

100CS Polyurethane Foam

I. Features

This unit is used to fill doors or windows with polyurethane foam joint mixture, applicable to both types of tube and gun. The filling line can be set as any combination of 1-6 work benches. The filler can be controlled separately so that no feeding is made without a container to be filled in. Directional closing ensures high quality. Directional aeration ensures efficient and accurate aeration. Furthermore, the gas consumption is very small. So far, this unit has been patented and sold to Europe, America, Africa and Southeast Asia.

II. Composition and parameters

1. Composition:

It consists of double-end liquid filling device, closing and aerating device, aerating and capping device, vibrator and booster pump.

2. Parameters

(1) Liquid filling device

Outline of host (L*W*H) (mm)	970*510*1400
Bench of metering cylinder (L*W*H) (mm)	700*500*250
Height of aerosol can (mm)	≤450
Diameter of aerosol can (mm)	Customizable
Max. liquid fill each time (ml)	530
Capacity (cans/hr)	500-1000
Max. gas consumption (L/min)	500

(2) Closing device

Outline of host (L*W*H) (mm)	970*510*1400
Height of aerosol can (mm)	≤450
Diameter of aerosol can (mm)	Customizable
Size of valve (inch)	1
Closing contact height (mm)	0~10 adjustable
Capacity (cans/hr)	800~1200
Max. gas consumption (L/min)	300

(3) Aerating device

Outline of host (L*W*H) (mm)	970*510*1500
Height of aerosol can (mm)	120~320
Diameter of aerosol can (mm)	Customizable
Max. gas fill each time (ml)	320
Capacity (cans/hr)	500-1000
Max. gas consumption (L/min)	3 00

(4) Capping device

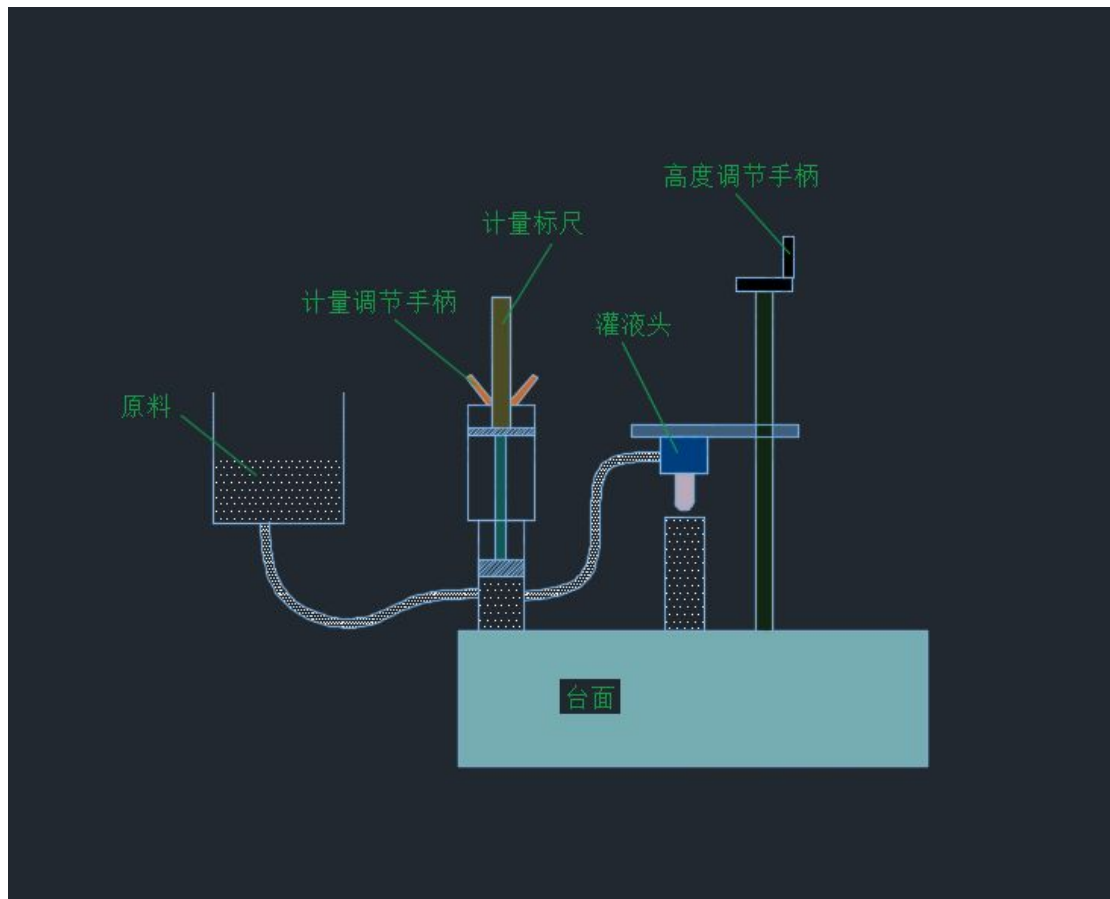
Outline (L*W*H) (mm)	970*510*1400
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Height of aerosol can (mm)	≤450
Diameter of aerosol can (mm)	≤200
Capacity (cans/hr)	800~1200
Max. gas consumption (L/min)	100
(5) Vibrating grid	
Outline (L*W*H) (mm)	800*400*900
Max. gas consumption (L/min)	300
Max. load (kg)	80

