



VIB1-12 Type VCB

Installation & Operation Instruction Manual

SHAANXI LONGXIANG ELECTRICAL Co., Ltd

1. General Description

The VIB1-12 type indoor high voltage vacuum circuit breaker (hereinafter referred to VCB for short) is applied for indoor switchgear with rated voltage of 12kV and frequency of AC50/60Hz. It adopts the modular operation mechanism and with VI embedded poles for primary circuit, which can be assembled into KYN28A-12 type switchgear cabinet by using special feed-in mechanism to form a withdrawable truck unit, and also it can be matched with XGN2 type fixed switchgear as fixed unit which equipped with relevant mechanical interlock.

The product is manufactured in accordance with standard requirements of GB1984 *AC High Voltage Circuit Breaker*, JB/T 3855 *AC High Voltage Vacuum Circuit Breaker*, DL/T403 *12kV~40.5kV High Voltage Vacuum Circuit Breaker Specifications* and IEC62271-100 "*High Voltage AC Circuit Breaker*".

Other special withdrawable truck unit series assembled to KYN28 type switchgear cabinet are isolating truck, fuse truck and lightning arrester trucks etc.

2. Applying Ambient Conditions

a) Ambient temp.: 40℃ for max., -15℃ for min., and average value should be no more than 35℃ measured during 24 hours.

b) Ambient humidity:

Average relative humidity of a day: $\leq 95\%$,

Average relative humidity of a month: $\leq 90\%$

Average vapor pressure of a day: $\leq 2.2 \times 10^{-3} \text{MPa}$

Average vapor pressure of a month: $\leq 1.8 \times 10^{-3} \text{MPa}$

c) The height above sea level: no more than 1000m.

d) Earthquake intensity is no more than 8 degree.

e) It should be installed in the condition without obviously polluted by dust, smoke, chemical erosion & explosive gas, vapor and salt spray etc.

Remark: When the ambient condition requirements are beyond the above normally applied ambient conditions, it should be consulted with manufacturer.

3. VCB Mechanical Performance Parameters (See Table below)

Item	Description	Unit	Parameter Value
1	Clearance between open contacts	mm	9 ± 1
2	Contacts Stroke		3.5 ± 0.5
3	Contacts bouncing duration at closing operation	ms	≤ 2
4	Non-synchronous Closing & opening operations of three poles		≤ 2
5	Opening time		20~50
6	Closing time		30~70
7	Average opening speed	m/s	1.1 ± 0.2
8	Average closing speed		0.6 ± 0.2

9	Distance between center of poles	mm	210±1.5	275±1.5
10	Allowed worn thickness for moving and fixed contacts	mm	≤ 3	
11	Main circuit resistance for each phase	μΩ	≤50 (630A) ≤45 (1250~1600A) ≤35 (2000A) ≤25 (2500A and above)	

4. Installation and commissioning

Check before installation:

When the VCB is hanged out of the packing box, the hooks should be placed into the hanging holes with obvious marks on the VCB body. When moving the product, the upper and lower contact arms could not bear force, and the VCB is not allowed to withstand strong impact and vibration.

The VCB had been strictly inspected before ex-factory, and all parameters meet the technical requirements.

Following preparation tasks should be made before getting through primary circuit.

4.1 Check whether the VCB is damaged or not, if yes please stop using.

4.2 Clean the dirt, especially for the insulating surface, and the product insulating performance shall be affected because of dirt caused in the transportation and storage process.

4.3 To operate the VCB for energy charging, closing and opening in manual way according to instruction, and observe whether the energy storage state and CO position indication are in normal condition or not.

4.4 To operate the VCB for energy charging, closing and opening by operating power, and observe whether the energy storage state and CO position indication are in normal condition or not.

4.5 For withdrawable VCB, the operation process is as follows: when the VCB is in testing position and opening condition, insert the push-in handle into the hole, and turn the handle clockwise for about 20 cycles in medium speed (if turn it clockwise, it means push-in, and if counterclockwise means pull-out). When heard sound" DAH", it means that it is in right position (avoid strong force in case of damaging the pushing-in mechanism), and the push-in total travel length is about 200mm, and it comes to working position, and then the S8 contact point breaks while S9 contact point gets through.

5. Commissioning

Possible phenomenon in operation process

Phenomenon	Reason
Not closing	(1) already in closing position or energy uncharged condition
	(2) withdrawable VCB is not completely pushed into working position or testing position
	(3) closing interlock device is used while auxiliary power is not getting through or it is below technical requirements
	(4) secondary circuit is not correct

Not pushing-in or pulling out	(1) VCB is in closing state
	(2) Push-in handle is not completely inserted into the hole
	(3) Push-in mechanism is not completely into the testing position, which makes the tongue plate can not be unlocked with cabinet
	(4) Earthing interlock of cabinet is locked

If any other problem still happens after above checking, please contact the manufacturer.

