SMD CHIP COUNTER

COU2000 ADV

COU2000 EX

USER MANUAL

Preface

Thank you very much for choosing TOPOINT SMD Chip Counter! You can use the COU2000 series products to achieve fast, convenient and error free SMD chip counting, and better manage materials. Before using this device, please read this User Manual carefully first, and keep it properly.

This product is subject to improvement and partial update without prior notice. Please contact our dealers or us if you have any questions to it.

We recommend that you keep the packing materials for this device for future handling. Improper packing for this device may lead to its damage.

Damage of the warranty label resulting from unauthorized disassembling of the device parts will be not included in warranty services.

Contents

1. Matters for attention

After unpacking, please check the parts against the packing list.

Incorrect power supply may damage the device, so please make sure that the power supply is in compliance with the specification.

Please position the device at a stable and solid place.

From the angle of ergonomics, we recommend that you use the device on a platform lower than 75 cm, because it is regarded as the optimal height which the user is able to sit at ease and see the display and the components in the pocket.

Statement of the range of environmental conditions:

1 Indoor use

2 Altitude up to 2000m

3 Temperature 5℃ to 40℃

4 maximum relative humidity 80%

5 main supply voltage fluctuations up to ±10% of the nominal voltage

6 rated pollution degree II

2. Overview

2.1 Application

COU2000 series products is a high efficient assisting equipment of SMD materials control, it is based on photoelectric theory. It makes use of the corresponding relationship between the tractive hole of the carrier tape and the pockets, so as to accurately determine the quantity of SMD parts, and achieve fast and convenient counting of the parts. It is undoubtedly a good help for materials management.

2.2 Features

2.2.1 High precision and free from counting errors.

2.2.2 All SMD general-purpose reeling packing parts are applicable.

2.2.3 Countable for in both forward and reverse directions, with double check feature; able to preset the quantity.

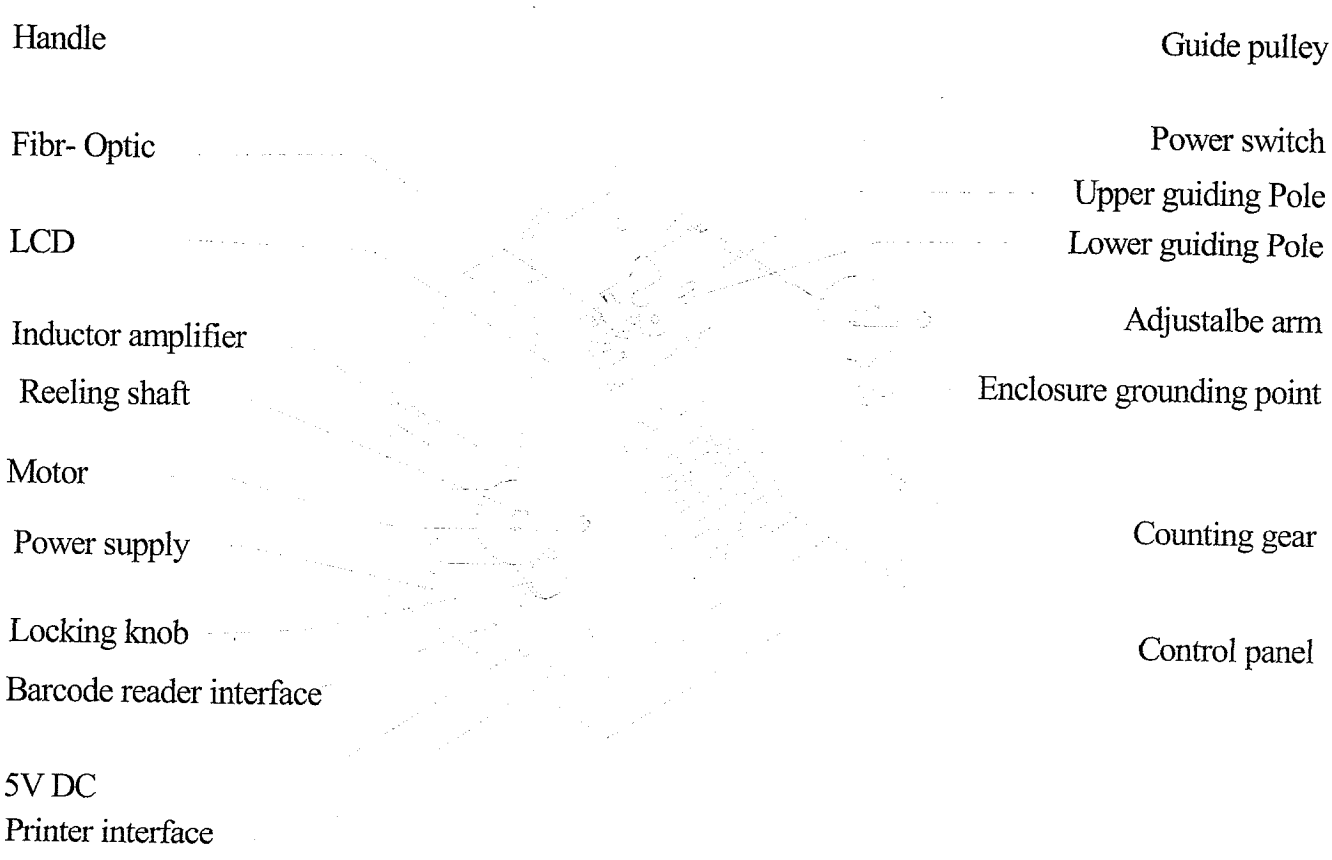
2.2.4 Simple operation and unique pocket falling-proof design will minimize the damage to the tape.

2.2.5 The patented inclined operation panel enables users to see the parts in both the display and the pockets.

2.3 Specifications SMD Chip Counter Compliant With Standards

Power	220-230 V~ ±10% 50Hz 60W/2A
Counting range	-59999----+59999 PCS
Outline Dimension	450*240*272mm (W*D*H)
Weight	9.5 kg

3. Parts description (EX)



4. Usage

4.1 Power on: select the workbench close to the power supply, connect the power supply, and position the cabinet onto the workbench.

4.2 Self check: press on power switch, and there will be the following displa on the **LCD**:

SMD CHIP COUNTER
COU2000 SERIES

YY MM DD HH : MM
20 04 05 26 14 : 59

Then the display will be changed to....., indicating that the device ha finished self check.

DATA PITCH SET
00000 1

4.3. Usage of operation panel:

- **TIME**: used to manage the time of the device; press the key to display the current time inside the device; press this key for ten seconds to enter the time setting display:

YY MM DD HH : MM
20 04 05 26 14 : 59

Key in the corresponding year, month, date and time, press the **TIME** ke and the display will automatically return back to:

DATA PITCH SET
00000 1

Time setting is finished.

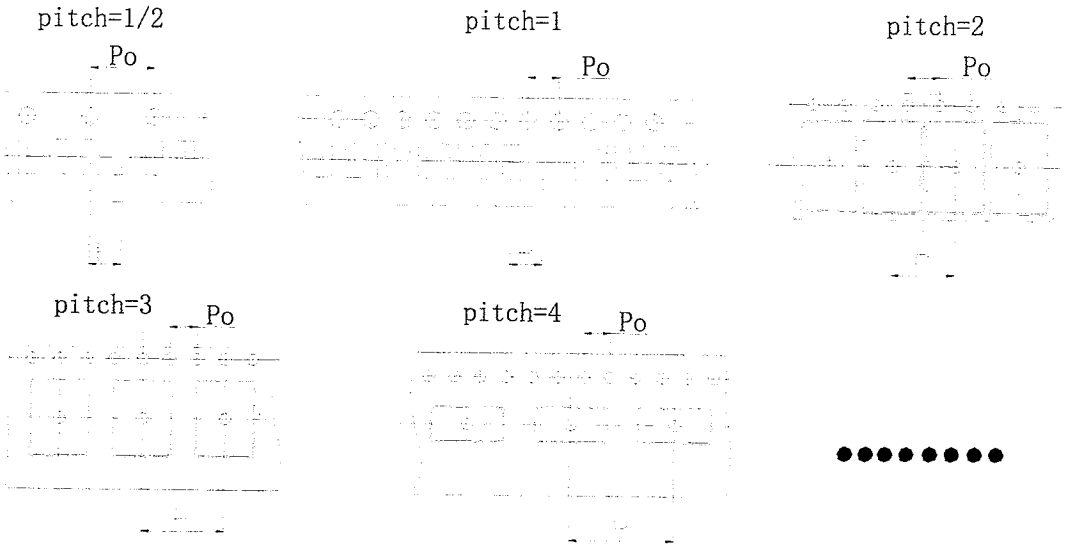
- **POCKET CHECK:** Applicable only to COU2000EX, it is used to check whether any components are absent in the pocket; press this key once to start the functions, and @ will be displayed on the upper left corner of the **LCD**; if there are any pocket without components , the device will automatically stop and give alarms. Press this key once again, and the pocket check function will become invalid.

@ DATA PITCH SET
00000 1

- **PRINT:** Applicable to COU2000ADV and COU2000EX. It is used to print the quantity and the corresponding time; if a Bar-code reader is connected, barcode of the products will be printed on the label.

Note: When the data is not a positive number, printing will be forbidden.

- **PITCH:** Pitch value setting: according to the EIA-481 standard, the P: P_0 ratio in the pockets fall within the following range: 1/2; 1; 2; 3; 4; 5; 6; 7; 8; 9; 10; 11; 12; 13; 14...; continue to press the PITCH key to set the correct pitch value. The pitch is equal to P/P_0. That is, the pitch is equal to the number of P_0s between the two neighboring pockets on the carrier tape (the P_0 for all the pockets is 4mm).



PITCH=P/ P_0

- **PRESET:** when it is expected that a certain number of parts are to counted, Preset function is helpful. Press the Preset key, enter the val the device will stop at the corresponding location, and the desi quantity can be got through simple fine tuning; press the Preset key ag to clear the set value, and the advance stop function will turn invalid.

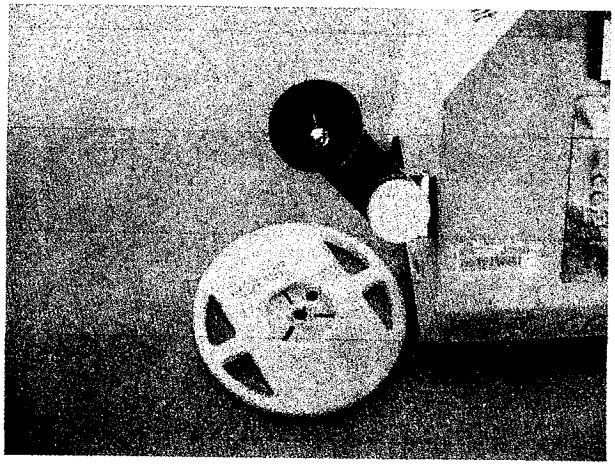
DATA PITCH SET
00000 1 *****

The preset value above 59999 is invalid due to the Limitation counting range.

