Super Primex

SPC-824SD

2-Color Pad Printer
with Sealed Ink Cup and Shuttle

Operation Instructions

Ever Bright Printing Machine Fty., Ltd.

Contents

Ⅰ. General Description

Pad printer series with sealed ink cup produced by Ever Bright Ltd. are based on years of production experience and pad printer development trend. The product use sealed ink cup to fill ink instead of traditional way to fill ink with open ink tray and the ceramic ring of ink cup takes place of traditional doctor blade. Therefore the pad printer with sealed ink cup efficiently prevents ink from evaporating and bad flavor from escaping. On one hand the waste is reduced and on the other hand it is good for environmental protection. We compile the instructions for you so that you can properly master the operation procedure of this machine.

Ⅱ. Model Indication and Technical Data

A. Model Indication

SPC - 8 × × × ×

- Design order (A, B,C...)
- Worktable type, S-shuttle
- Ink tray size (inch), no ink tray for machine with ink cup
- Color quantity
- Special No.
- SP-Super Primex, C-(ink) Cup

B. Technical Data

Ink cup size: φ90 mm
Max. printing diameter: φ82 mm
Max. printing pressure: 1155 N (6 bar)
Max. printing speed: 1200 pcs/hr
Wattage: 220/110V, 50/60Hz, 50W
Max. air consumption : 120 litre/min.
Dimensions: 618×861×1358 mm
Weight: 140 kg

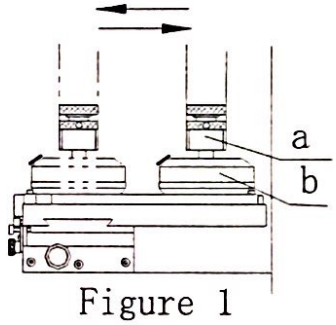


Figure 1

Ⅲ. Working Principle

It is pad printing method consisted of 4 steps:

1.Ink application: To apply ink on steel plate by ink cup. (Figure.1)

2.Ink scraping: To scrape the ink on steel plate away by ink cup. (Figure.1)

3.Ink taking: To take the ink of image by pad. (Figure.2)

4.Pad printing: To transfer the ink image on pad onto substrate (Figure.3). Ink application and ink scraping are done at the same time.

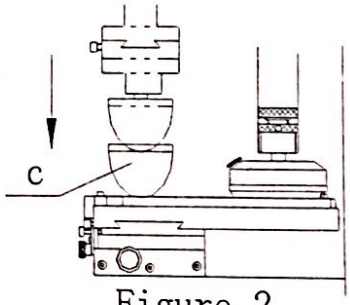


Figure 2

Explanation follows.

Figure.1: Ink cup fixing plate (a) takes ink cup (b) to apply and scrape ink.

Figure.2: Pad (c) is pushed by pad cylinder to move down and complete ink taking.

Figure.3: The pad with ink is first pushed by horizontal cylinder to be over substrate, then perpendicularly pushed by pad cylinder to the surface of substrate so that image ink on pad can be transferred onto it.

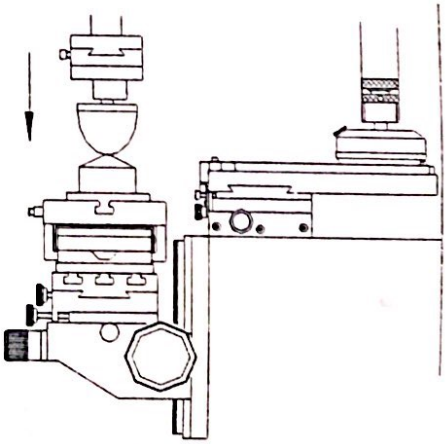


Figure 3

Ⅳ. Structure

See Figure 4.

