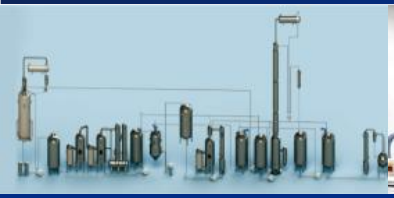
Canaan
迦南凯鑫隆

CFK-1500 Automatic capsule filling machine产品介绍



全产品链	自动化	数字化	智能化	大健康产业
Full product chain	Automatic	Digital	Intelligent	Big health industry

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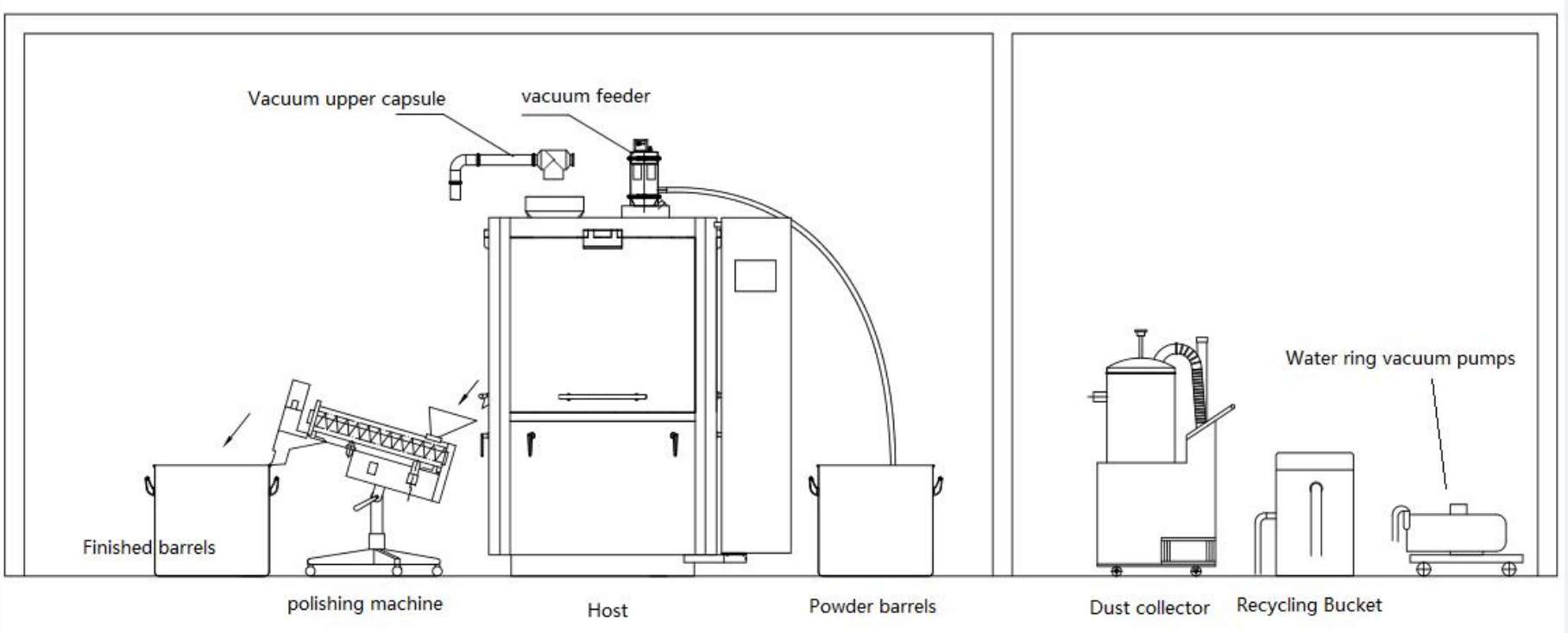
Part 1

Product overview

1.1Product overview

CFK-1500 series capsule filling machine is a full-automatic capsule filling machine developed by our company by absorbing domestic and foreign advanced technology. The equipment has beautiful shape, smooth operation, low noise, easy to operate, easy to clean. The whole machine adopts intermittent rotary mechanism and filling in a quantitative manner. It is suitable for filling powder and granule of 00#-5# capsules, and can be equipped with automatic capsule feeding machine, vacuum loading machine, gold inspection machine, polishing machine, elevator and other auxiliary equipment.

