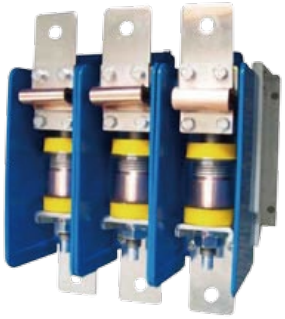
01

General



GVC3-800, 1000, 1250/1140 series AC vacuum contactor is used in an AC 50-60 Hz electric power system, with rated working voltage of 1140V, and rated current of 800A, 1000A, 1250A, for direct or remote on-off control of the main circuit, disconnect motor rotor winding loop. It is suitable for the electric-controlling condition which needs large current control, under AC-1 and AC-2 operation. This series adopts before-and-after layout between the main circuit and controlling circuit, and adopts electric-maintaining structure or machinery-maintaining structure, and vacuum interrupter with glass shell.

Type and specification of the product

G VC 3 - 1250A/ 1140V
1 2 3 4 5
1. GREEGOO
2. Vacuum Contactor
3. Design sequence no.
4. Rated working current (A)
5. Rated working voltage (V)

Normal working conditions

Ambient temperature: Maximum ambient air temperature not exceeds +50°C; averaged air temperature within 24 hours not exceeds +45°C; minimum ambient temperature to be not lower than -25°C.
Altitude above sea level: altitude above sea level of the installation place not exceeds 1,000 m.
Relative humidity: relative humidity of the atmospheric air not exceeds 50% when the ambient air temperature is +50°C; higher relative humidity is allowed when the air temperature is lower, daily averaged relative humidity not exceeds 95%; maximum monthly averaged relative humidity is 90% when the averaged air temperature is +20°C 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 not exceeds 5°
Contamination class: class III.

Structure and working principle

>> Structure and working principle
The main circuit and control circuit are arranged in front and rear sections. This arrangement mode looks apparently, safe, reliable and convenient for installing and maintaining. The moving current-conducting rod of vacuum switch tube is connected with the connecting lever by means of adjusting screws; the connecting lever and the moving armature is fixed/secured on the square axle. Attracting and releasing of the armature by the electro-magnetic coil drives the making and breaking process of the moving contacts in the vacuum switch tube. As making/breaking process of the contacts is carried out in the vacuum space, therefore, it has excellent switching characteristics, with long lifetime, both safe and reliable. Its control circuits provide the rectifying equipment and the changeover of picking up and holding of the electro-magnetic coil. It also provides the auxiliary switch of 3a+3b for the user.

http://www.greegoo.com
Peter@greegoo.com

>> Vacuum arc-extinguishing chamber
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 due to the cutoff current, and raise the 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/wasted.

Main technical data

Name			Unit	Value
Main circuit	Rated working voltage (Ue)		V	1140
	Rated working current (Ie)		A	800, 1000,1250
	Rated frenquency (fr)		Hz	50~60
	Rated making capacity		A	4Ie (AC-2)
	Rated breaking capacity		A	4Ie (AC-2)
	Withstand overload current capacity/s		A/s	4Ie/10
	Power frequency withstand voltage	Between phases, phase to earth	kV	4.2
		Vacuum breaks	kV	10
	Lightening impulse withstand voltage		kV	8
Control circuit	Rated voltage1 (Us)		V	AC. 220/380
				DC. 110/220
	Rated power (Ps)	Electric holding	VA	⩽1000/100(absorbing/holding)
		Mechanical holding	VA	⩽900/600(closing/opening)
Auxiliary circuit		Form		3a 3b
		Rated value		AC380V/5A, DC380V/1A
Control circuit, auxiliary circuit to earth power frequency withstand voltage			kV	2
Rated operating frequency	Long time or mechanical holding type		time/h	300
	Short-term		time/h	600
Mechanical endurance			10000 times	30
Electrical endurance			10000 times	10
Mechanical characteristics	Closing time		ms	⩽200
	Original opening time		ms	⩽160(electric holding)
				⩽60(mechanical holding)
	3-phase synchronism		ms	⩽3
	Closing tripping		ms	⩽10
Note: Rated control voltage can be made according to customer's requirements.				
For mechanical holding type, the interlock mechanism should be changed every 300,000 times.				