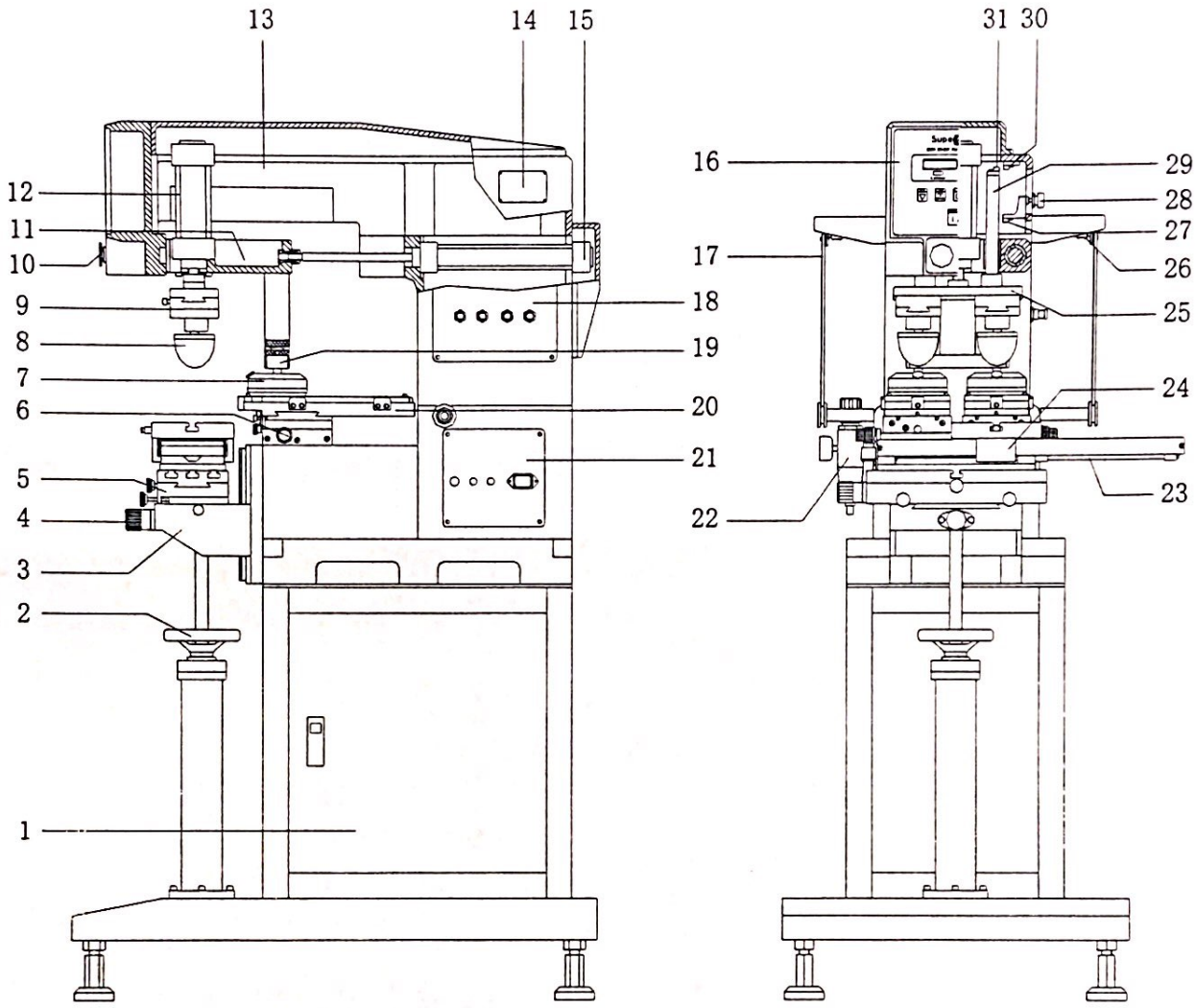


Figure 4

1. base assembly
2. handwheel
3. square base
4. worktable front/rear movement knob
5. worktable assembly
6. 2-color ink cup adjustment base
7. ink cup assembly
8. pad
9. pad adjustment base assembly
10. emergency stop
11. slide base
12. pad cylinder
13. machine head assembly
14. nameplate
15. horizontal cyliner
16. control panel
17. hood
18. flow control board
19. ink cup fixing plate
20. steel plate base
21. power panel
22. air valve assembly
23. shuttle cylinder
24. shuttle
25. pad adjustment base fixer
26. microswitch
27. lower inductive switch
28. adjusting knob for lower magnetic sensor
29. pad guide for up/down movement
30. upper inductive switch
31. mag. sensor

Ⅴ. Function and Adjustment of Main Component

A. Power Panel (Figure 5)

a. pedal switch socket: To connect with foot switch.

b. fuse: overcurrent protection.

c. power switch: To control power on/off. Up-on, Down-off.

d. power socket: To connect with power plug.

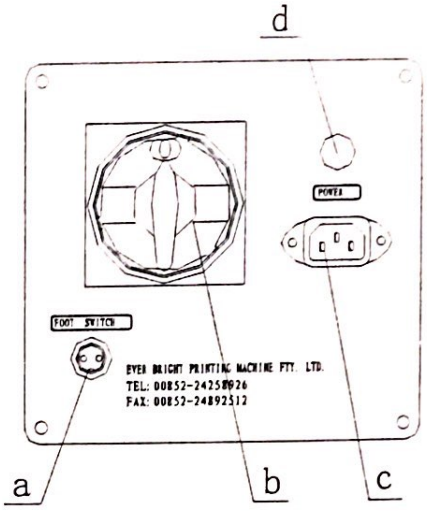


Figure 5

B. Air Valve Assembly (Figure 6)

a. pressure adjustment knob: Pull the knob up a bit and turn it clockwise, pressure will increase otherwise it will decrease. The knob should be reset after adjustment.

b. pressure gauge: To indicate the pressure of air to machine.

c. air valve: Turn it counterclockwise, air will be on; and otherwise, air will be off.

d. water discharging jacking needle: Jack it up, water will be discharged.

