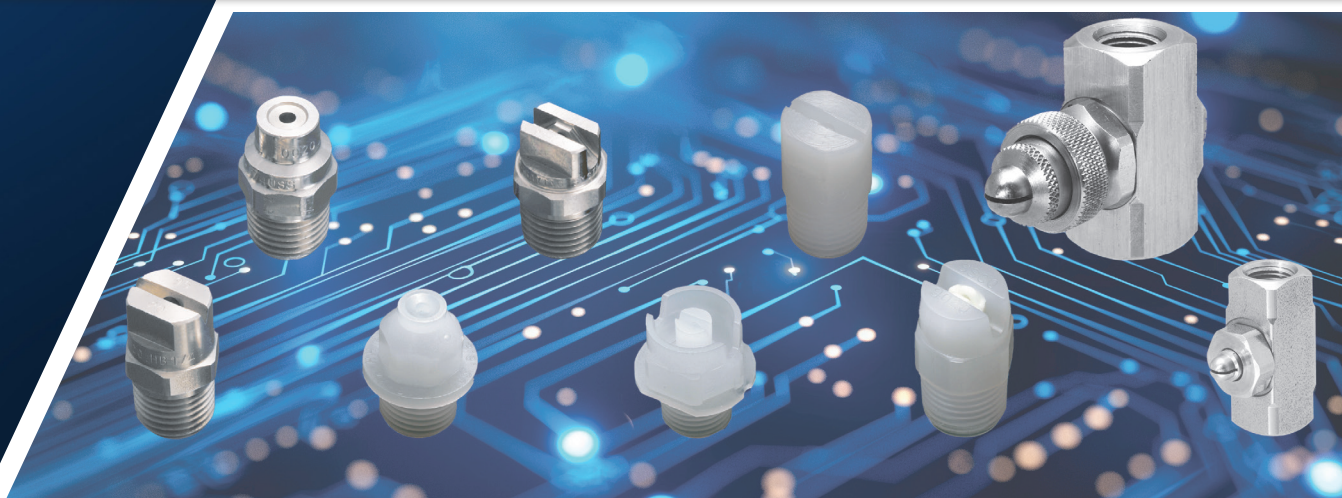




**Spraying Systems Co.®**  
Experts in Spray Technology



# ELECTRONICS SPRAY NOZZLES FOR ELECTRONICS



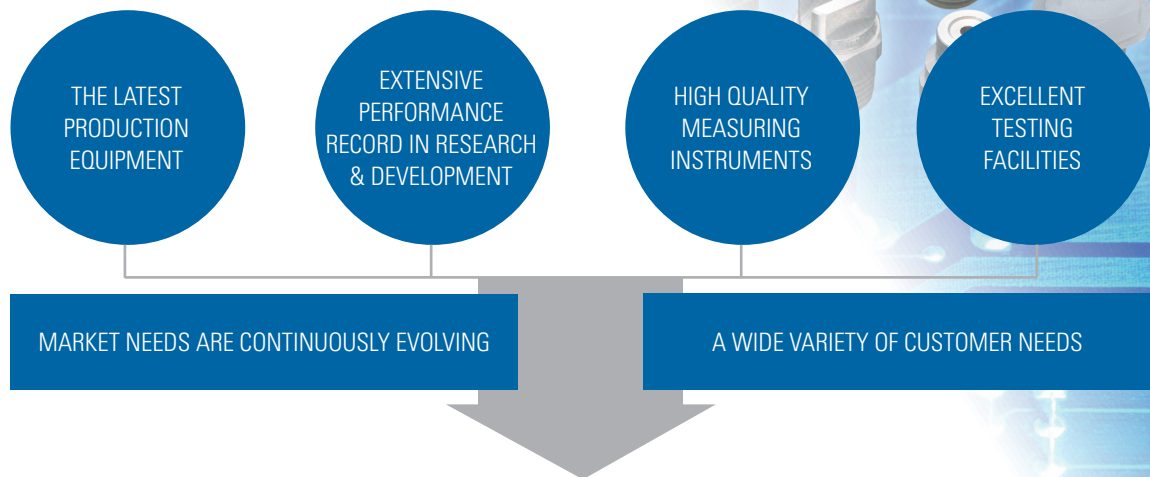
[www.spray.com](http://www.spray.com)

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· SPRAY GUNS · TANK CLEANING · **SPRAY CONTROL** · AUTOMATED · SPRAY LANCES · ACCESSORIES · **NOZZLES** · SPRAY GUNS · TANK



# SPRAY NOZZLES FOR ELECTRONICS INDUSTRY

The electronics industry is rapidly evolving. At Spraying Systems Co., we take pride in offering a diverse range of over 20,000 spray nozzles, including standard options and more. We not only provide high-performance products, backed by our proven track record, but also collaborate with customers to co-develop innovative solutions that meet their advanced and ever-changing needs.



**Our product lineup features a wide range of high-value solutions, from general-purpose spray nozzles to specialized applications tailored for specific needs.**

## EXTENSIVE PERFORMANCE RECORDS

### PRODUCT EXAMPLES

Wafers, FPD, Printed circuit board (PCB), Organic EL, Film substrates, Masks, Hard discs, Connectors, TAB tape mounting, etc.

### WORK PROCESS EXAMPLES

Various cleanings, Developing, Etching, Peeling, Coating, Draining, Drying, Cooling, Humidification, etc.

## VARIOUS SPRAY PATTERNS

### Hydraulic Atomizing Spray Nozzles



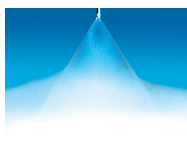
Full Cone



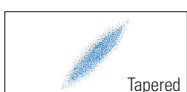
Flat



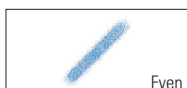
Squared



Flat



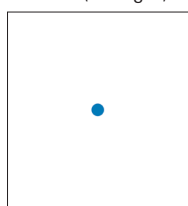
Tapered



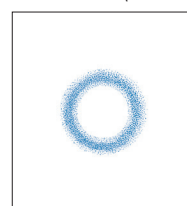
Even



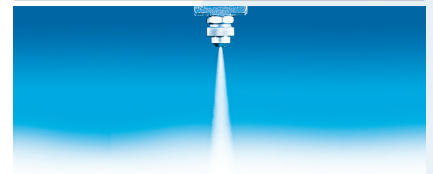
Solid (Straight)



Hollow Cone (Circular)



### Air Atomizing Spray Nozzles



Flat



Wide Angle Round



Round



Circular



Product Classification	Product Name		Spray Pattern	Application				Page Number
				PBC	LCD	Semiconductor	Application Example	
Technical Information	Liquid Viscosity and Spray Performance in Etching							4
	Comparison of Cleaning Efficiency between Hydraulic Spray (Low/High Pressure) and Air Atomizing Spray							5
Hydraulic Spray Nozzles	Resin Spray Nozzles	PFA Fullcone Nozzles	Full Cone		•	•	Washing, Rinsing, Developing, Etching	6
		PVC Fullcone Nozzles	Full Cone		•	•	Washing, Rinsing, Developing, Etching	
		Square Fullcone Nozzles (PVC/PTFE)	Full Cone (squared)		•	•	Washing, Rinsing, Developing, Etching	
	Compact Hydraulic Spray Headers		-		•	•	Washing, Supplying Chemicals, Adding Water, Moisturizing	7
	High Pressure Cleaning Spray Nozzles High Pressure Cleaning Headers		Flat/Solid (Straight flow)		•	•	Precise Wafer/LCD Cleaning, Removing Particles, Deburring	8-9
Air Atomizing Spray Nozzles	Micro Air Atomizing Nozzles		Round		•	•	Coating, Precise Cleaning	10-11
	UniCaster Air Atomizing Nozzles		Flat	•	•	•	Precise Cleaning, Particle Removal, Cooling	12
	Compact Air Atomizing Spray Headers		-		•	•	Precise Wafer / LCD Cleaing, Solvent Washing, Add Moisture to Working Object	13
	Air Atomizing Spray Headers		-	•	•	•	Precise Panel / PBC Cleaning, Cleaning Photomasks etc.	14-15
	Air Atomizing Slit Nozzles		-	•	•	•	Precise Cleaning, Cooling, Moisturizing	16-17
Liquid / Air Curtain Production Nozzles	Slit Nozzle Headers		-	•	•	•	Blowing Off Liquid, Drying, Deionized Water Replacement, Chemical Cooling, Gas Spray, Shutting Off, Small Hole Cleaning	18-21
Blow-off Nozzles	WindJet Nozzles / WindJet Air Amplifiers			Blowing Off Liquid, Drying, Dust Removal, Steam Spray				22
Automatic Spray Guns	Automatic Spray Guns for Moisture-proof Film Coating			Applying Chemical Agents, Coating				23





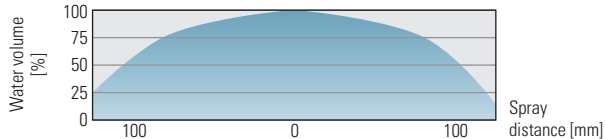
## LIQUID VISCOSITY AND SPRAY PERFORMANCE IN THE ETCHING PROCESS //

### 1. SPRAY DISTRIBUTION CHANGES DUE TO VISCOSITY

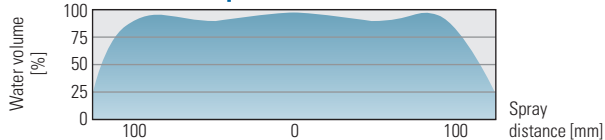
As liquid viscosity increases, the spray loses its force, resulting in spray distribution changes.

Nozzle type used: PFA full cone nozzle / operating pressure: 0.16MPa  
Measurement position: 165mm from a nozzle

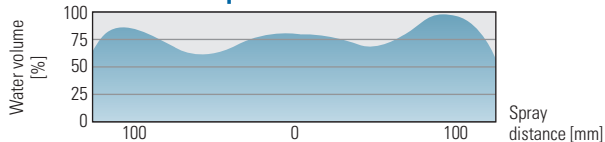
#### 1 mPa • s water



#### 20 mPa • s viscous liquid



#### 30 mPa • s viscous liquid

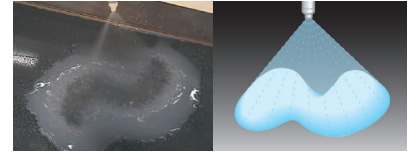


### 2. SPRAY PATTERNS WHEN NON-SUITABLE NOZZLES ARE USED WITH VISCOUS LIQUIDS

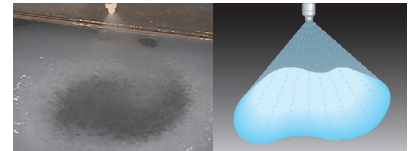
Difficult for the nozzles to form an intended spray pattern with viscous liquid, especially at low pressure.

