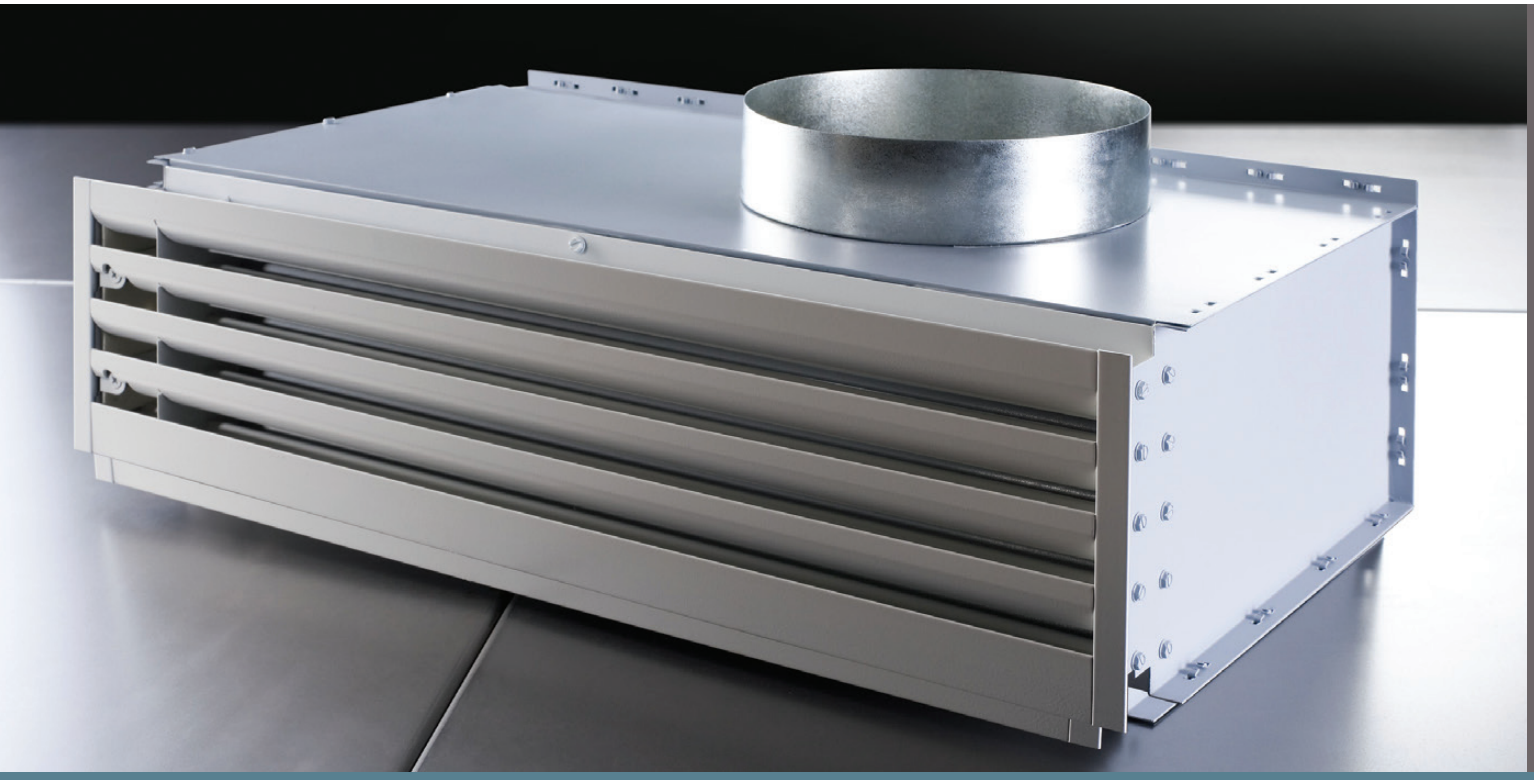
acutherm™
Therma-Fuser™ Systems

TLW Therma-Fuser™

Linear Sidewall Thermally Powered VAV Diffuser

Models:

TLW-C VAV cooling only
TLW-CW VAV cooling with constant volume warm up
TLW-D Manually adjustable blades
TLW-RAD Return air, ducted
TLW-RAP Return air, plenum



TLW: Product Overview
FORM 062.101 REV 1604

BENEFITS AT A GLANCE.

INDIVIDUAL COMFORT SELECTION AND CONTROL

Every Therma-Fuser™ diffuser is a VAV zone of temperature control providing pleasing comfort. The built-in thermostat senses average room air temperature from a sample of air induced into the unit. It controls airflow to precisely match the comfort requirements of the room or portion of the room served. Occupants breathe easier knowing that their personal temperature choice is concealed and will not be changed by someone else.

VAV IN A SOFFIT IS THE SOLUTION FOR NO ABOVE CEILING SPACE

Specially designed for installation just below the ceiling in a thin soffit, the sidewall Therma-Fuser™ diffuser is the solution where there is no space above the ceiling. The sleek look of the long narrow diffusion surface with a shallow soffit built around it satisfies both architectural concerns and air distribution needs. Installation directly in a wall just below the ceiling is possible where there is no chance of anything such as a bookcase disturbing the secondary room airflow up to the temperature sensing area of the diffuser.

ONLY THERMA-FUSER™ VAV OFFERS THESE BENEFITS

- Superior air distribution—longer throws, no dumping, more entrainment, even temperature distribution, higher ADPI* and better room air change effectiveness.
- Lowest cost per zone of control.
- Lowest energy VAV terminal—green VAV.
- Low to no maintenance—10 year warranty.
- Easily adapts to office changes.

*ADPI (Air Diffusion Performance Index) is defined in the ASHRAE Fundamentals Handbook.

