

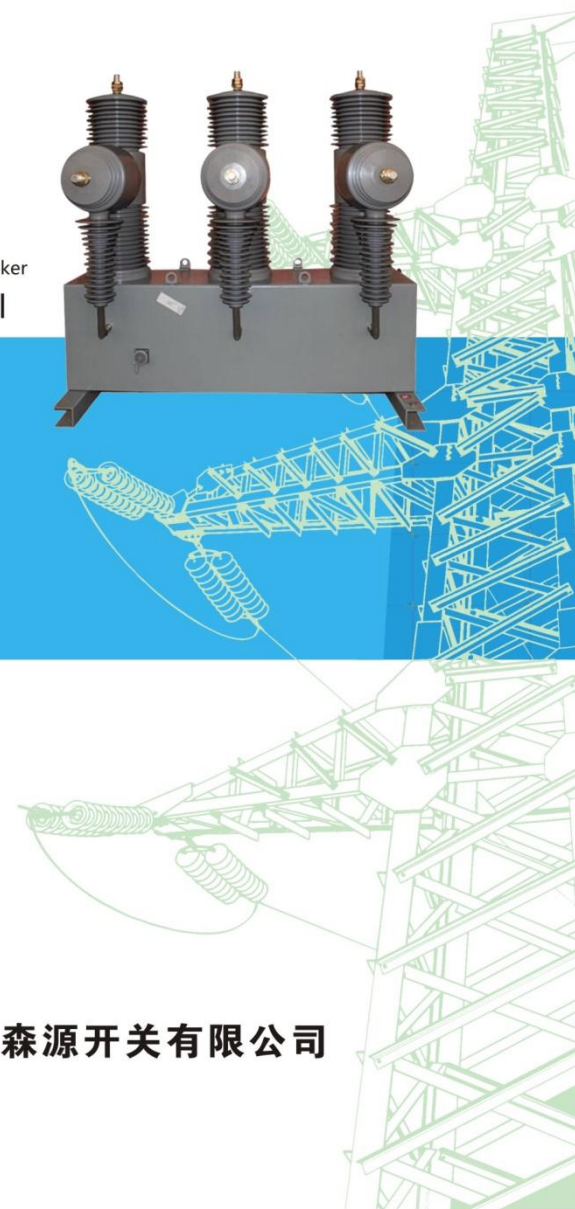
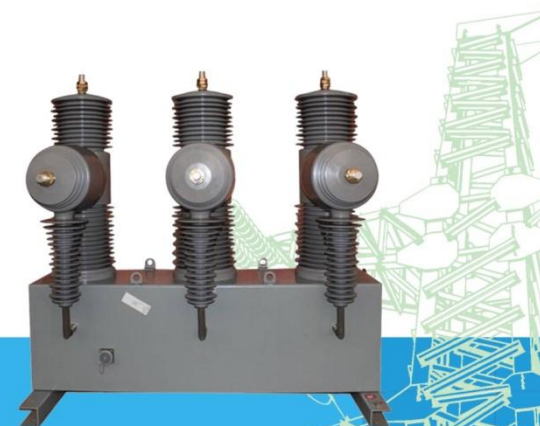


ZW32-12/24/35

型户外高压真空断路器

Outdoor high-voltage vacuum circuit breaker

产品手册 Product manual



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概述 General

随着城市、农村供电网架空绝缘化的实施，主干网的故障率大幅度下降，由于用户分支线引起的先例故障占到全部故障的80%以上，单相接地故障又占有故障的70%以上。而且对故障查找带来了很大困难。针对这一实际情况我公司引进德国西门子先进技术，不断完善ZW32型真空断路器智能化的各项指标，在用户不需要很大投资情况下大幅度提高了供电可靠性，低成本实现配网自动化功能。

ZW32F型智能分界断路器应用于10KV、20(24)KV、35(40.5)KV主干网分支线和用户入口处，通过接地故障直接分闸保护和过流故障瞬间速断分闸来隔离故障，将故障控制在最小范围内，尽量减小故障停电时间，提高主干网及线路的供电可靠性。

ZW32-□系列户外柱上真空断路器为额定电压10KV、20(24)KV、35(40.5)KV，三相交流50HZ户外配电终端设备，主要用于开断关合电力系统中的负荷电流、过载电流和短路电流，适用于城市、农村电网中作保护和控制，更适用于频繁操作的场所。

ZW32-F系列智能型户外柱上真空分界断路器的功能：

自动切除单相接地故障，当用户支线发生单相接地故障时，分界断路器自动分闸，不影响变电站及馈线上的其它支线用户；

自动隔离相间短路故障，当用户支线发生相间短路故障时，分界断路器先于变电站出线保护开关跳闸，自动隔离故障线路，不会涉及馈线上其它分支用户停电；

快速定位故障点，当用户支线故障造成分界断路器保护动作后，仅责任用户停电，由其主动报送故障信息，电力公司可迅速派员到场排查；

分界断路器可选配有线或无线通讯（GSM/GPRS）模块，自动将信息报送电力管理信息中心，实现对用户负荷数据测控、远方分合操作。

With the implement of overhead insulated power supply network in urban and rural, the failure rate of backbone network falls sharply, the precedent breakdown caused by branch line of customer accounts for 80% of total breakdown, single-phase earth fault occupies 70% of failure, which bring difficulty to find out the trouble. Aiming at this fact, our company introduced advanced technology of Germany Siemens to continue improve various indicators of ZW32 vacuum circuit breaker, greatly increasing power distribution reliability with low investment by customer and realize the goal of distribution network automation at low cost.

ZW32F intelligent boundaries circuit breaker is applicable for branch lines of backbone network of 10KV, 20(24)KV, 35(40.5)KV and user entries. It isolates the faults by direct opening when there is ground fault or instantaneous opening where there is overcurrent fault, which restricts the fault at minimum, so that try to reduce the power failure time and improve power supply reliability of backbone network and lines.

ZW32-□ series outdoor pole-mounted vacuum circuit breaker is a three-phase outdoor distribution equipment of AC50HZ and rated voltage 10KV, 20(24)KV, 35(40.5)KV. It is mainly used for making and



ZW32-□ 型户外高压真空断路器 outdoor high-voltage vacuum circuit breaker

breaking the load current, and overload and short-circuit current in power systems, especially suitable for protection and control of urban and rural power network and frequent operation locations.