III. Basic structure and working principle

Many kinds of aerosol are inflammable or explosive when filling containers with them. Therefore, this unit employs a mechanical structure under full gas-pressure transmission, which can avoid electric spark caused when using electricity.

Liquid filling: Switch on the liquid filling knob, press the foot valve slightly, the double pneumatic operated directional valve of the liquid metering cylinder changes direction, the liquid filler valve turns on with the help of the micro cylinder, and the angle seat valve at the inlet of the metering valve turns off. Meanwhile, the upper chamber in the power cylinder of the liquid metering cylinder takes gas in and the lower chamber exhausts. The piston in the power cylinder pushes down the piston in the liquid cylinder, so that the liquid in the liquid cylinder is transferred via the filler into the aerosol can. Then the signal valve is triggered by the piston of the power cylinder that has been pushed down, the gas pressure output from the signal valve acts on the double pneumatic operated directional valve of the liquid metering cylinder to make it change direction, so that the micro cylinder of the liquid filler moves opposite to the direction of incoming and outgoing gas of the power cylinder to turn off the valve of the liquid filler and turn on the angle seat valve at the inlet of the metering valve. Meanwhile, the metering cylinder returns home, takes in liquid of the same amount and waits for the next filling. The height of the locating piston of the metering cylinder can be adjusted by rotating the knob on the top of the metering cylinder in order to change the size of fill by changing the travel of the metering cylinder piston.



