CMPH – Ceiling Multi Pattern - Horizontal

Model: **CMPH – Ceiling Multi Pattern - Horizontal**

The CMPH series of diffusers was developed to increase the acceptable application range of multi-pattern type ceiling outlets, for the reduced volumetric flow levels typically associated with VAV systems.

It is a variation on the basic CMP series with a horizontal blade added to each blade, which increases the induction rate, resulting in rapid mixing of supply and room air, which produces a strong ceiling effect at lower flows, minimising dumping.

These diffusers are also ideal for lower than normal ceiling heights, or low fixed volume air flows such as those usually found in centre zones.

In general, they operate at higher pressure, noise level, and throw distance than the equivalent Model CMP at the same flow.

Construction

CMPH series diffusers are ruggedly constructed entirely of aluminium, are lightweight and have no heavy cast, or moulded components. Precision combination corner gussets and braces, keep mitres to a hairline and aluminium rivets hold the core components rigidly together, eliminating the possibility of warping, flexing, or rattling.

Panel diffusers (Type 2 on page 159D) are mechanically secured to steel panels with the unique Holyoake mounting pins, eliminating gaps and producing a super-fine junction between panel and extrusion.

Installation

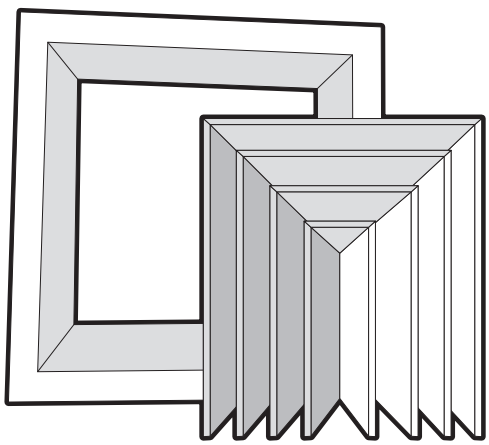
The diffusers frame assembly is installed in the ceiling opening and attached and sealed to the supply duct. The extensive range of cores, all snap in to the frame surrounds, with nickel plated spring steel thumb clips.

Finish

All Holyoake aluminium diffusers receive a three stage preparation, prior to final finishing; cleaning, chemical etch and drying. This preparation ensures powder coat adhesion and precludes powder peeling, or flaking after installation.
Standard colour is Holyoake White.

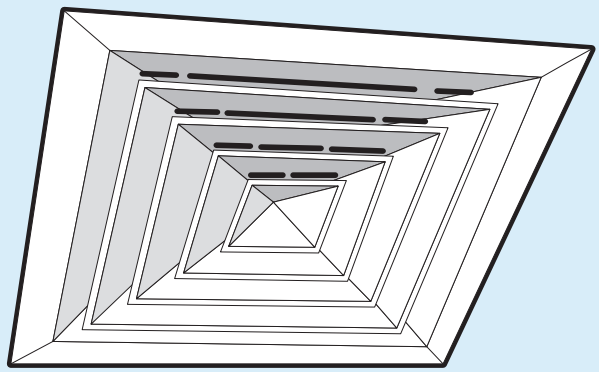
Features

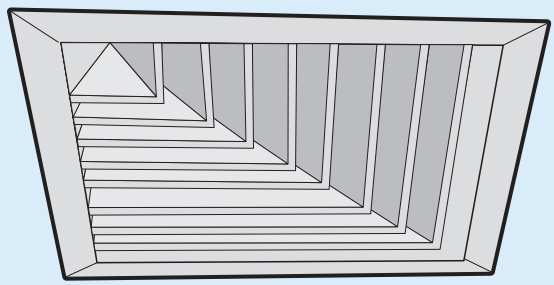
- All aluminium lightweight construction.
- Precision mitred corners.
- Selection of frame styles.
- Variety of throw patterns.
- Snap-in interchangeable cores.
- Tough powder coat finish.
- Lightweight Premi-Aire and galvanised cushion head boxes available.

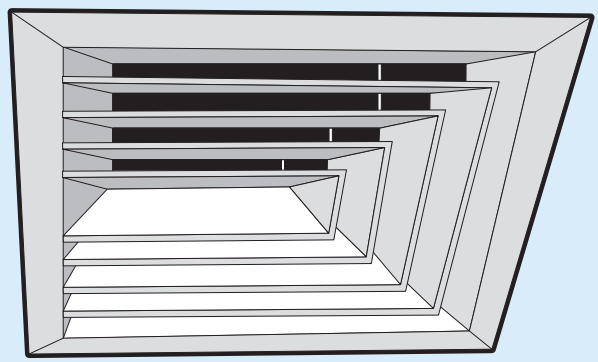


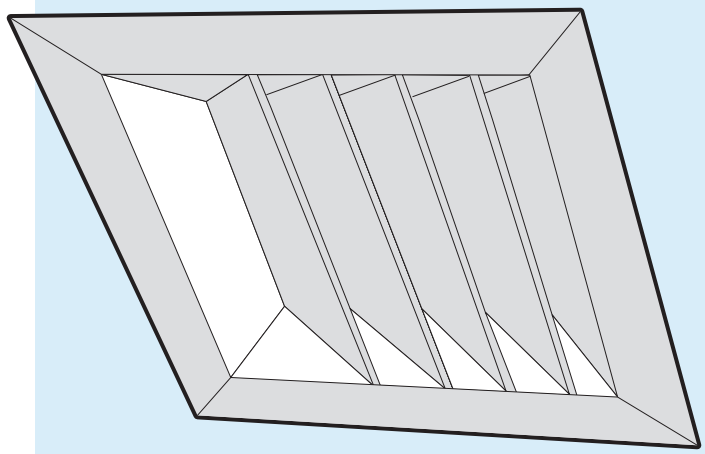
Due to a policy of continuous development and improvement the right is reserved to supply products which may differ slightly from those illustrated and described in this publication.

Ceiling Diffuser









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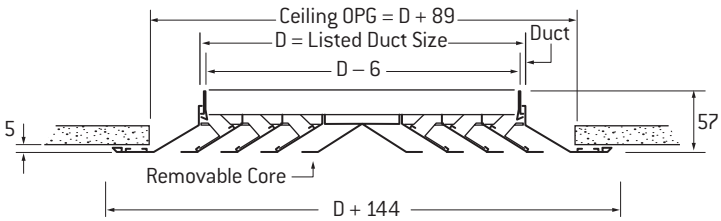
Model: **CMPH – Ceiling Multi Pattern Diffuser - Horizontal**

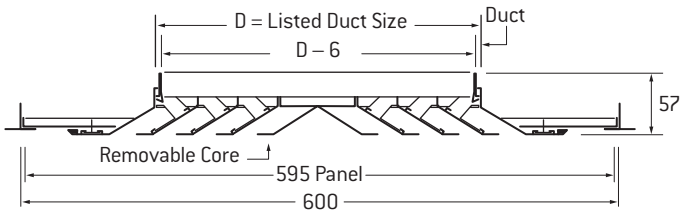
Standard Flange Frame.

Designed for surface mounting on all types of ceilings, as well as lay-in ceiling tile applications.



Panel Diffuser.

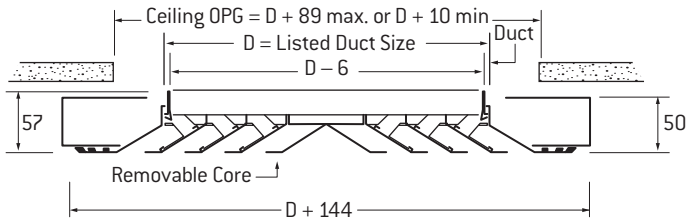
Lay-in type for installation in suspended "T-Rail" type ceilings. Standard panel overall size is 595 x 595 to suit a 600 x 600 grid. Size 450 x 450 has an overall face size of 595 x 595. It therefore does not require a panel in a 600 grid and fits "T-Rail" spacing with clearance*.



Drop Frame.

Lowers the face of the diffuser below the ceiling line. Can be used to reduce smudging, or against obstacles to minimise drafts. Can be supplied in any height from 50-81mm, but unless otherwise specified, frame height of 50 mm will be furnished.

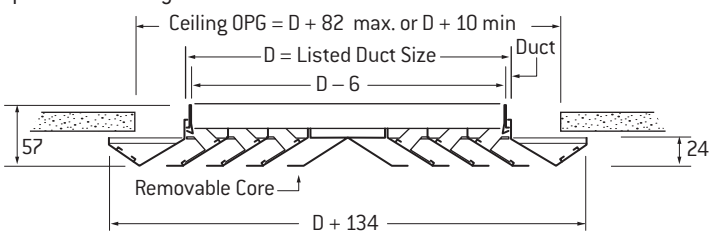
Special order only.



Bevelled Drop Frame.

Smartly styled bevelled type surround reduces ceiling smudging. For all surface mounting applications.

Special order only.



Construction

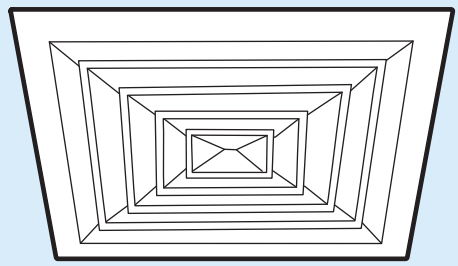
Aluminium:

0.75mm extruded 6063-T5 aluminium outer frame.