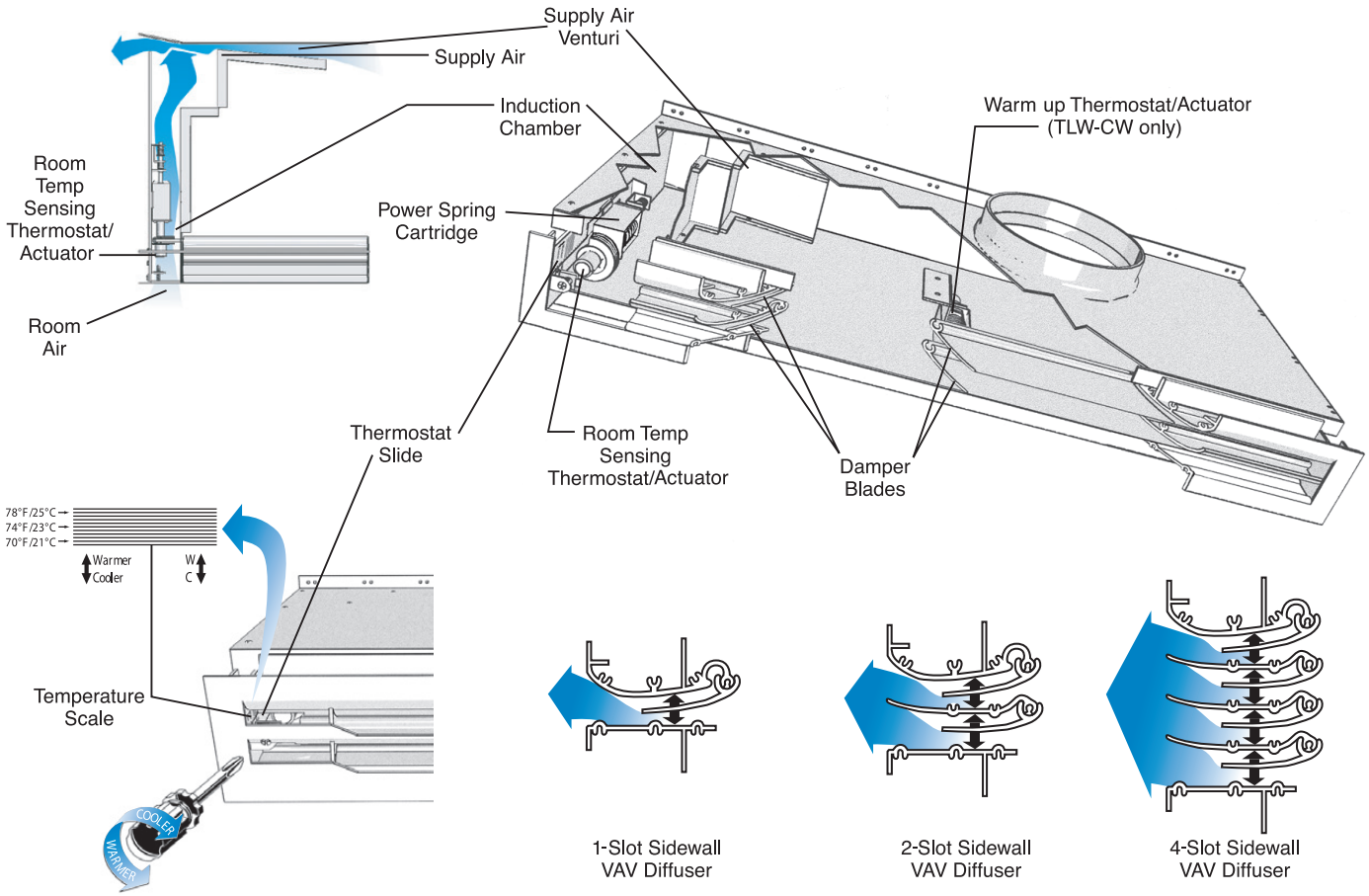


fig. 1

HOW IT WORKS

Model TLW-C and TLW-CW Therma-Fuser diffusers are sidewall diffusers with built-in temperature controls and VAV damper. The damper blades open and close, metering airflow into the room in response to room temperature. The damper is mechanically positioned by a thermostat/actuator that is both room thermostat and damper motor.

The room thermostat/actuator is a large brass cylinder containing a petroleum-based wax. The wax melts and expands when heated, pushing against a fixed piston which moves the thermostat outward. A heavy spring pulls the thermostat inward when the wax cools and contracts. Four-slot models have two thermostat/actuators.

ROOM AIR SENSING

As with all diffusers, air circulates around the room in a circular motion. Secondary air rises below the diffuser, passes in front of the diffuser and entrains with the primary air. This secondary air best represents average room temperature.

To monitor average room temperature *(see fig.3)*, a continuous sample of secondary air is drawn up into the induction chamber and over the thermostat by the action of a venturi fed by supply air. This venturi is located at the back of the induction chamber. A properly applied TLW will hold the room average within 1.5°F / 0.9°C of the temperature selected.

COOLING MODE

In the cooling mode, the damper blades open on a rise in room temperature. As the room warms, the wax in the room thermostat melts and expands. This pushes the damper blades open. When the room cools, the wax contracts and the spring pulls the damper blades closed.

CHANGEOVER (TLW-CW ONLY)

Changeover between the cooling and heating modes is determined by supply air temperature. A second thermostat/actuator (two in the four-slot models) located near the inlet, senses supply air temperature. Supply air temperature above 80°F / 26.5°C fully opens the damper blades for constant volume heating.

ADJUSTING TEMPERATURE SET POINT (TLW-C and TLW-CW)

