diffuse Radius (m)	H	1.1	1.3	1.6	1.9	2.1	2.4	2.6	3.1
	Max throw (m)	V	3.0	3.8	4.4	5.2	6.4	6.8	7.6	8.8
	Noise dB (A)		22	26	30	35	37	40	43	46
Φ250 (mm)	Air volume(m <sup>3</sup> /h)		359	448	539	628	718	807	897	1076
	Static pressure lost (Pa)	V	7	12	16	22	29	38	46	66
		H	5	9	12	14	20	25	30	39
	Diffuse Radius (m)	H	1.2	1.4	1.68	1.96	2.13	2.4	2.82	3.4
	Max throw (m)	V	3.4	4.2	5.1	6.0	6.9	7.6	8.4	10.2
	Noise dB (A)		24	28	33	37	39	42	46	48
Φ300 (mm)	Air volume(m <sup>3</sup> /h)		515	644	773	902	1031	1159	1288	1546
	Static pressure lost (Pa)	V	7	12	16	22	29	38	46	66
		H	5	9	12	14	20	25	30	39
	Diffuse Radius (m)	H	1.21	1.52	1.83	2.15	2.48	2.8	3.1	3.73
	Max throw (m)	V	3.8	4.7	5.8	6.7	7.7	8.6	9.6	11.6
	Noise dB (A)		28	31	36	40	42	45	48	51
Φ350 (mm)	Air volume(m <sup>3</sup> /h)		700	875	1050	1225	1400	1575	1750	2100
	Static pressure lost (Pa)	V	7	12	16	22	29	38	46	66
		H	5	9	12	14	20	25	30	39
	Diffuse Radius (m)	H	1.32	1.65	1.99	2.32	2.64	3.0	3.3	4.0
	Max throw (m)	V	4.1	5.2	6.2	7.3	8.4	9.5	10.5	12.6
	Noise dB (A)		32	35	40	44	47	49	52	55

Note:

- 1.H is for cold air , V is for warm air . The max. throw is parameter for end velocity which is 0.25m/s
2. Corresponding the max throw in the diagram ,the temperature difference of supply air is 10°C ; when temperature difference is different they will be change in the above diagram.
- 3.Diffuse radius is horizontal air discharge in Summer , the end air velocity is 0.25m/s
- 4.Blue number scope is the preferential size to choose

## 7, Selection and explanation

### 1. Given

- (1) In general , room's length,width and height
- (2) Indoor temperature , sensible heating burthen and allowable fluctuant for indoor temperature
- (3) In Summer and Winter ,the range of temperature of supply air according the cold or heating source

### 2. Example

Given a air conditioner project , in Summer indoor temperature is  $26^{\circ}\text{C}$  , room's size :  
length(36m),width(16m),height(7m) . In Summer , sensible heating cold burthen of indoor is  
241KJ/h per unit , requirement allowable fluctuant for indoor temperature is  $\pm 2^{\circ}\text{C}$

- (1) Calculate the requirement Volume flow rate per unit  $L_s$  and time of exchanging air  $n_1$

$$L_s = q / (C_p * P * \Delta t_0) = 241 / (1.01 * 1.2 * 8) = 24.85 \text{ m}^3 / \text{h} \cdot \text{m}^2$$

$t_0$  is  $8^{\circ}\text{C}$ , that is temperature of supply air is  $18^{\circ}\text{C}$  in summer. When the temperature of supply air is different, we should be use the actual temperature of supply air to calculate.

