

ENGINEERING
YOUR SPRAY SOLUTION



Hollow cone
nozzles

Hollow cone nozzles

- Absorption
- Chemical process engineering
- Cooling
- Disinfection
- Desuperheating
- Dust control
- Fire protection
- Foam destruction
- Gas treatment
- Humidification of air
- Humidification of goods
- Humidification of textiles
- Oil spraying
- Protection of storage tanks
- Spraying onto filters
- Spraying over germinating boxes
- Water recooling
- and many others...



Hollow cone nozzles

Axial-flow hollow cone nozzles

Wherever a fine, uniform hollow cone spray is needed, e.g. for cooling and cleaning of gas, absorption processes, dust control, product dampening, oil spraying and air humidifying, axial-flow hollow cone nozzles have proved very efficient. The spiral grooves in the swirl inserts ensure an efficient whirling of the liquid. As a result, the contact surface of the atomized liquid is significantly increased within a remarkably narrow droplet spectrum. This creates extraordinarily favourable conditions for mass transfer.



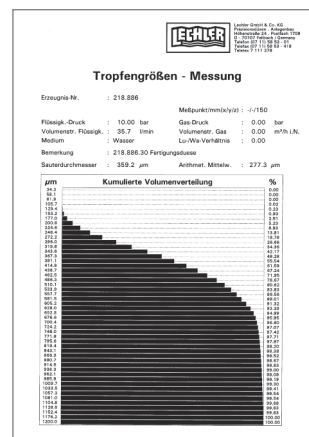
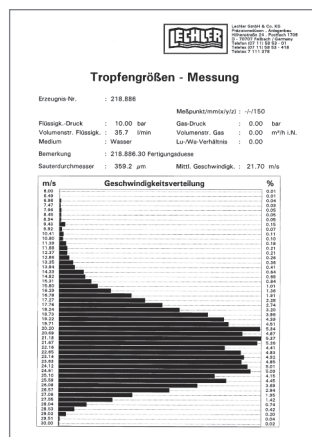
- Finest drop particles
- Narrowest free cross-sections
- Maximum spray angle: 90°

Tangential-flow hollow cone nozzles

Tangential-flow hollow cone nozzles provide a very uniform hollow cone spray thanks to a particular flow geometry. Liquid is put into rotation by an eccentricity arranged liquid inlet. Thereby a very uniform liquid distribution is achieved with spray angles up to 130°. Tangential-flow hollow cone nozzles are of a self-cleaning design, offering a high operational safety, even at rather poor water conditions. Typical applications for tangential-flow hollow cone nozzles are: air humidification in air conditioning systems or gas cleaning in chemical and environmental engineering installations.



- Coarser droplets than axial-flow hollow cone nozzles
- Large narrowest free cross-sections
- Wide spray angles up to 130°
- Self-cleaning, non-clogging









Number/frequency distribution chart

Cumulated volume distribution chart










Hollow cone nozzles

Axial-flow hollow cone nozzles		Series		\dot{V} [l/min] at $p = 2$ bar	Connection	Application/ Design	Page
	220	60° 80°	0.013 – 0.390 (at $p = 5$ bar)	1/4 BSPP	Disinfection, humidification, cooling. Extremely fine, fog-like hollow cone spray.	2.5	
	226	60° 80°	0.013 – 0.390 (at $p = 5$ bar)	Assembly with 3/8" retaining nut	Disinfection, humidification, cooling. Hollow cone nozzle for assembly with retaining nut. Extremely fine, fog-like hollow cone spray.	2.6	
	214	60° 80°	0.08 – 0.32	1/8 BSPP	Cooling and cleaning of air and gas, dust control, spray- ing onto filters, spray drying, desuperheating	2.7	
	216	60° 90°	0.40 – 8.50	3/8 BSPP			
	2TR	80°	0.16 – 1.57	Assembly with 3/8" retaining nut	Humidification of air, cooling and cleaning of gases, dust control, spraying onto filters. Fine, uniform hollow cone spray.	2.8	
Tangential-flow hollow cone nozzles		Series		\dot{V} [l/min] at $p = 2$ bar	Connection	Application/ Design	Page
	302	60° 80° 90° 130°	0.40 – 25.00	3/8 BSPP	Humidification of air in air washers, dust control, spraying onto filters, foam control, cooling. Non-clogging nozzle design, without swirl insert.	2.9 2.10	



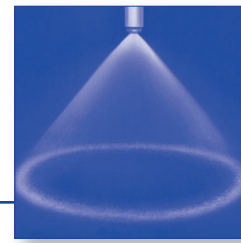
Hollow cone nozzles

Tangential-flow hollow cone nozzles	Series		\dot{V} [l/min] at $p = 2$ bar	Connection	Application/ Design	Page
	308	90°	0.63 – 3.15	3/8 BSPP	Foam destruction, dust control. Flow rate adjustable.	2.9
	302 with bayonet- quick-rele- ase system	45° 60° 80° 90° 130°	0.40 – 3.15	Assembly with bayonet quick-release system.	Humidification of air in air washers, dust control, spray- ing onto filters, foam control, cooling. Quick and safe assembly with the aid of a bayonet quick-lock system. Autom- atic setting of spray plane. A time-saving alternative to threaded nozzle designs.	2.11
	350	130°	0.63 – 3.15	3/8 BSPP or quick-lock	Humidification of air in air washers, dust control, spray- ing onto filters, foam control. Extremely fine atomization with a narrow droplet dis- tribution.	2.12
	304 306 307	90° 130°	5.60 – 33.50	1/2 BSPP 3/4 BSPP	Fire fighting, protection of storage tanks, foam control. Non-clogging nozzle design, without swirl insert.	2.13
	373 „Ramp Bottom“	70° 80° 90°	63.00 – 227.00	1 BSPP 1 1/4 BSPP 1 1/2 BSPP	Cooling and cleaning of gas, dust control, water recooling, chemical process engineer- ing. Longer service life thanks to the patented »ramp bot- tom« design of the mixing chamber.	2.14
	309	90°	118.00 – 160.00	1 1/4 BSPP	Less expensive design in plastic material.	