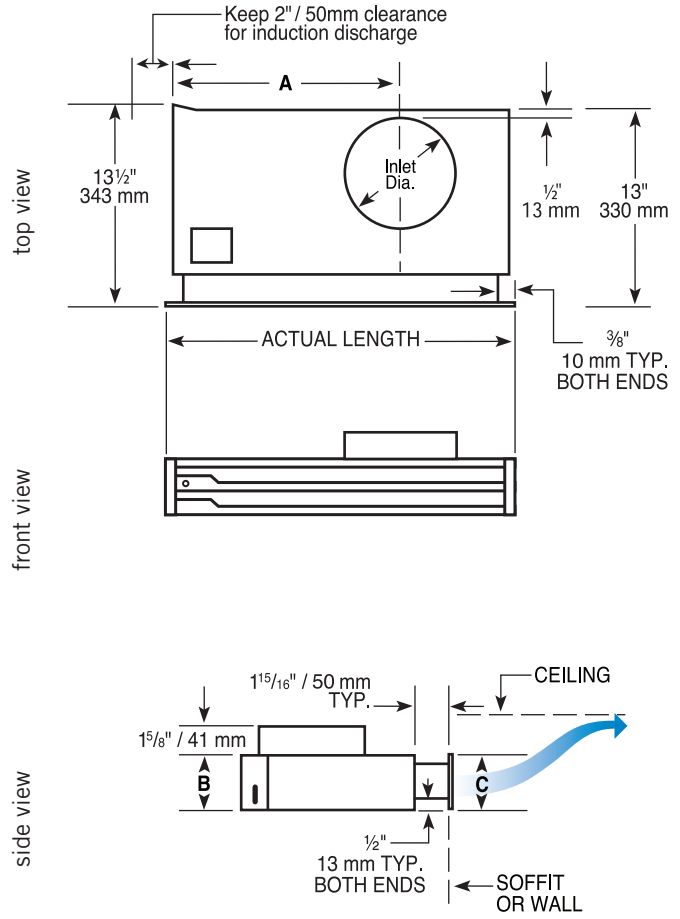
The room temperature set point is adjusted by turning the Phillips screw with a Phillips screwdriver to move the thermostat slide in or out. Four-slot units have two thermostats, each controlling two slots, that are separately adjusted. The temperature scale, graduated in degrees and located behind the thermostat slide, can be viewed at the end of the diffuser slot. Turning the Phillips screw clockwise will move the slide out over the temperature scale for a cooler set point. Each graduation on the temperature scale is 1°F / .55°C.

The diffuser is factory set to maintain approximately 74°F / 23°C. It is not necessary to adjust the temperature set point at time of installation. Instead, make any adjustments after the system has been started and the space is occupied. Then adjust only those Therma-Fuser diffusers where occupants are uncomfortable at the factory set point.

Readjust to the factory set point by turning the Phillips screw clockwise (cooler set point) until the thermostat slide hits the stop. Then turn counter clockwise (warmer) for seven turns.

DIMENSIONS: **MODELS TLW-C, TLW-CW. TL-D AND TL-RAD**— INSTALL AS CLOSE TO CEILING AS POSSIBLE

TLW-C AND TLW-CW WITH TOP ROUND INLET (PREFERRED)



TLW-C AND TLW-CW WITH OPTIONAL REAR RECTANGULAR INLET

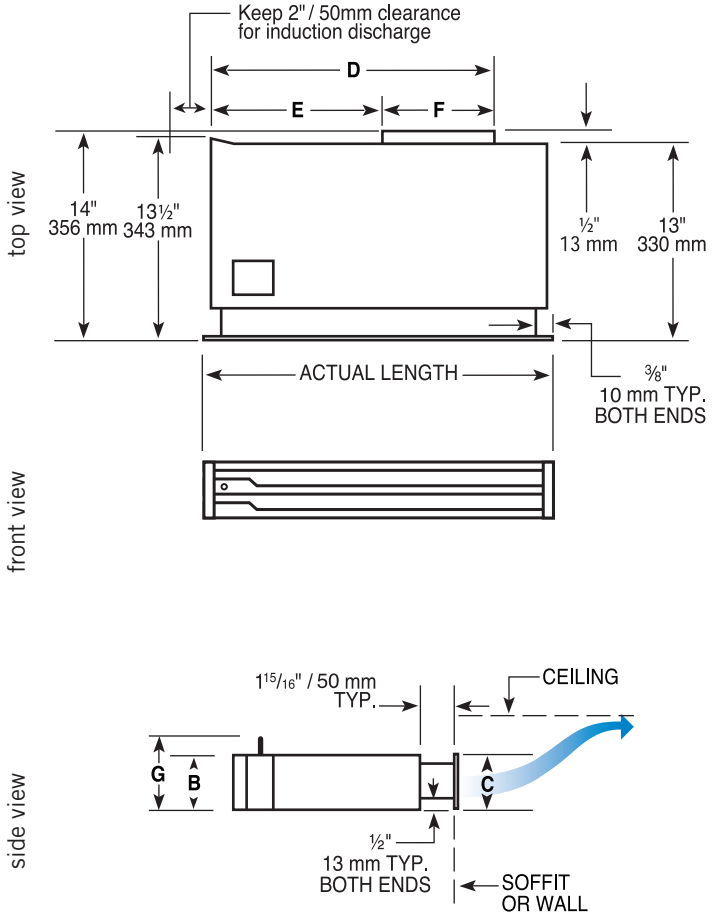


fig.2

ONE- AND TWO-SLOT

Nominal length	Actual length	Round Inlet Dia.	Optional Rectangular Inlet	A	B	C 1 Slot	C 2 Slot	D	E	F	G
24	23¾ in 603mm	5⅞ in 150mm	4 x 8 in 102 x 203mm	15 1/16 in 383mm	4 in 102mm	2 9/16in 65mm	3¾in 95mm	19¾in 502mm	11¾in 298mm	8in 203mm	4⅝in 118mm
36	35¾ in 908mm	5⅞ in 150mm	4 x 8 in 102 x 203mm	21 1/16 in 535mm	4 in 102mm	2 9/16in 65mm	3¾in 95mm	26⅞in 683mm	18⅞in 479mm	8in 203mm	4⅝in 118mm
48	47¾ in 1213mm	7⅞ in 200mm	4 x 16 in 102 x 406mm	28 1/16 in 713mm	4 in 102mm	2 9/16in 65mm	3¾in 95mm	36⅞in 937mm	20⅞in 530mm	16in 406mm	4⅝in 118mm
60	59¾ in 1518mm	7⅞ in 200mm	4 x 16 in 102 x 406mm	34 1/16 in 865mm	4 in 102mm	2 9/16in 65mm	3¾in 95mm	42⅞in 1089mm	26⅞in 683mm	16in 406mm	4⅝in 118mm

FOUR-SLOT

Nominal length	Actual length	Round Inlet Dia.	Optional Rectangular Inlet	A	B	C	D	E	F	G
24	23¾ in 603mm	7⅞ in 200mm	6 x 10 in 152 x 254mm	16 1/16 in 408mm	6 in 152mm	6 in 152mm	21¾in 552mm	11¾in 298mm	10in 254mm	6⅝in 168mm
36	35¾ in 908mm	7⅞ in 200mm	6 x 10 in 152 x 254mm	22 1/16 in 560mm	6 in 152mm	6 in 152mm	26⅞in 683mm	16⅞in 429mm	10in 254mm	6⅝in 168mm
48	47¾ in 1213mm	9⅞ in 250mm	6 x 18 in 152 x 457mm	29 1/16 in 738mm	6 in 152mm	6 in 152mm	38⅞in 987mm	20⅞in 530mm	18in 457mm	6⅝in 168mm
60	59¾ in 1518mm	11⅞ in† 300mm	6 x 18 in 152 x 457mm	37 7/16 in 926mm	6 in 152mm	6 in 152mm	44⅞in 1140mm	26⅞in 683mm	18in 457mm	6⅝in 168mm

† Oval shaped inlet

* 595, 895, 1195 AND 1495mm lengths are available to fit metric ceilings.

