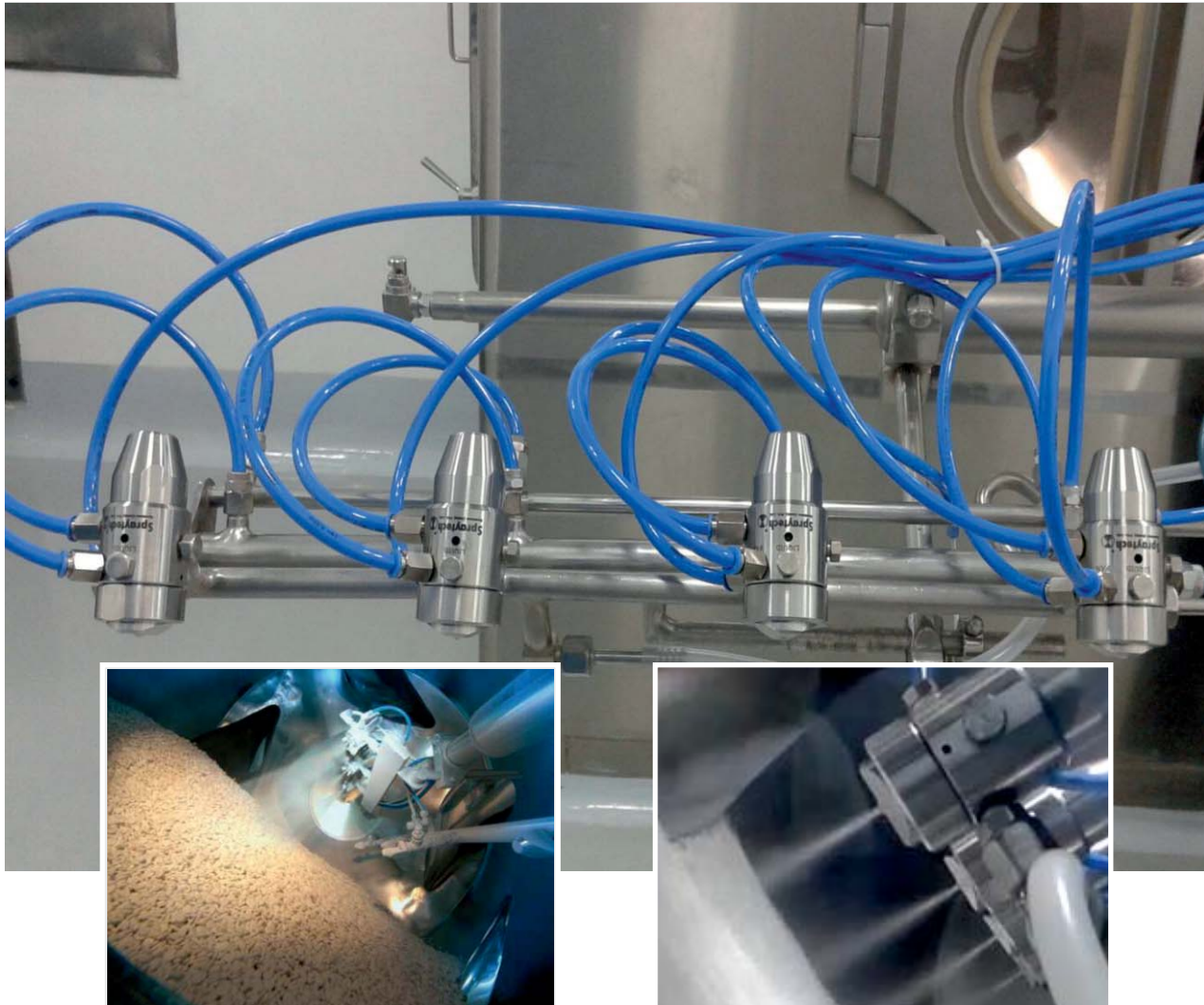


Air Atomizing Spray Nozzles



APPLICATION

- Tablet Coating
- Pallet Coating
- Atomization of viscous liquids
- Agglomeration
- Granulation
- Humidification of air

Air Atomizing Design, Features & Introduction

Air atomizing spray nozzles produces fine mist spray with the help of compressed air, liquid breaks into small droplets as air provides shearing effects on liquid droplets. Various spray patterns are available, they are categorized into Flat and Round spray patterns. The droplet size can be adjusted by flow adjustment of compressed air. Air atomizing nozzles are divided into two types Internal and External mix air atomizing nozzles. Those are available in various metals.

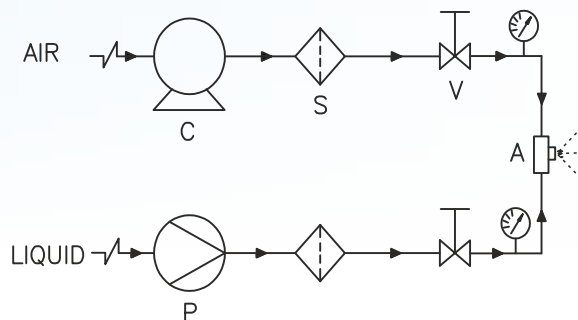
An air atomizing spray nozzle can work on three principles as below:

- 1) Pressure Principle
- 2) SIPHON Principle
- 3) Gravity Head Principle



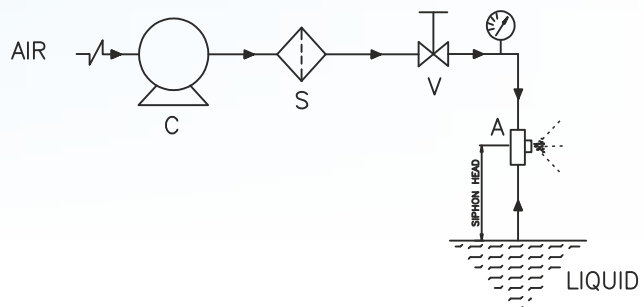
1) Pressure Principle

Liquid is supplied in pressurised form with the help of pump or pressurised container, separate compressed air is needed



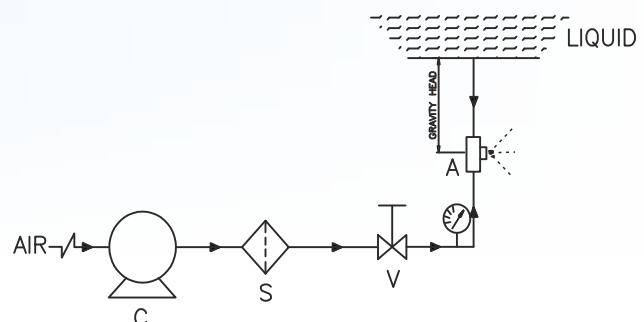
2) Siphon Principle

Siphon principle is utilised to lift liquid from certain height from spray nozzle, suitable where pump or pressurised container of liquid is not available.



3) Gravity head Principle

Gravitational head of liquid is utilised to feed liquid to the spray nozzle, suitable where pump or pressurized container of liquid is not available.



Choice of spray Nozzles

Each spray set-ups consists of an air cap and liquid cap which provide a specific spray pattern capacity and coverage performance

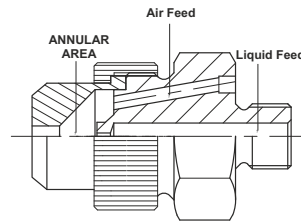
Inside Body Mixing

Liquid and air streams meet within nozzle and are mixed together and expelled through the same orifice. 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-up are able to produce the finest atomization of any of the XA set-ups, but they are generally not suitable for use with liquids which have a viscosity that is above 200 centipoise.

Out Side Body Mixing

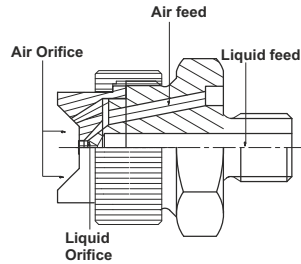
The air and liquid streams exit the nozzle independently and are combined and mixed outside of the nozzles. Because there is no connection between the air and liquid lines within the nozzles, the air and liquid flow rates can be controlled independently, allowing precise metering of the liquid. The atomization can be controlled by adjusting the air flow rate more air produces finer atomization. In most cases these set-up do not atomize as finely as Internal Mix Set-ups.

External Mix Set-up may be used with liquid having a viscosity above 200 centipoise and for abrasive suspensions. Spraytech provides Engineering guidance for spraying high viscosity liquids.



