EVC1-40.5/D160, 250, 400, 630-1.6 single pole AC high voltage vacuum contactor

Preface

EVC1-40.5/D160, 250, 400, 630-1.6 single pole AC high voltage vacuum contactor is suitable for the AC electric system, of which the frequency is 60 Hz, rated working voltage is up to 3.6 KV and rated working current is up to 630 A, for directly or remotely switching on/off the main circuit. It can be used for single-pole controlled electric controlling occasions. It is featured with reliable operation, long lifetime, less maintenance and safety.

Normal working conditions

- Ambient temperature: maximum ambient air temperature does not exceed +40℃; average air temperature within 24 hours does not exceed +35℃; minimum ambient temperature does not lower than -15℃.
- Altitude above sea level: altitude above sea level of the installation place does not exceed 1,000M.
- Relative humidity: the relative humidity of the atmospheric air does not exceed 50% when the ambient air temperature is +40℃;higher relative humidity is allowed when the air temperature is lower; daily average relative humidity does not exceed 95%;maximum monthly average relative humidity is 90% when the average air temperature is +20℃ in most humid months, having taken into account the condensation dew on the surface of the product due to the temperature variation.
- Working conditions: the places where are without the invasion of rain or snow, without open fire and explosive danger, without chemical corrosions and strong vibration.
- Installation conditions: inclination angle of the installed plane with the vertical plane does not exceed 5°.
- Contamination class: class III.

Type and specification of the product

E	VC	1	-	40.5	D	/	D	250	-	1.6	B
1	2	3		4	5		6	7		8	9

1. GREEGOO
2. Vacuum Contactor
3. Design sequence no.
4. Rated working current (KA)
5. Electric holding type
6. Electro-magnetic operating mechanism
7. Rated working current(A)
8. Rated limit breaking current(KA)
9. No. of enclosure material of vacuum switch tube: B-glass(can be not signed); T-ceramic

Structure & working principle

>> Structure and working principle

The high voltage main circuit and low voltage control circuit are arranged in upper and lower sections. This arrangement mode looks apparent, safe, reliable and convenient for installation and maintenance. The moving conducting rod of the vacuum switch tube is connected with the connecting lever through the insulators; the connecting lever and the moving armature are fixed on the rectangular. Attracting/releasing of the armature by the electro-magnetic coil drives the making/breaking process of the moving contacts. Since the making/breaking process is carried out in the vacuum space, it has excellent switching characteristics, with long lifetime, safe and reliability. Its control circuits provide the rectifying equipment and the changeover of the closing/holding of electro-magnetic coil, and can provide the auxiliary switch of 3a+3b for the users.

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>> Vacuum switch tube
Inside the vacuum switch tube of the glass or ceramic enclosure is installed one pair of contacts, made of wear-resistant and low current-cutting off material(see Fig 1), which can satisfy both the breaking performance and reducing the over-voltage caused by the cut off current, and raise lifetime of the vacuum switch tube. Bellow inside the vacuum switch tube has the function of separating the atmospheric air and making the moving contacts to be able to make axial motion, thus cannot rotate the moving conducting rod; otherwise the bellow will be damaged due to the twist of the rod.

Warning: Vacuum switch tube is the functional actuating component of the contactor. Do not impact it by the external force; otherwise the complete contactor will be damaged!

Installation

>> Installation
a. The contactor should be installed as per the normal working position, of which the inclination angle does not exceed 5°.
b. Correctly make electric wiring; pay attention to that the control power supply voltage to be in compliance with the control voltage of the contactor.

>> Replacement & adjustment of vacuum switch tube
■ Replacement of vacuum switch tube
a. Loosen the lock nut of the insulator and switch tube chamber, and remove the insulator.
b. Remove the soft conductor, and loosen the lock nut on stationary end and the stationary conducting board.
c. Assemble the switch tube with the opposite procedures as disassembling it.

Notice: Do not make the moving conducting rod relatively rotate with the switch tube when disassembling/ assembling the insulator and the soft connections; otherwise the bellows inside the switch tube will be damaged!

■ Adjustment of the stroke
a. Please see the technical parameters for the stroke of main contact of the vacuum switch tube; and see Fig.1 for the measuring method. Measure the distance h between the moving wiring board and the enclosure when it is under closed state, and then make the contactor be under released state, and measure the distance H between the moving wiring board and the enclosure. The difference of H-h is the stroke. When the contactor leaves the factory for delivery, the total travel and stroke has been adjusted. It does not need to be adjusted again in general condition.
b. When the stroke is to be adjusted, please refer to Fig.2. First remove the soft connection, loosen the lock nut, and then turn the insulator. Secure the lock nut upon the completion of the adjustment.