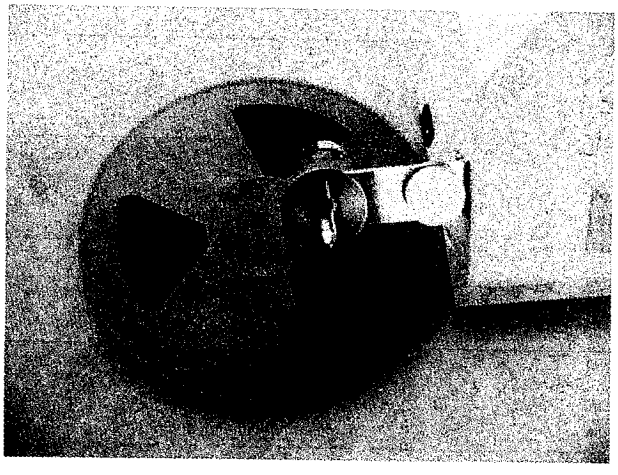
- **CLEAR:** use it to clear when beginning to count.
- **START:** the motor on the right begins to rotate clockwise, the motor the left is driven, and the counting value increases. The tape v gradually be rolled into the temporary reel from the original reel.

- **STOP:** the motor stops rotating.
- **REWIND:** the motor on the left begins to rotate anticlockwise, the motor on the right is driven, and the counting value decreases. The tape gradually rolls from the temporary reel back to the original reel. Note that when the counting value decreases to zero, the device will stop automatically, at the time, the pocket shall be back to the starting point, so as to reconfirm the accuracy of counting; press the Rewind key, the tape will go on rewinding, until it returns completely back to the original reel from the temporary reel.

4.4. Rotate **locking knob** in the anticlockwise direction, adjust the **adjustable arm:** when using the 7 inch reel, please position the **adjustable arm** at the location 45 degrees to the cabinet; when using the 13 inch reel, please position **adjustable arm** at the location 45 degrees to the cabinet; rotate **locking knob** in the clockwise direction, and lock the **adjustable arm** with the fixing bracket fast, as illustrated in the following figure:



7 inch reel / 45 Degree



13 inch reel / 90 Degree

4.5. Install the part reel to be counted onto **reeling shaft** on the left, so that the blades on **reeling shaft** are locked to the reel; install temporary reels of corresponding widths on the right; guide the starting part of the tape through the space between **upper guide pole** and **lower guide pole**, press the **guide pulley**, and hang the tractive hole, namely, D in Fig. 1, of the reel onto **counting gear**.

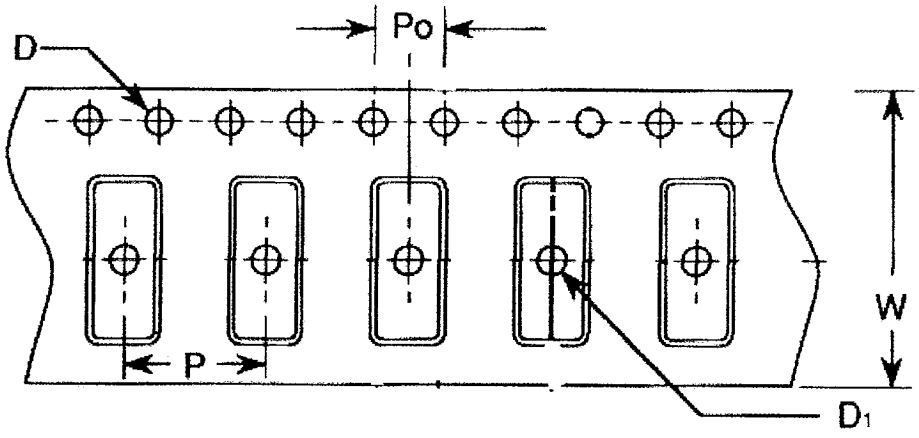
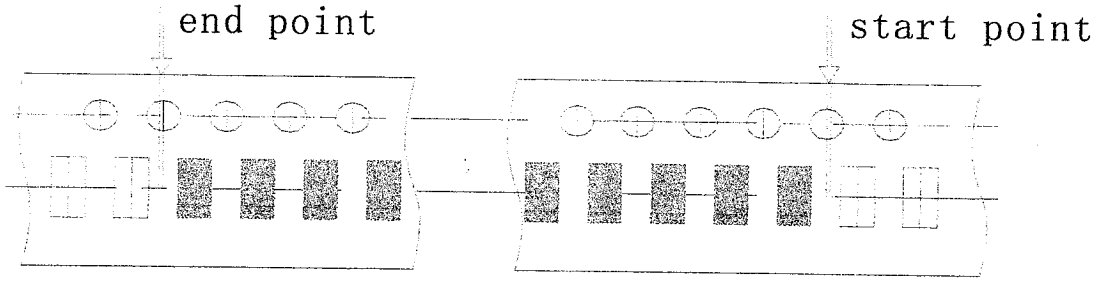


Fig. 1

4.6. According to item 4 mentioned above, press the **PITCH** key to set the corresponding pitch value.

4.7. Drag the tape by hand, align the first component with the arrow indicated on **guide pulley**; press the **CLEAR** key to clear.



o t th i t t co po t

4.8. Drag the tape and lead the tape into the temporary reel on the right and hang it to the hub of reel. Now, the value is increasing.

4.9. Press **START** key, and the motor will drag the tape in the forward direction, and the counting value will being to increase.

Note: whether in cases of manual or motor dragging of the tape, the counting value will be increased in the forward direction, and decreased in the reverse direction. The counting will be accurate only if the tape does not fall down from the counting gear.

4.10. If there is the preset value, the device will stop at the corresponding location, drag the tape manually, until the last component is aligned with the arrow indicated on the **guide pulley**.

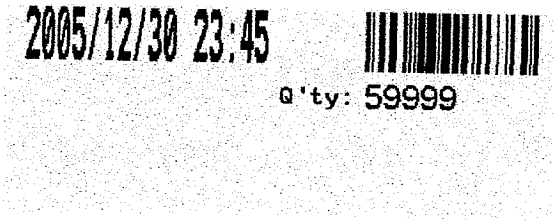
Note: because of the inertia of the motor and the different tensile forces of the pocket, the counting value where the device stops is often greater than the preset value.

4.11. If no value is preset, please press the **STOP** key to stop running when the tape is to come to an end, and drag the tape manually, until the last component is aligned with the arrow indicated on **guide pulley**.

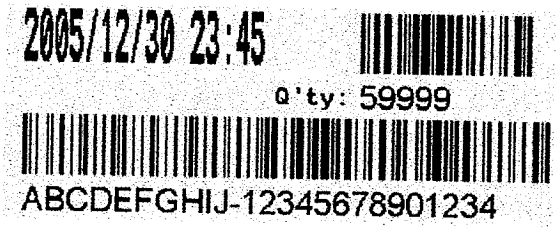
4.12. At the time, the data displayed on the device is the quantity for the components in the tape. Please record it onto the original reel.

4.13. If a label printer is equipped, press the **PRINT** key to print the label; if a

bar-code reader is equipped, scan the barcode on the original reel into the device, then the printed label will cover information such as time, quantity and bar-code, as shown in the following figure:



without bar-code of component



with bar-code of component

4.14. Press the **REWIND** key, and the tape will be rolled back from the temporary reel to the original reel. When the counting is decreased to zero, the device will stop automatically; drag the tape manually, and check whether the corresponding location zero at this time is consistent with location zero at start. This is called double check.

4.15. Press the **REWIND** key again, and all the tape will return back to the original reel.

5. Option function

Label Print and Barcode Copy Functions

1. Overview

COU2000ADV/COU2000EX provides the function of label printing, which can list the results of SMD materials inventory check on labels of standard specifications in place of manual copying. The barcode copy feature can copy the barcodes on the original labels of material rolls onto new labels to avoid confusion.

2. Attention Items

- This printer when in use will interfere with communications products such as radio and TV. So, when using the printer, please keep these products away from the printer.
- Place the printer on a horizontal and solid desktop or plane, and keep away from places of humidity, water or high temperature.
- Please be sure that the specifications of the power supply to be used are in compliance with the requirements for the printer's transformer, which otherwise may result in device burning or abnormal running.
- This printer will only serve as an output terminal of parts counter COU2000 series. The printer has been debugged and set with communications mode. For the specifications of character format, ribbon

and label paper, please refer to the following table:

Programming language	PPLB
Printing model	Thermal transfer printing
Barcode format	Code128
Resolution	200DPI
Communication port	RSR232 serial port
Carbon ribbon specification	80 mm 100 m
Label paper specification	65 26 mm 1000 pieces/roll Space: 2 mm

.Please do not try to change the printer's setting, and be sure that the carbon ribbon of consumable material is in compliance with the requirements. The label paper and carbon ribbon can be purchased from the suppliers of consumable materials. In case of special-purpose requirements, you can contact us or our distributors.

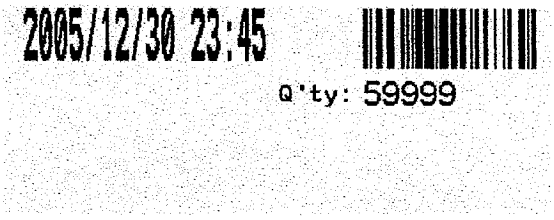
Note !!

2. Operations

2.1 Label printing

COU2000ADV and COU2000EX with label printing feature can all print labels.

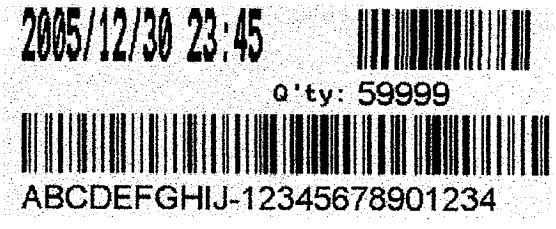
When counting is finished, the number of parts will be displayed on the screen. Press the Print key on the control panel, and the printer will print the labels of time and quantity of parts, as shown in the following figure:



Labels not containing part specification barcode

Barcode copy

If a barcode reader is equipped, and the barcode on the original roller of the parts are scanned into the device, then the time, quantity and parts' specification barcodes will be printed, as shown in the following figure:



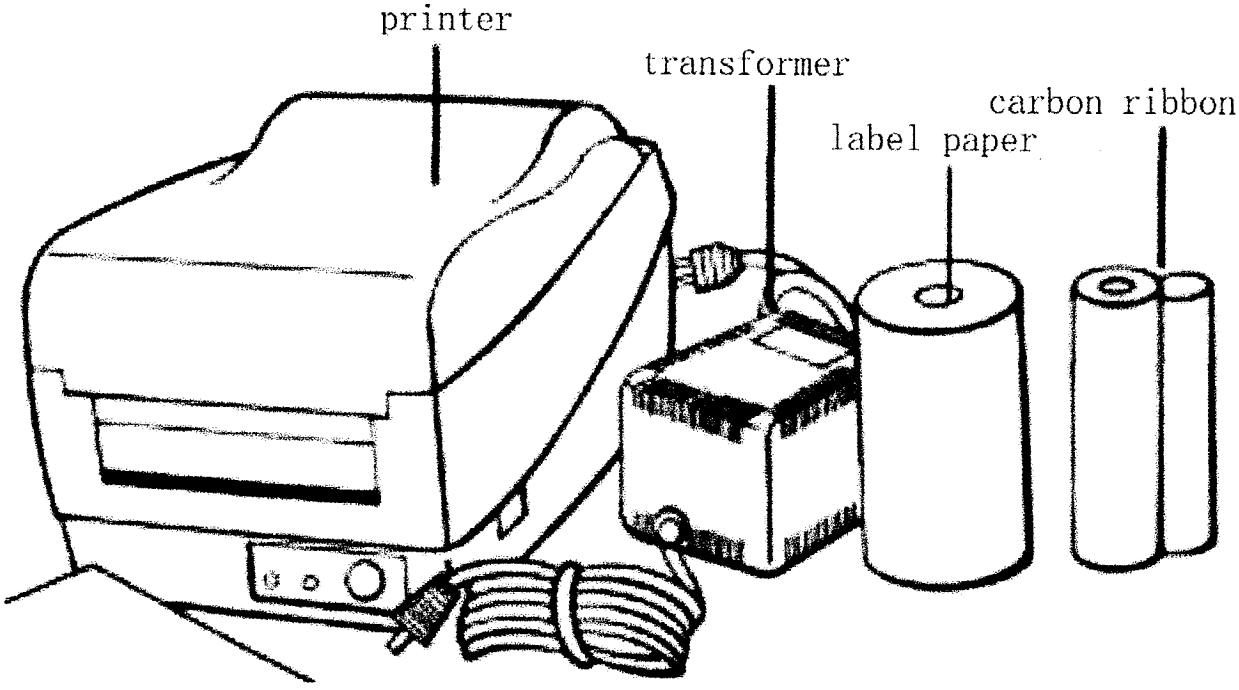
Labels containing part specification barcode

2. Installation

2.1 Unpacking and check

Ensure the following items when unpacking

- The printer's face shall point upward.
- Get out the fillings, and carefully get the printer out carefully.
- Please place the printer on an even and solid surface, and be sure that there is no any damage due to transiting
- Check whether all the following items are available: printer, barcode Reader *User's Manual*, transformer, carbon ribbon, label paper and communication wire.



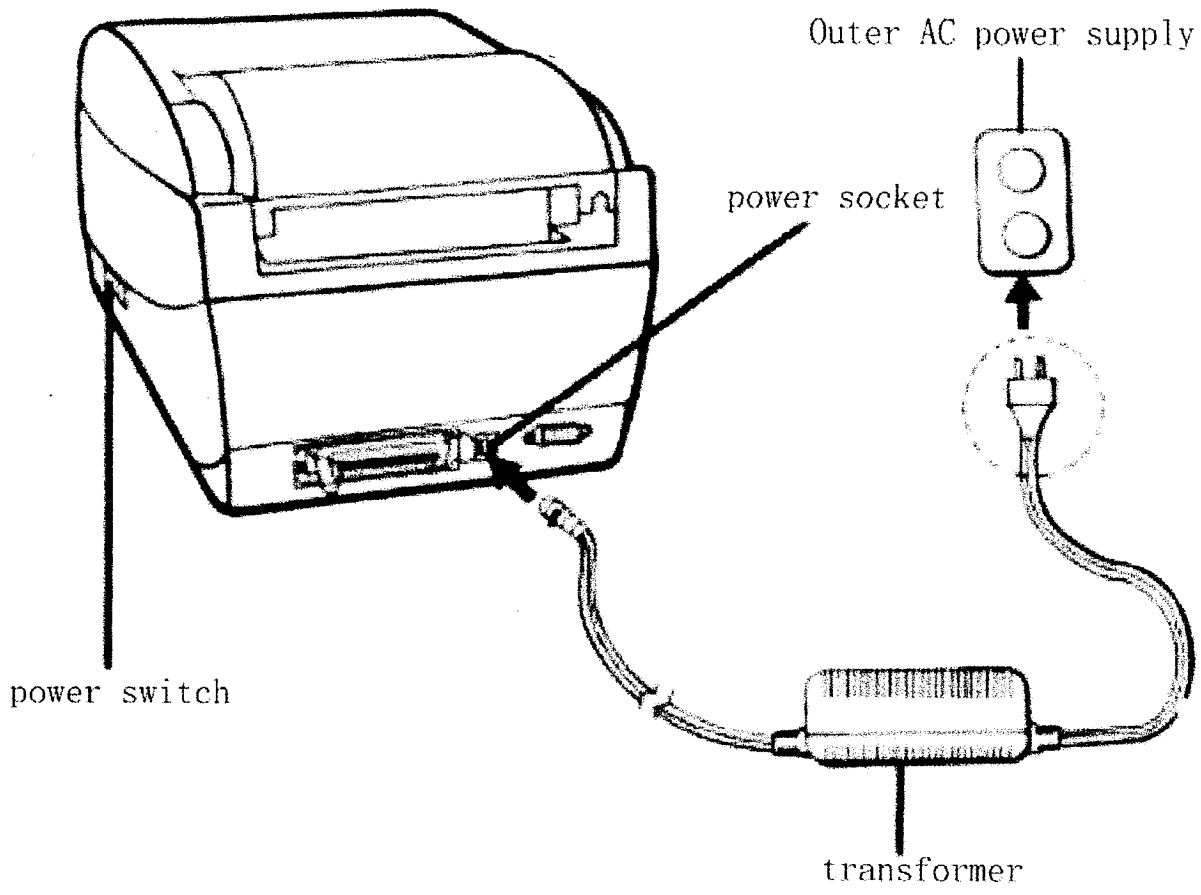
2.2 Power cord connection and communication connection

2.2.1 Connecting printer's power cord

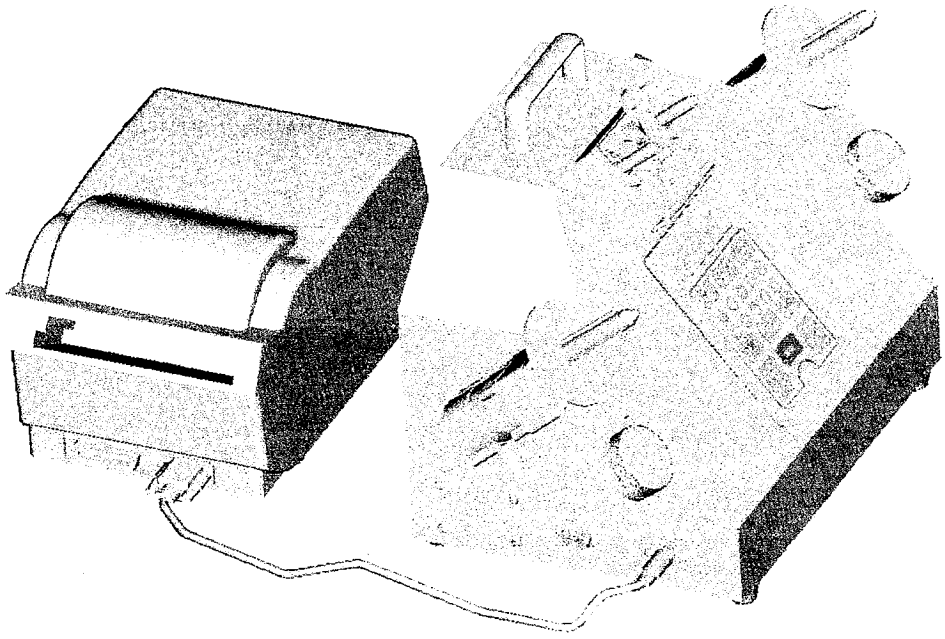
Keep the power switch at the "Off" location

Connect one end of the transformer to the power socket of the printer, and he

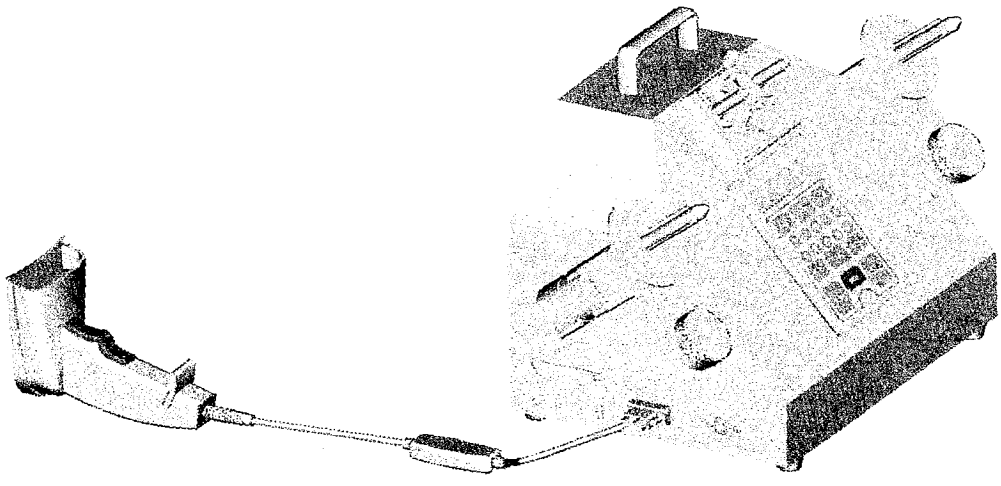
other end to the outer AC power supply. Note: when connecting the printer's power socket, be sure to avoid close loop of parallel ports (contact is forbidden)



2.2.2 Be sure that the power supplies for both the printer and the counter are off. Use a special-purpose communication line to connect the barcode machine's serial port to the printer's port of the counter. Use screws to secure them to avoid loosening.

