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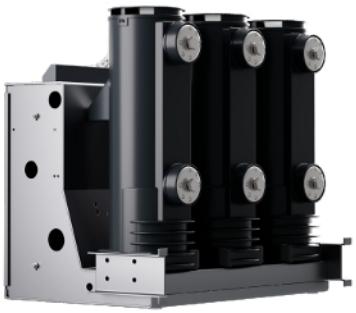
# VCB

## INDOOR HIGH VOLTAGE VACUUM CIRCUIT BREAKER —SLEEVE TYPE




ASKM SERIES MCCB
A PRODUCT OF
POWER DISTRIBUTION



## SLEEVE COUPLING TYPE STRUCTURE OVERVIEW

The vacuum arc extinguish chamber of the ASKV5 series sleeve coupling type indoor high voltage AC vacuum circuit breaker's main circuit is positioned in the enclosed insulating cylinder. The insulating cylinder is made of epoxy resin with reliable mechanical and electrical performance. The cylinder is moulded adopting the advanced automatic pressure gelation (APG) process. The cylinder functions not only a support, and also as insulation between phase and phase, between phase and ground.

The design of the insulating cylinder fully takes into account the requirements of the national standard and the harsh working conditions. It can not only prevent the vacuum arc extinguish chamber from being affected by the external environment, but also prevent dust and foreign matter from entering the main circuit. It also ensures that even in humid, hot and heavily polluted environments, it presents a high resistance state to the voltage effect.

## TESTS

VCB have passed the following tests to ensure their safe operation under normal operating conditions.

- Type test: power frequency withstand voltage, lightning impulse withstand voltage, temperature rise, short-time and peak withstand current, short-circuit current breaking/closing capability and cable charging current breaking/closing test.
- Factory routine test: mechanical characteristics test, main circuit power frequency withstand voltage test, auxiliary and control circuit insulation performance test, main circuit resistance test, interlocking operation test, mechanical and electrical operation test.

## QUALIFICATION DOCUMENTS




Test Report



Patent



Patent



CE



ISO

## STANDARDS

The technical parameters of VCB fully comply with GB1984, GB/T11022 and Chinese electric power industry standard DL403, and also meet the provisions of IEC62271-100,IEC56 standard specification and other major industrialized countries' relevant standards.

## APPLICATION SCOPE

VCB are widely used in power plants, power grids, metallurgy, petrochemical,urban infrastructure such as airports, buildings, subway and other projects. In the power distribution system, VCB can be applied to control and protectcables, overhead lines, transformers, engines, generators and capacitor sets.

## BREAKER SELECTION TABLE

**No:11010101**

| ASK | V | 5 | T | – | 12KV | / | 1600A | / | 31.5 |
|---|---|---|---|---|---|---|---|---|---|
| Company | Product code | Design code | Function code | | Rated voltage | | Rated current | | Rated short-time withstand current |
| AISIKAI ELECTRIC | Vacuum circuit breaker | | G:Solid-sealed Polar Pole Type<br>T: Sleeve Type | | 12KV<br>24KV<br>40.5KV | | 630 1250<br>1600 2000<br>2500 3150<br>4000 | | 20KA 25KA<br>31.5KA 40KA |

