

Banknote Counting Machine

Technical manual

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★★★ The modification what we will do not be informed., please forgive that !!!

1. Introduction

1.1. Summarize

VE-6 Series banknote counting machine is vacuum banknote counter machine with full metallic frame and automatic orientation. It depends on vacuum attraction technology, controlled by microcomputer. You can choose Check mode, Free mode, Batch model, Accumulation mode and Sample mode by operation panel. Moreover you can select the counting speed.

1.2. Environments

In order for the machine to run normally and to lengthen its service life, please take note of following:

1.2.1. Allow space of at least 12cm on the back and two sides of the unit for proper ventilation while installing.

1.2.2. Don' t put the machine in the place where the sun can beat down on it.

1.2.3. Make sure to use the right power.

1.2.4. The environmental temperature ranges 2 ℃ to 40 ℃ and humidity is below 90%.

1.2.5. Altitude is below 1000 m.

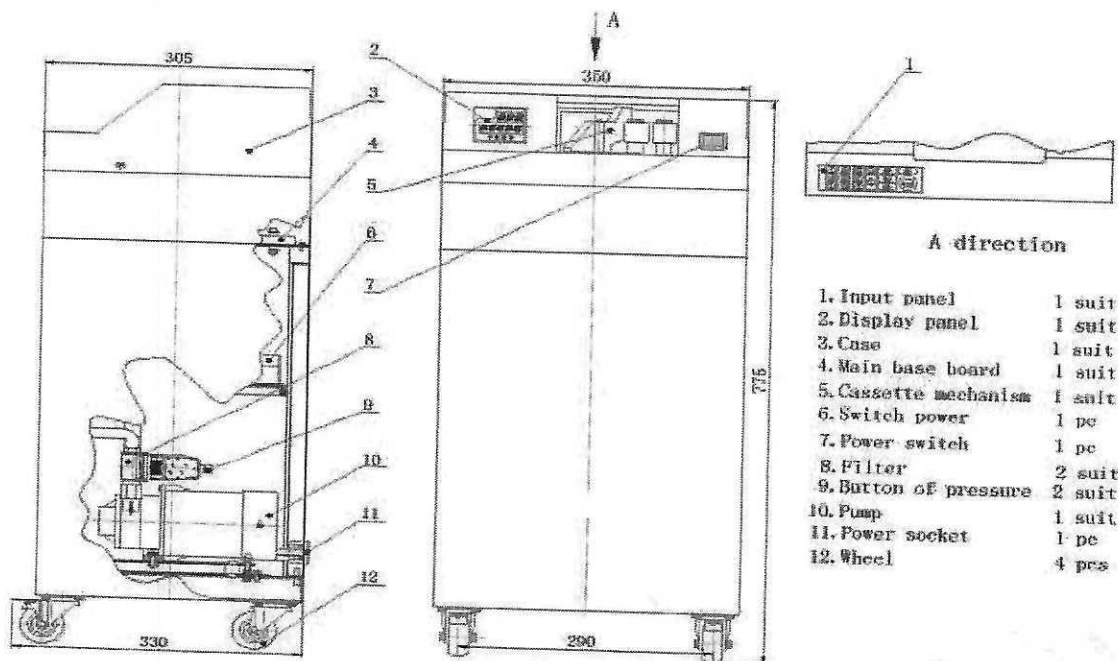
1.2.6. It is in the condition where it does not have inflammable and erodent material.

1.2.7. Continuous duty.

※※※※ You need order our special goods, if what you need do not accord with above.

1.3. Appearance

1.3.1. VC-870 (picture 1)



2. Specification: look at the table 1

Table 1 Technical parameter list

No.	Name	Content & Model	No.	Name	Content & Model
1	Type	Vacuum type	9	Pump	220V/50Hz or 110V/60Hz
2	Counting type	Pressure sensor	10	Spindle motor	30W 24V/1800
4	Display panel	0-99999+0-999	11	Note motor	30W 24V 1:25 1800
5	Capacity	<200 sheet	12	electromagnet	STT-1253 12V
6	Note size	45-130mm×100-240mm	13	Switch power	150W 90-265V
7	Control system	SH315 microcomputer	14	Fan	5030 24V

