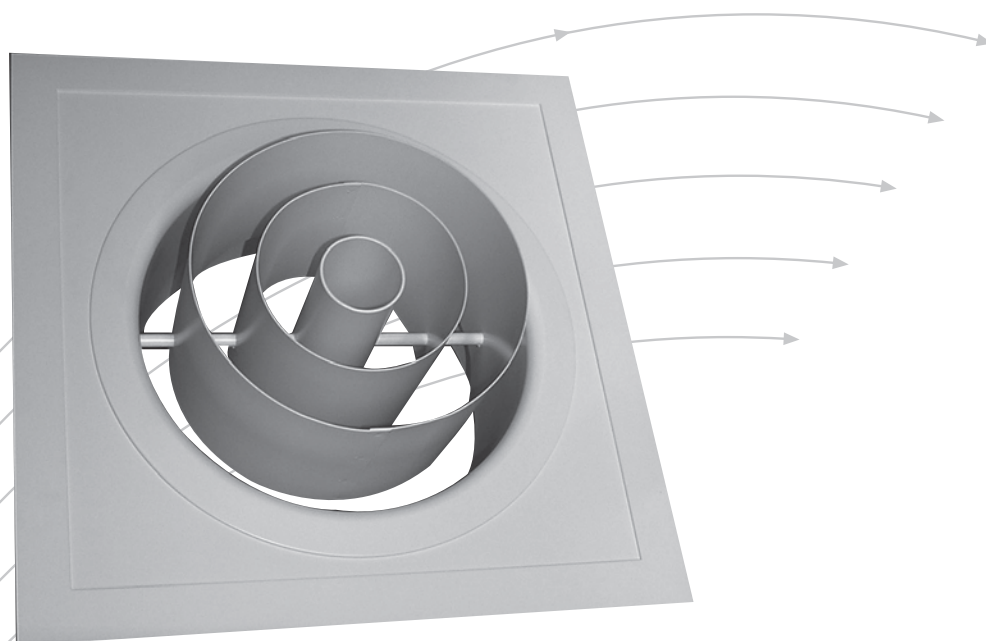


Jet Nozzles

Type AJA



TROX[®] TECHNIK

TROX Malaysia Sdn. Bhd.
20 Persiaran Bunga Tanjung 1
Senawang Land Industrial Park
70400 Seremban
Negeri Sembilan Darul Khusus
Malaysia

Telephone + 606-678 8188
Telefax + 606-678 8288 / 388
E-mail enquiry@troxapo.com
www.troxapo.com

Contents · Description

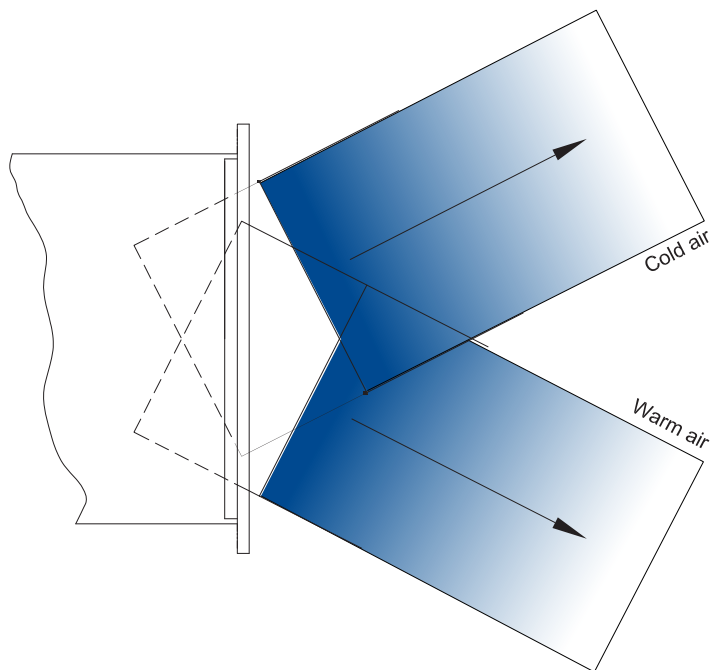
Description_____	2	Aerodynamic Data_____	6
Construction . Dimensions _____	3	Acoustic Data_____	8
Construction . Dimensions . Installation_____	4	Order Details_____	10
Aerodynamic Data . Nomenclature _____	5		

This jet nozzle is designed to deliver large volume of supply air into a large space that requires long throw, for example assembly halls, auditoriums and convention halls. They can be installed either to the walls or mounted directly onto the supply air ductwork.

