

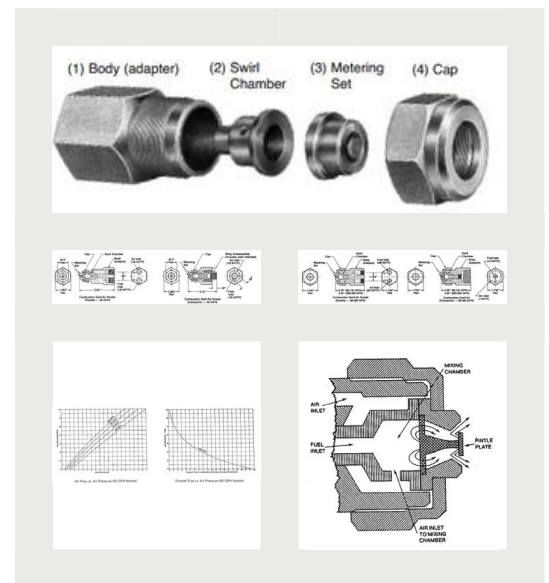
## SWIRL AIR - COMBUSTION AIR ATOMIZING NOZZLES

### OIL HEATING PRODUCTS - SPECIAL COMBUSTION APPLICATIONS

Delavan's two-fluid Swirl-Air is designed to make maximum use of input hydraulic and pneumatic energy to atomize fuels at low pressures. In combustion applications it can produce fine atomization at flow rates up to 300gph

Fuel enters the mixing chamber axially coming in contact with tangentially introduced streams of air (or steam). Interaction of the two creates extreme turbulence and mixing. Finally the fuel-air mixture impinges against a circular deflector ring, or pintle plate, before leaving the nozzle as a finely atomized spray.

Design of the pintle plate support eliminates the need for external struts that could interfere with the spray pattern. The progressive application of shear and inertial forces within the nozzle helps to provide high nozzle efficiencies.



### Swirl-Air Advantages

- Large fuel passages and lack of torturous paths reduce chances for clogging.
- Air consumption (SCFM) and power requirements are relatively low, permitting the use of smaller, more economical, air compressors and blowers.
- Good atomization ratios
- Nozzle configuration provides vortex mixing of two fluids.
- Can handle fuels up to Type C Bunker oil...also combustible waste liquids. (The use of Swirl-Air nozzles in burning Bunker oils often reduces the accumulation of ashes caused by the high concentrations of impurities such as vanadium and sulphur).
- Various spray angles and capacities available through a selection of metering sets and swirl chambers.
- No external struts that interfere with the spray

### Applications

The list of industrial combustion applications for the Swirl-Air nozzle continues to grow. Here are some of the more common ones:

- As igniter nozzles in both coal-fired and oil-fired electric power stations.
- As main atomizers in large burners, especially where heavier fuels are used. Advantages include one or more of the following: Fewer flue deposits (ashes), lower smoke reading (0 Bacharach not uncommon), higher CO<sub>2</sub> and lower pre-heat temperatures.

## CAPACITY CHARTS

Nozzle Size (GPH)	Nozzle Assy. Number		Component Part Numbers				
			(1) Body		(2) Swirl Chamber	(3) Metering Set	(4) Cap
	Parallel	Concentric	Parallel	Concentric			
50	34429-*	34460-*	34426	34516**	34427#	34431-*	1165-5
60	33240-*	34890-*	33517	33287	33233	33373-*	33516-1
100	33515-*	34892-*	33517	33287	33518	33521-*	33516-1
150	33522-*	34894-*	33517	33287	33523	33526-*	33516-1
200	33527-*	34896-*	33528	33907	33529	33532-*	33516-2
250	33533-*	34898-*	33528	33907	33534	33537-*	33516-2
300	33538-*	34900-*	33528	33907	33539	33542-*	33516-2

Dash No.	Spray Angle	
	50 GPH Size	All Other Sizes
-1	50°	50°
-2	70°	70°
-3	90°	90°
-4	110°	120°

