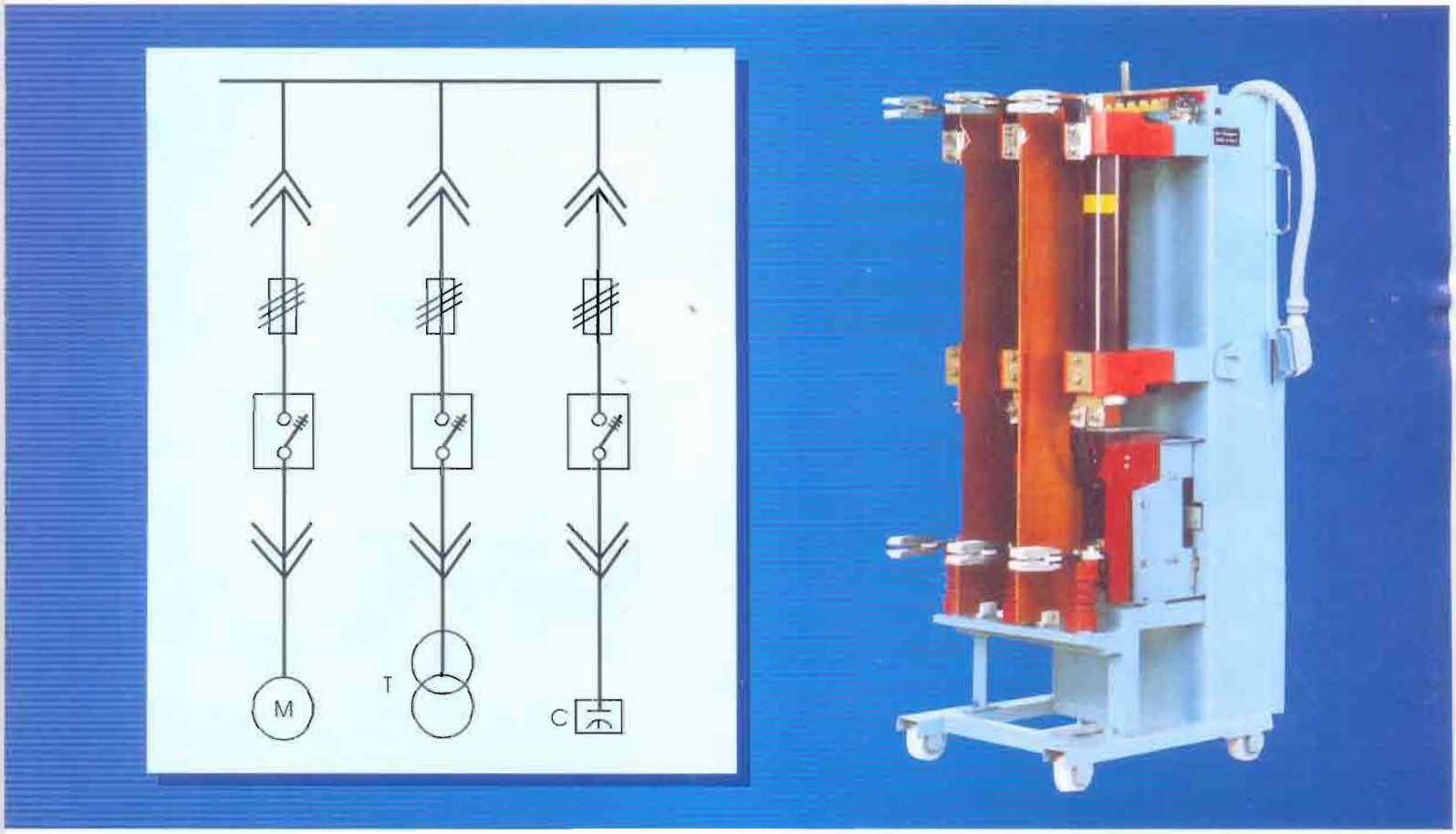
Jyoti Ltd.

Water • Power • Progress

'JYOTI'
Medium Voltage
Vacuum Contactors (3.6/7.2/12 kV)



Excellent choice for
Switching Motors, Transformers and capacitors.