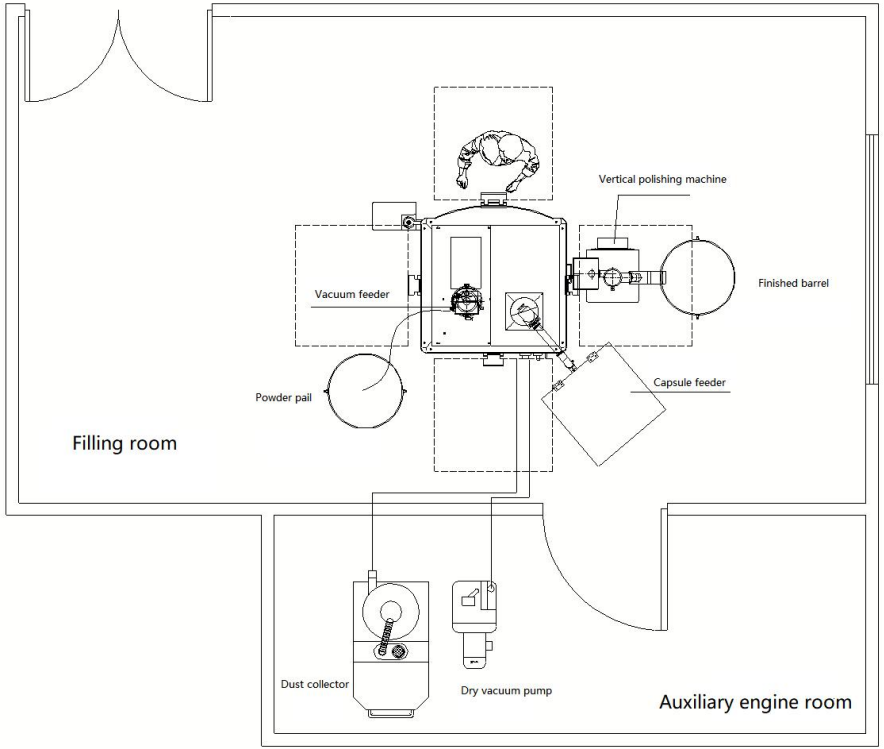
1.2 Display drawing



1.3 Reference layout

Auxiliary equipment

- Vacuum cleaner (standard)
- Gold inspection machine (optional)
- Polishing machine (optional)
- Automatic bag feeder (optional)
- Vacuum feeder (optional)
- Lift feeder (optional)
- Pellet and particle filling device (replace powder filling, optional)
- Sampling scale (optional)



1.4 Technical parameters

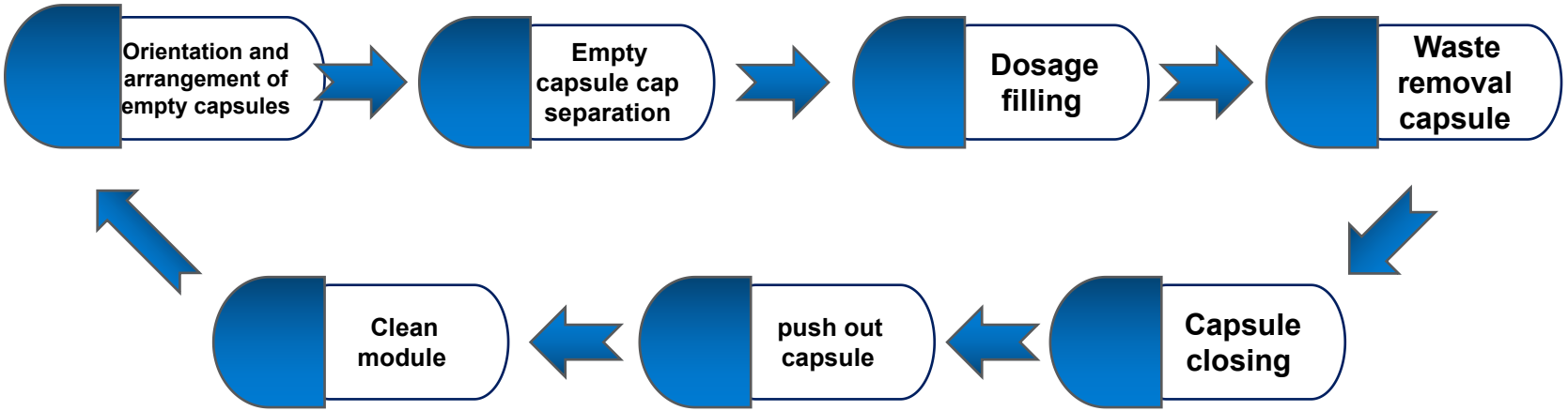
Output	1500 Capsules/min
No.of segment bores	11
Suitable fof capsule	00#-5#
Total power	8Kw(Standard configuration)
Overall weight	1400Kgs
Overall diemensions	1230mm×1175(+382)mm×1955mm
Noise	≤75DB（A）
Pressure	0.4 ~ 0.7Mpa
Air consumption	≤6m³
Vacuum	-0.03 ~ -0.06Mpa
Filling error	±2.5%~±5%

The machine may be improve in the technology without prior notice, and the attached image shows the selected items that may be provided

