

Super Primex

**SPC-814E Series Pneumatic Pad Printer
with Sealed Ink Cup**

Operation Instructions

Ever Bright Printing Machine Ft.Ltd.

Contents

I . General Description.....	1
II . Model Indication and Technical Data.....	1
III. Working Principle.....	1
IV. Worktable.....	3
V. Control Panel.....	3
VI. Pneumatic Transmission System.....	5
VII. Operation Procedure.....	6
VIII. Common Defect and Analysis on Image Printed.....	9
IX. Precautions.....	10
X. Trouble Shooting and Maintenance.....	11
XI. Electric Wiring Diagram.....	12

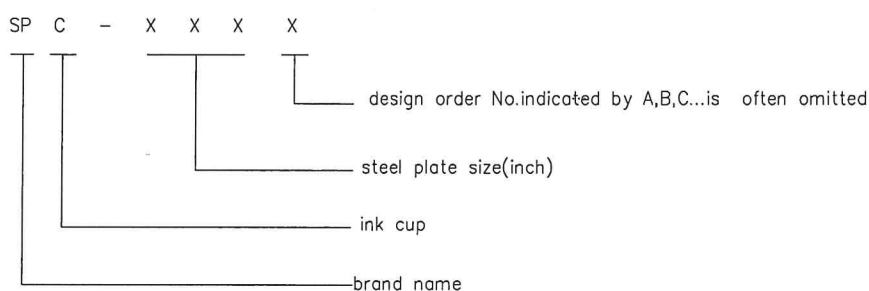
I. General Description

Pad printers with sealed ink cup are product series elaborately made by Ever Bright based on years of production experience and the development trend of pad printers.

On this pad printer series, sealed ink cup is used to contain ink instead of the traditional open ink tray, and ceramic ring is fixed on ink cup to replace the old doctor blade. Therefore, pad printers with sealed ink cup can effectively avoid ink evaporation and color leakage, which not only does good to waste reduction but also to environment protection. This manual is especially compiled to help users master the operating method correctly.

II. Model Tag and Technical Data

1. Model Indication



2. Technical Data

Model	Steel plate size mm	Ink cup size mm	Max. printing speed pcs/hr	Air Consumption L/min (6 bar)	Wattage 60/50Hz V	Dimensions L×W×H mm	Wt kg
SPC-814E	100×230	φ 90	1800	50	110/220 50W	580 × 360 × 1270	68
SPC-814TE	100×230	φ 90	1800	50	110/220 50W	580 × 526 × 1270	71
SPC-824SE	100×230	φ 90	1300	53	110/220 50W	580 × 526 × 1270	73

III. Working Principle

The working principle of pad printing is the method of transfer printing. And it can be divided into 4 motions:

- 1.ink applying: to apply ink to steel plate as shown in Figure 1;
- 2.ink scraping: to scrape redundant ink from the surface of steel plate as shown in Figure 1;
- 3.inking: to transfer ink on steel plate image to pad as in Figure 2;

4. pad printing: to transfer ink (image) on pad to substrate as in Figure 3.
 For pad printers with ink cup, the motions of ink applying and scraping are done simultaneously.

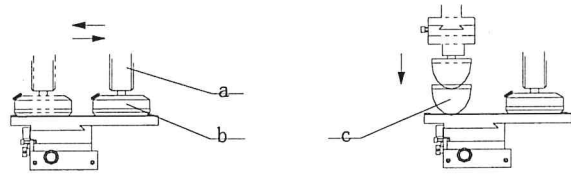


Figure 1

Figure 2

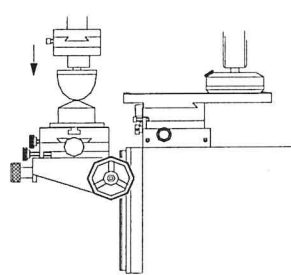


Figure 3

Figure 1: Ink cup “b” finishes the motions of ink applying & scraping led by ink cup fixing plate “a”;
 Figure 2: Pad “c” moves down and finishes the motion of inking thrust by pad cylinder;
 Figure 3: After inking, pad is thrust first horizontally over substrate by horizontal cylinder, then vertically onto the right surface of substrate by pad cylinder. Thus ink on pad (image) is transferred onto the surface of substrate.

