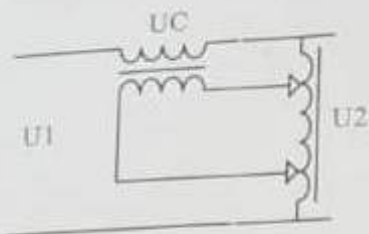




SBW/DBW
SBW/DBW

**Automatic compensation
type voltage stabilizer**

1. Compensating system are composed of compensating transformer T1 and special contact voltage regulator T2. The upside and downside of contact voltage regulator are connected to the output of stabilizer. The middle two groups of electric carbon brushes are connected the two sides of once-coil of compensation transformer. The twice coil are serial connected into main loop, see the voltage compensation principle picture 3.



Formula: $U1$ —Input voltage
 $U2$ —Output voltage
 UC —Compensatory voltage

When input voltage $U1$ changes $\Delta U1$, or output voltage $U0$ changes $\Delta U1$ because of load, then if compensation voltage UC changes $\Delta U2$ accordingly, and $\Delta U1$ equals $\Delta U2$ with opposite polarity, then output voltage $U0$ remain unchanged, which will achieve the stabilization. Compensation voltage UC varies according to the change of primary voltage of compensation transformer TM1, ie, the output voltage of TM2. The output voltage of TM2 is determined by the relative position (potential difference) of the brush on the varitran TM2 winding.

2. Voltage test and regulation circuit is the core control circuit. It can test the output voltage at any time. Compare it with the set stabilization precision value.

a. If the output voltage is within the stabilization precision, test circuit will not send out triggering signal, servo motor won't work and output voltage remains unchanged.

b. If the output voltage is above the stabilization precision upper limit, the test circuit will send out triggering signal to make step-down contactor close and drive the servo motor to reverse. Then the motor drive the front brush to slide down by chain, which will make a reversed polarity compensation voltage, thus keep the output voltage unchanged.

c. in the same way, if the output voltage is below the stabilization precision lower limit, the test circuit will send out triggering signal to make step-down contactor close and drive the servo motor to forward. Then the motor drive the front brush to slide up by chain, which will make a same polarity compensation voltage, thus keep the output voltage unchanged.

3. Protection circuit is composed of over voltage protection, lack voltage protection, over current (short circuit) protection, phase order protection and servo motor limit protection. The air switch in the main loop as part of power switch can also serve over voltage protection, lack voltage protection and over current (short circuit) protection. The servo motor limit switch mainly protect the varitran TM2 from slipping off the winding when it is sliding up. Limit protection executive component is limit travel switch. When input voltage reaches the limit, the electric brush will slide to the terminal TM2, then the brush holder will touch the limit switch to cut off the servo motor power to make it stop rotating.

Over/lack voltage protection circuit tests the output voltage anytime. When output voltage is over or below the set value, protection circuit will work and send control signal to cut off the power for protection. Then the whole machine only displays the input, there's no voltage in stabilizer. Try to start up to check whether the load has short circuit or the machine has problem.

4. Test and display circuit is composed of current, voltage display and signal indicator. Current meter displays the load current of each phase, which should not be over the rated current.

3.4 Press "step up" button, when output voltage is higher than 420V, it will delay about 4 seconds and protect circuit, cut off the power.

3.5 Press "step down" button, when the output voltage is lower than 340V, it will delay about 4 seconds and protect circuit, cut off the power.

3.6 Press "step up (or step down)" button, when the electric carbon brush will step up and down to two terminals of debugging machine, it will collide limited switch, cut off the power of servo motor. At this moment, press "reverse direction" button, making electric carbon brush slip to middle position.

3.7 Put cut-over switch into "auto." position, the output voltage should adjust to about 380V automatically.

4. The set of precision and output voltage

4.1 Test two of the left side of protection board (on the regulation control board inside) to change before precision of regulation.

4.2 Adjust PI of regulation control board to adjust output voltage.

5. Open the machine with load

5.1 After the adjustment without load, now it is allowed to connect the load. When the load is sensitivity (such as transformer), the capacity ratio between load power and stabilizer should smaller than 0.8 because of load power factor.

5.2 When the connection load is too much, please first start the big power, then the smaller one so as to keep the stabilizer from damage because of over-load current.

5.3 If the stabilizers have many loads and start at the same time. Please first start load by "AC lead directly", then cut over to operation of stabilizers. This method should not be multi-purpose. The best way is to reduce the load or start it orderly.

• If the stabilizer with load is single phase electric equipment, please choose three phases adjustment stabilizers.

