

SERIES JN

Jet Diffusers

PUBLICATION

DIFFUSERS 8

JUNE 2007



Features

- Jet Air Stream Distribution.
- Wide Directional Adjustment.
- Long Throw Capability
- Reversible Diffuser Nozzle
Provides full or reduced
Jet Pattern.
- High Volume Capacity.
- Low Noise Level
- Aluminium Construction.



GILBERTS



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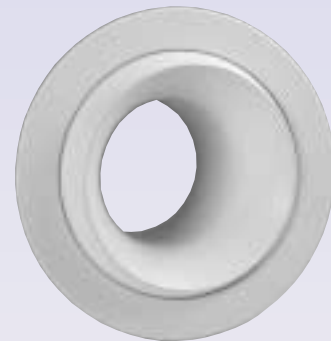
Introduction

Gilberts JN Series of Jet Nozzles are highly versatile units capable of delivering a powerful stream of air over long distances. Its ability to deliver an accurate airstream makes it ideal for spot heating or cooling applications and for ventilating areas where either for aesthetic reasons or perhaps lack of space, branch ducts cannot be accommodated. Its wide angular movement allows the airstream to be delivered through a wide area of direction ($\pm 30^\circ$ in full jet position and $\pm 10^\circ$ in reduced jet position) and with great precision. In addition the diffuser ball is fully reversible, rotating through 180° to provide either a full or reduced jet pattern. As well as single

module assemblies units can be banked in both horizontal and vertical arrays to provide multiple fields of coverage from a single position. Available in 5 different sizes, 160, 200, 250, 315 and 400 dia, to suit standard ISO duct sizes JN Series is manually adjusted to its set position however motorised options are available. Matching plenum boxes can also be designed with volume control available on the plenum inlet in manual quadrant or iris damper options. Standard finish on the JN Series is a Polyester Powder White with other colours available on request.



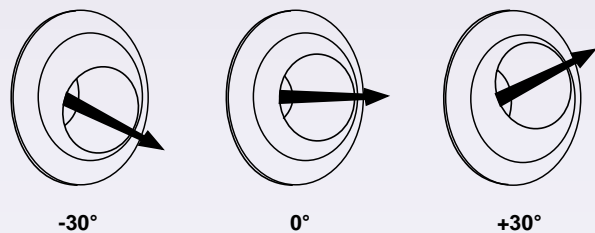
Full Jet Position



Reduced Jet Position

Features

- Jet air stream distribution.
- Wide directional adjustment.
- Long throw capability.
- Reversible Diffuser Nozzle Provides Full or Reduced Jet Pattern.
- High volume capacity.
- Low noise level.
- Aluminium construction.



($\pm 10^\circ$ in Reduced Jet Setting)

Performance Data

The performance tables listed in this brochure relate to isothermal heating and cooling applications. Performance figures for throw, pressure drop and also sound data under isothermal conditions can be found in the sizing performance tables on pages 7, 8, and 9. These performance figures are based on the diffuser set in the full jet and not reduced jet position. Value reductions for reduced jet position are indicated. Corresponding figures showing the rise and fall of the jet stream under heating and cooling conditions can be found in the rise and fall charts on pages 10 to 15, with angular corrections indicated on page 18. Vertical performance tables under heating conditions are given on page 19, with angular variances calculated from figures given on pages 16 and 17.

References Used

PRESSURE: All pressures are in Pa (N/m^2)

THROW: All terminal velocity figures in (m/s) as indicated in the performance charts

SOUND: All figures given in (dbA)

SELECTION PROCEDURE

Dependant upon the Jet Diffuser positions worked examples on pages 3 and 19 will guide the designer in the use and selection procedures for either horizontal or vertical applications.



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Selection Procedure

HORIZONTAL THROW EXAMPLE (ISOTHERMAL CONDITIONS)

Air volume is $0.425\text{m}^3/\text{s}$ and a throw of 18m is required with a terminal velocity of $0.5\text{m}/\text{s}$. Initially refer to the sizing charts on pages 7, 8 and 9. Using air volume as your primary factor search for the closest air volume to your requirements in the left hand columns of the sizing chart tables. Each table refers to a specific Jet Diffuser size and you may find that more than one size can accommodate your air volume. Throw requirements can then be read off on the horizontal axis to reveal the unit with the closest terminal velocity to your needs.

In this example a 400 dia. Jet Diffuser gives the closest match. At $0.425\text{m}^3/\text{s}$ and an 18m throw the terminal velocity is $0.55\text{m}/\text{s}$. The table also indicates that at this volume the pressure drop will be 58 Pa and the noise level 35 dbA.

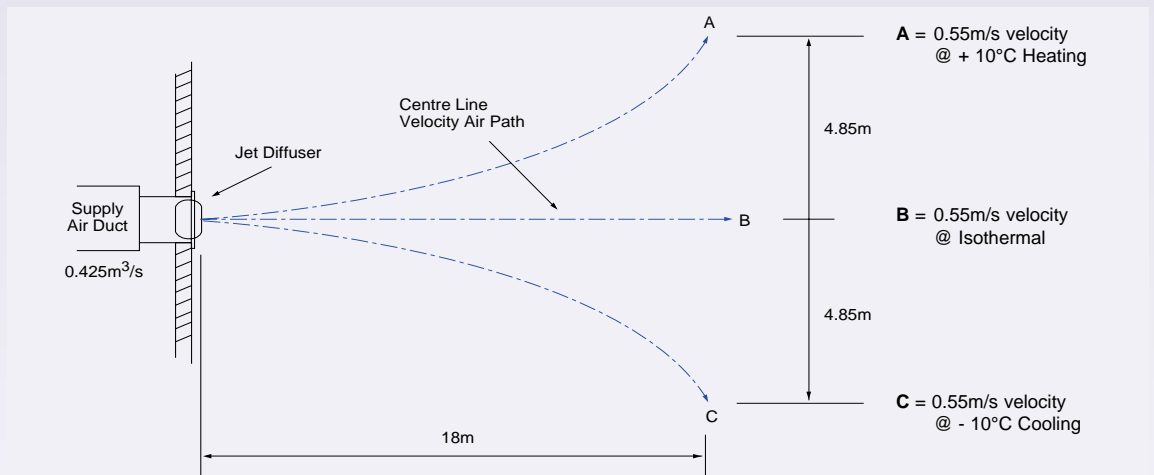
HEATING AND COOLING ALLOWANCES

When a temperature difference between supply air and room air exists we can calculate the rise and fall of any airstream.

Using the initial data from our horizontal throw example we can add a temperature differential and determine the effect on performance. For example the effect of a temperature differential of 10°C heating or cooling can be calculated using our rise and fall charts on pages 10 to

15, (other temp. differentials are also listed).

Reviewing our example size 400 dia. we can see from the Size 400 dia. Rise and Fall chart on page 13 that for an air volume of $0.425\text{m}^3/\text{s}$ at 18m throw and 10°C temp. differential the airstream will rise or fall by 4.85m (see diagram below).



