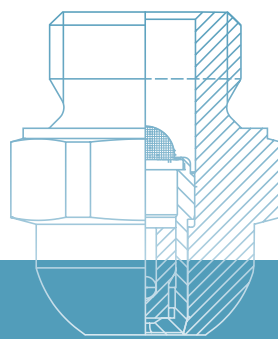
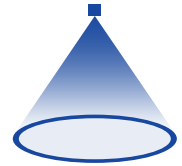


HOLLOW CONE NOZZLES



HOLLOW CONE NOZZLES

OVERVIEW OF TYPES



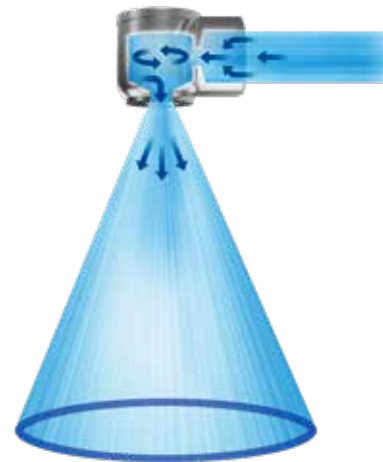
Hollow cone nozzles are used wherever fine droplets are required. A distinction is made between axial-flow hollow cone nozzles and tangential-flow hollow cone nozzles. Axial-flow hollow cone nozzles are mainly used for cooling, humidification and disinfecting, while tangential-flow hollow cone nozzles are traditionally used for humidification, dust control, sprinkling and foam control.

Axial-flow hollow cone nozzles



- High and controlled degree of atomization due to integrated swirl insert.
- Narrow droplet size spectrum.
- Uniform atomization.
- Large droplet surface area for mass transfer processes.

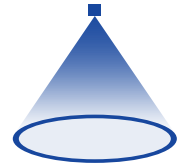
Tangential-flow hollow cone nozzles



- Liquid rotation without swirl insert.
- Clog-resistant maximum free passage.
- Large free cross sections.
- Operational reliability.
- Coarse droplets that are larger than axial-flow hollow cone nozzles.



HOLLOW CONE NOZZLES OVERVIEW OF SERIES



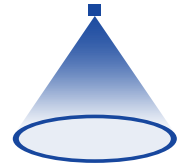
		Axial-flow hollow cone nozzles			
					
Series		220	226	214/216/218	2TR
Information on page		155	156	157	158
 Flow rate at p = 30 psi	Very low < 0.13 gal/min	• (at p = 75 psi)	• (at p = 75 psi)	• (at p = 75 psi)	• (at p = 75 psi)
	Low 0.13 gal/min–.53 gal/min			• (at p = 75 psi)	• (at p = 75 psi)
	Medium .53 gal/min–2.64 gal/min			• (at p = 75 psi)	
	High 2.64 gal/min–13.21 gal/min			• (at p = 75 psi)	
	Very high > 13.21 gal/min				
 Spray angle	Small 45°				
	Medium 55°–95°	•	•	•	•
	Large 130°				
 Nozzle material	Stainless steel	•	•	•	
	Brass			•	
	Plastic				•
 Nozzle connection		1/4 NPT	Assembly with retaining nut 3/8 NPT	1/8 NPT 1/4 NPT 3/8 NPT 1/2 NPT	Assembly with retaining nut 3/8 NPT

Tangential-flow hollow cone nozzles

					
302	302 with bayonet quick- release system	308	304/306/307	350	373 Ramp Bottom
159/160	158	163	164	165	162
•	•				
•	•	•		•	
•		•	•	•	
•			•		
					•
	•				
•	•	•	•		•
•	•		•	•	
•			•		•
•		•	•		
•	•			•	
3/8 NPT 3/8 BSPP	Assembly with bayonet quick-release system	3/8 BSPP	1/2 BSPP 3/4 BSPP	3/8 BSPP	1 NPT 1 1/4 NPT 1 1/2 NPT 2 NPT

➤ Axial-flow hollow cone nozzles

Series 220

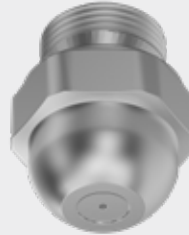


Features:

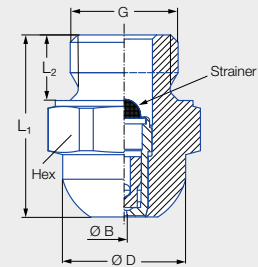
- Extremely fine, fog-like atomization

Applications:

- Humidification
- Cooling
- Disinfection
- Chemical engineering
- Adiabatic cooling



Series 220



Connection	G	Dimensions [in]				Weight [lb]
		L ₁	L ₂	Ø D	Hex (mm)	
BC	1/4 NPT	0.87	0.31	0.59	17	0.06