The discharge nozzles can be tilted vertically and set at any angle between 30° upward and 30° downward direction as shown below (i.e., with up to 60° vertical adjustment). Each nozzle will be held in the set position by friction-held fixings as standard supply.

As an optional extra, each jet nozzle can be fitted with a circular mounting flange that will enable the nozzles to be manually rotated through 360°, giving it the ability to direct air in a 60° conical fashion.

This jet nozzle has been tested in ISO 9000 certified test facilities to international standards, ISO 5219 and ISO 3741, to determine the aerodynamic and acoustics performance data respectively as published in this catalogue.



Construction · Dimensions

The jet nozzles are made from concentric steel tubes mounted onto a steel face plate with angle flanged border made from extruded aluminium sections complete with counter punched holes for screw fixings.

Type AJA - 1 (Alternate Supply)

Each nozzle can be manually adjusted in the vertical direction up to 60° angle (i.e., between 30° in the upward direction and 30° in the downward direction) as shown in the diagram below. This is available with one element only.

Type AJA – 2 (Standard supply)

As AJA – 1, and has an additional nozzle mounting plate which allow each nozzle to be rotated through 360°. This function is necessary for multiple nozzle assembly.

Table 2: Dimensions

SIZE	Nominal Size			
	□C	∅A	E	F
200	350	200	50	180
250	400	250	65	195
300	450	300	75	205
350	500	350	85	235

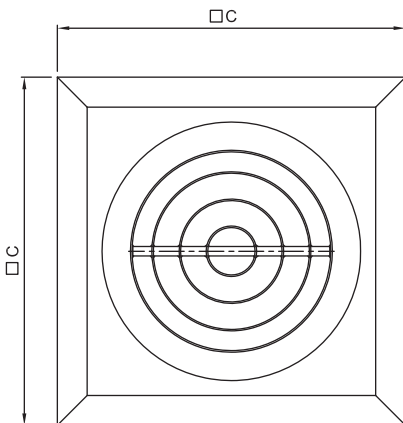
Table 3: Duct Dimensions

Nom. Size	Number of elements/ nozzles							
	1		2		3		4	
	B x H	B x H	B x H	B x H	B x H	B x H	B x H	
200	310	310	610	310	910	310	1210	310
250	360	360	710	360	1060	360	1410	360
300	410	410	810	410	1210	410	1610	410
350	460	460	910	460	1360	460	1810	460

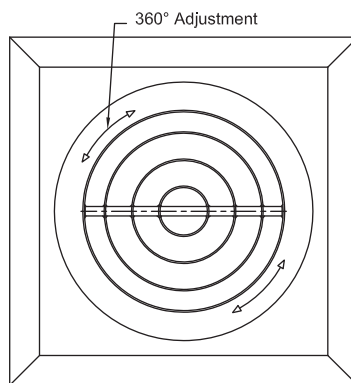
Table 1: Multiple Assemblies

Number of elements	Length, L (mm)			
	200	250	300	350
1	350	400	450	500
2	650	750	850	950
3	950	1100	1250	1400
4	1250	1450	1650	1850

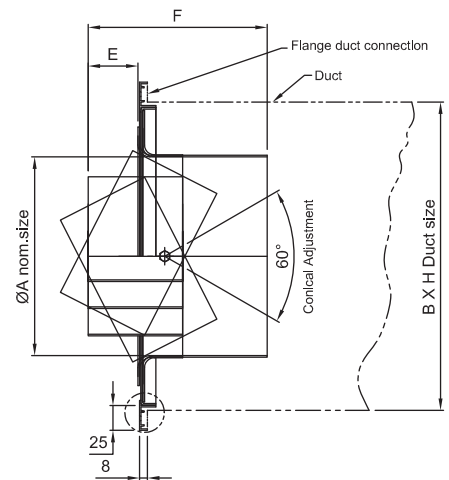
AJA-1



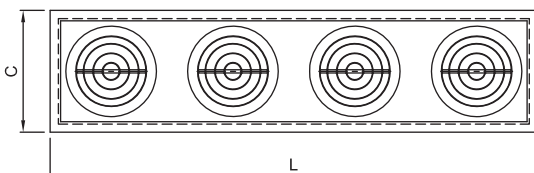
AJA-2 (Standard)



Type AJA
Standard type with square face section.
Border: for plenum or flanged duct fitting.

