

Lead the Globe

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Company Profile

Zhejiang Leaglo Electrical Co., Ltd. comprise of 2 companies which are focus on high-low voltage electrical and switches used for industrial automation equipments. Leaglo high-low voltage electrical company is a leading manufacturer in China which specialized in vacuum circuit breaker, load break switch, intelligent automation equipment for power grid, intelligent prepayment device for power grid, intelligent high voltage switchgear, outdoor AC high voltage disconnect switch and indoor load break switch. With more than 15 years' experience in high-low voltage electrical field, Leaglo enjoyed a good reputation in domestic and abroad, and now Leaglo Company has mature craft, advanced technology and strong technical power, which enable us to have comprehensive ability on researching, developing, designing and production, and present obvious advanced ability and profession.

Leaglo has been awarded Star Enterprise, Advanced Enterprise, Credit Enterprise, Science & Technology Enterprise, Municipal Enterprise Technology Research & Development Center by our national or local government. Our company and products have been listed in list of recommended major equipment products for National Urban & Rural Power Grid Construction and Transformation and Manufacturers, list of recommended products for Rural Power Grid Construction and Transformation Projects and Manufacturers and Standard Member Units of China Electric Power Technology Collaboration. Leaglo trademark is well-known in domestic and abroad.

Leaglo Company has passed ISO 9001:2008 quality management system. Most of the products have been CCC and CE certified. A few items have been got KEMA certificates.

Regarding "Lead the Globe" as our everlasting topic, we are always focus on "Top Quality, High Reputation, Excellent Service". Leaglo insists on developing business with science & technology, researching and developing new products continuously. Leaglo wishes to cooperate with clients from all over the world to create brilliant future.



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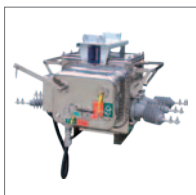
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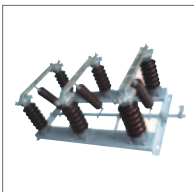
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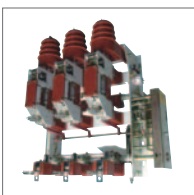
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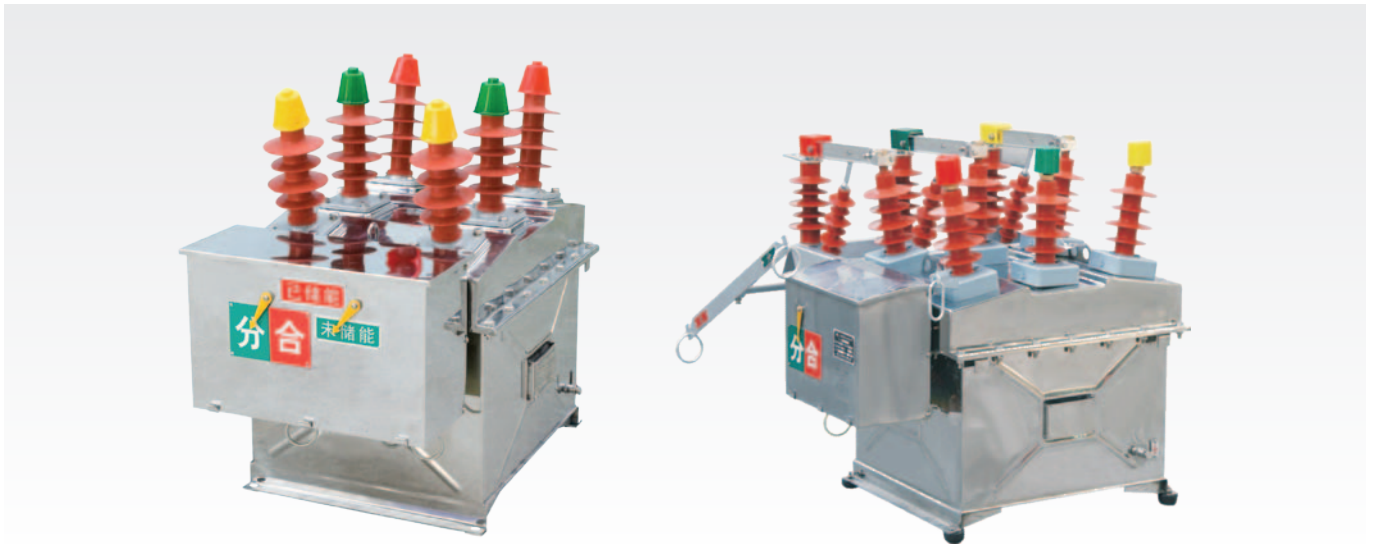
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ZW8-12 Outdoor HV AC Vacuum Circuit Breaker



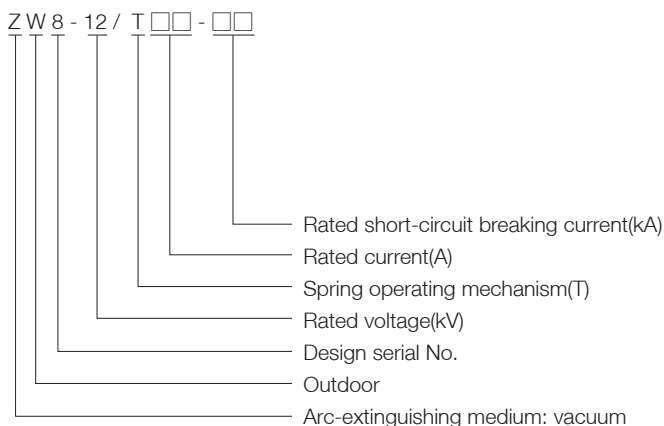
Summary

ZW8-12 outdoor HV AC vacuum circuit breaker is used to make and break load current, overload current and short-circuit current in the power system with rated voltage 12kV, three-phase AC 50/60Hz. It is applicable to substations, industrial and mining enterprises, urban and rural electric power networks, especially to the occasions with frequent operation and automatic power distribution networks for power network control and equipment protection. It can be also used as a sectionalizing switch after equipped with a disconnect switch, thus the installation space and working hours can be saved more. The product conforms to the standards of IEC62271-100 & GB1984: AC high voltage circuit breaker, IEC60694 & GB/T11022: HV general technical requirement of switch and control apparatus.

Ambient conditions

1. Altitude: $\leq 3000\text{m}$;
2. Ambient temperature: $-40\text{ }^{\circ}\text{C} \sim +40\text{ }^{\circ}\text{C}$; diurnal temperature range $\leq 25\text{ }^{\circ}\text{C}$;
3. Wind speed: $\leq 35\text{m/s}$;
4. Earthquake intensity: \leq grade 8;
5. Relative humidity: monthly average $\leq 90\%$; daily average 6. $\leq 95\%$;
6. Ice thickness: $\leq 10\text{mm}$
7. Pollution degree: \leq IV (GB5582);
8. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration

Model



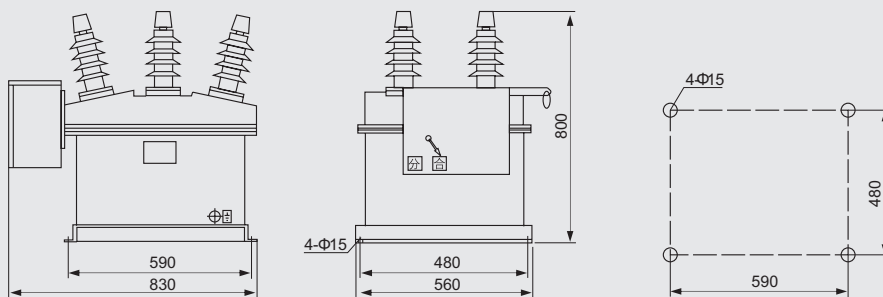
Main function features

1. The product can be equipped with an external isolator according to users' requirement;
2. The operating mechanism equipped with an anti-trip device and counter can be convenient for the users to accurately know the operating life of the product;
3. Iron or stainless steel body, manual or electric mechanism is available for free choice;
4. The product can be equipped with 3-sectional type anti-surge device and quick-breaking protection device;
5. External PT and controller can realize automatic recloser function. Reclosing times can be set according to users' requirement;
6. The product can be equipped with simple remote control device to realize remote operation;
7. The product can be provided with metering tank to realize electricity consumption monitoring.

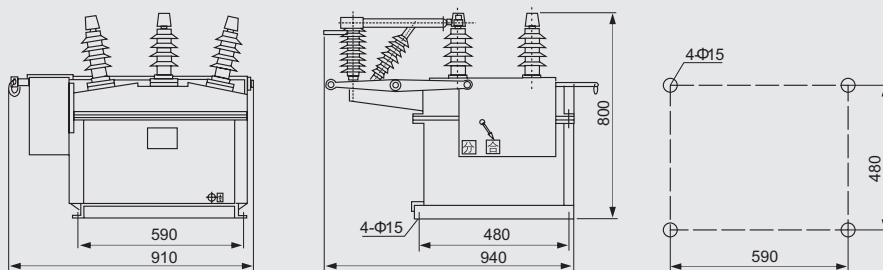
Technical specification

NO.	Item			Unit	Data		
1	Rated voltage			kV	12		
2	Rated insulation level	1min P.F withstand voltage	Dry test		42/48		
			Wet test		34		
		Lightning impulse withstand voltage(peak)			75/85		
3	Rated current			A	630、1250		
4	Rated short-circuit breaking current			kA	20、25		
5	Rated operating sequence				O-0.3s-CO-180s-CO		
6	Rated short-circuit breaking current times			times	30		
7	Rated short-circuit making current(peak)			kA	40	50	63
8	Rated withstand current(peak)				40	50	63
9	Rated short-time withstand current				16	20	25
10	Rated short-circuit duration			s	4		
11	Opening time (shunt trip)	At max. operating voltage		ms	15~50		
		At rated operating voltage			15~50		
		At min. operating voltage			30~16		
12	Closing time			ms	25~50		
13	Complete breaking time				≤ 100		
14	Arcing time				≤ 50		
15	Mechanical life			times	10000		
16	Rated operating voltage and rated auxiliary loop current			V	DC 220/AC 220		
17	Contact gap			mm	11 ± 1		
18	Contact over-travel				3 ± 1		
19	Average opening speed			m/s	1.0 ± 0.2		
20	Average closing speed				0.7 ± 0.15		
21	Contact close-bouncing time			ms	≤ 2		
22	Three-phase opening / closing non-simultaneity				≤ 2		
23	Resistance for each phase loop			μ Ω	≤ 150(200 with isolator)		
24	Net weight	Manual type		kg	152(180 with isolator)		
		Electric type			162(190 with isolator)		

Outline and installation dimension

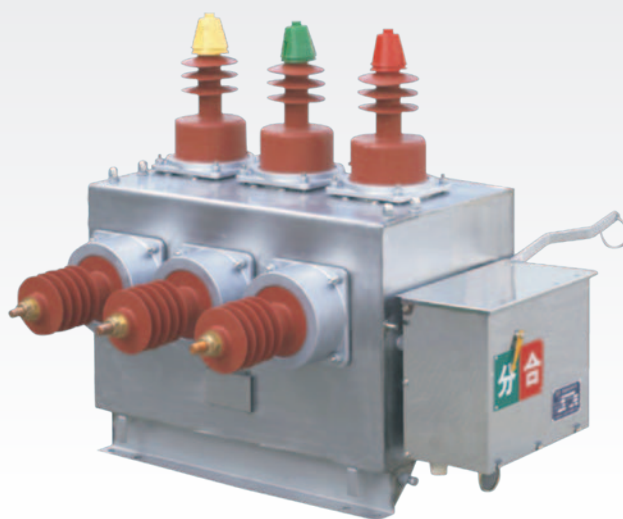


Drawing 1: vacuum circuit breaker without disconnect switch



Drawing 2: vacuum circuit breaker with disconnect switch

ZW10-12 Outdoor HV AC Vacuum Circuit Breaker



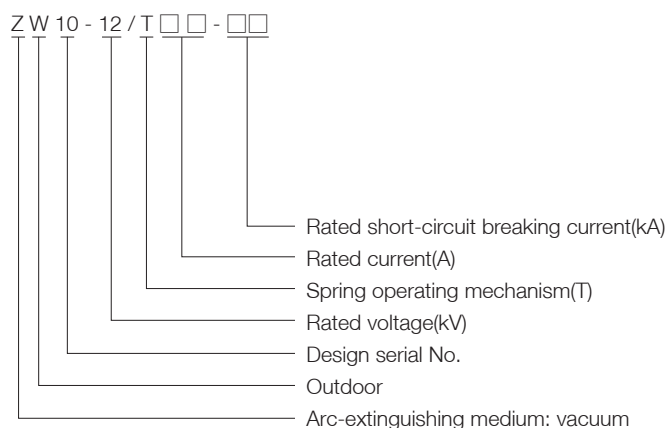
Summary

ZW10-12 outdoor HV AC vacuum circuit breaker is used to make and break load current, overload current and short-circuit current in the power system with rated voltage 12kV, three-phase AC 50/60Hz. It is applicable to substations, industrial and mining enterprises, urban and rural electric power networks, especially to the occasions with frequent operation and automatic power distribution networks for power network control and equipment protection. It can be also used as a sectionalizing switch after equipped with a disconnect switch, thus the installation space and working hours can be saved more. The product conforms to the standards of IEC62271-100 & GB1984: AC high voltage circuit breaker, IEC60694 & GB/T11022: HV general technical requirement of switch and control apparatus.

Ambient conditions

1. Altitude: $\leq 2000\text{m}$;
2. Ambient temperature: $-40^{\circ}\text{C} \sim +45^{\circ}\text{C}$; diurnal temperature range $\leq 25^{\circ}\text{C}$;
3. Wind speed: $\leq 34\text{m/s}$ (wind pressure $\leq 700\text{Pa}$);
4. Earthquake intensity: \leq grade 8;
5. Relative humidity: monthly average $\leq 90\%$; daily average $\leq 95\%$. Dew may be condensed in the interior of the tank body when high humidity drops rapidly;
6. Ice thickness: $\leq 10\text{mm}$;
7. Pollution degree: \leq IV (GB5582);
8. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration;
9. Neutral grounding mode: neutral non grounding, neutral grounding via arc-extinguishing coil, neutral grounding via low-resistance.

Model



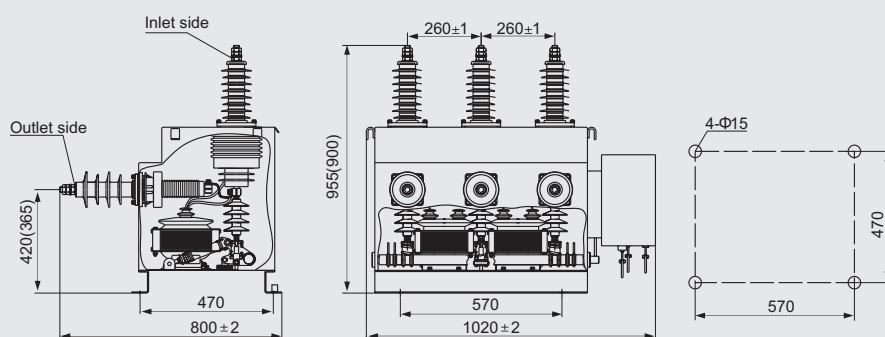
Main function features

1. The product can be equipped integrally with a built-in voltage transformer to simplify the construction and installation;
2. The switch can be equipped with an external isolator according to the users' request. The structure can be compact.
3. The operating mechanism may be equipped with an anti-trip device and counter which is convenient for the users to accurately know the operating life of the product;
4. Iron or stainless steel body, manual or electric mechanism is available for free choice;
5. The product can be equipped with metering tank to realize electricity consumption monitoring.
6. The operating mechanism can be permanent magnet type according to the users' request;
7. The switch can be equipped with a built-in zero sequence CT, the reserved automation interface is convenient for the users to upgrade the line.

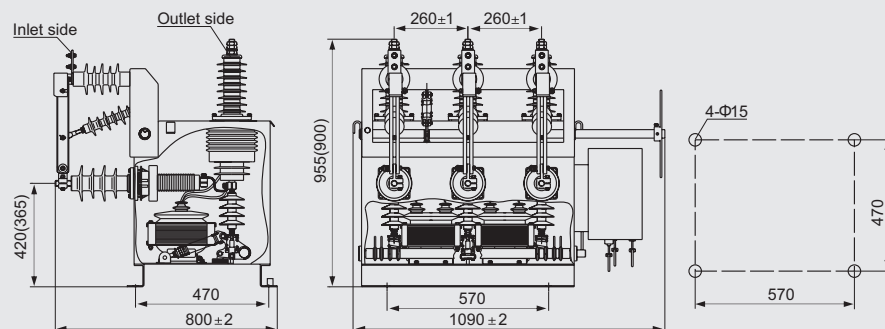
Technical specification

NO.	Item			Unit	Data
1	Rated voltage			kV	12
2	Rated current			A	630
3	Rated insulation level	1 min P.F withstand voltage	Dry test	kV	42
			Wet test (to earth, external insulation)		34
		Lightning impulse withstand voltage(peak)			75
4	Rated frequency			Hz	50/60
5	Rated short-circuit breaking current			kA	20
6	Rated operating sequence				O-0.3s-CO-180s-CO
7	Breaking times of rated short-circuit breaking current			times	30
8	Rated short-circuit making current(peak)			kA	50
9	Rated peak withstand current				50
10	Rated short-time withstand current				20
11	Rated short-circuit duration			s	4
12	Rated operating voltage /rated auxiliary loop voltage			V	AC/DC 220
13	Average opening speed			m/s	1.0 ± 0.3
14	Average closing speed				1.0 ± 0.25
15	Contact close-bouncing time			ms	≤ 2
16	Three-phase opening/closing non-simultaneity				≤ 2
17	Closing time			ms	25~50
18	Opening time	At highest rated operating voltage			15~50
		At lowest rated operating voltage			30~16
19	DC resistance for each phase loop			μ Ω	≤ 120(200 with isolator)
20	Phase-to-phase spacing(measure from arc chamber’ s end)			mm	260 ± 2.0
21	Mechanical life			times	10000
22	Net weight			kg	135(155 with isolator)

Outline and installation dimension



Drawing 1: vacuum circuit breaker without disconnect switch



Drawing 2: vacuum circuit breaker with disconnect switch

ZW20B-12 Outdoor HV AC Vacuum Circuit Breaker



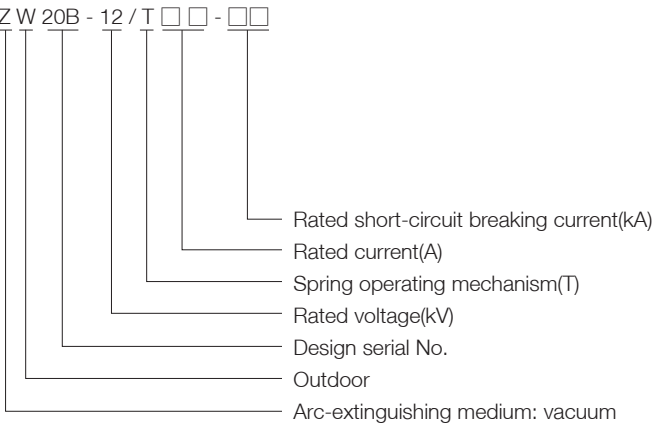
Summary

ZW20B-12 outdoor HV AC vacuum circuit breaker is used to make and break load current, overload current and short-circuit current in the power system with rated voltage 12kV, three-phase AC 50/60Hz. It is applicable to substations, industrial and mining enterprises, urban and rural electric power networks, especially to the occasions with frequent operation and automatic power distribution networks for power network control and equipment protection. The product conforms to the standards of IEC62271-100 & GB1984: AC high voltage circuit breaker, IEC60694 & GB/T11022: HV general technical requirement of switch and control apparatus.

Ambient conditions

1. Altitude: $\leq 3000\text{m}$;
2. Ambient temperature: $-30\text{ }^{\circ}\text{C} \sim +45\text{ }^{\circ}\text{C}$; diurnal temperature range $\leq 25\text{ }^{\circ}\text{C}$;
3. Wind speed: $\leq 35\text{m/s}$;
4. Earthquake intensity: \leq grade 8;
5. Relative humidity: monthly average $\leq 90\%$; daily average $\leq 95\%$;
6. Ice thickness: $\leq 10\text{mm}$
7. Pollution degree: \leq IV (GB5582);
8. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration.

Model



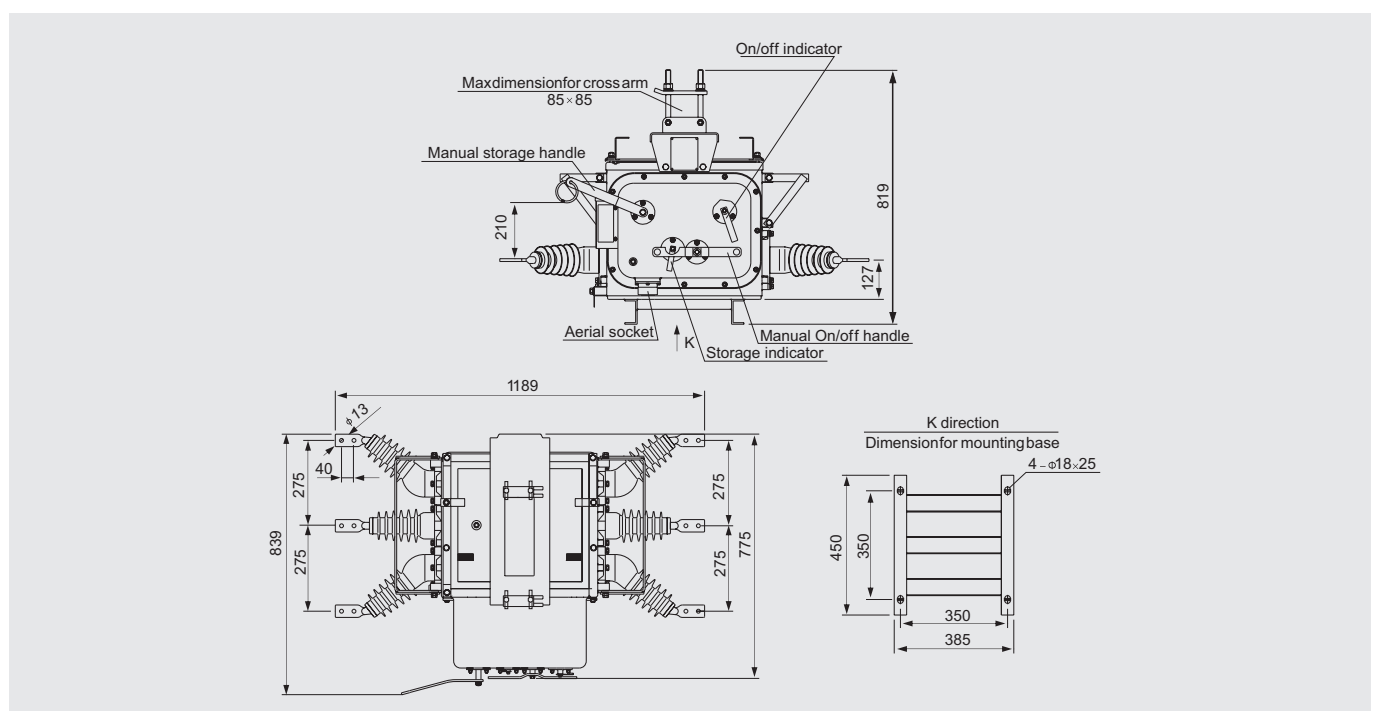
Main function features

1. Three phases in a common fully sealed body, vacuum arc-extinguishing, N2 gas as external insulation;
2. Built-in silicon rubber cover can ensure the standard of 42kV withstand voltage under the natural conditions. Filling in N2 gas, insulation margin is more fully;
3. Simple and convenient for the users to adjust the CT ratio directly by a change-over switch;
4. Hoisting installation or seat installation is convenient for the switch;
5. The automation interface can be provided with the switch as long as it's equipped with aviation plugs.
6. The switch can realize the function of recloser after equipped with external PT and reclosing controller.

Technical specification

No.	Item		Unit	Data
1	Rated value	Rated voltage	kV	12
		Rated frequency	Hz	50/60
		Rated current	A	630
		Rated withstand current(peak)	kA	50
		Rated short-time withstand current(4s)		20
		Rated short-circuit making current(peak)		50
		Breaking times of rated current	times	1000
		Making times of rated short-circuit breaking current		30
2	1min P.F withstand voltage	Phase to phase, phase to earth	kV	42
		Across open contacts		49
		P.F withstand voltage for secondary loop		2
3	Lightning impulse withstand voltage(peak)	Phase to phase, phase to earth		75
		Across open contacts		85
4	Opening speed		m/s	1.2 ± 0.2
5	Closing speed			0.8 ± 0.2
6	Closing time		ms	20~60
7	Opening time			18~45
8	Contact close-bouncing time		ms	≤ 2
9	Three-phase opening/closing non-simultaneity			≤ 2
10	Each phase conductive loop resistance		μ Ω	≤ 120
11	Rated power for energy storage motor		W	> 40
12	Rated voltage for energy storage motor		V	DC24/DC220
13	Rated close-operating voltage			DC24/DC220
14	Rated open-operating voltage			DC24/DC220
15	Rated pressure of SF ₆ gas (gauge pressure)		MPa	"0"
16	External creepage distance		cm/kV	3.8
17	External charged air insulation distance		mm	240 ± 2
18	Phase-to-phase spacing			135 ± 1.5
19	Mechanical life		times	10000
20	Net weight		kg	145

Outline and installation dimension



ZW27B-12 Outdoor HV AC Vacuum Circuit Breaker



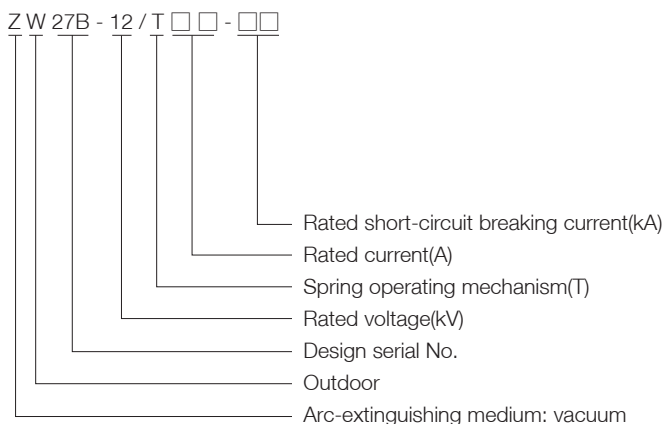
Summary

ZW27B-12 outdoor HV AC vacuum circuit breaker is used to make and break load current, overload current and short-circuit current in the power system with rated voltage 12kV, three-phase AC 50/60Hz. It is applicable to substations, industrial and mining enterprises, urban and rural electric power networks, especially to the occasions with frequent operation and automatic power distribution networks for power network control and equipment protection. It can be also used as a sectionalizing switch after equipped with a disconnect switch, thus the installation space and working hours can be saved more. The product conforms to the standards of IEC62271-100 & GB1984: AC high voltage circuit breaker, IEC60694 & GB/T11022: HV general technical requirement of switch and control apparatus.

Ambient conditions

1. Altitude: $\leq 1500\text{m}$;
2. Ambient temperature: $-40\text{ }^{\circ}\text{C} \sim +45\text{ }^{\circ}\text{C}$; diurnal temperature range $\leq 25\text{ }^{\circ}\text{C}$;
3. Wind speed: $\leq 34\text{m/s}$ (wind pressure $\leq 700\text{Pa}$);
4. Earthquake intensity: \leq grade 8;
5. Relative humidity: monthly average $\leq 90\%$; daily average $\leq 95\%$. Dew may be condensed in the interior of the tank body when high humidity drops rapidly;
6. Ice thickness: $\leq 10\text{mm}$;
7. Pollution degree: \leq IV (GB5582);
8. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration;
9. Neutral grounding mode: neutral non grounding, neutral grounding via arc-extinguishing coil, neutral grounding via low-resistance.

Model



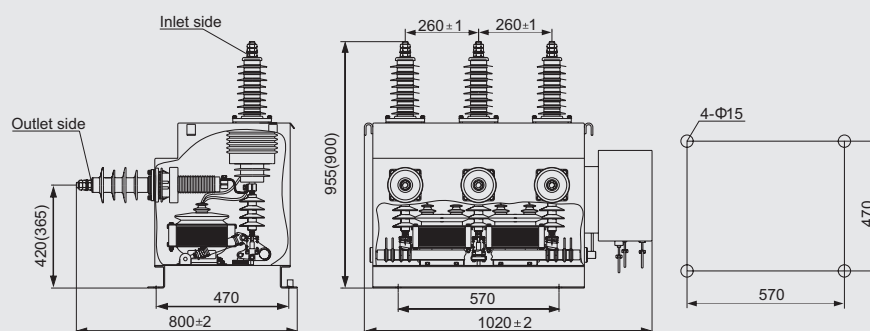
Main function features

1. The product can be equipped integrally with a built-in voltage transformer to simplify the construction and installation;
2. The switch can be equipped with an external isolator according to the users' request. The structure can be compact.
3. The operating mechanism may be equipped with an anti-trip device and counter which is convenient for the users to accurately know the operating life of the product;
4. Iron or stainless steel body, manual or electric mechanism is available for free choice;
5. The product can be equipped with metering tank to realize electricity consumption monitoring.
6. The operating mechanism can be permanent magnet type according to the users' request;
7. The switch can be equipped with a built-in zero sequence CT, the reserved automation interface is convenient for the users to upgrade the line.

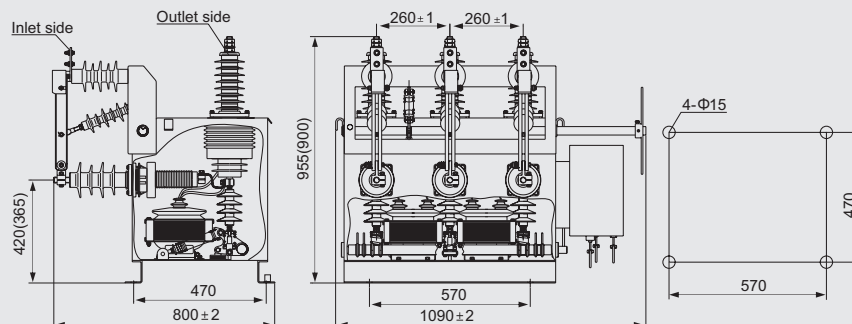
Technical specification

NO.	Item			Unit	Data
1	Rated voltage			kV	12
2	Rated current			A	630
3	Rated insulation level	1min P.F withstand voltage	Dry test	kV	42
			Wet test (to earth, external insulation)		34
		Lightning impulse withstand voltage(peak)			75
4	Rated frequency			Hz	50/60
5	Rated short-circuit breaking current			kA	20
6	Rated operating sequence				O-0.3s-CO-180s-CO
7	Breaking times of rated short-circuit breaking current			times	30
8	Rated short-circuit making current(peak)			kA	50
9	Rated peak withstand current				50
10	Rated short-time withstand current				20
11	Rated short-circuit duration			s	4
12	Rated operating voltage /rated auxiliary loop voltage			V	AC/DC 220
13	Average opening speed			m/s	1.0 ± 0.3
14	Average closing speed				1.0 ± 0.25
15	Contact close-bouncing time			ms	≤ 2
16	Three-phase opening/closing non-simultaneity				≤ 2
17	Closing time			ms	25~50
18	Opening time	At highest rated operating voltage			15~50
		At lowest rated operating voltage			30~16
19	DC resistance for each phase loop			μ Ω	≤ 120(200 with isolator)
20	Phase-to-phase spacing(measure from arc chamber’ s end)			mm	260 ± 2.0
21	Mechanical life			times	10000
22	Net weight			kg	135(155 with isolator)

Outline and installation dimension

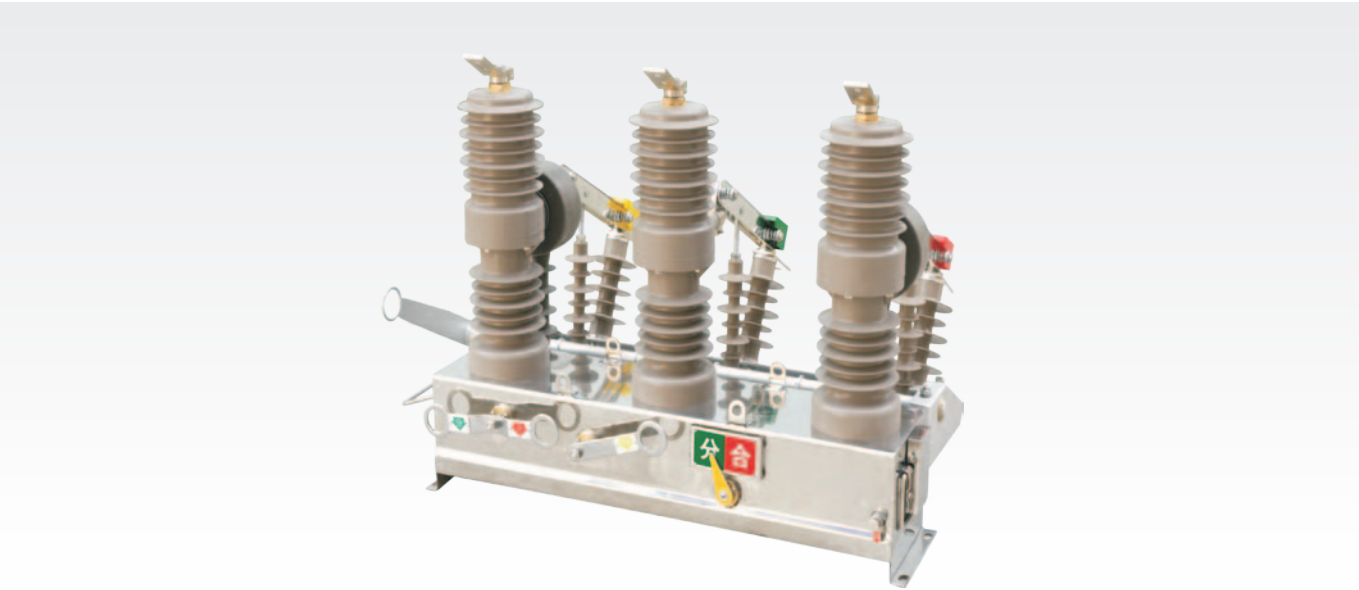


Drawing 1: vacuum circuit breaker without disconnect switch



Drawing 2: vacuum circuit breaker with disconnect switch

ZW32-12 Outdoor HV AC Vacuum Circuit Breaker



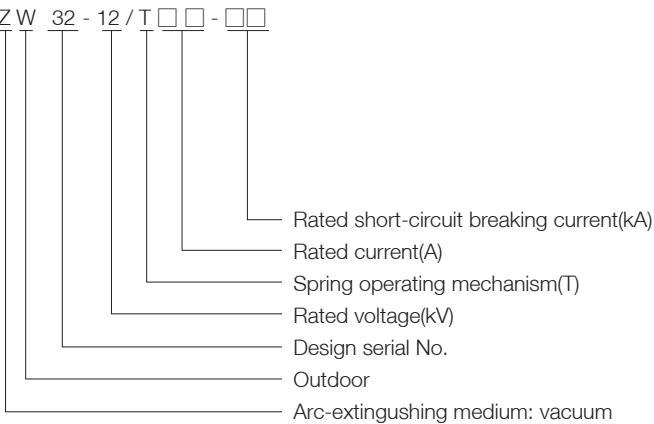
Summary

ZW32-12 outdoor HV AC vacuum circuit breaker is used to make and break load current, overload current and short-circuit current in the power system with rated voltage 12kV, three-phase AC 50/60Hz. It is applicable to substations, industrial and mining enterprises, urban and rural electric power networks, especially to the occasions with frequent operation and automatic power distribution networks for power network control and equipment protection. The product conforms to the standards of IEC62271-100 & GB1984: AC high voltage circuit breaker, IEC60694 & GB/T11022: HV general technical requirement of switch and control apparatus.

