

使用说明书

ZW32-12/630型 户外高压真空断路器

产品安装使用前，请仔细阅读使用说明书，
并妥善保管，以备查阅。

目 录

1、产品概述	1
2、工作原理	2
3、隔离开关主要技术参数和结构特点	5
4、运输、调试和安装	7
5、FDK 复合控制使用方法	7
6、产品检修和维护	9
7、随机文件	9
8、订货须知	10
图一断路器外形及安装尺寸	10
图二断路器（带隔离）外形及安装尺寸	11
图三断路器手动控制接线图	12
图四断路器电动控制接线图	13
图五断路器安装方式	14

Table of Contents

1. Product description	
2. Working principle	
3. Main technical parameters and structural characteristics of isolating switch	
4. Transportation, debugging and installation	
5. FDK compound control method of usage	
6. Product maintenance	
7. Documents together	
8. Ordering Information	
Figure 1 circuit breaker shape and installation dimensions	
Figure 2 circuit breaker (with isolation) shape and installation dimensions	
Figure 3 circuit breaker manual control wiring diagram	
Figure 4 circuit breaker electric control wiring diagram	
Figure 5 circuit breaker installation	

1、产品概述 Product Overview

1.1、主要用途 The main purpose

ZW32-12型户外高压真空断路器（以下简称断路器）是额定电压为12kV，50Hz三相交流的户外配电设备。主要用于开断、关合电力系统中的负荷电流、过载电流及短路电流。适用于变电站及工矿企业配电系统中做保护和控制，特别适用于农村电网及频繁操作的场所。

ZW32-12 outdoor high voltage vacuum circuit breaker (hereinafter referred to as circuit breaker) is rated voltage of 12Kv, 50Hz three-phase AC outdoor power distribution equipment. Mainly used for breaking, closing load current, overload current and short circuit current in the power system. It is suitable for the substation and industrial and mining enterprises in the distribution system to do protection and control, especially for rural power grids and the place for frequent operations.

1.2、引用标准 Reference Standards

GB/T1984 《高压交流断路器》

GB/T11022 《高压开关设备和控制设备标准的共用技术要求》

GB/T311.1 《高压输变电设备的绝缘配合：高压试验技术》

DL/T403 《12-40.5kV高压真空断路器订货技术条件》

GB/T1984 “High voltage AC circuit breaker”

GB/T11022 “High voltage switchgear and control equipment standard common technical requirements”

GB/T311.1 “Insulation coordination of high voltage power transmission equipment: high pressure test technology”

DL/T403 “12-40.5kV high voltage vacuum circuit breaker ordering technical conditions”

1.3、使用的环境条件 Environmental conditions for usage

1.3.1、海拔高度不超过1000m;

Altitude does not exceed 1000m.

1.3.2、周围空气温度-40°C-+40°C;

Ambient air temperature: -40°C-+40°C.

1.3.3、风速不大于35m/s;

Wind speed is not greater than 35m / s.

1.3.4、污染等级：IV级；

Pollution level: Class IV.

1.3.5、安装场所：无易燃、爆炸危险、化学腐蚀的场所；

Installation site: no flammable, no explosive hazard, no chemical corrosion.

1.3.6、地震强度不超过8度。

Earthquake intensity does not exceed 8 degrees.

1.4、主要特点 main features

1.4.1、断路器采用三相支柱结构，具有开断性能稳定可靠、无燃烧和爆炸危险、免维护、体积小、重量轻和使用寿命长等特点。

Circuit breaker adopts three-phase pillar structure, it has reliable breaking performance, no combustion and explosion hazard, maintenance-free, small size, light weight and long service life etc.

1.4.2、断路器采用全封闭结构，封密性能好，有助于提高防潮、防凝露性能，特别适应于严寒或潮湿地区使用。

Circuit breaker with a fully enclosed structure, good sealing performance, help to improve the moisture, anti-condensation performance, especially adapted to the use of cold or wet areas.

1.4.3、三相支柱及电流互感器采用进口户外环氧树脂固体绝缘，具有耐高低温、耐紫外线、耐老化的特点。

Three-phase pillar and current transformer using imported outdoor epoxy resin solid insulation, which has high and low temperature resistance, resistance to ultraviolet light, anti-aging characteristics.

1.4.4、操作机构采用小型化弹簧操作机构，分合闸能耗低；采用直动传输方式，分合闸部件少，可靠性高。

Operating mechanism using small spring operating mechanism, low energy consumption for breaking-closing; use of direct transmission mode, sub-closing parts less, high reliability. The operating mechanism and the arc extinguishing system are placed in a sealed mechanism box to solve the problem of corrosion of components such as parts and improve the reliability of the circuit breaker.

1.4.5、断路器的分、合闸操作可采用手动或电动操作及远方操作。可与控制器配套实现配电自动化，也可以与重合器控制配合组成自动重合器。

Circuit breaker sub-closing operation can be used manual or electric operation and remote operation. It can be equipped with the controller to achieve power distribution automation, it can also be combined with the control of the recloser automatic recloser.

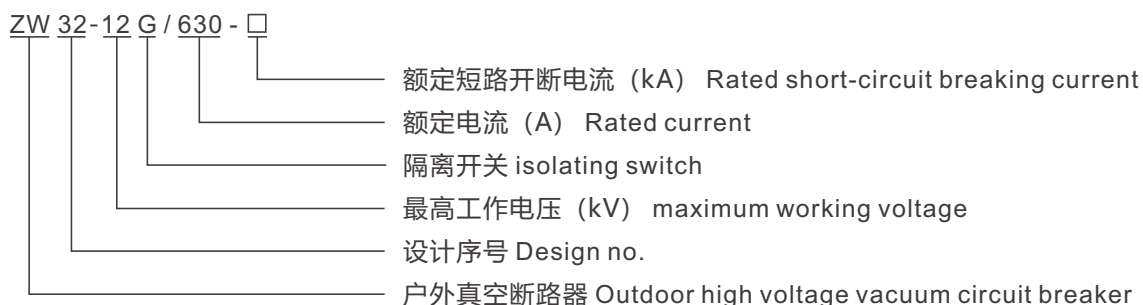
1.4.6、断路器可以装设二相或三相CT，供过电流自动脱扣保护和智能控制器进行信息分析。

The circuit breaker can be equipped with two-phase or three-phase CT for over-current automatic trip protection and intelligent controller for information analysis.