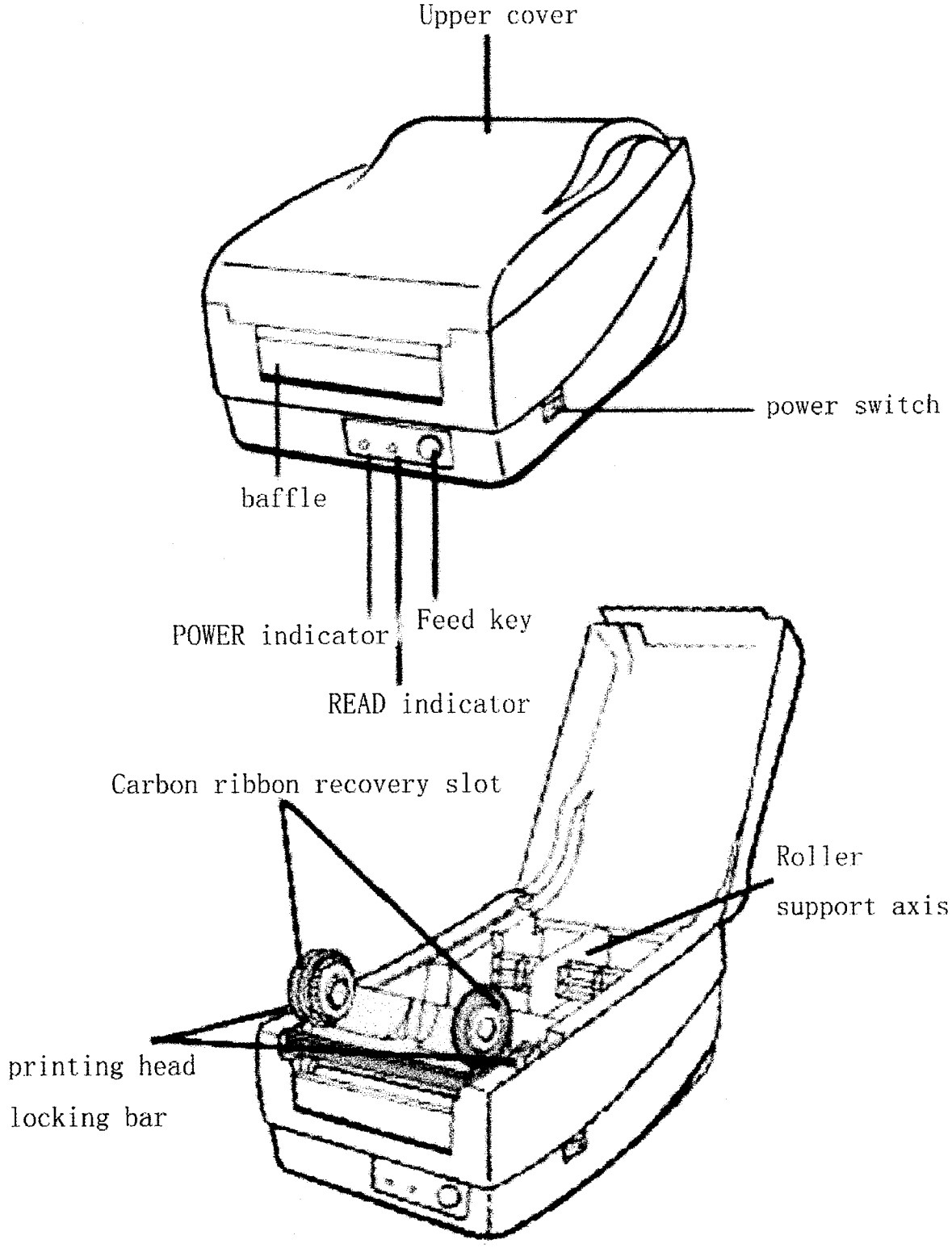


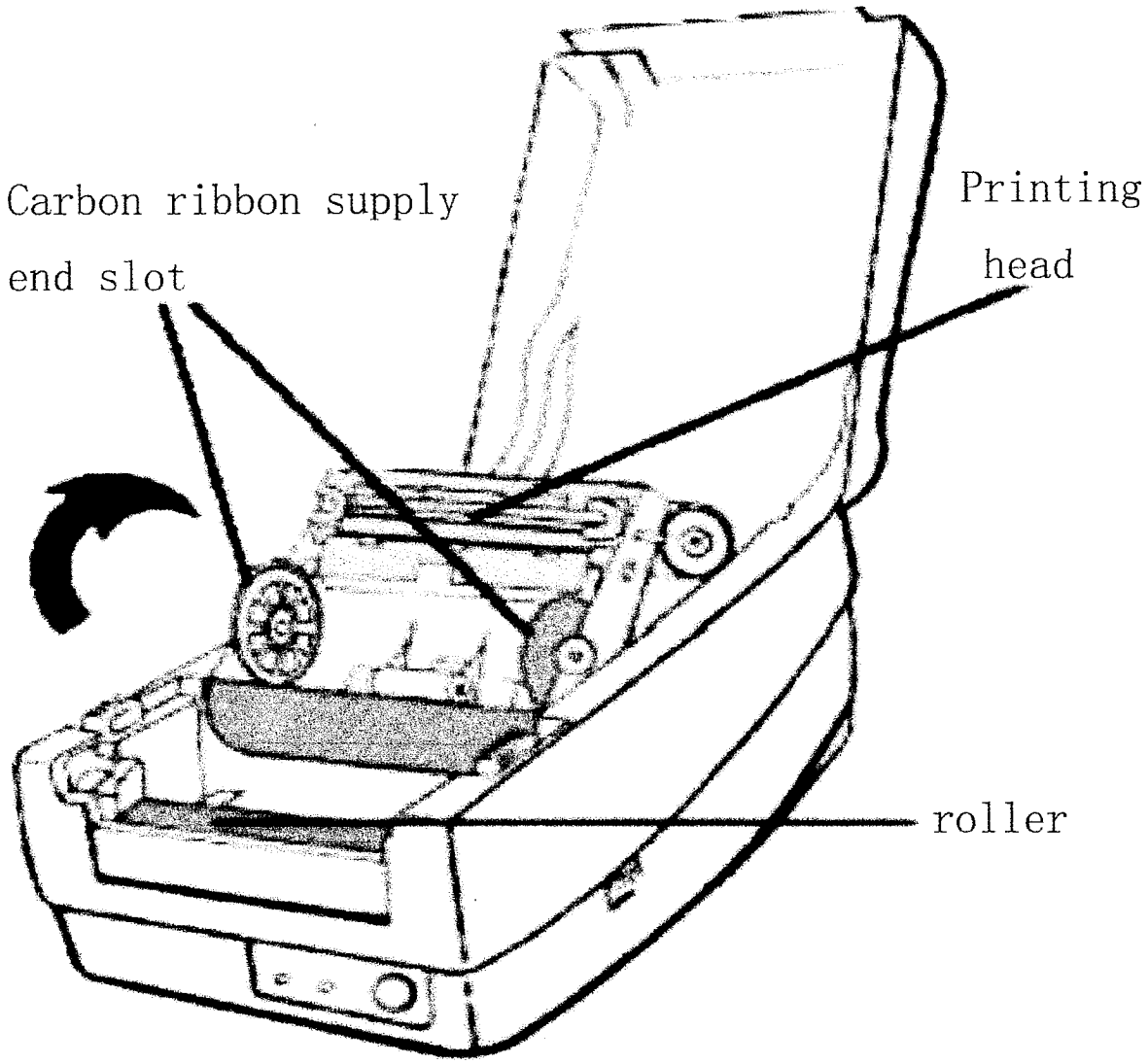
2.2.3 Connect the barcode reader's communication line with the barcode reader's port of the counter, and use screws to secure them to avoid loosening.



