

**INDUSTRIAL PRECISION
SPRAY NOZZLES &
ACCESSORIES**



Company Profile

BAPUJI INDUSTRIES , today is a trusted name in the field of industrial spray nozzles and accessories. With an experiences of 10 years, our facilities have been developed to manufacture different types of nozzles used in various fields. Our fields of specialization include manufacturing nozzles for surface treatment, chemical industry,steelmaking industry, power engineering and environmental technology, air conditioning, fire protection,paper industry, food and beverages, machine tools and agriculture.

We attribute our success to our motivated and skilled work force who can accomplish job orders of varying magnitudes and complexities. We are proud to have esteemed customers who have entrusted their faith in us over the years.

The aim of our organization is customer satisfaction which is achieve through following objectives:





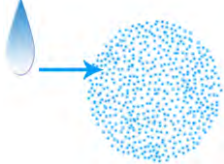
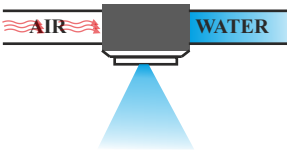
- ❖ Commitment to quality
- ❖ Prompt response
- ❖ Technological solutions
- ❖ In time delivery
- ❖ Service After sales

Our challenge is to meet the widely ranging delivery demands of an equally diverse customer base coupled with constant upgradation of production equipment and techniques to keep pace with new market trends and applications.

About Quality System

Internal Inspection report is made for every lot and the same is given to the customer along with material TC report. Third party inspection is carried out as per customer requirements. All our measuring instruments are calibrated periodically. Our managerial staff believes in continuous improvement in the existing processes.

Nozzle Selection Guide - by Application & spray pattern

Category of Nozzles	Applications	Spray Patterns
FLAT	Degreasing, Roll Cooling, Rinsing, High pressure Cleaning,	
FULL CONE	Surface spraying, washing & cooling of flue gases, scrubbing	
OIL BURNER SPRAY NOZZLE	LDO firing in kilns of cement, sponge, Iron plants & Dust suppression.	
HOLLOW CONE	Fugitive dust suppression Desuperheating, essentially, small droplet size	
OIL BURNER SPRAY NOZZLE	LDO firing in kilns of cement, sponge, Iron plants & Dust suppression.	
TANK CLEANING	Cleaning of inside surface of barrels & tanks.	
FINE ATOMIZING NOZZLE	Gas cooling, conditioning or humidifying applications, for improving the chemical reaction by increased contact surface	
AIR ATOMIZING NOZZLE	Coating, Atomizing of viscous liquids, Gas cooling, conditioning or humidifying, Chemical process engineering.	

Spray Characteristics

Spray nozzles are designed to perform under various spraying conditions. The following characteristics should be used when considering which nozzle to select.

- ❖ Spray Pattern
- ❖ Flow Rate & Pressure
- ❖ Spray Angle
- ❖ Droplet Size
- ❖ Material Selection

Spray Pattern

Spray nozzle selection follows primarily from its application. Spray nozzles are designed to perform under many different spraying conditions. Selecting a spray based on the pattern and other spray characteristics needed generally yields good results.

Each spray pattern is described further with applications to assist you in your nozzle selection.

Capacity

Nozzle capacity (flow rate) varies with spraying pressure. It also depends on the specific gravity of the liquid. Thus, for lower specific gravity, the flow rate is larger than for liquid with a higher specific gravity at the same pressure.

Spray Angle

Spray angle varies with the distance from where it is going to spray. Liquids with more viscosity give a narrow spray angle and vice-versa.

Droplet Size

In many applications like physical or chemical processes, which involve sprays, greatly depend on droplet size distribution. Significant factors influencing droplet size include nozzle type, capacity, spraying pressure and spray pattern.

Material Selection

Following types of materials are generally used.

1. Brass
2. Stainless steel (SS 304, SS 316, SS 316 L & all grades)
3. Hardened SS
4. Carbide Material
 - Silicon Carbide
 - Tungsten Carbide
5. Hastelloy B
6. Hastelloy C
7. Plastic Material
 - PVDF PP, PVC, PTFE/Teflon
8. Ceramic
9. Titanium



Flat Spray Nozzle

As the name implies, the spray pattern appears as a flat sheet of liquid.

The flow geometry provides uniform spray pattern & high impact, for various spray angles to satisfy various applications.

Characteristic : They are non-clogging and can operate through pressure fluctuations.

DESIGN : One piece construction, Non clogging type.

APPLICATION : Surface Treatment ,Roll Cooling, Degreasing and Rinsing, Lubricating, Industrial washing machines, etc.

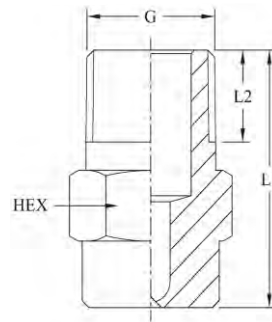
FLOW RATE : 1 LPM to 280 LPM

PRESSURE : 2.0 Kg/cm² or specified

SPRAY ANGLE : 15° to 120°

END CONNECTION : 1/8" to 2" BSP/BSPT/NPT (m/f)

M.O.C. : S.S. 316, 304, Brass, PVC, PP, Teflon
PVDF, etc.



