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HVVS compound vacuum on-load tap-changer

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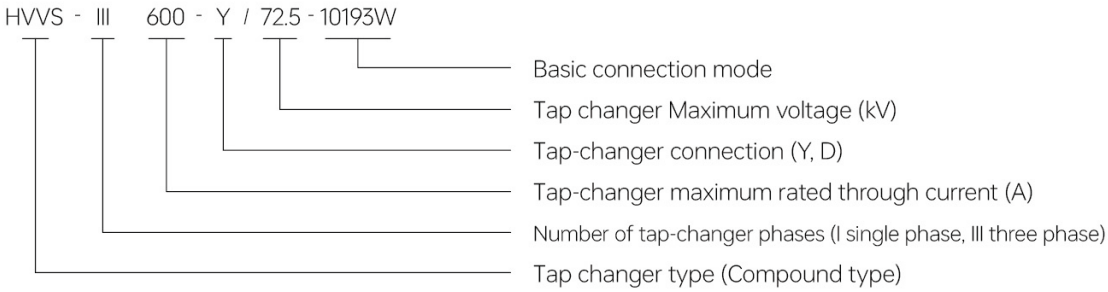
Huaqi Electric Powerr, Made in China

HVVS compound vacuum on-load tap-changer

1. HVVS model description

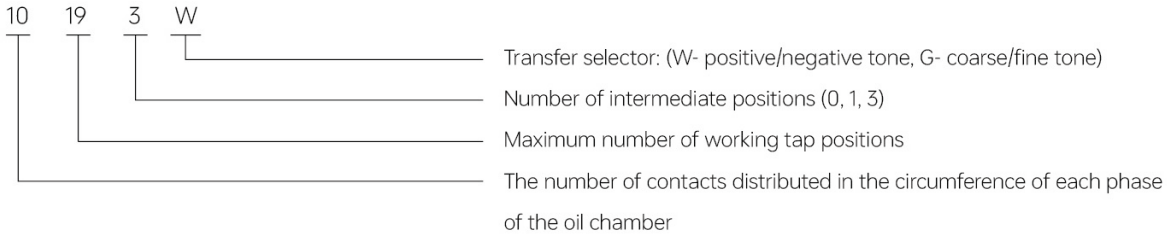
1.1 Model representation

HVVS on-load tap-changer is available in a variety of models and specifications depending on the combination of phase number, maximum rated passing current, maximum voltage and connection mode. The meanings of parameters in the model are described as follows:



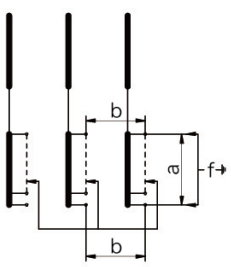
1.2 Basic connection method of tap selector

Tap selectors are available in a variety of sizes according to the voltage regulation range of the transformer and the connection mode of the windings. The specification of the tap selector consists of the tap selector distributing the number of contacts, the number of operating positions, the number of intermediate positions and the conversion selector. In the basic connection mode, the meanings of parameters are described as follows:

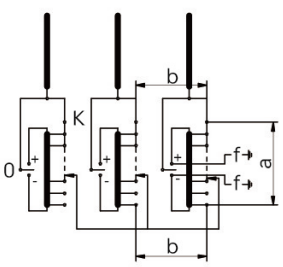


2. HVVS internal insulation level

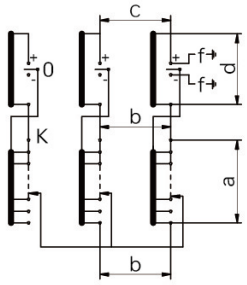
Switch internal insulation according to the structure of the switch is divided into the following forms:



Linear key



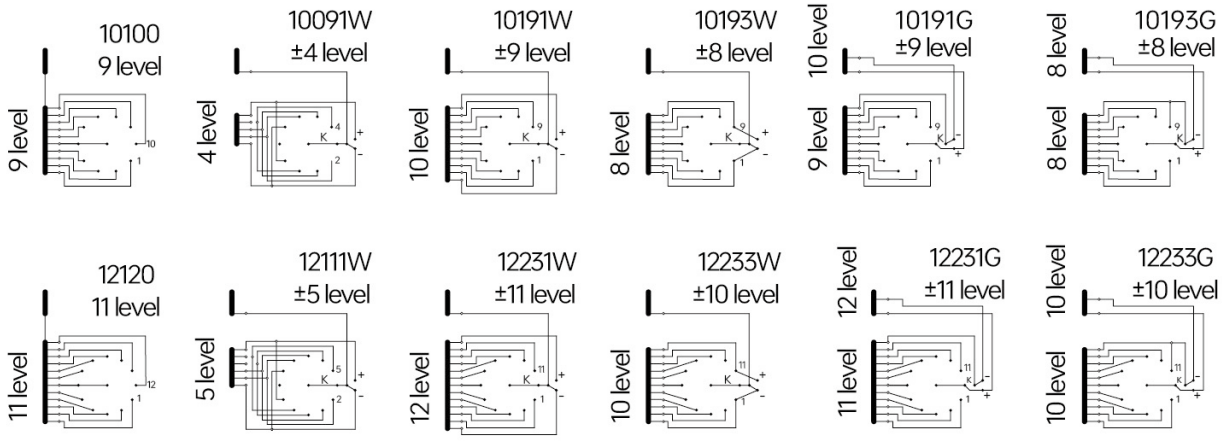
flipflop



Coarse-fine control

Insulation distance symbol		Withstand voltage (kV)	III 400Y	III 400D
			III 600Y	III 600D
a	Number of contacts: 10	Impulse test voltage: 1.2/50μs	200	
		Power frequency test voltage: 50Hz/1min	50	
	Number of contacts: 12	Impulse test voltage: 1.2/50μs	180	
		Power frequency test voltage: 50Hz/1min	50	
b	35kV	Impulse test voltage: 1.2/50μs	200	200
		Power frequency test voltage: 50Hz/1min	70	85
	66kV	Impulse test voltage: 1.2/50μs	200	360
		Power frequency test voltage: 50Hz/1min	70	140
c	35kV	Impulse test voltage:1.2/50μs	350	350
		Power frequency test voltage: 50Hz/1min	140	140
	66kV	Impulse test voltage: 1.2/50μs	350	350
		Power frequency test voltage: 50Hz/1min	140	140
d		Impulse test voltage: 1.2/50μs	200	
		Power frequency test voltage: 50Hz/1min	53	
f	35kV	Impulse test voltage: 1.2/50μs	200	
		Power frequency test voltage: 50Hz/1min	85	
	66kV	Impulse test voltage: 1.2/50μs	350	
		Power frequency test voltage: 50Hz/1min	140	