5.1 For product with the rated current of 1600A or above, during normal operation, the cover of insulation cylinder should be removed according to requirements.

5.2 Carry out a power frequency withstand voltage insulating test in reference with standard.

6. Usage and troubleshooting

6.1 The VCB is with features of simple structure, reliable and with long mechanical endurance. When it is used normally, it is with no need to maintain the main circuit.

6.2 According to applied ambient condition and operation frequency, when it is in reasonable time or the VCB gets exterior forces, and it is doubted that the vacuum interrupter is damaged, then we can adopt power frequency withstand voltage testing method to check its vacuum degree. The method is that: to have the VCB in opening position, and operate 42kV power frequency voltage to the gaps for one minute and there is no continuous breakthrough between gaps.

6.3 When it is need to replace the vacuum interrupter, it should be done by professional technical personnel with training or technicians from manufacturer and it can be used only after tested by specialized testing equipment.

7. Maintenance

7.1 After the VCB is operated for 2000 times, it should be maintained, and check whether each fastener looses, retaining circlip and retaining ring damaged or lost during maintenance. Then clean oil stain and dust etc. on the product surface.

7.2 For the product cleaning, the clean soft cloth (silk cloth is better) can be chose to wipe it by dipping absolute alcohol, and organic solvent is not allowed to be used which avoid erosion to plastic components, and then daub Vaseline oil to the friction parts.

7.3 The above work should be done **only after** it is assured that the VCB is opening and earthing.

7.4 The replaced electrical components should be the same model and type with the components installed on the product.

8. Transportation and storage

8.1 When transport the VCB, it should be packed and sealed into the packing box in whole set.

8.2 The packing, opening and storing all should be done in dry indoor condition.

8.3 During the transportation for VCB, it is not allowed to put it upside down and wetted by rain, and should not withstand strong vibration and bump.

8.4 The VCB should be kept in dry, ventilating, damp-proof and non-corrosive gas indoor conditions.

8.5 If it is for long time storing, the transmission part should be daubed with lubricating oil and check

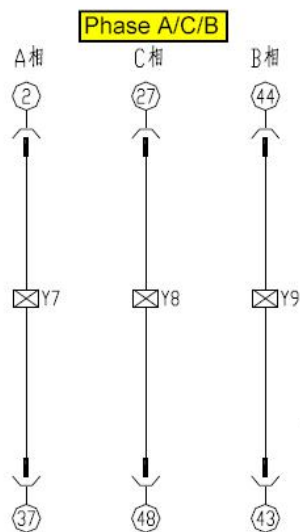
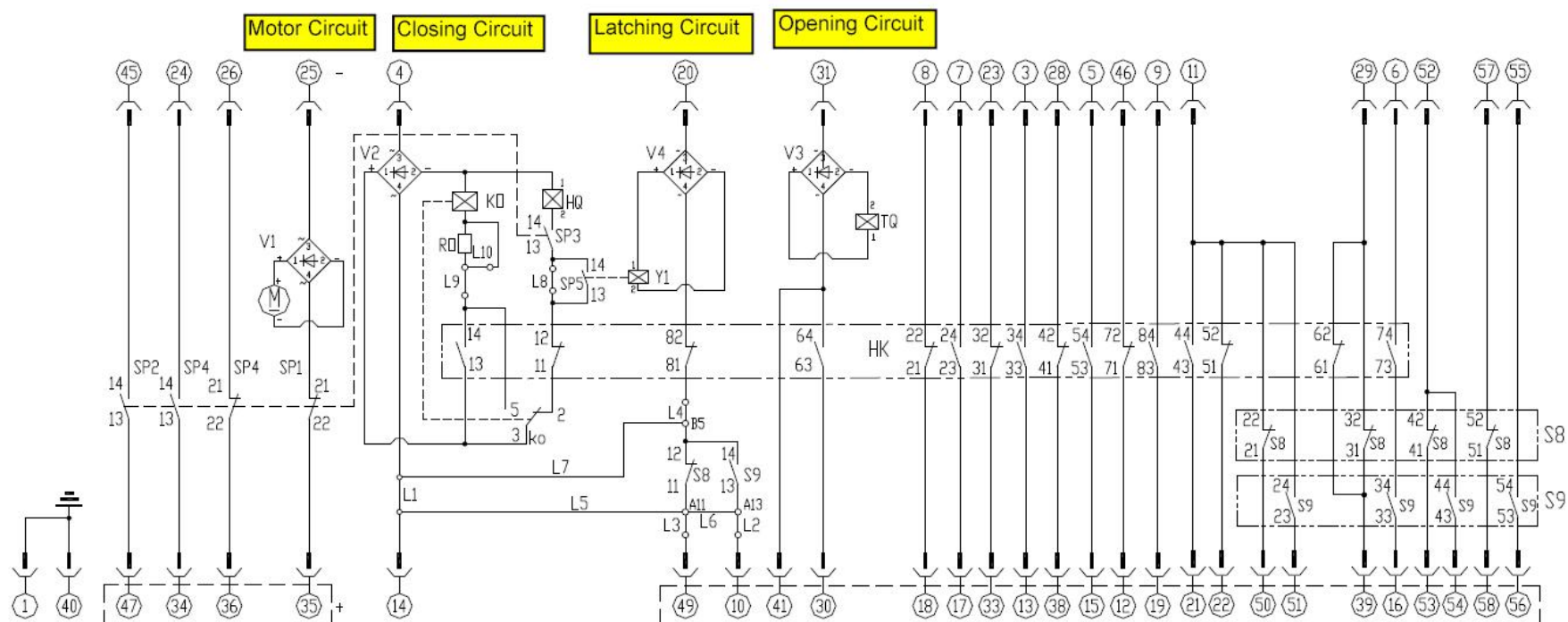
whether the ambient condition meets the requirements.