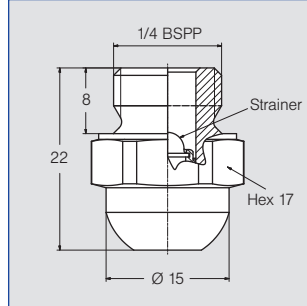


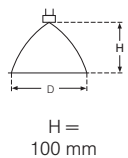
Axial-flow hollow cone nozzles

Series 220



Extremely fine, fog-like hollow cone spray.
Applications: Disinfection, humidification, cooling.



Spray angle	Ordering no.			B Ø [mm]	E Ø [mm]	Mesh size [mm]	\dot{V} [l/min]								Spray diameter D at p=5 bar  H = 100 mm	
	Type	Mat. no.					Code	p [bar]								
		11 430F SS*	1Y 316L SS*					1/4 BSPP	2.0	3.0	5.0	7.0	10.0	20.0		50.0
60°	220.004	○	○	AC	0.10	0.10	0.04	-	-	0.013	0.015	0.018	0.026	0.041	0.058	100
	220.014	○	○	AC	0.15	0.15	0.04	-	0.015	0.019	0.022	0.027	0.038	0.060	0.085	100
	220.054	○	○	AC	0.20	0.15	0.04	0.017	0.021	0.027	0.032	0.038	0.054	0.085	0.121	100
80°	220.085	○	○	AC	0.25	0.25	0.10	0.025	0.031	0.040	0.047	0.057	0.080	0.126	0.179	140
	220.125	○	○	AC	0.35	0.35	0.10	0.039	0.048	0.062	0.073	0.088	0.124	0.196	0.277	140
	220.145	○	○	AC	0.40	0.40	0.10	0.052	0.064	0.082	0.097	0.116	0.164	0.259	0.367	140
	220.165	○	○	AC	0.45	0.45	0.10	0.065	0.080	0.103	0.122	0.146	0.206	0.326	0.461	140
	220.185	○	○	AC	0.55	0.35	0.20	0.082	0.101	0.130	0.154	0.184	0.260	0.411	0.581	140
	220.205	○	○	AC	0.60	0.35	0.20	0.106	0.130	0.168	0.199	0.238	0.336	0.531	0.751	140
	220.245	○	○	AC	0.70	0.50	0.20	0.165	0.202	0.261	0.309	0.369	0.522	0.825	1.167	140
	220.285	○	○	AC	0.90	0.55	0.20	0.247	0.302	0.390	0.461	0.552	0.780	1.233	1.744	140

B = bore diameter · E = narrowest free cross section

The integrated strainer avoids clogging of the nozzle and increases its service life.

Example for ordering: Type 220.004 + Material-No. 11 + Code AC = Ordering no. 220.004.11.AC

* Materials

The folded page at the end of the catalogue will give you a survey on the various assembly possibilities. For complete assembly accessories, please refer to »Accessories«.

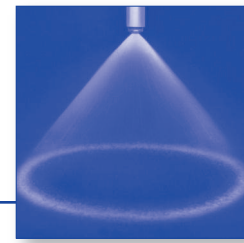
Mat. no	Housing	Nozzle insert	Strainer
11	430F SS	430F SS	316L SS
1Y	316L SS	316L SS	316L SS

Conversion formula for the above series: $\dot{V}_2 = \dot{V}_1 * \sqrt{\frac{p_2}{p_1}}$



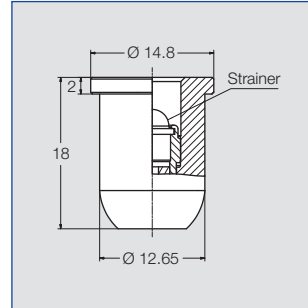


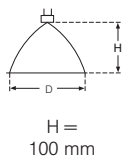
Axial-flow hollow cone nozzles for retaining nut Series 226



Hollow cone nozzle for assembly with retaining nut. Extremely fine, fog-like hollow cone spray.

Applications:
Disinfection, humidification, cooling.



