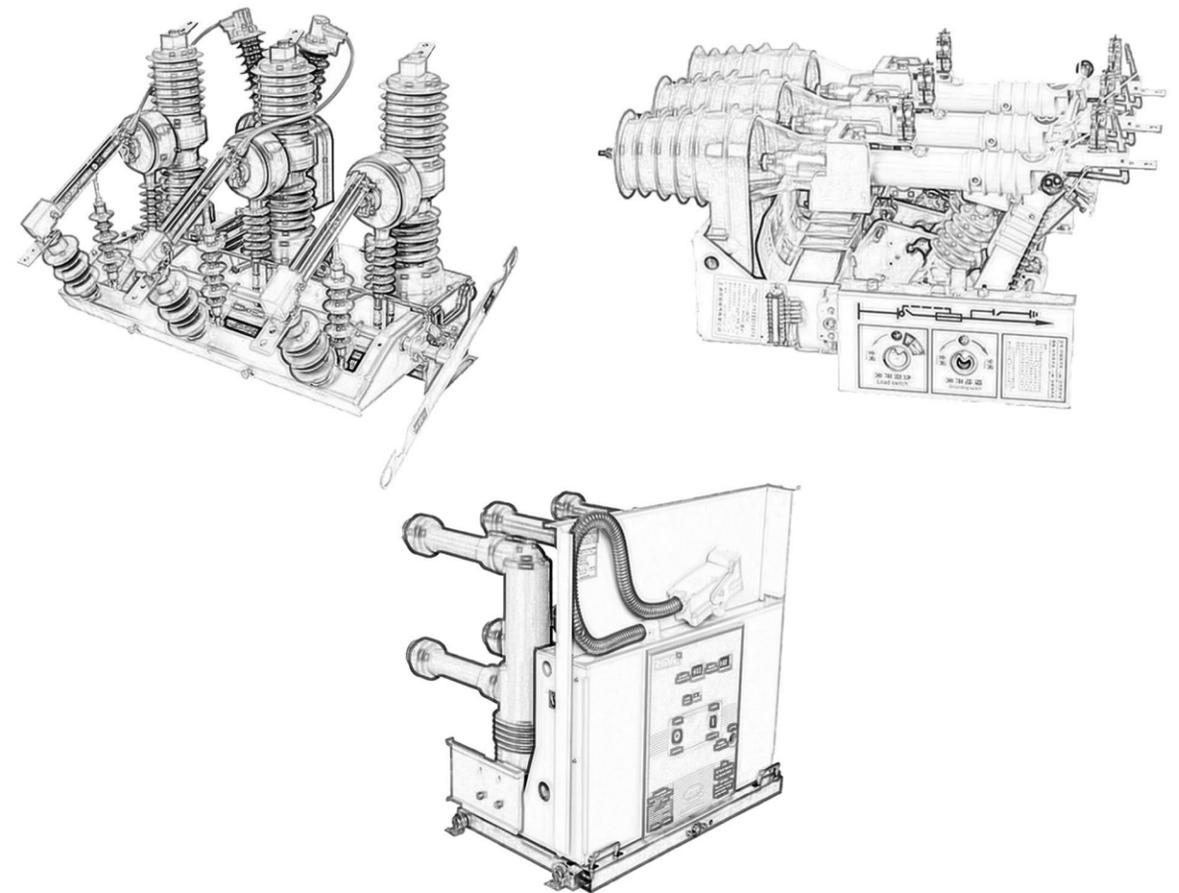


浙里,光尽其所能  
Here, The Light Did What It Could



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# PRODUCT MANUAL

ZHEGUANG ELECTRONIC CO.,LTD.

- I Vacuum Circuit Breaker
- I Recloser
- I Vacuum Load Switch
- I Grounding Switch
- I Disconnecter
- I Switchgear

Here The Light Did What It Could  
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# Company Profile



The company has a number of outstanding engineering and technical personnel, with a spacious purification production area. With a strong technical force, a full range of technology testing equipment. In the spirit of pragmatism, innovation, efficiency and win-win, the company has achieved a series of impressive achievements and outstanding performance. Over the years, the company has adhered to the principle of "professionalism and sincere service". The company's products are strictly implemented in relevant national and international standards. In recent years, the products are widely used in domestic transmission and distribution, metallurgy, chemical, mining, building urban and rural transformation and other supporting projects. Products are exported to many countries and regions in Southeast Asia, and are trusted and welcomed by customers.

The company wholeheartedly cooperates with domestic and foreign merchants to jointly develop domestic and foreign markets for a better future!

# Enterprise qualification



Under the aura, we strive for perfection and perfection. Every certificate means a commitment and responsibility. We are committed to society, economic development, outstanding technological innovation, caring service and honesty. We use strength and credibility to prove: The future will be more brilliant!

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# LW □ -12F

SF6 circuit breaker on a second fusion column

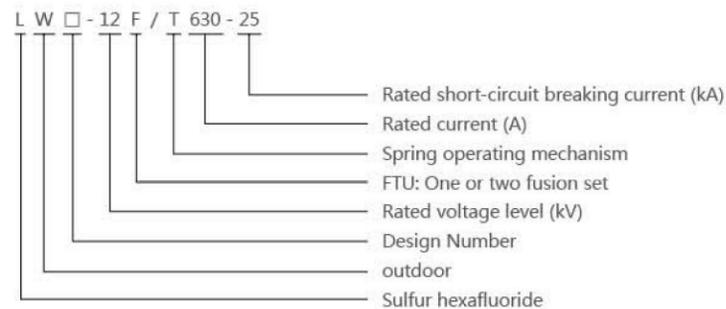


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## Overview

The 12kV outdoor pole-mounted SF6 circuit breaker is a new generation product developed by our company to meet the new requirements of the primary and secondary integration of the national grid. The switch configuration fully meets the requirements of the primary and secondary integration of the national grid. Mass production. The switch has a compact structure, a reasonable layout, and complete functions. All indicators meet the requirements of the primary and secondary fusion of the State Grid. It adopts unified parameter protection CT, zero sequence CT and zero sequence voltage sensors. It has a wide measurement range, high measurement accuracy, and reliability High characteristics, complete analog quantity is convenient for accurate determination of various faults on the line.

## Model and meaning



## Operating environmental conditions

- ◆ Ambient air temperature: -40 °C ~+ 40 °C ;
- ◆ Altitude: no more than 3000m;
- ◆ The surrounding air can be contaminated by dust, smoke, corrosive gas, steam or salt mist. Pollution level: Grade IV;
- ◆ The wind speed does not exceed 34m / s (equivalent to 700Pa on the surface of the cylinder);
- ◆ Vibration or ground motion from outside of switchgear and control equipment can be ignored;
- ◆ The amplitude of electromagnetic interference induced in the secondary system does not exceed 1.10kV.

# LW □ -12F

SF6 circuit breaker on a second fusion column

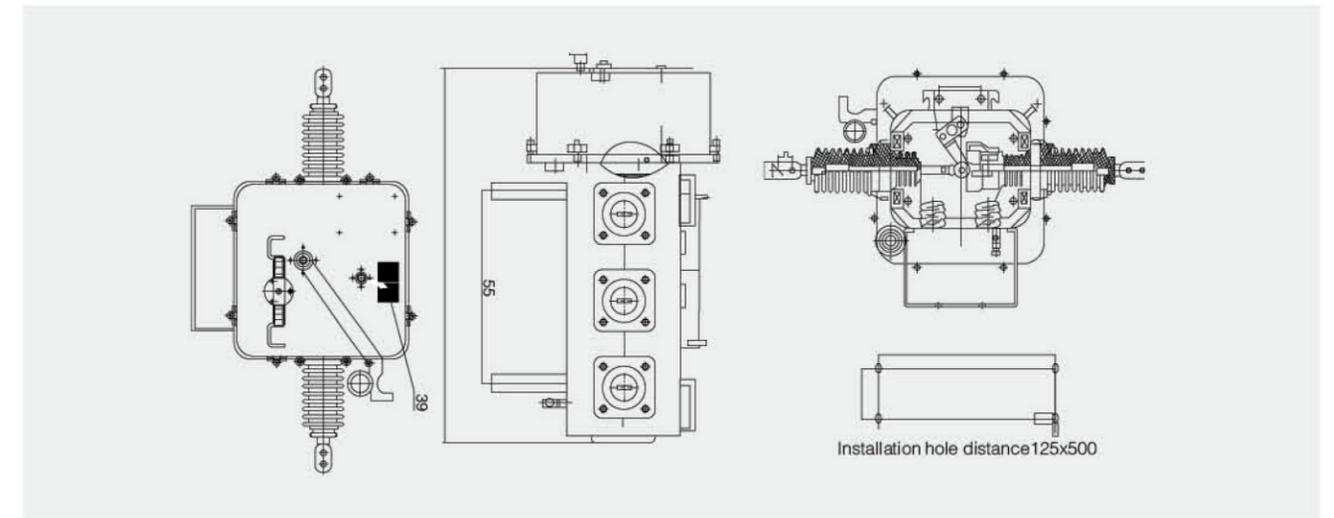
## The main technical parameters

### Electrical technical parameters

Project	Unit	Parameter
Rated voltage	kV	12
Rated frequency	Hz	50
Rated current	A	630
Rated short-time withstand current	kA	20
Rated short-time withstand current passing time	s	4
Rated short-time withstand current (peak value)	kA	50
Rated short-circuit making current (peak value)	kA	50
Rated cable charging current	A	25
Rated short-circuit breaking current	kA	20
Rated operating sequence		Points-0.3s-he points-180s-he points
Rated working pressure (at gauge pressure Mpa at 20 °C )		0.35
Minimum functional pressure (at gauge pressure Mpa20 °C )		0.25

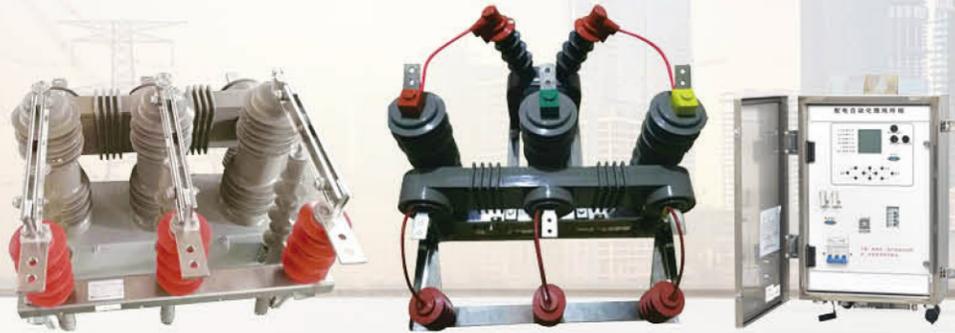
Project	Unit	Parameter	
Rated power frequency withstand voltage (1 minute) (Rated insulation level at minimum working pressure)	Alternately and relatively Insulation break	kV kV	42 48
Rated lightning impulse withstand voltage (BIL) (Rated insulation level at minimum working pressure)	Alternately and relatively Insulation break	kV kV	75 85
Rated mechanical stability	breaker		10000 times (E2 level)
Annual leakage rate of SF6 gas			≤ 0.5%
Rated closing / opening operating voltage	V	DC24V	
total weight	kg		175
Dimensions (L × W × H)	mm		1015×950×580
Closing time	Rated operating voltage	ms	50±ms
	Maximum operating voltage	ms	40 ~ 60
	Minimum operating voltage	ms	40 ~ 60
Opening time	Rated operating voltage	ms	40±ms
	Maximum operating voltage	ms	35 ~ 55
	Minimum operating voltage	ms	35 ~ 55
Closing different periods			≤ 2
Different stages of opening			≤ 2
Just close speed	m/s		2.6±0.2
Just split speed	m/s		2.6±0.2
Contact opening	mm		38±2
Contact overtravel	mm		22±1
Main circuit resistance of each phase (excluding cable)			≤ 130
Energy storage motor power			150W DC24V

## Structural features



# ZW32-12

One-time fusion complete set of on-column switch equipment



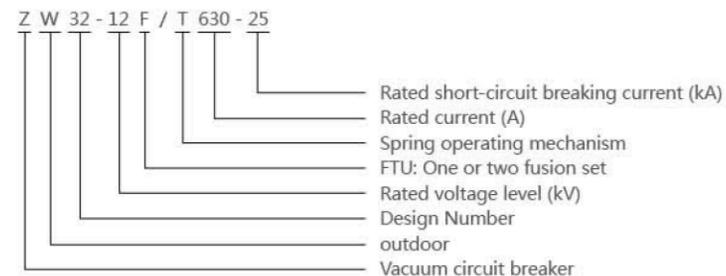
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## Overview

The AZW32-12 outdoor pole vacuum circuit breaker is a new generation product developed by our company according to the new requirements of the primary and secondary integration of the first and second integration of the national grid. The switch configuration fully meets the requirements of the primary and secondary integration of the national grid, which is convenient for the national grid. Unified procurement, mass production. The switch has a compact structure, a reasonable layout, and complete functions. All indicators meet the requirements of the primary and secondary fusion of the State Grid. It adopts unified parameter protection CT, zero sequence CT and zero sequence voltage sensors. It has a wide measurement range, high measurement accuracy, and reliability. High characteristics, complete analog quantity is convenient for accurate determination of various faults on the line.

The AZW32-12 switch body is a pillar type, using a solid sealed vacuum arc extinguishing chamber, encapsulated by silicone rubber (used as insulation and buffer), small in size, encapsulated in an epoxy resin insulated tube, excellent anti-condensation performance, long working life, Reliable performance. The spring operating mechanism has been miniaturized and optimized for performance, and its operational reliability is much higher than that of the traditional domestic spring mechanism. Meet the environmental protection requirements: no oil and SF6 gas, high anti-pollution grade, beautiful, light, easy to transport. An external set of EVT, ECT (three-phase voltage, current, zero-sequence voltage, current, used for measurement, measurement, protection). Two external electromagnetic single-phase power supply PT, 10 / 0.1 / 0.22KV.

## Model and meaning



# ZW32-12

一二次融合柱上开关断路器

## The main technical parameters

Project	Unit	Parameter		
Rated voltage	kV	12		
Fracture insulation level	Power frequency (dry test)	kV	48	
	Lightning impulse test voltage (peak value)	kV	85	
Insulation level to ground and interphase	Power frequency	Dry test	kV	42
		Wet test	kV	34
	Lightning impulse test voltage (peak value)	kV	75	
Rated current	A	630		
Rated short-circuit breaking current	kA	25		
Breaking times of rated short-circuit breaking current	Times	30		
Rated short-time withstand current	kA	25		
Rated short-circuit duration	s	4		
Rated short-circuit making current (peak value)	kA	63		
Rated peak withstand current	kA	63		
Mechanical life	Times	10000		
Breaking rated current times	Times	10000		
net weight	kg	180		

## Mechanical characteristics

Project	Unit	Parameter
Contact opening distance (mm)	mm	9±1
Contact stroke (mm)	mm	2±0.5
Bounce time of contact closing (ms)	ms	≤ 2
Conductive loop resistance of each phase (μΩ)	μΩ	≤ 120
Different period of opening (ms)	ms	≤ 2ms
Different period of closing (ms)	ms	≤ 2ms
Average speed of opening (m / s)	m/s	0.8 ~ 1.2m/s
Closing average speed (m / s)	m/s	0.4 ~ 0.8m/s
Closing time	ms	20 ~ 60
Opening time	ms	18 ~ 45
Center distance	mm	340
Rated power of energy storage motor	w	> 40
Energy storage motor rated voltage	v	DC24
Rated opening and closing operating voltage	v	DC24

## The main technical parameters

Electronic current sensor		
Rated current ratio	Phase current	600A/1V
	Zero sequence current	20A/0.2V
Accuracy level	Phase current	0.5S/5P10
	Zero sequence current	10P10 , ( 1%--120% ) In < 1%
Method to realize	Low power electromagnetic	
Load impedance	≥ 20 kΩ	
temperature range	-40°C -70°C	
Electronic voltage sensor		
Rated voltage ratio	Phase voltage	$(10kV/\sqrt{3})/(3.25V/\sqrt{3})$
	Zero sequence voltage	$(10kV)/(6.5V/3)$
Accuracy level	Phase voltage	0.5
	Zero sequence voltage	1
Method to realize	Resistance voltage	
temperature range	-40°C -70°C	
Partial discharge	14.4kV时, ≤ 10pC	
Load impedance	Terminal input impedance > 10 MΩ Distribution line loss acquisition module input impedance > 10 MΩ Comprehensive impedance > 5MΩ	
Electromagnetic voltage transformer (external type)		
Quantity (only)	2	
Rated voltage ratio (kV)	10/0.1/0.22	
Accuracy level	0.5	
Capacity (VA)	10 / 0.1 winding, 30VA 10 / 0.22 winding, to meet product power consumption requirements Rated capacity ≥ 150VA Short-term capacity ≥ 300VA / 1s	

# ZW20-12

One-time fusion complete set of on-column switch equipment



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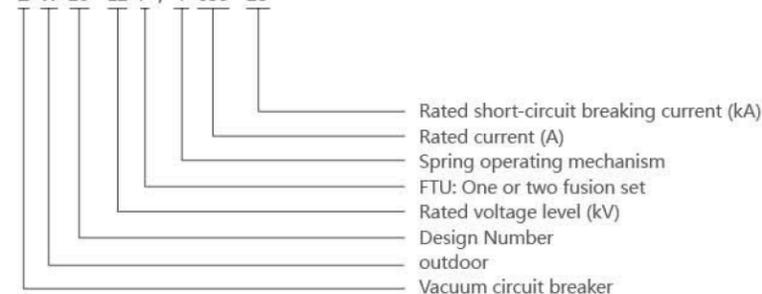
## Overview

ZW20-12 outdoor pole vacuum circuit breaker is a new generation product developed by our company according to the new requirements of primary and secondary fusion complete set of on-column switch access to the network. Unified procurement, mass production. The switch has a compact structure, a reasonable layout, and complete functions. All indicators meet the requirements of the primary and secondary fusion of the State Grid. It adopts unified parameter protection CT, zero sequence CT and zero sequence voltage sensors. It has a wide measurement range, high measurement accuracy, and reliability. High characteristics, complete analog quantity is convenient for accurate determination of various faults on the line.

The ZW20-12 switch body is a common box type, which is vacuum insulated SF6 gas insulated. The box body adopts gas sealing, explosion-proof, insulating structure technology, and the overall sealing performance is excellent. The SF6 gas filled inside does not leak and is not affected by the external environment. Its spring operating mechanism has been miniaturized and optimized for performance, and its action reliability is much higher than that of the traditional domestic spring mechanism. Built-in 1 set of EVT, ECT (three-phase voltage, current, zero-sequence voltage, current, used for measurement, measurement, protection). Two external electromagnetic single-phase power supplies PT, 10 / 0.1 / 0.22kV.

## Model and meaning

Z W 20 - 12 F / T 630 - 25



# ZW20-12

One-time fusion complete set of on-column switch equipment

## The main technical parameters

### Main technical parameters of circuit breaker

Project	Unit	Parameter		
Rated voltage	kV	12		
Fracture insulation level	Power frequency (dry test)	kV	48	
	Lightning impulse test voltage (peak value)	kV	85	
Insulation level to ground and interphase	Power frequency	Dry test	kV	42
		Wet test	kV	34
	Lightning impulse test voltage (peak value)	kV	75	
Rated current	A	630		
Rated short-circuit breaking current	kA	20, 25		
Breaking times of rated short-circuit breaking current	Times	30,		
Rated short-time withstand current	kA	20, 25		
Rated short-circuit duration	s	4		
Rated short-circuit making current (peak value)	kA	50, 63		
Rated peak withstand current	kA	50, 63		
Mechanical life	Times	10000		
Breaking rated current times	Times	10000		
net weight	kg	180		

## Mechanical characteristics

Project	Unit	Parameter
Contact opening	mm	9 <sup>+1</sup>
Contact overtravel	mm	3 <sup>+0.5</sup>
Opening speed	m/s	1.2±0.2
Closing speed	m/s	0.6±0.2
Bounce time of contact closing	ms	≤ 2
Center distance	mm	275±1
External charged air insulation distance	mm	235±2
External creepage distance	cm/kV	3.8
Different phases of three-phase opening	ms	≤ 2
Conductive loop resistance of each phase	μΩ	≤ 150
Closing time	ms	20 ~ 60
Opening time	ms	18 ~ 45
Rated power of energy storage motor	w	≥ 40
Energy storage motor rated voltage	v	DC24
Rated closing operating voltage	v	DC24
SF6 gas rated pressure (gauge pressure)	mpa	"0"

## The main technical parameters

Electronic current sensor		
Rated current ratio	Phase current	600A/1V
	Zero sequence current	20A/0.2V
Accuracy level	Phase current	0.5S/5P10
	Zero sequence current	10P10, ( 1%~120% ) In < 1%
Method to realize	Low power electromagnetic	
Load impedance	≥ 20 kΩ	
temperature range	-40°C ~70°C	
Electronic voltage sensor		
Rated voltage ratio	Phase current	$(10kV/\sqrt{3})/(3.25V/\sqrt{3})$
	Zero sequence current	$(10kV)/(6.5V/3)$
Accuracy level	Phase current	0.5
	Zero sequence current	1
Method to realize	电阻分压	
temperature range	-40°C ~70°C	
Partial discharge	14.4kV时, ≤ 10pC	
Load impedance	Terminal input impedance> 10 MΩ Distribution line loss acquisition module input impedance> 10 MΩ Comprehensive impedance> 5MΩ	
Electromagnetic voltage transformer (external type)		
Quantity (only)	2	
Rated voltage ratio (kV)	10/0.1/0.22	
Accuracy level	0.5	
Capacity (VA)	10 / 0.1 winding, 30VA 10 / 0.22 winding, to meet product power consumption requirements Rated capacity ≥ 150VA Short-term capacity ≥ 300VA / 1s	

# FZW28-12F

One-time fusion column vacuum load switch



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## Overview

FZW28F-12 outdoor boundary vacuum load switch (FFK for short) is used for installation on the column, and has manual and electric operation functions. The switch body adopts the VSP5-12 maintenance-free load switch imported from Japan Toshiba Corporation, and uses vacuum arc extinction and SF6 gas as the insulating medium.

This product meets the following standards:

GB3804-2004 3.6~40.5kV high voltage AC load switch

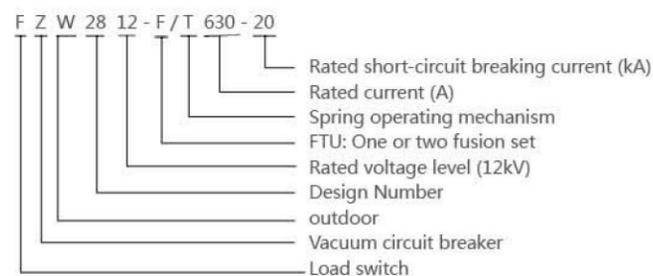
GB / T11022 Common technical requirements for high-voltage switchgear and control equipment standards

This manual describes the structure, function, installation and debugging methods of outdoor boundary vacuum load switches.

The FZW28F-12 outdoor boundary vacuum load switch has fault detection, protection, control and communication functions. It is installed on a 10kV line and can realize single-phase grounding fault isolation and automatic isolation between phase short-circuit faults. It is suitable for T connection or user terminal of 10kV distribution line user incoming line, and can also be used for other branch line connections that meet the requirements.

## Model and meaning

### Load switch model and meaning



### Controller model and meaning



## Operating environmental conditions

- ◆ The upper limit of ambient air humidity does not exceed 40 °C, and the lower limit does not exceed -45 °C ;
- ◆ Wind speed is not more than 35m / s;
- ◆ Altitude is not higher than 1000m;
- ◆ Environmental humidity: monthly average relative humidity is not more than 90%; daily average relative humidity is not more than 95%;
- ◆ The thickness of ice coating does not exceed 10mm;
- ◆ The installation site should be free of flammable, explosive, chemical corrosion and frequent severe vibration;
- ◆ Neutral point grounding method: neutral point is not grounded, neutral point is grounded by arc suppression coil, and neutral point is grounded by small resistance.

# FZW28-12F

One-time fusion column vacuum load switch

## Switch rated parameters

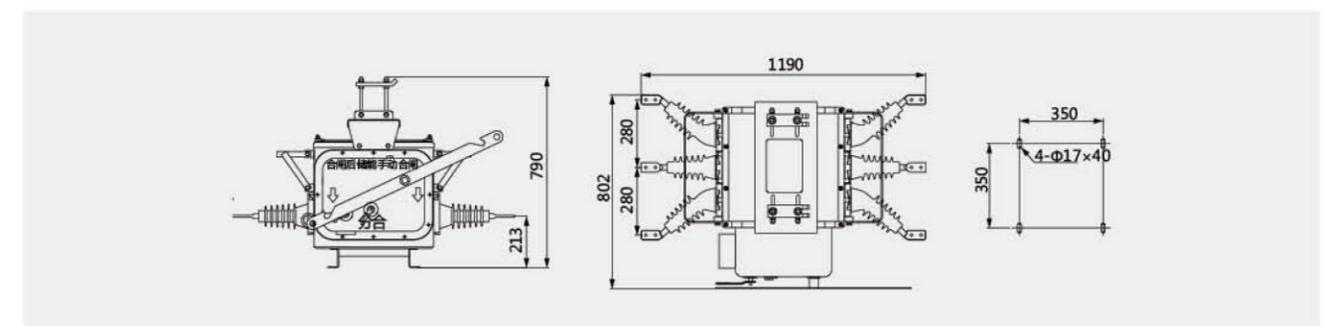
Project	Unit	Parameter
Rated voltage	kV	12
Rated insulation level	kV	1min power frequency withstand voltage (between poles, ground / fracture)
		dry 42 wet 34
	kV	Lightning impulse voltage (between poles, ground / fracture) 75/85
Rated frequency	Hz	50
Rated current	A	630
Rated short-time withstand current and duration	kA/4s	16/4
Rated peak withstand current	kA	40
Rated short-circuit making current	kA	40
Mechanical life	Times	10000
Design life	year	20
net weight	kg	210

Note: 1. When the altitude of the product use place is higher than 1000m, the insulation withstand voltage should be adjusted accordingly. 2. When the PT is built-in, it is forbidden to withstand voltage between the poles.

## The main technical parameters

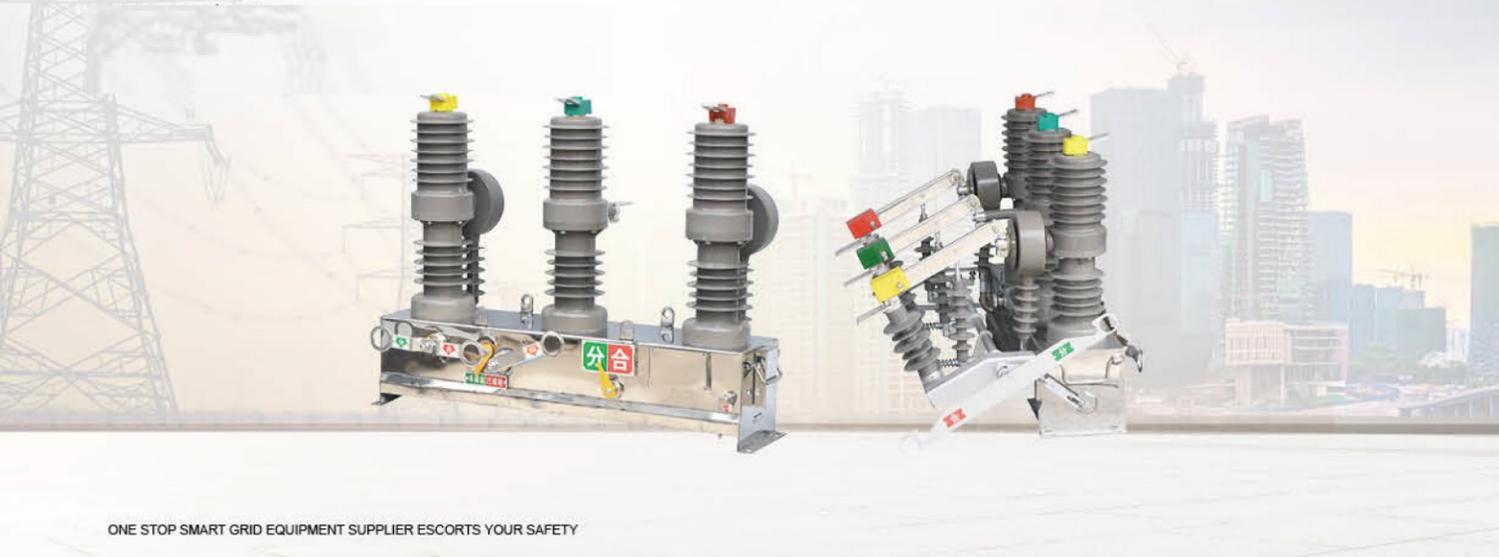
Electronic current sensor		
Rated current ratio	Phase current	600A/1V
	Zero sequence current	20A/0.2V
Accuracy level	Phase current	0.5S/5P10
	Zero sequence current	10P10, ( 1%-120% ) In < 1%
Method to realize	低功耗电磁式	
Load impedance	≥ 20 kΩ	
temperature range	-40°C -70°C	
Electronic voltage sensor		
Rated voltage ratio	Phase current	$(10kV/\sqrt{3})/(3.25V/\sqrt{3})$
	Zero sequence current	$(10kV)/(6.5V/3)$
Accuracy level	Phase current	0.5
	Zero sequence current	1
Method to realize	电阻分压	
temperature range	-40°C -70°C	
Partial discharge	14.4kV时, ≤ 10pC	
Load impedance	Terminal input impedance > 10 MΩ Distribution line loss acquisition module input impedance > 10 MΩ Comprehensive impedance > 5MΩ	
Electromagnetic voltage transformer (external type)		
Quantity (only)	2	
Rated voltage ratio (kV)	10/0.1/0.22	
Accuracy level	0.5	
Capacity (VA)	10 / 0.1 winding, 30VA/10 / 0.22 winding, to meet product power consumption requirements Rated capacity ≥ 150VA short-term capacity ≥ 300VA / 1s	

## Outline and installation dimensions (mm)



# ZW32-12

## Outdoor High Voltage Vacuum Circuit Breaker



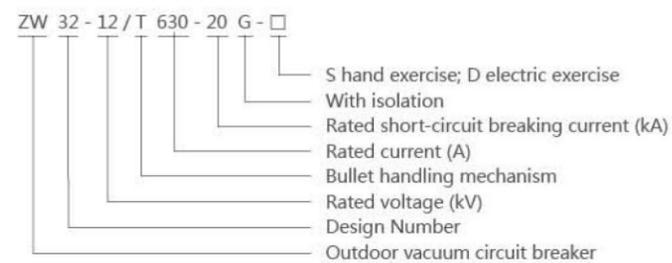
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### Overview

ZW32-12 outdoor vacuum circuit breaker (hereinafter referred to as circuit breaker) is an outdoor power distribution equipment with a rated voltage of 12kV and three-phase AC 50Hz. Mainly used for breaking and closing the load current, overload current and short circuit current in the power system. It is suitable for protection and control in substations and industrial and mining enterprise power distribution systems, and places where rural power grids are frequently operated.

The circuit breaker has the characteristics of small size, light weight, anti-condensation, maintenance-free, etc., and can adapt to harsh weather conditions and dirty environments.

### Model meaning



### Environmental conditions

- ◆ Ambient temperature: not higher than + 40 °C , not lower than -40 °C ;
- ◆ Relative humidity of air: daily average value is not greater than 95%, monthly average value is not greater than 90%;
- ◆ Altitude does not exceed 2000 meters;
- ◆ Wind pressure does not exceed 700Pa (equivalent to wind speed 34m / s);
- ◆ The seismic intensity does not exceed 8;
- ◆ No fire, explosion, severe pollution, chemical corrosion and violent vibration.

