



SPRAY NOZZLES

Air Nozzles



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Optimization of Air Nozzles

EVERLOY Air Nozzles are designed to maximize capability of compressed air.

Based on this principle, we design optimal air nozzles from a variety of nozzle inner structure.



• Application of The Latest Technologies

In order to optimize air nozzles, we put emphasis on to two principles - Making maximum effects with the minimum consumption and Ensuring the uniformity of velocity (impact force)

Therefore, EVERLOY uses the latest fluid analysis to simulate the uniformity of impact force repeatedly before prototyping, and commercialize after checking the actual distribution uniformity.

We also apply fluid analysis to compare nozzles of different shapes.

Through this comparison, we analyze and grasp features of various air nozzles.

We have verified to achieve Energy saving , High impact force , Low noise , High efficiency and been successful in developing EVERLOY air nozzles.

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NOTE: A square symbol ■ or □ before a model indicates a recommended air source.

■ Compressor □ Blower



Straight Pattern Nozzles

Air Jet Nozzle

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Flat Pattern Nozzles

Flat Air Nozzle

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Curtain Pattern Nozzles

Slit Air Nozzle

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Nozzle Specifications List

Straight Pattern Nozzles



	Air Jet Nozzle Single type (thread type)			Air Jet Nozzle Single type (pipe connection type)			Air Jet Nozzle Round type			Air Jet Nozzle Blower type
	Sonic velocity blow			Sonic velocity blow			Low noise level			Optimized spot blow
										
Recommended air source	Compressor			Compressor			Compressor			Blower
Features	The combination of laval orifice and coanda effect enables hard pneumatic hit.			The combination of laval orifice and coanda effect enables hard pneumatic hit. To be attached directly to a pipe.			Strong and straight air is injected from the multi-orifice. Comparatively silent.			Energy saver by using blower. High impact.
Model	KSV	KBV	KAV	KSV	KBV	KAV	KSVR	KBVR	KAVR	AJ
Material	Stainless steel	Brass	Aluminum	Stainless steel	Brass	Aluminum	Stainless steel	Brass	Aluminum	Aluminum (anodic oxide-coated)
Max. working pressure [MPa]	0.7	0.7	0.7	0.5	0.5	0.5	0.7	0.7	0.7	0.05
Heatproof temp. [°C]	250	200	200	250	200	200	250	200	200	100
Page	1			1			5			7



Flat Pattern Nozzles

	Flat Air Nozzle		Air Blaster Standard type			Air Blaster Compact type	Air Blaster Blower type	Air Wiping Nozzle
	Blows air with a wide angle		Wide blow with uniform impact force			Space-saving	Corresponding high-capacity blower	Powerful blow with a constant width
								
Recommended air source	Compressor		Compressor			Compressor	Blower	Compressor
Features	Able to blow air with a wide angle. The separate type provides easy tip replacement.		Blows air in the width direction with a uniform force. Uniformity is maintained even when multiple nozzles are arranged.			Can be installed in a narrow space. Excellent chemical and heat resistance by using PPS plastics.	Saves energy by using a blower. Excellent chemical and heat resistance by using PPS plastics.	Enables a powerful wide blow by concentrating air through the slit-shaped tip of the nozzle into a band form.
Model	KSTTH KSTTA	KBTH KBTTA	AB			AB - C	AB - B	AW
Material	Stainless steel	Brass	Stainless steel	Aluminum	Plastics	Plastics	Plastics	Stainless steel
Max. working pressure [MPa]	0.7	0.7	0.4	0.4	0.7	0.7	0.1	0.7
Heatproof temp. [°C]	250	200	200	200	110	130	130	250
Page	9		11			14	15	16

Curtain Pattern Nozzles



	Slit Air Nozzle Standard type				Slit Air Nozzle Compact type			Slit Air Nozzle Diagonal spray type		
	Sharp and uniform blow over a width of up to 4m				Sharp and uniform blow over a width of up to 4m			Able to set an air attack angle without tilting the nozzle		
										
Recommended air source	Compressor				Compressor			Compressor		
Features	Low pressure loss. Paper thin slit enables sharp air-knife blow. Excellent uniformity over the entire width.				Low pressure loss. Excellent uniformity over the entire width. Compact and lightweight.			Low pressure loss. Facilitates the design of nozzle mounting brackets. Reduces deflection caused by long length.		
Model	AK				AKC			AK		
Material	Stainless steel	Aluminum	Titanium	Plastics	Stainless steel	Aluminum	Titanium	Stainless steel	Aluminum	Titanium
Max. working pressure [MPa]	0.4	0.2	0.2	0.1	0.25	0.15	0.15	0.4	0.2	0.2
Heatproof temp. [°C]	250	200	500	50	250	200	500	250	200	500
Page	19				19			21		

Slit Air Nozzle Diagonal inducement spray type				Slit Air Nozzle Double-slit type			Slit Air Nozzle Teardrop type		Slit Air Nozzle Square type	
Effective blow by the inducement and magnification of air around the nozzle periphery				Powerful blow with a double-slit orifice			Energy-saving nozzle with a blower		High-capacity air blow. Compressor and blower, both resources can be used.	
										
Compressor				Compressor			Blower		Blower	
Inducement of air around the periphery enables thick air blow. Facilitates the design of nozzle mounting brackets. Reduces deflection caused by long length.				The single nozzle produces two curtains of sharp air-knife blow. Effective when even higher-precision drying and blowing are required.			Energy saving air source-blower air. Uniformity over the entire width.		Lightweight. Uniformity across the entire spray area.	
AK				AK			TAK		KAK	
Stainless steel	Aluminum	Titanium	Plastics	Stainless steel	Aluminum	Titanium	Stainless steel		Stainless steel	
0.4	0.2	0.2	0.1	0.4	0.2	0.2	0.01		0.05	
250	200	500	50	250	200	500	250		80	
21				23			24		25	

Air Jet Nozzle Single type



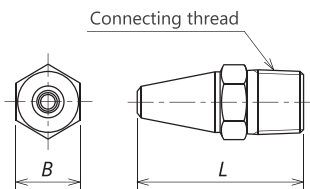
- Brass
- Aluminum
- 303 Stainless steel
(316L Stainless steel for CM type)

Sonic velocity blow



Shapes and dimensions

《KBV... C, Thread type》

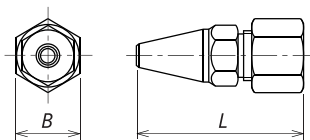


Model	Dimensions [mm]		Connecting thread	Max. service pressure [MPa]	Max. air flow rate [L/min(nor)]	Heatproof temp. [°C]	Weight [g]
	B	L					
KSV... C	10	29.5	R 1/8	0.7	318	200	25
KBV... C	14	34	R 1/4	0.7	636	200	35
KAV... C	17	44	R 3/8	0.7	3180	200	55
	22	50	R 1/2	0.7	5088	200	130
	29	60	R 3/4	0.7	8904	200	240

- These values of heatproof temperature and weight are based on brass material.
- Upon request, we can also produce nozzles with greater air flow rate and larger connecting threads.
- Spray angle is approximately 16 degrees.

《KBV... S, Pipe connection type》

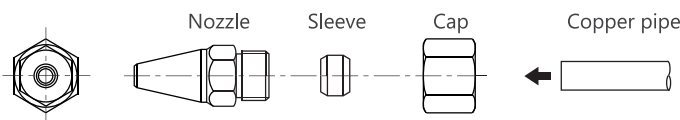
〈 Assembly drawing 〉



Model	Dimensions [mm]		Pipe dia. [mm]	Max. service pressure [MPa]	Max. air flow rate [L/min(nor)]	Heatproof temp. [°C]	Weight [g]
	B	L					
KSV... S	14	(40)	6	0.5	239	200	35
KBV... S	17	(45)	8	0.5	487	200	50
KAV... S	21	(52)	10, 12	0.5	1912	200	80

- These values of heatproof temperature and weight are based on brass material.
- Spray angle is approximately 16 degrees.

〈 Exploded drawing 〉



- The standard material for sleeves is brass.
- If you use a stainless steel pipe, please let us know.
If so, the nozzle and the cap must be stainless steel too.

- Model and model number representing

1/4
Connecting thread

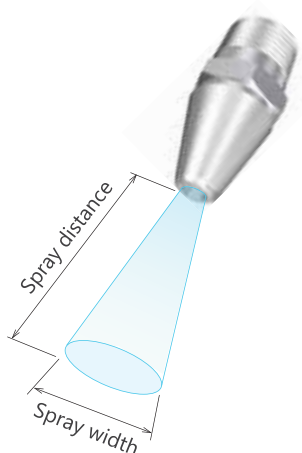
K S V
Material
S - Stainless steel
B - Brass
A - Aluminum

1000
Model No.

C
Connection
C - Thread type
S - Pipe connection type
CM - Thread type (MIM*, 316L Stainless steel)

*Metal injection molding

Performance data



Spray width characteristics

Model	Model No.	Air pressure [MPa]	Spray widths [mm] at the following spray distances [mm]					
			50	100	300	500	1000	1500
KSV.... C KBV.... C KAV.... C KSV.... S KBV.... S KAV.... S	0200	0.1	5	16	64	110	240	330
		0.3	7	16	69	126	280	370
		0.5	6	14	65	122	260	350
	0500	0.1	7	16	64	112	240	400
		0.3	8	17	68	121	280	450
		0.5	7	14	64	117	270	440
	1000	0.1	8	16	64	110	240	380
		0.3	10	15	68	120	280	420
		0.5	8	13	59	110	260	400
	2000	0.1	10	22	68	122	240	380
		0.3	9	19	71	121	270	430
		0.5	8	16	56	107	255	420
	3000	0.1	9	20	66	118	250	390
		0.3	10	17	67	113	270	440
		0.5	9	15	55	103	260	420
	4000	0.1	10	21	66	120	250	400
		0.3	11	17	67	114	250	430
		0.5	11	15	51	101	250	420
	5000	0.1	11	21	67	121	260	420
		0.3	11	17	69	118	270	440
		0.5	11	15	50	97	250	410
	8000	0.1	15	26	74	124	260	420
		0.3	15	23	64	108	255	440
		0.5	15	21	45	85	250	420
	10000	0.1	16	27	73	124	255	415
		0.3	16	25	64	106	250	430
		0.5	16	23	46	85	250	420

• For model numbers of the S type(pipe connection type), See page 4 "Standard-type model number list".