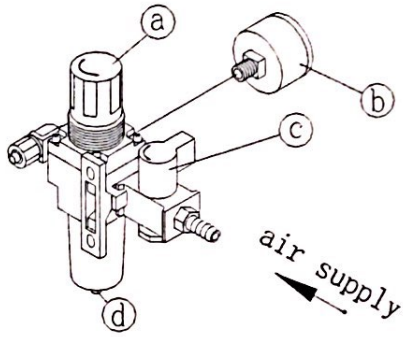
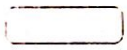


Figure 6

C. Control Panel (Figure 7)

A.Description on Each Function

1)counter store/reset key: Push it once, the reading will be stored; push it twice, it will be reset.



STORE/RESET

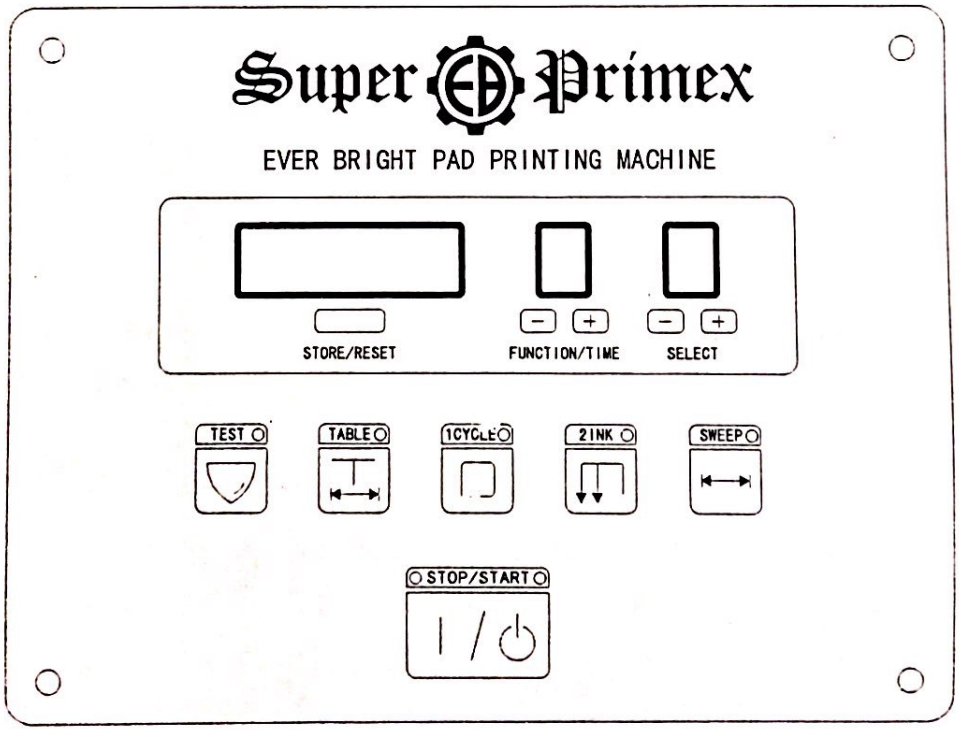


Figure 7

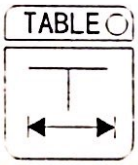
2)pad test key: When machine is standing by, push the key once, the pad will lower down once.

3)worktable test key: When machine is standing by, push it, the result will differ for various worktables.

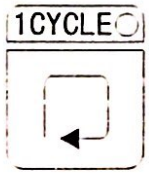
a)For 1-color machine, it does not function.

b)For the machine with shuttle, push it once, the worktable will move over 1 station. When the worktable moves to the last station, push it again, the table will return to the original position.

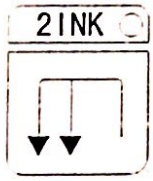
c)For the machine with conveyor and rotary table, push it once, the worktable will move over 1 station.



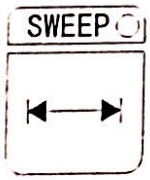
4)1-cycle key: Push it, machine will be in the state of 1-cycle. Under this condition, the operation can be controlled through STOP/START key or pedal switch.



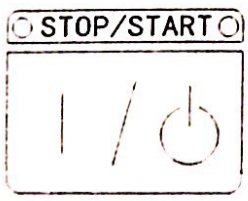
5)inking twice key: Push it, the machine will run under inking twice and printing once.