Internal Mix Set-Ups

Air & Liquid mix inside the nozzle



External Mix Set-Ups

Air & Liquid exit independently and combine outside the nozzle

Applications

- 1. Tablet Coating
- 2. Thin Film Coating
- 3. Humidification
- 4. Paper Moisturising
- 5. Dust Suppression

Optional Features

- 1. Manual Shut-off / Cleaning Needle
- 2. Automatic self Cleaning Needle
- 3. Auto shut-off Arrangement

Material Code

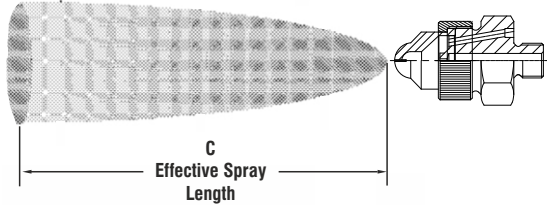
- M1 = SS303/SS304
- M2 = SS316/M2L=SS316L
- M3 = Brass (Nickel Plating on Request)
- M4 = SS410/ M4-3=SS310



CAIA Series Flat Internal Air Atomizing Spray Nozzles

DESIGN / SPRAY CHARACTERISTICS

- Internal mix
- Very fine atomization
- Flat fan, wide angle spray patterns (range 45° and 120°)



Flow Rates and Dimensions

Pressure-fed, Internal Mix, Flat Spray Pattern, 1/8" and 1/4" Pipe Sizes, BSP or NPT

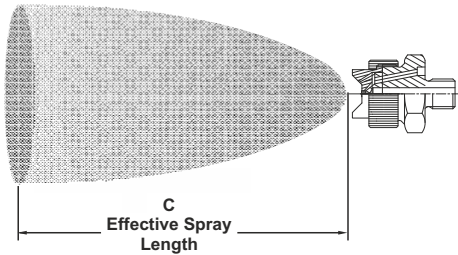
Pipe Size	Model No.	0.7 Bar Liquid			1.5 Bar Liquid			2.0 Bar Liquid			3.0 Bar Liquid			4.0 Bar Liquid			Spray Dimensions	
		Air (bar)	l/h	Nm ³ /h	Air (bar)	l/h	Nm ³ /h	Air (bar)	l/h	Nm ³ /h	Air (bar)	l/h	Nm ³ /h	Air (bar)	l/h	Nm ³ /h	"C" Effective Spray Length (mm)	Max. Spray Length (m)
1/8 or 1/4	CAIA 050	0.7	5.5	1.44	1.3	9.1	1.86	2.0	8.6	2.52	2.7	11.2	3.12	3.9	12.0	4.14	460 660 760 860 940	2.6 3.0 3.2 3.4 4.0
		0.9	4.7	1.62	1.5	7.7	2.16	2.2	7.5	2.82	3.0	10.1	3.36	4.6	9.7	4.86		
		1.0	4.1	1.86	1.8	6.5	2.52	2.5	6.2	3.12	3.2	9.1	3.72	5.3	7.5	5.58		
		1.1	3.5	2.04	2.1	5.4	2.82	2.8	5.2	3.42	3.5	8.1	3.96	6.0	5.3	6.24		
		1.3	3.0	2.22	2.4	4.3	3.12	3.1	4.2	3.78	4.2	5.4	4.74	6.3	4.3	6.60		
		1.4	2.5	2.40	2.7	3.3	3.42	3.2	3.7	3.90	4.6	4.2	5.10	6.7	3.3	6.96		
1.5	2.0	2.64	2.8	2.8	3.60	3.4	3.2	4.08	4.9	3.1	5.46	7.0	2.4	7.32				
1/8 or 1/4	CAIA 100	1.3	3.9	1.80	2.1	7.4	2.40	3.0	6.1	3.12	3.9	9.4	3.60	5.3	10.2	4.68	460 690 740 940 970	1.8 2.0 2.0 2.1 2.3
		1.4	3.0	1.98	2.4	5.3	2.70	3.1	5.3	3.24	4.2	7.2	4.02	5.6	8.3	5.04		
		1.5	2.3	2.10	2.5	4.4	2.82	3.2	4.5	3.42	4.6	5.3	4.38	6.0	6.6	5.34		
		1.7	1.8	2.28	2.7	3.7	3.00	3.4	3.8	3.54	4.9	3.8	4.80	6.3	5.1	5.88		
		1.8	1.3	2.46	2.8	3.1	3.12	3.5	3.2	3.72	3.9	3.8	4.80	6.3	5.1	5.88		
		2.0	1.0	2.64	3.0	2.6	3.30	3.9	1.8	4.08	4.9	3.8	4.80	6.3	5.1	5.88		
1.1	1.8	2.28	2.7	3.7	3.00	3.4	3.8	3.54	4.9	3.8	4.80	6.3	5.1	5.88				
1.8	1.3	2.46	2.8	3.1	3.12	3.5	3.2	3.72	3.9	3.8	4.80	6.3	5.1	5.88				
2.0	1.0	2.64	3.0	2.6	3.30	3.9	1.8	4.08	4.9	3.8	4.80	6.3	5.1	5.88				
1/8 or 1/4	CAIA 150	0.9	8.2	1.20	1.4	14.4	1.62	2.1	13.5	2.16	2.7	19.1	2.52	4.6	16.1	4.14	710 810 890 970 970	2.1 2.4 2.6 2.7 3.2
		1.0	6.8	1.38	1.7	11.9	1.92	2.4	11.4	2.52	3.0	17.1	2.76	4.9	13.8	4.56		
		1.1	5.5	1.62	2.0	9.5	2.22	2.7	9.2	2.82	3.2	15.1	3.12	5.3	11.5	4.98		
		1.3	4.1	1.80	2.1	8.3	2.40	3.0	7.1	3.18	3.5	13.1	3.42	5.6	9.3	5.40		
		1.4	2.9	2.04	2.2	7.1	2.58	3.2	5.0	3.54	4.2	8.1	4.32	6.0	7.3	5.82		
		2.4	6.1	2.76	3.4	4.0	3.78	3.4	4.0	3.78	4.6	5.9	4.74	6.3	5.6	6.24		
2.5	5.1	2.94	3.5	3.3	3.96	4.9	4.0	5.16	4.9	4.0	5.16	6.7	4.3	6.72				
1/8 or 1/4	CAIA 200	1.0	9.0	1.50	2.0	10.4	2.46	2.4	11.6	2.88	3.1	15.6	3.36	4.2	17.1	4.38	170 200 220 280 330	3.0 3.7 4.0 4.2 4.8
		1.1	7.8	1.80	2.1	9.3	2.70	2.5	10.4	3.06	3.2	14.6	3.54	4.6	15.0	4.80		
		1.3	6.6	1.92	2.2	8.2	2.88	2.7	9.4	3.24	3.4	13.7	3.72	4.9	12.8	5.22		
		1.4	5.2	2.16	2.5	6.1	3.30	3.0	7.3	3.66	3.8	10.8	4.26	5.3	11.0	5.64		
		1.7	3.1	2.64	2.8	4.3	3.72	3.2	5.5	4.08	4.2	8.5	4.92	5.6	9.4	6.18		
		2.0	2.0	3.00	3.1	3.0	4.14	3.5	4.1	4.50	4.9	5.2	5.88	6.3	7.2	7.14		
2.2	1.1	3.36	3.4	2.0	4.50	3.8	2.9	4.86	6.0	2.3	7.20	7.0	6.1	8.04				
1/8 or 1/4	CAIA 250	1.1	11.2	3.24	2.1	18.0	4.47	2.7	19.6	5.58	3.5	27.0	6.72	4.6	33.0	8.22	200 330 400 460 480	3.0 3.2 3.4 3.5 4.0
		1.3	8.5	3.60	2.2	15.8	5.04	2.8	17.3	5.88	3.7	25.0	6.96	4.9	28.0	8.94		
		1.4	6.5	3.90	2.4	13.6	5.34	3.0	15.2	6.18	3.8	23.0	7.26	5.3	24.0	9.66		
		1.5	5.0	4.26	2.5	11.6	5.70	3.1	13.2	6.54	3.9	21.0	7.56	5.6	19.7	10.4		
		1.7	3.8	4.62	2.7	9.5	6.24	3.2	11.4	6.84	4.1	18.9	7.92	6.0	15.7	11.2		
		2.5	3.8	4.62	2.7	9.5	6.24	3.2	11.4	6.84	4.2	17.0	8.22	6.3	12.4	12.0		
1/8 or 1/4	CAIA 300	0.9	27.0	1.98	1.8	38.0	3.30	2.4	39.0	4.02	3.2	58.0	4.56	4.6	59.0	6.36	300 410 430 480 510	3.4 3.5 3.7 3.8 4.4
		1.0	20.0	2.28	2.1	28.0	3.96	2.7	30.0	4.62	3.5	47.0	5.22	5.3	40.0	7.92		
		1.1	15.9	2.70	2.2	24.0	4.26	3.0	24.0	5.22	3.8	38.0	5.82	5.6	32.0	8.70		
		1.3	12.5	2.88	2.4	21.0	4.56	3.2	17.8	5.88	3.9	34.0	6.18	6.0	26.0	9.48		
		1.4	10.2	3.36	2.5	17.8	4.92	3.4	15.1	6.18	4.2	27.0	6.78	6.3	20.0	10.3		
		1.5	7.6	3.72	2.7	15.1	5.22	3.5	12.9	6.54	4.6	20.0	7.56	6.7	15.9	11.1		
1/8 or 1/4	CAIA 350	1.0	17.0	1.38	2.0	24.0	2.64	2.4	28.0	3.06	3.4	38.0	4.32	3.9	65.0	4.50	150 170 220 280 350	2.4 3.0 3.4 3.6 4.0
		1.1	11.0	1.62	2.1	18.9	3.00	2.5	23.0	3.54	3.5	33.0	4.80	4.2	53.0	5.34		
		1.3	7.6	1.98	2.2	14.4	3.36	2.7	18.9	3.96	3.7	28.0	5.34	4.6	40.0	6.48		
		1.4	3.2	2.40	2.4	10.6	3.78	2.8	15.1	4.44	3.8	23.0	5.82	4.9	30.0	7.62		
		2.5	7.2	4.26	2.5	7.2	4.26	3.0	11.7	4.74	3.8	19.7	6.30	5.3	21.0	8.94		
		4.2	13.1	7.20	5.6	13.8	10.4	3.2	13.5	8.28	6.3	13.5	8.28	6.3	3.2	13.5		
1/8 or 1/4	CAIA 400	1.0	29.0	5.40	1.8	56.0	7.02	2.1	100	7.14	3.0	126	8.40	4.1	140	10.9	250 430 460 530 580	3.4 3.8 4.3 4.6 5.2
		1.1	18.9	6.48	2.0	40.0	7.98	2.2	79.0	7.98	3.1	110	9.06	4.2	125	11.6		
		2.4	62.0	8.82	2.5	48.0	9.72	2.7	36.0	10.6	3.5	62.0	11.6	5.3	34.0	18.3		
		3.7	48.0	12.6	3.8	37.0	13.5	3.8	37.0	13.5	3.8	37.0	13.5	5.6	16.7	20.4		
		3.7	48.0	12.6	3.8	37.0	13.5	3.8	37.0	13.5	3.8	37.0	13.5	5.6	16.7	20.4		
		3.8	37.0	13.5	3.8	37.0	13.5	3.8	37.0	13.5	3.8	37.0	13.5	5.6	16.7	20.4		

Standard Materials: Nickel-plated Brass, 303 Stainless Steel and 316 Stainless Steel.