1.4.7、断路器总质量（不带隔离开关）105kg，（带隔离开关）125kg

The total mass of the circuit breaker (without isolation switch) 105kg, (with disconnector) 125kg

1.5、产品型号 Product Model



2、工作原理 working principle

2.1、手动机构动作原理 Manual mechanism principle

表1 断路器主要技术参数

table 1 the main technical parameters for circuit breaker

序号 No.	项目 Item	单位 unit	数值 value
1	额定电压 Rated voltage	kV	12
2	额定频率 Rated frequency	Hz	50
3	额定电流 Rated current	A	630,1250
4	额定短路开断电流 Rated short-circuit breaking current	kA	16,20,25
5	额定峰值耐受电流 Rated peak withstand current		40,50,63
6	额定短时耐受电流 Rated short-time withstand current		16,20,25
7	额定短时持续电流 Rated short - duration current	s	4
8	额定短路关合电流 (峰值) Rated short circuit closing current (peak)		40,50,63
9	额定操作顺序 Rated operation sequence	time	O-0.3s-CO-180s-CO
10	机械寿命 mechanical life		1000/isolating switch 2000
11	额定电流开断次数 Rated current breaking times		10000
12	额定短路开断电流开断次数 Rated short circuit breaking current breaking times		50
13	工频耐压 power frequency withstand voltage(1min) (湿) 相间对地 (wet) alternate to the ground (干) 相间、对地/断口 (dry) Interphase, ground/fracture	kV	34 42/48
14	雷电冲击耐受电压 (峰值) lightning impulse withstand voltage(peak) 相间, 对地/断口 Interphase, ground/fracture		75/85
15	二次回路1min 工频耐压 (电子器件除外) Secondary circuit 1min Power frequency withstand voltage (except electronics)	V	2000

表2 路器主要机械特性

table 2 The main mechanical characters of the circuit breaker

序号 No.	参数名称 Parameter name	单值 unit	数据 date
1	触头开关 Contact switch	mm	9±1
2	触头超行程 Over-travel of the contact		2± _{0.5} ¹
3	分闸速度 Opening speed	m/s	1.2±0.2
4	合闸速度 Closing speed		0.8±0.2
5	触头合闸弹跳时间 Contact closing time	ms	≤2
6	相间中心距离 Interphase center distance	mm	340±1.5
7	三相分合闸不同期性 Different periodicity of Three - phase breaking-closing	ms	≤2
8	各相导电回路电阻 /带隔离 Each phase conductance circuit resistance	μΩ	≤80/150
9	合闸时间 closing time	ms	≤80
10	分闸时间 opening time		≤80
11	储能电动机额定功率 Energy storage motor rated power	W	40

序号 No.	项目 Item	额定电压(V) Rated voltage	额定电流(A) Rated current	正常工作范围 Normal working range
1	分闸线圈 Opening solenoid	DC24 DC110 AC220 DC220	10 3.4 1.3 1.7	65%-120%额定电压下可靠脱扣, 小于30%额定电压下不得脱扣 Under 65% -120% of rated voltage, can trip reliably, less than 30% of rated voltage can not trip.
2	合闸线圈 Closing coil	DC24 DC110 AC220 DC220	10 3.4 1.3 1.7	85%-120%额定电压下可靠合闸 85%-120% Of rated current , can close reliably.
3	过流脱扣线圈 Overcurrent trip coil		5	
4	储能电机 Stored energy motor	额定电压 : DC/AC 220V Rated current: DC/AC 220V 额定功率: 40W Rated power:40W		85%-110%额定电压下可靠动作 85%-110% of rated current , can work reliably.
5	合闸弹簧储能时间 Closing spring storage time		<10s	

2.1.1、合闸操作：先拉动储能手柄进行储能，所施力矩由小变大，当弹簧过中瞬间时，合闸弹簧释放能量，促使储能系统逆时针旋转并带动传动拐臂转动，带动传动轴使开关合闸，同时分闸拐臂扣住合闸半轴，使路器处于合闸状态：机构在合闸状态下，凸轮与传动轴套脱离，机构不能再次合闸。

Closing operation: firstly pull the energy storage handle for energy storage, the applied torque becomes from small to large. When the spring is stretched and be loosen suddenly , closing spring releases energy, to promote the energy storage system counterclockwise rotation and drive the drive arm rotation, drive the shaft to close the switch, while the opening buckles closing axle, so that the circuit in a closed state: the mechanism in the closing state, the cam and drive sleeve from the body can not be closed again.

2.1.2、分闸操作：断路器合闸后，拉动分闸手柄，使分闸半轴转动，分闸拐臂解扣，传动杆在分闸弹簧的带动下使开关分闸。

Opening operation: after the circuit breaker is closed, the brake handle is pulled, so that the semi-axle of the split lock is turned and the brake lever is unbuckled. The driving lever is driven by the split spring to make the switch lock.

2.1.3、如果使用消涌流装置，当线路电流超过设定值时，过流线圈被驱动，撞击分闸半轴，使分闸拐臂解扣，传动轴在分闸弹簧的带动下使开关分闸。

If use flow dissipation device, when the line current exceeds the set value, flow coil driven, hit break-brake half shaft, make the trip turn break-brake arm, drive shaft under the driving of break-brake spring brake switch points.

