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Cutting Machine Instructions

Safety Notice

Read the instruction carefully before using the machine.

- Please read the operating instruction detailedly and learn the function of controlling and adjusting before the operation
- Please watch out and pay attention to the safety
- Please pay attention to the warning signs
- Don't close up the running machines , starting machines and stopping machines
- Please use and maintain the equipments correctly
- Please maintain the machines correctly
- The wire and power used must be undersirable
- It's absolutely forbidden to switch on the power during the repair
- The safety warning signs should be taken back,when the machine repair is finished

Sants International Trading Co.Ltd will take no responsibility, if accidents or damages happen because of

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getting out of line to operate machines!

Safety Warning Signs

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In order not to get an electric shock, it's forbidden to open any wire cover, wire canal and plug after the power is switched on..

当 心 触 电

Do not approach your hands to the working machine when it is rotating and running.

当 心 伤 手

CONTENT

Parts----------8

1、 Main Use and Application Scope

Circular Cutting Machine is special equipment for cutting plastic pipe. It equipped with other correspondent the main and auxiliary machines to realize machine, electric, pneumatic automatically controlling as well as automatically production of pipe extrusion, sizing, and hauling, sawing**,** automatic discharging**.**

2、 Working Condition and Environment

Power phase: 3

Power Voltage: 380V

The voltage range of the electric net: voltage of electric supply 90-110%

Frequency: 50Hz

Core circuit current: 5A

Working temperature: 0-55℃

Relative humidity: ≤90%（below 20℃）

Height above sea level: ≤1000m

Environment: no electric conduction or corrosive air in the surroundings

3、 Main technical parameters:

Max. cutting Dia.	160mm
Power:	2.2KW
Rotating speed:	2880r/min
Saw Diameter:	300mm
Pressure of pneumatic system:	0.4-0.6Mpa
Weight:	320kg
Outline Dia.	1400 x 1200 x 1700

4、 Main structure:

The machine mainly consists of machine frame, saw, clamping part, travel part and

the pneumatic system. (Refer to the structure diagram)

4.1 The main frame is made of square steel by welding which is of good rigidity and durable, it is used to support the saw, the clamping part and the travel structure.

4.2 The saw part consists of motor, bearing base, sawing platform and the saw blade.

The motor and the bearing base are fixed on the sawing platform, and the saw is directly fixed on the motor output shaft; the motor transports the driving force to saw blade to make the saw blade rotate, and the cutting height is controlled by pneumatic tank which is fixed on the sawing frame. Regulate the head of the travel will realize the cutting to different sizes of the profiles.

4.3 Clamp part includes cylinder, guide axle, upper saw cover and the clamp block. Cylinder is fixed on upper saw cover, and it is connected with clamp block. The guide axle controls the clamp block position.

4.4Running gear includes slide carriage, moving wheel, axis of guide, and the restoring
cylinder. There is ball bearing on the slide carriage to cooperate with axis of guide and moving wheel auxiliary supporting; the restoring cylinder is fixed with slide carriage through engaging lug. When profile need to be cut, the clamp part clamps the profile tightly, at the same time, the restoring cylinder drive running gear move and keep same pace with profile haul speed. The speed is controlled by the single direction throttle at two sides of restoring cylinder. When the profile is cut off, the restoration cylinder will drive the running gear to restore to primary position

4.5 The adjusting foot is mainly used for adjusting the center height of the high speed frame to make center height keep same as other auxiliaries.

4.6 The pneumatic system includes cylinder, electromagnetic valve, triplet, and single direction throttle. Two cylinders are used for clamping profile, one is for cutting, and the other is for restoring. The cylinder is controlled by electromagnetic valve to realize cutting performance.

5、 Product system introduction

5.1 Machinery transmission system, the driving power is transported to the belt pulley on the transmission shaft by the belt pulley on the motor of three-phase different direction. The saw web is fixed on transmission shaft to drive saw web rotating.

5.2 Pneumatic system is mainly used to control the cylinder of its clamping, cutting and restoration of the profile. The controlling is realized through the triplet, by which it can filter air, reduce pressure and lubricate. Switch one of the electromagnetical valve on to make the cylinder clamp profile, at the same time restoring cylinder drive slide carriage go forward and keep same pace with profile extrusion speed, switch the other electromagnetically operated valve on, cylinder drive cutting device to cut for profile, after cutting to cut the profiles. When cutting is completed, the sawing cylinder will drop and the cutting saw stops rotating, the clamp cylinder loosens, and the restoring cylinder restore.

5.3 Refer to the electrical schematic diagram for the instruction of electrical system, interconnection diagram and the control system operation and electrical parts list.

5.4 Electrical system instruction

5.4.1 Summary

The total installed power of this machine is 2.2KW, with one motor, power supply inducted into the controlling cabinet by user should be TN-S five wire system. Inside the equipments, there should be no connection between center line and earth connection circuit. The PEN terminal cannot be used in machinery electric cabinet to ensure running safety and reliable.

5.4.2 Motor control

Motor is 1.1KW 3 phase asynchronous motor ,rated rotate speed is 2830r/min.This cutting machine has automatic and manual control methods which can be chosen by

"SA1" knob, manual control adopts button SB1 and automatic control adopt fixed length detection switch SQ1. When the fixed length switch SQ1 is closed or press SB1 button, the motor starts running ,saw blade rotating, clamp valve clamping ,at the same time, the moving unit goes forward, after a short while , the cutting valve will be switched connected and the saw blade raises to cut the pipe. When the pipe is cutting off, the detecting switch SQ2 will be on and the motor stops, clamp valve loosen, the cutting valve is off, and the cutting saw descends and the moving unit restores. This machine adopts limit switch SQ5, to control the travel of the moving unit, when moving unit is over travelled, it will meet limit switch SQ5 to stop the machine.

6、 Lift and keep

6.1 The machine should be lifted by the bottom; no other parts should be lifted to prevent damaging to the machine.

6.2 The machine should be protected from rain in the course of keep and transportation to avoid rusting. The machine should be stored inside the house, put cover onto the machine if it is kept outside for the moment.

7、 Installment and adjusting.

7.1 This machine does not need foundation hole; find the clamp position center according to the unit centerline is ok, the machine center height can be adjusted according to different specification profile.

8、 Use and Operation

8.1 Preparation and check before using.

8.1.1 Check whether fastening pieces are loose, whether the electric, air pipeline is smooth, exact and credible.

8.1.2 Check whether electromagnetic valve keep same pace with cylinder, exact.

8.1.3 Check whether the elasticity of cutting device synchronism belt is proper, the saw blade is fastening, triplet has oil.

