

# 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.

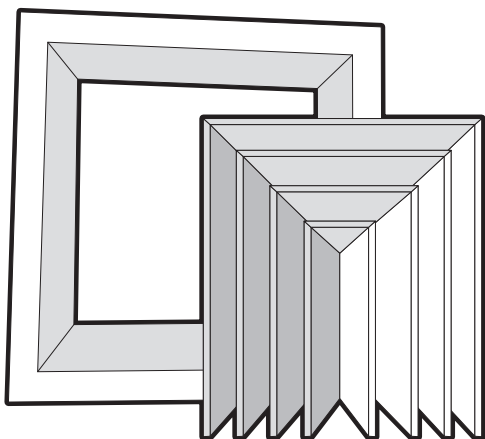
### Finish

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.

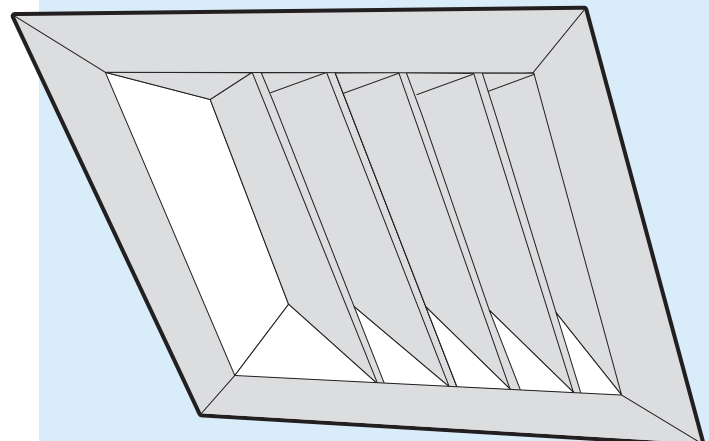
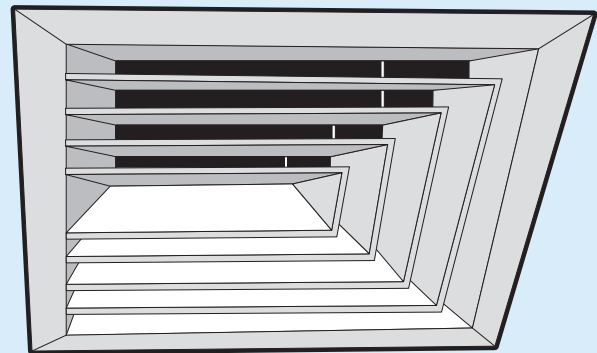
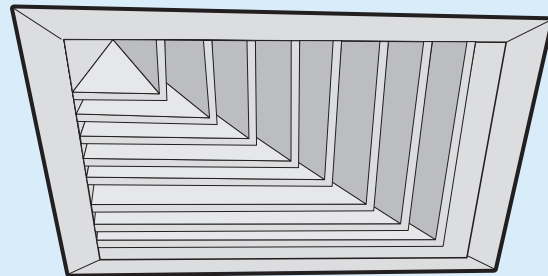
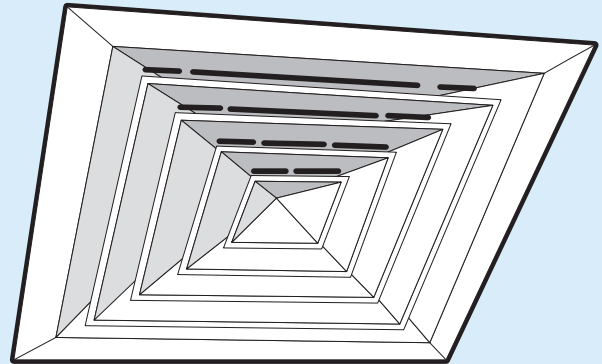
### Features

- 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.

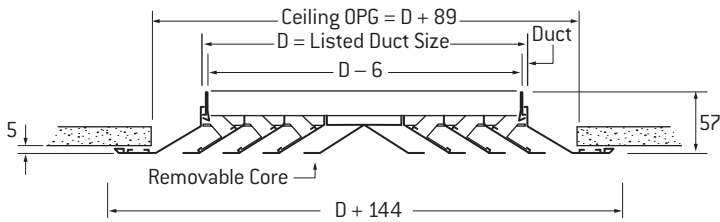
## Ceiling Diffuser



## Model: C MPH – Ceiling Multi Pattern Diffuser - Horizontal

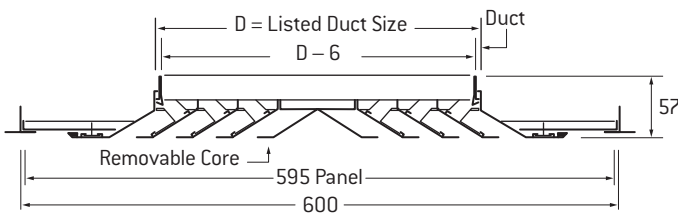
### Standard Flange Frame.

