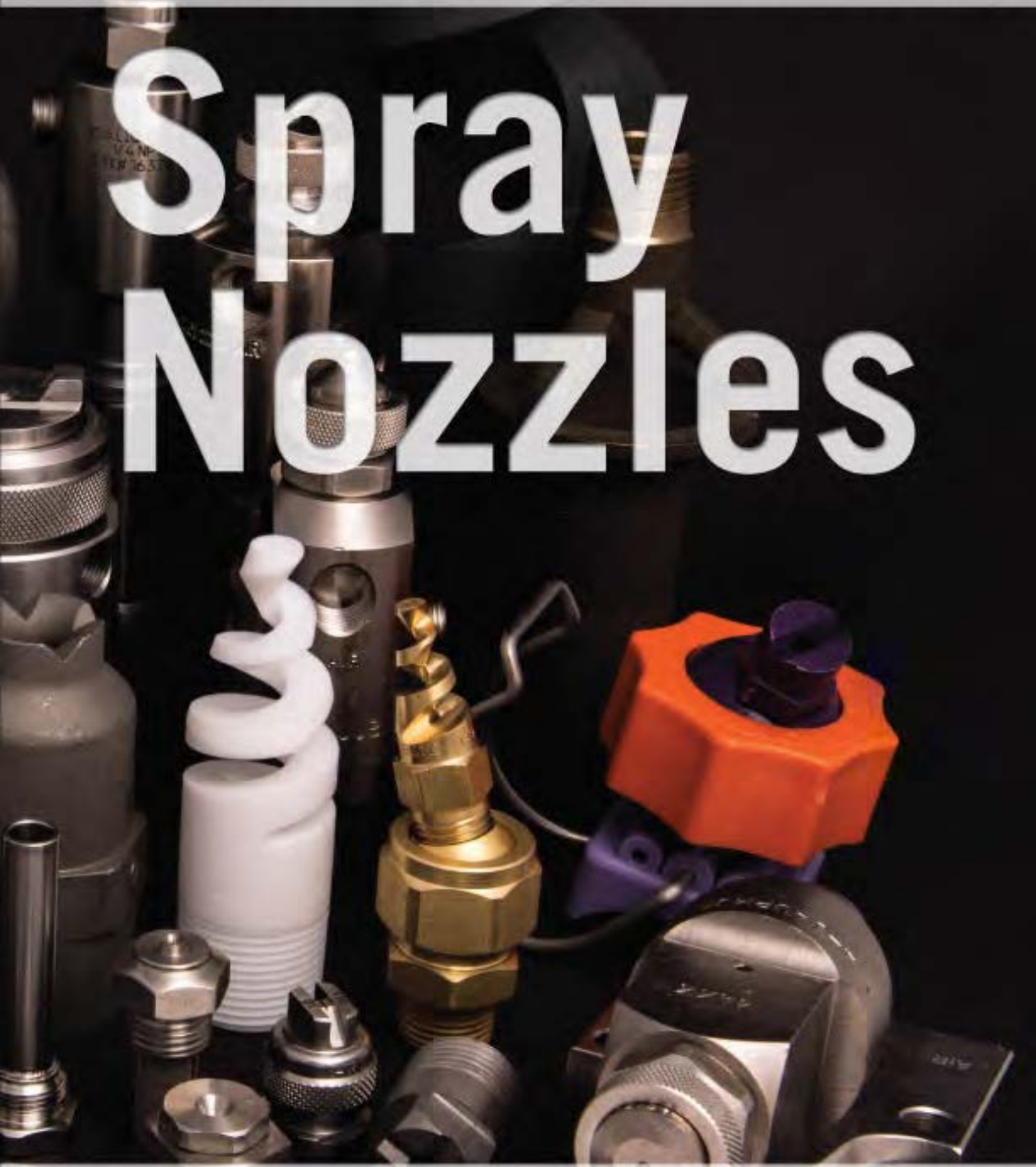
JOHN BROOKS COMPANY LIMITED

Spray Nozzles



www.johnbrooks.ca

1-877-624-5757

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EXPERIENCE

Our Company was founded in 1938 by Mr. John Brooks and started with just three employees.

WE'VE COME A LONG WAY SINCE THEN.

FACILITIES

Headquartered in Mississauga (Toronto), John Brooks Company Limited maintains over 150,000 square feet of warehouse facilities and national representation with sales offices in Montreal, Toronto, Winnipeg, Saskatoon, Calgary, Edmonton and Vancouver.

VALUE

Now more than ever, business efficiency is critical. Our vast experience and unsurpassed expertise allow us to offer our customers intelligent fluid handling solutions at the right price.

Companies today want increasingly more commitment, services and products. In short, better value. Well, at John Brooks, value is what we deliver.

COMMITMENT

With access to a variety of facilities, programs and services, our experienced personnel make full use of leading edge technology and are committed to meeting the ever-changing needs of your industry.

SERVICES

We offer value-added services that are continually expanding right alongside our customers' expectations. A variety of product-related services are available, including total system design, component assembly and full after-sales service. Call toll-free to find out more about what John Brooks can do for you today.

1-877-624-5757

PRODUCTS

For 75 years, John Brooks Company Limited has combined personnel, facilities and expertise to provide Canadian industry with a wide range of high quality fluid handling products.

ONE CALL - PROBLEM SOLVED
1-877-624-5757

INVENTORY

At John Brooks Company Limited, we stock one of the most extensive inventory of products available in the industry. Our large inventory ensures that you will be able to get the product that you need - when you need it.

COMPETITIVE PRICING

John Brooks is committed to providing quality products and value-added services at the most competitive pricing in the industry.

John Brooks Company Limited is proud of its "leading edge" reputation for top quality sales and service of fluid handling solutions across Canada and is dedicated to maintaining that image.

ONE CALL - PROBLEM SOLVED

1-877-624-5757

ADVANCED SPRAY ANALYSIS
TECHNIQUES TO MEASURE EVERY ASPECT OF EVERY DROP

John Brooks Company Limited understands that although spray nozzles may be a small component of a major system or process, they are absolutely critical to performance and efficiency.

Whatever your application, we can assist you in choosing the correct spray nozzle. Our complete selection includes 20,000+ products.

What is your application?

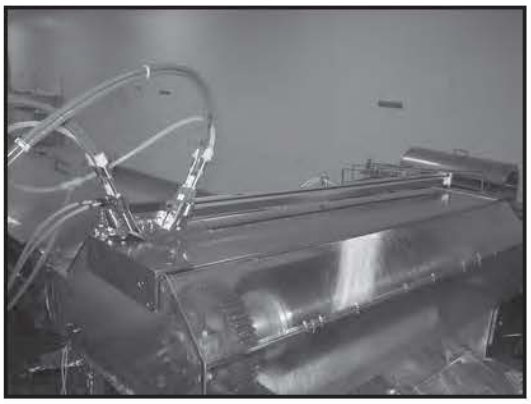
Let us help you find the right solution to your problem.

Our experienced professional staff can help you with all your nozzle requirements.

CALL TODAY

1-877-624-5757

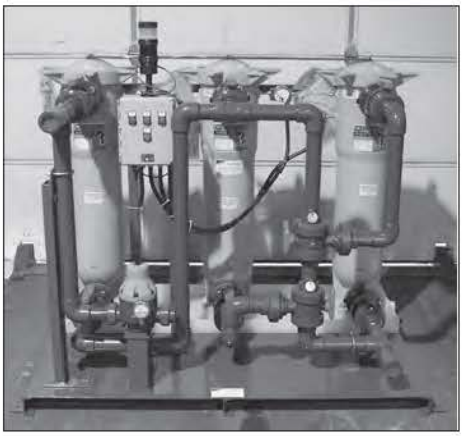
FOOD INDUSTRY
CUTTER LUBRICATION & MOLD RELEASE COATING



CUTTER LUBRICATION
Automatic air-atomizing spray nozzles are mounted on a pneumatic linear slide to lubricate the roller mounted cut-off knives. System includes: Two Automatic Spray Nozzles; Linear Slide; 10 Gallon Pressure Pot; Stainless Steel Portable Cart; Control Panel with Spray Nozzle Pneumatic Controls; Micro-PLC.

MOLD RELEASE COATING
Automatic air-atomizing spray nozzles are mounted on a header that extends across the width of the conveyor to spray a fine coating of release oil into moulds prior to filling with food product and cooking. System includes: Four Rows each of Four Spray Nozzles; Stainless Steel Box Style Headers to enclose all spray nozzle supply tubing; Double 10 Gallon Pressure Pots with Switch-Over Valving to ensure Continuous Supply; Electronic Control Panel with PLCs; Pneumatic Panel for Spray Nozzle Control.

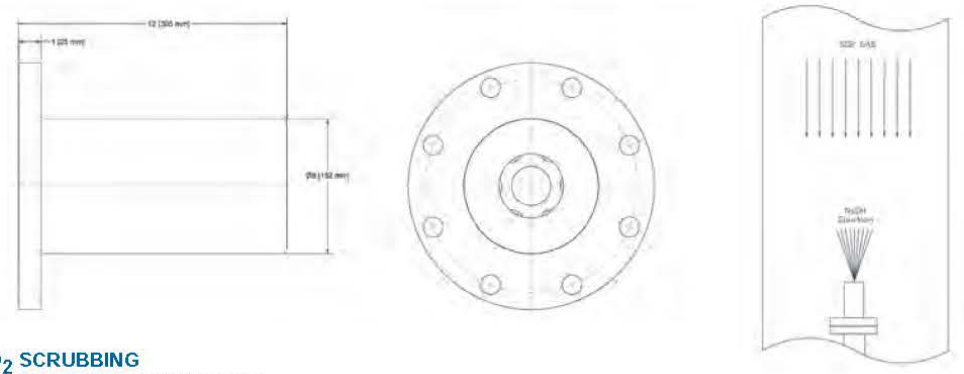
PROCESS INDUSTRIES
BATCHING SYSTEM, FILTRATION PLANT & NOZZLE CALIBRATION SYSTEM



BATCHING SYSTEM
Nutrient is prepared mixed and stored ready for use on an explosion-proof portable skid-mounted system. System includes: an Air Operated Diaphragm Pump: Air Driven Mixer; Extra Heavy Stainless Steel Piping; Pneumatic Valves, Stainless Steel Tank with Split Cover; Pneumatic Control Panel.

FILTRATION PLANT
An all plastic triple filter system supplies water to the processing lines. It can be arranged by manual ball valves to have all 3 filters in series, or #1 in parallel with numbers 2 & 3 in series. System includes: 3 Polypropylene Bag Filter Housings with Quick Opening Covers; Delta-P Gauges with Alarm to Indicate Filter Bag Change Required; Control Panel; Epoxy Coated Steel Mounting Base with Plastic Drip Tray and Drain.

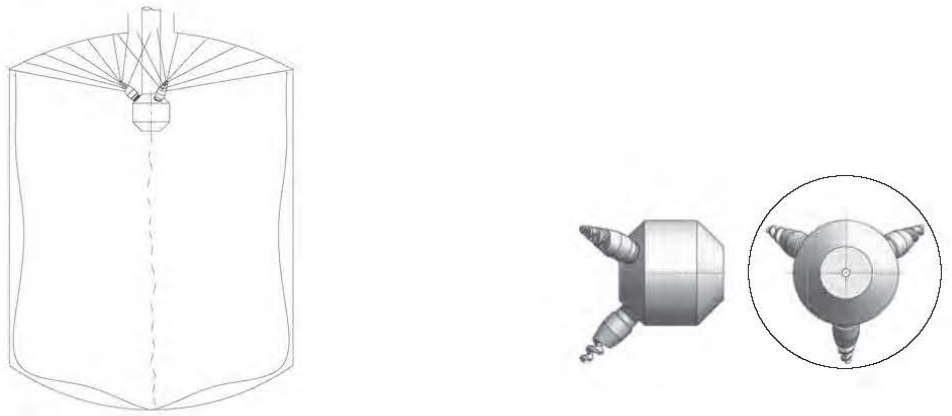
NOZZLE CALIBRATION SYSTEM
High capacity air-atomized cooling nozzles used in continuous casting are tested for critical water and air flow rates, and for spray nozzle alignment using a laser beam projected onto spray header-specific target sheets. System includes Centrifugal Pump with 20hp Motor; Spray Nozzle test Hook-Up Piping; Digital Air and Water Flow Meters; Spray Tank and Enclosure; Control Panel; Epoxy Coated Skid Base.



SO_2 SCRUBBING
SPECIAL HIGH FLOW NOZZLE

CUSTOMER SITUATION
SO_2 SCRUBBING
A large international chemical company had a requirement for nozzles to go into a scrubber they were preparing to build. The scrubber service would be removing Sulfur Dioxide from a gas by reaction with Sodium Hydroxide that would be injected by the nozzles. Sodium Sulfite and water would result. The nozzle would be required to flow 1150 gpm (4350 L/min) at 30 psi (2.1 bar) and unleash substantial energy to facilitate mixing.

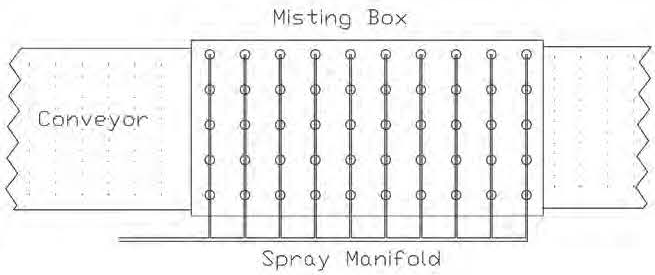
THE SOLUTION
SPECIAL HIGH FLOW NOZZLE
Efforts were coordinated with both the chemical company and the engineering firm that was contracted to build the scrubber. The nozzle specified for the job was a special high flow nozzle in Teflon with a 15 degree spray angle. The narrow spray angle was chosen to concentrate the force.



TANK WASHING
SPECIAL KYNAR® NOZZLE

CUSTOMER SITUATION
TANK WASHING
A large chemical company requested help with an unusual tank washing application. The customer wanted to clean just the top of the tank, and then rely on run-down to rinse the bottom. The tank was glass-lined so they did not want to use anything metallic. The nozzle would need to be made completely out of PVDF. The tank diameter was 3' (0.9 m).

THE SOLUTION
SPECIAL KYNAR 6353LEMJB
Applications Engineering specified a special 6353LEMJB with three HHSJJB spiral nozzles on the top of the customized manifold. There would be no nozzles in the bottom of the manifold. To allow the line to drain after operation, the manifold was designed with a 3/16" (4.8 mm) weep hole.The nozzle would operate at 40 psi (2.8 bar) for a 5 minute cycle time, providing a hard scrubbing spray in the top of the tank.



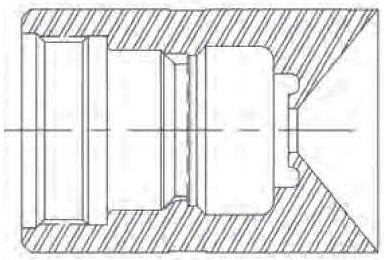
AREA MISTING
SPECIAL GEOMETRY PRJB NOZZLE

CUSTOMER SITUATION
AREA MISTING

A customer had created a misting machine for spraying water onto vegetables on a conveyor. The system was intended to use plant water pressure, 40-80 psi (3-5 bar), to eliminate the need for a special pump. They needed the nozzles to fit through holes in a sheet of plastic covering the conveyor, with minimal protrusion below the sheet. The flow needed to be about 5 GPM (19 L/min) over a 4 ft (1.2 m) wide and 10 ft (3.0 m) long area along the conveyor. The customer had 6 inches of space above the product in which to spray.

THE SOLUTION
SPECIAL GEOMETRY PRJB NOZZLE

For low pressure misting, PRJB/PRJJB nozzles are ideal. Even at pressures as low as 40 psi (3 bar), they create a very fine spray that cannot be matched by whirl type misting nozzles at this pressure. To accommodate the customer's need for a round section, the engineers created special body geometry for the customer. This allowed the nozzles to be easily inserted into the plastic sheet. The tight fit allowed the nozzles to be quickly and easily inserted with no chance of the nozzle slipping out. Application Engineers selected the PRJB24 nozzle, since the flow per nozzle was about 0.1 GPM(0.38 L/min) per nozzle. By creating a 5 by 10 nozzle array, complete coverage could be obtained over the entire area of interest.



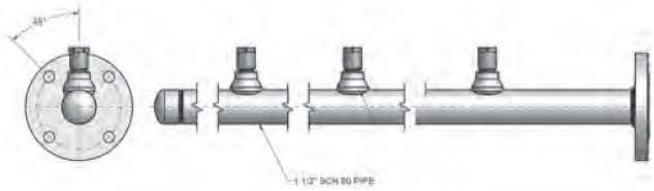
SPRAY DRYING
KNIFE-EDGE TWIST & DRY™ CARRIER

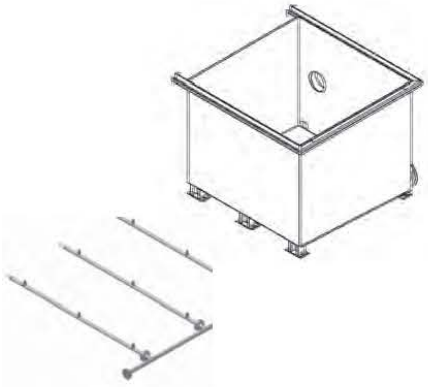
CUSTOMER SITUATION
SPRAY DRYING

A dairy processor was experiencing buildup on the nose of the standard Twist & Dry carrier while spray drying a high fat content product. Buildup needs to be prevented in this type of application because if the buildup dries when exposed to the hot air, there is a risk of combustion within the drying unit.

THE SOLUTION
KNIFE-EDGE TWIST & DRY™ CARRIER

The reasons behind this type of buildup are complex and largely related to the air flow within the dryer. To avoid the buildup, Applications Engineers modified an existing Twist & Dry carrier design to arrive at the "knife-edge" carrier #10 nose design (the lugless version is carrier #12). The knife-edge carrier tapers down to form a sharp ridge at the tip. The conventional Twist & Dry carrier design has a flat face. The new knife-edge design is typically for use in high fat content dairy applications, such as whole milk. The knife-edge carrier design significantly reduces product buildup, thus reducing the risk of combustion.





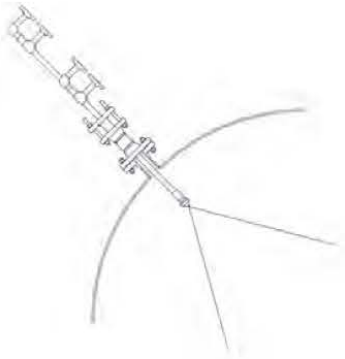
FOAM CONTROL
MFPJB NOZZLE ARRAY

CUSTOMER SITUATION
FOAM CONTROL

A customer had process condensate wastewater in a petroleum processing facility. The wastewater was in a rectangular tank that measured 10' x 11' by 9' (3 m x 3.4 m x 2.7 m) deep. As the wastewater entered the tank, foam was being generated which was undesirable in this process. The customer had about 25 gpm (94.6 L/min) available to use to control the foam. In addition, they were looking for a turnkey system that could be installed as soon as it arrived on site.

THE SOLUTION
MFPJB NOZZLE ARRAY

Applications Engineers first determined that a 3 x 3 array of 1/2HHMFPJB9028 Maxi-Pass full cone nozzles operating at 10 PSI (0.69 bar) would give the desired flow of 25 gpm total and knock down the foam that was being generated. The next step was to review the customer's piping specifications in order to come up with both a nozzle header design and a feed header design. Using one feed header and three nozzles headers, the customer simply had to bolt and gasket the flanges, hook the inlet up to a water source and they would be ready to go!



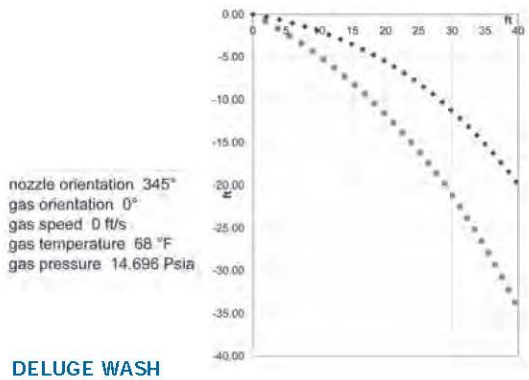
COOLING
RETRACTABLE SAJB LANCES

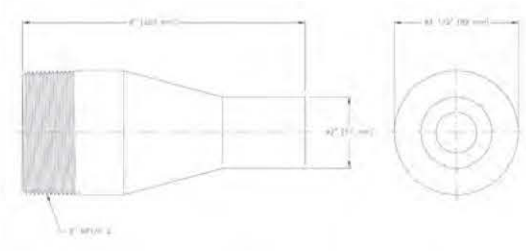
CUSTOMER SITUATION
COOLING

A customer needed air-atomizing nozzle lances to spray cooling water in a refining regenerator vessel.The nozzles needed to be made out of high temperature-resistant Inconel 625 nickel alloy. They also wanted an option of being able to retract the lances out of the gas flow when they weren't needed, reduce wear on the nozzles, and improve air-flow through the vessel.

THE SOLUTION
RETRACTABLE SAJB LANCES

Design Engineers offered lance designs for both permanent and retractable options, designing the retractable lance components to over 150% of the customers 380°F (193°C) temperature specification, and also allowing for 360° of nozzle head rotation if needed.





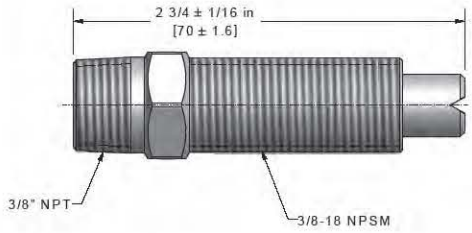
DELUGE WASH
HHJB30° NOZZLE

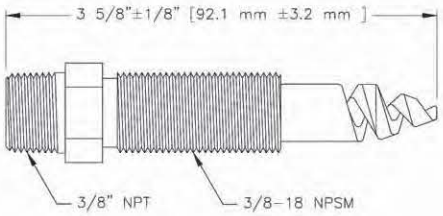
CUSTOMER SITUATION
DELUGE WASH

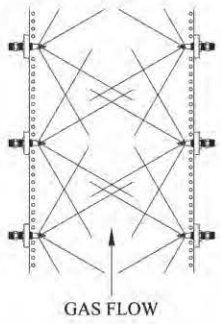
A manufacturer of paper products contacted Applications Engineering with an application involving cleaning a 100′ (30.5 m) diameter storm water retention basin. When the basin is emptied, sawdust from the water forms a ring around the wall of the lagoon. The company was looking for the most effective spray nozzle solution for cleaning the walls of the lagoon.

THE SOLUTION
HHJB30° NOZZLE

Applications Engineering deployed advanced spray-modeling technology to recommend an optimized solution. After running trajectory projections, we recommended using the 3″ 3HHJB302380-15 at 20 psi (1.4 bar), oriented 15 degrees below horizontal, 40′ (12.2 m) from the wall, and 20′ (6.1 m) above the area to be contacted. The HH30° nozzle revolves slowly around the center point of the lagoon to provide even and effective spray coverage.







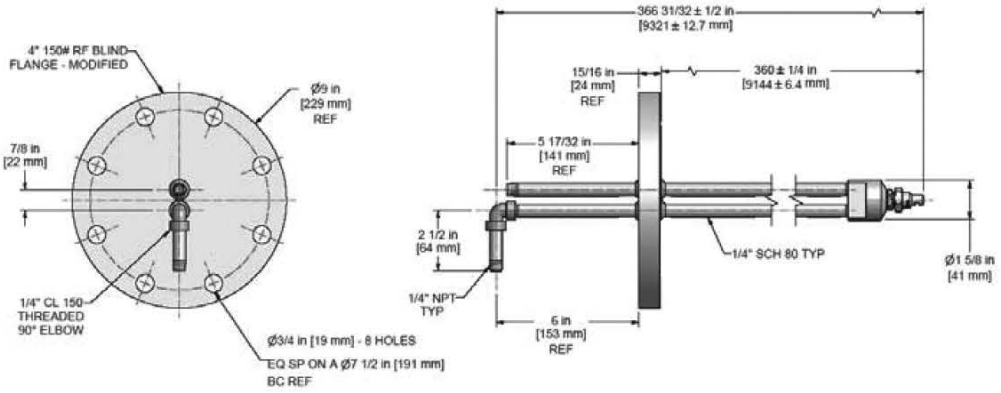
GAS COOLING
CUSTOM MOUNT WALL MOUNT UJB & HHSJJB

CUSTOMER SITUATION
GAS COOLING

A paper mill wanted to retrofit the quench section of their flue gas duct. The existing arrangement had the nozzles mounted through a mounting block and into the ductwork. Each nozzle connected to a mounting block with straight pipe threads and was held in place via a locking nut. This arrangement allowed the insertion length of the nozzle to be controlled. The interior of the ductwork was lined with heat transfer tubes, and the nozzles had to protrude into the duct far enough so that the spray would not impinge on the tubes. While the spray pattern was a simple flat fan, the increased length and special straight pipe threads on the nose precluded the nozzle from being a standard part. Additionally, the customer wanted to use a nickel alloy material due to corrosion occurring with the existing 316 stainless steel nozzles.

THE SOLUTION
CUSTOM LENGTH WALL MOUNT UJB & HHSJJB

Our custom design and machining capabilities allowed our Applications Engineers to offer a direct replacement design to the existing nozzles with drawing submittal back to the customer within a few days. However, the Applications Engineers went the extra step to help improve the customer's process. Using the customer-supplied data, a quench analysis was performed on the process. The analysis indicated good agreement with the amount of water the customer was using, but showed that the drop size produced by the fan nozzles was too large, leading to loss of efficiency. At the same time the direct replacement design was submitted to the customer, an alternate spiral design was submitted. It retained the same mounting features of the original nozzle, but the spiral design produces droplets 45% smaller than the flat fan at equivalent flow. In this case, the spiral design would allow the gas to be cooled to a temperature well below what the customer had achieved in the past.Our in-house foundry had the ability to cast nickel alloys resulted in the custom spiral nozzle having the same lead time as the custom flat fan.



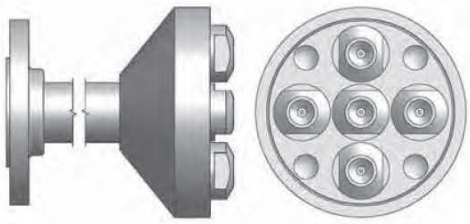
COATING
30' XAFF LANCE

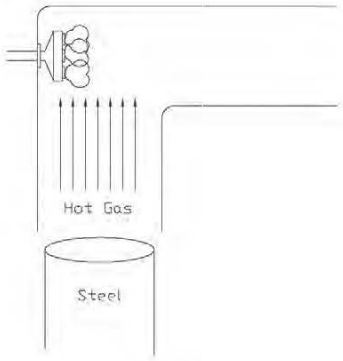
CUSTOMER SITUATION
COATING

A manufacturer of hydraulic cylinders requested help with an application involving coating the inside of centrifugal casting molds with mold release. The length of the molds presented the biggest challenge. The longest mold measured 30' (9.1m) and had a 30" (762mm) inside diameter. They needed a fine spray with even distribution so the coating would be even and the mold release would serve its intended purpose.

THE SOLUTION
30' JBCJB-240E LANCE

The best nozzle series to use in this case was the JJB. The JJB series offers superior spray atomization and flexibility with respect to spray pattern, flow rate and hardware configuration. Experimentation proved that the JJB240E, with its deflected flat fan, provided the desired coating performance. A 30' (9.1m) lance was designed with two parallel ¼" pieces of schedule 80 pipe feeding the 1/4JBCJB-240E nozzle. The JBC body style has parallel inlets that allow the lance to both be inserted into and reach the full length of the mold.





GAS COOLING
CUSTOM TITANIUM MULTI-HEAD NOZZLE

CUSTOMER SITUATION
GAS COOLING

A customer at a steel mill needed nozzles to quench and clean hot gas containing by-products from an upstream process. The composition of the vapor required that the nozzle be constructed of Titanium. Excess water would be detrimental to the equipment, so the spray had to be completely evaporated.

THE SOLUTION
CUSTOM TITANIUM LANCE WITH MULTI-HEAD NOZZLE

Applications Engineers designed a special assembly consisting of five Twist & Dry nozzles at the end of a lance. The necessary calculations were performed to determine the droplet size required for complete evaporation. The five nozzles used each had a 097-size orifice disc and a SW10 swirl unit. The nozzles operate at 150 psi (10.3 bar), flowing a total of 700 gph(2650 l/h) with a Sauter Mean Diameter of 110 microns.

SPIRAL

AXIAL WHIRL

TANGENTIAL WHIRL

FAN

IMPINGEMENT

AIR ATOMIZING

SPRAY PATTERNS

SPIRAL PATTERN

The BETE original design remains one of the major advances in nozzle technology. The liquid is atomized into small droplets by a continuously descending spiral and - therefore - enters and exits with no internal restrictions through relatively large passages. The result is a higher discharge velocity so lower pumping pressures can be used to produce the required atomization.

Note: The spiral full cone pattern is developed from a series of concentric hollow cones which combine to give a full cone effect.

FULL CONE

EXTRA WIDE

HOLLOW CONE

AXIAL WHIRL

In general, Whirl Nozzles provide uniform distribution of relatively large droplets. In-line or Axial Whirl nozzles feature an internal vane within the nozzle body which causes the liquid to "whirl".

AXIAL FULL CONE

AXIAL HOLLOW CONE

TANGENTIAL WHIRL

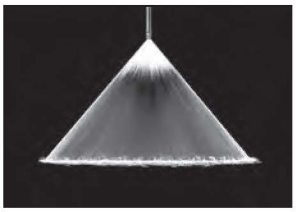
In Tangential Whirl Nozzles the liquid is introduced from the side of the chamber which causes the liquid to whirl and produces a hollow cone pattern without the need for an internal vane

TANGENTIAL HOLLOW CONE

FAN SPRAY

With Fan Nozzles - the liquid is forced through a relatively small, elliptical orifice to provide a thin, flat sheet of spray which covers a narrow area. They are particularly effective in applications such as washing or descaling where the nozzles are fixed and the item to be sprayed passes by.

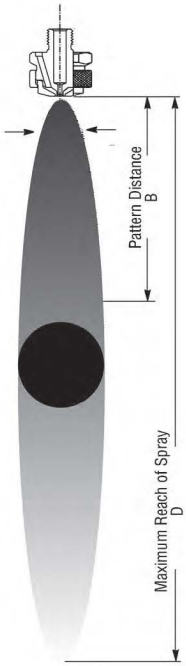
BASIC FAN



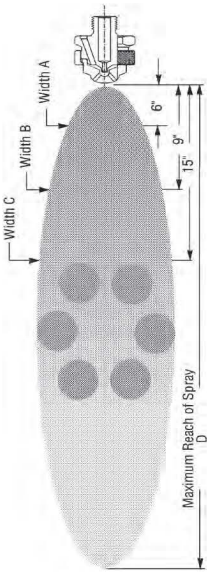
DEFLECTED FAN

AIR ATOMIZING

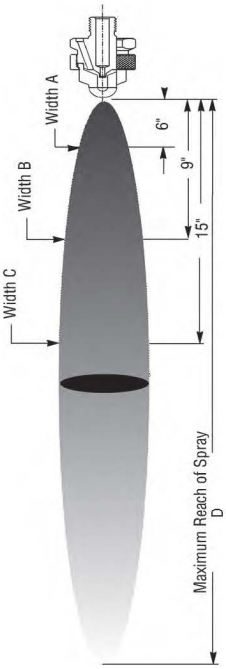
Air atomizing nozzles utilize compressed air and liquid -- typically water -- to provide the finest atomization of liquid. A complete range is available -- from lower flow rates (0.1 to 306 gallons per hour) to higher flow rates (from 0.33 to 20 gallons per minute). Also, available are nozzles designed to give very precise control at lower flow rates (0.7 to 47 gallons per hour). All types are available in a wide variety of configurations, so you can tailor the spray to your application.



FULL CONE



HOLLOW CONE



FLAT FAN

IMPINGEMENT

Shooting a fine liquid jet against a metal pin of equal diameter results in the finest atomization possible with a direct pressure nozzle. In some cases - these simple nozzles can replace more expensive air or steam atomizing nozzles.

IMPINGEMENT

FLUID PROPERTIES

Specific gravity primarily affects nozzle flow. Flow rates of liquids denser than water are lower than flow rates of water at the same pressure because more energy is required to accelerate denser fluids. The following relationship exists between flow rates of liquids with different specific gravities:

$$\frac{Q2}{Q1} = \sqrt{\frac{SG_1}{SG_2}}$$

FLUID	VISCOSITY	SPECIFIC GRAVITY
WATER	1cP	SG = 1
10W - 30 OIL	110 cP	SG = 0.88
HONEY	1500 cP	SG = 105

MATERIALS

Our nozzles are available in hundreds of different materials and combinations of materials. If you are not sure which material is best for your application - our Application experts can help you with your selection.

Virtually any material that can be machined, cast or molded can be used to make a nozzle. The selection depends on: cost, the fluid being sprayed, and operating conditions such as temperature, corrosion, chemical attack, and abrasion.

When evaluating various materials, it is important to consider the impact of nozzle life on plant efficiency. We can help you select the material for maximum effectiveness and operating life in your application.

MATERIALS LIST

Aluminum
Aluminum Bronze
Aluminum Oxide
Beryllium Copper
Boron Carbide
Brass
Bronze
Cast Iron
Ceramic
Chrome Carbide
Copper
CPVC
Cupro Nickel
DELRIN
Ductile Iron
DURANICKEL
DURONZE
EVERDUR
FRP
Graphite
Hard Rubber
Hard. Stainless Steel
HASTELLOY
HAVEG
ILLIUM
INCOLOY
INCONEL
KEL-F
KYNAR
LUCITE
MONEL
Naval Brass
Nickel
Nylon
Polycarbonate
Polyethylene
Polypropylene
Polyurethane
PVC
REFRAX
Reinforced Polyester
Sapphire
Silicone Carbide (Nitride Bonded)
Silicone Carbide (Reaction Bonded)
Silicon Carbide (Sintered)
Stainless Steel (all grades)
Steel
STELLITE
Tantalum
TEFLON
317 LMN Stainless Steel
Titanium
Tungsten Carbide
ULTIMET
VITON
ZIRCALLOY
Zirconium

TRADEMARK REGISTRATIONS AND OWNERSHIP

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Delrin®	E.I. DuPont de Nemours and Company	Lucite®	E.I. DuPont de Nemours and Company
Duranickel®	Inco Alloys International, Inc.	Monel®	The International Nickel Company, Inc.
Everdur®	BancBoston Financial Company	Refrax®	The Carborundum Company
Fairprene®	E.I. DuPont de Nemours and Company	Ryton®	Phillips Petroleum Company
Hastelloy®	Haynes International, Inc.	Stellite®	Stoody Deloro Stellite, Inc.
Haveg®	Ametek, Inc.	Teflon®	E.I. DuPont de Nemours and Company
Illium®	Stainless Foundry & Engineering, Inc.	Ultimet®	Haynes International, Inc.
Incoloy®	The International Nickel Company, Inc.	Viton®	E.I. DuPont de Nemours and Company
Inconel®	Inco Nickel Sales, Inc.	Zircalloy®	E.I. DuPont de Nemours and Company

SPECIFYING SPRAY NOZZLES

Spray nozzles have three basic functions:

- meter flow
- distribute liquid
- break up a liquid stream into droplets

The process of choosing a nozzle includes specifying:

a) its flow-rate-versus-pressure characteristics
b) how the droplets will be distributed after leaving the nozzle
c) the size of the droplets that will be produced
d) the nozzle connection to the feed pipe
e) the material of construction

FLOW RATE

The volume of liquid flowing through a nozzle depends primarily on the difference in fluid pressure upstream of its orifice and the pressure into which the nozzle discharges (normally that of the atmosphere). Pressures that are listed in the flow rate tables of each nozzle series are gauge pressures.

VISCOSITY

Viscosity also affects nozzle performance. High viscosities inhibit atomization. In general, fluids with viscosities greater than 100 cP are difficult to atomize except with air atomizing nozzles.

SYSTEM DESIGN

The piping system that supplies the nozzles must be designed to deliver the correct pressure at the nozzle inlet. The following formula is useful in estimating the pressure a pump will have to supply to a nozzle system:

$$P_{PUMP} = P_{NOZZLE} + P_{PIPE\,LOSSES} + \frac{ph}{144}$$

where:

p = density of fluid (lbs/ft3)

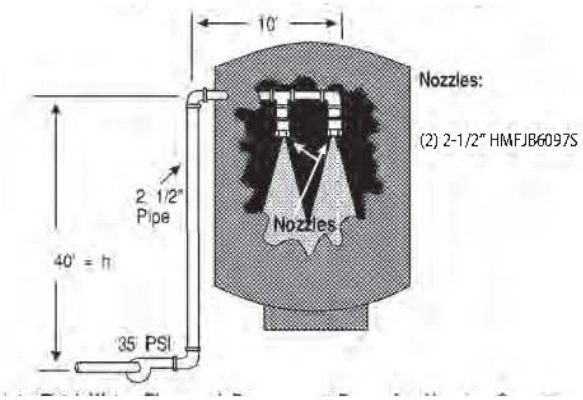
(water = 62.4 lbs/ft3)

h = height of nozzle above pump (ft)

– negative if the nozzle is below the pump

P = pressure (PSI)

SYSTEM DESIGN EXAMPLE



Calculate Total Water Flow and Pressure at Pump for Nozzles Operating at 10 PSI

Total Flow = (2 nozzles) (99.5 GPM/nozzle) = **199 GPM**

Pump Pressure Formula:

$$\text{PSI pump} = \text{PSI nozzle} + \text{PSI pipe losses} + \frac{ph}{144}$$

Calculate Pipe Loss:

Pipe Friction = 11.68 PSI/100'

⇨ (50'/100') 11.68 PSI = 5.8 PSI

Fitting Loss = (6 ft/elbow) (2 elbows) = 12' equivalent

⇨ (12'/100') (11.68 PSI) = 1.4 PSI

Total Piping Losses = 5.8 PSI + 1.4 PSI = 7.2 PSI

Calculate Elevation Losses:

$$\frac{(62.4)\,(40')}{144} = 17.3\ \text{PSI}$$

Calculate Pump Pressure Required from Above Formula:

10 PSI + 72 PSI + 17.3 PSI = 34.5 PSI

DROPLET SIZE

Droplet size is often critical. Many processes such as gas scrubbing depend on exposing the maximum possible amount of liquid surface to a gas stream. Other applications require that the droplets be as large as possible, such as when the spray must project into a faster moving gas stream.

Exposing the maximum surface area requires breaking the liquid into droplets as small as possible. To get an idea of how this works, imagine a cube of water with a volume of 1 gallon. This cube has a surface area of 1.6 ft^2. If we now split it in two, we expose some of the inner surface and increase total surface area to 2.1 ft^2. Atomizing the liquid into spheres 1mm (1,000 microns) in diameter would increase the surface area of this gallon of liquid to 244 ft^2.

A nozzle actually produces a range of droplet sizes from the solid liquid stream. Since it is inconvenient to list all the sizes produced, droplet size (in microns) is usually expressed by a mean or median diameter. An understanding of diameter terms is essential. The following definitions are given for the most frequently used mean and median diameters:

Arithmetic Mean Diameter (D10)

> The average of the diameters of all the droplet in the spray sample.

Volume Mean Diameter (D30)

> The diameter of a droplet whose volume, if multiplied by the total number of droplets, will equal the total volume of the sample.

Sauter Mean Diameter (D32)

> The diameter of a droplet whose ratio of volume to surface area is equal to that of the complete spray sample.

Mass (Volume) Median (DV05)

> The diameter which divides the mass (or volume) of the spray into two equal halves. Thus ½ of the total mass is made up of droplets with diameters smaller than this number and the other half with diameters that are larger.

The Sauter Mean Diameter is one of the most useful ways to characterize a spray. The ratio of volume to surface area for the Sauter Mean is the same as that ratio for the entire spray volume. For this reason, the use of the Sauter Mean is preferred for process calculations.

Whirl nozzles generally produce larger droplets than spiral nozzles, and air-atomizing nozzles typically produce the smallest droplets of all.

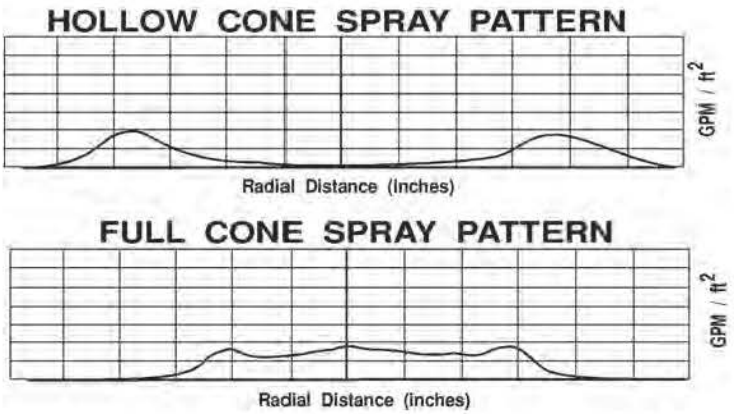
It is sometimes useful to predict the effect a change in pressure will have on the droplet size produced by the nozzle. For single fluid nozzles the following equation may be used for modest changes in pressure.

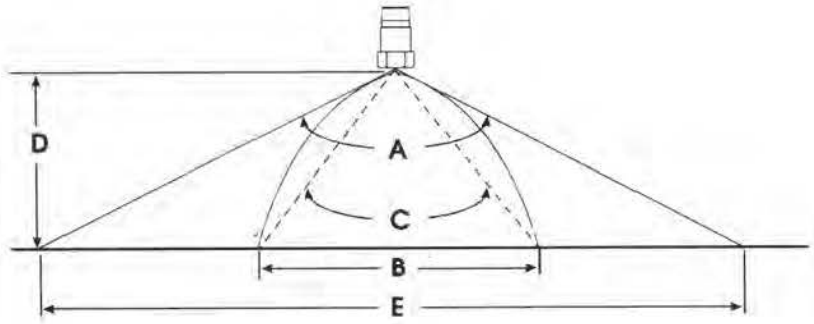
$$\frac{D2}{D1} = \left(\frac{P_2}{P_1}\right)^{-0.3}$$

NOZZLE SPRAY PATTERN

The term "Spray Pattern" describes the location and spray density of the liquid emitted from a nozzle.

Two examples of pattern measurement are shown to the right. The height of the curve at any point is the spray density in units of GPM/ft^2.





SPRAY COVERAGE DIAGRAM
DATA SHOWN IS THEORETICAL & DOES NOT TAKE INTO CONSIDERATION THE EFFECTS OF GRAVITY, GAS FLOW OR HIGH PRESSURE OPERATION.

SPRAY COVERAGE

Four terms are commonly used to describe spray coverage:

- Spray Angle
- Actual Spray Coverage
- Effective Spray Angle
- Theoretical Spray Coverage

SPRAY ANGLE

(A) The included angle of the spray as measured close to the nozzle orifice. Since the droplets are immediately acted upon by external forces (gravity and moving gases, for example), this measurement is useful only for determining spray coverage close to the nozzle. The spray angles listed for nozzles in this catalog are angles at the nozzle, measured at the nozzle's design pressure.

ACTUAL SPRAY COVERAGE

(B) The actual coverage at a specified distance (D) from the nozzle.

EFFECTIVE SPRAY ANGLE

(C) The angle calculated from the actual coverage (B) at a distance (D).

THEORETICAL SPRAY COVERAGE

(E) The coverage at distance (D) if the spray moved in a straight line.

THEORETICAL SPRAY COVERAGE (E) IN INCHES

Included Spray Angle (A)	Distance from Nozzle Orifice (D) (inches)										
	2	4	6	8	10	12	15	18	24	30	36
10°	0.4	0.7	1.1	1.4	1.8	2.1	2.6	3.1	4.2	5.2	6.3
20°	0.7	1.4	2.1	2.8	3.5	4.2	5.3	6.4	8.5	10.6	12.7
30°	1.1	2.1	3.2	4.3	5.4	6.4	8.1	9.7	12.8	16.1	19.3
40°	1.5	2.9	4.4	5.8	7.3	8.7	10.9	13.1	17.5	21.8	26.2
50°	1.9	3.7	5.6	7.5	9.3	11.2	14	16.8	22.4	28.0	33.6
60°	2.3	4.6	6.9	9.2	11.5	13.8	17.3	20.6	27.7		
70°	2.8	5.6	8.4	11.2	14	16.8	21	25.2	33.6		
80°	3.4	6.7	10.1	13.4	16.8	20.2	25.2	30.3	40.3		
90°	4.0	8.0	12;0	16.0	20.0	24.0	30.0	36.0	48.0		
100°	4.8	9.5	14.3	19.1	23.8	28.6	35.8	43.0			
110°	5.7	11.4	17.1	22.8	28.5	34.3	42.8	51.4			
120°	6.9	13.9	20.8	27.7	34.6	41.6	52.0	62.4			
130°	8.6	17.2	25.7	34.3	42.9	51.5	64.4				
140°	10.9	21.9	32.9	43.8	54.8	65.7					
150°	14.9	29.8	44.7	59.6	74.5						
170°	45.8	91.6									

HOW TO ORDER
FULL CONE, HOLLOW CONE & FLAT SPRAY NOZZLES

FULL CONE NOZZLES

STANDARD	1/4	G -	SJB	10
Inlet Connection Pipe Size				
Nozzle Type				
Material Code				
Capacity Size				

SQUARE	1/4	G -	SJB	12SQ
Inlet Connection Pipe Size				
Nozzle Type				
Material Code				
Capacity Size - Square Spray Pattern				

VANELESS	1/4	GANV -	SJB	10
Inlet Connection Pipe Size				
Nozzle Type				
Material Code				
Capacity Size				

NARROW ANGLE	1/2	GG -	SJB	30	80
Inlet Connection Pipe Size					
Nozzle Type					
Material Code					
Spray Angle					
Capacity Size					

SPIRAL TYPE	1/4	HHSJ	SJB	120	07
Pipe Size					
Nozzle Type					
Material Code					
Spray Angle					
Capacity Size					

* Material code SJB indicates Type 303 Stainless Steel

HOLLOW CONE NOZZLES

STANDARD	1/4	A -	SJB	10
Inlet Connection Pipe Size				
Nozzle Type				
Material Code				
Capacity Size				

CAST	2	C -	SXJB	60
Inlet Connection Pipe Size				
Nozzle Type				
Material Code				
Capacity Size				

* Material code SXJB indicates Type 316 Stainless Steel

INLINE	3/8	BD -	SJB	10
Inlet Connection Pipe Size				
Nozzle Type				
Material Code				
Capacity Size				

SPIRAL TYPE	1/4	BSJ -	SJB	120	07
Inlet Connection Pipe Size					
Nozzle Type					
Material Code					
Spray Angle					
Capacity Size					

FLAT SPRAY NOZZLES

STANDARD	1/4	VV -	SJB	110	10
Inlet Connection Pipe Size					
Nozzle Type					
Material Code					
Spray Angle					
Capacity Size					

HIGH IMPACT	3/8	PA -	SJB	50	60
Inlet Connection Pipe Size					
Nozzle Type					
Material Code					
Spray Angle					
Capacity Size					

* Material code SJB indicates Type 303 Stainless Steel

FLOODING	1/8	K -	SJB	.50
Inlet Connection Pipe Size				
Nozzle Type				
Material Code				
Capacity Size				

FINE SPRAY NOZZLES

HYDRAULIC ATOMIZING	1/4	LN -	SJB	8W
Inlet Connection Pipe Size				
Nozzle Type				
Material Code				
Capacity Size - Wide Spray Pattern				

FINE SPRAY – MULTI-HEAD	1-1/2 -	7G -	SJB	30
Inlet Connection Pipe Size				
Nozzle Type				
Material Code				
Capacity Size				

* Material code SJB indicates Type 303 Stainless Steel

AIR ATOMIZING NOZZLES

NOZZLE BODY ASB., RETAINER & GASKET	1/4	JN	SJB +
Inlet Connection Pipe Size			
Nozzle Body Asb. Type			
Material Code (Body & Retainer)			

SPRAY SET-UP	SUJB11 -	S
Spray Set-Up No.		
Material Code (Air & Fluid Caps)		

* Material code SJB indicates Type 303 Stainless Steel

SPRAY NOZZLE SYSTEMS

HOLLOW CONE – UNI-JB COMPLETE NOZZLE	Nozzle Body + TX -	JB	1.25
Tip Type			
Material Code			
Capacity Size			

FULL CONE – UNI-JB COMPLETE NOZZLE	Nozzle Body + TG -	SJB	14W
Tip Type			
Material Code			
Capacity Size - Wide Spray			

FLAT SPRAY – UNI-JB COMPLETE NOZZLE	Nozzle Body + TP JB	110	10	S
Tip Type (Only used when ordering tip alone)				
Spray Angle				
Capacity Size				
Material Code				

HOLLOW CONE – QUICK-SPRAY COMPLETE NOZZLE	Nozzle Body + QB -	SJB	5-5W
Tip Type			
Material Code			
Capacity Size			

FULL CONE – QUICK-SPRAY COMPLETE NOZZLE	Nozzle Body + QH -	SJB	12SQ
Tip Type			
Material Code			
Capacity Size			

FULL CONE – QUICK-SPRAY COMPLETE NOZZLE	Nozzle Body + QVV -	SJB	110	10
Tip Type				
Material Code				
Spray Angle				
Capacity Size				

* Material code SJB indicates Type 303 Stainless Steel

FLUID LINE ACCESSORIES

SADDLE CLAMP	7521	A JB	3/4 x	1/4
Split-Eyelet Connector Type				
Material Code				
Clamp Size				
Outlet Connection Size NPT (F)				

SWIVEL JOINT	ADJ	S	1/2 x	1/2
Type				
Material Code				
Inlet Connection Size				
Outlet Connection Size				

* Material code S indicates Type 303 Stainless Steel

SPRAY PATTERN
60° full cone

SPRAY PATTERN
90° full cone

GJB
1/8" - 1/2" NPT (F)

GGJB
1/8" - 1/2" NPT (M)

HHJB
3/4" - 1" NPT (M)

HHJB-W
3/4" - 6" (M)

HHJB
1/8" - 1" NPT (M)

GAJB
1/8" - 1/2" NPT (F)

GGAJB
1/8" - 1/2" NPT (M)

GDJB
1/8" - 1/2" NPT (F)

DESIGN FEATURES

Full cone spray nozzles are one of the most versatile types and are used in countless applications and in all industries. They are available in many variations of a full cone spray pattern; from narrow, high impact 15 degree round spray used for tough cleaning applications, to a light impact, extra wide angle rectangular spray used for rinsing delicate products such as soft fruit. Flow rates range from tenths of gallons per minute, to deluge sprays of thousands of gallons per minute, and everything in between. Here is a brief description of the types nozzles detailed in the following full cone section.

Standard - Types GJB & GGJB are three piece nozzles. The cap and internal helical vane can be removed for cleaning or replacement without disturbing the pipe connection of the nozzle body. As the cap and vane are the main wear parts, this makes maintenance easy. The spray pattern is circular with spray angles in the 50 to 90 degree range. Pipe connections sizes are from 1/8" to 1/2" in male and female NPT, and ANSI flanged connections for the larger pipe sizes.

Types HJB & HHJB are essentially a one piece nozzle with the internal vane being press fitted at the factory and not easily removable. HJB and HHJB range from ¼" to 12" with the larger sizes available with ANSI flanged connections, as the HFJB series.

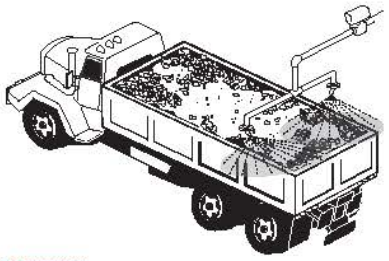
Angle Type - The GAJB and GGAJB nozzle range covers the same flow rates and spray patterns as the Standard GJB and GGJB nozzles above, but gives the option to position the spray nozzle connection perpendicular to the axis of the full cone spray pattern. This is a benefit in applications where headroom for the distance from the spray header to the sprayed surface is limited. Angle type full cone nozzles can be mounted along the horizontal centre-line rather than into the bottom of the spray header. They are available in 1/8" to ½" pipe connections.

Wall Mounted Type - Some applications require that the spray nozzle be inside a vessel, pipe, conveyor cover or similar, while the inlet pipe connection is outside. The Wall Mounted D series of full cone nozzles provides this option. The front, or orifice end of the nozzle body has a male NPT thread the same size as that of the nozzle inlet connection. The three piece G & GG and two piece H styles are available in pipe connection sizes from 1/8" to 3" NPT.

STANDARD SPRAY ANGLE
ROUND SPRAY PATTERN

SPRAY PATTERN
60° full cone

SPRAY PATTERN
90° full cone



DUST CONTROL
dust control with full cone nozzles for aggregate trucks before leaving the quarry

COMMON APPLICATIONS

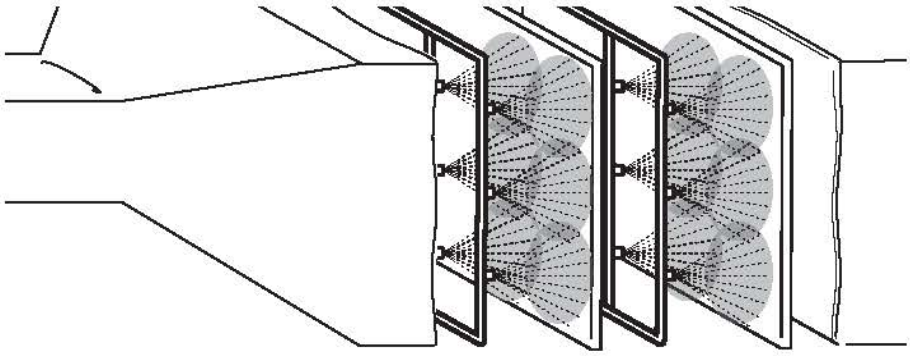
- Washing & Rinsing any Conveyorised product
- Quenching During Heat Treat Process
- Gas Cooling and Scrubbing
- Coating with Chemicals
- Fire Prevention
- Cooling Canned Foods

SPECIFICATIONS

PIPE SIZES 1/8" TO 1/2"

U.S. GALLONS PER MINUTE								SPRAY ANGLE °			PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE			
															STANDARD			
10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	150 PSI	7 PSI	20 PSI	80 PSI					(F)		(M)	
0.10	0.14	0.17	0.19	0.23	0.26	0.30	0.36		58	53		1	0.030	0.031	GJB		GGJB	
0.13	0.18	0.22	0.25	0.30	0.35	0.38	0.47		60*			1.3		0.043		HJB		HHJB
0.15	0.21	0.25	0.29	0.35	0.40	0.44	0.53	52	65	59		1.5	0.030	0.050	GJB		GGJB	
0.20	0.28	0.34	0.38	0.46	0.53	0.59	0.70	43	50	46		2	0.040	0.050	GJB		GGJB	
0.26	0.36	0.44	0.50	0.60	0.69	0.77	0.93		60*			2.6		0.055		HJB		HHJB
0.30	0.42	0.50	0.57	0.69	0.79	0.88	1.1	52	65	59	1/8	3	0.040	0.063	GJB		GGJB	
0.35	0.48	0.58	0.67	0.81	0.92	1.0	1.3	43	50	46		3.5	0.050	0.063	GJB		GGJB	
0.39	0.54	0.66	0.75	0.91	1.0	1.2	1.4		60*			3.9		0.072		HJB		HHJB
0.39	0.54	0.65	0.74	0.89	1.0	1.1	1.4	77	84	79		3.9A	0.050	0.078				
0.50	0.69	0.82	1.0	1.2	1.3	1.5	1.8	52	65	59		5	0.050	0.078	GJB		GGJB	
0.6	0.8	1.0	1.1	1.4	1.6	1.8	2.2	69	74	68		6.1	0.063	0.094				
0.5	0.7	0.9	1.0	1.2	1.4	1.5	1.9		60*			5.2		0.082		HJB		HHJB
0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.3	45	50	46		6.5	0.063	0.094	GJB		GGJB	HHJB
0.8	1.1	1.3	1.5	1.8	2.2	2.3	2.8		60*		1/4	7.8		0.109		HJB		HHJB
1.0	1.4	1.7	1.9	2.4	2.7	3.0	3.6	58	67	61		10	0.063	0.109	GJB		GGJB	HHJB
1.3	1.7	2.1	2.4	2.9	3.3	3.6	4.4	69	74	68		12.5	0.094	0.125				
1.0	1.3	1.6	1.8	2.2	2.5	2.8	3.4	45	50	46		9.5	0.094	0.109	GJB		GGJB	HHJB
1.0	1.4	1.8	2.0	2.4	2.8	3.1	3.7		60*			10		0.125		HJB		HHJB
1.5	2.1	2.5	2.9	3.5	4.0	4.4	5.3	64	67	61		15	0.109	0.141	GJB		GGJB	
1.6	2.2	2.6	3.0	3.6	4.2	4.6	5.6		60*		3/8	16		0.156		HJB		HHJB
2.0	2.8	3.4	3.8	4.6	5.3	5.9	7.2	76	80	73		20	0.109	0.156				
2.1	2.9	3.5	4.0	4.8	5.5	6.2	7.4		60*			21		0.188		HJB		HHJB
2.2	3.0	3.7	4.2	5.1	5.8	6.4	7.8	87	90	82		22	0.188	0.188			GGJB	HHJB
1.6	2.2	2.7	3.1	3.7	4.3	4.7	5.7	48	50	46		16	0.125	0.141	GJB		GGJB	
2.5	3.5	4.2	4.8	5.8	6.7	7.4	8.9	64	67	61		25	0.125	0.188	GJB		GGJB	HHJB
2.6	3.6	4.4	5.0	6.1	6.9	7.7	9.3		60*			26		0.203		HJB		HHJB
3.1	4.3	5.2	6.0	7.3	8.3	9.2	11.2		60*			31		0.219		HJB		HHJB
3.2	4.4	5.3	6.1	7.4	8.5	9.4	11.3	72	75	68	1/2	32	0.141	0.203			GGJB	
3.7	5.1	6.1	7.0	8.5	9.7	10.8	13.0		60*			36.5		0.228		HJB		HHJB
4.0	5.5	6.6	7.6	9.2	10.6	11.8	14.3	88	91	83		40	0.141	0.250	GJB		GGJB	HHJB
5.0	6.9	8.2	9.5	11.6	13.2	14.7	18.0	91	94	86		50	0.156	0.266				

* These sizes also available with 90° Spray Angle
Standard materials: Brass, 303 Stainless Steel 316 Stainless Steel, with many sizes also available in PVC, Polypropylene, and PTFE



AIR WASHER
in-duct air washing with full cone nozzles to take particulate out of the air stream

SPECIFICATIONS

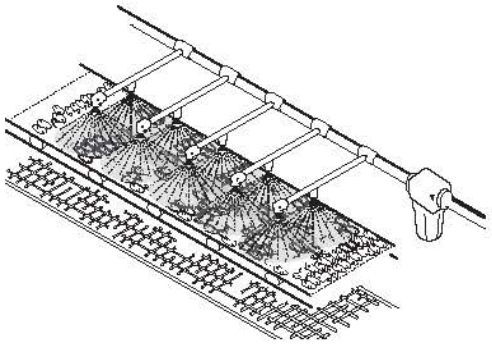
PIPE SIZES 3/4" TO 1-1/4"

U.S. GALLONS PER MINUTE										SPRAY ANGLE °			PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	
																	STANDARD	
5 PSI	7 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	150 PSI	7 PSI	20 PSI	80 PSI					(F)	(M)
2.1	2.5	3.0	4.1	4.9	5.7	6.9	7.9	8.7	10.5		90**			2.5	0.190	0.190	HJB	HHJB
2.1	2.5	3.0	4.1	4.9	5.6	6.8	7.8	8.6	10.4	48	50	46		2.5A	0.172	0.188	HJB	
2.6	3.0	3.6	4.9	5.9	6.8	8.2	9.4	10.5	12.6		90**			3	0.190	0.200	HJB	HHJB
3.4	4.0	4.7	6.6	7.9	9.1	11.0	12.6	14.0	16.9		90*			4	0.190	0.280	HJB	HHJB
3.4	4.0	4.7	6.5	7.8	8.9	10.7	12.4	13.7	16.6	67	70	63		4A	0.172	0.250	HJB	HHJB
2.8	3.5	4.2	5.8	7.0	8.0	9.7	11.1	12.3	14.9		60*		3/4	4.2		0.234	HJB	HHJB
3.6	4.4	5.2	7.2	8.7	10.0	12.1	13.8	15.4	18.6		60*			5.2		0.281	HJB	HHJB
5.1	6.0	7.1	9.8	11.9	13.6	16.5	18.9	20.9	25.3		90**			6*	0.190	0.300	HJB	HHJB
4.4	5.3	6.3	8.7	10.5	12.0	14.5	16.6	18.5	22.3		60*			6.3		0.312	HJB	HHJB
6.0	7.0	8.3	11.5	13.8	15.9	19.2	22.0	24.4	29.5		90*			7*	0.190	0.350	HJB	HHJB
6.0	7.0	8.3	11.4	13.8	15.8	19.1	22.0	24.0	29.0	89	92	84		7A	0.203	0.375	HJB	HHJB
3.6	4.2	5.0	6.9	8.3	9.5	11.5	13.2	14.7	17.7		90**			4.2	0.250	0.250	HJB	HHJB
3.6	4.2	5.0	6.8	8.2	9.4	11.5	13.1	14.5	17.6	48	50	46		4.2A	0.219	0.234		HHJB
6.0	7.0	8.3	11.5	13.8	15.9	19.2	22.0	24.4	29.5		90**			7	0.310	0.330	HJB	HHJB
6.0	7.0	8.3	11.4	13.8	15.8	19.1	22.0	24.0	29.0	67	68	62		7A	0.219	0.328	HJB	HHJB
5.4	6.5	7.8	10.8	13.1	15.0	18.1	20.8	23.1	27.9		60*			7.8		0.328	HJB	HHJB
6.8	8.0	9.5	13.1	15.8	18.1	22.0	25.1	27.9	33.7		90**			8	0.310	0.350	HJB	HHJB
6.9	8.0	9.4	13.0	15.6	17.8	21.0	25.0	27.0	33.0	72	81	82	1	8A	0.219	0.375	HJB	HHJB
7.7	9.0	10.6	14.7	17.8	14.7	24.7	28.3	31.4	37.9		90**			9	0.310	0.400	HJB	HHJB
8.5	10.0	11.8	16.4	19.8	22.7	27.4	31.4	34.9	42.2		90**			10	0.310	0.420	HJB	HHJB
7.2	8.7	10.4	14.4	17.5	20.0	24.2	27.7	30.8	37.2		60*			10.4		0.375	HJB	HHJB
9.4	11.0	13.0	18.0	21.8	25.0	30.2	34.6	38.4	46.4		90**			11	0.310	0.440	HJB	HHJB
10.2	12.0	14.2	19.7	23.7	27.2	32.9	37.7	41.9	50.6		90**			12	0.310	0.460	HJB	HHJB
10.2	12.0	14.2	19.4	24.0	27.0	32.0	37.0	41.0	50.0	89	92	84		12A	0.250	0.469	HJB	HHJB
5.1	6.0	7.1	9.8	11.9	13.6	16.5	18.9	20.9	25.3		90**			6	0.30	0.30	HJB	HHJB
5.1	6.0	7.1	9.7	11.8	13.5	16.3	18.6	21.0	25.0	48	50	44		6A	0.25	0.30	HJB	
8.5	10.0	11.8	16.4	19.8	22.7	27.4	31.4	34.9	42.2		90**			10	0.38	0.39	HJB	HHJB
10.2	12.0	14.2	19.7	23.7	27.2	32.9	37.7	41.9	50.6		90**			12	0.38	0.42	HJB	HHJB
10.2	12.0	14.1	19.4	24.0	27.0	33.0	37.0	41.0	50.0	66	70	60		12A	0.25	0.42		
12.0	14.0	16.6	22.9	27.7	31.8	38.4	44.0	48.9	59.0		90**		1 1/4	14	0.38	0.46	HJB	HHJB
12.0	14.0	16.5	23.0	27.0	32.0	38.0	41.0	48.0	58.0	77	80	70		14A	0.25	0.48	HJB	
13.7	16.0	18.9	26.2	31.7	36.3	43.9	50.3	55.8	67.4		90**			16	0.38	0.48	HJB	HHJB
14.5	17.0	20.1	27.8	33.6	38.6	46.7	53.4	59.3	71.7		90**			17	0.38	0.53	HJB	HHJB
17.1	20.0	23.7	32.8	39.6	45.4	54.9	62.8	69.8	84.3		90**			20	0.38	0.63	HJB	HHJB

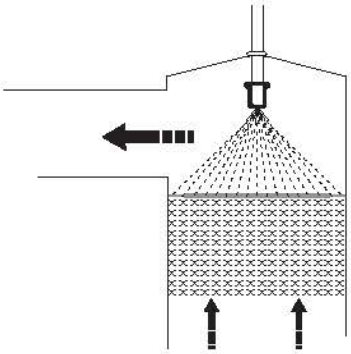
* These sizes also available in 90° Spray Angle
** These sizes also available in 60° Spray Angle
Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel

Similar nozzles in PVC, Polypropylene, and PTFE are shown on pages 58 - 62

STANDARD SPRAY ANGLE
ROUND SPRAY PATTERN - CONTINUED



DELUGE
deluge pre-wash of soil from field vegetables with high volume full cone nozzles.



CHEMICAL PROCESS TOWER
washing packings in a gas scrubber with high volume full cone nozzle

SPECIFICATIONS

PIPE SIZES 1-1/2" TO 2-1/2"

U.S. GALLONS PER MINUTE										SPRAY ANGLE °			PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	
																	STANDARD	
5 PSI	7 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	150 PSI	7 PSI	20 PSI	80 PSI					(F)	(M)
8.5	10.0	11.8	16.4	19.8	22.7	27.4	31.4	34.9	42.2		90*		1 1/2	10	0.38	0.39	HJB	HHJB
8.7	10.0	12.0	16.5	19.9	23.0	27.0	31.0	35.0	42.0	48	50	44		10A	0.34	0.38	HJB	
13.7	16.0	18.9	26.2	31.7	36.3	43.9	50.3	55.8	67.4		90*			16	0.38	0.53	HJB	HHJB
13.7	16.0	18.9	26.0	31.0	35.0	43.0	49.0	54.0	66.0	72	74	64		16A	0.34	0.50	HJB	
17.1	20.0	23.7	32.8	39.6	45.4	54.9	62.8	69.8	84.3		90*			20	0.41	0.56	HJB	HHJB
17.2	20.0	24.0	33.0	39.0	44.0	53.0	61.0	68.0	82.0	74	76	66		20A	0.34	0.56	HJB	
20.5	24.0	28.4	39.3	47.5	54.4	65.9	75.4	83.8	101		90*			24	0.41	0.63	HJB	HHJB
24.8	29.0	34.3	47.5	57.4	65.8	79.6	91.1	101	122		90*			29	0.41	0.69	HJB	HHJB
25.6	30.0	35.5	49.1	59.4	68.1	82.3	94.3	105	126		90*			30	0.41	0.75	HJB	HHJB
26.0	30.0	36.0	48.0	58.0	66.0	80.0	91.0	102	123	91	94	82		30A	0.41	0.72		
14.5	17.0	20.1	27.8	33.6	38.6	46.7	53.4	59	72		90*		2	17	0.48	0.48	HJB	HHJB
15.0	17.0	20.0	27.0	33.0	38.0	45.0	52.0	63	76	49	50	44		17A	0.44	0.50	HJB	
25.6	30.0	35.5	49.1	59.4	68.1	82.3	94.3	105	126		90*			30	0.56	0.64	HJB	HHJB
26.0	30.0	36.0	48.0	58.0	66.0	80.0	91.0	102	123	72	74	64		30A	0.44	0.69		
29.9	35.0	41.4	57.3	69.2	79.4	96.1	110	122	148		90*			35	0.56	0.72	HJB	HHJB
30.0	35.0	42.0	57.0	68.0	76.0	93.0	108	121	147	75	77	68		35A	0.44	0.75	HJB	
34.1	40.0	47.3	65.5	79.1	90.7	110	126	140	169		90*			40	0.56	0.78	HJB	HHJB
34.0	40.0	47.0	64.0	77.0	88.0	108	124	137	166	78	80	70		40A	0.44	0.83		
40.1	47.0	55.6	77.0	93.0	107	129	148	164	198		90*			47	0.56	0.97	HJB	HHJB
42.7	50.0	59.1	81.9	98.9	113	137	157	174	211		90*			50	0.56	1.10	HJB	HHJB
43.0	50.0	59.0	82.0	99.0	113	135	156	173	210	83	85	75		50A	0.56	0.94		
51.2	60.0	71.0	98.3	119	136	165	189	209	253		90*			60	0.75	1.14	HJB	HHJB
51.0	60.0	71.0	96.0	118	140	163	186	203	250	98	100	86		60A	0.56	1.13		
21.3	25.0	29.6	40.9	49.5	56.7	68.6	78.6	87.2	105		90*		2 1/2	25	0.61	0.61	HJB	HHJB
21.0	25.0	30.0	41.0	49.0	56.0	68.0	78.0	86.0	104	49	50	44		25A	0.56	0.59		
42.7	50.0	59.1	81.9	98.9	113	137	157	174	211		90*			50	0.75	0.87	HJB	HHJB
43.0	50.0	59.0	81.0	97.0	112	135	155	172	208	72	74	64		50A	0.56	0.88		
51.2	60.0	71.0	98.3	119	136	165	189	209	253		90*			60	0.75	0.96	HJB	HHJB
51.0	60.0	71.0	96.0	118	140	163	186	203	250	76	78	68		60A	0.56	0.97		
59.8	70.0	82.8	115	138	159	192	220	244	295		90*			70	0.75	1.07	HJB	HHJB
60.0	70.0	83.0	115	138	158	191	219	243	294	79	82	72		70A	0.56	1.13		
68.3	80.0	94.6	131	158	181	220	251	279	337		90*			80	0.75	1.15	HJB	HHJB
69.0	80.0	95.0	132	160	183	220	253	280	339	86	88	77		80A	0.69	1.13	HJB	
76.8	90.0	106	147	178	204	247	283	314	379		90*			90	0.75	1.27	HJB	HHJB
77.0	90.0	108	148	180	202	248	282	316	383	95	97	84		90A	0.69	1.25		

* These sizes also available in 60° Spray Angle
Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel

Similar nozzles in PVC, Polypropylene, and PTFE are shown on pages 58 - 62

SPECIFICATIONS

PIPE SIZES 3" TO 4"

U.S. GALLONS PER MINUTE										SPRAY ANGLE °			PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	
																	STANDARD	
5 PSI	7 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	150 PSI	7 PSI	20 PSI	80 PSI					(F)	(M)
35.9	42.0	49.7	68.8	83.1	95.3	115	132	147	177		90*		3	42	0.75	0.75	HJB	HHJB
36.0	42.0	50.0	69.0	82.0	94.0	105	131	145	176	49	50	44		42A	0.69	0.75		
49.5	58.0	68.6	95.0	115	132	159	182	202	244		90*			58	0.90	0.90	HJB	HHJB
68.3	80.0	94.6	131	158	181	220	251	279	337		90*			80	1.00	1.10	HJB	HHJB
69.0	80.0	95.0	132	160	183	220	253	280	339	81	84	73		80A	0.69	1.05		
76.8	90.0	106	147	178	204	247	283	314	379		90*			90	1.00	1.20	HJB	HHJB
77.0	90.0	108	148	180	202	248	282	316	383	86	89	77		90A	0.69	1.19	HJB	
81.1	95.0	112	156	188	216	261	299	332	400		90*			95	1.00	1.13	HJB	HHJB
85.4	100	118	164	198	227	274	314	349	422		90*			100	1.00	1.34	HJB	HHJB
86.0	100	119	164	198	228	274	314	349	419	92	95	83		100A	0.69	1.28		
99.9	117	138	192	231	265	321	368	408	493		90*			117	1.00	1.42	HJB	HHJB
102	120	142	197	237	272	329	377	419	506		90*			120	1.00	1.50	HJB	HHJB
102	120	142	194	235	269	324	370	411	500	102	105	89		120A	0.81	1.38		
115	135	160	221	267	306	371	424	471	569		90*			135	1.00	1.64	HJB	HHJB
107	125	148	205	247	284	343	393	436	527		90*		4	125	1.35		HJB	HHJB
111	130	154	213	257	295	357	409	454	548		90*			130	1.38		HJB	HHJB
137	160	189	262	317	363	439	503	558	674		90*			160	1.60		HJB	HHJB
154	180	213	295	356	408	494	566	628	759		90*			180	1.33	1.72	HJB	HHJB
161	188	222	308	372	427	516	591	656	792		90*			188	1.69		HJB	HHJB
171	200	237	328	396	454	549	628	698	843		90*			200	1.88		HJB	HHJB
179	210	248	344	415	476	576	660	733	885		90*			210	2.03		HJB	HHJB
213	250	296	409	495	567	686	786	872	1054		90*			250	2.50		HJB	HHJB

* These sizes also available in 60° Spray Angle
Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel.

Similar nozzles in PVC, Polypropylene, and PTFE are shown on pages 58 - 62

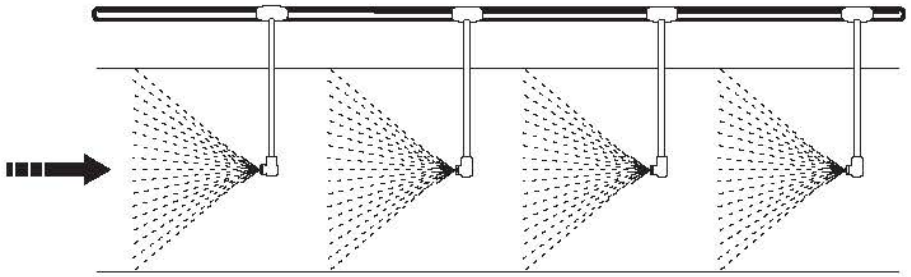
PIPE SIZES 5" TO 12" (FLANGED-TYPE AVAILABLE)

U.S. GALLONS PER MINUTE										SPRAY ANGLE °			PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE		
																	STANDARD		
5 PSI	7 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	150 PSI	7 PSI	20 PSI	80 PSI					(F)	(M)	FLANGED
272	320	378	519	621	710	858	980	1100	1330	97	100	87	5	320	1.38	2.69	HJB		HFJB
299	350	414	573	692	794	961	1100	1220	1475		90*		6	350	1.38	2.60	HJB	HHJB	
410	480	568	786	950	1090	1320	1510	1680	2023		90*			480	1.69	2.80	HJB	HHJB	
456	532	627	862	1040	1190	1430	1629	1805	2175		90*			532	1.75		HJB	HHJB	HFJB
504	588	693	953	1150	1310	1580	1800	1995	2404		90*			588	1.75		HJB	HHJB	HFJB
525	615	727	1010	1217	1400	1690	1930	2150	2592		90*			615	1.69	3.00	HJB	HHJB	
708	827	974	1340	1610	1840	2220	2532	2806	3381		90*			827	1.75		HJB	HHJB	HFJB
824	962	1130	1560	1880	2140	2580	2945	3264	3933		90*		8	962	2.06		HJB	HHJB	HFJB
959	1120	1320	1810	2190	2500	3010	3429	3800	4579		90*			1120	2.06		HJB	HHJB	HFJB
1080	1260	1480	2040	2460	2810	3380	3858	4275	5151		90*			1260	2.06		HJB	HHJB	HFJB
1270	1480	1740	2400	2890	3300	3980	4531	5021	6051		90*			1480	2.06		HJB	HHJB	HFJB
685	800	949	1320	1600	1830	2200	2530	2800	3390	78	80	70	10	800	2.50	3.34			HFJB
850	1000	1180	1630	1970	2260	2740	3130	3470	4200	86	89	77		1000	2.50	3.97			HFJB
1030	1200	1420	1970	2380	2720	3290	3750	4170	5020	97	100	87		1200	2.63	3.80			HFJB
1110	1300	1550	2130	2570	2930	3530	4050	4500	5430	103	106	92		1300	2.63	5.31			HFJB
1770	2070	2440	3350	4040	4610	5560	6338	7023	8463		90*		12	2070	2.25				HFJB
2010	2360	2770	3810	4590	5240	6310	7195	7973	9608		90*			2360	2.25				HFJB
2150	2510	2960	4070	4900	5600	6740	7685	8516	10262		90*			2510	2.25				HFJB
2280	2660	3130	4310	5190	5930	7150	8144	9025	10875		90*			2660	2.25				HFJB
2540	2960	3490	4800	5780	6600	7950	9063	10042	12102		90*			2960	2.25				HFJB
2780	3250	3830	5270	6350	7250	8730	9951	11026	13287		90*			3250	2.25				HFJB

* These sizes also available in 60° Spray Angle
Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel.

Similar nozzles in PVC, Polypropylene, and PTFE are shown on pages 58 - 62

STANDARD SPRAY ANGLE
ANGLE & WALL MOUNTED



GAS LINE
gas scrubbing contra-flow with angle type full cone nozzles

COMMON APPLICATIONS

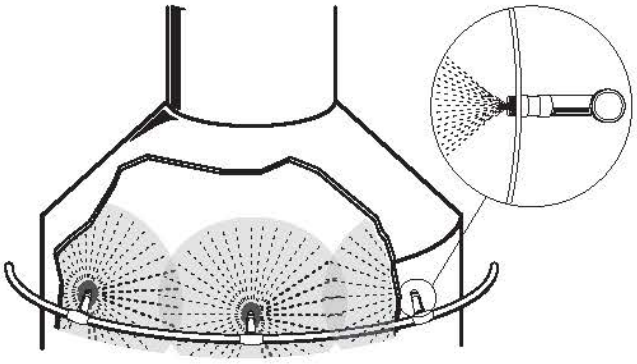
- Spraying Additives into Ribbon Blenders
- Cooling Canned Fruit and Vegetables
- Cooling Gases in Ducts
- Steam Condensing in Pipelines

SPECIFICATIONS

PIPE SIZES 1/8" TO 1/2"

U.S. GALLONS PER MINUTE								SPRAY ANGLE °			PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE				
															WALL MOUNTED			ANGLE TYPE	
10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	150 PSI	7 PSI	20 PSI	80 PSI					(F)		(M)	(F)	(M)
0.20	0.28	0.34	0.38	0.46	0.53	0.59	0.70	43	50	46	1/8	2	0.040	0.050	GDJB		GGDJB		
0.39	0.54	0.65	0.74	0.89	1.0	1.1	1.4	77	84	79		3.9	0.050	0.078				GAJB	GGAJB
0.50	0.69	0.82	0.95	1.2	1.3	1.5	1.8	52	65	59		5	0.050	0.078	GDJB				GGAJB
0.61	0.84	1.0	1.1	1.4	1.6	1.8	2.2	69	74	68		6.1	0.063	0.094	GDJB	HDJB		GAJB	GGAJB
0.65	0.89	1.1	1.3	1.5	1.7	1.9	2.3	45	50	46	1/4	6.5	0.063	0.094				GAJB	GGAJB
1.0	1.4	1.7	1.9	2.4	2.7	3.0	3.6	58	67	61		10	0.063	0.109	GDJB		GGDJB	GAJB	GGAJB
1.3	1.7	2.1	2.4	2.9	3.3	3.6	4.4	69	74	68		12.5	0.094	0.125				GAJB	GGAJB
0.95	1.3	1.6	1.8	2.2	2.5	2.8	3.4	45	50	46	3/8	9.5	0.094	0.109	GDJB			GAJB	GGAJB
1.5	2.1	2.5	2.9	3.5	4.0	4.4	5.3	64	67	61		15	0.109	0.141				GAJB	GGAJB
2.0	2.8	3.4	3.8	4.6	5.3	5.9	7.2	76	80	73		20	0.109	0.156				GAJB	GGAJB
2.2	3.0	3.7	4.2	5.1	5.8	6.4	7.8	87	90	82		22	0.188	0.188				GAJB	GGAJB
1.6	2.2	2.7	3.1	3.7	4.3	4.7	5.7	48	50	46	1/2	16	0.125	0.141			GGDJB	GAJB	GGAJB
2.5	3.5	4.2	4.8	5.8	6.7	7.4	8.9	64	67	61		25	0.125	0.188	GDJB		GGDJB	GAJB	GGAJB
3.2	4.4	5.3	6.1	7.4	8.5	9.4	11.3	72	75	68		32	0.141	0.203				GAJB	GGAJB
4.0	5.5	6.6	7.6	9.2	10.6	11.8	14.3	88	91	83		40	0.141	0.250				GAJB	GGAJB
5.0	6.9	8.2	9.5	11.6	13.2	14.7	18.0	91	94	86		50	0.156	0.266				GAJB	GGAJB

Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel.



FURNACE EXHAUST LINE
gas scrubbing in furnace exhaust ducts with wall mount full cone nozzles

COMMON APPLICATIONS

- Spraying Additives into Ribbon Blenders
- Cooling Canned Fruit and Vegetables
- Cooling Gases in Ducts
- Steam Condensing in Pipelines

SPECIFICATIONS

PIPE SIZES 3/4" TO 3"

U.S. GALLONS PER MINUTE										SPRAY ANGLE °			PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE
5 PSI	7 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	150 PSI	7 PSI	20 PSI	80 PSI					WALL MOUNTED
																	(F)
3.4	4.0	4.7	6.5	7.8	8.9	10.7	12.4	13.7	16.6	67	70	63	3/4	4	0.172	0.250	HDJB
6.0	7.0	8.3	11.4	13.8	15.8	19.1	22.0	24.0	29.0	89	92	84		7	0.203	0.375	HDJB
10.2	12.0	14.1	19.4	24.0	27.0	33.0	37.0	41.0	50.0	66	70	60	1	12	0.250	0.422	HDJB
12.0	14.0	16.5	23.0	27.0	32.0	38.0	41.0	48.0	58.0	77	80	70		14	0.250	0.484	HDJB
17.2	20.0	24.0	33.0	39.0	44.0	53.0	61.0	68.0	82.0	74	76	66	1 1/2	20	0.34	0.56	HDJB
26.0	30.0	36.0	48.0	58.0	66.0	80.0	91.0	102	123	91	94	82		30	0.41	0.72	HDJB
30.0	35.0	42.0	57.0	68.0	76.0	93.0	108	121	147	75	77	68	2	35	0.44	0.75	HDJB
34.0	40.0	47.0	64.0	77.0	88.0	108	124	137	166	78	80	70		40	0.44	0.83	HDJB
43.0	50.0	59.0	82.0	99.0	113	135	156	173	210	83	85	75		50	0.56	0.94	HDJB
21.0	25.0	30.0	41.0	49.0	56.0	68.0	78.0	86.0	104	49	50	44	2 1/2	25	0.56	0.59	HDJB
43.0	50.0	59.0	81.0	97.0	112	135	155	172	208	72	74	64		50	0.56	0.88	HDJB
51.0	60.0	71.0	96.0	118	140	163	186	203	250	76	78	68		60	0.56	0.97	HDJB
60.0	70.0	83.0	115	138	158	191	219	243	294	79	82	72		70	0.56	1.13	HDJB
69.0	80.0	95.0	132	160	183	220	253	280	339	86	88	77		80	0.69	1.13	HDJB
69.0	80.0	95.0	132	160	183	220	253	280	339	81	84	73	3	80	0.69	1.05	HDJB
77.0	90.0	108	148	180	202	248	282	316	383	86	89	77		90	0.69	1.19	HDJB
86.0	100	119	164	198	228	274	314	349	419	92	95	83		100	0.69	1.28	HDJB
102	120	142	194	235	269	324	370	411	500	102	105	89		120	0.81	1.38	HDJB

Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel.

