



Hollow cone nozzles

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



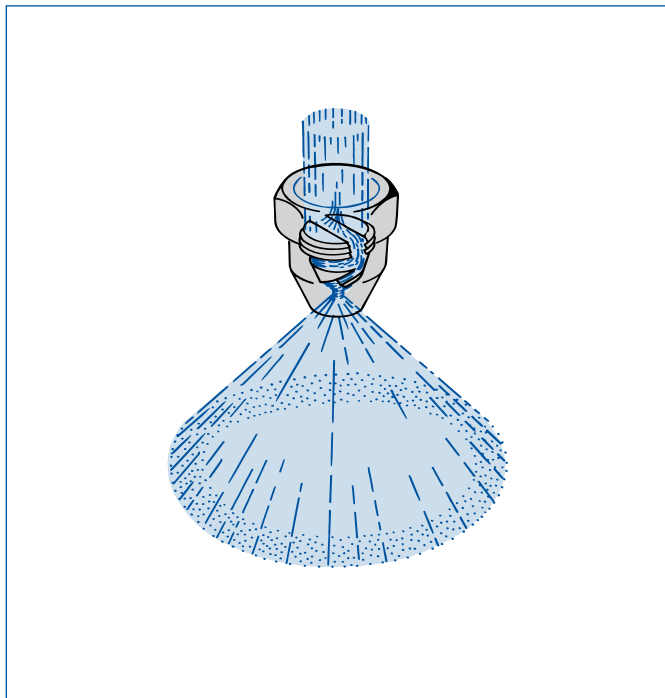


Hollow cone nozzles

Hollow cone

Axial hollow cone nozzles

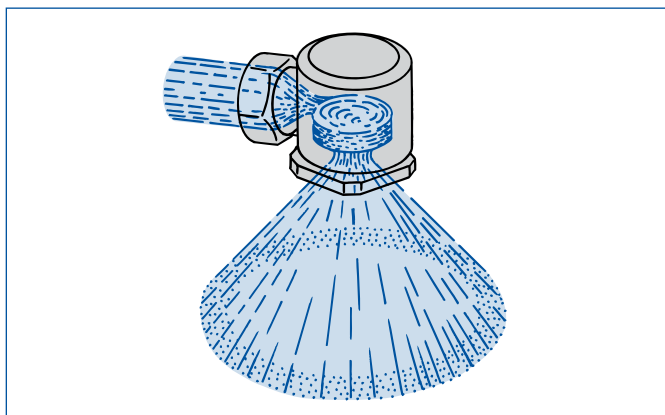
Hollow cone nozzles produce the smallest average droplet sizes of any purely hydraulic nozzle. Axial hollow cones create the smallest droplets of any type of hollow cone nozzle. The spiral grooves in the swirl inserts of these nozzles ensure an efficient whirling of the liquid which creates uniform droplets throughout and maximizes the total exposed surface area. Creation of such a spray means that the liquid can be absorbed faster, cool quicker, and moisturize better for more effective application spraying. As a result, these nozzles are suitable for applications where fine, uniform spray is required, such as for cooling and cleaning of gas, absorption processes, dust control, product dampening, oil spraying, and air humidifying.



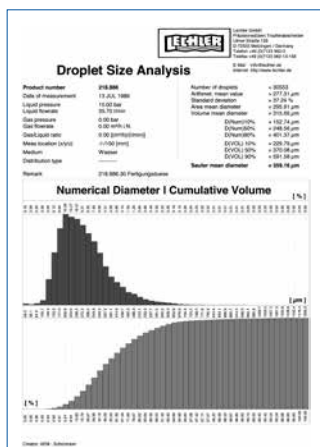
- Finest droplet particles
- Narrow free cross-sections
- Maximum spray angle: 90°