**50 GPH**  
#34429  
and  
#34460

FLOW RATE (GPH)	AIR PRESSURE (PSIG)													
	20		30		40		50		60		70		80	
	Liquid ΔP	Air Flow (SCFM)	Liquid ΔP	Air Flow (SCFM)	Liquid ΔP	Air Flow (SCFM)	Liquid ΔP	Air Flow (SCFM)	Liquid ΔP	Air Flow (SCFM)	Liquid ΔP	Air Flow (SCFM)	Liquid ΔP	Air Flow (SCFM)
5	6	2.2	8	2.8	10	3.5	14	4.2	17	5.2	20	5.7	23	6.2
10	11	2.1	15	2.7	18	3.3	21	4.1	26	4.8	30	5.5	33	6.1
15	16	1.9	22	2.5	25	3.2	30	3.9	34	4.6	38	5.4	43	6.1
20	23	1.8	28	2.3	33	3.0	39	3.8	43	4.5	48	5.1	51	6.0
25	30	1.6	36	2.2	42	2.8	47	3.6	52	4.4	57	5.0	62	5.9
30	38	1.4	44	2.1	50	2.7	56	3.5	62	4.2	67	4.9	72	5.8
40	56	1.3	63	2.0	69	2.6	77	3.4	83	4.1	88	4.8	93	5.7
50	78	1.2	87	1.9	92	2.5	100	3.3	107	4.0	112	4.7	120	5.4

**60 GPH**  
#33240  
and  
#34890

30	19	5.7	27	7.8	35	10.5	43	13.0	51	15.5	59	18.5	68	21.0
40	20	4.8	28	6.8	37	9.0	46	11.5	54	14.0	61	17.0	70	19.0
50	21	4.0	30	6.0	39	8.0	48	10.5	56	12.5	65	15.0	73	17.5
60	22	3.5	31	5.3	40	7.1	49	9.4	58	11.5	67	13.5	76	16.0

**100 GPH**  
#33515  
and  
#34892

60	20	6.2	27	9.0	35	12.0	42	15.0	49	18.5	57	21.5	64	24.5
70	21	5.7	29	8.1	37	11.0	44	14.0	52	17.0	59	20.5	67	23.0
80	23	5.2	31	7.5	39	10.5	47	13.5	55	16.5	62	19.0	70	22.0
90	25	4.6	33	6.8	41	9.5	49	12.0	57	15.0	64	18.0	72	21.0
100	26	4.2	35	6.2	43	9.0	51	11.5	59	14.5	67	17.0	75	20.0

**150 GPH**  
#33522  
and  
#34894

100	21	7.2	28	10.5	34	14.5	41	18.0	47	22.0	53	25.5	59	29.0
110	23	6.6	30	10.0	37	14.0	43	17.5	49	21.5	56	24.5	62	28.5
120	25	6.3	32	9.6	39	13.5	45	17.0	52	20.5	59	24.0	65	28.0
130	26	5.9	34	9.1	41	12.5	48	16.5	55	20.0	61	23.5	67	27.5
140	28	5.4	36	8.6	43	12.0	50	15.5	57	19.5	64	23.0	71	26.5
150	30	5.3	38	8.2	46	11.5	53	15.0	60	18.5	67	22.5	73	26.0

**200 GPH**  
#33527  
and  
#34896

150	23	6.6	31	10.5	38	14.5	46	18.5	53	22.5	60	26.5	66	31.5
160	24	6.4	32	9.9	40	13.5	47	18.0	54	22.0	62	26.0	68	30.5
170	25	6.1	33	9.4	41	13.0	49	17.0	56	21.0	63	25.5	70	29.5
180	26	5.7	35	9.1	42	12.5	50	16.0	58	20.0	65	24.5	72	28.5
190	28	5.5	36	8.6	44	12.0	51	15.5	59	19.5	67	23.5	74	28.0
200	29	5.2	37	8.1	45	11.5	53	15.0	61	19.0	68	23.0	76	27.0

**250 GPH**  
#33533  
and  
#34898

200	24	7.5	32	11.5	38	16.0	46	20.5	52	24.5	59	29.5	65	34.5
210	25	7.2	33	11.0	40	15.5	47	20.0	54	24.0	60	29.0	67	33.5
220	26	6.9	34	10.5	41	15.0	48	19.5	55	23.5	61	28.5	68	33.0
230	27	6.4	35	10.0	42	14.5	49	18.5	56	23.0	63	27.5	70	32.0
240	28	6.2	36	9.8	43	14.0	51	18.0	58	22.5	64	27.0	71	31.5
250	29	5.9	37	9.4	44	13.5	52	17.5	59	22.0	66	26.5	73	31.0

**300 GPH**  
#33538  
and  
#34900

250	23	8.8	31	13.5	38	19.0	45	24.0	52	29.5	58	35.0	64	40.0
260	24	8.6	32	13.0	39	18.5	46	23.5	53	28.5	59	34.0	65	39.5
270	25	8.3	33	13.0	40	18.0	47	23.0	54	28.0	60	33.5	67	39.0
280	26	7.9	34	12.5	41	17.5	48	22.5	55	27.5	62	33.0	68	38.5
290	27	7.5	35	12.0	42	17.0	49	22.0	56	27.0	63	32.5	70	38.0
300	28	7.2	36	11.5	43	16.5	50	21.5	57	26.5	64	32.0	71	37.5