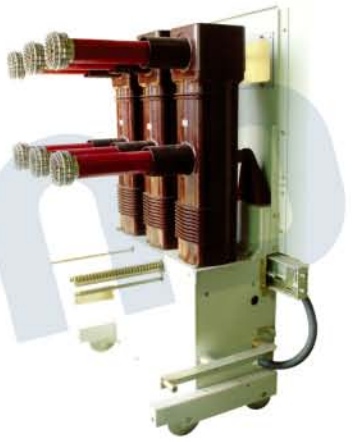
ZN85-40.5 Indoor AC High Voltage Vacuum Circuit Breaker

Summary

ZN85-40.5(3AV3) indoor vacuum circuit breaker is a product designed and produced by our company and Xi'an High-voltage Electric Apparatus Institute. The VCB is of rated voltage 40.5kV, three-phase and AC 50/60Hz. It applies to mining firms, power house and substation acting as protection and control electric apparatus. It is also applicable in occasions with frequent operation.



Ambient condition

1. Altitude: ⩽1000m;
2. Ambient temperature: -25℃~+40℃;
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.

Model

Z N 85 - 40.5 / 1250 - 31.5

- Rated short-circuit breaking current (kA)
- Rated current (A)
- Rated voltage(kV)
- Design serial No.
- Indoor
- Vacuum circuit breaker

Structrue feature

1. The arc-extinguish chamber is on the upper part and the mechanism is on the lower part. This structure is convenient for debug.
2. Complex insulating structure using air and organic material; Compactable dimension and small weight.
3. Vacuum arc-extinguish chamber of Cutler-Hammer Company (USA) and domestic ZMD are both applicable for the VCB. Both two kinds of chambers extinguish arc by vertical magnetic field and featuring with low cut-off and good on-off capability with asymmetry.
4. Simple spring operation mechanism is free from maintenance within 10000 times of operations.
5. Lead-screw propeller, easy and stable operation and good self-locking capability.

Technical specification

No.	Item	Unit	Data
1	Rated voltage	kV	40.5
2	1min. PF withstand voltage		95
3	Lightning impulse withstand voltage(peak)		185
4	Rated current	A	630,1250,1600,2000
5	Rated short-circuit breaking current	kA	25,31.5
6	Rated short-circuit making current(peak)		63,80
7	4s rated short-time withstand current		25,31.5
8	Rated peak withstand current		63,80
9	Rated operation sequence		O-0.3s-CO -180s-CO
10	Breaking times of rated short circuit breaking current	Times	20
11	Mechanical life		10000
12	Rated frequency	Hz	50/60
13	Rated breaking current of capacitor bank	A	630

Technical specification of storage motor of operating mechanism

No.	Rated voltage		Rated output power	Normal operate voltage
HDZ-22301B	DC110V AC110V	DC220V AC220V	⩽230W	85%-110% rated voltage

