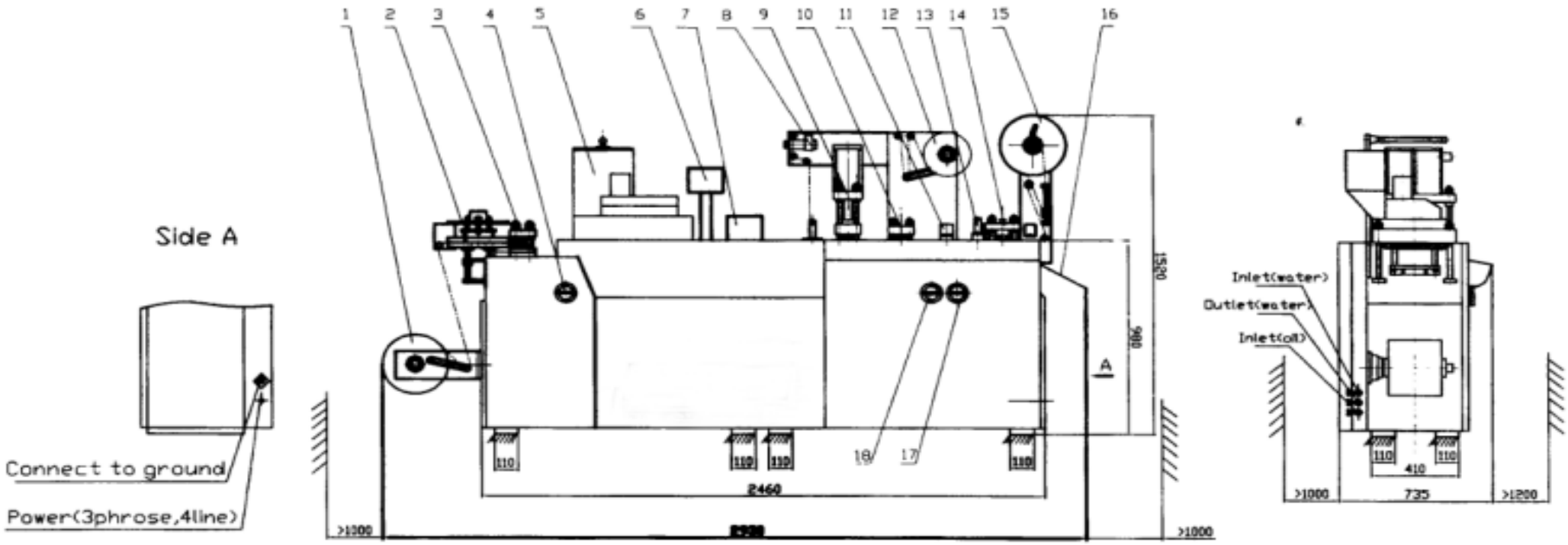
# BLISTER PACKING MACHINE (Al-PVC/Al-Al)




Pic. 1

1. PVC 2. PVC-forming Move Roller 3. PVC Heating Device 4. PVC Forming Device 5. Feeder 6. PLC 7. Check Device
8. Register Electric Reader 9. Heat-seal Device 10. Cross Perforation Tool 11. Traction Tool 12. PTP 13. Location Pin
14. Cutting Device 15. Waste-reject Device 16. Waste-seperate Device 17. Cutting Move Roller 18. Cross Perforation Move Roller



## Ⅰ. Application.

The plat type blister packing machine carries on to the drugs(troche、 capsule ) food, the medical treatment apparatus and its similar material .As the packing equipment of the blister type aluminum (PVP)/ plaster (PVC) has taken pressure forming, heat-sealing, so the product come out smoothly and solid.

**DPP−140** Packing Machine, our fourth generation, based on type DPP-250F, adopts frequency conversion to adjust the speed and automatic control technique and innovate and design to the standard "GMP ". It has many functions such as, adjustable stroke、partial、combination、two uses "AL/PL--AL/AL ", capsule directional turning . The technique fills up the local blank, it's comprehensiveness stands for the leader and more active than the imports.

## Ⅱ. Attentions

**1. Please connect to the ground carefully!**
**2.You must stop the machine to the stop point when adjust pressure.**

## Ⅲ. Installment and maintenances

1,Make sure the whole machine is complete and no damage during the transposition when open the packing (according to the packing list).

