

ANHUI KOYO BEVERAGE MACHINERY CO LTD
安徽蓬源饮料机械邮箱公司

ANHUI KOYO BEVERAGE MACHINERY.CO.LTD
安徽蓬源饮料机械有限公司

Auto ice tube blowing machine, milk bottle blowing machine

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Preface

Dear customer,

Thank you very much for choosing the blow moulding machine.

This manual is the systematic introduction to the blow moulding machine.

Before using the machine, please carefully read the operation manual so as to operate the machine correctly, fully explore its functions and keep safe. Please keep this manual permanently and hand it over to the operator for reference in the maintenance, repairing and checking in the future.

Screw extrusion plastic blowing technology is used for this unit and fully automatic temperature control system is used to control the temperature; the speed of the electric motor is adjusted in a stepless manner thus the rotation speed is stable with uniformed and smooth plastic pipe; further, its energy saving is also notable. The screws are the products of China, which adopts the latest production technology in China. The material is 38CrMoAlA. The pneumatic and electric parts are of OMRON products of Japan and FESTO ones of Germany; in this unit, the electric, pneumatic and mechanic parts are integrated bringing about stable performance and convenient operation; it is an ideal replacement for the manually operated products.

Product specification and technical parameters

Dimensions: 3300×1400×1800; for the components, please refer to the attached sketches

Product volume: 5-1000ml

Daily production: 20,000 – 120,000 pieces per 24 hours

Air consumption: around 0.4-0.6 m³/min

Work medium: 0.4~0.7MPa clean and dry compressed air

Net weight: around 1500kg,

Rotation speed: 0~13r/min

Rated voltage: three phase four wire 380V 50 HZ

Working system: under the rated voltage, around-the-clock running allowed

Blowing moulding machine power :

Power of 6 molds bottle blowing machine: N1=1.1KW

Power of 65 extrusion motor: N2=11KW

Power of heating ring: N3=15KW (it doesn't work when get required temperature)

Total average power: N=13KW

Applicability: this unit is applicable for blowing the bottles of volume under 1000ml with the materials of PE and PP granules, which are formed after heating in one installment.

Precautions

1. The power supply for this machine shall be 380V 50HZ, the power supply must satisfy this requirement.

2. The working medium for this machine is clean and dry compressed air; the working pressure is 0.4MPa~0.7Mpa; the air, before entering into this unit, must be filtered; the cooling water required for the molds shall not contain any solid substance and water temperature shall not be above 10°C; the power of the water pump shall be sufficient to ensure that the circulating water flows well.
3. Before material is added; unloaded running of the extrusion machine is forbidden; before the setted temperature is reached, do not start the extrusion machine. All the raw materials must be pure and free from solid impurity, especially the metal impurity.
4. For the right rotation direction of the machine.
The right rotation direction of the extrusion machine: the belt wheel rotates at the anti-clockwise direction
The right rotation direction of the bottle blowing machine: top view of the large disc, it rotates at anti-clockwise direction
5. Lubricant shall be applied to all parts timely; for each oil filling opening of the connecting rod, the lubricant shall be applied at an interval of 8 hours. During the running-in stage of the gear box, oil shall be replaced every two months and oil is the ordinary gear oil; the oil shall be filled to the upper limit; for details.
 - Note: no lubricant for the air cylinder.
6. The chamber for installing molds shall be perpendicular to the opening mold; the central lines of all 6 molds shall be on the same circle; besides, the molding positions of all the 6 molds must be the same.
7. The machine is not allowed to run for long time without the circulating water, otherwise, the integral part for water and air will be damaged.
8. When maintaining the machine, the power supply must be cut off to avoid the unnecessary damage or injury due to misoperation.
9. While working, the machine must be in a leveled position; the screws shall be checked regularly and during the running-in period, high speed running is not allowed.
10. The electric equipment of the machine must be well earthed (earthing screws provided for the machine).
11. When the machine is not used for long, the water inside the water circuit must be thoroughly removed.
12. Pressing out the transmission gear box. When the ambient temperature is above 40°C, the oil agent of N³²⁰₄₆₀ shall be used; before using, the oil level shall be checked, which shall be maintained above 1/2 of the mark; the oil shall be replaced timely based on the using time.

Working theory

The raw materials required for this unit is the granular material of high and low PE, PP etc., which, after heated, is pressed into the uniformed and smooth parison through the rotation of the screw rod; then, through the air cylinder, connecting rod and mold etc., the parison of proper length are sealed inside the mold; then air is filled into the mold by air cylinder and air needle and the parison are blown into the products with certain shapes.

