



# 3300V Vacuum Contactor

AVAILABLE FROM  
NEPEAN ELECTRONICS



NEPEAN Power is a proven leader in the supply and manufacture of quality engineered solutions, products and technologies. Established in 1994, through the commitment of our dedicated team we have become a supplier of choice.

**Compact Design:**

As a result of compactly designed vacuum bottles and a unique mechanism, mounting space is significantly reduced.

**High Insulation Strength:**

Can respectively withstand voltage for 1 minute and impulse withstand voltage of 6.5kV, and 15kV.

**Easy Inspection and Maintenance:**

Due to vacuum switches located up front, replacing and checking contacts for wear is made easy without disconnecting cables.

**Surge Absorber is not Required:**

The virtue of the contacts being made of special material that suppresses current chopping to a minimum level; a surge absorber is not required.

**Superior Core Design:**

The gap that suppresses the residual magnetism in the iron core is shielded with a stainless-steel plate. This will not wear out despite when under frequent cycling, ensuring a long service life.

**Storage and Transportation**

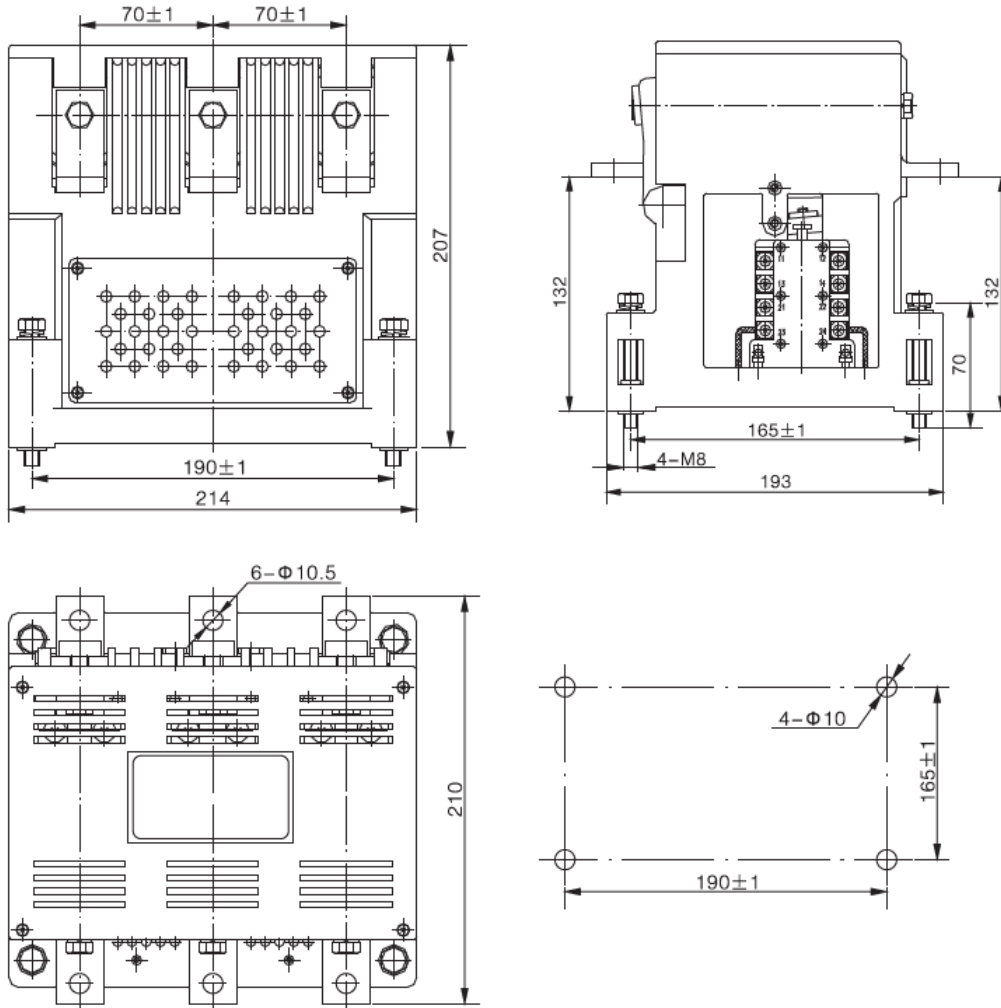
1. The contactor should be stored in good quality air conditions with relative humidity no higher than 90% and temperatures between -25°C and +40°C
2. Check the product at least once half year which is not at work for long time
3. Do regular checks and take detailed record of the contactor which is at work
4. No fierce vibration and collision in transportation and keep it against weather conditions.