Spray angle	Ordering number			Bore diameter B [in]	Narrowest free cross section Ø [in]	Strainer in- sert mesh size [in]	V̇ water [gal/min]										Spray diameter D [in] (at p = 75 bar) 	
	Type	Mat. no.					Connection	p [psi]										
		1Y	11					Liters per min.										
		Stainless steel 316L	Stainless steel 430F					30	45	75	5 bar	100	145	290	725	1450		H = 10 [in]
60°	220.004	●	●	BC	0.004	0.004	0.002	–	–	0.003	0.013	0.004	0.005	0.007	0.011	0.015	5	
	220.014	●	●	BC	0.006	0.006	0.002	–	0.004	0.005	0.019	0.006	0.007	0.010	0.016	0.022	6	
	220.054	●	●	BC	0.008	0.006	0.002	0.005	0.006	0.007	0.027	0.008	0.010	0.014	0.023	0.032	6	
80°	220.085	●	●	BC	0.010	0.010	0.004	0.007	0.008	0.011	0.040	0.012	0.015	0.021	0.033	0.047	7	
	220.125	●	●	BC	0.014	0.014	0.004	0.011	0.013	0.017	0.062	0.019	0.023	0.033	0.052	0.073	9	
	220.145	●	●	BC	0.016	0.016	0.004	0.014	0.017	0.022	0.082	0.025	0.031	0.043	0.068	0.097	10	
	220.165	●	●	BC	0.018	0.018	0.008	0.018	0.021	0.028	0.103	0.032	0.038	0.054	0.086	0.122	10	
	220.185	●	●	BC	0.022	0.014	0.008	0.022	0.027	0.035	0.130	0.040	0.049	0.069	0.109	0.154	11	
	220.205	●	●	BC	0.024	0.014	0.008	0.028	0.034	0.044	0.168	0.053	0.063	0.089	0.140	0.198	11	
	220.245	●	●	BC	0.028	0.020	0.008	0.044	0.054	0.070	0.261	0.081	0.097	0.138	0.218	0.308	11	
	220.285	●	●	BC	0.035	0.022	0.004	0.066	0.081	0.105	0.390	0.121	0.146	0.206	0.326	0.461	12	

Also available in BSPP

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

The supplied and integrated strainer insert prevents clogging of the nozzle, thereby ensuring a long service life.

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

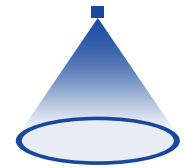
Ordering Type + Material no. + Code = Ordering no.
example: 220.004 + 1Y + BC = 220.004.1Y.BC



Assembly accessories can be found in Chapter 12 "Accessories".

➤ Axial-flow hollow cone nozzles

Series 226



Features:

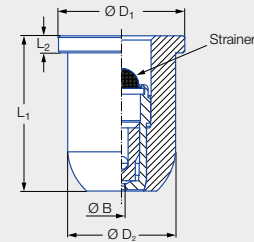
- Extremely fine, fog-like atomization
- Assembly with retaining nut

Applications:

- Humidification
- Cooling
- Disinfection
- Chemical engineering
- Adiabatic cooling



Series 226



Connection	Dimensions [in]				Weight [lb]
	L ₁	L ₂	Ø D ₁	Ø D ₂	
Assembly with retaining nut 3/8 BSPP	0.71	0.08	0.58	0.50	0.04

Spray angle	Ordering number		Bore diameter B [in]	Narrowest free cross section Ø [in]	Strainer insert mesh size [in]	V̇ water [gal/min]									Spray diameter D [in] (at p = 75 psi) 
	Type	Mat. no.				p [psi]									
		16													
		Stainless steel 303													
30	45	75	Liters per min. 5 bar	100	145	290	725	1450							
60°	226.004	●	0.004	0.004	0.002	–	–	0.003	0.013	0.004	0.005	0.007	0.011	0.015	5
	226.014	●	0.006	0.006	0.002	–	0.004	0.005	0.019	0.006	0.007	0.010	0.016	0.022	6
	226.054	●	0.008	0.006	0.002	0.005	0.006	0.007	0.027	0.008	0.010	0.014	0.023	0.032	6
80°	226.085	●	0.010	0.010	0.004	0.007	0.008	0.011	0.040	0.012	0.015	0.021	0.033	0.047	7
	226.125	●	0.014	0.014	0.004	0.011	0.013	0.017	0.062	0.019	0.023	0.033	0.052	0.073	9
	226.145	●	0.016	0.016	0.004	0.014	0.017	0.022	0.082	0.025	0.031	0.043	0.068	0.097	10
	226.165	●	0.018	0.018	0.004	0.018	0.021	0.028	0.103	0.032	0.038	0.054	0.086	0.122	10
	226.185	●	0.022	0.014	0.008	0.022	0.027	0.035	0.130	0.040	0.049	0.069	0.109	0.154	11
	226.205	●	0.024	0.014	0.008	0.028	0.034	0.044	0.168	0.053	0.063	0.089	0.140	0.198	11
	226.245	●	0.028	0.020	0.008	0.044	0.054	0.070	0.261	0.081	0.097	0.138	0.218	0.308	11
	226.285	●	0.035	0.022	0.008	0.066	0.081	0.105	0.390	0.121	0.146	0.206	0.326	0.461	12

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

The supplied and integrated strainer insert prevents clogging of the nozzle, thereby ensuring a long service life.