8.1.4 Check saw blade rotating direction is right and has no abnormal noise.

8.2 Operations

8.1.1 Cutting machine has manual and automatic function. Choose to manual function, put a part of the profile under slide carriage, then press the cutting button to make the saw web rotate, clamp cylinder clamp profile, at the same time, saw web raises, restore cylinder move forward and begins to cut. When the limit switch works, saw blade declines, clamp cylinder loosen, and the cutting machine stop cutting. When adjust cutting function to automatic cutting, to start cutting motor and saw blade running through fixed length limit switch of stacker, the clamp cylinder clamps profile tightly, and the saw blade raises and starts to cut, at the same time, restore cylinder drives slide carriage to move forward and keep same pace with profile extrusion speed, when the cutting is finished, the saw blade declines and stop rotating, clamp cylinder loosen, and restore cylinder is reposition.

8.1.2 When the empty loading is normal, do the trial running with load, Pull the profile which is extruding out of the hauling machine into the cutting machine, and when that profile touch the limit switch of stacker, the cutter starts to cut automatically ,its working is same to trial without loading

9、 Maintenance

9.1 Check the tightness of the synchronism belt regularly and regulate it by the tight bolt.

9.2 Check whether the saw blade and nuts are fasten and reliable regularly.

9.3 Check regularly the triplet filtration, discharge the water and fill lubricant.

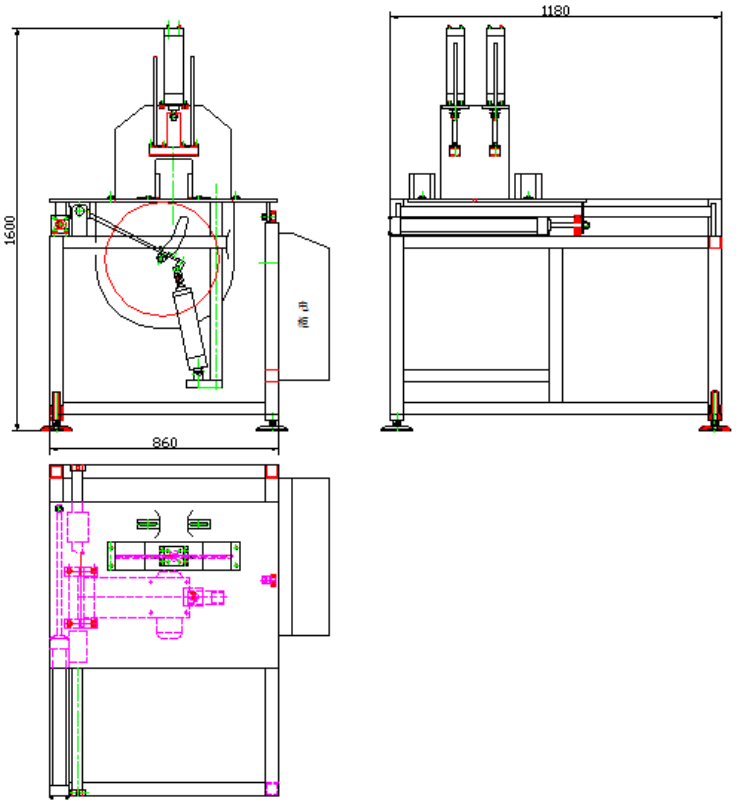
10、 Common Breakdowns and Solution

Trouble	possible reason	check and eliminate method
When cutting profile, saw	Synchronism belt becomes	Check whether the synchronism belt is too

blade rotate speed decline	loose, Saw blade and nut are loosen	loose, fasten the tension bolt, if the saw blade and nut are loose and fasten them.
Clamp cylinder can not clamp profile	cylinder pressure is not enough	Make air pressure be up to 0.4-0.6Mpa
when clamp of profile is enough, cutting machine don't keep same pace with extruder	The pressure of the restore cylinder is not enough	Adjust single-direction throttle to make cutting forward pace have same pace with profile extrusion speed

11、 Auxiliary parts

11.1 brief instruction to structure.



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Caterpillar Haul-off

Instructions

Safety Notice

Read the instruction carefully before operating the machine.

- Please read the operating instruction detailedly and learn the

function of controlling and adjusting before the operation

- Please watch out and pay attention to the safety
- Please pay attention to the warning signs
- Put on the suitable safeguard very well
- Please use and maintain the equipments correctly
- Please maintain the machines correctly
- The wire and power used must be undersirable
- It's absolutely forbidden to switch on the power during the repair
- The safety warning signs should be taken back,when the machine repair is finished

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当 心 伤 手

Contents

1. Brief introduction

belt haul-off is a traction equipment in the constant extrusion forming process of plastic products. When equipped with different auxiliaries, die heads and main machines, it can haul off different sizes of pipes, bars, profiles and decorative plates. It is one of the necessary machines for the pipes, bars and profiles manufacturers.

2. Technical parameters：

Belt opening height	10-150mm
Belt clamping length	1200mm
Clamp line speed	0.5-2m/min
Max. haul off	10000N
Drive motor mode:	Y100L1-4
Power:	2.2KW

Motor rotary speed:	1430r/min
Plenatery cycloid reducer	XWD3-4-59
Haul off driving mode	Caterpillar haul off
Belt-block width	200mm
Machine central height	1000mm
Machine weight	800kg
Appearance size（L×W×H）	1950×1300×1800mm

3. Structure characteristics

This machine mainly consists of 6 parts that are haul off bracket, haul off lifting device, slide way, machine frame, power driving system and electric control cabinet.

3、1 The haul bracket has upper bracket and nether bracket; it is made of structural steel through welding and manufacturing process, which is of good-looking and sturdy and durable; the front and back part of the hauling bracket is equipped with initiative and passive two-gang chain wheel to support and drive the belt. The rubber blocks on the belt are made through rubber mould pressing so as to increase the fiction coefficient between belt and finished products and raise the traction. It can also prevent damage to product surface, ensuring the quality of product surface. The belt block can be made in V type and flat type according to the cross-section shape of product surface.

3、2 The lifting device of the upper hauling bracket adopts pneumatic regulation, and the nether bracket adopts electric regulation, which features convenient operation and reliable safety. The planetary cycloid reducer distributes the drive through chain gear box, which features compact structure and convenient repair.

3.3 The drive motor adopts Y series 3-phase synchronous motor. The hauling speed can be regulated evenly and steplessly through main frequency control, which ensures a synchronous speed with the extrusion line speed of main machine as well as a good

quality of products. This speed regulation mode features stable running, no noise and convenient operation. The required hauling speed can be easily got only through turning frequency regulation knob.

4. Installation and debugging

4、1 The preparation before installation

4.1.1 Choose the proper installation position according to the work place layout. Be sure to consider the installation place for the main machine and auxiliaries. The installation place must be convenient for installation, disassembly and repair, and also convenient to equip with water, power and air.

4.1.2 Check up whether the tools and other attachments are all in readiness.

4.1.3 Turbine reducer must be applied with enough lubricant and all of the lubricant points must be applied lubricant and grease.

