

RVU SERIES 12-24kV EMBEDDED POLE VACUUM CIRCUIT BREAKER



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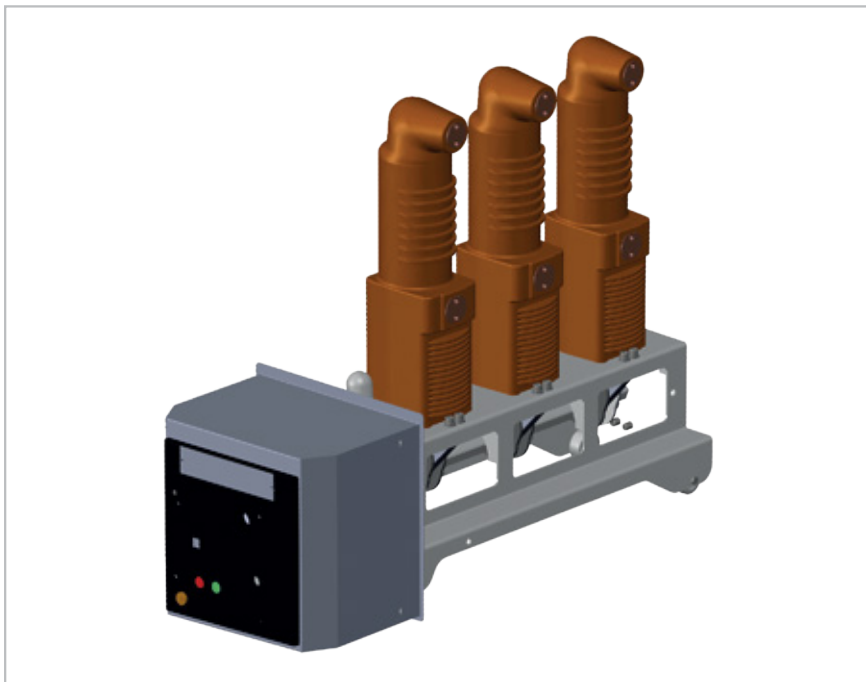
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DEFINITION