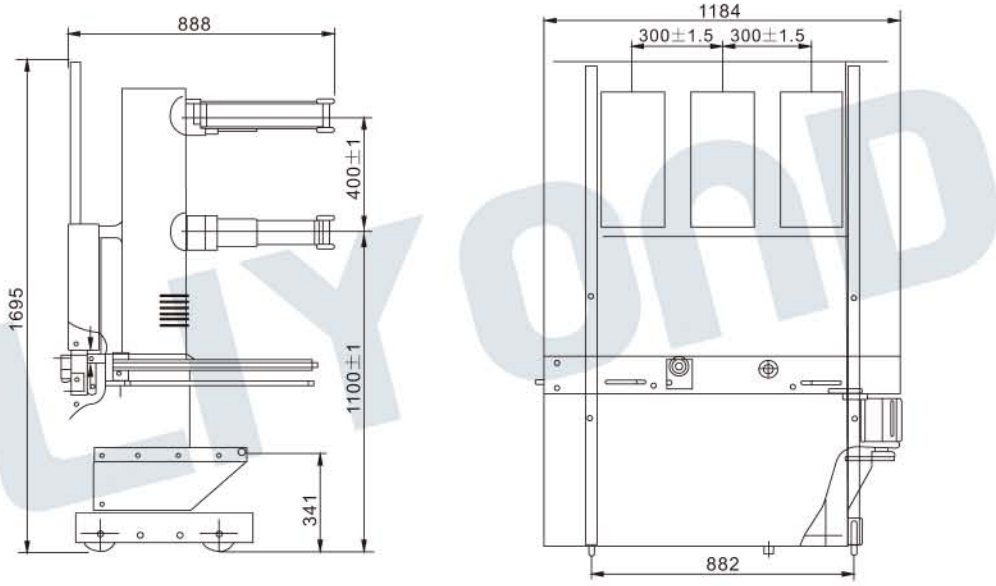
Mechanical parameters

No.	Item	Unit	Data
1	Contact clearance	mm	22±2
2	Over-travel	mm	7.5±1.5
3	Permissible abrasion of contact	mm	3
4	Average closing speed	m/s	0.65±0.15
5	Average opening speed(contact open at 12mm)	m/s	1.8±0.2
6	Contact closing trip time	ms	⩽2
7	Closing simultaneity of three pole	ms	⩽2
8	Opening simultaneity of three pole	ms	⩽2
9	Buffer travel	mm	13±1
10	Rebound of opening contact	mm	⩽2
11	Loop resistance	μΩ	⩽50(630A) ⩽65(1250A,1600A,2000A)

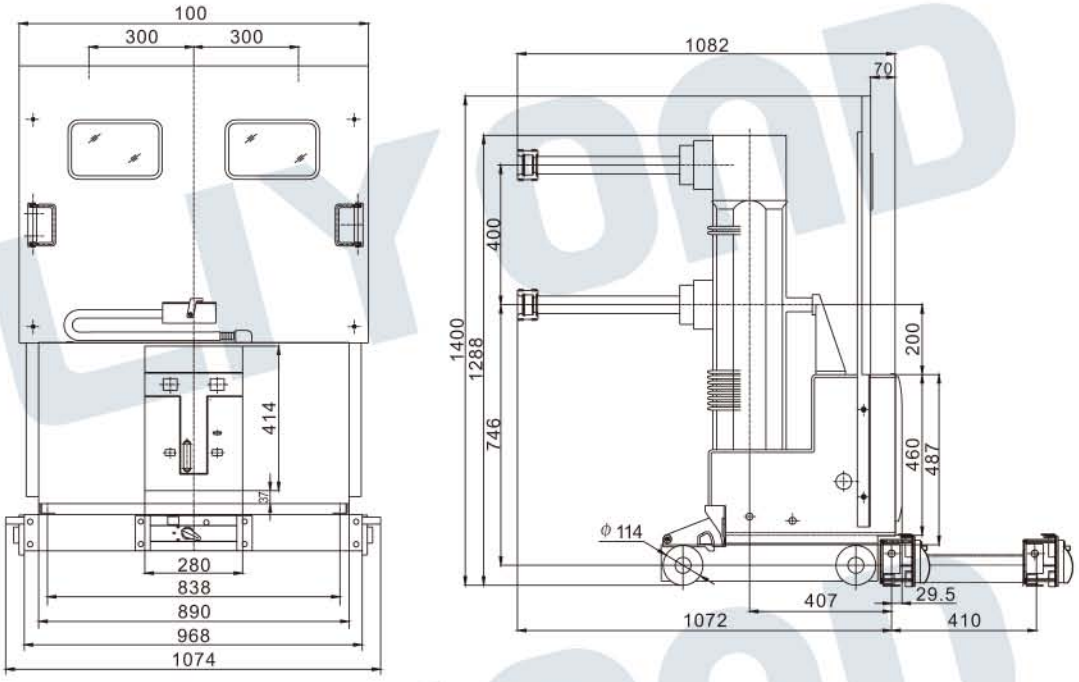
Technical specification of C/O release

Rated operate voltage(V)	DC110	DC220
Rated operating current(A)	<115	<210
Rated electric power (W)	1.05	0.96
Coil resistance at 20°C(Ω)	105±3	230±5
Normal operate voltage	Opening on 65%-120% of rated operate voltage, can not opening when less than 30% of rated voltage	

Outline and dimension of installation



ZN85-40.5(3AV3) VCB handcart outline dimension



ZN85-40.5/2000-31.5 miniaturization vacuum circuit breaker

ZN23-40.5 Indoor High Voltage Vacuum Circuit Breaker

Summary

ZN23-40.5 vacuum circuit-breaker handcart is a type of HV electric apparatus of rated voltage 40.5kV, three-phase and AC 50/60Hz. This product applies to electricity distribution system in mining industry and substation acting as control and protection apparatus, it is applicable in occasions with frequent operation such as metallurgy and electric-arc steel-making. This product conforms to standard of IEC298 & GB/T1984-2003 AC high voltage circuit-breaker.