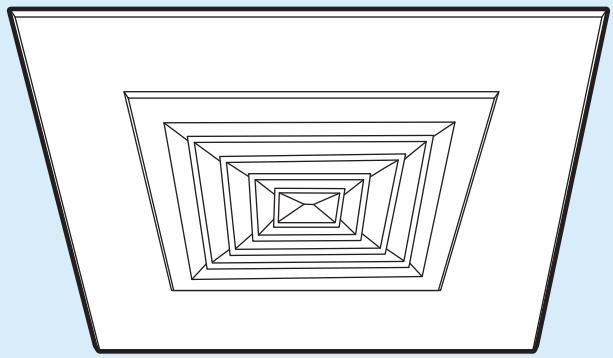
0.55mm removable aluminium core.

* Note: 0.75 mm Steel Panel on CMPH Type 2.
Product weights are shown on page 161D.

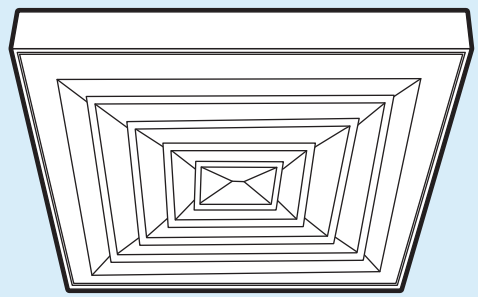
Type 1



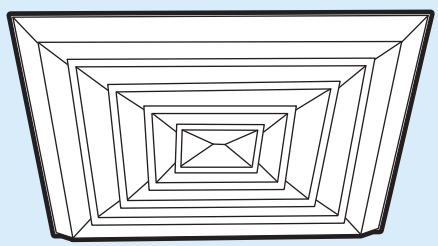
Type 2



Type 3



Type 4



CMPH – Performance Data

Size in mm	Patterns	Neck Vel m/s / TP Pa / Static Pa	1.04 / 4 / 3		1.57 / 10 / 8		2.10 / 16 / 13		2.62 / 24 / 20		3.15 / 35 / 30		3.67 / 48 / 40	
	Return Factors NC+1 -SP=1.1 TP	Total m^3/s / NC	0.024 / -		0.036 / -		0.047 / -		0.059 / -		0.071 / 23		0.083 / 28	
			A	B	A	B	A	B	A	B	A	B	A	B
150 x 150	41	m^3/s side	0.006		0.008		0.012		0.015		0.017		0.021	
		throw m 0.75	0.5		0.9		1.8		2.7		3.2		3.4	
		throw m 0.50	0.6		1.2		2.4		3.7		4.3		4.6	
		throw m 0.25	0.9		2.7		5.8		6.4		7		7.3	
	36 *	m^3/s side	0.005	0.009	0.007	0.014	0.009	0.019	0.012	0.024	0.014	0.028	0.017	0.033
		throw m 0.75	0.5	0.7	0.7	1.4	1.4	2.3	2.5	3.0	3.0	3.9	3.4	4.6
		throw m 0.50	0.6	0.9	0.9	1.8	1.8	3.0	3.4	4.0	4.0	5.2	4.6	6.1
		throw m 0.25	0.9	1.5	2.4	3.7	3.4	6.1	6.1	7.0	6.7	7.9	7.3	8.8
AD 0.023 m^2	21	m^3/s side	0.012		0.018		0.024		0.030		0.035		0.041	
		throw m 0.75	0.9		1.6		2.7		3.2		4.3		4.8	
		throw m 0.50	1.2		2.1		3.7		4.3		5.8		6.4	
		throw m 0.25	1.8		5.2		6.4		7.0		8.5		9.4	
	51	m^3/s side	0.024		0.035		0.047		0.059		0.071		0.083	
		throw m 0.75	0.9		2.3		3.2		4.3		5.0		5.9	
		throw m 0.50	1.2		3.0		4.3		5.8		6.7		7.9	
		throw m 0.25	2.7		6.1		7.0		8.5		9.7		10.4	
	11													
	Return Factors NC+3 -SP=1.3 TP	Total m^3/s / NC	0.052 / -		0.080 / -		0.106 / -		0.132 / 23		0.158 / 28		0.184 / 33	
			A	B	A	B	A	B	A	B	A	B	A	B
225 x 225	41	m^3/s side	0.013		0.020		0.026		0.033		0.040		0.046	
		throw m 0.75	0.7		1.6		2.7		4.1		4.3		5.0	
		throw m 0.50	0.9		2.1		3.7		5.5		5.8		6.7	
		throw m 0.25	2.1		5.5		6.4		7.9		8.5		9.7	
	36 *	m^3/s side	0.010	0.021	0.016	0.032	0.021	0.042	0.026	0.053	0.032	0.063	0.037	0.074
		throw m 0.75	0.7	0.9	1.6	2.3	2.5	3.2	3.2	4.1	3.7	5.0	4.8	5.9
		throw m 0.50	0.9	1.2	2.1	3.0	3.4	4.3	4.3	5.5	4.9	6.7	6.4	7.9
		throw m 0.25	1.8	2.7	3.7	6.1	6.1	7.0	7.0	8.2	7.6	9.7	9.1	11.3
AD 0.051 m^2	21	m^3/s side	0.026		0.040		0.053		0.066		0.079		0.092	
		throw m 0.75	1.1		2.5		3.2		4.3		5.5		6.2	
		throw m 0.50	1.5		3.4		4.3		5.8		7.3		8.2	
		throw m 0.25	3.0		6.1		7.0		8.5		10.1		10.7	
	51	m^3/s side	0.052		0.080		0.106		0.132		0.158		0.184	
		throw m 0.75	1.6		3.0		4.3		5.5		6.4		7.3	
		throw m 0.50	2.1		4.0		5.8		7.3		8.5		9.7	
		throw m 0.25	5.2		6.7		8.5		10.1		11.0		12.8	
	11													
	Return Factors NC+5 -SP=1.4 TP	Total m^3/s / NC	0.094 / -		0.142 / -		0.189 / -		0.236 / 28		0.283 / 33		0.330 / 38	
			A	B	A	B	A	B	A	B	A	B	A	B
300 x 300	41	m^3/s side	0.024		0.035		0.047		0.059		0.071		0.083	
		throw m 0.75	0.9		2.3		3.0		4.3		5.3		5.9	
		throw m 0.50	1.2		3.0		4.0		5.8		7.0		7.9	
		throw m 0.25	2.4		6.1		7.0		8.5		10.1		10.4	
	36 *	m^3/s side	0.019	0.038	0.028	0.057	0.038	0.076	0.047	0.094	0.057	0.113	0.066	0.132
		throw m 0.75	0.9	1.4	1.8	2.7	3.0	3.9	3.9	5.0	5.0	5.9	5.7	6.9
		throw m 0.50	1.2	1.8	2.4	3.7	4.0	5.2	5.2	6.7	6.7	7.9	7.6	9.1
		throw m 0.25	2.7	3.4	5.8	6.4	5.2	7.9	7.9	9.7	9.7	10.4	10.1	12.2
AD 0.090 m^2	21	m^3/s side	0.047		0.071		0.094		0.118		0.142		0.165	
		throw m 0.75	1.6		3.0		4.1		5.3		6.4		7.1	
		throw m 0.50	2.1		4.0		5.5		7.0		8.5		9.4	
		throw m 0.25	5.2		7.0		8.5		10.1		11.0		12.5	
	51	m^3/s side	0.094		0.142		0.189		0.236		0.283		0.330	
		throw m 0.75	2.3		3.9		5.5		6.4		7.3		8.0	
		throw m 0.50	3.0		5.2		7.3		8.5		9.7		10.7	
		throw m 0.25	6.1		7.9		10.1		11.6		12.8		14.9	
	11													
	Return Factors NC+5 -SP=1.9 TP	Total m^3/s / NC	0.146 / -		0.222 / -		0.295 / -		0.368 / 28		0.441 / 33		0.514 / 38	
			A	B	A	B	A	B	A	B	A	B	A	B
375 x 375	41	m^3/s side	0.036		0.055		0.074		0.092		0.110		0.128	
		throw m 0.75	1.4		2.7		3.9		5.0		5.9		6.6	
		throw m 0.50	1.8		3.7		5.2		6.7		7.9		8.8	
		throw m 0.25	3.4		6.4		7.9		9.7		10.4		11.9	
	36 *	m^3/s side	0.029	0.059	0.044	0.089	0.059	0.118	0.074	0.147	0.088	0.177	0.103	0.206
		throw m 0.75	1.1	1.8	2.5	3.2	3.4	4.6	4.8	5.7	5.5	6.9	6.4	7.8
		throw m 0.50	1.5	2.4	3.4	4.3	4.6	6.1	6.4	7.6	7.3	9.1	8.5	10.4
		throw m 0.25	3.0	5.8	6.1	7.0	7.3	9.1	9.4	10.1	10.1	12.2	11.0	14.3
AD 0.141 m^2	21	m^3/s side	0.073		0.111		0.147		0.184		0.220		0.257	
		throw m 0.75	1.8		3.4		5.0		5.9		7.1		7.5	
		throw m 0.50	2.4		4.6		6.7		7.9		9.4		10.1	
		throw m 0.25	5.8		7.3		9.7		10.4		12.5		14.3	
	51	m^3/s side	0.146		0.222		0.295		0.368		0.441		0.514	
		throw m 0.75	2.7		4.6		5.9		7.1		8.0		18.5	
		throw m 0.50	3.7		6.1		7.9		9.4		10.7		11.3	
		throw m 0.25	6.4		8.8		10.4		12.5		14.9		15.5	
	11													
	Return Factors NC+7 -SP=2.2 TP	Total m^3/s / NC	0.212 / -		0.319 / -		0.425 / -		0.531 / 28		0.637 / 33		0.743 / 38	
			A	B	A	B	A	B	A	B	A	B	A	B
450 x 450	41	m^3/s side	0.053		0.080		0.106		0.133		0.159		0.186	
		throw m 0.75	1.6		3.2		4.3		5.5		6.4		7.5	
		throw m 0.50	2.1		4.3		5.8		7.3		8.5		10.1	
		throw m 0.25	4.9		7.0		8.5		10.1		11.6		13.7	
	36 *	m^3/s side	0.042	0.085	0.064	0.127	0.085	0.170	0.106	0.212	0.127	0.255	0.149	0.297
		throw m 0.75	1.6	2.3	3.0	3.4	4.3	5.0	5.0	6.2	6.2	7.3	7.1	8.0
		throw m 0.25	2.1	3.0	4.0	4.6	5.8	6.7	6.7	8.2	8.2	9.7	9.4	10.7
		throw m 0.25	4.3	6.1	6.7	7.3	8.5	9.7	9.7	11.3	10.7	12.8	12.5	14.9
AD 0.202 m^2	21	m^3/s side	0.106		0.159		0.212		0.265		0.319		0.371	
		throw m 0.75	2.5		3.9		5.5		6.6		7.5		8.2	
		throw m 0.50	3.4		5.2		7.3		8.8		10.1		11.0	
		throw m 0.25	6.1		7.9		10.1		11.9		13.7		15.2	
	51	m^3/s side	0.212		0.319		0.425		0.531		0.637		0.743	
		throw m 0.75	3.2		5.0		6.4		7.5		8.2		8.7	
		throw m 0.50	4.3		6.7		8.5		10.1		11.0		11.6	
		throw m 0.25	7.0		9.7		11.3		13.7		15.2		16.8	
	11													

