

# Small Capacity Fine Fog Nozzles

## Flat Spray

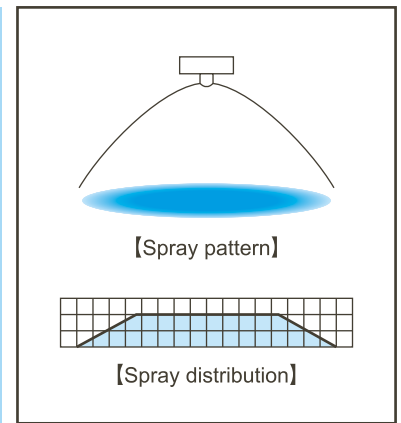
—Liquid Pressure Type—

# BIMV

### Features

- Flat spray pneumatic nozzle producing fine atomization with a mean droplet diameter of 100  $\mu\text{m}$  or less.\*1
- Features large turn-down ratio under liquid pressures of 0.1–0.3 MPa.
- Spray angle of 110°, 80°, or 45°.
- Produces two different spray distributions: uniform spray distribution throughout spray pattern area (when spraying at a low air-water ratio), or a mountain-shaped distribution having gradually tapered edges (at a high air-water ratio).

\*1) Droplet diameter measured by laser Doppler method



BIMV with SNB-type adaptor

### Applications

- Spraying: Mold release agent, lubricant, deodorant, oil, surface treatment agent, rust preventive, honey, insecticide, aqueous urea
- Cooling: Dies, gas, glass, steel plates, steel pieces, moldings, automobile bodies, plastic products
- Moisture control: Paper, flue gas, ceramics, concrete
- Cleaning: Printed circuit boards, glass tubes

### Structure & Materials

- Comprising four parts: Spray tip, core, cap, and adaptor. (Details of adaptors are shown on pages 23 and 24.)
- Materials: S303 (Optional material: S316L)

### Dimensions & Pipe Conn. Sizes

- Dimensions and pipe connection sizes are shown on page 24.

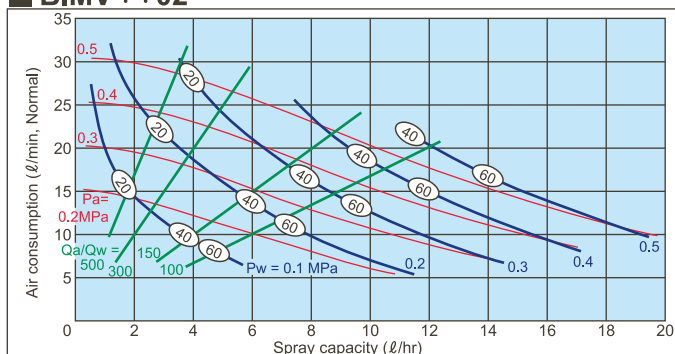
### Accessories

- Mounting bracket for easy installation is shown on page 26.

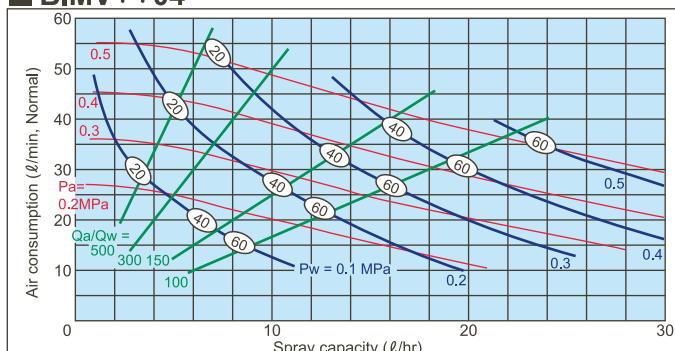
### Flow-rate Diagrams

- How to read the chart
- ① The spray capacity shown is for one nozzle.
- ② Red lines (—) represent compressed air pressures  $P_a$  in MPa.
- Blue lines (—) represent liquid pressures  $P_w$  in MPa.
- Green lines (—) represent air-water ratio  $Q_a/Q_w$ .
- ③ Figures in ovals  $\bigcirc$  indicate Sauter mean droplet diameters ( $\mu\text{m}$ ) measured by laser Doppler method.
- ④ \*\* to be filled by spray angle code of 110, 80, or 45.
- ⑤ These flow-rate diagrams are applicable to adaptors type T and N only.