VI. Operation and maintenance

1. Normal operation and notice points

1.1 Load current should not be over than allowance value.

1.2 Unstable output voltage

1.2.1 If input voltage is normal, should shut down and check the trouble reason and get rid of it.

1.2.2 If input voltage is over than allowance arrange, the over output voltage will not influence the usage, can work continuously.

1.3 When the stabilizers under normal environment, it should not get hot seriously.

2. Contents of maintenance

Usually the period of maintenance is 3 months, but under the bad condition, it should be a month and half.

2.1 Clear off all dusty and filth inside.

2.2 Adjust chain and add the note lubricating oil for reduction gear, roller chain, guide, gyro wheel.

2.3 Fix flexible and come off the fastener of the phenomenon.

2.4 Dip in the alcohol or the carbon tetrachloride with the thin white cotton cloth, wipe it clean the carbon powder on the contact voltage regulator coil, it is new to make it bright and clean. If any burn occurs, please use No.400-600 fine sand cover.

2.5 Change damage carbon brush, adjust and make them become with transferring and press parallel coil, it has a good contact with coil.

2.6 Check the protection function of stabilizers.

2.7 Check precision and output voltage of stabilizer.

| | | | | | | |
|------------|------|----------------|---|------|------|--|
| SBW-F-300 | 456 | 1100×1000×1850 | 1 | 1400 | 1480 | |
| SBW-F-320 | 486 | | 1 | 1470 | 1550 | |
| SBW-F-350 | 532 | | 1 | 1600 | 1680 | |
| SBW-F-400 | 608 | | 1 | 1840 | 1920 | |
| SBW-F-450 | 684 | | 1 | 1950 | 2030 | |
| SBW-F-500 | 760 | | 1 | 2070 | 2170 | |
| SBW-F-600 | 912 | 1100×1100×2150 | 1 | 2210 | 2310 | |
| SBW-F-700 | 1064 | | 1 | 2340 | 2440 | |
| SBW-F-800 | 1216 | | 2 | 2820 | 2920 | |
| SBW-F-1000 | 1520 | 1500×1000×2000 | 2 | 3350 | 3450 | |
| SBW-F-1200 | 1820 | | 2 | 3900 | 4000 | |
| SBW-F-1500 | 2280 | | 3 | 4800 | 4900 | |
| SBW-F-2000 | 3040 | 1100×1000×2150 | 4 | 6500 | 6600 | |
| SBW-F-2500 | 3800 | 1100×1000×2150 | 5 | 7700 | 7800 | |
| SBW-F-3000 | 4560 | 1100×1000×2150 | 6 | 8900 | 9000 | |

- 1. The above size, weight are just for reference, subject to real products.
- 2. The above products are with bypass, without self-starting.
- 3. Other functions such as self-starting can be made as per your requirements.

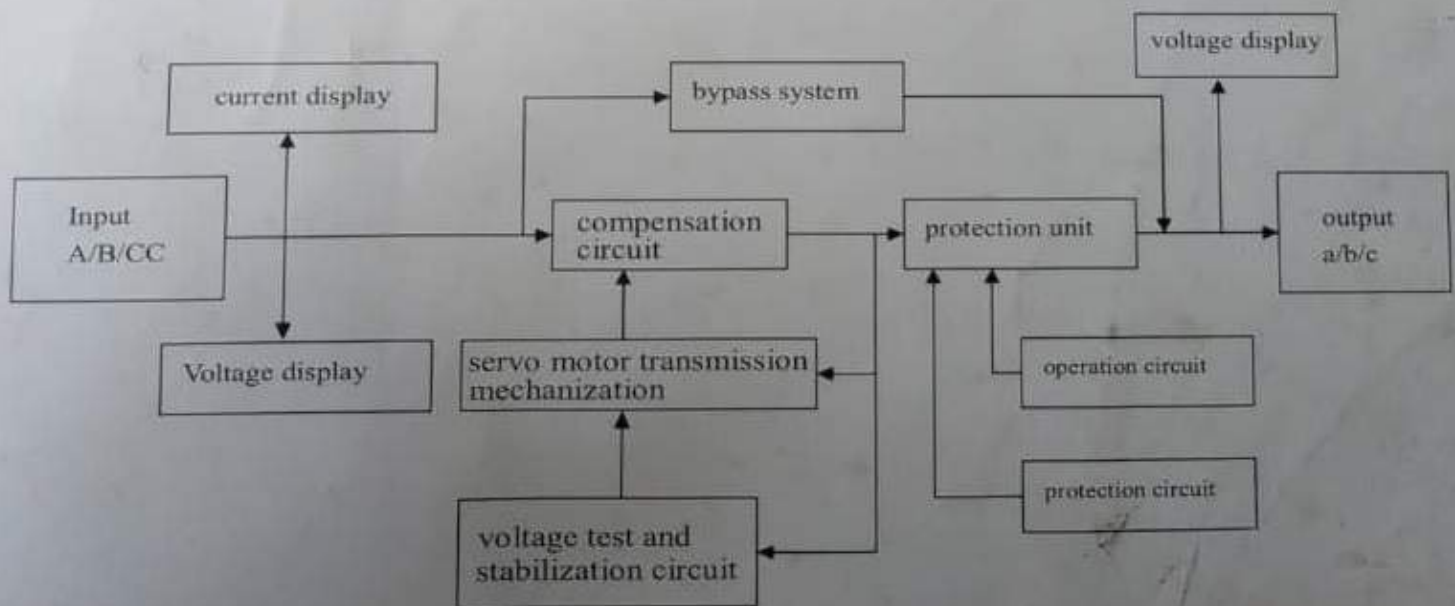
2.3 Specification of DBW series single-phase compensation stabilizer