During the production process, the bottle blowing machine rotates thus bringing about high productivity and low fault rate while saving the space. The 6 molds blow molding machine power is 1.1 KW; all the operations of the components are through machine control valves, pipes and execution elements as well as the air cylinder etc.; for the air route theory, please refer to the attached sketch.

Program control theory: the machine control valves and cylinder are fixed on the double disc, which in turn, is driven by the electric motor through the main axle. The rail ring does not rotate following the double disc (however, by using the hand-wheel for fine tune may change the rotating position of the rail ring to change the opening and closing of the molds and the time of other activities); when the double disc rotates anti-clockwise against the rail ring (from up to down), the lever rolling wheel of the accompanied machine control valve moves up the rail and down the rail; the pressing and restoration of the machine control valve makes the program control of the working and expulsion chambers of the machine valve to connect or disconnect to the compressed air; further, the air cylinder is activated to control the opening and closing of the molds, protruding of the needles, air blowing and extracting of needles as well as the maintenance of the above actions.

Detailed working theory: machine control valve 3 to the rail, and the working chamber B of this valve is open, the air cylinder rod push the mold to close; shortly after that, the machine control valve 1 rolling wheel to the rail ring and working chamber A is open, the mold is open, meanwhile, air is provided by the side air cylinder of the mold 3; the work of the discharge chamber O₂ of the machine control valve causing mold 4 to provide air to the air needle; machine control valve 3 moves underneath the rail and the air valve keeps action till to the rail ring of the current machine control valve, the machine control valve A is open and the molds open; meanwhile, it provides air to the needle of side 1 of the mold (mold 1 has lowered to rail for closing and waiting for air, air is provided to mold 4 side (through the O₂ action of the discharge chamber of machine control valve 3). Mold 4 is maintained on the rail ring and, when the machine control valve rotates to the lower rail, it, the same as the lower rail ring of machine control valve 3 to repeat the previous process thus completing the cycling of one mold closing → one provided with air → opening → return needle → mold closing

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again.				
Maintenance of the ordinary electric equipment				
- The electric equipment shall be kept clean and free from the intrusion of oil, water and dust. - When electrified and the open circuit protector functions, the short-circuit shall be checked and all the obstacles shall be shot, then the running may be resumed. - The bearing of the electric motor shall be cleaned at an interval of 12 months (use fire oil or light diesel) and the lubricant grease shall be replaced. - If the motor or other electric parts are not used during wet season (more than one month), before reuse, the insulation of the same shall be checked and moisture removed, that is , lower the voltage to 1/3 of the rated voltage, running the motor without load for 48 hours. - The electric parts must be well earthed; in case there is grease or rust of the earthing screw, the same shall be removed timely. - The exposed hose and electric wire cannot be pressed or broken. - The contact points and the sensitivity of the locking device shall be checked regularly. - Use the electric equipment as per the operational manual.				
Code, name, specification and quantity of the rolling bearings of the unit				
S/N	Model	Dimension	pieces	Name
1	30204	20×47×15	8	Moving mold bearing
2	4074104	20×42×22	4	Rolling needle bearing
3	160101	12×28×8		Bottom air providing bearing
4	205	25×52×15	6	Bottom air providing bearing
5	6206	30×62×16	2	Conveying belt bearing
6	6204	20×47×14	8	Side air providing bearing
7	1214	70×125×24	1	Main axle bearing
8	1215	75×130×25	1	Lower bearing of main axle
9	8215	110×75×30	1	Pressure bearing
10	2060088	8×16×5	8	Screed support bearing
11	6000Z	10×26×8	4	Support bearing in front of air cylinder
12	1202	15×35×11	4	Support bearing behind the air cylinder

Use of the machine

I. Preparations

1. Fix the machine on the ground, level the machine by adjusting the ground bolts and connect the earthing wire.

2. Connect to the power supply:

The power for this machine is 3 phase 4 wire 220VAC 60HZ; an error of voltage of 10% is permitted. The power supply must satisfy the requirement of this machine, besides, the live wire and zero line shall be differentiated; for any violation of the above, this company shall not be liable for any consequence.

II. Installation of the molds:

1. Outer dimension of the molds: the thickness shall not exceed 120mm.

2. The screw opening for installing the molds is M12x15, located on the central line of the mold; the distance between the up most screw opening is 30 mm beneath the needle opening and the middle opening is 50 mm from the upper one.

3. Extrude the air cylinder completely and well close the molds. Adjust the nuts of the connecting rod to make the widths of the moving and static mold to be 90 or 120 mm. For details.