CAEA Series Flat External Air Atomizing Spray Nozzles

DESIGN / SPRAY CHARACTERISTICS

- External mix: allows spraying of viscous materials
- Variable atomization
- Moderate spray angle (range 60°- 90°)
- Precise metering of the liquid flow rate



Flow Rates and Dimensions

Siphon-fed, External Mix, Flat Spray Pattern, 1/8" and 1/4" Pipe Sizes, BSP or NPT

Pipe Size	Model No.	0.7 Bar Liquid			1.5 Bar Liquid			2.0 Bar Liquid			3.0 Bar Liquid			4.0 Bar Liquid			Spray Dimensions					
		Air (bar)	l/h	Nm ³ /h	Air (bar)	l/h	Nm ³ /h	Air (bar)	l/h	Nm ³ /h	Air (bar)	l/h	Nm ³ /h	Air (bar)	l/h	Nm ³ /h	"C" Effective Spray Length(mm)	Max. Spray Length (m)				
1/8 or 1/4	CAEA 050	0.4	3	1.32	4	1.32	5	0.4	8	1.50	8	0.6	11	2.04	17	2.70	240	330	1.2			
		0.4		1.50		0.6		1.50		0.7		1.68		0.7		2.04				1.1	2.70	460
		0.5		1.62		0.6		1.68		0.7		2.04		0.9		2.40				1.1	3.24	430
		0.6		1.68		0.7		2.04		0.9		2.40		1.4		3.24				2.5	4.74	410
1/8 or 1/4	CAEA 100	0.2	3	1.51	4	1.58	5	0.7	8	1.87	8	1.4	11	4.38	17	2.8	240	230	0.9			
		0.4		1.58		0.7		1.87		1.1		2.38		1.8		3.23				3.5	5.10	230
		0.7		1.87		1.1		2.38		1.4		2.72		2.1		3.57				4.2	6.12	230
		1.1		2.38		1.4		2.72		1.8		3.23		2.8		4.42				4.9	7.14	250
		1.4		2.72		1.8		3.23		2.1		3.56		3.5		5.10				5.3	7.65	240
		1.8		3.23		2.1		3.56		2.8		4.42		4.2		6.12				5.6	8.34	280
1/8 or 1/4	CAEA 150	0.4	5	1.32	6	1.32	8	0.6	12	1.68	12	0.7	17	2.70	240	1.1	240	400	1.5			
		0.6		1.68		0.7		2.04		0.7		2.04		1.4		3.24				1.4	3.24	480
		0.7		2.04		1.1		2.70		1.4		3.24		2.1		4.26				2.1	4.26	580
		1.1		2.70		1.4		3.24		2.1		4.26		2.5		4.74				2.5	4.74	510
1/8 or 1/4	CAEA 200	0.4	5	1.58	6	1.87	8	1.1	12	2.38	12	1.8	17	4.92	240	3.2	250	220	1.0			
		0.7		1.87		1.1		2.38		1.4		2.72		2.1		3.56				3.5	5.10	220
		1.1		2.38		1.4		2.72		1.8		3.23		2.8		4.42				4.2	6.12	230
		1.4		2.72		1.8		3.23		2.1		3.56		3.5		5.10				4.9	7.14	290
		1.8		3.23		2.1		3.56		2.8		4.42		4.2		6.12				5.3	7.62	250
		2.1		3.56		2.8		4.42		3.5		5.10		4.9		7.14				6.3	9.54	300
		2.8		4.42		3.5		5.10		4.2		6.12		6.3		9.54				6.7	9.84	250
		3.5		5.10		4.2		6.12		4.9		7.14		6.3		9.54				7.0	10.56	300
1/8 or 1/4	CAEA 250	0.4	9	1.50	10	1.50	16	0.4	23	1.50	23	0.7	33	3.24	240	1.4	240	610	1.8			
		0.5		1.65		0.6		1.68		0.6		1.68		0.9		2.40				1.8	3.72	630
		0.6		1.68		0.7		1.86		0.7		1.86		0.9		2.70				2.1	4.26	630
		0.7		2.04		0.7		2.04		0.9		2.04		1.4		3.24				2.5	4.74	660
1/8 or 1/4	CAEA 300	0.7	9	1.87	10	2.38	16	1.4	23	2.72	23	2.5	33	5.10	240	3.5	300	250	1.2			
		1.1		2.38		1.4		2.72		1.8		3.23		2.8		4.42				4.2	6.12	250
		1.4		2.72		1.8		3.23		2.1		3.56		3.5		5.10				4.9	7.14	240
		1.8		3.23		2.1		3.56		2.8		4.42		4.2		6.12				5.3	7.62	320
		2.1		3.56		2.8		4.42		3.5		5.10		4.9		7.14				5.6	8.34	300
		2.8		4.42		3.5		5.10		4.2		6.12		5.6		8.34				6.3	9.54	360
		3.5		5.10		4.2		6.12		4.9		7.14		6.3		9.54				7.0	10.56	300

Standard Materials: Nickel-plated Brass, 303 Stainless Steel and 316 Stainless Steel.

CAEA Series Flat External Air Atomizing Spray Nozzles



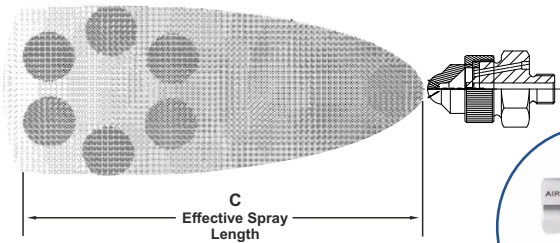
Pipe Size	Model No.	0.7 Bar Liquid			1.5 Bar Liquid			2.0 Bar Liquid			3.0 Bar Liquid			4.0 Bar Liquid			Spray Dimensions											
		Air (bar)	l/h	Nm ³ /h	Air (bar)	l/h	Nm ³ /h	Air (bar)	l/h	Nm ³ /h	Air (bar)	l/h	Nm ³ /h	Air (bar)	l/h	Nm ³ /h	"C" Effective Spray Length(mm)	Max. Spray Length (m)										
1/8 or 1/4	CAEA 350	0.6	13	5.46	16	6.12	25	9.36	37	12.6	52	17.1	68	25.8	141	33.0	480	3.8										
		0.7		6.12		7.80		9.36		11.0		12.6		15.6			17.1	21.6	25.8	27.3	560	4.3						
		1.1		7.80		8.34		9.36		11.0		12.6		15.6			17.1	21.6	25.8	27.3	580	4.0						
1/8 or 1/4	CAEA 400	1.4	13	9.36	16	11.0	25	14.1	37	15.6	52	18.8	68	21.6	141	33.0	250	1.7										
		1.0		6.12		6.96		8.34		9.36		10.7		11.7			12.7	13.9	15.3	16.5	18.8	20.4	21.6	24.7	250	2.7		
		1.4		6.96		8.34		9.36		10.7		11.7		12.7			13.9	15.3	16.5	18.8	20.4	21.6	24.7	250	3.0			
1/8 or 1/4	CAEA 450	1.8	18	11.0	22	12.6	33	15.6	48	17.1	68	19.8	141	21.6	141	33.0	280	3.5										
		0.6		5.46		6.12		7.80		9.36		11.0		12.6			14.1	15.6	17.1	18.8	19.8	21.6	22.6	28.5	31.5	510	3.5	
		1.1		7.80		8.34		9.36		11.0		12.6		15.6			17.1	18.8	19.8	21.6	22.6	28.5	31.5	580	4.9			
1/8 or 1/4	CAEA 500	1.8	18	11.0	22	12.6	33	15.6	48	17.1	68	19.8	141	21.6	141	33.0	270	2.1										
		0.7		5.10		6.12		6.96		8.34		9.36		10.7			11.7	12.7	13.9	15.3	16.5	18.8	20.4	21.6	24.7	25.7	270	3.0
		1.0		6.12		6.96		8.34		9.36		10.7		11.7			12.7	13.9	15.3	16.5	18.8	20.4	21.6	24.7	25.7	270	3.4	
1/8 or 1/4	CAEA 550	2.1	36	9.36	45	12.6	68	15.6	100	17.1	141	19.8	141	21.6	141	33.0	330	3.4										
		0.7		6.12		7.80		9.36		11.0		12.6		14.1			15.6	17.1	18.8	19.8	21.6	22.6	28.5	31.5	330	3.8		
		1.1		7.80		8.34		9.36		11.0		12.6		15.6			17.1	18.8	19.8	21.6	22.6	28.5	31.5	330	370	4.0		
1/8 or 1/4	CAEA 600	2.8	36	11.0	45	12.6	68	15.6	100	17.1	141	19.8	141	21.6	141	33.0	360	3.8										
		1.0		6.12		6.96		8.34		9.36		10.7		11.7			12.7	13.9	15.3	16.5	18.8	20.4	21.6	24.7	25.7	360	4.0	
		1.4		6.96		8.34		9.36		10.7		11.7		12.7			13.9	15.3	16.5	18.8	20.4	21.6	24.7	25.7	360	4.9		
1/8 or 1/4	CAEA 650	2.8	36	11.0	45	12.6	68	15.6	100	17.1	141	19.8	141	21.6	141	33.0	360	4.0										
		1.8		14.1		15.6		18.0		19.8		21.3		22.8			24.6	26.7	28.8	31.2	33.9	36.0	41.1	290	3.0			
		2.1		15.6		18.0		19.8		21.3		22.8		24.6			26.7	28.8	31.2	33.9	36.0	41.1	300	3.4				
1/8 or 1/4	CAEA 700	3.2	64	11.0	78	12.6	119	15.6	175	17.1	141	19.8	141	21.6	141	33.0	360	4.3										
		2.5		18.0		19.8		21.3		22.8		24.6		26.7			28.8	31.2	33.9	36.0	41.1	300	4.0					
		2.8		19.8		21.3		22.8		24.6		26.7		28.8			31.2	33.9	36.0	41.1	300	320	340	340	340	340	340	340
1/8 or 1/4	CAEA 750	3.5	102	11.0	125	12.6	192	15.6	280	17.1	141	19.8	141	21.6	141	33.0	360	4.6										
		2.1		15.6		18.0		19.8		21.3		22.8		24.6			26.7	28.8	31.2	33.9	36.0	41.1	340	3.5				
		2.5		18.0		19.8		21.3		22.8		24.6		26.7			28.8	31.2	33.9	36.0	41.1	340	360	360	360	360	360	360
1/8 or 1/4	CAEA 750	4.2	102	11.0	125	12.6	192	15.6	280	17.1	141	19.8	141	21.6	141	33.0	360	4.6										
		3.2		21.3		22.8		24.6		26.7		28.8		31.2			33.9	36.0	41.1	340	3.5							
		3.5		22.8		24.6		26.7		28.8		31.2		33.9			36.0	41.1	340	360	360	360	360	360	360	360		
1/8 or 1/4	CAEA 750	4.9	102	11.0	125	12.6	192	15.6	280	17.1	141	19.8	141	21.6	141	33.0	360	4.6										
		4.2		26.7		28.8		31.2		33.9		36.0		41.1			340	3.5										
		4.6		28.8		31.2		33.9		36.0		41.1		340			360	360	360	360	360	360	360	360	360			