Ambient conditions

1. Altitude: $\leq 2000\text{m}$;
2. Ambient temperature: $-40\text{ }^{\circ}\text{C} \sim +45\text{ }^{\circ}\text{C}$; diurnal temperature range $\leq 25\text{ }^{\circ}\text{C}$;
3. Wind speed: $\leq 35\text{m/s}$;
4. Earthquake intensity: \leq grade 8;
5. Relative humidity: monthly average $\leq 90\%$; daily average $\leq 95\%$;
6. Ice thickness: $\leq 10\text{mm}$
7. Sunlight intensity: $\leq 1000\text{W/m}^2$
8. Pollution degree: \leq IV (GB5582);
9. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration.

Model



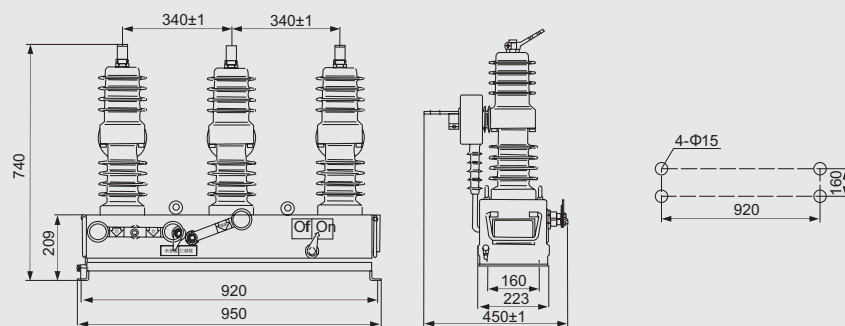
Main function features

1. The performance of the product is stable and reliable as the product adopts three-pillar type structure, and the vacuum arc-extinguishing chamber connects with the operating mechanism through insulation pulling rod;
2. Arc-extinguishing chamber, main conducting loop and insulation support are casted into an organic whole by epoxy resin with APG technology, and encapsulated with silicon rubber, it is provided with good anti-condensation performance and mechanical strength.
3. The switch adopts a high performance spring operating mechanism with the advantages of simple structure and long mechanical life, and with the functions of manual/electric energy storage and opening/closing operation.
4. An integrated isolating switch is optional for the product.
5. The product has the advantages of small size, novel appearance, light weight and easy installation.
6. The switch can be equipped with control terminal interface to apply to automation distribution networks and the unattended substations.

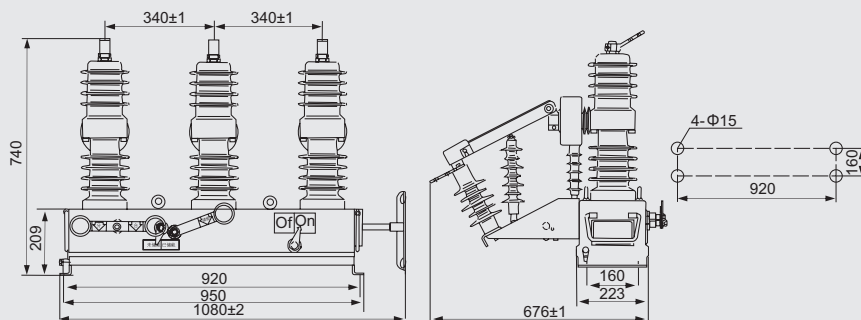
Technical specification

No.	Item	Unit	Data
1	Rated voltage	kV	12
2	Rated current	A	630/1250
3	Rated frequency	Hz	50/60
4	Rated short-circuit breaking current	kA	20/25
5	Rated short-time withstand current(4s)		20/25
6	Rated peak withstand current		50/60
7	Rated short-circuit making current(peak)		50/60
8	1min P.F withstand voltage	Wet test	34
		Phase to phase, phase to earth	42
		Across open contacts	48
9	Lightning impulse withstand current(peak)	Phase to phase, phase to earth	75
		Across open contacts	85
10	1min P.F withstand voltage for secondary loop	kV	2
11	Breaking times of rated current	times	1000
12	Breaking times of rated short-circuit current		30
13	Opening speed	m/s	1.2 ± 0.2
14	Closing speed		0.6 ± 0.2
15	Closing time	ms	25~60
16	Opening time		18~45
17	Contact close-bouncing time	ms	≤ 2
18	Three-phase opening/closing non-simultaneity		≤ 2
19	Resistance for each phase conductive loop	$\mu \Omega$	$\leq 80(120 \text{ with isolator})$
20	Rated power for energy storage motor	W	40
21	Phase-to-phase spacing	mm	340 ± 1.5
22	Mechanical life	times	10000
23	Net weight	kg	100(125 with isolator)

Outline and installation dimension

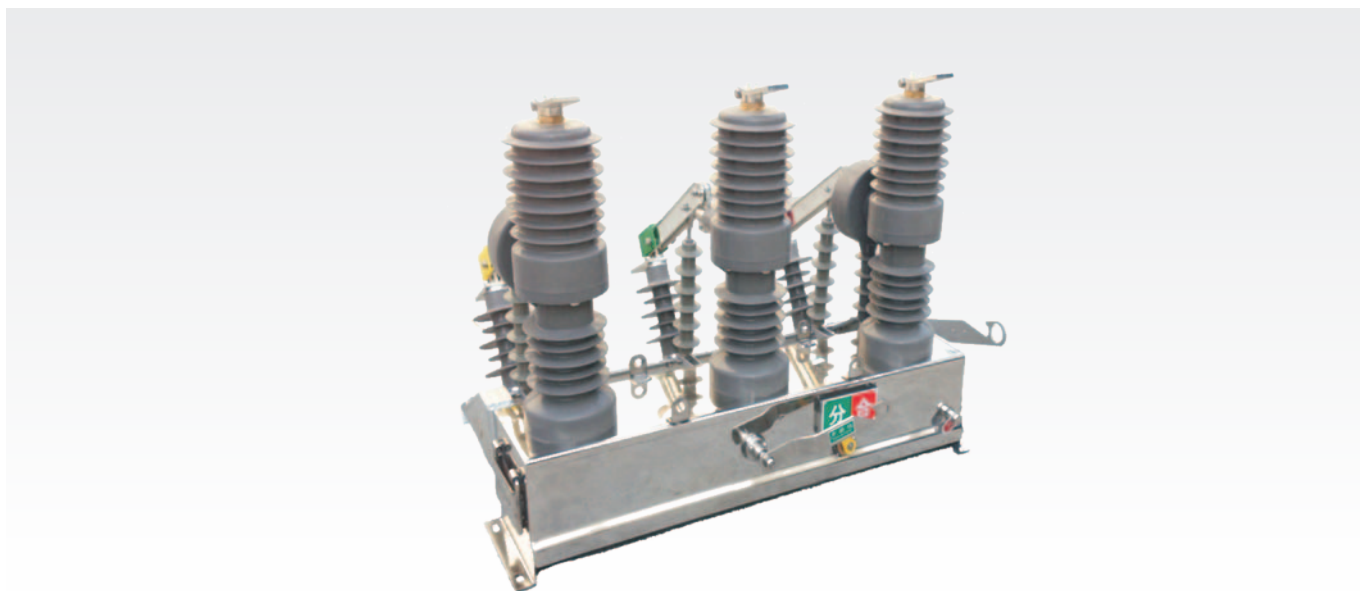


Drawing 1: vacuum circuit breaker without disconnect switch



Drawing 2: vacuum circuit breaker with disconnect switch

ZW32-12Y Outdoor HV AC Vacuum Circuit Breaker



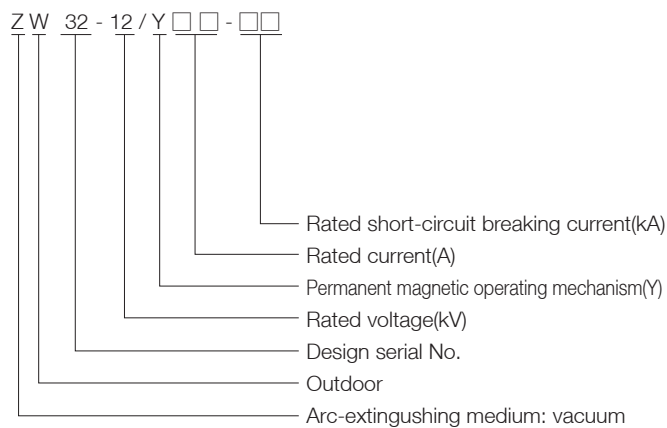
Summary

ZW32-12Y outdoor HV AC vacuum circuit breaker is used to make and break load current, overload current and short-circuit current in the power system with rated voltage 12kV, three-phase AC 50/60Hz. It is applicable to substations, industrial and mining enterprises, urban and rural electric power networks, especially to the occasions with frequent operation and automatic power distribution networks for power network control and equipment protection. The product conforms to the standards of IEC62271-100 & GB1984: AC high voltage circuit breaker, IEC60694 & GB/T11022: HV general technical requirement of switch and control apparatus.

Ambient conditions

1. Altitude: $\leq 2000\text{m}$;
2. Ambient temperature: $-40^{\circ}\text{C} \sim +45^{\circ}\text{C}$; diurnal temperature range $\leq 25^{\circ}\text{C}$;
3. Wind speed: $\leq 35\text{m/s}$, equivalent to wind pressure of 700Pa ;
4. Earthquake intensity: \leq grade 8;
5. Relative humidity: monthly average $\leq 90\%$; daily average $\leq 95\%$;
6. Ice thickness: $\leq 10\text{mm}$
7. Sunlight intensity: $\leq 1000\text{W/m}^2$
8. Pollution degree: $\leq \text{IV}$ (GB5582);
9. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration

Model



Main function features

1. The performance of the product is stable and reliable as the product adopts three-pillar type structure, and the vacuum arc-extinguishing chamber connects with the operating mechanism through insulation pulling rod;
2. Arc-extinguishing chamber, main conducting loop and insulation support are casted into an organic whole by epoxy resin with APG technology, and encapsulated with silicon rubber, it is provided with good anti-condensation performance and mechanical strength.
3. The switch adopts a high performance permanent magnet operating mechanism with the advantages of simple structure and long mechanical life, and with the functions of manual/electric energy storage and opening/closing operation.
4. An integrated isolation switch is optional for the product.
5. The product has the advantages of small size, novel appearance, light weight and easy installation.
6. The switch can be equipped with control terminal interface to apply to automation distribution networks and the unattended substations.

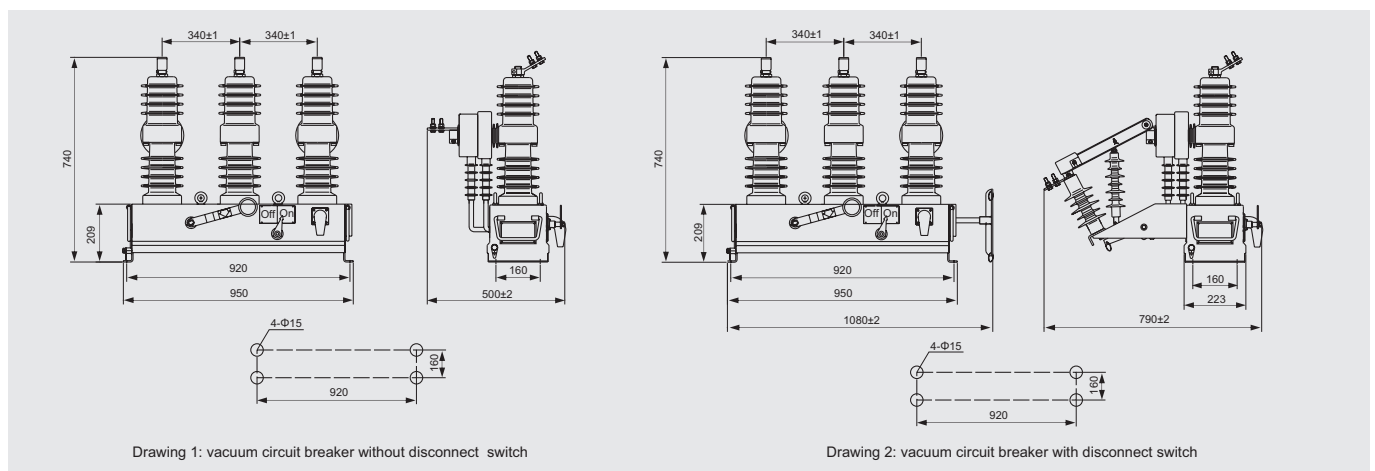
Technical specification

NO.	Item			Unit	Data		
1	Rated voltage			kV	12		
2	Rated insulation level	1min P.F withstand voltage	Dry test		42/48(isolate distance)		
			Wet test		34		
			Auxiliary loop and control loop		2		
			Lightning impulse withstand voltage(peak)		75/85(isolate distance)		
3	Rated frequency			Hz	50/60		
4	Rated current			A	630	1000	1250
5	Rated short-circuit breaking current			kA	16	20	25
6	Rate short-circuit making current(peak)				40	50	63
7	Rated peak withstand current(peak)				40	50	63
8	Rated short-time withstand current(4s)				16	20	25
9	Rated short-circuit duration			s	4		
10	Breaking times of rated short-circuit breaking current			times	30		
11	Closing time			ms	≤ 50		
12	Opening time				≤ 60		
13	Complete breaking time				≤ 100		
14	Arcing time				≤ 50		
15	Mechanical life			times	10000		
16	Rated operating voltage and rated auxiliary loop current			V	AC/DC 220		
17	Charging time under rated voltage			s	≤ 8		
18	Average opening speed			m/s	1.2 ± 0.2		
19	Average closing speed				0.6 ± 0.2		
20	Contact close-bouncing time			ms	≤ 2		
21	Three-phase opening non-simultaneity				≤ 2		
22	Allowed accumulative wear thickness for moving and static contacts			mm	3		
23	DC resistance for each phase loop(with isolator)			μ Ω	≤ 80(120 with isolator)		
24	Contact self-closing pressure			N	2000 ± 200		
25	Phase-to-phase spacing			mm	340 ± 1.5		
26	Net weight			kg	105(130 with isolator)		

Technical parameter for P.M operating mechanism

NO.	Item		Unit	Date		
	DC operating power supply, coil short-time duty			CDY- I	CDY- II	CDY- III
1	220V closing/opening coil	Calculating current	A	53	70	100
		resistance(20℃)	Ω	4.2 ± 0.2	3.2 ± 0.17	2.2 ± 0.12
2	Applicable to circuit breaker’ s spec.			16kA	20kA	25kA
3	Power supply voltage			AC220V		

Outline and installation dimension



ZW43-12 Outdoor HV AC Vacuum Circuit Breaker



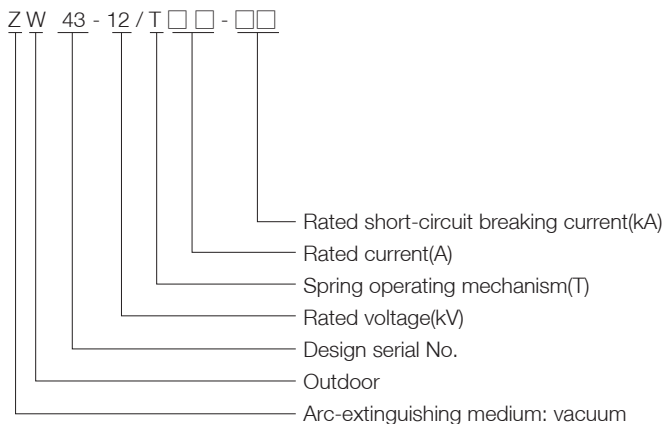
Summary

ZW43-12 outdoor HV AC vacuum circuit breaker is used to make and break load current, overload current and short-circuit current in the power system with rated voltage 12kV, three-phase AC 50/60Hz. The product is composed of a circuit breaker and a spring operating mechanism. It is applicable to substations, industrial and mining enterprises, urban and rural electric power networks, especially to those serious pollution environment and frequent operation places for power network control and equipment protection. The product conforms to the standards of IEC62271-100 & GB1984: AC high voltage circuit breaker, IEC60694 & GB/T11022: HV general technical requirement of switch and control apparatus.

Ambient conditions

1. Altitude: $\leq 2000\text{m}$;
2. Ambient temperature: $-40^{\circ}\text{C} \sim +45^{\circ}\text{C}$; diurnal temperature range $\leq 25^{\circ}\text{C}$;
3. Wind speed: $\leq 35\text{m/s}$, equivalent to wind pressure of 700Pa ;
4. Earthquake intensity: \leq grade 8;
5. Relative humidity: monthly average $\leq 90\%$; daily average $\leq 95\%$;
6. Ice thickness: $\leq 10\text{mm}$
7. Sunlight intensity: $\leq 1000\text{W/m}^2$
8. Pollution degree: \leq IV (GB5582);
9. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration.

Model



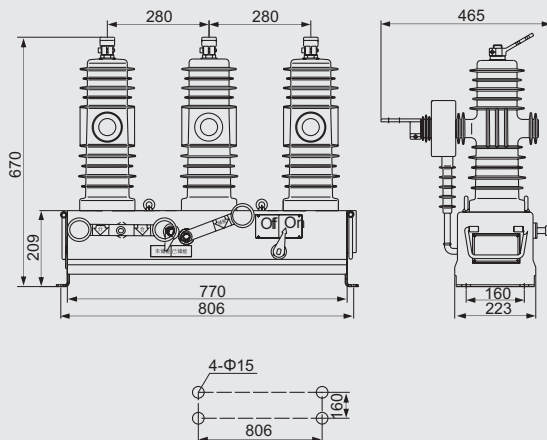
Main function features

1. The performance of the product is stable and reliable as the product adopts three-pillar type structure, and the vacuum arc-extinguishing chamber connects with the operating mechanism through insulation pulling rod;
2. Arc-extinguishing chamber, main conducting loop and insulation support are casted into an organic whole by epoxy resin with APG technology, and encapsulated with silicon rubber, it is provided with good anti-condensation performance and mechanical strength.
3. The switch adopts a high performance spring operating mechanism with the advantages of simple structure and long mechanical life, and with the functions of manual/electric energy storage and opening/closing operation.
4. An integrated isolation switch is optional for the product.
5. The product has the advantages of small size, novel appearance, light weight and easy installation.
6. The switch can be equipped with control terminal interface to apply to automation distribution networks and the unattended substations.

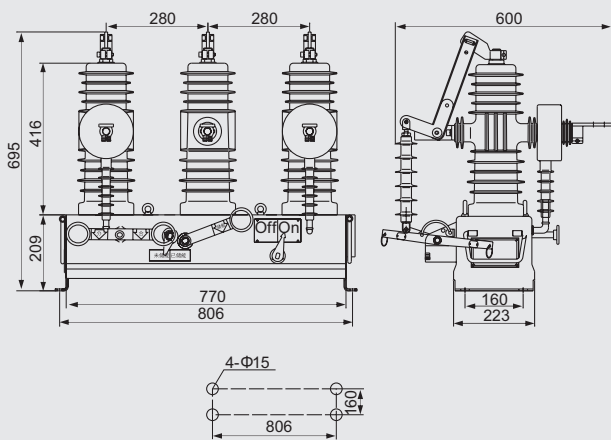
Technical specification

NO.	Item		Unit	Data
1	Rated voltage		kV	12
2	Rated current		A	630
3	Rated frequency		Hz	50/60
4	Rated short-circuit breaking current		kA	20
5	Rated short-time withstand current(4s)			20
6	Rated peak withstand current(peak)			50
7	Rated short-circuit making current(peak)			50
8	1min P.F withstand volage	Wet test	kV	34
		Phase to phase,phase to earth		42
		Across open contacts		48
9	Lightning impulse withstand voltage(peak)	Phase to phase,phase to earth	kV	75
		Across open contacts		85
10	1min P.F withstand voltage for secondary loop		kV	2
11	Breaking times of rated current		times	1000
12	Breaking times of rated short-circuit current			30
13	Mechanical life			10000
14	Opening speed		m/s	1.2 ± 0.2
15	Closing speed			0.6 ± 0.2
16	Closing time		ms	25~60
17	Opening time			18~45
18	Contact close-bouncing time			≤ 2
19	Rated power for energy storage motor		W	40
20	Three-phase opening/closing non-simultaneity		ms	≤ 2
21	Resistance for each phase conductive loop	Switch body	μ Ω	≤ 80
		Disconnect blade		Single side ≤ 120、double sides ≤ 200
22	Phase-to-phase spacing		mm	280 ± 1.5
23	Net weight		kg	125(single isolator)、150(double isolator)

Outline and installation dimension



Drawing 1: vacuum circuit breaker without disconnect switch



Drawing 2: vacuum circuit breaker with disconnect switch

ZWHA-24 Outdoor HV AC Vacuum Circuit Breaker



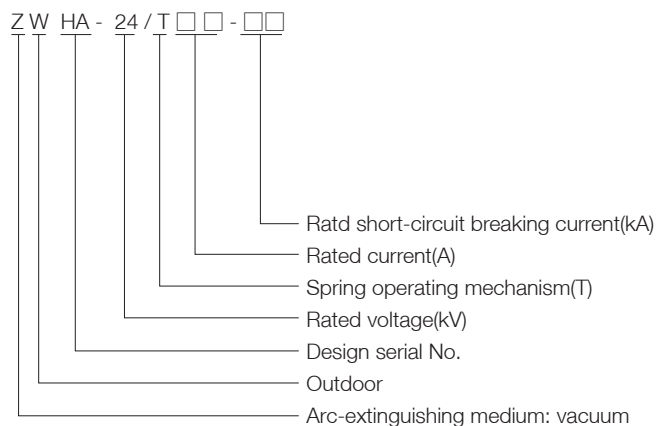
Summary

ZWHA-24 series outdoor HV AC vacuum circuit breaker is used to make and break load current, overload current and short-circuit current in the power system with rated voltage 24kV, three-phase AC 50/60Hz. It is applicable to substations, industrial and mining enterprises, urban and rural electric power networks, especially to the occasions with frequent operation and automatic power distribution networks for power network control and equipment protection. The product conforms to the standards of IEC62271-100 & GB1984: AC high voltage circuit breaker, IEC60694 & GB/T11022: HV general technical requirement of switch and control apparatus.

Ambient conditions

1. Altitude: $\leq 2000\text{m}$;
2. Ambient temperature: $-40^{\circ}\text{C} \sim +45^{\circ}\text{C}$; diurnal temperature range $\leq 25^{\circ}\text{C}$;
3. Wind speed: $\leq 35\text{m/s}$, equivalent to wind pressure of 700Pa ;
4. Earthquake intensity: \leq grade 8;
5. Relative humidity: monthly average $\leq 90\%$; daily average $\leq 95\%$;
6. Ice thickness: $\leq 10\text{mm}$
7. Sunlight intensity: $\leq 1000\text{W/m}^2$
8. Pollution degree: $\leq \text{IV}$ (GB5582);
9. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration.

Model



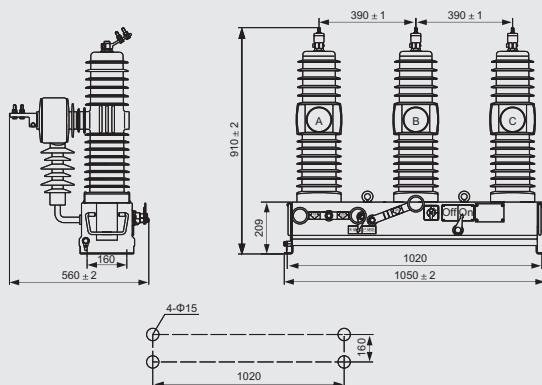
Main function features

1. The product can be equipped with a protection and metering current transformer to realize 3-sectional type over-current protection and electricity consumption monitoring according to users' request;
2. The product can be equipped with a built-in remote control device to realize remote operation;
3. Equipped with a reclosing controller, it can realize the function of automatic reclosing;
4. Iron or stainless steel body, manual or electric mechanism is available for free choice;
5. The product can meet the demands of the users from different regions as it has the norms of miniaturization and plateau types for users to choose;
6. The switch can be equipped with an external isolator according to the users' request;
7. The operating mechanism can be permanent magnet type which can sensitively and quickly cut off the short-circuit current;
8. All the other functions which the similar products have can be added to the switch according to the users' request;

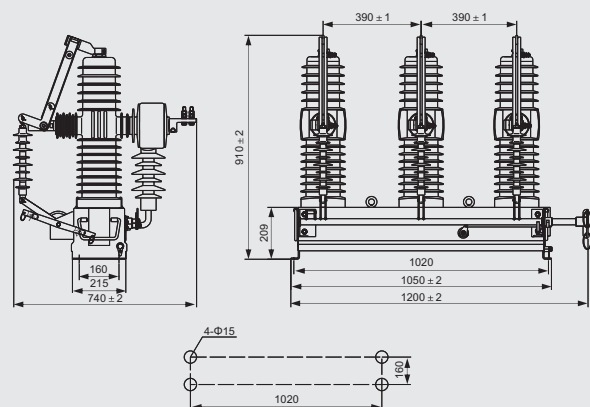
Technical specification

NO.	Item			Unit	Data		
1	Rated voltage			kV	24		
2	Rated insulation level	1min P.F withstand voltage	Dry test		65/79(isolate distance)		
			Wet test		50/64(isolate distance)		
			Auxiliary loop and control loop		2		
			Lightning impulse withstand voltage(peak)		125/145(isolate distance)		
3	Rated frequency			Hz	50/60		
4	Rated current			A	630、1250		
5	Rated operating sequence				O-0.3s-CO-180s-CO		
6	Rated short-circuit breaking current			kA	16	20	25
7	Rated short-circuit making current(peak)				40	50	63
8	Rated peak withstand current(peak)				40	50	63
9	Rated short-time withstand current				16	20	25
10	Rated short-circuit duration			s	4		
11	Breaking times of rated current			times	1000		
12	Breaking times of rated short-circuit breaking current				20		
13	Closing time			ms	20~80		
14	Opening time	At max. operating voltage			20~80		
		At rated operating voltage			20~80		
		At min. operating voltage			20~80		
15	Complete breaking time				≤ 100		
16	Mechanical life			times	10000		
17	Closing power			J	70		
18	Rated input power for energy storage motor			w	≤ 70		
19	Rated operating voltage and rated auxiliary loop current			v	DC/AC 220		
20	Energy storage time under rated voltage			S	≤ 8		
21	Over-current tripping device	Rated current		A	5		
		Tripping current accuracy		%	± 10		
22	Average opening speed			m/s	1.5 ± 0.2		
23	Average closing speed				0.8 ± 0.2		
24	Contact close-bouncing time			ms	≤ 3		
25	Three-phase opening non-simultaneity				≤ 2		
26	DC resistance for each phase loop(with isolator)			μ Ω	≤ 80(150 with isolator)		
27	Allowed accumulative wear thickness for moving and static contacts			mm	3		
28	Phase-to-phase spacing				390 ± 1.5		
29	Contact self-closing pressure			N	2000 ± 200		
30	Net weight			kg	125(155 with isolator)		

Outline and installation dimension

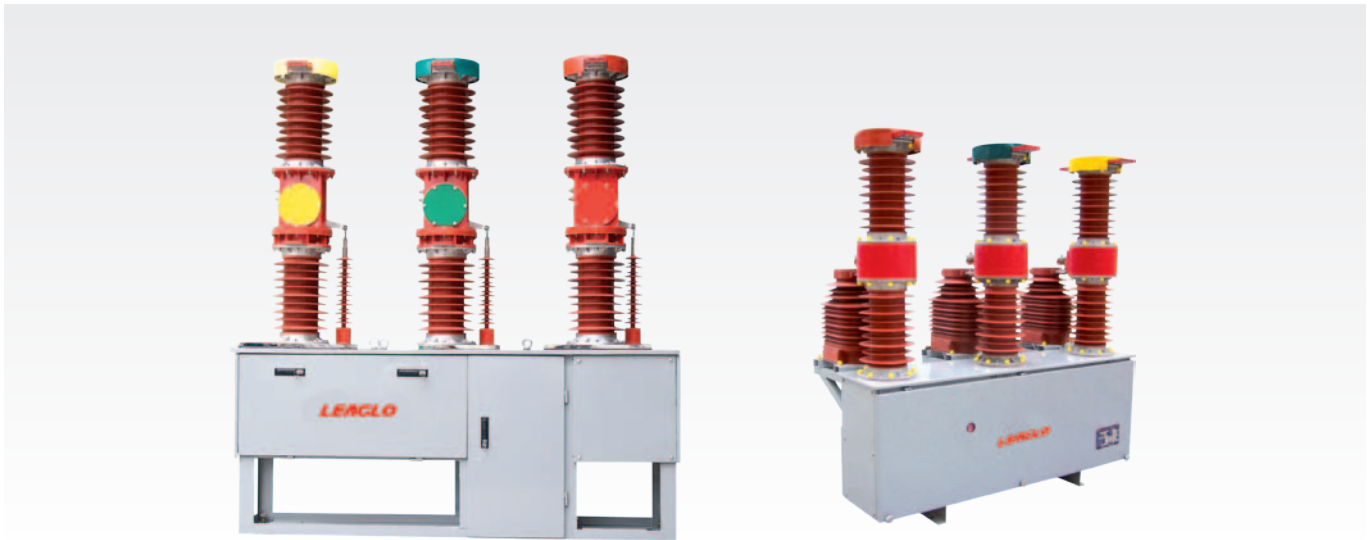


Drawing 1: vacuum circuit breaker without disconnect switch



Drawing 2: vacuum circuit breaker with disconnect switch

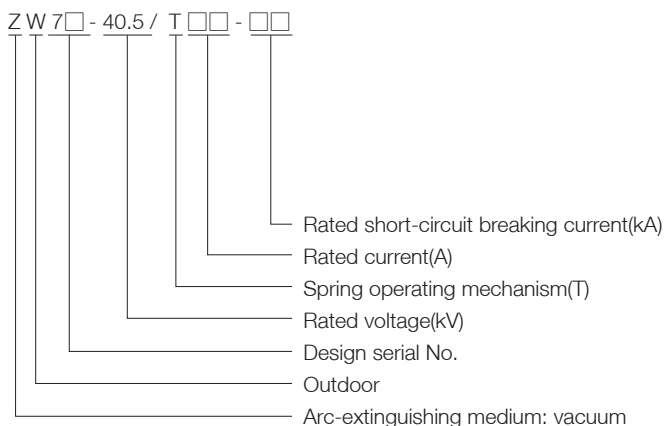
ZW7/ZW7A-40.5 Outdoor HV AC Vacuum Circuit Breaker



Summary

ZW7/ZW7A-40.5 outdoor HV AC vacuum circuit breaker is used to make and break load current, overload current and short-circuit current in the power system with rated voltage 40.5kV, three-phase AC 50/60Hz. It is applicable to substations, industrial and mining enterprises, urban and rural electric power networks, especially to the occasions with frequent operation and automatic power distribution networks for power network control and equipment protection. It is a new type of high quality circuit breaker which adopts domestic and foreign advanced technology. So the switch has the advantages of reasonable design, easy assembly, novel appearance, safe and reliable operation, convenient maintenance and long mechanical life. The product conforms to the standards of IEC62271-100 & GB1984: AC high voltage circuit breaker, IEC60694 & GB/T11022: HV general technical requirement of switch and control apparatus.