STANDARD SPRAY ANGLE
SQUARE SPRAY PATTERN

SPRAY PATTERN
60° full cone - square

HHJB-SQ
90° - POLYPROPYLENE

HJB-SQ
120° - METAL

HHISJB
1/16" - 1-1/2" (M) Rectangular Spray

DESIGN FEATURES

Square Spray nozzles produce a full cone pattern with a square footprint, and spray angles in the 40° to 120° range. Droplet sizes are medium to large and flow rates range from less than one gallon, to several hundreds of gallons per minute. The spray pattern has uniform distribution and varies in impact with the flow rate and area being covered. Pipe connection sizes are from 1/8" up to 6" in male and female NPT, with the larger sizes available in ANSI flanged connections.

GJB-SQ and GGJB-SQ Series body styles are 3 piece nozzles with the cap and vane removable for cleaning or replacement without disturbing the piping.

HJB-SQ and HHJB-SQ Series body styles are essentially one piece nozzles with the vane press fitted at the factory. Note that the position of the square spray pattern, as it contacts the sprayed surface, will rotate as the pressure increases. This is more pronounced with larger size nozzles and at lower pressures. It is suggested that a nozzle be tested at the planned operating pressure to determine where the square pattern is in relationship to the slots machined on the outlet face of the spray nozzle.

SPECIFICATIONS

PIPE SIZES 1/8" TO 1/2"

U.S. GALLONS PER MINUTE								SPRAY ANGLE °			PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE		
															STANDARD		
10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	150 PSI	7 PSI	20 PSI	80 PSI					(F)	(M)	
0.13	0.18	0.22	0.25	0.30	0.35	0.38	0.47		60*		1/8	1.3SQ		0.043	HJB		HHJB
0.26	0.36	0.44	0.50	0.60	0.69	0.77	0.93		60*			2.6SQ		0.055	HJB		HHJB
0.36	0.50	0.60	0.69	0.83	0.95	1.1	1.3	40	52	47		3.6SQ	0.05	0.063		GGJB	HHJB
0.39	0.66	0.66	0.75	0.91	1.0	1.2	1.4		60*			3.9SQ		0.072	HJB		HHJB
0.48	0.66	0.80	0.91	1.1	1.3	1.4	1.7	48	63	57		4.8SQ	0.05	0.078			HHJB
0.60	0.83	1.0	1.1	1.4	1.6	1.8	2.1	60	66	60		6.0SQ	0.05	0.094		GGJB	HHJB
0.52	0.72	0.87	1.0	1.2	1.4	1.5	1.9		60*		1/4	5.2SQ		0.082	HJB		HHJB
0.78	1.1	1.3	1.5	1.8	2.1	2.3	2.8		60*			7.8SQ		0.109	HJB		HHJB
1.0	1.4	1.7	1.9	2.3	2.6	2.9	3.5	62	67	61		10SQ	0.06	0.109		GGJB	HHJB
1.2	1.7	2.0	2.3	2.8	3.2	3.5	4.3	70	75	68		12SQ	0.06	0.125			HHJB
1.5	2.0	2.4	2.8	3.3	3.8	4.2	5.1	78	82	75		14.5SQ	0.06	0.154			HHJB
1.0	1.4	1.8	2.0	2.4	2.8	3.1	3.7		60*		3/8	10SQ		0.125	HJB		HHJB
1.6	2.2	2.6	3.0	3.6	4.2	4.6	5.6		60*			16SQ		0.156	HJB		HHJB
1.8	2.5	3.0	3.4	4.1	4.7	5.3	6.4	71	75	68		18SQ	0.09	0.156			HHJB
2.1	2.9	3.5	4.0	4.8	5.5	6.2	7.4		60*			21SQ		0.188	HJB		HHJB
2.6	3.6	4.4	5.0	6.1	6.9	7.7	9.3		60*		1/2	26SQ		0.203	HJB		HHJB
2.9	4.0	4.8	5.5	6.7	7.6	8.5	10.0	71	75	68		29SQ	0.13	0.219		GGJB	HHJB
3.1	4.3	5.2	6.0	7.3	8.3	9.2	11.2		60*			31SQ		0.219	HJB		HHJB
3.6	5.0	6.0	6.9	8.3	9.5	10.5	13.0	78	82	75		36SQ	0.13	0.250			HHJB
3.7	5.0	6.1	7.0	8.5	9.7	10.8	13.0		60*			37SQ		0.228	HJB		HHJB

* These sizes also available in 90° Spray Angle
Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel.

Similar nozzles in PVC, Polypropylene, and PTFE are shown on pages 59 - 63

STANDARD SPRAY ANGLE
SQUARE SPRAY PATTERN - CONTINUED

SPRAY PATTERN
60° full cone - square

SPRAY PATTERN
90° full cone - square

COMMON APPLICATIONS

- Cooling of Propane Tanks
- Cooling Canned and Bottled Foods
- Coke Quenching in the Steel Industry
- Washing Gravel on Size Grading Sieves
- Washing Fruits & Vegetables
- Dust Control
- Rotary Filter Drum Washing
- Foam Breaking

SPECIFICATIONS

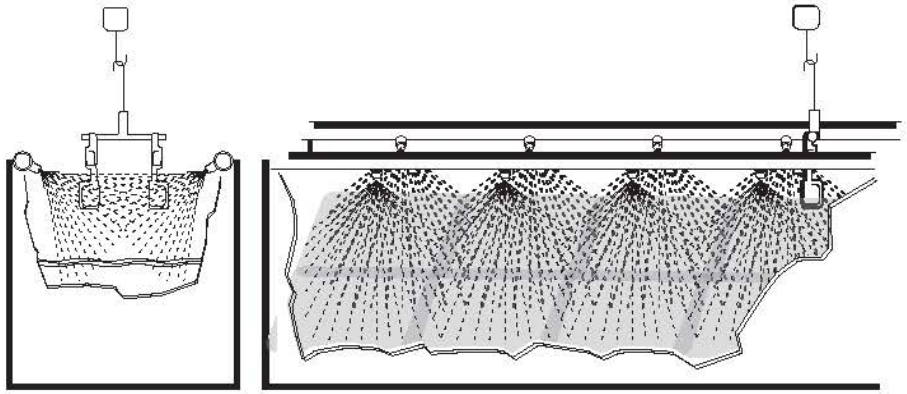
PIPE SIZES 3/4" TO 1-1/4"

U.S. GALLONS PER MINUTE										SPRAY ANGLE °			PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	
																	STANDARD	
5 PSI	7 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	150 PSI	7 PSI	20 PSI	80 PSI					(F)	(M)
2.1	2.5	3.0	4.1	4.9	5.7	6.9	7.9	8.7	10.5		90*			30SQ	0.19	0.190	HJB	HHJB
2.6	3.0	3.6	4.9	5.9	6.8	8.2	9.4	10.5	12.6		90*			36SQ	0.19	0.200	HJB	HHJB
2.8	3.5	4.2	5.8	7.0	8.0	9.7	11.1	12.3	14.9		60**			42SQ		0.234	HJB	HHJB
3.4	4.0	4.7	6.6	7.9	9.1	11.0	12.6	14.0	16.9		90*			47SQ	0.19	0.280	HJB	HHJB
3.7	4.3	5.0	7.0	8.4	9.6	11.5	13.2	14.6	17.6	71	75	68	3/4	50SQ	0.17	0.266		HHJB
3.6	4.4	5.2	7.2	8.7	10.0	12.1	13.8	15.4	18.6		60**			52SQ		0.281	HJB	HHJB
4.4	5.3	6.2	8.7	10.5	12.0	14.5	16.6	18.5	22.3		60**			62SQ		0.312	HJB	HHJB
5.1	6.0	7.1	9.8	11.9	13.6	16.5	18.9	20.9	25.3		90*			71SQ	0.19	0.300	HJB	HHJB
6.0	7.0	8.3	11.5	13.8	15.9	19.2	22.0	24.4	29.5		90*			83SQ	0.19	0.350	HJB	HHJB
3.6	4.2	5.0	6.9	8.3	9.5	11.5	13.2	14.7	17.7		90*			50SQ	0.25	0.250	HJB	HHJB
5.4	6.5	7.8	10.8	13.1	15.0	18.1	20.8	23.1	27.9		60**			78SQ		0.328	HJB	HHJB
6.0	7.0	8.3	11.5	13.8	15.9	19.2	22.0	24.4	29.5		90*			83SQ	0.31	0.330	HJB	HHJB
6.8	8.0	9.5	13.1	15.8	18.1	22.0	25.1	27.9	33.7		90*			95SQ	0.31	0.350	HJB	HHJB
7.2	8.7	10.4	14.4	17.5	20.0	24.2	27.7	30.8	37.2		60**			104SQ		0.375	HJB	HHJB
7.7	9.0	10.6	14.7	17.8	20.4	24.7	28.3	31.4	37.9		90*		1	106SQ	0.31	0.400	HJB	HHJB
7.6	8.9	10.6	14.5	17.5	20.0	24.0	28.0	31.0	37.0	78	80	73		106ASQ	0.22	0.391	HJB	
8.5	10.0	11.8	16.4	19.8	22.7	27.4	31.4	34.9	42.2		90*			118SQ	0.31	0.420	HJB	HHJB
9.4	11.0	13.0	18.0	21.8	25.0	30.2	34.6	38.4	46.4		90*			130SQ	0.31	0.440	HJB	HHJB
10.2	12.0	14.2	19.7	23.7	27.2	32.9	37.7	41.9	50.6		90*			142SQ	0.31	0.460	HJB	HHJB
5.1	6.0	7.1	9.8	11.9	13.6	16.5	18.9	20.9	25.3		90*			71SQ	0.30	0.30	HJB	HHJB
8.5	10.0	11.8	16.4	19.8	22.7	27.4	31.4	34.9	42.2		90*			118SQ	0.38	0.39	HJB	HHJB
10.2	12.0	14.2	19.7	23.7	27.2	32.9	37.7	41.9	50.6		90*			142SQ	0.38	0.42	HJB	HHJB
12.0	14.0	16.6	22.9	27.7	31.8	38.4	44.0	48.9	59.0		90*			166SQ	0.46	0.46	HJB	HHJB
12.8	15.0	17.7	25.0	30.0	34.0	41.0	47.0	52.0	63.0	78	80	73	1 1/4	177SQ	0.25	0.50	HJB	
13.7	16.0	18.9	26.2	31.7	36.3	43.9	50.3	55.8	67.4		90*			189SQ	0.38	0.48	HJB	HHJB
14.5	17.0	20.1	27.8	33.6	38.6	46.7	53.4	59.3	71.7		90*			201SQ	0.38	0.53	HJB	HHJB
17.1	20.0	23.7	32.8	39.6	45.4	54.9	62.8	69.8	84.3		90*			237SQ	0.38	0.63	HJB	HHJB

* These sizes also available in 60° Spray Angle
** These sizes also available in 90° Spray Angle
Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel.

Similar nozzles in PVC, Polypropylene, and PTFE are shown on pages 59 - 63

STANDARD SPRAY ANGLE
SQUARE SPRAY PATTERN - CONTINUED



RINSE TANK
rinsing plated parts with square spray full cone nozzles

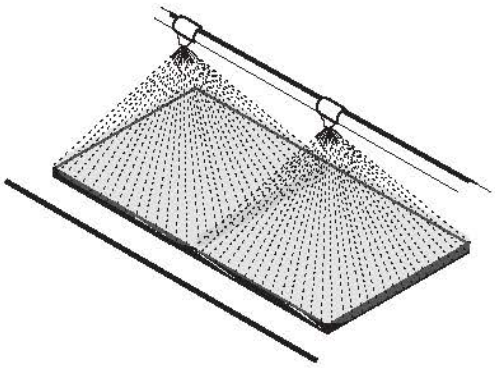
SPECIFICATIONS

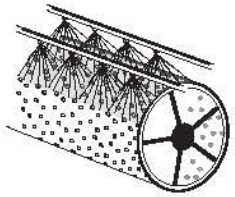
PIPE SIZES 1-1/2" TO 2-1/2"

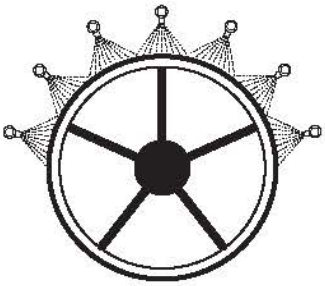
U.S. GALLONS PER MINUTE										SPRAY ANGLE °			PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	
																	STANDARD	
5 PSI	7 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	150 PSI	7 PSI	20 PSI	80 PSI					(F)	(M)
8.5	10.0	11.8	16.4	19.8	22.7	27.4	31.4	34.9	42.2		90*		1 1/2	118SQ	0.38	0.39	HJB	HHJB
13.7	16.0	18.9	26.2	31.7	36.3	43.9	50.3	55.8	67.4		90*			189SQ	0.38	0.53	HJB	HHJB
16.6	19.5	23.0	32.0	38.0	44.0	53.0	61.0	67.0	80.0	73	77	70		230SQ	0.34	0.56	HJB	
17.1	20.0	23.7	33.0	40.0	45.0	55.0	63.0	70.0	84.0		90*			237SQ	0.41	0.56	HJB	HHJB
20.5	24.0	28.4	39.3	47.5	54.4	65.9	75.4	83.8	101		90*			284SQ	0.41	0.63	HJB	HHJB
24.8	29.0	34.3	47.5	57.4	65.8	79.6	91.1	101	122		90*			343SQ	0.41	0.69	HJB	HHJB
25.6	30.0	35.5	49.1	59.4	68.1	82.3	94.3	105	126		90*			355SQ	0.41	0.75	HJB	HHJB
14.5	17.0	20.1	27.8	33.6	38.6	46.7	53.4	59.3	71.7		90*		2	201SQ	0.48	0.48	HJB	HHJB
21.0	25.0	29.0	40.0	48.0	55.0	67.0	76.0	85.0	100	66	70	64		290SQ	0.44	0.61	HJB	
25.6	30.0	35.5	49.1	59.4	68.1	82.3	94.3	105	126		90*			355SQ	0.56	0.64	HJB	HHJB
26.0	31.0	36.0	50.0	60.0	69.0	83.0	95.0	105	130	70	74	67		360SQ	0.44	0.69	HJB	
30.0	35.0	41.0	57.0	69.2	79.4	96.0	110	122	148		90*			414SQ	0.56	0.72	HJB	HHJB
34.1	40.0	47.3	65.5	79.1	90.7	110	126	140	169		90*			473SQ	0.56	0.78	HJB	HHJB
34.0	40.0	48.0	66.0	80.0	91.0	110	125	138	166	79	82	74		480SQ	0.44	0.83	HJB	
40.1	47.0	55.6	77.0	93.0	107	129	148	164	198		90*			556SQ	0.56	0.97	HJB	HHJB
42.7	50.0	59.1	81.9	98.9	113	137	157	174	211		90*			591SQ	0.56	1.10	HJB	HHJB
51.2	60.0	71.0	98.3	119	136	165	189	209	253		90*			710SQ	0.75	1.14	HJB	HHJB
21.3	25.0	29.6	40.9	49.5	56.7	68.6	78.6	87.2	105		90*		2 1/2	296SQ	0.61	0.61	HJB	HHJB
35.0	41.0	49.0	67.0	81.0	92.0	113	128	142	170	62	67	61		490SQ	0.56	0.78	HJB	
43.0	50.0	59.0	81.0	99.0	113	136	155	173	208	75	78	71		590SQ	0.56	0.88	HJB	
42.7	50.0	59.1	81.9	98.9	113	137	157	174	211		90*			591SQ	0.75	0.87	HJB	HHJB
51.2	60.0	71.0	98.3	119	136	165	189	209	253		90*			710SQ	0.75	0.96	HJB	HHJB
59.8	70.0	82.8	115	138	159	192	220	244	295		90*			828SQ	0.75	1.07	HJB	HHJB
68.3	80.0	94.6	131	158	181	220	251	279	337		90*			946SQ	0.75	1.15	HJB	HHJB
69.0	80.0	95.0	132	160	183	220	253	280	339	81	84	76		950SQ	0.69	1.13	HJB	
76.8	90.0	106	147	178	204	247	283	314	379		90*			1060SQ	0.75	1.27	HJB	HHJB

* These sizes also available in 60° Spray Angle
Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel.

Similar nozzles in PVC, Polypropylene, and PTFE are shown on pages 59 - 63







STEEL COOLING
cooling of metal sheets during rolling process with square spray nozzles

WASHING FILTER DRUM
washing filter drum using square spray nozzles

SPECIFICATIONS

PIPE SIZES 3" TO 6"

U.S. GALLONS PER MINUTE										SPRAY ANGLE °			PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	
																	STANDARD	
5 PSI	7 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	150 PSI	7 PSI	20 PSI	80 PSI					(F)	(M)
35.9	42.0	49.7	68.8	83.1	95.3	115	132	147	177		90*		3	497SQ	0.75	0.75	HJB	HHJB
49.5	58.0	68.6	95.0	115	132	159	182	202	244		90*			686SQ	0.90	0.90	HJB	HHJB
68.3	80.0	94.6	131	158	181	220	251	279	337		90*			946SQ	1.00	1.10	HJB	HHJB
76.8	90.0	106	147	178	204	247	283	314	379		90*			1060SQ	1.00	1.20	HJB	HHJB
81.1	95.0	112	156	188	216	261	299	332	400		90*			1120SQ	1.00	1.13	HJB	HHJB
85.4	100	118	164	198	227	274	314	349	422		90*			1180SQ	1.00	1.34	HJB	HHJB
99.9	117	138	192	231	265	321	368	408	493		90*			1380SQ	1.00	1.42	HJB	HHJB
102	120	142	197	237	272	329	377	419	506		90*			1420SQ	1.00	1.50	HJB	HHJB
115	135	160	221	267	306	371	424	471	569		90*			1600SQ	1.00	1.64	HJB	HHJB
107	125	148	205	247	284	343	393	436	527		90*		4	1480SQ		1.35	HJB	HHJB
111	130	154	213	257	295	357	409	454	548		90*			1540SQ		1.38	HJB	HHJB
137	160	189	262	317	363	439	503	558	674		90*			1890SQ		1.60	HJB	HHJB
154	180	213	295	356	408	494	566	628	759		90*			2130SQ	1.33	1.72	HJB	HHJB
161	188	222	308	372	427	516	591	656	792		90*			2220SQ		1.69	HJB	HHJB
171	200	237	328	396	454	549	628	698	843		90*			2370SQ		1.88	HJB	HHJB
179	210	248	344	415	476	576	660	733	885		90*			2480SQ		2.03	HJB	HHJB
213	250	296	409	495	567	686	786	872	1054		90*			2960SQ		2.50	HJB	HHJB
213	250	298	408	490	561	678	775	860	1040	89	91	83	5	2980SQ	1.13	1.88	HJB	
299	350	414	573	692	794	961	1100	1220	1475		90*		6	4140SQ	1.38	2.60	HJB	HHJB
410	480	568	786	950	1090	1320	1510	1680	2023		90*			5680SQ	1.69	2.80	HJB	HHJB
412	480	569	780	940	1080	1310	1490	1670	2040	102	105	95		5690SQ	1.75	3.22	HJB	
525	615	727	1010	1217	1400	1690	1930	2150	2592		90*			7270SQ	1.69	3.00	HJB	HHJB

* These sizes also available in 60° Spray Angle
Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel.

Similar nozzles in PVC, Polypropylene, and PTFE are shown on pages 59 - 63

STANDARD SPRAY ANGLE
VANELESS

SPRAY PATTERN
60° full cone

SPRAY PATTERN
90° full cone

GGANVJB
vaneless 1/4"-1/2" NPT (M)

GGJB-VL
oval - 3/8" NPT (F)

DESIGN FEATURES

GANVJB & GGANVJB Vaneless Nozzles provide a round full cone pattern without the use of an internal vane. The benefit of this design is a larger free passage through the spray nozzle and no internal obstructions for solid materials to catch on. Droplets are medium to large, and the axis of the conical spray pattern is perpendicular to that of the spray nozzle pipe connection.

GJB-VL & GGJB-VL nozzles provide a full cone pattern with an oval footprint. These are used in applications where the light impact and full coverage of a full cone pattern is required, but where there is not sufficient room to accommodate the full diameter of the cone. Where cooling sprays need to project between closely spaced guide rolls in steel slab and billet casting is one example.

SPECIFICATIONS

VANELESS

U.S. GALLONS PER MINUTE									SPRAY ANGLE °			PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	
5 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	7 PSI	20 PSI	80 PSI					(F)	(M)
0.18	0.25	0.30	0.35	0.43	0.50	0.61	0.70	0.79		90*		1/4	2.5		0.075	GANVJB	GGANVJB
0.20	0.28	0.34	0.39	0.48	0.56	0.68	0.79	0.88		90*			2.8		0.079	GANVJB	GGANVJB
0.22	0.31	0.38	0.44	0.54	0.62	0.76	0.88	0.98		90*			3.1		0.083	GANVJB	GGANVJB
0.27	0.39	0.47	0.55	0.67	0.77	0.95	1.1	1.2		90*			3.9		0.091	GANVJB	GGANVJB
0.35	0.50	0.61	0.71	0.87	1.0	1.2	1.4	1.6	68	75	82		5	0.078	0.109	GANVJB	GGANVJB
0.49	0.70	0.86	0.99	1.2	1.4	1.7	2.0	2.2	68	75	82		7	0.094	0.125	GANVJB	GGANVJB
0.57	0.80	0.98	1.1	1.4	1.6	1.9	2.3	2.5	75	80	85		8	0.109	0.156	GANVJB	GGANVJB
0.71	1.0	1.2	1.4	1.7	2.0	2.4	2.8	3.2	75	80	85		10	0.125	0.156	GANVJB	GGANVJB
0.78	1.1	1.3	1.6	1.9	2.2	2.7	3.1	3.5	75	80	85		11	0.141	0.156	GANVJB	GGANVJB
0.35	0.49	0.60	0.69	0.9	1.0	1.2	1.4	1.6		90*		3/8	4.9		0.102	GANVJB	GGANVJB
0.44	0.62	0.76	0.88	1.1	1.2	1.5	1.8	2.0		90*			6.2		0.118	GANVJB	GGANVJB
0.55	0.77	0.95	1.1	1.3	1.6	1.9	2.2	2.5		90*			7.7		0.130	GANVJB	GGANVJB
0.61	0.87	1.1	1.2	1.5	1.7	2.1	2.5	2.8		90*			8.7		0.138	GANVJB	GGANVJB
0.69	0.98	1.2	1.4	1.7	2.0	2.4	2.8	3.1		90*			9.8		0.146	GANVJB	GGANVJB
0.88	1.2	1.5	1.8	2.2	2.5	3.0	3.5	3.9		90*			12		0.163	GANVJB	GGANVJB
0.99	1.4	1.7	2.0	2.4	2.8	3.4	4.0	4.4		90*			14		0.173	GANVJB	GGANVJB
1.1	1.6	1.9	2.2	2.7	3.1	3.8	4.4	4.9		90*			16		0.183	GANVJB	GGANVJB
1.1	1.6	2.0	2.3	2.8	3.2	3.9	4.5	5.1	75	85	83		16	0.156	0.172	GANVJB	GGANVJB
1.4	1.9	2.4	2.7	3.4	3.9	4.8	5.5	6.1		90*			19		0.205	GANVJB	GGANVJB
1.6	2.3	2.8	3.3	4.0	4.6	5.6	6.5	7.3	75	85	83		23	0.188	0.219	GANVJB	GGANVJB
1.8	2.5	3.0	3.5	4.3	5.0	6.1	7.0	7.9		90*			25		0.228	GANVJB	GGANVJB
1.8	2.6	3.2	3.7	4.5	5.2	6.4	7.4	8.2	75	85	83		26	0.203	0.234	GANVJB	GGANVJB
2.1	2.9	3.6	4.1	5.0	5.8	7.1	8.2	9.2	75	85	83		29	0.219	0.234	GANVJB	GGANVJB
2.3	3.3	4.0	4.7	5.7	6.6	8.1	9.3	10.4	75	85	83		33	0.234	0.297	GANVJB	GGANVJB
2.2	3.1	3.8	4.4	5.4	6.2	7.6	8.8	9.8		90*		1/2	31		0.287	GANVJB	GGANVJB
2.7	3.9	4.8	5.5	6.7	7.8	9.5	11.0	12.3		90*			39		0.315	GANVJB	GGANVJB
3.5	4.9	6.0	6.9	8.5	9.8	12.0	13.8	15.4		90*			49		0.343	GANVJB	GGANVJB
4.0	5.6	6.9	7.9	9.7	11.2	13.7	15.8	17.7	85	90	95		56	0.297	0.391	GANVJB	GGANVJB
4.5	6.4	7.8	9.1	11.1	12.8	15.7	18.1	20.0	85	90	95		64	0.328	0.391	GANVJB	GGANVJB
5.1	7.2	8.8	10.2	12.5	14.4	17.6	20.0	23.0	85	90	95		72	0.359	0.391	GANVJB	GGANVJB

* These sizes also available in 110° Spray Angle

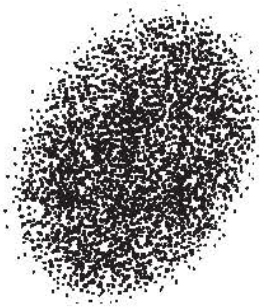
STANDARD SPRAY ANGLE
OVAL

SPRAY PATTERN
60° full cone

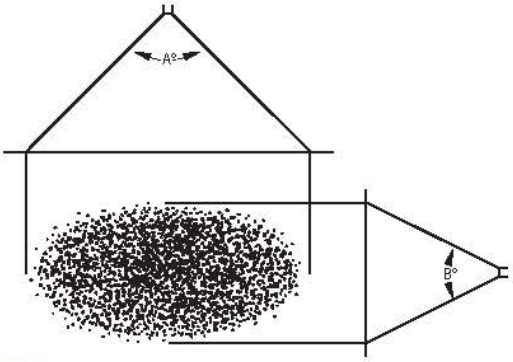
SPRAY PATTERN
90° full cone

GGANVJB
vaneless 1/4"-1/2" NPT (M)

GGJB-VL
oval - 3/8" NPT (F)



SPRAY PATTERN
oval full cone



DIMENSIONAL DRAWING
refer to specifications below

SPECIFICATIONS

OVAL

U.S. GALLONS PER MINUTE							SPRAY ANGLE ° (refer to above dimensional drawing)								PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	NOZZLE TYPE
15 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	150 PSI	15 PSI		40 PSI		100 PSI		150 PSI					NPT(M)
							A	B	A	B	A	B	A	B				
0.59	0.81	0.93	1.1	1.3	1.4	1.7	104	66	90	60	86	52	83	47	3/8	4.9VL	0.040	GGJB
0.78	1.1	1.2	1.5	1.7	1.9	2.3	103	64	95	60	85	50	81	45		6.5VL	0.050	GGJB
0.98	1.3	1.5	1.8	2.1	2.3	2.8	102	64	100	65	84	50	80	45		8.1VL	0.050	GGJB
1.1	1.5	1.7	2.1	2.4	2.7	3.2	103	65	100	65	86	51	81	46		9.2VL	0.050	GGJB

SPRAY PATTERN
110° full cone

HHLPJB
low profile metal full cone

HHLPJB
low profile polypropolyne full cone

DESIGN FEATURES

HHLPJB nozzles produce a full cone spray pattern, with spray angles of 70°, 90° and 110° available. It has been designed for applications where the spray nozzle must project a minimum distance from the pipe header in which it is mounted. To achieve this, as well as being shorter in overall length, the pipe thread has been machined further towards the front than on a standard full cone nozzle. This mounts the nozzle further into the pipe header. The amount projecting from the piping is similar to that of an equivalent sized pipe plug. Although more of the nozzle is inside the pipe header, the design still enables the nozzle to be mounted in a standard pipe elbow of the same pipe size if a right angle configuration is required, or a pipe coupling to form a female nozzle connection. The HHLPJB nozzles are available in male NPT pipe connection sizes from 1" to 4" with flow rates from 4.9 to 197 gallons per minute at 20 psi. As well as Brass and type 316 stainless steel, a range of plastic materials is available including Polypropylene, PVC and PTFE.

COMMON APPLICATIONS

- Washing & Rinsing any Conveyorised Product
- Quenching During Heat Treat Process
- Conveyor Sanitizing

SPECIFICATIONS

PIPE SIZES 1" TO 4"

U.S. GALLONS PER MINUTE									AVAILABLE SPRAY ANGLES ° @ 20 PSI			PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE
3 PSI	5 PSI	7 PSI	10 PSI	20 PSI	40 PSI	60 PSI	80 PSI	100 PSI								(M)
2.0	2.6	3.0	3.6	4.9	6.8	8.2	9.4	10.5	70	90	110		3	0.15	0.22	HHLPJB
3.4	4.3	5.0	5.9	8.2	11.3	13.7	15.7	17.4	70	90	110	1	5	0.22	0.28	HHLPJB
4.7	6.0	7.0	8.3	11.5	15.9	19.2	22.0	24.4	70	90	110		7	0.21	0.33	HHLPJB
6.7	8.5	10.0	11.8	16.4	22.7	27.4	31.4	34.9	70	90	110		10	0.28	0.41	HHLPJB
8.7	11.1	13.0	15.4	21.3	29.5	35.7	40.9	45.4	70	90	110	1 1/2	13	0.38	0.45	HHLPJB
10.7	13.7	16.0	18.9	26.2	36.3	43.9	50.3	55.8	70	90	110		16	0.36	0.50	HHLPJB
13.4	17.1	20.0	23.7	32.8	45.4	54.9	62.8	69.8	70	90	110		20	0.41	0.56	HHLPJB
16.8	21.3	25.0	29.6	40.9	56.7	68.6	78.6	87.2	70	90	110	2	25	0.45	0.64	HHLPJB
20.1	25.6	30.0	35.5	49.1	68.1	82.3	94.3	105	70	90	110		30	0.52	0.69	HHLPJB
23.5	29.9	35.0	41.4	57.3	79.4	96.1	110	122	70	90	110		35	0.55	0.75	HHLPJB
26.9	34.1	40.0	47.3	65.5	90.7	110	126	140	70	90	110		40	0.63	0.80	HHLPJB
30.2	38.4	45.0	53.2	73.7	102	124	141	157	70	90	110	2 1/2	45	0.63	0.84	HHLPJB
33.6	42.7	50.0	59.1	81.9	113	137	157	174	70	90	110		50	0.63	0.89	HHLPJB
40.3	51.2	60.0	71.0	98.3	136	165	189	209	70	90	110		60	0.63	0.94	HHLPJB
47.0	59.8	70.0	82.8	115	159	192	220	244	70	90	110	3	70	0.58	1.05	HHLPJB
57.1	72.6	85.0	101	139	193	233	267	297	70	90	110		85	0.66	1.16	HHLPJB
67.2	85.4	100	118	164	227	274	314	349	70	90	110		100	0.95	1.25	HHLPJB
80.6	102	120	142	197	272	329	377	419	70	90	110	4	120	1.00	1.38	HHLPJB

NARROW SPRAY ANGLE
15°, 20° & 30° SERIES

SPRAY PATTERN
15° full cone

SPRAY PATTERN
20° full cone

HHJB
15°, 20°, 30° plastic full cone

HHJB
15°, 20°, 30° metal full cone

DESIGN FEATURES

Available with spray angles of 15°, 20° and 30°, these narrow angle nozzles produce a full cone spray with even flow distribution across the pattern. Concentrating the full flow onto a relatively small target area provides higher impact and greater trajectory than full cone spray nozzles with larger spray angles. This is useful when sprays need to have maximum time in contact with gases inside a small diameter duct, or where high impact is required in washing applications.

GJB and GGJB narrow angle full cone nozzles are three piece construction where the cap and vane can be removed for cleaning or replacement without distrubing the pipe connection. This body style is available in pipe connection sizes from 1/8" to 3/4" with flow rate up to approximately 5 gallons per minute.

HJB and HHJB body styles are a one piece nozzle, with the internal vane permanently installed at the factory. This style has a larger size range, from 1/8" to 6" NPT connections.

SPECIFICATIONS

15° - PIPE SIZES 1/8" TO 6"

U.S. GALLONS PER MINUTE										SPRAY ANGLE °			PIPE SIZE NPT	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE			
																(F)		(M)	
10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI*	150 PSI	200 PSI	300 PSI	10 PSI	40 PSI	100 PSI							
0.35	0.50	0.61	0.70	0.86	0.99	1.10	1.40	1.60	1.90	13	15	15	1/8	1507	0.06	GJB		GGJB	
0.70	0.99	1.2	1.4	1.7	2.0	2.2	2.7	3.1	3.8	13	15	15		1514	0.09	GJB		GGJB	
1.5	2.1	2.6	3.0	3.7	4.2	4.7	5.8	6.7	8.2	13	15	15	1/4	1530	0.13	GJB		GGJB	
2.5	3.5	4.3	5.0	6.1	7.1	7.9	9.7	11.2	13.7	13	15	15	3/8	1550	0.17	GJB		GGJB	
4.5	6.4	7.8	9.0	11.0	12.7	14.2	17.4	20.0	25.0	13	15	15	1/2	1590	0.22	GJB		GGJB	
7.1	9.8	11.9	13.6	16.5	18.9	20.9	25.3	29.0	35.0		15		3/4	15136	0.30		HJB		HHJB
7.5	10.6	13.0	15.0	18.4	21.0	24.0	29.0	34.0	41.0	13	15	15		15150	0.30		HJB		
14.2	19.7	23.8	27.2	32.9	37.7	41.9	50.5	57.9	70.1		15		1	15272	0.41		HJB		HHJB
21.3	29.5	35.7	40.8	49.4	56.6	62.8	75.8	86.9	105		15		1 1/4	15408	0.48		HJB		HHJB
22.0	30.0	37.0	43.0	53.0	61.0	68.0	83.0	96.0	118	14	15	15		15430	0.48		HJB		
30.7	42.6	51.5	59.0	71.4	81.7	90.7	110	126	152		15		1 1/2	15590	0.60		HJB		HHJB
32.0	45.0	55.0	63.0	77.0	89.0	100	122	141	173	14	15	15		15630	0.59		HJB		
56.8	78.6	95.1	109	132	151	168	202	232	281		15		2	151090	0.80		HJB		HHJB
58.0	81.0	100	115	141	162	182	223	257	315	14	15	15		151150	0.80		HJB		
85.1	118	143	163	198	226	251	303	347	420		15		2 1/2	151630	0.97		HJB		HHJB
87.0	124	152	175	214	247	277	339	391	479	14	15	15		151750	0.97		HJB		
124	172	208	238	288	330	366	442	507	613		15		3	152380	1.16		HJB		HHJB
125	176	216	250	306	353	395	484	559	685	14	15	15		152500	1.16		HJB		
225	311	377	431	522	597	663	801	918	1110		15		4	154310	1.60		HJB		HHJB
225	318	390	450	550	636	712	871	1006	1232	14	15	15		154500	1.56		HJB		
350	495	606	700	858	990	1108	1356	1565	1917	14	15	15	5	157000	1.92		HJB		
414	573	694	794	961	1100	1220	1475	1690	2045		15		6	157940	2.13		HJB		HHJB

SPRAY PATTERN
20° full cone

HHJB
15°, 20°, 30° plastic full cone

HHJB
15°, 20°, 30° metal full cone

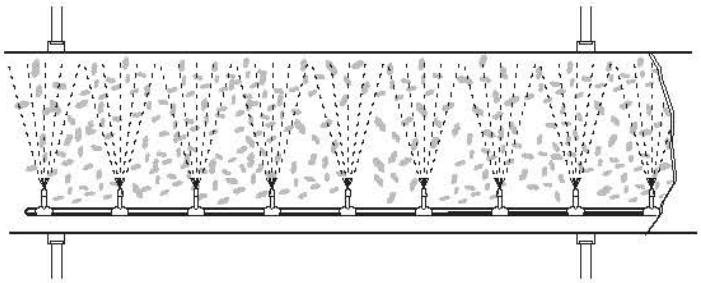
COMMON APPLICATIONS

> High Impact Washing & Rinsing Where the Spray Must Penetrate a Depth of Product
> In-Duct Gas Scrubbing & Cooling

SPECIFICATIONS

20° - PIPE SIZES 3/4" TO 6"

U.S. GALLONS PER MINUTE										SPRAY ANGLE ° @ 40 PSI	PIPE SIZE NPT	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	
10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI*	150 PSI	200 PSI	300 PSI					(F)	(M)
7.1	9.8	11.9	13.6	16.5	18.9	20.9	25.3	29.0	35.0	20	3/4	20136	0.30	HJB	HHJB
14.2	19.7	23.8	27.2	32.9	37.7	41.9	50.5	57.9	70.1	20	1	20272	0.41	HJB	HHJB
21.3	29.5	35.7	40.8	49.4	56.6	62.8	75.8	86.9	105	20	1 1/4	20408	0.48	HJB	HHJB
30.7	42.6	51.5	59.0	71.4	81.7	90.7	110	126	152	20	1 1/2	20590	0.60	HJB	HHJB
56.8	78.6	95.1	109	132	151	168	202	232	281	20	2	201090	0.80	HJB	HHJB
85	118	143	163	198	226	251	303	347	420	20	2 1/2	201630	0.97	HJB	HHJB
124	172	208	238	288	330	366	442	507	613	20	3	202380	1.16	HJB	HHJB
225	311	377	431	522	597	663	801	918	1110	20	4	204310	1.60	HJB	HHJB
414	573	694	794	961	1100	1220	1475	1690	2045	20	6	207940	2.13	HJB	HHJB



WASHING PRODUCT IN A TUMBLER DRUM
using 30º full cone nozzles for maximum penetration of tumbling product

SPECIFICATIONS

30º - PIPE SIZES 1/8" TO 6"

U.S. GALLONS PER MINUTE										SPRAY ANGLE °			PIPE SIZE NPT	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE			
																(F)		(M)	
10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI*	150 PSI	200 PSI	300 PSI	10 PSI	40 PSI	100 PSI							
0.07	0.10	0.12	0.14	0.17	0.20	0.22	0.27	0.31	0.38	17	30	31	1/8	3001.4	0.03	GJB		GGJB	
0.13	0.18	0.22	0.25	0.31	0.35	0.40	0.48	0.56	0.68	17	30	32		3002.5	0.03	GJB		GGJB	
0.20	0.28	0.35	0.40	0.49	0.57	0.63	0.78	0.90	1.1	26	30	32		3004	0.05	GJB		GGJB	
0.35	0.50	0.61	0.70	0.86	0.99	1.1	1.4	1.6	1.9	23	30	30		3007	0.06	GJB		GGJB	
0.45	0.64	0.78	0.90	1.1	1.3	1.4	1.7	2.0	2.5	23	30	30	1/4	3009	0.08	GJB		GGJB	
0.70	0.99	1.2	1.4	1.7	2.0	2.2	2.7	3.1	3.8	25	30	30	3/8	3014	0.09	GJB		GGJB	
1.5	2.1	2.6	3.0	3.7	4.2	4.7	5.8	6.7	8.2	26	30	31	1/2	3030	0.13	GJB		GGJB	
2.5	3.5	4.3	5.0	6.1	7.1	7.9	9.7	11.2	13.7	26	30	31	3/4	3050	0.17	GJB		GGJB	
7.1	9.8	11.9	13.6	16.5	18.9	20.9	25.3	29.0	35.0		30			30136	0.30		HJB		HHJB
3.5	5.0	6.1	7.0	8.6	9.9	11.1	13.6	15.7	19.2	27	30	30	1	3070	0.20				HHJB
5.0	7.1	8.7	10.0	12.3	14.2	15.8	19.4	22.0	27.0	27	30	30		30100	0.25				HHJB
14.2	19.7	23.8	27.2	32.9	37.7	41.9	50.5	57.9	70.1		30			30272	0.41		HJB		HHJB
7.5	10.6	13.0	15.0	18.4	21.0	24.0	29.0	34.0	41.0	27	30	30	1 1/4	30150	0.30				HHJB
10	14.2	17.3	20.0	25.0	28.0	32.0	39.0	45.0	55.0	27	30	30		30200	0.34				HHJB
21.3	29.5	35.7	40.8	49.4	56.6	62.8	75.8	86.9	105		30			30408	0.48		HJB		HHJB
12.5	18.0	22.0	25.0	31.0	35.0	40.0	48.0	56.0	68.0	27	30	30	1 1/2	30250	0.38				HHJB
15.0	21.0	26.0	30.0	37.0	42.0	47.0	58.0	67.0	82.0	27	30	30		30300	0.41				HHJB
30.7	42.6	51.5	59.0	71.4	81.7	90.7	110	126	152		30			30590	0.60		HJB		HHJB
17.5	25.0	30.0	35.0	43.0	50.0	55.0	68.0	78.0	96.0	28	30	30	2	30350	0.44				HHJB
20.0	28.0	35.0	40.0	49.0	57.0	63.0	78.0	90.0	110	28	30	30		30400	0.47				HHJB
25.0	35.0	43.0	50.0	61.0	71.0	79.0	97.0	112	137	28	30	30		30500	0.53				HHJB
56.8	78.6	95.1	109	132	151	168	202	232	281		30			301090	0.80		HJB		HHJB
30.0	42.0	52.0	60.0	74.0	85.0	95.0	116	134	164	28	30	30	2 1/2	30600	0.58				HHJB
35.0	50.0	61.0	70.0	86.0	99.0	111	136	157	192	28	30	30		30700	0.63				HHJB
50.0	71.0	87.0	100	123	141	158	194	223	274	28	30	30		301000	0.75				HHJB
55.0	78.0	95.0	110	135	155	174	213	246	301	28	30	30		301100	0.78				HHJB
60.0	85.0	104	120	147	170	190	232	268	328	28	30	30		301200	0.81				HHJB
85.1	118	143	163	198	226	251	303	347	420		30			301630	0.97		HJB		HHJB
124	172	208	238	288	330	366	442	507	613		30		3	302380	1.16		HJB		HHJB
225	311	377	431	522	597	663	801	918	1110		30		4	304310	1.60		HJB		HHJB
414	573	694	794	961	1100	1220	1475	1690	2045		30		6	307940	2.13		HJB		HHJB

SPRAY PATTERN
120° round full cone

SPRAY PATTERN
120° square full cone

HHJB-W
wide spray full cone

DESIGN FEATURES

Wide & Wide Square Spray. Wide angle full cone spray nozzles are primarily intended for applications where a large surface has to be covered with few spray nozzles or where there is little headroom from the nozzle to the sprayed surface in which to form a wide enough spray pattern with standard angle nozzles.

With spray angles of up to 125°, the W series full cone nozzles can produce a circle of coverage 46" in diameter from just a 12" spray height. The WSQ series has a square full cone pattern, with spray angles up to 115°.

GJB-W and GGJB-W are standard type with three piece construction where the cap and vane are removable for cleaning or replacement without disturbing the pipe connection. This body style is available in pipe connection sizes from 1/8" to 1/2" NPT covering flow rates from ¼ to 5 gallons per minute

HJB-W and HHJB-W body styles are a one piece nozzle, with the internal vane permanently installed at the factory. This style has a larger size range, from 1/8" to 6" NPT and a flow rate range from less than 1 gallon per minute to over 700 gallons per minute.

SPECIFICATIONS

PIPE SIZES 1/8" TO 3/8"

U.S. GALLONS PER MINUTE							SPRAY ANGLE ° @ 10 PSI	PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE					
												WIDE SPRAY STANDARD				WIDE SPRAY ANGLE TYPE	
10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI						(F)		(M)		(F)	(M)
0.13	0.18	0.22	0.25	0.30	0.35	0.38	120		1.3W		0.043		HJB		HHJB		
0.26	0.36	0.44	0.50	0.60	0.69	0.77	120		2.6W		0.055		HJB		HHJB		
0.28	0.38	0.45	0.51	0.61	0.70	0.78	120		2.8W	0.040	0.063	GJB		GGJB			
0.39	0.54	0.66	0.75	0.91	1.0	1.2	120	1/8	3.9W		0.072		HJB		HHJB		
0.43	0.58	0.70	0.79	0.95	1.1	1.2	120		4.3W	0.040	0.078	GJB		GGJB		GAJB	GGAJB
0.56	0.76	0.91	1.0	1.2	1.4	1.6	120		5.6W	0.040	0.094	GJB		GGJB			
0.80	1.1	1.3	1.5	1.8	2.0	2.2	120		8W	0.050	0.094	GJB		GGJB		GAJB	GGAJB
0.52	0.72	0.87	1.00	1.21	1.39	1.5	120		5.2W		0.082		HJB		HHJB		
0.78	1.1	1.3	1.5	1.8	2.1	2.3	120		7.8W		0.109		HJB		HHJB		
1.0	1.4	1.6	1.8	2.2	2.5	2.8	120	1/4	10W	0.050	0.109	GJB		GGJB			
1.2	1.6	1.9	2.2	2.6	3.0	3.4	120		12W	0.050	0.125	GJB		GGJB			
1.4	1.9	2.3	2.6	3.1	3.5	3.9	120		14W	0.063	0.141	GJB		GGJB	HHJB	GAJB	GGAJB
1.0	1.4	1.8	2.0	2.4	2.8	3.1	120		10W		0.125		HJB		HHJB		
1.6	2.2	2.6	3.0	3.6	4.2	4.6	120		16W		0.156		HJB		HHJB		
1.7	2.3	2.8	3.1	3.7	4.2	4.7	120		17W	0.063	0.156	GJB		GGJB			
2.0	2.7	3.2	3.7	4.4	5.0	5.6	120	3/8	20W	0.094	0.172	GJB		GGJB	HHJB	GAJB	GGAJB
2.1	2.9	3.5	4.0	4.8	5.5	6.2	120		21W		0.188		HJB		HHJB		
2.4	3.3	3.9	4.4	5.3	6.0	6.7	120		24W	0.094	0.188	GJB		GGJB	HHJB		
2.7	3.7	4.4	5.0	5.9	6.7	7.5	120		27W	0.109	0.203	GJB		GGJB			

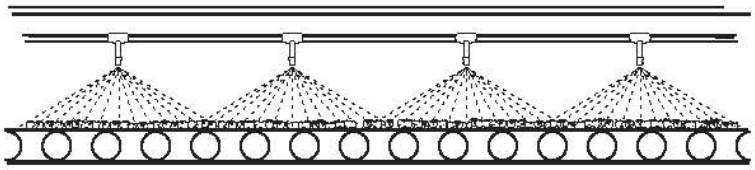
WIDE SPRAY ANGLE
ROUND SPRAY PATTERN - CONTINUED

SPRAY PATTERN
120° round full cone

HHJB-W
120° full cone - PVC

HHJB-W
120° high flow full cone - metal

HFJB-W
flanged full cone



RINSING SOFT FRUIT ON CONVEYOR
with low head room, using wide spray full cone nozzles

SPECIFICATIONS

PIPE SIZES 1/2" TO 1"

U.S. GALLONS PER MINUTE									SPRAY ANGLE ° @ 10 PSI	PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE					
														WIDE SPRAY STANDARD				WIDE SPRAY ANGLE TYPE	
5 PSI	7 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI						(F)		(M)		(F)	(M)
1.8	2.2	2.6	3.6	4.4	5.0	6.1	6.9	7.7	120	1/2	26W		0.203		HJB		HHJB		
2.2	2.6	3.0	4.1	4.9	5.5	6.6	7.5	8.4	120		30W	0.109	0.219	GJB		GGJB	HHJB		
2.2	2.6	3.1	4.3	5.2	6.0	7.3	8.3	9.2	120		31W		0.219		HJB		HHJB		
2.6	3.0	3.5	4.8	5.7	6.4	7.7	8.7	9.7	120		35W	0.125	0.234	GJB		GGJB	HHJB	GAJB	GGAJB
2.6	3.1	3.7	5.1	6.1	7.0	8.5	9.7	10.8	120		37W		0.228		HJB		HHJB		
3.0	3.4	4.0	5.4	6.5	7.4	8.8	10.0	11.2	120		40W	0.125	0.250	GJB		GGJB	HHJB		
3.3	3.9	4.5	6.1	7.3	8.3	9.9	11.2	12.5	120		45W	0.141	0.250	GJB		GGJB	HHJB		
3.7	4.3	5.0	6.8	8.1	9.2	11.0	12.5	14.0	120		50W	0.156	0.266	GJB		GGJB	HHJB	GAJB	GGAJB
2.6	3.0	3.6	4.9	5.9	6.8	8.2	9.4	10.5	120	3/4	3W	0.190	0.200		HJB		HHJB		
2.8	3.5	4.2	5.8	7.0	8.0	9.7	11.1	12.3	120		3.5W		0.234		HJB		HHJB		
3.4	4.0	4.7	6.6	7.9	9.1	11.0	12.6	14.0	120		4W	0.190	0.280		HJB		HHJB		
3.6	4.4	5.2	7.2	8.7	10.0	12.1	13.8	15.4	120		4.4W		0.281		HJB		HHJB		
5.1	6.0	7.1	9.8	11.9	13.6	16.5	18.9	20.9	120		6W	0.190	0.300		HJB		HHJB		
5.2	6.0	7.0	9.5	11.4	12.9	15.4	17.5	19.6	120		6AW	0.172	0.391		HJB		HHJB		
4.4	5.3	6.3	8.7	10.5	12.0	14.5	16.6	18.5	120		5.3W		0.312		HJB		HHJB		
6.0	7.0	8.3	11.5	13.8	15.9	19.2	22.0	24.4	120		7W	0.190	0.350		HJB		HHJB		
5.4	6.5	7.8	10.8	13.1	15.0	18.1	20.8	23.1	120	1	6.5W		0.33		HJB		HHJB		
6.0	7.0	8.3	11.5	13.8	15.9	19.2	22.0	24.4	120		7W	0.31	0.33		HJB		HHJB		
6.8	8.0	9.5	13.1	15.8	18.1	22.0	25.1	27.9	120		8W	0.31	0.35		HJB		HHJB		
7.2	8.7	10.4	14.4	17.5	20.0	24.2	27.7	30.8	120		8.7W		0.38		HJB		HHJB		
7.7	9.0	10.6	14.7	17.8	14.7	24.7	28.3	31.4	120		9W	0.31	0.40		HJB		HHJB		
8.5	10.0	11.8	16.4	19.8	22.7	27.4	31.4	34.9	120		10W	0.31	0.42		HJB		HHJB		
9.4	11.0	13.0	18.0	21.8	25.0	30.2	34.6	38.4	120		11W	0.31	0.44		HJB		HHJB		
9.5	11.0	12.9	17.5	21.0	24.0	28.0	32.0	35.8	120		11W	0.22	0.52		HJB		HHJB		
10.2	12.0	14.2	19.7	23.7	27.2	32.9	37.7	41.9	120		12W	0.31	0.46		HJB		HHJB		

SPRAY PATTERN
120° round full cone

HHJB-W
120° full cone - PVC

HHJB-W
120° high flow full -metal

HFJB-W
flanged full cone

SPECIFICATIONS

PIPE SIZES 1-1/4" TO 4"

U.S. GALLONS PER MINUTE									SPRAY ANGLE ° @ 10 PSI	PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	
														WIDE SPRAY STANDARD	
5 PSI	7 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI						(F)	(M)
8.5	10.0	11.8	16.4	19.8	22.7	27.4	31.4	34.9	120	1 1/4	10W	0.38	0.39	HJB	HHJB
10.2	12.0	14.2	19.7	23.7	27.2	32.9	37.7	41.9	120		12W	0.38	0.42	HJB	HHJB
12.0	14.0	16.6	22.9	27.7	31.8	38.4	44.0	48.9	120		14W	0.38	0.46	HJB	HHJB
13.7	16.0	18.9	26.2	31.7	36.3	43.9	50.3	55.8	120		16W	0.38	0.48	HJB	HHJB
14.5	17.0	20.1	27.8	33.6	38.6	46.7	53.4	59.3	120		17W	0.38	0.53	HJB	HHJB
17.1	20.0	23.7	32.8	39.6	45.4	54.9	62.8	69.8	120		20W	0.38	0.63	HJB	HHJB
13.7	16.0	18.9	26.2	31.7	36.3	43.9	50.3	55.8	120	1 1/2	16W	0.38	0.53	HJB	HHJB
17.1	20.0	23.7	32.8	39.6	45.4	54.9	62.8	69.8	120		20W	0.41	0.56	HJB	HHJB
20.5	24.0	28.4	39.3	47.5	54.4	65.9	75.4	83.8	120		24W	0.41	0.63	HJB	HHJB
24.8	29.0	34.3	47.5	57.4	65.8	79.6	91.1	101	120		29W	0.41	0.69	HJB	HHJB
25.6	30.0	35.5	49.1	59.4	68.1	82.3	94.3	105	120		30W	0.41	0.75	HJB	HHJB
25.6	30.0	35.5	49.1	59.4	68.1	82.3	94.3	105	120	2	30W	0.56	0.64	HJB	HHJB
29.9	35.0	41.4	57.3	69.2	79.4	96.1	110	122	120		35W	0.56	0.72	HJB	HHJB
34.1	40.0	47.3	65.5	79.1	90.7	110	126	140	120		40W	0.56	0.78	HJB	HHJB
40.1	47.0	55.6	77.0	93.0	107.0	129	148	164	120		47W	0.56	0.97	HJB	HHJB
41.0	47.0	55.0	75.0	89.0	101	121	137	153	120		47AW	0.44	0.98	HJB	
42.7	50.0	59.1	81.9	98.9	113	137	157	174	120		50W	0.56	1.10	HJB	HHJB
51.2	60.0	71.0	98.3	119	136	165	189	209	120		60W	0.75	1.14	HJB	HHJB
51.2	60.0	71.0	98.3	119	136	165	189	209	120	2 1/2	60W	0.75	0.96	HJB	HHJB
59.8	70.0	82.8	115	138	159	192	220	244	120		70W	0.75	1.07	HJB	HHJB
60.0	70.0	82.0	111	133	151	180	204	228	120		70AW	0.56	1.25	HJB	
68.3	80.0	94.6	131	158	181	220	251	279	120		80W	0.75	1.15	HJB	HHJB
76.8	90.0	106	147	178	204	247	283	314	120		90W	0.75	1.27	HJB	HHJB
76.8	90.0	106	147	178	204	247	283	314	120	3	90W	1.00	1.20	HJB	HHJB
81.1	95.0	112	156	188	216	261	299	332	120		95W	1.00	1.13	HJB	HHJB
82.0	95.0	111	151	180	205	245	277	310	120		95AW	0.69	1.63	HJB	
85.4	100	118	164	198	227	274	314	349	120		100W	1.00	1.34	HJB	HHJB
99.9	117	138	192	231	265	321	368	408	120		117W	1.00	1.42	HJB	HHJB
102	120	142	197	237	272	329	377	419	120		120W	1.00	1.50	HJB	HHJB
115	135	160	221	267	306	371	424	471	120		135W	1.00	1.64	HJB	HHJB
154	180	213	295	356	408	494	566	628	120	4	180W	1.33	1.72	HJB	HHJB
161	188	222	308	372	427	516	591	656	120		188W	1.33	1.69	HJB	HHJB
162	188	220	299	357	405	484	549	614	120		188AW	0.81	2.00	HJB	
171	200	237	328	396	454	549	628	698	120		200W	1.33	1.88	HJB	HHJB
179	210	248	344	415	476	576	660	733	120		210W	1.33	2.03	HJB	HHJB
213	250	296	409	495	567	686	786	872	120		250W	1.33	2.50	HJB	HHJB

SPRAY PATTERN
120° round full cone

HHJB-W
120° full cone - PVC

HHJB-W
120° high flow full cone - metal

HFJB-W
flanged full cone

SPECIFICATIONS

PIPE SIZES 6" TO 12"

U.S. GALLONS PER MINUTE									SPRAY ANGLE ° @ 10 PSI	PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE		
														WIDE SPRAY STANDARD		
5 PSI	7 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI						(F)	(M)	FLANGED
299	350	414	573	692	794	961	1100	1220	120	6	350W	1.38	2.60	HJB	HHJB	
410	480	568	786	950	1090	1320	1510	1680	120		480W	1.69	2.80	HJB	HHJB	
456	532	627	862	1040	1190	1430	1629	1805	120		532W	1.75		HJB	HHJB	HFJB
504	588	693	953	1150	1310	1580	1800	1995	120		588W	1.75		HJB	HHJB	HFJB
525	615	727	1010	1217	1400	1690	1930	2150	120		615W	1.69	3.00	HJB	HHJB	
708	827	974	1340	1610	1840	2220	2532	2806	120		827W	1.75		HJB	HHJB	HFJB
824	962	1130	1560	1880	2140	2580	2945	3264	120	8	962W	2.06		HJB	HHJB	HFJB
959	1120	1320	1810	2190	2500	3010	3429	3800	120		1120W	2.06		HJB	HHJB	HFJB
1080	1260	1480	2040	2460	2810	3380	3858	4275	120		1260W	2.06		HJB	HHJB	HFJB
1270	1480	1740	2400	2890	3300	3980	4531	5021	120		1480W	2.06		HJB	HHJB	HFJB
1770	2070	2440	3350	4040	4610	5560	6338	7023	120	12	2070W	2.25				HFJB
2010	2360	2770	3810	4590	5240	6310	7195	7973	120		2360W	2.25				HFJB
2150	2510	2960	4070	4900	5600	6740	7685	8516	120		2510W	2.25				HFJB
2280	2660	3130	4310	5190	5930	7150	8144	9025	120		2660W	2.25				HFJB
2540	2960	3490	4800	5780	6600	7950	9063	10042	120		2960W	2.25				HFJB
2780	3250	3830	5270	6350	7250	8730	9951	11026	120		3250W	2.25				HFJB

WIDE SPRAY ANGLE
SQUARE SPRAY PATTERN

SPRAY PATTERN
120° square full cone

HJB-WSQ
120° square full cone

HHJB-WSQ
120° square full cone - PVC

COMMON APPLICATIONS

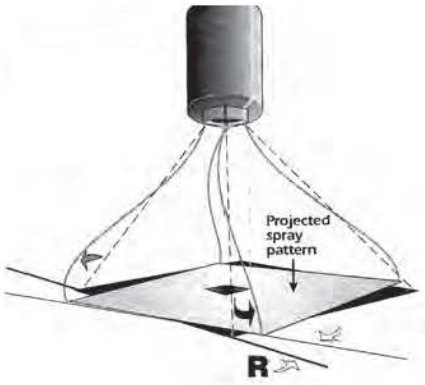
- > Washing Fruits & Vegetables
- > Dust Control
- > Rotary Filter Drum Washing
- > Foam Breaking
- > Cooling of Propane Tanks
- > Cooling Canned and Bottled Foods
- > Coke Quenching in the Steel Industry
- > Washing Gravel on Size Grading Sieves

SPECIFICATIONS

PIPE SIZES 1/8" TO 1/2"

U.S. GALLONS PER MINUTE									SPRAY ANGLE ° @ 10 PSI	PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	
														WIDE SPRAY SQUARE	
5 PSI	7 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI						(F)	(M)
		0.13	0.18	0.22	0.25	0.30	0.35	0.38	120	1/8	1.3WSQ		0.043	HJB	HHJB
		0.26	0.36	0.44	0.50	0.60	0.69	0.77	120		2.6WSQ		0.055	HJB	HHJB
		0.39	0.54	0.66	0.75	0.91	1.0	1.2	120		3.9WSQ		0.072	HJB	HHJB
		0.52	0.72	0.87	1.0	1.2	1.4	1.5	120	1/4	5.2WSQ		0.082	HJB	HHJB
		0.78	1.1	1.3	1.5	1.8	2.1	2.3	120		7.8WSQ		0.109	HJB	HHJB
		1.4	1.9	2.3	2.6	3.1	3.5	3.9	101		14WSQ	0.063	0.141		HHJB
		1.0	1.4	1.8	2.0	2.4	2.8	3.1	120	3/8	10WSQ		0.125	HJB	HHJB
		1.6	2.2	2.6	3.0	3.6	4.2	4.6	120		16WSQ		0.156	HJB	HHJB
		1.7	2.3	2.8	3.1	3.7	4.2	4.7	101		17WSQ	0.063	0.156		HHJB
		2.0	2.7	3.2	3.7	4.4	5.0	5.6	110		20WSQ	0.094	0.172		HHJB
		2.1	2.9	3.5	4.0	4.8	5.5	6.2	120		21WSQ		0.188	HJB	HHJB
		2.4	3.3	3.9	4.4	5.3	6.0	6.7	110		24WSQ	0.094	0.188		HHJB
		2.7	3.7	4.4	5.0	5.9	6.7	7.5	110		27WSQ	0.109	0.203		HHJB
1.8	2.2	2.6	3.6	4.4	5.0	6.1	6.9	7.7	120	1/2	26WSQ		0.203	HJB	HHJB
2.2	2.6	3.0	4.1	4.9	5.5	6.6	7.5	8.4	110		30WSQ	0.109	0.219		HHJB
2.2	2.6	3.1	4.3	5.2	6.0	7.3	8.3	9.2	120		31WSQ		0.219	HJB	HHJB
2.6	3.0	3.5	4.8	5.7	6.4	7.7	8.7	9.7	110		35WSQ	0.125	0.234		HHJB
2.6	3.1	3.7	5.1	6.1	7.0	8.5	9.7	10.8	120		37WSQ		0.228	HJB	HHJB
3.0	3.4	4.0	5.4	6.5	7.4	8.8	10.0	11.2	110		40WSQ	0.125	0.250		HHJB
3.3	3.9	4.5	6.1	7.3	8.3	9.9	11.2	12.5	110		45WSQ	0.141	0.250		HHJB
3.7	4.3	5.0	6.8	8.1	9.2	11.0	12.5	14.0	110		50WSQ	0.156	0.266		HHJB

WIDE SPRAY ANGLE
SQUARE SPRAY PATTERN - CONTINUED



PROJECTED SPRAY PATTERN

The square spray pattern generated by the HHJB-SQ nozzle will not line up corner to corner with the "points" of the nozzle nose. The square pattern will be rotated 10° - 15° counter clockwise when viewed from above. The figure above illustrates the angle of rotation of the pattern R= 10° - 15°.

SPECIFICATIONS

PIPE SIZE 3/4" TO 1-1/2"

U.S. GALLONS PER MINUTE									SPRAY ANGLE ° @ 10 PSI	PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	
														WIDE SPRAY SQUARE	
5 PSI	7 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI						(F)	(M)
2.6	3.0	3.6	4.9	5.9	6.8	8.2	9.4	10.5	120	3/4	36WSQ	0.190	0.200	HJB	HHJB
2.8	3.5	4.2	5.8	7.0	8.0	9.7	11.1	12.3	120		41WSQ		0.234	HJB	HHJB
3.4	4.0	4.7	6.6	7.9	9.1	11.0	12.6	14.0	120		47WSQ	0.190	0.280	HJB	HHJB
3.6	4.4	5.2	7.2	8.7	10.0	12.1	13.8	15.4	120		52WSQ		0.281	HJB	HHJB
4.4	5.3	6.3	8.7	10.5	12.0	14.5	16.6	18.5	120		62WSQ		0.312	HJB	HHJB
5.1	6.0	7.1	9.8	11.9	13.6	16.5	18.9	20.9	120		71WSQ	0.190	0.300	HJB	HHJB
5.2	6.0	7.0	9.5	11.4	12.9	15.4	17.5	19.6	110		71AWSQ	0.172	0.391	HJB	HHJB
6.0	7.0	8.3	11.5	13.8	15.9	19.2	22.0	24.4	120		83WSQ	0.190	0.350	HJB	HHJB
5.4	6.5	7.8	10.8	13.1	15.0	18.1	20.8	23.1	120	1	78WSQ		0.33	HJB	HHJB
6.0	7.0	8.3	11.5	13.8	15.9	19.2	22.0	24.4	120		83WSQ	0.31	0.33	HJB	HHJB
6.8	8.0	9.5	13.1	15.8	18.1	22.0	25.1	27.9	120		95WSQ	0.31	0.35	HJB	HHJB
7.2	8.7	10.4	14.4	17.5	20.0	24.2	27.7	30.8	120		104WSQ		0.38	HJB	HHJB
7.7	9.0	10.6	14.7	17.8	14.7	24.7	28.3	31.4	120		106WSQ	0.31	0.40	HJB	HHJB
8.5	10.0	11.8	16.4	19.8	22.7	27.4	31.4	34.9	120		118WSQ	0.31	0.42	HJB	HHJB
9.4	11.0	13.0	18.0	21.8	25.0	30.2	34.6	38.4	120		130WSQ	0.31	0.44	HJB	HHJB
9.5	11.0	12.9	17.5	21.0	24.0	28.0	32.0	35.8	110		130AWSQ	0.22	0.52	HJB	HHJB
10.2	12.0	14.2	19.7	23.7	27.2	32.9	37.7	41.9	120		142WSQ	0.31	0.46	HJB	HHJB
8.5	10.0	11.8	16.4	19.8	22.7	27.4	31.4	34.9	120	1 1/4	118WSQ	0.38	0.39	HJB	HHJB
10.2	12.0	14.2	19.7	23.7	27.2	32.9	37.7	41.9	120		142WSQ	0.38	0.42	HJB	HHJB
12.0	14.0	16.6	22.9	27.7	31.8	38.4	44.0	48.9	120		166WSQ	0.38	0.46	HJB	HHJB
13.7	16.0	18.9	26.2	31.7	36.3	43.9	50.3	55.8	120		189WSQ	0.38	0.48	HJB	HHJB
13.8	16.0	18.7	25.0	30.0	34.0	41.0	47.0	52.5	111		190WSQ	0.22	0.61	HJB	
14.5	17.0	20.1	27.8	33.6	38.6	46.7	53.4	59.3	120		201WSQ	0.38	0.53	HJB	HHJB
17.1	20.0	23.7	32.8	39.6	45.4	54.9	62.8	69.8	120		237WSQ	0.38	0.63	HJB	HHJB
13.7	16.0	18.9	26.2	31.7	36.3	43.9	50.3	55.8	120	1 1/2	189WSQ	0.38	0.53	HJB	HHJB
17.1	20.0	23.7	32.8	39.6	45.4	54.9	62.8	69.8	120		237WSQ	0.41	0.56	HJB	HHJB
20.5	24.0	28.4	39.3	47.5	54.4	65.9	75.4	83.8	120		284WSQ	0.41	0.63	HJB	HHJB
21.0	25.0	29.0	39.0	47.0	53.0	64.0	72.0	78.3	114		290AWSQ	0.31	0.72	HJB	
24.8	29.0	34.3	47.5	57.4	65.8	79.6	91.1	101	120		343WSQ	0.41	0.69	HJB	HHJB
25.6	30.0	35.5	49.1	59.4	68.1	82.3	94.3	105	120		355WSQ	0.41	0.75	HJB	HHJB

SPRAY PATTERN
120° square full cone

HJB-WSQ
120° square full cone

HHJB-WSQ
120° square full cone - PVC

COMMON APPLICATIONS

- Washing Fruits & Vegetables
- Dust Control
- Rotary Filter Drum Washing
- Foam Breaking
- Cooling of Propane Tanks
- Cooling Canned and Bottled Foods
- Coke Quenching in the Steel Industry
- Washing Gravel on Size Grading Sieves

SPECIFICATIONS

PIPE SIZES 2" TO 6"

U.S. GALLONS PER MINUTE									SPRAY ANGLE ° @ 10 PSI	PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	
														WIDE SPRAY SQUARE	
5 PSI	7 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI						(F)	(M)
25.6	30.0	35.5	49.1	59.4	68.1	82.3	94.3	105	120		355WSQ	0.56	0.64	HJB	HHJB
29.9	35.0	41.4	57.3	69.2	79.4	96.1	110	122	120		414WSQ	0.56	0.72	HJB	HHJB
34.1	40.0	47.3	65.5	79.1	90.7	110	126	140	120		473WSQ	0.56	0.78	HJB	HHJB
40.1	47.0	55.6	77.0	93.0	107	129	148	164	120	2	556WSQ	0.56	0.97	HJB	HHJB
41.0	47.0	55.0	75.0	89.0	101	121	137	153	114		560WSQ	0.44	0.98	HJB	
42.7	50.0	59.1	81.9	98.9	113	137	157	174	120		591WSQ	0.56	1.10	HJB	HHJB
51.2	60.0	71.0	98.3	119	136	165	189	209	120		710WSQ	0.75	1.14	HJB	HHJB
51.2	60.0	71.0	98.3	119	136	165	189	209	120		710WSQ	0.75	0.96	HJB	HHJB
59.8	70.0	82.8	115	138	159	192	220	244	120		828WSQ	0.75	1.07	HJB	HHJB
60.0	70.0	82.0	111	133	151	180	204	228	115	2 1/2	830WSQ	0.56	1.25	HJB	
68.3	80.0	94.6	131	158	181	220	251	279	120		946WSQ	0.75	1.15	HJB	HHJB
76.8	90.0	106	147	178	204	247	283	314	120		1060WSQ	0.75	1.27	HJB	HHJB
76.8	90.0	106	147	178	204	247	283	314	120		1060WSQ	1.00	1.20	HJB	HHJB
82.0	95.0	111	151	180	205	245	277	310	115		1070WSQ	0.69	1.63	HJB	
81.1	95.0	112	156	188	216	261	299	332	120		1120WSQ	1.00	1.13	HJB	HHJB
85.4	100	118	164	198	227	274	314	349	120	3	1180WSQ	1.00	1.34	HJB	HHJB
99.9	117	138	192	231	265	321	368	408	120		1380WSQ	1.00	1.42	HJB	HHJB
102	120	142	197	237	272	329	377	419	120		1420WSQ	1.00	1.50	HJB	HHJB
115	135	160	221	267	306	371	424	471	120		1600WSQ	1.00	1.64	HJB	HHJB
154	180	213	295	356	408	494	566	628	120		2130WSQ	1.33	1.72	HJB	HHJB
161	188	222	308	372	427	516	591	656	120		2220WSQ	1.33	1.69	HJB	HHJB
171	200	237	328	396	454	549	628	698	120	4	2370WSQ	1.33	1.88	HJB	HHJB
179	210	248	344	415	476	576	660	733	120		2480WSQ	1.33	2.03	HJB	HHJB
213	250	296	409	495	567	686	786	872	120		2960WSQ	1.33	2.50	HJB	HHJB
299	350	414	573	692	794	961	1100	1220	120		4140WSQ	1.38	2.60	HJB	HHJB
410	480	568	786	950	1090	1320	1510	1680	120	6	5680WSQ	1.69	2.80	HJB	HHJB
525	615	727	1010	1217	1400	1690	1930	2150	120°		7270WSQ	1.69	3.00	HJB	HHJB

SPRAY PATTERN
rectangular spray

HHISJB
full cone rectangular

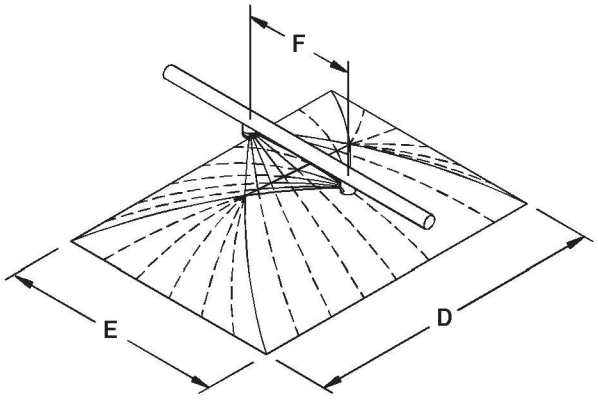
DESIGN FEATURES

HHISJB style nozzles are used in pairs to produce a wide angled rectangular pattern. Nozzles are mounted on a pipe header with centre-to-centre distances as shown below, with the two spray patterns facing each other. The thick bands of droplets intersect and fall uniformly. They provide a well formed pattern at pressures as low as 0.5 psi., and feature a large unimpeded orifice to resist clogging. The extra wide spray angle produces a rectangular pattern of up to 8' x 3' from a 12" spray height. With pipe connection sizes from 1/16" to 1-1/2", flow rate ranges from 2 to just over 104 gallons per minute at 8 psi.

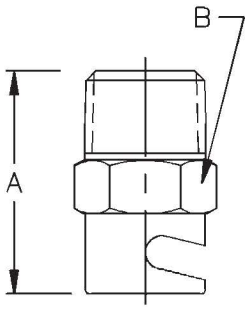
SPECIFICATIONS

PIPE SIZES 1/16" TO 1-1/2"

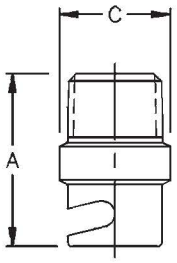
U.S. GALLONS PER MINUTE										PIPE SIZE NPT	CAPACITY SIZE	NOZZLE TYPE
												RECTANGULAR SPRAY
0.5 PSI	1 PSI	2 PSI	3 PSI	4 PSI	6 PSI	8 PSI	10 PSI	15 PSI	20 PSI			(M)
0.50	0.71	1.0	1.2	1.4	1.7	2.0	2.2	2.7	3.2	1/16	2	HHISJB
0.75	1.1	2.0	1.8	2.1	2.6	3.0	3.4	4.1	4.7		3	HHISJB
1.0	1.4	2.0	2.4	2.8	3.5	4.0	4.5	5.5	6.3	1/8	4	HHISJB
1.5	2.1	3.0	3.7	4.2	5.2	6.0	6.7	8.2	9.5		6	HHISJB
2.0	2.8	4.0	4.9	5.7	6.9	8.0	8.9	11.0	13.0	1/4	8	HHISJB
2.5	3.5	5.0	6.1	7.1	8.7	10.0	11.0	14.0	16.0		10	HHISJB
3.0	4.2	6.0	7.3	8.5	10.0	12.0	13.0	16.0	19.0	3/8	12	HHISJB
3.5	4.9	7.0	8.6	9.9	12.0	14.0	16.0	19.0	22.0		14	HHISJB
4.0	5.7	8.0	9.8	11.0	14.0	16.0	18.0	22.0	25.0		16	HHISJB
5.0	7.1	10.0	12.0	14.0	17.0	20.0	22.0	27.0	32.0	1/2	20	HHISJB
6.0	8.5	12.0	15.0	17.0	21.0	24.0	27.0	33.0	38.0		24	HHISJB
7.0	9.9	14.0	17.0	20.0	24.0	28.0	31.0	38.0	44.0		28	HHISJB
8.0	11.0	16.0	20.0	23.0	28.0	32.0	36.0	44.0	51.0	3/4	32	HHISJB
10.0	14.0	20.0	24.0	28.0	35.0	40.0	45.0	55.0	63.0		40	HHISJB
12.0	17.0	24.0	29.0	34.0	42.0	48.0	54.0	66.0	76.0		48	HHISJB
14.0	20.0	28.0	34.0	40.0	48.0	56.0	63.0	77.0	89.0	1	56	HHISJB
16.0	23.0	32.0	39.0	45.0	55.0	64.0	72.0	88.0	101		64	HHISJB
18.0	25.0	36.0	44.0	51.0	62.0	72.0	80.0	99.0	114	1 1/4	72	HHISJB
20.0	28.0	40.0	49.0	57.0	69.0	80.0	89.0	110	126		80	HHISJB
22.0	31.0	44.0	54.0	62.0	76.0	88.0	98.0	120	139	1 1/2	88	HHISJB
24.0	34.0	48.0	59.0	68.0	83.0	96.0	107	131	152		96	HHISJB
26.0	37.0	52.0	64.0	74.0	90.0	104	116	142	164		104	HHISJB



COVERAGE CHART
refer to dimensional data below



METAL
refer to dimensional data below



PLASTIC
refer to dimensional data below

DIMENSIONAL DATA

PIPE SIZES 1/16" TO 1-1/2"

DIMENSIONS (INCHES)			SPACING (INCHES)	APPROXIMATE COVERAGE (INCHES) @ PSI								PIPE SIZE NPT
				1 PSI		2 PSI		4 PSI		8 PSI		
A	B	C	F	D	E	D	E	D	E	D	E	
0.8	0.3	0.4	3	24	18	34	26	60	30	72	30	1/16
0.9	0.4	0.5	4	20	14	32	18	42	30	46	36	1/8
1.1	0.6	0.6	5	30	18	42	22	60	36	78	42	1/4
1.3	0.7	0.8	6	26	12	36	20	54	24	60	24	3/8
1.5	0.9	0.9	8	36	12	60	30	84	36	88	42	1/2
1.8	1.1	1.1	10	42	12	60	20	66	24	90	26	3/4
2.2	1.4	1.4	12	30	18	48	20	66	24	90	38	1
2.5	1.8	1.8	14	48	14	60	18	88	20	108	24	1 1/4
3.0	2.0	2.0	16	36	14	48	18	72	24	120	38	1 1/2

COMMON APPLICATIONS

- Wetting Aggregates and Minerals on Conveyors to Suppress Dust
- Washing and Rinsing Delicate Products such as Soft Fruit
- Rinsing Vegetables
- Foam Breaking
- Flow Coating
- Flushing Chemicals from Conveyorised Products
- Applications Where only Very Low Pressure is Available for Spray Nozzle Supply

STANDARD & WIDE SPRAY ANGLE
MAXIMUM FREE PASSAGE DESIGN

SPRAY PATTERN
60° full cone

SPRAY PATTERN
120° full cone

HHMFPJB-W
120° maximum free passage full cone

CUT-A-WAY
showing the S-shaped vanes which enable the nozzle to handle large particles without clogging

COMPARISON OF FREE PASSAGE
the HMFPJB nozzles can pass solid particles which are 2-3 times larger in diameter than particles that will pass through a traditional full cone nozzle.

FOAM CONTROL HEADERS
for a holding tank using Maximum Free Passage full cone nozzles

DESIGN FEATURES

HMFPJB and HHMFPJB spray nozzles are designed for maximum clog resistance. The modified internal vanes which form the full cone pattern, have the largest free passage size of any of the full cone spray nozzles. They can handle solids of 2 to 3 times the diameter of those that will pass through standard full cone spray nozzles of the same capacity. This enables them to be used reliably with liquids containing solid particulate. Care has been taken to ensure that the more open vane design does not compromise the spray pattern quality. They produce a circular full cone pattern with standard or wide spray and a choice of spray angles from 30 to 120 degrees. Square spray patterns are available to special order. Pipe connection sizes are from 3/8" to 4" NPT with flanged connections available in the larger sizes. Flow rates at 20 psi. range from 1.7 to 510 gallons per minute for the standard range, and sizes of up to 4500 gallons per minute can be made to special order.