2.1.4、手动机构（带消涌器）的电路原理及内部接线图如图3所示

The circuit principle and internal wiring diagram of the manual mechanism (with the surge) is shown in figure 3

2.2、电动机构动作原理

Electric mechanism working principle

2.2.1、储能：拉动储能手柄，或电动机转动，在传动齿轮的带动下使凸轮转动，合闸弹簧被逐渐拉长，当弹簧过中后，凸轮由定位件保持不再转动，开关处于准备合闸状态：同时凸轮与传动轴脱离，使机构不能再次储能。

Energy storage: pull the energy storage handle, or the motor rotation, driven by the transmission gear to make the cam turn, closing spring is gradually elongated, when the spring is over, the cam will not be rotated by the positioning device, the switch is ready to close State: At the same time the CAM is detached from the transmission shaft, so that the body can not re-energy storage.

2.2.2、合闸操作：储能完毕后，拉动手动合闸手柄或给合闸线圈施压，使合闸半轴转动，合闸拐臂与合闸半轴解扣，合闸弹簧释放能量，带动传动轴使开关合闸，同时分闸弹簧被储能。

Closing operation: After the completion of energy storage, pull the manual closing handle or to the closing coil pressure, so that make the closing axle rotation, closing arm and closing axle buckle, closing spring releases energy, and drive the shaft so that the switch close, while the opening spring is energy stored.

机构在合闸状态下，再进行储能操作，合闸弹簧再次被拉长，弹簧过中后，合闸半轴被连锁装置扣住，避免机构误合闸。

The body in the closing state, and then carry out energy storage operation, closing spring again was elongated, the spring was over, closing axle was locked by the chain device to avoid the wrong closing of mechanism.

再合闸已储能状态，机构处于重合闸状态，可实现“分0.3S-合分”一次重合闸操作。

Closing again the state of energy storage, and the mechanism is in the state of reclosing, which can realize the operation of "0.3s-Close&open".

2.2.3、分闸及过流脱扣过程：断路器合闸后，拉动分闸手柄或给分闸线圈施压或当线路电流超过消涌流装置的设定值时过流线圈被驱动，都使分闸半轴转动，分闸拐臂与分闸半轴解扣，分闸弹簧释放能量，带动传动杆使开关分闸。

Break-brake and overcurrent tripping process: after the circuit breaker closing, pull the brake lever or press the break-brake coil or when the line current exceeds away flow device Settings ,over current coil is driven, make break-brake half shaft rotation, break-brake turn arm and the brake axle shaft trip, break-brake spring releases energy, drive transmission rod brake switch.

2.2.4、电动装置典型电路原理及内部接线图见图4

Typical circuit principle and internal wiring diagram of electric device are shown in figure 4

3、隔离开关主要技术参数和结构特点

The main technical parameters and structural characteristics of the isolation switch

3.1、对于需要加装隔离开关的用户，可选用ZW32-12G系列开关，外形尺寸及结构图见图2.隔离开关用螺栓固定于ZW32-12型断路器的机构箱上，坚固、稳定、拆卸方便、可靠、可灵活加装。

For the users who need to install the disconnecter, they can use ZW32-12G series switch, dimensions and structure shown in Figure 2. Isolated switch bolts fixed to the ZW32-12 circuit breaker box, solid, stable, easy to disassemble, Reliable, flexible installation.

3.2、隔离开关主要技术参数见表3

The main technical parameters of the isolation switch are shown in table 3

序号 No.	项目 Item	单位 unit	数值 value
1	额定电压 Rated voltage	kV	12
2	额定电流 Rated current	A	630,1250
3	4s 额定短时耐受电流 (有效值) 4s Rated short time withstand current (virtual value)	kA	16,20,25
4	额定峰值耐受电流 Rated peak withstand current		40,50,63

序号 No.	项目 Item	单位 unit	数值 value
5	1min工频耐受电压 1min Power frequency withstand voltage	kV	42(对地, 相间/to the ground , interphase) 48(断口/fracture)
6	回路电阻 (断路器接线板至隔离开关进线板间) Circuit resistance (between circuit breaker wiring board and the isolation switch line board)	$\mu\Omega$	≤ 150
7	三相刀闸合闸时中心偏摆量 The amount of center deflection when the three - phase switch is closed	mm	≤ 2
8	三相刀闸分、合闸同期性偏差 Simultaneous deviation of breaking and closing of Three-phase knife switch		≤ 2
9	导电部分对地绝缘距离 The insulation distance between conductive part to the ground		≥ 160
10	断口开距 open distance of fracture		≥ 200
11	质量 weight	kg	40

3.3、隔离开关机构特点 Characteristics of the isolation switch mechanism

隔离开关由隔离架12、绝缘子7、绝缘拉杆11，刀片10、隔离主轴2、进线板9、操作手柄1、电流互感器8等组成。隔离支架固定在机构箱上，利用断路器的接线端作为闸刀的支点，构成隔离断口的一端，断口的另一端通过操作绝缘子和驱动轴打开、关合刀闸。三相联动，在隔离开关分闸状态下有明显的可见断口，并具有与断路器本体之间的可靠防误机构联锁，维护方便，安全。

The disconnecter is composed of the isolation frame 12, the insulator 7, the insulation rod 11, the blade 10, the isolation spindle 2, the inlet plate 9, the operation handle 1, the current transformer 8. The isolation bracket is fixed on the mechanism box, and the terminal of the circuit breaker is used as the fulcrum of the knife to form one end of the isolation fracture. The other end of the fracture is opened by operating the insulator and the drive shaft. Three-phase linkage, in the disconnecter sub-gate state has obvious visible fracture, and the reliable anti-error mechanism interlock with the circuit breaker body, which realize easy maintenance, security.

3.4、隔离开关操作顺序 Isolate switch operation sequence

3.4.1、合闸操作（送电操作） Closing operation (power supply operation)

a) 拉动隔离开关操作手柄，闭合隔离刀，闭合到位

Pull the isolation switch operation handle, close the isolation knife, close in place

b) 多次拉动断路器储能手柄（储能）

Repeatedly pull the circuit breaker energy storage handle (energy storage)

c) 拉下断路器合闸拉环，断路器合闸。

Pull down the circuit breaker closing ring, circuit breaker closing.

