PP21N Pad Printer Machine Operation Manual with Ink cuo setup Serial No.:







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Introduction

Dear valued customer:

Thank you for choosing the PP-21N pad printer. We hope that you will get the most out of your machine.

The following manual will familiarize you with the setup and use of your printer. Please read through the manual thoroughly before using your printer for the first time. Please note that the diagrams shown in this manual are not to scale, and some aesthetic details may be omitted for the sake of clarity.

We would like to draw your special attention to the following notes:



IT IS THE OPERATOR'S RESPONSIBILITY TO COMPLY WITH THE FOLLOWING SAFETY INSTRUCTIONS TO PREVENT SERIOUS INJURIES.

Proper usage of machine

The present machine is provided as "stand alone" and cannot be linked to other automation/system via third party control. Warranty of machine will be void if equipment is modified or not operated under intended usage and maintenance.

Emergency stop

Press the emergency stop switch (panic switch) to cut off power and stop machine in the event of an emergency. The foot switch should be used to stop a cycle in normal operating conditions only.

Proper use of manual keys

Always use the manual keys for machine setup and simulations before switching to "one-cycle" or "automatic cycle" for printing.

Cabling obstruction

All external flexible cables should be run in conduits as not to present a tripping hazard.

Isolation of energy sources

Electrical and pneumatic energy sources must be cut off from machine for service, repair, maintenance, and associated activities. Complete separation of power plug from socket and air hose from compressed air line by mean of lever or quick connector coupling is mandatory to prevent injuries caused by unexpected energizing or start up of machines.

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Overview of the pad printing process

The 3 main constituents of the process are:

1. The Cliché

The desired image to print is etched onto a plate called a cliché. The cliché is usually made of a polymer coating on a metal backing or of hardened steel.

2. The lnk

Pad printing inks are available in a broad range of colors and come in a variety of chemicals that are specific to the type of substrate to be printed on.

3. The Pad

The pads are made of silicon which can vary in hardness, shape and size. The properties of the silicon allow the inks to temporarily stick to the pad and be released fully when pressed against the surface of the product on which the image is to be printed.

The pad printing process consists of the following steps:

1. Flooding

The image on the cliché is flooded with ink via the enclosed cup while the pad travels to the image.

2. Inking

The pad picks up the inked image from the cliché and travels to the substrate.

3. Printing

The pad makes contact with the substrate and releases the image.

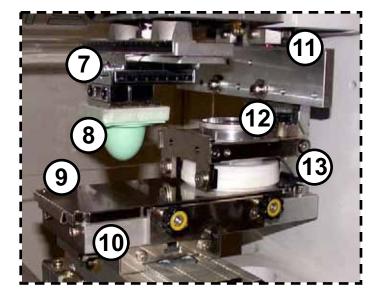
Page 2.3

Main Features

Use the following illustrations to become familiar with the main parts and components of your machine.



- 1. Front control panel
- 2. Panic switch (CE version)
- 3. Adjustable work table
- 4. Pad speed control panel
- 5. Pressure regulator with gauge & auxiliary air connector
- 6. Ink cup die plate platform slide



- 7. Pad holder assembly
- 8. Pad
- 9. Die plate (cliché)
- 10. Die plate platform
- 11. Doctor blade bar
- 12. Ink cup (CMIC)
- 13. Ink cup holder



- 14. Side control panel
- 15. Lubrication diagram
- 16. Side guard
- 17. Mounting base
- 18. Foot switch



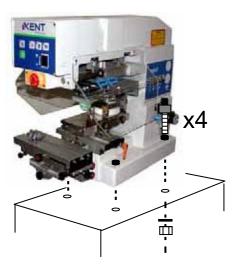
- 19. Machine specifications
- 20. Machine Optional accessory connection
- 21. Foot switch connection
- 22. Main power connection & ON-OFF power switch
- 23. Machine external ground connector

Installation

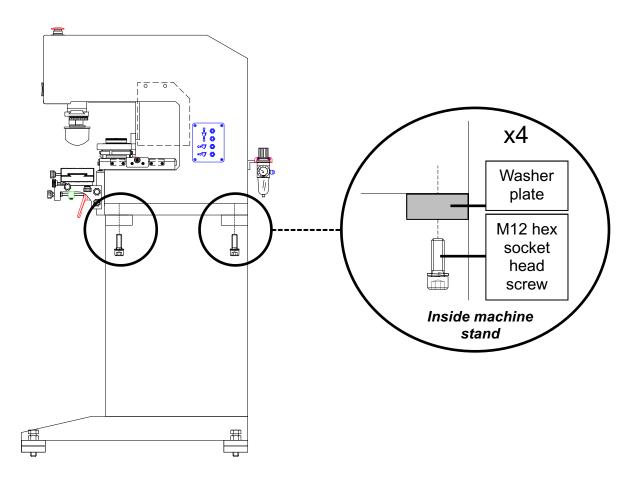
Unpacking

Un-crate and mount base of machine securely on a bench or stand (optional).

Bench

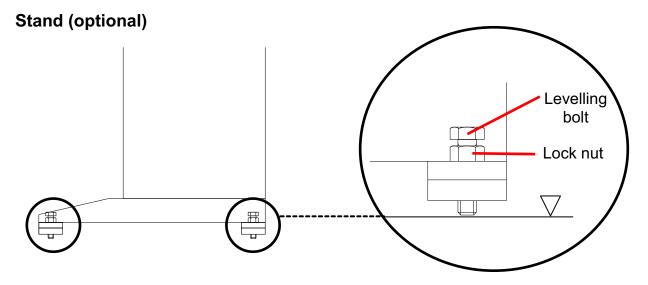


Stand (optional)



Levelling

Place a level on the die plate platform slide of machine and level bench or stand.