COMMON APPLICATIONS

- Fruit and Vegetable Primary Wash
- Quenching during Heat Treat Process
- Gas Cooling and Scrubbing
- Washing & Rinsing Aggregates and Minerals
- Dust Control & Suppression
- Foam Breaking
- Rotary Filter Drum Washing
- Fire Prevention and Control

FULL CONE SPRAY NOZZLES

SPRAY PATTERN
60° full cone

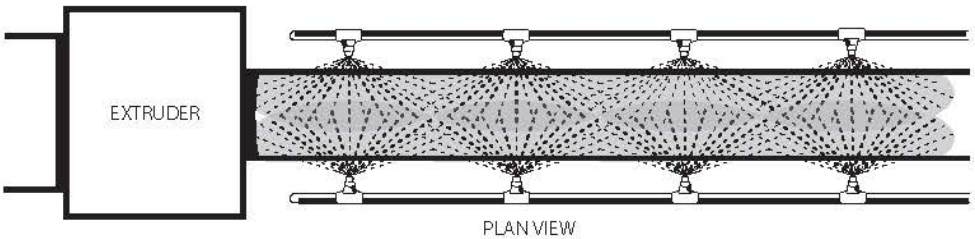
SPRAY PATTERN
120° full cone

HHMFPJB-W
120° maximum free passage full cone

SPECIFICATIONS

PIPE SIZES 3/8" TO 1"

U.S. GALLONS PER MINUTE							SPRAY ANGLES ° @ 20 PSI				PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	NOZZLE TYPE	
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI								(F)	(M)
0.89	1.2	1.7	2.1	2.4	2.9	3.3	30	60	90	120	3/8	12	0.13	HMFPJB	HHMFPJB
1.4	2.0	2.7	3.3	3.7	4.5	5.2	30	60	90	120		20	0.16	HMFPJB	HHMFPJB
2.0	2.8	3.9	4.7	5.4	6.5	7.5	30	60	90	120		28	0.19	HMFPJB	HHMFPJB
2.0	2.8	3.9	4.7	5.4	6.5	7.5	30	60	90	120	1/2	28	0.17	HMFPJB	HHMFPJB
3.2	4.5	6.2	7.5	8.6	10.4	11.9	30	60	90	120		45	0.22	HMFPJB	HHMFPJB
3.7	5.1	7.0	8.5	9.7	11.7	13.4	30	60	90	120		51	0.25	HMFPJB	HHMFPJB
4.5	6.2	8.6	10.4	11.9	14.4	16.5	30	60	90	120	3/4	62	0.28	HMFPJB	HHMFPJB
5.4	7.5	10.4	12.6	14.4	17.4	20.0	30	60	90	120		75	0.29	HMFPJB	HHMFPJB
6.6	9.2	12.7	15.4	17.6	21.3	24.4	30	60	90	120		92	0.34	HMFPJB	HHMFPJB
7.8	10.8	15.0	18.1	20.8	25.1	28.8	30	60	90	120	1	108	0.38	HMFPJB	HHMFPJB
9.4	13.0	18.0	21.8	24.9	30.2	34.5	30	60	90	120		130	0.41	HMFPJB	HHMFPJB
10.9	15.2	21.0	25.4	29.1	35.2	40.3	30	60	90	120		152	0.44	HMFPJB	HHMFPJB



PLAN VIEW

COOLING
extruded plastic pipe with re-circulated water using Maximum Free Passage full cone nozzles

SPECIFICATIONS

PIPE SIZES 1-1/4" TO 4"

U.S. GALLONS PER MINUTE								SPRAY ANGLE ° @ 20 PSI				PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	NOZZLE TYPE	
3 PSI	5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	30 °	60 °	90 °	120 °				(F)	(M)
	10.9	15.2	21.0	25.4	29.1	35.2	40.3	30	60	90	120	1 1/4	152	0.44	HMFPJB	HHMFPJB
	14.1	19.5	27.0	32.7	37.4	45.2	51.8	30	60	90	120		195	0.50	HMFPJB	HHMFPJB
	15.6	21.7	30.0	36.3	41.6	50.3	57.6	30	60	90	120		217	0.53	HMFPJB	HHMFPJB
	17.2	23.8	33.0	39.9	45.7	55.3	63.3	30	60	90	120		238	0.56	HMFPJB	HHMFPJB
13.5	17.2	23.8	33.0	39.9	45.7	55.3	63.3	30	60	90	120	1 1/2	238	0.56	HMFPJB	HHMFPJB
15.4	19.5	27.1	37.5	45.4	51.9	62.8	71.9	30	60	90	120		271	0.59	HMFPJB	HHMFPJB
16.4	20.8	28.9	40.0	48.4	55.4	67.0	76.7	30	60	90	120		289	0.63	HMFPJB	HHMFPJB
19.9	25.3	35.0	48.5	58.7	67.2	81.3	93.0	30	60	90	120		350	0.66	HMFPJB	HHMFPJB
20.9	26.6	36.8	51.0	61.7	70.6	85.5	97.8	30	60	90	120		368	0.69	HMFPJB	HHMFPJB
25.4	32.3	44.8	62.0	75.0	85.9	104	119	30	60	90	120	2	448	0.75	HMFPJB	HHMFPJB
27.9	35.4	49.1	68.0	82.3	94.2	114	130	30	60	90	120		491	0.81	HMFPJB	HHMFPJB
34.4	43.8	60.6	84.0	102	116	141	161	30	60	90	120		606	0.88	HMFPJB	HHMFPJB
38.5	49.0	67.9	94.0	114	130	158	180	30	60	90	120		679	0.94	HMFPJB	HHMFPJB
45.1	57.3	79.4	110	133	152	184	211	30	60	90	120		794	1.00	HMFPJB	HHMFPJB
55.4	70.4	97.5	135	163	187	226	259	30	60	90	120		975	1.12	HMFPJB	HHMFPJB
55.4	70.4	97.5	135	163	187	226	259	30	60	90	120	2 1/2	975	1.12	HMFPJB	HHMFPJB
66.4	84.4	117	162	196	224	271	311	30	60	90	120		1170	1.24	HMFPJB	HHMFPJB
79.5	101	140	194	235	269	325	372	30	60	90	120		1400	1.37	HMFPJB	HHMFPJB
97.6	124	172	238	288	330	399	457	30	60	90	120		1720	1.50	HMFPJB	HHMFPJB
97.6	124	172	238	288	330	399	457	30	60	90	120	3	1720	1.46	HMFPJB	HHMFPJB
115	146	202	280	339	388	469	537	30	60	90	120		2020	1.62	HMFPJB	HHMFPJB
131	167	231	320	387	443	536	614	30	60	90	120		2310	1.75	HMFPJB	HHMFPJB
131	167	231	320	387	443	536	614	30	60	90	120	4	2310	1.75	HMFPJB	HHMFPJB
148	188	260	360	436	499	603	691	30	60	90	120		2600	1.87	HMFPJB	HHMFPJB
173	220	305	422	511	585	707	810	30	60	90	120		3050	1.96	HMFPJB	HHMFPJB
193	245	339	470	569	651	788	902	30	60	90	120		3390	2.12	HMFPJB	HHMFPJB
209	266	368	510	617	706	855	978	30	60	90	120		3680	2.25	HMFPJB	HHMFPJB

FULL CONE SPRAY NOZZLES

SPRAY PATTERN
60° full cone

SPRAY PATTERN
90° full cone

SPRAY PATTERN
150° / 170° full cone

HHSJJB
60°, 90°, 120° metal

HHSJXJB
extra free passage - metal

DESIGN FEATURES

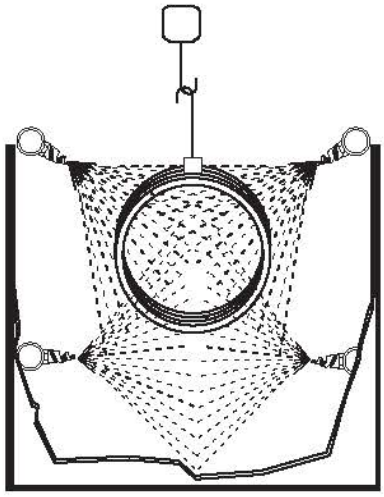
HHSJJB Spiral nozzles are designed to provide a full cone spray pattern without the restriction of an internal vane. By positioning the "vane" outside the nozzle, the maximum free passage - or the ability to pass solids - can be increased. This feature makes the spiral full cone nozzles especially well suited for applications where there solids may be present in the liquid being sprayed, such as recirculated wash water, or some chemical scrubbing applications using slurries. The clog resistance provides performance reliability in critical applications such as fire suppression and prevention, where nozzles are inactive most of the time, but when activated they must operate without fail, often with dirty water.

HHSJJB is the standard male pipe threaded series of spiral nozzles. They are available with spray angles of 60° to 170° and pipe connection sizes from 1/8" to 4" NPT. Flow rates range from 1.4 to 1050 gallons per minute at 40 psi.

HHSJXJB series has a larger free passage size, increasing the ability to pass solid particulate. This version has spray angles of 90 and 120 degrees available with a flow rate range of 6 to 1050 gallons per minute at 40 psi. Pipe connection sizes are from 3/8" to 4" male NPT.

COMMON APPLICATIONS

- Fruit and Vegetable Primary Wash
- Quenching During Heat Treat Process
- Chemical Gas Scrubbing
- Washing & Rinsing Aggregates and Minerals
- Dust Control & Suppression
- Foam Breaking
- Gas Cooling
- Fire Prevention and Control
- Full Cone Applications which may contain Solid Particulate in the Liquid



COOLING
spring steel coils during heat treating process with Extra Free Passage full cone spiral nozzles.

SPECIFICATIONS

PIPE SIZES 1/8" TO 4"

U.S. GALLONS PER MINUTE											AVAILABLE SPRAY ANGLES ° @ 40 PSI					MALE PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE (M)
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI										
0.50	0.70	0.99	1.2	1.4	1.6	1.7	2.0	2.2	3.1	4.4	60	90	120	150	170	1/8	7	0.09	0.09	HHSJJB
0.92	1.3	1.8	2.3	2.6	2.9	3.2	3.7	4.1	5.8	8.2	60	90	120	150	170		13	0.13	0.13	HHSJJB
0.50	0.70	0.99	1.2	1.4	1.6	1.7	2.0	2.2	3.1	4.4	60	90	120	150	170	1/4	7	0.09	0.09	HHSJJB
0.92	1.3	1.8	2.3	2.6	2.9	3.2	3.7	4.1	5.8	8.2	60	90	120	150	170		13	0.13	0.13	HHSJJB
1.4	2.0	2.8	3.5	4.0	4.5	4.9	5.7	6.3	8.9	12.6	60	90	120	150	170		20	0.13	0.16	HHSJJB
0.50	0.70	0.99	1.2	1.4	1.6	1.7	2.0	2.2	3.1	4.4	60					3/8	7	0.09	0.09	HHSJJB
0.92	1.3	1.8	2.3	2.6	2.9	3.2	3.7	4.1	5.8	8.2	60						13	0.13	0.13	HHSJJB
1.4	2.0	2.8	3.5	4.0	4.5	4.9	5.7	6.3	8.9	12.6	60						20	0.13	0.16	HHSJJB
2.1	3.0	4.2	5.2	6.0	6.7	7.4	8.5	9.5	13.4	19.0	60	90	120	150	170		30	0.13	0.19	HHSJJB
2.9	4.1	5.7	7.0	8.1	9.1	9.9	11.5	12.8	18.1	25.6	60	90	120	150	170		41	0.13	0.22	HHSJJB
3.8	5.3	7.5	9.2	10.6	11.9	13.0	15.0	16.8	23.7	33.5	60	90	120	150	170		53	0.13	0.25	HHSJJB
5.8	8.3	11.7	14.3	16.5	18.4	20.2	23.3	26.1	36.9	52.2	60	90	120	150	170		83	0.13	0.31	HHSJJB
8.5	12.1	17.0	20.9	24.1	26.9	29.5	34.1	38.1	53.9	76.2	60	90	120	150	170	1/2	121	0.19	0.38	HHSJJB
11.7	16.5	23.3	28.6	33.0	36.9	40.4	46.7	52.2	73.8	104.0	60	90	120	150	170		165	0.19	0.44	HHSJJB
14.8	21.0	29.7	36.4	42.0	47.0	51.4	59.4	66.4	93.9	133.0	60	90	120	150	170	3/4	210	0.19	0.50	HHSJJB
23.7	33.5	47.4	58.0	67.0	74.9	82.1	94.8	106	150	212.0	60	90	120	150	170	1	335	0.25	0.63	HHSJJB
33.6	47.5	67.2	82.3	95.0	106	116	134	150	212	300.0	60	90	120	150	170		475	0.25	0.75	HHSJJB
45.6	64.5	91.2	112	129	144	158	182	204	288	408.0	60	90	120	150	170	1 1/2	645	0.31	0.88	HHSJJB
59.7	84.5	120	146	169	189	207	239	267	378	534.0	60	90	120	150	170		845	0.31	1.00	HHSJJB
67.9	96.0	136	166	192	215	235	272	304	429	607.0	60	90	120	150	170		960	0.31	1.13	HHSJJB
99.0	140	198	242	280	313	343	396	443	626	885.0	60	90	120	150	170	2	1400	0.44	1.38	HHSJJB
125	177	250	306	354	395	433	500	559	791	1120	60	90	120	150	170		1770	0.44	1.50	HHSJJB
181	256	362	443	512	572	627	724	810	1150	1620	60	90	120			3	2560	0.56	1.75	HHSJJB
239	339	480	588	679	759	831	960	1070	1510	2150	60	90	120				3390	0.56	2.00	HHSJJB
371	525	742	909	1050	1170	1290	1480	1660	2350	3320	60	90	120			4	5250	0.63	2.50	HHSJJB

Operation Above 60 PSI Not Recommended for PTFE

High PSI Operation Recommended for Metal Only

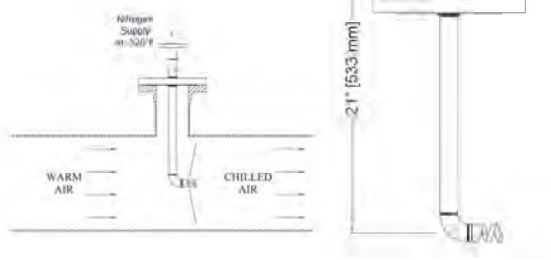
Standard Materials: Brass, 316 Stainless Steel, PVC, Polypropylene and PTFE

STANDARD & WIDE SPRAY ANGLE
SPIRAL EXTRA FREE PASSAGE DESIGN

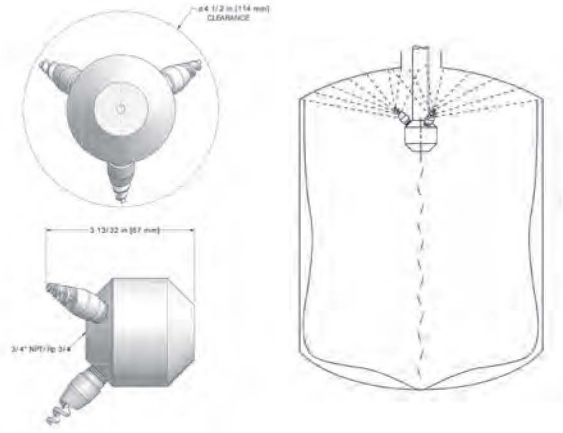
SPRAY PATTERN
90º full cone

HHSJXJB
90º, 120º metal

HHSJXJB
extra free passage - PTFE



COOLING
cooling gas stream with liquid nitrogen using Extra Free Passage HHSJXJB - wide spray



WASHING
washing inside tank roof using 3 special kynar HHSJJB nozzles in a manifold

SPECIFICATIONS

PIPE SIZES 3/8" TO 4"

U.S. GALLONS PER MINUTE										AVAILABLE SPRAY ANGLES ° @ 40 PSI		MALE PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE (M)
10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI							
3.0	4.2	5.2	6.0	6.7	7.4	8.5	9.5	13.4	19.0	90	120	3/8	30	0.19	0.19	HHSJXJB
4.1	5.7	7.0	8.1	9.1	9.9	11.5	12.8	18.1	25.6	90	120		41	0.22	0.22	HHSJXJB
5.3	7.5	9.2	10.6	11.9	13.0	15.0	16.8	23.7	33.5	90	120		53	0.25	0.25	HHSJXJB
8.3	11.7	14.3	16.5	18.4	20.2	23.3	26.1	36.9	52.2	90	120		83	0.31	0.31	HHSJXJB
12.1	17.0	20.9	24.1	26.9	29.5	34.1	38.1	53.9	76.2	90	120	1/2	121	0.38	0.38	HHSJXJB
16.5	23.3	28.6	33.0	36.9	40.4	46.7	52.2	73.8	104	90	120		165	0.44	0.44	HHSJXJB
21.0	29.7	36.4	42.0	47.0	51.4	59.4	66.4	93.9	133	90	120	3/4	210	0.50	0.50	HHSJXJB
33.5	47.4	58.0	67.0	74.9	82.1	94.8	106	150	212	90	120	1	335	0.63	0.63	HHSJXJB
47.5	67.2	82.3	95.0	106	116	134	150	212	300	90	120		475	0.75	0.75	HHSJXJB
64.5	91.2	112	129	144	158	182	204	288	408	90	120	1 1/2	645	0.88	0.88	HHSJXJB
84.5	120	146	169	189	207	239	267	378	534	90	120		845	1.00	1.00	HHSJXJB
96.0	136	166	192	215	235	272	304	429	607	90	120		960	1.13	1.13	HHSJXJB
140	198	242	280	313	343	396	443	626	885	90	120	2	1400	1.38	1.38	HHSJXJB
177	250	306	354	395	433	500	559	791	1120	90	120		1770	1.50	1.50	HHSJXJB
256	362	443	512	572	627	724	810	1150	1620	90	120	3	2560	1.50	1.75	HHSJXJB
339	480	588	679	759	829	960	1070	1510	2150	90	120		3390	1.50	2.00	HHSJXJB
525	742	909	1050	1170	1290	1480	1660	2350	3320	90	120	4	5250	1.50	2.50	HHSJXJB

Operation Above 60 PSI Not Recommended for PTFE

High PSI Operation Recommended for Metal Only

Standard Materials: Brass, 316 Stainless Steel, PVC, Polypropylene and PTFE

STANDARD & WIDE SPRAY ANGLE
SPIRAL 2 & 3 PIECE ABRASION RESISTANT DESIGN

SPRAY PATTERN
90° full cone

SPRAY PATTERN
120° full cone

HSJJB
2-piece female

TSJJB
3-piece female

TTSJJB
3-piece male

TTSJXJB
3-piece male

DESIGN FEATURES

TTSJJB and TTSJXJB are 2 and 3 piece designs of the spiral nozzle type. They have no internal restrictions and so are well suited to spraying liquids that may contain some solids. They produce a full cone spray pattern with spray angles of 90 and 120 degrees. The nozzle body and tip retainer cap are made from type 316 stainless steel, and the spray tips are made from highly abrasion and corrosion resistant Cobalt Alloy or Resin Bonded Silicon Carbide ceramic. (RBSC).

TTSJXJB series have an extra large free passage size of up to 2 – 3 times that of the standard TTSJJB, for improved clog resistance.

TTSJJB and TTSJXJB nozzles are available in male and female 3 piece versions in pipe connection sizes from ¼" to 4". 2 piece female pipe threaded versions are available in 2-1/2" to 4" NPT sizes. Flow rates are from 1.4 to 1050 gallons per minute at 40 psi.

SPECIFICATIONS - PIPE SIZES 1/4" TO 4"

U.S. GALLONS PER MINUTE												AVAILABLE SPRAY ANGLES ° @ 40 PSI		PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE		
																		STANDARD SPIRAL		
																		3- PIECE		2-PIECE
5 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI	90	120					(F)	(M)	(F)
0.50	0.70	0.86	0.99	1.2	1.4	1.6	1.7	2.0	2.2	3.1	4.4	90	120		7	0.09	0.09	TSJJB	TTSJJB	
0.92	1.3	1.6	1.8	2.3	2.6	2.9	3.2	3.7	4.1	5.8	8.2	90	120	1/4	13	0.13	0.13	TSJJB	TTSJJB	
1.4	2.0	2.5	2.8	3.5	4.0	4.5	4.9	5.7	6.3	8.9	12.6	90	120		20	0.13	0.16	TSJJB	TTSJJB	
2.1	3.0	3.7	4.2	5.2	6.0	6.7	7.4	8.5	9.5	13.4	19.0	90	120		30	0.13	0.19	TSJJB	TTSJJB	
2.9	4.1	5.0	5.7	7.0	8.1	9.1	9.9	11.5	12.8	18.1	25.6	90	120		41	0.13	0.22	TSJJB	TTSJJB	
3.8	5.3	6.5	7.5	9.2	10.6	11.9	13.0	15.0	16.8	23.7	33.5	90	120	3/8	53	0.13	0.25	TSJJB	TTSJJB	
5.8	8.3	10.1	11.7	14.3	16.5	18.4	20.2	23.3	26.1	36.9	52.2	90	120		83	0.13	0.31	TSJJB	TTSJJB	
8.5	12.1	14.8	17.0	20.9	24.1	26.9	29.5	34.1	38.1	53.9	76.2	90	120		121	0.19	0.38	TSJJB	TTSJJB	
11.7	16.5	20.2	23.3	28.6	33.0	36.9	40.4	46.7	52.2	73.8	104	90	120	3/4	165	0.19	0.44	TSJJB	TTSJJB	
14.8	21.0	25.7	29.7	36.4	42.0	47.0	51.4	59.4	66.4	93.9	133	90	120		210	0.19	0.50	TSJJB	TTSJJB	
23.7	33.5	41.0	47.4	58.0	67.0	74.9	82.1	94.8	106	150	212	90	120		335	0.25	0.63	TSJJB	TTSJJB	
33.6	47.5	58.2	67.2	82.3	95.0	106	116	134	150	212	300	90	120	1	475	0.25	0.75	TSJJB	TTSJJB	
45.6	64.5	79.0	91.2	112	129	144	158	182	204	288	408	90	120		645	0.31	0.88	TSJJB	TTSJJB	
59.8	84.5	103	120	146	169	189	207	239	267	378	534	90	120	1 1/2	845	0.31	1.00	TSJJB	TTSJJB	
67.9	96.0	118	136	166	192	215	235	272	304	429	607	90	120		960	0.31	1.12	TSJJB	TTSJJB	
99.0	140	171	198	242	280	313	343	396	443	626	885	90	120		1400	0.44	1.37	TSJJB	TTSJJB	
125	177	216	250	306	354	395	433	500	559	791	1120	90	120	2	1770	0.44	1.50	TSJJB	TTSJJB	
99.0	140	171	198	242	280	313	343	396	443	626	885	90	120	2 1/2	1400	0.44	1.37			HSJJB
125	177	216	250	306	354	395	433	500	559	791	1120	90	120		1770	0.44	1.50			HSJJB
181	256	314	362	443	512	572	627	724	810	1150	1620	90	120	3	2560	0.56	1.75	TSJJB	TTSJJB	HSJJB
239	339	414	480	588	679	759	831	960	1070	1510	2150	90	120		3390	0.56	2.00	TSJJB	TTSJJB	HSJJB
371	525	643	742	909	1050	1170	1290	1480	1660	2350	3320	90	120	4	5250	0.63	2.50	TSJJB	TTSJJB	HSJJB

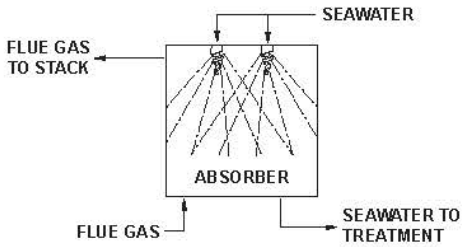
Standard Materials: Base & Cap - 316 Stainless Steel, Tip - Cobalt alloy 6. RBSC Ceramic tips also available for nozzle sizes 335 and larger.

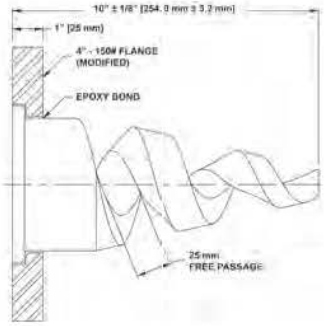
STANDARD & WIDE SPRAY ANGLE
SPIRAL 2 & 3 PIECE ABRASION RESISTANT DESIGN
EXTRA FREE PASSAGE

SPRAY PATTERN
90° full cone

SPRAY PATTERN
120° full cone

TTSJXJB
3-piece male





FLUE GAS DESULPHURIZATION
with seawater using TTSJXJB for fine droplet size and large free passage

COMMON APPLICATIONS

The highly abrasion resistant spray tip materials make these nozzles especially suited to gas scrubbing applications where a chemical slurry is sprayed, or any other full cone application where wear resistance is a major requirement.

SPECIFICATIONS

PIPE SIZES 3/8" TO 4"

U.S. GALLONS PER MINUTE												AVAILABLE SPRAY ANGLES ° @ 40 PSI		PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE		
																		EXTRA LARGE FREE PASSAGE SPIRAL		
5 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI							3-PIECE		2-PIECE
																		(F)	(M)	(F)
2.1	3.0	3.7	4.2	5.2	6.0	6.7	7.4	8.5	9.5	13.4	19.0	90	120	3/8	30	0.19	0.19	TSJXJB	TTSJXJB	
2.9	4.1	5.0	5.7	7.0	8.1	9.1	9.9	11.5	12.8	18.1	25.6	90	120		41	0.22	0.22	TSJXJB	TTSJXJB	
3.8	5.3	6.5	7.5	9.2	10.6	11.9	13.0	15.0	16.8	23.7	33.5	90	120		53	0.25	0.25	TSJXJB	TTSJXJB	
5.8	8.3	10.1	11.7	14.3	16.5	18.4	20.2	23.3	26.1	36.9	52.2	90	120		83	0.31	0.31	TSJXJB	TTSJXJB	
8.5	12.1	14.8	17.0	20.9	24.1	26.9	29.5	34.1	38.1	53.9	76.2	90	120	3/4	121	0.38	0.38	TSJXJB	TTSJXJB	
11.7	16.5	20.2	23.3	28.6	33.0	36.9	40.4	46.7	52.2	73.8	104.0	90	120		165	0.44	0.44	TSJXJB	TTSJXJB	
14.8	21.0	25.7	29.7	36.4	42.0	47.0	51.4	59.4	66.4	93.9	133.0	90	120		210	0.50	0.50	TSJXJB	TTSJXJB	
23.7	33.5	41.0	47.4	58.0	67.0	74.9	82.1	94.8	106	150	212	90	120	1	335	0.63	0.63	TSJXJB	TTSJXJB	
33.6	47.5	58.2	67.2	82.3	95.0	106	116	134	150	212	300	90	120		475	0.75	0.75	TSJXJB	TTSJXJB	
45.6	64.5	79.0	91.2	112	129	144	158	182	204	288	408	90	120	1 1/2	645	0.88	0.88	TSJXJB	TTSJXJB	
59.8	84.5	103	120	146	169	189	207	239	267	378	534	90	120		845	1.00	1.00	TSJXJB	TTSJXJB	
67.9	96.0	118	120	166	192	215	235	272	304	429	607	90	120		960	1.13	1.13	TSJXJB	TTSJXJB	
99.0	140	171	198	242	280	313	343	396	443	626	885	90	120	2	1400	1.50	1.50	TSJXJB	TTSJXJB	
125	177	216	250	306	354	395	433	500	560	791	1120	90	120		1770	1.38	1.38	TSJXJB	TTSJXJB	
181	256	314	362	443	512	572	627	724	810	1150	1620	90	120	3	2560	1.50	1.75	TSJXJB	TTSJXJB	HSJXJB
239	339	414	480	588	679	759	829	960	1070	1510	2150	90	120		3390	1.50	2.00	TSJXJB	TTSJXJB	HSJXJB
371	525	643	742	909	1050	1170	1290	1480	1660	2350	3320	90	120	4	5250	1.50	2.50	TSJXJB	TTSJXJB	HSJXJB

Standard Materials: Base & Cap - 316 Stainless Steel, Tip - Cobalt alloy 6. RBSC Ceramic tips also available for nozzle sizes 335 and larger.

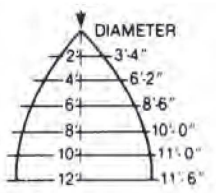
STANDARD & WIDE SPRAY ANGLE
SPIRAL FIRE SUPPRESSION DESIGN

#210 NOZZLES PROTECT A PROPANE STORAGE TANK FROM FIRE & EXPLOSION

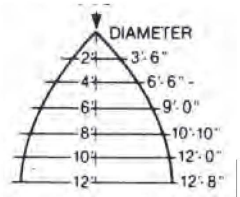
All models
Factory Mutual Approved

Certified for use on ships and offshore installations by Lloyd's Register

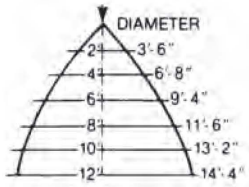
UL approved



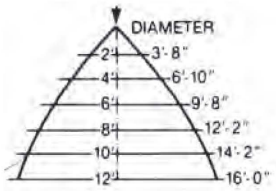
#53 - 90°
50psi



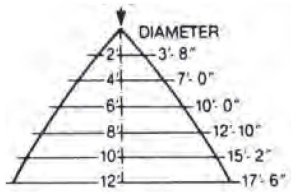
#83 - 90°
50psi



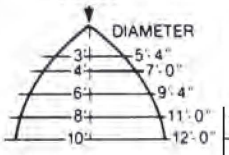
#121 - 90°
50psi



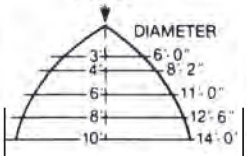
#165 - 90°
50psi



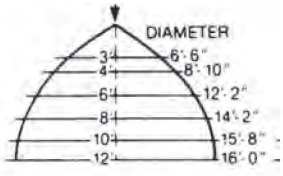
#210 - 90°
50psi



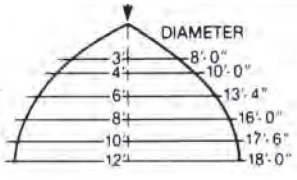
#53 - 120°
50psi



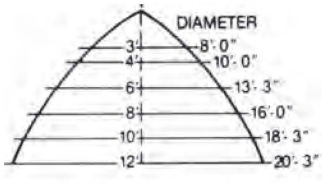
#83 - 120°
50psi



#121 - 120°
50psi



#165 - 120°
50psi



#210 - 120°
50psi

DESIGN FEATURES SUPERIOR PERFORMANCE CHARACTERISTICS

- Sprays composed of droplets 30% to 50% smaller than conventional designs at equivalent pressures
- Extraordinarily large surface area of spray enhances evaporation and cooling
- Rugged, compact design
- Multiple concentric con spray, unique to sprial pattern, maximizes contact

SUPERIOR FIRE/LOSS PREVENTION APPLICATIONS

- Gas wellhead protection
- Safeguarding ship borne cargo
- Storage tank protection
- Secondary explosion protection in explosive dusty environments
- Mitigation of HF and other toxic gas releases

SPRAY PATTERN
90° full cone

SPRAY PATTERN
120° full cone

NOZZLE WITH OPTIONAL PROTECTIVE COVER

DESIGN FEATURES

HHSJNJB nozzles are specifically designed for fire and explosion suppression applications. It is a one piece, clog resistant design with male pipe connection sizes of ½" to 1½" with 90 and 120 degree full cone spray patterns. Flow rates range from 6 to 169 gallons per minute at 40 psi, and the nozzles are rated to 400 psi. For areas where personnel are working, an optional protective cover is available. Models approved by Factory Mutual, UL, U.S. Coast Guard and Lloyd's Register are available in Brass and type 316 stainless steel material. See Page 53 for specific information on spray pattern coverage.

SPECIFICATIONS

PIPE SIZES 1/2" TO 1-1/2"

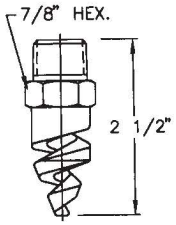
U.S. GALLONS PER MINUTE									AVAILABLE SPRAY ANGLES ° @ 40 PSI		MALE PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE
10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI							(M)
3.0	4.2	5.2	6.0	7.4	8.5	9.5	13.4	19.0	90	120	1/2	30	0.13	0.19	HHSJNJB
5.3	7.5	9.2	10.6	13.0	15.0	16.8	23.7	33.5	90	120		53	0.13	0.25	HHSJNJB
8.3	11.7	14.3	16.5	20.2	23.3	26.1	36.9	52.2	90	120		83	0.13	0.31	HHSJNJB
12.1	17.0	20.9	24.1	29.5	34.1	38.1	53.9	76.2	90	120		121	0.19	0.38	HHSJNJB
16.5	23.3	28.6	33.0	40.4	46.7	52.2	73.8	104	90	120		165	0.19	0.43	HHSJNJB
21.0	29.7	36.4	42.0	51.4	59.4	66.4	93.9	133	90	120		210	0.19	0.50	HHSJNJB
21.0	29.7	36.4	42.0	51.4	59.4	66.4	93.9	133	90	120	1	210	0.19	0.50	HHSJNJB
33.5	47.4	58.0	67.0	82.1	94.8	106	150	212	90	120		335	0.25	0.63	HHSJNJB
47.5	67.2	82.3	95.0	116	134	150	212	300	90	120	1 1/2	475	0.25	0.75	HHSJNJB
64.5	91.2	112	129	158	182	204	288	408	90	120		645	0.31	0.88	HHSJNJB
84.5	120	146	169	207	239	267	378	534	90	120		845	0.31	1.00	HHSJNJB

Standard Materials: Brass, 316 Stainless Steel

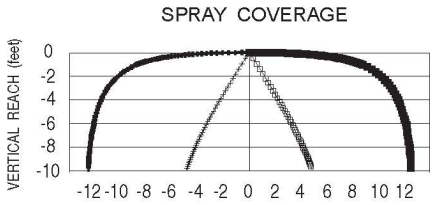
STANDARD & WIDE SPRAY ANGLE
SPIRAL FIRE SUPPRESSION DESIGN
ULTRA WIDE COVERAGE

SPRAY PATTERN
180° full cone

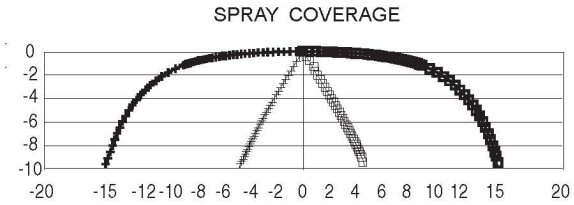
HHSJJB
ultra wide free passage full cone



HHSJJB
dimensional drawing



SPRAY COVERAGE
1/2" HHSJJB18060 @ 50 psi



SPRAY COVERAGE
1/2" HHSJJB180124 @ 50 psi

DESIGN FEATURES

HHSJJB is designed specifically for fire prevention and suppression, this spiral nozzle has ultra wide coverage. The two turn spiral produces a circular sheet of water with an effective spray angle of 180°. This provides maximum coverage for the material being protected – up to 30 feet diameter at 10 foot spray height. The ½ male NPT nozzle has a range of flow rates from 7.6 to 34.8 gallons per minute at 40 psi, with large free passage sizes from 0.2 to 0.44 inches. It is an excellent choice for deluge applications where there is little nozzle headroom.

COMMON APPLICATIONS

Fire prevention and suppression, or any application requiring a full cone spray pattern with extra wide coverage.

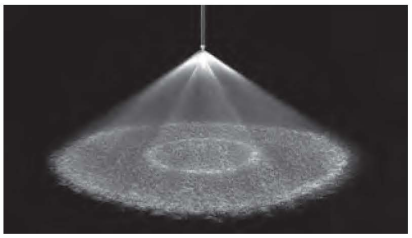
SPECIFICATIONS

PIPE SIZE 1/2"

U.S. GALLONS PER MINUTE										SPRAY ANGLE ° @ 40 PSI	MALE PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE
10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI						(M)
3.8	5.4	6.6	7.6	8.5	9.3	10.7	12.0	17.0	24.0	180	1/2	38	0.20	0.20	HHSJJB
6.0	8.5	10.4	12.0	13.4	14.7	17.0	19.0	26.8	37.9	180		60	0.25	0.25	HHSJJB
7.3	10.3	12.6	14.5	16.2	17.8	20.5	22.9	32.4	45.9	180		73	0.28	0.28	HHSJJB
9.5	13.4	16.5	19.0	21.2	23.3	26.9	30.0	42.5	60.1	180		95	0.33	0.33	HHSJJB
12.4	17.5	21.4	24.7	27.6	30.3	34.9	39.1	55.2	78.1	180		124	0.38	0.38	HHSJJB
17.4	24.6	30.1	34.8	38.9	42.6	49.2	55.0	77.8	110.0	180		174	0.44	0.44	HHSJJB

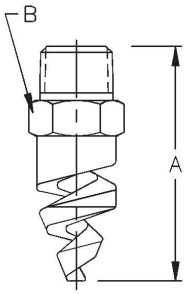
Standard Materials: Brass, 316 Stainless Steel

STANDARD & WIDE SPRAY ANGLE
SPIRAL FIRE SUPPRESSION DESIGN
EXTRA FREE PASSAGE

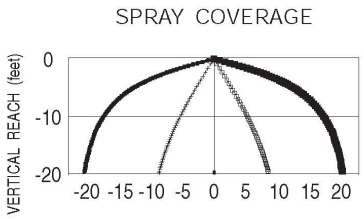


SPRAY PATTERN
150º full cone

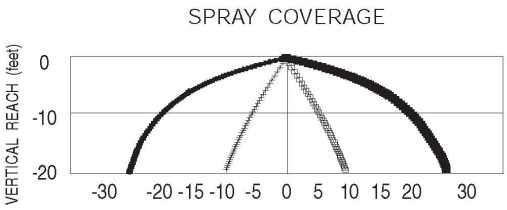
HHSJXPWJB
extra large free passage full cone



DIMENSIONAL DRAWING
refer to specifications below



SPRAY COVERAGE
1" HHSJXPWJB475 @ 40 psi



SPRAY COVERAGE
1-1/2" HHSJXPWJB845 @ 40 psi

DESIGN FEATURES

HHSJXJBPW designed specifically for fire prevention and suppression this spiral nozzle has an extra large free passage size of approximately 0.5" with pipe connection sizes of 1" and 1-1/2" male NPT. The 150 degree spray angle produces a full cone spray of up to 40 feet in diameter from a spray height of 20 feet. Capacities are 95 and 169 gallons per minute at 40 psi.

Capacities are shown for pressures up to 400 psi. The extra heavy construction ensures reliability in tough environments.

COMMON APPLICATIONS

Fire prevention and suppression, or any application requiring a full cone spray pattern with extra wide coverage.

SPECIFICATIONS

DIMENSIONAL DATA (REFERS TO DRAWING ABOVE)

U.S. GALLONS PER MINUTE											SPRAY ANGLE ° @ 40PSI	MALE PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	DIMESIONS (INCHES)	
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI						(M)	A	B
33.6	47.5	67.2	82.3	95	106	116	134	150	212	300	150	1	475	0.50	0.75	HHSJXPWJB	6.50	2.35
59.8	84.5	120	146	169	189	207	239	267	378	534	150	1 1/2	845	0.50	1.00	HHSJXPWJB	6.75	2.50

Standard Materials: Brass, 316 Stainless Steel

SPRAY PATTERN
60° full cone

SPRAY PATTERN
120° full cone

HHJB
120° - MALE

HJB
120° - FEMALE

DESIGN FEATURES

Many applications involving the spraying of corrosive chemicals, or where nozzles are in a corrosive environment cannot use standard metallic materials. The plastic HJB and HHJB full cone spray nozzles have been developed for these applications, and in some cases can avoid the necessity of using exotic and expensive metal alloys. They are available in PVC, Polypropylene and PTFE.

The non-metalllic HJB and HHJB standard series produce a round full cone spray pattern with uniform distribution and coarse droplets. Spray angles from 60 to 120 degrees are available. Pipe connection sizes range from ¾" to 6" in male and female NPT, with flow rates from just under 4.9 to 1010 gallons per minute at 20 psi.

SPECIFICATIONS

PIPE SIZES 3/4" TO 2"

U.S. GALLONS PER MINUTE									AVAILABLE SPRAY ANGLES ° @ 20 PSI			PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	
3 PSI	5 PSI	7 PSI	10 PSI	20 PSI	40 PSI	60 PSI	80 PSI	100 PSI	60	90	120 *					(F)	(M)
2.0	2.6	3.0	3.6	4.9	6.8	8.2	9.4	10.5	60	90	120	3/4	3	0.16	0.25	HJB	HHJB
2.7	3.4	4.0	4.7	6.6	9.1	11.0	12.6	14.0	60	90	120		4	0.19	0.25	HJB	HHJB
4.7	6.0	7.0	8.3	11.5	15.9	19.2	22.0	24.4	60	90	120		7	0.23	0.33	HJB	HHJB
6.0	7.7	9.0	10.6	14.7	20.4	24.7	28.3	31.4	60	90	120	1	9	0.25	0.38	HJB	HHJB
8.1	10.2	12.0	14.2	19.7	27.2	32.9	37.7	41.9	60	90	120		12	0.30	0.45	HJB	HHJB
9.4	12.0	14.0	16.6	22.9	31.8	38.4	44.0	48.9	60	90	120	1 1/4	14	0.34	0.47	HJB	HHJB
11.4	14.5	17.0	20.1	27.8	38.6	46.7	53.4	59.3	60	90	120		17	0.38	0.53	HJB	HHJB
10.7	13.7	16.0	18.9	26.2	36.3	43.9	50.3	55.8	60	90	120	1 1/2	16	0.38	0.50	HJB	HHJB
13.4	17.1	20.0	23.7	32.8	45.4	54.9	62.8	69.8	60	90	120		20	0.41	0.56	HJB	HHJB
16.1	20.5	24.0	28.4	39.3	54.4	65.9	75.4	83.8	60	90	120		24	0.44	0.61	HJB	HHJB
11.4	14.5	17.0	20.1	27.8	38.6	46.7	53.4	59.3	60	90	120	2	17	0.38	0.53	HJB	HHJB
13.4	17.1	20.0	23.7	32.8	45.4	54.9	62.8	69.8	60	90	120		20	0.41	0.56	HJB	HHJB
22.2	28.2	33.0	39.0	54.1	74.9	90.6	104	115	60	90	120		33	0.55	0.72	HJB	HHJB
26.9	34.1	40.0	47.3	65.5	90.7	110	126	140	60	90	120		40	0.63	0.80	HJB	HHJB
30.2	38.4	45.0	53.2	73.7	102	124	141	157	60	90	120		45	0.63	0.84	HJB	HHJB
33.6	42.7	50.0	59.1	81.9	113	137	157	174	60	90	120		50	0.60	0.89	HJB	HHJB
40.3	51.2	60.0	71.0	98.3	136	165	189	209	60	90	120		60	0.63	0.94	HJB	HHJB
43.6	55.5	65.0	76.9	106	147	178	204	227	60	90	120		65	0.67	1.00	HJB	HHJB
47.0	59.8	70.0	82.8	115	159	192	220	244	60	90	120		70	0.68	1.05	HJB	HHJB

* For 120° nozzles - insert suffix "W" after capacity size to indicate Wide Spray Pattern

Standard Materials: PVC, Polypropylene and PTFE

SPRAY PATTERN
60° full cone

SPRAY PATTERN
120° full cone

HHJB
120° - MALE

HJB
120° - FEMALE

COMMON APPLICATIONS

- Gas Cooling and Scrubbing
- Adding Water or Other Liquid Ingredients in Chemical Batch Mixing Operations
- Any Application where Medium to High Flow Non-Metallic Full Cone Spray Nozzles are Required for Chemical Resistance.

SPECIFICATIONS

PIPE SIZES 2-1/2" TO 6"

U.S. GALLONS PER MINUTE									AVAILABLE SPRAY ANGLES ° @ 20 PSI			PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	
3 PSI	5 PSI	7 PSI	10 PSI	20 PSI	40 PSI	60 PSI	80 PSI	100 PSI	60	90	120*					(F)	(M)
47.0	59.8	70.0	82.8	115	159	192	220	244	60	90	120	2 1/2	70	0.68	1.05	HJB	HHJB
53.7	68.3	80.0	94.6	131	181	220	251	279	60	90	120		80	0.69	1.13	HJB	HHJB
60.4	76.8	90.0	106	147	204	247	283	314	60	90	120		90	0.78	1.19	HJB	HHJB
38.9	49.5	58.0	68.6	95	132	159	182	202	60	90	120	3	58	0.63	0.95	HJB	HHJB
56.4	71.7	84.0	99.3	138	191	231	264	293	60	90	120		84	0.88	1.17	HJB	HHJB
64.5	82.0	96.0	114	157	218	264	302	335	60	90	120		96	0.95	1.12	HJB	HHJB
78.6	99.9	117	138	192	265	321	368	408	60	90	120		117	0.97	1.36	HJB	HHJB
83.9	107	125	148	205	284	343	393	436	60	90	120	4	125	0.98	1.39	HJB	HHJB
87.3	111	130	154	213	295	357	409	454	60	90	120		130	1.00	1.42	HJB	HHJB
121	154	180	213	295	408	494	566	628	60	90	120		180	1.31	1.69	HJB	HHJB
168	213	250	296	409	567	686	786	872	60	90	120		250	1.59	1.98	HJB	HHJB
235	299	350	414	573	794	961	1100	1220	60	90	120	6	350	1.70	2.38	HJB	HHJB
322	410	480	568	786	1090	1320	1510	1670	60	90	120		480	1.75	2.75	HJB	HHJB
413	525	615	727	1010	1390	1690	1930	2150	60	90	120		615	1.97	3.11	HJB	HHJB

* For 120° nozzles - insert suffix "W" after capacity size to indicate Wide Spray Pattern

Standard Materials: PVC, Polypropylene and PTFE

SPRAY PATTERN
60° square full cone

SPRAY PATTERN
120° square full cone

HHJB-SQ
120° - PVC

HHJB-SQ
90° - POLYPROPYLENE

DESIGN FEATURES

The HJB-SQ and HHJB-SQ nozzles are available in non-metallic materials of PVC, Polypropylene and PTFE, and have been developed for use in applications where standard metals will not stand up to the chemicals being sprayed, or the chemistry of the nozzle environment. They produce a square shaped full cone pattern of uniform distribution and coarse droplets. Spray angles of 60, 90 and 120 degrees are available. As shown in the image above, the square of the pattern will be offset from the machined slots on the face of the nozzle. This will vary with the operating pressure. Pipe connection sizes in male and female NPT range from ¾" to 6" with flow rates from 4.91 to 1010 gallons per minute at 20 psi. Metallic versions of these nozzles are shown on pages 26 to 29.

SPECIFICATIONS

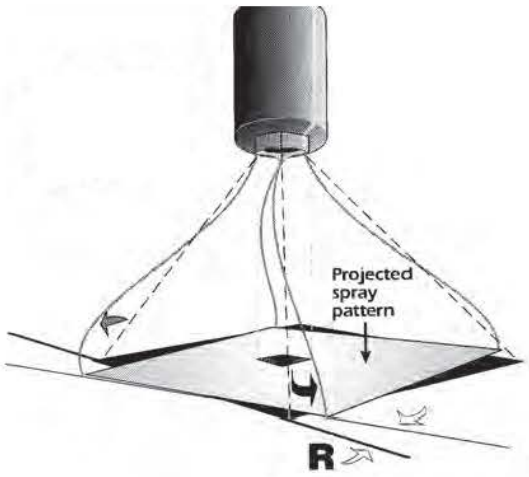
PIPE SIZES 3/4" TO 1-1/2"

U.S. GALLONS PER MINUTE									AVAILABLE SPRAY ANGLES ° @ 20 PSI			PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	
3 PSI	5 PSI	7 PSI	10 PSI	20 PSI	40 PSI	60 PSI	80 PSI	100 PSI	60	90	120 *					(F)	(M)
2.0	2.6	3.0	3.6	4.9	6.8	8.2	9.4	10.5	60	90	120	3/4	30SQ	0.16	0.25	HJB	HHJB
2.7	3.4	4.0	4.7	6.6	9.1	11.0	12.6	14.0	60	90	120		40SQ	0.19	0.25	HJB	HHJB
4.7	6.0	7.0	8.3	11.5	15.9	19.2	22.0	24.4	60	90	120		70SQ	0.23	0.33	HJB	HHJB
6.0	7.7	9.0	10.6	14.7	20.4	24.7	28.3	31.4	60	90	120	1	90SQ	0.25	0.38	HJB	HHJB
8.1	10.2	12.0	14.2	19.7	27.2	32.9	37.7	41.9	60	90	120		120SQ	0.30	0.45	HJB	HHJB
9.4	12.0	14.0	16.6	22.9	31.8	38.4	44.0	48.9	60	90	120	1 1/4	140SQ	0.34	0.47	HJB	HHJB
11.4	14.5	17.0	20.1	27.8	38.6	46.7	53.4	59.3	60	90	120		170SQ	0.38	0.53	HJB	HHJB
10.7	13.7	16.0	18.9	26.2	36.3	43.9	50.3	55.8	60	90	120	1 1/2	160SQ	0.38	0.50	HJB	HHJB
13.4	17.1	20.0	23.7	32.8	45.4	54.9	62.8	69.8	60	90	120		200SQ	0.41	0.56	HJB	HHJB
16.1	20.5	24.0	28.4	39.3	54.4	65.9	75.4	83.8	60	90	120		240SQ	0.44	0.61	HJB	HHJB

* For 120° nozzles - insert prefix 'W' before the 'SQ' in capacity size to indicate Wide Spray Pattern

Standard Materials: PVC, Polypropylene and PTFE

STANDARD & WIDE SPRAY ANGLE
NON-METALLIC SQUARE SPRAY PATTERN - CONTINUED



PROJECTED SPRAY PATTERN

The square spray pattern generated by the HHJB-SQ nozzle will not line up corner to corner with the "points" of the nozzle nose. The square pattern will be rotated 10° - 15° counter clockwise when viewed from above. The figure above illustrates the angle of rotation of the pattern R= 10° - 15°.

SPECIFICATIONS -

PIPE SIZES 2" TO 6"

U.S. GALLONS PER MINUTE									AVAILABLE SPRAY ANGLES ° @ 20 PSI			PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	
3 PSI	5 PSI	7 PSI	10 PSI	20 PSI	40 PSI	60 PSI	80 PSI	100 PSI	60	90	120 *					(F)	(M)
11.4	14.5	17.0	20.1	27.8	38.6	46.7	53.4	59.3	60	90	120	2	170SQ	0.38	0.53	HJB	HHJB
13.4	17.1	20.0	23.7	32.8	45.4	54.9	62.8	69.8	60	90	120		200SQ	0.41	0.56	HJB	HHJB
22.2	28.2	33.0	39.0	54.1	74.9	90.6	104	115	60	90	120		330SQ	0.55	0.72	HJB	HHJB
26.9	34.1	40.0	47.3	65.5	90.7	110	126	140	60	90	120		400SQ	0.63	0.80	HJB	HHJB
30.2	38.4	45.0	53.2	73.7	102	124	141	157	60	90	120		450SQ	0.63	0.84	HJB	HHJB
33.6	42.7	50.0	59.1	81.9	113	137	157	174	60	90	120		500SQ	0.60	0.89	HJB	HHJB
40.3	51.2	60.0	71.0	98.3	136	165	189	209	60	90	120		600SQ	0.63	0.94	HJB	HHJB
43.6	55.5	65.0	76.9	106	147	178	204	227	60	90	120		650SQ	0.67	1.00	HJB	HHJB
47.0	59.8	70.0	82.8	115	159	192	220	244	60	90	120		700SQ	0.68	1.05	HJB	HHJB
47.0	59.8	70.0	82.8	115	159	192	220	244	60	90	120	2 1/2	700SQ	0.68	1.05	HJB	HHJB
53.7	68.3	80.0	94.6	131	181	220	251	279	60	90	120		800SQ	0.69	1.13	HJB	HHJB
60.4	76.8	90.0	106	147	204	247	283	314	60	90	120		900SQ	0.78	1.19	HJB	HHJB
38.9	49.5	58.0	68.6	95	132	159	182	202	60	90	120	3	580SQ	0.63	0.95	HJB	HHJB
56.4	71.7	84.0	99.3	138	191	231	264	293	60	90	120		840SQ	0.88	1.17	HJB	HHJB
64.5	82.0	96.0	114	157	218	264	302	335	60	90	120		960SQ	0.95	1.12	HJB	HHJB
78.6	99.9	117	138	192	265	321	368	408	60	90	120		1170SQ	0.97	1.36	HJB	HHJB
83.9	107	125	148	205	284	343	393	436	60	90	120	4	1250SQ	0.98	1.39	HJB	HHJB
87.3	111	130	154	213	295	357	409	454	60	90	120		1300SQ	1.00	1.42	HJB	HHJB
121	154	180	213	295	408	494	566	628	60	90	120		1800SQ	1.31	1.69	HJB	HHJB
168	213	250	296	409	567	686	786	872	60	90	120		2500SQ	1.59	1.98	HJB	HHJB
235	299	350	414	573	794	961	1100	1220	60	90	120	6	3500SQ	1.70	2.38	HJB	HHJB
322	410	480	568	786	1090	1320	1510	1670	60	90	120		4800SQ	1.75	2.75	HJB	HHJB
413	525	615	727	1010	1390	1690	1930	2150	60	90	120		6150SQ	1.97	3.11	HJB	HHJB

* For 120° nozzles - insert prefix 'W' before the 'SQ' in capacity size to indicate Wide Spray Pattern

Standard Materials: PVC, Polypropylene and PTFE

STANDARD & WIDE SPRAY ANGLE
NON-METALLIC FLANGED INLET DESIGN

SPRAY PATTERN
60° full cone

SPRAY PATTERN
120° full cone

HFJB
plastic flanged

DESIGN FEATURES

HFJB nozzles are available in non-metallic materials of PVC, Polypropylene and PTFE, and have been developed for use in applications where standard metals will not stand up to the chemicals being sprayed, or the chemistry of the nozzle environment. They produce a full cone pattern of uniform distribution and coarse droplets. Spray angles of 60, 90 and 120 degrees are available. Flanged pipe connection sizes range from 4" to 12" with flow rates from 229 to 4360 gallons per minute at 20 psi.

COMMON APPLICATIONS

- Gas Cooling and Scrubbing
- Adding Water or Other Liquid Ingredients in Chemical Batch Mixing Operations
- Any Application where Medium to High Flow Non-Metallic Full Cone Spray Nozzles are Required for Chemical Resistance.

SPECIFICATIONS

PIPE SIZES 4" TO 12"

U.S. GALLONS PER MINUTE							AVAILABLE SPRAY ANGLES ° @ 20 PSI			PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE
3 PSI	5 PSI	7 PSI	10 PSI	12 PSI	15 PSI	20 PSI	60	90	120 *					FLANGED
94	120	140	166	180	200	229	60	90	120	4	140	1.00	1.48	HFJB
121	154	180	213	232	258	295	60	90	120		180	1.31	1.69	HFJB
168	213	250	296	322	358	409	60	90	120		250	1.58	1.98	HFJB
235	299	350	414	451	501	573	60	90	120	6	350	1.70	2.38	HFJB
322	410	480	568	618	687	786	60	90	120		480	1.75	2.75	HFJB
413	525	615	727	792	880	1010	60	90	120		615	1.97	3.11	HFJB
447	568	665	786	857	951	1090	60	90	120	8	665	2.12	3.25	HFJB
520	662	775	916	998	1110	1270	60	90	120		775	2.38	3.52	HFJB
594	756	885	1050	1140	1270	1450	60	90	120		885	2.62	3.75	HFJB
860	1090	1280	1510	1650	1830	2100	60	90	120	12	1280	2.88	4.50	HFJB
1280	1630	1910	2260	2460	2730	3130	60	90	120		1910	3.25	5.50	HFJB
1790	2270	2665	3150	3430	3810	4360	60	90	120		2665	3.50	6.25	HFJB

* For 120° nozzles - insert suffix 'W' after capacity size to indicate Wide Spray Pattern

Standard Materials: PVC, Polypropylene and PTFE

SPRAY PATTERN
80° hollow cone

SPRAY PATTERN
120° hollow cone

BJB
1/8" - 3/4" NPT (M)

AXJB
1/8" - 3/4" NPT (F)

BXJB
1/8" - 3/4" NPT (M)

DESIGN FEATURES

Hollow cone spray nozzles are an extremely simple design that produces a high quality, small droplet size spray pattern primarily through centrifugal force. Using this design enables standard type hollow cone nozzles to produce a soft circular spray of relatively fine droplets, while having a free passage size (good clog resistance) considerably larger than flat fan or full cone nozzles of similar flow rates.

Free passage size is important in applications involving solids particulate in the liquid being sprayed, such as in a recirculating water cooling pond application. Fine droplets are important in gas and other product cooling applications, because finer droplets mean more water surface area in contact with the gas or other product being cooled. Soft impact is important to minimize bounce-back and product damage in applications where a coating is being deposited onto a surface, or where delicate items such as soft fruit are being sprayed.

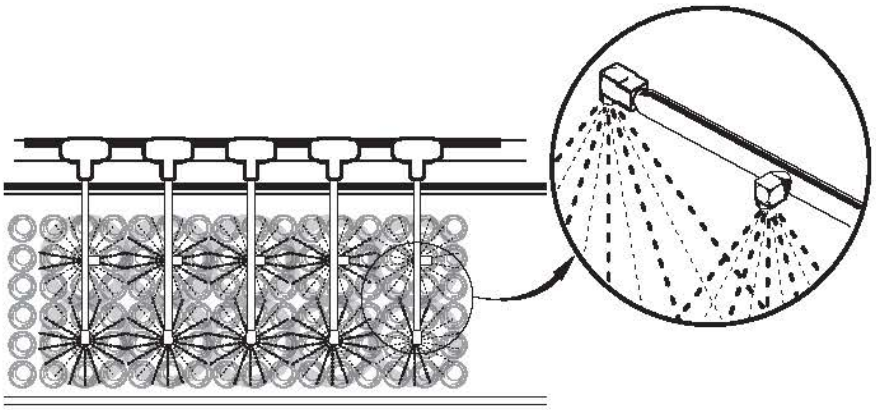
Standard

AJB and BJB are small capacity nozzles which produce a uniform hollow cone spray pattern of fine droplets. They are available in male and female NPT pipe connections sizes of 1/8" to ¾". Spray angles range from 60 to 90 degrees with flow rates from 0.05 to 12 gallons per minute at 10 psi.

AXJB and BXJB nozzles are similar in spray performance but have an added design feature to increase wear resistance. This is important in applications where there may be solid particulate in the liquid or other factors which can cause accelerated wear.

COMMON APPLICATIONS

- Cooling and scrubbing gases
- Aggregate and mineral washing
- Cooling in heat treat processes
- Applying chemical coatings
- Cooling towers
- Dust control



COOLING JARS OF FRUIT
after cooking using low capacity hollow cone spray nozzles

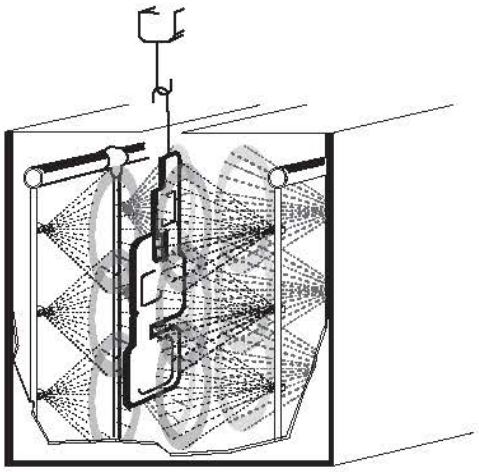
SPECIFICATIONS

PIPE SIZES 1/8" TO 1/4"

U.S. GALLONS PER MINUTE								SPRAY ANGLE ° @ 20 PSI	PIPE SIZE NPT	CAPACITY SIZE	APPROX. INLET DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE			
													STANDARD LIFE		EXTENDED LIFE	
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI						(F)	(M)	(F)	(M)
	0.05	0.07	0.09	0.10	0.12	0.14	0.16	70	1/8	0.5	0.04	0.05	AJB	BJB	AXJB	BXJB
	0.05	0.07	0.09	0.10	0.12	0.14	0.16	58		0.5A	0.03	0.05	AJB	BJB	AXJB	
0.07	0.10	0.14	0.17	0.20	0.24	0.28	0.32	70		1	0.06	0.06	AJB	BJB	AXJB	BXJB
0.14	0.20	0.28	0.35	0.40	0.49	0.57	0.63	70		2	0.09	0.09	AJB	BJB	AXJB	BXJB
0.14	0.20	0.28	0.35	0.40	0.48	0.56	0.63	61		2A	0.08	0.08				BXJB
0.21	0.30	0.42	0.52	0.60	0.73	0.85	0.95	70		3	0.10	0.11	AJB	BJB	AXJB	BXJB
0.35	0.50	0.71	0.87	1.0	1.2	1.4	1.6	70		5	0.13	0.13	AJB	BJB	AXJB	BXJB
0.57	0.80	1.13	1.39	1.6	2.0	2.3	2.5	70		8	0.15	0.16	AJB	BJB	AXJB	BXJB
0.71	1.00	1.41	1.73	2.0	2.5	2.8	3.2	70		10	0.17	0.19	AJB	BJB	AXJB	BXJB
	0.06	0.08	0.10	0.12	0.15	0.17	0.19	80	1/4	0.6	0.04	0.05	AJB	BJB	AXJB	BXJB
	0.09	0.13	0.16	0.18	0.22	0.25	0.28	80		0.9	0.06	0.06	AJB	BJB	AXJB	BXJB
0.07	0.10	0.14	0.17	0.20	0.24	0.28	0.32	70		1	0.06	0.06	AJB	BJB	AXJB	BXJB
0.07	0.10	0.14	0.17	0.20	0.24	0.28	0.31	53		1A	0.06	0.06			AXJB	BXJB
0.10	0.14	0.19	0.23	0.27	0.33	0.38	0.43	80		1.4	0.07	0.08	AJB	BJB	AXJB	BXJB
0.14	0.20	0.28	0.35	0.40	0.49	0.57	0.63	70		2	0.08	0.09	AJB	BJB	AXJB	BXJB
0.14	0.20	0.28	0.35	0.40	0.48	0.56	0.63	62		2A	0.08	0.08		BJB		BXJB
0.19	0.27	0.37	0.46	0.53	0.65	0.75	0.84	80		2.7	0.09	0.11	AJB	BJB	AXJB	BXJB
0.21	0.30	0.42	0.52	0.60	0.73	0.85	1.0	70		3	0.10	0.11	AJB	BJB	AXJB	BXJB
0.35	0.50	0.71	0.87	1.0	1.2	1.4	1.6	70		5	0.13	0.14	AJB	BJB	AXJB	BXJB
0.57	0.80	1.1	1.4	1.6	2.0	2.3	2.5	70		8	0.16	0.17	AJB	BJB	AXJB	BXJB
0.71	1.0	1.4	1.7	2.0	2.5	2.8	3.2	70		10	0.18	0.19	AJB	BJB	AXJB	BXJB
0.92	1.3	1.8	2.3	2.6	3.2	3.7	4.1	80		13	0.20	0.20	AJB	BJB	AXJB	BXJB
0.99	1.4	2.0	2.4	2.8	3.4	4.0	4.4	80		14	0.20	0.22	AJB	BJB	AXJB	BXJB
1.1	1.5	2.1	2.6	3.0	3.7	4.2	4.7	70		15	0.20	0.22	AJB	BJB	AXJB	BXJB
1.2	1.7	2.4	2.9	3.4	4.2	4.8	5.4	80		17	0.22	0.24	AJB	BJB	AXJB	BXJB
1.4	2.0	2.8	3.5	4.0	4.9	5.7	6.3	80		20	0.25	0.28	AJB	BJB	AXJB	BXJB
1.7	2.4	3.4	4.2	4.8	5.9	6.8	7.6	80		24	0.25	0.27	AJB	BJB	AXJB	BXJB
2.1	2.9	4.1	5.0	5.8	7.1	8.2	9.2	80		29	0.27	0.30	AJB	BJB	AXJB	BXJB
2.3	3.2	4.5	5.5	6.4	7.8	9.1	10.1	80		32	0.27	0.30	AJB	BJB	AXJB	BXJB
2.4	3.4	4.8	5.9	6.8	8.3	9.6	10.8	80		34	0.27	0.34	AJB	BJB	AXJB	BXJB
2.8	4.0	5.7	6.9	8.0	9.8	11.3	12.7	80		40	0.27	0.34	AJB	BJB	AXJB	BXJB

Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel

STANDARD SPRAY ANGLE
STANDARD & EXTRA LIFE DESIGN - CONTINUED



COATING
metal products with phosphate solution prior to painting using special metal pre-treatment hollow cone nozzles

SPECIFICATIONS

PIPE SIZES 3/8" TO 3/4"

U.S. GALLONS PER MINUTE								SPRAY ANGLE ° @ 20 PSI	PIPE SIZE NPT	CAPACITY SIZE	APPROX. INLET DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE			
													STANDARD LIFE		EXTENDED LIFE	
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI						(F)	(M)	(F)	(M)
0.35	0.50	0.71	0.87	1.0	1.2	1.4	1.6	70	3/8	5	0.14	0.15	AJB	BJB	AXJB	BXJB
0.57	0.80	1.1	1.4	1.6	2.0	2.3	2.5	70		8	0.17	0.18	AJB	BJB	AXJB	BXJB
0.71	1.0	1.4	1.7	2.0	2.5	2.8	3.2	70		10	0.19	0.20	AJB	BJB	AXJB	BXJB
1.1	1.5	2.1	2.6	3.0	3.7	4.2	4.7	70		15	0.20	0.23	AJB	BJB	AXJB	BXJB
1.4	2.0	2.8	3.5	4.0	4.9	5.7	6.3	70		20	0.24	0.27	AJB	BJB	AXJB	BXJB
1.8	2.5	3.5	4.3	5.0	6.1	7.1	7.9	70		25	0.26	0.28	AJB	BJB	AXJB	BXJB
2.1	3.0	4.2	5.2	6.0	7.4	8.5	9.5	70		30	0.31	0.31	AJB	BJB	AXJB	BXJB
3.5	5.0	7.1	8.7	10.0	12.3	14.1	15.8	70		50	0.34	0.38	AJB	BJB	AXJB	BXJB
1.6	2.3	3.2	4.0	4.6	5.6	6.5	7.3	50	3/8*	15-30.1	0.23	0.31	AJB			
2.0	2.8	4.0	4.8	5.6	6.9	8.0	8.9	47		25-30.1	0.30	0.31	AJB			
3.5	5.0	7.1	8.7	10.0	12.3	14.2	15.8	47		50-50.1	0.34	0.38	AJB			
3.5	5.0	7.1	8.7	10.0	12.3	14.2	15.8	76		50-50.3	0.34	0.38	AJB			
1.8	2.5	3.5	4.3	5.0	6.1	7.1	7.9	70	1/2	25	0.30	0.30	AJB	BJB	AXJB	BXJB
2.1	3.0	4.2	5.2	6.0	7.4	8.5	9.5	70		30	0.33	0.31	AJB	BJB	AXJB	BXJB
2.8	4.0	5.7	6.9	8.0	9.8	11.3	12.7	70		40	0.36	0.36	AJB	BJB	AXJB	BXJB
3.5	5.0	7.1	8.7	10.0	12.3	14.1	15.8	70		50	0.36	0.44	AJB	BJB	AXJB	BXJB
3.5	5.0	7.1	8.5	10.0	12.3	14.2	15.8	79		50A	0.38	0.44			AXJB	
4.2	6.0	8.5	10.4	12.0	14.7	17.0	19.0	70		60	0.40	0.48	AJB	BJB	AXJB	BXJB
2.8	4.0	5.7	6.9	8.0	9.8	11.3	12.7	70	3/4	40	0.36	0.38	AJB	BJB	AXJB	BXJB
3.5	5.0	7.1	8.7	10.0	12.3	14.1	15.8	70		50	0.40	0.44	AJB	BJB	AXJB	BXJB
3.5	5.0	7.1	8.5	10.0	12.3	14.2	15.8	75		50A	0.50	0.38			AXJB	
4.2	6.0	8.5	10.4	12.0	14.7	17.0	19.0	70		60	0.44	0.44	AJB	BJB	AXJB	BXJB
5.0	7.0	9.9	12.1	14.0	17.2	19.8	22.1	80		70	0.47	0.48	AJB	BJB	AXJB	BXJB
5.0	7.0	9.9	12.1	14.0	17.1	19.8	22.0	79		70A	0.50	0.50		BJB		
5.7	8.0	11.3	13.9	16.0	19.6	22.6	25.3	80		80	0.48	0.51	AJB	BJB	AXJB	BXJB
6.4	9.0	12.7	15.6	18.0	22.1	25.5	28.5	80		90	0.50	0.56	AJB	BJB	AXJB	BXJB
6.4	9.0	12.7	15.6	18.0	22.0	25.0	29.0	84		90A	0.50	0.58				BXJB
7.1	10.0	14.1	17.3	20.0	24.5	28.3	31.6	90		100	0.52	0.59	AJB	BJB	AXJB	BXJB
7.1	10.0	14.1	17.3	20.0	25.0	28.0	32.0	86		100A	0.50	0.63			AXJB	
7.8	11.0	15.6	19.1	22.0	26.9	33.1	34.8	90		110	0.53	0.63	AJB	BJB	AXJB	BXJB
8.5	12.0	17.0	20.8	24.0	29.4	33.9	38.0	90		120	0.55	0.69	AJB	BJB	AXJB	BXJB

*These sizes are specifically designed for applying pre-paint coatings

Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel

STANDARD SPRAY ANGLE
ONE PIECE CAST DESIGN

SPRAY PATTERN
narrow angle - hollow cone

SPRAY PATTERN
medium angle - hollow cone

CJB
3/4" - 4" NPT (F)

CFJB
silicon carbide

DESIGN FEATURES

CJB one piece nozzles produce a uniform hollow cone spray pattern with relatively fine droplets with medium to high flow rates. They have a large orifice with no internal components and so have good clog resistance. Spray angles range from 45 to 80 degrees. Female pipe connection sizes are from 3/4" to 4" with the larger sizes also available with ANSI flanged connections.

Flow rates range from 3.6 to 282 gallons per minute at 10 psi. As well as brass, carbon steel and type 316 stainless steel materials, CJB nozzles are also available to special order in Silicon Carbide. This material provides maximum erosion resistance in gas scrubbing applications using chemical slurries.

SPECIFICATIONS

PIPE SIZES 3/4" TO 1-1/2"

U.S. GALLONS PER MINUTE										SPRAY ANGLE°			PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	
																	EXTRA LIFE	STANDARD LIFE
3 PSI	5 PSI	7 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	7 PSI	20 PSI	60 PSI					(F)	(F)
4.6	5.9	7.0	8.4	10.3	11.9	14.5	16.7	21.0	24.0	70	71	72	3/4	7	0.50	0.50		CJB
6.5	8.4	10.0	11.9	14.6	16.9	21.0	24.0	29.0	34.0	73	75	77		10	0.59	0.66		CJB
4.1	5.3	6.3	7.5	9.2	10.6	13.0	15.0	18.4	21.2	54	54	54	1	6.3	0.34	0.34		CJB
4.9	6.4	7.5	9.0	11.0	12.7	15.6	18.0	22.0	25.4	56	56	56		7.5	0.38	0.38		CJB
6.3	8.1	9.6	11.5	14.1	16.3	19.9	23.0	28.2	32.6	63	66	66		9.6	0.44	0.44		CJB
6.5	8.4	10.0	11.9	14.6	16.9	21.0	24.0	29.0	34.0	67	69	71		10	0.61	0.61	CXJB	
7.4	9.6	11.3	13.5	16.5	19.1	23.4	27.0	33.0	38.2	66	70	70		11.3	0.47	0.47		CJB
7.8	10.2	12.0	14.3	17.5	20.0	25.0	29.0	35.0	41.0	70	73	75		12	0.67	0.67	CXJB	
8.8	11.3	13.4	16.0	19.6	22.6	27.7	32.0	39.2	45.2	68	72	71		13.4	0.44	0.44		CJB
9.8	12.7	15.0	17.9	22.0	25.0	31.0	36.0	44.0	51.0	76	79	81		15	0.69	0.81	CXJB	
10.4	13.4	15.9	19.0	23.3	26.9	32.9	38.0	46.6	53.8	68	72	71		15.9	0.60	0.60		CJB
8.8	11.3	13.4	16.0	19.6	22.6	27.7	32.0	39.2	45.2	66	66	66	1 1/4	13.4	0.55	0.55		CJB
10.4	13.4	15.9	19.0	23.3	26.9	32.9	38.0	46.6	53.8	68	70	70		15.9	0.63	0.63		CJB
11.2	14.5	17.2	20.5	25.1	29.0	35.5	41.0	50.2	58.0	73	74	74		17.2	0.66	0.66		CJB
14.2	18.4	21.8	26.0	31.8	36.8	45.0	52.0	63.6	73.6	79	80	80		21.8	0.78	0.78		CJB
19.2	24.7	29.3	35.0	42.9	49.5	60.6	70.0	85.8	99.0	83	85	85		29.3	0.89	1.03		CJB
10.5	13.5	16.0	19.1	23.0	27.0	33.0	38.0	47.0	54.0	64	67	69	1 1/2	16	0.69	0.69	CXJB	
13.1	16.9	20.0	24.0	29.0	34.0	41.0	48.0	59.0	68.0	69	72	74		20	0.86	0.86	CXJB	
16.7	21.6	25.5	30.5	37.4	43.1	52.8	61.0	74.8	86.2	58	60	60		25.5	0.77	0.77		CJB
19.2	24.7	29.3	35.0	42.9	49.5	60.6	70.0	85.8	99.0	63	65	65		29.3	0.84	0.84		CJB
21.1	27.2	32.2	38.5	47.2	54.4	66.7	77.0	94.4	109	63	66	66		32.2	0.92	0.92		CJB
24.6	31.8	37.6	45.0	55.1	63.6	77.9	90.0	110	127	67	70	70		37.6	1.03	1.03		CJB
34.8	44.9	53.1	63.5	77.8	89.8	110	127	156	180	75	80	80		53.1	1.06	1.30		CJB
39.7	51.3	60.7	72.5	88.8	103	126	145	178	206	80	80	83		60.7	1.06	1.42		CJB

Standard Materials: Brass, Carbon Steel, 316 Stainless Steel

STANDARD SPRAY ANGLE
ONE PIECE CAST DESIGN - CONTINUED

SPRAY PATTERN
narrow angle - hollow cone

SPRAY PATTERN
medium angle - hollow cone

CJB
3/4" - 4" NPT (F)

CFJB
silicon carbide

COMMON APPLICATIONS

- > Cooling and Scrubbing Gases
- > Aggregate and Mineral Washing
- > Cooling in Heat Treat Processes
- > Spray Pond Cooling and Aerating
- > Cooling Towers
- > Dust Control

SPECIFICATIONS

PIPE SIZES 2" TO 4"

U.S. GALLONS PER MINUTE										SPRAY ANGLE°			PIPE SIZE NPT*	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	
																	EXTRA LIFE	STANDARD LIFE
3 PSI	5 PSI	7 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	7 PSI	20 PSI	60 PSI					(F)	(F)
23.0	30.0	35.0	42.0	51.0	59.0	72.0	84.0	103	118	68	70	73		35	1.06	1.06	CXJB	CJB
23.3	30.1	35.6	42.5	52.1	60.1	73.6	85.0	104	120	63	65	65		35.6	0.86	0.86		CJB
28.8	37.1	43.9	52.5	64.3	74.2	90.9	105	129	148	65	67	67		43.9	1.00	1.00		CJB
33.0	42.0	50.0	60.0	73.0	84.0	104	119	146	169	74	77	82		50	1.42	1.42	CXJB	CJB
34.2	44.2	52.3	62.5	76.5	88.4	108	125	153	177	68	70	70		52.3	1.14	1.14		CJB
39.0	51.0	60.0	72.0	88.0	102	124	143	175	203	77	79	84	2	60	1.44	1.56	CXJB	CJB
39.7	51.3	60.7	72.5	88.8	103	126	145	178	206	74	79	79		60.7	1.27	1.27		CJB
46.6	60.1	71.1	85.0	104	120	147	170	208	240	77	80	80		71.1	1.39	1.39		CJB
52.6	67.9	80.3	96.0	118	136	166	192	236	272	77	80	80		80.3	1.44	1.52		CJB
56.1	72.5	85.8	103	126	145	178	205	252	290	77	83	83		85.8	1.44	1.63		CJB
63.0	81.3	96.2	115	141	163	199	230	282	326	76	83	83		96.2	1.44	1.75		CJB
46.6	60.1	71.1	85.0	104	120	147	170	208	240	85	85	85		71.1	1.33	1.33		CJB
52.0	67.2	79.5	95.0	116	134	165	190	232	268	70	73	73		79.5	1.42	1.42		CJB
56.1	72.5	85.8	103	126	145	178	205	252	290	72	75	73		85.8	1.47	1.47		CJB
63.0	81.3	96.2	115	141	163	199	230	282	326	76	78	78		96.2	1.58	1.58		CJB
76.7	99.0	117	140	171	198	242	280	342	396	79	80	80	2 1/2	117	1.75	1.81		CJB
87.6	113	134	160	196	226	277	320	392	452	83	85	85		134	1.75	2.02		CJB
93.1	120	142	170	208	240	294	340	416	480	87	90	90		142	1.75	2.09		CJB
119	154	182	218	266	308	377	435	532	616	92	95	95		182	1.75	2.44		CJB
50.7	65.4	77.4	92.5	113	131	160	185	226	262	58	58	58		77.4	1.28	1.28		CJB
63.0	81.3	96.2	115	141	163	199	230	282	326	65	65	65		96.2	1.44	1.44		CJB
76.7	99.0	117	140	171	198	242	280	342	396	70	70	70		117	1.63	1.63		CJB
87.6	113	134	160	196	226	277	320	392	452	65	70	70		134	1.78	1.78		CJB
93.1	120	142	170	208	240	294	340	416	480	68	70	70	3	142	1.84	1.84		CJB
113	146	172	206	252	291	357	412	504	582	75	78	78		172	2.11	2.11		CJB
128	166	196	235	287	332	406	469	574	664	75	80	80		196	2.13	2.28		CJB
144	186	220	263	322	372	456	526	644	744	78	80	80		220	2.13	2.48		CJB
154	199	236	282	345	399	488	564	690	798	78	80	80		236	2.13	2.59		CJB

* Larger sizes also available with ANSI flanged connections.

Standard Materials: Brass, Carbon Steel, 316 Stainless Steel

STANDARD SPRAY ANGLE
ONE PIECE CAST DESIGN - CONTINUED

SPRAY PATTERN
narrow angle - hollow cone

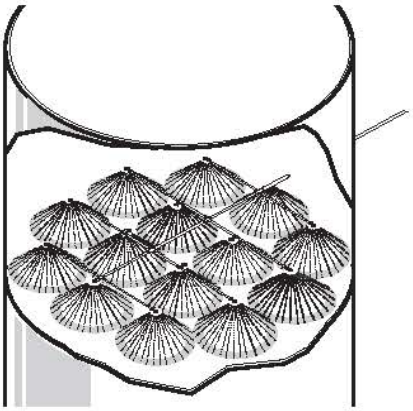
SPRAY PATTERN
medium angle - hollow cone

CJB
3/4" - 4" NPT (F)

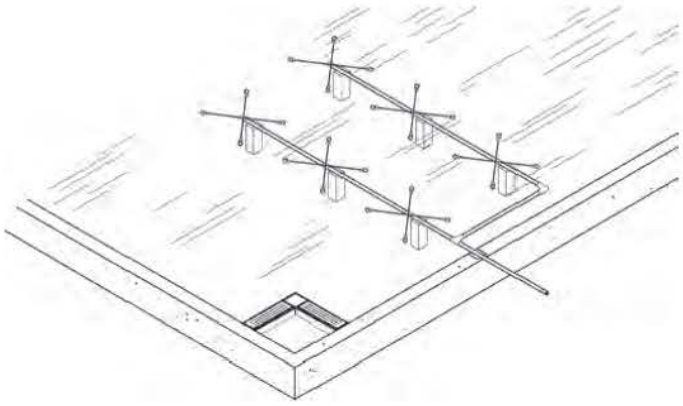
CFJB
silicon carbide

INLET PORT NPT(F)	NUMBER OF OUTLET PORTS	OUTLET PORTS NPT(F)	JUNCTION BOX NUMBER
2	4	1-1/4	25JB(2-4-1-1/4)
3	4	1-1/2	35JB(3-4-1-1/2)
4	4	2	45JB(4-4-2)
6	4	2-1/2	65JB(6-4-2-1/2)

JUNCTION BOX
for effective distribution of multiple nozzle arrays

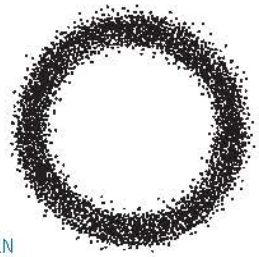


COOLING TOWER
using medium capacity one-piece cast design hollow cone spray nozzles for high flow rate with small droplet size



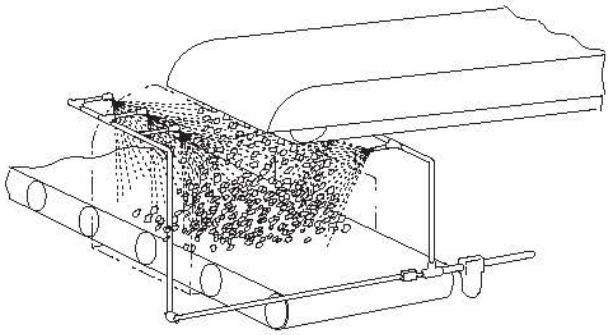
SPRAY COOLING POND
using one-piece cast type hollow cone spray nozzles and Junction Boxes

STANDARD SPRAY ANGLE
IN-LINE DESIGN



SPRAY PATTERN
in-line design

BDJB
3/8" NPT (M)



DUST CONTROL
at conveyor transfer point using inline hollow cone spray nozzles

DESIGN FEATURES

BDJB series feature an in-line design - unlike most hollow cone spray nozzles. The nozzle threads directly into a pipe header with very little projected outside the pipe, making it ideally suited for applications with restricted nozzle headroom. They produce a hollow cone spray pattern of uniform distribution around the ring, and relatively small droplets. BDJB nozzles are available in spray angles of 60 to 90 degrees and male NPT pipe connection size of 3/8". Flow rates range from 0.2 to 1.4 gallons per minute at 10 psi.

COMMON APPLICATIONS

- Dust Control - Especially in the Mining Industry
- Gas Cooling and Scrubbing
- Brine Spraying in Refrigeration Plants
- Cooling of Canned and Bottled Food Products

SPECIFICATIONS

INLINE BDJB

U.S. GALLONS PER MINUTE										SPRAY ANGLE °			PIPE SIZE NPT	CAPACITY SIZE	APPROX. INLET DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE
5 PSI	7 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	7 PSI	20 PSI	80 PSI					INLINE BDJB
		0.20	0.25	0.28	0.35	0.40	0.48	0.56	0.63		60	70	3/8	2	0.09	0.08	BDJB
0.21	0.25	0.30	0.37	0.42	0.52	0.6	0.73	0.85	0.95	52	64	77	3/8	3	0.09	0.09	BDJB
0.35	0.42	0.50	0.61	0.70	0.86	1.0	1.2	1.4	1.6	56	67	76	3/8	5	0.11	0.13	BDJB
0.97	1.1	1.4	1.7	1.9	2.4	2.7	3.3	3.8	4.3	61	65	67	3/8	20-10	0.16*	0.17	BDJB

Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel

SPRAY PATTERN
120° hollow cone

AJB-W
1/8" - 3/4" NPT (F)

BJB-W
1/8" - 3/4" NPT (M)

QSJJB

UNI-JB

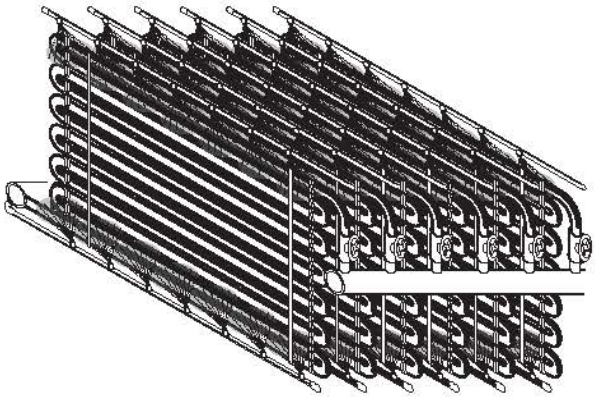
DESIGN FEATURES

AJB-W and BJB-W nozzles produce a uniform, hollow cone spray pattern of fine droplets with spray angles of 100 to 140 degrees. They have a relatively large free passage size for their flow rates, with no internal components therefor offering good clog resistance. They are available in male and female NPT pipe connections sizes of 1/8" to ¾", with flow rates from 0.05 to 12 gallons per minute at 10 psi.

AXJB-W and BXJB-W nozzles are similar in spray performance but have an added design feature to increase wear resistance. This is important in applications where there may be solid particulate in the liquid or other factors which can cause accelerated wear.