4. When installing the molds, firstly fix the 6 fixed molds on the boards for them, then smash the moving molds on the fixed ones; close the moving molds and tighten the bolts. Please note the central lines of the 6 molds must be on the same circle. The screw shall be tightened properly so that the molds may be opened and closed freely and free from gap; if it is hard to open, the pre-tightening force of the screw is too bid.

5. Adjust the height of the screed, which shall be 5mm above the machine head.

6. Connect the air circuit and cycling water with the pressure set at 0.4~0.5MPa (or set the same according to the size and air required of the bottles); check for the leakage of air and water.

7. Adjust the height and location of the air providing needle as well as the angle for opening the mold.

III. Trial running

1. Check the wire, if it is correct, connect to the power supply; according to the type of the raw materials, set the target temperature of the temperature control meter; connect the power for the 4 heating areas and heat the extrusion machines.

2. When the set temperature is reached, keep the same for 10 to 30 minutes; then adjust the transducer to the low frequency and carry out trial running; check the rotation in both directions to see if the molds are closing and opening normally.

IV. Adjustment of the material pipes

During the process of trial running, if there is no abnormality, stop the running of the bottle blowing machine and switch off the power of 24 V and adjust the speed of the extrusion machine to the normal rotation speed and make the material bar

to be uniform and straight through adjusting the 3 bolts on the machine head. Adjustment method: the perpendicularity of the material pipes is through the 3 bolts of the adjusting machine head; generally, if the bar inclines to any direction, then tighten the bolt of this direction or loosen the one in reverse direction. The diameter of the pipe is through the core of the rotating machine head, generally it comes to coarser when rotating upward.

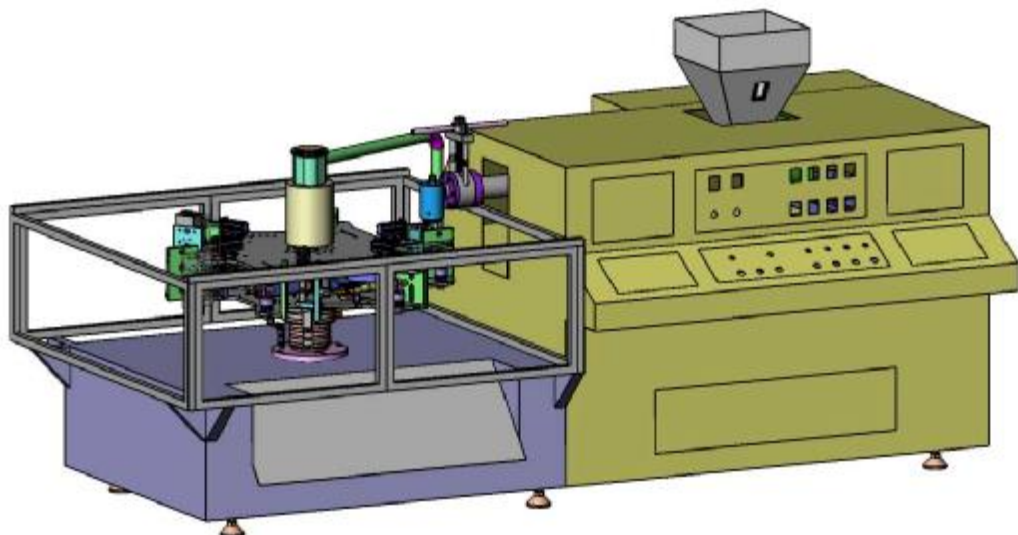
V. Normal operation

After the material pipe has been adjusted, closing all 6 molds and connect to the 24 V power; connect the air circuit and start the bottle blowing machine; coordinate the rotating angle of the big disc and the extrusion speed.