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



### Panel Diffuser.

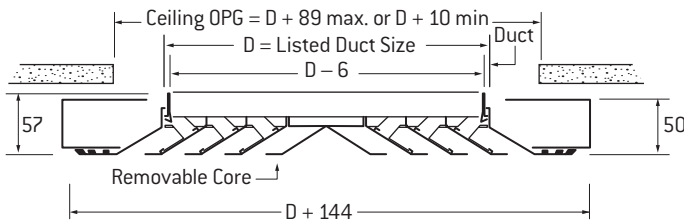
Lay-in type for installation in suspended "T-Rail" type ceilings. Standard panel overall size is 595 x 595 to suit a 600 x 600 grid. Size 450 x 450 has an overall face size of 595 x 595. It therefore does not require a panel in a 600 grid and fits "T-Rail" spacing with clearance\*.



### 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.

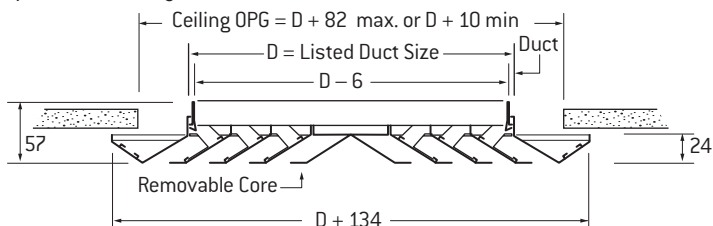
Special order only.



### Bevelled Drop Frame.

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

Special order only.



### Construction

#### Aluminium:

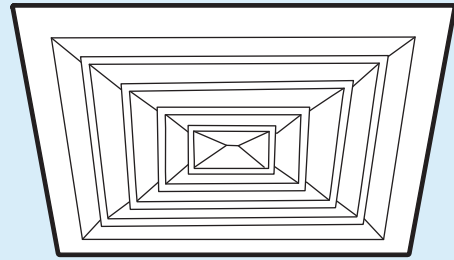
0.75mm extruded 6063-T5 aluminium outer frame.

0.55mm removable aluminium core.

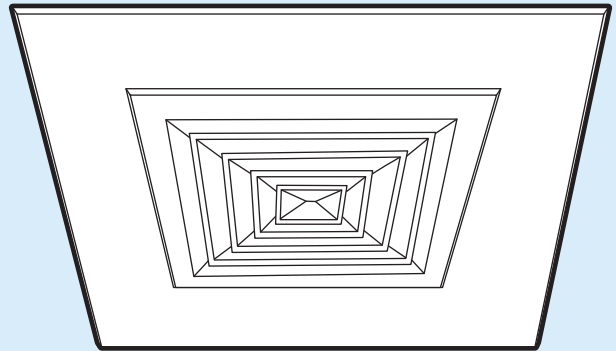
\* Note: 0.75 mm Steel Panel on C MPH Type 2.

Product weights are shown on page 1610.

