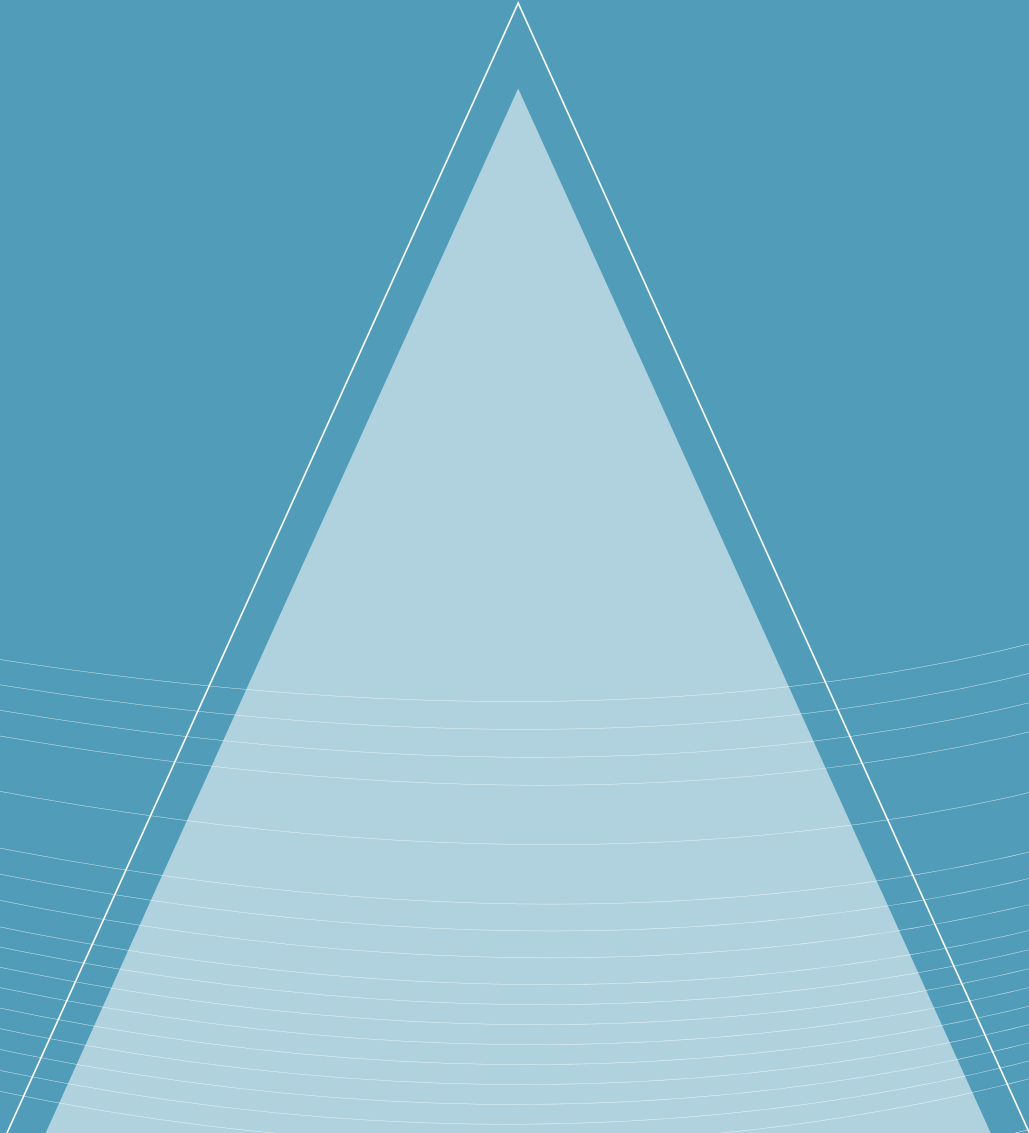
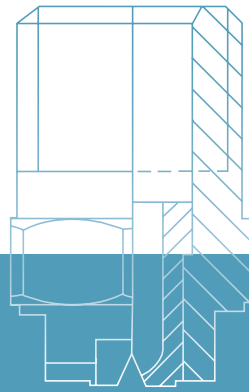
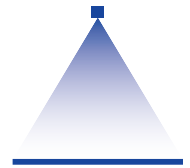


FLAT FAN NOZZLES

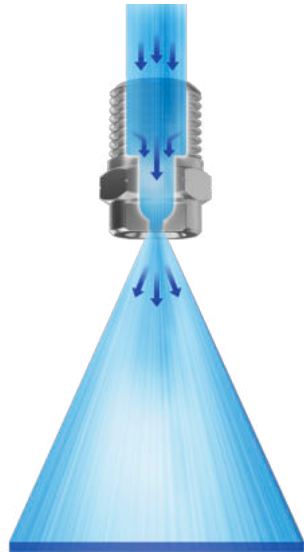


FLAT FAN NOZZLES OVERVIEW OF TYPES



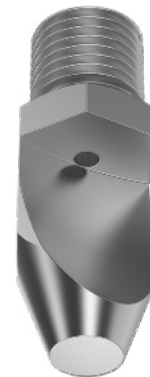
Lechler flat fan nozzles produce evenly distributed jets of water. Flat fan nozzles are generally used in cleaning processes and throughout many areas of surface treatment. Numerous designs – including tongue-type nozzles for special applications – and extensive assembly accessories enable easy installation as well as quick nozzle changeovers.

Standard flat fan nozzles



- Particularly high-energy spray with spray angles of up to 120°
- Parabolic liquid distribution
- Unaffected by transient pressures
- Simple and cost-saving assembling options

Tongue-type nozzles



- Special design in which a solid stream is diverted by a deflector plate
- Powerful, sharply delimited spray
- Shape of the deflector plate determines the spray angle
- Clog resistant due to large free cross-sections

Spray angle in degrees



Flow rate in US gal/min at 40 psi

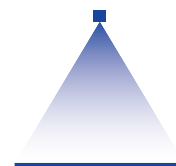
Conversion: Value · 3.22 = flow rate in l/min at 2 bar










example: 0.2 gal/min at 40 psi = 0.644 l/min at 2 bar

Good to know

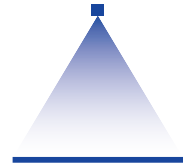
Information on the arrangement of several flat fan nozzles can be found in Chapter "Planning Aids" on page 27.

FLAT FAN NOZZLES OVERVIEW OF SERIES










		Standard flat fan nozzles					
							
Series		632/633	610	612	616/617	621	
Information on page		201	204	206	209	upon request	
Pressure range	Low pressure	•	•	•	•	•	
	High pressure						
 Flow rate at p = 75 psi	Low < 1.06 gal/min	•	•	•			
	Medium 1.06 gal/min–4.23 gal/min	•	•	•	•		
	High 4.23 gal/min–13.21 gal/min	•		•	•		
	Very high > 13.21 gal/min				•	•	
 Spray angle	Small 20°–45°	•	•	•	•	•	
	Medium 60°–90°	•	•	•	•	•	
	Large 120°–140°	•	•	•	•		
 Nozzle material	Stainless steel	•	•	•	•		
	Brass	•	•	•	•		
	Plastic	•				•	
 Nozzle connection		1/8 NPT 1/4 NPT 3/8 NPT 1/2 NPT	1/8 NPT	1/4 NPT	3/4 NPT	1-1/4 BSPP	

















Standard flat fan nozzles

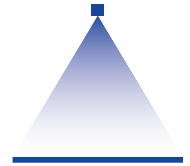
							
	625	612.xxx.5E.03 Press-in nozzle	672/673	652	656/657	684	686
	upon request	209	210	214	217	217	218
	•	•	•	•	•	•	•
		• (at p = 30 psi)	•	•		•	•
			•	•	•	•	•
			•	•	•		•
	•		•		•		
	•		•	•	•		
	•	•	•	•	•		•
	•	•	•	•	•	•	•
		•	•	•	•		•
			•	•	•		•
	•	•		•		•	•
	2 BSPP	For pressing into pipes	For pressing into pipes	Assembly with retaining nut 3/8 BSPP	Assembly with retaining nut 3/4 BSPP	Assembly with retaining nut 3/8 BSPP	1/4 NPT 1/8 NPT 3/8 NPT 1/2 NPT



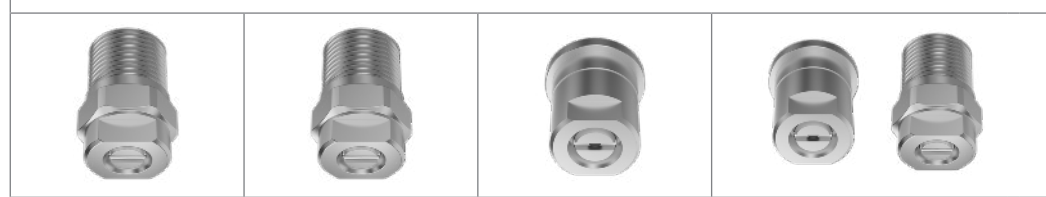
		Standard flat fan nozzles			
					
Series		688/689	680	690	676
Information on page		220	221	222	226
Pressure range	Low pressure	•	•	•	•
	High pressure				
 Flow rate at p = 75 psi	Low < 4 gal/min	•	•	•	•
	Medium 1.06 gal/min–4.23 gal/min	•	•	•	•
	High 4.23 gal/min–13.21 gal/min	•	•	•	
	Very high > 13.21 gal/min				
 Spray angle	Small 20°–45°	•	•	•	•
	Medium 60°–90°		•	•	•
	Large 120°–140°				•
 Nozzle material	Stainless steel	•	•	•	•
	Brass				•
	Plastic	•			
 Nozzle connection		3/8 NPT 3/4 NPT	5/8 - 18 UNF	Assembly with retaining nut BSPP	Assembly with retaining nut Welded nipple Threaded nipple Threaded socket





Standard flat fan nozzles

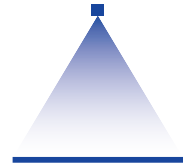
			
660	664/665	6M2	686.XXX.WW.08
226	229	by request	by request
•	•	•	
			•
•	•	•	•
•	•	•	•
	•	•	•
	•		
•	•	•	
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	
Assembly with retaining nut 3/8 BSPP and dovetail guide	Assembly with retaining nut 3/8 BSPP and dovetail guide	Assembly with retaining nut Weld nipple	Assembly with retaining nut Weld nipple







High pressure flat fan nozzles



Series		602	608	652	6FH with spray stabilizer
Information on page		234	235	236	237
Pressure range	Low pressure				
	High pressure	●	●	●	●
 Flow rate at p = 75 psi	Low < 4 gal/min				
	Medium 1.06 gal/min–4.23 gal/min	● (at p = 1160 psi)	● (at p = 1160 psi)	● (at p = 1160 psi)	● (at p = 1160 psi)
	High 4.23 gal/min–13.21 gal/min	● (at p = 1160 psi)	● (at p = 1160 psi)	● (at p = 1160 psi)	● (at p = 1160 psi)
	Very high > 13.21 gal/min	● (at p = 1160 psi)		● (at p = 1160 psi)	● (at p = 1160 psi)
 Spray angle	Small 20°–45°	●	●	●	●
	Medium 60°–90°	●	●	●	●
	Large 120°–140°				
 Nozzle material	Stainless steel	●	●	●	●
	Brass				
	Plastic				
 Nozzle connection		1/4 BSPT 1/4 NPT	1/8 BSPT 1/8 NPT	Assembly with retaining nut 3/8 BSPP	1/8 BSPT 1/8 NPT 1/4 BSPT 1/4 NPT Assembly with retaining nut 3/8 BSPP

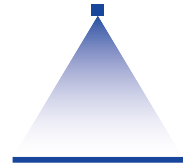


Surface technology flat fan nozzles

Surface technology flat fan nozzles					
					
652 Belt lubrication nozzle	564	646	676/677 MEMOSPRAY	676 Easy-Clip	
239	238	239	243	247	
•		•	•	•	
	•				
• (at p = 45 psi)		•			
	•	•	• (at p = 30 psi)	• (at p = 30 psi)	
			• (at p = 30 psi)	• (at p = 30 psi)	
		•	•		
•	•		•	•	
•	•		•		
•	•	•	•		
•		•	•	•	
Assembly with retaining nut 3/8 BSPP	1/4 NPT	Assembly with bayonet quick-release system	Eyelet clamps for following pipe sizes: 1 1 1/4 1 1/2 2	Eyelet clamps for following pipe sizes: 1 1 1/4 1 1/2 2	

Low pressure flat fan nozzles

Series 632/633



Features:

- Uniform, parabolic liquid distribution
- Stable spray angle
- Tapered, self-sealing thread

Applications:

- Spray cleaning
- Surface cleaning
- Strainer insert cleaning
- Coating processes
- Belt cleaning
- Lubrication processes



Series 632/633

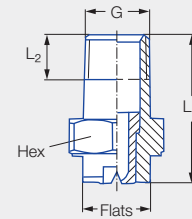


Figure 1

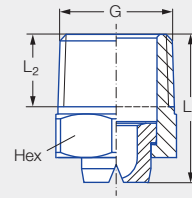


Figure 2

Connection	Figure	G	Dimensions [in]				Weight [lb] (Brass)
			L ₁	L ₂	Hex (mm)	Flats (mm)	
BA	1	1/8 NPT	0.87	0.26	14	10	0.037
BC	1	1/4 NPT	0.87	0.38	14	10	0.044
BE	2	3/8 NPT	0.87	0.40	17	–	0.066
BG	2	1/2 NPT	1.06	0.52	22	–	0.088

Spray angle	Type	Ordering number								Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]								Spray width B [in] (at p = 75 psi)			
		Material number				Connection						p [psi]											
		16 ¹	17 ²	30	5E	1/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT			7	15	30	45	75	liters per minute	100	145			H = 10 [in]	H = 20 [in]
		Stainless steel 303/ Stainless steel 304	Stainless steel 316Ti/ Stainless steel 316L	Brass	PVDF												5 bar						
20°	632.301	●	●	●	●	BA	BC			0.03	0.02	0.04*	0.06*	0.09	0.11	0.14	0.51	0.16	0.19	3	6		
	632.361	●	●	●	●	BA	BC			0.04	0.03	0.08*	0.12*	0.17	0.21	0.27	1.00	0.31	0.37	3	6		
	632.441	●	●	●	●	BA	BC			0.05	0.04	0.16*	0.24	0.34	0.41	0.53	1.98	0.61	0.74	3	6		
	632.481	●	●	●	●	BA	BC			0.06	0.05	0.21*	0.30	0.43	0.53	0.68	2.53	0.78	0.95	3	6		
30°	632.302	●	●	●	●	BA	BC			0.02	0.02	0.04*	0.06*	0.09	0.11	0.14	0.51	0.16	0.19	5	9		
	632.362	●	●	●	●	BA	BC			0.04	0.03	0.08*	0.12*	0.17	0.21	0.27	1.00	0.31	0.37	5	9		
	632.402	●	●	●	●	BA	BC			0.05	0.035	0.13*	0.19	0.27	0.33	0.42	1.58	0.49	0.59	5	9		
	632.482	●	●	●	●	BA	BC			0.06	0.04	0.21*	0.30	0.43	0.53	0.68	2.53	0.78	0.95	5	9		
	632.562	●	●	●	●	BA	BC			0.08	0.06	0.32	0.47	0.67	0.82	1.06	3.95	1.23	1.48	5	9		
	632.642	●	●	●			BC			0.10	0.07	0.52	0.76	1.08	1.32	1.70	6.33	1.96	2.36	6	10		
	632.722	●	●	●			BC			0.12	0.09	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	6	10		
	632.762	●	●	●			BC			0.14	0.11	1.04	1.52	2.15	2.63	3.30	12.65	3.92	4.73	6	10		
	632.802	●	●	●			BC			0.16	0.12	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	6	10		
	632.882	●	●	●				BG		0.20	0.16	2.08	3.04	4.30	5.26	6.80	25.32	7.85	9.45	6	10		
	632.922	●	●	●				BG		0.22	0.17	2.60	3.80	5.37	6.58	8.49	31.65	9.81	11.81	6	10		
	632.962	●	●	●				BG		0.24	0.19	3.24	4.75	6.71	8.22	10.62	39.52	12.26	14.76	6	10		
633.002	●						BG		0.28	0.22	4.09	5.99	8.46	10.37	13.38	49.82	15.45	18.61	6	10			

* Differing spray pattern.

¹ We reserve the right to supply material 303 or 304 under material no. 16.

² We reserve the right to supply material 316Ti or 316L under material no. 17.

Spray angle	Ordering number								Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]										Spray width B [in] (at p = 75 psi)		
	Type	Material number				Connection					p [psi]										H = 10 [in]	H = 20 [in]	
		16 ¹	17 ²	30	5E	1/8 NPT	1/4 NPT	3/8 NPT			1/2 NPT						liters per minute						
		Stainless steel 303/ Stainless steel 304	Stainless steel 316Ti/ Stainless steel 316L	Brass	PVDF							7	15	30	45	75		5 bar	100	145			
45°	632.303	●	●	●	●	BA	BC			0.03	0.02	0.04*	0.06*	0.09	0.11	0.14	0.51	0.16	0.19	7	13		
	632.363	●	●	●	●	BA	BC			0.04	0.023	0.08*	0.12*	0.17	0.21	0.27	1.00	0.31	0.37	7	14		
	632.403	●	●	●	●	BA	BC			0.05	0.035	0.13*	0.19	0.27	0.33	0.42	1.58	0.49	0.59	8	15		
	632.483	●	●	●	●	BA	BC			0.06	0.04	0.21*	0.30	0.43	0.53	0.68	2.53	0.78	0.95	8	15		
	632.563	●	●	●	●	BA	BC			0.08	0.06	0.32	0.47	0.67	0.82	1.06	3.95	1.23	1.48	8	16		
	632.643	●	●	●	●	BA	BC			0.10	0.07	0.52	0.76	1.08	1.32	1.70	6.33	1.96	2.36	9	16		
	632.673	●	●	●	●		BC	BE			0.11	0.08	0.62	0.90	1.28	1.56	2.02	7.51	2.33	2.81	9	17	
	632.723	●	●	●	●		BC	BE			0.12	0.09	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	9	17	
	632.763	●	●	●	●		BC	BE			0.14	0.10	1.04	1.52	2.15	2.63	3.30	12.65	3.92	4.73	9	17	
	632.803	●	●	●	●		BC	BE	BG		0.16	0.12	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	9	17	
	632.843	●	● ¹	●	●		BC		BG		0.18	0.13	1.62	2.37	3.36	4.11	5.31	19.76	6.13	7.38	9	17	
	632.883	● ¹	● ¹	● ¹	● ³		BC		BG		0.20	0.15	2.08	3.04	4.30	5.26	6.80	25.30	7.85	9.45	9	17	
632.923	●	●	●	●				BG		0.22	0.165	2.60	3.80	5.37	6.58	8.49	31.62	9.81	11.81	9	17		
632.963	●	●	●	●				BG		0.24	0.173	3.24	4.75	6.72	8.23	10.62	39.53	12.26	14.77	9	17		
60°	632.304	●	●	●	●	BA	BC			0.03	0.016	0.04*	0.06*	0.09	0.11	0.14	0.51	0.16	0.19	10	19		
	632.334	●	●	●	●	BA	BC			0.035	0.02	0.06*	0.09*	0.12	0.15	0.19	0.71	0.22	0.27	10	19		
	632.364	●	●	●	●	BA	BC			0.04	0.022	0.08*	0.12*	0.17	0.20	0.26	1.00	0.31	0.37	10	20		
	632.404	●	●	●	●	BA	BC			0.047	0.03	0.13*	0.19	0.27	0.33	0.42	1.58	0.49	0.59	10	20		
	632.444	●	●	●	●	BA	BC			0.05	0.035	0.16*	0.24	0.34	0.41	0.53	1.98	0.61	0.74	10	20		
	632.484	●	●	●	● ³	BA	BC			0.06	0.04	0.21*	0.30	0.43	0.53	0.68	2.53	0.78	0.95	10	20		
	632.514	●	●	●	●	BA	BC			0.065	0.043	0.25*	0.36	0.51	0.62	0.81	3.00	0.93	1.12	11	20		
	632.564	●	●	●	●	BA	BC			0.08	0.05	0.32	0.47	0.67	0.82	1.06	3.95	1.23	1.48	11	21		
	632.604	●	●	●	●	BA	BC			0.09	0.06	0.41	0.60	0.85	1.04	1.34	4.98	1.54	1.86	11	21		
	632.644	●	●	●	● ³		BC	BE			0.10	0.063	0.52	0.76	1.08	1.32	1.70	6.33	1.96	2.36	11	21	
	632.674	●	●	●	● ³		BC	BE			0.11	0.07	0.62	0.90	1.28	1.56	2.02	7.51	2.33	2.81	11	22	
	632.724	●	●	●	● ³		BC	BE			0.12	0.08	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	11	22	
	632.764	●	●	●	●		BC	BE			0.14	0.09	1.04	1.52	2.15	2.63	3.30	12.65	3.92	4.73	11	22	
	632.804	●	●	●	● ³		BC		BG		0.16	0.10	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	11	23	
	632.844	●	●	●	● ³		BC		BG		0.18	0.12	1.62	2.37	3.36	4.11	5.31	19.76	6.13	7.38	11	23	
	632.884	●	●	●	● ³		BC		BG		0.20	0.13	2.08	3.04	4.30	5.26	6.80	25.30	7.85	9.45	11	23	
	632.924	●	●	●	●				BG		0.22	0.16	2.60	3.80	5.37	6.58	8.49	31.62	9.81	11.81	11	23	
	632.964	●	●	●	●				BG		0.24	0.17	3.24	4.75	6.72	8.23	10.62	39.53	12.26	14.77	11	23	
633.004	●	●	●	●				BG		0.28	0.19	4.09	5.98	8.46	10.36	13.38	49.80	15.45	18.60	11	23		
633.044	●	●	●	●				BG		0.31	0.22	5.19	7.60	10.75	13.16	16.99	63.25	19.62	23.63	11	23		
633.084	●	●	●	●				BG		0.35	0.27	6.49	9.50	13.43	16.45	21.24	79.06	24.53	29.53	11	23		
75°	632.145	●		●		BA	BC			0.008	0.005	–	0.01*	0.014	0.017	0.021	0.08	0.025	0.03	15	27		
	632.165	●		●		BA	BC			0.008	0.005	–	0.01*	0.017	0.02	0.027	0.10	0.03	0.04	15	27		
	632.185	●		●		BA	BC			0.008	0.006	–	0.011*	0.02	0.03	0.035	0.13	0.04	0.05	15	27		
	632.215	●		●		BA	BC			0.016	0.008	–	0.02*	0.03	0.04	0.05	0.18	0.06	0.07	15	27		
	632.245	●		●		BA	BC			0.02	0.012	–	0.03*	0.04	0.05	0.07	0.26	0.08	0.10	15	27		
	632.275	●		●		BA	BC			0.023	0.012	0.03*	0.04*	0.06	0.07	0.09	0.35	0.11	0.13	15	27		

* Differing spray pattern.

¹ We reserve the right to supply material 303 or 304 under material no. 16.

² We reserve the right to supply material 316Ti or 316L under material no. 17.

³ Only available with Code BC.