* These cores are constructed to give as near as possible equal air flow in A & B directions.

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Size in mm	Patterns	Neck Vel m/s TP Pa Static Pa	1.04 4 3		1.57 10 8		2.10 16 13		2.62 24 20		3.15 35 30		3.67 48 40	
	Return Factors NC+9 -SP=2.7 TP	Total m^3/s NC	0.288 - A	B	0.434 - A	B	0.578 28 A	B	0.722 33 A	B	0.866 38 A	B	1.010 43 A	B
525 x 525	41	m^3/s side	0.072		0.109		0.144		0.180		0.217		0.252	
		throw m 0.75	1.8		3.4		5		5.9		7.1		8	
		throw m 0.50	2.4		4.6		6.7		7.9		9.4		10.7	
		throw m 0.25	5.8		7.3		9.7		10.4		12.5		14.9	
	36 *	m^3/s side	0.058	0.115	0.087	0.174	0.116	0.231	0.144	0.289	0.173	0.346	0.202	0.404
		throw m 0.75	1.8	2.7	3.2	4.1	4.6	5.7	5.5	6.9	6.4	7.5	7.5	8.2
		throw m 0.50	2.4	3.7	4.3	5.5	6.1	7.6	7.3	9.1	8.5	10.1	10.1	11.0
		throw m 0.25	5.8	6.4	7.0	8.2	8.8	10.1	10.1	12.2	11.3	13.7	13.4	15.5
AD 0.276 m^2	21	m^3/s side	0.144		0.217		0.289		0.361		0.433		0.505	
		throw m 0.75	2.7		4.3		5.9		7.1		7.8		8.5	
		throw m 0.50	3.7		5.8		7.9		9.4		10.4		11.3	
		throw m 0.25	6.4		8.5		10.4		12.5		14.6		15.8	
	51	m^3/s side	0.288		0.434		0.578		0.722		0.866		1.010	
		throw m 0.75	3.4		5.5		7.1		8.0		8.7		9.1	
		throw m 0.50	4.6		7.3		9.4		10.7		11.6		12.2	
		throw m 0.25	7.3		10.1		12.5		14.9		16.2		17.4	
	11													
	Return Factors NC+9 -SP=2.83 TP	Total m^3/s NC	0.378 - A	B	0.566 - A	B	0.755 28 A	B	0.944 33 A	B	1.133 38 A	B	1.321 43 A	B
600 x 600	41	m^3/s side	0.094		0.142		0.189		0.236		0.283		0.330	
		throw m 0.75	2.5		3.9		5.5		6.4		7.5		8.2	
		throw m 0.50	3.4		5.2		7.3		8.5		10.1		11.0	
		throw m 0.25	6.1		7.9		10.1		11.3		13.7		15.5	
	36 *	m^3/s side	0.076	0.151	0.113	0.227	0.151	0.302	0.189	0.378	0.227	0.453	0.264	0.529
		throw m 0.75	1.8	3.0	3.4	4.6	5.0	5.9	5.9	7.3	7.1	8.0	7.8	8.5
		throw m 0.50	2.4	4.0	4.6	6.1	6.7	7.9	7.9	9.7	9.4	10.7	10.4	11.3
		throw m 0.25	6.1	6.7	7.3	9.1	9.7	10.4	10.4	12.8	12.5	14.9	14.3	15.8
AD 0.36 m^2	21	m^3/s side	0.188		0.283		0.378		0.472		0.566		0.661	
		throw m 0.75	3.0		5.0		6.6		7.5		8.2		8.7	
		throw m 0.50	4.0		6.7		8.8		10.1		11.0		11.6	
		throw m 0.25	6.7		9.7		11.3		13.7		17.4		16.8	
	51	m^3/s side	0.378		0.566		0.755		0.944		1.133		1.321	
		throw m 0.75	3.9		5.9		7.3		8.7		8.9		9.6	
		throw m 0.50	5.2		7.9		9.7		11.6		11.9		12.8	
		throw m 0.25	7.9		10.4		13.1		15.8		17.1		18.0	
	11													
	Return Factors NC+9 -SP=3.3 TP	Total m^3/s NC	0.477 - A	B	0.717 - A	B	0.956 28 A	B	1.194 33 A	B	1.432 38 A	B	1.671 43 A	B
675 x 675	41	m^3/s side	0.119		0.179		0.239		0.298		0.358		0.418	
		throw m 0.75	2.7		4.6		5.7		6.9		7.8		8.5	
		throw m 0.50	3.7		6.1		7.6		9.1		10.4		11.3	
		throw m 0.25	6.4		9.1		10.4		12.2		14.6		15.8	
	36 *	m^3/s side	0.095	0.191	0.143	0.287	0.191	0.382	0.239	0.478	0.286	0.573	0.334	0.668
		throw m 0.75	2.3	3.0	3.9	5.0	5.5	6.4	6.4	7.5	7.5	8.5	8.0	8.7
		throw m 0.50	3.0	4.0	5.2	6.7	7.3	8.5	8.5	10.1	10.1	11.3	10.7	11.6
		throw m 0.25	6.4	7.0	7.9	9.7	10.1	11.6	11.3	13.7	13.7	15.5	14.9	16.2
AD 0.456 m^2	21	m^3/s side	0.238		0.359		0.478		0.597		0.716		0.835	
		throw m 0.75	3.2		5.5		7.3		7.8		8.7		8.9	
		throw m 0.50	4.3		7.3		9.7		10.4		11.6		11.9	
		throw m 0.25	7.0		10.1		12.2		14.6		16.2		17.4	
	51	m^3/s side	0.477		0.717		0.956		1.194		1.432		1.671	
		throw m 0.75	4.3		6.4		7.5		8.9		9.1		10.1	
		throw m 0.50	5.8		8.5		10.1		11.9		12.2		13.4	
		throw m 0.25	8.5		11.3		14.3		16.5		17.4		18.6	
	11													
825 x 825	Return Factors NC+9 -SP=3.5 TP	Total m^3/s NC	0.713 - A	B	1.071 23 A	B	1.428 28 A	B	1.784 33 A	B	2.140 38 A	B	2.497 43 A	B
	41	m^3/s side	0.178		0.268		0.357		0.446		0.535		0.624	
AD 0.681 m^2		throw m 0.75	3.0		4.8		6.6		7.5		8.0		8.7	
		throw m 0.50	4.0		6.4		8.8		10.1		10.7		11.6	
		throw m 0.25	7.0		9.7		11.3		13.1		14.9		16.2	

* These cores are constructed to give as near as possible equal air flow in A & B directions.

Guide Product Weights		
Approximate Weight in Kg.		
Size	CMPH141	CMPH241
150 x 150	0.53	2.77
225 x 225	0.91	2.84
300 x 300	1.33	2.89
375 x 375	1.79	2.94
450 x 450	2.35	3.05