原料：Material

计量调节手柄：Metering adjuster

计量标尺：Scale

灌液头：Filler

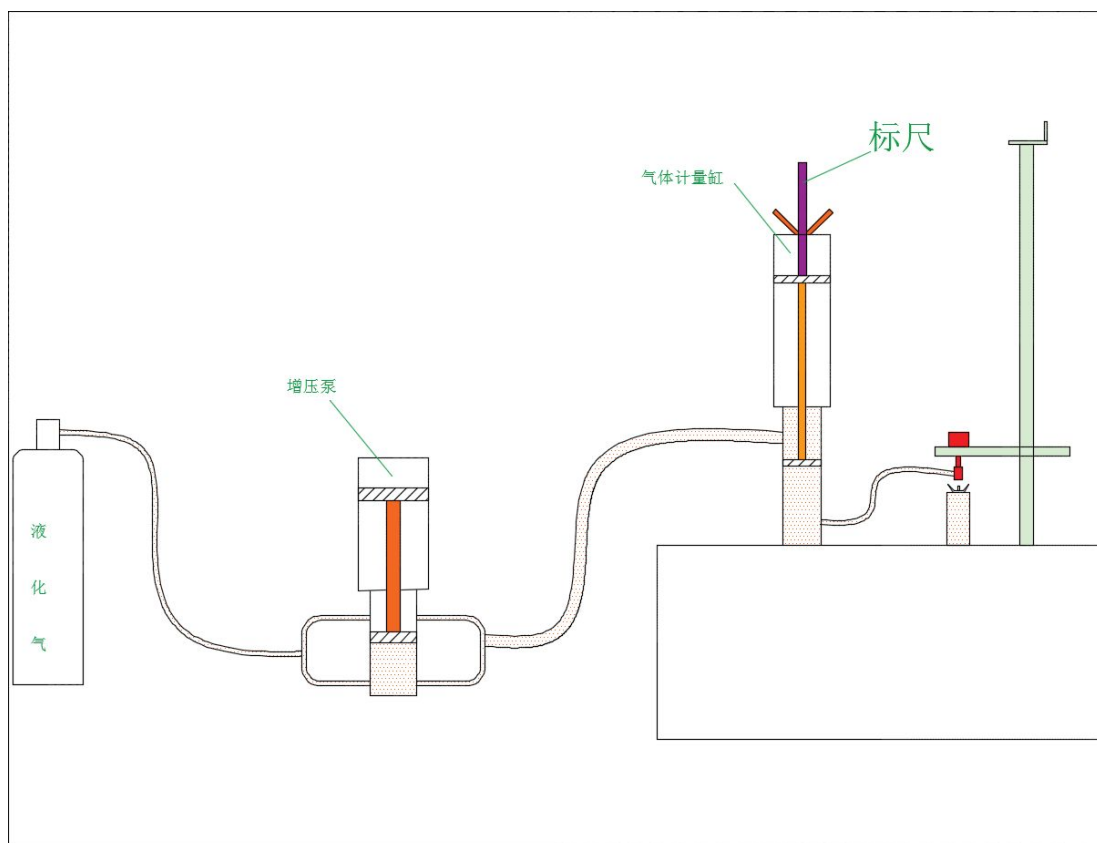
高度调节手柄：Height adjuster

台面：Work bench

Closing: Switch on the closing knob, press the foot valve slightly, the double pneumatic operated directional valve of the closing machine changes direction, the upper chamber in the lifting cylinder of the closing machine takes gas in and the lower chamber exhausts, so that the piston in the lifting cylinder is made to move downwards. The cylinder valve is compressed by the closing end. Meanwhile, the closing signal valve is triggered by the bottom of the closing cylinder that has moved downwards, the gas pressure output from the signal valve acts on the single pneumatic operated directional valve to make the upper chamber in the closing cylinder take gas in and the lower chamber exhaust. The piston moves downwards so that the closing claw is released to close the cylinder mouth. Meanwhile, the stopper on the top of the closing machine triggers the reset signal valve to output gas pressure, which acts on the double pneumatic operated directional valve to make it change direction. The piston of the lifting cylinder ascends home. Meanwhile, the single pneumatic operated directional valve changes direction to move the piston

of the closing cylinder upwards and the closing claw retreats home.

Aeration: Turn on the aeration knob, press the foot valve slightly, the double pneumatic operated directional valve of the gas metering cylinder changes direction, the gas filler pushes down the aerosol can with the help of the micro cylinder and the nozzle opens automatically. Meanwhile, the upper chamber in the power cylinder of the gas metering cylinder takes gas in, the lower chamber exhausts, and the piston in the power cylinder moves the propellant piston downwards, so that the liquid propellant in the propellant cylinder of the metering cylinder is injected via the gas filler into the closed aerosol can. At this moment, the piston of the power cylinder is pushed down to trigger the signal valve, the gas pressure output from it acts on the double pneumatic operated directional valve of the gas metering cylinder to make it change direction, so that the micro cylinder of the gas filler moves opposite to the direction of incoming and outgoing gas of the power cylinder, so that the gas filler and metering cylinder return home, and the metering cylinder returns home, takes in gas of the same amount from the cylinder and waits for the next filling. The height of the locating piston of the metering cylinder can be adjusted by rotating the knob on the top of the metering cylinder in order to change the size of fill by changing the travel of the metering cylinder piston.



液化气: Liquefied gas

增压泵: Booster pump

气体计量缸: Gas metering pump

标尺: Scale

Capping: Turn in order on the hand slide valve in front of the gas supply to the capping machine and the capping knob, press the foot valve slightly, the reversing valve of the capping machine changes direction, the upper chamber in the capping cylinder takes gas in, the lower chamber exhausts, and the capping end moves downwards to press the thread cap. After capping, it returns home together with the aerating machine. (Note: The capping machine works to cooperate with the aerating machine.)