COMMON APPLICATIONS

- Cooling and Scrubbing Gases
- Applying Chemical Coatings
- Washing and Rinsing Delicate Products
- Roof Cooling
- Cooling Canned and Bottled Foods
- Dust Control
- Wetting Items Between Stages in Parts Washers
- Maintaining High Humidity Levels



BRINE SPRAYING
spraying brine in chiller unit using wide spray hollow cone spray nozzles

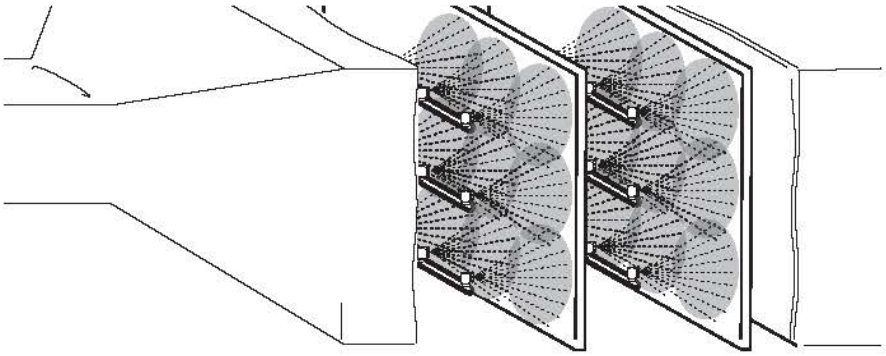
SPECIFICATIONS

PIPE SIZES 1/8" TO 1/4"

U.S. GALLONS PER MINUTE								SPRAY ANGLE ° @ 20 PSI	PIPE SIZE NPT	CAPACITY SIZE	APPROX. INLET DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE			
													WIDE ANGLE			
													STANDARD LIFE		EXTENDED LIFE	
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI						(F)	(M)	(F)	(M)
0.04	0.05	0.07	0.09	0.10	0.12	0.14	0.16	110	1/8	0.5W	0.04	0.05	AJB	BJB	AXJB	BXJB
0.07	0.10	0.14	0.17	0.20	0.24	0.28	0.32	115		1W	0.06	0.06	AJB	BJB	AXJB	BXJB
0.18	0.25	0.35	0.43	0.50	0.61	0.71	0.79	115		2.5W	0.09	0.09	AJB	BJB	AXJB	BXJB
0.21	0.30	0.42	0.52	0.60	0.73	0.85	0.95	115		3W	0.10	0.11	AJB	BJB	AXJB	BXJB
0.25	0.35	0.49	0.61	0.70	0.86	0.99	1.1	115		3.5W	0.10	0.11	AJB	BJB	AXJB	BXJB
0.28	0.40	0.57	0.69	0.80	0.98	1.1	1.3	120		4W	0.11	0.12	AJB	BJB	AXJB	BXJB
0.35	0.50	0.71	0.87	1.0	1.2	1.4	1.6	115		5W	0.13	0.13	AJB	BJB	AXJB	BXJB
0.46	0.65	0.92	1.1	1.3	1.6	1.8	2.1	120		6.5W	0.14	0.14	AJB	BJB	AXJB	BXJB
0.64	0.90	1.3	1.6	1.8	2.2	2.6	2.9	120		9W	0.17	0.16	AJB	BJB	AXJB	BXJB
0.07	0.10	0.14	0.17	0.20	0.24	0.28	0.32	110	1/4	1W	0.06	0.06	AJB	BJB	AXJB	BXJB
0.12	0.18	0.25	0.30	0.35	0.43	0.49	0.55	100		1.8W	0.08	0.09	AJB	BJB	AXJB	BXJB
0.15	0.21	0.30	0.36	0.42	0.51	0.59	0.66	120		2.1W	0.08	0.09	AJB	BJB	AXJB	BXJB
0.17	0.24	0.34	0.42	0.48	0.59	0.68	0.76	105		2.4W	0.09	0.11	AJB	BJB	AXJB	BXJB
0.24	0.34	0.48	0.59	0.68	0.83	0.96	1.1	120		3.4W	0.10	0.13	AJB	BJB	AXJB	BXJB
0.28	0.40	0.57	0.69	0.80	0.98	1.1	1.3	135		4W	0.13	0.13	AJB	BJB	AXJB	BXJB
0.35	0.50	0.71	0.87	1.0	1.2	1.4	1.6	115		5W	0.13	0.14	AJB	BJB	AXJB	BXJB
0.46	0.65	0.92	1.1	1.3	1.6	1.8	2.1	130		6.5W	0.15	0.16	AJB	BJB	AXJB	BXJB
0.53	0.75	1.1	1.3	1.5	1.8	2.1	2.4	130		7.5W	0.16	0.17	AJB	BJB	AXJB	BXJB
0.64	0.90	1.3	1.6	1.8	2.2	2.6	2.9	130		9W	0.18	0.18	AJB	BJB	AXJB	BXJB
0.71	1.0	1.4	1.7	2.0	2.5	2.8	3.2	120		10W	0.18	0.19	AJB	BJB	AXJB	BXJB
0.78	1.1	1.6	1.9	2.2	2.7	3.1	3.5	130		11W	0.18	0.22	AJB	BJB	AXJB	BXJB
0.85	1.2	1.7	2.1	2.4	2.9	3.4	3.8	120		12W	0.20	0.20	AJB	BJB	AXJB	BXJB
1.1	1.5	2.1	2.6	3.0	3.7	4.2	4.7	100		15W	0.20	0.22	AJB	BJB	AXJB	BXJB

Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel

HOLLOW CONE SPRAY NOZZLES



WASHING & COOLING
office building air in-duct using wide spray hollow cone spray nozzles to give wide coverage at a short spray distance

SPECIFICATIONS

PIPE SIZES 3/8" TO 3/4"

U.S. GALLONS PER MINUTE								SPRAY ANGLE° @ 20 PSI	PIPE SIZE NPT	CAPACITY SIZE	APPROX. INLET DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE			
													WIDE ANGLE			
													STANDARD LIFE		EXTENDED LIFE	
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI						(F)	(M)	(F)	(M)
0.5	0.7	0.9	1.1	1.3	1.6	1.8	2.1	130°		6.5W	0.14	0.18	AJB	BJB	AXJB	BXJB
0.5	0.8	1.1	1.3	1.5	1.8	2.1	2.4	140°		7.5W	0.17	0.18	AJB	BJB	AXJB	BXJB
0.6	0.9	1.3	1.6	1.8	2.2	2.6	2.9	120°		9W	0.17	0.19	AJB	BJB	AXJB	BXJB
0.7	1.0	1.4	1.7	2.0	2.5	2.8	3.2	115°		10W	0.19	0.20	AJB	BJB	AXJB	BXJB
0.8	1.1	1.6	1.9	2.2	2.7	3.1	3.5	120°		11W	0.19	0.20	AJB	BJB	AXJB	BXJB
0.9	1.2	1.7	2.1	2.4	2.9	3.4	3.8	125°		12W	0.19	0.20	AJB	BJB	AXJB	BXJB
0.9	1.3	1.8	2.3	2.6	3.2	3.7	4.1	120°		13W	0.19	0.23	AJB	BJB	AXJB	BXJB
1.0	1.4	1.9	2.3	2.7	3.3	3.8	4.3	120°		13.5W	0.20	0.23	AJB	BJB	AXJB	BXJB
1.1	1.5	2.1	2.6	3.0	3.7	4.2	4.7	115°	3/8	15W	0.20	0.23	AJB	BJB	AXJB	BXJB
1.3	1.5	2.1	2.6	3.0	3.7	4.2	4.7	106°		15AW	0.23	0.22	AJB			
1.2	1.8	2.5	3.0	3.5	4.3	5.0	5.5	115°		17.5W	0.24	0.25	AJB	BJB	AXJB	BXJB
1.4	2.0	2.8	3.5	4.0	4.9	5.7	6.3	105°		20W	0.24	0.27	AJB	BJB	AXJB	BXJB
1.7	2.0	2.8	3.5	4.0	4.9	5.6	6.3	102°		20AW	0.28	0.23		BJB		
1.6	2.2	3.1	3.8	4.4	5.4	6.2	7.0	105°		22W	0.26	0.30	AJB	BJB	AXJB	BXJB
1.8	2.5	3.5	4.3	5.0	6.1	7.1	7.9	105°		25W	0.26	0.28	AJB	BJB	AXJB	BXJB
2.1	2.5	3.5	4.3	5.0	6.1	7.1	7.9	100°		25AW	0.30	0.30	AJB	BJB		
2.0	2.8	4.0	4.9	5.6	6.9	7.9	8.9	105°		28W	0.26	0.31	AJB	BJB	AXJB	BXJB
3.5	5.0	7.1	8.7	10.0	12.3	14.1	15.8	110°	1/2	50W	0.36	0.44	AJB	BJB	AXJB	BXJB
5.7	8.0	11.3	13.9	16.0	19.6	22.6	25.3	115°	3/4	80W	0.48	0.51	AJB	BJB	AXJB	BXJB

Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel

WIDE SPRAY ANGLE
ONE PIECE CAST DESIGN

SPRAY PATTERN
wide angle - hollow cone

CJB-W
3/4" - 4" NPT-F

CFJB-W
silicone carbide flanged

DESIGN FEATURES

CJB-W one piece nozzles produce a uniform hollow cone spray pattern with relatively fine droplets and medium to high flow rates. They have a large orifice with no internal components and so have good clog resistance. Spray angles range from 100 to 135 degrees. Female pipe connection sizes are from 3/4" to 4" with the larger sizes also available with ANSI flanged connections.

Flow rates range from 3.6 to 282 gallons per minute at 10 psi. As well as Brass, carbon steel and type 316 stainless steel materials, CJB-W nozzles are also available to special order in Silicon Carbide. This material provides maximum erosion resistance in gas scrubbing applications using chemical slurries.

SPECIFICATIONS

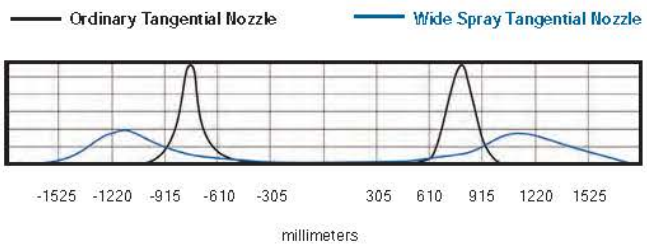
PIPE SIZES 1" TO 1-1/2"

U.S. GALLONS PER MINUTE										SPRAY ANGLE °			PIPE SIZE NPT	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE
3 PSI	5 PSI	7 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	5 PSI	15 PSI	40 PSI					STANDARD (F)
4.1	5.3	6.3	7.5	9.2	10.6	13.0	15.0	18.4	21.2	100	100	100		6.3 W	0.34	0.34	CJB
4.9	6.4	7.5	9.0	11.0	12.7	15.6	18.0	22.0	25.4	115	115	115		7.5 W	0.38	0.38	CJB
6.3	8.1	9.6	11.5	14.1	16.3	19.9	23.0	28.2	32.6	120	120	120		9.6 W	0.44	0.44	CJB
7.4	9.6	11.3	13.5	16.5	19.1	23.4	27.0	33.0	38.2	120	120	120	1	11.3 W	0.47	0.47	CJB
8.8	11.3	13.4	16.0	19.6	22.6	27.7	32.0	39.2	45.2	120	120	120		13.4 W	0.44	0.44	CJB
10.4	13.4	15.9	19.0	23.3	26.9	32.9	38.0	46.6	53.8	120	120	120		15.9 W	0.60	0.60	CJB
8.8	11.3	13.4	16.0	19.6	22.6	27.7	32.0	39.2	45.2	120	120	120		13.4 W	0.55	0.55	CJB
10.4	13.4	15.9	19.0	23.3	26.9	32.9	38.0	46.6	53.8	125	125	125		15.9 W	0.63	0.63	CJB
11.2	14.5	17.2	20.5	25.1	29.0	35.5	41.0	50.2	58.0	125	125	125	1 1/4	17.2 W	0.66	0.66	CJB
14.2	18.4	21.8	26.0	31.8	36.8	45.0	52.0	63.6	73.6	125	125	125		21.8 W	0.78	0.78	CJB
19.2	24.7	29.3	35.0	42.9	49.5	60.6	70.0	85.8	99.0	125	125	125		29.3 W	0.89	1.03	CJB
16.7	21.6	25.5	30.5	37.4	43.1	52.8	61.0	74.8	86.2	110	110	110		25.5 W	0.77	0.77	CJB
19.2	24.7	29.3	35.0	42.9	49.5	60.6	70.0	85.8	99.0	112	115	115		29.3 W	0.84	0.84	CJB
21.1	27.2	32.2	38.5	47.2	54.4	66.7	77.0	94.4	109	117	120	120		32.2 W	0.92	0.92	CJB
24.6	31.8	37.6	45.0	55.1	63.6	77.9	90.0	110	127	117	120	120	1 1/2	37.6 W	1.03	1.03	CJB
34.8	44.9	53.1	63.5	77.8	89.8	110	127	156	180	117	120	120		53.1 W	1.06	1.30	CJB
39.7	51.3	60.7	72.5	88.8	103	126	145	178	206	117	120	120		60.7 W	1.06	1.42	CJB

Standard Materials: Brass, Carbon Steel, 316 Stainless Steel

WIDE SPRAY ANGLE
ONE PIECE CAST DESIGN - CONTINUED

SPRAY PATTERN
wide angle - hollow cone



SPRAY PATTERN COMPARISON
comparing a wide spray pattern with an ordinary hollow cone nozzle of equal flow rate.

COMMON APPLICATIONS

- > Cooling and Scrubbing Gases
- > Aggregate and Mineral Washing
- > Spray Pond Cooling and Aerating
- > Cooling in Heat Treat Processes

SPECIFICATIONS

PIPE SIZES 2" TO 3"

U.S. GALLONS PER MINUTE										SPRAY ANGLE °			PIPE SIZE NPT*	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE
3 PSI	5 PSI	7 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	5 PSI	15 PSI	40 PSI					STANDARD (F)
23.3	30.1	35.6	42.5	52.1	60.1	73.6	85.0	104	120	112	115	115	2	35.6 W	0.86	0.86	CJB
28.8	37.1	43.9	52.5	64.3	74.2	90.9	105	129	148	120	122	122		43.9 W	1.00	1.00	CJB
34.2	44.2	52.3	62.5	76.5	88.4	108	125	153	177	119	122	122		52.3 W	1.14	1.14	CJB
39.7	51.3	60.7	72.5	88.8	103	126	145	178	206	122	125	125		60.7 W	1.27	1.27	CJB
46.6	60.1	71.1	85.0	104	120	147	170	208	240	125	125	125		71.1 W	1.39	1.39	CJB
52.6	67.9	80.3	96.0	118	136	166	192	236	272	125	125	125		80.3 W	1.44	1.52	CJB
56.1	72.5	85.8	103	126	145	178	205	252	290	125	125	125		85.8 W	1.44	1.63	CJB
63.0	81.3	96.2	115	141	163	199	230	282	326	125	125	125		96.2 W	1.44	1.75	CJB
46.6	60.1	71.1	85.0	104	120	147	170	208	240	117	120	120	2 1/2	71.1 W	1.33	1.33	CJB
52.0	67.2	79.5	95.0	116	134	165	190	232	268	117	120	120		79.5 W	1.42	1.42	CJB
56.1	72.5	85.8	103	126	145	178	205	252	290	117	120	120		85.8 W	1.47	1.47	CJB
63.0	81.3	96.2	115	141	163	199	230	282	326	123	125	125		96.2 W	1.58	1.58	CJB
76.7	99.0	117	140	171	198	242	280	342	396	128	130	130		117 W	1.75	1.81	CJB
87.6	113	134	160	196	226	277	320	392	452	128	130	130		134 W	1.75	2.02	CJB
93.1	120	142	170	208	240	294	340	416	480	128	130	130		142 W	1.75	2.09	CJB
119	154	182	218	266	308	377	435	532	616	128	130	130		182 W	1.75	2.44	CJB
50.7	65.4	77.4	92.5	113	131	160	185	226	262	122	122	122	3	77.4 W	1.28	1.28	CJB
63.0	81.3	96.2	115	141	163	199	230	282	326	122	122	122		96.2 W	1.44	1.44	CJB
76.7	99.0	117	140	171	198	242	280	342	396	122	122	122		117 W	1.63	1.63	CJB
87.6	113	134	160	196	226	277	320	392	452	125	125	125		134 W	1.78	1.78	CJB
93.1	120	142	170	208	240	294	340	416	480	125	125	125		142 W	1.84	1.84	CJB
113	146	172	206	252	291	357	412	504	582	128	130	130		172 W	2.11	2.11	CJB
128	166	196	235	287	332	406	469	574	664	129	132	135		196 W	2.13	2.28	CJB
144	186	220	263	322	372	456	526	644	744	129	132	135		220 W	2.13	2.48	CJB
154	199	236	282	345	399	488	564	690	798	129	132	135		236 W	2.13	2.59	CJB

* Larger sizes are available with ANSI flanged connection

Standard Materials: Brass, Carbon Steel, 316 Stainless Steel

NARROW SPRAY ANGLE
15°, 20° & 30° SERIES

SPRAY PATTERN
15° hollow cone

SPRAY PATTERN
20° hollow cone

SPRAY PATTERN
30° hollow cone

HHCJB
3/4" - 6" NPT (M)

HHCJB
plastic

DESIGN FEATURES

HHCJB and HCJB spray nozzles are an in-line design and produce a narrow angle, hollow cone spray pattern of uniform distribution. The spray has coarse droplets and high impact. This provides good penetration into counter-current gas streams and similar applications. A choice of 15, 20 or 30 degree spray angles is available over the capacity range of the series, from 13.6 to 794 gallons per minute at 40 psi. Male and female pipe connection sizes are from ¾" to 6" with larger sizes available with optional ANSI flanged connections. For applications where chemical corrosion of metallic nozzles is a concern, these nozzles are also available in PVC, Polypropylene and PTFE materials.

SPECIFICATIONS

15° - PIPE SIZES 3/4" TO 6"

U.S. GALLONS PER MINUTE							SPRAY ANGLE ° @ 40 PSI	PIPE SIZE NPT	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE		
10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI					(F)	(M)	FLANGED
7.1	9.8	11.9	13.6	16.5	18.9	20.9	15	3/4	15136	0.30	HCJB	HHCJB	
14.2	19.7	23.8	27.2	32.9	37.7	41.9	15	1	15272	0.41	HCJB	HHCJB	
21.3	29.5	35.7	40.8	49.4	56.6	62.8	15	1 1/4	15408	0.48	HCJB	HHCJB	
30.7	42.6	51.5	59.0	71.4	81.7	90.7	15	1 1/2	15590	0.60	HCJB	HHCJB	
56.8	78.6	95.1	109	132	151	168	15	2	151090	0.80	HCJB	HHCJB	
85.1	118	143	163	198	226	251	15	2 1/2	151630	0.97	HCJB	HHCJB	
124	172	208	238	288	330	366	15	3	152380	1.2	HCJB	HHCJB	
225	311	377	431	522	597	663	15	4	154310	1.6	HCJB	HHCJB	HFCJB
414	573	694	794	961	1100	1220	15	6	157940	2.1	HCJB	HHCJB	HFCJB

Standard Materials: Brass, 316 Stainless Steel, PVC, Polypropylene and PTFE

20° - PIPE SIZES 3/4" TO 6"

U.S. GALLONS PER MINUTE							SPRAY ANGLE ° @ 40 PSI	PIPE SIZE NPT	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE		
10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI					(F)	(M)	FLANGED
7.1	9.8	11.9	13.6	16.5	18.9	20.9	20	3/4	20136	0.30	HCJB	HHCJB	
14.2	19.7	23.8	27.2	32.9	37.7	41.9	20	1	20272	0.41	HCJB	HHCJB	
21.3	29.5	35.7	40.8	49.4	56.6	62.8	20	1 1/4	20408	0.48	HCJB	HHCJB	
30.7	42.6	51.5	59.0	71.4	81.7	90.7	20	1 1/2	20590	0.60	HCJB	HHCJB	
56.8	78.6	95.1	109	132	151	168	20	2	201090	0.80	HCJB	HHCJB	
85.1	118	143	163	198	226	251	20	2 1/2	201630	0.97	HCJB	HHCJB	
124	172	208	238	288	330	366	20	3	202380	1.2	HCJB	HHCJB	
225	311	377	431	522	597	663	20	4	204310	1.6	HCJB	HHCJB	HFCJB
414	573	694	794	961	1100	1220	20	6	207940	2.1	HCJB	HHCJB	HFCJB

Standard Materials: Brass, 316 Stainless Steel, PVC, Polypropylene and PTFE

HOLLOW CONE SPRAY NOZZLES

SPRAY PATTERN
15° hollow cone

SPRAY PATTERN
20° hollow cone

SPRAY PATTERN
30° hollow cone

HHCJB
3/4" - 6" NPT (M)

HHCJB
plastic

COMMON APPLICATIONS

> In-Duct Gas Cooling and Scrubbing
> Product Washing in Restricted Areas

SPECIFICATIONS

30° - PIPE SIZES 3/4" TO 6"

U.S. GALLONS PER MINUTE							SPRAY ANGLE ° @ 40 PSI	PIPE SIZE NPT	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE		
10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI					(F)	(M)	FLANGED
7.1	9.8	11.9	13.6	16.5	18.9	20.9	30	3/4	30136	0.30	HCJB	HHCJB	
14.2	19.7	23.8	27.2	32.9	37.7	41.9	30	1	30272	0.41	HCJB	HHCJB	
21.3	29.5	35.7	40.8	49.4	56.6	62.8	30	1 1/4	30408	0.48	HCJB	HHCJB	
30.7	42.6	51.5	59.0	71.4	81.7	90.7	30	1 1/2	30590	0.60	HCJB	HHCJB	
56.8	78.6	95.1	109	132	151	168	30	2	301090	0.80	HCJB	HHCJB	
85.1	118	143	163	198	226	251	30	2 1/2	301630	0.97	HCJB	HHCJB	
124	172	208	238	288	330	366	30	3	302380	1.2	HCJB	HHCJB	
225	311	377	431	522	597	663	30	4	304310	1.6	HCJB	HHCJB	HFCJB
414	573	694	794	961	1100	1220	30	6	307940	2.1	HCJB	HHCJB	HFCJB

Standard Materials: Brass, 316 Stainless Steel, PVC, Polypropylene and PTFE

STANDARD & WIDE SPRAY ANGLE
SPIRAL DESIGN

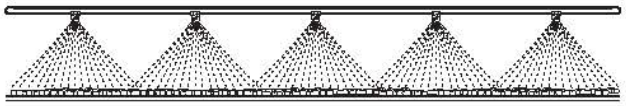
SPRAY PATTERN
hollow cone 50°

SPRAY PATTERN
hollow cone 120°

SPRAY PATTERN
hollow cone 180°

BSJJB
50° 1/4" - 4"

BSJJB
180° wide angle



COOLING CORN AND OTHER VEGETABLES
prior to freezing, using hollow cone spiral nozzles

DESIGN FEATURES

BSJJB nozzles are an in-line design featuring an external spiral to produce a hollow cone pattern. Droplet size is small, providing a large amount of water surface area available for cooling applications, and the unrestricted orifice gives good clogging resistance.

Flow rates range from 1.4 to 1050 gallons per minute at 40 psi, with the full range being available in spray angles of 50, 120 and 180 degrees. Male NPT pipe connection sizes are from ¼" to 4". Some sizes are available with female NPT or ANSI flanged connections to special order.

SPECIFICATIONS

PIPE SIZES 1/4" TO 3/4"

U.S. GALLONS PER MINUTE											SPRAY ANGLE °					PIPE SIZE NPT	CAPACITY SIZE	APPROX. MAXIMUM FREE PASSAGE (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE OVERALL LENGTH		NOZZLE TYPE
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI										50° to 120°	180°	(M)
0.50	0.70	1.0	1.2	1.4	1.6	1.7	2.0	2.2	3.1	4.4	50	60	90	120			7	0.09	0.09	1.88		BSJJB
0.92	1.3	1.8	2.3	2.6	2.9	3.2	3.7	4.1	5.8	8.2	50	60	90	120	180	1/4	13	0.13	0.13	1.88	1.88	BSJJB
1.4	2.0	2.8	3.5	4.0	4.5	4.9	5.7	6.3	8.9	12.6	50	60	90	120	180		20	0.13	0.16	1.88	1.88	BSJJB
2.1	3.0	4.2	5.2	6.0	6.7	7.4	8.5	9.5	13.4	19.0	50	60	90	120	180		30	0.13	0.19	1.88	1.88	BSJJB
2.9	4.1	5.7	7.0	8.1	9.1	9.9	11.5	12.8	18.1	25.6	50	60	90	120	180		40	0.13	0.22	1.88	1.88	BSJJB
3.8	5.3	7.5	9.2	10.6	11.9	13.0	15.0	16.8	23.7	33.5	50	60	90	120	180	3/8	53	0.13	0.25	1.88	1.88	BSJJB
5.8	8.3	11.7	14.3	16.5	18.4	20.2	23.3	26.1	36.9	52.2	50	60	90	120	180		82	0.13	0.31	1.88	1.88	BSJJB
8.5	12.1	17.0	20.9	24.1	26.9	29.5	34.1	38.1	53.9	76.2	50	60	90	120	180		121	0.19	0.38	2.50	2.38	BSJJB
11.7	16.5	23.3	28.6	33.0	36.9	40.4	46.7	52.2	73.8	104	50	60	90	120	180	1/2	165	0.19	0.44	2.50	2.38	BSJJB
14.8	21.0	29.7	36.4	42.0	47.0	51.4	59.4	66.4	93.9	133	50	60	90	120	180	3/4	210	0.19	0.50	2.75	3.00	BSJJB

Operation Above 60 PSI Not Recommended for PTFE

High PSI Operation Recommended for Metal Only

Standard Materials: Brass, 316 Stainless Steel, PVC, Polypropylene and PTFE.
Polypropylene not available for 1/4" NPT sizes

STANDARD & WIDE SPRAY ANGLE
SPIRAL DESIGN - CONTINUED

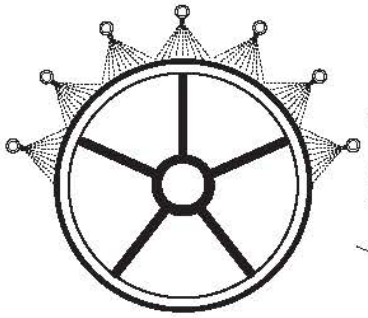
SPRAY PATTERN
hollow cone 50°

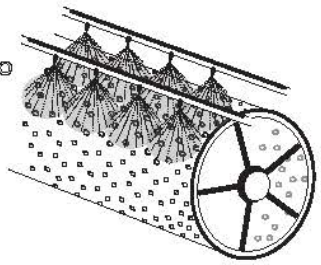
SPRAY PATTERN
hollow cone 120°

SPRAY PATTERN
hollow cone 180°

BSJJB
50° metal

BSJJB
180° metal





WASHING ROTARY FILTER DRUM
using spiral type hollow cone spray nozzles

COMMON APPLICATIONS

- Fruit and Vegetable Washing
- Dust Control & Suppression
- Quenching During Heat Treat Process
- Gas Scrubbing
- Gas Cooling
- Chute and Duct Cascade Cleaning
- Cooling of Canned and Bottled Foods
- "Scum Line" Wetting in Tanks & Vessels

SPECIFICATIONS

PIPE SIZES 1" TO 4"

U.S. GALLONS PER MINUTE											SPRAY ANGLE °				PIPE SIZE NPT	CAPACITY SIZE	APPROX. MAXIMUM FREE PASSAGE (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE OVERALL LENGTH		NOZZLE TYPE
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI									50° to 120°	180°	(M)
23.7	33.5	47.4	58.0	67.0	74.9	82.1	94.8	106	150	212	60	90	120	180	1	335	0.25	0.63	3.63	3.63	BSJJB
33.6	47.5	67.2	82.3	95.0	106	116	134	150	212	300	60	90	120	180		475	0.25	0.75	3.63	3.63	BSJJB
45.6	64.5	91.2	112	129	144	158	182	204	288	408	60	90	120	180	1 1/2	645	0.31	0.88	4.38	4.38	BSJJB
60	85	120	146	169	189	207	239	267	378	534	60	90	120	180		845	0.31	1.00	4.38	4.38	BSJJB
68	96	136	166	192	215	235	272	304	429	607	60	90	120	180		960	0.31	1.13	4.38	4.38	BSJJB
99	140	198	242	280	313	343	396	443	626	885	60	90	120	180	2	1400	0.44	1.38	5.63	5.00	BSJJB
125	177	250	306	354	395	433	500	559	791	1120	60	90	120	180		1770	0.44	1.50	6.88	5.00	BSJJB
181	256	362	443	512	572	627	724	810	1150	1620	60	90	120		3	2560	0.56	1.75	8.00		BSJJB
239	339	480	588	679	759	831	960	1070	1510	2150	60	90	120			3390	0.56	2.00	8.00		BSJJB
371	525	742	909	1050	1170	1290	1480	1660	2350	3320	60	90	120		4	5250	0.63	2.50	9.00		BSJJB

Operation Above 60 PSI Not Recommended for PTFE

High PSI Operation Recommended for Metal Only

Standard Materials: Brass, 316 Stainless Steel, PVC, Polypropylene and PTFE.
Polypropylene not available for 1/4" NPT sizes

EXTRA LOW FLOW STANDARD SPRAY ANGLE
SPIRAL DESIGN

SPRAY PATTERN
hollow cone 90°

SPRAY PATTERN
fog pattern

HHSJLPJB
metal

DESIGN FEATURES

BSJLFJB nozzles produce a fine fog of droplets in a hollow cone pattern - with flow rates from just 0.28 to 2.43 gallons per minute at 40 psi. The standard spray angle is 90 degrees, with a 120 degree version available to special order. Male NPT pipe connections are 1/8" or 1/4".

COMMON APPLICATIONS

- Misting
- Chemical Coating
- Cooling
- Humidifying
- Conveyor Sanitizing

SPECIFICATIONS

PIPE SIZES 1/8" TO 1/4"

U.S. GALLONS PER MINUTE										SPRAY ANGLE ° @ 10 PSI	PIPE SIZE NPT	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE (M)
10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	70 PSI	80 PSI	90 PSI	100 PSI					
0.14	0.20	0.24	0.28	0.31	0.34	0.37	0.40	0.42	0.44	90	1/8	1.4	0.04	BSJLFJB
0.20	0.28	0.35	0.40	0.45	0.49	0.53	0.57	0.60	0.63	90		2.0	0.05	BSJLFJB
0.27	0.37	0.46	0.53	0.59	0.65	0.70	0.75	0.80	0.84	90		2.7	0.05	BSJLFJB
0.38	0.53	0.65	0.75	0.84	0.92	0.99	1.1	1.1	1.2	90		3.8	0.07	BSJLFJB
0.54	0.76	0.94	1.1	1.2	1.3	1.4	1.5	1.6	1.7	90		5.4	0.08	BSJLFJB
1.2	1.7	2.1	2.4	2.7	3.0	3.2	3.4	3.7	3.8	90		12	0.12	BSJLFJB
0.14	0.20	0.24	0.28	0.31	0.34	0.37	0.40	0.42	0.44	90	1/4	1.4	0.04	BSJLFJB
0.20	0.28	0.35	0.40	0.45	0.49	0.53	0.57	0.60	0.63	90		2.0	0.05	BSJLFJB
0.27	0.37	0.46	0.53	0.59	0.65	0.70	0.75	0.80	0.84	90		2.7	0.05	BSJLFJB
0.38	0.53	0.65	0.75	0.84	0.92	0.99	1.1	1.1	1.2	90		3.8	0.07	BSJLFJB
0.54	0.76	0.94	1.1	1.2	1.3	1.4	1.5	1.6	1.7	90		5.4	0.08	BSJLFJB
1.2	1.7	2.1	2.4	2.7	3.0	3.2	3.4	3.7	3.8	90		12	0.12	BSJLFJB

Standard Materials: Brass, PVC and Polypropylene.
1/4" NPT sizes also available in 316 Stainless Steel and PTFE.

STANDARD SPRAY ANGLE
DESIGN FEATURES
120°, 110°, 90°, 40°, 30°, 25°, 15°, 0° SPRAY ANGLE

SPRAY PATTERN
120° fan

UJB
1/8" - 2" NPT (M)

VVLJB
1/8" - 1/4" NPT (M) with strainer

DESIGN FEATURES

VVJB, VVLJB and UJB Flat fan nozzles feature one piece construction with no internal parts. They are available in a wide range of capacities from less than 0.1 US gpm to over 200 US gpm per nozzle. Spray angles vary from 0° solid stream to 120°. The tapered flat fan design can produce even flow coverage over wide areas by overlapping the spray patterns of adjacent nozzles on a pipe header.

Type VVLJB Flat Fan nozzles are supplied complete with a strainer screen.

COMMON APPLICATIONS

- Washing food products
- Cooling in air ducts
- Coating fabrics & steel siding
- Moistening paper products

SPECIFICATIONS

120°, 110°, 90°, 40°, 30°, 25°, 15°, 0° *

U.S. GALLONS PER MINUTE												CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE PIPE SIZE NPT										
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	300 PSI	400 PSI	500 PSI			1/8	1/4	1/8	1/4	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
0.03	0.05	0.07	0.09	0.10	0.12	0.14	0.16	0.22	0.27	0.32	0.35	01	0.026	VVJB	VVJB	VVLJB	VVLJB		UJB							
0.05	0.08	0.11	0.13	0.15	0.18	0.21	0.24	0.34	0.41	0.47	0.53	015	0.031	VVJB	VVJB	VVLJB	VVLJB		UJB							
0.07	0.10	0.14	0.17	0.20	0.25	0.28	0.32	0.45	0.55	0.63	0.71	02	0.036	VVJB	VVJB	VVLJB	VVLJB		UJB							
0.09	0.13	0.18	0.22	0.25	0.31	0.35	0.4	0.56	0.68	0.79	0.88	025	0.040	VVJB	VVJB	VVLJB	VVLJB		UJB							
0.11	0.15	0.21	0.26	0.30	0.37	0.42	0.47	0.67	0.82	0.95	1.10	03	0.043	VVJB	VVJB	VVLJB	VVLJB		UJB							
0.14	0.20	0.28	0.35	0.40	0.49	0.57	0.63	0.89	1.1	1.3	1.4	04	0.052	VVJB	VVJB	VVLJB	VVLJB		UJB							
0.18	0.25	0.35	0.43	0.50	0.61	0.71	0.79	1.12	1.4	1.58	1.8	05	0.057	VVJB	VVJB	VVLJB	VVLJB		UJB							
0.21	0.30	0.42	0.52	0.60	0.74	0.85	0.95	1.34	1.6	1.90	2.1	06	0.062	VVJB	VVJB	VVLJB	VVLJB		UJB							
0.28	0.40	0.57	0.69	0.80	0.98	1.1	1.3	1.8	2.2	2.5	2.8	08	0.072	VVJB	VVJB	VVLJB	VVLJB		UJB							
0.35	0.50	0.71	0.87	1.0	1.2	1.4	1.6	2.2	2.7	3.2	3.5	10	0.078					UJB	UJB	UJB						
0.53	0.75	1.1	1.3	1.5	1.8	2.1	2.4	3.4	4.1	4.7	5.3	15	0.094					UJB	UJB	UJB						
0.71	1.0	1.4	1.7	2.0	2.5	2.8	3.2	4.5	5.5	6.3	7.1	20	0.109					UJB	UJB	UJB						
1.1	1.5	2.1	2.6	3.0	3.7	4.2	4.7	6.7	8.2	9.5	10.6	30	0.141					UJB	UJB	UJB						
1.4	2.0	2.8	3.5	4.0	4.9	5.7	6.3	8.9	11.0	12.6	14.2	40	0.156					UJB	UJB	UJB						
1.8	2.5	3.5	4.3	5.0	6.1	7.1	7.9	11.2	13.7	15.8	17.7	50	0.172						UJB	UJB						
2.1	3.0	4.2	5.2	6.0	7.4	8.5	9.5	13.4	16.4	19.0	21.0	60	0.187						UJB	UJB	UJB					
2.5	3.5	5.0	6.1	7.0	8.6	9.9	11.1	15.6	19.2	22.1	25.0	70	0.203						UJB	UJB	UJB					
2.8	4.0	5.7	6.9	8.0	9.8	11.3	12.6	17.9	22.0	25.3	28.0	80	0.219						UJB	UJB	UJB					
3.2	4.5	6.4	7.8	9.0	11.0	12.7	14.2	20.1	24.7	28.5	32.0	90	0.234							UJB	UJB					
3.5	5.0	7.1	8.7	10.0	12.2	14.1	15.8	22.4	27.0	31.6	35.0	100	0.250							UJB	UJB					
4.2	6.0	8.5	10.4	12.0	14.7	17.0	19.0	26.8	33.0	37.9	42.0	120	0.266							UJB	UJB					
5.3	7.5	10.6	13.0	15.0	18.4	21.2	23.7	33.5	41.0	47.4	53.0	150	0.297								UJB					
7.1	10.0	14.1	17.3	20.0	24.5	28.3	31.6	44.7	55.0	63.2	71.0	200	0.344								UJB					
10.6	15.0	21.2	26.0	30.0	36.7	42.4	47.4	67.1	82.0	94.9	106	300	0.422									UJB				
14.1	20.0	28.3	34.6	40.0	49.0	56.6	63.2	89.4	110	126	142	400	0.500									UJB	UJB			
26.5	37.5	53.0	64.9	75.0	92.0	106	119	168	206	237	266	750	0.500										UJB			
28.3	40.0	56.6	69.3	80.0	98.0	113	126	179	219	253	283	800	0.688											UJB		
40.7	57.5	81.3	100	115	141	163	182	257	315	364	407	1150	0.719											UJB		
53.0	75.0	106	130	150	184	212	237	335	411	474	530	1500	0.859												UJB	
79.5	113	160	195	225	276	318	356	500	616	715	795	2250	0.969													UJB

* All 0° Solid Stream Nozzles are UJB Type

Standard Materials: Brass, Carbon Steel, 316 Stainless Steel, PVC and PTFE
Note: PTFE not available in sizes below 025; PVC not available in sizes below 01

STANDARD SPRAY ANGLE
95° & 80° SPRAY ANGLE

95°

U.S. GALLONS PER MINUTE												CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE PIPE SIZE NPT							
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	300 PSI	400 PSI	500 PSI			1/8	1/4	1/8	1/4	1/8	1/4	3/8	1/2
		0.035	0.043	0.05	0.06	0.07	0.08	0.11	.0.14	0.16	0.18	0050	0.018	VVJB	VVJB	VVLJB	VVLJB				
0.03	0.05	0.07	0.09	0.10	0.12	0.14	0.16	0.22	0.27	0.32	0.35	01	0.026	VVJB	VVJB	VVLJB	VVLJB				
0.05	0.08	0.11	0.13	0.15	0.18	0.21	0.24	0.34	0.41	0.47	0.53	015	0.031	VVJB	VVJB	VVLJB	VVLJB				
0.07	0.10	0.14	0.17	0.20	0.25	0.28	0.32	0.45	0.55	0.63	0.71	02	0.036	VVJB	VVJB	VVLJB	VVLJB				
0.11	0.15	0.21	0.26	0.30	0.37	0.42	0.47	0.67	0.82	0.95	1.1	03	0.043	VVJB	VVJB	VVLJB	VVLJB				
0.14	0.20	0.28	0.35	0.40	0.49	0.57	0.63	0.89	1.1	1.3	1.4	04	0.052	VVJB	VVJB	VVLJB	VVLJB				
0.18	0.25	0.35	0.43	0.50	0.61	0.71	0.79	1.1	1.4	1.6	1.8	05	0.057	VVJB	VVJB	VVLJB	VVLJB				
0.21	0.30	0.42	0.52	0.60	0.74	0.85	0.95	1.3	1.6	1.9	2.1	06	0.062	VVJB	VVJB	VVLJB	VVLJB				
0.28	0.40	0.57	0.69	0.80	0.98	1.1	1.3	1.8	2.2	2.5	2.8	08	0.072	VVJB	VVJB	VVLJB	VVLJB				
0.35	0.50	0.71	0.87	1.0	1.2	1.4	1.6	2.2	2.7	3.2	3.5	10	0.080					UJB	UJB		UJB
0.53	0.75	1.1	1.3	1.5	1.8	2.1	2.4	3.4	4.1	4.7	5.3	15	0.094					UJB	UJB		UJB
0.71	1.0	1.4	1.7	2.0	2.5	2.8	3.2	4.5	5.5	6.3	7.1	20	0.109					UJB	UJB		
1.1	1.5	2.1	2.6	3.0	3.7	4.2	4.7	6.7	8.2	9.5	10.6	30	0.141					UJB	UJB		UJB
1.4	2.0	2.8	3.5	4.0	4.9	5.7	6.3	8.9	11.0	12.6	14.2	40	0.156						UJB	UJB	UJB
1.8	2.5	3.5	4.3	5.0	6.1	7.1	7.9	11.2	13.7	15.8	17.7	50	0.172						UJB		UJB
2.1	3.0	4.2	5.2	6.0	7.4	8.5	9.5	13.4	16.4	19.0	21.0	60	0.186						UJB		UJB
2.5	3.5	5.0	6.1	7.0	8.6	9.9	11.1	15.6	19.2	22.1	25.0	70	0.203						UJB	UJB	UJB
3.5	5.0	7.1	8.7	10.0	12.2	14.1	15.8	22.4	27.0	31.6	35.0	100	0.250								UJB
5.3	7.5	10.6	13.0	15.0	18.4	21.2	23.7	33.5	41.0	47.4	53.0	150	0.297								UJB

Standard Materials: Brass, Carbon Steel, 316 Stainless Steel, PVC and PTFE
Note: PTFE not available in sizes below 025; PVC not available in sizes below 01

80°

U.S. GALLONS PER MINUTE												CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE PIPE SIZE NPT										
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	300 PSI	400 PSI	500 PSI			1/8	1/4	1/8	1/4	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2
		0.035	0.043	0.05	0.06	0.07	0.08	0.11	.0.14	0.16	0.18	0050	0.018	VVJB	VVJB	VVLJB	VVLJB									
	0.03	0.05	0.06	0.067	0.08	0.09	0.11	0.15	0.18	0.22	0.24	0067	0.021	VVJB	VVJB	VVLJB	VVLJB									
0.03	0.05	0.07	0.09	0.10	0.12	0.14	0.16	0.22	0.27	0.32	0.35	01	0.026	VVJB	VVJB	VVLJB	VVLJB									
0.05	0.08	0.11	0.13	0.15	0.18	0.21	0.24	0.34	0.41	0.47	0.53	015	0.031	VVJB	VVJB	VVLJB	VVLJB									
0.07	0.10	0.14	0.17	0.20	0.25	0.28	0.32	0.45	0.55	0.63	0.71	02	0.036	VVJB	VVJB	VVLJB	VVLJB									
0.09	0.13	0.18	0.22	0.25	0.31	0.35	0.40	0.56	0.68	0.79	0.88	025	0.040	VVJB	VVJB	VVLJB	VVLJB									
0.11	0.15	0.21	0.26	0.30	0.37	0.42	0.47	0.67	0.82	0.95	1.1	03	0.043	VVJB	VVJB	VVLJB	VVLJB									
0.14	0.20	0.28	0.35	0.40	0.49	0.57	0.63	0.89	1.1	1.3	1.4	04	0.052	VVJB	VVJB	VVLJB	VVLJB									
0.18	0.25	0.35	0.43	0.50	0.61	0.71	0.79	1.1	1.4	1.6	1.8	05	0.057	VVJB	VVJB	VVLJB	VVLJB									
0.21	0.30	0.42	0.52	0.60	0.74	0.85	0.95	1.3	1.6	1.9	2.1	06	0.062	VVJB	VVJB	VVLJB	VVLJB									
0.28	0.40	0.57	0.69	0.80	0.98	1.1	1.3	1.8	2.2	2.5	2.8	08	0.072	VVJB	VVJB	VVLJB	VVLJB									
0.35	0.50	0.71	0.87	1.0	1.2	1.4	1.6	2.2	2.7	3.2	3.5	10	0.080					UJB	UJB	UJB						
0.53	0.75	1.1	1.3	1.5	1.8	2.1	2.4	3.4	4.1	4.7	5.3	15	0.094					UJB	UJB	UJB						
0.71	1.0	1.4	1.7	2.0	2.5	2.8	3.2	4.5	5.5	6.3	7.1	20	0.109					UJB	UJB	UJB	UJB					
1.1	1.5	2.1	2.6	3.0	3.7	4.2	4.7	6.7	8.2	9.5	10.6	30	0.141					UJB	UJB	UJB	UJB					
1.4	2.0	2.8	3.5	4.0	4.9	5.7	6.3	8.9	11.0	12.6	14.2	40	0.156					UJB	UJB	UJB	UJB					
1.8	2.5	3.5	4.3	5.0	6.1	7.1	7.9	11.2	13.7	15.8	17.7	50	0.172						UJB	UJB	UJB					
2.1	3.0	4.2	5.2	6.0	7.4	8.5	9.5	13.4	16.4	19.0	21.0	60	0.186						UJB	UJB	UJB					
2.5	3.5	5.0	6.1	7.0	8.6	9.9	11.1	15.6	19.2	22.1	25.0	70	0.203						UJB	UJB	UJB					
2.8	4.0	5.7	6.9	8.0	9.8	11.3	12.6	17.9	22.0	25.3	28.0	80	0.219							UJB	UJB					
3.2	4.5	6.4	7.8	9.0	11.0	12.7	14.2	20.1	24.7	28.5	32.0	90	0.234							UJB	UJB					
3.5	5.0	7.1	8.7	10.0	12.2	14.1	15.8	22.4	27.0	31.6	35.0	100	0.250							UJB	UJB					
4.2	6.0	8.5	10.4	12.0	14.7	17.0	19.0	26.8	33.0	37.9	42.0	120	0.266							UJB	UJB					
5.3	7.5	10.6	13.0	15.0	18.4	21.2	23.7	33.5	41.0	47.4	53.0	150	0.297								UJB					
7.1	10.0	14.1	17.3	20.0	24.5	28.3	31.6	44.7	55.0	63.2	71.0	200	0.344								UJB	UJB				
10.6	15.0	21.2	26.0	30.0	36.7	42.4	47.4	67.1	82.0	94.9	106	300	0.422									UJB				
14.1	20.0	28.3	34.6	40.0	49.0	56.6	63.2	89.4	110	126	142	400	0.500									UJB	UJB			
26.5	37.5	53.0	64.9	75.0	92.0	106	119	168	206	237	266	750	0.500										UJB			
28.3	40.0	56.6	69.3	80.0	98.0	113	126	179	219	253	283	800	0.688											UJB		
40.7	57.5	81.3	100	115	141	163	182	257	315	364	407	1150	0.719											UJB		
53.0	75.0	106	130	150	184	212	237	335	411	474	530	1500	0.859												UJB	
79.5	113	160	195	225	276	318	356	500	616	715	795	2250	0.969													UJB

Standard Materials: Brass, Carbon Steel, 316 Stainless Steel, PVC and PTFE
Note: PTFE not available in sizes below 025; PVC not available in sizes below 01

STANDARD SPRAY ANGLE
73° & 65° SPRAY ANGLE

73°

U.S. GALLONS PER MINUTE												CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE PIPE SIZE NPT			
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	300 PSI	400 PSI	500 PSI			1/8	1/4	1/8	1/4
	0.039	0.055	0.067	0.077	0.09	0.11	0.12	0.17	0.21	0.24	0.27	0077	0.022	VVJB	VVJB	VVLJB	VVLJB
0.05	0.08	0.11	0.13	0.15	0.19	0.22	0.24	034	0.42	0.48	0.54	0154	0.032	VVJB	VVJB	VVLJB	VVLJB
0.08	0.12	0.16	0.20	0.23	0.28	0.33	0.37	0.52	0.63	0.74	0.82	0231	0.040		VVJB		VVLJB
0.11	0.15	0.22	0.27	0.31	0.38	0.44	0.49	0.69	0.84	0.88	1.1	0308	0.045	VVJB	VVJB	VVLJB	VVLJB
0.16	0.23	0.33	0.40	0.46	0.57	0.65	0.73	1.0	1.3	1.3	1.6	0462	0.056		VVJB		VVLJB
0.27	0.38	0.54	0.67	0.77	0.94	1.1	1.20	1.7	2.1	2.2	2.7	0770	0.072	VVJB		VVLJB	

Standard Materials: Brass, Carbon Steel, 316 Stainless Steel, PVC and PTFE
Note: PTFE not available in sizes below 025; PVC not available in sizes below 01

65°

U.S. GALLONS PER MINUTE												CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE PIPE SIZE NPT										
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	300 PSI	400 PSI	500 PSI			1/8	1/4	1/8	1/4	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2
		0.012	0.015	0.017	0.021	0.024	0.027	0.038	0.047	0.054	0.06	0017	0.011	VVJB	VVJB	VVLJB	VVLJB									
		0.023	0.029	0.033	0.04	0.047	0.052	0.07	0.09	0.104	0.12	0033	0.015	VVJB	VVJB	VVLJB	VVLJB									
	0.03	0.05	0.06	0.067	0.08	0.09	0.11	0.15	0.18	0.22	0.24	0067	0.021	VVJB	VVJB	VVLJB	VVLJB									
0.03	0.05	0.07	0.09	0.10	0.12	0.14	0.16	0.22	0.27	0.32	0.35	01	0.026	VVJB	VVJB	VVLJB	VVLJB									
0.05	0.08	0.11	0.13	0.15	0.18	0.21	0.24	0.34	0.41	0.47	0.53	015	0.031	VVJB	VVJB	VVLJB	VVLJB									
0.07	0.10	0.14	0.17	0.20	0.25	0.28	0.32	0.45	0.55	0.63	0.71	02	0.036	VVJB	VVJB	VVLJB	VVLJB									
0.09	0.13	0.18	0.22	0.25	0.31	0.35	0.40	0.56	0.68	0.79	0.88	025	0.040	VVJB	VVJB	VVLJB	VVLJB									
0.11	0.15	0.21	0.26	0.30	0.37	0.42	0.47	0.67	0.82	0.95	1.1	03	0.043	VVJB	VVJB	VVLJB	VVLJB									
0.14	0.20	0.28	0.35	0.40	0.49	0.57	0.63	0.89	1.1	1.3	1.4	04	0.052	VVJB	VVJB	VVLJB	VVLJB									
0.18	0.25	0.35	0.43	0.50	0.61	0.71	0.79	1.1	1.4	1.6	1.8	05	0.057	VVJB	VVJB	VVLJB	VVLJB									
0.21	0.30	0.42	0.52	0.60	0.74	0.85	0.95	1.3	1.6	1.9	2.1	06	0.062	VVJB	VVJB	VVLJB	VVLJB									
0.28	0.40	0.57	0.69	0.80	0.98	1.1	1.3	1.8	2.2	2.5	2.8	08	0.072	VVJB	VVJB	VVLJB	VVLJB									
0.35	0.50	0.71	0.87	1.0	1.2	1.4	1.6	2.2	2.7	3.2	3.5	10	0.080					LJB	LJB	LJB						
0.53	0.75	1.06	1.3	1.5	1.8	2.1	2.4	3.4	4.1	4.7	5.3	15	0.094					LJB	LJB	LJB	LJB					
0.71	1.0	1.41	1.7	2.0	2.5	2.8	3.2	4.5	5.5	6.32	7.1	20	0.109					LJB	LJB	LJB	LJB					
1.1	1.5	2.1	2.6	3.0	3.7	4.2	4.7	6.7	8.2	9.49	10.6	30	0.141					LJB	LJB	LJB						
1.4	2.0	2.8	3.5	4.0	4.9	5.7	6.3	8.9	11.0	12.6	14.2	40	0.156					LJB	LJB	LJB						
1.8	2.5	3.5	4.3	5.0	6.1	7.1	7.9	11.2	13.7	15.8	17.7	50	0.172					LJB	LJB	LJB	LJB					
2.1	3.0	4.2	5.2	6.0	7.4	8.5	9.5	13.4	16.4	19.0	21.0	60	0.186						LJB	LJB	LJB					
2.5	3.5	5.0	6.1	7.0	8.6	9.9	11.1	15.6	19.2	22.1	25.0	70	0.203						LJB	LJB	LJB					
2.8	4.0	5.7	6.9	8.0	9.8	11.3	12.6	17.9	22.0	25.3	28.0	80	0.219							LJB	LJB					
3.2	4.5	6.4	7.8	9.0	11.0	12.7	14.2	20.1	24.7	28.5	32.0	90	0.234							LJB	LJB					
3.5	5.0	7.1	8.7	10.0	12.2	14.1	15.8	22.4	27.0	31.6	35.0	100	0.250							LJB	LJB					
4.2	6.0	8.5	10.4	12.0	14.7	17.0	19.0	26.8	33.0	37.9	42.0	120	0.266							LJB	LJB					
5.3	7.50	10.6	13.0	15.0	18.4	21.2	23.7	33.5	41.0	47.4	53.0	150	0.297								LJB					
7.1	10.0	14.1	17.3	20.0	24.5	28.3	31.6	44.7	55.0	63.2	71.0	200	0.344								LJB	LJB				
10.6	15.0	21.2	26.0	30.0	36.7	42.4	47.4	67.1	82.0	94.9	106	300	0.422									LJB				
14.1	20.0	28.3	34.6	40.0	49.0	56.6	63.2	89.4	110	126	142	400	0.500									LJB	LJB			
26.5	37.5	53.0	64.9	75.0	92.0	106	119	168	206	237	266	750	0.500										LJB			
28.3	40.0	56.6	69.3	80.0	98.0	113	126	179	219	253	283	800	0.688											LJB		
40.7	57.5	81.3	100	115	141	163	182	257	315	364	407	1150	0.719											LJB		
53.0	75.0	106	130	150	184	212	237	335	411	474	530	1500	0.859												LJB	
79.5	113	160	195	225	276	318	356	500	616	715	795	2250	0.969													LJB

Standard Materials: Brass, Carbon Steel, 316 Stainless Steel, PVC and PTFE
Note: PTFE not available in sizes below 025; PVC not available in sizes below 01

SPECIFICATIONS - 50°

VVJB & VVLJB

U.S. GALLONS PER MINUTE												CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE PIPE SIZE NPT			
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	300 PSI	400 PSI	500 PSI			1/8	1/4	1/8	1/4
0.03	0.05	0.07	0.09	0.10	0.12	0.14	0.16	0.22	0.27	0.32	0.35	01	0.026	VVJB	VVJB	VVLJB	VVLJB
0.05	0.08	0.11	0.13	0.15	0.18	0.21	0.24	0.34	0.41	0.47	0.53	015	0.031	VVJB	VVJB	VVLJB	VVLJB
0.07	0.10	0.14	0.17	0.20	0.25	0.28	0.32	0.45	0.55	0.63	0.71	02	0.036	VVJB	VVJB	VVLJB	VVLJB
0.09	0.13	0.18	0.22	0.25	0.31	0.35	0.40	0.56	0.68	0.79	0.88	025	0.040	VVJB	VVJB	VVLJB	VVLJB
0.11	0.15	0.21	0.26	0.30	0.37	0.42	0.47	0.67	0.82	0.95	1.1	03	0.043	VVJB	VVJB	VVLJB	VVLJB
0.14	0.20	0.28	0.35	0.40	0.49	0.57	0.63	0.89	1.1	1.3	1.4	04	0.052	VVJB	VVJB	VVLJB	VVLJB
0.18	0.25	0.35	0.43	0.50	0.61	0.71	0.79	1.1	1.4	1.6	1.8	05	0.057	VVJB	VVJB	VVLJB	VVLJB
0.21	0.30	0.42	0.52	0.60	0.74	0.85	0.95	1.3	1.6	1.9	2.1	06	0.062	VVJB	VVJB	VVLJB	VVLJB
0.28	0.40	0.57	0.69	0.80	0.98	1.1	1.3	1.8	2.2	2.5	2.8	08	0.072	VVJB	VVJB	VVLJB	VVLJB

Standard Materials: Brass, Carbon Steel, 316 Stainless Steel, PVC and PTFE
Note: PTFE Not Available in Sizes Below 025; PVC Not Available in Sizes Below 01

UJB

U.S. GALLONS PER MINUTE												CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE PIPE SIZE NPT						
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	300 PSI	400 PSI	500 PSI			1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2
0.35	0.50	0.71	0.87	1.0	1.2	1.4	1.6	2.2	2.7	3.2	3.5	10	0.080	UJB	UJB	UJB						
0.53	0.75	1.1	1.3	1.5	1.8	2.1	2.4	3.4	4.1	4.7	5.3	15	0.094	UJB	UJB	UJB						
0.71	1.0	1.4	1.7	2.0	2.5	2.8	3.2	4.5	5.5	6.3	7.1	20	0.109	UJB	UJB	UJB						
1.1	1.5	2.1	2.6	3.0	3.7	4.2	4.7	6.7	8.2	9.5	10.6	30	0.141	UJB	UJB	UJB						
1.4	2.0	2.8	3.5	4.0	4.9	5.7	6.3	8.9	11.0	12.6	14.2	40	0.156	UJB	UJB	UJB						
1.8	2.5	3.5	4.3	5.0	6.1	7.1	7.9	11.2	13.7	15.8	17.7	50	0.172		UJB	UJB						
2.1	3.0	4.2	5.2	6.0	7.4	8.5	9.5	13.4	16.4	19.0	21.0	60	0.186		UJB	UJB	UJB					
2.5	3.5	5.0	6.1	7.0	8.6	9.9	11.1	15.6	19.2	22.1	25.0	70	0.203		UJB	UJB	UJB					
2.8	4.0	5.7	6.9	8.0	9.8	11.3	12.6	17.9	22.0	25.3	28.0	80	0.219		UJB	UJB	UJB					
3.2	4.5	6.4	7.8	9.0	11.0	12.7	14.2	20.1	24.7	28.5	32.0	90	0.234			UJB	UJB					
3.5	5.0	7.1	8.7	10.0	12.2	14.1	15.8	22.4	27.0	31.6	35.0	100	0.250			UJB	UJB					
4.2	6.0	8.5	10.4	12.0	14.7	17.0	19.0	26.8	33.0	37.9	42.0	120	0.266			UJB	UJB					
5.3	7.5	10.6	13.0	15.0	18.4	21.2	23.7	33.5	41.0	47.4	53.0	150	0.297				UJB					
7.1	10.0	14.1	17.3	20.0	24.5	28.3	31.6	44.7	55.0	63.2	71.0	200	0.344				UJB					
10.6	15.0	21.2	26.0	30.0	36.7	42.4	47.4	67.1	82.0	94.9	106	300	0.422					UJB				
14.1	20.0	28.3	34.6	40.0	49.0	56.6	63.2	89.4	110	126	142	400	0.500					UJB	UJB			
17.7	25.0	35.0	43.0	50.0	61.0	71.0	79.0	112	137	158	177	500	0.516						UJB	UJB		
21.0	29.0	41.0	50.0	58.0	71.0	82.0	92.0	130	159	184	205	580	0.547						UJB			
26.5	37.5	53.0	64.9	75.0	92.0	106	119	168	206	237	266	750	0.500						UJB			
28.3	40.0	56.6	69.3	80.0	98.0	113	126	179	219	253	283	800	0.688							UJB		
35.0	50.0	71.0	87.0	100	123	142	158	223	273	316	353	1000	0.719							UJB		
40.7	57.5	81.3	100	115	141	163	182	257	315	364	407	1150	0.719							UJB		
53.0	75.0	106	130	150	184	212	237	335	411	474	530	1500	0.859								UJB	UJB
71.0	100	142	173	200	245	283	316	447	547	632	707	2000	1.031									UJB
79.5	113	160	195	225	276	318	356	500	616	715	795	2250	0.969									UJB

Standard Materials: Brass, Carbon Steel, 316 Stainless Steel, PVC and PTFE
Note: PTFE Not Available in Sizes Below 025; PVC Not Available in Sizes Below 01

LOW PROFILE TYPE
120° TO 20° SPRAY ANGLE

SPRAY PATTERN
120° flat fan

SPRAY PATTERN
90° flat fan

NFSJB
metal

DESIGN FEATURES

Producing similar spray results to the UJB flat fan nozzles, the ULPJB (low profile), project a very short distance from the face of the pipe header. From approximately 1/4" for the 1/4" NPT models, to approximately 1/2" for the 2" NPT model. This allows the ULPJB to provide width of coverage with much less headroom than standard flat fan nozzles.

TYPICAL APPLICATIONS

- Washing
- Cooling
- Coating
- In applications where there is very little headroom to develop spray pattern width, and where projections from the header pipe are undesirable.

SPECIFICATIONS - 120°, 90°, 60°, 45°, 30°, 20°

U.S. GALLONS PER MINUTE											CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE			
													PIPE SIZE, NPS * (Straight Thread)			
5 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	150 PSI	200 PSI			1/4	3/4	1-1/4	2
0.04	0.06	0.08	0.09	0.11	0.12	0.15	0.18	0.20	0.24	0.28	012	0.032	ULPJB			
0.07	0.10	0.12	0.14	0.17	0.19	0.24	0.28	0.31	0.38	0.44	019	0.039	ULPJB			
0.11	0.16	0.19	0.22	0.27	0.31	0.38	0.44	0.49	0.60	0.70	031	0.047	ULPJB			
0.14	0.19	0.24	0.27	0.34	0.39	0.47	0.55	0.61	0.75	0.87	039	0.053	ULPJB			
0.18	0.25	0.30	0.35	0.43	0.50	0.61	0.70	0.78	0.96	1.1	050	0.059	ULPJB			
0.21	0.29	0.36	0.42	0.51	0.59	0.72	0.83	0.93	1.1	1.3	059	0.065	ULPJB			
0.27	0.39	0.47	0.55	0.67	0.77	0.95	1.1	1.2	1.5	1.7	077	0.079	ULPJB			
0.35	0.49	0.60	0.69	0.85	0.98	1.2	1.4	1.6	1.9	2.2	098	0.087	ULPJB			
0.44	0.62	0.76	0.88	1.1	1.2	1.5	1.8	2.0	2.4	2.8	12	0.098	ULPJB			
0.52	0.74	0.90	1.0	1.3	1.5	1.8	2.1	2.3	2.9	3.3	15	0.106	ULPJB			
0.69	0.98	1.2	1.4	1.7	2.0	2.4	2.8	3.1	3.8	4.4	20	0.118	ULPJB	ULPJB		
0.88	1.2	1.5	1.8	2.2	2.5	3.0	3.5	3.9	4.8	5.6	25	0.138	ULPJB	ULPJB		
1.1	1.6	1.9	2.2	2.7	3.1	3.8	4.4	4.9	6.0	7.0	31	0.157	ULPJB	ULPJB		
1.4	1.9	2.4	2.7	3.4	3.9	4.7	5.5	6.1	7.5	8.7	39	0.177	ULPJB	ULPJB		
1.8	2.5	3.0	3.5	4.3	5.0	6.1	7.0	7.9	9.6	11.1	50	0.197	ULPJB	ULPJB		
2.2	3.1	3.8	4.4	5.4	6.3	7.6	8.8	9.8	12.0	13.9	62	0.217	ULPJB	ULPJB		
2.7	3.9	4.7	5.5	6.7	7.8	9.5	11.0	12.2	15.0	17.3	77	0.236	ULPJB	ULPJB		
3.3	4.7	5.7	6.6	8.1	9.3	11.4	13.1	14.7	18.0	20.8	93	0.272		ULPJB		
4.4	6.2	7.6	8.8	10.7	12.4	15.2	17.5	19.6	24.0	27.7	124	0.315		ULPJB	ULPJB	
5.5	7.8	9.5	11.0	13.4	15.5	19.0	21.9	24.5	30.0	34.6	155	0.354		ULPJB	ULPJB	
6.5	9.2	11.3	13.1	16.0	18.5	22.6	26.1	29.2	35.8	41.3	185	0.374		ULPJB	ULPJB	
6.9	9.8	12.0	13.8	16.9	19.5	23.9	27.6	30.9	37.8	43.7	195	0.394		ULPJB	ULPJB	
10.9	15.4	18.9	21.8	26.7	30.9	37.8	43.7	48.8	59.8	69.1	309	0.472		ULPJB	ULPJB	
17.5	24.8	30.4	35.1	43.0	49.6	60.8	70.2	78.5	96.1	111	496	0.591			ULPJB	
19.7	27.8	34.1	39.4	48.2	55.7	68.2	78.8	88.1	108	125	557	0.630				ULPJB
21.9	31.0	38.0	43.9	53.7	62.0	76.0	87.7	98.1	120	139	620	0.669				ULPJB
27.4	38.7	47.4	54.8	67.1	77.5	94.9	110	122	150	173	775	0.748				ULPJB
34.5	48.9	59.8	69.1	84.6	97.7	120	138	155	189	219	977	0.827				ULPJB
40.0	56.6	69.3	80.0	98.0	113	139	160	179	219	253	1130	0.886				ULPJB
46.6	65.9	80.8	93.3	114	132	162	187	209	255	295	1320	0.965				ULPJB

Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel and PVC
*Note: Gasket Required to Seal Connection

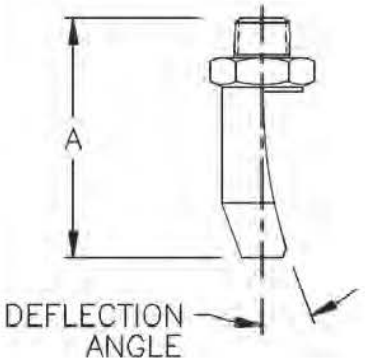
NARROW SPRAY ANGLE
HIGH IMPACT TYPE

SPRAY PATTERN
30° fan

SPRAY PATTERN
50° deflected fan

PAJB
metal

PAJB
plastic



DIMENSIONAL DRAWING
metal

DESIGN FEATURES

The precise alignment of the PJB and PAJB nozzle orifice with the deflector surface, and the low deflected angle produce a spray pattern with a narrow spray angle. (Choice of 15° to 50°). Due to the thin line of the pattern, impact is higher than standard flat fan nozzles. A relatively large orifice is resistant to clogging.

COMMON APPLICATIONS

- Gravel & Stone Washing
- Conveyor Cleaning
- Peeling Stock from Paper Making Screens
- Fruit & Vegetable Washing

SPECIFICATIONS - 50°, 40°

U.S. GALLONS PER MINUTE								SPRAY ANGLE ° @ 40 PSI	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	DIMENSIONAL DATA		NOZZLE TYPE				
											A* (INCHES) Metal Only	ANGLE ° OF DEFLECTION *	PIPE SIZE, NPT(M)				
15 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI						1/8	1/4	3/8	1/2	3/4
0.61	0.71	0.87	1.0	1.2	1.4	1.6	2.2	50	10	0.078	2.0	55		PAJB			
1.2	1.4	1.7	2.0	2.4	2.8	3.2	4.5		20	0.109	2.0	45		PAJB			
1.5	1.8	2.2	2.5	3.1	3.5	3.9	5.6		25	0.120	2.0, 3.0	50, 45		PAJB			
2.5	2.8	3.5	4.0	4.9	5.7	6.3	9.0		40	0.141	2.0, 3.0	45, 50		PAJB	PAJB		
3.7	4.2	5.2	6.0	7.3	8.5	9.5	13.4		60	0.188	3.0	35			PAJB		
4.9	5.7	6.9	8.0	9.8	11.3	12.6	17.9		80	0.203	3.0	35			PAJB	PAJB	
6.1	7.1	8.7	10.0	12.2	14.1	15.8	22.3		100	0.234	3.0	40			PAJB		
7.4	8.5	10.4	12.0	14.7	17.0	19.0	26.8		120	0.265	3.0	40			PAJB		
7.6	8.8	10.8	12.5	15.3	17.7	19.7	28.0		125	0.266	3.0	38			PAJB		
8.0	10.0	12.0	14.0	15.7	17.0	20.0	22.1		140	0.296	4.5	50				PAJB	
9.8	11.3	13.9	16.0	19.6	23.0	25.0	35.5		160	0.297	3.0	37			PAJB	PAJB	
12.2	14.2	17.0	20.0	24.0	28.0	32.0	44.7		200	0.328	3.0	32			PAJB		
2.5	2.8	3.5	4.0	4.9	5.7	6.3	9.0	40	40	0.141	3.0	35			PAJB		
3.1	3.5	4.3	5.0	6.1	7.1	8.0	11.2		50	0.156	3.0	33			PAJB		
3.7	4.2	5.2	6.0	7.3	8.5	9.5	13.4		60	0.172	3.0	33			PAJB		
4.3	5.0	6.1	7.0	8.6	9.9	11.0	15.7		70	0.203	3.0	29			PAJB		
4.9	5.7	6.9	8.0	9.8	11.3	12.6	17.9		80	0.203	3.0	26			PAJB		
5.5	6.4	7.8	9.0	11.0	12.7	14.2	20.1		90	0.219	3.0	28			PAJB		
6.1	7.1	8.7	10.0	12.2	14.1	15.8	22.3		100	0.234	3.0	28			PAJB		

* Multiple values refers to smallest to largest pipe size

Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel, PVC and PTFE

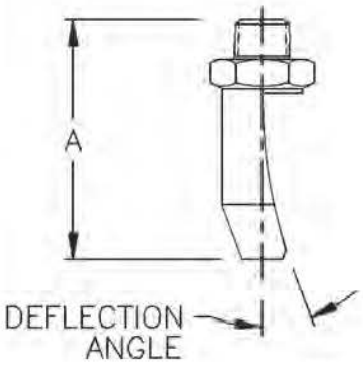
NARROW SPRAY ANGLE
HIGH IMPACT TYPE - CONTINUED

SPRAY PATTERN
35° fan

SPRAY PATTERN
50° deflected fan

PAJB
metal

PAJB
plastic



DIMENSIONAL DRAWING
metal

SPECIFICATIONS - 35º, 25º, 15º

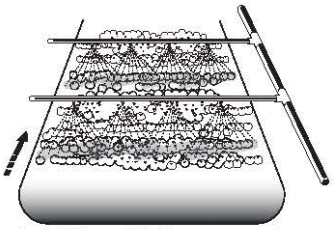
U.S. GALLONS PER MINUTE								SPRAY ANGLE º @ 40 PSI	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	DIMENSIONAL DATA		NOZZLE TYPE				
											A* (INCHES) Metal Only	ANGLE º OF DEFLECTION *	PIPE SIZE, NPT(M)				
15 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI						1/8	1/4	3/8	1/2	3/4
0.25	0.28	0.35	0.40	0.49	0.57	0.63	0.89		04	0.047	0.7	15	PAJB				
0.61	0.71	0.87	1.0	1.2	1.4	1.6	2.2		10	0.078	2.0	35		PAJB			
1.2	1.4	1.7	2.0	2.4	2.8	3.2	4.5		20	0.109	2.0, 3.0	35, 30		PAJB	PAJB		
1.5	1.8	2.2	2.5	3.1	3.5	3.9	5.6		25	0.109	3.0	28			PAJB		
1.8	2.1	2.6	3.0	3.7	4.2	4.7	6.7		30	0.125	3.0	28			PAJB		
2.5	2.8	3.5	4.0	4.9	5.7	6.3	9.0		40	0.141	3.0	35			PAJB		
3.1	3.5	4.3	5.0	6.1	7.1	8.0	11.2		50	0.156	3.0	20			PAJB		
3.7	4.2	5.2	6.0	7.3	8.5	9.5	13.4	35	60	0.172	4.5	27				PAJB	
4.9	5.7	6.9	8.0	9.8	11.3	12.6	17.9		80	0.203	3.0, 4.5	25			PAJB	PAJB	
6.1	7.1	8.7	10.0	12.2	14.1	15.8	22.3		100	0.234	3.0, 4.5	25, 19			PAJB	PAJB	
7.4	8.5	10.4	12.0	14.7	17.0	19.0	26.8		120	0.265	3.0	25			PAJB		
8.5	10.0	12.0	14.0	17.0	20.0	22.1	32.0		140	0.296	4.5	25				PAJB	
9.8	11.3	13.9	16.0	19.6	23.0	25.0	35.5		160	0.297	3.0, 4.5, 4.9	23, 25, 23			PAJB	PAJB	PAJB
12.2	14.2	17.0	20.0	24.0	28.0	32.0	44.7		200	0.328	4.9	22					PAJB
2.5	2.8	3.5	4.0	4.9	5.7	6.3	9.0	25	40	0.141	2.0	20		PAJB			
0.61	0.71	0.87	1.0	1.2	1.4	1.6	2.2		10	0.078	2.0	5		PAJB			
1.2	1.4	1.7	2.0	2.4	2.8	3.2	4.5		20	0.109	2.0	5		PAJB			
1.8	2.1	2.6	3.0	3.7	4.2	4.7	6.7		30	0.125	3.0	5			PAJB		
2.5	2.8	3.5	4.0	4.9	5.7	6.3	9.0		40	0.141	3.0	5			PAJB		
3.7	4.2	5.2	6.0	7.3	8.5	9.5	13.4		60	0.188	3.0, 4.5	5			PAJB	PAJB	
4.9	5.7	6.9	8.0	9.8	11.3	12.6	17.9	15	80	0.203	3.0, 4.5	5			PAJB	PAJB	
6.1	7.1	8.7	10.0	12.2	14.1	15.8	22.3		100	0.234	3.0, 4.5	5			PAJB	PAJB	
7.4	8.5	10.4	12.0	14.7	17.0	19.0	26.8		120	0.265	3.0	5			PAJB		
8.5	10.0	12.0	14.0	17.0	20.0	22.1	32.0		140	0.296	4.5	5				PAJB	
9.8	11.3	13.9	16.0	19.6	23.0	25.0	35.5		160	0.297	4.5	5				PAJB	
12.2	14.2	17.0	20.0	24.0	28.0	32.0	44.7		200	0.328	4.9	5					PAJB

* Multiple values refers to smallest to largest pipe size

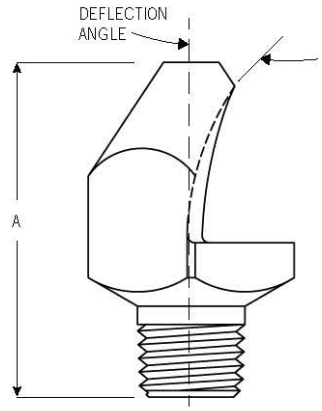
Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel, PVC and PTFE

NARROW SPRAY ANGLE
HIGH IMPACT TYPE - CONTINUED

SPRAY PATTERN
50° deflected fan



WASHING SKINS
from "scalded" tomatoes using high impact flat fan spray nozzles



DIMENSIONAL DRAWING
metal

SPECIFICATIONS - 50°, 40°, 35°, 15°

U.S. GALLONS PER MINUTE								SPRAY ANGLE ° @ 40 PSI	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	DIMENSIONAL DATA		NOZZLE TYPE				
15 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI				A (INCHES) Metal Only	ANGLE ° OF DEFLECTION	PIPE SIZE, NPT(M)				
													1/8	1/4	3/8	1/2	3/4
0.25	0.30	0.37	0.40	0.49	0.56	0.63	0.89	50	05	0.052	0.700	15		PJB			
0.61	0.71	0.87	1.0	1.2	1.4	1.6	2.2		10	0.078	1.219	60		PJB			
1.5	1.8	2.2	2.5	3.1	3.5	3.9	5.6		25	0.109	1.625	42		PJB	PJB		
2.5	2.8	3.5	4.0	4.9	5.7	6.3	9.0		40	0.141	1.844	45		PJB	PJB		
3.7	4.2	5.2	6.0	7.3	8.5	9.5	13.4		60	0.188	2.156	37			PJB		
6.1	7.1	8.7	10.0	12.2	14.1	15.8	22.3		100	0.234	2.844	40			PJB		
7.6	8.8	10.8	12.5	15.3	17.7	19.7	28.0		125	0.266	2.844	38			PJB		
12.2	14.2	17.0	20.0	24.0	28.0	32.0	44.7		200	0.328	2.844	32			PJB		
2.2	2.5	3.1	3.6	4.4	5.7	6.3	9.0	40	40	0.141	1.844	35			PJB		
2.7	3.1	3.8	4.4	5.4	7.1	8.0	11.2		50	0.156	3.000	35			PJB		
3.7	4.2	5.2	6.0	7.3	8.5	9.5	13.4		60	0.172	2.844	33			PJB		
4.3	5.0	6.1	7.0	8.6	9.9	11.0	15.7		70	0.203	2.967	29			PJB		
4.9	5.7	6.9	8.0	9.8	11.3	12.6	17.9		80	0.203	3.031	26			PJB		
6.1	7.1	8.7	10.0	12.2	14.1	15.8	22.3		100	0.234	3.406	28			PJB		
0.25	0.28	0.35	0.40	0.49	0.57	0.63	0.89	35	04	0.047	0.906	40	PJB				
0.61	0.71	0.87	1.0	1.2	1.4	1.6	2.2		10	0.078	1.438	36		PJB			
1.2	1.4	1.7	2.0	2.4	2.8	3.2	4.5		20	0.109	1.656	30		PJB	PJB		
1.5	1.8	2.2	2.5	3.1	3.5	3.9	5.6		25	0.109	1.938	28			PJB		
1.8	2.1	2.6	3.0	3.7	4.2	4.7	6.7		30	0.125	2.062	28			PJB		
2.2	2.5	3.1	3.6	4.4	5.7	6.3	9.0		40	0.141	1.844	35		PJB			
3.1	3.5	4.3	5.0	6.1	7.1	8.0	11.2		50	0.156	2.500	23			PJB		
3.7	4.2	5.2	6.0	7.3	8.5	9.5	13.4		60	0.172	2.875	27				PJB	
4.9	5.7	6.9	8.0	9.8	11.3	12.6	17.9		80	0.203	3.188	24				PJB	
6.1	7.1	8.7	10.0	12.2	14.1	15.8	22.3		100	0.234	3.500	19				PJB	
9.8	11.3	13.9	16.0	19.6	23.0	25.0	31.0		160	0.297	4.500	35					PJB
12.2	14.2	17.0	20.0	24.0	28.0	32.0	44.7		200	0.328	4.813	22					PJB
0.61	0.71	0.87	1.0	1.2	1.4	1.6	2.2	15	10	0.078	1.875	22		PJB			
1.2	1.4	1.7	2.0	2.4	2.8	3.2	4.5		20	0.109	1.656	30		PJB			
1.8	2.1	2.6	3.0	3.7	4.2	4.7	6.7		30	0.125	2.844	25			PJB		
2.5	2.8	3.5	4.0	4.9	5.7	6.3	9.0		40	0.141	3.625	18			PJB		
3.1	3.5	4.3	5.0	6.1	7.1	8.0	11.2		50	0.172	3.563	15			PJB		
3.7	4.2	5.2	6.0	7.3	8.5	9.5	13.4		60	0.188	4.938	14				PJB	
4.9	5.7	6.9	8.0	9.8	11.3	12.6	17.9		80	0.203	5.125	14				PJB	
12.2	14.2	17.0	20.0	24.0	28.0	32.0	44.7		200	0.328	7.50	14					PJB

Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel

WIDE SPRAY ANGLE
LOW IMPACT TYPE

SPRAY PATTERN
145° fan

KJB
metal

KJB
plastic

UNI-JB
wide angle flat fan tip

UL
all 3/8" KJB nozzles in brass have UL approval

FM
3/8" KJB30 in brass has FM approval

DESIGN FEATURES

The KJB series of flat fan nozzles produces a wide, low impact spray. The circular orifice is relatively resistant to clogging. The deflector surface is machined to align precisely with the nozzle orifice to produce a high quality spray pattern. The orientation of the spray pattern relative to the nozzle pipe connection axis provides extra wide spray coverage at minimal spray stand-off distances.

SPECIFICATIONS - PIPE SIZES 1/8" & 1/4"

U.S. GALLONS PER MINUTE										SPRAY ANGLE° @ 40 PSI	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE PIPE SIZE NPT (M)	
3 PSI	5 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI				1/8	1/4
0.014	0.018	0.025	0.031	0.035	0.043	0.050	0.061	0.071	0.079	105	.25	0.016	KJB	
0.027	0.035	0.050	0.061	0.071	0.087	0.10	0.12	0.14	0.16	105	.50	0.024	KJB	
0.041	0.053	0.075	0.092	0.11	0.13	0.15	0.18	0.21	0.24	105	.75	0.028	KJB	
0.055	0.071	0.10	0.12	0.14	0.17	0.20	0.25	0.28	0.32	105	1	0.033	KJB	
0.082	0.11	0.15	0.18	0.21	0.26	0.30	0.37	0.42	0.47	145	1.5	0.041	KJB	
0.11	0.14	0.20	0.25	0.28	0.35	0.40	0.49	0.57	0.63	145	2	0.046	KJB	
0.14	0.18	0.25	0.31	0.35	0.43	0.50	0.61	0.71	0.79	145	2.5	0.052	KJB	
0.16	0.21	0.30	0.37	0.42	0.52	0.60	0.74	0.85	0.95	145	3	0.057	KJB	
0.22	0.28	0.40	0.49	0.57	0.69	0.80	0.98	1.1	1.3	145	4	0.065	KJB	
0.27	0.35	0.50	0.61	0.71	0.87	1.0	1.2	1.4	1.6	145	5	0.073	KJB	KJB
0.41	0.53	0.75	0.92	1.1	1.3	1.5	1.8	2.1	2.4	145	7.5	0.093	KJB	KJB
0.55	0.71	1.0	1.2	1.4	1.7	2.0	2.5	2.8	3.2	145	10	0.104	KJB	KJB
0.66	0.85	1.2	1.5	1.7	2.1	2.4	2.9	3.4	3.8	145	12	0.116	KJB	KJB
0.69	0.88	1.3	1.5	1.8	2.2	2.5	3.1	3.5	4.0	145	12.5	0.125	KJB	KJB
0.82	1.1	1.5	1.8	2.1	2.6	3.0	3.7	4.2	4.7	145	15	0.129	KJB	KJB
0.99	1.3	1.8	2.2	2.6	3.1	3.6	4.4	5.1	5.7	145	18	0.141	KJB	KJB
1.1	1.4	2.0	2.5	2.8	3.5	4.0	4.9	5.7	6.3	145	20	0.148	KJB	KJB
1.2	1.6	2.2	2.7	3.1	3.8	4.4	5.4	6.2	7.0	145	22	0.156		KJB
1.3	1.7	2.4	2.9	3.4	4.2	4.8	5.9	6.8	7.6	145	24	0.161		KJB
1.5	1.9	2.7	3.3	3.8	4.7	5.4	6.6	7.6	8.5	145	27	0.173		KJB

Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel, PVC and PTFE
Note: PTFE Not Available in Nozzles Under Size 10

WIDE SPRAY ANGLE
LOW IMPACT TYPE - CONTINUED

SPRAY PATTERN
145° fan

KJB
metal

KJB
plastic

UNI-JB
wide angle flat fan tip

UL
all 3/8" KJB nozzles in brass have UL approval

FM
3/8" KJB30 in brass has FM approval

COMMON APPLICATIONS

- Conveyor Sanitation
- Soft Fruit Washing
- Cascade Rinsing & Cooling
- Foam Knock-Down
- Water Curtains

SPECIFICATIONS - PIPE SIZES 3/8", 1/2", 3/4" & 1"

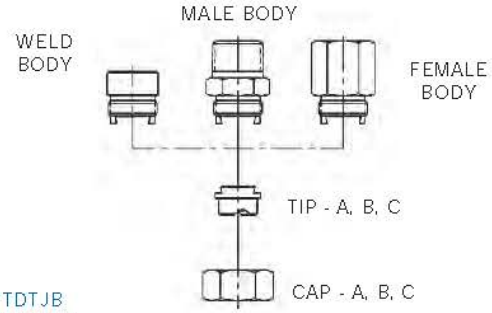
U.S. GALLONS PER MINUTE										SPRAY ANGLE° @ 40 PSI	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE			
													PIPE SIZE NPT (M)			
3 PSI	5 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI				3/8	1/2	3/4	1
1.6	2.1	3.0	3.7	4.2	5.2	6.0	7.4	8.5	9.5	145	30	0.187	KJB			
1.9	2.5	3.5	4.3	5.0	6.1	7.0	8.6	9.9	11.1	145	35	0.196	KJB			
2.0	2.6	3.7	4.6	5.3	6.5	7.5	9.1	10.1	11.8	145	37	0.196	KJB			
2.2	2.8	4.0	4.9	5.7	6.9	8.0	9.8	11.3	12.6	145	40	0.218	KJB			
2.5	3.2	4.5	5.5	6.4	7.8	9.0	11.0	12.7	14.2	145	45	0.221	KJB			
2.0	2.6	3.7	4.6	5.3	6.5	7.5	9.1	10.1	11.8	145	37	0.196		KJB		
2.2	2.8	4.0	4.9	5.7	6.9	8.0	9.8	11.3	12.6	145	40	0.218		KJB		
2.9	3.7	5.3	6.5	7.4	9.1	10.5	12.9	14.8	16.6	145	52.5	0.250		KJB		
3.3	4.2	6.0	7.4	8.5	10.4	12.0	14.7	17.0	19.0	145	60	0.256		KJB		
3.8	5.0	7.0	8.6	9.9	12.1	14.0	17.1	19.8	22.1	145	70	0.281		KJB		
4.4	5.7	8.0	9.8	11.3	13.9	16.0	19.6	22.6	25.3	145	80	0.312		KJB		
6.6	8.5	12.0	14.7	17.0	20.8	24.0	29.4	33.9	37.9	145	120	0.375		KJB		
4.9	6.4	9.0	11.0	12.7	15.6	18.0	22.0	25.5	28.5	145	90	0.316			KJB	
5.5	7.1	10.0	12.3	14.1	17.3	20.0	24.5	28.3	31.6	145	100	0.332			KJB	
6.0	7.8	11.0	13.5	15.6	19.1	22.0	26.9	31.1	34.8	145	110	0.348			KJB	
6.6	8.5	12.0	14.7	17.0	20.8	24.0	29.4	33.9	37.9	145	120	0.375			KJB	
7.7	9.9	14.0	17.2	19.8	24.2	28.0	34.3	39.6	44.3	145	140	0.406			KJB	
8.8	11.3	16.0	19.6	22.6	27.7	32.0	39.2	45.3	50.6	145	160	0.437			KJB	
9.9	12.7	18.0	22.1	25.5	31.2	36.0	44.1	50.9	56.9	145	180	0.453			KJB	
11.5	14.8	21.0	25.7	29.7	36.4	42.0	51.4	59.4	66.4	145	210	0.484			KJB	
13.1	17.0	24.0	29.4	33.9	41.6	48.0	58.8	67.9	75.9	145	240	0.500			KJB	
16.4	21.2	30.0	36.8	42.4	52.0	60.0	73.5	84.9	94.9	145	300	0.578				KJB
20.0	25.8	36.5	44.7	51.6	63.2	73.0	89.4	103	115	145	365	0.625				KJB
24.6	31.8	45.0	55.0	63.6	77.9	90.0	110	127	142	145	450	0.703				KJB
28.8	37.1	52.5	64.5	74.2	90.9	105	129	148	166	145	525	0.750				KJB

Standard Materials: Brass, 303 Stainless Steel, 316 Stainless Steel, PVC and PTFE
Note: PTFE Not Available in Nozzles Under Size 10

3-PIECE DOVETAIL TYPE
120° TO 20° SPRAY ANGLE

SPRAY PATTERN
45° fan

TTDTJB
assembly weld base



TTDTJB
components

DESIGN FEATURES

The TTDTJB nozzle consists of a body, which is either threaded or welded into the pipe header, a spray tip, which fits into a dovetail groove in the body for constant alignment, and a retainer cap which secures the spray tip. The dovetail groove in the body is offset by 5° to 15° from the hex flats - making installation easy by lining up the hex flats with the axis of the pipe. This allows adjacent spray patterns to overlap for even coverage without interfering with each other.