3.4.2、分闸操作（断电、检修操作） Opening operation (power failure, overhaul operation)

a) 拉下断路器分闸拉环，断路器分闸：

Pull down the circuit breaker breaking ring, circuit breaker breaking:

b) 拉动隔离开关操作手柄，打开隔离刀，打开到位。

Pull the disconnect handle, open the isolator, open it in place.

3.4.3、注意事项 Precautions

a) 严禁在断路器合闸时，分合隔离开关

It is forbidden to disengage the disconnect when the circuit breaker is closed

b) 隔离开关必须分合到位，否则断路器不得进行分合闸操作

The isolation switch must be in place, otherwise the circuit breaker shall not make breaking-closing operation

4、运输、调试和安装 Transport, commissioning and installation

4.1、产品在运输过程中不得翻转、倒置，并要采取防震措施。起吊断路器时，必须勾住箱体上的四个耳环吊起。不得直接搬运环氧绝缘套筒。

Products in the transport process shall not be reversed, inverted, and to take shock measures. When lifting the circuit breaker, you must hook the four earrings on the box. Do not carry epoxy insulation sleeves directly

4.2、开箱后应检查断路器户外环氧绝缘套筒有无破裂，箱体是否变形，分合指示是否齐全，产品铭牌、合格证是否与订货单相符，装箱清单是否与实物相符。

After open the box, please check is there any rupture in the circuit breaker outdoor epoxy insulation sleeve, the box is deformed or not, whether the instructions are complete, product nameplate, certificate is consistent with the order, packing list is consistent with the actual product or not.

4.3、断路器投入运行前，应仔细核对各操作原件的额定电压、额定电流与实际情况是否相符。

Before the circuit breaker is put into operation, please check carefully whether the rated voltage, the rated current of each original operation are consistent with the actual situation.

4.4、断路器的触头参数和机械特性参数在出厂检验时就已经调整好，用户不必开箱检查。按要求进行耐压试验、接触电阻测量后，即可安装。有条件可以按照表2的要求进行机械特性检查。

Circuit breaker contact parameters and mechanical characteristics parameters has been adjusted already before delivery , the user does not have to check out the box. According to the requirements of the pressure test, contact resistance measurement, you can install. If possible, the mechanical properties can be checked in accordance with the requirements of Table 2

4.5、断路器可以单杆架设，也可双杆架设。断路器应平稳、牢固地安装在专用钢架上使用（如图5所示）

The circuit breaker can be set up single rod or double pole erection. It shall be installed smoothly and securely on the dedicated steel frame (as shown in fig.5)

5、TC-42型涌流控制器使用说明及调整方法 TC-42 inrush current controller instructions and adjustment methods

5.1、概述 summarize

本产品配套的控制器，适用于手动、电动控制真空断路器馈线保护，该控制器具有如下特点：

This product is equipped with a controller for manual, electric control vacuum circuit breaker feeder protection, the controller has the following characteristics:

5.1.1、极强的抗干扰、抗腐蚀和抗凝露能力

Strong anti-interference, anti-corrosion and anti-condensation ability

5.1.2、体积小，安装方便 Small size, easy to install

5.1.3、无须电源，成本低，适应性强 No power needed, low cost, strong adaptability

5.1.4、消除了脱扣线圈的抖动及热现象 Eliminating the jitter and heat of the trip coil

5.2、功能热点及设置方法 Function hotspot and setting method

5.2.1、为了消除断路器合闸或运行过程中出现的涌流电流而引起的误动作，本装置对馈线电流在额定电流以上时按设定延时时间跳闸，馈线电流达到速断电流时将按设定速断延时时间后跳闸，该控制器响应速度快，最短响应时间达20ms，能可靠地实现对事故区的隔离。

In order to eliminate the circuit breaker closing or the malfunction caused by inrush current in the process of running, the device set delay time trip when the feed current is above the rated current. When the feeder current reaches the fast current, it will be trip after setting speed delay Time. The controller is moving fastly, the shortest response time reaches to 20ms, can reliably achieve the isolation of the accident zone.

5.2.2、整定方法 Setting method

整定A相时，把A相二次电流固定为待整定（3.5-6.5）或A相一次固定为相应电流，再把所有拨码开关拨向“ON”一边后，调节A相电位器使“红色指示灯”由不亮变成均匀闪烁，A相调整完成。B相或C相调整方法同A相。

When Setting the A phase, make the secondary current of the A phase to be set (3.5-6.5) or A phase fixed to the corresponding current, and then All dial code switches should be dialed to "ON" side, then adjust the A phase potentiometer and make " Red light " from no light to uniform flash, A phase adjustment is completed. B phase or C phase adjustment method is same as A phase.

5.2.3、拨码开关设置 Dial switch Settings

5.2.3.1、合闸延时时间设置 Closing delay time setting

拨码方向 Dialing direction	ON		延时时间 Delay time(ms)
	↑	↑	200
↓	↑	400	
↑	↓	600	
↓	↓	800	
拨码编号 Dial number	1	2	

5.2.3.2、过流延时时间设置 Overcurrent delay time setting

拨码方向 Dialing direction	ON				延时时间 Delay time(ms)
	↑	↑	↑	↑	40
↓	↑	↑	↑	80	
↑	↓	↑	↑	120	
↓	↓	↑	↑	160	
↑	↑	↓	↑	200	
↓	↑	↓	↑	300	
↑	↓	↓	↑	400	
↓	↓	↓	↑	500	
↑	↑	↑	↓	600	
↓	↑	↑	↓	700	
↑	↓	↑	↓	800	
↓	↓	↑	↓	1000	
↑	↑	↓	↓	2000	
↓	↑	↓	↓	3000	
↑	↓	↓	↓	4000	
↓	↓	↓	↓	5000	
拨码编号 Dial number	3	4	5	6	