8	Work power	220V/50Hz 或 110V/60Hz	15	Weight	30-42Kg
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3. Functions and operation

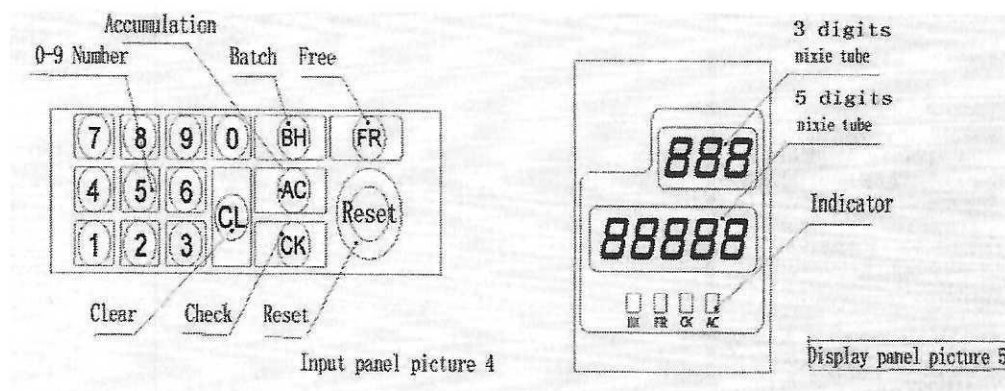
3.1. Interface

The machine has input panel as picture 4 and display panel as picture 5. It can respond according as your input operation. The display can show it at the same time

3.1.1. One buzzer alarm after a effective operation.

3.1.2. Three buzzer alarms when the function is wrong.

3.1.3. four buzzer alarms and code show E18 when the self-check is wrong.



3.2. The maintenance debugging mode

Open the power and press "RESET" at the same time, we can open the "RESET", when we heard the alarm.

At this time, we have come into the maintenance debugging mode, please press "RESET" to choose functions.

3.2.1. Check list of Maintenance Debugging Mode

show	function	options	remarks
R01	Switch signal detection	None	
R02	Control function detection	Number "1" - "6"	
R03	Machine aging function	Number "1"	
R04	Display aging function	Number "1"	
R05	Unutilized	None	
R06	Unutilized	None	
R07	Select speed	Number "1" "2" "3"	
R08	Simple mode	Number "1"	
	Leave MD Mode	Number "0"	In any debugging function

3.2.2. Control function detection R02

options	function	remarks
1	Start the note holder	Press the number "1" repeatedly
2	Start spindle motor	Press the number "2" repeatedly
3	Start pump	Press the number "3" repeatedly
4	Start batch poing	Press the number "4" repeatedly
5	Start fan	VE650 and VE600 do not use it
6	Note holder and pump start at the same time	Press the number "6" repeatedly

3.3. Check mode (CK)

The check function provides an exactly 100 sheet counting. The machine will work normally. When counted total is 100 sheets, the machine will stop. At the same time, alarm warns the operator until pressing the RESET switch if counted total is not 100 sheets (more or less 100 sheets). Pressing CK, you can be into Check mode from other mode.

When it is Check mode:

- ※ LED (CK) indicator will be lighted
- ※ Stop switch will react at any time
- ※ The input panel will be locked
- ※ After counting, when press the RESET, The note holder will open and close

3.4. Free mode (FR)

Within the right range (200 max), the machine can count the number what you put. After counting, the holder will open. Press the FR switch, machine will be into the FREE function and FR indicator will be lighted.

When it is Free mode:

- ※ LED (FR) indicator will be lighted.
- ※ Stop switch will react at any time in the process of counting
- ※ The input panel will be locked
- ※ After counting, when press the RESET, The note holder will open and close

3.5. Batch mode (BH)

Within the right range (200 max), you can enact any number. When counted number is equal to preset number, the machine will stop immediately and the holder is clamped, Press the BH switch, machine will be into the Batch function and BH indicator will be lighted.

When it is Batch mode

- ※ LED (BH) indicator will be lighted.
- ※ Stop switch will react at any time in the process of counting
- ※ The input panel will be locked

※ After counting, when press the RESET, The note holder will open and close

3.6. Accumulation mode (AC)

In period of open and close the machine, it shows the total amount after accumulating all the right counting in different modes. Press the AC switch when it is CK mode, FR mode or BH mode, machine will be into the Accumulation function.

