

**DPL-300**

**Multifunctional Fluidized Bed**



**TECHNICAL  
PARAMETER**

**南京翰洋智能设备有限公司**  
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# DPL-300 Multifunctional fluidized bed



## WORKING PRINCIPLE

Multi functional fluidized bed is a new type of pharmaceutical equipment developed in boiling drying technology, which integrates functions such as granulation and drying, and is widely used in the pharmaceutical industry. The fluidized bed multi-function drying granulator is mainly composed of host machine, air handling system, spray system, main air duct system, exhaust system, electric control cabinet, etc.

The main structure of the multifunctional fluidized bed drying granulator is shown in Figure 1. Its working principle is that the airflow is sucked by the negative pressure of the induced draft fan,

and enters the fluidized bed granulator through the airflow distribution plate through the air filter, heat exchanger, and air supply duct, stirring and boiling the powder into a fluidized state.

The atomized liquid material and compressed air enter the nozzle through their respective pipelines, atomizing into small droplets, which are sprayed in the fluidized bed granulation chamber without mixing with the powder and bonding into particles. At the same time, the particles are



dried by hot air, and a portion of the fine powder rises to the filter bag for collection. After a certain period of time, the left exhaust valve closes, and the left ventricular filter bag shakes up and down under the action of the cylinder. The shaken powder does not fall into the reflux bed for granulation again. After shaking the bag, the left exhaust valve opens again, and after a certain period of time, the right exhaust valve closes, causing the filter bag in the right chamber of the filter room to shake. The left and right chambers shake alternately in this cycle to clean the captured powder and keep the filter bag unobstructed, ultimately completing the drying and granulation operations.

## FINISHED PRODUCT DISPLAY



## EQUIPMENT CHARACTERISTICS

1.1. The main body of the equipment is a circular structure with no dead corners.

1.2. The heater is made of stainless steel fins wrapped around a stainless steel tube with a diameter of 18x2. It has fast heat transfer, high heat transfer efficiency, no rusting, no pollution to materials, and a long service life.

1.3. The air inlet is equipped with an air filter, and the air purification meets GMP requirements;

1.4. The bottom of the host is equipped with a drainage outlet, which can conveniently and quickly discharge the sewage from the flushing equipment.

1.5. The hopper is connected to a rack with wheels for easy movement and loading and unloading operations. The hopper and upper cylinder are sealed with silicone rubber, which is hygienic, not easy to age, and has a good sealing effect.

1.6. The hopper is equipped with an observation window and a sampler, which can clearly observe the internal drying situation during operation. And it can quickly and conveniently sample the materials in the hopper without stopping the machine, allowing for a more intuitive understanding of the drying process.

1.7. The bottom can be replaced with a mat shaped mesh bottom cylinder with a special structure, as shown in Figure 2, specifically designed for drying materials. It has good ventilation effect and can prevent fine powder from leaking. This design is also equipped with a mixing system to fully achieve the ideal drying effect of the material.

1.8. The seal between the hopper and the upper cylinder body adopts a cylinder lift seal, which is reliable and easy to operate.

1.9. There are three spray gun holes on the middle cylinder, and the height of the spray gun can be adjusted to adapt to different granulation processes. The atomization of the adhesive adopts

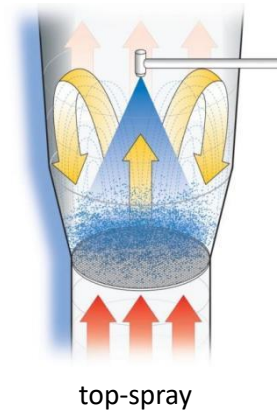


Figure 2 Drying bottom



Figure 3. Bag dust collector

a multi fluid spray gun, which has good atomization effect, uniform particle size, and high product qualification rate.

1.10. Install an anti-static bag dust collector in the upper cylinder as shown in Figure 3, which can effectively filter the exhaust air, prevent fine powder from escaping, and do not adsorb materials. And adopt a double cylinder shaking bag method to thoroughly clean the dust.

1.11. The exhaust outlet of the fan is equipped with a silencer, which reduces the noise of the fan and effectively improves the working environment.

1.12. The temperature control adopts a digital temperature controller, which can set the temperature arbitrarily and automatically control it, making it intuitive, convenient, and highly accurate.

1.13. The electrical control cabinet is equipped with a maintenance door, which is easy to inspect, maintain, and repair. The door and box are sealed with silicone rubber, with good sealing effect. External dust and moisture should not enter the interior, making it safe and durable to use.

1.14. Completing mixing, granulation, and drying in the same container reduces the process and facilitates operation.

Adjustable range of guide tube and bottom: 0-40mm for 200 type single tube and below equipment, 0-60mm for above equipment.

Interchangeable bottom jet flow distribution plate, equipped with two types of perforated airflow distribution plates as standard, meets the requirements of uniform and orderly boiling of materials with different characteristics.



