

**SPC-84 One-Colour
Pad Printer with Sealed Ink Cup**

Operation Instructions

Ever Bright Color Printing Machine Fty., Ltd.

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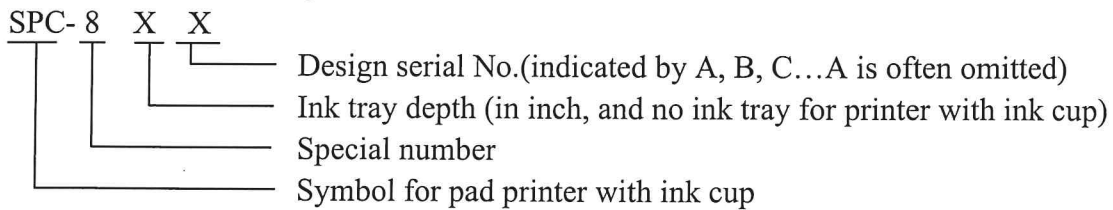
I .General Description

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 porcelain 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 odour 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 .Technical Specifications

1.Model Indication Way



2.Basic Parameter

Item	Parameter
Ink cup size	φ 90x φ 82mm
Max. substrate diameter	φ 80mm
Max. printing pressure	473N(6bar)
Max. printing speed	1300pcs/hr
Power supply	220/110V 50/60Hz 50W
Max. air consumption	80litre/min
Dimensions	470x450x600mm
Weight	40kg

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 over 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: 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.