http://www.greegoo.com
Peter@greegoo.com

Installation, operation, adjustment and maintenance

>> Installation

a. The contactor should be installed as per the normal working position, of which the inclination angle not exceeds 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 arc-extinguishing chambera.

a.Loosen the lock bolt of the soft connection and moving conducting terminal, remove the lock nut of the adjusting screw and arc-extinguishing chamber;

b. Remove the adjusting screw, loosen the lock nut on stationary end and the stationary conducting board, and take out the switch tube and remove the soft connection;

c. Assemble the arc-extinguishing chamber with the opposite procedures as disassembling it.

Notice: Do not make moving conducting rod to be relatively rotated with the arc-extinguishing chamber when disassembling/assembling the insulator and the soft connections; otherwise the bellows inside the arc-extinguishing chamber will be damaged.

■ Adjustment of the strokea.

a. Please see the technical parameters of each model of the contactor for the stroke of main contact of the vacuum arc-extinguishing chamber; and see Fig.1 for the measuring method. Measure the distance between the moving wiring plate and end face of the enclosure to be h when it is under closed state, and then make the contactor to be under released state, and measure the distance between the moving wiring plate and the end face of the enclosure to be H. The difference of H-h is the stroke. The total travel and stroke has been adjusted when the contactor leaves the factory. It does not necessary to be adjusted under normal condition.

b. Please refer to figure 1 in case the stroke needs to be adjusted. Loosening the lock nut and turning the adjusting screw can make it. Tighten the lock nut after adjustment.

Notice: be careful about the twist of the bellows when loosen or tighten the nut.

■ Upon completion of the adjustment, perform the moving operation test under the following voltage range, the contactor should be capable of reliable work:

a. Make closing/opening operation for several times under 85% rated control voltage;

b. Make closing/opening operation for several times under 110% rated control voltage;

c. The highest releasing voltage of the contactor should be between 75%~10% of rated control voltage.

>> 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 value.

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

http://www.greegoo.com
Peter@greegoo.com

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°C and not lower than -30°C.

Unpack & Inspection

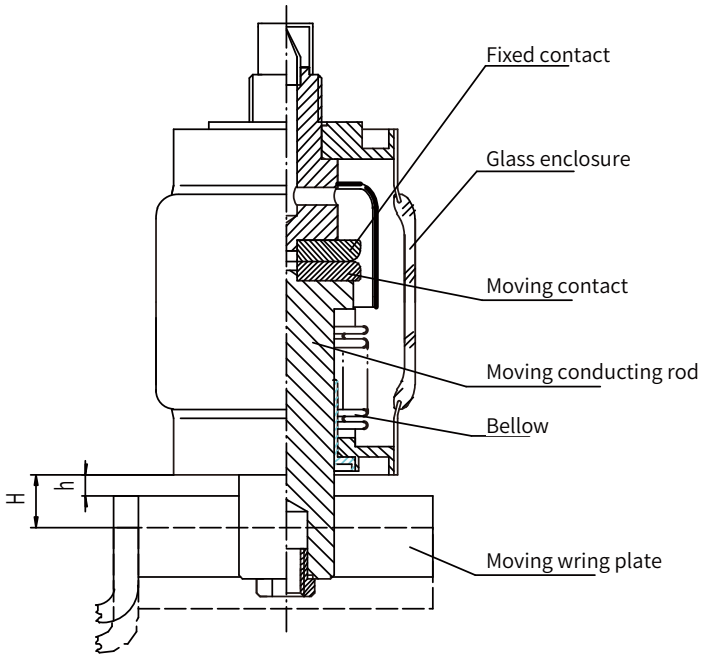
■ Inspect the package for its completeness, and check it for damage.
■ Check the contactor if comply with the purchase order, and check the spare parts and attached document if comply with the packing list.
■ Make corresponding inspection to the contactor.