Reference Example: full cone nozzle / viscous liquid 30mPa • s

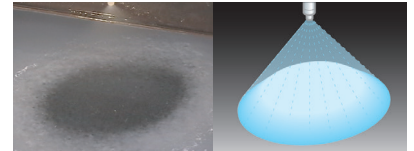
Operating pressure: 0.15 MPa



Operating pressure: 0.2 MPa



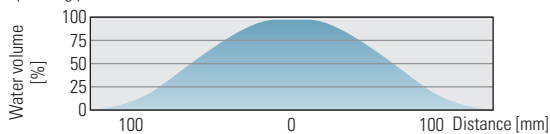
Operating pressure: 0.3 MPa



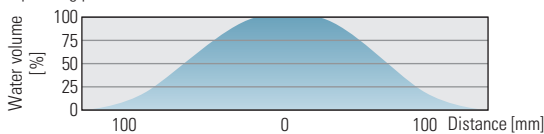
### 3. SPRAY DISTRIBUTION AND PERFORMANCE WHEN USING NOZZLES THAT ARE DESIGNED FOR VISCOUS LIQUIDS

Nozzle type used: full cone nozzle / 30mPa • s custom-made product for etching liquid / Measurement position: 165mm from the nozzle

Operating pressure: 0.15 MPa



Operating pressure: 0.2 MPa



Operating pressure: 0.15 MPa



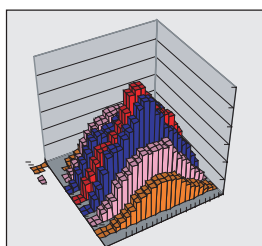
Selecting the right nozzle for spraying viscous liquids is crucial to ensure optimal performance for the specific application.

#### Time series variations in spray distribution caused by the buildup of etching liquid sludge.

##### [Measurement Example] Flow rate distribution of water after using etching liquid\*1

- Etching liquids, (ferric chloride solution, etc.) can cause sludge to accumulate on the surface of the vane\*2 inside the nozzle.
- The accumulation of sludge increases with operation time, affecting spray distribution and spray pattern.
- As sludge accumulates, the spray distribution tends to concentrate fluid around the perimeter.

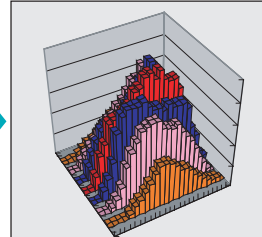
##### Before using etching liquid



\*1Nozzle located at the graph center.

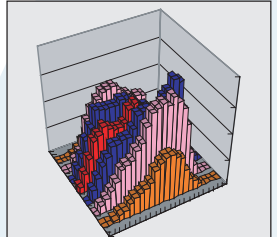


##### After use / small sludge accumulation



\*2A component that shapes the spray pattern by rotating the liquid

##### After use / sludge accumulated even further



Regular inspection, maintenance, and replacement of nozzles is essential.



## COMPARISON OF CLEANING EFFICIENCY BETWEEN HYDRAULIC SPRAY (LOW / HIGH PRESSURE) AND AIR ATOMIZING SPRAY //

In general, high cleaning efficiency is achieved at high pressure rather than at low pressure, and by using air atomizing spray rather than hydraulic spray.

High-pressure air atomizing spray generates finer droplets at a higher flow rate compared to low-pressure hydraulic spray. This increases collision density and impact continuity, allowing the spray to penetrate water films, resulting in superior cleaning performance.

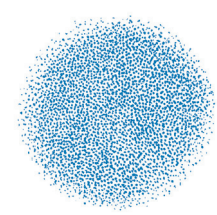
However, high-pressure and air atomizing systems require proper equipment and lead to higher operating costs. Therefore, it is crucial to select nozzles based on the type of dirt and the shape of the objects being cleaned, ensuring the most effective cleaning method is used.

	Hydraulic: Low Pressure	Hydraulic: High Pressure	Air Atomizing
			
Impact Image			
Collision Density			
Spraying Method	Liquid pressure only (low pressure)	Liquid pressure only (high pressure)	Liquid
Drop Size	Large	Small to medium	Small
Flow Speed	Slow	Fast	Fast
Board Collision Density	Low	High	High
Push-Away Force of Water Film	Weak	Strong	Strong
Required Equipment	Low pressure pump / piping	High pressure pump / piping	Compressor, low pressure pump / piping
Maintenance Frequency	Infrequent	Frequent	Infrequent



## PLASTIC SPRAY NOZZLES //

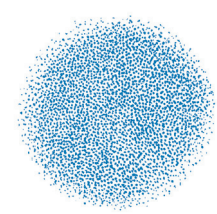
### PFA FULL CONE NOZZLES



- Form a stable round full cone pattern even at low pressure or with very low capacity.
- Even flow rate distribution in the spray center. Ideal for etching and developing.
- Compact shape for effortless installation in limited space.
- Materials: PFA (Perfluoroalkoxythane)

Nozzle part number	Connection	Nominal Orifice Diameter [mm]	Capacity [L/min]							Spray Angle		
			0.07 MPa	0.1 MPa	0.15 MPa	0.2 MPa	0.3 MPa	0.4 MPa	0.6 MPa	0.07 MPa	0.15 MPa	0.6 MPa
Y32223-B1/8HH-PFA3	R1/8	1.5	1.1	1.3	1.6	1.8	2.2	2.4	2.8	52°	65°	59°

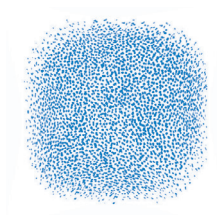
### PVC FULL CONE NOZZLES



- Ideal for chemical spraying at low capacity.
- Lowest capacity among full cone nozzles.
- Form even spray distribution even at the lowest flow rate.
- Materials: PVC

Nozzle part number	Connection	Nominal Orifice Diameter [mm]	Capacity [L/min]					Spray Angle		
			0.07 MPa	0.1 MPa	0.15 MPa	0.2 MPa	0.3 MPa	0.07 MPa	0.15 MPa	0.6 MPa
Y32223-B1/8HH-PVC0.8	R1/8	0.79	0.31	0.37	0.44	0.50	0.61	47°	65°	72°

### SQUARE FULL CONE NOZZLES (LOW CAPACITY TYPE)



- Low capacity square full cone nozzles.
- Form a stable spray pattern.
- Materials: PVC or PTFE

Nozzle part number	Connection	Nominal Orifice Diameter [mm]	Capacity [L/min]					Spray Angle		
			0.05 MPa	0.1 MPa	0.15 MPa	0.2 MPa	0.3 MPa	0.05 MPa	0.15 MPa	0.3 MPa
YB1/8HH-PVC1.8SQ	R1/8	1.5	0.60	0.83	0.98	1.1	1.3	52°	65°	65°
YB1/8HH-TEF1.8SQ										
YB1/8HH-PVC3.6SQ	R1/8	1.6	1.2	1.6	1.9	2.2	2.7	40°	52°	52°
YB1/8HH-TEF3.6SQ										

## COMPACT HYDRAULIC SPRAY HEADERS //



- Superlight weight (approx. 2.8kg for 2500mm header length).
- Maintain a consistent performance with low capacity spray.
- Compact design (height 16mm × thickness 16mm).
- A wide lineup of header lengths from 1000 to 2500mm.
- Suitable for low capacity nozzles in narrow spaces.

### Specifications

Header length : 1000 / 1500 / 2000 / 2500 (mm)

Header materials : SUS304

(available for manufacturing in SUS316)

Nozzle materials : SUS303 (spray tip)

PTFE (gasket)

SUS304 (retainer ring)

Maximum

operating pressure: approx. 3.5 MPa

Inlet connection : Rc1/4 (for both edges)

### Performance Example

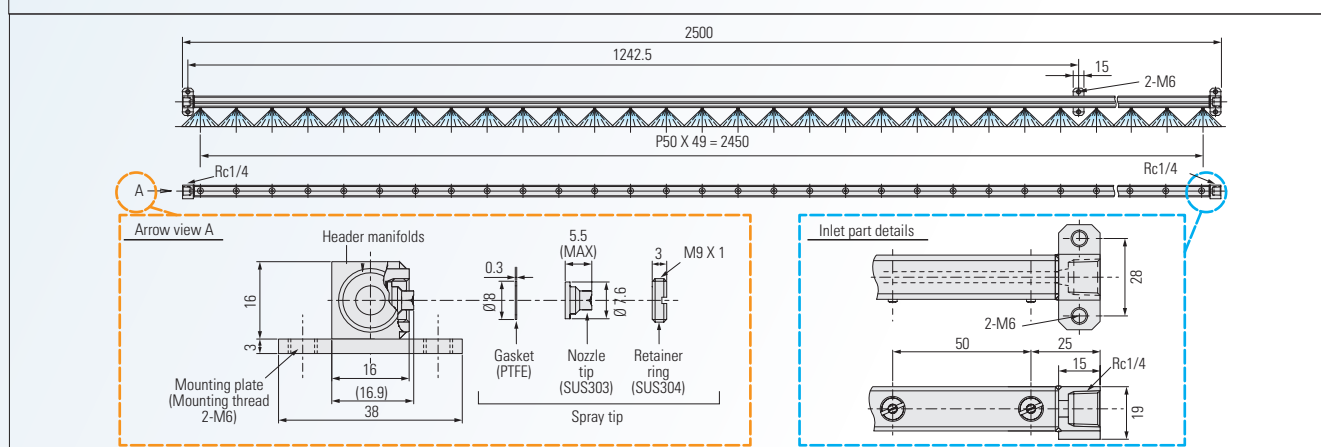
Nozzle Tip Capacity Size	Nozzle Tip Only					Total Capacity [L/min] (Estimate Value) (at 0.3MPa, Nozzle Pitch 50mm)				
	Equivalent Orifice Diameter (Estimate Value) [mm]	Capacity [L/min]				Spray Angle (at 0.3MPa)	1000mm (20)*1	1500mm (30)*1	2000mm (40)*1	2500mm (50)*1
		0.1 MPa	0.2 MPa	0.3 MPa	0.5 MPa					
0033	0.10	-	0.11	0.13	0.17	110°	2.6	3.9	5.2	6.5
0050	0.15	-	0.16	0.20	0.25		4.0	6.0	8.0	10.0
0067	0.20	-	0.22	0.26	0.34		5.2	7.8	10.4	13.0
01	0.25	0.23	0.32	0.39	0.51		7.8	11.7	15.6	19.5
02	0.40	0.46	0.64	0.79	1.00		15.8	23.7	31.6	39.5*2
04	0.55	0.91	1.30	1.60	2.00		32.0	48.0*2	64.0*2	80.0*2

\*1 = Nozzle Numbers.

