

# 電力設備綜合型錄

## MV & LV SWITCHGEAR AND DEVICE









**TDT 2049-10**

## TYPE TEST CERTIFICATE OF COMPLETE TYPE TESTS

**APPARATUS** An air-insulated metal-enclosed switchgear unit, incorporating a three-phase vacuum circuit-breaker and an earthing switch

**DESIGNATION** SVIE **SERIAL No.** D9704-1, D9704-3

Rated voltage	24 kV	Rated normal current	1250 A
Rated short-circuit current	25 kA	Rated frequency	50 Hz

**MANUFACTURER SWITCHGEAR** TECO Electric & Machinery Co., Ltd.,  
Hsinchu County 303, Taiwan

**MANUFACTURER CIRCUIT-BREAKER, EARTHING SWITCH** Xiamen Huadian Switchgear Co., Ltd.,  
Xiamen, China

**TESTED FOR** TECO Electric & Machinery Co., Ltd.,  
Hsinchu County 303, Taiwan

**TESTED BY** KEMA HIGH-POWER LABORATORY  
Utrechtseweg 310 - 6812 AR Arnhem - The Netherlands

**DATE(S) OF TESTS** 6 to 23 April 2010

The apparatus, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with

**IEC 62271-200** subclauses 6.6 (STC) and 6.101 (Verification of making and breaking).

This Type Test Certificate has been issued by KEMA following exclusively the STL Guides.

**The results are shown in the record of Proving Tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above Standard and to justify the ratings assigned by the manufacturer as listed on pages 4 and 5.**

This Certificate applies only to the apparatus tested. The responsibility for conformity of any apparatus having the same designations with that tested rests with the Manufacturer.

This Certificate consists of 57 sheets in total.

This Certificate falls under the scope of the accreditation certificate L 020 of the Dutch Council for Accreditation. See information sheet (page 2).

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The sealed and bound version of the Certificate is the only valid version.

KEMA Nederland B.V.

  
P. G. A. Bus  
KEMA T&D Testing Services  
Managing Director

Arnhem, 22 June 2010



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## 品質認證 Product Certification

- 1.KEMA T&D Testing Services Type Test 24KV SWGR Certified  
荷蘭KEMA 24KV配電盤 型式試驗合格
- 2.TPC Type Test 13.8KV, 14.4KV, 23KV Metal-Clad Switchgear (MCSG) Certified.  
台電13.8KV、14.4KV、23KV 裝甲型開關箱(MCSG) 型式試驗合格
- 3.TPC Type Test 480V POWER CENTER Certified  
台電480V負載中心(Power Center) 型式試驗合格
- 4.TPC Type Test 480V Motor Control Center(MCC) Certified  
台電480V馬達控制中心(MCC) 型式試驗合格
- 5.TPC Type Test 23KV Gas Insulated Switchgear(C-GIS) Certified  
台電23KV氣體絕緣開關設備(C-GIS) 型式試驗合格
- 6.Xi An Hi-Power Laboratory(China) Type Test 12KV Metal-Clad Switchgear Certified  
中國西高所12KV開關櫃(SWGR) 型式試驗合格
- 7.Taiwan Electric Research & Testing Center Type Test 24KV Metal-Clad Switchgear Certified  
台灣大電力研究試驗中心 24KV開關櫃(SWGR) 型式試驗合格
- 8.Taiwan Accreditation Foundation (TAF) Switchgear Laboratory Assessed and Certified  
財團法人全國認證基金會(TAF) 配電盤實驗室認證合格
- 9.Certified Manufacturer Under Article 401 of Interior Power Wiring System Rules, Bureau of Energy, Ministry of Economic Affairs(R.O.C.)  
經濟部能源局屋內線路裝置規則第401條款 原製造廠家認可合格

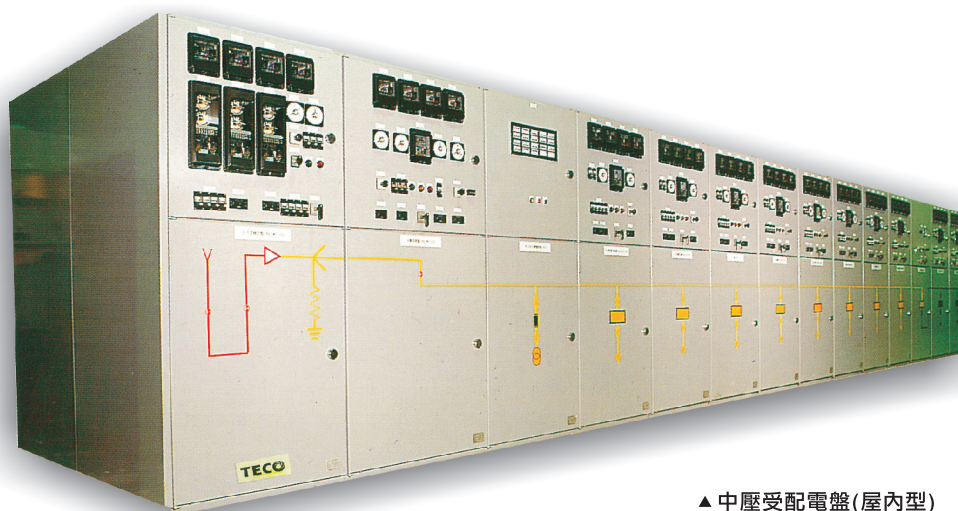


## 中壓配電盤

### 3.6KV-36KV MEDIUM VOLTAGE SWITCHGEAR

在3.3KV~36KV受配電盤與監控盤的領域上，經過多年來持續不斷的經驗累積與研究改善，並藉助新科技、新材料的深入應用，使得東元電機的產品不但具有豐富的機種組合，以滿足不同用戶之需求外，更因擁有高品質與高可靠度，準確的交貨期、完善的服務，是東元電機持續不斷努力之目標。

Through continuous studies and improvement on our design of 3.3KV-36KV Medium Voltage Receiving-Distributing Switchgears and Panel Boards, such that providing optimum safety and wide range of applications in power plant, factories, public establishment, buildings, etc. Our design not only possessing splendid appearance, they are also featuring high quality and excellent reliability. Our policy of punctual delivery and offering best service to our customer, has enable TECO switchgears to be widely welcomed and own a great reputation.