Spray angle	Ordering no.		B Ø [mm]	E Ø [mm]	Mesh size [mm]	\dot{V} [l/min]								Spray diameter D at p=5 bar  H = 100 mm
	Type	Mat.- no. 16				p [bar]								
						303 SS†	2.0	3.0	5.0	7.0	10.0	20.0	50.0	
60°	226.004	○	0.10	0.10	0.04	-	-	0.013	0.015	0.018	0.026	0.041	0.058	100
	226.014	○	0.15	0.15	0.04	-	0.015	0.019	0.022	0.027	0.038	0.060	0.085	100
	226.054	○	0.20	0.15	0.04	0.017	0.021	0.027	0.032	0.038	0.054	0.085	0.121	100
80°	226.085	○	0.25	0.25	0.10	0.025	0.031	0.040	0.047	0.057	0.080	0.126	0.179	140
	226.125	○	0.35	0.35	0.10	0.039	0.048	0.062	0.073	0.088	0.124	0.196	0.277	140
	226.145	○	0.40	0.40	0.10	0.052	0.064	0.082	0.097	0.116	0.164	0.259	0.367	140
	226.165	○	0.45	0.45	0.10	0.065	0.080	0.103	0.122	0.146	0.206	0.326	0.461	140
	226.185	○	0.55	0.35	0.20	0.082	0.101	0.130	0.154	0.184	0.260	0.411	0.581	140
	226.205	○	0.60	0.35	0.20	0.106	0.130	0.168	0.199	0.238	0.336	0.531	0.751	140
	226.245	○	0.70	0.50	0.20	0.165	0.202	0.261	0.309	0.369	0.522	0.825	1.167	140
	226.285	○	0.90	0.55	0.20	0.247	0.302	0.390	0.461	0.552	0.780	1.233	1.744	140

B = bore diameter · E = narrowest free cross section

Example Type + Material-No. = Ordering no.
for ordering: 226.004 + 16 = 226.004.16

The folded page at the end of the catalogue will give you a survey on the various assembly possibilities. For complete assembly accessories, please refer to »Accessories«.

The integrated strainer avoids clogging of the nozzle and increases its service life.

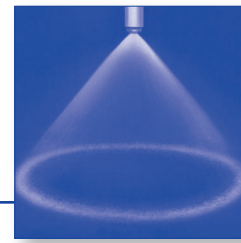
* Materials

Mat. no	Housing	Nozzle insert	Strainer
16	303 SS	430F SS	316L SS



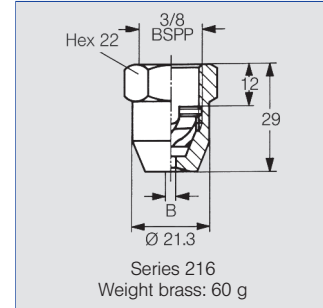
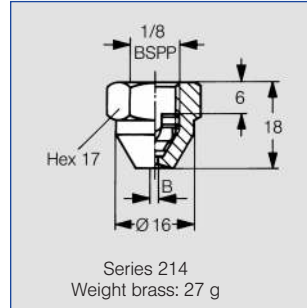
Axial-flow hollow cone nozzles

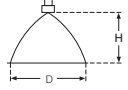
Series 214 / 216



Fine, uniform hollow cone spray.

Applications:
Cooling and cleaning of air and gas, dust control, spraying onto filters, spray drying, desuperheating.



Spray angle	Ordering no.		G	B Ø [mm]	E Ø [mm]	\dot{V} [l/min]							Spray diameter D at p=3 bar  H = 250 mm	
	Type	Mat. no.				p [bar]								
						17	30	0.5	1.0	2.0	3.0	5.0		10.0
			BSPP											
60°	214. 184	○ ○	1/8"	0.50	0.50	-	-	0.08	0.10	0.13	0.18	0.25	200	
	214. 245	○ ○	1/8"	1.00	0.50	-	-	0.16	0.20	0.25	0.36	0.51	450	
80°	214. 305	○ ○	1/8"	1.80	0.50	-	0.23	0.32	0.39	0.51	0.72	1.01	450	
	216. 324	○ ○	3/8"	1.00	1.00	-	0.28	0.40	0.49	0.63	0.89	1.26	200	
60°	216. 364	○ ○	3/8"	1.40	1.40	-	0.45	0.63	0.77	1.00	1.41	1.99	200	
	216. 404	○ ○	3/8"	2.00	2.00	-	0.71	1.00	1.22	1.58	2.24	3.16	200	
90°	216. 496	○ ○	3/8"	3.00	2.00	-	1.20	1.70	2.08	2.69	3.80	5.38	500	
	216. 566	○ ○	3/8"	4.00	2.00	-	1.77	2.50	3.06	3.95	5.59	7.91	500	
	216. 646	○ ○	3/8"	3.50	2.00	2.00	2.83	4.00	4.90	6.32	8.94	12.65	500	
	216. 686	○ ○	3/8"	4.00	2.00	2.50	3.54	5.00	6.12	7.91	11.18	15.81	500	
	216. 726	○ ○	3/8"	5.00	2.00	3.15	4.45	6.30	7.72	9.96	14.09	19.92	500	
	216. 776	○ ○	3/8"	6.00	2.00	4.30	6.00	8.50	10.40	13.40	19.00	26.90	500	

B = bore diameter · E = narrowest free cross section

Example	Type	+	Material no.	=	Ordering no.
for ordering	214. 184	+	17	=	214. 184. 17

The folded page at the end of the catalogue will give you a survey on the various assembly possibilities.

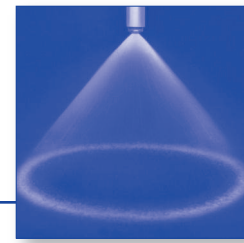
For complete assembly accessories, please refer to »Accessories«.

Conversion formula for the above series: $\dot{V}_2 = \dot{V}_1 \cdot \sqrt{\frac{p_2}{p_1}}$





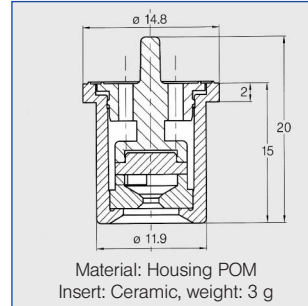
Axial-flow hollow cone nozzles for retaining nut Series 2TR



Hollow cone nozzle with ceramic insert. Assembly with retaining nut. Fine, uniform hollow cone spray.