Model



Ambient conditions

1. Altitude: $\leq 2000\text{m}$;
2. Ambient temperature: $-40^{\circ}\text{C} \sim +45^{\circ}\text{C}$; diurnal temperature range $\leq 25^{\circ}\text{C}$;
3. Wind speed: $\leq 35\text{m/s}$;
4. Earthquake intensity: \leq grade 8;
5. Relative humidity: monthly average $\leq 90\%$; daily average $\leq 95\%$;
6. Ice thickness: $\leq 10\text{mm}$;
7. Pollution degree: \leq IV (GB5582);
8. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration;

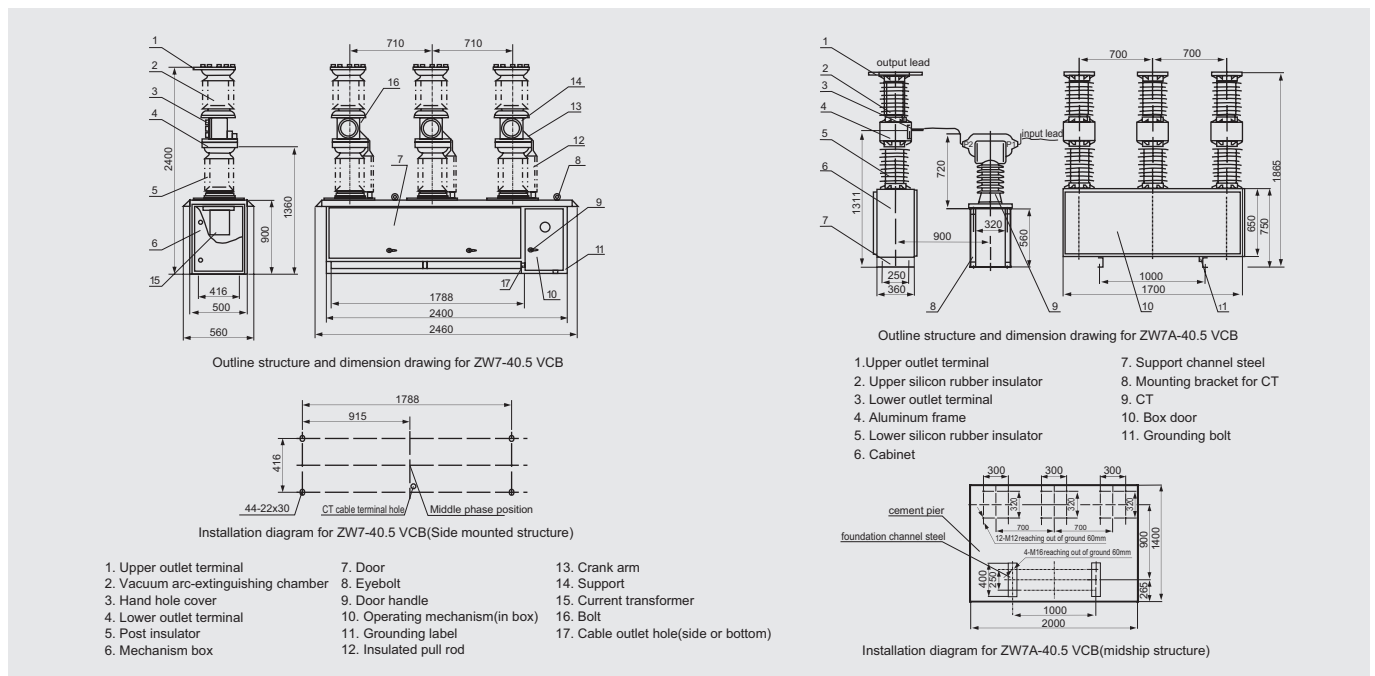
Main function features

1. The switch is mainly composed of a vacuum arc-extinguishing chamber, a current transformer, a driving mechanism and an operating mechanism;
2. The overall structure adopts silicon rubber insulator post type, the upper silicon rubber insulator is for built-in vacuum arc-extinguishing chamber and the lower silicon rubber insulator is for supporting the upper one. The three-phase linkage parts and the operating mechanism are installed in a waterproof case. The dynamic end of the arc-extinguishing chamber is linked with the output shaft of the mechanism through insulating rod and crank arm. The current transformer adopts built-out type.
3. The product is newly researched, developed and produced according to the advanced domestic and foreign technologies. It has the advantages of novel structure design, reasonable combination scheme, flexible and convenient operation and long mechanical life. The insulation structure made of new type of insulating material has advantages of good sealing performance, aging resistance, withstanding high voltage, no combustion and no explosion danger.
4. Provided with high precision and high performance CT, the product has the merits of less maintenance, high reliability and strong completeness, as a result, the occupied area and investment for the product can be reduced more.

Technical specification

NO.	Item			Unit	Data		
1	Rated voltage			kV	40.5		
2	Rated insulation level	1min P.F	Dry test		95		
		withstand voltage	Wet test		80		
		Lightning impulse withstand voltage(peak)			185		
3	Rated current			A	630、1250、1600、2000		
4	Rated short-circuit breaking current			kA	20	25	31.5
5	Rated short-circuit making current (peak)				50	63	80
6	Rated operating sequence				O-0.3s-CO-180s-CO		
7	Rated short-time withstand current			kA	20	25	31.5
8	Rated peak withstand current				50	63	80
9	Rated short-circuit duration			s	4		
10	Rated operating voltage			V	DC/AC 220		
11	Breaking times of rated short-circuit breaking current			times	12		
12	Complete breaking time			ms	≤ 80		
13	Mechanical s life			times	10000		
14	Average opening speed			m/s	≥ 1.4		
15	Average speed of closing				≥ 0.4		
16	Contact close-bouncing time			ms	≤ 5		
17	Three-phase opening non-simultaneity				≤ 2		
18	Opening time			ms	≤ 60		
19	Closing time				≤ 90		
20	DC resistance for each phase loop			μ Ω	≤ 100		
21	Phase-to-phase spacing			mm	710		
22	Allowed accumulative wear thickness for moving and static contacts				3		
23	Dimension (length × width × height)				2080 × 500 × 2275		
24	Contact self-closing pressure			N	2500		
25	Net weight			kg	800/740		

Outline and installation dimension

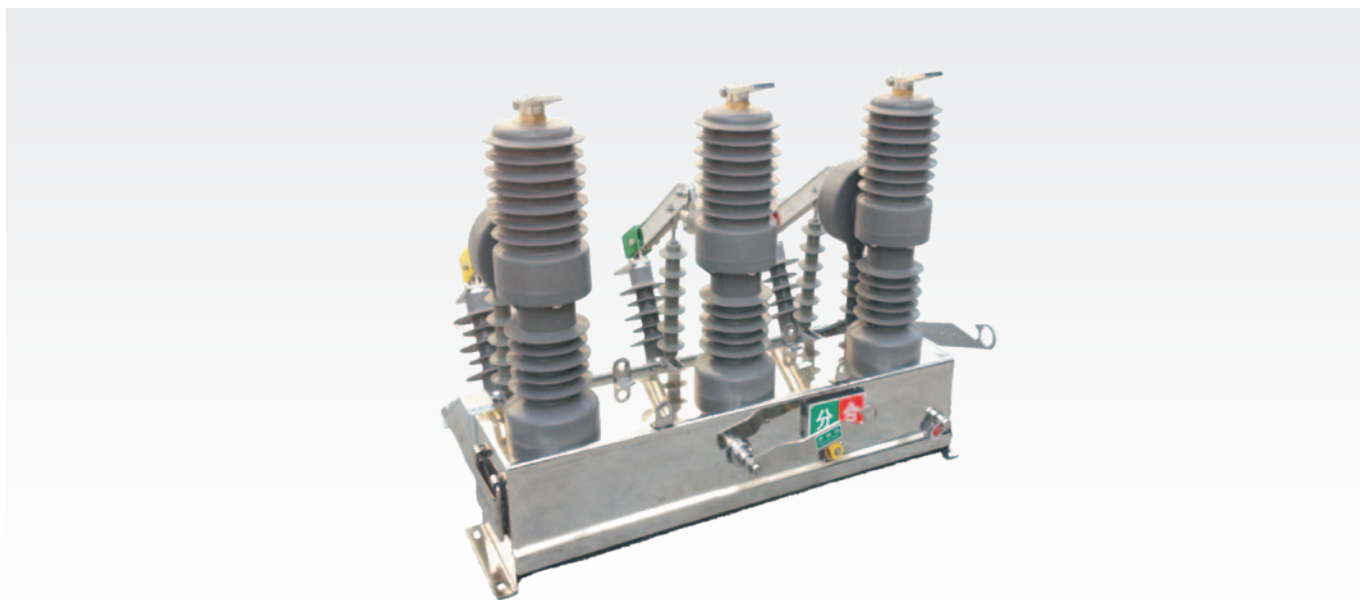


Main function features

1. The length the anchor bolt for the switch embedded in the cement pier must be over 1000mm;
2. The length the anchor bolt for the CT embedded in the cement pier must be over 1000mm;
3. The height of the cement pier must be 1850mm;

4. The cement pier foundation depth is calculated and determined by the construction unit;
5. The foundation channel steel for the switch is provided by the construction unit.

FZW13-12 Outdoor HV AC Permanent-magnet Vacuum Load Break Switch



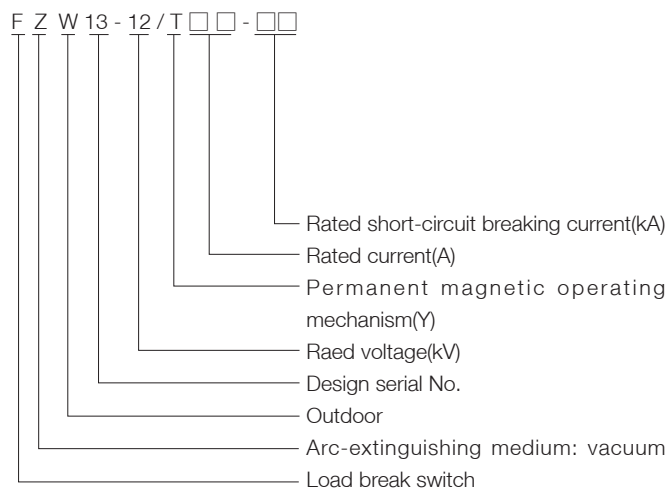
Summary

FZW13-12 outdoor HV AC permanent-magnet vacuum load break switch is used in the power system with rated voltage 12kV, three phase AC 50/60Hz, to open and close the load current in power line, the loop current in loop power network, the inductive current of capacity load transformer and the capacitive current of capacitor bank(or cable). It can also close the short-circuit current and withstand the electrodynamic effect and electrothermal effect caused by the short-circuit current. The product conforms to the standards of IEC 60265-1, IEC62271-103 & GB/T3804: 3.6kV~40.5kV AC high voltage load break switch and IEC60694 & GB/T11022: high voltage switch apparatus and control device.

Ambient conditions

1. Altitude: $\leq 2000\text{m}$;
2. Ambient temperature: $-40^{\circ}\text{C} \sim +45^{\circ}\text{C}$; diurnal temperature rang $\leq 25^{\circ}\text{C}$;
3. Wind speed: $\leq 35\text{m/s}$ (equivalent to wind pressure of 700Pa);
4. Earthquake intensity: \leq grade 8;
5. Relative humidity: monthly average $\leq 90\%$; daily average $\leq 95\%$;
6. Ice thickness: $\leq 10\text{mm}$;
7. Sunlight intensity: $\leq 1000\text{W/m}^2$;
8. Pollution degree: $\leq \text{IV}$ (GB5582);
9. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration;

Model



Main function features

1. The product can be equipped with a protection and metering current transformer to realize 3-sectional type over-current protection and electricity consumption monitoring according to users' request;
2. The product can be equipped with a built-in remote control device to realize remote operation;
3. Equipped with a reclosing controller, it can realize the function of automatic reclosing;
4. Iron or stainless steel body, manual or electric mechanism is available for free choice;
5. The product can meet the demands of the users from different regions as it has the norms of miniaturization and plateau types for users to choose;
6. The switch can be equipped with an external isolator according to the users' request;
7. The operating mechanism can be permanent magnet type which can sensitively and quickly cut off the short-circuit current;
8. All the other functions which the similar products have can be added to the switch according to the users' request;

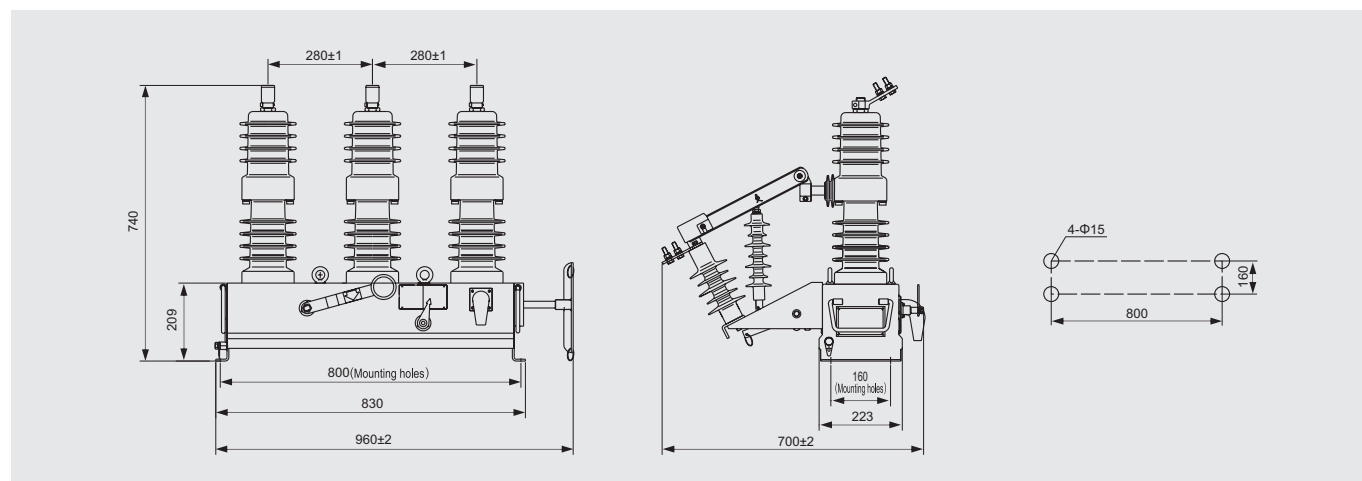
Technical specification

NO.	Item			Unit	Data		
1	Rated voltage			kV	12		
2	Rated insulation level	1min P.F	Dry test		42/48(isolating distance)		
		Withstand voltage	Wet test		34		
			Auxiliary loop and control loop		2		
			Lightning impulse withstand voltage(peak)		75/85(isolating distance)		
3	Rated frequency			Hz	50/60		
4	Rated current			A	630、1000、1250		
5	Rate short-circuit making current(peak)			kA	40	50	63
6	Rated peak withstand current (peak)				40	50	63
7	Rated short-time withstand current				16	20	25
8	Rated short-circuit duration			s	4		
9	Making times of rated short-circuit making current			times	30		
10	Closing time			ms	≤ 50		
11	Opening time				≤ 60		
12	Complete breaking time				≤ 100		
13	Arcing time				≤ 50		
14	Mechanical life			times	10000		
15	Rated operating voltage and rated auxiliary loop current			V	DC/AC 220		
16	Charging time under rated voltage			s	≤ 8		
17	Average opening speed			m/s	1.2 ± 0.2		
18	Average closing speed				0.6 ± 0.2		
19	Contact close-bouncing time			ms	≤ 2		
20	Three-phase opening non-simultaneity				≤ 2		
21	Allowed accumulative wear thickness for moving and static contacts			mm	3		
22	Contact self-closing pressure			N	2000 ± 200		
23	DC resistance for each phase loop(with isolator)			μ Ω	≤ 80(120 with isolator)		
24	Phase-to-phase spacing			mm	280 ± 1.5		
25	Net weight			kg	115		

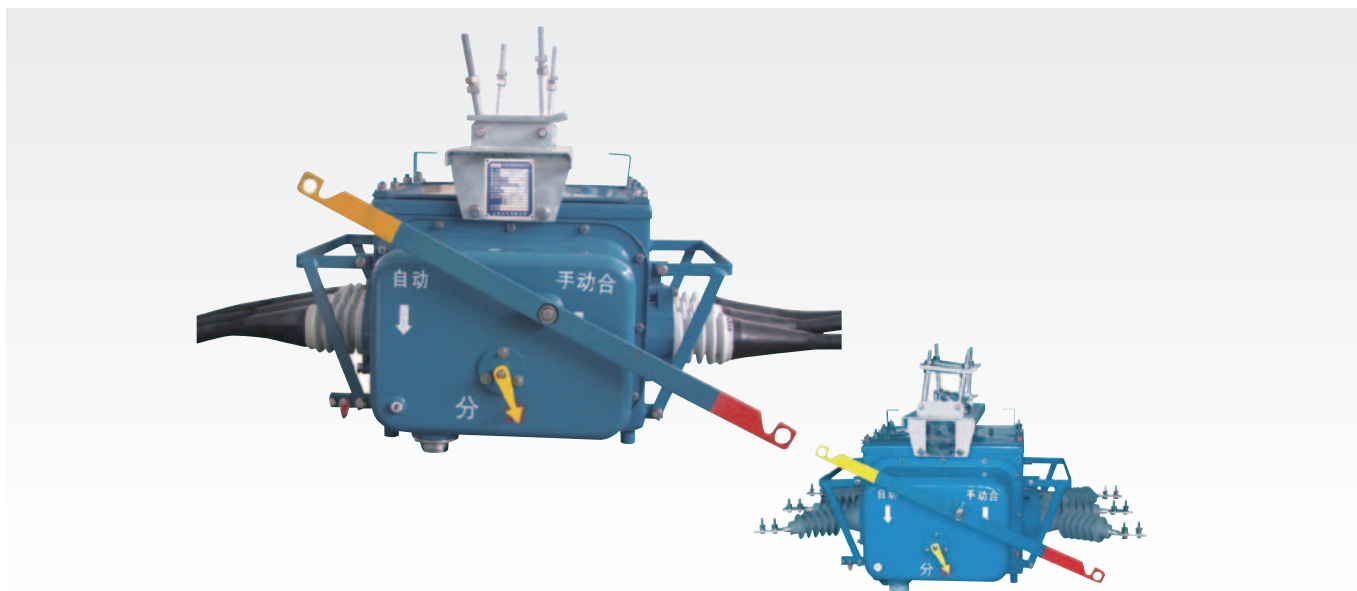
Technical parameter for P.M operating mechanism

NO.	Item		Unit	Date		
	DC operating power supply, coil short-time duty			CDY- I	CDY- II	CDY- III
1	220V closing/opening coil	Calculating current	A	53	70	100
		resistance(20℃)	Ω	4.2 ± 0.2	3.2 ± 0.17	2.2 ± 0.12
2	Applicable to circuit breaker' s spec.			16kA	20kA	25kA
3	Power supply voltage			AC220V		

Outline and installation dimension



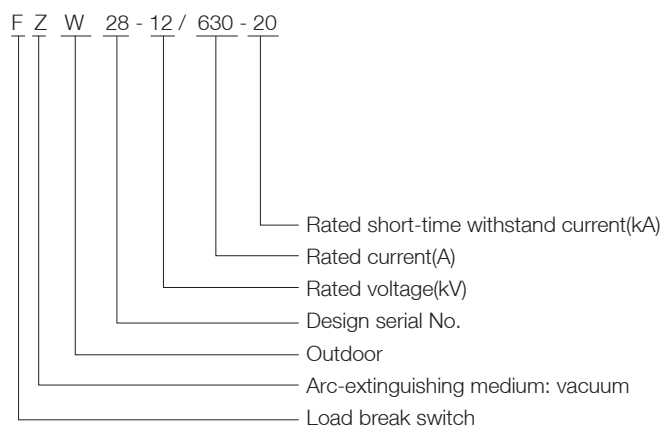
FZW28-12(VSP5) Outdoor HV AC SF₆ Insulation Vacuum Load Break Switch



Summary

FZW28-12(VSP5) outdoor HV AC SF₆ insulation vacuum load break switch is used to open and close load current and short-circuit current in the power distribution system with rated voltage 12kV, three-phase AC 50/60Hz. It is applicable to substations, industrial and mining enterprises, urban and rural electric power networks, especially to the occasions with frequent operation and urban and rural automatic power distribution networks for power network control and equipment protection. The switch has the functions of manual operation and electric operation. The product conforms to the standards of IEC 60265-1, IEC62271-103 & GB/T3804: High voltage AC load break switch.

Model



Ambient conditions

1. Altitude: $\leq 3000\text{m}$;
2. Ambient temperature: $-30^{\circ}\text{C} \sim +45^{\circ}\text{C}$; diurnal temperature rang $\leq 25^{\circ}\text{C}$;
3. Wind speed: $\leq 35\text{m/s}$;
4. Earthquake intensity: \leq grade 8;
5. Relative humidity: monthly average $\leq 90\%$; daily average $\leq 95\%$;
6. Ice thickness: $\leq 10\text{mm}$;
7. Pollution degree: \leq IV (GB5582);
8. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration.

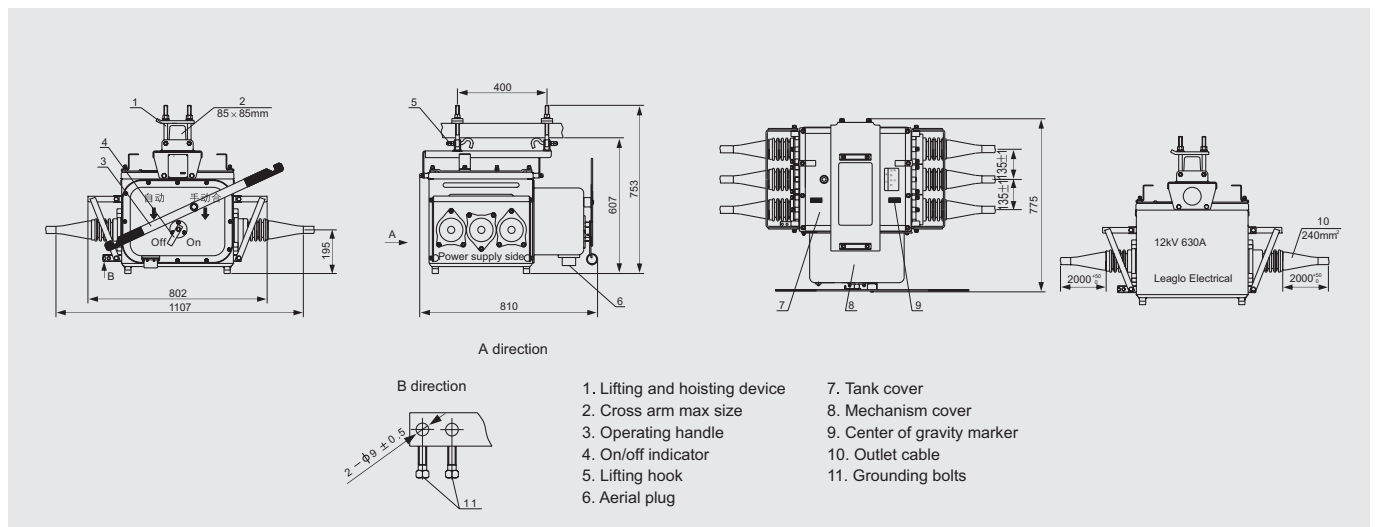
Main function features

1. SF₆ gas insulation: SF₆ gas is the non-toxic, non-combustible and electrical insulation gas, it has excellent arc-extinguishing performance;
2. Besides the standard porcelain bushing, a variety of options are available including silicon rubber insulator on the epoxy equipment bushing;
3. Visible Open/Close: The main contact position indicator marked by colors (Green-Open; Red-Close) can be easily visible from the ground. The indicator is connected directly to the main contact drive shaft assembly to ensure displaying the contact state accurately;
4. Reliable sealing performance with IP67 Protection Level: The mature sealing technology assures reliable sealing performance. The shell is processed by die drawing once-shaping technology, so it's easy for the case sealing with high air tightness and high mechanical strength;
5. Free maintainance: The main loop of circuit breaker, the secondary component and the operation mechanism are all sealed in SF₆ gas(zero gauge pressure), so they are not affected by the external environment, and have stable & reliable performance as well as the advantage of free maintainance.
6. Good performance of incoming and outgoing line: The switch can adopt cable incoming & outgoing method, or can use liquid silicon rubber corner bushing to make the distance between phases up to 280mm and ensure good performance of external insulation;
7. Safe usage: Anti-explosive device mounted on the top of box can prevent heated gas or matters from spattering out once the switch fault occurs;

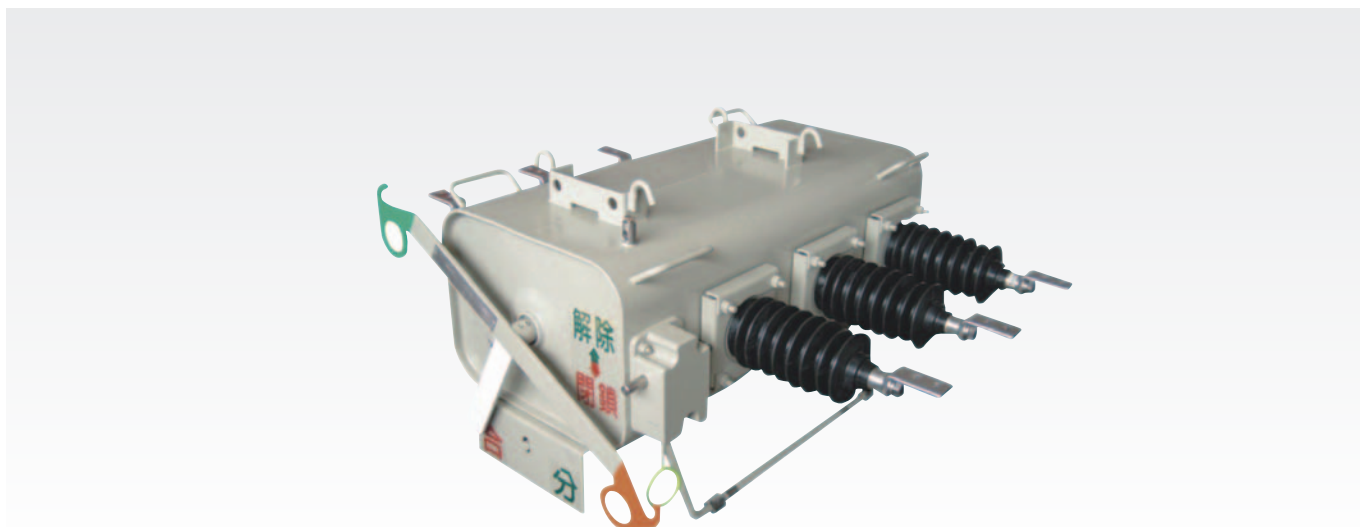
Technical specification

NO.	Item		Data
	Operating method		Manual or electric(persistent exciting magnet)
1	Rated value	Rated voltage	12KV
		Rated current	630A
		Rated short-time withstand current(4s)	12.5 16 20
		Rated short-circuit closing current(peak)	31.5 40 50
		Rated frequency	50/60Hz
2	1min P.F withstand current	Operating voltage	AC220V(80%~110%)
		Phase to earth	42KV
		Phase to phase	42KV
		Across open contacts	48KV
		Secondary phase to earth	2KV
3	Lightning impulse withstand current(peak)	Phase to earth	75KV
		Phase to phase	75KV
		Across open contacts	85KV
4	Rated gauge pressure of SF ₆ gas		Concentration up to 93% at 0 gauge pressure
5	Manual rated operating strength		100~400N
6	Main loop resistance		≤ 700 μ Ω / ≤ 150 μ Ω
7	Close-operating	184~220V	closing time 120-180ms(220V) ≤ 400ms(184V) attract current ≤ 17A bouncing time ≤ 10ms maintaining current ≤
		Lowest closing voltage	120~160V
8	Open-operating	184~220V	opening time ≤ 1.5s asynchronous time ≤ 3ms
		Lowest maintaining attract voltage	45~85V
9	Close/open-operating time difference between isolation clearance and vacuum arc-extinguishing chamber		≥ 10ms
10	Power consumption		≤ 99W
11	Short-circuit non-breaking test		≥ 1400A
12	Air-sealed test(leakage detecting)		No leakage at 0.2Mpa
13	Contact gap of vacuum arc-extinguishing chamber		7~9mm
14	Contact over-travel of vacuum arc-extinguishing chamber		3~4mm
15	Across isolating distance		25~35mm
16	Isolating clearance over-travel		6~13mm
17	Net weight		185Kg

Outline and installation dimension



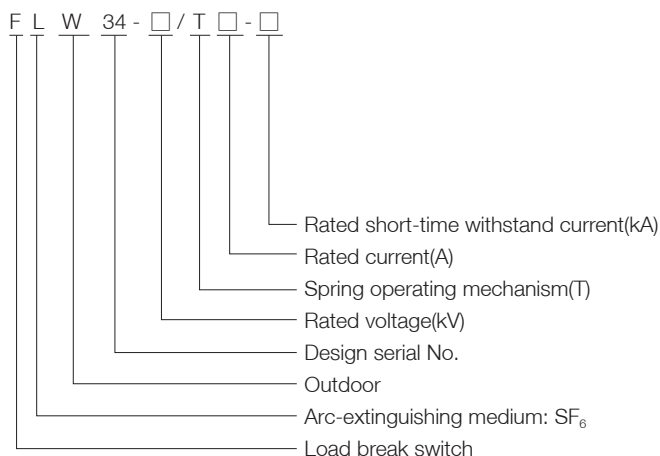
FLW34-12/24 Outdoor Pole-mounted HV AC SF₆ Insulation Load Break Switch



Summary

FLW34-12/24 outdoor pole-mounted HV AC SF₆ insulation load break switch is suitable to the distribution network with rated voltage 12/24kV, rated current 400/630A, three-phase AC 50/60Hz to open and close the load current and short circuit current in the power system. It can automatically disconnect the distribution line segment in which the fault occurred. Equipped with the advanced electronic controller, the switch can be for manual operation, electric operation and remote operation. The electronic controller is installed in a stainless steel cabinet, so it can be used in all kinds of climatic conditions. The wire and wireless modems can be also installed in the cabinet to realize remote monitoring and control. Simple, convenient and quick pole mounting can lower the installation cost. The product conforms to the standards of IEC60265-1, IEC62271-103 & GB/T3804: 3.6kV~40.5kV AC high voltage load break switch and IEC60694 & GB/T11022: high voltage switch apparatus and control device.

Model



Ambient conditions

- Altitude: ≤ 3000m;
- Ambient temperature: -40℃ ~ +50℃; diurnal temperature rang ≤ 25℃ ;
- Wind speed: ≤ 35m/s, equivalent to wind pressure of 700Pa;
- Earthquake intensity: ≤ grade 8;
- Relative humidity: 100%;
- Ice thickness: ≤ 10mm;
- Pollution degree: ≤ IV (GB5582);
- Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration;

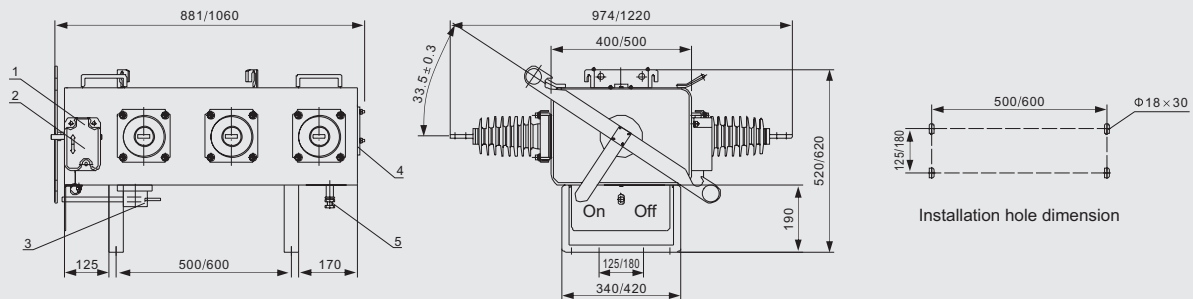
Main function features

- SF₆ gas insulation: SF₆ gas is the non-toxic, non-combustible and electrical insulation gas, it has excellent arc-extinguishing performance;
- Besides the standard porcelain bushing, a variety of options are available including silicon rubber insulator on the epoxy equipment bushing;
- Visible Open/Close
The main contact position indicator marked by colors (Green-Open; Red-Close) can be easily visible from the ground.
The indicator is connected directly to the main contact drive shaft assembly to ensure displaying the contact state accurately;
- Quick operation
Using a spring energy storage operator to ensure rapidly closing and opening operation(less than 1s);
- Remote controllable
With a electronic controller, field operation or main control platform operation through FTU-interface can be realized;
- Sturdy and durable switch
The switch is made from the sturdy, durable and anti-corrosion materials (304L stainless steel plate for warships) to ensure long service life(more than 30 years) and a series of operations;
- Easily installation
The switch can be pole mounted easily ;
- Standards
Each switch is filled with Sf₆ gas and sealed well before delivery, and is strictly tested according to the standards IEC60265-1(1998) and GB3804-1990.