G	L1	L2	HEX
1/8	18	8	12 mm
1/4	22	10	14 mm
3/8	25	10.5	17 mm
1/2	27	13	22 mm
3/4	15	8	32 mm



Flood Spray Nozzles

Wide angle flat with sharply defined spray pattern. It is available with a threaded connection and, for the sizes from 1/4" to 3/4" as a nozzle assure a wide coverage and an even distribution.

Characteristic : Flat nozzle work on the impact principle, with high efficiency and low plugging risks.

DESIGN : One Piece Construction, Non Clogging type
Accurately Machined to Provide very high impact

APPLICATION : Gravel Washing, Rinsing, Control of Foam , etc.

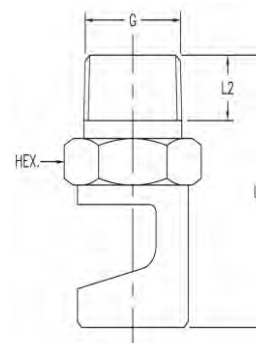
FLOW RATE : 2 LPM to 250 LPM

PRESSURE : 2.0 Kg/cm² or specified

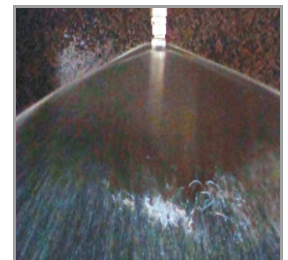
SPRAY ANGLE : 90° to 140°

END CONNECTION : 1/4" to 3/4" BSP/BSPT/NPT (m/f)

M.O.C. : S.S. 316, 304, Brass, PVC, PP, PVDF,
Teflon.



G	L1	L2	HEX
1/4	24	10	14 mm
3/8	42	10.5	19 mm
1/2	50	13	22 mm
3/4	72	16	32 mm



Flat Spray Nozzle With Dove Tail Design

Uniform parabolic distribution of liquid. Headers, equipped with these nozzles, show a highly uniform total distribution of liquids, even at different installation heights and centers.

Nozzle position fixed by self-setting dove-tail Flat preset at 15° and 5° pipe axis.

Characteristic : Uniform flat spray with knife-like cutting edge, accurate alignment.

Applications :

- ❖ Roll Cooling
- ❖ Descaling
- ❖ High pressure cleaning etc.

Range :

Spray angle : 15° to 120°

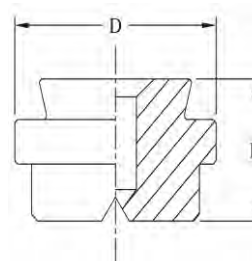
Flow rate : 1 To 100 LPM

Pressure : 2.0 Kg/cm² or specified

Connection : Mounted With Aid Of Dovetail Fixing Dovetail Nipple & Retaining Nut.

Standard Accessories : welding nipple and screwed nut.

G	L1	H
3/8	14.8	12 mm
3/4	24	14 mm



Solid Cone Spray Nozzle (Full Cone)

Full Cone nozzle form complete spray coverage in a round or square shaped area.

It provides an uniform spray distribution of medium to large size drops resulting from their vane design which features large flow passage and control characteristics. This is extensively used style in industry.

Characteristic : Internal vane design features large flow passage and fine control.

DESIGN : Removable Vane.

TYPE : Round Pattern, Square Pattern, Oval Solid Cone, Wall Mounted type.

APPLICATION : Surface spraying, washing & cooling of flue gasses to remove fly ash , cooling condenser, Scrubbing, Foam Breaking,

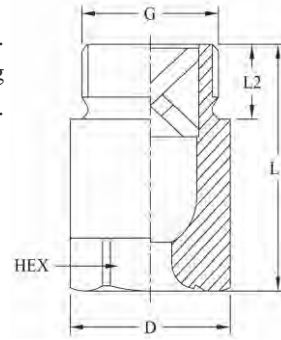
FLOW RATE : 1 LPM to 8000LPM

PRESSURE : 2.0 Kg/cm² or specified

SPRAY ANGLE : 30° to 120°

END CONNECTION : 1/8" to 4" BSPT /NPT or BSP-Flanged

M.O.C. : S.S. 316, 304, Brass, PVC, PVDF, PP, Teflon



G	L1	L2	HEX
1/8	18	8	12 mm
1/4	22	10	14 mm
3/8	25	10.5	17 mm
1/2	32	13	22 mm
3/4	42	16	27 mm
1	56	18	36 mm

Spiral Full Cone Spray Nozzle

The helix spiral full cone nozzles combine small nozzle sizes with wide flow openings.

Characteristic : The absence of any internal parts make these nozzles non-clogging.

DESIGN : One Piece Construction, Non Clogging type.

APPLICATION : Gas washing, Cooling Towers , Fire fighting systems.