Spray angle	Ordering number										Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]							Spray width B [in] (at p = 75 psi)		
	Type	Material number				Connection				p [psi]							H = 10 [in]	H = 20 [in]				
		16 ¹	17 ²	30	5E	1/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT	7			15	30	45	75			liters per minute 5 bar	100	145	
		Stainless steel 303/ Stainless steel 304	Stainless steel 316Ti/ Stainless steel 316L	Brass	PVDF																	
90°	632.216	●		●		BA	BC			0.016	0.008	–	0.02*	0.03	0.04	0.05	0.18	0.06	0.07	17	31	
	632.276	●		●		BA	BC			0.02	0.012	0.03*	0.04*	0.06	0.07	0.09	0.35	0.11	0.13	17	31	
	632.306	●	●	●	●	BA	BC			0.03	0.016	0.04*	0.06*	0.09	0.11	0.14	0.51	0.16	0.19	17	31	
	632.336	●	●	●	●	BA	BC			0.035	0.02	0.06*	0.09*	0.12	0.15	0.19	0.71	0.22	0.27	17	32	
	632.366	●	●	●	●	BA	BC			0.04	0.023	0.08*	0.12*	0.17	0.21	0.27	1.00	0.31	0.37	18	33	
	632.406	●	●	●	●	BA	BC			0.047	0.028	0.13*	0.19	0.27	0.33	0.42	1.58	0.49	0.59	18	33	
	632.446	●	●	●	●	BA	BC			0.05	0.03	0.16*	0.24	0.34	0.41	0.53	1.98	0.61	0.74	18	34	
	632.486	●	●	●	●	BA	BC			0.06	0.03	0.21*	0.30	0.43	0.53	0.68	2.53	0.78	0.95	19	34	
	632.516	●	●	●	●	BA	BC			0.065	0.035	0.25*	0.36	0.51	0.62	0.81	3.00	0.93	1.12	19	35	
	632.566	●	●	●	●	BA	BC			0.08	0.04	0.32	0.47	0.67	0.82	1.06	3.95	1.23	1.48	19	35	
	632.606	●	●	●	●	BA	BC			0.09	0.047	0.41	0.60	0.85	1.04	1.34	4.98	1.54	1.86	20	36	
	632.646	●	●	●	● ³		BC	BE			0.10	0.05	0.52	0.76	1.08	1.32	1.70	6.33	1.96	2.36	20	37
	632.676	●	●	●	● ³		BC	BE			0.11	0.06	0.62	0.90	1.28	1.56	2.02	7.51	2.33	2.81	20	37
	632.726	●	●	●	● ³		BC	BE			0.12	0.067	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	20	39
	632.766	●	●	●	● ³		BC	BE			0.14	0.07	1.04	1.52	2.15	2.63	3.40	12.65	3.92	4.73	21	39
	632.806	●	●	●	● ³		BC	BG			0.16	0.09	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	21	41
	632.846	●	●	●	● ³		BC	BG			0.18	0.09	1.62	2.37	3.36	4.11	5.31	19.76	6.13	7.38	21	41
	632.886	●	●	●	● ³		BC	BG			0.20	0.12	2.08	3.04	4.30	5.26	6.80	25.30	7.85	9.45	21	42
632.926	●	●	●	● ³		BC	BG			0.22	0.14	2.60	3.80	5.37	6.58	8.49	31.62	9.81	11.81	21	42	
632.966	●	●	●				BG			0.24	0.15	3.24	4.75	6.72	8.23	10.62	39.53	12.26	14.77	21	42	
120°	632.187	●		●		BA	BC			0.01	0.008	–	0.011*	0.02	0.03	0.035	0.13	0.04	0.05	25	42	
	632.217	●		●		BA	BC			0.016	0.008	–	0.02*	0.03	0.04	0.05	0.18	0.06	0.07	26	43	
	632.247	●		●		BA	BC			0.02	0.008	–	0.03*	0.04	0.05	0.07	0.26	0.08	0.10	26	43	
	632.277	●		●		BA	BC			0.024	0.012	0.03*	0.04*	0.06	0.07	0.09	0.35	0.11	0.13	17	45	
	632.307	●	●	●	●	BA	BC			0.03	0.012	0.04*	0.06*	0.09	0.11	0.14	0.51	0.16	0.19	17	49	
	632.337	●	●	●	●	BA	BC			0.035	0.016	0.06*	0.09*	0.12	0.15	0.19	0.71	0.22	0.27	17	53	
	632.367	●	●	●	●	BA	BC			0.04	0.02	0.08*	0.12*	0.17	0.21	0.27	1.00	0.31	0.37	18	56	
	632.407	●	●	●	●	BA	BC			0.047	0.024	0.13*	0.19	0.27	0.33	0.42	1.58	0.49	0.59	18	58	
	632.447	●	●	●	●	BA	BC			0.05	0.024	0.16*	0.24	0.34	0.41	0.53	1.98	0.61	0.74	18	60	
	632.487	●	●	●	●	BA	BC			0.06	0.024	0.21*	0.30	0.43	0.53	0.68	2.53	0.78	0.95	19	61	
	632.517	●	●	●	●	BA	BC			0.065	0.035	0.25*	0.36	0.51	0.62	0.81	3.00	0.93	1.12	19	61	
	632.567	●	●	●	●	BA	BC			0.08	0.035	0.32	0.47	0.67	0.82	1.06	3.95	1.23	1.48	19	63	
	632.607	●	●	●	●	BA	BC			0.09	0.04	0.41	0.59	0.83	1.02	1.32	4.98	1.56	1.86	34	64	
	632.647	●	●	●			BC	BE			0.10	0.05	0.53	0.75	1.06	1.29	1.67	6.33	1.98	2.36	35	65
	632.677	●	●	●	● ³		BC	BE			0.11	0.055	0.63	0.89	1.25	1.54	1.98	7.51	2.35	2.81	35	65
	632.727	●	●	●	● ³		BC	BE			0.12	0.06	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	35	66
	632.767	●	●	●	● ³		BC	BE			0.14	0.07	1.06	1.50	2.11	2.59	3.34	12.65	3.95	4.73	35	67
	632.807	●	●	●			BC	BG			0.16	0.08	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	35	67
	632.847	●	●	●	● ³		BC	BG			0.18	0.09	1.62	2.37	3.36	4.11	5.31	19.76	6.13	7.38	35	67
	632.887	●	●	●				BG			0.20	0.10	2.08	3.04	4.30	5.26	6.80	25.30	7.85	9.45	36	67
632.927	●	●	●				BG			0.22	0.11	2.60	3.80	5.37	6.58	8.49	31.62	9.81	11.81	36	67	

* Differing spray pattern.

¹ We reserve the right to supply material 303 or 304 under material no. 16.

² We reserve the right to supply material 316Ti or 316L under material no. 17.

³ Only available with Code BC.

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

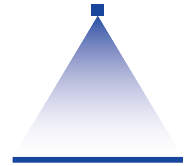
Ordering Type + Material no. + Code = Ordering no.
example: 632.216 + 16 + BA = 632.216.16.BA



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

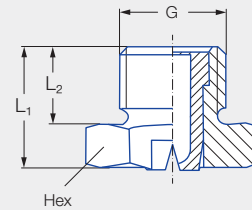
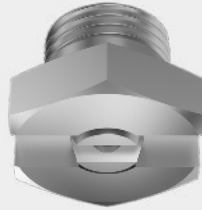
Low pressure flat fan nozzles

Series 610



Features:

- Uniform, parabolic liquid distribution
- Stable spray angle
- Compact design for narrow installation conditions



Applications:

- Spray cleaning
- Surface cleaning
- Strainer insert cleaning
- Coating processes
- Belt cleaning
- Lubrication processes

Series 610

G	Dimensions [in]			Weight [lb] Brass
	L ₁	L ₂	Hex (mm)	
1/8 BSPP	0.43	.028	14	0.02

Spray angle	Ordering number		Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]									Spray width B [in] (at p = 75 psi)				
	Type	Material number			p [psi]													
		16			30						liters per minute			H = 10 [in]	H = 20 [in]			
		Stainless steel 303			Brass	7	15	30	45	75	5 bar	100	145					
20°	610.301	●	●	0.03	0.02	0.04*	0.06*	0.08	0.11	0.13	0.51	0.16	0.19	3	6			
	610.361	●	●	0.04	0.03	0.08*	0.12*	0.17	0.20	0.26	1.00	0.31	0.37	3	6			
	610.441	●	●	0.05	0.04	0.16*	0.24	0.34	0.41	0.53	1.98	0.61	0.74	3	6			
	610.481	●	●	0.06	0.05	0.21*	0.30	0.43	0.53	0.68	2.53	0.78	0.95	3	6			
30°	610.302	●	●	0.03	0.02	0.04*	0.06*	0.08	0.11	0.13	0.51	0.16	0.19	5	9			
	610.362	●	●	0.04	0.03	0.08*	0.12*	0.17	0.20	0.26	1.00	0.31	0.37	5	9			
	610.402	●	●	0.05	0.035	0.13*	0.19	0.27	0.33	0.42	1.58	0.49	0.59	5	9			
	610.482	●	●	0.06	0.04	0.21*	0.30	0.43	0.53	0.68	2.53	0.78	0.95	5	9			
	610.562	●	●	0.08	0.06	0.32	0.47	0.67	0.82	1.06	3.95	1.23	1.48	5	9			
45°	610.303	●	●	0.03	0.019	0.04*	0.06*	0.08	0.11	0.13	0.51	0.16	0.19	7	13			
	610.363	●	●	0.04	0.02	0.08*	0.12*	0.17	0.20	0.26	1.00	0.31	0.37	7	14			
	610.403	●	●	0.05	0.035	0.13*	0.19	0.27	0.33	0.42	1.58	0.49	0.59	8	15			
	610.483	●	●	0.06	0.04	0.21*	0.30	0.43	0.53	0.68	2.53	0.78	0.95	8	15			
	610.563	●	●	0.08	0.06	0.32	0.47	0.67	0.82	1.06	3.95	1.23	1.48	8	16			
	610.643	●	●	0.09	0.07	0.52	0.76	1.08	1.32	1.70	6.33	1.96	2.36	9	16			

* Differing spray pattern.
NPT version available by request






Spray angle	Ordering number			Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]								Spray width B [in] (at p = 75 psi)	
	Type	Material number				p [psi]									
		16	30			7	15	30	45	75	liters per minute 5 bar	100	145		
		Stainless steel 303	Brass												
60°	610.304	●	●	0.03	0.015	0.04*	0.06*	0.09	0.11	0.13	0.51	0.16	0.19	10	19
	610.334	●	●	0.035	0.02	0.06*	0.09*	0.12	0.15	0.19	0.71	0.22	0.27	10	19
	610.364	●	●	0.04	0.023	0.08*	0.12*	0.17	0.20	0.26	1.00	0.31	0.37	10	20
	610.404	●	●	0.047	0.03	0.13*	0.19	0.24	0.33	0.42	1.58	0.49	0.59	10	20
	610.444	●	●	0.05	0.035	0.16*	0.24	0.34	0.41	0.53	1.98	0.61	0.74	10	20
	610.484	●	●	0.06	0.04	0.21*	0.30	0.43	0.53	0.68	2.53	0.78	0.95	10	20
	610.514	●	●	0.065	0.043	0.25*	0.36	0.51	0.62	0.81	3.00	0.93	1.12	11	20
	610.564	●	●	0.08	0.05	0.32	0.47	0.67	0.82	1.06	3.95	1.23	1.48	11	21
610.604	●	●	0.09	0.06	0.41	0.60	0.85	1.04	1.34	4.98	1.54	1.86	11	21	
75°	610.145	●	●	0.008	0.004	–	0.01*	0.014	0.017	0.021	0.08	0.025	0.03	15	27
	610.165	●	●	0.008	0.005	–	0.01*	0.017	0.02	0.027	0.10	0.03	0.04	15	27
	610.185	●	●	0.008	0.006	–	0.011*	0.02	0.03	0.035	0.13	0.04	0.05	15	27
	610.215	●	●	0.016	0.008	–	0.02*	0.03	0.04	0.05	0.18	0.06	0.07	15	27
	610.245	●	●	0.02	0.012	–	0.03*	0.04	0.05	0.07	0.26	0.08	0.10	15	27
	610.275	●	●	0.023	0.012	0.03*	0.04*	0.06	0.07	0.09	0.35	0.11	0.13	15	27
90°	610.216	●	●	0.016	0.008	–	0.02*	0.03	0.04	0.05	0.18	0.06	0.07	17	31
	610.276	●	●	0.023	0.012	0.03*	0.04*	0.06	0.07	0.09	0.35	0.11	0.13	17	31
	610.306	●	●	0.03	0.015	0.04*	0.06*	0.08	0.11	0.13	0.51	0.16	0.19	17	31
	610.336	●	●	0.035	0.02	0.06*	0.09*	0.12	0.15	0.19	0.71	0.22	0.27	17	32
	610.366	●	●	0.04	0.02	0.08*	0.12*	0.17	0.20	0.26	1.00	0.31	0.37	18	33
	610.406	●	●	0.047	0.028	0.13*	0.19	0.24	0.33	0.42	1.58	0.49	0.59	18	33
	610.446	●	●	0.05	0.03	0.16*	0.24	0.34	0.41	0.53	1.98	0.61	0.74	18	34
	610.486	●	●	0.06	0.03	0.21*	0.30	0.43	0.53	0.68	2.53	0.78	0.95	19	34
	610.516	●	●	0.065	0.035	0.25*	0.36	0.51	0.62	0.81	3.00	0.93	1.12	19	35
	610.566	●	●	0.08	0.043	0.32	0.47	0.67	0.82	1.06	3.95	1.23	1.48	19	35
610.606	●	●	0.09	0.05	0.41	0.60	0.85	1.04	1.34	4.98	1.54	1.86	20	36	
120°	610.187	●	●	0.014	0.008	–	0.011*	0.02	0.03	0.035	0.13	0.04	0.05	15	42
	610.217	●	●	0.016	0.008	–	0.02*	0.03	0.04	0.05	0.18	0.06	0.07	15	43
	610.247	●	●	0.02	0.008	–	0.03*	0.04	0.05	0.07	0.26	0.08	0.10	15	43
	610.277	●	●	0.024	0.012	–	0.04*	0.06	0.07	0.09	0.35	0.11	0.13	15	45
	610.307	●	●	0.028	0.012	0.04*	0.06*	0.08	0.11	0.13	0.51	0.16	0.19	28	49
	610.337	●	●	0.03	0.015	0.06*	0.09*	0.12	0.15	0.19	0.71	0.22	0.27	29	53
	610.367	●	●	0.04	0.02	0.08*	0.12*	0.17	0.20	0.26	1.00	0.31	0.37	31	56
	610.407	●	●	0.047	0.023	0.13*	0.19	0.24	0.33	0.42	1.58	0.49	0.59	33	58
	610.447	●	●	0.05	0.023	0.16*	0.24	0.34	0.41	0.53	1.98	0.61	0.74	33	60
	610.487	●	●	0.06	0.023	0.21*	0.30	0.43	0.53	0.68	2.53	0.78	0.95	33	61
	610.517	●	●	0.065	0.035	0.25*	0.36	0.51	0.62	0.81	3.00	0.93	1.12	33	61
	610.567	●	●	0.08	0.035	0.32	0.47	0.67	0.82	1.06	3.95	1.23	1.48	34	63
	610.607	●	●	0.087	0.043	0.41	0.60	0.85	1.04	1.34	4.98	1.54	1.86	34	64

* Differing spray pattern.
NPT version available by request

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

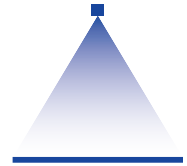
Ordering Type + Material no. = Ordering no.
example: 610.304 + 16 = 610.304.16

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



Low pressure flat fan nozzles

Series 612

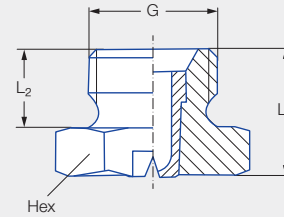


Features:

- Uniform, parabolic liquid distribution
- Stable spray angle
- Compact design for narrow installation conditions



Series 612



Applications:

- Spray cleaning
- Surface cleaning
- Strainer insert cleaning
- Coating processes
- Belt cleaning
- Lubrication processes

G	Dimensions [in]			Weight [lb] Brass
	L ₁	L ₂	Hex (mm)	
1/4 BSPP	.51	.31	17	.03

Spray angle	Ordering number				Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]										Spray width B [in] (at p = 75 psi)																																						
	Type	Material number					p [psi]																																																
		16	17 ¹	30			7					15							30					45					75					liters per minute					5 bar					100					145					H = 10 [in]	
		Stainless steel 303	Stainless steel 316Ti	Stainless steel 316L			Brass																																																
20°	612.301	●	●	●	0.03	0.02	0.04*	0.06*	0.09	0.11	0.14	0.51	0.16	0.19	3	6																																							
	612.361	●	●	●	0.04	0.03	0.08*	0.12*	0.17	0.21	0.27	1.00	0.31	0.37	3	6																																							
	612.441	●	●	●	0.05	0.04	0.16*	0.24	0.34	0.41	0.53	1.98	0.61	0.74	3	6																																							
	612.481	●	●	●	0.06	0.05	0.21*	0.30	0.43	0.53	0.68	2.53	0.78	0.95	3	6																																							
30°	612.302	●	●	●	0.02	0.02	0.04*	0.06*	0.09	0.11	0.14	0.51	0.16	0.19	5	9																																							
	612.362	●	●	●	0.04	0.03	0.08*	0.12*	0.17	0.21	0.27	1.00	0.31	0.37	5	9																																							
	612.402	●	●	●	0.05	0.035	0.13*	0.19	0.27	0.33	0.42	1.58	0.49	0.59	5	9																																							
	612.482	●	●	●	0.06	0.04	0.21*	0.30	0.43	0.53	0.68	2.53	0.78	0.95	5	9																																							
	612.562	●	●	●	0.08	0.06	0.32	0.47	0.67	0.82	1.06	3.95	1.23	1.48	5	9																																							
	612.642	●	●	●	0.10	0.07	0.52	0.76	1.08	1.32	1.70	6.33	1.96	2.36	6	10																																							
	612.722	●	●	●	0.12	0.09	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	6	10																																							
	612.762	●	●	●	0.14	0.11	1.04	1.52	2.15	2.63	3.40	12.65	3.92	4.73	6	10																																							
612.802	●	●	●	0.16	0.12	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	6	10																																								
45°	612.303	●	●	●	0.03	0.02	0.04*	0.06*	0.08	0.11	0.13	0.51	0.16	0.19	7	13																																							
	612.363	●	●	●	0.04	0.023	0.08*	0.12*	0.17	0.20	0.26	1.00	0.31	0.37	7	14																																							
	612.403	●	●	●	0.05	0.035	0.13*	0.19	0.26	0.32	0.42	1.58	0.49	0.59	8	15																																							
	612.483	●	●	●	0.06	0.04	0.21*	0.30	0.43	0.53	0.68	2.53	0.78	0.95	8	15																																							
	612.563	●	●	●	0.08	0.06	0.32	0.47	0.67	0.82	1.06	3.95	1.23	1.48	8	16																																							
	612.643	●	●	●	0.10	0.07	0.52	0.76	1.08	1.32	1.70	6.33	1.96	2.36	9	16																																							
	612.723	●	●	●	0.12	0.09	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	9	17																																							
	612.763	●	●	●	0.14	0.11	1.04	1.52	2.15	2.63	3.40	12.65	3.92	4.73	9	17																																							
612.803	●	●	●	0.16	0.12	1.30	1.90	2.69	3.24	4.25	15.81	4.90	5.91	9	17																																								

* Differing spray pattern.

¹ We reserve the right to supply material 316Ti or 316L under material no. 17.

NPT version available by request





Spray angle	Ordering number				Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]								Spray width B [in] (at p = 75 psi)	
	Type	Material number					p [psi]								H = 10 [in]	H = 20 [in]
		16	17 ¹	30			7	15	30	45	75	liters per minute 5 bar	100	145		
		Stainless steel 303	Stainless steel 316Ti Stainless steel 316L	Brass												
60°	612.304	●	●	●	0.03	0.016	0.04*	0.06*	0.09	0.11	0.14	0.51	0.16	0.19	10	19
	612.334	●	●	●	0.035	0.02	0.06*	0.09*	0.12	0.15	0.19	0.71	0.22	0.27	10	19
	612.364	●	●	●	0.04	0.024	0.08*	0.12*	0.17	0.21	0.27	1.00	0.31	0.37	10	20
	612.404	●	●	●	0.047	0.03	0.13*	0.19	0.27	0.33	0.42	1.58	0.49	0.59	10	20
	612.444	●	●	●	0.05	0.035	0.16*	0.24	0.34	0.41	0.53	1.98	0.61	0.74	10	20
	612.484	●	●	●	0.06	0.04	0.21*	0.30	0.43	0.53	0.68	2.53	0.78	0.95	10	20
	612.514	●	●	●	0.065	0.043	0.25*	0.36	0.51	0.62	0.81	3.00	0.93	1.12	11	20
	612.564	●	●	●	0.08	0.05	0.32	0.47	0.67	0.82	1.06	3.95	1.23	1.48	11	21
	612.604	●	●	●	0.09	0.06	0.41	0.60	0.85	1.04	1.34	4.98	1.54	1.86	11	21
	612.644	●	●	●	0.10	0.063	0.52	0.76	1.08	1.32	1.70	6.33	1.96	2.36	11	21
	612.674	●	●	●	0.11	0.07	0.63	0.89	1.25	1.54	1.98	7.51	2.35	2.81	11	22
	612.724	●	●	●	0.12	0.08	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	11	22
	612.764	●	●	●	0.14	0.09	1.04	1.52	2.15	2.63	3.40	12.65	3.92	4.73	11	22
612.804	●	●	●	0.16	0.10	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	11	23	
612.884	●	●	●	0.20	0.13	2.08	3.04	4.30	5.26	6.80	25.30	7.85	9.45	11	23	
75°	612.145	●		●	0.008	0.004	–	0.01*	0.014	0.017	0.021	0.08	0.025	0.03	15	27
	612.165	●		●	0.008	0.005	–	0.01*	0.017	0.02	0.027	0.10	0.03	0.04	15	27
	612.185	●		●	0.008	0.006	–	0.011*	0.02	0.03	0.035	0.13	0.04	0.05	15	27
	612.215	●		●	0.016	0.008	–	0.02*	0.03	0.04	0.05	0.18	0.06	0.07	15	27
	612.245	●		●	0.02	0.012	–	0.03*	0.04	0.05	0.07	0.26	0.08	0.10	15	27
612.275	●		●	0.024	0.012	0.03*	0.04	0.06	0.07	0.09	0.35	0.11	0.13	15	27	
90°	612.216	●		●	0.016	0.008	–	0.02*	0.03	0.04	0.05	0.18	0.06	0.07	17	31
	612.276	●		●	0.024	0.012	0.03*	0.04*	0.06	0.07	0.09	0.35	0.11	0.13	17	31
	612.306	●	●	●	0.03	0.016	0.04*	0.06*	0.09	0.11	0.14	0.51	0.16	0.19	17	31
	612.336	●	●	●	0.035	0.02	0.06*	0.09*	0.12	0.15	0.19	0.71	0.22	0.27	17	32
	612.366	●	●	●	0.04	0.028	0.08*	0.12*	0.17	0.21	0.27	1.00	0.31	0.37	18	33
	612.406	●	●	●	0.047	0.03	0.13*	0.19	0.27	0.33	0.42	1.58	0.49	0.59	18	33
	612.446	●	●	●	0.05	0.03	0.16*	0.24	0.34	0.41	0.53	1.98	0.61	0.74	18	34
	612.486	●	●	●	0.06	0.03	0.21*	0.30	0.43	0.53	0.68	2.53	0.78	0.95	19	34
	612.516	●	●	●	0.065	0.035	0.25*	0.36	0.51	0.62	0.81	3.00	0.93	1.12	19	35
	612.566	●	●	●	0.08	0.04	0.33	0.47	0.66	0.81	1.04	3.95	1.23	1.48	19	35
	612.606	●	●	●	0.09	0.047	0.41	0.60	0.85	1.04	1.34	4.98	1.54	1.86	20	36
	612.646	●	●	●	0.10	0.05	0.52	0.76	1.08	1.32	1.70	6.33	1.96	2.36	20	37
	612.676	●	●	●	0.11	0.06	0.62	0.90	1.28	1.56	2.02	7.51	2.33	2.81	20	37
	612.726	●	●	●	0.12	0.067	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	20	39
	612.766	●	●	●	0.14	0.07	1.04	1.52	2.15	2.63	3.40	12.65	3.92	4.73	21	39
612.806	●	●	●	0.16	0.09	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	21	41	

* Differing spray pattern.

¹ We reserve the right to supply material 316Ti or 316L under material no. 17.