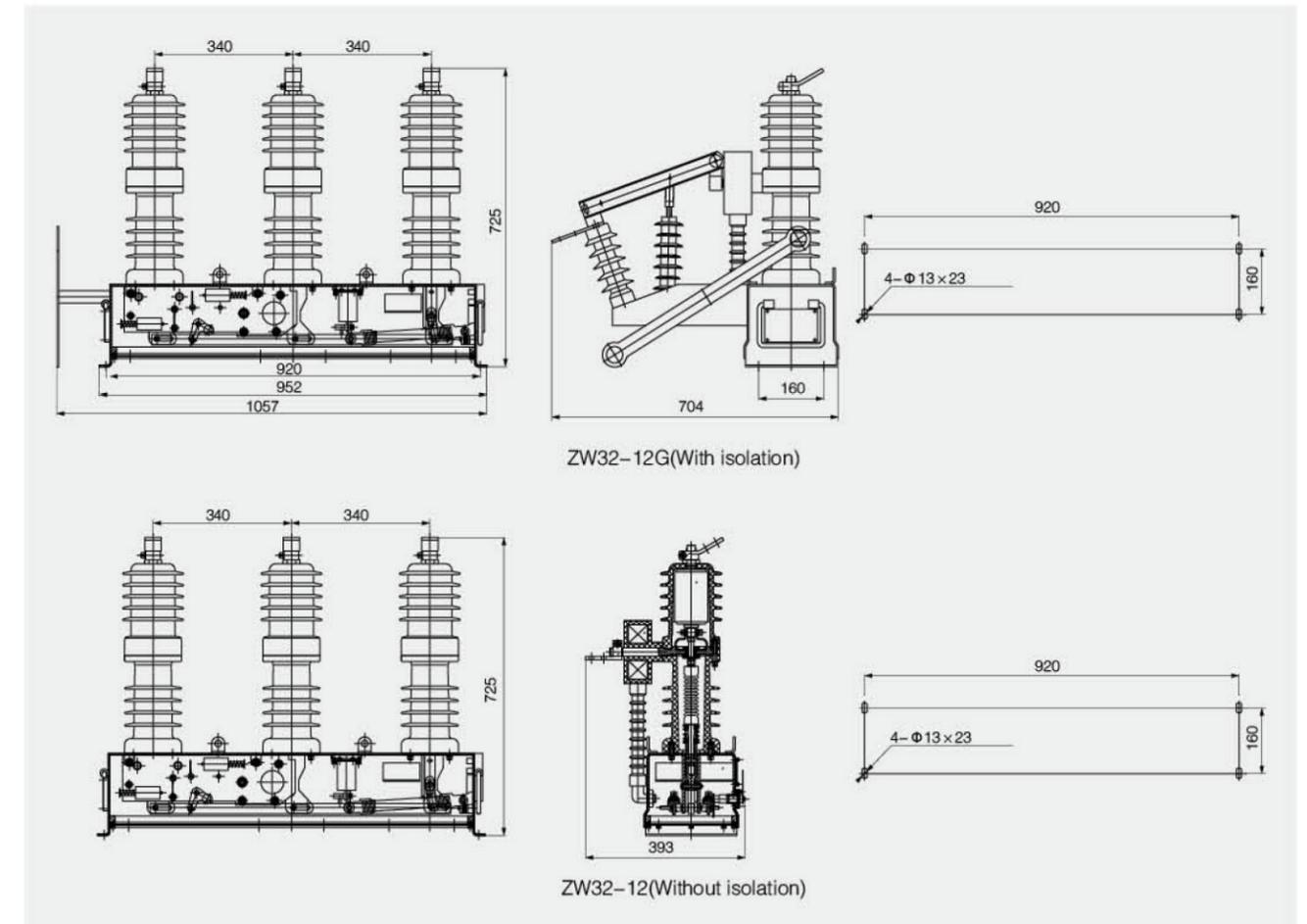
# ZW32-12

## Outdoor High Voltage Vacuum Circuit Breaker

### The main technical parameters

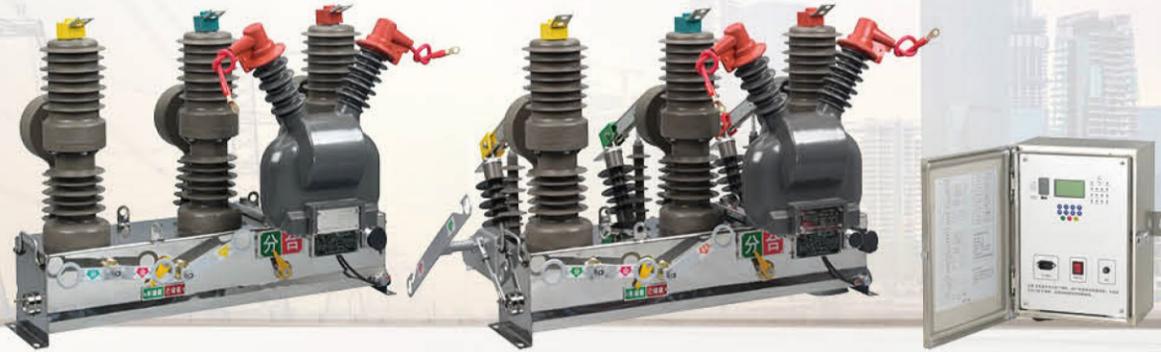
Project	Unit	Parameter
Rated voltage	kV	12
Rated frequency	Hz	50
Rated current	A	630
Rated short-circuit breaking current	kA	20
Rated peak withstand current (peak value)	kA	50
Rated short-time withstand current	kA	20
Rated short-circuit making current (peak value)	kA	50
Mechanical life	Times	10000
Breaking times of rated short-circuit breaking current	Times	30
Power frequency withstand voltage (1min): (wet) (dry) interphase, ground / fracture	kV	42/48
Lightning impulse withstand voltage (peak) interphase, ground / fracture	kV	75/85
Secondary circuit 1min power frequency withstand voltage	kV	2

### Outline and installation dimensions (mm)



# ZW32-12MF

## Outdoor High Voltage Permanent Magnet Vacuum Circuit Breaker

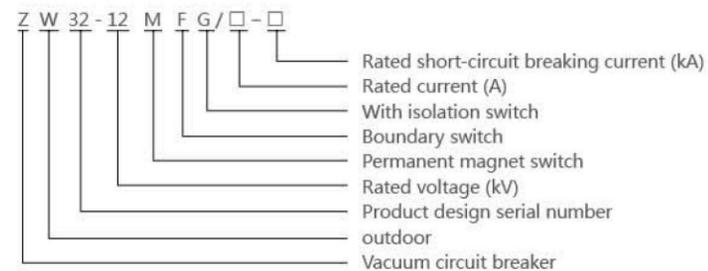


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### Overview

When a fault occurs inside the T-connected branch line of the 12kV overhead distribution line or at the end user, the time limit of the protection action of the incoming switch and the protection time limit of the outgoing switch of the substation cannot be adjusted properly, which will cause the outgoing switch of the substation to trip. If the nature of the fault is permanent and the substation coincidence will be unsuccessful, a local fault in the medium-voltage user community will cause the entire 12kV distribution line to be powered off. If an outdoor boundary circuit breaker is installed at the T junction or the user terminal (responsibility boundary point), if a failure (overcurrent, short circuit, single-phase grounding, etc.) occurs within the user boundary after judgment, the failure is automatically isolated, you can ensure Users in the non-fault area normally use electricity. The application of ZW32-12MF outdoor high voltage permanent magnet vacuum circuit breaker on the 12kV feeder overhead line can avoid the unintended power outage of the fault-free line, reduce the fault outage range, shorten the user outage time and protect the safe operation of the main network. It also has a fault detection function, protection control function and communication function, which can automatically cut off single-phase ground faults and automatically isolate short-circuit faults between phases. The installation point is applicable to the junction point of the responsibility of the 12kV distribution line user incoming line, and can also be applied to the branch line connection that meets the requirements.

### Model meaning



### Environmental conditions

- ◆ Ambient temperature: not higher than + 40 °C , not lower than -40 °C ;
- ◆ Relative humidity of air: daily average value is not greater than 95%, monthly average value is not greater than 90%;
- ◆ Altitude does not exceed 2000 meters;
- ◆ Wind pressure does not exceed 700Pa (equivalent to wind speed 34m / s);
- ◆ The seismic intensity does not exceed 8;
- ◆ No fire, explosion, severe pollution, chemical corrosion and violent vibration.

# ZW32-12MF

## Outdoor High Voltage Permanent Magnet Vacuum Circuit Breaker

### The main technical parameters

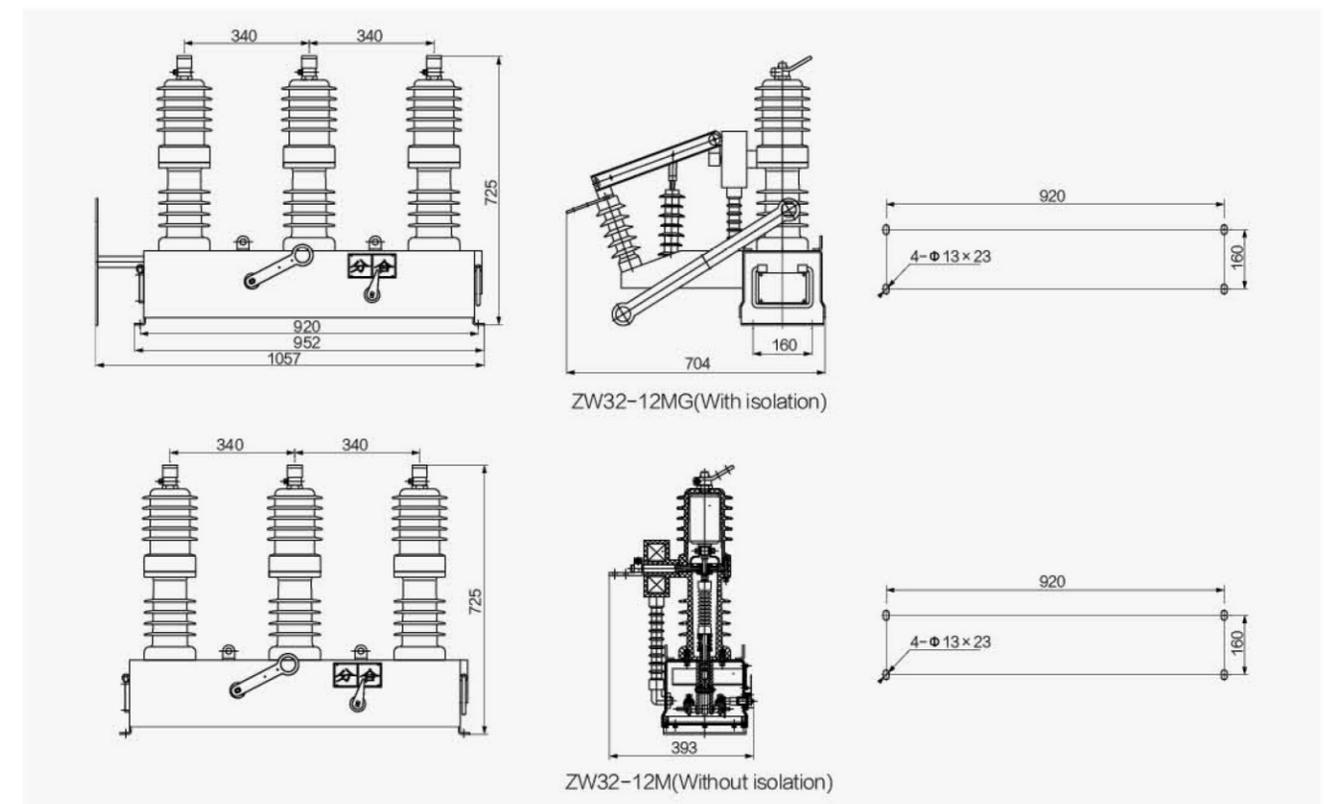
The main mechanical parameters of the circuit breaker

project	Unit	parameter	
Rated voltage	kV	12	
Rated current	A	630, 1250	
Rated frequency	Hz	50	
Power frequency withstand voltage (1min)	kV	Dry (interphase, ground / fracture)	42/48
		Wet test (to ground, external insulation)	34
Lightning impulse withstand current (peak value) (interphase, ground / fracture)	kA	75/85	
Rated short-circuit breaking current	kA	20	25
Rated short-circuit making current (peak value)	kA	50	63

Main technical parameters of circuit breaker

project	Unit	parameter	
Rated bee value withstand current	kA	50	63
4S short-time withstand current	kA	20	25
Rated operating cycle		Points-0.3s-he points-180s-he points	
Breaking times of rated short-circuit current	次	30	
Mechanical life	次	30000	
Secondary circuit 1min power frequency withstand voltage	kV	2	
Contact opening	mm	9±1	
Contact overtravel	mm	2.5 ±1	
Opening speed	m/s	1.1 ±0.3	
Closing speed	m/s	0.6 ±0.2	
Bounce time of contact closing	ms	≤ 2	
Center distance	mm	340 ±2	
Different phases of three-phase opening and closing	ms	≤ 2	
Conductive loop resistance of each phase	μΩ	≤ 80 (with isolation ≤ 150)	
weight	KG	About 70	

### Shape and installation size (mm)



# ZW32-12F

## Outdoor High Voltage Intelligent Demarcation Vacuum Circuit Breaker (Watchdog)

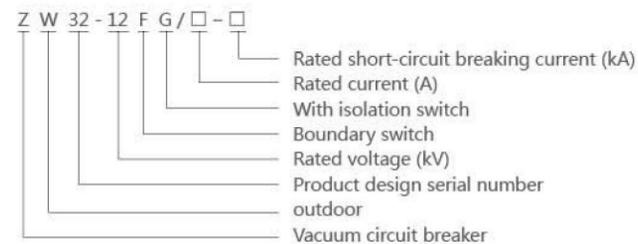


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### Overview

When a fault occurs inside the T-connected branch line of the 12kV overhead distribution line or at the end user, the time limit of the protection action of the incoming switch and the protection time limit of the outgoing switch of the substation cannot be adjusted properly, which will cause the outgoing switch of the substation to trip. If the nature of the fault is permanent and the substation coincidence will be unsuccessful, a local fault in the medium-voltage user community will cause the entire 12kV distribution line to be powered off. If an outdoor boundary circuit breaker is installed at the T junction or the user terminal (responsibility boundary point), if a failure (overcurrent, short circuit, single-phase grounding, etc.) occurs within the user boundary after judgment, the failure is automatically isolated, you can ensure Users in the non-fault area normally use electricity. The application of ZW32-12F outdoor high-voltage intelligent demarcation vacuum circuit breaker (watchdog) on 12kV feeder overhead line can avoid the continuous power failure of fault-free lines, reduce the scope of fault power outages, shorten the user power outage time, protect the main network safe operation. It also has a fault detection function, protection control function and communication function, which can automatically cut off single-phase ground faults and automatically isolate short-circuit faults between phases. The installation point is used at the junction of the responsibility of the 12kV distribution line user incoming line, and it can also be applied to the branch line connection that meets the requirements.

### Model meaning



### Environmental conditions

- ◆ Ambient temperature: not higher than + 40 °C , not lower than -40 °C ;
- ◆ Relative humidity of air: daily average value is not greater than 95%, monthly average value is not greater than 90%;
- ◆ Altitude does not exceed 2000 meters;
- ◆ Wind pressure does not exceed 700Pa (equivalent to wind speed 34m / s);
- ◆ The seismic intensity does not exceed 8;
- ◆ No fire, explosion, severe pollution, chemical corrosion and violent vibration.

# ZW32-12F

## Outdoor High Voltage Intelligent Demarcation Vacuum Circuit Breaker (Watchdog)

### The main technical parameters

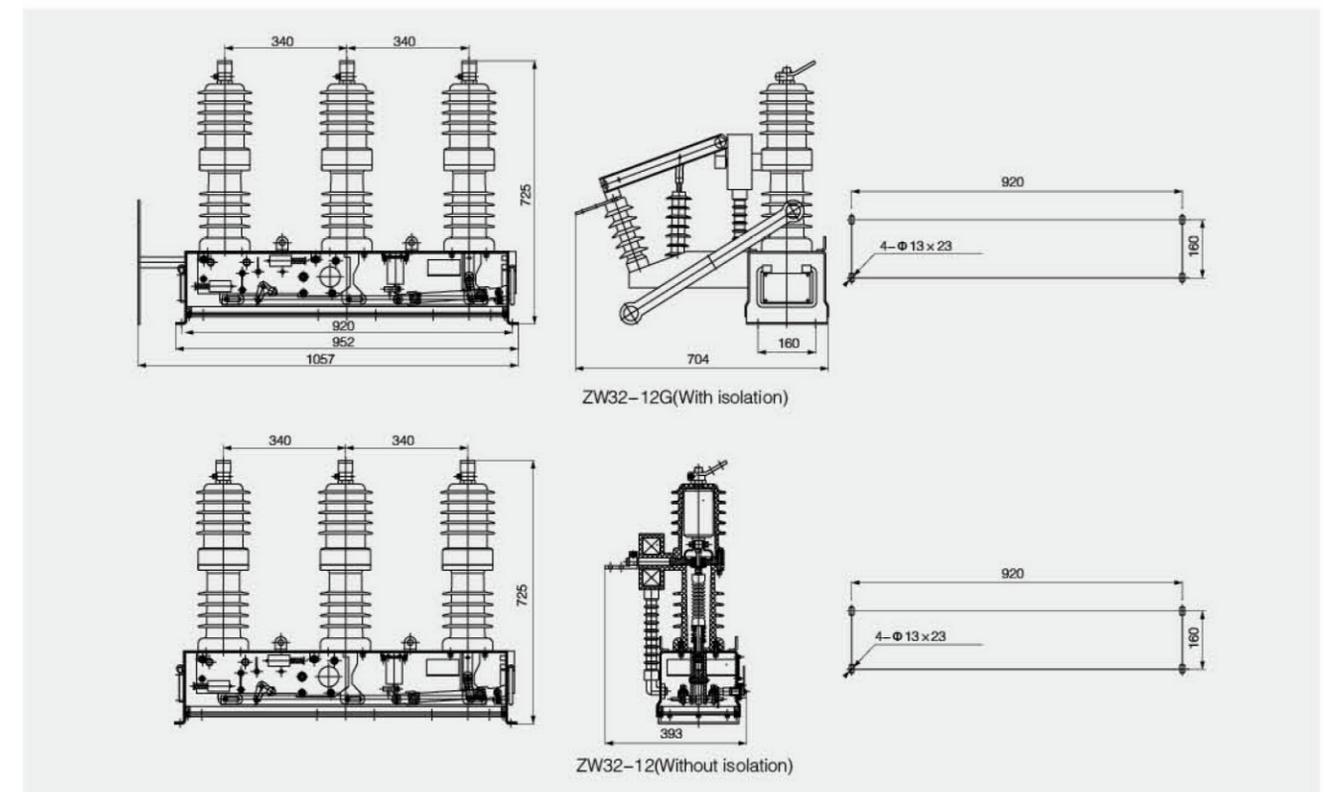
Main technical parameters of circuit breaker

Project	Unit	Parameter	
Rated voltage	kV	12	
Rated current	A	630. 1250	
Rated frequency	Hz	50	
Power frequency withstand voltage (1min)	Dry (interphase, ground / fracture)	42/48	
	Wet test (to ground, external insulation)	34	
Lightning impulse withstand current (peak value) (interphase, ground / fracture)	kA	75/85	
Rated short-circuit breaking current	kA	20	25
Rated short-circuit making current (peak value)	kA	50	63
Rated bee value withstand current	kA	50	63
4S short-time withstand current	kA	20	25

The main mechanical parameters of the circuit breaker

Project	Unit	Parameter	
Rated operating cycle		Points-0.3s-he points-180s-he points	
Breaking times of rated short-circuit current	Times	30	
Mechanical life	Times	10000	
Secondary circuit 1min power frequency withstand voltage	kV	2	
Contact opening	mm	9±1	
Contact overtravel	mm	2.5 ±1	
Opening speed	m/s	1.1 ±0.3	
Closing speed	m/s	0.6 ±0.2	
Bounce time of contact closing	ms	≤ 2	
Center distance	mm	340 ±2	
Different phases of three-phase opening and closing	ms	≤ 2	
Conductive loop resistance of each phase	μΩ	≤ 80 (with isolation ≤ 150)	
weight	kg	About 70	

### Outline and installation dimensions (mm)



# ZW32-24F

## Outdoor High Voltage Intelligent Demarcation Vacuum Circuit Breaker (Watchdog)

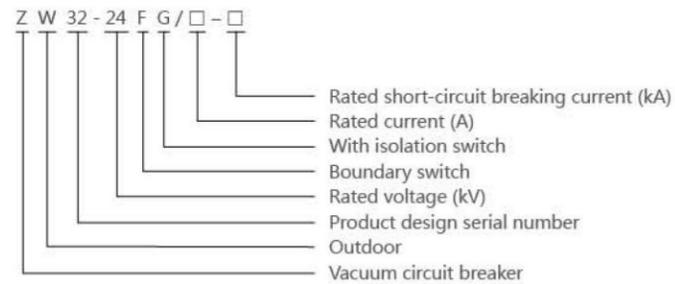


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### Overview

ZW32-24F outdoor high voltage intelligent boundary vacuum circuit breaker (hereinafter referred to as circuit breaker) is an outdoor power distribution equipment with rated voltage of 24kV and 50Hz three-phase AC. It is mainly used to break and close the load current, overload current and short circuit current in the power system of the distribution network. It is suitable for protection and control in the distribution system of substations and industrial and mining enterprises. It is more suitable for rural power grids and places with frequent operations, especially suitable for the needs of urban and rural power grids.

### Model meaning



### Environmental conditions

- ◆ Ambient temperature: not higher than + 40 °C , not lower than -40 °C ;
- ◆ Relative humidity of air: daily average value is not greater than 95%, monthly average value is not greater than 90%;
- ◆ Altitude does not exceed 2000 meters;
- ◆ Wind pressure does not exceed 700Pa (equivalent to wind speed 34m / s);
- ◆ The seismic intensity does not exceed 8;
- ◆ No fire, explosion, severe pollution, chemical corrosion and violent vibration.

# ZW32-24F

## Outdoor High Voltage Intelligent Demarcation Vacuum Circuit Breaker (Watchdog)

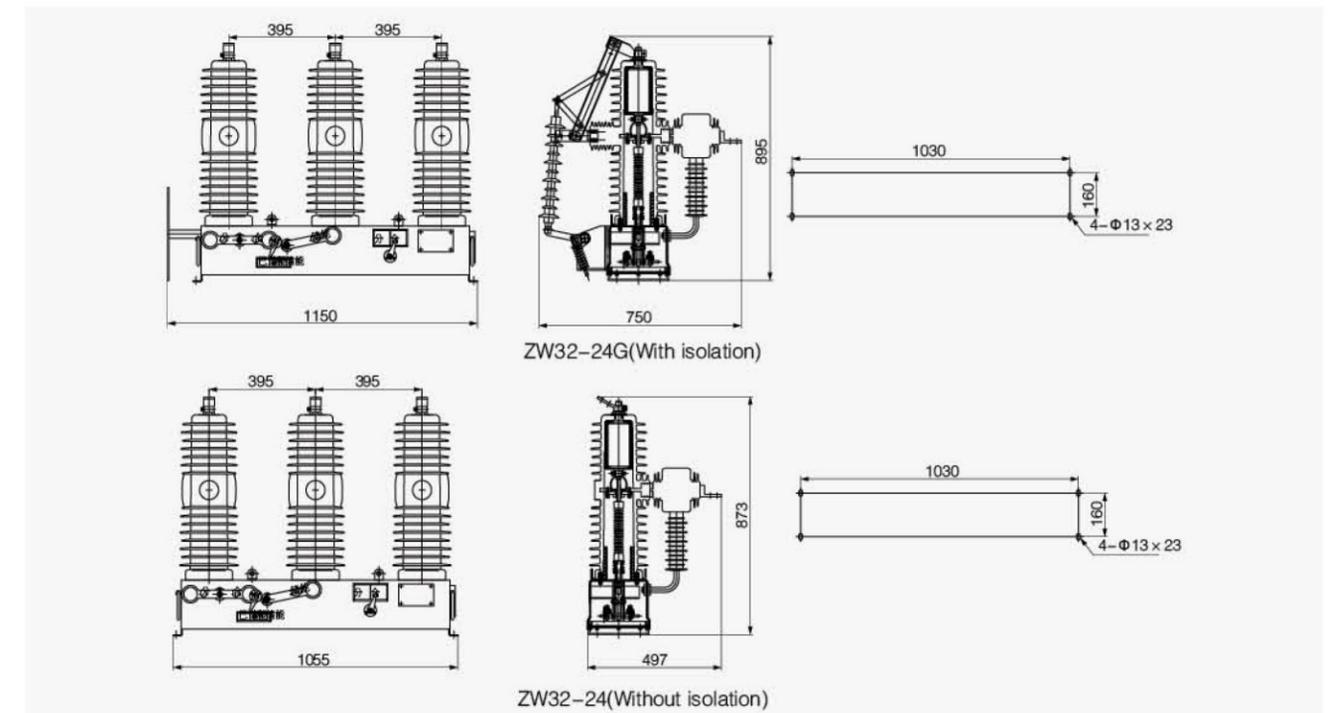
### The main technical parameters

Main technical parameters of circuit breaker

project	Unit	parameter		
Rated voltage		24		
1min rated power frequency withstand voltage	kV	Alternating, ground 65, fracture 65		
Rated lightning impulse withstand (peak value)		Alternate, ground 125, fracture 145		
Rated current	kA	630、1250		
Rated frequency	Hz	50		
Rated short-circuit breaking current (peak value)		20	25	31.5
Rated short-circuit withstand current	kA	50	63	80
Rated peak withstand current		50	63	80
4s rated short-time withstand current	kA	20	25	31.5
Rated operating sequence		Points-0.3s-he points-180s-he points		
Closing time		25~60		
Opening time	ms	18~45		

project	Unit	parameter		
Breaking times of rated short-circuit breaking current	Times	30		
Mechanical life		10000		
1min power frequency withstand voltage of secondary circuit	V	2000		
Rated power of energy storage motor	W	40		
Energy storage motor rated voltage		DC220、110、DC24		
Rated closing operating voltage	v	AC/DC220、110 ; DC24		
Rated opening operating voltage		AC/DC220、110 ; DC24		
Motor energy storage time	s	≤ 8		
Contact opening		12±1		
Overtravel	mm	3 ± 1		
Center distance		395 ± 2		
Bounce time of contact closing		≤ 2		
Synchronization of three-phase opening and closing	ms	≤ 2		
Average opening speed		1.1~1.7		
Average closing speed	m/s	0.5~1.0		
Main circuit resistance	μΩ	≤ 100		

### Shape and installation size (mm)



# ZW32-40.5F(M)

Outdoor High Voltage Intelligent  
(Permanent Magnet) Vacuum Circuit Breaker



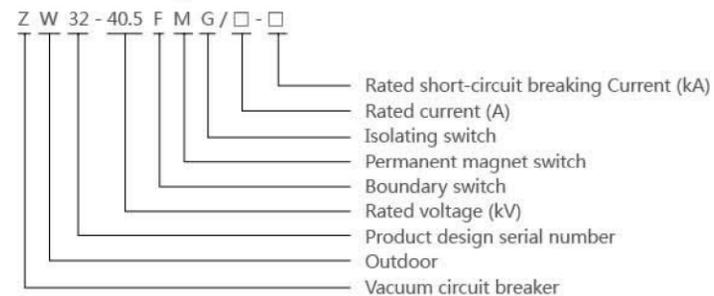
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## Overview

ZW32-40.5F (M) outdoor high voltage intelligent (permanent magnet) vacuum circuit breaker is mainly composed of integrated solid sealed pole, current transformer, operating mechanism and box body. Isolation switch can be added. This type of circuit breaker is of miniaturized design, and the shell is made of high-quality steel box. Current transformers can be selected according to user needs.

The device is mainly used in medium-voltage overhead line power grids as a branching and closing load current, overload current, and short-circuit current.

## Model meaning



## Environmental conditions

- Ambient temperature: not higher than +40 °C , not lower than -15 °C ;
- Relative humidity of air: daily average value is not greater than 95%, monthly average value is not greater than 90%;
- The altitude does not exceed 1000 meters;
- The seismic intensity does not exceed 8;
- There is no fire, explosion, serious pollution, chemical corrosion and violent vibration.

Note: If the customer has other special requirements, he can put forward at the time of order, and our company will give the greatest satisfaction.

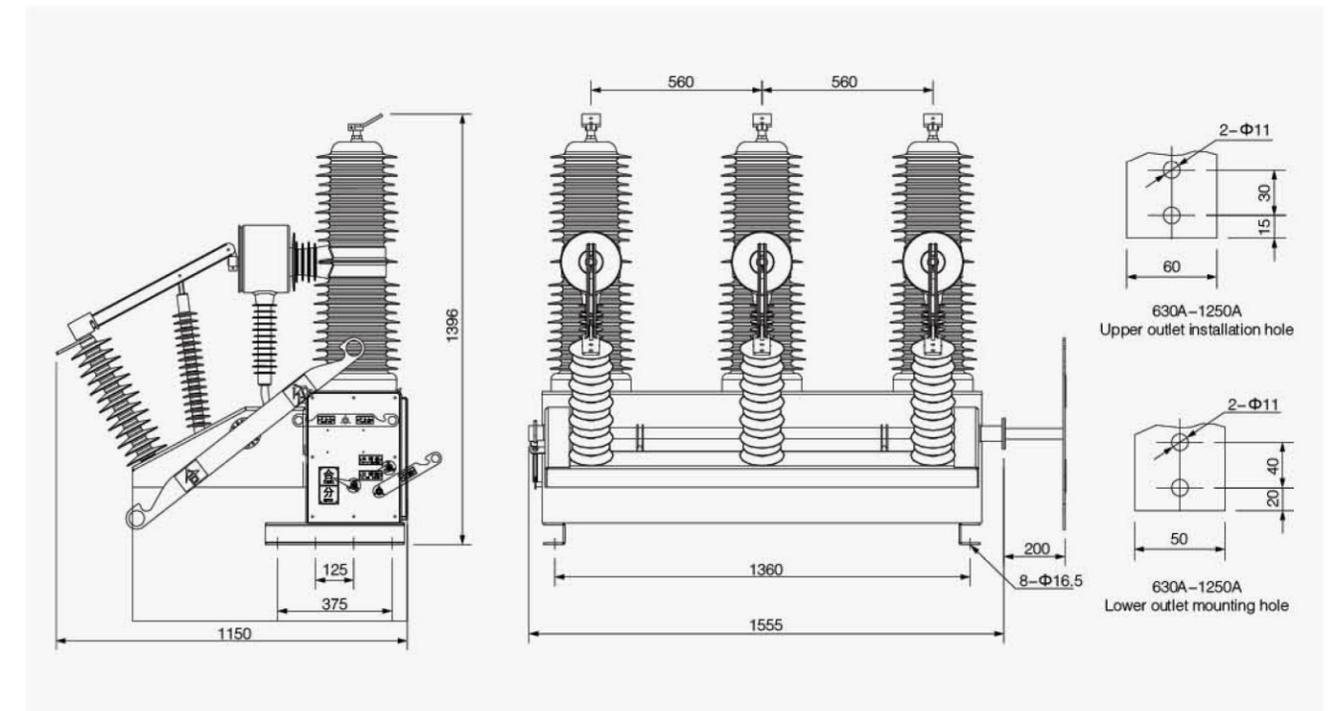
# ZW32-40.5F(M)

Outdoor High Voltage Intelligent (Permanent Magnet) Vacuum Circuit Breaker

## The main technical parameters

Project	Unit	Parameter
Rated voltage	kV	40.5
Rated current	A	630/1250
Rated frequency	Hz	50 或 60
Power frequency withstand voltage 1min (wet) (dry) interphase, ground / fracture	kV	80 95/95
Lightning impulse withstand current (peak) interphase, ground / fracture	kV	185
Rated short-circuit breaking current	kA	20/25/31.5
Rated short-circuit making current (peak value)	kA	63/80
Rated peak withstand current	kA	63/80
4S short-time withstand current	kA	25/31.5
Rated operating cycle		Points-0.1s-Combined-3s-Combined-6s Combined-60s Recovery
Breaking times of rated short-circuit current	次	30
Mechanical life	次	10000
Mechanism control voltage	V	AC/DC220
Secondary circuit 1min power frequency withstand voltage	kV	2
Contact opening	mm	18 ± 1
Contact overtravel	mm	4 ± 0.5
Opening speed	m/s	1.4-1.8
Closing speed	m/s	0.4-0.8
Bounce time of contact closing	ms	≤ 5
Center distance	mm	560 ± 2
Different phases of three-phase opening and closing	ms	≤ 2
Conductive loop resistance of each phase	μΩ	< 80
Closing time	ms	≤ 100
Opening time	ms	≤ 50
weight	KG	Without isolation 300      With isolation 380

## Shape and installation size (mm)



# ZW43-12F

## Outdoor High Voltage Intelligent Vacuum Circuit Breaker

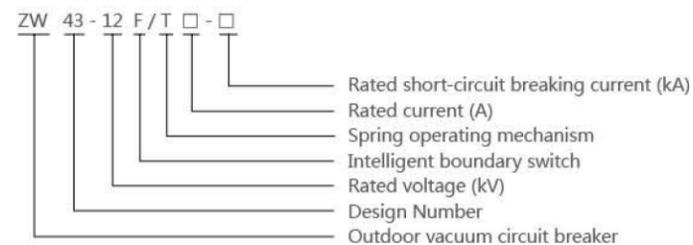


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### Overview

ZW43-12F outdoor high-voltage intelligent vacuum circuit breaker is outdoor high-voltage switchgear with rated voltage of 12kV and three-phase AC 50Hz. Mainly used for breaking and closing the load current, overload current and short circuit current of the power system. It is suitable for the protection and control of substations, industrial and mining enterprises, and urban and rural distribution networks, especially for places with frequent operations and urban network automatic distribution networks. Comply with the following standards: GB / T1984 "High Voltage AC Circuit Breaker", GB / T11022 "Shared Technical Requirements for High Voltage Switchgear and Control Equipment Standards", DL402 "AC High Voltage Circuit Breaker Order Technical Conditions".

### Model and meaning



### Structural features

- ◆ The vacuum arc extinguishing chamber adopts patented solid sealing technology, small size, long life, high reliability, exposed shielding cover; encapsulated in epoxy resin, good weather resistance, easy to transport operation mechanism using high reliability bistable permanent Magnetic technology, simple structure, no maintenance, mechanical life can be up to 30,000 times;
- ◆ Epoxy resin wax package: meets environmental protection requirements: has been widely verified outdoor performance: ozone and ultraviolet resistance; strong, light and not easy to break;
- ◆ Permanent magnet mechanism: few moving parts; no maintenance is required; bistable permanent magnet technology is applied;
- ◆ Vacuum arc extinguishing, solid insulation, small size, light weight, large breaking capacity and high insulation level;
- ◆ Manual opening device: when the control system fails, manual opening can be used for emergency breaking operation, which can reliably break the rated load current;
- ◆ Position detector: the proximity switch is installed on the linkage shaft, no mechanical components are needed, and the sub-station position of the switch is simply and reliably detected;
- ◆ The shell of the switch is made of stainless steel or spray plastic, which has good corrosion resistance and weather resistance;
- ◆ Isolation switch, forming visible fracture and reliable interlocking, forming a combined electrical appliance;
- ◆ The controller realizes "four remote" functions of remote control, telemetry, remote signaling and remote adjustment.