## MAIN TECHNICAL PARAMETERS

| Item | | Unit | Technical parameters | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Rated voltage | | kV | 12 | | | | | 24 | | |
| Rated insulation level | Rated short-timepower frequency withstand voltage(1min) | kV | 42 | | | | | 65 | | |
| | Rated lightning impulse withstand voltage(peak) | kV | 75 | | | | | 125 | | |
| Rated frequency | | Hz | 50 | | | | | 50 | | |
| Rated current | | A | 630<br>1250 | 630<br>1250 | 1250<br>1600<br>2000<br>2500<br>3150<br>4000 | 1250<br>1600<br>2000<br>2500<br>3150<br>4000<br>5000 | 3150<br>4000<br>5000 | 630<br>1250 | 630<br>1250 | 1250<br>1600<br>2000<br>2500<br>3150 |
| Rated short-circuit breaking current | | kA | 20 | 25 | 31.5 | 40 | 50 | 20 | 25 | 31.5 |
| Rated short-time withstand current | | kA | 20 | 25 | 31.5 | 40 | 50 | 20 | 25 | 31.5 |
| Rated peak withstand current | | kA | 50 | 63 | 80 | 100 | 125 | 50 | 63 | 80 |
| Rated short-circuit closing current (peak) | | kA | 50 | 63 | 80 | 100 | 125 | 50 | 63 | 80 |
| 4s thermal stable current | | kA | 20 | 25 | 31.5 | 40 | 50 | 20 | 25 | 31.5 |
| Rated dynamic stable current | | kA | 50 | 63 | 80 | 100 | 125 | 50 | 63 | 80 |
| Rated capacitor set closing surge current | | kA | 12.5 ( frequency not higher than1000Hz) | | | | | | | |
| Rated single/back-to-back capacitor set breaking current | | A | 630 / 400 | | | | | | | |
| Rated short-circuit duration | | S | 4 | | | | | | | |
| Secondary circuit power frequency withstand voltage | | V | 2000 | | | | | | | |
| Rated operational voltage | Closing coil | V | AC 110 / 220 DC 110 / 220 | | | | | AC 110 / 220 DC 110 / 220 | | |
| | Opening coil | V | AC 110 / 220 DC 110 / 220 | | | | | | | |
| | Energy storage motor | V | AC 110 / 220 DC 110 / 220 | | | | | | | |
| Opening time(rated voltage) | | ms | 20~50 | | | | | ⩽45 | | |
| Closing time (rated voltage) | | ms | 30~70 | | | | | ⩽60 | | |
| The allowablewear cumulative thickness of moving and fixed contacts | | mm | 3 | | | | | | | |
| Energy storage Time | | s | ⩽15 | | | | | ⩽15 | | |
| Contact opening distance | | mm | 9±1(630A~1250A) | | 11±1(1250A~4000A) | | | 13±1 | | |
| Overtravel | | mm | 3~4 | | | | | 4±1 | | |
| Contact closing bounce Time | | ms | ⩽2 | | | | | | | |
| Three phase opening/closing non-synchronous characteristic | | ms | ⩽2 | | | | | | | |
| Average opening speed | | m/s | 0.9~1.3 | | | | | 1.1~1.7 | | |
| Average closing speed | | m/s | 0.4~0.8 | | 0.5~0.9(side-mounted) | | | 0.6~1.1 | | |
| Contact opening rebound amplitude | | mm | ⩽2 | | ⩽3(side-mounted) | | | ⩽3 | | |
| Main conductive circuit resistance | | μΩ | ⩽55 (630A) | | ⩽45(630A side) | | | Rated current | handcart type | fixed type |
| | | | ⩽45 (1250A) | | ⩽40(1250A side) | | | 630~1250A | ⩽60 | ⩽50 |
| | | | ⩽35 (1600A~2000A) | | | | | 1600~2000A | ⩽35 | ⩽30 |
| | | | ⩽25 (2500A above) | | | | | 2500A above | ⩽25 | ⩽20 |

| | | | |
|---|---|---|---|
| Contact closing contact pressure | N | 2000±200(20KA) | |
| | | 2400±200(25KA) | |
| | | 3100±200(31.5KA) | |
| | | 4750±200(40KA) | |
| Rated operation sequence | | O-0.3s-CO-180s-CO | |
| Mechanical life | times | 30000 (31.5kA and below) | 20000 |
| | | 20000 (40kA and above) | |

1.The average opening speed refers to the average speed of the breaker contact just after opening 6mm.

2.①12kV circuit breaker: the average closing speed refers to the average speed of the breaker contact before closing 8mm

②24kV circuit breaker : the average closing speed refers to the average speed of the circuit breaker contacts full opening distance.

3.When the rated short-circuit breaking current<40kA. θ=0.3s, When the rated short-circuit breaking current is ⩾40kA, θ=180s

## Energy Storage Motor Technical Parameters(Sleeve Coupling Type)

| Model | Rated voltage | Rated input power(W) | | Normal operation voltage range | Energy storage time at rated voltage(S) |
|---|---|---|---|---|---|
| | | 12kV | 24kV | | |
| ZYJ55-1 | DC110V | 70,100 | 70 ,100 | 85% ~110% rated voltage | ⩽15 |
| | DC220V | | | | |