Connecting hoses and cables

WARNING:

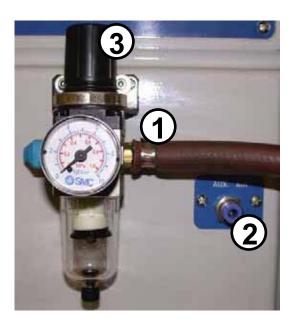
Secure all cables and hoses in an organized manner to prevent tripping hazards.

1. Connect main air supply to the pressure regulator of machine.

Important note:

Ensure that machine can be isolated from the main air supply using an isolation device installed upstream such as a manually operated valve as shown below. This device will ensure extra protection from potentially hazardous and unexpected energization, start-up, or release of stored energy that could cause injury.

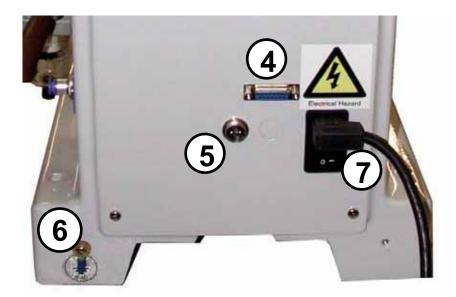
- 2. Connect any optional air operated accessory to auxiliary air connector.
- 3. Set operating pressure to 4-6 bar.



Air Supply isolation device with manual valve

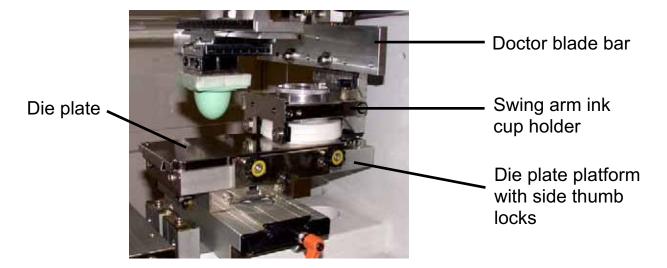


- 4. Connect cable of optional accessory if any to the 15 pin D-connector.
- 5. Connect foot switch cable to the 2 pin round connector.
- 6. Ground machine externally.
- 7. Connect main power cable. Printer suitable for 120V 50/60Hz (+/- 5%) or 220V 50/60Hz (+/- 5%) depends on model, read label on machine.



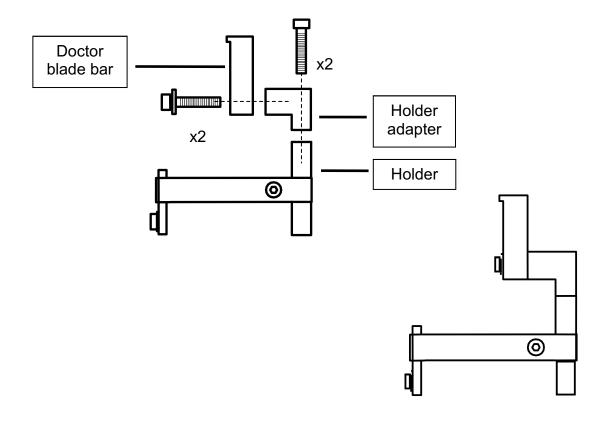
Ink cup setup

Ink cup setup mainly consists of installing the cup holder, cup and plate.

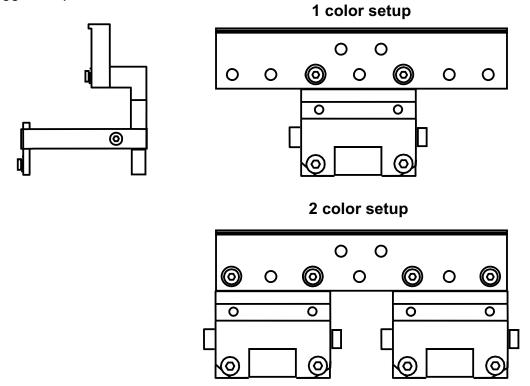


Ink cup holder installation

Install the cup holder against the doctor blade bar of machine.



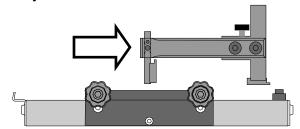
Suggested positions

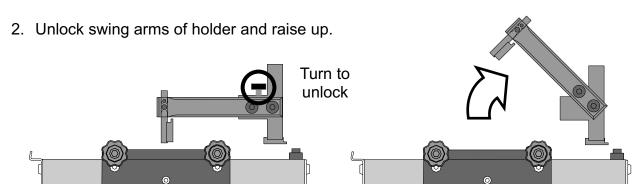


Die plate and ink cup installation

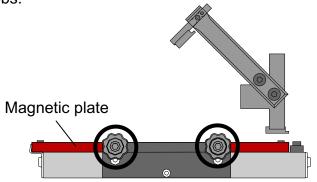
Thin plate (0.25 mm) / magnetic plate setup:

1. Push the cup holder completely to the back.





3. Place magnetic plate (also called back up plate) on platform between stoppers then secure plate by lock knobs.



Lock knobs

4. Place thin plate with image facing down over top of cup (ring side).



5. Turn ink cup setup unit upside down and slide on plate as shown.





Image at the front



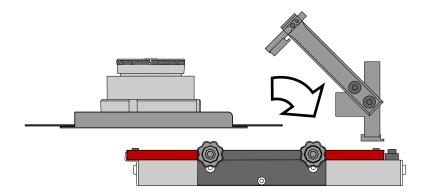
6. Remove lid of cup and pour ink up to 80% full.