IV. Debugging and operation

Liquid filling

1. Debugging

(1) Adjust height of the bed-plate of the host. Put an aerosol can under the liquid filler, loosen the fastening screw of bed-plate and column, and adjust the height of bed-plate so that the filling nozzle is at such a level just over the mouth of the aerosol can that it is easy to place or remove cylinders. However, over-height shall be avoided in order to prevent spill.

(2) Adjust the pressure of gas supply to the host. Turn on the hand slide valve in front of the gas supply, pull up the pressure regulator on the gas supply, then rotate it clockwise and the pressure will rise. Rotate it anticlockwise and the pressure will fall. Adjust it to the pressure as needed (usually to 0.4-0.6MPa) and then press the pressure regulator to lock it up.

(3) Metering adjustment for liquid filling machine. The height of the locating piston of the metering cylinder can be adjusted by rotating the knob on the top of the metering cylinder in order to change the size of fill by changing the travel of the metering cylinder piston. (Note: Before adjustment, it is a must to turn off the hand slide valve in front of the gas supply to the host and wait until the compressed air in the equipment is emptied. Otherwise, the knob can't be rotated. It is a good idea to adjust volume from minimum to maximum. If adjustment is from maximum to minimum with a large span, it is likely that the knob can't be rotated continuously after a distance adjusted. In this case, you may use a small rod to push up the white PTFE stopper in the liquid filler. Please note not to push heavily; otherwise it may damage the stopper. Then put a container under the liquid filler to hold the liquid flowing when adjusting volume.) First, adjust the volume to an approximate level for trial filling and then adjust the volume according to the fill until it is up to the level as needed.

2. Operation

(1) First, turn on the hand slide valve in front of the gas supply, put the aerosol can at the locating screw under the liquid filler, switch on the knob, press the foot valve and the liquid filling machine starts work. After filling is finished, remove the aerosol can. (Note: It is OK to press the foot valve slightly. Never press it heavily or keep on

pressing it. DO take or remove the cylinder gently. Otherwise, cylinder location may be inaccurate. At the very beginning, it is likely that no liquid flows during the first fillings, because the new equipment is empty. Filling can be made only after the metering cylinder has taken in liquid. Press the foot valve with no load in the early stage.

(2) If an accident happens during operation, press the RESET button and the filling machine will return to the initial state.

(3) In the course of operation, take a close look at the pressure gage in the front of the host. The 0-2.5MPa gage shows the pressure of compressed air that has been adjusted by the gas supply reducing valve of the host. It is aligned with the indication on the pressure gage of the gas supply triple of the host, usually 0.4-0.6MPa; if the pressure is abnormal, stop operation and find out the cause in order to avoid inaccurate measurement or equipment shutdown.

Closing

1. Debugging

(1) Adjust gas supply pressure of the host: Turn on the hand slide valve in front of the gas supply, pull up the pressure regulator on the gas supply, then rotate it clockwise and the pressure will rise. Rotate it anticlockwise and the pressure will fall. Adjust it to the pressure as needed (usually to 0.4-0.6MPa) and then press the pressure regulator to lock it up.

(2) Adjust the height of the bed-plate of the host: First, turn off the hand slide valve in front of the gas supply to the host, put at the locating screw right under the closing end an aerosol can that needs to be closed (Note: It's better that the aerosol can has been closed in order to ensure accurate location). Then press the top of the closing machine until the closing cylinder descends to the end. At this moment, the bottom of the closing cylinder holds down the copper-colored pin on the closing signal valve. Screw off the fastening screw of bed-plate and column and adjust the height of the bed-plate so that the closing end descends just to hold down the valve of the aerosol can (Note: The closing end shall not hold down the valve too tight, nor too loose. It is good when the cylinder can't just move up and down). Finally, screw down the locating screw of bed-plate and column.