4.1.4 Choose proper lifting equipment according to the number of machines.

4.2 Installation (when foundation bolts are needed)

4.2.1 Concrete the foundation according to the attached drawing and the foundation size, and keep the foundation bolt holes free.

4.2.2 After the foundation is concreted, put the machine on the concrete foundation, then put the foundation screws into the foundation and adjust the machine.

4.2.3 Concrete again until the concrete achieves the required hardness, screw down the nuts of foundation bolts to fix the machine.

4.3 Debug

4.3.1 Check up whether each tightened part of screws is tightened and tighten them properly.

4.3.2 Check up the tightness of upper and nether belt and regulate them properly.

4.3.2 Check up whether all of the lubricant points have been applied enough lubricant and grease (Calcium-base grease). Regulate the upper hauling bracket according to the shape and size of the product cross section.

4.3.3 Switch on the power and start the motor to make the machine run at a low speed.

Check up whether all of the drive parts are flexible and whether the power drive system has abnormal noise.

4.3.4 Check up whether the upper and lower belts run stably and whether the lifting of hauling bracket is flexible.

5. Trial run and operation

5.1 Press the motor start button (green) to start the motor; then turn the “regulation” knob slowly to make the machine run at a low speed. The intensity of clamping force should be adjusted according to the strength of products and clamping condition through the air cylinder throttle valve to meet the craft requirements.

5.2 Turn the “speed regulation” knob slowly to make hauling speed match with main machine extrusion speed.

5.3 Before stopping the machine, turn the “speed regulation” knob to “0”position in advance so as to let the motor from running at a low speed again. Press hauling motor stop button (red) and regulate the lifting device of hauling bracket to make products separate from the belt.

5.4 If the machine need to stop under the normal condition, stop the main machine first when all of the material is extruded out of mouth of mould, then stop the haul-off according to step“5.3”.

6. Maintenance

6、1 Check up whether all of tightened parts are tightened firmly.

6、2 The machine is not allowed to run without operators.

6、3 Clear the reducer and change the oil one time every 2500 running hours.

6、4 Apply grease termly on the 2 pieces of regulation screw rod.

6、5 The temperature of reducer and motor should not exceed 65℃when the machine is running.

6、6 If the machine is not used for a long time, make the upper and lower belt in a flabby condition.

7. Appendix

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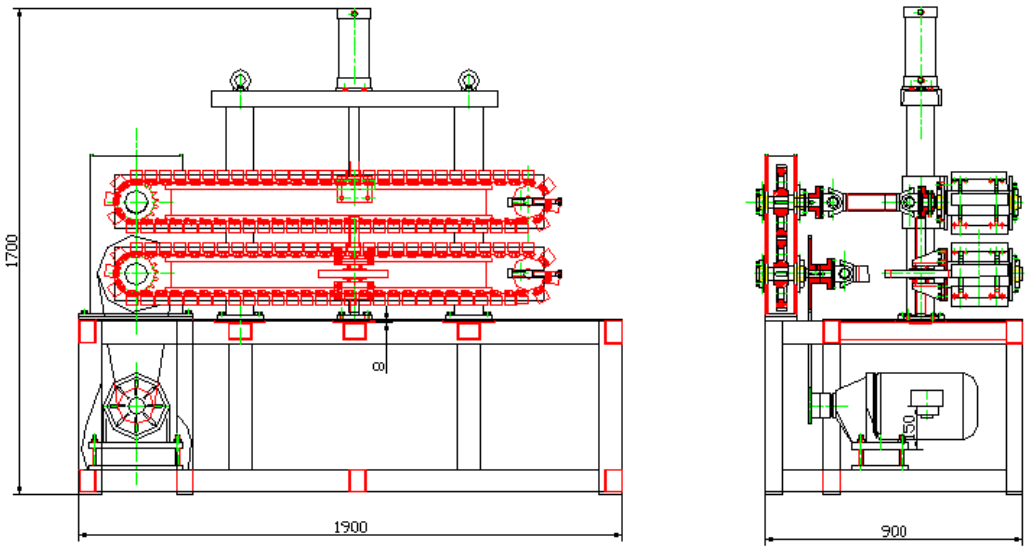
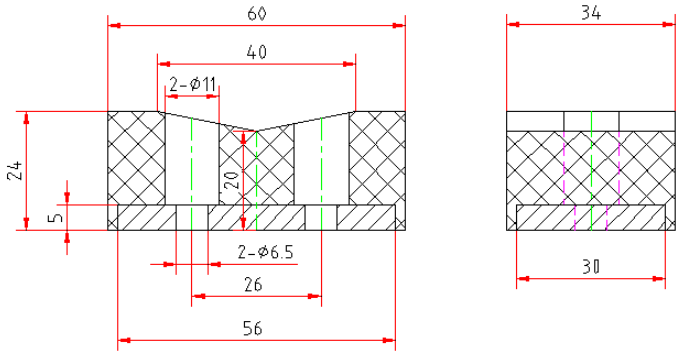
No.	Name	Specification	Q'ty	Remark
1	deep groove ball bearing with dustproof cover	60206	4	Passive chain wheel shaft
2	deep groove ball bearing with dustproof cover	6007	2	Initiative chain wheel shaft
3	deep groove ball bearing	6000	8	Guiding device
4	Pnaumatic tank	SC125X120-FA	1	Up- down structure

8. Attached drawing



Rubber block



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Tilter Stacker

USE INSTRUCTION

Safety Cautions

Please read this <Product Specifications> carefully before start the machine.

- Please read the operating instruction detailedly and learn the function of controlling and adjusting before the operation
- Please watch out and pay attention to the safety cautions
- Please pay attention to the warning signs
- Don't get close to the running machines, starting machines and

stopping machines.

- Please use the maintenance tools in proper way.
- Please maintain the machines in prepore way.
- The wires and power must meet the requirement.
- It's absolutely forbidden to switch on the power during the repair process.
- The safety warning signs should be put back after the repair is finished.

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Please put this safety operating instruction near the running machines

Contents

1. Application

Tilter Stacker

is to stack the products in the end of the production line, the max. width is 600mm, length is 400mm.

2. Main Specifications and Technical parameter

Width of table	160mm
Length	4000mm
Height of stacked products	≤190mm
Cylinder travel	175mm
Machine weight	200kg
Size（L×W×H）	4000x1550×1300mm

3. **Structure features**

The tilter includes tilter table, support from and stack bracket.

4. Machine Installation

4.1 Preparation before start running

4.1.1 Choose the proper installation position according to the work place layout. Be sure to consider the installation place for the main machine and auxiliaries. The installation place must be convenient for installation, disassembly and repair, and also convenient to equip with water, power and air.