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

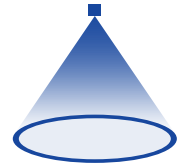
Ordering example: Type 226.004 + Material no. 16 = Ordering no. 226.004.16



Assembly accessories can be found in Chapter 12 "Accessories".

➤ Axial-flow hollow cone nozzles

Series 214/216/218



Features:

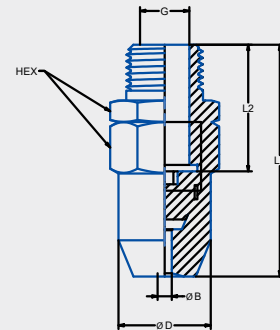
- Fine, uniform atomization

Applications:

- Cooling
- Gas washing
- Dust control
- Sprinkling
- Adiabatic cooling



Series 214/216/218



Ordering no.	Dimensions [in]					Weight [lb]
	Thread size Male NPT	Hex (mm)	L ₁	L ₂	Ø D ₁	
214.xxx.YY.BA	1/8	17	1.531	0.718	0.625	0.15
214.xxx.YY.BC	1/4	17	1.593	0.718	0.625	0.20
216.xxx.YY.BC	1/4	22	1.468	1.156	0.843	0.25
216.xxx.YY.BE	3/8	22	1.468	1.156	0.843	0.25
218.xxx.YY.BG	1/2	27	2.531	1.406	1.031	0.30

Spray angle	Ordering number							Bore diameter B [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]									Spray diameter D [in] (at p = 75 bar) 
	Type	Mat. no.		Connection						p [psi]									
		17	30	Male NPT															
		Stainless steel 316Ti	Brass	1/8"	1/4"	3/8"	1/2"			10	15	30	45	75	Liters per min. 5 bar	145	290	H =10 [in]	
60°	214.184	●	●	BA	BC			0.020	0.020	–	–	0.02	0.027	0.035	0.13	0.05	0.07	5	
	216.324	●	●		BC	BE		0.039	0.039	–	0.08	0.11	0.13	0.17	0.63	0.24	0.33	7	
	216.364	●	●		BC	BE		0.055	0.055	–	0.12	0.17	0.21	0.27	1.00	0.37	0.53	9	
	216.404	●	●		BC	BE		0.079	0.079	–	0.19	0.27	0.33	0.42	1.58	0.59	0.83	9	
80°	214.245	●	●	BA	BC			0.039	0.020	–	–	0.04	0.05	0.07	0.25	0.10	0.13	9	
	214.305	●	●	BA	BC			0.071	0.020	–	0.06	0.09	0.11	0.14	0.51	0.19	0.27	13	
90°	216.496	●	●		BC	BE		0.118	0.079	–	0.32	0.46	0.56	0.72	2.69	1.00	1.42	17	
	216.566	●	●		BC	BE		0.157	0.079	–	0.47	0.67	0.82	1.06	3.95	1.48	2.09	17	
	216.646	●	●		BC	BE		0.138	0.079	0.62	0.76	1.07	1.32	1.70	6.32	2.36	3.34	17	
	216.686	●	●		BC	BE		0.157	0.079	0.78	0.95	1.34	1.65	2.13	7.91	2.95	4.18	18	
	216.726	●	●		BC	BE		0.197	0.079	0.98	1.20	1.69	2.07	2.68	9.96	3.72	5.26	18	
	216.776	●	●		BC	BE		0.234	0.079	1.31	1.61	2.28	2.79	3.60	13.40	5.01	7.08	19	
	218.646	●	●			BG		0.197	0.079	0.62	0.76	1.07	1.32	1.70	6.32	2.36	3.34	20	
	218.666	●	●			BG		0.217	0.079	0.70	0.86	1.21	1.48	1.91	7.12	2.66	3.76	20	
	218.706	●	●			BG		0.256	0.079	0.87	1.06	1.50	1.84	2.38	8.85	3.31	4.68	20	
	218.766	●	●			BG		0.197	0.079	1.24	1.52	2.15	2.63	3.40	12.65	4.73	6.68	20	
	218.826	●	●			BG		0.256	0.079	1.74	2.13	3.01	3.69	4.76	17.71	6.62	9.36	20	
	218.846	●	●			BG		0.300	0.079	1.94	2.37	3.36	4.11	5.31	19.76	7.38	10.44	20	
	218.886	●	●			BG		0.354	0.094	2.48	3.04	4.30	5.26	6.80	25.30	9.45	13.37	20	

Also available in BSPP

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

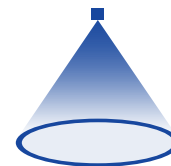
Ordering Type + Material no. + Code = Ordering no.
example: 214.184 + 17 + BC = 214.184.17.BC



Assembly accessories can be found in Chapter 12 "Accessories".