CMPH – Performance Data

Size in mm	Patterns	Neck Vel m/s / TP Pa / Static Pa	1.04 / 4 / 3		1.57 / 10 / 8		2.10 / 16 / 13		2.62 / 24 / 20		3.15 / 35 / 30		3.67 / 48 / 40	
	Return Factors NC+0 -SP=1.3 TP	Total m^3/s NC	0.035 -		0.052 -		0.071 -		0.087 23		0.104 28		0.123 33	
			A	B	A	B	A	B	A	B	A	B	A	B
150 x 225	42 43	m^3/s side	0.012	0.006	0.017	0.008	0.024	0.012	0.029	0.015	0.035	0.017	0.041	0.020
		throw m 0.75	0.7	0.5	1.4	0.9	2.6	1.8	3.2	2.8	4.1	3.2	4.8	3.5
		throw m 0.50	0.9	0.6	1.8	1.2	3.4	2.4	4.3	3.7	5.5	4.3	6.4	4.6
		throw m 0.25	2.1	0.9	4.3	2.7	6.1	5.8	7	6.4	8.2	7	9.4	7.3
	31	m^3/s side	0.014	0.007	0.021	0.010	0.030	0.012	0.037	0.015	0.044	0.018	0.052	0.021
		throw m 0.75	0.7	0.5	1.6	1.1	2.8	1.8	3.5	2.8	4.4	3.5	5.0	3.9
		throw m 0.50	0.9	0.6	2.1	1.5	3.7	2.4	4.6	3.7	5.8	4.6	6.7	5.2
		throw m 0.25	1.8	1.2	5.5	3.0	6.4	5.8	7.3	6.4	8.5	7.3	9.7	7.9
	32	m^3/s side	0.013	0.011	0.020	0.017	0.027	0.022	0.033	0.028	0.040	0.033	0.046	0.039
		throw m 0.75	0.7	0.7	1.6	1.1	3.0	2.3	3.9	3.0	4.6	3.7	5.5	4.4
		throw m 0.50	0.9	0.9	2.1	1.5	4.0	3.0	5.2	4.0	6.1	4.9	7.3	5.8
		throw m 0.25	2.1	1.5	4.6	3.0	6.7	6.1	7.9	7.0	9.1	7.6	10.1	8.5
	22, 23	m^3/s side	0.018		0.026		0.035		0.043		0.052		0.061	
		throw m 0.75	0.8		2.0		3.6		4.7		5.5		6.6	
		throw m 0.50	1.1		2.6		4.8		6.2		7.3		8.8	
		throw m 0.25	2.6		5.5		8.0		9.5		11.0		12.1	
AD 0.033 m^2	52 55 54 53	m^3/s side	0.023	0.120	0.035	0.017	0.047	0.024	0.058	0.029	0.069	0.035	0.082	0.041
		throw m 0.75	1.1	0.5	2.6	1.1	3.5	1.8	4.6	2.8	5.5	3.5	6.2	3.9
		throw m 0.50	1.5	0.6	3.4	1.5	4.6	2.4	6.1	3.7	7.3	4.6	8.2	5.2
		throw m 0.25	3.0	1.2	6.1	3.0	7.3	5.8	8.8	6.4	10.1	7.3	10.7	7.9
	12, 13	m^3/s side	0.035		0.052		0.071		0.087		0.104		0.123	
		throw m 0.75	1.7		3.3		4.4		6.1		6.8		8.1	
		throw m 0.50	2.2		4.4		5.9		8.1		9.1		10.8	
		throw m 0.25	4.0		7.7		9.5		11.7		12.4		13.5	
	Return Factors NC+2 -SP=1.7 TP	Total m^3/s NC	0.047 -		0.071 -		0.094 -		0.118 23		0.142 28		0.165 33	
			A	B	A	B	A	B	A	B	A	B	A	B
150 x 300	42 43	m^3/s side	0.018	0.006	0.027	0.009	0.035	0.012	0.044	0.015	0.053	0.018	0.062	0.021
		throw m 0.75	0.7	0.7	1.6	0.9	3.0	2.0	3.5	3.0	4.4	3.5	5.0	4.4
		throw m 0.50	0.9	0.9	2.1	1.2	4.0	2.7	4.6	4.0	5.8	4.6	6.7	5.8
		throw m 0.25	2.4	1.5	4.6	2.7	6.7	8.1	7.3	6.7	8.5	7.3	10.1	8.5
	31	m^3/s side	0.020	0.006	0.031	0.009	0.041	0.012	0.052	0.015	0.062	0.018	0.072	0.021
		throw m 0.75	0.7	0.7	1.8	1.4	3.0	2.6	3.9	3.0	5.0	3.9	5.7	4.6
		throw m 0.50	0.9	0.9	2.4	1.8	4.0	3.4	5.2	4.0	6.7	5.2	7.6	6.1
		throw m 0.25	2.1	1.5	5.8	3.7	7.0	6.1	7.9	7.0	9.7	7.9	10.1	9.1
	32	m^3/s side	0.023	0.012	0.035	0.018	0.047	0.024	0.060	0.029	0.071	0.035	0.083	0.041
		throw m 0.75	0.9	0.9	2.3	1.6	3.2	2.6	4.4	3.2	5.0	4.1	5.9	5.0
		throw m 0.50	1.2	1.2	3.0	2.1	4.3	3.4	5.8	4.3	6.7	5.5	7.9	6.7
		throw m 0.25	2.7	2.1	6.1	5.5	7.0	6.1	8.5	8.5	9.7	8.2	10.4	9.7
	22, 23	m^3/s side	0.024		0.035		0.047		0.059		0.071		0.083	
		throw m 0.75	1.1		2.2		3.8		5.2		6.0		7.1	
		throw m 0.50	1.5		2.9		5.1		6.9		8.0		9.5	
		throw m 0.25	3.3		5.9		8.4		10.2		11.7		12.4	
AD 0.045 m^2	52 55 54 53	m^3/s side	0.036	0.011	0.054	0.017	0.071	0.023	0.090	0.028	0.108	0.034	0.125	0.040
		throw m 0.75	1.4	0.7	2.8	1.4	3.9	2.6	5.0	3.0	5.9	3.9	6.6	4.6
		throw m 0.50	1.8	0.9	3.7	1.8	5.2	3.4	6.7	4.0	7.9	5.2	8.8	6.1
		throw m 0.25	3.4	1.5	6.4	3.7	7.9	6.1	9.7	7.0	10.4	7.9	12.2	9.1
	12, 13	m^3/s side	0.047		0.071		0.094		0.118		0.142		0.165	
		throw m 0.75	2.0		3.6		5.3		6.3		7.7		8.5	
		throw m 0.50	2.6		4.8		7.0		8.4		10.2		11.3	
		throw m 0.25	6.2		8.4		10.2		12.1		13.2		15.0	
	Return Factors NC+2 -SP=2.0 TP	Total m^3/s NC	0.059 -		0.087 -		0.118 -		0.146 23		0.175 28		0.205 33	
			A	B	A	B	A	B	A	B	A	B	A	B
150 x 375	22, 23	m^3/s side	0.029		0.044		0.059		0.073		0.087		0.103	
		throw m 0.75	1.4		3.0		4.1		5.5		6.6		7.7	
		throw m 0.50	1.8		4.0		5.5		7.3		8.8		10.2	
		throw m 0.25	3.7		7.3		8.8		11.0		12.1		13.2	
	52 55 54 53	m^3/s side	0.047	0.012	0.070	0.017	0.094	0.024	0.117	0.029	0.140	0.035	0.165	0.040
		throw m 0.75	1.6	0.9	3.2	1.6	4.4	2.8	5.5	3.2	6.2	4.1	7.1	5.0
		throw m 0.50	2.1	1.2	4.3	2.1	5.8	3.7	7.3	4.3	8.2	5.5	9.4	6.7
		throw m 0.25	5.5	2.1	7.0	3.7	8.5	6.4	10.1	7.0	10.7	8.2	12.5	9.7
AD 0.056 m^2	12, 13	m^3/s side	0.059		0.087		0.118		0.146		0.175		0.205	
		throw m 0.75	2.2		3.8		5.5		6.8		8.3		9.1	
		throw m 0.50	2.9		5.1		7.3		9.1		11.0		12.1	
		throw m 0.25	7.0		8.4		11.0		12.1		14.6		15.7	
	Return Factors NC+3 -SP=2.8 TP	Total m^3/s NC	0.071 -		0.106 -		0.142 -		0.177 23		0.212 28		0.248 33	
			A	B	A	B	A	B	A	B	A	B	A	B
150 x 450	22, 23	m^3/s side	0.035		0.053		0.071		0.088		0.106		0.124	
		throw m 0.75	1.7		3.3		4.4		6.0		6.8		8.0	
		throw m 0.50	2.2		4.4		5.9		8.0		9.1		10.6	
		throw m 0.25	4.0		7.7		9.5		11.7		12.4		13.6	
AD 0.068 m^2	12, 13	m^3/s side	0.071		0.106		0.142		0.177		0.212		0.248	
		throw m 0.75	2.5		4.1		6.1		7.1		8.5		9.6	
		throw m 0.50	3.3		5.5		8.1		9.5		11.3		12.8	
		throw m 0.25	7.3		8.8		11.7		12.4		15.0		17.6	
150 x 525	Return Factors NC+4 -SP=3.4 TP	Total m^3/s NC	0.083 -		0.123 -		0.165 -		0.205 23		0.245 28		0.288 33	
			A	B	A	B	A	B	A	B	A	B	A	B
AD 0.079 m^2	12, 13	m^3/s side	0.083		0.123		0.165		0.205		0.245		0.288	
		throw m 0.75	2.5		4.4		6.3		7.4		9.1		9.6	
		throw m 0.50	3.3		5.9		8.4		9.9		12.1		12.8	
		throw m 0.25	7.3		9.1		12.1		12.8		15.7		17.9	
	Return Factors NC+5 -SP=4.1 TP	Total m^3/s NC	0.071 -		0.106 -		0.142 -		0.177 28		0.212 33		0.248 38	
			A	B	A	B	A	B	A	B	A	B	A	B
225 x 300	42 43	m^3/s side	0.023	0.013	0.033	0.020	0.044	0.027	0.056	0.033	0.066	0.040	0.078	0.046
		throw m 0.75	0.9	0.7	2.3	1.6	3.0	2.8	4.4	3.2	5.3	4.1	5.9	5.3
		throw m 0.50	1.2	0.9	3.0	2.1	4.0	3.7	5.8	4.3	7.0	5.5	7.9	7.0
		throw m 0.25	2.7	2.1	6.1	5.5	7.0	6.4	8.5	7.0	9.7	8.2	10.4	10.1
	31	m^3/s side	0.029	0.013	0.043	0.020	0.058	0.027	0.072	0.033	0.086	0.040	0.101	0.046
		throw m 0.75	1.1	0.7	2.6	1.6	3.5	2.8	4.6	3.5	5.5	4.4	6.2	5.3
		throw m 0.50	1.5	0.9	3.4	2.1	4.6	3.7	6.1	4.6	7.3	5.8	8.2	7.0
		throw m 0.25	3.0	2.4	6.1	5.5	7.3	6.4	9.1	7.3	10.1	8.5	10.7	9.7
AD 0.068 m^2	32	m^3/s side	0.023	0.023	0.035	0.035	0.047	0.047	0.059	0.059	0.071	0.071	0.083	0.083
		throw m 0.75	1.4	0.9	2.8	1.8	3.7	3.0	5.0	3.9	5.7	4.6	6.6	5.3
		throw m 0.50	1.8	1.2	3.7	2.4	4.9	4.0	6.7	5.2	7.6	6.1	8.8	7.0
		throw m 0.25	3.4	2.4	6.4	5.8	7.9	6.7	9.7	7.9	10.4	9.1	11.3	9.1
	52 55 54 53	m^3/s side	0.045	0.026	0.066	0.040	0.089	0.053	0.111	0.066	0.133	0.079	0.155	0.093
		throw m 0.75	1.8	0.7	3.5	1.6	4.6	2.8	5.7	3.5	6.4	4.4	7.3	5.3
		throw m 0.50	2.4	0.9	4.6	2.1	6.1	3.7	7.6	4.6	8.5	5.8	9.7	7.0
		throw m 0.25	5.8	2.4	7.3	5.5	8.8	6.4	10.1	7.3	11.3	8.5	13.1	9.7