## TECHNICAL PARAMETER

MODEL		DPL-300
Bucket volume (L)	Top spray	980
Yield (kg/batch)	Top spray	200-300
Material yield (%)		≥99
Operating temperature (°C)		Normal temperature~120 °C
fan	Power (kW)	37/45
	Air volume (m <sup>3</sup> /h)	7200
	Wind pressure (mmH <sub>2</sub> O)	9500
Electric heating power (kW)		90
Steam pressure (Mpa)		0.4
Steam consumption (kg/h)		480
Compressed air pressure (Mpa)		0.4~0.6
Compressed air consumption (m <sup>3</sup> /min)		3 (0.6MPa)
Main engine weight (kg)		2500
Equipment installation size (H * ∅ D * W) (mm)		5865*1608*1840

## CONFIGURATION LIST

### (1) Air intake system

NO.	NAME	QTY	MATERIAL QUALITY	SPECIFICATIONS	REMARKS	PRODUCER
1	Primary filter	1	stainless steel	300	G4	SUZHOU
2	Medium efficiency filter	1	cloth bag	300	F8	Suzhou
3	High temperature resistant and high-efficiency filter	1	High temperature resistant filter paper	Plate type, 300 type	H13, Temperature resistance of 250 °C	Suzhou
4	Steam heater	1	stainless steel	54 m <sup>2</sup>	Heat the purified air to the required temperature of the material	Wuxi
5	Solenoid valve	1		DN40	Options	Suzhou
6	Air intake system box	1	SUS304	Supporting facilities $\delta=1.5$	Side with cleaning and maintenance doors	Hanyoo
7	Air inlet valve	1	SUS304	DN315		Hanyoo
8	Inlet air temperature probe	1		PT100,EX 防爆	Monitoring the inlet air temperature	Shanghai

### (2) Bottom cylinder

NO.	NAME	QTY	MATERIAL QUALITY	SPECIFICATIONS	REMARKS	PRODUCER
1	Head	1	SUS316L	$\delta=3\text{mm}$	Mirror polished inner surface, matte treated outer surface, elliptical head	Suzhou
2	Sewage discharge device	1	SUS316L	$\Phi 32$	Discharge after cleaning	Hanyoo
3	Airtight seal	1	silicon rubber	40×40	Used for PLC control of top sealing	Jiangsu
4	Jacking section	1	SUS316L	$\delta=3\text{mm}$		Hanyoo
5	Jacking cylinder	2		SU150×100FB	PLC	AirTAC

### (3) Fluidized bed (hopper)

NO.	NAME	QTY	MATERIAL QUALITY	SPECIFICATIONS	REMARKS	PRODUCER
1	Bed body	1	SUS316L	$\delta=3\text{mm}$	Mirror polished inner surface, matte treated outer surface, conical structure design	Hanyoo
2	Sampler	1	SUS316L	300	Online monitoring of material results	Shanghai
3	Mirror	1	tempering glass	$\Phi 160$	Equipped with a powder scraping device for online observation of working conditions	Zhejiang
4	Fluidization plate	1	SUS316L	300	Design and manufacture based on the process technology of the product	Hanyoo
5	Frame	1	SUS304	$\Phi 45$	Diversified structural design, convenient for workers to operate	Hanyoo

### (4) Diffusion chamber (middle cylinder)

NO.	NAME	QTY	MATERIAL QUALITY	SPECIFICATIONS	REMARKS	PRODUCER
1	Cylinder body	1	SUS316L	$\delta=3\text{mm}$	Mirror polished inner surface, matte treated outer surface, designed according to fluidization requirements	Hanyoo
2	Mirror	1	tempering glass	$\Phi 160$	Online observation	Zhejiang
3	Vacuum feeding device	1	SUS316L	$\Phi 76$ Pneumatic control	Pneumatic control, can be connected to the wet granulator of the wet mixer	Hanyoo
4	Spotlights	1		DN100	Online observation	Hanyoo
5	Spray gun holder	3	SUS316L	DN89		Hanyoo



**(5) Filter chamber (top cylinder)**

NO.	NAME	QTY	MATERIAL QUALITY	SPECIFICATI ONS	REMARKS	PRODUC ER
1	Head	1	SUS316L	$\delta=3\text{mm}$ $\Phi 1200$	Mirror polished inner surface and matte treated outer surface	Hanyoo
2	Cylinder body	1	SUS316L	$\delta=3\text{mm}$ $\Phi 1200$	Left and right ventricular isolation design	Hanyoo
3	Mirror	2	tempering glass	$\Phi 160$	Online observation	Zhejiang
4	Dust cleaning cylinder	2		SC63 $\times$ 320-FA	PLC control	chint
5	Air damper cylinder	2		SC63 $\times$ 200	PLC control	chint
6	Locking cylinder	2		SC63 $\times$ 40	PLC control	chint
7	Bag filter	2	CCP Cloth anti-static	300	Regular left and right cleaning of dust	Hanyoo
8	Bag holder	2	SUS316L	300	Semi-circular structure	Hanyoo
9	Bag lifting mechanism	2		300	Pulley+steel wire rope structure	Hanyoo