TÜV NORD ISO 9001

65 YEARS OF ENGINEERING EXCELLENCE

SWITCHGEAR TYPE TESTED AT International Test Laboratories PEHLA Jyoti Ltd.

Why Vacuum Contactor is Superior to Other Switching Devices

1. **Exceptionally high Mechanical and Electrical life**

   The Vacuum Contactor has a mechanical life of 1.0 millions operations and an electrical life of 0.25 million operations.

2. **Excellent are interruption performace**

   Arc extinction takes place at the first current zero. There is no possibility of interruption failure. Build up of dielectric strength is extremely fast.

3. **Lowest chopping current**

   Interrupter used in vacuum contactor has a very low chopping current, thereby minimising the chopping overvoltages.

4. **Suited for high switching frequency**

   Switching frequency of 300 operations per hour or more.

5. **Safest for connected equipment**

   Vacuum contactors are used with back-up HRC fuses which have very fast electrical cut-off characteristics and very low let-through energy. Hence, connected power cables and equipment are not subjected to high thermal, electrodymanic and mechanical stresses. Consequential damages in the event of a down-stream fault are minimal.

6. **Maximum reliability**

   The vacuum contactor has very few moving parts and low operating energy. Hence offers very high reliability.

7. **Compact and light-weight**

   Vacuum contactor weights only about 36kgs. Hence, handling and operation is very convenient.

8. **Highest environmental safety**

   There is no fire / toxicity hazard, no explosion,no shock and no noise. Vacuum interrupters are totally environment friendly.

9. **Substantial cost saving**

   The Vacuum contactor fuse combination is much cheaper than a vacuum or SF6 circuit breaker and the fuses cut off the short circuit current much below the prospective peak. Hence, the downstream circuit elements like cables, motor terminal box and CTs need to be designed for lower dynamic and thermal withstand current. This reduces the overall cost of the installation substantially.

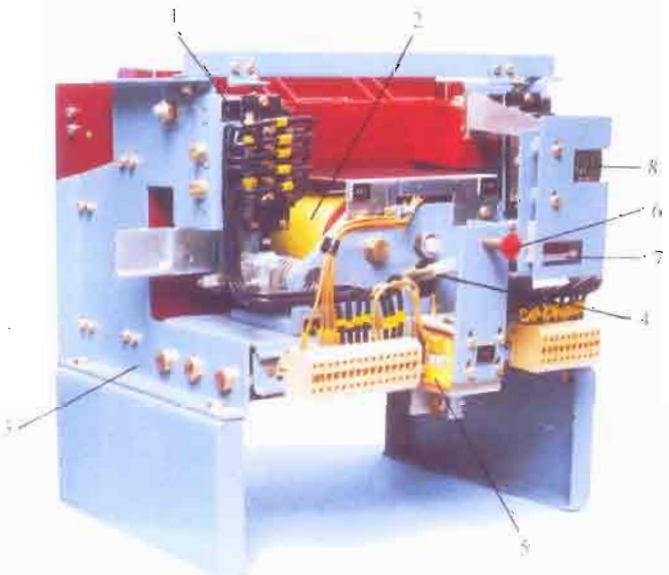
10. **Low Maintenance**

    various data collected from field have conclusively established that there is practically no maintenance required.

Rear View of Vacuum Contactor

1. Vacuum Interrupter
2. Epoxy resin moulded body providing solid insulation between phase and earth
3. Epoxy cast armature assembly
4. Upper contact terminal
5. Lower contact terminal

Front View of Vacuum Contactor



1. Auxiliary switch
2. Closing solenoid
3. Metallic base frame
4. Mechanical latching device
5. Trip coil
6. Mechanical off-push button
7. Operation counter
8. ON/OFF indicator

Vacuum Contactors are available in two versions :

1. **Electrically held.**

   Recommended where the frequency of operation is very high. The closing solenoid can be energised from an auxiliary transformer connected to the main bus, in which case the Contactor drop off when the bus voltage collapses.

   Alternatively, the solenoid can be powered through a separated auxiliary source of 220 / 110V AC or DC.