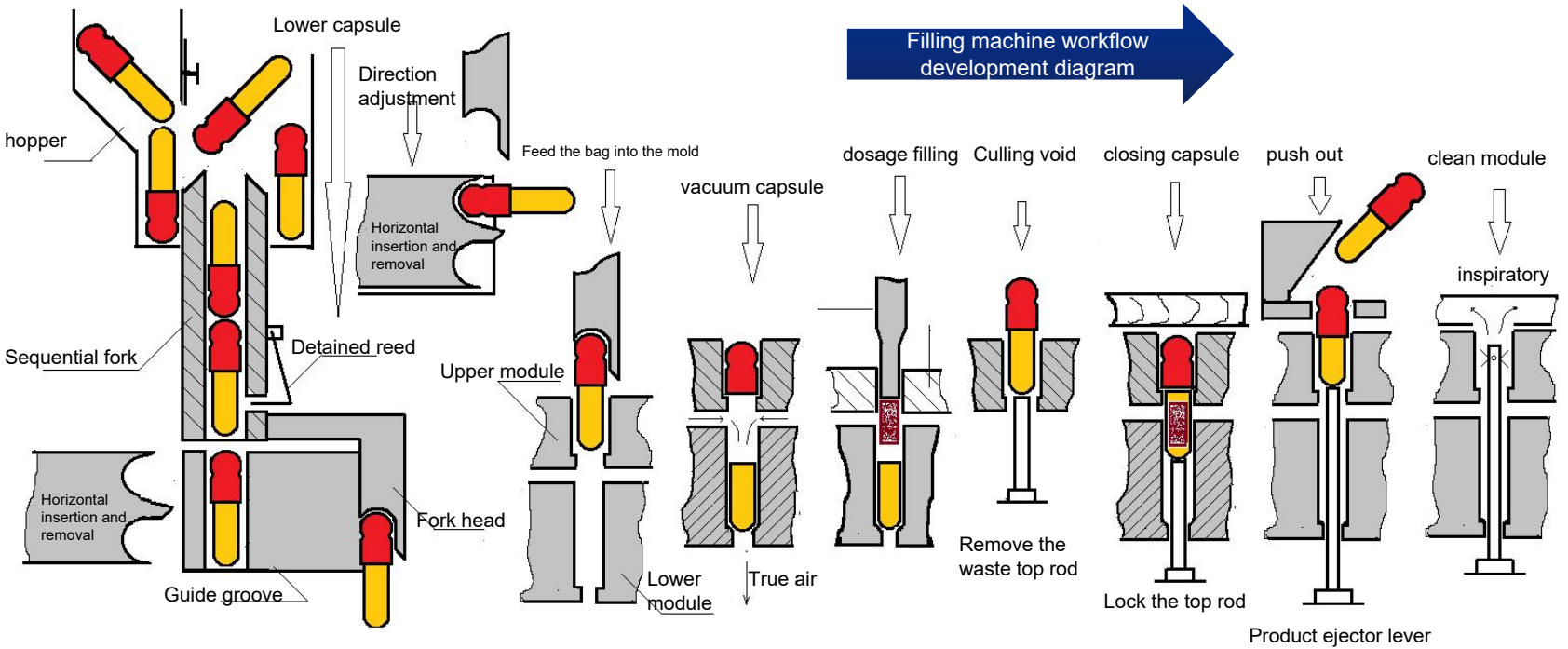
Part 2

Working principle

2.1Filling process



2.2Working principle expansion diagram

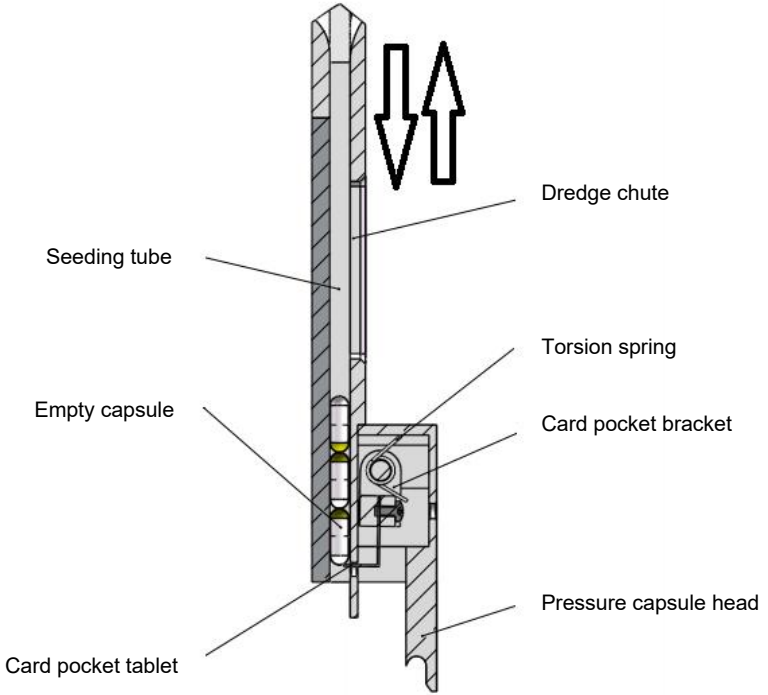


2.3Sort empty capsules

Principle:

The sowing capsule tube is provided with a plurality of circular channels which are communicated with the capsule hopper, and a card capsule sheet is arranged in the channels.

The seed tube slides up and down to drop the empty capsule into the orifice. When the sowing capsule tube goes up, the card capsule will jam the capsule. When the sowing tube goes down, the card carrier rotates to drive the card carrier to release the capsule, and the capsule falls out of the hole.



2.4 Orientation of empty capsules

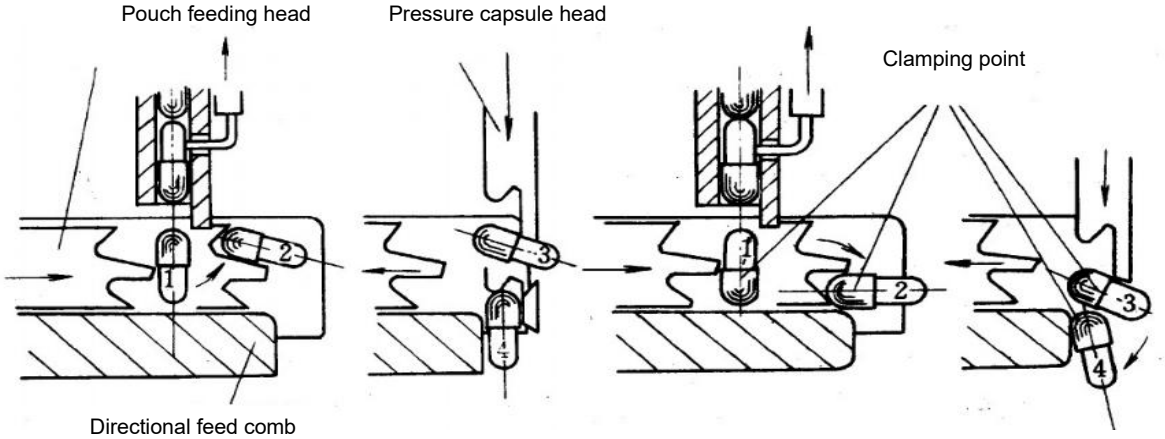
Description

The capsule head always acts in the middle of the capsule body, and the capsule head pushes the capsule to produce a turning action, always pushing the capsule body to the edge of the capsule comb, and then pushing the capsule under the capsule head to turn over the capsule and push it vertically into the module hole.