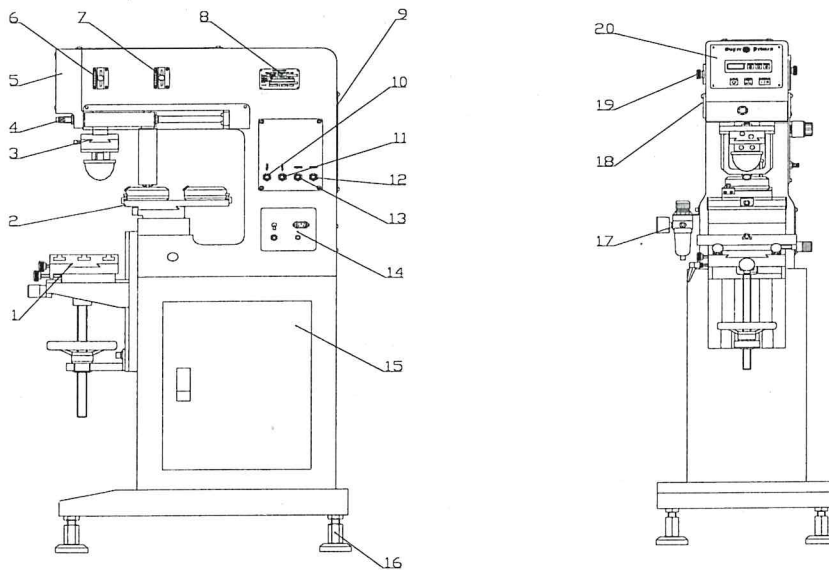


Figure 4

1. worktable assembly
2. ink cup assembly
3. pad assembly
4. hydraulic cushion
5. machine head
6. pad printing stroke adjusting knob
7. pad inking stroke adjusting knob
8. name brand
9. back lid
10. pad cylinder downward control valve
11. pad cylinder upward control valve
12. horizontal cylinder backward control valve
13. horizontal cylinder forward control valve
14. power socket
15. base
16. machine foot
17. air regulator assembly
18. safety guard
19. fine adjustment knob for scraper scraping stroke
20. control panel

IV. Worktable

There are two types of worktable for SPC-814E series to meet different printing requirements.

(-) **Single color(SPC-814E)**.(see figure 5). This is the basic type and the shuttle worktable developed from it. The single color worktable is as figure 3:

1. hand wheel: to adjust worktable up-down position.
2. knob: worktable fine turn adjustment
3. knob: knob: worktable left-right position
4. knob: to adjust worktable front-back position
5. knob: to adjust worktable left-right position
6. knob: worktable up-down move lock
7. knob: worktable forth-back move lock

(-) **2-Color left-right shuttle type(SPC-824SE)**.(see figure 6). The 2-color left-right shuttle is component of 1-color worktable plus shuttle table.

1. shuttle table

V. Control Panel

The control panels for pad printer include 2 types: 1-color and 2-color with shuttle.

(1).1-color such as SPC-814E(see figure 7)

SLIDE: to move pad holder forward/backward. Push it, you can make pad stop at front or back. SLIDE+PAD→ auto running. Generally SLIDE should be pushed after start to stir the ink.

PAD: to lower down the pad. When SLIDE stops at front or back, push this button, the pad will try printing.

STOP/START: to be used for auto control . If you push this button when the machine is down, you will start auto operation; under SLIDE, the machine will change to run automatically and under auto running, the printing will stop.