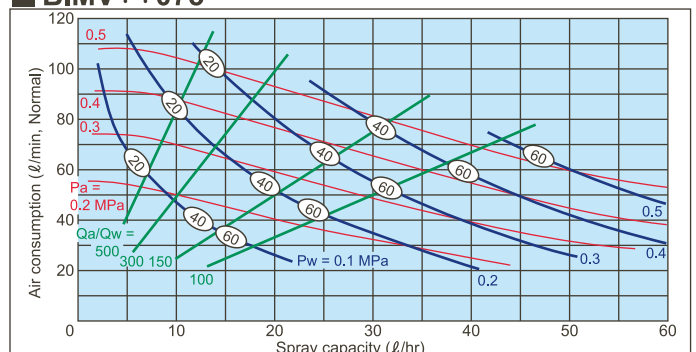
#### BIMV\*\*02



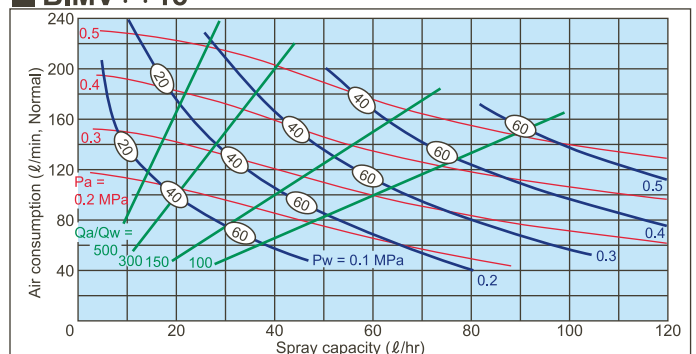
#### BIMV\*\*04



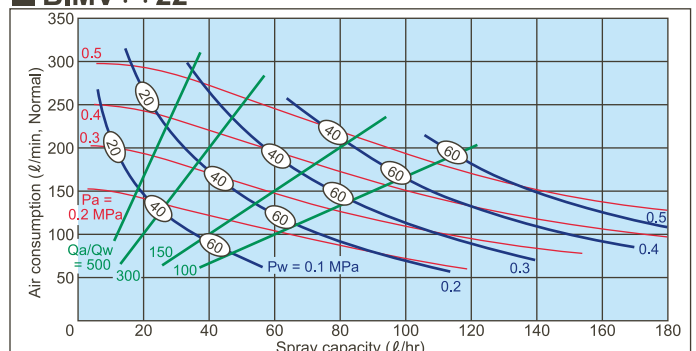
#### BIMV\*\*075



#### BIMV\*\*15



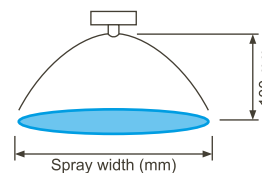
#### BIMV\*\*22



Spray angle code *2	Air consumption code	Air pressure (MPa)	Spray capacity (ℓ/hr) & Air consumption (ℓ/min, Normal)										Spray width*3 (mm)			Mean droplet dia. (μm)	Free passage diameter (mm)			
			Liquid pressure (MPa)										Liquid press. (MPa)				Laser Doppler method	Spray orifice	Adaptor	
			0.1		0.15		0.2		0.25		0.3		0.1	0.15	0.25				Liquid	Air
			Liquid	Air	Liquid	Air	Liquid	Air	Liquid	Air	Liquid	Air								
110	02	0.2	2.2	14	5.3	11	—	—	—	—	—	—	280	340	—	20-100	0.2	0.9	0.7	
		0.3	1.0	20	2.5	19	4.6	17	8.3	12	14.3	7	220	250	420					
		0.4	—	—	1.4	25	2.3	24	4.0	23	6.3	20	—	230	340					
	04	0.2	4.5	25	9.5	20	17.0	13	—	—	—	—	300	360	—	20-100	0.3	0.9	0.9	
		0.3	2.0	36	4.7	35	8.5	31	13.1	27	19.6	20	230	270	430					
		0.4	—	—	2.8	45	4.8	44	7.7	41	11.4	37	—	250	350					
	075	0.2	8.7	51	18.4	42	33.3	29	—	—	—	—	320	380	—	20-100	0.5	1.2	1.4	
		0.3	4.0	74	8.8	71	15.5	64	24.3	54	38.5	40	240	300	450					
		0.4	—	—	5.6	91	9.1	89	14.8	82	21.8	74	—	270	370					
	15	0.2	16.8	107	34.8	90	64.4	60	—	—	—	—	340	400	—	20-100	0.8	1.8	1.9	
		0.3	8.0	150	17.7	144	30.8	130	50.0	108	74.5	87	270	320	470					
		0.4	—	—	11.2	190	18.3	183	29.1	172	42.9	154	—	280	380					
	22	0.2	22.3	140	45.6	116	92.1	77	—	—	—	—	350	420	—	20-100	0.9	2.1	2.2	
		0.3	11.5	200	23.9	189	41.3	169	68.5	138	107	103	280	330	490					
		0.4	—	—	15.3	245	24.5	238	39.1	220	57.7	198	—	300	400					
80	02	0.2	2.2	14	5.3	11	—	—	—	—	—	200	260	—	20-100	0.3	0.9	0.7		
		0.3	1.0	20	2.5	19	4.6	17	8.3	12	14.3	7	170	210					300	
		0.4	—	—	1.4	25	2.3	24	4.0	23	6.3	20	—	200					250	
	04	0.2	4.5	25	9.5	20	17.0	13	—	—	—	—	200	260	—	20-100	0.4	0.9	0.9	
		0.3	2.0	36	4.7	35	8.5	31	13.1	27	19.6	20	170	210	310					
		0.4	—	—	2.8	45	4.8	44	7.7	41	11.4	37	—	200	260					
	075	0.2	8.7	51	18.4	42	33.3	29	—	—	—	—	200	270	—	20-100	0.6	1.2	1.4	
		0.3	4.0	74	8.8	71	15.5	64	24.3	54	38.5	40	170	210	310					
		0.4	—	—	5.6	91	9.1	89	14.8	82	21.8	74	—	200	260					
	15	0.2	16.8	107	34.8	90	64.4	60	—	—	—	—	210	280	—	20-100	0.9	1.8	1.9	
		0.3	8.0	150	17.7	144	30.8	130	50.0	108	74.5	87	180	220	320					
		0.4	—	—	11.2	190	18.3	183	29.1	172	42.9	154	—	200	270					
	22	0.2	22.3	140	45.6	116	92.1	77	—	—	—	—	210	280	—	20-100	1.1	2.1	2.2	
		0.3	11.5	200	23.9	189	41.3	169	68.5	138	107	103	180	220	330					
		0.4	—	—	15.3	245	24.5	238	39.1	220	57.7	198	—	210	280					
45	02	0.2	2.2	14	5.3	11	—	—	—	—	—	100	130	—	20-100	0.4	0.9	0.7		
		0.3	1.0	20	2.5	19	4.6	17	8.3	12	14.3	7	80	110					150	
		0.4	—	—	1.4	25	2.3	24	4.0	23	6.3	20	—	100					130	
	04	0.2	4.5	25	9.5	20	17.0	13	—	—	—	—	100	130	—	20-100	0.5	0.9	0.9	
		0.3	2.0	36	4.7	35	8.5	31	13.1	27	19.6	20	80	110	150					
		0.4	—	—	2.8	45	4.8	44	7.7	41	11.4	37	—	100	130					
	075	0.2	8.7	51	18.4	42	33.3	29	—	—	—	—	100	140	—	20-100	0.9	1.2	1.4	
		0.3	4.0	74	8.8	71	15.5	64	24.3	54	38.5	40	80	110	160					
		0.4	—	—	5.6	91	9.1	89	14.8	82	21.8	74	—	100	140					
	15	0.2	16.8	107	34.8	90	64.4	60	—	—	—	—	110	150	—	20-100	1.2	1.8	1.9	
		0.3	8.0	150	17.7	144	30.8	130	50.0	108	74.5	87	90	120	170					
		0.4	—	—	11.2	190	18.3	183	29.1	172	42.9	154	—	110	150					
	22	0.2	22.3	140	45.6	116	92.1	77	—	—	—	—	110	160	—	20-100	1.6	2.1	2.2	
		0.3	11.5	200	23.9	189	41.3	169	68.5	138	107	103	90	120	180					
		0.4	—	—	15.3	245	24.5	238	39.1	220	57.7	198	—	110	150					

