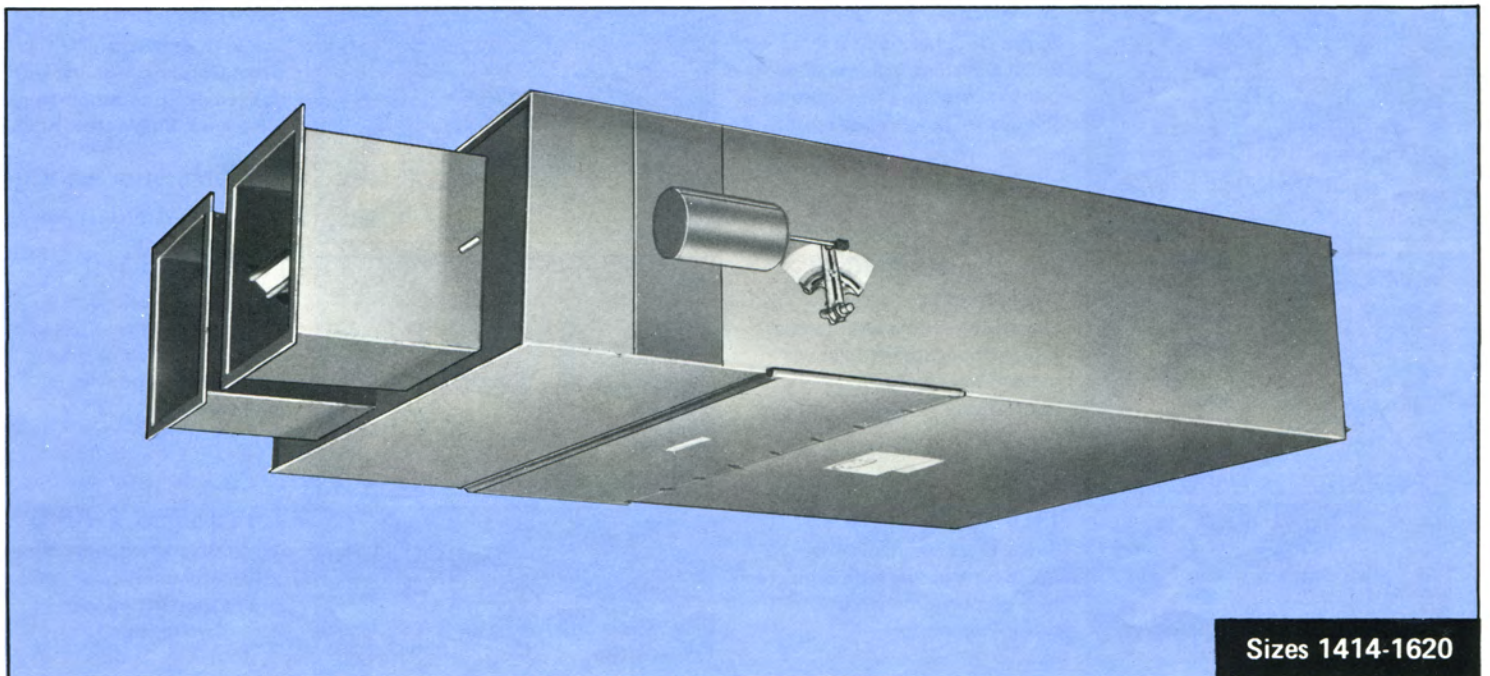
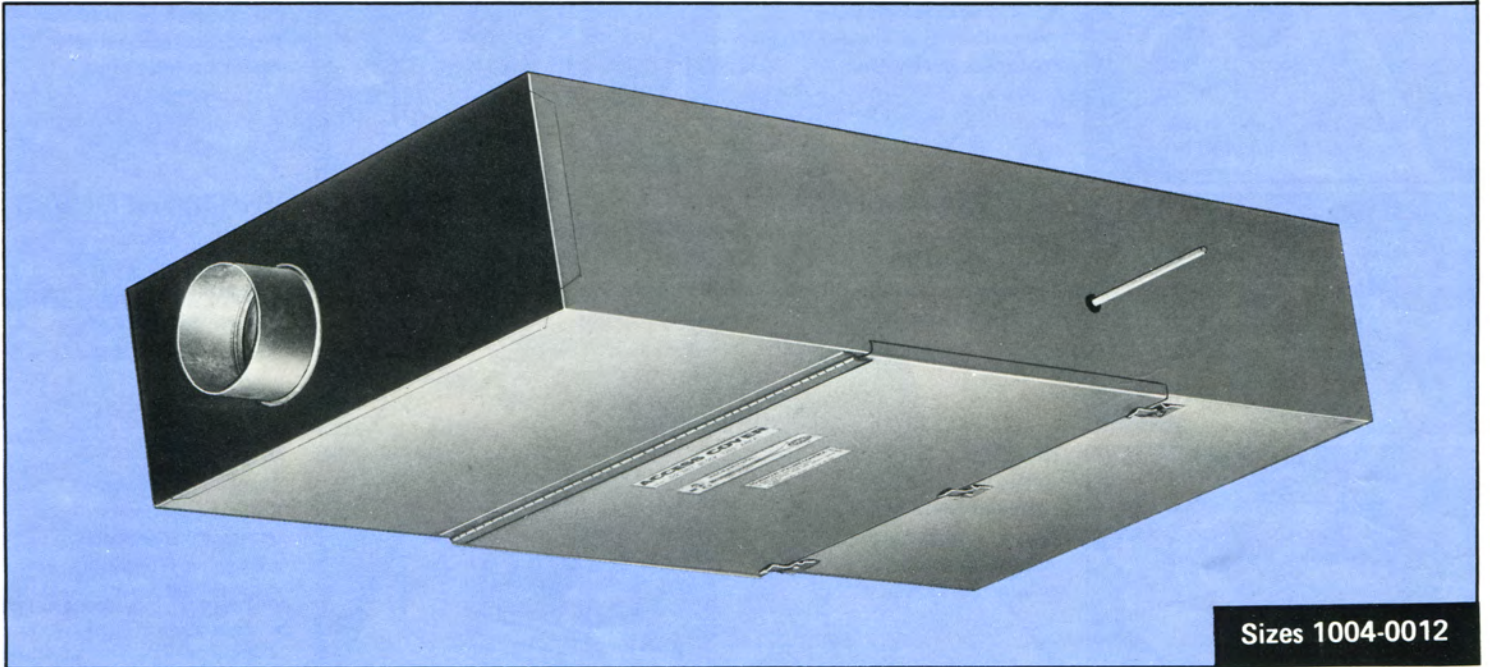
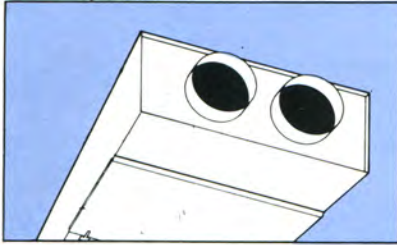


# Mechanitrol High Velocity Dual and Single Duct

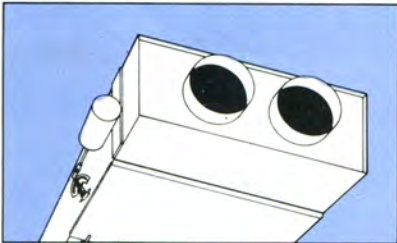




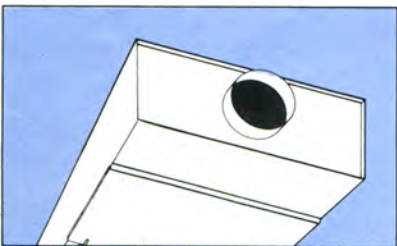
Sizes 1004/0012



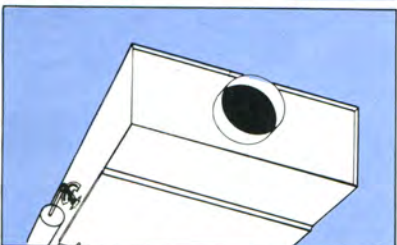
**MHC5B and MHC6B**  
Dual Duct Mechanical constant volume with temperature proportioning inlet valve. Single motor for inlet valve.



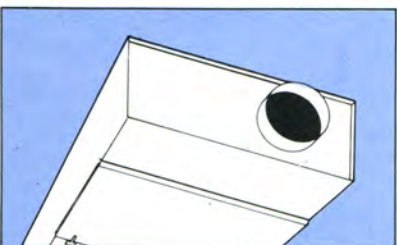
**MHV7B and MHV8B**  
Dual Duct Mechanical Reset Constant Volume with temperature proportioning inlet valve. Two motors.



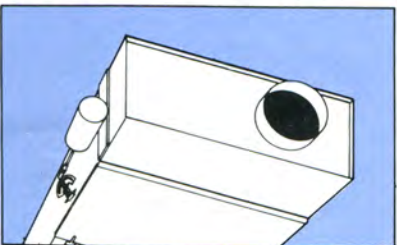
**SHC9B**  
Single Duct Mechanical Constant Volume without temperature proportioning inlet valve. No motors – manual field reset.



**SHV9B**  
Single Duct Mechanical Reset Constant Volume without temperature proportioning inlet valve. Single reset motor.

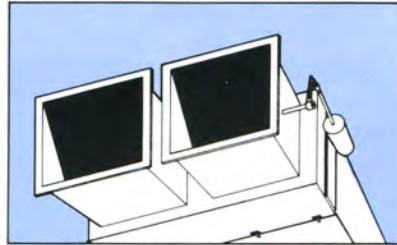


**THC3B and THC4B**  
Single Duct Mechanical Constant Volume with temperature proportioning inlet valve. Single motor for inlet valve.



**THV3B and THV4B**  
Single Duct Mechanical Reset Constant Volume with temperature proportioning inlet valve. Two motors.

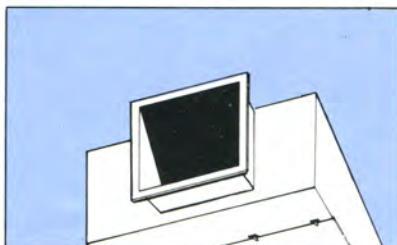
Sizes 1414/1620



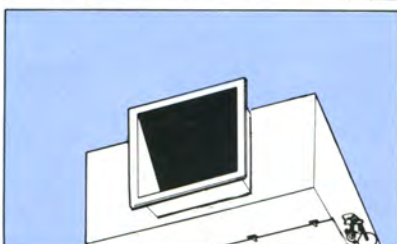
**MHC5B and MHC6B**  
Dual Duct Mechanical constant volume with temperature proportioning inlet valve. Single motor for inlet valve.