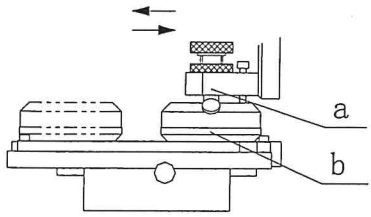


Figure 1

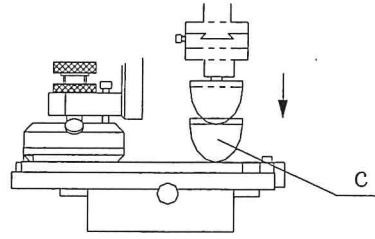


Figure 2

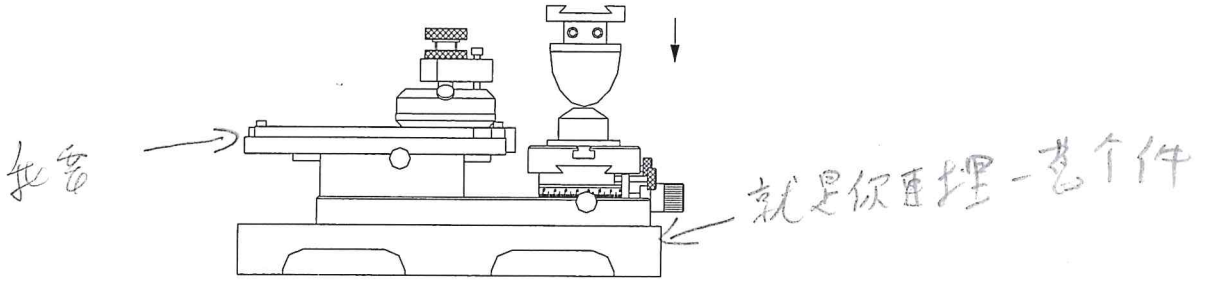


Figure 3

IV. Basic Components
See Figure 4.

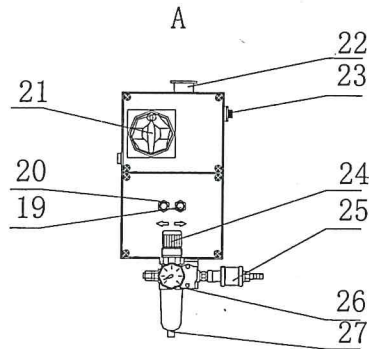
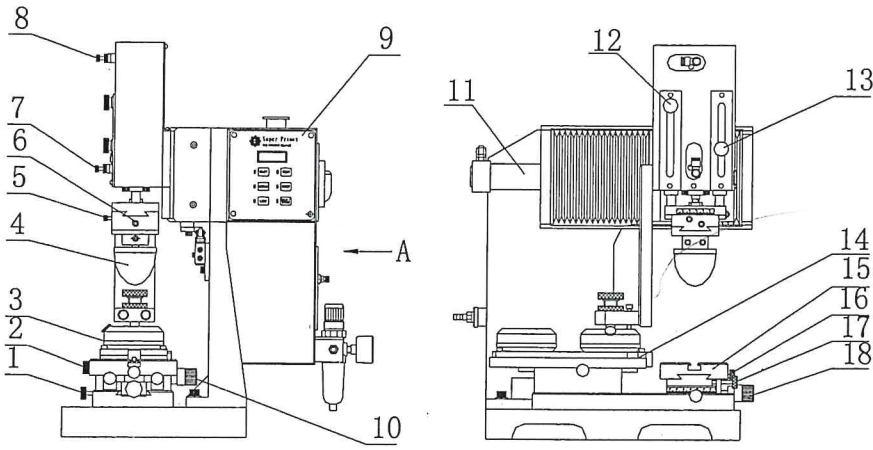


Figure 4

- 1.locking knob for worktable forward/backward movement
- 2.locking knob for steel plate base
- 3.ink cup assembly
- 4.pad
- 5.locking screw for pad base
- 6.locking screw for pad front/rear position
- 7.speed adjusting knob for pad down
- 8.speed adjusting knob for pad up
- 9.control panel
- 10.adjusting knob for worktable L/R movement
- 11.cylinder
- 12.mag. sensor base for inking stroke adjustment
- 13.mag. sensor base for printing stroke adjustment
- 14.steel plate base
- 15.worktable
- 16.adjusting knob for worktable L/R movement
- 17.adjusting knob for worktable rotation
- 18.adjusting knob for worktable forward/backward movement
- 19.speed adjustor for horizontal cylinder backward
- 20.speed adjustor for horizontal cylinder forward
- 21.power switch
- 22.emergency stop
- 23.fuse
- 24.pressure adjusting knob
- 25.slide valve
- 26.pressure gauge
- 27.jack pin for water discharge

V. Control Panel

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.

DUAL: to take ink twice. It must be pushed when the machine is down.

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.

1.Mode Selection

Turn on power and push “DUAL” to make the light on, then push “+” and “-” to select the mode required (displayed as PF## when adjusting).

Push “DUAL” again, the display changes from PF## to PP## and the mode selected will be stored. 2-color with shuttle has four modes:

PP 01 1-color; PP 02 1-color inking twice

PP 03 1-color 1-cycle; PP 04 1-color 1-cycle inking twice

FAST/LOW: speed (time delay) adjustment

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 SP-X (X=1, ...9). Speed display will disappear in 5 seconds and become counting again. Each time the adjustment value 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.

VI.Function and Adjustment of Each Main Component

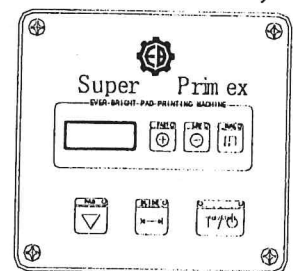


Figure 5

1. Ink Cup Assembly

See Figure 6.

a. steel plate underlay: to support thin steel plate;

b. thin steel plate: with image;

c. ink cup: to contain ink and scrape ink;

d. ink cup cover: to seal the entrance for thinner fitting;

e. positioning pin: to fix the crosswise position of steel plate underlay;

f. ink cup knob assembly: to lead ink cup to move forward/backward and apply force to it vertically;

g. fixing piece for steel plate underlay: to fix steel plate underlay;

h. locking screw for (g): to lock (g);

i. positioning piece: to fix the lengthwise position of steel plate underlay;

j. locking screw for (b): to fix (b) onto steel plate underlay;

k. steel plate base: to support steel plate underlay;

l. ink cup fixing plate: to fix ink cup knob assembly;

m. antirotation screw for ink cup: to prevent ink cup from rotation.