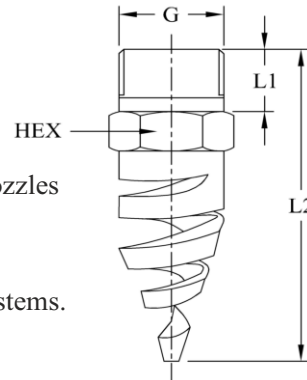
FLOW RATE : 5 LPM to 3410 LPM

PRESSURE : 2.0 Kg/cm² or specified

SPRAY ANGLE : 60° to 180°

END CONNECTION : 1/4" to 4" BSP/BSPT /NPT

M.O.C. : S.S. 316, 304, Brass, PVDF, PVC, PP, Teflon



G	L1	L2	HEX
1/4	40	10	16 mm
3/8	48	10.5	17 mm
1/2	64	13	22 mm
3/4	80	15	27 mm
1	95	18	36 mm

Solid Spray Nozzle (Injector Type)

Compact stream with a defined length owing to optimum flow geometry.

Flow conditions are not affected by turbulence. A concentrated with high impact force is achieved. This is used for powerful punctiform impact, wherever concentrated power is vital.

Characteristic : A high efficiency and economical performance is obtained.

DESIGN : One Piece Construction.

APPLICATION : For High pressure cleaning systems, Cutting and separating.

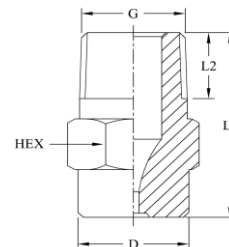
FLOW RATE : 5 LPM to 250 LPM

PRESSURE : 2.0 Kg/cm² or specified

SPRAY ANGLE : Only 0°

END CONNECTION : 1/8" to 1" BSP/BSPT /NPT

M.O.C. : S.S. 316, 304, Brass, PVC, PVDF, PP, Teflon



G	L1	L2	HEX
1/8	18	8	12 mm
1/4	22	10	14 mm
3/8	25	10.5	17 mm
1/2	32	13	22 mm
3/4	42	16	27 mm
1	56	18	36 mm

Tangential Entry Hollow Cone

This flow pattern is essentially a circular ring of liquid.

Hollow cone nozzles are best for application requiring good atomization of liquids at lower pressures or where quick heat transfer is needed. These nozzles also feature large and unobstructed flow passage which provide a relatively high resistance to clogging.

There are Following types of hollow cone nozzles.

1) Tangential Entry 2) Inline (Axial) Entry 3) Spiral Hollowcone.
Characteristic : high resistance to clogging.

DESIGN : Vaneless (Two Piece Construction) Non clogging

APPLICATION : Cooling & Washing of gas

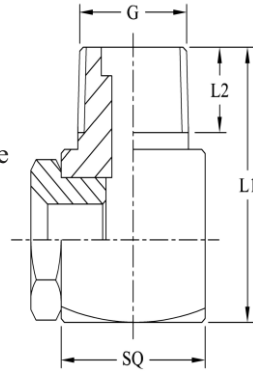
FLOW RATE : 1 LPM to 530 LPM

PRESSURE : 2.0 Kg/cm² or specified

SPRAY ANGLE : 60°, 80°, 90°, 120°, 130°

END CONNECTION : 1/4" to 3/4" BSP/BSPT /NPT (m/f)

M.O.C. : S.S. 316, 304, Brass, PVC, PVDF, PP, Teflon



G	L1	L2	Sq
1/4	35	10	20 mm
3/8	35	10	20 mm
1/2	45	13	25.4 mm
3/4	57	15	30 mm



Inline Entry Hollow Cone

Hollow cone spray pattern with uniform distribution of finely atomized droplets. Smaller droplets in spray pattern than full cone nozzles of the same capacity at similar pressures.

Characteristic : One piece in-line body with removable orifice tip.

DESIGN : Two Piece Construction

APPLICATION : Gas Cooling & Cleaning spray Drying, desuperheating, Water Cooling, fugitive dust suppression.

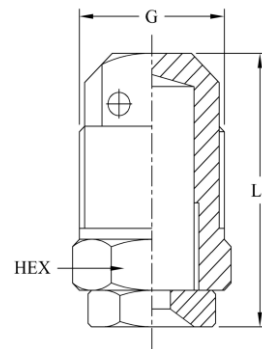
FLOW RATE : 1 LPM to 40 LPM

PRESSURE : 2.0 Kg/cm² or specified

SPRAY ANGLE : 45° to 120°

END CONNECTION : 1/4" to 1/2" BSP/BSPT /NPT (m)

M.O.C. : S.S. 316, 304, Brass, PVC, PVDF, PP, Teflon



G	L1	HEX
1/4	30	14 mm
3/8	32	17 mm
1/2	37	22 mm



Spiral Hollow Cone

A hollow cone spray pattern with large flow rates and small drop sizes. These nozzles have an anti clog design that can be easily inspected, cleaned and serviced.

Characteristic : High resistance to clogging.

DESIGN : One Piece Construction, No Internal Parts.

APPLICATION : Dust Suppression, Gas washing, Humidification.