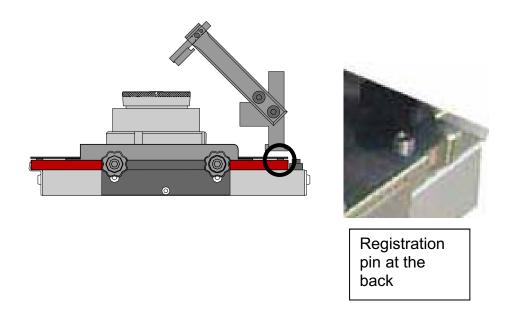


7. Screw back lid and loosen bleeding knob screw as to permit air to escape from cup.

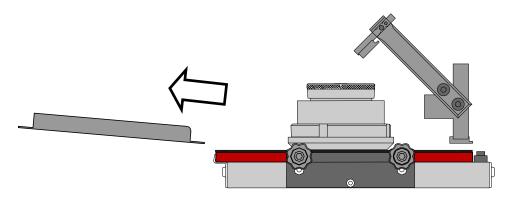


8. Place ink cup unit on magnetic plate and fit the registration corner pin at the back

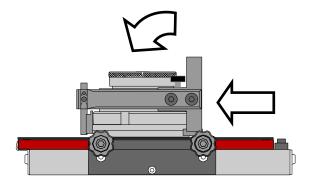




9. Hold the cup down slightly and remove the ink cup setup unit. Fit other registration corner pin at the front.



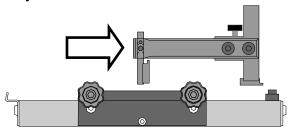
10. Bring the cup holder forward then lower the swing arms.

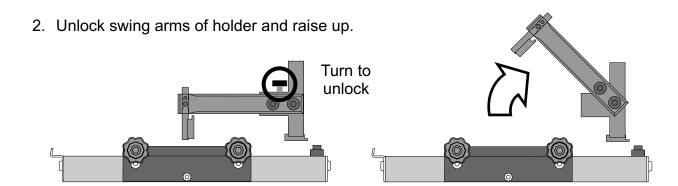


11. Finally push holder with cup completely to the back.

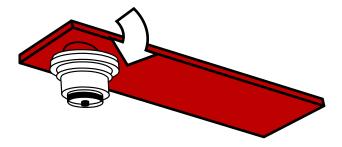
Thick plate (10 mm) setup:

1. Push the cup holder completely to the back.

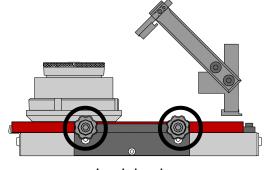




3. Release plate with image facing down over top of cup (ring side) gently.

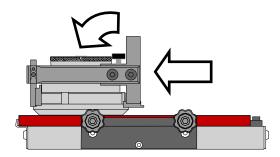


- 4. Back upright, remove lid of cup and pour ink up to 80% full.
- 5. Screw back lid and loosen bleeding knob screw as to permit air to escape from cup.
- 6. Place plate with cup on the platform between stoppers then secure plate by lock knobs.



Lock knobs

7. Bring the cup holder forward then lower the swing arms.



8. Finally push holder with cup completely to the back.

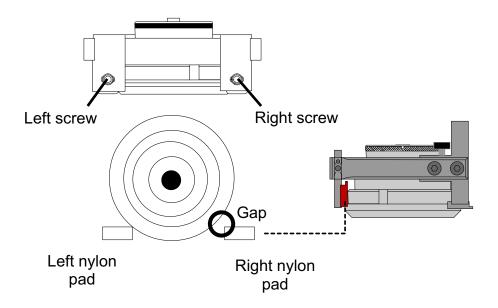
Die plate, ink cup and holder removal

Follow above procedure in reverse order to remove cup, plate and holder.

Ink cup holder adjustment

Adjust the nylon pads of holder to allow cup to rotate while moving in-out.

Using an Allen key, move the left screw until the left nylon pad touches the cup. Then, move the right screw to leave a small gap between the right nylon pad and cup.



Ink leak troubleshooting

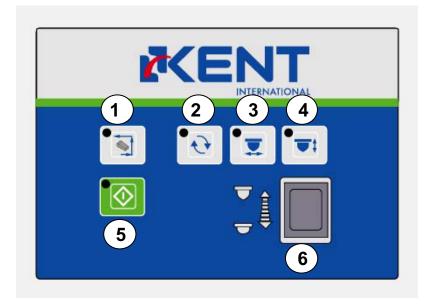
Follow this troubleshooting guide to find out how to cure common ink leak scenarios.