ANGULAR SETTING OF JET DIFFUSERS

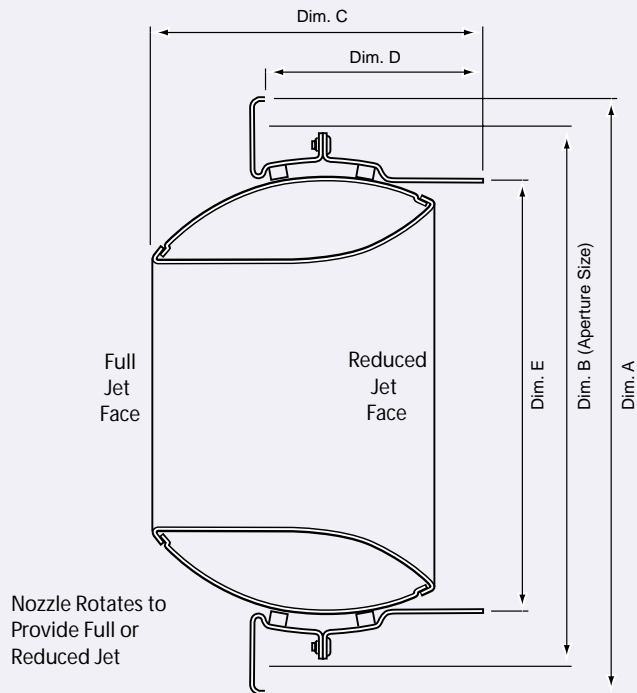
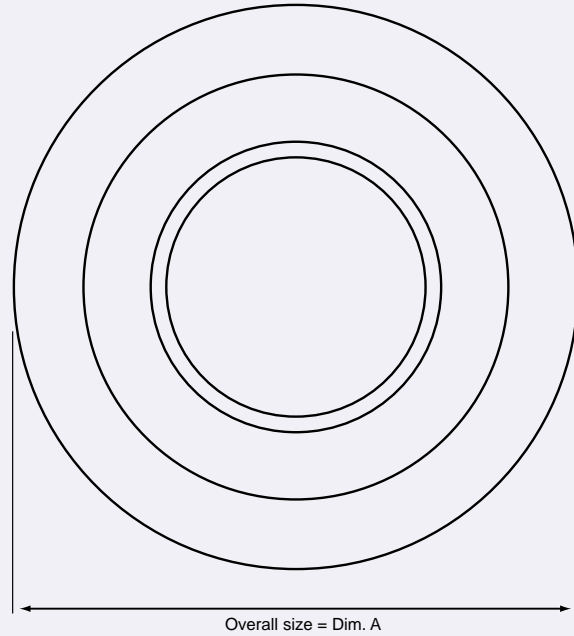
Once the throw is established we can use the angular discharge correction chart on page 18 to determine the vertical angular correction required on the diffuser position to achieve a horizontal throw. In our example at 18m throw we have a rise/fall effect of 4.85m. The

nearest factor available on the chart indicates that a 14° adjustment would correct a 4.5 rise/fall at 18m. From this we can estimate that a 15° angular adjustment would correct to near horizontal throw desired at 18m



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Dimensional Data



DIMENSIONS (mm)

Size	Dim. A	Dim. B	Dim. C	Dim. D	Dim. E
160	215	193	123	81	157
200	260	235	154	103	197
250	325	293	180	116	247
315	410	374	216	140	313
400	512	469	265	165	397

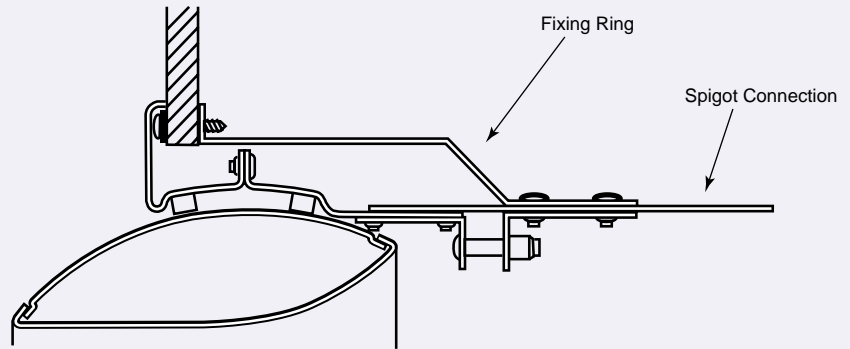


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Fixing Options

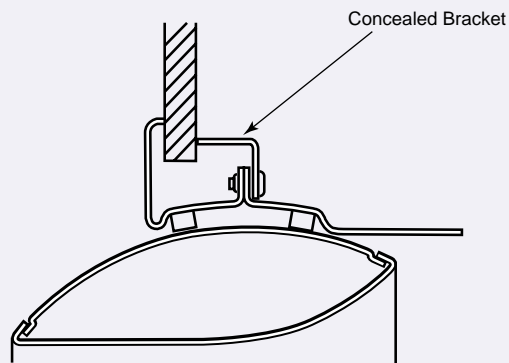
Concealed Bracket Fixing - Flexible Duct (Standard)

Ref: CB



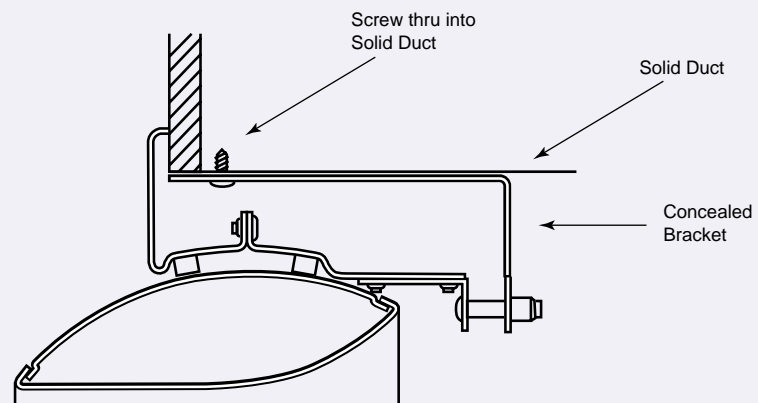
Concealed Bracket Fixing - Rear (Optional)

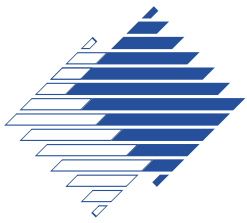
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Concealed Bracket Fixing - Solid Duct (Optional)