4.1.2. Check up whether the tools and other attachments are all in readiness.

4.1.3. Prepare lifting Equipment according to machines weight

4.2 Installation

4.2.1 Machine should be installed on the solid ground, foundation should be concrete foundation structure, check whether all the fasten parts are fast well.

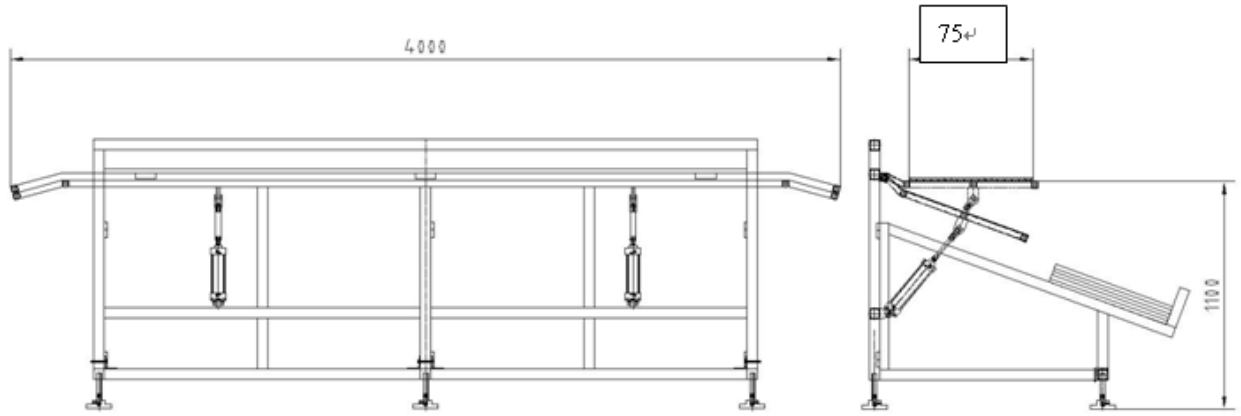
5. Maintenance and repair for Machine

1. Regularly check whether all the bolts are fasted well.
2. Do not let the machine without work at spot.

6. Standard Parts Appendix

No.	Name	Spec.	Qty	Applicable Position
1	Cylinder	ф50×100	2 sets	

7. Attached Drawing



锥型双螺杆挤出机

Conical Twin-screw Extruder

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使用说明书

Operating Instruction

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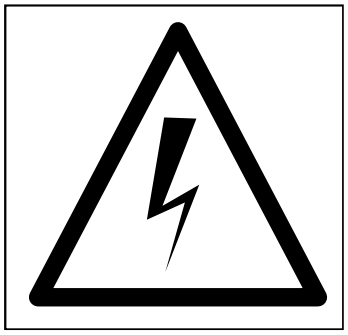

In order not to get an electric shock, it's forbidden to open any wire cover, wire canal and plug after the power is switched on.

When the machines run in a condition of high temperature or high pressure, the operators must put on safeguard.

If the operators are ignorance of correct safety instructions and cause body injury or property damage, Sants International Trading Co.Ltd takes no responsibilities. All of the safety warning signs are necessary parts of the machines.

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Contents

Notice: Please be sure to read the operating instruction before installing and debugging this machine.

1. Brief introduction

conical twin-screw extruder equipped with proper die and accessory machine can process WPC material to profiles, pellets and many other plastic products.

2. Technical specification

Screw diameter：	¢65/132mm
Screw number	2 pcs
Screw valid working length	1430mm
Screw rotating speed	3.9-39r/min
Screw rotating direction	different-direction outward rotating
Main motor power	37KW
Main motor rotating speed	1480r/min
Central height	1000mm
Production capacity	180-250Kg/h
Heating zone and power	4 zones 26kw, connecting part 2kw
Barrel cooling mode	air cooling, 3 sections
Air cooling power	180w x 3
Vacuum pump	1 unit
Motor power	2.2 kw
Ultimate vacuum	0.093Mpa
Used water	1-3m3/min
Ration loading device	screw-type loading

Material-load screw rotating speed: 3.4-34r/min

Raw material dry HPVC powder

Weight 3400kg

3. Structure description

The machine has following characteristics:

1、 Degassing device can remove water in the material and low molecular compound in the air so as to raise product quality.

Because of the characteristics of the conical screw, the loading section has bigger diameter, which can increase material heat conduction area and raise cutting speed, so that it's good for the plasticization of the material. The screw diameter of measuring section is smaller, which can decrease the heat conduction area and cutting speed, so that the melt can be extruded at low temperature.

The ration loading device can make extruding amount match with loading amount so as to ensure the product can be extruded stably.

There is a magnetic substance in the ration loading device to prevent other substances getting into screw so as to protect screw.

5. Because the screw is conical, the small end is measuring section. Its cross-sectional area is small. So the thrust is light. Conversely the space is big at the big end, so that the bearing that can sustain heavy thrust can be installed.

6. The machine was equipped with gear distribution box. The driving moment is distributed to each screw through the gear distribution box.

7. The barrel heating adopts cast aluminum heating, which features long service life and convenient installation and dismantle.

8. The barrel cooling adopts air cooling, so that the temperature fluctuation is small.

9. The frequency regulating device can achieve stable rotating speed and convenient regulation for the motor.

10. It is equipped with overcurrent protection device to prevent the parts from damages.

Composition

The main machine consists of screw, barrel, drive system, barrel heating cooling system, degassing system, ration loading system, machine bracket, die connecting part and electric controlling box etc.

1、 Screw

It is the key part to make convey and plasticization. While it rotates in the barrel, push the plasticized plastic to the die so as to achieve compaction, meltdown, compounding and homogenization. The screw thread on the screw consists of different screw pitch so as to achieve better convey, compaction, meltdown and plasticization and make degassing and water removing effect.

2、 Barrel

The barrel is a part that accommodates plastic and screw. Its inner shape is similar with '∞'.It rubs with plastic and screw directly. The barrel material is nitridized steel. The inner surface has pretty high wear-resistance and corrosion-resistance after nitrification treatment. The barrel surface was equipped with 3 groups of electric heater. The heat is conducted to plastic through the barrel, which melts down and plasticizes plastic. Each of heaters was equipped with temperature measuring point to control the heating temperature of the barrel.

3、 Die connector

It is the part to connect with die. It was equipped with electric heater. (The die connecting size refers to related drawing.)

4、 Drive device

The drive device in the specified craft condition can make screw rotate evenly with necessary torque moment so that the screw can plasticize and convey plastic. In order to suit the needs of PVC products, this machine adopts DC motor driving, drive the gear distribution box through coupler and gear reduction box and achieve speed regulating through the thyristor direct current regulator so as to make a smooth regulating between the screws rotating speed 3.9-39r/min. The screw rotating speed can be directly shown on the control panel.