Warning: Do not make the bellow be rotated /twisted when secure the lock nut.

■ Upon completion of the adjustment, perform the moving operation test under the following voltage range, the conductor should be capable of reliable work.
a. Make closing operation for several times under 80% rated control voltage;
b. Make closing operation for several times under 110% rated control voltage;
c. Make the contactor be reliably released for several times under 70%-10% rated control voltage.

>> We suggest using the surge voltage absorber, such as R-C resistance capacitor protection or varistor protection, when the contactor is to be used for controlling the inductive loads such as the electric motor etc.

>> The new switch tube should be capable of withstanding the specified withstand test under power frequency. Periodically perform the withstand voltage test during the using process. The withstand voltage should not be less than half of the rated test voltage.

>> During the operating process, keep the contactor in clean; periodically adjust its stroke, and check its structural elements for loosened connections.

Transportation & storage

■ During the transportation process, the contactor should not be converted, turned over, strongly vibrated/ shocked and collided.
■ During the transportation and storage process of the contactor, it cannot suffer the invasion of rain and snow. It should be stored in the warehouse without the invasion of rain and snow, with circulating air, and relative humidity of air not exceeding 85%, and air temperature not higher than +40℃ or lower than -30℃.

Unpack & inspection

- Inspect the package for its completeness, and check it for damage.
- Check the contactor if comply with the purchase order, and check the spare parts and attached document if comply with the packing list.
- Make corresponding inspection to the contactor.

Documents going with the contactor

- Product quality certificate;
- Operating instructions;
- Test record;
- Packing list.

Notice when placing the order

Please state the following when placing the order:

- Title, model/specification of the product;
- Rated voltage, rated current and rated control voltage;
- Quantity of product and spare parts;
- Other special requirements.;

EVC1-40.5/D160, 250, 400, 630-1.6 single pole AC high voltage vacuum contactor adopts the separate frame structure featuring with composite structure, good
appearance and stable functions and so forth.

Main technical parameters

1. Power frequency withstand voltage:
The main circuit, auxiliary circuit and control circuit should be able to endure 1 min power frequency withstand voltage test. During the test, there should be no breakthrough or surface flashover. The test voltage is as follows.

Test position		Value of power frequency withstand voltage KV	remarks
Main circuit	Vacuum break	85	
Control circuit	Control circuit to ground	2.0	Except for the semiconductor and resistance-capacitance unit
Auxiliary circuit	Auxiliary circuit to ground	2.0	

2. Rated making capacity:
In the condition of power factor cosØ=0.35±0.05, 1.1fold rated working voltage, make 10fold rated current for 100 times.

3. Rated breaking capacity
In the condition of power factor cosØ=0.35±0.05, 1.1fold rated working voltage, emphasize 8fold rated current for 25 times.

4. Limit breaking capacity
In the condition of power factor cosØ=0.35±0.05, emphasize 10fold rated current for 3 times.

5. Mechanical endurance 30,000 times; electric endurance 25,000 times (AC-3)

6. Rated voltage
a. Main circuit's rated working voltage of the contactor: 40.5KV.
b. Rated voltage of the control circuit: DC.110/220V, also can be made according to the user's requirement. Rated power frequency: closing≤1000VA,holding≤100VA.
c. Auxiliary circuit: AC.380V/5A, DC.380V/1A.

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7. Rated current
a. In the condition of rated working voltage and AC-3 working mode, the working current of the main circuit is 160A, 250A, 400A, 630A.
b. The rated thermal current of the contactor's main circuit is 160A, 250A, 400A, 630A.