(3) Adjust closing diameter and closing contact height: After the height of the bed-plate of the host is adjusted, trial closing may be made after turning on the hand slide valve in front of the gas supply to the host and the closing knob, pressing the foot valve, making the equipment idle a few times (For the detail, please see "Operation"). The closing diameter may be adjusted, if needed, by adjusting the closing diameter adjuster on the top of the closing machine and screwing off the nut on the adjuster. Up-adjustment (by anticlockwise rotation) can increase closing diameter, while down-adjustment (by clockwise rotation) can decrease closing diameter (Note: There is a maximal value of closing diameter when adjusted. The closing diameter never increases if beyond the maximal value. It is inappropriate for the claw support to stretch out the closing claw; otherwise, the valve may be damaged). After adjustment, screw down the nut. In order to adjust closing contact height, it is mandatory to screw off three fixed jackscrews on the closing end and then adjust the closing height regulating ring. Up-adjustment (by anticlockwise rotation)

can increase the closing contact height, while down-adjustment (by clockwise rotation) can decrease the closing contact height. After adjustment, screw down the jackscrews.

(4) Adjust lifting cylinder speed: Adjust the controlling and adjusting elbow in the upper part of the lifting cylinder, so that the piston of the lifting cylinder ascends a little more slowly than the closing cylinder returns home. The can is lifted when the closing machine returns home. The cylinder moves faster by clockwise rotation or slower by anticlockwise rotation.

2. Operation

(1) Turn in order on the hand slide valve in front of the gas supply to the host and the knob of the closing machine, press the foot valve, and the closing machine will work.

(2) If an accident happens during operation, e.g. the closing machine is pressed down but not returns home due to inaccurate can location, etc., press the RESET button.

(3) In the course of operation, take a close look at the pressure gage in the front of the host. The 0-2.5MPa gage shows the pressure of compressed air that has been adjusted by the gas supply reducing valve of the host. It is aligned with the indication on the pressure gage of the gas supply triple of the host, usually 0.4-0.6MPa; if the pressure is abnormal, stop operation and find out the cause.

Aeration

1. Debugging

(1) Adjust gas supply pressure of the host: Turn on the hand slide valve in front of the gas supply, pull up the pressure regulator on the gas supply, then rotate it clockwise and the pressure will rise. Rotate it anticlockwise and the pressure will fall. Adjust it to the pressure as needed (usually to 0.4-0.6MPa) and then press the pressure regulator to lock it up.

(2) Adjust height of the bed-plate of the host: First, turn on the hand slide valve in front of the gas supply to the host so that the aerating machine is in the reset state. Put at the locating screw under the closing end an aerosol can that has been closed, screw off the fastening screw of bed-plate and column, and adjust bed-plate height, so that the aerating nozzle is about 1cm over the nozzle of the aerosol can valve. Finally, screw down the fastening screw of bed-plate and column. (Note: When adjusting the bed-plate height, ensure the aerating end is pressed down during aeration, the aerating nozzle can completely hold down the valve element of the aerosol can and the aerating nozzle can compress upwards to push open the valve in the aerating end, so that aeration can be made. Otherwise, aeration is impossible when the valve in the aerating end is not pushed open.

(3) Adjust the locating screw of aerosol can. After bed-plate height is adjusted, turn off the hand slide valve in front of the gas supply. At this time, the aerating end can move up and down. Put under the aerating end an aerosol can that has been closed, press the aerating end manually to hold down the aerosol can, keep the aerosol can where it is located, screw off the nut on the locating screw, adjust the stretched length of the adjusting screw to make it just against the can wall, and then tighten the nut.

(4) Metering adjustment for aerating machine. The height of the locating piston of

the metering cylinder can be adjusted by rotating the knob on the top of the metering cylinder in order to change the size of fill by changing the travel of the metering cylinder piston. (Note: Before adjustment, it is a must to turn off the hand slide valve in front of the gas supply to the host and wait until the compressed air in the equipment is emptied. Otherwise, the knob can't be rotated. First, adjust the volume to an approximate level for trial filling and then adjust the volume according to the fill until it is up to the level as needed. It is a good idea to adjust volume from minimum to maximum. If adjustment is from maximum to minimum with a large span, it is likely that the knob can't be rotated continuously after a distance adjusted. In this case, push the aerating nozzle of the aerating end upwards a bit to discharge a little liquidized gas and then continue to adjust it.)