2. **Mechanically latched.**

   Recommended where the frequency of operationis low to moderate. The mechanical latching attachment needs checking after every 25,000 operations. In addition to the closing solenoid, the contactor is provided with a shunt trip coil. The contactor is made OFF through a mechanical pushbutton or by an external electrical command (through push-button or control-switch of relay contact).

Accessories :

Control Transformers

For closing solenoid, an auxiliary transformer rated for primary voltage of 3.3/6.6 kV can be supplied on request. The control transformer can be conected to the main incoming supply and is provided with fuses on primary side.

Bridge Rectifier

In case the control supply is AC, a bridge rectifier unit is provided to rectify the supply for closing solenoid circuit.

Surge Suppressor

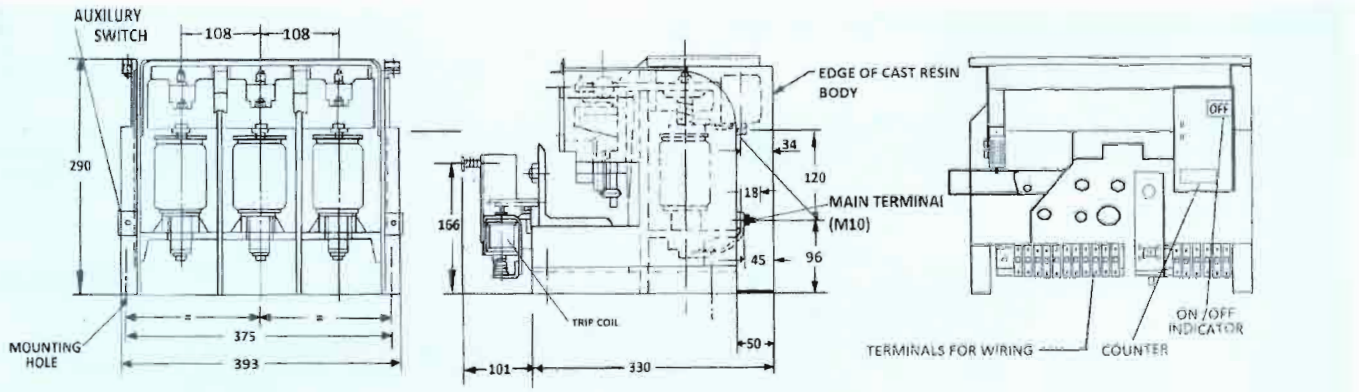
The Vacuum Interrupters have very low chopping current and, therefore, for normal switching duty, no surge suppressor is necessary. However, for preference, C.R. Suppressor can be supplied on request.

C.R. type Surge supressor

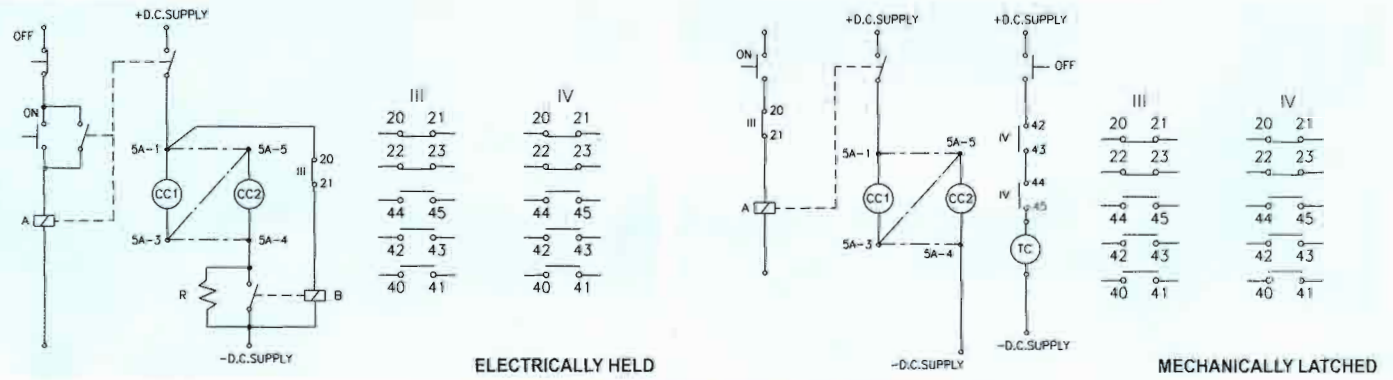
C.R.type surge suppressor ensures limiting of the switching over voltage peak to less than 2.5 p.u. and also reduces the switching surge steepness.