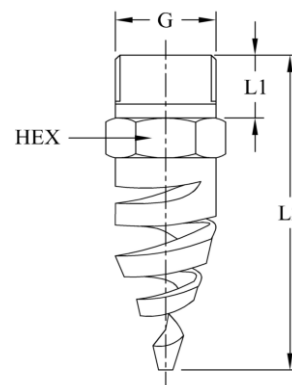
FLOW RATE : 10 LPM to 3000 LPM

PRESSURE : 2.0 Kg/cm² or specified

SPRAY ANGLE : 60° to 180°

END CONNECTION : 1/4" to 4" BSP/BSPT /NPT

M.O.C. : S.S. 316, 304, Brass, PVC, PVDF, PP, Teflon



G	L1	L2	HEX
1/4	40	10	16 mm
3/8	48	10.5	17 mm
1/2	64	13	22 mm
3/4	80	15	27 mm
1	95	18	36 mm



Tank Cleaning Spray Nozzle (Self-Rotating)

There are good reasons for you to look for more efficient ways to clean tanks and vessels in your plant.

The main disadvantages like high cost of labour intensive washing methods, tighter sanitary requirements, disposal costs of contaminated cleaning solutions, safety requirements at work for cleaning solvents can be overcome by using this type of nozzle.

Characteristic : No external power source is required.

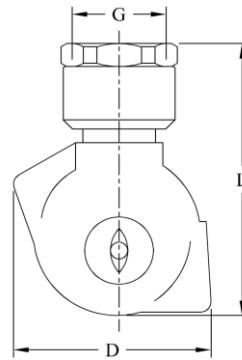
Applications :

- ❖ Cleaning of inside surface of barrels and tanks.
- ❖ To circulate liquids in chemical processes to accelerate the reactions.

Range :

Spray Angle : 200° to 360°
 Flow rate (lpm) at 2 bar Pressure : 24 to 147
 Connection : 3/4" NPT
 M.O.C. : S.S. 316, 304

* Stationary type nozzle is also available .



G	L	D
3/4	98	69

Self Powered Rotating Tank Cleaning Nozzle

For larger vessels with internal dimensions of 10 to 30 feet, the larger Gyro series sets the pace. All Gyro heads are self powered with simple long life teflon bearings. All coverage angles are available in every size available in steel & teflon for corrosive medium application.

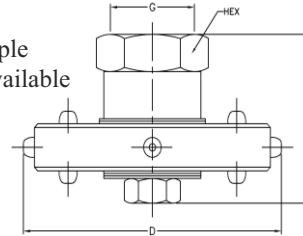
Requiring no motor gears or other mechanical devices for operation can be used as a portable or permanent fixture the nozzle provides an efficient cleaning action for medium size tanks. It cuts cleaning costs by reducing man hours and ensures uniform tank cleaning.

Recommended operating Pressure : 2-3 bar

Characteristic : No external power source is required.

Range :

Spray Angle : 120° up, 180° up, down, 270° up, 360°
 Flow rate (lpm) at 2 bar Pressure: 320 to 1100
 Connection : 1", 2", 3" NPT, BSPT, BSPP
 M.O.C. : S.S. 316, 304



G	D	L	HEX
1"	117	68	41
2"	132	95	71

Eductors

Eductors have a unique venturi design which enables smaller pumps to circulate large volumes of tank solution. The eductor will circulate four to five gallons of solution for each gallon pumped. Eductors are used for mixing chemicals, suspending solids, adjusting pH, "sweeping" debris or sludge toward a filter intake and many other useful applications.

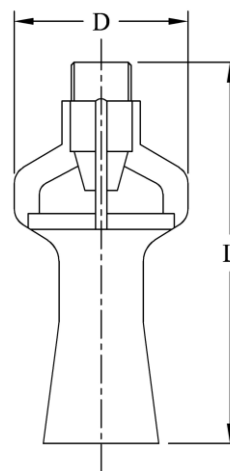
Characteristic : It's unique venturi design ensures proper mixing of tank Solution.

Eductor Typical Applications :

- ❖ Plating Tanks
- ❖ Phosphating Tanks
- ❖ Fertilizer Tanks
- ❖ Pulp Tanks
- ❖ Sludge Tanks
- ❖ Paint Booths
- ❖ Anodizing Tanks
- ❖ Cooling Towers
- ❖ Decorative Fountains

M.O.C. : S.S. 316, CS, Brass, PVC, PVDF.

Size from 1/4" to 3" N.P.T.
 (BSPT Models also available)



Multiple Full cone Nozzle

Multiple spray nozzles, consisting of seven finely atomizing hollow cone nozzles, provide a fog-like full cone pattern with relatively high flow volumes. The overlapping hollow cone nozzles produce a 130° full cone spray pattern of very fine droplets that cannot be achieved by a single orifice spray nozzle of the same flow rate size. The resulting increased droplet surface area of the atomized liquid provides greater efficiency in gas treatment and cooling application ideal for reaction towers which do not use packings.

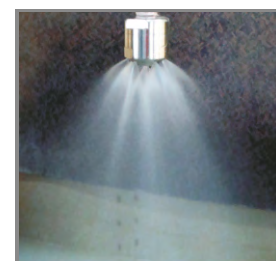
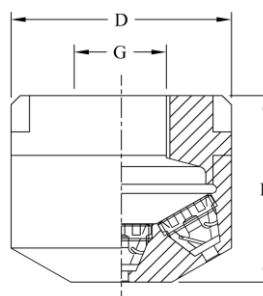
Characteristic : This type of nozzle gives fine atomization with the aid of several hollow cones spraying into one another.