3. HVVS basic wiring diagram



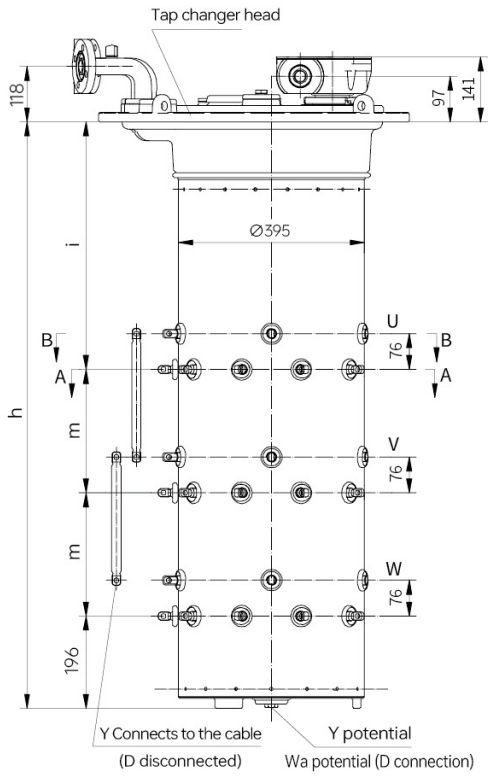
4. HVVS technical parameters

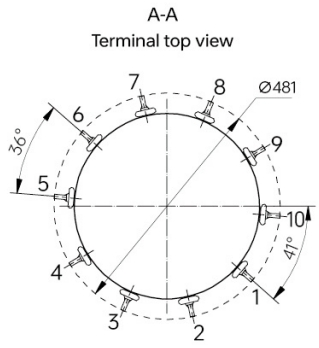
item	Classification feature		III 400Y	III 400D	III 600Y	III 600D
1	Maximum rated passing current (A)		400	400	600	600
2	Rated frequency (Hz)		50 or 60			
3	Number of phases and connection mode		Central point	Arbitrary connection	Central point	Arbitrary connection
4	Maximum grading voltage (V)	Number of contacts: 10	1500			
		Number of contacts: 12	1400			
5	Rated capacity (kYA)	Number of contacts: 10	525		750	
		Number of contacts: 12	420		490	
6	Withstand short circuit Ability (kA)	Thermal stability (3 s RMS)	5		7	
		Dynamic stability	12.5		17.5	
7	Number of working positions		Linear keys 5, 6, 7, 8, 9, 10, 11, 12 Positive and negative tones or coarse and fine tones: ±3~±11			
8	Tap-changer insulation level (kV)	nominal voltage	35		66	
		maximum working voltage	40.5		72.5	
		Power frequency test voltage (1min)	85		140	
		Impulse test voltage (1.2/50)	200		350	
9	mechanical life		No less than 1.5 million times			
10	electrical life		No less than 350,000 times			
11	Switch switch oil chamber	Work pressure	3×10^4 Pa			
		sealing property	6×10^4 Pa 24h no leakage			
		overpressure protection	Rupture cap $(4\sim5)\times10^4$ Pa			
		keep relay	QJ4-25 Set the oil speed 1.0m/s±10%			
12	Oil discharge (L)		About 260~300			
13	Oil charge (L)		About 245~280			
14	Weight (Kg)		About 180~270			
15	Equipped with electric mechanism		HED-200			

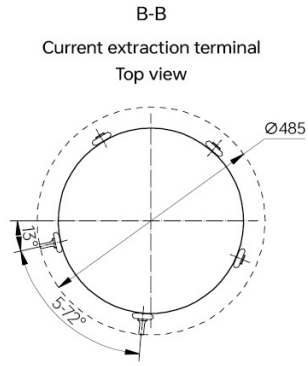
Note: 1. The stage capacity is equal to the product of the stage voltage and the load current, and the rated stage capacity is the maximum continuously allowed stage capacity.

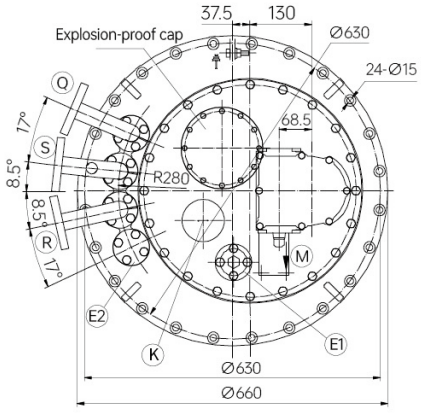
2. The voltage regulation series can be designed according to the user's needs within the range of working positions in the table above.