5.2.3.3、速断延时时间设置 Speed delay time setting

拨码方向 Dialing direction	ON		延时时间 Delay time(ms)
	↑	↑	0
↓	↑	40	
↑	↓	80	
↓	↓	120	
拨码编号 Dial number	7	8	

5.2.3.4、速断倍数设置 Speed multiple setting

拨码方向 Dialing direction	ON		速断电流倍数 Speed current multiple
	↑	↑	2 (倍/times)
↓	↑	3 (倍/times)	
↑	↓	4 (倍/times)	
↓	↓	8 (倍/times)	
拨码编号 Dial number	9	10	

6、产品的检修与维护 Product repair and maintenance

6.1、本断路器因其特殊的设计结构确保用户在使用中长期免维护，只需每隔三年左右进行一次工频耐压试验
Due to its special design structure, this circuit breaker can ensure long-term maintenance-free, and only one frequency withstand test is conducted every three years.

6.2、用户不得随意更换使用与原型号规格不一致的电器元件

The user shall not change any electrical components that are inconsistent with the original specifications

6.3、操作人员应初步了解机构的性能及安装调整、维护知识，对运行中问题应予记录，必要时可咨询制造厂家

The operator should have a preliminary understanding of the performance of the organization, installation and adjustment, maintenance of knowledge, and record the problems in operation, and consult manufacturers when necessary

6.4、正常运行的断路器如果出现无故障自动跳闸，可按一下方法处理

The circuit breaker in normal operation automatically trips if there is no fault, you can deal with as following.

6.4.1、偶尔发生跳闸，一次回路产生的浪涌电流驱动过流线圈跳闸，可以调大涌流延时时间，避开涌流脉冲宽度产生的误跳闸。

Occasionally tripping occurs, the inrush current generated by a loop drives the overcurrent coil trip, you can adjust the surge time and avoid the false trip caused by the inrush pulse width

6.4.2、频繁跳闸，一次回路电流大于或接近互感器的设定值，引起过流跳闸，可以改变电流互感器变比，将接线合中A，C相电流调整线，调换到高一档变比上。

Frequent trip, a loop current greater than or close to the transformer set value, causing over-current trip, you can change the current transformer ratio, and exchange the wiring in the A, C-phase current adjustment line to a high gear ratio.

7、随机文件 Documents together

7.1、产品合格证一份 one certificate of approval

7.2、出厂检验报告一份 one test report

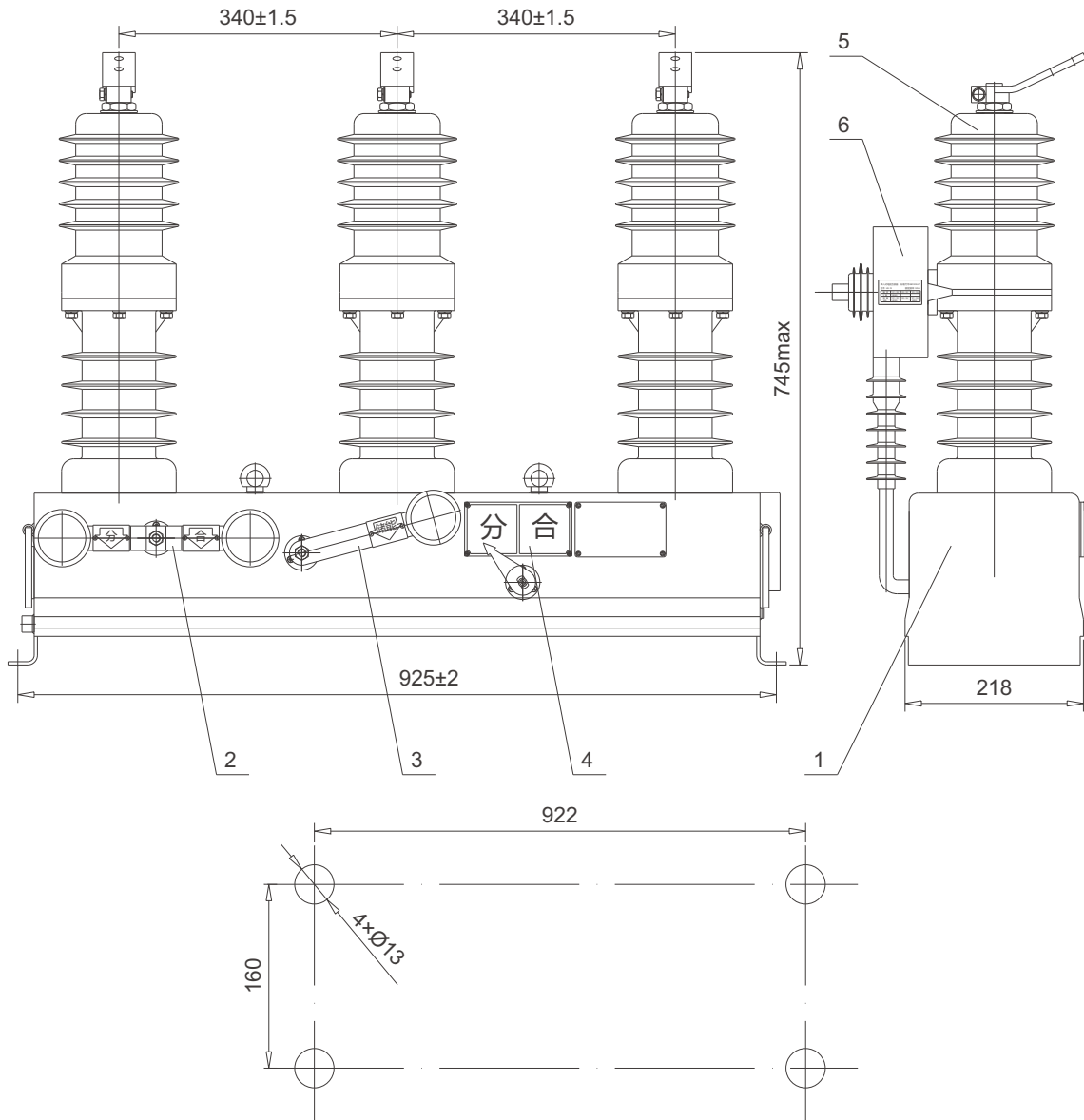
7.3、安装使用说明书一份 one book of operation instruction