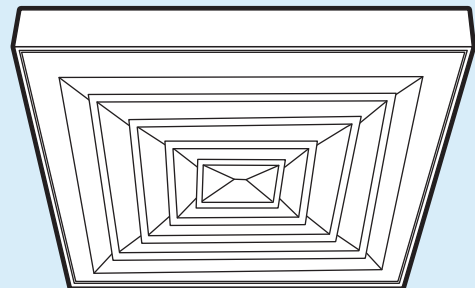
Type 1



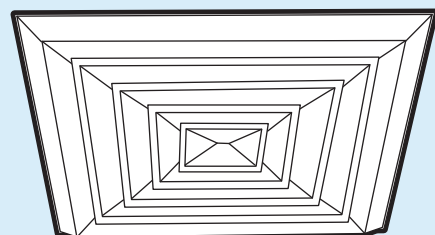
Type 2














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							
150 x 150  AD 0.023 m <sup>2</sup>	<b>Return Factors</b>	<b>NC+1 -SP=1.1 TP</b>	<b>Total m<sup>3</sup>/s NC</b>		<b>0.024</b>	<b>0.036</b>	<b>0.047</b>	<b>0.059</b>	<b>0.071</b>	<b>0.083</b>					
			A	B	A	B	A	B	A	B					
	 <b>41</b>	m <sup>3</sup> /s side	0.006		0.008		0.012		0.015		0.017		0.021		
		throw m	0.75 0.50 0.25		0.9 1.2 2.7		1.8 2.4 5.8		2.7 3.7 6.4		3.2 4.3 7		3.4 4.6 7.3		
	 <b>36*</b>	m <sup>3</sup> /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 0.50 0.25	0.5 0.6 0.9	0.7 0.9 1.5	1.4 1.8 3.7	1.4 1.8 3.4	2.3 3.0 6.1	2.5 3.4 6.1	3.0 4.0 7.0	3.0 4.0 6.7	3.9 5.2 7.9	3.4 4.6 7.3	4.6 6.1 8.8	
	 <b>21</b>	m <sup>3</sup> /s side	0.012		0.018		0.024		0.030		0.035		0.041		
		throw m	0.75 0.50 0.25		0.9 1.2 1.8		1.6 2.1 5.2		2.7 3.7 6.4		3.2 4.3 7.0		4.3 5.8 8.5		4.8 6.4 9.4
	 <b>11</b>	m <sup>3</sup> /s side	0.024		0.035		0.047		0.059		0.071		0.083		
		throw m	0.75 0.50 0.25		0.9 1.2 2.7		2.3 3.0 6.1		3.2 4.3 7.0		4.3 5.8 8.5		5.0 6.7 9.7		5.9 7.9 10.4
225 x 225  AD 0.051 m <sup>2</sup>	<b>Return Factors</b>	<b>NC+3 -SP=1.3 TP</b>	<b>Total m<sup>3</sup>/s NC</b>		<b>0.052</b>	<b>0.080</b>	<b>0.106</b>	<b>0.132</b>	<b>0.158</b>	<b>0.184</b>					
			A	B	A	B	A	B	A	B					
	 <b>41</b>	m <sup>3</sup> /s side	0.013		0.020		0.026		0.033		0.040		0.046		
		throw m	0.75 0.50 0.25		0.7 0.9 2.1		1.6 2.1 5.5		2.7 3.7 7.9		4.1 5.5 8.5		5.0 6.7 9.7		
	 <b>36*</b>	m <sup>3</sup> /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 0.50 0.25	0.7 0.9 1.8	0.9 1.2 2.7	2.3 3.0 6.1	2.5 3.4 6.1	3.2 4.3 7.0	3.2 4.3 8.2	4.1 5.5 9.7	5.0 6.7 10.4	5.9 7.9 11.3	6.4 9.1 11.3		
	 <b>21</b>	m <sup>3</sup> /s side	0.026		0.040		0.053		0.066		0.079		0.092		
		throw m	0.75 0.50 0.25		1.1 1.5 3.0		2.5 3.4 6.1		3.2 4.3 7.0		4.3 5.8 8.5		5.5 7.3 10.1		6.2 8.2 10.7
	 <b>11</b>	m <sup>3</sup> /s side	0.052		0.080		0.106		0.132		0.158		0.184		
		throw m	0.75 0.50 0.25		1.6 2.1 5.2		3.0 4.0 6.7		4.3 5.8 8.5		5.5 7.3 10.1		6.4 8.5 11.0		7.3 9.7 12.8
300 x 300  AD 0.090 m <sup>2</sup>	<b>Return Factors</b>	<b>NC+5 -SP=1.4 TP</b>	<b>Total m<sup>3</sup>/s NC</b>		<b>0.094</b>	<b>0.142</b>	<b>0.189</b>	<b>0.236</b>	<b>0.283</b>	<b>0.330</b>					
			A	B	A	B	A	B	A	B					
	 <b>41</b>	m <sup>3</sup> /s side	0.024		0.035		0.047		0.059		0.071		0.083		
		throw m	0.75 0.50 0.25		0.9 1.2 2.4		2.3 3.0 6.1		3.0 4.0 7.0		4.3 5.8 10.1		5.9 7.9 10.4		
	 <b>36*</b>	m <sup>3</sup> /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 0.50 0.25	0.9 1.2 2.7	1.4 1.8 3.4	2.7 3.7 6.4	3.0 4.0 7.9	3.9 5.2 9.7	5.0 6.7 10.4	5.9 7.9 12.8	7.0 9.7 15.5	8.5 11.3 18.4	9.4 12.2		
	 <b>21</b>	m <sup>3</sup> /s side	0.047		0.071		0.094		0.118		0.142		0.165		
		throw m	0.75 0.50 0.25		1.6 2.1 5.2		3.0 4.0 7.0		4.1 5.5 8.5		5.3 7.0 10.1		6.4 8.5 12.5		7.1 9.4 12.5
	 <b>11</b>	m <sup>3</sup> /s side	0.094		0.142		0.189		0.236		0.283		0.330		
		throw m	0.75 0.50 0.25		2.3 3.0 6.1		3.9 5.2 9.7		5.5 7.3 11.6		7.3 9.7 12.8		8.0 10.7 14.9		8.0 10.7 14.9
375 x 375  AD 0.141 m <sup>2</sup>	<b>Return Factors</b>	<b>NC+5 -SP=1.9 TP</b>	<b>Total m<sup>3</sup>/s NC</b>		<b>0.146</b>	<b>0.222</b>	<b>0.295</b>	<b>0.368</b>	<b>0.441</b>	<b>0.514</b>					
			A	B	A	B	A	B	A	B					
	 <b>41</b>	m <sup>3</sup> /s side	0.036		0.055		0.074		0.092		0.110		0.128		
		throw m	0.75 0.50 0.25		1.4 1.8 3.4		2.7 3.7 6.4		3.9 5.2 9.7		5.0 6.7 10.4		5.9 8.8 11.9		
	 <b>36*</b>	m <sup>3</sup> /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 0.50 0.25	1.1 1.5 3.0	1.8 2.4 5.8	3.4 4.6 9.7	3.4 4.6 9.1	4.6 6.1 10.1	4.8 6.4 10.1	5.7 7.6 12.2	6.9 9.1 12.2	9.1 10.4 14.3	6.4 8.5 11.0	7.8 10.4 14.3	
	 <b>21</b>	m <sup>3</sup> /s side	0.073		0.111		0.147		0.184		0.220		0.257		
		throw m	0.75 0.50 0.25		1.8 2.4 5.8		3.4 4.6 7.3		5.0 6.7 9.7		6.4 7.9 10.4		7.1 9.4 12.5		7.5 10.1 14.3
	 <b>11</b>	m <sup>3</sup> /s side	0.146		0.222		0.295		0.368		0.441		0.514		
		throw m	0.75 0.50 0.25		2.7 3.7 6.4		4.6 6.1 8.8		5.9 7.9 10.4		7.1 9.4 12.5		8.0 10.7 14.9		8.0 11.3 15.5
450 x 450  AD 0.202 m <sup>2</sup>	<b>Return Factors</b>	<b>NC+7 -SP=2.2 TP</b>	<b>Total m<sup>3</sup>/s NC</b>		<b>0.212</b>	<b>0.319</b>	<b>0.425</b>	<b>0.531</b>	<b>0.637</b>	<b>0.743</b>					
			A	B	A	B	A	B	A	B					
	 <b>41</b>	m <sup>3</sup> /s side	0.053		0.080		0.106		0.133		0.159		0.186		
		throw m	0.75 0.50 0.25		1.6 2.1 4.9		3.2 4.3 7.0		4.3 5.8 8.5		5.5 7.3 10.1		6.4 8.5 11.6		7.5 10.1 13.7
	 <b>36*</b>	m <sup>3</sup> /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 0.25 0.25	1.6 2.1 4.3	2.3 3.0 6.1	3.0 4.0 6.7	3.4 4.6 7.3	4.3 5.8 8.5	5.0 6.7 9.7	6.2 8.2 11.3	7.3 9.7 12.8	8.2 10.7 14.9	9.4 12.5 14.9		
	 <b>21</b>	m <sup>3</sup> /s side	0.106		0.159		0.212		0.265		0.319		0.371		
		throw m	0.75 0.50 0.25		2.5 3.4 6.1		3.9 5.2 7.9		5.5 7.3 10.1		6.6 8.8 11.9		7.5 10.1 13.7		8.2 11.0 15.2
	 <b>11</b>	m <sup>3</sup> /s side	0.212		0.319		0.425		0.531		0.637		0.743		
		throw m	0.75 0.50 0.25		3.2 4.3 7.0		5.0 6.7 9.7		6.4 8.5 11.3		7.5 10.1 13.7		8.2 11.0 14.9		8.7 11.6 16.8