Documents going with the contactor

■ Product quality certificate;
■ Operating instruction;
■ Test record;

Notice 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.



http://www.greegoo.com
Peter@greegoo.com

Main technical specification

>> Maximum Voltage Test at 50/60Hz
The main circuit, auxiliary circuit and control circuit shall be able to bear the maximum voltage test at 50/60Hz for one minute. During the test, it shall not be seen of any breakdown or flash, the test voltage is listed in the following table:

Item	Test point	Test voltage 50/60Hz (kV)	Remark
Main circuit	Phase to phase Phases to earth	4.2	
	Vacuum breaks	10	
Control circuit	Control circuit to earth	2.0	Except for semiconductor and resistance or capacitor
Auxiliary circuit	Auxiliary circuit to earth	2.0	

>> Rated ability for turning on the circuit
If the power factor COS= 0.65±0.05, it is able to turn on the circuit 100 times at the current of 4 times of the rated value, under 1.1 times of the rated working voltage.

>> Rated ability for breaking the circuit
If the power factor COS= 0.65±0.05, it is able to break the circuit 25 times at the current of 4 times of the rated value, under 1.1 times of the rated working voltage.

>> limit breaking capacity
If the power factor COS= 0.35±0.05, it is able to break the 10 time of rated current 3 times.

>> Mechanical life: 1 million times. Electric life: 250000 times (AC-2).

>> Rated voltage
■ Rated working voltage of the main circuit of the contactor: 1.14 kV.
■ Rated voltage of the control circuit: AC. 220V/380V, DC. 110V/220V.
Other options are available.
Rated power: picking up≤1000VA, holding≤100VA.
■ Auxiliary circuit: AC. 380V/5A, DC.380V/1A.

>> Rated current
■ The rated current of the main circuit is 800A, 1000A and 1250A under rated working voltage and AC-2 working class.
■ The rated current of temperature rise for main circuit is 800A, 1000A and 1250A.

>> The rated frequency of the contactor is 50/60 Hz.

>> Frequency of operation: long term 300 times/ hour, short time 600 times/ hour.