Ref: CD


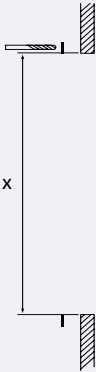
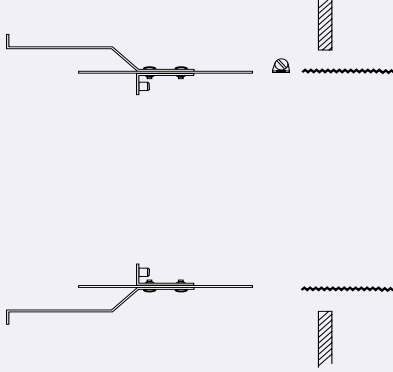
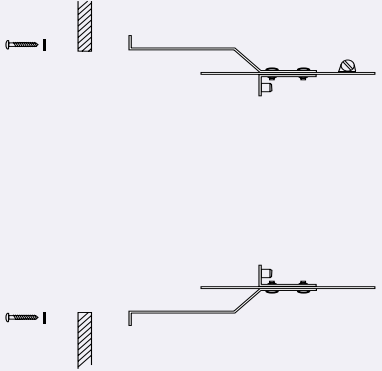
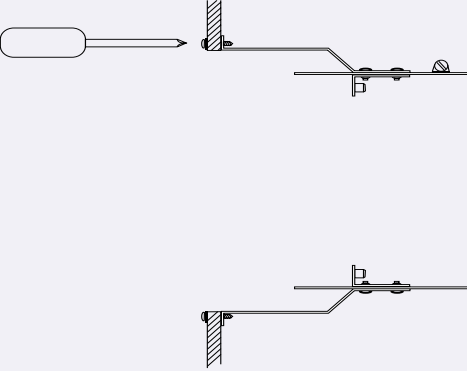
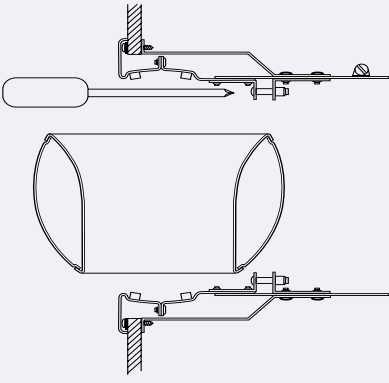
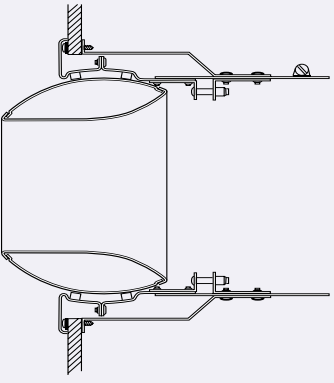




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Installation Procedure

Standard Fixing (Concealed Bracket - Flexible Duct)

<p>1.</p>  <p>Each jet diffuser is supplied with a 2 part fixing ring. Using the outer ring as a template, mark out and cut a hole in the structure.</p>	<p>2.</p>  <p>Again using the outer ring as a template, drill the fixing screw holes. (x = internal Dim. of ring)</p>	<p>3.</p>  <p>Offer the flex onto the main fixing ring and tighten.</p>
<p>4.</p>  <p>Joggle the main fixing ring through the hole.</p>	<p>5.</p>  <p>Fix screws through the outer ring and structure into the main fixing ring to secure.</p>	
<p>6.</p>  <p>Insert the jet diffuser into the main fixing ring and rotate the nozzle to allow access to the rear fixings, secure with M4 screws.</p>	<p>7.</p>  <p>Finally rotate the nozzle to desired distribution angle.</p>	



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Sizing Data

Size 160

Vol	Throw in Metres								P.S.	Sound
in	3	6	9	12	15	18	21	24		
m3/s	Residual Velocity m/s								(Pa)	(dBA)
0.010	0.24	0.12	0.08	0.06	0.05	0.04	0.03	0.02	1	<20
0.020	0.48	0.24	0.17	0.12	0.10	0.08	0.06	0.03	5	<20
0.030	0.73	0.36	0.25	0.19	0.15	0.11	0.08	0.05	10	22
0.040	0.97	0.48	0.33	0.25	0.20	0.15	0.11	0.07	18	25
0.050	1.21	0.60	0.41	0.31	0.24	0.19	0.14	0.09	28	28
0.060	1.45	0.72	0.50	0.37	0.29	0.23	0.16	0.10	40	30
0.070	1.70	0.84	0.58	0.43	0.34	0.26	0.19	0.12	55	32
0.080	1.94	0.96	0.66	0.49	0.39	0.30	0.22	0.14	72	34
0.090	2.18	1.08	0.74	0.56	0.44	0.34	0.25	0.15	90	35
0.100	2.42	1.20	0.83	0.62	0.49	0.38	0.27	0.17	110	37
0.110	2.67	1.32	0.91	0.68	0.54	0.41	0.30	0.19	120	38
0.120	2.91	1.44	0.99	0.74	0.58	0.45	0.33	0.20	160	40
0.130	3.15	1.56	1.08	0.80	0.63	0.49	0.35	0.22	185	41
0.140	3.39	1.68	1.16	0.87	0.68	0.53	0.38	0.24	220	42
0.150	3.64	1.80	1.24	0.93	0.73	0.56	0.41	0.25	260	43
0.160	3.88	1.92	1.32	0.99	0.78	0.60	0.44	0.27	285	45

Size 200

Vol	Throw in Metres								P.S.	Sound
in	3	6	9	12	15	18	21	24		
m3/s	Residual Velocity m/s								(Pa)	(dBA)
0.015	0.22	0.12	0.09	0.07	0.05	0.04	0.03	0.02	-	<20
0.030	0.44	0.25	0.18	0.14	0.11	0.08	0.06	0.04	4	<20
0.045	0.66	0.38	0.27	0.20	0.16	0.12	0.09	0.05	8	<20
0.060	0.88	0.50	0.36	0.27	0.22	0.17	0.12	0.07	15	<20
0.075	1.10	0.63	0.45	0.34	0.27	0.21	0.15	0.09	23	<20
0.090	1.32	0.75	0.54	0.41	0.32	0.25	0.18	0.10	33	23
0.105	1.54	0.88	0.63	0.48	0.38	0.29	0.21	0.12	44	26
0.120	1.76	1.00	0.72	0.55	0.43	0.33	0.23	0.14	58	28
0.135	1.98	1.13	0.81	0.61	0.49	0.37	0.26	0.16	73	30
0.150	2.20	1.25	0.90	0.68	0.54	0.41	0.29	0.17	90	32
0.165	2.42	1.38	0.99	0.75	0.59	0.45	0.32	0.19	110	35
0.180	2.64	1.50	1.08	0.82	0.65	0.49	0.35	0.21	130	37
0.195	2.86	1.63	1.17	0.89	0.70	0.54	0.38	0.23	155	39
0.210	3.08	1.75	1.25	0.96	0.76	0.58	0.41	0.24	180	41
0.225	3.30	1.88	1.34	1.02	0.81	0.62	0.44	0.26	200	43

Single Units

All figures based on isothermal conditions with unit set in Full Jet position and directed centrally through a 10m x 10m envelope.

For units set in the reduced jet position the above figures should be reduced by 40%.

Multiple Units

Please bear in mind that as a general rule an increase in in throw of up to 40% can be achieved for each jet diffuser positioned within 300mm of another unit. For multiples above 3 simulations should be run to accurately predict throw.