3. Printer maintenance

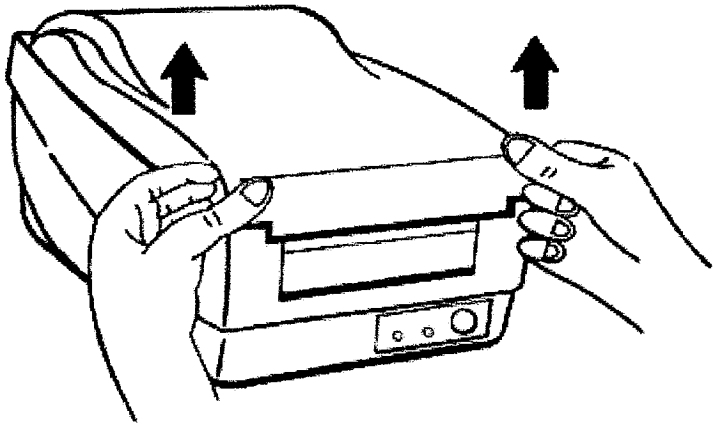
3.1 Printer structure



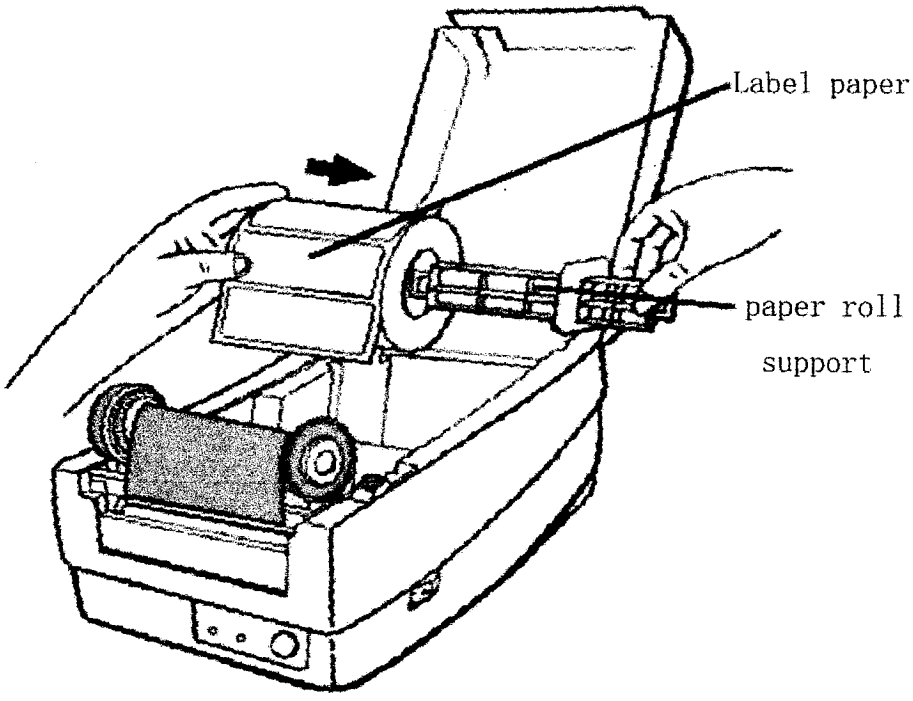

Carbon ribbon supply
end slot
Printing
head
roller

3.2 Paper placement

3.2.1 Uplift the upper cover of the printer, and keep it at the Open location.



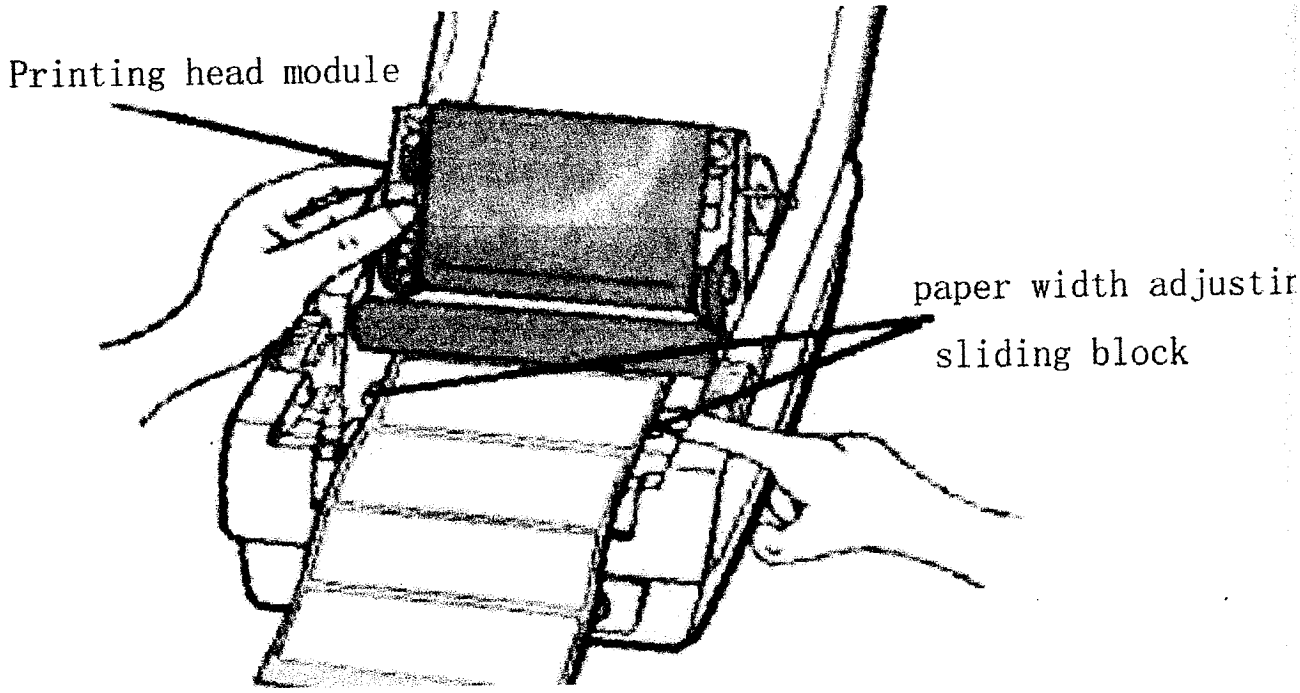
3.2.2 Lift the paper roll support axis, insert the paper roll support axis into the paper tube in the middle of the label paper, place it into the paper tray of the printer, and the baffle shall be placed on the right, flush to the left.



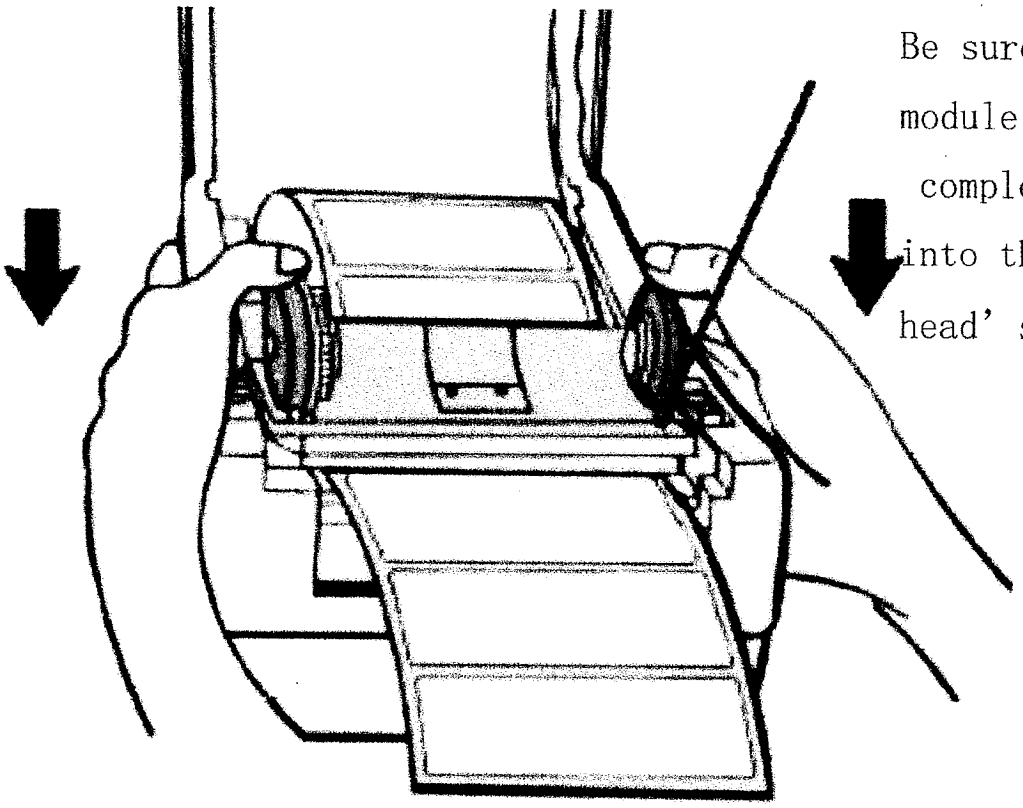
3.2.3 Loosen the locking bar of the printing head, and turn the printing head's module to the vertical location.

3.2.4 Pull out the label paper, run it through the paper width adjusting slot at the bottom of the printing head module.

3.2.5 Move the sliding block on the right to the left, get the paper tight, at the same time, pull out the label paper to the appropriate location, and be sure that it is outside the printing head module.



3.2.6 Recover the printing head module, and be sure that the module has been completely locked into the printing head's locking bar.



Be sure that the module has been completely locked into the printing head' s locking bar.

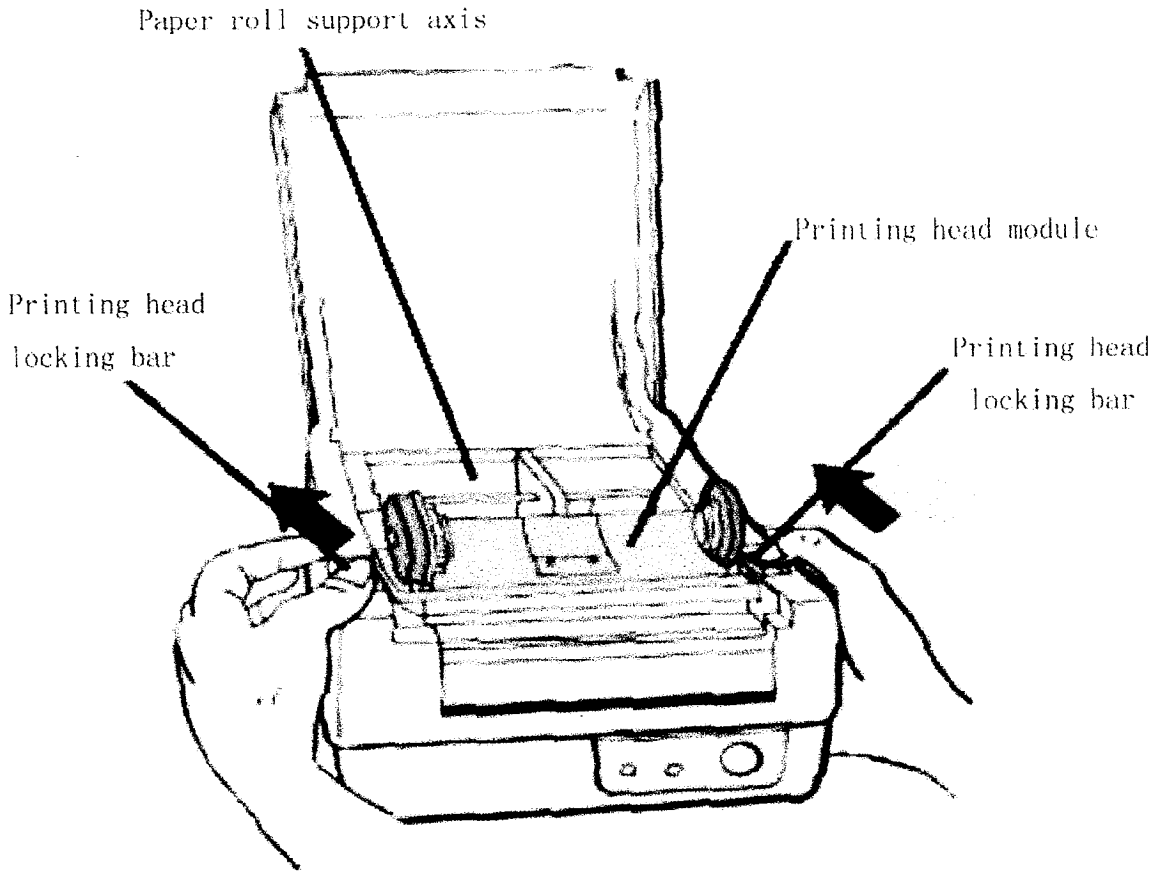
3.2.7 Recover the printer's upper cover

3.3. Paper testing

Press the **FEED** key, turn on the power supply, until the printer's motor is started. The printer will automatically feed out label of a certain length, and thus is finished the paper testing.