Air velocity characteristics

Measurement position : Center of spray

Spray direction : Horizontal

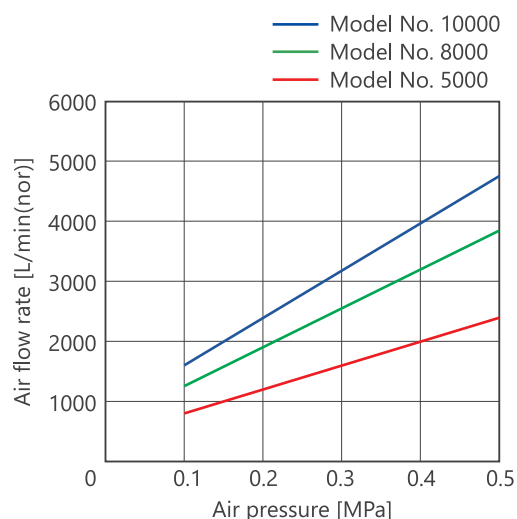
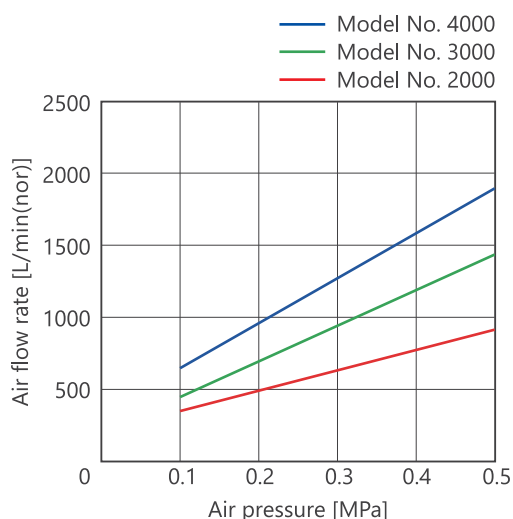
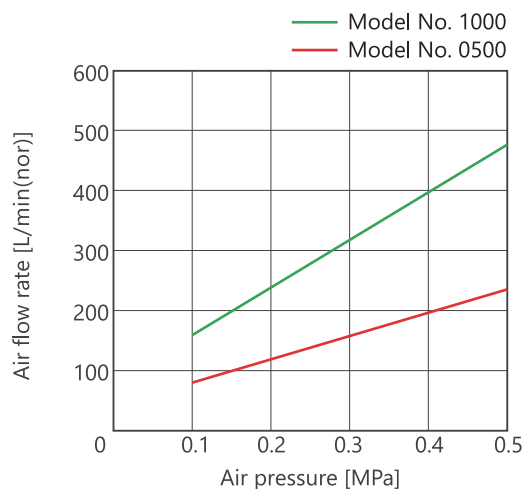
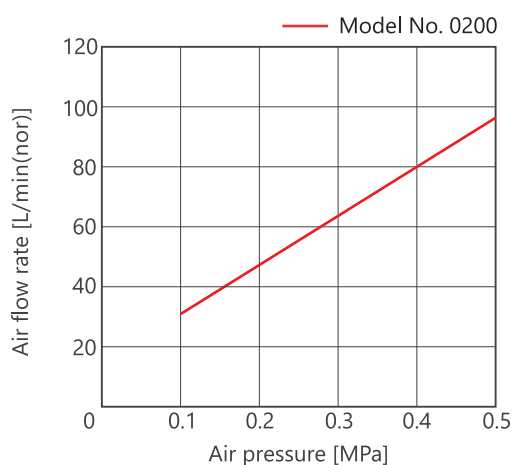
Model	Model No.	Air pressure [MPa]	Air velocity [m/s] at the following spray distances [mm]					
			50	100	300	500	1000	1500
KSV.... C KBV.... C KAV.... C KSV.... S KBV.... S KAV.... S	0200	0.1	47	25	9	5	3	1
		0.3	84	51	16	9	4	3
		0.5	102	68	22	13	6	4
	0500	0.1	75	44	14	8	4	3
		0.3	118	68	26	15	8	5
		0.5	172	94	35	20	10	7
	1000	0.1	115	62	21	13	7	4
		0.3	167	89	40	23	12	8
		0.5	-	128	52	31	16	10
	2000	0.1	175	83	32	19	10	6
		0.3	-	117	58	35	17	11
		0.5	-	177	80	47	24	15
	3000	0.1	-	98	40	24	12	7
		0.3	-	134	70	43	21	14
		0.5	-	-	99	60	31	19
	4000	0.1	-	109	45	27	14	9
		0.3	-	146	79	49	24	16
		0.5	-	-	112	70	36	22
	5000	0.1	-	116	49	30	15	10
		0.3	-	155	86	54	27	18
		0.5	-	-	122	77	40	25
	8000	0.1	-	130	57	36	18	13
		0.3	-	172	100	65	33	23
		0.5	-	-	141	92	48	31
	10000	0.1	-	135	60	39	19	14
		0.3	-	180	107	71	36	25
		0.5	-	-	150	99	52	34

• "-" indicates unavailability of measurement data (air velocity is more than 200 m/s.)

• For model numbers of the S type(pipe connection type), See page 4 "Standard-type model number list".

Performance data

Air flow rate characteristics



Noise level characteristics

Measurement position : 1 m above the floor, 1 m distance

Background noise : 45 dB

Spray direction : Horizontal

Model	Model No.	Equivalent sound levels [dB] at the following air pressures [MPa]		
		0.1	0.3	0.5
KSV ... C KBV ... C KAV ... C	0200	55	67	72
	0500	63	76	81
	1000	71	83	88
KSV ... S KBV ... S KAV ... S	2000	79	90	95
	3000	83	94	99
	4000	85	97	101
KSV ... S KBV ... S KAV ... S	5000	88	99	104
	8000	91	102	107
	10000	94	104	109

•For model numbers of the S type(pipe connection type), See page 4 "Standard-type model number list".

Performance data

Results of velocity distribution analysis

- Analysis conditions: Min. orifice diameter = $\phi 6$ mm, Pressure = 0.1 MPa, Nozzle length $\approx$ 50 mm

Pipe-shaped

The velocity has already started to attenuate immediately outside the tip.



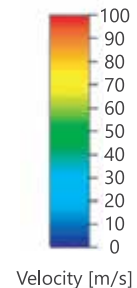
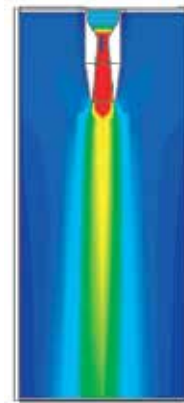
Conventional KBV shape

Compared with the pipe-shaped model, velocity attenuation is lower and the high speed zone (in green) is wider.



New KBV shape

The tapered tip further reduces velocity attenuation, and the ultrahigh speed zone (in yellow) is even wider.



Standard-type model numbers list

Models marked with "•" are available.

Connecting thread	Model							Model No.	Min. orifice dia. [mm]	Air flow rate [L/min(nor)] at the following air pressures [MPa]						
	C type		CM		S type		0.1			0.2	0.3	0.4	0.5	0.6	0.7	
	KSV	KBV	KAV	KSV	KSV	KBV										KAV
1/8				●				0200	1.46	32	48	64	80	96	112	127
				●				0500	2.46	80	120	160	199	239	248	318
1/8 1/4						●	●	0200	1.46	32	48	64	80	96	112	127
		●	●			●	●	0300	1.75	48	72	96	120	143	167	191
		●	●			●	●	0400	2.04	64	96	128	159	191	223	254
						●	●	0500	2.26	80	120	160	199	239	278	318
1/4		●	●			●	●	0600	2.46	97	144	191	239	287	334	382
		●	●			●	●	0700	2.65	113	168	223	279	335	390	445
		●	●			●	●	0800	2.84	129	192	255	319	382	449	509
		●	●			●	●	0900	3.00	145	216	287	358	430	501	572
				●	●	●	●	1000	3.22	161	240	319	398	478	557	636
		●	●	●					1200	3.46	193	288	383	478	574	668
3/8	●	●	●					1300	3.61	209	312	415	517	621	724	827
				●				1400	3.80	225	336	447	558	669	780	890
	●	●	●					1500	3.90	242	360	479	597	717	836	954
	●	●	●					1600	4.00	258	384	510	637	765	891	1018
	●	●	●		●	●	●	2000	4.56	322	480	639	797	955	1110	1270
	●	●	●		●	●	●	2500	5.00	403	600	798	995	1195	1393	1590
	●	●	●					2700	5.26	435	648	861	1075	1291	1504	1717
	●	●	●		●	●	●	3000	5.50	483	720	957	1194	1435	1671	1908
	●	●	●		●	●	●	3500	5.92	564	840	1117	1393	1673	1950	2226
	●	●	●					3600	6.00	580	864	1148	1433	1721	2005	2290
	●	●	●		●	●	●	4000	6.45	644	960	1278	1592	1912	2228	2544
	●	●	●					4500	6.71	725	1080	1436	1791	2151	2507	2862
	●	●	●					5000	7.07	805	1200	1595	1990	2390	2785	3180
	1/2	●	●	●					6000	7.86	966	1440	1914	2388	2868	3342
●		●	●					7000	8.49	1127	1680	2233	2786	3346	3899	4452
●		●	●					8000	9.08	1288	1920	2552	3184	3824	4456	5088
●		●						9000	9.49	1449	2160	2871	3582	4302	5013	5724
3/4	●	●						10000	10.00	1610	2400	3190	3980	4780	5570	6360
	●	●						12000	10.95	1932	2880	3828	4776	5736	6684	7632
	●	●						14000	12.00	2254	3360	4466	5572	6692	7798	8904

- Upon request, we can also produce nozzles with greater air flow rate and larger connecting threads than the above.
- Spray angle is approximately 16 degrees.

Air Jet Nozzle Round type



Low noise level



● 303 Stainless steel



● Aluminum

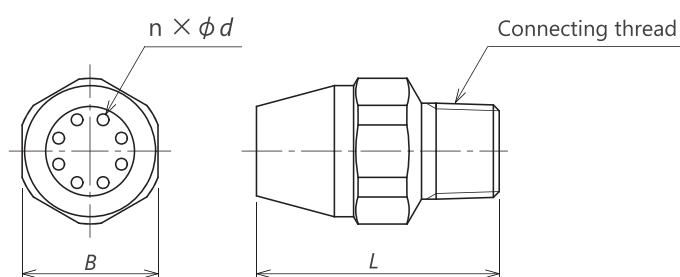


● Brass



Shapes and dimensions

《KBVR type》



Model	Model No.	Q'ty of orifice n	Dimensions[mm]			Connecting thread	Max. service pressure [MPa]	Max. air flow rate [L/min(nor)]	Heatproof temp. [°C]	Weight [g]
			d	B	L					
KSVR KBVR KAVR	1	6	1.0	14	25	R $\frac{1}{8}$	0.7	360	250	13
	2	8	1.0	14	25	R $\frac{1}{8}$	0.7	475	250	13
	3	6	1.0	14	25	R $\frac{1}{4}$	0.7	360	250	15
	4	8	1.0	14	25	R $\frac{1}{4}$	0.7	475	250	15
	5	6	1.4	17	32	R $\frac{1}{4}$	0.7	700	250	28
	6	8	1.4	17	32	R $\frac{1}{4}$	0.7	930	250	28

●The values of heatproof temperature and weight are based on stainless steel material.

- Model and model number representing

K S V R
└─┘

Material

S - Stainless steel

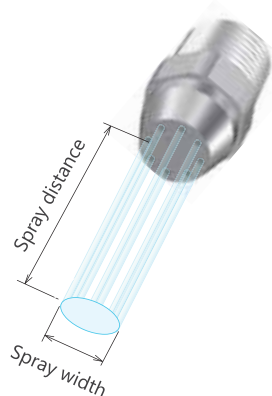
B - Brass

A - Aluminum

1
└─┘

Model No.

Performance data



Spray width characteristics

Model	Model No.	Air pressure [MPa]	Spray widths [mm] at the following spray distances [mm]					
			50	100	300	500	1000	1500
KSVR KBVR KAVR	1 3	0.1	10	18	64	115	250	380
		0.3	12	21	72	125	260	390
		0.5	13	22	73	130	265	395
	2 4	0.1	11	19	67	120	255	390
		0.3	12	22	73	130	265	400
		0.5	13	23	74	135	275	410
	5	0.1	12	17	67	118	255	380
		0.3	13	23	73	130	260	390
		0.5	14	24	74	132	265	395
	6	0.1	13	19	68	120	255	390
		0.3	14	23	75	130	265	400
		0.5	15	25	77	135	275	410

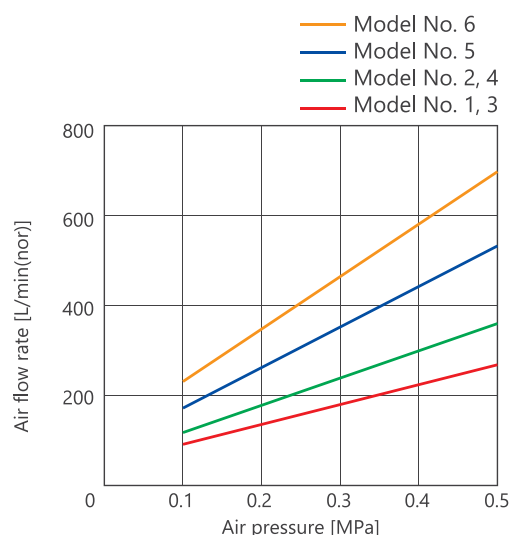
Air velocity characteristics

Measurement position : Center of spray

Spray direction : Horizontal

Model	Model No.	Air pressure [MPa]	Air velocity [m/s] at the following spray distances [mm]					
			50	100	300	500	1000	1500
KSVR KBVR KAVR	1 3	0.1	58	40	14	10	4	3
		0.3	85	63	26	16	8	5
		0.5	106	81	33	21	10	7
	2 4	0.1	66	48	17	11	5	3
		0.3	96	73	31	19	9	6
		0.5	117	90	40	25	12	8
	5	0.1	77	58	22	14	7	4
		0.3	112	86	38	23	11	8
		0.5	132	103	50	30	14	10
	6	0.1	85	65	26	15	7	5
		0.3	123	96	43	27	13	9
		0.5	143	113	56	35	16	12