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

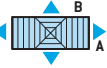





















Diffusers - Ceiling Multi Pattern

Size in mm	Patterns		Neck Vel m/s	1.04	1.57	2.10	2.62	3.15	3.67			
	Return Factors	NC+9 -SP=2.7 TP	TP Pa	4	10	16	24	35	48			
			Static Pa	3	8	13	20	30	40			
			Total m <sup>3</sup> /s NC	0.288	0.434	0.578	0.722	0.866	1.010			
				A	B	A	B	A	B			
525 x 525 AD 0.276 m <sup>2</sup>		41 36* 21 51 11	Total m <sup>3</sup> /s NC	0.288	0.434	0.578	0.722	0.866	1.010			
			m <sup>3</sup> /s side	0.072	0.109	0.144	0.180	0.217	0.252			
			throw m	0.75 1.8 0.50 2.4 0.25 5.8	3.4 4.6 7.3	5 6.7 9.7	5.9 7.9 10.4	7.1 9.4 12.5	8 10.7 14.9			
			m <sup>3</sup> /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 0.50 2.4 3.7 0.25 5.8 6.4	3.2 4.1 4.3 5.5 7.0 8.2	4.6 5.7 6.1 7.6 8.8 10.1	5.5 6.9 7.3 9.1 10.1 12.2	6.4 7.5 8.5 10.1 11.3 13.7	7.5 8.2 10.1 11.0 13.4 15.5			
			m <sup>3</sup> /s side	0.144	0.217	0.289	0.361	0.433	0.505			
			throw m	0.75 2.7 0.50 3.7 0.25 6.4	4.3 5.8 8.5	5.9 7.9 10.4	7.1 9.4 12.5	7.8 10.4 14.6	8.5 11.3 15.8			
			m <sup>3</sup> /s side	0.288	0.434	0.578	0.722	0.866	1.010			
			throw m	0.75 3.4 0.50 4.6 0.25 7.3	5.5 7.3 10.1	7.1 9.4 12.5	8.0 10.7 14.9	8.7 11.6 16.2	9.1 12.2 17.4			
			600 x 600 AD 0.36 m <sup>2</sup>		41 36* 21 51 11	Total m <sup>3</sup> /s NC	0.378	0.566	0.755	0.944	1.133	1.321
						m <sup>3</sup> /s side	0.094	0.142	0.189	0.236	0.283	0.330
						throw m	0.75 2.5 0.50 3.4 0.25 6.1	3.9 5.2 7.9	5.5 7.3 10.1	6.4 8.5 11.3	7.5 10.1 13.7	8.2 11.0 15.5
m <sup>3</sup> /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 0.50 2.4 4.0 0.25 6.1 6.7	3.4 4.6 4.6 6.1 7.3 9.1				5.0 5.9 6.7 7.9 9.7 10.4	5.9 7.3 7.9 9.7 10.4 12.8	7.1 8.0 9.4 10.7 12.5 14.9	7.8 8.5 10.4 11.3 14.3 15.8			
m <sup>3</sup> /s side	0.188	0.283				0.378	0.472	0.566	0.661			
throw m	0.75 3.0 0.50 4.0 0.25 6.7	5.0 6.7 9.7				6.6 8.8 11.3	7.5 10.1 13.7	8.2 11.0 17.4	8.7 11.6 16.8			
m <sup>3</sup> /s side	0.378	0.566				0.755	0.944	1.133	1.321			
throw m	0.75 3.9 0.50 5.2 0.25 7.9	5.9 7.9 10.4				7.3 9.7 13.1	8.7 11.6 15.8	8.9 11.9 17.1	9.6 12.8 18.0			
675 x 675 AD 0.456 m <sup>2</sup>		41 36* 21 51 11				Total m <sup>3</sup> /s NC	0.477	0.717	0.956	1.194	1.432	1.671
						m <sup>3</sup> /s side	0.119	0.179	0.239	0.298	0.358	0.418
						throw m	0.75 2.7 0.50 3.7 0.25 6.4	4.6 6.1 9.1	5.7 7.6 10.4	6.9 9.1 12.2	7.8 10.4 14.6	8.5 11.3 15.8
			m <sup>3</sup> /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 0.50 3.0 4.0 0.25 6.4 7.0	3.9 5.0 5.2 6.7 7.9 9.7	5.5 6.4 7.3 8.5 10.1 11.6	6.4 7.5 8.5 10.1 11.3 13.7	7.5 8.5 10.1 11.3 13.7 15.5	8.0 8.7 10.7 11.6 14.9 16.2			
			m <sup>3</sup> /s side	0.238	0.359	0.478	0.597	0.716	0.835			
			throw m	0.75 3.2 0.50 4.3 0.25 7.0	5.5 7.3 10.1	7.3 9.7 12.2	7.8 10.4 14.6	8.7 11.6 16.2	8.9 11.9 17.4			
			m <sup>3</sup> /s side	0.477	0.717	0.956	1.194	1.432	1.671			
			throw m	0.75 4.3 0.50 5.8 0.25 8.5	6.4 8.5 11.3	7.5 10.1 14.3	8.9 11.9 16.5	9.1 12.2 17.4	10.1 13.4 18.6			
			825 x 825 AD 0.681 m <sup>2</sup>		41	Total m <sup>3</sup> /s NC	0.713	1.071	1.428	1.784	2.140	2.497
						m <sup>3</sup> /s side	0.178	0.268	0.357	0.446	0.535	0.624
						throw m	0.75 3.0 0.50 4.0 0.25 7.0	4.8 6.4 9.7	6.6 8.8 11.3	7.5 10.1 13.1	8.0 10.7 14.9	8.7 11.6 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	1.04	1.57	2.10	2.62	3.15	3.67								
	Return Factors	NC+0 -SP=1.3 TP	TP Pa Static Pa	4 3	10 8	16 13	24 20	35 30	48 40								
			Total m <sup>3</sup> /s NC	0.035	0.052	0.071	0.087	0.104	0.123								
				A B	A B	A B	A B	A B	A B								
150 x 225	 <b>42</b>	 <b>43</b>	m <sup>3</sup> /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	
	 <b>31</b>	 <b>32</b>	m <sup>3</sup> /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	
	 <b>22, 23</b>	 <b>52</b>	 <b>54</b>	m <sup>3</sup> /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
	AD 0.033 m <sup>2</sup>	 <b>55</b>	 <b>53</b>	m <sup>3</sup> /s side	0.018	0.008	0.026	0.010	0.035	0.012	0.043	0.015	0.052	0.018	0.061	0.021	
				throw m	0.75	0.8	0.8	2.6	2.0	4.8	3.6	6.2	4.7	9.1	7.6	10.1	8.5
		 <b>12, 13</b>	 <b>52</b>	 <b>54</b>	m <sup>3</sup> /s side	0.023	0.012	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
		 <b>12, 13</b>	 <b>52</b>	 <b>54</b>	m <sup>3</sup> /s side	0.035	0.012	0.052	0.017	0.071	0.024	0.087	0.029	0.104	0.033	0.123	0.039
					throw m	0.75	1.7	3.3	4.4	4.4	5.9	6.1	8.1	8.8	11.7	12.4	13.5
150 x 300		 <b>42</b>	 <b>43</b>	m <sup>3</sup> /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
		 <b>31</b>	 <b>32</b>	m <sup>3</sup> /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
		 <b>22, 23</b>	 <b>52</b>	 <b>54</b>	m <sup>3</sup> /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
	 <b>12, 13</b>	 <b>52</b>	 <b>54</b>	m <sup>3</sup> /s side	0.024	0.012	0.035	0.018	0.047	0.024	0.059	0.029	0.071	0.035	0.083	0.041	
				throw m	0.75	1.1	2.2	3.8	5.1	6.9	8.0	10.2	11.7	12.4	13.2	15.0	
	AD 0.045 m <sup>2</sup>	 <b>55</b>	 <b>53</b>	m <sup>3</sup> /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
		 <b>12, 13</b>	 <b>52</b>	 <b>54</b>	m <sup>3</sup> /s side	0.047	0.012	0.071	0.017	0.094	0.024	0.118	0.028	0.142	0.035	0.165	0.040
					throw m	0.75	2.0	3.6	5.3	7.0	8.4	10.2	12.1	13.2	15.0		