Tangential hollow cone nozzles

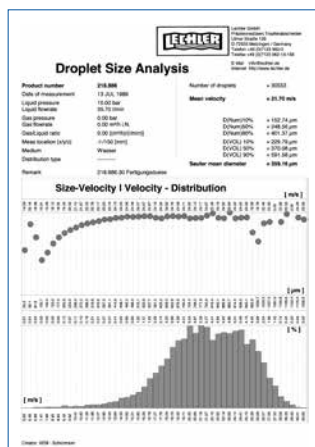
Tangential hollow cone nozzles also provide a very uniform hollow cone spray. This is due to the right-angle flow the fluid takes inside the nozzle body. An off-center inlet combines with the 90° turn the fluid makes to create a whirling rotation of the liquid within the nozzle chamber, ultimately resulting in smaller droplets and a consistent distribution upon discharge. With tangential hollow cones, spray angles up to 130° can be achieved. Due to their insert-free interiors, tangential hollow cone nozzles are basically self-cleaning and resistant to clogging, even with rather poor water conditions. Typical applications for tangential hollow cone nozzles include: air humidification in air conditioning systems, spray pond cooling, cooling of plastic pipes after extrusion, and gas cleaning in chemical and environmental engineering installations.



- Coarser droplets than axial hollow cone nozzles
- Large free cross-sections
- Wide spray angles up to 130°
- Self-cleaning, clog-resistant



Cumulated volume distribution



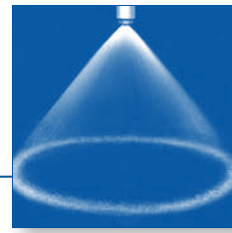
Velocity distribution by number



Hollow cone nozzles

Axial-low flow

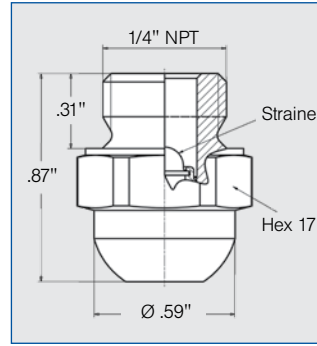
Series 220



Extremely fine, fog-like hollow cone spray.

Applications:

- Disinfection
- Humidification
- Cooling



Nozzles of series 220 replace series 212 which are still available on request.

Spray angle	Ordering no.				Orifice diam. (in.)	Free Passage (in.)	Mesh size Strainer (in.)	Flow Rate (Gallons Per Minute)								Spray Diam. D (in.) @ 72 psi 	Theoretical Spray Width @ 72.5 psi (5 bar) H=100mm
	Type	Material no.		Connection				30 psi	45 psi	5 bar	75 psi	100 psi	150 psi	300 psi			
		11 AISI 430F	1Y AISI 316L												Male 1/4\" NPT		
60°	220. 004	○	○	BC	.004	.004	.002	-	-	.013	.003	.004	.005	.007	4	100	
	220. 014	○	○	BC	.006	.006	.002	-	.004	.019	.005	.006	.007	.010	4	100	
80°	220. 085	○	○	BC	.010	.010	.004	.007	.008	.040	.011	.012	.015	.021	6	140	
	220. 125	○	○	BC	.014	.014	.004	.010	.013	.062	.016	.019	.023	.033	6	140	
	220. 145	○	○	BC	.016	.016	.004	.014	.017	.082	.022	.026	.031	.043	6	140	
	220. 165	○	○	BC	.018	.018	.004	.017	.021	.103	.027	.032	.039	.054	6	140	

Example Type + Material no. + Conn. = Ordering no.
for ordering: 220. 004 + 1Y + BC = 220. 004. 1Y. BC

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

*** Materials**

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

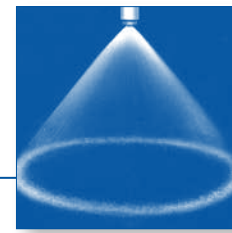
Hollow cone

Conversion formula for the above series: $V_2 = V_1 \sqrt{\frac{P_2}{P_1}}$
(See page 12 for symbol definitions.)