When it is Accumulation mode:

※ LED (AC) indicator will be lighted.;

※ Show this amount in one second after completing a counting and ultimately, show the accumulation amount.

※ Press the key-press of AC to select or close Accumulation mode.

※ the Accumulation amount will be cleared when you close power or Accumulation mode.

3.7. Simple mode

selecting "SP" mode open (ON) and close (OF) through pressing "1" repeatedly.

Press "0" or restart machine in the mode of "SP" "ON", at this time, machine will work in "SP" mode until we come into maintenance debugging mode to close "SP" mode.

When it is FREE model:

※ all of the LED are not lighted

※ Stop switch will be locked

※ All number of the input key-press will be locked. Excluding "CL" and "0"

※ close the power, then open, the machine will be set in SP mode automatically.

3.8. Select speed

The counting speed is 100 sheets/3.5 seconds when machine is leaving our factory (2- speed)

We can select counting speeds according to the different environments.

The applications of three speeds are as follows

1-speed (100 sheets/4 seconds) banknotes are older even torn (older below 50%)

2-speed (100 sheets/3.5 seconds) all banknotes (but if the banknotes are older, we advice you can use 1-speed)

3-speed (100 sheets/3 seconds) 70% new banknotes or customers need high speed

remark: above scope is only reference

When it is in this mode:

※ all of the LED are not lighted

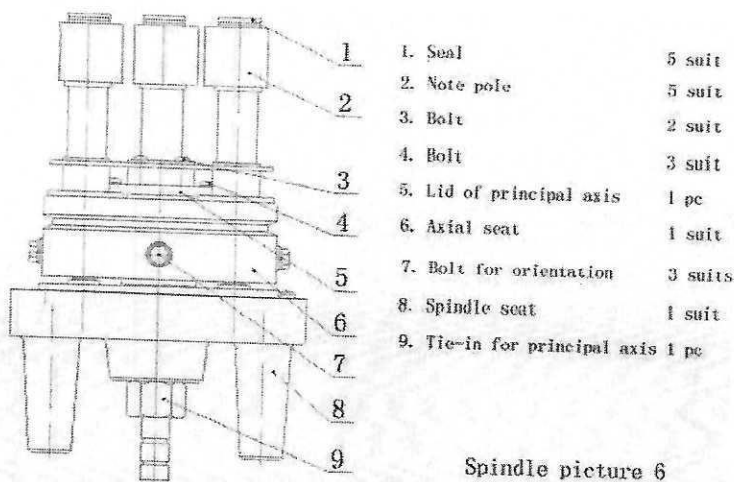
※ Stop switch will be locked.

※ All numbers of the input key-press will be locked. Excluding RESET, "CL" and "2".

※ Press RESET to select speed. The display 3000, 3500 and 4000 of 5-digit nixie tube are corresponding 100 sheets/ 3 Sec, 100 sheets/ 3.5 Sec, and 100 sheets/sec.

4. Frame and adjustment

4.1. Pump and pressure adjustment



The pressure of pump is $620 \pm 10 \text{ mmHg}$, when machine leaves our factory. Generally, you need not adjust it. If you need adjust it, please follow the method of 3.2.6 to enter the adjusting mode. Start machine, move the counting poles to the position where they can absorb the banknotes (see picture 6). Pull the button of adjusting pressure out (see picture 1 and 2), then adjust the pressure: pressure will upswing when move the button from left to right and it will descend when move the button from right to left, pull the button in when we feel the pressure is well.

4.2. Work Power

※. Display power _AC 110V/60Hz/5A or 220V/50Hz/5A Input power of machine, locked when leave the factory.