Applications:

Humidification of air, cooling and cleaning of gases, dust control, spraying onto filters.

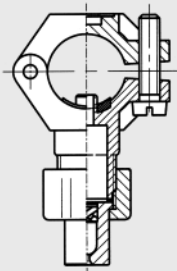


Spray angle	Ordering no.	Colour	B Ø [mm]	E Ø [mm]	\dot{V} [l/min]						Spray diameter D at p=3 bar H = 250 mm
	Type				p [bar] [p _{max} = 20 bar]						
					1.0	2.0	3.0	5.0	7.0	10.0	
80°	2TR. 245. C8	lilac	0.65	0.55	-	0.16	0.20	0.25	0.30	0.36	450
	2TR. 275. C8	black	0.80	0.70	0.16	0.22	0.27	0.35	0.41	0.49	450
	2TR. 305. C6	orange	0.90	0.80	0.23	0.32	0.39	0.51	0.60	0.72	450
	2TR. 345. C6	green	1.10	0.90	0.34	0.48	0.59	0.76	0.90	1.07	450
	2TR. 365. C6	yellow	1.40	0.95	0.45	0.63	0.78	1.01	1.19	1.42	450
	2TR. 405. C6	blue	1.70	1.10	0.68	0.96	1.17	1.52	1.79	2.14	450
	2TR. 445. C6	red	2.00	1.20	0.89	1.26	1.55	2.02	2.37	2.83	450
	2TR. 485. C6	brown	2.20	1.30	1.11	1.57	1.94	2.50	2.96	3.54	450

B = bore diameter · E = narrowest free cross section

The folded page at the end of the catalogue will give you a survey on the various assembly possibilities.

For complete assembly accessories, please refer to »Accessories«.

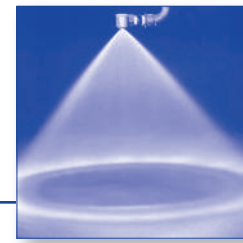


For assembly possibilities please refer to folded page.



Tangential-flow hollow cone nozzles

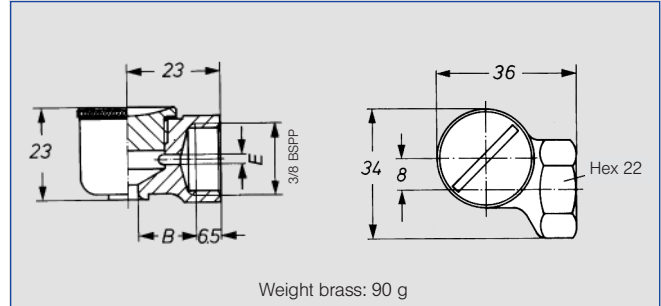
Brass versions
Series 302 / 308



Uniform hollow cone spray. Non-clogging nozzle, with- out swirl insert.

Applications:

Humidification of air in air washers, dust control, spraying onto filters, foam control, cooling.



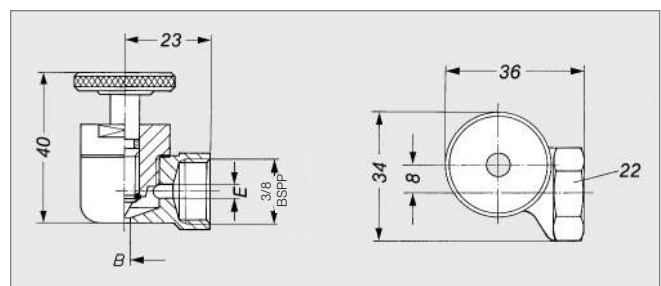
Spray angle	Ordering no.		B ∅ [mm]	E ∅ [mm]	\dot{V} [l/min]								Spray diameter D at p=2 bar	
	Type	Mat. no.			p [bar]								 H = 250 mm H = 500 mm	
					30	1Y	0.5	1.0	2.0	3.0	5.0	7.0		
		Brass	316L SS											
60°	302. 364	○	-	1.50	1.50	0.31	0.45	0.63	0.77	1.00	1.18	1.41	200	350
	302. 464	○	○	2.00	2.00	0.70	0.99	1.40	1.71	2.21	2.62	3.13	300	560
80°	302. 545	○	○	4.90	2.30	1.12	1.58	2.24	2.74	3.54	4.19	5.01	400	700
90°	302. 606	○	○	4.60	4.00	1.57	2.23	3.15	3.86	4.98	5.89	7.04	450	750
130°	302. 368	○	○	3.00	1.00	0.31	0.45	0.63	0.77	1.00	1.18	1.41	800	1500
	302. 468	○	○	5.00	1.70	0.70	0.99	1.40	1.71	2.21	2.62	3.13	800	1500
	302. 548	○	-	5.00	2.50	1.12	1.58	2.24	2.74	3.54	4.19	5.01	800	1500
	302. 608	○	○	5.00	3.50	1.57	2.23	3.15	3.86	4.98	5.89	7.04	1000	1800
	302. 668	○	-	7.50	3.60	2.25	3.18	4.50	5.51	7.12	8.42	10.06	1200	2000
	302. 748	○	-	7.50	4.80	3.55	5.02	7.10	8.70	11.23	13.28	15.88	1200	2000

B = bore diameter · E = narrowest free cross section

Flow rate adjustable. Decrease in flow rate causes narrower spray angle.

Applications:

Dust control, foam control.