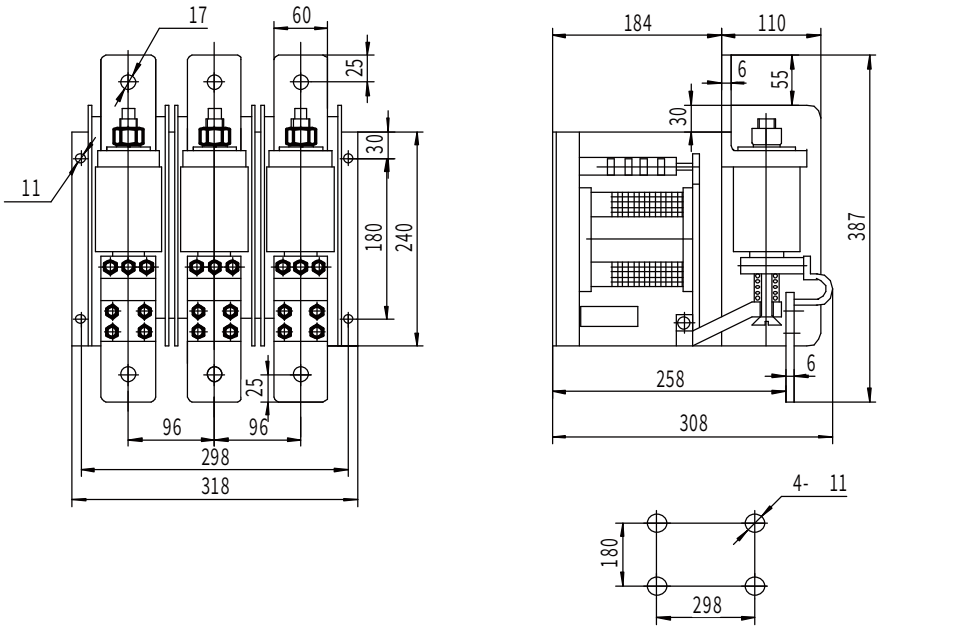
>> Data list for main contacts

Product type	Final contact force (N)	Separation distance (mm)	Passing distance (mm)
GVC3-800A/1.14kV	≥100	2.5±0.5	1.5±0.5
GVC3-1000A/1.14kV	≥100	2.5±0.5	1.5±0.5
GVC3-1250A/1.14kV	≥120	2.5±0.5	1.5±0.5

>> Data list for main contacts
■ GVC3-800A/1.14kV≤120μΩ.
■ GVC3-1000A/1.14kV≤100μΩ.
■ GVC3-1250A/1.14kV≤80μΩ.

>> Mechanical operation characteristics: in accord with the technical standard of our Company.

http://www.greegoo.com
Peter@greegoo.com



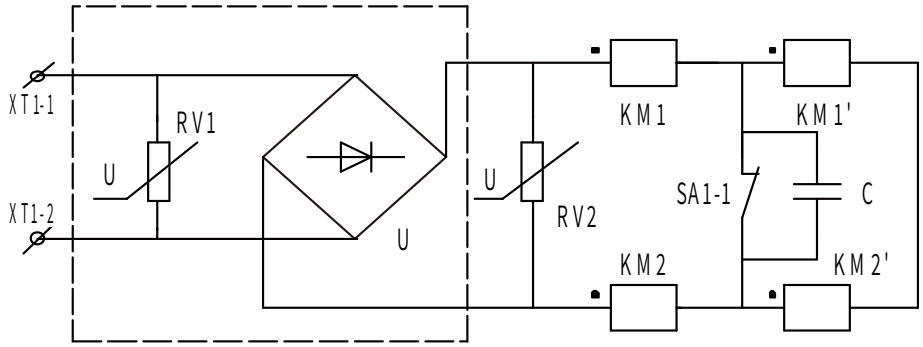
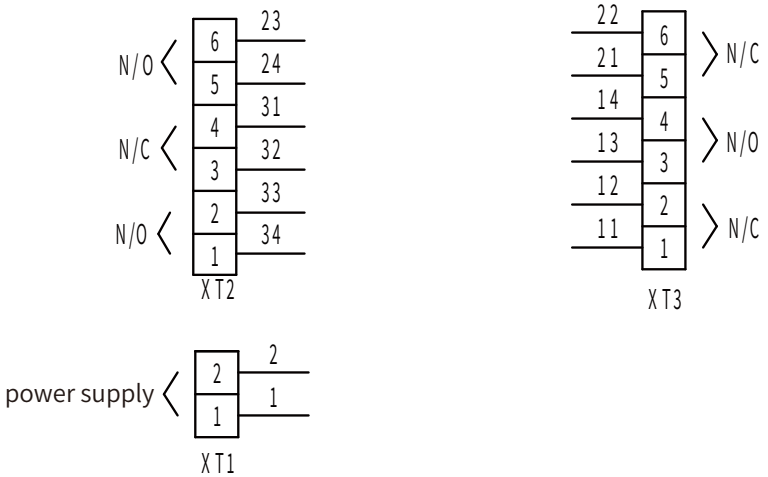