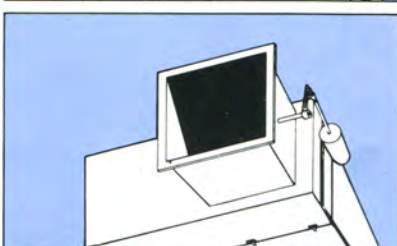
**MHV7B and MHV8B**  
Dual Duct Mechanical Reset Constant Volume with temperature proportioning inlet valve. Two motors.



**SHC9B**  
Single Duct Mechanical Constant Volume without temperature proportioning inlet valve. No motors – manual field reset.



**SHV9B**  
Single Duct Mechanical Reset Constant Volume without temperature proportioning inlet valve. Single reset motor.

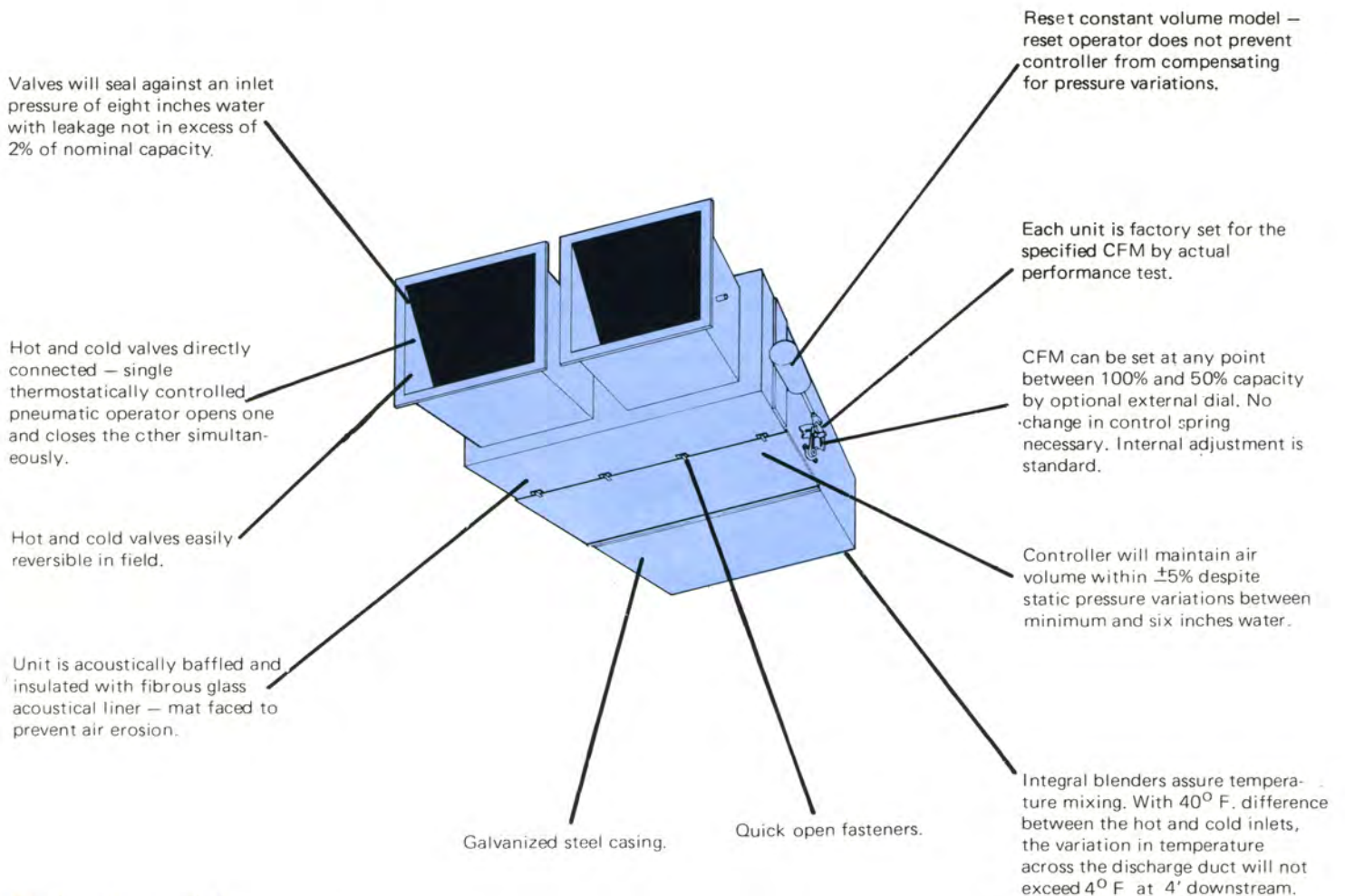


**THC3B and THC4B**  
Single Duct Mechanical Constant Volume with temperature proportioning inlet valve. Single motor for inlet valve.



**THV3B and THV4B**  
Single Duct Mechanical Reset Constant Volume with temperature proportioning inlet valve. Two motors.

# Mechanitrol High Velocity Dual and Single Duct



Optional extended range units are available having same reset capacity. (Model MHV7B Shown)

## Designed to:

- Proportion the hot and cold flows in response to the space thermostat.
- Reduce high velocities and pressures for discharge of the air at conventional low velocity values.
- Mix the hot and cold flows to provide uniform temperature at discharge.
- Attenuate self-generated noise.
- Automatically control the volume of air discharge despite static pressure unbalance between .75" and 6".
- Prevent leakage in excess of 3% of nominal capacity when all connections are sealed with pressures of eight inches water upstream and one inch water downstream of volume controller.
- Provide above functions within a factory built, tested and performance-rated unit.

## Suggested Specifications:

**TERMINAL CONTROL UNITS:** Units shall be Carnes high velocity, dual duct,

mechanical constant reset constant or variable volume, acoustic terminal control units.

**CAPACITIES:** Each unit shall deliver the air capacity specified on the mechanical drawings with inlet velocity not in excess of 2850 FPM and with minimum static pressure drop not in excess of 1.2 inches water. The specified CFM shall be within the catalog limits of the unit. The low limit shall be at least 50% of the high limit. Units shall have catalogued performance ratings for CFM, static drop and sound power level.



**CONSTANT VOLUME CONTROLLER:**

Controller shall be self-contained and maintain air volume within  $\pm 5\%$  despite inlet static pressure variations between minimum and 6 inches water. Controller shall be factory set with air flow for CFM and shall have an exterior CFM dial and adjustment shaft to allow re-setting to any CFM within the limits specified under "Capacities" above. The complete range of adjustment shall be obtainable within less than one complete revolution of adjustment shaft.

**SOUND POWER LEVEL:** Units shall be rated in sound power level (PWL-NC Index) in decibels re  $10^{-12}$  watt.

**VALVES:** The temperature control valves shall be operable by one thermostatically controlled pneumatic operator. The valves shall be capable of sealing against an inlet pressure of 8 inches water with leakage less than 2% of

nominal capacity (nominal capacity based on 3000 FPM inlet velocity per Air Diffusion Council Code). Hot and cold valves are to be easily reversible in the field. The resilient sealing members shall be attached to the movable valve element rather than attached to the casing.

**INSULATION:** The interior of the casing and baffles shall be covered with mat-faced fibrous glass acoustical liner with covered edges so no raw edges face air flow. Liner shall meet NFPA-90A.

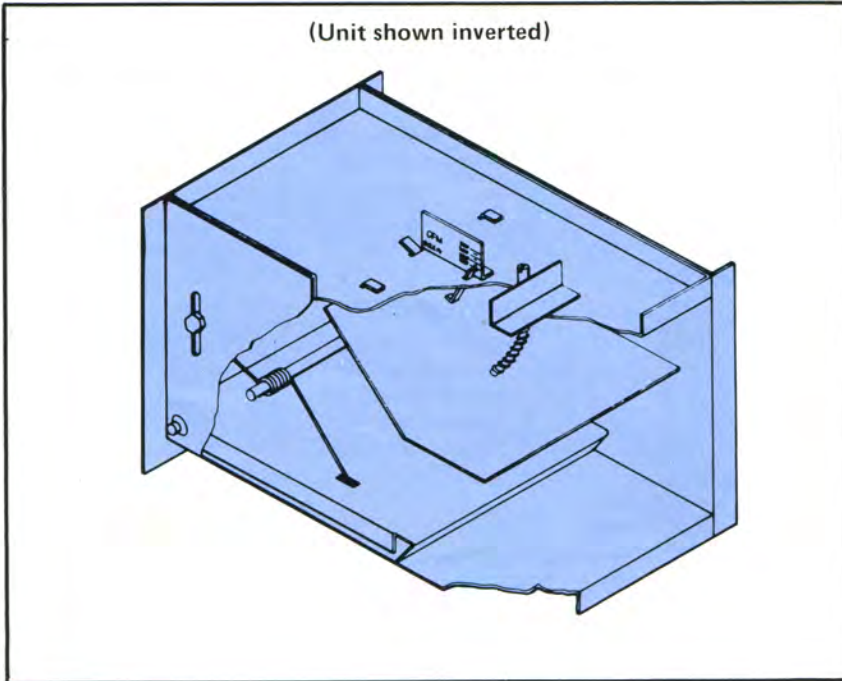
**RESET CONSTANT VOLUME:** Where specified, units shall be equipped with a pneumatic motor to adjust the volume controller to operate at any CFM between the high and low limits specified in the catalog. The combination shall be such that the motor does not prevent the controller from compensating for pressure variations. The motor shall be furnished by the temperature control

contractor and factory installed by the terminal unit manufacturer.

**VARIABLE VOLUME:** Where specified, single duct units may be equipped with an inlet valve, pneumatically operated, for complete reduction of air flow. However, below the minimum catalog pressure drop, the box is not required to maintain constant volume.

**AIR MIXING:** Units shall have integral blenders which assure mixing such that stratification, in the downstream ductwork at a distance of two duct widths, will not exceed  $1^{\circ}\text{F}$ . for each  $20^{\circ}\text{F}$ . difference between the temperature of the hot and cold air streams.