2,The machine should be placed level in the room, no need to fix screws on the bottom, but put sheet rubber in 12mm in case that there will be any damage to the ground and remove with the time passing .The minimum area and space for the machine you can arrange according to the picture 1.

3,Clean the whole machine. Remove the oily soil, grime with cleanser essence, and rub it with soft cloth.

4,In order to produce safely, you should connect the line to the ground in the signed place according to nomenclature plate.

5,You should ask specialized person to operate and fix. The person must learn hard during operating till master well and should do the fix well.

6,Put oil in the reduction box (15-20#)[Attention: make sure whether every cam box has oil, also the cutting prejudicial wheel], the highest point of the cam must reach the oil. Every ball bearing should be added lubricant per year at least once (it has added when produced)

## Ⅳ. Performance and characteristics

1、The whole machine can be packed by parts when carried into the lift and workshop,

use bolt to fix the cylindrical pin when combine it. Easily installment.

2、The mould adopts clamp plate.

3、Adopting frequency conversion to adjust the speed: the punch frequency can be set according to the range and the filled material (it can reach 40 times/min.).

4、The heating plate can open and shut automatically and postpone to switch on while the heating plank laying down, so limit the cost of plastic in one round of working.

5、The cylinder automatically lifts the checkered plate when the machine stops working. The blister deformation case caused by the heat radiation during the sop period is eliminated. It is easy to clean the net plate. At the same time, the butter action is provided as the super pressure, which extends the lifespan of the machine.

6、Heat-sealing: the plane of the mould can be point-moire (also line-moire). Plates will be flat under equal pressure, at the same time, the heat-sealing capability rises.

7、When PVC is over, it breaks, rings, stops automatically so that the operator can change and connect PVC continuously.

8、All the parts which touches with the medicine includes the funnel for adding, adopts stainless steel and safe material to the standard "GMP".

## Ⅴ. Main Technical Parameters

| Terms | | Unit | Parameters |
|---|---|---|---|
| Punch Frequency Max | | Times/Min | AL/AL: 25 AL/PL: 50 |
| Production Capacity | | Thousands Caplets/H | AL/AL: 5 AL/PL: 13 |
| Range Of Working Travel | | Mm | 30-120 |
| Max. Formed. Area | | Mm | 140×112 |
| Max. Formed Depth | | Mm | 12 (special: 25) |
| Formation Heating Efficiency (Upper& Lower) | | Kw | 1.5 (×2) |
| Heat-Sealing Efficiency | | Kw | 1 kw |
| Power& Total Efficiency | | Kw | 380V50HZ (220V60HZ) 5.3 KW |
| Motor Power | | Kw | 1.1 |
| Volume Flux Of Air Pump | | $M^3$/Min | ≧0.25 |
| Packing Material | PVC | Mm | 0.25 (0.15-0.5)×140 |
| | Heat-Sealing Al-Foil | Mm | 0.02×140 |
| | Forming Al-Foil | Mm | 0.12×140 |
| Overall Mechanism | | L×W×H | 2930×625×1800 |
| Weight Of Machine | | Kg | 1100 |

## Ⅵ . Start-up procedures.

1、The start-up procedures should follow the electric appliance principle diagram and electric safety prescription. Enter into the first interface when the screen is open, and press it to enter into the second. Press "power" "adjust"、，observe electrical machinery rotary direction the same as shown arrow point, change line correct.

2、Connect the water inlet, water outlet, connecting the air pump trachea into inlet according to sign behind the machine base.

3、Open each heating part and set temperature: heat-sealing about160℃,forming-heating about 100℃, which should be adjusted as following: compared to screen, the first interface "operate system" appears when connected to the power; press the "operate system" will come to the second interface, there are many bottoms, such as "up-heat"、 "down-heat"、" heat-sealing"、 "adjust"、 "set up"、"exit". At the same time, it also appears the working parameter. If you want to set the temperature and working speed, press "set up" to enter into the third interface, and adjust it according to the prompting. Since the temperature changes to the working speed, the plastic, air temperature etc, so it should be set practically.