➤ Axial-flow hollow cone nozzles

Series 2TR



Features:

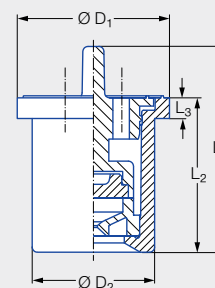
- Fine, uniform atomization
- Assembly with retaining nut

Applications:

- Sprinkling
- Adiabatic cooling
- Cooling
- Humidification of air



Series 2TR



Connection	Dimensions [in]					Weight [lb]
	L ₁	L ₂	L ₃	Ø D ₁	Ø D ₂	
Assembly with retaining nut 3/8 BSPP	0.79	0.59	0.08	0.58	0.47	0.007

Spray angle	Ordering number		Color	Bore diameter B [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]							Spray diameter D [in] (at p = 75 bar)
	Type	Mat. no.				p [psi]							
		C8											
		Housing: POM Insert: Ceramic				15	30	45	75	Liters per min. 5 bar	100	145	
80°	2TR.245	●	Purple	0.026	0.022	–	0.04	0.05	0.07	0.25	0.08	0.09	9
	2TR.275	●	Black	0.032	0.028	0.04	0.06	0.07	0.09	0.35	0.11	0.13	10
	2TR.305	●	Orange	0.035	0.032	0.06	0.09	0.11	0.14	0.51	0.16	0.19	13
	2TR.345	●	Green	0.043	0.035	0.09	0.13	0.16	0.20	0.76	0.24	0.28	17
	2TR.365	●	Yellow	0.055	0.037	0.12	0.18	0.21	0.28	1.03	0.32	0.38	19
	2TR.405	●	Blue	0.067	0.043	0.18	0.26	0.32	0.41	1.53	0.47	0.57	21
	2TR.445	●	Red	0.079	0.047	0.24	0.34	0.42	0.54	2.02	0.63	0.75	22
	2TR.485	●	Brown	0.087	0.051	0.30	0.42	0.52	0.67	2.50	0.78	0.93	22

Assembly example



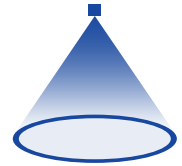
Conversion formula for this series: $\dot{V}_2 = \dot{V}_1 \cdot \sqrt{\frac{p_2}{p_1}}$

Ordering example: Type 2TR.245 + Material no. C8 = Ordering no. 2TR.245.C8



Assembly accessories can be found in Chapter 12 "Accessories".

Tangential-flow hollow cone nozzles, stainless steel/brass version Series 302



Features:

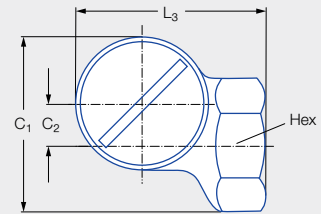
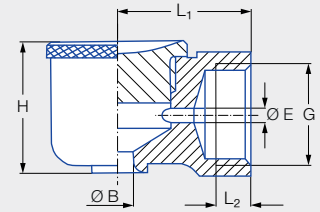
- Uniform atomization
- Clog-resistant nozzle without swirl insert

Applications:

- Humidification
- Dust control
- Sprinkling
- Foam control
- Adiabatic cooling



Series 302



G	Dimensions [in]							Weight [lb] (Brass)
	C ₁	C ₂	H	L ₁	L ₂	L ₃	Hex (mm)	
3/8 BSPP	1.34	0.31	0.91	0.91	0.26	1.42	22	0.20

Spray angle	Ordering number				Bore diameter B [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]								Spray diameter D [mm] (at p = 30 psi)	
	Type	Mat. no.		C onn.			p [psi]								H = 10 [in]	H = 20 [in]
		1Y	30													
		Stainless steel 316L	Brass				Female BSPP 3/8"									
10	15	30	Liters per min. 2 bar	45	75	100	145	11	17							
60°	302.364		●	00	0.06	0.06	0.10	0.12	0.17	0.63	0.21	0.27	0.31	0.37	11	17
	302.464	●	●	00	0.08	0.08	0.22	0.27	0.38	1.40	0.46	0.59	0.69	0.83	11	18
80°	302.545	●	●	00	0.19	0.09	0.35	0.43	0.60	2.24	0.74	0.95	1.10	1.32	14	26
90°	302.606	●	●	00	0.18	0.16	0.49	0.60	0.85	3.15	1.04	1.34	1.55	1.86	19	32
130°	302.368	●	●	00	0.12	0.04	0.10	0.12	0.17	0.63	0.21	0.27	0.31	0.37	26	43
	302.468	●	●	00	0.20	0.07	0.22	0.27	0.38	1.40	0.46	0.59	0.69	0.83	32	54
	302.548		●	00	0.20	0.10	0.35	0.43	0.60	2.24	0.74	0.95	1.10	1.32	38	65
	302.608	●	●	00	0.20	0.14	0.49	0.60	0.85	3.15	1.04	1.34	1.55	1.86	42	71
	302.668		●	00	0.30	0.14	0.70	0.85	1.21	4.50	1.48	1.91	2.21	2.66	44	77
	302.748	●	●	00	0.30	0.19	1.10	1.35	1.91	7.10	2.34	3.02	3.48	4.19	46	85

Available in NPT with adapter add-on.