Scenario	Description	Cause	Cure
1.	Lines of ink left on printing plate surface.	Ring edge chipped.	Lap ring.
		Thin steel plate scratched.	Change thin plate.
		Ink residue on ring edge.	Clean ink cup edge and printing plate.
	Ink film evenly left on printing plate.	Ceramic ring edge not flat and partially worn out due to hard ink pigment.	Check and lap ring.
2.		Ring edge width widened over 0.25mm.	Send back for repair.
		Not enough magnetic forces.	Change for stronger magnetic forces cup.
3.	Dried ink builds-up on edge of cup.	Ink too thick.	Add ink solvent. (Add solvent every 4-6 hours.
3.		Not enough ink.	Refill ink and maintain 80% full at all time.
		Vibrations of ink cup	Check pad carriage
	Leak at front or back of cup.	when moving.	shock absorber.
4.		Ink cup movement is not parallel to printing plate.	Adjust ink cup movement speed.
		Old holder.	Change to new holder.
5.	Image area turns black.	Ink cup sits on printing plate too long and oxidize die-plate.	Leave cup at the back of plate, remove CMIC from printing plate apply grease to image everyday to prevent oxidation.
6.	Leak from edge after few minutes.	Too much pressure built up inside ink cup. Temperature of ink increases at high speed.	Release bleeding screw on top of ink cup cover.

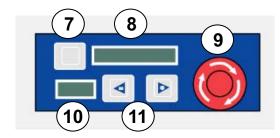
Page 5.8

Control Sequence - Main features

Front control panel



Side control panel



Foot switch



1. Print selector key

Function disabled LED turns ON when a one-cycle mode program is activated

2. Index key

To index attached accessory (optional)

3. Pad carriage in-out key

To activate pad carriage in/out movements

4. Pad up-down key

To activate pad up/down movements

5. Start key

To activate air pressure
To activate auto and manual modes
To cancel foot switch

6. Pad stroke toggle switch

To increase/decrease pad stroke

7. Setting key

To reset number of print cycles to 0 To enter machine settings mode

8. Setting display

Displays the number of print cycles performed

Displays pad stroke values
Displays machine settings values

9. Panic switch

To stop machine in the event of an emergency

10. Program number display

Displays the program number

11. **+/- keys**

To increase/decrease value of machine settings

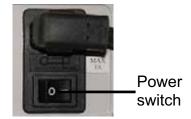
12. Foot switch

To activate one cycle printing mode To stop printer in any modes

Control Sequence

Turning your machine ON

- 1. Close the side doors properly.
- 2. Press the power switch to turn your printer on.



3. Release the panic switch.



Machine beeps and LED of start key is flashing

4. Press the setting key to reset the number of print cycles to 0 if necessary now.



5. Press the start key to activate air pressure inside machine.



Warning:

Stay away from machine when air is activated. Pad carriage and optional accessory may move to their respective home position hard.

LED of start key becomes steady

Choose one of the following options to continue:

- For machine setup & pad stroke adjustment go to page 6.3.
- To select a printing program and start to print go to page 6.5.
- For side doors and stopping for emergency go to page 6.5.
- To set delay before print or dwell for print go to page 6.6.
- For alarm troubleshooting go to page 6.7.
- For the programs list go to page 6.8.

Manual mode

In manual mode you can perform all your machine adjustments. Use the manual mode keys to simulate a print cycle, test-print or adjust the pad stroke.

Entering manual mode

1. Press either manual mode keys.



2. Press the start key to enter manual mode.



Machine has now entered manual mode. Movement of selected manual key is activated. Press manual key again to stop pad movement.

Manual mode keys

Press a manual mode key to activate or stop the movement of your choice.

Pad carriage in/out key

for continuous pad carriage in/out movements



Pad up/down key

for continuous pad up/down movements



Index key

for single indexing of attached accessory (optional)



Pad stroke adjustment

Adjust the pad stroke to allow complete transfer of image to the pad and product.

1. Turn on the pad carriage in/out key and when the pad is at the back over the inking area, turn it off.



2. Activate the pad up/down movement (this step is optional although helps visualizing stroke adjustment).



3. Press the pad stroke switch to increase or decrease stroke.



The pad stroke value is displayed at the side control panel.



When desired stroke is found, turn off the pad up/down key.

Repeat steps above for pad stroke at printing.

- 4. Turn on the pad carriage in/out key and when the pad is at the front over the printing area, turn it off.
- 5. Activate the pad up/down movement (optional).
- 6. Press the pad stroke switch to increase or decrease stroke.

Leaving manual mode

Make sure LED of manual mode keys are off. Turn them off if necessary then press the start key.

. Page 6.4

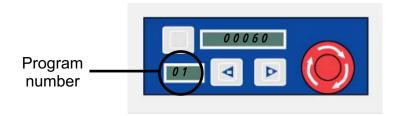
Printing mode

Select a program and start to print.

1. Press "+/-" to select a program from the program list.



Note: Refer to the program list on page 6.8.



2. Press the start key.



For **continuous printing programs**, machine is activated right away.

To stop printing, press the foot switch then press the start key to resume operations.



For **one-cycle printing programs**, press the foot switch to activate one cycle. LED of print selector key turns ON.



Machine stops automatically after completion of cycle. Press the foot switch again to activate more print cycles.

Side doors

If a side door is opened while printing, machine will come to a stop. Close door and press the start key to resume operations.

Stopping for emergency

In the event of an emergency, press the panic switch to cut off the main power and air supply.

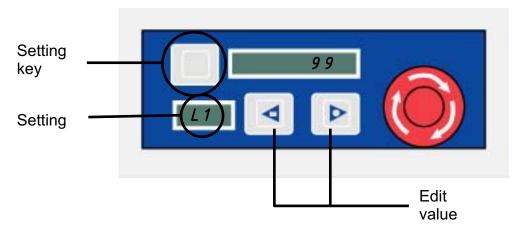


Release the panic switch to restart machine.