Technical specification

NO.	Item			Unit	Data
1	Rated voltage			kV	12/24
2	Rated frequency			Hz	50/60
3	Rated insulation level (charged SF ₆ gas 0.05MPa/20℃)	Lightning impulse withstand voltage(peak)	Phase to phase, phase to earth	kV	75/125
			Across open contacts		85/145
		1min P.F withstand voltage	Phase to phase, phase to earth		42/64
			Across open contacts		48/79
		Raining withstand voltage test			34/50
4	Insulation level under zero gauge pressure	1min P.F withstand voltage		kV	30
5	Rated current			A	630
6	Rated load breaking current (at 0.05MPa/20℃)				630
7	Breaking current at zero gauge pressure				630
8	Rated short-circuit making current			kA	50
9	Rated short-time withstand current/duration			kA/s	20/4
10	Rated peak withstand current(peak)			kA	50
11	Rated cable charging breaking current			A	25
12	Rated line charging breaking current				1.5
13	Rated loop breaking current				630
14	Breaking times of rated load breaking current			times	100(E3 class)
15	Rated SF ₆ gas pressure			MPa	0.05 ± 0.01
16	Main loop resistance for each phase			μ Ω	≤ 120
17	Relative gas leakage rate			yearly	≤ 1%
18	SF ₆ gas moisture content	Delivery ex-factory value		ppm	≤ 150
		Switch operating value			≤ 300
19	Mechanical life			times	5000(M2 class)
20	Contact gap			mm	47 ± 2
21	Contact over-travel				17 ± 2
22	Average opening speed			m/s	1.2 ± 0.2
23	Average closing speed				0.6 ± 0.2
24	Closing time			ms	25~60
25	Opening time				18~45
26	Rated operating voltage			V	DC220、AC220
27	Rated power for energy storage motor			W	40
28	1 min P.F withstand voltage for secondary loop			kV	2
29	Phase-to-phase spacing			mm	230 ± 1.5/340 ± 1.5
30	Net weight			kg	125/155

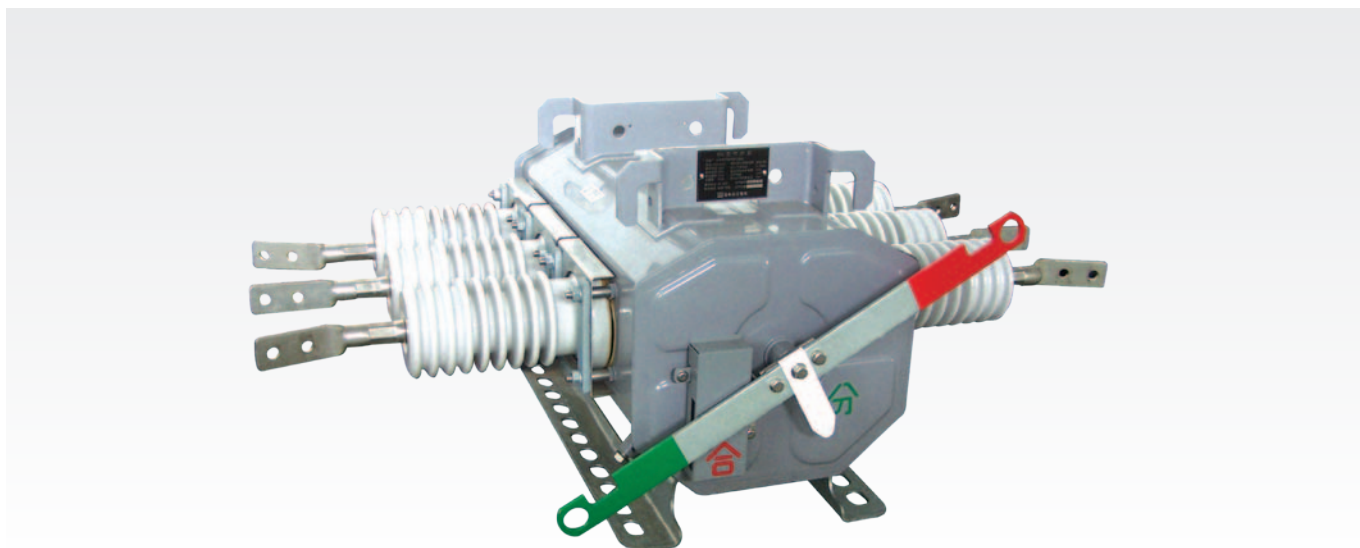
Outline and installation dimension



Outline and installation dimension for LBS(seat mounting type)

- | | |
|------------------------------------|-------------------------------------|
| 1. Manual locking device | 4. High gas pressure release device |
| 2. Unlocking device | 5. Grounding bolt |
| 3. Low gas pressure locking device | |

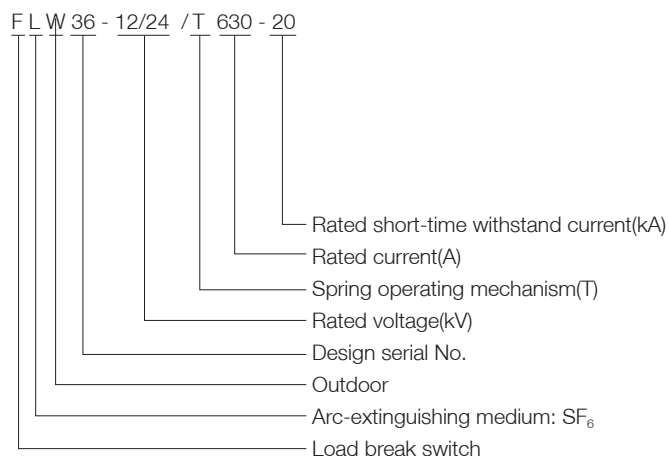
FLW36-12/24(SOG) Outdoor Pole-mounted HV AC SF₆ Insulation Load Break Switch



Summary

FLW36-12/24(SOG) outdoor pole-mounted HV AC SF₆ insulation load break switch type sectionalizer is suitable to the distribution network with rated voltage 12kV/24kV, rated current 400/630A, three-phase AC 50/60Hz to open and close the load current and short circuit current in the power system. It can automatically disconnect the distribution line segment in which the fault occurred. Equipped with the advanced electronic controller, the switch can be for manual operation, electric operation and remote operation. The electronic controller is installed in a stainless steel cabinet, so it can be used in all kinds of climatic conditions. The wire and wireless modems can be also installed in the cabinet to realize remote monitoring and control. Simple, convenient and quick pole mounting can lower the installation cost. The product conforms to the standards of IEC62271-103 & GB/T3804: 3.6kV~40.5kV AC high voltage load break switch and IEC60694 & GB/T11022: high voltage switch apparatus and control device.

Model



Ambient conditions

1. Altitude: ≤ 3000m;
2. Ambient temperature: -40℃ ~ +45℃; diurnal temperature rang ≤ 25℃ ;
3. Wind speed: ≤ 35m/s, equivalent to wind pressure of 700Pa;
4. Earthquake intensity: ≤ grade 8;
5. Relative humidity: 100%;
6. Ice thickness: ≤ 10mm;
7. Pollution degree: ≤ IV (GB5582);
8. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration;

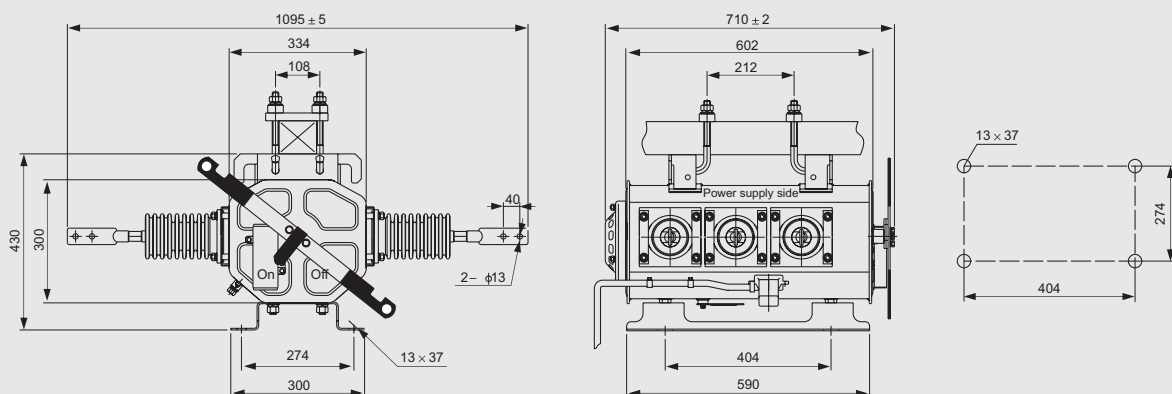
Main function features

1. SF₆ gas insulation: SF₆ gas is the non-toxic, non-combustible and electrical insulation gas, it has excellent arc-extinguishing performance;
2. Besides the standard porcelain bushing, a variety of options are available including silicon rubber insulator on the epoxy equipment bushing;
3. Visible Open/Close: The main contact position indicator marked by colors (Green-Open; Red-Close) can be easily visible from the ground. The indicator is connected directly to the main contact drive shaft assembly to ensure displaying the contact state accurately;
4. Quick operation: Using a spring energy storage operator to ensure rapidly closing and opening operation(less than 1s);
5. Remote controllable: With a electronic controller, field operation or main control platform operation through FTU-interface can be realized;
6. Sturdy and durable switch: The switch is made from the sturdy, durable and anti-corrosion materials (304L stainless steel plate for warships) to ensure long service life(more than 30 years) and a series of operations;
7. Easily installation: The switch can be pole mounted easily ;
8. Standards: Each switch is filled with SF₆ gas and sealed well before delivery, and is strictly tested according to the standards IEC60265-1 (1998) and GB3804-1990.

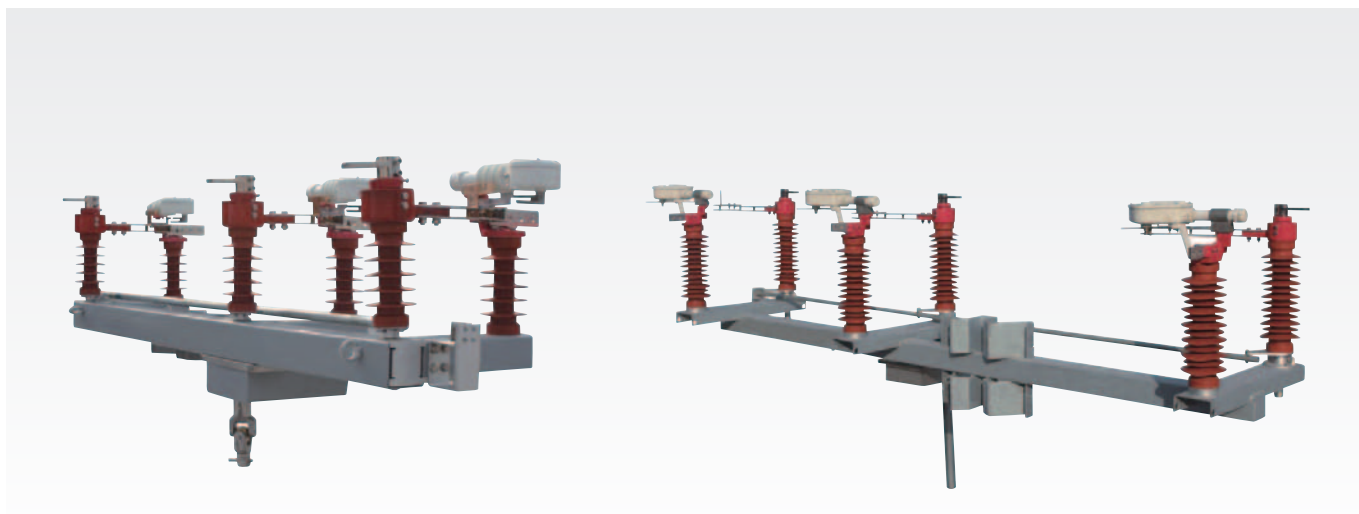
Technical specification

NO.	Item			Unit	Data
1	Rated voltage			kV	12/24
2	Rated frequency			Hz	50/60
3	Rated insulation level(charged SF ₆ gas0.05MPa/20℃)	Lightning impulse withstand voltage(peak)	Phase to phase, phase to earth	kV	75/125
			Across open contacts		85/145
		1min P.F withstand voltage	Phase to phase, phase to earth		42/64
			Across open contacts		48/79
		Raining withstand voltage test			34/50
4	Insulation level under zero gauge pressure	1min P.F withstand voltage		kV	30
5	Rated current			A	630
6	Rated load breaking current (at 0.05MPa/20℃)				630
7	Breaking current at zero gauge pressure				630
8	Rated short-circuit making current			kA	50
9	Rated short-time withstand current/duration			kA/s	20/4
10	Rated peak withstand current(peak)			kA	50
11	Rated cable charging breaking current			A	25
12	Rated line charging breaking current				1.5
13	Rated loop breaking current				630
14	Breaking times of rated load breaking current			times	100(E3 class)
15	Rated SF ₆ gas pressure			MPa	0.05 ± 0.01
16	Main loop resistance for each phase			μ Ω	≤ 120
17	Relative gas leakage rate			yearly	≤ 1%
18	SF ₆ gas moisture content	Delivery ex-factory value		ppm	≤ 150
		Switch operating value			≤ 300
19	Mechanical life			times	5000(M2 class)
20	Contact gap			mm	47 ± 2
21	Contact over-travel				17 ± 2
22	Average opening speed			m/s	1.2 ± 0.2
23	Average closing speed				0.6 ± 0.2
24	Closing time			ms	25~60
25	Opening time				18~45
26	Rated operating voltage			V	DC220、 AC220
27	Rated power for energy storage motor			W	40
28	1 min P.F withstand voltage for secondary loop			kV	2
29	Phase-to-phase spacing			mm	230 ± 1.5/340 ± 1.5
30	Net weight			kg	125/155

Outline and installation dimension



FKW18-12/24/40.5 Outdoor HV AC Load Break Switch



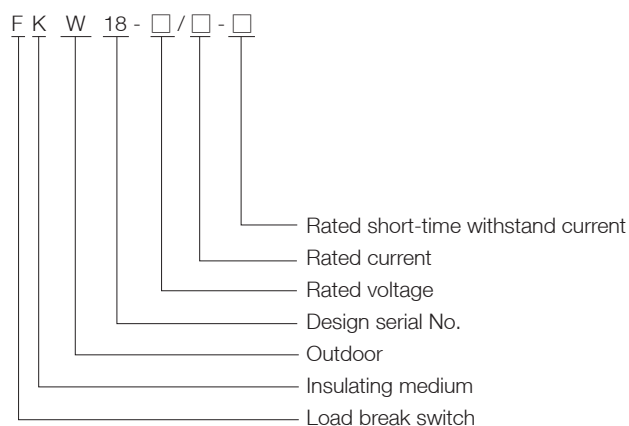
Summary

FKW18-12/24/40.5 outdoor AC high voltage load break switch is used in rated voltage 12/24/40.5kV, rated frequency 50/60Hz outdoor three-phase power system. The load break switch is composed of disconnect blade, arc extinguishing chamber and operation mechanism. It has advantages of simple structure, strong extinguishing arc ability, reliable performance, etc.

Ambient conditions

1. Altitude: $\leq 3000\text{m}$;
2. Ambient temperature: $-25^{\circ}\text{C} \sim +40^{\circ}\text{C}$;
3. Wind speed: $\leq 35\text{m/s}$;
4. Pollution degree: $\leq \text{IV}$;
5. Earthquake intensity: ≤ 8 degree;
6. Ice thickness: $\leq 10\text{mm}$.

Model



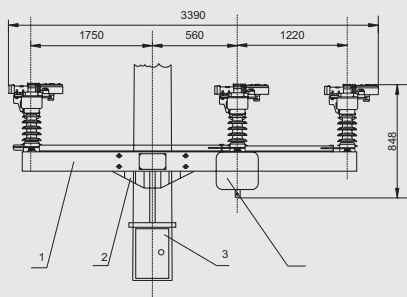
Main function features

FKW18-12/24/40.5 outdoor alternating current high voltage load break switch is composed of disconnect blade, arc extinguishing chamber and operating mechanism. Arc extinguishing chamber is made of insulating materials with merits of high electric performance, arc-endurance, high strength Built-in linking spring with fast acting mechanism to ensure breaking of load current effecting free from operating speed, fast or slow. The arcing gap and disconnecting gap of the load breaker switch is parallel in the course of opening and closing, so the arcing gap is only used to extinguish arc, no task for carrier current, simplifying arcing structure; however the disconnect gap only takes on task for carrier current and short-circuit closing, not participating in extinguishing arc, so simple in structure and long in lifetime In this way, the load break switch can be used as disconnect switch when don't consider the action of arcing gap, and with the action of arcing gap, the disconnect switch is changed into load break switch This load break switch adopts manual linking rod or motor operating mechanism to operate. and to lock up location of opening & closing There is visible gap of switch after opening to produce functions of isolating and protection The LBS could be mounted on pole outdoor, could suit for pollution with IV degree horizontal or vertical installation, very convenient for setting cables outdoor with few maintenance and arc extinguishing chamber breaking load without maintenance for 100 times The A, B, C three-phase of the load breaker switch is in turn installed on one great sectional galvanized square steels base, joint together with one integrative drive axis inter-phase to ensure for closing & opening three poles synchronously. The blade of the switch uses press spring to assure enough connection pressure to the contact, in this way, operation is convenient and the blade is stable, in the same time, the reliability of opening-closing operation is guaranteed The switch opens or closes under rated load current, not requires connecting secondary protection device.

Technical specification

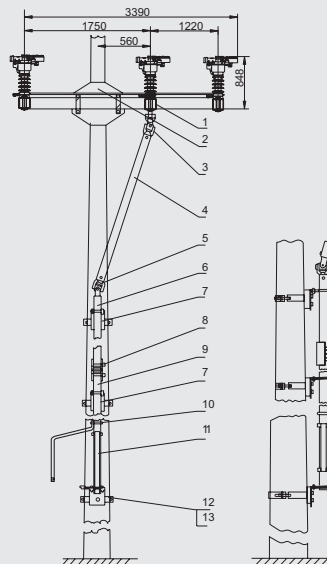
No.	Item			Unit	Data		
1	Rated voltage			kV	12	24	40.5
2	Rated current			A	630		
3	Rated power frequency			Hz	50/60		
4	Rated peak withstand current			kA	50		
5	Rated short-time withstand current			kA	20		
6	Rated short-circuil duration			s	4		
7	Rated active load breaking current			A	630		
8	Rated loop breaking current			A	630		
9	Rated cable charging current			A	10		
10	5% rated active load breaking current			A	31.5		
11	Rated power transformer breaking current			A	1250		
12	Rated short-circuit making current			kA	50		
13	Main loop resistance			μ Ω	≤ 90	≤ 95	≤ 95
14	1min.power frequency withstand voltage	Dry	phase to phase, to earth	kV	42	65	95
			across open contacts	kV	49	79	115
		Wet	phase to phase, to earth	kV	30	63	85
15	Lightning impulse withstand voltage(peak)		phase to phase, to earth	kV	75	125	185
			across open contacts	kV	85	145	215
16	Mechanical life			Times	2000		
17	Three phase O/C asynchronous			ms	≤ 5		
18	Voltage, power of motor			V W	≥ 220	≤ 200	
19	Closing direction deflexion of blade			mm	≤ 2		
20	Main blade pressure			N	420 ± 42		
21	Rated operating moment			Nm	≤ 300		

Outline and installation dimension



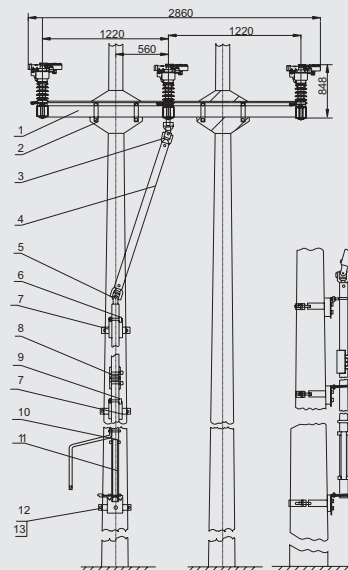
Drawing 1 Motor Operating Installation

1. Switch body assemble
2. Body & holt hoop iron components
3. Control cabinet
4. Motor operating mechanism



Drawing 2 Switch Manual Operating Single Pole Horizontal Installation Drawings

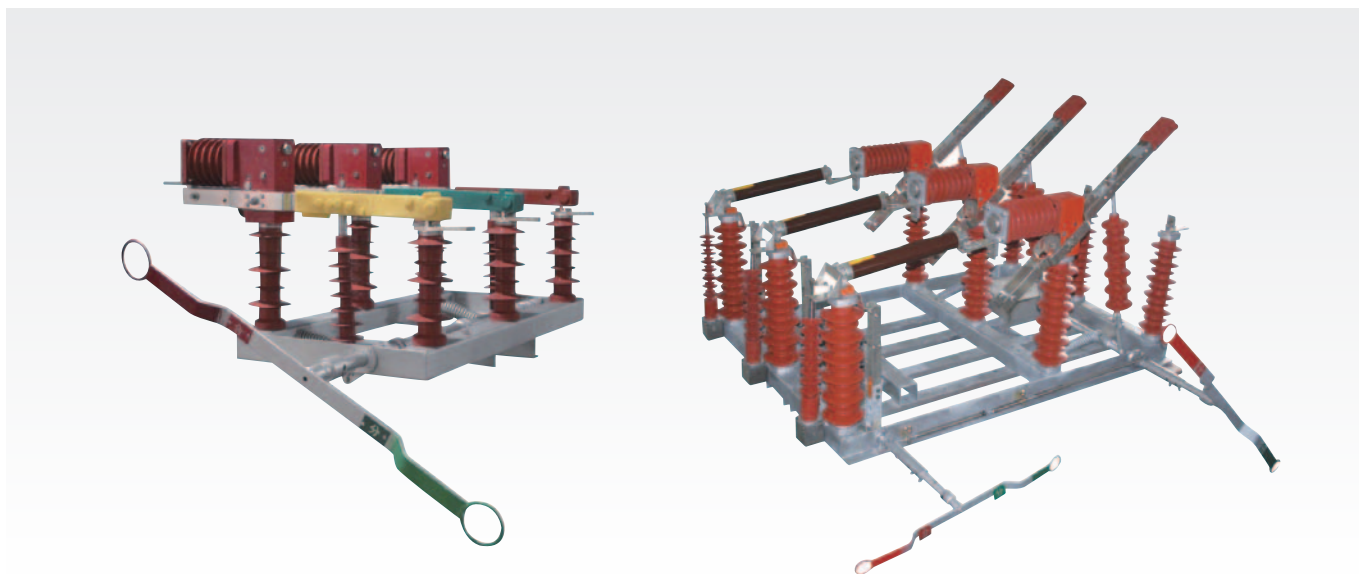
1. The switch body assembly
2. Body & holt hoop iron components
3. Universal joint
4. Connecting rod
5. Universal joint
6. Connecting rod



Drawing 3 Switch Manual Horizontal Operating Installation Diagram of Double Rod

7. Guidance holt hoop iron components
8. Joint components
9. Connecting rod
10. Grounding device
11. Operating handle
12. Bottom guidance holt hoop iron components
13. Padlock

FZW32-12/24/40.5 Outdoor HV Vacuum Disconnect Load Break Switch



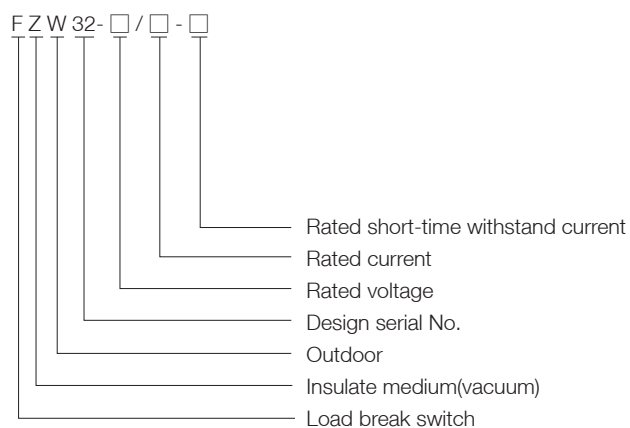
Summary

FZW32-12/24/40.5 Outdoor AC high voltage disconnect vacuum load break switch is a new product adopts domestic existing mature load break switch production experience and overseas advanced technology to design and manufacture. the load break switch is composed of disconnect blade, vacuum interrupter and operation mechanism vacuum extinguishing arc, there are merits as strong extinguishing arc ability, reliable performance, long lifetime, small volume, no explosive danger and no pollution to environment. It accords with standards of IEC62271-103 High voltage switches.

Ambient conditions

1. Altitude: $\leq 1000\text{m}$;
2. Ambient temperature: $-30^{\circ}\text{C} \sim +40^{\circ}\text{C}$;
3. Wind speed: $\leq 34\text{m/s}$;
4. Pollution degree: $\leq \text{IV}$;
5. Earthquake intensity: ≤ 8 degree;
6. Ice thickness: $\leq 10\text{mm}$.

Model



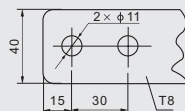
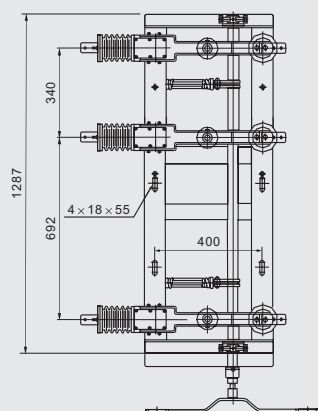
Technical specification

NO.	Item			Unit	Data	
1	Rated voltage			kV	12/24	40.5
2	Rated current			A	630,1250	
3	Rated power frequency			Hz	50/60	
4	Rated peak withstand current			kA	50,63	
5	Rated short-time withstand current			kA	20,25	
6	Rated short-circuit duration			s	4	
7	Rated active load breaking current			A	630,1250	
8	Rated loop breaking current			A	630,1250	
9	Rated cable charging current			A	10	
10	5%rated active load breaking current			A	31.5,63	
11	Rated power transformer breaking current			kVA	1250	
12	Rated short-circuit making current			kA	50,63	
13	Main loop resistance			μ Ω	≤ 90	≤ 100
14	1min.power frequency withstand voltage	Dry	phase to phase phase to earth	kV	42/50	95
			across open contacts	kV	49/60	115
		Wet	phase to phase phase to earth	kV	30/40	85
15	Lightning impulse withstand voltage(peak)		phase to phase phase to earth	kV	75/125	185
			across open contacts	kV	85/145	215
16	Mechanical life			Times	10000	10000
17	Three phase closing asynchronous			ms	≤ 5	≤ 5
18	Direction rotating of making contact blade			mm	≤ 2	≤ 2
19	Main contact blade pressure			N	300 ± 30	420 ± 42
20	Distance between electric Darts and phase to earth			mm	≥ 200	≥ 380
21	Rated operating moment			Nm	≤ 300	≤ 300

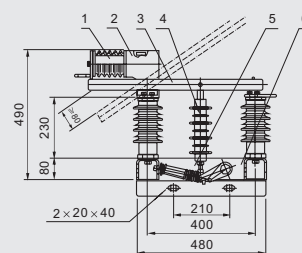
LBS with vacuum arc extinguish chamber

NO.	Item	Unit	Data	
1	Contact distance	mm	5 ± 1	18 ± 1
2	Average breaking speed	m/s	1.1 ± 0.2	1.6 ± 0.2
3	Three phase breaking asynchronous	ms	≤ 5	≤ 5
4	Three phase making asynchronous	ms	≤ 5	≤ 5

Outline and installation dimension



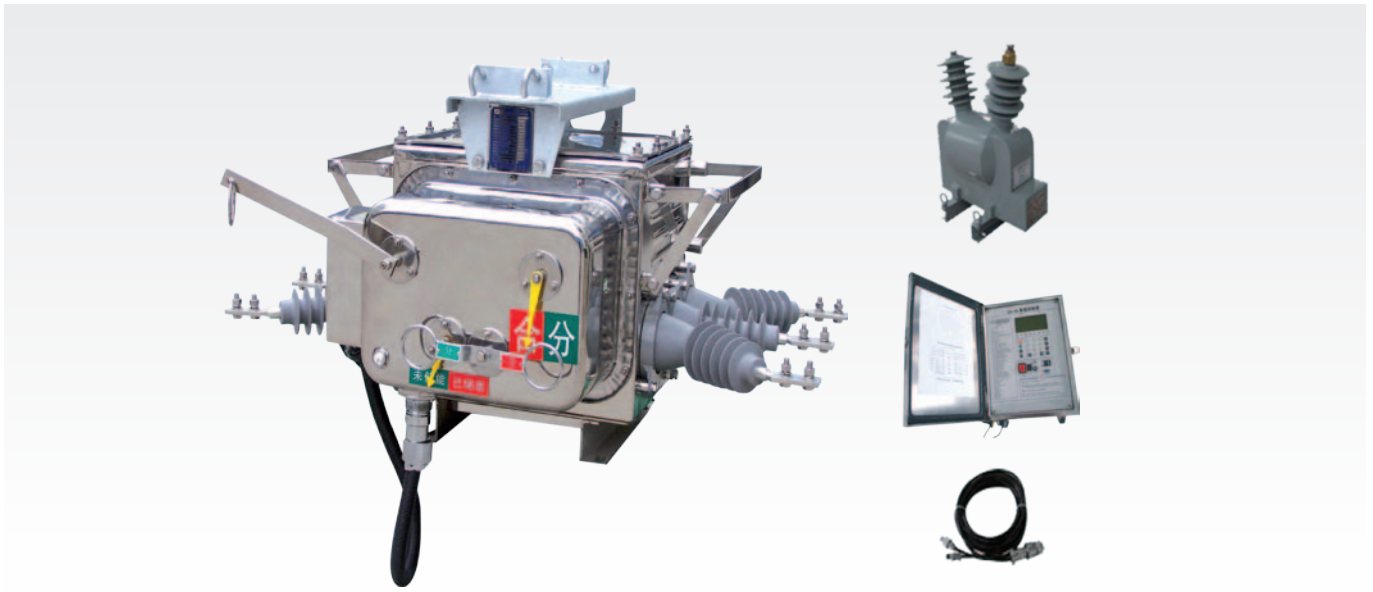
Schematic diagram for connecting terminal



1. Vacuum arc chamber cubicle
2. Opening spring
3. Disconnect blade
4. Insulating bar
5. Frame
6. Spring

FZW32-12 General Arrangement & Dimension Drawing

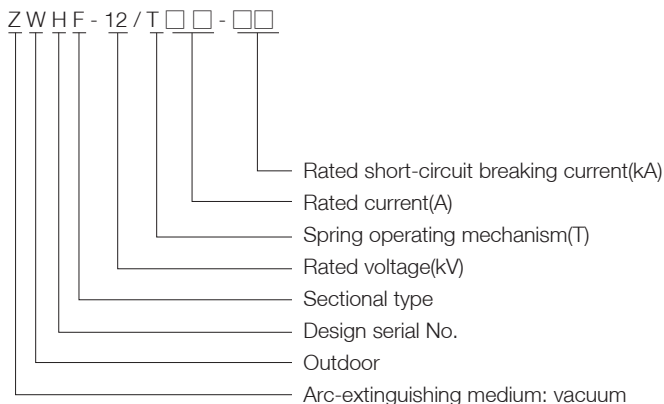
ZWHF-12 Outdoor HV AC Vacuum Circuit Breaker Type Sectionalizer



Summary

ZWHF-12 outdoor HV AC vacuum circuit breaker type sectionalizer (hereinafter referred to as the sectionalizer) is a new multifunctional intelligent device which is mainly assembled by three parts of a vacuum circuit breaker, a CH-40 controller and external (or built-in) voltage transformer (Note: bilateral PT can be chosen to use in distribution automation line ring network), so as it has the functions of vacuum circuit breaker, vacuum load break switch, recloser and sectionalizer. The sectionalizer is widely used in overhead ring network line for urban and rural electric distribution networks with rated voltage 12kV as the sectionalizing disconnect switch, interconnection switch, automatic switch device which can implement the ring deployment line load. It can be used as a sectionalized switch (commonly known as a watchdog) in the branch line of power supply, used as a recloser and a sectionalizer in feed overhead distribution network. The sectionalizer has remote management mode, and has the functions of protection & control and communication. It can reliably judge and detect MA level zero-sequence current and short-circuit fault current between phases to remove automatically the single-phase grounding fault and short-circuit fault between phases. The product conforms to the standards of IEC62271-100 & GB1984: AC high voltage circuit breaker, IEC60694 & GB/T11022: HV general technical requirement of switch and control apparatus.

Model



Main function features

1. Reliable sealing performance with IP67 Protection Level: The mature sealing technology assures reliable sealing performance. The shell is processed by die drawing once-shaping technology, so it's easy for the case sealing with high air tightness and high mechanical strength.
2. Excellent breaking capability: To break the short-circuit current can be up to 25kA with 30 times.
3. Free maintenance: The main loop of circuit breaker, the secondary component and the operation mechanism are all sealed in SF₆ gas (zero gauge pressure), so they are not affected by the external environment, and have stable & reliable performance as well as the advantage of free maintenance.
4. Good performance of incoming and outgoing line: The switch adopts liquid silicon rubber corner bushing to make the distance between phases up to 280mm and ensure good performance of external insulation.
5. Safe usage: Anti-explosive device mounted on the top of box can prevent heated gas or matters from spattering out once the switch fault occurs.

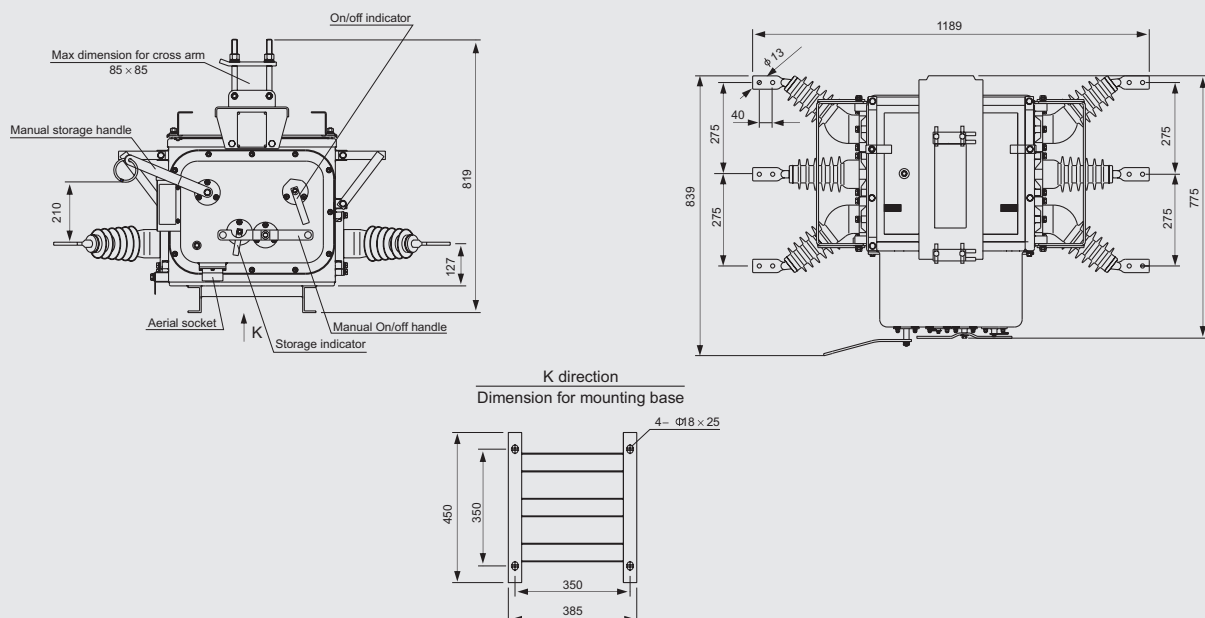
Ambient conditions

1. Altitude: ≤ 3000m;
2. Ambient temperature: -30℃ ~ +45℃; diurnal temperature range ≤ 25℃;
3. Wind speed: ≤ 35m/s;
4. Earthquake intensity: ≤ grade 8;
5. Relative humidity: monthly average ≤ 90%; daily average ≤ 95%;
6. Ice thickness: ≤ 10mm;
7. Pollution degree: ≤ IV (GB5582);
8. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration.