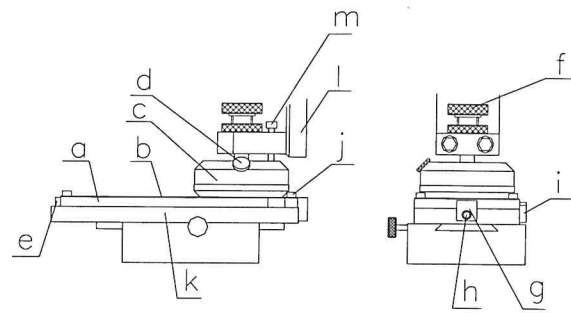


Figure 6

(1) Ink cup removal

A. Loosen (h) and unfix (f) & (m) to take ink cup out together with thin steel plate and steel plate underlay as shown in Figure 7;

B. Hold ink cup (c) in one hand and turn over the whole part to make ink cup face down and steel plate underlay up. Then apply force gently to make ink cup slide away from the surface of thin steel plate slowly. When doing this, special attention should be paid lest any damage should occur to the edge of porcelain ring of ink cup. Refer to Figure 8.

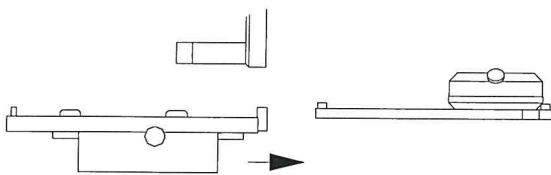


Figure 7



Figure 8

(2) Thin steel plate (image) replacement

Unfix (j) and remove the old steel plate with image (b). Then put new steel plate with image on steel plate underlay (a) flatly, and use (j) to fix it onto (a). See Figure 9 for reference.

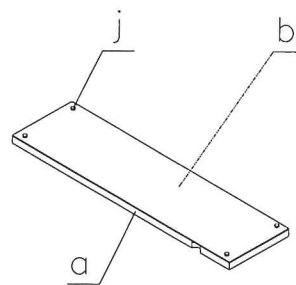


Figure 9

(3) Ink cup installation

Turn over the steel plate underlay after replacing the thin steel plate (image) to

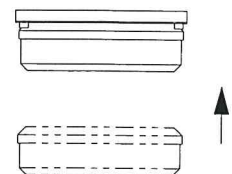


Figure 10

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 10. While doing this, caution should be



Figure 11

taken to avoid damage to the edge of porcelain ring of ink cup. After this turn over the steel plate again to make ink cup face up as shown in Figure 11. Then put this part onto steel plate base (k) and fix it as shown in Figure 12.

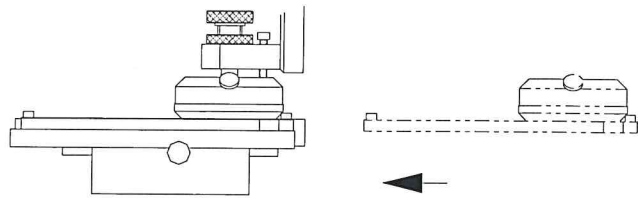


Figure 12

(4) Thinner fitting

Unfix ink cup cover (d) in Figure 6 and insert a little funnel into the entrance, then pour proper amount of thinner into ink cup through the funnel. See Figure 13.

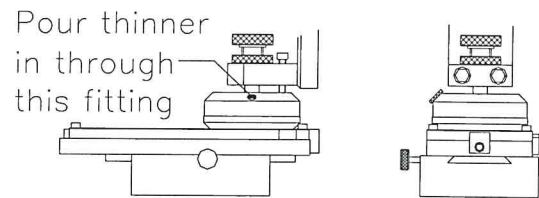


Figure 13

2. Worktable

See Figure 14.

a.knob: to adjust worktable forward/ backward movement;

b.knob: to finely adjust the angle of worktable;

c.knob: to lock the L/R movement of worktable;

d.knob: to lock the forward/backward movement of worktable;

e.knob: to adjust the L/R movement of worktable.