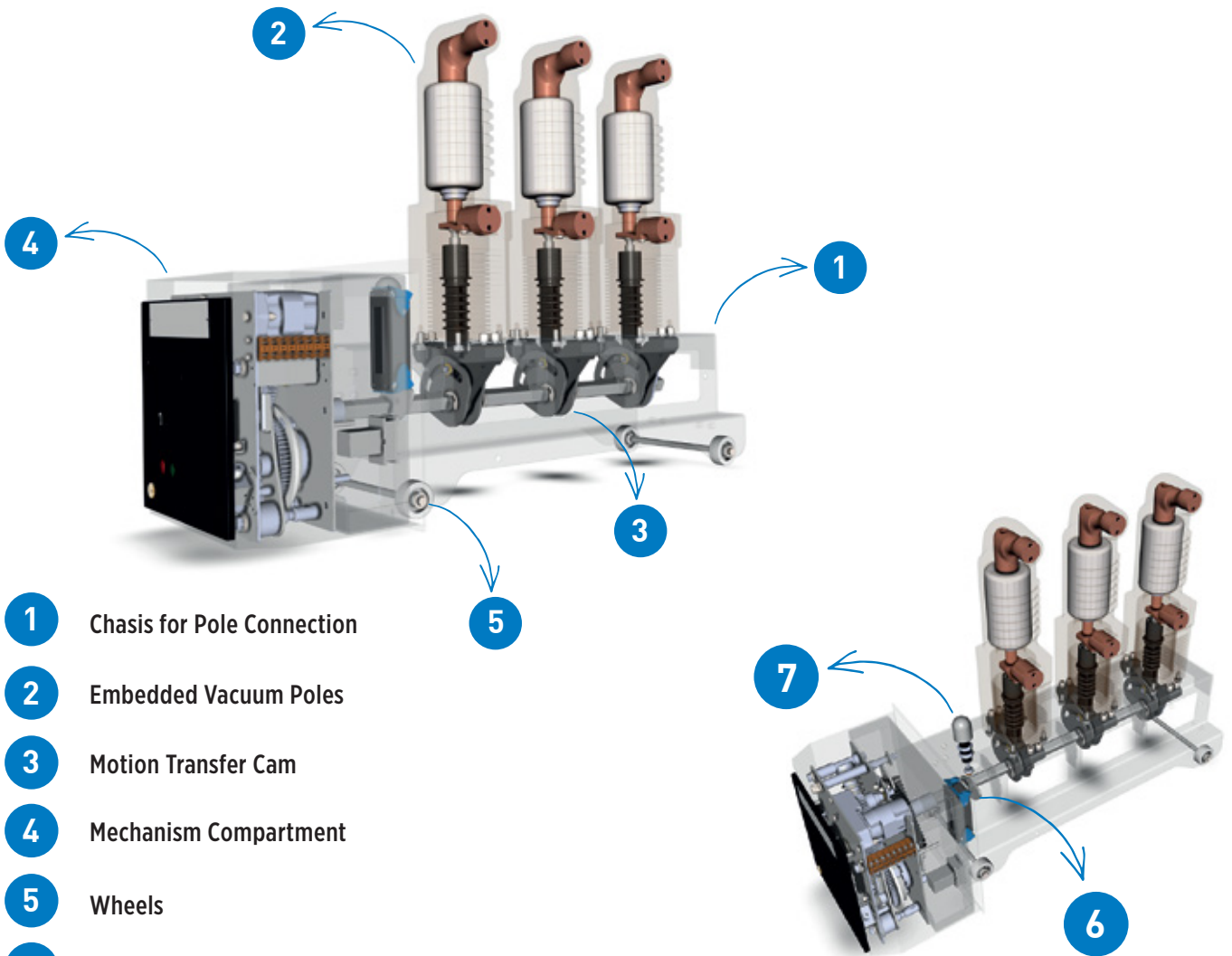
RVU Series 12-24kV Vacuum Circuit Breaker is a three-phase AC indoor breaker with 12-24kV rated voltage suitable for air insulated switchgear and can be applied in controlling and protecting electrical equipment in industrial and mineral enterprises, power plants and substations. Operation mechanism is installed laterally.

The product conforms to the IEC 62271-100 standard. Short circuit type tests are performed in KEMA High Power Laboratory in the Netherlands. RVU series provide safe and reliable performance. The embedded poles of RVU have the technique of ventilation and convection. Besides the vacuum interrupter has low resistance and high number of short circuit breaking. All of that reduce the power consumption and the temperature rising due to the longtime running of circuit breaker.