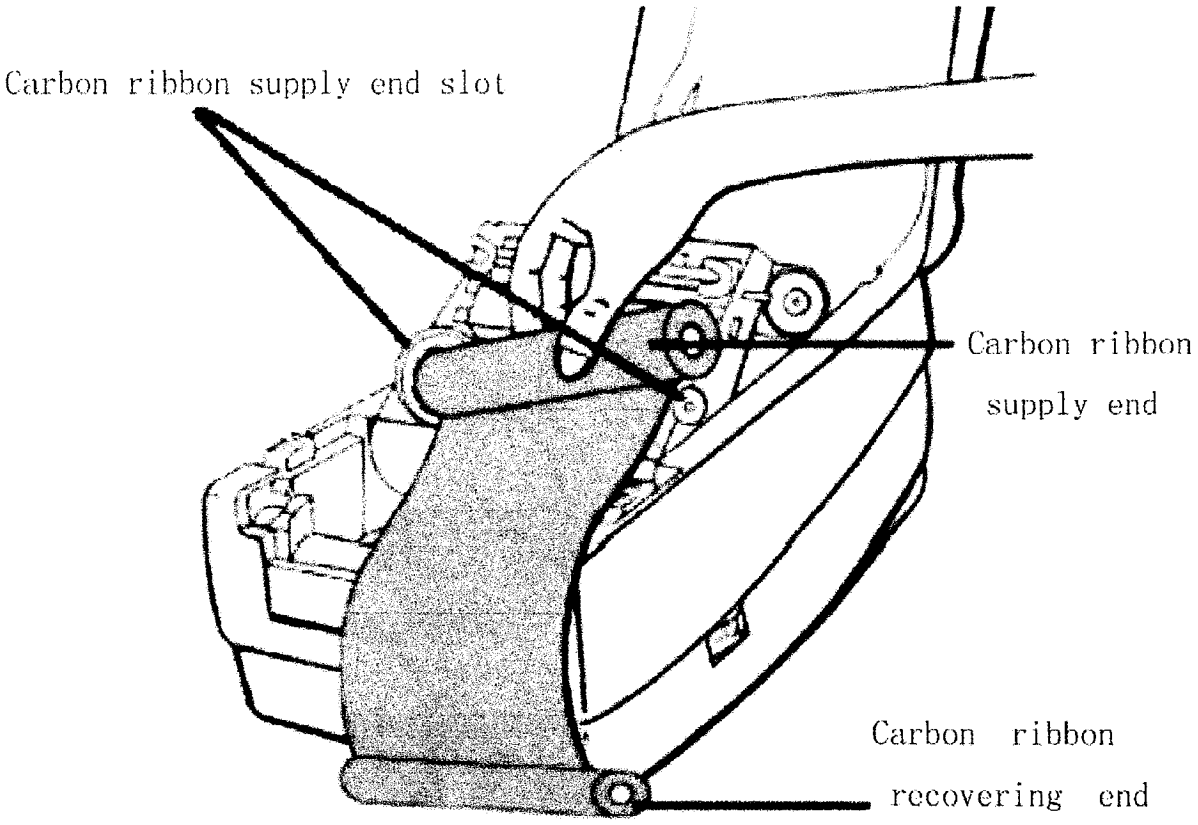
3.4 Carbon Ribbon installation

3.4.1 Lift the printer's upper cover, and keep it at the OPEN location.



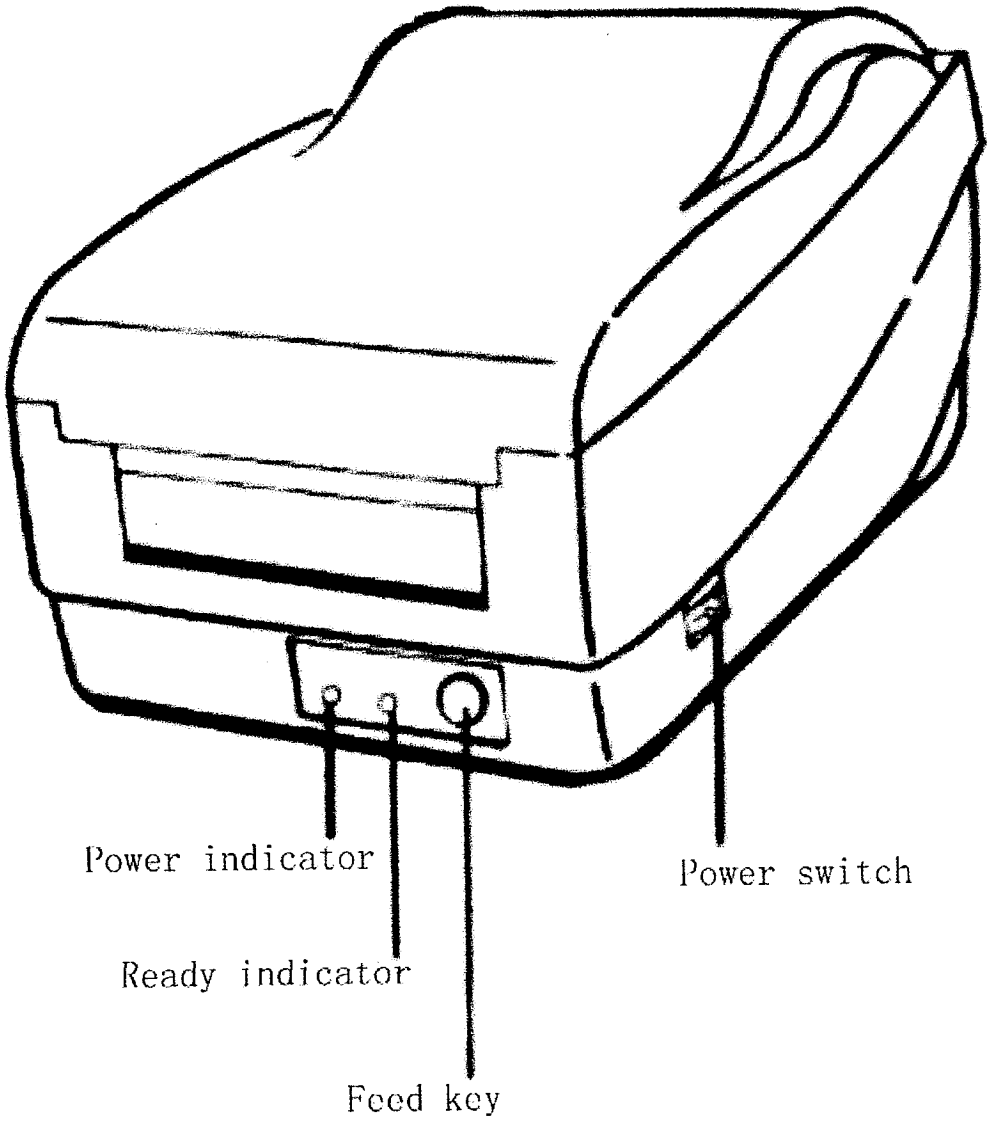
3.4.2 Loosen the printing head's locking bar, open the printing head's module, and adjust it to the vertical location.

3.4.3 Open the carbon ribbon, and lock the carbon ribbon's supply end into the carbon ribbon's supply end slot (first, lock the paper tube on the left of the carbon ribbon into the left slot, apply force slightly on the left, and then lock the paper tube on the right of the carbon ribbon into the right slot.)



3.4.4 Lock the carbon ribbon recovery end's paper tube into the carbon ribbon recovery end's slot (the step is the same as above), and then slightly roll the gear for a cycle.

3.5 Printer panel operation guide



Power Switch

Control power connection or disconnection status

Note: when connecting communication lines or power cords, be sure that th switch is on the OFF location.

FEED Key

Feed paper to the next location

Press slightly once—Feed paper to the next location

In the continuous print status, slightly press the FEED key—Enter the pause status

Slight press the FEED key in the pause status—Enter the normal print status

Ready Indicator

Display the power and error statuses

OFF—The printer is off

Green—The printer is started

Flash—There is an error, and check against the following table:

The POWER and READY indicators flash contemporaneity		The POWER and READY indicators flash alternately	
Possible problem	**Solution**	**Possible problem**	**Solution**
Label spacing Cannot be found	Check the label path Check the label detector	The carbon ribbon is used up	Reinstall carbon ribbon
Paper is used up	Reload paper roll	The carbon ribbon is blocked	Clean up the carbon ribbon
The paper roll is not loaded	Load the paper roll	carbon ribbon detector goes wrong	Replace the carbon ribbon detector
Paper is blocked	Remove the fault		

4. Basic maintenance steps:

4.1 Cleaning the printing head and sensor

4.1.1 Cleaning the printing head is the most important and fundamental maintenance. First, use cotton (or tampons and other cleaning means with less flocking and smoothness) dipped with alcohol to wipe the heating line on the printing head in the "unidirectional" mode. Be sure that the carbon is cleaned up, and then wipe another two times for confirmation (one time of maintenance can be done when one roll of paper is used up).

4.1.2 Cleaning sensor is to ensure that the device is able to keep the correct spacing between papers and ensure the security of detecting carbon ribbons. If no cleaning is done for a long time, dust in the air will deposit on the sensor. After a long time, the light source of the sensor will be in malfunction. So, please use an air pressure bottle without any elements, and the amount of spray and wiping will be determined by the operating environment of the device (one time of maintenance for every one month).

4.2 Cleaning, maintenance and lubrication of paper carbon ribbon paths and joints

4.2.1Clean along the path installed with paper and carbon ribbon, so that paper and carbon ribbon can more smoothly operate. Examine the various rotating nodes or rollers, and clean the deposit on the surface to lubricate

the various parts with lubricating oil (one time of maintenance for about every three months). Maintain the carbon ribbon's recovery roller and installation axis. However, after maintenance, the force of each axis shall be readjusted to prevent phenomena such as corrupting from happening. Customers are not encouraged to clean on their own (one time of maintenance for every three moths).

5. Trouble shooting

Q1: When printing labels, the printed part deviates in one direction, how to improve it?

A: Reload the label paper, be sure that it is against the baffle, flush on the left, and adjust the sliding slot of the paper width at the bottom of the printing head's module.

Q2: There is one or more blank papers.

A: Please calibrate, and once again detect the size of label. If the problem remains, please follow these steps to solve the problem.

1. The size of the actual label is not in compliance with the required label size.
2. The label transparence is abnormal, please use the barcode device's special-purpose label paper.

Q3: No display of barcode.

A: Probably, the barcode format is not accepted. Please select the correct barcode; or the barcode is not scanned. Generally speaking, the LED of the barcode reader will be lit when scanning barcodes, and sound BEBE.

Memory of barcode reader always keeps only one barcode, and new barcode will automatically cover the old one and be cleared after each printing output. This is to ensure accuracy of barcode copying.

Q4: No display of some barcodes.

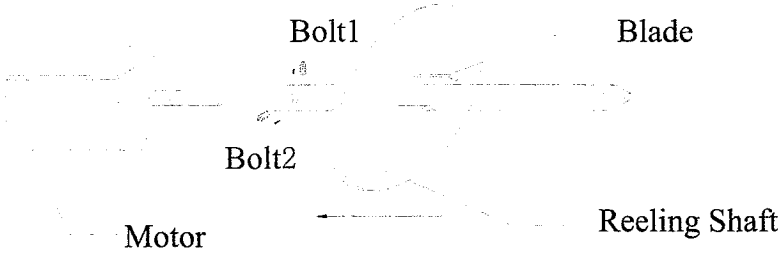
A: At present, the maximum acceptable length of barcode is 24 digits, and no additional length can be displayed.

Q5: Press the PRINT key, but the printer refuses to work.

A: The printer is not connected or not powered on; when the data is not a positive number, printing is prohibited.

6. Maintenance

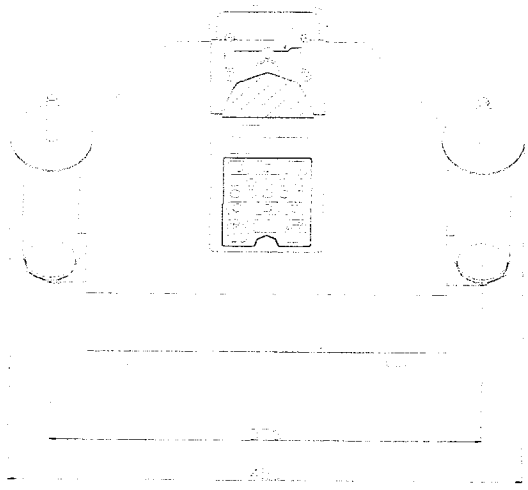
- Appropriate cleanness of **counting gear** is required for the COU2000 series products.
- Long time use of the device will result in locking loosening between the **reeling shaft** and **motor** shaft. In such a case, please use a hexagonal spanner to lock it fast.
- For every three months, please use the M3 hexagonal spanner to get **motor** shaft from **reeling shaft**, clean it before reassembly.

