



## Sample-Manual S Info-Zoned-Hydronic Systems

### Heating Only

Manual D performed on ACCA approved software-Elite

Additional information available on Manual J

### Equipment-System 1

Hydronic Airhandler: Lennox Model # CBWMV-60C-100 (100000 BTU)

Boiler: Triangle Tube Model #PT175(50000-170000 BTU-Modulating)-See Submittal

#### Summary

Number of active trunks:	32		
Number of active runouts:	25		
Total runout outlet airflow:	1,479		
Main trunk airflow:	1,479		
Largest trunk diameter:	18.6	SMT-100	
Largest runout diameter:	7	SR-250	
Smallest trunk diameter:	3.8	ST-880	
Smallest runout diameter:	3	SR-230	
Supply fan external static pressure:	0.800		
Supply fan device pressure losses:	0.120		
Supply fan static pressure available:	0.680		
Runout maximum cumulative static pressure loss:	0.395	SR-120	
Return loss added to supply:	0.155		
Total effective length of return ( ft.):	525.0	Hall Ceiling	
Total effective length of supply ( ft.):	328.5	SR-120	
Overall total effective length ( ft.):	853.5	Hall Ceiling to SR-120	
Design overall friction rate per 100 ft.:	0.080	(Available SP x 100 / TEL)	
System duct surface area (Scenario 1):	793.5	Main	(Linked to duct load)
System duct surface area (Scenario 3):	123.6	Garage	(Linked to duct load)
Total system duct surface area:	917.1		



## Fan Performance

<b>CBWMV-60C-100 Blower Performance</b>																
0 through 0.80 in. w.g. (0 Through 200 Pa) External Static Pressure Range ; Factory Settings: Heating Speed - 4, Cooling Speed - 3, Speed Adjust - NORM; Applications with single sided inlets will reduce CFM by approximately 5%.																
<b>"ADJUST" Jumper Setting</b>	<b>BDC3 Jumper Speed Positions</b>															
	<b>1st Stage "COOL" Speed</b>															
	<b>1</b>		<b>2</b>		<b>3</b>		<b>4</b>		<b>1</b>		<b>2</b>		<b>3</b>		<b>4</b>	
	<b>cfm</b>	<b>L/s</b>	<b>cfm</b>	<b>L/s</b>	<b>cfm</b>	<b>L/s</b>	<b>cfm</b>	<b>L/s</b>	<b>cfm</b>	<b>L/s</b>	<b>cfm</b>	<b>L/s</b>	<b>cfm</b>	<b>L/s</b>	<b>cfm</b>	<b>L/s</b>
+	1110	525	1250	590	1380	650	1530	720								
NORM	1000	470	1130	535	1250	590	1380	650								
—	930	440	1040	490	1130	535	1260	595								
<b>"ADJUST" Jumper Setting</b>	<b>"HEAT" Speed</b>								<b>2nd Stage "COOL" Speed</b>							
	<b>1</b>		<b>2</b>		<b>3</b>		<b>4</b>		<b>1</b>		<b>2</b>		<b>3</b>		<b>4</b>	
	<b>cfm</b>	<b>L/s</b>	<b>cfm</b>	<b>L/s</b>	<b>cfm</b>	<b>L/s</b>	<b>cfm</b>	<b>L/s</b>	<b>cfm</b>	<b>L/s</b>	<b>cfm</b>	<b>L/s</b>	<b>cfm</b>	<b>L/s</b>	<b>cfm</b>	<b>L/s</b>
	+	1500	710	1700	800	1880	885	2100	990	1540	725	1760	830	1970	930	2200
NORM	1370	645	1540	725	1720	810	1920	905	1400	660	1600	755	1800	850	1980	935
—	1250	590	1380	650	1540	725	1720	810	1270	600	1420	670	1600	755	1780	840

The effect of static pressure and filter resistance is included in air volumes shown.  
 1st stage COOL is approximately 70% of the same 2nd stage COOL speed position.  
 Continuous Fan Only speed is approximately 38% of the same 2nd stage COOL speed position.  
 Lennox Harmony zone control applications - Minimum blower speed is 600 cfm. Max cfm is the same as 2nd stage cool position.



## Equipment-System 2

Hydronic Airhandler: Lennox Model # CBWMV-36B-070 (70000 BTU)

Boiler: Triangle Tube Model # PT110LP (25000-97000 BTU-Modulating)-see submittal

Summary			
Number of active trunks:	24		
Number of active runouts:	20		
Total runout outlet airflow:	1,137		
Main trunk airflow:	1,137		
Largest trunk diameter:	16.9	SMT-520	
Largest runout diameter:	6	SR-350	
Smallest trunk diameter:	9.8	ST-850	
Smallest runout diameter:	2	SR-530	
Supply fan external static pressure:	0.800		
Supply fan device pressure losses:	0.120		
Supply fan static pressure available:	0.680		
Runout maximum cumulative static pressure loss:	0.354	SR-500	
Return loss added to supply:	0.126		
Total effective length of return ( ft.):	475.3	Mstr Low	
Total effective length of supply ( ft.):	260.3	SR-500	
Overall total effective length ( ft.):	735.6	Mstr Low to SR-500	
Design overall friction rate per 100 ft.:	0.092	(Available SP x 100 / TEL)	
System duct surface area (Scenario 1):	774.7	Main	(Linked to duct load)
Total system duct surface area:	774.7		



## Fan Performance

<b>CBWMV-36B-070 Blower Performance</b>																
0 through 0.80 in. w.g. (0 Through 200 Pa) External Static Pressure Range ; Factory Settings: Heating Speed - 4, Cooling Speed - 3, Speed Adjust - NORM; Applications with single sided inlets will reduce CFM by approximately 4%.																
"ADJUST" Jumper Setting	BDC3 Jumper Speed Positions															
	1st Stage "COOL" Speed															
	1		2		3		4		1		2		3		4	
	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s
+	590	280	745	350	895	420	975	460								
NORM	545	255	680	320	805	380	890	420								
-	490	230	600	280	725	340	780	370								
"ADJUST" Jumper Setting	"HEAT" Speed								2nd Stage "COOL" Speed							
	1		2		3		4		1		2		3		4	
	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s
	+	790	370	980	465	1140	540	1310	620	850	400	1090	515	1300	620	1430
NORM	730	345	870	410	1040	490	1190	560	775	365	990	465	1190	560	1280	605
-	640	300	770	360	920	435	1070	505	700	330	870	410	1065	500	1150	540
The effect of static pressure and filter resistance is included in air volumes shown.																
1st stage COOL is approximately 70% of the same 2nd stage COOL speed position.																
Continuous Fan Only speed is approximately 38% of the same 2nd stage COOL speed position.																
Lennox Harmony zone control applications - Minimum blower speed is 400 cfm. Max cfm is the same as 2nd stage cool position.																