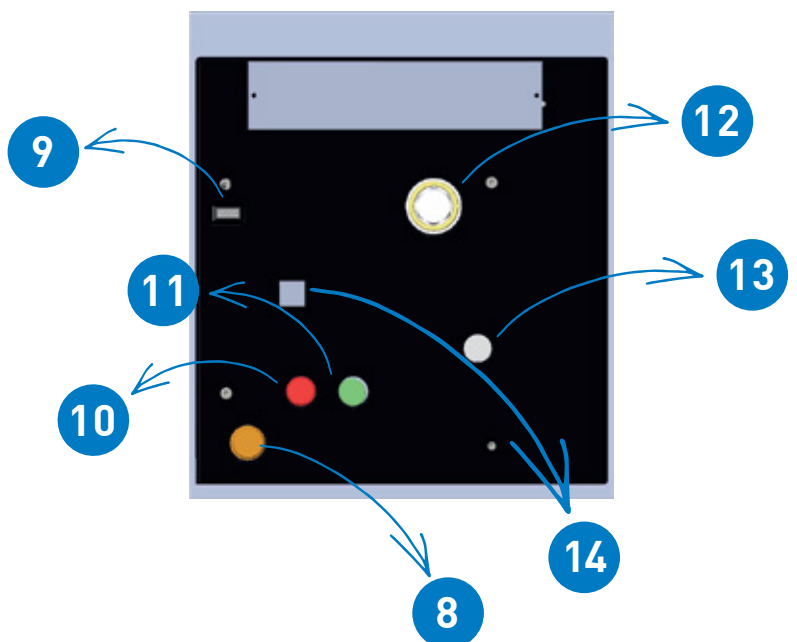
Under normal conditions the interrupter is in closed position. Arcing is occurred within the interrupter by withdrawing the moving contact from stationary contact. This arc burns in the metal vapor evaporated from local hot spots on the contact surfaces. The metal vapour continually leaves the inter-contact region and recondenses on the contact surfaces and surrounding metal vapor condensation shield. The latter is usually isolated from both contacts and serves to protect the glass or ceramic envelope from vapor deposition. At current zero, vapor production ceases and the original vacuum condition is rapidly approached. The dielectric strength of the interrupter also increases, and the circuit is interrupted.