Functions of ZW32-F intelligent outdoor pole-mounted vacuum circuit breaker:

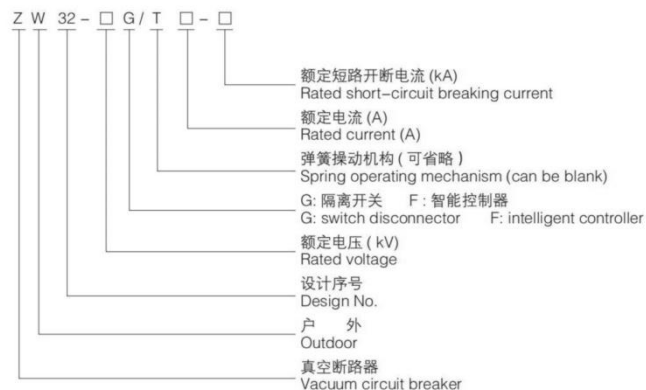
Automatic removal of single-phase ground fault. When the user line comes across single-phase ground fault, the boundaries circuit breaker will open automatically, other branch lines from the transformer substation and feeder line will not be affected by this fault;

Automatic isolation of phase-to-phase short-circuit fault. When user line has phase-to-phase short-circuit fault, the boundaries circuit breaker will trip prior to the outlet switch of transformer substation and isolate the faulty line automatically, power supply of other branch lines at feeder line will not be affected by this fault;

Quick detection of fault point. When the boundaries circuit breaker conducts protective action due to failure of user line, only the responsibility user's power supply will be cut off, and the product will send the fault information automatically to the power company who will dispatch person to check and eliminate the fault;

The boundaries circuit breaker also can be equipped with wired or wireless communication (GSM/GPRS) modules that can send information to the electric power control center automatically to realize data measurement and remote making and breaking control to the user loads.

型号含义 Model description



产品主要用途 Main applications

ZW32-□系列户外柱上真空断路器(以下简称断路器)为额定电压12kV,三相交流50Hz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、过载电流和短路电流,适用于城市和农村电网中作保护和控制之用,更适用于频繁操作的场所。

ZW32-□ Outdoor pole-mounted vacuum circuit breaker (hereinafter referred to as circuit breaker) is a three-phase outdoor distribution equipment of AC50Hz and rated voltage 12kV. It is mainly used for making and breaking the load current, and overload and short-circuit current in power systems, especially suitable for protection and control of urban and rural power network and frequent operation locations.

使用环境条件 Service conditions

- 环境温度: $-30^{\circ}\text{C} \sim +80^{\circ}\text{C}$;
- 污秽等级不大于 IV 级;
- 海拔高度不超过 1000m;
- 风压不超过 700Pa(相当于风速 34m/S);
- 无火灾、爆炸、化学腐蚀的场所;
- 无经常性的剧烈振动,地震烈度不超过 8 度;
- 有特殊要求及高海拔,高寒地区请与我公司联系。
- Ambient temperature: $-30^{\circ}\text{C} \sim +80^{\circ}\text{C}$;
- Pollution degree \leq class IV;
- Altitude not exceed 1000m;
- Wind pressure not exceed 700Pa (equivalent to wind speed 34m/S);
- Locations far away from fire, explosion or chemical corrosion;
- Locations free of frequent excessive vibration, and earthquake intensity not exceed 8°.
- Please contact us if any special requirements or the product is intended for high altitude or alpine region.

执行标准 Executive standards

- GB1984-2003 IEC62271-100《交流高压断路器》
- GB/T11022-1999《高压开关设备和控制设备标准的共用技术要求》
- GB1984-2003 IEC62271-100《High-voltage alternating-current circuit-breakers》
- GB/T11022-1999《Common specifications for high-voltage switchgear and controlgear standards》

产品技术特点 Technical features

◆ 高密封性能的三相支柱式全封闭结构 Three-phase post type fully enclosed structure with high sealing property

- 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,使用寿命长。
- 防潮、防凝露性能强,特别适用于严寒或潮湿的地区使用。
- 进口材料绝缘性能好,耐高温,耐老化。
- Stable and reliable breaking performance, no combustion or explosion danger; safe operation, maintenance free, small size, light weight, long service life.
- Moistureproof and condensation prevention, especially suitable for severe cold or humid area.
- Adoption of imported materials that enjoy excellent insulating property, high temperature resistance, and ageing-resistant performance

◆ 高效可靠的小型化弹簧操动机构 Efficient and reliable miniature spring mechanism

- 储能电机功率小,分合闸能耗低;机构传动采用直动传输方式,零部件数量少,可靠性高。
- 操动机构置于密封箱,有效防止锈蚀,提高了机构的可靠性。

ZW32-□ 型户外高压真空断路器 outdoor high-voltage vacuum circuit breaker

- Low power of energy-storage motor, low energy consumption for switching on and off; mechanism transmission adopts direct-acting transmission mode that requires less parts and enjoys higher reliability.
- The operating mechanism is set in the seal box, which effectively prevents corrosion and improves reliability of mechanism.

◆ 高效可靠的小型化弹簧操动机构 Efficient and reliable miniature spring mechanism

- 可采用手动分闸或电动分、合闸以及远方遥控操作。
- 与智能控制器配套实现配电自动化，或与重合控制器配合组成自动重合器、分段器。
- 可装设二相或三相电流互感器，供过流或短路保护之用。
- 可为智能控制器提供电流采集信号；可根据用户要求加装计量用电流互感器。
- 可外带三相联动隔离开关，具备防误联锁装置；可连接避雷器支柱绝缘子，维护方便。
- Manual opening, electric opening/closing and remote operation are available.
- Equipped with intelligent controller to realize automatic distribution, or equipped with reclosing controller to constitute automatic recloser and sectionalizer.
- Can be equipped with 2-phase or 3-phase current transformer for protection against overcurrent or short circuit.
- It can provide current acquisition signal for intelligent controller; can be equipped with current transformer at request for metering.
- It can be used with external 3-phase linkage disconnector and work as anti-misoperation interlocking device; also can be connected with arrester post insulator that is convenient for maintenance.