## Technical Parameters of Closing and Opening Electromagnets and Related Electrical Components

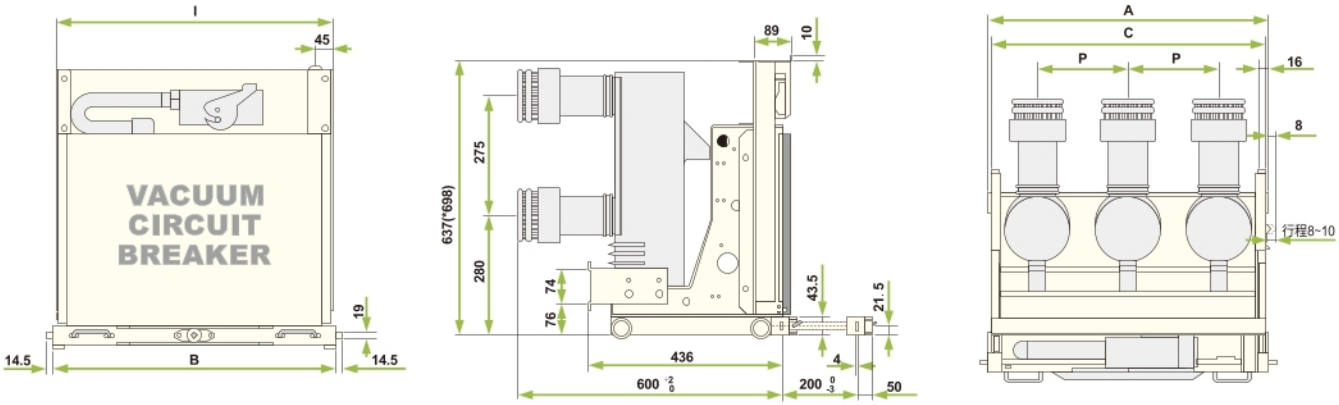
| Item \ category | Closing electromagnet | | Opening electromagnet | | Locking electromagnet | | Anti-tripping relay | |
|---|---|---|---|---|---|---|---|---|
| Rated operational voltage(V) | DC220 | DC110 | DC220 | DC110 | DC220 | DC110 | DC220 | DC110 |
| Rated operational current(A) | 1.1 | 2.2 | 1.1 | 2.2 | 25mA | | 9.1mA | |
| Rated power(W) | 242 | 242 | 242 | 242 | 2.7 | | 1.0 | |
| Normaloperational voltage range | 85%~110% rated voltage | | 65%~120% rated voltage; If at voltage lower than 30% of rated voltage, the switch can not open. | | — | | — | |

## Secondary Control Circuit Solution Portfolio

| Control voltage | Locking solution | Anti-tripping solution | Under-voltage tripping solution | Over-current tripping solution | | |
|---|---|---|---|---|---|---|
| AC220V | With electrical locking | With anti-tripping relay | With under-voltage tripper | With over-current tripper | Number of over-current trippers | Action current value |
| DC220V | | | | | 2 units/3 units | 3.5/5 |
| AC110V | Without electrical locking | without anti-tripping relay | Without under-voltage tripper | Without over-current tripper | | |
| DC110V | | | | | | |

# OUTLINE AND INSTALLATION DIMENSIONS

## 12kV Low Current Handcart Vacuum Circuit Breaker Outline Dimensions(630A~1600A)



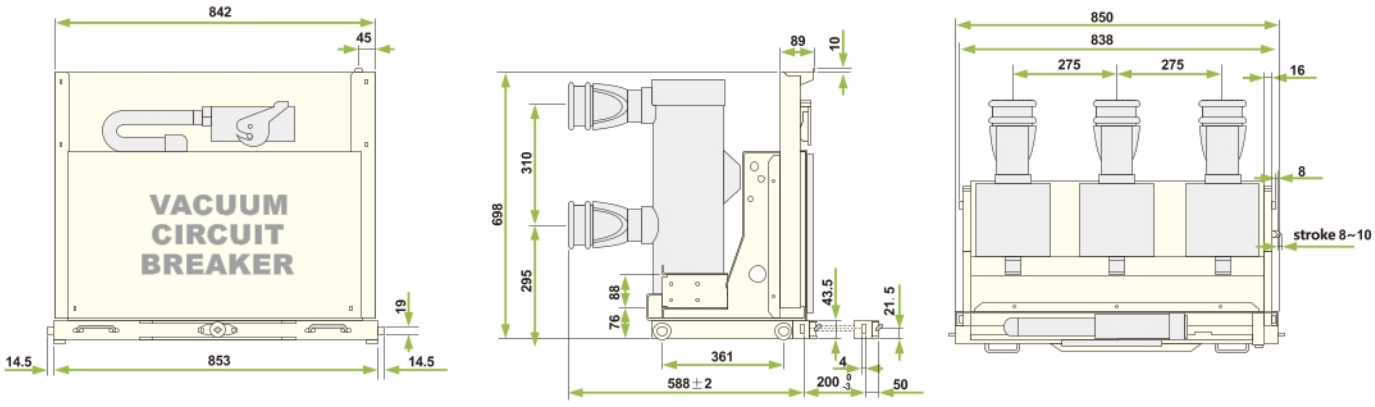

| Rated current(A) | Rated short-circuit breaking curentKA) | P(mm) | A(mm) | B(mm) | C(mm) | I(mm) | Supporting cabinet width(mm) |
|---|---|---|---|---|---|---|---|
| 630~1250 | 20~40 | 150 | 502 | 503 | 492 | 492 | 650 |
| 630~1600 | | 210 | 650 | 653 | 640 | 638 | 800 |
| | | 275 | 850 | 853 | 838 | 842 | 1000 |

| | Rated current(A) | Star shaped contact | Static contact size(mm) |
|---|---|---|---|
| Moving and static contact fit size | 630 | CT-24 | Ø35 |
| | 1250 | CT-30 | Ø49 |
| | 1600 | CT-36 | Ø55 |