Air flow rate characteristics



Noise level characteristics

Measurement position : 1 m above the floor, 1 m distance

Background noise : 45 dB

Spray direction : Horizontal

Model	Model No.	Equivalent sound levels [dB] at the following air pressures [MPa]		
		0.1	0.3	0.5
KSVR KBVR KAVR	1, 3	54	68	74
	2, 4	58	71	78
	5	62	75	83
	6	65	78	86

Air Jet Nozzle Blower type



Optimized pinpoint blow

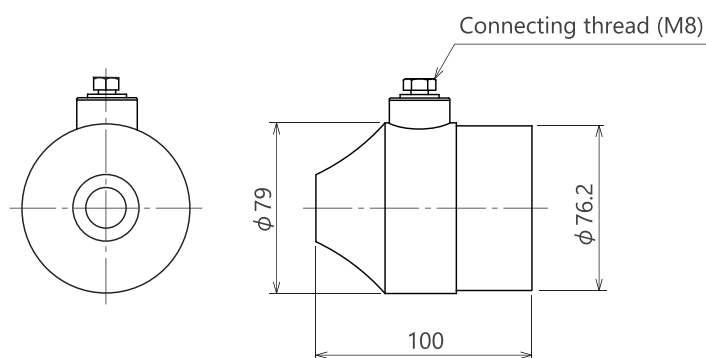


● Aluminum (anodic oxide-coated)



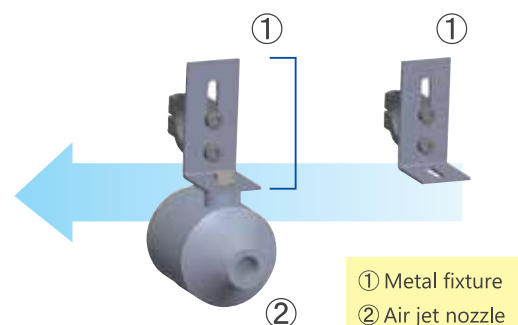
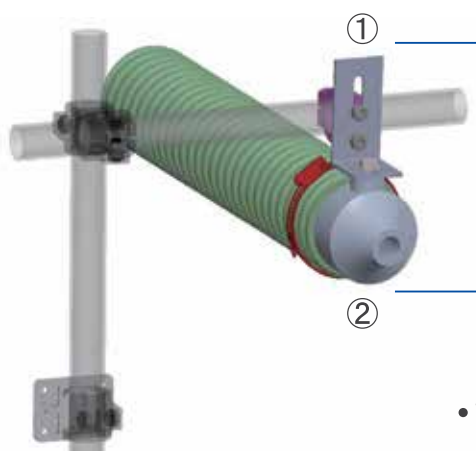
Shapes and dimensions

《AJ - B190A》



Model	Model No.	Min. orifice diameter [mm]	Weight [g]
AJ	B190A	19	710

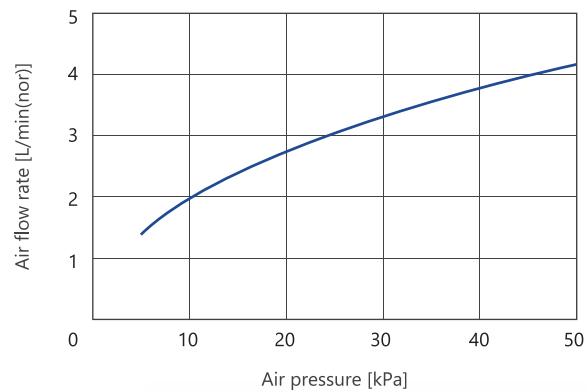
● Nozzle installation example



- This is just an example of combination with a commercial fixing bracket. Please contact our sales department for more details.
- Make sure that the air inlet joint is firmly secured. Depending on the situation, the hose might be required.

Performance data

Air flow rate characteristics

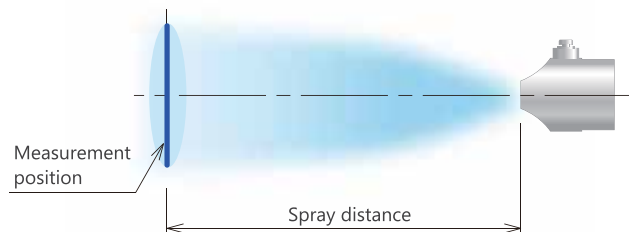


Air velocity characteristics

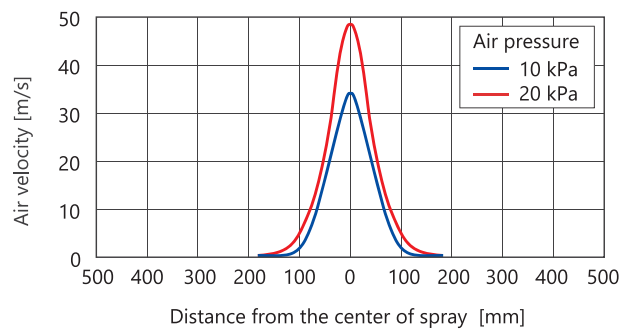
Spray environment : Indoor, no wind, 20 °C, 1 atm (101.3 kPa)

Spray direction : Horizontal

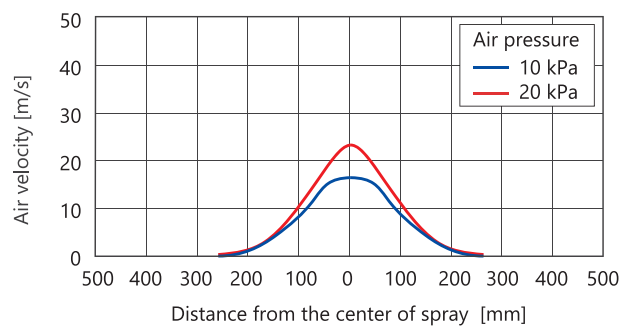
Spray distances : 500 mm, 1000 mm, and 2000 mm



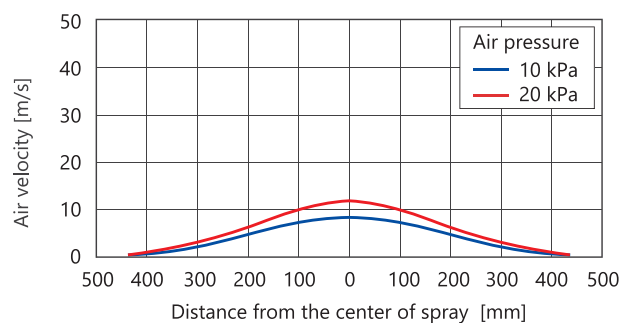
Spray distance : 500 mm



Spray distance : 1000 mm



Spray distance : 2000 mm



Flat Air Nozzle



Blows air with a wide angle

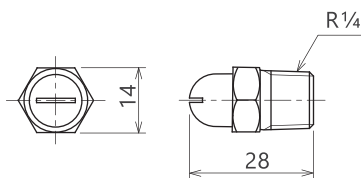


- 303 Stainless steel
- Brass



Shapes and dimensions

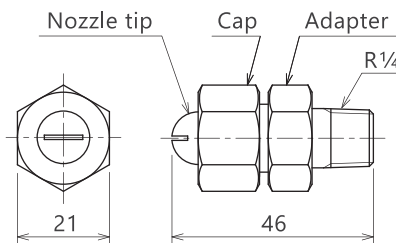
《KSTTH, Integral type》



Model	Model No.	Min. orifice diameter [mm]	Max. service pressure [MPa]	Max. air flow rate [L/min(nor)]	Heatproof temp. [°C]	Weight [g]
KSTTH KBTH	03	0.7	0.7	191	250	30
	04	0.8	0.7	254	250	30
	05	0.9	0.7	318	250	30
	07	1.0	0.7	445	250	30
	10	1.2	0.7	636	250	30

● These values of heatproof temperature and weight are based on stainless steel material.

《KSTTA, Separate type》



Model	Model No.	Min. orifice diameter [mm]	Max. service pressure [MPa]	Max. air flow rate [L/min(nor)]	Heatproof temp. [°C]	Weight [g]
KSTTA KBTA	03	0.7	0.7	191	250	60
	04	0.8	0.7	254	250	60
	05	0.9	0.7	318	250	60
	07	1.0	0.7	445	250	60
	10	1.2	0.7	636	250	60

● These values of heatproof temperature and weight are based on stainless steel material.

- Model and model number representing

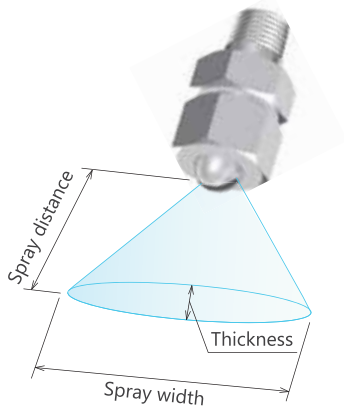
$\frac{1}{4}$
 T
 Connecting thread

K S T T A
 T
 Material
 S - Stainless steel
 B - Brass

05
 T
 Model No.

Performance data

Spray width and thickness characteristics



Model	Air pressure [MPa]	Spray widths and thickness at the following spray distances [mm]							
		50		100		300		500	
		Width	Thickness	Width	Thickness	Width	Thickness	Width	Thickness
KSTTH	0.1	80	13	135	27	288	78	422	150
KBTTH	0.3	107	12	171	25	363	77	512	146
KSTTA	0.5	159	11	250	23	500	74	698	140
KBTTA									

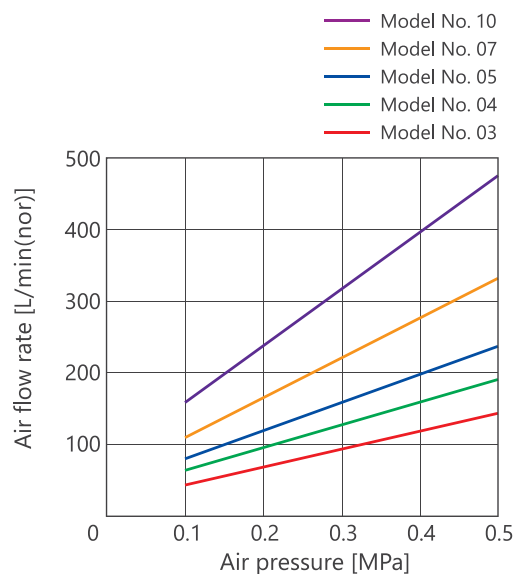
Air velocity characteristics

Measurement position : Center of spray

Spray direction : Horizontal

Model	Model No.	Air pressure [MPa]	Air velocity [m/s] at the following spray distances [mm]			
			50	100	300	500
KSTTH KBTTH KSTTA KBTTA	03	0.1	15	7	2	1
		0.3	30	15	5	3
		0.5	40	20	7	4
	04	0.1	25	12	3	2
		0.3	50	25	8	5
		0.5	65	32	10	6
	05	0.1	30	15	5	3
		0.3	60	30	10	6
		0.5	80	40	13	8
	07	0.1	40	20	7	4
		0.3	80	40	14	8
		0.5	100	50	18	10
	10	0.1	50	25	8	5
		0.3	100	50	16	10
		0.5	130	65	21	13

Air flow rate characteristics



Noise level characteristics

Measurement position : 1 m above the floor, 1 m distance

Background noise : 45 dB

Spray direction : Horizontal

Model	Model No.	Equivalent sound levels [dB] at the following air pressures [MPa]		
		0.1	0.3	0.5
KSTTH KBTTH KSTTA KBTTA	03	54	64	68
	04	56	67	71
	05	58	69	74
	07	61	72	78
	10	65	76	82