# ZW43-12F

## Outdoor High Voltage Intelligent Vacuum Circuit Breaker

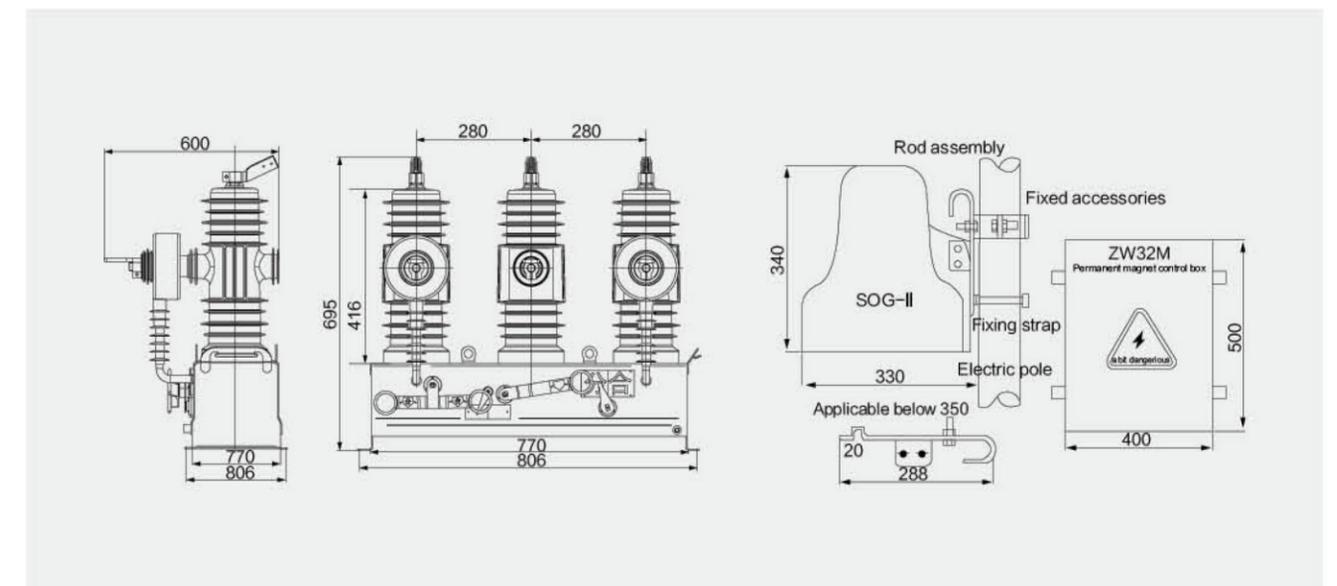
### Performance advantages

This type of product uses a permanent magnet operating mechanism for operation; because the permanent magnet operating mechanism is provided with a permanent magnet to provide the holding force, the switch is maintained at the closing position, the number of mechanical parts is small, and the mechanical transmission chain is short, thereby greatly improving the reliability of the switch Sex and mechanical life.

### The main technical parameters

Project	Unit	Parameter	
Rated voltage		12	
Rated insulation level	kV	dry	42/49
		wet	34
		Lightning impulse withstand voltage (between poles and ground)	75
		Lightning impulse withstand voltage (fracture)	85
Rated frequency	Hz	50	
Rated current	A	630	
Rated short-time withstand current and duration	kA/4S	20	
Rated short-circuit breaking current		20	
Rated short-circuit making current	kA	50	
Rated peak withstand current		50	
Rated operating sequence	/	O-0.3s-CO-180s-CO	
Breaking times of rated short-circuit current	Times	30	
Mechanical life		30000	
Contact wear thickness	mm	3	
net weight	kg	70	

### Outline and installation dimensions (mm)



# ZW20-12F(M)

## Outdoor High Voltage Intelligent (Permanent Magnet) Vacuum Circuit Breaker



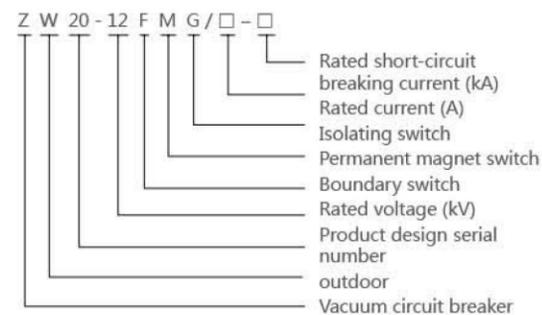
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### Overview

ZW20-12F (M) outdoor high-voltage intelligent (permanent magnet) vacuum circuit breaker is outdoor high-voltage switchgear with rated voltage of 12kV and three-phase AC 50 / 60Hz. Mainly used for breaking and closing the load current, overload current and short circuit current of the power system.

It is suitable for the protection and control of substations, industrial and mining enterprises, and urban and rural distribution networks, especially for places with frequent operations and urban network automatic distribution networks. This product is matched with the controller, can meet the requirements of the distribution automation system, and can reliably and effectively complete the traditional recloser function. It adopts mature box seal structure, has good sealing performance, so that it is not affected by the external environment, is a maintenance-free product. The spring operating mechanism or permanent magnet operating mechanism has high action reliability and is a good product for the pole breaker.

### Model and meaning



### Structural features

- ◆ Miniaturized design;
- ◆ The box has an inverted button structure, full sealing, simple sealing effect, and high anti-pollution level;
- ◆ The transmission mode is novel, simple and reliable;
- ◆ The main components are sealed in the box to achieve real maintenance-free;
- ◆ External voltage transformer and isolating switch can be installed.

### Operating environmental conditions

- ◆ Working environment temperature: no more than 40 °C; daily average temperature does not exceed 35 °C; minimum ambient air temperature is -25 °C;
- ◆ Relative humidity of air: daily average value is not more than 95%, monthly average value is not more than 90%; daily average value of water vapor pressure is not more than 2.2kPa, monthly average value is not more than 1.8kPa;
- ◆ Altitude: no more than 2000m;
- ◆ The surrounding area is not obviously polluted by dust, smoke, corrosive and / or flammable gas, steam or salt spray;
- ◆ Vibration or ground motion from outside of switchgear and control equipment can be ignored;
- ◆ The amplitude of induced electromagnetic interference in the secondary system does not exceed 1.6kV.

# ZW20-12F(M)

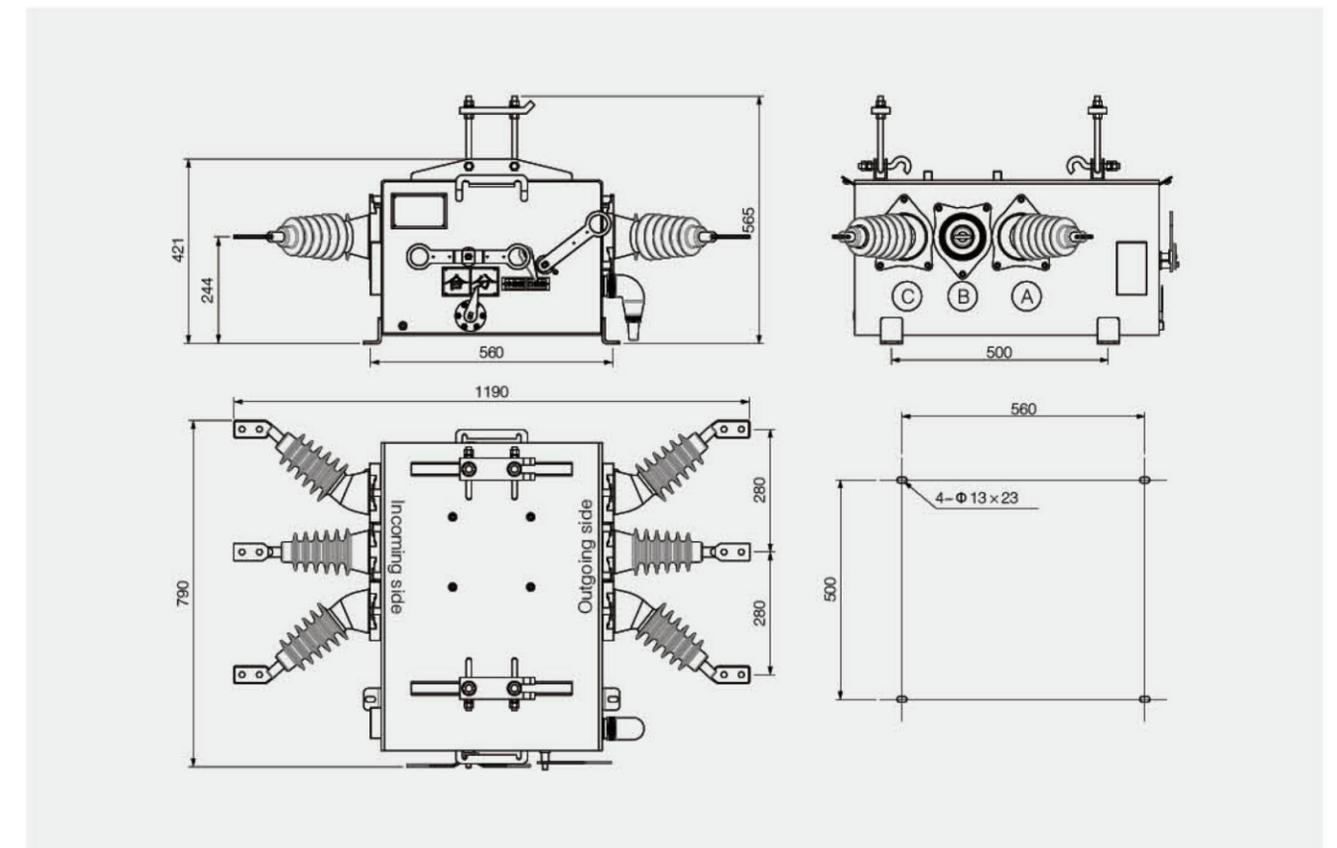
## Outdoor High Voltage Intelligent (Permanent Magnet) Vacuum Circuit Breaker

### The main technical parameters

Main technical parameters of circuit breaker

Project	Unit	Parameter	
Rated voltage	kV	12	
Rated current	A	630、1250	
Rated frequency	Hz	50/60	
Power frequency withstand voltage (1min)	Dry (interphase, ground / fracture)	42/48	
	Wet test (to ground, external insulation)	34	
Lightning impulse withstand current (peak value) (interphase, ground / fracture)	kV	75/85	
Rated short-circuit breaking current	kA	20	25
Rated short-circuit making current (peak value)	kA	50	63
Rated peak withstand current	kA	50	63
4S short-time withstand current	kA	20	25
Rated operating cycle		Points-0.3s-he points-180s-he points	
Breaking times of rated short-circuit current	Times	30	
Mechanical life	Times	10000	
Secondary circuit 1min power frequency withstand voltage	kV	2	

### Outline and installation dimensions(mm)



# ZW20-12F

## Outdoor High Voltage Intelligent Demarcation Vacuum Circuit Breaker



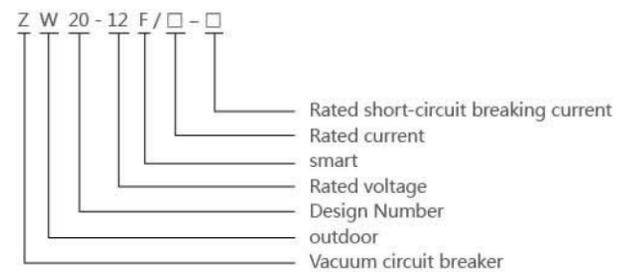
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### Overview

ZW20-12F outdoor high-voltage intelligent demarcation vacuum circuit breaker is outdoor high-voltage switchgear with rated voltage of 12kV and three-phase AC 50Hz. Mainly used for breaking and closing the load current, overload current and short circuit current of the power system.

It is suitable for the protection and control of substations, industrial and mining enterprises, and urban and rural distribution networks, especially for places with frequent operations and urban network automatic distribution networks. This product is matched with the controller, can meet the requirements of the distribution automation system, and can reliably and effectively complete the traditional recloser function. It adopts a mature box seal structure, filled with SF6 gas, has good sealing performance, so that it is not affected by the external environment, is a maintenance-free product. The spring operating mechanism adopts a direct-acting chain main drive and a multi-stage tripping system. The action reliability is high, and it is a good product for the circuit breaker on the column.

### Model and meaning



### Operating environmental conditions

- ◆ Altitude does not exceed 3000m;
- ◆ Ambient air temperature: -40 °C ~ + 40 °C ; Daily temperature difference: Daily temperature change 25 °C ;
- ◆ Wind speed is not more than 35m / s;
- ◆ There is no flammable, explosion hazard, strong chemical corrosives (such as various acids, alkalis or dense smoke, etc.) in all places with strong vibration.

# ZW20-12F

## Outdoor High Voltage Intelligent Demarcation Vacuum Circuit Breaker

### The main technical parameters

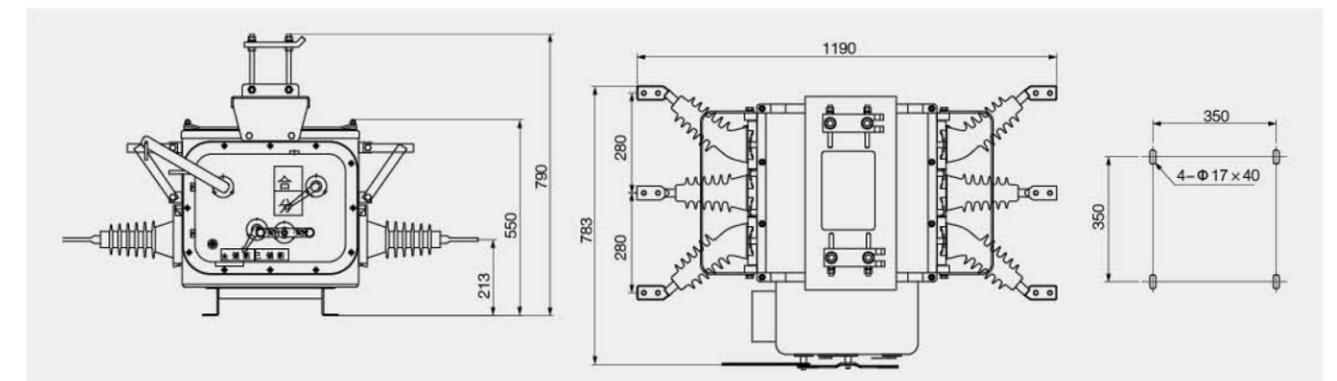
Main technical parameters of circuit breaker

Project	Unit	Parameter
额定电压	kV	12
额定频率	Hz	50
额定电流	A	630、1000、1250
额定短路开断电流	kA	20、25
额定峰值耐受电流 (峰值)	kA	50、63
额定短时耐受电流 (4s)	kA	20、25
额定短路关合电流 (峰值)	kA	50、63
机械寿命		10000
额定电流开断次数	Times	10000
额定短路开断电流次数		30

Main mechanical parameters of circuit breaker

Project	Unit	Parameter
Power frequency withstand voltage (1min): interphase, ground / fracture	kV	42/48
Lightning impulse withstand voltage (peak) interphase, ground / fracture	kV	75/85
Secondary circuit 1min power frequency withstand voltage	kV	2
net weight	kg	140 (with isolation ≤ 170)
Contact opening	mm	9±0.5
Contact overtravel	mm	3±0.5
Opening speed	m/s	1.2±0.2
Closing speed	m/s	0.6±0.2
Bounce time of contact closing	ms	≤ 2
Center distance	mm	135±1.5
External charged air insulation distance	mm	240±2
External creepage distance	cm/kV	3.8
Different phases of three-phase opening	ms	≤ 2
Conductive loop resistance of each phase	μΩ	≤ 150 (with isolation ≤ 200)
Closing time	ms	≤ 45
Opening time	ms	≤ 45
Isolation fracture opening distance	mm	≥ 190
The deflection of the stylus just close position	mm	≤ 2
Operating torque for manual opening and closing	N.m	≤ 150
Rated power of energy storage motor	W	≥ 40
Energy storage motor rated voltage	V	AC220
Rated closing operating voltage	V	AC220
Highest / lowest closing operating voltage	V	AC264/143
Rated opening operating voltage	V	AC220
Maximum / minimum opening operating voltage	V	AC264/143
Highest / lowest motor voltage	V	AC242/187
SF6 gas rated pressure (gauge pressure)	MPa	"0"

### Outline and installation dimensions (mm)



# AB-3S-12

## Outdoor High Voltage Fast Permanent Magnet Vacuum Circuit Breaker

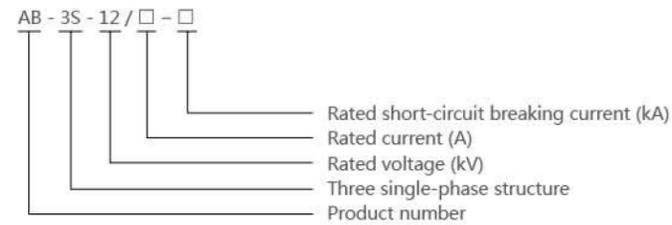


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### Overview

AB-3S-12 series outdoor high-voltage three-phase permanent magnet vacuum circuit breaker is a new generation of the latest generation of the company's comprehensive domestic and foreign advanced technology, the strengths of the public Intelligent vacuum circuit breaker. This product can be used as a switch for the 10kV side and 10kV outlet of the main transformer of the 35kV substation, and can also be used as a pole switch on the distribution network. It can be easily controlled, protected, combined with various control units produced by our company. Star survey and communication are the first choice equipment for realizing distribution network automation and miniaturization.

### Model and meaning



### Operating environmental conditions

- ◆ Working environment temperature: no more than 40 °C; daily average temperature does not exceed 35 °C; minimum ambient air temperature is -25 °C;
- ◆ Air relative humidity: daily average value is not greater than 95%, monthly average value is not greater than 90%; daily average value of water vapor pressure is not greater than 2.2kPa; monthly average value is not greater than 1.8kPa;
- ◆ Altitude: no more than 2000m;
- ◆ The surrounding area is not obviously polluted by dust, smoke, corrosive and / or flammable gas, steam or salt spray;
- ◆ Vibration or ground motion from outside of switchgear and control equipment can be ignored;
- ◆ The amplitude of induced electromagnetic interference in the secondary system does not exceed 1.6kV.

# AB-3S-12

## Outdoor High Voltage Fast Permanent Magnet Vacuum Circuit Breaker

### The main technical parameters

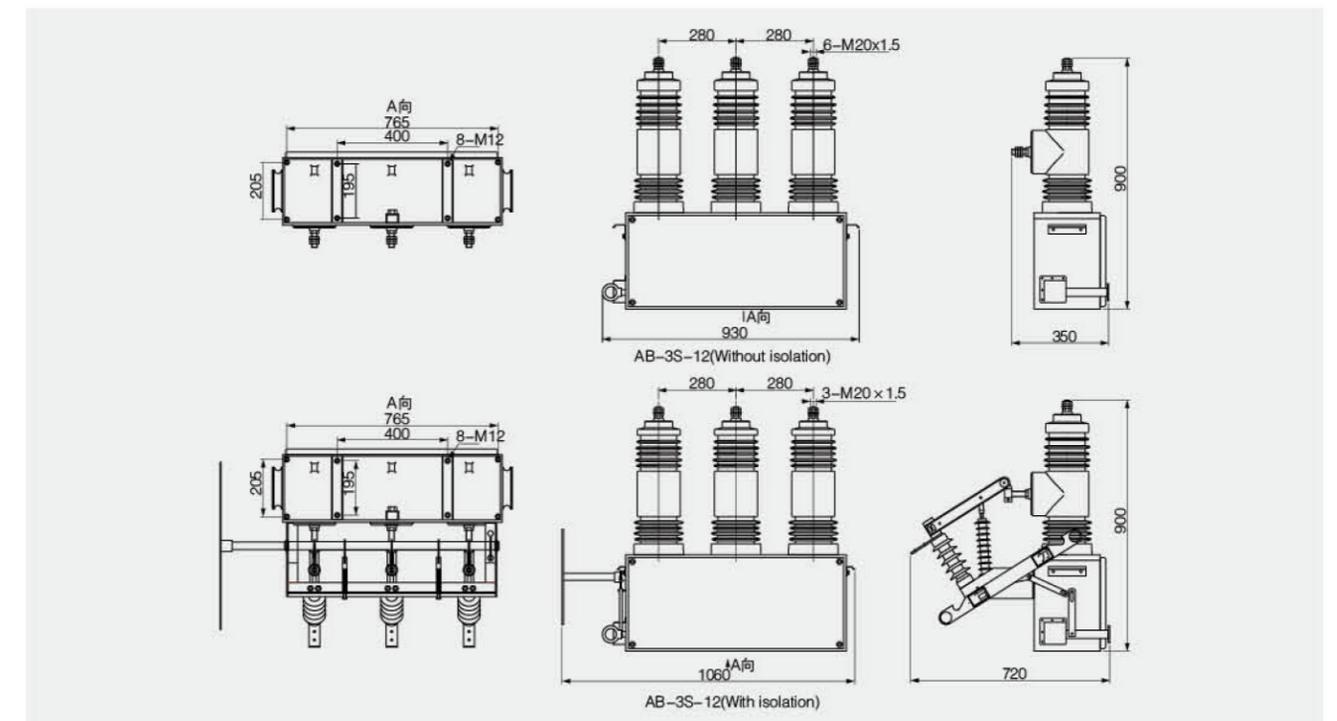
Main technical parameters of circuit breaker

Project	Unit	Parameter	
Rated voltage	kV	12	
Rated insulation level	1min power frequency withstand voltage (effective value)	kV	42
	Lightning impulse withstand voltage (peak value)	kV	75
Rated frequency	Hz	50	
Rated current	A	630/1250	
Rated short-circuit breaking current	kA	20	
Rated short-circuit making current (peak value)	kA	50	
Rated operating sequence		Ot1(0.3s)-COt2(3s)-COt2(3s)-CO	
Thermally stable current (4S)	kA	20	
Dynamic stable current (Bee value)	kA	50	
Breaking times of rated short-circuit current	Times	30	

Mechanical characteristics and technical parameters after circuit breaker assembly adjustment

Project	Unit	Parameter
CT ratio		30-1250/1 (5)
Working power supply voltage	V	-220 (-110)
Creepage distance		≥ 31
Mechanical frequency	次	10000
weight	kg	90 + 40 (isolated)
Contact opening	mm	11±1
Contact travel (measure the relative position of the contact spring when it opens and closes)	mm	3±0.5
Average closing speed	m/s	0.6±0.2
Average opening speed (running 10mm)	m/s	1.0-1.4
Closing time	ms	30-50
Opening time	ms	30~70
Bounce time of contact closing	ms	≤ 2
Different period of three-phase contact closing	ms	≤ 2
Different period of three-phase contact opening	ms	≤ 2
Conductive loop resistance of each phase	μΩ	≤ 120; with isolation ≤ 170
Center distance	mm	280±2

### Outline and installation dimensions (mm)



# AB-3S-40.5

## Outdoor Column Permanent Magnet Vacuum Circuit Breaker

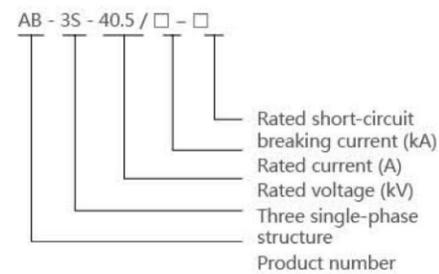


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### Overview

AB-3S-40.5 series outdoor pole-mounted permanent magnet vacuum circuit breaker is a new generation of pole-mounted intelligence developed by our company that integrates advanced technologies at home and abroad, draws on the strengths of the house, adopts a new design concept, uses high-tech means, and is newly developed. Vacuum circuit breaker. This product can be used as a switch for the main transformer outlet of a 35kV substation, and can also be used as a pole switch in the distribution network. It can be easily combined with various control units produced by our company to achieve control, protection, star measurement, and communication. The device of choice for automation and miniaturization of distribution networks.

### Model and meaning



### Operating environmental conditions

- ◆ Working environment temperature: no more than 40 °C; daily average temperature does not exceed 35 °C; minimum ambient air temperature is -25 °C;
- ◆ Air relative humidity: daily average value is not greater than 95%, monthly average value is not greater than 90%; daily average value of water vapor pressure is not greater than 2.2kPa; monthly average value is not greater than 1.8kPa;
- ◆ Altitude: no more than 2000m;
- ◆ The surrounding area is not obviously polluted by dust, smoke, corrosive and / or flammable gas, steam or salt spray;
- ◆ Vibration or ground motion from outside of switchgear and control equipment can be ignored;
- ◆ The amplitude of induced electromagnetic interference in the secondary system does not exceed 1.6kV.

# AB-3S-40.5

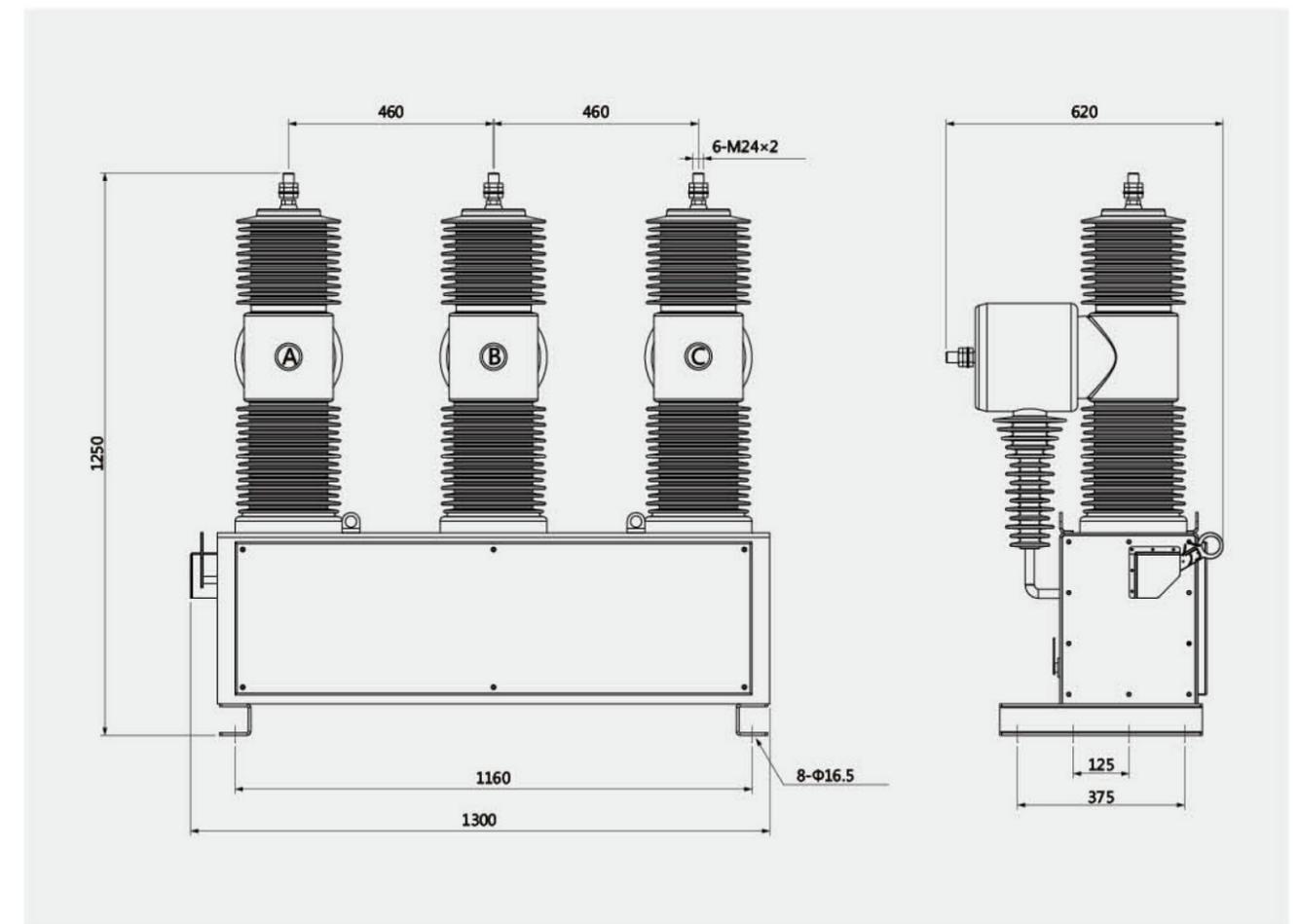
## Outdoor Column Permanent Magnet Vacuum Circuit Breaker

### The main technical parameters

Main mechanical parameters of circuit breaker

Project	Unit	Parameter
Permanent magnet mechanism control voltage	V	DC220
Secondary circuit 1min power frequency withstand voltage	kV	2
Contact opening	mm	16±1
Contact overtravel	mm	4±0.5
Opening speed	m/s	1.4-1.8
Closing speed	m/s	0.4-0.8
Bounce time of contact closing	ms	≤ 5
Center distance	mm	460±2
Different phases of three-phase opening and closing	ms	≤ 2
Conductive loop resistance of each phase	μΩ	< 120
Closing time	ms	25~45
Opening time	ms	20~45
weight	Kg	295

### Outline and installation dimensions (mm)



# ZW8-12

## Outdoor High Voltage Vacuum Circuit Breaker



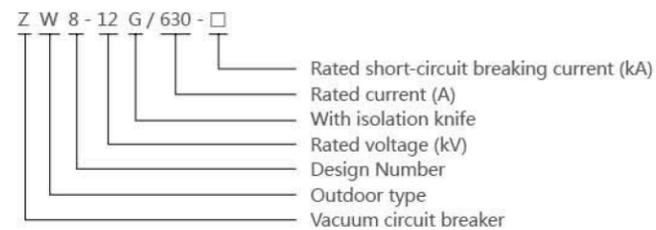
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### Overview

ZW8-12 series vacuum circuit breakers are high-voltage outdoor switching equipment with rated voltage of 12kV and three-phase AC 50Hz, which are mainly used to switch off the load current, overload current and short circuit current of Henong power grid, urban power grid and small power system. The overall structure of the product is a three-phase common box type. The three-phase vacuum interrupter is placed in a metal box. The SMC insulation material is used for inter-phase insulation and ground insulation. It has reliable performance and high insulation strength.

ZW8-12G is a combination of ZW8-12 circuit breaker and isolation knife. It is called a combination circuit breaker and can be used as a sectional switch. The operating mechanism of this series of products is CT23 spring energy storage operating mechanism, which is divided into electric and manual. The circuit breaker has the function of closing inrush control to meet the control and measurement requirements. Equipped with electronic control unit, it can realize "four remote" monitoring.

### Model and meaning



### The main technical parameters

Project	Unit	6.3kA	12.5kA	20kA
Rated voltage	kV	12		
Rated current	A	630		
Rated short-circuit breaking current	kA	6.3	12.5	20
Rated short-circuit making current (peak value)	kA	16	31.5	50
Rated peak withstand current	kA	16	31.5	50
Rated short-time withstand current	kA	6.3	12.5	20
Rated insulation level	Lightning impulse withstand voltage (peak value)	75		
	1min power frequency withstand voltage	42		

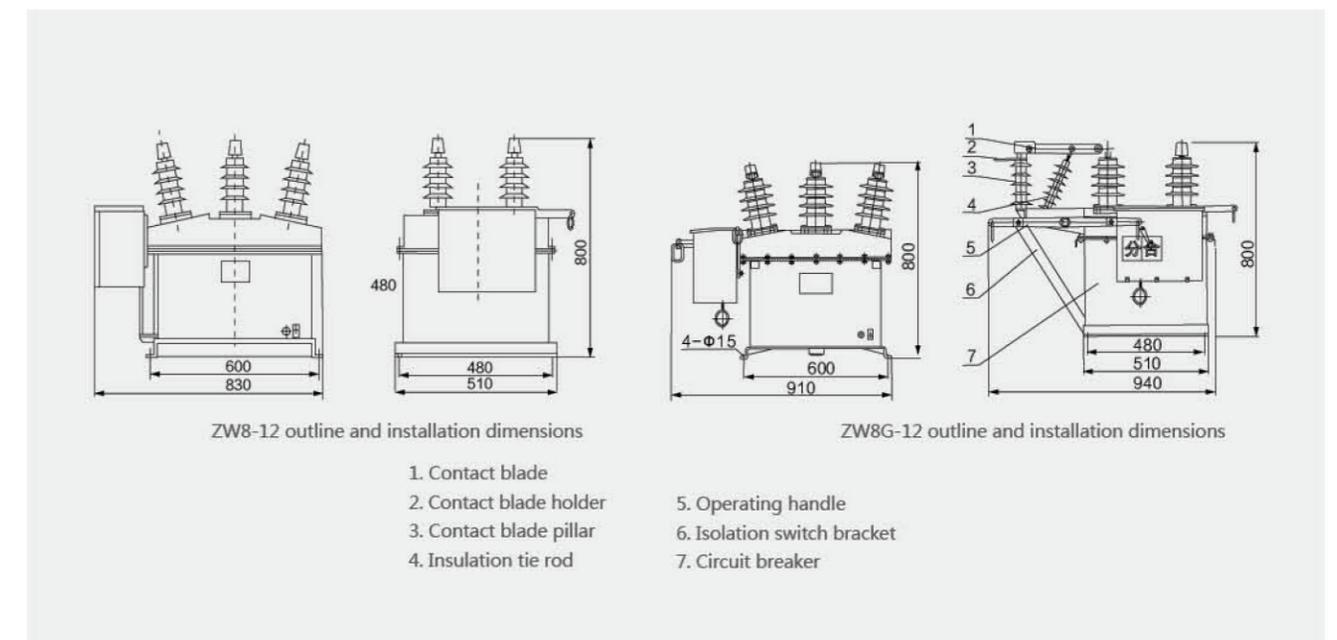
# ZW8-12

## Outdoor High Voltage Vacuum Circuit Breaker

### The main technical parameters

Project	Unit	6.3kA	12.5kA	20kA
Rated operating sequence		Points-0.3s-he points-180s-he points		
Mechanical life	次	10000		
Breaking times of rated short-circuit breaking current	次	30		
Operating mechanism rated closing voltage	V	110 , 220		
Operating mechanism rated opening voltage	V	110 , 220		
Contact opening	mm	11±1		
Overtravel (contact spring compression length)	mm	3±0.3		
Different phases of three-phase opening and closing	ms	≤ 2		
Bounce time of contact closing	ms	≤ 2		
Average opening speed	m/s	1.0±0.2		
Average closing speed	m/s	0.7±0.15		
Opening time	At maximum operating voltage	ms	15-50	
	At the lowest operating voltage	ms	30-60	
Closing time	ms	25-50		
Main loop resistance of each phase	μΩ	≤ 120 (with G ≤ 200)		
Dynamic and static contacts allow the cumulative thickness of wear	mm	3		
weight	kg	152 (with G180)		
Center distance	mm	175±1.5		

### Outline and installation dimensions (mm)



# FZW28-12F

## Outdoor Boundary Vacuum Load Switch



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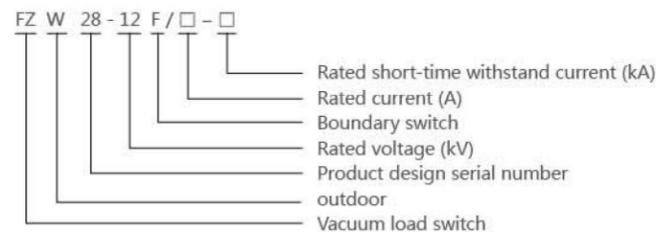
### Overview

FZW28-12F outdoor demarcation vacuum load switch (referred to as demarcation switch) is used in the installation of outdoor columns, and has the function of manual and electric operation. The switch body adopts the VSP5-12 technology imported from Japan Toshiba Corporation. This switch is a maintenance-free load switch. Vacuum arc extinguishing and SF6 gas are used as the insulation medium to ground and interphase.