Diffusers - Ceiling Multi Pattern




















Size in mm	Patterns		Neck Vel m/s TP Pa Static Pa	1.04		1.57		2.10		2.62		3.15		3.67			
				5	3	10	8	16	13	24	20	35	30	48	40		
225 x 375	Return Factors	NC+4 -SP=1.8 TP	Total m³/s NC	0.088		0.132		0.177		0.221		0.266		0.310			
				A	B	A	B	A	B	A	B	A	B	A	B		
AD 0.084 m²	 <b>42</b>  <b>43</b>	 <b>31</b>  <b>32</b>  <b>22, 23</b>	m³/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	
			m³/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	0.155	0.092
			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			
	m³/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	0.155	0.092		
	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			
	m³/s side	0.044		0.066		0.089		0.111		0.133		0.155		0.187			
	throw m	0.75	2.0	3.6	4.7	6.2	7.7	9.1	10.6	12.1	13.6	15.1	16.6	18.1			
		0.50	2.6	4.8	6.2	7.6	9.0	10.4	11.8	13.2	14.6	16.0	17.4	18.8			
		0.25	5.5	8.0	9.9	11.8	13.7	15.6	17.5	19.4	21.3	23.2	25.1	27.0			
		m³/s side	0.062	0.026	0.093	0.039	0.124	0.053	0.155	0.066	0.199	0.079	0.232	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			
		m³/s side	0.088		0.132		0.177		0.221		0.266		0.310				
	throw m	0.75	2.8	4.4	6.3	8.4	10.2	12.1	14.0	15.9	17.8	19.7	21.6	23.5			
		0.50	3.7	5.9	8.4	10.2	12.1	14.0	15.9	17.8	19.7	21.6	23.5	25.4			
		0.25	7.3	9.1	12.1	15.1	18.1	21.1	24.1	27.1	30.1	33.1	36.1	39.1			

