



# HIGH-SHEAR GRANULATION

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# SOLUTIONS FOR EFFICIENT, HOMOGENEOUS GRANULATION

Fluid undergoes “**shear**” when a certain area of its surface is traveling with a different velocity relative to an adjacent area. A high-shear mixer uses a rotating impeller or high-speed rotor (or both) to create flow and shear. The tip velocity, or speed of the fluid at the outside edge of the rotor, will be higher than the velocity at the center of the rotor, and it is this difference in velocity that creates shear.

**High-shear granulation** is an effective way to turn powders into dense granules for tableting or coating. To create the granules, powders are added to the mixing bowl and the bowl is sealed. A large impeller rotates at slow speeds, spinning the powders into a vortex. After the powders are blended together, liquid is added to the product using a pump or pressurized container. A high-speed chopper tool located in the bowl shears the granules and removes air. The mixing continues until the desired granule size and density are achieved.

## ADDITIONAL RESOURCES

For more information on high-shear granulators,  
[click here ▶](#)



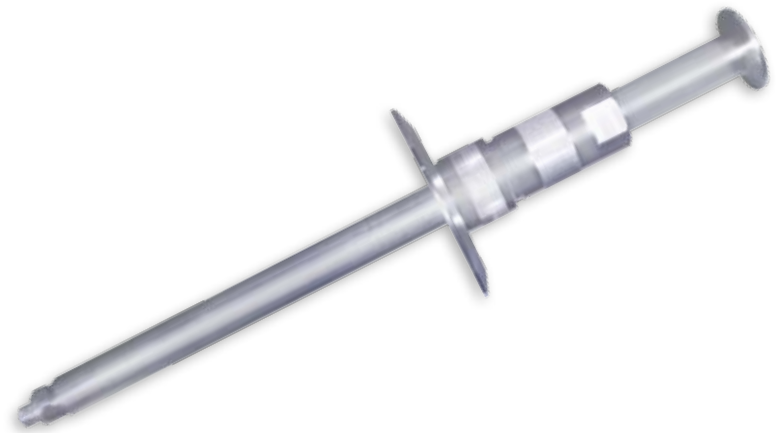
## CUSTOM-FABRICATED GRANULATION LANCES

### PRODUCT OVERVIEW

We are able to provide fully customized lances for your high-shear granulation application. The lances are available in either adjustable hydraulic or fixed length and use TP style UniJet® or TeeJet® spray tips.

### FEATURES AND BENEFITS

- Completely customizable, designed to fit your mixer's exact specifications
- Threadless, sanitary design – all components are welded in place
- Sanitary connections
- Materials of construction: 316L stainless steel



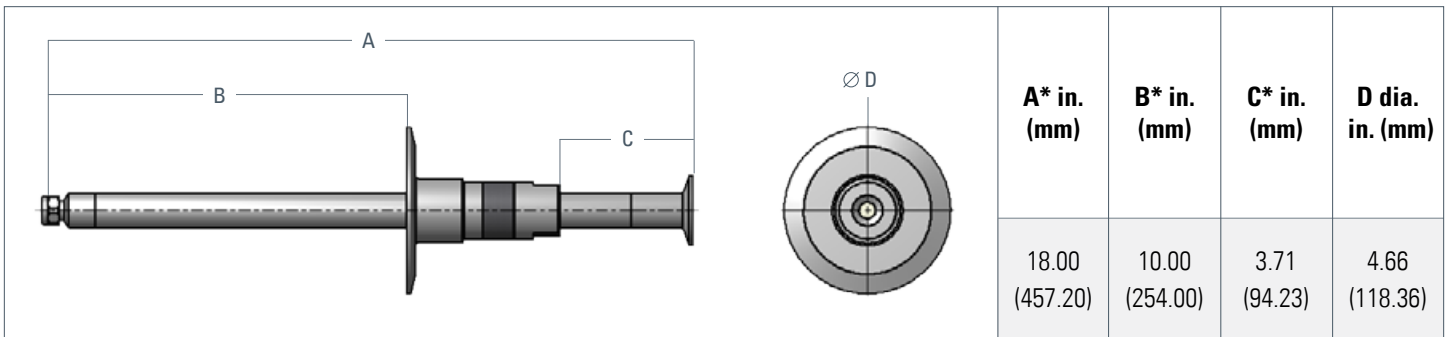
### SPRAY TIP: RETROFIT YOUR HIGH-SHEAR MIXER TO ENHANCE GRANULATION RESULTS

Replace your existing spray assembly with a completely customized high-shear granulation lance for improved performance and sanitation. We are able to customize high-shear granulation lances to fit a range of high-shear mixers, including Fluid Air PHARMX® systems as well as those of other manufacture.