This product meets: GB3804 "High-voltage AC load switch" and GBT11022 "Shared technical requirements for high-voltage switchgear and control equipment standards".

FZW28-12F outdoor boundary vacuum load switch has fault detection function, protection control function and communication function. It is installed on 10kV overhead line, which can automatically cut off single-phase ground fault and automatically isolate interphase short-circuit fault. The installation point is applicable to the junction of the responsibility of the 10kV distribution line user incoming line, and can also be applied to the branch line connection that meets the requirements.

### Model and meaning



### Operating environmental conditions

- ◆ The upper limit of ambient air temperature does not exceed 40 °C , and does not exceed -45 °C
- ◆ Wind speed is not more than 35m / s;
- ◆ The altitude is not higher than 1000m, and the seismic intensity is not more than 8 degrees;
- ◆ Environmental humidity: monthly average relative humidity is not more than 90%; daily average relative humidity is not more than 95%;
- ◆ The thickness of ice coating does not exceed 10mm;
- ◆ The installation site should be free of flammable, explosive, chemical corrosion and frequent severe vibration;
- ◆ Neutral point grounding method: neutral point is not grounded, neutral point is grounded through arc suppression coil, and neutral point is grounded through small resistance.

Note: If the customer has other special requirements, he can put forward at the time of order, and our company will give the greatest satisfaction.

# FZW28-12F

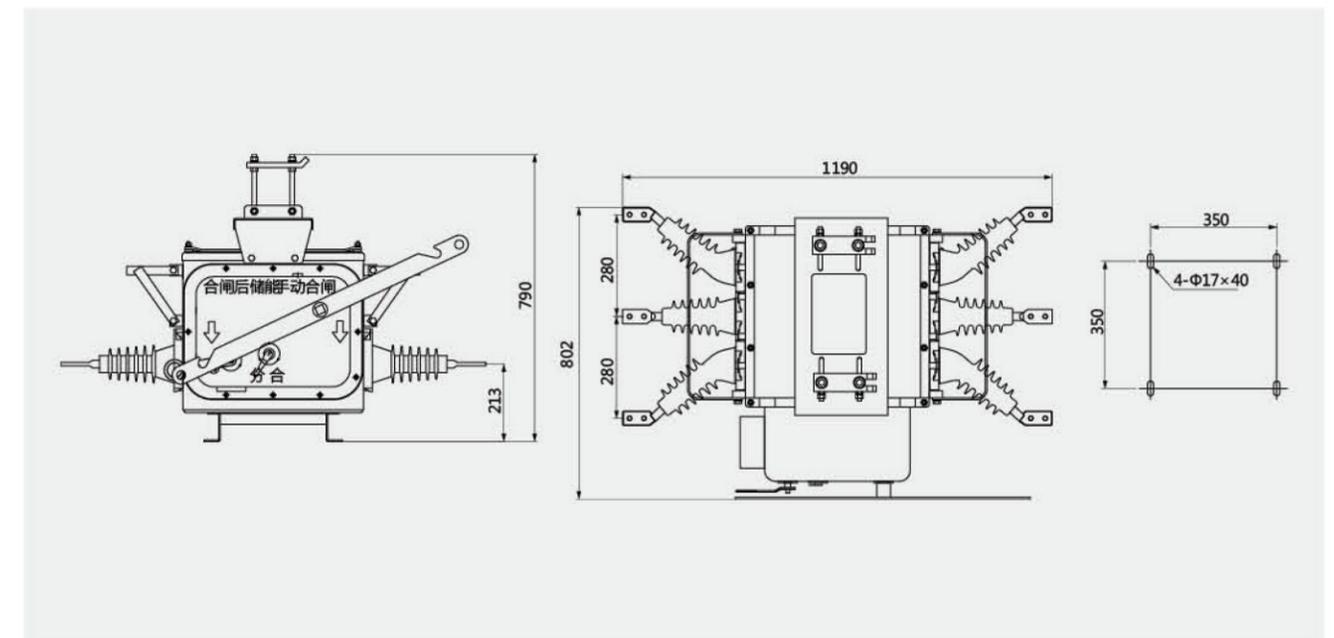
## Outdoor Boundary Vacuum Load Switch

### The main technical parameters

Project	Unit	Parameter
Method of operation		Manual or automatic (electromagnetic)
Rated value	Rated voltage	kV 12
	Rated current	A 630
	Rated short-time withstand current (4S)	kA 12.5 16 20
	Rated closing short-circuit current (peak value)	kA 31.5 40 50
	Rated frequency	Hz 50
Power frequency withstand voltage (1min)	Operating voltage	AC220V(80%~110%)
	On the ground	kV 42
	Alternate	kV 42
	Fracture	kV 48
Secondary ground	kV 2	

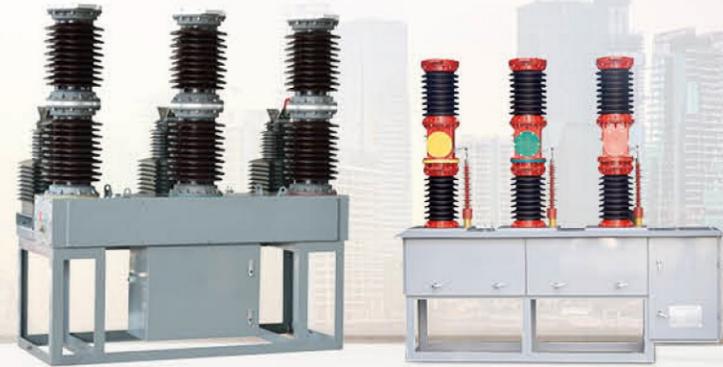
Project	Unit	Parameter
Impact pressure (peak)	On the ground	kV 75
	Alternate	kV 75
	Fracture	kV 84
net weight	kg	185
SF6 gas rated gauge pressure		0 gauge pressure concentration is above 93%
Determination of the manual force of the operating handle	N	100~400
Main circuit resistance	μΩ	≤ 500
Closing operation	184~220V	1. Closing time 120 ~ 180ms (220V) / 2. Bounce time is not more than 10ms 3. The pull-in current (peak value) is below 17A / 4. The holding current is not greater than 0.45 A
	Minimum closing voltage	
Opening operation	184~220V	1. The opening time is less than 1.5s / 2. The different time is less than 30ms
	Minimum hold-in voltage	
Operation time difference between isolation fracture and vacuum arc chamber	ms	10±2
Air tightness test (leak detection)		0.2 Mpa gauge pressure without leakage
Opening distance of contact in vacuum interrupter	mm	7~9
Vacuum arc extinguishing chamber contact distance	mm	3~3.5
Isolation fracture opening distance	mm	25~30
Isolation fracture over distance	mm	6~13

### Outline and installation dimensions (mm)



# ZW7-40.5

## Outdoor High Voltage Vacuum Circuit Breaker

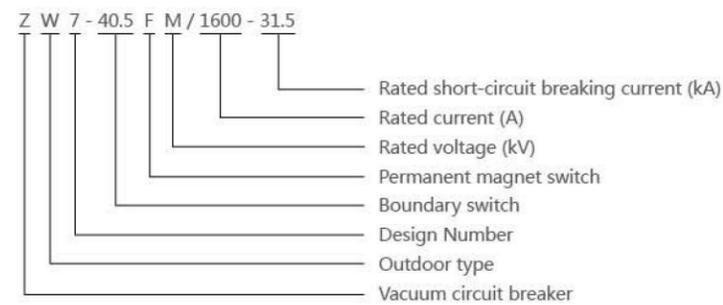


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### Overview

ZW7-40.5F (M) outdoor high-voltage intelligent (permanent magnet) vacuum circuit breaker uses a uniquely designed split pole and high reliability spring operating mechanism or permanent magnet operating mechanism. The device is mainly used in medium-voltage overhead line power grids as a branching and closing load current, overload current, and short-circuit current.

### Load switch model and meaning



### Environmental conditions

- ◆ Ambient temperature: not higher than + 40 °C , not lower than -15 °C ;
- ◆ Relative humidity of air: daily average value is not greater than 95%, monthly average value is not greater than 90%;
- ◆ Altitude does not exceed 1000 meters;
- ◆ The seismic intensity does not exceed 8;
- ◆ No fire, explosion, severe pollution, chemical corrosion and violent vibration.

Note: If the customer has other special requirements, he can put forward at the time of order, and our company will give the greatest satisfaction.

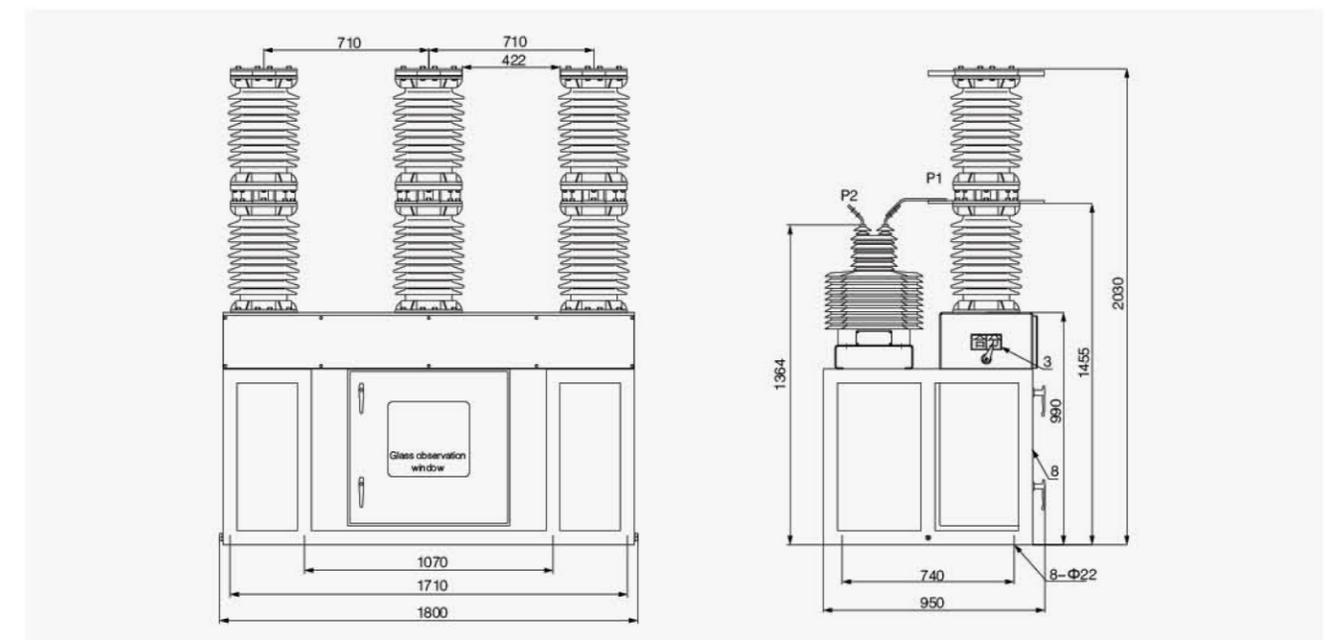
# ZW7-40.5

## Outdoor High Voltage Vacuum Circuit Breaker

### Switch rated parameters

project	Unit	Parameter
Rated voltage	kV	40.5
Rated current	A	1250/1600
Rated frequency	Hz	50 或 60
Power frequency withstand voltage 1min (wet) (dry) interphase, ground / fracture	kV	80 95/95
Lightning impulse withstand current (peak) interphase, ground / fracture	kA	185
Rated short-circuit breaking current	kA	25/31.5
Rated short-circuit making current (peak value)	kA	63/80
Rated peak withstand current	kA	63/80
4S short-time withstand current	kA	25/31.5
Rated operating cycle		Points-0.1s-Combined-3s-Combined-6s Combined-60s Recovery
Breaking times of rated short-circuit current	Times	30
Mechanical life	Times	10000
Mechanism control voltage	V	AC/DC220
Secondary circuit 1min power frequency withstand voltage	kV	2
Contact opening	mm	18±1
Contact overtravel	mm	4±0.5
Opening speed	m/s	1.4-1.8
Closing speed	m/s	0.4-0.8
Bounce time of contact closing	ms	≤ 5
Center distance	mm	710±2
Different phases of three-phase opening and closing	ms	≤ 2
Conductive loop resistance of each phase	μΩ	< 80
Closing time	ms	≤ 100
Opening time	ms	≤ 50
weight	KG	800

### Shape and installation size (mm)



# ZN63A(VS1)-12

Indoor High Voltage  
Vacuum Circuit Breaker



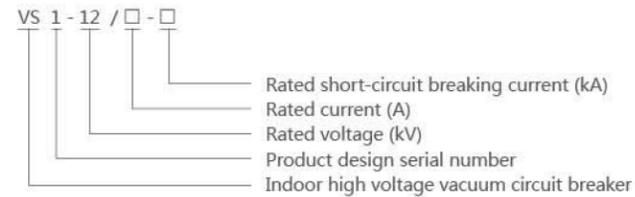
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## Overview

ZN63A (VS1) -12 indoor high-voltage vacuum circuit breaker is an indoor switchgear of three-phase AC 50Hz rated voltage of 12kV power system, as a protection and control unit for power grid equipment, industrial and mining enterprise power equipment. It is suitable for places requiring frequent operation at rated working current, or frequent short circuit current.

The circuit breaker adopts the integrated design of the operating mechanism and the circuit breaker body, which can be used as a fixed installation unit, or can be equipped with a special propulsion mechanism to form the role of a handcart unit.

## Model meaning



## Environmental conditions

- ◆ Ambient temperature: not higher than + 40 °C , not lower than -15 °C (storage and transportation at -30 °C are not allowed);
- ◆ Altitude: no more than 1000m;
- ◆ Relative humidity: daily average value is not greater than 95%, monthly average value is not greater than 90%, saturated vapor pressure average value is not greater than  $2.2 \times 10^{-3}$ MPa; monthly average is not greater than  $1.8 \times 10^{-3}$ MPa
- ◆ Earthquake intensity: no more than 8;
- ◆ No fire, explosion, severe pollution, chemical corrosion and severe vibration.

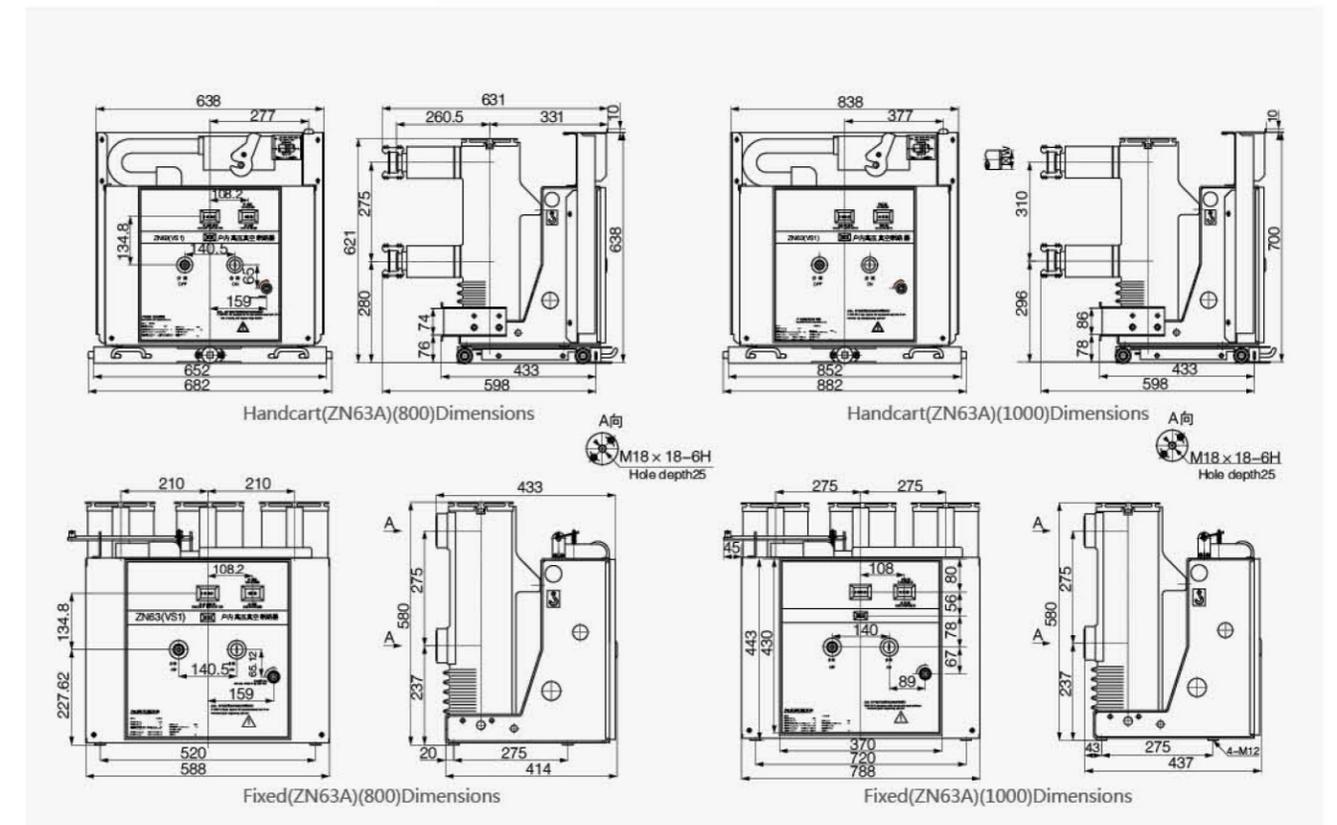
# ZN63A(VS1)-12

Indoor High Voltage Vacuum Circuit Breaker

## The main technical parameters

Project	Unit	Parameter		
Rated voltage	kV	12		
Rated Insulation level	kV	Rated lightning impulse withstand voltage peak		
		75		
		1min power frequency withstand voltage		
		42		
Rated short-circuit breaking current	kA	20/25	31.5	40
Rated current	A	630 1250	630, 1250 1600, 2000 2500, 3150	1250, 1600, 2000 2500, 3150
Rated thermal stability current (effective value)		20/25	31.5	40
Rated dynamic stable current (peak value)	kA	63	80	100
Rated short-circuit making current (peak value)		63	80	100
Breaking times of rated short-circuit breaking current	次	50		
Secondary circuit power frequency withstand voltage (1min) s	V	2000		
Rated operating sequence		O-0.3-CO-180s-CO		
		O-180s-CO-180s-CO		
Rated thermal stability time	s	4		
Rated single / back-to-back capacitor bank breaking current	A	630/400 800/400(40kA)		
Mechanical life	Times	10000		

## Shape and installation size (mm)



# ZN63A(VS1)-12C

Indoor High Voltage Side-Mounted Vacuum Circuit Breaker



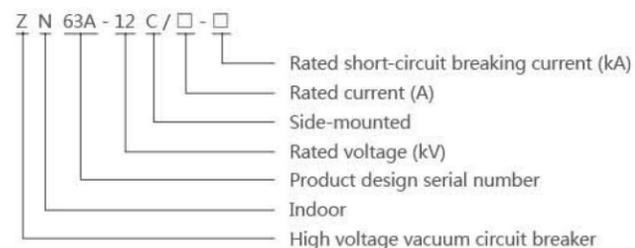
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## Overview

ZN63A (VS1) -12C type side-mounted vacuum circuit breaker is an indoor high-voltage switchgear, suitable for three-phase power systems with a rated voltage of 12 kV and a frequency of 50 Hz. It is used as a protection and control appliance. It has special advantages, especially suitable for places that require frequent operation at rated current, or break short-circuit current multiple times.

ZN63A (VS1) -12C type side-mounted vacuum circuit breaker is fixed installation, mainly used in fixed switchgear, the circuit breaker can be used alone, can also be used for ring network power supply, box type transformer or various non-standard power supply system.

## Model meaning



## Environmental conditions

- ◆ Ambient temperature: not higher than + 40 °C , not lower than -15 °C ;
- ◆ Relative humidity of air: daily average value is not greater than 95%, monthly average value is not greater than 90%;
- ◆ Altitude does not exceed 1000m;
- ◆ The seismic intensity does not exceed 8;
- ◆ No fire, explosion, severe pollution, chemical corrosion and violent vibration.

Note: If the customer has other special requirements, he can put forward at the time of order, and our company will give the greatest satisfaction.

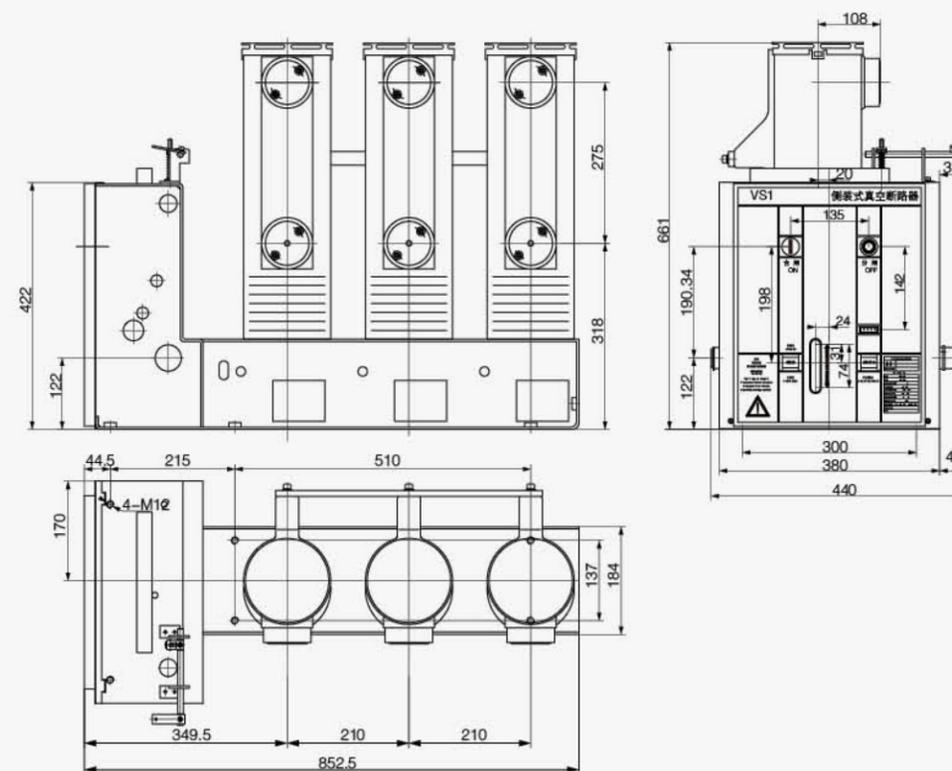
# ZN63A(VS1)-12C

Indoor High Voltage Side-Mounted Vacuum Circuit Breaker

## The main technical parameters

project	Unit	Parameter		
Rated voltage	kV	12		
Maximum working voltage	kV	12		
Rated current	A	630	1250	1600
Rated short-circuit breaking current	kA	20	25	31.5
Rated short-circuit making current	kA	50	63	80
Rated peak withstand current	kA	50	63	80
4S rated short circuit withstand current	kA	20	25	31.5
Rated insulation level	Power frequency withstand voltage (before and after rated breaking)	kV		
	Impact resistance (before and after rated breaking)	42 (fracture 48) 75 (fracture 85)		
Rated operating sequence	O-0.3s-CO-180s-CO			
Mechanical life	Times	1000		
Breaking times of rated short-circuit breaking current	Times	50		
Operating mechanism rated closing voltage (DC)	V	110 , 220		
Operating mechanism rated opening voltage (DC)	V	110 , 200		
Contact opening	mm	11±1		
Overtravel (contact spring compression length)	mm	4.5±0.5		
Three-phase opening and closing bounce time	ms	≤ 2		
Bounce time of contact closing	ms	≤ 2		
Average opening speed	m/s	0.9±1.2		
Average closing speed	m/s	0.4±0.8		
Opening time	At maximum operating voltage		s	
	At the lowest operating voltage		≤ 0.05	
Closing time	At maximum operating voltage		s	
	At the lowest operating voltage		≤ 0.08	
Main loop resistance of each phase	uΩ	60	50	

## Shape and installation size (mm)



# ZN73A(VSM)-12

Indoor High Voltage Permanent Magnet Vacuum Circuit Breaker



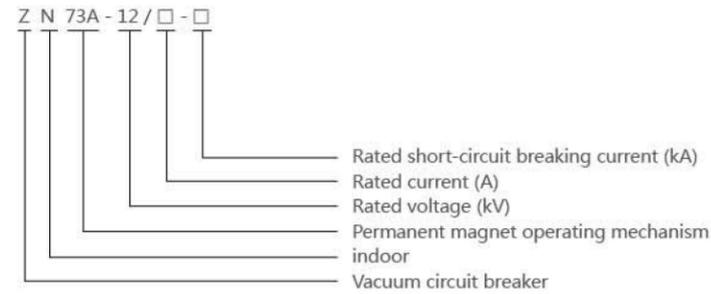
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## Overview

ZN73A (VSM) -12 indoor high voltage permanent magnet vacuum circuit breaker is an indoor switchgear with three-phase AC 50Hz rated voltage of 12kV power system, as a protection and control unit for power grid equipment, industrial and mining power equipment It is suitable for places requiring frequent operation at rated working current or multiple short-circuit current breaking.

The circuit breaker adopts the integrated design of the operating mechanism and the circuit breaker body. It can be used as a fixed installation unit or can be equipped with a special propulsion mechanism to form a handcart unit.

## Model and meaning



## Operating environmental conditions

- ◆ Ambient temperature: not higher than + 40 °C , not lower than -15 °C (storage and transportation at -30 °C are not allowed);
- ◆ Altitude: no more than 1000m;
- ◆ Relative humidity: the daily average is not more than 95%, the monthly average is not more than 90%, the average value of saturated steam pressure is not more than  $2.2 \times 10^{-3}$ MPa; the monthly average is not more than  $1.8 \times 10^{-3}$ MPa;
- ◆ Earthquake intensity: no more than 8;
- ◆ No fire, explosion, severe pollution, chemical corrosion and severe vibration.

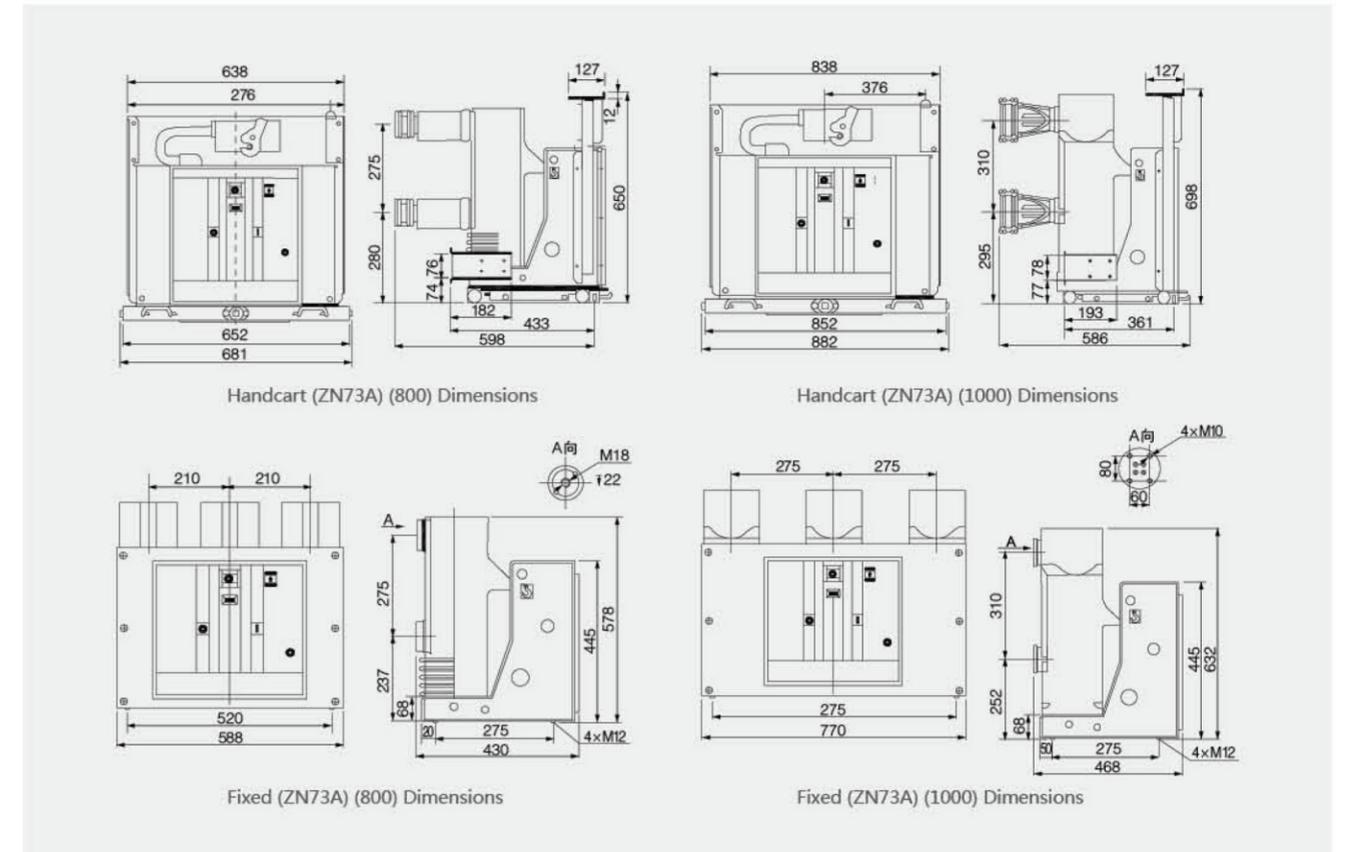
# ZN73A(VSM)-12

Indoor High Voltage Permanent Magnet Vacuum Circuit Breaker

## The main technical parameters

Project	Unit	参数		
Rated voltage	kV	12		
Rated insulation level	kV	Rated lightning impulse withstand voltage peak		
		75		
Rated short-circuit breaking current	kA	1min power frequency withstand voltage		
		42		
Rated current	A	20/25	31.5	40
		630 1250	630, 1250, 1600 2000, 2500, 3150	1250, 1600, 2000 2500, 3150
Rated thermal stability current (effective value)	kA	20/25	31.5	40
Rated dynamic stable current (peak value)		63	80	100
Rated short-circuit making current (peak value)		63	80	100
Breaking times of rated short-circuit breaking current	次	50		
Secondary circuit power frequency withstand voltage (Imin) s	V	2000		
Rated operating sequence	O-0.3-CO-180s-CO			
	O-180s-CO-180s-CO			
Rated thermal stability time	S	4		
Rated single / back-to-back capacitor bank breaking current	A	630/400 800/400(40kA)		
Mechanical life	次	30000		

## Outline and installation dimensions (mm)



# VS1-12

## Indoor Solid-Sealed Pole High Voltage Vacuum Circuit Breaker



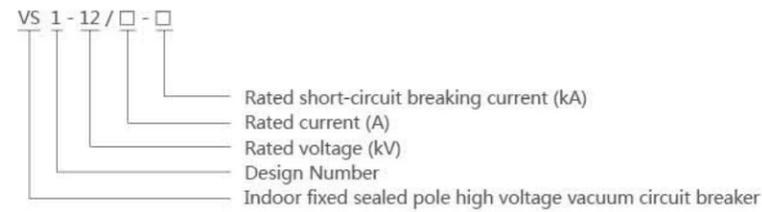
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### Overview

VS1-12kV series indoor sealed pole high voltage vacuum circuit breaker, suitable for three-phase AC power system with rated voltage 7.2 ~ 12kV, frequency 50Hz, widely used in power plants, substations, petrochemical, metallurgy, manufacturing, airports and residential areas. As the protection and control of electrical facilities, it is especially suitable for places where the rated current is frequently operated or the short-circuit current is broken multiple times. It can be installed in a removable or fixed air-insulated switchgear. The product meets the requirements of GB1984 "AC High Voltage Circuit Breaker", DL / T403 "Technical Conditions for Ordering Indoor High Voltage Circuit Breakers of 12 ~ 40.5kV" and relevant standards such as IEC60694 and IEC6227-100.

VS1-12kV series indoor solid-sealed pole high-voltage vacuum circuit breaker adopts advanced APG technology to directly seal the vacuum interrupter and the main conductive circuit in the epoxy pole to form a solid-sealed insulation method, representing the current world's highest level of design and manufacture of high-voltage vacuum circuit breakers.

### Model meaning



### Operating environmental conditions

- ◆ Altitude: no more than 2000m;
- ◆ Ambient temperature: maximum temperature + 40 °C; minimum temperature -15 °C;
- ◆ Relative humidity: ≤ 95%;
- ◆ Earthquake intensity: level 8;
- ◆ Installation place: the place where there is no dripping water, fire, no explosion risk, serious pollution, chemical corrosion and violent vibration.