CIRCUIT BREAKER MECHANISM'S MAIN COMPONENTS



- 1 Chasis for Pole Connection
- 2 Embedded Vacuum Poles
- 3 Motion Transfer Cam
- 4 Mechanism Compartment
- 5 Wheels
- 6 Connector (Plug)
- 7 Absorber

- 8 Mechanical Interlock
- 9 Counter
- 10 Closing Push Button
- 11 Opening Push Button
- 12 Mechanic Charged Adapter
- 13 Spring Charge/ Discharge Signalling
- 14 Circuit Breaker Position Indicator



1- Spring Charge Motor



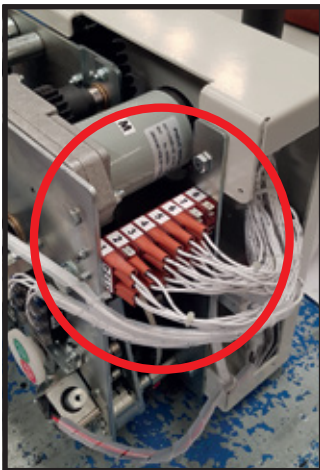
2- Opening Coil



3- Closing Coil



4- Auxiliary Contacts



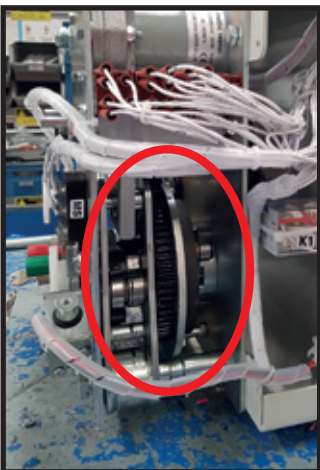
5- Anti-Pumping Relay



6- Spring Charging Switch



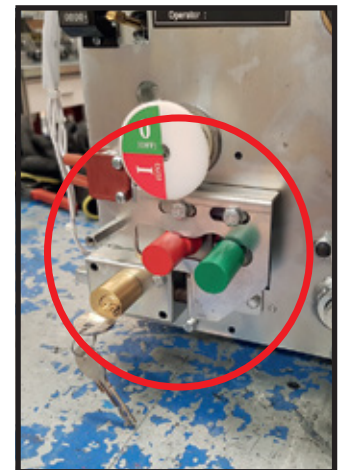
7- Charging Gear



8- Counter



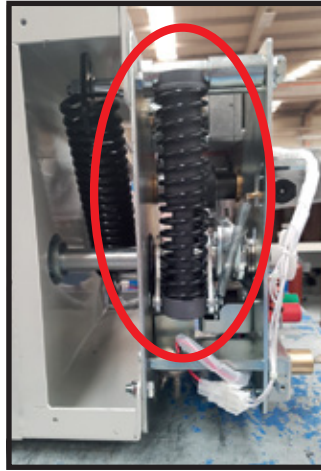
9 - Mechanical Interlock



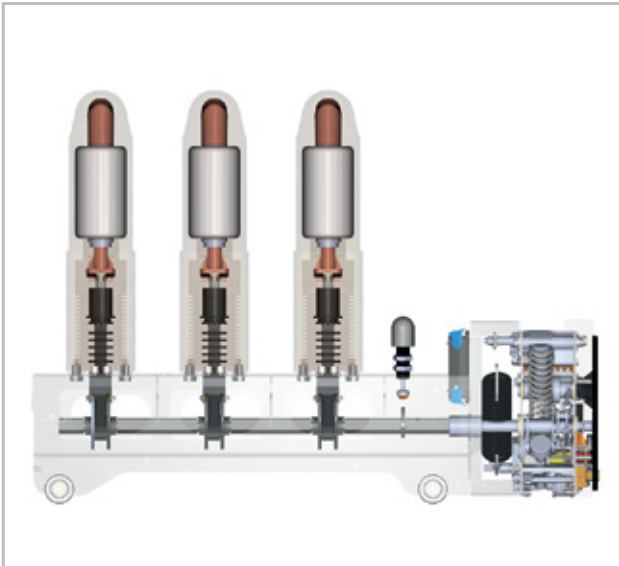
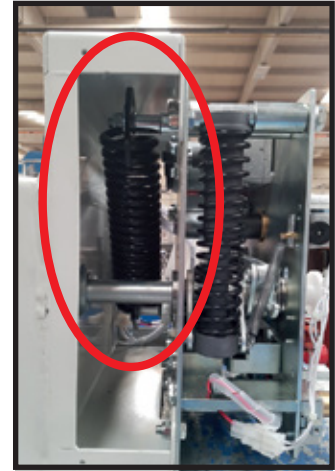
10- Mechanical Operation Lever Hole



11- Opening Spring



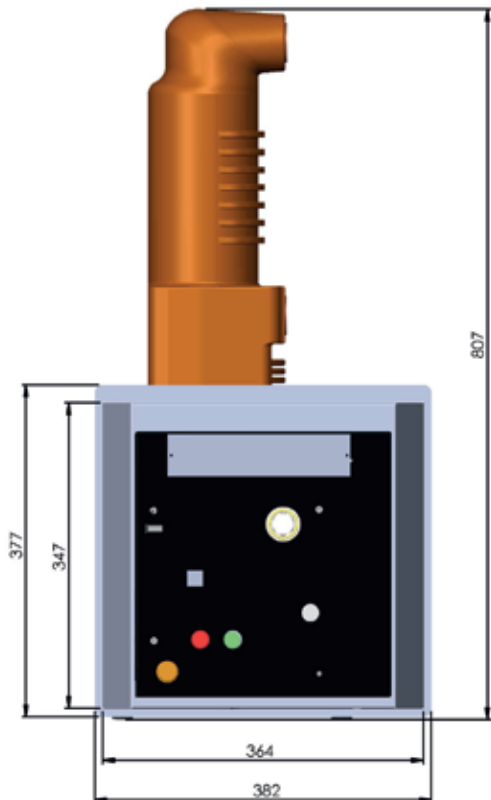
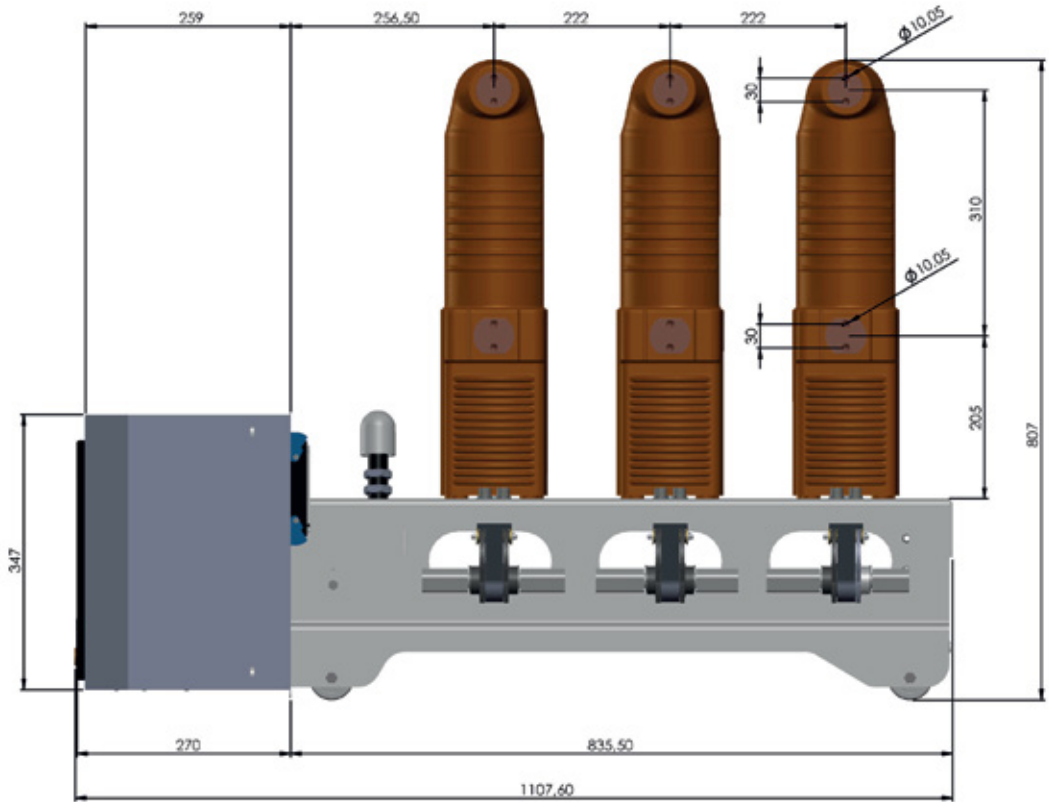
12- Closing Spring