2. Operation

(1) First, put the to-be-aerated aerosol can at the can locating screw under the aerating end, switch on the aeration button, press the foot valve and the aerating machine starts work. Remove the can after aeration. (Note: It is OK to press the foot valve slightly. Never press it heavily or keep on pressing it. DO take or remove the cylinder gently. Otherwise, can location may be inaccurate.)

(2) If an accident happens or the propellant pressure declines obviously during operation, press the RESET button and the equipment will return to the reset state.

(3) In the course of operation, take a close look at two pressure gages in the front of the host. The 0-2.5MPa gage shows the pressure of compressed air that has been adjusted by the gas supply reducing valve of the host. It is aligned with the indication on the pressure gage of the gas supply triple of the host, usually 0.4-0.6MPa; the 0-4MPa gage shows the pressure of propellant that has been boosted by the booster pump. It is used to adjust the gas supply reducing valve on the booster pump, usually 1.0-1.4MPa

It is aligned with the indication on the pressure gage of the gas supply triple of the host, usually 0.4-0.6MPa (If the propellant pressure declines obviously during filling, press the RESET button of the host to restart the booster pump). If the pressure is abnormal, stop operation and find out the cause in order to avoid inaccurate measurement or equipment shutdown.

Capping

1. Debugging

(1) Adjust bed-plate height. Screw off the fastening screw of bed-plate and column, and adjust the bed-plate so that the capping end is pressed to the end to compress the thread cap. Finally, screw down the fastening screw of bed-plate and column.

2. Operation

Turn on the hand slide valve in front of the gas supply, put the aerosol can with thread cap in place at the locating block, and press the foot valve to make the capping end hold down the thread cap. The equipment is reset after capping, waiting for the next capping.

Vibrating grid

Debugging and operation

Turn on the hand slide valve in front of the gas supply of the vibrator, adjust the gas-supply reducing valve to 0.4MPa (the gas supply pressure may be adjusted properly according to the load of the vibrator), and then slowly turn on the ball valve in the back of the gas supply. The vibrator begins to reciprocate. The reciprocating speed of the vibrator may be adjusted according to the opening of the ball valve. (Note: The vibrator shall not run too fast; otherwise it may reduce its service life.)

If the vibrator stops work suddenly during vibration, press the RESET button to restart the vibrator.