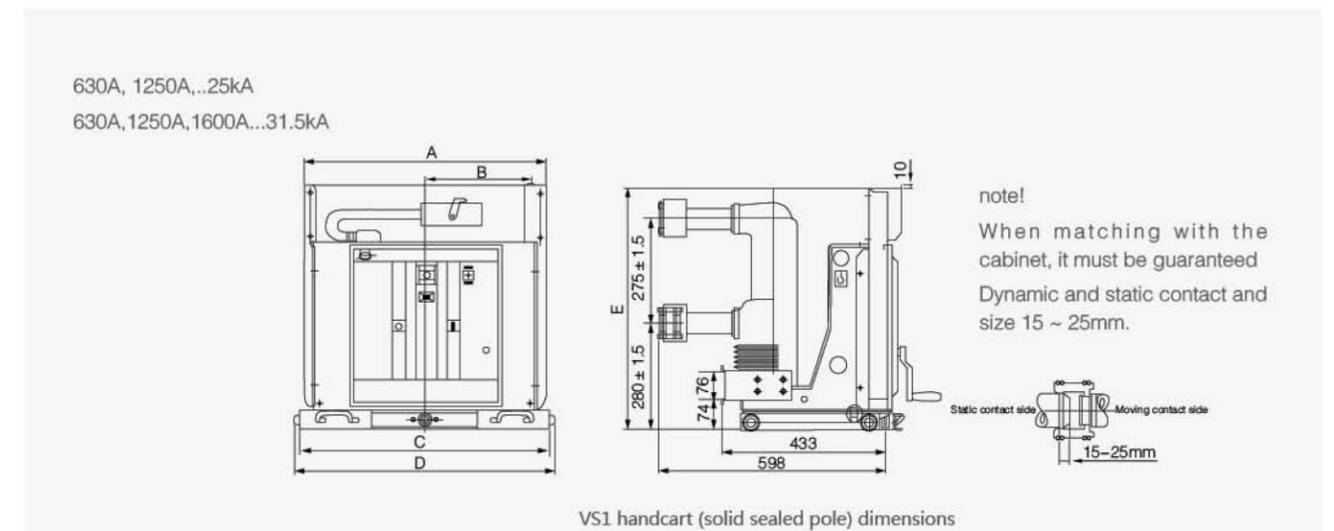
# VS1-12

## Indoor Solid-Sealed Pole High Voltage Vacuum Circuit Breaker

### The main technical parameters

Project	Unit	Parameter			
Rated voltage	kV	12			
Rated frequency	Hz	50			
Rated insulation level	Rated lightning impulse withstand voltage peak	kV	75		
	1min power frequency withstand voltage	kV	42		
Rated current	A	630 1250	630 1250	1250, 1600 2000, 2500	1600, 2000, 2500 3150, 1000, 5000
Rated short-circuit breaking current	kA	25		31.5	40
Rated short-circuit making current (peak value)	kA	63		80	100
Rated short-circuit duration	S	4			
Rated operating sequence		O-0.3s-CO-180s-cO O-180s-CO-180s-CO(40kA)			
Rated single / back-to-back capacitor bank breaking current	A	630/400			
Breaking times of rated short-circuit breaking current	次	30			
Closing time	ms	30~70			
Opening time	ms	20 ~50			
Mechanical life	次	10000			
Rated energy storage and operating voltage	V	AC220/110DC220/110			
Contact opening	mm	11±1			
Contact overline	mm	3.5±0.5			
Average closing speed	m/s	0.5~0.8			
Average opening speed	m/s	0.9~1.2			
Bounce time of contact closing	ms	≤ 2			
Different phases of three-phase opening and closing	ms	≤ 2			
Main circuit resistance	μΩ	≤ 50(630A) ≤ 45(1250A) ≤ 35(1600~2000A) ≤ 25(2500以上)			

### Shape and installation size (mm)



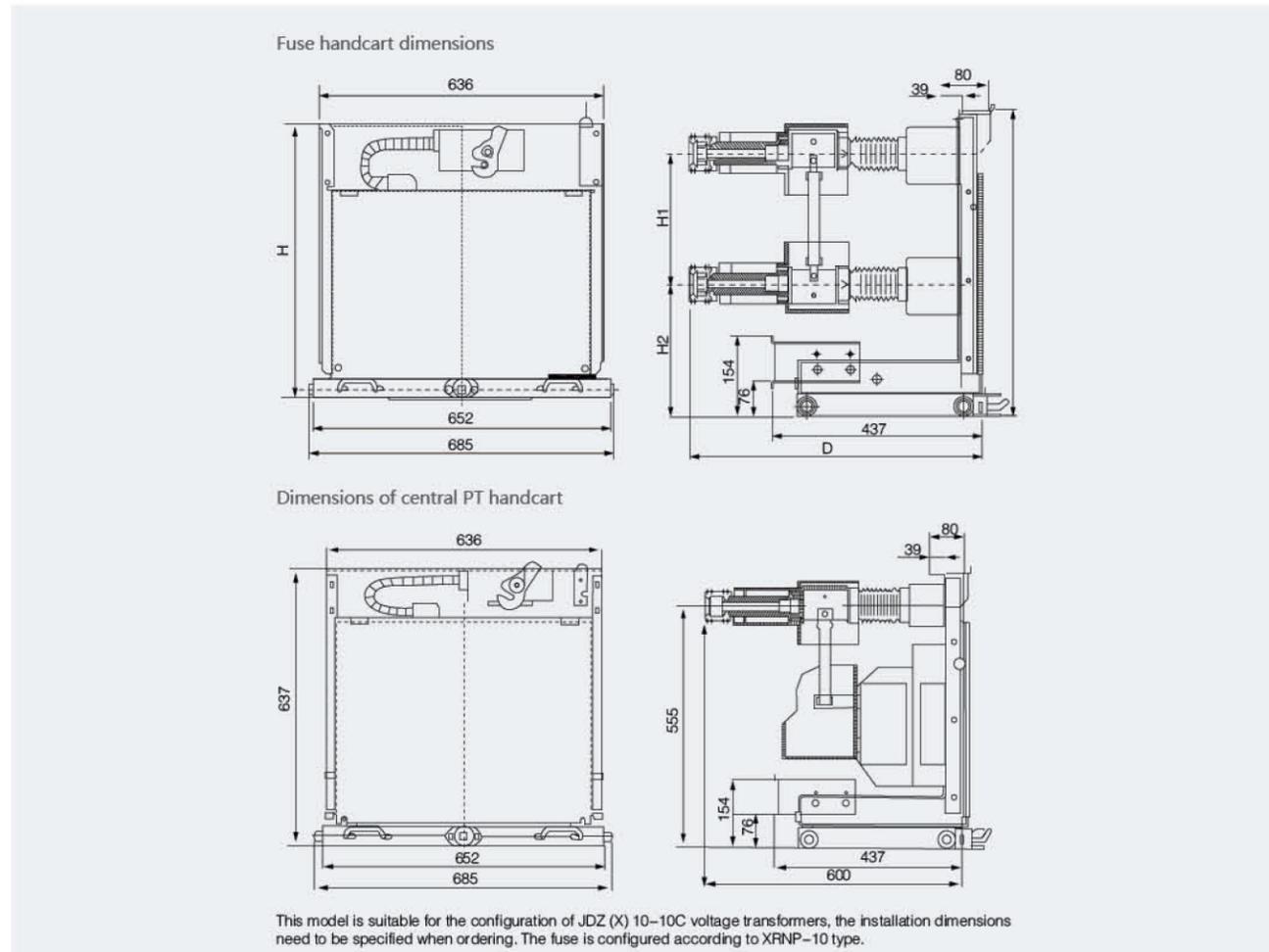
	Phase spacing	A	B	C	D	E	Rated current	with static contacts
With 650mm cabinet width	150	490	202	502	531	637	630A	Φ35
With 800mm cabinet width	210	638	277	652	681	637	1250A	Φ49
With 1000mm cabinet width	275	638	377	852	881	637/697	1600A	Φ55

## Armored removable AC metal-enclosed switchgear



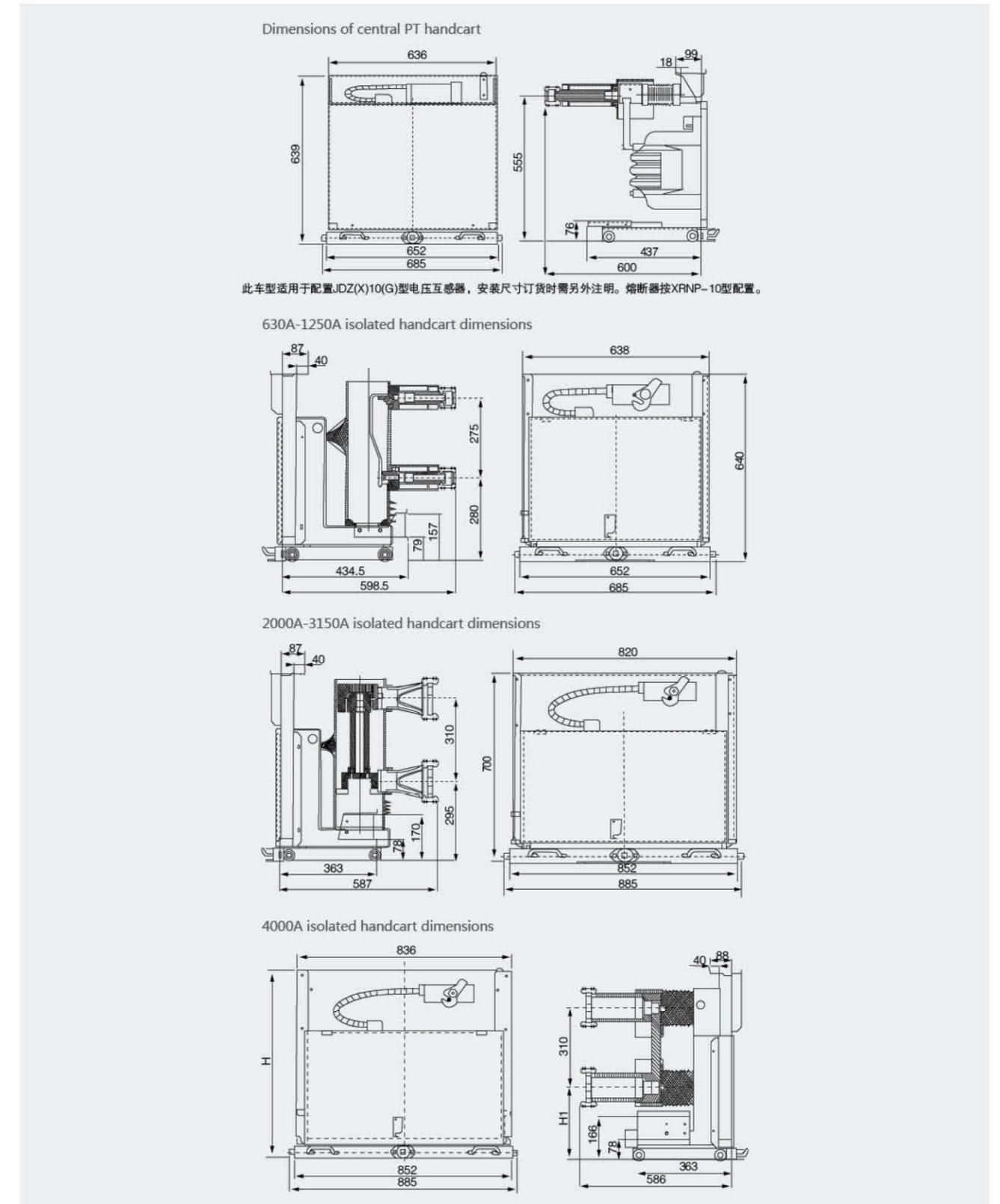
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### Outline and installation dimensions (mm)



## Armored removable AC metal-enclosed switchgear

### Outline and installation dimensions (mm)



# ZN85-40.5

## Indoor High Voltage Vacuum Circuit Breaker



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### Overview

ZN85-40.5 indoor high-voltage vacuum circuit breaker is suitable for three-phase AC 50Hz, 40.5kV system. It can be used for industrial and mining enterprises, power plants and substations as switching load current, overload current fault current, and is suitable for frequent operation occasions. This circuit breaker adopts up and down arrangement structure, which effectively reduces the depth of the circuit breaker. And adopt composite insulation structure, three-phase arc extinguishing chamber and associated charged body separated by three independent epoxy resin insulation shells. After using composite insulation structure, the circuit breaker meets the requirements of air distance and creep distance under normal operating conditions And effectively reduce the volume of the circuit breaker, the main conductive loop vacuum interrupter and the dynamic and static conductive connection are installed in the insulating cylinder, so that the phase is only 300mm. The main circuit electrical connections are all fixed connections with high reliability.

### Model meaning



### Operating environmental conditions

- ◆ Altitude: no more than 2000 meters;
- ◆ Ambient temperature: the upper limit is + 40 °C , the lower limit is + 15 °C ;
- ◆ Relative humidity: daily average value is not greater than 95%, monthly average value is not greater than 90%;
- ◆ Earthquake intensity: no more than 8 degrees; there is no danger of fire and explosion, and there is no severe pollution such as severe vibration and chemical corrosion.

Note: When the above environmental conditions are exceeded, please consult with the manufacturer.

### Structural features

The circuit breaker adopts the overall arrangement structure with the arc extinguishing chamber on the top and the mechanism on the bottom, which is convenient for debugging.

Adopt air and organic material composite insulation structure, compact design and light weight. It can be equipped with the vacuum interrupter of American Cutler-Hammer Company and the vacuum interrupter of domestic ZMD. The two types of arc extinguishers use longitudinal magnetic field to extinguish the arc, with low cutoff and good asymmetrical breaking performance. Simple spring operating mechanism, maintenance-free for 10,000 operations.

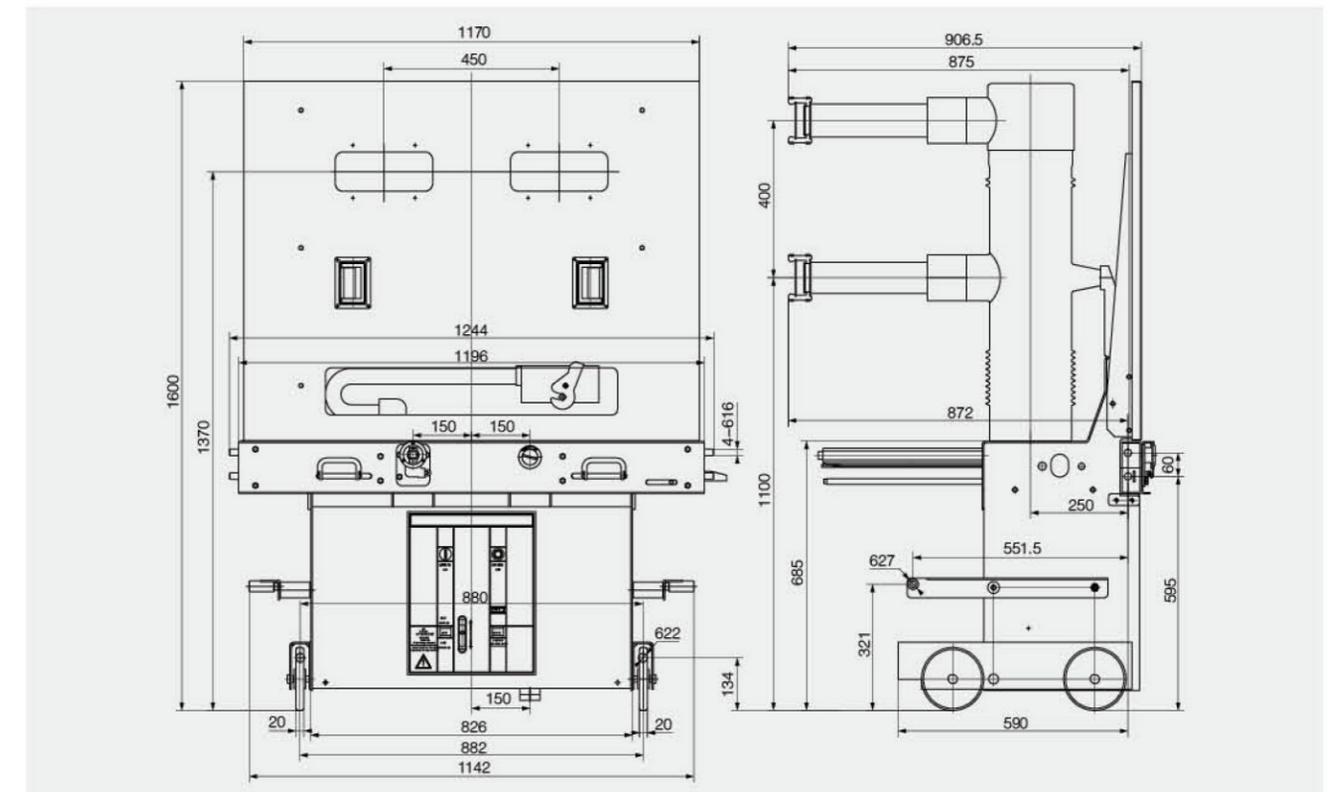
# ZN85-40.5

## Indoor High Voltage Vacuum Circuit Breaker

### The main technical parameters

project	unit	Parameter			
Rated voltage	kV	40.5			
Rated current	A	1250	1600	2000、2500	
Rated short-circuit breaking current	kA	25	31.5	25	31.5
Dynamic stable current (peak value)	kA	63	80	63	80
4S thermal stable current	kA	25	31.5	25	31.5
Rated short-circuit making current (peak value)	kA	63	80	63	80
Breaking times of rated short-circuit current	次	20			
Rated operating sequence		O-0.3 S-CO-180 s-CO			
Rated insulation level	1min power frequency withstand voltage	kV			
	Lightning impulse withstand voltage (peak value)	95			
		185			
Mechanical life	次	10000			
Rated single capacitor bank opening and current	A	630			
Rated back-to-back capacitor bank current	A	400			
Energy storage motor rated voltage	V	AC、DC : 110; 220			
Rated power of energy storage motor	W	≤ 230			
Energy storage time of energy storage motor	S	≤ 15			
Rated voltage of closing and opening coil	V	Dc : 110; 220			
Rated current of closing and opening coil	A	1.05(110V) 0.96(220V)			
Contact opening	mm	20±2			
Contact stroke	mm	7.5 ±1.5			
Three-phase combination of different periods	ms	≤ 2			
Bounce time of contact closing	ms	≤ 3			
Main circuit resistance (excluding wall contact)	μΩ	≤ 40			

### Outline and installation dimensions (mm)





# FZ(R)N25-12

## Vacuum Load Switch



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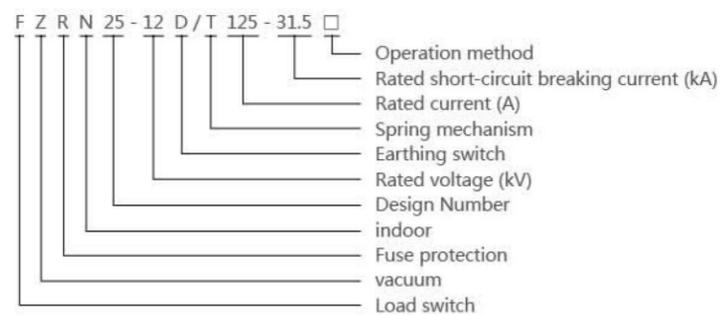
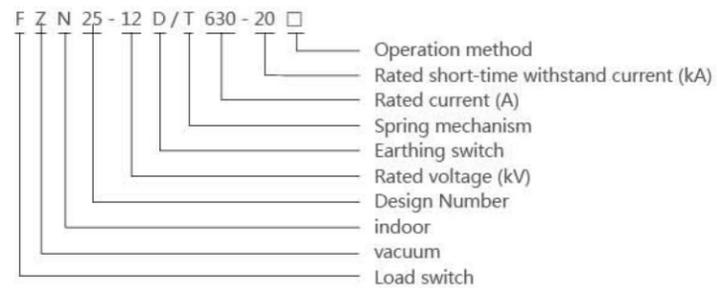
### Overview

FZN25-12 indoor high-voltage vacuum load switch is an indoor device with three-phase AC 50Hz and rated voltage of 12kV. It is used with industrial and mining enterprise power distribution stations and substations as protection and control of electrical facilities. It is used to divide and load current, Closed-loop current, no-load transformer and cable charging current.

FZRN25-12 indoor high-voltage vacuum load switch fuse combination appliance is an indoor device with three-phase AC 50Hz and rated voltage of 12kV. It is suitable for industrial and mining enterprise power distribution stations and substations, etc. for load control and short circuit protection. The equipped grounding switch can withstand short circuit current. The operating mechanism can be turned on manually to facilitate the realization of the three remote control requirements of the power system.

FZN25-12, FZRN25-12 series load switches and combination appliances are suitable for urban power distribution stations and industrial power equipment powered by three-phase ring network or terminal, for load control and short circuit protection. Because the protection effect of combined appliances on transformers and other electrical equipment is more reliable and more economical than circuit breaking, it is especially suitable for ring networks, dual-radiation power supply units and box-type substations.

### Model and meaning



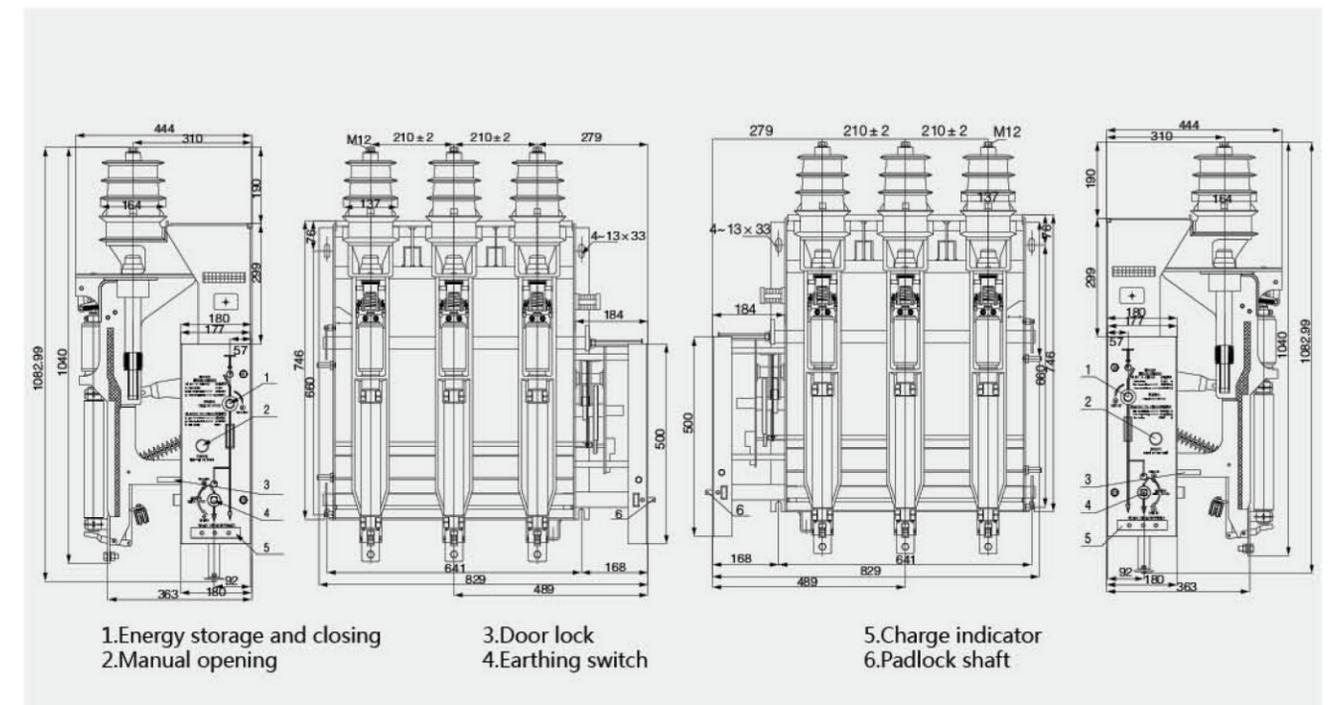
# FZ(R)N25-12

## Vacuum Load Switch

### The main technical parameters

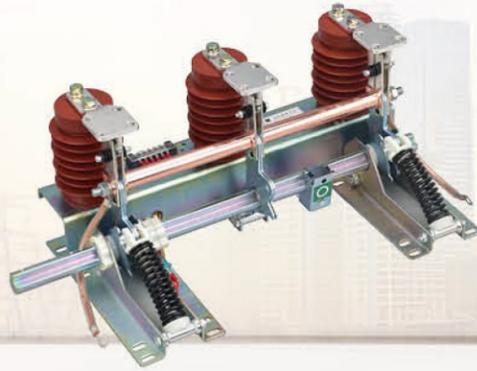
Project	Unit	Parameter	
		FZN25-12D/T630-20	FZN25-12R.D/T125-31.5
Rated voltage	kV	12	
Rated frequency	Hz	50	
Rated current	A	630	125
Rated insulation level	1min power frequency withstand voltage	Arc-extinguishing chamber fracture 30; ground-to-ground, interphase 42; isolation fracture 48	
	Lightning impulse withstand voltage	75 to ground, interphase; 85 isolation gap	
Rated dynamic current (peak value)	kA	50	-
4S thermal stable current	kA	20	-
Rated active load breaking current	A	630	125
Rated closed-loop breaking current	A	630	125
Rated cable charging breaking current	A	10	10
Breaking no-load transformer capacity	kVA	1250	1250
Rated short-circuit breaking current	kA	-	31.5
Rated transfer current, rated transfer current	A	-	2000
Fuse model		-	SDLAJ-12 SFLAJ-12
Impactor output energy	J	-	2-5 (medium)
Rated short-circuit making current	kA	50	
Grounding switch rated dynamic stable current	kA	50	
Grounding switch 2S thermally stable current	kA	20	
Auxiliary circuit rated voltage	V	AC/CD : 220/110	
Mechanical life	次	10000	

### Outline and installation dimensions (mm)



# JN15-12/31.5

Indoor High Voltage  
Grounding Switch

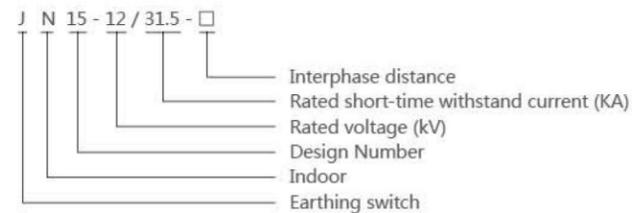


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## Overview

JN15-12 / 31.5 indoor high-voltage grounding switch is a new type of grounding switch with international advanced level developed by our company according to the prototype design of ES1 type grounding switch. The structure is assembled, and its performance meets the requirements of GB1985-2004 "AC high-voltage isolating switch and grounding switch" and IEC129, suitable for indoor 3 ~ 12Kv three-phase AC 50 (60) Hz power system: it has Closing capacity to protect other electrical equipment in the switchgear from damage, can be used with a variety of high-voltage switchgear, as a grounding protection for high-voltage electrical equipment maintenance.

## Model and meaning



## Conditions of Use

Ambient air temperature: upper limit + 40 °C , lower limit -10 °C ;  
 Altitude: no more than 1000 meters;  
 Humidity conditions: the average daily relative humidity does not exceed 95%, and the average monthly relative humidity does not exceed 90%  
 Earthquake intensity: no more than 8 degrees;  
 Pollution level: Grade II .

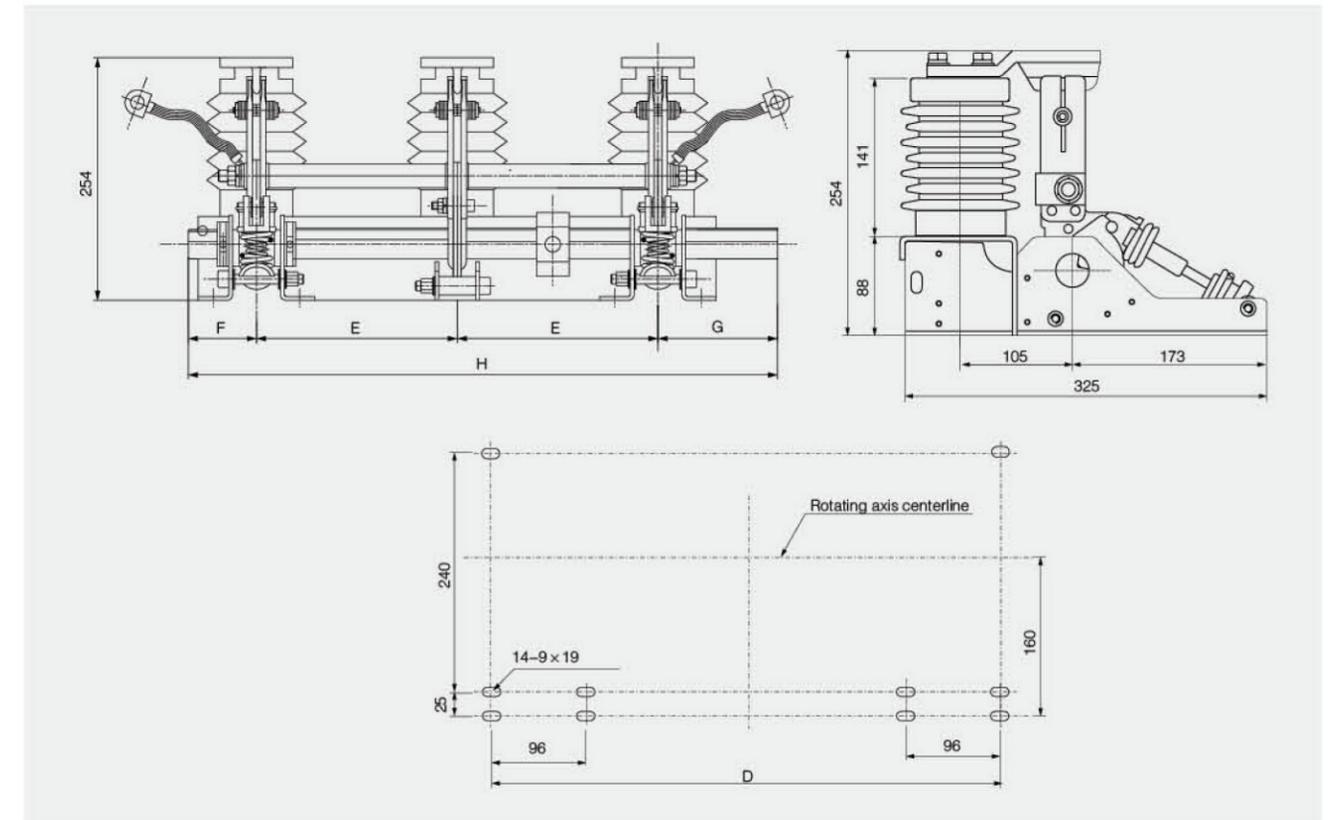
## The main technical parameters

Project	Unit	Parameter		
Rated voltage	Kv	12		
Rated short-time withstand current (thermal stability)	KA	31.5		
Rated short-circuit holding time	S	4		
Rated short-circuit making current	KA	80		
Rated peak withstand current (dynamic stability)	KA	80		
Rated insulation level	Rated short-term power frequency withstand voltage	kV	Relatively and alternately	42
	Rated lightning impulse withstand voltage	kV	Relatively and alternately	75
Mechanical life	次	2000		

# JN15-12/31.5

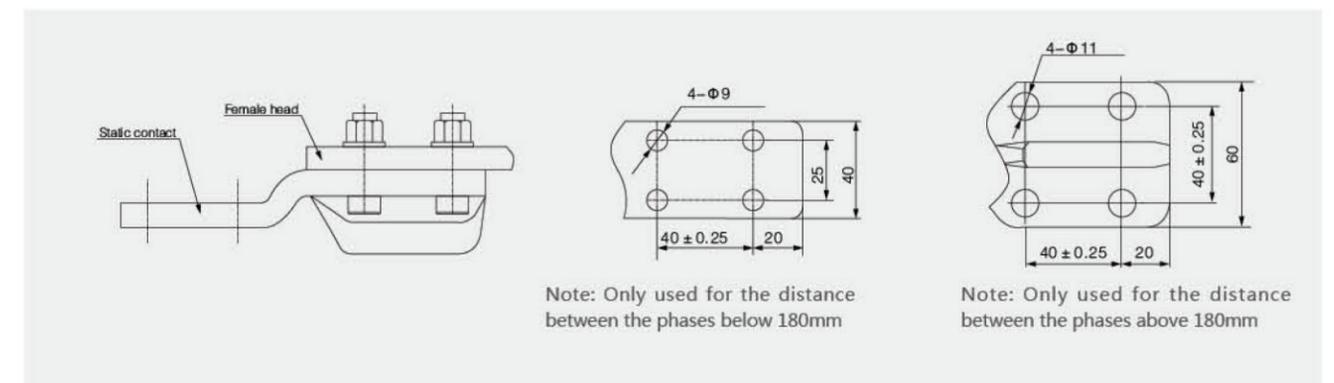
Indoor High Voltage Grounding Switch

## Outline and installation dimensions (mm)



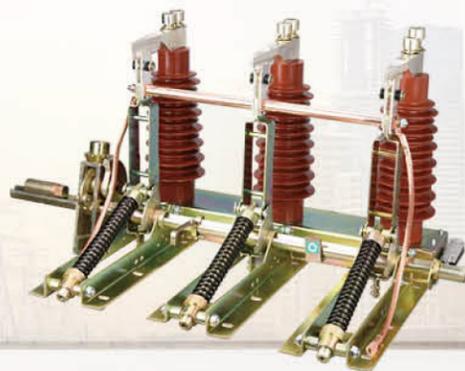
Model	E	F	G	H	D
JN15-12/31.5-150	150	75	165	535	396
JN15-12/31.5-165	165	75	160	565	426
JN15-12/31.5-210	210	75	160	655	516
JN15-12/31.5-250	250	75	160	735	596
JN15-12/31.5-275	275	75	185	810	646

## Copper terminal block diagram



# JN22-40.5/31.5

Indoor High Voltage  
Grounding Switch

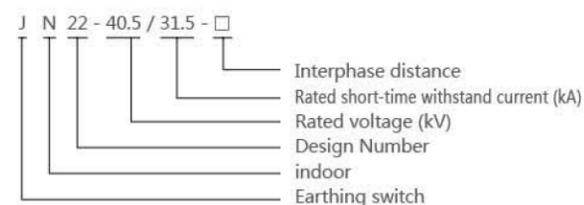


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## Overview

JN22-40.5 / 31.5 indoor high voltage grounding switch (hereinafter referred to as grounding switch) is an advanced level product with high technical parameters and performance developed by Xi'an High Voltage Electric Apparatus Research Institute. After comprehensive evaluation, its performance complies with the provisions of the national standard GB1985 "AC high-voltage disconnecter and grounding switch", suitable for 40.5kV, AC 50Hz power system, can be used with KYN □ -40.5 and other models of high-voltage switch cabinet. It can also be used for grounding protection during the maintenance of high-voltage electrical equipment.