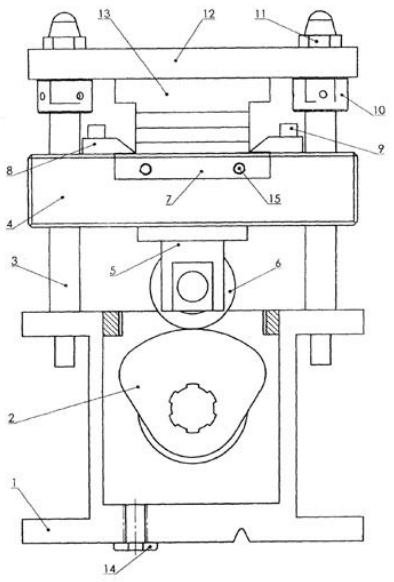
4、When it needs to separate the scrap while changing dies, you must set the parameter again which contains mainly rows and plates.

First, adjust the machine making it run normally, then stop to measure the distance from the place of rejecting to the middle place of punching, and calculate the plates (= the distance/ traction journey), the rows is the total plates for punching, at the end, press " set up ", then do adjustment.

5、 Compressor, the heating plates raise after air inflating. Set the plastic plates and aluminum foil (according to pic.2). Observe the forming,heat-sealing,punching and running siutation, make sure everything is normal then open the device gate for feeding ( attention: should remember to open the cooling water while using).

## Ⅶ. Operation and adjustment

### 1. Al/PL forming mould installation (pic.3)




1.1.Forming mould must close to heat board, distance should be 1mm, lock the clamps.

1.2.When the hole appears moving, side A should be toward to the heating plate while setting (pic.4).

1.3.The upper die should be installed at the same level to the forming mould. The

method of installation is the same to the above.

1.4.Insert wave-handle (fitting with machine) to the hole of axle at the back of the machine (you can find it when open the left-back cover), then wave the machine till the forming plate rises to the top. Then adjust the round-head (5) and fixed nut (13) of the forming station till the mould surface covers forming mould. The pressure should be uniform avoiding too much, and make sure there is no deflation. (Attention: when adjust the pressure, you must stop the machine to the stop-point avoiding any damage in the case that the pressure can't be control). After adjustment, fasten the nut (pic.3-13).

## 2. Hard-aluminum forming mould installation (pic.5).

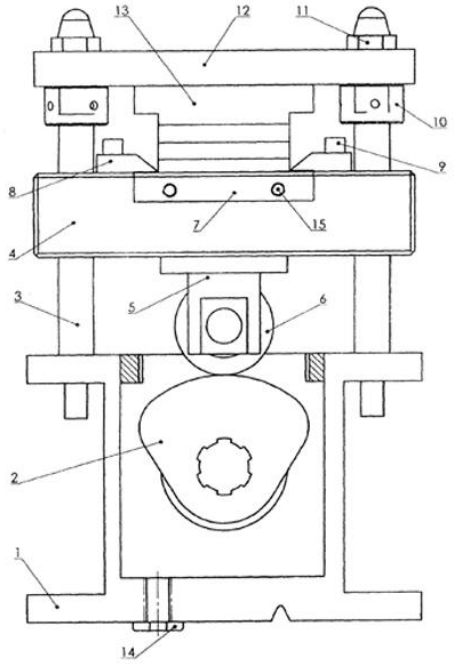
2.1 Install the lower-mould (6), no need to press the plates at two ends.

2.2. Stop to the stop-point, then start to install middle mould (9). Use column-pin to calibrate the center point of upper and lower mould; fasten the two ends plates of lower mould; rotate the round-pin, at the same time, fasten 6-angle nut. While adjusting the pressure, do not forget to rotate the reciprocating motion to the stop-point, the forming pressure refers to the formed blisters and the distinctness of words and pictures (Attention: do not forget to stop to stop-point while adjusting the pressure).

2.3 Install the upper-mould and cover-plate, rotate nut and fasten the round-nut.

## 3. Installment of heat-seal mould (pic.6)

3.1.The method of heat-sealing installment and pressure adjustment is the same to forming mould installment, the mould should be lay at the right center place of lower guide board, the direction to install is the same to forming mould (pay attention to the parallel with forming mould). After installment, adjust the distance to forming mould. The measure length= plate length A+ slitter edge B (traction journey) x multiple (the distance between forming to heat-sealing is the positive multiple to journey).