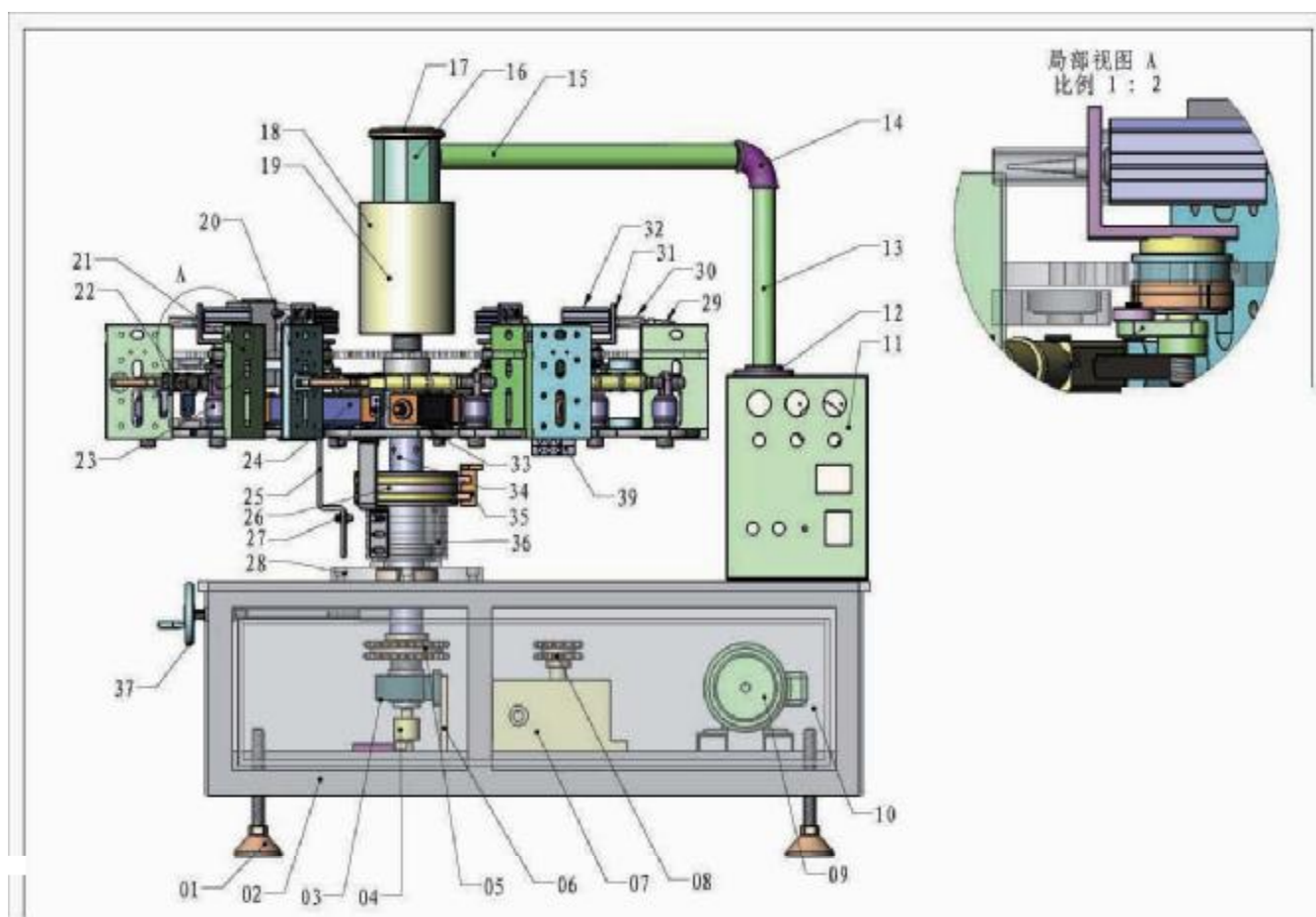
For the fully automatic bottle blowing machine, the extrusion machine and the total body, if there is any change in terms of structure, dimension and control principle, we are sorry that no prior notice will be given.

List of attached sketches:

1. KQ-4,6 Blow moulding machine
2. Air route theory sketch
3. Circuit diagram of Blow machine for KQ-4,6
4. Circuit diagram of Extruder machine for KQ-4,6



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No. Parts Name

01 Foot

02 Chassis

03 Bearing

04 Rotary joint

05 Big sprocket

06 Bearing fixed plate

07 Reducer

08 Small sprocket

09 Motor

10 Engine case

11 Electronic Control Box

12 Pipe flange

13 Threading pipe

14 Joint elbow 头

No. Parts Name

15 Threading pipe 2 2

16 Joint pipe

17 Joint pipe shell

18 Dustcloak

19 Water Jacket

20 Dynamic Template

21 Static template

22 connecting bar

23 Connecting Block

24 Cylinder 50*150

25 Proximity Switch Stent

26 Conductive ring

27 Proximity Switch

28 Main Bearing Block

No. Parts Name

29 Gas needle

30 Set-oriented

31 Stent

32 Cylinder 32*75

33 Cylinder joint

34 Spindle

35 Carbon frame

36 Guide jacket

37 Handwheel

38 Guide template

39 Solenoid valve

40 Positioning block

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