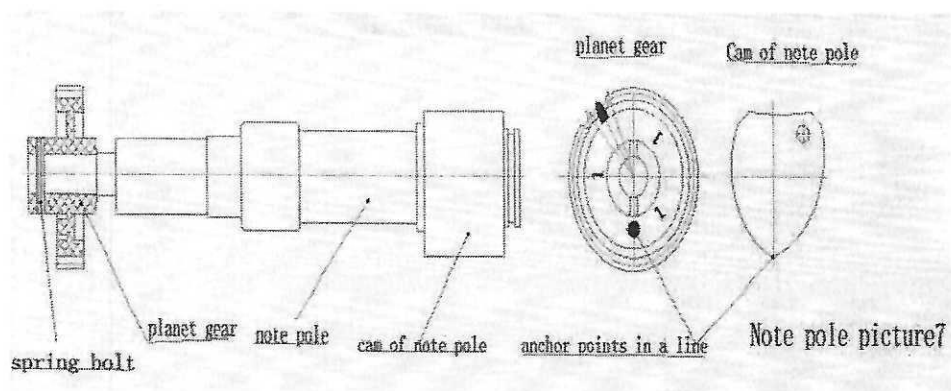
※. Switch power _DC +24V/5A, Working power of main control board, spindle, note holder, heat scatter , motor of dust absorption and batch electromagnet.

※. Switch power _DC +12V/0.5A, Driving power of main control board MOSFET.

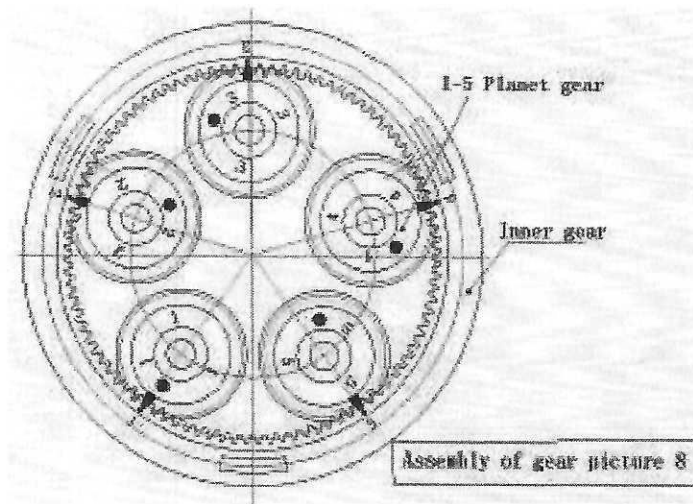
※. Switch power _DC +5V/1A, working power of main control board MCU System, key-press and display panel.

4.3. Spindle orientation and adjustment

※. Assembly of planet gear and counting pole: see the picture 7.



※. Assembly of planet gear and inner gear: see the picture 8.



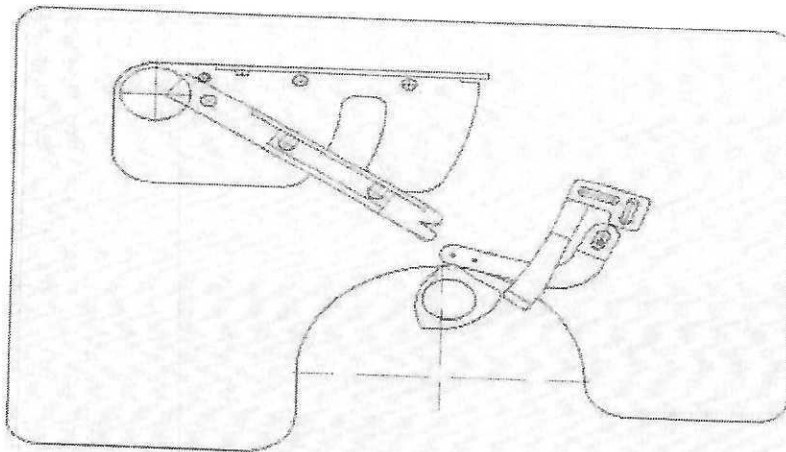
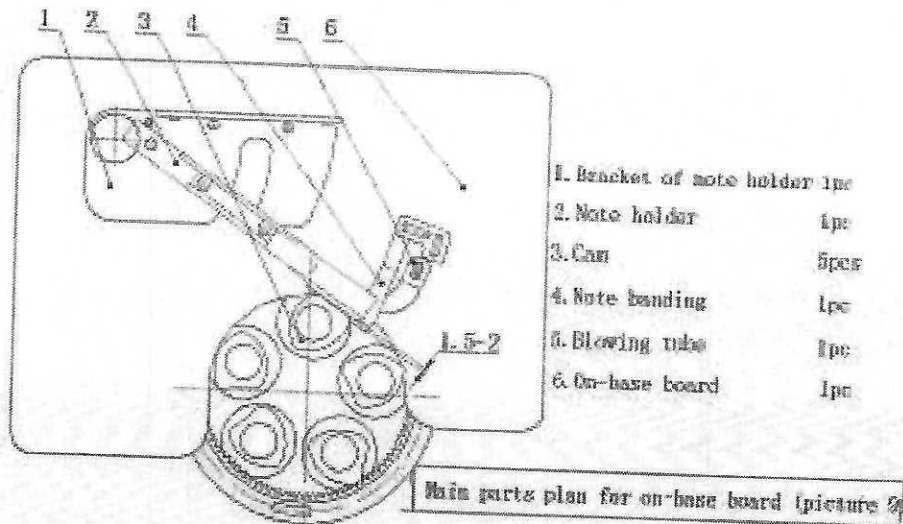
※ Adjustment of angle to absorb the banknote. Following the method of 4.1 to start machine (see picture 6), Loose the tie-in of principal axis, turn axial seat, adjust the angle of note poles to $90 \pm 5^\circ$, finally lock the tie-in of principal axis.

