

# Flat fan nozzle with dovetail alignment Series 660

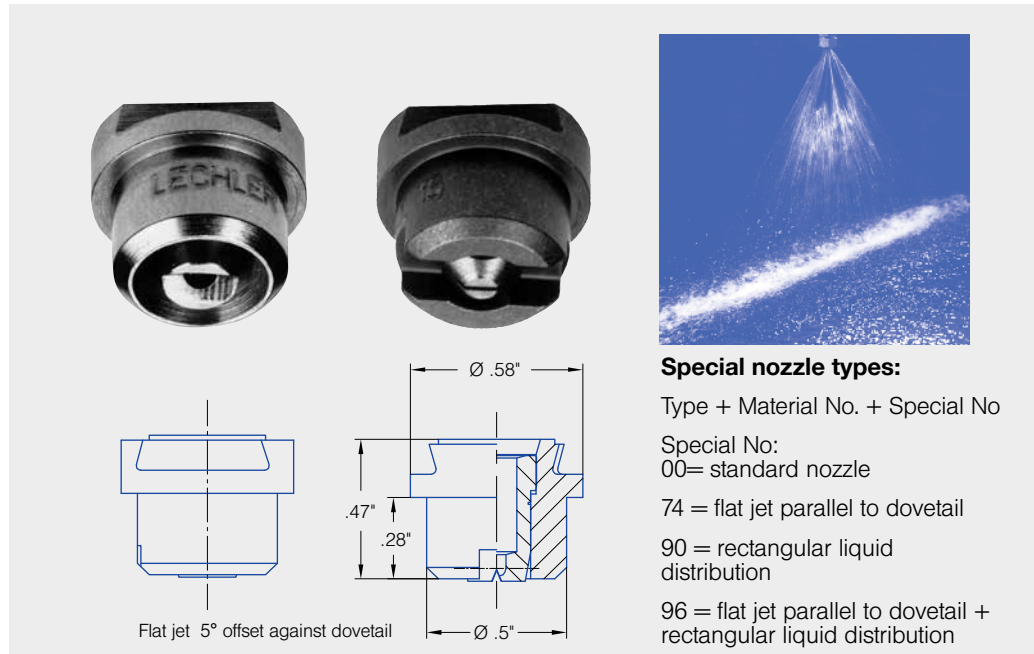
## Series 660

Assembly with retaining nut. Self-aligning jet with dovetail design secures correct spray position for optimal strand surface quality and easy maintenance. Standard version with parabolic liquid distribution.

### Applications:

Multi nozzle arrangements for strand cooling in foot roller area of slab casters where space is limited. Multi nozzle arrangements in segments for water only secondary cooling in stainless steel slab casters with low water flow rates.

- Standard offset angle 5° built into the nozzle
- 0° offset angle available on request 660.xxx.xx.74