5、 Degassing device

In order to raise the product quality, exhaust opening was equipped in the barrel middle section. Vacuum pump pumps out low molecular volatile substance and attached water and air etc.

6、 Ration material loading device

Because the plastic in the screw is conveyed forcedly, so the loading amount must suit the extruding amount. If the loading amount is not enough, not only the output is very low but also influence degassing effect. If the loading amount is too much, the load of the machine will become heavy and material will overflow at the exhaust opening. For this screw-type or spring-type ration loading device was designed. Pay attention especially, according to the features of the product material and processing craft condition, the loading amount and extruding amount must be adjusted strictly while the run-in. Because the rotating speed mode of the loading screw is frequency speed regulating, so the rotating speed of the loading screw is 3.4-34r/min.After the craft become stable, it needs not be adjusted separately. The main speed regulating knob can be used to regulate speed synchronously.

7、Machine bracket

The machine bracket is a steel structure part that was welded by steel plate and U-steel.

4. Electric part

The electric part of SITSJSZ-65/132 conical twin-screw extruder consists of drive system and temperature control system 2 parts.

（1）、Drive system

Adopting imported AC motor inverter to adjust the screw rotating speed. The input voltage is 3-phase alternating current 380V.The maximum output electricity is 42.5A.The speed regulating range is 1：10. The loading motor also adopts import inverting device that can be controlled synchronously with main machine.

（2）、Temperature control system

This machine has 8 sections of temperature control zone. They are arranged from charging hole to die. The heating temperature of barrel temperature control zone 1 to 4 are controlled by cast aluminum heater, thermocouple and new temperature controller，and temperature control zone 2,3,4 adopt air cooling. The temperature control zone 5 to 8 can be chosen by the die.

The following is the adjusting method of C400 temperature control:

1. The setting up of the working temperature

If the heater working temperature requirement is 180℃, press the ‘SET’ button of the adjustor and the ‘SV’ light on the adjustor window is on, which means it can be set up right away. Press ‘∠’ button to move cursor twinkle position and enter the digit of set-up value. Press ‘∧’ button to increase or decrease the twinkle digit in the SV window.Set‘1’at hundreds’place.Set‘8’at tens’place.Set‘0’at unit place. When the setting up is finished, press ‘SET’ button. Then the setting up is entered. The controller gets into PV/SV display condition.

2. The setting up of cooling temperature

Press ‘SET’ button for more than 5 seconds. The PV light on the controller window displays parameter. Gradually, press ‘SET’ button time and time again until the PV light displays AL prompt symbol. Then press ‘∧’button or ‘∨’ button to make SV light display‘0003’.At last press ‘SET’ button for more than 5 seconds. The setting up is entered. The controller gets into PV/SV display condition.

3. The setting up of PID self-tune function

If adopt the AT function, the controller can self-tune P, I, D parameters according to the characteristics of system control.

Press ‘SET’ button for more than 5 seconds. The PV light on the controller window displays parameter. The SV light unit place cursor twinkle. Gradually, press ‘SET’ button time and time again until the PV light displays ‘ATU’ prompt symbol. Press ‘∧’ button or ‘∨’button to make SV light display‘0001’. At last press ‘SET’ button for more than 5 seconds and AT light twinkles. The adjustor gets into self-tune condition. When the controller power is switched off, the AT function is canceled.

4. The manual setting up of PID parameters

Press ‘SET’ button for more than 5 seconds. Gradually, press ‘SET’ button time and time again until the PV light on the controller window displays ‘P’ prompt symbol. Then press ‘∠’button, ‘∧’button and ‘∨’ button separately to make SV light display required parameter（1-400）. Press

'SET' button to verify P value. PV light displays'1' prompt symbol. Then press '∠'button, 'Λ' button and 'V' button separately to make SV light display required parameter（1-3600 sec）. Press 'SET' button to verify I value. PV light displays differentiation time prompt symbol. Use the same way above-mentioned to make SV light display required parameter（1-3000 sec）. Press 'SET' button for more than 5 seconds to verify it. The controller window displays PV/SV.

5. The setting up of heater line-break protecting value

If the rating electricity of the heater is 10A, then the HBA should be 85% of the rating electricity. Press 'SET' button for more than 5 seconds. Gradually, press 'SET' button time and time again until the PV light on the controller window displays 'HBA' prompt symbol. Then press '∠' button, 'Λ'button and 'V'button separately to make SV light display required parameter（8.5）. Press 'SET' button for more than 5 seconds to verify it. The controller window displays PV/SV.

If the rating electricity of the heater is less than setting value, then AL2 alert light is on. Press 'SET' button for more than 5 seconds. Gradually, press 'SET' button time and time again until the PV light on the controller window displays 'CT' prompt symbol. At this time the SV light display-value is the heater rating electricity value.

6. The lockout protection of parameter values

Press 'SET' button for more than 5 seconds. After the PV light on the controller window displays parameters, then gradually, press 'SET' button time and time again. When the PV light displays LCK, then press '∠'button, 'Λ'button and 'V' button separately to change the value of SV light. All kinds of conditions can be set up. Press 'SET' button for more than 5 seconds to verify it.

'0100'represents that the lockout was canceled; any parameters can be set again.

'0101' represents that all of parameters were lockout. All of parameters can be not changed.

'0110' represents that all of parameters were lockout except the working temperature can be set up. Only the SV working temperature can be set up.

C400 temperature controller has many other functions. The user can refer to temperature controller instruction.

（3） Usage and adjustment (refer to electric principle drawing)

After the power is in order, don't switch the QS1 on. Open the door of control cabinet and switch on the control power QF5, material-load motor power QF2, the cooling air-blower power QF3 of DC motor and vacuum pump power QF4, then switch on the heating power Q1-Q8 according to the actual need. At last, switch on the main QS1 and set up the 1 to 8 temperature on the digital temperature controller to the temperature that required by plastic processing craft. Keep it invariant. The heater 2 and 3 of which were equipped with air-blower cooling device. When the temperature exceeds rating temperature, it can make cooling automatically to match the needs of plastic product processing craft.

Before starting up the main motor and material-load motor, the screw installation must be in order. After the temperature of barrel and mould achieve the craft standard, turn the 2 multi-turn

potentiometer RP1 and RP2 on the control panel to '0' position. While operating in separated steps, turn the EP1, EP2 separately to regulate the speed of the main motor and material-load motor so as to meet the production requirement. Then regulate the speed of the material-load motor with RP2 a little. The thyristor regulating device of this DC motor has many kinds of protection measures. When the DC motor exceeds load, it can stop and alert automatically.

The principle, debug and usage of the motor control cabinet, barrel cooling device and digital temperature controller could be referred to related operating instructions.

The start-up and stop are controlled by 'vacuum pump' switch marked on the control panel. The inlet wire power of this machine is 380V.The power is of 3-phase 4-line type and the phase order should correspond well.