▲ 中壓受配電盤(屋內型)  
MEDIUM VOLTAGE SWITCHGEAR  
(INDOOR TYPE)

TABLE 1. SPECIFICATION

Items	Standard Specification
Standard	CNS-3990; JEM-1425; IEC 62271-200., ANSI-C37
Service Conditions	<ul style="list-style-type: none"> <li>Altitude: MAX. 1000m, High Humidity Atmosphere</li> <li>Ambient Temperature: -5°C~40°C (indoor application)/-20°C~40°C (outdoor application)</li> </ul>



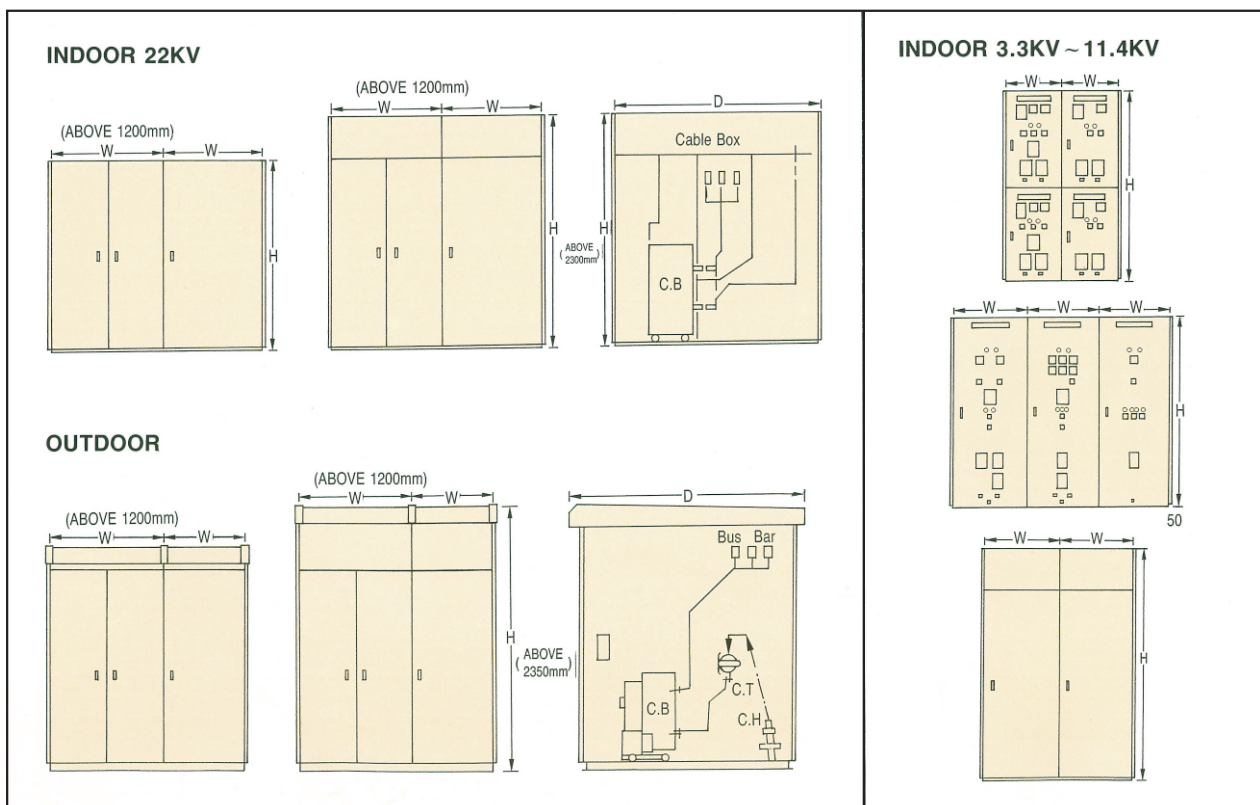
TABLE 2. RATING

Rated Voltage	KV	3.6	7.2	12	24	36
Rated Frequency	Hz	50/60				
Rated Current	A	400~3150	400~3150	600~3150	600~2500	600~2500
Bus Bar Current	A	600,1000,1200,1600,2000,2500				

TABLE 3. DIMENSIONS

Type	Indoor				Outdoor			
Rated Voltage	3.6KV/7.2KV	12KV	24KV	36KV	3.6KV	12KV	24KV	36KV
Width (W) mm	700,800	900,1000	1000,1200	1500	700,800	900,1000	1000,1200	1500
Height (H) mm	2100,2400	2400,2800	2400	2600	2350,2650	2650	2650	2850
Depth (D) mm	1400,1600	1800,2000	2000,2200	2600	1400,1600	1800,2000	2000,2200	2600