The function of pedal switch is the same as that of STOP/START

FAST/LOW: speed (time delay) adjustment

1. mode selection

Push "DUAL" to illuminate first when the electricity is switched

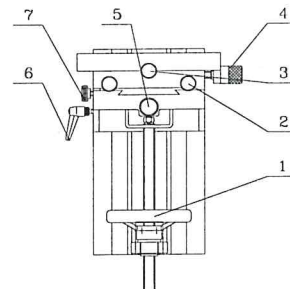


Figure 5

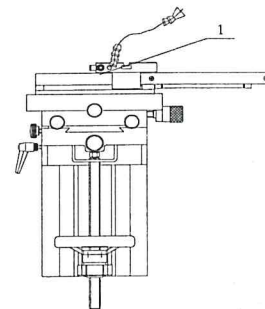


Figure 6

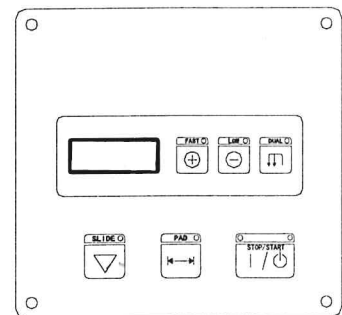


Figure 7

on, then push "+" "-" to select the needed program mode, (Display PF## when adjusting), then push "DUAL" to extinguish, the PF## is changed to PP## at the moment, the selected mode is stored.

1-color pad printer has four modes:

- PP 01 1-color PP02 1-color, inking twice
- PP 03 1-color, 1-cycle PP 04 1-color, inking twice, 1-cycle

2. Speed can be adjusted when the machine is down or running automatically. It is divided into 9 grades, from 1-9. "9" means the fastest and time delay for it is "0". "1" means the slowest. Push FAST or LOW, counting will become speed on the display with the symbol as DL-X(X=1,...9). Speed display will disappear in 5 seconds and become counting. Each time the adjustment valve will be permanently stored in the memory. No need to adjust for each start.

3. When the machine is running under SLIDE, the fixed time delay is 2 seconds.

(2).2-color with shuttle such as SPC-824SE(see figure 8)

1.Mode Selection

Turn on power and push "PRG" to make the light on, then push "+" and "-" to select the mode required(displayed as PF## when adjusting).Push "PRG" again, the display changes from PF## to PP## and the mode selected will be stored permanently.

PP 01 1-color; PP 02 1-color inking twice(The shuttle does not move)

PP 03 2-color; PP 04 2-color inking twice(The shuttle moves left/right) PP 05 roll printing

2.Operation

(1)Push "SLIDE", the blade will move forward/backward.

(2)When the machine is down, push "PAD", the pad will lower down to try printing.

(3)When the machine is down, push "TABLE", the shuttle will move forward; push it again, the shuttle will move backward.

(4)PP 03/04 modes are for 2-color printing : push "SLIDE", then "PAD" and "TABLE"(to make the shuttle work) in order, the machine will run automatically. PP 01/02 modes are for 1-color printing : push "SLIDE" and then "PAD", the machine will run automatically. To stop the machine, you need to push "SLIDE" and make the light off. If you only push "PAD" to extinguish, the pad will stop lowering down immediately but "SLIDE" will work on.

(5)The operator can start or stop the machine with pedal switch at any time.

(6)Speed adjustment: The time delay is adjusted through "+" (FAST) and "-"(LOW) during auto running.

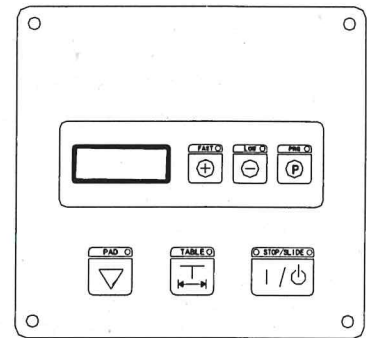


Figure 8

(三) Power Panel (figure 9)

- 1. power switch
- 2. power socket
- 3. fuse(1A)
- 4. pedal switch socket

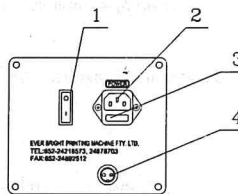


Figure 9

VI. Pneumatic Transmission System

(-) Assembly Valve

The input pressed air assembly valve is installed on the left side of machine. As in figure 10.

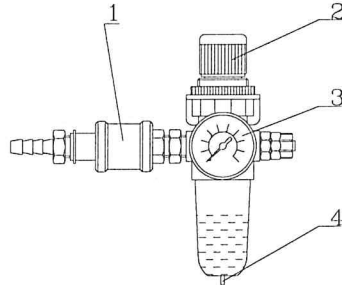


Figure 10

No.	Name	Function
1	Manual valve	Push it towards the gauge, air will enter machine. Pull it towards opposite direction, air will shut off meanwhile machine will discharge air.
2	Pressure adjusting knob	Pick it up and turn it clockwise, pressure will increase. Turn it anticlockwise, pressure will decrease.
3	Pressure gauge	To indicate the pressure of air to machine.
4	Jacking pin for water discharge	Jack it up with air on, the water inside will discharge.