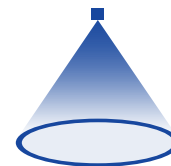
Conversion formula for this series: $\dot{V}_2 = \dot{V}_1 \cdot \sqrt{\frac{p_2}{p_1}}$

Ordering Type + Material no. + Code = Ordering no.
 example: 302.364 + 30 + 00 = 302.364.30.00



Assembly accessories can be found in Chapter 12
 "Accessories".

Tangential-flow hollow cone nozzles, plastic version Series 302

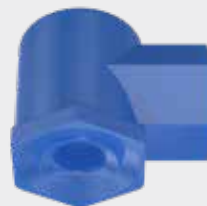


Features:

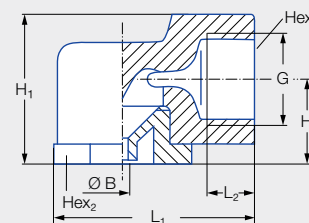
- Uniform atomization
- Clog resistant nozzle without swirl insert

Applications:

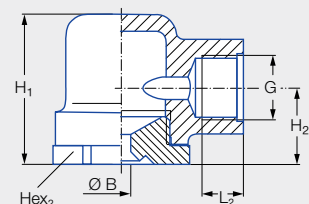
- Humidification
- Dust control
- Sprinkling
- Foam control
- Adiabatic cooling



Series 302



Type 302.32x-302.48x

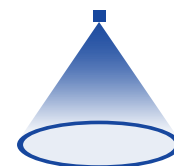


Type 302.52x-302.96x

Type	G	Dimensions [in]						Weight [lb]	P _{max} [psi]
		H ₁	H ₂	L ₁	L ₂	Hex ₁ (mm)	Hex ₂ (mm)		
302.32x-302.48x	3/8 NPT/BSPP	1.08	0.65	1.71	0.39	22	22	0.03	75
302.52x-302.96x	3/8 NPT/BSPP	1.34	0.73	1.46	0.39	22	22	0.04	75

Spray angle	Ordering number						Bore diameter B [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]						Spray diameter D [in] (at p = 30 psi)	
	Type	Mat. no.			Connection				p [psi]							
		51	5E	53	Female											
		PA	PVDF	PC	3/8" NPT	3/8" BSPP			10	15	30	Liters per min. 2 bar	45	75	H = 10 [in]	H = 20 [in]
60°	302.364	●		●	-	00	0.05	0.05	0.10	0.12	0.17	0.63	0.21	0.27	13	24
	302.464	●		●	-	00	0.08	0.08	0.22	0.27	0.38	1.40	0.46	0.59	13	24
90°	302.326	●	●		-	00	0.04	0.04	0.06	0.08	0.11	0.40	0.13	0.17	19	30
	302.366	●	●		-	00	0.05	0.05	0.10	0.12	0.17	0.63	0.21	0.27	19	31
	302.406	●	●		-	00	0.06	0.06	0.16	0.19	0.27	1.00	0.33	0.42	19	32
	302.486	●		●	-	00	0.08	0.08	0.25	0.30	0.43	1.60	0.53	0.68	20	33
	302.526	●		●	BF	00	0.20	0.08	0.31	0.38	0.54	2.00	0.66	0.85	20	34
	302.566	●		●	-	00	0.20	0.09	0.39	0.47	0.67	2.50	0.82	1.06	20	35
	302.606	●		●	BF	00	0.20	0.13	0.49	0.60	0.85	3.15	1.04	1.34	21	37
	302.686	●			BF	00	0.30	0.13	0.78	0.95	1.34	5.00	1.65	2.12	21	40
	302.766	●			BF	00	0.35	0.17	1.24	1.52	2.15	8.00	2.63	3.40	21	41
	302.846	●		●	BF	00	0.43	0.20	1.94	2.37	3.36	12.50	4.11	5.31	21	41
	302.886	●	●	●	BF	00	0.43	0.25	2.48	3.04	4.30	16.00	5.26	6.80	21	41
	302.966	●			BF	00	0.43	0.34	3.88	4.75	6.72	25.00	8.23	10.62	21	41