**CASING:** Casing shall be of galvanized steel construction, sealed to prevent leakage in excess of 3% of nominal capacity when all connections are sealed against pressure of 8 inches water upstream and 1 inch water downstream of volume controller.



The Carnes mechanical constant volume control operates on the principle of pressure conversion in air flowing thru the unit. Control blade shape is similar to an air foil section and once energized, "flies" in the air stream in response to varying inlet static pressure.

Controls contain a minimum of moving parts. Non-corrosive materials as nylon control vane bushings, stainless steel springs, nylon spring roller and neoprene pulse snubber are used. Internal CFM adjustment, accessible thru the access cover, is standard on all models up thru size 12. External adjustment is standard on sizes over size 12.

The volume control access cover is removed by opening the quick release catches. This will expose the slotted adjustment shaft and CFM indicating label. Using a screwdriver, turning the shaft counterclockwise will increase CFM and clockwise will decrease CFM.

There is an optional external manual operator available which uses a locking quadrant and also has an external CFM label.



# Performance Mechanitol High Velocity Dual and Single Duct

Size	CFM	Min. SPD	SPD = 1"		SPD = 2"		SPD = 4"	
			PWL-NC Index	* NC	PWL-NC Index	* NC	PWL-NC Index	* NC
1004	075	.75	40	32	45	37	48	40
	100	.75	42	34	47	39	49	41
	125	.75	44	36	49	41	50	42
	150	1.00	46	38	51	43	53	45
2004	100	.75	41	33	46	38	52	44
	125	.75	43	35	47	39	54	46
	150	.85	45	37	49	41	56	48
	175	.90	46	38	51	43	58	50
200	1.00	47	39	54	46	60	52	
	175	.75	45	37	47	39	49	41
0005	200	.75	46	38	48	40	51	43
	225	.75	47	39	49	41	53	45
	250	.75	48	40	51	43	55	47
	275	.75	49	41	55	47	56	48
	300	.90	50	42	56	48	57	49
	325	.90	51	43	56	48	58	50
	350	1.00	51	43	57	49	59	51
	250	.75	46	38	49	41	54	46
0006	275	.75	47	39	50	42	54	46
	300	.75	48	40	52	44	55	47
	325	.75	48	40	53	45	56	48
	350	.75	48	40	54	46	57	49
	375	.75	48	40	55	47	58	50
	400	.75	48	40	55	47	59	51
	425	.85	49	41	56	48	60	52
	450	.90	49	41	58	50	60	52
	475	.95	50	42	58	50	60	52
	500	1.00	50	42	59	51	64	56
	325	.75	34	26	40	32	45	30
	350	.75	35	27	40	32	46	38
0007	375	.75	36	28	41	33	46	38
	400	.75	37	29	42	34	47	39
	425	.75	39	31	43	35	47	39
	450	.75	41	33	44	36	49	41
	475	.80	43	35	45	37	51	43
	500	.85	45	37	47	39	53	45
	550	.90	47	39	49	41	55	47
	600	.95	49	41	51	43	56	48
	650	1.00	50	42	52	44	57	49
	427	.75	37	29	46	38	56	48
0008	450	.75	37	29	46	38	57	49
	475	.75	38	30	46	38	59	51
	500	.75	38	30	46	38	59	51
	550	.75	39	31	46	38	63	55
	600	.75	40	32	54	46	63	55
	650	.80	45	37	60	52	64	56
	700	.85	51	43	60	52	65	56
	750	.90	51	43	62	54	66	56
	800	.95	52	44	64	56	66	56
	850	1.10	53	45	64	56	67	56

\*Discharge NC

Size	CFM	Min. SPD	SPD = 1"		SPD = 2"		SPD = 4"		
			PWL-NC Index	* NC	PWL-NC Index	* NC	PWL-NC Index	* NC	
0009	0550	.75	47	39	46	38	46	38	
	0600	.75	47	39	46	38	50	42	
	0650	.75	48	40	51	43	55	47	
	0700	.75	49	41	55	47	60	52	
	0750	.75	49	41	55	47	66	58	
	0800	.75	50	42	56	48	66	58	
	0850	.75	50	42	56	48	66	58	
	0900	.75	51	43	58	50	67	59	
	0950	.85	51	43	60	52	67	59	
	1000	.90	52	44	60	52	68	60	
	1050	.95	52	44	61	53	69	61	
	1100	1.00	53	45	61	53	69	61	
	0010	0700	.75	48	40	54	46	60	52
		0750	.75	49	41	54	46	61	53
0800		.75	49	41	55	47	61	53	
0850		.75	50	42	55	47	62	54	
0900		.75	51	43	56	48	64	56	
0950		.75	51	43	56	48	64	56	
1000		.75	52	44	57	49	65	57	
1050		.75	54	46	58	50	66	58	
1100		.75	54	46	58	50	66	58	
1150		.75	55	47	59	51	67	59	
1200		.80	55	47	59	51	67	59	
1250		.85	55	47	60	52	68	60	
1300		.90	56	48	61	53	68	60	
1350		.95	56	48	61	53	69	61	
1400		1.00	56	48	62	54	69	61	
0012		1000	.75	53	45	58	50	62	54
	1050	.75	53	45	58	50	62	54	
	1100	.75	54	46	59	51	63	55	
	1150	.75	54	46	59	51	64	56	
	1200	.75	56	48	60	52	64	56	
	1250	.75	56	48	61	53	66	58	
	1300	.75	56	48	61	53	66	58	
	1350	.75	56	48	62	54	67	59	
	1400	.75	59	51	63	55	67	59	
	1450	.75	59	51	64	56	68	60	
	1500	.75	60	52	65	57	68	60	
	1550	.75	60	52	65	57	69	61	
	1600	.80	60	52	67	59	69	61	
	1650	.80	61	53	67	59	70	62	
	1700	.85	61	53	67	59	70	62	
	1800	.90	61	53	67	59	70	62	
1900	.95	62	54	68	60	71	63		
2000	1.20	62	54	69	61	71	63		

\*Discharge NC



# Performance Mechanitol High Velocity Dual and Single Duct

Size	CFM	Min. SPD	SPD = 1''		SPD = 2''		SPD = 4''	
			PWL-NC Index	* NC	PWL-NC Index	* NC	PWL-NC Index	* NC
1004	075	.75	40	32	45	37	48	40
	100	.75	42	34	47	39	49	41
	125	.75	44	36	49	41	50	42
	150	1.00	46	38	51	43	53	45
2004	100	.75	41	33	46	38	52	44
	125	.75	43	35	47	39	54	46
	150	.85	45	37	49	41	56	48
	175	.90	46	38	51	43	58	50
200	1.00	47	39	54	46	60	52	
	175	.75	45	37	47	39	49	41
0005	200	.75	46	38	48	40	51	43
	225	.75	47	39	49	41	53	45
	250	.75	48	40	51	43	55	47
	275	.75	49	41	55	47	56	48
	300	.90	50	42	56	48	57	49
	325	.90	51	43	56	48	58	50
	350	1.00	51	43	57	49	59	51
	250	.75	46	38	49	41	54	46
0006	275	.75	47	39	50	42	54	46
	300	.75	48	40	52	44	55	47
	325	.75	48	40	53	45	56	48
	350	.75	48	40	54	46	57	49
	375	.75	48	40	55	47	58	50
	400	.75	48	40	55	47	59	51
	425	.85	49	41	56	48	60	52
	450	.90	49	41	58	50	60	52
	475	.95	50	42	58	50	60	52
	500	1.00	50	42	59	51	64	56
	325	.75	34	26	40	32	45	30
	350	.75	35	27	40	32	46	38
0007	375	.75	36	28	41	33	46	38
	400	.75	37	29	42	34	47	39
	425	.75	39	31	43	35	47	39
	450	.75	41	33	44	36	49	41
	475	.80	43	35	45	37	51	43
	500	.85	45	37	47	39	53	45
	550	.90	47	39	49	41	55	47
	600	.95	49	41	51	43	56	48
	650	1.00	50	42	52	44	57	49
	427	.75	37	29	46	38	56	48
0008	450	.75	37	29	46	38	57	49
	475	.75	38	30	46	38	59	51
	500	.75	38	30	46	38	59	51
	550	.75	39	31	46	38	63	55
	600	.75	40	32	54	46	63	55
	650	.80	45	37	60	52	64	56
	700	.85	51	43	60	52	65	56
	750	.90	51	43	62	54	66	56
	800	.95	52	44	64	56	66	56
	850	1.10	53	45	64	56	67	56

\*Discharge NC

Size	CFM	Min. SPD	SPD = 1''		SPD = 2''		SPD = 4''		
			PWL-NC Index	* NC	PWL-NC Index	* NC	PWL-NC Index	* NC	
0009	0550	.75	47	39	46	38	46	38	
	0600	.75	47	39	46	38	50	42	
	0650	.75	48	40	51	43	55	47	
	0700	.75	49	41	55	47	60	52	
	0750	.75	49	41	55	47	66	58	
	0800	.75	50	42	56	48	66	58	
	0850	.75	50	42	56	48	66	58	
	0900	.75	51	43	58	50	67	59	
	0950	.85	51	43	60	52	67	59	
	1000	.90	52	44	60	52	68	60	
	1050	.95	52	44	61	53	69	61	
	1100	1.00	53	45	61	53	69	61	
	0010	0700	.75	48	40	54	46	60	52
		0750	.75	49	41	54	46	61	53
0800		.75	49	41	55	47	61	53	
0850		.75	50	42	55	47	62	54	
0900		.75	51	43	56	48	64	56	
0950		.75	51	43	56	48	64	56	
1000		.75	52	44	57	49	65	57	
1050		.75	54	46	58	50	66	58	
1100		.75	54	46	58	50	66	58	
1150		.75	55	47	59	51	67	59	
1200		.80	55	47	59	51	67	59	
1250		.85	55	47	60	52	68	60	
1300		.90	56	48	61	53	68	60	
1350		.95	56	48	61	53	69	61	
1400		1.00	56	48	62	54	69	61	
0012		1000	.75	53	45	58	50	62	54
		1050	.75	53	45	58	50	62	54
		1100	.75	54	46	59	51	63	55
	1150	.75	54	46	59	51	64	56	
	1200	.75	56	48	60	52	64	56	
	1250	.75	56	48	61	53	66	58	
	1300	.75	56	48	61	53	66	58	
	1350	.75	56	48	62	54	67	59	
	1400	.75	59	51	63	55	67	59	
	1450	.75	59	51	64	56	68	60	
	1500	.75	60	52	65	57	68	60	
	1550	.75	60	52	65	57	69	61	
	1600	.80	60	52	67	59	69	61	
	1650	.80	61	53	67	59	70	62	
	1700	.85	61	53	67	59	70	62	
	1800	.90	61	53	67	59	70	62	
1900	.95	62	54	68	60	71	63		
2000	1.20	62	54	69	61	71	63		