Principle

1. The thrust point of the capsule feeding head is on the capsule body;

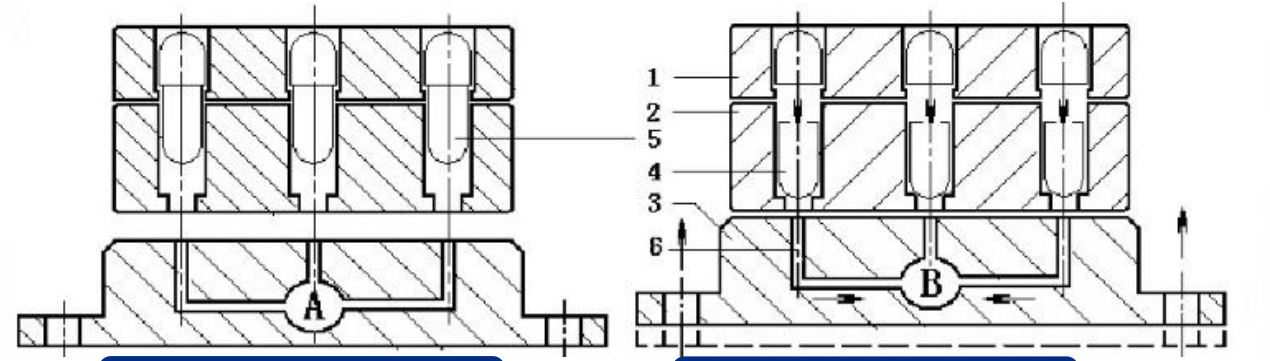
2. The width of the chute is smaller than the outer diameter of the capsule cap and larger than the outer diameter of the capsule body, which only has a clamping effect on the capsule cap and does not contact the capsule body.



2.5The body cap of the empty capsule is separated

Principle

When the capsule enters the module hole, the vacuum suction seat rises and attaches tightly to the lower module. Because the diameter of the small hole of the upper and lower module steps is smaller than the diameter of the capsule cap and the capsule body respectively; When the vacuum is switched on, the capsule body is vacuumed into the lower module hole, and the step in the upper module die hole prevents the capsule cap from going down, and the empty capsule cap is separated.



A The state before switching on the vacuum

B The state after the vacuum is turned on

1.Upper module 2.Lower module 3.Vacuum suction seat 4.The cysts have been isolated
5.The capsule was not isolated 6.Vacuum line

2.6Packing type metering filling

Principle

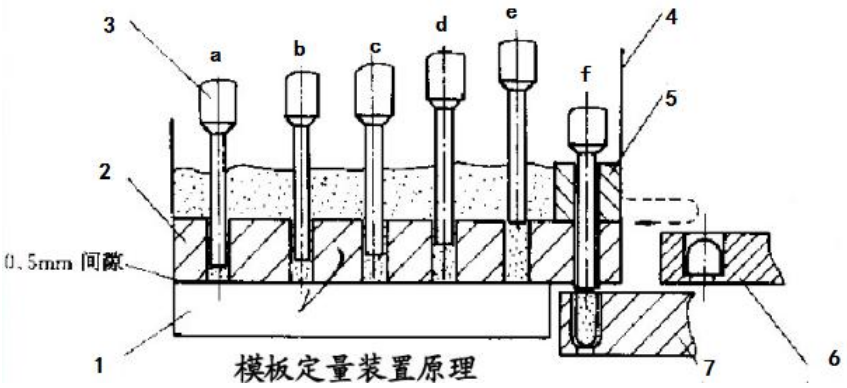
a-f represents each punch bar, and during the interval after the punch bar is raised, the cartridge rotates at an Angle. The powder in the die hole of the measuring plate is compacted by each punch rod in turn. When the filling rod is lifted from the die hole, the powder cartridge rotates, and the powder on the metering tray will automatically fill the remaining space in the die hole. Fill once and compacted once, until the sixth time, the punch rod will poke the powder column in the mold hole out of the measuring tray, so that it falls into the empty capsule body below, and complete a filling work.

Using the relative movement between the scraping block and the measuring plate, the excess powder on the surface of the measuring plate is scraped to ensure the measuring requirements of the powder column.

The characteristics of the stuffing method

1. Accurate loading, the difference of loading > 0.3g is controlled within ±3%.

2. Adjust the lifting height of the punch rod to fine-tune the dose of the drug filling.



模板定量装置原理

1. Copper gasket
2. Measuring plate
3. Fill the rod
4. Compact case
5. Scrape the powder blocks
6. Install the module
7. Next module

2.7Eliminate waste stations

Use

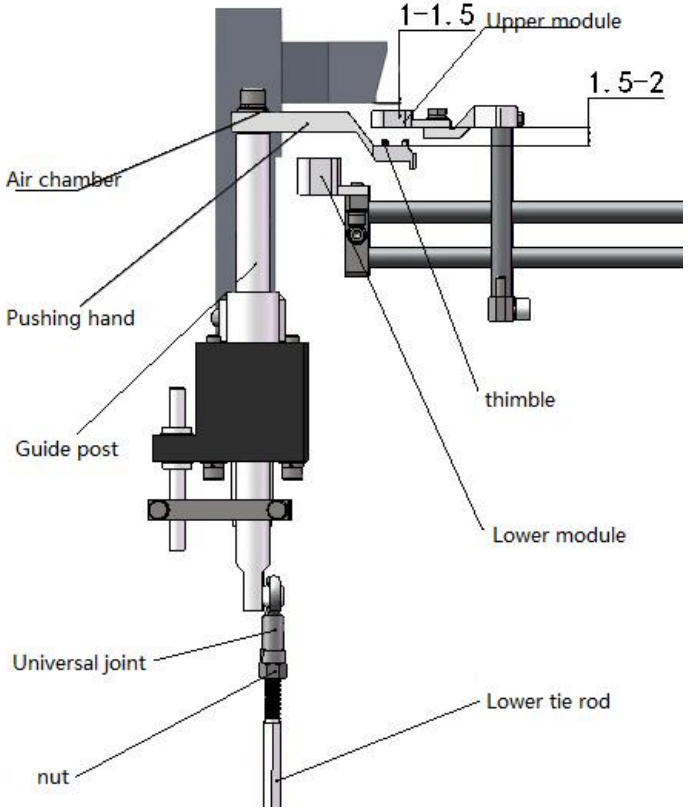
Some empty capsules will make the proper cap not separate for some reason, and these empty capsules are not filled with drugs, but they have remained in the upper module hole; To prevent it from mixing into the finished product, it is removed before the capsule is closed.