**Specifications**

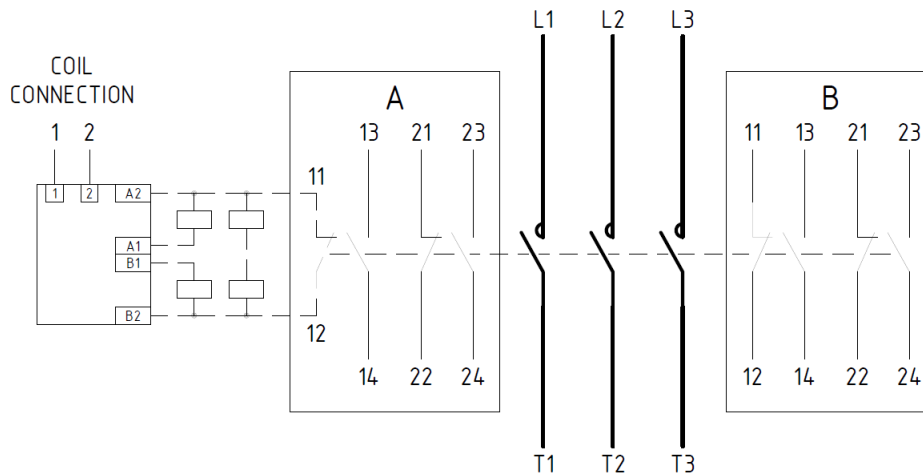
Item	Unit	Data	
Main circuit rated voltage	kV	3.6	3.6
Main circuit rated current	A	400	630
Rated frequency	Hz	50	50
Power-frequency withstand voltage	kV	18	18
Rated making current	A/100 times	4000	6300
Rated breaking current	A/25 times	3200	5000
Maximum breaking current	A/3 times	4000	6000
Opening time	ms	<80	<80
Closing time	ms	<100	<100
Clearance between open contacts	mm	3 <sup>-0.5</sup>	3 <sup>-0.5</sup>
Over travel	mm	>1	>1
Mechanical life	times	1,000,000	1,000,000
Electrical life	times	600,000	600,000
PFVV between open contact	kV	18	18
PFVV of Main Circuit to ground	kV	18	18
Control Circuit Withstand to ground	kV	2	2
Non-synchronization of three-phase	ms	≤2	≤2
Main Circuit Resistance	μΩ	≤200	≤200
Coil Power consumption	VAC	110	110
Pull in	VA	650	650
Holding	VA	15	15

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## Outline and Installation Dimension

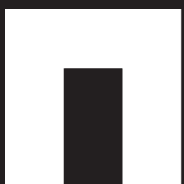


## Connection Diagram



## Ordering Information

Part Number	Description
VACG6-630/3.6100	3600V 630A Vacuum Contactor 110VAC



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This vacuum contactor (hereafter refers to as: contactor) is applied to electric power network (electricity environment) of AC 50Hz or 60Hz, main circuit rated voltage of 3.6KV and rated current below 630A. It makes or breaks, starts frequently or controls the AC motor, also makes up magnetic starters and explosion-proof magnetic starters with other protective devices.

#### **I. Work condition:**

1. The surrounding air temperature is no higher than +40°C, or no lower than -25°C
2. The altitude is no higher than 2,000 meters.
3. The monthly average air relative humidity in the wettest month is no higher than 90% and the temperature is no less than 25°C in the same month.  
(Pay attention to the dew which will freeze on the surface of the product caused by change of temperature)
4. No obvious shock and vibration working situation
5. No explosion danger in the air medium and the medium should not have any gas or dust which will erode the metal and insulator (including conductive dust)
6. Keep it away from rain or snow

#### **II. Main technical parameter**

1. Main technical characteristic: see to Table 1:
2. Main circuit pole number: Three poles
3. Control power supply: 110V, AC 50HZ/60HZ (customer required)
4. Working way of control circuit: DC electromagnetism system, AC control power provides electricity to the coil through the rectifier bridge.
5. Auxiliary circuit contacts: 3 normal open, 3 normal closed
6. Rated current of auxiliary contact is 5A
7. The shell of vacuum switch tube is ceramic and metal made
8. Rated working mode: discontinuously long-time working mode, repeatedly short-time working mode (The rated making rate is 40%)
9. Shape and installation size: see to chart 2

#### **III. Structure and principle of work**

This contactor is made up of base, foundation, transmission shaft, electromagnetism system, vacuum switch tube and other parts.

When the electromagnetism system is connected with the AC control power supply, the armature and the shaft begin to turn, then the main contact inside the vacuum switch tube will close and the main circuit made.

When the electromagnetism system is disconnected, the main contact will open by the opening spring, and then the main circuit breaks. The electromagnetism coil is made up of two windings which are start winding and maintain winding, the two can switch between each other by the help of auxiliary contact (see to chart 1) and make the coil energy-saving when closed.

#### **IV. Installation, Adjustment and Test**

##### **Installation:**

1. Drill installation holes on the right positions on the mounting panel. (See to chart 2).
2. Fix down the product with four M8 bolts provided.
3. Connect the control power and the auxiliary contact
4. Fix copper busbars of the main circuit.
5. Moving end upside when installed.