7.4、装箱单一份 Packing list one

8、订货须知 Ordering instruction

订货时要说明产品的型号，名称，数量，额定电流，额定开断电流，所配电流互感器电流比，操作方式及操作电压等。

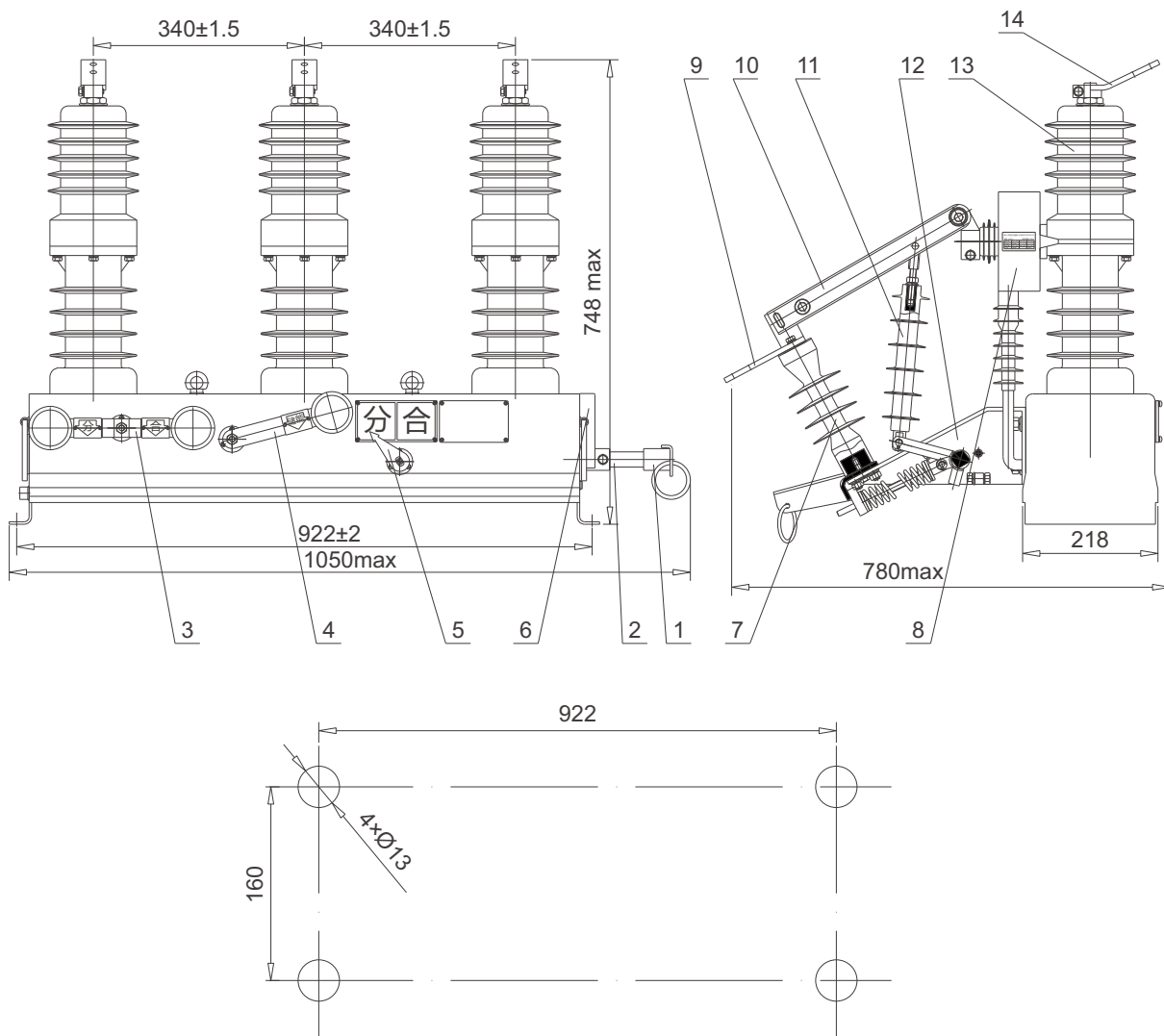
When ordering, please specify the model, name, quantity, rated current, rated breaking current, current ratio of current transformer, operating mode and operating voltage, etc.



- | | |
|--|--|
| 1. 操作机构 Operating mechanism | 2. 分合闸操动手柄 Open-close operation handle |
| 3. 储能手柄 Energy storage handle | 4. 分合闸指示 Open-close instructions |
| 5. 真空灭弧室封装 Vacuum arcing chamber encapsulation | |
| 6. 电流互感器 Current transformer | |

图1 断路器（带隔离）外形及安装尺寸

Figure 1 Circuit breaker (with isolation) outline and mounting dimensions



- | | |
|--|--|
| 1. 操作手柄 Operating mechanism | 8. 电流互感器 Current transformer |
| 2. 隔离主轴 Isolation spindle | 9. 接线板 (进线端) Terminal plate (entering point) |
| 3. 断路器手动分合手柄 Manual open-close handle of the breaker | 10. 隔离刀片 isolating blade |
| 4. 断路器储能手柄 Energy storage handle of the breaker | 11. 绝缘拉杆 Insulated pull rod |
| 5. 分合指示 Open-close instructions | 12. 隔离架 Isolating tray |
| 6. 接线插头 Connection plug | 13. 接线板 (出线端) Terminal plate (outlet end) |
| 7. 绝缘子 Insulator | 14. 断路器 Circuit breaker |