Air Blaster



Wide blow with uniform impact force



● Plastics (m-PPE, m-PPO)



● Aluminum

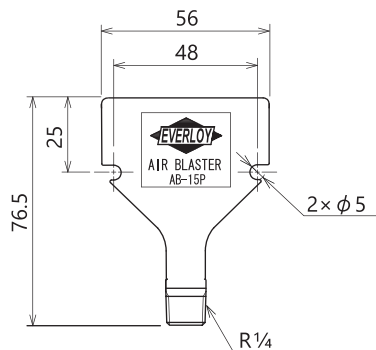


● 304 Stainless steel

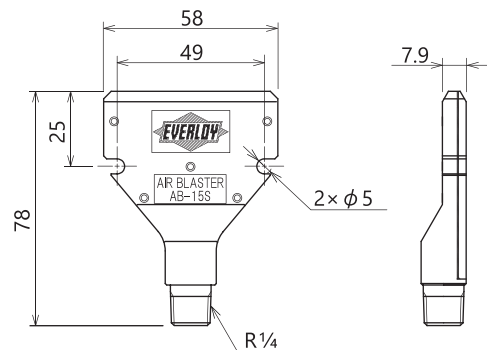


Shapes and dimensions

《AB --- P type》



《AB --- A type and AB --- S type》



Model	Model No.	Min. orifice diameter [mm]
AB	10	0.7
	15	0.9
	25	1.2

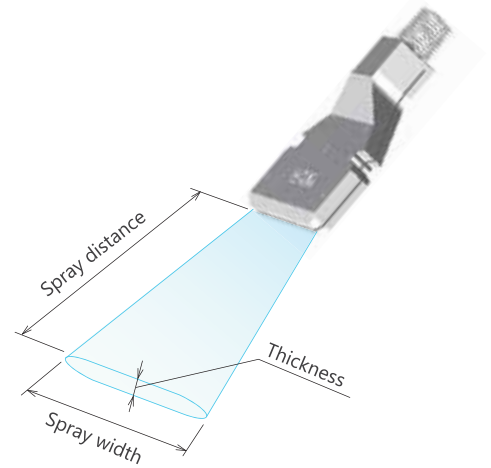
Material	Model	Max. service pressure [MPa]	Max. air flow rate [L/min(nor)]	Heatproof temp. [°C]	Weight [g]
Plastics (PPE)	AB --- P	0.7	1620	110	15
Aluminum	AB --- A	0.4	1010	200	60
Stainless steel	AB --- S	0.4	1010	200	165

- These values of heatproof temperature for AB-A and AB-S types are based on the assumption that the packing material is fluoroplastic.
- Only for AB - 25P, the plastic material is m - PPO.

- Model and model number representing

A B - $\frac{15}{\text{Model No.}}$ $\frac{S}{\text{Material}}$
 P - Plastics
 A - Aluminum
 S - Stainless steel

Performance data



Spray width and thickness characteristics

Model	Air pressure [MPa]	Spray widths and thickness at the following spray distances [mm]											
		50		100		300		500		1000		1500	
		Width	Thickness	Width	Thickness	Width	Thickness	Width	Thickness	Width	Thickness	Width	Thickness
AB	0.1	68	11	80	24	135	84	185	150	300	300	415	415
	0.3	65	11	75	23	125	83	175	149	290	290	400	400
	0.5	62	11	70	22	115	82	165	148	285	285	390	390

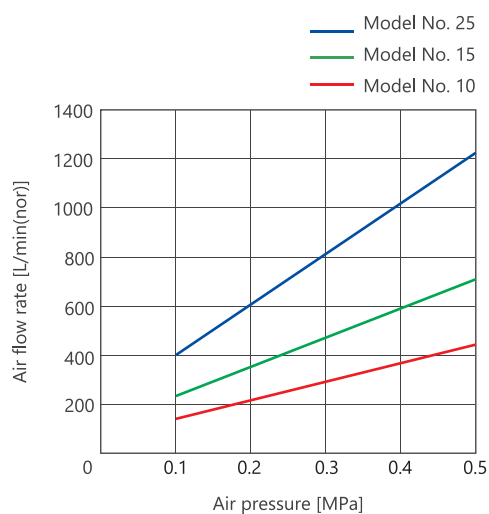
Air velocity characteristics

Measurement position : Center of spray

Spray direction : Horizontal

Model	Model No.	Air pressure [MPa]	Air velocity [m/s] at the following spray distances [mm]					
			50	100	300	500	1000	1500
AB	10	0.1	42	27	14	10	5	3
		0.3	66	46	25	17	9	6
		0.5	75	55	34	23	13	9
	15	0.1	49	32	17	12	7	4
		0.3	78	55	31	21	12	8
		0.5	90	67	42	30	17	11
	25	0.1	59	40	21	14	9	6
		0.3	92	68	40	27	16	11
		0.5	110	82	53	37	21	14

Air flow rate characteristics



Noise level characteristics

Measurement position : 1 m above the floor, 1 m distance

Background noise : 45 dB

Spray direction : Horizontal

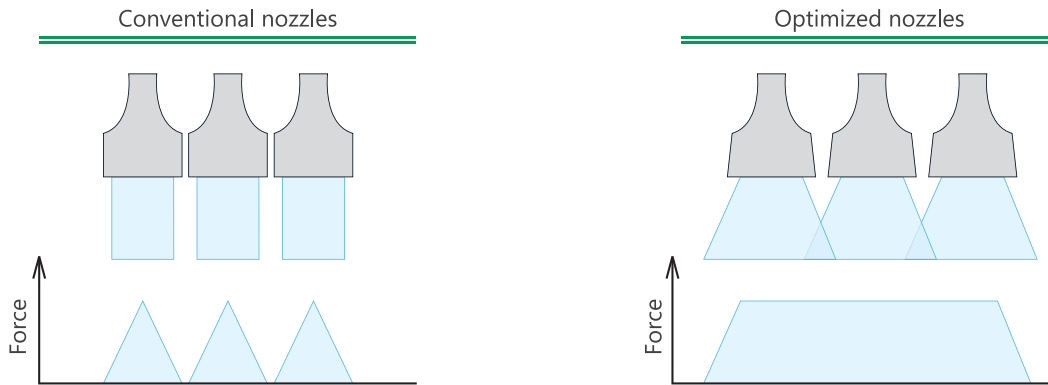
Model	Model No.	Equivalent sound levels [dB] at the following air pressures [MPa]		
		0.1	0.3	0.5
AB	10	55	65	73
	15	66	74	80
	25	76	83	88

Performance data

Spray pattern

Optimization of the nozzle inner structure has achieved a uniform blow.

With conventional nozzles, the impact force is the strongest directly under the nozzles and weak at the edges.

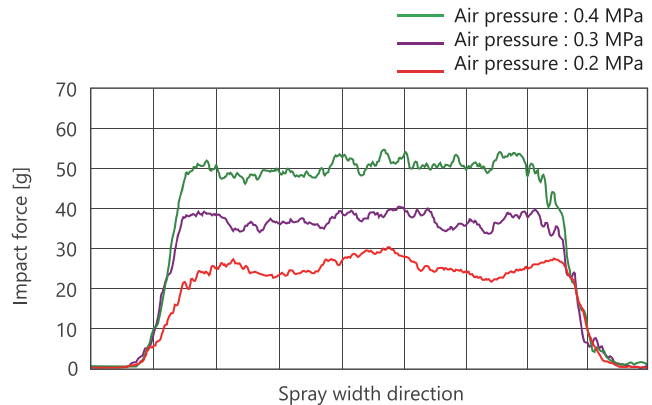
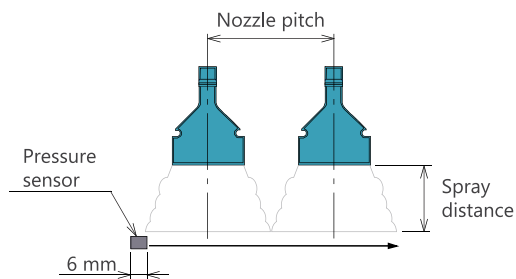


Overlapped impact force distribution

Model number : 15

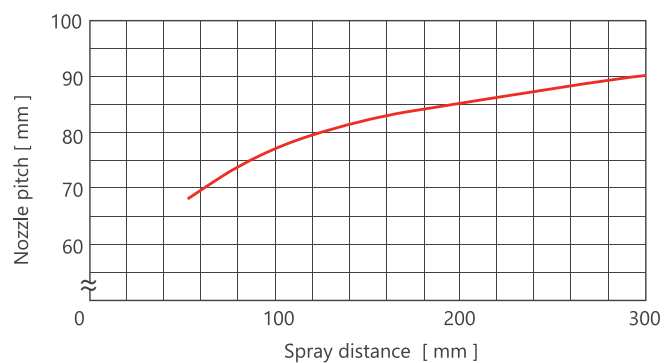
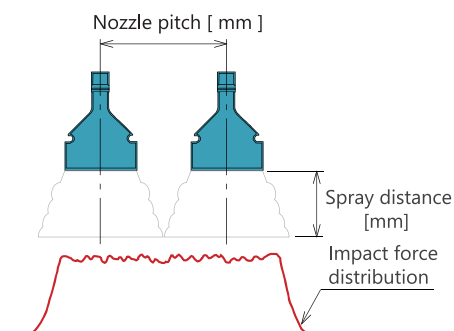
Spray distance : 100 mm

Nozzle pitch : 77.5 mm



Suitable nozzle pitch for uniformity of impact force

Model number : 15



Air Blaster Compact type



Best for use in a limited space

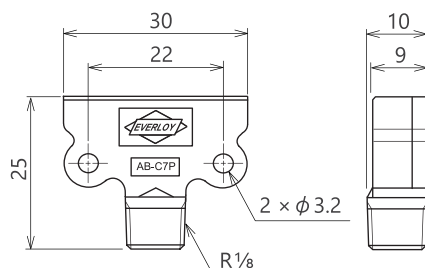


- Plastics (PPS)



Shapes and dimensions

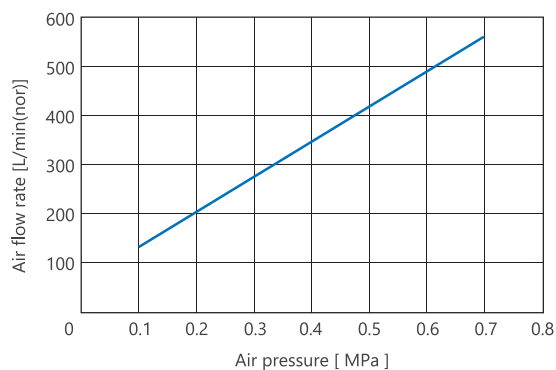
《AB - C7P》



Model	Model No.	Min. orifice diameter [mm]	Max. service pressure [MPa]	Max. air flow rate [L/min(nor)]	Heatproof temp. [°C]	Weight [g]
AB	C7P	1.0	0.7	560	130	5