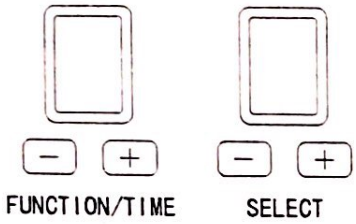
6)sweep key: Push it, the machine will just run back and forth without pad lowering down. Under this condition, the operation can be controlled through STOP/START key or pedal switch.



7)STOP/START key: to start or stop the operation.



B.Description on Function/Time and Select



Relation between Function/Time and Select

Function/Time	Select	Printing Function
1	1	Shuttle stops right, 1-color printing
	2	Shuttle stops left, 1-color printing
	3	2-color process printing
	4	1-color rolling
2	0-9	Time when pad staying above steel plate (0-shortest; 9-longest)
3	0-9	Time when pad inking (0-shortest; 9-longest)
4	0-9	Time when pad staying above substrate (0-shortest; 9-longest)
5	0-9	Time when pad printing (0-shortest; 9-longest)

Note: Function/Time and Select values can be changed through "+" and "-". Push "+", the value will increase; push "-", it will decrease. After change, you can directly start and machine will auto store the settings.

D. Worktable (Figure 8)

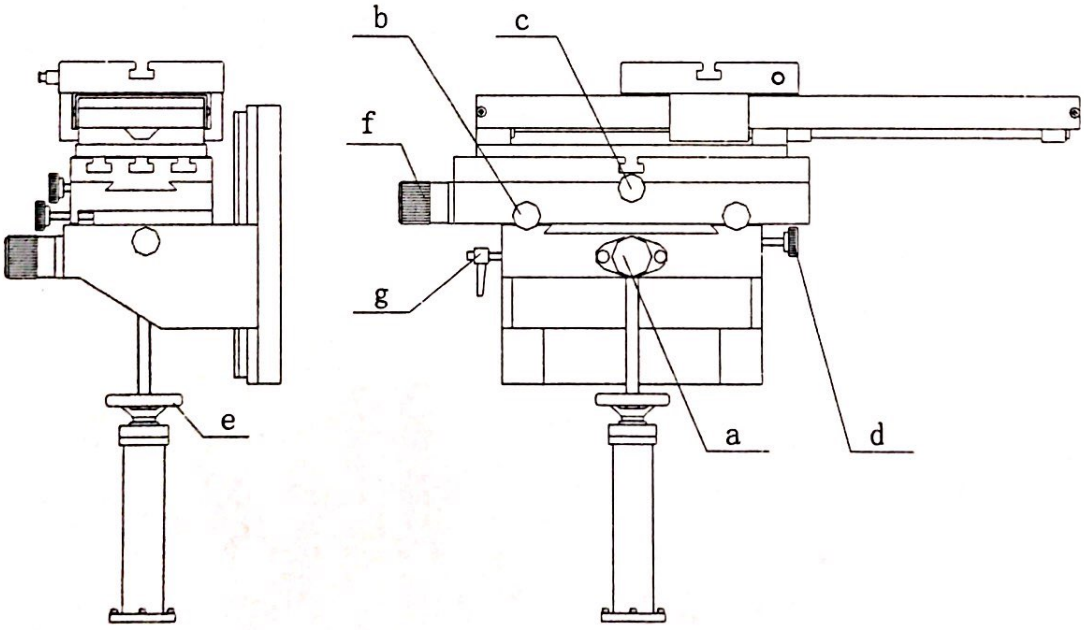


Figure 8

The function of each knob follows

a. knob: to adjust front/rear movement
b. knob: for fine rotation
c. knob: to lock left/right movement
d. knob: to lock front/rear movement
e. handwheel: to adjust up/down movement
f. knob: to adjust left/right movement
g. knob: to lock up/down movement