Technical specification

No.	Item		Unit	Data
1	Rated value	Rated voltage	kV	12
		Rated frequency	Hz	50/60
		Rated current	A	630
		Rated withstand current(peak)	kA	50
		Rated short-time withstand current(4s)		20
		Rated short-circuit making current(peak)		50
		Breaking times of rated current	times	1000
		Making times of rated short-circuit breaking current		30
2	1min P.F withstand current	Phase to phase, phase to earth	kV	42
		Across open contacts		48
		Secondary loop withstand voltage		2
3	Lightning impulse withstand voltage (peak)	Phase to phase, phase to earth		75
		Across open contacts		85
4	Opening speed	m/s		1.2 ± 0.2
5	Closing speed			0.8 ± 0.2
6	Closing time	ms		20~60
7	Opening time			18~45
8	Contact close-bouncing time			≤ 2
9	Three-phase opening/closing non-simultaneity			≤ 2
10	Resistance for each phase conductive loop	μ Ω		≤ 120
11	Rated power for energy storage motor	W		> 40
12	Rated voltage for energy storage motor	V		DC24/DC220
13	Rated close-operating voltage			DC24/DC220
14	Rated open-operating voltage			DC24/DC220
15	Rated gauge pressure of SF ₆ gas(gauge pressure)	MPa		“0”
16	External creepage distance	cm/kV		3.8 ± 2
17	External charged air insulation distance	mm		240 ± 2
18	Phase-to-phase spacing			135 ± 1.5
19	Mechanical life	times		10000
20	Net weight	kg		145

Outline and installation dimension



ZW27K-12 Outdoor HV AC Vacuum Circuit Breaker Type Sectionalizer



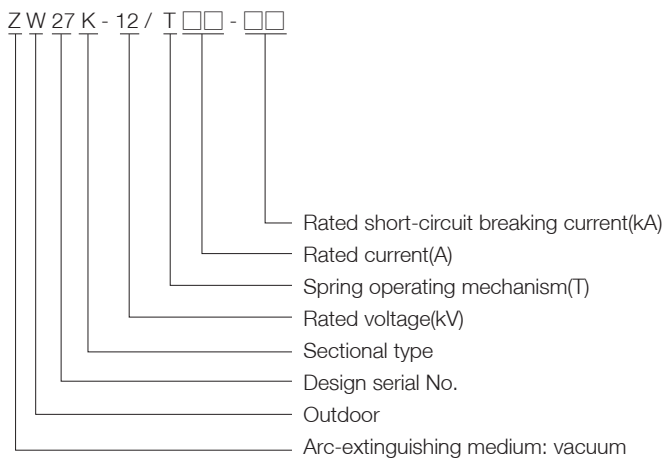
Summary

ZW27K-12 outdoor HV AC vacuum circuit breaker type sectionalizer is a kind of user sectionalized switch which is independently researched and developed by our company. It is composed of two main parts of switch body and fault detection controller. These two parts are electrically connected together by aerial sockets and outdoor sealed control cables. The switch has the remote management mode, and has the functions of protection & control and communication. It can reliably judge and detect MA level zero sequence current in or out boundary and short-circuit fault current between phases to remove automatically the single-phase grounding fault and shortcircuit fault between phases. The product conforms to the standards of IEC62271-100 & GB1984: AC high voltage circuit breaker, IEC60694 & GB/T11022: HV general technical requirement of switch and control apparatus.

Ambient conditions

1. Altitude: $\leq 1500\text{m}$;
2. Ambient temperature: $-40^{\circ}\text{C} \sim +45^{\circ}\text{C}$; diurnal temperature range $\leq 25^{\circ}\text{C}$;
3. Wind speed: $\leq 34\text{m/s}$ (wind pressure $\leq 700\text{Pa}$);
4. Earthquake intensity: \leq grade 8;
5. Relative humidity: monthly average $\leq 90\%$; daily average $\leq 95\%$. Dew may be condensed in the interior of the tank body when high humidity drops rapidly;
6. Ice thickness: $\leq 10\text{mm}$;
7. Pollution degree: \leq IV (GB5582);
8. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration;
9. Neutral grounding mode: neutral non grounding, neutral grounding via arc-extinguishing coil, neutral grounding via low-resistance.

Model



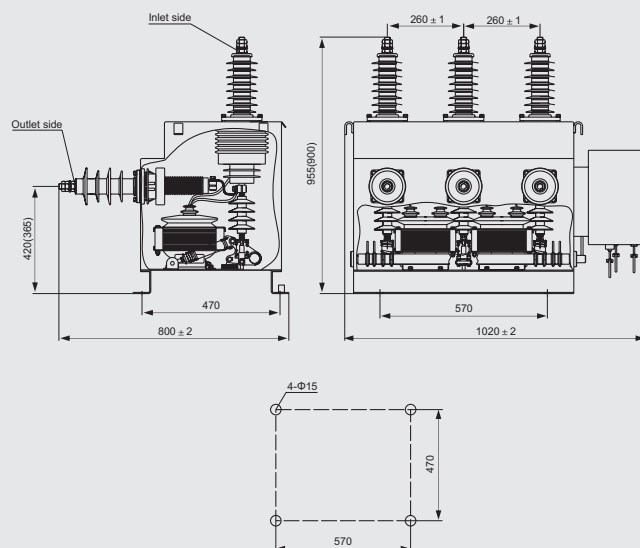
Main function features

1. When the fault occurs in T shape branch line junction of 10kV overhead distribution line, or occurs in the inside of end users, and if the fault occurs in the incoming line for feeder switch, or although the fault occurs in the inside of user line switch, all these faults will cause the protection tripping of the outgoing line switch for substation due to ill-timed coordination between the protective action time limit for feeder switch or user line switch and the protective action time limit for the outgoing line switch for substation. If the fault is permanent, and reclosing substation is not successive, an accident occurs in a medium voltage user community will make the whole distribution line outage. This common accident in the power distribution network will cause vicious influence to the society.
2. If a user boundary switch(commonly known as watchdog) is installed in T shape branch line junction or user end(duty boundary point), it can confirm the faults of overcurrent or short-circuit or single-phase grounding after judging and automatically isolate the faults to ensure the safe usage of the electricity in non-fault zone.

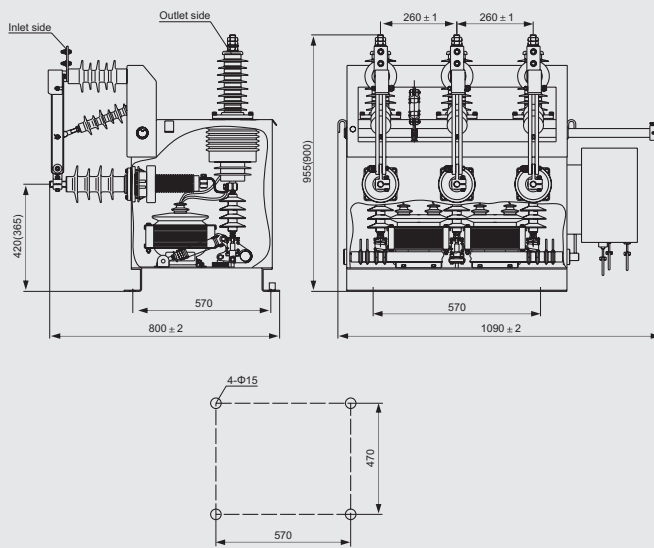
Technical specification

NO.	Item			Unit	Data
1	Rated voltage			kV	12
2	Rated current			A	630
3	Rated insulation level	1min P.F withstand voltage	Dry test	kV	42
			Wet test (to earth, external insulation)		34
		Lightning impulse withstand voltage(peak)			75
4	Rated frequency			Hz	50/60
5	Rated short-circuit breaking current			kA	20
6	Rated operating sequence				O-0.3s-CO-180s-CO
7	Breaking times of rated short-circuit breaking current			times	30
8	Rated short-circuit making current (peak)			kA	50
9	Rated peak withstand current				50
10	Rated short-time withstand current				20
11	Rated short-circuit duration			s	4
12	Rated operating voltage /rated auxiliary loop voltage			V	AC/DC 220
13	Average opening speed			m/s	1.0 ± 0.3
14	Average closing speed				1.0 ± 0.25
15	Contact close-bouncing time			ms	≤ 2
16	Three-phase opening non-simultaneity				≤ 2
17	Closing time			ms	25~50
18	Opening time	At highest rated operating voltage			15~50
		At lowest rated operating voltage			30~16
19	DC resistance for each phase loop			μ Ω	≤ 120(200 with isolator)
20	Phase-to-phase spacing(measure from arc chamber' s end)			mm	260 ± 2.0
21	Mechanical life			times	10000
22	Net weight			kg	135/155 with isolator)

Outline and installation dimension

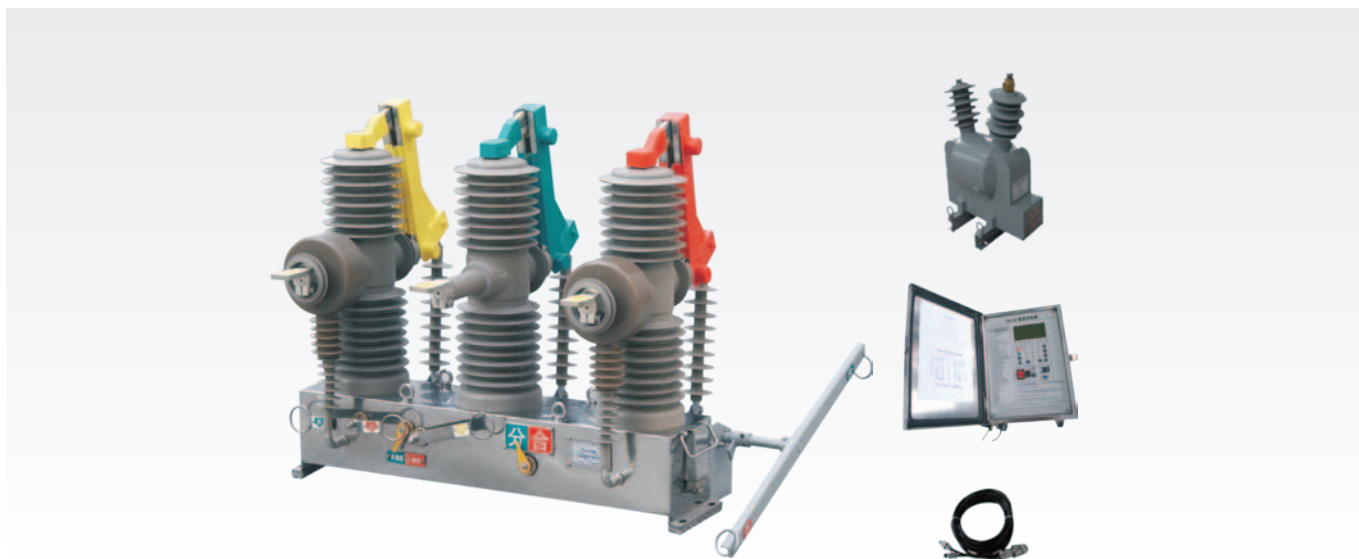


Drawing 1: sectionnizer without disconnect switch



Drawing 2: sectionnizer with disconnect isolator

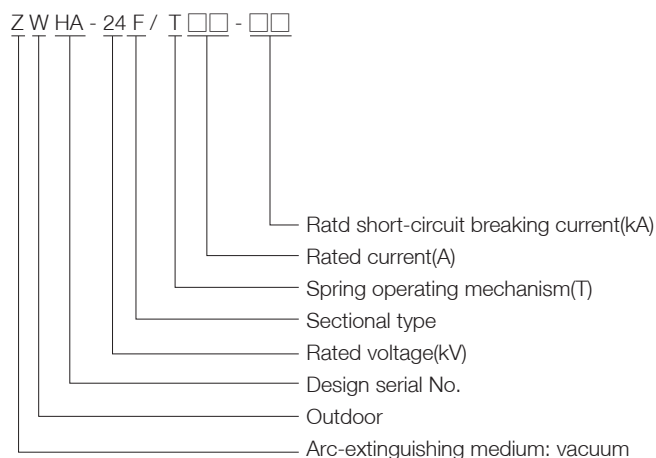
ZWHA-24F Outdoor HV AC Vacuum Circuit Breaker Type Sectionalizer



Summary

ZWHA-24F outdoor HV AC vacuum circuit breaker type sectionalizer is used to make and break load current, overload current and short-circuit current in the power system with rated voltage 24kV, three-phase AC 50/60Hz. The sectionalizer is composed of ZWHA-24 vacuum circuit breaker an intelligent controller and a built-out voltage transformer. These three parts are electrically connected together by aerial sockets and outdoor sealed control cables. It has the functions of fault detection, protection & control and communication. It can reliably judge and detect MA level zero sequence current in boundary and short-circuit fault current between phases. It is applicable to substations, industrial and mining enterprises, urban and rural electric power networks, especially to the occasions with frequent operation and automatic power distribution networks for power network control and equipment protection. The product conforms to the standards of IEC62271-100 & GB1984: AC high voltage circuit breaker, IEC60694 & GB/T11022: HV general technical requirement of switch and control apparatus.

Model



Ambient conditions

1. Altitude: $\leq 2000\text{m}$;
2. Ambient temperature: $-40^{\circ}\text{C} \sim +45^{\circ}\text{C}$; diurnal temperature rang $\leq 25^{\circ}\text{C}$;
3. Wind speed: $\leq 35\text{m/s}$, equivalent to wind pressure of 700Pa;
4. Earthquake intensity: \leq grade 8;
5. Relative humidity: monthly average $\leq 90\%$; daily average $\leq 95\%$;
6. Ice thickness: $\leq 10\text{mm}$;
7. Sunlight intensity: $\leq 1000\text{W/m}^2$;
8. Pollution degree: \leq IV (GB5582);
9. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration.

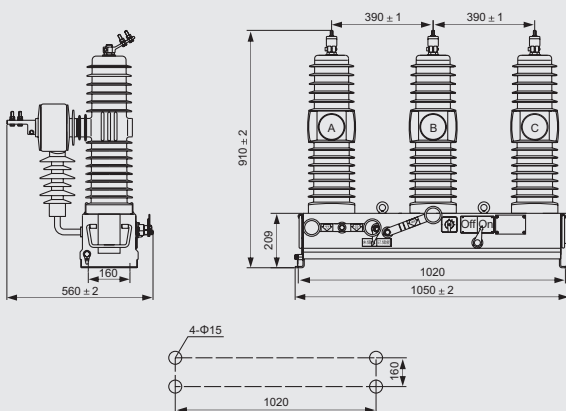
Main function features

1. The product can be equipped with a protection and metering current transformer to realize 3-sectional type over-current protection and electricity consumption monitoring according to users' request;
2. The product can be equipped with a built-in remote control device to realize remote operation;
3. Equipped with a reclosing controller, it can realize the function of automatic reclosing;
4. Iron or stainless steel body, manual or electric mechanism is available for free choice;
5. The product can meet the demands of the users from different regions as it has the norms of miniaturization and plateau types for users to choose;
6. The switch can be equipped with an external isolator according to the users' request;
7. The operating mechanism can be permanent magnet type which can sensitively and quickly cut off the short-circuit current;
8. All the other functions which the similar products have can be added to the switch according to the users' request.

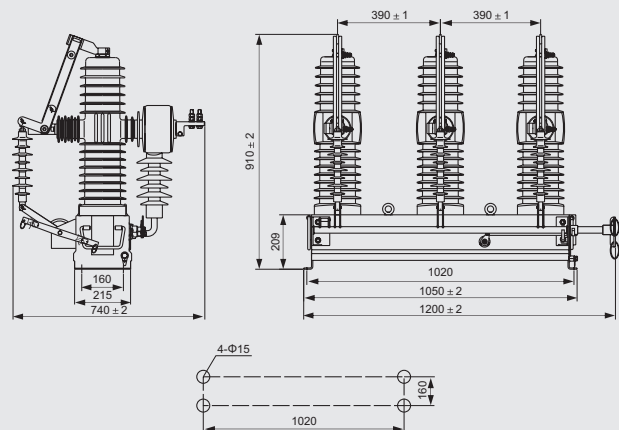
Technical specification

NO.	Item			Unit	Data		
1	Rated voltage			kV	24		
2	Rated insulation level	1min P.F	Dry test		65/79(isolate distance)		
		Withstand voltage	Wet test		50/64(isolate distance)		
			Auxiliary loop and control loop		2		
			Lightning impulse withstand voltage(peak)		125/145(isolate distance)		
3	Rated frequency			Hz	50/60		
4	Rated current			A	630、1250		
5	Rated operating sequence				0-0.3s-CO-180s-CO		
6	Rated short-circuit breaking current			kA	16	20	25
7	Rated short-circuit making current(peak)				40	50	63
8	Rated peak withstand current(peak)				40	50	63
9	Rated short-time withstand current				16	20	25
10	Rated short-circuit duration			s	4		
11	Breaking times of rated current			times	1000		
12	Breaking times of rated short-circuit breaking current				20		
13	Closing time			ms	20~80		
14	Opening time	At max. operating voltage			20~80		
		At rated operating voltage			20~80		
		At min. operating voltage			20~80		
15	Complete breaking time				≤100		
16	Mechanical life			times	10000		
17	Closing power			J	70		
18	Rated input power for energy storage motor			W	≤ 70		
19	Rated operating voltage and rated auxiliary loop current			V	DC/AC 220		
20	Energy storage time under rated voltage			S	≤ 8		
21	Over-current tripping device	Rated current		A	5		
		Tripping current accuracy		%	± 10		
22	Average opening speed			mm	1.5 ± 0.2		
23	Average closing speed				0.8 ± 0.2		
24	Contact close-bouncing time			ms	≤ 3		
25	Three-phase opening non-simultaneity				≤ 2		
26	DC resistance for each phase loop(with isolator)			μ Ω	≤ 80(150 with isolator)		
27	Allowed accumulative wear thickness for moving and static contacts			mm	3		
28	Phase-to-phase spacing				390 ± 1.5		
29	Contact self-closing pressure			N	2000 ± 200		
30	Net weight			kg	125(155 with isolator)		

Outline and installation dimension

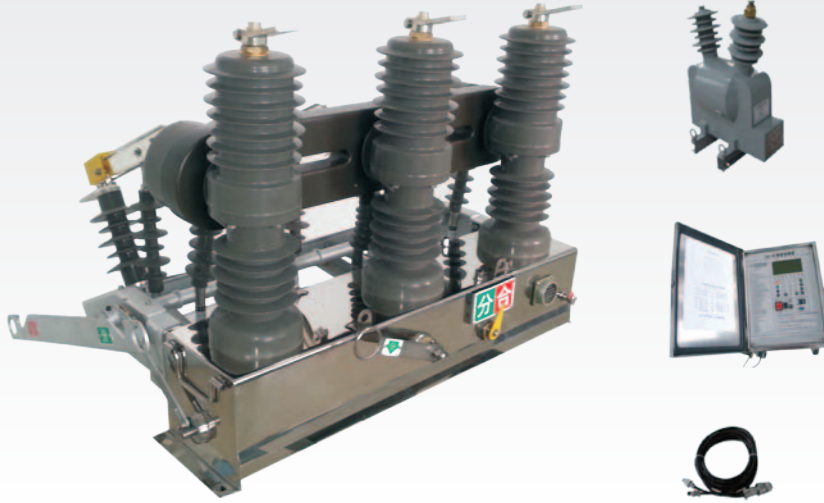


Drawing 1: vacuum circuit breaker without disconnect switch



Drawing 2: vacuum circuit breaker with disconnect switch

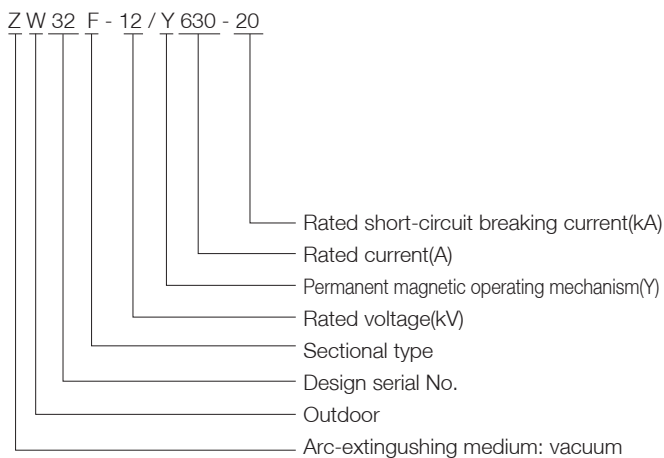
ZW32F-12Y Outdoor HV AC Pole-mounted Permanent Magnet Vacuum Circuit Breaker Type Sectionalizer



Summary

ZW32F-12Y outdoor HV AC pole-mounted permanent magnet vacuum circuit breaker type sectionalizer is used in the outdoor power distribution system with rated voltage 12kV, three-phase AC 50/60Hz. It is applicable to substations, industrial and mining enterprises, especially to rural electric power networks and the occasions with frequent operation for power network control and equipment protection. The sectionalizer is mainly composed of ZW43-12Y vacuum circuit breaker, an intelligent controller and a built-out voltage transformer (PT). These three parts are electrically connected together by aerial sockets and outdoor sealed control cables. It has the functions of fault detection, protection & control and communication. It can reliably judge and detect MA level zero sequence current in boundary and short-circuit fault current between phases to remove automatically the single-phase grounding fault and short-circuit fault between phases. The product conforms to the standards of IEC62271-100 & GB1984: AC high voltage circuit breaker, IEC60694 & GB/T11022: HV general technical requirement of switch and control apparatus.

Model



Ambient conditions

1. Altitude: $\leq 2000\text{m}$;
2. Ambient temperature: $-40^{\circ}\text{C} \sim +45^{\circ}\text{C}$; diurnal temperature rang $\leq 25^{\circ}\text{C}$;
3. Wind speed: $\leq 35\text{m/s}$ (wind pressure $\leq 700\text{Pa}$);
4. Earthquake intensity: \leq grade 8;
5. Relative humidity: monthly average $\leq 90\%$; daily average $\leq 95\%$. Dew may be condensed in the interior of the tank body when high humidity drop rapidly;
6. Ice thickness: $\leq 10\text{mm}$;
7. Sunlight intensity: $\leq 1000\text{W/m}^2$;
8. Pollution degree: \leq IV (GB5582);
9. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration.

Main function features

1. When the fault occurs in T shape branch line junction of 10kV overhead distribution line, or occurs in the inside of end users, and if the fault occurs in the incoming line for feeder switch, or although the fault occurs in the inside of user line switch, all these faults will cause the protection tripping of the outgoing line switch for substation due to ill-timed coordination between the protective action time limit for feeder switch or user line switch and the protective action time limit for the outgoing line switch for substation. If the fault is permanent, and reclosing substation is not successive, an accident occurs in a medium voltage user community will make the whole distribution line outage. This common accident in the power distribution network will cause vicious influence to the society.
2. If a user boundary switch(commonly known as watchdog) is installed in T shape branch line junction or user end(duty boundary point), it can confirm the faults of overcurrent or short-circuit or single-phase grounding after judging and automatically isolate the faults to ensure the safe usage of the electricity in non-fault zone.

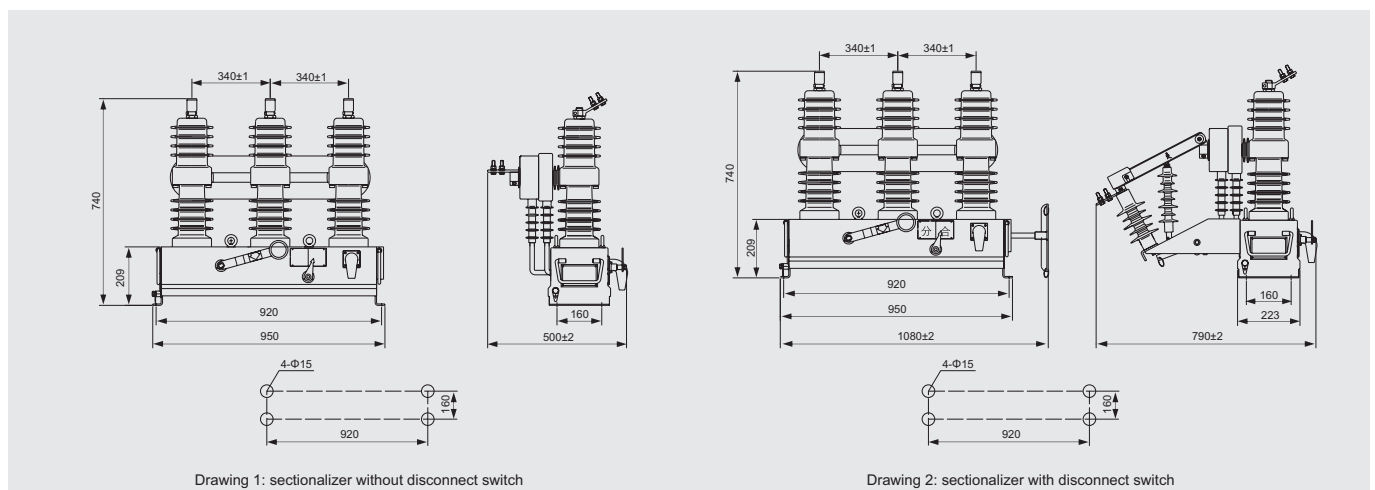
Technical specification

NO.	Item			Unit	Data		
1	Rated voltage			kV	12		
2	Rated insulation level	1min P.F Withstand voltage	Dry test		42/48(isolate distance)		
			Wet test		34		
			Auxiliary loop and control loop		2		
			Lightning impulse withstand voltage(peak)		75/85(isolate distance)		
3	Rated frequency			Hz	50/60		
4	Rated current			A	630, 1000, 1250		
5	Rated short-circuit breaking current			kA	16	20	25
6	Rated short-circuit making current(peak)				40	50	63
7	Rated peak withstand current(peak)				40	50	63
8	Rated short-time withstand current(4s)				16	20	25
9	Rated short-circuit duration			s	4		
10	Making times of rated short-circuit making current			ms	30		
11	Closing time				≤ 50		
12	Opening time				≤ 60		
13	Complete breaking time				≤ 100		
14	Arcing time			times	≤ 50		
15	Average opening speed			m/s	1.2 ± 0.2		
16	Average closing speed				0.6 ± 0.2		
17	Contact close-bouncing time			ms	≤ 2		
18	Three-phase opening non-simultaneity				≤ 2		
19	Allowed accumulative wear thickness for moving and static contacts			mm	3		
20	Contact self-closing pressure			N	2000 ± 200		
21	Rated operating voltage /rated auxiliary loop voltage			V	DC/AC 220		
22	Charging time under rated voltage			s	≤ 8		
23	DC resistance for each phase loop(with isolator)			μ Ω	≤ 80(120 with isolator)		
24	Phase-to-phase spacing			mm	280 ± 1.5		
25	Mechanical life			times	10000		
26	Net weight			kg	105(135 with isolator)		

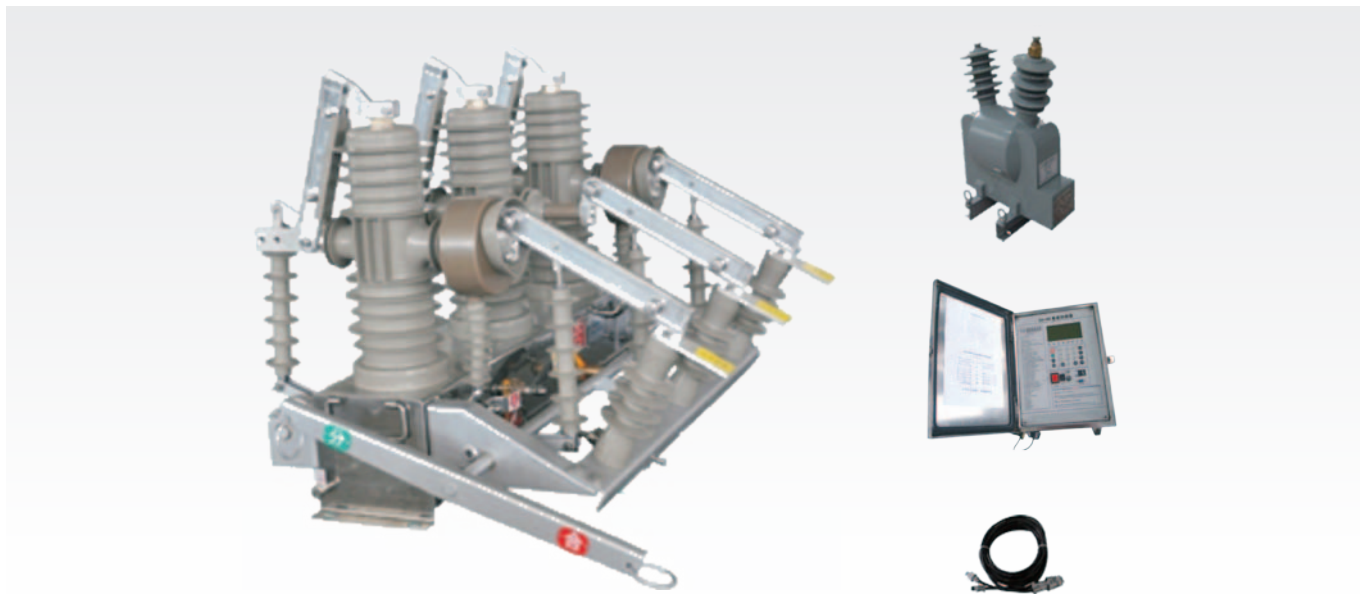
Technical parameter for P.M operating mechanism

NO.	Item		Unit	Date		
	DC operating power supply, coil short-time duty			CDY- I	CDY- II	CDY- III
1	220V closing/opening coil	Calculating current	A	53	70	100
		resistance(20℃)	Ω	4.2 ± 0.2	3.2 ± 0.17	2.2 ± 0.12
2	Applicable to circuit breaker’ s spec.			16kA	20kA	25kA
3	Power supply voltage			AC220V		

Outline and installation dimension



ZW43SG-12 Outdoor HV AC Double-Isolating Type Intelligent Vacuum Circuit Breaker



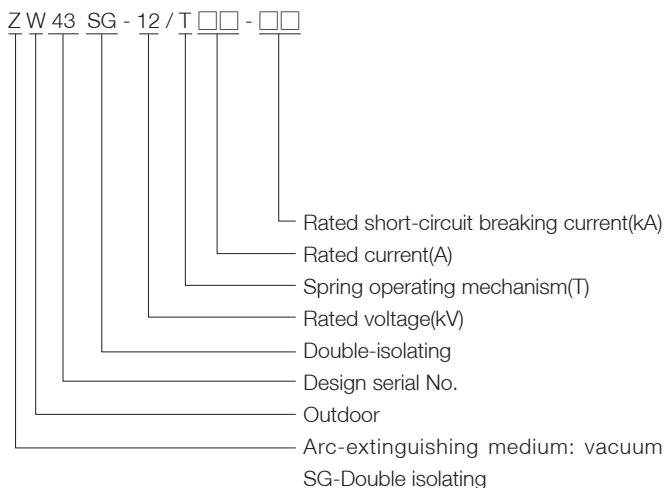
Summary

ZW43SG-12 outdoor HV AC double-isolating type intelligent vacuum circuit breaker is used to make and break load current, overload current and short-circuit current in the power system with rated voltage 12kV, three-phase AC 50/60Hz. The product is composed of a vacuum circuit breaker, an intelligent controller and a built-out PT. It is applicable to substations, industrial and mining enterprises, urban and rural electric power networks, especially to those serious pollution environment and frequent operation places for power network control and equipment protection. The product conforms to the standards of IEC62271-100 & GB1984: AC high voltage circuit breaker, IEC60694 & GB/T11022: HV general technical requirement of switch and control apparatus.

Ambient conditions

1. Altitude: $\leq 2000\text{m}$;
2. Ambient temperature: $-40^{\circ}\text{C} \sim +45^{\circ}\text{C}$; diurnal temperature range $\leq 25^{\circ}\text{C}$;
3. Wind speed: $\leq 35\text{m/s}$, equivalent to wind pressure of 700Pa ;
4. Earthquake intensity: \leq grade 8;
5. Relative humidity: monthly average $\leq 90\%$; daily average $\leq 95\%$;
6. Ice thickness: $\leq 10\text{mm}$;
7. Sunlight intensity: $\leq 1000\text{W/m}^2$;
8. Pollution degree: \leq IV (GB5582);
9. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration

Model



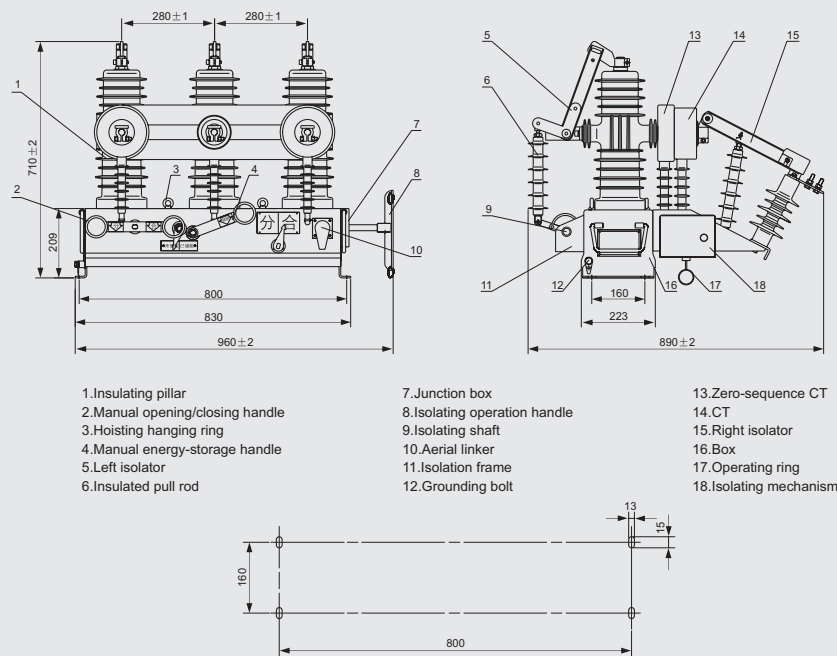
Main function features

1. The performance of the product is stable and reliable as the product adopts three-pillar type structure, and the vacuum arc-extinguishing chamber connects with the operating mechanism through insulation pulling rod;
2. Arc-extinguishing chamber, main conducting loop and insulation support are casted into an organic whole by epoxy resin with APG technology, and encapsulated with silicon rubber, it is provided with good anti-condensation performance and mechanical strength.
3. The switch adopts a high performance spring operating mechanism with the advantages of simple structure and long mechanical life, and with the functions of manual/electric energy storage and opening/closing operation.
4. The product has the advantages of small size, novel appearance, light weight and easy installation.
5. The switch can be equipped with control terminal interface to apply to automation distribution networks and the unattended substations.