Technical Characteristics

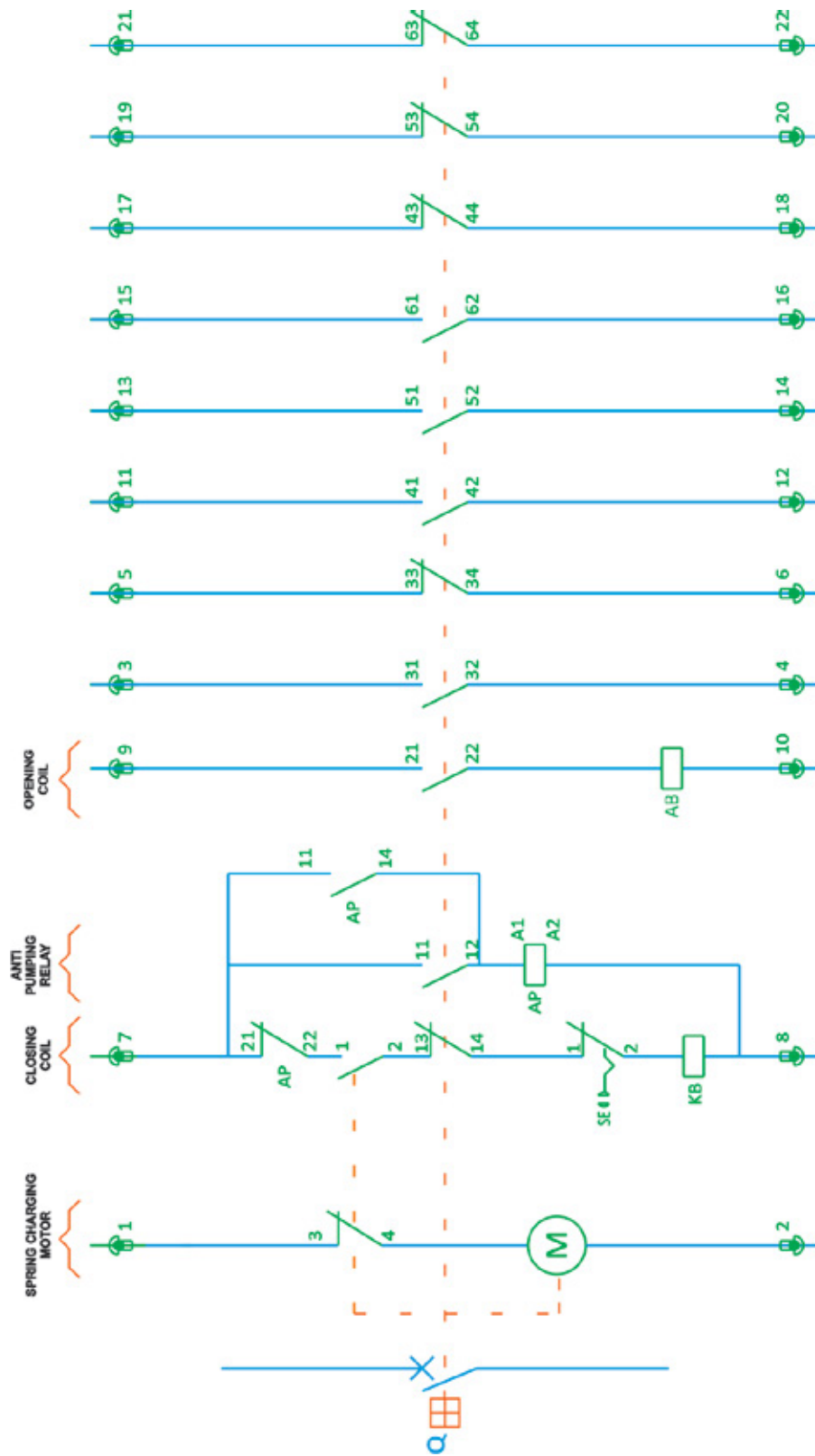
Type	RVU 12	RVU 24
Standard	IEC 62271-100	
Rated Voltage	12kV	24kV
Power Freq. Withstand Test Voltage	28kV (1min)	50kV (1min)
Lightning Impulse Withstand	75kV peak	125kV peak
Rated Current	1250A	
Rated Short Circuit Current (Isc)	25kA	
Rated Short-Time Withstand Current	3 sec	
Operating Sequence	O-300msec-CO-3min-CO	
Interrupter	Vacuum	
DC Component Max	40%	
Cable Charging Breaking Current	31,5A	
System Neutral	Neutral earth or without earth	
Out of Phase Breaking	6,25kA	
Motor Supply Voltage	24-48-110-220VDC, 220VAC	
Trip Coils Supply Voltage	24-48-110-220VDC, 220VAC	
Mechanical Class	M2	
Working Temperature	min: -25°C / max: +50°C	
Interruption Medium	Vacuum	

Drawings & Dimensions



*Dimensions are given in mm.

CIRCUIT BREAKER SECONDARY WIRING DIAGRAM



VACUUM EMBEDDED CIRCUIT BREAKER CONNECTION DIAGRAM



MANUAL OPERATING INSTRUCTIONS



1- Charging The Mechanism

Put the lever for manual spring charging into the Mechanical Operation Lever Hole. Charge the spring of mechanism by moving the lever clockwise. After the gear loses its force, spring charged / discharged signal will turn into “Spring Charged” position and the circuit breaker position indicator will remain same as “O” green.



2- Closing Operation

In order to close the circuit breaker push the red closing button. The circuit breaker position indicator will turn into “I” (closed) position. After the closing operation spring charged / discharged signal will turn into “Spring Discharged” position and charging motor re-charge the closing spring after closing operation to “Spring Charged” position for other closing operations.