Spray angle	Ordering no.		B ∅ [mm]	E ∅ [mm]	\dot{V}_{max} [l/min]						Spray diameter D at p=2 bar		
	Type	Mat.- Nr.			p [bar]						 H = 250 mm H = 500 mm		
					30	0.3	0.5	1.0	2.0	5.0			10.0
		Brass											
90°	308. 466	○	2.0	2.0	0.54	0.70	1.00	1.40	2.21	3.13	400	880	
	308. 606	○	4.0	4.0	1.22	1.58	2.23	3.15	4.98	7.04	450	950	

B = bore diameter · E = narrowest free cross section

Example for ordering	Type	+	Material no.	=	Ordering no.
	308. 466	+	30	=	308. 466. 30

Conversion formula for the above series: $\dot{V}_2 = \dot{V}_1 * \sqrt{\frac{p_2}{p_1}}$

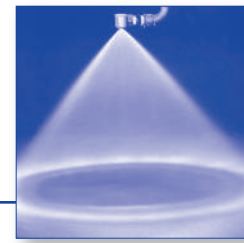




Tangential-flow hollow cone nozzles

Plastic version

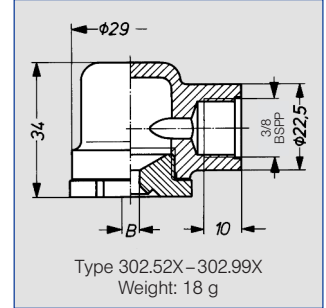
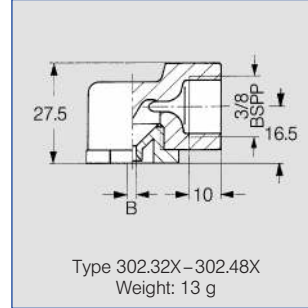
Series 302



Uniform hollow cone spray. Non-clogging nozzle, without swirl insert.

Applications:

Humidification of air in air washers, dust control, spraying onto filters, foam control, cooling.



Spray angle	Ordering no.				B Ø [mm]	E Ø [mm]	V̇ [l/min]						Spray diameter D at p=2 bar		
	Type	Mat. no.					p [bar]						H = 250 mm	H = 500 mm	
		5E	51	53			0.5	1.0	2.0	[US gal/min] at 40 psi	3.0	5.0			10.0
		P/DF	PA	PP											
60°	302. 364	-	○	○	1.50	1.50	0.31	0.45	0.63	0.20	0.77	1.00	1.41	200	350
	302. 464	-	○	○	3.80	1.95	0.70	0.99	1.40	0.43	1.71	2.21	3.13	300	560
90°	302. 326	○	○	-	1.20	0.90	0.20	0.28	0.40	0.12	0.49	0.63	0.89	400	700
	302. 366	○	○	-	2.10	1.30	0.31	0.45	0.63	0.20	0.77	1.00	1.41	400	880
	302. 406	○	○	○	2.60	1.40	0.50	0.71	1.00	0.31	1.22	1.58	2.24	400	880
	302. 486	-	○	○	2.60	2.60	0.80	1.13	1.60	0.50	1.96	2.53	3.58	400	880
	302. 526	-	○	○	5.00	2.00	1.00	1.41	2.00	0.62	2.45	3.16	4.47	400	880
	302. 566	-	○	○	5.00	2.40	1.25	1.77	2.50	0.78	3.06	3.95	5.59	400	880
	302. 606	-	○	○	5.00	3.20	1.57	2.23	3.15	0.98	3.86	4.98	7.04	450	950
	302. 686	-	○	-	7.50	3.40	2.50	3.45	5.00	1.55	6.12	7.91	11.18	500	1050
	302. 766	-	○	-	9.00	4.30	4.00	5.66	8.00	2.48	9.80	12.65	17.89	500	1050
	302. 846	-	○	○	11.00	5.20	6.25	8.84	12.50	3.88	15.31	19.67	27.95	550	1130
	302. 886	○	○	○	11.00	6.40	8.00	11.31	16.00	4.96	19.60	25.30	35.78	550	1130
302. 966	-	○	-	11.00	8.60	12.50	17.68	25.00	7.75	30.62	39.53	55.90	550	1130	
130°	302. 328	○	-	-	1.35	0.80	0.20	0.28	0.40	0.12	0.49	0.63	0.89	700	1380
	302. 368	○	○	-	1.85	1.10	0.31	0.45	0.63	0.20	0.77	1.00	1.41	700	1380
	302. 408	○	○	-	3.65	1.30	0.50	0.71	1.00	0.31	1.22	1.58	2.24	700	1380
	302. 488	-	○	○	5.20	1.60	0.80	1.13	1.60	0.50	1.96	2.53	3.58	700	1380
	302. 528	-	○	-	5.00	2.00	1.00	1.41	2.00	0.62	2.45	3.16	4.47	700	1380
	302. 568	-	○	-	5.00	2.40	1.25	1.77	2.50	0.78	3.06	3.95	5.59	780	1520
	302. 608	○	○	○	5.00	3.20	1.57	2.23	3.15	0.98	3.86	4.98	7.04	780	1520
	302. 648	-	○	-	7.50	3.00	2.00	2.83	4.00	1.20	4.90	6.32	8.94	950	1850
	302. 688	-	○	-	7.50	3.40	2.50	3.54	5.00	1.55	6.12	7.91	11.18	950	1850
	302. 728	-	○	-	7.50	4.10	3.15	4.45	6.30	1.89	7.72	9.96	14.09	950	1850
	302. 768	-	○	-	9.00	4.30	4.00	5.66	8.00	2.48	9.80	12.65	17.89	950	1850
	302. 848	-	○	-	11.00	5.20	6.25	8.84	12.50	3.88	15.31	19.76	27.95	950	1850
	302. 888	-	○	○	11.00	6.40	8.00	11.31	16.00	4.96	19.60	25.30	35.78	950	1850
	302. 968	○	○	-	11.00	8.60	12.50	17.68	25.00	7.75	30.62	39.53	55.90	950	1850

