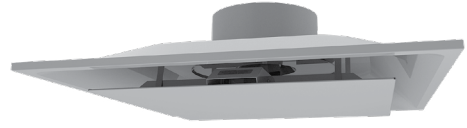


MODEL MSC/MSCVH

The MSC (cooling only) and the MSCVH (heating/cooling) are thermally powered variable volume air diffusers which are completely self-powered and self-contained. The thermal control actuators are both the room thermostats and the damper motor. To sense the average room temperature, a continuous sample of room air is induced up and around the face panel. A small amount of supply air is diverted through an orifice against an induction wing then back into the primary air path, creating just enough negative pressure to induce a sample of secondary room air around the edge of the face panel, through the induction trough and across the thermal actuators. The diffusion damper is mechanically opened and closed by the thermal actuators to vary the flow of warm/cool air into the space.



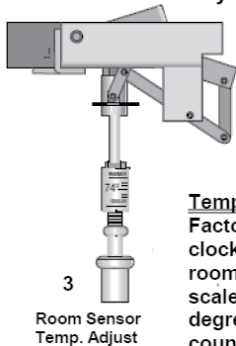
- Each thermal actuator is a precisely calibrated thermostat
- Thermal control actuators allow heat energy to transform into mechanical energy through the movement of a stainless steel piston
- The thermal actuator is a small brass cylinder containing petroleum based wax. The wax expands when heated, driving the piston out. A torsion spring returns the piston as the wax cools and retracts
- Thermal actuators are used in a variety of thermostatic applications. Typical applications include automotive controls, aerospace, marine, medical and many more

VAV room temperature cooling control. Room air is induced past a thermal actuator, which then adjusts airflow based on space requirements. The actuator is mechanical and requires no electrical or pneumatic connectors.

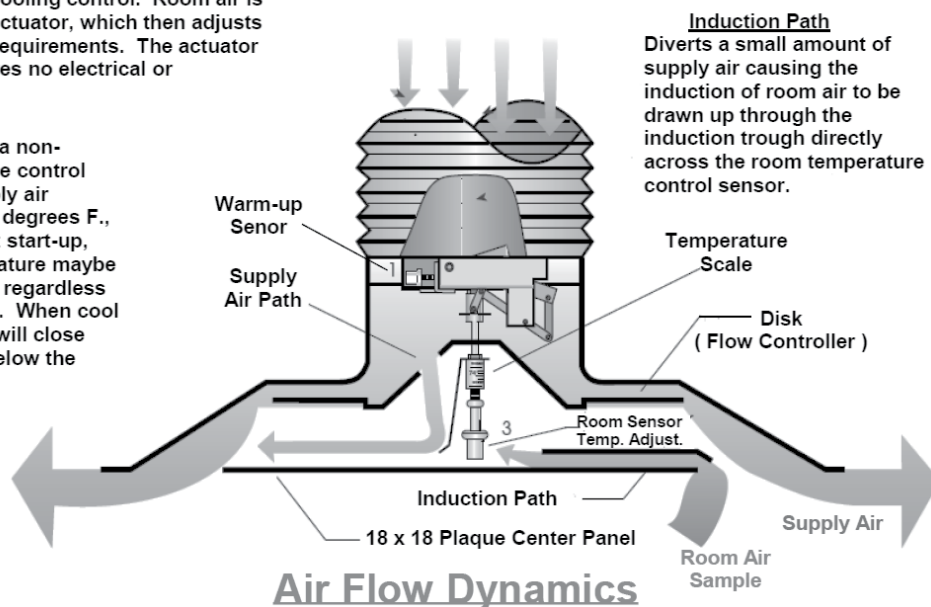
Note:

Units are equipped with a non-adjustable warm-up cycle control function. When the supply air temperature is above 72 degrees F., the disc will be open. At start-up, when the supply temperature maybe warm, the disc will open regardless of the room temperature. When cool air is supplied, the disc will close but only if the room is below the setting.

Actuator Assembly



3
Room Sensor Temp. Adjust



Induction Path
Diverts a small amount of supply air causing the induction of room air to be drawn up through the induction trough directly across the room temperature control sensor.