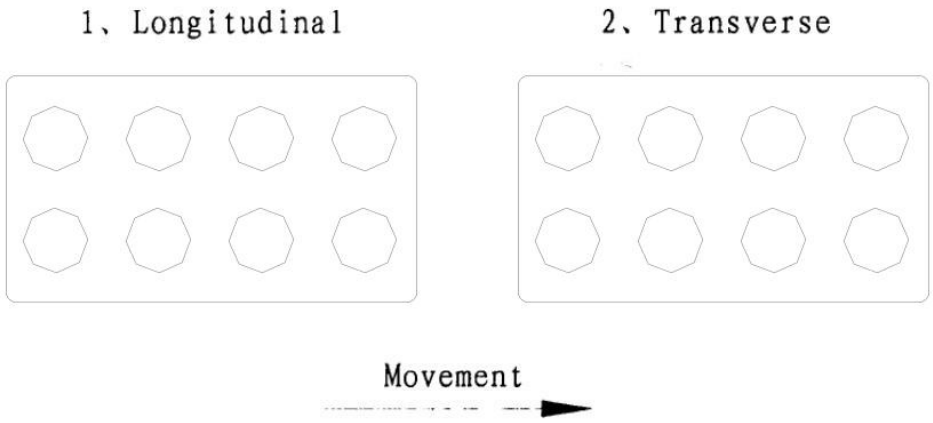



The factual distance depends to where the plastic blisters fall down to the heat-sealing hole accurately. Like (pic7-1), if there appears longitudinal direction press, you should adjust the forming station place. Make forming station move ahead or backwards by rotating the forming move hand wheel, till the blister fits the heat-sealing mould completely (we should wait until the adjusted blister tows to heat-sealing mould from forming mould, in the another way, it must have taken forming, heat-sealing, then we can view the result according to whether the plastic piece is flat and no bend after heat-sealing. If appears (pic.7 -2) phenomenon, loose the heat-sealing mould board and move it to right or left.

Then adjust guide way, (pic.8) loose the nut (3) and adjust guide way (4)(7) to right or left till it reaches blister holes, then fasten nuts (3). The second installment is similar to the first one.

3.2. Moire templates installment (pic.6)

The installment method is the same to install forming upper mould: fasten when facing to the lower one completely (10).



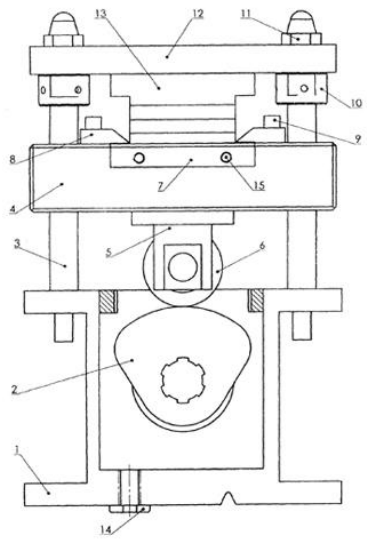

PIC7: Heat-seal Blister

3.3. Pressure-adjustment (pic.6)

When adjust, rise the lower mold to the top, adjust 4 post round-head screw and fixed screw till the moiré board goes to the heat-sealing mould equably, and the board should move upper 3mm measured by ruler when sealing (the operation changes to air pressure temperature and moiré). Attention: increase pressure when line sealing.

3.4. Track adjustment (pic.8)

Adjust the short track and long track till there are two tracks whose side is near to the flank of blister.(As to pic.8 –2.and –4). (Attention: pay attention not to be too close).




3.5. Depth backing plate adjustment:

Depth backing plate (6) is used for holding the blister avoiding the tablets in small diameter and thickness going out. The surface of the stepped forming plastic plate must not higher or lower than the track. Adjustment: loose screws, remove depth backing plates (6), increase or reduce plates (5).

## 4. Installment of Cutting Device (pic.9)

4.1. Loose round-head screw (7)、remove cover (8)、put packaged punching mould on the lower plate(8)、 place it straight、fasten two sides with 6-angle screw(10)、put on the cover(8).rise the lower plate (3) using hand operating crank, till the upper die-holder (6) reaches the cover (8), then fasten the holder and wave the machine till the die plates (4) fall, and fasten the inner 6-angle screw (9) again.