(-) Pneumatic transmission diagram:

The pneumatic transmission system consists of air filter, pressure relief valve, solenoid, regulator and cylinder. There are 2 kinds of pneumatic transmission methods.

1. 1-color SPC-814E (see figure 11)

The compression air is divided into 2 branches after going through manual valve, air filter, pressure relief valve: one branch enters pad cylinder after going pad solenoid: the other enters horizontal cylinder after going through horizontal solenoid.

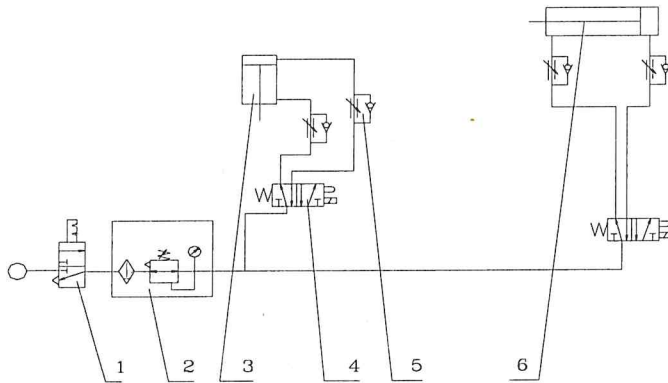


Figure 11

1. manual valve
2. assembly valve
3. pad cylinder
4. 5/2 solenoid
5. 1-way regulator
6. horizontal cylinder

The compressed air is divided into 3 branches after going through manual valve, air filter and pressure relief valve. One branch enters pad cylinder through pad solenoid. One branch enters shuttle cylinder through worktable solenoid. One branch enters horizontal cylinder through horizontal solenoid;

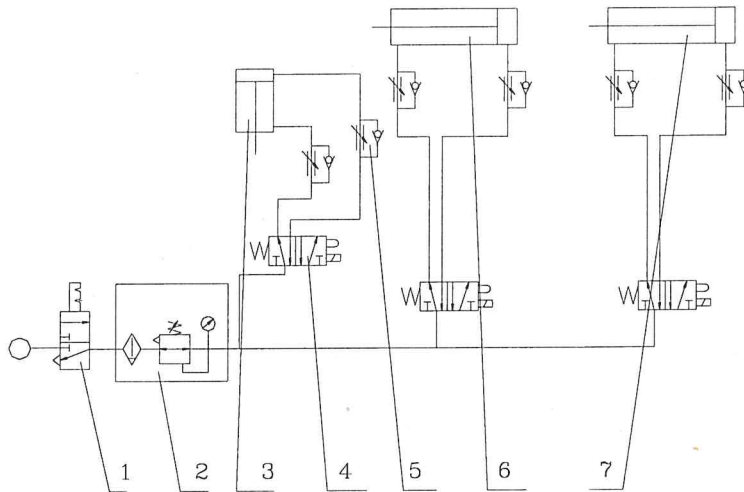


Figure 12

1. manual valve
2. assembly valve
3. pad cylinder
4. 5/2 solenoid
5. 1-way regulator
6. shuttle cylinder
7. horizontal cylinder

VII. Operation Procedure

1. Inlet compression air and adjust the pressure to make the gauge indicator read about 5 bar.
2. Turn on power and make the switch be at "ON"

Remember: Before inletting air, do not let any part of your body be at the space where the movable components of machine can go by as they will return to their original positions once air is on.