Fig:XT:wiring terminal;U:rectifying bridge;KM+KM':electro-magnetic coil

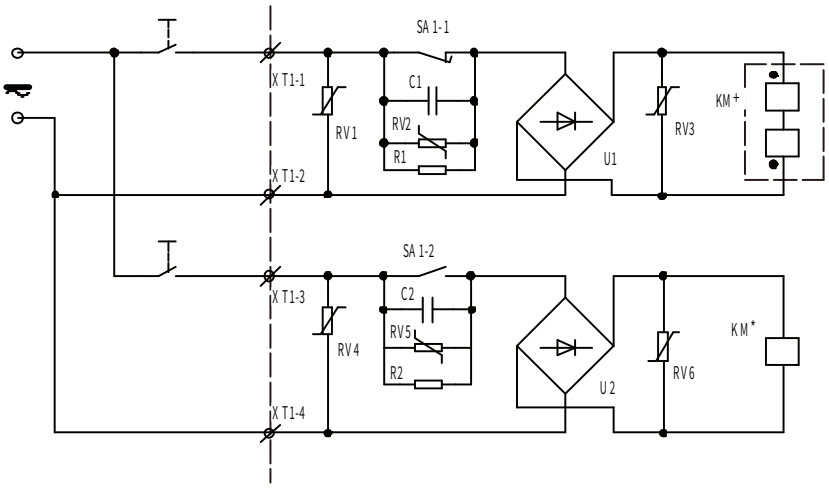
SA: auxiliary switch; C: capacitor; RV: varistor resistance

(the rectifying parts in the imaginary line frame would not exist if the customer need DC control

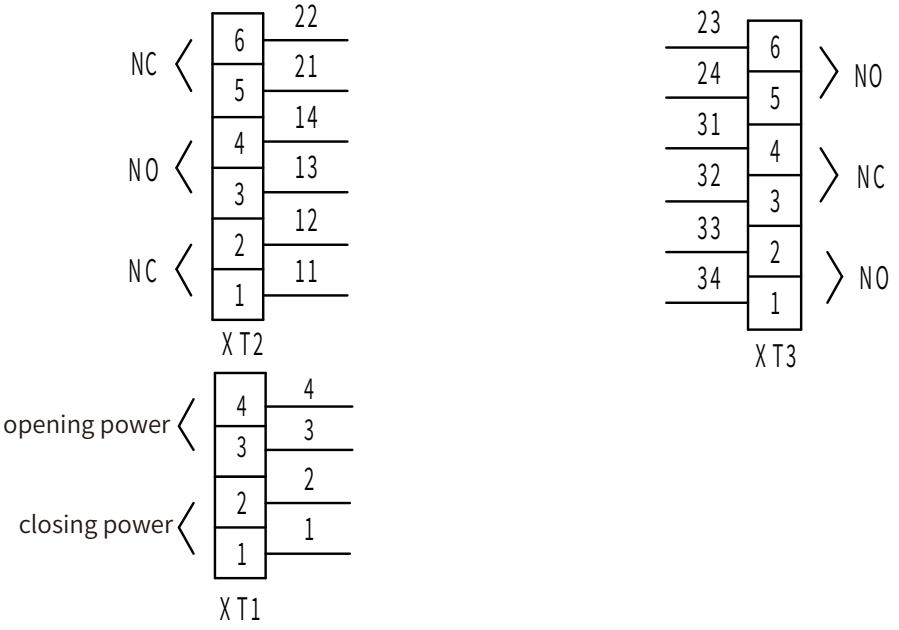
fig.5 GVC3-1.14kV series electric scheme



GVC3-1.14kV series wiring terminal



GVC3 series mechanical holding type scheme
In the diagram, the internal wiring is on the right side of the dotted line, the indicating wiring is on the left. The specific wiring type decided by the user
RV1-6: varistor; R1, R2: color-ring resistance; C1, C2: arc-suppresssion capacitor;
SA1-1, SA1-2: auxiliary switch
U1, U2: rectifier bridge; KMC: closing coil band; KM O: opening coil



GVC3 series mechanical holding vacuum contactor wiring terminal diagram