



# **LVQB SF<sub>6</sub> Current Transformer**

## **Installation and Operation Instruction**

**Shandong Taikai Instrument Transformer Co.,Ltd**

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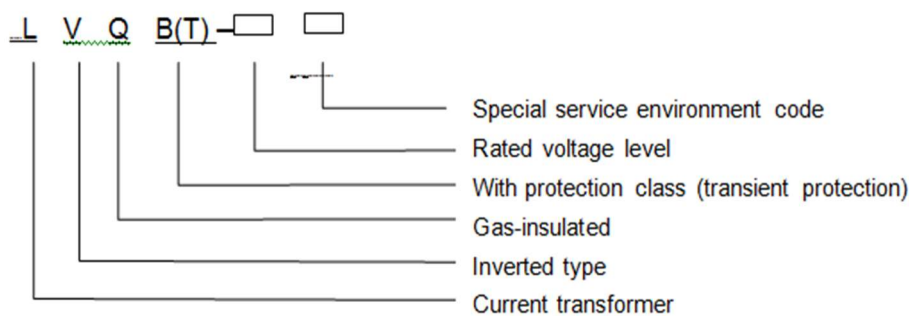
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## 1. Product description

### 1.1 Product application

LVQB series current transformer is used to transform the current value on primary circuit to standard current value (1A or 5A) as required proportion, transmit an information signal to measuring instruments, meters and protective or control device in the power system with rated voltage of 35kV to 550kV, rated frequency 50Hz.

### 1.2 Model designation



### 1.3 Product construction

1) LVQB SF<sub>6</sub> current transformer is of fully hermetical inverted type, consisting of primary terminal, enclosure, bushing, filling valve, density controller, terminal box and pedestal and so on.

2) The tank, at the top section of the product, has two different types T type and bell type. The body is fixed in the tank. Primary windings and secondary windings are insulated by SF<sub>6</sub> gas. The line outgoing from the secondary windings is led into the terminal box through the fairlead.

3) There are two kinds of bushing ceramic bushing and silicon-rubber bushing.

4) Pedestal is installed with terminal box, density controller and filling valve.



## 2. Service condition

Maximum temperature : +40°C

Daily average temperature not exceeding: +35°C

Minimum temperature:  $-40^{\circ}\text{C}$

Monthly Max relative humidity: 95% (at  $25^{\circ}\text{C}$ )

Maximum wind velocity: 34 m/s<sup>2</sup>

There are no contamination and corrosive and explosive media that seriously affect the transformer insulation in the atmosphere.

It is used in areas where the seismic intensity is not greater than 8 degrees.

### **3. Storage and transportation**

#### **3.1 Storage**

- 1) The product shall be stored in ventilated condition, without flammable, explosive and corrosive gases.
- 2) After unpacked, it is recommended to store it in an upright state to avoid damage to the product.

#### **3.2 Transportation**

The product should be transported in good condition and protected from collision and other mechanical damage.

On-site transportation should adopt the protective measures required for transportation. If long-distance transportation is required, it is recommended to keep the original packaging or repackage it in the original form.

During storage and transportation, the gauge pressure of the product is  $+0.03 \sim +0.05\text{MPa}$ .

### **4. Installation**

#### **4.1 Check before installation**

- 1) Check the shipping list whether the product, accessories and the documents are complete. The accessories include one set of filling device; The documents include installation instruction and the qualification certificate.
- 2) Check whether the package of the product is intact without damage.
- 3) Check whether the product appearance is intact without damage.
- 4) Use megger to test the insulation resistance on primary conductive rod-to-earth, which is not less than 1000 M $\Omega$ . For current transformer with voltage 220kV and above, the insulation resistance shall be tested in lying or vertical state separately to ensure the effective insulation. When test in lying state, the earthing terminal in terminal box shall be unfasten to test the insulation resistance between earthing terminal on secondary wiring

board and primary conductive rod.

For any question, please contact the service department of the manufacturer.

## 4.2 Erecting

After unpacking, hoist the product and erect in accordance with figure 1 to figure 2. Refer to the nameplate for product weight.

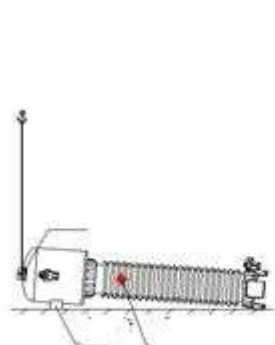


Figure 1-1 Horizontal

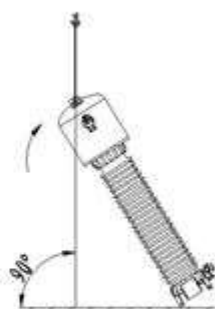


Figure 1-2 Erecting



Figure1-3 Vertical

Figure 1 Hoisting schematic of cap type SF6 current transformer

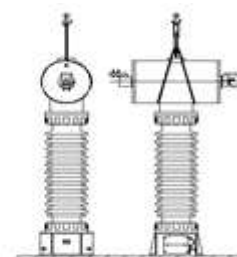
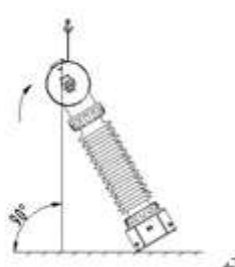
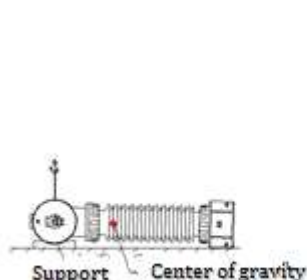


Figure 2 Hoisting schematic of T type SF6 current transformer

Note: string and ground shall form an angle of 90 degree.