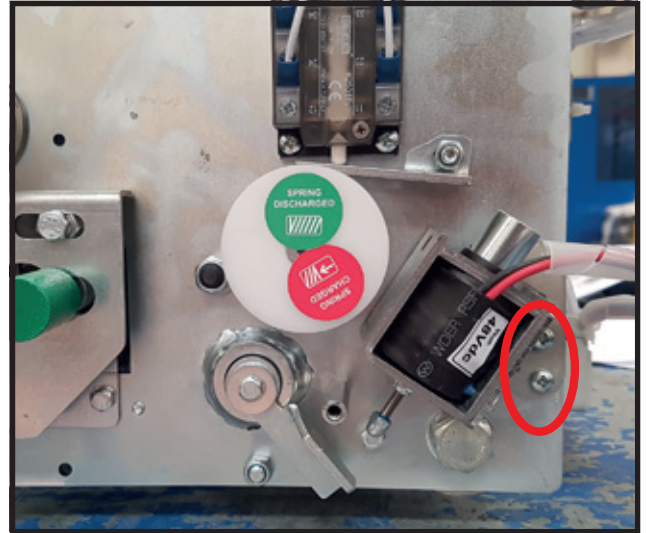


2- Opening Operation

In order to open the circuit breaker, push the green opening button. The circuit breaker position indicator will turn into “O” (opened) position.

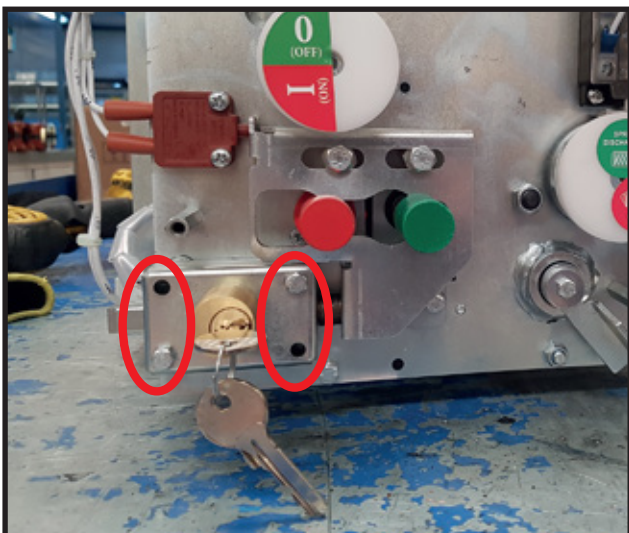
Changing Coils:

Disconnect the electrical connections of coils. Make the bolts dismantled. Inside of coils should be dismantled, pull outward. Put the new coil inside and screw the bolts. Control the coil by your hand if it works or not, then make the electrical connections.



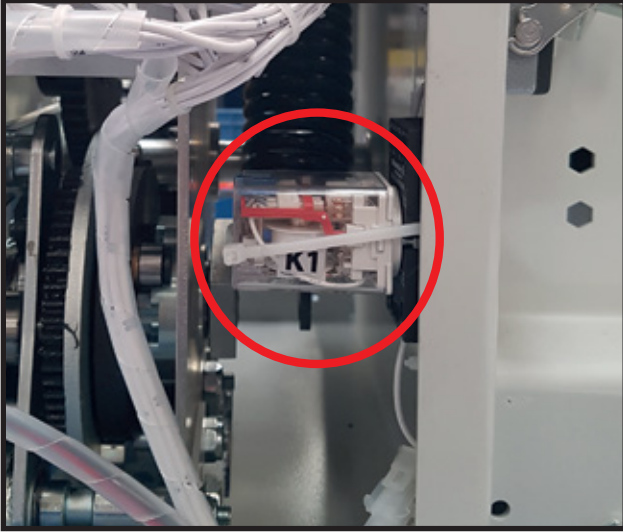
Changing Keys:

Dismount the bolts by using screwdriver. Pull and take off the key core. After joining the new key, mount the bolts and check them.