E. Ink Cup Assembly (Figure 9)

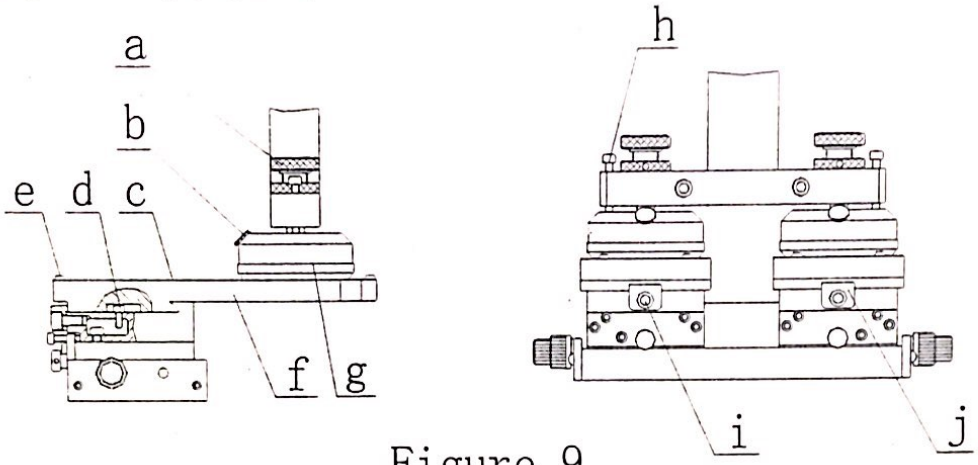


Figure 9

a. ink cup knob assembly: To take ink cup to move front/rear and apply perpendicular force to ink cup.
b. cup lid: To seal the diluent entrance.
c. thin steel plate: with image.
d. plate base dowel: To fix left/right position of plate base.
e. plate fixing screw: To fix plate on the base.
f. plate base: To support the plate.
g. ink cup: To contain and scrape ink.
h. limit screw: To prevent cup from rotating when moving.
i. fixing screw for the base: To fix plate base fixer.
j. plate base fixer: To fix plate base.

(A) Ink Cup Removal

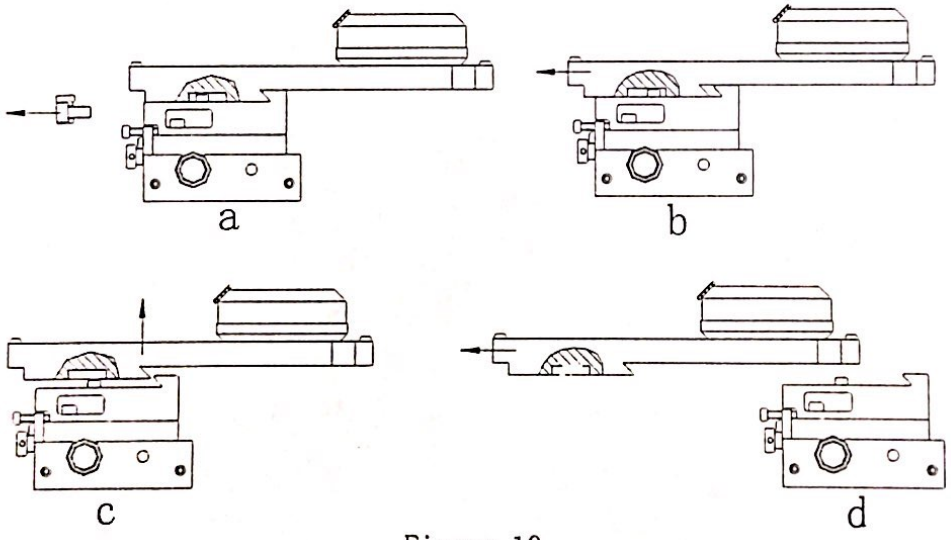


Figure 10

1. First Step (Figure 10):
a. Loosen plate base fixer
b. Move plate base forward horizontally
c. Pick up plate base vertically till it leaves the dowel (d)
d. Move plate with the base together forward and take them out

2. Second Step (See Figure 11):

Hold ink cup (c) with hand and turn down the part which has been taken out to make ink cup upside down and steel plate shim face up. Slightly force ink cup slide away from thin plate surface. Care should be taken in doing this to avoid damaging ceramic ring edge.

Figure 11

(B) Steel Plate Replacement (Figure 12)

Remove plate fixing screw (j). Take away the old steel plate (b) and put the new one on plate shim (a). Fix the new one on (a) with (j).

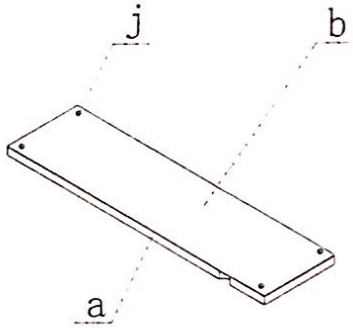


Figure 12

(C) Ink Cup Reinstallation

Turn the shim with new thin plate over and make the plate face down and the shim face up. Hold ink cup with one hand and the steel plate with the other to make ink cup slightly engage with the steel plate (Figure 13). Care should be taken to avoid damaging ceramic ring edge. Then turn the steel plate over to make ink cup face up (Figure 14). Put it on plate base (f) as shown in Figure 9 and lock it after positioning (Figure 15).