Standard Materials: Nickel-plated Brass, 303 Stainless Steel and 316 Stainless Steel.

DAIA Series Full Cone Internal Air Atomizing Spray Nozzles

DESIGN / SPRAY CHARACTERISTICS

- Internal Mix
- Full Cone spray pattern (range 45° to 120°)
- Very fine atomization
- Moderate forward spray projection



Full Cone spray pattern
(range 15° to 30°)

Flow Rates and Dimensions

Pressure-fed, Internal Mix, Wide Angle Round Spray Pattern, 1/8" and 1/4" Pipe Sizes, BSP or NPT

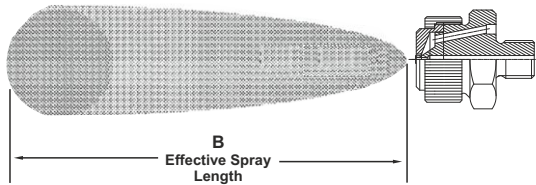
Pipe Size	Model No.	0.7 Bar Liquid			1.5 Bar Liquid			2.0 Bar Liquid			3.0 Bar Liquid			4.0 Bar Liquid			Spray Dimensions	
		Air (bar)	l/h	Nm ³ /h	Air (bar)	l/h	Nm ³ /h	Air (bar)	l/h	Nm ³ /h	Air (bar)	l/h	Nm ³ /h	Air (bar)	l/h	Nm ³ /h	"C" Effective Spray Length(mm)	Max. Spray Length (m)
1/8 or 1/4	DAIA 050	0.6	5.3	0.60	1.1	8.1	0.79	1.5	8.1	0.92	2.4	8.9	1.24	3.1	10.5	1.44	230 240 250 260 300	1.5 1.8 2.1 2.7 4.0
		0.7	4.3	0.72	1.3	7.0	0.88	1.8	6.6	1.09	2.7	8.1	1.40	3.4	9.7	1.68		
		0.9	3.0	0.84	1.4	6.4	0.94	2.1	4.9	1.32	3.0	6.4	1.66	3.9	7.8	2.16		
		1.0	1.7	1.02	1.5	5.5	1.01	2.4	3.2	1.68	3.2	4.9	1.92	4.2	6.1	2.52		
					1.7	4.5	1.16				3.4	4.2	2.13	4.6	4.4	2.82		
			1.8	3.5	1.30				3.5	3.4	2.33	4.9	2.8	3.24				
1/8 or 1/4	DAIA 100	0.9	7.0	3.00	1.7	13.2	4.08	2.0	18.5	4.08	2.8	25.0	5.04	3.7	31.0	5.76	310 330 330 340 370	1.8 2.4 3.2 4.1 5.9
		1.0	2.1	3.72	1.8	9.8	4.74	2.1	15.1	4.56	3.0	22.0	5.52	3.8	28.0	6.30		
								2.2	11.7	5.10	3.1	18.5	6.06	3.9	26.0	6.78		
											3.2	15.1	6.54	4.1	23.0	7.32		
											3.4	12.1	7.14	4.2	20.0	7.80		
									3.5	9.1	7.80	4.6	13.6	9.18				
									3.7	6.1	8.52	4.9	6.8	11.0				
1/8 or 1/4	DAIA 150	1.1	12.3	2.40	2.2	16.3	3.72	2.7	21.0	4.14	4.2	19.3	6.00	5.6	22.0	7.80	230 240 240 250 280	2.7 4.6 5.5 7.3 9.4
		1.3	9.9	2.70	2.5	12.1	4.26	3.0	16.3	4.68	4.6	14.6	6.78	6.0	17.6	8.52		
		1.4	7.9	3.00	2.8	8.9	4.74	3.2	12.3	5.16	4.9	10.8	7.44	6.3	14.0	9.12		
		1.5	6.1	3.24	3.0	7.6	4.98	3.4	10.7	5.46	5.3	8.1	8.10	6.7	11.4	9.78		
		1.7	4.9	3.48	3.1	6.4	5.22	3.5	9.3	5.64	5.6	6.2	8.76	7.0	9.1	10.4		
			3.2	5.5	5.46	3.9	6.4	6.30	6.0	4.9	9.42							
			4.0	3.1	4.02	3.4	4.7	5.70	4.2	4.7	6.90	6.3	4.0	10.00				
1/8 or 1/4	DAIA 200	0.7	24.0	1.92	1.4	43.0	2.22	2.1	33.0	3.96	2.8	52.0	3.90	3.7	63.0	4.08	360 370 370 380 390	2.1 3.2 4.1 5.0 6.8
		0.9	13.6	2.64	1.5	35.0	2.94	2.2	26.0	4.68	3.0	46.0	4.56	3.8	58.0	4.74		
		1.0	7.6	3.42	1.7	28.0	3.66	2.4	18.9	5.34	3.1	39.0	5.22	4.0	52.0	6.06		
					1.8	21.0	4.26	2.5	11.7	6.00	3.2	33.0	5.94	4.2	41.0	6.66		
											3.4	26.0	6.60	4.6	27.0	8.28		
									3.5	19.5	7.32	4.9	15.9	9.96				
									3.7	13.2	7.98							
1/8 or 1/4	DAIA 250	1.3	36.0	5.10	2.1	57.0	6.96	3.1	53.0	9.36	4.2	64.0	11.8	5.6	74.0	14.7	330 340 370 380 400	5.5 6.4 8.2 9.1 10.4
		1.5	29.0	6.12	2.4	51.0	7.80	3.2	50.0	9.78	4.9	51.0	13.8	6.0	68.0	15.6		
		1.8	23.0	7.02	2.7	45.0	8.58	3.4	47.0	10.2	5.6	40.0	15.9	6.3	62.0	16.8		
		2.0	19.7	7.50	3.0	39.0	9.42	3.5	45.0	10.6	6.0	34.0	17.1	6.7	56.0	17.7		
		2.1	16.7	7.98	3.2	33.0	10.2	3.9	38.0	11.6	6.3	28.0	18.0	7.0	51.0	18.9		
			3.5	28.0	11.1	4.6	25.5	13.8	6.7	22.0	19.2							
			4.2	13.6	13.2	4.9	18.5	14.7	7.0	17.8	20.1							
1/8 or 1/4	DAIA 300	1.7	27.0	9.36	3.0	39.0	13.8	3.4	50.0	15.0	4.6	62.0	19.2	6.0	93.0	23.7	460 470 510 530 580	5.5 6.4 7.3 7.9 9.8
		1.8	20.0	10.0	3.1	33.0	14.4	3.5	43.0	15.6	4.9	47.0	20.7	6.3	77.0	25.5		
		2.0	15.9	10.7	3.2	27.0	15.3	3.7	41.0	16.5	5.3	36.0	22.5	6.7	62.0	27.6		
		2.1	12.5	11.6	3.4	23.0	15.9	3.9	27.0	18.0	5.6	26.0	24.3	7.0	52.0	29.7		
		2.3	10.2	12.3	3.5	18.5	16.8	4.1	23.0	18.6	6.0	18.9	26.1					
			3.7	14.8	17.4	4.2	18.9	19.2	6.3	13.6	27.6							

Standard Materials: Nickel-plated Brass, 303 Stainless Steel and 316 Stainless Steel.