Temperature Adjustment:

Factory set-point approximately 74 degrees. For cooler room temperature, turn room actuator clockwise. For warmer room temperature, turn room actuator counter-clockwise. Determine room temperature set-point by aligning end of actuator with the indicators on the temperature scale. Each full rotation for each indicator on the temperature scale equals plus or minus 2 degrees. For 74 degree factory set-point, turn actuator clockwise until it stops, then turn counter-clockwise 3 full turns.

Operation

Change over between heating and cooling modes is determined by supply air temperature. When heating cycle is initiated, element # ① will react first, lowering damper to full open position (full heating).

Then element # ②, the heating slave, reacts at 78 degrees or greater, posing the heating u-arm to engage element # ③, the room thermostat for heating control.

As the room warms, element # ③ begins to sense room temperature to vary the heating supply volume to achieve and sustain the desired room temperature. The factory set point of 74 degrees is adjustable between 72 - 78 degrees. For less heating, turn element # ③ clockwise. For more heating turn element # ③ counter-clockwise. Each full turn will equal plus or minus 2 degrees. A drop in room temperature and unit will respond by opening to increase heating volume until the room temperature reaches the desired set point.

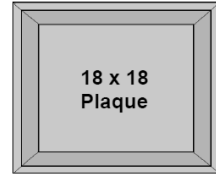
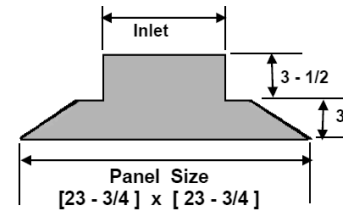
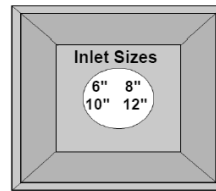
VAV Cooling control is initiated when supply air is below 68 degrees.

In cooling mode elements # ① & # ②, do not react. This engages the cooling control element # ④ which will vary the supply air when cooling. A rise in room temperature and the unit will respond by allowing cool air into the space until the room temperature reaches the desired set point. All units are factory set at 74 degrees, and are adjustable between 72 and 78 degrees.

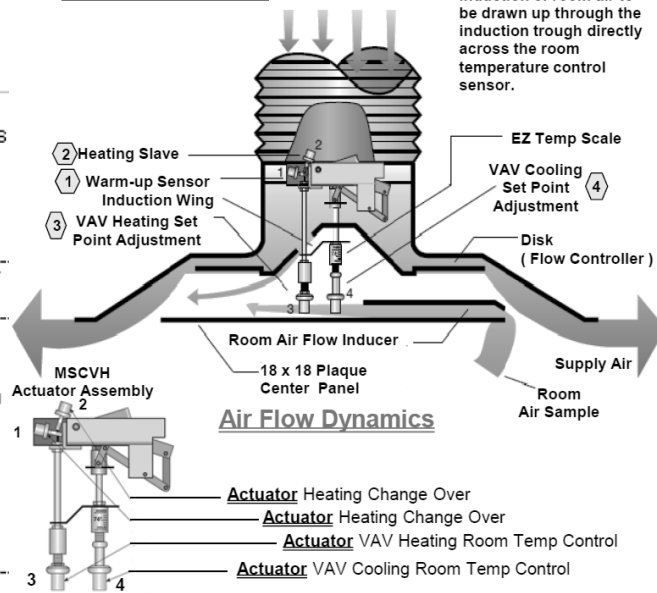
For a cooler room temperature turn element # ④ clockwise. For a warmer room temperature turn element # ④ counter-clockwise.

Determine room temperature set point by aligning the end of the element with the indicators on the temperature scale. Each full turn or indicator will equal plus or minus 2 degrees.

Induction Room air is induced across elements # ③ and # ④ by use of a simple induction wing. This diverts a small amount of supply air which induces a room air sample through trough located on the back side of the appearance panel.



Induction Path
Diverts a small amount of supply air causing the induction of room air to be drawn up through the induction trough directly across the room temperature control sensor.