### Special nozzle types:

Type + Material No. + Special No


Special No:  
00= standard nozzle

74 = flat jet parallel to dovetail

90 = rectangular liquid distribution

96 = flat jet parallel to dovetail + rectangular liquid distribution

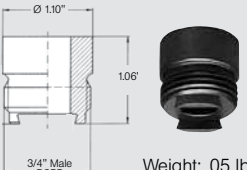
Spray angle	Ordering no.				Equivalent Orifice diam. (in.)	Free passage (in.)	Flow Rate (Gallons Per Minute)						Spray Coverage @ 30 psi		
	Type	Material no.					psi	psi	liters per minute 10 bar	20 psi	2 psi	40 psi	60 psi	80 H=10"	100 H=20"
		303 SS 16	316 SS 17 <sup>1</sup>	Brass 30											
20°	660.301	○	○	○	.028	.024	.05	.07	.32	.10	.12	.14	.16	2	4
	660.361	○	○	○	.039	.032	.10	.14	.63	.20	.24	.28	.31	3	5
	660.441	○	○	○	.053	.043	.19	.27	1.3	.39	.48	.55	.61	3	5
	660.481	○	○	○	.059	.047	.25	.35	1.6	.50	.61	.70	.78	3	5
30°	660.302	○	○	○	.024	.020	.05	.07	.32	.10	.12	.14	.16	4	8
	660.362	○	○	○	.039	.028	.10	.14	.63	.20	.24	.28	.31	4	8
	660.402	○	○	○	.047	.035	.16	.22	1.0	.31	.38	.44	.49	4	8
	660.482	○	○	○	.059	.043	.25	.35	1.6	.50	.61	.70	.78	4	8
	660.562	○	○	○	.079	.059	.39	.55	2.5	.78	.95	1.1	1.2	4	8
45°	660.303	○	○	○	.028	.020	.05	.07	.32	.10	.12	.14	.16	7	13
	660.363	○	○	○	.039	.024	.10	.14	.63	.20	.24	.28	.31	7	13
	660.403	○	○	○	.047	.035	.16	.22	1.0	.31	.38	.44	.49	7	13
	660.483	○	○	○	.059	.043	.25	.35	1.6	.50	.61	.70	.78	7	13
	660.563	○	○	○	.079	.055	.39	.55	2.5	.78	.95	1.1	1.2	7	14
	660.643	○	○	○	.099	.071	.62	.88	4.0	1.2	1.5	1.8	2.0	7	14
60°	660.304	○	○	○	.028	.016	.05	.07	.32	.10	.12	.14	.16	11	21
	660.334	○	○	○	.035	.020	.07	.10	.45	.14	.17	.20	.22	11	21
	660.364	○	○	○	.039	.024	.10	.14	.63	.20	.24	.28	.31	11	21
	660.404	○	○	○	.047	.032	.16	.22	1.0	.31	.38	.44	.49	11	21
	660.444	○	○	○	.053	.035	.19	.27	1.3	.39	.48	.55	.61	11	21
	660.484	○	○	○	.059	.039	.25	.35	1.6	.50	.61	.70	.78	11	21
	660.514	○	○	○	.065	.043	.29	.42	1.9	.59	.72	.83	.93	11	21
	660.564	○	○	○	.079	.051	.39	.55	2.5	.78	.95	1.1	1.2	11	21
	660.604	○	○	○	.087	.059	.49	.69	3.2	.98	1.2	1.4	1.5	11	21
	660.644	○	○	○	.099	.063	.62	.88	4.0	1.2	1.5	1.8	2.0	11	21
	660.724	○	○	○	.118	.083	.98	1.4	6.3	2.0	2.4	2.8	3.1	11	20
660.804	-	○	○	.158	.102	1.6	2.2	10.0	3.1	3.8	4.4	4.9	11	20	
75°	660.145	○	-	○	.008	.005	.01	.01	.05	.02	.02	.02	.02	13	24
	660.165	○	-	○	.008	.003	.01	.01	.07	.02	.03	.03	.03	13	24
	660.185	○	-	○	.008	.006	.01	.02	.09	.02	.03	.03	.04	13	25
	660.215	○	-	○	.020	.008	.02	.02	.11	.03	.04	.05	.05	13	25
	660.245	○	-	○	.020	.300	.02	.03	.16	.05	.06	.07	.08	14	25
	660.275	○	-	○	.024	.300	.03	.05	.22	.07	.08	.10	.11	14	25