NPT version available by request

Spray angle	Ordering number				Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]								Spray width B [in] (at p = 75 psi)	
	Type	Material number					p [psi]								H = 10 [in]	H = 20 [in]
		16	17 ¹	30			liters per minute	5 bar	100	145	100	145				
		Stainless steel 303	Stainless steel 316Ti/ Stainless steel 316L	Brass												
120°	612.187	●		●	0.014	0.008	–	0.011*	0.02	0.03	0.035	0.13	0.04	0.05	25	42
	612.217	●		●	0.016	0.008	–	0.02*	0.03	0.04	0.05	0.18	0.06	0.07	26	43
	612.247	●		●	0.02	0.008	–	0.03*	0.04	0.05	0.07	0.26	0.08	0.10	26	43
	612.277	●		●	0.024	0.012	0.03*	0.04*	0.06	0.07	0.09	0.35	0.11	0.13	26	45
	612.307	●		●	0.03	0.012	0.04*	0.06*	0.09	0.11	0.14	0.51	0.16	0.19	28	49
	612.337	●	●	●	0.035	0.016	0.06*	0.09*	0.12	0.15	0.19	0.71	0.22	0.27	29	53
	612.367	●	●	●	0.04	0.016	0.08*	0.12*	0.17	0.21	0.27	1.00	0.31	0.37	31	56
	612.407	●	●	●	0.047	0.02	0.13*	0.19	0.27	0.33	0.42	1.58	0.49	0.59	33	58
	612.447	●	●	●	0.05	0.02	0.16*	0.24	0.34	0.41	0.53	1.98	0.61	0.74	33	60
	612.487	●	●	●	0.06	0.02	0.21*	0.30	0.43	0.53	0.68	2.53	0.78	0.95	33	61
	612.517	●	●	●	0.065	0.035	0.25*	0.36	0.51	0.62	0.81	3.00	0.93	1.12	33	61
	612.567	●	●	●	0.08	0.035	0.32	0.47	0.67	0.82	1.06	3.95	1.23	1.48	34	63
	612.607	●	●	●	0.09	0.04	0.41	0.60	0.85	1.04	1.34	4.98	1.54	1.86	34	64
	612.647	●	●	●	0.10	0.05	0.52	0.76	1.08	1.32	1.70	6.33	1.96	2.36	35	65
	612.677	●	●	●	0.11	0.06	0.62	0.90	1.28	1.56	2.02	7.51	2.33	2.81	35	65
612.727	●	●	●	0.12	0.063	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	35	66	
612.767	●	●	●	0.14	0.07	1.04	1.52	2.15	2.63	3.40	12.65	3.92	4.73	35	67	
612.807	●		●	0.16	0.08	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	35	67	

* Differing spray pattern.

¹ We reserve the right to supply material 316Ti or 316L under material no. 17.
NPT version available by request

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

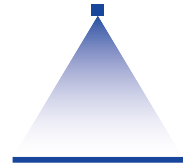
Ordering Type + Material no. = Ordering no.
example: 612.187 + 16 = 612.187.16



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

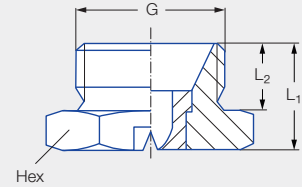
Low pressure flat fan nozzles

Series 616/617



Features:

- Uniform, parabolic liquid distribution
- Stable spray angle
- Compact design for narrow installation conditions



Series 616/617

Applications:

- Spray cleaning
- Surface cleaning
- Filter cleaning
- Coating processes
- Belt cleaning
- Lubrication processes

G	Dimensions [mm]			Weight [in] Brass
	L ₁	L ₂	Hex (mm)	
3/4 BSPP	0.75	0.47	32	0.17

Spray angle	Ordering number				Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]										Spray width B [in] (at p = 75 psi)	
	Type	Material number					p [psi]											
		16	17 ¹	30								liters per minute			H = 10 [in]	H = 20 [in]		
		Stainless steel 303	Stainless steel 316Ti/ Stainless steel 316L	Brass			7	15	30	45	75	5 bar	100	145				
20°	616.721	●	●	●	0.12	0.10	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	4	7		
	616.801	●	●	●	0.16	0.13	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	4	7		
	616.881	●	●	●	0.20	0.16	2.08	3.04	4.30	5.26	6.80	25.30	7.85	9.45	4	7		
	616.921	●	●	●	0.22	0.17	2.60	3.80	5.37	6.58	8.49	31.62	9.81	11.81	4	7		
	616.961	●	●	●	0.24	0.20	3.24	4.75	6.72	8.23	10.62	39.53	12.26	14.77	4	7		
30°	616.722	●	●	●	0.12	0.10	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	6	10		
	616.762	●	●	●	0.14	0.11	1.04	1.52	2.15	2.63	3.40	12.65	3.40	4.73	6	10		
	616.802	●	●	●	0.16	0.12	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	6	10		
	616.882	●	●	●	0.20	0.16	2.08	3.04	4.30	5.26	6.80	25.30	7.85	9.45	6	11		
	616.922	●	●	●	0.22	0.17	2.60	3.80	5.37	6.58	8.49	31.62	9.81	11.81	6	11		
616.962	●	●	●	0.24	0.20	3.24	4.75	6.72	8.23	10.62	39.53	12.26	14.77	6	11			
45°	616.723	●	●	●	0.12	0.09	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	9	17		
	616.763	●	●	●	0.14	0.10	1.04	1.52	2.15	2.63	3.40	12.65	3.40	4.73	9	17		
	616.803	●	●	●	0.16	0.12	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	9	17		
	616.843	●	●	●	0.18	0.13	1.62	2.37	3.36	4.11	5.31	19.76	6.13	7.38	9	17		
	616.883	●	●	●	0.20	0.15	2.08	3.04	4.30	5.26	6.80	25.30	7.85	9.45	9	17		
	616.923	●	●	●	0.22	0.165	2.60	3.80	5.37	6.58	8.49	31.62	9.81	11.81	9	17		
	616.963	●	●	●	0.24	0.17	3.24	4.75	6.72	8.23	10.62	39.53	12.26	14.77	9	17		

¹ We reserve the right to supply material 316Ti or 316L under material no. 17. Available in NPT upon request

Spray angle	Ordering number				Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]								Spray width B [in] (at p = 75 psi)			
	Type	Material number					p [psi]										H = 10 [in]	H = 20 [in]
		16	17 ¹	30			7	15	30	45	75	liters per minute	100	145				
		Stainless steel 303	Stainless steel 316Ti/ Stainless steel 316L	Brass											5 bar			
60°	616.724	●	●	●	0.12	0.08	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	11	22		
	616.764	●	●	●	0.14	0.09	1.04	1.52	2.15	2.63	3.40	12.65	3.40	4.73	11	22		
	616.804	●	●	●	0.16	0.10	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	11	23		
	616.844	●	●	●	0.18	0.12	1.62	2.37	3.36	4.11	5.31	19.76	6.13	7.38	11	23		
	616.884	●	●	●	0.20	0.13	2.08	3.04	4.30	5.26	6.80	25.30	7.85	9.45	11	23		
	616.924	●	●	●	0.22	0.16	2.60	3.80	5.37	6.58	8.49	31.62	9.81	11.81	11	23		
	616.964	●	●	●	0.24	0.17	3.24	4.75	6.72	8.23	10.62	39.53	12.26	14.77	11	23		
	617.044	●		●	0.31	0.22	5.19	7.59	10.74	13.15	16.98	63.20	19.61	23.61	11	23		
617.124			●	0.39	0.29	8.17	11.97	16.92	20.73	26.76	99.60	30.90	37.21	11	23			
90°	616.726	●	●	●	0.12	0.07	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	20	39		
	616.766	●	●	●	0.14	0.075	1.04	1.52	2.15	2.63	3.40	12.65	3.40	4.73	21	39		
	616.806	●	●	●	0.16	0.09	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	21	41		
	616.846	●	●	●	0.18	0.09	1.62	2.37	3.36	4.11	5.31	19.76	6.13	7.38	21	41		
	616.886	●	●	●	0.20	0.12	2.08	3.04	4.30	5.26	6.80	25.30	7.85	9.45	21	42		
	616.926	●	●	●	0.22	0.14	2.60	3.80	5.37	6.58	8.49	31.62	9.81	11.81	21	42		
	616.966	●	●	●	0.24	0.15	3.24	4.75	6.72	8.23	10.62	39.53	12.26	14.77	21	42		
120°	616.727	●	●	●	0.12	0.06	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	35	66		
	616.767	●	●	●	0.14	0.07	1.04	1.52	2.15	2.63	3.40	12.65	3.40	4.73	35	67		
	616.807	●	●	●	0.16	0.08	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	35	67		
	616.887	●	●	●	0.20	0.10	1.62	2.37	3.36	4.11	5.31	19.76	6.13	7.38	36	67		
	616.927	●	●	●	0.22	0.11	2.60	3.80	5.37	6.58	8.49	31.62	9.81	11.81	36	67		
	616.967			●	0.24	0.13	3.24	4.75	6.72	8.23	10.62	39.53	12.26	14.77	36	67		
	617.047			●	0.31	0.17	5.19	7.59	10.74	13.15	16.98	63.20	19.61	23.61	36	67		

¹ We reserve the right to supply material 316Ti or 316L under material no. 17.
Available in NPT upon request

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: 616.724 + 16 = 616.724.16

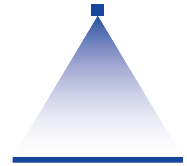


Assembly accessories can be found in Chapter 12 "Accessories".

Low pressure flat fan nozzles

Press-in nozzle

Series 612.xxx.5E.03



Features:

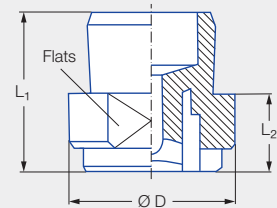
- Uniform, parabolic liquid distribution
- For pressing into pipes

Applications:


- Cleaning and rinsing procedures
- Industrial dish washers



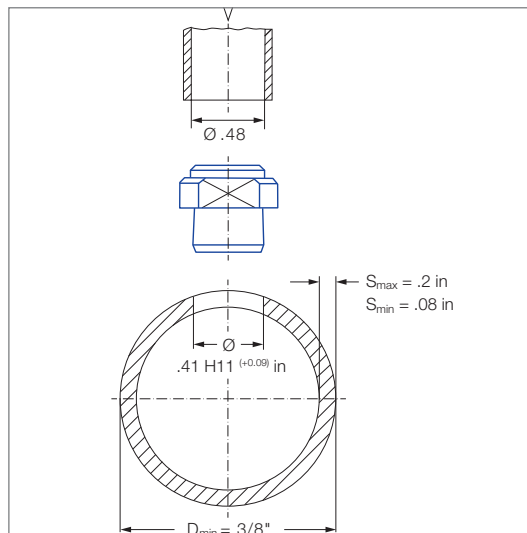
Series 612.xxx.5E.03



Dimensions [in]				Weight [g]
L ₁	L ₂	Ø D	Flats (mm)	
.49	.22	.55	12	.004

Spray angle	Ordering number		Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]							Spray width B [in] (at p = 30 psi)			
	Type	Material number			p [psi]							 H = 10 [in] H = 20 [in]			
		5E.03			4	7	10	15	22	30	liters per minute				
		P.V.D.F.													
90°	612.366	●	0.04	0.20	0.06	0.08	0.10	0.12	0.14	0.17	0.63	2 bar	14	29	
	612.486	●	0.06	0.203	0.16	0.21	0.25	0.30	0.37	0.43	1.60	2 bar	14	29	
120°	612.487	●	0.06	0.203	0.16	0.21	0.25	0.30	0.37	0.43	1.60	2 bar	28	50	
	612.647	●	0.10	0.50	0.40	0.52	0.62	0.76	0.92	1.08	4.00	2 bar	28	50	

Assembly :



Drill pipe (Ø .4 in), ream to Ø .4 H11 (+0.09) in, adjust nozzle, place press-in pipe (inner diameter .48 in) on nozzle and tap in using a rubber mallet. Max. flow velocity in the pipe 2–3 m/s.

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

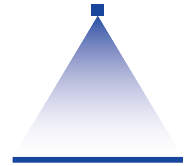
Ordering Type + Material no. = Ordering no.
example: 612.366 + 5E.03 = 612.366.5E.03



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

Flat Fan Nozzle Tips

Series 672/673



Features:

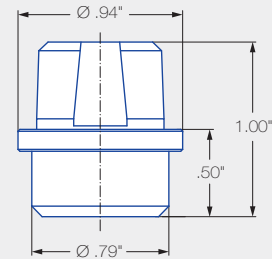
- Socket alignment flats

Applications:

- Cooling
- Lubricating



Series 672/673



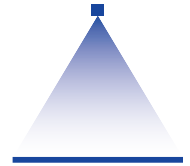
Nozzle Angle	Ordering number	Width—in. (B)	
		10°	20°
20°	672.561-672.921	3	7
	672.961-673.121	4	8
30°	672.562-672.962	5	11
	673.012-673.122	6	12
45°	672.563-672.963	8	17
	672.013-673.123	9	19
60°	672.564-673.124	13	25
90°	672.566-672.766	18	34
	672.806-672.886	19	36
	672.926-672.966	21	40
	673.016		
140°	672.567-672.677	27	51
	672.727	29	54
	672.767	30	55
	672.807-672.927	31	57
	673.047-673.127	49	85

Ordering number						Equivalent bore diameter (in.)	V̇ water [gal/min]									
Type							Material number	p [psi]								
Spray Angle								303 SS	316 SS	Brass	10 psi	20 psi	liters per minute 2 bar	40 psi	60 psi	80 psi
20°	30°	45°	60°	90°	120°	16	17	30								
672.561	672.562	672.563	672.564	672.566	672.567	-	●	-	.079	.39	.55	2.5	.78	.95	1.1	1.2
672.601	672.602	672.603	672.604	672.606	672.607	-	●	-	.087	.49	.69	3.2	.98	1.2	1.4	1.5
672.641	672.642	672.643	672.644	672.646	672.647	-	●	-	.099	.62	.88	4	1.24	1.52	1.75	1.96
672.671	672.672	672.673	672.674	672.676	672.677	-	●	-	.106	.74	1.04	4.75	1.47	1.80	2.08	2.33
672.721	672.722	672.723	672.724	672.726	672.727	-	●	-	.118	.98	1.38	6.3	1.95	2.39	2.76	3.09
672.761	672.762	672.763	672.764	672.766	672.767	-	●	-	.137	1.24	1.75	8	2.48	3.04	3.51	3.92
672.801	672.802	672.803	672.804	672.806	672.807	-	●	-	.157	1.55	2.19	10	3.10	3.80	4.39	4.90
672.841	672.842	672.843	672.844	672.846	672.847	-	●	-	.177	1.94	2.75	12.5	3.88	4.75	5.48	6.13
672.881	672.882	672.883	672.884	672.886	672.887	-	●	-	.197	2.48	3.51	16	4.96	6.08	7.02	7.85
672.921	672.922	672.923	672.924	672.926	672.927	-	●	-	.220	3.10	4.39	20	6.20	7.60	8.77	9.81
672.961	672.962	672.963	672.964	673.016		-	●	-	.236	3.88	5.48	25	7.75	9.50	10.9	12.2
673.041	673.042	673.043	673.044	673.046	673.047	●	-	●	.315	6.20	8.77	40	12.4	15.2	17.5	19.6
673.081	673.082	673.083	673.084	673.086		●	-	●	.354	7.75	10.9	50	15.5	18.9	21.9	24.5
673.121	673.122	673.123	673.124	673.126	673.127	●	-	●	.394	9.77	13.8	63	19.5	23.9	27.6	30.9

¹ We reserve the right to supply material 316Ti or 316L under material no. 17.

Conversion formula for this series: $\dot{V}_2 = \dot{V}_1 \cdot \sqrt{\frac{P_2}{P_1}}$

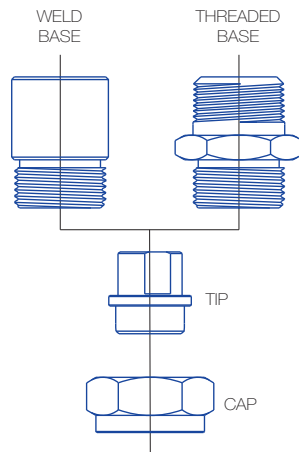
Ordering	Type	+	Material no.	=	Ordering no.
example:	672.721	+	17	=	672.721.17



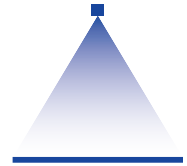
Series 672/673 bases, caps and accessories

Ordering number		Description	Material No.	
			17 ¹	30
Type			316 SS	Brass
Bases	067. 210. xx. 01	Weld Base, 1.06" long	●	
	067. 210. xx. 02	Weld Base, 1.37" long	●	
	067. 210. xx. 03	Weld Base, 1.67" long	●	
	067. 211. xx. 04	Weld Base, 2.37" long	●	
	067. 211. xx. 06	Weld Base, 4.92" long	●	
	067. 211. xx. 11	Weld Base, 7.08" long	●	
	067. 211. xx. 13	Weld Base, 3.94" long	●	
	067. 216. xx. BK	Threaded, 3/4" NPT Male, 1.75" long	●	
Caps	065. 600. xx. 00	Nozzle Tip Retainer Cap	●	●
Accessories	006. 721. xx. 00	Alignment Tip — Right Hand		●
	006. 722. xx. 00	Alignment Tip — Left Hand		●
	006. 723. xx. 00	Alignment Tip — Center		●

¹ We reserve the right to supply material 316Ti or 316L under material no. 17.
 Other base options are available.
 Please contact Lechler for more information.

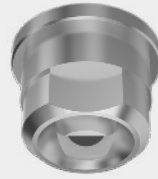


Low pressure flat fan nozzles for retaining nut Series 652

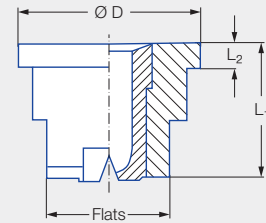


Features:

- Uniform, parabolic liquid distribution
- Stable spray angle
- Assembly with retaining nut



Series 652



Applications:

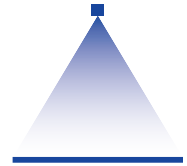
- Spray cleaning
- Surface cleaning
- Filter cleaning
- Coating processes
- Belt cleaning
- Lubrication processes

Connection	Dimensions [in]				Weight [lb] Brass
	L ₁	L ₂	Ø D	Flats (mm)	
Assembly with retaining nut 3/8 BSPP	0.43	0.08	0.58	10	.02

Spray angle	Ordering number					Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]								Spray width B [in] (at p = 75 psi)	
	Type	Material number						p [psi]									
		16	17 ¹	30	5E												
		Stainless steel 303	Stainless steel 316Ti/ Stainless steel 316L	Brass	PVDF			7	15	30	45	75	liters per minute 5 bar	145	H = 10 [in]	H = 20 [in]	
20°	652.301	●	●	●	●	0.03	0.02	0.04*	0.06*	0.09	0.11	0.14	0.51	0.19	3	6	
	652.361	●	●	●	●	0.04	0.03	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	3	6	
	652.441	●	●	●	●	0.05	0.04	0.16*	0.24	0.34	0.41	0.53	1.98	0.74	3	6	
	652.481	●	●	●	●	0.06	0.05	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	3	6	
30°	652.302	●	●	●	●	0.02	0.02	0.04*	0.06*	0.08	0.11	0.13	0.51	0.19	5	9	
	652.362	●	●	●	●	0.04	0.03	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	5	9	
	652.402	●	●	●	●	0.05	0.035	0.13*	0.19	0.27	0.33	0.42	1.58	0.59	5	9	
	652.482	●	●	●	●	0.06	0.04	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	5	9	
	652.562	●	●	●	●	0.08	0.06	0.32	0.47	0.67	0.82	1.06	3.95	1.48	5	9	
	652.642	●	●	●		0.10	0.07	0.52	0.76	1.08	1.32	1.70	6.33	2.36	6	10	
	652.722	●	●	●		0.12	0.09	0.82	1.20	1.69	2.07	2.68	9.96	3.72	6	10	
	652.762	●	●	●		0.14	0.11	1.04	1.52	2.15	2.63	3.40	12.65	4.73	6	10	
652.802	●	●	●		0.16	0.12	1.30	1.90	2.69	3.29	4.25	15.81	5.91	6	10		
45°	652.303	●	●	●		0.03	0.02	0.04*	0.06*	0.08	0.11	0.13	0.51	0.19	7	13	
	652.363	●	●	●	●	0.04	0.024	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	7	14	
	652.403	●	●	●	●	0.05	0.035	0.13*	0.19	0.27	0.33	0.42	1.58	0.59	8	15	
	652.483	●	●	●	●	0.06	0.04	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	8	15	
	652.563	●	●	●	●	0.08	0.06	0.32	0.47	0.67	0.82	1.06	3.95	1.48	8	16	
	652.643	●	●	●	●	0.10	0.07	0.52	0.76	1.08	1.32	1.70	6.33	2.36	9	16	
	652.723	●	●	●		0.12	0.09	0.82	1.20	1.69	2.07	2.68	9.96	3.72	9	17	
	652.763	●	●	●		0.14	0.10	1.04	1.52	2.15	2.63	3.40	12.65	4.73	9	17	
	652.803	●	●	●		0.16	0.12	1.30	1.90	2.69	3.29	4.25	15.81	5.91	9	17	

* Differing spray pattern.

¹ We reserve the right to supply material 316Ti or 316L under material no. 17.



Spray angle	Ordering number				Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]							Spray width B [in] (at p = 75 psi)			
	Type	Material number					p [psi]							H = 10 [in]	H = 20 [in]		
		16	17 ¹	30			5E	liters per minute 5 bar	145	10	19	20	21			22	23
		Stainless steel 303	Stainless steel 316Ti/ Stainless steel 316L	Brass			PVDF										
60°	652.304	●	●	●	●	0.03	0.016	0.04*	0.06	0.09	0.11	0.14	0.51	0.19	10	19	
	652.334	●	●	●	●	0.035	0.02	0.06*	0.09	0.12	0.15	0.19	0.71	0.27	10	19	
	652.364	●	●	●	●	0.04	0.024	0.08*	0.12	0.17	0.21	0.27	1.00	0.37	10	20	
	652.404	●	●	●	●	0.047	0.03	0.13*	0.19	0.27	0.33	0.42	1.58	0.59	10	20	
	652.444	●	●	●	●	0.05	0.035	0.16*	0.24	0.34	0.41	0.53	1.98	0.74	10	20	
	652.484	●	●	●	●	0.06	0.04	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	10	20	
	652.514	●	●	●	●	0.065	0.043	0.25*	0.36	0.51	0.62	0.81	3.00	1.12	11	20	
	652.564	●	●	●	●	0.08	0.05	0.32	0.47	0.67	0.82	1.06	3.95	1.48	11	21	
	652.604	●	●	●	●	0.09	0.06	0.41	0.60	0.85	1.04	1.34	4.98	1.86	11	21	
	652.644	●	●	●	●	0.10	0.063	0.52	0.76	1.08	1.32	1.70	6.33	2.36	11	21	
	652.674	●	●	●	●	0.11	0.07	0.62	0.90	1.28	1.56	2.02	7.51	2.81	11	22	
	652.724	●	●	●	●	0.12	0.08	0.82	1.20	1.69	2.07	2.68	9.96	3.72	11	22	
	652.764	●	●	●	●	0.14	0.09	1.04	1.52	2.15	2.63	3.40	12.65	4.73	11	22	
	652.804	●	●	●	●	0.16	0.10	1.30	1.90	2.69	3.29	4.25	15.81	5.91	11	23	
652.844	●	●	●	●	0.18	0.12	1.62	2.37	3.36	4.11	5.31	19.76	7.38	11	23		
652.884	●	●	●	●	0.20	0.13	2.08	3.04	4.30	5.26	6.80	25.30	9.45	11	23		
75°	652.145	●	●	●	●	0.008	0.004	–	0.01*	0.014	0.017	0.021	0.08	0.03	15	27	
	652.165	●	●	●	●	0.008	0.005	–	0.01*	0.017	0.02	0.027	0.10	0.04	15	27	
	652.185	●	●	●	●	0.008	0.006	–	0.011*	0.02	0.03	0.035	0.13	0.05	15	27	
	652.215	●	●	●	●	0.016	0.008	–	0.02*	0.03	0.04	0.05	0.18	0.07	15	27	
	652.245	●	●	●	●	0.02	0.012	–	0.03*	0.04	0.05	0.07	0.26	0.10	15	27	
	652.275	●	●	●	●	0.024	0.012	0.03*	0.04*	0.06	0.07	0.09	0.35	0.13	15	27	
90°	652.216	●	●	●	●	0.016	0.008	0.01*	0.02*	0.03	0.04	0.05	0.18	0.07	17	31	
	652.246	●	●	●	●	0.02	0.012	0.02*	0.03*	0.04	0.05	0.07	0.26	0.10	17	31	
	652.276	●	●	●	●	0.024	0.012	0.03*	0.04*	0.06	0.07	0.09	0.35	0.13	17	31	
	652.306	●	●	●	●	0.03	0.016	0.04*	0.06*	0.09	0.11	0.14	0.51	0.19	17	31	
	652.336	●	●	●	●	0.035	0.02	0.06*	0.09*	0.12	0.15	0.19	0.71	0.27	17	32	
	652.366	●	●	●	●	0.04	0.02	0.08*	0.12	0.17	0.21	0.27	1.00	0.37	18	33	
	652.406	●	●	●	●	0.047	0.028	0.13*	0.19	0.27	0.33	0.42	1.58	0.59	18	33	
	652.446	●	●	●	●	0.05	0.03	0.16*	0.24	0.34	0.41	0.53	1.98	0.74	18	34	
	652.486	●	●	●	●	0.06	0.03	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	19	34	
	652.516	●	●	●	●	0.065	0.035	0.25*	0.36	0.51	0.62	0.81	3.00	1.12	19	35	
	652.566	●	●	●	●	0.08	0.04	0.32	0.47	0.67	0.82	1.06	3.95	1.48	19	35	
	652.606	●	●	●	●	0.09	0.047	0.41	0.60	0.85	1.04	1.34	4.98	1.86	20	36	
	652.646	●	●	●	●	0.10	0.05	0.52	0.76	1.08	1.32	1.70	6.33	2.36	20	37	
	652.676	●	●	●	●	0.11	0.06	0.62	0.90	1.28	1.56	2.02	7.51	2.81	20	37	
	652.726	●	●	●	●	0.12	0.07	0.82	1.20	1.69	2.07	2.68	9.96	3.72	20	39	
	652.766	●	●	●	●	0.14	0.075	1.04	1.52	2.15	2.63	3.40	12.65	4.73	21	39	
	652.806	●	●	●	●	0.16	0.09	1.30	1.90	2.69	3.29	4.25	15.81	5.91	21	41	
	652.846	●	●	●	●	0.18	0.09	1.62	2.37	3.36	4.11	5.31	19.76	7.38	21	41	
652.886	●	●	●	●	0.20	0.12	2.08	3.04	4.30	5.26	6.80	25.30	9.45	21	42		

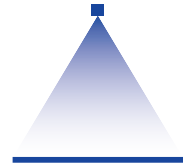
Conversion formula for this series: $\dot{V}_2 = \dot{V}_1 \cdot \sqrt{\frac{p_2}{p_1}}$

* Differing spray pattern.