产品结构及工作原理 Product structure and working principle

◆ 产品结构 Product structure

整体结构为三相支柱式，由导电回路、绝缘系统、操作机构、密封件及壳体组成，外形结构见图一。
The whole structure is of three-phase post type that consists of conductive circuit, insulation system, operating mechanism, sealing component and shell, see Fig.1 for its outline structure

◆ 结构特点 Structural features

- 断路器经全新的小型化设计，采用全封闭结构，独特的灭弧室封装技术，密封性能好，有助于提高 防潮、防凝露性能，适用于高温、潮湿地区使用。
- 断路器开断性能稳定可靠，具有无燃烧和爆炸危险，安全、免维护、体积小、重量轻、使用寿命长等特点。
- 断路器可装设二相或三相 CT，输出二相或三相电流供智能控制器进行信息分析，实现过流保护功能 CT 变比有 25/5—600/5 多种。用户可依实际情况选用。
- 断路器内装有合闸涌流消除装置（复合控制器），不但能避免涌流引起的误动作，而且正常工作时过电流脱扣器线圈不带电，从而消除了脱扣器抖动可能引起的误动作。
- 断路器也可配置智能开关控制器，设有三段式电流保护，零序保护，重合闸、速断保护等多种保护功能。它支持多种通讯协议，允许选用多种通讯方式构成通讯网，即可对开关进行本地手动或遥控操作，也可通过通讯网实现远方遥控。如配有相应的重合器或分段器控制装置，可作为重合器或分段器使用。
- 操动机构密封在开关箱体内部，可以有效地避免开关因长期户外环境下面引起的机构锈蚀。
- 操动机构新颖、简单、动作可靠、体积小，机械寿命可达 1 万次。
- 断路器的安装方式采用柱上座式安装。

- The circuit breaker adopts brand new compact design with fully enclosed structure, unique arc-extinguish chamber encapsulation technology and excellent sealing performance, which help to improve humidity resistance and anti condensation performance, applicable for high-temperature and humid areas.
- The circuit breaker has stable and reliable breaking performance, is featured with safe operation, maintenance free, small size, light weight, long service life, free of combustion or explosion danger, etc.
- The circuit breaker can be equipped with 2-phase or 3-phase CT, output 2-phase or 3-phase current for information analysis of intelligent controller to realize overcurrent protection. Transformation ratio of CT has more than 25/5—600/5 types, users can choose as needed.
- The circuit breaker has built-in closing surge eliminating device (composite controller) that not only prevents false operation caused by surge, but also avoid false operation caused by shake of release by means of let the overcurrent release coil be uncharged during normal working.
- Breaker can also be configured with intelligent switch controller, which has three-section current protection, zero-sequence protection, reclosing protection and instantaneous trip protection. It supports multiple communication protocols, allows communication network with choice of a variety of communication modes, the switches not only can be manually or remotely operated, but it also realizes remote control via the communication network. If corresponding automatic circuit-breaker or sectionalizer control device are equipped, it can be used as circuit-breaker or sectionalizer.
- The operating mechanism is sealed inside the switch box, which enables it to be free of rust caused by long term operation in outdoors.
- The operating mechanism is novel and simple, has reliable operation, small size, long mechanical life that reaches 10,000 times above.
- Installation of circuit breaker adopts pole-mounted base type.

主要参数 Main parameters

◆ 断路器的主要技术参数见表 1 main technical parameters of circuit breaker see Table 1 表 1 table 1

| 序号 No. | 名称 Name | 单位 Unit | 数值 Data | | |
|-----------|---|------------|---|---|--|
| 1 | 额定电压 Rated voltage | KV | 12 | 24 | 35 |
| 2 | Imin 额定工频耐受电压 Imin Rated power frequency withstand voltage | KV | 相间、对地 42, 隔离断口 48 Phase-to-phase and to- ground 42, isolating distance 48 | 相间、对地 50, 隔离断口 65 Phase-to-phase and to- ground 50, isolating distance 65 | 相间 80、对地 / 断口 95/95 Phase-to-phase 80, to- ground / distance 95/95 |
| 3 | 额定雷电冲击耐压(峰值) Rated lightning impulse withstand voltage (peak) | KV | 相间、对地 75, 隔离断口 85 Phase-to-phase and to- ground 75, isolating distance 85 | 125 | 185 |
| 4 | 额定电流 Rated current | A | 630 | 630/1250 | 1250/1600/2000/2500 |
| 5 | 额定频率 Rated frequency | Hz | 50 | 50 | 50/60 |
| 6 | 额定短路开断电流 Rated short-circuit breaking current | KA | 20 | 20/31.5 | 25/31.5 |

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表 1 table 1

| 序号 No. | 名称 Name | 单位 Unit | 数值 Data | | |
|-----------|---|------------|---|---|---|
| 7 | 额定短路关合电流 (峰值) Rated short-circuit making current (peak) | KA | 50 | 50/80 | 63/80 |
| 8 | 额定峰值耐受电流 Rated peak withstand current | KA | 50 | 50/80 | 63/80 |
| 9 | (4s) 额定短时耐受电流 (4s) Rated short-time withstand current | KA | 20 | 20/31.5 | 25/31.5 |
| 10 | 额定操作顺序 Rated operating sequence | | 分-0.3s-合分-180s-合分 ON-0.3s-ON/OFF-180s-ON/OFF | 分-0.3s-合分-180s-合分 ON-0.3s-ON/OFF-180s-ON/OFF | 分-0.1s-合分-3s-合分-6s 合分-60 恢复 ON-0.1s-ON/OFF-3s-ON/OFF-6s ON/OFF-60 Recovery |
| 11 | 合闸时间 Closing time | ms | 25~60 | 30~60 | ≤ 100 |
| 12 | 分闸时间 Opening time | ms | 20~55 | 20~40 | ≤ 50 |
| 13 | 额定短路开断电流开断次数 Rated short-circuit current breaking times | 次 | 30 | 30 | 30 |
| 14 | 机械寿命 Mechanical life | 次 | 10000 | 10000 | 10000 |
| 15 | 二次回路 Imin 工频耐压 1min power frequency withstand voltage of secondary circuit | V | 2000 | 2000 | 2000 |
| 16 | 储能电动机额定功率 Rated power of energy-storage motor | w | 40 | 70 | 140 |
| 17 | 储能电动机额定电压 Rated voltage of energy-storage motor | V | DC220、110 | AC DC220、110 | AC DC220、110 |
| 18 | 额定合闸操作电压 Rated closing operating voltage | V | DC220、110 AC220 | DC220、110 AC220 | DC220、110AC220 |
| 19 | 额定分闸操作电压 Rated opening operating voltage | V | DC220、110AC220 | DC220、110AC220 | DC220、110AC220 |
| 20 | 电机储能时间 Energy-storage time of motor | s | <8 | <8 | <8 |