Technical specification

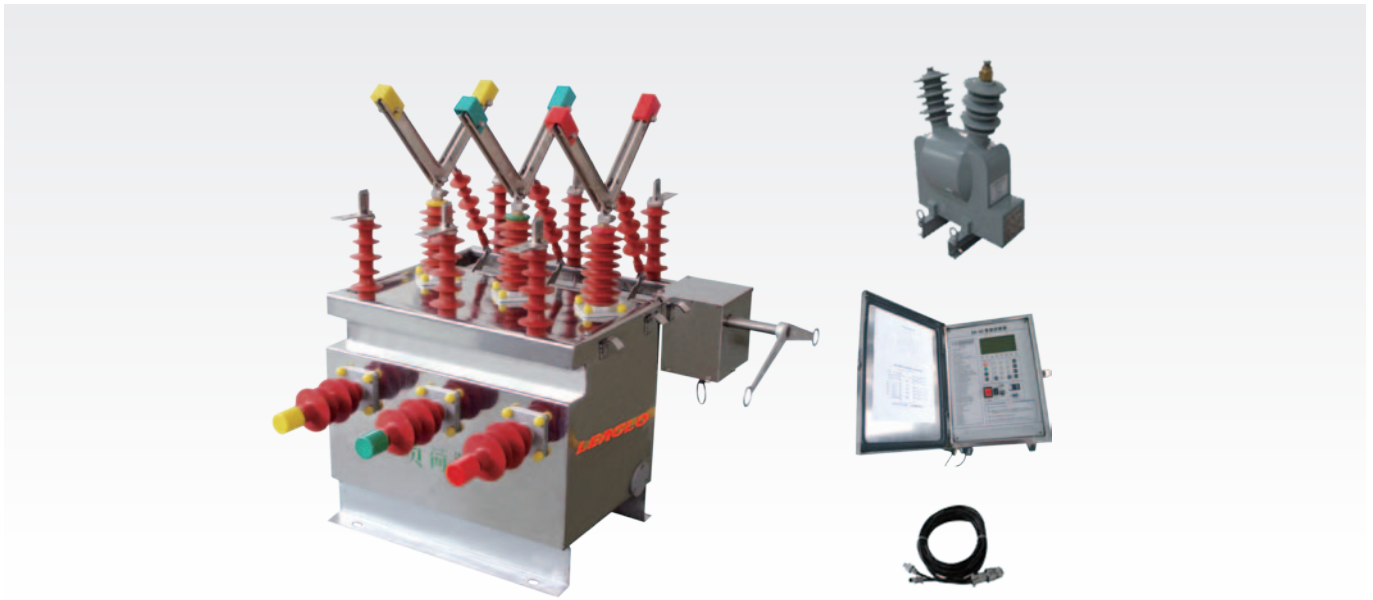
NO.	Item		Unit		Data
1	Rated voltage		kV	12	
2	Rated current		A	630	
3	Rated frequency		Hz	50/60	
4	Rated short-circuit breaking current		kA	20	
5	Rated short-time withstand current(4s)			20	
6	Rated peak withstand current(peak)			50	
7	Rated short-circuit making current(peak)			50	
8	1min P.F withstand volage	Wet test	kV	34	
		Phase to phase,phase to earth		42	
		Across open contacts		48	
9	Lightning impulse withstand voltage(peak)	Phase to phase,phase to earth	kV	75	
		Across open contacts		85	
10	1min P.F withstand voltage for secondary loop		kV	2	
11	Breaking times of rated current		times	1000	
12	Breaking times of rated short-circuit current			30	
13	Mechanical life			10000	
14	Opening speed		m/s	1.2 ± 0.2	
15	Closing speed			0.6 ± 0.2	
16	Closing time		ms	25~60	
17	Opening time			18~45	
18	Contact close-bouncing time			≤ 2	
19	Rated power for energy storage motor		W	40	
20	Three-phase opening/closing non-simultaneity		ms	≤ 2	
21	Resistance for each phase conductive loop	Switch body	μ Ω	≤ 80	
		Disconnect blade		Single side ≤ 120、double sides ≤ 200	
22	Phase-to-phase spacing		mm	280 ± 1.5	
23	Net weight		kg	165	

Outline and installation dimension



Outline structure and installation dimension for VCB

HZW □ -12 Type Intelligent High Voltage Dual Power Supply Switching Device



Summary

HZW □ -12 type outdoor high voltage intelligent dual power supply switching device is composed of a high voltage vacuum circuit breaker, an intelligent controller and a built-out PT. It is used in the dual power supply system with rated voltage 12kV or below, rated current up to 630A and three-phase AC 50/60Hz.

Once the power cut or undervoltage occurs in one way of power supply, it can automatically switch to the other way of normal power supply to ensure the continuity of power supply. Having the interlocking functions of short-circuit current protection and overload current protection, it can efficiently avoid unnecessary power supply impact again once the load fault occurred. When the power cut occurs due to the fault happened in common used power supply, the device can realize the automatical switching to the standby power supply to ensure the reliability and safety of the equipments. It can effect the selective switching between the two ways of power supply according to the needs of load.

As an important electric control device which ensures the continuous power supply, it is especially suitable for those important locations

where the power outages are not allowed.

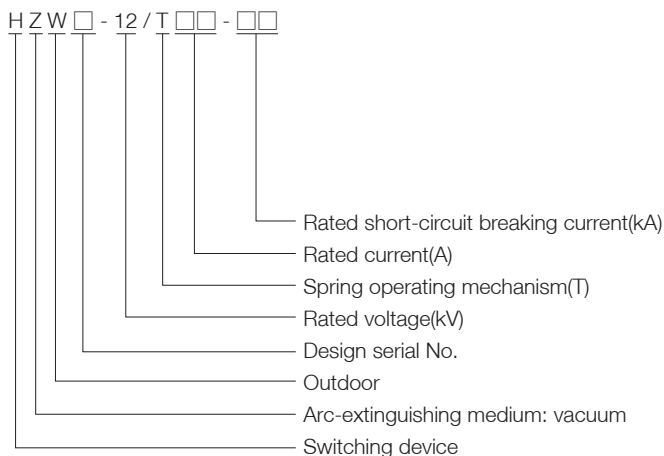
And as a new generation of automatic change and automatic recovery type of dual power supply automatic switching device, it has many advantages of novel design, perfect performance, safety & reliability, high automatization and wide application range, etc..

The product ensures the complete disconnecting between the two ways of high voltage power supply in design, and adopts the perfect and reliable mechanical and electric interlock, as a result, it is highly safe and reliable.

As a control and protection device for dual power supply system, it is applicable for the dual power supply users who require high reliability and safety of the power supply. The device is widely used in 10kV distribution line for oil field, mine, metallurgy, chemical industry, railway, communication and machinery.

The product conforms to the standards of IEC62271-100 & GB1984: AC high voltage circuit breaker, IEC60694 & GB/T11022: HV general technical requirement of switch and control apparatus.

Model



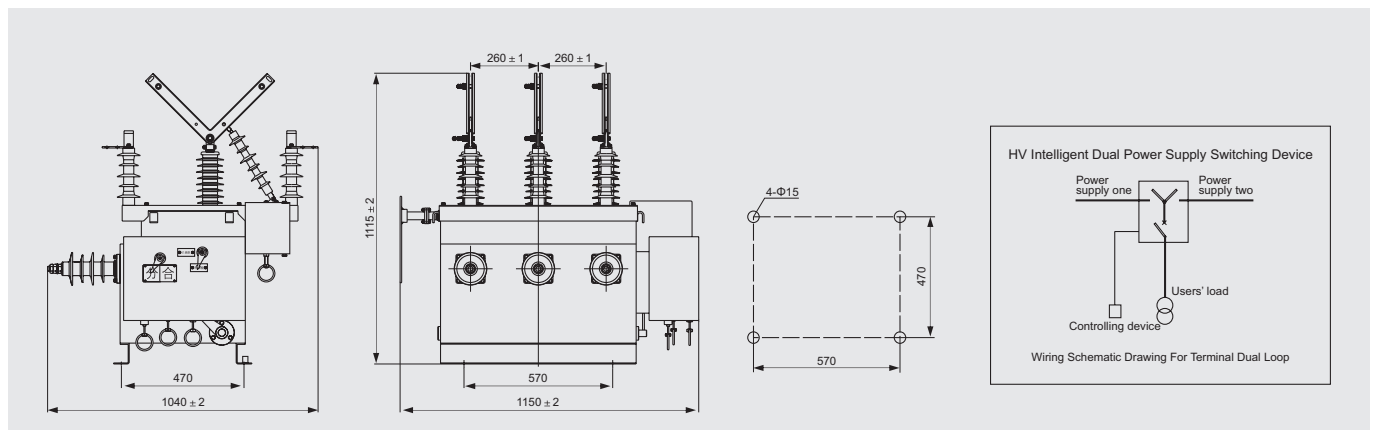
Ambient conditions

- Altitude: $\leq 3000\text{m}$;
- Ambient temperature: $-40^{\circ}\text{C} \sim +45^{\circ}\text{C}$; diurnal temperature rang $\leq 25^{\circ}\text{C}$;
- Wind speed: $\leq 35\text{m/s}$, equivalent to wind pressure of 700Pa;
- Earthquake intensity: \leq grade 8;
- Relative humidity: monthly average $\leq 90\%$; daily average $\leq 95\%$;
- Ice thickness: $\leq 10\text{mm}$;
- Sunlight intensity: $\leq 1000\text{W/m}^2$
- Pollution degree: $\leq \text{IV}$ (GB5582);
- Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration;
- Neutral grounding mode: neutral non grounding, neutral grounding via arc-extinguishing coil, neutral grounding via low-resistance.

Technical specification

NO.	Item			Unit	Data
1	Rated voltage			kV	12
	Rated current			A	630
2	Rated short-circuit breaking current			kA	20
5	Rated short-circuit making current(peak)				50
6	Rated peak withstand current(peak)				50
7	Rated short-time withstand current				20
8	Rated short-circuit duration			S	4
	Rated insulation level	Lightning impulse withstand voltage(peak)		kV	75
		1min P.F withstand voltage	Dry test		42
			Wet test		34
13	Rated operating sequence				O-0.3s-CO-180s-CO
14	Breaking times of rated current			times	30
15	Mechanical life				10000
16	Rated operating voltage(opening/closing coil)			V	DC220, DC110, AC220
17	Rated current for over-current tripping device			A	5
19	Current ratio of CT			/5	200/5 400/5 600/5
20	Contact gap			mm	9 ± 1
21	Contact over-travel				3 ± 1
22	Allowed accumulative wear thickness for moving and static contacts				3
23	Average opening speed			m/s	1.0 ± 0.3
24	Average closing speed				1.0 ± 0.25
25	Opening time	At highest rated operating voltage		ms	≤ 60
26		At lowest voltage operating voltage			≤ 100
27	Closing time			ms	≤ 100
28	Contact close-bouncing time				≤ 2
29	Three-phase opening/closing non-simultaneity			ms	≤ 2
	DC resistance for each phase loop			μ Ω	≤ 200
	Energy storage motor	Rated voltage		V	DC 220
		Rated power		W	70
		Energy storage time		S	≤ 10
30	Net weight			kg	185

Outline and installation dimension



Ambient conditions

- ◇ The device adopts the voltage on A incoming line or B incoming line to judge the states of the circuit breaker and the automatical isolating switch, and to switch automatically;
- ◇ The device has the functions of overcurrent protection; it can realize time overcurrent limiting and quick breaking protection by detecting the running current on load side. It also has the single-shot reclosing and locking function;
- ◇ The device has the electricity-coming delay closing function. It also can be set with the prior power supplying function, the device can automatically switch to the side to supply power once the power supply is restored on the set

- main power supply side, the vacuum circuit breaker automatically trips due to no voltage on incoming line, and the automatical isolating switch doesn't change the direction. When the power is preferentially supplied to any side next time, it will automatically turn to another side, therefore the vacuum circuit breaker will automatically close. It also can be opened manually and the switch is locked if examination and maintenance is needed.
- ◇ The automatical isolating switch stops in the middle position to ensure the safety of the electricity usage.

FZW28-12F(FFK) Outdoor HV AC Vacuum Load Break Switch Type Sectionalizer

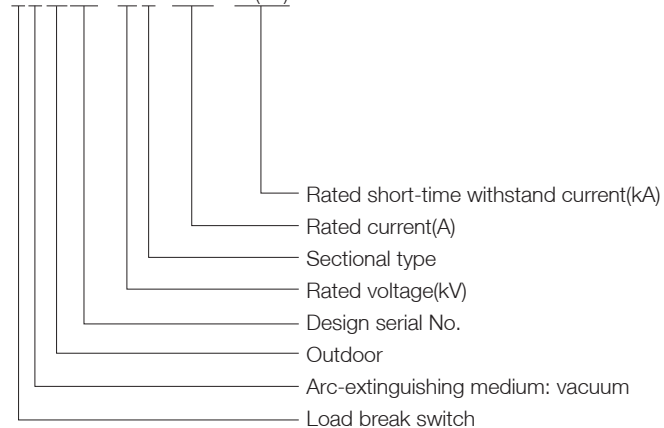


Summary

FZW28-12F(FFK) outdoor HV AC vacuum load break switch type sectionalizer is for pole-mounting installation, and has manual and electric operation functions. The sectionalizer adopts FZW28-12 type of free-of-maintenance load break switch as its main body which uses vacuum arc-extinguishing and SF6 gas as the insulation mediums to earth and between phases. The switch is composed of FZW28-12 vacuum LBS and controller. It has the functions of fault detection, protection & control and communication. Installed on the overhead line of voltage 10kv, it can remove automatically the single-phase grounding fault and short-circuit fault between phases. The installation position can be the duty boundary site of 10kV distribution user incoming line or the T branch line junction which conforms to requirements. The switch can not be for the use of series connection. The product conforms to the standards of IEC62271-100 & GB1984: AC high voltage circuit breaker, IEC60694 & GB/T11022: HV general technical requirement of switch and control apparatus.

Model

F Z W 28 - 12 F / 630 - 16(20)



Ambient conditions

1. Altitude: $\leq 3000\text{m}$;
2. Ambient temperature: $-30^{\circ}\text{C} \sim +40^{\circ}\text{C}$; diurnal temperature rang $\leq 25^{\circ}\text{C}$;
3. Wind speed: $\leq 35\text{m/s}$;
4. Earthquake intensity: \leq grade 8;
5. Relative humidity: monthly average $\leq 90\%$; daily average $\leq 95\%$;
6. Dew may be condensed in the interior of the tank body when high humidity drop rapidly;
7. Ice thickness: $\leq 10\text{mm}$;
8. Pollution degree: \leq IV (GB5582);
9. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration;
10. Neutral grounding mode: neutral non grounding, neutral grounding via arc-extinguishing coil, neutral grounding via low-resistance.

Main function features

1. Function of zero-sequence protection: After detecting the line zero-sequence earthing fault, the switch will take the action and open automatically within the delay time set by the controller.
2. Protection of short-circuit between phases: When short-circuit fault between phases occurs in the line, the boundary switch will open immediately once the substation open to isolate the fault area.
3. Users' load monitoring: Users' load monitoring can be realized after through controller and communication system after the switch is built in a metering CT.
4. Wireless protection: The embedded GPRS communication module which supports GPS communication can realize the function of "four remote" .

Technical specification

Rated technical parameters for switchRated technical parameters for switch

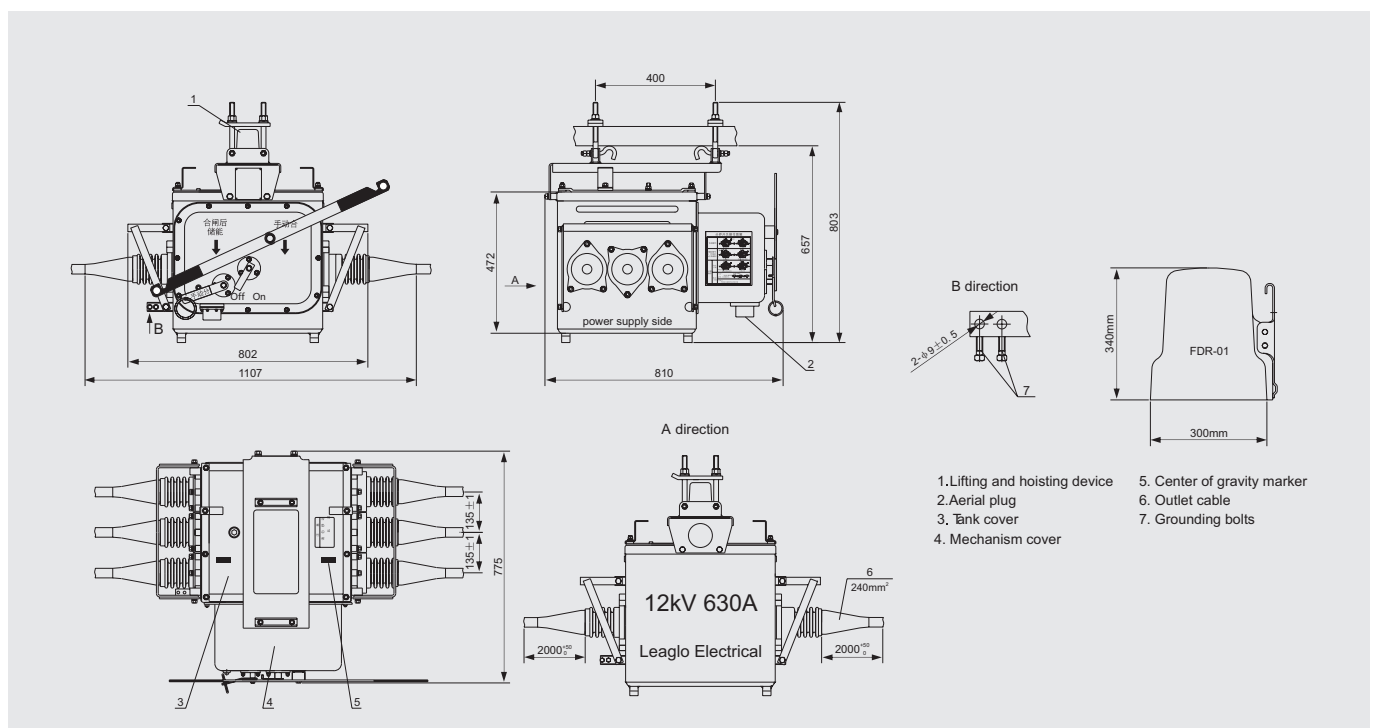
Item		Unit	Data	
Rated voltage		kV	12	
Rated insulation level	1 min P.F withstand voltage (phase to phase, phase to earth/across open contacts)	kV	Dry test	42/48
			Wet test	34
	Lightning impulse withstand voltage (phase to phase, phase to earth/across open contacts)	kV	75/85	
Rated frequency		Hz	50/60	
Rated current		A	630	
Rated short-time withstand current/ rated short-circuit duration		kA/4s	16	20
Rated peak withstand current(peak)		kA	40	50
Rated short-circuit making current			40	50
Mechanical life		times	10000	
Net weight		kg	185	

Note:1. The insulation withstand voltage should be amended accordingly if the altitude of the product' s using site is higher than 1000m;
2. Do not make the insulation between phases when PT is built in the switch.

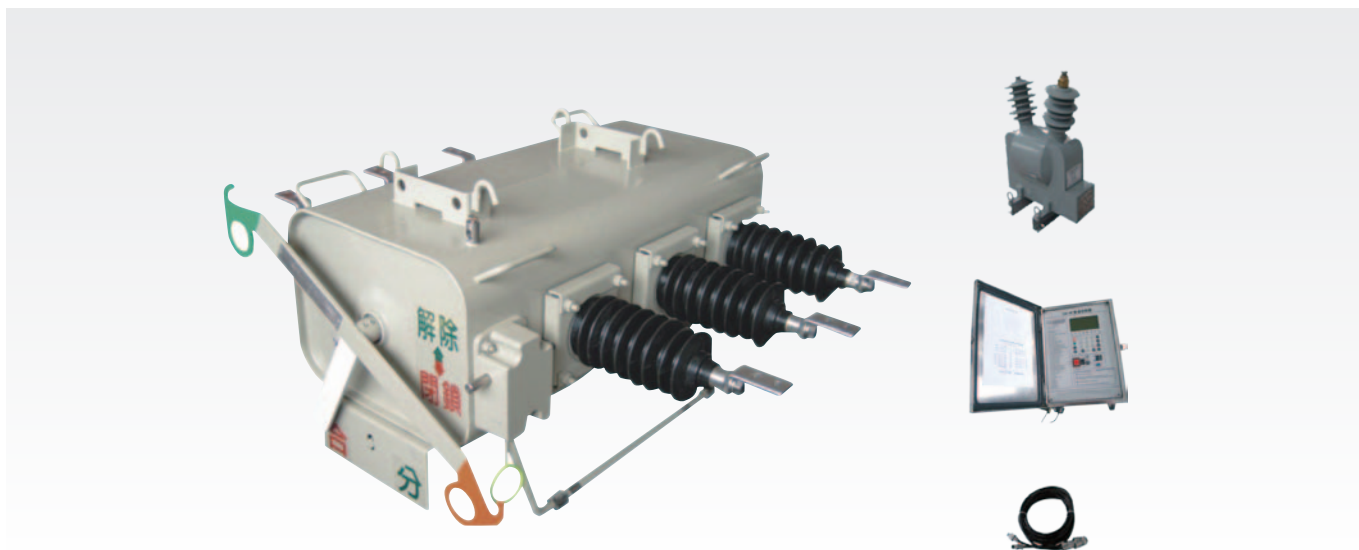
Parameter table for control device

No.	Item	Rated value	Remarks
1	Input operating voltage	AC 220V	12
	Output voltage(open-operating)	AC 220V / DC 48V	630
2	Input operating voltage frequency	50Hz	42
3	Allowed fluctuating range for input operating voltage	± 20%	34
4	Overall unit' s power consumption	<10W	75
5	Sampling phase current input value	120~600A(primary value)	50
6	Low voltage action value	10~140V(secondary value)	16
7	Allowed sampling error for input power value	± 5%	O-0.3s-CO-180s-CO
8	Delaying time value of over-current protecting action	0.3~1s(can not be set)	30
9	Zero-sequence current setting value	0.2~60A(primary value)	40
10	Earthing action delaying time	0~1800s	40

Outline and installation dimension



FLW34-12/24F Outdoor Pole-mounted HV AC SF₆ Insulation Load Break Switch Type Sectionalizer

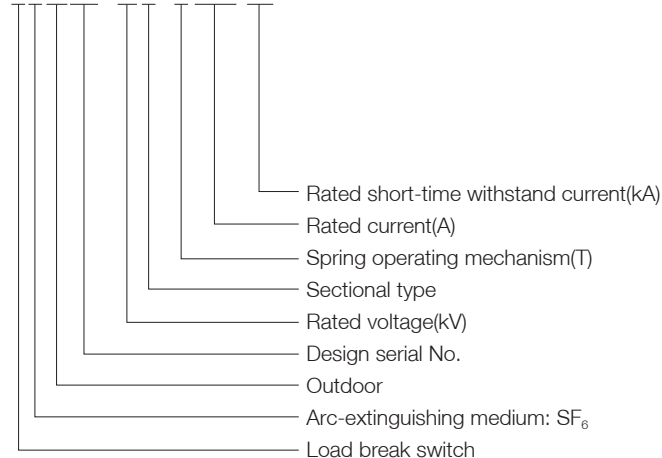


Summary

FLW34-12/24F outdoor pole-mounted HV AC SF₆ insulation load break switch type sectionalizer is suitable to the distribution network with rated voltage 12/24kV, rated current 400/630A, three-phase AC 50/60Hz to open and close the load current and short circuit current in the power system. It can automatically disconnect the distribution line segment in which the fault occurred. Equipped with the advanced electronic controller, the switch can be for manual operation, electric operation and remote operation. The electronic controller is installed in a stainless steel cabinet, so it can be used in all kinds of climatic conditions. The wire and wireless modems can be also installed in the cabinet to realize remote monitoring and control. Simple, convenient and quick pole mounting can lower the installation cost. The product conforms to the standards of IEC62271-103 & GB/T3804: 3.6kV~40.5kV AC high voltage load break switch and IEC60694 & GB/T11022: high voltage switch apparatus and control device.

Model

FLW34-12F/T630-20



Ambient conditions

1. Altitude: ≤ 3000m;
2. Ambient temperature: -40℃ ~ +45℃; diurnal temperature rang ≤ 25℃ ;
3. Wind speed: ≤ 35m/s, equivalent to wind pressure of 700Pa;
4. Earthquake intensity: ≤ grade 8;
5. Relative humidity: 100%;
6. Ice thickness: ≤ 10mm
7. Pollution degree: ≤ IV (GB5582);
8. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration.

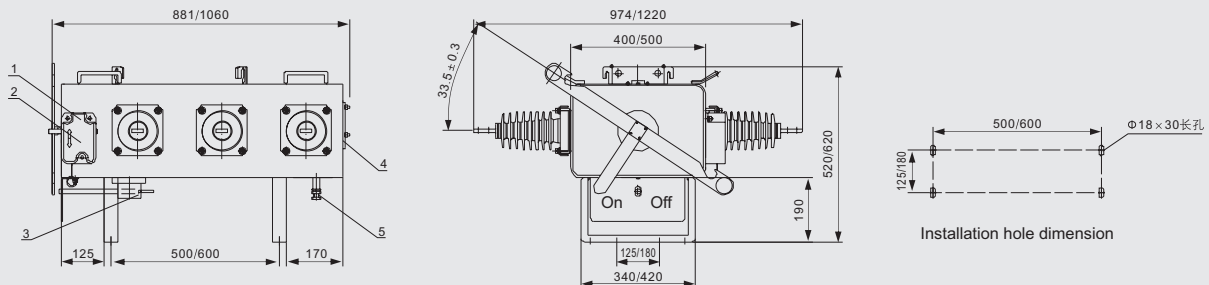
Main function features

1. SF₆ gas insulation: SF₆ gas is the non-toxic, non-combustible and electrical insulation gas, it has excellent arc-extinguishing performance;
2. Besides the standard porcelain bushing, a variety of options are available including silicon rubber insulator on the epoxy equipment bushing;
3. Visible Open/Close: The main contact position indicator marked by colors (Green-Open; Red-Close) can be easily visible from the ground. The indicator is connected directly to the main contact drive shaft assembly to ensure displaying the contact state accurately;
4. Quick operation: Using a spring energy storage operator to ensure rapidly closing and opening operation(less than 1s);
5. Remote controllable: With a electronic controller, field operation or main control platform operation through FTU-interface can be realized;
6. Sturdy and durable switch: The switch is made from the sturdy, durable and anti-corrosion materials (304L stainless steel plate for warships) to ensure long service life(more than 30 years) and a series of operations;
7. Easily installation: The switch can be pole mounted easily ;
8. Standards: Each switch is filled with Sf gas and sealed well before delivery, and is strictly tested according to the standards IEC60265-1 6 (1998) and GB3804-1990.

Technical specification

NO.	Item			Unit	Data
1	Rated voltage			kV	12/24
2	Rated frequency			Hz	50/60
3	Rated insulation level(charged SF ₆ gas0.05MPa/20℃)	Lightning impulse withstand voltage(peak)	Phase to phase, phase to earth	kV	75/125
			Across open contacts		85/145
		1min P.F withstand voltage	Phase to phase, phase to earth		42/64
			Across open contacts		48/79
		Raining withstand voltage test			34/50
4	Insulation level under zero gauge pressure	1min P.F withstand voltage test		kV	30
5	Rated current			A	630
6	Rated load breaking current (at 0.05MPa/20℃)				630
7	Breaking current at zero gauge pressure				630
8	Rated short-circuit making current			kA	50
9	Rated short-time withstand current/duration			kA/s	20/4
10	Rated peak withstand current(peak)			kA	50
11	Rated cable charging breaking current			A	25
12	Rated line charging breaking current				1.5
13	Rated loop breaking current				630
14	Breaking times of rated load breaking current			times	100(E3 class)
15	Rated SF ₆ gas pressure			MPa	0.05 ± 0.01
16	Main loop resistance for each phase			μ Ω	≤ 120
17	Relative gas leakage rate			yearly	≤ 1%
18	SF ₆ gas moisture content	Delivery ex-factory value		ppm	≤ 150
		Switch operating value			≤ 300
19	Mechanical life			times	5000(M2 class)
20	Contact gap			mm	47 ± 2
21	Contact over-travel				17 ± 2
22	Average opening speed			m/s	1.2 ± 0.2
23	Average closing speed				0.6 ± 0.2
24	Closing time			ms	25~60
25	Opening time				18~45
26	Rated operating voltage			V	DC220、 AC220
27	Rated power for energy storage motor			W	40
28	1 min P.F withstand voltage for secondary loop			kV	2
29	Phase-to-phase spacing			mm	230 ± 1.5/340 ± 1.5
30	Net weight			kg	125/155

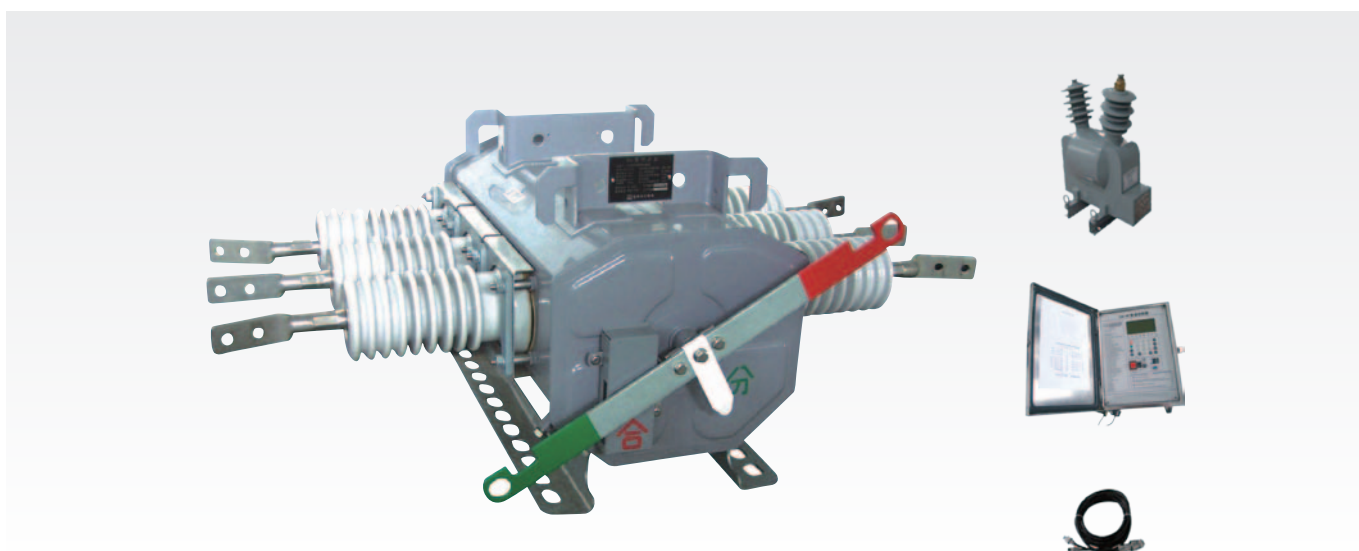
Outline and installation dimension



Outline and installation dimension for LBS(seat mounting type)

- | | |
|------------------------------------|-------------------------------------|
| 1. Manual locking device | 4. High gas pressure release device |
| 2. Unlocking device | 5. Grounding bolt |
| 3. Low gas pressure locking device | |

FLW36-12/24F(SOG) Outdoor Pole-mounted HV AC SF₆ Insulation Load Break Switch Type Sectionalizer

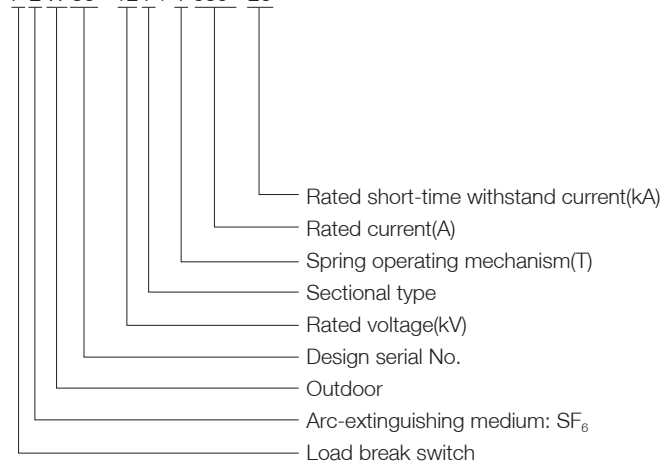


Summary

FLW36-12/24F(SOG) outdoor pole-mounted HV AC SF₆ insulation load break switch type sectionalizer is suitable to the distribution network with rated voltage 12kV/24kV, rated current 400/630A, three-phase AC 50/60Hz to open and close the load current and short circuit current in the power system. It can automatically disconnect the distribution line segment in which the fault occurred. Equipped with the advanced electronic controller, the switch can be for manual operation, electric operation and remote operation. The electronic controller is installed in a stainless steel cabinet, so it can be used in all kinds of climatic conditions. The wire and wireless modems can be also installed in the cabinet to realize remote monitoring and control. Simple, convenient and quick pole mounting can lower the installation cost. The product conforms to the standards of IEC62271-103 & GB/T3804: 3.6kV~40.5kV AC high voltage load break switch and IEC60694 & GB/T11022: high voltage switch apparatus and control device.

Model

FLW36-12F/T630-20



Ambient conditions

1. Altitude: ≤ 3000m;
2. Ambient temperature: -40℃ ~ +45℃; diurnal temperature rang ≤ 25℃ ;
3. Wind speed: ≤ 35m/s, equivalent to wind pressure of 700Pa;
4. Earthquake intensity: ≤ grade 8;
5. Relative humidity: 100%;
6. Ice thickness: ≤ 10mm
7. Pollution degree: ≤ IV (GB5582);
8. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration.