\*2) Spray angle measured at compressed air pressure of 0.3 MPa and liquid pressure of 0.1 MPa.

\*3) Measured at 100 mm from nozzle.



### How to order

Please inquire or order for a specific nozzle using this coding system.

<Example> BIMV 11002 S303 + N S303

BIMV	<b>110</b>	<b>02</b>	S303	+	<b>N</b>	S303
	Spray angle code	Air consumption code			Type of adaptor	
	■110	■02			■N	■SPB
	■80	■04			■T	■USPB
	■45	■075			■NDB	■SNB
		■15			■UNDB	■USNB
		■22				

Details of adaptors are shown on pages 23 and 24.

The following eight types of adaptors are available for BIM Small Capacity Fine Fog Nozzles: BIMV, BIMV-S, BIMK, BIMK-S, BIMJ, which are introduced on [pages 13 to 22](#).

**Types of Adaptors**

**Type N** Liquid and air enter into adaptor from both sides.

Compressed air  
 Liquid

**Type T** Air inlet is on the center line and liquid inlet is on a 90° angle line to the center line. Suitable for use in a small space.

M8 depth 6  
 Compressed air  
 Liquid

**Type NDB** Spray capacity is adjustable with needle valve.

Liquid  
 Compressed air

**Type UNDB** Besides the features of the NDB-type adaptor, spray direction can be adjusted within +/- 15° by means of a ball joint. It is ideal for fine-tuning of spray direction after pipe assemblies have been completed.

Liquid  
 Compressed air

**Type SNB** Spray ON/OFF can be regulated by turning compressed air ON/OFF, which actuates an internal piston, to open or close the nozzle. Compressed air pressure over 0.2 MPa starts the spray.

Liquid  
 Compressed air  
 φ1\*1

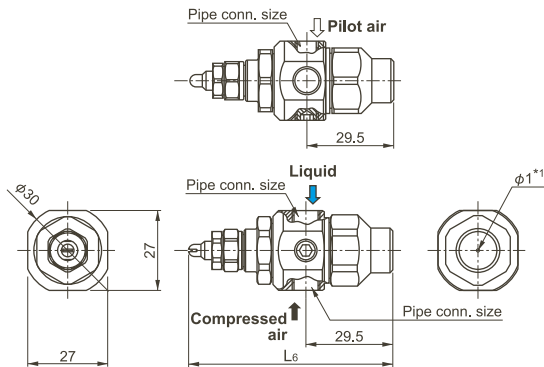
**Type USBN** Besides the features of the SNB-type adaptor, spray direction can be adjusted within +/- 15° by means of a ball joint. It is ideal for fine-tuning of spray direction after pipe assemblies have been completed.

Liquid  
 Compressed air  
 φ1\*1

\*1) Hole φ1 is for air relief.

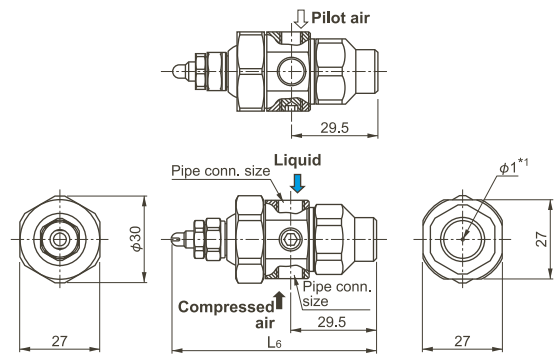
## Types of Adaptors

**Type SPB** Spray ON/OFF can be regulated by switching the pilot air ON/OFF. The pilot air actuates an internal piston to regulate the spray. (Pilot air pressure more than 0.2 MPa required) This type of adaptor is suitable for applications to avoid scattering droplets of fog.



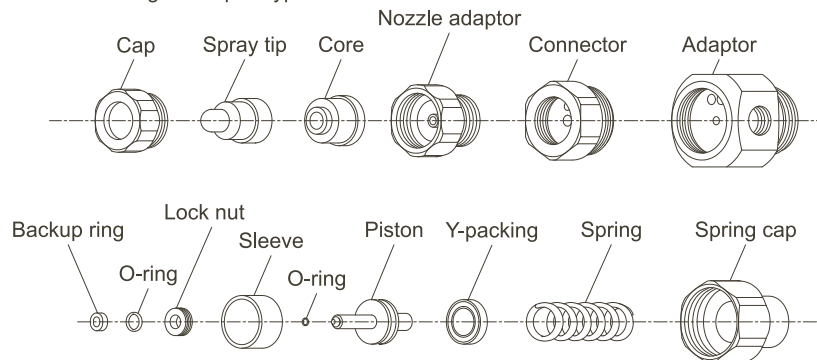
\*1) Hole φ1 is for air relief.