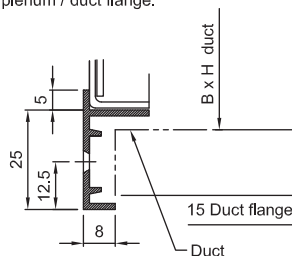


Multiple Assemblies



Duct fixing / Border detail

Border face punched for screw fixing into plenum / duct flange.



Construction · Dimensions · Installation

Table 4: Duct Width, B (mm)

Number of nozzles	Duct Width, B (mm)			
	Nozzle Size			
	200	250	300	350
1	200	250	300	350
2	500	600	800	800
3	800	1000	1200	1200
4	1200	1400	1600	1800

Table 5: Duct Height, H (mm)

Duct Height, H (mm)			
Nozzle Size			
200	250	300	350
200	250	300	350
200	250	300	350

Jet Nozzles with plenum boxes

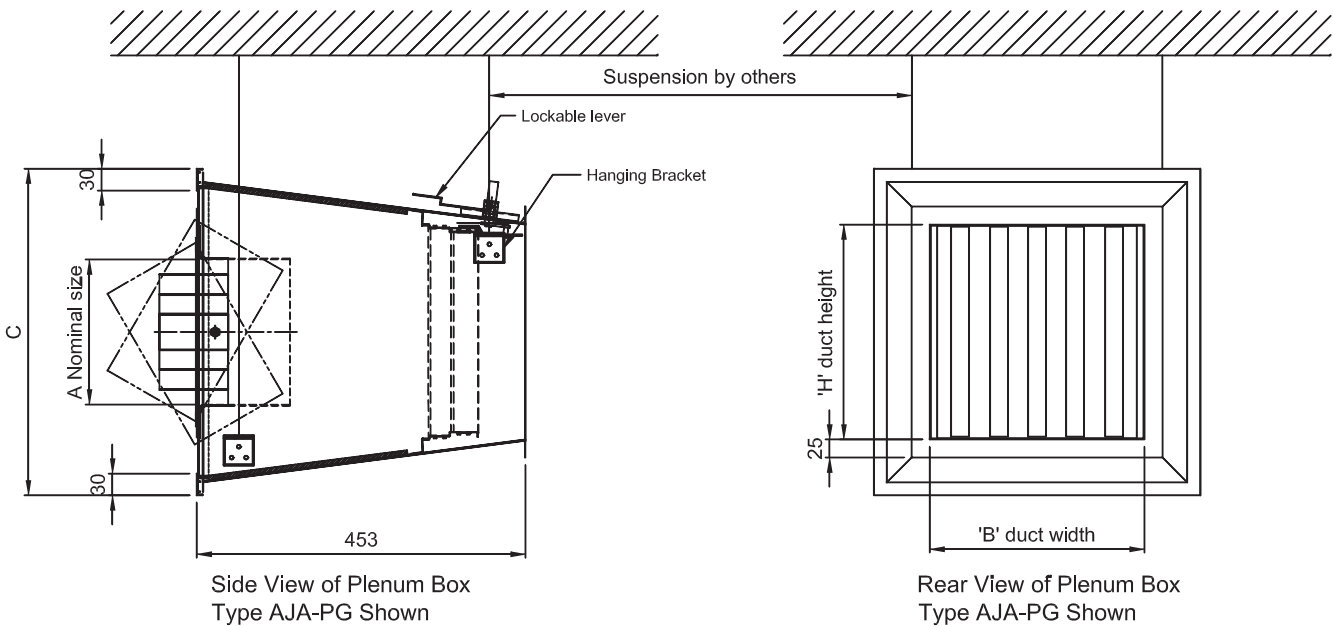
Type AJA – X – PO

This 'AJA' unit is fitted with plenum box with 25 mm wide flange for connection to the supply air ducting.