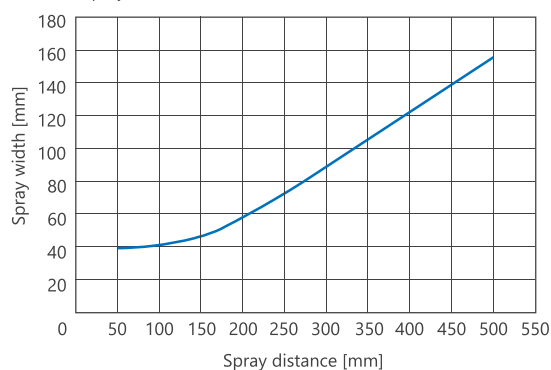
Performance data

Air flow rate characteristics



Spray width characteristics

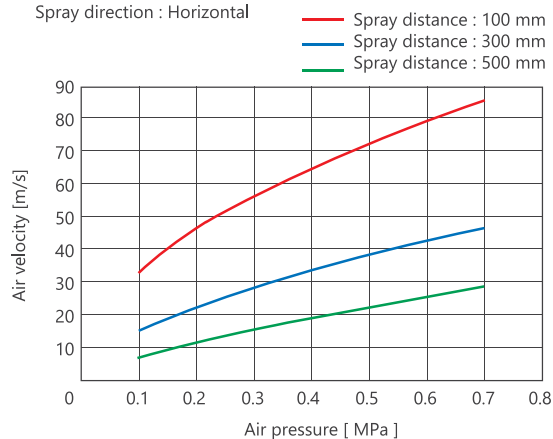
Spray direction : Horizontal



Air velocity characteristics

Measurement position : Center of spray

Spray direction : Horizontal

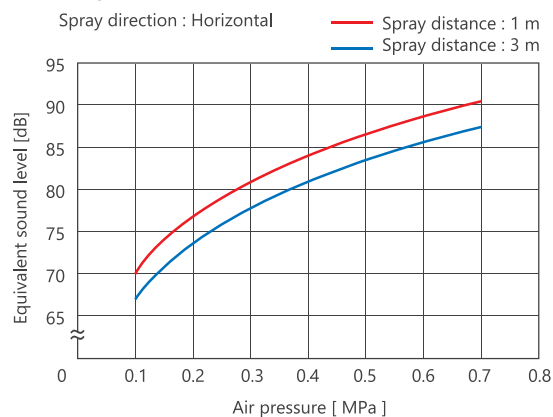


Noise level characteristics

Measurement position : 1 m above the floor

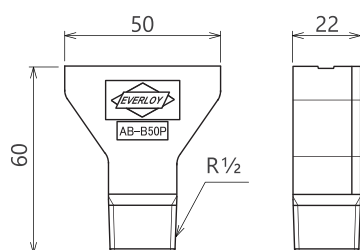
Background noise : 50 dB

Spray direction : Horizontal



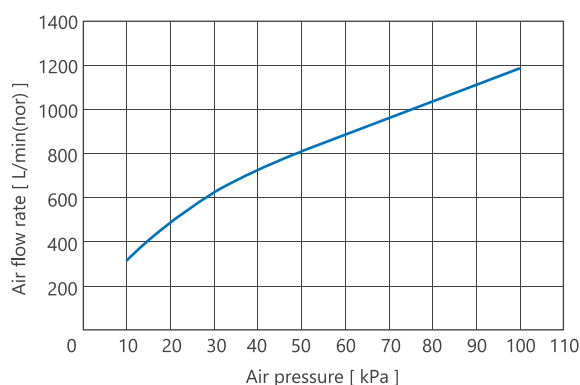


《AB - B50P》



Model	Model No.	Min. orifice diameter [mm]	Max. service pressure [kPa]	Max. air flow rate [L/min(nor)]	Heatproof temp. [°C]	Weight [g]
AB	B50P	3.1	100	1190	130	25

Air flow rate characteristics

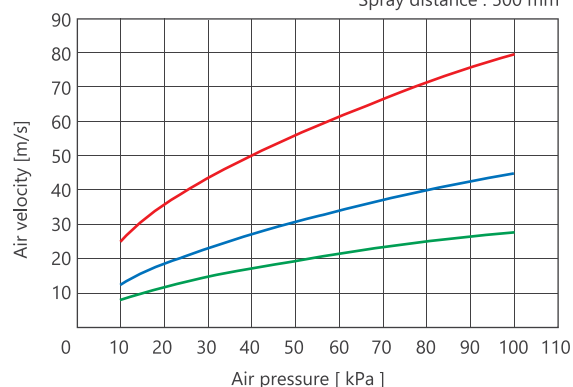


Air velocity characteristics

Measurement position : Center of spray

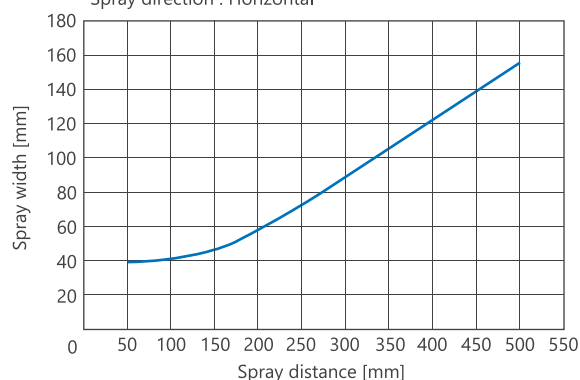
Spray direction : Horizontal

- Spray distance : 100 mm
- Spray distance : 300 mm
- Spray distance : 500 mm



Spray width characteristics

Spray direction : Horizontal



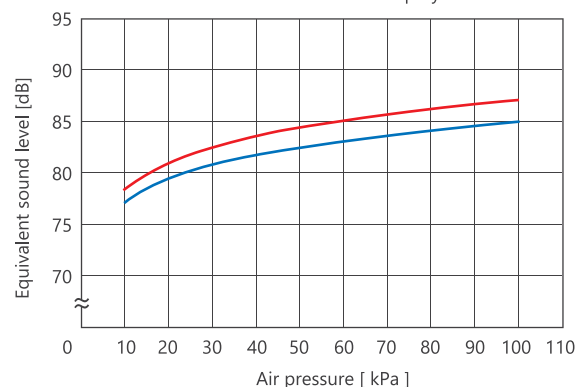
Noise level characteristics

Measurement position : 1 m above the floor

Background noise : 50 dB

Spray direction : Horizontal

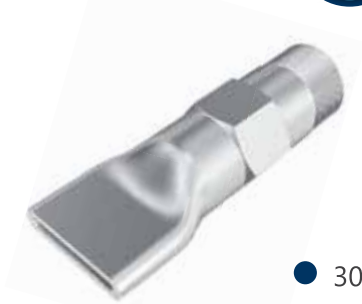
— Spray distance : 1 m
— Spray distance : 3 m



Air Wiping Nozzle



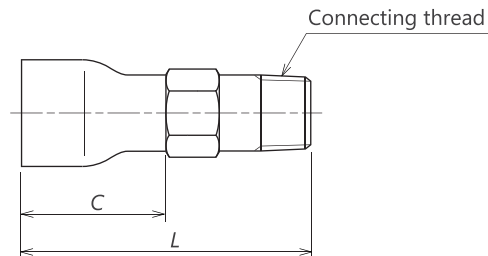
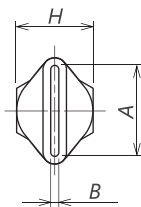
Powerful blow with a constant width



● 304 Stainless steel



《AW type》



- Dimensions C, L, and H and the size of the connecting thread depend on dimensions A and B.

Model	Model No.	Dimensions[mm]					Connecting thread	Max. service pressure [MPa]	Max. air flow rate [L/min(nor)]	Heatproof temp. [°C]	Weight [g]
		A	B	C	L	H					
AW	10 - 0.5	10	0.5	25	44	10	R 1/8	0.7	390	250	12
	15 - 1.0	15	1.0	36	62	14	R 1/4	0.7	1150	250	27
	20 - 1.0	20	1.0	44	74	17	R 3/8	0.7	1560	250	39
	25 - 1.0	25	1.0	52	87	22	R 1/2	0.7	1960	250	111

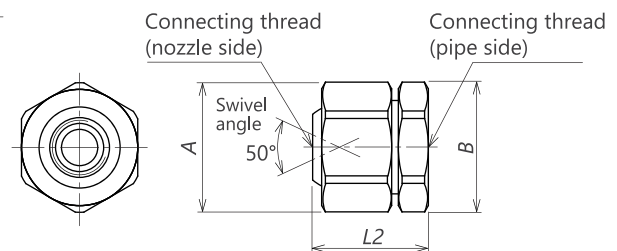
- The tolerance class of the slit part is the coarse class provided in JIS B 0405.
- This product can be used as a water nozzle, too.

- Model and model number representing

$\frac{1}{4}$ A W 15 - 1.0
 └───┬───┘ └───┬───┘ └───┬───┘
 Connecting Slit width (A) Slit aperture (B)
 thread



- Brass



Model	Model No.	Connecting thread		Dimensions [mm]				Weight [g]
		Pipe side	Nozzle side	L1	L2	A (hex.)	B (hex.)	
BJHC	1/8 × 1/8	R 1/8	Rc 1/8	32	-	22	22	80
	1/4 × 1/4	R 1/4	Rc 1/4	41	-	29	29	170
	3/8 × 3/8	R 3/8	Rc 3/8	49	-	35	35	290
	1/2 × 1/2	R 1/2	Rc 1/2	56	-	41	38	450
	3/4 × 3/4	R 3/4	Rc 3/4	65	-	50	46	780
	1/8 × 1/8 F	Rc 1/8	Rc 1/8	-	24	22	22	65
	1/4 × 1/4 F	Rc 1/4	Rc 1/4	-	29	29	29	140
	3/8 × 3/8 F	Rc 3/8	Rc 3/8	-	35	35	35	240
	1/2 × 1/2 F	Rc 1/2	Rc 1/2	-	39	41	38	370
	3/4 × 3/4 F	Rc 3/4	Rc 3/4	-	46	50	46	660

- The weight values are based on stainless steel material.
- Pressure capacity is 1 Mpa.

A diagram showing a yellow ball joint assembly. A white nozzle is attached to the left side of the ball joint. A white pipe is attached to the right side of the ball joint. Labels with arrows point to the 'Nozzle', 'Ball joint', and 'Pipe'.

- B J H C $\frac{1}{4}$ × $\frac{1}{4}$ SUS
- ┴ ┴ ┴
- Connecting Connecting Material
- thread thread
- (pipe side) (nozzle side)
- SUS - Stainless steel
- BSBM - Brass

Gun joint



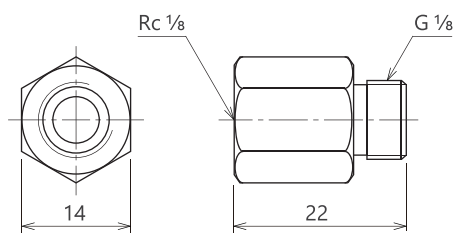
For attaching a spray gun



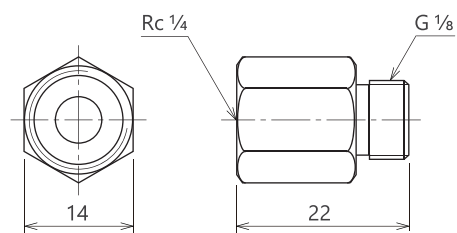
● Brass

Shapes and dimensions

《GJ1》

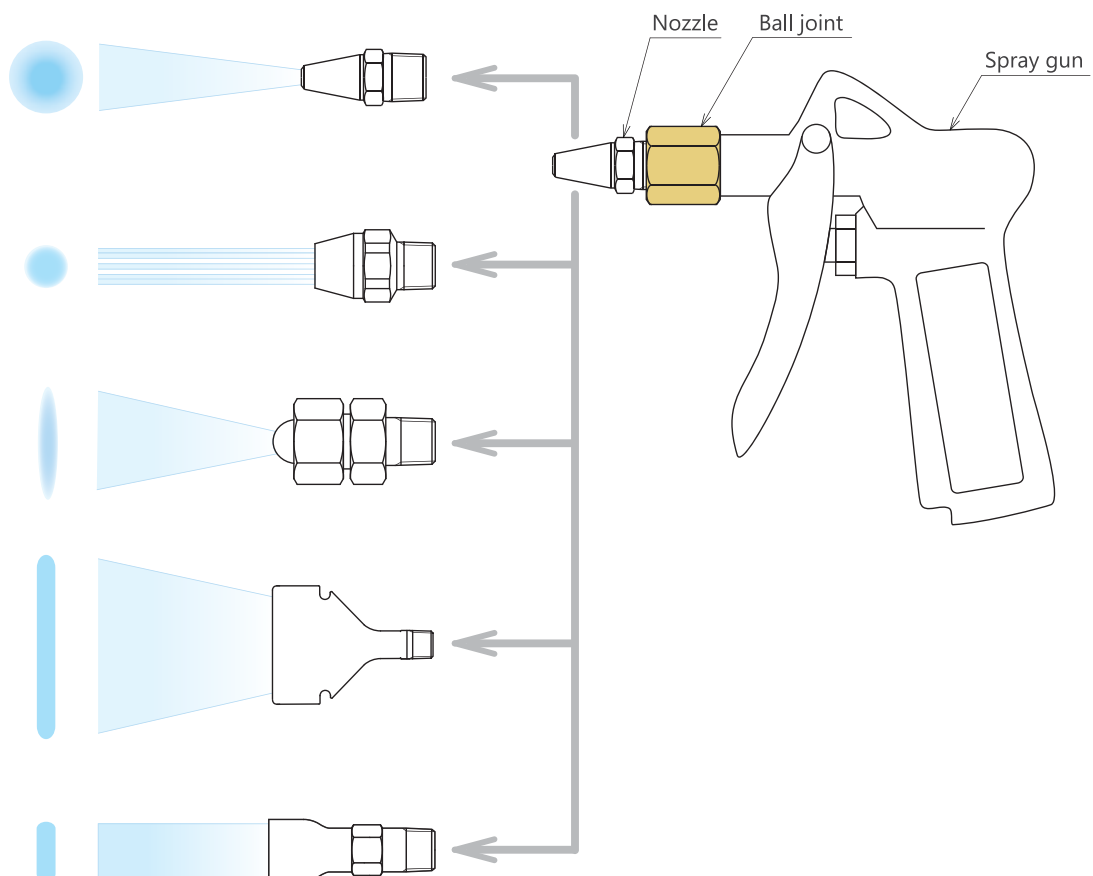


《GJ2》



Nozzle installation example

You can use different types of nozzles with the spray gun by attaching gun joint.