## Model and meaning



## Operating environmental conditions

- ◆ Altitude: no more than 1000 meters;
- ◆ Ambient air temperature: upper limit + 40 °C, lower limit -10 °C;
- ◆ Seismic degree: no more than 8 degrees;
- ◆ Installed in places without flood, explosion hazard, severe dust, chemical corrosion and severe vibration.

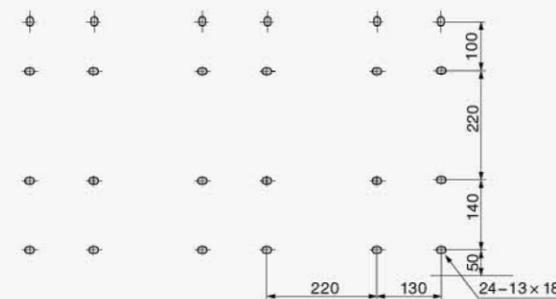
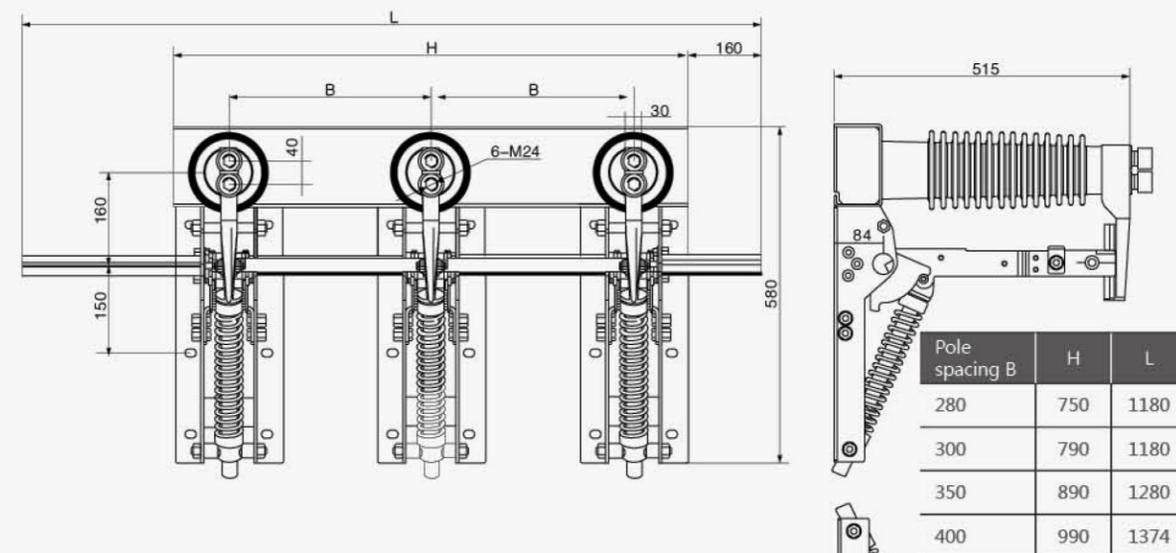
## The main technical parameters

Project	Unit	Parameter	
Rated voltage	Kv	35	
Maximum voltage	KA	40.5	
Thermally stable voltage	KA	31.5	
Thermal stability current time	S	4	
Short-circuit making current	KA	80	
Dynamic current	KA	80	
Center distance	mm	300;350;400	
Rated insulation level	Power frequency withstand voltage	Relatively and interpolar	95
	Lightning impulse withstand voltage		185

# JN22-40.5/31.5

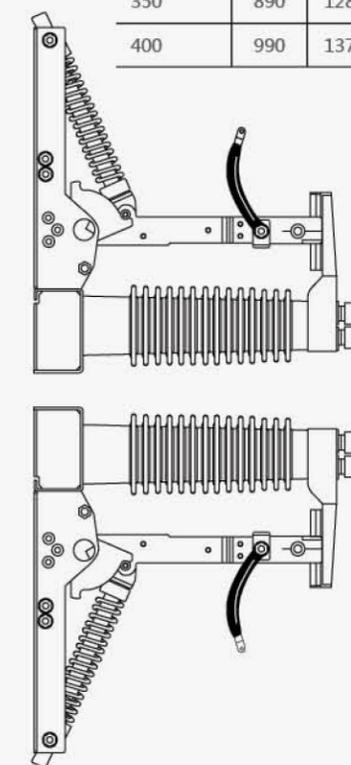
Indoor High Voltage Grounding Switch

Shape and installation size (mm)



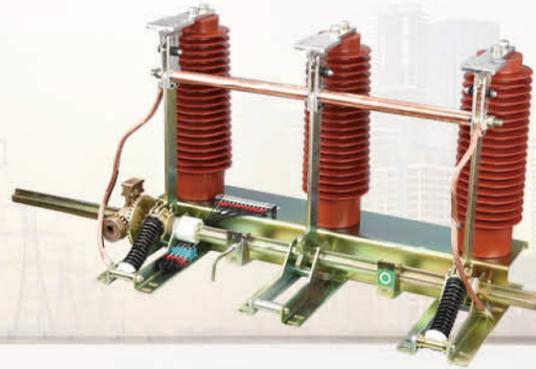
Pole spacing B	H
280	750
300	790
350	890
400	990

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# JN22B-40.5/31.5

Indoor High Voltage  
Grounding Switch

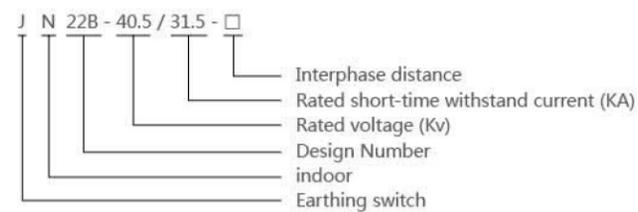


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## Overview

JN22B-40.5 / 31.5 indoor high-voltage grounding switch (hereinafter referred to as grounding switch) is an advanced level product with high technical parameter performance improved by our company on the basis of JN15. After a comprehensive assessment, its performance conforms to the provisions of the national standard GB1985 "AC high-voltage isolating switch and grounding switch", suitable for 40.5Kv, AC 50Hz power system, can be used with KYN □ -40.5 and other models of high-voltage switch cabinet It can also be used for grounding protection during the maintenance of high-voltage electrical equipment.

## Model and meaning



## Operating environmental conditions

- ◆ Altitude does not exceed 1000 meters;
- ◆ Upper limit of ambient air temperature + 40 °C ; lower limit -10 °C ;
- ◆ Earthquake intensity does not exceed 8 degrees;
- ◆ Installed in places without flood, explosion hazard, severe dust, chemical corrosion and severe vibration.

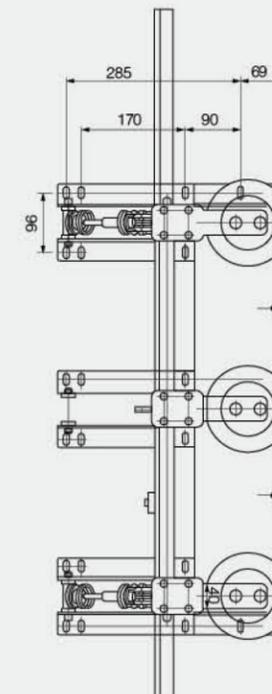
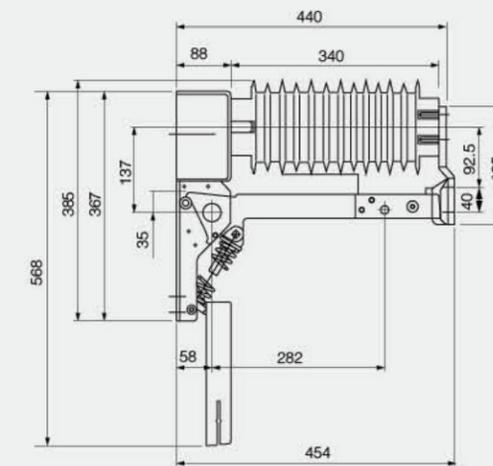
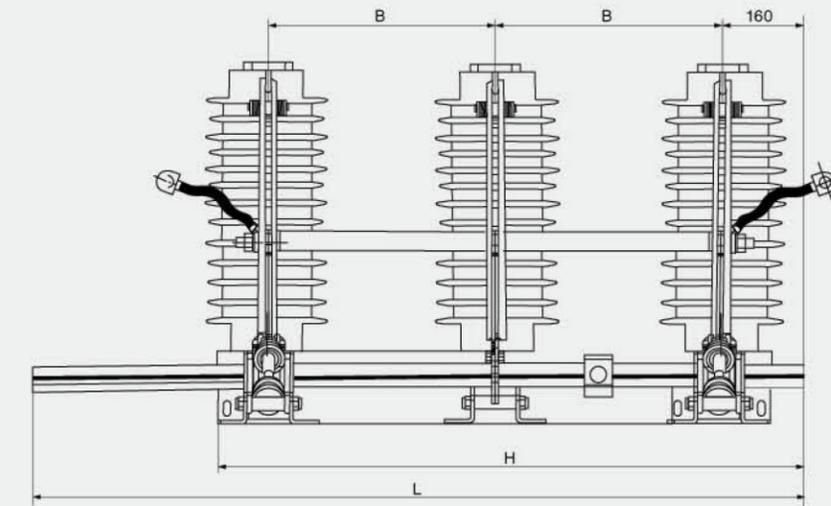
## The main technical parameters

Project	Unit	Parameter		
Rated voltage	Kv	35		
Maximum voltage	KA	40.5		
Thermally stable voltage	KA	31.5		
Thermal stability current time	S	4		
Short-circuit making current	KA	80		
Dynamic current	KA	80		
Center distance	mm	300;350;400		
Rated insulation level	Power frequency withstand voltage	Kv	Relatively and interpolar	95
	Lightning impulse withstand voltage		185	

# JN22B-40.5/31.5

Indoor High Voltage Grounding Switch

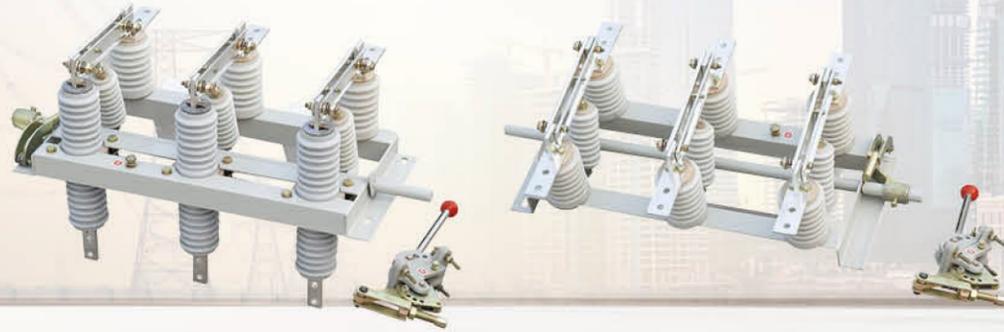
## Outline and installation dimensions (mm)



Pole spacing B	H	L
280	684	1050
300	724	1070
350	824	1120
400	924	1374

# GN19-12

## Indoor High Voltage Disconnector

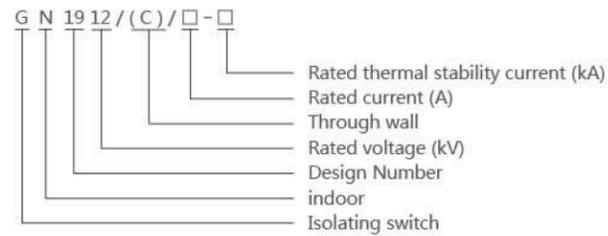


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### Overview

GN19-12 series indoor high-voltage isolation relation high-voltage switchgear, used in rated voltage 12kV, AC 50Hz and below power systems, equipped with CS6-1 human-operated mechanism, as a voltage without load, For the purpose of splitting and combining circuits, there are also derivative products of anti-fouling type, high-prototype, and the installation of charged display devices.

### Model meaning



### Conditions of Use

- ◆ Altitude: no more than 1000m;
- ◆ Air temperature: -25 °C ~ + 40 °C ;
- ◆ Relative humidity: daily average value is not greater than 95%, daily average value is not greater than 90%;
- ◆ Earthquake intensity: no more than 8 degrees;
- ◆ Installation site: There is no fire, flammable, explosive, severe pollution, chemical corrosion and severe vibration.

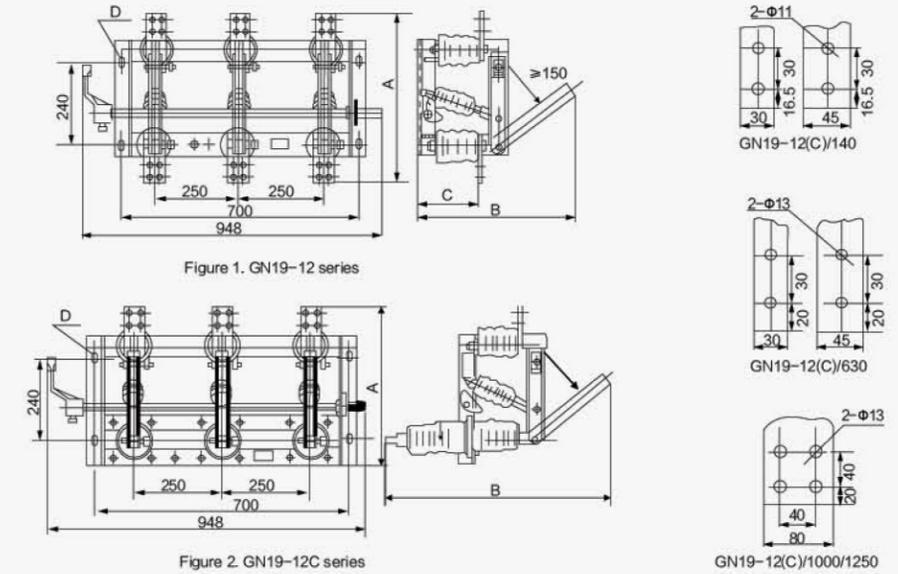
### The main technical parameters

Model	Rated voltage (kV)	Rated voltage (V)	Thermal stability current in 4 seconds (kA)	Dynamic stability current (kA)
GN19-10(C)400-12.5	12	400	12.5	31.5
GN19-10(C)630-20	12	630	20	50
GN19-10(C)1000-31.5	12	1000	31.5	80
GN19-10(C)1250-40	12	1250	40	100

# GN19-12

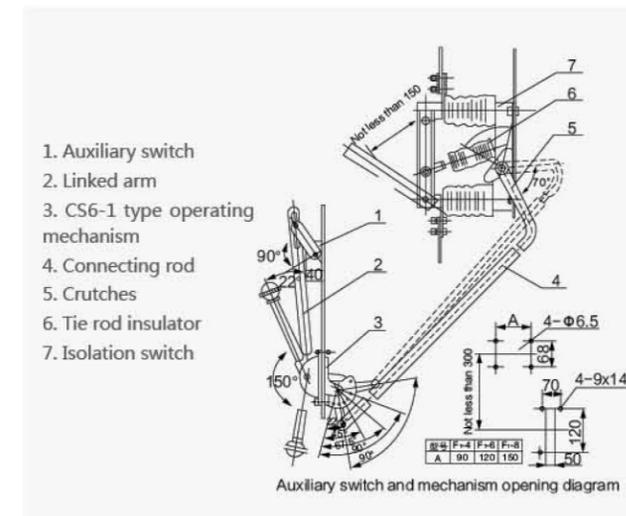
## Indoor High Voltage Disconnector

### Shape and installation size (mm)

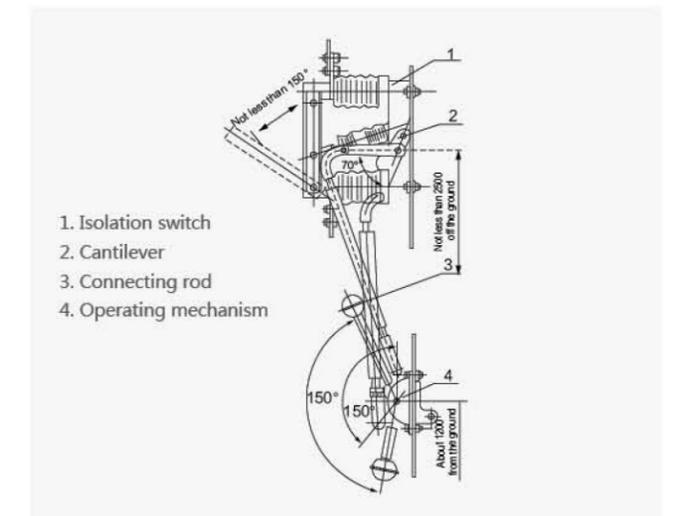


Model	A	B	C	D
GN19-12/400	450	446	185	4-14×24
GN19-12/630	470	446	185	4-14×24
GN19-12/1000/1250	510	500	196	4-18×28
GN19-12C/400	420	690	185	4-14×24
GN19-12C/630	430	690	185	4-14×24
GN19-12C/1000/1250	470	745	196	4-18×28

### The first installation diagram of this switch and CS6-1 operating mechanism



### The second installation diagram of this switch and CS6-1 operating mechanism



# GN30-12

## Indoor Rotary High Voltage Disconnecter



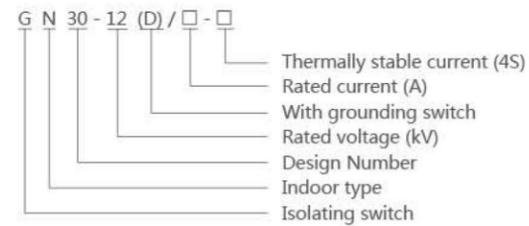
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### Overview

GN30-12 rotary indoor high-voltage isolating switch is a new type of rotary contact knife isolating switch. The main structure is to fix two sets of insulators and contacts on the upper and lower planes of the three-phase common chassis. Rotate the contact knife to realize the opening and closing of the switch.

GN30-12D type switch is based on GN30-12 type switch to add a form with a grounding knife, which can meet the needs of different power systems. This product has compact design, small space occupation, strong insulation capacity, easy installation and adjustment, and its performance meets the requirements of GB1985-89 "AC high-voltage disconnecter and grounding switch". It is suitable for indoor systems with rated voltage of 10 kV and AC 50 Hz and below, Used as a switching circuit in the case of voltage and no load. It can be used in conjunction with high-voltage switchgear or separately.

### Model meaning



### Conditions of Use

- ◆ Altitude: no more than 1000m;
- ◆ Air temperature: upper limit + 40 °C ; lower limit -10 °C ;
- ◆ Relative humidity: daily average value is not greater than 95%; monthly average value is not greater than 90%;
- ◆ Earthquake intensity: no more than 8 degrees;
- ◆ Pollution level: no serious dust, chemically corrosive and explosive substances;
- ◆ Installation site: a place without frequent severe vibration.

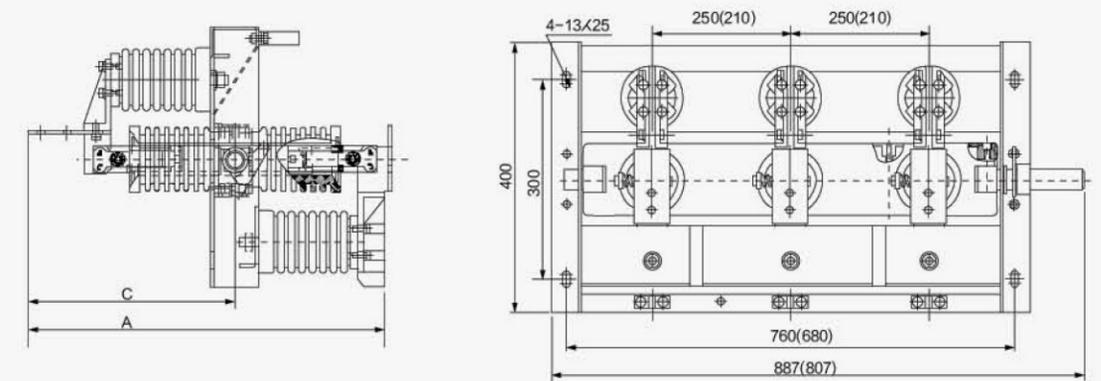
### The main technical parameters

project	GN30-12/400-12.5	GN30-12/630-20	GN30-12/1000-31.5	GN30-12/1250-31.5
	GN30-12D/400-12.5	GN30-12D/630-20	GN30-12D/1000-31.5	GN30-12D/1250-31.5
Rated voltage (kV)	2			
Rated current (A)	400	630	1000	1250
Thermally stable current (KA)	12.5	20	31.5	
Thermal stability time (S)	4			
Dynamic stable current (KA)	31.5	50	80	
Rated insulation level	Lightning impulse voltage (kV)	Interphase, phase to ground 75, fracture 85		
	1min power frequency withstand voltage (kV)	Alternating phase, phase 42, fracture 48		

# GN30-12

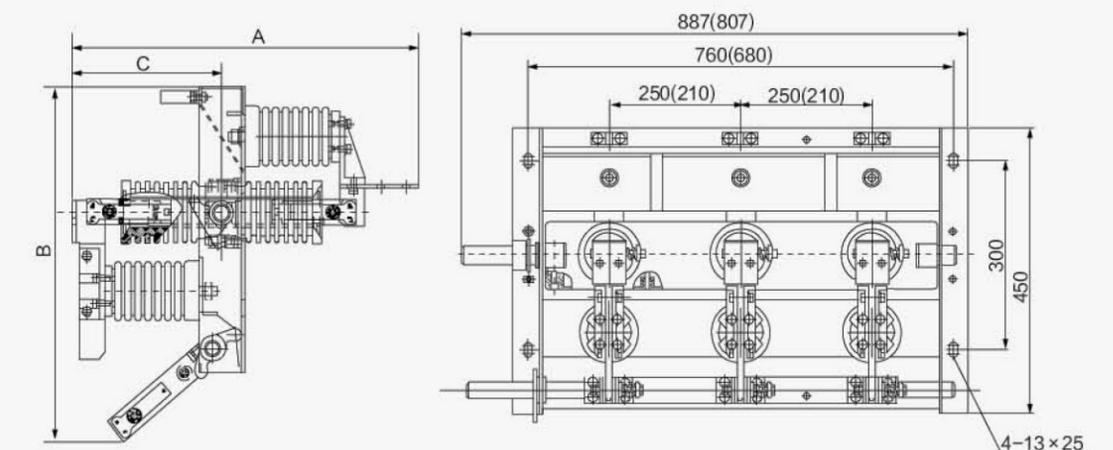
## Indoor Rotary High Voltage Disconnecter

### Shape and installation size (mm)

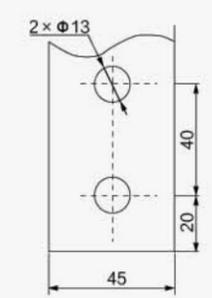


GN30-12/400~1250

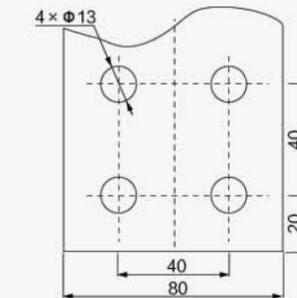
GN30-12						GN30-12D								
400/630A		1000A		1250A		400/630A			1000A			1250A		
A	C	A	C	A	C	A	B	C	A	B	C	A	B	C
560	315	580	332	580	295	550	610	240	575	615	245	580	600	295



GN30-12D/400~1250



GN30-12(D)/400/630



GN30-12(D)/1000/1250

# GCD-12kV

## Outdoor High Voltage Isolation Switch



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### Product description and structure

GCD isolating switch is a single-phase isolating switch on outdoor pole. It provides a visible break for maintenance personnel and can also be used as a breaking point. The structure is a double-column isolating switch, the insulator and the bolt are locked on a hot-dip galvanized base, and the isolating switch can be operated by pulling the pull ring. The limit of the isolation knife is 160 degrees by default (it can be changed to 90 degrees on site or removed to no limit). When installing the GCD isolating switch, the back plate can be optionally installed, and the board can be clamped on the crossarm to fix the switch during installation.

### Technical parameter

GCD isolation switch is used in 12kV distribution network system, rated current is 630A, short-time withstand current 20KA / 4S, peak withstand current is 50KA, power frequency and lightning impulse withstand voltage can reach the level of 2000 meters above sea level.

### Safety Precautions

The person responsible for installation, maintenance and operation of the isolating switch shall have the instruction manual;  
Follow your company's safety regulations;  
Please read the instruction manual carefully before preparing to install, maintain and operate the isolating switch, so as not to operate the switch incorrectly, causing unnecessary casualties;  
The switch must be operated and maintained by professionals familiar with safety regulations. The right of instruction is used as a reference material for operation and maintenance personnel, and can not be used as an alternative material for training and internship of such equipment safety regulations.

### Operating

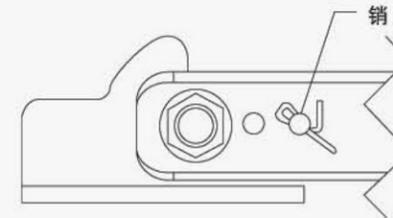
GCD disconnecter is a kind of high-voltage equipment, which is usually operated with standard electrical insulation tools, and pay attention to correct and safe operation;  
The operator should use the insulated rod to pull the pull ring on the GCD. The opening and closing operation of the GCD disconnecter should be carried out under no load;  
Double-post isolating switch, the insulator and bolt are locked on a hot-dip galvanized low seat, and the isolating switch can be operated by pulling the pull ring;  
The limit position of the isolation knife is 160 degrees by default (can be changed to 90 degrees on site or removed to no limit);  
When installing the GCD isolating switch, the back plate can be optionally installed, and the board can be clamped on the crossarm during installation.

# GCD-12kV

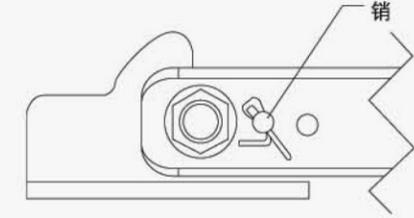
## Outdoor High Voltage Isolation Switch

### Limit method

The factory default of GCD is 160 degree limit. Take the pin in the figure below from the knife contact group.



If you need a 90-degree limit, you need to take this pin out and then put it into the position shown in the figure below.

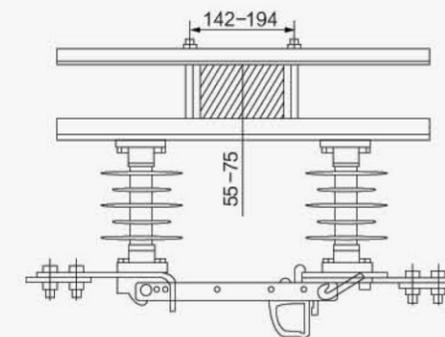


### Installation method

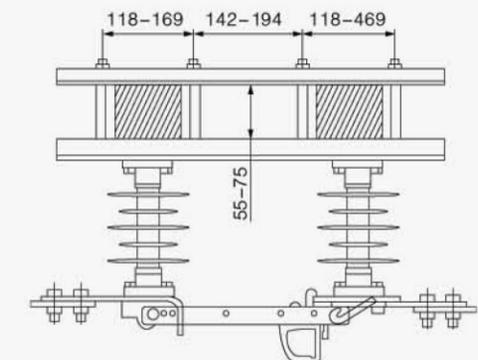
GCD isolating switch has single and double post installation methods; the installation form can be divided into hanging installation or vertical installation; can be installed with single crossarm clamp hoop or double crossarm

The M12 bolts on the terminal block should be tightened by the installer with a torque of about 80N.m;  
See the figure below for the specific installation method, pay attention to the direction of the bolts.

Single crossarm installation



Double crossarm installation



# GW9-12

## Outdoor Ac Low Voltage Disconnect



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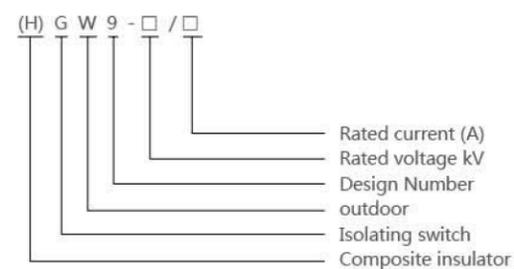
### Overview

Outdoor low-voltage isolating switch is a single-pole AC 50Hz high-voltage switchgear, used in rated voltage 10kV power system, used to connect or isolate power supply under voltage and no load.

This isolation switch uses insulated hook rods for operation.

This series of outdoor disconnects meet the relevant regulations of GB1985 "High-voltage AC disconnects and grounding switches", IEC129 "AC disconnects and grounding switches" and GB / T11022 "Shared technical requirements for high-voltage switchgear and control standards".

### Model and meaning



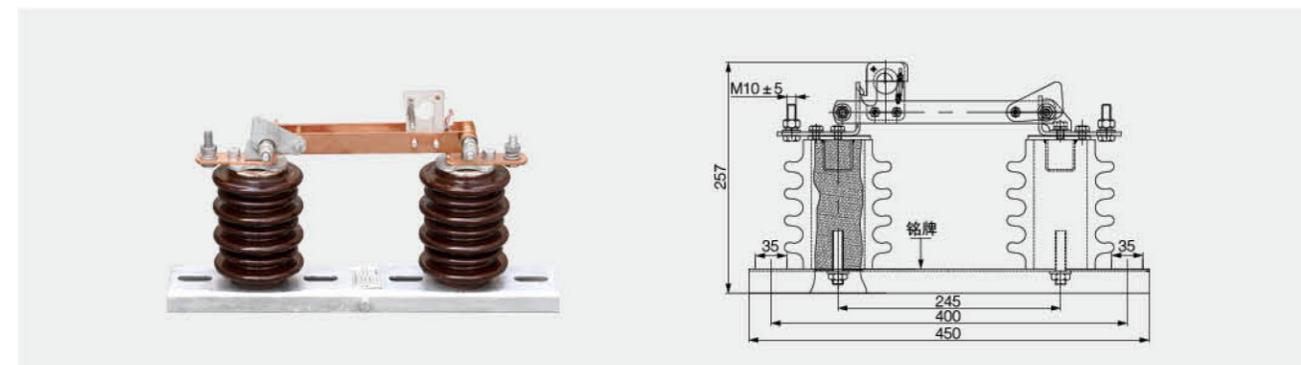
### Operating environmental conditions

- ◆ Ambient temperature: -40 °C ~ + 40 °C .
- ◆ Altitude: normal type: no more than 2000 meters; high prototype: no more than 4000 meters.
- ◆ Wind pressure: no more than 700Pa (equivalent to wind speed 34m / s).
- ◆ Anti-pollution grade: Grade II and Grade III.
- ◆ Earthquake intensity: no more than 8 degrees.
- ◆ Thickness of ice coating: no more than 10mm.
- ◆ Locations free of fire, explosion, chemical corrosion and frequent severe vibration.
- ◆ The requirements exceeding the above conditions shall be negotiated by the user and the manufacturing unit.

# GW9-12

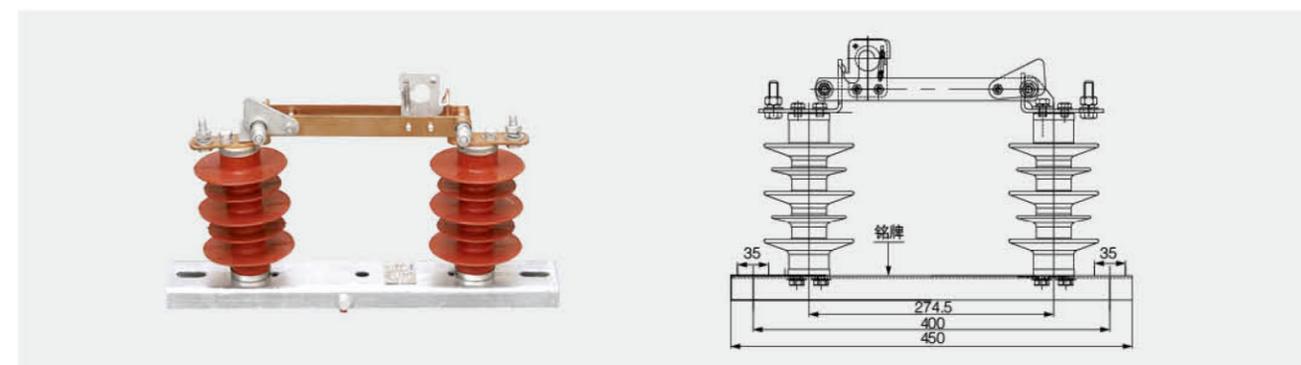
## Outdoor Ac Low Voltage Disconnect

### GW9 型



model	Rated voltage (kV)	Rated current (A)	Dynamic stable current (Peak) (kA)	4 seconds thermal stability current (kA)
GW9-12/200	12	200	31.5	12.5
GW9-12/400	12	400	31.5	12.5
GW9-12/630	12	630	40	16
GW9-12/1000	12	1000	50	20
GW9-12/1250	12	1250	50	20

### HGW9 型



model	Rated voltage (kV)	Rated current (A)	Dynamic stable current (Peak) (kA)	4 seconds thermal stability current (kA)
HGW9-12/200	12	200	31.5	12.5
HGW9-12/400	12	400	31.5	12.5
HGW9-12/630	12	630	40	16
HGW9-12/1000	12	1000	50	20
HGW9-12/1250	12	1250	50	20

# HY5WS-17/50DL-TB

Fall arrester



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## Overview

HY5WS-17 / 50DL-TB drop-arrester is a distribution type zinc oxide surge arrester modified and cleverly installed on the drop-out structure of the drop-out fuse, so that in the case of continuous power, it can be facilitated by the insulating drawbar Ground detection, maintenance and replacement of lightning arresters not only ensure the smooth flow of the line, but also greatly reduce the work intensity and time of power maintenance personnel, especially suitable for places that are not suitable for power outages such as post and telecommunications, airport stations, hospitals, bustling commercial District etc. The other performance of the product is the same as the distribution type arrester. The second-generation drop arrester adds a disconnecter. When an abnormal occurrence occurs in the arrester, the power frequency short-circuit current is used to operate the disconnecter to automatically disconnect the grounding terminal of the disconnecter. It is easy for maintenance personnel to find repairs and replacements in time. Its overturning principle is similar to that of a fuse blown by a fuse and causes a fall of the fuse.