◆ 断路器的主要机械特性见表 2 Main mechanical characteristics of circuit breaker see table 2

表 2 table 2

| 序号 No. | 名称 Name | 单位 Unit | 数值 Data | | |
|-----------|--|------------|-----------|-----------|-----------|
| 1 | 额定电压 Rated voltage | KV | 12 | 24 | 35 |
| 2 | 触头行程 Travel of contacts | mm | 9 ± 1 | 13 ± 1 | 16 ± 1 |
| 3 | 触头超行程 Overtravel of contacts | mm | 2.5 ± 0.5 | 3 ± 1 | 4 ± 0.5 |
| 4 | 相间中心距离 Phase-to-phase central distance | mm | 340 ± 1.5 | 380 ± 1.5 | 460 ± 2 |
| 5 | 触头合闸弹跳时间 Closing contact bounce time | ms | ≤ 2 | ≤ 2 | ≤ 5 |
| 6 | 三相分合闸不同期 Three-phase opening/closing asynchrony | ms | ≤ 2 | ≤ 2 | ≤ 2 |
| 7 | 平均分闸速度 Average opening speed | m/s | 1.2 ± 0.2 | 1.6 ± 0.2 | 1.4 ~ 1.8 |
| 8 | 平均合闸速度 Average closing speed | m/s | 0.6 ± 0.2 | 0.8 ± 0.2 | 0.4 ~ 0.8 |
| 9 | 每相导电回路电阻 Resistance of conductive circuit of each phase | μ Ω | ≤ 80 | ≤ 80 | < 80 |

◆ 工作原理 Working principle

· 储能过程

拉动机构手动储能拉环,或给机构电动储能信号,电机带动储能拐臂给储能弹簧储能,通过储能保持环节 保持此能量。

· 合闸过程

合闸时,拉动机构手动合闸拉环或给机构电动合闸信号,合闸弹簧能量释放,机构输出轴转动,通过拐臂、连杆带动灭弧室动触头向上运动,与静触头接触,并提供接触压力,同时为分闸弹簧储能,通过机构的合闸 保持环节正常扣接使断路器保持合闸状态。

· 分闸过程

分闸时,拉动机构手动分闸拉环或机构电动分闸信号,机构的合闸保持环节解扣,在触头压力弹簧和分闸 弹簧的作用下,机构输出轴反向转动,通过连杆、拐臂带动灭弧室触头向下运动,动静触头分开,断路器分闸。

· 过流保护过程

配置电流互感器的断路器,当流经断路器主回路的电流超过互感器额定值时,通过互感器副边输出 5A 电流,驱动机构过流脱扣器,断路器分闸。

· Energy-storage process

Pull the energy ring for manual energy storage, or give an electric energy storage signal to the mechanism, the motor drives energy crank arm to store energy to the storage spring, and keep the energy with energy holding device.

· Closing process

When the switch closes, pull the close ring manually or give an electric close signal to the mechanism, the closing spring energy releases, the output shaft is rotated, which drives moving contact of arc-extinguish chamber to

ZW32-□ 型户外高压真空断路器 outdoor high-voltage vacuum circuit breaker

move upwards by crank arm and rod, and contacts with static contact, in order to provide contact pressure, as well as store energy for opening spring, and keep close state of the circuit breaker by keeping normal fastening of the closing holding of mechanism.

· Opening process

When the switch opens, pull the open ring manually or give an electric open signal to the mechanism, the closing holding of mechanism trips, the mechanism output shaft rotates reversely under the action of contact pressure spring and the opening spring, and drives the contact of arc-extinguish chamber to move downwards by rod and crank arm, the moving and static contacts separate, and circuit breaker is opened.

· Overcurrent protection process

If the circuit breaker is equipped with current transformer, when the current flowing through the main circuit breaker exceeds rated value of the transformer, it outputs 5A current through secondary side of the transformer to drive mechanism overcurrent release, and the circuit breaker is opened.

隔离开关 Switch disconnector

◇ 对于需要加装隔离开关的用户，可选用 ZW32-12G 系列开关，外形尺寸及结构见图二。

The need for the installation of isolating switch users can choose ZW32-12G series switches, dimensions and structure shown in Figure II.

隔离开关用螺栓固定于原开关机箱上，紧固、稳定、拆卸方便、可靠、可灵活加装。

Switch disconnector is fixed on the original switch chassis by bolts, it is firm, stable, reliable and convenient to install and remove.

◇ 隔离开关主要技术参数见表 3 See table 3 for main technical parameters of switch disconnector

表 3 table 3

| 序号 No. | 项 目 Item | 单位 Unit | 参数 Parameters | |
|-----------|--|---------|---------------|--------------|
| 1 | 额定电压 Rated voltage | kV | 12 | 24 |
| 2 | 额定电流 Rated current | KA | 630、1250 | 630、1250 |
| 3 | 额定短时耐受电流（最大值） Rated short-time ithstand current (max value) | KA | 20 | 20、31.5 |
| 4 | 额定峰值耐受电流 Rated peak withstand current | | 50 | 50、80 |
| 5 | 1 min 工频耐受电压 1 min Power frequency withstand voltage | kV | 42 | 65 |
| | | | 48 | 125 |
| 6 | 回路电阻（断路器接线板至隔离开关进线板间） Circuit resistance (between the wiring board of circuit breaker and inlet board of disconnecter) | μ Ω | ≤ 120 | ≤ 80、G ≤ 150 |
| 7 | 三相刀闸合闸时中心偏差度 Central deviation value of closing of three-phase knife switch | mm | ≤ 2 | ≤ 2 |
| 8 | 三相刀闸分、合闸同期性偏差 Synchronism deviation of opening and closing of three-phase knife switch | | ≤ 2 | ≤ 2 |
| 9 | 导电部分对地绝缘距离 Insulation distance of conductive part to ground | | ≥ 160 | ≥ 180 |
| 10 | 断口开距 Break gap | | ≥ 200 | ≥ 250 |
| 11 | 质量 Mass | kg | 30 | 30、40 |

备注：额定短时耐受电流随电流互感器变化的不同而不同 35kv 隔离开关需独立配置

Remark: rated short-time withstand current varies along with the change of current transformer switch disconnector of 35kv need to be configured separately.