**Type USPB** Besides the features of the SPB-type adaptor, spray direction can be adjusted within +/- 15° by means of a ball joint. It is ideal for fine-tuning of spray direction after pipe assemblies have been completed.



### Structure of SPB adaptor

This exploded view shows a structure of SPB adaptor as an example. Structure and components varies according to adaptor types.



### CAUTIONS for NDB, UNDB, SPB, USPB, SNB, and USNB adaptors

**Thin-walled nozzle adaptor tends to deform easily if installed directly by itself.**

First assemble Core, Spray tip, Cap and Nozzle adaptor by hand with light pressure, then attach them to Connector (or UT Ball). Use a well-fitting hexagon socket wrench instead of a regular spanner (wrench), as a spanner may deform the unit.

### Pipe connection sizes and mass

Adaptor type	Air consumption code	Pipe connection sizes			Mass (g)
		Compressed air	Liquid	Pilot air	
N	02, 04, 075	Rc1/8	Rc1/8		55
	15, 22	Rc1/4	Rc1/4		130
T	02, 04, 075	Rc1/8	Rc1/8		80
	15, 22	Rc1/4	Rc1/4		210
NDB UNDB	02, 04, 075	Rc1/8	Rc1/8		172
	15, 22				193
SPB USPB	02, 04, 075	Rc1/8	Rc1/8	Rc1/8	146
	15, 22				167
SNB USNB	02, 04, 075	Rc1/8	Rc1/8		151
	15, 22				172

### Dimensions

Air consumption code	Dimensions (mm)									
	L1	L2	L3	L4	L5	L6	a	H1	H2	φD
02	25.3	16.3	40.8	24.8	87.3	66.8	32	17	21	23.5
04*2	26.8	17.8	42.3	26.3	88.8	68.3	32	17	21	23.5
BIMJ 2004	27.0	18.0	42.5	26.5	89.0	68.5	32	17	21	23.5
075	28.1	19.1	43.6	27.6	90.1	69.6	32	17	21	23.5
15	39.1	26.6	60.1	38.1	97.6	77.1	43	23	29	32.5
22	41.3	28.8	62.3	40.3	99.8	79.3	43	23	29	32.5

\*2) Excludes BIMJ2004.

**How to Use BIM Controlling Adaptors**

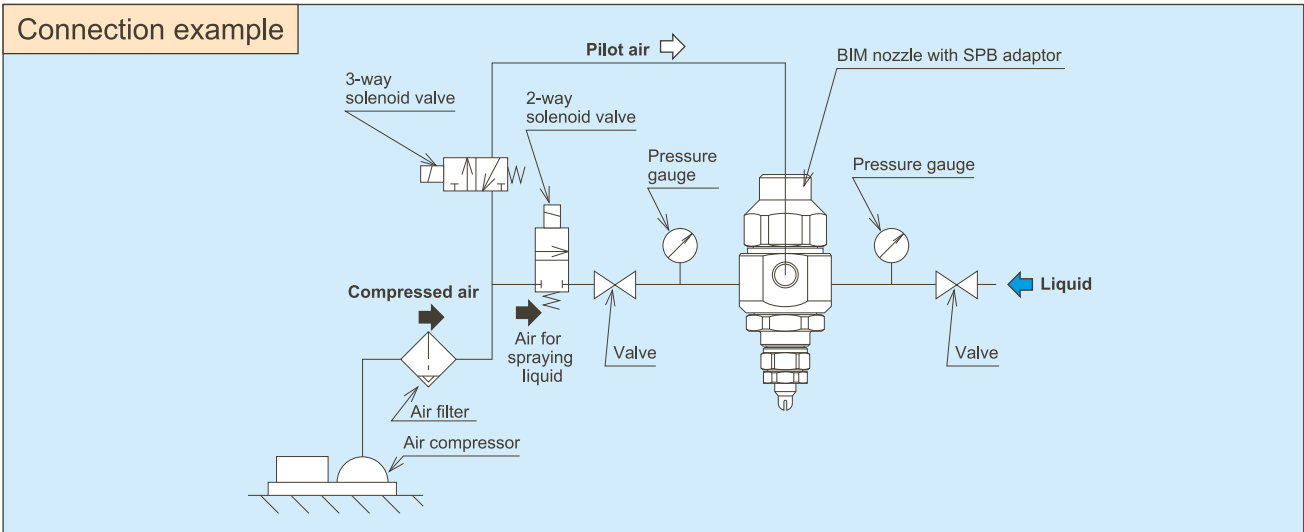
**SPB adaptor**

Spray ON/OFF can be regulated by switching the pilot air ON/OFF.

The pilot air actuates an internal piston to regulate the spray. (Pilot air pressure must be 0.2 MPa or higher.) As even low pressure atomizing air can be used, production of a range of fine to coarse fog is possible. Best-suited for when there is concern about scattering droplets.