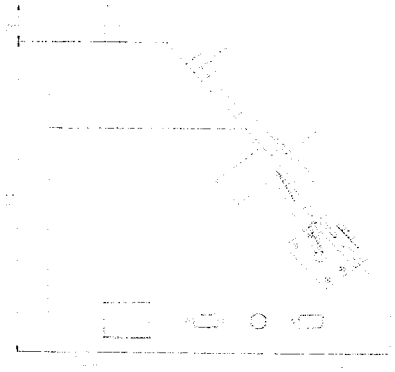


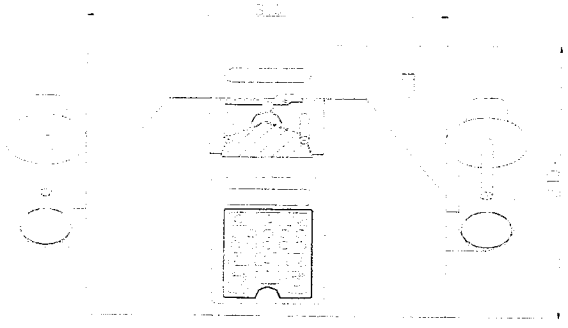
- When there is any distortion with **spring**, please get a spare spring to replace the original one.

7. Appendixes

7.1 Dimension:







7.2 Troubleshooting

Fault	Troubleshooting
Turn on the power switch, and there is no display on the LCD	1.Check whether the power supply is correctly connected; 2.The fuse is damaged, get a spare fuse from the power socket in the device.

7.3 Numerical part list

Part	Description
Cou2k-b	Cou2000 cabinet without communication board, without pocket check kit
Spring cou	Spring of guide pulley

8. Pocket Check (User's Guide)

1. Overview of Applications

Pocket Check serves to check automatically whether there is absence of components in the pocket and stop and prompt when absence of component is detected.

COU2000ADV/COU2000EX applies correlation fiber optic sensor to detect difference of quantity of light input to determine if there is absence of component in the pocket. So:

- For black emboss carrier tape without a hole in the center of pocket (Figure 3-1, P1), the function is invalid.
- For transparent emboss carrier tape, because of high similarity between transparency light quantity when no component is in the pocket and input light quantity of area between the component pockets (Figure 3-1, Z), it is east to be misjudged.
- For black emboss tape with a hole in the center of pocket or paper tape (Figure 3-1, D1), the function is realized.

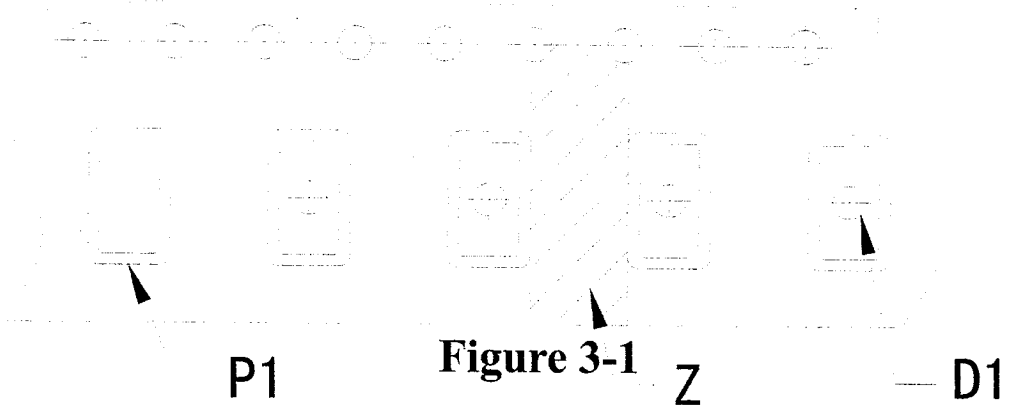


Figure 3-1

2. Four Parts of the Pocket Check

2.1 Communication board

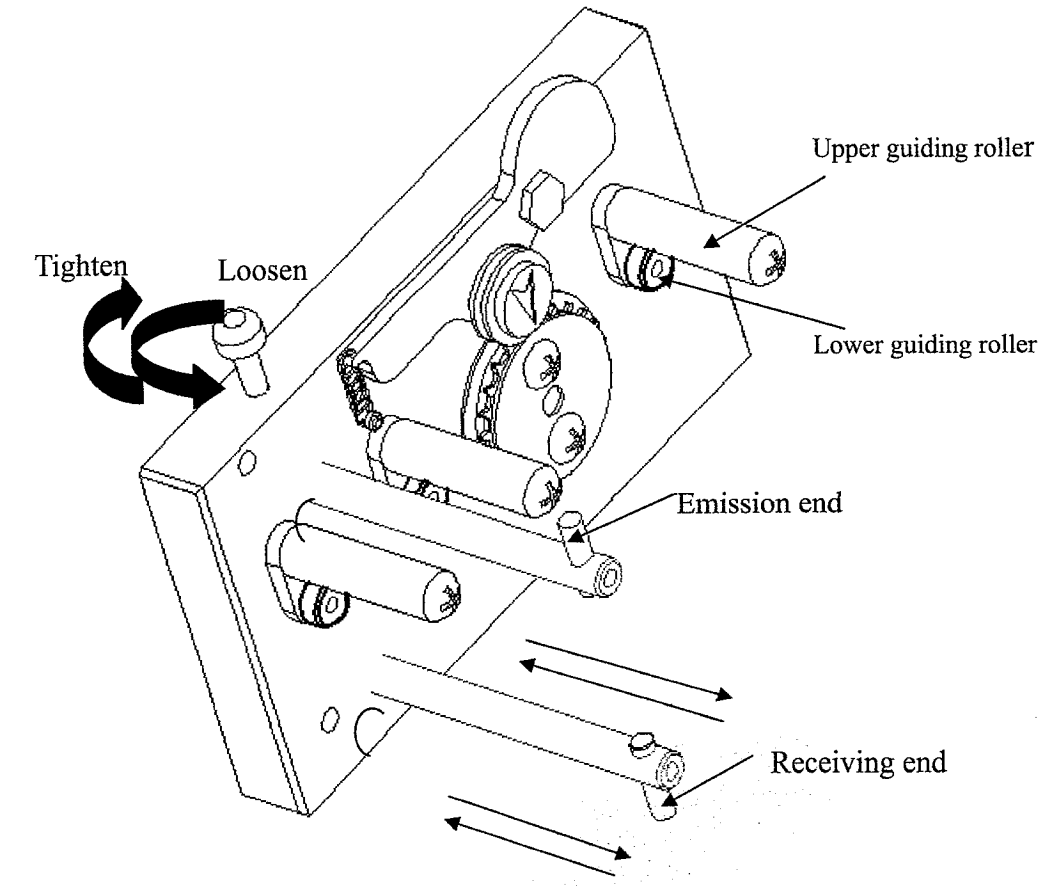
The board is installed in the cabinet oCOU2000ADV/COU2000EX and requires no adjustment and setting.

2.2 Optical Fiber

KEYENCE's correlation optical fiber FU-77 is applied and can be replaced with correlation optical fibers of the same category, diameter and flexibility.

2.3 Alignment structure for the optical fiber

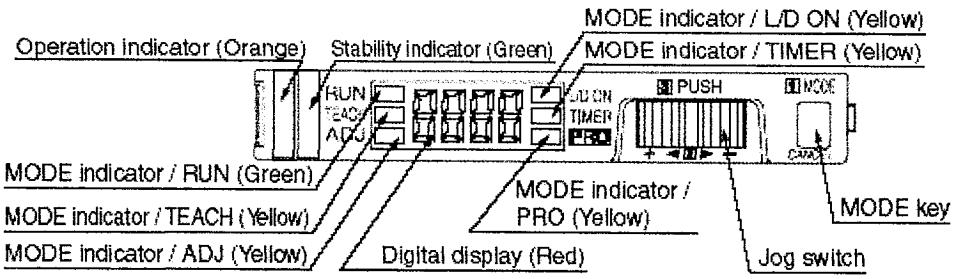
Corresponding to pockets of different width, before enabling the pocket check function, alignment structure of the optical fiber must be loosened first to align the emission end of the fiber to the central hole of the pocket (Figure 3-1, D1) and then tightened again.



2.4 Amplifier

Operation of the amplifier is relatively complicated. And SUNX FX-301 is applied to simplify adjustment of the amplifier as possible. Key operation of COU2000ADV/COU2000EX has been locked ex work, and only reference value and adjustment functions are valid.

2.4.1 Name of amplifier units



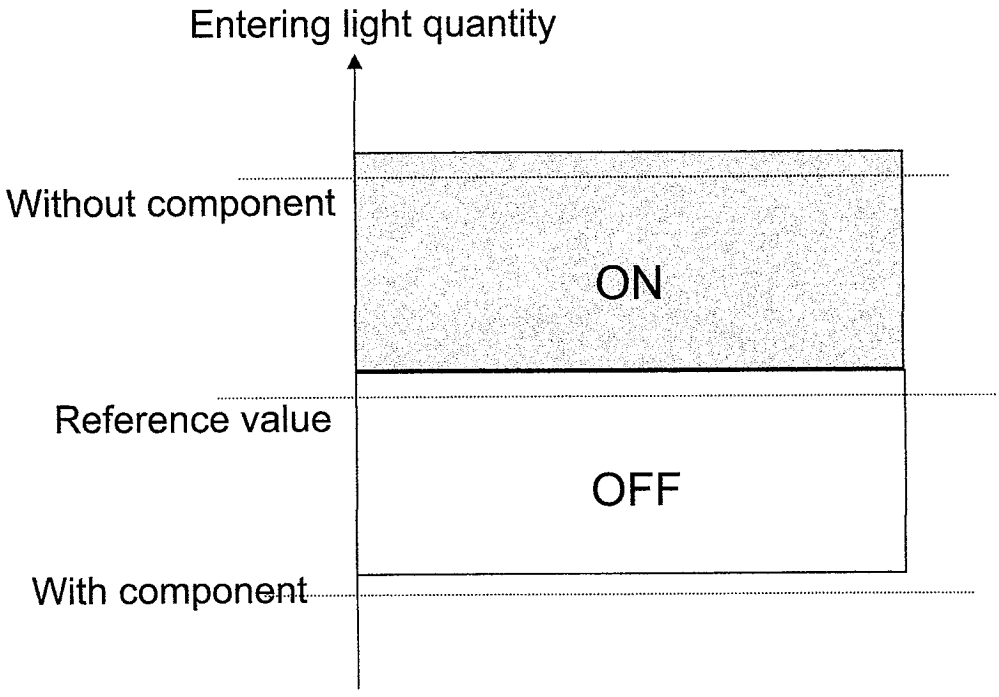
2.4.2 Adjusting and setting the reference value

Jog switch 2 leftward to increase the reference value and rightward to decrease the reference value.

Push switch 3 to confirm the setting of the reference value.