Machine settings

Set delay before print, dwell for print and other optional operating functions. *Make sure to select a suitable program, refer to the program list on page 6.8.*

Press the setting key repeatedly to enter machine settings mode and access settings L1-L4. Press +/- keys to edit value.



- L1 Delays

Delay before print (program # 4, 8, 13 & 17)

Pad pauses above object to print for the time selected before moving down for printing. Values: 00-99 (0-9.9 seconds).

Dwell for print (program # 31-34)

Pad dwells on product for the time entered. Values: 00-99 (0-9.9 seconds).

- L2 --- Function unavailable in standard machine ---
- L3 --- Function unavailable in standard machine ---
- L4 Remote control (all programs)

Enables machine to be operated via third party control. Values: ON-OFF

Notes:

Complete cycle connection must be properly wired to third party control. All programs will operate as one cycle and must be activated by third party control.

When finished, press the start key to leave machine settings mode and resume operations.



Alarm Troubleshooting

If the alarm of machine turns ON, right down the number of intermittent beeps and read below to troubleshoot problem:

No. of beep	Problem
1	pad stroke not at home
2	optical sensor failure
3	carriage not at home (ink position)
4	carriage not at actuate (print position)
5	sensor for pad clean at the middle not detected (optional pad clean at the middle setup)

Programs list

The following contains a list of programs for printing. Select a program with an asterisk (*), when it is necessary to use delay before print or dwell for print. Make sure to enter a value for machine setting L1 on page 6.6.

NO.	FUNCTION	DESCRIPTION			
Stand	Standard				
01	Single print	Continuous printing. Ink, print			
02	Double inking	Continuous printing. Ink, ink, print			
03	Double print	Continuous printing. Ink, print, print			
*04	Delay before print	Continuous printing. Ink, delay (0.1-9.9 seconds), print Input data for machine setting L1.			
05	One cycle	One cycle printing (foot switch). Ink, print			
06	One cycle + 02	One cycle printing (foot switch). Ink, ink, print			
07	One cycle + 03	One cycle printing (foot switch). Ink, print, print			
*08	One cycle + 04	One cycle printing (foot switch). Ink, delay (0.1-9.9 seconds), print Input data for machine setting L1.			
09	Reverse one cycle	One cycle printing (foot switch). Print, ink			
10	Two cycle	One cycle printing (foot switch). Ink, print, ink, print			
With	With pneumatic conveyor				
11	Single index	Continuous printing. Ink, print, index			

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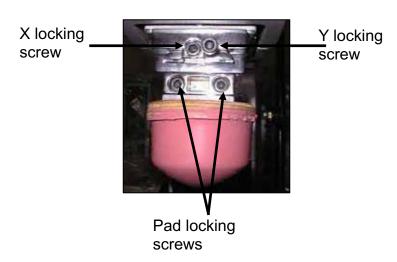
Control Sequence

12	Single index + 03	Continuous printing. Ink, print, print, index
*13	Single index + 04	Continuous printing. Ink, delay (0.1-9.9 seconds), print, index. Input data for machine setting L1.
14	Single index + 10	Continuous printing. Ink, print, ink, print, index
15	Double index	Continuous printing. Ink, print, index, index
16	Double index + 03	Continuous printing. Ink, print, print, index, index
*17	Double index + 04	Continuous printing. Ink, delay (0.1-9.9 seconds), print, index, index Input data for machine setting L1.
18	Double index + 10	Continuous printing. Ink, print, ink, print, index, index
With	pneumatic (DR) shu	uttle
19	2 color shuttle	Continuous printing. Ink, print, print
20	2 color shuttle + 05	One cycle printing (foot switch). Ink, print, print
21	3 color shuttle	Continuous printing. Ink, print, print
22	3 color shuttle + 05	One cycle printing (foot switch). Ink, print, print
23	4 color shuttle	Continuous printing. Ink, print, print, print
24	4 color shuttle + 05	One cycle printing (foot switch). Ink, print, print, print
25	2 color shuttle (2 nd &3 rd)	Continuous printing. Ink, print second position, print third position

26	2 color shuttle + 05 (2 nd &3 rd)	One cycle printing (foot switch). Ink, print second position, print third position			
27	2 color shuttle (1 st &3 rd)	Continuous printing. Ink, print first position, print third position			
28	2 color shuttle + 05 (1 st &3 rd)	One cycle printing (foot switch). Ink, print first position, print third position			
29	Roller print	Continuous printing. Machine with turning attachment for round print. Ink, print from 1 st to 2 nd position			
30	Roller print + 05	One cycle printing (foot switch). Machine with turning attachment for round print. Ink, print from 1 st to 2 nd position			
Dwell	Dwell for print programs				
*31	Dwell	Continuous printing. Ink, print & dwell (0.1-9.9 seconds). Input data for machine setting L1.			
*32	Dwell + 05	One cycle printing (foot switch). Ink, print & dwell (0.1-9.9 seconds). Input data for machine setting L1.			
*33	Single index + dwell	Continuous printing. Ink, print & dwell (0.1-9.9 seconds), index Input data for machine setting L1.			
*34	Double index + dwell	One cycle printing (foot switch). Ink, print & dwell (0.1-9.9 seconds), index Input data for machine setting L1.			