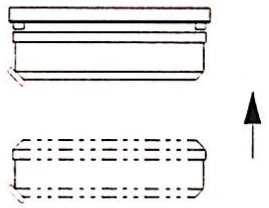


Figure 13

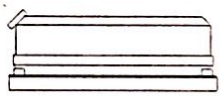


Figure 14

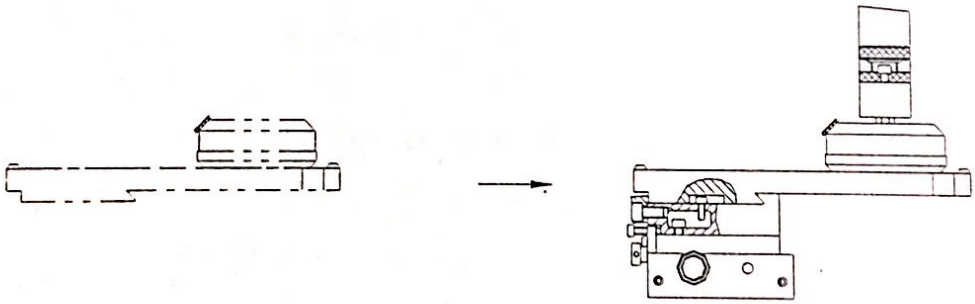


Figure 15

(D) Adjustment on 2-Color Plate Base (Figure 16)

1. lock screw: To lock front/rear movement
2. lock screw: To rotate the base slightly within range± 2°. Meanwhile turn the 2 knobs , one loose and the other tight, to rotate plate base.
3. knob: To adjust left/right position of right plate.
4. knob: To adjust front/rear positon.
5. knob: To adjust left/right position of left plate.

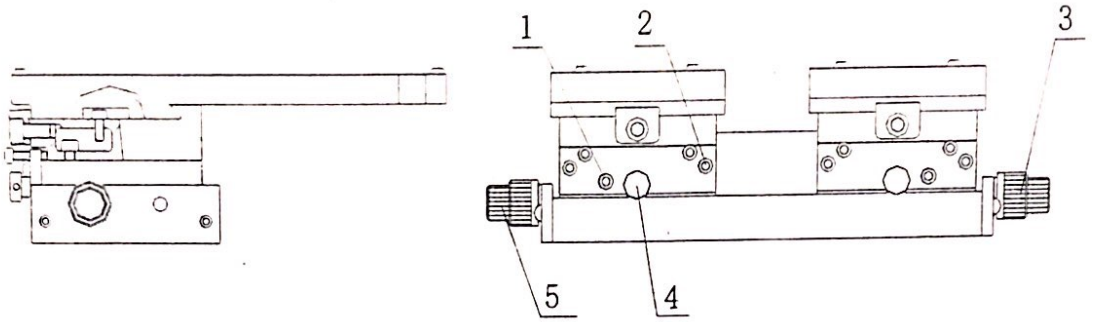


Figure 16

(E) Diluent Filling

Unscrew the cup lid (b) as shown in Figure 9. Put a little hopper in the diluent entrance and put proper amount of diluent into the cup as shown in Figure 17.

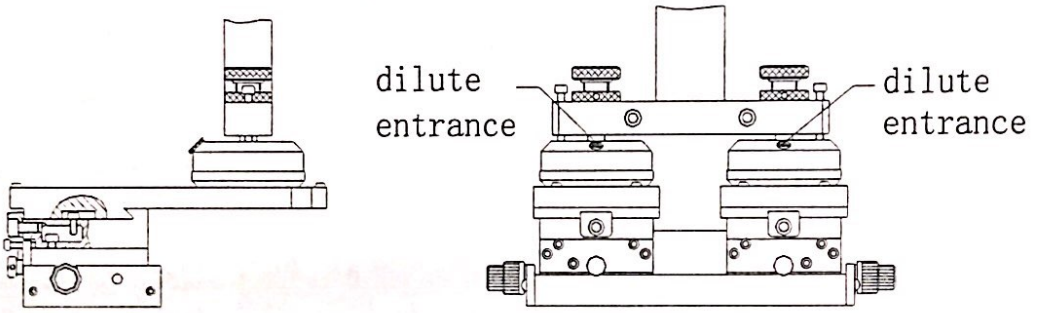


Figure 17

(F) Flow Control Board (Figure 18)

a.1-way regulator for pad lowering down
b.1-way regulator for pad lifting up
c.1-way regulator for pad moving forward
d.1-way regulator for pad moving backward