Diagram of semi-auto (PU Foam) liquid filling machine

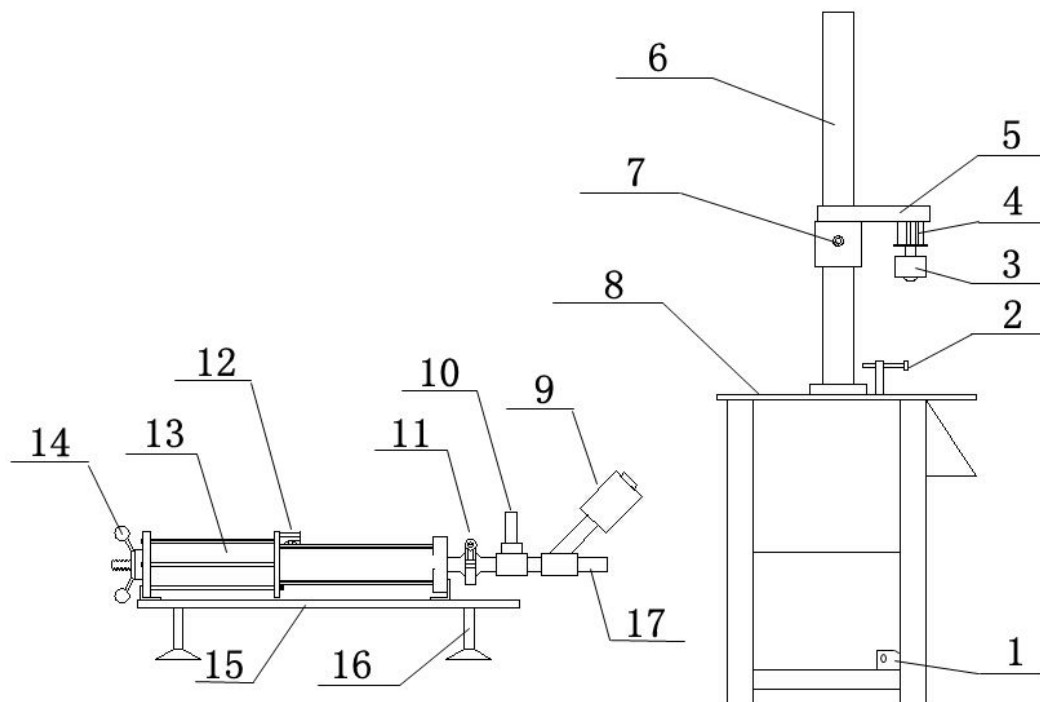


Fig. 1: Structure diagram

1. Foot valve; 2. Can locating screw; 3. Liquid filler; 4. Micro cylinder of liquid filler; 5. Bed-plate; 6. Column; 7. Fastening screw of bed-plate and column; 8. Bench of host; 9. Angle seat valve; 10. Outlet of metering cylinder (connecting inlet of liquid filler); 11. Sanitary quick-connect clamp; 12. Signal valve; 13. Liquid metering cylinder; 14. Volume adjusting knob; 15. Bench of metering cylinder; 16. Anchor bolt; 17. Inlet of metering cylinder (connecting storage hopper)

Diagram of automatic closing machine

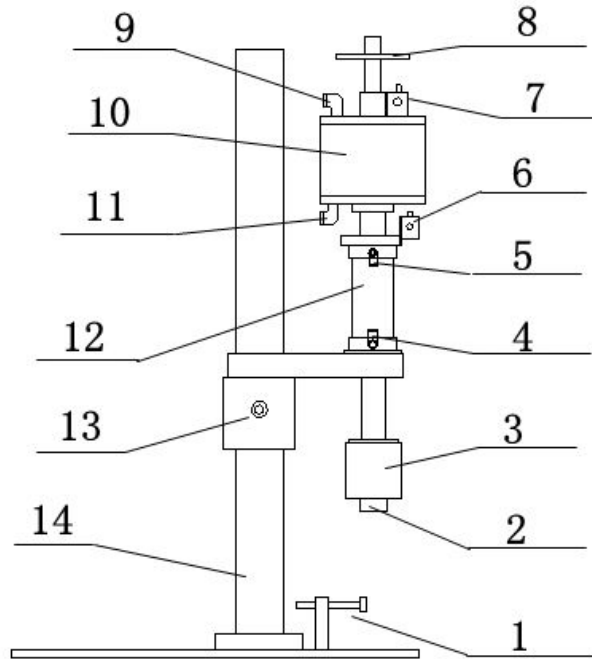


Fig. 2: Diagram of closing machine

1. Cylinder locating screw; 2. Regulating ring for closing contact height of closing machine; 3. Closing end; 4. Controlling and adjusting elbow for ascending gas of lifting cylinder; 5. Controlling and adjusting elbow for descending gas of lifting cylinder; 6. closing signal valve; 7. Reset signal valve; 8. closing diameter adjuster; 9. Descending gas inlet of closing cylinder; 10. closing cylinder; 11. Ascending gas inlet of closing cylinder; 12. Lifting cylinder; 13. Fastening screw of bed-plate and column; 14. Column