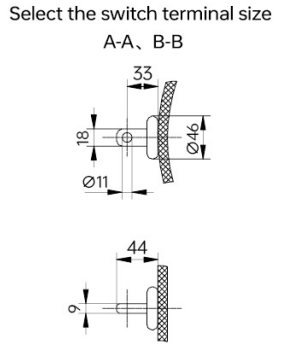
5. HVVS outline size drawing



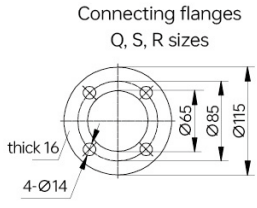






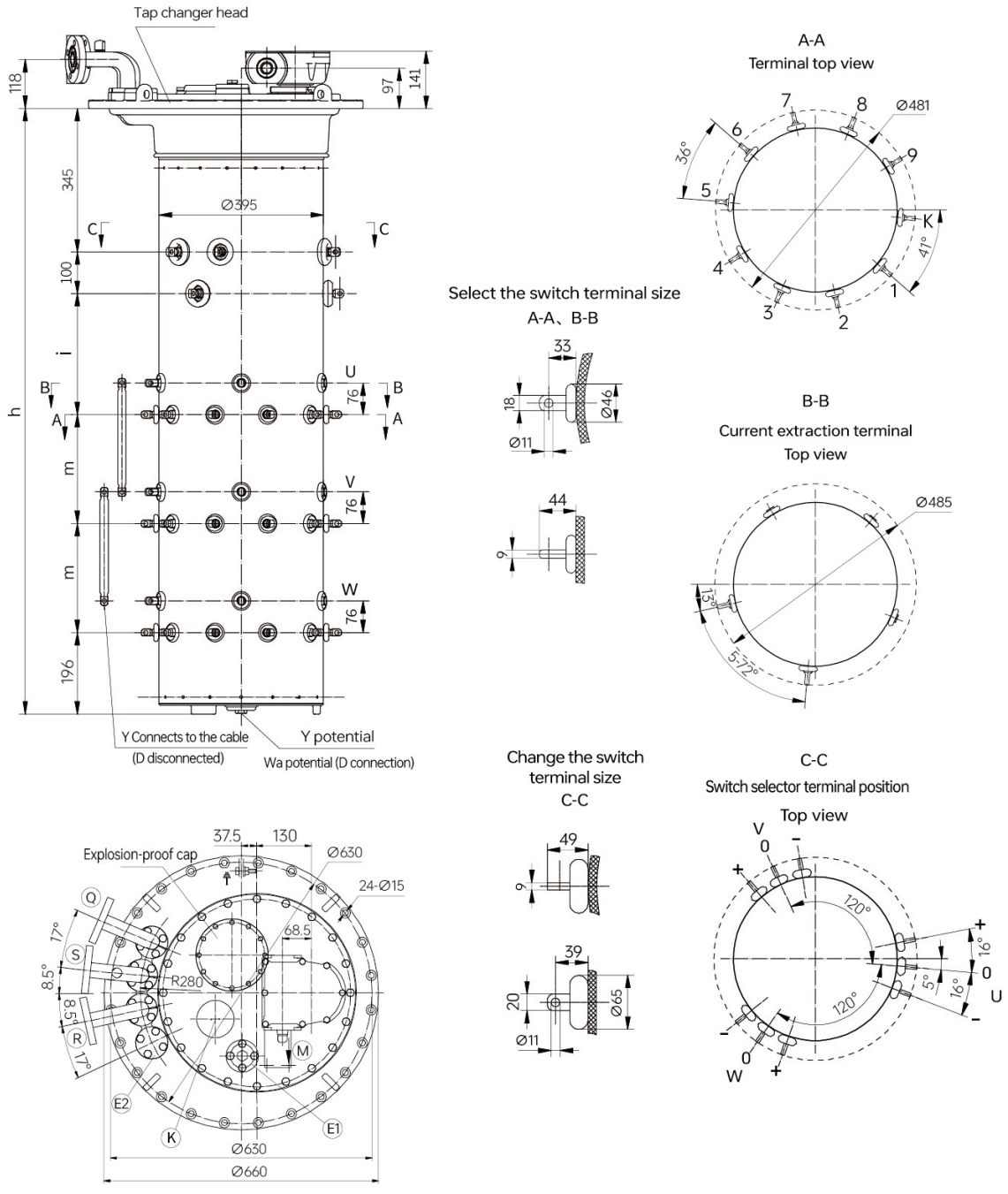


M: Tap-changer driver side
E1: Open head vent plug
E2: Transformer tank vent flange
K: Observation window
Q: Return pipe connection
S: Suction tubing joint
R: Protective relay adapter



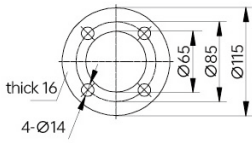
Maximum operating voltage (kV)		40.5		72.5	
Tap-changer connection mode		y-joint	d-joint	y-joint	d-joint
Size mm	h	1246	1486	1246	1606
	i	526	526	526	566
	m	262	382	262	422

Figure 1 HVVS III400~600 linear tone



M: Tap-changer driver side
E1: Open head vent plug
E2: Transformer tank vent flange
K: Observation window
Q: Return pipe connection
S: Suction tubing joint
R: Protective relay adapter