Pad installation & adjustment

Pad holder assembly



Pad

Pad mounting plate with 4 self-drilling screws



Installation

- 1. Mount pad to pad mounting plate by 4 self-drilling screws. (fig.1)
- 2. Loosen both pad locking screws on the pad holder assembly.
- 3. Slide pad stem through pad holder assembly. (fig. 2)
- 4. Fasten pad locking screws.

Fig.1

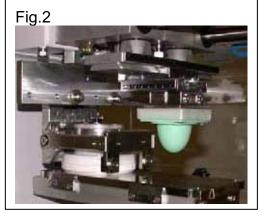
Adjustment

Along X axis

- 1. Loosen X locking screw.
- 2. Slide to adjust pad along X axis.
- 3. Fasten X locking screw.

Along Y axis

- 1. Loosen Y locking screw.
- 2. Slide to adjust pad along the Y axis.
- 3. Fasten Y locking screw.



Speed adjustment

Turn the following flow control valves to regulate speed of pad & cup.





Pad stroke DOWN speed
 Pad stroke UP speed
 Carriage OUT speed
 (Pad & cup movement - - cup setup)
 Carriage IN speed
 (Pad & cup movement - - cup setup)

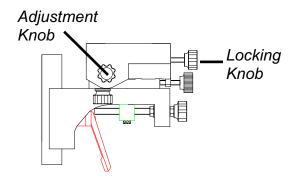
Page 7.2

Work table adjustment

Work table can be adjusted as followed:

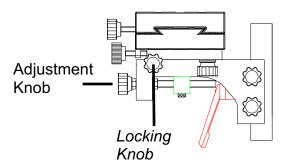
1. X axis adjustment

- x Loosen locking knob
- x Adjust work table by adjustment knob
- x Tighten locking knob



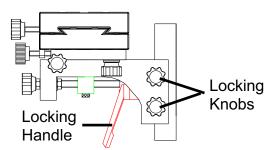
2. Y axis adjustment

- x Loosen the locking knob
- x Adjust work table by adjustment knob
- x Tighten locking knob



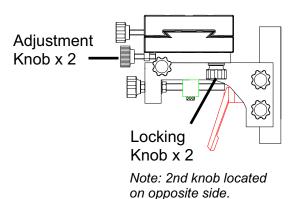
3. Z axis adjustment

- x Hold up the work table and loosen both locking knobs and handle
- x Adjust work table manually
- x Tighten locking handle and knobs



4. Angle Adjustments

- x Loosen both locking knobs
- x Turn both adjustment knobs simultaneously in opposite directions to rotate the work table
- When proper angle is found tighten both locking knobs

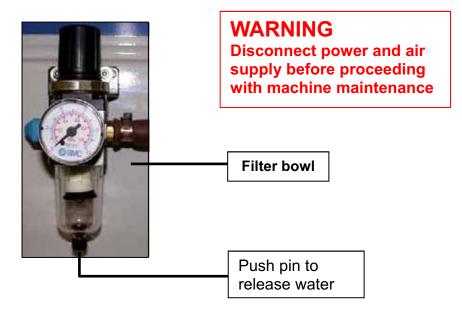


Maintenance

Apply an appropriate amount of grease to the parts shown below and drain water from the filter regulator bowl drain. Compressed air must be clear of water to avoid damage to the valves and cylinders. If the filter regulator of machine has excessive water drained into the bowl, a filter/dryer should be considered and installed at the back of the air compressor to extract moisture and other contaminants.