B = bore diameter · E = narrowest free cross section

Example for ordering	Type	+	Material no.	=	Ordering no.
	302. 364	+	51	=	302. 364. 51

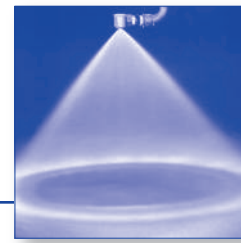
The folded page at the end of the catalogue will give you a survey on the various assembly possibilities.
For complete assembly accessories, please refer to »Accessories«.



Tangential-flow hollow cone nozzles

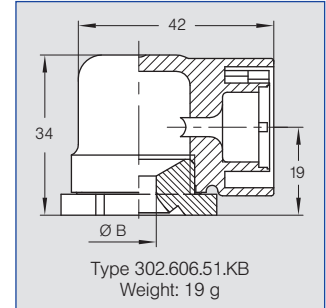
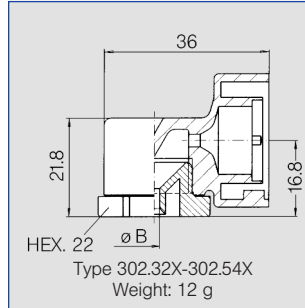
Bayonet quick-release system

Series 302



A time-saving alternative to threaded design. Quick and secure assembling. Automatic setting of spray direction.

Applications:
Humidification of air in air washers, dust control, spraying onto filters, foam control.



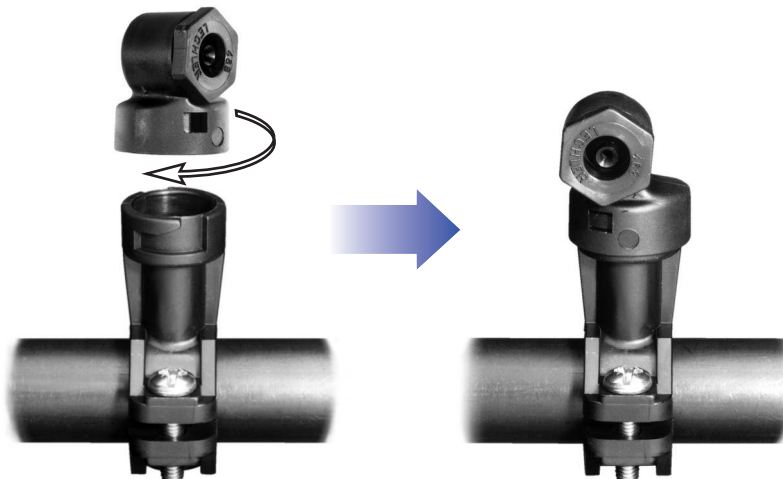
Spray angle	Ordering no.				B ∅ [mm]	E ∅ [mm]	V̇ [l/min]						Spray diameter D at p=2 bar		
	Type	Mat. no.		Code			p [bar]								
		51	56				0.5	1.0	2.0	US [gal/min] at 40 psi	3.0	4.0			10.0
45°	302. 503	○	-	KB	2.05	2.05	0.90	1.27	1.80	0.56	2.20	2.85	4.02	220	560
60°	302. 464	-	○	KB	1.95	1.95	0.70	0.99	1.40	0.43	1.71	2.21	3.13	300	560
80°	302. 545	-	○	KB	2.30	2.30	1.12	1.58	2.24	0.69	2.74	3.54	5.01	400	700
90°	302. 326	○	○	KB	1.05	1.05	0.20	0.28	0.40	0.12	0.49	0.63	0.89	400	700
	302. 406	○	○	KB	1.55	1.55	0.50	0.71	1.00	0.31	1.22	1.58	2.24	400	880
	302. 486	○	-	KB	2.10	2.10	0.80	1.13	1.60	0.50	1.96	2.53	3.58	400	880
	302. 606	○	-	KB	5.00	3.20	1.58	2.23	3.15	0.98	3.86	4.98	7.04	450	880
130°	302. 368	-	○	KB	1.30	1.30	0.31	0.45	0.63	0.20	0.77	1.00	1.41	700	1380
	302. 408	○	○	KB	2.00	2.00	0.50	0.71	1.00	0.31	1.22	1.58	2.24	700	1380
	302. 468	○	-	KB	2.40	2.40	0.70	0.99	1.40	0.43	1.71	2.21	3.13	700	1380
	302. 488	○	-	KB	2.75	2.75	0.80	1.13	1.60	0.50	1.96	2.53	3.58	700	1380

B = bore diameter · E = narrowest free cross section

Example Type + Material no. + Code = Ordering no.
for ordering: 302. 503 + 51 + KB = 302. 503. 51. KB

Simple assembling – just with a twist

Nozzle set assembled on pipe



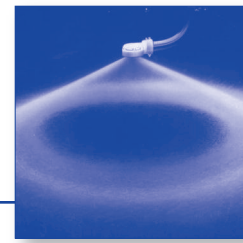
The folded page at the end of the catalogue will give you a survey on the various assembly possibilities. For complete assembly accessories, please refer to »Accessories«.