\*2 = Configuration of header may be adjusted in order to maintain performance.

### Product Example (In mm)

\*Material : SUS304 / Header length : 2500mm / Nozzle pitch : 50mm / Number of Nozzles : 50 pieces



### ORDERING INFO

[Example]

Install '0033' capacity size  
nozzle tip to the above example

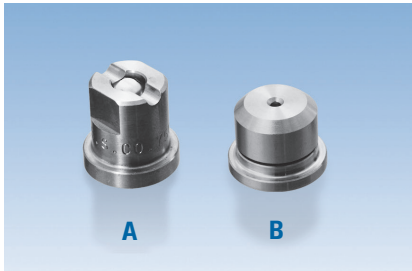
YH	Our own ID number	2500	50	0033	X	50
HEADER TYPE		HEADER LENGTH	NOZZLE PITCH	NOZZLE TIP CAPACITY SIZE		NOZZLE INSTALLATION NUMBERS





## HIGH PRESSURE CLEANING SPRAY NOZZLES //

### HIGH PRESSURE SPRAY TIPS



Superior corrosion- resistance, ideal for deionized water high pressure spray.

Nozzle Tip	Orifice Material	Nozzle Body Material	Spray Pattern	Maximum Operating Pressure	Characteristic
A	High Alumina Ceramic	SUS304	Flat	21 MPa	High wear resistance
B	Crystal Sapphire		Solid (Straight flow)		Ideal for deionized water high pressure spray

#### Dimensions (in mm)



#### Performance Data

##### (A) High Alumina Ceramic Orifice

Nozzle Tip		Equivalent Orifice Diameter (Estimate Value) [mm]	Capacity [L/min]				Nozzle Data at 10 MPa*2				
Part Number	ID*1 Number		5.0 MPa	10 MPa	12 MPa	15 MPa	Spray A Coverage [mm]	Drop Size [μm]	Maximum Impact [mN]	Flow Speed [m/sec]	
YTPHP750018-304SSCER	718	0.29	0.30	0.42	0.46	0.51	160	27	95	28	
YTPHP800035-304SSCER	835	0.39	0.57	0.80	0.88	0.98	170	29	165	44	
YTPHP850044-304SSCER	844	0.43	0.71	1.00	1.10	1.22	180	31	200	43	

\*1 ID numbers are used in part numbers. \*2 Measurement point is 100mm from a nozzle.

##### (B) Crystal Sapphire Orifice

Nozzle Tip	Nominal Orifice Diameter [mm]	Capacity [L/min]					Maximum Impact* [mN]
		1.0 MPa	3.0 MPa	5.0 MPa	10 MPa	15 MPa	
YTP000006-CS	0.10	0.013	0.023	0.029	0.042	0.051	100
YTP000008-CS	0.15	0.030	0.042	0.067	0.094	0.115	225
YTP000009-CS	0.20	0.053	0.092	0.118	0.167	0.205	410

\* At 10MPa, the measurement point is 100mm from a nozzle.

### NOZZLE BODIES FOR HIGH PRESSURE SPRAY TIPS

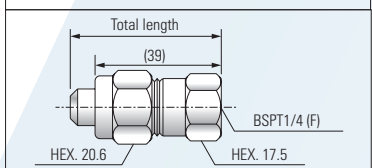


Maximum operating pressure of 21 MPa with maximum spray tip performance.

- Various UniJet high-pressure spray tips can be attached. A nozzle body is supplied with a strainer and you can choose mesh size according to the orifice diameter of the attached tip. (For more information, please contact us)
- Materials: 303 stainless steel (body)  
Nylon (gasket)

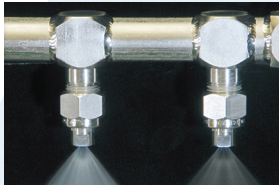
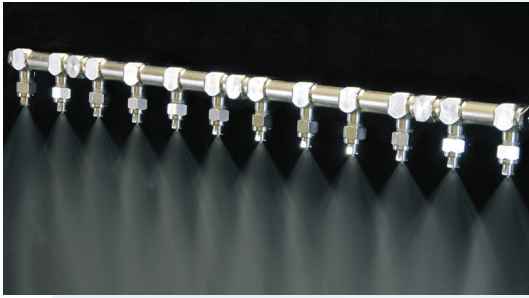
\* PTFE gasket available (optional)

#### Dimensions (in mm)



\* The total length will change according to the attached spray tip (Max. 51.5mm). BSPT connections require the addition of a "B" prior to the inlet connection.

## HIGH PRESSURE CLEANING HEADERS



**Flat Spray Tip**  
(High Alumina Ceramic Orifice)

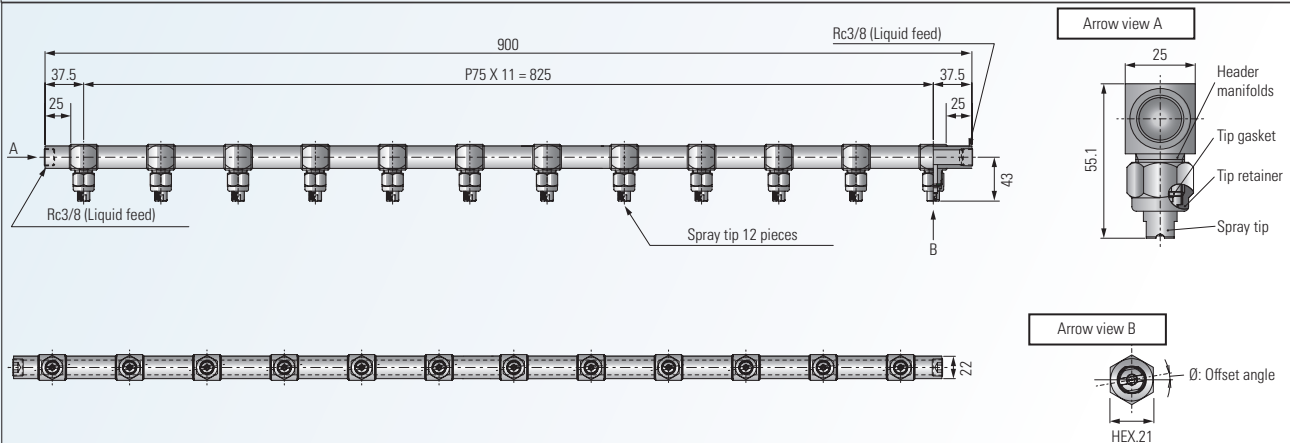


- Suitable for high pressure precision cleaning in Electronics (maximum operating pressure: 15 MPa).
- Design has no uneven fluid lines to prevent standing water and "dead spaces" in the system.
- Orifice has superior corrosion resistance and is made of high alumina ceramic.
- You can choose from three types of spray tips with different performance characteristics to fit your specific cleaning needs.

\* The attached spray tip is a high alumina ceramic orifice spray tip.  
(See performance data in page 8 (A))

- Specifications  
Header length: MAX 2500 mm  
Header materials: SUS304 etc.  
(adapter / pipe) (electro-polished inner and outer surface)  
Nozzle materials: SUS303 (body)  
High alumina ceramic (tip)

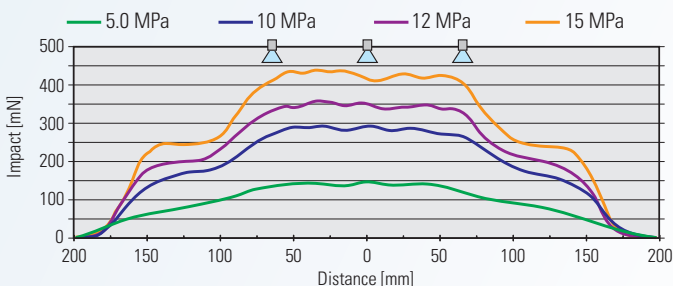
**Product Example (in mm) / Material: SUS304 / Slit length: 600mm / Slit width: 0.07 / Weight: approx. 7kg)**



\* Liquid feed number, positions, and configurations will change according to the conditions of use. You can choose the pitch of a nozzle adapter from 75mm and above.

## Impact Distributions

Nozzle type used: YTPHP850044-304SSCER, when three in a line  
Offset angle: 10° / measurement point: 120mm from a nozzle  
Size of pressure receiving plate: 10 X 60mm



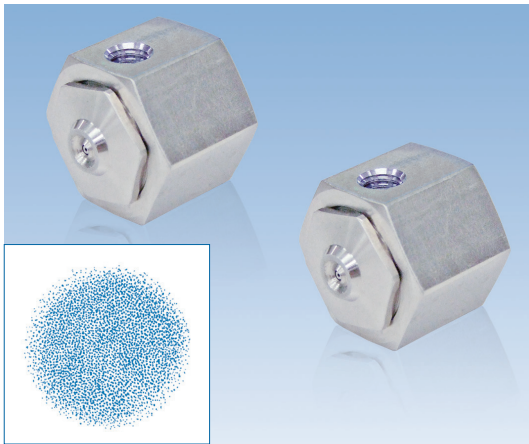
## ORDERING INFO

[Example]  
YTPH750018-304SSCER tip is attached  
to the above example

YH	EP	Our own ID number	900	75	718	X	12
HEADER TYPE			HEADER LENGTH	NOZZLE PITCH	NOZZLE ID NUMBER		NOZZLE INSTALLATION NUMBERS
ELECTRO-POLISHED							

\* We offer optimized specifications to suit your applications, including nozzle type, nozzle pitch, and liquid feed method.