DASA Series Full Cone Siphon Air Atomizing Spray Nozzles

DESIGN / SPRAY CHARACTERISTICS

- Lowest flow available
- Very fine atomization
- Narrow spray angle (12°- 25°)
- Full cone pattern
- Short to moderate forward spray projection



Flow Rates and Dimensions

Siphon-fed, External Mix, Round Spray Pattern, 1/8" and 1/4" Pipe Sizes, BSP or NPT

Pipe Size	Spray Set-up Number	ATOMIZING AIR		Liquid Capacity in l/h (Liters Per Hour)								Spray Dimensions at 200 mm. Siphon Height	
				Gravity Head				Siphon Height					
		Air (bar)	Nm ³ /h	450 mm	300 mm	150 mm	100 mm	200 mm	300 mm	600 mm	900 mm	"B" Effective Spray Length(mm)	Max. Spray Length (m)
1/8 or 1/4	DASA 050	0.7	0.66	1.5	1.3	1.1	0.9	0.7	0.5			280	1.8
		1.5	1.02	1.8	1.7	1.5	1.3	1.2	1.1	0.6		280	1.9
		3.0	1.68	2.1	1.9	1.7	1.5	1.4	1.3	1.1	0.8	300	2.3
		4.0	2.16	2.2	2.0	1.8	1.6	1.5	1.4	1.2	0.9	360	2.6
1/8 or 1/4	DASA 150	0.7	0.78	24	2.1	1.7	1.5	1.2	0.8			300	2.1
		1.5	1.20	2.8	2.6	2.4	2.1	1.9	1.6	0.9		330	2.3
		3.0	1.92	3.4	3.1	2.9	2.8	2.6	2.4	1.7	1.1	380	2.6
		4.0	2.46	3.7	3.4	3.3	3.1	2.9	2.7	2.1	1.5	430	3.0
1/8 or 1/4	DASA 200	0.7	1.38	2.5	2.3	2.0	1.6	1.4	1.1			300	2.4
		1.5	2.16	2.9	2.8	2.5	2.2	2.0	1.7	0.9		330	2.7
		3.0	3.48	3.4	3.3	3.2	2.9	2.8	2.5	1.9	1.2	380	3.4
		4.0	4.44	3.7	3.6	3.5	3.4	3.3	3.0	2.5	2.0	430	4.0
1/8 or 1/4	DASA 250	0.7	1.14	4.5	4.0	3.4	2.1	1.8	1.4			380	3.0
		1.5	1.86	5.3	4.9	4.4	3.5	2.9	2.7	1.8		410	3.4
		3.0	3.00	6.0	5.6	5.0	4.4	4.0	3.4	2.4	1.2	460	4.0
		4.0	3.90	5.7	5.4	5.0	4.2	3.9	3.5	2.8	1.9	510	4.6
1/8 or 1/4	DASA 400	1.5	3.48	22	19.9	16.3	12.3	10.5	8.3	2.8		460	3.7
		3.0	5.28	25	23	19.5	16.7	14.2	11.5	6.4	2.8	510	4.3
		4.0	6.66	26	24	21	18.4	15.7	12.9	7.9	4.5	530	4.9
		5.6	8.82	26	24	22	19.7	17	14.6	9.8	6.1	580	5.5
1/8 or 1/4	DASA 450	2.0	8.64				27	22	16.8			510	6.7
		3.0	11.4				30	26	21			530	7.0
		4.0	14.4		43	40	31	28	23	11.0		580	7.6
		5.6	18.9	44	42	39	31	28	24	16.7	8.3	630	8.2

Standard Materials: Nickel-plated Brass, 303 Stainless Steel and 316 Stainless Steel.

Tablet Coating Process

It is the process to apply coating material on external surface of tablets to enhance its efficiency and properties.

Today many solid pharmaceutical dosage mediums are produced with coatings, either on the external surface of tablets, or on materials dispensed within gelatine capsules.

Coating serves a number of purposes right from protecting stomach lining from aggressive drugs to protecting the tablet from stomach acids. It also helps in maintaining the shape of the tablet and thus can offer a delayed release of the medication.

But for good results, a better coating medium is required. And the same can be fulfilled by Tablet coating spray nozzles.

General purposes of tablet coating

- Covers unpleasant taste, colour and odour
- Chemical and physical protection from environment
- To control the release of drug with enteric coating
- It protects drug from gastric surrounding of stomach
- Provide way to identify the drug and improves appearance

Results of bad coating

- Sticking or picking
- Roughness
- Twinning
- Peeling
- Cracking



Example of Bad Tablet Coating

Granulation With RMG / HSG

Also known as wet granulation process. material is loaded into bowl having agitator and chopper and mixed rigorously then binder material is sprayed from top and granules are formed.

Good quality granules are foundation for good quality tablet.

Various liquid blenders are used for wet granulation.

Spraying binder over bulk material could reduce wet granulation cycle time and increase productivity.



Fluid bed process consists of following applications :

1. Drying

Process of extracting moisture from solid bulk material by making it fluidized with high flow blow of air, so moisture is removed homogeneously and all over surface of every single particle.

2. Granulation/ Agglomeration

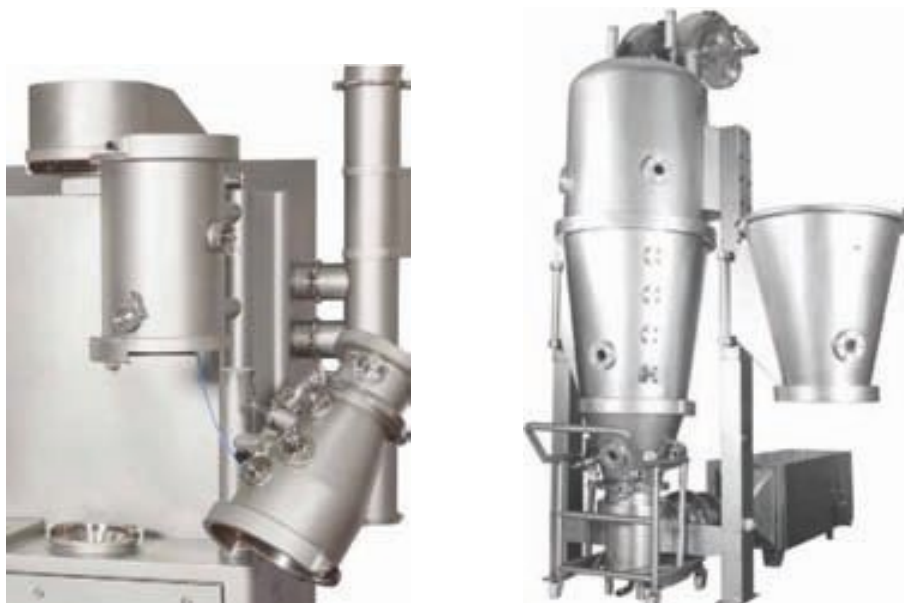
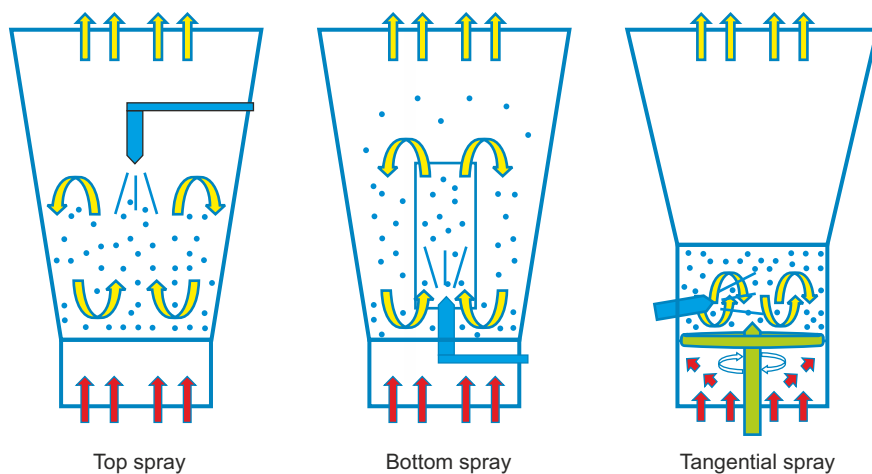
Powder particles of bulk material bonded by liquid fine spray. Liquid could be water or an organic solvent and the powder material will be mixed together. Agglomerate has less strength of particle bond.

3. Coating

Fluidized particles are coated with spray of coating material which enhances. coating film must be very uniform over the particle surface.

4. Tangential Coating

Centrifugal motion is used for making spherical pellets, at the same time particles are bonded by binder liquid. layering also can be done in same way.



Coating Spray Nozzles RC Series



Spraytech's RC Series tablet coating spray nozzle are specially designed to meet GMP requirements where surface texture plays very important role.

The unique Air Cap design makes it Anti Bearding and keeps coating process shutdown free, thus higher production ratio and quality requirements are achieved.

RC series spray nozzle is a compact device incorporating of independent controls for Liquid, Atomizing Air and Fan Air for fine tuning of spray capacity, droplet size and spray patterns. It is available in wide variety of spray setups that give a complete selection of flow rate and flat spray patterns.