◇ 隔离开关的结构特点 Structural features of switch disconnector

隔离开关由支架 9、绝缘子 6、绝缘拉杆 7、刀片 4、主轴 10、进线板 5、操作手柄 8、电流互感器 3 等组成。支 架固定在机箱上，利用接线端作为闸刀的支点。成为隔离断口的一端，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备与断路器本体，之间的可靠防误机械 联锁。维护方便、安全。

The switch disconnector consists of support 9, insulator 6, insulated rod 7, blade 4, main shaft 10, inlet board 5, operating handle 8 and current transformer 3. The support is fixed on the chassis and it is an end of isolating distance by using the terminal as a fulcrum of the switch blade. The other end of the isolating distance opens and closes the switch by operating the insulator and the driving shaft. Three-phase linkage, there is obvious gap in opening state of switch disconnector, and enjoy reliable anti-misoperation mechanical interlocking between it and the circuit breaker body. It is safe and convenient for maintenance.

◇ 隔离开关操作顺序 Operating sequence of switch disconnector

· 合闸操作（送电操作）

- 拉动隔离开关操作手柄，闭合隔离刀，闭合到位
- 拉动断路器储能手柄，储能到位。
- 拉下断路器合闸拉环，使断路器合闸并保持在合闸位置。

· 分闸操作（断电、检修操作）

- 拉下断路器分闸拉环，使断路器分闸。
- 拉动隔离开关操作手柄，打开隔离刀，分闸到位。

· 注意事项：

- 严禁在断路器合闸时分合隔离开关。
- 隔离开关必须分合到位，否则断路器不得进行分合闸操作！

· Closing operation (power-on operation)

- Pull the operating handle of switch disconnector to close the disconnecter to fully closing position.
- Pull the energy-storage handle of circuit breaker to energy-storage position.
- Pull down the closing pulling eye of circuit breaker to keep the circuit breaker in closing position.

· Opening operation (power outage and overhaul operation)

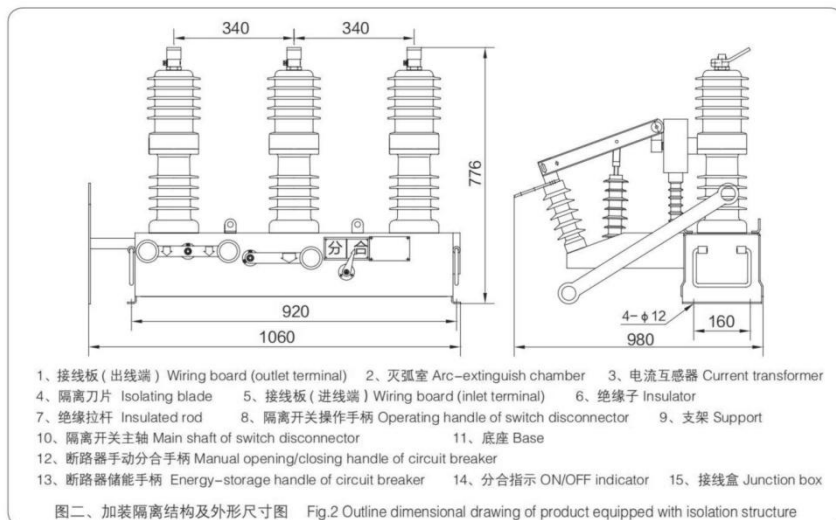
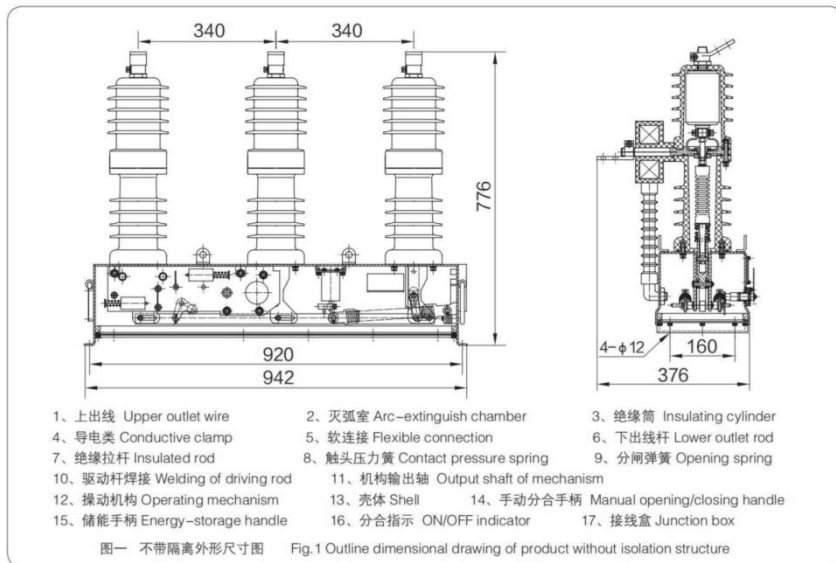
- Pull down the opening pulling eye of circuit breaker to let the circuit breaker open.
- Pull the operating handle of switch disconnector to open the disconnecter to fully open position.