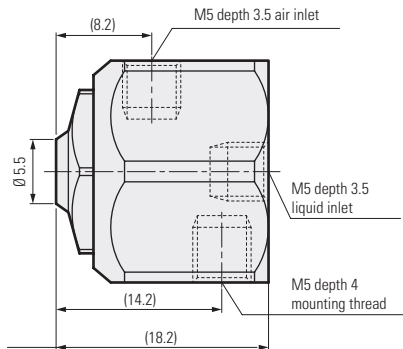
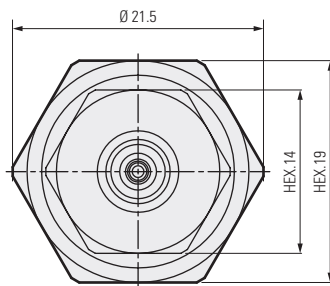
## MICRO AIR ATOMIZING NOZZLES //



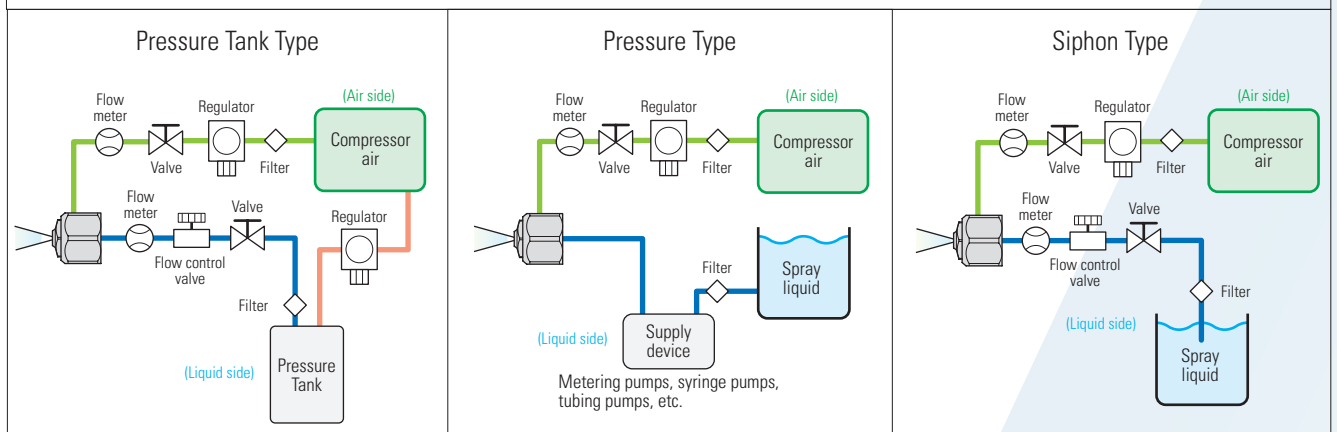
- Reduce air and spray consumption to a minimum.
- Generates fine droplets with a small amount of air at low pressure to form a wide-angle round spray pattern.
- Ultra-compact design with approximately 35g of weight. Suitable for small-amount coating and precision cleaning.
- Materials: Body and tip: SUS304  
O-ring: FKM



### Dimensions (in mm)



**Connection Example** \*Please use proper filters for both air and liquid lines. For more information, please contact us.





Performance Reference					
Nozzle Part Number	Air Pressure [MPa]	Air Capacity [L(normal)/min]	Liquid Capacity [mL/min]	Drop Size* <sup>1</sup> [μm]	Spray Angle* <sup>2</sup> [μm]
YM5JG4 + SUR5-304	0.09	5	1.5 ~ 30	11 ~ 24	50°
	0.17	8		6 ~ 14	45°
	0.29	12		6 ~ 9	40°
YM5JG4 + SUR30-304	0.07	8	5 ~ 40	23 ~ 33	65°
	0.13	12	5 ~ 120	11 ~ 22	60°
	0.25	20	5 ~ 120	6 ~ 13	45°

\*1 = Sauter Mean Diameter (measured value of particle size distribution by the laser diffraction/scattering method).

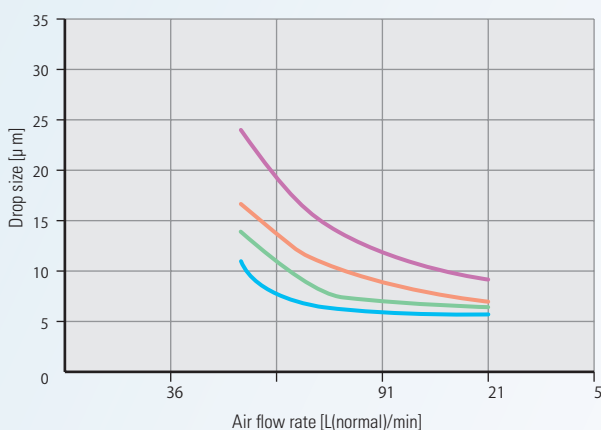
Measurement position: 50mm from the nozzle/ at spray center.

\*2 = Spray angle is calculated from spray coverage at a spray distance of 30mm.

### Droplet Distribution Curve

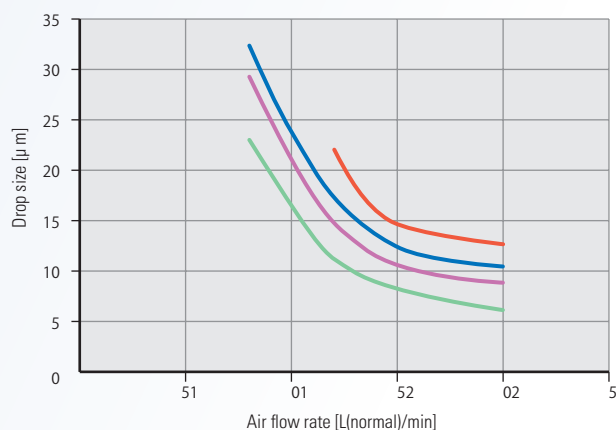
#### YM5JG4 + SUR5-304

— Liquid flow rate 30mL/min    — Liquid flow rate 10mL/min  
— Liquid flow rate 5mL/min    — Liquid flow rate 1.5mL/min



#### YM5JG4 + SUR30-304

— Liquid flow rate 120mL/min    — Liquid flow rate 40mL/min  
— Liquid flow rate 30mL/min    — Liquid flow rate 5mL/min



### ORDERING INFO

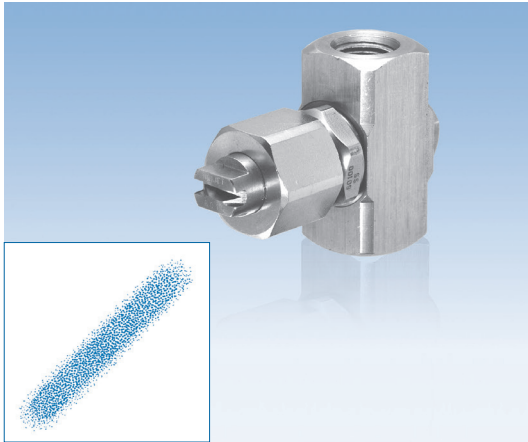
YM5JG4  
NOZZLE BODY

+

SUR5-304 or SUR30-304  
SPRAY SET-UP



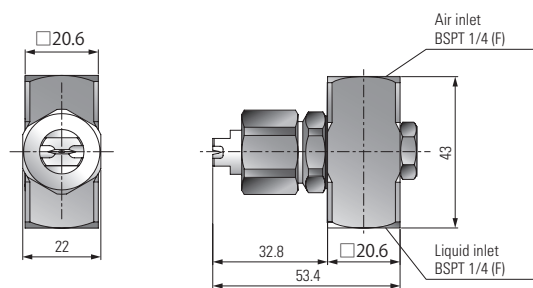
## UNICASTER AIR ATOMIZING NOZZLES //



- Achieve high-density cleaning with fine droplets and high-speed air flow.
- Maintain high cleaning efficiency even at low pressure.
- Form flat spray patterns with lower air consumption compared to standard type air atomizing nozzles, contributing to energy saving.
- **Materials:** Body tip: 303 Stainless Steel  
Gasket: PTFE

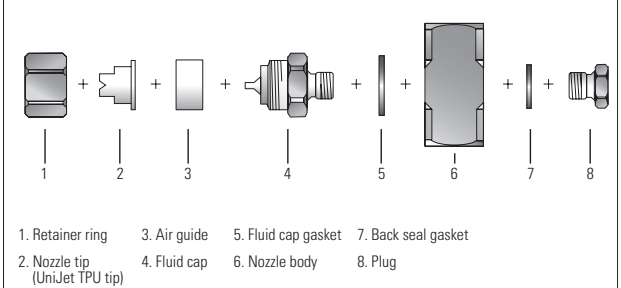
\*Other materials available upon request.

### Dimensions (in mm)



\* NPT connection is available. BSPT thread size specifications are based on PT and R standards.

### Nozzle Spray Set-ups



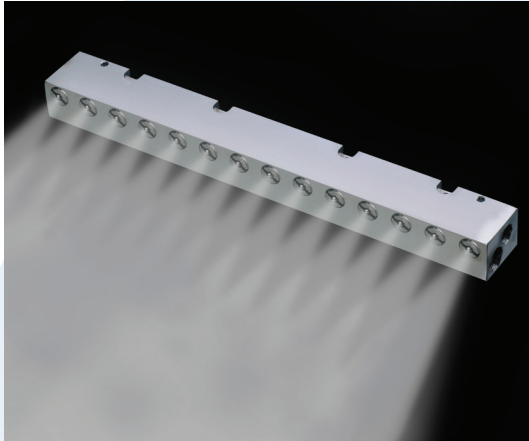
Performance Example						
Nozzle Part Number	Nozzle Tip*	Air Pressure [MPa]	Liquid Pressure [MPa]	Air Capacity [L(normal)/min]	Liquid Capacity [L/min]	Spray Angle (Estimate Value)
YB1/4JUC-28-SS + 6506-SS	TPU6506-SS	0.2	0.2 ~ 0.3	34 ~ 20	0.4 ~ 0.8	Approx. 55°
		0.3	0.25 ~ 0.4	56 ~ 35	0.3 ~ 0.8	
		0.4	0.3 ~ 0.5	76 ~ 48	0.25 ~ 0.8	
		0.5	0.35 ~ 0.5	96 ~ 72	0.2 ~ 0.6	
YB1/4JUC-SS + 6508-SS	TPU6508-SS	0.25	0.2 ~ 0.25	50 ~ 40	0.7 ~ 1.0	Approx. 65°
		0.3	0.2 ~ 0.4	65 ~ 28	0.5 ~ 1.6	
		0.4	0.3 ~ 0.5	78 ~ 38	0.7 ~ 1.8	
		0.5	0.4 ~ 0.5	90 ~ 68	0.9 ~ 1.4	
YB1/4JUC-40-SS + 6510-SS	TPU6510-SS	0.2	0.1 ~ 0.2	50 ~ 25	0.5 ~ 1.8	Approx. 65°
		0.3	0.2 ~ 0.3	62 ~ 36	1.0 ~ 2.1	
		0.4	0.3 ~ 0.4	75 ~ 42	1.3 ~ 2.4	
		0.5	0.4 ~ 0.5	87 ~ 51	1.6 ~ 2.7	

\* A variety of TPU tips can be attached. For more information, please contact us.