Spray angle 	Ordering no.			Equivalent Orifice diam. (in.)	Free passage (in.)	Flow Rate (Gallons Per Minute)							Spray Coverage @ 30 psi		
	Type	Material no.				10 psi	20 psi	liters per minute 2 bar	40 psi	60 psi	80 psi	100 psi	H=10"	H=20"	
		303 SS 16	316 SS 17												Brass 30
90°	660.216	○	-	○	.016	.200	.017	.024	.11	.034	.042	.048	.054	20	35
	660.276	○	-	○	.024	.300	.034	.05	.22	.07	.08	.10	.11	20	35
	660.306	○	○	○	.028	.016	.05	.07	.32	.10	.12	.14	.16	20	37
	660.336	○	○	○	.035	.020	.07	.10	.45	.14	.17	.20	.22	20	37
	660.366	○	○	○	.039	.020	.10	.14	.63	.20	.24	.28	.31	20	37
	660.406	○	○	○	.047	.028	.16	.22	1.0	.31	.38	.44	.49	20	37
	660.446	○	○	○	.053	.032	.19	.27	1.3	.39	.48	.55	.61	20	36
	660.486	○	○	○	.059	.032	.25	.35	1.6	.50	.61	.70	.78	20	36
	660.516	○	○	○	.065	.035	.29	.42	1.9	.59	.72	.83	.93	20	36
	660.566	○	○	○	.079	.043	.39	.55	2.5	.78	.95	1.1	1.2	20	36
	660.606	○	○	○	.087	.047	.49	.69	3.2	.98	1.2	1.4	1.5	20	36
	660.646	○	○	○	.099	.051	.62	.88	4.0	1.2	1.5	1.8	2.0	20	36
	660.676	○	○	○	.106	.055	.74	1.0	4.8	1.5	1.8	2.1	2.3	19	36
	660.726	○	○	○	.118	.067	.98	1.4	6.3	2.0	2.4	2.8	3.1	19	35
660.806	○	○	○	.158	.095	1.6	2.2	10.0	3.1	3.8	4.4	4.9	19	34	
120°	660.187	○	-	○	.014	.008	.012	.018	.08	.025	.030	.035	.039	26	48
	660.217	○	-	○	.016	.008	.017	.024	.11	.034	.042	.048	.054	26	48
	660.247	○	-	○	.020	.008	.025	.035	.16	.05	.06	.07	.08	26	49
	660.277	○	-	○	.024	.012	.034	.05	.22	.07	.08	.10	.11	26	49
	660.307	○	-	○	.028	.012	.05	.07	.32	.10	.12	.14	.16	26	50
	660.337	○	○	○	.035	.016	.07	.10	.45	.14	.17	.20	.22	26	50
	660.367	○	○	○	.039	.016	.10	.14	.63	.20	.24	.28	.31	26	50
	660.407	○	○	○	.047	.024	.16	.22	1.0	.31	.38	.44	.49	26	50
	660.447	○	○	○	.053	.024	.19	.27	1.3	.39	.48	.55	.61	26	50
	660.487	○	○	○	.059	.024	.25	.35	1.6	.50	.61	.70	.78	27	50
	660.517	○	○	○	.065	.035	.29	.42	1.9	.59	.72	.83	.93	27	50
	660.567	○	○	○	.079	.035	.39	.55	2.5	.78	.95	1.1	1.2	27	50
	660.607	○	○	○	.087	.043	.49	.69	3.2	.98	1.2	1.4	1.5	27	51
	660.647	○	○	○	.099	.051	.62	.88	4.0	1.2	1.5	1.8	2.0	28	51
	660.727	○	○	○	.118	.063	.99	1.4	6.4	2.0	2.4	2.8	3.1	29	52
	660.807	○	-	○	.158	.079	1.6	2.2	10.0	3.1	3.8	4.4	4.9	31	53

**Example** Type + Material no. = Ordering no.  
**for ordering:** 660.306 + 16 = 660.306.16

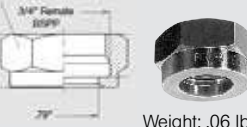
1) We reserve the right to deliver material 316 SS or 316L SS, if we show the material code 17.

### Accessories



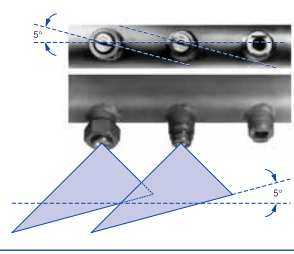
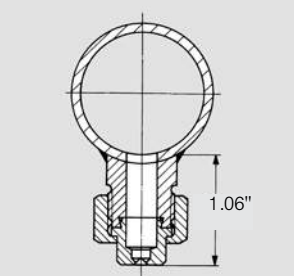
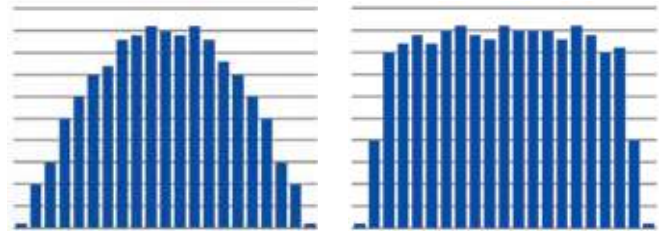
Weight: .05 lb.

Nipple **066.011.17** (316 SS)



Weight: .06 lb.

Retaining nut **065.200.16** (303 SS)  
**065.200.17** (316 SS)  
**065.200.30** (Brass)

Standard spray water distribution (left) and rectangular spray water distribution (right)

- Available with
- Rectangular liquid distribution for single nozzle arrangement (per roller gap) or wide pitches 660.xxx.xx.90.
  - Rectangular liquid distribution combined with 0° offset angle for single nozzle arrangement (per roller gap) or wide pitches 660.xxx.xx.96 in narrow roller gaps.

Conversion formula for the above series:  $V_2 = V_1 \sqrt{\frac{P_2}{P_1}}$