Conversion formula for the above series: $\dot{V}_2 = \dot{V}_1 \cdot \sqrt{\frac{p_2}{p_1}}$



Tangential-flow hollow cone nozzles

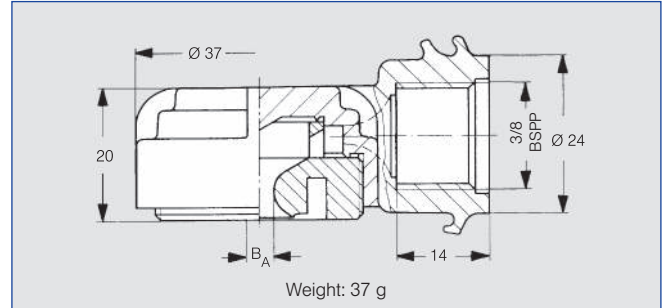
Series 350



High-performance eccentric spray nozzles for air-conditioning. Narrow drop spectrum and extremely uniform distribution of liquid over the entire spray pattern.

Applications:

Humidification of air in air washers, dust control, spraying onto filters, foam control.

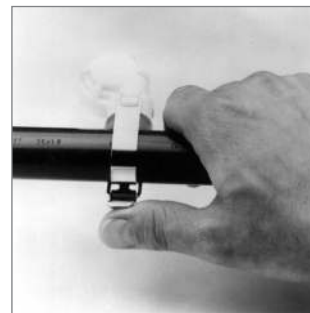
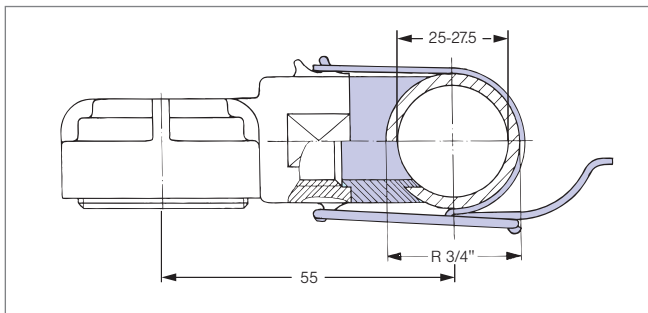


Spray angle	Ordering no.		B Ø [mm]	E Ø [mm]	\dot{V} [l/min]							Spray diameter D at p=2 bar			
	Type	Mat.- Nr. 56			p [bar]							p _{max} : 20 bar		H =	
					0.5	1.0	2.0	3.0	5.0	7.0	10.0	250 mm	500 mm		
130°	350. 368	○	1.55	0.70	0.32	0.45	0.63	0.77	1.00	1.18	1.41	1120	2000		
	350. 608	○	5.00	1.40	1.58	2.23	3.15	3.86	4.98	5.89	7.04	1140	2100		

B = bore diameter · E = narrowest free cross section

Example for ordering:	Type	+	Material no.	=	Ordering no.
	350. 368	+	56	=	350. 368. 56

Accessories



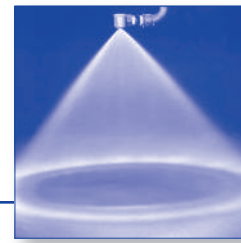
Quick snap clamp unit · **Ord.-no.: 035. 030. 15. 05. 00. 0**
consisting of: Stainless steel clamp and polyurethan gasket

Bore-Ø: 18 mm

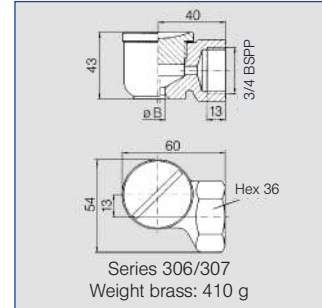
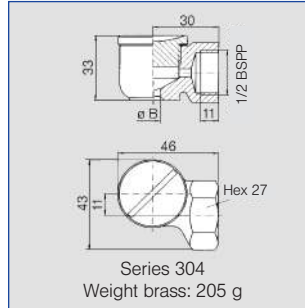


Tangential-flow hollow cone nozzles

Series 304 / 306 / 307



Uniform hollow cone spray.
Non-clogging nozzle,
without swirl insert.
 Applications:
 Fire fighting, protection of
 storage tanks, foam control.