For more information on high-shear mixers, [click here](#) ▶



**DIMENSIONS – CUSTOM-FABRICATED GRANULATION LANCES**



\*Custom lengths available.

**PERFORMANCE DATA**

Spray Angle at 40 PSI	Capacity Size	Orifice Dia. (in.)*	Capacity gpm**											Spray Angle (°)			
			5	10	20	30	40	60	80	100	200	300	500	20	40	80	200
80°	0050	.018	--	--	.035	.043	.050	.060	.07	.08	.11	.14	.18	61	80	95	101
	0067	.021	--	.033	.05	.06	.067	.08	.09	.11	.15	.18	.24	67	80	94	99
	01	.026	--	.05	.07	.09	.10	.12	.14	.16	.22	.27	.35	68	80	89	92
	015	.032	--	.08	.11	.13	.15	.18	.21	.24	.34	.41	.53	68	80	89	92
	02	.035	.07	.10	.14	.17	.20	.24	.28	.32	.45	.55	.71	69	80	88	91
	03	.043	.11	.15	.21	.26	.30	.37	.42	.47	.67	.82	1.1	70	80	87	90
	04	.050	.14	.20	.28	.35	.40	.49	.57	.63	.89	1.1	1.4	71	80	86	89
	045	.053	.16	.23	.32	.39	.45	.55	.64	.71	1.0	1.2	1.6	71	80	86	89
	05	.056	.18	.25	.35	.43	.50	.61	.71	.79	1.1	1.4	1.8	71	80	86	89
	06	.061	.21	.30	.42	.52	.60	.73	.85	.95	1.3	1.6	2.1	72	80	85	88
	07	.066	.25	.35	.49	.61	.70	.86	.99	1.1	1.6	1.9	2.5	72	80	85	88
	08	.071	.28	.40	.57	.69	.80	.98	1.1	1.3	1.8	2.2	2.8	72	80	84	87
	09	.075	.32	.45	.64	.78	.90	1.1	1.3	1.4	2.0	2.5	3.2	73	73	73	73
	10	.079	.35	.50	.71	.87	1.0	1.2	1.4	1.6	2.2	2.7	3.5	73	80	84	87
	11	.083	.39	.55	.78	.95	1.1	1.3	1.6	1.7	2.5	3.0	3.9	73	73	73	73
	12	.087	.42	.60	.85	1.0	1.2	1.5	1.7	1.9	2.7	3.3	4.2	73	73	73	73
	13	.090	.46	.65	.92	1.1	1.3	1.6	1.8	2.1	2.9	3.6	4.6	73	73	73	73
	14	.093	.49	.70	.99	1.2	1.4	1.7	2.0	2.2	3.1	3.8	4.9	73	73	73	73
	15	.097	.53	.75	1.1	1.3	1.5	1.8	2.1	2.4	3.4	4.1	5.3	74	80	83	86
	16	.100	.57	.80	1.1	1.4	1.6	2.0	2.3	2.5	3.6	4.4	5.7	74	80	83	86
	17	.103	.60	.85	1.2	1.5	1.7	2.1	2.4	2.7	3.8	4.7	6.0	74	80	83	86
20	.112	.71	1.0	1.4	1.7	2.0	2.4	2.8	3.2	4.5	5.5	7.1	74	80	83	86	
25	.121	.88	1.3	1.8	2.2	2.5	3.1	3.5	4.0	5.6	6.8	8.8	74	80	83	86	
30	.133	1.1	1.5	2.1	2.6	3.0	3.7	4.2	4.7	6.7	8.2	10.6	74	80	83	86	
40	.153	1.4	2.0	2.8	3.5	4.0	4.9	5.7	6.3	8.9	11.0	14.1	74	80	83	86	
50	.172	1.8	2.5	3.5	4.3	5.0	6.1	7.1	7.9	11.2	13.7	17.7	74	80	83	85	
60	.188	2.1	3.0	4.2	5.2	6.0	7.3	8.5	9.5	13.4	16.4	21	75	80	83	85	
70	.203	2.5	3.5	4.9	6.1	7.0	8.6	9.9	11.1	15.7	19.2	25	75	80	83	86	

**ORDERING INFORMATION – CUSTOM-FABRICATED GRANULATION LANCES**

Use this form to describe your specific requirements and then submit to your local sales representative.  
Custom Fabricated Granulation Lances (Coming Soon)