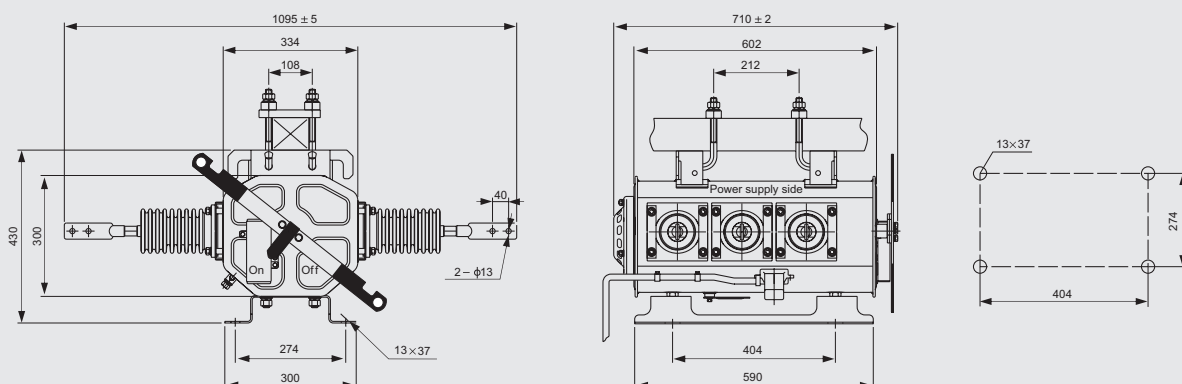
Main function features

1. SF₆ gas insulation: SF₆ gas is the non-toxic, non-combustible and electrical insulation gas, it has excellent arc-extinguishing performance;
2. Besides the standard porcelain bushing, a variety of options are available including silicon rubber insulator on the epoxy equipment bushing;
3. Visible Open/Close: The main contact position indicator marked by colors (Green-Open; Red-Close) can be easily visible from the ground. The indicator is connected directly to the main contact drive shaft assembly to ensure displaying the contact state accurately;
4. Quick operation: Using a spring energy storage operator to ensure rapidly closing and opening operation(less than 1s);
5. Remote controllable: With a electronic controller, field operation or main control platform operation through FTU-interface can be realized;
6. Sturdy and durable switch: The switch is made from the sturdy, durable and anti-corrosion materials (304L stainless steel plate for warships) to ensure long service life(more than 30 years) and a series of operations;
7. Easily installation: The switch can be pole mounted easily ;
8. Standards: Each switch is filled with Sf gas and sealed well before delivery, and is strictly tested according to the standards IEC60265-1 6 (1998) and GB3804-1990.

Technical specification

NO.	Item			Unit	Data
1	Rated voltage			kV	12/24
2	Rated frequency			Hz	50/60
3	Rated insulation level(charged SF ₆ gas0.05MPa/20℃)	Lightning impulse withstand voltage(peak)	Phase to phase, phase to earth	kV	75/125
			Across open contacts		85/145
		1min P.F withstand voltage	Phase to phase, phase to earth		42/64
			Across open contacts		48/79
		Raining withstand voltage test			34/50
4	Insulation level under zero gauge pressure	1min P.F withstand voltage test		kV	30
5	Rated current			A	630
6	Rated load breaking current (at 0.05MPa/20℃)				630
7	Breaking current at zero gauge pressure				630
8	Rated short-circuit making current			kA	50
9	Rated short-time withstand current/duration			kA/s	20/4
10	Rated peak withstand current(peak)			kA	50
11	Rated cable charging breaking current			A	25
12	Rated line charging breaking current				1.5
13	Rated loop breaking current				630
14	Breaking times of rated load breaking current			times	100(E3 class)
15	Rated SF ₆ gas pressure			MPa	0.05 ± 0.01
16	Main loop resistance for each phase			μ Ω	≤ 120
17	Relative gas leakage rate			yearly	≤ 1%
18	SF ₆ gas moisture content	Delivery ex-factory value		ppm	≤ 150
		Switch operating value			≤ 300
19	Mechanical life			times	5000(M2 class)
20	Contact gap			mm	47 ± 2
21	Contact over-travel				17 ± 2
22	Average opening speed			m/s	1.2 ± 0.2
23	Average closing speed				0.6 ± 0.2
24	Closing time			ms	25~60
25	Opening time				18~45
26	Rated operating voltage			V	DC220、 AC220
27	Rated power for energy storage motor			W	40
28	1 min P.F withstand voltage for secondary loop			kV	2
29	Phase-to-phase spacing			mm	230 ± 1.5/340 ± 1.5
30	Net weight			kg	125/155

Outline and installation dimension



ZW □ YF1-12 Outdoor Vacuum Prepayment and Anti-power-theft Device



Summary

ZW □ YF1-12 Outdoor Vacuum Prepayment and anti-power-theft Device is used to make and break load current, overload current and short-circuit current in the power system with rated voltage 12kV or below, three-phase AC 50/60Hz . The product is composed of a ZW8-12 type vacuum circuit breaker and a prepayment electricity selling management terminal controller. Equipped with the high precision CT and PT in the vacuum switch three-phase, SADC and box, it can realize three-phase current and voltage accurate metering through the combination with the controller. The control system and the switch body are closely linked and both indispensable. When the linkage between the switch body and controller is separated, the switch will automatically open and lock, and manual closing will fail (if GPRS and CDMA wireless backstage functions are selected). It will automatically feedback such information to management terminal to alarm.

The device has anti electricity theft function, three-section protection function, metering function, prepayment function, auxiliary function, fault record and query function, remote communication function, ring network operation function and nearest remote control function. HX-3000G electricity prepayment control device is for the electricity metering in 10kV line. It has the functions of prepayment metering control, anti electricity theft, transformer protection, and load control. And it has the advantages of high accurate metering, low cost, convenient installation and stable and reliable operation.

The high voltage prepayment metering control system is composed of electronic type electric energy meter, the intelligent IC card controller, combined voltage and current transformers with power supply, vacuum circuit breaker for 10kV and master station software.

Main function features

1. The device is an integral structure. It can realize the electric energy metering and prepayment control;
2. Effectively preventing electricity stealing: the device measures electric power consumption no matter the electric energy meter runs forward or backward.
3. Intelligent IC card: anti-magnetic, anti-static, unable to crack after encryption;
4. The power supply company holds the high management right for the intelligent IC card;
5. Each set of equipments is provided with a special power purchase card which is treated by the advanced encryption measures which can effectively prevent copying IC card from stealing electricity;
6. The display device can show dump energy, purchasing power, overdrawing power, pulse constant, PT and CT ratio and illegal carding

numbers, etc. It has the function of turning display. The power error rate can be up to 0.01 degrees;

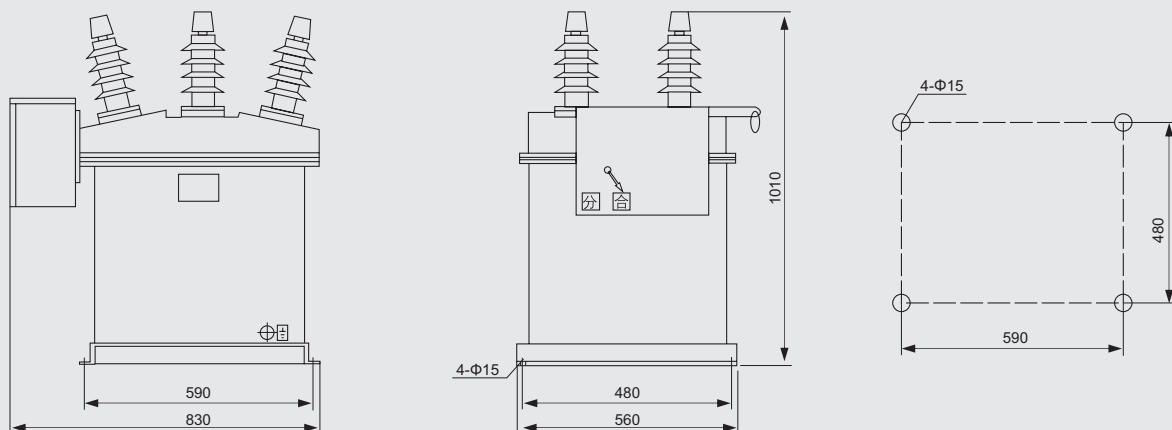
7. The device can be set with an alarm power, once the dump power is less than the alarm one, the device will make the sound and light alarm to remind the users to purchase power timely. During the night rest hours, the bell alarm can be turned off, only leave the indicator light alarm on duty so as not to affect the rest;

8. The device can reliably break the load current of less than 1000A when the users' dump power is shown as zero;

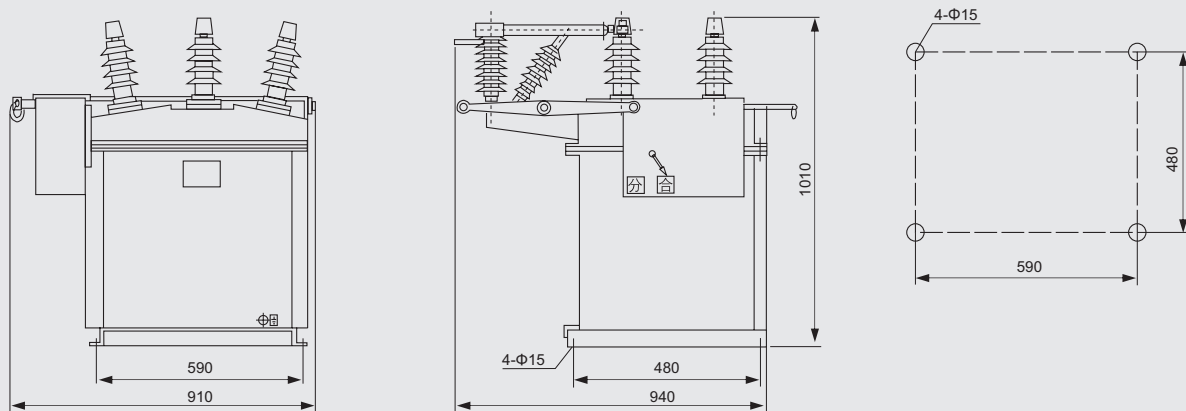
9. The cabinet adopts closed architecture which can effectively prevent power stealing and raining,

10. The device can realize IC card charging, GPRS remote charging and built-in GPRS communication terminal control management.

Outline and installation dimension

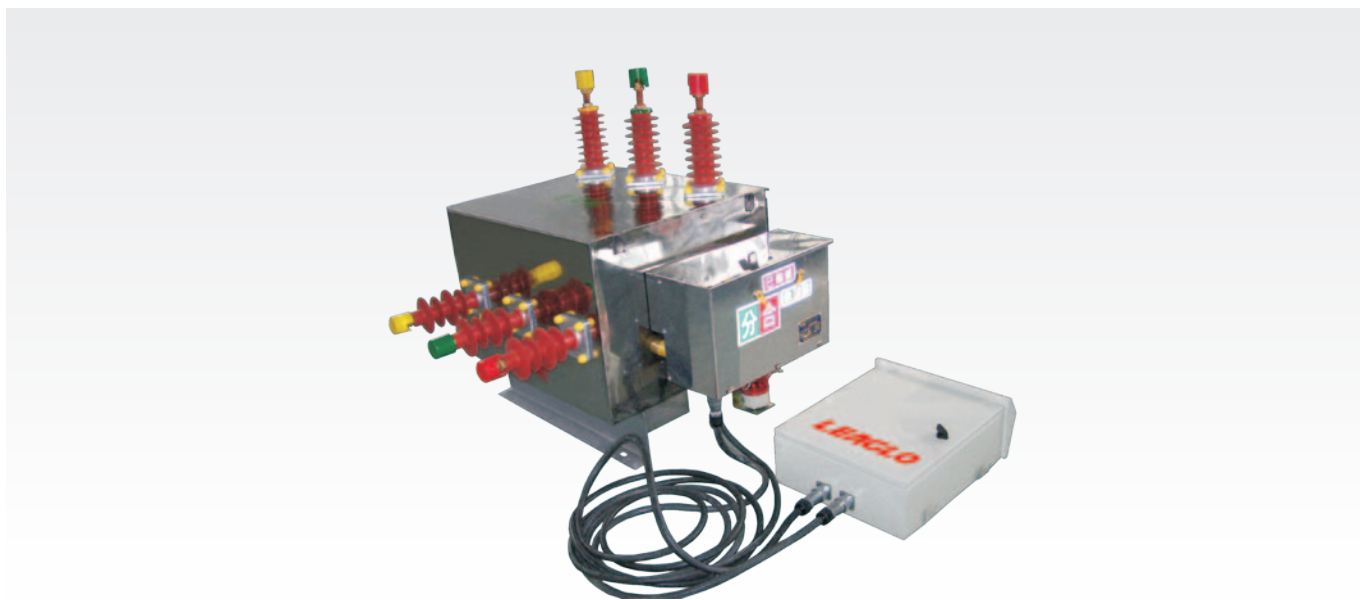


Drawing 1: vacuum circuit breaker without disconnect switch



Drawing 2: vacuum circuit breaker with disconnect switch

ZW □ YF2-12 Outdoor Vacuum Prepayment and Anti-power-theft Device



Summary

ZW □ YF2-12 Outdoor Vacuum Prepayment and anti-power-theft Device is used to make and break load current, overload current and short-circuit current in the power system with rated voltage 12kV or below, three-phase AC 50/60Hz . The product is composed of a ZW8-12 type vacuum circuit breaker and a prepayment electricity selling management terminal controller. Equipped with the high precision CT and PT in the vacuum switch three-phase, SADC and box, it can realize three-phase current and voltage accurate metering through the combination with the controller. The control system and the switch

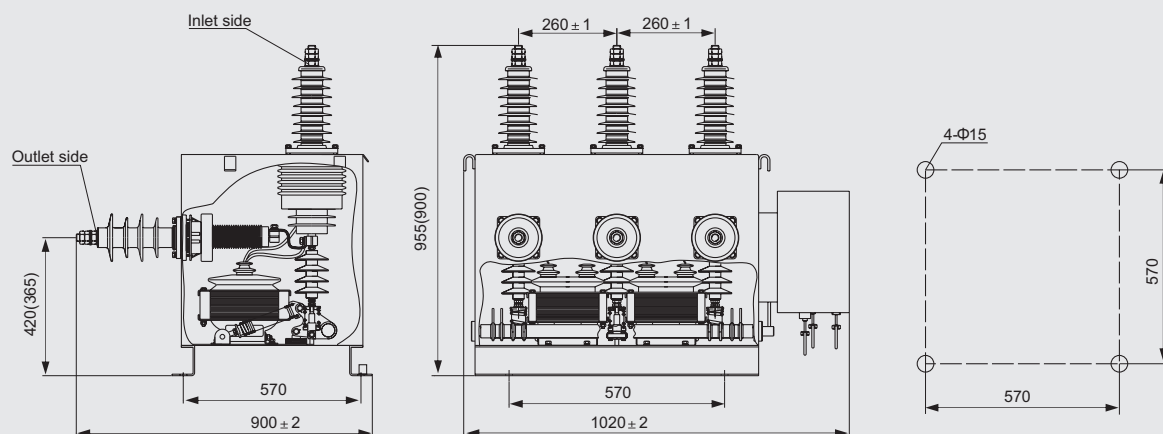
body are closely linked and both indispensable. When the linkage between the switch body and controller is separated, the switch will automatically open and lock, and manual closing will fail (if GPRS and CDMA wireless backstage functions are selected). It will automatically feedback such information to management terminal to alarm.

The device has anti electricity theft function, three-section protection function, metering function, prepayment function, auxiliary function, fault record and query function, remote communication function, ring network operation function and nearest remote control function.

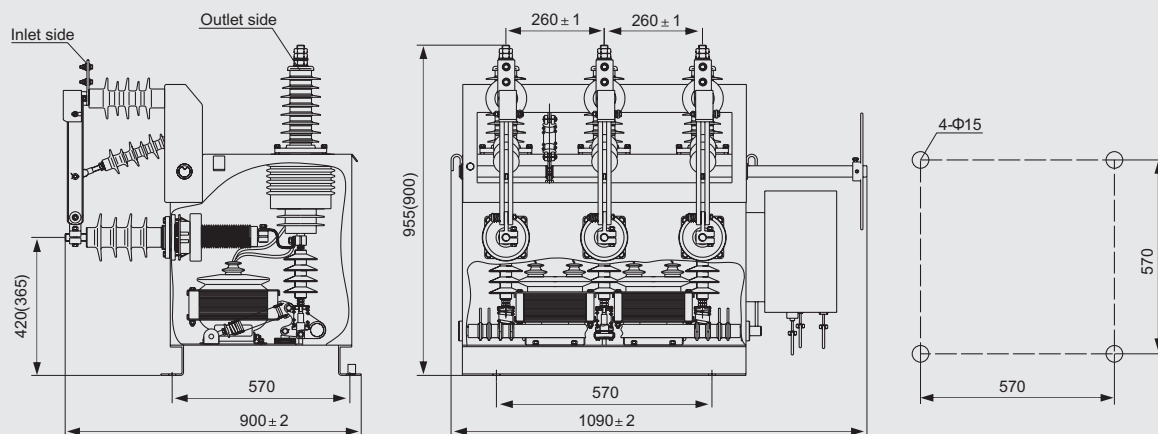
Main function features

1. Three-section type overcurrent protection function;
2. Auxiliary function;
3. Ring network operation function;
4. Reclosing control function;
5. Fault query function;
6. Nearest remote control function;
7. Zero sequence protection function;
8. Charging record and query function;
9. Input/output port function;
10. Metering function;
11. Users' parameters correcting function;
12. Prepayment function,
13. Remote communication function.

Outline and installation dimension



Drawing 1: vacuum circuit breaker without disconnect switch



Drawing 2: vacuum circuit breaker with disconnect switch

GTXGN □ -12 Type Solid Insulated Fully-enclosed Ring Main Unit(RMU)



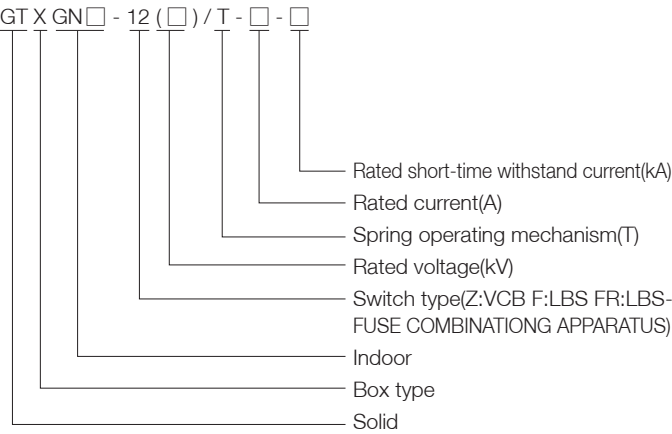
Summary

GTXGN □ -12 type solid insulated fully-enclosed ring main unit(RMU) is a kind of fully-sealed power supply unit. All the living parts and switch are fully sealed in an epoxy resin shell without any gas, therefore the whole switch device is not affected by external environment, and this can ensure operation stability and personal safety and realize free of maintainance. This RMU has two types of indoor and outdoor. Sealing the indoor type of RMUs in a metal enclosure makes up the outdoor mutil loops ring networks power supply unit.The RMU is used in power distribution systems with rated voltage 12kV, three phases, AC 50/60Hz for ring network power supply or terminal power supply. The RMU is applicable to the power distribution systems for industrial & mining enterprises, residential communities, schools and gardens. It can also be equipped into a compact box type substation to control and protect the power distribution transformers. So both of the indoor and outdoor typies RMUs can realize power distribution antomation.

Ambient conditions

1. Altitude: $\leq 3000\text{m}$;
2. Ambient temperature: outdoor, $-60^{\circ}\text{C} \sim +60^{\circ}\text{C}$; indoor, $-10^{\circ}\text{C} \sim +25^{\circ}\text{C}$;
3. Wind speed: $\leq 35\text{m/s}$ (wind pressure $\leq 700\text{Pa}$);
4. Earthquake intensity: \leq grade 8;
5. Relative humidity: monthly average $\leq 90\%$; daily average $\leq 95\%$.
6. Ice thickness: $\leq 10\text{mm}$;
7. Sunlight intensity: $\leq 1000\text{W/m}^2$;
8. Pollution degree: $\leq \text{IV}$ (GB5582);
9. Applicable occasions: ambient air should not be obviously But the outdoor type can be used in the harsh environmental conditions. polluted by dust, water vapor, salt fog, corrosive gases or inflammable gas.

Model



Technical specification

Rated parameters for RMU

No.	Item		Unit	Data
1	Rated voltage		kV	12
2	Rated current		A	630、1000、1250
3	Rated frequency		Hz	50/60
4	Rated short-time withstand current for isolator/granding switch(4s)		kA	16、20、25
5	Rated peak withstand current for isolator/granding switch			40、50、63
6	Rated short-circuit breaking current			16、20、25
7	Breaking times of rated short-circuit breaking current		times	30
8	Rated short-circuit making current(peak)		kA	40、50、63
9	1min P.F withstand voltage	Across contact distance, phase to phase, phase to earth	kV	42
		Across isolating distance		48
	Lightning impulse withstand voltage	Across contact distance, phase to phase, phase to earth		75
		Across isolating distance		85
10	Mechanical life	Vacuum circuit breaker	times	10000
		Isolating switch / grounding switch		2000
11	Resistance of main loop(one unit)		u Ω	≤ 100
12	Breaking current for different phases grounding fault		kA	17.4
13	Protection class of housing		IP	3X

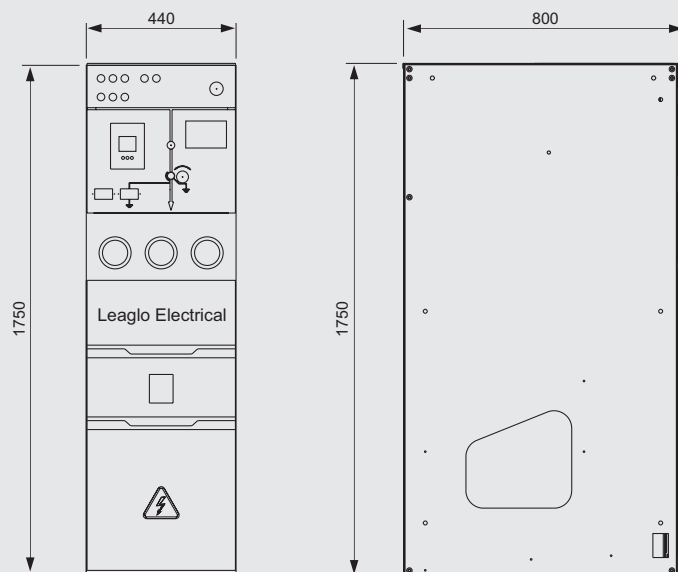
Mechanical property parameters for VCB

No.	Item	Unit	Data
1	Rated operating sequence		O-0.3s-CO-180s-CO
2	1min P.F withstand voltage for secondary loop	kV	2
3	Distance between open contacts	mm	9 ± 1
4	Contact over-travel		3 ± 0.5
5	Average opening speed	m/s	1.2 ± 0.2
6	Average closing speed		0.8 ± 0.2
7	Contact close-bouncing time	ms	≤ 2
8	Closing time		25 ~ 70
9	Opening time		20 ~ 50
10	Phase-to-phase spacing	mm	135 ± 1
11	Three-phase opening non-simultaneity	ms	≤ 2
12	Three-phase closing non-simultaneity		≤ 2
13	Rated closing/opening operating voltage	V	DC220
14	Max/min closing operating voltage		DC242/176
15	Max/min opening operating voltage		DC264/143
16	Opening rebound	mm	≤ 2

Main function features

1. The high voltage load break switch and high voltage live parts are sealed in an epoxy resin insulated sleeve shell without any gas. The vacuum arc-extinguishing chamber is small and with the function of reliable arc extinction. With grounding switch, the load break switch has three stations of closing, opening and grounding. The grounding knife also has the function of isolating knife.
2. The switchgear can accommodate 1 to 5-way load break switch units, or 1 to 5-way vacuum circuit breaker units. The outgoing lines for each unit are through three high voltage bushings which are convenient for cable connection.
3. The sealed box is made of imported materials. The joint of the operation mechanism and high voltage bushing adopt strict sealing measures to ensure the good performance.
4. The high voltage bushings and insulating cylinders are made of imported epoxy resin with APG technology. They are tightly fitted and connected by silicon rubber sleeve with good sealing performance.
5. Each way is equipped with an independent operation mechanism which is mounted on the front of the cabinet body with a variety of mechanical interlock functions.
6. Both of the load break switch and grounding switch are provided with spring operating mechanism, the load break switch can be for manual or electric operation, while the grounding switch is only for manual operation. is not only for earthing, but also for isolating. The grounding switch is not only for earthing purpose, but also for isolating purpose.
7. The vacuum circuit breaker is provided with a permanent magnetic actuator which can be for electric closing and opening, or only for manual opening, not for manual closing. The vacuum circuit breaker can also be equipped with a spring operation mechanism which can be for manual operation and electric operation. It is provided with the distribution automation interface for future connection.
8. There is a visible window on the panel of RMU for observation of the opening or closing state of the isolating knife.
9. Each RMU has three separate and parallel insulated cylinders for convenient installation, easy replacement. Its biggest advantage is to avoid the white discharge between phases.

Outline and installation dimension



Outline dimension drawing for one unit

XGN □ -12(Z) Indoor HV AC Gas Insulated Metal-clad Switchgear



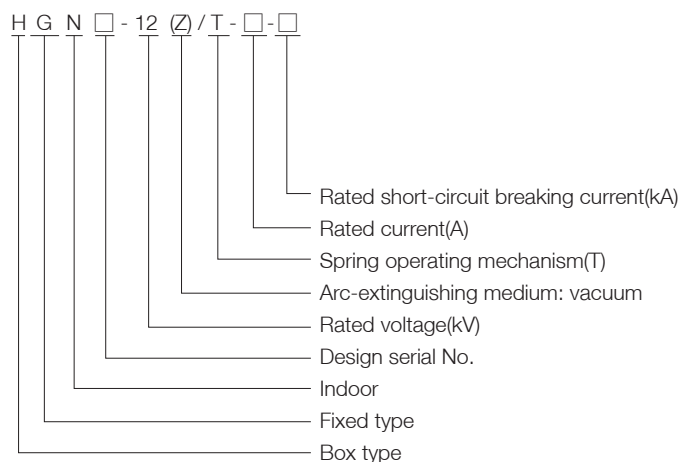
Summary

XGN □ -12(Z) indoor HV AC gas insulated metal-clad switchgear is a kind of floor-stand box type sectionalized vacuum circuit breaker and corollary equipment for installation and operation at the user branch T connecting point or end sectional point in 10kV cable distribution line. It is mainly composed of vacuum circuit breaker cabinet, sectionalized switch controller and power transformer. The switchgear is used in power distribution systems with rated voltage 12kV, three phases, AC 50/60Hz for ring network power supply or terminal power supply. It is applicable to the power distribution systems for industrial & mining enterprises, residential communities, schools and gardens. It can also be equipped into a compact box type substation to control and protect the power distribution transformers. So both of the indoor and outdoor types RMUs can realize power distribution automation.

Ambient conditions

1. Altitude: $\leq 2000\text{m}$;
2. Ambient temperature: $-25^{\circ}\text{C} \sim +55^{\circ}\text{C}$;
3. Relative humidity: monthly average $\leq 90\%$; daily average $\leq 95\%$.
4. Sunlight intensity: $\leq 1000\text{W/m}^2$
5. Annual thunderstorm days: $\leq 70\text{days}$
6. Earthquake intensity: \leq grade 8;
7. Pollution degree: \leq IV (GB5582);
8. Applicable occasions: no fire and explosion danger, no chemical corrosion and no frequent severe vibration.

Model



Technical specification

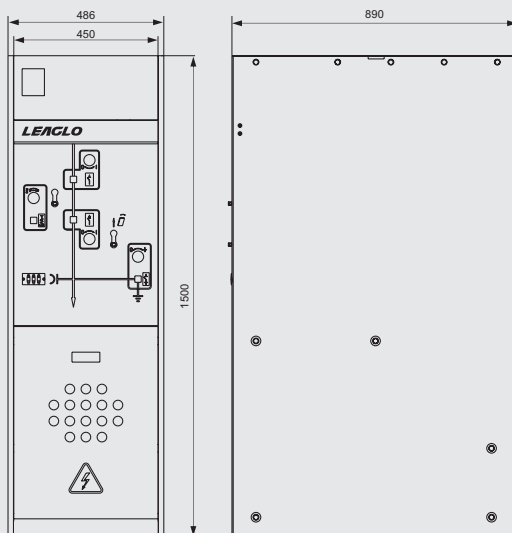
NO.	Item			Unit	Data
1	Rated voltage			kV	12
2	Rated insulation level	1min P.F Withstand voltage	phase to phase, phase to earth,across open contacts		42
			across isolating distance		48
			auxiliary loop and control loop		2
	Lightning impulse withstand voltage	phase to phase, phase to earth,across open contacts	75		
		across isolating distance	85		
3	Rated frequency			Hz	50/60
4	Rated current			A	630
5	Rated short-circuit breaking current			kA	20
6	Rated short-circuit making current(peak)				50
7	Rated operating sequence				O-0.3s-CO-180s-CO
8	Breaking times of rated short-circuit breaking current			times	30
9	Rated cable charging current			A	25
10	Rated peak withstand current			kA	50
11	Rated short-time withstand current				20
12	Rated short-circuit duration			s	4
13	Average opening speed			m/s	1.2 ± 0.2
14	Average closing speed				0.6 ± 0.2
15	Opening time	At rated operating voltage		ms	25 ± 2.5
		At max/min. operating voltage			20~40
16	Closing time	At rated operating voltage			42 ± 4.2
		At max/min. operating voltage			20~60
17	Opening rebound				mm
18	Contact close-bouncing time			ms	≤ 2
19	Three-phase opening non-simultaneity				≤ 2
20	Three-phase closing non-simultaneity				≤ 2
21	Phase-to-phase spacing				mm
22	Resistance of loop			μ Ω	≤ 150
23	Rated operating voltage			V	AC 220
24	Rated energy storage voltage			V	AC 220
25	Rated gauge pressure of SF6 gas			MPa	0.01(20℃ gauge pressure)
26	Rated min functional gauge pressure of SF6 gas				0.00(20℃ gauge pressure)
27	Annual leakage rate of SF6 gas			%/year	<0.5
28	Resistance of main loop (one unit)			μ Ω	≤ 200
29	Protection class of housing			IP	3X
30	Menchanical life			times	10000

Main function features

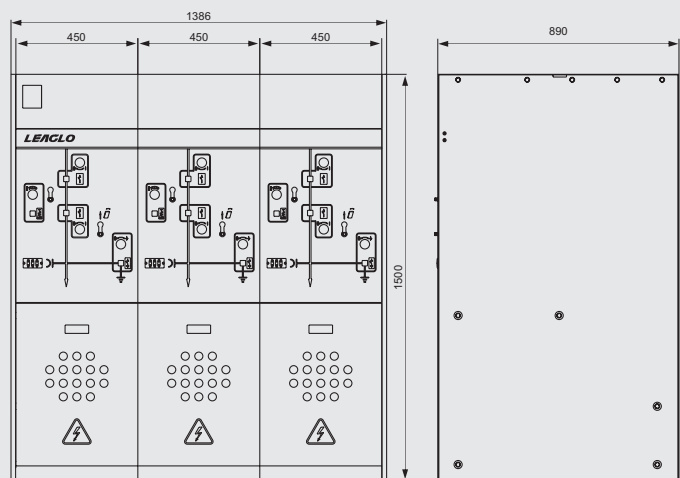
1. Structure: The switchgear is composed of integrated VCB, voltage transformer, three-phase and zero-sequence current transformer and watchdog protection controller by integration design. It has indoor type and outdoor type. It can be expanded to the multi-loop group cabinets through the busbars or it can be combined with other brand cabinets.
2. Principle: The switchgear can distinguish line fault and achieve automatic cut-off and isolation through detection and analysis of zero sequence current.
3. Functions:
 - 1) can automatically cut off the single-phase grounding fault occurred on loading side of cable watchdog;
 - 2) can automatically isolate the short-circuit fault occurred on loading side of cable watchdog;
 - 3) can initiatively send the fault information to the users through the customized communication way or submit the operating voltage and current datas as per the superior's calling.
4. The switchgear adopts vacuum arc-extinguishing method and N2 gas as insulation.
5. The switchgear is composed of main body box which is equipped with high voltage main loop system and transmission parts, upper disconnect switch, the vacuum arc-extinguishing chamber assembly, lower grounding switch and operation mechanism.
6. The cover for the actuator and the top cover of the casing are respectively filled holes.

7. All the parts, wearing parts and spare parts for the vacuum circuit breaker produced according to the same pattern are interchangeable.
8. The incoming and outgoing line bushings for the switchgear adopt American type bushings which are integrally casted by epoxy resin. They can bear 5000N of static tension along the wire horizontal direction.
9. The upper of the box body is provided with lifting device for crane to lift the switchgear. The position of the lifting device is on the switchgear's center of gravity so that the switchgear can keep horizontal when it is being lifted and can avoid the friction between the lifting rope and other mechanical parts.
10. There are the obvious indicators of "Energy storage", "Opened", "Closed" and "Grounded" on the panel of the cabinet body to clearly show the positions of Opened/Closed/Grounded.
11. The switchgear has a M12 grounding bolt on the shell and has a obvious grounding mark.
12. The control parts for the switchgear have the measures of proof-moisture and anti-interference.
13. The switchgear is equipped with a spring operating mechanism which has the breaking capacity of breaking and making the short-circuit current.

Outline and installation dimension

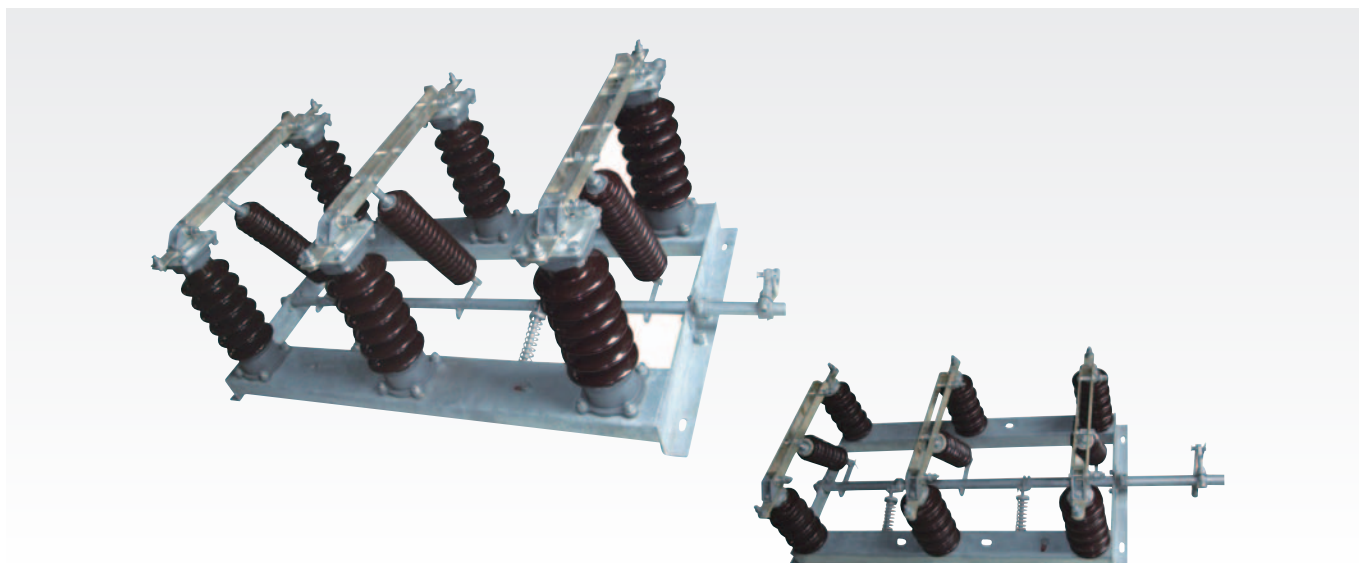


Outline dimension drawing for one unit



Outline dimension drawing for three units

GW □ -12/24/40.5 Outdoor HV Disconnect Switch



Summary

GW □ -12(24/40.5)/630-20(25) outdoor AC high voltage disconnect switch(disconnect switch for short) is used to open and close circuit with voltage but no-load 50/60Hz, 12(24)(40.5)kV power system, The antipollution type can be used in the serious pollution area. It has advantages of three pole linkage and good synchronous performance.It accords with standards of IEC 62271-103:High Voltage Switches.