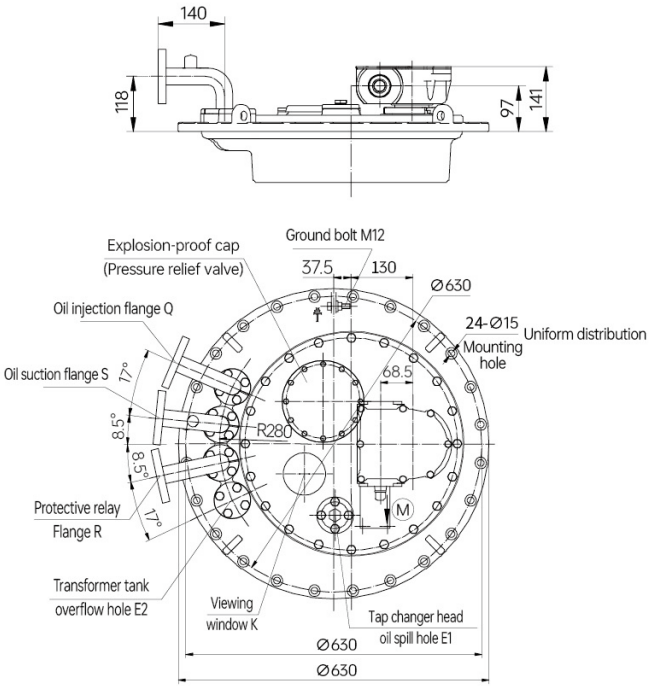
Connecting flanges
Q, S, R sizes

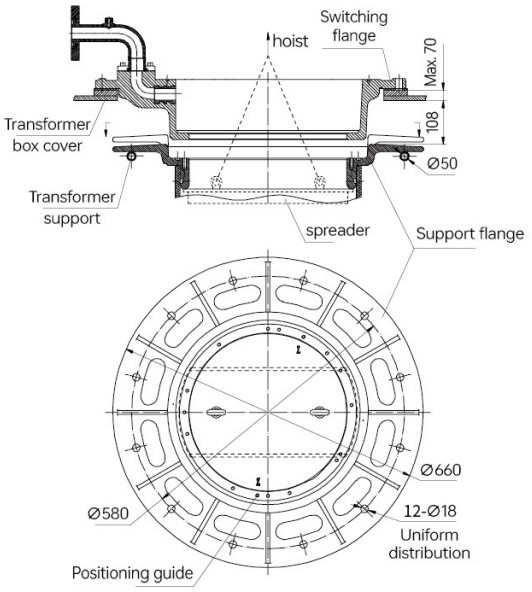


Maximum operating voltage (kV)		40.5		72.5	
Tap-changer connection mode		y-joint	d-joint	y-joint	d-joint
Size mm	h	1456	1736	1456	1816
	i	291	331	291	331
	m	262	382	262	422

Figure 1 HVVS III400~600 positive and negative tones/coarse and fine tones

6. HVVS installation dimension diagram

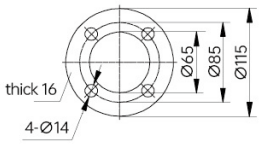




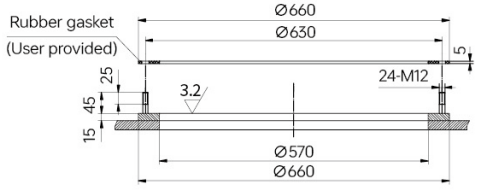
HVVS bell mounted dimensions

Connecting flanges
Q, S, R sizes

Q: It can turn 360°
S: It can turn 360°
R: It can turn 360°
(Can be used with Q connector)



HVVS head mounting dimensions



Transformer box cover
mounting flange dimensions

7. HVVS head cover layout

In order to meet user requirements, HVVS switch head cover when ordering, please select the appropriate head cover layout, if the user does not choose to confirm, according to Figure A production. In case of special Angle, please give the solution supplier's confirmation when ordering.

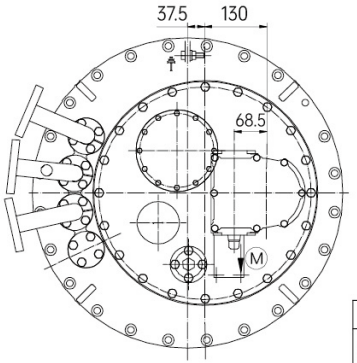
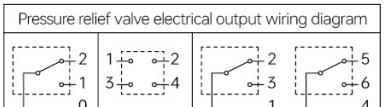
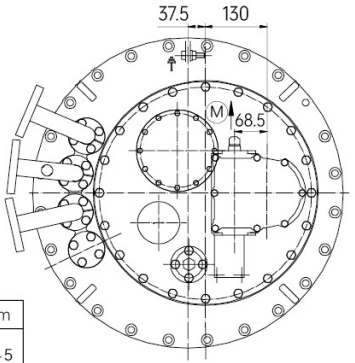