COMMON APPLICATIONS

- Cooling of Plate, Strip and Rolls in the Primary Metal Industry
- Even Cooling of other Conveyorised Sheet-Type Products

SPECIFICATIONS

U.S. GALLONS PER MINUTE								SPRAY ANGLE° @ 40 PSI						CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	DIMENSIONS (INCHES)			CAP & TIP SIZE	NOZZLE TYPE	
10 PSI	20 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI	20	30	45	60	90	120			PIPE SIZE NPT	BODY HEX. WIDTH	BODY LENGTH		(F)	(M)
0.049	0.070	0.10	0.12	0.14	0.16	0.22	0.31	20	30	45	60	90	120	01	0.028	1/4	0.69"	1.44"	A	TDTJB	TTDTJB
0.070	0.10	0.14	0.17	0.20	0.22	0.31	0.44	20	30	45	60	90	120	014	0.035				A	TDTJB	TTDTJB
0.10	0.14	0.19	0.24	0.28	0.31	0.44	0.62	20	30	45	60	90	120	02	0.039				A	TDTJB	TTDTJB
0.15	0.22	0.31	0.38	0.44	0.49	0.69	0.98	20	30	45	60	90	120	03	0.047				A	TDTJB	TTDTJB
0.19	0.27	0.39	0.47	0.55	0.61	0.87	1.2	20	30	45	60	90	120	04	0.053	3/8	0.69"	1.44"	A	TDTJB	TTDTJB
0.25	0.35	0.50	0.61	0.70	0.78	1.1	1.6	20	30	45	60	90	120	05	0.059				A	TDTJB	TTDTJB
0.29	0.42	0.59	0.72	0.83	0.93	1.3	1.9	20	30	45	60	90	120	06	0.065				A	TDTJB	TTDTJB
0.39	0.55	0.77	0.95	1.1	1.2	1.7	2.4	20	30	45	60	90	120	08	0.079				A	TDTJB	TTDTJB
0.49	0.69	0.97	1.2	1.4	1.5	2.2	3.1	20	30	45	60	90	120	10	0.087	1/2	0.88"	1.75"	A	TDTJB	TTDTJB
0.62	0.88	1.2	1.5	1.8	2.0	2.8	3.9	20	30	45	60	90	120	12	0.098				A	TDTJB	TTDTJB
0.74	1.0	1.5	1.8	2.1	2.3	3.3	4.7	20	30	45	60	90	120	15	0.106				A	TDTJB	TTDTJB
2.5	3.5	4.9	6.1	7.0	7.8	11.0	15.6	20	30	45	60	90	120	50	0.197				A	TDTJB	TTDTJB
0.98	1.4	2.0	2.4	2.8	3.1	4.4	6.2	20	30	45	60	90	120	20	0.118	3/4	1.125"	2.00"	B	TDTJB	TTDTJB
1.2	1.8	2.5	3.0	3.5	3.9	5.5	7.8	20	30	45	60	90	120	25	0.138						
1.5	2.2	3.1	3.8	4.4	4.9	6.9	9.8	20	30	45	60	90	120	30	0.157						
1.9	2.7	3.9	4.7	5.5	6.1	8.7	12.2	20	30	45	60	90	120	39	0.177						
2.5	3.5	5.0	6.1	7.0	7.9	11.1	15.6	20	30	45	60	90	120	50	0.197						
3.1	4.4	6.2	7.6	8.8	9.8	13.9	19.6	20	30	45	60	90	120	62	0.217						
3.9	5.5	7.7	9.5	11.0	12.2	17.2	24.4	20	30	45	60	90	120	77	0.236						
4.3	6.1	8.7	10.6	12.3	13.7	19.4	27.4	20	30	45	60	90	120	87	0.252						
5.2	7.3	10.4	12.7	14.7	16.4	23.2	32.8	20	30	45	60	90	120	104	0.283						
6.2	8.8	12.4	15.2	17.5	19.6	27.7	39.2	20	30	45	60	90	120	124	0.315						
7.8	11.0	15.5	19.0	21.9	24.5	34.6	49.0	20	30	45	60	90	120	155	0.354						
9.8	13.8	19.5	23.9	27.6	30.8	43.6	61.6	20	30	45	60	90	120	195	0.394						
6.2	8.8	12.4	15.2	17.5	19.6	27.7	39.2	20	30	45	60	90	120	124	0.315	1 1/4	1.75"	2.50"	C	TDTJB	TTDTJB
9.8	13.8	19.5	23.9	27.6	30.8	43.6	61.6	20	30	45	60	90	120	195	0.394						
15.4	21.8	30.9	37.8	43.7	48.8	69.1	97.6	20	30	45	60	90	120	309	0.475						
24.8	35.1	49.6	60.8	70.2	78.5	111	157	20	30	45	60	90	120	496	0.591						

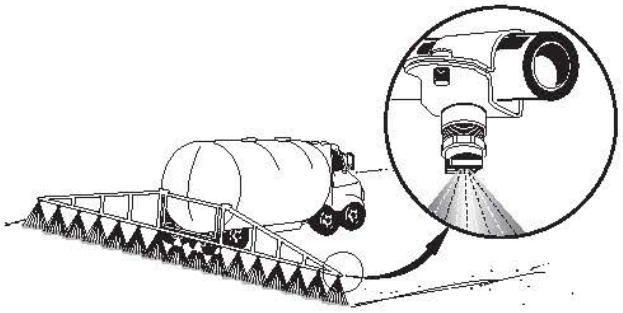
* Also available with Weld Base, see diagram above

Standard Materials: Brass, 303 Stainless Steel and 316 Stainless Steel, Weldable Bodies Also Available in Mild Steel

FLAT SPRAY NOZZLES

SPRAY PATTERN
25° fan

PW
1/8"-1/4" NPT (M)



WASHING TIRE MARKS OFF AIRPORT RUNWAYS
at high pressure with high impact flat fan wash nozzles

DESIGN FEATURES

These Wash Nozzles are specifically designed for use on high pressure washing equipment. They produce a flat fan spray pattern with even distribution across the width of the pattern. The thickness of the pattern band is kept tight so as to maximize the impact on the surface being cleaned.

Spray angles range from 0 degrees (solid stream) to 65 degrees, and flow rates from 1 to 45 gallons per minute at 1000 psi. Most sizes are available with a choice of either 1/8 or ¼ NPT pipe connection. Nozzles have a hardened stainless steel insert for maximum wear resistance.

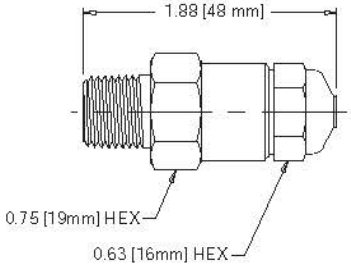
SPECIFICATIONS - 65°, 50°, 40°, 25°, 15°, 0°

U.S. GALLONS PER MINUTE											CAPACITY SIZE	NOZZLE TYPE - NPT											
300 PSI	400 PSI	500 PSI	600 PSI	700 PSI	800 PSI	1000 PSI	1500 PSI	2000 PSI	2500 PSI	3000 PSI		PW1/8						PW1/4					
0.55	0.63	0.71	0.77	0.84	0.89	1.0	1.2	1.4	1.6	1.7	02	•	•	•					•	•			
0.82	1.0	1.1	1.2	1.3	1.4	1.5	1.8	2.1	2.4	2.6	03	•	•	•	•	•		•	•	•	•	•	
1.1	1.3	1.4	1.6	1.7	1.8	2.0	2.5	2.8	3.2	3.5	04	•	•	•	•	•	•	•	•	•	•	•	•
1.2	1.4	1.6	1.7	1.9	2.0	2.3	2.8	3.2	3.6	3.9	045	•	•	•	•		•	•	•	•	•		
1.4	1.6	1.8	1.9	2.1	2.2	2.5	3.1	3.5	4.0	4.3	05	•	•	•	•	•	•	•	•	•	•	•	•
1.5	1.7	1.9	2.1	2.3	2.5	2.8	3.4	3.9	4.3	4.8	055	•	•	•	•	•	•	•	•	•	•	•	•
1.6	1.9	2.1	2.3	2.5	2.7	3.0	3.7	4.2	4.7	5.2	06	•	•	•	•	•	•	•	•	•	•	•	•
1.8	2.1	2.3	2.5	2.7	2.9	3.3	4.0	4.6	5.1	5.6	065	•	•	•	•			•	•	•	•		
1.9	2.2	2.5	2.7	2.9	3.1	3.5	4.3	4.9	5.5	6.1	07	•	•	•	•	•	•	•	•	•	•	•	•
2.1	2.4	2.7	2.9	3.1	3.4	3.8	4.6	5.3	5.9	6.5	075	•	•	•	•			•	•	•	•		
2.2	2.5	2.8	3.1	3.4	3.6	4.0	4.9	5.7	6.3	6.9	08	•	•	•	•	•	•	•	•	•	•	•	•
2.3	2.7	3.0	3.3	3.6	3.8	4.3	5.2	6.0	6.7	7.4	085	•	•	•	•			•	•	•	•		
2.5	2.9	3.2	3.5	3.8	4.0	4.5	5.5	6.4	7.1	7.8	09	•	•	•	•	•	•	•	•	•	•		•
2.6	3.0	3.4	3.7	4.0	4.2	4.8	5.8	6.7	7.5	8.2	095			•	•								
2.7	3.2	3.5	3.9	4.2	4.5	5.0	6.1	7.1	7.9	8.7	10	•	•	•	•	•	•	•	•	•	•	•	•
3.0	3.5	3.9	4.3	4.6	4.9	5.5	6.7	7.8	8.7	9.5	11	•		•				•	•	•	•		
3.1	3.6	4.1	4.5	4.8	5.1	5.8	7.0	8.1	9.1	10.0	115			•									
3.3	3.8	4.2	4.6	5.0	5.4	6.0	7.3	8.5	9.5	10.4	12	•			•			•	•	•			
3.4	4.0	4.4	4.8	5.2	5.6	6.3	7.7	8.8	9.9	10.8	125								•	•	•		
3.6	4.1	4.6	5.0	5.4	5.8	6.5	8.0	9.2	10.3	11.3	13							•	•	•	•		
3.8	4.4	4.9	5.4	5.9	6.3	7.0	8.6	9.9	11.1	12.1	14									•			
4.1	4.7	5.3	5.8	6.3	6.7	7.5	9.2	10.6	11.9	13.0	15	•	•	•				•	•	•	•	•	•
4.4	5.1	5.7	6.2	6.7	7.2	8.0	9.8	11.3	12.6	13.9	16							•					
4.9	5.7	6.4	7.0	7.5	8.0	9.0	11.0	12.7	14.2	15.6	18							•					
5.5	6.3	7.1	7.7	8.4	8.9	10.0	12.3	14.1	15.8	17.3	20	•						•	•	•	•	•	•
6.9	7.9	8.9	9.7	10.5	11.2	12.5	15.3	17.7	19.8	22.0	25							•	•	•	•		
8.2	9.5	10.6	11.6	12.5	13.4	15.0	18.4	21.0	24.0	26.0	30							•	•	•	•		•
9.6	11.1	12.4	13.6	14.6	15.7	17.5	21.0	25.0	28.0	30.0	35							•	•	•	•		
11.0	12.6	14.1	15.5	16.7	17.9	20.0	24.0	28.0	32.0	35.0	40							•	•	•	•		
13.7	15.8	17.7	19.4	21.0	22.0	25.0	31.0	35.0	40.0	43.0	50							•	•	•	•		
16.4	19.0	21.0	23.0	25.0	27.0	30.0	37.0	42.0	47.0	52.0	60							•	•	•	•		
19.2	22.0	25.0	27.0	29.0	31.0	35.0	43.0	49.0	55.0	61.0	70							•					
22.0	25.0	28.0	31.0	33.0	36.0	40.0	49.0	57.0	63.0	69.0	80							•					
25.0	28.0	32.0	35.0	38.0	40.0	45.0	55.0	64.0	71.0	78.0	90							•					

Standard Materials: Stainless Steel with HSS insert

SPRAY PATTERN
fine fog droplets

LNJB
with strainer



LNNJB
dimensions

DESIGN FEATURES

The core and orifice tip design produces a hollow cone spray of very fine droplets using liquid pressure alone. The metal series are available with or without an integral strainer, and with a medium or extra wide spray angle. The separate nozzle heads have a straight thread for connection to the pipe threaded nozzle body. This enables them to be removed for cleaning easily, and replaced without the use of pipe joint sealant. Nozzles are available with 1/4" male or female NPT, and with flow rates from 0.37 to 26 gallons per hour at 40 psi.

LJB nozzles include an integral strainer screen. Nozzle orifice and core tip are stainless steel with the body and cap in brass or type 303 stainless steel. See table below for full details on materials.

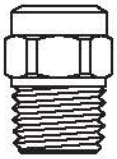
SPECIFICATIONS

WITH STRAINER & WALL MOUNT WITH STRAINER - PIPE SIZE 1/4"

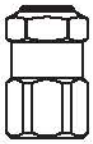
U.S. GALLONS PER HOUR									SPRAY ANGLE °			CAPACITY SIZE	CORE NUMBER	APRROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE NPT			
															WITH STRAINER		WALL MOUNT WITH STRAINER	
30 PSI	40 PSI	60 PSI	100 PSI	200 PSI	300 PSI	500 PSI	700 PSI	1000 PSI	40 PSI	80 PSI	300 PSI				(F)	(M)	(F)	(M)
				0.83	1.0	1.3	1.6	1.9			60	.37			LNJB	LNNJB		
			0.79	1.1	1.4	1.8	2.1	2.5			63	.5			LNJB	LNNJB		
			0.95	1.3	1.6	2.1	2.5	3.0		35	65	.6	206	0.016	LNJB	LNNJB	LNDJB	LNNDJB
		0.58	1.2	1.7	2.1	2.7	3.2	3.8	40	55	70	.75			LNJB	LNNJB		
	1.0	1.2	1.6	2.2	2.7	3.5	4.2	5.0	45	62	72	1	210	0.020	LNJB	LNNJB	LNDJB	LNNDJB
1.3	1.5	1.8	2.4	3.4	4.1	5.3	6	7.5	65	70	72	1.5	216	0.020	LNJB	LNNJB	LNDJB	LNNDJB
1.7	2	2.5	3.2	4.5	5.5	7.1	8.4	10.0	70	75	77	2	216	0.028	LNJB	LNNJB	LNDJB	LNNDJB
2.2	2.5	3.1	4.0	5.7	6.9	8.8	10.6	12.5	70	72	76	2.5			LNJB	LNNJB		
2.6	3.0	3.7	4.7	6.7	8.2	10.6	12.5	15.0	65	70	73	3	220	0.028	LNJB	LNNJB	LNDJB	LNNDJB
3.5	4.0	4.9	6.3	9.0	11.0	14.2	16.7	20.0	72	81	84	4	220	0.042	LNJB	LNNJB	LNDJB	LNNDJB
5.2	6.0	7.3	9.5	13.4	16.5	21.0	25.0	30.0	73	79	81	6	225	0.042	LNJB	LNNJB	LNDJB	LNNDJB
6.9	8.0	9.8	12.6	17.9	22.0	28.0	34.0	40.0	85	89	91	8	225	0.060	LNJB	LNNJB	LNDJB	LNNDJB
8.6	10.0	12.2	15.8	22.0	27.0	35.0	42.0	50.0	82	84	86	10	420	0.064	LNJB	LNNJB	LNDJB	LNNDJB
10.4	12.0	14.7	19.0	27.0	33.0	43.0	50.0	60.0	78	82	85	12	420	0.076	LNJB	LNNJB	LNDJB	LNNDJB
12.1	14.0	17.1	22.0	31.0	38.0	50.0	59.0	70.0	85	88	90	14	421	0.076	LNJB	LNNJB	LNDJB	LNNDJB
15.6	18.0	22.0	29.0	40.0	49.0	64.0	75.0	90.0	81	84	86	18	422	0.076	LNJB	LNNJB	LNDJB	LNNDJB
19.1	22.0	27.0	35.0	49.0	60.0	78.0	92.0	110	70	72	75	22	625	0.076	LNJB	LNNJB	LNDJB	LNNDJB
23.0	26.0	32.0	41.0	58.0	71.0	92.0	109	130	73	74	77	26	625	0.086	LNJB	LNNJB	LNDJB	LNNDJB

WIDE ANGLE - WITH STRAINER

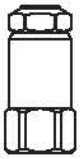
U.S. GALLONS PER HOUR				SPRAY ANGLE °		PIPE SIZE NPT	CAPACITY SIZE	CORE NUMBER	APRROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	
										WITH STRAINER	
20 PSI	30 PSI	40 PSI	80 PSI	40 PSI	80 PSI					(F)	(M)
	1.7	2.0	2.8		165	1/4	2W	210	0.039	LNJB-W	LNNJB-W
2.1	2.6	3.0	4.2		157		3W	216	0.039	LNJB-W	LNNJB-W
3.5	4.3	5.0	7.1	156	155		4W	220	.0600	LNJB-W	LNNJB-W
5.6	6.8	8.0	11.3	152			8W	225	.0600	LNJB-W	LNNJB-W



MJB
one-piece



NJB
one-piece with fitted core



LNJB
one-piece with fitted core & integral strainer screen

DESIGN FEATURES

MJB feature a one piece body and cap incorporating the nozzle orifice, and a separate core. They are available in brass or type 303 stainless steel with a limited range of sizes available in polyacetal (UMJB).

NJB are same construction as the LNJB but without a strainer.

COMMON APPLICATIONS

- Gas & Product Cooling
- Humidifying
- Moistening
- Coating

SPECIFICATIONS

LESS STRAINER, ONE-PIECE & PLASTIC

U.S. GALLONS PER HOUR									SPRAY ANGLE °			PIPE SIZE NPT	CAPACITY SIZE	CORE NUMBER	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE NPT			
																LESS STRAINER		ONE PIECE	PLASTIC
30 PSI	40 PSI	60 PSI	100 PSI	200 PSI	300 PSI	500 PSI	700 PSI	1000 PSI	40 PSI	80 PSI	300 PSI					(F)	(M)	(M)	(M)
			0.95	1.3	1.6	2.1	2.5	3.0		35	65	1/4	.6	206	0.016	NJB	NNJB	MJB	
		0.77	1.0	1.4	1.7	2.2	2.6	3.2				1/8	.63						UMJB
		0.77	1.0	1.4	1.7	2.2	2.6	3.2				1/8	.63						UMJB
	1.0	1.2	1.6	2.2	2.7	3.5	4.2	5.0	45	62	72	1/4	1	210	0.020	NJB	NNJB	MJB	
	1.3	1.5	2	2.9	3.6	4.7	5.4	6.3				1/8	1.3						UMJB
1.3	1.5	1.8	2.4	3.4	4.1	5.3	6	7.5	65	70	72	1/4	1.5	216	0.020	NJB	NNJB	MJB	
1.5	1.7	2.1	2.7	3.8	4.7	6.1	7.1	8.5				1/8	1.7						UMJB
1.7	2	2.5	3.2	4.5	5.5	7.1	8.4	10.0	70	75	77	1/4	2	216	0.028	NJB	NNJB	MJB	
2.6	3.0	3.7	4.7	6.7	8.2	10.6	12.5	15.0	65	70	73	1/4	3	220	0.028	NJB	NNJB	MJB	
3.5	4.0	4.9	6.3	9.0	11.0	14.2	16.7	20.0	72	81	84	1/4	4	220	0.042	NJB	NNJB	MJB	
5.2	6.0	7.3	9.5	13.4	16.5	21.0	25.0	30.0	73	79	81	1/4	6	225	0.042	NJB	NNJB	MJB	
6.9	8.0	9.8	12.6	17.9	22.0	28.0	34.0	40.0	85	89	91	1/4	8	225	0.060	NJB	NNJB	MJB	
8.6	10.0	12.2	15.8	22.0	27.0	35.0	42.0	50.0	82	84	86	1/4	10	420	0.064	NJB	NNJB	MJB	
10.4	12.0	14.7	19.0	27.0	33.0	43.0	50.0	60.0	78	82	85	1/4	12	420	0.076	NJB	NNJB	MJB	
12.1	14.0	17.1	22.0	31.0	38.0	50.0	59.0	70.0	85	88	90	1/4	14	421	0.076	NJB	NNJB	MJB	
15.6	18.0	22.0	29.0	40.0	49.0	64.0	75.0	90.0	81	84	86	1/4	18	422	0.076	NJB	NNJB	MJB	
19.1	22.0	27.0	35.0	49.0	60.0	78.0	92.0	110	70	72	75	1/4	22	625	0.076	NJB	NNJB	MJB	
23.0	26.0	32.0	41.0	58.0	71.0	92.0	109	130	73	74	77	1/4	26	625	0.086	NJB	NNJB	MJB	

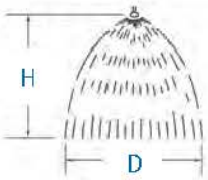
WIDE ANGLE - LESS STRAINER

U.S. GALLONS PER HOUR				SPRAY ANGLE °		PIPE SIZE NPT	CAPACITY SIZE	CORE NUMBER	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE	
										LESS STRAINER	
20 PSI	30 PSI	40 PSI	80 PSI	40 PSI	80 PSI					(F)	(M)
	1.7	2.0	2.8		165	1/4	2W	210	0.039	NJB-W	NNJB-W
2.1	2.6	3.0	4.2		157		3W	216	0.039	NJB-W	NNJB-W
2.8	3.5	4.0	5.7	156	155		4W	220	.0600	NJB-W	NNJB-W
5.7	6.9	8.0	11.3	152			8W	225	.0600	NJB-W	NNJB-W

STANDARD SPRAY ANGLE
FULL CONE TYPE

SPRAY PATTERN
fine fog droplets

7NJB
1" NPT (F)



COVERAGE DIAMETER 'D' AT SPRAY HEIGHT 'H'
refer to dimensions below

DESIGN FEATURES

7NJB. By placing seven low capacity fine spray heads in one manifold, these fogging nozzles produce a dense full cone pattern of very fine droplets with relatively high flow rates of up to 3 US gpm at 40 psi. Having straight threads, the individual nozzle heads are easily removable for cleaning, and can be reinstalled without the use of pipe joint sealant.

7GJB. Using seven full cone nozzle heads in one manifold, the 7GJB produces a dense full cone shower-like pattern with larger flow rates than the 7NJB .

Like the 7NJB - the droplets are still considerably smaller than single orifice spray nozzles of similar flow rates. At 40 psi, flow rates range from 1.3 to 67 gallons per minute and pipe connection sizes are from 3/4" to 1-1/2" NPT (F).

COMMON APPLICATIONS

- Dust Control
- Fire Suppression & Prevention
- Gas Scrubbing
- Gas Cooling

SPECIFICATIONS

7NJB - PIPE SIZE 1"

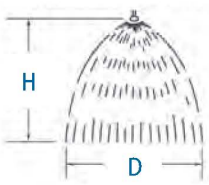
U.S. GALLONS PER MINUTE							CAPACITY SIZE	SPRAY PATTERN DIMENSIONS (FEET)	
20 PSI	40 PSI	60 PSI	80 PSI	100 PSI	125 PSI	150 PSI		H	D
				0.11	0.12	0.14	.60	3	3 1/2
	0.12	0.14	0.16	0.18	0.21	0.23	1	3	4
	0.17	0.21	0.25	0.28	0.31	0.34	1.5	3	4 1/2
	0.23	0.29	0.33	0.37	0.41	0.45	2	3	4 1/2
0.25	0.35	0.43	0.50	0.55	0.62	0.68	3	3	5 1/2
0.33	0.47	0.57	0.66	0.74	0.83	0.90	4	3	5 1/2
0.50	0.70	0.86	0.98	1.1	1.2	1.4	6	3	6
0.66	0.93	1.1	1.3	1.5	1.7	1.8	8	3	6
0.83	1.2	1.4	1.7	1.8	2.1	2.3	10	3	7
1.0	1.4	1.7	2.0	2.2	2.5	2.7	12	3	8
1.2	1.6	2.0	2.3	2.6	2.9	3.2	14	3	8
1.3	1.9	2.3	2.6	3.0	3.3	3.6	16	3	8
1.3	1.9	2.3	2.6	3.0	3.3	3.6		7	8 1/2
1.5	2.1	2.6	3.0	3.3	3.7	4.1	18	3	8
1.5	2.1	2.6	3.0	3.3	3.7	4.1		7	9
1.8	2.6	3.2	3.6	4.1	4.5	5.0	22	3	9 1/2
1.8	2.6	3.2	3.6	4.1	4.5	5.0		7	11
2.1	3.0	3.7	4.3	4.8	5.4	5.9	26	3	10
2.1	3.0	3.7	4.3	4.8	5.4	5.9		7	12

Standard Materials: Brass and 303 Stainless Steel Body, 416 Stainless Steel Core Tip and Orifice

STANDARD SPRAY ANGLE
FULL CONE TYPE - CONTINUED

SPRAY PATTERN
fine fog droplets

7GJB
3/4" - 1-1/2" NPT (F)



COVERAGE DIAMETER 'D' AT SPRAY HEIGHT 'H'
refer to dimensions below

SPECIFICATIONS

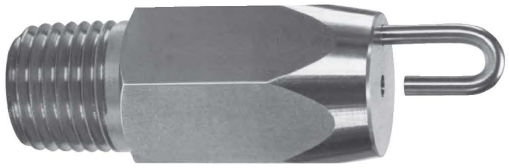
7GJB

U.S. GALLONS PER MINUTE							PIPE SIZE NPT (F)	CAPACITY SIZE	SPRAY PATTERN DIMENSIONS (FEET)	
20 PSI	40 PSI	60 PSI	80 PSI	100 PSI	125 PSI	150 PSI			H	D
0.98	1.3	1.6	1.8	2.1	2.3	2.5	3/4	1	3	5
									5	6 1/2
									8	7 1/2
									11	8
1.5	2.0	2.4	2.8	3.1	3.4	3.7		1.5	3	8
									5	9
									8	10
									11	10 1/2
2.9	4.0	4.8	5.5	6.2	6.8	7.4		3	3	8 1/2
									5	10
									8	11
									11	11 1/2
4.8	6.7	8.1	9.2	10.3	11.3	12.4		5	3	9 1/2
									5	11
									8	12
									11	12 1/2
9.8	13.5	16.4	18.9	21.0	23.0	25.0	1 or 1 1/2	10	3	11
									5	12 1/2
									8	13 1/2
									11	14
12.0	17.0	20.0	23.0	25.0	28.0	30.0		12.5	3	12
									5	13 1/4
									8	14
									11	14 1/2
24.0	34.0	41.0	47.0	52.0	57.0	62.0		25	3	13 3/4
									5	16
									8	17
									11	17 1/2
29.0	40.0	48.0	55.0	62.0	68.0	74.0		30	3	13 3/4
									5	16
									8	17
									11	17 1/2
31.0	43.0	52.0	59.0	66.0	74.0	79.0		32	3	13 3/4
									5	16
									8	17
									11	17 1/2
39.0	53.0	64.0	74.0	83.0	92.0	100		40	3	13 3/4
									5	16
									8	17
									11	17 1/2
44.0	60.0	72.0	82.0	91.0	100	110	1 1/2	45	3	14
									5	16 1/2
									8	17 1/2
									11	18
48.0	67.0	81.0	92.0	103	113	124		50	3	14 1/2
									5	17
									8	18
									11	19

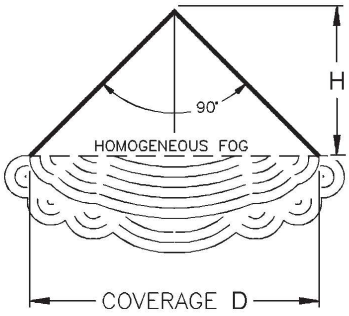
Standard Materials: Brass, 303 Stainless Steel and 316 Stainless Steel

STANDARD SPRAY ANGLE
IMPINGEMENT TYPE

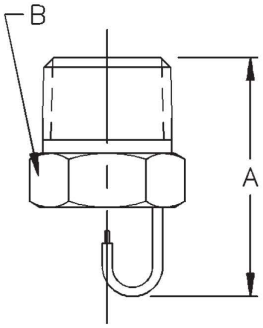
SPRAY PATTERN
fog



PRJB
impingement nozzle



SPRAY COVERAGE
fog pattern



DIMENSIONAL DRAWING
PRJB

DESIGN FEATURES

From the internal orifice lead-in design, a highly efficient laminar jet impinges onto the target pin to produce a fine fog. With a high percentage of droplets in the 25-400 micron range, the PRJB spray nozzle has the finest droplet size of any direct pressure nozzle. They are available with an optional filter of 100 mesh polypropylene screen or 10 micron paper filter.

The PRJB nozzle has a spray angle of 90° and flow rates from 0.067 to 2.43 gallons per minute at 40 psi. Pipe connection size is 1/4NPT(M).

COMMON APPLICATIONS

- Dust Control
- Evaporative Cooling
- Humidifying
- Moistening

SPECIFICATIONS

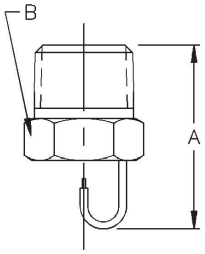
PRJB - PIPE SIZE 1/4"

U.S. GALLONS PER MINUTE												SPRAY ANGLE° @ 40 PSI	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	APPROX. COVERAGE (INCHES)	APPROX. SPRAY HEIGHT (INCHES)	APPROX. DIMENSIONS (INCHES)	
10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	70 PSI	80 PSI	90 PSI	100 PSI	200 PSI	400 PSI				D	H	A	B
0.03	0.05	0.06	0.07	0.08	0.08	0.09	0.10	0.10	0.11	0.15	0.21	90	20	0.020	12	6	2	0.63
0.05	0.07	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.22	0.32		24	0.024	16	8		
0.07	0.09	0.11	0.13	0.15	0.16	0.17	0.18	0.20	0.21	0.29	0.41		28	0.028	18	9		
0.09	0.13	0.16	0.18	0.20	0.22	0.24	0.25	0.27	0.28	0.4	0.57		32	0.032	22	11		
0.14	0.20	0.24	0.28	0.31	0.34	0.37	0.40	0.42	0.44	0.63	0.89		40	0.042	24	12		
0.20	0.28	0.35	0.4	0.45	0.49	0.53	0.57	0.60	0.63	0.89	1.26		48	0.047	28	14		
0.27	0.37	0.46	0.53	0.59	0.65	0.70	0.75	0.80	0.84	1.19	1.68		54	0.054	30	15		
0.38	0.53	0.65	0.75	0.84	0.92	0.99	1.1	1.1	1.2	1.7	2.4		66	0.065	36	18		
0.54	0.76	0.94	1.1	1.2	1.3	1.4	1.5	1.6	1.7	2.4	3.4		80	0.085	48	24		
1.2	1.7	2.1	2.4	2.7	3.0	3.2	3.4	3.7	3.8	5.4	7.7		120	0.130	60	30		

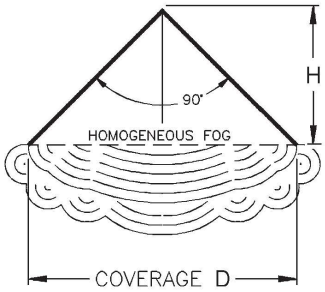
Standard Materials: Brass, 303 Stainless Steel and 316 Stainless Steel

SPRAY PATTERN
fog

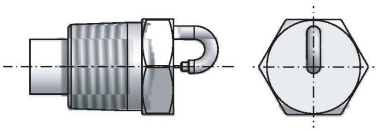
PRJJB
smaller size version



DIMENSIONAL DRAWING
PRJJB



SPRAY COVERAGE
fog pattern



PRJJB
with polypropylene filter

DESIGN FEATURES

From the internal orifice lead-in design, a highly efficient laminar jet impinges onto the target pin to produce a fine fog. With a high percentage of droplets in the 25-400 micron range, the PRJJB spray nozzle has the finest droplet size of any direct pressure nozzle. They are available with an optional filter of 100 mesh polypropylene screen or 10 micron paper filter.

The PRJJB nozzle is designed with a very short length projecting from the pipe header. Flow rates are from 0.006 to 0.31 gallons per minute at 50 psi with a pipe connection sizes choice of 1/8" or 1/4" NPT (M).

COMMON APPLICATIONS

- Dust Control
- Evaporative Cooling
- Humidifying
- Moistening

SPECIFICATIONS

PRJJB - PIPE SIZES 1/8" OR 1/4"

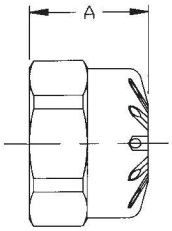
U.S. GALLONS PER MINUTE									SPRAY ANGLE° @ 40 PSI	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	APPROX. COVERAGE (INCHES)	APPROX. SPRAY HEIGHT (INCHES)	APPROX. DIMENSIONS (INCHES)		
30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI	1000 PSI				D	H	PIPE SIZE NPT	A	B
		0.006	0.007	0.008	0.010	0.013	0.019	0.030	90	6	0.006	10	5	1/8	0.75	0.44
		0.013	0.014	0.016	0.018	0.025	0.036	0.057		8	0.008	10	5			
	0.017	0.019	0.021	0.024	0.027	0.038	0.054	0.085		10	0.010	10	5			
	0.023	0.026	0.028	0.033	0.036	0.051	0.073	0.12		12	0.012	10	5			
0.032	0.037	0.041	0.045	0.052	0.059	0.083	0.12	0.19		15	0.015	10	5			
0.058	0.067	0.075	0.082	0.095	0.11	0.15	0.21	0.34		20	0.020	12	6	1/4	0.97	0.56
0.087	0.10	0.11	0.12	0.14	0.16	0.22	0.32	0.50		24	0.024	16	8			
0.11	0.13	0.15	0.16	0.18	0.21	0.29	0.41	0.65		28	0.028	18	9			
0.16	0.18	0.20	0.22	0.25	0.28	0.40	0.57	0.90		32	0.032	22	11			
0.24	0.28	0.31	0.34	0.40	0.44	0.63	0.89	1.4		40	0.040	24	12			

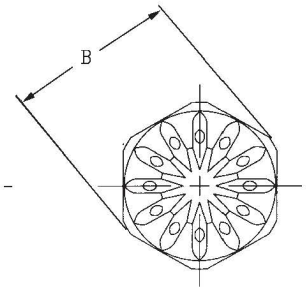
Standard Materials: Brass, 303 Stainless Steel and 316 Stainless Steel

NARROW SPRAY ANGLE
FULL CONE FOG TYPE

SPRAY PATTERN
fog

FFJB
multi-orifice fog nozzle





DIMENSIONS (INCHES)
Refers to Performance Data

DESIGN FEATURES

FFJB. The FFJB spray nozzle produces a narrow angle full cone fog-like pattern. Relatively small droplet size for the flow rate is possible by combining several flat fan patterns in the single head. It is a solid one-piece construction with a female NPT pipe connection sizes of 3/4" to 1-1/4". Flow rates are from 4.8 to 70 gallons per minute at 40 psi.

COMMON APPLICATIONS

- Gas Cooling
- Gas Scrubbing
- Washing
- Product Cooling

SPECIFICATIONS

FFJB

U.S. GALLONS PER MINUTE										SPRAY ANGLE° @ 40 PSI	PIPE SIZE NPT (M)	CAPACITY SIZE	APPROX DIMENSIONS (INCHES)	
10 PSI	20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	80 PSI	100 PSI	150 PSI	200 PSI				A	B
2.4	3.4	4.2	4.8	5.4	5.9	6.8	7.6	9.3	10.7	35	3/4	4.8	1.00	1.38
4.5	6.4	7.8	9.0	10.1	11.0	12.7	14.2	17.4	20.1	35		9		
6.0	8.5	10.4	12.0	13.4	14.7	17.0	19.0	23.2	26.8	35		12		
9.0	12.7	15.6	18.0	20.1	22.0	25.5	28.5	34.9	40.2	35		18		
12.5	17.7	21.7	25.0	28.0	30.6	35.4	39.5	48.4	55.9	35	1	25	1.16	1.66
17.5	24.7	30.3	35.0	39.1	42.9	49.5	55.3	67.8	78.3	45		35		
25.0	35.4	43.3	50.0	55.9	61.2	70.7	79.1	96.8	112	45	1-1/4	50	1.22	2.09
35.0	49.5	60.6	70.0	78.3	85.7	99.0	111	136	157	45		70		

Standard Materials: Brass, 303 Stainless Steel and 316 Stainless Steel

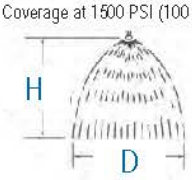
STANDARD & WIDE SPRAY ANGLE
HIGH PRESSURE FOG TYPE

SPRAY PATTERN
multiple MWJB nozzles

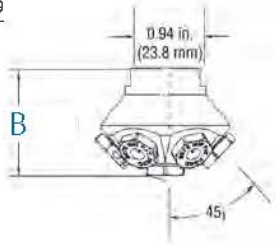
MWJB
fog nozzle

MWJB
shown with optional 1/16" (1.59

MWHJB
multi-head fog nozzles



SPRAY COVERAGE- MWHJB
cone-shaped fog pattern



DESIGN FEATURES

MWJB. The MWJB spray nozzle with a drip free pinless design produces an extremely fine droplet full cone fog-like pattern. For best performance the minimum operating pressure is 1000 psi. A 70 micron polypropylene filter is standard and a 1/16" diameter safety wire tying hole is available as an option.

MWHJB. Multi-head unit combines the capacity of seven MWJB nozzles on 1/2" NPT(F) manifold to produce a dense fog of relatively high flow rate, but still with extremely fine droplet size.

COMMON APPLICATIONS

- Dust Control
- Evaporative Cooling
- Humidifying
- Moistening

SPECIFICATIONS

MWJB

U.S. GALLONS PER MINUTE								SPRAY ANGLE ° @ 40 PSI	PIPE SIZE NPT (M)	CAPACITY SIZE	APPROX. DIMENSIONS (INCHES)	
100 PSI	300 PSI	600 PSI	1000 PSI	1500 PSI	2000 PSI	2500 PSI	3000 PSI				A	B
0.009	0.015	0.021	0.027	0.033	0.038	0.043	0.047	70	1/8 or 1/4 or 3/8"-24UNF	085	1/8 NPT	
0.011	0.018	0.026	0.033	0.041	0.047	0.053	0.058			105	0.49	0.44
0.013	0.022	0.031	0.040	0.048	0.056	0.063	0.068			125	1/4 NPT	
0.015	0.025	0.036	0.046	0.056	0.065	0.073	0.079			145	0.69	0.56
0.020	0.034	0.048	0.062	0.076	0.087	0.098	0.11			195	3/8"-24UNF	
0.028	0.048	0.067	0.087	0.11	0.12	0.14	0.15			275	0.43	0.50

Standard Materials: 303 Stainless Steel, 316 Stainless Steel, Polypropylene Filter, Viton O-Ring (3/8-24UNF sizes only).

MWHJB

U.S. GALLONS PER MINUTE			PIPE SIZE NPT (F)	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	APPROX. COVERAGE (INCHES)	APPROX. SPRAY HEIGHT (INCHES)	APPROX. DIMENSIONS (INCHES)	
1000 PSI	2000 PSI	3000 PSI				D	H	A	B
1.1	1.6	1.9	1/2	1207	0.022	60	60	1.41	1.94

Standard Materials: 316 Stainless Steel, Polypropylene Filter

1/4JJB
with end plug

1/4JNJB
with shut-off needle

1/4JCONJB
with clean-out/shut-off with needle

1/4XA00JB
with air operated shut-off clean-out needle

DESIGN FEATURES

The JJB nozzle system uses the energy in compressed air to produce highly atomized sprays at low flow rates. There are many interchangeable components that can be assembled to achieve a variety of spraying options.

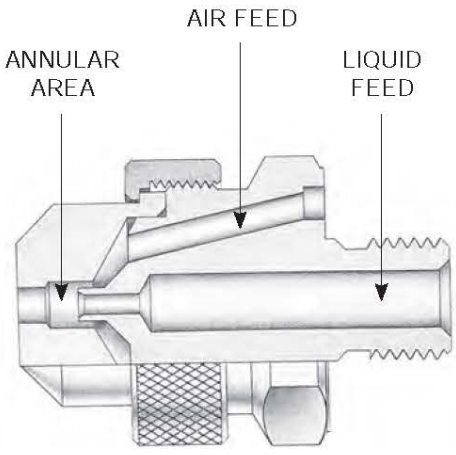
Spray Set-Ups. JJB nozzles produce eight distinctly different types of sprays, depending on which interchangeable air and fluid caps are selected. The spray type and flow rate are determined by the "set-up" - a specific combination of one air cap and one fluid cap.

Internal Mix Set Ups. Liquid and air streams meet within the nozzle and are mixed together and expelled through the same orifice(s). This internal mixing means the streams are not independent; a change in air flow will affect the liquid flow. This makes precise metering of the liquid more difficult than with an External Mix Set-Up.

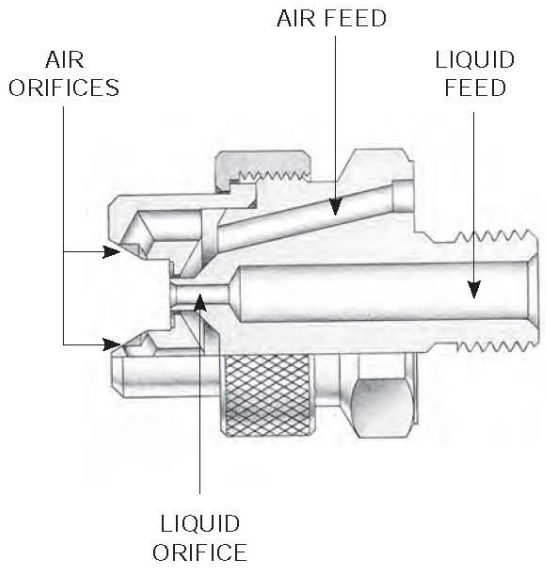
Internal Mix Set-Ups are able to produce the finest atomization of any of the JJB set-ups, but they are generally not suitable for use with liquids which have a viscosity that is above 200 centipoise.

External Mix Set Ups. The air and liquid streams exit the nozzle independently and are combined and mixed outside of the nozzle. Because there is no connection between the air and liquid lines within the nozzle, the air and liquid flow rates can be controlled independently, allowing precise metering of the liquid. The atomization can be controlled by adjusting the air flow rate - more air produces finer atomization. In most cases these set-ups do not atomize as finely as Internal Mix Set-Ups. External Mix Set Ups may be used with liquids having a viscosity above 200 centipoise and for abrasive suspensions.

INTERNAL MIX SET-UPS
Air and liquid mix inside the nozzle



EXTERNAL MIX SET-UPS
Air and liquid exit independently and combine outside the nozzle.

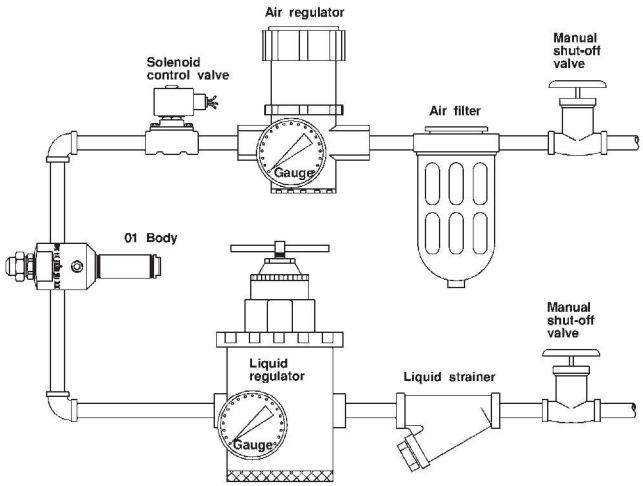


AIR CAP
siphon round pattern

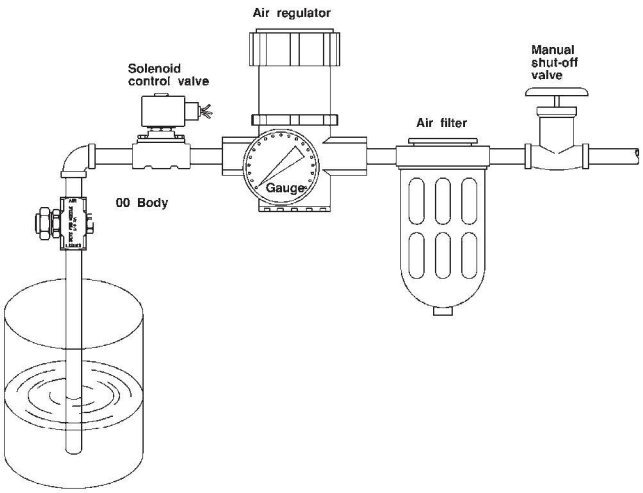
AIR CAP
pressure flat pattern - internal mix

AIR CAP
pressure flat pattern - external mix

FLUID CAP



PRESSURE FEED SYSTEM



SIPHON SYSTEM

DESIGN FEATURES

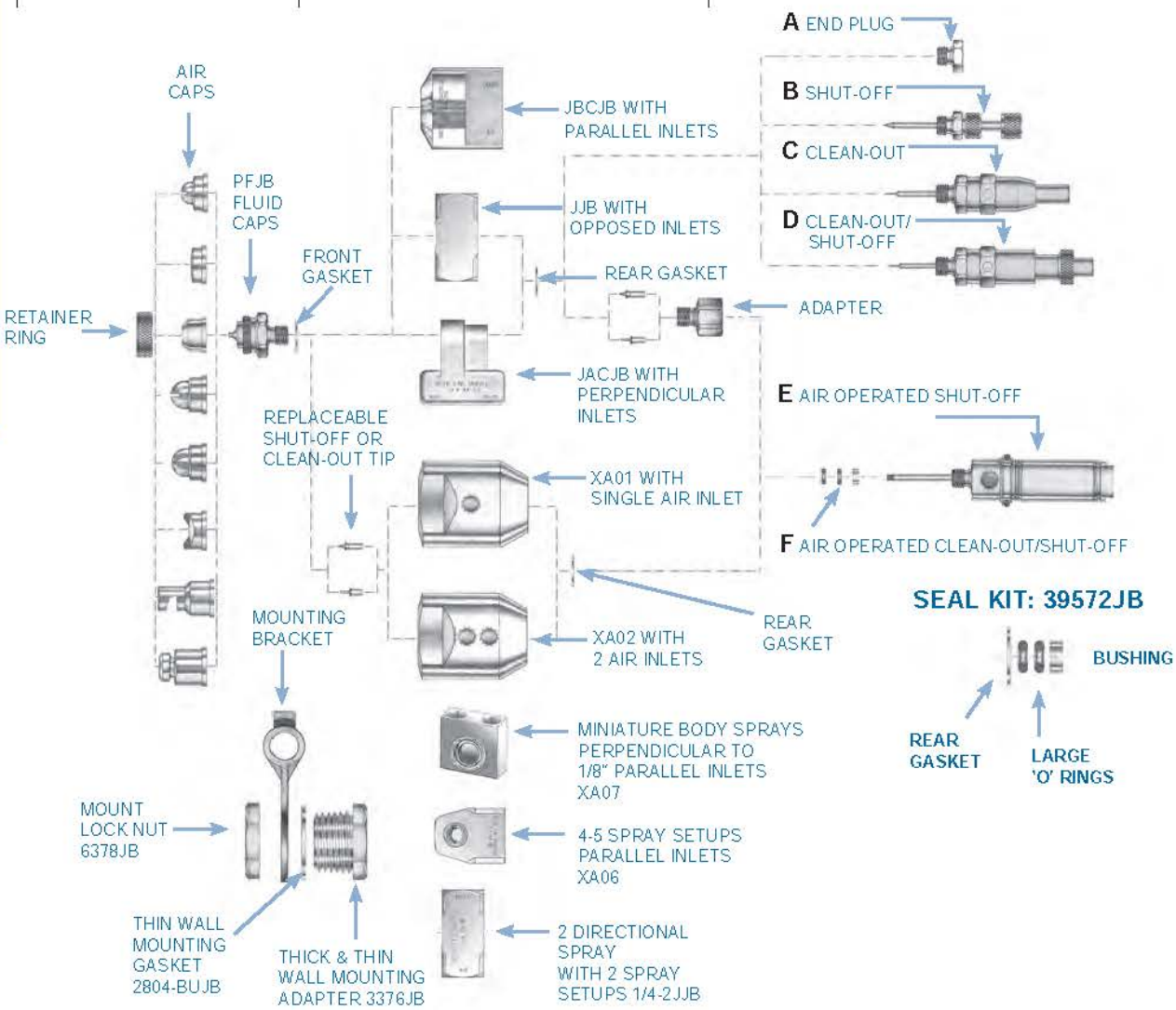
PRESSURE FEED SYSTEM SET-UP

In a pressure-fed system, the liquid is supplied under pressure to either internal or external mix nozzles. Air and liquid regulators control the fluid delivery pressure, while the air filter and liquid strainer ensure that the supplied fluids are free of particulate. Operational control is maintained by manual or solenoid valves used in conjunction with the various hardware assemblies.

SIPHON SYSTEM SET-UP

In a siphon-fed system, the liquid is supplied by either a siphon or a gravity feed. An air regulator controls the air delivery pressure, while the air filter ensures that the compressed air is of high quality. Operational control is maintained by manual or solenoid valves used in conjunction with the various hardware assemblies.

SPRAY SET UP | BODY STYLES AND SEALS | HARDWARE ASSEMBLIES



DESIGN FEATURES

With the exception of the XA07 body style (1/8 NPT only), body styles are available with air and liquid inlet connections of 1/8" or 1/4" NPT (F) or BSP (F).

Type JJB body style only is also available in 1/2" NPT (F) or BSP (F). JJB body with 1/2" connections is physically larger.

REPLACEABLE COMPONENTS & GASKETS

- > Seal Kit
- > Front Gasket
- > Rear Gasket
- > Cap Nut
- > Adapter
- > Thin Wall Mounting Gaskets
- > Mounting Brackets
- > Thin Wall Lock Nut
- > Thick & Thin Wall Mounting Adapter
- > Shut-Off Replacement Tip*
- > Clean-Out Replacement Tip***

* Specify Body Type

*** Specify Fluid Cap

JCOJB BODY
with C hardware

XA 01/02 BODY
with F hardware

JACJB BODY
with A hardware

XA 01/02 BODY
with E hardware

A. PLUG
type JJB

B. SHUT-OFF
type JNJB

C. CLEAN-OUT
type JCOJB

D. CLEAN-OUT/SHUT-OFF
type JCONJB

DESIGN FEATURES

Basic Operation

The basic JJB nozzle assembly consists of a body, a spray set-up, and a "hardware assembly" that can provide shut-off and clean-out capabilities.

Non-Automatic Operation

The JJB Square Body is the basic component of a non-automatic nozzle. Air and liquid feeds are located at opposite ends, perpendicular to the spray.

The JACJB Body has air and a liquid feeds on on side, perpendicular to the spray axis.

The JBCJB Body has air and liquid inlets located in-line with the spray. Hardware assemblies cannot be used with the JBCJB body.

Automatic Operation

For critical applications which require automatic, no-drip, or high-speed spray shut-off, the JJB can be supplied with an air cylinder-operated shut-off or clean-out/shut-off.

These air cylinders provide virtually instantaneous liquid shut-off at rates of up to 180 cycles per minute. The air cylinders require a minimum of 30 PSI.

Hardware Assemblies for Non-Automatic Operation

Refer to drawing on Page 102.

A. Plug. The minimum option hardware assembly required for JJB operation. Provides neither clean-out nor shut-off.

B. Shut-off. Turning the knurled knob will stop the flow of liquid to the nozzle. Should not be used to meter the flow of liquid.

C. Clean-Out. Pressing the spring-loaded plunger will force a small diameter rod through the liquid orifice, cleaning any obstruction. Useful for intermittent spraying of a liquid that may dry in the orifice when not in use.

D. Clean-out/Shut-off. Combines functions of hardware assemblies B and C in one unit.

Hardware Assemblies for Automatic Operation

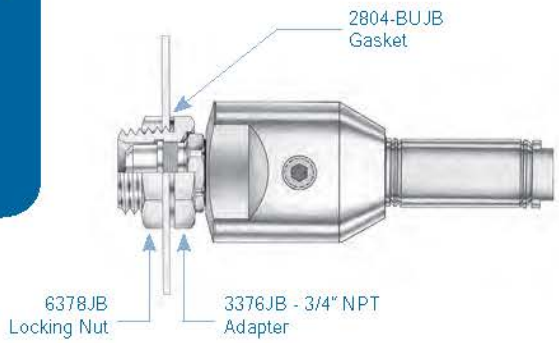
E. Air-Operated Shut-off. Removal of air pressure to the cylinder causes a spring-loaded poppet valve actuator to shut off liquid flow.

F. Air-Operated Clean-out/Shut-off. Operation similar to E, but includes a clean-out needle.

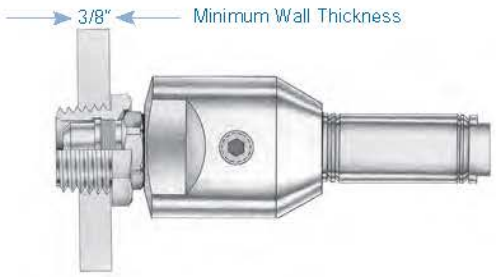
HART LIQUID STRAINER
Y Strainer

SPRAY EXTENSION

MOUNTING BRACKET



XA 01/02
with thin wall adapter



XA 01/02
with thick wall adapter

DESIGN FEATURES

Y Strainers with Large Screen: Pipe cross section ratio protects the liquid orifice of the fluid cap. Choose a screen with mesh openings 1/4 to 1/3 the diameter of the fluid cap orifice.

Spray Extensions. The spray set-up can be moved away from the nozzle body by using optional 6" or 12" extensions. These allow the spray to be moved closer to the target while keeping the nozzle body and associated piping at a distance.

MOUNTING HARDWARE

In many JJB installations the nozzle is supported by the rigid metal pipe that supplies air or liquid. There are several components for the JJB Bodies when it isn't appropriate to suspend the nozzle from piping; for example, when the nozzle will spray through the the wall of a tank or duct, or when the air and liquid will be supplied through flexible tubing. All JJB bodies except the JACJB can be used with any of the mounting hardware described here.

Thin Wall Adapter. Three-piece adapter used to support a JJB nozzle with the body located outside a tank or duct having a relatively thin (less than 3/8") wall and the spray directed into the interior. To use this adapter, a 1-1/16" diameter hole must be drilled through the wall. This adapter both secures the air cap and attaches the nozzle body to the tank wall.

Thick Wall Adapter. Similar in design and function to the Thin Wall Adapter, but intended for use with tanks or ducts with walls that are thick enough (3/8" or over) to be drilled and tapped for a 3/4" NPT thread.

Mounting Bracket Adapter. This bracket is used in combination with a Thin Wall Adapter to support a JJB nozzle from a 1/2" diameter metal rod. The bracket allows flexibility in aiming the spray.

MATERIALS

Bodies, Fluid Caps, Air Caps, Hardware Assemblies, Mounting Hardware. The standard materials for the JJB series are nickel-plated brass, 303 and 316 Stainless Steel. Other metals and plastics can be supplied on request.

Air Cylinders. The air cylinders used for JJB hardware assemblies E and F have rods and cylinders made of stainless steel and end caps made of anodized aluminum. All metal parts in contact with the spray liquid are 316 stainless steel.

Seals. The standard material for JJB gaskets is compressed fiber with a neoprene binder. For installations requiring FDA approval, SBR gaskets are available. Other elastomeric and metallic gasket materials can be supplied on request.

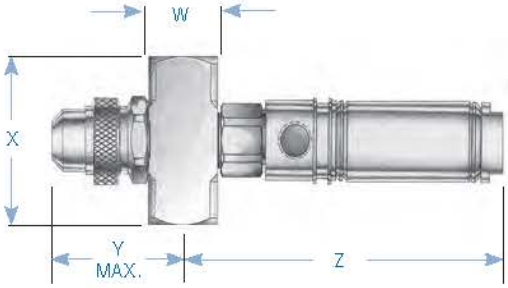
The Standard material for O-rings in JJB automatics is Viton. Other materials available on request.

JCOJB BODY
with C hardware

XA 01/02 BODY
with F hardware

JACJB BODY
with A hardware

XA 01/02 BODY
with E hardware



OVERALL DIMENSIONS OF XA00 ASSEMBLY
WITH AIR-OPERATED SHUT-OFF/CLEAN-OUT HARDWARE

PIPE SIZE NPT (F)	HARDWARE OPTION	DIMENSIONS (INCHES)			
		W	X	Y	Z (MAX)
1/8 or 1/4	A	13/16	1-11/16	1-15/16	9/16
	B				1-5/8
	C				2-5/8
	D				3-3/16
	E				4-1/16
	F				4-1/16
1/2	A	1-1/4	2-1/2	2-11/6	1

SPECIFICATIONS FOR SPRAY SET-UPS

EF - FLAT FAN EXTERNAL MIX

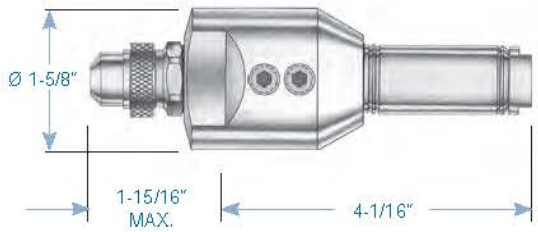
PIPE SIZE NPT(F)	SET-UP NO.	FLUID CAP	AIR CAP
1/8 or 1/4	SUJBE18B	PFJB1650	PAJB6224060
	SUJBE15B	PFJB1650	PAJB6722845
	SUJBE18A	PFJB2050	PAJB6224060
	SUJBE15A	PFJB2050	PAJB6722845
	SUJBE18	PFJB2850	PAJB6224060
	SUJBE15	PFJB2850	PAJB6722845
	SUJBE28B	PFJB35100	PAJB12228160
	SUJBE25B	PFJB35100	PAJB13425545
	SUJBE28A	PFJB40100	PAJB12228160
	SUJBE25A	PFJB40100	PAJB13425545
	SUJBE28	PFJB60100	PAJB12228160
	SUJBE25	PFJB60100	PAJB13425545
	SUJBE45B	PFJB60150	PAJB20027845
	SUJBE45A	PFJB80150	PAJB20027845
	SUJBE45	PFJB100150	PAJB20027845
1/2	SUJBE75	PFJB250375	PAJB14356

SF - SIPHON FLAT FAN

PIPE SIZE NPT(F)	SET-UP NO.	FLUID CAP	AIR CAP
1/8 or 1/4	SUJBF1	PFJB2850	PAJB73420
	SUJBF2C	PFJB35100	PAJB120432
	SUJBF3B	PFJB40100	PAJB122435
	SUJBF4B	PFJB40100	PAJB122440

SR - SIPHON ROUND

PIPE SIZE NPT(F)	SET-UP NO.	FLUID CAP	AIR CAP
1/8 or 1/4	SUJB1A	PFJB1650	PAJB64
	SUJB1	PFJB2050	PAJB64
	SUJB2A	PFJB2050	PAJB70
	SUJB2	PFJB2850	PAJB70
	SUJB4	PFJB60100	PAJB120
	SUJB5	PFJB100150	PAJB180
1/2	SUJB70	PFJB250375	PAJB437



OVERALL DIMENSIONS FOR ASSMEBLIES WITH XA 01/02 BODY

SPECIFICATIONS FOR SPRAY SET-UPS - CONTINUED

PF - PRESSURE FLAT FAN

PIPE SIZE NPT(F)	SET-UP NO.	FLUID CAP	AIR CAP
1/8 or 1/4	SUJB13A	PFJB2050	PAJB73328
	SUJB14	PFJB2850	PAJB73320
	SUJB13	PFJB2850	PAJB73328
	SUJB13N	PFJB2850	PAJB73335
	SUJB23B	PFJB40100	PAJB125328
	SUJB23	PFJB60100	PAJB125328
	SUJBN23	PFJB60100	PAJB125340
	SUJB43	PFJB100150	PAJB189351
1/2	SUJB75	PFJB250375	PAJB4533102
	SUJB85	PFJB251376	PAJB4693102

AD - WIDE ANGLE ROUND

PIPE SIZE NPT(F)	SET-UP NO.	FLUID CAP	AIR CAP
1/8 or 1/4	SUJB16	PFJB2050	PAJB6762070
	SUJB26B	PFJB40100	PAJB14063770
	SUJB30	PFJB40100	PAJB12063560
	SUJB26	PFJB60100	PAJB14063770
	SUJB29	PFJB60100	PAJB14065270
	SUJB46	PFJB100150	PAJB18966270
1/2	SUJB77	PFJB250375	PAJB42267370
	SUJB78	PFJB250375	PAJB42269470
	SUJB79	PFJB250375	PAJB469612570
	SUJB89	PFJB251376	PAJB469613070

XW - EXTRA WIDE ANGLE ROUND

PIP SIZE NPT(F)	SET-UP NO.	FLUID CAP	AIR CAP
1/8 or 1/4	SUJB340C	PFJB60150	PAJB189662160HC
1/2	SUJB380C	PFJB251376	PAJB4696130160HC

FF - DEFLECTED FLAT FAN

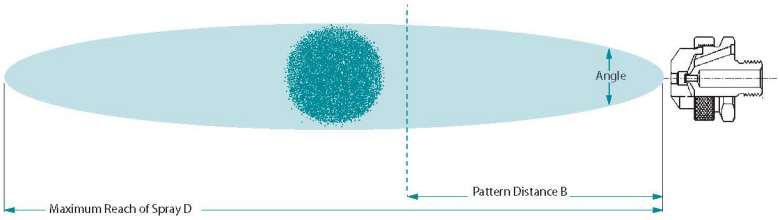
PIPE SIZE NPT(F)	SET-UP NO.	FLUID CAP	AIR CAP
1/8 or 1/4	SUJB240E	PFJB28150	PAJB18911075

PR - PRESSURE ROUND

PIPE SIZE NPT(F)	SET-UP NO.	FLUID CAP	AIR CAP
1/8 or 1/4	SUJB11	PFJB2050	PAJB67147
	SUJB12A	PFJB2050	PAJB73160
	SUJB12	PFJB2850	PAJB73160
	SUJB22B	PFJB40100	PAJB1401110
	SUJB22	PFJB60100	PAJB1401110
	SUJB42	PFJB100150	PAJB1891125
1/2	SUJB72	PFJB250375	PAJB4221250
	SUJB82	PFJB251376	PAJB4691312

1/4" SPRAY SET-UPS - PRESSURE FEED
ROUND SPRAY INTERNAL MIX

XA 01/02 WITH SUJB11



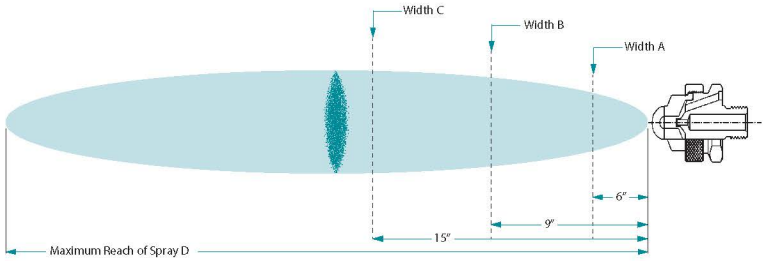
SPRAY DIMENSIONS
narrow spray angle - between 12º and 22º

SPECIFICATIONS

PIPE SIZES 1/8" OR 1/4"

SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBERS	10 PSI LIQUID			20 PSI LIQUID			30 PSI LIQUID			40 PSI LIQUID			60 PSI LIQUID			SPRAY DIMENSIONS				
		AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	PSI AIR	PSI LIQUID	ANGLE°	"B" INCHES	"D" FEET
SUJB11	Fluid Cap PFJB2050 Air Cap PAJB67147	10	0.7	0.6	14	1.5	0.4	24	1.7	0.6	32	1.9	0.7	50	2.3	1.0					
		12	0.5	0.7	18	1.2	0.5	28	1.4	0.6	36	1.6	0.8	54	2.1	1.1	12	10	13	12	9
		14	0.4	0.8	22	1.0	0.6	32	1.1	0.8	40	1.3	0.9	58	1.8	1.2	24	20	13	13	10
					24	0.9	0.7	36	0.8	1.0	44	1.1	1.1	62	1.6	1.4	36	30	13	14	11
					26	0.7	0.8	38	0.7	1.0	48	0.9	1.2	66	1.3	1.5	44	40	14	16	12
					28	0.6	0.8	40	0.7	1.1	50	0.7	1.3	68	1.2	1.6	62	60	15	18	14
					30	0.5	0.9	42	0.5	1.2	52	0.7	1.4	70	1.1	1.7					
SUJB12A	Fluid Cap PFJB2050 Air Cap PAJB73160	10	0.7	0.7	18	1.4	0.9	24	2.0	1.0	30	2.4	1.1	40	3.3	1.4					
		12	0.5	0.8	20	1.3	1.0	28	1.7	1.2	34	2.2	1.3	46	2.9	1.5	12	10	12	17	12
		14	0.4	0.9	22	1.2	1.1	32	1.4	1.4	38	1.9	1.5	52	2.6	1.8	20	20	13	18	13
					24	1.1	1.2	34	1.3	1.5	42	1.6	1.7	58	2.3	2.1	34	30	13	19	14
					26	0.9	1.3	36	1.2	1.6	44	1.5	1.8	62	2.1	2.3	42	40	13	20	15
								38	1.1	1.7	46	1.4	1.9	66	1.9	2.5	58	60	15	22	17
								40	1.0	1.8	48	1.3	2.0	70	1.7	2.7					
SUJB12	Fluid Cap PFJB2850 Air Cap PAJB73160	12	1.3	0.7	22	2.2	1.1	30	2.9	1.2	36	4.3	1.3	48	5.8	1.5					
		16	1.1	0.9	26	1.7	1.3	34	2.5	1.4	40	3.9	1.4	52	5.3	1.7	22	10	12	19	13
		20	0.9	1.2	30	1.4	1.5	38	2.1	1.7	44	3.6	1.6	56	4.9	1.7	34	20	13	20	14
		22	0.8	1.3	34	1.3	1.7	42	1.7	1.9	48	2.8	1.8	60	4.6	1.9	42	30	13	21	15
		24	0.8	1.4	38	1.1	1.9	46	1.5	2.0	52	2.5	2.0	64	4.1	2.1	48	40	14	22	16
		26	0.8	1.4	40	1.0	2.0	50	1.2	2.3	56	2.2	2.2	68	3.7	2.3	60	60	15	24	17
		28	0.8	1.6	42	0.9	2.0	52	1.2	2.4	60	1.8	2.4	70	3.6	2.3					
SUJB22B	Fluid Cap PFJB40100 Air Cap PAJB1401110	16	3.4	2.7	28	5.0	3.7	40	6.1	4.7	48	7.8	5.3	65	10.7	6.7					
		20	2.4	3.2	32	3.7	4.2	44	5.0	5.2	55	6.0	6.1	75	8.7	7.7	24	10	18	26	16
		22	1.9	3.5	36	2.6	4.7	48	4.0	5.7	65	3.6	7.3	80	7.7	8.3	40	20	20	30	20
		24	1.5	3.7	40	1.9	5.1	55	2.3	6.5	75	2.0	8.5	85	6.7	8.8	55	30	20	32	22
		26	1.2	4.0	44	1.3	5.6	60	1.6	7.1	80	1.4	9.1	90	5.6	9.4	75	40	21	36	26
		28	1.0	4.2	48	0.9	6.1	65	1.1	7.8	85	1.0	9.7	95	4.6	10.0	85	60	21	38	28
		30	0.7	4.5	50	0.8	6.4	70	0.7	8.4	90	0.7	10.3	100	3.6	10.6					
SUJB22	Fluid Cap PFJB60100 Air Cap PAJB1401110	12	8.1	2.0	20	13.6	2.6	30	16.3	3.3	38	19.5	3.7	54	25.7	4.7					
		14	6.6	2.3	22	12.0	2.9	34	13.1	3.8	42	16.5	4.2	60	21.8	5.3	14	10	17	24	16
		16	4.9	2.7	24	10.2	3.2	38	9.9	4.3	46	13.6	4.7	65	18.5	6.0	26	20	18	27	18
		18	3.4	3.0	26	8.6	3.5	40	8.7	4.6	50	10.8	5.3	70	15.2	6.7	40	30	20	30	22
					28	7.2	3.8	42	7.6	4.9	52	9.6	5.6	75	12.2	7.8	50	40	20	31	23
					30	5.9	4.1	44	6.6	5.2	54	8.6	5.9	80	10.0	8.1	70	60	21	36	25
					32	4.6	4.4	46	5.6	5.5	56	7.6	6.1	85	8.0	8.9					
SUJB42	Fluid Cap PFJB100150 Air Cap PAJB1891125	14	11.7	3.1	20	27.5	3.0	28	36.6	3.6	32	49.4	3.3	42	70.6	3.2					
		16	8.5	3.6	22	23.0	3.5	30	32.6	4.0	36	42.2	4.1	46	65.0	3.9	14	10	19	35	20
					24	18.0	4.0	32	28.7	4.4	40	35.1	4.9	50	59.0	4.6	24	20	20	39	23
					26	14.4	4.4	34	24.8	4.8	44	28.0	5.7	54	53.2	5.4	34	30	21	41	25
					28	11.3	4.9	36	20.9	5.2	46	24.5	6.1	58	47.4	6.2	44	40	21	42	26
								38	17.5	5.6	48	21.0	6.5	65	37.8	7.5	54	60	22	46	28
								40	14.6	6.0	50	18.4	6.9	70	30.0	8.6					

1/4" SPRAY SET-UPS - PRESSURE FEED
FLAT SPRAY INTERNAL MIX



1/4"JJB WITH SUJB23
JJB body and plug hardware

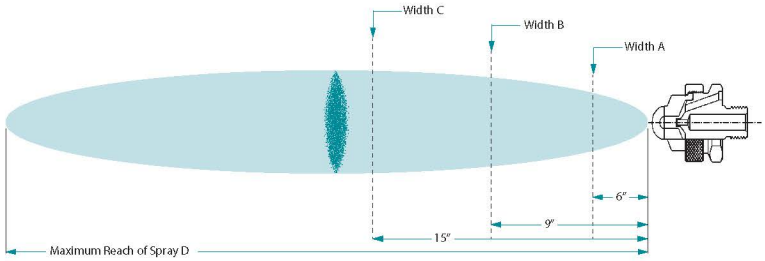
SPRAY DIMENSIONS
flat fan, wide spray angle - between 80° and 90°

SPECIFICATIONS

PIPE SIZES 1/8" OR 1/4"

SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBERS	10 PSI LIQUID			20 PSI LIQUID			30 PSI LIQUID			40 PSI LIQUID			60 PSI LIQUID			SPRAY DIMENSIONS (INCHES)					
		AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	PSI AIR	PSI LIQUID	"A" INCHES	"B" INCHES	"C" INCHES	"D" FEET
SUJB13A	Fluid Cap PFJB2050 Air Cap PAJB73328	10	1.4	0.8	18	2.2	1.5	28	2.5	1.5	38	2.8	1.8	55	3.4	2.4						
		12	1.3	1.0	22	1.8	1.6	32	2.2	1.6	42	2.5	2.0	65	2.8	2.8	16	10	10	14	18	8
		14	1.1	1.1	26	1.5	1.8	36	1.9	1.8	46	2.2	2.2	75	2.3	3.3	30	20	14	20	26	9
		16	0.9	1.2	30	1.2	2.0	40	1.6	2.0	50	1.9	2.4	85	1.7	3.7	40	30	14	20	30	10
		18	0.8	1.3	34	0.9	2.2	44	1.3	2.2	60	1.3	2.8	80	1.4	3.8	50	40	18	24	34	11
		20	0.7	1.4	38	0.7	2.4	48	1.0	2.4	65	0.9	3.0	95	1.1	4.1	85	60	22	28	36	13
		22	0.5	1.6	40	0.6	2.7	55	0.7	2.7	70	0.7	3.3	100	0.9	4.3						
SUJB14	Fluid Cap PFJB2850 Air Cap PAJB73220	20	0.8	1.2	34	1 1	1.6	44	1.8	1.9	60	1.6	2.4	80	2.7	2.9						
		22	0.6	1.3	56	0.9	1.7	46	1.6	1.9	65	1.2	2.6	85	2.2	3.1	22	10	10	14	18	6
		24	0.5	1.4	38	0.7	1.8	48	1.4	2.0	70	0.8	2.9	90	1.8	3.4	38	20	14	20	28	6
		26	0.4	1.5	40	0.6	1.9	50	1.1	2.1							46	30	23	28	36	7
		28	0.3	1.6	42	0.5	2.0	55	0.7	2.4							60	40	24	28	37	7
					44	0.4	2.1										80	60	25	30	38	8
SUJB13	Fluid Cap PFJB2850 Air Cap PAJB73328	12	2.2	0.7	20	3.4	1.0	30	4.0	1.3	38	4.7	1.5	65	4.8	2.4						
		14	1.8	0.8	24	2.7	1.1	34	3.4	1.5	42	4.1	1.7	70	4.2	2.8	16	10	14	18	28	7
		16	1.5	1.0	28	2.1	1.3	38	2.9	1.8	46	3.6	1.9	75	3.6	2.9	30	20	16	24	32	8
		18	1.1	1.1	30	1.8	1.5	42	2.3	1.9	50	3.1	2.1	80	3.1	3.1	42	30	20	26	35	8
		20	0.8	1.2	32	1.4	1.6	46	1.7	2.1	60	1.8	2.6	85	2.5	3.4	50	40	22	28	38	9
					34	1.2	1.7	48	1.4	2.2	65	1.2	2.8	90	2.0	3.6	80	60	23	30	38	10
					36	0.9	1.8	50	1.2	2.3	70	0.8	3.1	95	1.6	3.9						
SUJBN13	Fluid Cap PFJB2850 Air Cap PAJB73335	14	2.4	0.9	22	3.2	1.1	34	3.4	1.6	40	4.4	1.8	60	5.0	2.5						
		16	2.1	1.1	26	2.8	1.4	38	2.9	1.9	44	3.8	2.0	65	4.4	2.7	20	10	4	5	7	10
		18	1.7	1.1	30	2.1	1.6	42	2.3	2.1	48	3.3	2.2	70	3.9	3.0	34	20	5	6	8	12
		20	1.4	1.3	34	1.5	1.9	46	1.8	2.4	54	2.6	2.6	75	3.4	3.3	46	30	5	7	9	13
		24	0.8	1.5	38	1.2	2.1	50	1.4	2.6	60	1.9	3.0	80	3.0	3.6	54	40	6	9	11	14
		28	0.5	1.8	42	0.7	2.4	60	0.6	3.2	70	1.1	3.5	90	2.3	4.1	75	60	8	10	12	16
		32	0.3	2.0	48	0.4	2.7	70	0.3	3.7	85	0.4	4.3	100	2.0	4.7						

1/4" SPRAY SET-UPS - PRESSURE FEED
FLAT SPRAY INTERNAL MIX - CONTINUED



1/4"JJB WITH SUJB23
JJB body and plug hardware

SPRAY DIMENSIONS
flat fan, wide spray angle - between 80° and 90°

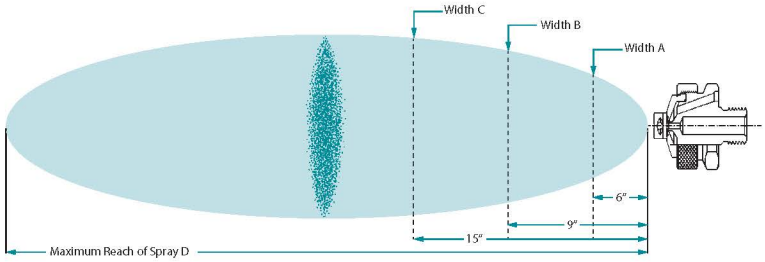
SPECIFICATIONS

PIPE SIZES 1/8" OR 1/4"

SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBERS	10 PSI LIQUID			20 PSI LIQUID			30 PSI LIQUID			40 PSI LIQUID			60 PSI LIQUID			SPRAY DIMENSIONS (INCHES)					
		AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	PSI AIR	PSI LIQUID	"A" INCHES	"B" INCHES	"C" INCHES	"D" FEET
SUJB23B	Fluid Cap PFJB40100 Air Cap PAJB125328	16	3.0	1.9	28	4.5	2.7	38	5.9	3.2	46	7.5	3.7	65	9.7	4.8						
		18	2.3	2.1	30	3.9	2.8	40	5.4	3.4	50	6.5	4.0	70	8.6	5.2	20	10	6	7	8	9
		20	1.7	2.3	32	3.3	3.0	42	4.9	6.0	52	5.9	4.2	72	8.0	5.6	32	20	9	11	12	10
		24	1.3	2.5	34	2.8	3.2	44	4.3	7.0	54	5.4	4.3	80	6.4	6.0	42	30	10	13	18	11
			1.0	2.7	36	2.3	3.4	46	3.8	3.9	56	4.9	4.5	85	5.3	6.5	54	40	12	15	18	12
								48	3.3	4.1	58	4.3	4.7	90	4.3	7.0	75	60	13	16	19	13
											60	3.8	4.9									
SUJB23	Fluid Cap PFJB60100 Air Cap PAJB125328	12	7.0	1.2	22	11.5	1.7	34	12.4	2.2	46	13.7	2.8	65	18.3	3.6						
		14	5.4	1.4	26	8.3	2.0	38	9.8	2.6	50	10.9	3.1	75	12.6	4.5	16	10	7	9	12	10
		16	4.2	1.6	30	6.0	2.4	42	7.8	3.0	54	8.7	3.5	80	10.6	5.0	32	20	9	12	14	11
		18	3.3	1.7	32	5.1	2.6	46	5.9	3.3	56	7.8	3.7	85	8.7	5.4	46	30	10	13	16	12
		20	2.7	2.0	34	4.3	2.8	48	5.0	3.5	60	6.4	4.1	90	6.9	5.9	56	40	12	15	19	12
		22	2.0	2.2	36	3.6	3.0	50	4.3	3.7	65	4.6	4.5	95	5.5	6.3	85	60	13	16	20	14
					38	3.0	3.2	52	3.7	3.9	70	3.3	5.0	100	4.5	6.8						
SUJBN23	Fluid Cap PFJB60100 Air Cap PAJB125340	14	4.5	0.8	24	7.5	1.2	34	9.5	1.7	44	11.1	2.2	56	19.8	2.6						
		16	2.9	1.0	26	6.0	1.4	36	7.8	2.0	46	9.7	2.5	60	16.7	3.0	16	10	4	5	6	8
		18	2.0	1.2	28	4.5	1.7	38	6.5	2.2	48	8.4	2.7	65	13.5	3.5	30	20	4	5	7	10
		20	0.8	1.4	30	3.4	1.8	40	5.2	2.5	52	5.7	3.3	70	9.7	4.3	40	30	5	7	9	11
					32	2.4	2.1	42	4.1	2.7	56	3.9	3.8	80	4.8	5.7	52	40	6	8	11	12
					34	1.3	2.3	46	2.6	3.3	60	2.4	4.4	90	1.8	7.4	70	60	8	10	12	13
					36	0.8	2.6	50	1.1	3.7	65	1.1	5.0	95	0.7	8.4						
SUJB43	Fluid Cap PFJB100150 Air Cap PAJB189351	14	7.7	3.2	26	10.5	4.6	34	20.8	4.8	42	29.4	5.2	58	44.7	6.1						
		16	5.0	3.8	28	7.0	5.2	36	16.6	5.3	44	25.1	5.6	60	41.0	6.4	14	10	7	8	10	11
								38	12.8	5.8	46	20.8	6.1	65	31.4	7.5	26	20	10	12	16	12
								40	9.5	6.4	48	16.7	6.6	70	22.5	8.8	38	50	10	12	18	14
								42	6.7	6.9	50	13.1	7.2	75	15.0	10.1	48	40	12	16	20	15
											52	10.1	7.8	80	8.7	11.5	70	60	14	17	23	16
												7.3	8.3									