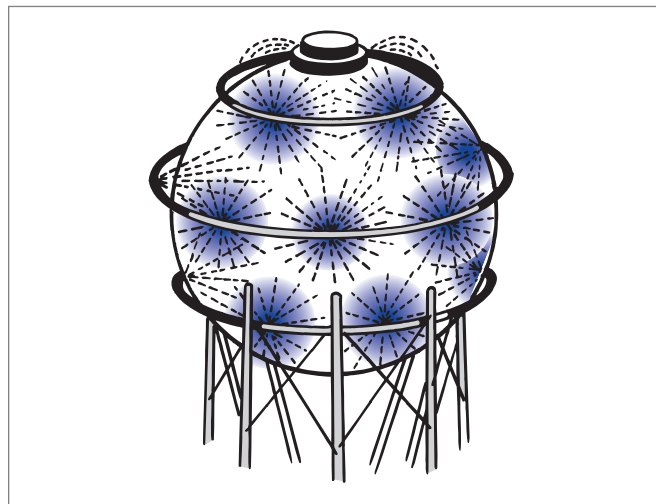


Spray angle	Ordering no.		G	B ∅ [mm]	E ∅ [mm]	ṽ [l/min]								Spray diameter D at p=2 bar		
	Type	Mat. no.				p [bar]								H =		
		30				1Y	0.5	1.0	2.0	3.0	5.0	7.0	10.0	250 mm	500 mm	
		Brass	316L SS	BSPP												
90°	304. 706	○	○	1/2"	5.10	5.10	2.80	3.96	5.60	6.86	8.85	10.47	12.52	450	750	
	304. 796	○	○	1/2"	8.90	6.00	4.75	6.72	9.50	11.64	15.02	17.77	21.24	450	750	
	306. 906	○	○	3/4"	9.00	9.00	9.00	12.73	18.00	22.05	28.46	33.68	40.25	470	850	
	306. 976	○	○	3/4"	13.50	10.00	13.25	18.74	26.50	32.46	41.90	49.58	59.26	470	850	
130°	304. 818	○	-	1/2"	12.00	5.00	5.30	7.50	10.60	12.98	16.76	19.83	23.70	1400	1800	
	304. 898	○	○	1/2"	12.00	7.00	8.50	12.02	17.00	20.82	26.88	31.80	38.01	1400	1800	
	306. 978	○	-	3/4"	19.00	7.30	13.25	18.74	26.50	32.46	41.90	49.58	59.25	1450	2400	
	307. 018	○	○	3/4"	19.00	8.60	16.75	23.69	33.50	41.03	52.97	62.67	74.91	1450	2400	

B = bore diameter · E = narrowest free cross section

Example	Type	+	Material no.	=	Ordering no.
for ordering:	304. 706	+	30	=	304. 706. 30

The folded page at the end of the catalogue will give you a survey on the various assembly possibilities.
 For complete assembly accessories, please refer to »Accessories«.

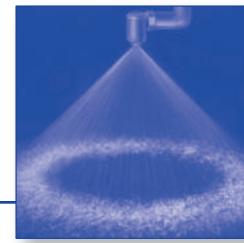


Fire protection on spherical storage tank.



Tangential-flow hollow cone nozzles

Series 373 »Ramp Bottom« / 309



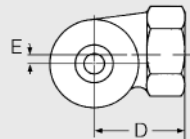
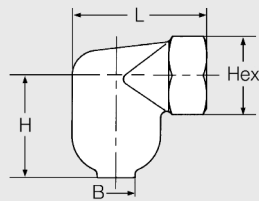
Fine, uniform hollow cone spray, also at low pressures.

Applications:
cooling and cleaning of gas,
water re-cooling, dust control,
chemical process engineering.



Sectional view of a series 373 »Ramp Bottom« nozzle

»Ramp Bottom« design offering a longer service life, due to the patented »sloping« shape of the swirl chamber.

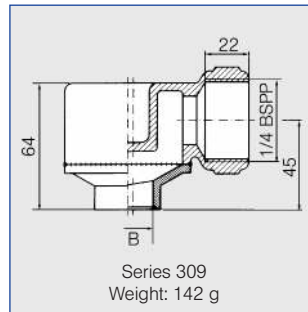


Dimensions

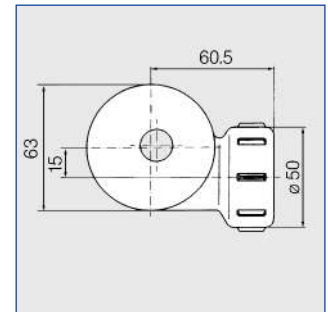
BSPP	L [mm]	D [mm]	H [mm]	E [mm]	SW	Weight 316Ti SS [g]
1	67	45	52	6.3	41	285
1 1/4	77	51	65	7.9	48	570
1 1/2	97	65	81	7.9	58	900

Series 373 »Ramp Bottom«

Less expensive plastic version, with low requirements on temperature and abrasion resistance.



Series 309
Weight: 142 g



Spray angle	Ordering no.				B Ø [mm]	\dot{V} [l/min]						Spray diameter D at p=2 bar		
	Type	Mat. no.	Code			p [bar]						H =		
			17	316 SS		1 BSPP	1 1/4 BSPP	1 1/2 BSPP	0.3	0.5	1.0	2.0	5.0	10.0
70°	373. 115	○	AN	-	-	11.40	24.40	31.50	44.50	63.00	99.60	141.00	650	1300
80°	373. 175	○	AN	-	-	12.90	31.00	40.00	56.60	80.00	126.00	179.00	800	1550
	373. 235	○	-	AQ	-	16.20	45.70	59.00	83.40	118.00	187.00	264.00	700	1350
	373. 285	○	-	AQ	-	20.50	62.00	80.00	113.00	160.00	253.00	358.00	800	1550
	373. 325	○	-	-	AS	22.20	77.50	100.00	141.00	200.00	316.00	447.00	800	1550
	373. 365	○	-	-	AS	23.60	67.90	114.00	161.00	227.00	359.00	508.00	700	1400

Plastic version:

90°	309. 236. 5E	(Material PVDF)	20.00	45.70	59.00	83.40	118.00	187.00	264.00	358.00	850	1500
	309. 286. 5E	(Material PVDF)	24.00	62.00	80.00	113.00	160.00	253.00	358.00	750	1400	

B = bore diameter

Example for ordering: Type 373. 115 + Material no. 17 + Code AN = Ordering no. 373. 115. 17. AN



Conversion formula for the above series: $\dot{V}_2 = \dot{V}_1 \cdot \sqrt{\frac{p_2}{p_1}}$