¹ We reserve the right to supply material 316Ti or 316L under material no. 17.



Ordering Type + Material no. = Ordering no.
example: 652. 216 + 16 = 652. 216. 16

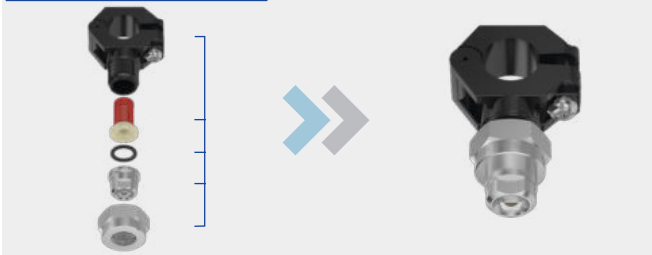


Spray angle	Ordering number					Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]							Spray width B [in] (at p = 75 psi)	
	Type	Material number						p [psi]							H = 10 [in]	H = 20 [in]
		16	17 ¹	30	5E			7	15	30	45	75	liters per minute 5 bar	145		
120°	652.187	●		●		0.01	0.008	–	0.011*	0.02	0.03	0.035	0.13	0.05	25	42
	652.217	●		●		0.016	0.008	–	0.02*	0.03	0.04	0.05	0.18	0.07	26	43
	652.247	●		●		0.02	0.008	–	0.03*	0.04	0.05	0.07	0.26	0.10	26	43
	652.277	●		●		0.024	0.012	–	0.04*	0.06	0.07	0.09	0.35	0.13	26	45
	652.307	●		●	●	0.03	0.012	0.04*	0.06*	0.09	0.11	0.14	0.51	0.19	28	49
	652.337	●	●	●	●	0.035	0.016	0.06*	0.09*	0.12	0.15	0.19	0.71	0.27	29	53
	652.367	●	●	●	●	0.04	0.02	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	31	56
	652.407	●	●	●	●	0.047	0.024	0.13*	0.19	0.27	0.33	0.42	1.58	0.59	33	58
	652.447	●	●	●	●	0.05	0.024	0.16*	0.24	0.34	0.41	0.53	1.98	0.74	33	60
	652.487	●	●	●	●	0.06	0.024	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	33	61
	652.517	●	●	●	●	0.065	0.035	0.25*	0.36	0.51	0.61	0.81	3.00	1.12	33	61
	652.567	●	●	●	●	0.08	0.04	0.32	0.47	0.67	0.82	1.06	3.95	1.48	34	63
	652.607	●	●	●	●	0.09	0.043	0.41	0.60	0.85	1.04	1.34	4.98	1.86	34	64
	652.647	●	●	●		0.10	0.05	0.52	0.76	1.08	1.32	1.70	6.33	2.36	35	65
	652.677	●	●	●		0.11	0.06	0.62	0.90	1.28	1.56	2.02	7.51	2.81	35	65
	652.727	●	●	●	●	0.12	0.063	0.82	1.20	1.69	2.07	2.68	9.96	3.72	35	66
	652.767	●	●	●		0.14	0.07	1.04	1.52	2.15	2.63	3.40	12.65	4.73	35	67
	652.807	●		●		0.16	0.08	1.30	1.90	2.69	3.29	4.25	15.81	5.91	35	67
652.847				●	0.18	0.09	1.62	2.37	3.36	4.11	5.31	19.76	7.38	35	67	
652.887				●	0.20	0.10	2.08	3.04	4.30	5.26	6.80	25.30	9.45	36	67	

* Differing spray pattern.

¹ We reserve the right to supply material 316Ti or 316L under material no. 17.

Assembly example



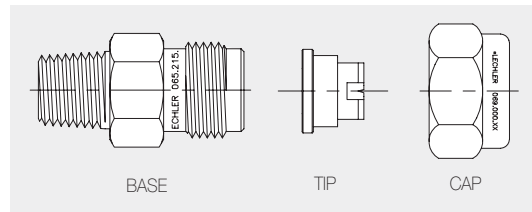
Bases and Caps for Mounting

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

Example Type + Material no. = Ordering no.
for ordering: 652. 407 + 30 = 652. 407. 30

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: 652.187 + 16 = 652.187.16



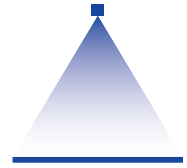
1) We reserve the right to deliver material 316 SS or 316L SS, if we show the material code 17.



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

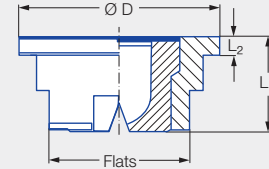
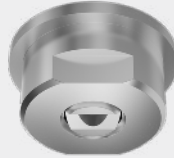
Low pressure flat fan nozzles for retaining nut

Series 656/657



Features:

- Uniform, parabolic liquid distribution
- Stable spray angle
- High spray energy
- Assembly with retaining nut
- Non-clogging



Series 656/657

Applications:

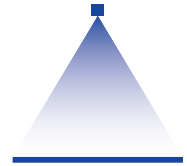
- Cleaning installations
- Gravel washing
- Roll cooling
- Cooling of rolled stock
- Cooling pipes

Connection	Dimensions [in]				Weight [lb] Brass
	L ₁	L ₂	Ø D	Flats (mm)	
Assembly with retaining nut 3/4 BSPP	.43	.08	.94	17	.05

Spray angle	Ordering number				Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]								Spray width B [mm] (at p = 75 psi)	
	Type	Material number					p [psi]									
		16	17 ¹	30												
		Stainless steel 303	Stainless steel 316Ti / Stainless steel 316L	Brass			7	15	30	45	75	liters per minute 5 bar	100	145	H = 10 [in]	H = 20 [in]
20°	656.721	●	●	●	0.12	0.10	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	4	7
	656.801	●	●	●	0.16	0.13	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	4	7
	656.881	●	●	●	0.20	0.16	2.08	3.04	4.30	5.26	6.80	25.30	7.85	9.45	4	7
	656.921	●	●	●	0.22	0.17	2.60	3.80	5.37	6.58	8.49	31.62	9.81	11.81	4	7
	656.961	●	●	●	0.24	0.21	3.24	4.75	6.72	8.23	10.62	39.53	12.26	14.77	4	7
30°	656.722	●	●	●	0.12	0.09	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	6	10
	656.762	●	●	●	0.14	0.11	1.04	1.52	2.15	2.63	3.40	12.65	3.92	4.73	6	10
	656.802	●	●	●	0.16	0.12	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	6	10
	656.882	●	●	●	0.20	0.16	2.08	3.04	4.30	5.26	6.80	25.30	7.85	9.45	6	11
	656.922	●	●	●	0.22	0.17	2.60	3.80	5.37	6.58	8.49	31.62	9.81	11.81	6	11
	656.962	●	●	●	0.24	0.20	3.24	4.75	6.72	8.23	10.62	39.53	12.26	14.77	6	11
45°	656.723	●	●	●	0.12	0.09	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	9	17
	656.763	●	●	●	0.14	0.10	1.04	1.52	2.15	2.63	3.40	12.65	3.92	4.73	9	17
	656.803	●	●	●	0.16	0.12	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	9	17
	656.843	●	●	●	0.18	0.13	1.62	2.37	3.36	4.11	5.31	19.76	6.13	7.38	9	17
	656.883	●	●	●	0.20	0.15	2.08	3.04	4.30	5.26	6.80	25.30	7.85	9.45	9	17
	656.923	●	●	●	0.22	0.165	2.60	3.80	5.37	6.58	8.49	31.62	9.81	11.81	9	17
	656.963	●	●	●	0.24	0.17	3.24	4.75	6.72	8.23	10.62	39.53	12.26	14.77	9	17

¹ We reserve the right to supply material 316Ti or 316L under material no. 17.

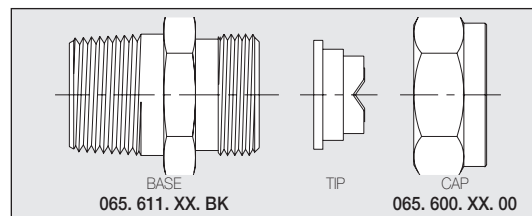




Spray angle	Ordering number				Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]								Spray width B [mm] (at p = 75 psi)	
	Material number						p [psi]									
	16	17 ¹	30													
	Type	Stainless steel 303	Stainless steel 316Ti/ Stainless steel 316L	Brass			7	15	30	45	75	liters per minute	100	145	H = 10 [in]	H = 20 [in]
60°	656.724	●	●	●	0.12	0.08	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	11	22
	656.764	●	●	●	0.14	0.09	1.04	1.52	2.15	2.63	3.40	12.65	3.92	4.73	11	22
	656.804	●	●	●	0.16	0.10	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	11	23
	656.844	●	●	●	0.18	0.12	1.62	2.37	3.36	4.11	5.31	19.76	6.13	7.38	11	23
	656.884	●	●	●	0.20	0.13	2.08	3.04	4.30	5.26	6.80	25.30	7.85	9.45	11	23
	656.924	●	●	●	0.22	0.16	2.60	3.80	5.37	6.58	8.49	31.62	9.81	11.81	11	23
	656.964	●	●	●	0.24	0.17	3.24	4.75	6.72	8.23	10.62	39.53	12.26	14.77	11	23
	657.044		●	●	0.31	0.22	5.19	7.60	10.75	13.16	16.99	63.25	19.62	23.63	11	23
90°	656.726	●	●	●	0.12	0.067	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	20	39
	656.766	●	●	●	0.14	0.075	1.04	1.52	2.15	2.63	3.40	12.65	3.92	4.73	21	39
	656.806	●	●	●	0.16	0.09	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	21	41
	656.846	●	●	●	0.18	0.09	1.62	2.37	3.36	4.11	5.31	19.76	6.13	7.38	21	41
	656.886	●	●	●	0.20	0.12	2.08	3.04	4.30	5.26	6.80	25.30	7.85	9.45	21	42
	656.926	●	●	●	0.22	0.14	2.60	3.80	5.37	6.58	8.49	31.62	9.81	11.81	21	42
	656.966	●	●	●	0.24	0.15	3.24	4.75	6.72	8.23	10.62	39.53	12.26	14.77	21	42
	657.046			●	0.31	0.19	5.19	7.60	10.75	13.16	16.99	63.25	19.62	23.63	21	42
120°	656.727	●	●	●	0.12	0.06	0.82	1.20	1.69	2.07	2.68	9.96	3.09	3.72	35	66
	656.767	●	●	●	0.14	0.07	1.04	1.52	2.15	2.63	3.40	12.65	3.92	4.73	35	67
	656.807	●	●	●	0.16	0.08	1.30	1.90	2.69	3.29	4.25	15.81	4.90	5.91	35	67
	656.887	●	●	●	0.20	0.10	2.08	3.04	4.30	5.26	6.80	25.30	7.85	9.45	11	67
	656.927	●	●	●	0.22	0.11	2.60	3.80	5.37	6.58	8.49	31.62	9.81	11.81	11	67

¹ We reserve the right to supply material 316Ti or 316L under material no. 17.

Inlet Male NPT	Outlet Male	Part No.	Standard Materials: 17 316 SS 30 Brass
3/4"	3/4" BSPP	065. 611. XX. BK	
Cap			Other materials available. See Accessories beginning on page 127.
To fit 3/4" BSPP		065. 600. XX. 00	



Example Type + Material no. = Ordering no.
for ordering: 656. 727 + 16 = 656. 727. 16

1) We reserve the right to deliver material 316 SS or 316L SS, if we show the material code 17.

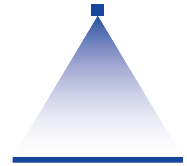
Conversion formula for this series: $\dot{V}_2 = \dot{V}_1 \cdot \sqrt{\frac{p_2}{p_1}}$

Ordering Type + Material no. = Ordering no.
example: 656.724 + 16 = 656.724.16

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

Low pressure tongue-type nozzles

Series 684



Features:

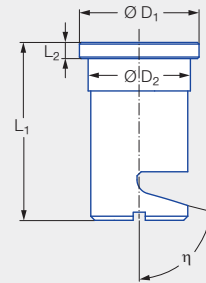
- Sharply delimited, powerful flat fan spray
- Large spray angle
- Assembly with retaining nut
- Non-clogging

Applications:

- Foam control
- Cleaning processes
- Washing processes



Series 684



G	Dimensions [in]			Weight [lb]
	L ₂	Ø D ₁	Ø D ₂	
Assembly with retaining nut 3/8 NPT	0.08	0.58	0.50	0.01

Spray angle	Deflection angle η	Ordering number		Color ¹	Bore diameter B [in]	L ₁ [in]	V̇ water [gal/min]				Spray width B [in] (at p = 30 psi)	
		Type	Material number				p [psi]					
			56				5E	15	30	liters per minute 2 bar	75	H = 10 [in]
140°	75°	684.348	●		Green	0.028	0.79	0.09*	0.13	0.50	0.21	49
		684.368	●	●	Yellow	0.03	0.79	0.12*	0.17	0.63	0.27	49
		684.408	●		Blue	0.04	0.79	0.19	0.27	1.00	0.42	50
		684.448	●		Red	0.047	0.79	0.24	0.34	1.25	0.53	50
		684.488	●	●	Brown	0.05	0.79	0.30	0.43	1.60	0.68	50
		684.528	●		Grey	0.06	0.79	0.38	0.54	2.00	0.85	50
		684.568	●	●	White	0.07	0.75	0.47	0.67	2.50	1.06	51
		684.608	●		Light blue	0.075	0.75	0.60	0.85	3.15	1.34	51
		684.688	●		Green	0.09	0.67	0.95	1.34	5.00	2.12	52
		684.728	●	●	Black	0.11	0.67	1.20	1.69	6.30	2.68	53
684.808	●		Beige	0.13	0.63	1.90	2.69	10.00	4.25	53		

* Differing spray pattern.

¹ PVDF material is always blue.

Assembly example



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

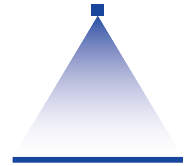
Ordering Type + Material no. = Ordering no.
example: 684.348 + 56 = 684.348.56



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

Low pressure tongue-type nozzles

Series 686

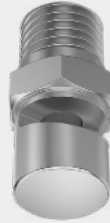


Features:

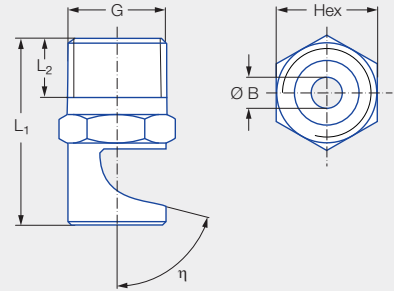
- Sharply delimited, powerful flat fan spray
- Large spray angle
- Non-clogging

Applications:

- Foam control
- Cleaning processes
- Washing processes

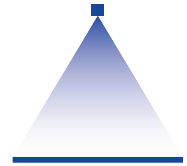


Series 686



Type	NPT	Connection	Dimensions [in]			Weight [lb] Brass
			L ₁	L ₂	Hex	
686.366	1/8	BA	0.91	0.26	7/16	0.03
686.406	1/8	BA	0.91	0.26	7/16	0.03
686.686	1/4	BC	1.16	0.38	9/16	0.05
686.726	1/8	BA	0.98	0.26	7/16	0.03
686.806	1/4	BC	1.30	0.38	9/16	0.05
686.886	1/4	BC	1.38	0.38	9/16	0.07
686.926	3/8	BE	1.52	0.40	11/16	0.07
686.368	1/8	BA	0.79	0.26	7/16	0.03
686.408	1/8	BA	0.91	0.26	7/16	0.03
686.448	1/4	BC	0.94	0.38	9/16	0.05
686.488	1/8	BA	0.91	0.26	7/16	0.03
686.488	1/4	BC	0.94	0.38	9/16	0.05
686.528	1/8	BA	0.91	0.26	7/16	0.03
686.528	1/4	BC	0.94	0.38	9/16	0.05
686.568	1/8	BA	0.91	0.26	7/16	0.03
686.568	1/4	BC	0.94	0.38	9/16	0.05
686.608	1/8	BA	0.91	0.26	7/16	0.03
686.608	1/4	BC	0.94	0.38	9/16	0.05
686.648	1/4	BC	0.94	0.38	9/16	0.05
686.688	1/8	BA	0.91	0.26	7/16	0.03
686.688	1/4	BC	1.06	0.38	9/16	0.05
686.728	1/8	BA	0.91	0.26	7/16	0.03
686.728	1/4	BC	1.06	0.38	9/16	0.05
686.768	1/4	BC	1.06	0.38	9/16	0.05
686.808	1/8	BA	0.91	0.26	7/16	0.03
686.808	1/4	BC	1.06	0.38	9/16	0.05
686.828	1/4	BC	1.06	0.38	9/16	0.05
686.848	1/4	BC	1.06	0.38	9/16	0.05
686.868	1/4	BC	1.10	0.38	9/16	0.05
686.888	1/4	BC	1.10	0.38	9/16	0.05
686.908	1/4	BC	1.10	0.38	9/16	0.05
686.928	3/8	BE	1.18	0.40	11/16	0.07
686.968	1/2	BG	1.46	0.52	7/8	0.13
686.988	3/8	BE	1.26	0.40	11/16	0.07
686.988	1/2	BG	1.46	0.52	7/8	0.13

Also suitable for air or saturated steam (see Page 218).



Spray angle	Deflection angle η	Ordering number								Bore diameter B [in]	V water [gal/min]					Spray width B [in] (at p = 30 psi)
		Material number			Connection				p [psi]							
		16	30	5E	1/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT	15		20	30	liters per minute	75	H = 10 [in]	
		Type	Stainless steel 303	Brass									PVDF			2 bar
90°	75°	686.366		●		BA			0.03	0.12	0.14	0.17	0.63	0.26	18	
		686.406	●	●		BA			0.04	0.19	0.22	0.27	1.00	0.42	18	
	40°	686.686	●	●		BC			0.09	0.95	1.10	1.34	5.00	2.12	20	
		686.726		●		BA			0.11	1.20	1.38	1.69	6.30	2.68	21	
		686.806	●	●		BC			0.13	1.90	2.19	2.69	10.00	4.25	21	
		686.886	●			BC			0.17	3.04	3.51	4.30	16.00	6.80	21	
686.926	●				BE		0.19	3.80	4.39	5.37	20.00	8.50	21			
140°	75°	686.368	●	●		BA			0.03	0.12	0.14	0.17	0.63	0.26	49	
		686.408	●	●		BA			0.04	0.19	0.22	0.27	1.00	0.42	50	
		686.448	●	●			BC		0.047	0.24	0.27	0.34	1.25	0.53	50	
		686.488	●	●		BA	BC		0.05	0.30	0.35	0.43	1.60	0.68	50	
		686.528	●	●		BA	BC		0.06	0.38	0.44	0.54	2.00	0.85	50	
		686.568	●	●	● ¹	BA	BC		0.07	0.47	0.55	0.67	2.50	1.06	51	
		686.608	●	●		BA	BC		0.075	0.60	0.69	0.85	3.15	1.34	51	
		686.648	●	●			BC		0.087	0.76	0.88	1.07	4.00	1.70	52	
		686.688	●	●		BA	BC		0.09	0.95	1.10	1.34	5.00	2.12	52	
		686.728	●	●		BA	BC		0.11	1.20	1.38	1.69	6.30	2.68	53	
		686.768	●	●			BC		0.12	1.52	1.75	2.15	8.00	3.40	53	
		686.808	●	●		BA	BC		0.13	1.90	2.19	2.69	10.00	4.25	54	
		686.828	●	●			BC		0.14	2.13	2.46	3.01	11.20	4.76	54	
		686.848	●	●			BC		0.15	2.37	2.74	3.36	12.50	5.31	54	
		686.868	●	●			BC		0.16	2.66	3.07	3.76	14.00	5.95	54	
		686.888	●	●			BC		0.17	3.04	3.51	4.30	16.00	6.80	54	
		686.908	●	●			BC		0.18	3.42	3.95	4.84	18.00	7.65	54	
		686.928	●					BE	0.19	3.80	4.39	5.37	20.00	8.50	54	
686.968		●				BG	0.21	4.75	5.48	6.72	25.00	10.62	54			
686.988	●				BE	BG	0.22	5.32	6.14	7.52	28.00	11.89	54			

¹ Only available with code BA.