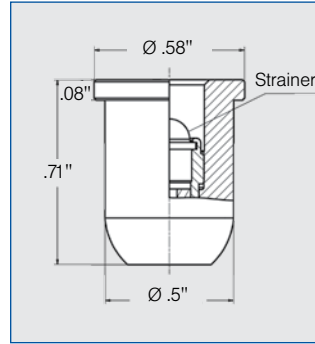
Hollow cone nozzles Axial-low flow for retaining nut Series 226




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

Applications:

- Disinfection
- Humidification
- Cooling



Spray angle	Ordering no.		Orifice diam. (in.)	Free Passage (in.)	Mesh size Strainer (in.)	Flow Rate (Gallons Per Minute)						Spray Diam. D (in.) @ 72 psi  H=4"	Theoretical Spray Width @ 72.5 psi (5 bar) H=100mm	
	Type	Material no. AISI 303*				30 psi		45 psi		liters per minute				
						5 bar	75 psi	100 psi	150 psi	300 psi				
60°	226. 004	○	.004	.004	.002	-	-	.013	.003	.004	.005	.007	4	100
	226. 014	○	.006	.006	.002	-	.004	.019	.005	.006	.007	.010	4	100
80°	226. 085	○	.010	.010	.004	.007	.008	.040	.011	.012	.015	.021	6	140
	226. 125	○	.014	.014	.004	.010	.013	.062	.016	.019	.023	.033	6	140
	226. 145	○	.016	.016	.004	.014	.017	.082	.022	.026	.031	.043	6	140
	226. 165	○	.018	.018	.004	.017	.021	.103	.027	.032	.039	.054	6	140

Hollow cone

Example Type + Material no. = Ordering no.
for ordering: 226. 004 + 16 = 220. 004. 16

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

*** Materials**

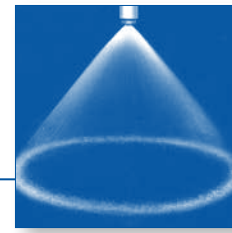
Mat. no.	Housing	Nozzle insert	Strainer
16	AISI 303	AISI 430F	AISI 316L



Hollow cone nozzles

Axial-flow

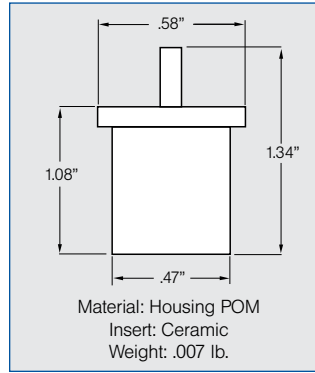
Series 2TR



Hollow cone nozzle with fine uniform spray. Assembly with retaining nut.

Applications:

- Humidification of air
- Cooling of gases
- Dust control
- Spraying onto filters



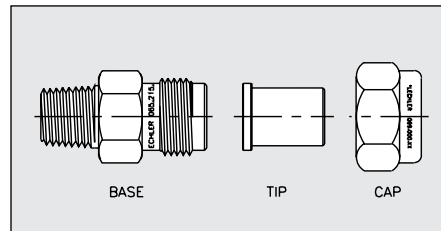
Hollow cone

Spray angle	Ordering no.	Color	Orifice diam. (in.)	Free Passage (in.)	Flow Rate (Gallons Per Minute)							Spray Diam. D (in.) @ 40 psi H=10"
					10 psi	20 psi	liters per minute 2 bar	40 psi	60 psi	80 psi	100 psi	
80°	2TR. 245. C8	Magenta	.026	.022	.02	.04	.16	.05	.06	.07	.08	18
	2TR. 275. C8	Black	.032	.028	.03	.05	.22	.07	.08	.10	.11	18
	2TR. 305. C8	Orange	.035	.032	.05	.07	.32	.10	.12	.14	.16	18
	2TR. 345. C8	Green	.043	.035	.07	.11	.48	.15	.18	.21	.24	18
	2TR. 365. C8	Yellow	.055	.037	.10	.14	.63	.20	.24	.28	.31	18
	2TR. 405. C8	Blue	.067	.043	.15	.21	.96	.30	.36	.42	.47	18
	2TR. 445. C8	Red	.079	.047	.20	.28	1.3	.39	.48	.55	.62	18
	2TR. 485. C8	Brown	.087	.051	.24	.34	1.6	.49	.60	.69	.77	18

Materials		
Material no.	Nozzle housing	Nozzle insert
C8	POM	Zirconium Oxide

Bases and Caps for Mounting

Inlet NPT Male	Outlet Male	Part No.	Standard Materials: 17 316 SS 30 Brass
1/4"	11/16 x 16	065. 215. XX. 10	
3/8"	11/16 x 16	065. 211. XX. 10	
1/4"	3/8 BSPP	065. 215. XX. 11	
3/8"	3/8 BSPP	065. 215. XX. 12	
Caps			Other materials available. See Accessories beginning on page 127.
To fit 11/16x16		069. 000. XX. 00	
To fit 3/8 BSPP		065. 200. XX. 00	

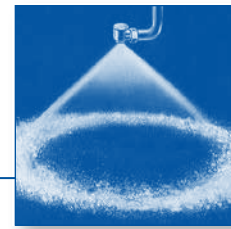


A listing of alternatives for various assembly possibilities is shown in the Accessories section beginning on page 127.