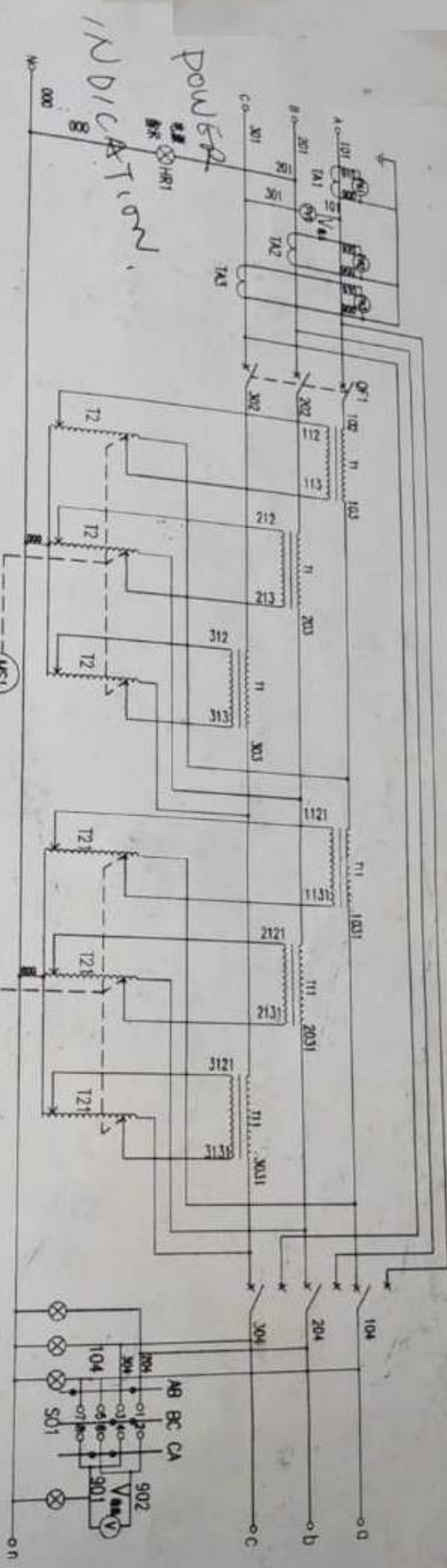
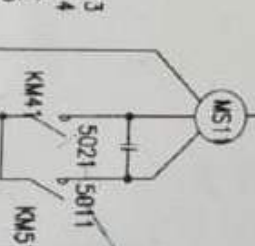
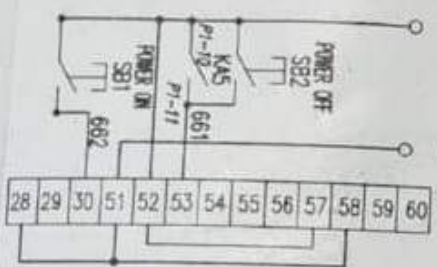
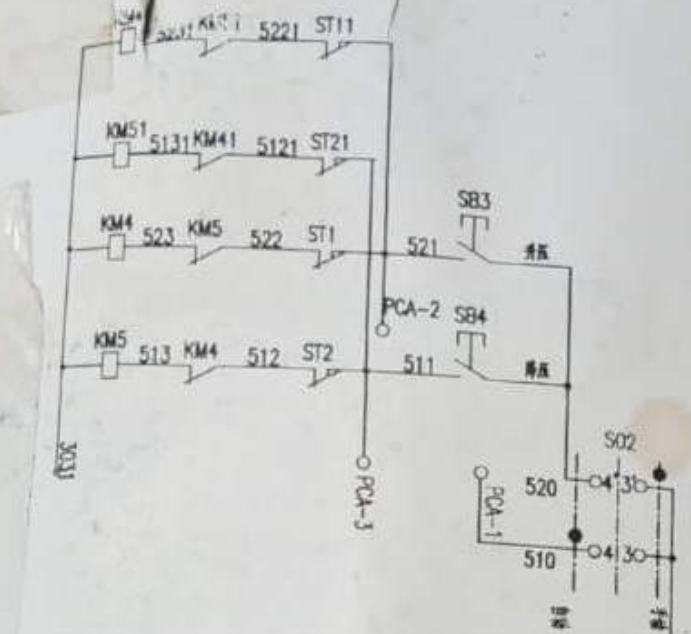
| Type& Capacity (KVA) | Current (A) | Outer Size W*D*H(mm) | Cabinet Number | Net Weight (KGS) | Gross Weight (KGS) | Remarks |
|----------------------|-------------|----------------------|----------------|------------------|--------------------|---------|
| DBW-20 | 91 | 800×560×1330 | 1 | 170 | 205 | |
| DBW-30 | 136 | | 1 | 210 | 245 | |