· Matters need attention:

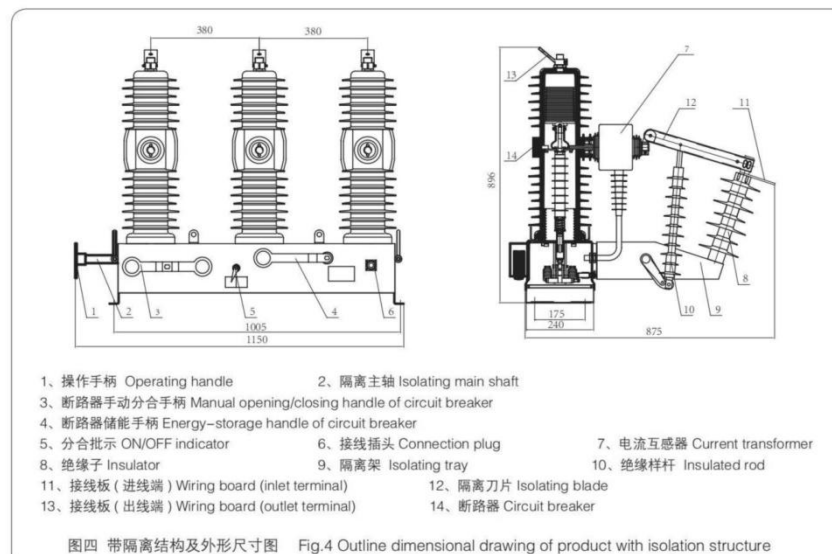
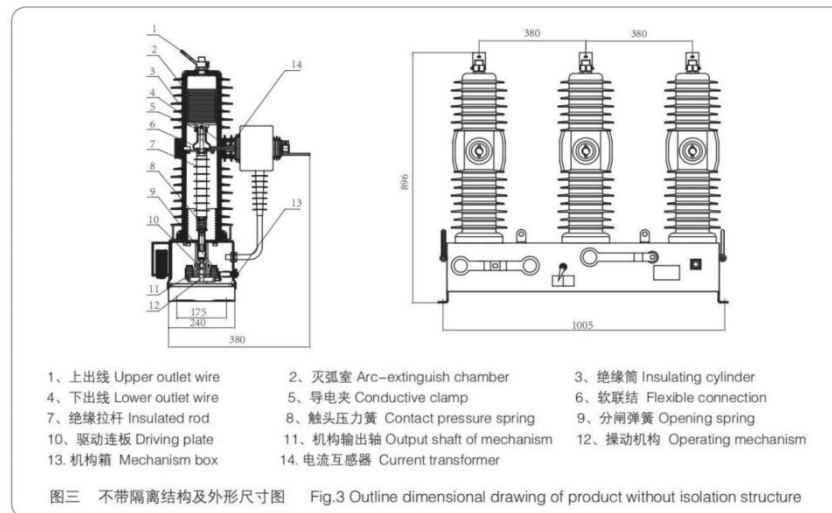
- Don't open or close the switch disconnector at closing of circuit breaker.
- Switch disconnector must be fully opened or closed, if not, don't conduct opening or closing operation of circuit breaker.

ZW32-□ 型户外高压真空断路器 outdoor high-voltage vacuum circuit breaker

ZW32-12 外形结构及尺寸图 ZW32-12 Outline structure and dimensional drawing

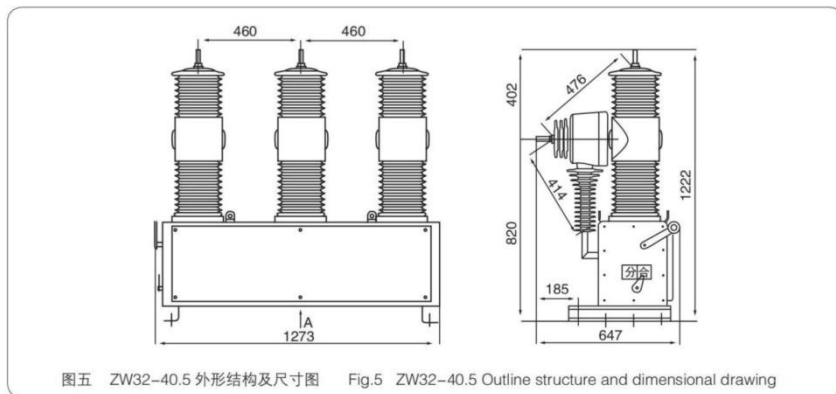


ZW32-24 外形结构及尺寸图 ZW32-24 Outline structure and dimensional drawing



ZW32-□ 型户外高压真空断路器 outdoor high-voltage vacuum circuit breaker

ZW32-40.5 外形结构及尺寸图 ZW32-40.5 Outline structure and dimensional drawing



产品的安装、使用和维护 Installation, use and maintenance

- 开箱后应检查断路器户外环氧绝缘套筒有无破裂，产品铭牌、合格证是否与订货单相符，装箱单是否与实物相符。
- 断路器投入运行前，应仔细核对各操作元件的额定电压，额定电流与实际情况是否相符，合分闸方式进行试操作，以检查各项指标是否正确。
- 断路器可以单杆架设。也可以双杆架设（如图六），安装孔位见图七。
- 本断路器因其特殊的设计结构可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。
- 用户不得随意更换使用与原型号规格不一致的电器元件。
- 操作人员应初步了解结构的性能及安装调整、维护知识，对运行中问题予以记录。必要时可通知制造厂家。
- 控制部分的内部二次接线及原理见图九～图十一

• After unpacking, please check the outdoor epoxy insulating sleeve of circuit breaker to see if there is any damage, make sure that the nameplate and certificate of conformity are in accordance with the order, also check the packing list to see if it is in compliance with the actual goods.

• Before the circuit breaker is put into operation, please check the rated voltage and rated current of each operating component to see if they are in accordance with the actual conditions. Conduct trial operation of closing and opening to make sure that all indexes are right.