1.Main circuit adopts sleeve coupling type

2.In the diagram (*698) is an optional solution for the height of the sealing plates with phase spacing 275

## 12kV High Current Handcart Vacuum Circuit Breaker Qutline Dimensions(1600A~5000A)



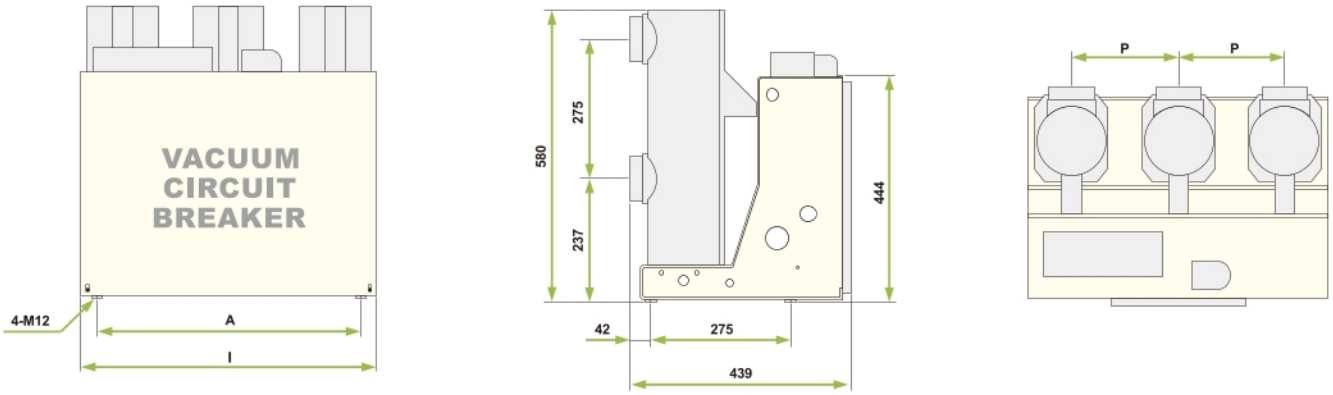

| Rated current(A) | Rated short-circuit breaking current(KA) | Supporting cabinet width(mm) |
|---|---|---|
| 1600~5000 | 25~40 | 1000 |

Main circuit adopts sleeve type.

| | Rated currentA) | Star shaped contact | Static contact size(mm) |
|---|---|---|---|
| Moving and static contact fit size | 1600~2000 | CT-48 | Ø79 |
| | 2500~3150 | CT-64 | Ø109 |
| | 4000 | CT-82 | |
| | 5000 | CT-96 | |

# OUTLINE AND INSTALLATION DIMENSIONS

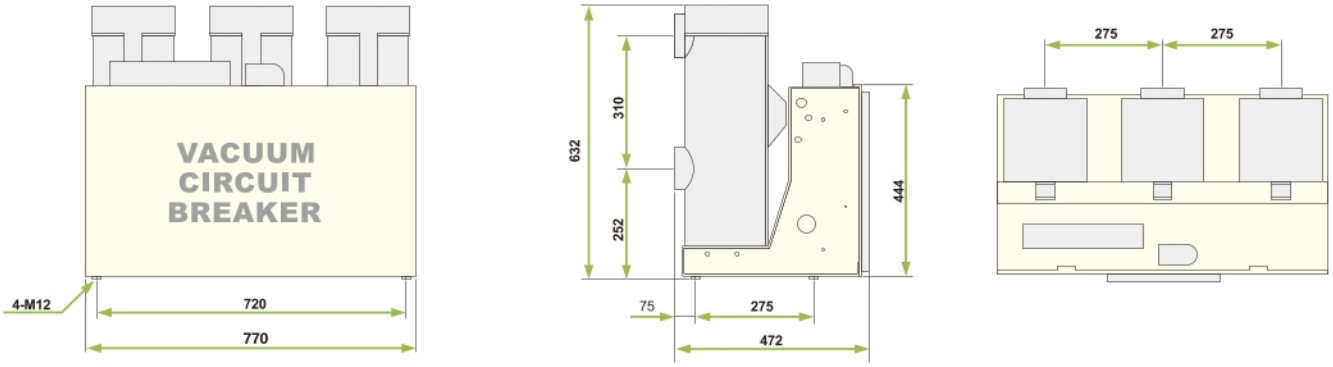
## 12kV Low Current Fixed Vacuum Circuit Breaker Outline Dimensions(630A~1600A)




| Rated current(A) | Rated short-circuit breaking current(kA) | P(mm) | I(mm) | A(mm) | Supporting cabinet width(mm) |
|---|---|---|---|---|---|
| 630~1600 | 20~40 | 210 | 588 | 520 | 800 |
| | | 275 | 770 | 720 | 1000 |

Main circuit adopts sleeve type.