Ambient condition

1. Altitude: ⩽1000m;
2. Ambient temperature: -25℃~+40℃;
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.

Model

Z N 23 - 40.5 / 630 - 31.5

- Rated short-circuit breaking current (kA)
- Rated current (A)
- Rated voltage(kV)
- Design serial No.
- Indoor
- Vacuum circuit breaker

Product feature

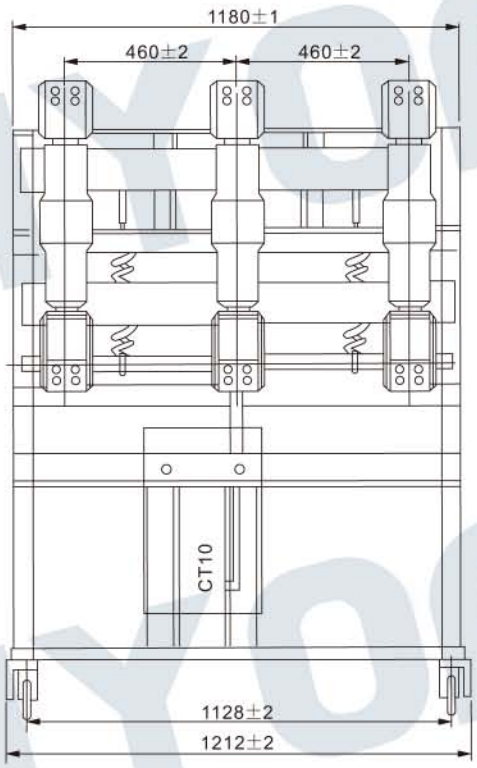
1. High insulation level, low cut-off level and strong arc-extinction capability.
2. Electric magnetic mechanism and spring operating mechanism both fit on.
3. GBC ark and JYN1 ark both fit on.

Technical specification

No.	Item	Unit	Data
1	Rated voltage	kV	40.5
2	Lightning impulse withstand voltage	kV	185
3	1min P.F withstand voltage	kV	95
4	Rated frequency	Hz	50/60
5	Rated current	A	630,1000,1600,2000
6	Rated short circuit breaking current	kA	25,31.5
7	Rated short-time withstand current	kA	25,31.5
8	Rated peak withstand current	kA	63,80
9	Rated short-circuit duration	s	4
10	Rated short circuit breaking time	ms	⩽90
11	Rated short-circuit making current	kA	50,80

No.	Item	Unit	Data
12	Rated operation sequence		O-0.3s-CO-180s-CO
13	Opening time	ms	50~85
14	Closing time	ms	40~85
15	Rated short-circuit breaking current breaking time	Times	20
16	Mechanical life	Times	10000
17	Rated breaking current of capacitor	A	630
18	Rated power of storage motor	W	275
19	Rated voltage of storage motor	V	≌220,110
20	Power-storage time	s	≤15
21	Rated voltage of on-off electromagnetic	V	≌220,110
22	Rated voltage of no-voltage tripper	V	≌220,110
23	Rated current of over-current release	A	5
24	Rated current of auxiliary switch	A	10

Outline dimension



ZN12-40.5(3AF) Indoor High Voltage Vacuum Circuit Interrupter

Specification

Summary

ZN12-40.5(3AF) circuit breaker use main conductivity loop and operation mechanism around arrangement form. Circuit breaker uses dedicated spring operation integrated with switch. The main loop uses excellent vertical magnetic field vacuum arc-extinguish chamber. The circuit breaker has small volume, steady function, safety operation.The technology of circuit breaker is 3AF with strong breaking capacity, long mechanical lifetime, and excellent technical performance.The actuator with complete functions can be operated by AC, DC, or manual operation.

Ambient condition

1.Ambient temperature: max +40°C, min -10°C
2.Humidity: daily average RH ≤95%, monthly average RH≤90%
3.Saturated vapor pressure: daily average ≤2.2kPa, monthly average ≤ 1.8kPa
4.Earthquake withstand ability : ≤ Grade 8
5.Altitude: ≤1000m
6.Free from dropping water, fire disaster, explosion risk, severe pollution, chemical corrosion and fierce vibration.