‡ TLW-RAP is also available in actual lengths of 71¾".

Dimensions ± 1/16in / ± 1.6mm

Dimensions for models TLW-D and TLW-RAD are the same as shown for models TLW-C and TLW-CW. Dimensions for model TLW-RAP are shown in the installation instructions, Form 23.2. See Model Designation on page 6 for descriptions of model TLW-D, TLW-RAD and TLW-RAP.

SELECTION GUIDELINES

Minimum/Maximum Spacing—Use the throw ratings for design air volume (maximum flow in the Performance Guide) to determine distances for minimum and maximum spacing to walls and other diffusers. Below design air volume, room air motion will be kept to acceptable levels by the increasing entrainment ratio as the diffuser turns down.

Less than 100fpm / 0.51m/s is normally satisfactory for air discharged against an inside partition and up to 150 fpm / .76m/s can be tolerated against an outside wall. Maximum throw is usually figured around the 50fpm / 0.25m/s point.

When given a choice, place diffusers so they do not blow at each other. When unavoidable, space diffusers at least two times the 150fpm / 0.76m/s throw (preferably two times the 100fpm / 0.51m/s throw) to avoid down drafts.

Maximum centerline spacing between diffusers in line (in the same row) should be three to four times the unit's length. A 48in / 1200mm diffuser would then cover an area 12 to 16 feet / 3650 to 4875mm wide (maximum).

Do not obstruct the venturi outlet at the end of the diffuser. Allow a spacing of 2in / 50mm or more between the venturi opening at the end of the diffuser and lights, joists, other diffusers, etc.

Return Air may be handled in the conventional manner using return air grills or, more typically, return air sidewall slots can be provided to match the supply air diffusers.

Each space should have returns. Select returns with the same total length of slot as the supply air diffusers in the space. If return air slots must be located in the supply air stream, place them beyond the 50fpm / 0.25m/s throw for the supply air diffuser.

SYSTEM DESIGN

The best control for heating/cooling units supplying air to VAV terminals is a discharge thermostat that maintains a constant supply air temperature. With DX equipment, this is a low limit. Use a room thermostat for changeover between heating and cooling modes. For hybrid systems (part VAV and part constant volume), control the heating/cooling supply unit with a thermostat in one of the rooms with a constant volume diffuser, preferably the space with the greatest load. For both VAV or hybrid systems, the fan should run continuously.

Static pressure at the inlet of the Therma-Fuser diffuser should be between .05"wg / 12Pa and .25"wg / 62Pa at full and partial air flows. Static pressure below .05"wg / 12Pa will result in low air flow and less induction. Above .25"wg / 62Pa, Therma-Fuser diffusers operate well, but excessive noise may result.

If the system turns down more than 30%, static pressure should be controlled. Included in the options for static pressure control are fan speed control and modulating bypass dampers. Modulating zone dampers are recommended where several zones share a higher pressure duct or riser.

When designing ducts, if Therma-Fuser diffusers are to deliver nominal volume at inlet static pressure of .15"wg / 37Pa, and if a maximum static pressure of .25"wg / 62Pa is to be held for quiet operation, size the duct for a maximum pressure drop of .1"wg / 25Pa between the first and last takeoff.

Manual balancing dampers should be used at the takeoff for each diffuser. Manual balancing dampers may not be required with ducts designed to Acutherm specifications.

A short length of low pressure flexible duct should be used to connect the diffuser. To avoid static pressure losses, flexible duct runs should be designed and installed as straight as possible (equivalent of one 90° turn max.) and should NOT be formed in a centerline radius of less than 1½ times the duct diameter.

Because Therma-Fuser diffusers control room temperature by sensing room air induced up the wall, care should be taken not to disturb room air induction and entrainment. Avoid the possibility of anything, including furniture, below the diffuser that blocks secondary air from entering the induction chamber of the diffuser. *(See fig.3).*

DISTANCE BELOW THE CEILING

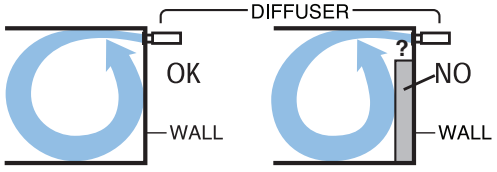
Ratings in the Performance Guide are for sidewall diffusers installed with the top edge 2in / 10mm or less below the ceiling.

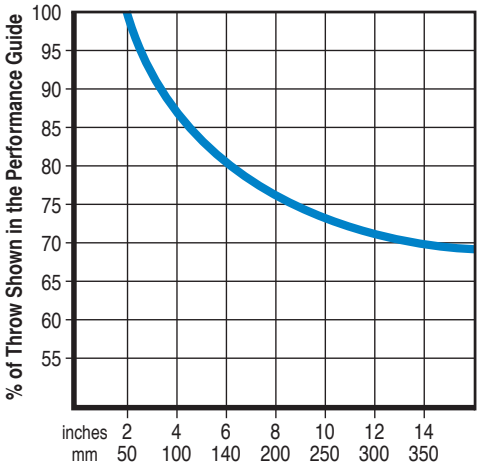
Under these conditions, the distance between the bottom of the 50fpm / .025m/s lobe and the horizontal centerline of the diffuser face is 4in / 100mm for one slot diffusers, 5in / 125mm for two-slot diffusers and 10in / 250mm for four-slot diffusers. The drops remain the same for installations with the top edge of the diffuser more than 2in / 100mm below the ceiling.