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Sizing Data

Size 250

Vol	Throw in Metres								P.S.	Sound
in	3	6	9	12	15	18	21	24		
m3/s	Residual Velocity m/s								(Pa)	(dBA)
0.025	0.29	0.16	0.12	0.09	0.07	0.05	0.04	0.02	-	<20
0.045	0.52	0.29	0.21	0.16	0.13	0.10	0.07	0.04	3	<20
0.065	0.75	0.43	0.31	0.23	0.19	0.14	0.10	0.06	7	<20
0.085	0.98	0.56	0.40	0.31	0.24	0.19	0.13	0.08	13	<20
0.105	1.21	0.69	0.49	0.38	0.30	0.23	0.16	0.10	21	<20
0.125	1.44	0.82	0.59	0.45	0.36	0.27	0.19	0.11	31	<20
0.145	1.68	0.95	0.68	0.52	0.41	0.32	0.22	0.13	41	<20
0.165	1.91	1.08	0.78	0.59	0.47	0.36	0.25	0.15	54	25
0.185	2.14	1.21	0.87	0.67	0.53	0.40	0.28	0.17	66	30
0.205	2.37	1.34	0.97	0.74	0.59	0.45	0.32	0.19	82	35
0.225	2.60	1.47	1.06	0.81	0.64	0.49	0.35	0.20	98	36
0.245	2.83	1.60	1.16	0.88	0.70	0.53	0.38	0.22	118	38
0.265	3.06	1.74	1.25	0.96	0.76	0.58	0.41	0.24	140	38
0.285	3.29	1.87	1.34	1.03	0.81	0.62	0.44	0.26	160	39
0.305	3.52	2.00	1.44	1.10	0.87	0.66	0.47	0.28	172	40

Size 315

Vol	Throw in Metres								P.S.	Sound
in	3	6	9	12	15	18	21	24		
m3/s	Residual Velocity m/s								(Pa)	(dBA)
0.025	0.22	0.13	0.09	0.07	0.06	0.04	0.03	0.02	-	<20
0.045	0.40	0.23	0.16	0.13	0.10	0.08	0.05	0.03	1	<20
0.065	0.58	0.33	0.24	0.18	0.14	0.11	0.08	0.05	3	<20
0.085	0.76	0.43	0.31	0.24	0.19	0.14	0.10	0.06	5	<20
0.105	0.94	0.53	0.38	0.29	0.23	0.18	0.12	0.07	8	<20
0.125	1.12	0.63	0.45	0.35	0.28	0.21	0.15	0.09	12	<20
0.145	1.30	0.73	0.53	0.40	0.32	0.24	0.17	0.10	17	<20
0.165	1.48	0.83	0.60	0.46	0.37	0.28	0.20	0.12	23	<20
0.185	1.66	0.93	0.67	0.52	0.41	0.31	0.22	0.13	29	21
0.205	1.84	1.03	0.75	0.57	0.45	0.35	0.24	0.14	35	23
0.225	2.02	1.13	0.82	0.63	0.50	0.38	0.27	0.16	42	25
0.245	2.20	1.23	0.89	0.68	0.54	0.41	0.29	0.17	50	26
0.265	2.38	1.33	0.96	0.74	0.59	0.45	0.31	0.18	59	27
0.285	2.56	1.44	1.04	0.80	0.63	0.48	0.34	0.20	68	30
0.305	2.74	1.54	1.11	0.85	0.68	0.51	0.36	0.21	78	34
0.325	2.92	1.64	1.18	0.91	0.72	0.55	0.38	0.23	88	36
0.345	3.10	1.74	1.26	0.96	0.76	0.58	0.41	0.24	100	37
0.365	3.28	1.84	1.33	1.02	0.81	0.61	0.43	0.25	110	38
0.385	3.46	1.94	1.40	1.08	0.85	0.65	0.46	0.27	125	39

Single Units

All figures based on isothermal conditions with unit set in Full Jet position and directed centrally through a 10m x 10m envelope.

For units set in the reduced jet position the above figures should be reduced by 40%.

Multiple Units

Please bear in mind that as a general rule an increase in in throw of up to 40% can be achieved for each jet diffuser positioned within 300mm of another unit. For multiples above 3 simulations should be run to accurately predict throw.



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Sizing Data

Size 400

Vol	Throw in Metres								P.S.	Sound
in	3	6	9	12	15	18	21	24		
m3/s	Residual Velocity m/s								(Pa)	(dBA)
0.050	0.35	0.19	0.14	0.11	0.09	0.07	0.05	0.03	-	<20
0.075	0.53	0.29	0.21	0.16	0.13	0.10	0.07	0.04	2	<20
0.100	0.70	0.39	0.28	0.22	0.17	0.13	0.09	0.05	3	<20
0.125	0.88	0.49	0.35	0.27	0.21	0.16	0.11	0.07	5	<20
0.150	1.05	0.58	0.42	0.32	0.26	0.20	0.14	0.08	7	<20
0.175	1.23	0.68	0.49	0.38	0.30	0.23	0.16	0.09	10	<20
0.200	1.40	0.78	0.56	0.43	0.34	0.26	0.18	0.11	13	<20
0.225	1.58	0.87	0.63	0.49	0.39	0.29	0.21	0.12	16	<20
0.250	1.75	0.97	0.70	0.54	0.43	0.33	0.23	0.13	20	22
0.275	1.92	1.07	0.77	0.59	0.47	0.36	0.25	0.15	24	25
0.300	2.10	1.17	0.84	0.65	0.51	0.39	0.27	0.16	29	28
0.325	2.27	1.26	0.91	0.70	0.56	0.42	0.30	0.17	34	30
0.350	2.45	1.36	0.98	0.76	0.60	0.46	0.32	0.19	39	31
0.375	2.62	1.46	1.06	0.81	0.64	0.49	0.34	0.20	45	32
0.400	2.80	1.55	1.13	0.87	0.69	0.52	0.36	0.21	52	33
0.425	2.97	1.65	1.20	0.92	0.73	0.55	0.39	0.23	58	35
0.450	3.15	1.75	1.27	0.97	0.77	0.59	0.41	0.24	65	36
0.475	3.32	1.85	1.34	1.03	0.82	0.62	0.43	0.25	72	37
0.500	3.50	1.94	1.41	1.08	0.86	0.65	0.46	0.27	80	38
0.525	3.67	2.04	1.48	1.14	0.90	0.68	0.48	0.28	88	39
0.550	3.85	2.14	1.55	1.19	0.94	0.72	0.50	0.29	97	40
0.575	4.02	2.23	1.62	1.24	0.99	0.75	0.52	0.31	105	41
0.600	4.20	2.33	1.69	1.30	1.03	0.78	0.55	0.32	115	42

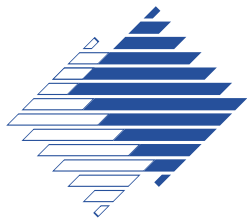
Single Units

All figures based on isothermal conditions with unit set in Full Jet position and directed centrally through a 10m x 10m envelope.

For units set in the reduced jet position the above figures should be reduced by 40%.

Multiple Units

Please bear in mind that as a general rule an increase in in throw of up to 40% can be achieved for each jet diffuser positioned within 300mm of another unit. For multiples above 3 simulations should be run to accurately predict throw.