1/4" SPRAY SET-UPS - PRESSURE FEED
FLAT SPRAY EXTERNAL MIX

1/4" XA00 WITH SUJBE18A



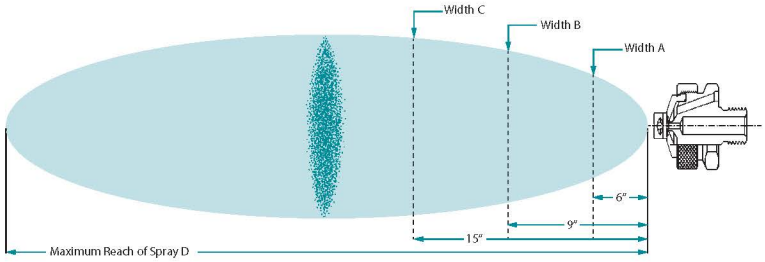
SPRAY DIMENSIONS
flat fan, moderate spray angle - between 60° and 90°

SPECIFICATIONS

PIPE SIZES 1/8" OR 1/4"

SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBERS	3 PSI LIQUID			5 PSI LIQUID			10 PSI LIQUID			20 PSI LIQUID			40 PSI LIQUID			SPRAY DIMENSIONS					
		AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	PSI AIR	PSI LIQUID	"A" INCHES	"B" INCHES	"C" INCHES	"D" FEET
SUJBE18B	Fluid Cap PFJB1650 Air Cap PAJB6224060°																6	5	8	11	13	4
		5		0.8	5		0.8	6		0.9	8		1.0	10		1.2	8	10	9	12	16	6
		6		0.9	6		0.9	8		1.0	10		1.2	15		1.6	8	20	11	14	18	6
			0.8			1.0			1.4			2.0			2.8		15	20	11	13	17	8
		7		1.0	8		1.0	10		1.2	15		1.6	25		2.2	20	20	10	12	16	8
		8		1.0	10		1.2	12		1.4	20		1.9	35		2.8	15	30	11	14	19	9
																	20	10	12	15	20	7
SUJBE15B	Fluid Cap PFJB1650 Air Cap PAJB6722845°	3		0.9	5		0.9	10		1.1	20		1.6	40		2.6	3	3	4	6	9.0	3
		5		0.9	10		1.1	15		1.4	25		1.9	50		3.0	15	3	4	6	9.0	4
		10		1.1	15		1.4	20		1.6	30		2.1	60		3.6	20	5	4	6	9.0	4
		15	0.8	1.4	20	1.0	1.6	25	1.4	1.9	40	2.0	2.6	70	2.8	4.2	20	20	5	7	10	5
		20		1.6	25		1.9	30		2.1	50		3.0	75		4.5	25	10	5	6	10	5
		25		1.9	30		2.1	40		2.6	60		3.6	80		4.9	40	20	5	7	11	6
		30		2.1	40		2.6	50		3.0	80		4.9	90		5.6	70	40	6	7	10	8
SUJBE18A	Fluid Cap PFJB2050 Air Cap PAJB6224060°																10	5	11	13	16	5
		5		0.8	5		0.8	8		1.0	10		1.2	15		1.6	15	10	12	15	19	6
		8		1.0	10		1.2	10		1.2	20		2.9	20		1.9	10	20	15	18	23	7
			1.2			1.6			2.2			3.1			4.4		20	20	14	17	22	8
		10		1.2	15		1.6	20		1.9	30		2.5	30		2.5	25	20	13	16	20	9
		15		1.6	20		1.9	30		2.5	35		2.8	35		2.8	25	30	15	18	23	10
																	25	40	16	19	26	10
SUJBE15A	Fluid Cap PFJB2050 Air Cap PAJB6722845°	5		0.9	10		1.1	15		1.4	25		1.9	45		2.9	5	3	3	6	9	4
		10		1.1	15		1.4	20		1.6	30		2.1	50		3.0	20	3	4	6	9	5
		15		1.4	20		1.6	25		1.9	40		2.6	60		3.6	25	5	4	7	9	6
		20	1.2	1.6	25	1.6	1.9	30	2.2	2.1	50	3.1	3.0	70	4.4	4.2	25	20	5	8	12	7
		25		1.9	30		2.1	40		2.6	60		3.6	75		4.5	30	10	5	7	10	6
		30		2.2	40		2.6	50		3.0	70		4.2	90		5.6	50	20	5	9	12	8
		40		2.6	50		3.0	60		3.6	90		5.6	95		5.8	75	40	6	8	10	10
SUJBE18	Fluid Cap PFJB2850 Air Cap PAJB6224060°																8	5	14	19	24	5
		6		0.9	6		0.9	6		0.9	10		1.2	20		1.9	8	10	14	19	25	6
		7		1.0	8		1.0	8		1.0	12		1.4	25		2.2	10	20	15	19	25	6
			2.3			3.0			4.2			5.9			8.4		15	20	16	20	26	7
		8		1.0	9		1.1	10		1.2	15		1.6	30		2.5	20	20	17	21	26	8
		10		1.2	10		1.2	12		1.4	20		1.9	35		2.8	25	30	16	20	27	9
																	30	40	16	20	27	10

1/4" XA00 WITH SUJBE18A



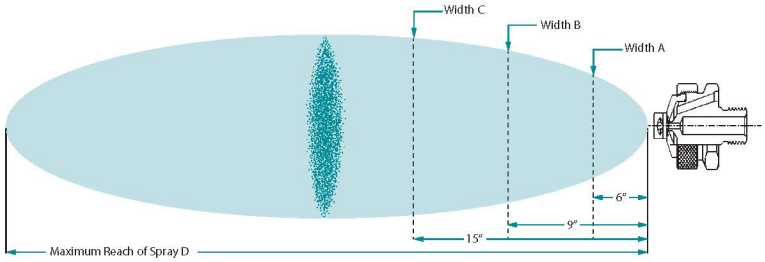
SPRAY DIMENSIONS
flat fan, moderate spray angle - between 60° and 90°

SPECIFICATIONS

PIPE SIZES 1/8" OR 1/4"

SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBERS	3 PSI LIQUID			5 PSI LIQUID			10 PSI LIQUID			20 PSI LIQUID			40 PSI LIQUID			SPRAY DIMENSIONS (INCHES)					
		AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	PSI AIR	PSI LIQUID	"A" INCHES	"B" INCHES	"C" INCHES	"D" FEET
SUJBE15	Fluid Cap PFJB2850 Air Cap PAJB6722845°	10	2.3	1.1	15	3.0	1.4	20	4.2	1.6	35	5.9	2.4	50	8.4	3.0	10	3	5	7	10	4
		15		1.4	20		1.6	25		1.9	40		2.6	60		3.6	25	3	5	7	10	5
		20		1.6	25		1.9	30		2.1	50		3.0	70		4.2	30	5	5	7	10	6
		25		1.9	30		2.1	40		2.6	60		3.6	75		4.5	35	20	6	8	13	8
		30		2.1	40		2.6	50		3.0	70		4.2	80		4.9	40	10	6	8	12	7
		40		2.6	50		3.0	60		3.6	80		4.9	90		5.6	60	20	6	8	14	10
		50		3.0	60		3.6	70		4.2	90		5.6	100		6.2	75	40	7	8	12	12
SUJB28B	Fluid Cap PFJB35100 Air Cap PAJB12228160°		3.6			4.7			6.6			9.3			13.2		20	5	13	15	19	10
		8		3.2	10		3.6	20		5.5	30		7	45		10	30	10	13	16	22	12
		10		3.6	15		4.6	30		7.4	40		9	60		13	30	20	14	18	23	13
																	45	20	15	19	26	14
		15		4.6	25		6.5	35		8.3	50		11	75		15	60	20	15	19	25	15
		20		5.5	30		7.4	40		9.1	60		13	80		16	55	30	16	20	27	15
																	60	40	15	20	28	16
SUJBE25B	Fluid Cap PFJB35100 Air Cap PAJB13425545°	10	3.6	3.0	15	4.7	3.6	20	6.6	4.1	35	9.3	6	45	13.2	8	10	3	5	8	10	6
		15		3.6	20		4.1	25		4.9	40		7	50		8	25	3	5	8	10	8
		20		4.1	25		4.9	30		5.5	50		8	55		9	30	5	6	8	11	10
		25		4.9	30		5.5	35		6.3	60		9	60		10	35	10	6	9	11	11
		30		5.5	40		6.9	40		6.9	70		11	70		11	35	20	7	9	14	12
		40		6.9	50		8.0	50		8.0	80		13	80		13	60	20	7	9	15	13
		50		8.0	60		9.4	60		9.4	90		15	90		15	70	40	7	9	13	15
SUJBE28A	Fluid Cap PFJB40100 Air Cap PAJB12228160°		4.8			6.2			8.7			12.3			17.4		15	3	13	15	20	18
		8		3.2	10		3.6	15		4.6	35		8	50		11	25	10	14	19	25	10
		15		4.6	20		5.5	25		6.5	45		10	65		14	35	20	15	18	25	12
																	45	20	13	17	24	14
		20		5.5	25		6.5	35		8.3	55		12	85		17	60	20	12	17	23	16
		25		6.5	30		7.4	40		9.1	60		13	95		19	60	30	13	17	24	16
																	70	40	13	17	24	14
SUJBE25A	Fluid Cap PFJB40100 Air Cap PAJB13425545°	10	4.8	3.0	20	6.1	4.1	25	8.7	4.9	40	12.3	7	50	17.4	8	10	3	6	8	11	7
		15		3.6	25		4.9	30		5.5	45		8	60		10	25	3	6	8	11	10
		20		4.1	30		5.5	35		6.3	50		8	70		11	35	5	6	9	13	11
		25		4.9	35		6.3	40		6.9	60		9	75		12	40	10	6	9	14	12
		30		5.5	40		6.9	50		8.0	70		11	80		13	40	20	7	10	15	13
		40		6.9	50		8.0	60		9.4	80		13	90		15	60	20	7	10	15	14
		50		8.0	60		9.4	70		11.0	90		15	95		15	75	40	7	9	14	17

1/4" XA00 WITH SUJBE18A



SPRAY DIMENSIONS
flat fan, moderate spray angle - between 60° and 90°

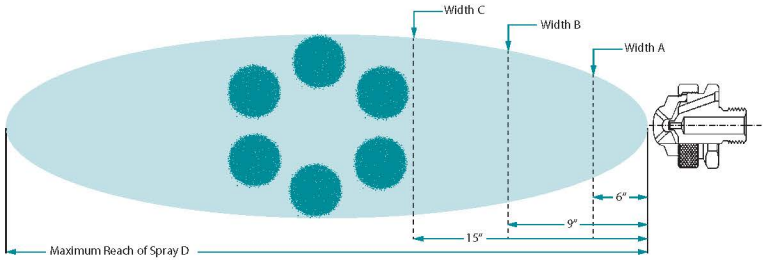
SPECIFICATIONS

PIPE SIZES 1/8" OR 1/4"

SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBERS	3 PSI LIQUID			5 PSI LIQUID			10 PSI LIQUID			20 PSI LIQUID			40 PSI LIQUID			SPRAY DIMENSIONS					
		AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	PSI AIR	PSI LIQUID	"A" INCHES	"B" INCHES	"C" INCHES	"D" FEET
SUJBE28	Fluid Cap PFJB60100 Air Cap PAJB12228160°		9.9			12.7			18.0			25.5			36.0		30	5	16	22	30	11
		10		3.6	15		4.6	25		6.5	45		10	75		15	40	10	18	23	32	13
		15		4.6	20		5.5	30		7.4	50		11	85		17	45	20	19	23	31	14
																	65	20	17	21	30	16
		20		5.5	30		7.4	40		9.1	70		14	95		19	80	20	15	20	26	19
		25		6.5	35		8.3	45		10.0	80		16	100		19	55	30	19	25	33	14
																	90	40	16	22	31	18
SUJBE25	Fluid Cap PFJB60100 Air Cap PAJB13425545°	15	9.9	3.6	25	12.7	4.9	35	18.0	6	45	25.5	8	55	36.0	9	15	3	6	8	10	8
		20		4.1	30		5.5	40		7	50		8	60		10	30	3	6	9	12	10
		25		4.9	35		6.3	45		8	55		9	65		11	40	5	7	10	14	11
		30		5.5	40		6.9	50		8	60		9	70		11	45	20	8	11	16	12
		35		6.3	45		7.5	60		9	70		11	80		13	50	10	8	11	15	13
		40		6.9	50		8.0	70		11	80		13	90		15	60	20	8	11	16	14
		50		8.0	60		9.4	80		13	90		15	100		16	80	40	7	10	15	18
SUJBE45B	Fluid Cap PFJB60150 Air Cap PAJB20027845°	25	10.0	8	25	12.9	8	35	18.0	11	55	25.5	15				25	3	6	8	12	10
		30		9	30		9	40		12	60		16				40	3	6	8	12	11
		35		11	35		11	45		13	65		17				40	5	6	8	12	13
		40		12	40		12	50		13	70		18				50	10	7	9	13	14
		45		13	45		13	55		15	75		20				55	20	7	9	14	15
		50		13	50		13	60		16	80		21				60	15	7	9	13	15
		60		16	60		16	70		18	90		24				70	20	7	9	14	18
SUJBE45A	Fluid Cap PFJB80150 Air Cap PAJB20027845°	30	17.4	9	40	22.5	12	55	31.5	15	70	44.7	18				30	3	7	10	14	11
		35		11	45		13	60		16	75		20				45	3	7	10	14	13
		40		12	50		13	65		17	80		21				55	5	7	10	14	14
		45		13	55		15	70		18	85		23				70	10	7	10	14	17
		50		13	60		16	75		20	90		24				70	20	8	10	15	18
		60		16	70		18	80		21							75	15	7	10	15	18
		70		18	80		21	90		24							80	20	8	10	15	19
SUJBE45	Fluid Cap PFJB100150 Air Cap PAJB20027845°	40	27.9	12	50	36.0	13	65	50.6	17	80	72.0	21				40	3	8	10	14	14
		45		13	55		15	70		18	85		23				55	3	8	10	15	15
		50		13	60		16	75		20	90		24				65	5	8	10	15	17
		55		15	65		17	80		21							75	10	9	11	15	18
		60		16	70		18	85		23							80	15	9	11	16	18
		65		17	75		20	90		24							80	20	9	11	16	19
		70		18	80		21										85	20	9	11	16	19

1/4" SPRAY SET-UPS - PRESSURE FEED
WIDE ANGLE ROUND SPRAY INTERNAL MIX

1/4"JCOJB WITH SUJB26B
JJB body and cleanout



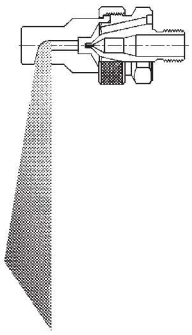
SPRAY DIMENSIONS
hollow cone, moderate forward spray projection - 70°

SPECIFICATIONS

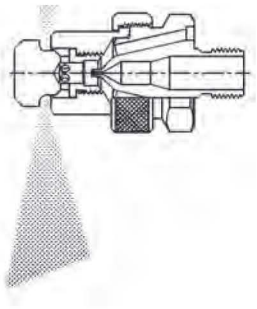
PIPE SIZES 1/8" OR 1/4"

SPRAY SET-UP NuMBR	FLUID & AIR CAP NUMBERS	10 PSI LIQUID			20 PSI LIQUID			30 PSI LIQUID			40 PSI LIQUID			60 PSI LIQUID			SPRAY DIMENSIONS (INCHES)					
		AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	PSI AIR	PSI LIQUID	"A" INCHES	"B" INCHES	"C" INCHES	"D" FEET
SUJB16	Fluid Cap PFJB2050 Air Cap PAJB6762070°	8	1.4	0.4	14	2.1	0.4	22	2.4	0.6	30	2.5	0.7	44	3.0	0.8						
		10	1.1	0.4	16	1.9	0.5	26	2.0	0.7	34	2.2	0.8	48	2.7	0.9	10	10	6	7	9	5'0
		12	0.8	0.5	18	1.7	0.6	30	1.6	0.8	38	1.9	0.9	55	2.3	1.2	20	20	6	8	10	6'0
		14	0.5	0.6	20	1.4	0.6	34	1.2	1.0	42	1.5	1.1	60	1.9	1.4	34	30	7	8	10	7'0
					22	1.2	0.7	36	0.9	1.1	46	1.1	1.3	65	1.5	1.6	42	40	7	8	11	9'0
					24	0.9	0.8	38	0.7	1.2	48	0.9	1.4	70	1.1	1.8	60	60	8	9	12	12'0
					26	0.6	0.9	40	0.4	1.3	50	0.7	1.5	75	0.7	2.1						
SUJB26B	Fluid Cap PFJB40100 Air Cap PAJB14063770°	12	1.9	1.8	22	3.3	2.3	30	5.1	2.5	38	6.4	2.8	54	8.8	3.4						
		14	0.6	2.2	24	2.2	2.8	32	4.3	2.9	42	4.7	3.4	56	8.1	3.7	12	10	7	10	13	6'0
					26	1.2	3.1	34	3.4	3.2	44	3.9	3.7	58	7.4	4.0	24	20	8	10	13	8'0
								36	2.5	3.5	46	3.1	4.1	60	6.8	4.3	34	30	8	10	13	10'0
								38	1.6	3.9	48	2.3	4.4	65	5.1	5.1	46	40	8	11	14	13'0
								40	0.7	4.3	50	1.4	4.8	70	3.5	6.0	60	60	9	11	15	16'0
											52	0.6	5.3	75	1.9	7.0						
SUJB30	Fluid Cap PFJB40100 Air Cap PAJB12063560°	16	3.2	1.4	28	4.6	2.0	42	5.3	2.7	55	5.7	3.3	80	7.1	4.5						
		18	2.6	1.6	32	3.4	2.3	46	4.0	3.0	60	4.2	3.7	85	5.8	4.9	22	10	6	8	9	9'0
		20	2.1	1.8	36	2.5	2.6	48	3.5	3.1	65	3.2	4.1	90	4.7	5.3	40	20	7	8	10	15'0
		22	1.6	1.9	40	1.8	2.9	50	3.0	3.3	70	2.3	4.4	95	3.8	5.7	50	30	7	8	10	18'0
		24	1.3	2.1	42	1.5	3.0	55	2.1	3.6	75	1.7	4.8	100	3.0	6.0	70	40	7	9	10	22'0
		26	1.0	2.2	44	1.2	3.1	60	1.5	4.0	80	1.3	5.2				90	60	8	10	11	26'0
		28	0.8	2.4	46	1.0	3.3	65	1.0	4.4	85	1.1	5.6									
SUJB26	Fluid Cap PFJB60100 Air Cap PAJB14063770°	10	6.3	1.1	20	9.0	1.6	30	11.2	2.0	40	12.4	2.5	56	16.2	2.8						
		12	3.6	1.5	22	6.9	2.0	32	9.3	2.4	42	10.6	2.9	58	14.8	3.1	12	10	8	10	14	7'0
		14	2.0	2.0	24	5.1	2.4	34	7.4	2.8	44	8.8	3.3	60	13.8	3.5	22	20	8	11	15	10'0
					26	3.3	2.8	36	5.4	3.2	46	7.1	3.7	65	9.8	4.4	34	30	8	11	15	12'0
								38	3.6	3.6	48	5.4	4.1	70	6.5	5.4	46	40	8	11	15	15'0
								40	2.3	4.0	50	3.6	4.5	75	4.0	6.3	65	60	8	11	16	19'0
											52	2.2	4.9	80	2.4	6.5						
SUJB29	Fluid Cap PFJB60100 Air Cap PAJB14065270°	18	9.4	3.0	30	13.4	4.2	44	15.3	5.5	60	15.6	7.1	80	21.4	8.6						
		22	7.7	3.6	34	11.9	4.7	48	13.8	5.9	70	12.5	8.3	85	19.5	9.2	28	10	8	10	13	18'0
		26	6.0	4.1	38	10.3	5.1	55	11.3	6.8	80	9.3	9.5	90	17.9	9.8	42	20	8	11	14	21'0
		28	5.2	4.4	42	8.9	5.6	65	7.8	8.0	85	7.8	10.1	95	16.5	10.4	65	30	9	11	15	22'0
		30	4.4	4.7	46	7.3	6.1	70	6.1	8.6	90	6.2	10.7	100	15.1	11.0	85	40	9	12	15	24'0
		32	3.7	5.0	50	5.8	6.7	75	4.5	9.3	95	4.8	11.3				90	60	10	13	16	28'0
		34	3.0	5.3	60	2.4	8.0	80	3.3	9.9	100	3.7	11.9									
SUJB46	Fluid Cap PFJB100150 Air Cap PAJB18966270°	24	6.7	5.5	38	10.7	7.4	48	16.5	8.8	60	18.6	10.4	85	29.2	13.7						
		26	5.2	5.9	42	7.6	8.3	52	12.5	9.6	65	13.7	11.4	90	24.6	14.7	28	10	10	13	18	18'0
		28	4.0	6.3	44	6.2	8.7	56	9.2	10.4	70	10.0	12.4	95	20.7	15.8	46	20	10	14	19	20'0
		30	3.0	6.8	46	5.0	9.1	60	6.6	11.3	75	7.4	13.5	100	17.5	16.9	60	30	11	15	20	24'0
		32	2.0	7.2	48	4.0	9.5	62	5.6	11.7	80	5.5	14.5				75	40	12	15	21	26'0
					50	3.0	9.9	65	4.4	12.3	85	4.0	15.5				90	60	13	17	23	28'0
					52	2.4	10.3	70	2.6	13.3	90	2.5	16.6									

1/4" SPRAY SET-UPS - PRESSURE FEED
DEFLECTED FLAT FAN & EXTRA WIDE HOLLOW CONE



SPRAY PATTERN
deflected flat fan



SPRAY PATTERN
180º extra-wide hollow cone

XA 01/02 WITH SUJB240E
with automatic shut-off

1/4JACJB WITH SUJB340C
with plug

SPECIFICATIONS

DEFLECTED FLAT FAN - PIPE SIZES NPT (F) 1/8" OR 1/4"

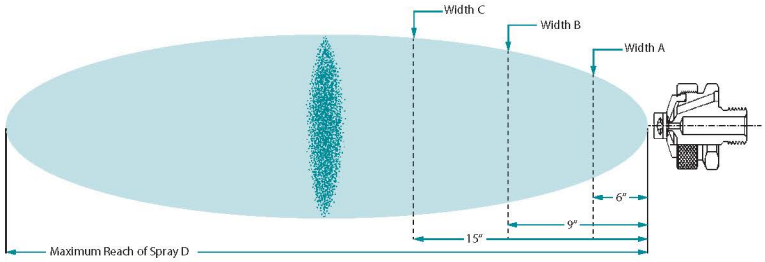
SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBERS	10 PSI LIQUID			20 PSI LIQUID			30 PSI LIQUID			40 PSI LIQUID			60 PSI LIQUID		
		AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM
SUJB240E	Fluid Cap PFJB28150 Air Cap PAJB18911075	6	2.9	1.6	14	3.9	2.6	22	4.7	3.3	26	5.8	3.6	38	7.4	4.6
		8	2.5	1.9	16	3.5	2.8	24	4.3	3.6	32	4.8	4.4	46	6.4	5.5
		10	2.0	2.3	18	3.1	3.1	26	4.0	3.8	38	3.8	5.3	54	5.3	6.6
		12	1.5	2.7	20	2.8	3.5	30	3.3	4.5	44	2.8	6.2	62	4.2	7.8
					22	2.3	3.8	34	2.3	5.2	46	2.3	6.6	70	2.8	9.4

EXTRA WIDE HOLLOW CONE - PIPE SIZES NPT (F) 1/8" OR 1/4"

SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBERS	10 PSI LIQUID			20 PSI LIQUID			30 PSI LIQUID			40 PSI LIQUID			60 PSI LIQUID		
		AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM
SUJB340C	Fluid Cap PFJB60150 Air Cap PAJB189662160HC	20	4.0	2.5	34	6.6	4.1	50	7.1	6.4	60	11.0	7.6	85	14.4	11.8
		22	2.8	2.7	38	4.4	4.8	52	6.2	6.8	65	8.3	8.6	90	12.0	13.0
		24	2.0	3.0	42	2.8	5.5	56	4.4	7.6	70	6.1	9.8	95	9.8	14.1
		26	1.5	3.3	46	1.7	6.3	60	3.2	8.4	80	3.1	12.4	100	7.8	15.4
		28	1.1	3.6	48	1.3	6.9	70	1.3	11.8	90	1.4	15.4			

1/4" SPRAY SET-UPS - SIPHON FEED
FLAT SPRAY INTERNAL MIX

XA 01/02 WITH SUJBF1
JAUJB body and clean-out hardware



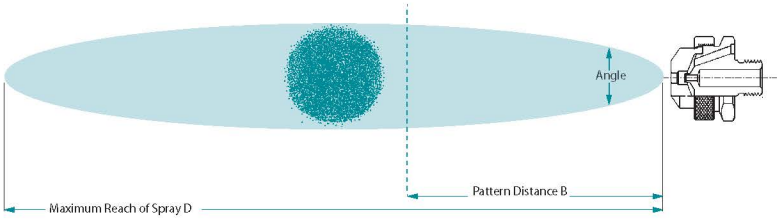
SPRAY DIMENSIONS
flat fan, moderate spray angle - between 60° and 85°

SPECIFICATIONS

PIPE SIZES 1/8" OR 1/4"

SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBERS	ATOMIZING AIR		U.S. GALLONS PER HOUR AT								SPRAY DIMENSIONS AT 12" SIPHON HEIGHT				
				GRAVITY HEAD			SIPHON HEIGHT									
		AIR	SCFM	18"	12"	6"	4"	8"	12"	24"	36"	AIR	"A" INCHES	"B" INCHES	"C" INCHES	"D" FEET
SUJBF1	Fluid Cap PFJB2850 Air Cap PAJB73420															
		10	1.0	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.1	10	8	11	15	7
		20	1.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	20	9	12	15	7
		30	1.8	0.2	0.2	0.2	0.1	0.1				30	9	12	15	6
SUJBF2C	Fluid Cap PFJB35100 Air Cap PAJB120432	20	1.9	1.0	1.0	0.9	0.8	0.7	0.7	0.6	0.6	20	9	13	15	8
		30	2.4	0.9	0.8	0.8	0.8	0.7	0.7	0.6	0.6	30	10	14	17	9
		40	3.0	0.8	0.7	0.7	0.7	0.6	0.6	0.5	0.5	40	11	15	18	10
		60	4.1	0.4	0.4	0.4	0.3	0.3	0.3			60	11	16	19	9
SUJBF3B	Fluid Cap PFJB40100 Air Cap PAJB122435	20	2.3	1.4	1.3	1.2	1.0	1.0	0.9	0.8	0.6	20	8	9	11	10
		30	2.9	1.3	1.2	1.1	0.9	0.9	0.8	0.7	0.6	30	8	10	11	11
		40	3.5	1.0	0.9	0.9	0.7	0.6	0.5	0.4		40	9	11	12	10
		50	4.1	0.6	0.5	0.4										
SUJBF4B	Fluid Cap PFJB40100 Air Cap PAJB122440	20	2.1	2.0	1.9	1.7	1.5	1.4	1.3	1.2	0.9	20	7	9	11	10
		30	2.7	2.0	1.9	1.8	1.6	1.5	1.5	1.3	1.0	30	7	9	12	11
		40	3.3	1.8	1.7	1.6	1.4	1.3	1.2	1.0		40	8	11	13	11
		50	3.9	1.1	1.0	0.9	0.7									

1/4" SPRAY SET-UPS - SIPHON FEED
ROUND SPRAY EXTERNAL MIX



1/4"JNJB WITH SUJB1A
JJB body and shut-off hardware

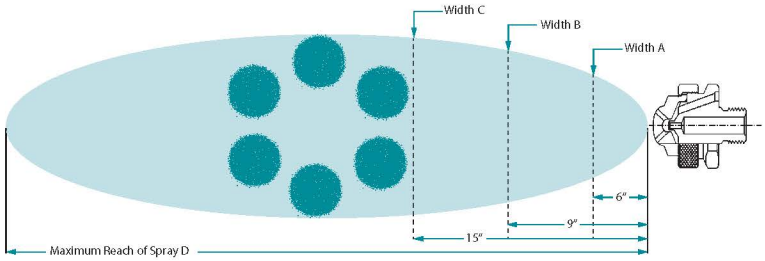
SPRAY DIMENSIONS
narrow spray angle - between 17° and 22°

SPECIFICATIONS

PIPE SIZES 1/8" OR 1/4"

SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBERS	ATOMIZING AIR		U.S. GALLONS PER HOUR AT								SPRAY DIMENSIONS AT 12" SIPHON HEIGHT			
				GRAVITY HEAD			SIPHON HEIGHT								
		AIR	SCFM	18"	12"	6"	4"	8"	12"	24"	36"	AIR	ANGLE °	"B" INCHES	"D" FEET
SUJB1A	Fluid Cap PFJB1650 Air Cap PAJB64	10	0.4	0.4	0.4	0.3	0.2	0.2	0.1	0.1		10	18	11	6
		20	0.6	0.5	0.4	0.4	0.3	0.3	0.3	0.3		20	18	11	6
		40	1.0	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.2	40	18	12	7
		60	1.3	0.6	0.5	0.5	0.4	0.4	0.4		0.2	60	18	14	8
SUJB1	Fluid Cap PFJB2050 Air Cap PAJB64	10	0.5	0.6	0.6	0.5	0.4	0.3	0.2			10	18	12	7
		20	0.7	0.7	0.7	0.6	0.5	0.5	0.4	0.2	0.1	20	18	13	8
		40	1.1	0.9	0.8	0.8	0.7	0.7	0.6	0.4	0.3	40	18	15	9
		60	1.5	1.0	0.9	0.9	0.8	0.8	0.7	0.6	0.4	60	19	17	10
SUJB2A	Fluid Cap PFJB2050 Air Cap PAJB70	10	0.8	0.7	0.6	0.5	0.4	0.4	0.3			10	18	12	8
		20	1.2	0.8	0.7	0.6	0.6	0.5	0.4	0.2		20	18	13	9
		40	1.9	0.9	0.9	0.8	0.8	0.7	0.7	0.5	0.3	40	19	15	11
		60	2.7	1.0	1.0	0.9	0.9	0.9	0.8	0.7	0.6	60	20	17	12
SUJB2	Fluid Cap PFJB2850 Air Cap PAJB70	10	0.7	1.2	1.1	0.9	0.6	0.5	0.4			10	21	15	10
		20	1.0	1.4	1.3	1.1	0.9	0.8	0.7	0.5		20	21	16	11
		40	1.7	1.6	1.5	1.3	1.2	1.1	0.9	0.6	0.3	40	21	18	12
		60	2.4	1.5	1.4	1.3	1.1	1.0	0.9	0.7	0.5	60	22	20	14
SUJB4	Fluid Cap PFJB60100 Air Cap PAJB120	20	1.9	5.8	5.2	4.2	3.1	2.7	1.9	0.6		20	17	18	12
		40	3.0	6.5	6.0	5.1	4.3	3.7	3.0	1.7	0.7	40	18	20	13
		60	4.1	6.8	6.4	5.6	4.9	4.2	3.5	2.2	1.3	60	18	21	15
		80	5.2	6.8	6.4	5.8	5.2	4.5	3.9	2.6	1.6	80	19	23	16
SUJB5	Fluid Cap PFJB100150 Air Cap PAJB180	30	5.3				7.2	6.0	4.6			30	20	20	22
		40	6.5				7.8	6.8	5.3			40	20	21	23
		60	8.8		11.4	10.6	8.3	7.4	6.2	3.2		60	21	23	25
		80	11.1	11.6	11.0	10.3	8.3	7.5	6.4	3.6	2.2	80	22	25	27

1/2" SPRAY SET-UPS - PRESSURE FEED
WIDE ANGLE ROUND SPRAY INTERNAL MIX



1/2JJB
includes wide angle round spray set-up

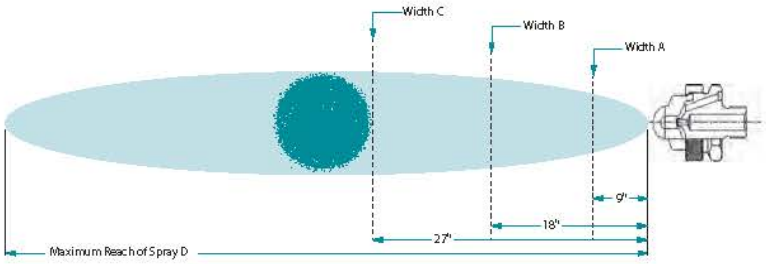
SPRAY DIMENSIONS
wide spray angle - between 80° and 90°

SPECIFICATIONS

PIPE SIZE 1/2"

SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBERS	5 PSI LIQUID			15 PSI LIQUID			25 PSI LIQUID			35 PSI LIQUID			55 PSI LIQUID			SPRAY DIMENSIONS					
		AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	PSI AIR	PSI LIQUID	"A" INCHES	"B" INCHES	"C" INCHES	"D" FEET
SUJB77	Fluid Cap PFJB250375 Air Cap PAJB42267370																					
								28	33.0	8.4	40	28.8	11.3	58	66.0	12.2	30	25	13.5	19.0	26.5	22
								30	19.8	10.8	42	15.6	13.9	60	42.0	15.0	40	35	13.5	19.0	26.5	24
														62	25.5	18.2	60	55	14.0	19.5	27.0	28
SUJB78	Fluid Cap PFJB250375 Air Cap PAJB42269470	8	27.0	6.5	18	42.0	7.0	32	47.0	11.0	46	42.6	18.1	70	81.0	30.0	10	5.0	13.0	18.5	25.5	20
		10	15.0	8.2	20	29.4	8.8	34	36.0	12.8	48	32.4	20.2	75	45.0	35.0	20	15	13.5	19.0	25.5	28
		12	8.4	9.8	22	20.2	10.5	38	25.2	14.7	50	25.8	22.2	80	22.2	39.6	36	25	13.0	18.5	26.5	21
					24	14.4	12.2	38	18.6	16.6	52	19.8	24.0				50	35	13.5	19.0	26.5	24
								40	13.8	18.6	54	15.6	25.8				75	55	14.0	19.0	27.0	27
SUJB79	Fluid Cap PFJB250375 Air Cap PAJB469612570	10	34.2	11.4	26	46.2	20.2	40	62.6	27.5	54	75.6	32.6	75	127	39.0	12	5.0	14.0	19.5	27.0	26
		12	21.6	13.0	28	37.2	22.0	42	52.8	29.6	56	57.0	34.3	80	108	42.0	30	15	13.5	19.0	26.5	24
		14	12.0	14.7	30	28.4	23.7	44	42.0	31.6	58	46.8	35.8	85	98	46.0	46	25	13.0	18.5	26.0	23
					32	21.6	25.3	46	33.6	33.6	60	39.0	37.3				60	35	14.0	19.5	27.0	28
					34	16.2	27.0	48	25.2	35.6	62	33.0	38.8				80	55	14.0	19.5	28.0	30
								50	18.0	37.5	65	25.8	41.2									
SUJB89	Fluid Cap PFJB251376 Air Cap PAJB469613070	10	35.4	11.1	18	103	15.4	26	155	17.7	36	180	23.0	54	222	29.1	10	5.0	13.0	25.0	36.0	11
		12	26.4	13.4	20	81.6	17.6	28	135	20.0	38	162	25.4	56	204	31.2	20	15	11.0	26.0	36.0	16
					22	63.6	19.8	30	115	22.5	40	147	27.8	58	192	34.0	32	25	11.0	22.0	32.0	20
					24	49.3	22.6	32	100	25.1	42	131	30.2	60	180	36.3	44	35	11.0	21.0	29.0	22
								34	84.0	27.5	44	116	32.6	62	166	38.9	64	55	11.0	22.0	31.0	25
								36	69.5	30.0	46	101	35.1	64	154	41.6						
								38	56.4	32.6	48	85	37.6	66	142	44.1						
								40	45.7	35.3	50	75	40.2	68	130	46.6						
											52	62.4	42.7	70	119	49.3						
														72	108	51.6						
														74	97.4	54.2						
														76	87.5	57.1						

1/2" SPRAY SET-UPS - PRESSURE FEED
ROUND SPRAY INTERNAL MIX



1/2JJB
includes round spray set-up

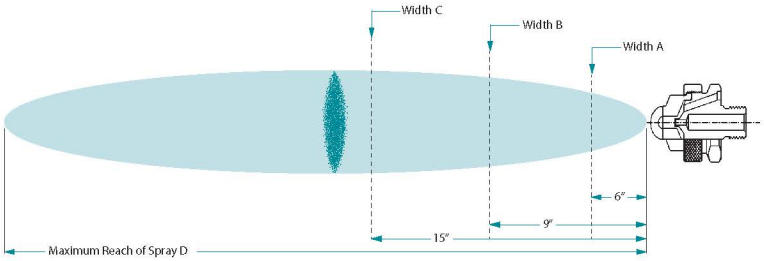
SPRAY DIMENSIONS
narrow spray angle - between 20° and 30°

SPECIFICATIONS

PIPE SIZE 1/2"

SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBERS	5 PSI LIQUID			15 PSI LIQUID			25 PSI LIQUID			35 PSI LIQUID			55 PSI LIQUID			SPRAY DIMENSIONS					
		AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	PSI AIR	PSI LIQUID	"A" INCHES	"B" INCHES	"C" INCHES	"D" FEET
SUJB72	Fluid Cap PFJB250375 Air Cap PAJB4221250	18	9.0	12.4	28	31.7	14.9	38	58.0	17.3	48	80.0	19.3				20	5	3.5	6.5	10	22
		20	6.7	13.7	32	22.5	17.0	44	37.7	20.8	54	55.2	23.6				36	15				24
		22	5.4	14.7	38	15.9	19.3	50	24.7	24.8	60	40.0	27.5				50	25				27
		24	4.1	15.7	36	13.2	20.4	54	19.5	27.5	66	30.0	32.1				60	35				30
					40	11.1	21.5	58	16.0	30.2	72	23.3	37.0									
					42	9.2	22.6	60	14.5	31.8	78	18.3	42.2									
SUJB82	Fluid Cap PFJB251376 Air Cap PAJB4691312	10	35	11.1	18	103	15.4	26	155	17.7	36	180	23.0	54	222	29.1	10	5	4	7	9	23
		12	26.4	13.4	20	81.6	17.6	28	135	20.0	36	162	25.4	56	205	31.2	20	15	6	10	13	21
					22	63.6	19.8	30	115	22.5	40	147	27.8	58	190	34.0	32	25	5	8	10	37
					24	49.3	22.6	32	100	25.1	42	131	30.2	60	178	36.3	44	35	4	7	10	41
								34	84.0	27.5	44	116	32.6	62	166	38.9	64	55	4	7	10	47
								36	69.5	30.0	48	101	35.1	64	154	41.6						
								38	56.4	32.6	48	85.0	37.6	66	142	44.1						
								40	45.7	35.3	50	73.0	40.2	68	130	46.6						
											52	62.4	42.7	70	119	49.3						
														72	108	51.6						
														74	97.4	54.2						
														76	87.5	57.1						

1/2" SPRAY SET-UPS - PRESSURE FEED
FLAT SPRAY - INTERNAL MIX & EXTERNAL MIX



1/2JJB
with flat spray set-up - external mix

SPRAY DIMENSIONS
flat fan, wide spray angle - between 80° and 90°

SPECIFICATIONS

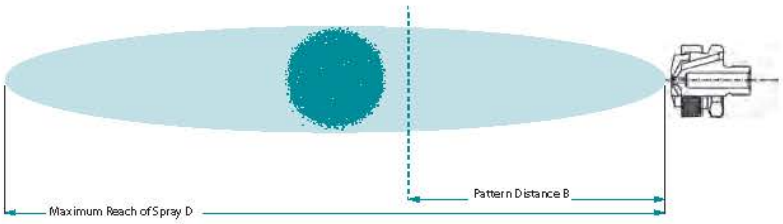
FLAT SPRAY INTERNAL MIX - PIPE SIZE 1/2"

SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBERS	5 PSI LIQUID			15 PSI LIQUID			25 PSI LIQUID			35 PSI LIQUID			55 PSI LIQUID			SPRAY DIMENSIONS					
		AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	PSI AIR	PSI LIQUID	"A" INCHES	"B" INCHES	"C" INCHES	"D" FEET
SUJB75	Fluid Cap PFJB250375 Air Cap PAJB4533102				28	39.0	22.4	44	44.1	31.5	58	53.0	40.0				20	10	17	28	35	18
					30	31.8	24.0	46	37.2	33.5	60	45.6	42.0				30	15	18	29	36	19
					32	24.6	25.9	48	31.2	35.1	62	38.0	44.0				40	20	19	30	37	21
					34	19.8	27.5	50	26.0	36.9	65	31.0	47.0				50	25	20	31	38	23
					36	15.0	29.1	60	20.6	38.7	70	21.0	52.5				60	35	24	36	43	27
																	70	40	26	39	46	29
SUJB85	Fluid Cap PFJB251376 Air Cap PAJB4693102	10	35.4	11.1	18	103	15.4	26	155	17.7	36	180	23.0	54	222	29.1						
		12	26.4	13.4	20	81.6	17.6	28	135	20.1	36	162	25.4	56	205	31.2	10	5	20	34	47	13
					22	63.6	19.8	30	115	22.5	40	147	27.8	58	190	34.0	20	15	34	62	83	15
					24	49.3	22.6	32	100	25.1	42	131	30.2	60	178	36.3	32	25	34	62	82	17
								34	84.0	27.5	44	116	32.6	62	166	38.9	44	35	36	66	85	19
								36	69.5	30.0	46	101	35.1	64	154	41.6	64	55	36	67	89	21
								38	56.4	32.6	48	85.0	37.6	66	142	44.1						
								40	45.7	35.3	50	73.0	40.2	68	130	46.6						
											52	62.4	42.7	70	119	49.3						
														72	108	51.6						
														74	97.4	54.2						
														76	87.5	57.1						

FLAT SPRAY EXTERNAL MIX - PIPE SIZE 1/2"

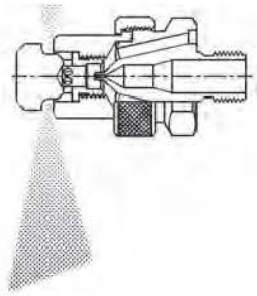
SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBERS	3 PSI LIQUID			5 PSI LIQUID			7 PSI LIQUID			10 PSI LIQUID			15 PSI LIQUID			SPRAY DIMENSIONS					
		AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	PSI AIR	PSI LIQUID	"A" INCHES	"B" INCHES	"C" INCHES	"D" FEET
SUEJB75	Fluid Cap PFJB250375 Air Cap PAJB14356	30		31.0	40		38.0	45		41.5	55		48.0	80		65.0	35	3	8.5	14.5	20.5	19
		35		34.0	45		41.5	50		45.0	60		51.5	85		69.0	50	5	9	16.5	21.5	22
		40	138	38.0	50	180	45.0	55	210	48.0	70	252	58.0	90	306	72.0	55	7	9.5	17.5	23	23
		45		41.5	55		48.0	60		51.5	75		62.0	95		75.0	70	10	9.5	18.5	24	25
					60		51.5	65		55.0	80		65.0	100		78.0	90	15	10	19.5	26	29
								70		58.0	85		69.0									

1/2" SPRAY SET-UPS
SIPHON ROUND SPRAY EXTERNAL MIX & EXTRA WIDE ROUND SPRAY INTERNAL MIX



1/2JBCJB
includes round spray set-up

SPRAY DIMENSIONS
siphon round spray



SPRAY PATTERN
180° extra-wide hollow cone

SPECIFICATIONS

SIPHON ROUND SPRAY - EXTERNAL MIX - PIPE SIZES 1/2"

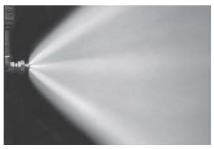
SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBERS	ATOMIZING AIR		GRAVITY HEAD			SIPHON HEIGHT				SPRAY DIMENSIONS AT 8" SIPHON HEIGHT		
		AIR	SCFM	18"	12"	6"	4"	8"	12"	24"	AIR	"B" (WIDTH) INCHES	"D" FEET
SUJB70	Fluid Cap PFJB250375 Air Cap PAJB437	10	12.7				10.7				20	6	20
		20	18.5				22.8	13.9			30		22
		30	24.0				32.4	24.8	13.8		40		24
		43	29.2		67.6	58.8	38.8	31.2	22.7		50		26
		50	34.8	79.8	70.5	62.8	43.0	35.2	27.6		60		29
		60	40.1	81.9	72.1	63.5	45.4	38.3	30.5	9.5	70		32
		70	46.1	83.2	74.5	66.0	48.0	41.4	33.9	13.8	80		35
		80	51.0	84.6	76.2	67.6	49.8	43.2	36.0	16.5			

EXTRA WIDE ROUND SPRAY - INTERNAL MIX - PIPE SIZES 1/2"

SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBERS	10 PSI LIQUID			20 PSI LIQUID			30 PSI LIQUID			40 PSI LIQUID			60 PSI LIQUID		
		AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM	AIR	GPH	SCFM
SUJB380C	Fluid Cap PFJB251376 Air Cap PAJB4696130160HC	14	56.4	12.2	24	104	16.0	36	116	22.4	48	122	27.8	72	128	40.2
		16	38.4	14.8	26	85.8	18.6	38	98.4	24.8	50	110	29.8	74	116	42.3
		18	25.8	16.8	28	70.0	20.3	40	85.2	26.5	52	98.4	31.5	76	108	44.3
		20	15.6	19.0	30	54.6	22.7	42	73.2	28.9	54	85.8	33.8	78	96.6	46.3
					32	42.0	24.8	44	61.0	30.9	56	74.4	36.0	80	85.8	48.3
					34	30.6	26.8	46	49.8	35.0	58	66.0	38.3	82	78.6	50.5
					36	20.0	29.3	48	38.4	35.0	60	55.2	40.1	84	67.8	52.5
					38	7.2	31.8	50	30.0	37.8	62	44.4	42.0	86	60.0	54.8
											64	37.2	44.5	90	48.0	59.0
											66	20.4	45.8			

SPIRAL AIR
HIGH FLOW ABRASION RESISTANT

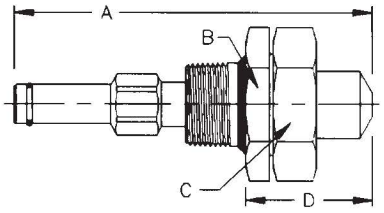
SPRAY PATTERN
narrow round 20°



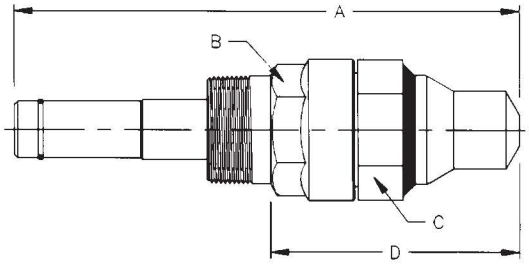
SPRAY PATTERN
wide round 90°

SPRAY PATTERN
flat fan 60°

SAJB
1-1/2" set-up



1" SAJB SET-UP

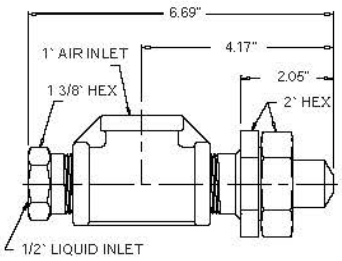


1-1/2" SAJB SET-UP

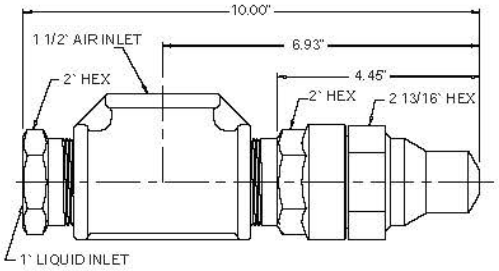
SPECIFICATIONS

PIPE SIZE NPT (M)	SPRAY SET-UP NUMBER	SPIRAL TIP NUMBER	SPRAY ANGLE	SPRAY TYPE	APPROXIMATE FREE PASSAGE DIAMETER (INCHES)	DIMENSIONS (INCHES)				WEIGHT LBS
						A	B	C	D	
1	SAJB 101	14	20°	Narrow Round	0.190	5.81	2.00	2.00	2.00	1.4
	SAJB 308		90°	Wide Round	0.106					
	SAJB 310		60°							
	SAJB 402		90°	Flat Fan	0.166					
	SAJB 404		60°							
	SAJB 103	20	20°	Narrow Round	0.281	5.81	2.00	2.00	2.00	1.4
	SAJB 307		90°	Wide Round	0.137					
	SAJB 309		60°							
	SAJB 401		90°	Flat Fan	0.205					
	SAJB 403		60°							
1-1/2	SAJB 2100	28	20°	Narrow Round	0.365	9.00	2.00	2.19	4.44	3.3
	SAJB 2300		90°	Wide Round	0.213					
	SAJB 2301		60°							

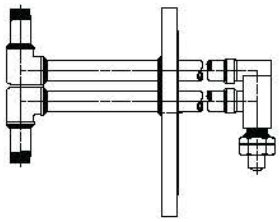
SPIRAL AIR
SPRAY SET-UPS & CONFIGURATIONS



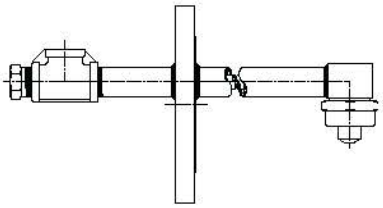
1" SAJB
with right angle adapter



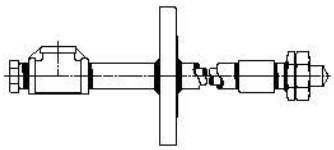
1-1/2" SAJB
with right angle adapter



LANCE ASSEMBLY TYPE C
with parallel inlet piping



LANCE ASSEMBLY TYPE F
with co-axial inlet piping



LANCE ASSEMBLY TYPE B
with co-axial inlet piping

SPECIFICATIONS

PIPE SIZE NPT (M)	SPIRAL TIP NUMBER	30 PSI Air			40 PSI Air			50 PSI Air			60 PSI Air			70 PSI Air			80 PSI Air			90 PSI Air			100 PSI Air		
		GPM	LIQUID	SCFM	GPM	LIQUID	SFM	GPM	LIQUID	SCFM	GPM	LIQUID	SCFM	GPM	LIQUID	SCFM	GPM	LIQUID	SCFM	GPM	LIQUID	SCFM	GPM	LIQUID	SCFM
1	14	0.3	26	37	0.3	34	52	0.3	44	68	0.3	53	85	0.3	64	103	0.3	75	121	0.3	86	139	0.3	98	158
		0.7	28	24	0.7	37	34	0.7	46	45	0.7	56	56	0.7	67	68	0.7	78	79	0.7	90	92	0.7	102	104
		1.0	30	19	1.0	39	27	1.0	48	35	1.0	58	44	1.0	69	53	1.0	80	62	1.0	92	71	1.0	104	81
		1.3	31	16	1.3	40	22	1.3	50	30	1.3	60	37	1.3	71	44	1.3	82	52	1.3	94	60	1.3	106	68
		1.7	32	14	1.7	41	20	1.7	51	26	1.7	61	32	1.7	72	39	1.7	83	45	1.7	95	52	1.7	107	59
		2.0	33	12	2.0	42	18	2.0	52	23	2.0	62	29	2.0	73	35	2.0	85	41	2.0	96	47	2.0	109	53
		2.3	34	11	2.3	43	16	2.3	53	21	2.3	63	26	2.3	74	31	2.3	86	37	2.3	98	43	2.3	110	48
		2.7	35	10	2.7	44	15	2.7	54	19	2.7	64	24	2.7	75	29	2.7	87	34	2.7	99	39	2.7	111	45
		3.0	35	10	3.0	45	14	3.0	55	18	3.0	65	22	3.0	76	27	3.0	88	32	3.0	100	37	3.0	112	42
	20	1.0	27	38	1.0	34	52	1.0	42	65	1.0	51	79	1.0	59	92	1.0	69	106	1.0	78	120	1.0	88	133
		2.0	29	27	2.0	37	36	2.0	45	45	2.0	54	55	2.0	63	64	2.0	72	74	2.0	82	84	2.0	92	93
		3.0	31	22	3.0	39	29	3.0	47	37	3.0	56	45	3.0	65	52	3.0	75	60	3.0	84	68	3.0	94	76
		4.0	33	19	4.0	41	25	4.0	49	32	4.0	58	38	4.0	67	45	4.0	76	52	4.0	86	58	4.0	96	65
		5.0	35	17	5.0	42	22	5.0	51	28	5.0	59	34	5.0	69	40	5.0	78	46	5.0	88	52	5.0	98	58
		6.0	35	15	6.0	43	20	6.0	52	26	6.0	61	31	6.0	70	36	6.0	79	42	6.0	89	47	6.0	100	53
		7.0	36	14	7.0	44	19	7.0	53	24	7.0	62	29	7.0	71	34	7.0	81	39	7.0	91	44	7.0	101	49
		8.0	37	13	8.0	45	18	8.0	54	22	8.0	63	27	8.0	72	31	8.0	82	36	8.0	92	41	8.0	102	45
		9.0	38	12	9.0	46	17	9.0	55	21	9.0	64	25	9.0	73	30	9.0	83	34	9.0	93	38	9.0	103	43
		10.0	39	12	10.0	47	16	10.0	56	20	10.0	65	24	10.0	74	28	10.0	84	32	10.0	94	36	10.0	104	41
1-1/2	28				10.0	46	36	10.0	54	51	10.0	64	67	10.0	73	85	10.0	84	105	10.0	94	126	10.0	105	148
					11.0	46	34	11.0	55	47	11.0	65	63	11.0	74	79	11.0	85	98	11.0	95	117	11.0	106	137
					12.0	47	31	12.0	56	44	12.0	65	59	12.0	75	74	12.0	85	91	12.0	96	109	12.0	107	128
					13.0	48	30	13.0	57	42	13.0	66	55	13.0	76	70	13.0	86	86	13.0	97	103	13.0	108	121
					14.0	48	28	14.0	57	39	14.0	67	52	14.0	77	66	14.0	87	81	14.0	98	97	14.0	109	114
					15.0	49	27	15.0	58	37	15.0	67	49	15.0	77	63	15.0	88	77	15.0	98	92	15.0	109	108
					16.0	50	25	16.0	59	36	16.0	68	47	16.0	78	60	16.0	88	73	16.0	99	88	16.0	110	103
					17.0	50	24	17.0	59	34	17.0	69	45	17.0	79	57	17.0	89	70	17.0	100	84	17.0	111	98
					18.0	51	23	18.0	60	32	18.0	69	43	18.0	79	54	18.0	90	67	18.0	100	80	18.0	111	94
					19.0	51	22	19.0	60	31	19.0	70	41	19.0	80	52	19.0	90	64	19.0	101	77	19.0	112	90
					20.0	52	21	20.0	61	30	20.0	70	40	20.0	80	50	20.0	91	62	20.0	102	74	20.0	113	87

1/8SAM
variable spray pattern width

22AJBAUHS
hydraulic with external packing nut

HYDROPULSE
pneumatically actuated flat fan

1/4XA00
with shut-off needle

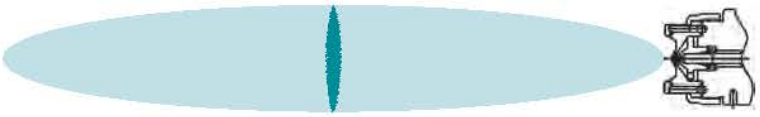
XA 01/02 BODY
with shut-off clean-out needle

1/4JAUPMJB
plate-mounted

DESIGN FEATURES

Air Atomizing. Automatic air atomizing nozzles can be actuated by an electric solenoid valve in the compressed air line, for up to 180 on-off cycles per minute. The shut-off point inside the spray nozzle it directly behind the fluid orifice, and so there is a minimal amount of liquid downstream of the shut-off point. Where liquids being sprayed could harden or solidify when exposed to air, or contain soft solids or particulate, a clean-out needle is recommended. With this option, a probe on the end of the shut-off needle will clean the fluid orifice each time the spray nozzle is closed. This can be limited to when the spraying operation is shut-off, or it can be done more frequently if required by a momentary "off-on" cycle of less than half a second, during the spraying operation. The probe fills the fluid orifice when closed, preventing any liquid remaining to set up in the nozzle downstream of the shut-off point. All of the SUJB spray set-ups can be used on all of the automatic air atomizing nozzles shown, except where noted.

Hydraulic Atomizing. These operate in the same way as the automatic air atomizing nozzles described above, but without the use of compressed air to atomize the liquid. The UniJB nozzle spray tips are used on these automatic nozzles up to the flow rates (gpm), shown for each type. A clean-out needle is not available for hydraulic atomizing guns.



1/8SAM
variable spray pattern width

SPRAY PATTERN
separate atomizing and fan air lines provide variable coverage and fine control of drop size without affecting liquid flow rates

DESIGN FEATURES

The 1/8SAM series is the most versatile of the air atomizing spray nozzles. Liquid is supplied to the nozzle liquid tip under pressures from 3 to 20 psi, and compressed air, or other gases are used to atomize the liquid into a controlled spray pattern of fine droplets. Because the liquid mixes with the air outside the spray nozzle tip, increasing or decreasing the air pressure will not affect the liquid flow rate as it does with internal mixing nozzles. This important feature means that the operator has to set only the liquid pressure in order to determine the precise liquid flow rate. Once this is done, the degree of atomization, and the width of the fan pattern can both be set by adjusting air pressure independently to the two separate air inlet ports on the 1/8SAM nozzle body. I.e. "atomizing air" and "fan air". Increasing atomizing air pressure produces finer droplets; increasing fan air pressure increases the coverage width of the spray pattern. Tables on pages 127 -130 reflect this design and show the liquid flow rate, atomizing air consumption, and fan pattern width as 3 separate and independent sets of data.

The external mix design is well suited to spraying viscous liquids, and the atomizing and fan air can be adjusted accordingly to account for the higher pressures required to atomize more viscous liquids.

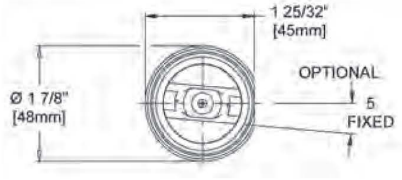
The 1/8SAM nozzle has an air actuated shut-off needle valve located right at the outlet of the liquid tip. This provides a sharp cut-off for intermittent spraying applications. It also ensures that there is no free liquid downstream of the shut-off needle valve that could set up if left exposed to air, an important maintenance advantage when spraying liquids other than water.

The "spray tip" of the 1/8SAM comprises a liquid tip, an air cap and a retainer ring to hold these components to the nozzle body. Several sizes of liquid tips and air caps are shown on the following pages, and each combination is referred to in the tables as a "spray set-up". Spray set-ups listed provide a wide range of liquid flow rates ranging from 0.7 to 47 gallons per hour over the range of 3 to 20 psi liquid pressure.

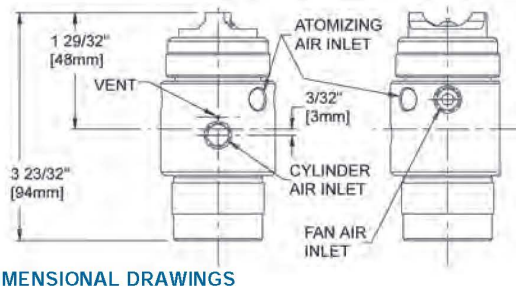
COMMON APPLICATIONS

- Coating Candies, Pills & Tablets
- Adhesive Sprays
- Lubricants onto Gears & Bearings
- Colours onto Ceramics, Bricks and Tiles
- Cooling of Products on a Conveyor
- Preservatives and other Food Additives
- Resins & Binders in Manufactured Sheet Wood Products

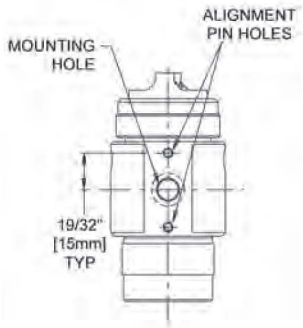
SPRAY SET-UPS
VARIABLE FLAT & ROUND PATTERN



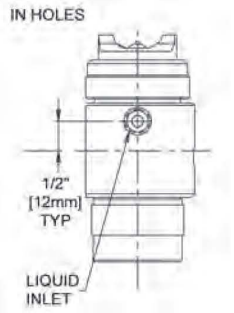
DIMENSIONAL DRAWINGS
tip offset 5° for overlap



DIMENSIONAL DRAWINGS
left side & front



DIMENSIONAL DRAWINGS
right side

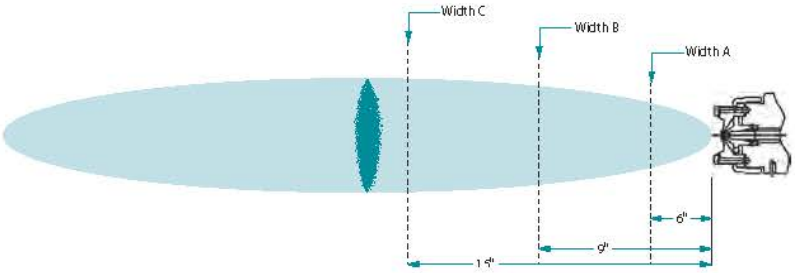


DIMENSIONAL DRAWINGS
back

SPECIFICATIONS

1/8SAM LIQUID FLOW RATES

PIPE SIZE NPT(F)	SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBER	U.S. GALLONS PER HOUR				
			3 PSI	5 PSI	10 PSI	15 PSI	20 PSI
1/8	SAM-01-02	FLUID CAP 01 AIR CAP 02	0.7	1.0	1.4	1.7	1.9
	SAM-02-02	FLUID CAP 02 AIR CAP 02	1.1	1.5	2.1	2.5	2.9
	SAM-03-02	FLUID CAP 03 AIR CAP 02	2.2	2.8	4.0	4.9	5.6
	SAM-04-03	FLUID CAP 04 AIR CAP 03	3.6	4.7	6.6	8.0	9.4
	SAM-05-03	FLUID CAP 05 AIR CAP 03	4.9	6.4	9.0	11.0	12.8
	SAM-06-04	FLUID CAP 06 AIR CAP 04	10.0	13.0	18.4	23.0	26.0
	SAM-07-05	FLUID CAP 07 AIR CAP 05	18.3	24.0	33.0	41.0	47.0



1/8SAM
variable spray pattern width

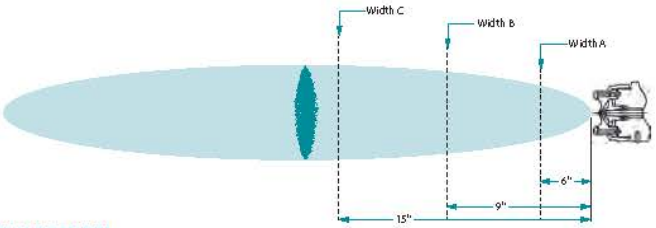
SPRAY PATTERN
separate atomizing and fan air lines provide variable coverage and fine control of drop size without affecting liquid flow rates

SPECIFICATIONS

1/8SAM FLAT SPRAY PATTERN WIDTH AT VARIOUS FAN AIR PRESSURE SETTINGS (PSI)

PIPE SIZE NPT(F)	SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBER	FLAT SPRAY PATTERN WIDTH (INCHES) AT VARIOUS FAN AIR PRESSURE SETTINGS (PSI) A = 6" FROM TIP OF NOZZLE; B = 9" FROM TIP OF NOZZLE; C = 15" FROM TIP OF NOZZLE												
			ATOM. AIR PSI	LIQUID PSI	0 PSI NARROW ROUND SPRAY PATTERN			10 PSI			40 PSI			60 PSI		
					A	B	C	A	B	C	A	B	C	A	B	C
1/8	SAM-01-02	FLUID CAP 01 AIR CAP 02	10	3	2	3	4	7	9	10	6	8	11	6	8	11
				10	2.5	3.5	4.5	7.5	10	12	7	8	11	7	8	12
				20	2	3	4	8	12	14	9	11	14	8	10	13
			30	3	2	3	4.5	5	6	7	8	10	14	8	11	14
				10	2	2.5	5	6	7.5	10	8	10	13	8	10	12
				20	2	3	4	7	9	13	10	12	15	9.5	11.5	14.5
			40	3	2.5	3.5	6	5	6	8	8	10	14	9	11	14
				10	2	3	5	6	7	10	9	11	14	9	11	13
				20	2	3	4.5	7	8	12	10	12	14	10	12	15
			60	3	2.5	3.5	6	4	5	6	8	11	13	9	11	14
				10	2	3	5	4.5	5	7	8	10	14	9	12	15
				20	2	3	4.5	5	7	9	9	12	16	10	13	17
	SAM-02-02	FLUID CAP 02 AIR CAP 02	10	3	2	3	4	8	10	12	6.5	8.5	11	6	9	12
				10	2.5	3.5	4.5	8	12	15	9	14	18	7	10	13
				20	2	3	4	8	12	15				8	10	13
			30	3	2	3	4.5	5.5	7	8	8	10	14	8	11	14
				10	2	3	5	7	9	12	10	12	14	9	10	13
				20	2	3	4	7	10	12	13	16	18	9.5	11.5	14.5
			40	3	2.5	3.5	6	5	7	9	8	10	14	9	11	14
				10	2	3	5	7	8	6.5	9.5	12	14	9	12	15
				20	2	3	4.5	6.5	9	12.5	11.5	15	17	11	14	18
			60	3	2.5	3.5	6	4.5	5.5	7	8	10.5	13	9	11	14
				10	2.5	4	5.5	5	6	8.5	9	11	14	10	12	15
				20	2	3	4.5	5.5	7.5	9.5	10	14	18	11	14	18
	SAM-03-02	FLUID CAP 03 AIR CAP 02	10	3	2	3	5	9	12	15	7	9	11	7	9	12
				10	2	2.5	4	12	15	21	12	20	23			
				20				10	12	16						
			30	3	2.5	3	4.5	6	8	9	8	10	13	8	10	13
				10	2	3	5	8	11	15	11	13	13	10	11	13
				20	2	2.5	4	8	15	14	16	20	22			
			40	3	2.5	3.5	5	5	7	10	8	10	13	8	11	13
				10	2	3	5	7	8	11	11	13	15	10	12	13
				20	2	3	5	7	9	13.5	13	18	21	12	17	21
			60	3	2.5	3.5	5.5	5	6	8	8	10	13	8	10	13
				10	2.5	3.5	5.5	6	7	9.5	10	13	16	11	13	15
				20	2	3	4.5	6	8	10	12	18	22	13	18	21

1/8SAM
variable spray pattern width



SPRAY PATTERN
separate atomizing and fan air lines provide variable coverage and fine control of drop size without affecting liquid flow rates

SPECIFICATIONS

1/8SAM - FLAT SPRAY PATTERN WIDTH AT VARIOUS FAN AIR PRESSURE SETTINGS (PSI) - CONTINUED

PIPE SIZE NPT(F)	SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBER	FLAT SPRAY PATTERN WIDTH (INCHES) AT VARIOUS FAN AIR PRESSURE SETTINGS (PSI)														
			A = 6" FROM TIP OF NOZZLE; B = 9" FROM TIP OF NOZZLE; C = 15" FROM TIP OF NOZZLE														
			ATOM. AIR PSI	LIQUID PSI	0 PSI NARROW ROUND SPRAY PATTERN			10 PSI			40 PSI			60 PSI		
					A	B	C	A	B	C	A	B	C	A	B	C
1/8	SAM-04-03	FLUID CAP 04 AIR CAP 03	10	3	2.5	3.5	5	9	13	17						
				10	2	3	4.5	10	14	16						
				20				9	13	17	18	24	29			
			30	3	2.5	3	5	4	5	7	11	15	18	12	15	18
				10	2.5	3.5	5	5	7	9	13	17	22	18	21	26
				20	2.5	3.5	5.5	5	6	9	13	20	24	17	22	27
			40	3	2.5	3	5	3.5	4.5	6.5	9	12	14	11	13	18
				10	2.5	3.5	5	4	5	7	10	14	18	15	18	22
				20	2.5	3.5	5	4	5.5	8	11	15	21	16	20	25
			60	3	2.5	3.5	5	3	4	6	8	10	13	10	12	17
				10	2.5	3.5	4.5	3	4	6	8	11	14	11	15	18
				20	2.5	3.5	4.5	3	4.5	7	10	12	16	12	17	22
	SAM-05-03	FLUID CAP 05 AIR CAP 03	10	3	3	4	6	9	12	18						
				10				8	11	15	24	29	35			
				20				9	12	15	21	28				
			30	3	2.5	3.5	6	4	6	8	12	15	19	12	15	19
				10	2.5	3.5	5	4.5	6	8	14	18	23	17	22	25
				20	2	3	5	4.5	6	9	15	19	27	18	23	27
			40	3	2.5	3.5	6	3.5	5	7	10	13	17	12	14	18
				10	2.5	3.5	5.5	4	6	8	12	16	20	15	18	22
				20	2.5	3.5	5.5	3.5	5	9	13	17	22	16	20	24
			60	3	2.5	3.5	6	2.5	4	7	9	11	14	10	12	17
				10	2.5	3.5	5.5	3	4	6	10	13	16	13	16	20
				20	2.5	3.5	5.5	3	4	6	9	13	17	12	17	23
	SAM-06-04	FLUID CAP 06 AIR CAP 04	10	3	4	5	7	10	13							
				10							21	26	33			
				20							17	22	30	22	27	34
			30	3	3	4	5	4	6	8	12	14	21	15	19	22
				10	2.5	3.5	5	4	6	8.5	13	16	22	16	21	23
				20							11	16	21	18	18	24
			40	3	3	4	5.5	3.5	5	7	10	12	17	12	17	21
				10	2.5	3.5	5	4	5	7	11	14	20	14	18	25
				20	2.5	3.5	5	3	5	8	9	13	17	13	18	26
			60	3	3	4	6	3	4	6	8	10	13	10	13	18
				10	3	4	5	3.5	4.5	7	9	12	16	12	16	21
				20	3	3.5	5	3	4	5.5	8	10	15	12	16	21

SPECIFICATIONS

1/8SAM FLAT SPRAY PATTERN WIDTH AT VARIOUS FAN AIR PRESSURE SETTINGS (PSI) - CONTINUED
FOR A, B & C DIMENSIONS - REFER TO SPRAY PATTERN DIAGRAM ON PAGE 129

PIPE SIZE NPT(F)	SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBER	FLAT SPRAY PATTERN WIDTH (INCHES) AT VARIOUS FAN AIR PRESSURE SETTINGS (PSI)													
			A = 6" FROM TIP OF NOZZLE; B = 9" FROM TIP OF NOZZLE; C = 15" FROM TIP OF NOZZLE													
			ATOM. AIR PSI	LIQUID PSI	0 PSI NARROW ROUND SPRAY PATTERN			10 PSI			40 PSI			60 PSI		
					A	B	C	A	B	C	A	B	C	A	B	C
1/8	SAM-07-05	FLUID CAP 07 AIR CAP 025	10	3	4	5	8	11	15							
				10							21	27	35			
				20							19	24	33			
			30	5	5	6.5	9	13	18	23	13	18	23			
				10				6	7	10	13	17	22	17	25	27
				20							14	17	24	18	22	29
			40	3	3	4	5.5	5.5	6	9	11	15	19	17	24	30
				10	3	3.5	5	4.5	7	7.5	12	15	20	16	20	29
				20							12	14	21	14	19	27
			60	3	3	4	6	4	6	8	9	12	16	14	17	21
				10	3	4	6.5	5	6.5	7.5	10	13	17	13	17	23
				20	2.5	3	5	3.5	4.5	6	7	14	15	12	16	24

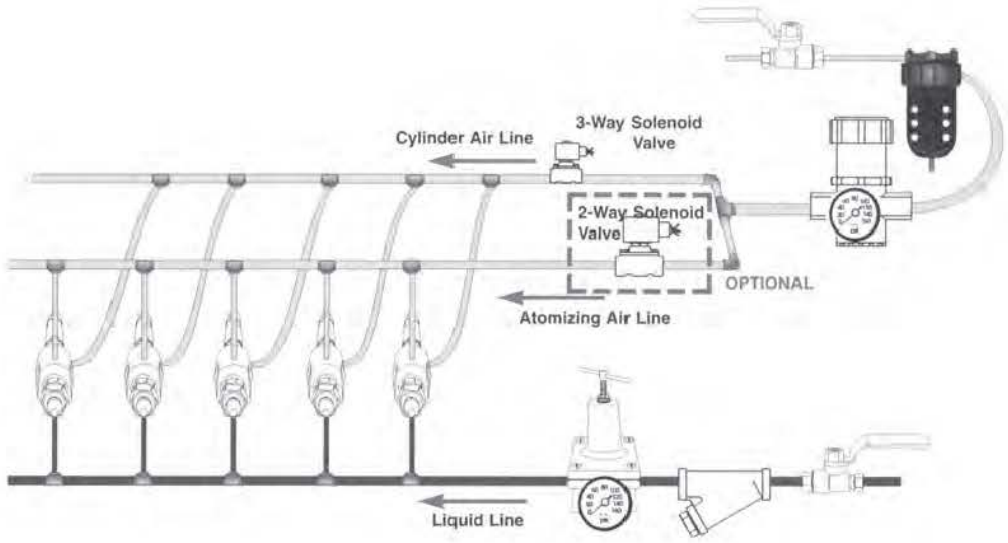
1/8SAM ATOMIZING AIR FLOW RATES

PIPE SIZE NPT (F)	SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBER	ATOMIZING AIR CAPACITY - SCFM									
			10 PSI	15 PSI	20 PSI	30PSI	40 PSI	50 PSI	60 PSI	70 PSI	80 PSI	90 PSI
1/8	SAM-01-02	FLUID CAP 01 AIR CAP 02	0.44	0.53	0.62	0.82	1	1.3	1.5	1.7	2	2.2
	SAM-02-02	FLUID CAP 02 AIR CAP 02	0.44	0.53	0.62	0.82	1	1.3	1.5	1.7	2	2.2
	SAM-03-02	FLUID CAP 03 AIR CAP 02	0.44	0.53	0.62	0.82	1	1.3	1.5	1.7	2	2.2
	SAM-04-03	FLUID CAP 04 AIR CAP 03	1.6	2	2.4	3.2	4	4.7	5.5	6.3	7	7.8
	SAM-05-03	FLUID CAP 05 AIR CAP 03	1.6	2	2.4	3.2	4	4.7	5.5	6.3	7	7.8
	SAM-06-04	FLUID CAP 06 AIR CAP 04	1.6	2	2.4	3.1	3.9	4.7	5.4	6.2	7	7.8
	SAM-07-05	FLUID CAP 07 AIR CAP 05	1.8	2.2	2.6	3.6	4.4	5.3	6.2	7	7.8	8.6

1/8SAM FAN AIR FLOW RATES

PIPE SIZE NPT (F)	SPRAY SET-UP NUMBER	FLUID & AIR CAP NUMBER	FAN AIR CAPACITY - SCFM									
			10 PSI	15 PSI	20 PSI	30PSI	40 PSI	50 PSI	60 PSI	70 PSI	80 PSI	90 PSI
1/8	SAM-01-02	FLUID CAP 01 AIR CAP 02	2.2	2.7	3.3	4.4	5.5	6.6	7.6	8.6	9.6	10.6
	SAM-02-02	FLUID CAP 02 AIR CAP 02	2.2	2.7	3.3	4.4	5.5	6.6	7.6	8.6	9.6	10.6
	SAM-03-02	FLUID CAP 03 AIR CAP 02	2.2	2.7	3.3	4.4	5.5	6.6	7.6	8.6	9.6	10.6
	SAM-04-03	FLUID CAP 04 AIR CAP 03	3.5	4.4	5.4	7.2	8.9	10.6	12.3	14	15.5	17.2
	SAM-05-03	FLUID CAP 05 AIR CAP 03	3.5	4.4	5.4	7.2	8.9	10.6	12.3	14	15.5	17.2
	SAM-06-04	FLUID CAP 06 AIR CAP 04	3.9	4.9	6	8.1	10.2	12.3	14.3	16.3	18.2	20
	SAM-07-05	FLUID CAP 07 AIR CAP 05	3.9	4.8	5.8	7.8	9.8	11.7	13.6	15.4	17.2	18.8

AIR ATOMIZING DOUBLE AIR INLET
INSTALLATION & OPERATION



INSTALLATION DIAGRAM
type XA 01/02 or other double air inlet automatic spray nozzle

XA 00
with air actuated shut-off needle

XA 01/02
with shut-off clean-out needle

1/4JAUPMJB
plate-mounted

DESIGN FEATURES

Spray nozzles can be installed on air and liquid lines using saddle clamps shown in the Fluid Line Accessories section further along in this catalogue. Separate filtered and regulated air lines feed the cylinder port, and the air atomizing port of the spray nozzle. This allows for atomizing air pressure to be set lower than the 30 psi minimum required for the cylinder air. A 3-way solenoid valve is required in the cylinder air line to exhaust the downstream air when the solenoid valve is closed, and allow the cylinder return spring to close the spray nozzle needle valve. A line strainer and pressure regulator should also be installed in the liquid line. The liquid pressure regulator should be rated for sufficient flow to supply all the downstream spray nozzles at the viscosity of the liquid being sprayed.

XA 01/02. Spray nozzles can be mounted to the air and liquid feed pipes with saddle clamps for ease of installation. Cylinder air (to control the spray nozzle on-off cycle), and atomizing air are supplied from separate regulated lines, and so the degree of atomization can be set independent of the minimum 30 psi pressure required for the cylinder air. This spray nozzle is used when low atomizing air pressure is required.

1/4JAUC0JB. This version is mounted and operated the same as the standard XA 01/02, but with the addition of a clean out probe on the tip of the shut off needle to clean out the fluid tip at each on-off operation. When not in operation, the clean out probe also prevents liquid from hardening in the end of the fluid tip.

1/4JAUPMJB. For mounting and maintenance convenience, all 3 pipe connections for this plate mounted (PM) version are parallel and on the back of the mounting plate. The spray nozzle head can be removed from the plate for servicing or replacement without disturbing the piping connections.

22AJBAUHS
with external packing nut

HYDROPULSE
pneumatically actuated flat fan

DESIGN FEATURES

Air-actuated hydraulic atomizing automatic spray nozzles use compressed air only to open the liquid shut-off valve, which is located right at the spray tip. Liquid is atomized solely by the hydraulic pressure in the liquid line and the design of the spray tip. Spray tips from the Uni-JB section of the catalogue can be used with these automatic spray nozzles up to the flow rate maximum shown below.

Automatic hydraulic atomizing nozzles can be used in any application where intermittent spraying is required and the liquid is easily atomized without the use of compressed air.

SPECIFICATIONS

22AJBAUHS. The 22AJBAUHS allows for up to 180 on-off cycles per minute. A 1/2" diameter mounting hole with a hand-tightened screw facilitates mounting and direction of the spray pattern. The shut-off needle is sealed by a packing gland, with an external packing nut for easy access to adjustment on-line. Should any leakage occur through the packing gland, it is prevented from fouling the air cylinder by the "divorced" design of the liquid end from the air cylinder.

Specifications for 22AJBAUHS:

- Maximum liquid operating pressure: 600 psi
- Maximum flow rate: 5 US gpm
- Minimum air cylinder pressure: 30 psi
- Wetted parts: Stainless steel, TEFLON

SPRAY PATTERN
MWHJB at high pressure

MWJB
hydraulic nozzle

MWHJB
multi-head nozzle

DESIGN FEATURES

MWJB. MW Hydraulic nozzles are designed to provide an extremely fine fog of droplets when operated at water pressures of 1000 to 3000 psi and without the use of compressed air. They are ideal for evaporative cooling of outside or inside areas, humidification, and misting.

The MWJB nozzle features:

- Finest atomization of any direct pressure nozzle
- Rugged Construction
- Drip free pinless design
- 70 micron polypropylene filter to prevent clogging
- Safety wire hole available
- Minimum Operating Pressure 1000 psi (70 bar)

MWHJB. For higher flow rates with the same fine fog of spray droplets, seven of the MWJB spray nozzles are installed into a header to be fed from a single 1/2" NPT pipe connection. The result, when operated at 1000 to 3000 psi is a dense fog of fine droplets at flow rates from 1.1 to 1.9 gpm per unit.

The MWHJB nozzle features:

- Finest atomization of any direct pressure multi-nozzle
- Rugged Construction
- Narrow Drop Spectrum
- Minimum Operating Pressure 1000 psi (70 bar)
- Other manifolds and flow rates available

SPECIFICATIONS - MWJB

U.S. GALLONS PER MINUTE								APPROX. SPRAY ANGLE °	PIPE SIZE NPT (M)	CAPACITY SIZE
100 PSI	300 PSI	600 PSI	1000 PSI	1500 PSI	2000 PSI	2500 PSI	3000 PSI	600 PSI		
0.009	0.015	0.021	0.027	0.033	0.038	0.043	0.047	70	1/8 or 1/4 or 3/8"-24UNF	085
0.011	0.018	0.026	0.033	0.041	0.047	0.053	0.058			105
0.013	0.022	0.031	0.040	0.048	0.056	0.063	0.068			125
0.015	0.025	0.036	0.046	0.056	0.065	0.073	0.079			145
0.020	0.034	0.048	0.062	0.076	0.087	0.098	0.11			195
0.028	0.048	0.067	0.087	0.11	0.12	0.14	0.15			275

SPECIFICATIONS - MWHJB

U.S. GALLONS PER MINUTE			PIPE SIZE NPT (F)	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	APPROX. COVERAGE 'D' (INCHES)	APPROX. SPRAY HEIGHT 'H' (INCHES)
1000 PSI	2000 PSI	3000 PSI					
1.1	1.6	1.9	1/2	1207	0.022	60	60

UNI-JB SPRAY NOZZLE SYSTEM
INTRODUCTION & DESIGN FEATURES

TIP RETAINER | SPRAY TIP | OPTIONAL STRAINER | NOZZLE BODY

1/4TTJB UNI-JB ASSEMBLY
with flat spray tip

INTRODUCTION

The Uni-JB assembly consists of 4 pieces including the tip retainer, spray tip, optional strainer with or without an integral check valve, and nozzle body.

The Uni-JB nozzle system provides a range of spray nozzle mounting options with a wide variety of interchangeable spray tips, spray patterns, capacities and spray angles. The nozzle body is fitted permanently into the piping, and spray tips can be removed for cleaning or replacement without disturbing the sealed pipe threaded connection.

Tip strainers and check valves can be added when required to ensure trouble free operation.