Spray angle	Ordering number						Bore diameter B [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]						Spray diameter D [in] (at p = 30 psi)	
	Type	Mat. no.			Connection				10	15	30	Liters per min. 2 bar	45	75	H = 10 [in]	H = 20 [in]
		51	5E	53	Female											
		PA	PVDF	RP	3/8" NPT	3/8" BSPP										
130°	302.328		●			00	0.05	0.03	0.06	0.08	0.11	0.40	0.13	0.17	25	37
	302.368	●	●			00	0.07	0.04	0.10	0.12	0.17	0.63	0.21	0.27	26	40
	302.408	●	●			00	0.14	0.05	0.16	0.19	0.27	1.00	0.33	0.42	27	44
	302.488	●		●		00	0.20	0.06	0.25	0.30	0.43	1.60	0.53	0.68	28	49
	302.528	●			BF	00	0.20	0.08	0.31	0.38	0.54	2.00	0.66	0.85	30	52
	302.568	●				00	0.20	0.09	0.39	0.47	0.67	2.50	0.82	1.06	31	56
	302.608	●	*●	●	BF	00*	0.20	0.13	0.49	0.60	0.85	3.15	1.04	1.34	32	59
	302.648	●			BF	00	0.30	0.12	0.62	0.76	1.07	4.00	1.32	1.70	34	63
	302.688	●			BF	00	0.30	0.13	0.78	0.95	1.34	5.00	1.65	2.12	35	65
	302.728	●			BF	00	0.30	0.16	0.98	1.20	1.69	6.30	2.07	2.68	36	67
	302.768	●			BF	00	0.35	0.17	1.24	1.52	2.15	8.00	2.63	3.40	37	68
	302.848	●			BF	00	0.43	0.20	1.94	2.37	3.36	12.50	4.11	5.31	38	69
	302.888	●		●	BF	00	0.43	0.25	2.48	3.04	4.30	16.00	5.26	6.80	38	70
	302.968	*●	●		BF	00*	0.43	0.34	3.88	4.75	6.72	25.00	8.23	10.62	39	71

* Material only available in BSPP

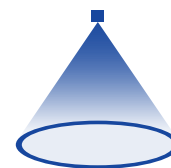
Conversion formula for this series: $\dot{V}_2 = \dot{V}_1 \cdot \sqrt{\frac{p_2}{p_1}}$

Ordering Type + Material no. = Ordering no.
example: 302.328 + 5E = 302.328.5E



Assembly accessories can be found in Chapter 12 "Accessories".

Tangential-flow hollow cone nozzles, plastic version with bayonet quick-release system Series 302



Features:

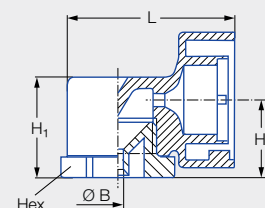
- Uniform atomization
- Clog-resistant nozzle without swirl insert
- Quick and secure assembly thanks to bayonet quick-release system
- Fixed alignment

Applications:

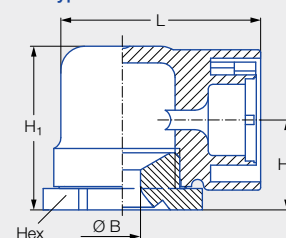
- Humidification
- Dust control
- Sprinkling
- Foam control
- Adiabatic cooling



Series 302



Type 302.32x-302.54x



Type 302.6xx.51.KB

Type	Connection	Dimensions [in]				Weight [lb]	p _{max} [psi]
		H ₁	H ₂	L	Hex (mm)		
302.32x-302.54x	KB	0.86	0.66	1.42	22	0.03	75
302.6xx.51	KB	1.34	0.75	1.65	30	0.04	75

Spray angle	Ordering number				Bore diameter B [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]						Spray diameter D [in] (at p = 30 psi)	
	Type	Mat. no.		Connection			p [psi]						H = 10 [in]	H = 20 [in]
		51	56											
		PA	POM											
				Bayonet quick-release system			10	15	30	Liters per min. 2 bar	45	75		
45°	302.503	●		KB	0.081	0.081	0.28	0.34	0.48	1.80	0.59	0.76	8	17
60°	302.464		●	KB	0.077	0.077	0.22	0.27	0.38	1.40	0.46	0.59	11	21
80°	302.545		●	KB	0.091	0.091	0.35	0.43	0.60	2.24	0.74	0.95	18	32
90°	302.326	●	●	KB	0.041	0.041	0.06	0.08	0.11	0.40	0.13	0.17	16	28
	302.406	●	●	KB	0.061	0.061	0.16	0.19	0.27	1.00	0.33	0.42	16	29
	302.486	●		KB	0.083	0.083	0.25	0.30	0.43	1.60	0.53	0.68	18	31
	302.606	●		KB	0.197	0.126	0.49	0.60	0.85	3.15	1.04	1.34	21	39
	302.686		●	KB	0.300	0.133	0.78	0.95	1.34	5.00	1.65	2.12	21	40
130°	302.368		●	KB	0.051	0.051	0.10	0.12	0.17	0.63	0.21	0.27	26	43
	302.408	●	●	KB	0.079	0.079	0.16	0.19	0.27	1.00	0.33	0.42	27	47
	302.468	●		KB	0.094	0.094	0.22	0.27	0.38	1.40	0.46	0.59	27	49
	302.488	●		KB	0.108	0.108	0.25	0.30	0.43	1.60	0.53	0.68	28	51

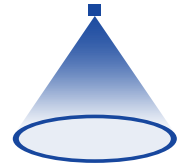
Conversion formula for this series: $\dot{V}_2 = \dot{V}_1 \cdot \sqrt{\frac{p_2}{p_1}}$

Ordering example: 302.503 + 51 + KB = 302.503.51.KB



Assembly accessories can be found in Chapter 12 "Accessories".