Slit Air Nozzle Standard type and Compact type



Used to change the spray direction

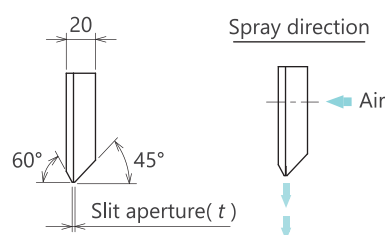
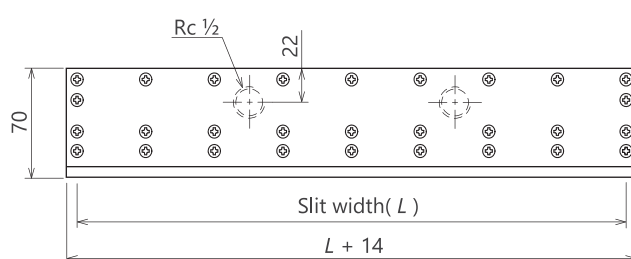


- Stainless steel (304, 316, and 316L)
- Aluminum
- Titanium
- Plastics (H-PVC)

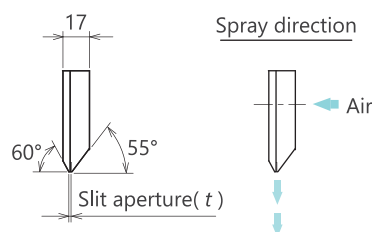
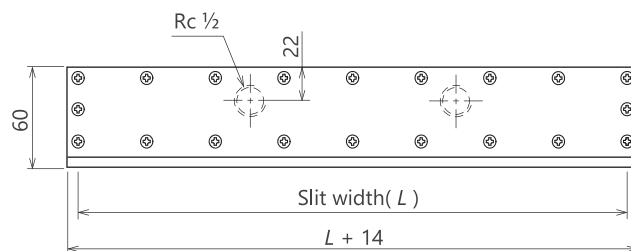


Shapes and dimensions

《AK standard type》



《AKC compact type》



Material	Slit width L [mm]	Slit aperture t [mm]
Stainless steel	100 – 1200	0.05 – 0.3
Aluminum	1201 –	0.08 – 0.3
Plastics	100 – 500	0.1 – 0.3
	501 – 2300	0.15 – 0.3

Slit width L [mm]	Material	Max. service pressure [MPa]		Max. air flow rate [m³/min(nor)]	Heatproof temp. [°C]	Weight [Kg]	
		Standard type	Compact type			Standard type	Compact type
1000	Stainless steel	0.4	0.25	9.9	250	8.2	6.0
	Aluminum	0.2	0.15	5.9	200	2.9	2.1
	Titanium	0.2	0.15	5.9	500	4.6	3.4
	Plastics (H-PVC)	0.1	–	4.0	50	1.5	–
2000	Stainless steel	0.4	0.25	19.8	250	16.2	11.9
	Aluminum	0.2	0.15	11.9	200	5.7	4.2
	Titanium	0.2	0.15	11.9	500	9.1	6.7
	Plastics (H-PVC)	0.1	–	7.9	50	3.0	–
3000	Stainless steel	0.4	0.25	29.7	250	24.4	17.8
	Aluminum	0.2	0.15	17.8	200	8.6	6.3
	Titanium	0.2	0.15	17.8	500	13.7	10.0

- The maximum air amount is an expected value at 0.3mm slit aperture.
- Dash "–" indicates unavailable.

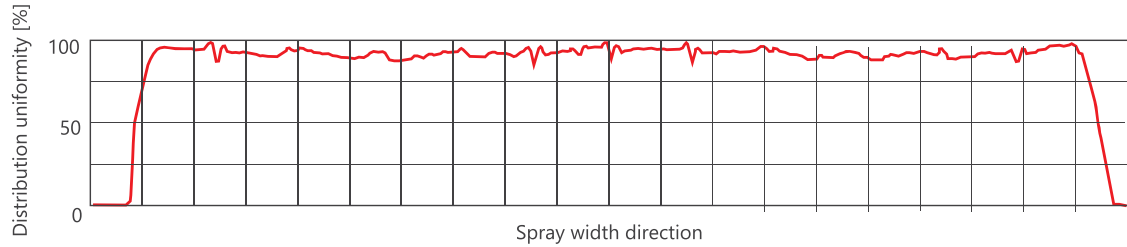
Performance data

Impact force distribution

Nozzle model number : AK-504L 0.15t

Air pressure : 0.04 MPa

Spray distance : 5 mm



Air flow rate characteristics

Slit width L [mm]	Slit aperture t [mm]	Air flow rate [L/min(nor)] at the following air pressures [MPa]						
		0.01	0.02	0.03	0.04	0.06	0.08	0.10
500	0.05	184	200	217	233	265	298	330
	0.10	368	400	433	465	530	595	660
	0.15	552	601	649	698	796	893	991
1000	0.05	368	400	433	465	530	595	660
	0.10	735	800	865	930	1059	1189	1319
	0.15	1103	1200	1298	1395	1590	1784	1979
1500	0.08	883	961	1039	1117	1273	1429	1584
	0.10	1103	1200	1298	1395	1590	1784	1979
	0.15	1655	1801	1947	2093	2385	2678	2970
2000	0.08	1177	1281	1385	1489	1696	1904	2112
	0.10	1471	1601	1731	1860	2120	2380	2640
	0.15	2206	2401	2595	2790	3180	3569	3958
2500	0.08	1471	1601	1731	1860	2120	2380	2640
	0.10	1839	2001	2164	2326	2651	2975	3299
	0.15	2758	3001	3245	3488	3975	4462	4948
3000	0.08	1766	1922	2078	2234	2546	2858	3168
	0.10	2206	2400	2596	2790	3180	3568	3958
	0.15	3310	3602	3894	4186	4770	5356	5940

- Model and model number representing

《Standard type》

A K - 1000 L 0.15 t
Slit width Slit aperture

《Compact type》

A K C - 1000 L 0.15 t
Slit width Slit aperture

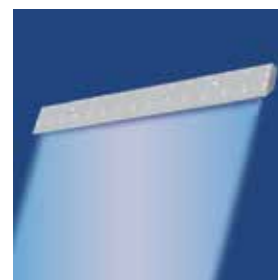
Slit Air Nozzle Diagonal spray type and Diagonal inducement spray type



Able to set an air attack angle without tilting the nozzle

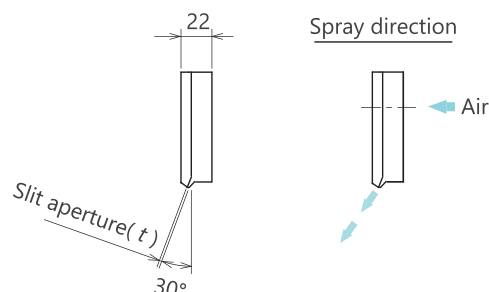
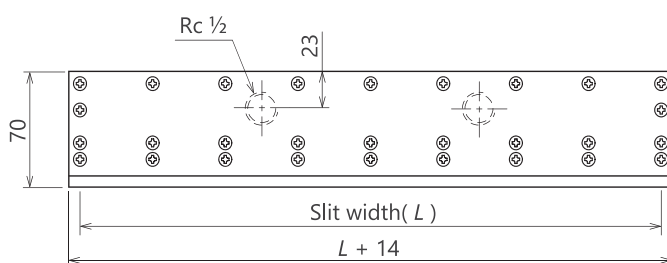


- Stainless steel (304, 316, and 316L)
- Aluminum
- Titanium
- Plastics (H-PVC)

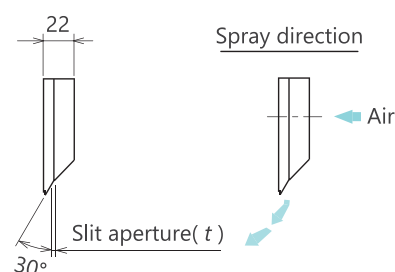
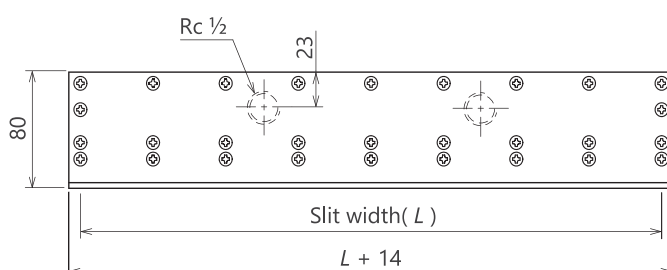


Shapes and dimensions

《AK diagonal spray type》



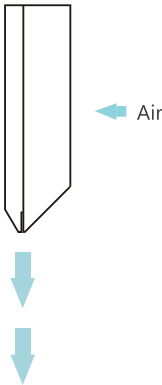
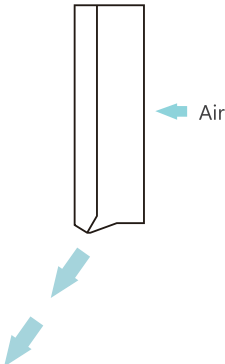
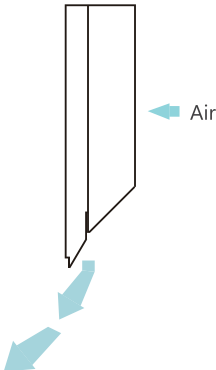
《AK diagonal inducement spray type》



Slit width L [mm]	Material	Max. service pressure [MPa]		Max. air flow rate [m³/min(nor)]	Heatproof temp. [°C]	Weight [kg]	
		Diagonal spray type	Diagonal inducement spray type			Diagonal spray type	Diagonal inducement spray type
1000	Stainless steel	0.4	0.4	9.9	250	9.8	9.8
	Aluminum	0.2	0.2	5.9	200	3.3	3.3
	Titanium	0.2	0.2	5.9	500	5.7	5.7
	Plastics (H-PVC)	—	0.1	4.0	50	—	1.8
2000	Stainless steel	0.4	0.4	19.8	250	19.5	19.4
	Aluminum	0.2	0.2	11.9	200	6.6	6.5
	Titanium	0.2	0.2	11.9	500	11.2	11.2
	Plastics (H-PVC)	—	0.1	7.9	50	—	3.5
3000	Stainless steel	0.4	0.4	29.7	250	29.4	29.2
	Aluminum	0.2	0.2	17.8	200	9.9	9.8
	Titanium	0.2	0.2	17.8	500	17.0	16.8

- The maximum air amount is an expected value at 0.3mm slit aperture.
- Dash "—" indicates unavailable.