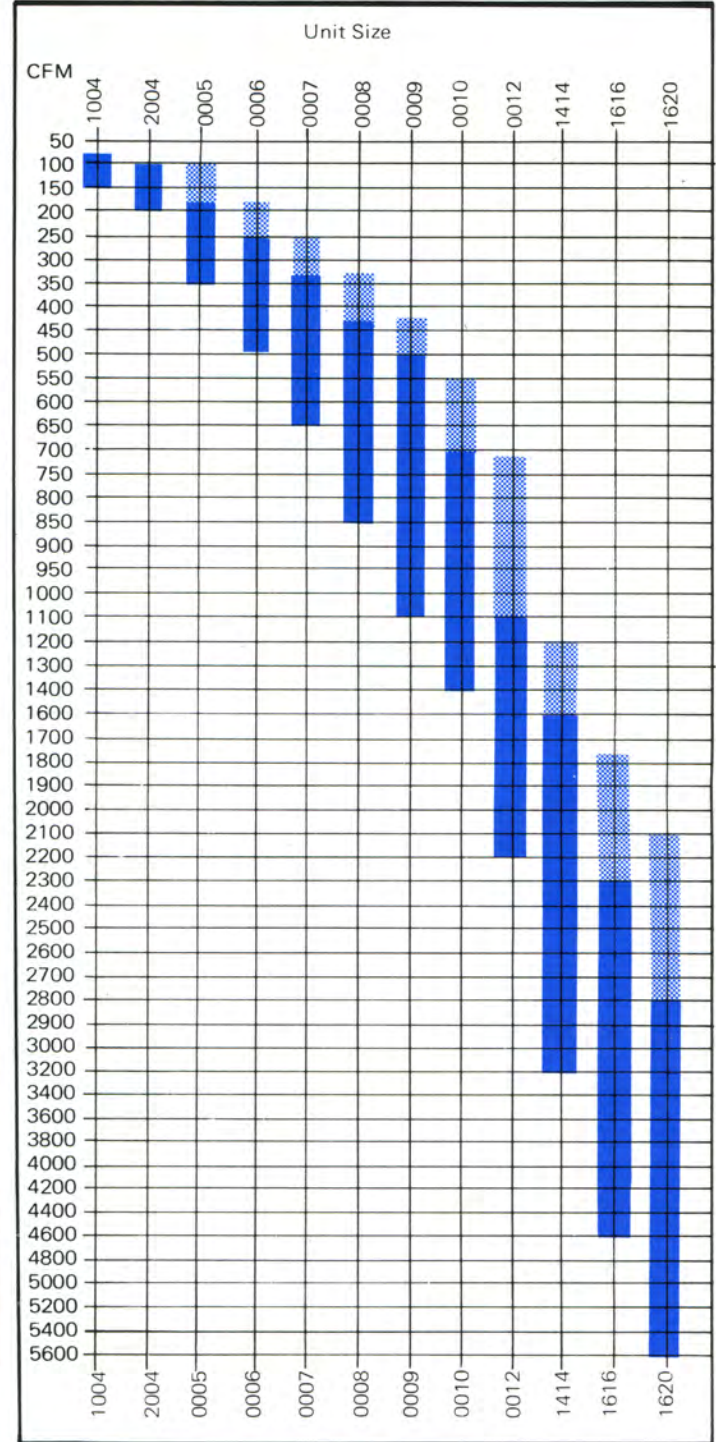
\*Discharge NC



Size	CFM	Min. SPD	SPD = 1"		SPD = 2"		SPD = 4"	
			PWL-NC Index	* NC	PWL-NC Index	* NC	PWL-NC Index	* NC
1414	1600	.75	46	38	49	41	52	44
	1700	.75	47	39	50	42	53	45
	1800	.75	48	40	50	42	53	45
	1900	.75	49	41	51	43	54	46
	2000	.75	50	42	52	44	55	47
	2100	.75	51	43	53	45	56	48
	2200	.75	52	44	54	46	57	49
	2300	.75	53	45	54	46	58	50
	2400	.75	54	46	55	47	59	51
	2500	.75	55	47	56	48	60	52
	2600	.75	55	47	56	48	60	52
	2700	.75	56	48	57	49	61	53
	2800	.75	56	48	57	49	62	54
	2900	.75	57	49	58	50	62	54
	3000	.75	57	49	58	50	63	55
	3100	.75	58	50	59	51	64	56
3200	1.00	59	51	60	52	64	56	
1616	2300	.75	51	43	53	45	57	49
	2400	.75	51	43	53	45	57	49
	2500	.75	51	43	54	46	58	50
	2600	.75	52	44	54	46	58	50
	2700	.75	52	44	55	47	59	51
	2800	.75	52	44	55	47	59	51
	2900	.75	52	44	56	48	60	51
	3000	.75	53	45	57	49	61	53
	3200	.75	53	45	58	50	62	54
	3400	.75	54	46	59	51	64	56
1620	3600	.75	56	48	60	52	66	58
	3800	.75	57	49	61	53	67	59
	4000	.75	58	50	62	54	67	59
	4200	.75	58	50	62	54	68	60
	4400	.75	59	51	63	55	68	60
	4600	1.00	59	51	63	55	69	61
	2800	.75	51	43	55	47	59	51
	2900	.75	51	43	55	47	59	51
	3000	.75	51	43	55	47	60	52
	3200	.75	53	44	56	48	61	53
	3400	.75	53	44	56	48	62	54
	3600	.75	52	44	57	49	63	55
	3800	.75	53	45	59	49	65	57
	4000	.75	54	46	58	50	67	59
4200	.75	55	47	59	51	69	61	
4400	.75	55	47	60	52	70	62	
4600	.75	56	48	61	53	71	63	
4800	.75	56	48	61	53	72	64	
5000	.75	57	49	62	54	72	64	
5200	.75	59	51	64	56	73	65	
5400	.75	62	54	68	60	74	66	
5600	1.00	68	60	73	65	76	68	

\*Discharge NC

### Nominal Range Comparison



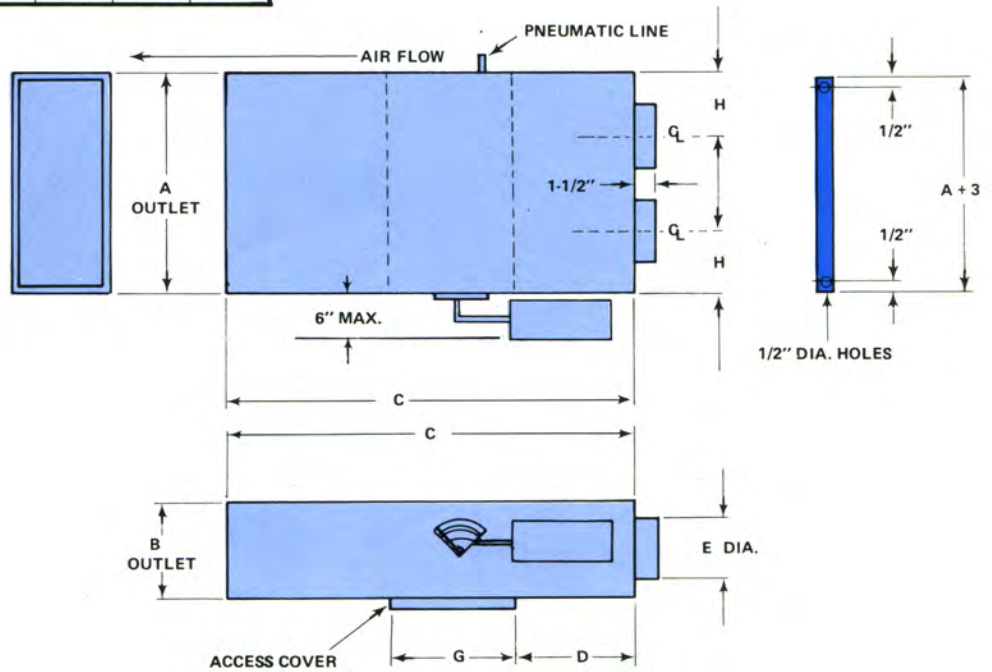
■ Nominal Range  
 ▨ Extended Range

# Dimensions

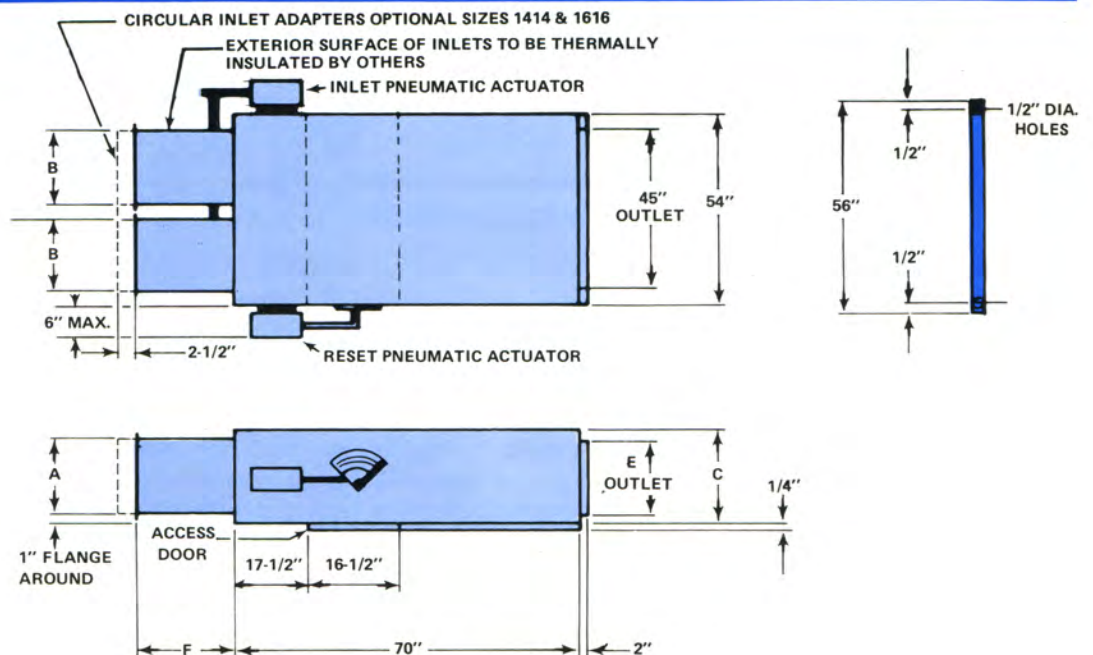
## High Velocity

### Dual and Single Duct

	Unit Size Number								
	1004	2004	0005	0006	0007	0008	0009	0010	0012
	Dimensions – Inches								
A	19	21	23	25	27	29	31	35	
B	7	8	9	10	11	12	13	15	
C	35-1/4	37-1/4	39-1/4	47-1/4	47-1/4	47-1/4	51-1/4	59-1/4	
D	11-3/8	11-3/8	11-3/8	13-3/8	13-3/8	13-3/8	13-3/8	19-3/4	
E Dia.	4	5	6	7	8	9	10	12	
G	13-3/4	15	16-1/4	21-3/4	20-3/4	20	23-1/4	25-1/2	
H	6-1/4	6-3/4	7-1/4	7-3/4	8-1/4	8-3/4	9-1/4	10-1/4	