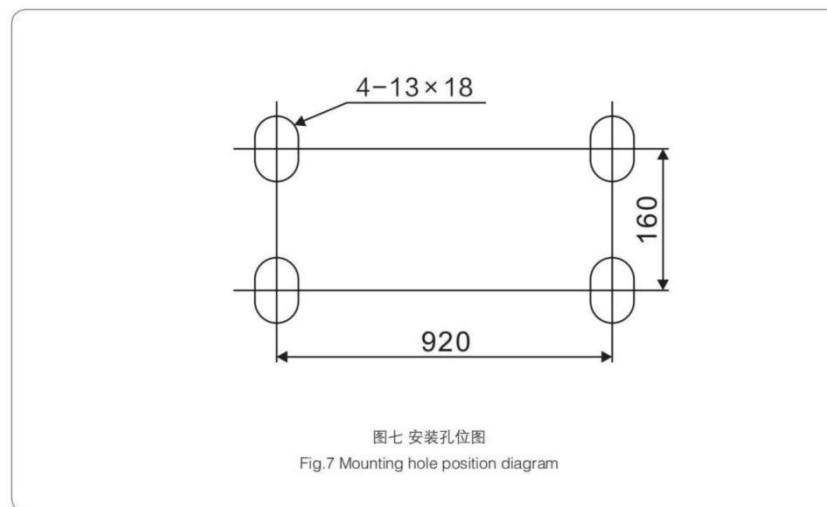
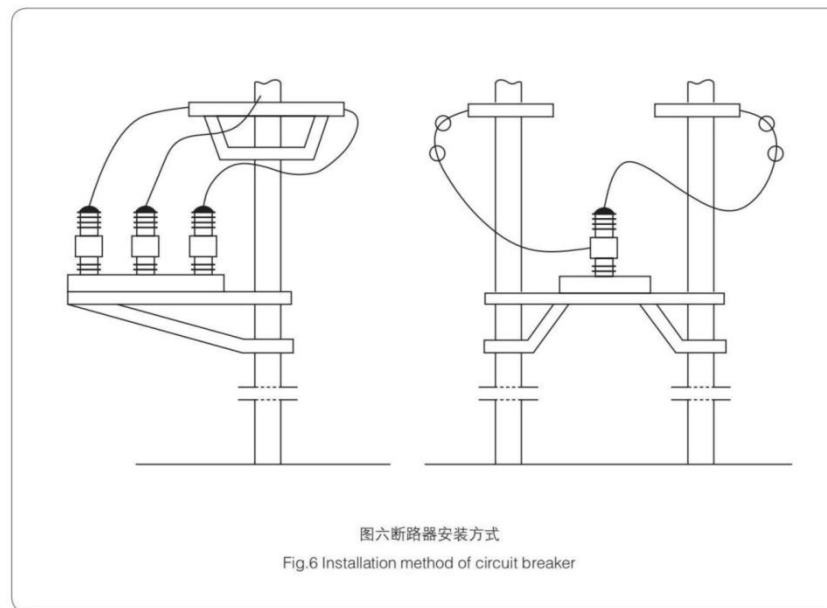
• Both single-rod erection and double-rod erection (see Fig.6) are applicable for circuit breaker, see Fig.7 for mounting hole position.

• The special design of circuit breaker guarantees maintenance-free during long-term operation, but it requires a power-frequency withstand voltage test about every three years.

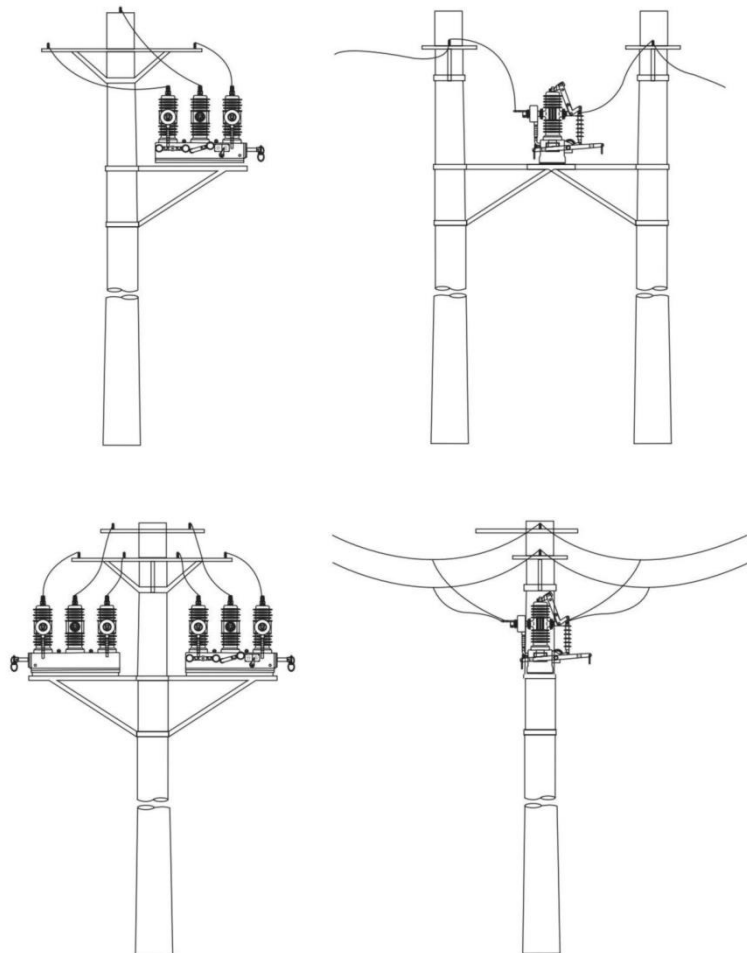
• Users should not change the elements or use components of different model or specification.

• The operator should have some preliminary understandings about the performances, installation, regulation and maintenance of mechanism, should record the problems coming across during operation, and notify the manufacturer if it is necessary.

• See Fig. 9~ Fig. 11 for internal secondary wiring and schematic diagram of control part