Parameters

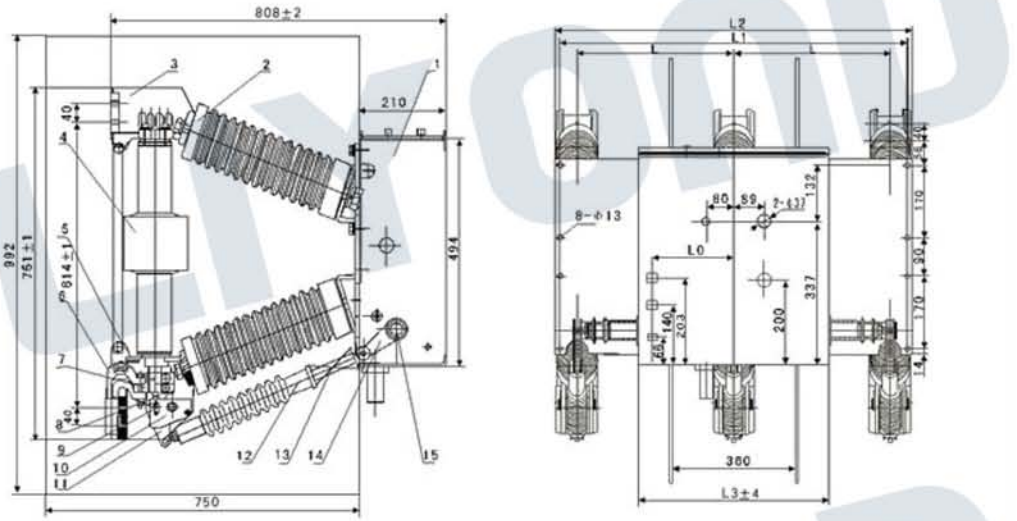
S.N	Name		Unit	Data	
1	Rated voltage		kV	40.5	
2	Rated frequency		Hz	50/60	
3	Rated current			630	1250
			A	1000	1600
				1250	2000
4	Rated short circuit breaking current		kA	25	31.5
5	Rated peak withstand current		kA	63	80
6	Rated short-circuit duration		S	4	
7	Rated power frequency withstand voltage	Between phases, phase to ground	kV	95	
		Between gaps	kV		
8	Rated lightning impulse withstand voltage	Between phases, phase to ground	kV	185	
		Between gaps	kV		
9	Rated operating sequence			O-0.3s-CO-180s-CO	
10	Power source voltage of opening and closing circuit		V	~220/110; -220/110	
11	Rated current of closing circuit		A	-220/0.89; -110/1.91	
12	Rated current of opening circuit		A	-220/1.25; -110/1.91	
13	Rated breaking current of single capacitor bank		A	630	
14	Rated breaking current of back to back capacitor bank		A	400	
15	Electrical endurance class		Cycle	ClassE2 (20cycles)	
16	Mechanical endurance		Cycle	(classM1) 10000	
17	Rated voltage of energy stored motor		V	~220/110; -220/110	
18	Clearance between open contacts		mm	22±2	
19	Contact stroke of contacts		mm	6±2	
20	Out of simultaneity of CO operation of three poles		ms	≤2	
21	Contact bouncing duration at closing operation		ms	≤3	

Connected to the above table

S.N	Name	Unit	Data
22	Closing time	ms	≤100
23	Opening time	ms	≤50
24	Average closing speed	m/s	0.75~1.25
25	Average opening speed	m/s	1.15~1.85
26	Main circuit resistance of each pole	μΩ	≤45
27	D.C component		40%(Max.)

C

Drawing



1.Frame 2.Insulator 3.Upper outlet 4.Vacuum interrupter 5.lower outlet 6.Flexibar 7.Conducting clamp
8.Bearing 9.Shaft pin 10.Guide plate 11.Shaft arm 12.Pulling pole 13.Contact spring 14.Shaft arm 15.Main shaft

Type	L	L0	L1	L2	L3	Remarks
ZN12-40.5A	350	215	800	830	516	With partition between phases
ZN12-40.5B	400	240	900	930	556	With partition between phases
ZN12-40.5C	460	265	1040	1090	605	

ZN39-40.5C Indoor High Voltage Vacuum Circuit breaker

Specification

Summary

1.Circuit breaker with composite insulation, circuit breaker under the condition of meet the normal operation of the air distance and the creepage distance requirements,and effectively laughed the volume of circuit breaker, the overall layout is reasonable, beautiful and concise.
2.Operating mechanism used specifically for this new type of circuit breaker design of spring operating mechanism, the output curves to the demands of the arcing chamber cooperate good, its performance is more suitable for the characteristics and requirement of 40.5 KV vacuum circuit breaker,it has the very high reliability, long service life, convenient maintenance and maintenance free.
3.Handcart adopt four cylinder nut mechanism, propulsion can easily move the handcart, use force mechanical locking mode, meet the "five prevention" function.
Applicable to a variety of occasions and is quite harsh operating conditions of the workplace.