| DBW-50 | 228 | | 1 | 270 | 305 | |
| DBW-60 | 273 | | 1 | 300 | 335 | |
| DBW-80 | 364 | | 1 | 370 | 410 | |
| DBW-100 | 456 | 850×620×1530 | 1 | 420 | 460 | |
| DBW-120 | 547 | | 1 | 450 | 490 | |
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| DBW-180 | 820 | 1000×700×1650 | 1 | 650 | 700 | |
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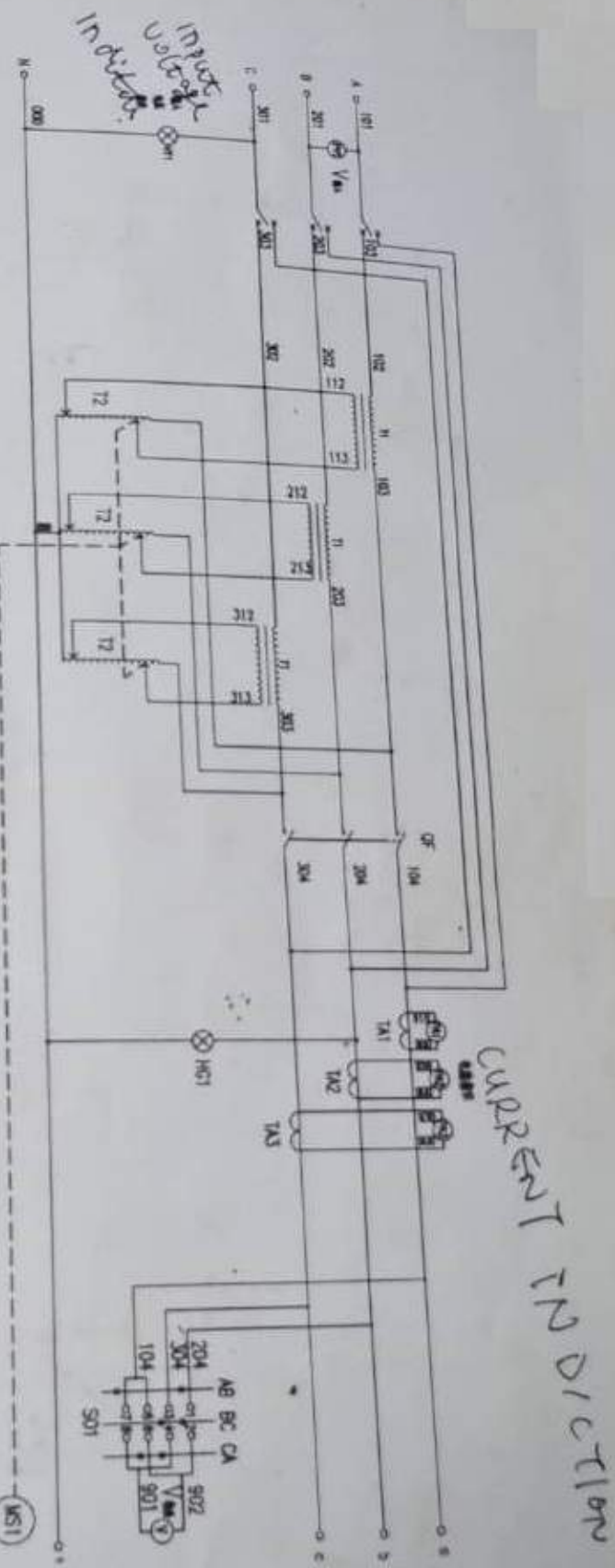
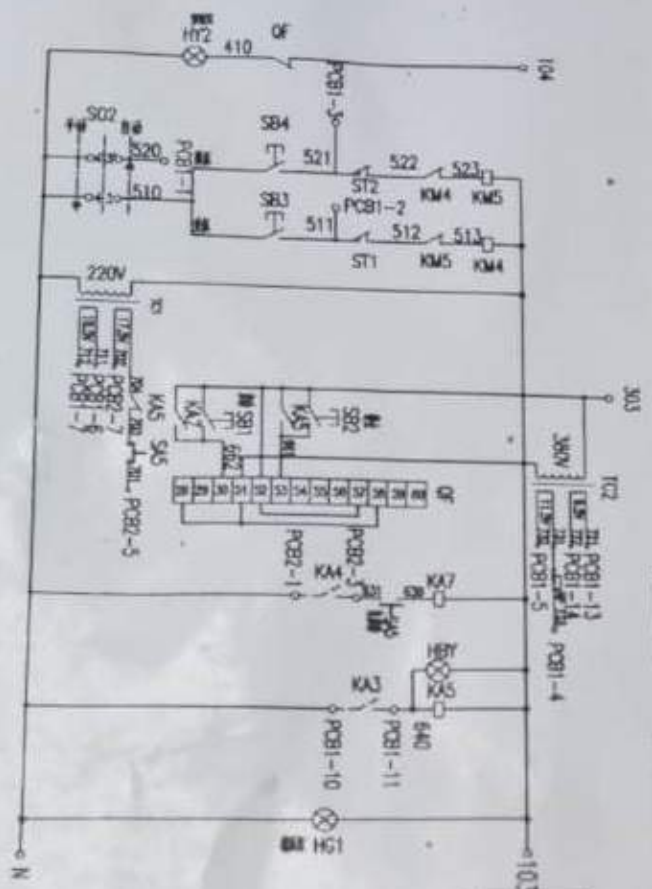
* The above size, weight is just for reference, subject to real products.