**Function chart**

Compressed air			ON		
Pilot air	OFF	ON	OFF	ON	OFF
Liquid	Stop	Spray	Stop	Spray	Stop



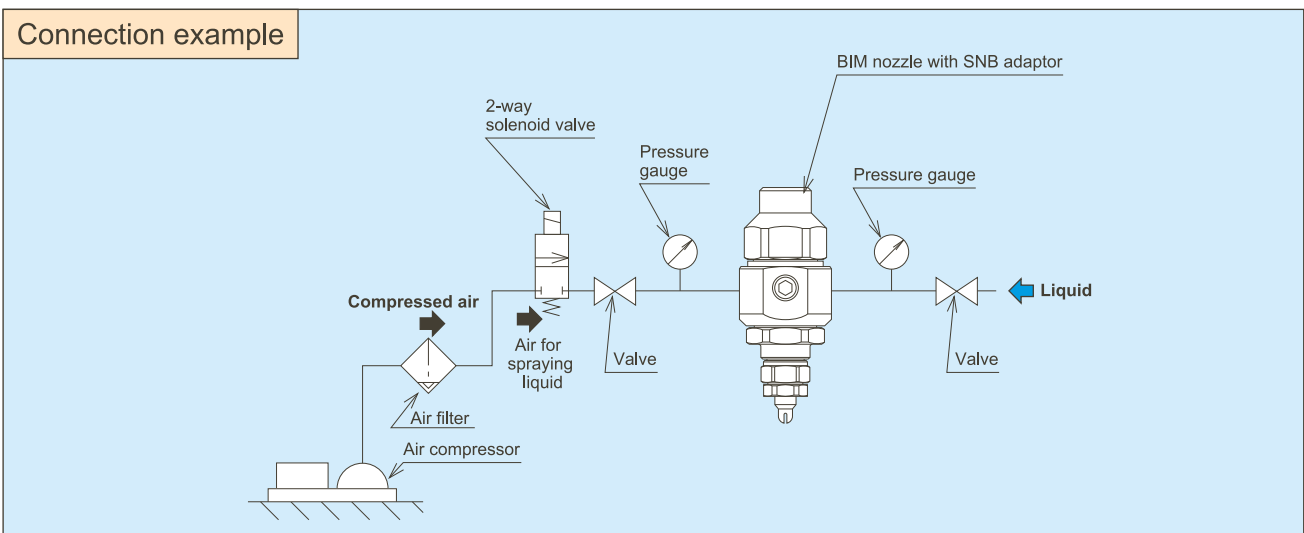
**SNB adaptor**

Spray ON/OFF can be regulated by turning compressed air ON/OFF.

Compressed air pressure must be 0.2 MPa or higher in order to start the spray.

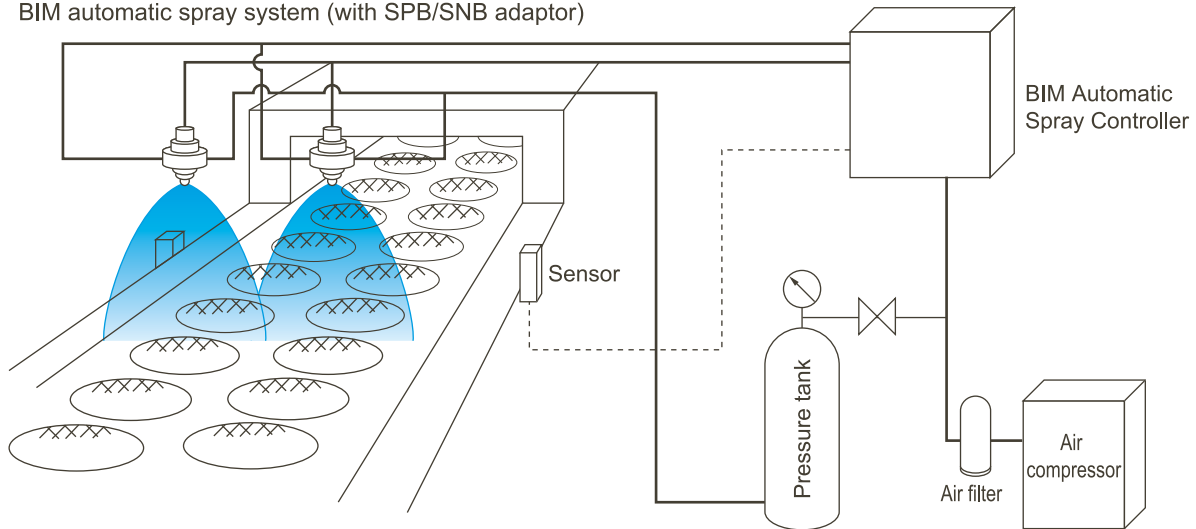
**Function chart**

Compressed air	OFF	ON	OFF	ON	OFF
Liquid	Stop	Spray	Stop	Spray	Stop



## Installation Example of BIM Automatic Spray System

■ Example of applications controlled by BIM automatic spray system (with SPB/SNB adaptor)



## Optional/ Related Products

### ■ Mounting Bracket (product code: MBW)

Mounting bracket enables easy fixing of a nozzle on a pole (metal rod) with desired spray direction.  
Available in two size for pipe diameters of 8 mm and 10 mm.  
Available for the adaptor types T, NDB, UNDB, SPB, USPB, SNB, and USNB (not available for N-type adaptor).



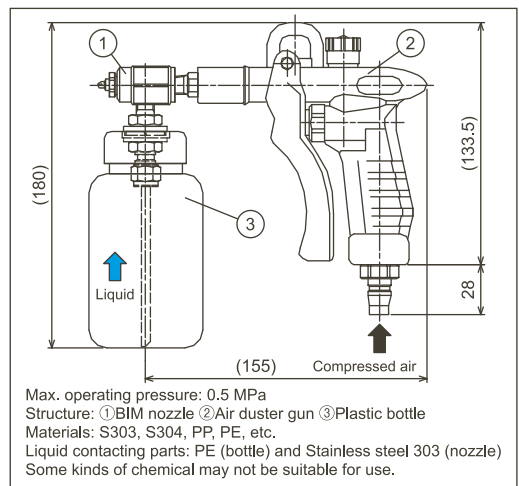
### ■ Spray Gun Unit with BIM nozzles: BIM-GUN

Liquid siphon type with 250 ml bottle.\*  
Air capacity adjustability (as standard equipment).  
Suitable for chemical spraying, etc.  
\*500ml bottle is available as an option.