**(6) Exhaust System**

NO.	NAME	QTY	MATERIAL QUALITY	SPECIFICATI ONS	REMARKS	PRODUC ER
1	Exhaust duct	1	SUS304	$\delta=1.5\text{mm}$	Flange connection	Hanyoo
2	Exhaust valve	1	SUS304	DN280	PLC control, shut down during shutdown to prevent air backflow	Hanyoo
3	Exhaust	1		PT100, EX explosion-pr oof	Online observation of air outlet temperature	Jiangsu
4	Induced	1	A3	37KW	PLC variable frequency control,	Zhejiang
7	Frequency	1		37KW	PLC variable frequency control	Delta
8	Silencer	1	A3	300	Ensure that the noise level of the host after isolation installation is $\leq 75\text{Dba}$	Hanyoo

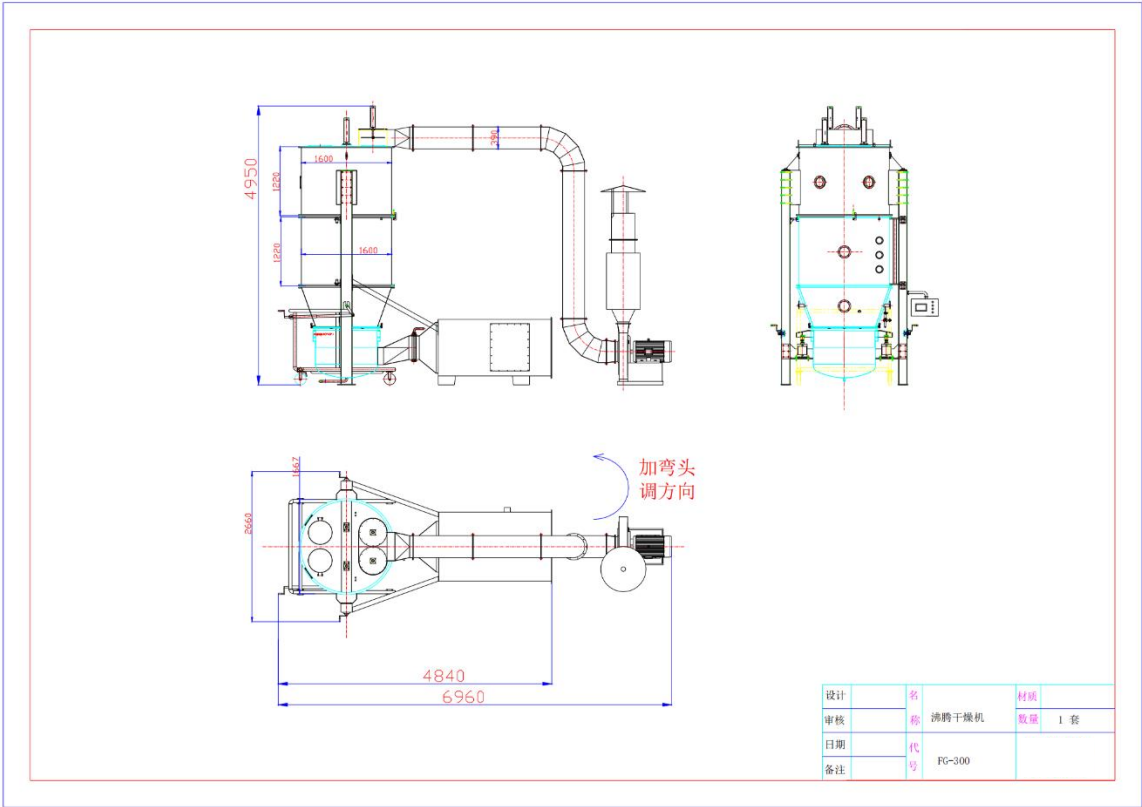
**(7) control system**

NO.	NAME	QTY	MATERIAL QUALITY	SPECIFICATI ONS	REMARKS	PRODUC ER
1	Explosion proof control cabinet	1	SUS304	interface	Strong and weak current isolation installation	Hanyoo
2	Main electrical components	1		Schneider		Germany
3	Pneumatic components	1		Electromagn etic valve, cylinder, pressure regulating valve, pressure gauge	AirTAC	domestic
4	Frequency converter	1		37KW	Delta	domestic
5	touch screen	1		Siemens 7 "		Germany
6	PLC	1		Siemens		Germany

**(8) Cleaning system**

NO.	NAME	QTY	MATERIAL QUALITY	SPECIFICATI ONS	REMARKS	PRODUC ER
1	Vertical pipeline pump	1		CDLF8-12		Southern Pump Industry
2	Water pump motor	1		Y2-112M-2	4KW	Southern Pump Industry
3	pneumatic valve	1	SUS304	Q681F Ø40		Zhejiang
4		1		Q681F Ø15		Zhejiang
5	Pneumatic actuator valve	1	SUS304	TBN150 Ø250	SUS304	Shanghai
6	Rotating spray ball	1	SUS316L	Φ50.5	SUS304	Zhejiang
7	Mobile casters	4	SUS304	3 寸		Wuxi

PLAN SKETCH





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