Principle

A push-hand that can move up and down is located between the upper module and the lower module, and the push-hand is provided with a thimble. When the upper and lower modules rotate, the pusher stops at the lower limit position and the thimble detach from the upper module. When the module stops at this station, the pusher goes up and the thimble mounted on the pusher is inserted into the upper module hole.

①. If there is a capsule cap that has been pulled out in the upper die hole, the upper top has no effect on the capsule cap.

②. If there is an empty capsule in the upper die hole, it is pushed out of the upper module by the ascending thimble and is sucked into the air chamber.



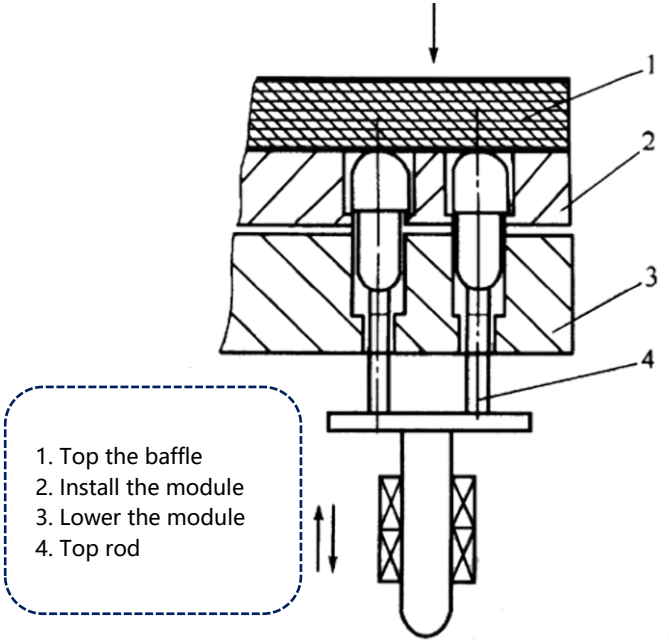
2.8Closed station

Use

The capsule of filling material is locked by pushing rod to meet the requirements of finished product.

Principle

The upper and lower modules are rotated to the lock-up position together, and the axes of the upper and lower modules are coincident. The upper baffle above the module and the lower ejector rod begin to move towards each other. The upper baffle presses the capsule cap, the top rod rises, and the capsule cap body closes and locks.



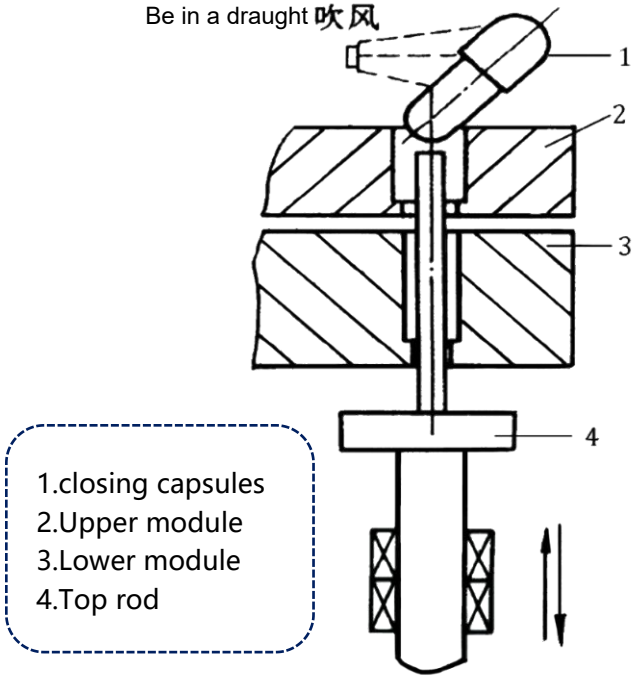
2.9Get out of the capsule station

Use

The finished capsule with the lock intact will be pushed out for collection.

principle

The main component of the device is an up and down reciprocating discharge ejector rod, which ejector the capsule out of the module hole when the upper and lower modules carrying the closed capsule are rotated above the outlet station and stopped. The capsule is then blown into the hopper and slid into the bucket.



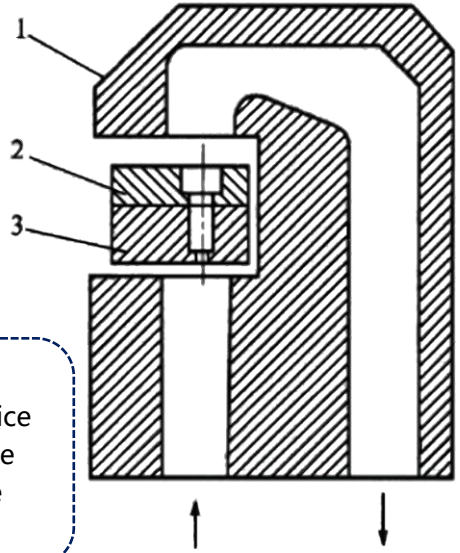
2.10Clean workstation

Use

The cleaning device cleans the module in preparation for the next cycle.

principle

When the upper and lower modules are pulled under the main working disk and stopped at the cleaning station, they are placed right at the gap of the cleaning device. At this time, the compressed air is opened, and the pollutants such as powder and broken capsule skin in the die hole are blown upward from below the lower module. The suction system placed above the die hole inhales it into the vacuum cleaner to keep the die hole clean for the next cycle operation.