Throw reduces as the distance increases between the ceiling and the top edge of the diffuser as shown in *fig.4.*

Acutherm has "how to" system design brochures for almost every ducted air system.

DO NOT BLOCK SECONDARY AIR *fig.3*





Distance Between the Ceiling and the Top Edge of the Diffuser

fig.4

CONSTRUCTION

Diffuser construction is extruded aluminum to maintain precise tolerances essential for proper air distribution.

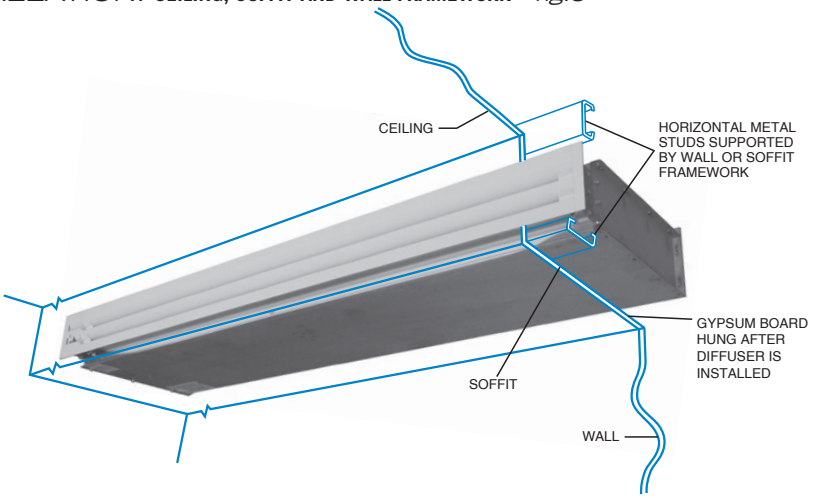
Close tolerances are especially critical in the throat area of the diffuser to achieve the necessary aerodynamic air pattern or Coanda effect along the surface of the ceiling.

An off-white epoxy-polyester hybrid powder coat is standard on all visible portions and provides a quality appearance. Power compression springs are contained in cartridges attached directly to the thermostat/actuators. This closely contains the forces needed to cause the thermostat to retract when cooled, thereby avoiding distortion of other diffuser parts to assure accuracy of control.

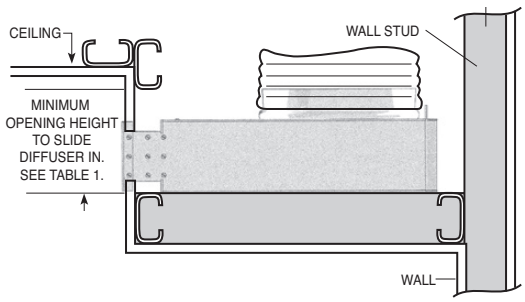
Plenum construction is heavy-duty 24-gauge galvanized steel to minimize damage during shipment and installation.

Insulation (optional) is ½" 2 pound density bonded blanket of glass fibers with smooth fire resistant air stream surfaces adhered with ASTM C 916 adhesive. Insulation and adhesive meet NFPA 90A and 90B or equivalent.

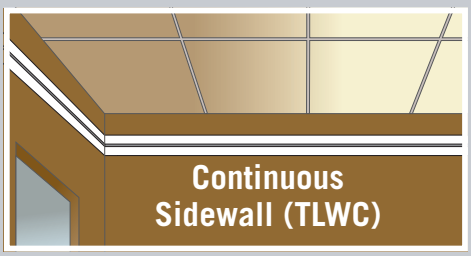
INSTALLATION: **CEILING, SOFFIT AND WALL FRAMEWORK** *fig.5*

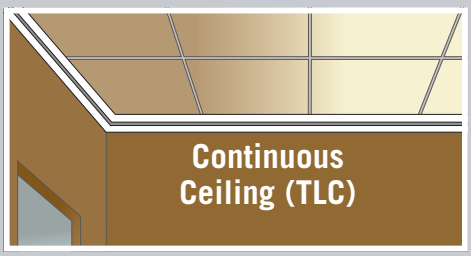


LAYING ON SOFFIT FRAMING



Linear Therma-Fuser™ Diffusers are also available in continuous sidewall and ceiling models.





For information on ceiling diffusers, see Acutherm's TL brochure.

GUIDE SPECIFICATION

(Suitable for Section 23 36 16 Variable Air Volume Units of the CSI Master Format). *Material in italics applies only to model TLW-CW. Delete the italics for model TLW-C.)*

2.2 Thermally-Powered sidewall VAV Diffusers

A. Thermally-powered sidewall VAV diffusers shall be a complete VAV terminal and thermostat self-contained in a linear diffuser. They shall be thermally powered with room thermostat/actuator *and changeover thermostat/actuator*. External wiring or pneumatics shall not be allowed.

B. The room thermostat/actuator shall open damper blade(s) on a rise in room temperature and modulate airflow to control the space within 1½°F / 0.9°C of temperature setting. The temperature setting shall be adjustable between 70°F / 21°C and 78°F / 26°C. The initial set point shall be factory set at 74°F / 23°C.

C. The diffuser and blades shall be constructed of extruded aluminum with all visible portions powder coated. The diffuser shall be complete with plenum constructed of 24-gauge galvanized steel.

D. The diffuser shall have an induction chamber and supply air venturi at one end for inducing room air past the room sensing thermostat/actuator. The venturi shall be at least 4in / 100mm wide for effective induction. The VAV diffusers shall have positive induction of secondary room air over the room thermostat at all flows from fully closed to fully open.

E. Manufacturer's ratings for flow and sound shall be verified by an independent testing laboratory certified for ARI 890 and ADC testing

F. *The TLW-CW unit shall be equipped with a changeover thermostat/actuator to fully open the diffuser for warm up at supply air temperatures of 80°F / 26.5°C or more.*

G. Power compression spring cartridges shall be attached directly to the thermostat/actuators to contain the forces produced without distorting other parts of the diffuser and assure accuracy of control.

H. Optional—The diffuser shall be lined with ½" fiber-free foam insulation adhered with ASTM C 916 adhesive. The insulation and adhesive shall meet the requirements of NFPA 90A and 90 B.