图2 断路器 (带隔离) 外形及安装尺寸

Figure 2 Circuit breaker (with isolation) Outline and mounting dimensions

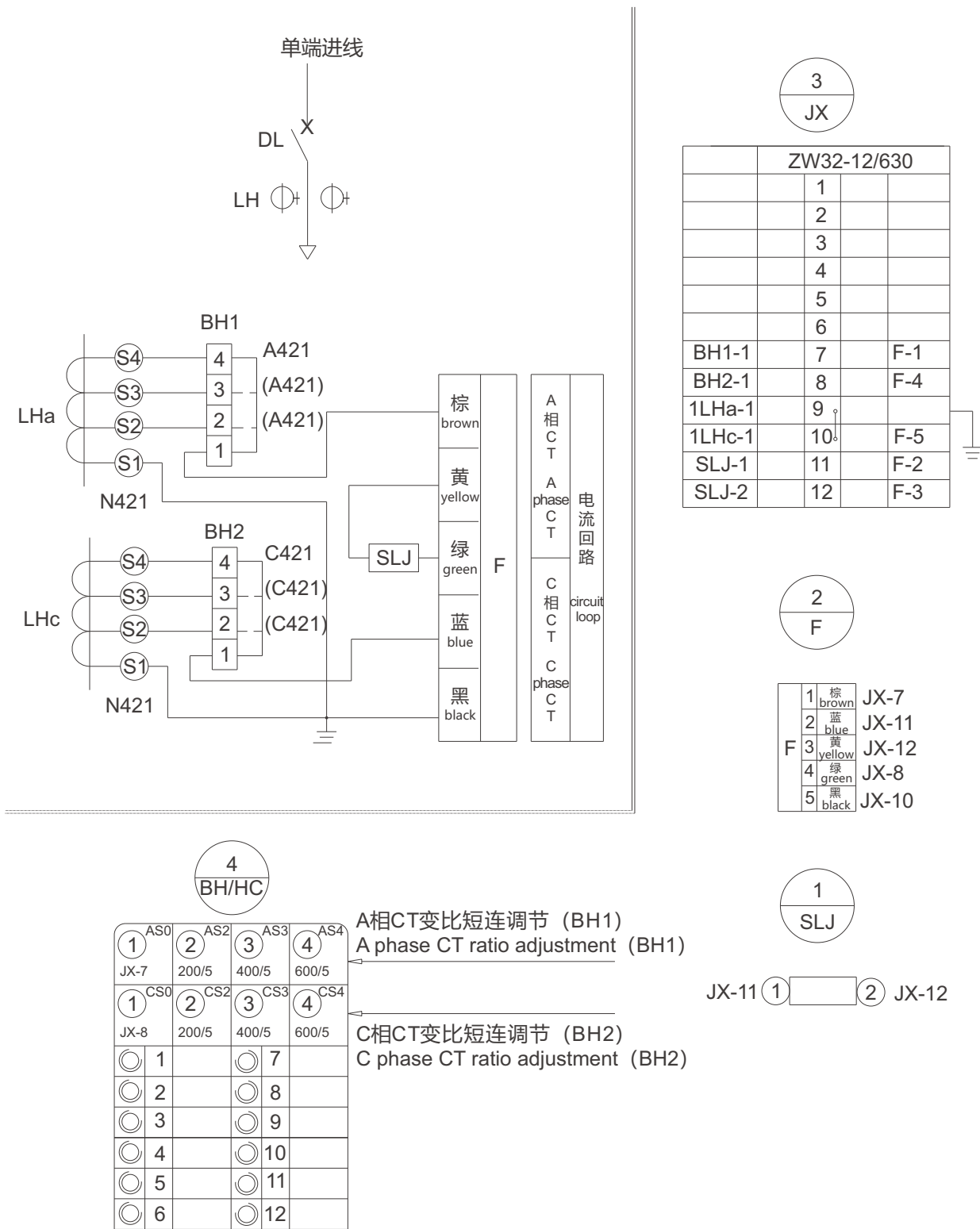


图3 断路器手动控制接线图

Figure 3 Circuit breaker manual control wiring diagram

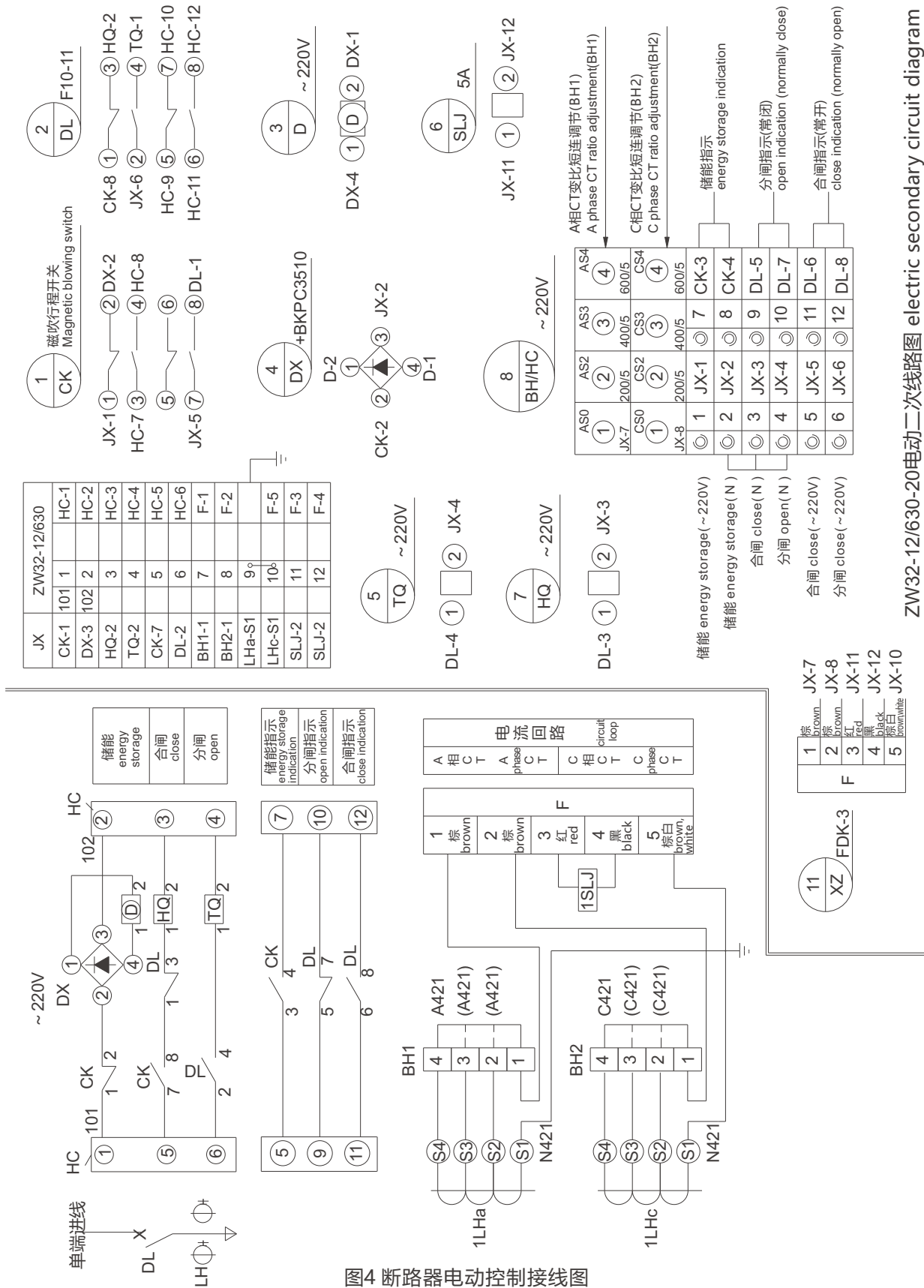


图4 断路器电动控制接线图

Figure 4 Circuit breaker electric control wiring diagram