Type AJA – X – PG

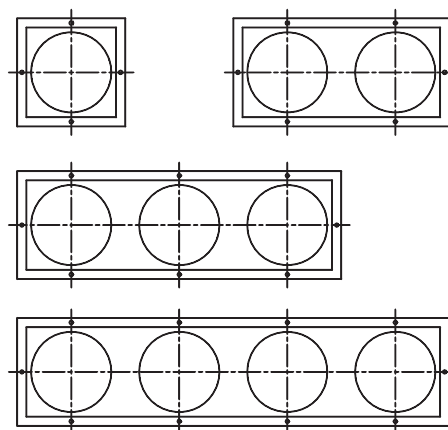
This 'AJA' unit is fitted with a plenum box complete with opposed blade volume control damper with external locking lever located at the rear as shown in the diagram below.

Note: Both plenum and damper will be painted in black to RAL 9005.

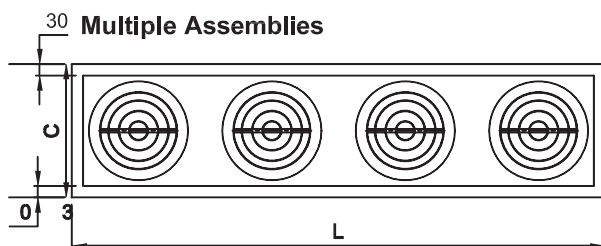


Note:
Jet Nozzle plenums are supplied complete with 4 hanging brackets (2 per side). These can be rotated for horizontal or vertical fixing.

Drilling



Note:
Flanges are punched on centre line of nozzle in both directions.



Construction · Dimensions

Symbol	Unit	Description
L	m	Throw of cold supply air at 0.25 m/s terminal velocity and 10K below room temperature with the assumption that there is no ceiling effect.
L _{max}	m	Maximum downward projection of warm supply air at 10K above room temperature.
\dot{V}	l/s	Volume flow rate.
v _L	m/s	Average terminal velocity.
Δt_z	K	Temperature differential between supply air and room temperature.
Δp_a	Pa	Static pressure drop.
L _{pNC}		Noise Criteria (NC) rating based on 8 dB room attenuation.
y	m	The drop or rise in height of the supply air stream based on a terminal velocity of 0.25 m/s.

Table 6: Throw, L (m)

Size	200				250				300				350						
	No. Elements	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
\dot{V} l/s	95	8																	
	140	9																	
	190	12	8																
	230	15	9			12				11									
	280	18	11			15				14				11					
\dot{V} l/s	330	21	12			17				15				12					
	380	24	14	11		18	11			17	9			14					
	420	28	15	12	9	21	12			18	11			15					
	470		17	14	11	24	14			21	12			17					
	570		21	15	12	28	15	12		24	14	11		20	12				
\dot{V} l/s	660		24	17	14	30	18	14	11	28	15	12		24	14				
	750		28	20	15		21	15	12	34	18	14		28	15				
	850			23	17		24	17	14	37	21	15		30	18	12			
	940			24	18		28	18	15	43	24	17		34	20	14			
	1040			28	21		29	21	17		26	18	14	37	21	15			
\dot{V} l/s	1130				23		30	23	18		28	20	15	40	24	17	14		
	1230				24		34	24	19		29	21	17	43	26	18	15		
	1320				26		37	25	20		30	23	18	47	28	20	16		
	1420				28			28	21		34	24	20	49	30	21	17		
	1650				32			32	24		37	28	21		34	24	18		
\dot{V} l/s	1890							37	29				32	26		35	28	21	
	2120							40	32				35	28		40	32	24	
	2360								37				40	32		46	35	28	
	2850								43				49	37		58	41	32	
	3300													43			49	37	
																		55	43
	3780																		

Aerodynamic Data

In the heating mode, the downward throw of the supply air is dependent on the temperature differential between the supply air and room temperature.