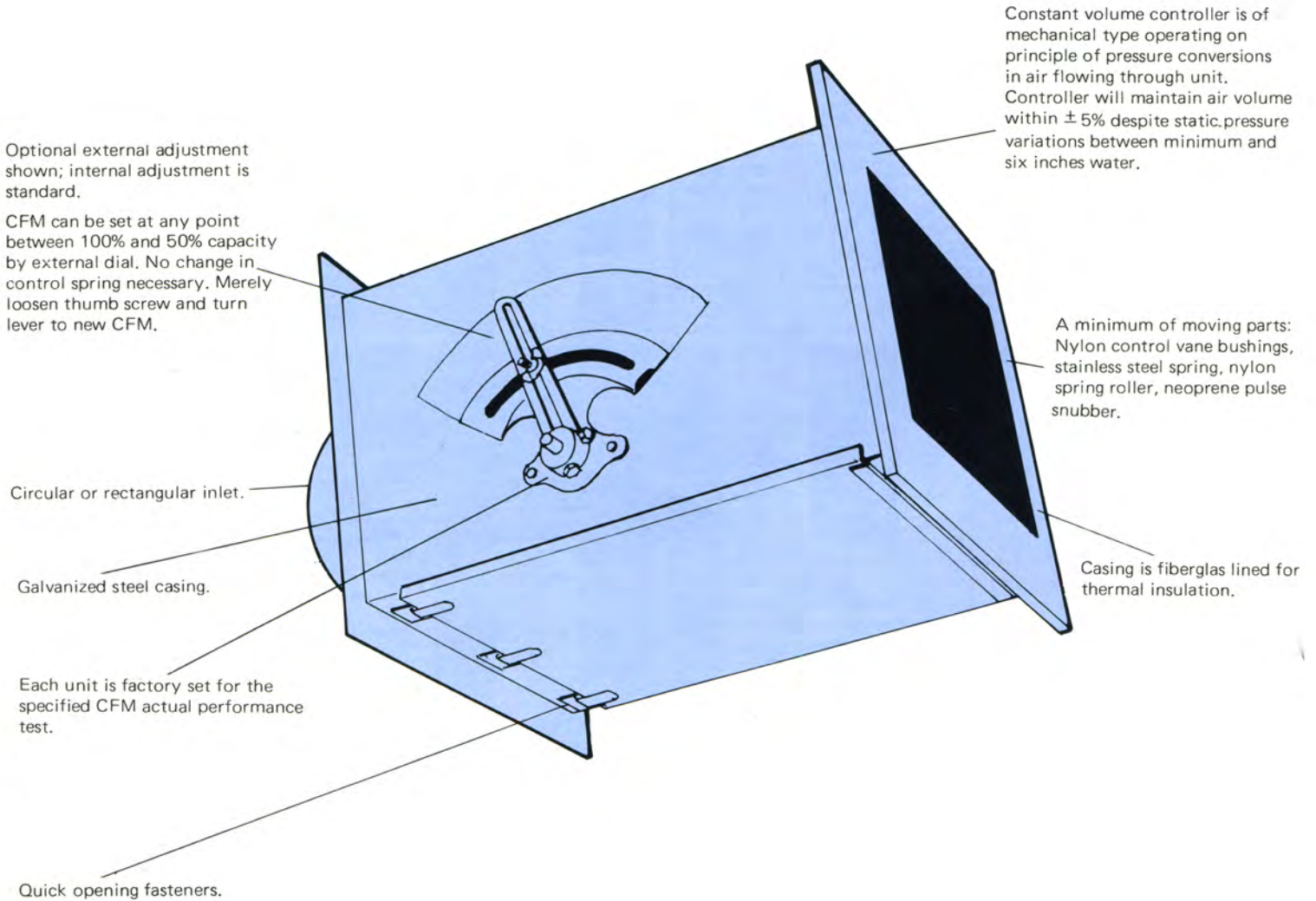


	Unit Size Number		
	1414	1616	1620
	Dimensions – Inches		
A	14	16	16
B	14	16	20
C	16-3/4	18-3/4	18-3/4
E	15	17	17
F	13	14-1/2	14-1/2





# Duct Mounted Constant Volume Control



## DESIGNED TO:

- Automatically control air volume in high-velocity air systems, supply or return.
- Compensate for system static pressure unbalance.
- Install between duct sections.
- Accommodate circular or rectangular ductwork at inlet.
- Reduce high velocities and pressures to low velocity values.
- Provide above functions within a factory built, tested and performance-rated unit.

## SUGGESTED SPECIFICATIONS:

- DUCT MOUNTED VOLUME CONTROL:** Units shall be Carnes high velocity mechanical constant volume duct mounted controls.
- CAPACITIES:** Each unit shall deliver the air capacity specified on the mechanical drawings, within the catalog ratings. The range of CFM shall include low limits that are 50% of the cataloged high limit and ratings shall be provided for CFM, static drop and sound power level in db re 10<sup>-12</sup> watt. Minimum static pressure required shall be .75 inches water.

**PERFORMANCE:** Controller shall be self-contained and maintain air volume within  $\pm 5\%$  despite inlet static pressure variations between catalog minimum and 6 inches water. Controller shall be factory set for CFM and contain an internal CFM adjustment. An external control shall be available.

**INSULATION:** Control casing shall be lined with mat-faced fibrous glass acoustical and thermal material meeting NFPA-90A.