When hoisting or erecting, **No other parts can be used as hoisting lugs except the specified lugs**. When the products in horizontal state, the proper support shall be provided as figure1-1 and figure 2-1.

## 4.3 Series-parallel switching

Unless otherwise specified, the primary connection is in series when leave factory. Before operation, choose the corresponding connection method as requirement. If there is no specified requirement for series or parallel (transformation ratio with 2×). It is no need to change. See figure3, figure 4 and figure 5 for primary series-parallel switching.

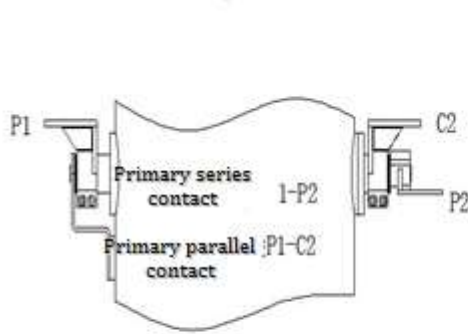


Figure 3 Series-parallel switching

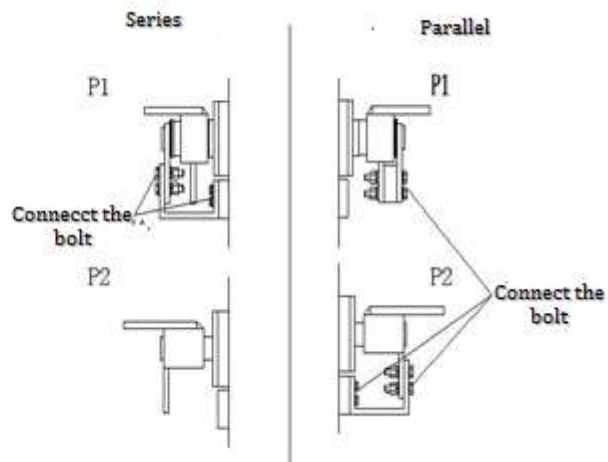


Figure 4 Series-parallel switching

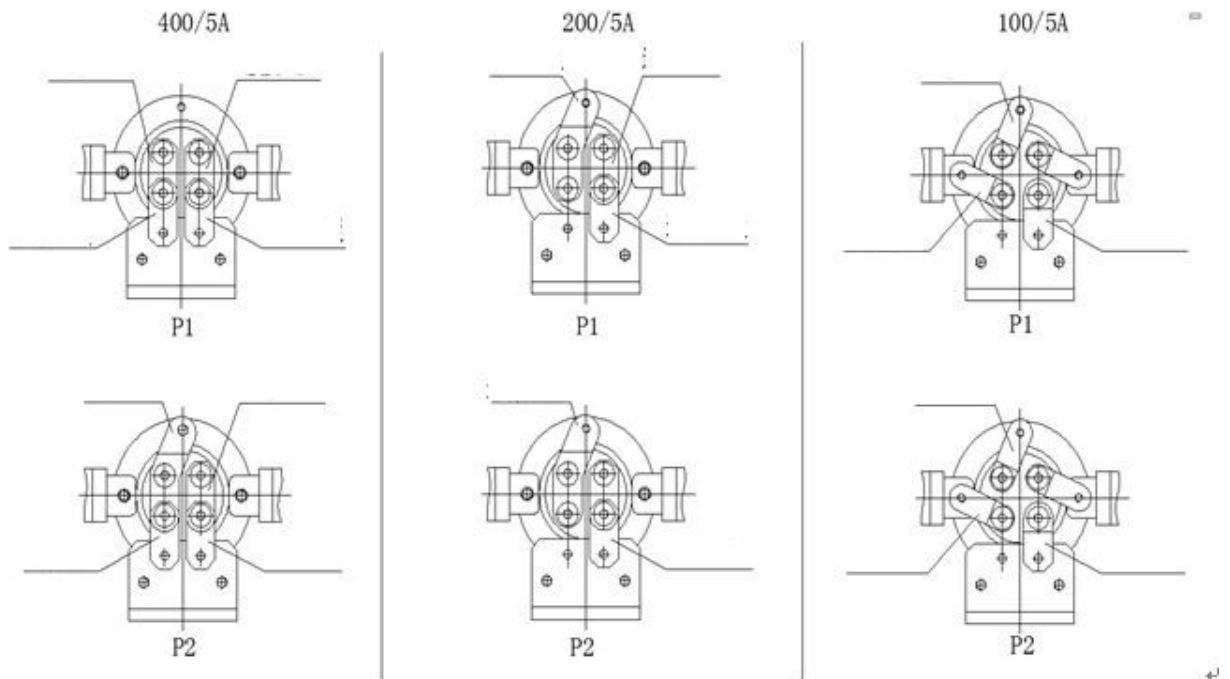


Figure 5 Series-parallel switching

#### 4.4 Installation

- 1) The product shall be installed vertically on a smooth and horizontal platform.
- 2) **The earthing plate on the pedestal must be effectively earthed.**

#### 4.5 Primary wiring

Dirt part and oxide layer shall be cleaned up before the wiring connected with primary terminal to ensure the good electrical contact performance. The recommended tightening torque values are shown in table 1.