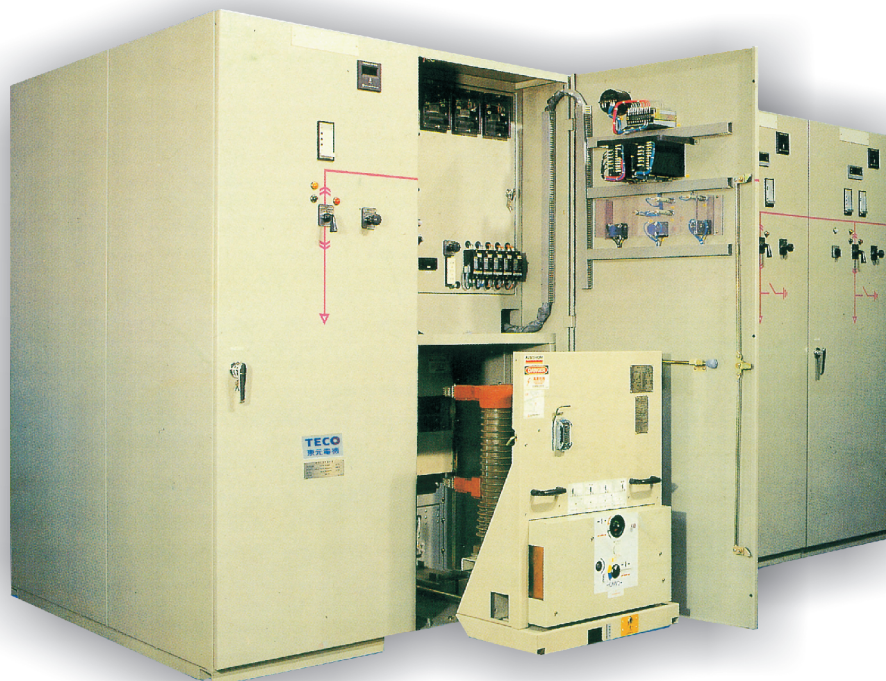
DIMENSIONS DIAGRAM





# 裝甲型開關箱

## METAL-CLAD SWITCHGEAR UP TO 36KV



### FEATURES

The METAL-CLAD SWITCHGEAR with drawable design covers all the functions needed for a distribution system up to 36 kV with the following choices:

- Complete conformity with the national and international standards and recommendations of the IEC, taking account of UTE-BS-VDE-ANSI.
- Modular assembly by virtue of the adoption of industrial sub-assemblies so ensuring the flexibility as well as the quality of the equipments.
- Internal plugging for withdrawable and self-supporting frame for installation and operation under severe conditions.
- High degree of partitioning.
- Use of fire resistant insulation materials and highly reliable mechanical interlocks.

The cubicle complies with the definition of metal clad equipment having four compartments fitted with:

- a withdrawable circuit breaker on a movable portion and shutters.
- busbars with insulation
- connections for MV cables
- Low Voltage equipment

The continuity of the metallic cladding meets the IP 2X protection. For higher levels of protection, please consult us.

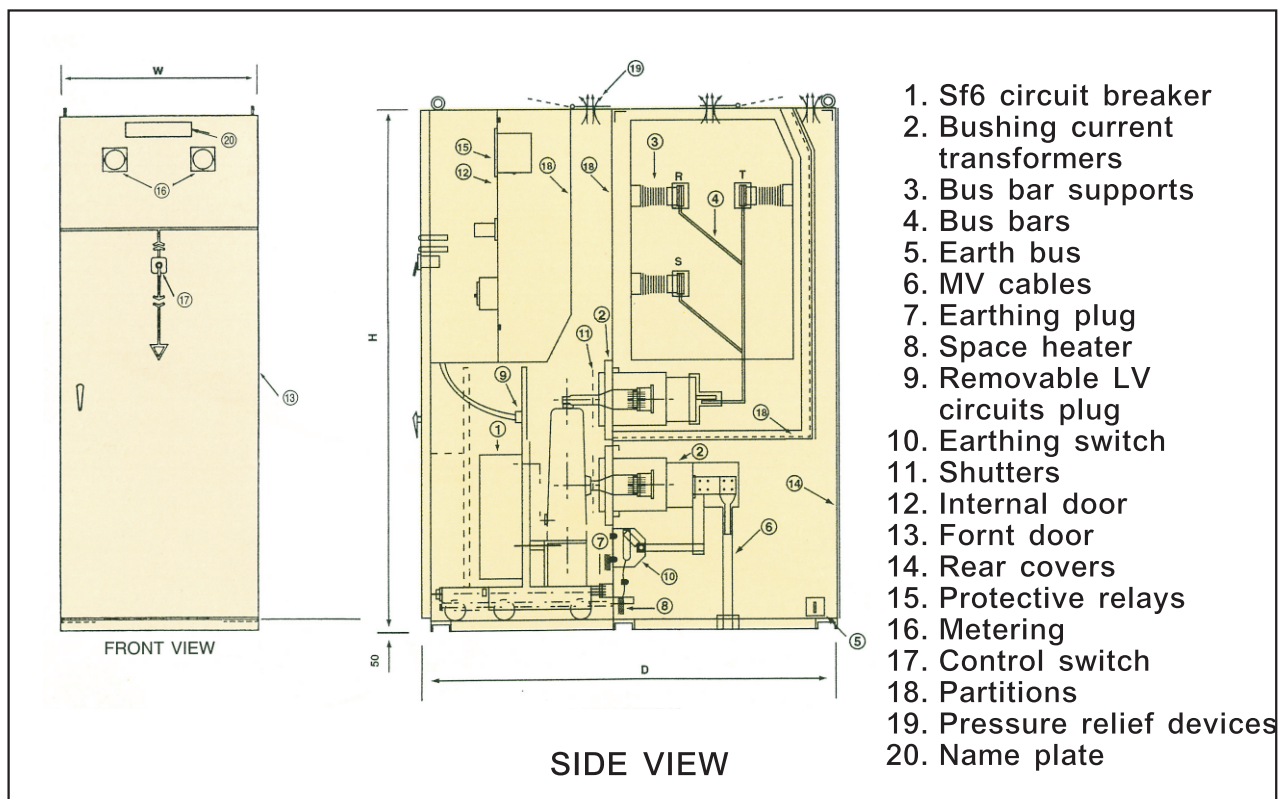
Pressure relief devices are provided for the evacuation of the gases and to limit overpressure in the event of internal ARC fault.