# Performance Duct Mounted Constant Volume Control

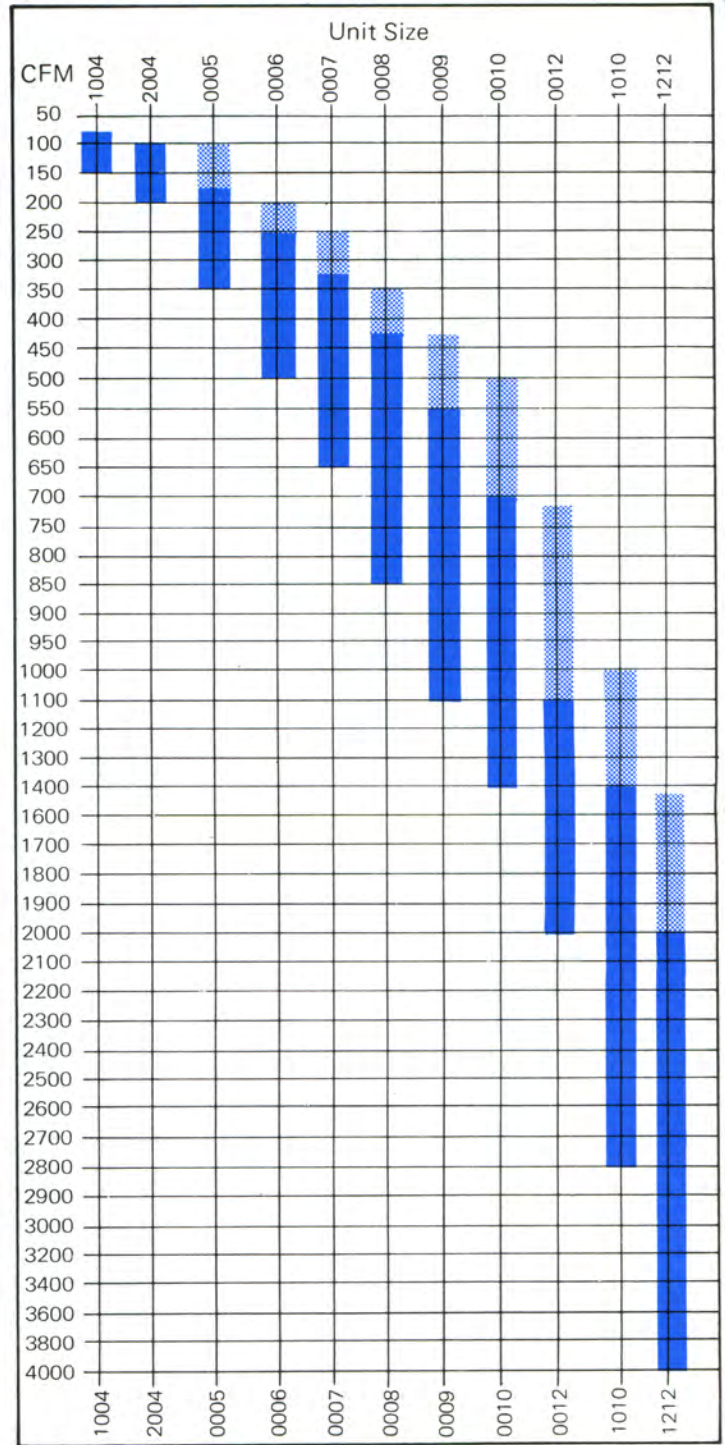
Size	CFM	Min. Spd.	SPD = 1"				SPD = 2"				SPD = 3"				SPD = 4"				SPD = 5"			
			PWL-NC Index		NC Lined Duct		PWL-NC Index		NC Lined Duct		PWL-NC Index		NC Lined Duct		PWL-NC Index		NC Lined Duct		PWL-NC Index		NC Lined Duct	
			0'	5'	0'	5'	0'	5'	0'	5'	0'	5'	0'	5'	0'	5'	0'	5'	0'	5'	0'	5'
1004	75	.75	52	44	L	58	50	22	62	54	26	65	57	29	69	61	33					
	100	.75	53	45	L	60	52	24	64	56	28	67	59	31	71	63	35					
	125	.75	55	47	L	62	54	26	66	58	30	69	61	33	72	64	36					
	150	1.00	56	48	L	64	56	28	68	60	32	71	63	35	73	65	37					
2004	100	.75	53	45	L	59	51	23	63	55	27	66	58	30	70	62	34					
	125	.75	54	46	L	60	52	24	64	56	28	67	59	31	71	63	35					
	150	.75	55	47	L	61	53	25	65	57	29	68	60	32	72	64	36					
	175	.75	56	48	L	62	54	26	66	58	30	69	61	33	73	65	37					
200	1.00	57	49	L	63	55	27	67	59	31	70	62	34	74	66	38						
0005	175	.75	54	46	L	60	52	24	64	56	28	67	59	31	71	63	35					
	200	.75	55	47	L	61	53	25	65	57	29	68	60	32	72	64	36					
	225	.75	56	48	L	62	54	26	66	58	30	69	61	33	73	65	37					
	250	.75	57	49	L	63	55	27	67	59	31	70	62	34	74	66	38					
	275	.75	58	50	L	64	56	28	68	60	32	71	63	35	75	67	39					
	300	.75	59	51	L	65	57	29	69	61	33	72	64	36	76	68	40					
0006	300	.75	58	50	L	63	55	27	67	59	31	70	62	34	74	66	38					
	325	.75	59	51	L	64	56	28	68	60	32	71	63	35	75	67	39					
	350	1.00	59	51	L	65	57	29	69	61	33	72	64	36	76	68	40					
	250	.75	55	47	L	61	53	25	65	57	29	68	60	32	72	64	36					
	275	.75	57	49	L	62	54	26	66	58	30	69	61	33	73	65	37					
	300	.75	57	49	L	62	54	26	66	58	30	69	61	33	73	65	37					
	325	.75	58	50	L	63	55	27	67	59	31	70	62	34	74	66	38					
	350	.75	58	50	L	63	55	27	67	59	31	70	62	34	74	66	38					
	400	.75	59	51	L	64	56	28	68	60	32	71	63	35	75	67	39					
	425	.75	59	51	L	64	56	28	68	60	32	71	63	35	75	67	39					
0007	450	.75	59	51	L	64	56	28	68	60	32	71	63	35	75	67	39					
	475	.75	60	52	L	65	57	29	69	61	33	72	64	36	76	68	40					
	500	1.00	60	52	L	65	57	29	69	61	33	72	64	36	76	68	40					
	325	.75	57	49	L	62	54	26	66	58	30	69	61	33	72	64	36					
	350	.75	57	49	L	62	54	26	66	58	30	69	61	33	72	64	36					
	375	.75	57	49	L	63	55	27	67	59	31	70	62	34	74	66	38					
	400	.75	58	50	L	63	55	27	67	59	31	70	62	34	74	66	38					
	425	.75	58	50	L	64	56	28	68	60	32	71	63	35	75	67	39					
	450	.75	58	50	L	64	56	28	68	60	32	71	63	35	75	67	39					
	475	.75	59	51	L	65	57	29	69	61	33	72	64	36	76	68	40					
	500	.75	59	51	L	65	57	29	69	61	33	72	64	36	76	68	40					
	525	.75	59	51	L	65	57	29	69	61	33	72	64	36	76	68	40					
	550	.75	59	51	L	65	57	29	69	61	33	72	64	36	76	68	40					
	575	.75	60	52	L	66	58	30	70	62	34	74	66	38	78	70	42					
600	.75	60	52	L	66	58	30	70	62	34	74	66	38	78	70	42						
625	.75	60	52	L	66	58	30	70	62	34	74	66	38	78	70	42						
650	1.00	60	52	L	66	58	30	70	62	34	74	66	38	78	70	42						



Size	CFM	Min. Spd.	SPD = 1"				SPD = 2"				SPD = 3"				SPD = 4"				SPD = 5"			
			PWL-NC Index		NC Lined Duct		PWL-NC Index		NC Lined Duct		PWL-NC Index		NC Lined Duct		PWL-NC Index		NC Lined Duct		PWL-NC Index		NC Lined Duct	
			0'	5'	0'	5'	0'	5'	0'	5'	0'	5'	0'	5'	0'	5'	0'	5'	0'	5'	0'	5'
0008	425	.75	58	50	33	64	56	39	68	60	43	70	62	45	74	66	49					
	450	.75	58	50	33	64	56	39	68	60	43	71	63	46	74	66	49					
	475	.75	59	51	34	65	57	40	69	61	44	71	63	46	75	67	50					
	500	.75	59	51	34	65	57	40	69	61	44	72	64	47	75	67	50					
	550	.75	59	51	34	65	57	40	69	61	44	72	64	47	77	69	52					
	600	.75	60	52	32	66	58	38	70	62	42	73	65	45	77	69	49					
	650	.75	60	52	32	66	58	38	70	62	42	73	65	45	77	69	49					
	700	.75	61	53	33	67	59	39	71	63	43	74	66	46	78	70	50					
	750	.75	61	53	33	67	59	39	71	63	43	74	66	46	78	70	50					
	800	.75	61	53	33	68	60	40	72	64	44	75	67	47	79	71	51					
	850	1.00	62	54	34	68	60	40	72	64	44	75	67	47	79	71	51					
	550	.75	60	52	35	64	56	39	68	60	43	71	63	46	75	67	50					
	600	.75	60	52	32	65	57	37	68	60	40	71	63	43	76	68	48					
	650	.75	60	52	32	65	57	37	69	61	41	72	64	44	76	68	48					
700	.75	61	53	33	66	58	38	70	62	42	73	65	45	78	70	50						
0009	750	.75	61	53	33	66	58	38	70	62	42	73	65	45	78	70	50					
	800	.75	61	53	33	67	59	39	71	63	43	74	66	46	78	70	50					
	850	.75	62	54	34	68	60	40	72	64	44	75	67	47	79	71	51					
	900	.75	62	54	34	68	60	40	72	64	44	75	67	47	79	71	51					
	950	.75	62	54	34	68	60	40	72	64	44	75	67	47	79	71	51					
	1000	.75	63	55	35	69	61	41	73	65	45	76	68	48	80	72	52					
	1050	.75	63	55	35	69	61	41	73	65	45	76	68	48	80	72	52					
	1100	1.00	63	55	35	69	61	41	73	65	45	76	68	48	80	72	52					
	700	.75	60	52	33	66	58	39	70	62	43	73	65	46	77	69	50					
	750	.75	60	52	33	67	59	40	70	62	43	74	66	47	77	69	50					
	800	.75	61	53	34	67	59	40	71	63	44	74	66	47	78	70	51					
	850	.75	61	53	34	68	60	41	72	64	45	75	67	48	78	70	51					
	900	.75	62	54	35	68	60	41	72													



Size	CFM	Min. Spd.	SPD = 1"				SPD = 2"				SPD = 3"				SPD = 4"			
			PWL-NC Index	NC Lined Duct		PWL-NC Index	NC Lined Duct		PWL-NC Index	NC Lined Duct		PWL-NC Index	NC Lined Duct		PWL-NC Index	NC Lined Duct		
				0'	5'		0'	5'		0'	5'		0'	5'				
0012	1000	.75	62	54	37	68	60	43	72	64	47	74	66	49				
	1100	.75	63	55	38	69	61	44	72	64	47	75	67	50				
	1200	.75	64	56	37	69	61	42	73	65	46	76	68	49				
	1300	.75	64	56	37	70	62	43	74	66	47	76	68	49				
	1400	.75	64	56	37	70	62	43	74	66	47	77	69	50				
	1500	.75	65	57	38	71	63	44	75	67	48	77	69	50				
	1600	.75	65	57	38	71	63	44	75	67	48	78	70	51				
	1700	.75	65	57	38	72	64	45	75	67	48	79	71	52				
	1800	.75	65	57	37	72	64	44	75	67	47	79	71	51				
	1900	.75	65	57	37	72	64	44	75	67	47	79	71	51				
	2000	1.00	65	57	37	72	64	44	75	67	47	79	71	51				
	1010	1400	.75	64	56	39	70	62	45	74	66	49	78	70	53			
1500		.75	65	57	40	71	63	46	75	67	50	78	70	53				
1600		.75	67	57	40	71	63	46	75	67	50	79	71	54				
1700		.75	65	57	40	71	63	46	75	67	50	79	71	54				
1800		.75	65	57	39	72	64	46	75	67	49	79	71	53				
1900		.75	66	58	40	72	64	46	76	68	50	79	71	53				
2000		.75	66	58	40	72	64	46	76	68	50	79	71	53				
2100		.75	66	58	40	72	64	46	76	68	50	80	72	54				
2200		.75	66	58	40	73	65	47	77	69	51	80	72	54				
2300		.75	67	59	41	73	65	47	77	69	51	80	72	54				
2400		.75	67	59	40	73	65	46	77	69	50	80	72	53				
2500		.75	67	59	40	73	65	46	77	69	50	80	72	53				
1212	2600	.75	67	59	40	74	66	47	77	69	50	81	73	54				
	2700	.75	67	59	40	74	66	47	78	70	51	81	73	54				
	2800	1.00	67	59	40	74	66	47	78	70	51	81	73	54				
	2000	.75	66	58	41	72	64	47	74	66	49	78	70	53				
	2200	.75	66	58	41	72	64	47	75	67	50	78	70	53				
	2400	.75	67	59	41	73	65	47	76	68	50	79	71	53				
	2600	.75	67	59	41	73	65	47	77	69	51	79	71	53				
	2800	.75	67	59	41	73	65	47	77	69	51	80	72	54				
	3000	.75	68	60	41	74	66	47	78	70	51	80	72	53				
	3200	.75	68	60	41	74	66	47	78	70	51	81	73	54				
	3400	.75	68	60	41	74	66	47	78	70	51	81	73	54				
	3600	.75	68	60	41	75	67	48	79	71	52	82	74	55				
3800	.75	68	60	41	75	67	48	79	71	52	82	74	55					
4000	1.00	68	60	41	75	67	48	79	71	52	82	74	55					