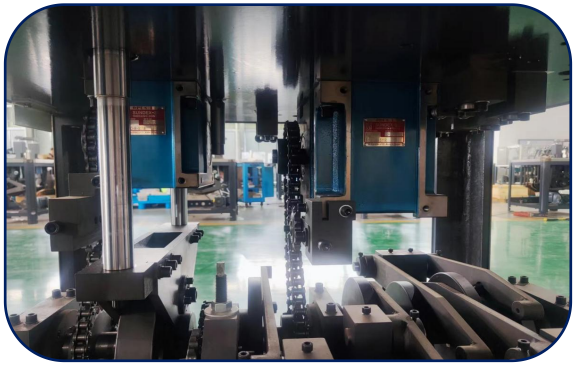


Part 3

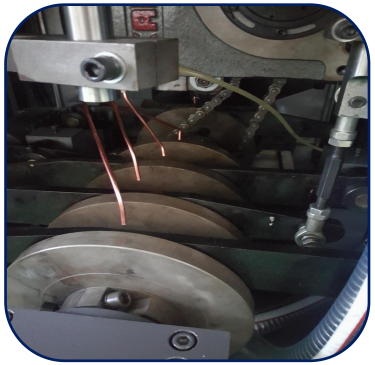
Performance characteristics

3.1 Reasonable drive system

【Index box】



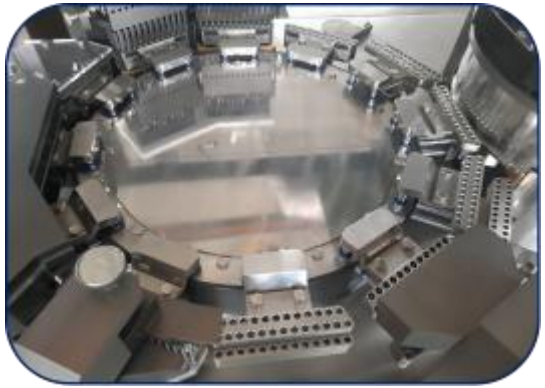
【Driving part】



【Internal groove cams】

- The DF110 and DF80 type grading box combination are used to make reasonable adaptation. Greatly improves the stability and service life of the machine.
- Improve the transmission cam of all stations, use high quality special steel to make the inner groove wheel drive, eliminate the disadvantages of spring pulling easy fatigue and fracture, and wear resistance, stable operation.
- The new layout design of the mechanical transmission part and with the "inner cam" instead of the traditional "lever" filling transmission mechanism, so that the machine runs more quiet and stable.

3.2 Enclosed station turntable

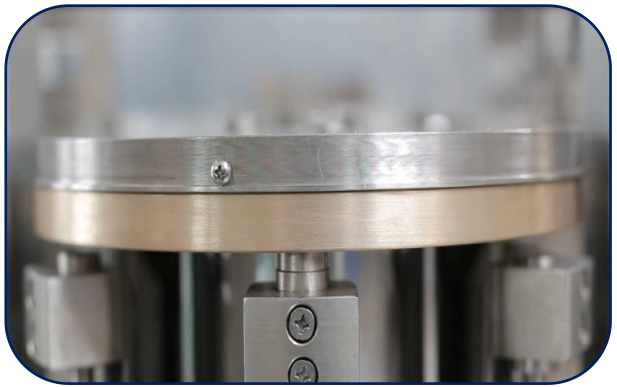


【Second generation fully enclosed station turntable】

- With imported silicone sealing ring, reduce the situation of powder being brought into the turntable due to the expansion of the movement shaft, and smooth operation, high precision;
- It solves the cumbersome problem of assembling and disassembling molds, reduces the labor intensity of employees, and strengthens the service life of station turntable.

3.3 Three-dimensional regulating mechanism

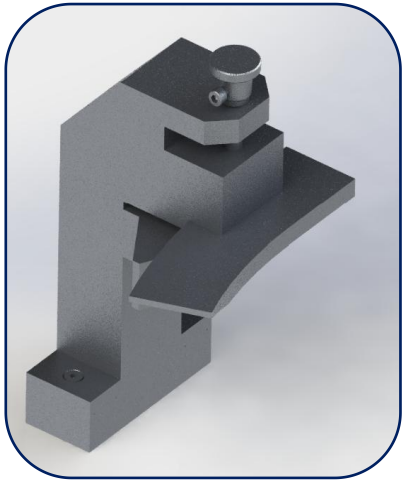
【Three dimensional chassis adjustment mechanism】

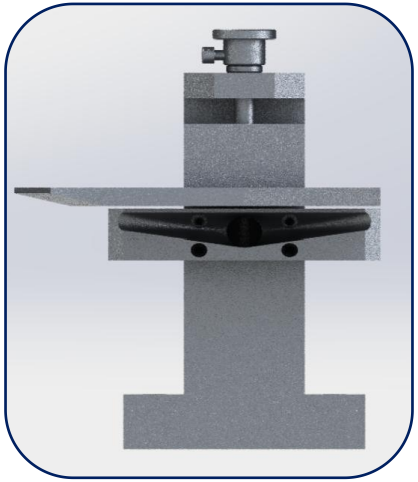


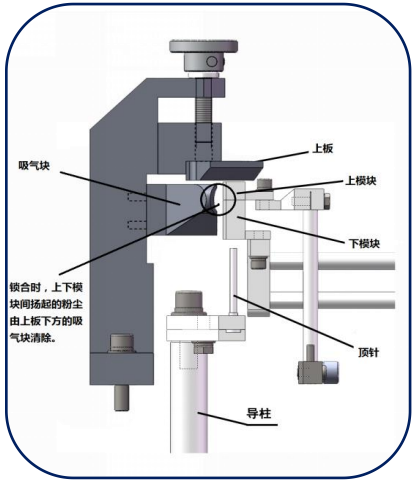
【Metering tray and copper pad】

- The natural deformation degree of the measuring disc and copper ring is eliminated, the gap is uniform, and the phenomenon of powder leakage is reduced.
- Easy to disassemble, easy to clean;
- Ensure that the difference of loading is within the acceptable range.