Ambient condition

1.The environment temperature:It is not higher than 40 °C ,Not less than -10 °C.
2.Relative humidity:Daily average no greater than 95%, on average no greater than 90%
Earthquake intensity:No more than 8 degrees.
3.Vapor pressure: daily average no more than 2.2 Pa, monthly average no more than 1.8 Pa
4.Altitude: not more than 1000 m.
5.No fire and explosion danger, serious pollution, chemical corrosion and the site of violent vibration.

Parameters

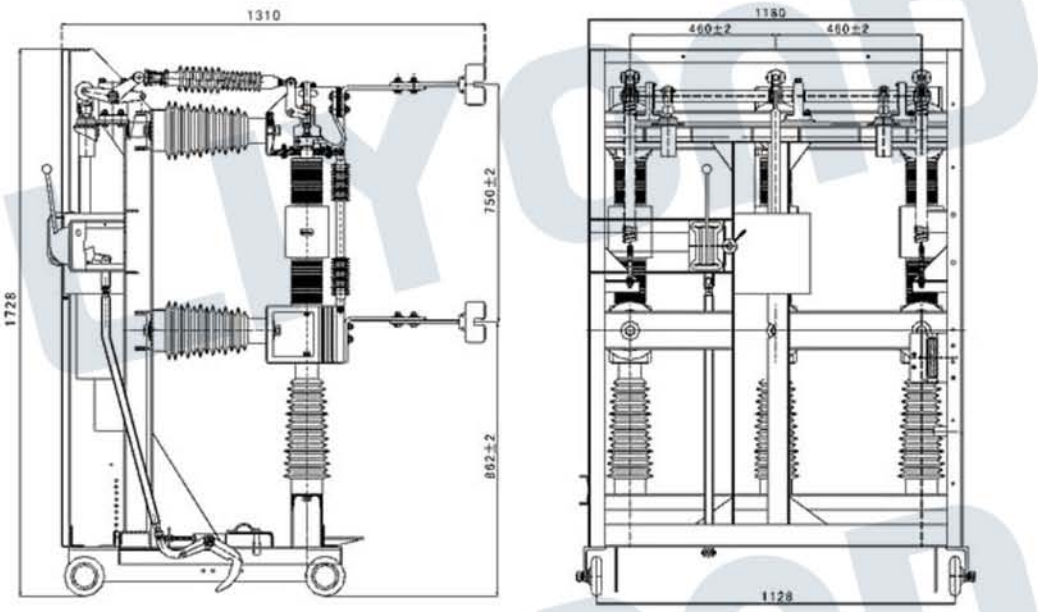
C

S.N	Name	Unit	Data	
1	Rated voltage	kV	40.5	
2	Rated frequency	Hz	50	
3	Rated current	A	1250	1250
			1600	1600
				2000
4	Rated short circuit breaking current	kA	25	31.5
5	Rated peak withstand current	kA	63	80
6	Rated short-circuit duration	S	4	
7	Rated power frequency withstand voltage — Between phases, phase to ground	kV	95/1min	
	Rated power frequency withstand voltage — Between gaps	kV	95/1min	
8	Rated lightning impulse withstand voltage — Between phases, phase to ground	kV	185	
	Rated lightning impulse withstand voltage — Between gaps	kV	185	
9	Rated operating sequence		O-0.3s-CO-180s-CO	
10	Power source voltage of opening and closing circuit	V	~220/-110; -220/110	
11	Rated breaking current of single capacitor bank	A	630	
12	Rated breaking current of back to back capacitor bank	A	400	
13	Electrical endurance class	次	20	
14	Mechanical endurance	次	10000	
15	Operating mechanism type		CT19N	Cd10 Ⅱ
16	Clearance between open contacts	mm	22 ± 2	
17	Contact stroke of contacts	mm	6 ± 1	
18	Out of simultaneity of CO operations of three poles	ms	≤2	
19	Contact bouncing duration at closing operation	ms	≤3	
20	Closing time	ms	30 ~ 100	