Spray direction

Standard type	Diagonal spray type	Diagonal inducement spray type
		
《Features》 - Designed to minimize pressure loss and therefore unlikely to be restricted by peripheral equipment such as pipes and filters. - Can be disassembled, cleaned, and reassembled.	《Features》 - Good to reduce deflection caused by long length. - Simple connection to devices enables bracket cost reduction. - Space-saving. - Can be disassembled, cleaned, and reassembled.	《Features》 - Good to reduce deflection caused by long length. - Simple connection to devices enables bracket cost reduction. - Space-saving. - Provides thick spray pattern. - Can be disassembled, cleaned, and reassembled. - Disadvantage : Less impact force.

- Inlet(s) can be designed either, on frontward or backward, in both diagonal spray type and the diagonal inducement spray type.

- Model and model number representing

A K - $\frac{1000 \text{ L}}{\text{Slit width}}$ $\frac{0.15 \text{ t}}{\text{Slit aperture}}$ - $\frac{30}{\text{Diagonal angle}}$ $\frac{\text{E}}{\text{Model}}$
 E - Diagonal inducement spray type
 No symbol - Diagonal spray type

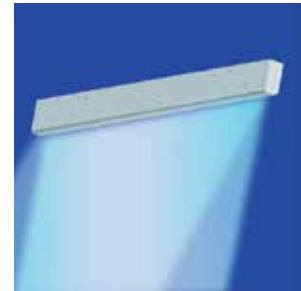
Slit Air Nozzle Double-slit type



Powerful blow with a double-slit orifice

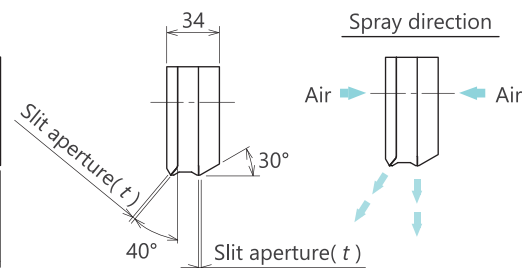
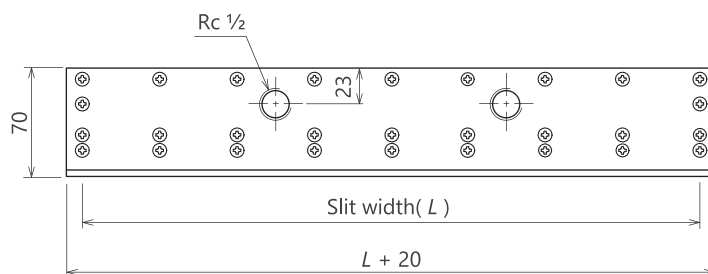


- Stainless steel (304, 316, and 316L)
- Aluminum
- Titanium



Shapes and dimensions

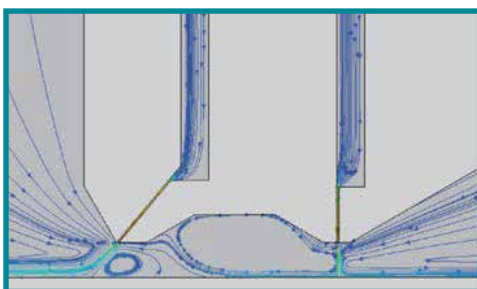
《AK double-slit type》



- Model and model number representing

A K - $\frac{1000 L}{\text{Slit width}}$ 2 - $\frac{0.15 t}{\text{Slit aperture}}$ $\left(\frac{40}{\text{Diagonal angle of the front stage}} \right)$ - $\frac{0}{\text{Lead angle of backward (fixed)}}$

Flow analysis diagram



Advantages

- Unlikely to generate negative pressure on the substrate, thereby reducing flutters.
- the optimal distance of both slits enables complete dewatering without re-adhesion.
- Needs less installation space and consumes less air, compared with the case of two-nozzle arrangement.
- Able to increase transfer speed, compared with a single slit nozzle.

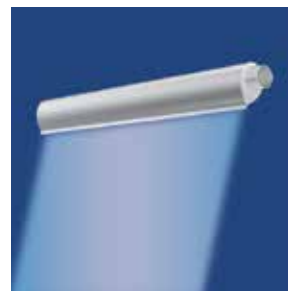
Slit Air Nozzle Teardrop type



Energy-saving nozzle optimal for a blower

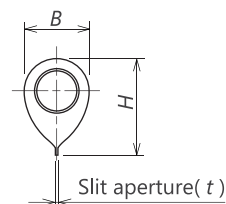
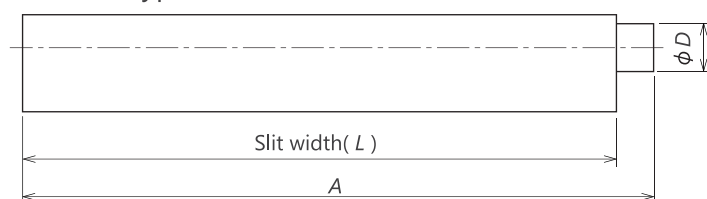


- 304 Stainless steel

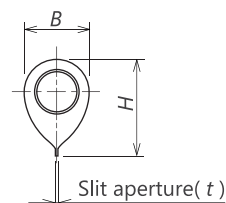
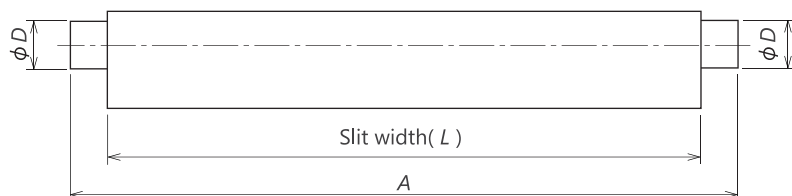


Shapes and dimensions

《TAK type (one-inlet type)》



《TAK type (two-inlet type)》



- The slit aperture is at least 3 mm.

Dimensions of nozzle parts (reference values)

〈One-inlet type〉

Model No.	Dimensions [mm]					
	<i>L</i>	<i>t</i>	<i>A</i>	<i>B</i>	<i>D</i>	<i>H</i>
500L 3t	500	3.0	550	69	50.8	108
1000L 3.5t	1000	3.5	1080	104	76.3	158
1500L 4t	1500	4.0	1600	136	101.6	202
2000L 5t	2000	5.0	2100	175	127.0	256

〈Two-inlet type〉

Model No.	Dimensions [mm]					
	<i>L</i>	<i>t</i>	<i>A</i>	<i>B</i>	<i>D</i>	<i>H</i>
500L 3t -W	500	3.0	600	50	38.0	81
1000L 3.5t -W	1000	3.5	1160	74	50.8	116
1500L 4t -W	1500	4.0	1700	97	76.3	147
2000L 5t -W	2000	5.0	2200	124	89.1	185

- Model and model number representing

T A K - $\frac{1600 \text{ L}}{\text{Slit width}}$ $\frac{3 \text{ t}}{\text{Slit aperture}}$ - $\frac{W}{\text{Inlet type}}$
W - Two-inlet type
No symbol - One-inlet type

When placing an order, please inform us of the following details.

We will design and produce products that meet your specific conditions of use.

- 1) When you use this nozzle with your blower, specify the blower's discharge diameter and slit width (L).
- 2) When you ask us to choose a blower for you, specify the slit width (L) and slit aperture (t).
- 3) The air inlet size is indicated with ϕD here, but thread-type air inlets are available, too.

Slit Air Nozzle Square type



Able to blow more air than the standard type

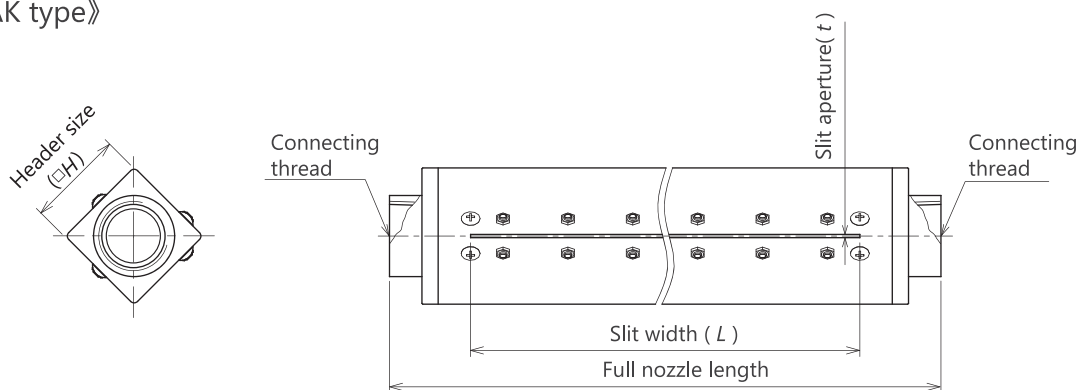


304 Stainless steel



Shapes and dimensions

《KAK type》



Slit width L [mm]	Max. service pressure [kPa]	Max. air flow rate [m³/min(nor)]	Heatproof temp. [°C]	Weight [kg] for the following header sizes H [mm]				
				35	46	60	75	100
500	50	8.2	80	1.7	2.6	4.0	5.4	—
1000	50	16.3	80	3.0	4.8	7.2	9.5	13.4
1500	50	24.5	80	4.3	7.0	10.4	13.6	18.8
2000	50	32.7	80	5.7	9.2	13.7	17.8	24.2
2400	50	39.2	80	6.8	11.0	16.2	21.1	28.5

- These values of maximum air flow rate are based on the assumption that the slit aperture is 1.0 mm.

〈Standard shape〉

Header size H [mm]	Connecting thread	Entire length of the nozzle [mm]
35	Rc 3/4	L + 80
46	Rc 1	L + 90
60	Rc 1 1/4	L + 100
75	Rc 2	L + 100
100	Rc 2 1/2	L + 110

〈Header size H〉

Slit width L [mm]	Header size H [mm] at following slit aperture [mm]				
	0.15	0.3	0.5	0.8	1.0
500	35	35	46	46	75
1000	35	35	46	60	75
1500	35	46	60	75	75
2000	35	60	75	75	100
2400	46	60	75	100	100

- Model and model number representing

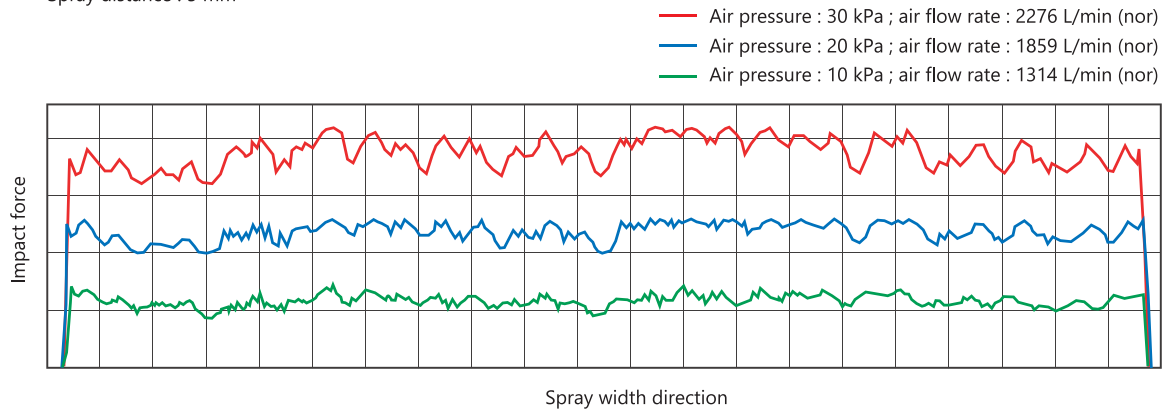
K A K 500 L 0.15
 Slit width Slit aperture

Performance data

Impact force distribution

Nozzle model number : KAK 1200L 0.15

Spray distance : 5 mm



Air flow rate characteristics

Slit width L [mm]	Slit aperture t [mm]	Air flow rate [L/min(nor)] at the following air pressures [kPa]					
		5	10	20	30	40	50
500	0.15	387	547	774	948	1095	1224
	0.3	774	1095	1549	1897	2190	2449
	0.5	1290	1825	2582	3161	3649	4082
	0.8	2064	2919	4131	5058	5839	6531
	1.0	2580	3649	5163	6323	7299	8163
1000	0.15	774	1095	1549	1897	2190	2449
	0.3	1548	2190	3098	3794	4379	4898
	0.5	2580	3649	5163	6323	7299	8163
	0.8	4128	5839	8261	10117	11678	13061
	1.0	5160	7299	10326	12646	14597	16326
1500	0.15	1161	1642	2323	2845	3284	3673
	0.3	2322	3284	4647	5691	6569	7347
	0.5	3870	5474	7745	9484	10948	12245
	0.8	6192	8758	12392	15175	17517	19592
	1.0	7740	10948	15490	18969	21896	24490
2000	0.15	1548	2190	3098	3794	4379	4898
	0.3	3096	4379	6196	7588	8758	9796
	0.5	5160	7299	10326	12646	14597	16326
	0.8	8256	11678	16522	20233	23356	26122
	1.0	10319	14597	20653	25292	29194	32653
2400	0.15	1858	2628	3718	4553	5255	5878
	0.3	3715	5255	7435	9105	10510	11755
	0.5	6192	8758	12392	15175	17517	19592
	0.8	9907	14013	19827	24280	28027	31347
	1.0	12383	17517	24783	30350	35033	39183

Technical Data



Conversion formula for obtaining an air nozzle flow rate

[Relation between pressure and flow rate]

$$Q2 = (P2 / P1) \times Q1$$

P1 and P2 are absolute pressure.