I. Cooling supply air to the VAV diffuser shall be constant temperature (may be reset to another constant temperature). Supply air shall be limited to no lower than 50°F / 10°C.

J. All VAV diffusers shall warrant that the diffuser shall be free from defects in materials and workmanship for a period of ten years from date of shipment.

1-Slot Sidewall

Nominal Length in	Inlet Static Pressure in wg	Maximum Flow cfm	Maximum Flow		25% Maximum Flow	
			Throw - Feet* @ vt=50/100/150FPM	†NC	Throw* - Feet @ vt=50/100/150FPM	†NC
24	0.05	45	4/3/2	<15	1/<1/<1	<15
	0.10	60	5/4/4	<15	1/<1/<1	<15
	0.15	70	5/4/4	21	2/1/1	<15
	⊙ 0.18	76	6/5/4	23	3/2/1	<15
	0.20	80	6/5/4	24	3/2/1	<15
	0.25	90	7/6/5	27	4/3/2	21
36	0.05	70	4/3/2	<15	1/<1/<1	<15
	⊙ 0.07	78	4/3/3	17	1/<1/<1	<15
	0.10	90	5/4/4	19	1/<1/<1	<15
	0.15	110	5/4/4	22	2/1/1	<15
	0.20	125	7/6/5	25	3/2/1	<15
	0.25	140	7/6/5	28	4/3/2	21
48	0.05	90	4/3/3	<15	1/<1/<1	<15
	0.10	125	5/4/3	21	2/1/1	<15
	⊙ 0.12	135	5/4/3	23	2/1/1	<15
	0.15	150	6/5/4	25	3/2/2	<15
	0.20	175	7/6/5	28	4/3/2	21
	0.25	190	8/7/6	31	4/3/2	24
60	0.05	100	4/3/3	<15	1/<1/<1	<15
	⊙ 0.09	140	5/4/4	21	1/<1/<1	<15
	0.10	150	5/4/4	22	1/<1/<1	<15
	0.15	180	7/6/5	26	2/1/<1	20
	0.20	210	7/6/5	29	2/1/<1	22
	0.25	230	8/6/5	32	3/2/2	25

2-Slot Sidewall

Nominal Length in	Inlet Static Pressure in wg	Maximum Flow cfm	Maximum Flow		25% Maximum Flow	
			Throw - Feet* @ vt=50/100/150FPM	†NC	Throw* - Feet @ vt=50/100/150FPM	†NC
24	.05	65	4/3/3	<15	1/<1/<1	<15
	.07	75	4/3/3	17	1/<1/<1	<15
	.10	90	5/4/4	19	1/<1/<1	<15
	.15	110	6/5/4	23	2/1/<1	19
	.20	130	7/6/5	29	3/2/1	22
	• .25	145	7/6/5	31	4/3/2	25
36	.05	85	3/2/2	<15	1/<1/<1	<15
	.10	120	4/3/3	22	1/<1/<1	<15
	.12	130	4/3/3	23	1/<1/<1	17
	• .15	145	5/4/4	24	2/1/<1	21
	.20	165	6/5/4	29	2/1/1	26
	.25	180	7/6/5	31	3/2/2	29
48	.05	150	7/6/5	<15	2/1/<1	<15
	.10	200	8/7/6	23	2/1/<1	<15
	.15	240	9/8/7	27	3/2/1	22
	• .17	256	9/8/7	28	3/2/1	22
	.20	280	10/9/8	30	4/3/2	23
	.25	310	10/9/8	32	6/4/3	27
60	.05	170	5/4/3	<15	2/1/<1	<15
	.10	230	7/6/5	23	2/1/<1	<15
	• .13	263	8/7/6	26	3/2/<1	21
	.15	280	8/7/6	27	3/2/<1	24
	.20	320	9/8/6	30	3/2/2	27
	.25	360	10/8/7	32	5/3/2	31

4-Slot Sidewall

Nominal Length in	Inlet Static Pressure in wg	Maximum Flow cfm	Maximum Flow		25% Maximum Flow	
			Throw - Feet* @ vt=50/100/150FPM	†NC	Throw* - Feet @ vt=50/100/150FPM	†NC
24	.05	150	4/3/3	<15	1/<1/<1	<15
	.10	210	7/6/5	25	2/1/<1	19
	.13	240	8/7/6	26	3/2/<1	21
	• .15	260	8/7/6	27	3/2/1	22
	.20	300	8/7/6	32	4/3/2	27
	.25	335	9/8/7	35	4/3/2	31
36	.05	180	4/3/3	<15	1/<1/<1	<15
	.10	250	6/5/4	25	2/1/<1	19
	• .11	262	6/5/4	26	2/1/<1	20
	.15	310	7/6/5	28	2/1/1	23
	.20	360	8/7/6	32	3/2/1	28
	.25	400	8/7/6	35	4/3/2	31
48	.05	315	9/7/6	<15	2/1/<1	<15
	• .08	393	10/8/7	22	2/1/<1	19
	.10	445	11/9/7	26	2/1/1	22
	.15	545	11/9/7	32	3/2/2	27
	.20	630	13/11/9	35	5/4/3	32
	.25	700	14/12/10	39	6/5/4	35
60	.05	400	11/9/7	<15	2/1/<1	<15
	.10	570	13/11/9	27	2/1/1	22
	• .11	596	13/11/9	28	2/1/1	23
	.15	700	13/11/9	32	4/3/2	27
	.20	800	15/12/10	36	6/5/4	32
	.25	900	17/15/12	39	7/6/5	34

The volume of induction air (into the plenum) required in addition to rated air volume is:

Inlet SP In.wg / Pa	1- and 2-Slots CFM / l/s	4-Slot CFM / l/s
0.05	7	11
0.10	9	14
0.15	11	17
0.20	12.5	20

Note:
The installation must have provision to vent the induction air either to the return air plenum or to the room.

• Denotes 750 fpm / 3.81 m/s inlet velocity.

⊙ Denotes 400 fpm / 2.03 m/s inlet velocity.

* Throw data is for air 20°F/11°C lower than room temperature. Throws for isothermal air are 40 to 50% greater.

† NC based on L_w (10^{-12} watts reference) -10db.