SERIES JN

Rise & Fall Charts

Size 160

Vol in m ³ /s	Temp Diff C	Throw in Metres							
		3	6	9	12	15	18	21	24
		Rise or Fall (mm)							
0.010	5	1210	9650	-	-	-	-	-	-
	10	2415	-	-	-	-	-	-	-
	15	3620	-	-	-	-	-	-	-
	20	4830	-	-	-	-	-	-	-
0.020	5	300	2415	8150	-	-	-	-	-
	10	600	4820	-	-	-	-	-	-
	15	905	7230	-	-	-	-	-	-
	20	1210	9650	-	-	-	-	-	-
0.030	5	135	1070	3610	8560	-	-	-	-
	10	270	2150	7250	-	-	-	-	-
	15	400	3220	-	-	-	-	-	-
	20	535	4285	-	-	-	-	-	-
0.040	5	75	600	2035	4820	9415	-	-	-
	10	150	1205	4070	9650	-	-	-	-
	15	225	1805	6090	-	-	-	-	-
	20	300	2415	8150	-	-	-	-	-
0.050	5	55	410	1425	3375	6595	9340	-	-
	10	105	870	2935	6965	9005	-	-	-
	15	165	1300	4395	8105	-	-	-	-
	20	220	1740	5880	-	-	-	-	-
0.060	5	30	240	815	1930	3775	6520	-	-
	10	65	535	1805	4280	8360	-	-	-
	15	100	800	2705	6415	-	-	-	-
	20	135	1070	3610	8550	-	-	-	-
0.070	5	20	180	600	1425	2780	4805	7630	-
	10	50	395	1330	3140	6140	9570	-	-
	15	75	590	1990	4720	9215	-	-	-
	20	100	785	2655	6295	-	-	-	-
0.080	5	15	135	460	1090	2125	3670	5830	8705
	10	40	300	1015	2410	4705	8135	-	-
	15	55	450	1525	3610	7050	-	-	-
	20	75	600	2030	4810	9395	-	-	-
0.090	5	15	115	165	890	1740	3010	4780	7135
	10	35	245	830	1975	3860	6675	9745	-
	15	45	370	1250	2960	5780	9060	-	-
	20	60	490	1665	3945	7705	-	-	-
0.100	5	10	85	295	695	1360	2350	3730	5565
	10	25	195	650	1545	3020	5215	8285	-
	15	35	290	975	2310	4510	7790	-	-
	20	50	385	1300	3080	6020	-	-	-
0.110	5	10	70	250	590	1155	1940	3160	4715
	10	20	165	550	1305	2550	4410	7000	-
	15	30	245	825	1955	3825	6605	-	-
	20	40	325	1100	2610	5105	8200	-	-
0.120	5	10	60	205	485	945	1630	2590	3865
	10	15	135	450	1065	2085	3605	5720	8540
	15	25	200	680	1605	3140	5420	8610	-
	20	35	270	905	2145	4190	7240	-	-
0.130	5	10	50	180	420	820	1415	3245	3350
	10	15	120	390	925	1945	3130	4970	7415
	15	25	170	585	1390	2720	4700	7465	-
	20	30	230	785	1860	3635	6280	9365	-
0.140	5	5	45	150	355	695	1200	1900	2840
	10	10	100	330	785	1535	2655	4220	6295
	15	20	145	495	1180	2305	3980	6320	9435
	20	25	195	665	1575	3080	5320	8445	-
0.150	5	5	45	135	375	645	1110	1755	2625
	10	10	85	295	690	1360	2340	3720	5555
	15	20	130	440	1040	2035	3515	5580	8330
	20	25	175	585	1390	2715	4685	7440	-

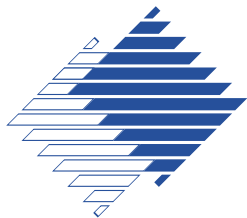


SERIES JN

Rise & Fall Charts

Size 200

Vol in m ³ /s	Temp Diff C	Throw in Metres							
		3	6	9	12	15	18	21	24
		Rise or Fall (mm)							
0.015	5	1060	8470	-	-	-	-	-	-
	10	2115	-	-	-	-	-	-	-
	15	3185	-	-	-	-	-	-	-
	20	4245	-	-	-	-	-	-	-
0.030	5	265	2120	7160	-	-	-	-	-
	10	530	4245	-	-	-	-	-	-
	15	800	6365	-	-	-	-	-	-
	20	1060	8470	-	-	-	-	-	-
0.045	5	120	945	3185	7545	-	-	-	-
	10	235	1890	6370	-	-	-	-	-
	15	355	2830	9560	-	-	-	-	-
	20	470	3775	-	-	-	-	-	-
0.060	5	65	530	1790	4235	8270	-	-	-
	10	130	1055	3565	8455	-	-	-	-
	15	200	1590	5365	-	-	-	-	-
	20	265	2115	7135	-	-	-	-	-
0.075	5	40	340	1145	2710	5290	9140	-	-
	10	85	680	2285	5420	-	-	-	-
	15	125	1015	3430	8130	-	-	-	-
	20	170	1355	4575	-	-	-	-	-
0.090	5	30	255	865	2050	3995	6905	-	-
	10	65	515	1725	4095	6700	-	-	-
	15	95	765	2590	6140	-	-	-	-
	20	125	1020	3455	7520	-	-	-	-
0.105	5	20	175	585	1385	2700	4670	7415	-
	10	45	345	1170	2770	5405	9345	-	-
	15	65	520	1750	4150	8105	-	-	-
	20	85	690	2335	5530	-	-	-	-
0.120	5	20	140	470	1110	2170	3750	5950	7795
	10	35	280	940	2220	4335	7495	-	-
	15	50	420	1405	3330	6505	-	-	-
	20	70	555	1875	4440	8140	-	-	-
0.135	5	15	105	355	835	1635	2825	4485	6690
	10	25	210	705	1670	3265	5640	8960	-
	15	40	315	1060	2510	4905	8470	-	-
	20	50	420	1410	3350	6540	-	-	-
0.150	5	15	85	295	700	1365	2360	3745	5585
	10	25	175	590	1400	2730	4715	7490	-
	15	35	260	885	2095	4090	7065	-	-
	20	45	350	1180	2795	5460	-	-	-
0.165	5	10	70	235	560	1095	1890	3000	4480
	10	20	140	475	1125	2195	3790	6020	8985
	15	25	210	710	1680	3275	5660	8990	-
	20	35	280	945	2240	4375	7560	-	-
0.180	5	10	60	200	480	940	1620	2575	3840
	10	20	120	410	965	1880	3245	5155	7690
	15	25	180	610	1440	2810	4855	7710	-
	20	30	240	815	1920	3760	6495	9890	-
0.195	5	5	50	170	400	785	1350	2150	3205
	10	15	100	340	800	1565	2700	4290	6400
	15	20	150	505	1200	2345	4050	6430	9605
	20	25	200	680	1605	3140	5425	8610	-
0.210	5	5	45	150	350	685	1180	1880	2810
	10	10	85	300	700	1370	2370	3760	5610
	15	15	135	440	1050	2055	3550	5635	8420
	20	20	180	600	1405	2750	4750	7540	-