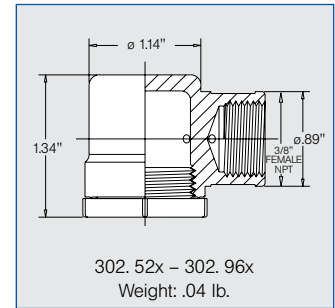
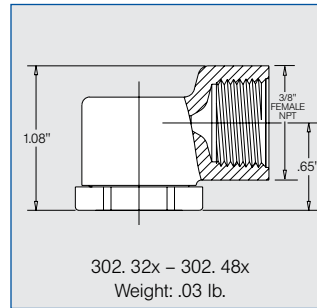
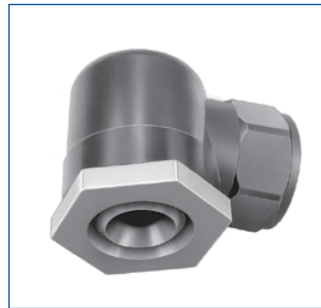
Hollow cone nozzles Tangential-flow Series 302 Plastic version



Uniform hollow cone spray using a clog-resistant design

Applications:

- Humidification
- Air washing
- Dust collectors
- Pasteurizer cooling lines
- Tunnel coolers



Spray angle	Ordering no.				Orifice diam. (in.)	Free Passage (in.)	Flow Rate (Gallons Per Minute)									Spray Diameter D (in.) @ 30 psi	
	Type	Material no.		Connection			10 psi	20 psi	liters per minute 2 bar	30 psi	40 psi	60 psi	80 psi	100 psi	H=10"	H=20"	
		Nylon	PE	Female 3/8" NPT													Female 3/8" BSPP
90°	302.326	○	-	-	00	.047	.035	.06	.09	.40	.11	.12	.15	.18	.20	16	28
	302.366	○	-	-	00	.050	.051	.10	.14	.63	.17	.20	.24	.28	.31	16	28
	302.406	○	-	-	00	.102	.055	.16	.22	1.0	.27	.31	.38	.44	.49	16	35
	302.526	○	○	BF	-	.197	.079	.31	.44	2.0	.54	.62	.76	.88	.98	16	35
	302.606	○	○	BF	-	.197	.126	.49	.69	3.2	.86	.98	1.2	1.4	1.5	18	37
	302.766	○	-	BF	-	.355	.169	1.2	1.8	8.0	2.2	2.5	3.0	3.5	3.9	20	41
	302.846	○	○	BF	-	.433	.205	1.9	2.7	12.5	3.4	3.9	4.8	5.5	6.1	22	45
	302.886	○	○	BF	-	.433	.252	2.5	3.5	16.0	4.3	5.0	6.1	7.0	7.8	22	45
302.966	○	-	BF	-	.433	.339	3.9	5.5	25.0	6.7	7.8	9.5	11.0	12.3	22	45	
130°	302.408	○	-	-	00	.144	.051	.16	.22	1.0	.27	.31	.38	.44	.49	28	54
	302.528	○	-	BF	-	.197	.079	.31	.44	2.0	.54	.62	.76	.88	.98	28	54
	302.608	○	-	BF	-	.197	.126	.49	.69	3.2	.86	.98	1.2	1.4	1.5	31	60
	302.648	-	○	BF	-	.296	.118	.62	.88	4.0	1.1	1.2	1.5	1.8	2.0	37	73
	302.728	○	-	BF	-	.296	.162	.98	1.4	6.3	1.7	2.0	2.4	2.8	3.1	37	73
	302.768	○	-	BF	-	.355	.169	1.2	1.8	8.0	2.2	2.5	3.0	3.5	3.9	37	73
	302.848	○	-	BF	-	.433	.205	1.9	2.7	12.5	3.7	3.9	4.8	5.5	6.1	37	73
	302.888	○	-	BF	-	.433	.252	2.5	3.5	16.0	4.3	5.0	6.1	7.0	7.9	37	73