◊ Oval shaped inlet.

- Ratings independently verified by Inchcape Testing Services, ETL Testing Laboratories.

- Tested in accordance with ANSI/ASHRAE 70-1991, ANSI S12.31, ARI 890-2001, ISO 5219 and ISO 3741.

1-Slot Sidewall

Nominal Length mm	Nomical Inlet Dia. mm	Inlet Static Pressure Pa	Maximum Flow L/s	Maximum Flow m³/h	Maximum Flow Throw (m)*@v_t = .25 m/s	.50 m/s	.75 m/s	†NC	25% Maximum Flow Throw (m)*@v_t = .25 m/s	.50 m/s	.75 m/s	†NC
600	150	10	20	72	1.2	0.9	0.5	<15	0.3	< 0.3	< 0.3	<15
		20	26	92	1.4	1.1	1.0	<15	0.3	< 0.3	< 0.3	<15
		30	30	109	1.5	1.2	1.2	17	0.4	0.3	0.3	<15
		40	34	123	1.6	1.3	1.2	22	0.7	0.4	0.3	<15
		⊙ 50	38	136	1.8	1.5	1.2	24	0.9	0.6	0.3	<15
		60	42	150	2.1	1.8	1.5	26	1.2	0.9	0.6	20
900	150	10	31	112	1.2	0.9	0.5	<15	0.3	< 0.3	< 0.3	<15
		⊙ 20	39	140	1.4	1.1	1.0	17	0.3	< 0.3	< 0.3	<15
		30	46	167	1.5	1.2	1.2	20	0.4	< 0.3	< 0.3	<15
		40	53	193	1.6	1.4	1.3	23	0.7	0.4	0.3	<15
		50	59	213	2.1	1.8	1.5	25	0.9	0.6	0.3	<15
		60	65	233	2.1	1.8	1.5	27	1.2	0.9	0.6	20
1200	200	10	39	141	1.1	0.9	0.9	<15	0.3	< 0.3	< 0.3	<15
		20	52	189	1.4	1.1	0.9	19	0.5	0.3	0.3	<15
		⊙ 30	64	230	1.7	1.4	1.1	23	0.8	0.4	0.4	<15
		40	73	264	1.9	1.6	1.3	26	1.0	0.7	0.6	16
		50	83	298	2.1	1.8	1.5	28	1.2	0.9	0.6	21
		60	88	319	2.4	2.1	1.8	30	1.2	0.9	0.6	23
1500	200	10	43	153	1.2	0.9	0.9	<15	0.3	< 0.3	< 0.3	<15
		⊙ 20	62	222	1.4	1.1	1.1	19	0.3	< 0.3	< 0.3	<15
		30	77	276	1.8	1.5	1.4	24	0.4	< 0.3	< 0.3	17
		40	88	317	2.1	1.8	1.5	27	0.6	0.3	< 0.3	20
		50	99	358	2.1	1.8	1.5	29	0.6	0.3	< 0.3	22
		60	107	385	2.4	1.8	1.5	31	0.9	0.6	0.6	24

2-Slot Sidewall

Nominal Length mm	Nomical Inlet Dia. mm	Inlet Static Pressure Pa	Maximum Flow L/s	Maximum Flow m³/h	Maximum Flow Throw (m)*@v_t = .25 m/s	.50 m/s	.75 m/s	†NC	25% Maximum Flow Throw (m)*@v_t = .25 m/s	.50 m/s	.75 m/s	†NC
600	150	10	28	102	1.2	0.9	0.9	<15	0.3	< 0.3	< 0.3	<15
		20	38	136	1.4	1.1	1.1	17	0.3	< 0.3	< 0.3	<15
		30	46	167	1.7	1.4	1.2	21	0.4	< 0.3	< 0.3	17
		40	54	194	1.9	1.6	1.3	24	0.7	0.4	< 0.3	20
		50	61	221	2.1	1.8	1.5	29	0.9	0.6	0.3	22
		• 60	67	242	2.1	1.8	1.5	31	1.2	0.9	0.6	24
900	150	10	37	133	0.9	0.6	0.5	<15	0.3	< 0.3	< 0.3	<15
		20	50	181	1.1	0.8	0.8	19	0.3	< 0.3	< 0.3	<15
		30	61	221	1.3	1.0	1.0	23	0.4	< 0.3	< 0.3	17
		• 40	70	254	1.6	1.3	1.2	25	0.6	0.3	< 0.3	22
		50	78	281	1.8	1.5	1.2	29	0.6	0.3	0.3	26
		60	84	302	2.1	1.8	1.5	31	0.9	0.6	0.6	28
1200	200	10	66	238	2.0	1.8	1.5	<15	0.6	0.3	< 0.3	<15
		20	85	307	2.3	2.0	1.7	20	0.6	0.3	< 0.3	<15
		30	102	368	2.6	2.3	2.0	25	0.8	0.4	0.3	18
		• 40	117	423	2.8	2.5	2.2	28	1.0	0.7	0.4	22
		50	132	477	3.1	2.8	2.5	30	1.2	0.9	0.6	23
		60	144	518	3.1	2.8	2.5	32	1.7	1.2	0.9	26
1500	200	10	75	269	1.4	1.1	0.8	<15	0.6	0.3	< 0.3	<15
		20	97	351	1.9	1.6	1.3	20	0.6	0.3	< 0.3	<15
		• 30	118	426	2.3	2.0	1.7	25	0.7	0.4	< 0.3	19
		40	136	491	2.5	2.2	1.8	28	0.9	0.6	0.4	25
		50	151	545	2.8	2.4	1.9	30	0.9	0.6	0.6	27
		60	166	600	3.0	2.5	2.1	32	1.4	0.9	0.6	30