## GENERAL CHARACTERISTICS OF THE CUBICLE

Rated voltage	12 kV	24 kV	36 kV
Rated insulation level • 60 Hz for 1 min • impulse 1.2/50 $\mu$ s	28 kV rms 75 kVp	50 kV rms 125 kVp	70 kV rms 170 kVp
Rated currents for an equipment • Circuit breaker • load breaking switch	630,1250,1600,2000,2500 A 400,630 A		
Permissible shot time current (1s or 3s) • root mean square value • peak value	40 kA rms 100 kAp	40 kA rms 100 kAp	31.5 kA rms 80 kAp
Protection level	IP 3 up to IP 5 on request		
Max.service ambient temperature	40°C		
Height(mm)	2000	2400	2500
Width(mm)	800	900	1500
Depth(mm)	1600	1850	2500

## CONSTRUCTION DIAGRAM



# 12/24KV中置式裝甲型開關箱

12/24KV Metal-Clad Switchgear SVIE Series



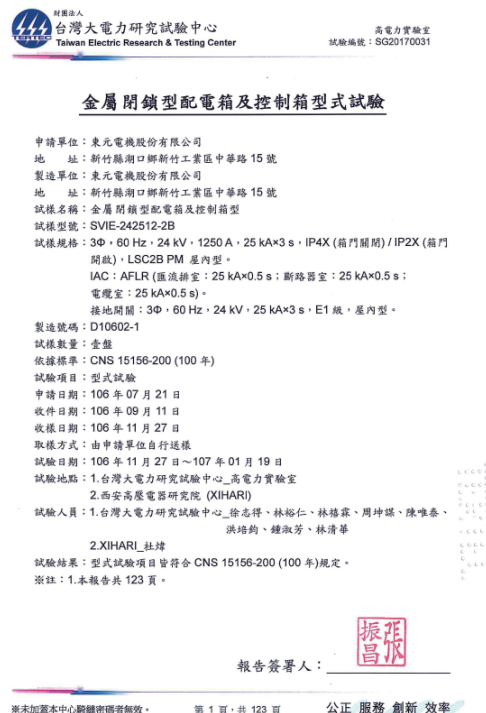


# 12/24KV中置式裝甲型開關箱 12/24kV Metal-Clad Switchgear

Won the KEMA and Taiwan Electric Research & Testing Center type testing certification



KEMA certificate



Taiwan Electric Research & Testing Center certificate

## SVIE TYPE

- Conforms to the newest quality standards of the CNS 15156-200 and IEC 62271-200.
- Design that can withstand internal arc to ensure operator safety.
- The enclosure utilizes galvanized steel sheet for superior rust prevention performance.
- Standardized design, assembly, and testing to ensure quality stability.
- Complete mechanical interlock design that prevents wrong operation by operators and improves operator protection and safety.
- Four independent compartments to ensure that operators will not accidentally come in contact with other electrified segregated compartments during operations.
- Each of the high voltage compartments have their own independent pressure relief device that can independently release pressure when internal arc occurs.



Busbar compartments



Circuit breaker compartments



Circuit breaker compartment metal shutter



Cable compartments

# 12/24KV中置式裝甲型開關箱

## 12/24kV Metal-Clad Switchgear

### Technology data

Item		Unit	SVIE-122512-2B	SVIE-242512-2B
Standards			CNS 15156-200 / IEC 62271-200	
Rated voltage		kV	12	24
Rated normal current		A	630、1250、2500	630、1250
Rated frequency		Hz	50 / 60	
Rated power frequency withstand voltage		kV	28	50
Rated lightning impulse withstand voltage		kV	75	125
Auxiliary circuit power frequency withstand voltage		V	2000	
Rated short-time withstand current	Main circuit	kA	25	
	Earthing circuit	kA	25	
	Earthing switch	kA	25	
Rated peak withstand current	Main circuit	kA	65	
	Earthing circuit	kA	65	
	Earthing switch	kA	65	
Rated duration of short circuit	Main circuit	s	3	
	Earthing circuit	s	3	
	Earthing switch	s	3	
Internal arc			25kA x 0.5s / Option 1s	
Accessibility type			AFLR	
Loss of service continuity category			LSC2B	
Partition class			PM	
Degree of protection	The door close		IP4x	
	The door open		IP2x	
Classification of electrical endurance for earthing switch			E1 / Option E2	
Earthing switch mechanical endurance			1000 / Option 2000 1001(Number of operation cycles)	