## COMPACT AIR ATOMIZING SPRAY HEADERS //

Achieve stable spray performance at low flow rates.

Our air atomizing spray headers produce fine droplets, ensuring enhanced cleaning efficiency. The compact design is ideal for installation where space is limited. They are also available for manufacturing with increased length specifications, allowing for broader coverage (Max. 2500mm).



- Specifications

Header length : ~270mm (integral structure)

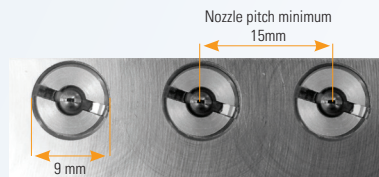
270 ~ 2500mm (welded structure)

Header material : SUS304

\*Available for manufacturing in SUS316.

Inlet connection : Rc1/8 or M10 ~ M5

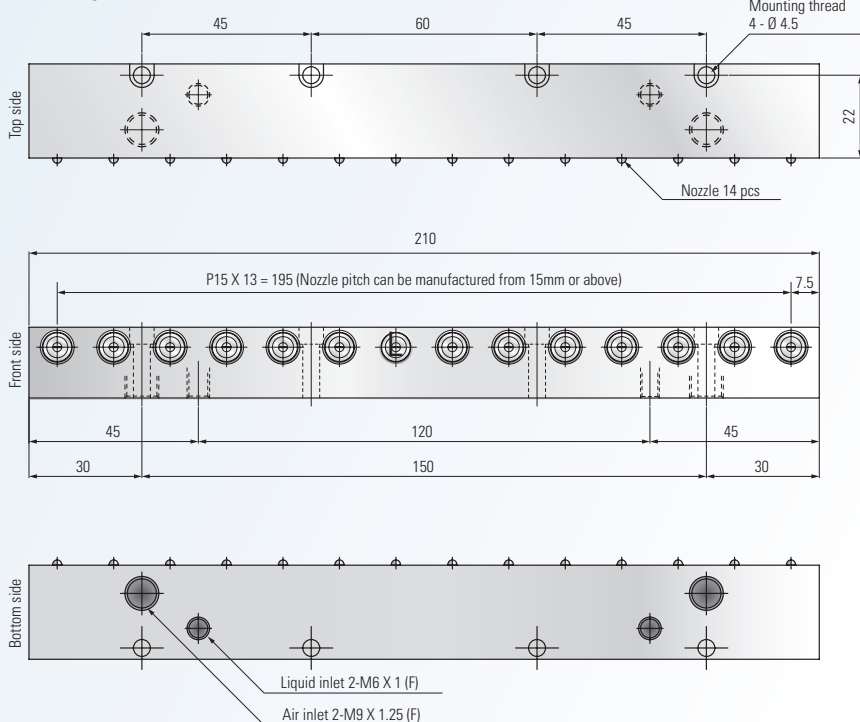
\*Air side and liquid side. We will manufacture to suit your application.



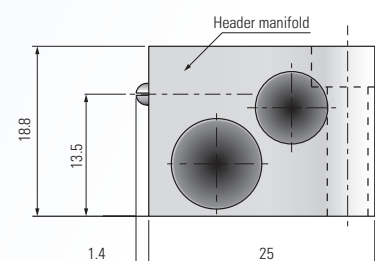
### Product Example (Integral Structure, in mm)

\*For welded structure (270 ~ 2500mm), please contact us.

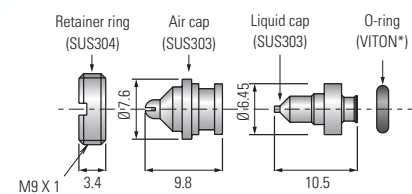
#### ■ Integral structure (~ 270mm)



#### ■ Side view



#### ■ Nozzle Set-ups



\*Material of O-ring can be changed according to liquid type (Perfluoro, EPDM etc.).





## AIR ATOMIZING SPRAY HEADERS //

Multiple air atomizing nozzles are connected to a single header. Air atomizing spray headers allow fine spraying to a broad coverage. Setting space can be reduced by simplifying the piping.

### STAINLESS STEEL HEADERS



- Specifications

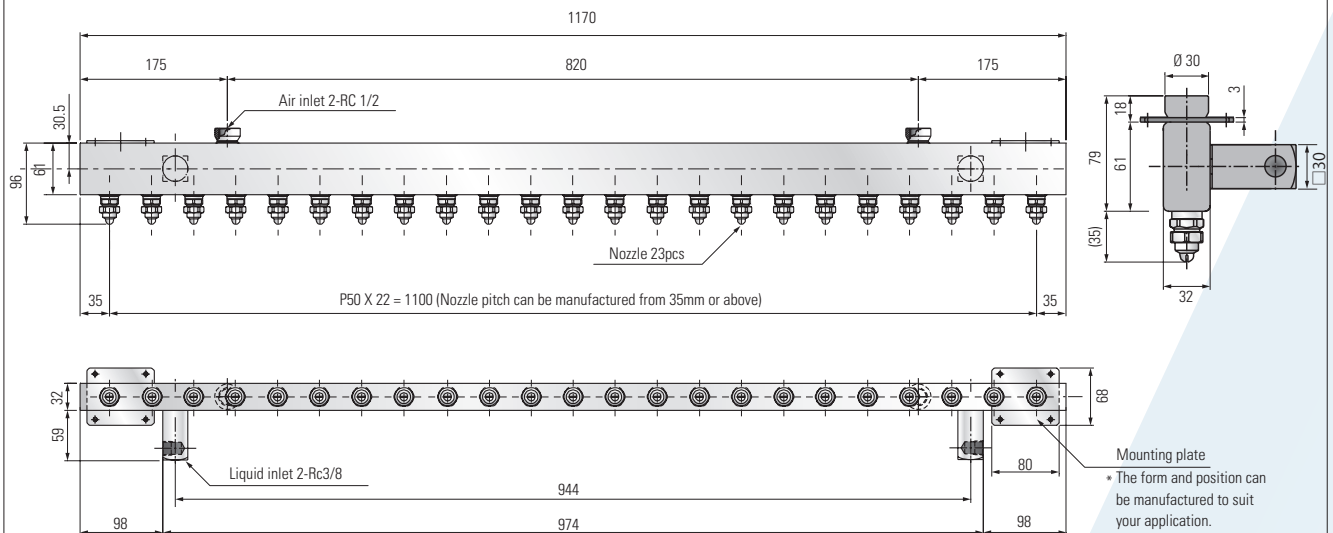
Main materials: SUS304, PTFE

\*Available for manufacturing in SUS316

We will design header length, nozzle pitch, and nozzle mounting number to suit your applications.



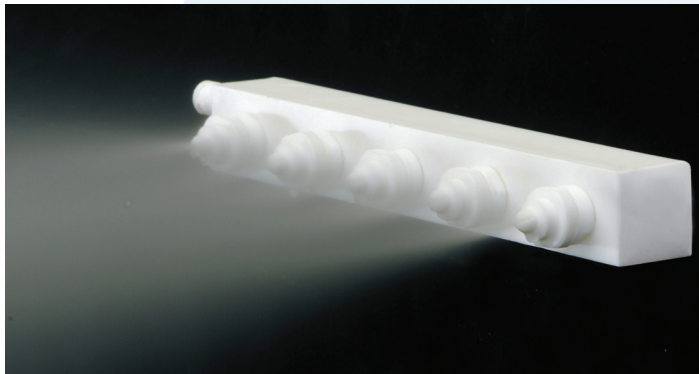
#### Product Example (in mm)



- Main material  
Body and other parts: SUS304 etc.  
Gasket: PTFE
- Spray set-up: SUN23 (flat spray)

- Performance example (liquid pressure at 0.2MPa, air pressure at 0.25MPa)  
Total flow rate (liquid) : approx. 530L/h  
(air) : approx. 1360L(normal)min

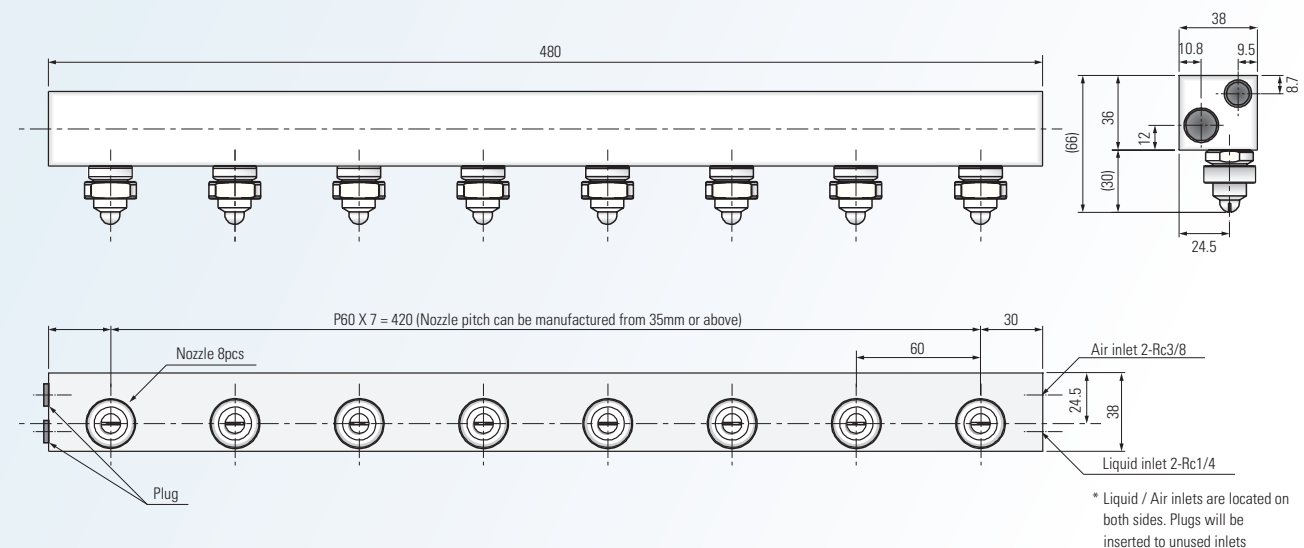
## PLASTIC HEADERS //



- Specifications  
Main materials: PVC, PTFE etc.  
Header length: MAX 800mm  
\*Please consult us if used in a line.