SERIES JN

Rise & Fall Charts

Size 250

Vol in m3/s	Temp Diff C	Throw in Metres							
		3	6	9	12	15	18	21	24
		Rise or Fall (mm)							
0.025	5	750	6000	-	-	-	-	-	-
	10	1505	-	-	-	-	-	-	-
	15	2255	-	-	-	-	-	-	-
	20	3005	-	-	-	-	-	-	-
0.045	5	230	1845	6230	-	-	-	-	-
	10	460	3690	-	-	-	-	-	-
	15	690	5540	-	-	-	-	-	-
	20	925	7385	-	-	-	-	-	-
0.065	5	110	890	3000	7115	-	-	-	-
	10	220	1780	6000	-	-	-	-	-
	15	330	2665	9000	-	-	-	-	-
	20	440	3555	-	-	-	-	-	-
0.085	5	80	615	2080	4925	6700	-	-	-
	10	155	1235	4150	6950	-	-	-	-
	15	230	1845	6230	-	-	-	-	-
	20	305	2460	8330	-	-	-	-	-
0.105	5	45	340	1155	2730	5335	9220	-	-
	10	85	685	2305	5465	-	-	-	-
	15	130	1025	3460	8195	-	-	-	-
	20	170	1365	4610	-	-	-	-	-
0.125	5	35	260	880	2080	4065	7025	-	-
	10	65	525	1755	4165	6660	-	-	-
	15	100	780	2635	6245	-	-	-	-
	20	130	1040	3515	6830	-	-	-	-
0.145	5	20	180	605	1430	2795	4825	7665	-
	10	45	360	1205	2860	5585	9655	-	-
	15	65	535	1810	4290	8380	-	-	-
	20	90	715	2415	5725	-	-	-	-
0.165	5	20	145	490	1155	2255	3895	6190	8170
	10	35	290	975	2310	4510	7795	-	-
	15	50	435	1460	3465	6735	-	-	-
	20	70	580	1950	4620	7975	-	-	-
0.185	5	15	110	370	880	1715	2965	4710	7030
	10	25	220	740	1760	3435	5935	9420	-
	15	40	330	1110	2635	5150	8900	-	-
	20	55	440	1485	3515	6865	-	-	-
0.205	5	15	95	310	740	1440	2485	3945	5890
	10	20	185	620	1455	2880	4975	7895	-
	15	35	275	930	2210	4315	7460	-	-
	20	40	370	1245	2945	5755	9610	-	-
0.225	5	10	75	250	595	1160	2005	3185	4750
	10	20	150	500	1190	2325	4015	6375	9515
	15	30	225	750	1780	3480	6015	9550	-
	20	35	295	1005	2375	4640	8020	-	-
0.245	5	10	65	215	515	1000	1725	2740	4090
	10	15	120	395	940	1830	3160	5015	7490
	15	25	195	645	1535	2995	5180	8220	-
	20	30	255	865	2045	3995	6905	-	-
0.265	5	5	55	180	430	835	1445	2295	3430
	10	10	85	290	685	1335	2305	3660	5465
	15	20	160	540	1285	2510	4340	6890	-
	20	30	215	725	1715	3350	5785	8320	-
0.285	5	5	50	160	380	735	1270	2015	3005
	10	10	80	280	670	1300	2250	3570	5325
	15	20	140	475	1130	2200	3805	6040	7995
	20	25	190	635	1505	2940	5075	7625	-



SERIES JN

Rise & Fall Charts

Size 315

Vol in m ³ /s	Temp Diff C	Throw in Metres							
		3	6	9	12	15	18	21	24
		Rise or Fall (mm)							
0.065	5	230	1825	6165	-	-	-	-	-
	10	435	3495	-	-	-	-	-	-
	15	675	5400	-	-	-	-	-	-
	20	915	7310	-	-	-	-	-	-
0.085	5	135	1070	3605	8545	-	-	-	-
	10	265	2135	7210	-	-	-	-	-
	15	395	3180	-	-	-	-	-	-
	20	515	4130	-	-	-	-	-	-
0.105	5	85	700	2360	5595	-	-	-	-
	10	175	1400	4720	-	-	-	-	-
	15	260	2095	7080	-	-	-	-	-
	20	350	2795	9435	-	-	-	-	-
0.125	5	65	535	1795	4265	7020	-	-	-
	10	135	1065	3595	7190	-	-	-	-
	15	195	1595	5395	-	-	-	-	-
	20	265	2130	7195	-	-	-	-	-
0.145	5	45	365	1235	2930	5725	9895	-	-
	10	90	735	2475	5865	-	-	-	-
	15	135	1100	3710	8795	-	-	-	-
	20	185	1465	4950	-	-	-	-	-
0.165	5	35	285	955	2270	4430	7655	-	-
	10	70	565	1915	4540	8860	-	-	-
	15	105	850	2870	6805	-	-	-	-
	20	140	1135	3825	9070	-	-	-	-
0.185	5	30	235	790	1870	3650	6310	-	-
	10	60	465	1580	3740	7300	-	-	-
	15	90	700	2365	5610	9910	-	-	-
	20	120	935	3155	7470	-	-	-	-
0.205	5	25	185	620	1470	2870	4960	7875	-
	10	45	365	1240	2940	5740	9920	-	-
	15	70	550	1860	4410	8610	-	-	-
	20	90	735	2480	5875	-	-	-	-
0.225	5	20	160	530	1250	2440	4215	6690	9405
	10	35	310	1055	2495	4875	8430	-	-
	15	60	470	1580	3745	7310	-	-	-
	20	80	625	2110	5000	9245	-	-	-
0.245	5	15	130	435	1025	2005	3465	5505	8215
	10	30	255	865	2055	4010	6935	-	-
	15	50	385	1300	3075	6010	-	-	-
	20	65	515	1740	4120	8045	-	-	-
0.265	5	15	110	370	880	1715	2965	4705	7025
	10	25	220	740	1755	3430	5925	9410	-
	15	40	330	1110	2635	5145	8890	-	-
	20	55	440	1480	3510	6855	-	-	-
0.285	5	15	95	325	775	1505	2600	4130	6165
	10	25	195	650	1540	3010	5200	8255	-
	15	35	290	975	2310	4515	7800	-	-
	20	50	385	1300	3080	6015	9915	-	-
0.305	5	10	85	280	665	1295	2235	3550	5300
	10	20	165	560	1325	2590	4470	7100	-
	15	30	250	840	1985	3880	6705	-	-
	20	40	330	1120	2650	5175	8940	-	-
0.325	5	10	75	250	590	1155	1995	3165	4725
	10	15	150	500	1170	2305	3985	6325	8920
	15	25	225	750	1770	3455	5975	9100	-
	20	35	295	995	2360	4610	7965	-	-