5. Composition of the complete set (including electric control cabinet)

1. Extruder (including electric control cabinet) 1 unit
2. Foundation bolt M20*400 4 sets

6. Installation, run-in, operation and maintenance

1. The preparation before installation

The contents of the operating instruction should be read detailed and learned about completely by the professional technicians. According to the packing list of the product, check up whether all of the machines, parts and technical documents in the list are complete.

The supplied usage environment should be proper. The environment temperature shouldn't exceed 40℃.The elevation shouldn't exceed 1000M.

The relative humidity shouldn't exceed 85% and no dust, no corrosion and no detonating gas.

The proper lifting device should be chosen according to the weight of the machine.

The chosen foundation must be flat and hard. The installation position must have necessary space for the machine installation and repair.

The required electricity grid, water supply and other equipments should be equipped according to related electricity and water requirement.

Lubricate all of gear drive device, barrel cooling device and lubricant points properly. And make change and maintenance timely.

2. Installation

（A） According to the appearance dimension and weight of the machine and foundation drawing(refer to drawing 3),fill with concrete foundation and leave the machine foundation bolt position free.

（2） After the foundation concreted, put the machine on the foundation and put the foundation bolts into the holes. Adjust the machine to horizontal condition then concrete. After the concrete achieved the required strength and hardness.Screw down the nuts of the foundation bolts to fix the machine.

（3） Make wire and water pipe installation. Caution: The exhaust opening and waterspout shouldn't merge to one line so as to prevent the water drainage isn't fluent.

（4） Apply proper oil for the required lubricant points.

（5） Check up completely one time. If it's all right, and then make a run-in.

（B）Run-in and operation

1. The preparation before run-in

The machine run-in should be operated by the technicians know the extruder performances and product processing craft procedure well, in order to prevent the accidents happening during the run-in. The technicians can take measures on time to prevent accidents happening.

1) The electrician must check up whether the wire connected into electric control cabinet is correct.

2) Check up whether the applied oil in the gear reduction box and gear distribution box reaches to marked position. If not, apply oil to the marked position.

3) Check up whether the gear sleeve has been already connected with the screw gear correctly.

4) Start up main motor to observe whether the rotate direction of the screw is correct. The screw must rotate different-direction outwards.

Caution: If the rotate direction is not correct, shut down the machine right away and correct the rotate direction. Additionally, the machine should be avoided running in no-load condition to prevent the screw scratches the barrel or the screw can't run any longer. If making a no-load run-in, apply oil in the barrel.

5） Check up whether the rotate direction of the material-load motor and vacuum pump is correct.

6） Supply the machine water. Switch on the heaters. Check up whether heating and cooling is in order, whether the barrel cooling line is fluent and has leak phenomenon.

7） If above-mentioned steps are in order, then install the die and set up the processing craft temperature of barrel, die connecting part and die to heat. When the temperature of every zone reaches to the required temperature, keep the temperature for 30 minutes.

2、 Run-in and operation

（1） At first put the powder material into the hopper. Start up the main motor to make the twin-extruder run at low speed. At the same time start up the feeding device loading material slowly until the material comes out of the die. Then speed up gradually until achieving the required rotate speed. Look out of that the electricity of the main motor shouldn't exceed rated value 76A.The loading amount and the extruding amount should be kept balance. Usually, the loading amount should be less than the extruding amount. In this condition the main motor will not overload and the material will not stack at the load opening. If the loading amount is too much,

the main motor will overload and the material will stack at the load opening. If this happened, decrease the loading amount or stop loading material right away. Extrude all of the material in the load opening slowly. Then speed up the material-load screw. Adjust the balance of the loading amount and the extruding amount. Then it is feasible to start up the vacuum pump to make exhaust and check up whether the quality of the products achieves requirements.

（2）The vacuum pump must be start up when the screw is full of material. And the vacuum pump must be shut down before stopping the main machine to avoid the material being absorbed into the degassing device.

（3）Before starting up the machine, the cooling water must be connected (refer to operating instruction).

（4） Make run-in records well to refer to in the future.

(5) After the run-in was finished, clear up the remaining plastic in the barrel and screw (except special craft) so as to prevent hindering the next production.

1. Adjustment to the space between screws.

After the two screws are put into the barrel, take the barrel to its work position and fix the barrel firmly. Push the two screws forwards. When the space between screw and barrel is zero, take the screw as the standard. If the spaces between two screws are both zero, take any of which as the standard. Then the screw as the standard should be drawn back 4.2mm so as to make the space between the screw and the barrel is about 0.1mm. At this time the interval between the screw and drive shaft is just the thickness of adjustment spacing piece. Take the adjusted first one as the standard and then move another screw. Measure the space between the two screws. Move the second screw to the middle interval. Measure the interval between the screw and drive shaft. At this time the interval is just the thickness of spacing piece that the second screw needs to adjust.

Draw back the second screw. Measure the interval between the screw and the barrel. The interval must be in the range 0.1-0.15mm.Otherwise the interval between the first screw and the barrel must be adjusted. Generally, the middle interval between the two screws must be ensured and the interval between the screw and the barrel must be in the range 0.1-0.15mm.

After all of adjustments are finished, the adjusting spacing piece can be installed and make the connecting sleeve in order.

1. The installation and disassembly of screw

1) The installation of screw

While installing the screw, clear up the remaining plastic on the barrel and screw. Then push the screw into barrel slowly and turn the screw to push it forwards enough. Then push the barrel to its work position. Turn the handwheel to move the barrel and screw into distribution box and connecting sleeve. Use a crescent spanner to screw down the barrel nuts.

The disassembly of screw

Unload the connector (mould) on the die, then turn the loading device to make it separate from the material-load opening. Move the screw spline housing backwards to make the screw separate from the distribution box. Then use a crescent spanner to loosen the barrel nuts.(refer to drawing 1)

Turn the handwheel in front of barrel to make the barrel separate from the distribution box. Move the barrel(refer to drawing 4)and pull the screw out of the barrel. Make sure that the left and right position of the screw is correct so as to install the screw correctly.

Notice: The interval of the screws has been already adjusted when the machine is to be delivered to the customers. After the repair, the user may adjust the interval of the screws according to the above-mentioned method.

2. The usage of raw material filter

The filter was equipped in the machine bracket. The filter can prevent the material out of the degassing opening from getting into the vacuum pump. When the filter is full of drained raw material, it must be cleared up. The seal of the filter must be ensured after cleaning. Otherwise, it will influence the vacuum and the quality of the products as well.

（C） The maintenance

1. The machine must be operated by professional technicians.

2. Usually, the machine isn’t allowed to run in no-load so as to prevent that the screw scratches the barrel or the two screws can’t co-rotate any longer.

3. The reduction box, gear distribution box and ration loader reduction box. Change oil one time after the first 300 operating hours and then change oil every 7000 operating hours.