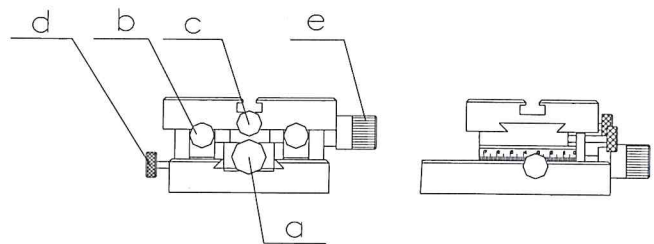


Figure 14

VII. Operating Method

1. Let compression air flow in and adjust its pressure by making the indicator of pressure gauge read about 5 bar.

2. Connect with power supply and set the switch on switch board at "ON".

Note: Never place any part of your body within the moving range of pad printer before compression air is applied. For once the compression air is applied, the parts of pad printer will go back to its normal position automatically.

3. Select proper pad and fix it according to Figure 15.

4. Push sweep button in Figure 5 to make ink cup move L/R. Turn ink cup knob assembly downward for adjustment if ink can not be scraped clean.

5. Push test button on control panel and turn stroke control knob (12)/(13) in Figure 4 to adjust the height of pad lowering down.

6. Press speed selection button "FAST" or "LOW" on control panel to adjust the running speed of machine so as to fit printing requirement.

7. Machine stops on pushing stop/start button. The switch on power board should be turned off on long-time shutdown.

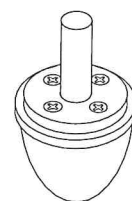


Figure 15

VIII. Precautions

1. Special caution should be taken while operation (e.g., removal, installation, cleaning) for the edge of porcelain ring of ink cup is fragile.

2. Pay attention to 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 plastics, 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.

IX.Service and Maintenance

1.Common failure and solution

See the following table.

Failure	Description	Cause	Solution
Machine doesn't run.	The indicator on control panel is not on when power switch is on.	1.The power plug is not inserted into the power socket; 2.The input voltage is abnormal; 3.The fuse is out of use.	1.Insert the plug; 2.Checkout the voltage; 3.Replace the fuse.
	The indicator on control panel is on when turning on the power switch.	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.Connect it; 2.Adjust it to high; 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 low; 2.Adjust the single direction 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 high; 2.Replace it.
	The speed of cylinder motion is too low.	1.The air pressure is too low; 2.The flow control valve is adjusted too low; 3.The air hose is folded and suffocated; 4.The air valve is rusted or plugged by foreign objects; 5.The silencer is plugged.	1.Adjust it high; 2.Adjust it high; 3.Rearrange the air hose properly; 4.Clean or replace it; 5.Clean it.
Failure of doctor blade system	Ink can't be scraped clean.	1.The thin steel plate distorts; 2.The edge of the porcelain ring is damaged.	1.Replace it; 2.Replace it.

Pad failure	The pad can't lift up after lowering down.	Something is wrong with the mag. sensor.	To checkout the connection or replace the mag. sensor.
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2.Maintenance

- a.The machine body should be kept clean;
- b.The moving part should be cleaned and lubricant be added every week;
- c.The water should be discharged often lest it should enter internal pneumatic system;
- d.Pad, steel plate and ink cup should be cleaned after printing.

X .Common Printing Defects and Analysis

1.Air pockets occur to the print

- a.The surface of the pad is smeary and sticky and rotten or damaged;
- b.The center point of the pad is right pressed on the image position;
- c.The ink is rotten;
- d.The thinner for ink is improperly chosen;
- e.The edge of porcelain ring of ink cup is not sharp;
- f.The arc of pad surface is not enough;
- g.The ink is too thin.

2.The image lines are rough and unclear

- a.The pad surface is damaged;
- b.The ink is too thin;
- c.The image on steel plate is damaged;
- d.The edge of porcelain ring of ink cup is not sharp or has undercuts;
- e.The original image is designed roughly;
- f.The image on steel plate is too deep;
- g.The ink is too dry.

3.The printing image looks faint

- a.The ink is too thin;
- b.The ink is deposited;
- c.The additive is added too much (normally it should be controlled round 5%);
- d.The image on steel plate is damaged;
- e.The image depth on steel plate is insufficient.