Our company adopts the most advanced RWI2 road drop mechanism from the previous international, which has reliable contact, flexible opening and closing, and advanced accessories of stainless steel cover with composite pillars. It has anti-pollution, fast action, wide current range, and is resistant The advantages of specified current impact and operating load. The product performance meets the national standard GB11032-2000 (IEC60099-4: 1991) "AC gapless metal oxide surge arresters", JB / T8952-2005 "Composite jacket gapless metal oxide surge arresters for AC systems", GB311.1-1997 " Insulation coordination of high-voltage transmission and transformation equipment.

## Model meaning

HY 5 W S - □ / □ DL TB(R)

- TR means with hot melt detach, TB means with hot explosion detacher
- DL stands for landing structure
- Maximum residual voltage kV (peak) at nominal discharge current
- Arrester rated voltage kV (effective value)
- Use place: S-K electricity, R-capacitor, Z-power station
- Structural features: W-no gap
- Nominal discharge current kA
- Composite jacket metal oxide surge arrester

## Normal conditions of use

- Ambient temperature: -40 °C ~ + 40 °C ;
- Altitude is not greater than 3000m;
- Power frequency: 48Hz ~ 62Hz;
- The maximum wind speed does not exceed 35m / S;
- Areas with an earthquake intensity of 7 degrees and below.

# HY5WS-17/50DL-TB

Fall arrester

## Product structure features

- The lightning arrester unit can be loaded and unloaded at any time with power on, and is especially suitable for places where power failure is not suitable.
- With a detach, the lightning arrester unit can automatically fall down and exit the operation to ensure the normal passage of the line.
- Due to the failure of the unit, a clear sign is formed, which is easy to find and timely repair and replacement.
- The lightning arrester adopts a composite jacket, and the drop mechanism adopts a composite pillar, which has good water repellency and strong stain resistance.

## The main technical parameters

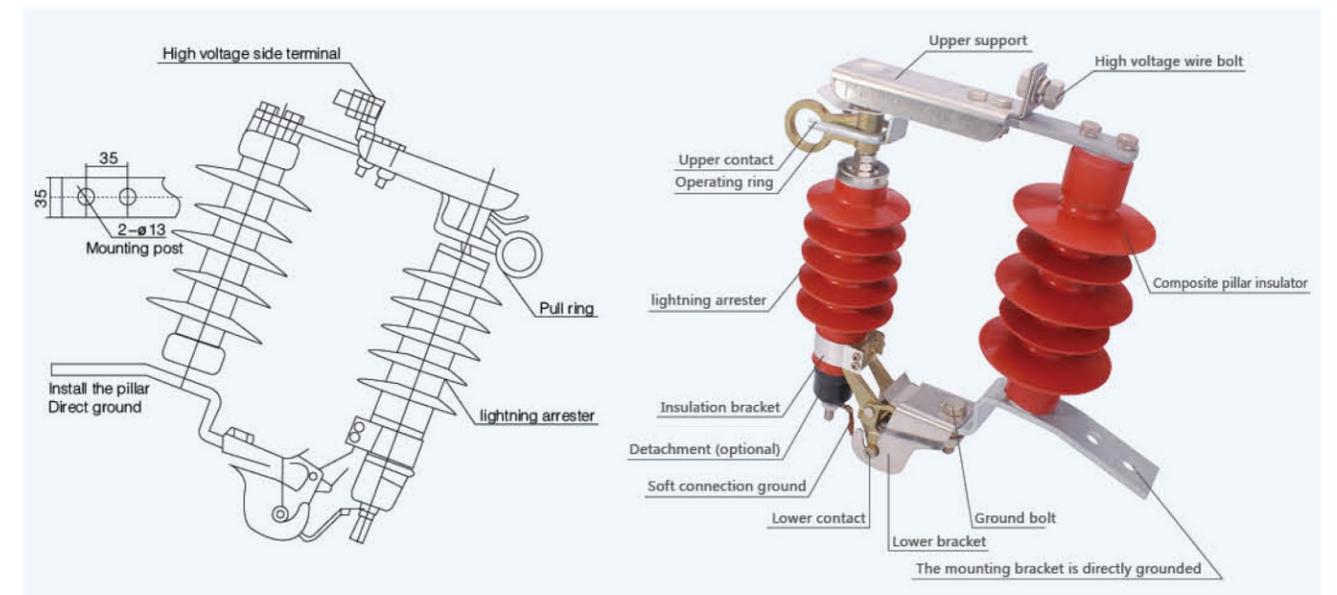
Arrester model	System rated voltage	lightning arrester Rated voltage	Continuous operating voltage	DC reference voltage (U1mA)	0.75U1mA Leakage current	Residual voltage under lightning impulse current	Residual current under operating surge current	Square wave flow capacity (2ms)	High current impact tolerance	Place of use
	kV(r.m.s)			< kV	> μA	> kV	< A	< kA		
HY5WS-10/30DL	6	10	8.0	15.0	30	30	25.6	150	40	配电
HY5WS-10/30DL-TR										
HY5WS-10/30DL-TB										
HY5WS-17/50DL	10	17	13.6	25.0	30	50	42.5	150	40	Distribution
HY5WS-17/50DL-TR										
HY5WS-17/50DL-TB										

Note: The parameters of the arrester are the same as those of the conventional arrester. The above is the power distribution type, which can be replaced with other types such as the capacitor type.

## Installation instructions

- This product should be installed on the circuit of the system and equipment whose rated voltage is consistent with the rated voltage of the arrester.
- Before installation and use, please check the tightness between the arrester components and the drop mechanism to ensure good contact and flexible loading and unloading.
- Adjustment method: turn the copper contact (with pull ring) on the arrester to make the opening pulling force within 6 ~ 10kg, and keep the side of the copper contact pull ring facing outward, and then tighten the nut to make the pull ring difficult to rotate .
- During installation, the angle between the arrester and the vertical line should be 15 ~ 30 degrees, and the distance should be 200mm.

## Product Structure



# YH(HY)

## Composite jacket zinc oxide surge arrester



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### Overview

Lightning arrester is the basis for insulation coordination of various electrical equipment (transformers, reactors, capacitors, generators, motors, PT, CT, circuit breakers, contactors, etc.) of the power system. Insulation index (short-term power frequency withstand voltage, lightning impulse withstand voltage and operating impulse withstand voltage, etc.).

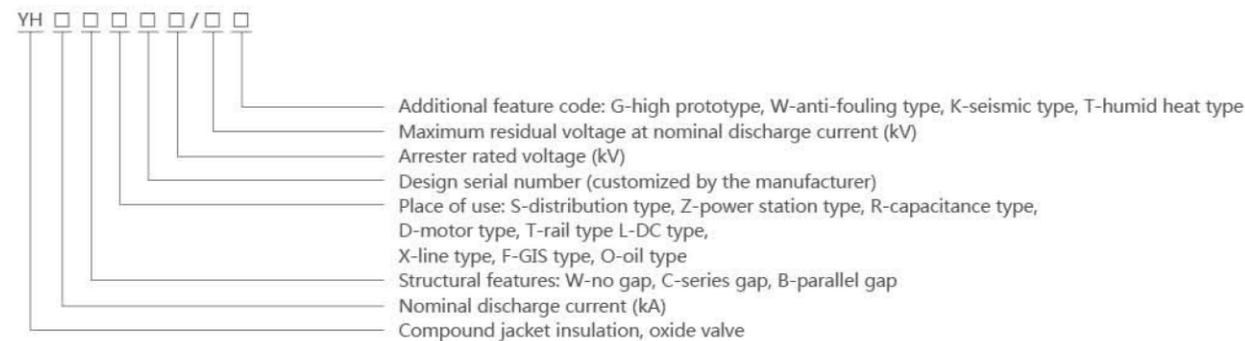
Metal oxide surge arresters, commonly known as "zinc oxide surge arresters", are a new generation of surge arresters that have been popularized internationally in the 1980s from the United States, Japan and other countries, and are the most advanced products among conventional surge arresters. Since the comprehensive introduction of this technology in China in the mid-1980s, through years of practical digestion, the current performance of AC surge arresters of various professional surge arrester factories is comparable to the most advanced products in the United States, Japan, Western Europe and other countries, and has truly met all the requirements of the national standard Products can also meet the requirements of international IEC standards.

The nuclear working element of this product is fired with multi-metal oxide powder mainly made of zinc oxide, which has excellent nonlinear volt-ampere characteristics, fast steep wave response, and large flow capacity. Products with gaps use self-blowing gaps, with a uniform pressure irradiation structure, which reduces the dispersion of discharge and has a small impact coefficient.

The adoption of composite insulation jackets conforms to the development trend of miniaturization, safety and maintenance-free of international power products. Compared with inorganic materials such as traditional ceramics and glass, high-molecular organic composite materials have small size, light weight, pollution-free cleaning, explosion-proof and shockproof.

### Model meaning

This product model definition fully implements the provisions of JB / T8459-2006 "Surge Arrester Product Model Development Method". The specific model descriptions are as follows:



# YH(HY)

## Composite jacket zinc oxide surge arrester

### Physical picture



Low voltage distribution type



3kV S type



3kV R, D type



Low-voltage motor type



3kV Z, D type



6kV S type



6kV Z, D type



10kV S type



10kV R, D type



6kV R, D type



10kV Z, D type



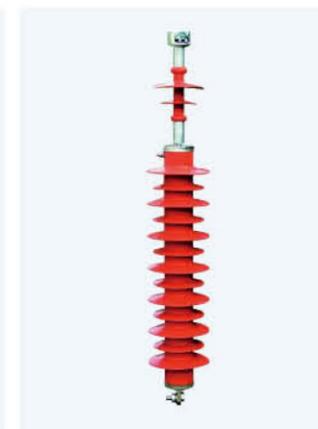
Special generator type (15.75 ~ 20kV)



35kV Z type



30/80 type for neutral point



35kV X type



60/144 type for neutral point

# PRW-12kV

Closed jet fuse

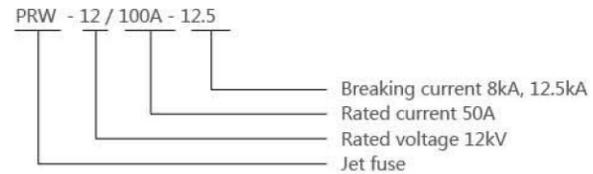


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## Overview

Outdoor high-pressure enclosed spray fuses have excellent weather resistance and stability, while being protected from environmental interference, which can greatly improve system safety. It is especially suitable for areas with extremely high stability requirements, harsh natural environment and severe pollution.

## Model and meaning



## product structure

The outdoor high-pressure closed jet fuse product has a unique design, mainly including domestic high-quality silicone rubber insulating sleeves, the upper end is closed, and the lower end is made of ceramic sleeves and silicone rubber seal design. This product has an insert structure and the upper contact is a kind of Arc surface contact, flexible switch card, and lower contact adopt double-sided card and contact, more contact and safer, this product is used to confirm the operating state on the ground, the fuse is fused or broken when the load-carrying parts can be worn. Through the structure of the center point of the rubber sealing cover, there is an obvious indication at the bottom after the melted part pops up. A reset sleeve, a positioning spring, and a moving contact are also added to the melt tube. Sliding down the tube, the lower contact and the lower moving contact (reset sleeve) do not move, so that the molten tube slides out, so that it can be easily found without delaying maintenance, which brings convenience to the operator, the product is easy to install and any angle operating.

## main feature

- ◆ The body of the closed jet fuse adopts an integrated structure, fully sealed and fully insulated, which fundamentally solves the shortcomings of the insulation and anti-pollution performance of the traditional drop fuse.
- ◆ The upper and lower outlet leads are made of rubber integrated molding, which can effectively resist dust pollution, salt pollution, etc., and has high weather resistance.
- ◆ The ceramic base of the body is designed as a sealing mechanism. The material is made of high weather resistance polyethylene resin and protected by a sealing cover, which has excellent sealing performance and weather resistance.
- ◆ After breaking, the melting tube pops up, and the lower sealing cover falls down, which is easy to identify as the breaking instruction.
- ◆ Jet-type fuse has the function of load current opening and closing, and can realize the operation with load through a simple tool.

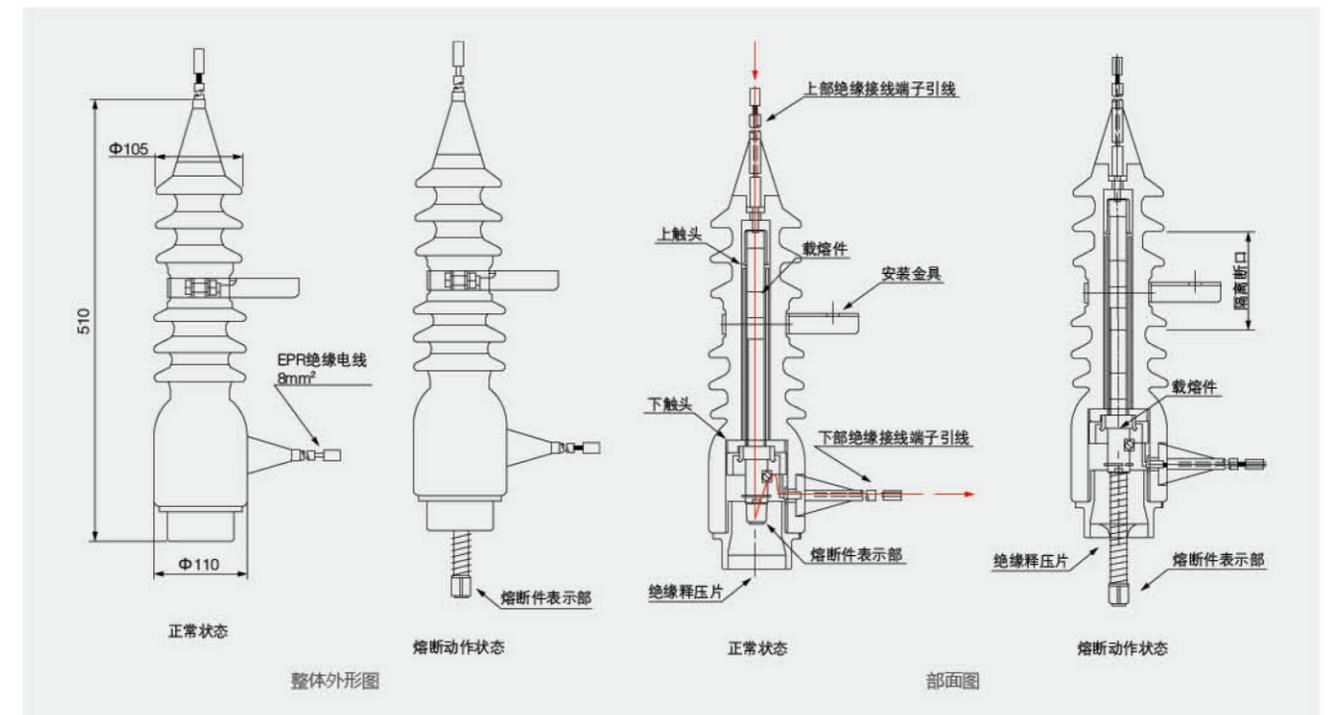
# PRW-12

Closed jet fuse

## The main technical parameters

Project		Parameter	
model		PRW-12/100A-12.5	
Rated current		12kV	
Rated voltage		50A	
Rated breaking current		12.5kA	
Rated frequency		50/60Hz	
Rated current of fuse		6A/10A/15A/20A/25A/30A/40A/50A	
		The fuse characteristics meet the requirements of DL / T640-1997, equivalent to K type	
insulation	Power frequency withstand voltage	relatively	Dry flash 42kV for 1 minute
			Wet flash 30kV for 1 minute
	Lightning impulse withstand voltage	Fracture (without loading parts)	Dry flash 48kV for 1 minute
		relatively	Dry flash 75kV
		Fracture (without loading parts)	Dry flash 85kV
The temperature rises		35 °C or less (use 50A fuse)	
Mechanical stability		300 times	
Break	High Current	12kV / Sym12.5kA 3 times (single, use 6A / 50A fuse)	
	Small current	12kV / 16.2-19.8kA 2 times (single, use 6A fuse)	
Thermal stability current test		1000A / sec 1 time	
Current switching	No-load current switching	No-load current 10 times for 12kV / 630kVA connection transformer	
	Charging current switching	12kV 1A 10 times	
	Load current switching	12kV	50A 15 times 2.5A 15 times 65A 5 times
Tensile strength of insulated leads and terminals		200N does not fall off	
Safety (after strength test)		18kV 1 minute without flashover	
Dimensions		63 × 58 × 16	
Pollution level		National Standard Level 3	
weight		About 23kg / group	

## Outline and installation dimensions (mm)



# RW12

## Drop Fuse



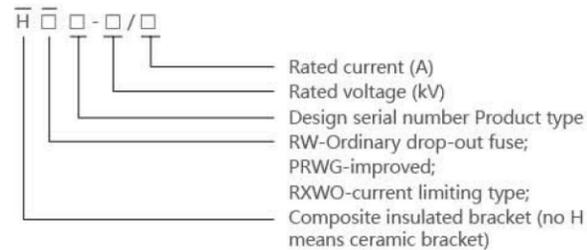
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### Overview

The drop-out fuse and the load drop-out fuse are outdoor high-voltage protection appliances. It is installed on the high-voltage side of the distribution transformer or the branch line of the distribution line, and is used as a short circuit, overload protection and split and combined load current for the transformer and line. The drop-out fuse is composed of an insulating bracket and a fuse tube. The static contacts are installed at both ends of the insulating bracket, and the moving contacts are installed at both ends of the fuse tube. The fuse tube is composed of an inner arc suppression tube and an outer layer. Composed of phenolic paper tube or epoxy glass cloth tube. The load-dropping fuse enhances the elastic auxiliary contact and arc-extinguishing cover to divide and close the load current.

During normal operation of the drop-out fuse, the fuse tube is tensioned by the fuse to form a closed position. When a fault occurs in the system, the fault current quickly blows the fuse and forms an arc. The arc extinguisher tube is heated by the arc and decomposes a large amount of gas, causing a high pressure in the tube and forming a vertical blow along the pipe. And extinguished. After the fuse is blown, the lower moving contact loses tension and turns down, locking the machine, releasing the fuse tube, and the fuse tube falls, forming an obvious breaking position. When the load needs to be pulled, the contact is pulled away with the insulating rod, at this time the active and static auxiliary contacts are still in contact, and the contact is continued to be pulled with the insulating rod, the auxiliary contacts are also separated, and an arc is generated between the auxiliary contacts. It is elongated in the slit of the hood, and at the same time, the arc hood produces gas. When the current crosses zero, the arc is extinguished.

### Model and meaning



This product model is compiled in accordance with the provisions of JB / T8321-1996 "AC high voltage fuse model compilation method"

### Operating environmental conditions

- ◆ Ambient temperature: not higher than +40 °C, not lower than -30 °C;
- ◆ Altitude: no more than 1000m; (above 1000m can be revised according to GB311.1-1997);
- ◆ Power frequency: 50 ± 2Hz;
- ◆ Earthquake intensity: 7 degrees and below;
- ◆ Maximum wind speed: 35m / s.

### Purpose and implementation standard

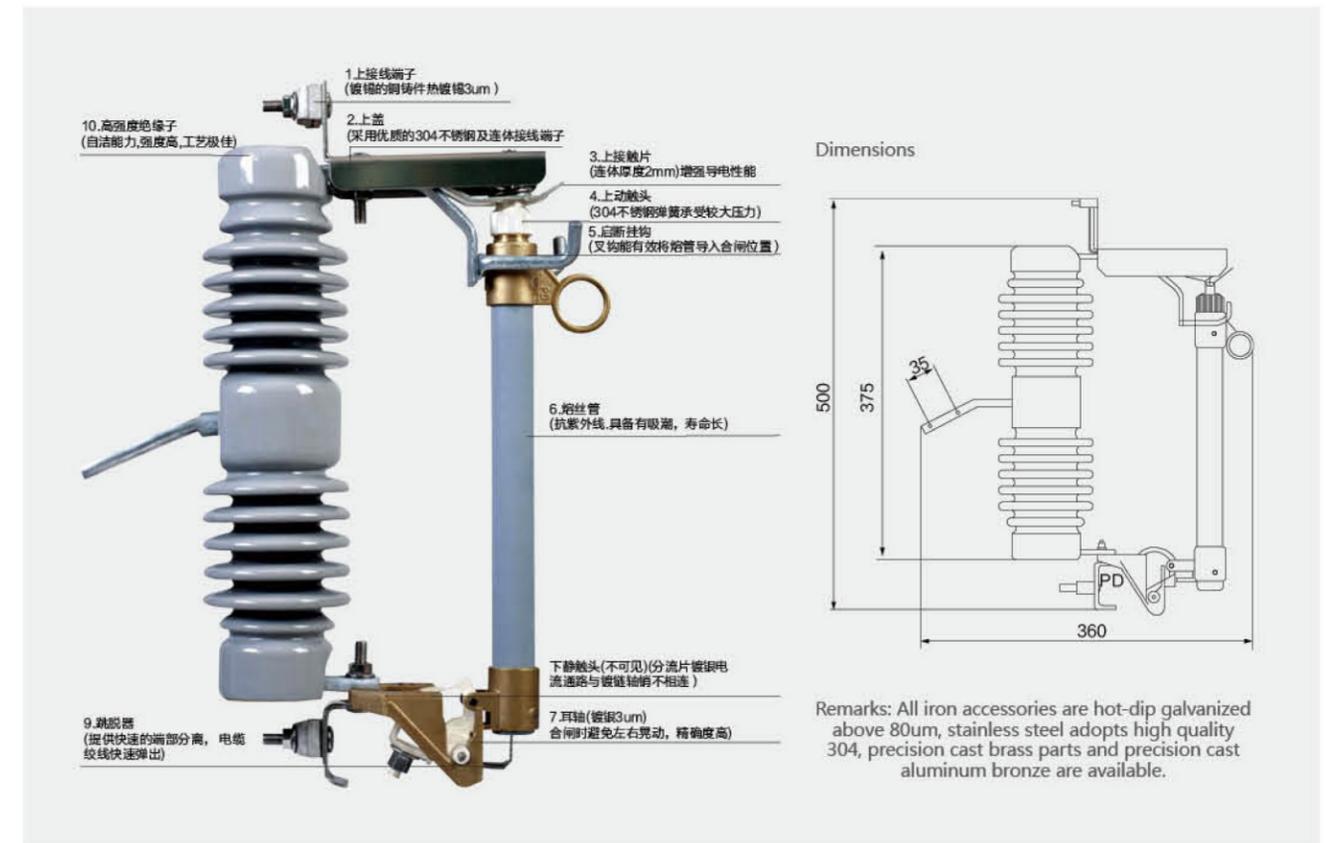
This product is used in the branch line of 10 ~ 35kV distribution line and the primary side of the distribution transformer. It is used for overload and short circuit protection, and divides the rated load current.

This product model is compiled according to the provisions of JB / T8321-1996 "AC high-voltage fuse model compilation method", and the product parameters are implemented according to the standard of GB15166.3-1994 "AC high-voltage fuse jet-type fuse". The important parameters and configuration methods not clearly defined in this standard shall be revised and implemented in accordance with the requirements of JB / DQ2139-1986 "Temporary Technical Conditions for 10 ~ 35kV Outdoor AC High-voltage Drop-out Fuse".

# RW12-15

## Drop Fuse

### RW12-15 drop-out fuse



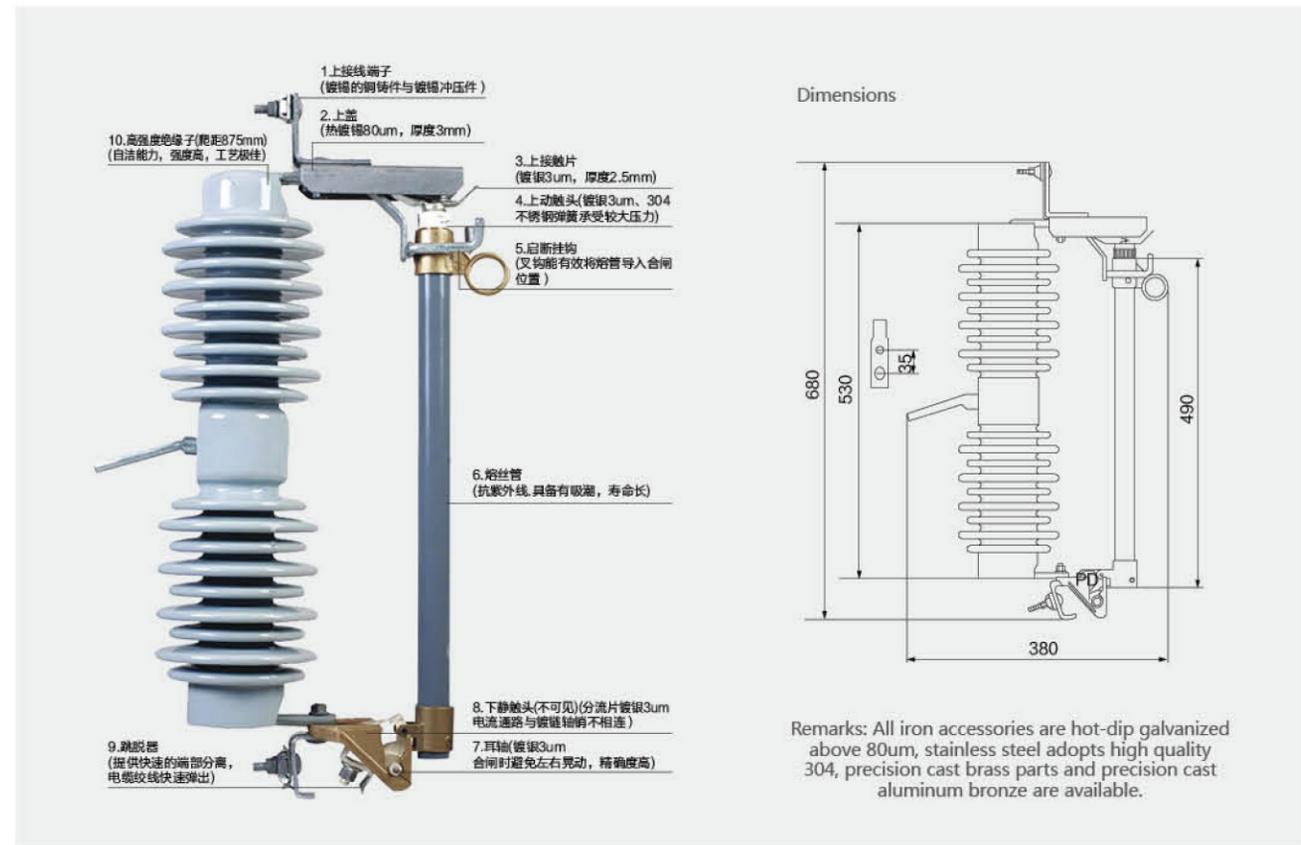
### The main technical parameters

Project	RW12	RW12
Rated voltage (kV)	12(15)	12(15)
Rated current (A)	100	200
Rated frequency (Hz)	50	50
Base rated current (A)	100	200
Rated short-circuit breaking current (kA / A)	8/100, 12.5/100, 16/100	12.5/200, 16/200
Power frequency withstand voltage test (kV)	45/55	45/55
Power frequency withstand voltage dry test (kV)	50/55	50/55
Rated lightning impulse voltage (kV)	125	125
Creepage distance (mm / kV)	330	330
Mechanical life (times)	500	500
Altitude (mm)	1000	1000
Ambient temperature (°C)	-40°C ~ +70°C	-40°C ~ +70°C
Dimensions (cm)	50×36×12.5	50×36×12.5

# RW12-35

## Drop Fuse

### RW12-35 drop-out fuse



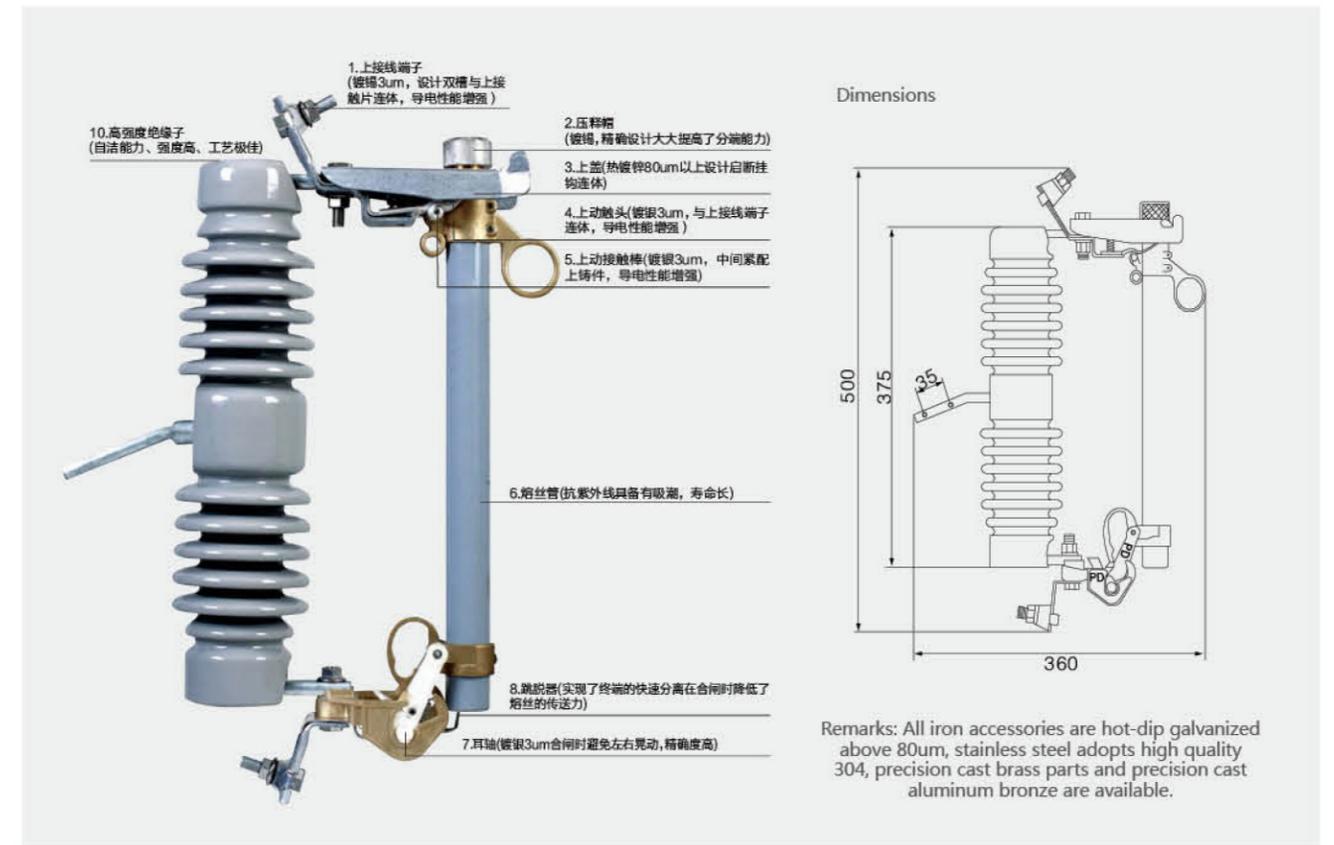
### The main technical parameters

Project	RW12	RW12
Rated voltage (kV)	35	35
Rated current (A)	100	200
Rated frequency (Hz)	50	50
Base rated current (A)	100	200
Rated short-circuit breaking current (kA / A)	12.5/100, 16/100	12.5/200, 16/200
Power frequency withstand voltage test (kV)	85/95	85/95
Power frequency withstand voltage dry test (kV)	90/95	90/95
Rated lightning impulse voltage (kV)	170	170
Creepage distance (mm / kV)	875	875
Mechanical life (times)	500	500
Altitude (mm)	1000	1000
Ambient temperature (°C)	-40°C ~+70°C	-40°C ~+70°C
Dimensions (cm)	68×38×16	68×38×16