## 12kV high current handcart vacuum circuit breaker dimensions(1600A~4000A)

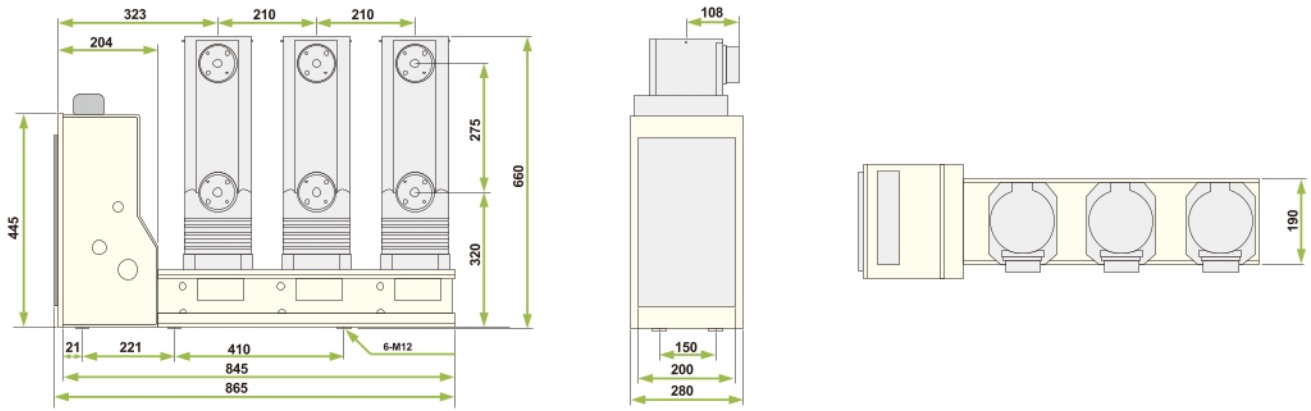



| Rated current(A) | Rated short-circuit breaking current(kA) |
|---|---|
| 1600~5000 | 25~40 |

Main circuit adopts sleeve type.

# OUTLINE AND INSTALLATION DIMENSIONS

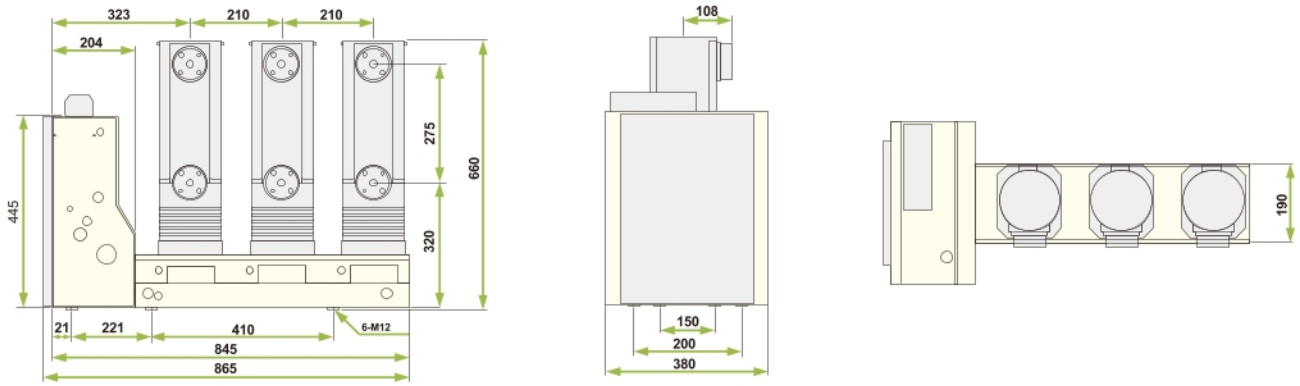
## 12kV (A) side mounted vacuum circuit breaker (fixed type) dimensions(630A~1600A)




| Rated current(A) | Rated short-circuit breaking current(KA) | Supporting cabinet width(mm) |
|---|---|---|
| **630-1600** | **20~40** | **280** |