Nominal Range Comparison



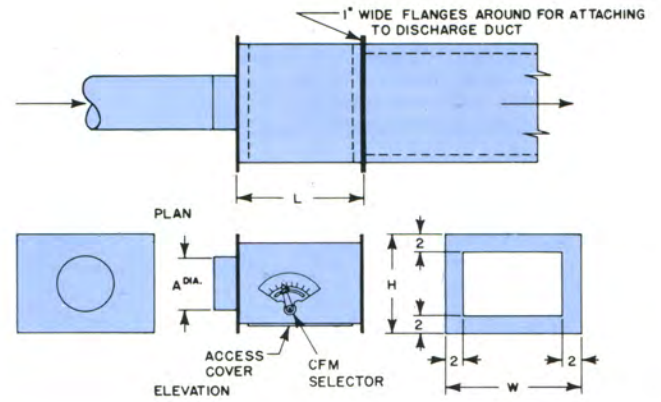
 Nominal Range  
 Extended Range



# Dimensions Duct Mounted Mechanitrol

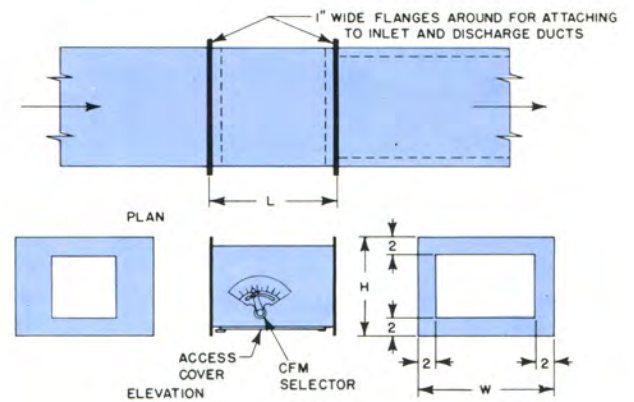
## 75 to 2000 CFM with circular inlet \*

Unit and Catalog Number	Dimensions – Inches			
	A	L	W	H
DHC9B 0004	4	11 $\frac{1}{4}$	11	10
DHC9B 0005	5	14 $\frac{1}{4}$	13	10
DHC9B 0006	6	14 $\frac{1}{4}$	13	11
DHC9B 0007	7	14 $\frac{1}{4}$	17	12
DHC9B 0008	8	14 $\frac{1}{4}$	17	13
DHC9B 0009	9	18 $\frac{1}{4}$	23	14
DHC9B 0010	10	18 $\frac{1}{4}$	23	15
DHC9B 0012	12	18 $\frac{1}{4}$	23	17



## 300 to 4000 with rectangular inlet \*

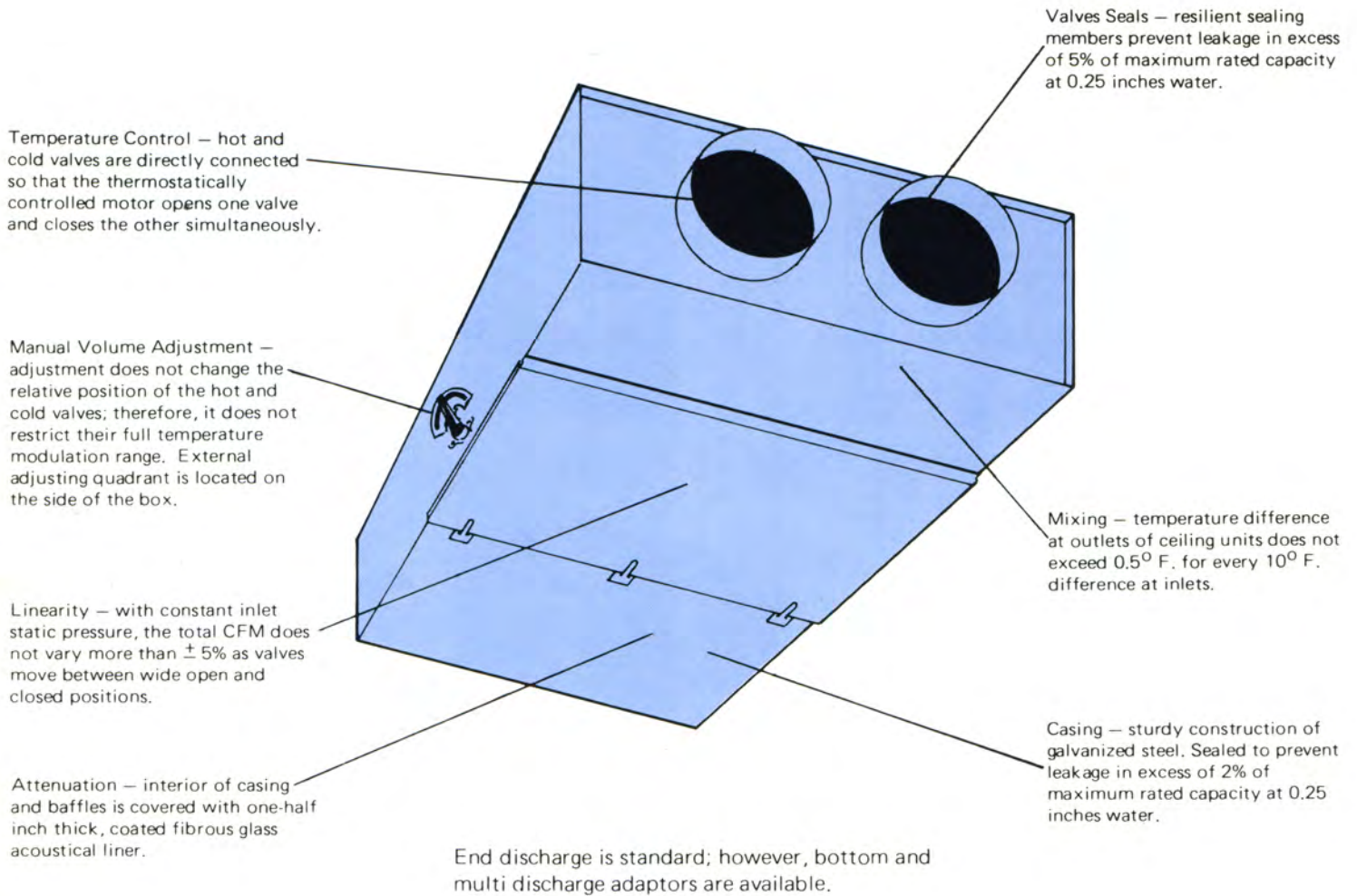
Unit and Catalog Number	Dimensions – Inches		
	L	W	H
DHC9B 0006	14 $\frac{1}{4}$	13	11
DHC9B 0007	14 $\frac{1}{4}$	17	12
DHC9B 0008	14 $\frac{1}{4}$	17	13
DHC9B 0009	18 $\frac{1}{4}$	23	14
DHC9B 0010	18 $\frac{1}{4}$	23	15
DHC9B 0012	18 $\frac{1}{4}$	23	17
DHC9B 1010	18 $\frac{1}{4}$	46	15
DHC9B 1212	18 $\frac{1}{4}$	46	17



\*Indicate circular or rectangular inlet on order form.



# Mechanitrol Low Velocity



## Designed for:

Capacities to 1200 CFM. Maximum rated capacity is based on inlet velocity not greater than 1500 FPM and static pressure drop not greater than 0.25 inches water.

Sound ratings — PWL-NC index (re  $10^{-12}$  watt) method gives sound power level radiated by unit. Level heard in the average room will be at least 8 db lower, depending upon room attenuation and ductwork between unit and outlet.

## Suggested Specifications:

Low velocity dual duct acoustic terminal control units shall be provided as follows:

Each unit shall contain a pair of hot and cold air valves to be operated by one

thermostatically controlled pneumatic motor to be furnished by the control contractor.

The maximum rated capacity shall be the flow rate thru the wide open valve based on inlet velocity of not greater than 1500 FPM and static pressure drop (inlet SP) of not greater than 0.25 in. water. Discharge velocities shall not exceed 1000 FPM.

Valve performance shall be linear so that with constant inlet SP the total capacity shall not vary more than  $\pm 5\%$  as valves move between wide open and closed positions. Valves shall incorporate resilient sealing members to prevent leakage in excess of 5% of max. rated capacity when closed against inlet SP of 0.25 in. water.

Each unit shall contain a manual volume control, externally adjustable without restricting the full temperature modulation range of the hot and cold valves.

Provision for blending the hot and cold air in ceiling models shall be such that the temperature difference at the outlets shall not exceed  $0.5^{\circ}$  F. for each  $10^{\circ}$  F. between inlet temperatures.

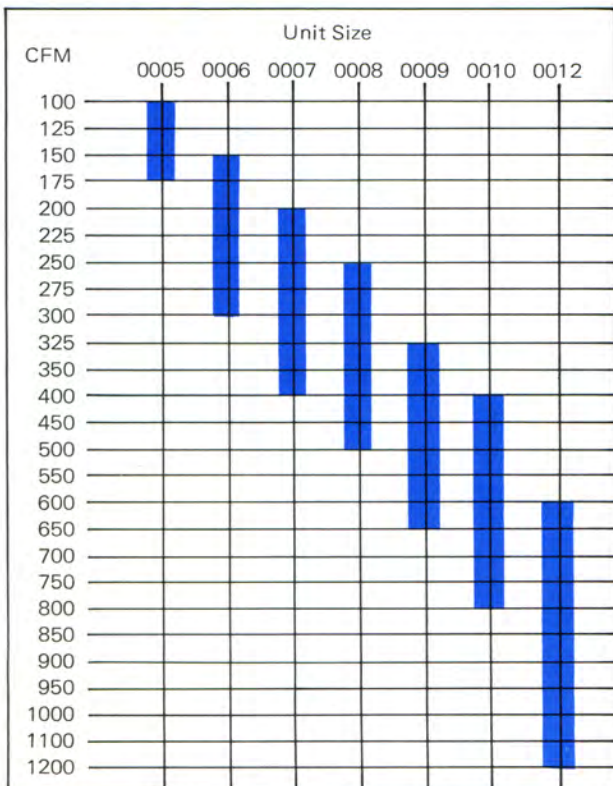
Units shall be baffled and internally lined with fibrous glass acoustical and thermal liner at least  $1/2''$  thick, coated to prevent air-erosion. Casing shall be of galvanized steel, sealed to prevent leakage of more than 2% of max. rated capacity with all connections sealed and internal pressure of 0.25 in. water.