SERIES MSC SPECIFICATIONS

Air Diffusers shall be model:

MSC Cooling only

MSCVH Heating and Cooling

- Units shall be manufactured by METALAIRE and be of steel construction. Units shall be square with a formed backpan and a flat face panel. The face panel shall project no more than 1/4" below the ceiling grid or surface. The diffuser shall have the same appearance from the face regardless of the inlet size. Each diffuser damper shall consist of an aluminum extruded disc to provide a variable unobstructed 360° horizontal discharge for maximum Coanda effect and superior induction. All diffusers shall have a temperature adjustment scale with indicators that range from 70°-78°F. The initial set point shall be factory set at 74°F. No tools shall be required.
- Model MSC cooling diffuser shall utilize one thermal actuator to provide VAV room temperature control for cooling.
- Model MSCVH heating and cooling diffuser shall utilize four thermal actuators to provide both heating and cooling control. The diffuser is equipped with two room-temperature-sensing thermal actuators and two heating change-over thermal actuators. The room temperature settings for heating and cooling shall be separately adjustable. One room actuator shall sense temperature and vary the supply air when cooling. The second actuator shall sense room temperature and vary the supply air when heating. The heating change-over actuators shall be factory set to engage heating mode when supply air temperature rises above 78°F and will return to cooling mode when supply air temperature falls below 68°F.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-2006.

Paint Specification

Process shall be anodic electro-deposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaline cleaner and a de-ionized water rinse.

MSC MODEL NUMBER SPECIFICATION

THERMAL PLAQUE DIFFUSER — COOLING ONLY

Model		Neck Size	Module	Available Finishes	
MSC-1	Surface Mount	6	24 x 24	Standard	
MSC-6	T-bar Lay-in	8		01	White
MSC-8	Tegular Lay-in	10		Available Accessories	
MSC-9	Donn Finline/BAFit Slot	12		BAF-1	3-Way (One Baffle)
				BAF-2	2-Way (Two Baffles)
				BAF-3	1-Way (Three Baffles)
				TBPF	T-bar Plaster Frame

MSCVH MODEL NUMBER SPECIFICATION

THERMAL PLAQUE DIFFUSER — HEATING AND COOLING

Model		Neck Size	Module	Available Finishes	
MSCVH-1	Surface Mount	6	24 x 24	Standard	
MSCVH-6	T-bar Lay-in	8		01	White
MSCVH-8	Tegular Lay-in	10		Available Accessories	
MSCVH-9	Donn Finline/BAFit Slot	12		BAF-1	3-Way (One Baffle)
				BAF-2	2-Way (Two Baffles)
				BAF-3	1-Way (Three Baffles)
				TBPF	T-bar Plaster Frame

SERIES MSC PERFORMANCE DATA

MODEL MSC/MSCVH

Listed Size	Inlet Ps	Max. CFM	Throw @ Max. CFM			Throw @ 25% of CFM		NC@ Max. CFM
			150 (fpm)	100 (fpm)	50 (fpm)	100 (fpm)	50 (fpm)	
6	.05	85	1	3	5	1	3	–
	.10	120	2	3	6	2	3	20
	.15	150	2	4	7	3	4	24
	.20	170	3	5	8	4	6	28
	.25	220	5	6	8	4	7	33
8	.05	160	2	4	6	2	4	–
	.10	225	3	5	8	3	5	20
	.15	275	4	5	9	4	6	25
	.20	320	5	6	10	5	8	29
	.25	355	6	7	12	6	9	33
10	.05	250	3	4	7	3	5	–
	.10	355	4	5	9	4	6	22
	.15	450	5	6	11	4	7	26
	.20	500	6	7	12	5	8	29
	.25	580	7	8	13	7	10	32
12	.05	365	4	5	8	4	6	–
	.10	520	6	7	11	5	8	23
	.15	650	6	7	12	6	8	27
	.20	740	7	8	14	7	10	32
	.25	820	9	10	15	8	11	36
	30	890	10	11	17	9	12	40

PERFORMANCE NOTES FOR SERIES MSC

All data is tested in accordance with ANSI/ASHRAE 70-2006.

DEFINITION OF UNITS

CFM Cubic Feet Per Minute (air)

fpm Velocity of air stream in Feet Per Minute

Pt Total pressure (inches of water column)

Throw Non-isothermal horizontal throw (supply air temperature 15°F colder than average room temperature); values are for 150, 100 and 50fpm velocities

NC Noise criterion, sound pressure level NC ratings are based on sound power level (Lw) re: 10⁻¹² watts minus a 10dB room attenuation in all octave bands

Ps Static Pressure (inches of water column)