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Size in mm	Patterns	Neck Vel m/s TP Pa Static Pa		1.04 5 3		1.57 10 8		2.10 16 13		2.62 24 20		3.15 35 30		3.67 48 40	
	Return NC+4 Factors -SP=1.8 TP	Total m^3/s NC		0.088 - A	B	0.132 - A	B	0.177 - A	B	0.221 28 A	B	0.266 33 A	B	0.310 38 A	B
225 x 375 AD 0.084 m^2	42, 43	m^3/s side		0.031	0.013	0.046	0.020	0.062	0.027	0.078	0.033	0.093	0.040	0.109	0.046
		throw m	0.75	1.1	0.7	2.6	1.8	3.5	2.8	4.6	3.5	5.5	4.4	6.2	5.5
			0.50	1.5	0.9	3.4	2.4	4.6	3.7	6.1	4.6	7.3	5.8	8.2	7.3
			0.25	3.0	2.4	6.1	5.8	7.3	6.4	9.1	7.3	10.1	8.5	11	10.1
	31	m^3/s side		0.037	0.013	0.056	0.020	0.075	0.027	0.094	0.033	0.113	0.040	0.132	0.046
		throw m	0.75	1.4	0.7	2.8	1.8	3.7	3.0	5.0	3.9	5.7	4.6	6.6	5.5
			0.50	1.8	0.9	3.7	2.4	4.9	4.0	6.7	5.2	7.6	6.1	8.8	7.3
			0.25	3.4	2.4	6.4	5.8	7.9	6.7	9.7	7.9	10.4	9.1	11.3	10.1
	32	m^3/s side		0.037	0.026	0.055	0.039	0.074	0.052	0.092	0.064	0.111	0.078	0.129	0.090
		throw m	0.75	1.6	0.9	3.0	2.3	3.9	3.0	5.3	4.4	6.2	5.0	7.1	5.9
			0.50	2.1	1.2	4.0	3.0	5.2	4.0	7.0	5.8	8.2	6.7	9.4	7.9
			0.25	4.6	2.7	6.7	6.1	8.2	7.0	10.1	8.5	10.7	9.8	12.5	10.4
	22, 23	m^3/s side		0.044		0.066		0.089		0.111		0.133		0.155	
		throw m	0.75	2.0		3.6		4.7		6.3		7.4		8.5	
			0.50	2.6		4.8		6.2		8.4		9.9		11.3	
			0.25	5.5		8.0		9.9		12.1		12.8		15.0	
	52, 55, 54, 53	m^3/s side		0.062	0.026	0.093	0.039	0.124	0.053	0.155	0.066	0.159	0.067	0.218	0.092
		throw m	0.75	1.8	0.7	3.5	1.8	5.0	3.0	5.9	3.9	6.8	5.0	7.6	5.5
			0.50	2.4	0.9	4.6	2.4	6.7	4.0	7.9	5.2	9.1	6.7	10.1	7.3
			0.25	5.8	2.4	7.3	5.8	9.8	6.7	10.4	7.9	12.2	9.8	13.7	10.1
	12, 13	m^3/s side		0.088		0.132		0.177		0.221		0.266		0.310	
		throw m	0.75	2.8		4.4		6.3		7.7		9.1		9.6	
			0.50	3.7		5.9		8.4		10.2		12.1		12.8	
			0.25	7.3		9.1		12.1		13.2		15.7		17.9	
	Return NC+4 Factors -SP=2.2 TP	Total m^3/s NC		0.105 - A	B	0.159 - A	B	0.213 - A	B	0.265 28 A	B	0.319 33 A	B	0.372 38 A	B
225 x 450 AD 0.101 m^2	42, 43	m^3/s side		0.040	0.013	0.060	0.020	0.080	0.027	0.100	0.033	0.120	0.040	0.140	0.046
		throw m	0.75	1.4	0.9	2.8	2.0	3.9	3.0	5.0	3.9	5.7	4.8	6.6	5.7
			0.50	1.8	1.2	3.7	2.7	5.2	4.0	6.7	5.2	7.6	6.4	8.8	7.6
			0.25	3.7	2.7	6.4	6.1	7.9	6.7	9.8	7.9	10.1	9.4	11.9	10.1
	31	m^3/s side		0.046	0.013	0.070	0.020	0.093	0.027	0.116	0.033	0.140	0.040	0.163	0.046
		throw m	0.75	1.6	0.9	3.0	2.3	3.9	3.2	5.3	4.4	6.2	5.0	7.1	5.9
			0.50	2.1	1.2	4.0	3.0	5.2	4.3	7.0	5.8	8.2	6.7	9.4	7.9
			0.25	4.6	2.7	6.7	6.1	8.2	7.0	10.1	8.5	10.7	9.8	12.5	10.4
	22, 23	m^3/s side		0.053		0.080		0.107		0.133		0.160		0.186	
		throw m	0.75	2.0		3.8		5.2		6.6		7.7		9.1	
			0.50	2.6		5.1		6.9		8.8		10.2		12.1	
			0.25	6.6		8.4		10.2		12.1		13.5		15.7	
	52, 55, 54, 53	m^3/s side		0.079	0.026	0.120	0.039	0.160	0.053	0.200	0.065	0.240	0.079	0.280	0.092
		throw m	0.75	2.3	0.9	3.7	2.3	5.3	3.2	6.6	4.4	7.4	5.0	8.0	5.9
			0.50	3.0	1.2	4.9	3.0	7.0	4.3	8.8	5.8	9.8	6.7	10.7	7.9
			0.25	6.1	2.7	7.6	6.1	10.1	7.0	11.3	8.5	12.8	9.8	14.9	10.4
	12, 13	m^3/s side		0.105		0.159		0.213		0.265		0.319		0.372	
		throw m	0.75	3.3		5.2		6.6		8.3		9.6		9.9	
			0.50	4.4		6.9		8.8		11.0		12.8		13.2	
			0.25	7.7		10.2		12.4		14.6		17.2		18.3	
	Return NC+5 Factors -SP=2.6 TP	Total m^3/s NC		0.123 - A	B	0.185 - A	B	0.248 23 A	B	0.309 28 A	B	0.372 33 A	B	0.434 38 A	B
225 x 525 AD 0.118 m^2	42, 43	m^3/s side		0.049	0.013	0.073	0.020	0.097	0.027	0.122	0.033	0.146	0.040	0.171	0.046
		throw m	0.75	1.4	0.9	3.0	2.0	3.9	3.2	5.0	4.1	5.9	5.0	6.8	5.9
			0.50	1.8	1.2	4.0	2.7	5.2	4.3	6.7	5.5	7.9	6.7	9.1	7.9
			0.25	4.3	2.7	6.7	6.1	7.9	7.0	10.1	8.2	10.4	9.8	12.2	10.4
	31	m^3/s side		0.055	0.013	0.083	0.020	0.111	0.027	0.138	0.033	0.166	0.040	0.194	0.046
		throw m	0.75	1.6	0.9	3.2	2.3	4.4	3.5	5.5	4.4	6.4	5.3	7.4	6.2
			0.50	2.1	1.2	4.3	3.0	5.8	4.6	7.3	5.8	8.5	7.0	9.8	8.2
			0.25	5.2	2.7	7.0	6.1	8.5	7.3	10.1	8.5	11.0	10.1	12.8	10.7
	22, 23	m^3/s side		0.062		0.093		0.124		0.155		0.186		0.217	
		throw m	0.75	2.2		3.8		5.5		6.8		8.3		9.3	
			0.50	2.9		5.1		7.3		9.1		11.0		12.4	
			0.25	6.9		8.4		11.0		12.1		14.6		17.2	
	52, 55, 54, 53	m^3/s side		0.097	0.026	0.146	0.039	0.196	0.052	0.244	0.065	0.294	0.078	0.342	0.092
		throw m	0.75	2.6	0.9	3.9	2.3	5.3	3.5	6.6	4.4	7.6	5.3	8.3	6.2
			0.50	3.4	1.2	5.2	3.0	7.0	4.6	8.8	5.8	10.1	7.0	11.0	8.2
			0.25	6.4	2.7	7.9	6.1	10.1	7.3	11.3	8.5	13.1	10.1	15.5	10.7
	Return NC+3 Factors -SP=1.7 TP	Total m^3/s NC		0.117 - A	B	0.177 - A	B	0.236 23 A	B	0.295 28 A	B	0.354 33 A	B	0.413 38 A	B
300 x 375 AD 0.113 m^2	42, 43	m^3/s side		0.036	0.023	0.053	0.035	0.071	0.047	0.089	0.059	0.106	0.071	0.123	0.083
		throw m	0.75	1.4	0.9	3.0	2.0	3.9	3.2	5.0	4.1	5.9	5.0	6.8	5.7
			0.50	1.8	1.2	4.0	2.7	5.2	4.3	6.7	5.5	7.9	6.7	9.1	7.6
			0.25	4.3	2.7	6.7	6.1	7.9	7.0	9.7	8.2	10.4	9.8	12.2	10.1
	31	m^3/s side		0.047	0.023	0.071	0.035	0.095	0.047	0.118	0.059	0.142	0.071	0.165	0.083
		throw m	0.75	1.6	0.9	3.0	2.3	4.4	3.2	5.3	4.4	6.4	5.3	7.1	6.2
			0.50	2.1	1.2	4.0	3.0	5.8	4.3	7.0	5.8	8.5	7.0	9.4	8.2
			0.25	5.2	2.7	6.7	6.1	8.5	7.0	10.1	8.5	11.0	10.1	12.5	10.7
	32	m^3/s side		0.037	0.040	0.055	0.061	0.074	0.081	0.092	0.101	0.111	0.122	0.129	0.142
		throw m	0.75	1.1	1.8	2.8	3.2	3.5	4.6	4.8	5.7	5.5	6.8	6.4	7.8
			0.50	1.5	2.4	3.7	4.3	4.6	6.1	6.4	7.6	7.3	9.1	8.5	10.4
			0.25	3.0	5.8	6.4	7.0	7.3	9.1	9.4	10.1	10.1	12.2	11.0	14.3
	22, 23	m^3/s side		0.059		0.088		0.118		0.148		0.177		0.207	
		throw m	0.75	2.2		3.8		5.5		6.8		8.3		9.3	
			0.50	2.9		5.1		7.3		9.1		11.0		12.4	
			0.25	6.9		8.4		11.0		12.1		14.6		17.2	
	52, 55, 54, 53	m^3/s side		0.070	0.047	0.106	0.071	0.142	0.094	0.177	0.118	0.212	0.142	0.248	0.165
		throw m	0.75	2.6	0.9	3.9	2.3	5.3	3.5	6.6	4.4	7.6	5.3	8.3	6.2
			0.50	3.4	1.2	5.2	3.0	7.0	4.6	8.8	5.8	10.1	7.0	11.0	8.2
			0.25	6.4	2.7	7.9	6.1	10.1	7.3	11.3	8.5	13.1	10.1	15.5	10.7
	12, 13	m^3/s side		0.117		0.177		0.236		0.295		0.354		0.413	
		throw m	0.75	3.3		5.2		6.6		8.3		9.9		10.1	
			0.50	4.4		6.9		8.8		11.0		13.2		13.5	
			0.25	7.7		10.2		12.4		14.6		17.6		18.7	