R series spray nozzles are externally mix nozzles. This means the liquid and air are mixed outside of air cap to produce complete atomized spray.

The liquid atomization is controlled by varying atomizing air and fan air pressures without changing liquid flow rates. The flat spray pattern is controlled by varying the fan air pressure in conjunction with the atomizing air. This is effective for high viscosity liquids, coatings and suspensions.

Tablet coating spray nozzle features a cylinder for controlled "on-off" operation. The cylinder controls a liquid clean-out/ Shut-off needle which also cleans the liquid orifice.

Spray Nozzle	Type	RC
Spray Type :	Airborne	Air Atomised
Liquid orifice size Range (standard)	mm	0.8 - 1.5, (1.0)
Solution Flow Rate (typical per nozzle)	Liters/hour	6 - 30
Atomizing Air Pressure Range	bar	0.7 - 3
Spray Width Pressure Range	bar	1.0 - 4.0
Maximum Compressed Air Pressure	bar	5.5
Compressed Air Consumption (maximum @ 2.0 bar)	Nm ³ /hour	16
Seal Material (standard) check compatibility for organic use	FDA	Approved

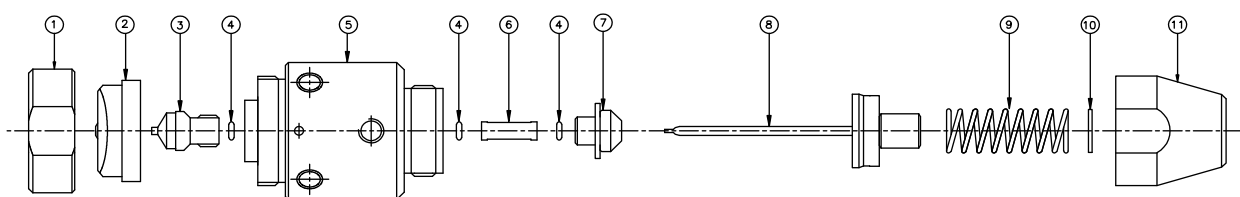
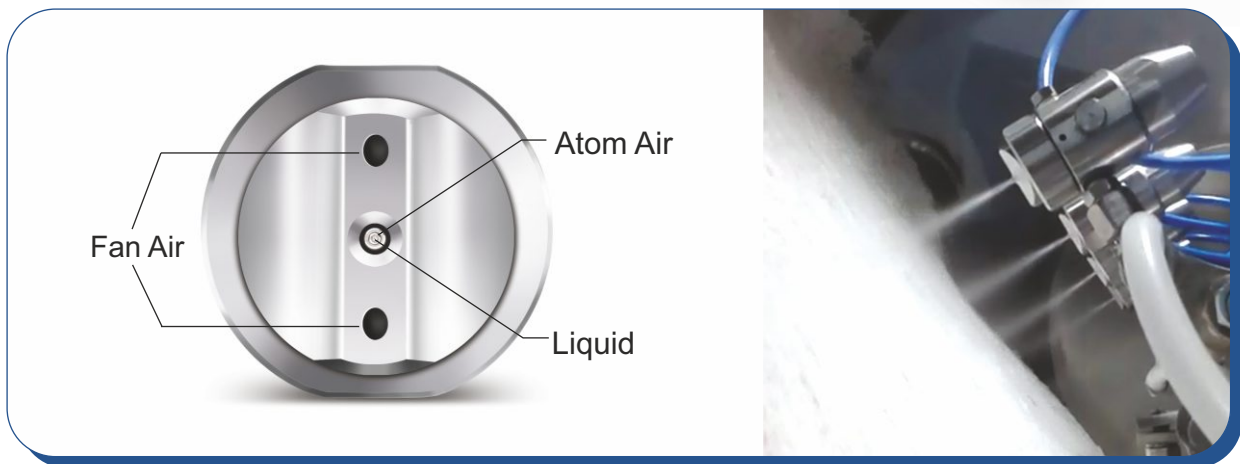
Coating Spray Nozzles RC Series

DESIGN FEATURES

1. Separate atomizing and fan air lines for complete control.
2. Provides variable coverage and fine control of drop size without affecting liquid flow rates.
3. Higher atomizing air pressure yields fine droplet size.
4. Higher fan air pressure yields broader patterns.
5. Non clogging and anti - bearding design



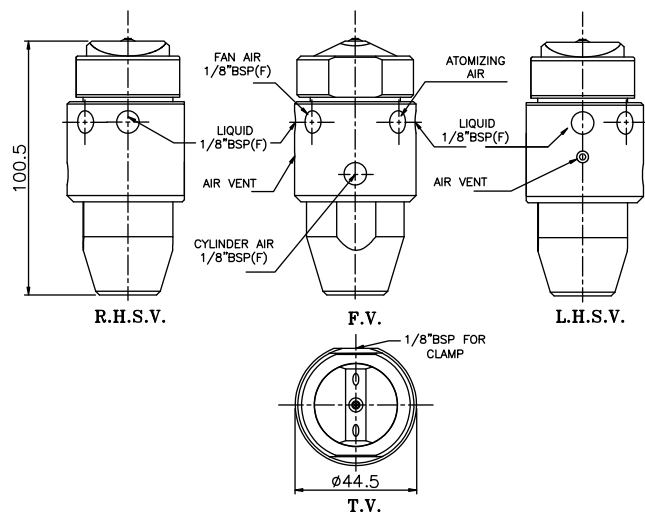
The R Series coating Spray Nozzle are a compact, precision nozzles. Incorporating independent controls of liquid atomizing air and fan air for fine tuning of spray capacity droplet size and spray patterns. It is available in a wide variety of spray Set-ups that give a complete selection of flow rates and flat spray patterns.



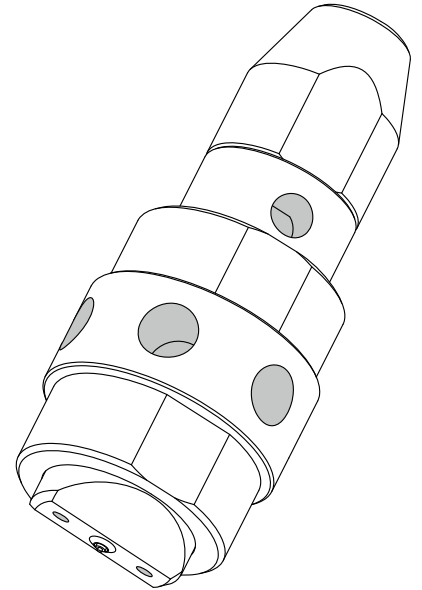
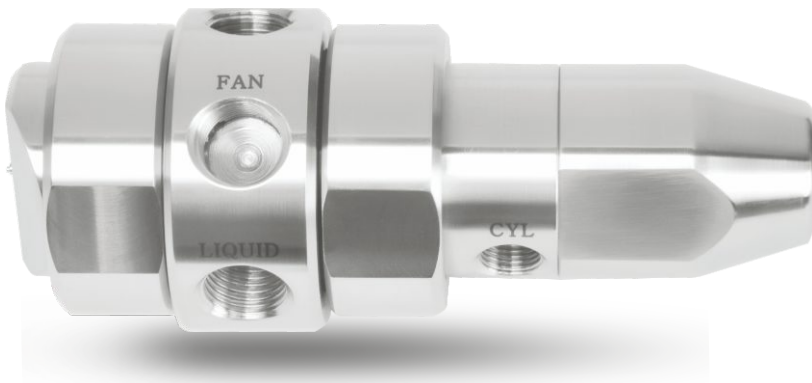
Part Details

- | | |
|-------------|--------------------|
| 1 Lock Nut | 7 Cup Seal Packing |
| 2 Air Cap | 8 Needle Assembly |
| 3 Fluid Cap | 9 Spring |
| 4 Seal | 10 Strainer Disc |
| 5 Body | 11 End Cap |
| 6 Spacer | |

Details of Inlet Connections

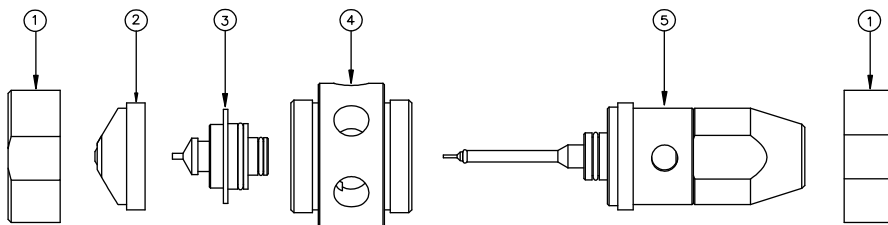


RB Series Flat External Mix Coating Spray Nozzles



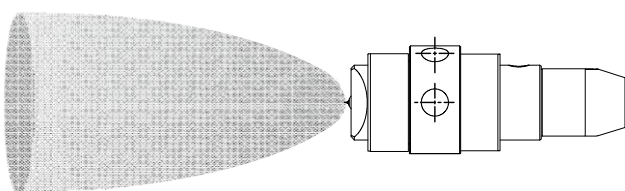
Design Summary :

- RB Series variable spray nozzles provide uniform spray distribution with uniform droplet sizes, even when spraying viscous fluids.
- For finest tuning of liquid flow rate along with spray pattern and droplet sizes independent controls are given in spray nozzles assembly.
- Suitable for large scale production.
- For various settings of spray droplet sizes separate air controller is given in spray nozzle assembly.
- Additional inlet /outlet port allows for liquid re-circulation that effectively maintains the flow of viscous liquids.
- Having removable auto shut off and spring loaded needle cylinder assembly is provided for maintenance.
(Liquid Orifice Range : 1.0 to 2.0 MM)