Example Type + Material no. + Conn. = Ordering no.
for ordering: 302.566 + 51 + BF = 302.566.51.BF

Hollow cone

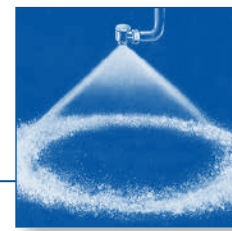
A listing of alternatives for various assembly possibilities is shown in the Accessories section beginning on page 127.

Conversion formula for the above series: $V_2 = V_1 \sqrt{\frac{P_2}{P_1}}$
(See page 12 for symbol definitions.)





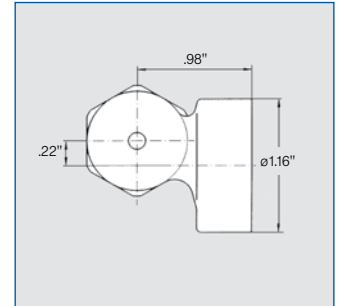
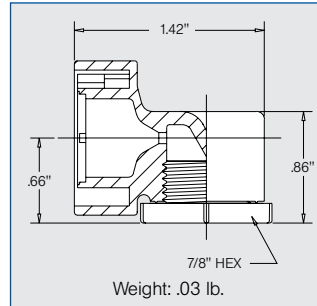
Hollow cone nozzles Tangential-flow TWISTLOC quick release mount Series 302 Plastic version



Uniform hollow cone spray using a clog-resistant design. Connects by hand with a quick twist.

Applications:

- Humidification
- Air washing
- Dust collectors
- Pasteurizer cooling lines
- Tunnel coolers



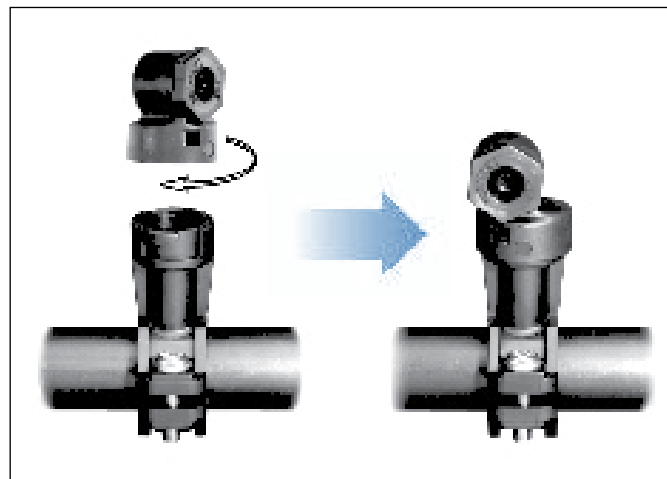
Hollow cone

Spray angle	Ordering no.				Orifice diam. (in.)	Free Passage (in.)	Flow Rate (Gallons Per Minute)								Spray Diameter D (in.) @ 30 psi	
	Type	Material no.		Conn.			10 psi	20 psi	liters per minute 2 bar	30 psi	40 psi	60 psi	80 psi	100 psi	H=10"	H=20"
		Nylon 51	POM 56													
45°	302.503	○	-	KB	.193	.081	.28	.39	1.8	.48	.56	.68	.79	.88	9	22
60°	302.464	-	○	KB	.150	.077	.22	.31	1.4	.38	.43	.53	.61	.69	12	22
80°	302.545	-	○	KB	.193	.091	.35	.49	2.2	.59	.70	.85	.98	1.10	16	28
90°	302.326	○	○	KB	.055	.041	.06	.09	.40	.11	.12	.15	.18	.20	16	28
	302.406	○	○	KB	.150	.061	.16	.22	1.0	.27	.31	.38	.44	.49	16	35
	302.486	○	-	KB	.150	.083	.25	.35	1.6	.43	.50	.61	.70	.78	16	35
	302.606	○	-	KB	.209	.116	.49	.69	3.2	.86	.98	1.2	1.4	1.5	19	35
130°	302.368	-	○	KB	.083	.051	.10	.14	.63	.17	.20	.24	.28	.31	28	54
	302.408	○	○	KB	.083	.079	.16	.22	1.0	.27	.31	.38	.44	.49	28	54
	302.468	○	-	KB	.110	.095	.22	.31	1.4	.38	.43	.53	.61	.69	28	54
	302.488	○	-	KB	.110	.108	.25	.35	1.6	.43	.50	.61	.70	.78	28	54