IV. Operation principle

The stabilizer is composed of compensating circuit, voltage test, motor control, driving structure, contactor circuit and protecting circuit. Schematic diagram of stabilizer refer to Picture 2.







Indicate Voltage

CURRENT INDICATION

200K-400K Electrical schematic diagram

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 t voltage of stabilizer.

VII.

Normal Solution to Malfunction

| Malfunction phenomenon | Reason | Solution |
|---|---|--|
| 1 No output voltage Find out: No input voltage and no indicator | Circuit breaker is bad | Change it |
| 2 No output voltage There is phenomenon of striking sparks | A. The carbon brush doesn't contact well and oxidize | A. Adjust the carbon brush |
| | B. Input or output or terminal | B. Get rid of and oxidize layer, connect again |
| 3 Vibration of output voltage | The precision of steady voltage is exactly fixed too high | Re-measure two electric potential machines on the left of protection board |
| 4 Big noise during operation Find out: Too hot of contact voltage regulation | A. Seriously over load | A. Reduce load |
| | B. Break carbon brush | B. Change carbon brush |
| | C. The carbon brush shelf slopes | C. Correct the carbon brush shelf and make the brush present a straight line, parallel with wire |
| 5 Output voltage to deviate from by a small margin (380V±5%) | A. Loose chain | A. Correct chain |
| | B. Stabilize the value centre to deviate from | B. Exactly fix P1 of electric potential machine on the control panel of steady voltage again. |
| | C. The resistance value of electric potential of steady voltage drift | C. Measure and protect the organ of two pie of electric potential of on the left of be definitely wholly again |
| 6 Output voltage to deviate from by a large margin (380V±10%) | A. The cut-over switch has not put to "auto" position | A. Cut over to "auto" position |
| | B. Normal in manual, abnormal in automatic ①Loose or break control connection wire ②Bad circuit board of voltage regulation | B. ①Re-connect the new wire ②Change circuit board |
| | C. Abnormal in automatic ①Bad dynamical machine ②Loose chain ③Input voltage over the range of stabilization | C. ①Change dynamical machine ②Re-confirm it ③Choose stabilizer with wide voltage |

VIII. Order instruction

1. When you make order, please inform us your type(single phase or three phase), specification.
2. If no specific need, we provide three-phase stabilizers with three phases united adjustment; if three phase stabilizer with individual adjustment, please make special description.
3. If you want different input voltage range, rated output voltage, precision of voltage regulation and please note when placing an order.