4.2. Position adjustment.

Moving ahead - back can adjust the punching move hand wheel, moving right-left can loose the inner 6-angle screw. So move the punching mould right or left to your requirement, and fasten it after adjustment.

**5.Reel material adjustment**

Discharge the conical plate (pic.2), put the PL or AL/PL reel into material-carrying mandril, and fasten the reel with plate. If the position doesn't fit well, loose the plate again and adjust, then fasten the plate.

We can adjust the reel to an ideal position by adjust the screw slightly, that is, the two sides of plastic blister are the same. The method: loose the fixed screw and fasten it after adjustment.

**6. Operation of general speed-adjustment feeding device**

6.1.This al/pl packing machine adopts general feeding device (pic.1 –5), after putting the medicine in the device, view the forming, heat-sealing, punching, and make sure everything runs well, then open the gate, the medicine will flow to the feeding device from the gate. The rotative velocity of disk-brush and roll-brush (of feeding machine) and the sizes of the gate when opening depend on the shape and size of the medicine, and the real situation. In a word, the best is to reach the satisfied result.

6.2.Agitating-brush adjustment

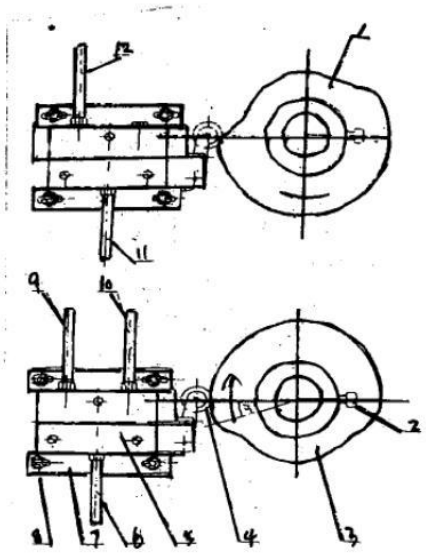
The height of agitating brush can be adjusted by the size of the medicine. Generally, the hair of the brush reaches the surface of plastic plate, according to real situation.

6.3.The roll-brush needs washing (also the dish-brush), after medicine changing and long-time using. The feeding device is easy install and separate: loose inner 6-angle screw of bearing holder, then put out the bearing holder, brush from the under; install it in the same way after washing.

**7.Air pressure**

When the air piper enters into the duplicate pressure- reducing valve, the air pressure should be controlled at 0.5-0.7mpa. The oil mist device needs adding enough oil (20# machine oil), single pressure reducing valve control forming, the air pressure should be about 0.5mpa.we should let the water our from the pressure reducing valve every time when start the machine, avoiding any vapor coming into the blister.

**8.Traction operation cam adjustment (pic.10)**



1. Plastic Location Cam
2. Fixing Screw
3. Traction Holding Cam
4. Rooler 5. Valve
6. Air-in Pipe
7. Valve Baseboard
8. Fixing Screw of baseboard
9. Pipe 10.pipe
11. Air-in pipe
12. Pipe

**PIC.10: MATCH GAS CAM**

In the process of traction operation, the set cylinder looses while the traction holding pneumatic cylinder controls the plastic piece, and the traction starts working.(Move the plastic to punching direction), when the traction stops, set pneumatic cylinder starts working. Traction holding loose, and turn back, then it repeats.

Traction holding pneumatic cylinder holds the plastic piece to punching direction till stops (pic.11), that is, when the traction cam (5) is just on the top, the plastic set cam (1) will be on the top (pic.10). The traction holding cam begins downgrading at the about angle 15° (pic.10): when plastic piece stops, the two make-up gas will be at the position as (pic.10). If the angle is not right, loose fixing screw (pic.2) to adjust, then fasten it again.

## 9.Journey adjustment

9.1.The adjustment of mechanical hand holding feed journey: there are two kinds of adjustment: rough and slight. Rough adjustment: open the gate at back, loose fixing screw (pic.11—10), adjust journey-adjust handle (5) clockwise to shorten the journey, on the other hand, the journey prolongs if counterclockwise. Adjust the journey by slight-adjustment screw, then fix screw. If adjust register device, method as following: loose screw to adjust roughly, till the journey is longer than the repeating motor journey. 0.1 –0.2mm is the best. If it is overrun, adjust by cylinder redeeming till it is within the allowed-error range.