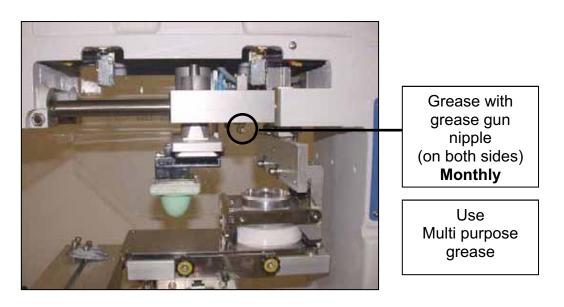
Daily inspection of filter regulator

Release water from the filter bowl

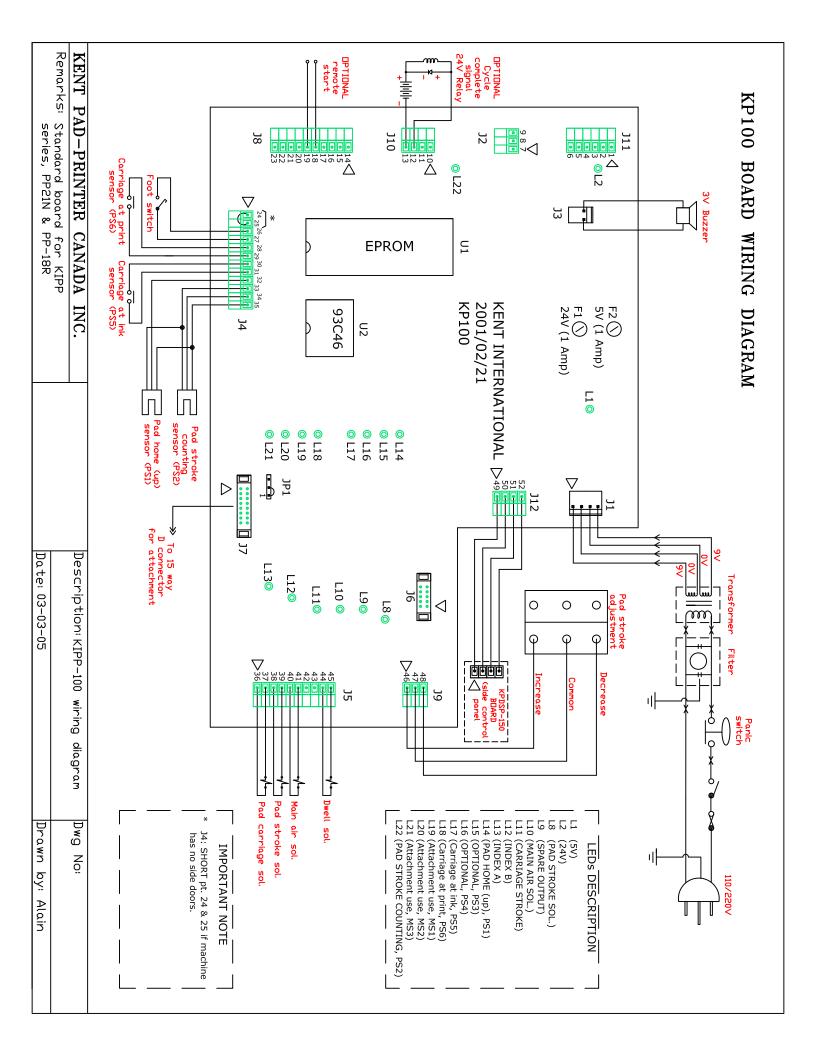


Lubrication of moving components

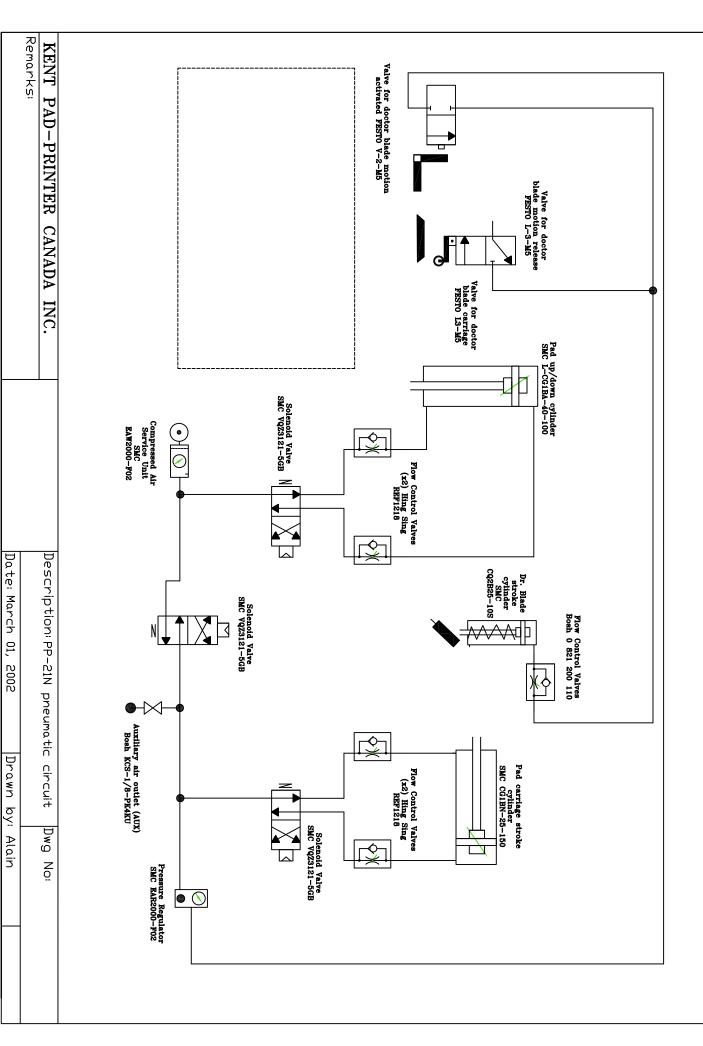
Lubricate the following parts:

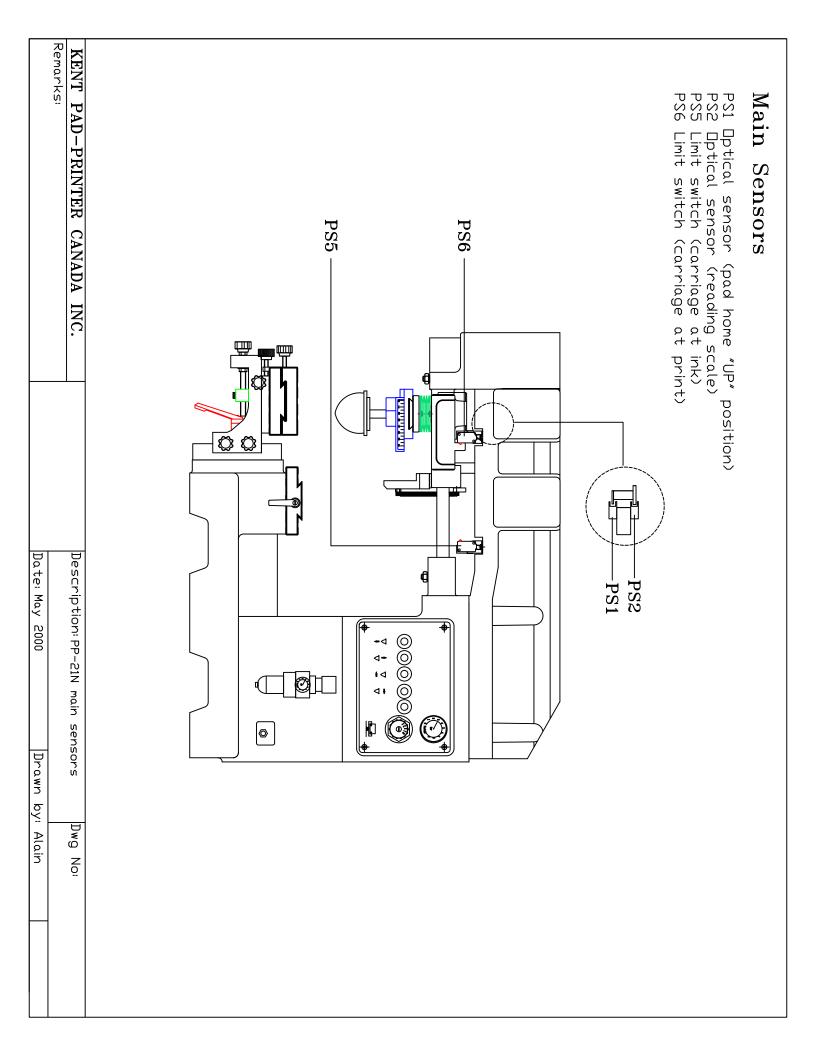


Appendix A CIRCUITS/DIAGRAMS



Pneumatic Circuit





Appendix B SPARE PARTS LIST

Appendix B-1



PP-21N Spare Parts List (CE)

ELECTRICAL

15-EC-000 PANIC SWITCH	000	21-EC-A371 PP-21N FILTER ASSEMBLY	
15-EC-590 MICRO SWITCH		AN10-EC-611.01 POWER SOCKET WITH SWITCH &FUSE HOLDER	0-
15-EC-752 SLOW BLOW FUSE (1.6A) SIZE:20MM	(<u>)</u> ()	AN10-EC-620 EE-SX 672 SENSOR	E CO
15-EC-753 SLOW BLOW FUSE (1A) SIZE:20MM		KP150-EC-030.0	KP-1.6
15-EC-A974 FOOT SWITCH WITH COVER LENGTH OF CABLE - 1.83M ASSEMBLY GRAY WHITE FOR CE	V D	KP150-EC-A102 KIPP PCB WITH EPROM	
21-EC-A271 MAIN AIR SOLENOID CABLE ASSEMBLY		KP90-EC-020 APS SWITCH	
21-EC-A320 OPTICAL SENSOR AND PAD STROKE HOME SENSOR CABLE ASSEMBLY FOR PP-21N,PP-21		21-EC-A340 PP-21N TRANSFORMER ASSEMBLE AC220V FOR CPU CONTROL	



ENT PP-21N Spare Parts List (CE)

MECHANICAL





PP-21N Spare Parts List (CE)

PNEUMATIC

10-PCY-010 BLADE HOLDER CYLINDER (CQ2B-25-10S)		15-PFT-060 FITTING (ELBOW CONNECTOR) (GCK-1/8-PK-6-KU)		15-PVA-080 POPPET VALVE V-2-M5	1
10-PCY-A010 PAD CARRIAGE CYLINDER ASSEMBLY (L-CG1BN25-150)		15-PFT-090 TEE-CONNECTOR (T-4-4)		20-PSL-010 U-1/8 SILENCER	
10-PFR-010 FLOW CONTROL VALVE SUPPLY SIDE (GRL-M5-PU4-S) (INLET-SIDE THROTTLED)		15-PFT-150 FITTING (GCK-1/4-PK-6-KU)		21-PCY-010 PAD STROKE CYLINDER (CG1BA-40-100)	
15-PAH-010.01 TUBE (PUN-8) I.D.5.7MM O.D.8MM	0	15-PFT-170 STRAIGHT EXTENSION CONNECTOR (RTU-6-4)		21-PSU-010 BLADE PRESSURE CONTROL VALVE (EAR-2000-F02)	
15-PAH-020.01 TUBE (PUN-6) I.D.4MM O.D.6MM	0	15-PFT-280 T-CONNECTOR (T-6-4-6)		21-PSU-020 BLADE PRESSURE GAUGE (L-G36-10-01)	
15-PFR-030.01 FLOW REGULATOR (AM 5062)		15-PSL-010 SILENCER PT M5 (AN120-M5)		21-PSU-030 PRESSURE REGULATOR (EAW-2000-F02) WITH L-LOCK NUT	
15-PFT-030 FITTING (STRAIGHT CONNECTOR) (CK-1/8-PK-4-KU)		15-PSL-020 SILENCER PT 1/4" (AN-200-02)		30-PSA-020 HYDRAULIC SHOCK ABSORBER (RBC-1412S) M14X 1.5THREAD L.80.8MM	
15-PFT-040 FITTING (MALE CONNECTOR) (CK-1/8-PK-6-KU)		15-PVA-010 ROLLER VALVE (L-3-M5)	33.		
15-PFT-050 FITTING (ELBOW CONNECTOR) (GCK-1/8-PK-4-KU)		15-PVA-070 SOLENOID COIL (F-COIL) DC 24V (MSFG-24)			_