Table 1 Recommended torque value.

Specification of the bolt, mm	the recommended value	
	N·m	kgf·m
M12	48±5	4.8±0.5
M16	120±10	12±1

**Note: Tensile strength of primary terminal shall be within the tolerable static load.**

#### 4.6 Secondary wiring

The secondary wiring shall be as per the data on the nameplate.

**Note: Secondary leader cable shall be connected firmly with secondary earthing terminal, and No short-circuit on secondary terminal is permitted. Earthing terminal on secondary wiring board shall be connected effectively with pedestal and pedestal shall be earthed.**

### 5. Gas filling

1) Before filling, check all the bolts of the sealing surface whether they are loose or not, the bushing damaged or not, the density controller intact or not.

2) Before operation, fill SF<sub>6</sub> gas to the rated pressure specified on nameplate. The specific filling procedure is as following.

- a) Keep the SF<sub>6</sub> gas cylinder vertical
- b) Unscrew the protection cap of the gas cylinder, connect the filling device end with reducing valve to the contact joint of the cylinder, See figure 6
- c) Open the reducing valve, release all the residual gas in the filling pipe then close the valve.
- d) Unscrew the plug of the filling valve, connect the contact joint of the filling device to the filling valve.
- e) Open the switch of the filling valve and valve of the gas cylinder to fill gas with the filling pressure below 0.5MPa (the value on the pressure meter of the filling device)
- f) In the filling process, maintain the same speed by controlling reducing valve, and observe the value on density controller. Dab the density controller to fill to the rated pressure, when filling pressure reaches to the minimum service pressure but the value stops there.

3) After the rated filling pressure reached, keep the products stand motionless for 2 hours. Use portable detectors to detect the sealing surface and the filling valve. After 24 hours, measure the moisture content of the SF<sub>6</sub>, which shall not exceed 250μL/L.

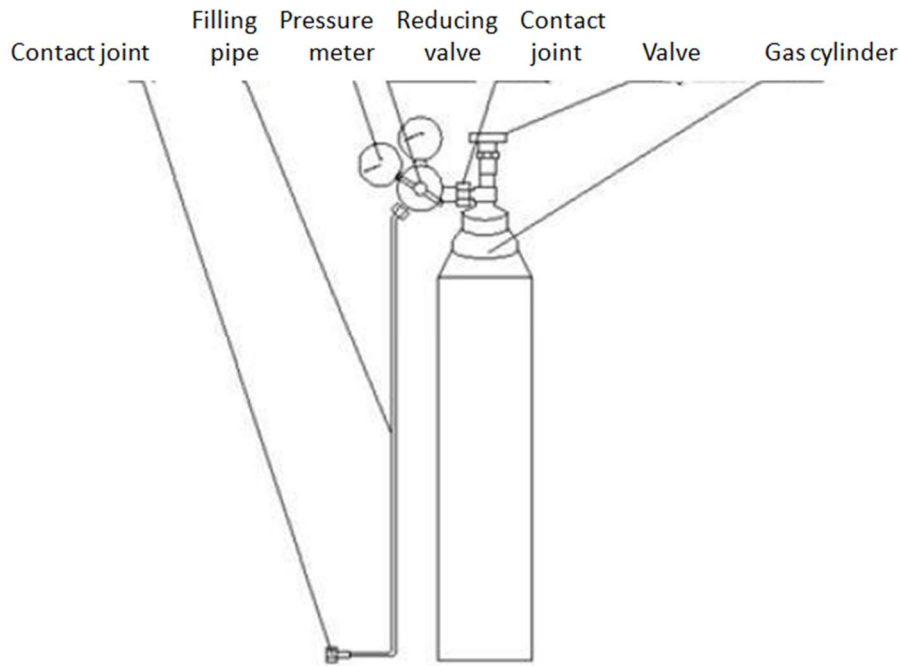


Figure 6 Schematic diagram of filling device

## 6. Handling of common exception

See table 2 for the handling of common exception.

Table 2 Handling of common exception.

Items	Descriptions	Approaches	Measures
1	Alarm set by density controller on site	Handling on site	1. Remove and calibrate the density controller. If any exception, change the density controller. 2. Detect gas leakage, if any leakage, contact the service department of the manufacturer.
2	The tested current ratio is abnormal	Handling on site	Check primary series and parallel, check the tested connection, raise the test current
3	Fracture of anti-exploding slice	Replace product	Stop the operation immediately
4	Others	/	Contact the service department of the manufacturer



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