Main circuit adopts sleeve type

## 12kV (B) side mounted vacuum circuit breaker (fixed type) dimensions(630A~1250A)

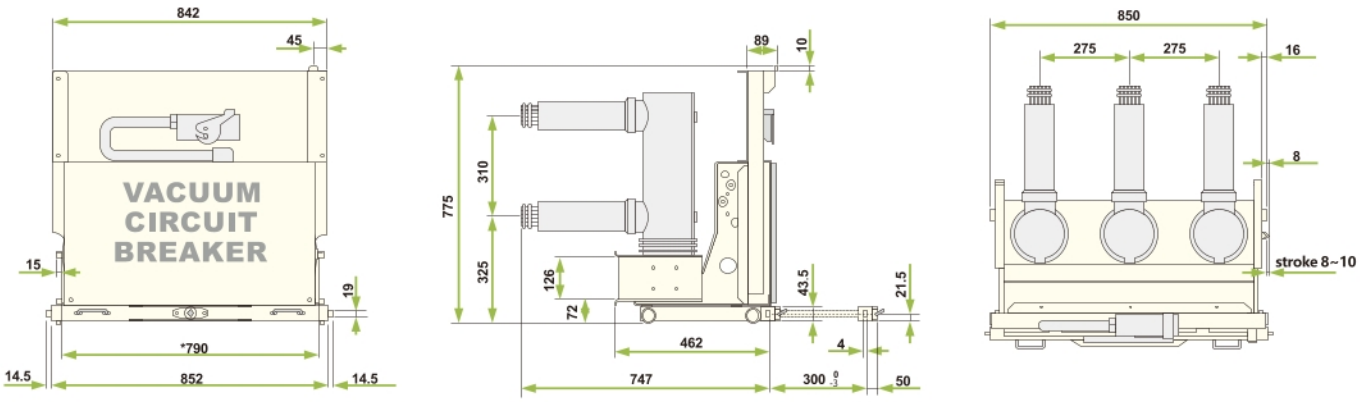



| Rated current(A) | Rated short-circuit breaking current(KA) | Supporting cabinet width(mm) |
|---|---|---|
| **630~1250** | **20~40** | **380** |

Main circuit adopts sleeve type

# OUTLINE AND INSTALLATION DIMENSIONS

## 24kV Handcart Vacuum Circuit Breaker Outline Dimensions(630A~1600A)

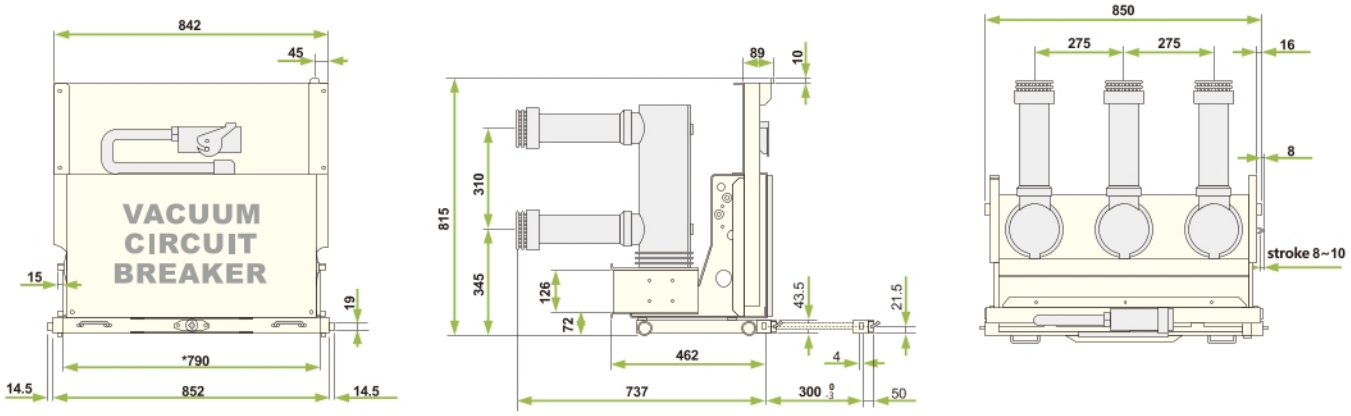



| Rated current(A) | Rated short-circuit breaking current(KA) | Supporting cabinet width(mm) |
|---|---|---|
| 630 | 40 and below | 1000 |
| 1250 | | |
| 1600 | | |

| | Rated current(A) | Star shaped contact | Staic contact size(mm) |
|---|---|---|---|
| Moving and static contact fit size | 630 | CT-24 | Ø35 |
| | 1250 | CT-30 | Ø49 |
| | 1600 | CT-36 | Ø55 |