4. Clear up the remaining plastic in the die, barrel and screw right away after production every time (except the special craft).If the machine doesn’t work for a period of time, the interior surface of the screw, barrel and die should be applied rust-preventative oil.

5. The hard impurities must be prevented to get into the material opening so as to prevent the screw and barrel breaking.

6. In order to ensure long-term constant stable running, all of the bearings should be checked up one time every time. It should be replaced when the first wear phenomenon happened. Usually, the abnormal sound can be heard.

7. During the running procedure, If some abnormal condition are found, stop the machine right away. Make a check and repair.

7. Appendix-The analysis’s and solutions for the faults

No.	Faults	Reasons & analysis	Solutions
1	The screw doesn’t rotate.	1、 The main motor fails power. 2、 The main motor breaks.	1. Supply power after checking up the rapid fuse.

		3、 The main machine overloads. 4、The raw material isn't plasticized. 5、 The raw material brand is not correct. 6、 Overcurrent happens at the moment.	2. Check up and repair the main motor. 3. Decrease the loading material amount. 4. Continue heating and increase the time of heat insulation. 5. Choose the plasticization humidity according to the brand. 6. Switch on the overcurrent protection switch.
2	The temperature control doesn't work.	1、 The thermocouple doesn't contact well. 2、The contacts of the thermocouple opened. 3、The temperature control meter isn't exact.	1. Adjust the contact points to ensure a fine contact. 2. Weld the contacts well or check up the socket. 3. Adjust or repair the temperature control meter.
3	The barrel temperature is too high to cool.	1、 The air blower doesn't work. 2、 The air blower has faults.	1. Check up the line of the air blower. 2. Replace the air blower.
4	The material-load motor doesn't rotate.	1. The motor is broken. 2. The material-load screw is stuck and the bearing is broken. 1. Tripping	1. Check up and repair the motor. 2. Replace the bearing. 3. Switch on the power after checking up reasons.
5	The vacuum pump doesn't rotate.	1、The motor overloads. 2、The motor is broken.	1. Reset the thermo replay after switching on the power. 2. Check up and repair the motor.
6	There is no vacuum.	The vacuum pipe leaks out.	Check up the seal and repair it.

8. Attached drawing

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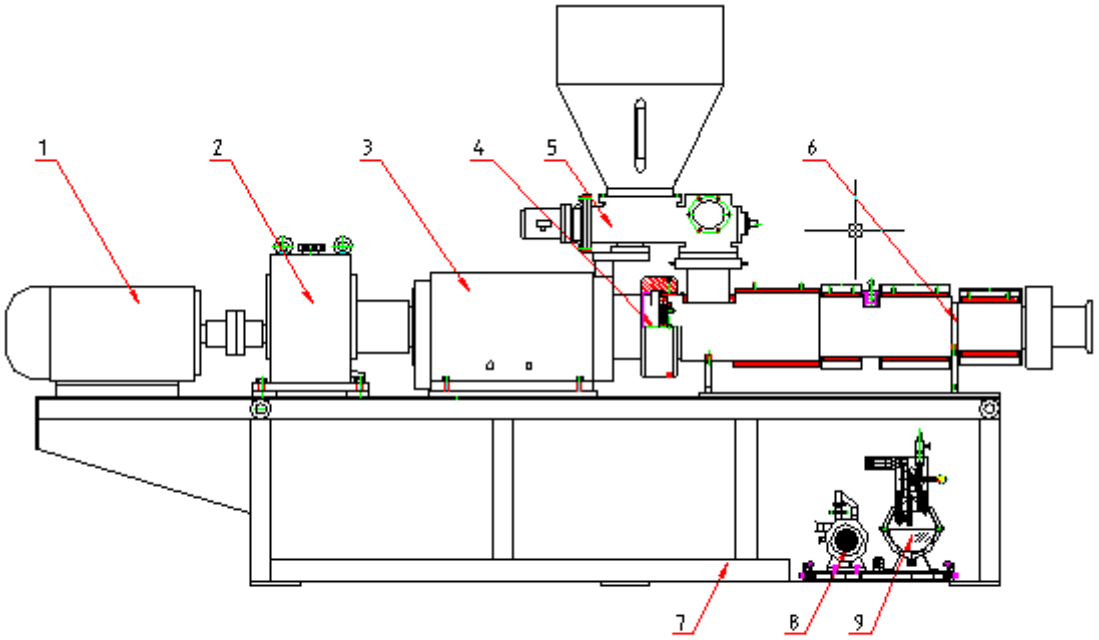
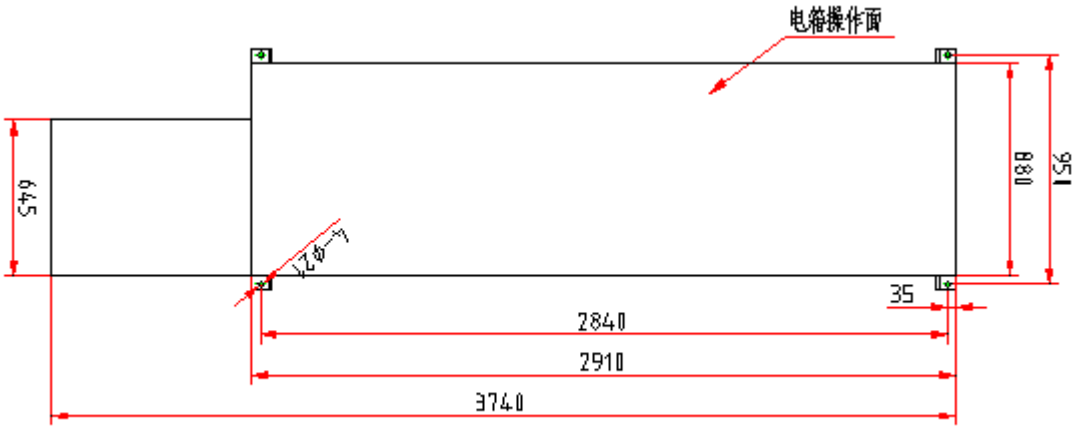


1变频电机 2 减速箱 3 分配器 4 螺筒固定螺母 5 定量喂料装置 6 机筒 7机架 8 真空泵 9 过滤器

Outline Drawing of Conical Twin Screw Extruder
1. Frequency motor; 2. Reduction box; 3. Distributor; 4. Locknut of barrel; 5. Dosing feeding device; 6. Barrel; 7. Machine frame; 8. Vacuum Pump; 9. filter.