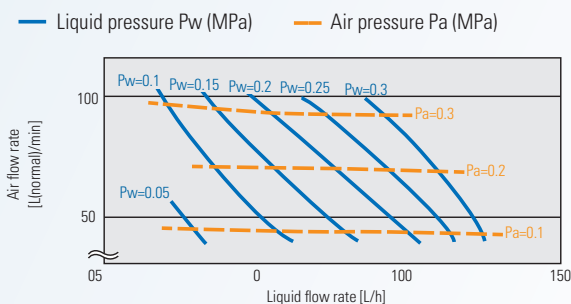


### Product Example (in mm)



- Main material  
Body and other parts: PVC  
Gasket: PTFE  
Spray set-up: SUN23 (flat spray)
- Performance example (liquid pressure at 0.2MPa, air pressure at 0.25MPa)  
Total flow rate (liquid): approx. 180L/h  
(air): approx. 470L(normal)min

### (Reference) SUN23 Performance Curve



### ORDERING INFO

We will offer optimal specifications to suit your applications, including nozzle type, nozzle pitch and liquid feed method.

## AIR ATOMIZING SLIT NOZZLES //



- Achieve uniform spray distribution with our original stabilizing design. Spraying is available in a broad range of flow rates.
- High cleaning efficiency with fine droplets and high speed stream.
- Eliminate the turbulence in the spray overlap area caused when nozzles are set in a line. Enhance cleaning efficiency with consistent, uniform spraying, free of irregularities.
- Compact and lightweight design, allowing for close installation in tight spaces.

- Specifications

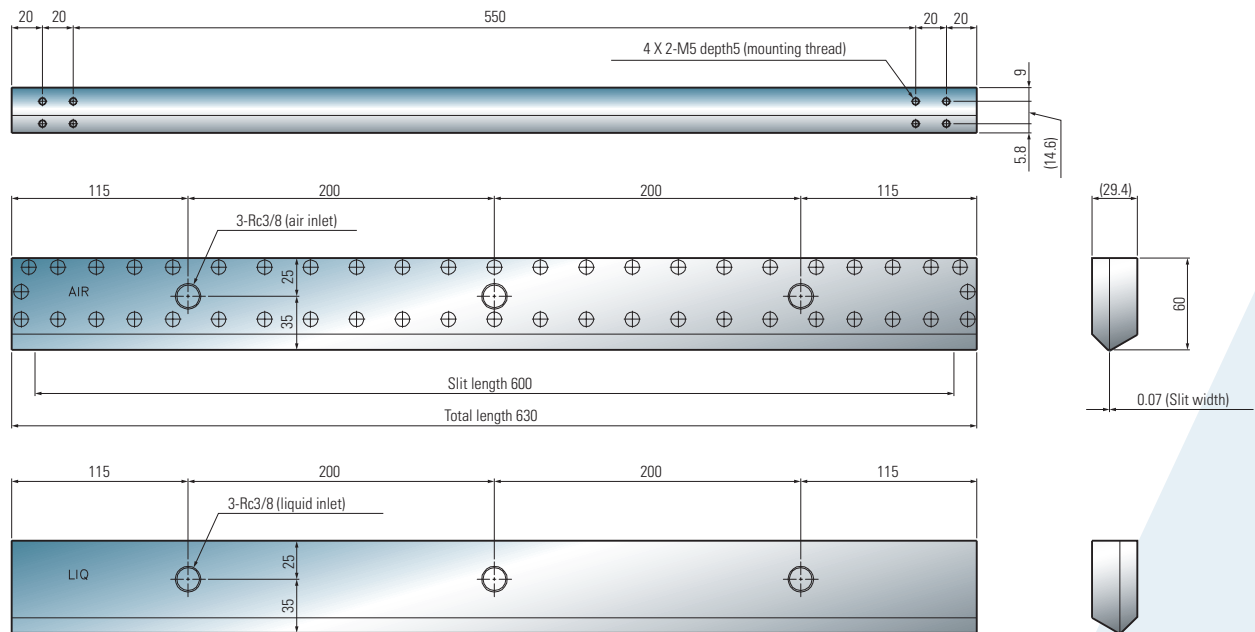
Main Materials: SUS304, SUS316, SUS316L, titanium  
Maximum slit length: 3000 mm  
Slit width: 0.06 ~ 0.15mm.

\*Slit nozzles are customized to meet various requirements of your special application.

\*Electro-polishing is available (optional).

\*Please contact us about material not listed above.

### Product Example (Unit: mm / Material: SUS304 / Slit length: 600mm / Slit width: 0.07 / Weight: approx. 7kg)



### Performance Example

Slit Length [mm]	Slit Width [mm]	Pressure [MPa] (Same Liquid / Air Pressure)	Capacity		Flow Speed [m/sec]	Drop Size [μ m]
			Liquid [L/min]	Air [L(normal)/min]		
600	0.07	0.1	6.0	440	18	37
		0.2	9.5	630	28	33
		0.35	13	950	50	29

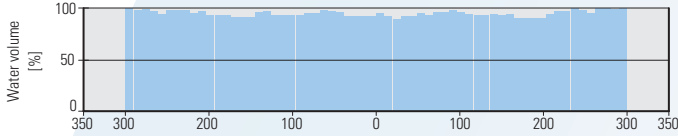
\* Air capacity when measured at 0° and 1 atmospheric pressure (measured by phase Doppler interferometer).  
Measurement position for flow speed and drop size: 10mm from a nozzle.



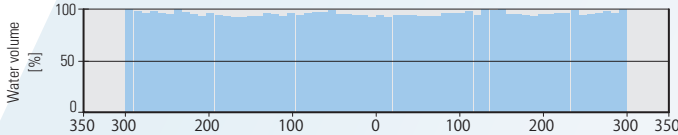
**Flow Rate Distribution**

Measurement point: 10mm from a nozzle

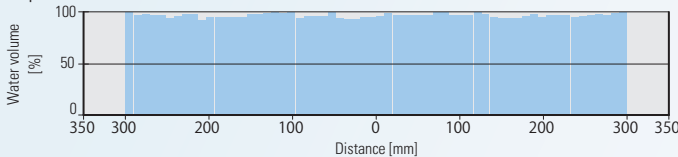
Liquid / Air Pressure: 0.1 MPa



Liquid / Air Pressure: 0.2 MPa

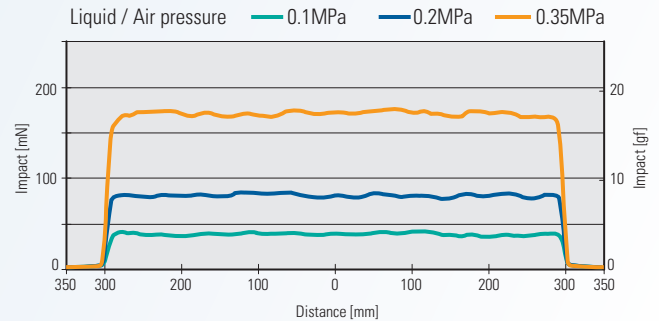


Liquid / Air Pressure: 0.35 MPa

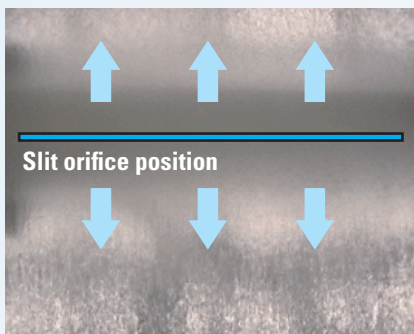
**Impact Distribution**

Measurement point: 10mm from a nozzle

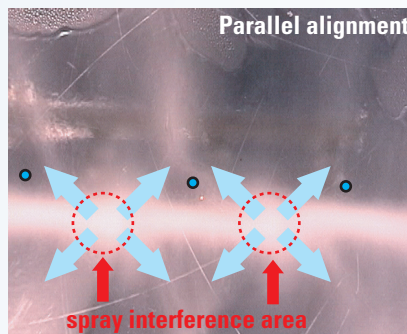
Pressure receiving plate size: 10 X 60mm

**Comparison of Impact Surfaces**

When air atomizing nozzles are setup in a line (parallel or offset) they are likely to cause turbulence in the spray overlap area.  
With air atomizing slit nozzles, a current flows in a uniform direction, which eliminates the turbulence problem.

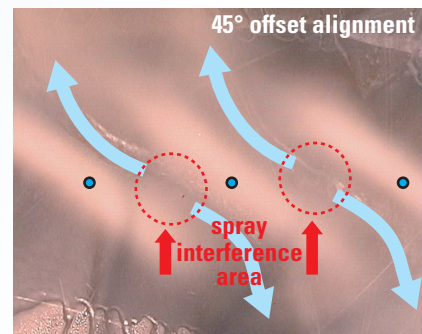
**Air Atomizing Slit Nozzle**

Flow runs in the same direction

**Parallel Setup of Air Atomizing Nozzles**

Flow crosses where sprays interfere in X-shape

● Nozzle setup position  
➡ Flow direction



Flow forms an S-shape between sprays

**ORDERING INFO**

Example: Slit length 600mm / Slit width 0.07mm  
Material SUS304 / Electro-polished

JS

TYPE

Our own  
ID number

600

SLIT LENGTH

007

SLIT  
WIDTH

304

MATERIAL

EP

ONLY ADDED WHEN  
ELECTRO-POLISHED  
MATERIAL IS USED



## SLIT NOZZLE HEADERS //

High uniformity for both flow rate and impact distribution.  
Multi-purpose spray in up/down/side direction.