3.4 Locking device





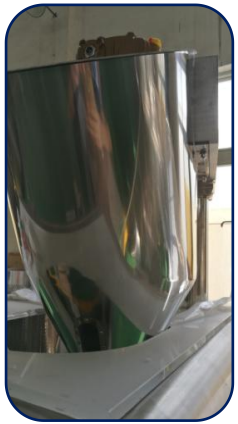


【New locking device】

【Old locking device】

- The front ramp allows the capsule to be locked in advance to avoid the phenomenon of cap cutting and flying of the old type of lock device.
- The locking cleaning device is added, and the locking bag cleaning block works at the same time to remove the fine dust raised between the upper and lower molds.

3.5Easy to disassemble powder hopper



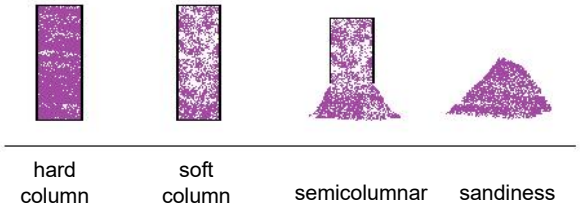
The old type of hopper, installation, disassembly and cleaning require employees to consume greater energy to operate

A screw is added to the support column, which passes through the panel, connects to the hopper support at the top, and the motor and turbine box are installed at the bottom. When the hopper is disassembled and installed, the whole lifting process can be controlled on the PLC operating panel. Due to the use of single screw support, there is a slight jitter phenomenon at work.

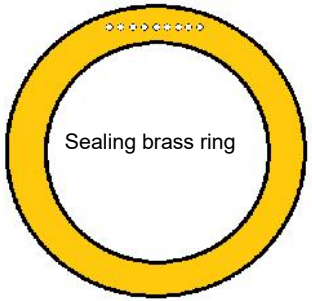
Newly designed powder feeding device, double section feeding hopper with fast clip, simple structure, stable and reliable work, easy to disassemble the hopper.

3.6 Copper ring

The four shapes of the material when it is sent out of the dosing tray



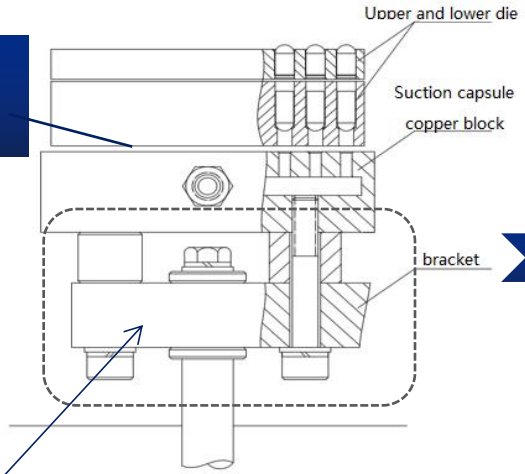
- Hard column: the grain weight is stable, the load is close to the maximum, there is a group or two groups of filling rods have obvious beating, the adjustment range is too small, the machine load is large, and the corresponding parts wear fast.
- Soft column: stable grain weight, large adjustment range, small load, small component wear.
- Semi-columnar: sometimes the powder particle weight becomes lighter.
- Loose sand: leakage powder, machine table dirty, big installation difference. The notched copper ring can be replaced by a sealed one.



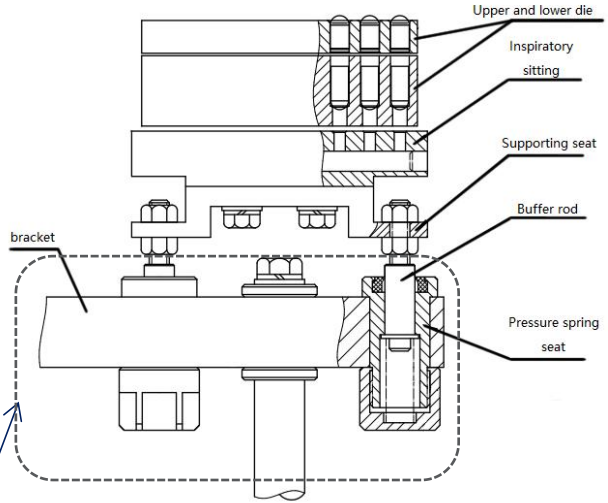
According to the material conditions, the company provides optional copper rings

3.7 Vacuum dispenser mechanism

The capsule copper block rises, fits with the lower plane of the mold, and enters the vacuum state



improvement



Rigid joint

- The lower bracket is rigidly connected with the copper block of the suction bag.
- Loud noise, suction capsule copper block easy to wear.

Add pressure spring seat

- Improve the fit degree of suction seat and capsule mold, improve the vacuum effect, so that empty capsules can be separated more effectively.
- Reduce impact and wear.