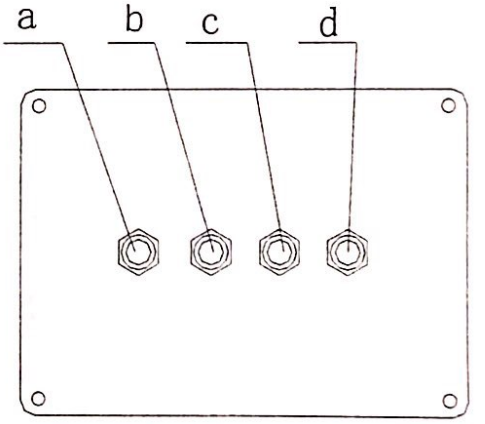


Figure 18

VI. Operation Procedure

1. Inlet compression air and adjust the pressure to make the gauge indicator read about 5 bar.
   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.
2. Turn on power and make the switch be at "ON".
3. Select suitable pad and install it in accordance with Figure 19.
4. Push "SWEEP" (Figure 7) to make ink cup move lengthwise. If ink can not be scraped clean, you should adjust ink cup knob assembly down properly.
5. Push "TEST" on operation panel. If pad can not lower down to proper position, you should adjust through the knob 28 (Figure 4).
6. Adjust the running speed of machine and make it meet printing requirement. This includes the adjustment on the dwell time of pad at each stroke end and the regulator that controls the speed of each cylinder (See Figure 18).
7. Push "STOP/START" to stop machine. If machine is down for long, power should be turned off.

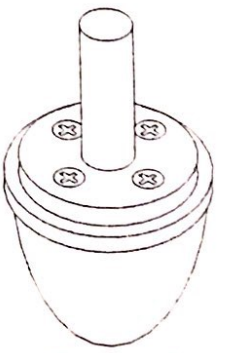


Figure 19

Ⅶ. Precautions

1. The ceramic ring edge easily gets damaged, so care must be taken when removing, reinstalling and cleaning ink cup.
2. Pad selection: The hardness of pad is divided into 3 kinds: soft, intermediate and hard. The hard pad is used for fine image and soft pad for printing on convexoconcave surfaces. Additionally the size and shape of pad should match with image size and substrate shape.
3. Ink: Different substrates such as plastics, glass and metal require various ink which should be mixed evenly before using.
4. During printing, diluent should be added then mixed properly in accordance with ink drying speed to keep suitable ink viscosity. The dirts on pad should be wiped off on time.
5. Fixture should be prepared according to the outline of substrate.
6. After printing, steel plate and ink roller should be cleaned.

Ⅷ. Service and Maintenance

A. Troubleshooting on Common Failure

Item / Defaults	Occurrence	Causes	Troubleshooting
Machine doesn't run	After power is turned on, control panel indicator isn't on.	1.Power plug isn't inserted in. 2.Input voltage is abnormal. 3.Fuse blows off.	1.Plug it in. 2.Measure the voltage. 3.Replace the fuse.
	After power is turned on, control panel indicator is on.	1.Air isn't supplied. 2.Pressure is too low. 3.Manual air valve is closed. 4.Cylinder is plugged by dirts.	1.Supply air. 2.Adjust it higher. 3.Open the valve. 4.Remove the dirts.
Running speed is abnormal.	When cylinder moves, the speed is too fast.	1.Pressure is too high. 2.Piston moves too fast.	1.Adjust it lower. 2.Adjust the regulating check valve.
	When cylinder moves, impact force is too big.	1.Cylinder buffering is too mall. 2.Hydraulic absorber is damaged	1.Adjust cylinder buffering higher. 2.Replace the absorber.
	When cylinder moves, the speed is too slow.	1.Pressure is too low. 2.Regualting valve is adjusted too small. 3.Air hose is folded. 4.Air valve is rusted or plugged by dirts. 5.Silencer is plugged.	1.Adjust it higher. 2.Adjust it bigger. 3.Make it clear. 4.Remove the dirts or replace the valve. 5.Clean it.
Problem with blade.	Ink can not be scraped clean.	1.Blade pressure is insufficient. 2.Blade has defect or doesn't match with steel plate.	1.Adjust it higher. 2.Grind or replace the blade.
	Blade easily breaks.	1.Blade pressure is too high. 2.Blade stroke is longer than steel plate.	1.Adjust it lower. 2.Adjust it properly.
Problem with pad	Pad doesn't lift up after lowering down.	Magnetic sensor fails.	Check the circuit or replace the sensor.

B. Maintenance

1. Keep machine clean.
2. Add lubrication for movable parts once a week.
3. Discharge the water in the glass on time.
4. After printing, pad, steel plate and ink cup should be cleaned.

Ⅸ. Common Defect and Analysis on Image Printed

A. Air Pocket

1.Pad surface is damaged.
2.The central point stands right on the image.
3.Ink has gone bad.
4.Diluent chosen is not correct.
5.Blade is not sharp.
6.Pad arc is insufficient.
7.Ink is too thin.

B. Rough and Unclear Line of Image

1.Pad surface is damaged.
2.Ink is too thin.
3.Steel plate pattern is damaged.
4.Blade is not sharp or has undercuts.
5.Image design is rough.
6.Steel plate pattern is too deep.
7.Ink is too dry.