## Ⅷ Common Problems And Solutions

| | Problems | Causes | Solutions |
|---|---|---|---|
| Problem Of Forming Process On The Plastic Blister Cover | 1. Perforation At The Blister Cover Bottom | 1. The Forming Temperature Is Too High<br>2. The Quality Of PVC Is Not Good. | 1. Lower The Temperature<br>2. Change PVC Plastic Sheet |
| | 2. Non-Intergrated Forming | 1. The Forming Temperature Is Too Low<br>2. Upper And Lower Dies Are Not Parallel<br>3. O-Shaped Seal Ring Is Worn Off<br>4. Blast Hole And Air Outlet Hole Are Jammed<br>5. Air Pressure Is Not Correct<br>6. Blast Time Is Not Correct | 1. Raise Temperature<br>2. Connect The Upper And Lower Dies Tightly With Good Seal By Adjusting The Ball-Shape Head Nut<br>3. Exchange The O-Shape Seal Ring<br>4. Clean The Air Outlet Hole By Steel Needle<br>5. Adjust The Pressure At 0.3-0.5mpa<br>6. Adjust The Position Of Blast Cam (When The Forming Die Closed, Release The Air) |
| Problem Of Forming Process On The Aluminum Foil Blister | 1. The Blister Is Not Deep Enough Or The Depths Are Not The Same | 1. The Depths Have Not Been Adjusted Well | 1. Loose Adjustable Nuts (Pic.5-11、12), Then Adjust It Downwards And Measure The Depth Of The Forming Blister With Vernier Caliper (Deeper Than The Depth Of The Medicine At 0.3—0.5mm Is The Best). If The Depths Are Different, Adjust The Distance From The Upper-Soleplate (6) To The Forming Lower-Mould, Adjust The Nuts (11)(12) Till The Four Angles Parallel (The Errors Should No Longer Than 0.1mm). |

| | Problems | Causes | Solutions |
|---|---|---|---|
| Problem Of Forming Process On The Aluminum Foil Blister | 2. The Eyes Of The Blister Breaks After Forming | 1. The Blister Is Too Deep<br>2. The Prolongation Rate Is Not Enough | 1. Reduce The Forming Depth<br>2. Collect Again |
| | 3. The Surface Cockles After Forming | 1. The Blister Is Too Deep<br>2. The Pressure Between Two Moulds Is Not Enough. | 1. Reduce The Forming<br>2. Adjust The Nuts (1)(2) Of Forming Station To Add The Pressure Between Moulds |
| The PI-Blister Can Not Fall To The Heat-Sealing Correctly | 1. Too Ahead Or Log | 1. The Journey Has Been Adjusted Well<br>2. The Problem Of The Distance From Forming To Heat-Sealing | 1. Measure The Journey Of Every Plate And Adjust It Well If Any Problem<br>2. Adjust The Distance From Forming Mould To Heat-Sealing Mould By Rotating The Forming Move Handle. |
| | 2. Displacement Of Sidelong Or Unilateral Loose/Tighten | 1. The Problem Of Track Adjustment<br>2. The Wrong Way Of Cooling The Forming And Heat-Sealing Mould So PVC Distorts Because Of The Rising Temperature<br>3. The Two Sides Of PVC Flex Because Of Bad Quality. | 1. Adjust The Journey Again<br>2. Increase The Runoff Of Cooling Water<br>3. Change The PVC (Plastic Piece) |