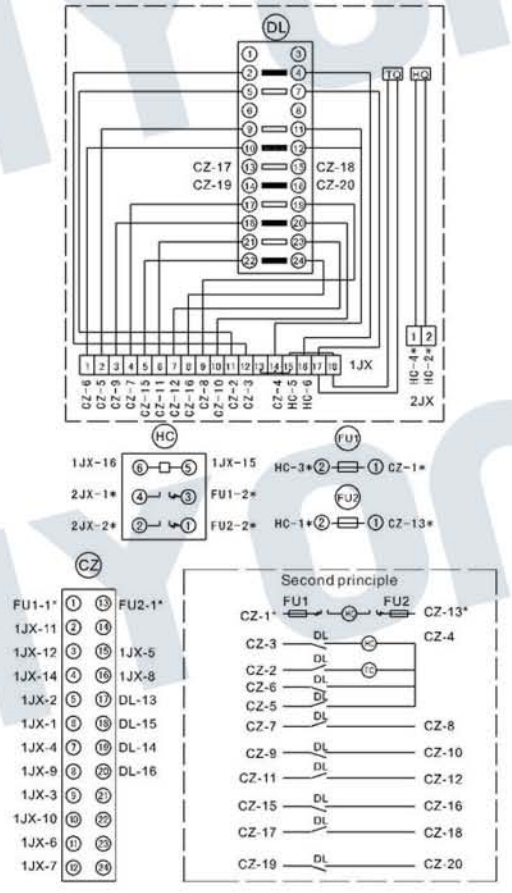
connected to the above table

S.N	Name	Unit	Data
21	Opening time	ms	30 ~ 60
22	Average closing speed	m/s	0.6 ± 0.2
23	Average opening speed	m/s	1.6 ± 0.3
24	Main circuit resistance of each pole	μ Ω	≤80
25	D.C component		40%(Max.)