##### **Adjustment:**

If the parameters of the contact are not in accord with the required, Clearance (between open contacts), Overtravel and Terminal pressure should be adjusted as follows:

1. Connect the control power and contactor closed, the contact is contacted.
2. Loosen the nuts of the drawbars on the three switch tubes; make adjustment of each insertional length.



Measure with caliper and make sure the Clearance (between open contacts) will be the same and also within rated range when break the switch tubes. (See to table 1)

3. Tighten the nuts, be careful not to twist and break the Corrugated Pipe by rough handle
4. Check the Clearance (between open contacts) and Overtravel of the contact, drop some lube oil into the guide sleeve.

**Action Test after Adjustment:**

1. Open and close with 85% rated control power voltage for 5 times.
2. Open and close with 110% rated control power voltage for 5 times.
3. Contactor opens when rated control power voltage below 10%, test it twice.

**V. Operation and Maintenance**

1. Working voltage and current of main circuit or control circuit should be strictly in accord with required for safety consideration.
2. When replace with new vacuum switch tube, check the vacuum degree by vacuity tester and be sure it is less than  $1.33 \times 10^{-2}$  Pa. Check by PFVW Test is also suggested, the contact should withstand 18KV voltage or above when with rated Clearance( between open contacts).
3. Do check the vacuum degree of the contactor which is in work once half year (by PFVW Test), if the withstand is less than 12KV, replacement is suggested. If for daily check, use 5kV or 2.5kV tramegger for checking. Pay attention when the insulation resistance of switch tube is less than  $200M\Omega$  and replace it when less than  $50M\Omega$  (Here be noticed that humidity and dirt will also cause the resistance to decrease)
4. Check-up needed with below situation:
  - 4.1 Check and clearance made only once a year
  - 4.2 Product worked for more than 100,000 times
  - 4.3 Vacuum switch tube is broken
  - 4.4 Repair or replace the auxiliary switches if not contact each other well.



No.	Faults	Cause of Fault	Fix Method
1	Contactors cannot close when made	<ol style="list-style-type: none"> <li>1. Power supply circuit of coil break</li> <li>2. Coil breaks (open circuit)</li> <li>3. Loose contact of auxiliary contact</li> </ol>	<ol style="list-style-type: none"> <li>1. Check circuit and connect the disconnection.</li> <li>2. Replace Coil</li> <li>3. Adjust auxiliary contact or replace it.</li> </ol>
2	No full close and electromagnetic noise exist when made	<ol style="list-style-type: none"> <li>1. Voltage and current of control circuit is lower than 85% of rated ones</li> <li>2. Power module break down, (half-wave rectification status)</li> <li>3. Overtravel of main circuit contact is too big</li> <li>4. Moving side jammed</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust voltage and current</li> <li>2. Replace power module</li> <li>3. Adjust Overtravel</li> <li>4. Check the parts which will jam easily</li> </ol>
3	Contactors can not keep close when made	<ol style="list-style-type: none"> <li>1. Normal close contact of auxiliary contact open too early</li> <li>2. Circuit of maintain winding breaks Maintain winding breaks</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust the normal close contact, make its Clearance to be 1.5-2mm when contactor closed.</li> <li>2. Check the circuit of maintain winding</li> <li>3. Replace maintain winding.</li> </ol>
4	Iron core gets too much noise or vibration when contactor close	<ol style="list-style-type: none"> <li>1. Voltage of control circuit is too low</li> <li>2. Iron core get dirt or rust on the upside surface</li> <li>3. Fixing screw get loose</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust voltage of control power.</li> <li>2. Clear the surface, dress or replace it when needed</li> <li>3. Tighten the crew.</li> </ol>
5	Contactors close too slowly	<ol style="list-style-type: none"> <li>1. The gap between iron core and armature is too wide</li> <li>2. Voltage of coil is too low</li> <li>3. Acting force of breaking spring is too strong</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust the gap</li> <li>2. Adjust the voltage</li> <li>3. Adjust acting force of breaking spring</li> </ol>
6	Contactors open too slowly when break	<ol style="list-style-type: none"> <li>1. Acting force of breaking spring is too weak</li> <li>2. Moving side jammed</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust the acting force of breaking spring.</li> <li>2. Check the parts which will jam easily.</li> </ol>
7	Coil heated too much or burned.	<ol style="list-style-type: none"> <li>1. Voltage of control circuit is not required.</li> <li>2. Insulation layer of coil destroyed by humid air or corrosive gas</li> <li>3. Normal close contact of auxiliary contact don't open when contactor close</li> <li>4. Normal close contact of auxiliary contact don't open when contactor close</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the voltage of control circuit and make adjustment</li> <li>2. Replace coil</li> <li>3. Adjust the auxiliary contact.</li> </ol>
8	Power module break down	<ol style="list-style-type: none"> <li>1. Voltage of control circuit is not as required</li> <li>2. Frequency of opening/ closing is too fast.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the voltage of control circuit and make adjustment.</li> <li>2. Operate with Manual.</li> </ol>