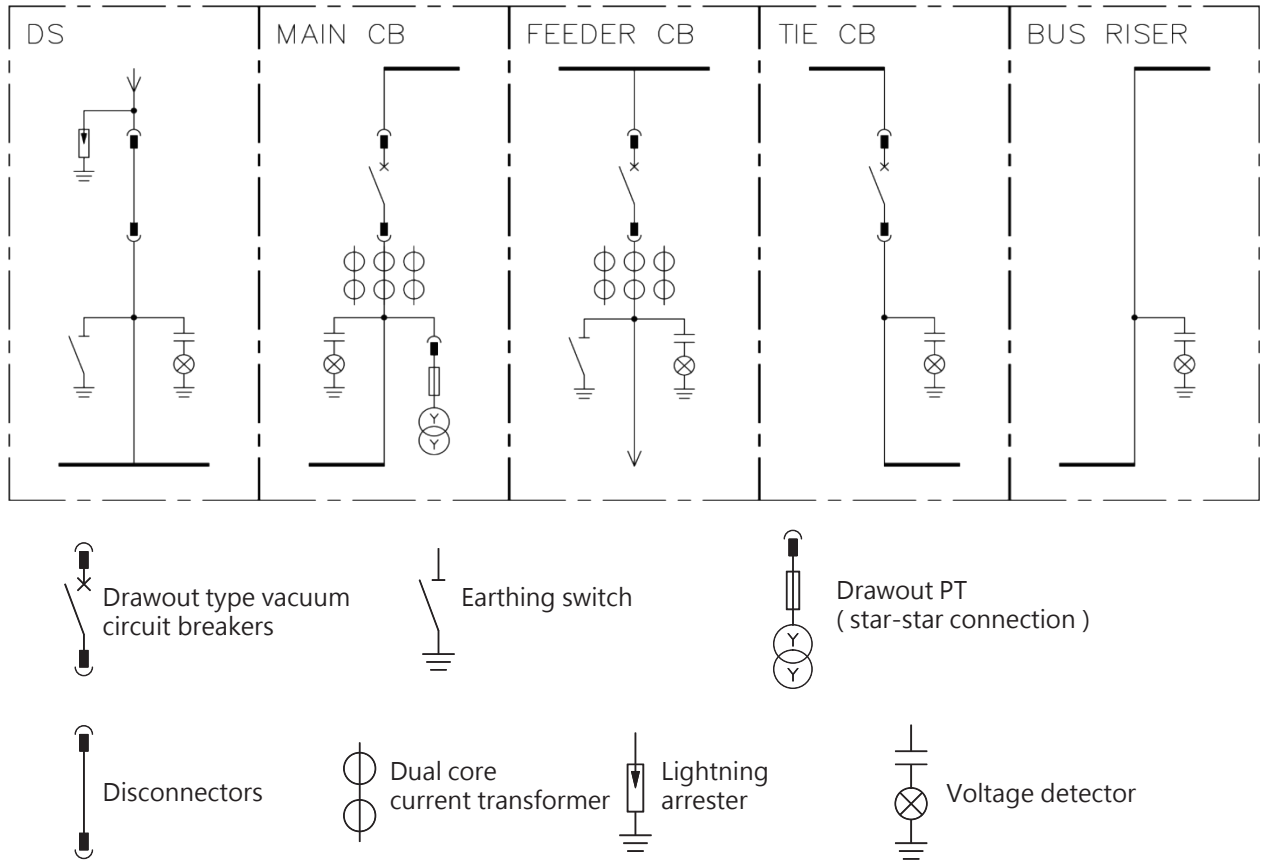
Five preventive mechanical interlocks. The highest safety standard.

1. Prevent personnel from entering electrified compartments.
2. Prevent operation errors of circuit breakers.
3. Prevent earthing switch be closed while electrified.
4. Prevent circuit breakers be closed while earthing switch is closed.
5. Prevent racking trolley be racked in or out while the circuit breaker is closed.