3. Select suitable pad and install it in accordance with figure.



4. Adjust the worktable, see figure 5, loosen(6), adjust(1) to adjust the up and down position of worktable, loosen (7), adjust(4) to adjust the front/rear position of worktable, then loosen(3), adjust(5) to adjust the left/right position of worktable, then adjust(2) to adjust the angle of worktable, after adjust well, lock all the locking screw, install the fixture and workpiece.
5. Inject the suitable ink to the ink cup.
6. Push "PAD" on operation panel, if pads lowering height can't meet requirements, adjust knob 6 and knob 7 in figure 4 to meet the requirements.
7. Push the speed select keys on control panel to make the running speed of machine suitable for operation.
8. Push "STOP/START" to stop machine. If machine is down for long, power should be turned off and manual air valve be shut off.
9. The ink cup assembly shows as figure 13:

- a. set screw for thin plate: Fix the thin plate on the plate base.
- b. Cup lid: To seal the diluent entrance.
- c. Fixing base for ink cup knob: fix the ink cup knob assembly.
- d. Ink cup: to contain and scrape ink.
- e. Thin steel plate: with image
- f. Plate base: to support the plate cushion
- g. Locating block: lengthwise locating for plate base.
- h. Ink cup knob assembly: to take ink cup to move front/rear and apply perpendicular force to ink cup.
- i. Fixing screw for the base fixer: to fix plate base fixer.

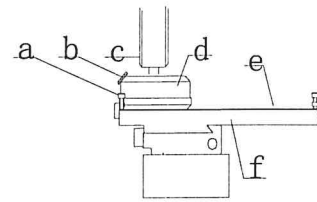


Figure 13

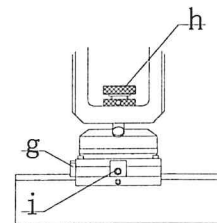


Figure 13

(A).Ink Cup Removal

1. First Step (figure 14)

Loosen fixing screw for the base fixer (i), and dismantle ink cup knob assembly(f), then move plate with the base together forward and take them out.

2. Second Step (see figure 15)

Hold ink cup (c) in one hand and turndown the part which has been taken out to make ink cup upside down and steel plate shim face up. Then gently slide ink cup away from the surface of thin steel plate slowly, extra attention should be applied in this procedure to avoid any damage to the edge of porcelain ring of ink cup. Refer to Figure 11.

(B) Thin Steel Plate (image)Replacement

Unscrew(j) and remove the old steel plate with image (b). Then place new steel plate with image on steel plate underlay (a) horizontally, and use (j) to fix it onto (a). See Figure 12 for reference.

(C) Ink Cup Installation.

Turn over the steel plate underlay after replacing the thin steel plate (image) to make thin steel plate face down and steel plate underlay up. Then hold ink cup by one hand and steel plate by the other, and let ink cup engage with steel plate gently. See Figure 17 While doing this, exercise extra caution to avoid damage to the edge of porcelain ring of

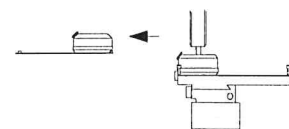


Figure 14



Figure 15

ink cup. After this turn over the steel plate again to make ink cup face up as shown in Figure 16 Then put this part onto steel plate base (k) and screw it tight as shown in Figure 19

(D) Diluent filling

Remove the ink cup lid (“d” in Figure 13)Put a little hopper in the filling hole and fill proper amount of diluent into the cup as in figure 20.

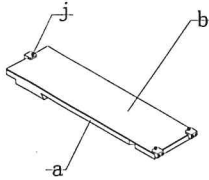


Figure 16

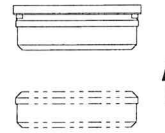


Figure 17

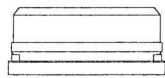


Figure 18

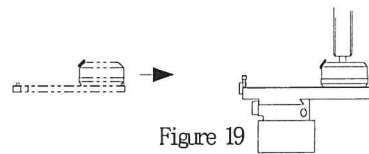


Figure 19

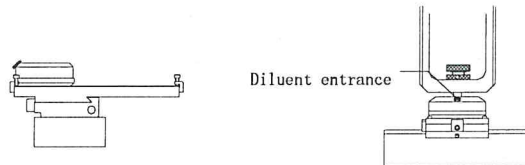


Figure 20

(E) The Adjustment of the 2-color Steel Plate Base.

- ①Locking screw: to lock the front-rear movement of the steel plate base.
- ②Locking screw: fine adjustment of the steel plate base rotation.
- ③Knob: left-right adjustment for the right steel plate base.
- ④Knob: front-rear adjustment for the steel plate base.
- ⑤Knob: left-right adjustment for the left steel base.