C. Light Image Color

1.Ink is too thin.
2.Ink deposits.
3.Filler is too much.(Normally it should be controlled roughly within 5%.)
4.Steel plate pattern is worn.
5.Steel plate pattern depth is insufficient.

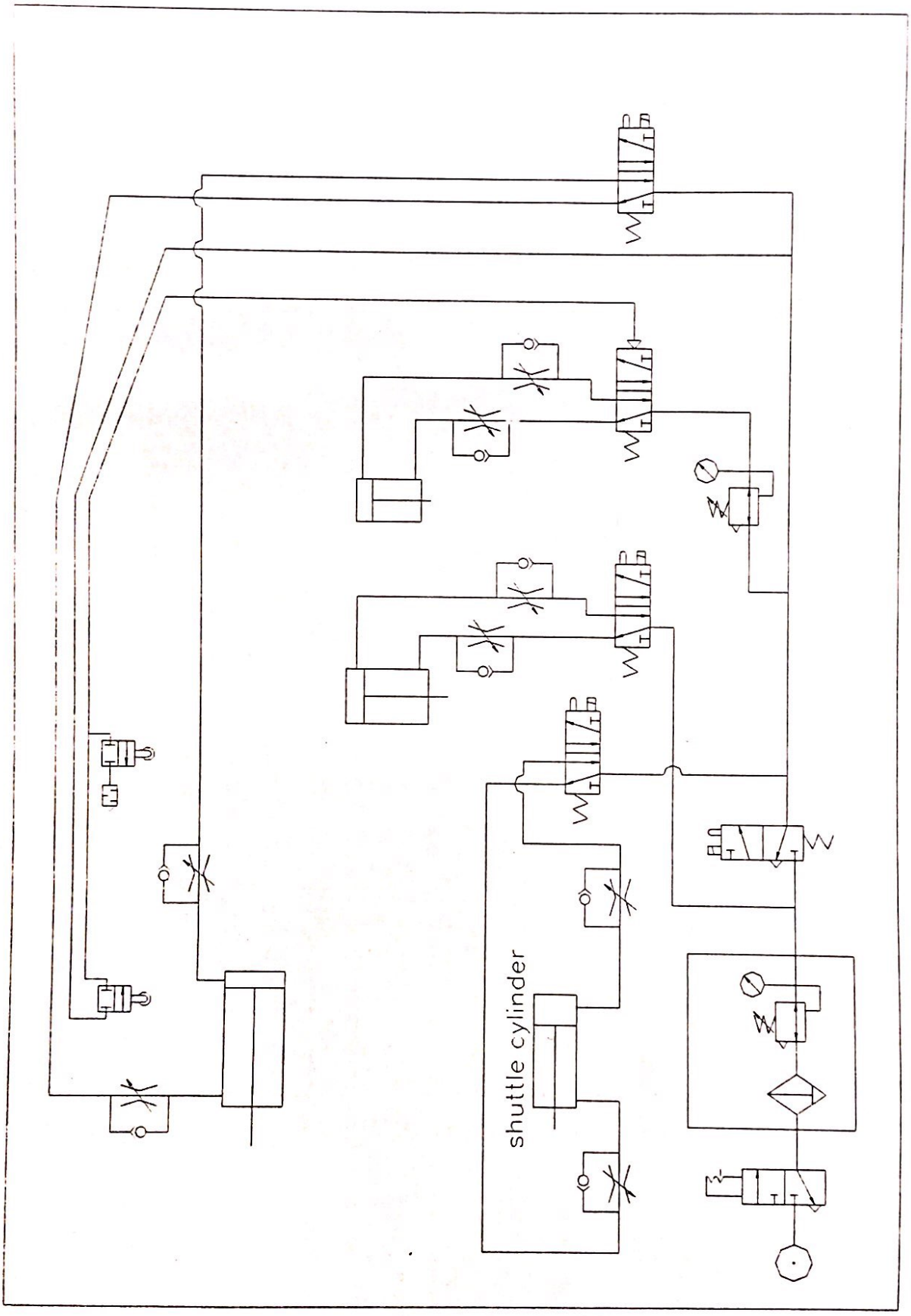
D. Superfluous Lines

1.Steel plate pattern is worn.
2.Blade has undercuts.
3.Pad sliding piece is loose.
4.Pad pressure is too high.

E. Deformation

1.Pad height is insufficient.
2.Pad shape is chosen incorrectly.
3.Pattern is beyond printing range.
4.Pad is too small and hard.
5.Pad pressure is too high.

X. Pneumatic System Diagram



XI. 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 meanwhile grounding should be used for safety.