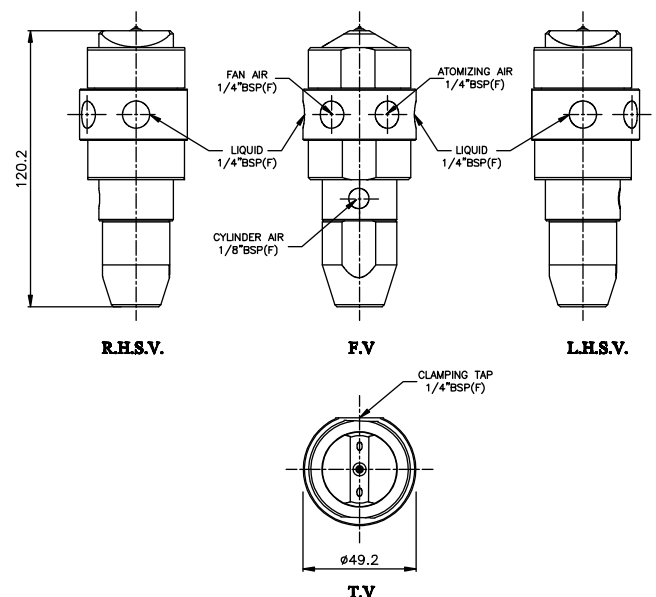
Part Details

- 1 Lock Nut
- 2 Air Cap
- 3 Fluid Cap
- 4 Body
- 5 Cylinder (Needle) Assembly

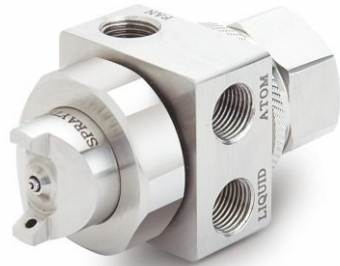


With fan air: Flat Spray Pattern.
Without fan air: Round Spray Pattern.

Details of Inlet Connections :



RAS Flat External Mix Coating Spray Nozzles



Liquid Orifice Range : 0.5 to 1.2 MM

RAS type tablet coating spray nozzle is very compact and light weight design and it comes with 4 ports of controls.

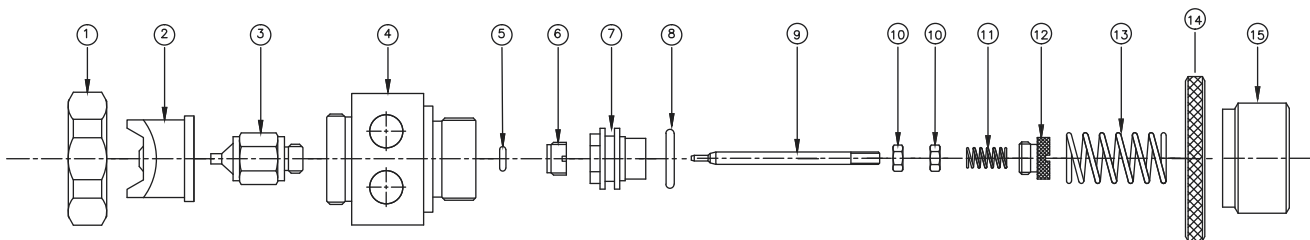
Externally mixed atomized spray properties could be changed as per need with fine tuning of individual pressures of Atomizing air, Fan Air & liquid pressure.

Integrated needle assembly provide the Auto-shut off and Auto Cleaning of liquid orifice.

RAS type spray nozzle is suitable for Lab-coater, Auto Coater and Conventional coater.

Spray setup available with Flat Fan, and Round Pattern.

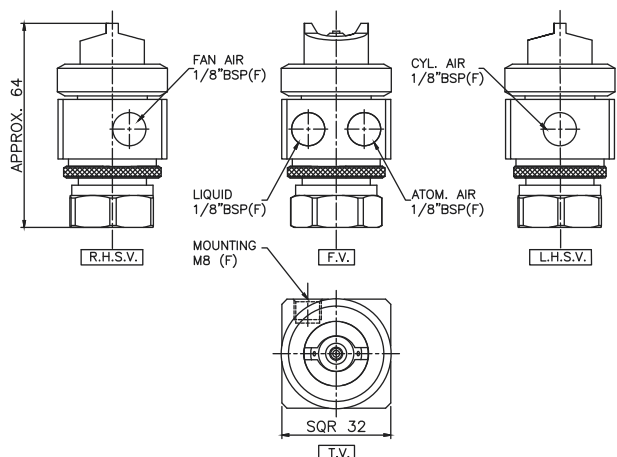
All Sealing materials are FDA Approved.



Part Details

- | | |
|----------------------|------------------|
| 1 Lock Nut | 9 Needle |
| 2 Air Cap | 10 Needle Nut |
| 3 Fluid Cap | 11 Needle Spring |
| 4 Body | 12 Packing Screw |
| 5 Seal | 13 Rear Spring |
| 6 Seal Guide Packing | 14 Retainer Nut |
| 7 Piston | 15 End Cap |
| 8 Seal | |

Details of Inlet Connections



RCS Flat External Mix Coating Spray Nozzles

With Flow Control

Without Flow Control



Liquid Orifice Range : 0.5 to 1.2 MM

SPRAYTECH'S Latest Development, RCS series coating spray nozzles offers very compact design with innovative flow control feature. This feature offers the user to take the RCS coating nozzle from the lowest 20 ml to its max limit is just a spin.

RCS type coating spray nozzle is very light weight and features anti bearding air cap design which eliminates the deposition of material over the air cap and abolishes bearding over gun.

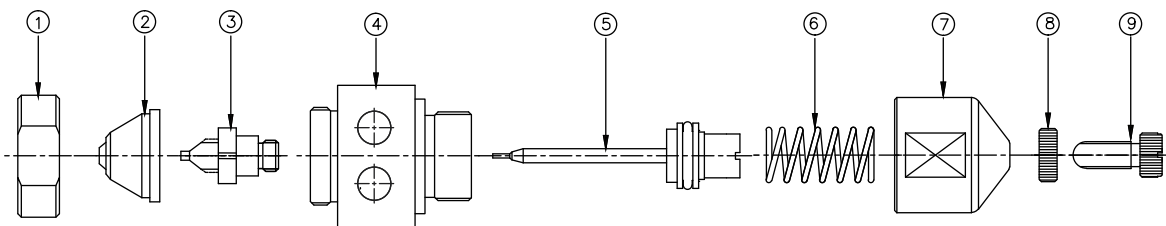
RCS comes with individual ports for liquid, Atomizing, Fan control and auto shut-off for total control. Also as it has external mixed design thus, atomized spray properties could be changed as per need with fine tuning of individual pressures of Atomizing air, Fan Air & Liquid pressure.

Innovative needle assembly provides the Auto-shut off and Auto Cleaning of liquid orifice.

RCS type coating spray nozzle is suitable for Lab-coater, Auto Coater and Conventional coater.

Spray setup available with Flat Fan, and Round Pattern.

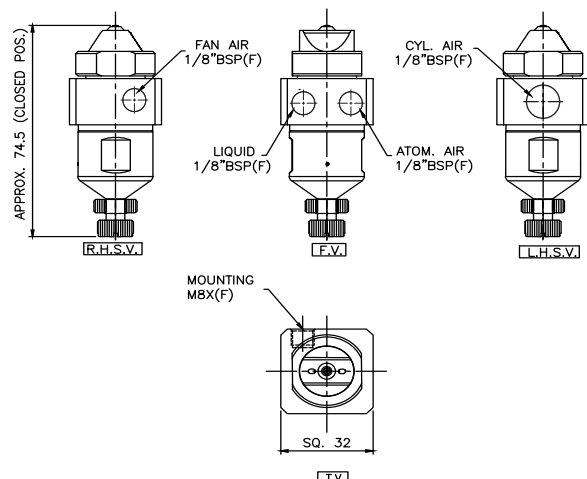
All Sealing materials are FDA Approved.



Part Details

- 1 Lock Nut
- 2 Air Cap
- 3 Fluid Cap
- 4 Body
- 5 Needle Assembly
- 6 Needle Spring
- 7 End Cap
- 8 Check Nut
- 9 Flow Adjustment Screw

Details of Inlet Connections



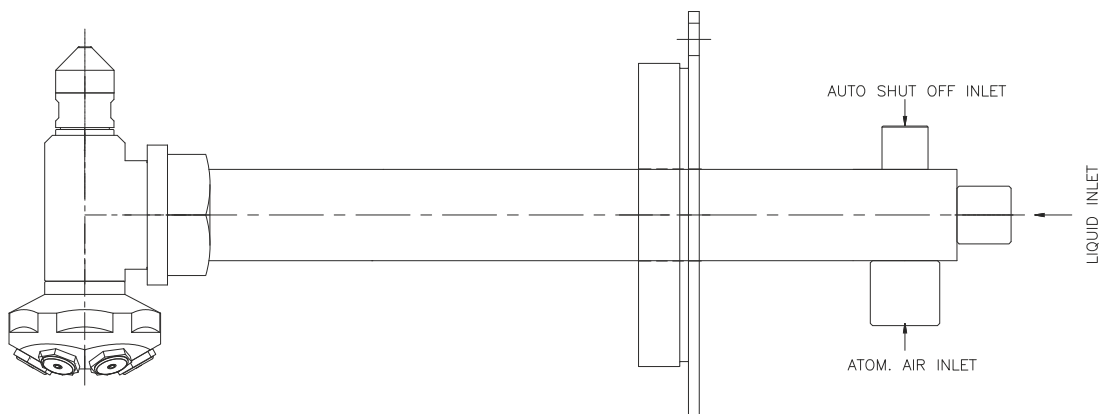
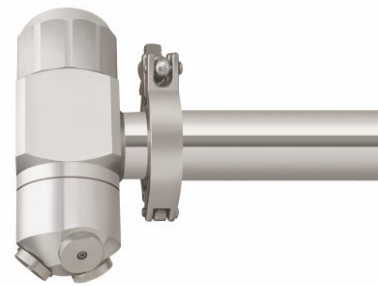
FBP Top Spray Nozzle & Lance

Spraytech's Top Spray Nozzles are design for Large Scale, Medium Scale and Lab Scale Fluid Bed Processors.