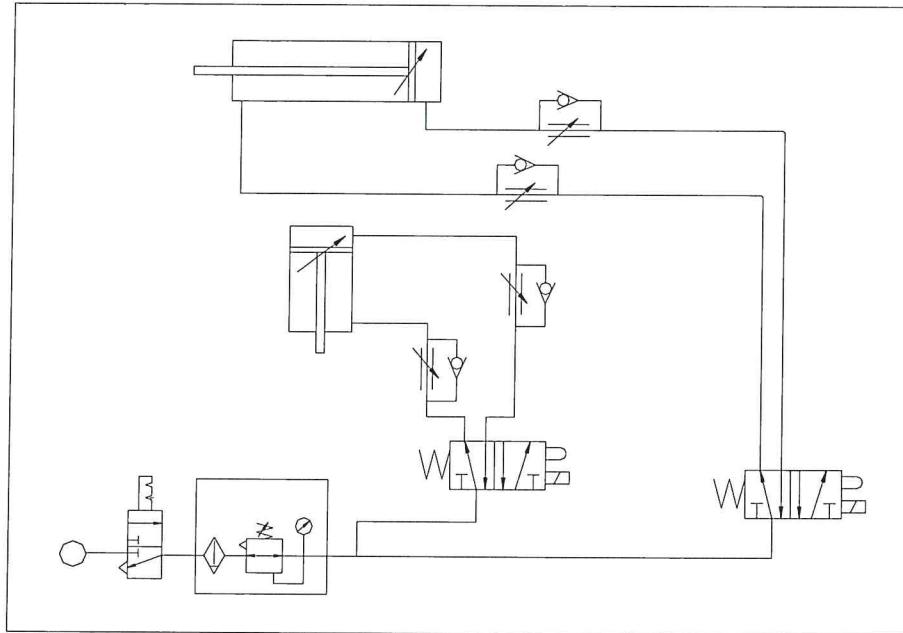
4.Redundant lines occur to the printing image

- a.The image on steel plate is damaged;
- b.The edge of porcelain ring of ink cup has undercuts;
- c.The slide for pad is loose;
- d.The pad pressure is too high.

5.Distortion occurs to the printing image

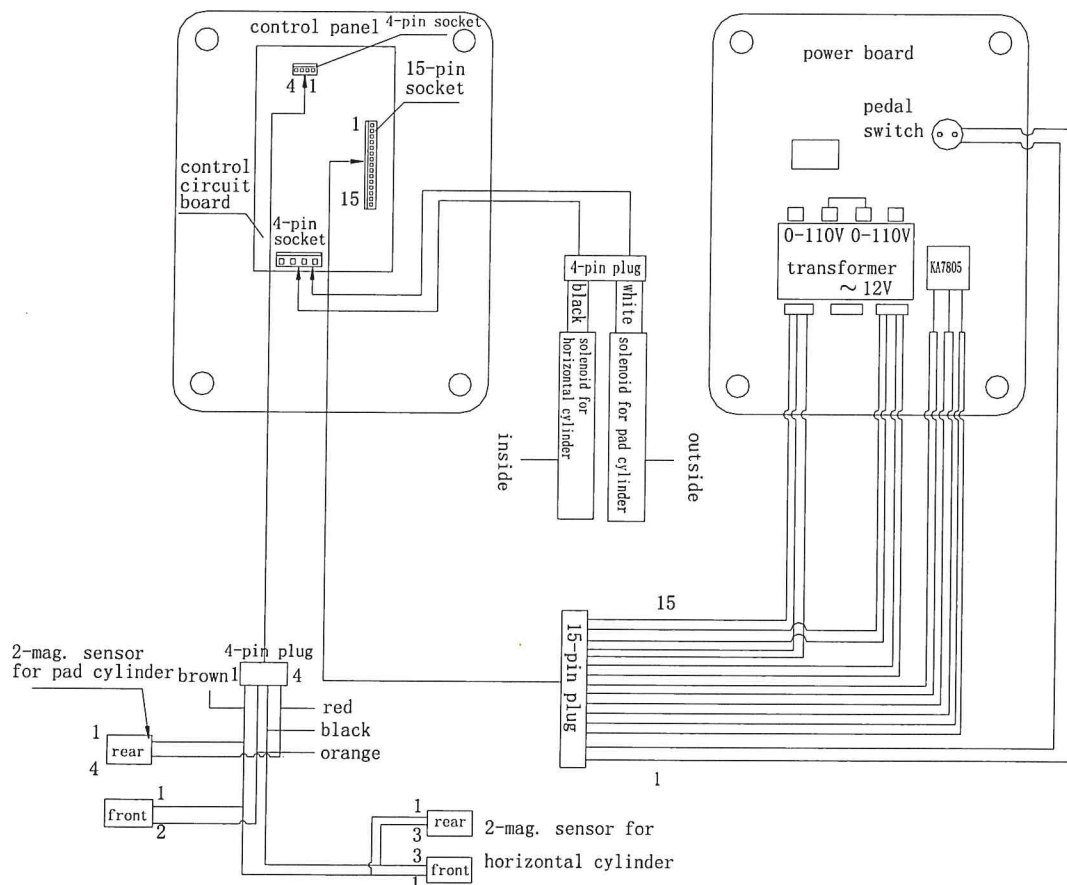
- a.The height of pad position is not enough;
- b.The pad shape is not correctly chosen;
- c.The image is beyond printing size;
- d.The pad is too small and hard;
- e.The pad pressure is too high.