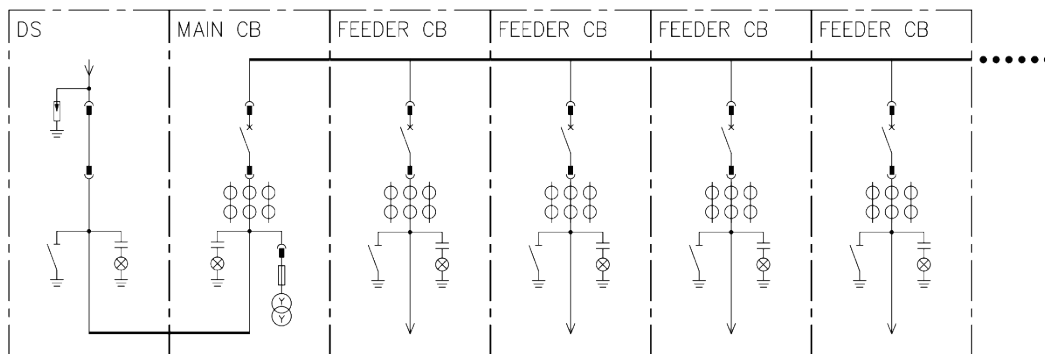


# 12/24KV中置式裝甲型開關箱 12/24kV Metal-Clad Switchgear

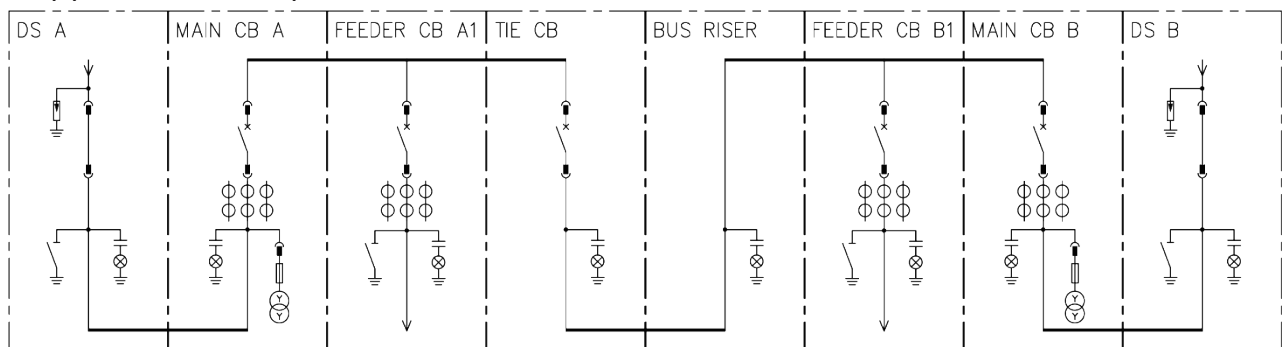
## Design solution



## Application example 1

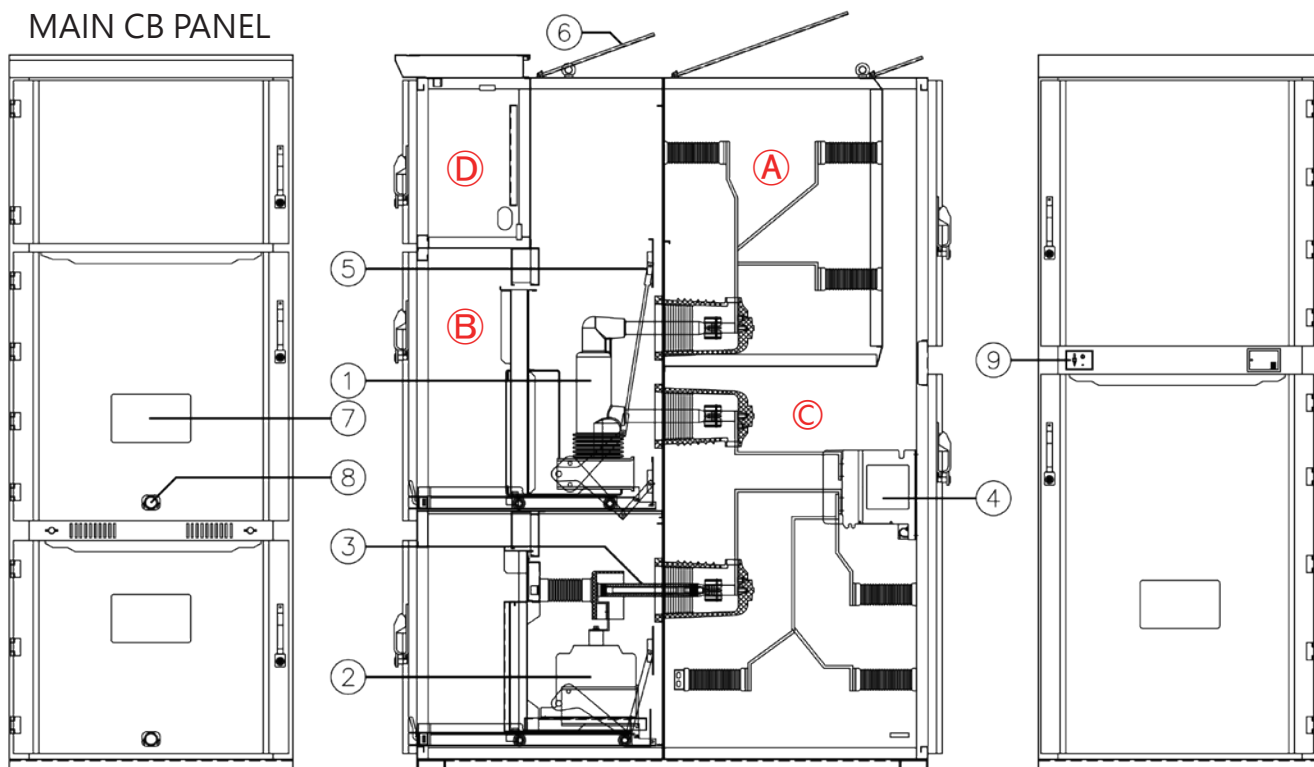


## Application example 2

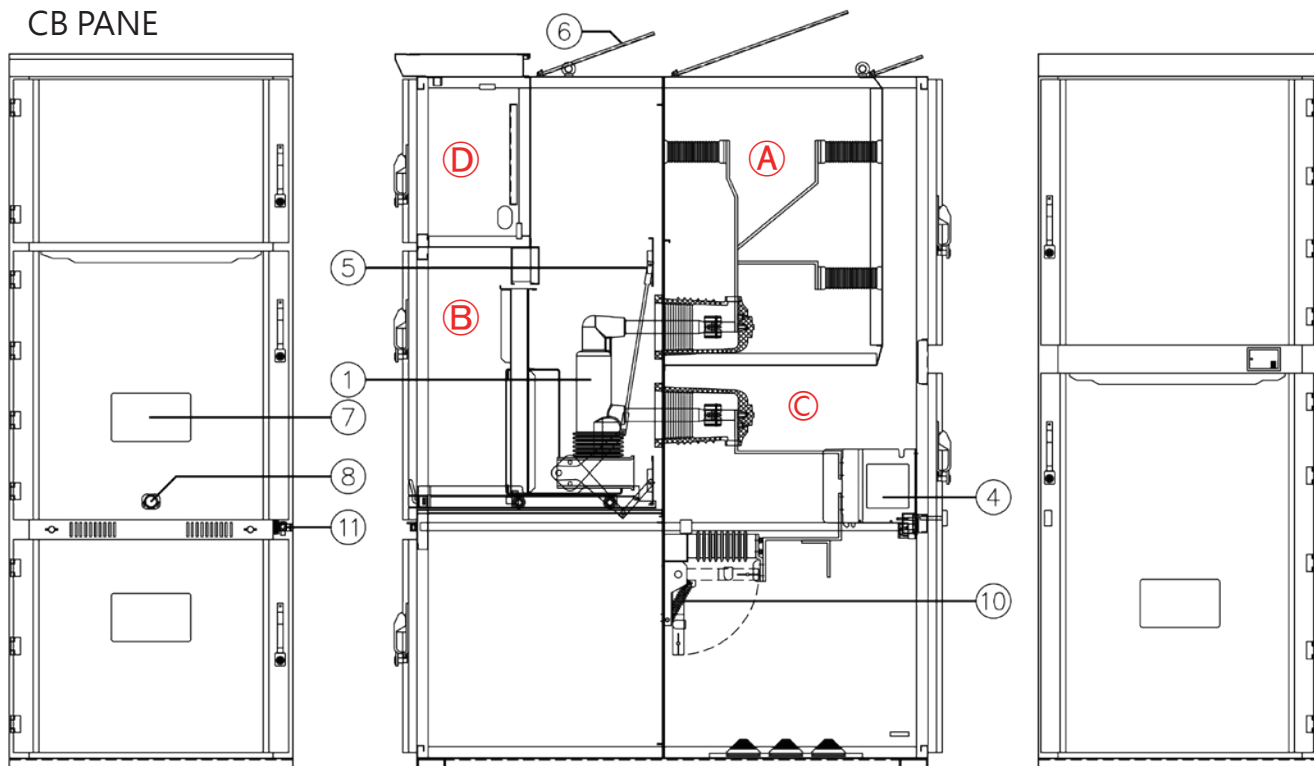


# 12/24KV中置式裝甲型開關箱 12/24kV Metal-Clad Switchgear

## Construction MAIN CB PANEL



## CB PANE



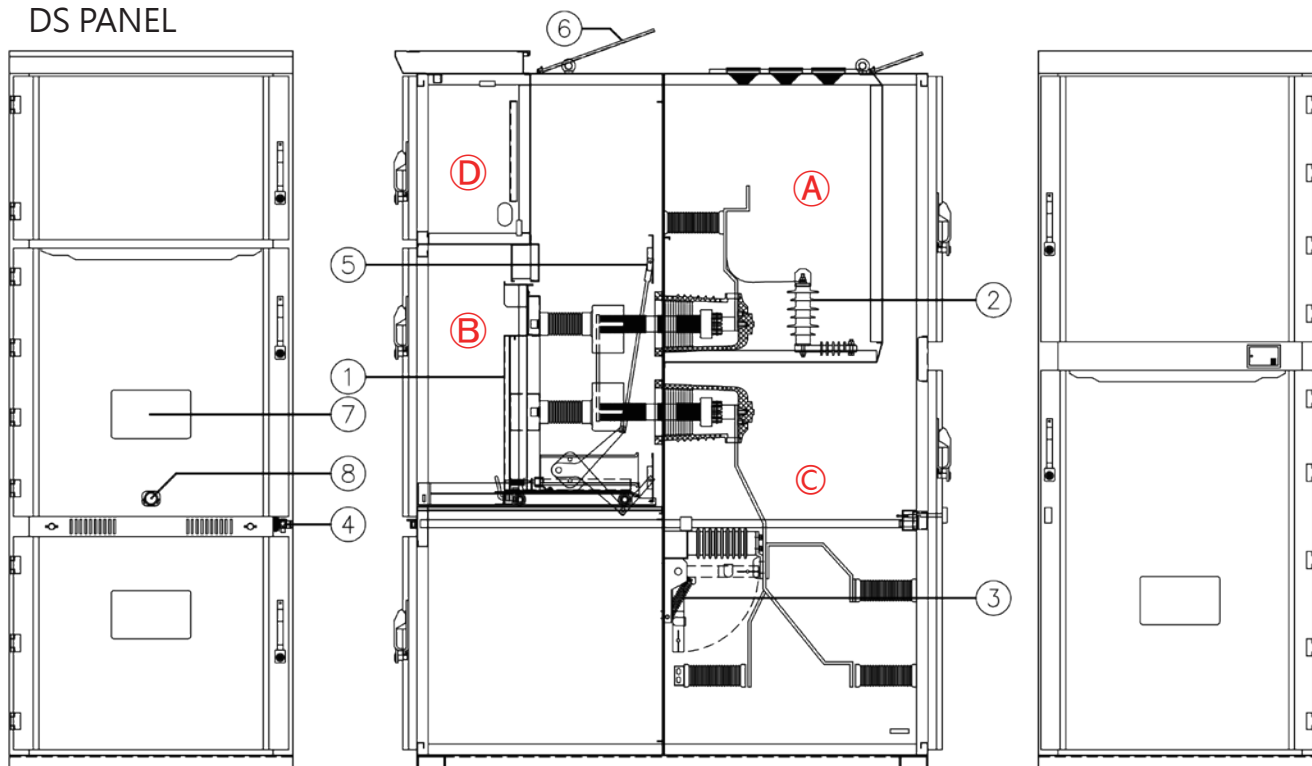
- |                                |                           |  |   |
|--------------------------------|---------------------------|--|---|
| ① Busbar compartments          | ② Vacuum circuit breakers | ⑤ Metal shutter  | ⑨ Magnetic lock                                   |
| ③ Circuit breaker compartments | ④ Drawout type PT         | ⑥ Pressure relief device   | ⑩ Earthing switch                                 |
| ④ Cable compartments           | ③ Power fuse              | ⑦ Explosion proof window   | ⑪ External operating hole for the earthing switch |
| ⑤ Low voltage compartments     | ④ Current transformer     | ⑧ External operating hole for racking in/out the circuit breaker |   |