Pressure gauge kit including pressure reducing valve and two couplers.

Note: When using BIM\*\*04S types, this item is necessary.



## How to order

Please inquire or order for a specific BIM-GUN using these product codes.

(Flat spray) BIMV series **BIMV8004SS303+TS303** siphon spray unit (w/ 250 ml bottle)  
**BIMV80075SS303+TS303** siphon spray unit (w/ 250 ml bottle)

(Hollow cone spray) BIMK series **BIMK6004SS303+TS303** siphon spray unit (w/ 250 ml bottle)  
**BIMK60075SS303+TS303** siphon spray unit (w/ 250 ml bottle)

Approx. spray capacity (for your reference)

●BIMV8004S/BIMK6004S: 30 ml/min ●BIMV80075S/BIMK60075S: 60 ml/min



# Small Capacity Fine Fog Nozzles

## Made of Polypropylene –Liquid Pressure Type–

# BIM-PP

### Features

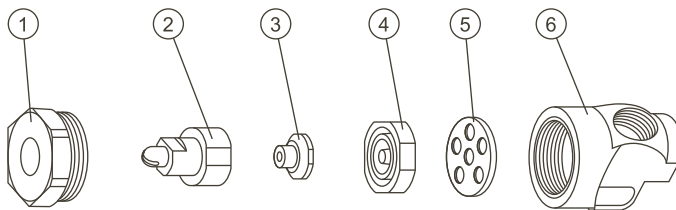
- Excellent chemical resistance with polypropylene construction.
- Two types, BIMV (flat spray pattern) and BIMJ (full cone spray pattern) are available.
- Liquid pressure type with approx. 0.1 to 0.3 MPa.



### Applications

- Spraying: Deodorant, germicide, disinfectant
- Moisture control: Paper, textile, printing
- Cleaning: Printed circuit boards, electrical components

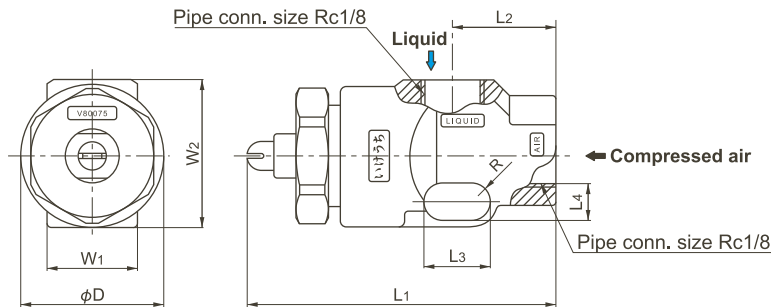
### Structure & Materials



#### Components and materials

No.	Components	Standard materials
①	Cap	PP
②	Spray tip	PP
③	Core	PP
④	Orifice	PP
⑤	Packing	PTFE
⑥	Adaptor	PP

### Dimensions & Pipe Conn. Sizes



#### Dimensions

Spray pattern type	Nozzle code	Dimensions (mm)								Mass (g)
		L1	L2	L3	L4	W1	W2	φD	R	
Flat spray	BIMV80075	47.5	16	10	5	14	23	22	2.5	10
Full cone spray	BIMJ2004	46.7								

BIMV80075 (Flat spray): See [pages 13 and 14](#) for spray performance details of BIMV80075.  
 BIMJ2004 (Full cone spray): See [pages 21 and 22](#) for spray performance details of BIMJ2004.

### How to order

Please inquire or order for a specific nozzle using these product codes.

**Flat spray type**

BIMV 80075 PP + TPP-IN

**Full cone spray type**

BIMJ 2004 PP + TPP-IN

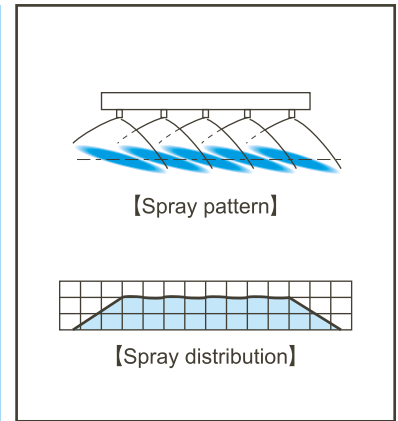
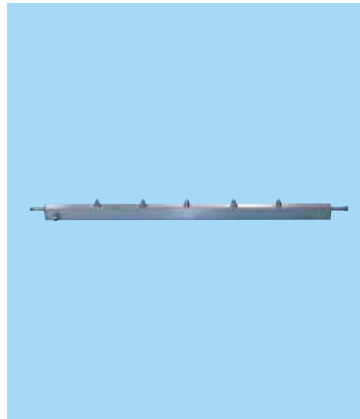
# Integrated Spray Header with BIM Fine Fog Nozzles

# BIM Header

## Features

- Spray header equipped with BIMV series (liquid pressure type) producing fine atomization with mean droplet diameter of 100 μm or less.\*1
- Combines two pipes for air and water into one rectangular spray header. Compact and easy to install and maintain.
- Uniform spray distribution across the entire spray area.