8. Rated frequency of the contactor is 50-60Hz.

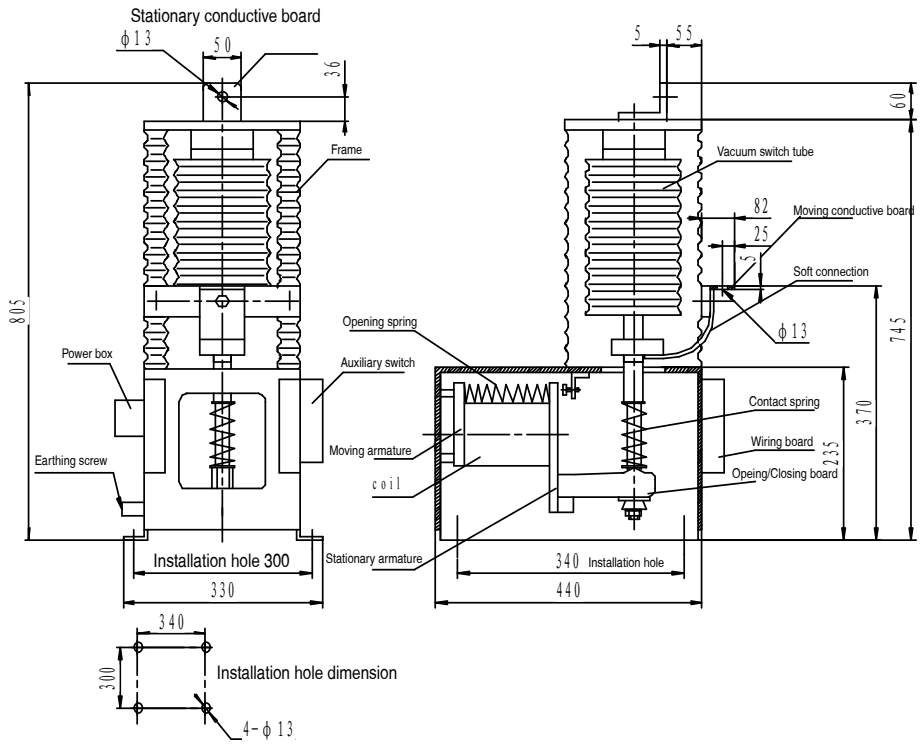
9. Operating frequency: longtime 120times/hour, short time 300times/hour.

10. Parameters of the main contact see the following table

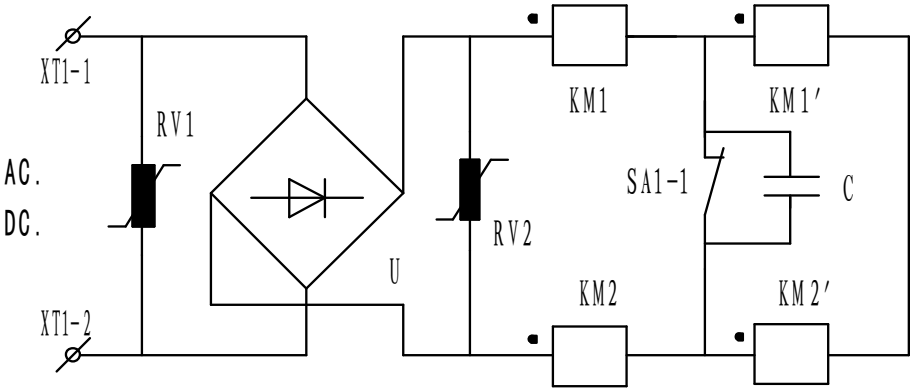
Model	Final pressure of the contact	Stroke mm	Overtravel mm
EVC1-40.5/D160-1.6	≥90N	15±1	1.5±0.5
EVC1-40.5/D250-1.6	≥90N	15±1	1.5±0.5
EVC1-40.5/D400-1.6	≥100N	15±1	1.5±0.5
EVC1-40.5/D630-1.6	≥120N	15±1	1.5±0.5

11. Touch resistance of the main circuit
EVC1-40.5/D160-1.6 type≤200μΩ
EVC1-40.5/D250-1.6 type≤200μΩ
EVC1-40.5/D250-1.6 type≤200μΩ
EVC1-40.5/D630-1.6 type≤200μΩ

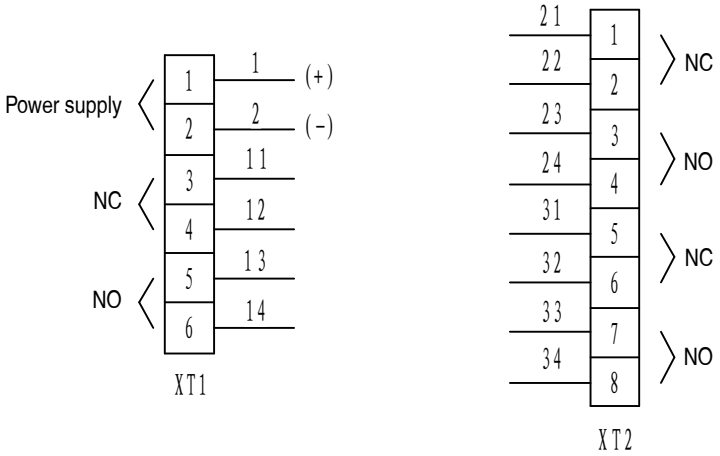
12. Mechanical movement characteristics: in conformity with our product technical standard.



EVC1-40.5 series single-pole AC vacuum contactor outline dimension



XT: wiring terminal; KM+KM': eletromagnetic coil;
SA: auxiliary switch; U:rectifier bridge; C:capacitor; RV:varistor
EVC1-40 .5 series wiring diagram



EVC1-40.5 series wiring terminal