IX. Enclosure

- Enclosing with the stabilizer
1. One copy of usage manual
 2. One copy of certificate of conformity
 3. One copy of warranty card

X. Electric schematic diagram

See appendix

VII.

Normal Solution to Malfunction

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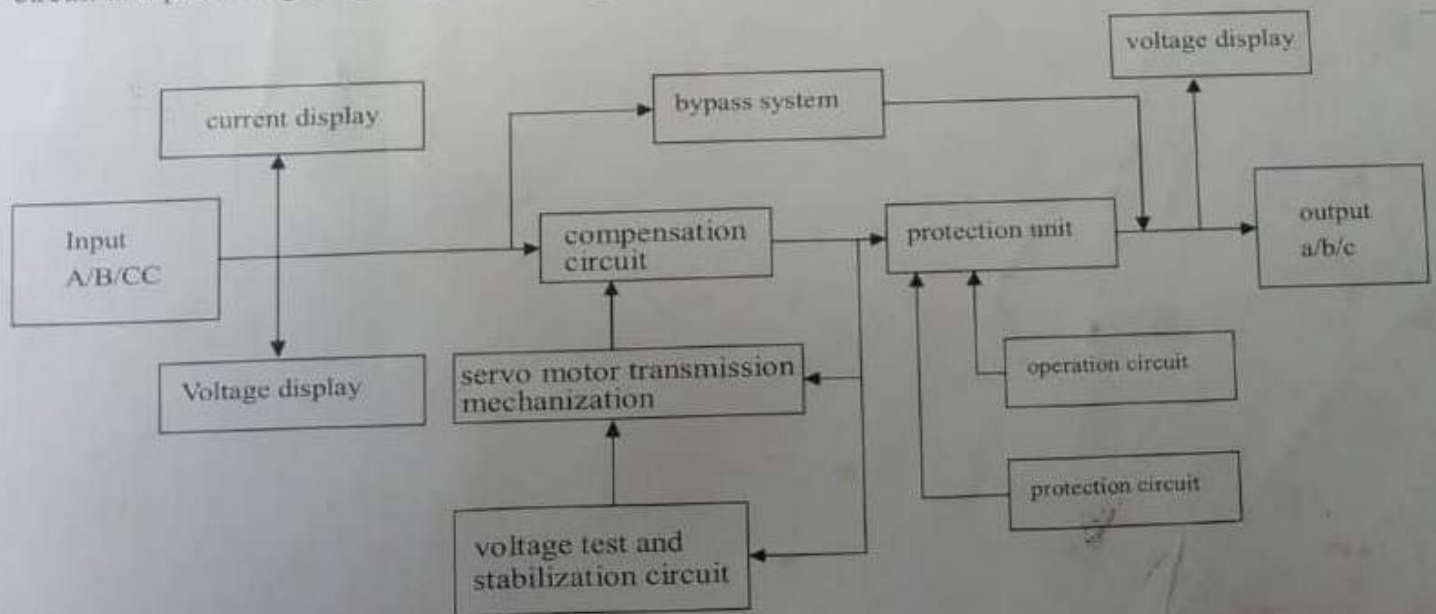