Applications :

- ❖ Cooling of gaseous and solid material
- ❖ In desuperheaters
- ❖ Chlorine precipitation
- ❖ For improving the chemical reaction by means of enlarging the contact surface

Range :

Spray Angle : 70°, 120°, 130°
 Flow rate (lpm) at 2 bar Pressure : 6 to 70
 Connection : 3/4", 1" BSP
 M.O.C. : S.S. 316, 304, Brass, PVC



G	L	D
3/4	51.5	60

Fog Spray Nozzle

This type of nozzle throws a fogging spray of small-sized drops. They produce a dense full cone type pattern with large flow rates.

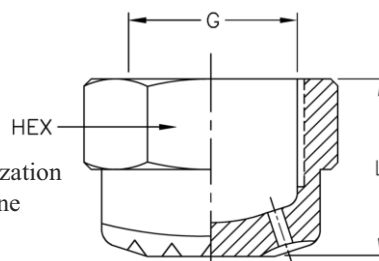
Characteristic : This non-clogging nozzle gives fine atomization with the aid of several flat spraying into one another.

Applications :

- ❖ Fire protection
- ❖ Dust Control
- ❖ Aerating
- ❖ Chemical Processing

Range :

Spray Angle : 70°, 90°
 Flow rate (lpm) at 2 bar Pressure : 16 to 225
 Connection : 3/4", 1", 1 1/4" BSPT(F) OR NPT
 M.O.C. : S.S. 316, 304, Brass, PVC



G	L	HEX
3/4	26	32

Multiple Full Nozzles

The nozzle assembly consists of a nozzle body and seven removable atomizing spray caps. Each cap has an internal core which is easily removed for cleaning or replacement.

The nozzle provides large flow capacities with relatively small drops.

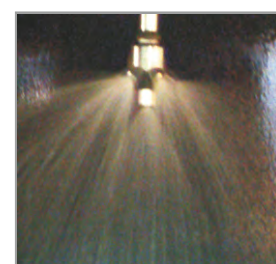
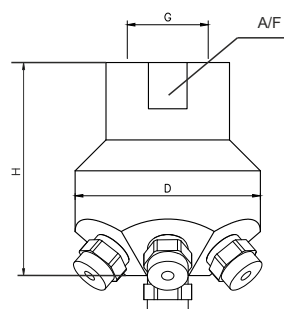
Characteristic : With the aid of multiple fine full cone nozzles it gives large full cone with small droplets.

Application :

- ❖ Gas scrubbing
- ❖ Gas cooling
- ❖ Dust control
- ❖ Tank rinsing
- ❖ Humidifying applications

Range :

Flow rate (lpm) at 2 bar Pressure : 1 to 215
 Connection : 1" BSP (F)
 M.O.C. : S.S. 316, 304, Brass, PVC



Air Atomizing Spray Nozzle

Air atomizing nozzle utilizes a collision of air and liquid to provide an atomized spray. Various nozzle designs are to comply with specific application.

Characteristic : Air mist nozzles can operate for less cost than high pressure hydraulic spray nozzles.

Applications :

- ❖ Coating
- ❖ Gas cooling, conditioning or humidifying.
- ❖ Atomizing of viscous liquids.
- ❖ Chemical process engineering.

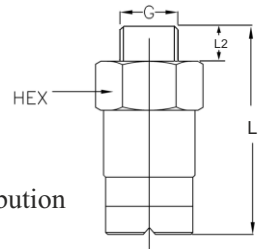
Range :

Spray Angle : 15°, 20°, 25°, 30°, 45°, 60°, 90°, 120°
 Flow rate (lpm) at 2 bar Pressure : 0.05 to 6
 Connection : 1/8" to 1/4" BSPT/NPT OR BSP.
 M.O.C. : Brass, SS316, 304



Spray Nozzle For continuous Casters (Square Pattern)

The share of continuous casters in world steel production is steadily increasing. For production of perfect steel grades, cooling of the red hot strand, especially in the secondary cooling areas, is of vital importance.



Characteristic : Full cone spray pattern with uniform distribution throughout the approximately square cone.

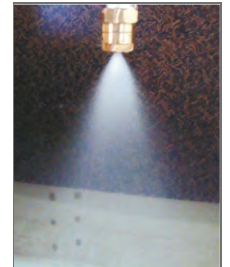
Advantages :

This nozzle gives uniform distribution of cooling water, fine sprays with narrow drop spectrums and quick removing of cooling water from the strand surface which are considered vital for obtaining a perfect steel quality.

Range :

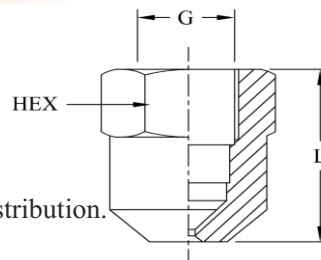
Spray Angle : 60°, 75°, 90°, 120°
 Flow rate (lpm) at 2 bar Pressure : 1 to 40
 Connection : depends on site conditions.(m/f)
 M.O.C. : Brass, SS316, 304

G	L1	L2	SQ
1/8	33	6.5	14 mm
1/4	33	10	17 mm
3/8	33	10	17 mm
1/2	31	14	17 mm



Full Cone Nozzles For continuous Casters (Round Pattern)

Full cone nozzles produce a full cone spray pattern, with a uniform liquid distribution. The special design of the internal vane ensures a good resistance to clogging. Typical application continuous casting machines.