Tangential-flow hollow cone nozzles Series 308



Features:

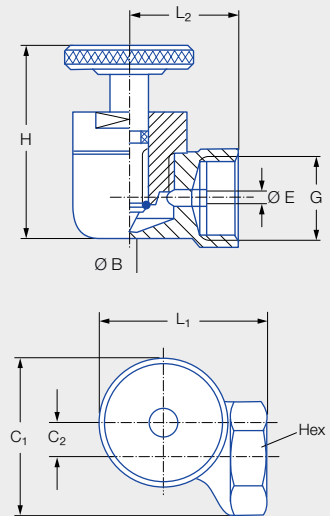
- Uniform atomization
- Clog-resistant nozzle without swirl insert
- Adjustable flow rate

Applications:

- Humidification in air washers
- Dust control
- Spraying onto filters
- Foam control
- Cooling



Series 308



G	Dimensions [in]						Weight [lb]
	C ₁	C ₂	H	L ₁	L ₂	Hex (mm)	
3/8 BSPP	1.34	0.31	1.57	1.42	0.91	22	0.33

Spray angle	Ordering number		Bore diameter B [in]	Narrowest free cross section Ø [in]	V _{max} water [gal/min]							Spray diameter D [in] (at p = 30 psi)	
	Type	Mat. no.			p [psi]								
		30											
		Brass											
					5	10	15	30	Liters per min. 2 bar	75	145	H = 10 [in]	H = 20 [in]
90°	308.466	●	0.08	0.08	0.15	0.22	0.27	0.38	1.40	0.59	0.83	17	33
	308.606	●	0.16	0.16	0.35	0.49	0.60	0.85	3.15	1.34	1.86	18	33

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

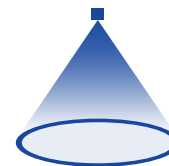
Ordering Type + Material no. = Ordering no.
 example: 308.466 + 30 = 308.466.30



Assembly accessories can be found in Chapter 12 "Accessories".

Tangential-flow hollow cone nozzles

Series 304/306/307



Features:

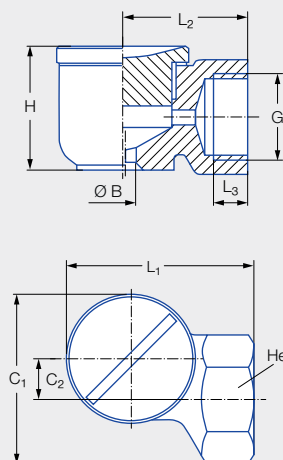
- Uniform atomization
- Clog-resistant nozzle without swirl insert

Applications:

- Storage tank cooling
- Foam control
- Dust control
- Surface treatment
- Absorption



Series 304/306/307



Series	G	Dimensions [in]							Weight [lb] (Brass)
		C ₁	C ₂	H	L ₁	L ₂	L ₃	Hex (mm)	
304	1/2 BSPP	1.69	0.43	1.30	1.81	1.18	0.43	27	0.45
306/307	3/4 BSPP	2.13	0.51	1.69	2.36	1.57	0.51	36	0.90

Spray angle	Ordering number			Bore diameter B [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]								Spray diameter D [in] (at p = 30 psi)	
	Type	Mat. no.				p [psi]									
		1Y	30												
		Stainless steel 316L	Brass			5	10	30	Liters per min. 2 bar	45	75	100	145		H = 10 [in]
90°	304.706	●	●	0.201	0.201	0.61	0.87	1.50	5.60	1.84	2.38	2.75	3.31	20	39
	304.796	●	●	0.350	0.236	1.04	1.47	2.55	9.50	3.13	4.04	4.66	5.61	20	39
	306.906	●	●	0.354	0.354	1.97	2.79	4.84	18.00	5.92	7.65	8.83	10.63	22	41
	306.976	●	●	0.531	0.394	2.91	4.11	7.12	26.50	8.72	11.26	13.00	15.65	22	41
130°	304.818		●	0.472	0.197	1.16	1.64	2.85	10.60	3.49	4.50	5.20	6.26	47	83
	304.898	●	●	0.472	0.276	1.86	2.64	4.57	17.00	5.59	7.22	8.34	10.04	49	87
	306.978		●	0.748	0.287	2.91	4.11	7.12	26.50	8.72	11.26	13.00	15.65	51	93
	307.018	●	●	0.748	0.339	3.67	5.20	9.00	33.50	11.02	14.23	16.43	19.79	51	93

Available in NPT with adaptor add-on.

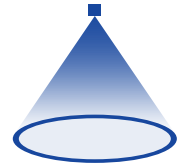
Conversion formula for this series: $\dot{V}_2 = \dot{V}_1 \cdot \sqrt{\frac{p_2}{p_1}}$

Ordering Type + Material no. = Ordering no.
 example: 304.706 + 1Y = 304.706.1Y



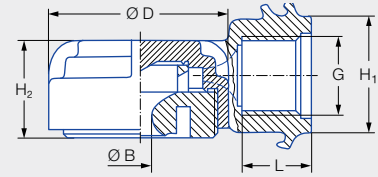
Assembly accessories can be found in Chapter 12 "Accessories".