Drawing



The overall outline drawing of ZN39-40.5/T(D) series of Vacuum Circuit Breaker

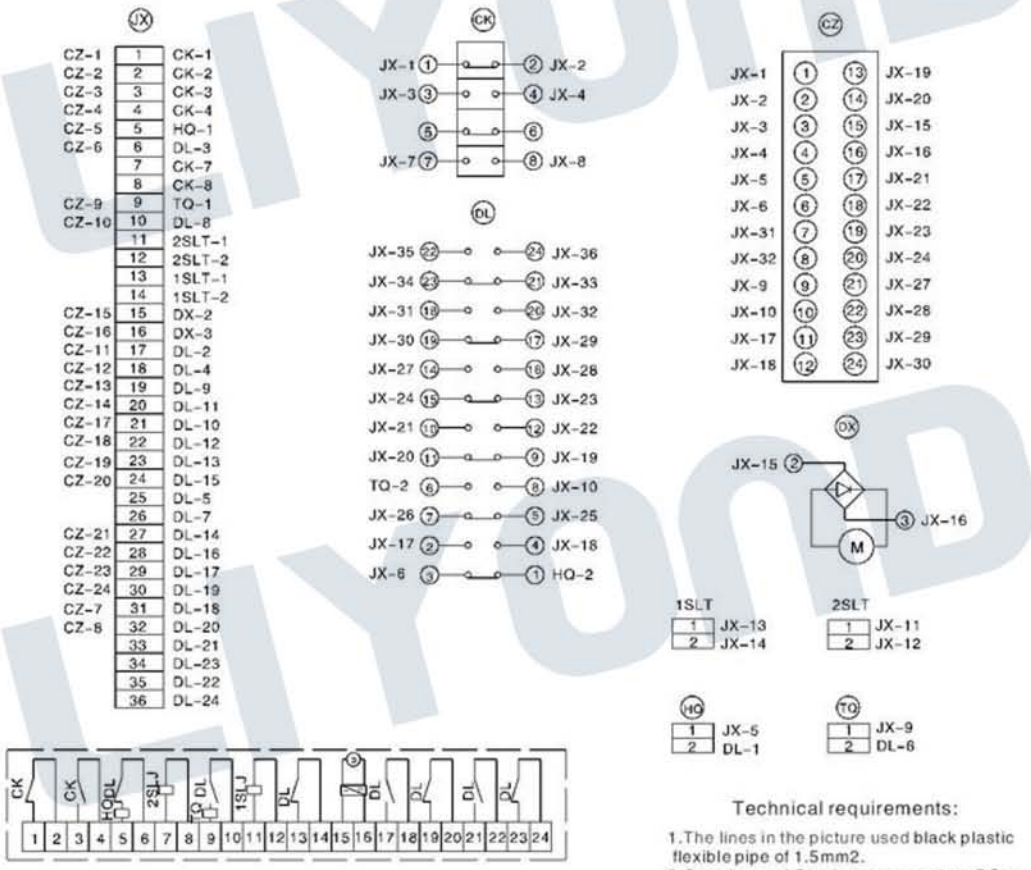


S.N.	Code	Name	Type	Note
4	FU	Fuse	RM10-60	
3	HC	D. C. Contactor	CZ0-40C,-220V	
2	CZ	Second plug	JYN1-35	24pin(with 2 bodkin)
1		Operating mechanism	CD10-Ⅱ,-220V	

Technical requirements

1.The lines with * used black plastic flexible pipe of 6mm².
2.The other lines used black plastic flexible pipe of 1.5mm².

Drawing



Technical requirements:

1.The lines in the picture used black plastic flexible pipe of 1.5mm2.
2.Opening and Closing source adopt DC or AC power margin

Note:
1.When it is three over-current,please connect JX-17,JX-18 instead of CN13,CN14 and 3SLJ.
2.When it is no over-current,please connect JX-17,JX-18 instead of CN11,CN12;and use JX-31,JX-32 instead of CZ7,CZ8

7	SLT	Overcurrent coil		
6	TQ	Trippingcoil		
5	HQ	Closing coil		
4	CK	Micro switch		
3	DL	Auxiliary switch		
2	CZ	Second plug	JYN1	24 Pin(without bodkin)
1		Spring mechanism	CT19N	

EP-40.5/T indoor high voltage vacuum circuit interrupter with Embedded poles for 40.5kV switchgear

Specification

40.5kV indoor high voltage vacuum circuit interrupter with Embedded poles is a three-phase, rated voltage of 40.5kV indoor switchgear. Our company with its own research and development of permanent magnetic actuator for industrial and mining enterprises, power generation and substation facilities as electrical control and protection purposes. The product has high reliability and long life characteristics, especially suitable for frequent operation, repeatedly breaking conditions, such as short-circuit current of the place.

C

Parameters

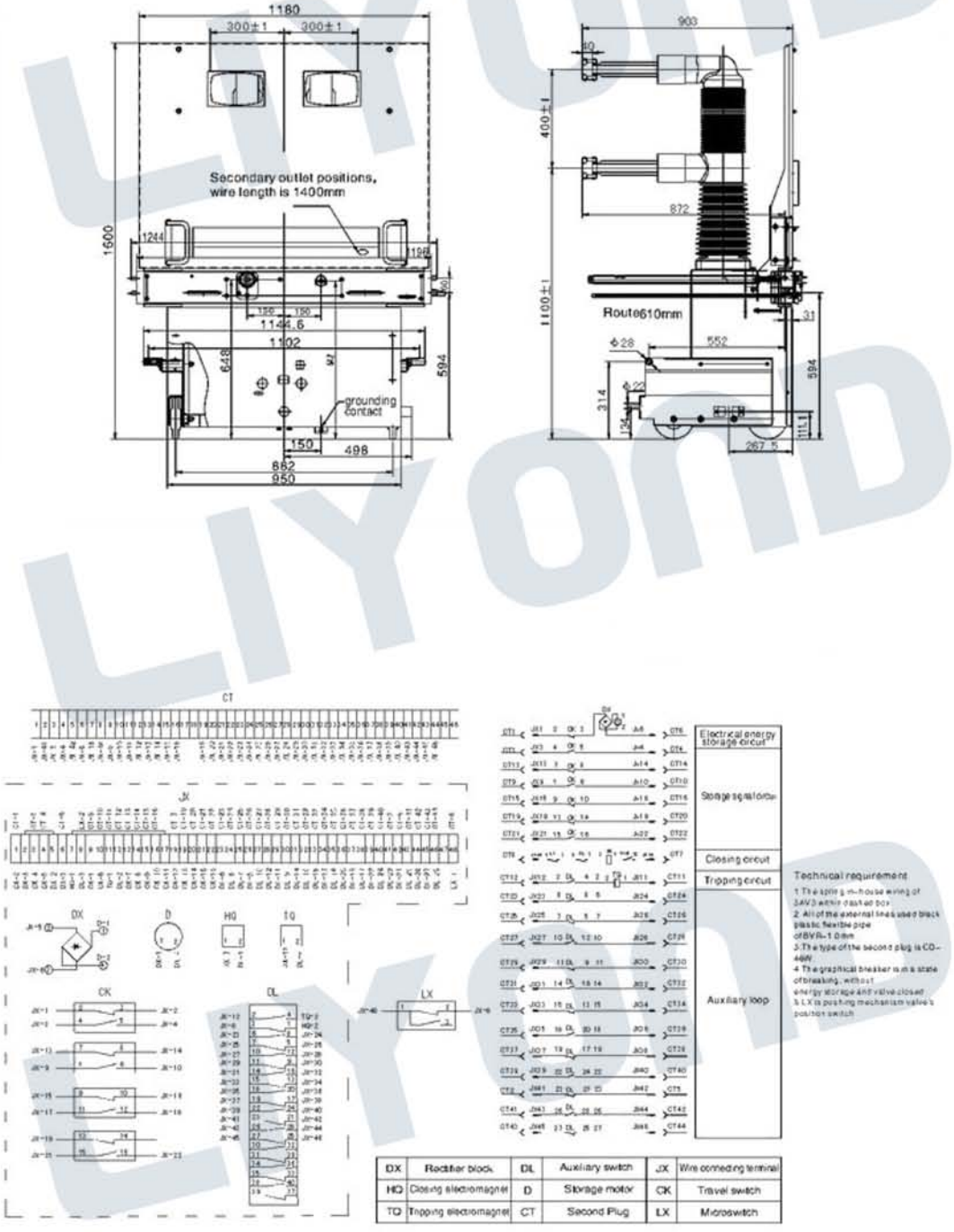
S.N	Name	Unit	Data
1	Clearance between open contacts	mm	22±2
2	Contact stroke of contacts	mm	7.5±1.5
3	Allows the thickness of the contact	mm	3
4	Average closing speed	m/s	0.65±0.15