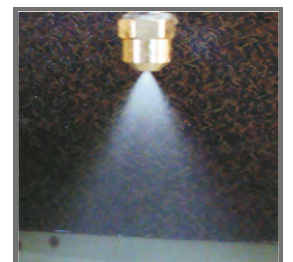


Characteristic : These nozzles produce a uniform liquid distribution.

Range :

Spray Angle : 30° to 90°
 Flow rate (lpm) at 2.8 bar Pressure : 1 LPM to 12 LPM
 Connection : 1/4", 3/8" BSP (f)
 M.O.C. : Brass, SS316, 304

G	L1	HEX
1/4	22	16
3/8	26.5	22



Special Purpose Nozzles

Oil Burner Spray Nozzle

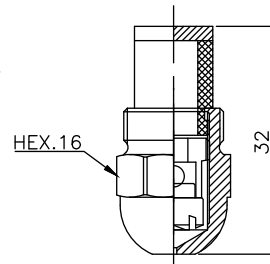
Oil burner nozzles are available in fullcone & hollowcone spray pattern. Micro-finish of Tip & Disc seats permitting flow only through the slots of the disc, plus extremely close manufacturing tolerances, ensure accurate capacity control.

These nozzles are accomplished with filter in order to provide highly efficient in depth filtration with one piece construction extra fine filter microns are supplied as standard on all small capacity nozzles.

Applications :

❖ LDO firing in kilns of cement, sponge, Iron plants & Dust suppression.

Range :
 Spray Angle : 45°, 60°, 80°,
 Flow rate (lpm) at 2 bar Pressure : 0.75, 1.5, 1.75, 2.2, 2.5, 3, 3.5, 4, 5, 6, 5,
 10.5, 12.5, 15.5, 19.5, 24, 30, 40, 50,
 55, 60, 70, 80, 100 GPH.
 Connection : UNF 9/16"
 M.O.C. : SS, 304



Clip On Spray Nozzle

Designed to ensure easy installation and minimal maintenance downtime, the Clip On nozzle assembly simply snaps onto an existing header. The assembly is affixed to the header by a spring-grade stainless steel clamp, which fits 3/4", 1-1/4", 1-1/2" or 2" pipes.

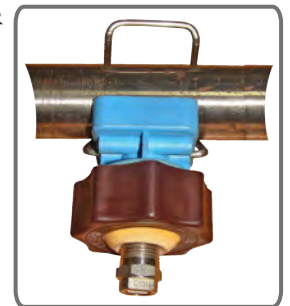
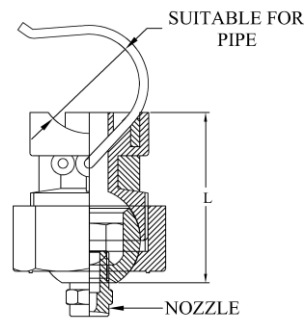
The nozzle tip is installed aligned and secured by manually twisting the cap which allows the spray pattern to be directed very precisely at the surface being cleaned.

Characteristic : Retaining cap holds the tip in position, even when the nozzle is jarred or vibrated.

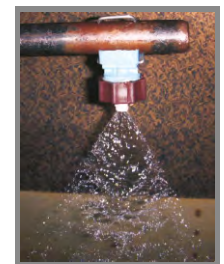
Applications :

❖ Cleaning problems, phosphating, degreasing, rinsing in surface treatment techniques. Ball joint, omnidirectional swivelling range of 30°
 Simple quick assembling. Easy adjusting and cleaning.

Range :
 Flow rate (lpm) at 2 bar Pressure : 1 LPM to 40 LPM.
 Connection : 1/4", 3/8" BSP



G	L
1/4	58 mm
3/8	58 mm



Air Wiping Nozzles

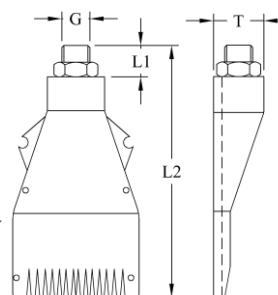
Multi channel flat spray nozzles have been specially designed to attenuate noise, to obtain an intensive, precise blowing power, to minimise cost by reducing air consumption.

Characteristic : The air stream is discharged through 16 precision orifices that ensure uniform distribution and spray pattern integrity.

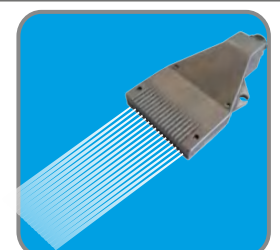
Applications :

❖ For transporting, blowing off, cleaning blowing-out cooling. On stamping machines, for die-casting, compression moulding blowing-off emulsions etc. Adjustable cover affords selection of 16 different orifices.