Example Type + Material no. + Conn. = Ordering no.
for ordering: 302. 408 + 51 + KB = 302. 408. 51. KB

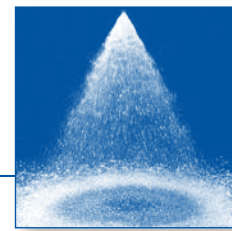
Plastic TWISTLOC mounting system

These nozzles mount by hand with a quarter turn using Lechler's TWISTLOC bases and accessories.





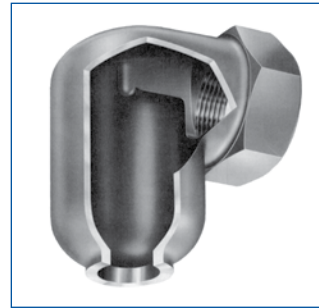
Hollow cone nozzles Tangential-flow Ramp Bottom® Series 373



Hollow cone spray with fine droplets and uniform distribution even at low pressure. Patented swirl chamber design with built-in ramp extends service life.

Applications:

- Wet scrubbers
- Gas cooling and conditioning
- Dust suppression
- Chemical reactors
- Spray pond cooling



Inlet (Female NPT)	Dimensions (in.)				Wt. (lb.)
	A	B (Hex)	C	D	
1	2.62	1-5/8	2.05	1.78	.8
1-1/4	3.03	1-7/8	2.56	2.00	1.4
1-1/2	3.81	2-3/16	3.19	2.56	2.4
2	4.25	2-13/16	3.69	2.81	3.1
3	6.03	4	4.62	4.50	17

Type	Ordering no.					Orifice diam. (in.)	Flow Rate (Gallons Per Minute)								Spray Angle in degrees at				
	Mat. no.	Connection					liters per minute								5 psi	15 psi	40 psi		
		316 SS 17	Female NPT					5 psi	10 psi	15 psi	20 psi	2 bar	40 psi	60 psi				80 psi	100 psi
373. 115	○	BN	-	-	-	-	0.45	6.6	9.3	11	13	60	19	23	26	29	64	64	71
373. 175	○	BN	-	-	-	-	0.52	9.4	13	16	19	85	27	32	37	42	80	80	82
373. 235	○	-	BQ	-	-	-	0.64	13	19	23	27	121	38	46	53	59	66	66	75
373. 285	○	-	BQ	-	-	-	0.74	18	26	32	37	167	52	63	73	82	80	80	84
373. 325	○	-	-	BS	-	-	0.8	21	30	37	43	196	61	74	86	96	80	80	85
373. 365	○	-	-	BS	-	-	0.95	27	39	47	54	248	77	94	109	122	74	74	77
373. 445	○	-	-	-	BW	-	1.14	45	63	77	89	406	126	154	178	199	77	77	80
373. 465	○	-	-	-	BW	-	1.21	51	72	88	101	461	143	175	202	226	82	82	90
373. 514	○	-	-	-	-	MB	1.45	65	92	112	129	590	183	224	259	289	56*	62**	-
373. 554	○	-	-	-	-	MB	1.62	81	115	141	163	741	230	282	325	364	62*	68**	-

* degree is for 3 psi

** degree is for 7 psi

Example for ordering: Type 373. 325 + Material no. 17 + Conn. BS = Ordering no. 373. 325. 17. BS

This product line is also available in larger capacities with inlets up to 6" in size. Please contact Lechler if you have an application requiring a larger size.

A listing of alternatives for various assembly possibilities is shown in the Accessories section beginning on page 127.

Conversion formula for the above series: $V_2 = V_1 \sqrt{\frac{P_2}{P_1}}$
(See page 12 for symbol definitions.)



Hollow cone