Figure A

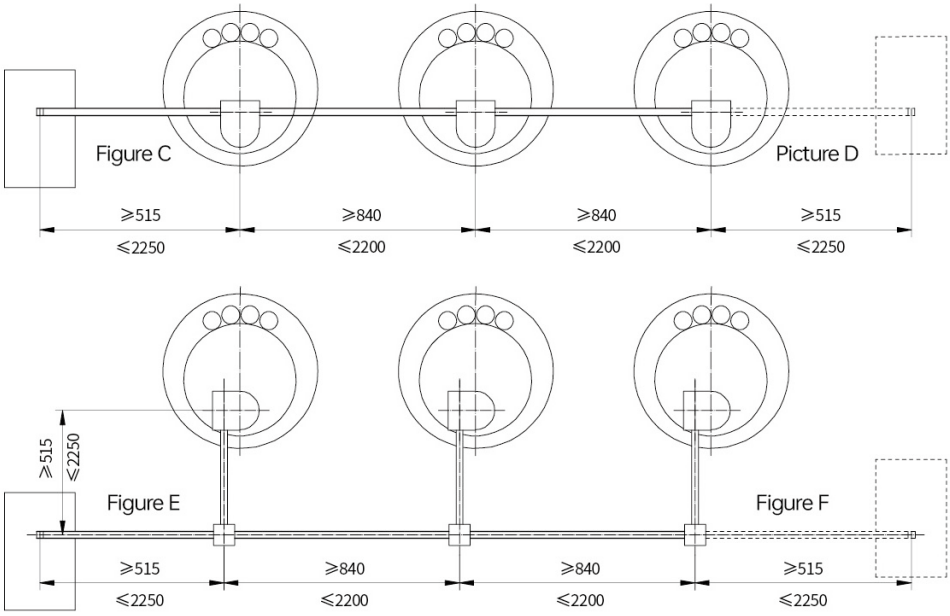
Pressure relief valve electrical output wiring diagram			
			
Standard configuration	Type I	Type II	



Picture B

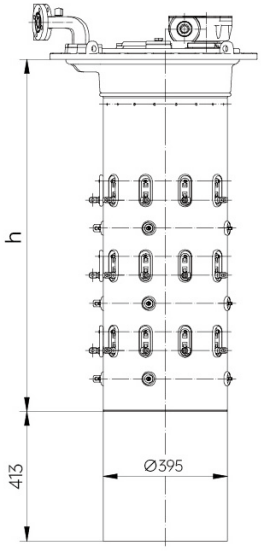
8. HVVS three mechanical linkage layout

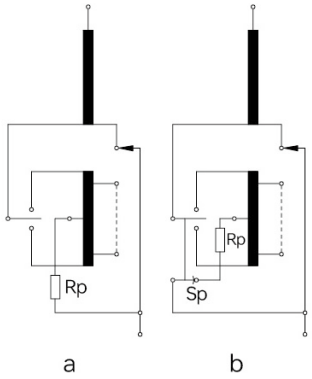
In order to facilitate the user's three mechanical linkage arrangement, HVVS three mechanical linkage gives four schemes, such as Figure C, Figure D, Figure E and Figure F, for user reference. If there are other layout parties, as agreed by both parties.



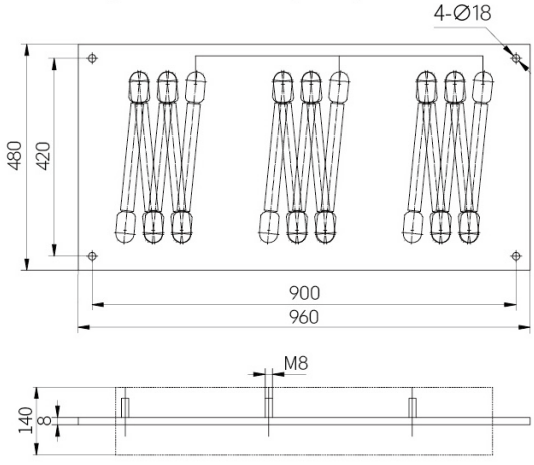
8. HVVS potential resistor and potential switch

When the tap-changer selector is in action, the tap-changer winding is in a "suspended" state. Because there is a coupling capacitor C between the main winding and the tap-winding, and a coupling capacitor C between the tap-winding and the box shell, the conversion selector generates spark discharge. In order to reduce the spark discharge gas, the potentiometric resistor is fixed or connected by a potentiometric resistor switch.





Mounting dimensions of plate potential resistors



a-Solid potential resistance Rp

b-Borrow potential switch Sp fixed potential resistor Rp

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