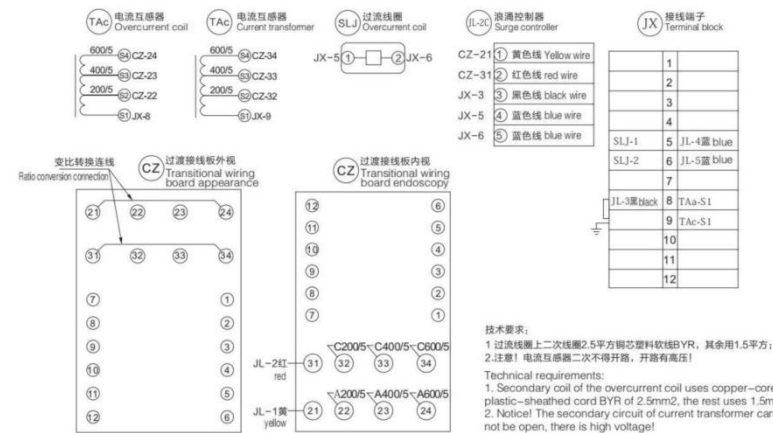


ZW32-□ 型户外高压真空断路器 outdoor high-voltage vacuum circuit breaker

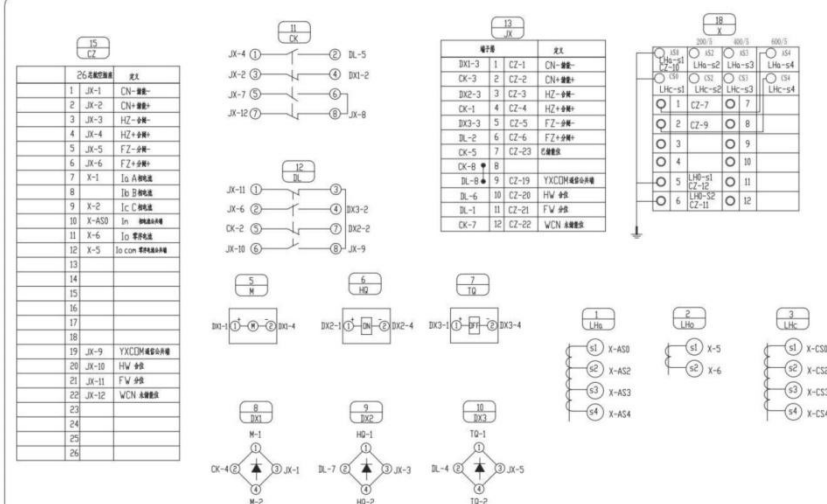


图八 ZW32-12 系列安装示意图
Fig.8 ZW32-12 Installation diagram

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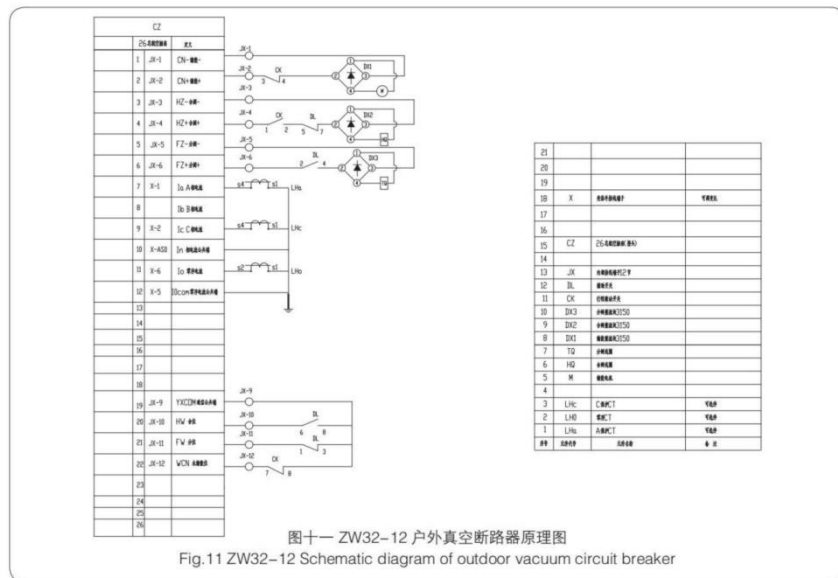


图九 ZW32-12 型户外柱上真空断路器手动机构接线图
Fig.9 ZW32-12 Wiring diagram of manual mechanism of outdoor pole-mounted vacuum circuit breaker



图十 ZW32 型户外柱上真空断路器电动机机构接线图
Fig.10 ZW32-12 Wiring diagram of electric mechanism of outdoor pole-mounted vacuum circuit breaker

ZW32-□ 型户外高压真空断路器 outdoor high-voltage vacuum circuit breaker



运输、验收及贮存 Transit, acceptance check and storage

◆ 运输 Transit

运输时必须整台装入封闭的包装箱内加以固定，运输过程中不得翻转、倾斜，同时需采取防震措施。

The whole circuit breaker should be packed in a closed packing case and fixed for transportation, it should not be rolled or leaned during transportation, please take suitable measures against shock.

◆ 验收 Acceptance check

用户收到断路器后就进行如下工作：

- 检查包装是否损坏。
- 对照产品装箱检查文件是否齐全、附件及备件是否齐全。
- 检查断路器铭牌上的技术参数、产品合格证是否符合订货要求。

Conduct the following work when receiving the circuit breaker:

- Check the package to see whether it is damaged.
- Check whether the documents, accessories and spare parts are complete according to the packing list.
- Check whether the technical parameters on nameplate and certificate of conformity of circuit breaker conform to the order requirements.

◆ 贮存 Storage

本断路器应存放在干燥、通风、防潮防震及防有害气体侵蚀的室内，长期存放应定期检查环境是否符合要求。装箱、开箱和保管应在干燥的室内。

The circuit breakers should be placed in dry, draughty, dampproof and quakeproof room where should be resistant to harmful gas. If it is long-term storage, please check the environment regularly and make sure the environmental conditions are in accordance with the storage requirements. Packaging, unpacking and storage should be done in dry room.

订货须知 Order guide

订货时请在合同上注明：

- 产品型号及名称。
- 机构类型（手动和电动）。
- 如果电动机机构请分别注明合、分闸线圈及储能电机的额定电压（AC220V、AC110V、DC220V、DC110V、DC24V）。
- 如需要互感器过流保护装置，请注明互感器电流比。
- 如需要配置开关控制器，请注明控制器形式及型号。

Please specify the following information in the contract:

- Product model and name.
- Mechanism type (manual, electric).
- Please specify the rated voltage of closing and opening coil and energy-storage motor (AC220V, AC110V, DC220V, DC110V, DC24V) if it is electric mechanism.
- Please specify the current ratio of transformer if need transformer overcurrent protective device.
- Please specify the controller type and model if need switch controller.

随机文件 Enclosed documents

- 产品合格证
- 断路器和机构安装使用说明书
- 接线图
- Certificate of Conformity
- Installation and Operation Manual of Circuit Breaker and Mechanism
- Wiring Diagram