Diffusers - Ceiling Multi Pattern

# 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 30 25	3.67 48 40		
300 x 450	<b>Return Factors</b> NC+4 -SP=2.0 TP	Total m³/s NC	0.140	0.212	0.283	0.354	0.425	0.496		
	42  43	m³/s side	A B	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 1.1 0.50 2.1 1.5 0.25 5.2 2.7	3.2 2.3 4.3 3.0 6.7 6.1	4.4 3.5 5.8 4.6 8.5 7.3	5.5 4.4 7.3 5.8 10.1 8.5	6.4 5.3 8.5 7.0 11.0 10.1	7.4 5.9 9.8 7.9 12.8 10.4		
	31	m³/s side	A B	0.059 0.023	0.088 0.035	0.118 0.047	0.147 0.059	0.177 0.071	0.206 0.083	
		throw m	0.75 1.6 1.1 0.50 2.1 1.5 0.25 5.5 3.0	3.2 2.6 4.3 3.4 7.0 6.1	4.4 3.5 5.8 4.6 8.5 7.3	5.7 4.6 7.6 6.1 10.1 8.8	6.6 5.9 8.8 7.9 11.3 10.4	7.6 6.4 10.1 8.5 13.1 11.0		
	32	m³/s side	A B	0.053 0.044	0.079 0.066	0.106 0.089	0.133 0.111	0.159 0.133	0.186 0.155	
		throw m	0.75 2.0 1.4 0.50 2.7 1.8 0.25 6.1 3.4	3.5 2.8 4.6 3.7 7.3 6.4	5.0 3.7 6.7 4.9 9.8 7.9	7.9 6.7 9.9 7.9 10.4 9.8	9.4 7.6 10.4 9.8 12.5 10.4	10.7 8.8 14.6 11.3		
	AD 0.135 m²	22, 23	m³/s side	A B	0.070	0.106	0.142	0.177	0.213	0.248
			throw m	0.75 2.5 4.1 0.50 3.3 5.5 0.25 7.3 8.8	4.1 5.5 8.8	6.0 8.0 11.7	7.1 9.5 12.4	8.5 11.3 15.0	9.6 12.8 17.6	
	52  54 53	m³/s side	A B	0.093 0.047	0.141 0.071	0.189 0.094	0.236 0.118	0.283 0.142	0.331 0.165	
		throw m	0.75 2.8 1.1 0.50 3.7 1.5 0.25 6.4 3.0	4.1 2.6 5.5 7.1 8.2 3.4	5.7 3.5 7.6 4.6 10.4 7.3	7.1 4.6 9.4 6.1 12.5 8.8	8.5 5.7 10.4 7.6 14.3 10.4	9.8 6.4 13.1 8.5 15.8 11.0		
	12, 13	m³/s side	A B	0.140	0.212	0.283	0.354	0.425	0.496	
throw m		0.75 3.6 5.5 0.50 4.8 7.3 0.25 8.0 10.6	5.5 7.3 10.6	7.1 9.5 12.8	8.5 11.3 15.0	9.9 13.2 17.9	10.4 13.9 19.4			
300 x 525	<b>Return Factors</b> NC+6 -SP=2.3 TP	Total m³/s NC	0.165	0.248	0.330	0.413	0.496	0.578		
	42  43	m³/s side	A B	0.060 0.023	0.089 0.035	0.118 0.047	0.148 0.059	0.177 0.071	0.206 0.083	
		throw m	0.75 1.8 1.1 0.50 2.4 1.5 0.25 5.8 3.0	3.2 2.6 4.3 3.4 7.0 6.1	4.4 3.5 5.8 4.6 8.5 7.3	5.7 4.6 7.6 6.1 10.1 8.8	6.6 5.5 8.8 7.3 11.3 10.1	7.6 6.2 10.1 8.2 13.4 10.7		
	22, 23	m³/s side	A B	0.083	0.124	0.165	0.207	0.248	0.289	
		throw m	0.75 2.5 4.1 0.50 3.3 5.5 0.25 7.3 8.8	4.1 5.5 8.8	6.0 8.0 11.7	7.1 9.5 12.4	8.5 11.3 15.0	9.6 12.8 17.6		
	52  54 53	m³/s side	A B	0.118 0.047	0.177 0.071	0.236 0.094	0.295 0.118	0.355 0.141	0.413 0.165	
		throw m	0.75 2.8 1.4 0.50 3.7 1.8 0.25 6.4 3.4	4.4 2.8 5.8 3.7 8.5 6.4	5.9 3.7 7.9 4.9 10.4 7.6	7.4 4.8 9.8 6.4 12.8 9.4	8.0 5.9 10.7 7.9 14.9 10.4	8.7 6.6 11.6 8.8 16.2 11.3		
	300 x 600	<b>Return Factors</b> NC+6 -SP=2.7 TP	Total m³/s NC	0.187	0.283	0.378	0.472	0.566	0.661	
		42  43	m³/s side	A B	0.071 0.023	0.106 0.035	0.142 0.047	0.177 0.059	0.212 0.071	0.248 0.083
			throw m	0.75 1.8 1.4 0.50 2.4 1.8 0.25 5.8 3.4	3.2 2.8 4.3 3.7 7.0 6.4	4.6 3.5 6.1 4.6 9.1 7.3	5.9 4.8 7.9 6.4 10.4 9.1	6.8 5.5 9.1 7.3 12.2 10.1	7.8 6.4 10.4 8.5 14.0 11.0	
		375 x 450	<b>Return Factors</b> NC+5 -SP=2.1 TP	Total m³/s NC	0.177	0.264	0.354	0.441	0.532	0.618
			42  43	m³/s side	A B	0.052 0.037	0.077 0.055	0.103 0.074	0.129 0.092	0.155 0.111