4-Slot Sidewall

Nominal Length mm	Nomical Inlet Dia. mm	Inlet Static Pressure Pa	Maximum Flow L/s	Maximum Flow m³/h	Maximum Flow Throw (m)*@v_t = .25 m/s	.50 m/s	.75 m/s	†NC	25% Maximum Flow Throw (m)*@v_t = .25 m/s	.50 m/s	.75 m/s	†NC
600	200	10	65	235	1.0	0.7	0.8	<15	< 0.3	< 0.3	< 0.3	<15
		20	88	317	1.8	1.5	1.3	21	0.5	0.3	< 0.3	17
		30	109	392	2.3	2.0	1.7	26	0.7	0.4	< 0.3	20
		• 40	127	457	2.4	2.1	1.8	28	1.0	0.7	0.4	23
		50	142	511	2.4	2.1	1.8	32	1.2	0.9	0.6	27
		60	155	559	2.7	2.4	2.1	34	1.2	0.9	0.6	30
900	200	10	78	283	1.1	0.8	0.9	<15	< 0.3	< 0.3	< 0.3	<15
		20	105	378	1.6	1.3	1.1	21	0.5	0.3	< 0.3	17
		• 30	130	467	2.0	1.7	1.4	26	0.6	0.3	< 0.3	21
		40	151	545	2.2	1.9	1.6	29	0.7	0.4	0.3	24
		50	170	613	2.4	2.1	1.8	32	0.9	0.6	0.3	28
		60	185	668	2.4	2.1	1.8	34	1.2	0.9	0.6	30
1200	250	10	137	492	2.6	2.0	1.8	<15	0.6	0.3	< 0.3	<15
		• 20	186	670	3.1	2.5	2.0	22	0.6	0.3	< 0.3	19
		30	229	826	3.4	2.8	2.2	28	0.8	0.4	0.4	24
		40	266	958	3.5	2.9	2.3	33	1.0	0.7	0.7	28
		50	298	1073	4.0	3.4	2.8	35	1.5	1.2	0.9	32
		60	324	1169	4.2	3.6	3.0	38	1.8	1.5	1.2	34
1500	300◊	10	173	623	3.2	2.6	2.0	<15	0.6	0.3	< 0.3	<15
		20	237	856	3.7	3.1	2.5	22	0.6	0.3	0.3	19
		• 30	294	1060	4.0	3.4	2.8	29	0.9	0.6	0.4	24
		40	340	1227	4.1	3.4	2.8	33	1.4	1.1	0.8	28
		50	378	1363	4.6	3.7	3.1	36	1.8	1.5	1.2	32
		60	416	1500	5.1	4.4	3.6	38	2.1	1.8	1.5	34

The volume of induction air (into the ceiling) required in addition to rated air volume is:		
Inlet SP Pa	1- and 2- slot Induction Air l/s	4-Slot CFM / l/s
12	3.3	5.2
25	4.2	6.6
37	5.2	8.0
50	5.9	9.4

Note:
The installation must have provision to vent the induction air either to the return air plenum or to the room.

All SI (metric) ratings are soft conversion from I-P ratings.

• Denotes 750 fpm / 3.81 m/s inlet velocity.

⊙ Denotes 400 fpm / 2.03 m/s inlet velocity.

* Throw data is for air 20°F/11°C lower than room temperature. Throws for isothermal air are 40 to 50% greater.

† NC based on L_w (10^{-12} watts reference) -10db.

◊ Oval shaped inlet.

- Ratings independently verified by Inchcape Testing Services, ETL Testing Laboratories.

- Tested in accordance with ANSI/ASHRAE 70-1991, ANSI S12.31, ARI 890-2001, ISO 5219 and ISO 3741.

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TLW Therma-Fuser™ Linear Sidewall Thermally Powered VAV Diffuser

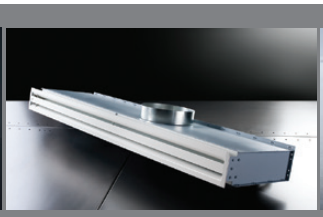
TEN YEAR WARRANTY

Acutherm warrants that its TLW diffuser, exclusive of any options and accessories (whether factory or field installed) shall be free from defective material or workmanship for a period of ten (10) years from the date of shipment and agrees to repair or replace, at its option, any parts that fail during said ten (10) year period due to any such defects which would not have occurred had reasonable care and proper usage and all parts and controls remain unaltered. Acutherm makes NO WARRANTY OF MERCHANTABILITY OF PRODUCTS OR OF THEIR FITNESS FOR ANY PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY WHICH EXTENDS BEYOND THE LIMITED WARRANTY ABOVE. ACUTHERM'S LIABILITY FOR ANY AND ALL LOSSES AND DAMAGES RESULTING FROM DEFECTS SHALL IN NO EVENT EXCEED THE COST OF REPAIR OR REPLACEMENT OF PARTS FOUND DEFECTIVE UPON EXAMINATION BY ACUTHERM. IN NO EVENT SHALL ACUTHERM BE LIABLE FOR INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR DAMAGES FOR INJURY TO PERSONS OR PROPERTY. Acutherm shall not be responsible for freight to or from its plant in connection with the inspection, repair or replacement of parts under the terms of this limited warranty nor for cost of removal or installation.

ACUTHERM PRODUCT GUIDE

Square VAV Diffusers

Round VAV Diffusers


Linear VAV Diffusers

Accessories

Pressure Control

Temperature control

PRODUCT INFORMATION DESCRIPTION

Use the following model number nomenclature to order Therma-Fuser diffusers, options and accessories.

Product

(1) Model	(2) Type	(3) Nominal Length	(4) Slots	(5) Blow	(6) Inlet
TLW					

Product

1. Model: **TLW** Sidewall Linear Therma-Fuser Diffuser
2. Type: **C** VAV cooling only, **CW** VAV cooling plus warm up, **D** Manually adjustable diffuser, **RAD** Return air, ducted, **RAP** Return air, plenum
3. Nominal Length: **24**, **36**, **48** or **60** in. (**72** in. available for Type-RAP only.) **600**, **900**, **1200** and **1500** mm lengths are available to fit metric ceilings.
4. Slots: **1**-slot, **2**-slot, **4**-slot
5. Blow Direction: **1**-way
6. Inlet: **S** Standard Top or **R** Rear Rectangular

Options

(1) Remote Adjust	(2) Insulation	(3) Sensor

Options

1. Remote Adjust: **DA1** or **DA1M** (**DA2** or **DA2M** for 4-slot) for Digital Wall Adjuster. **WA1M** (or **WA2M** for 4-slot) for Wireless Wall Adjuster.
2. Insulation: **I** Internal insulation
3. Sensor: **AS** for DSMC or for 3rd party

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