4.4. On-base board adjustment

※ Adjusting the note banding (picture 9)

_ The acme of note banding (NO is 4) is taller the note clamp (NO is 2) 1.5-2mm.

※ Adjusting the blowing tube (picture 9 and 10)_ the tail end of blowing tube 5 is close to the arc brim of note clamp bracket 1.



Location drawing of blowing tube (picture 10)

5. Repair and maintenance

5.1. Table for failures and resolves

failure	Check item	description	resolve
Machine without work	power	When open machinn machine can not run, please check all the supplied power circuitary .	1. Change the related parts
E01	Located switch for spindle	Machine shows failure code E01and can run normally. But without reverse located function.	1. Check whether spindle located switch circuitary is good 2. change spindle located switch 3. Change the main control board
E04	spindle	Machine shows failure code E14 and can	1. Check whether note poles jam or

failure	Check item	description	resolve
	V-SENSOR	not work. This failure owes to the	not .
	Main control board	abnormal V-SENSOR output singal	2. Check whether V-SENSOR circuitary is normal or not 3. Change main control board

failure	Check item	description	resolve
E12	Motor for note holder	Machine shows E12 and can not run normally. This failure owes to the abnormality between spindle module and note holder module.	1. Check the related circuitary 2. adjust and clear up spindle located switch and note holder located switch. 3. Change the related wrong parts 4. Change the main control board.
	Located switch for note holder		
	Spindle motor		
	Spindle located switch		
	Main control board		
E14	Start switch	Machine shows E14 and can not run normally. This failure mostly owes to the abnormal singal output of start switch.	1. Check the related circuitary 2. Mediate start switch position 3. Change start switch 4. Change main control board and display panel
E17	Control press-key board	Machine shows E14 and can not run normally. This failure mostly owes to the abnormal singal output of control press-key board	1. Check tie-in of control press-key board and related circuitary 2. Change Control press-key board 3. Change main control board and display panel
E18	communication circuitary between main control board and display panel	Machine shows E14 and can not run normally. This failure mostly owes to the abnormal communication failure between main control board and display panel	1. Check the communication circuitary between main control board and display panel 2. Change main control board
More counting	V-SENSOR	Buring counting , it usually happen to count more	1. Meditate VR102 on main control board to make the wheel 2 voltage of TEST119 to 1.01V
Less counting	V-SENSOR	Buring counting , it usually happen to count less	1. Check whether pressure output of pump is normal 2. Whether air passage leak or jam 3. Adjust the angle of spindle

			4. Check and adjust note banding 5. Adjust the position of blowing tube 6. Meditate VR102 on main control board to make the wheel 3 voltage of TEST119 to 2.30V
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5.2. Routine maintenance

The maintenance is based on the frequency of the machine used. Generally, we do it one time in 1-3 months. The details are as following:

- ◆ Close the power, clean up the oil spots, dust and other substance.
- ◆ Close the power, clean up the filters of pump and change them when it need doing.
- ◆ Draw out the seals of counting poles, then take out the filters and wash them with cleaning water, install them after drying .
- ◆ Others please refer to the corresponding requirement on the Technical manual.