throw m				0.75 2.4 1.1 0.50 3.1 1.5 0.25 5.8 3.0	3.0 2.8 4.0 3.7 6.7 6.4	4.6 3.5 6.1 4.6 9.1 7.3	5.7 4.6 7.6 6.1 10.1 8.8	6.8 5.5 9.1 7.3 12.2 10.1	7.6 6.2 10.1 8.2 13.4 10.7	
31			m³/s side	A B	0.069 0.037	0.105 0.055	0.140 0.074	0.175 0.092	0.210 0.111	0.245 0.129
			throw m	0.75 2.0 1.4 0.50 2.7 1.8 0.25 6.1 3.4	3.5 2.8 4.6 3.7 7.3 6.4	5.0 3.7 6.7 4.9 9.8 7.6	7.9 6.7 9.9 7.6 10.4 9.8	9.4 7.9 12.5 10.4 15.0 11.3	8.0 6.6 10.7 8.8 14.6 11.3	
32			m³/s side	A B	0.053 0.061	0.079 0.093	0.106 0.124	0.133 0.155	0.159 0.186	0.186 0.217
			throw m	0.75 1.6 2.3 0.50 2.1 3.0 0.25 4.6 6.1	3.0 3.7 4.0 4.9 6.7 7.6	3.9 5.0 5.2 6.7 8.2 10.1	5.3 6.2 7.0 8.2 10.1 10.7	6.2 7.4 8.2 9.8 10.7 12.8	7.1 8.0 9.4 10.7 12.5 14.9	
375 x 525			<b>Return Factors</b> NC+6 -SP=2.2 TP	Total m³/s NC	0.205	0.309	0.413	0.516	0.620	0.723
			31	m³/s side	A B	0.084 0.037	0.127 0.055	0.170 0.074	0.212 0.092	0.255 0.111
	throw m			0.75 2.0 1.4 0.50 2.7 1.8 0.25 6.4 4.3	3.7 3.0 4.9 4.0 7.6 6.7	5.3 3.9 7.0 5.2 9.8 7.9	6.2 5.3 8.2 7.0 10.7 10.1	7.6 5.9 10.1 7.9 13.1 10.4	8.0 6.8 10.7 9.1 14.9 11.6	
	32		m³/s side	A B	0.072 0.067	0.108 0.100	0.145 0.134	0.181 0.168	0.217 0.202	0.253 0.235
			throw m	0.75 2.0 1.8 0.50 2.7 2.4 0.25 6.4 5.5	3.9 3.2 5.2 4.3 8.2 8.2	5.5 4.4 7.3 5.8 10.1 8.5	6.4 5.5 8.5 7.3 11.0 10.1	7.6 6.4 10.1 8.5 13.7 11.6	8.3 7.4 11.0 9.8 15.2 12.8	
	22, 23	m³/s side	A B	0.103	0.155	0.207	0.258	0.310	0.362	
		throw m	0.75 2.8 4.7 0.50 3.7 6.2 0.25 7.7 9.9	4.7 6.2 9.9	6.6 8.8 12.1	7.7 10.2 13.2	9.1 12.1 16.5	9.9 13.2 18.3		
	52  54 53	m³/s side	A B	0.132 0.073	0.199 0.110	0.266 0.147	0.332 0.184	0.399 0.221	0.465 0.258	
		throw m	0.75 3.0 1.4 0.50 4.0 1.8 0.25 7.0 4.3	4.8 3.0 6.4 4.0 9.4 6.7	6.2 3.9 8.2 5.2 10.7 7.9	7.6 5.3 10.1 7.0 13.7 9.1	8.3 5.9 11.0 7.9 15.2 10.4	8.7 6.8 11.6 9.1 16.5 11.6		
	12, 13	m³/s side	A B	0.205	0.309	0.413	0.516	0.620	0.723	
		throw m	0.75 3.8 6.1 0.50 5.1 8.1 0.25 8.4 11.7	6.1 8.1 11.7	8.0 10.6 13.5	9.1 12.1 15.2	10.1 13.5 17.2	10.7 14.3 18.7		
	375 x 600	<b>Return Factors</b> NC+7 -SP=2.7 TP	Total m³/s NC	0.234	0.353	0.473	0.590	0.709	0.826	
42  43		m³/s side	A B	0.080 0.037	0.122 0.055	0.163 0.074	0.203 0.092	0.244 0.111	0.284 0.129	
		throw m	0.75 2.3 1.4 0.50 3.0 1.8 0.25 6.1 4.3	3.5 3.0 4.6 4.0 7.3 6.7	5.0 3.9 6.7 5.2 9.8 8.2	6.2 5.0 8.2 6.7 10.7 9.8	7.1 5.9 9.4 7.9 12.5 10.4	7.8 6.6 10.4 8.8 14.6 11.6		
22, 23		m³/s side	A B	0.117	0.177	0.237	0.295	0.355	0.413	
		throw m	0.75 3.3 5.2 0.50 4.4 6.9 0.25 7.7 10.2	5.2 6.9 10.2	6.8 9.1 12.1	8.0 10.6 13.9	9.3 12.4 17.6	10.1 13.5 19.0		
52  54 53		m³/s side	A B	0.161 0.073	0.243 0.110	0.325 0.148	0.405 0.185	0.487 0.222	0.567 0.259	
		throw m	0.75 3.2 1.6 0.50 4.3 2.1 0.25 7.0 5.2	5.0 3.2 6.7 4.3 9.8 6.7	6.4 4.4 8.5 5.8 11.3 8.2	7.6 5.5 10.1 7.3 13.7 10.1	8.5 6.2 11.3 8.2 15.5 10.7	8.9 7.1 11.9 9.4 16.8 12.5		
12, 13		m³/s side	A B	0.234	0.353	0.473	0.590	0.709	0.826	
		throw m	0.75 3.8 6.1 0.50 5.1 8.1 0.25 8.8 11.7	6.1 8.1 11.7	8.3 11.0 14.6	9.3 12.4 17.6	10.1 13.5 19.4	10.7 14.3 20.1		