| | Problems | Causes | Solutions |
|---|---|---|---|
| The Problem Of Heat-Sealing | 1. Not Stick Firm | 1. The Glue On The Surface Has Not Reached the Melting Point Because Of The Low Temperature<br>2. The Quality Of The Al-Foil Is Not Good Or Besmear Un-equably | 1. Rise The Temperature At About 160° (It Changes To The Temperature Of Machine And Air)<br>2. Change Aluminum Foil, Then Try Again |
| | 2. The Moire Is Not Symmetrical | 1. Rust And Pollution On Moire<br>2. Lower Temperature Of Heat-Sealing<br>3. Moire doesn't Fit Lower-Plate Well<br>4. The Thickness Between Blisters Becomes Thin When Forming Because Of The Low Temperature.<br>5. The Pressure Is Not Enough<br>6. Unparalleled Up-Down Moulds<br>7. The Height Of The Heat-Sealing Mast Rising Is Not High Enough, The Moire Plate Must Move Upwards About 3mm. | 1. Clean It With Wired Brush Or Abrade It With Saw Blade<br>2. Rise The Heat-Sealing Temperature<br>3. Polish The Lower-Plane With Hone (When There Are Red Lead Or Stamp-Pad Ink On The Lower-Plane, The Moire Plates Tally And Move So Abrade The Contact-Point)<br>4. Rise Forming Temperature<br>5. Rise Heat-Sealing Pneumatic Cylinder Pressure (0.5mpa The Highest)<br>6. Adjust Flat Roof<br>7. Loose The Four Round-Head Screws, Then Adjust Them Upwards Within 5mm, Four Angles Should Be Parallel |
| | 3. The PL-Foil Is Pressed Too Much | 1. Too High Temperature Of Heat-Sealing<br>2. Too Much Pressure Of Heat-Sealing | 1. Reduce The Temperature<br>2. Reduce The Pressure |

| | Problems | Causes | Solutions |
|---|---|---|---|
| Aluminum Foil Cockles | 1.Cockles Naturally | 1. It Has Not Been Parallel When The Al-Foil And Plastic Piece Conglutinates | 1. Break Aluminum Foil, Conglutinate Again |
| | 2. Tilted Wrink | 1. Aluminum Foil Looses One Side<br>2. Aluminum Foil Is Pressed Unparallel<br>3. The Forming Mould And Heat-Sealing Are Not Installed Parallel | 1. Adjust The Screw And Change The Parallel Rate.<br>2.Parallel The Plane Of Pressing-Stick And Track, With Rolled-Flower Adjusting Handle<br>3. Correct The Parallel Rate Of Two Moulds And Heat-Sealing, Generally, We Take The Forming Mould As The Norm |

## Ⅸ Electrical parts detailed list

| Type | Style | Quantity | Remark |
|---|---|---|---|
| Touch Screen | PWS1711-STN | 1 | 24V |
| Programmed Controller | ES3200T2 | 1 | |
| Temperature controller | TDA4848V1 | 3 | 220V |
| Frequency converter | WFD-A | 1 | 1.5KW |
| Air Switch | DZ47 | 4 | 10A/P-3，3A/P-1 |
| Solid Relay | SSR | 3 | 40A-3 |
| Buzzer | DMQ-27 | 1 | DC6V-15V |
| Contactor | CIXI-12/22 | 1 | 50HZ，220V |
| Proximity Switch | JZ-D4NK-M | 3 | DC9V-30V |
| Switch Power | S-40-24 | 1 | 40W |
| Direct Current Machine | 90YY40 | 3 | 90W |
| Electric thermocouple | WRNX-21 | 3 | 2.5M |
| Electromagnetic valve | 4V210-0608 | 1 | 120V |
| Transformer | BK-350 | 1 | 120V |
| Photoelectric Magnifier | E3X-NALL | 8 | 24V |
| Optical Fiber Head | TC-200 | 16 | |
| Main Motor | Y2-90S-4 | 1 | 1.1KW |
| Feeding Motor | 60ZYT02 | 1 | 60W |
| Feeding Governor | 4A | 1 | |
| Electric heat board | | 3 | |

## X Check List

| No. | Name and Type | Quantity | Note |
|---|---|---|---|
| 1 | DPP-140F Automatic Blister Packing Machine | 1 | |
| 2 | Hand operating crank | 1 | |
| 3 | Steel letters | 150 | |
| 4 | Copper and steel wire brush | 1 | |
| 5 | Roller wheel | 2 | |
| 6 | Rolling needle: 5 x 30 | 50 | |
| 7 | Sharp nose pliers | 1 | |
| 8 | Slotted head and cruciform slot screwdriver | 1 | |
| 9 | Inner hexagon spanner | 1 | |
| 10 | Adjustable bending bar | 1 | |
| 11 | Pressure oil can | 1 | |
| 12 | Forming seal packing ring | 3 | |
| | Technical Documents | | |
| 1 | DPP-140F specification sheets | 1 | |
| 2 | Production quality eligible certification | 1 | |
| 3 | Frequency control specification sheets | 1 | |
| 4 | Specification sheets of controlling temperature | 1 | |

**Note: With the development of the production, some technical details have a slight difference with the manual.**