SERIES JN

Rise & Fall Charts

Size 400

Vol in m ³ /s	Temp Diff C	Throw in Metres							
		3	6	9	12	15	18	21	24
		Rise or Fall (mm)							
0.100	5	200	1605	5410	-	-	-	-	-
	10	400	3200	-	-	-	-	-	-
	15	600	4815	-	-	-	-	-	-
	20	800	6415	-	-	-	-	-	-
0.125	5	145	1155	3905	7205	-	-	-	-
	10	290	2315	5445	-	-	-	-	-
	15	435	3480	9180	-	-	-	-	-
	20	580	4635	-	-	-	-	-	-
0.150	5	90	710	2400	5695	-	-	-	-
	10	180	1425	4810	-	-	-	-	-
	15	270	2145	7240	-	-	-	-	-
	20	355	2845	9610	-	-	-	-	-
0.175	5	65	525	1765	4185	8180	-	-	-
	10	130	1045	3535	8375	-	-	-	-
	15	195	1570	5300	-	-	-	-	-
	20	260	2095	7070	-	-	-	-	-
0.200	5	50	420	1415	3360	6565	9965	-	-
	10	105	840	2835	6720	-	-	-	-
	15	160	1260	4255	-	-	-	-	-
	20	210	1680	5675	-	-	-	-	-
0.225	5	40	315	1070	2535	4950	8550	-	-
	10	80	635	2140	5065	9895	-	-	-
	15	120	950	3205	7600	-	-	-	-
	20	160	1265	4275	-	-	-	-	-
0.250	5	35	265	890	2115	4130	7135	-	-
	10	70	530	1785	4230	8260	-	-	-
	15	100	795	2675	6345	-	-	-	-
	20	130	1055	3565	7745	-	-	-	-
0.275	5	25	210	715	1695	3310	5725	9090	-
	10	55	425	1430	3395	6625	-	-	-
	15	80	635	2145	5090	9940	-	-	-
	20	105	850	2860	6785	-	-	-	-
0.300	5	20	180	615	1455	2840	4915	7800	-
	10	50	365	1225	2915	5685	9100	-	-
	15	65	545	1840	4370	8525	-	-	-
	20	90	725	2455	5825	-	-	-	-
0.325	5	20	150	510	1215	2370	4100	6510	9715
	10	40	305	1025	2430	4745	8200	-	-
	15	55	455	1535	3645	7115	-	-	-
	20	75	605	2050	4860	9490	-	-	-

Size 400 table continues on page 15



SERIES JN

Rise & Fall Charts

Size 400

Vol in m3/s	Temp Diff C	Throw in Metres							
		3	6	9	12	15	18	21	24
		Rise or Fall (mm)							
0.350	5	15	130	440	1045	2045	3535	5610	8375
	10	35	260	885	2095	4090	7065	-	-
	15	50	395	1325	3140	6135	-	-	-
	20	65	525	1765	4190	8180	-	-	-
0.375	5	15	115	390	925	1810	3120	4955	7400
	10	30	230	780	1850	3610	6235	9255	-
	15	45	350	1170	2775	5415	9350	-	-
	20	60	460	1560	3695	7225	-	-	-
0.400	5	15	100	340	800	1570	2705	4295	6415
	10	25	200	675	1605	3130	5410	8595	-
	15	40	300	1015	2405	4700	8120	-	-
	20	50	400	1355	3205	6265	-	-	-
0.425	5	10	90	300	715	1405	2425	3845	5745
	10	25	180	605	1435	2805	4845	7695	-
	15	35	270	910	2155	4205	7265	-	-
	20	45	355	1215	2870	5610	9685	-	-
0.450	5	10	80	265	635	1240	2140	3395	5070
	10	20	160	535	1265	2475	4275	6790	-
	15	30	240	800	1900	3710	6415	-	-
	20	40	315	1070	2535	4950	8550	-	-
0.475	5	10	70	240	570	1110	1920	3045	4550
	10	20	140	480	1135	2220	3840	6095	9095
	15	25	215	720	1705	3330	5755	9140	-
	20	35	285	960	2275	4440	7675	-	-
0.500	5	10	65	215	515	1010	1745	2770	4140
	10	15	130	435	1035	2020	3490	5545	8270
	15	25	195	655	1550	3025	5235	7895	-
	20	30	260	875	2065	4035	6980	-	-
0.525	5	5	60	195	465	910	1570	2495	3725
	10	15	115	395	930	1820	3140	4990	7445
	15	20	175	590	1395	2725	4710	7480	-
	20	30	235	785	1860	3635	6280	9975	-
0.550	5	5	55	180	425	835	1440	2290	3415
	10	10	105	360	855	1670	2880	4575	6830
	15	20	160	540	1280	2500	4320	6860	-
	20	25	215	720	1705	3335	5760	9145	-
0.575	5	5	50	165	390	760	1310	2080	3105
	10	10	95	325	775	1515	2620	4160	6210
	15	20	145	490	1165	2275	3930	6240	9310
	20	25	195	655	1550	3030	5240	8315	-



SERIES JN

Vertical Performance Under Heating Conditions

(this data is for reference only with throws shown to 0.1m/s terminal velocity)

5 °C

Q (m ³ /s)	Maximum Throw (m)							
	2.5	5	7.5	10	15	20	25	30
0.05	315	200	160					
0.10		315	315	250	160			
0.15			400	315	250	200	160	
0.20			400	400	315	250	200	160
0.30					400	315	250	250
0.40						400	315	315
0.60							400	400
0.80								400
1.00								

10 °C

Q (m ³ /s)	Maximum Throw (m)							
	2.5	5	7.5	10	15	20	25	30
0.05	250	160						
0.10	400	315	200	160				
0.15		400	315	250	160	160		
0.20			315	315	200	200	160	
0.30				400	315	250	200	200
0.40					400	315	250	250
0.60						400	315	315
0.80							400	400
1.00								400

15 °C

Q (m ³ /s)	Maximum Throw (m)							
	2.5	5	7.5	10	15	20	25	30
0.05	250	160						
0.10	400	250	200	160				
0.15		315	250	200	160			
0.20		400	315	250	200	160		
0.30			400	315	250	200	160	160
0.40				400	315	250	200	200
0.60					400	315	315	250
0.80						400	400	315
1.00							400	400



SERIES JN

Vertical
Performance
Under Heating
Conditions

(this data is for
reference only with
throws shown to 0.1m/s
terminal velocity)

20 °C

Q	Maximum Throw (m)							
(m3/s)	2.5	5	7.5	10	15	20	25	30
0.05	200							
0.10	315	200	160					
0.15		315	200	200				
0.20		315	315	250	160			
0.30			400	315	250	200		
0.40			400	400	315	250	200	160
0.60					400	315	250	250
0.80						400	315	315
1.00						400	400	315

30 °C

Q	Maximum Throw (m)							
(m3/s)	2.5	5	7.5	10	15	20	25	30
0.05	160							
0.10	315	200	160					
0.15	400	250	200	160				
0.20		315	250	200	160			
0.30		400	315	250	200	160		
0.40			400	315	250	200	160	
0.60				400	315	250	250	200
0.80					400	315	315	250
1.00						400	315	315