SPECIFICATIONS

UNI-JB BODY SUB-ASSEMBLY

NOZZLE INLET CONNECTION NPT	UNI-JB BODY SUB ASSEMBLY NUMBER		MATERIAL
	(F)	(M)	
1/8"	1/8TJB	1/8TTJB	Brass
	1/8TSJB	1/8TTSJB	303 St. Steel
1/4"	1/4TJB	1/4TTJB	Brass
	1/4TSJB	1/4TTSJB	303 St. Steel
3/8"	3/8TJB	3/8TTJB	Brass
	3/8TSJB	3/8TTSJB	303 St. Steel
1/2"	1/2TJB	1/2TTJB	Brass
	1/2TSJB	1/2TTSJB	303 St. Steel

UNI-JB STRAINER ASSEMBLY

STRAINER MESH	APPROX. MESH OPENING (INCHES)	STRAINER ASSEMBLY NUMBER	MATERIAL
50	0.012	5053JB50	BRASS BODY WITH ST. STEEL MESH
		6051SJB50	ST. STEEL BODY AND MESH
100	0.005	5053JB100	BRASS BODY WITH ST. STEEL MESH
		6051SJB100	ST. STEEL BODY AND MESH
200	0.003	5053JB200	BRASS BODY WITH ST. STEEL MESH
		6051SJB200	ST. STEEL BODY AND MESH

UNI-JB SHUT-OFF VALVE

VALVE NUMBER	INLET/OUTLET CONNECTION
025MNBT	1/4 NPT (M) x 11/16-16(M)
O25MFBT	1/4 NPT (F) x 11/16-16 (M)

1/4TJB & 1/4TTJB
nozzle bodies

STRAINER

025FNBT
Uni-JB shut off valve

DESIGN FEATURES

The strainer fits inside the nozzle body and can be added for use with the smaller sized spray tips. All components are manufactured in brass and 303 stainless steel with some items available in 316 stainless steel.

All of the spray tips listed in the Uni-JB section with the exception of those with extended length, (noted for each tip type) can be used with any of the JB hand spray guns, or with Automatic hydraulic spray guns.

SPRAY TIPS

Spray Tips for the Uni-JB system are available in all spray pattern types, including full cone, hollow cone, flat fan – both standard and wide angle type, as well as solid stream and fine spray patterns. Standard materials are brass, 303 and 316 stainless steels, with some tips also available in hardened stainless steel and engineered plastics. Flat fan & fine spray tips are also manufactured with tungsten carbide orifice inserts, to provide longer wear life in high pressure spraying of liquids/fluids.

NOZZLE BODIES

Standard nozzle bodies, type TJB (female) or TTJB (male) are available in 1/8", 1/4", 3/8" or 1/2" NPT inlet connections. All have an 11/16-16 male outlet thread for the tip retainer or one of the other outlet adapters.

Shut-off Valve nozzle body type 025FNBT can be provided with inlet connections of ¼"NPT male (or female) in brass body with plated steel ball. The outlet fits the Uni-JB tip retainer, and there is room inside the valve body for a strainer or strainer/check valve. The small ¼ turn handle allows installation in tight areas where standard ball valves would not fit.

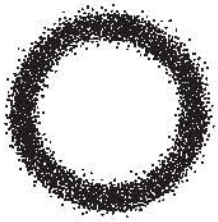
RETAINERS AND OUTLET ADAPTERS

As well as the standard tip retainer, outlet adapters type 4676JB are available with female NPT threads from 1/8" to 1/2" to fit onto any of the Uni-JB nozzle bodies. This will allow any male threaded spray nozzle or other accessories such as drop pipes, pressure gauges, ball valves, instrument transmitters etc. to be easily installed on the Uni-JB spray system.

STRAINERS

Strainer assemblies are used where particulate that could clog the spray tip may be present in the sprayed liquid, or as a standard precaution when spraying with smaller sized spray tips. They fit inside the nozzle body immediately behind the spray tip. Mesh screens are supported by an internal strainer body to prevent collapse, and are available in 50, 100 and 200 mesh.

UNI-JB SPRAY TIPS
HOLLOW CONE



SPRAY PATTERN
hollow cone

TXJB
standard spray angle

DESIGN FEATURES

TXJB spray tips provide a hollow cone pattern of even distribution with extra fine spray droplets. They provide extremely fine droplets, without the use of compressed air. They are available in brass with a stainless steel core tip, or in all stainless steel.

These low flow spray tips are rated in US gallons per hour (gph) with capacities ranging from 1 gph to 26 gph at 40 psi. TXJB tips have spray angles from 40° to 72° at 20 psi.

The TXPAJB spray tip is made from a polyacetal material. The smooth molded surface helps resist the build-up of water borne minerals when used for humidifying and evaporative cooling applications.

SPECIFICATIONS

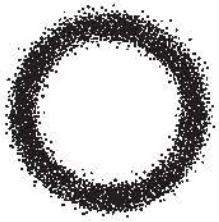
UNI-JB - TXJB

U.S. GALLONS PER HOUR									SPRAY ANGLE °		CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	NUMBER OF CORE SLOTS	CORE SLOT SIZE (INCHES)	RECOMMENDED SCREEN MESH
20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	150 PSI	200 PSI	400 PSI	20 PSI	40 PSI					
			0.71	.0.80	0.88	1.0	1.2	1.6			0.6	0.014	One	.012 x .010	200
	0.89	1.0	1.2	1.3	1.5	1.7	1.9	2.6		54	1	0.020	One	.016 x .015	100
	1.1	1.3	1.5	1.7	1.8	2.2	2.4	3.2		59	1.25	0.022	One	.020 x .020	100
	1.3	1.5	1.8	2.0	2.2	2.6	2.9	3.9		63	1.5	0.024	One	.024 x .020	100
1.5	1.8	2.0	2.4	2.7	3.0	3.6	4.0	5.5	40	68	2	0.028	One	.028 x .024	100
1.8	2.2	2.5	3.0	3.4	3.7	4.4	5.0	6.8	48	70	2.5	0.031	One	.030 x .029	100
2.2	2.6	3.0	3.6	4.1	4.5	5.3	6.1	8.2	57	72	3	0.034	One	.036 x .034	100
2.9	3.5	4.0	4.8	5.5	6.1	7.3	8.3	11.4	61	73	4	0.041	One	.040 x .034	50
3.6	4.4	5.0	6.0	6.9	7.6	9.1	10.4	14.3	63	73	5	0.044	Two	.032 x .032	50
4.4	5.3	6.0	7.2	8.2	9.1	11.0	12.5	17.1	65	74	6	0.047	Two	.040 x .032	50
5.7	7.0	8.0	9.7	11.1	12.4	15.0	17.3	24.0	66	74	8	0.055	Two	.040 x .036	50
7.2	8.7	10.0	12.1	13.9	15.5	18.8	21.6	30.1	68	75	10	0.060	Two	.050 x .030	50
8.6	10.5	12.0	14.6	16.7	18.6	22.6	25.9	36.1	69	76	12	0.067	Two	.050 x .034	50
9.9	12.1	14.0	17.1	19.7	22.1	27.0	31.1	43.9	70	76	14	0.070	Two	.055 x .034	50
12.8	15.6	18.0	22.0	25.4	28.4	34.7	40.0	56.4	71	77	18	0.079	Two	.060 x .031	50
15.6	19.1	22.0	26.9	31.0	34.7	42.4	48.9	68.9	71	78	22	0.086	Two	.065 x .030	50
18.4	22.5	26.0	31.8	36.7	41.0	50.1	57.8	81.5	72	78	26	0.094	Two	.065 x .030	50

UNI-JB - TXPAJB (Polyacetal Material)

U.S. GALLONS PER HOUR									SPRAY ANGLE °		CAPACITY SIZE	RECOMMENDED SCREEN MESH
20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	150 PSI	200 PSI	400 PSI	20 PSI	40 PSI		
		1.1	1.3	1.5	1.7	2	2.4	3.4		65	1.1	100

UNI-JB SPRAY TIPS
HOLLOW CONE - CONTINUED



SPRAY PATTERN
hollow cone

TCWJB
standard spray angle

1/4TTWJB ASSEMBLY
wide spray angle - hollow cone

DESIGN FEATURES

TCWJB & T-WJB tips are higher capacity spray tips, rated in US gallons per minute (gpm). They provide a hollow cone pattern with uniform distribution and relatively fine droplet size. Capacities range from 0.13 to 0.52 US gallons per minute at 10 psi with a choice of 80° or 120° spray angles.

They are available in brass, 303 stainless steel and 316 stainless steel.

T-WJB spray tips are rated in gallons per hour (gph), from 2 to 12 @ 40 psi. Spray angle is 140° at 40 psi and spray pattern is a wide hollow cone with very fine droplets.

SPECIFICATIONS

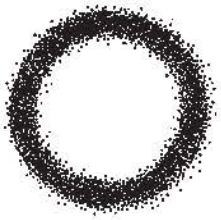
UNI-JB - TCWJB

U.S. GALLONS PER MINUTE							SPRAY ANGLE °	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)
10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	40 PSI		
0.13	0.18	0.22	0.25	0.30	0.35	0.38	80	1.3	0.045
0.26	0.36	0.44	0.50	0.60	0.69	0.77		2.6	0.054
0.39	0.54	0.66	0.75	0.91	1.0	1.2		3.9	0.063
0.52	0.72	0.87	1.0	1.2	1.4	1.5		5.2	0.086
0.13	0.18	0.22	0.25	0.30	0.35	0.38	120	1.3W	0.045
0.26	0.36	0.44	0.50	0.60	0.69	0.77		2.6W	0.054
0.39	0.54	0.66	0.75	0.91	1.0	1.2		3.9W	0.063
0.52	0.72	0.87	1.0	1.2	1.4	1.5		5.2W	0.086

UNI-JB - T-WJB

U.S. GALLONS PER HOUR								SPRAY ANGLE °			CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	NUMBER OF CORE SLOTS	CORE SLOT SIZE (INCHES)	RECOMMENDED SCREEN MESH
10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	20 PSI	40 PSI	80 PSI					
		1.4	1.7	2.0	2.5	2.8	3.2	130	140	136	2W	0.031	Two	.016 x .015	100
	1.8	2.1	2.6	3.0	3.7	4.3	4.8	138	140	137	3W	0.039	Two	.020 x .019	100
	2.5	2.8	3.5	4.0	4.9	5.7	6.3	140	140	138	4W	0.044	Two	.024 x .021	50
2.5	3.1	3.5	4.3	5.0	6.1	7.1	7.9	140	140	138	5W	0.050	Two	.028 x .027	50
3.0	3.7	4.2	5.2	6.0	7.3	8.5	9.5	140	140	138	6W	0.055	Two	.032 x .026	50
4.0	4.9	5.7	6.9	8.0	9.8	11.3	12.7	140	140	136	8W	0.063	Two	.036 x .029	50
5.0	6.1	7.1	8.7	10.0	12.3	14.2	15.8	140	140	136	10W	0.070	Two	.040 x .030	50
6.0	7.3	8.5	11.3	12.0	14.7	17.0	19.0	140	140	136	12W	0.078	Two	.044 x .029	50

UNI-JB SPRAY TIPS
HOLLOW CONE - CONTINUED



SPRAY PATTERN
hollow cone

TNJB
standard spray angle

DESIGN FEATURES

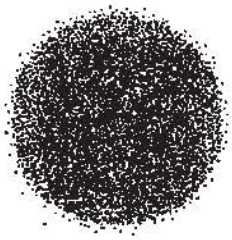
TNJB spray tips provide a hollow cone pattern of even distribution with extra fine spray droplets. They form the smallest droplets available at the rated operating pressures, without the use of compressed air. Pressure ratings are up to 1000 psi.

They are available in brass with a stainless steel core tip and orifice insert, or in all stainless steel. These low flow spray tips are rated in US gallons per hour (gph) with capacities ranging from 1 gph to 26 gph at 40 psi. TNJB tips have spray angles from 45° to 85° at 40 psi.

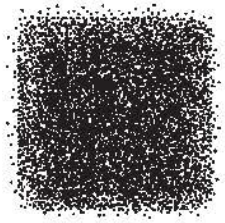
SPECIFICATIONS

U.S. GALLONS PER HOUR									SPRAY ANGLE °			CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	CORE NUMBER	NOZZLE TYPE
30 PSI	40 PSI	60 PSI	100 PSI	200 PSI	300 PSI	500 PSI	700 PSI	1000 PSI	40 PSI	80 PSI	300 PSI				UNI-JB FLANGE
			0.95	1.3	1.6	2.1	2.5	3.0		35	65	0.6	0.016	206	TNJB
	1.0	1.2	1.6	2.2	2.7	3.5	4.2	5.0	45	62	72	1	0.020	210	
1.3	1.5	1.8	2.4	3.4	4.1	5.3	6.3	7.5	65	70	72	1.5	0.020	216	
1.7	2.0	2.5	3.2	4.5	5.5	7.1	8.4	10.0	70	75	77	2	0.028	216	
2.6	3.0	3.7	4.7	6.7	8.2	10.6	12.5	15.0	65	70	73	3	0.028	220	
3.5	4.0	4.9	6.3	9.0	11.0	14.2	16.7	20.0	72	81	84	4	0.042	220	
5.2	6.0	7.3	9.5	13.4	16.5	21.0	25.0	30.0	73	79	81	6	0.042	225	
6.9	8.0	9.8	12.6	17.9	22.0	28.0	34.0	40.0	85	89	91	8	0.060	225	
8.6	10.0	12.2	15.8	22.0	27.0	35.0	42.0	50.0	82	84	86	10	0.064	420	
10.4	12.0	14.7	19.0	27.0	33.0	43.0	50.0	60.0	78	82	85	12	0.076	420	
12.1	14.0	17.1	22.0	31.0	38.0	50.0	59.0	70.0	85	88	90	14	0.076	421	
15.6	18.0	22.0	29.0	40.0	49.0	64.0	75.0	90.0	81	84	86	18	0.076	422	
19.1	22.0	27.0	35.0	49.0	60.0	78.0	92.0	110	70	72	75	22	0.076	625	
23.0	26.0	32.0	41.0	58.0	71.0	92.0	109	130	73	74	77	26	0.086	625	

UNI-JB SPRAY TIPS
FULL CONE



SPRAY PATTERN
solid cone - round



SPRAY PATTERN
solid cone - square

TGJB
standard angle spray

TGJB-SQ
square spray angle

DESIGN FEATURES

TGJB tips form a full cone spray pattern with uniform distribution in both round and square impact areas. They provide a range of lower capacities than standard threaded full cone spray nozzles. They are available in 2 different full cone patterns as detailed below and on the following page. All are manufactured in brass and 303 stainless steel, with selected sizes available in type 316 stainless steel as indicated in the performance tables below.

TGJB tips provide a round solid cone spray pattern with uniform distribution and medium to large droplets. Capacities range from 0.06 to 3.4 US gallons per minute at 40 psi, and spray angles from 50° to 80°.

Note: Capacity sizes 6.5 and 10 have an extended area below the flange, and will not accept a strainer assembly inside Uni-JB mounting bodies.

TGJB-SQ spray tips form a solid cone spray pattern with a square footprint and relatively large droplets. Two capacity sizes are available at the high end of the range. These SQ sizes can be used in the same applications as round solid cones where the extra capacity is required.

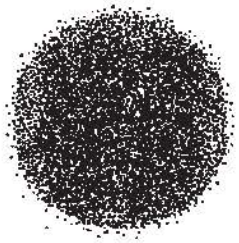
Note: Both of these tips have an extended area below the flange and cannot be used with a strainer in Uni-JB mounting bodies.

SPECIFICATIONS

U.S. GALLONS PER MINUTE										SPRAY ANGLE °			CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE
5 PSI	7 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	150 PSI	7 PSI	20 PSI	80 PSI				UNI-JB FLANGE
			0.042	0.052	0.060	0.073	0.085	0.10	0.12		50	61	0.3	0.016	0.020	
			0.057	0.069	0.080	0.10	0.11	0.13	0.16		56	63	0.4	0.018	0.022	
			0.071	0.087	0.10	0.12	0.14	0.16	0.19		56	63	0.5	0.020	0.024	
			0.085	0.10	0.12	0.15	0.17	0.19	0.23		54	62	0.6	0.020	0.027	
			0.10	0.12	0.14	0.17	0.20	0.22	0.27		54	63	0.7	0.020	0.030	
			0.14	0.17	0.19	0.23	0.26	0.30	0.36		58	53	1	0.025	0.036	
		0.13	0.18	0.22	0.25	0.30	0.35	0.38	0.47		80		1.3*	0.030	0.045	
		0.20	0.28	0.34	0.38	0.46	0.53	0.59	0.77		50	46	2	0.040	0.047	
		0.26	0.36	0.44	0.50	0.60	0.69	0.77	0.94		80		2.6*	0.040	0.054	TGJB
		0.30	0.42	0.50	0.57	0.69	0.79	0.88	1.1		65	59	3	0.040	0.062	
		0.35	0.48	0.58	0.67	0.81	0.92	1.0	1.3		50	46	3.5	0.050	0.067	
		0.39	0.54	0.66	0.75	0.91	1.0	1.2	1.5		80		3.9*	0.050	0.063	
		0.50	0.69	0.82	0.95	1.2	1.3	1.5	1.8		65	59	5	0.050	0.082	
		0.52	0.72	0.87	1.0	1.2	1.4	1.5	1.8		80		5.2*	0.050	0.086	
0.47	0.55	0.65	0.89	1.1	1.3	1.5	1.7	1.9	2.3	45	50	46	6.5	0.063	0.094	
0.73	0.85	1.0	1.4	1.7	1.9	2.4	2.7	3.0	3.6	58	67	61	10	0.063	0.109	
0.86	1.0	1.2	1.7	2.0	2.3	2.8	3.2	3.5	4.3	70	75	68	12SQ	0.063	0.125	TGJB-SQ
1.3	1.5	1.8	2.5	3.0	3.4	4.1	4.7	5.3	6.4	71	75	68	18SQ	0.094	0.156	

* Available in 316 Stainless Steel

UNI-JB SPRAY TIPS
FULL CONE - CONTINUED



SPRAY PATTERN
solid cone - round

TGJB-W
wide spray angle

1/4TTGJB-W ASSEMBLY
wide spray angle - solid cone

DESIGN FEATURES

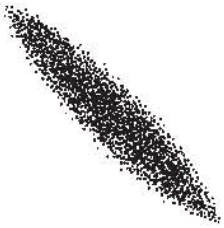
TGJB-W spray tips provide a wide angle round solid cone spray pattern with even distribution. They are intended for applications where head room is limited, and the spray coverage needs to be formed from a lower spray height. They are also used in applications where gpm per unit area needs to be reduced from that of the standard angle spray tips. This is achieved by covering a larger area with a similar tip flow rate. Capacities range from 0.25 to 2.6 US gallons per minute at 40 psi, with a spray angle of 120°.

SPECIFICATIONS

U.S. GALLONS PER MINUTE								SPRAY ANGLE °			CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE
5 PSI	7 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	7 PSI	20 PSI	80 PSI				UNI-JB FLANGE
		0.13	0.18	0.22	0.25	0.30	0.35		120		1.3W	0.030	0.045	
		0.26	0.36	0.44	0.50	0.60	0.69		120		2.6W*	0.040	0.054	
		0.28	0.38	0.45	0.51	0.61	0.70		120	102	2.8W	0.040	0.063	
		0.39	0.54	0.66	0.75	0.91	1.0		120		3.9W*	0.050	0.063	
		0.43	0.58	0.70	0.79	0.95	1.1		120	102	4.3W	0.040	0.078	
		0.52	0.72	0.87	1.0	1.2	1.4		120		5.2W*	0.050	0.086	TGJB-W
	0.48	0.56	0.76	0.91	1.0	1.2	1.4		120	102	5.6W	0.040	0.094	
	0.68	0.80	1.1	1.3	1.5	1.8	2.0		120	103	8W	0.050	0.094	
0.74	0.86	1.0	1.4	1.6	1.8	2.2	2.5	112	120	103	10W	0.050	0.109	
0.89	1.0	1.2	1.6	1.9	2.2	2.6	3.0	114	120	103	12W	0.050	0.125	
1.0	1.2	1.4	1.9	2.3	2.6	3.1	3.5	114	120	103	14W	0.063	0.141	

* Available in 316 Stainless Steel

UNI-JB SPRAY TIPS
FLAT SPRAY



SPRAY PATTERN
flat spray

TPJB
flat spray tip

5053JB
strainer assembly

DESIGN FEATURES

TPJB spray tips have a flat fan spray that is tapered toward the edges. This allows for adjacent spray tips mounted on a header pipe to overlap and provide uniform coverage across the total sprayed width.

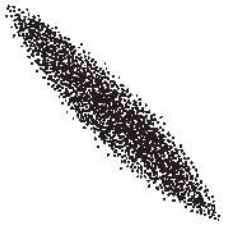
TPJB tips are available in spray angles from 15° to 110° with capacities ranging from 0.017 to 7.0 US gallons per minute at 40 psi.

0° spray angle solid stream tips are also included in this section and provide a solid stream spray pattern. Concentrating the full nozzle flow into a small target area maximizes the impact. Solid stream tips are available in capacities from 0.009 to 7.0 US gallons per minute at 40 psi.

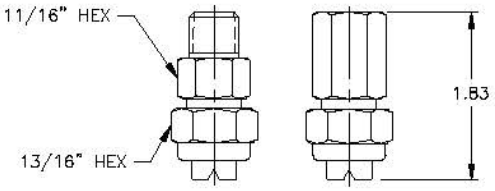
SPECIFICATIONS

TPJB SPRAY TIPS

U.S. GALLONS PER MINUTE											CAPACITY SIZE	APPROX. EQUIV. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE BY SPRAY ANGLE ° @ 40 PSI								
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	300 PSI	500 PSI			00	15	25	40	50	65	73	80	95	110
0.003	0.005	0.006	0.008	0.009	0.011	0.013	0.014	0.02	0.025	0.032	0009	0.008	00									
0.004	0.006	0.008	0.010	0.012	0.015	0.017	0.019	0.027	0.033	0.042	0012	0.010	00									
		0.012	0.015	0.017	0.021	0.024	0.027	0.038	0.047	0.06	0017	0.011		15	25	40	50	65				
0.007	0.009	0.013	0.016	0.019	0.023	0.027	0.030	0.043	0.052	0.067	0019	0.012	00									
0.007	0.010	0.015	0.018	0.021	0.026	0.030	0.033	0.047	0.058	0.074	0021	0.014	00									
		0.016	0.020	0.023	0.028	0.032	0.036	0.051	0.063	0.081	0023	0.012							73			
		0.018	0.022	0.025	0.031	0.035	0.040	0.060	0.070	0.090	0025	0.013		15	25	40	50	65				
		0.023	0.029	0.033	0.040	0.047	0.052	0.070	0.090	0.12	0033	0.015		15	25	40	50	65				
	0.020	0.028	0.034	0.039	0.048	0.055	0.062	0.087	0.11	0.14	0039	0.016							73			
0.018	0.025	0.035	0.043	0.050	0.060	0.070	0.080	0.11	0.14	0.18	0050	0.020	00									
		0.035	0.043	0.050	0.060	0.070	0.080	0.11	0.14	0.18	0050	0.018		15	25	40	50	65		80		
0.024	0.033	0.050	0.060	0.067	0.080	0.090	0.11	0.15	0.18	0.24	0067	0.023	00									
		0.050	0.060	0.067	0.080	0.090	0.11	0.15	0.18	0.24	0067	0.021		15	25	40	50	65				
	0.039	0.055	0.067	0.077	0.09	0.11	0.12	0.17	0.21	0.27	0077	0.022							73			
		0.063	0.075	0.086	0.10	0.12	0.14	0.19	0.23	0.3	0050	0.024		15	25	40	50	65		80		
	0.050	0.070	0.090	0.10	0.12	0.14	0.16	0.22	0.27	0.35	01	0.026		15	25	40	50	65		80	95	110
0.040	0.060	0.080	0.10	0.12	0.14	0.16	0.18	0.26	0.32	0.41	0116	0.028							73			
0.050	0.070	0.11	0.13	0.15	0.18	0.21	0.24	0.34	0.41	0.53	015	0.033	00									
	0.070	0.11	0.13	0.15	0.18	0.21	0.24	0.34	0.41	0.53	015	0.031		15	25	40	50	65		80	95	110
0.050	0.080	0.11	0.13	0.15	0.19	0.22	0.24	0.34	0.42	0.53	0154	0.032							73			



SPRAY PATTERN
flat spray



UNI-JB NOZZLES
male & female with TPJB tips

1/4TTJB UNI-JB ASSEMBLY
with TPJB flat spray tip

DESIGN FEATURES

TPJB spray tips have a flat fan spray that is tapered toward the edges. This allows for adjacent spray tips mounted on a header pipe to overlap and provide uniform coverage across the total sprayed width.
TPJB tips are available in spray angles from 15° to 110° with capacities ranging from 0.017 to 7.0 US gallons per minute at 40 psi.

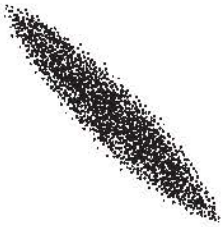
0° spray angle solid stream tips are also included in this section and provide a solid stream spray pattern. Concentrating the full nozzle flow into a small target area maximizes the impact. Solid stream tips are available in capacities from 0.009 to 7.0 US gallons per minute at 40 psi.

SPECIFICATIONS

TPJB SPRAY TIPS - CONTINUED

U.S. GALLONS PER MINUTE											CAPACITY SIZE	APPROX. EQUIV. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE BY SPRAY ANGLE ° @ 40 PSI								
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	300 PSI	500 PSI			00	15	25	40	50	65	73	80	95	110
0.070	0.10	0.14	0.17	0.20	0.25	0.28	0.32	0.45	0.55	0.71	02	0.039	00									
-	0.10	0.14	0.17	0.20	0.25	0.28	0.32	0.45	0.55	0.71	02	0.036		15	25	40	50	65		80	95	110
0.080	0.12	0.16	0.20	0.23	0.28	0.33	0.37	0.52	0.63	0.82	0231	0.040							73			
0.10	0.15	0.21	0.26	0.30	0.37	0.42	0.47	0.67	0.82	1.1	03	0.047	00									
0.11	0.15	0.21	0.26	0.30	0.37	0.42	0.47	0.67	0.82	1.1	03	0.043		15	25	40	50	65		80	95	110
0.11	0.15	0.22	0.27	0.31	0.38	0.44	0.49	0.69	0.84	1.1	0308	0.045							73			
0.14	0.19	0.27	0.33	0.39	0.47	0.54	0.61	0.86	1.1	1.4	0385	0.051							73			
0.14	0.20	0.28	0.35	0.40	0.49	0.57	0.63	0.89	1.1	1.4	04	0.055	00									
0.14	0.20	0.28	0.35	0.40	0.49	0.57	0.63	0.89	1.1	1.4	04	0.052		15	25	40	50	65		80	95	110
0.16	0.23	0.33	0.40	0.46	0.57	0.65	0.73	1.0	1.3	1.6	0462	0.056							73			
0.18	0.25	0.35	0.43	0.50	0.61	0.71	0.79	1.1	1.4	1.8	05	0.061	00									
0.18	0.25	0.35	0.43	0.50	0.61	0.71	0.79	1.1	1.4	1.8	05	0.057		15	25	40	50	65		80	95	110
0.21	0.30	0.42	0.52	0.60	0.73	0.85	0.95	1.3	1.6	2.1	06	0.067	00									
0.21	0.30	0.42	0.52	0.60	0.73	0.85	0.95	1.3	1.6	2.1	06	0.062		15	25	40	50	65		80	95	110
0.22	0.31	0.44	0.53	0.62	0.75	0.87	0.98	1.9	1.7	2.2	0616	0.065							73			
0.27	0.38	0.54	0.67	0.77	0.94	1.1	1.2	1.7	2.1	2.7	0770	0.072							73			
0.28	0.40	0.56	0.69	0.80	0.98	1.1	1.3	1.8	2.2	2.8	08	0.078	00									
0.28	0.40	0.56	0.69	0.80	0.98	1.1	1.3	1.8	2.2	2.8	08	0.072		15	25	40	50	65		80	95	110
0.33	0.46	0.65	0.80	0.92	1.1	1.3	1.5	2.1	2.5	3.3	0924	0.078							73			
0.35	0.50	0.71	0.86	1.0	1.2	1.4	1.6	2.2	2.7	3.5	10	0.086	00									
0.35	0.50	0.71	0.86	1.0	1.2	1.4	1.6	2.2	2.7	3.5	10	0.078		15	25	40	50	65		80	95	110
0.53	0.75	1.1	1.3	1.5	1.8	2.1	2.4	3.4	4.1	5.3	15	0.107	00									
0.53	0.75	1.1	1.3	1.5	1.8	2.1	2.4	3.4	4.1	5.3	15	0.094		15	25	40	50	65		80	95	110
0.71	1.0	1.4	1.7	2.0	2.5	2.8	3.2	4.5	5.5	7.1	20	0.125	00									
0.71	1.0	1.4	1.7	2.0	2.5	2.8	3.2	4.5	5.5	7.1	20	0.109		15	25	40	50	65		80	95	110
1.1	1.5	2.1	2.6	3.0	3.7	4.2	4.7	6.7	8.2	10.6	30	0.141	00	15	25	40	50	65		80	95	110
1.4	2.0	2.8	3.5	4.0	4.9	5.7	6.3	8.9	11.0	14.2	40	0.156		15	25	40	50	65		80	95	
1.8	2.5	3.5	4.3	5.0	6.1	7.1	7.9	11.2	13.7	17.7	50	0.172	00	15	25	40	50	65		80	95	
2.1	3.0	1.2	5.2	6.0	7.3	8.5	9.5	13.4	16.4	21.0	60	0.188		15	25	40	50	65		80	95	
2.5	3.5	4.9	6.1	7.0	8.6	9.9	11.1	15.7	79.2	25.0	70	0.203		15	25	40	50	65		80	95	

UNI-JB SPRAY TIPS
WIDE ANGLE LOW IMPACT



SPRAY PATTERN	TKJB
flat spray	wide angle

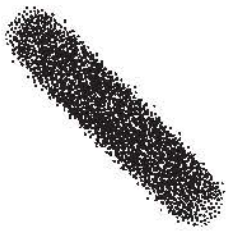
DESIGN FEATURES

TKJB spray tips provide a wide angle, low impact spray pattern. They are ideally suited for operating at low pressures in applications where a coating is to be applied with minimum splash back. Distribution is tapered across the width of the pattern and droplet size is small to medium depending on the tip capacity and operating pressure. A slot machined in the front of the tip is parallel to the plane of the spray pattern and allows for easy alignment. The tip has a round orifice with relatively large free passage size to minimize plugging. Capacities range from 0.050 to 4.0 US gpm at 10 psi, and spray angles from 73° @ 7 psi to 145° @ 60 psi . Standard materials are brass and 303 stainless steel.

SPECIFICATIONS

U.S. GALLONS PER MINUTE									SPRAY ANGLE °			CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	NOZZLE TYPE
3 PSI	5 PSI	7 PSI	10 PSI	15 PSI	20 PSI	30 PSI	40 PSI	60 PSI	7 PSI	20 PSI	60 PSI			UNI-JB FLANGE
			0.050	0.060	0.070	0.080	0.10	0.12		89	122	.50	0.024	TKJB
			0.075	0.090	0.11	0.13	0.15	0.18		106	125	.75	0.028	
			0.10	0.12	0.14	0.17	0.20	0.24		109	128	1	0.033	
		0.12	0.15	0.18	0.21	0.26	0.30	0.37	73	108	125	1.5	0.041	
		0.17	0.20	0.24	0.28	0.35	0.40	0.49	83	113	129	2	0.046	
	0.18	0.21	0.25	0.31	0.35	0.43	0.50	0.61	98	122	133	2.5	0.052	
	0.21	0.25	0.30	0.37	0.42	0.52	0.60	0.73	86	112	126	3	0.057	
	0.28	0.33	0.40	0.49	0.57	0.69	0.80	0.98	97	123	132	4	0.065	
0.27	0.35	0.42	0.50	0.61	0.71	0.87	1.0	1.2	114	128	142	5	0.073	
0.41	0.53	0.63	0.75	0.92	1.1	1.3	1.5	1.8	101	119	134	7.5	0.091	
0.55	0.71	0.84	1.0	1.2	1.4	1.7	2.0	2.5	115	133	145	10	0.104	
0.82	1.1	1.3	1.5	1.8	2.1	2.6	3.0	3.7	98	113	123	15	0.129	
0.99	1.3	1.5	1.8	2.2	2.5	3.1	3.6	4.4	106	120	131	18	0.141	
1.1	1.4	1.7	2.0	2.4	2.8	3.5	4.0	4.9	110	122	133	20	0.148	
1.6	2.1	2.5	3.0	3.7	4.2	5.1	6.0	7.3	100	110	121	30	0.180	
2.2	2.8	3.3	4.0	4.9	5.7	6.9	8.0	9.8	111	126	136	40	0.209	

UNI-JB SPRAY TIPS
AIR & STEAM BLOW-OFF



SPRAY PATTERN
air flat fan

TBJB
blow-off tip for air & steam

DESIGN FEATURES

TBJB spray tips are designed specifically for spraying air and steam or other gases. They are available in brass or stainless steel and have flow rates from 3.6 to 61 scfm of air at 100 psi, or from 8.2 to 140 pounds per hour of steam at 100 psi.

A slot machined in the hemispherical face of the tip provides a flat fan of air or steam with pattern widths ranging from 5-1/2" to 16-1/2" at 6" distance from the spray tip. TBJB tips are precision machined to provide the specific performance shown in the tables, and are much more energy efficient for blow-off and cooling applications than tubing flattened at the end, or holes drilled in pipe.

SPECIFICATIONS

CAPACITY FOR AIR (SCFM)				CAPACITY FOR STEAM (LBS PER HOUR)				SPRAY COVERAGE AT 6 INCHES DISTANCE (INCHES)		CAPACITY SIZE	APPROX. SLOT WIDTH (INCHES)	NOZZLE TYPE
10 PSI	25 PSI	50 PSI	100 PSI	10 PSI	25 PSI	50 PSI	100 PSI	10 PSI	50 PSI			UNI-JB FLANGE
0.60	1.3	2.1	3.6	1.2	2.8	4.6	8.2	10	16-1/2	L	0.008	TBJB
1.2	2.0	3.1	5.4	2.4	4.4	7.0	12.1	5-1/2	10	P	0.013	
2.2	3.9	6.2	10.7	4.7	8.7	14	25.3	8-1/2	13	Q	0.023	
3.9	6.4	11.0	19.0	8.4	14.0	28.0	43.0	6	9-1/2	R	0.045	
6.3	11.0	18.5	31.0	13.5	25.0	41.7	71.0	10-1/2	14-1/2	U	0.045	
12.5	22.7	37.0	61.0	26.8	51.2	83.5	140	9	13-1/2	V	0.091	

QJB QUICK-SPRAY
exploded view

1/4QJJJB QUICK-SPRAY
nozzle complete

INTRODUCTION

Quick-Spray Assemblies. The JB Quick-Spray system of nozzles and tips is an innovative breakthrough in spray nozzle maintenance. For use in spray applications such as washing, rinsing, cooling, coating, and others, where the nozzles need to be removed for cleaning or replacement on a regular basis.

Spray tips can be inserted and removed by hand, and locked in place with a twist.

For applications where the alignment of the spray pattern is important, the nozzle body, fixed permanently into the piping, will always position the removable spray tip in the same orientation. This is especially important with flat fan type spray nozzles, where adjacent tip patterns must overlap for even coverage, but should not impinge on each other. The positive tip alignment maintains the offset built into the body position in the pipe header. A flexible seal, supplied in either Buna-N or Viton, ensures a positive seal throughout the recommended operating pressure range. The seal also acts as a spring to maintain pressure on the tip inside the QJB body.

The two main categories of Quick-Spray nozzles are based on the material, and they are available in metal – QJB or QLJB.

QJB Metal Quick-Spray nozzles. These are available in Brass, 303 stainless steel, and 316 stainless steel, with either Buna N or Viton seals. Nozzle bodies have pipe connection sizes from 1/8" to 1/2" NPT, male and female. Some of the larger capacity tips will not perform well with 1/8" body sizes, and these are noted in the tables.

Accessories specifically designed for the QJB Quick-Spray nozzle system include: Quick-Spray adapters with NPT-F threaded outlets. These will accept any other type of spray nozzle with a threaded NPT-M inlet connection from 1/8" to ½", to convert the application to Quick-Spray. Blank shut-off plugs are also available.

Adjustable ball fittings with the Quick-Spray outlet format will allow nozzle directional adjustment through an approximately 40° spherical range. Once set, the ball retainer nut is tightened, and the nozzle outlet is permanently positioned exactly as required. Future changes of Quick-Spray spray tips will be automatically aligned.

COMMON APPLICATIONS

- Sanitation in Food Processing Plant
- Animal Carcass Washing
- Cooling Extruded PVC Pipe
- Screen and Filter Cleaning
- Metal Pretreatment
- Cooling Food Containers After Packaging
- Any spray nozzle application for standard full cone, hollow cone, flat spray or spiral nozzles where tips need to be removed for cleaning or replacement, or where pattern alignment is critical

SPECIFICATIONS

QUICK-SPRAY BODIES - FOR INLET CONNECTIONS 1/8, 1/4, 3/8 OR 1/2

MATERIAL	STANDARD SIZE			LARGE SIZE		
	NPT-M	NPT-F	Butt weld	NPT-M	NPT-F	Butt weld
BRASS	QJJJB	QJJB	QWJB	QJJLJB	QJLJB	QLWJB
303 ST. STEEL	QJJSJB	QJSJB	QWSJB	QJJLSJB	QJLSJB	QLWSJB
316 ST. STEEL	QJJSXJB	QJSXJB	QWSXJB	QJJLSXJB	QJLSXJB	QLWSXJB

QUICK-SPRAY OUTLET ADAPTERS
FOR OUTLET THREAD SIZES NPT (F) - 1/8, 1/4, 3/8 OR 1/2

MATERIAL	STANDARD SIZE NPT(F)	LARGE SIZE NPT(F)
BRASS	QJBx*	QLJBx*
303 ST. STEEL	QSJBx*	QLSJBx*
316 ST. STEEL	QSXJBx*	QLSXJBx*

* Add outlet thread size, e.g. QJBx1/4

QUICK-SPRAY ADJUSTABLE SWIVEL BODY

INLET CONNECTION NPT(M)	STANDARD SIZE	
	BRASS	303 ST. STEEL
1/8	1/8X1/8QJB	1/8X1/8QSJB
1/4	1/4X1/4QJB	1/4X1/4QSJB
3/8	3/8X3/8QJB	3/8X3/8QSJB
1/2	1/2X1/2QJB	1/2X1/2QSJB

UNI-JB ADAPTER
FOR OUTLET CONNECTION 11/16 - 16 (M)

MATERIAL		
BRASS	303 ST. STEEL	316 ST. STEEL
QTJB	QTSJB	QTSXJB

BLANK PLUG

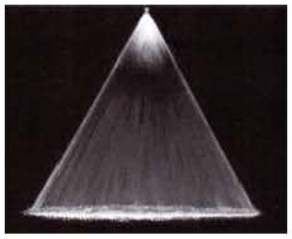
STANDARD SIZE			LARGE SIZE		
BRASS	303 ST. STEEL	316 ST. STEEL	BRASS	303 ST. STEEL	316 ST. STEEL
QPJB	QPSJB	QPSXJB	QLPJB	QLPSJB	QLPSXJB

SADDLE CLAMP BODIES

OUTLET BODY MATERIAL	TO CLAMP ONTO					
	PIPE SIZE	3/4*	1*	1-1/4**	1-1/2**	2**
	TUBING O.D.	1 to 1-1/16*	1-1/8 to 1-3/8*	1-9/16 to 1-11/16**	1-3/4 to 2**	2-1/8 to 2-3/8**
BRASS		3/4QSEJB	1QSEJB	1-1/4QSEJB	1-1/2QEJB	2QSEJB
303 ST. STEEL		3/4QSESJB	1QSESJB	1-1/4QSESJB	1-1/2QESJB	2QSESJB

* Drill 1/2" hole
** Drill 11/16" hole

Large size bodies, tips and adapters are not interchangeable with standard size.



SPRAY PATTERN
0° - 120° flat fan

SPRAY PATTERN
hollow cone

SPRAY PATTERN
full cone

1/4QJJVVJB
low capacity flat fan

1/4QJJMBSJJB
spiral hollow cone

DESIGN FEATURES

QJB Quick-Spray spray tips are precision machined from brass and stainless steel to the same high standards as threaded nozzles of the same type. They are installed by twisting and locking into a positive stop position in the nozzle body. This provides automatic alignment of the spray pattern when tips are replaced in existing nozzle bodies, an important benefit especially for flat fan tips, where the direction of the spray plane is critical. They are available in Brass, 303 Stainless Steel and 316 Stainless Steel. Buna-N seals are standard on brass tips, and Viton standard on Stainless Steel tips.

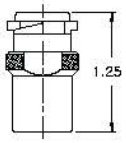
COMMON APPLICATIONS

- Conveyor Cooling
- Gravel & Aggregate Washing
- Vehicle Wash Arches
- Oil Preservative Coating on Steel Coils
- Dust Control at Conveyor Transfer Points
- Rinsing in Glass & Mirror Production
- Any spray nozzle application for standard full cone, hollow cone, flat spray or spiral nozzles where tips need to be removed for cleaning or replacement, or where pattern alignment is critical.

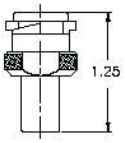
QUICK-SPRAY NOZZLE SYSTEM
DESIGN FEATURES - CONTINUED

QKJB
low impact flat spray

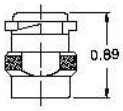
QBJB
hollow cone



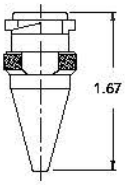
QKJB & QPJB
dimensions



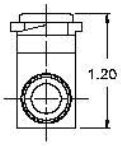
QKJB LOW FLOW
dimensions



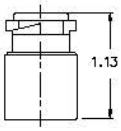
QVVJB, QUJB & QHJB
dimensions



QSJJB SPIRAL
dimensions



QBJB HOLLOW CONE
dimensions



3/8" NPT (F) OUTLET ADAPTER
dimensions

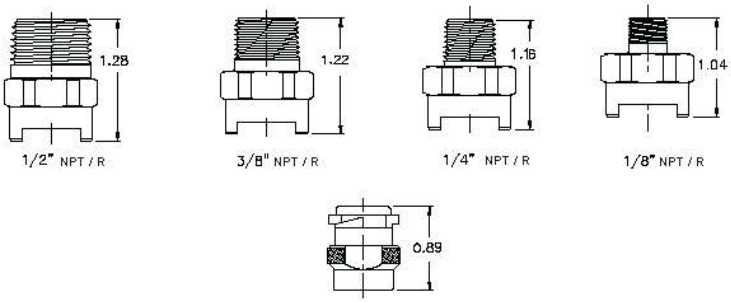
TYPES & MATERIALS

SPRAY TIP TYPE	STANDARD SIZE			LARGE SIZE		
	BRASS	303SS	316SS	BRASS	303SS	316SS
FULL CONE	QHJB	QHSJB	QHSXJB	QLHJB	QLHSJB	QLHSXJB
SPIRAL TYPE FULL CONE	QHSJJB	QHSJSJB	QHSJSXJB			
HOLLOW CONE	QBJB	QBSJB	QBSXJB			
SPIRAL TYPE HOLLOW CONE	QBSJJB	QBSJSJB	QBSJSXJB			
STANDARD FLAT FAN LESS THAN SIZE 10	QVVJB	QVVSJB	QVVSXJB			
STANDARD FLAT FAN SIZE 10 & UP	QUJB	QUSJB	QUSXJB	QLUJB	QLUSJB	QLUSXJB
FLAT FAN NARROW ANGLE - HIGH IMPACT	QPJB	QPSJB	QPSXJB			
FLAT FAN WIDE ANGLE - LOW IMPACT	QKJB	QKSJB	QKSXJB			

Large size bodies, adapters and spray tips are not interchangeable with standard size.

QUICK-SPRAY NOZZLE SYSTEM
FULL CONE

SPRAY PATTERN
120° full cone



QHJB
male bodies & tip dimensions

QHJB

1/4QMHJB
standard angle

DESIGN FEATURES

Quick-Spray Full Cone tips provide a circular spray pattern with the centre filled in, and have light to medium impact. They are available in a range of flow rates from 0.19 US gpm to more than 6 US gpm based on 40 psi spray pressure, and with spray angles from 30° to 120°. Square spray patterns are also available.

COMMON APPLICATIONS

- Washing & Rinsing
- Rinsing
- Gas Cooling
- Coating with Chemicals
- Fire Prevention

SPECIFICATIONS

FULL CONE STANDARD SPRAY ANGLE
FITS QUICK SPRAY BODY SIZES 1/8" TO 1/2"

U.S. GALLONS PER MINUTE										SPRAY ANGLE °			CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	TIP TYPE
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI	7 PSI	20 PSI	80 PSI			STANDARD SIZE
	0.10	0.14	0.17	0.19	0.23	0.26	0.30	0.42	0.60		58	53	1	0.031	
	0.13	0.18	0.22	0.25	0.30	0.35	0.38	0.53	0.74		60*		1.3	0.043	QHJB
0.14	0.20	0.28	0.34	0.38	0.46	0.53	0.59	0.83	1.2	43	50	46	2	0.047	QGJB
0.19	0.26	0.36	0.44	0.50	0.60	0.69	0.77	1.1	1.5		60*		2.6	0.055	QHJB
0.22	0.30	0.42	0.50	0.57	0.69	0.79	0.88	1.2	1.8	52	65	59	3	0.063	QGJB
0.28	0.39	0.54	0.66	0.75	0.91	1.0	1.2	1.6	2.2		60*		3.9	0.072	QHJB
0.36	0.50	0.69	0.82	0.95	1.2	1.3	1.5	2.1	3.0	52	65	59	5	0.078	
0.38	0.52	0.72	0.87	1.0	1.2	1.4	1.5	2.1	3		60*		5.2	0.082	QHJB
0.47	0.65	0.89	1.1	1.3	1.5	1.7	1.9	2.7	3.8	45	50	46	6.5	0.094	QHJB
0.56	0.78	1.1	1.3	1.5	1.8	2.1	2.3	3.2	4.4		60*		7.8	0.109	QHJB
0.57	0.80	1.1	1.4	1.6	2	2.3	2.5	3.5	5.0	54	65	61	8	0.096	
0.75	1.0	1.4	1.8	2.0	2.4	2.8	3.1	4.3	5.9		60*		10	0.125	QHJB
0.73	1.0	1.4	1.7	1.9	2.4	2.7	3.0	4.2	6.0	58	67	61	10A	0.109	
1.1	1.5	2.1	2.5	2.9	3.5	4.0	4.4	6.2	8.8	64	67	61	15	0.141	QGJB
1.1	1.6	2.2	2.6	3.0	3.6	4.2	4.6	6.4	8.9		60*		16	0.156	QHJB
1.5	2.1	2.9	3.5	4.0	4.8	5.5	6.2	8.5	11.8		60*		21	0.188	QHJB
1.6	2.2	3.0	3.7	4.2	5.1	5.8	6.4	9.1	12.8	87	90	82	22	0.188	QGJB
1.9	2.3	3.6	4.4	5.0	6.1	6.9	7.7	9.3	10.6		60*		23	0.203	QHJB
2.3	3.1	4.3	5.2	6.0	7.3	8.3	9.2	11.2	12.3		60*		31	0.219	QHJB

* These sizes are also available with 90° spray angle

SPECIFICATIONS

FULL CONE WIDE ANGLE
FITS QUICK-SPRAY BODY SIZES 1/8" TO 1/2"

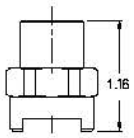
U.S. GALLONS PER MINUTE										SPRAY ANGLE ° @ 40 PSI	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	TIP TYPE
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI				STANDARD SIZE
	0.13	0.18	0.22	0.25	0.30	0.35	0.38	0.53	0.74	120	1.3W	0.043	QHJB
0.19	0.26	0.36	0.44	0.50	0.60	0.69	0.77	1.1	1.5		2.6W	0.055	QHJB
0.20	0.28	0.40	0.48	0.56	0.69	0.79	0.88	1.2	1.8		2.8W	0.063	
0.28	0.39	0.54	0.66	0.75	0.91	1.0	1.2	1.6	2.2		3.9W	0.072	QHJB
0.30	0.43	0.61	0.74	0.86	1.1	1.2	1.3	1.8	2.6		4.3W	0.078	
0.38	0.52	0.72	0.87	1.0	1.2	1.4	1.5	2.1	3.0		5.2W	0.082	QHJB
0.40	0.56	0.79	0.97	1.1	1.4	1.6	1.8	2.5	3.6		5.6W	0.094	
0.56	0.78	1.1	1.3	1.5	1.8	2.1	2.3	3.2	4.4		7.8W	0.109	QHJB
0.55	0.80	1.1	1.4	1.6	2.0	2.3	2.6	3.5	5.2		8W	0.094	
0.75	1.0	1.4	1.8	2.0	2.4	2.8	3.1	4.3	5.9		10W	0.125	QHJB
0.71	1.0	1.4	1.7	2.0	2.4	2.8	3.1	4.3	6.1		10AW	0.109	QHJB
1.0	1.4	2.0	2.4	2.8	3.4	4.0	4.4	6.2	8.8		14W	0.141	
1.1	1.6	2.2	2.6	3.0	3.6	4.2	4.6	6.4	8.9		16W	0.156	QHJB
1.5	2.1	2.9	3.5	4.0	4.8	5.5	6.2	8.5	11.8		21W	0.188	QHJB
1.9	2.3	3.6	4.4	5.0	6.1	6.9	7.7	9.3	10.6		23W	0.203	QHJB
2.3	3.1	4.3	5.2	6.0	7.3	8.3	9.2	11.2	12.3		31W	0.219	QHJB

FULL CONE 15°
FITS QUICK-SPRAY BODY SIZES 1/8" TO 1/2"

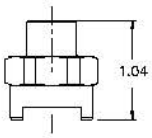
U.S. GALLONS PER MINUTE										SPRAY ANGLE ° @ 40 PSI	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	TIP TYPE
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI				STANDARD SIZE
0.25	0.35	0.50	0.61	0.70	0.86	0.99	1.1	1.6	2.2	15	07	0.063	QGJB
1.1	1.5	2.1	2.6	3.0	3.7	4.2	4.7	6.7	9.4		30	0.125	
1.8	2.5	3.5	4.3	5.0	6.1	7.1	7.9	11.2	15.8		50	0.172	

FULL CONE 30°
FITS QUICK-SPRAY BODY SIZES 1/8" TO 1/2"

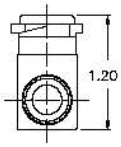
U.S. GALLONS PER MINUTE										SPRAY ANGLE ° @ 40 PSI	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	TIP TYPE
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI				STANDARD SIZE
0.050	0.070	0.10	0.1	0.1	0.2	0.20	0.22	0.31	0.44	30	01.4	0.031	QGJB
0.090	0.13	0.2	0.2	0.3	0.30	0.4	0.38	0.53	0.74		02.5	0.043	QHJB
0.19	0.26	0.4	0.4	0.50	0.60	0.7	0.77	1.1	1.5		05	0.055	
0.28	0.39	0.5	0.66	0.8	0.9	1.0	1.2	1.6	2.2		07.5	0.072	
0.38	0.52	0.7	0.87	1.0	1.2	1.4	1.5	2.1	3.0		10	0.082	
0.56	0.78	1.1	1.3	1.5	1.8	2.1	2.3	3.2	4.4		15	0.109	
0.75	1.0	1.4	1.8	2.0	2.4	2.8	3.1	4.3	5.9		20	0.125	
1.1	1.6	2.2	2.6	3.0	3.6	4.2	4.6	6.4	8.9		30	0.156	
1.5	2.1	2.9	3.5	4.0	4.8	5.5	6.2	8.5	11.8		40	0.188	
1.9	2.3	3.6	4.4	5.0	6.1	6.9	7.7	9.3	10.6		50	0.203	
2.3	3.1	4.3	5.2	6.0	7.3	8.3	9.2	11.2	12.3		60	0.219	



1/4" FNPT / Rp



1/8" FNPT / Rp



QBJB

QBJB
female bodies & tip dimensions

QBJB
metal

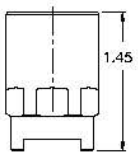
DESIGN FEATURES

Quick-Spray Hollow Cone Tips provide a circular spray pattern with a hollow centre and produce small size droplets with light impact. They are available in a range of flow rates from 0.1 US gpm to 4 US gpm based on 40 psi spray pressure, and with spray angles of 70° and 110°. Spray tips are automatically aligned when replaced into a permanently mounted Quick Change body.

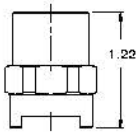
SPECIFICATIONS - HOLLOW CONE STANDARD ANGLE

FITS QUICK-SPRAY BODY SIZES 1/8" TO 1/2"

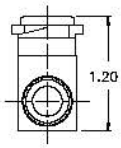
U.S. GALLONS PER MINUTE										SPRAY ANGLE ° @ 40 PSI (METAL)	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	TIP TYPE
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI				STANDARD SIZE
		0.070	0.090	0.10	0.12	0.14	0.16	0.22	0.32		.5	0.030	QBJB
	0.060	0.080	0.10	0.12	0.15	0.17	0.19	0.27	0.38		.6	0.030	QBJB
	0.090	0.13	0.16	0.18	0.22	0.25	0.28	0.40	0.56		.9	0.050	QBJB
0.070	0.10	0.14	0.17	0.20	0.24	0.28	0.32	0.45	0.64		1	0.060	QBJB
0.10	0.14	0.19	0.23	0.27	0.33	0.38	0.43	0.60	0.86		1.4	0.050	QBJB
0.12	0.18	0.25	0.31	0.35	0.43	0.49	0.55	0.78	1.1		1.8	0.060	QBJB
0.14	0.20	0.28	0.35	0.40	0.49	0.57	0.63	0.89	1.3		2	0.080	QBJB
0.15	0.21	0.30	0.37	0.42	0.51	0.59	0.66	0.94	1.3		2.1	0.060	QBJB
0.17	0.24	0.34	0.42	0.48	0.59	0.68	0.76	1.1	1.5		2.4	0.060	QBJB
0.18	0.25	0.35	0.43	0.50	0.61	0.71	0.79	1.1	1.6		2.5	0.080	QBJB
0.19	0.27	0.37	0.46	0.53	0.65	0.75	0.84	1.2	1.7		2.7	0.110	QBJB
0.21	0.30	0.42	0.52	0.60	0.73	0.85	1.0	1.3	1.9		3	0.090	QBJB
0.24	0.34	0.48	0.59	0.68	0.83	0.96	1.1	1.5	2.2		3.4	0.130	QBJB
0.25	0.35	0.49	0.60	0.70	0.86	0.99	1.1	1.6	2.2		3.5	0.090	QBJB
0.28	0.40	0.57	0.70	0.80	0.98	1.1	1.3	1.8	2.5		4	0.080	QBJB
0.35	0.50	0.71	0.87	1.0	1.2	1.4	1.6	2.2	3.2	70	5	0.130	QBJB
0.46	0.65	0.92	1.1	1.3	1.6	1.8	2.1	2.9	4.1		6.5	0.130	QBJB
0.53	0.75	1.1	1.4	1.5	1.8	2.1	2.4	3.4	4.7		7.5	0.220	QBJB
0.57	0.80	1.1	1.4	1.6	2.0	2.3	2.5	3.6	5.1		8	0.160	QBJB
0.64	0.90	1.3	1.6	1.8	2.2	2.6	2.9	4.0	5.7		9	0.170	QBJB
0.71	1.0	1.4	1.7	2.0	2.5	2.8	3.2	4.5	6.3		10	0.220	QBJB
0.78	1.1	1.6	2.0	2.2	2.7	3.1	3.5	4.9	7.0		11	0.220	QBJB
0.85	1.2	1.7	2.1	2.4	2.9	3.4	3.8	5.4	7.6		12	0.200	QBJB
0.92	1.3	1.8	2.3	2.6	3.2	3.7	4.1	5.8	8.2		13	0.220	QBJB
0.95	1.4	1.9	2.3	2.7	3.3	3.8	4.3	6.0	8.5		13.5	0.220	QBJB
0.99	1.4	2.0	2.4	2.8	3.4	4.0	4.4	6.3	8.9		14	0.200	QBJB
1.1	1.5	2.1	2.6	3.0	3.7	4.2	4.7	6.7	9.5		15	0.250	QBJB
1.2	1.7	2.4	2.9	3.4	4.2	4.8	5.4	7.6	10.8		17	0.280	QBJB
1.2	1.8	2.5	3.1	3.5	4.3	5.0	5.5	7.8	11.1		17.5	0.230	QBJB
1.4	2.0	2.8	3.5	4.0	4.9	5.7	6.3	8.9	12.6		20	0.250	QBJB



1/2" FNPT / R



3/8" FNPT / R



QBJB

QBJB
female bodies & tip dimensions

QBJB
metal

COMMON APPLICATIONS

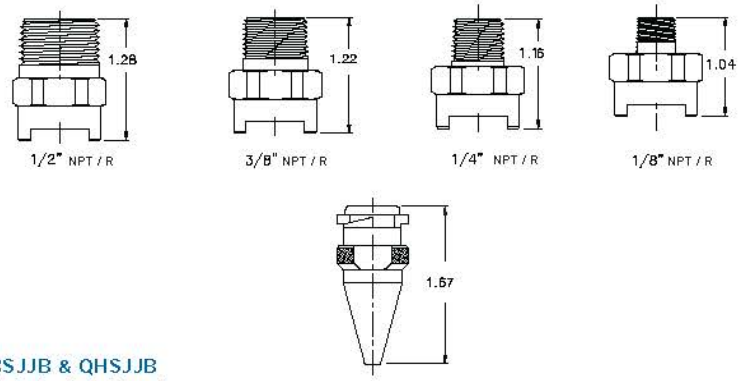
- > Light Rinsing
- > Product Cooling
- > Gas Cooling
- > Coating
- > Moistening
- > Sanitizing

SPECIFICATIONS - HOLLOW CONE WIDE ANGLE

FITS QUICK-SPRAY BODY SIZES 1/8" TO 1/2"

U.S. GALLONS PER MINUTE										SPRAY ANGLE ° @ 40 PSI (METAL)	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	TIP TYPE STANDARD SIZE
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI				
		0.070	0.090	0.10	0.12	0.14	0.16	0.22	0.32	110	.5W	0.030	QBJB
	0.060	0.080	0.10	0.12	0.15	0.17	0.19	0.27	0.38		.6W	0.030	QBJB
	0.090	0.13	0.16	0.18	0.22	0.25	0.28	0.40	0.56		.9W	0.050	QBJB
0.070	0.10	0.14	0.17	0.20	0.24	0.28	0.32	0.45	0.64		1W	0.060	QBJB
0.10	0.14	0.19	0.23	0.27	0.33	0.38	0.43	0.60	0.86		1.4W	0.050	QBJB
0.12	0.18	0.25	0.31	0.35	0.43	0.49	0.55	0.78	1.1		1.8W	0.060	QBJB
0.14	0.20	0.28	0.35	0.40	0.49	0.57	0.63	0.89	1.3		2W	0.080	QBJB
0.15	0.21	0.30	0.37	0.42	0.51	0.59	0.66	0.94	1.3		2.1W	0.060	QBJB
0.17	0.24	0.34	0.42	0.48	0.59	0.68	0.76	1.1	1.5		2.4W	0.060	QBJB
0.18	0.25	0.35	0.43	0.50	0.61	0.71	0.79	1.1	1.6		2.5W	0.080	QBJB
0.19	0.27	0.37	0.46	0.53	0.65	0.75	0.84	1.2	1.7		2.7W	0.110	QBJB
0.21	0.30	0.42	0.52	0.60	0.73	0.85	1.0	1.3	1.9		3W	0.090	QBJB
0.24	0.34	0.48	0.59	0.68	0.83	0.96	1.1	1.5	2.2		3.4W	0.130	QBJB
0.25	0.35	0.49	0.60	0.70	0.86	0.99	1.1	1.6	2.2		3.5W	0.090	QBJB
0.28	0.40	0.57	0.70	0.80	0.98	1.1	1.3	1.8	2.5		4W	0.080	QBJB
0.35	0.50	0.71	0.87	1.0	1.2	1.4	1.6	2.2	3.2		5W	0.130	QBJB
0.46	0.65	0.92	1.1	1.3	1.6	1.8	2.1	2.9	4.1		6.5W	0.130	QBJB
0.53	0.75	1.1	1.4	1.5	1.8	2.1	2.4	3.4	4.7		7.5W	0.220	QBJB
0.57	0.80	1.1	1.4	1.6	2.0	2.3	2.5	3.6	5.1		8W	0.160	QBJB
0.64	0.90	1.3	1.6	1.8	2.2	2.6	2.9	4.0	5.7		9W	0.170	QBJB
0.71	1.0	1.4	1.7	2.0	2.5	2.8	3.2	4.5	6.3		10W	0.220	QBJB
0.78	1.1	1.6	2.0	2.2	2.7	3.1	3.5	4.9	7.0		11W	0.220	QBJB
0.85	1.2	1.7	2.1	2.4	2.9	3.4	3.8	5.4	7.6		12W	0.200	QBJB
0.92	1.3	1.8	2.3	2.6	3.2	3.7	4.1	5.8	8.2		13W	0.220	QBJB
0.95	1.4	1.9	2.3	2.7	3.3	3.8	4.3	6.0	8.5		13.5W	0.220	QBJB
0.99	1.4	2.0	2.4	2.8	3.4	4.0	4.4	6.3	8.9		14W	0.200	QBJB
1.1	1.5	2.1	2.6	3.0	3.7	4.2	4.7	6.7	9.5		15W	0.250	QBJB
1.2	1.7	2.4	2.9	3.4	4.2	4.8	5.4	7.6	10.8		17W	0.280	QBJB
1.2	1.8	2.5	3.1	3.5	4.3	5.0	5.5	7.8	11.1		17.5W	0.230	QBJB
1.4	2.0	2.8	3.5	4.0	4.9	5.7	6.3	8.9	12.6		20W	0.250	QBJB

QUICK-SPRAY NOZZLE SYSTEM
HOLLOW CONE & FULL CONE
SPIRAL TYPE



QBSJJB & QHSJJB
male bodies & tip dimensions

1/4QJJBSJJB & 1/4QJJHSJJB
spiral Quick-Spray

DESIGN FEATURES

Quick-Spray Hollow and Full Cone Spiral Tips provide a circular spray pattern with either a hollow or full centre. Capacities available range from 1.4 US gpm to over 16 US gpm based on 40 psi spray pressure. Spray angles range from 60° to 180°, wider spray angles than those of the standard hollow and full cone tips.

COMMON APPLICATIONS

- Washing
- Rinsing
- Product Cooling
- Gas Cooling

SPECIFICATIONS

QBSJJB - SPIRAL HOLLOW CONE

U.S. GALLONS PER MINUTE										AVAILABLE SPRAY ANGLES				TO FIT QUICK-SPRAY BODY SIZE	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI								
0.50	0.70	0.99	1.2	1.4	1.7	2.0	2.2	3.1	4.4	60°	90°	120°	180°	1/8 to 1/2	07	0.090	0.090
0.92	1.3	1.8	2.3	2.6	3.2	3.7	4.1	5.8	8.2	60°	90°	120°	180°		13	0.130	0.130
1.4	2.0	2.8	3.5	4.0	4.9	5.7	6.3	8.9	12.6	60°	90°	120°	180°		20	0.130	0.160
2.1	3.0	4.2	5.2	6.0	7.4	8.5	9.5	13.4	19.0	60°	90°	120°	180°		30	0.130	0.190
2.9	4.1	5.7	7.0	8.1	9.9	11.5	12.8	18.1	25.6	60°	90°	120°	180°	1/4 to 1/2	41	0.130	0.220
3.8	5.3	7.5	9.2	10.6	13.0	15.0	16.8	23.7	33.5	60°	90°	120°	180°		53	0.130	0.250
5.8	8.3	11.7	14.3	16.5	20.2	23.3	26.1	36.9	52.2	60°	90°	120°	180°		83	0.130	0.310

QHSJJB - SPIRAL FULL CONE

U.S. GALLONS PER MINUTE										AVAILABLE SPRAY ANGLES					TO FIT QUICK-SPRAY BODY SIZE	CAPACITY SIZE	APPROX. FREE PASSAGE DIAMETER (INCHES)	APPROX. ORIFICE DIAMETER (INCHES)
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI									
0.50	0.70	0.99	1.2	1.4	1.7	2.0	2.2	3.1	4.4	60°	90°	120°	150°	170°	1/8 to 1/2	07	0.090	0.090
0.92	1.3	1.8	2.3	2.6	3.2	3.7	4.1	5.8	8.2	60°	90°	120°	150°	170°		13	0.130	0.130
1.4	2.0	2.8	3.5	4.0	4.9	5.7	6.3	8.9	12.6	60°	90°	120°	150°	170°		20	0.130	0.160
2.1	3.0	4.2	5.2	6.0	7.4	8.5	9.5	13.4	19.0	60°	90°	120°	150°	170°		30	0.130	0.190
2.9	4.1	5.7	7.0	8.1	9.9	11.5	12.8	18.1	25.6	60°	90°	120°	150°	170°	1/4 to 1/2	41	0.130	0.220
3.8	5.3	7.5	9.2	10.6	13.0	15.0	16.8	23.7	33.5	60°	90°	120°	150°	170°		53	0.130	0.250
5.8	8.3	11.7	14.3	16.5	20.2	23.3	26.1	36.9	52.2	60°	90°	120°	150°	170°		83	0.130	0.310

QUICK-SPRAY NOZZLE SYSTEM
FLAT FAN

SPRAY PATTERN
120° flat fan

1/4QJJJB
Quick-Spray body & gasket

QVVJB
flat fan tip

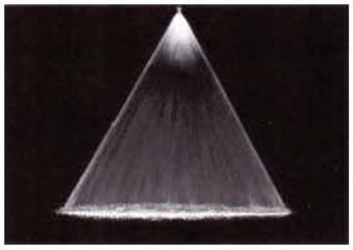
COMMON APPLICATIONS

- Washing
- Cooling
- Moistening

SPECIFICATIONS

QVVJB - STANDARD SIZE - FITS QUICK-SPRAY BODY SIZES 1/8" TO 1/2"

U.S. GALLONS PER MINUTE											AVAILABLE SPRAY ANGLES °												CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI	500 PSI	00	15	25	30	40	50	65	73	80	90	95	110	120		
		0.012	0.015	0.017	0.021	0.024	0.027	0.038	0.054	0.060			25		40	50	65							0017	0.011
		0.016	0.020	0.023	0.028	0.032	0.036	0.051	0.072	0.081								73						0023	0.012
		0.018	0.022	0.025	0.031	0.035	0.040	0.060	0.080	0.090			25		40	50	65							0025	0.013
		0.023	0.029	0.033	0.040	0.047	0.052	0.070	0.10	0.12			25		40	50	65							0033	0.015
		0.035	0.043	0.050	0.060	0.070	0.080	0.11	0.16	0.18			25		40	50	65		80					0050	0.018
	0.030	0.050	0.060	0.067	0.080	0.090	0.11	0.15	0.22	0.24			25		40	50	65		80					0067	0.021
0.030	0.050	0.070	0.090	0.10	0.12	0.14	0.16	0.22	0.32	0.35	00	15	25	30	40	50	65		80	90	95	110	120	01	0.026
0.050	0.080	0.11	0.13	0.15	0.18	0.21	0.24	0.34	0.47	0.53	00	15	25	30	40	50	65		80	90	95	110	120	015	0.031
0.070	0.10	0.14	0.17	0.20	0.25	0.28	0.32	0.45	0.63	0.71	00	15	25	30	40	50	65		80	90	95	110	120	02	0.036
0.090	0.13	0.18	0.22	0.25	0.31	0.35	0.4	0.56	0.79	0.88	00	15	25	30	40	50	65		80	90	95	110	120	025	0.040
0.11	0.15	0.21	0.26	0.30	0.37	0.42	0.47	0.67	0.95	1.1	00	15	25	30	40	50	65		80	90	95	110	120	03	0.043
0.14	0.20	0.28	0.35	0.40	0.49	0.57	0.63	0.89	1.3	1.4	00	15	25	30	40	50	65		80	90	95	110	120	04	0.052
0.18	0.25	0.35	0.43	0.50	0.61	0.71	0.79	1.1	1.6	1.8	00	15	25	30	40	50	65		80	90	95	110	120	05	0.057
0.21	0.30	0.42	0.52	0.60	0.74	0.85	0.95	1.3	1.9	2.1	00	15	25	30	40	50	65		80	90	95	110	120	06	0.062
0.28	0.40	0.57	0.69	0.80	0.98	1.1	1.3	1.8	2.5	2.8	00	15	25	30	40	50	65		80	90	95	110	120	08	0.072



SPRAY PATTERN
50° flat fan

1/4QJJUJB
flat fan nozzle

DESIGN FEATURES

Quick-Spray Nozzles with QUJB tips, produce a medium impact flat fan pattern with spray angles from 0° (solid stream) to 120°. Nozzle tips can be changed in seconds without the use of tools, and the elastomer seal ensures a leakproof connection.

With the nozzle body permanently installed in the pipe header, the plane of the flat fan pattern will be automatically aligned each time a spray tip is replaced in the body.

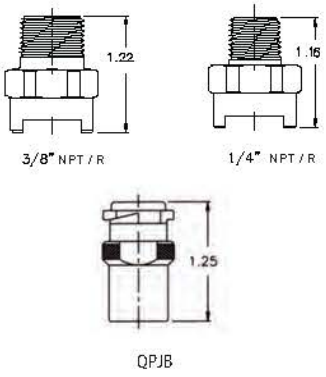
SPECIFICATIONS

QUJB - STANDARD SIZE - FITS QUICK-SPRAY BODY SIZES 1/8" TO 1/2"

U.S. GALLONS PER MINUTE											AVAILABLE SPRAY ANGLES °												FITS QUICK-SPRAY BODY SIZE	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI	500 PSI	00	15	25	30	40	50	65	80	90	95	110	120			
0.4	0.50	0.7	0.9	1.0	1.2	1.4	1.6	2.2	3.2	3.5	00	15	25	30	40	50	65	80	90	95	110	120	1/8 to 1/2	10	0.080
0.5	0.8	1.1	1.3	1.5	1.8	2.1	2.4	3.4	4.7	5.3	00	15	25	30	40	50	65	80	90	95	110	120		15	0.094
0.7	1.0	1.4	1.7	2.0	2.5	2.8	3.2	4.5	6.3	7.1	00	15	25	30	40	50	65	80	90	95	110	120		20	0.109
1.1	1.5	2.1	2.6	3.0	3.7	4.2	4.7	6.7	9.5	10.6	00	15	25	30	40	50	65	80	90	95	110	120		30	0.141
1.4	2.0	2.8	3.5	4.0	4.9	5.7	6.3	8.9	12.6	14.2	00	15	25	30	40	50	65	80	90	95	110	120		40	0.156
1.8	2.5	3.5	4.3	5.0	6.1	7.1	7.9	11.2	15.8	17.7	00	15	25	30	40	50	65	80	90	95	110	120		50	0.172
2.1	3.0	4.2	5.2	6.0	7.4	8.5	9.5	13.4	19.0	21.0	00	15	25	30	40	50	65	80	90	95	110	120		60	0.186
2.5	3.5	5.0	6.1	7.0	8.6	9.9	11.1	15.6	22.1	25.0	00	15	25	30	40	50	65	80	90	95	110	120		70	0.203
2.8	4.0	5.7	6.9	8.0	9.8	11.3	12.6	17.9	25.3	28.0	00	15	25	30	40	50	65	80	90	95	110	120	1/4 to 1/2	80	0.219
3.2	4.5	6.4	7.8	9.0	11.0	12.7	14.2	20.1	28.5	32.0	00	15	25	30	40	50	65	80	90	95	110	120		90	0.234

QUICK-SPRAY NOZZLE SYSTEM
FLAT FAN
NARROW ANGLE - HIGH IMPACT

SPRAY PATTERN
50° fan



QPJB

QPJB
male bodies and tip dimensions

QPJB
tip

DESIGN FEATURES

Quick-Spray Nozzles with QPJB tips produce a high impact narrow angle flat fan pattern with spray angles from 15° to 50°. Nozzle tips can be changed in seconds without the use of tools, and the elastomer seal ensures a leakproof connection. With the nozzle body permanently installed in the pipe header, the plane of the flat fan pattern will be automatically aligned each time a spray tip is replaced in the body. This is very important in applications such as deckle and "Save-All" sprays in paper making, where the spray pattern direction is critical.

COMMON APPLICATIONS

- Gravel & Stone Washing
- Conveyor Cleaning
- Deckle & Saveall Stock Removal
- Paper Making

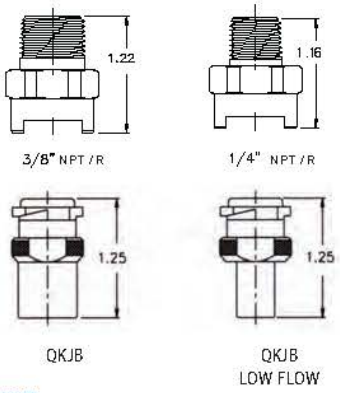
SPECIFICATIONS

QPJB - FITS QUICK-SPRAY BODY SIZES 1/8" TO 1/2"

U.S. GALLONS PER MINUTE									AVAILABLE SPRAY ANGLES					TO FIT QUICK-SPRAY BODY SIZE	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	ANGLE OF DEFLECTION				
5 PSI	10 PSI	20 PSI	40 PSI	80 PSI	100 PSI	200 PSI	400 PSI	500 PSI	15°	25°	35°	40°	50°				15°	25°	35°	40°	50°
0.36	0.50	0.71	1.0	1.4	1.6	2.2	3.2	3.5	15°		35°		50°	1/8 to 1/2	10	0.057	5°		35°		55°
0.70	1.0	1.4	2.0	2.8	3.2	4.5	6.4	7.1	15°		35°		50°		20	0.080	5°		35°		45°
0.80	1.3	1.8	2.5	3.5	3.9	5.6	7.8	8.8					50°		25	0.094			30°		50°
1.1	1.5	2.1	3.0	4.2	4.7	6.7	9.4	10.6	15°		35°				30	0.109	5°		28°		
1.4	2.0	2.8	4.0	5.7	6.3	9.0	12.6	14.1	15°	25°	35°	40°	50°		40	0.141	5°	20°	35°	35°	55°
1.8	2.5	3.5	5.0	7.1	8.0	11.2	16.0	17.7			35°	40°			50	0.156			23°	33°	
2.1	3.0	4.2	6.0	8.5	9.5	13.4	19.0	21.2	15°		35°	40°	50°		60	0.172	5°		20°	33°	35°
2.5	3.5	5.0	7.0	9.9	11.1	15.7	22.1	24.7				40°			70	0.185				29°	
2.8	4.0	5.7	8.0	11.3	12.6	17.9	25.3	28.3	15°		35°	40°	50°	1/4 to 1/2	80	0.203	5°		25°	26°	35°
3.2	4.5	6.4	9.0	12.7	14.2	20.1	28.5	31.8				40°			90	0.219				28°	
3.6	5.0	7.1	10.0	14.1	15.8	22.3	31.6	35.4	15°		35°	40°	50°		100	0.234	5°		25°	28°	40°

QUICK-SPRAY NOZZLE SYSTEM
FLAT FAN
WIDE ANGLE - LOW IMPACT

SPRAY PATTERN
145° fan



QHJB
male bodies & tip dimensions

QKJB
tip

DESIGN FEATURES

Quick-Spray Nozzles with QKJB tips, produce a wide angle low impact flat fan pattern with spray angles of 105° or 145°. Nozzle tips can be changed in seconds without the use of tools, and the elastomer seal ensures a leakproof connection. With the nozzle body permanently installed in the pipe header, the plane of the flat fan pattern will be automatically aligned each time a spray tip is replaced in the body.

COMMON APPLICATIONS

- Conveyor Sanitation
- Soft Fruit Washing
- Cascade Rinsing
- Cooling
- Foam Knock-Down
- Water Curtains

SPECIFICATIONS

QKJB - AVAILABLE WITH SPRAY ANGLES OF 105° OR 145° - FITS QUICK-SPRAY BODY SIZES 1/8" TO 1/2"

U.S. GALLONS PER MINUTE											TO FIT QUICK-SPRAY BODY SIZE	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)
5 PSI	10 PSI	20 PSI	30 PSI	40 PSI	60 PSI	80 PSI	100 PSI	200 PSI	400 PSI	500 PSI			
0.018	0.025	0.035	0.043	0.050	0.061	0.071	0.079	0.11	0.16	0.18	1/8 to 1/2	.25	0.016
0.035	0.050	0.071	0.087	0.10	0.12	0.14	0.16	0.22	0.32	0.35		.50	0.024
0.053	0.075	0.11	0.13	0.15	0.18	0.21	0.24	0.34	0.47	0.53		.75	0.028
0.071	0.10	0.14	0.17	0.20	0.25	0.28	0.32	0.48	0.63	0.71		1	0.033
0.11	0.15	0.21	0.26	0.30	0.37	0.42	0.47	0.67	0.95	1.1		1.5	0.041
0.14	0.20	0.28	0.35	0.40	0.49	0.57	0.63	0.89	1.3	1.4		2	0.046
0.18	0.25	0.35	0.43	0.50	0.61	0.71	0.79	1.1	1.6	1.8		2.5	0.052
0.21	0.30	0.42	0.52	0.60	0.74	0.85	0.95	1.3	1.9	2.1		3	0.057
0.28	0.40	0.57	0.69	0.80	0.98	1.1	1.3	1.8	2.5	2.8		4	0.065
0.35	0.50	0.71	0.87	1.0	1.2	1.4	1.6	2.2	3.2	3.5		5	0.073
0.53	0.75	1.1	1.3	1.5	1.8	2.1	2.4	3.4	4.7	5.3		7.5	0.093
0.71	1.0	1.4	1.7	2.0	2.5	2.8	3.2	4.5	6.3	7.1		10	0.104
0.85	1.2	1.7	2.1	2.4	2.9	3.4	3.8	5.4	7.6	8.5		12	0.116
0.88	1.3	1.8	2.2	2.5	3.1	3.5	4.0	5.6	7.9	8.8		12.5	0.125
1.1	1.5	2.1	2.6	3.0	3.7	4.2	4.7	6.7	9.5	10.6		15	0.129
1.3	1.8	2.6	3.1	3.6	4.4	5.1	5.7	8.1	11.4	12.7		18	0.141
1.4	2.0	2.8	3.5	4.0	4.9	5.7	6.3	8.9	12.6	14.1		20	0.148
1.6	2.2	3.1	3.8	4.4	5.4	6.2	7.0	9.8	13.9	15.6		22	0.156
1.7	2.4	3.4	4.2	4.8	5.9	6.8	7.6	10.7	15.2	17.0		24	0.161
1.9	2.7	3.8	4.7	5.4	6.6	7.6	8.5	12.1	17.1	19.1		27	0.173
2.1	3.0	4.2	5.2	6.0	7.4	8.5	9.5	13.4	19.0	21.2		30	0.187
2.5	3.5	5.0	6.1	7.0	8.6	9.9	11.1	15.7	22.2	24.8		35	0.196
2.8	4.0	5.7	6.9	8.0	9.8	11.3	12.6	17.9	25.2	26.2	1/4 to 1/2	40	0.218
3.2	4.5	6.4	7.8	9.0	11.0	12.7	14.2	20.1	28.4	31.8		45	0.221
3.7	5.3	7.4	9.1	10.5	12.9	14.8	16.6	23.5	33.2	37.1		52.5	0.250
4.2	6.0	8.5	10.4	12.0	14.7	17.0	19.0	26.8	38.0	42.5		60	0.256

PAPER REWINDER

CHOOSING THE BEST NOZZLES

Let us help you choose the best shower nozzles and spray showers for your pulp and papermaking processes!

Experience is the best teacher. We have earned the reputation as the leader in Design Engineering of spray nozzles throughout the Pulp & Papermaking Process.

Why? Because we take the time and listen. Then we act!
We have a complete in-house Design, Testing and Manufacturing capabilities (including investment Cast Foundry), so turn around time from Design to Installation is controlled. Whether it's a new application or a replacement, we are able to recommend or furnish virtually any material. More than likely we will have "done it before".

Some examples of our nozzles for specific applications include:

PULP MILL

- Debarking: UJJB
- Dust Control: HHSJJB, HHSJXJB, TFXPJB, HHSJLFJB, LJB, MPJB, MFPJB and PRJJB
- Washing & Moistening Logs: UJB and PAJB

WOOD ROOM

- Pulp Washing: MFPJB
- Pulp Bleaching: UJB, KJB

PAPER MILL / WET END FOUDRINIER

- Head Box: BJB, BSJJB, RTWJB
- Foam Control: MFPJB, KJB
- White Water: LD, SHWR, MFPJB
- Cleaning - Wire, Felts & Dandy Rolls: SHWR, NDL
- Trim Nozzles - Stainless Steel, Ceramic, Ruby, Pyrex

FINISHING & CONVERTING

- Humidification: JJB, PRJB

HEAT RECOVERY: CJB, MFPJB
ODOR CONTROL: JJB, JAUJB
AIR POLLUTION: SAJB, HJB,CJ B
COOLING PONDS: CJB
WATER POLLUTION: KJB, UJB

More than 65% of our production is devoted to nozzles custom designed for application specific customer requests. Call your nearest John Brooks Company Limited office and find out about the expertise that makes the difference.