CMPH – Performance Data

Size in mm	Patterns	Neck Vel m/s TP Pa Static Pa		1.04 5 3		1.57 10 8		2.10 16 13		2.62 24 20		3.15 35 30		3.67 48 40	
	Return NC+4 Factors -SP=2.0 TP	Total m^3/s NC		0.140 - A	B	0.212 - A	B	0.283 23 A	B	0.354 28 A	B	0.425 33 A	B	0.496 38 A	B
300 x 450 AD 0.135 m^2	42, 43, 31, 32, 22, 23, 52, 55, 54, 53, 12, 13	m^3/s side throw m	0.75	0.047 1.6	0.023 1.1	0.071 3.2	0.035 2.3	0.095 4.4	0.047 3.5	0.118 5.5	0.059 4.4	0.142 6.4	0.071 5.3	0.165 7.4	0.083 5.9
			0.50	2.1	1.5	4.3	3.0	5.8	4.6	7.3	5.8	8.5	7.0	9.8	7.9
			0.25	5.2	2.7	6.7	6.1	8.5	7.3	10.1	8.5	11.0	10.1	12.8	10.4
		m^3/s side throw m	0.75	0.059 1.6	0.023 1.1	0.088 3.2	0.035 2.6	0.118 4.4	0.047 3.5	0.147 5.7	0.059 4.6	0.177 6.6	0.071 5.9	0.206 7.6	0.083 6.4
			0.50	2.1	1.5	4.3	3.4	5.8	4.6	7.6	6.1	8.8	7.9	10.1	8.5
			0.25	5.5	3.0	7.0	6.1	8.5	7.3	10.1	8.8	11.3	10.4	13.1	11.0
		m^3/s side throw m	0.75	0.053 2.0	0.044 1.4	0.079 3.5	0.066 2.8	0.106 5.0	0.089 3.7	0.133 5.9	0.111 5.0	0.159 7.1	0.133 5.7	1.860 8.0	0.155 6.6
			0.50	2.7	1.8	4.6	3.7	6.7	4.9	7.9	6.7	9.4	7.6	10.7	8.8
			0.25	6.1	3.4	7.3	6.4	9.8	7.9	10.4	9.8	12.5	10.4	14.6	11.3
		m^3/s side throw m	0.75	0.070 2.5		0.106 4.1		0.142 6.0		0.177 7.1		0.213 8.5		0.248 9.6	
			0.50	3.3		5.5		8.0		9.5		11.3		12.8	
			0.25	7.3		8.8		11.7		12.4		15.0		17.6	
		m^3/s side throw m	0.75	0.093 2.8	0.047 1.1	0.141 4.1	0.071 2.6	0.189 5.7	0.094 3.5	0.236 7.1	0.118 4.6	0.283 7.8	0.142 5.7	0.331 8.5	0.165 6.4
			0.50	3.7	1.5	5.5	7.1	7.6	4.6	9.4	6.1	10.4	7.6	11.3	8.5
			0.25	6.4	3.0	8.2	3.4	10.4	7.3	12.5	8.8	14.3	10.4	15.8	11.0
		m^3/s side throw m	0.75	0.140 3.6		0.212 5.5		0.283 7.1		0.354 8.5		0.425 9.9		0.496 10.4	
			0.50	4.8		7.3		9.5		11.3		13.2		13.9	
			0.25	8.0		10.6		12.8		15.0		17.9		19.4	
300 x 525 AD 0.158 m^2	Return NC+6 Factors -SP=2.3 TP	Total m^3/s NC		0.165 - A	B	0.248 - A	B	0.330 23 A	B	0.413 28 A	B	0.496 33 A	B	0.578 38 A	B
	42, 43, 22, 23, 52, 55, 54, 53	m^3/s side throw m	0.75	0.060 1.8	0.023 1.1	0.089 3.2	0.035 2.6	0.118 4.4	0.047 3.5	0.148 5.7	0.059 4.6	0.177 6.6	0.071 5.5	0.206 7.6	0.083 6.2
			0.50	2.4	1.5	4.3	3.4	5.8	4.6	7.6	6.1	8.8	7.3	10.1	8.2
			0.25	5.8	3.0	7.0	6.1	8.5	7.3	10.1	8.8	11.3	10.1	13.4	10.7
		m^3/s side throw m	0.75	0.083 2.5		0.124 4.1		0.165 6.0		0.207 7.1		0.248 8.5		0.289 9.6	
			0.50	3.3		5.5		8.0		9.5		11.3		12.8	
			0.25	7.3		8.8		11.7		12.4		15.0		17.6	
		m^3/s side throw m	0.75	0.118 2.8	0.047 1.4	0.177 4.4	0.071 2.8	0.236 5.9	0.094 3.7	0.295 7.4	0.118 4.8	0.355 8.0	0.141 5.9	0.413 8.7	0.165 6.6
			0.50	3.7	1.8	5.8	3.7	7.9	4.9	9.8	6.4	10.7	7.9	11.6	8.8
			0.25	6.4	3.4	8.5	6.4	10.4	7.6	12.8	9.4	14.9	10.4	16.2	11.3
300 x 600 AD 0.180 m^2	Return NC+6 Factors -SP=2.7 TP	Total m^3/s NC		0.187 - A	B	0.283 - A	B	0.378 23 A	B	0.472 28 A	B	0.566 33 A	B	0.661 38 A	B
	42, 43	m^3/s side throw m	0.75	0.071 1.8	0.023 1.4	0.106 3.2	0.035 2.8	0.142 4.6	0.047 3.5	0.177 5.9	0.059 4.8	0.212 6.8	0.071 5.5	0.248 7.8	0.083 6.4
			0.50	2.4	1.8	4.3	3.7	6.1	4.6	7.9	6.4	9.1	7.3	10.4	8.5
			0.25	5.8	3.4	7.0	6.4	9.1	7.3	10.4	9.1	12.2	10.1	14.0	11.0
375 x 450 AD 0.169 m^2	Return NC+5 Factors -SP=2.1 TP	Total m^3/s NC		0.177 - A	B	0.264 - A	B	0.354 23 A	B	0.441 28 A	B	0.532 33 A	B	0.618 38 A	B
	42, 43, 31, 32	m^3/s side throw m	0.75	0.052 1.8	0.037 1.1	0.077 3.0	0.055 2.8	0.103 4.6	0.074 3.5	0.129 5.7	0.092 4.6	0.155 6.8	0.111 5.5	0.180 7.6	0.129 6.2
			0.50	2.4	1.5	4.0	3.7	6.1	4.6	7.6	6.1	9.1	7.3	10.1	8.2
			0.25	5.8	3.0	6.7	6.4	9.1	7.3	10.1	8.8	12.2	10.1	13.4	10.7
		m^3/s side throw m	0.75	0.069 2.0	0.037 1.4	0.105 3.5	0.055 2.8	0.140 5.0	0.074 3.7	0.175 5.9	0.092 5.0	0.210 7.1	0.111 5.9	0.245 8.0	0.129 6.6
			0.50	2.7	1.8	4.6	3.7	6.7	4.9	7.9	6.7	9.4	7.9	10.7	8.8
			0.25	6.1	3.4	7.3	6.4	9.8	7.6	10.4	9.8	12.5	10.4	14.6	11.3
		m^3/s side throw m	0.75	0.053 1.6	0.061 2.3	0.079 3.0	0.093 3.7	0.106 3.9	0.124 5.0	0.133 5.3	0.155 6.2	0.159 6.2	0.186 7.4	0.186 7.1	0.217 8.0
			0.50	2.1	3.0	4.0	4.9	5.2	6.7	7.0	8.2	8.2	9.8	9.4	10.7
			0.25	4.6	6.1	6.7	7.6	8.2	10.1	10.1	10.7	10.7	12.8	12.5	14.9
375 x 525 AD 0.197 m^2	Return NC+6 Factors -SP=2.2 TP	Total m^3/s NC		0.205 - A	B	0.309 - A	B	0.413 23 A	B	0.516 28 A	B	0.620 33 A	B	0.723 38 A	B
	31, 32, 22, 23, 52, 55, 54, 53, 12, 13	m^3/s side throw m	0.75	0.084 2.0	0.037 1.4	0.127 3.7	0.055 3.0	0.170 5.3	0.074 3.9	0.212 6.2	0.092 5.3	0.255 7.6	0.111 5.9	0.297 8.0	0.129 6.8
			0.50	2.7	1.8	4.9	4.0	7.0	5.2	8.2	7.0	10.1	7.9	10.7	9.1
			0.25	6.4	4.3	7.6	6.7	9.8	7.9	10.7	10.1	13.1	10.4	14.9	11.6
		m^3/s side throw m	0.75	0.072 2.0	0.067 1.8	0.108 3.9	0.100 3.2	0.145 5.5	0.134 4.4	0.181 6.4	0.168 5.5	0.217 7.6	0.202 6.4	0.253 8.3	0.235 7.4
			0.50	2.7	2.4	5.2	4.3	7.3	5.8	8.5	7.3	10.1	8.5	11.0	9.8
			0.25	6.4	5.5	8.2	8.2	10.1	8.5	11.0	10.1	13.7	11.6	15.2	12.8
		m^3/s side throw m	0.75	0.103 2.8		0.155 4.7		0.207 6.6		0.258 7.7		0.310 9.1		0.362 9.9	
			0.50	3.7		6.2		8.8		10.2		12.1		13.2	
			0.25	7.7		9.9		12.1		13.2		16.5		18.3	
		m^3/s side throw m	0.75	0.132 3.0	0.073 1.4	0.199 4.8	0.110 3.0	0.266 6.2	0.147 3.9	0.332 7.6	0.184 5.3	0.399 8.3	0.221 5.9	0.465 8.7	0.258 6.8
			0.50	4.0	1.8	6.4	4.0	8.2	5.2	10.1	7.0	11.0	7.9	11.6	9.1
			0.25	7.0	4.3	9.4	6.7	10.7	7.9	13.7	9.1	15.2	10.4	16.5	11.6
		m^3/s side throw m	0.75	0.205 3.8		0.309 6.1		0.413 8.0		0.516 9.1		0.620 10.1		0.723 10.7	
			0.50	5.1		8.1		10.6		12.1		13.5		14.3	
			0.25	8.4		11.7		13.5		17.2		18.7		19.8	
375 x 600 AD 0.225 m^2	Return NC+7 Factors -SP=2.7 TP	Total m^3/s NC		0.234 - A	B	0.353 - A	B	0.473 23 A	B	0.590 28 A	B	0.709 33 A	B	0.826 38 A	B
	42, 43, 22, 23, 52, 55, 54, 53, 12, 13	m^3/s side throw m	0.75	0.080 2.3	0.037 1.4	0.122 3.5	0.055 3.0	0.163 5.0	0.074 3.9	0.203 6.2	0.092 5.0	0.244 7.1	0.111 5.9	0.284 7.8	0.129 6.6
			0.50	3.0	1.8	4.6	4.0	6.7	5.2	8.2	6.7	9.4	7.9	10.4	8.8
			0.25	6.1	4.3	7.3	6.7	9.8	8.2	10.7	9.8	12.5	10.4	14.6	11.6
		m^3/s side throw m	0.75	0.117 3.3		0.177 5.2		0.237 6.8		0.295 8.0		0.355 9.3		0.413 10.1	
			0.50	4.4		6.9		9.1		10.6		12.4		13.5	
			0.25	7.7		10.2		12.1		13.9		17.6		19.0	
		m^3/s side throw m	0.75	0.161 3.2	0.073 1.6	0.243 5.0	0.110 3.2	0.325 6.4	0.148 4.4	0.405 7.6	0.185 5.5	0.487 8.5	0.222 6.2	0.567 8.9	0.259 7.1
			0.50	4.3	2.1	6.7	4.3	8.5	5.8	10.1	7.3	11.3	8.2	11.9	9.4
			0.25	7.0	5.2	9.8	6.7	11.3	8.2	13.7	10.1	15.5	10.7	16.8	12.5
		m^3/s side throw m	0.75	0.234 3.8		0.353 6.1		0.473 8.3		0.590 9.3		0.709 10.1		0.826 10.7	
			0.50	5.1		8.1		11.0		12.4		13.5		14.3	
			0.25	8.8		11.7		14.6		17.6		19.4		20.1	