Main circuit adopts sleeve type

## 24kV Handcart Vacuum Circuit Breaker Outline Dimensions(1600A~3150A)



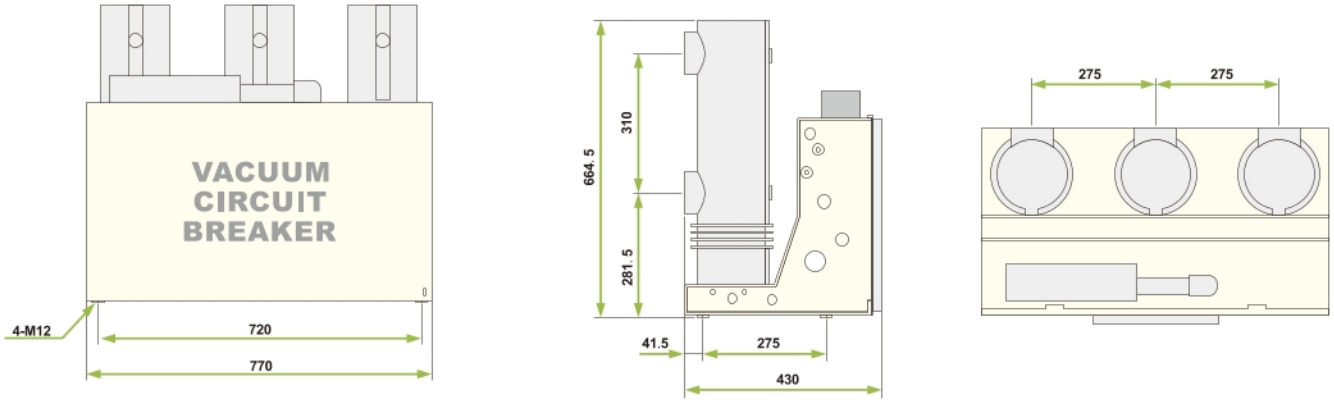

| Rated current(A) | Rated short-circuit breaking current(kA) | Supporting cabinet width(mm) |
|---|---|---|
| 2000/2500 | 40 | 1000 |
| 2500/3150 | | |

| | Rated current(A) | Star shaped contact | Static contact size(mm) |
|---|---|---|---|
| Moving and static contact fit size | 1600/2000 | CT-48 | Ø79 |
| | 2500/3150 | CT-64 | Ø109 |

Main circuit adopts sleeve type

# OUTLINE AND INSTALLATION DIMENSIONS

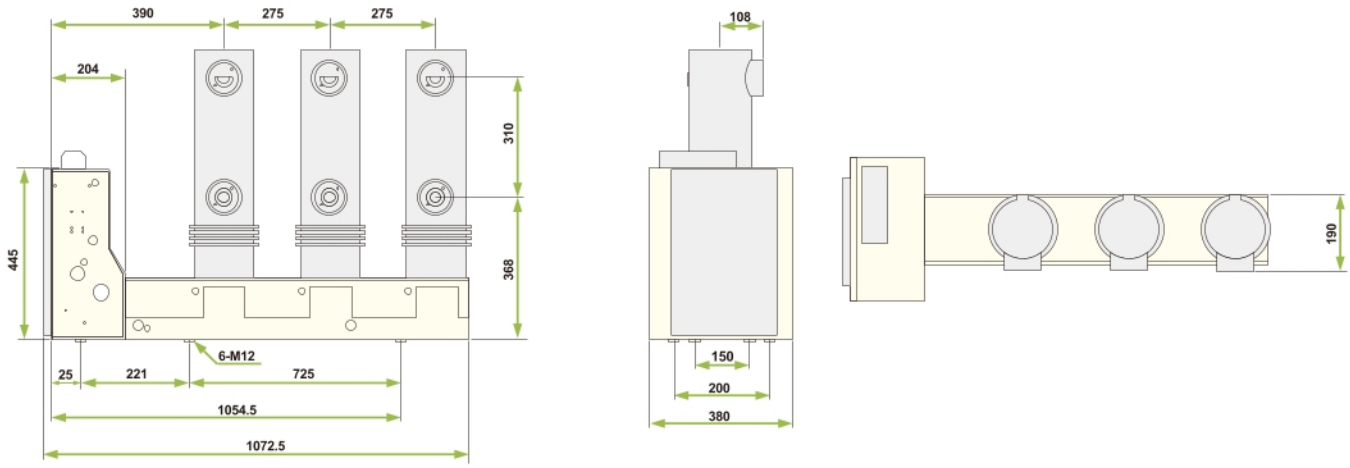
## 24kV Fixed Vacuum Circuit Breaker Outline Dimensions(630A~1600A)




| Rated current(A) | Rated short-circuit breaking current(KA) | Supporting cabinet width(mm) |
|---|---|---|
| **630/1250/1600** | **40 and below** | **1000** |