connected to the above table

S.N	Name	Unit	Data
5	Average opening speed	m/s	1.8±0.2
6	Contact bouncing duration at closing operation	ms	≤3
7	simultaneity of CO operations of three poles	ms	≤2
8	out of simultaneity of CO operations of three poles	ms	≤2
9	Separating brake rebound amplitude	mm	2
10	Buffer spacing	mm	7

S.N	Name	Unit	Data		
1	Rated voltage	kV	40.5		
2	Rated power frequency withstand voltage	kV	95		
3	Rated lightning impulse withstand voltage	kV	185		
4	Rated frequency	Hz	50		
5	Rated current	A	1250	1600	2000
6	Rated short circuit breaking current	kA	25/31.5	25/31.5	31.5
7	Rated peak withstand current	kA	63/80	63/80	80
8	Rated short time withstand current	kA	25/31.5	25/31.5	31.5
9	Rated short time duration current	S	4		
10	Rated short circuit making current	kA	63; 80		
11	Rated operating sequence		O-0.3s-CO-180s-CO		
12	Closing time	ms	50 - 100		
13	Opening time	ms	35 - 60		
14	Circuit resistance	μΩ	≤60(Rated current1600, 2000A)		
15			≤80 (Rated current1250A)		
16	Electrical endurance class	Cycle	20		
17	Rated operating voltage	V	~220/110; -220/110		
18	Rated current of closing/opening circuit	A	1.05(-110V)0.96(-220V)		
19	Mechanical endurance	Cycle	10000		
20	D.C component		40%(Max.)		

Drawing


1180
300±1
300±1
Secondary outlet positions,
wire length is 1400mm
1600
1244
198
150
150
1144.6
1102
648
594
grounding contact
150
498
862
950
903
400±1
872
1100±1
Route610mm
31
552
28
594
314
124
111.1
267.5
CT
JX
DX
D
HQ
TQ
CK
DL
LX
Electrical energy storage circuit
Storage signal circuit
Closing circuit
Tripping circuit
Auxiliary loop
Technical requirement
1 The spring in-house wiring of 24V3 within cabinet box
2. All of the external lines used black plastic flexible pipe of BVR-1.0mm
3.The type of the second plug is CD-46W
4 The graphical breaker is in a state of breaking, without energy storage and valve closed
5 LX is pushing mechanism valve's position switch
DX Rectifier block
HQ Closing electromagnet
TQ Tripping electromagnet
DL Auxiliary switch
D Storage motor
CT Second Plug
JX Wire connecting terminal
CK Travel switch
LX Microswitch