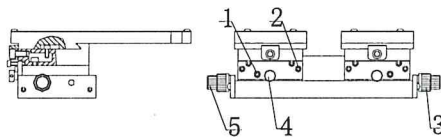


Figure 21

VIII. Common Defect and Analysis on Image Printed

1. Air Pocket

- A. pad surface is damaged.
- B. The central point stands right on the image.
- C. Ink has gone bad.
- D. Diluent chosen is not correct.
- E. Ink cup ceramic ring is not sharp.
- F. Pad arc is insufficient.

2. Rough and Unclear Line of Image

- A. Pad surface is damaged.
- B. Ink is too thin.
- C. Steel plate pattern is damaged.
- D. Ink cup ceramic ring is not sharp or has undercuts.
- E. Image design is rough.
- F. Steel plate pattern is too deep.
- G. Ink is too dry.

3. Light Image Color

- A. Ink is too thin.
- B. Ink deposits.
- C. Filler is too much. (Normally it should be controlled roughly within 5%)
- D. Steel plate pattern is worn.
- E. Steel plate pattern depth is insufficient.

4. Superfluous Lines

- A. Steel plate pattern is worn.
- B. Ceramic ring has undercuts.
- C. Pad sliding piece is loose.
- D. Pad pressure is too high.

5. Deformation

- A. Pad height is insufficient.
- B. Pad shape is chosen incorrectly.
- C. Pattern is beyond printing range.
- D. Pad is too small and hard.
- E. Pad pressure is too high.

IX. Precautions

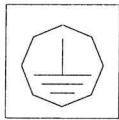
1. Extra caution should be taken while operate (e.g., removal, installation, cleaning) on the edge of porcelain ring of ink cup as it is fragile.
2. Attention on the selection of pad:
The hardness of pad can be divided into three types: soft, medium and hard. Hard pads should be used for fine images, and soft for rough substrates. In addition, the size and shape of pad should be similar to the size of image and the shape of substrate respectively.
3. The choice of ink:
Different inks should be used for different substrate materials (such as plastic, glass and metal).
4. While printing, proper amount of thinner should be added at proper time according to the density of ink so as to keep proper viscosity of ink. After thinner addition, let machine run without substrate for several times to make ink and thinner mix evenly. Cleaner should be used if there is dirt on pad.
5. Clamps should be premade according to the shape of substrates.
6. Steel plate and ink cup should be cleaned with cleaner after printing.

Customer Notice:

The follow item should be noticed to keep solenoid normal work and prolong its life:

- (1). Production environment should be clean to get pure air source.
- (2). Discharge dirty water in container.
- (3). Keep discharge hole at back of unit not being blocked. When machine does not work for a long time, it must be kept dry in order to prevent solenoid being blocked by dirty water.

Note: To keep operator safe and remove disturbing element to control panel, the machine must connect to ground. There is a grounding symbol for users:



X. Trouble Shooting and Maintenance

1. For common trouble shooting, see the following table:

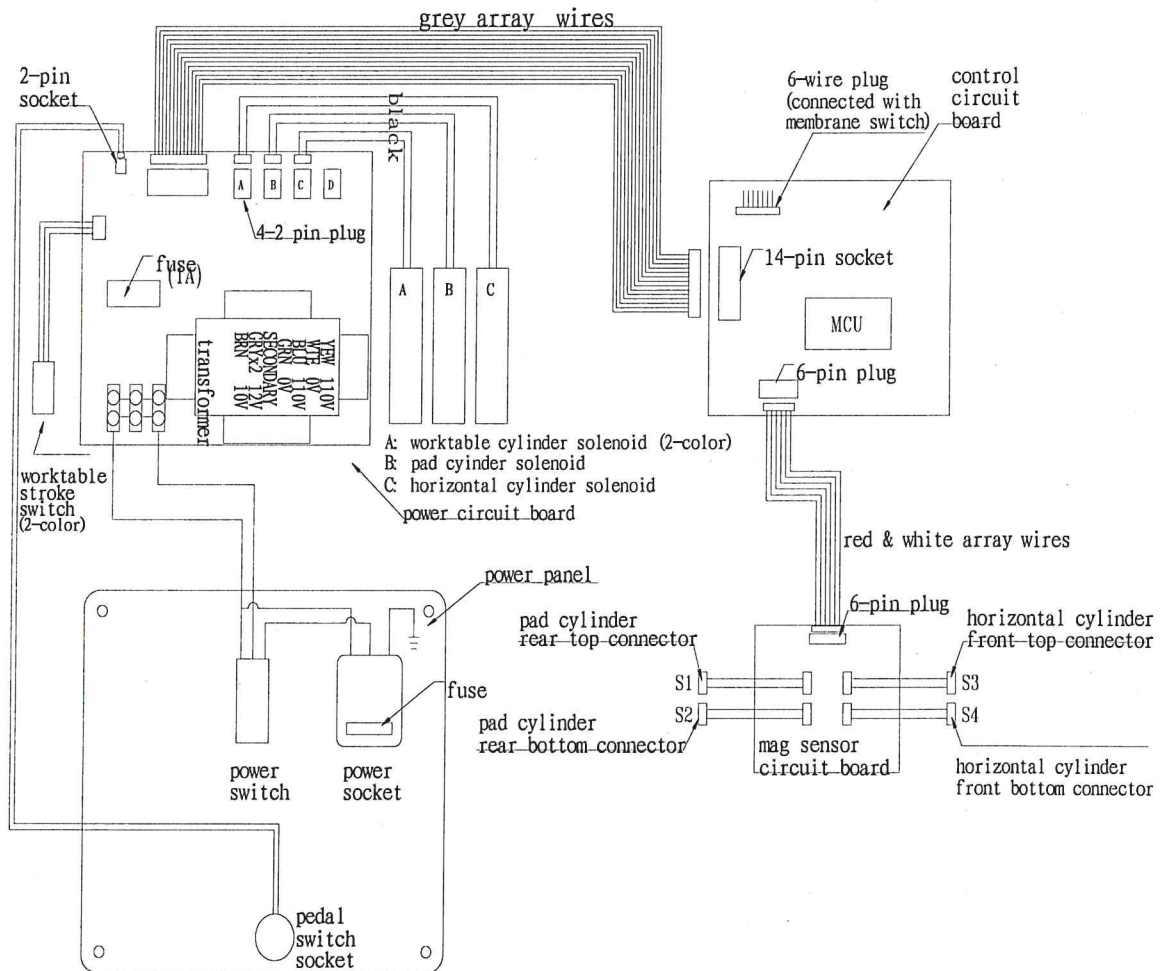
Failure	Description	Cause	Solution
Machine doesn't run.	The indicator on control panel is not on when power switch is turned on.	1. The power plug is not plugged into the power socket; 2. The input voltage is abnormal; 3. The fuse blows off.	1. Plug in; 2. Check the voltage; 3. Replace the fuse.
	The indicator on control panel is on when power switch is turned on.	1. The general air source isn't connected; 2. The pressure reading is too low; 3. The slide valve isn't on for air inlet; 4. The cylinder is plugged by foreign objects.	1. hook it up; 2. Adjust it higher; 3. Turn it on; 4. Clean it.
The running speed is abnormal.	The speed of cylinder motion is too fast.	1. The air pressure is too high; 2. The speed of piston is too fast.	1. Adjust it lower; 2. Adjust the flow control valve.
	The impact of cylinder motion is too big.	1. The cushion of cylinder adjusted is too low. 2. The hydraulic cushion is damaged.	1. Adjust it higher; 2. Replace it.
	The speed of cylinder motion is too slow.	1. The air pressure is too low; 2. The flow control valve is adjusted too low; 3. The air hose is twisted and plugged; 4. The air valve is rusted or plugged by foreign objects; 5. The silencer is plugged.	1. Adjust it higher; 2. Adjust it higher; 3. Rearrange the air hose properly; 4. Clean or replace it; 5. Clean it.
Failure of doctor blade system	Ink can not be scraped clean.	1. The thin steel plate distorts; 2. The edge of the ceramic ring is damaged.	1. Replace it; 2. Replace it.
Pad	The pad can not lift up after lowering down.	Something is wrong with the mag. sensor.	To checkout the connection or replace the mag. sensor.