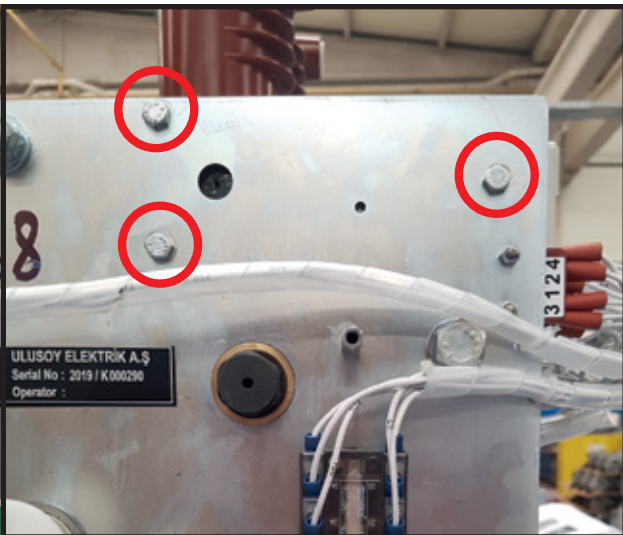
Changing Anti-Pumping Relay:

Unravel the anti-pumping relay's link. Dislodge the anti-pumping relay by pulling. Press the new anti-pumping relay to insert its place. Insert the link.



Changing Spring Charge Motor:

Pull down the track clip to take off motor protection fuse. Push the locks of the clip and remove the connections of electrical cables. Remove bolts. After removing bolts, take the motor outside carefully. Put the new motor into its place and make all connections again (install the bolts, connect the electrical cables and insert the motor protection fuse).



WARNING AND RECOMMENDATIONS



- Provide all safety instructions during operation and in other cases.
- Check the circuit breakers when delivered.
- Change the parts which can be changed according to instructions.
- Compare the technical values with ordered values.
- Save the test reports which has been sent with circuit breaker.
- Keep the operation condition according to as requested.
- When the key is open position, the closing cannot be done. Do not force the by closing.
- Take care the mechanism and poles during the dispatch, mountage and operations to avoid any hitting.
- Never clean the poles by using the materials which have unsuitable insulation levels.
- Contact surfaces needs to be clean before making bar connections, with a oil free solvent or acetone.
- Take care the poles to be clean. Clean the contact surfaces with a cotton free material.
- Follow the operation orders when energizing the circuit breaker.
- In any failure, follow the Fault Table.

CIRCUIT BREAKER STORAGE AND PACKAGING DIMENSIONS

Keep circuit breaker away from any water and direct sunlight in an ambient temperature between -40°C to 50°C. The circuit breaker is shipped in the open position “0” with the springs “discharged”. Store the circuit breakers in their original packing. Following a long period of storage (more than a month in normal ambient conditions.), all insulated parts shall be carefully cleaned from all dust by using a dry fabric before using.

PROBABLE FAILURE TABLE

Mechanism can not be charged by spring charge motor	Electric motor	<ul style="list-style-type: none"> - The voltage level might be low at the motor terminals. Correct the voltage level. - The motor might be burned, must be changed.
	Charging motor contact	<ul style="list-style-type: none"> - The contact might be out of service, must be changed.
	Motor protection fuse automat	<ul style="list-style-type: none"> - Automat might be taken, please check it.
Circuit Breaker does not make closing	Closing coil	<ul style="list-style-type: none"> - Check the coil wiring connections. - The voltage might be low at coil terminals. - The coil might be burned, must be changed. - Relay settings might be wrong, please check it.
Circuit Breaker does immediately opening after closing	Mechanism	<ul style="list-style-type: none"> - Mechanism might not be charged, please check it.
	Any opening component	<ul style="list-style-type: none"> - The failure might continue because of high voltage. - Relay settings must be wrong, please check it.
Circuit Breaker makes opening-closing one after another	Anti-pumping relay or opening component	<ul style="list-style-type: none"> - Change the relay and make settings of protection system again.
Circuit Breaker does not make opening both remote and local	Coil	<ul style="list-style-type: none"> - Charge the mechanism by using lever, then make opening.
Circuit Breaker is working but not charging	Charging prong	<ul style="list-style-type: none"> - Charging prong might be broken, please check it. - Check the reducer gear group; if the failure still continues, call the technical service.
Motor does not stop after charging	Motor charging contacts	<ul style="list-style-type: none"> - Motor charging contacts might be fault, must be changed.