Diffusers - Ceiling Multi Pattern

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								
450 x 525 AD 0.236 m <sup>2</sup>	<b>Return Factors</b> NC+6 -SP=2.3 TP	Total m <sup>3</sup> /s NC	0.246	0.371	0.496	0.619	0.744	0.867								
	 <b>31</b>	m <sup>3</sup> /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		
		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		
	 <b>22, 23</b>	m <sup>3</sup> /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	14.3							
	 <b>52 55 54 53</b>	m <sup>3</sup> /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		
 <b>12, 13</b>	m <sup>3</sup> /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	14.3								
450 x 600 AD 0.270 m <sup>2</sup>	<b>Return Factors</b> NC+7 -SP=2.6 TP	Total m <sup>3</sup> /s NC	0.281	0.424	0.567	0.707	0.851	0.991								
	 <b>42 43</b>	m <sup>3</sup> /s side	0.088	0.053	0.133	0.079	0.178	0.106	0.227	0.133	0.267	0.159	0.310	0.186		
		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		
	 <b>31</b>	m <sup>3</sup> /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		
	 <b>32</b>	m <sup>3</sup> /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		
 <b>22, 23</b>	m <sup>3</sup> /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	14.3								
 <b>52 55 54 53</b>	m <sup>3</sup> /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			
 <b>12, 13</b>	m <sup>3</sup> /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	10.7								
	0.50	5.5	9.1	11.3	13.5	13.9	14.3	14.3								
525 x 675 AD 0.354 m <sup>2</sup>	<b>Return Factors</b> NC+9 -SP=3.2 TP	Total m <sup>3</sup> /s NC	0.369	0.556	0.744	0.928	1.116	1.301								
	 <b>31</b>	m <sup>3</sup> /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		
		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		
	 <b>32</b>	m <sup>3</sup> /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	8.9	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		
	 <b>22, 23</b>	m <sup>3</sup> /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	14.3							
 <b>52 55 54 53</b>	m <sup>3</sup> /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			
 <b>12, 13</b>	m <sup>3</sup> /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	10.7								
	0.50	6.2	9.5	11.7	13.9	14.3	14.3	14.3								
525 x 825 AD 0.433 m <sup>2</sup>	<b>Return Factors</b> NC+9 -SP=3.3 TP	Total m <sup>3</sup> /s NC	0.450	0.680	0.910	1.135	1.364	1.590								
	 <b>42 43</b>	m <sup>3</sup> /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		
		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		
	600 x 750 AD 0.450 m <sup>2</sup>	<b>Return Factors</b> NC+9 -SP=3.5 TP	Total m <sup>3</sup> /s NC	0.468	0.707	0.945	1.179	1.418	1.652							
		 <b>42 43</b>	m <sup>3</sup> /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	
			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	
		 <b>32</b>	m <sup>3</sup> /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		
 <b>12, 13</b>		m <sup>3</sup> /s side	0.468	-	0.707	-	0.945	-	1.179	-	1.418	-	1.652	-		
		throw m	0.75	4.7	7.1	8.8	10.4	10.7	10.7							
		0.50	6.2	9.5	11.7	13.9	14.3	14.3	14.3							