### 1. EXCELLENT PRODUCT LINE-UP

Main line-up includes 4 types:

1. Adjustable slit width types can be customized to meet various requirements of your specific application
2. Fixed slit width type for easy maintenance and cleaning
3. Compact type that can be installed in tight spaces
4. PVC molded type available as:
  - Air knife (for water blow-off)
  - Aqua knife (for spraying deionized water)

Adjustable  
Slit Width

Compact Type

Fixed  
Slit Width

PVC Molded Type

### 2. THIN STRUCTURES FOR PROXIMITY INSTALLATION

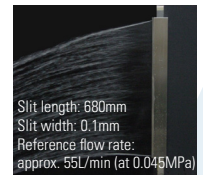
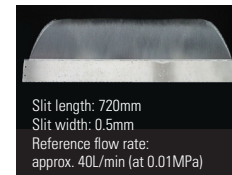
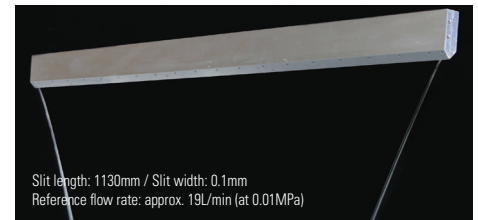
The nozzle tip can be positioned closer to the workpiece, even with a narrow roller pitch.

### 3. ALWAYS MAINTAIN UNIFORMITY IN ANY UP/DOWN/SIDE DIRECTION

Our original stabilizing chamber structure guarantees a uniform liquid/air curtain.

### 4. COMPLETE MATCHING FOR LARGE-SIZED PANELS

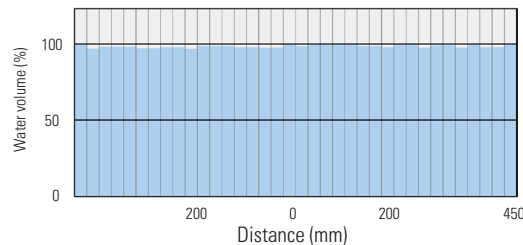
Maximum slit length is 4800mm and minimum slit width is 0.05mm.  
Headers are customized to your required dimensions.



### 5. SHOWING SUPERIOR PERFORMANCE WITH OUR ORIGINAL DESIGN STRUCTURE

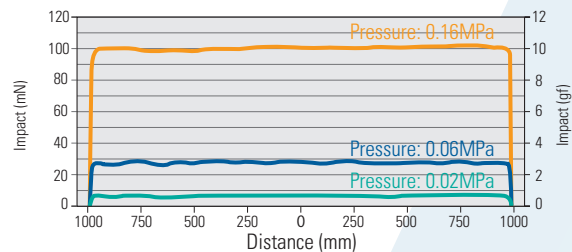
#### Flow Rate Distribution (Liquid)

Material: SUS304 / Slit length: 900mm / Slit width: 0.2 mm  
Pressure: 0.1 MPa / Measurement position: 10mm from a nozzle

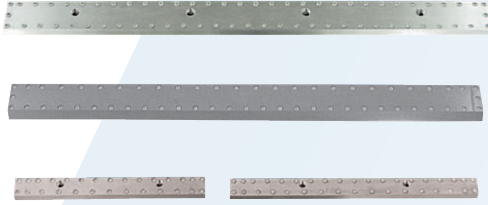


#### Impact Distribution (Air)

Material: SUS304 / Slit length: 2000mm / Slit width: 0.1 mm  
Pressure receiving plate size: 10 X 60mm / Measurement position: 5mm from a nozzle



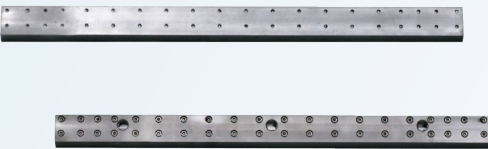
## ADJUSTABLE SLIT WIDTH



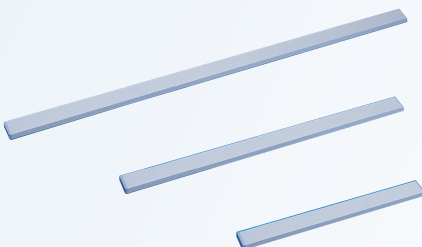
## FIXED SLIT WIDTH



## COMPACT TYPE: KATANAJET



## PVC MOLDED TYPE: SLITJET



## Liquid

- Precisely manufactured nozzle body and finely adjusted slit width create excellent quality liquid/air curtains.
- Slit length/width and materials are customized to meet various requirements of your specific application.
- Specifications
- Materials: SUS304, SUS316, SUS316L, aluminum, titanium, HTPVC, PVC, PEEK™ etc.
- Maximum slit length: 50 ~ 4800mm
- Slit width: 0.06 ~ 0.15mm

\* Slit width is adjusted by our spray experts.

\* Slit length varies according to nozzle shape and its slit length.

\* Please contact us for materials not listed above.

\* Electro-polishing is available (optional).

## Air

## Liquid

- Fixed structure. Adjustment screws are not provided in the nozzle header. The slit width is completely fixed.
- Easy nozzle maintenance due to a fixed slit orifice.
- Specifications
- Materials: SUS304, SUS316, SUS316L, aluminum, titanium, HTPVC, PVC, PEEK™ etc.
- Maximum slit length: 50 ~ 4800mm
- Slit width: 0.1 ~ 1.6mm

\* Electro-polishing is available (optional).

## Air

## Air

- This compact type nozzle can be installed in the tightest spaces.
- The weight is almost half compared to the slit width adjustable and fixed types. Easy for skewed angled installation.
- Specifications
- Materials: SUS304, SUS316, aluminum, titanium
- Maximum slit length: 50 ~ 3900mm
- Slit width: 0.05 ~ 0.3mm

\* Both adjustable and fixed slit width types are available.

\* Electro-polishing is available (optional)

## Liquid

- Available as an air knife for water blow-off
- Available as an aqua knife to spray deionized water, or for other applications.
- You can choose liquid laminar application or air blow application. Slit nozzles are highly cost-effective.
- Specifications
- Materials: PVC
- Maximum slit length: 50 ~ 3900mm
- Slit width: 0.15, 0.2, 0.3, 0.4, 0.5

\* Slit width is adjusted by our spray experts.

\* Slit length varies according to nozzle shape and its slit length.

## Air



**Performance Example** \*This data is for reference only. Values change depending on nozzle materials, liquid types and/or other conditions.

Liquid Capacity for Slit Width Adjustable and Fixed Types (Material: SUS304)

Slit Length [mm]	Slit Width [mm]	Liquid Capacity [L/min]							
		*	0.01 MPa	0.02 MPa	0.03 MPa	0.05 MPa	0.10 MPa	0.20 MPa	0.30 MPa
500	0.10	-	-	8.3	11	14	22	34	45
	0.20	8.5	12	16.5	21	29	44	68	90
	0.30	9	18	25	32	43	66	102	135
	0.50	9.5	30	41.5	53	72	111	170	225
1000	0.10	-	-	16.5	21	29	44	68	90
	0.20	17	24	33	42	58	88	136	180
	0.30	18	36	49.5	63	86	133	204	270
	0.50	19	60	83	106	144	221	340	450
2000	0.10	-	-	33	42	58	88	136	180
	0.20	33.5	48	66	84	115	177	272	360
	0.30	35	71	99	127	173	265	408	540
	0.50	36.5	119	165	211	288	442	680	900
3000	0.10	-	-	50	63	86	133	204	270
	0.20	52	71	99	127	173	265	408	540
	0.30	54	107	148	190	259	398	612	810
	0.50	56	179	248	317	432	663	1020	1350

\* Minimum capacity to create liquid curtain.

Air Capacity for Slit Width Adjustable and Fixed Types / Compact Type (Material: SUS304)

Slit Length [mm]	Slit Width [mm]	Air Capacity [L(normal)/min]							
		0.01 MPa	0.02 MPa	0.03 MPa	0.04 MPa	0.06 MPa	0.08 MPa	0.10 MPa	0.16 MPa
500	0.10	160	245	320	380	520	630	750	1000
	0.15	240	368	480	570	780	945	1125	1500
	0.20	320	490	640	760	1040	1260	1500	2000
	0.30	480	736	960	1140	1560	1890	2250	3000
1000	0.10	320	490	640	760	1040	1260	1500	2000
	0.15	480	735	960	1140	1560	1890	2250	3000
	0.20	640	980	1280	1520	2080	2520	3000	4000
	0.30	960	1470	1920	2280	3120	3780	4500	6000
2000	0.10	640	980	1280	1520	2080	2520	3000	4000
	0.15	960	1470	1920	2280	3120	3780	4500	6000
	0.20	1280	1960	2560	3040	4160	5040	6000	8000
	0.30	1920	2940	3840	4560	6240	7560	9000	12000
3000	0.10	960	1470	1920	2280	3120	3780	4500	6000
	0.15	1440	2205	2880	3420	4680	5670	6750	9000
	0.20	1920	2940	3840	4560	6240	7560	9000	12000
	0.30	2880	4410	5760	6840	9360	11340	13500	18000
4000	0.10	1280	1960	2560	3040	4160	5040	6000	8000
	0.15	1920	2940	3840	4560	6240	7560	9000	12000
	0.20	2560	3920	5120	6080	8320	10080	12000	16000
	0.30	3840	5880	7680	9120	12480	15120	18000	24000



**Performance Example** \*This data is for reference only. Values change depending on nozzle materials, liquid types and/or other conditions.