Manufactured according to GMP and available in wide range of spray rates. And external mix spray setup enhances the spray quality and distribution in optimum way.

Design Features

- Available in 1, 3, 6, 7 spray heads
- Available in various spray angles (Top down spray)
- Auto-shut off Feature
- Anti-drip spray heads
- Long Life Lance design
- Compact design of spray nozzle
- Homogeneous spray distribution
- Fine droplet size, best for dry granulation, pallet coating, and agglomeration.
- GMP Suitable design
- Anti-clogging lance
- Made from SS316L and All O-rings from FDA Approved material
- Custom made designs available



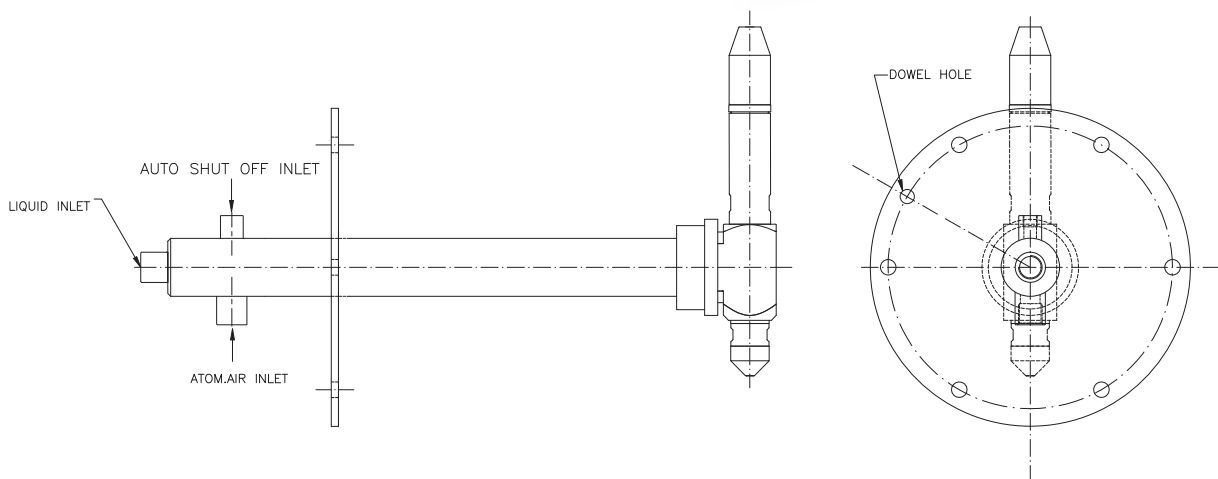
FBP Bottom Spray Nozzle & Lance (Wurster Coating)

Spraytech's specially designed and customizable Fluid bed Bottom spray (Wurster coating) nozzle helps to improve the wurster coating application and also makes it possible to attain high-quality results in coating pellets and particles.

Designed for All type of Bottom Spray Coating, Allegiant spray distribution and fine droplets results in optimum quality of coating. Light weight design and easy to control the spray parameters. Minimum internal parts hence less maintenance,

Design Features

- Optimum spray quality
- Anti-drip spray tip
- Auto-clean needle assembly
- Easy to assemble and dismantle
- Special air cap design to avoid material build-up
- GMP Suitable design
- Anti-clogging lance
- Available with various orifices sizes
- Made from SS316L and All O-rings from FDA Approved material
- Custom made designs available



RMG / HSG Top Spray Nozzle & Lance

Spraytech's RMG / HSG Top Spray Nozzles & Lance are design for Large Scale, Medium Scale and Lab Scale Rapid Mixer Granulator and High - Shear Granulator for Wet Granulation. Superior spray quality produces best in class granules from bulk. Manufactured according to GMP and available in wide range of spray rates. And external mixing spray setup enhances the spray quality and distribution in optimum way.

Spray Nozzles and special purpose lance designs available

Design Features

- Available in 1, 3, 4 spray heads
- Available in various spray angles
- Auto-shut off feature
- Anti-drip spray heads
- Long Life Lance design
- Compact design of spray nozzle
- Homogeneous spray distribution
- Fine droplet size, best for wet granulation,
- GMP Suitable design
- Anti-clogging lance design
- Made from SS316L and All O-rings from FDA Approved material
- Custom made designs available





Spray angle range : 60° - 80°

Flow range : 10 LPM to 50 LPM

Features:

- Anti drip Spray setup
- Auto shut off
- Finest droplet Size

Internal Mix Setup

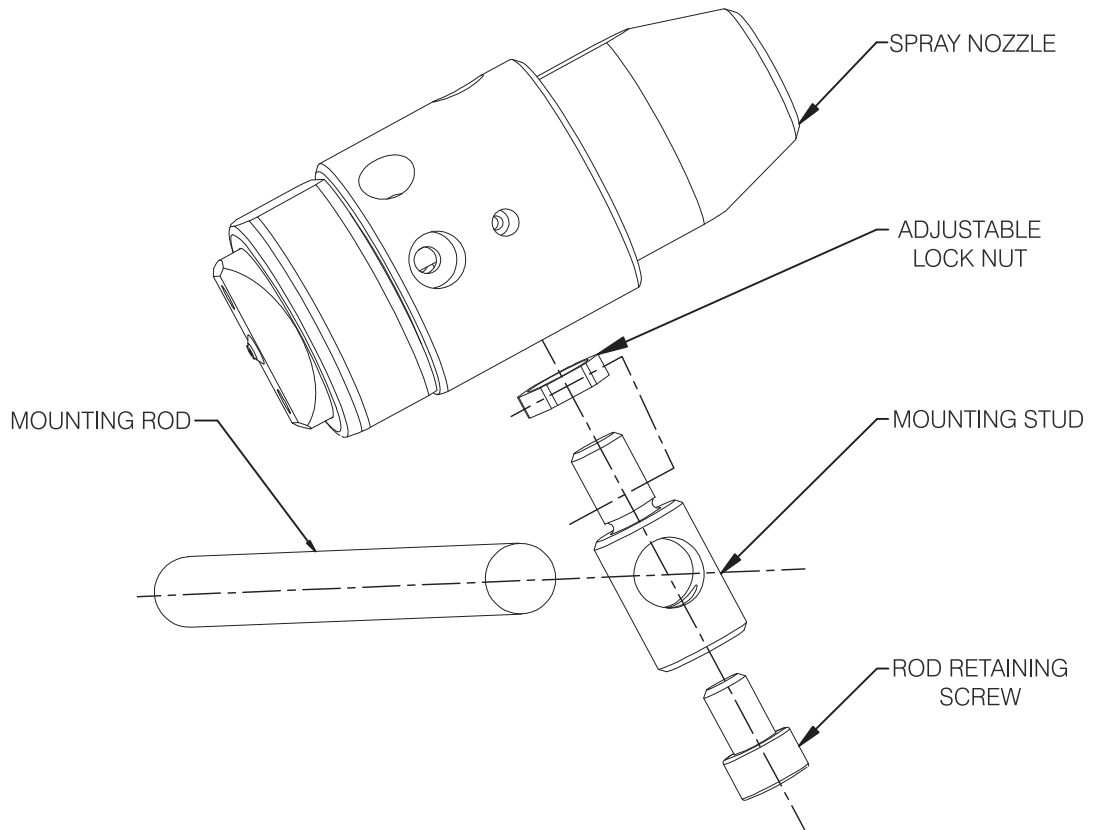


Special Design For R&D & Pilot
RMG / HSG Equipment

Spray angle range: 20° - 90°

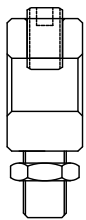
Flow range : 1 LPM to 8 LPM

Mounting Assembly

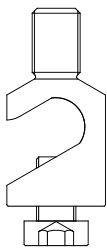


Accessories

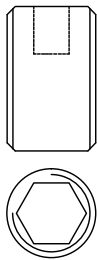
Optional Accessories available for R series coating spray nozzles



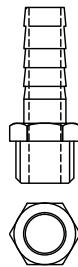
MOUNTING STUD
For round rod
(ACC405)



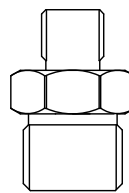
MOUNTING STUD
For Hex rod
(ACC406)



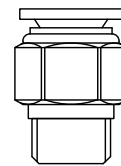
PLUG
(ACC006)



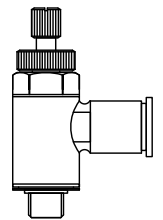
BARB CONNECTOR
(ACC005)



NIPPLE
(ACC303)



PUSH-IN
CONNECTOR
(ACC304)



FLOW REGULATOR
(ACC305)