Operative surface

Conical Twin Screw Extruder Foundation Drawing

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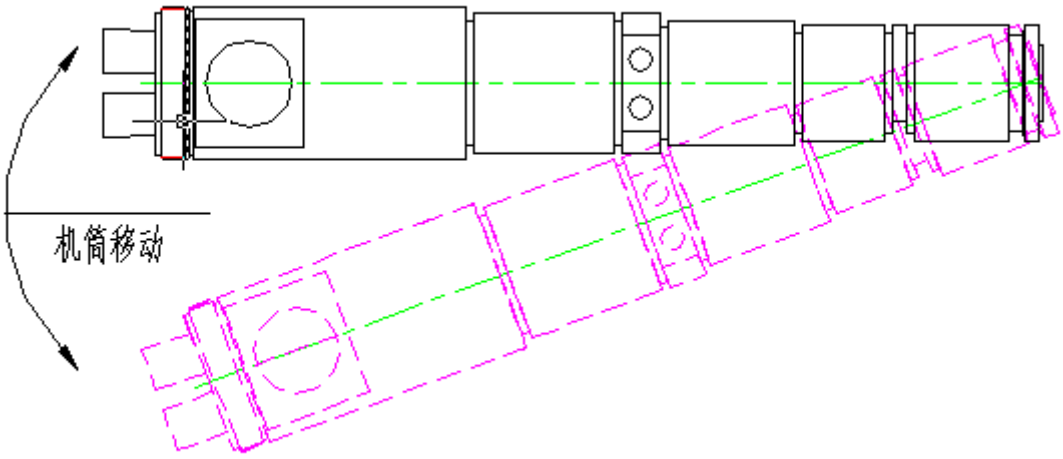

Conical Twin Screw Extruder Installation Drawing

Calibration Unit

产品使用说明书

Product Specifications

Move the barrel

Safety Notice

Read the instruction carefully before operating the machine.

- Please read the operating instruction detailedly and learn the function of controlling and adjusting before the operation
- Please watch out and pay attention to the safety
- Please pay attention to the warning signs
- Put on the suitable safeguard very well
- Please use and maintain the equipments correctly
- Please maintain the machines correctly
- The wire and power used must be undersirable
- It's absolutely forbidden to switch on the power during the repair
- The safety warning signs should be taken back,when the machine repair is finished

Sants International Trading Co.Ltd will take no responsibility, if accidents or damages happen because of getting out of line to operate machines!

Please take this safety operating instruction near the running machines.

All of the safety warning signs equipped on the machines must be kept timelessly on the machines .

CONTENT

1. General Information

The Calibration unit is matched to the extrusion line to take the shape of the profiles. It has the features of high speed and even cooling, to increase the production line speed.

2. Main Function

The calibration unit is used to make the hot melted plastic/WPC plastic from the mould, cool the products from the surface and guarantee the straightness of the products. It can meet the calibration requirement, and have some improvement on the structure and functions.

3. Features

◆Stable and realizable, high precision, can be easily regulated.

◆It adopts deep flume structure to prevent the water spilled out in the working process, and have leakage-proof design to prevent the water from leaking to cause rust to water flume.

◆ The calibration is of compact structure, make the mould change and regulation easily.

2. Parameters

1.. Forming mould stand length: 3000mm
2. Mould stand width: 260mm
3. Max. height regulation range:200mm
4. The stand cross regulation range: 100mm
5. Water inlet nozzles: 24 pcs
6. Lengthwise moveable distance of guide rail: ≤500mm
7. Overall size: 3500X1000X1640mm
8. Machine weight: 630kg

3. Working Principle

a. It adopts two vacuum pumps to supply the vacuum, and divided into two sections to absorb the vacuum from the forming mould, uses PU pipes to connect to the mould through quick-change connector, realize negative pressure inside the cavity of the forming mould, so the hot melt material which is going through the mould cavity will stick onto the inner wall of the mould cavity to form the same shape as the cavity, and the vacuum pump will extract the water on the surface of the profile and the water in the cavity, then this water will go through the vacuum pump outlet pipe into the water tank. The degree of the vacuum is displayed on the vacuum meter on the vacuum bracket, if the resistance of the pump-out pipe is larger, the

vacuum degree is larger too. Because the hot melt material sticks on the mould cavity, and the mould is made of metal, whose co-efficient of heat dissipation is very large, the hot material will be cooled and formed very soon. The cooling of the mould is realized by the cooling water running constantly.

b. The water goes into the forming mould is supplied by water bleeder on the forming stand. There are many water supply nozzles installed on the forming stand to supply water for the forming stand, the cooling water is cycling inside the forming mould and then goes into the water flume, then goes to the water tank under the stand through the funnel; the water in the water tank will flow to the cooling water collector system through a water pipe. The cooling water for the vacuum pump is also from the water supply area.

c. The regulation system for this machine is largely improved and optimized. The forward and backward of the forming stand is realized through the nuts connected with the transmission screw rod under the drive force from the reduction box. The height adjustment is realized by the worm wheel and worm up-down device, there are four up-down device to support the forming stand, which is easily operate. The cross movement of the stand is realized by turning the handwheel, and through the screw rod. Finally realizes the three-dimensional adjustment.

4. Electrical System and Operation

This machine can be operated independently, but the movement must be coordinate with other machines. Therefore, as a single machine in this profile production line, it is not necessary to specially list all the electrical system for it. Please refer to the electrical cabinet use instruction of the extruder.

NOTICE:

4.1 The operation of the electrical control cabinet must follow the use instruction, before start, please check whether the ball valves of the vacuum pipeline are open, each ball valves reliable, not loose nor leaking air, the water tank has water inside, it no water, fill it; whether the vacuum has cooling water; all the parts are flexible for rotation; whether the water let solenoid valve is working sensitively; try to connect the electricity to see whether the vacuum pump and water pump are rotating in the correct direction. When there is no mistake after careful inspecting, you can start

4.2 Before formal producing of profile, you should adjust height between centerline of vacuum forming stand（using each adjustment units of this machine）and extrusion centerline consistent.

4.3 Check whether the vacuum pipeline not leak air, each ball valves reliable, not loose or leaking air. When there is no mistake after careful inspecting, you can start.

4.4 Users should regularly check water trough sieve, eliminate the sewage and promptly clean and change, clean up the water tank regularly.

4.5 Users should regularly lubricate each glide contact face and various mechanical drive parts, refueling cycle of user may set down according to own situation.

5. Common faults and solution

1. Vacuum pump giving off heat, big noise

Treatment: stop vacuum pump, close water inlet pipeline, take down and readjust gap or sharpen processing

2. The vacuum degree of vacuum table is not showing or showing small vacuum degree

Treatment: 1. replaces vacuum table

2. Carefully inspect main and branch pipeline inspiration and mould inspiration mouth, look for air leakage spot, dispose properly.

6. Easy Wearing parts

Name	Size or specification	Qty	Material
quick-change connector	Shell type conical thread straight in pipe connector E10	50	Groupwear (cooper)
Soft pipe	φ10xφ6.5	50m	PU