The maximum downward throw (in metres) as given in the table below is based on the supply air at 10K above room temperature.

Figure 8: Downward projection of warm air

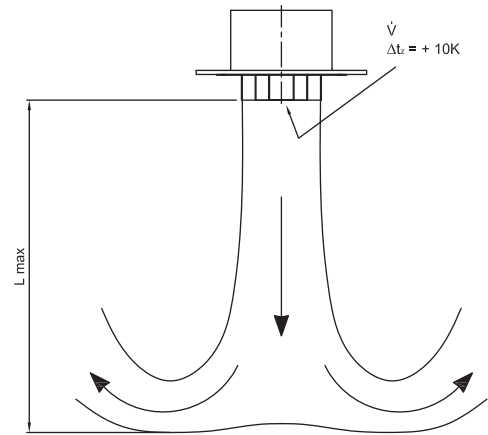


Table 7: Vertical downward projection of supply air, L_{max}

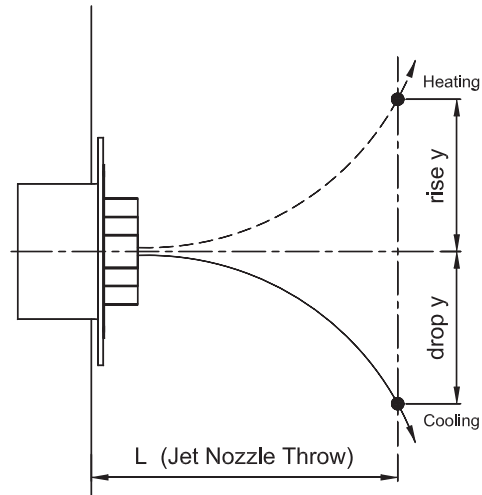
Size	200				250				300				350				
	No. Elements	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
\dot{V} l/s	95	4															
	140	6															
	190	8	4														
	230	9	5			7				5							
	280	11	7			8				6				5			
\dot{V} l/s	330	13	8			9				7				6			
	380	15	9	7		11	7			8	5			7			
	420	17	10	7	6	12	7			9	6			8			
	470		12	8	7	14	8			10	6			9			
	570		14	10	8	16	10	7		12	7	6		10	6		
\dot{V} l/s	660		16	12	9	19	12	9	7	15	8	7		12	7		
	750		19	13	11		13	10	8	17	10	7		14	8		
	850			15	12		16	11	9	18	11	8		15	9	7	
	940			16	14		17	13	10	22	12	9		17	10	7	
	1040			18	15		19	14	11		13	10	8	18	11	9	
\dot{V} l/s	1130				15		20	16	13		14	11	10	21	12	10	7
	1230				19		22	16	14		17	12	10	23	14	10	8
	1320				20		25	18	16		17	13	11	24	15	11	9
	1420				22			19	17		19	14	13	28	16	12	9
	1650				26			23	19		22	16	15		17	14	10
\dot{V} l/s	1890						28	22				18	16		20	17	12
	2120						30	25				20	19		23	19	14
	2360							27				22	21		28	21	15
	2850							32				24	26		32	23	18
	3300												28		28	20	
3780																	

Aerodynamic Data

The drop or rise of supply air in horizontal discharge is dependent on the temperature difference between the supply air and room temperature.

The drop or rise of the supply air as given in the table below is based on a temperature differential of 10K between the supply air and the room temperature at a terminal velocity of 0.25 m/s.

Figure 9: Effect of warm or cold air in horizontal discharge



Drop and rise is directly proportional to Δt_z

Table 8: Airstream drop or rise, y (m)