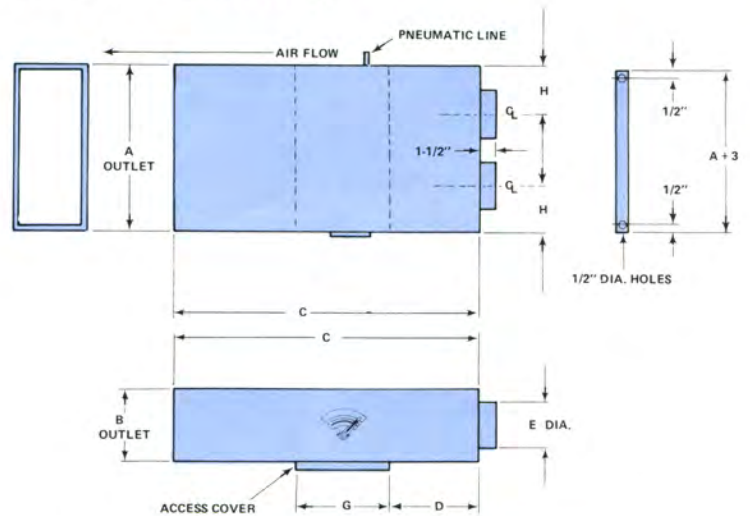
# Low Velocity Performance and Sound Ratings

CFM	0005				0006				0007				0008				0009				0010				0012				CFM
	Manual Volume Adj.				Manual Volume Adj.				Manual Volume Adj.				Manual Volume Adj.				Manual Volume Adj.				Manual Volume Adj.								
	Wide Open		Partially Closed		Wide Open		Partially Closed		Wide Open		Partially Closed		Wide Open		Partially Closed		Wide Open		Partially Closed		Wide Open		Partially Closed		Wide Open		Partially Closed		
	SPD	PWL	SPD	PWL	SPD	PWL	SPD	PWL	SPD	PWL	SPD	PWL	SPD	PWL	SPD	PWL	SPD	PWL	SPD	PWL	SPD	PWL	SPD	PWL	SPD	PWL	SPD	PWL	
100	.04	20	.16	29																							100		
125	.07	27	.28	36																								125	
150	.11	32	.44	41	.02	18	.08	21																				150	
175	.16	39	.64	45	.03	21	.12	25																				175	
200	.23	42	.92	49	.04	24	.16	28	.02	18	.08	22																200	
225					.05	29	.20	32	.03	20	.12	26																225	
250					.06	32	.24	35	.04	23	.16	31	.02	20	.08	25												250	
275					.07	34	.28	37	.05	26	.20	34	.03	22	.12	27												275	
300					.08	37	.32	40	.06	28	.24	37	.04	25	.16	31												300	
325									.07	31	.28	39	.05	27	.20	35	.01	23	.04	26									325
350									.08	35	.32	42	.06	29	.24	39	.02	27	.08	30									350
400									.09	39	.36	45	.07	32	.28	43	.03	30	.12	33	.01	27	.04	32					400
450													.08	36	.32	45	.04	34	.16	37	.02	29	.08	34					450
500													.09	40	.36	47	.05	37	.20	41	.03	32	.12	37					500
550																	.06	40	.24	44	.04	35	.16	40					550
600																	.07	43	.28	46	.05	38	.20	43	.01	32	.04	35	600
650																	.08	45	.32	49	.06	41	.24	44	.02	34	.08	37	650
700																					.07	44	.28	47	.03	36	.12	39	700
750																					.08	46	.32	49	.04	38	.16	41	750
800																					.09	48	.36	51	.05	40	.20	43	800
850																									.06	42	.24	45	850
900																									.07	44	.28	47	900
950																									.08	46	.32	49	950
1000																									.09	48	.36	51	1000
1100																									.10	51	.40	54	1100
1200																									.12	53	.48	56	1200

## Nominal Range Comparison



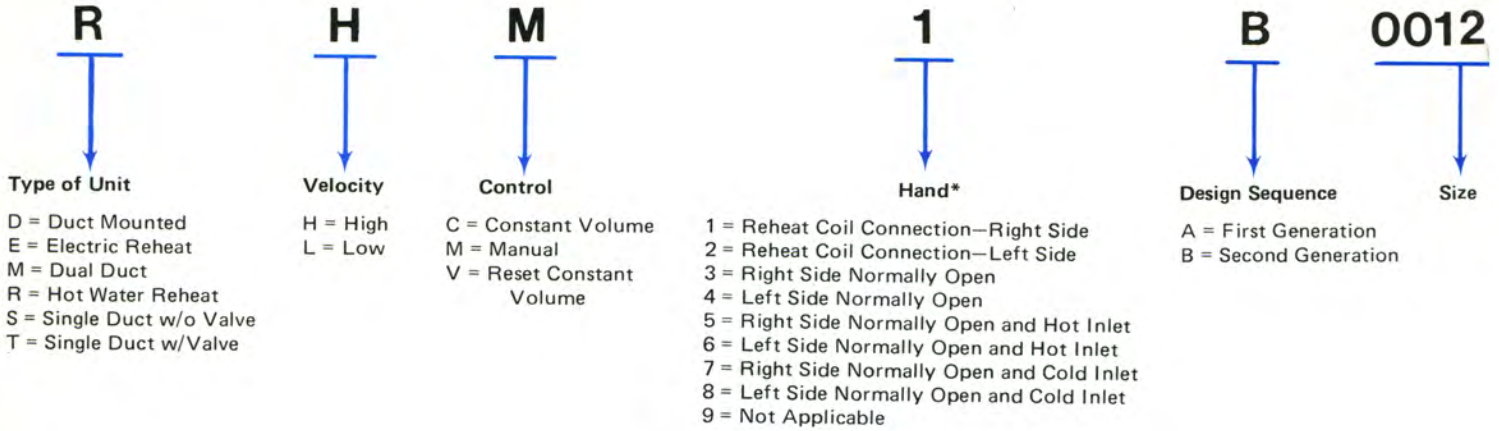
## Dimensions Low Velocity



	Unit Size Number						
	0005	0006	0007	0008	0009	0010	0012
Dimensions – Inches							
A	21	23	25	27	29	31	35
B	8	9	10	11	12	13	15
C	37-1/4	39-1/4	47-1/4	47-1/4	47-1/4	51-1/4	59-1/4
D	11-3/8	11-3/8	13-3/8	13-3/8	13-3/8	13-3/8	19-3/8
E Dia.	5	6	7	8	9	10	12
G	15	16-1/4	21-3/4	20-3/4	20	23-1/4	25-1/2
H	6-3/4	7-1/4	7-3/4	8-1/4	8-3/4	9-1/4	10-1/4



# Model Numbering System



\*Hand is determined by looking in the direction of air flow (with air flow hitting at back of head) when unit is mounted in the ceiling with access cover/covers located on bottom of unit.

## Engineering Data

### Sound Ratings:

PWL-NC index indicates the sound power level (PWL) in decibels, re  $10^{-12}$  watt, radiated from the discharge end of the unit.

By definition, the PWL-NC index is a single number assigned to the PWL spectrum of a noise source indicating the minimum NC curve which will not be exceeded in any octave band (when subsequent attenuation is zero).

The NC (Noise Criteria, sound-pressure level in decibels re 0.0002 microbar) which will result in the room served will be less than the tabulated decibels, depending upon:

- The attenuation of the system downstream of the unit, due to branches, lined duct and bends, and end reflection.
- The attenuation of the room (RA) due to its acoustical characteristics.

NC values show the noise criteria which will result in the average room (RA = 8 db when PWL is re  $10^{-12}$  watt) under two conditions:

0' is based on no acoustically lined duct between the unit and room outlet, and all the air is discharged from one properly sized outlet.

5' is based on five feet of acoustically lined duct (1" thick and 1.5 pcf density) between the unit and room outlet, and a maximum of 600 CFM per outlet. Rating "L" means that the NC will be less than 20 db.

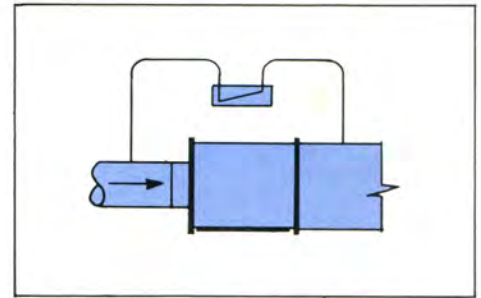
Additional attenuation will be provided by more lengths of lined duct, lining of square elbows and tees, and more outlets per ATC unit. For further information see ASHRAE GUIDE & DATA BOOK.

PWL-NC index values were determined with no lined duct on outlet of unit.

Casing radiation: If units are installed exposed, rather than behind a ceiling or wall, add 3 db to the ratings of PWL-NC index and of NC with 0'. In this case, the addition of down-stream attenuation can effect a maximum decrease of only 3 db since the casing radiation noise will control the resultant room level.

Unit Sizes	Octave Band							
	2	3	4	5	6	7	8	
1004	-2	0	-8	-12	-26	-29	-28	
2004	+1	0	-8	-12	-24	-27	-27	
0005	-2	0	-8	-15	-28	-28	-28	
0006	+6	+4	0	-7	-19	-23	-24	
0007	+8	+4	0	-6	-18	-20	-21	
0008	+4	0	-6	-9	-21	-26	-28	
0009	+4	0	-6	-16	-24	-30	-31	
0010	+5	+3	0	-9	-19	-22	-26	
0012	+3	0	-6	-15	-22	-23	-29	
1414								
1620	+10	+6	+1	-4	0	-8	-13	

The 0\* point is where the spectrum and the NC curve are tangent. To draw a spectrum, pass a horizontal line thru the tangent point and apply the plus or minus numbers to this line.



SPD = STATIC PRESSURE DROP (Inches of water) measured across the inlet and discharge openings of the unit.

The minimum SPD required is 0.75 inches. The maximum SPD rated is 8.0 inches.

The total minimum SP required at the inlet of the controller for the required CFM is the sum of 0.75 plus the resistances of the downstream ductwork and outlets.

# CARNES®

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