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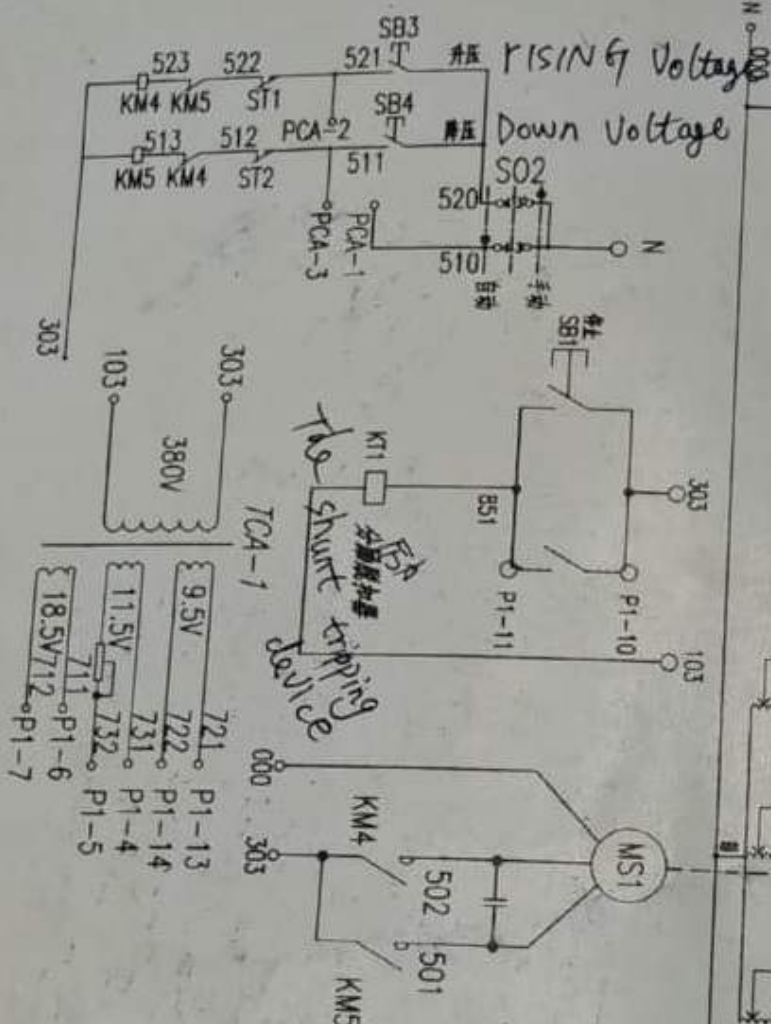
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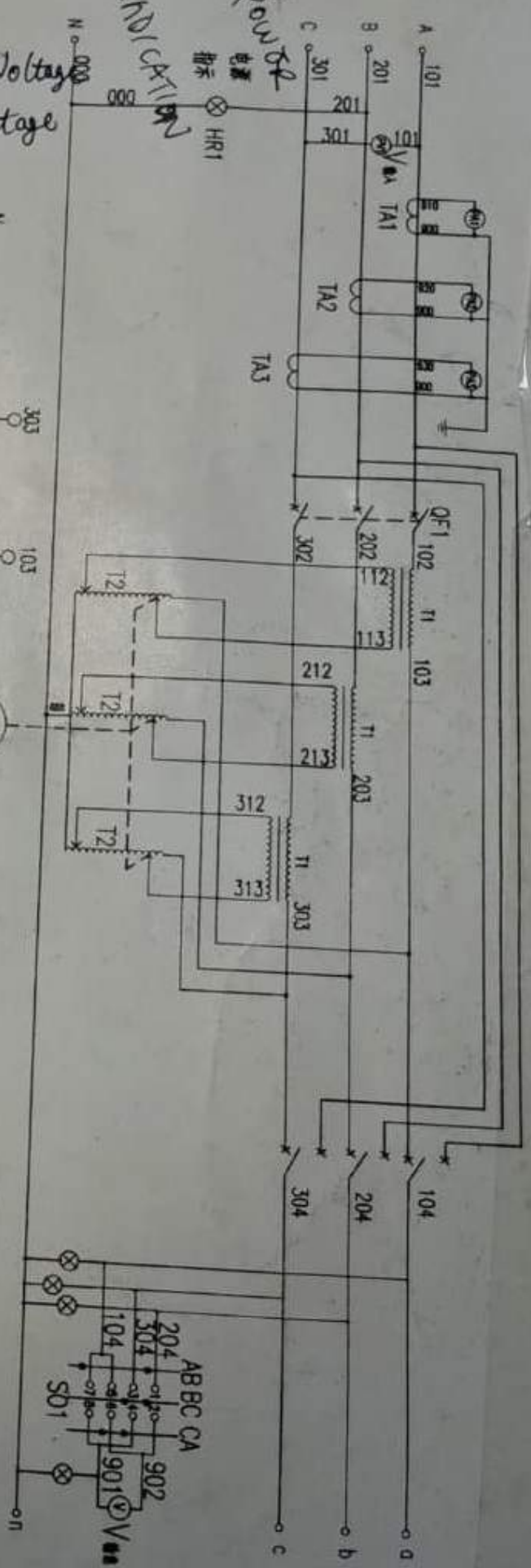
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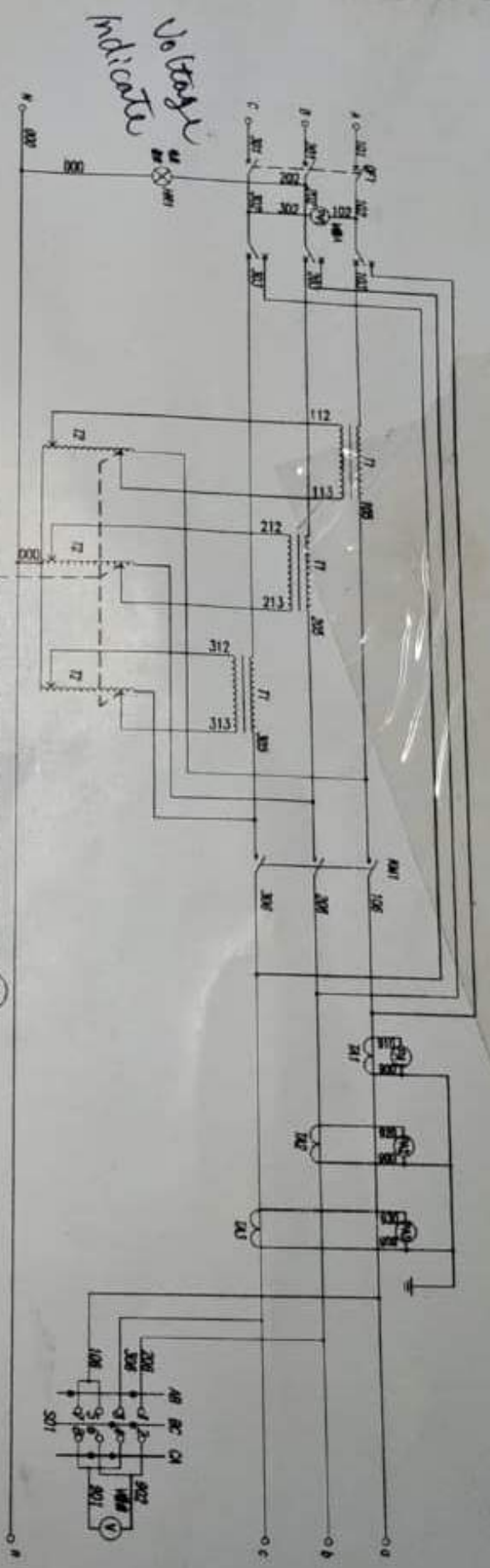
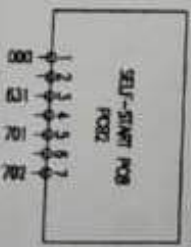