Diagram of automatic aerating machine

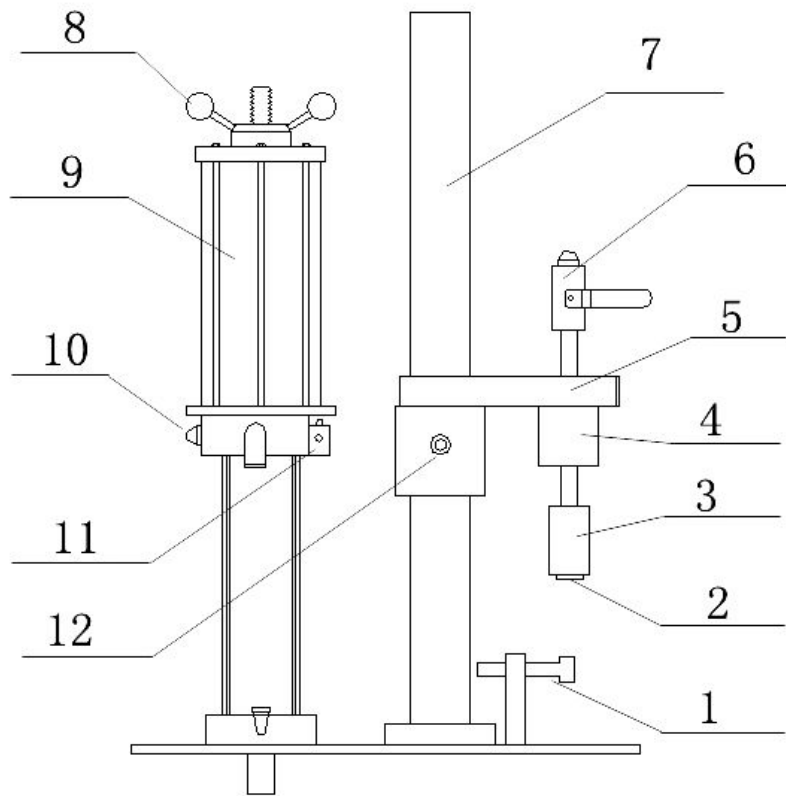


Fig. 3: Diagram of aerating machine (side view)

1.Cylinder locating screw; 2. Aerating nozzle; 3. Gas filler; 4. Micro cylinder of gas filler; 5. Bed-plate; 6. Ball valve; 7. Column; 8. Metering adjuster; 9. Gas metering cylinder; 10. Inlet of metering cylinder (connecting gas cylinder); 11. Signal valve; 12. Fastening screw of bed-plate and column

Diagram of full pneumatic vibrator

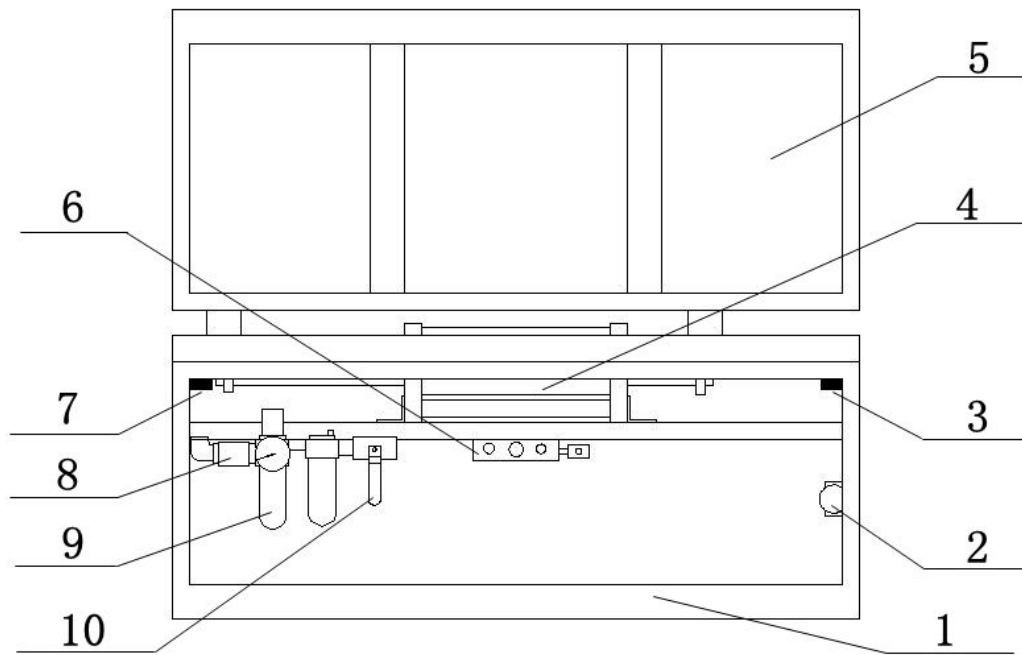


Fig. 4: Diagram of closing machine

1. Support rack; 2. RESET button; 3. Signal valve (1); 4. Power cylinder;
5. Hopper rack; 6. 2-digit 5-way double pneumatic operated directional valve; 7. Signal valve (2); 8. Hand slide valve; 9. Gas supply triple;
10. Ball valve