Atmospheric pressure → 0.101325 MPa

0.1 MPaG (gauge pressure) → 0.201325 MPa

P1 : Reference pressure

(see the model numbers list in this catalog)

P2 : Pressure to be obtained

Q1 : Reference flow rate

(see the model numbers list in this catalog)

Q2 : Flow rate to be obtained

Calculation example :

What is the flow rate of a single-type Air jet nozzle 1/8 KBV 0200C at a pressure of 0.25 MPa?

According to the model numbers list,

if P1 = 0.1 MPaG (absolute pressure = 0.201325 MPa), Q1 = 32 L/min (nor).

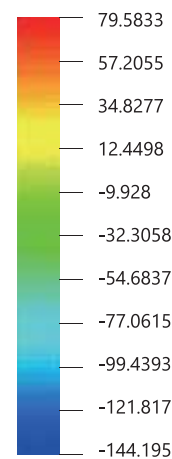
P2 = 0.25 MPaG (absolute pressure = 0.351325 MPa)

Then, Q2 = (0.351325 / 0.201325) × 32 ≈ 56 L/min(nor)

Example of temperature distribution analysis of CO₂ sprayed with an air jet nozzle

[Inlet gas conditions]

- Composition : CO₂ : N₂ = 50 : 50 (vol. %)
- Total pressure : 2.0 MPa
- Temperature : 25 °C



Ambient temperature [°C]

[Fluid physical property values at the orifice (nozzle exit)]

《Local parameters》

Parameter	Min. value	Max. value	Mean value
Pressure [MPa]	0.0597706	0.111423	0.098886
Density [kg/mm ³]	1.1879 E-9	3.1918 E-9	2.8337 E-9
Velocity [mm/s]	367898	542026	525327
Velocity component X [mm/s]	-97863.3	98188.2	3.00333
Velocity component Y [mm/s]	-541685	-347830	-523964
Velocity component Z [mm/s]	-97845.8	97927.3	-16.0533
Mach number	1.4192	2.58474	2.43114
Fluid temperature [°C]	-130.371	-54.9655	-121.095

《Integration parameters》

Parameter	Value
Mass flow rate [kg/s]	0.0018026
Volume flow rate [mm ³ /s]	633449
Surface area [mm ²]	1.20896
Uniformity index	0.970407

Example of velocity distribution analysis with TAK-2000L 3t - W

[Analysis conditions]

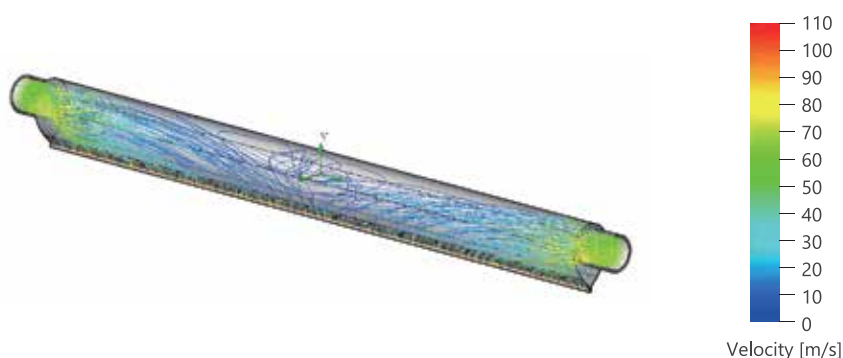
- Analysis software : SolidWorks Flow Simulation
- Fluid used : Air in the standard state (0.101325 MPa, 20.05 °C)
- Model shape : 3D full model
- Supply pressure : 10 kPa
- Boundary conditions : Supply part: Set with pressure values 2, 5, 10, 15, and 20 kPaG
Exit part: Ambient pressure 0.101325 MPa

[Model shape]

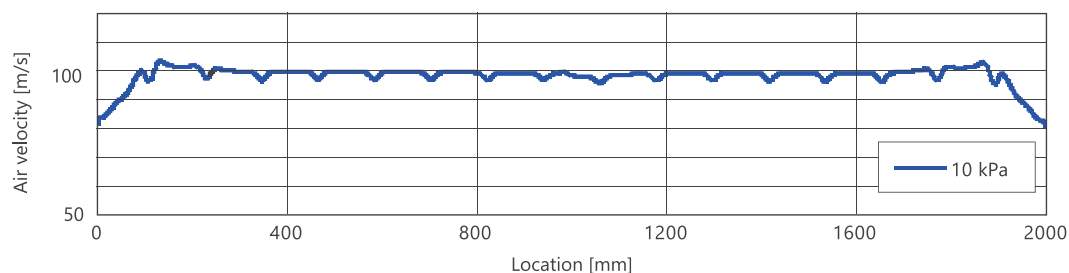


[Analysis results]

《Path lines》



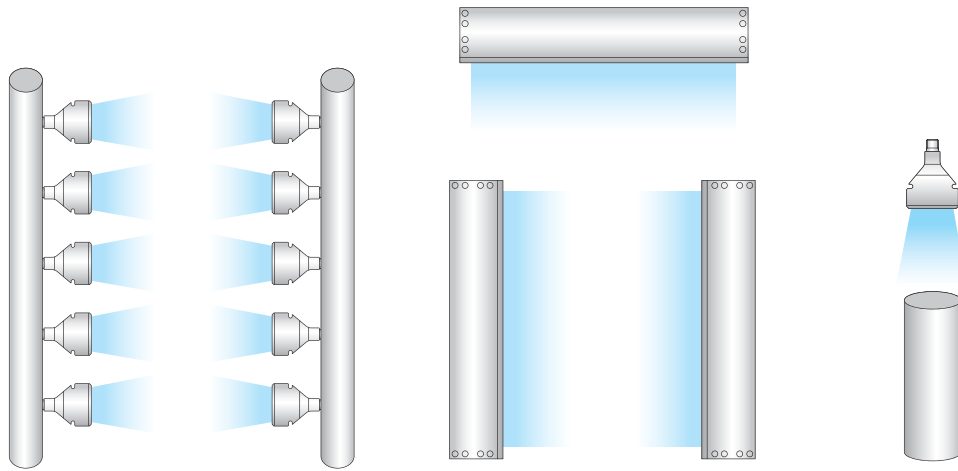
《Distribution of flow velocity at the slit exit》



《Flow rate characteristics》

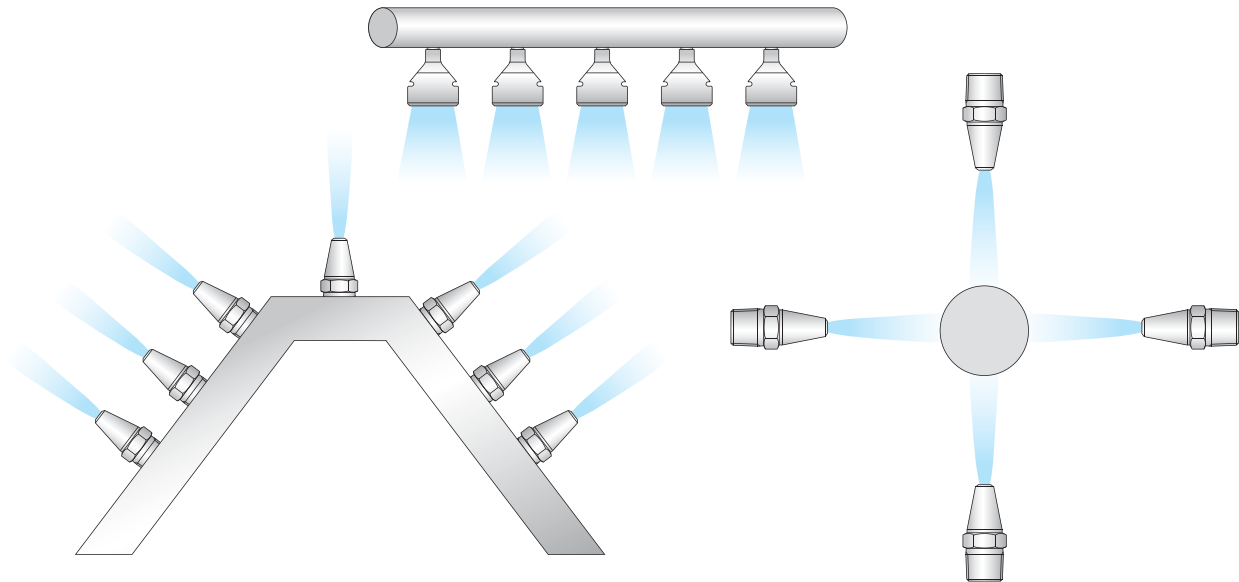
Parameter	Value				
Air pressure [kPa]	2	5	10	15	20
Mass flow rate [kg/s]	0.514	0.809	1.143	1.400	1.618
Volume flow rate [m ³ /min(nor)]	23.9	37.5	53.0	65.0	75.1
Flow velocity uniformity at the exit [%]	75.0	75.5	76.5	77.3	78.2

Nozzle Arrangement Examples



Applications

Nozzle type	Applications					
	Aeration	Powder conveyance	Blow-off for sorting	Pipe cooling	Dewatering, drying off and dust removal from cotton material surfaces	Dewatering, drying off and dust removal from holes and concave areas
Air Jet Nozzle Single type P.1 	☐	☐	☐	☐	☐	☐
Air Jet Nozzle Round type P.5 	☐	☐	☐	☐	☐	☐
Air Jet Nozzle Blower type P.7 	☐	☐	☐	☐	☐	☐
Flat Air Nozzle P.9 				☐	☐	☐
Air Blaster P.11 			☐	☐	☐	☐
Air Wiping Nozzle P.16 			☐	☐	☐	☐
Slit Air Nozzle Plate type P.19 						
Slit Air Nozzle Teardrop type P.24 						
Slit Air Nozzle Square type P.25 						



Applications					
Dewatering, drying off and dust removal from the outer and inner surfaces of pipes	Dewatering, drying off and dust removal from the outer and inner surfaces of bottles and cans	Cooling of plates and films	Dewatering, drying off and dust removal from plate and film surfaces	Isolation from the outside air (air curtain)	Isolation from dust (air curtain)
☐	☐	☐	☐		
☐	☐	☐	☐		
☐	☐	☐	☐		
☐	☐	☐	☐		
☐	☐	☐	☐	☐	☐
☐	☐	☐	☐		
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☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐



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