3.8 Modular powder filling mechanism

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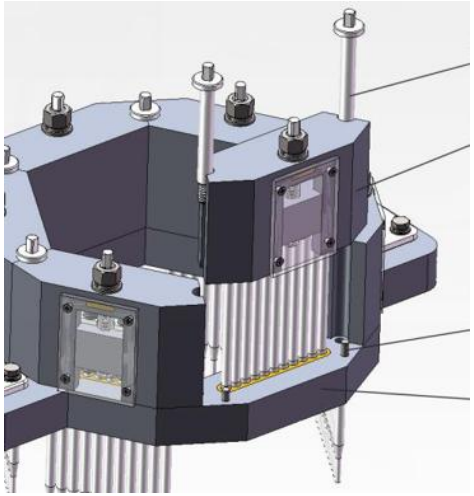
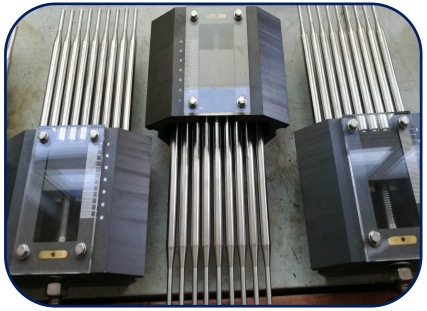
Modular closed powder filling mechanism, easy to disassemble, easy to clean.

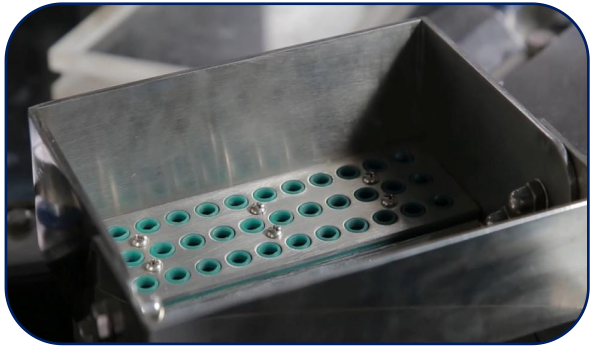


After improvement

After improvement



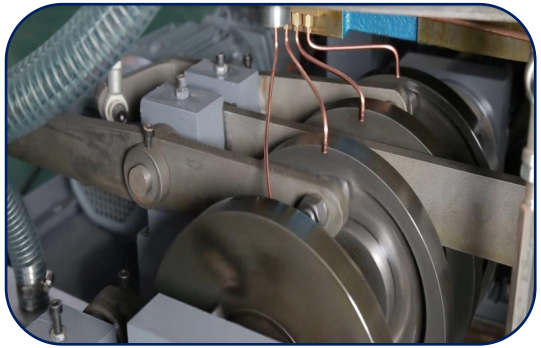
3.9 Other properties



【Three rows of silicone outlet】

Using three rows of silicone pads, no air source, no dust flying sac device.

The equipment has an automatic timing refueling system.



【Automatic refueling system】

3.10 Other properties

【Clean the blowing structure】

The mold cleaning and blowing structure is increased, which solves the problem that the capsule is difficult to pull out due to the deposition of strong viscous drug dust in the mold plane and mold cavity during production, and greatly improves the probability of the capsule.

The secondary dehumidification device of the humidity in the filling room is equipped to solve the problem of poor dehumidification effect of the filling workshop system.

【 Micro-dehumidifier 】(Optional)

3.10 Other properties

【Sowing bag control switch】

Added a capsule control switch. (Control outside the body: safer and more convenient)

【New flow scraper】

The flow scraper is fastened on the metering plate and rotates with the metering plate, which greatly improves the fluidity of the powder in the powder storage ring. (Optional).

Part 4

Auxiliary machine selection

4.1 Material feeding method

Hand feed

- Add the material to the hopper manually
- The dust is larger, and the labor intensity is higher
- No cost, suitable for smaller batch production

Lift feeder (optional)

- Material pipe with soft connection charging
- The feeding process is closed, safe and hygienic
- Suitable for mixing and feeding to solve the problem of stratification

Vacuum feeder (optional)

- Compact structure, airtight, no pollution, safety and health, low noise
- Easy to install/operate, fast conveying speed
- Suitable for the height of 2.7m and above the floor workshop

4.2 Capsule feeding method

Hand capsule

- Capsules are manually added into the capsule hopper.
- Suitable for smaller batch production

Automatic bag feeder (optional)

- The bottom capsule tube is connected with compressed air, and the automatic capsule feeder delivers the capsule to the capsule bucket without manually adding the capsule.
- The automatic bag feeder is easy to operate and can automatically start and stop feeding, ensuring the continuity of the machine operation.

4.3Exocyst polishing

Capsule polishing machine (optional)

- It can remove the dust and static electricity on the surface of the capsule and improve the surface smoothness.
- Adopting stepless speed regulating motor, the hopper height can be adjusted.

Sorting capsule polisher (optional)

- In addition to removing dust and polishing, eliminating static electricity, it can also automatically remove the capsule with slight load, empty shell, debris and body separation.
- Adopt frequency conversion speed regulation, speed sensitive and reliable can withstand large starting torque, synchronous belt output power to achieve low noise operation.

Vertical capsule polishing machine (optional)

- It has the functions of capsule polishing, sorting and lifting, leaving a high space for connecting subsequent equipment.
- The inlet and outlet can be adjusted 360°, which is convenient for production and saves space.
- The quick mounting connection structure makes the disassembly and installation of the machine more convenient and fast.

4.4Other auxiliaries

【 Metal Detector 】 (Optional)

- Metals can be separated from materials
- Integrated metal foreign object removal system, even if the metal is sealed in the product can be detected
- Available in various calibers and sizes for all practical applications
- Compact and easy to install

- It is used to remove and collect the residual dust under the filling station of the capsule filling machine, and the residual waste in the mold hole

【 Industrial vacuum cleaner 】

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Thanks

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