Technical Particulars

VACUUM CONTACTOR	3.6 kV TO 12 kV		
Parameters	Vaccum Contactor		
	JVM1-604	JVE1-604	Units
Rated Voltage	3.3 / 6.6 / 11	3.3 / 6.6 / 11	kV
Highest System Voltage	3.6 / 7.2 / 12	3.6 / 7.2 / 12	kV
Frequency	50	50	Hz
Rated Operational Current (Continuous)	400	400	Amp
Reference	IEC	IEC	
Standard	62271-106	62271-106	
Utilization Category	AC3 / AC4	AC3 / AC4	
Rated Breaking Current	3.2	3.2	kA
Rated Making Current	4	4	kA
Short time withstand capacity	8	8	kA
Short time withstand Time	1	1	Sec
Power frequency withstand voltage for 1 min.	10 / 20 / 28	10 / 20 / 28	kV
Impulse withstand voltage for 1.2 / 50	40 / 60 / 75	40 / 60 / 75	kVp
No Of Poles	1/2/3	1/2/3	No.
Switching Mechanism	Mechanically Held	Electrically Held	
Switching Frequency	300	300	Opr/Hr
Closing Time	120	120	mSec
Opening Time	30	30	mSec
No Of Contacts	6 NO+4NC	6 NO+4NC	
Rated Control Voltage (AC With Rectifier)	110 / 220	110 / 220	Vac
Rated Control Voltage (DC)	110 / 220	110 / 220	VDc
Closing Coil Inrush Current	8 / 4	8 / 4	Amp
Holding Current	--	2 / 1	Amp
Tripping Current	--	3.6 / 1.8	Amp
Application / Rated Performance Motor	1500 / 3000	6000	KW
Transformer	4000	7500	KVA
Capacitor	2000	3000	KVAr
No. of VC opening operation			
a. At no load	1,000,000	1,000,000	No.
b. At 100% rated current application.	250,000	250,000	No.
Dimension HxWxD	290x395x330	290x395x330	mm
Mounting WxD	375x330	375x330	mm
Hole Size	9	9	mm
Weight	35	36	Kg



DIMENSION SKETCH FOR VACUUM CONTACTOR
6.6 / 11 kV. 400A TYPE - JVM1-604



VACUUM CONTACTOR-SCHEMATIC DIAGRAM OF CONNECTION

——— - ——— - ——— 220 V.D.C.
— — — — — — — 110 V.D.C.
CC1,CC2 ——— CLOSING COILS
T.C. ——— TRIPPING COIL
R ——— ECONOMY RESISTOR
220V : 200Ω ,250W
110V : 50Ω ,250W
III,IV ——— AUXILIARY SWITCHES
R ——— AUXILIARY RELAY/CONTACTOR

SELECTION OF HT FUSES

HT fuses provide protection from short circuit currents to vacuum contactor, cables and other connected equipment. However, the protection from overloads, unbalance etc. is provided by vacuum contactor operated by relays.

In order, that HT fuses withstand the transient overcurrents and blow only during short circuit faults, their rating must be selected very carefully. In general, following criterion can be applied to select the H.T. fuse rating in order to provide short circuit protection to various equipment.

For H.T. Motors

In order that the fuse selected, withstands the starting current of the motor, the fuse rating has to be at least 1.4 times the full load current of the motor. However, the fuse can be selected from the fuse selection chart supplied by the fuse manufacturer for given motor specifications and application.

For H.T. Transformers

The fuse rating should be 1.6 to 2.0 times the full load current of the transformer in order to withstand in-rush current, cold start current and over-load.

For H.T. Capacitors

The fuse rating should be 2.0 to 2.5 times the capacitor bank current, so that high frequency in-rush current, harmonics and voltage flutuations are effectively withstn

Jyoti Ltd. VADODARA (INDIA)
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FOR FURTHER ENQUIRIES PLEASE CONTACT

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