Size	200				250				300				350					
	No. Elements	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
\dot{V} l/s	95	4.0																
	140	5.5																
	190	7.0	5.0															
	230	9.0	5.5			9.0				12.0								
	280	10.0	6.0			10.0				12.5				8.5				
\dot{V} l/s	330	12.0	6.5			10.5				14.5				12.0				
	380	13.0	7.5	6.5		11.5	7.5			15.0	7.0			14.0				
	420	18.0	8.0	7.0	4.5	13.0	8.0			16.5	10.0			15.5				
	470		9.0	7.5	5.0	14.0	9.0			18.0	11.0			17.0				
	570		11.0	8.0	5.5	15.5	10.5	7.5		20.0	12.5	10.0		19.0	11.0			
\dot{V} l/s	660		13.0	8.5	6.5	17.0	12.0	9.0	6.5	22.0	14.5	10.5		24.0	13.0			
	750		16.0	9.0	7.0		13.0	9.5	7.0	24.0	15.5	11.0		29.0	15.0	9.5		
	850			10.0	7.5		14.5	10.0	7.5	34.0	18.0	12.5		31.0	17.0	11.0		
	940			13.0	9.0		16.0	11.0	8.0	43.0	20.0	13.0		33.0	18.5	13.0		
	1040			15.0	9.5		19.0	12.0	9.0		22.0	14.0	9.5		35.0	19.5	15.0	
\dot{V} l/s	1130				10.0		20.0	12.5	10.0		23.0	14.5	10.0	38.0	22.5	16.0	13.5	
	1230				11.0		22.0	13.0	10.5		23.5	15.0	12.0	41.0	25.0	17.5	14.0	
	1320				11.5		23.0	14.0	11.0		24.0	16.0	13.0	44.0	27.5	19.0	14.5	
	1420				12.0			14.5	11.5		24.5	17.5	15.0	49.0	29.0	21.0	15.0	
	1650				13.5			16.5	13.0		25.0	19.0	17.0		31.5	23.5	17.0	
\dot{V} l/s	1890						18.5	14.5				22.0	19.0		34.0	26.0	18.0	
	2120						20.0	15.5				24.5	20.0		39.0	31.0	19.5	
	2360							18.0				30.5	22.5		45.0	33.5	21.0	
	2850							21.0				36.0	24.0		52.0	36.0	25.0	
	3300												29.0			43.5	29.0	
3780												44.0			48.0	34.0		

Acoustic Data

Table 9: Pressure Drop and Noise Level Data

Size 200			
V, l/s	Number of Elements	Ps, Pa	L NC
95	1	15	-
140	1	35	25
190	1	60	31
230	1	90	39
280	1	125	43
330	1	175	45
380	1	225	53
190	2	15	-
230	2	25	22
280	2	35	23
330	2	45	33
380	2	60	35
420	2	75	40
470	2	90	42
570	2	125	45
660	2	175	50
780	2	225	55
380	3	25	24
420	3	35	29
470	3	40	32
570	3	50	37
660	3	80	42
780	3	100	45
850	3	125	48
940	3	160	51
1040	3	190	53
420	4	20	22
470	4	25	25
570	4	35	31
660	4	45	37
780	4	60	40
850	4	75	43
940	4	90	45
1040	4	105	47
1130	4	125	51
1230	4	150	52
1320	4	175	53
1420	4	200	55
1650	4	275	58

Size 250			
V, l/s	Number of Elements	Ps, Pa	L NC
230	1	30	-
280	1	45	29
330	1	60	33
380	1	75	38
420	1	95	41
470	1	120	42
570	1	190	48
660	1	240	56
380	2	25	-
420	2	30	-
470	2	35	25
570	2	50	32
660	2	65	38
750	2	75	42
850	2	95	46
940	2	120	49
1040	2	145	52
1130	2	175	54
1230	2	200	57
1320	2	240	60
570	3	20	-
660	3	25	-
750	3	35	28
850	3	45	31
940	3	55	37
1040	3	65	40
1130	3	75	42
1230	3	90	45
1320	3	105	47
1420	3	120	49
1650	3	155	54
1890	3	215	59
2120	3	250	61
750	4	25	-
850	4	30	-
940	4	35	27
1040	4	40	31
1130	4	45	34
1230	4	50	38
1320	4	85	40
1420	4	70	42
1650	4	90	46
1890	4	120	51
2120	4	150	53
2350	4	190	57
1850	4	250	62