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

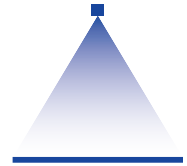
Ordering Type + Material no. + Code = Ordering no.
 example: 686.366 + 30 + BA = 686.366.30.BA



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

Low pressure tongue-type nozzles

Series 688/689

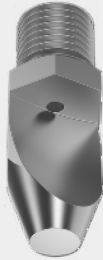


Features:

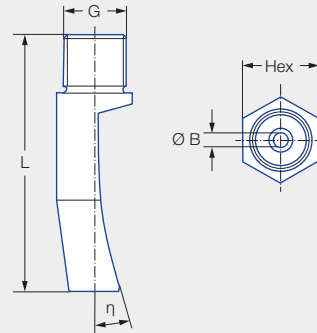
- Narrowly delimited, powerful flat fan spray
- Non-clogging

Applications:

- Cleaning processes
- Washing processes
- Degreasing installations
- Phosphating installations
- Preparation techniques



Series 688/689



Type	Connection	G	Dimensions [in]		Weight [lb]
			L	Hex (mm)	
688.763	BE	3/8 NPT	1.69	19	0.18 (Stainless steel 303)
688.843	BE	3/8 NPT	1.97	19	0.29 (Stainless steel 303)
688.923	BE	3/8 NPT	2.32	22	0.55 (Stainless steel 303)
689.003	BK	3/4 NPT	3.15	32/24	0.68/0.07 (Stainless steel 303/PVDF)

Spray angle	Deflection angle η	Ordering number				Bore diameter B [in]	\dot{V} water [gal/min]					Spray width B [in] (at p = 30 psi)		
		Material number		Connection			p [psi]							
		16	5E	3/8 NPT	3/4 NPT						liters per minute			2 bar
		Stainless steel 303	PVDF				7	15	30	75				
45°	35°	688.763	●		BE		0.12	1.04	1.52	2.15	8.00	3.40	H = 10 [in]	H = 20 [in]
	30°	688.843	●		BE		0.15	1.62	2.37	3.36	12.50	5.31	9	17
	29°	688.923	●		BE		0.19	2.60	3.80	5.37	20.00	8.50	9	17
	35°	689.003	●	●		BK		0.24	4.09	5.98	8.46	31.50	13.38	9

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

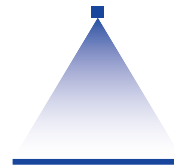
Ordering example: Type 688.763 + Material no. 16 + Code BE = Ordering no. 688.763.16.BE



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

Threaded Disc type tips

Series 680



Features:

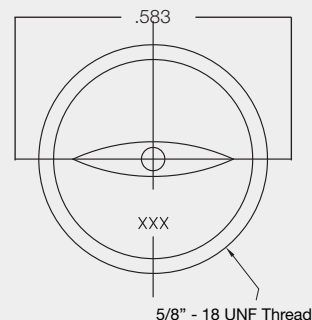
- Excellent for inexpensive headers with minimal clearance
- Orifices thread directly into pipe wall without any protrusion

Applications:

- Belt washing
- Web coating
- Spray washing of products on conveyors



Series 680



Spray angle at 40psi	Ordering number		Bore diameter (in.)	V̇ water [gal/min]								
	Type	Material		p [psi]								
		316 SS 17 ¹		10 psi	20 psi	30 psi	liters per minute 2 bar	40 psi	60 psi	80 psi	100 psi	150 psi
35°	680. 402	●	.046	-	0.22	0.27	1.00	0.31	0.38	0.44	0.49	0.60
	680. 492	●	.062	0.26	0.37	0.46	1.70	0.53	0.65	0.75	0.83	1.02
	680. 572	●	.076	0.40	0.57	0.70	2.60	0.81	0.99	1.14	1.28	1.56
	680. 712	●	.111	0.92	1.29	1.59	5.90	1.83	2.24	2.59	2.89	3.54
	680. 752	●	.125	1.19	1.69	2.07	7.70	2.39	2.93	3.38	3.78	4.63
680. 872	●	.187	2.33	3.29	4.03	15.0	4.65	5.70	6.58	7.36	9.01	
50°	680. 403	●	.046	-	0.22	0.27	1.00	0.31	0.38	0.44	0.49	0.60
	680. 493	●	.062	0.26	0.37	0.46	1.70	0.53	0.65	0.75	0.83	1.02
	680. 573	●	.076	0.40	0.57	0.70	2.60	0.81	0.99	1.14	1.28	1.56
	680. 713	●	.111	0.92	1.29	1.59	5.90	1.83	2.24	2.59	2.89	3.54
	680. 813	●	.156	1.61	2.28	2.79	10.4	3.23	3.95	4.56	5.10	6.25
	680. 873	●	.187	2.33	3.29	4.03	15.0	4.65	5.70	6.58	7.36	9.01
	680. 953	●	.218	3.52	4.98	6.10	22.7	7.04	8.62	9.96	11.13	13.64
680. 993	●	.250	4.73	6.69	8.19	30.5	9.46	11.59	13.38	14.96	18.32	
65°	680. 374**	●	.040	-	-	0.21	0.80	0.25	0.30	0.35	0.39	0.48
	680. 404	●	.046	-	0.22	0.28	1.00	0.32	0.40	0.47	0.52	0.65
	680. 494	●	.062	0.26	0.37	0.46	1.70	0.53	0.65	0.75	0.83	1.02
	680. 574*	●	.076	0.40	0.57	0.70	2.60	0.81	0.99	1.14	1.28	1.56
	680. 714	●	.111	0.92	1.29	1.59	5.90	1.83	2.24	2.59	2.89	3.60
	680. 754**	●	.125	1.19	1.69	2.07	7.70	2.39	2.93	3.38	3.78	4.40
	680. 814**	●	.156	1.61	2.28	2.79	10.4	3.23	3.95	4.56	5.10	6.25
	680. 874	●	.187	2.33	3.29	4.03	15.0	4.65	5.70	6.58	7.36	9.01
680. 954	●	.218	3.52	4.98	6.10	22.7	7.04	8.62	9.96	11.13	13.64	
80°	680. 345	●	.031	-	-	-	-	0.16	0.19	0.22	0.25	0.30
	680. 405***	●	.046	-	0.22	0.28	1.00	0.32	0.40	0.47	0.52	0.65
	680. 495	●	.062	0.26	0.37	0.46	1.70	0.53	0.65	0.75	0.83	1.02
	680. 575	●	.076	0.40	0.57	0.70	2.60	0.81	0.99	1.14	1.28	1.56
	680. 655	●	.093	0.65	0.92	1.13	4.20	1.30	1.60	1.84	2.06	2.52
	680. 715	●	.111	0.92	1.29	1.59	5.90	1.83	2.24	2.59	2.89	3.60
	680. 755	●	.125	1.19	1.69	2.07	7.70	2.39	2.93	3.38	3.78	4.40
	680. 815	●	.156	1.61	2.28	2.79	10.4	3.23	3.95	4.56	5.10	6.25
	680. 875	●	.187	2.33	3.29	4.03	15.0	4.65	5.70	6.58	7.36	9.01

¹ We reserve the right to supply material 316Ti or 316L under material no. 17.

Tungsten carbide available upon request

* 60° spray angle

** 70° spray angle

*** 75° spray angle

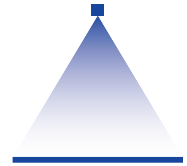
Conversion formula for this series: $\dot{V}_2 = \dot{V}_1 \cdot \sqrt{\frac{p_2}{p_1}}$

Ordering Type + Material code = Ordering no.
example: 680. 873 + 17 = 680. 873. 17



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

Disc type tips Series 690



Features:

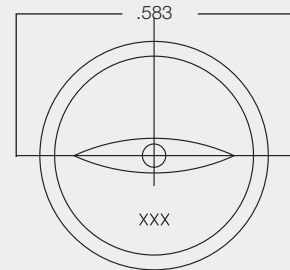
- Excellent for inexpensive headers with minimal clearance
- Orifices thread directly into pipe wall without any protrusion

Applications:

- Belt washing
- Web coating
- Spray washing of products on conveyors



Series 690



Spray angle at 40 psi	Ordering number		Bore diameter (in.)	V̇ water [gal/min]								
		Material		p [psi]								
		316 SS		10 psi	20 psi	30 psi	liters per minute 2 bar	40 psi	60 psi	80 psi	100 psi	150 psi
0°	690.340	●	.031	-	-	-	-	0.16	0.19	0.22	0.25	0.30
	690.360	●	.040	-	-	0.21	0.80	0.25	0.29	0.34	0.38	0.46
	690.400	●	.046	-	0.22	0.27	1.00	0.31	0.38	0.44	0.49	0.60
	690.490	●	.032	0.26	0.37	0.46	1.70	0.53	0.65	0.75	0.83	1.02
	690.570	●	.076	0.40	0.57	0.70	2.60	0.81	0.99	1.14	1.28	1.56
690.650	●	.093	0.65	0.92	1.13	4.20	1.30	1.60	1.84	2.06	2.52	
35°	690.402	●	.046	-	0.22	0.27	1.00	0.31	0.38	0.44	0.49	0.60
	690.492	●	.062	0.26	0.37	0.46	1.70	0.53	0.65	0.75	0.83	1.02
	690.572	●	.076	0.40	0.57	0.70	2.60	0.81	0.99	1.14	1.28	1.56
	690.712	●	.111	0.92	1.29	1.59	5.90	1.83	2.24	2.59	2.89	3.54
	690.752	●	.125	1.19	1.69	2.07	7.70	2.39	2.93	3.38	3.78	4.63
690.872	●	.187	2.33	3.29	4.03	15.0	4.65	5.70	6.58	7.36	9.01	
50°	690.403	●	.046	-	0.22	0.27	1.00	0.31	0.38	0.44	0.49	0.60
	690.493	●	.062	0.26	0.37	0.46	1.70	0.53	0.65	0.75	0.83	1.02
	690.573	●	.076	0.40	0.57	0.70	2.60	0.81	0.99	1.14	1.28	1.56
	690.713	●	.111	0.92	1.29	1.59	5.90	1.83	2.24	2.59	2.89	3.54
	690.813	●	.156	1.19	1.69	2.07	7.70	2.39	2.93	3.38	3.78	4.63
	690.873	●	.187	2.33	3.29	4.03	15.0	4.65	5.70	6.58	7.36	9.01
	690.953	●	.218	3.52	4.98	6.10	22.7	7.04	8.62	9.96	11.13	13.64
690.993	●	.250	4.73	6.69	8.19	30.5	9.46	11.59	13.38	14.96	18.32	
65°	690.374**	●	.040	-	-	0.21	0.80	0.23	.28	0.32	0.36	0.44
	690.404	●	.046	-	0.22	0.27	1.00	0.31	0.38	0.44	0.49	0.60
	690.494	●	.062	0.26	0.37	0.46	1.70	0.53	0.65	0.75	0.83	1.02
	690.574*	●	.076	0.40	0.57	0.70	2.60	0.81	0.99	1.14	1.28	1.56
	690.714	●	.111	0.92	1.29	1.59	5.90	1.83	2.24	2.59	2.89	3.54
	690.754**	●	.125	1.19	1.69	2.07	7.70	2.39	2.93	3.38	3.78	4.63
	690.814**	●	.156	1.61	2.28	2.79	10.4	3.23	3.95	4.56	5.10	6.25
	690.874	●	.187	2.33	3.29	4.03	15.0	4.65	5.70	6.58	7.36	9.01
690.954	●	.218	3.52	4.98	6.10	22.7	7.04	8.62	9.96	11.13	13.64	
80°	690.345	●	.031	-	-	-	-	0.23	0.28	0.32	0.36	0.44
	690.405***	●	.046	-	0.22	0.27	1.00	0.31	0.38	0.44	0.49	0.60
	690.495	●	.062	0.26	0.37	0.46	1.70	0.53	0.65	0.75	0.83	1.02
	690.575	●	.076	0.40	0.57	0.70	2.60	0.81	0.99	1.14	1.28	1.56
	690.655	●	.093	0.65	0.92	1.13	4.20	1.30	1.60	1.84	2.06	2.52
	690.715	●	.111	0.92	1.29	1.59	5.90	1.83	2.24	2.59	2.89	3.54
	690.755	●	.125	1.19	1.69	2.07	7.70	2.39	2.93	3.38	3.78	4.63
	690.815	●	.156	1.61	2.28	2.79	10.4	3.23	3.95	4.56	5.10	6.25
	690.875	●	.187	2.33	3.29	4.03	15.0	4.65	5.70	6.58	7.36	9.01

¹ We reserve the right to supply material 316Ti or 316L under material no. 17.

Tungsten carbide available upon request

* 60° spray angle

** 70° spray angle

*** 75° spray angle



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

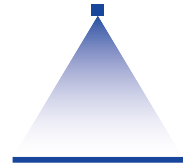
Conversion formula for this series: $\dot{V}_2 = \dot{V}_1 \cdot \sqrt{\frac{p_2}{p_1}}$

Ordering example: Type 690.345 + Material code 17 = Ordering no. 690.345.17



Low pressure flat fan nozzles with ball joint

Series 676



Features:

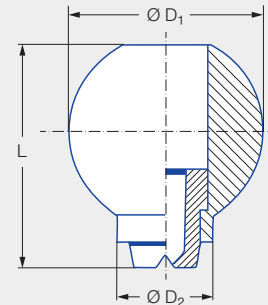
- Swivelling nozzle
- Precise spray alignment according to requirements
- Assembly with retaining nut, threaded socket, threaded nipple, welded nipple

Applications:

- Cleaning
- Cooling
- Lubrication



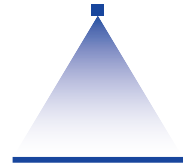
Series 676



Dimensions [in]			Weight [lb] Brass	P _{max} [psi]
L	Ø D ₁	Ø D ₂		
0.98	0.87	0.43	0.10	435

Spray angle	Ordering number			Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]							Spray width B [in] (at p = 75 psi)				
	Type	Material number				p [psi]										H = 10 [in]	H = 20 [in]
		16	30														
						Stainless steel 303	Brass	7	15	30	45	75	liters per minute 5 bar	145			
20°	676.301	●	●	0.03	0.02	0.04*	0.06*	0.09	0.11	0.14	0.51	0.19	3	6			
	676.361	●	●	0.04	0.03	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	3	6			
	676.441	●	●	0.05	0.04	0.16*	0.24	0.34	0.41	0.53	1.98	0.74	3	6			
	676.481	●	●	0.06	0.05	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	3	6			
30°	676.302	●	●	0.03	0.02	0.04*	0.06*	0.09	0.11	0.14	0.51	0.19	5	9			
	676.362	●	●	0.04	0.03	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	5	9			
	676.402	●	●	0.05	0.047	0.13*	0.19	0.27	0.33	0.42	1.58	0.59	5	9			
	676.482	●	●	0.06	0.04	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	5	9			
	676.562	●	●	0.08	0.06	0.32	0.47	0.67	0.82	1.06	3.95	1.48	5	9			
	676.642	●	●	0.10	0.07	0.52	0.76	1.08	1.32	1.70	6.33	2.36	6	10			
	676.722	●	●	0.12	0.09	0.82	1.20	1.69	2.07	2.68	9.96	3.72	6	10			
	676.762	●	●	0.14	0.11	1.04	1.52	2.15	2.63	3.40	12.65	4.73	6	10			
45°	676.303	●	●	0.03	0.02	0.04*	0.06*	0.09	0.11	0.14	0.51	0.19	7	13			
	676.363	●	●	0.04	0.03	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	7	14			
	676.403	●	●	0.05	0.047	0.13*	0.19	0.27	0.33	0.42	1.58	0.59	8	15			
	676.483	●	●	0.06	0.04	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	8	15			
	676.563	●	●	0.08	0.06	0.32	0.47	0.67	0.82	1.06	3.95	1.48	8	16			
	676.643	●	●	0.10	0.07	0.52	0.76	1.08	1.32	1.70	6.33	2.36	9	16			
	676.723	●	●	0.12	0.09	0.82	1.20	1.69	2.07	2.68	9.96	3.72	9	17			
	676.763	●	●	0.14	0.11	1.04	1.52	2.15	2.63	3.40	12.65	4.73	9	17			
60°	676.304	●	●	0.03	0.016	0.04*	0.06*	0.09	0.11	0.14	0.51	0.19	10	19			
	676.334	●	●	0.04	0.02	0.06*	0.09*	0.12	0.15	0.19	0.71	0.27	10	19			
	676.364	●	●	0.05	0.024	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	10	20			
	676.404	●	●	0.06	0.03	0.13*	0.19	0.27	0.33	0.42	1.58	0.59	10	20			
	676.444	●	●	1.35	0.04	0.16*	0.24	0.34	0.41	0.53	1.98	0.74	10	20			
	676.484	●	●	1.50	0.04	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	10	20			

* Differing spray pattern.



Spray angle	Ordering number			Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]							Spray width B [in] (at p = 75 psi)		
	Type	Material number				p [psi]							liters per minute	H = 10 [in]	H = 20 [in]
		16	30			7	15	30	45	75	145				
		Stainless steel 303	Brass									5 bar			
60°	676.514	●	●	0.06	0.04	0.25*	0.35	0.50	0.61	0.79	3.00	1.12	11	20	
	676.564	●	●	0.08	0.05	0.33	0.47	0.66	0.81	1.04	3.95	1.48	11	21	
	676.604	●	●	0.09	0.06	0.41	0.59	0.83	1.02	1.32	4.98	1.86	11	21	
	676.644	●	●	0.10	0.065	0.53	0.75	1.06	1.29	1.67	6.33	2.36	11	21	
	676.674	●	●	0.11	0.07	0.63	0.89	1.25	1.54	1.98	7.51	2.81	11	22	
	676.724	●	●	0.12	0.08	0.83	1.18	1.66	2.04	2.63	9.96	3.72	11	22	
75°	676.764	●	●	0.14	0.09	1.06	1.50	2.11	2.59	3.34	12.65	4.73	11	22	
	676.145	●	●	0.008	0.005	–	0.01*	0.014	0.017	0.021	0.08	0.03	15	27	
	676.165	●	●	0.008	0.003	–	0.01*	0.017	0.02	0.03	0.10	0.04	15	27	
	676.185	●	●	0.008	0.006	–	0.014*	0.02	0.025	0.03	0.12	0.04	15	27	
	676.215	●	●	0.016	0.008	–	0.02*	0.03	0.04	0.05	0.18	0.07	15	27	
	676.245	●	●	0.02	0.012	–	0.03*	0.04	0.05	0.07	0.26	0.10	15	27	
90°	676.275	●	●	0.024	0.012	0.03*	0.04*	0.06	0.07	0.09	0.35	0.13	15	27	
	676.216	●	●	0.016	0.008	–	0.02*	0.03	0.04	0.05	0.18	0.07	17	31	
	676.276	●	●	0.024	0.012	0.03*	0.04*	0.06	0.07	0.09	0.35	0.13	17	31	
	676.306	●	●	0.03	0.016	0.04*	0.06*	0.08	0.11	0.14	0.51	0.19	17	31	
	676.336	●	●	0.035	0.02	0.06*	0.08*	0.12	0.15	0.19	0.71	0.27	17	32	
	676.366	●	●	0.04	0.02	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	18	33	
	676.406	●	●	0.047	0.028	0.13*	0.19	0.27	0.33	0.42	1.58	0.59	18	33	
	676.446	●	●	0.05	0.03	0.16*	0.24	0.33	0.40	0.52	1.98	0.74	18	34	
	676.486	●	●	0.06	0.03	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	19	34	
	676.516	●	●	0.063	0.035	0.25*	0.36	0.51	0.62	0.81	3.00	1.12	19	35	
	676.566	●	●	0.08	0.04	0.32	0.47	0.67	0.82	1.06	3.95	1.48	19	35	
	676.606	●	●	0.09	0.047	0.41	0.60	0.85	1.04	1.34	4.98	1.86	20	36	
	676.646	●	●	0.10	0.05	0.52	0.76	1.08	1.32	1.70	6.33	2.36	20	37	
	676.676	●	●	0.11	0.06	0.62	0.90	1.28	1.56	2.02	7.51	2.81	20	37	
676.726	●	●	0.12	0.07	0.82	1.20	1.69	2.07	2.68	9.96	3.72	20	39		
120°	676.187	●	●	0.014	0.008	–	0.011*	0.02	0.03	0.035	0.13	0.05	20	42	
	676.217	●	●	0.016	0.008	–	0.02*	0.03	0.04	0.05	0.18	0.07	26	43	
	676.247	●	●	0.02	0.008	–	0.03*	0.04	0.05	0.07	0.26	0.10	26	43	
	676.277	●	●	0.024	0.012	–	0.04*	0.06	0.07	0.09	0.35	0.13	26	45	
	676.307	●	●	0.03	0.012	0.04*	0.06*	0.08	0.11	0.14	0.51	0.19	28	49	
	676.337	●	●	0.035	0.016	0.06*	0.08*	0.12	0.15	0.19	0.71	0.27	29	53	
	676.367	●	●	0.04	0.02	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	18	56	
	676.407	●	●	0.047	0.024	0.13*	0.19	0.27	0.33	0.42	1.58	0.59	18	58	
	676.447	●	●	0.05	0.03	0.16*	0.24	0.33	0.40	0.52	1.98	0.74	18	60	
	676.487	●	●	0.06	0.024	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	19	61	
	676.517	●	●	0.063	0.035	0.25*	0.36	0.51	0.62	0.81	3.00	1.12	19	61	
	676.567	●	●	0.08	0.035	0.32	0.47	0.67	0.82	1.06	3.95	1.48	19	63	
	676.607	●	●	0.09	0.04	0.41	0.60	0.85	1.04	1.34	4.98	1.86	20	64	
	676.647	●	●	0.10	0.05	0.52	0.76	1.08	1.32	1.70	6.33	2.36	20	65	
	676.677	●	●	0.11	0.055	0.62	0.90	1.28	1.56	2.02	7.51	2.81	20	65	
	676.727	●	●	0.12	0.06	0.82	1.20	1.69	2.07	2.68	9.96	3.72	20	66	
676.767	●	●	0.14	0.07	1.04	1.52	2.15	2.63	3.40	12.65	4.73	4.7	67		

* Differing spray pattern.

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

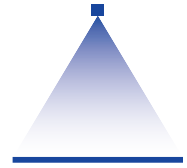
Ordering Type + Material no. = Ordering no.
example: 676.514 + 16 = 676.514.16



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

Low pressure flat fan nozzles with dovetail guide

Series 660

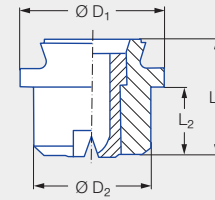


Features:

- Uniform, parabolic liquid distribution
- Stable spray angle
- Spray automatically aligned approx. 5° to the longitudinal axis of the pipe due to dovetail guide
- Assembly with retaining nut
- Non-clogging
- High spray energy



Series 660



Applications:

- Cleaning installations
- Spray pipes
- Cooling pipes

Connection	Dimensions [in]				Weight [lb] Brass
	L ₁	L ₂	Ø D ₁	Ø D ₂	
Assembly with retaining nut 3/8 BSPP and dovetail guide	0.47	0.28	0.58	0.47	0.02

Spray angle	Ordering number				Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]							Spray width B [in] (at p = 75 psi)	
	Type	Material number					p [psi]								
		16	17 ¹	30											
		Stainless steel 303	Stainless steel 316Ti / Stainless steel 316L	Brass			7	15	30	45	75	liters per minute	145	H = 10 [in]	H = 20 [in]
20°	660.301	●	●	●	0.03	0.02	0.04*	0.06*	0.09	0.11	0.14	0.51	0.19	3	6
	660.361	●	●	●	0.04	0.03	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	3	6
	660.441	●	●	●	0.05	0.04	0.16*	0.24	0.34	0.41	0.53	1.98	0.74	3	6
	660.481	●	●	●	0.06	0.05	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	3	6
30°	660.302	●	●	●	0.02	0.02	0.04*	0.06*	0.09	0.11	0.14	0.51	0.19	5	9
	660.362	●	●	●	0.04	0.03	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	5	9
	660.402	●	●	●	0.05	0.035	0.13*	0.13	0.27	0.33	0.42	1.58	0.59	5	9
	660.482	●	●	●	0.06	0.04	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	5	9
	660.562	●	●	●	0.08	0.06	0.32	0.32	0.67	0.81	1.04	3.95	1.48	5	9
45°	660.303	●	●	●	0.03	0.02	0.04*	0.06*	0.09	0.11	0.14	0.51	0.19	7	13
	660.363	●	●	●	0.04	0.024	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	7	14
	660.403	●	●	●	0.05	0.035	0.13*	0.13	0.27	0.33	0.42	1.58	0.59	8	15
	660.483	●	●	●	0.06	0.04	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	8	15
	660.563	●	●	●	0.08	0.06	0.32	0.32	0.67	0.81	1.04	3.95	1.48	8	16
	660.643	●	●	●	0.10	0.07	0.52	0.76	1.08	1.32	1.70	6.33	2.36	9	16
60°	660.304	●	●	●	0.03	0.016	0.04*	0.06*	0.09	0.11	0.14	0.51	0.19	10	19
	660.334	●	●	●	0.035	0.02	0.06*	0.09*	0.12	0.15	0.19	0.71	0.27	10	19
	660.364	●	●	●	0.04	0.024	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	10	20
	660.404	●	●	●	0.047	0.03	0.13*	0.19	0.27	0.33	0.42	1.58	0.59	10	20
	660.444	●	●	●	0.05	0.04	0.16*	0.24	0.34	0.41	0.53	1.98	0.74	10	20

* Differing spray pattern.

¹ We reserve the right to supply material 316Ti or 316L under material no. 17.