HHSJJB
spiral full cone

HHSJXJB
extra free passage full cone

HHSJLFJB
low flow hollow cone

PRJJB
misting

UJB
flat fan

PAJB
high impact

BJB
hollow cone

BXJB
extra life hollow cone

GANVJB
vaneless full cone

HHJB
full cone

MFPJB
maximum free passage full cone

KJB
low impact flat fan

PULP MILL

DEBARKING

UJB FAN SHOWERS

> High impact spray can run at up to 1000 psi
> Constructed from one piece with no internals to clog

DUST CONTROL

HHSJJB, HHSJXJB, HHSJLF & PRJ SHOWERS

> Fine atomization, wide coverage for controlling dust at pulp piles and hoppers

MFPJB FULL CONE SHOWERS

> Handles stringy, lumpy liquids especially well
> Premier performer in white water service

WASHING MUD FROM LOGS, GROUNDWOOD STONE WASHING

UJB OR PAJB SHOWERS

> One-piece clog-resistant construction

PAJB FAN SHOWERS

> Yields higher flow rate at same pressure compared with the U-series
> Highest impact shower with least atomization
> Requires different mounting orientation than U-Series

MOISTENING LOGS

BJB, BXJB, GANVJB OR HHJB SHOWERS

> Produce wide spray coverage, coarse atomization with small quantities of water

BJB AND BXJB SPECIFICS

> Right angle type
> Hollow cone nozzles
> Available with large emitting angles for greater coverage and a range of flow rates

GANVJB AND HHJB SPECIFICS

> GANVJB is a right angle type
> Both produce full cone, uniform spray patterns

WOOD ROOM

PULP WASHING

MFPJB SHOWERS

> Unique, patented S-shaped vane easily handles difficult, lumpy, stringy, white water
> Highly energy efficient and reliable
> Full cone pattern excellent for leveling pulp in blow pit

PULP BLEACHING

UJB & KJB FAN SHOWERS

> Uniform high and medium impact showers with moderate flow rates for cost efficient coverage

BJB
hollow cone

HHJB
full cone

UJB
flat fan

NDL
needle jet shower nozzle

QBSJJB
spiral quick spray

RTWJB
tank spinner

LEM
spiral tank cleaner

CLUMP
maximum free passage tank cleaner

KJB
low impact flat fan

PAJB
high impact flat fan

SHWR
brush shower nozzles

TRIM NOZZLES
trim squirt nozzles

PAPERMAKING

HEADBOX, FOAM CONTROL & WHITE WATER

BJB, BJBX OR HHJB SHOWERS

> Large emitting angles, low flow rates - maximize coverage, minimize water use

BJB AND BXJB SHOWERS

> Right angle designs with hollow cone patterns
> No internals, recommended for very lumpy white water, has greater clog-resistance

HHJB SHOWERS

> Mounts in-line, full cone pattern with slightly greater water requirements

BROKE CHEST

RTWJB, LEM, CLUMP OR SHWR SHOWERS

> Tank, vat washing nozzles

RTWJB

> Self-powered rotary nozzle with high impact flat fan tips, covers entire surface

LEM OR CLUMP

> Stationary 360° rinsing and washing nozzles
> LEM has spiral high atomization tips
> CLUMP has MFPJB clog-resistant tips
> Orifice recessed for protection on outside the shower and domed inside for cleaning with manual or auto brush

SHWR SHOWERS

> Felt & wire cleaning and lube

FOUDRINER, CLEANING WIRES, FELTS, SUCTION AND DANDY ROLLS

UJB, PAJB, KJB OR QBSJJB FANS

> High impact 0° - 145° angles available for precise cleaning overlap of wires and felts
> Vaneless design

UJB 0° AND NDL SHOWERS

> Exceptionally hard driving jet, ideal for cleaning dandy rolls and caked wires

PAJB FANS

> Deflected shower spray ideal for directing at difficult locations

NDL SHOWERS

> Smallest mounting clearance with inverted orifice

TRIM NOZZLES

> "Glass rod" solid stream
> Available with or without strainer
> Ceramic or ruby orifice

QBSJJB QUICK-SPRAY NOZZLES

> Interchangeable tips enabling easy variation of setups and reduced maintenance

WET END SHOWERS

> Custom designed and built to fit your location
> Stationary or oscillating
> Standard or pipe-in-a-pipe
> Manual or automatic brush, or brushless
> Equipped with shower nozzles, needle jets, self-cleaning, or other nozzles of your choice

UJB
flat fan

MFPJB
max.free passage full cone

CJB
large capacity hollow cone

PRJJB
misting

JJB
air atomizing

XA 01/02
automatic air atomizing

FINISHING AND CONVERTING

DRY END

JJB AIR ATOMIZING NOZZLES

> Excellent for profiling the web
> Produce extremely fine atomization for humidification and remoistening

PRESS SECTION

MFPJB LARGE, FREE-PASSAGE NOZZLES

> Unique S-Shaped vane easily handles lumpy liquid
> Full cone, medium flow rate and impact provides excellent uniform deluge coverage
> 3/8" - 4" male or female pipe sizes

CJB HOLLOW CONE NOZZLE

> Vaneless design utilizes less water than the MFPJB but produces a coarser shower spray

CONVERTING

PRJJB IMPINGEMENT SERIES

> Produce fine mists with low water consumption
> Direct pressure nozzle
> One-piece compact design excellent choice for humidification when compressed air is not available
> Available with mesh filters

JJB AIR ATOMIZING NOZZLE

> Available with siphon, gravity or pressurized liquid feed
> Automatic cylinders can be changed out without tools - a real boon in tight locations
> Interchangeable caps for variable spray effects and quick replacement
> Available with automatic shut-off and clean-out options for high seed spray shut-off and/or self-cleaning
> Extremely low water consumption, 0.4 -30 gph
> Ideal for spraying laminates, glue and photographic coatings
> Automatic JJB's are ideal for high speed intermittent applications

MISTING SHOWERS

> Constructed with hydraulic or air atomizing type spray nozzles
> Nozzles available with automatic on-off control and tip clean-out feature
> Lower cost version available where air and water supply tubing is not enclosed in piping
> Large turn down ratio to automatically vary spray nozzle flow rate for machines with moisture control systems

KJB
low impact flat fan

UJB
flat fan

MFPJB
max.free passage full cone

HHJB
full cone

HHSJXJB
extra free passage full cone

HHSJJB
spiral full cone

TSJJB
high capacity spiral

TSJXJB
multi-part spiral

CJB
large capacity hollow cone

SAJB
high capacity air atomizing

HHJB
high capacity full cone

WATER POLLUTION

SETTLEMENT PONDS

KJB, UJB and MFPJB for wall wash and sludge removal from ponds

KJB AND UJB NOZZLES

> Driving, medium and high-impact, wide fan sprays - move sludge off walls and floor and into removal drains

MFPJB NOZZLES

> Full cone pattern, medium-impact, used for wall wash

FOAM CONTROL

MFPJB, HHJB, HHSJXJB and KJB nozzles for controlling foam in settling basins, below weirs and spillways

> Require low pumping pressure and produce moderate-to-high flow rates

MFPJB NOZZLES

> Best for handling lumpy white water
> HHSJXJB is also a good choice for this application

KJB NOZZLE

> Flat fan and wide spray angle make it excellent for perimeter weir foam control

AERATION

HHSJJB, HHSJXJB and MFPJB nozzles provide optimum performance in meeting EPA oxygen content requirements

> All provide superior clog-resistance

HHSJJB AND HHSJXJB NOZZLES

> Provide best atomization and turbulence

AIR POLLUTION

John Brooks Company and BETE are leading the way in pollution control and detoxification.

QUENCHER, PRE-SCRUBBER AND ABSORBER

HHSJJB, HHSJXJB, TSJJB, TSJXJB OR HHSJLFJB NOZZLES

> Produce the best atomization and clog-resistance

MFPJB NOZZLES

> Uniformly distributed spray

CJB NOZZLES

> Right angle mounting

SAJB NOZZLES

> Two-fluid high flow air atomizes with superior atomization

MIST ELIMINATOR

Nozzles keep mist eliminator blades clean and maintain high mist removal efficiencies.

HHJB NOZZLES

> Excellent low flow, wide coverage nozzle

HJB FULL CONE NOZZLE

> Effective for higher flow rates

MFPJB LARGE FREE PASSAGE NOZZLE

> Best in high or low flow rates when particulates are present in the spray water

OTHER APPLICATIONS
HEAT RECOVERY, COOLING PONDS & ODOR CONTROL

MFPJB
max. free passage full cone

CJB
large capacity hollow cone

CJB-W
wide angle hollow cone

HHSJXJB
extra free passage full cone

HHSJJB
spiral full cone

HHSJLFJB
low flow hollow cone

PRJJB
misting

JJB
air atomizing

KJB
low impact flat fan

SAJB
high capacity air atomizing

HEAT RECOVERY

MFPJB, CJB, CJB-W are the nozzles of choice for maximizing heat recovery for your mill.

MFPJB NOZZLES

- High energy efficiency
- Easily handles white water and recirculated water with superior clog-resistance
- 30° - 120° provides wide coverage

CJB AND CJB-W HOLLOW CONE

- Large free passage
- Wide, even spray band
- Right angle design
- Flange connection available

COOLING PONDS

HHSJXJB & HHSJJB NOZZLES

- Greater surface area spray; fine atomization for maximum gas-to-liquid transfer and heat reduction
- Excellent free passage

CJB NOZZLES

- Coarser atomization than HHSJ and HHSJX

MFPJB NOZZLES

- Excellent for lumpy liquids
- Provides medium atomization

ODOR CONTROL

JJB NOZZLES

- Generate extremely fine atomization for injecting deodorants in open tower mist reactors at flow rates under 2 gpm

SAJB NOZZLE

- Generate fine droplets at higher flow rates (between 1 and 20 gpm)

HHSJLFJB SPIRAL

- This direct pressure nozzle produces a slightly greater drop size than J, SA or PRJ

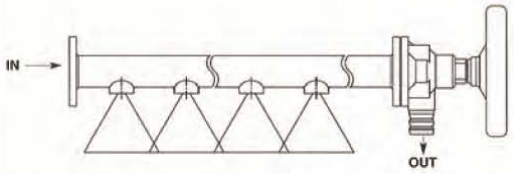
PRJJB IMPINGEMENT

- Direct pressure nozzles produce a finely atomized mist at lower flow rates than the HHSJLF

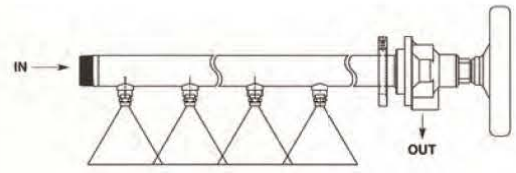
MANUALLY OPERATED BRUSH SHOWER
with flat fan SHWR nozzles

BRUSH TYPE SHOWER
showing brush segment

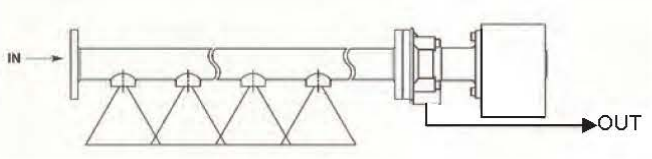
SHWR
flat fan nozzles



MANUAL BRUSH SHOWER
with flat fan SHWR nozzles, flanged inlet and hose barb flush port



MANUAL BRUSH SHOWER
with Quick-Spray nozzles, threaded inlet and flush port



AUTOMATIC BRUSH SHOWER
with flat fan SHWR nozzles, flanged inlet and threaded flush port

DESIGN FEATURES

Custom designed stainless steel showers are available for all areas of the paper machine and for other shower locations in the mill. Showers we have supplied include standard wash and lube showers, high pressure, pipe-in-a-pipe, oscillating, brush – manual & automatic, misting, stone washing, save-all, deckle, etc. They are available as Automatic Brush, Manual Brush, Brushless or Oscillating.

Automatic Brush Showers. Automatic Brush Showers include a motor to rotate the cleaning brush and activate the flushing valve and a controller to set the cleaning-flushing duration, and the interval between cleaning cycles. The internal stainless steel brush segments are automatically positioned so as not to foul the spray nozzles when at rest, and sufficient room is left between the segments to allow for effective flushing of the fibers. Cleaning does not interrupt production.

Manual Brush Showers. Manual Brush Showers are supplied with a hand wheel. It is usually opposite the water inlet end so as to provide effective flushing of the debris during the cleaning cycle. When rotated, the hand wheel opens the flush valve so that debris cleaned from the nozzles is flushed from the shower header. When the wheel is returned to its original position and the flushing valve closed, the stainless steel brush segments are automatically positioned so as not to foul the nozzles. For locations that are too high for an operator to reach safely, a chain wheel can be fitted in place of the hand wheel.

Oscillating showers. For high impact cleaning of tough dirt on conveyors, the brush shower is fitted with solid stream spray nozzles. These give the highest impact for the most effective cleaning. Oscillators can be fitted to manual or automatic brush showers. Type SHWR Shower nozzles are specifically designed for use with manual or automatic brush showers. They are made from type 316 stainless steel and are available in spray angles of 30° , 60° and 75° flat fan and in 0° solid stream spray patterns. See table on the next page for full details. The flat fan sizes have flats machined on their outer edge to align with flats in the nozzle holder. Nozzle holders are positioned in the shower header to give the correct offset of the fan pattern when overlapping, preventing adjacent spray nozzles from interfering with each other.

Other Types. Other types of standard flat fan, full cone or hollow cone nozzles can be used with brush showers by installing a domed strainer disc inside the nozzle holder, and fitting a locknut with an NPT(F) outlet. The strainer disc is perforated with several holes that are smaller than the free passage size of the final spray nozzle and it is the strainer disc that gets brushed during the cleaning cycle.

TRIM NOZZLES
RUBY TIPS - SINGLE STREAM

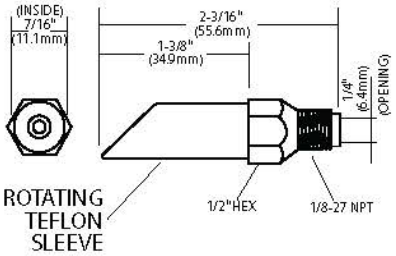
RUBY TIPS
single, double 10°, parellel stream with ruby inserts

DESIGN FEATURES

Ruby trim Nozzles are available in Single, Double 10° and Parallel Stream. We have completed a comprehensive development program to perfect these nozzle designs and extensive testing has been done to ensure a very effective and high quality product for our customers. Our Ruby nozzles have Stainless Steel bodies and low friction precision ruby orifices and are provided with a rotating Teflon shield or integral Stainless Steel Shield to protect the stream from moisture or debris buildup. The shields are cut on an angle to direct drips to the waste side of the cut. Orifices are available in a large range of sizes. Our Double Stream nozzle can be requested with two different orifice sizes.

SINGLE RUBY TIP - STAINLESS STEEL SHELL & TEFLON® DRIP SHIELD

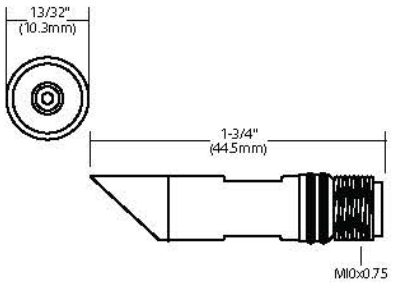
Size	Part#
.010"	R1045SS
.015"	R1545SS
.020"	R2045SS
.025"	R2545SS
.030"	R3045SS
.035"	R3545SS
.040"	R4045SS
.050"	R5045SS



SINGLE RUBY TIP - STAINLESS STEEL SHELL & STAINLESS STEEL DRIP SHIELD

Size	Part# - 10mm	Part# - 1/8" NPT
.010"	RS109MSS	RS109SS
.015"	RS159MSS	RS159SS
.020"	RS209MSS	RS209SS
.025"	RS259MSS	RS259SS
.030"	RS309MSS	RS309SS
.035"	RS359MSS	RS359SS
.040"	RS409MSS	RS409SS
.045"	RS459MSS	RS459SS

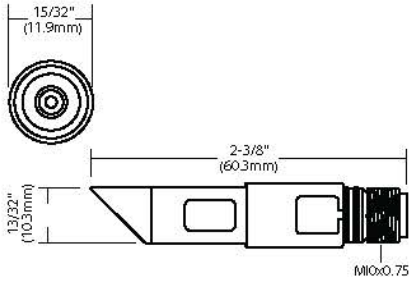
Note: Also available with anti-stick Teflon® Coating. Add TEF to the Part # - i.e. RS109MSSTEF



SINGLE RUBY TIP - ADJUSTABLE STAINLESS STEEL SHELL & STAINLESS STEEL DRIP SHIELD

Size	Part# - 10mm	Part# - 1/8" NPT
.010"	RA109MSS	RA109SS
.015"	RA159MSS	RA159SS
.020"	RA209MSS	RA209SS
.025"	RA259MSS	RA259SS
.030"	RA309MSS	RA309SS
.035"	RA359MSS	RA359SS
.040"	RA409MSS	RA409SS
.045"	RA459MSS	RA459SS

Note: Also available with anti-stick Teflon® Coating. Add TEF to the Part # - i.e. RS109MSSTEF



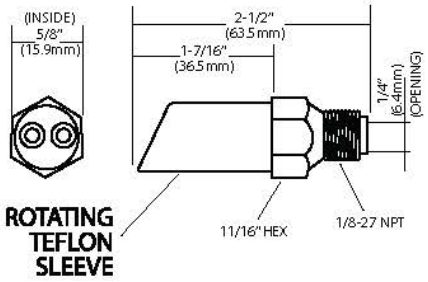
TRIM NOZZLES
RUBY TIPS - DOUBLE 10° STREAM & PARALLEL STREAM

RUBY TRIPS
single, double 10°, parellel stream with ruby inserts

DOUBLE 10° RUBY TIP - STAINLESS STEEL SHELL & TEFLON® DRIP SHIELD

Size	Part#
.010"	RD1046SS
.015"	RD1546SS
.020"	RD2046SS
.025"	RD2546SS
.030"	RD3046SS
.035"	RD3546SS
.040"	RD4046SS
.050"	RD5046SS

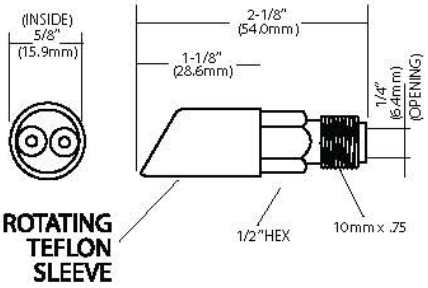
Any combination of sizes are available.



DOUBLE PARALLEL STREAM RUBY TIP - STAINLESS STEEL SHELL & TEFLON® DRIP SHIELD

Size	Part#
.010"	R-PRL1047SS
.015"	R-PRL1547SS
.020"	R-PRL2047SS
.025"	R-PRL2547SS
.030"	R-PRL3047SS
.035"	R-PRL3547SS
.040"	R-PRL4047SS
.050"	R-PRL5047SS

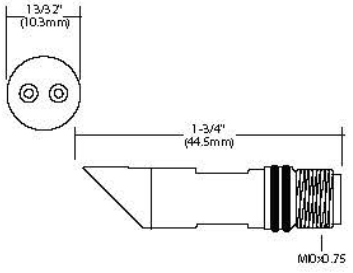
Note: Nozzle has metric thread - 10mm x 0.75 Male with double 'O'-ring connection. Any combination of sizes are available.



DOUBLE PARALLEL STREAM RUBY TIP - STAINLESS STEEL SHELL & STAINLESS STEEL DRIP SHIELD

Size	Part# - 10mm	Part# - 1/8" NPT
.010"	RS-PRL109MSS	RS-PRL109SS
.015"	RS-PRL159MSS	RS-PRL159SS
.020"	RS-PRL209MSS	RS-PRL209SS
.025"	RS-PRL259MSS	RS-PRL259SS
.030"	RS-PRL309MSS	RS-PRL309SS

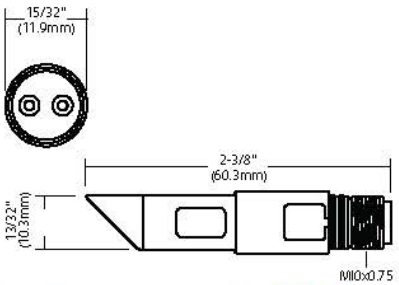
Note: Also available with anti-stick Teflon® Coating. Add TEF to the Part # - i.e. RS-PRL109MSSTEF



DOUBLE PARALLEL STREAM RUBY TIP - ADJUSTABLE STAINLESS STEEL SHELL & STAINLESS STEEL DRIP SHIELD

Size	Part# - 10mm	Part# - 1/8" NPT
.010"	RA-PRL109MSS	RA-PRL109SS
.015"	RA-PRL159MSS	RA-PRL159SS
.020"	RA-PRL209MSS	RA-PRL209SS
.025"	RA-PRL259MSS	RA-PRL259SS
.030"	RA-PRL309MSS	RA-PRL309SS

Note: Also available with anti-stick Teflon® Coating. Add TEF to the Part # - i.e. RA-PRL109MSSTEF



TRIM NOZZLES
STAINLESS STEEL - SINGLE STREAM

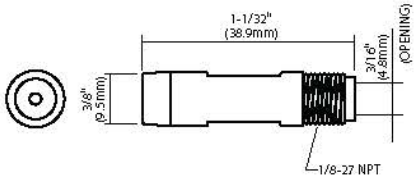
STAINLESS STEEL TIPS
single, double 10°, parellel stream with ruby inserts

DESIGN FEATURES

Stainless Steel Tips are available in Single, Double 10°, and Parallel Streams. Single Stream tips produce a fine, tight stream that can be used in a great range of distances from the web. They come in regular or high-pressure shells. Orifice sizes range from .010" through .080" and threads are 1/8" NPT.

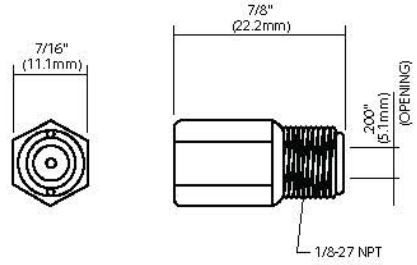
SINGLE STAINLESS TIP - BRASS LONG SHELL

Size	Part #	Size	Part #
.010"	S104	.035"	S354
.012"	S124	.037"	S374
.015"	S154	.040"	S404
.018"	S184	.042"	S424
.020"	S204	.045"	S454
.023"	S234	.050"	S504
.025"	S254	.060"	S604
.028"	S284	.070"	S704
.030"	S304	.080"	S804
.032"	S324		



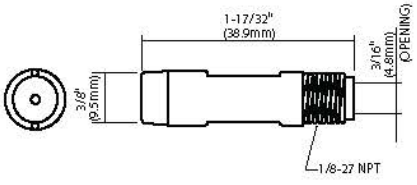
SINGLE STAINLESS TIP - STAINLESS STEEL HEX HIGH PRESSURE SHELL

Size	Part #	Size	Part #
.010"	S108SS	.035"	S358SS
.012"	S128SS	.037"	S378SS
.015"	S158SS	.040"	S408SS
.018"	S188SS	.042"	S428SS
.020"	S208SS	.045"	S458SS
.023"	S238SS	.050"	S508SS
.025"	S258SS	.060"	S608SS
.028"	S288SS	.070"	S708SS
.030"	S308SS	.080"	S808SS
.032"	S328SS		

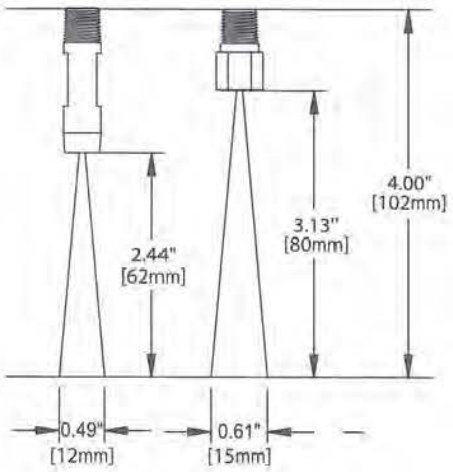


SINGLE STAINLESS TIP - STAINLESS STEEL HIGH PRESSURE SHELL

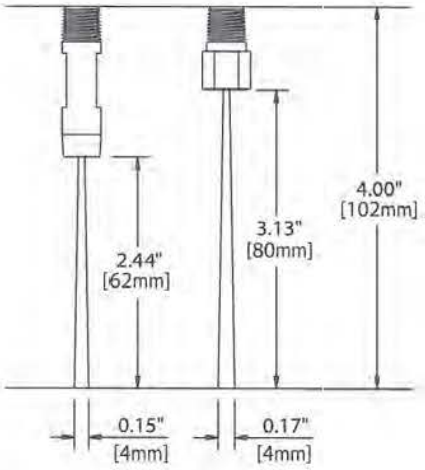
Size	Part #	Size	Part #
.010"	S1011SS	.035"	S3511SS
.012"	S1211SS	.037"	S3711SS
.015"	S1511SS	.040"	S4011SS
.018"	S1811SS	.042"	S4211SS
.020"	S2011SS	.045"	S4511SS
.023"	S2311SS	.050"	S5011SS
.025"	S2511SS	.060"	S6011SS
.028"	S2811SS	.070"	S7011SS
.030"	S3011SS	.080"	S8011SS
.032"	S3211SS		



TRIM NOZZLES
STAINLESS STEEL
DOUBLE 10˚ STREAM & PARALLEL STREAM



DOUBLE 10˚ STREAM TIP DETAILS

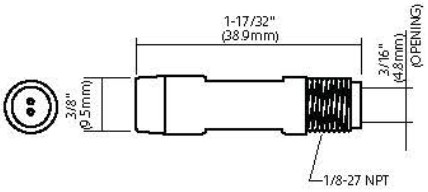


PARALLEL STREAM TIP DETAILS

DOUBLE STAINLESS TIP - BRASS LONG SHELL

Size	10° Stream	Parallel Stream
.010" x 2	D105	PRL105
.012" x 2	D125	PRL125
.015" x 2	D155	PRL155
.018" x 2	D185	PRL185
.020" x 2	D205	PRL205
.023" x 2	D235	PRL235
.025" x 2	D255	PRL255
.015" x .020"	D15205	PRL15205

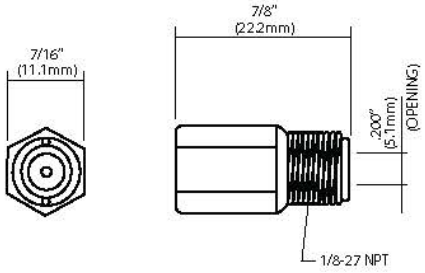
Any Combination of Sizes are Available



DOUBLE STAINLESS TIP - STAINLESS STEEL SHORT HEX HIGH PRESSURE SHELL

Size	10° Stream	Parallel Stream
.010" x 2	D108SS	PRL108SS
.012" x 2	D128SS	PRL128SS
.015" x 2	D158SS	PRL158SS
.018" x 2	D188SS	PRL188SS
.020" x 2	D208SS	PRL208SS
.023" x 2	D238SS	PRL238SS
.025" x 2	D258SS	PRL258SS
.015" x .020"	D15208SS	PRL15208SS

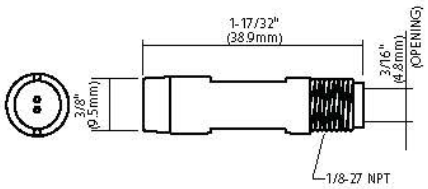
Any Combination of Sizes are Available



DOUBLE STAINLESS TIP - STAINLESS STEEL LONG HIGH PRESSURE SHELL

Size	10° Stream	Parallel Stream
.010" x 2	D1011SS	PRL1011SS
.012" x 2	D1211SS	PRL1211SS
.015" x 2	D1511SS	PRL1511SS
.018" x 2	D1811SS	PRL1811SS
.020" x 2	D2011SS	PRL2011SS
.023" x 2	D2311SS	PRL2311SS
.025" x 2	D2511SS	PRL2511SS
.015" x .020"	D152011SS	PRL152011SS

Any Combination of Sizes are Available



PYREX TIPS

CERAMIC TIPS

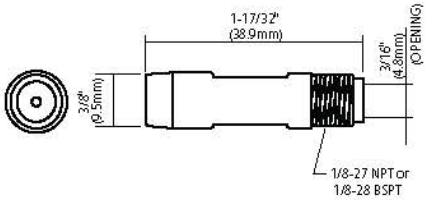
DESIGN FEATURES

PYREX TIPS. Gatewood's most widely used nozzle comes equipped with a reliable Pyrex tip. This guarantees a smooth, consistant flow. Orifice sizes range from .010 through .080 and threads are 1/8" NPT.

CERAMIC TIPS. The Gatewood Ceratip is a long lasting, precision, high pressure nozzle with an extremely hard ceramic tip. This tough, high quality nozzle was specially designed by Gatewood at the request of several large paper mills in need of a nozzle to withstand high pressure while maintaining the highest quality stream over long periods of time. Orifice sizes are .010", .015", .020", .025", .030", .035", .040" and .050" and threads are 1/8" NPT.

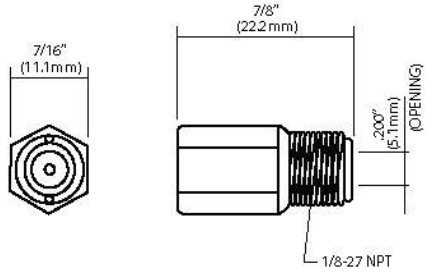
PYREX TIP IN BRASS LONG SHELL

Size	Part #	Size	Part #
.010"	P102	.020"	P202
.012"	P122	023"	P232
.015"	P152	.025"	P252
.018"	P182	.028"	P282
.030"	P302	.050"	P502
.035"	P352	.060"	P602
.040"	P402	.070"	P702
.045"	P452	.080"	P802



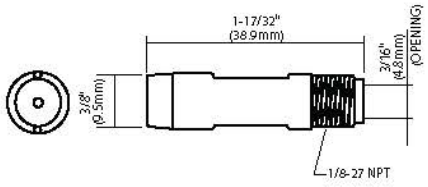
CERAMIC TIP - STAINLESS STEEL SHORT HEX SHELL

Size	Part #
.010"	C108SSS
.015"	C158SSS
.020"	C208SSS
.025"	C258SSS
.030"	C308SSS
.035"	C358SSS
.040"	C408SSS
.050"	C508SSS



CERAMIC TIP - STAINLESS STEEL LONG HIGH PRESSURE SHELL

Size	Part #
.010"	C1011SS
.015"	C1511SS
.020"	C2011SS
.025"	C2511SS
.030"	C3011SS
.035"	C3511SS
.040"	C4011SS
.050"	C5011SS



THREAD ADAPTERS, FILTER SCREENS & ACCESSORIES

M10FSS THREAD ADAPTER
10mm x 0.75 female to 1/8 npt male
stainless steel

M10FSS THREAD ADAPTER
1/8 npt female to 10mm x 0.75 male
stainless steel

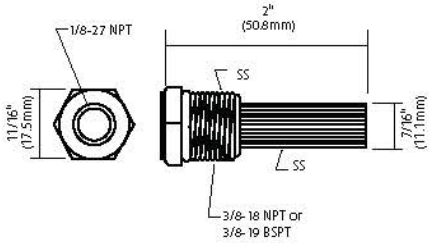
DESIGN FEATURES

We are continuously striving to provide the best technology in our designs. Our research and development is an on-going process. In addition, we provide a wide range of accessories to compliment your nozzles. If your trim nozzle application requires special accessories - contact us at 1-877-624-5757.

FILTER SCREEN WITH STAINLESS BUSHING

Size	Part #
40 Mesh	SA64
50 Mesh	SA65
60 Mesh	SA66
100 Mesh	SA6100R
40 Mesh BSPT	SA74
50 Mesh BSPT	SA75
60 Mesh BSPT	SA76
100 Mesh BSPT	SA7100R

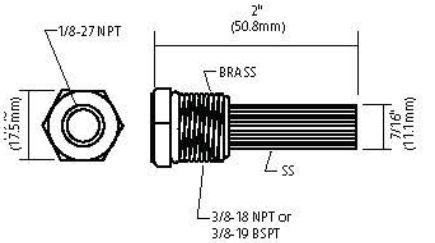
Shown with Standard Screen



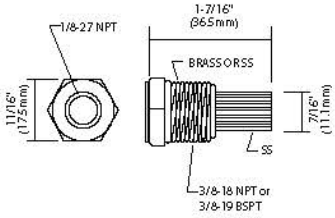
FILTER SCREEN WITH BRASS BUSHING

Size	Part #
40 Mesh	A64
50 Mesh	A65
60 Mesh	A66
100 Mesh	A6100R
40 Mesh BSPT	A74
50 Mesh BSPT	A75
60 Mesh BSPT	A76
100 Mesh BSPT	A7100R

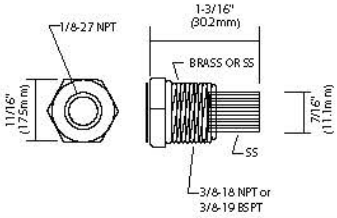
Shown with Standard Screen



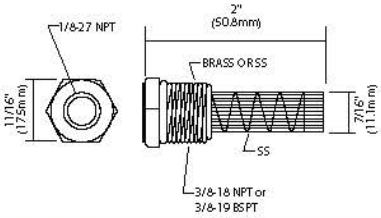
OTHER SCREEN OPTIONS



Short Screen		
Size	Brass	SS
50 Mesh	A65SHRT	SA65SHRT

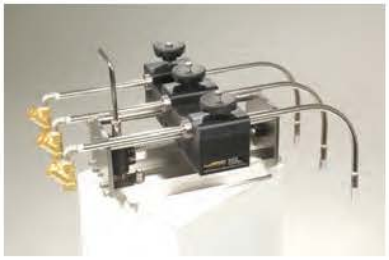


Extra Short Screen		
Size	Brass	SS
50 Mesh	A65SHSH	SA65SHSH

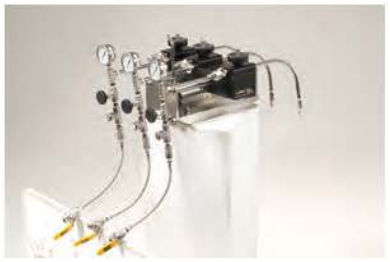


Reinforced Screen		
Size	Brass	SS
40 Mesh	A64R	SA64R
50 Mesh	A65R	SA65R
60 Mesh	A66R	SA66R
100 Mesh	A6100R	SA6100R
200 Mesh	A6200R	SA6200R

EDGE TRIMMING MACHINES
ADJUSTA TRIM SQUIRT & ADJUSTA TRIM SQUIRT PLUS



ADJUSTA TRIM SQUIRT



ADJUSTA TRIM SQUIRT "PLUS"

DESIGN FEATURES

The world's leading wet-end trim nozzle manufacturer can now provide you with a complete edge trimming system. Our unique machine allows the operator to make precision adjustments to the width of the sheet or safely change a nozzle during production.

ADJUSTA TRIM SQUIRT.

- Precise horizontal adjustment through an 8-1/4" range.
- 1/2" diameter squirt pipes accept 1/8" NPT trim nozzles directly into the outlet end
- Easy filter screening access at the inline end
- Rugged machine
- Easy to install and operate
- Maximum adjustability within a compact size
- SQUIRT PIPES FABRICATED TO YOUR SPECIFIC REQUIREMENTS

ADJUSTA TRIM SQUIRT "PLUS". Additional features of the "PLUS" machine include:

- Pressure gauges and needle valves allow fine tuning of water pressure at the trim nozzle.
- Micro-adjustment to precision align each nozzle cut
- Increased capacity filtering for longer protection of linear stream
- Flexible piping and on/off valves with quick disconnects
- Easy to install and operate

TOP VIEW

SIDE VIEW

END VIEW

OPERATOR SAFETY - OUR NUMBER ONE MOTIVATION FOR THE DESIGN!

Adjust the trim and change nozzles from a SAFE location! All three squirts move at the same time with the easy turn of a handle. Simply loosen the clamping knob and remove the squirt tubes from the machine to make a nozzle change - then replace it to the exact same trimming location by utilizing the unique "double locking collar" system.

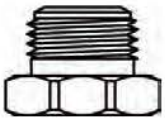
HIGH PRESSURE CLEANING NOZZLES
NEEDLE STYLE NOZZLES
NDL


NDL


NDL "A"


NDL "B"

Nozzle Type	Inlet Connection	Length	Internal Hex	External Hex
NDL	9/16" - 24 UNEF	.56"	-	11/16"
NDL "A"	9/16" - 24 UNEF	.62"	5/16"	-
NDL "B"	9/16" - 24 UNEF	.56"	-	11/16"



DIMENSIONAL DRAWING
NDL SERIES

DESIGN FEATURES

Our NDL Needle Style nozzles are typically used in high pressure oscillating cleaning showers. All models have a standard 316SS body and are available with a 316SS, Ceramic or Ruby Orifice.

Body Styles include the standard external Hex without O-Ring, or an internal or external Hex with O-Ring.

HOW TO ORDER - EXAMPLE: S-NDL40A

S	-NDL	40	A
Orifice Material *S=316 Stainless Steel* *C=Ceramic* *R=Ruby*	*Nozzle Type* *NDL=Needle*	*Capacity Size* *See Specs in Table Below*	*Body Style* *Blank = External HEX, without O-Ring* *A=Internal HEX, with O-Ring* *B=External HEX, with O-Ring*

SPECIFICATIONS

U.S. GALLONS PER MINUTE @ PRESSURE SHOWN (PSI)									CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	AVAILABLE ORIFICE MATERIALS		
40	60	80	100	200	400	600	800	1000			316SS	CERAMIC	RUBY
0	0	0	0	0	0	0	0	0	00	Blank	•		
0.11	0.13	0.15	0.17	0.24	0.33	0.43	0.48	0.50	28	0.028	•	•	•
0.16	0.20	0.22	0.25	0.36	0.52	0.63	0.75	0.82	33	0.033	•	•	•
0.18	0.22	0.25	0.28	0.41	0.57	0.70	0.82	0.95	35	0.035	•		•
0.23	0.28	0.32	0.36	0.5	0.68	0.88	1.0	1.2	40	0.040	•	•	•
0.40	0.48	0.58	0.67	0.91	1.3	1.5	1.75	2.0	55	0.055	•		
0.67	0.84	0.98	1.1	1.6	2.3	2.8	3.1	3.5	70	0.070	•		
1.2	1.45	1.6	1.8	2.5	4.0	4.6	5.5	6.5	94	0.094	•		
1.95	2.45	2.7	2.8	4.4	6.0	7.5	10.0	11.0	125	0.125	•		

NEEDLE STYLE SHOWER NOZZLES
SNDL-EXT2, SNDL-EXT3, SNDL-EXT4

NDL-EXT

Nozzle Type	Inlet Connection	Length	Hex
NDL-EXT2	9/16" - 24 UNEF	2-3/16"	11/16"
SDL-EXT3	9/16" - 24 UNEF	3"	11/16"
SDL-EXT4	9/16" - 24 UNEF	4-1/2"	11/16"

DIMENSIONAL DRAWING
NDL-EXT SERIES

NDL-EXT2

NDL-EXT3

NDL-EXT4

DESIGN FEATURES

Our Needle Style with Extension (NDL-EXT) Nozzle is designed to help prevent plugging in shower bars that are spraying down. The extension tube draws clean water from the top of the pipe. Available with a 316SS or Ceramic Orifice and the extension lengths shown.

HOW TO ORDER - EXAMPLE: S-NDL40EXT2

S	-NDL	40	EXT	2
Orifice Material *S = 316 Stainless Steel* *C = Ceramic*	*Nozzle Type* *-NDL= Needle*	*Capacity Size* *See Specs in Table*	*Nozzle Type* *EXT= with Extension*	*Length* *2 = 2-3/16"* *3 = 3"* *4 = 4-1/2"*

SPECIFICATIONS

U.S. GALLONS PER MINUTE @ PRESSURE SHOWN (PSI)									CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	AVAILABLE ORIFICE MATERIALS	
40	60	80	100	200	400	600	800	1000			316SS	CERAMIC
0.11	0.13	0.15	0.17	0.24	0.33	0.43	0.48	0.5	28	0.028	•	•
0.16	0.20	0.22	0.25	0.36	0.52	0.63	0.75	0.82	33	0.033	•	•
0.23	0.28	0.32	0.36	0.5	0.68	0.88	1.0	1.2	40	0.040	•	•
0.40	0.48	0.58	0.67	0.91	1.3	1.5	1.75	2.0	55	0.055	•	
0.67	0.84	0.98	1.1	1.6	2.3	2.8	3.1	3.5	70	0.070	•	
1.2	1.45	1.6	1.8	2.5	4.0	4.6	5.5	6.5	94	0.094	•	
1.95	2.45	2.7	2.8	4.4	6.0	7.5	10.0	11.0	125	0.125	•	

HIGH PRESSURE CLEANING NOZZLES
THREADED BUL TYPE

BUL STYLE

Inlet Connection	Length	Hex
1/8"	1-1/8"	7/16"

DIMENSIONAL DRAWING
BUL style

DESIGN FEATURES

The Bullet Style (BUL) Nozzle is designed with a smaller body and extension than the Needle Style with Extension and is available in 316SS only.

HOW TO ORDER - EXAMPLE: S-BUL40

S — *Orifice Material*
S = 316 Stainless Steel

-BUL — *Nozzle Type*
-BUL=Bullet Style

40 — *Capacity Size*
See Specs in Table

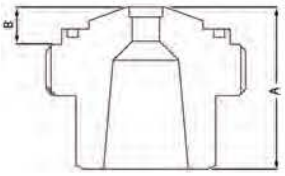
SPECIFICATIONS

U.S. GALLONS PER MINUTE @ PRESSURE SHOWN (PSI)									CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	AVAILABLE ORIFICE MATERIALS 316SS ONLY
40	60	80	100	200	400	600	800	1000			
0.11	0.13	0.15	0.17	0.24	0.33	0.43	0.48	0.50	28	0.028	·
0.16	0.20	0.22	0.25	0.36	0.52	0.63	0.75	0.82	33	0.033	·
0.23	0.28	0.32	0.36	0.5	0.68	0.88	1.0	1.2	40	0.040	·
0.40	0.48	0.58	0.67	0.91	1.3	1.5	1.75	2.0	55	0.055	·
0.67	0.84	0.98	1.1	1.6	2.3	2.8	3.1	3.5	70	0.070	·

HIGH PRESSURE CLEANING NOZZLES
BRUSH-TYPE SHOWER NOZZLES

M SERIES SHWR

Nozzle Type	Inlet Connection	A	B	Hex
M30	M30 (Fits 1-1/8" NPT)	0.95"	0.275"	0.75"
M30E	M30 (Fits 1-1/8" NPT)	0.95"	0.345"	0.75"
M32	M32	0.95"	0.275"	0.75"
M32E	M32	0.95"	0.345"	0.75"



DIMENSIONAL DRAWING
M SERIES

DESIGN FEATURES

These solid stream nozzles are designed to replace the three-piece nozzle /gasket / retainer system in use on many brush-type shower pipes. The integral threads and o-ring significantly reduce change-out time and eliminate the possibility of poor seals or dropped components. Available with a Ruby Orifice in M30 or M32 threads. Extension tube draws clean water from the top of the pipe. Available with a 316SS or Ceramic Orifice and the extension lengths shown.

HOW TO ORDER - EXAMPLE: M30E-R-SHWR40A

M30	E	R	-SHWR	40	A
Inlet Connection *M30=M30 (Fits 1⅛")* *M32=M32*	*Insertion Length* *Blank=Standard* *E=Extended Insertion (Fits Spraying Systems Shower Pipes)*	*Orifice Material* *R=Ruby Only*	*Nozzle Type* *SHWR=Shower*	*Capacity Size* *See Specs in Table Below*	*Body Style* *A=Intregal O-Ring*

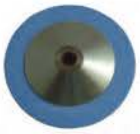
SPECIFICATIONS

U.S. GALLONS PER MINUTE @ PRESSURE SHOWN (PSI)					CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	AVAILABLE ORIFICE
20	40	100	250	800			RUBY
0.07	0.10	0.15	0.25	0.42	28	0.028	•
0.10	0.13	0.22	0.35	0.60	33	0.033	•
0.11	0.15	0.24	0.38	0.67	35	0.035	•
0.15	0.22	0.34	0.54	0.95	40	0.040	•

HIGH PRESSURE CLEANING NOZZLES
BRUSH-TYPE SHOWER NOZZLES

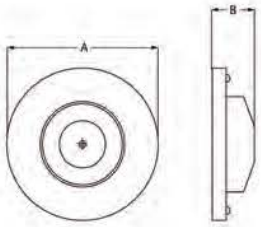
SHWR

SHWR - "A"



SHWR - "G"

Nozzle Type	A	B
SHWR	1"	.300"
SHWR - "A"	1"	.275"
SHWR - "G"	1"	.200"



DIMENSIONAL DRAWING
SHWR style

DESIGN FEATURES

Gatewood offers a variety of solid stream nozzles for use in brush-type showers. All of our Shower Nozzle Bodies are made from 316 Stainless Steel.

We offer both a Gasket and O-Ring Disk Style Nozzle for use with a lock ring retainer. Available Orifice Materials include 316SS, Ceramic and Ruby.

HOW TO ORDER - EXAMPLE: R-SHWR40G

R — *Orifice Material*
S=316 Stainless Steel
R=Ruby
C=Ceramic

-SHWR — *Nozzle Type*
SHWR=Shower

40 — *Capacity Size*
See Specs in Table Below

G — *Body Style*
Blank = Standard Body with Loose Gasket
A=O-Ring
G=Integral Gasket

All nozzles are supplied with Gaskets or O-Rings
For Replacement Gaskets - Order As: SHWR-GSKT
For Replacement O-Rings - Order As: SHWR-ORING

SPECIFICATIONS

U.S. GALLONS PER MINUTE @ PRESSURE SHOWN (PSI)					CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	AVAILABLE ORIFICE MATERIALS		
20	40	100	250	800			316SS	CERAMIC	RUBY
0	0	0	0	0	00	0.000	•		
0.07	0.10	0.15	0.25	0.42	28	0.028	•	•	•
0.10	0.13	0.22	0.35	0.60	33	0.033	•	•	•
0.11	0.15	0.24	0.38	0.67	35	0.035	•		•
0.15	0.22	0.34	0.54	0.95	40	0.040	•	•	•
0.25	0.35	0.55	0.85	1.5	55	0.055	•		
0.43	0.61	0.97	1.5	2.7	70	0.070	•		
0.88	1.2	2.0	3.1	5.6	94	0.094	•		
1.4	2.0	3.1	5.0	8.9	125	0.125	•		

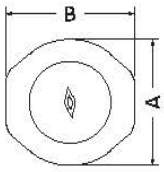
DISC-TYPE FAN NOZZLES
BRUSH-TYPE SHOWER NOZZLES

SHWR

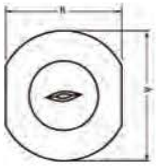
SHWRK

Nozzle Type	A	B
SHWR	1.02"	1.05"
SHWRK	1.18"	1.05"

DIMENSIONAL DRAWING
SHWR & SHWRK



SHWR



SHWRK

DESIGN FEATURES

Disc-Type Fan Nozzles are for use in brush-type showers where the internal brush is used to clean the nozzle orifice. Our standard shower nozzles will fit Spraying Systems and STAMM shower pipes while our "K" Type fits KADANT Showers designed for this style. Our shower series nozzles are made in 316SS material and are shipped with a sealing gasket.

HOW TO ORDER - EXAMPLE: SHWRK4512SXMX

SHWR	*K*	*45*	*12*	*SX*	*MX*
Nozzle Style	*Nozzle Type* *Blank = SSCo/ Stamm* *K = Kadant*	*Spray Angle* *See Specs in Table Below*	*Capacity Size* *See Specs in Table Below*	*Material* *SX=316SS Only*	*Nozzle Type*

SPECIFICATIONS

U.S. GALLONS PER MINUTE @ PRESSURE SHOWN (PSI)					CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)	SPRAY ANGLE @ 40PSI				
20	40	100	250	800			15	30	45	60	75
0.16	0.23	0.36	0.58	1.0	02	0.039	•	•	•	•	•
0.23	0.33	0.52	0.83	1.5	03	0.047	•	•	•	•	•
0.30	0.43	0.68	1.1	1.9	04	0.590	•	•	•	•	•
0.43	0.61	0.97	1.5	2.7	06	0.071	•	•	•	•	•
0.56	0.79	1.3	2.0	3.5	08	0.079	•	•	•	•	•
0.72	1.0	1.6	2.6	4.6	10	0.089	•	•	•	•	•
0.88	1.2	2.0	3.1	5.6	12	0.990	•	•	•	•	•
1.1	1.6	2.5	4.0	7.2	16	0.110	•	•	•	•	•
1.4	2.0	3.1	5.0	8.9	20	0.118	•	•	•	•	•
1.8	2.6	4.1	6.4	11.5	25	0.138	•	•	•	•	•
2.2	3.1	5.0	7.9	14.0	31	0.157	•	•	•	•	•
2.9	4.0	6.4	10.1	18.0	40	0.177	•	•	•	•	•
3.5	4.9	7.7	12.2	22	49	0.197	•	•	•	•	•
4.5	6.4	10.1	16.0	29	64	0.217				•	
5.6	7.9	12.5	19.8	35	78	0.236	•	•	•	•	•
7.0	9.9	15.7	25	44	99	0.276	•	•	•	•	•
8.8	12.4	19.6	31	55	124	0.315	•	•	•	•	•

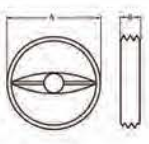
FLUSH MOUNTED SHOWER NOZZLES
BT & BN TYPE
SPRAY ANGLES - 25° to 60°

BT

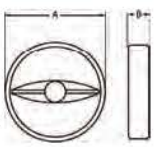
BN

Nozzle Type	Thread Size	Thickness
BT	5/8" UNF	1/8"
BN (Threadless)	5/8"	1/8"

DIMENSIONAL DRAWING
BT & BN TYPE



BT



BN

DESIGN FEATURES

Our BT and BN Style nozzles are used in shower pipes where low profile mounting is required. The BT Nozzle threads directly into the shower pipe for a flush mounting. The BN Style nozzle is held in place with a Retainer Cap.

HOW TO ORDER - EXAMPLE: BTSX6153MX

BT	SX	65	13	MX
Nozzle Style *BT=5/8-18 Thread* *BN=Threadless*	*Material* *SX=316SS Only*	*Spray Angle* *See Specs in Table Below*	*Capacity Size* *See Specs in Table Below*	*Nozzle Type*

SPECIFICATIONS - SPRAY ANGLES 25° to 60°

U.S. GALLONS PER MINUTE @ PRESSURE SHOWN (PSI)								SPRAY ANGLE @ 40 PSI	CAPACITY SIZE	EQUIVALENT ORIFICE DIAMETER (INCHES)	NOZZLE STYLE	
10	20	30	40	60	80	100	150				BT	BN
0.50	0.71	0.86	1.0	1.2	1.4	1.6	1.9	25	10		•	
0.42	0.59	0.73	0.84	1.0	1.2	1.3	1.6	35	084	0.076		•
1.2	1.7	2.0	2.4	2.9	3.3	3.7	4.6		24	0.125		•
3.5	5.0	6.2	7.2	8.8	10.1	11.3	14.0		72	0.218		•
4.0	5.6	6.9	8.0	9.8	11.3	12.6	15.5		80	0.040	•	
2.0	2.8	3.5	4.0	4.9	5.7	6.3	7.7	40	40		•	
2.4	3.3	4.1	4.7	5.8	6.6	7.4	9.1		47	0.187	•	
3.4	4.7	5.8	6.7	8.2	9.5	10.6	13.0		67		•	
3.5	4.9	6.1	7.0	8.6	9.9	11.1	13.6		70	0.218	•	
4.3	6.0	7.4	8.5	10.4	12.2	13.4	16.5		85	0.250	•	
0.40	0.57	0.69	0.80	0.98	1.1	1.2	1.5	43	08	0.076	•	
0.66	0.93	1.1	1.3	1.6	1.8	2.0	2.5		13	0.093	•	•
0.17	0.23	0.29	0.33	0.40	0.47	0.52	0.64	50	033		•	
0.66	0.93	1.1	1.3	1.6	1.8	2.0	2.5		13	0.093		•
1.2	1.7	2.0	2.4	2.9	3.3	3.7	4.6		24	0.125	•	•
1.7	2.3	2.9	3.3	4.0	4.7	5.2	6.4		33	0.156	•	
1.9	2.6	3.2	3.7	4.5	5.2	5.9	7.2		37		•	
0.27	0.38	0.47	0.54	0.66	0.76	0.84	1.0	55	054	0.062	•	•
0.40	0.57	0.69	0.80	0.98	1.1	1.2	1.5		08	0.076	•	
1.2	1.7	2.0	2.4	2.9	3.3	3.7	4.6	58	24	0.125	•	
1.7	2.3	2.9	3.3	4.0	4.7	5.2	6.4		33	0.156	•	
0.27	0.38	0.47	0.54	0.66	0.76	0.85	1.0	60	054	0.062	•	

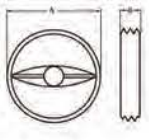
FLUSH MOUNTED SHOWER NOZZLES
BT & BN TYPE
SPRAY ANGLES - 65° to 90°

BT

BN

Nozzle Type	Thread Size	Thickness
BT	5/8" UNF	1/8"
BN (Threadless)	5/8"	1/8"

DIMENSIONAL DRAWING
BT & BN type



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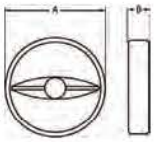


BN

DESIGN FEATURES

Our BT and BN Style nozzles are used in shower pipes where low profile mounting is required. The BT Nozzle threads directly into the shower pipe for a flush mounting. The BN Style nozzle is held in place with a Retainer Cap.

HOW TO ORDER - EXAMPLE: BTSX6153MX

BT	*SX*	*65*	*13*	*MX*
Nozzle Style *BT=5/8-18 Thread* *BN=Threadless*	*Material* *SX=316SS Only*	*Spray Angle* *See Specs in Table Below*	*Capacity Size* *See Specs in Table Below*	*Nozzle Type*

SPECIFICATIONS - SPRAY ANGLES 65° to 90°

U.S. GALLONS PER MINUTE @ PRESSURE SHOWN (PSI)								SPRAY ANGLE @ 40 PSI	CAPACITY SIZE	EQUIVALENT ORIFICE DIAMETER (INCHES)	NOZZLE STYLE	
10	20	30	40	60	80	100	150				BT	BN
0.27	0.38	0.47	0.54	0.66	0.76	0.85	1.0		054	0.062	•	
0.66	0.93	1.1	1.3	1.6	1.8	2.0	2.5		13	0.093	•	•
0.95	1.3	1.6	1.9	2.3	2.7	3.0	3.7	65	19	0.111	•	
1.7	2.3	2.9	3.3	4.0	4.7	5.2	6.4		33	0.156	•	
2.5	3.5	4.3	5.0	6.1	7.1	7.9	9.7		50	0.187	•	
3.5	4.9	6.1	7.0	8.6	9.9	11.1	13.6		70	0.218	•	
1.2	1.7	2.0	2.4	2.9	3.3	3.7	4.6		24	0.125	•	•
2.0	2.8	3.5	4.0	4.9	5.7	6.3	7.7	68	40		•	
3.2	4.5	5.5	6.4	7.8	9.1	10.1	12.4		64		•	
3.5	4.9	6.1	7.0	8.6	9.9	11.1	13.6		70	0.218	•	
0.12	0.16	0.20	0.23	0.28	0.33	0.36	0.45	70	023	0.040	•	
0.27	0.38	0.47	0.54	0.66	0.76	0.85	1.0		054	0.062		•
0.16	0.23	0.28	0.32	0.39	0.45	0.51	0.62		032	0.046	•	
0.27	0.38	0.47	0.54	0.66	0.76	0.85	1.0		054	0.062	•	
0.40	0.57	0.69	0.80	0.98	1.1	1.2	1.5		08	0.076	•	
0.42	0.59	0.73	0.84	1.0	1.2	1.3	1.6		084	0.076	•	
0.66	0.93	1.1	1.3	1.6	1.8	2.0	2.5	80	13	0.093	•	•
1.2	1.7	2.0	2.4	2.9	3.3	3.7	4.6		24	0.125	•	•
1.7	2.3	2.9	3.3	4.0	4.7	5.2	6.4		33	0.156	•	
2.0	2.8	3.5	4.0	4.9	5.7	6.3	7.7		40		•	
2.7	3.8	4.7	5.4	6.6	7.6	8.5	10.5		54	0.187		•
0.08	0.11	0.14	0.16	0.20	0.23	0.25	0.31		016	0.031	•	
0.27	0.38	0.47	0.54	0.66	0.76	0.85	1.0	90	054	0.062	•	•
0.66	0.93	1.1	1.3	1.6	1.8	2.0	2.5		13	0.093	•	•

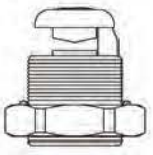
SELF-CLEANING NOZZLES
LD & PN TYPE
SPRAY ANGLES 0° to 40°

LD

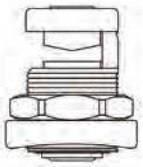
PN

Nozzle Type	Inlet Connection	Length	Hex
LD	1-1/8" - 20UN	1-13/32"	1"
PN	3/4" - 20UNEF	1-5/8"	1-1/2"

DIMENSIONAL DRAWING
LD & PN TYPE



LD



PN

DESIGN FEATURES

Gatewood Self-Cleaning Nozzles are designed to be able to be cleaned while still in service. Lowering the pipe pressure causes the orifice to open allowing it to purge. Once the pipe pressure is increased, the orifice closes again to make the proper spray pattern. Two Styles are available, the LD version is designed for pipes with a machined flat. The PN version comes with a saddle for installation on pipes without a machined flat.

HOW TO ORDER - EXAMPLE: LD0006SXMX

LD	00	06	SX	MX
Nozzle Style *LD = 1⅛ NPT* *PN = ¾ NPT*	*Spray Angle* *See Specs in Table Below*	*Capacity Size* *See Specs in Table Below*	*Material* *SX=316SS Only*	*Nozzle Type*

SPECIFICATIONS - SPRAY ANGLES 0° to 40°

U.S. GALLONS PER MINUTE @ PRESSURE SHOWN (PSI)								SPRAY ANGLE AT 40 PSI	CAPACITY SIZE	NOZZLE TYPE	
20	40	60	80	100	140	200	250			LD	PN
0.14	0.20	0.25	0.28	0.32	0.37	0.45	0.50	0	02	•	•
0.31	0.44	0.53	0.62	0.69	0.81	0.97	1.1		043	•	•
0.35	0.50	0.61	0.71	0.79	0.94	1.1	1.3		05	•	•
0.42	0.60	0.73	0.85	0.95	1.1	1.3	1.5		06	•	•
0.56	0.80	0.98	1.1	1.3	1.5	1.8	2.0		08	•	•
0.71	1.0	1.2	1.4	1.6	1.9	2.2	2.5		10	•	•
0.42	0.60	0.73	0.85	0.95	1.1	1.3	1.5	15	06	•	•
0.35	0.50	0.61	0.71	0.79	0.94	1.1	1.3	30	05	•	•
0.92	1.3	1.6	1.8	2.1	2.4	2.9	3.3		13	•	•
0.99	1.4	1.7	2.0	2.2	2.6	3.1	3.5		14	•	•
2.80	4.00	4.90	5.70	6.30	7.5	8.9	10.0		40	•	•
0.56	0.80	0.98	1.1	1.3	1.5	1.8	2.0	40	08	•	•
0.85	1.2	1.5	1.7	1.9	2.2	2.7	3.0		12	•	•
0.92	1.3	1.6	1.8	2.1	2.4	2.9	3.3		13	•	•
0.99	1.4	1.7	2.0	2.2	2.6	3.1	3.5		14	•	•
1.4	2.0	2.4	2.8	3.2	3.7	4.5	5.0		20	•	•
2.3	3.2	3.9	4.5	5.1	6.0	7.2	8.0		32	•	•
3.2	4.5	5.5	6.4	7.1	8.4	10.1	11.3		45	•	•

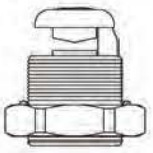
SELF-CLEANING NOZZLES
LD & PN TYPE
SPRAY ANGLES 45° to 120°

LD

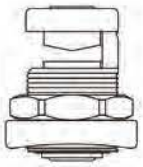
PN

Nozzle Type	Inlet Connection	Length	Hex
LD	1-1/8" - 20UN	1-13/32"	1"
PN	3/4" - 20UNEF	1-5/8"	1-1/2"

DIMENSIONAL DRAWING
LD & PN type



LD



PN

DESIGN FEATURES

Gatewood Self-Cleaning Nozzles are designed to be able to be cleaned while still in service. Lowering the pipe pressure causes the orifice to open allowing it to purge. Once the pipe pressure is increased, the orifice closes again to make the proper spray pattern. Two Styles are available, the LD version is designed for pipes with a machined flat. The PN version comes with a saddle for installation on pipes without a machined flat.

HOW TO ORDER - EXAMPLE: PN0006SXMX

PN	*00*	*06*	*SX*	*MX*
Nozzle Style *LD = 1⅛ NPT* *PN = ¾ NPT*	*Spray Angle* *See Specs in Table Below*	*Capacity Size* *See Specs in Table Below*	*Material* *SX=316SS Only*	*Nozzle Type*

SPECIFICATIONS - SPRAY ANGLES 45° to 120°

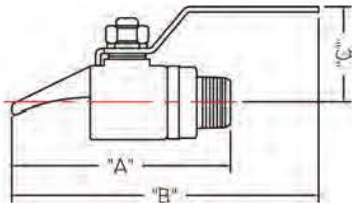
U.S. GALLONS PER MINUTE @ PRESSURE SHOWN (PSI)								SPRAY ANGLE AT 40 PSI	CAPACITY SIZE	NOZZLE TYPE	
20	40	60	80	100	140	200	250			LD	PN
1.1	1.6	2.0	2.3	2.5	3.0	3.6	4.0	45	16	•	•
1.8	2.5	3.1	3.5	4	4.7	5.6	6.3		25	•	•
3.0	4.2	5.1	5.9	6.6	7.9	9.4	10.5		42	•	•
0.35	0.50	0.61	0.71	0.79	0.94	1.1	1.3	60	05	•	•
0.85	1.2	1.5	1.7	1.9	2.2	2.7	3.0		12	•	•
0.99	1.4	1.7	2.0	2.2	2.6	3.1	3.5		14	•	•
1.1	1.6	2.0	2.3	2.5	3.0	3.6	4.0		16	•	•
1.4	2.0	2.4	2.8	3.2	3.7	4.5	5.0		20	•	•
1.8	2.5	3.1	3.5	4.0	4.7	5.6	6.3		25	•	•
2.2	3.1	3.8	4.4	4.9	5.8	6.9	7.8		31	•	•
2.7	3.8	4.7	5.4	6.0	7.1	8.5	9.5		38	•	•
3.5	5.0	6.2	7.0	8.0	9.4	11.2	12.6		50	•	•
0.35	0.50	0.61	0.71	0.79	0.94	1.1	1.3	80	05	•	•
0.78	1.1	1.3	1.5	1.7	2.1	2.5	2.8		11	•	•
1.3	1.9	2.3	2.7	3.0	3.6	4.2	4.8		19	•	•
2.1	3.0	3.7	4.2	4.7	5.6	6.7	7.5		30	•	•
2.5	3.6	4.4	5.1	5.7	6.7	8.0	9.0		36	•	•
3.3	4.6	5.6	6.5	7.3	8.6	10.3	11.5		46	•	•
0.57	0.80	0.98	1.1	1.3	1.5	1.8	2.0	120	08	•	•

DECKER BLASTER
DBJBMX

DBJBMX

Inlet Connection	A	B	C
3/8"	2-31/32"	4-5/32"	1-9/32"

DIMENSIONAL DRAWING
DBJBMX



DBJBMX

DESIGN FEATURES

Our Decker Blaster Nozzle is perfect for use in disc filters / save-alls. The high impact fan is ideal for peeling the mat off rotating discs, and the integral full-port ball valve allows for fast and efficient cleaning of the nozzle to eliminate the problem of plugging. Turning the handle 90° opens the orifice to allow flushing. A further 90° turn, cleans the orifice tip. Turning the handle back to it's original position, resets the nozzle - all while it remains in place.

HOW TO ORDER - EXAMPLE: 3/8DBSXJB3520MX

⅜	DB	SX	JB	35	20	MX
Inlet Connection *⅜" NPT (Only)*	*Nozzle Type*	*Material* *SX = 316SS (Only)*	*Nozzle Type*	*Spray Angle* *35° (Only)*	*Capacity Size* *See Specs in Table*	*Nozzle Type*

SPECIFICATIONS

U.S. GALLONS PER MINUTE @ PRESSURE SHOWN (PSI)								SPRAY ANGLE AT 40 PSI	CAPACITY SIZE	APPROX. ORIFICE DIAMETER (INCHES)"
15	20	30	40	60	80	100	200			
1.2	1.4	1.7	2.0	2.4	2.8	3.2	4.5	35	20	0.105
1.5	1.8	2.2	2.5	3.1	3.5	4.0	5.6		25	0.117
1.8	2.1	2.6	3.0	3.7	4.2	4.7	6.7		30	0.128

CUSTOM DESIGN QUESTIONNAIRE
PIPE-IN-PIPE SHOWERS

INDUSTRIAL SPRAY HEADER SPECIFICATION SHEET

This form will be useful in describing your specific industrial spray header requirements. Make a copy of the form and complete the information requested.

Company: _____ Date: _____

Address: _____

Name: _____ Phone: _____

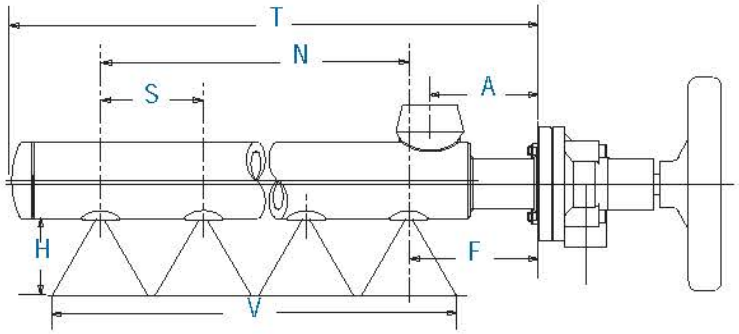
E-Mail Address: _____ Fax: _____

Office: _____ Rep: _____

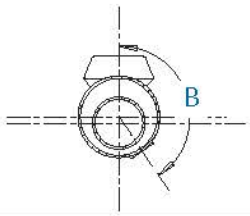
Originator: _____ Date Required: _____

Type of Business: _____

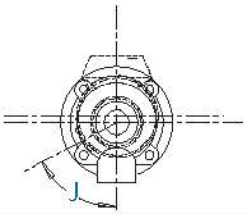
Location in Plant: _____



PIPE-IN-PIPE SCHEMATIC



ANGULAR RELATIONSHIP BETWEEN INLET AND NOZZLE BASES
(default is 180°)



ANGULAR RELATIONSHIP BETWEEN OUTLET AND NOZZLE BASES
(default is 0°)

DIMENSIONS

LEGEND		ENGINEERING RECOMMENDATIONS	YOUR REQUIRED DIMENSIONS
T	Pipe length	Must be greater than N + F + 2.0" (5.08 cm)	
F	Housing flange to centerline of first nozzle		
N	centerline of first nozzle to centerline of last nozzle		
S	Nozzle spacing		
H	Spray height	Minimum is 2.5" (6.35 cm)	
V	Theoretical coverage		
A	Housing flange to inlet centerline		
B	Angle between inlet and nozzle bases		
J	Angle between outlet and nozzle bases		

Industrial spray header required: [ ] Brushless [ ] Brush-type Pipe Size: _____

Material: [ ] 304LSS [ ] 316LSS Stroke: _____

No. of headers required: _____ Qty of nozzles required: _____ Orifice size: _____

Angle: _____ Operating Pressure: _____ *(Recommended minimum: 40 psig)* Total flow rate per header: _____

Type of liquid being sprayed: _____ Manufacturer and model of machine: _____

Comments or special requirements: _____

_____

CUSTOM DESIGN QUESTIONNAIRE
SINGLE PIPE SHOWERS

INDUSTRIAL SPRAY HEADER SPECIFICATION SHEET

This form will be useful in describing your specific industrial spray header requirements. Make a copy of the form and complete the information requested.

Company: _____ Date: _____

Address: _____

Name: _____ Phone: _____

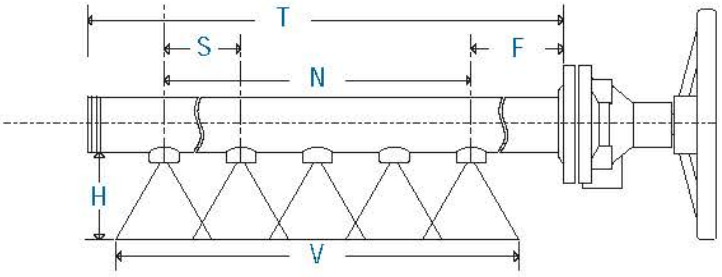
E-Mail Address: _____ Fax: _____

Office: _____ Rep: _____

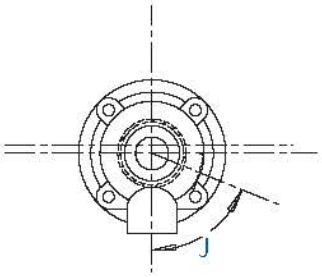
Originator: _____ Date Required: _____

Type of Business: _____

Location in Plant: _____



SINGLE PIPE SCHEMATIC



ANGULAR RELATIONSHIP BETWEEN OUTLET AND NOZZLE BASES
(default is 0°)

DIMENSIONS

LEGEND		ENGINEERING RECOMMENDATIONS	YOUR REQUIRED DIMENSIONS
T	Pipe length	Must be greater than N + F + 2.0" (5.08 cm)	
F	Housing flange to centerline of first nozzle		
N	centerline of first nozzle to centerline of last nozzle		
S	Nozzle spacing		
H	Spray height	Minimum is 2.5" (6.35 cm)	
V	Theoretical coverage		
J	Angle between outlet and nozzle bases		

Industrial spray header required: [ ] Brushless [ ] Brush-type Pipe Size: _____

Material: [ ] 304LSS [ ] 316LSS Stroke: _____

No. of headers required: _____ Qty of nozzles required: _____ Orifice size: _____

Angle: _____ Operating Pressure: _____ *(Recommended minimum: 40 psig)* Total flow rate per header: _____

Type of liquid being sprayed: _____ Manufacturer and model of machine: _____

Comments or special requirements: _____

_____

_____

AA238JB-3/8x1/4
Pressure: 2300 psi
Flow Rate: 8 gpm
Temperature: 210°F

AA238JB-3/8
Pressure: 2300 psi
Flow Rate: 8 gpm
Temperature: 210°F

AA408JB-3/8x1/4
Pressure: 4050 psi
Flow Rate: 8 gpm
Temperature: 320°F

RL56
Pressure: 5100 psi
Flow Rate: 8 gpm
Temperature: 320°F

AA4511JB-3/8x1/4
Pressure: 4500 psi
Flow Rate: 11 gpm
Temperature: 320°F

WITH INTEGRAL SWIVEL

G250VASW
Pressure: 4500 psi
Flow Rate: 11 gpm
Temperature: 320°F

CU316JB-1/2
Pressure: 350 psi
Flow Rate: 16 gpm
Temperature: 195°F

WITH INTEGRAL SWIVEL

CU316JB-1/2-S
Pressure: 350 psi
Flow Rate: 16 gpm
Temperature: 195°F

CU327JB-1/2
Pressure: 350 psi
Flow Rate: 27 gpm
Temperature: 195°F

RB35
Pressure: 175 psi
Flow Rate: 13.2 gpm
Temperature: 176°F

DESIGN FEATURES

AA238JB

Rated for up to 2300 PSI and 8 GPM. Weighing in at just over 9 ounces , this is our lightest spray gun. It is ergonomically designed for minimum operator fatigue. A 3/8" NPT(F) inlet port is positioned in front of the trigger guard. The outlet port is available as 1/4" NPT(F) on the AA238JB-3/8x1/4 or with the 11/16-16 UniJB retainer cap male thread on the AA238JB-3/8. Any of the UniJB spray tips, up to 8 GPM at the operating pressure, can be used with this version. A trigger-closed lock is standard.

AA408JB

Rated for up to 4050 PSI and 8 GPM. If the preference is to standardize on one spray gun throughout the plant, at this pressure and volume rating, this gun will meet most in-plant high pressure washing needs. The inlet port is 3/8" NPT (F) and the outlet port is available as 1/4" NPT(F) on the AA408JB-3/8x1/4. Any of the UniJB spray tips, up to 8 GPM at the operating pressure, can be used with this version. A trigger-closed lock is standard.

RL56

Compensating Gun rated for up to 5100 PSI and 8 GPM. Weighing less than 1-1/2 lbs, this is an excellent spray gun for heavy duty operations where the gun will be used for long periods of time. The inlet port is 3/8 NPT (F) and the outlet port is 1/4" NPT(F).

AA4511JB

Rated for up to 4500 PSI and 11 GPM. Weighing less than 1-1/2 lbs, this is an excellent spray gun for heavy duty operations where the gun will be used for long periods of time. The 3/8"NPT(F) bottom inlet adds to the comfort by helping to balance the reactionary force or "kick-back" of the spray gun. The outlet port is available as 1/4" NPT(F) on the AA4511JB-3/8x1/4 or with the 11/16-16 UniJB retainer cap male thread on the AA4511JB-3/8. Any of the UniJB spray tips, up to 11 GPM at the operating pressure, can be used with this version. A trigger-closed lock is standard.

G250VASW

Available with (-S) an Integral Swivel.

CU316JB & CU327JB.

Low pressure wash-down spray guns feature an infinitely adjustable spray pattern from fine hollow cone to high impact solid stream. The pattern is controlled by the amount the trigger is opened and varies from a cone of fine mist to a high impact solid stream, similar to a garden hose nozzle. The CU316JB has a maximum flow rate of 16 and is available with (-S) or without an integral Swivel. The CU327JB has a maximum flow rate of 27 GPM. Materials include a plated brass body with a tough plastic outer cover. A trigger-open lock is standard to assist the operator with long stints.

RL35

New light-weight compact wash-down gun. Rated for up to 175 PSI and 13.2 GPM. The inlet port is 1/2" NPT (F) swivel with adjustable spray pattern. Excellent for food industry applications. Available in two versions with different temperature ratings and chemical capabilities.

QCJBA-3/8F
Quick Disconnect Part A Female for the inlet of the AA Series guns

QCJBB-3/8M
Quick Disconnect - Part B Male for the inlet of the AA Series guns

3010JB27 & 3010JB35
27" Single Lance - Zinc Plated
35" Single Lance - Zinc Plated

3015JB-1/2
Brass Swivel - 1/2" BSP (F x M)

3015JB-3/8
Brass Swivel - 3/8" NPT (F x M)

3015SJB-3/8
Stainless Steel Swivel - 3/8" NPT (F x M)

SPRAY GUNS

PART NUMBER	WETTED METALLIC PARTS	MAXIMUM OPERATING PRESSURE PSI	MAXIMUM FLOW RATE US GPM	MAXIMUM TEMPERATURE °F	INLET CONNECTION	OUTLET CONNECTION	SWIVEL
AA238JB-3/8x1/4	BRASS	2300	8	210	3/8" NPT (F)	1/4" NPT (F)	Optional
AA238JB-3/8	BRASS	2300	8	210	3/8" NPT (F)	11/16" - 16 (M)	Optional
AA408JB-3/8x1/4	BRASS	4050	8	320	3/8" NPT (F)	1/4" NPT (F)	Optional
RL56							
6250VASW	BRASS	4500	11	320	3/8" NPT (F)	1/4" NPT (F)	Integral
AA4511JB-3/8x1/4	BRASS	4500	11	320	3/8" NPT (F)	1/4" NPT (F)	Optional
AA4511JB-3/8-S	BRASS	4500	11	320	3/8" NPT (F)	11/16" - 16 (M)	Integral
RB35							
CU316JB-1/2-S	PLATED BRASS	350	16	195	1/2" BSP (F)	-	Integral
CU316JB-1/2	PLATED BRASS	350	16	195	1/2" BSP (F)	-	Optional
CU327JB-1/2	PLATED BRASS	350	27	195	1/2" BSP (F)	-	Optional

ACCESSORIES

PART NUMBER	DESCRIPTION	MATERIAL	MAXIMUM FLOW RATE US GPM	MAXIMUM OPERATING PRESSURE	MAXIMUM TEMPERATURE °F	INLET CONNECTION	OUTLET CONNECTION
QCJBA-3/8F	Quick-Connect A	Brass	10.5	3000	284	3/8" NPT (F)	-
QCJBB-3/8M	Quick-Connect B	Brass	10.5	3000	284	-	3/8" NPT (M)
3010JB27	27" Lance	Steel, Zinc Plated	10.5	3000	284	1/4" BSP (M)	1/4" BSP (F)
3010JB35	35" Lance	Steel, Zinc Plated	10.5	3000	284	1/4" BSP (M)	1/4" BSP (F)
3015JB-1/2SW65	Swivel	Brass	26.5	350	195	1/2" BSP (F)	1/2" BSP (M)
3015JB-3/8SW7044	Swivel	Brass	-	3000	200	3/8" NPT (F)	3/8" NPT (M)
3015SJB-3/8SW7080	Swivel	Stainless Steel	-	5000	200	3/8" NPT (F)	3/8" NPT (M)

AIR AMPLIFIERS

AIR KNIVES

AIR NOZZLES

AIR OPERATED CONVEYORS

PANEL COOLERS

TOOL COOLERS

VORTEX TUBE & SPOT COOLING

AIR AMPLIFIERS

Air Amplifiers are actually energy "converters" that convert the pressure from compressed air into useful and amplified air flow creating a simple, inexpensive means to move air, fumes, and light materials. Hence the original term "air movers". Air Amplifiers use the "coanda effect" to entrain the surrounding air and create a high output flow. Because the energy normally lost as noise and pressure drop is converted to flow, the noise levels drop dramatically and the output flow is increased up to 25 times the air consumed.

AIR KNIVES

Nex Flow™ air knives dramatically reduce compressed air and noise levels as compared to other blow-off products. They provide a compact and efficient means to dry, clean and cool materials. An air knife operates by entraining the surrounding air along with the compressed air utilizing the "coanda" effect essentially converting energy which would normally be lost as noise and pressure drop into useful flow.

AIR NOZZLES

Nex Flow™ removes the confusion from air jets and nozzles. You do NOT need hundreds of different nozzles. All air amplifying nozzles produce air flows up to 25 times the compressed air consumed. Different nozzles have different outlet sizes and the more air used, the greater the force produced. Noise reduction up t0 10 dBA is typical as well as reduced air consumption when compared to open jets and tubes.

AIR OPERATED CONVEYORS

The Ring Vac Pneumatic Conveying System has virtually no moving parts, conveys material at high rates and over long distances. It utilizes compressed air for a powerful, efficient venturi action along its length in a compact design for high capacity conveying over large distances. Available in standard versions in both anodized aluminum and stainless steel for high temperature and corrosive environments, and in higher performance hard anodized aluminum versions to convey for longer and higher distances and to convey abrasive and sticky materials.

PANEL COOLERS

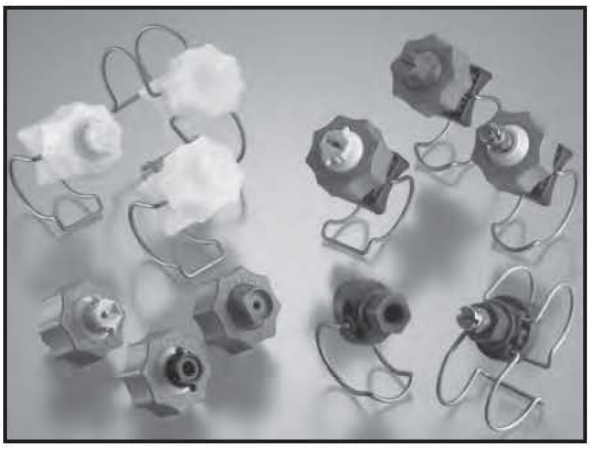
Cabinet Enclosure Cooler / Cooling- Frigid-X™ series for electronic control panels provide a low cost method of both purging and cooling electrical and electronic control panels by using a stainless steel vortex tube to create cold air from ordinary compressed air. Cabinet Enclosure Cooler - Frigid-X™ series are compact and can be installed in minutes through a standard electrical knockout. There are virtually no moving parts.

TOOL COOLERS

Frigid-X™ Tool Cooling System for dry machining applications - replaces polluting and often toxic mist systems to improve dry machining operations. No mess, no residue and low in cost. It is efficient and can improve dry machining operations and assist in spot cooling applications for a variety of industrial machining processes but increasing matchining rates and extending tool life.

VORTEX TUBE & SPOT COOLING

Nex Flow™ stainless steel vortex tube uses a metal (brass) generator as a standard item rather than cheap plastic for longer life and for applications in high temperature environments. (competitors would charge extra for that feature.) With virtually no moving parts, a vortex tube takes compressed air and converts it to cold air at one end and hot air at the other. Temperature as low as minus 50 degrees F (minus 46 C) can be achieved at the cold end and up to 260 degrees F (127 degrees C) at the hot end Vortex tube are available in two basic sizes and in several packaged versions.


NOZZLES


QUIK DISCONNECTS


PIPE SADDLES


RISER SUPPORTS


EDUCTORS


RISERS


HEADERS

UNI-SPRAY SYSTEMS

Uni-Spray's spraying nozzles and piping systems are the preferred products for leading OEM and engineering firms designing complete paint solutions for a multitude of customers These systems can be for a new system, a retrofit or expansion of existing equipment .

Nozzles

Uni-Spray Systems offers an extensive line of nozzles.
Assemblies are currently available in 3 different generations Mark I - Mark II - Mark III. These models provide unique aspects to meet the demanding working environments of our customers.

Quik Disconnects

Quick Disconnects or cam operated couplers are pipe connection devices that speed up the removal and cleaning of spray risers and spray bars. The couplers are available in sizes from 1" thru 4" and in a number of materials to suit many industrial applications. Parts are also available in thread configurations to meet the set up parameters you require.

Pipe Saddles

The Uni-Spray Pipe Saddle is a high-quality injection-molded pipe fitting which can be installed on an existing pipe in less than two minutes. It is made of pure master-batched polypropylene, and is highly resistant to a wide range of caustic and acid based chemicals.

Riser Supports

Riser supports are a value added component when setting up a pipe system that can be fully maintained. Each riser support is color coded for pipe size and supplied with stainless steel hardware for mounting. The supports are available in the standard design as well as the new mini and can also be configured with either a single or a double spring format and in either polypropylene or PVDF. These brackets create a solid support structure for the pipe and yet - with a simple flip of the spring - the pipe is free for fast removal.

Eductors

Tank Mixing Eductors enable small pumps to circulate large tanks. The suction produced by the venturi action of the eductor greatly amplifies the mixing ability of the pump. Solids in the tank are kept from settling by the velocity of the discharge plume.

Risers

Uni-Spray's Riser designs make use of their full compliment of components to create a functional yet cost effective wash system. The ability to bend and form riser pipes in a number of materials allows Uni-Spray to eliminate a number of fittings during construction. This also makes a system that works efficiently with the pumping system. Custom riser systems from Uni-Spray are available in PVC, CPVC, Polypropylene, PVDF, Black Iron and various grades of Stainless steel.

Headers

Using all the components available, Uni-Spray is able to design and build a full array of headers to meet your needs. Whether your header is 1-1/2" diameter or 8", they have the parts and components to build exactly the header you need. Whether you require saddles, quick disconnects on the ends or multiple outlets, their design is user friendly and maintainable. Building headers out of all of the current materials allows Uni-Spray to provide you with a quality product at competitive prices. Custom header systems from Uni-Spray are available in PVC, CPVC, Polypropylene, PVDF, Black Iron and various grades of Stainless steel. This ability allows us to evaluate your system requirements and provide the system that suits your needs the best.

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