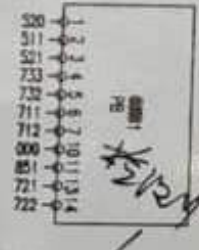
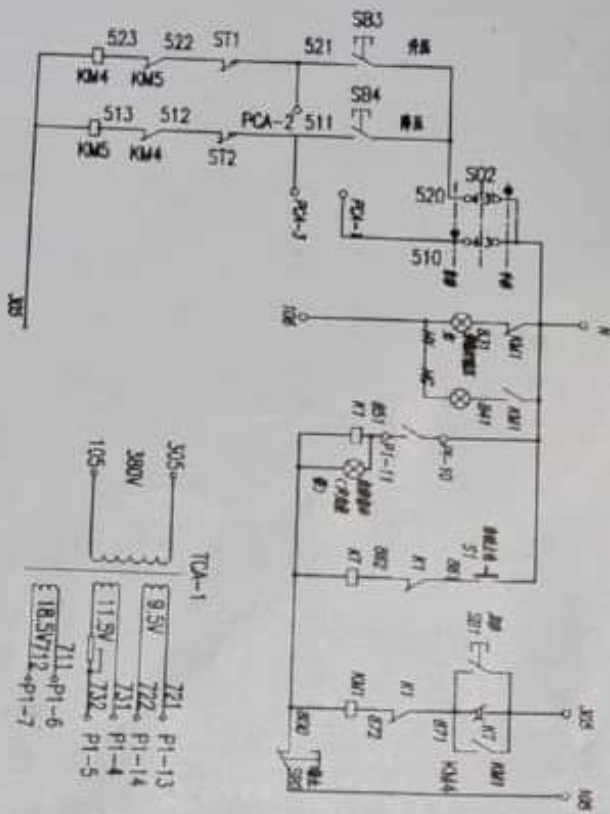


INDICATION
power
指示 电源
HR1



- TEST Board
- 1 520
 - 2 511
 - 3 521
 - 4 733
 - 5 732
 - 6 711
 - 7 712
 - 10 305
 - 11 851
 - 13 721
 - 14 722

XI. Regulator electric principle diagram



30K-150K Electrical schematic diagram