Spray angle	Ordering number				Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]							Spray width B [in] (at p = 75 psi)	
	Type	Material number					p [psi]							H = 10 [in]	H = 20 [in]
		16	17 ¹	30			7	15	30	45	75	liters per minute 5 bar	145		
		Stainless steel 303	Stainless steel 316Ti/ Stainless steel 316L	Brass											
60°	660.484	●	●	●	0.06	0.04	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	10	20
	660.514	●	●	●	0.063	0.043	0.25*	0.36	0.51	0.62	0.81	3.00	1.12	11	20
	660.564	●	●	●	0.08	0.05	0.32	0.47	0.67	0.82	1.06	3.95	1.48	11	21
	660.604	●	●	●	0.09	0.06	0.41	0.60	0.85	1.04	1.34	4.98	1.86	11	21
	660.644	●	●	●	0.10	0.063	0.52	0.76	1.08	1.32	1.70	6.33	2.36	11	21
	660.724	●	●	●	0.12	0.08	0.82	1.20	1.69	2.07	2.68	9.96	3.72	11	22
660.804	●	●	●	0.16	0.10	1.30	1.90	2.69	3.29	4.25	15.81	5.91	11	23	
75°	660.145	●		●	0.008	0.005	–	0.01*	0.014	0.017	0.021	0.08	0.03	15	27
	660.165	●		●	0.008	0.005	–	0.01*	0.017	0.02	0.03	0.10	0.04	15	27
	660.185	●		●	0.008	0.006	–	0.011*	0.02	0.03	0.035	0.13	0.05	15	27
	660.215	●		●	0.02	0.008	–	0.02*	0.03	0.04	0.05	0.18	0.07	15	27
	660.245	●		●	0.02	0.012	–	0.03*	0.04	0.05	0.07	0.26	0.10	15	27
	660.275	●		●	0.024	0.012	0.03*	0.04*	0.06	0.07	0.09	0.35	0.13	15	27
90°	660.216	●		●	0.016	0.008	–	0.02*	0.03	0.04	0.05	0.18	0.07	17	31
	660.276	●		●	0.02	0.012	0.03*	0.04*	0.06	0.07	0.09	0.35	0.13	17	31
	660.306	●	●	●	0.03	0.016	0.04*	0.06*	0.09	0.11	0.14	0.51	0.19	17	31
	660.336	●	●	●	0.035	0.02	0.06*	0.09*	0.12	0.15	0.19	0.71	0.27	17	32
	660.366	●	●	●	0.04	0.02	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	18	33
	660.406	●	●	●	0.047	0.028	0.13*	0.19	0.27	0.33	0.42	1.58	0.59	18	33
	660.446	●	●	●	0.05	0.03	0.16*	0.24	0.34	0.41	0.53	1.98	0.74	18	34
	660.486	●	●	●	0.06	0.03	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	19	34
	660.516	●	●	●	0.063	0.035	0.25*	0.36	0.51	0.62	0.81	3.00	1.12	19	35
	660.566	●	●	●	0.08	0.04	0.32	0.47	0.67	0.82	1.06	3.95	1.48	19	35
	660.606	●	●	●	0.09	0.047	0.41	0.60	0.85	1.04	1.34	4.98	1.86	20	36
	660.646	●	●	●	0.10	0.05	0.52	0.76	1.08	1.32	1.70	6.33	2.36	20	37
	660.676	●	●	●	0.11	0.06	0.62	0.90	1.28	1.56	2.02	7.51	2.81	20	37
	660.726	●	●	●	0.12	0.07	0.82	1.20	1.69	2.07	2.68	9.96	3.72	20	39
	660.806		●	●	0.16	0.09	1.30	1.90	2.69	3.29	4.25	15.81	5.91	21	41
120°	660.187	●		●	0.014	0.008	–	0.011*	0.02	0.03	0.035	0.13	0.05	25	42
	660.217	●		●	0.016	0.008	–	0.02*	0.03	0.04	0.05	0.18	0.07	26	43
	660.247	●		●	0.02	0.012	–	0.03*	0.04	0.05	0.07	0.26	0.10	26	43
	660.277	●		●	0.024	0.012	0.03*	0.04*	0.06	0.07	0.09	0.35	0.13	26	45
	660.307	●		●	0.03	0.012	0.04*	0.06*	0.09	0.11	0.14	0.51	0.19	28	49
	660.337	●	●	●	0.035	0.016	0.06*	0.09*	0.12	0.15	0.19	0.71	0.27	29	53
	660.367	●	●	●	0.04	0.016	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	31	56
	660.407	●	●	●	0.047	0.02	0.13*	0.19	0.27	0.33	0.42	1.58	0.59	33	58
	660.447	●	●	●	0.05	0.02	0.16*	0.24	0.34	0.41	0.53	1.98	0.74	33	60
	660.487	●	●	●	0.06	0.02	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	33	61
	660.517	●	●	●	0.063	0.035	0.25*	0.36	0.51	0.62	0.81	3.00	1.12	33	61
	660.567	●	●	●	0.08	0.035	0.32	0.47	0.67	0.82	1.06	3.95	1.48	34	63
	660.607	●	●	●	0.09	0.04	0.41	0.60	0.85	1.04	1.34	4.98	1.86	34	64
	660.647	●	●	●	0.10	0.05	0.52	0.76	1.08	1.32	1.70	6.33	2.36	35	65
	660.727	●	●	●	0.12	0.06	0.83	1.20	1.66	2.04	2.63	9.96	3.72	35	66
	660.807	●		●	0.16	0.08	1.30	1.90	2.69	3.29	4.25	15.81	5.91	35	67

* Differing spray pattern.

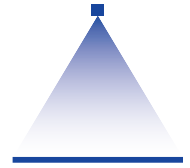
¹ We reserve the right to supply material 316Ti or 316L under material no. 17.

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: 660.484 + 16 = 660.484.16



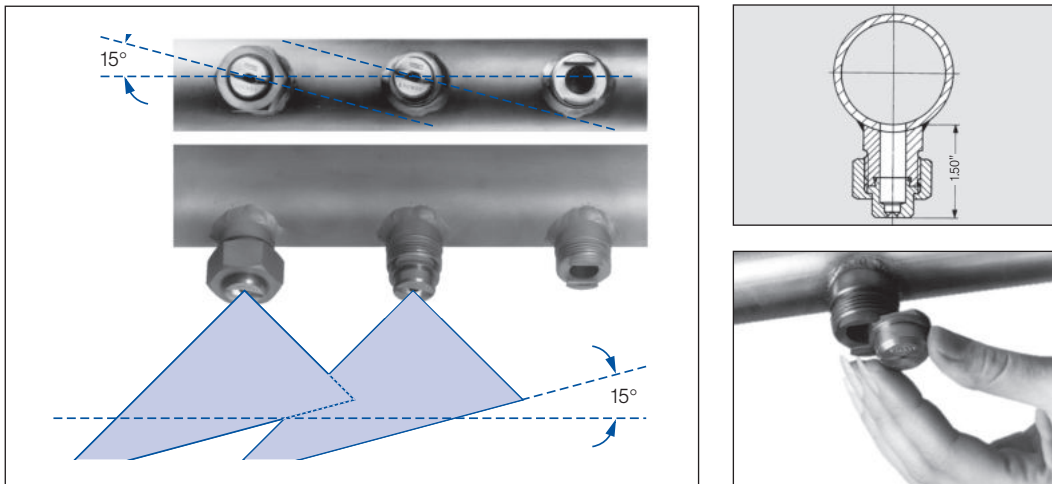
Assembly accessories can be found in Chapter 12 "Accessories".



Accessories

Nipple **066. 011. 17** (316 SS) Weight: .14 lb.

Retaining nut **065. 200. 16** (303 SS)
065. 200. 17 (316 SS)
065. 200. 30 (Brass) Weight: .13 lb.

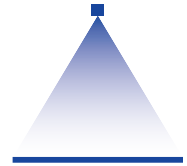


Standard accessories, alignment, and installation for the Series 664 dovetail nozzle tip

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

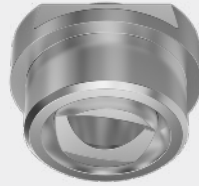
Low pressure flat fan nozzles with dovetail guide

Series 664/665

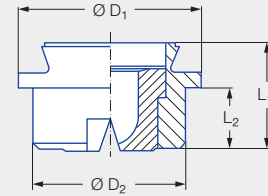


Features:

- Uniform, parabolic liquid distribution
- Stable spray angle
- Spray automatically aligned approx. 15° to the longitudinal axis of the pipe via dovetail guide
- Assembly with retaining nut
- Non-clogging
- High spray energy



Series 664/665



Applications:

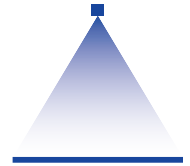
- Cleaning installations
- Spray pipes
- Roll cooling
- Cooling pipes
- Cooling of rolled stock

Code	Dimensions [in]				Weight [lb]
	L ₁	L ₂	Ø D ₁	Ø D ₂	
Assembly with retaining nut 3/4 BSPP and dovetail guide	0.55	0.31	0.94	0.79	.08

Spray angle	Ordering number				Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]							Spray width B [in] (at p = 75 psi)	
	Type	Material number					p [psi]								
		16	17 ¹	30			7	15	30	45	75	liters per minute 5 bar	145		
20°	664.721	●	●	●	0.12	0.10	0.82	1.20	1.69	2.07	2.68	9.96	3.72	4	7
	664.801	●	●	●	0.16	0.13	1.30	1.90	2.69	3.29	4.25	15.81	5.91	4	7
	664.881	●	●	●	0.20	0.16	2.08	3.04	4.30	5.26	6.80	25.30	9.45	4	7
	664.921	●	●	●	0.22	0.17	2.60	3.80	5.37	6.58	8.49	31.62	11.81	4	7
	664.961	●	●	●	0.24	0.20	3.24	4.75	6.72	8.23	10.62	39.53	14.77	4	7
30°	664.722	●	●	●	0.12	0.09	0.82	1.20	1.69	2.07	2.68	9.96	3.72	6	10
	664.762	●	●	●	0.14	0.11	1.04	1.52	2.15	2.63	3.40	12.65	4.73	6	10
	664.802	●	●	●	0.16	0.12	1.30	1.90	2.69	3.29	4.25	15.81	5.91	6	10
	664.882	●	●	●	0.20	0.16	2.08	3.04	4.30	5.26	6.80	25.30	9.45	6	11
	664.922	●	●	●	0.22	0.17	2.60	3.80	5.37	6.58	8.49	31.62	11.81	6	11
	664.962	●	●	●	0.24	0.20	3.24	4.75	6.72	8.23	10.62	39.53	14.77	6	11
	665.042	●	●	●	0.31	0.25	5.19	7.60	10.75	13.16	16.99	63.25	23.63	6	11
	665.122	●	●	●	0.39	0.32	8.18	11.97	16.92	20.73	26.76	99.61	37.21	6	11

¹ We reserve the right to supply material 316Ti or 316L under material no. 17.





Spray angle	Ordering number				Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]							Spray width B [in] (at p = 75 psi)	
	Type	Material number					p [psi]								
		16	17 ¹	30								liters per minute	H = 10 [in]		
		Stainless steel 303	Stainless steel 316Ti/ Stainless steel 316L	Brass			7	15	30	45	75	5 bar	145		
45°	664.723	●	●	●	0.12	0.09	0.82	1.20	1.69	2.07	2.68	9.96	3.72	9	17
	664.763	●	●	●	0.14	0.10	1.04	1.52	2.15	2.63	3.40	12.65	4.73	9	17
	664.803	●	●	●	0.16	0.12	1.32	1.90	2.69	3.29	4.25	15.81	5.91	9	17
	664.843	●	●	●	0.18	0.13	1.62	2.37	3.36	4.11	5.31	19.76	7.38	9	17
	664.883	●	●	●	0.20	0.15	2.08	3.04	4.30	5.26	6.80	25.30	9.45	9	17
	664.923	●	●	●	0.22	0.165	2.60	3.80	5.37	6.58	8.49	31.62	11.81	9	17
	664.963	●	●	●	0.24	0.17	3.24	4.75	6.72	8.23	10.62	39.53	14.77	9	17
	665.043			●	0.31	0.23	5.19	7.60	10.75	13.16	16.99	63.25	23.63	9	17
60°	664.724	●	●	●	0.12	0.08	0.82	1.20	1.69	2.07	2.68	9.96	3.72	11	22
	664.764	●	●	●	0.14	0.09	1.04	1.52	2.15	2.63	3.40	12.65	4.73	11	22
	664.804	●	●	●	0.16	0.10	1.32	1.90	2.69	3.29	4.25	15.81	5.91	11	23
	664.844	●	●	●	0.18	0.12	1.62	2.37	3.36	4.11	5.31	19.76	7.38	11	23
	664.884	●	●	●	0.20	0.13	2.08	3.04	4.30	5.26	6.80	25.30	9.45	11	23
	664.924	●	●	●	0.22	0.16	2.60	3.80	5.37	6.58	8.49	31.62	11.81	11	23
	664.964	●	●	●	0.24	0.17	3.24	4.75	6.72	8.23	10.62	39.53	14.77	11	23
	665.044	●	●	●	0.31	0.22	5.19	7.60	10.75	13.16	16.99	63.25	23.63	11	23
	665.084		●	●	0.35	0.24	6.49	9.50	13.43	16.45	21.24	79.06	29.24	11	23
665.124			●	0.39	0.29	8.18	11.97	16.92	20.73	26.76	99.61	37.21	11	23	
90°	664.726	●	●	●	0.12	0.067	0.82	1.20	1.69	2.07	2.68	9.96	3.72	20	39
	664.766	●	●	●	0.14	0.075	1.04	1.52	2.15	2.63	3.40	12.65	4.73	21	39
	664.806	●	●	●	0.16	0.09	1.32	1.90	2.69	3.29	4.25	15.81	5.91	21	41
	664.846	●	●	●	0.18	0.09	1.62	2.37	3.36	4.11	5.31	19.76	7.38	21	41
	664.886	●	●	●	0.20	0.12	2.08	3.04	4.30	5.26	6.80	25.30	9.45	21	42
	664.926	●	●	●	0.22	0.14	2.60	3.80	5.37	6.58	8.49	31.62	11.81	21	42
	664.966	●	●	●	0.24	0.15	3.24	4.75	6.72	8.23	10.62	39.53	14.77	21	42
	665.046			●	0.31	0.19	5.19	7.60	10.75	13.16	16.99	63.25	23.63	21	42
	665.126			●	0.39	0.25	8.18	11.97	16.92	20.73	26.76	99.61	37.21	21	42
120°	664.727	●	●	●	0.12	0.06	0.82	1.20	1.69	2.07	2.68	9.96	3.72	35	66
	664.767	●	●	●	0.14	0.07	1.04	1.52	2.15	2.63	3.40	12.65	4.73	35	67
	664.807	●	●	●	0.16	0.08	1.32	1.90	2.69	3.29	4.25	15.81	5.91	35	67
	664.887	●	●	●	0.20	0.10	2.08	3.04	4.30	5.26	6.80	25.30	9.45	36	67
	664.927	●	●	●	0.22	0.11	2.60	3.80	5.37	6.58	8.49	31.62	11.81	36	67
	664.967			●	0.24	0.13	3.24	4.75	6.72	8.23	10.62	39.53	14.77	36	67
	665.047			●	0.31	0.17	5.19	7.60	10.75	13.16	16.99	63.25	23.63	36	67

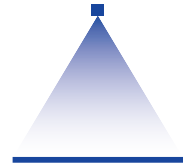
¹ We reserve the right to supply material 316Ti or 316L under material no. 17.

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

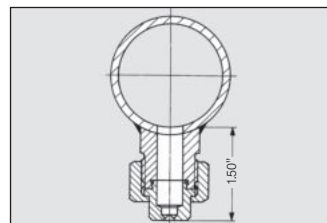
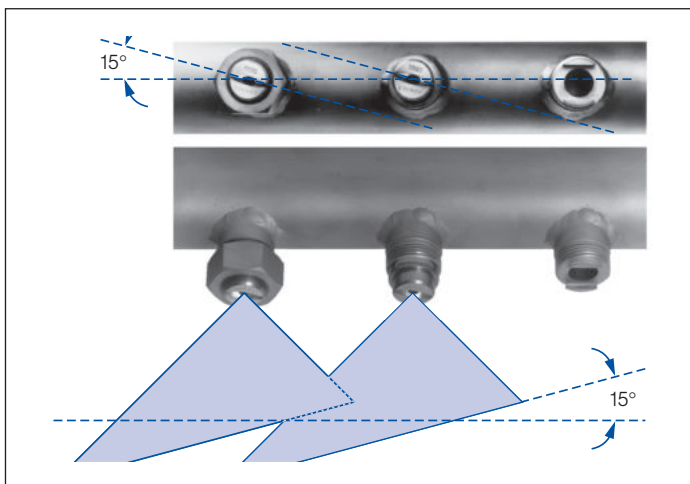
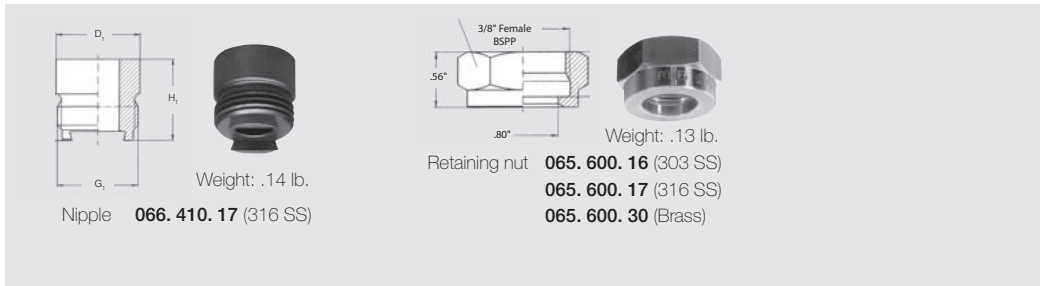
Ordering Type + Material no. = Ordering no.
example: 664.723 + 16 = 664.723.16



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



Accessories

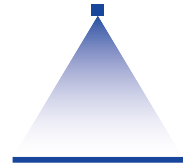


Standard accessories, alignment, and installation for the Series 664 dovetail nozzle tip

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

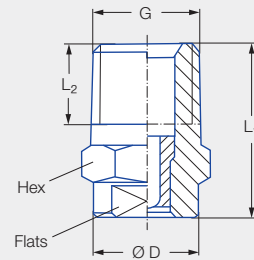
High pressure flat fan nozzles

Series 602



Features:

- Sharp, uniform flat fan spray
- Extremely narrow spray depth
- Housing: Stainless steel 303,
Insert: Hardened stainless steel 420F



Applications:

- High pressure cleaning

Series 602

G	Dimensions [in]					Weight [lb]	p _{max} ¹ [psi]
	L ₁	L ₂	Ø D	Hex (mm)	Flats (mm)		
1/4 BSPT	0.87	0.39	0.51	14	10	.04	approx. 10,153
1/4 NPT	0.87	0.40	0.51	14	10	.04	approx. 10,153

¹ Applies only to operation at constant pressure.

International Code US gal/min. at 40 psi	Ordering number							Equivalent bore diameter A [in]	V̇ water [gal/min]								
	Series	Flow rate code				Mat. No. A3	Connection		p [psi]								
		Spray angle					Stainless steel 303/420F		1/4 BSPT	1/4 NPT	liters per minute 80 bar						
		20°	30°	45°	60°						40	600	1000	1500	2000	3000	4500
02	602	361	362	363	364	●	00	07	0.039	0.20	0.77	4.08	1.00	1.22	1.41	1.73	2.12
021	602	371	372	373	374	●	00	07	0.040	0.21	0.81	4.28	1.05	1.29	1.49	1.82	2.23
025	602	381	382	383	384	●	00	07	0.043	0.25	0.97	5.10	1.25	1.53	1.77	2.16	2.65
028	602	391	392	393	394	●	00	07	0.045	0.28	1.09	5.71	1.40	1.72	1.98	2.43	2.97
03	602	401	402	403	404	●	00	07	0.046	0.30	1.16	6.11	1.50	1.84	2.12	2.60	3.18
034	602	411	412	413	414	●	00	07	0.051	0.34	1.32	6.93	1.70	2.08	2.40	2.94	3.61
038	602	441	442	443		●	00	07	0.052	0.38	1.47	7.75	1.90	2.33	2.69	3.29	4.03
04	602	451	452	453	454	●	00	07	0.053	0.40	1.55	8.16	2.00	2.45	2.83	3.47	4.25
043	602	461	462			●	00	07	0.054	0.43	1.67	8.77	2.15	2.63	3.04	3.72	4.56
045	602	471	472	473	474	●	00	07	0.055	0.45	1.74	9.18	2.25	2.76	3.18	3.90	4.77
05	602	481	482	483	484	●	00	07	0.061	0.50	1.94	10.20	2.50	3.06	3.54	4.33	5.30
055	602	501	502	503	504	●	00	07	0.063	0.55	2.13	11.22	2.75	3.37	3.89	4.76	5.83
06	602	521	522	523	524	●	00	07	0.068	0.60	2.32	12.24	3.00	3.67	4.24	5.20	6.36
065	602	531	532	533	534	●	00	07	0.069	0.65	2.52	13.26	3.25	3.98	4.60	5.63	6.89
07	602	541	542	543	544	●	00	07	0.071	0.70	2.71	14.28	3.50	4.29	4.95	6.06	7.42
075	602	551	552	553	554	●	00	07	0.075	0.75	2.90	15.29	3.75	4.59	5.30	6.49	7.95
08	602	571	572	573	574	●	00	07	0.080	0.80	3.10	16.31	4.00	4.90	5.66	6.93	8.49
087	602	581	582	583	584	●	00	07	0.081	0.87	3.37	17.74	4.35	5.33	6.15	7.53	9.23
09	602	591	592	593	594	●	00	07	0.083	0.90	3.49	18.35	4.50	5.51	6.37	7.80	9.55
10	602	601	602	603	604	●	00	07	0.091	1.00	3.87	20.38	5.00	6.12	7.07	8.66	10.60
11	602	621	622	623	624	●	00	07	0.094	1.10	4.26	22.42	5.50	6.74	7.78	9.53	11.67
125	602	641	642	643	644	●	00	07	0.098	1.25	4.84	25.48	6.25	7.65	8.84	10.83	13.26
131	602	651	652	653	654	●	00	07	0.100	1.31	5.07	26.71	6.55	8.02	9.27	11.35	13.90
139	602	661	662	663	664	●	00	07	0.104	1.39	5.38	28.34	6.95	8.51	9.83	12.04	14.74
15	602	671	672	673	674	●	00	07	0.106	1.50	5.81	30.58	7.50	9.18	10.60	12.99	15.91
175	602	701	702	703	704	●	00	07	0.118	1.75	6.78	35.68	8.75	10.72	12.38	15.16	18.56
20	602			723	724	●	00	07	0.120	2.00	7.75	40.78	10.00	12.25	14.14	17.32	21.21
25	602			763	764	●	00	07	0.138	2.50	9.68	50.97	12.50	15.31	17.68	21.65	26.52
30	602			793		●	00	07	0.153	3.00	11.62	61.16	15.00	18.37	21.21	25.98	31.82

Conversion formula for this series: $\dot{V}_2 = \dot{V}_1 \cdot \sqrt{\frac{P_2}{P_1}}$

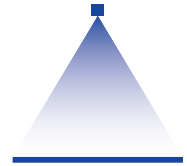


Assembly accessories can be found in Chapter 12 "Accessories".

Ordering example: 602 + 361 + A3 + 00 = Ordering no. = 602.361.A3.00

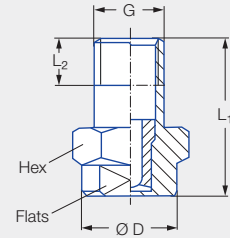
High pressure flat fan nozzles

Series 608



Features:

- Sharp, uniform flat fan spray
- Extremely narrow spray depth
- Housing: Stainless steel 303,
Insert: Hardened stainless steel 420F



Applications:

- High pressure cleaning

Series 608

G	Dimensions [in]					Weight [lb]	P _{max} ¹ [bar]
	L ₁	L ₂	Ø D	Hex (mm)	Flats (mm)		
1/8 BSPT	0.87	0.39	0.51	14	10	.04	approx. 10,153
1/8 NPT	0.87	0.40	0.51	14	10	.04	approx. 10,153

¹ Applies only to operation at constant pressure.

International Code US gal/min. at 40 psi	Ordering number								Equivalent bore diameter A [in]	V̇ water [gal/min]								
	Series	Flow rate code				Mat. No. A3	Connection			p [psi]								
		Spray angle					Stainless steel 303/420F	1/8 BSPT		1/8 NPT	40	600	liters per minute 80 bar	1000	1500	2000	3000	4500
		20°	30°	45°	60°													
02	608	361	362	363	364	●	00	07	0.039	0.20	0.77	4.08	1.00	1.22	1.41	1.73	2.12	
021	608	371	372	373	374	●	00	07	0.040	0.21	0.81	4.28	1.05	1.29	1.49	1.82	2.23	
025	608	381	382	383	384	●	00	07	0.043	0.25	0.97	5.10	1.25	1.53	1.77	2.16	2.65	
028	608	391	392	393	394	●	00	07	0.045	0.28	1.09	5.71	1.40	1.72	1.98	2.43	2.97	
03	608	401	402	403	404	●	00	07	0.046	0.30	1.16	6.11	1.50	1.84	2.12	2.60	3.18	
034	608	411	412	413	414	●	00	07	0.051	0.34	1.32	6.93	1.70	2.08	2.40	2.94	3.61	
038	608	441	442	443		●	00	07	0.052	0.38	1.47	7.75	1.90	2.33	2.69	3.29	4.03	
04	608	451	452	453	454	●	00	07	0.053	0.40	1.55	8.16	2.00	2.45	2.83	3.47	4.25	
043	608	461	462			●	00	07	0.054	0.43	1.67	8.77	2.15	2.63	3.04	3.72	4.56	
045	608	471	472	473	474	●	00	07	0.055	0.45	1.74	9.18	2.25	2.76	3.18	3.90	4.77	
05	608	481	482	483	484	●	00	07	0.061	0.50	1.94	10.20	2.50	3.06	3.54	4.33	5.30	
055	608	501	502	503	504	●	00	07	0.063	0.55	2.13	11.22	2.75	3.37	3.89	4.76	5.83	
06	608	521	522	523	524	●	00	07	0.068	0.60	2.32	12.24	3.00	3.67	4.24	5.20	6.36	
065	608	531	532	533	534	●	00	07	0.069	0.65	2.52	13.26	3.25	3.98	4.60	5.63	6.89	
07	608	541	542	543	544	●	00	07	0.071	0.70	2.71	14.28	3.50	4.29	4.95	6.06	7.42	
075	608	551	552	553	554	●	00	07	0.075	0.75	2.90	15.29	3.75	4.59	5.30	6.49	7.95	
08	608	571	572	573	574	●	00	07	0.080	0.80	3.10	16.31	4.00	4.90	5.66	6.93	8.49	
087	608	581	582	583	584	●	00	07	0.081	0.87	3.37	17.74	4.35	5.33	6.15	7.53	9.23	
09	608	591	592	593	594	●	00	07	0.083	0.90	3.49	18.35	4.50	5.51	6.37	7.80	9.55	
10	608	601	602	603	604	●	00	07	0.091	1.00	3.87	20.38	5.00	6.12	7.07	8.66	10.60	

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

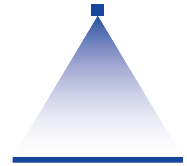


Assembly accessories can be found in Chapter 12 "Accessories".