Range :
 Connection : 1/4" BSP (m/f)
 M.O.C. : Aluminium, SS, PP



G	L1	L2	T
1/4 M	13mm	99mm	20mm
1/4 F	12mm	86mm	20mm



Accessories

- Swivel Ball Joint
- Dovetail Assembly
- Connector
- Clip on Assembly to suit 25, 32, and 40 NB pipe in PP material to mount 1/4" and 3/8"



Troubleshooting basics

The following are some of the things to look for when a system is not performing as intended :

Nozzle Wear of Corrosion

- ◆ May cause excessive flowrate due to enlarged passage
- ◆ May increase droplet size
- ◆ Degrades spray Pattern

Nozzle Clogging

- ◆ Low flowrates
- ◆ Poor Spray Pattern

Inadequate Pipe Size

- ◆ Excessive pipe pressure losses leading to low nozzle pressures
- ◆ High velocities in headers that disrupt fluid entering the nozzle

Incorrect Nozzle Location

- ◆ Poor gas/liquid contact in scrubbers and quenchers
- ◆ Poor area coverage

Incorrect Nozzle For Application

- ◆ Drop size too small or too large
- ◆ Incorrect pattern type

Careful system design and selection of the proper Nozzle will minimize spray problems.

Specifying Spray Nozzles

Spray Nozzle have three basic functions :

- ◆ Meter flow
- ◆ Distribution of liquid
- ◆ Break up a liquid stream into droplets

The process of choosing a nozzle includes specifying :

- a) Its flow-rate-verses-pressure characteristics.
- b) The size of the droplets that will be produced.
- c) How the droplets will be distributed after leaving the nozzle.
- d) The Nozzle connection to the feed pipe.
- e) The Material of construction.

SPRAY COVERAGE & DATA SHEET

CAPACITY :All capacity tabulations given in this catalogue are based on water. The specific gravity affects its flow rate. The capacity must be multiplied by the given conversion factor for the specific gravity of the liquid sprayed.

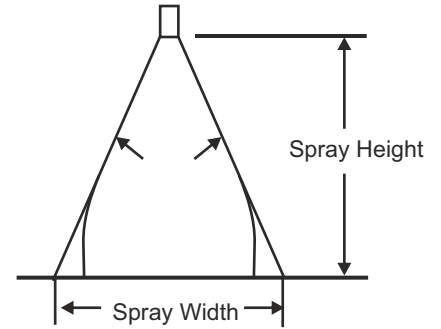
Specific Gravity	0.84	0.96	1.00	1.08	1.20	1.32	1.44	1.5
Conversion Factor	1.09	1.02	1.00	0.96	0.91	0.87	0.83	0.82

$$Q_2 = Q_1 \sqrt{\frac{P_2}{P_1}}$$

Where Q = Flow rate
P = Pressure

SPRAY COVERAGE TABLE

This table lists the theoretical coverage of spray patterns as calculated from the included spray and the distance from the nozzle orifice. These values are based on the assumption that the spray angle remains same throughout entire spray distance. In actual practice, the tabulated spray angle does not hold for long spray distance.



Theoretical spray Width (in mm) at various height from nozzle tip

Spray Angle	50	100	150	200	250	300	400	500	600	700	800	1000
5°	4	9	13	18	22	26	35	44	52	61	70	87
10°	9	18	26	35	44	53	70	88	105	123	140	175
15°	13	26	40	53	66	79	105	132	158	184	211	263
20°	18	35	53	71	88	106	141	176	212	247	282	353
25°	22	44	67	89	111	133	177	222	266	310	355	443
30°	27	54	80	107	134	161	214	268	322	375	429	536
35°	32	63	95	126	158	189	252	315	378	441	505	631
40°	36	73	109	146	182	218	291	364	437	510	582	728
45°	41	83	124	166	207	249	331	414	497	580	663	828
50°	47	93	140	187	233	280	373	466	560	653	746	933
55°	52	104	140	208	260	312	417	521	625	729	833	1040
60°	58	116	173	231	289	346	462	577	693	808	924	1150
65°	64	127	191	255	319	382	510	637	765	892	1020	1270
70°	70	140	210	280	350	420	560	700	840	980	1120	1400
75°	77	154	230	307	384	460	614	767	921	1070	1230	1530
80°	84	168	252	336	420	504	671	839	1010	1180	1340	1680
85°	92	183	275	367	458	550	733	916	1100	1280	1470	1830
90°	100	200	300	400	500	600	800	1000	1200	1400	1600	2000
95°	109	218	327	437	546	655	873	1090	1310	1530	1750	2180
100°	119	238	358	477	596	715	953	1190	1430	1670	1910	2380
110°	143	286	429	571	714	857	1140	1430	1710	2000	2290	2860
120°	173	346	520	693	866	1040	1390	1730	2080	2430		
130°	215	429	643	858	1070	1290	1720	2150	2570			

Service Life

The service life of nozzle is dependent on various circumstances such as spray application, service conditions, the quality of the liquid to be sprayed. According to the material used, service life of nozzles can considerably differ.

This short survey gives you an idea about proper nozzle selection.