ZW32-12/630-20电动二次线路图 electric secondary circuit diagram

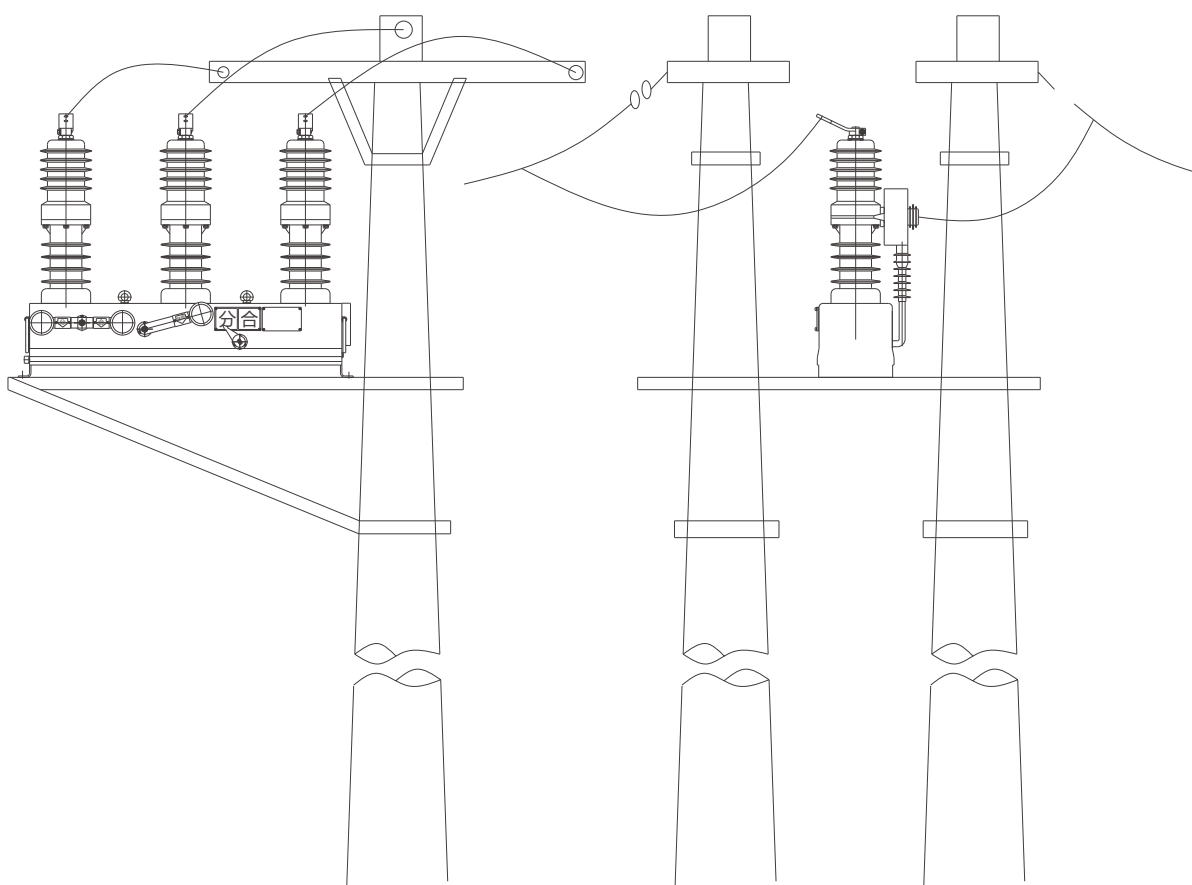


图5 断路器安装方式

Figure 5 Circuit breaker installation

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注意：对于本手册的内容，若因技术升级或采用更新的生产工艺，人民电器有权随时更改、变动，不再另作说明。

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