2.4.3 Reference Value

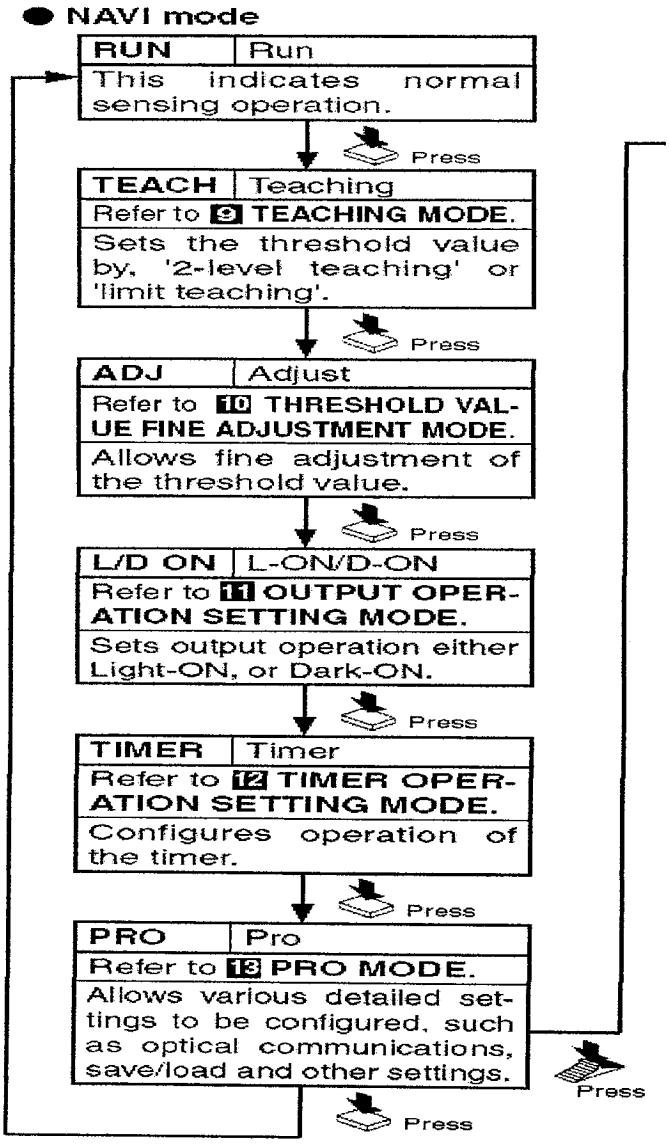
Reference value refers to critical value of entering light quantity under status of with component or without component. When using pocket check function, we need only to set the reference value. Once the entering light quantity is greater than the value, the amplifier determines that there is no component in the pocket. See the following figure:



3. Advanced Operation of the Amplifier

The key locking will be cancelled if press switch 3 and Mode 1 button simultaneously for three seconds. After canceling the key locking, settings of the amplifier become much more complicated. Please refer to the following descriptions if you accidentally or curiously enter the settings.

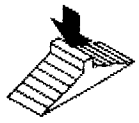
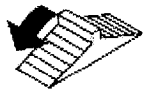
- **After being powered up, the amplifier will carry out communication self-check. General status is [Mode indicator/RUN (green) lit up, digits displays the entering light quantity].**
- **Press MODE1button to shift modes between RUN-TEACH-ADJ-L/D-TIMER-PRO in which corresponding indicator LED will be lit up. See the following figure:**



- **Press switch 3 to confirm the setting.**
- **In ADJ mode, the reference value can be adjusted by pressing switch 2.**

8 OPERATION PROCEDURE

- When the power supply is switched on, communication self-check is carried out and normal condition is displayed [MODE indicator / RUN (green)] lights up and the digital display shows the incident light intensity.

MODE key	Jog switch		
Press	Press	Turn	
		'+' side	'-' side
			

*1: When Jog switch is pressed, the setting is confirmed.
*2: When MODE key is pressed for 2 sec., or more, the sensor returns to the 'RUN' mode.
*3: Cancellation is possible by pressing MODE key during setting.
*4: When Jog switch is turned in the 'RUN' mode, the current threshold value is displayed. And then, the current incident light intensity display appears again automatically.

- **Corresponding functions of COU2000PC/COU2000ALL, the amplifier needs not adjustment i three modes. Accidental change of these settings may cause decline even invalidity of the pocke check function. Please refer to the following description to reset the default setting if they ar changed.**

- **Under L/D mode, the default setting is L-ON, i.e. the status in light entering is ON.**

11 OUTPUT OPERATION SETTING MODE

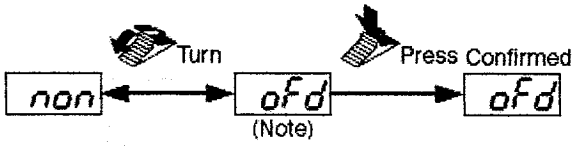
- The output operation setting can be done when MODE indicator / L/D ON (yellow) lights up.

- The output operation is changed when Jog switch is turned to the '+' side or the '-' side.
  When Jog switch is pressed, the threshold value is confirmed.

- **Under TIMER mode, the default setting is non, i.e. no timing function set.**

12 TIMER OPERATION SETTING MODE

- The setting for whether the timer is used or not can be done when MODE indicator / TIMER (yellow) lights up.
- 10ms OFF-delay (initial value) timer is automatically set when the timer is set to be used.
- Refer to '**13 PRO MODE / PRO1 mode setting**' for the setting method of the OFF-delay timer, ON-delay timer and ONE-SHOT timer intervals.

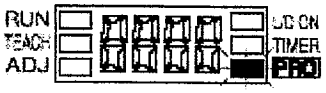


Note: The OFF-delay timer interval set in the PRO mode is displayed.

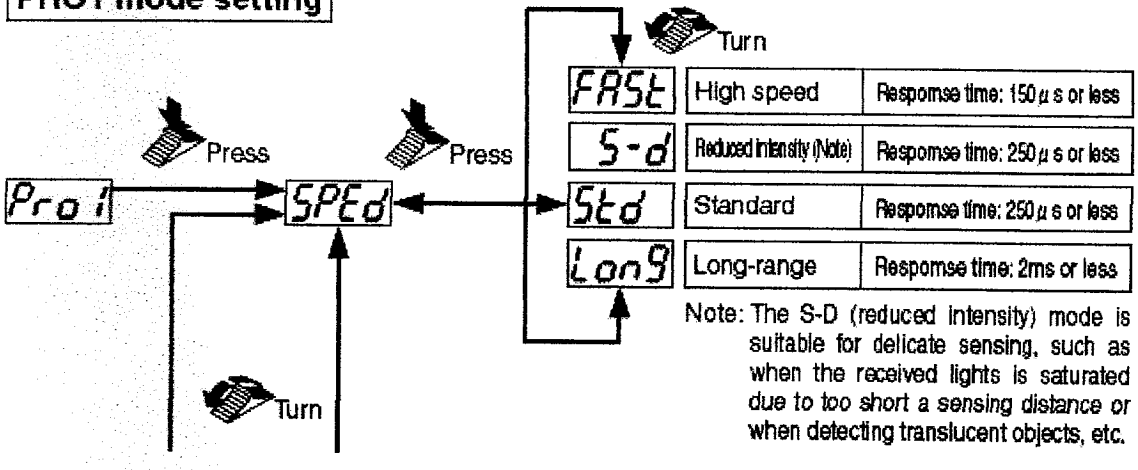
- **Under PRO - PRO1 – SPED mode, the default setting is H-SP, i.e. superspeed response.**

13 PRO MODE

- PRO settings can be done when MODE indicator / PRO (yellow) lights up.



PRO1 mode setting



Note: The S-D (reduced intensity) mode is suitable for delicate sensing, such as when the received lights is saturated due to too short a sensing distance or when detecting translucent objects, etc.

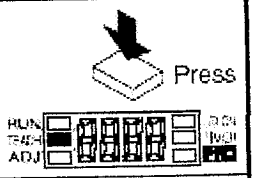
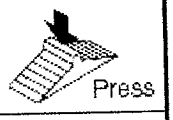
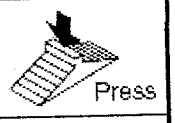
- **The user need only to set the reference value in TEACH mode and fine adjust the reference value in ADJ mode.**

9 TEACHING MODE

- The threshold values can be set by 2-level teaching or limit teaching, when the MODE indicator / TEACH (yellow) lights up.

In case of 2-level teaching

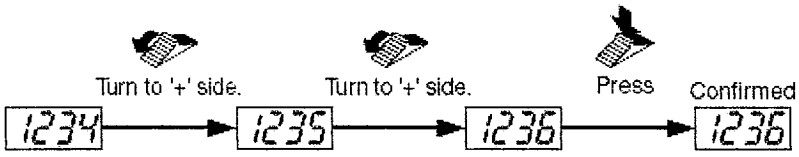
- This is the method of setting the threshold value by teaching two levels, corresponding to the object present and object absent conditions. Normally, setting is done by this method.

Step	Display	Description
①	1234	· Set the fiber within the sensing range. · Press MODE key to light up MODE indicator / TEACH (yellow). 
②	567	· Press Jog switch in the object present condition. · If the teaching is accepted, the read incident light intensity blinks in the digital display. 
③	1234	· The MODE indicator / TEACH (yellow) blinks. · Press Jog switch in the object absent condition. 
④	Good	· If the teaching is accepted, the read incident light intensity blinks in the digital display and the threshold value is set at the mid-value between the incident light intensities in the object present and the object absent conditions. After this, the judgement on the stability of sensing is displayed. In case stable sensing is possible: 'Good' is displayed. Stability indicator (green) blinks. In case stable sensing is not possible: 'HArd' is displayed. Stability indicator (green) is off.
	HArd	
⑤	900	· The threshold value is displayed.
⑥	----	· '----' blinks in the digital display.
⑦	1234	· The incident light intensity appears in the digital display and the setting is complete.

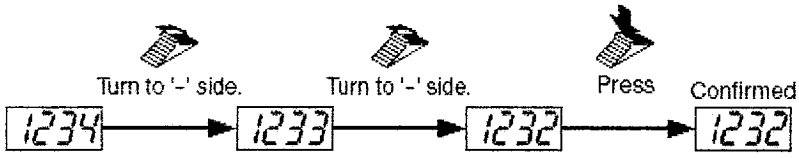
10 THRESHOLD VALUE FINE ADJUSTMENT MODE

● Fine adjustment of the threshold value can be done when MODE indicator / ADJ (yellow) lights up.

- When Jog switch is turned to the '+' side, the threshold value increases (sensitivity decreases).
  When Jog switch is pressed, the threshold value is confirmed.



- When Jog switch is turned to the '-' side, the threshold value decreases (sensitivity increases).
  When Jog switch is pressed, the threshold value is confirmed.



4. Operation Instruction of the Pocket Check Function

4.1 Press Pocket Check key on the operation panel. The displayed @ on the upper left corner of the screen indicates the function has been enabled.

4.2 Adjust the alignment structure of the optical fiber to align the optical fiber to the central hole of the pocket, see Figure 3-1, D1.

4.3 Adjust the amplifier and set proper reference value.

4.4 When using COU2000ADV or COU2000ALL, if there appears absence of component, the buzzer will give an alarm and the motor will stop to let you confirm the alarm.

5. Precautions

5.1 Do not use it outdoors or in the place where extraneous light can directly attend to

the light receiving surface.

5.2 Illumination of the place to set the reference value should be close to that of place where the machine is used.

5.3 Make sure the optical fiber head is facing down when reconnecting the optical fiber to the emission hole of the amplifier.

5.4 Do not dismantle or bend the optical fiber forcibly.