<i>Conversion Data</i>		
MULTIPLY	By	TO OBTAIN
Feet/sec	18.29	Meters/Min
Feet or Water	0.0295	Atmospheres
Feet or Water	0.884	Inches of Mercury
Feet or Water	0.433	Psi
Gallons	3785	Cm ³
Gallons	0.1337	Ft ³
Gallons	0.83257	Imperial Gallons
Gallons	3.785	Liters
Gallons/min	0.06308	Liters/sec
Imperial Gallons	1.2	Gallons
Horsepower	1.014	Horsepower (metric)
Horsepower	33.000	Foot pounds/min
Horsepower	746	Watts
Inches	2.54	Centimeters
Kg/cm ²	14.22	Psi
Kilo Watts	1.340	Horsepower
Liters	1000	Cm ³
Liters	0.264	Gallons
Liters	0.22	Imperial Gallons
Liters	33.8	Ounces (Fluid)
Meters	3.281	Feet
Microns (μ)	0.0394	Thousandth of an inch
Miles/hr	44.7	Centimeters/sec
Miles/hr	1.467	Feet/sec
Millimeres	0.0394	Inches
Psi	0.068	Atmospheres
Psi	0.06895	Bar
Psi	2.307	Feet of Water
Psi	0.0703	Kg/cm ²
Psi	6.895	KPa

<i>Conversion Data</i>		
MULTIPLY	By	TO OBTAIN
Atmospheres	1.013	Bar
Atmospheres	33.931	Feet of water
Atmospheres	1.0332	Kg/cm ³
Atmospheres	101.3Kilo	Pascals (k Pa)
Atmospheres	14.696	Psi
Bar	100	kPa
Bar	14.5	Psi
Barrels (oil)	42	Galions
Centimeters	0.3937	Inches
Centi Stokes	Sp.gravity	Centi Poise
Cm ³	0.061	in ³
Cm ³	0.000264	Gallons
Cm ³	0.001	Liters
Ft ³	1728	in ³
Ft ³	0.02832	M ³
Ft ³	7.48	Gallons
Ft ³	28.32	Liters
Ft ³ (water)	62.43	Pounds (Water)
In ³	16.39	Cm ²
In ³	0.00433	Gallons
In ³	0.164	Liters
M ³	35.31	Ft ³
M ³	61.016	In ³
M ³	264.2	Gallons
M ³	1000	Liters
Degree (Angle)	60	Minutes
Degree (Celsius)	(°C x 1.8)+32	Degree (Fahrenheit)
Degree (Fahrenheit)	(°F - 32)x0.56	Degree (Celsius)
Feet	0.3048	Meters
Feet/sec	30.48	Centimeters/sec

RANGE OF INDUSTRIAL SPRAY NOZZLES & ACCESSORIES

All Flow Rates (V-LPM) and Spray Angle (α) @ 2.0 Kg/cm² except otherwise specified.

FLAT



V : 0.5 to 280
α : 15° to 120°
High Precision



V : 4 to 500
α : 15° to 120°
Large Capacity



V : 1 to 200
α : 15° to 120°
Dove Tail Nozzle



V : 0.5 to 280
α : 90° to 140°
Flood Spray Wide Angle



V : 0.3 to 80
α : 15° to 120°
Nozzle Tip

FULL CONE



V : 1 to 1500
α : 45° to 120°
Axial Full Cone



V : 1 to 5000
α : 40° to 120°
Square Pattern



V : 10 to 4000
α : 60° to 180°
Spiral Full Cone



V : 1 to 100
α : 60° to 120°
Vaneless Full Cone



V : 1 to 6000
α : 45° to 120°
Tangential Entry Full Cone

HOLLOW CONE



V : 1 to 850
α : 60° to 130°
Tangential Entry



V : 10 to 250
α : 60° to 180°
Spiral Hollow Cone



V : 0.2 to 80
α : 45° to 120°
Inline Entry (male Connection)



V : 40 to 800
α : 60° to 90°
Ramp Bottom



V : 0.5 to 50
α : 30° to 90°
Burner Nozzle

SOLID



V : 0.8 to 250
α : 0°
Needle



V : 6 to 87
α : 45° to 90°
Medium capacity Full cone



V : 0.05 to 5.0
α : 15° to 25°
Full cone Narrow Angle



V : 0.5 to 6
α : 45° to 180°
Air Atomizing



V : 0.02 to 6
α : 60° to 120°
Air Atomizing Full Cone

TANK CLEANING



V : 16 to 40
α : 120° to 240°
Self Rotating



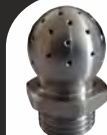
V : 40 to 140
α : 180° to 360°
Barrel/Tank Cleaning



V : 80 to 200
α : 180° to 360°
Turbo Tank Cleaning



V : 150 to 1120
α : 180° to 360°
Gyro



V : 12 to 280
α : 120° to 240°
Stationary Type

SPECIAL



V : 2 to 80
α : 90° to 130°
Multiple Full Cone



V : 16 to 225
α : 65° to 90°
Fog Spray nozzle



V : 15 m³/hr.
Air Wiping



V : 3 to 40
α : 20° to 120°
Blow off Nozzle



V : 40 to 240
α : 70° to 130°
Multiple Full cone

ACCESSORIES



Dove Tail Nipple & Nut



Nipple & Nut



BAPUJI INDUSTRIES
Mfg. Spray Nozzle, Forge & Fitting & Valve



Ball Joint



Clamps

Special Design, End Connections & Materials On Request

Office :- R-446, T.T.C., Industrial Area, MIDC Rabale, Navi Mumbai - 400 701.

E-mail : sales@bapujiindustries.com Website : www.spraynozzle.co.in