$$\text{Time of exchanging air } n_1 = L_s / H = 24.85 / 7 = 3.55 / \text{h}$$

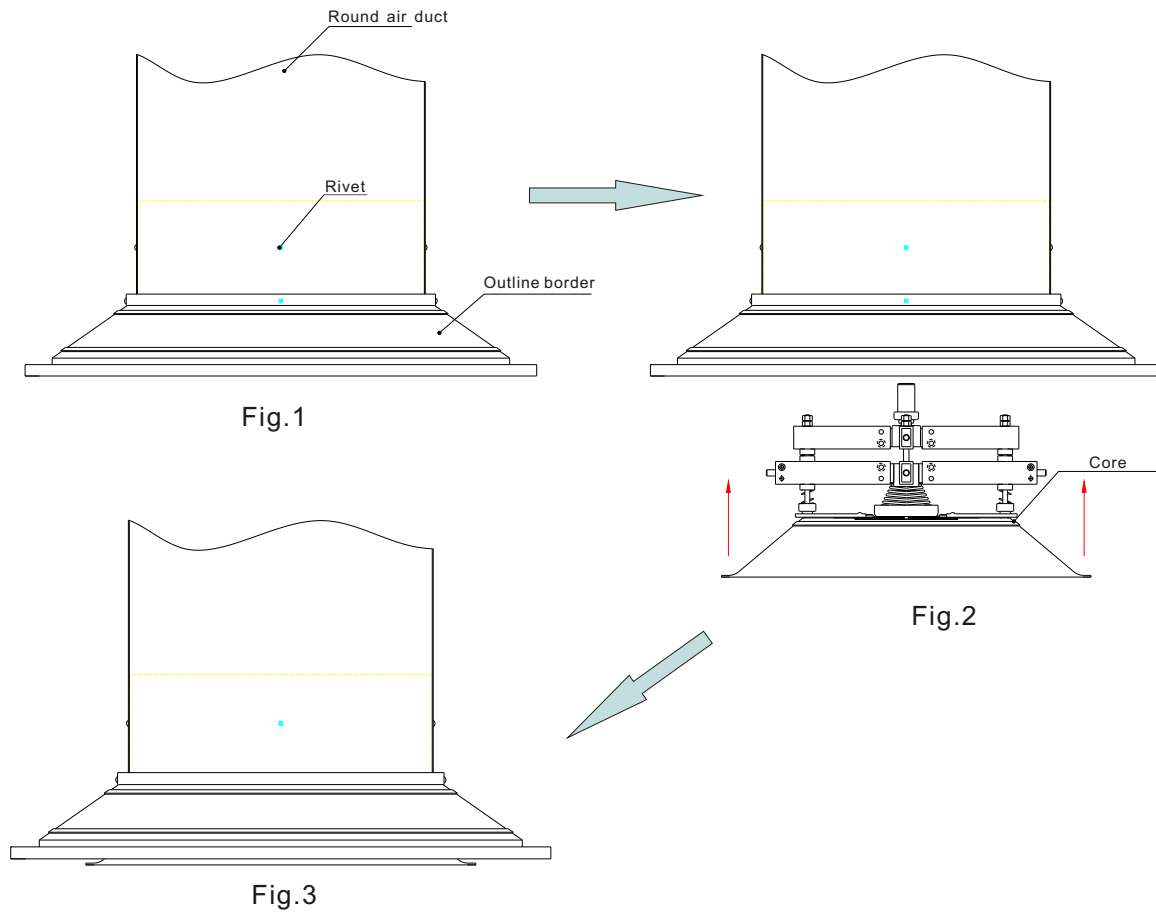
- (2) Choose and calculate the quantity  $n_2$  and size

$$\text{Total volume flow rate: } 24.85 * 36 * 16 = 14314 \text{ m}^3 / \text{h}$$

When choose the size of the diffuser , we should according the max. throw of warm air and diffuse radius of cold air . As the distance between the ceiling diffuser , we can choose the 2 or 4 times of diffuse radius . As that , at the same type of air , there are several choices for the size and quantity of ceiling diffuser .

For this example , we choose FK-FS/ $\Phi$ 300, quantity is 12 pcs . The volume flow rate is  $1193 \text{ m}^3 / \text{h}$  . Other parameter please check from the technical diagram.

## 8, installation



For example:

1. Before installing the ceiling diffuser, you must confirm the air duct can bear definite pull with fixing fastness.
2. Install order are ,chart 1,chart 2,chart 3.
3. When install as chart 2, you must push upward the inner on horizontal of thermostat ceiling diffuser , and confirm it is fastness with the frame (Avoid the inner brush off and harm persons .

## 9, Order details

1, The technical parameters listed in are reckoned in special working conditions. Testing condition are : air streams for isothermal condition. When use condition is different from the testing condition, the technical parameters in the samples may have a little windage.

2, Our company retains the rights of interpretation and revision of this sample.