>> Tangential-flow hollow cone nozzles Series 350



Features:

- High performance nozzle for humidification
- Very narrow droplet size spectrum
- Extremely uniform liquid distribution over the entire spray pattern
- Quick-release clamp unit available for pipe mounting



Applications:

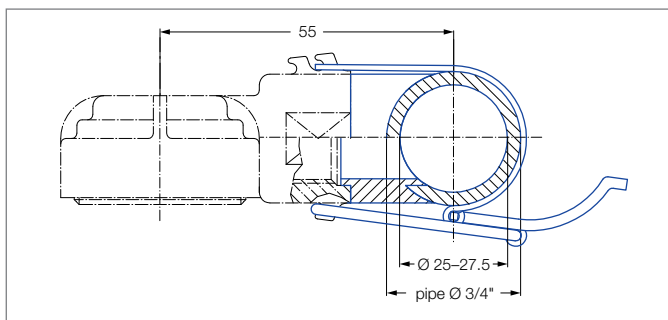
- Foam control
- Dust control
- Surface treatment
- Absorption

Series 350

G	Dimensions [in]				Weight [lb]	p _{max} [psi]
	H ₁	H ₂	L	Ø D		
3/8 BSPP	0.94	0.79	0.55	1.46	0.08	300

Spray angle	Ordering number		Bore diameter B [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]								Spray diameter D [in] (at p = 30 psi)	
	Type	Mat. no.			p [psi]									
		56												
		POM			10	15	30	Liters per min. 2 bar	45	75	100	145		H = 10 [in]
130°	350.368	●	0.06	0.03	0.10	0.12	0.17	0.63	0.21	0.27	0.31	0.37	37	49
	350.608	●	0.20	0.06	0.49	0.60	0.85	3.15	1.04	1.34	1.55	1.86	39	77

Accessories:



Recommended bore diameter 18 mm.

Quick-release clamp unit: Ordering no. 035.030.15.05.00.0.

Consisting of: Stainless steel clamp, polyurethane gasket.

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

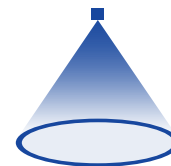
Ordering Type + Material no. = Ordering no.
 example: 350.368 + 56 = 350.368.56



Assembly accessories can be found in Chapter 12 "Accessories".

➤ Eccentric hollow cone nozzles

Series 373 Ramp Bottom



Features:

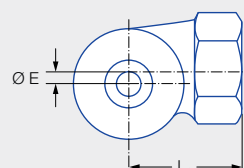
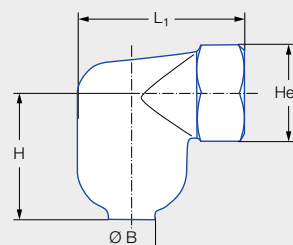
- Fine, uniform atomization even at low pressure
- Patented swirl chamber with built-in ramp extends service life

Applications:

- Gas cooling
- Water recooling
- Dust control



Series 373



Connection	G	Dimensions [in]					Weight [lb]
		H	L ₁	L ₂	E	Hex (mm)	
BN	1 NPT	2.05	2.64	1.77	0.25	41	0.6
BQ	1 1/4 NPT	2.56	3.03	2.01	0.31	48	1.2
BS	1 1/2 NPT	3.19	3.82	2.56	0.31	58	2.0
BW	2 NPT	3.69	4.25	4.50	0.50	71	2.7

Spray angle (at p = 40 psi)	Ordering number						Bore diameter B [in]	V̇ water [gal/min]						Spray diameter D [in] (at p = 30 psi)		
	Type	Mat. no.	Connection					p [psi]								
		17	Female													
		Stainless steel 316	1 NPT	1 1/4 NPT	1 1/2 NPT	2 NPT		5	10	15	30	Liters per min. 2 bar	75		145	H = 20 [in]
70°	373.115	●	BN				0.45	6.91	9.77	11.97	16.93	63	26.76	37.21	26	47
80°	373.175	●	BN				0.51	8.77	12.41	15.2	21.49	80	33.98	47.25	31	57
75°	373.235	●		BQ			0.64	12.94	18.30	22.42	31.70	118	50.12	69.69	30	51
85°	373.285	●		BQ			0.81	17.55	24.82	30.39	42.98	160	67.96	94.50	31	53
85	373.325	●			BS		0.87	21.94	31.02	37.99	53.73	200	84.96	118.13	35	59
77°	373.365	●			BS		0.93	24.90	35.21	43.12	60.98	227	96.42	134.07	33	55
80°	373.445	●				BW	1.14	44.53	62.97	77.13	109.07	406	172.46	239.80	39	67
90°	373.465	●				BW	1.21	50.56	71.50	87.57	123.85	461	195.82	272.28	46	80

Other sizes and flow rates available upon request

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

Ordering Type + Material no. + Code = Ordering no.
example: 373.115 + 17 + BN = 373.115.17.BN



Assembly accessories can be found in Chapter 12 "Accessories".