2. Maintenance

- A .The machine body should be kept clean;
- B .The moving parts should be cleaned and lubricated every week;
- C .The accumulated water should be discharged frequently lest it should enter internal pneumatic system;
- D .Pad, steel plate and ink cup should be cleaned after printing.

XI. Electric Wiring Diagram

Attention: Electronic components are easily damaged due to unstable voltage. Therefore, manostat should be used at areas where voltage is not stable. And grounding should be applied for safety at the same time.



Solution to Ink Cup Leakage

Instruction: There are usually two reasons for ink cup leakage.

1. Ceramic ring is in good condition.

Ink cup leakage is usually caused by excessive distance between magnet and steel plate. The intension of same batch of magnet would have minor difference. Do fine adjustment of magnet and steel plate in the following way: Adjust the "Adjustment Screw" clockwise for 1/4 circle(or 1/2 circle according to requirement, but do not over one circle maximumly) as shown in Figure 1. There are six pieces of magnet and adjust the related one if ink can not be scraped clearly.

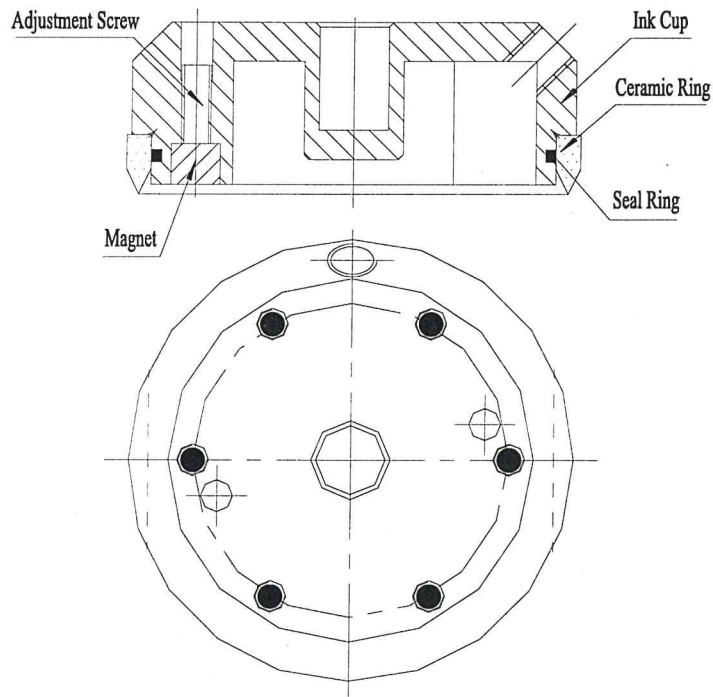


Figure 1

2. The ceramic ring must be replaced if damaged.

The way to replace: Clean the ink cup and put it into the quick-freezing chamber of fridge and take it out in one hour, then take off the old ceramic ring quickly and place the new one into ink cup. As shown in Figure 2.

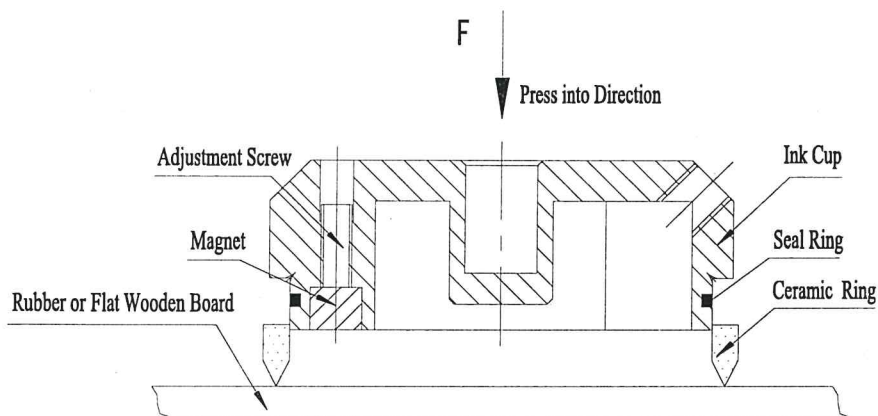


Figure 2