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Size in mm	Patterns	Neck Vel m/s / TP Pa / Static Pa		1.04 / 5 / 3		1.57 / 10 / 8		2.10 / 16 / 13		2.62 / 24 / 20		3.15 / 35 / 30		3.67 / 48 / 40	
	Return Factors	Total m^3/s / NC		0.246 / -		0.371 / -		0.496 / 23		0.619 / 28		0.744 / 33		0.867 / 38	
				A	B	A	B	A	B	A	B	A	B	A	B
450 x 525	NC+6 -SP=2.3 TP	m^3/s side		0.097	0.053	0.146	0.079	0.195	0.106	0.243	0.133	0.292	0.159	0.341	0.186
	31	throw m	0.75	2.6	1.6	3.9	3.2	5.3	4.4	6.6	5.5	7.6	6.2	8.3	7.4
			0.50	3.4	2.1	5.2	4.3	7.0	5.8	8.8	7.3	10.1	8.2	11.0	9.8
			0.25	6.4	5.2	7.9	6.7	10.1	8.5	11.3	10.1	13.7	10.7	15.2	12.8
	22, 23	m^3/s side		0.123		0.186		0.248		0.310		0.372		0.434	
		throw m	0.75	3.3		5.2		6.8		8.0		9.3		10.1	
			0.50	4.4		6.9		9.1		10.6		12.4		13.5	
			0.25	7.7		10.2		12.1		14.6		17.9		19.4	
AD 0.236 m^2	52 55 / 54 53	m^3/s side		0.193	0.053	0.292	0.079	0.390	0.106	0.487	0.132	0.585	0.159	0.681	0.186
		throw m	0.75	3.2	1.6	5.0	3.2	6.6	4.4	7.6	5.5	8.5	6.2	8.9	7.4
			0.50	4.3	2.1	6.7	4.3	8.8	5.8	10.1	7.3	11.3	8.2	11.9	9.8
			0.25	7.0	5.2	9.8	6.7	11.6	8.5	14.0	10.1	15.5	10.7	16.8	12.8
	12, 13	m^3/s side		0.246		0.371		0.496		0.619		0.744		0.867	
		throw m	0.75	4.1		6.3		8.5		9.9		10.4		10.7	
			0.50	5.5		8.4		11.3		13.2		13.9		14.3	
			0.25	8.8		12.1		15.0		17.6		19.8		20.5	
	Return Factors	Total m^3/s / NC		0.281 / -		0.424 / -		0.567 / 23		0.707 / 28		0.851 / 33		0.991 / 38	
				A	B	A	B	A	B	A	B	A	B	A	B
450 x 600	NC+7 -SP=2.6 TP	m^3/s side		0.088	0.053	0.133	0.079	0.178	0.106	0.221	0.133	0.267	0.159	0.310	0.186
	42 / 43	throw m	0.75	2.6	1.6	3.9	3.0	5.5	4.1	6.4	5.3	7.6	6.4	8.3	7.1
			0.50	3.4	2.1	5.2	4.0	7.3	5.5	8.5	7.0	10.1	8.5	11.0	9.4
			0.25	6.4	5.2	7.9	7.0	10.1	8.5	11.3	10.1	13.7	11.0	15.5	12.5
	31	m^3/s side		0.114	0.053	0.172	0.079	0.230	0.106	0.287	0.133	0.346	0.159	0.403	0.186
		throw m	0.75	2.8	1.8	4.4	3.2	5.7	4.6	6.8	5.7	8.0	6.6	8.5	7.6
			0.50	3.7	2.4	5.8	4.3	7.6	6.1	9.1	7.6	10.7	8.8	11.3	10.1
			0.25	6.4	5.8	8.5	7.0	10.1	8.8	12.2	10.1	14.6	11.3	15.5	13.1
	32	m^3/s side		0.094	0.094	0.141	0.141	0.189	0.189	0.236	0.236	0.284	0.284	0.330	0.330
		throw m	0.75	3.0	2.0	4.6	3.5	5.9	5.0	7.1	5.9	8.0	7.1	8.7	8.0
			0.50	4.0	2.7	6.1	4.6	7.9	6.7	9.4	7.9	10.7	9.4	11.6	10.7
			0.25	6.7	6.1	8.8	7.3	10.4	9.8	12.5	10.4	14.9	12.5	16.2	14.6
	22, 23	m^3/s side		0.141		0.212		0.284		0.354		0.426		0.496	
		throw m	0.75	3.6		5.5		7.1		8.5		9.6		10.4	
			0.50	4.8		7.3		9.5		11.3		12.8		13.9	
			0.25	8.0		10.6		12.4		15.0		18.3		19.8	
AD 0.270 m^2	52 55 / 54 53	m^3/s side		0.228	0.053	0.345	0.080	0.461	0.106	0.574	0.133	0.691	0.160	0.805	0.186
		throw m	0.75	3.5	1.8	5.3	3.2	6.8	4.6	7.8	5.7	8.7	6.6	9.2	7.6
			0.50	4.6	2.4	7.0	4.3	9.1	6.1	10.4	7.6	11.6	8.8	12.2	10.1
			0.25	7.3	5.8	10.1	7.0	12.2	8.8	14.3	10.1	15.8	11.3	17.1	13.1
	12, 13	m^3/s side		0.281		0.424		0.567		0.707		0.851		0.991	
		throw m	0.75	4.1		6.8		8.5		10.1		10.4		11.0	
			0.50	5.5		9.1		11.3		13.5		13.9		14.6	
			0.25	8.8		12.4		15.4		17.9		20.1		20.9	
	Return Factors	Total m^3/s / NC		0.369 / -		0.556 / -		0.744 / 23		0.928 / 28		1.116 / 33		1.301 / 38	
				A	B	A	B	A	B	A	B	A	B	A	B
525 x 675	NC+9 -SP=3.2 TP	m^3/s side		0.148	0.072	0.224	0.108	0.300	0.145	0.374	0.181	0.450	0.217	0.524	0.253
	31	throw m	0.75	3.0	2.0	4.6	3.5	5.9	5.0	7.1	5.9	8.5	7.1	8.7	7.8
			0.50	4.0	2.7	6.1	4.6	7.9	6.7	9.4	7.9	11.3	9.4	11.6	10.4
			0.25	6.7	6.1	9.1	7.3	10.4	9.8	12.5	10.4	15.5	12.5	16.2	13.7
	32	m^3/s side		0.125	0.118	0.189	0.179	0.252	0.239	0.315	0.298	0.379	0.359	0.441	0.418
		throw m	0.75	3.2	2.3	5.0	3.9	6.4	5.0	7.6	6.4	8.3	7.6	18.9	8.0
			0.50	4.3	3.0	6.7	5.2	8.5	6.7	10.1	8.5	11.0	10.1	11.9	10.7
			0.25	7.0	6.1	9.8	7.9	11.0	10.1	13.4	11.6	15.2	13.1	16.5	14.9
	22, 23	m^3/s side		0.185		0.278		0.372		0.464		0.558		0.651	
		throw m	0.75	3.8		6.0		7.7		9.1		9.9		10.7	
			0.50	5.1		8.0		10.2		12.1		13.2		14.3	
			0.25	8.4		11.7		13.2		16.1		18.7		20.1	
AD 0.354 m^2	52 55 / 54 53	m^3/s side		0.297	0.072	0.448	0.108	0.599	0.145	0.748	0.180	0.899	0.217	1.048	0.253
		throw m	0.75	3.7	2.0	5.5	3.5	7.1	5.0	8.0	5.9	8.7	7.1	9.4	7.8
			0.50	4.9	2.7	7.3	4.6	9.4	6.7	10.7	7.9	11.6	9.4	12.5	10.4
			0.25	7.6	6.1	10.4	7.3	12.5	9.8	14.9	10.4	16.2	12.5	17.4	13.7
	12, 13	m^3/s side		0.369		0.556		0.744		0.928		1.116		1.301	
		throw m	0.75	4.7		7.1		8.8		10.4		10.7		11.6	
			0.50	6.2		9.5		11.7		13.9		14.3		15.4	
			0.25	9.5		12.8		15.7		19.0		20.5		21.6	
525 x 825	Return Factors	Total m^3/s / NC		0.450 / -		0.680 / -		0.910 / 23		1.135 / 28		1.364 / 33		1.590 / 38	
				A	B	A	B	A	B	A	B	A	B	A	B
AD 0.433 m^2	NC+9 -SP=3.3 TP	m^3/s side		0.153	0.072	0.232	0.108	0.310	0.145	0.387	0.181	0.465	0.217	0.542	0.253
	42 / 43	throw m	0.75	3.0	2.3	4.6	3.5	5.9	5.0	7.1	5.9	8.0	7.1	8.7	7.6
			0.50	4.0	3.0	6.1	4.6	7.9	6.7	9.4	7.9	10.7	9.4	11.6	10.1
			0.25	6.7	6.1	8.8	7.3	10.4	9.7	12.5	10.4	15.2	12.5	16.2	13.7
600 x 750	Return Factors	Total m^3/s / NC		0.468 / -		0.707 / -		0.945 / 23		1.179 / 28		1.418 / 33		1.652 / 38	
				A	B	A	B	A	B	A	B	A	B	A	B
AD 0.450 m^2	NC+9 -SP=3.5 TP	m^3/s side		0.140	0.094	0.212	0.141	0.284	0.189	0.354	0.236	0.425	0.284	0.496	0.330
	42 / 43	throw m	0.75	3.0	2.3	4.8	3.5	6.2	5.0	7.4	6.2	8.0	7.1	8.9	8.3
			0.50	4.0	3.0	6.4	4.6	8.2	6.7	9.8	8.2	10.7	9.4	11.9	11.0
			0.25	6.7	6.1	9.1	7.3	10.7	9.8	12.8	10.7	15.2	12.5	16.5	14.6
	32	m^3/s side		0.161	0.146	0.243	0.221	0.325	0.295	0.405	0.368	0.487	0.443	0.568	0.516
		throw m	0.75	3.2	2.6	5.5	4.4	6.8	5.7	7.8	6.6	8.5	7.8	9.2	8.5
			0.50	4.3	3.4	7.3	5.8	9.1	7.6	10.4	8.8	11.3	10.4	12.2	11.3
			0.25	7.3	6.4	10.1	8.5	12.2	10.4	14.6	11.9	16.2	14.6	17.1	15.8