XI. Pneumatic System Diagram



XII. Electric Wiring Diagram

Note: 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 used 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.

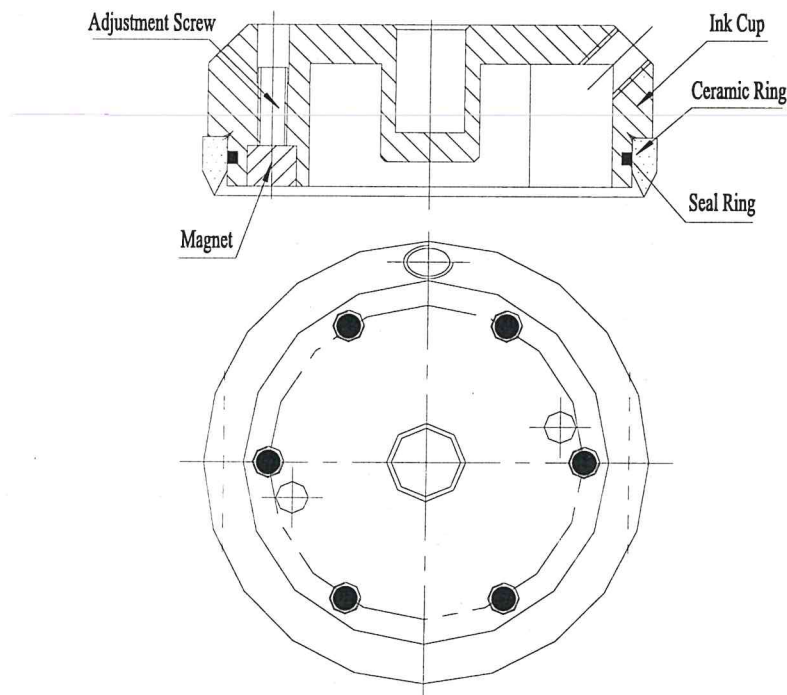


Figure 1

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.

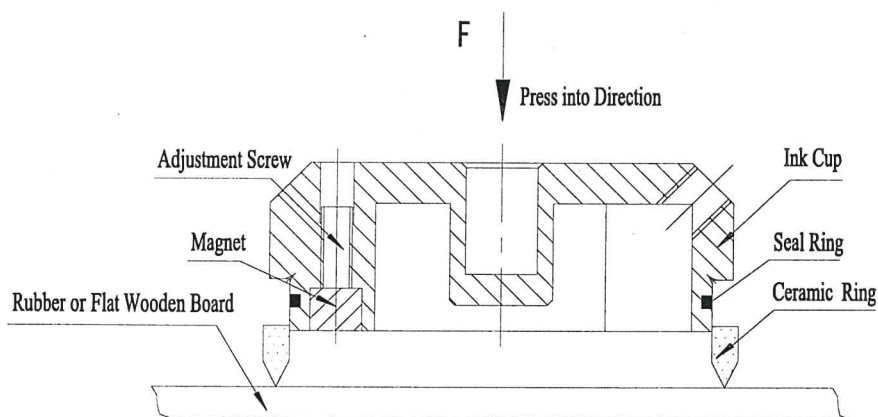


Figure 2