Ordering Series + Flow rate code + Material no. + Code = Ordering no.
example: 608 + 361 + A3 + 00 = 608.361.A3.00

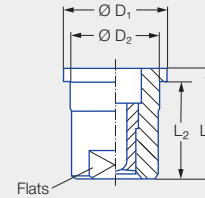
High pressure flat fan nozzles

Series 652



Features:

- Sharp, uniform flat fan spray
- Extremely narrow spray depth
- Assembly with retaining nut
- Housing: Stainless steel 303,
Insert: Hardened stainless steel 420F



Applications:

- High pressure cleaning

Series 652

G	Dimensions [in]					Weight [lb]	p _{max} ¹ [psi]
	L ₁	L ₂	Ø D ₁	Ø D ₂	Flats (mm)		
Assembly with retaining nut 3/8 BSPP	0.63	0.55	0.58	0.50	10	0.03	approx. 4,351

¹ Applies only to operation at constant pressure.

International Code US gal/min. at 40 psi	Ordering number							Equivalent bore diameter A [in]	V̇ water [gal/min]							
	Series	Flow rate code				Mat. No. A3 Stainless steel 303/420F	Connection For retaining nut		p [psi]							
		Spray angle							liters per minute							
		20°	30°	45°	60°				80 bar	1000	1500	2000	3000	4500		
02	652	361	362	363	364	●	29	0.039	0.20	0.77	4.08	1.00	1.22	1.41	1.73	2.12
021	652	371	372	373	374	●	29	0.040	0.21	0.81	4.28	1.05	1.29	1.49	1.82	2.23
025	652	381	382	383	384	●	29	0.043	0.25	0.97	5.10	1.25	1.53	1.77	2.16	2.65
028	652	391	392	393	394	●	29	0.045	0.28	1.09	5.71	1.40	1.72	1.98	2.43	2.97
03	652	401	402	403	404	●	29	0.046	0.30	1.16	6.11	1.50	1.84	2.12	2.60	3.18
034	652	411	412	413	414	●	29	0.051	0.34	1.32	6.93	1.70	2.08	2.40	2.94	3.61
038	652	441	442	443	444	●	29	0.052	0.38	1.47	7.75	1.90	2.33	2.69	3.29	4.03
04	652	451	452	453	454	●	29	0.053	0.40	1.55	8.16	2.00	2.45	2.83	3.47	4.25
043	652	461	462	463	464	●	29	0.054	0.43	1.67	8.77	2.15	2.63	3.04	3.72	4.56
045	652	471	472	473	474	●	29	0.055	0.45	1.74	9.18	2.25	2.76	3.18	3.90	4.77
05	652	481	482	483	484	●	29	0.061	0.50	1.94	10.20	2.50	3.06	3.54	4.33	5.30
055	652	501	502	503	504	●	29	0.063	0.55	2.13	11.22	2.75	3.37	3.89	4.76	5.83
06	652	521	522	523	524	●	29	0.068	0.60	2.32	12.24	3.00	3.67	4.24	5.20	6.36
065	652	531	532	533	534	●	29	0.069	0.65	2.52	13.26	3.25	3.98	4.60	5.63	6.89
07	652	541	542	543	544	●	29	0.071	0.70	2.71	14.28	3.50	4.29	4.95	6.06	7.42
075	652	551	552	553	554	●	29	0.075	0.75	2.90	15.29	3.75	4.59	5.30	6.49	7.95
08	652	571	572	573	574	●	29	0.080	0.80	3.10	16.31	4.00	4.90	5.66	6.93	8.49
087	652	581	582	583	584	●	29	0.081	0.87	3.37	17.74	4.35	5.33	6.15	7.53	9.23
09	652	591	592	593	594	●	29	0.083	0.90	3.49	18.35	4.50	5.51	6.37	7.80	9.55
10	652	601	602	603	604	●	29	0.091	1.00	3.87	20.38	5.00	6.12	7.07	8.66	10.60
11	652	621	622	623	624	●	29	0.094	1.10	4.26	22.42	5.50	6.74	7.78	9.53	11.67
125	652	641	642	643	644	●	29	0.098	1.25	4.84	25.48	6.25	7.65	8.84	10.83	13.26
131	652	651	652	653	654	●	29	0.100	1.31	5.07	26.71	6.55	8.02	9.27	11.35	13.90
139	652	661	662	663	664	●	29	0.104	1.39	5.38	28.34	6.95	8.51	9.83	12.04	14.74
15	652	671	672	673	674	●	29	0.106	1.50	5.81	30.58	7.50	9.18	10.60	12.99	15.91
175	652	701	702	703	704	●	29	0.118	1.75	6.78	35.68	8.75	10.72	12.38	15.16	18.56
20	652			723	724	●	29	0.120	2.00	7.75	40.78	10.00	12.25	14.14	17.32	21.21
25	652			763	764	●	29	0.138	2.50	9.68	50.97	12.50	15.31	17.68	21.65	26.52
30	652			793		●	29	0.153	3.00	11.62	61.16	15.00	18.37	21.21	25.98	31.82

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

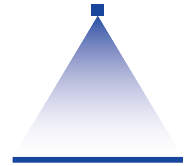


Assembly accessories can be found in Chapter 12 "Accessories".

Ordering example: 652 + 361 + A3 + 29 = Ordering no. = 652.361.A3.29

High pressure flat fan nozzles

Series 6FH with spray stabilizer



Features:

- Sharp, uniform flat fan spray
- Extremely narrow spray depth
- Nozzle with spray stabilizer
- Housing: Stainless steel 303, Insert: Hardened stainless steel 420F, spray stabilizer: Stainless steel 301



Series 6FH

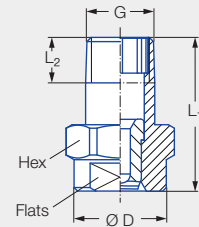


Figure 1

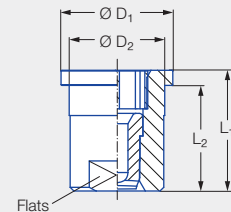


Figure 2

Applications:

- High pressure cleaning

Figure	G	Dimensions [in]							Weight [lb]	p _{max} ¹ [psj]
		L ₁	L ₂	Ø D	Ø D ₁	Ø D ₂	Hex (mm)	Flats (mm)		
1	1/8 BSPT	0.87	0.26	0.51	–	–	14	10	0.03	approx. 10,153
1	1/8 NPT	0.87	0.26	0.51	–	–	14	10	0.03	approx. 10,153
1	1/4 BSPT	0.87	0.39	0.51	–	–	14	10	0.04	approx. 10,153
1	1/4 NPT	0.87	0.40	0.51	–	–	14	10	0.04	approx. 10,153
2	–	0.63	0.55	–	0.58	0.50	–	10	0.03	approx. 4,351

¹ Applies only to operation at constant pressure.

Series	Ordering number				Mat. No. A3 Stainless steel 303/420F/301	Equivalent bore diameter A [in]	V̇ water [gal/min]								
	Flow rate code						p [psi]								
	Spray angle						liters per minute	40	600	80 bar	1000	1500	2000	3000	4500
	20°	30°	45°	60°											
6FH	361	362	363	364	●	0.039	0.20	0.77	4.08	1.00	1.22	1.41	1.73	2.12	
6FH	371	372	373	374	●	0.040	0.21	0.81	4.28	1.05	1.29	1.49	1.82	2.23	
6FH	381	382	383	384	●	0.043	0.25	0.97	5.10	1.25	1.53	1.77	2.16	2.65	
6FH	391	392	393	394	●	0.046	0.28	1.09	5.71	1.40	1.72	1.98	2.43	2.97	
6FH	401	402	403	404	●	0.047	0.30	1.16	6.11	1.50	1.84	2.12	2.60	3.18	
6FH	411	412	413	414	●	0.051	0.34	1.32	6.93	1.70	2.08	2.40	2.94	3.61	
6FH	441	442	443		●	0.052	0.38	1.47	7.75	1.90	2.33	2.69	3.29	4.03	
6FH	451	452	453	454	●	0.053	0.40	1.55	8.16	2.00	2.45	2.83	3.47	4.25	
6FH	461	462			●	0.054	0.43	1.67	8.77	2.15	2.63	3.04	3.72	4.56	
6FH	471	472	473	474	●	0.055	0.45	1.74	9.18	2.25	2.76	3.18	3.90	4.77	
6FH	481	482	483	484	●	0.061	0.50	1.94	10.20	2.50	3.06	3.54	4.33	5.30	
6FH	501	502	503	504	●	0.063	0.55	2.13	11.22	2.75	3.37	3.89	4.76	5.83	
6FH	521	522	523	524	●	0.068	0.60	2.32	12.24	3.00	3.67	4.24	5.20	6.36	

Series	Ordering number					Equivalent bore diameter A [in]	V̇ water [gal/min]							
	Flow rate code				Mat. No.		p [psi]							
	Spray angle						Stainless steel 303/420F/301							
	20°	30°	45°	60°	40			600	liters per minute 80 bar	1000	1500	2000	3000	4500
6FH	531	532	533	534	●	0.069		0.65	2.52	13.26	3.25	3.98	4.60	5.63
6FH	541	542	543	544	●	0.071	0.70	2.71	14.28	3.50	4.29	4.95	6.06	7.42
6FH	551	552	553	554	●	0.075	0.75	2.90	15.29	3.75	4.59	5.30	6.49	7.95
6FH	571	572	573	574	●	0.080	0.80	3.10	16.31	4.00	4.90	5.66	6.93	8.49
6FH	581	582	583	584	●	0.081	0.87	3.37	17.74	4.35	5.33	6.15	7.53	9.23
6FH	591	592	593	594	●	0.083	0.90	3.49	18.35	4.50	5.51	6.37	7.80	9.55
6FH	601	602	603	604	●	0.091	1.00	3.87	20.38	5.00	6.12	7.07	8.66	10.60
6FH	621*	622*	623*	624*	●	0.094	1.10	4.26	22.42	5.50	6.74	7.78	9.53	11.67
6FH	641*	642*	643*	644*	●	0.098	1.25	4.84	25.48	6.25	7.65	8.84	10.83	13.26
6FH	651*	652*	653*	654*	●	0.100	1.31	5.07	26.71	6.55	8.02	9.27	11.35	13.90
6FH	661*	662*	663*	664*	●	0.104	1.39	5.38	28.34	6.95	8.51	9.83	12.04	14.74
6FH	671*	672*	673*	674*	●	0.106	1.50	5.81	30.58	7.50	9.18	10.60	12.99	15.91
6FH	701*	702*	703*	704*	●	0.12	1.75	6.78	35.68	8.75	10.72	12.38	15.16	18.56
6FH			723*	724*	●	0.12	2.00	7.75	40.78	10.00	12.25	14.14	17.32	21.21
6FH			763*	764*	●	0.14	2.50	9.68	50.97	12.50	15.31	17.68	21.65	26.52
6FH			793*		●	0.15	3.00	11.62	61.16	15.00	18.37	21.21	25.98	31.82

* Only available with code CC, BC or 29.

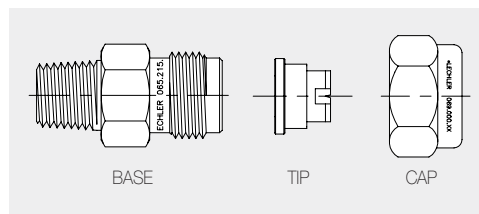
Code	Type of connection
CA	1/8 BSPT
BA	1/8 NPT
CC	1/4 BSPT
BC	1/4 NPT
29	Assembly with retaining nut 3/8 BSPP

Bases and Caps for Mounting

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

Ordering Type + Material no. + Code = Ordering no.
example: 6FH.404 + A3 + BA = 6FH.404.A3.BA

1) We reserve the right to deliver material 316 SS or 316L SS, if we show the material code 17.



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



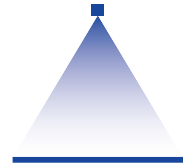
Assembly accessories can be found in Chapter 12 "Accessories".

Ordering Series + Flow rate code + Material no. + Code = Ordering no.
example: 6FH + 541 + A3 + BA = 6FH.541.A3.BA

Low pressure flat fan nozzles

Belt lubrication

Series 652



Features:

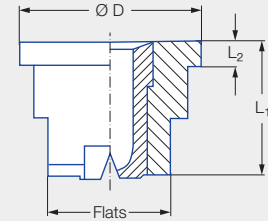
- Particularly low flow rate
- Parabolic liquid distribution
- Assembly with retaining nut

Applications:

- Belt lubrication
- Spraying on food products
- Moistening of rollers
- Oiling of metal sheets



Series 652.xxx.56.03



Connection	Material	Dimensions [in]				Weight [lb]
		L ₁	L ₂	Ø D	Flats (mm)	
Assembly with retaining nut 3/8 BSPP	Stainless steel 303	0.43	0.08	0.58	10	.02
	POM/Stainless steel	0.47	0.08	0.58	8	.007
	POM	0.43	0.08	0.59	8	.004

Spray angle	Type	Ordering number			Color	Narrowest free cross section Ø [in]	V̇ water [gal/min]				
		Material number					p [psi]				
		16	8H.03	56.03			liters per minute				
		Stainless steel 303	Housing: POM Insert: 303 SS	POM					3 bar		
75°	652.145	●	●	●	Green	0.004	0.009*	0.013	0.016	0.06	0.021
	652.165	●	●		Black	0.005	0.012*	0.02	0.021	0.08	0.03
	652.185	●	●	●	Red	0.006	0.016*	0.02	0.03	0.10	0.035
	652.215	●	●	●	Blue	0.008	0.02*	0.03	0.04	0.14	0.05
	652.245	●	●	●	Orange	0.012	0.03*	0.04	0.05	0.20	0.07
	652.275	●	●		Brown	0.012	0.04*	0.06	0.07	0.27	0.09
120°	652.187	●	●		Grey	0.008	0.016*	0.02	0.03	0.10	0.035
	652.247	●	●		Black	0.008	0.03*	0.04	0.05	0.20	0.07
	652.277	●	●		Black	0.012	0.04*	0.06	0.07	0.27	0.09

* Differing spray pattern.

¹ We reserve the right to supply material 316Ti or 316L under material no. 17.

Accessories:

	Designation	Ordering no.	Material	Color	Pressure [psi]		G BSPP	Dimensions [in]						Mesh size [in]
					Opening	Closing		H ₁	H ₂	Ø D	Ø D ₁	Ø D ₂	Hex	
	Filter with non-return valve	095.016.53.11.00	PP	Blue	7	4	-	.83	.06	-	.59	.43	-	0.003
		095.016.53.14.63	PP	Green	41	23	-	.83	.06	-	.59	.43	-	0.003
	Flat gasket	065.240.55	PTFE	-	-	-	-	-	-	-	-	-	-	-
		065.240.72	EWP 210	-	-	-	-	-	-	-	-	-	-	-
	Retaining nut	065.200.16	Stainless steel 303	-	-	-	3/8	.51	.39	.50	-	-	22	-
		065.200.56	POM	Black	-	-	3/8	.57	.45	.51	-	-	22	-

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

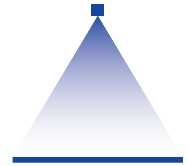
Ordering Type + Material no. = Ordering no.
example: 652.145 + 16 = 652.145.16



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

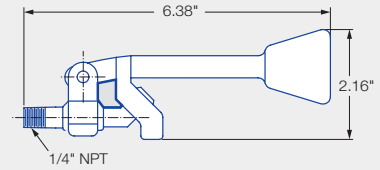
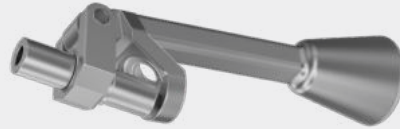
Easy Flush foam control nozzles

Series 564



Features:

- Efficient flat fan spray
- Quick removal without complete nozzle replacement
- Reduced clogging due to larger free passage
- Reduced pumping costs due to low pressure liquid flow



Series 564

Applications:

- Foam control in aeration tanks

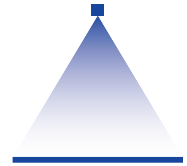
Spray angle	Ordering number Connection: 1/4 " NPT Material: 316SS	Stamp	V̇ water [gal/min]						
			p [psi]						
			Pressure psi	Flow rate gpm	Width of spray coverage at elevation of nozzle above water line				
				12"	18"	24"	30"	36"	
90°	564. 846. 17. BC	1	3	1.1	22"	30"	39"	46"	54"
			5	1.4	25"	35"	44"	53"	62"
			7	1.7	27"	38"	48"	58"	68"
			10	2.0	29"	43"	53"	64"	73"
120°	564. 847. 17. BC	2	3	1.1	34"	45"	56"	66"	75"
			5	1.4	36"	49"	62"	72"	82"
			7	1.7	40"	54"	67"	79"	90"
			10	2.0	44"	60"	73"	86"	—
140°	564. 848. 17. BC	3	3	1.1	41"	57"	72"	85"	—
			5	1.4	50"	66"	82"	—	—
			7	1.7	56"	74"	92"	—	—
			10	2.0	65"	84"	—	—	—
90°	564. 916. 17. BC	4	3	1.7	23"	31"	39"	47"	56"
			5	2.1	27"	36"	45"	54"	63"
			7	2.5	29"	39"	50"	60"	70"
			10	2.9	31"	42"	54"	65"	76"
120°	564. 917. 17. BC	5	3	1.7	38"	49"	60"	70"	81"
			5	2.1	43"	57"	69"	81"	93"
			7	2.5	48"	64"	79"	93"	—
			10	2.9	56"	71"	86"	100"	—
140°	564. 918. 17. BC	6	3	1.7	50"	62"	74"	86"	—
			5	2.1	60"	73"	87"	—	—
			7	2.5	65"	78"	92"	—	—
			10	2.9	—	—	—	—	—
90°	564. 946. 32. BC	7	3	2.1	24"	33"	41"	50"	58"
			5	2.6	27"	37"	48"	58"	68"
			7	3.0	29"	40"	52"	63"	73"
			10	3.5	32"	44"	57"	69"	80"
120°	564. 947. 32. BC	8	3	2.1	45"	60"	76"	90"	—
			5	2.6	50"	66"	84"	98"	—
			7	3.0	54"	71"	90"	—	—
			10	3.5	59"	78"	100"	—	—
140°	564. 948. 32. BC	9	3	2.1	54"	67"	80"	—	—
			5	2.6	62"	75"	88"	—	—
			7	3.0	—	—	—	—	—
			10	3.5	—	—	—	—	—

¹ We reserve the right to supply material 316Ti or 316L under material no. 17.

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

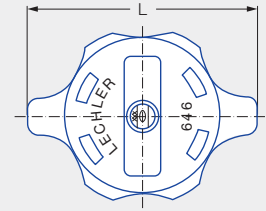
Low pressure flat fan nozzles

Series 646



Features:

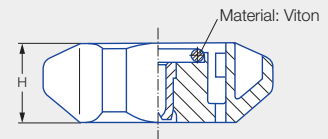
- Uniform, parabolic liquid distribution
- Adjusted spray direction
- Simple, fast manual assembly due to bayonet quick-release system



Applications:

- Belt cleaning
- Surface treatment
- Spray cleaning
- Coating processes

Series 646

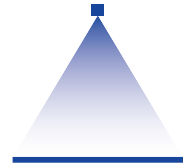


Dimensions [in]		Weight [lb]
H	L	
0.59	1.73	.03

Spray angle	Ordering number		Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]							Spray width B [in] (at p = 75 psi)	
	Type	Mat. No.			p [psi]							H = 10 [in]	H = 20 [in]
		5E			liters per minute	7	15	30	45	75	5 bar		
20°	646.301	●	0.03	0.02	0.04*	0.06*	0.09	0.11	0.14	0.51	0.19	3	6
	646.361	●	0.04	0.03	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	3	6
	646.441	●	0.05	0.04	0.16*	0.24	0.34	0.41	0.53	1.98	0.74	3	6
	646.481	●	0.06	0.05	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	3	6
30°	646.302	●	0.03	0.02	0.04*	0.06*	0.09	0.11	0.14	0.51	0.19	5	9
	646.362	●	0.04	0.03	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	5	9
	646.402	●	0.05	0.035	0.13*	0.19	0.27	0.33	0.42	1.58	0.59	5	9
	646.482	●	0.06	0.04	0.21*	0.30	0.42	0.53	0.68	2.53	0.95	5	9
	646.562	●	0.08	0.06	0.32	0.47	0.67	0.82	1.06	3.95	1.48	5	9
45°	646.363	●	0.04	0.02	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	7	14
	646.403	●	0.05	0.035	0.13*	0.19	0.27	0.33	0.42	1.58	0.59	8	15
	646.483	●	0.06	0.04	0.21*	0.30	0.42	0.53	0.68	2.53	0.95	8	15
	646.563	●	0.08	0.06	0.32	0.47	0.67	0.82	1.06	3.95	1.48	8	16
	646.643	●	0.10	0.07	0.52	0.76	1.07	1.32	1.70	6.32	2.36	8	16
60°	646.304	●	0.03	0.016	0.04*	0.06*	0.09	0.11	0.14	0.51	0.19	10	19
	646.334	●	0.035	0.02	0.06*	0.08*	0.12	0.15	0.19	0.71	0.27	10	19
	646.364	●	0.04	0.024	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	10	20
	646.404	●	0.047	0.03	0.13*	0.19	0.27	0.33	0.42	1.58	0.59	10	20
	646.444	●	0.05	0.035	0.17*	0.24	0.34	0.41	0.53	1.98	0.74	10	20
	646.484	●	0.06	0.04	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	10	20
	646.514	●	0.065	0.043	0.25*	0.36	0.51	0.62	0.81	3.00	1.12	11	20
	646.564	●	0.08	0.05	0.32	0.47	0.67	0.82	1.06	3.95	1.48	11	21
	646.604	●	0.09	0.06	0.41	0.60	0.85	1.04	1.34	4.98	1.86	11	21

* Differing spray pattern.