# RW33-15

## Drop Fuse

### RW33-15 drop-out fuse



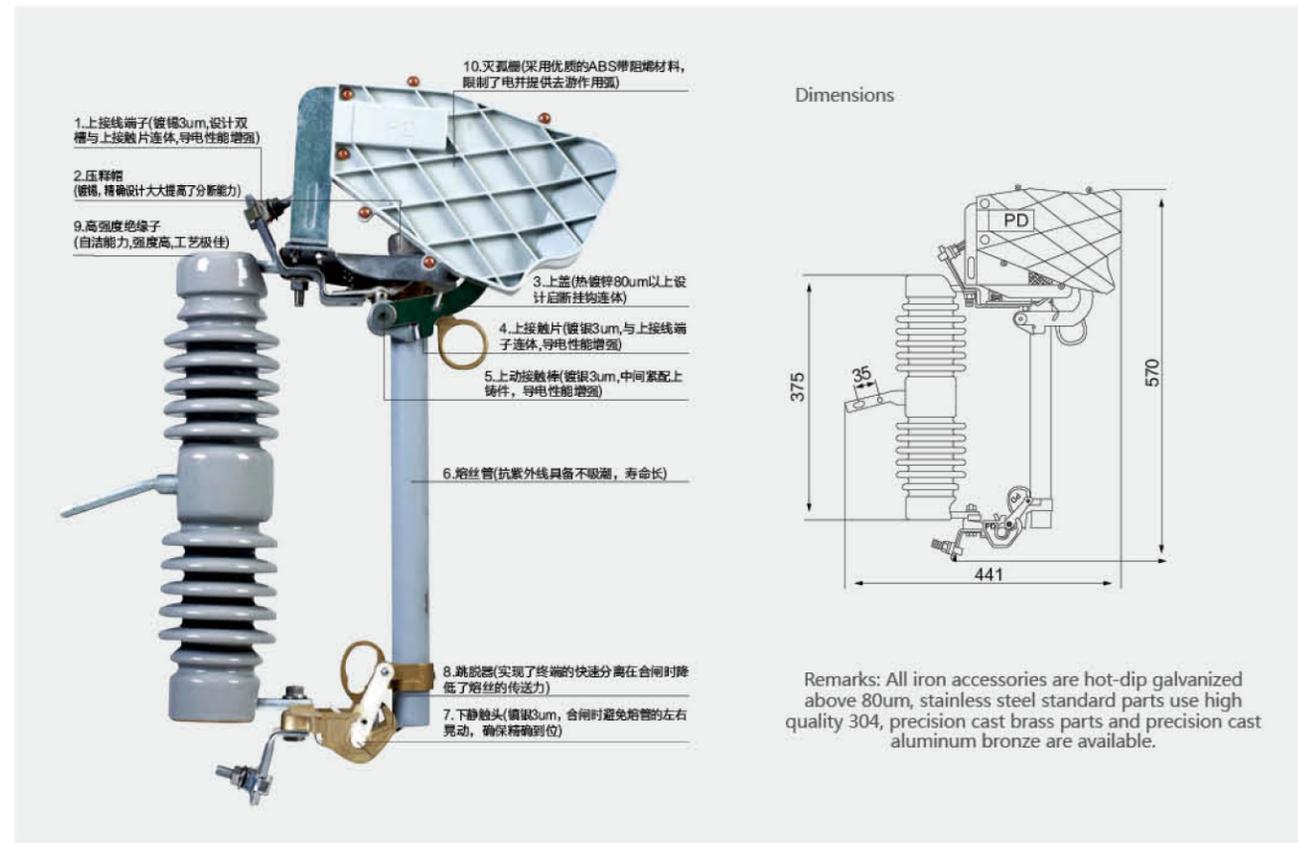
### The main technical parameters

Project	RW33	RW33
Rated voltage (kV)	12(15)	12(15)
Rated current (A)	100	200
Rated frequency (Hz)	50	50
Base rated current (A)	100	200
Rated short-circuit breaking current (kA / A)	12.5/100, 16/100	12.5/200, 16/200
Power frequency withstand voltage test (kV)	45/55	45/55
Power frequency withstand voltage dry test (kV)	50/55	50/55
Rated lightning impulse voltage (kV)	125	125
Creepage distance (mm / kV)	330	330
Mechanical life (times)	500	500
Altitude (mm)	1000	1000
Ambient temperature (°C)	-40°C ~+70°C	-40°C ~+70°C
Dimensions (cm)	50×36×12.5	50×36×12.5

# RW12-15F

## Drop Fuse

### RW12-15F drop-out fuse

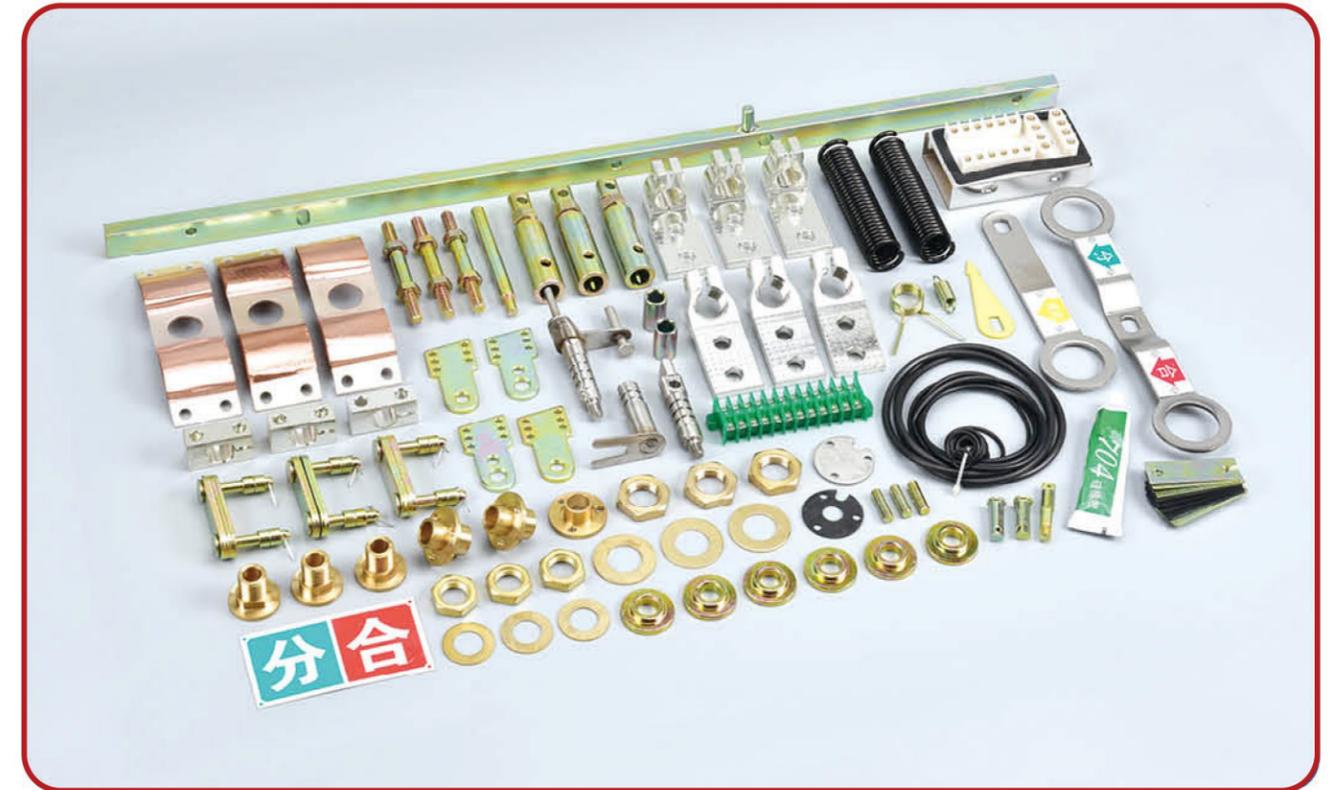


### The main technical parameters

Project	RW12	RW12
Rated voltage (kV)	12(15)	12(15)
Rated current (A)	100	200
Rated frequency (Hz)	50	50
Base rated current (A)	100	200
Rated short-circuit breaking current (kA / A)	12.5/100, 16/100	12.5/200, 16/200
Power frequency withstand voltage test (kV)	45/55	45/55
Power frequency withstand voltage dry test (kV)	50/55	50/55
Rated lightning impulse voltage (kV)	125	125
Creepage distance (mm / kV)	330	330
Mechanical life (times)	500	500
Altitude (mm)	1000	1000
Ambient temperature (°C)	-40°C ~ +70°C	-40°C ~ +70°C
Dimensions (cm)	60×40×15	60×40×15

# ZW32-12/630-20

## Vacuum circuit breaker accessories



Copper outlet	Copper outlet	Soft link	Conductive clip
Junction Box	Drive square shaft		

# ZW32-12/630-20

Vacuum circuit breaker accessories

Pin $\Phi 10 \times 35$	Rod pin	Tie sleeve assembly	Double-ended screw
Energy storage shaft	Reset screw	Opening spring hanging shaft	Indicating shaft for opening and closing
Iron nut M20 x 1.5	Copper nut M24 x 2	Copper gasket $\Phi 24$	Copper gasket $\Phi 22$
限位套	导向套	三孔铜套 (短)	三孔铜套 (长)

# ZW32-12/630-20

Vacuum circuit breaker accessories

Opening and closing operation shaft	Connecting plate assembly	Single / double hole spring hanging board	Small tension spring / small torsion spring
Split pointer	Adjusting the gasket assembly	Split word plate	704 silicone rubber
Open round cover	Open round leather pad	Seal ring assembly	Overtravel compression spring
Terminals	Opening spring	Energy storage handle / opening and closing handle	

ZW32-12G/630-20  
Vacuum circuit breaker accessories



Spring seat post	Screw M12 × 120	Adjusting screw
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Chain plate welding	Isolation frame
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ZW32-12G/630-20  
Vacuum circuit breaker accessories

Post insulator	Tie rod	Contact pressure spring
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Interlocking connector	Butterfly contact	Opening and closing pressure spring
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Spring cap	Scroll wheel	Stainless steel cover
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Interlocking arm	Interlocking lever	Dust cover
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ZW32-12G/630-20  
Vacuum circuit breaker accessories

Pin $\Phi 10 \times 20$	Pin $\Phi 8 \times 25$	Pin $\Phi 10 \times 35$
		
Elastic cylindrical pin $\Phi 8 \times 35$	Elastic cylindrical pin $\Phi 5 \times 35$	Open lock $3 \times 25$
		
Open round cover	Open round leather pad	Oil seal
		
标准配件包	Isolated clapper board	
		

ZW20-12/630-20  
Vacuum circuit breaker accessories

Soft link	Conductive rod	Aerial plug	Opening pressure spring
			
Opening lever	Long cantilever	Hexagonal spindle	
			
Hex elbow arm (height 21)	Hex elbow arm (height 23)	Mechanism boom	Hexagon straight arm
			
Guide rod	Adjusting screw	Overtravel compression spring	support
			

ZW20-12/630-20  
Vacuum circuit breaker accessories

Three-hole flange (Φ12)	Three-hole flange (Φ16)	Conductive clip	Bracket gasket
Spring seat	Copper gasket (Φ22)	Copper nut M22 × 1.5	Non-return gasket
Copper sleeve (height 18)	Thickened copper sleeve	Hexagon bushing (height 18)	
Spindle fixing plate	Round pressure plate	Bearing 6000Z	

ZW20-12/630-20  
Vacuum circuit breaker accessories

Pin Φ10 × 25	Pin Φ10×35	Pin Φ12×74
Split pointer	Energy storage pointer	Seven-word cantilever
Pin Φ8 × 30	Pin Φ10×53	Oil buffer
Scroll wheel	Connection terminal	Nylon sleeve (high 12)

ZW20-12/630-20  
Vacuum circuit breaker accessories

Flat key	Spring seat	Indicating shaft for opening and closing
		
Nylon sleeve (height 17)	24-pin connection terminal	Silicone grease
		
Opening and closing handle	Energy storage handle	705 silicone
		
Mica label sticker	Seal ring assembly	Standard accessory kit
		

ZW20-12G/630-20  
Isolation switch accessories

Short compression spring	Insulation tie rod	Post insulator
		
Copper blade	Isolation frame	
		

# ZW20-12G/630-20

Isolation switch accessories

Spring cap	Scroll wheel	Install seat cover
		
Stainless steel cover	Copper bearing	Copper Knife Block
		
Interlocking connector	Spring seat post	Adjusting screw
		
Long compression spring	Interlocking bracket	Silicone rubber sheath
		

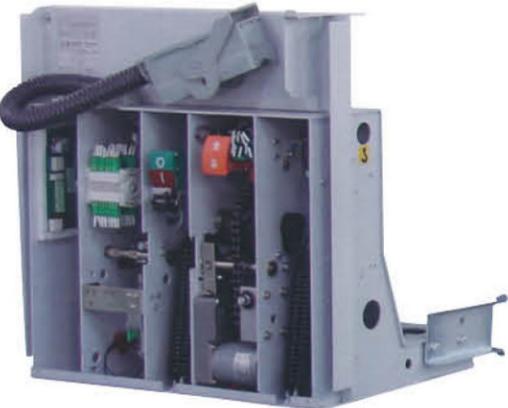
# ZW20-12G/630-20

Isolation switch accessories

Pin $\Phi 8 \times 25$	Pin $\Phi 10 \times 35$	Interlocking connector
		
Open lock $3 \times 25$	Elastic cylindrical pin $\Phi 8 \times 35$	Elastic cylindrical pin $\Phi 5 \times 35$
		
Indicating shaft for opening and closing	Seven-word cantilever	Indicating pin for opening and closing
		
Standard parts package	Isolation handle	
		

# VS1-12

Indoor vacuum circuit breaker accessories

VS1 agency		VS1-12 five-hole insulation cylinder		VS1-12 high current insulation cylinder	
					
					
24 pieces of VS1-12 contacts	30 pieces of VS1-12 contacts	36 pieces of VS1-12 contacts	48 pieces of VS1-12 contacts	64 pieces of VS1-12 contacts	84 pieces of VS1-12 contacts
					
VS1-12 630A contact arm	VS1-12 1250A contact arm	VS1-12 1600A contact arm	VS1-12 2000A contact arm	VS1-12 2500 ~ 3150A Tentacle	VS1-12 4000A contact arm
					

# VS1-12

Indoor vacuum circuit breaker accessories

VS1-12 standard					
					
VS1-12 standard	VS1-12Φ20 conductive clip	VS1-12 four-hole insulation tube installation	VS1-12 four-hole insulation tube installation	vacuum tube 175mm Insulation tube four holes installation	
					
VS1-12 with vacuum tube 235mm or 225mm	VS1-12 soft connection	VS1-12 high current 1600 ~ 2000A	VS1-12 high current 1600 ~ 2000A	VS1-12 high current 1600 ~ 2000A	
					
VS1-12 high current 1600 ~ 2000A	VS1-12 high current	VS1-12 high current 4000A	VS1-12 high current 4000A	VS1-12 high current 4000A	
					
VS1-12 high current 4000A	VS1-12 high current 4000A	VS1-12 high current 4000A	VS1-12 fixed high current outlet 2000 ~ 4000A	VS1-12 high current 2000 ~ 4000A	
					

# HXGN15-12(VS1)

Unit Type Ac Metal-Enclosed Ring Network Switchgear



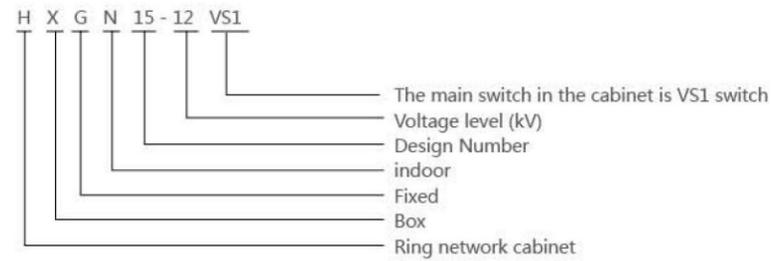
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## Overview

HXGN15-12 (VS1) box-type fixed metal-enclosed ring network switchgear (hereinafter referred to as ring network cabinet) is a complete set of power distribution device for 12KV three-phase AC 50Hz power supply system.

The switchgear is mainly indoor high-voltage vacuum circuit breaker, and the whole cabinet is air-insulated. It can be widely used in the construction and transformation of urban power grids. The power distribution system is used to receive and distribute electrical energy. It is suitable for distribution automation, compact and expandable metal-enclosed switchgear, mainly used for ring network power supply and terminal power supply, and is also suitable for installation in pre-installed substations.

## Model and meaning



## Operating environmental conditions

- ◆ Ambient temperature: upper limit + 40 °C , lower limit -25 °C ;
- ◆ Altitude: The altitude does not exceed 2000m;
- ◆ Relative temperature: daily average value is not greater than 95%; monthly average value is not greater than 90%;
- ◆ Surrounding environment: the surrounding air is not significantly polluted by corrosive gas, flammable gas, water vapor, etc. ;
- ◆ No frequent severe vibration.

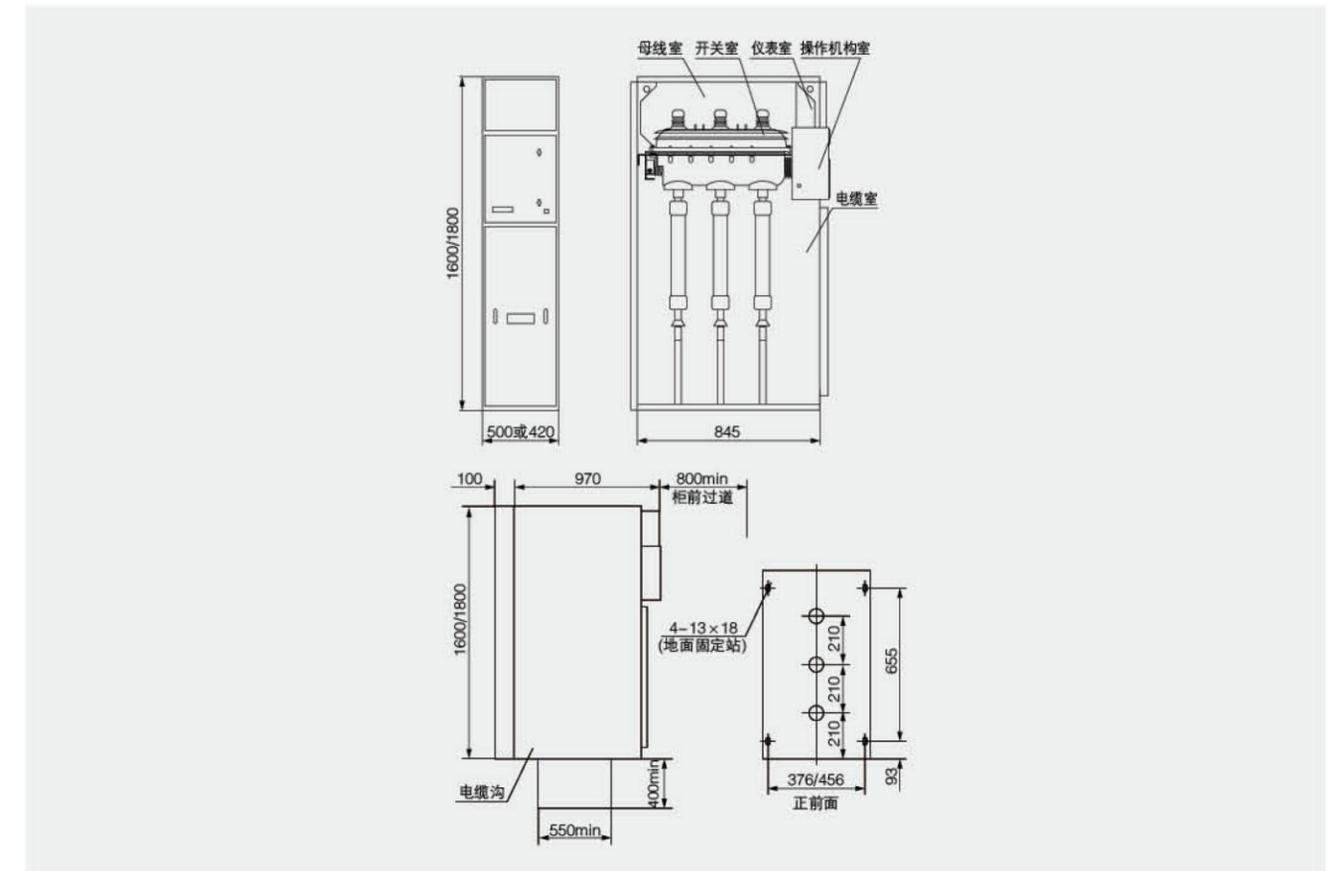
# HXGN15-12(VS1)

Unit Type Ac Metal-Enclosed Ring Network Switchgear

## The main technical parameters

Project	Unit	Parameter
Rated voltage	kV	12
Rated frequency	Hz	50
Circuit breaker cabinet rated current	A	630,1250
Circuit breaker cabinet maximum short-time withstand current	kA/S	40 , 4S
Rated peak withstand current of main circuit and ground circuit	kA	50/80
Rated short-circuit making current of main circuit and ground circuit	kA	50/80
Full capacity breaking number	次	30
Rated short-circuit breaking current	kA	20 , 25 , 31.5 , 40
Mechanical life	次	2000/10000

## Outline and installation dimensions (mm)



# KYN28-12

## New Armored Removable Ac Metal-Enclosed Switchgear



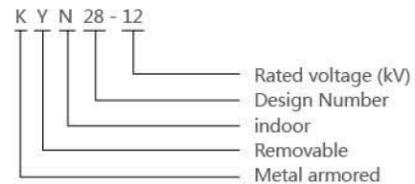
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### Overview

KYN28-12 (Z) (GZS1) armored removable AC metal enclosed switchgear (hereinafter referred to as "switching device") It is suitable for three-phase AC 50Hz power system, used to receive and distribute electrical energy and control the circuit Protection and monitoring.

This product meets the standards: GB3906 "3 ~ 35kV AC metal enclosed switchgear", GB / T11022 "High-voltage switchgear and control equipment standard common technical requirements", IEC60298 "Rated voltage 1kV and above AC metal enclosed switchgear and control equipment"

### Model and meaning



### Operating environmental conditions

- ◆ Ambient air temperature: maximum temperature + 40 °C , minimum temperature -15 °C ;
- ◆ Relative humidity: Daily average relative humidity: ≤ 95%, daily average water vapor pressure does not exceed 2.2KPa; monthly average relative humidity ≤ 90%; monthly average water vapor pressure does not exceed 1.8KPa;
- ◆ Altitude: ≤ 1000m;
- ◆ Earthquake intensity: no more than 8 levels;
- ◆ The surrounding air should not be obviously polluted by corrosive or combustible gas, water vapor, etc .;
- ◆ No severe vibration place;
- ◆ When using under normal conditions beyond GB3906, the user and the company shall negotiate.

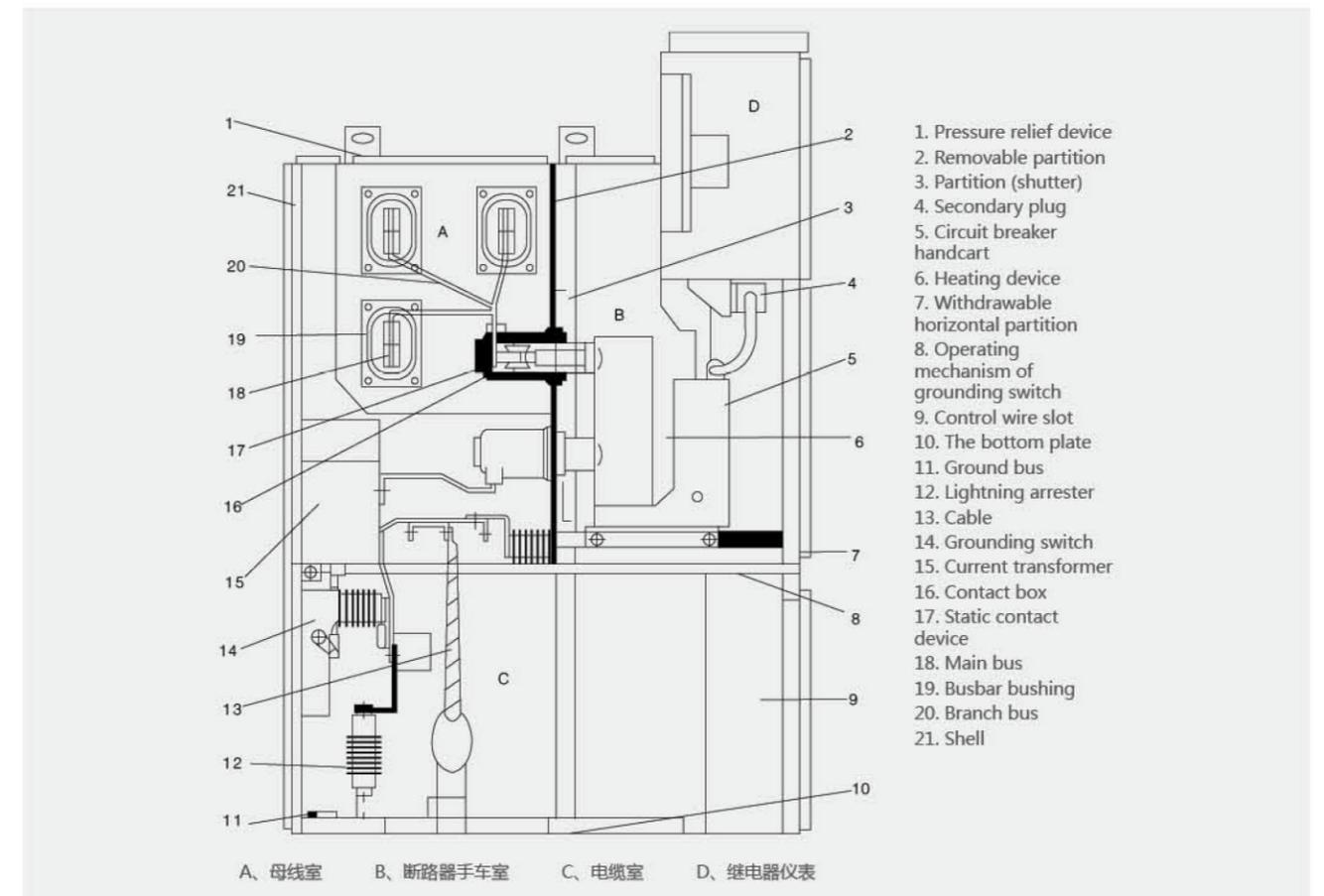
# KYN28-12

## New Armored Removable Ac Metal-Enclosed Switchgear

### The main technical parameters

Project	Unit	Parameter	
Rated voltage	kV	3.6, 7.2, 12	
Rated frequency	Hz	50	
Circuit breaker rated current	A	630, 1250, 1600, 2000, 2500, 3150	
Switching device rated current	A	630, 1250, 1600, 2000, 2500, 3150	
Rated short-time withstand current (4S)	kA	20, 25, 31.5, 40	
Rated peak withstand current (peak value)	kA	50, 63, 80, 100	
Rated short-circuit breaking current	kA	20, 25, 31.5, 40	
Rated short-circuit making current (peak value)	kA	50, 63, 80, 100	
Rated insulation level 1min power frequency withstand voltage	Between poles, between poles and earth	kV	24, 32, 42
	Break	kV	24, 32, 42
Lightning shock Withstand voltage (peak)	Between poles, between poles and earth	kV	40, 60, 75
	Break	kV	46, 70, 85
Protection level		The housing is IP4X, and the compartment and circuit breaker door are IP2X when opened.	

### Schematic diagram of switchgear structure



# XGN66-12

Box type fixed AC metal-enclosed switchgear



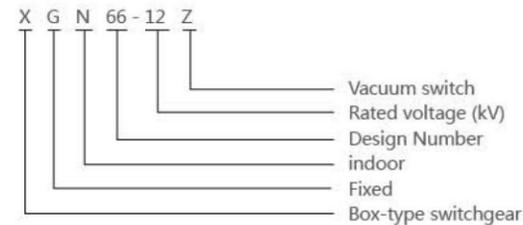
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## Overview

XGN66-12 (Z) box-type fixed AC metal-enclosed switchgear (hereinafter referred to as switchgear) is our company's new generation of high-voltage electrical appliances, which meets the national standard GB3906 "-35kV AC metal-enclosed switchgear" DLT404 "Indoor AC The requirements of "Technical Conditions for Ordering High-Voltage Switchgears" also meet the international standard IEC60298 "Requirements for AC Metal-enclosed Switchgear and Control Equipment Above 1kV and Below 52kV."

This product absorbs advanced foreign technology. It is small in size, only 50% of the volume of ordinary switchgear. The circuit breaker has high reliability and good performance; the "five-proof" interlocking mechanism is reliable and simple. The switchgear is an indoor complete set of 3.6, 7.2, 12kV three-phase alternating current 50Hz single bus section, which is used to receive and distribute electrical energy. It also has the functions of controlling, protecting, and monitoring circuits. It can be used in various types of power plants, substations, industrial and mining enterprises, high-rise buildings, and other places. It can also be used in combination with ring network cabinets in switching stations.

## Model and meaning



## Operating environmental conditions

- ◆ Altitude does not exceed 1000m;
- ◆ Ambient temperature: -25 °C ~ + 40 °C, the average temperature within 24 hours does not exceed + 35 °C ;
- ◆ The horizontal inclination is not more than 3° ;
- ◆ The earthquake intensity does not exceed 8;
- ◆ No violent vibration and shock and explosion hazards.

## Structural features

- ◆ The cabinet body is welded with high-quality angle steel;
- ◆ The circuit breaker room is located in the middle (lower) part of the cabinet, which is convenient for installation, debugging and maintenance. Equipped with VS1 circuit breaker as standard, and equipped with pressure release channel to ensure personal safety;
- ◆ Adopting advanced and reliable rotary isolating switch, it can safely enter the circuit breaker room for maintenance when the main bus is charged;
- ◆ The protection grade of the whole cabinet is IP2X;
- ◆ It is equipped with a reliable and functional mandatory mechanical locking device, which can easily and effectively meet the requirements of "five preventions";
- ◆ Has a reliable grounding system;
- ◆ Observation windows are installed on the door to clearly observe the working status of the components in the cabinet;
- ◆ The locking mechanism of the operating mechanism is the same as the JSXGN locking mechanism used in the XGN2-12 cabinet, which is simple, reliable, convenient and practical;
- ◆ Incoming and outgoing cable is lower than the front of the cabinet, which is convenient for users to connect.

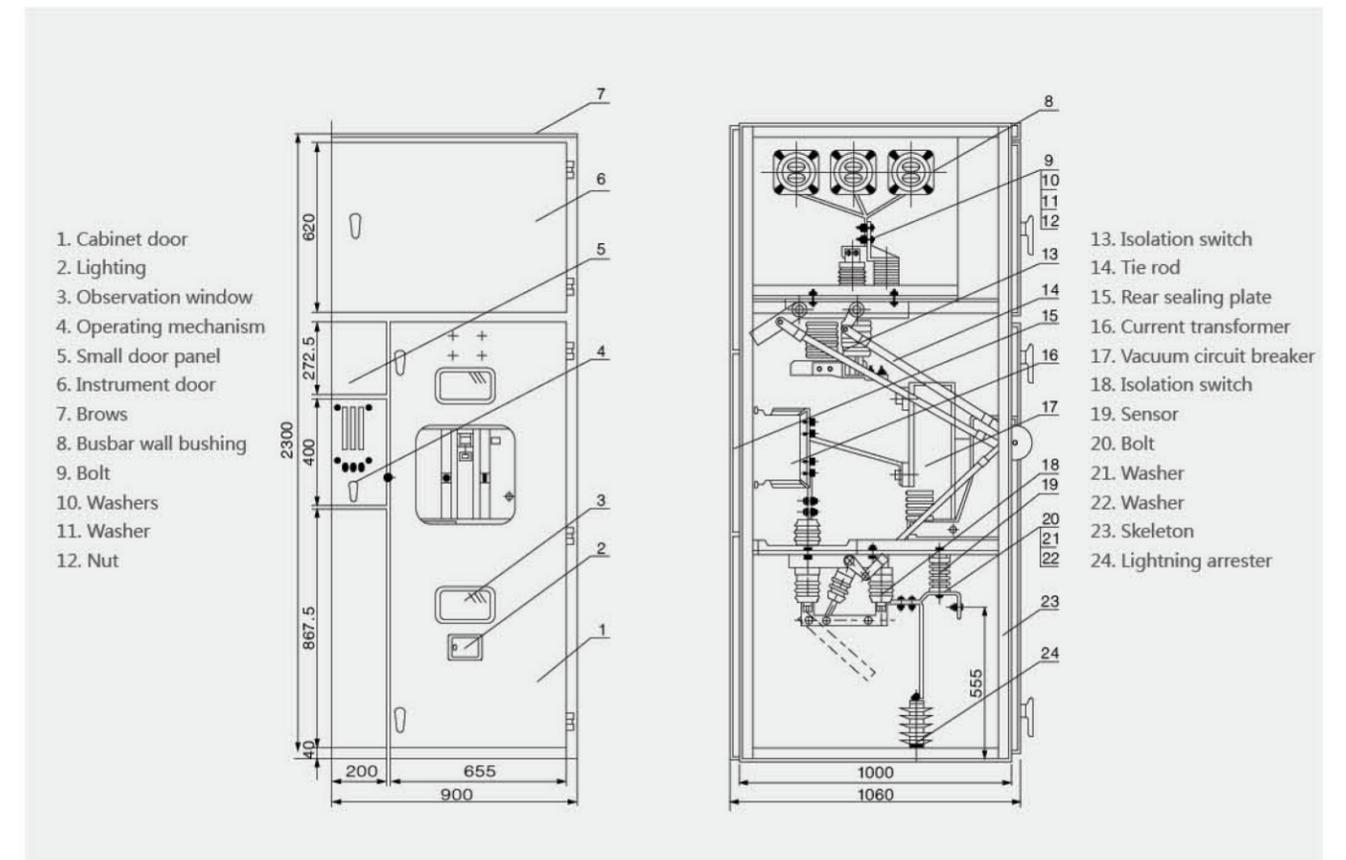
# XGN66-12

Box type fixed AC metal enclosed switchgear

## The main technical parameters

Project	Unit	Parameter
Rated voltage	kV	3.6 , 7.2 , 12
Rated power frequency withstand voltage	kV	On the ground, alternately: 42; fracture: 48
Rated lightning impulse withstand voltage	kV	On the ground, alternately: 75; fracture: 85
Rated frequency	Hz	50
Rated current	A	630 , 1250
Rated short-circuit breaking current (effective value)	kA	20 , 25 , 31.5
Rated short-circuit making current (peak value)	kA	50 , 63 , 80
Rated dynamic stable current (peak value)	kA	50 , 63 , 80
Rated thermal stability current 4s (effective value)	kA	20 , 25 , 31.5
Protection level		IP2X
Dimensions (width × depth × height)	mm	900×1000×2300
weight	kg	≈ 600

## Schematic diagram of switchgear layout



# YB □ -12/0.4

Outdoor prefabricated substation (European style)



# YB □ -12

Prefabricated substation (American)