9. Documents attached with product

9.1 Quality Certificate

9.2 Installation and Operation Instruction Manual

9.3 Packing List



Optional cable wiring setting

Jumper status	Jumper	a-b	g-h	e-f	c-d	a-f	a-g	b-c	f-j	i-k
configuration	L1	L2	L3	L4	L5	L6	L7	L8	L9	
with interlock	✓	✓	✓	✓	/	/	/	/	✓	
without interlock	/	/	/	/	✓	✓	✓	✓	✓	
with anti-pumping	✓	✓	✓	✓	/	/	/	/	/	
without anti-pumping	/	/	/	/	✓	✓	✓	✓	✓	

Operating power selection

Operating power	Jumper	m-l	L10
AC/DC220V	/		
AC/DC110V	✓		

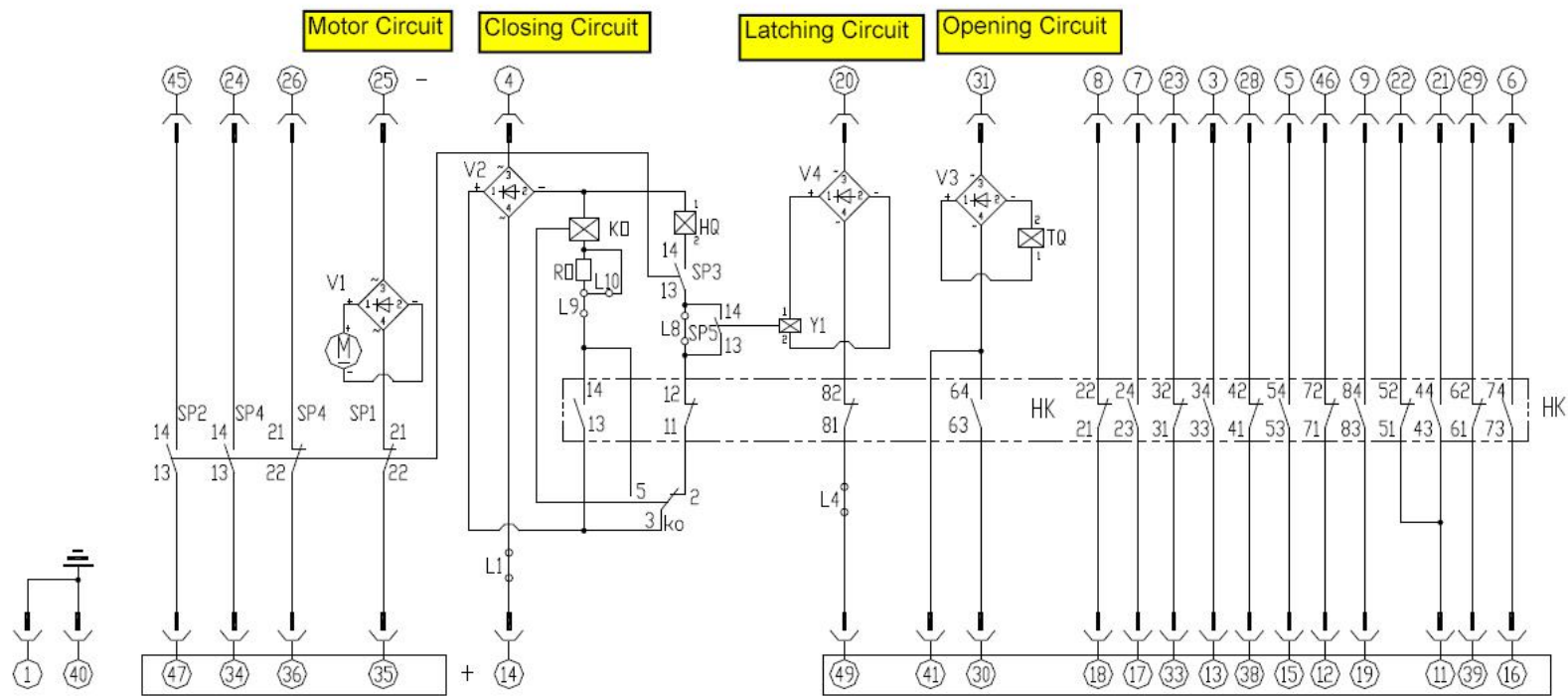
Note:

1. "/" means disconnect, "✓" means connect.
2. The VCB is at status of opening position and without energy charge. The VCB chassis is at testing position.
3. When operating power is in DC, the polarity within dashed line is equivalent.

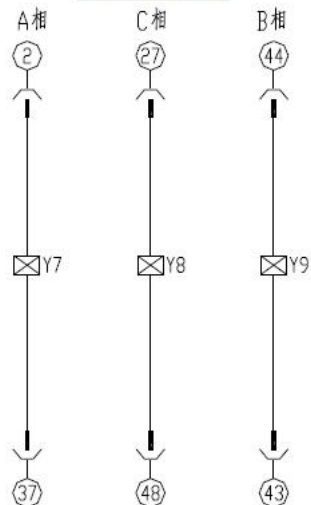
S9: auxiliary switch (switching when VCB at working position)
 S8: auxiliary switch (switching when VCB at testing position)
 SP5: micro switch
 SP1~SP4: micro switch (switching after closing spring charged)
 HK: auxiliary switch (switching when at CO operations)
 V1~V4: bridge rectifier (canceled at DC operation)
 Y1: closing latching coil (optional)
 K0: anti-pumping relay (optional)
 Y7~Y9: indirect overcurrent tripper (optional)
 L1~L11: jumper

HQ: closing coil
 TQ: opening coil
 R0~R1: resistance
 M: charging motor

Internal Secondary Wiring & Principle Drawing for Withdrawable VCB



Phase A/C/B



Optional cable wiring setting

Jumper status	Jumper configuration	a-b	b-d	d-c	i-j	j-k	l-k
with anti-pumping	with interlock	✓	✓	/	✓	✓	✓
	without interlock	✓	/	✓	✓	✓	✓
without anti-pumping	with interlock	✓	✓	/	/	/	/
	without interlock	✓	/	✓	/	/	/

Operating power selection

Operating power	Jumper	l-m
AC/DC220V	/	/
AC/DC110V	✓	✓

Note:

1. "/" means disconnect, "✓" means connect.
2. The VCB is at status of opening position and without energy charge. The VCB chassis is at testing position.
3. When operating power is in DC, the polarity within dashed line is equivalent.
4. when the 46 cores plug and socket is used by customer, the wiring No.47 should be changed into 32, No.48 changed into 42 and No.49 into 10.

SP5: limit switch
 SP1~SP4: micro switch (switching after closing spring charged)
 HK: auxiliary switch (switching when at CO operations)
 V1~V4: bridge rectifier (canceled at DC operation)
 Y1: closing latching coil (optional)
 K0: anti-pumping relay (optional)
 Y7~Y9: indirect overcurrent tripper (optional)
 L1~L11: jumper

HQ: closing coil
 TQ: opening coil
 R0~R1: voltage dividing resistance
 M: charging motor

Internal Secondary Wiring & Principle Drawing for Fixed VCB

说 明 Notice

为防止意外事故，在操作加润滑等维护工作时，应在分闸、未储能状态下进行。

对断路器各项故障维修应由受过专业培训的人员或生产厂家服务人员进行，以作出正确的调整工作。

In order to prevent accident, the maintenance work such as the lubricating to operating mechanism etc. should be carried out at VCB opening, uncharged state.

All repair and maintenance for any VCB fault should be done by the professional trained personnel or service technicians from manufacturer in order for correct adjustment.



陕西龙翔电器有限公司

SHAANXI LONGXIANG ELECTRICAL CO., LTD.

销售电话: 0917-6732951 0917-6732963
销售传真: 0917-6732950
网 址: www.longxiangdianqi.com
电子信箱: 2020VIB@sina.cn
公司地址: 陕西省宝鸡市东开发区高新 19 路
邮 编: 721306

Sales Hotline: +86-917-6732963/ 6732951
Fax: +86-917-6732950
Website: www.longxiangelectric.com
E-mail: vcb@longxiangelectric.com
Company Address: Gaoxin 19th Road, East
Development Zone, Baoji, Shaanxi Province, PRC
Post code: 721306