CMP-A, CMP-ADJ & CMPH

Product Ordering Key and Suggested Specifications

CMP	–	A	–	1	–	41	–	450x450	–	600x600	–	OBD	–	TRV	–	SRA 300 DIA CH 300 DIA	–	FINISH
Ceiling Multi Pattern		Aluminium		Frame Style		Core Pattern		Duct Size		Module Size		Opposed Blade Damper Attached		Throw Reducing Vanes		Square to Round Adaptor, or Cushion Head		Holyoake White Mill Aluminium Powder Coat

Ceiling Multi Pattern Louver Face diffusers shall be type CMP-A and be all Aluminium construction with removable core, to give the air distribution pattern shown on the drawings. They shall be available with a range of frame styles and purpose made accessories for both throw adjustment and volume control.

All shall be as manufactured by Holyoake.

CMP-ADJ	–	2	–	41	–	225x225	–	600x600	–	OBD	–	TRV	–	SRA 150 DIA CH 150 DIA	–	FINISH
Ceiling Multi Pattern - Adjustable		Frame Style		Core Pattern		Duct Size		Module Size		Opposed Blade Damper Attached		Throw Reducing Vanes		Square to Round Adaptor, or Cushion Head		Holyoake White Mill Aluminium Powder Coat

Ceiling Multi Pattern - Adjustable Louver Face diffusers shall be type CMP-ADJ. They shall be of all Aluminium construction, with removeable cores. CMP-ADJ are fitted with vanes which can easily be adjusted to enable vertical, or horizontal throw.

All shall be as manufactured by Holyoake.

CMPH	–	2	–	41	–	300x300	–	600 x 600	–	OBD	–	TRV	–	SRA 150 DIA CH 150 DIA	–	FINISH
Ceiling Multi Pattern Horizontal		Frame Style		Core Pattern		Duct Size		Module Size		Opposed Blade Damper Attached		Throw Reducing Vanes		Square to Round Adaptor, or Cushion Head		Holyoake White Mill Aluminium Powder Coat

Ceiling Multi Pattern Horizontal Louver Face diffusers shall be type CMPH and be all Aluminium construction with additional horizontal blades. Complete with removeable core to give multiple air distribution patterns. They shall be available with a range of frame styles and accessories for both throw adjustment and volume control.

All shall be as manufactured by Holyoake.

Note: All ceiling diffusers, seismic restraints required, but not supplied.

CMPP & CMP - TL

Product Ordering Key and Suggested Specifications

CMPP	–	1	–	300x300	–	450 x 450	–	OBD	–	SRA 300 DIA CH 300 DIA	–	FINISH
Ceiling Multi Pattern Plaque		Frame Style		Duct Size		Module Size		Opposed Blade Damper Attached		Square to Round Adaptor, or Cushion Head		Holyoake White Mill Aluminium Powder Coat

Ceiling Multi Pattern - Plaque Louver Face diffusers shall be type CMPP. They shall be of all Aluminium construction, with removeable plaque core. CMPP have a range of frame styles and accessories for installation and volume control.

All shall be as manufactured by Holyoake.

CMP-TL	–	1	–	450x450	–	SRA 300 DIA CH 300 DIA	–	FINISH
Ceiling Multi Pattern - Thermal Low Cost		Frame Style		Neck Size		Square to Round Adaptor, or Cushion Head		Holyoake White Mill Aluminium Powder Coat

Ceiling Multi Pattern - Thermal Low Cost Louver Face diffusers shall be type CMP-TL. They shall be of Aluminium construction, with removeable cores. CMP-TL central cores, are complete with a vertical supply section controlled by a thermally actuated damper. Supply air is diffused horizontally below temperatures of 24°C and vertically with temperatures above 30°C.

All shall be as manufactured by Holyoake.

Note: All ceiling diffusers, seismic restraints required, but not supplied.

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