Table 10: Pressure drop and Noise Level Data

Size300			
V, l/s	Number of Elements	Ps, Pa	L NC
230	1	15	-
280	1	25	-
330	1	30	24
380	1	40	29
420	1	50	34
470	1	65	39
570	1	90	42
660	1	125	46
750	1	160	49
850	1	200	52
940	1	260	57
380	2	10	-
420	2	15	22
470	2	15	22
570	2	25	24
660	2	30	27
750	2	40	32
850	2	50	38
940	2	65	42
1040	2	75	44
1130	2	90	45
1230	2	105	47
1320	2	125	50
1420	2	140	52
1650	2	190	55
1890	2	250	58
570	3	10	-
660	3	15	-
750	3	20	24
850	3	25	25
940	3	30	28
1040	3	35	31
1130	3	40	35
1230	3	50	39
1320	3	55	41
1420	3	65	43
1650	3	80	46
1890	3	110	48
2120	3	140	51
2360	3	190	54
2850	3	250	57
1040	4	20	27
1130	4	25	28
1230	4	25	30
1320	4	30	31
1420	4	35	34
1650	4	40	39
1890	4	65	44
2120	4	80	48
2360	4	100	50
2850	4	145	54
3300	4	200	57
3780	4	250	61

Size 350			
V, l/s	Number of Elements	Ps, Pa	L NC
280	1	10	-
380	1	20	24
470	1	30	31
570	1	45	36
660	1	60	41
750	1	80	42
850	1	115	46
940	1	125	49
1040	1	150	52
1130	1	175	54
1230	1	200	57
1320	1	225	60
1420	1	250	62
570	2	10	-
660	2	15	-
750	2	20	25
850	2	25	29
940	2	30	34
1040	2	40	38
1130	2	45	39
1230	2	55	43
1320	2	65	44
1420	2	70	46
1650	2	100	49
1890	2	125	52
2120	2	155	55
2360	2	185	59
2850	2	250	65
850	3	19	-
940	3	15	22
1040	3	20	24
1130	3	20	26
1230	3	25	29
1320	3	30	32
1420	3	30	35
1650	3	45	40
1890	3	55	45
2120	3	60	47
2360	3	80	50
2850	3	125	53
3300	3	185	58
3780	3	210	63
1130	4	10	-
1230	4	15	-
1320	4	15	26
1420	4	20	27
1650	4	25	32
1890	4	30	37
2120	4	40	40
2360	4	50	43
2850	4	70	49
3300	4	95	52
3780	4	125	56

Order Details

Order Code

AJA -2-PG / 250 / 2 / 0 / 0 / RAL 9002

Type

AJA-1 with vertical angle adjustment only
AJA-2 with 60° conical angle adjustment.

Rear assemblies

0 – Without plenum
PG – With plenum and volume control damper.
PO – With plenum only.

Nozzle size

200; 250; 300 or 350.

Number of nozzles / unit

From 1 to 4 (max.) for AJA-2 only.

RAL Colour Code

To state colour code if it is any other colour other than RAL 9010.

Powder coating

0 – Matt white (RAL 9010) as **standard supply**.
1 – For any other RAL colour.

Fixing requirement

0 – Border with counter punched holes (**Standard supply**)
1 – Border without counter punched holes.

General Specification

This jet nozzle is designed to supply large amount of supply air to a large enclosed space such airport terminal building, convention and exhibition halls and sports arena. It is suitable for either heating or cooling application. Each nozzle can be manually adjusted to direct the supply air to a specific zone. They can be installed either to the side walls or mounted directly to the supply air duct.

Each nozzle can be manually adjusted in the vertical direction and set at any angle between 30° upward and 30° downward direction (i.e., with up to 60° vertical adjustment). The set position for each nozzle will be held by friction-held fixings as standard supply.

As an addition feature, the nozzles can be fitted with nozzle mounting plates, which will allow each nozzle to rotate through 360°, giving it a wider air discharge range. Such a function is recommended for multiple nozzle assembly.

Plenum and volume control damper can be provided, if required. These will be painted black to RAL 9005.

Recommendation

'AJA-1' should only be used if each unit has only one nozzle. For unit with more than one nozzle, it is recommended 'AJA-2' should be used to avoid convergence of two or more parallel jet streams.

Order Example

Make: TROX
Type: AJA-1-PG/ 250/0/0
Quantity: 16 nos.