Ambient conditions

1. Altitude: $\leq 3000\text{m}$;
2. Ambient temperature: $-30\text{ }^{\circ}\text{C} \sim +40\text{ }^{\circ}\text{C}$;
3. Wind speed: $\leq 35\text{m/s}$;
4. Air pollution: IV;
5. Earthquake intensity: ≤ 8 grade;
6. Ice thickness: $\leq 10\text{mm}$.

Technical specification

NO.	Item		Unit	Data		
1	Rated voltage		kV	12,24,40.5		
2	Rated current		A	630,1250		
3	Rated power frequency		Hz	50/60		
4	Rated peak withstand current		kA	50,63		
5	Rated short-time withstand current		kA	20,25		
6	Rated short-time withstand current duration		s	4		
7	Main circuit resistance		$\mu \Omega$	12kV \leq 90	24kV \leq 100	40.5kV \leq 100
8	1min(dry) power frequency withstand voltage	phase to phase phase to earth across open contacts	kV	42/48	55/75	95/115
9	1min(wet)power frequency withstand voltage			30	50	85
10	Lightning impulse withstand voltage (peak)			75/85	85/145	185/215
11	Mechanical life		Times	2000		

This disconnect switch consists of frame, operating insulator, static contact, blade, linkage spring mechanism, etc.

Frame: 5mm thickness bended armor ptate, there are holes on the frame to fixed post insulator.

Post and operating insulator: adopt ZS 12,24,40.5 series outdoor clubbed post insulator. The mini resist bend load is 4000N.

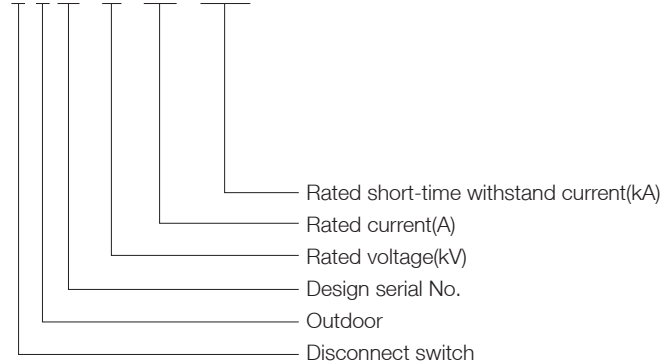
Static contactor: it is made of violet copperplate and fixed on post insulator.

Blade: it is made of rectangular violet copperplate, there is a press-spring to adjust press.

The switch can be vertically or horizontally installed in outdoor with CS □ mechanism.

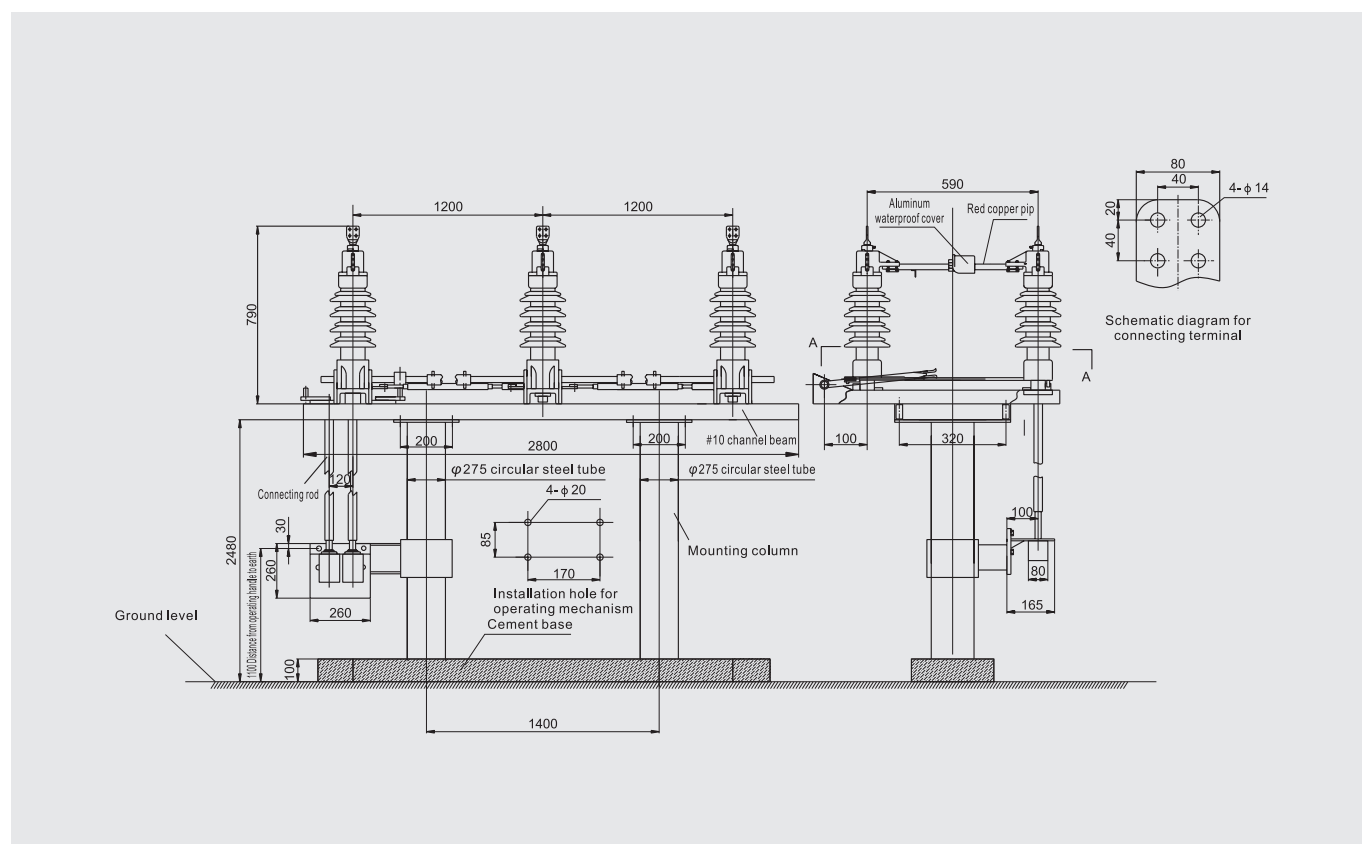
Model

GW □ - 12 / 630 - 20/25

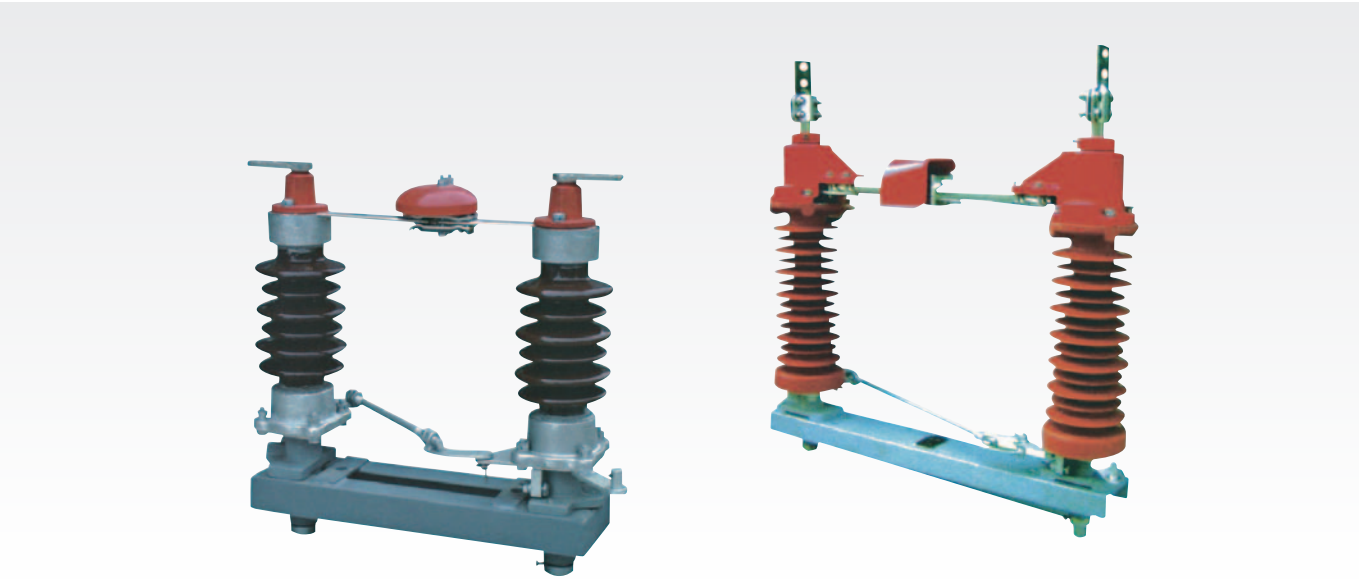


Outline and installation dimension

Model	Outline Dimension (mm)				
	B	C	D	E	F
GW-12/630-20	400	1000	1200	565	510
GW-24/630-20	420	1040	1250	610	540
GW-40.5/630-20	500	1250	1450	815	728



GW4-12/40.5D(W) Outdoor HV Disconnect Switch



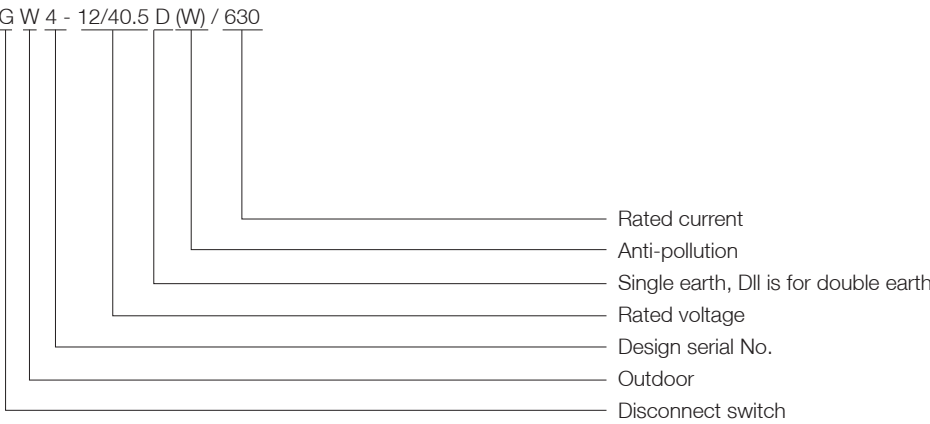
Summary

GW4-12/40.5 outdoor high voltage disconnect switch is used to open and close high voltage circuit in rated voltage 12/40.5kV, AC 50/60Hz system, the anti-pollution type is especial suitable for serious pollution area.

Ambient conditions

- 1. Altitude: $\leq 3000\text{m}$;
- 2. Ambient temperature: $-25^{\circ}\text{C} \sim +40^{\circ}\text{C}$;
- 3. Wind speed: $\leq 35\text{m/s}$;
- 4. Earthquake intensity: ≤ 8 grade;
- 5. Ice thickness: $\leq 10\text{mm}$;
- 6. Anti-pollution type is special suitable for serious pollution area;
- 7. Applicable occasions should free from inflammable, explosives and severe vibration.

Model

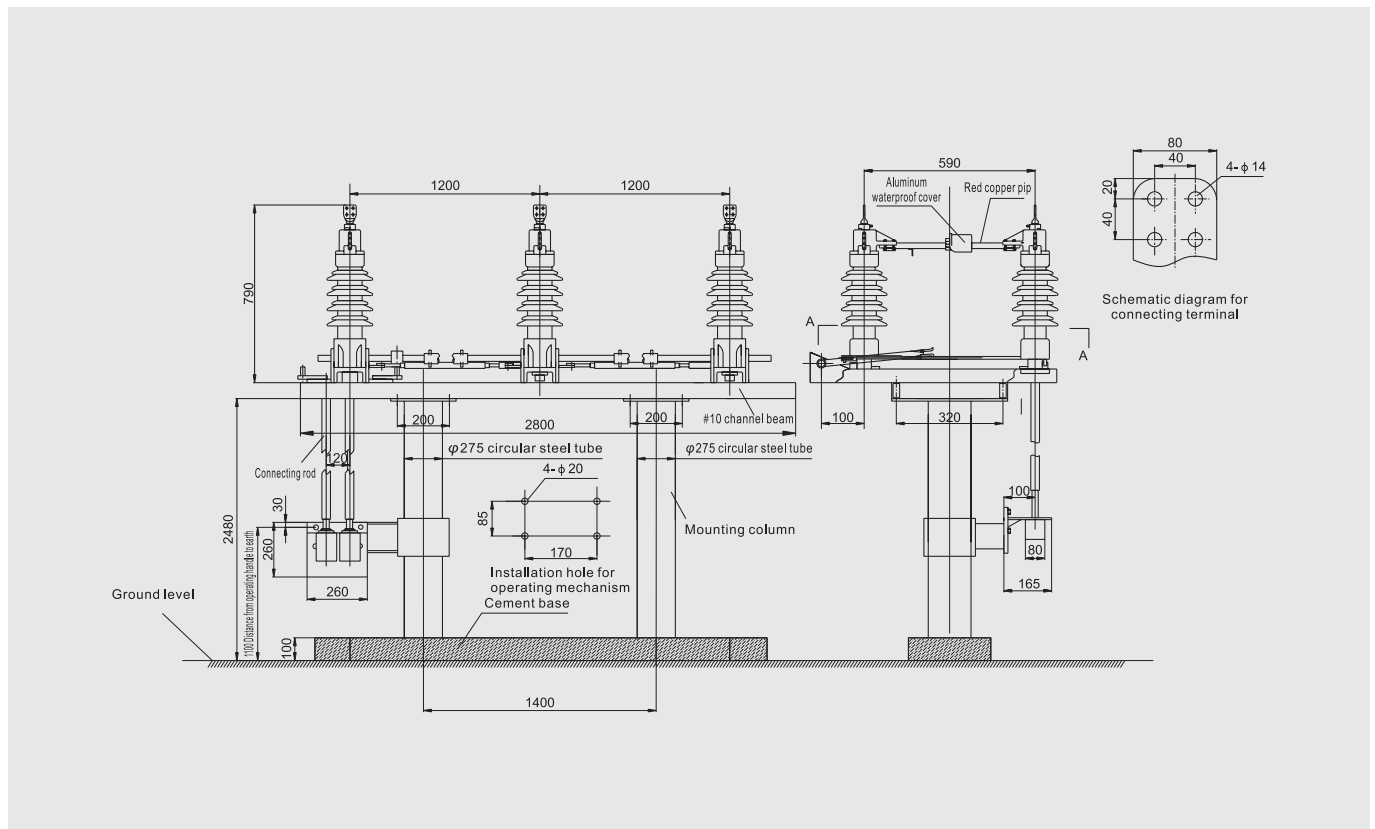


Technical specification

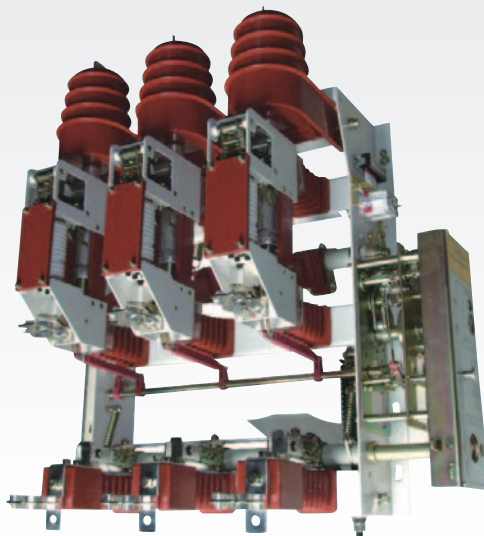
Item	Unit	Data		Note
Rated voltage	kV	12/40.5		
Rated current	A	630	1250	
Rated peak withstand current	kA	50	80	
4s short-time withstand current		20	31.5	
Rated static pull on connection terminal	N	735		
Rated power frequency	Hz	50/60		
1min power frequency withstand voltage	kV	Phase to phase, phase to earth: 185/275 across open contacts: 210/315		Suitable for three pole linkage
Lightning impulse withstand voltage(peak)	kV	Phase to phase, phase to earth: 450/650 across open contacts: 520/750		Suitable for three pole linkage
Weight of switchbody	kg	≈240		
Operating mechanism		CS14 manual		
Earth method		Without earth, single earth, double earth		
Post insulate creepage distance	mm	Normal type: 1870 anti-pollution: 3050		
With earth switch	Short-time withstand current	kA	12.5(2s)	20(2s)
	Peak withstand current		31.5	50

Disconnect switch is contain of frame, post insulator, conductive part, with earth and operating mechanism etc, earth blade is mounted with rotating shaft, static contactor is mounted on the bar, there is a mechanism linkage to ensure operating ordinally, one set Cs14 handle operating mechanical for no earth switch, two sets for single earth switch, three sets for double earth switch.

Outline and installation dimension



FZ(R)N25-12D Indoor AC High Voltage Vacuum Load Break Switch



Summary

This product applies vacuum arc-extinguishing chamber. It features with reliable operation, long electric life and easy maintenance, breaking and making power supply frequently. The operation mechanism is inside switch gear combining disconnecter, load break switch and earthing switch into one. It has compactable dimension and small weight. The disconnect gap lies in a serial with the vacuum arc-extinguishing chamber.

The large dynamic stable current and thermal stable current, the interlinked procedures assure the operation coherently.

Busbar and load break switch are separated fully by cone fixed contact, insulating cover and valve. Vacuum load break switch, earthing switch, valve and cubicle door are interlocked according to "5 protections" to prevent from miss-operation. The spring storage operation mechanism can be both operated by independent manual and motor to realize remote control. The CO operating power can be AC or DC source.

Manual operation is generally on the right of switch, but can be changed to the left or obverse according to user's requirement. It is made as per IEC62271-105.

Ambient conditions

1. Altitude: $\leq 1000\text{m}$;
2. Ambient temperature: $-25^{\circ}\text{C} \sim +40^{\circ}\text{C}$;
3. Relative humidity: daily average ≤ 95 , monthly average ≤ 90 ;
4. Earthquake intensity: ≤ 8 degree;
5. Applicable occasions should free from inflammables, explosives, corrosives and severe vibration.

Technical specification

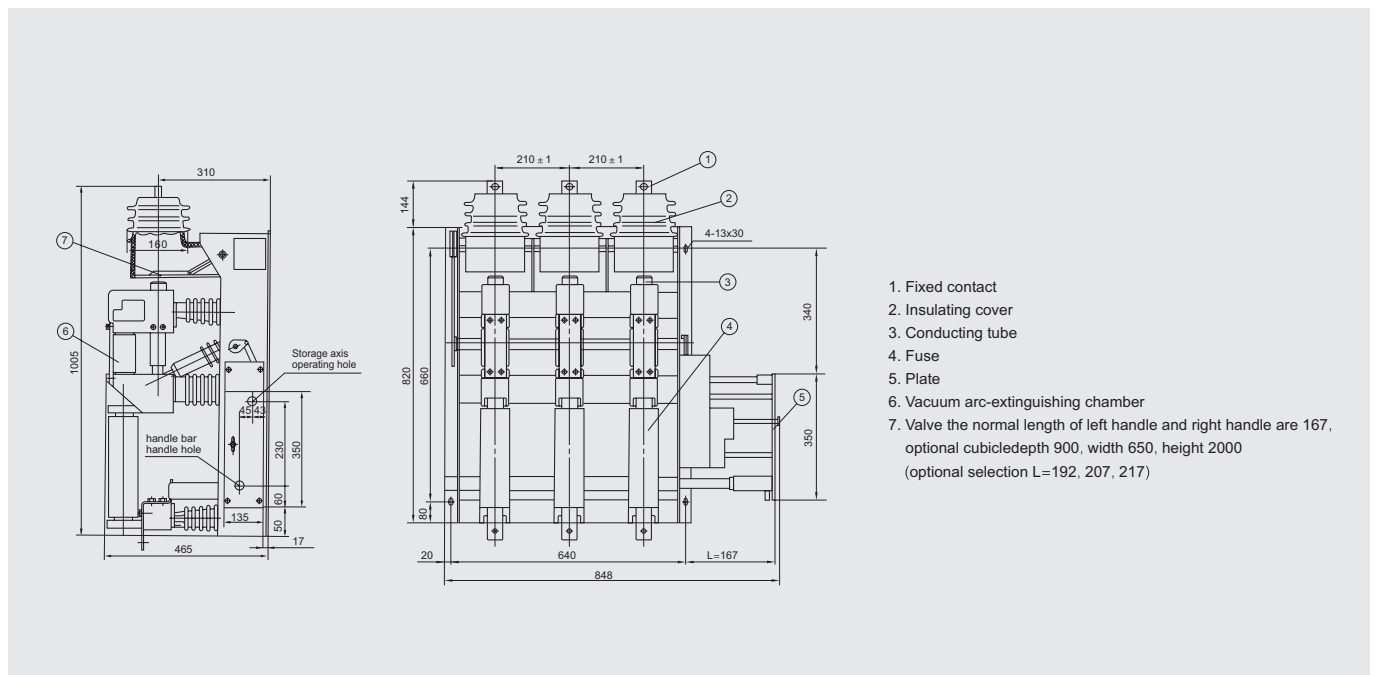
Mechanical specification of FZN25-12D and FZRN25-12D

No.	Item	Unit	FZN25-12D/T630-20	FZRN25-12D/T200-31.5
1	Clearance between electrified parts/ to earth	mm	≥ 125	
2	The thickness of conducting tube inject into fixed contacting base	mm	≥ 18	
3	Clearance between fixed and moving contact	mm	6_0^{+1}	
4	Spring decrement under contact pressrue	mm	2_0^{+1}	
5	Average closing speed of arc-extinguishing chamber	m/s	0.9 ± 0.2	
6	Average opening speed of arc-extinguishing chamber	m/s	0.6 ± 0.2	
7	Opening spring time	ms	≤ 2	
8	Three poles C/O asynchronous	ms	≤ 3	
9	Main circuit resistance	$\mu\Omega$	≤ 150	≤ 300
10	Maximum moment of manual operation	N.m	≤ 160	
11	Opening time actuated by fuse	ms	-	30-40
12	Opening time actuated by release	ms	40-45	

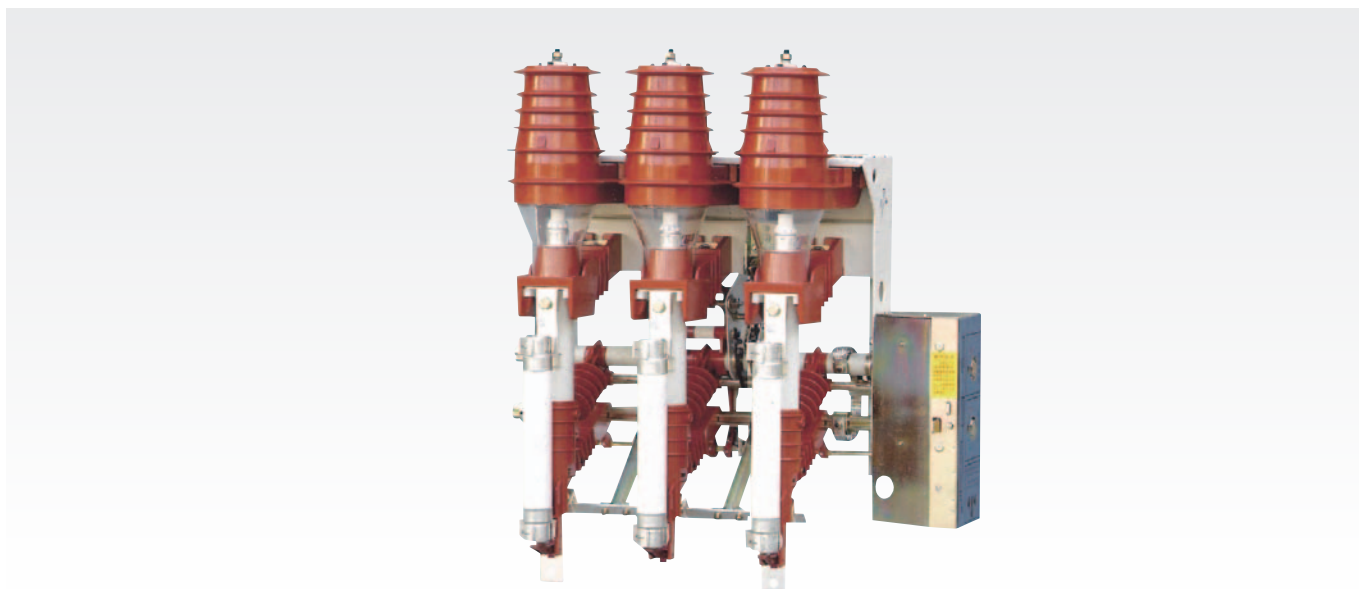
FZN25-12D Vacuum load break switch and FZRN25-12D Combination

No.	Item		Unit	FZN25-12D/T630-20	FZRN25-12D/T200-31.5
1	Rated voltage		kV	12	
2	Rated current		A	630	≤ 200
3	Rated frequency		Hz	50/60	
4	Rated insulating level	1 min. PF withstand voltage	kV	arcing chamber gaps:30, phase to earth, phase to phase:42, across open contacts:48 phase to phase:75, across open contacts:85	
5		lightning impulse withstand voltage(peak)	kV		
6	Rated short-time withstand current(thermal stable current)		kA	20	-
7	Rated short-circuit duration		s	4	-
8	Rated peak withstand current(dynamic stable current)		kA	50	-
9	Rated active load breaking current		A	630	-
10	Rated breaking current of closed-loop		A	630	-
11	Rated breaking current of charging cable		A	10	-
12	Rated breaking no-load transformer capacity		kVA	1600	
13	Rated short-circuit breaking current		kA	-	31.5
14	Rated transfer current		A	-	2000
15	Fuse model			-	SDLAJ-12/SFLAJ-12
16	Output power of impinger		J	-	2-5
17	Rated short-circuit making current		kA	50	-
18	Rated short-time withstand current of earthing switch(thermal stable current)		kA	20	
19	Rated short-circuit duration of earthing switch		s	2	
20	Rated voltage of auxiliary loop		V	≤ 220, 110	
21	Mechanical life		Times	10,000	

Outline and installation dimension



FK(R)N12-12D Load Break Switch-Fuse Combination Apparatus

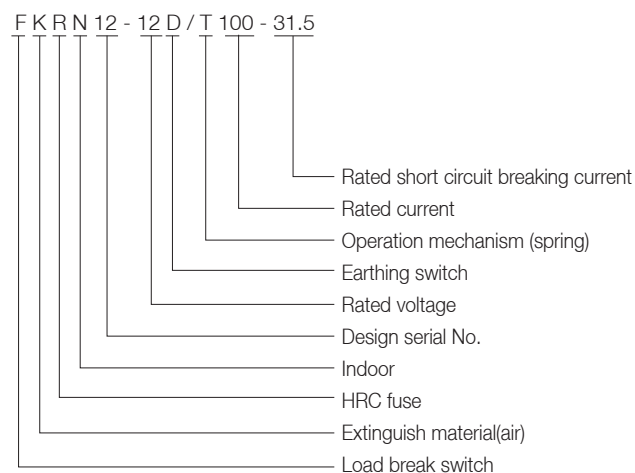


Summary

FKN12-12D air-blast load break switch and FKRN12-12D series air-blast load break switch-fuse combination apparatus are new series switchgear applies to three-phase electric distribution system of rated 12kV, acting as protecting and control apparatus for transformers, cable and overhead wiring. These series are especially applicable in rural, urban terminal substation and prefabricated substations, as well as ring network power supply. FKN12-12D can break and make load current and over-current. FKRN12-12D can break and make over-current load current and short-circuit current(limited current fuse). This product is featured with impact structure aesthetic appearance, reliable interlock and high insulating level. In the spring storage

operation mechanism, ON/OFF speed is free from the influence of the manpower. For the arc-extinguish, electric arc-extinguish inside the insulating cover, the free gas occurs at sparking do not cause descend of insulating level between phases and phase to earth. The insulation cover clapboard separates electrified part thus boost protection grade of ring main unit. The copper-tungsten contact and main contact brings along reliable conductivity and long life. This product achieves sound fame due to easy maintenance and operation as well as reliable performance. It is in compliance with IEC62271-105.

Model



Ambient conditions

1. Altitude: $\leq 1000\text{m}$;
2. Ambient temperature: $-25^{\circ}\text{C} \sim +40^{\circ}\text{C}$;
3. Relative humidity: daily average $\leq 95\%$, monthly average $\leq 90\%$;
4. Eadhquake intensity: ≤ 8 degree;
5. Pollution degree: II ;
6. Applicable occasions should be free from inflammables, explosives, corrosives and severe vibration.

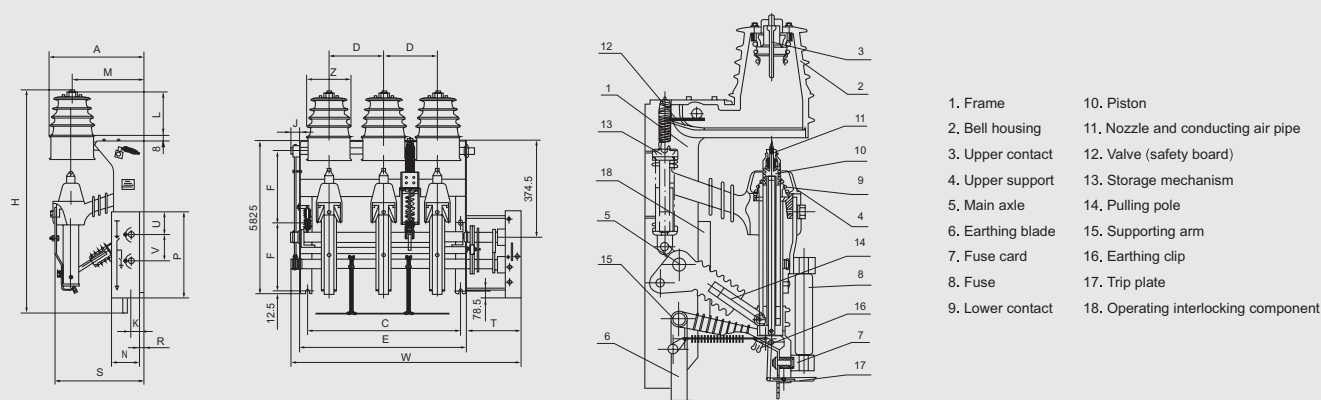
Technical specification

No.	Item	Unit	FZN12-12D	FKRN12-12D(HRC fuse)
1	Rated voltage	kV	12	12
2	Rated power frequency	Hz	50/60	50/60
3	Rated current	A	630	125
4	1 min PF withstand voltage(phase to earth, phase to phase)	kV	42	42
5	1 min PF withstand Voltage(across open contacts)	kV	48	48
6	Lightning impulse withstand voltage(phase to earth, phase to phase)	kV	75	75
7	Lightning impulse withstand voltage(across open contacts)	kV	85	85
8	Rated short-time withstand current(thermal steadily)-LBS	kA	20	
9	Rated short-time withstand current(thermal steadily)-earthing switch	kA	20	
10	Rated short-circuit duration(thermal steadily time)-LBS	s	4	
11	Rated short-circuit duration(thermal steadily time)-earthing switch	s	2	
12	Rated short-circuit making current(peak)	kA	50	
13	Rated breaking current active load breaking current	A	630	
14	Rated breaking current loop breaking current	A	630	
15	5% of rated active load breaking current	A	31.5	
16	Rated breaking current cable charging current	A	10	
17	Rated breaking current no-load transformer capacity	kVA	1250	
18	Rated short-circuit breaking current(fuse)	kA		31.5
19	Rated transfer current	A		1200
20	Mechanical life	Times	2000	2000

Mechanical performance

No.	Item	Unit	Date
1	Distance of open contacts	mm	≥ 175
2	Central distance of poles	mm	210 ± 2
3	Air clearance of poles	mm	≥ 125
4	Travel	mm	210 ± 4
5	Over-travel	mm	≥ 40
6	Three pole making asynchronous	ms	≤ 10
7	Three pole breaking asynchronous	ms	≤ 5
8	Release tripper breaking time	ms	40~65
9	Main circuit resistance	$\mu \Omega$	≤ 130

Outline and installation dimension



- | | |
|-------------------|--------------------------------------|
| 1. Frame | 10. Piston |
| 2. Bell housing | 11. Nozzle and conducting air pipe |
| 3. Upper contact | 12. Valve (safety board) |
| 4. Upper support | 13. Storage mechanism |
| 5. Main axle | 14. Pulling pole |
| 6. Earthing blade | 15. Supporting arm |
| 7. Fuse card | 16. Earthing clip |
| 8. Fuse | 17. Trip plate |
| 9. Lower contact | 18. Operating interlocking component |

Model	Size(mm)	A	H	C	D	E	F	K	J	L	M	N	P	R	S	T	U	V	W	Z	Weight
FKN12-12D		390	880	600	210	648	270	67	50	155	287	171	368	11	337	170	94	105	868	180	70kg

Power Grid Solution & Safety Technology

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