#### Air Capacity for PVC Molded Type

Slit Length [mm]	Slit Width [mm]	Air Capacity [L(normal)/min]						
		0.01 MPa	0.02 MPa	0.03 MPa	0.04 MPa	0.06 MPa	0.08 MPa	0.10 MPa
500	0.15	375	550	735	910	1245	1575	1900
	0.20	500	730	980	1210	1660	2100	2540
	0.30	750	1100	1470	1820	2490	3150	3800
	0.40	1000	1460	1960	2420	3320	4200	5080
	0.50	1250	1830	2450	3030	4150	5250	6350
1000	0.15	750	1100	1470	1820	2490	3150	3800
	0.20	1000	1460	1960	2420	3320	4200	5080
	0.30	1500	2200	2940	3640	4980	6300	7600
	0.40	2000	2920	3920	4840	6640	8400	10160
	0.50	2500	3660	4900	6060	8300	10500	12700
2000	0.15	1500	2190	2940	3630	4980	6300	7620
	0.20	2000	2920	3920	4840	6640	8400	10160
	0.30	3000	4380	5880	7260	9960	12600	15240
	0.40	4000	5840	7840	8680	13280	16800	20320
	0.50	5000	7300	9800	12100	16600	21000	25400
3000	0.15	2250	3300	4410	5460	7470	9450	11400
	0.20	3000	4380	5880	7260	9960	12600	15240
	0.30	4500	6600	8820	10920	14940	18900	22800
	0.40	6000	8760	11760	14520	19920	25200	30480
	0.50	7500	10980	14700	18180	24900	31500	38100
3500	0.15	2625	3850	5145	6370	8715	11025	13300
	0.20	3500	5110	6860	8470	11620	14700	17780
	0.30	5250	7700	10290	12740	17430	22050	26600
	0.40	7000	10220	13720	16940	23240	29400	35560
	0.50	8750	12810	17150	21210	29050	36750	44450
3900	0.15	2925	4290	5733	7098	9711	12285	14820
	0.20	3900	5694	7644	9438	12948	16380	19812
	0.30	5850	8580	11466	14196	19422	24570	29640
	0.40	7800	11388	15288	18876	25896	32760	39624
	0.50	9750	14274	19110	23634	32370	40950	49530

\* For liquid capacity, slit width and materials can be adjusted according to your preferences. For more information, please contact us.

#### ORDERING INFO

##### [Air Atomizing Slit Nozzle]

This nozzle is made to order and has no specific part number.

##### [Compact type]

[Example]  
Slit length: 1000mm / Slit width: 0.1mm / Material: SUS304 / Electro-polished

##### [PVC molded type]

[Example]  
Used with air / Slit length: 500mm / Slit width: 0.2mm

SLA	—	1000	01	—	304	EP
TYPE		SLIT LENGTH	SLIT WIDTH		MATERIAL	ONLY ADDED WHEN ELECTRO-POLISHED MATERIAL IS USED
SLA = USED WITH AIR						
SLW = USED WITH LIQUID						
SLK	—	1000	01	—	304	EP
TYPE		SLIT LENGTH	SLIT WIDTH		MATERIAL	ONLY ADDED WHEN ELECTRO-POLISHED MATERIAL IS USED
SLK = USED WITH AIR						
SJA	—	500	02	—	PVC	
TYPE		SLIT LENGTH	SLIT WIDTH		MATERIAL	
SJA = USED WITH AIR						
SJW = USED WITH LIQUID						

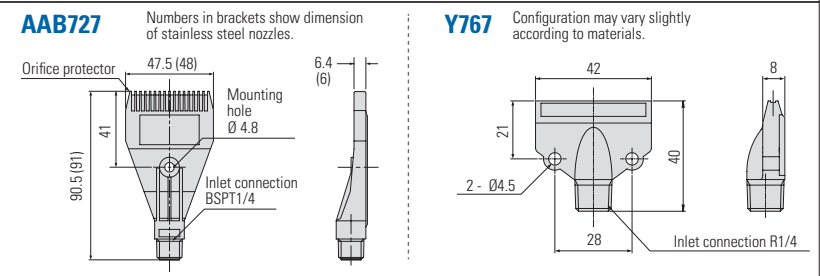
## BLOW-OFF NOZZLES //

### WINDJET NOZZLES



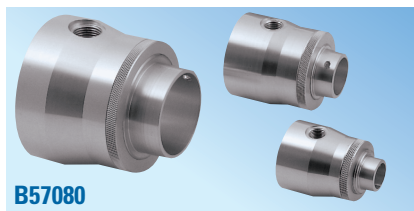
- Blow-off nozzles that offer a high air flow at a low noise level.
- Broad range to ensure a perfect fit for your application.

#### Product Example (in mm)

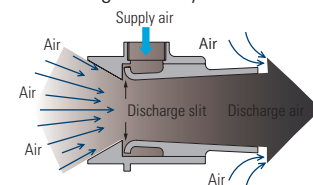


Performance Curve		*Air flow rate at 0°C and 1 atm (101.3kpa)				
AAB727		Y767				
<p>Air flow rate [L (normal)/min]</p> <p>Operating pressure [MPa]</p>	Nozzle Part Number		Material	Weight [g]	Max Pressure [MPa]	Max Temperature (at 0.3MPa)
	AAB727-1/4-11		ABS	18	0.7	82°C
	AAB727-1/4-15					
	AAB727-1/4-23					
	AAB727-1/4-SS-11		316 Stainless	116	1.0	260°C
	AAB727-1/4-SS-15					
	AAB727-1/4-SS-23					
	Y767-ABS		ABS	7	0.7	65°C
Y767-SS		SUS316 equivalent	48	0.7	200°C	

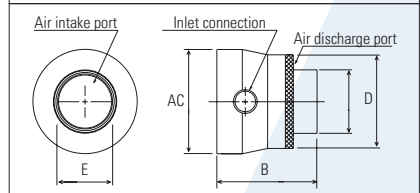
### WINDJET AIR AMPLIFIERS



- Amplify the air by sucking from the rear of the nozzle to efficiently produce an intense high velocity air stream.



#### Dimensions (in mm)

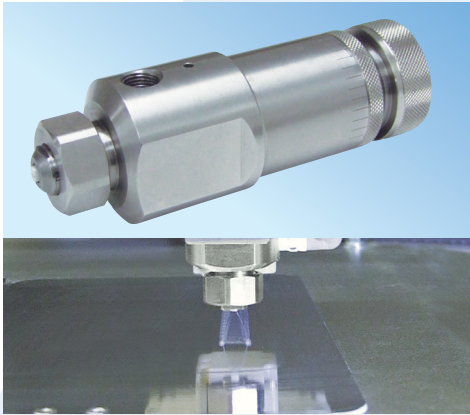


Performance Example      *At 0°C and 1atm (101.3kPa). Air consumption, amplification factors and air discharge rates are for reference only.									
Capacity Size	Reference Capacity (at 0.55MPa)			Dimensions					Inlet Connection
	Air Consumption [L(normal)/min]	Amplification Factor	Air Discharge Rate [L/min]	A [mm]	B* [mm]	C [mm]	D [mm]	E [mm]	
075	263	10	2634	38.1	56	19.1	33.2	11.4	BSPT 1/8 (F)
125	370	16	5919	49.5	73.1	31.8	44.5	21.5	BSPT 1/4 (F)
200	606	20	12121	78.7	82.4	50.8	69.9	41.6	BSPT 3/8 (F)
400	1424	24	34182	126.4	127	101.6	116.0	767.7	BSPT 1/2 (F)

\* When discharge slit is fully closed.

FOR MORE INFORMATION, PLEASE SEE CATALOG 20D WINDJET AIR PRODUCTS

## FILM COATING SPRAY GUNS FOR COATING MOISTURE-PROOF AGENTS //

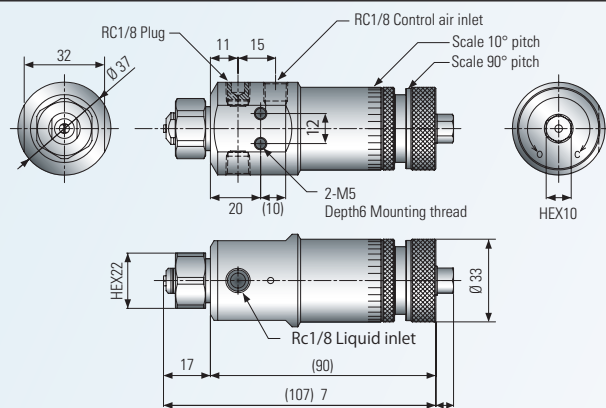


- Automatic spray guns specializing in coating moisture-proof agents (Humiseal®, silicon liquid).
- Forms stable and uniform film coatings.  
Create pin-pointed, uniform, mist-free spray film without masking.
- Supplied with a function to fine-adjust spray width and quantity.  
Application is stable compared to that of brush coating, dipping and flow coating. Spray quantity can easily be controlled, resulting in waste reduction.
- Excellent response to create sharp edges at the start/end of spraying.  
Can be used for high speed conveyor lines.
- Compact body allows installation close to workpiece.



Extension type (optional)

### Dimensions (in mm)



### Specifications

Automatic Spray Gun	Part Number	Y87038-B1/8JAUH-SS-1	
	Material	Wetted component	SUS303
		Gasket	SUNELAST, PTFE
		O-ring	Perfluor
	Temperature Range	0 ~ 50°C	
	Max Pressure	0.5 MPa	
	Max Cycle	180 cycles/minute*	

### Specifications

Spray Tip	Part Number	For HumiSeal® Y122335		For silicon type liquid Y123984	
	Material	Body	SUS303	Body	SUS303
		Orifice	Ceramic	Orifice	Ceramic
		Gasket	PTFE	O-ring	VITON®

\* Cylinder working pressure at more than 0.25 MPa.

### Performance Example

\*Optimal pressure will differ depending on working conditions and applications.

Liquid use	Spray Tip	Pressure [MPa]	Capacity* [mL/min]	Mixing rate (Weight ratio)	Viscosity	Spray Width	
HumiSeal® + Thinner	Y122335	0.1	46	2:1	65mPa • s (Liquid temperature 20°C)	10mm	
		0.15	56			13mm	
Silicon + n-hexane	Y123984	0.1	32	1:1.8	29mPa • s (Liquid temperature 20°C)	10mm	
		0.15	38			13mm	

\* Capacity based on tests with water.

### ORDERING INFO

Y87038-B1/8JAUH-SS-1 + Y122335 (FOR HUMISEAL®)  
OR  
Y123984 (FOR SILICON TYPE LIQUID)

AUTOMATIC SPRAY GUN BODY SPRAY TIP

\* Spray tip is not included in the part number of an automatic spray gun body.



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