Main circuit adopts sleeve type

## 24kV Side-mounted Vacuum Circuit Breaker(Sleeve Coupling) Dimensions(630A~1250A)




| Rated current(A) | Rated short-circuit breaking current(KA) | Supporting cabinet width(mm) |
|---|---|---|
| **630~1250** | **20~40** | **380** |

Main circuit adopts sleeve type

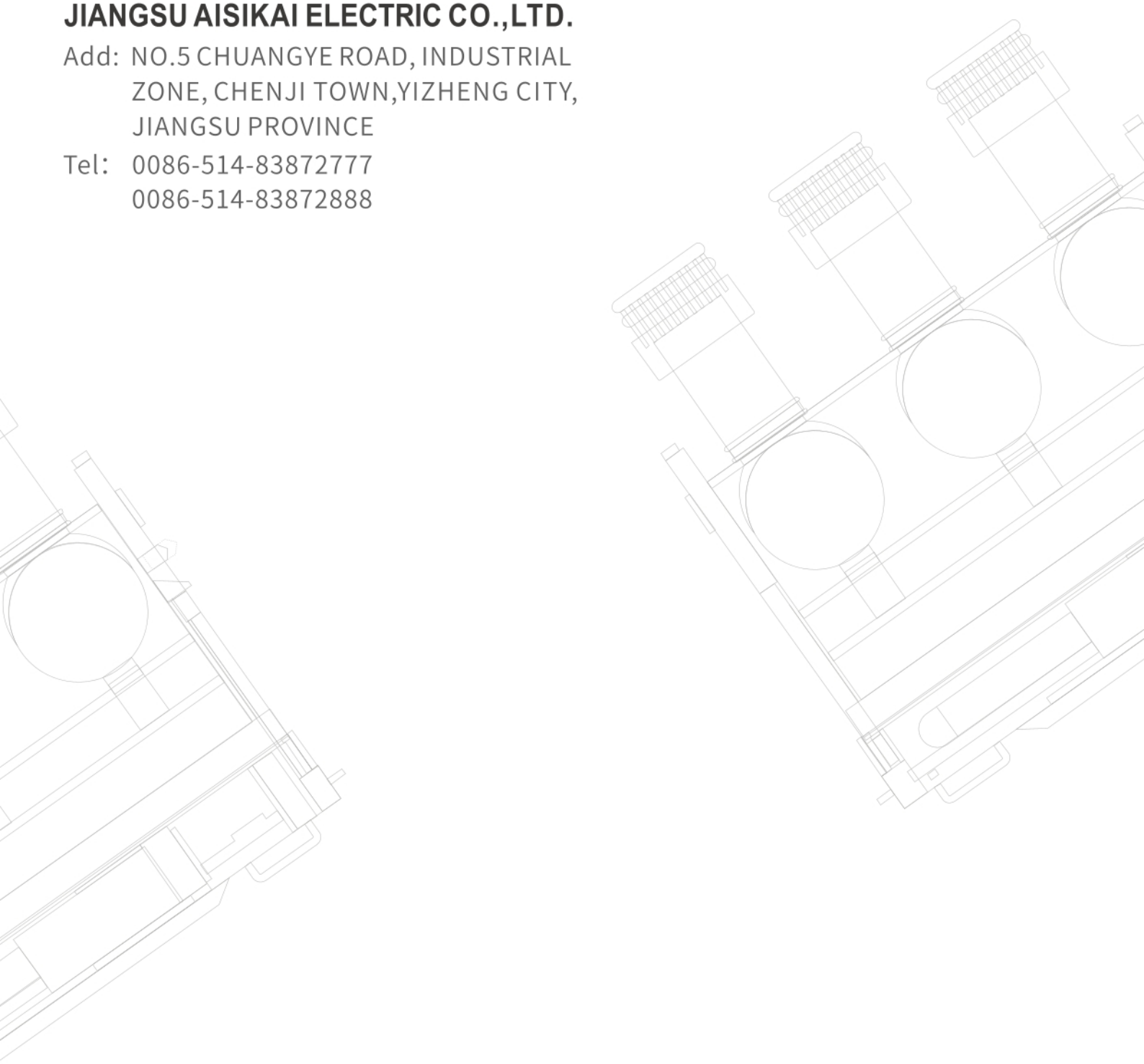
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