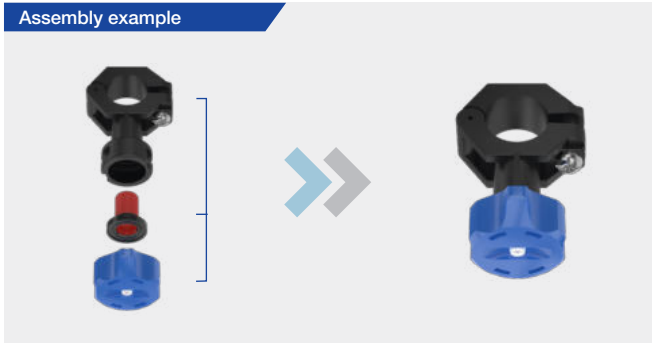




Spray angle	Ordering number		Equivalent bore diameter A [in]	Narrowest free cross section Ø [in]	V̇ water [gal/min]							Spray width B [in] (at p = 75 psi)	
	Type	Mat. No.			p [psi]							H = 10 [in]	H = 20 [in]
		5E			7	15	30	45	75	liters per minute 5 bar	145		
90°	646.306	●	0.03	0.016	0.04*	0.06*	0.09	0.11	0.14	0.51	0.19	17	31
	646.336	●	0.035	0.02	0.06*	0.09*	0.12	0.15	0.19	0.71	0.27	17	32
	646.366	●	0.04	0.02	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	18	33
	646.406	●	0.047	0.028	0.13*	0.19	0.27	0.33	0.42	1.58	0.59	18	33
	646.446	●	0.05	0.03	0.17*	0.24	0.34	0.41	0.53	1.98	0.74	18	34
	646.486	●	0.06	0.03	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	19	34
	646.516	●	0.065	0.035	0.25*	0.36	0.51	0.62	0.81	3.00	1.12	19	35
	646.566	●	0.08	0.04	0.32	0.47	0.67	0.82	1.06	3.95	1.48	19	35
646.606	●	0.09	0.05	0.41	0.60	0.85	1.04	1.34	4.98	1.86	20	36	
120°	646.307	●	0.03	0.01	0.04*	0.06*	0.09	0.11	0.14	0.51	0.19	28	49
	646.337	●	0.035	0.016	0.06*	0.09*	0.12	0.15	0.19	0.71	0.27	29	52
	646.367	●	0.04	0.02	0.08*	0.12*	0.17	0.21	0.27	1.00	0.37	31	53
	646.407	●	0.047	0.024	0.13*	0.19	0.27	0.33	0.42	1.58	0.59	33	55
	646.447	●	0.05	0.024	0.17*	0.24	0.34	0.41	0.53	1.98	0.74	33	56
	646.487	●	0.06	0.024	0.21*	0.30	0.43	0.53	0.68	2.53	0.95	33	56
	646.517	●	0.065	0.035	0.25*	0.36	0.51	0.62	0.81	3.00	1.12	33	56
	646.567	●	0.08	0.035	0.32	0.47	0.67	0.82	1.06	3.95	1.48	34	57
646.607	●	0.09	0.04	0.42	0.59	0.85	1.04	1.34	4.98	1.86	34	57	

* Differing spray pattern.

Assembly example



Bayonet quick-release base options for use with Series 646 nozzle



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

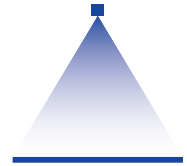
Ordering Type + Material no. = Ordering no.
example: 646.306 + 5E = 646.306*



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

➤➤ Nozzle systems for surface treatment

Series 676/677 MEMOSPRAY

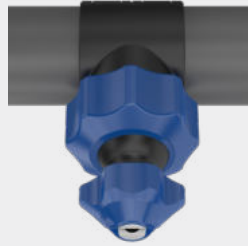


Features:

- Retention of the adjusted spray direction when changing nozzles
- Simple, quick nozzle assembly without the need for tools
- Many combination options
- Large range of flow rates, spray angles and materials

Applications:

- Degreasing
- Phosphating in surface treatment
- Industrial cleaning
- Container washers

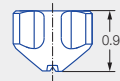


Assembly example



① a Flat fan nozzle

Incl. gasket 095.015.7A.05.65
(Material: Viton)

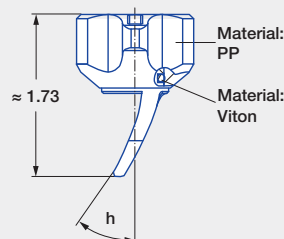
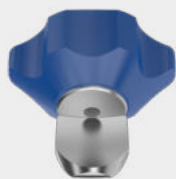


Designation	Spray angle	Ordering number				Narrowest free cross section Ø [in]	V̇ [gal/min]							Weight [lb]				
		Type	Material number				p [psi]							PP/Stainless steel 303	PP/Stainless steel 316L	PP/Ceramic	Polypropylene (PP)	
			8F	8R	E8		53	20	30	liters per minute 2 bar	40	60	80					100
① a Flat fan nozzle	30°	676.642.xx.40	●	●			0.06	1.10	1.07	4.00	1.55	1.90	2.19	2.45	0.03	0.03	-	-
		676.722.xx.40	●	●			0.08	1.38	1.69	6.30	1.95	2.39	2.76	3.09	0.03	0.03	-	-
		676.762.xx.40	●	●			0.09	1.75	2.15	8.00	2.48	3.04	3.51	3.92	0.03	0.03	-	-
		676.802.xx.40	●	●			0.10	2.19	2.69	10.00	3.10	3.80	4.39	15.81	0.03	0.03	-	-
		676.842.xx.40	●	●			0.12	2.74	3.36	12.50	3.88	4.75	5.48	6.13	0.03	0.03	-	-
		676.882.xx.40	●	●			0.13	3.51	4.30	16.00	4.96	6.08	7.02	7.85	0.03	0.03	-	-
		676.922.xx.40	●	●			0.16	4.39	5.37	20.00	6.20	7.60	8.77	9.81	0.03	0.03	-	-
		676.962.xx.40	●	●			0.17	5.48	6.72	25.00	7.76	9.50	10.97	12.26	0.03	0.03	-	-
	677.002.xx.40	●				0.19	6.91	8.46	31.50	9.77	11.97	13.82	15.45	0.03	-	-	-	
	60°	676.644.xx.40	●	●			0.06	1.10	1.07	4.00	1.55	1.90	2.19	2.45	0.03	0.03	-	-
		676.724.xx.40	●	●			0.08	1.38	1.69	6.30	1.95	2.39	2.76	3.09	0.03	0.03	-	-
		676.764.xx.40	●	●			0.09	1.75	2.15	8.00	2.48	3.04	3.51	3.92	0.03	0.03	-	-
		676.804.xx.40	●	●			0.10	2.19	2.69	10.00	3.10	3.80	4.39	15.81	0.03	0.03	-	-
		676.844.xx.40	●	●			0.12	2.74	3.36	12.50	3.88	4.75	5.48	6.13	0.03	0.03	-	-
		676.884.xx.40	●	●			0.13	3.51	4.30	16.00	4.96	6.08	7.02	7.85	0.03	0.03	0.02	0.02
		676.924.xx.40	●	●	●	●	0.16	4.39	5.37	20.00	6.20	7.60	8.77	9.81	0.03	0.03	0.02	0.02
		676.964.xx.40	●	●	●	●	0.17	5.48	6.72	25.00	7.76	9.50	10.97	12.26	0.03	0.03	0.02	0.02
		677.004.xx.40	●	●	●	●	0.19	6.91	8.46	31.50	9.77	11.97	13.82	15.45	0.03	0.03	0.02	0.02
		677.044.xx.40	●	●	●	●	0.22	8.77	10.75	40.00	12.41	15.20	17.55	19.62	0.03	0.03	-	-
		677.084.xx.40	●	●			0.24	10.97	13.43	50.00	15.51	19.00	21.94	24.52	0.03	0.03	-	-

Designation	Spray angle	Ordering number					Narrowest free cross section \varnothing [in]	\dot{V} [gal/min]							Weight [lb]			
		Type	Material number					p [psi]							PP/Stainless steel 303	PP/Stainless steel 316L	PP/Ceramic	Polypropylene (PP)
			8F	8R	E8	53		liters per minute	2 bar	40	60	80	100					
			Housing: PP Insert: 303 SS	Housing: PP Insert: 316L SS	Housing: PP Insert: Ceramic	Polypropylene (PP)								20				
① a Flat fan nozzle	90°	676.646.xx.40	●	●			0.06	1.10	1.07	4.00	1.55	1.90	2.19	2.45	0.03	0.03	-	-
		676.726.xx.40	●	●			0.08	1.38	1.69	6.30	1.95	2.39	2.76	3.09	0.03	0.03	-	-
		676.766.xx.40	●	●			0.09	1.75	2.15	8.00	2.48	3.04	3.51	3.92	0.03	0.03	-	-
		676.806.xx.40	●	●			0.10	2.19	2.69	10.00	3.10	3.80	4.39	15.81	0.03	0.03	-	-
		676.846.xx.40	●	●			0.12	2.74	3.36	12.50	3.88	4.75	5.48	6.13	0.03	0.03	-	-
		676.886.xx.40	●	●			0.13	3.51	4.30	16.00	4.96	6.08	7.02	7.85	0.03	0.03	-	-
		676.926.xx.40	●	●			0.16	4.39	5.37	20.00	6.20	7.60	8.77	9.81	0.03	0.03	-	-
	676.966.xx.40	●	●			0.17	5.48	6.72	25.00	7.76	9.50	10.97	12.26	0.03	0.03	-	-	
	120°	676.647.xx.40	●	●			0.06	1.10	1.07	4.00	1.55	1.90	2.19	2.45	0.03	0.03	-	-
		676.727.xx.40	●	●			0.08	1.38	1.69	6.30	1.95	2.39	2.76	3.09	0.03	0.03	-	-
		676.767.xx.40	●	●			0.09	1.75	2.15	8.00	2.48	3.04	3.51	3.92	0.03	0.03	-	-
		676.807.xx.40	●	●			0.10	2.19	2.69	10.00	3.10	3.80	4.39	15.81	0.03	0.03	-	-
		676.847.xx.40	●	●			0.12	2.74	3.36	12.50	3.88	4.75	5.48	6.13	0.03	0.03	-	-
		676.887.xx.40	●	●			0.13	3.51	4.30	16.00	4.96	6.08	7.02	7.85	0.03	0.03	-	-
676.927.xx.40		●	●			0.16	4.39	5.37	20.00	6.20	7.60	8.77	9.81	0.03	0.03	-	-	
Blind nozzle	-	067.630.8F.40.01	●			-	-	-	-	-	-	-	-	0.03	-	-	-	

① b Tongue-type nozzle

Incl. gasket 095.015.7A.05.65
(Material: Viton)



Designation	Spray angle	Deflection angle	Ordering number		Narrowest free cross section \varnothing [in]	\dot{V} [gal/min]					Weight [lb]		
			Type	Material number		p [psi]					PP/Stainless steel 316L	PVDF	
				8R		5E	liters per minute	2 bar	40	75			
				Housing: PP Insert: 316L SS		PVDF							20
① b Tongue-type nozzle	45°	35°	676.803.xx.41	●		0.13	2.19	2.69	10.00	3.10	4.25	0.05	-
	60°	35°	676.874.xx.41	●		0.17	3.29	4.03	15.00	4.65	6.37	0.05	-
	60°	35°	676.924.xx.41	●		0.19	4.39	5.37	20.00	6.20	8.50	0.05	-
	70°	40°	677.005.xx.41	●	●	0.24	6.91	8.46	31.50	9.77	13.38	0.05	0.02



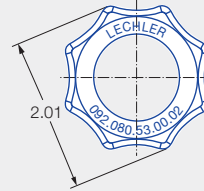
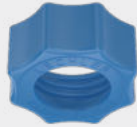
Ordering Type + Material no. = Ordering no.
example: 676.646.xx.40 + 8F = 676.646.8F.40

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



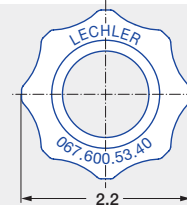
② a Split Eyelet/ Single Clamp retaining nut

092.080.xx.00.02



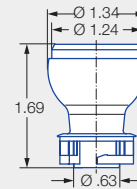
② b Eyelet Clamp Retaining Nut

067.600.xx.40



③ Split Eyelet/ Single Clamp Ball Base Bayonet

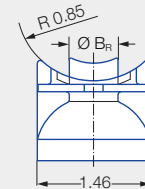
067.630.xx.40



④ a Eyelet Clamp Ball Seat

067.631.xx.40.x2

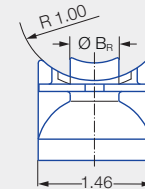
For eyelet clamp
067.631.xx.40.00



④ b Eyelet Clamp Ball Seat

067.631.xx.50.x2

For eyelet clamp
067.631.xx.50.00

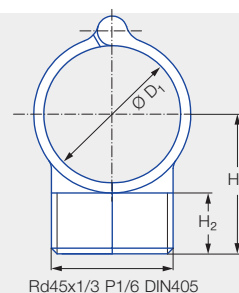


Designation	Ordering number		Ø B _r ¹ [in]	Recommended bore diameter [in]	Pipe Ø [in]	Weight [lb]	
	Type	Material number					
		53 Polypropylene (PP)					6M PP reinforced
② a Retaining nut	092.080.xx.00.02	●		-	-	0.04	
② b Retaining nut	067.600.xx.40	●		-	-	0.04	
③ Ball bayonet base	067.630.xx.40	●		-	-	0.03	
④ a Ball seat for eyelet clamp no. 067.631.xx.40.00	067.631.xx.40.22		●	0.54	0.55 – 0.56	1 1/4" (1.57 – 1.69)	0.02
	067.631.xx.40.02		●	0.63	0.65 – 0.67	1 1/4" (1.57 – 1.69)	0.02
	067.631.xx.40.12		●	0.78	0.80 – 0.82	1 1/4" (1.57 – 1.69)	0.03
④ b Ball seat for eyelet clamp no. 067.631.xx.50.00	067.631.xx.50.22		●	0.54	0.55 – 0.56	1 1/2" (1.81 – 1.93)	0.02
	067.631.xx.50.02		●	0.63	0.65 – 0.67	1 1/2" (1.81 – 1.93)	0.02
	067.631.xx.50.12		●	0.78	0.80 – 0.82	1 1/2" (1.81 – 1.93)	0.03

¹ Ø B_r = spigot diameter.

ⓐ Eyelet clamp

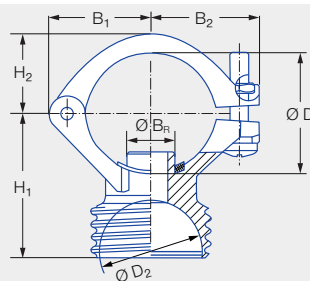
067.631.xx.x0.00



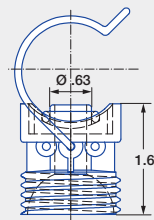
Rd45x1/3 P1/6 DIN405

ⓑ Split Eyelet clamp

090.0x3.xx.4x.10


ⓒ Single clamp

092.08x.xx.00



Designation	Ordering number		Dimensions [in]						Ø BR ¹ [in]	Recommended bore diameter [in]	Pipe Ø (Ø D) [in]	Weight [lb]
	Type	Material number	B ₁	B ₂	H ₁	H ₂	Ø D ₁	Ø D ₂				
ⓐ Eyelet clamp	067.631.xx.40.00	●	–	–	1.88	0.87	1.69	–	–	–	1 1/4" (1.57 – 1.69)	0.07
	067.631.xx.50.00	●	–	–	2.03	0.87	1.99	–	–	–	1 1/2" (1.81 – 1.93)	0.07
ⓑ Split Eyelet clamp	090.023.xx.44.10	●	1.18	1.26	1.75	0.91	–	1.34	0.54	0.55 – 0.56	1" (1.26 – 1.36)	0.11
	090.023.xx.43.10	●	1.18	1.26	1.75	0.91	–	1.34	0.63	0.65 – 0.67	1" (1.26 – 1.36)	0.11
	090.033.xx.44.10	●	1.30	1.42	1.89	1.06	–	1.34	0.54	0.55 – 0.56	1 1/4" (1.57 – 1.69)	0.11
	090.033.xx.43.10	●	1.30	1.42	1.89	1.06	–	1.34	0.63	0.65 – 0.67	1 1/4" (1.57 – 1.69)	0.11
	090.033.xx.40.10	●	1.30	1.42	1.89	1.06	–	1.34	0.79	0.81 – 0.83	1 1/4" (1.57 – 1.69)	0.11
	090.043.xx.44.10	●	1.42	1.38	2.05	1.18	–	1.34	0.54	0.55 – 0.56	1 1/2" (1.81 – 1.93)	0.11
	090.043.xx.43.10	●	1.42	1.38	2.05	1.18	–	1.34	0.63	0.65 – 0.67	1 1/2" (1.81 – 1.93)	0.11
ⓒ Single clamp	092.080.xx.00	●	–	–	–	–	–	–	0.64*	0.65 – 0.67	1" (1.26 – 1.36)	0.08
	092.081.xx.00	●	–	–	–	–	–	–	0.64*	0.65 – 0.67	1 1/4" (1.57 – 1.69)	0.08
	092.082.xx.00	●	–	–	–	–	–	–	0.64*	0.65 – 0.67	1 1/2" (1.81 – 1.93)	0.09
	092.083.xx.00	●	–	–	–	–	–	–	0.64*	0.65 – 0.67	2" (2.28 – 2.44)	0.09

* Other spigot diameters available on request.

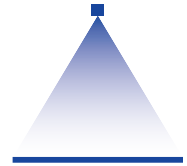
¹ Ø BR = spigot diameter.

Ordering Type + Material no. = Ordering no.
 example: 067.631.xx.40.00 + 53 = 067.631.53.40.00

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

➤➤ Nozzle systems for surface treatment

Series 676 Easy-Clip



Features:

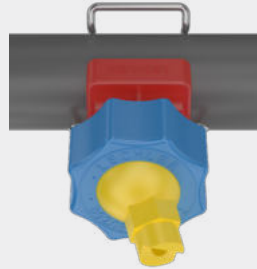
- Simple, quick nozzle assembly without the need for tools
- All-round 30° swivelling
- Easy adjustment and cleaning

Applications:

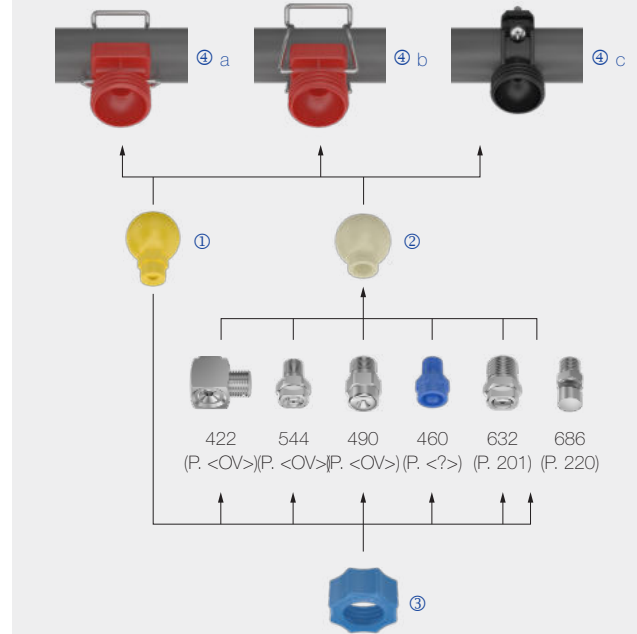
- Degreasing
- Phosphating in surface treatment
- Industrial cleaning
- Container washers

Materials:

- Clamp: Stainless steel 301
- Gasket: EPDM
- Cylinder pin, screw, screw unit: Stainless steel 316L
- Body, retaining nut: Polypropylene, glass fibre reinforced
- Ball nozzle, ball joint: Polypropylene



Assembly example



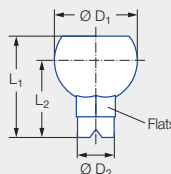
Sets – series 676 Easy-Clip

Designation	Spray angle	Ordering number	Nozzle Color	V̇ [gal/min]				
				p [psi]				
				7	15	20	liters per minute 2 bar	30
Set 1 consisting of: Ball nozzle Single clamp for 1 1/4" pipe Retaining nut	60°	676.724.53.31	Grey	0.82	1.20	1.38	6.30	1.69
		676.764.53.31	Brown	1.04	1.52	1.75	8.00	2.15
		676.804.53.31	Purple	1.30	1.90	2.19	10.00	2.69
		676.844.53.31	Yellow	1.62	2.37	2.74	12.50	3.36
		676.884.53.31	Red	2.08	3.04	3.51	16.00	4.30
		676.904.53.31	Blue	2.36	3.46	3.99	18.20	4.89
676.924.53.31	Green	2.60	3.80	4.39	20.00	5.37		

Designation	Ordering number	Ball Color	BSPP	Matches series
	Type			
Set 2 consisting of: Ball joint Single clamp for 1 1/4" pipe Retaining nut	092.081.53.AB	Beige	1/8	460, 490, 632, 686, 610, 544
	092.081.53.AD	Beige	1/4	422, 460, 490, 544, 612, 632, 686
	092.081.53.AF	Beige	3/8	422, 460, 490, 632, 686, 688
	092.081.53.AH	Beige	1/2	422, 460, 490, 632, 686

Individual parts – series 676 Easy-Clip

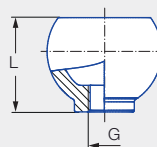
① Ball nozzle



Dimensions [in]				
L ₁	L ₂	Ø D ₁	Ø D ₂	Flats (mm)
1.63	1.24	1.34	0.59	16.0

Designation	Spray angle	Ordering number Type	Nozzle Color	V̇ [gal/min]				
				p [psi]				
				7	15	20	liters per minute 2 bar	30
① Ball nozzle	60°	676.724.53.30.01	Grey	0.82	1.20	1.38	6.30	1.69
		676.764.53.30.01	Brown	1.04	1.52	1.75	8.00	2.15
		676.804.53.30.01	Purple	1.30	1.90	2.19	10.00	2.69
		676.844.53.30.01	Yellow	1.62	2.37	2.74	12.50	3.36
		676.884.53.30.01	Red	2.08	3.04	3.51	16.00	4.30
		676.904.53.30.01	Blue	2.36	3.46	3.99	18.20	4.89
676.924.53.30.01	Green	2.60	3.80	4.39	20.00	5.37		
Blind nozzle	–	092.080.53.00.01	Grey	–	–	–	–	–

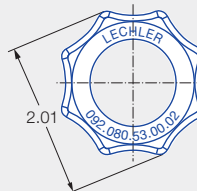
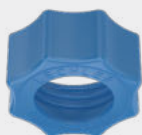
② Ball joint



Designation	Ordering number	Ball Color	BSPP	L [in]	Matches series
	Type				
② Ball joint	092.080.53.AB.01	Beige	1/8	1.12	460, 490, 632, 686, 610, 544
	092.080.53.AD.01*	Beige	1/4	1.28	422, 460, 490, 544, 612, 632, 686
	092.080.53.AF.01*	Beige	3/8	1.24	422, 460, 490, 632, 686, 688
	092.080.53.AH.01	Beige	1/2	1.30	422, 460, 490, 632, 686

* Also available with NPT connection

③ Retaining nut



Designation	Ordering number
	Type
③ Retaining nut	092.080.53.00.02

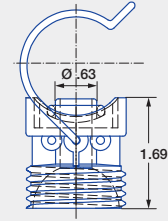


➤➤ Nozzle systems for surface treatment

Series 676 Easy-Clip

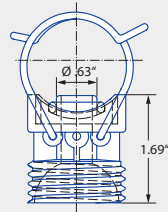
④ a Single clamp

092.08x.53.00



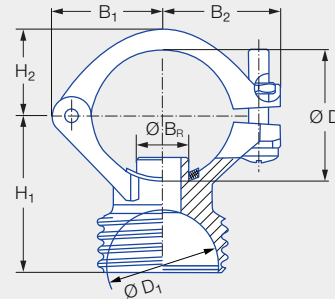
④ b Double clamp

092.09x.53.00



④ c Eyelet clamp

090.0x3.53.43.10



Designation	Ordering number	Dimensions [in]					Ø B _R ¹ [in]	Recommended bore diameter [in]	Pipe Ø (Ø D) [in]	Weight [lb]
		Type	B ₁	B ₂	H ₁	H ₂				
④ a Single clamp	092.080.53.00	–	–	–	–	–	0.64*	0.65 – 0.67	1" (1.26 – 1.36)	0.08
	092.081.53.00	–	–	–	–	–	0.64*	0.65 – 0.67	1 1/4" (1.57 – 1.69)	0.08
	092.082.53.00	–	–	–	–	–	0.64*	0.65 – 0.67	1 1/2" (1.81 – 1.93)	0.09
	092.083.53.00	–	–	–	–	–	0.64*	0.65 – 0.67	2" (2.28 – 2.44)	0.09
④ b Double clamp	092.090.53.00	–	–	–	–	–	0.64*	0.65 – 0.67	1" (1.26 – 1.36)	0.10
	092.091.53.00	–	–	–	–	–	0.64*	0.65 – 0.67	1 1/4" (1.57 – 1.69)	0.11
	092.092.53.00	–	–	–	–	–	0.64*	0.65 – 0.67	1 1/2" (1.81 – 1.93)	0.11
	092.093.53.00	–	–	–	–	–	0.64*	0.65 – 0.67	2" (2.28 – 2.44)	0.11
④ c Eyelet clamp	090.023.53.43.10	1.18	1.26	1.75	0.91	1.34	0.64*	0.65 – 0.67	1" (1.26 – 1.36)	0.11
	090.033.53.43.10	1.30	1.42	1.89	1.06	1.34	0.64*	0.65 – 0.67	1 1/4" (1.57 – 1.69)	0.11
	090.043.53.43.10	1.42	1.38	2.05	1.18	1.34	0.64*	0.65 – 0.67	1 1/2" (1.81 – 1.93)	0.11

¹ Ø B_R = spigot diameter.

* Other spigot diameters available upon request