\*1) Droplet diameter measured by laser Doppler method

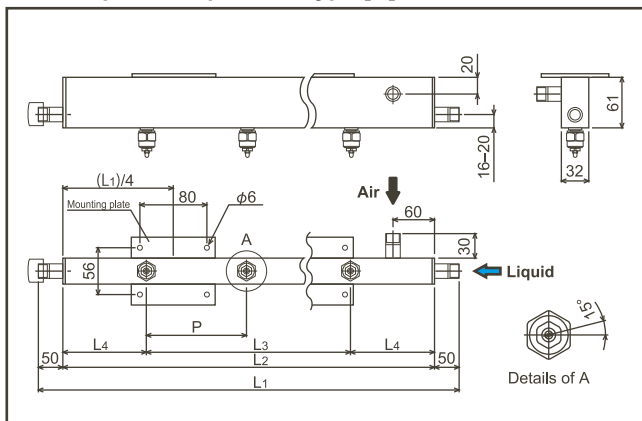


## Applications

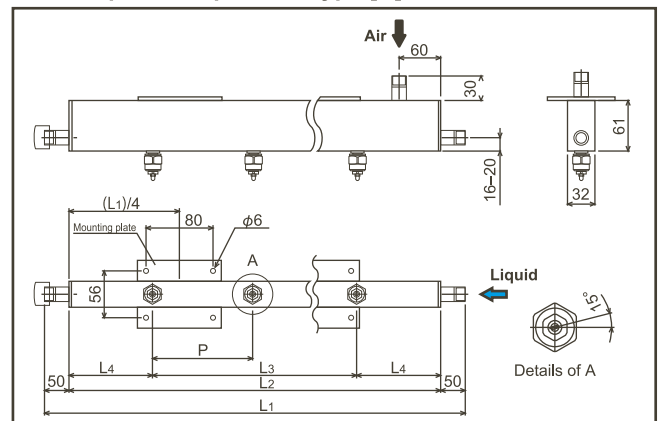
- Spraying: Oil, surface treatment agent
- Cooling: Moldings, steel plates, glass plates, plastic film
- Cleaning: Printed circuit boards

## Structure, Materials, Dimensions & Pipe Connection Sizes

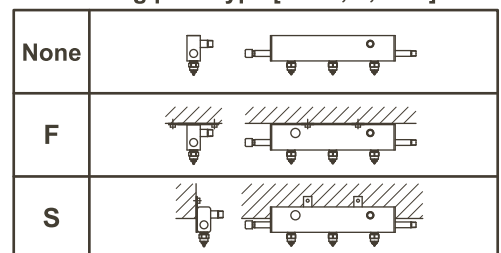
### ■ Air/Liquid inlet position type [A]



### ■ Air/Liquid inlet position type [B]



### ■ Mounting plate type [None, F, or S]



F: To install facing perpendicular from a wall.  
S: To install facing parallel along a wall edge.

### ■ Dimensions

Header code		Nozzle spacing P (mm)	Nozzle quantity (Number of BIM nozzles equipped)	Spacing (mm)		Pipe connection size						Material	
Header length L2 (mm)	Total length L1 (mm)					Nozzle code							
				L3	L4	BIMV11002		BIMV11004		BIMV110075			
						Air	Liquid	Air	Liquid	Air	Liquid	Nozzle	Header
1,000	1,100	100	10	900	50	R3/8	R1/4	R3/8	R1/4	R1/2	R3/8	S303	S304
		200	5	800	100					R3/8	R1/4		
2,000	2,100	100	20	1,900	50	R3/8	R1/4	R3/8	R1/4	R3/4	R1/2		
		200	10	1,800	100					R3/8	R1/4	R3/8	R1/4



**Air Consumption & Spray Capacity**

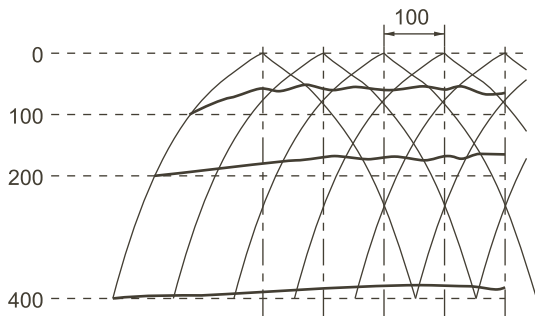
Nozzle code	Nozzle quantity	Air pressure (MPa)	Air consumption (ℓ/min, Normal)	Spray capacity (ℓ/hr) at liquid pressure of 0.1 MPa
BIMV11002	5	0.3	100	5.0
	10		200	10.0
	20		400	20.0
BIMV11004	5	0.3	180	10.0
	10		360	20.0
	20		720	40.0
BIMV110075	5	0.3	370	20.0
	10		740	40.0
	20		1,480	80.0

Note: Total air consumption and spray capacities shown in the above table are calculated from the number of nozzles used, based on each air consumption and spray capacity described on page 14.

**Spray Distribution**

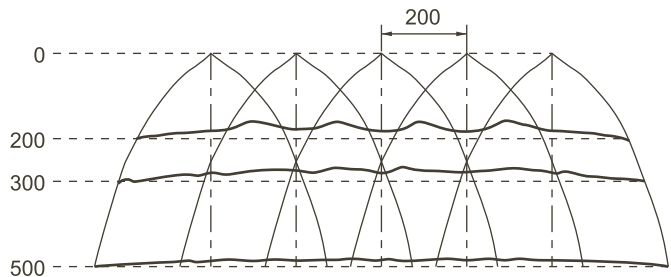
**■ BIMV11004S303**

Nozzle spacing: 100 mm,  
 Compressed air pressure: 0.3 MPa,  
 Liquid pressure: 0.1 MPa,  
 Offset angle (nozzle tip angle to axis of header): 15°



**■ BIMV11004S303**

Nozzle spacing: 200 mm,  
 Compressed air pressure: 0.3 MPa,  
 Liquid pressure: 0.1 MPa,  
 Offset angle (nozzle tip angle to axis of header): 15°



**How to order**

To determine specifications, please specify a nozzle code, nozzle quantity, nozzle spacing, and header length etc., using this coding system.