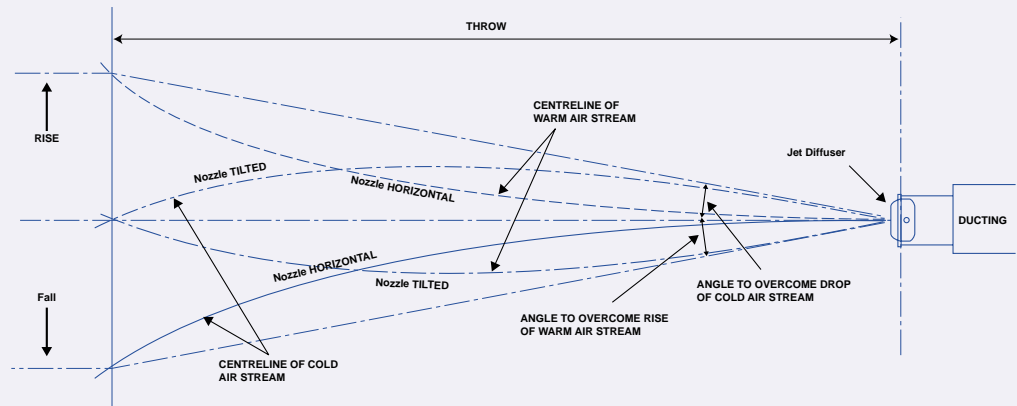
40 °C

Q	Maximum Throw (m)							
(m3/s)	2.5	5	7.5	10	15	20	25	30
0.05	160							
0.10	250	160						
0.15	315	250	160					
0.20	400	315	200	160				
0.30		400	315	250	160	160		
0.40			315	315	200	200	160	
0.60				400	315	250	200	200
0.80					400	315	250	250
1.00						315	315	250



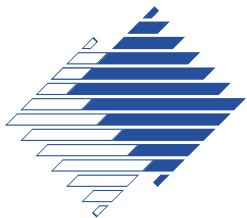
SERIES JN

Angular Discharge Correction Chart



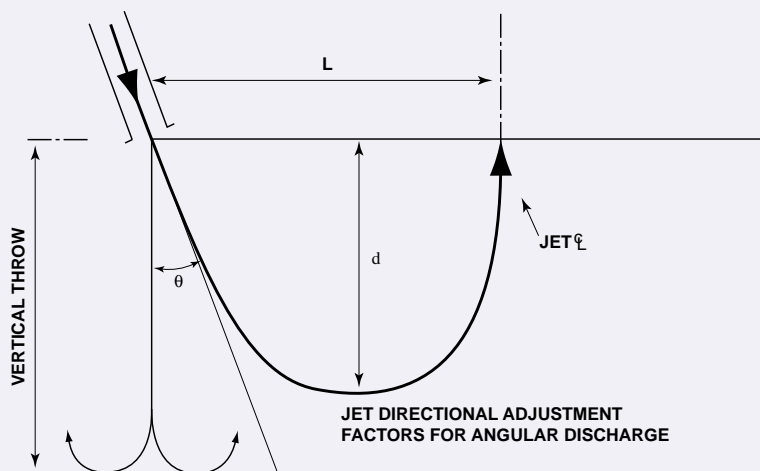
		THROW (METRES)										
		3	6	9	12	15	18	21	24	27	30	36
RISE OR FALL (METRES)	0.03	1	1	1								
	0.15	3	2	1	1							
	0.30	6	3	2	1	1	1					
	0.60	11	6	4	3	2	2	2				
	1.20		11	8	6	5	4	3	3			
	1.80		17	11	9	7	6	5	4	4		
	2.40		22	15	11	9	8	7	6	5	5	
	3.00		27	18	14	11	10	8	7	6	6	
	4.50			27	21	17	14	12	11	9	9	7
	6.00				27	22	18	16	15	12	12	10
	7.20					27	23	20	17	16	14	12
	9.15						27	23	21	18	17	14
	10.66							27	24	21	19	16
	12.20								27	24	22	18
	13.72									27	25	21
15.24				CORRECTION IN DEGREES								23
16.77											25	
18.30											27	

Please bear in mind that as a general rule an increase in throw of up to 40% can be achieved for each jet diffuser positioned within 300m of another unit. For multiples above 3 simulations should be run to accurately predict throw.



SERIES JN

Correctional
Figures for
Angular
Variance to
Vertical
Performance



Take Maximum Throw (T_M) from Tables

Hence, $d = K_1 T_M$
 $L = K_2 T_M$

θ°	K_1	K_2
0 -10	1.00	0.00
11 -20	0.98	0.45
21 -30	0.91	0.86
31 -40	0.81	1.21
41 -50	0.67	1.28
51 -60	0.52	1.60
61 -70	0.35	1.59
71 -80	0.20	1.43
81 -90	0.07	1.07

VERTICAL THROW EXAMPLE (ISOTHERMAL CONDITIONS)

Select and size Jet Diffuser from sizing charts on pages 7, 8 and 9 in accordance with the first part of the selection procedure on page 2.

VERTICAL THROW (HEATING)

A requirement for 10°C heating is required at a volume of $0.3 \text{ M}^3/\text{s}$ to throw vertically to floor level 10m away.³

To select a Jet Diffuser size we simply view our table on page 16.

Reviewing $\Delta t = 10^\circ\text{C}$ chart with a volume of $0.3 \text{ m}^3/\text{s}$ gives a 400 Dia. Jet Diffuser selection to give a 10m throw to 0.1m/s terminal velocity. Therefore a size 400 Dia. JN unit should be selected.

VERTICAL THROW ANGULAR ADJUSTMENT (HEATING)

All previous data has assumed a direct vertical discharge, although we can calculate a throw pattern for an angular discharge using our table above.

Using the previous data of $+10^\circ\text{C}$ Δt and $0.4\text{m}^3/\text{s}$ we can calculate the new air path by using the listed formulas, assuming a 30° angle, by using the formula stated.

Discharge at 30° off set from vertical

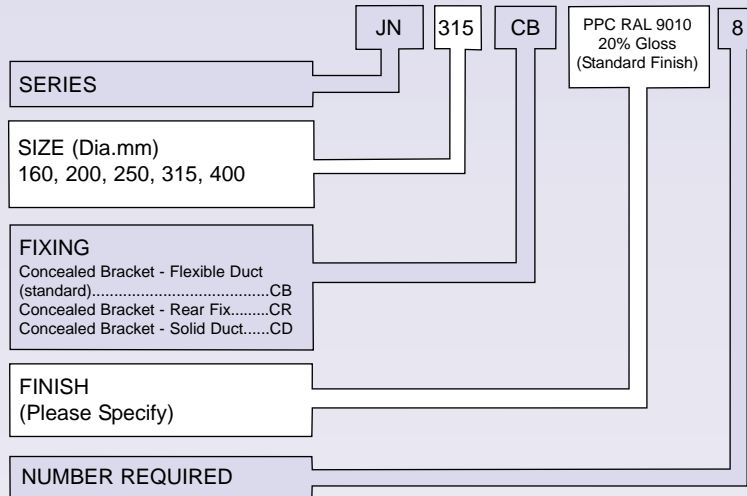
$d = K_1 \times T_M$, $d = 0.91 \times 10\text{m}$, $d = 9.1\text{m}$ vertical

$L = K_2 \times T_M$, $L = 0.86 \times 10\text{m}$, $L = 8.6\text{m}$ horizontal



SERIES JN

Ordering Specification



FINISH

Standard Finish: Polyester Powder Coat White
RAL 9010 20% Gloss.

Special Finishes: PPC to Stock BS or RAL colour.
Stove Enamel to any BS/RAL colour.

Size Range

Available in sizes 160, 200,250,315 and 400mm diameters

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