<Example> BIMV11002S303 + 10 (P100) A1000F (Pre-setting 15°, L=1100)

<b>BIMV11002</b>	<b>S303+</b>	<b>10</b>	<b>(P 100)</b>	<b>A</b>	<b>1000</b>	<b>F</b>	<b>(Pre-setting 15°</b>	<b>, L=1100)</b>
Nozzle code		Nozzle quantity	Nozzle spacing	Inlet position type	Header length	Mounting plate type	Offset angle	Total length
■ BIMV11002		■ 5	■ 100	■ A	■ 1000	■ F	■ 0° (Blank denotes 0°.)	■ 1100
■ BIMV11004		■ 10	■ 200	■ B	■ 2000	■ S	■ 15°	■ 2100
■ BIMV110075		■ 20				■ None (Blank denotes "without plate".)		

Note: For details of BIMV nozzles, see page 14.  
 For details of BIM Header, please ask for our inquiry drawing.



**SCBIM series Spray Tip Interchangeability**

			Liquid pressure type						Liquid siphon type	
			SCBIMV				SCBIMJ		SCBIMV-S	
			11001	80005	8001	45005	4501	20005	2001	80005S
Liquid pressure type	SCBIMV	11001	×	⊙	×	⊙	×	⊙	×	×
		80005	×	×	⊙	×	⊙	×	×	×
		8001	⊙	×	×	⊙	×	⊙	×	×
		45005	×	⊙	×	×	⊙	×	×	×
		4501	⊙	×	⊙	×	×	⊙	×	×
		20005	×	⊙	×	⊙	×	×	×	×
Liquid siphon type	SCBIMV-S	80005S	×	×	×	×	×	×	×	
		8001S	×	×	×	×	×	×	×	

Spray tips with ⊙ are interchangeable with each other.

**CBIM series Cap Interchangeability**

Adaptor type		T* <sup>1</sup>					CSP/CSN* <sup>2</sup>		
		005	01	02	04	075	005	01	02
T* <sup>1</sup>	005	×	⊙	⊙	×	×	×	×	×
	01	⊙	×	⊙	×	×	×	×	×
	02	⊙	⊙	×	×	×	×	×	×
	04	×	×	×	⊙	×	×	×	×
	075	×	×	×	⊙	×	×	×	×
CSP/CSN* <sup>2</sup>	005	×	×	×	×	×	⊙	⊙	
	01	×	×	×	×	×	⊙	⊙	
	02	×	×	×	×	×	⊙	⊙	

Caps with ⊙ are interchangeable with each other.

\*1) Air consumption codes available for T-type adaptor are 005, 01, 02, 04, and 075.

\*2) Air consumption codes available for CSP- and CSN-type adaptors are 005, 01, and 02 only.

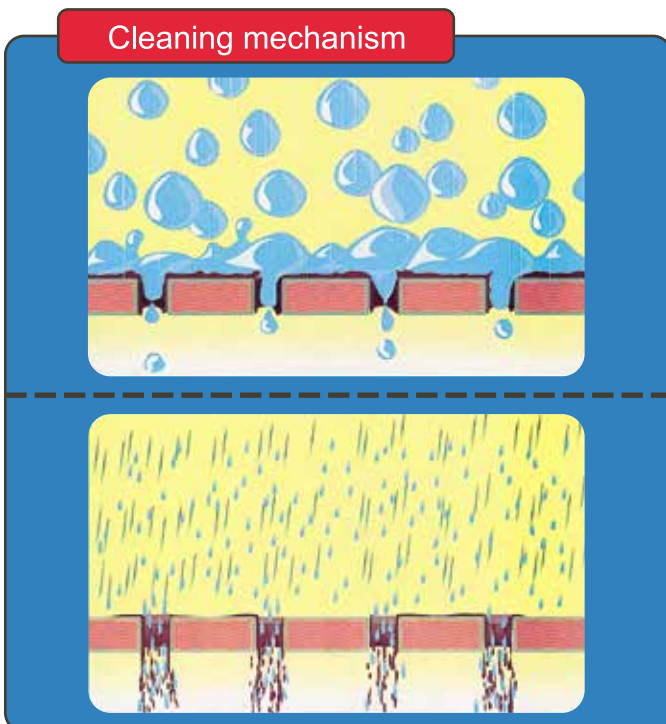
When changing an adaptor type of the existing CBIM nozzle between T, CSP, and CSN types, it is possible to continue to use the same spray tips and core, which are the common parts (the cap is not).

**Common applications**



- **Paper & Pulp:** Moisture control, spraying mold lubricant, preventing cardboard from curling
- **Plastics:** Spraying anti-electrostatic agent, coating
- **Iron & Steel:** Cooling metal sheets
- **Glass:** Coating and cooling glass sheets
- **Textile:** Moisture control of textile and fiber
- **Printing:** Moisture control of paper after dryer of web offset printing machine
- **Automotives:** Cooling carriages of automobile bodies on the painting lines after oven
- **Food:** Spraying egg yolk, oil, honey, and more

**New cleaning method "Fog Cleaning"**



- For precise cleaning in cleaning process of photo-processing products

In conventional cleaning methods, large droplets created by hydraulic nozzles are used and cannot clean within fine interstices.

By using air, pneumatic spray nozzles produce very fine droplets for "fog cleaning".

■ Features of Fog Cleaning

- ① Very fine droplets get into interstices and wash out dirt.
- ② Velocity of cleaning water has been remarkably improved due to compressed air blow, that contributes to maximizing spray impact.
- ③ Compressed air will blow off puddles on surfaces of objects, stopping chemical reactions, and thus, it will get better cleaning effects.