# 12/24KV中置式裝甲型開關箱 12/24kV Metal-Clad Switchgear

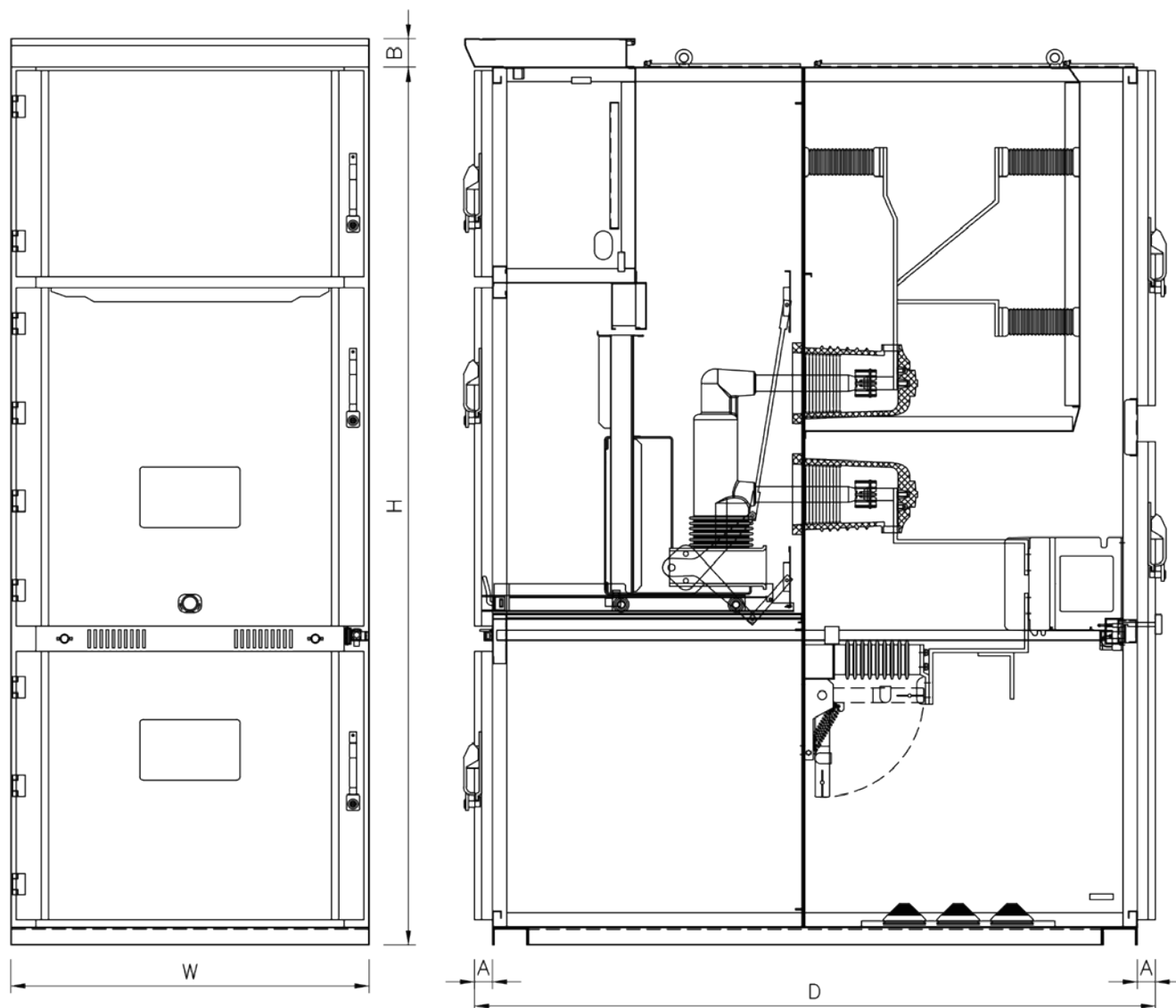
Construction

DS PANEL



- |                                |   |   |
|--------------------------------|---|---|
| ① Busbar compartments          | ① Disconnectors                                   | ⑤ Metal shutter                                   |
| ② Circuit breaker compartments | ② Lightning arrester                              | ⑥ Pressure relief device                          |
| ③ Cable compartments           | ③ Earthing switch                                 | ⑦ Explosion proof window                          |
| ④ Low voltage compartments     | ④ External operating hole for the earthing switch | ⑧ External operating hole for the earthing switch |

# 12/24KV中置式裝甲型開關箱 12/24kV Metal-Clad Switchgear



Dimensions

Unit : mm

Rated voltage	Width ( W )	Hight ( H )	Depth ( D )	Door ( A )	Label ( B )
24kV	800 1000	2450	1900 2000 2100	50	80
12kV	800	2450	1600 1700 1800	50	80

For other dimension and specifications that are not with the above, please contact us.



## 3.6KV/7.2KV中壓綜合型啟動開關

### MEDIUM VOLTAGE COMBINATION SWITCH

東元 中壓綜合型啟動開關，係採用小型輕量，具有優越切段能力之全樹脂膜型SF6旋轉消弧形式(HGR形)高壓電磁接觸器，並配合限流形電力熔線組，操作變壓器，計器變流器，起動電抗器，自藕變壓器，保護電驛及儀表等器材組合而成。適用於特殊環境，起動頻繁的各類型馬達的起動及變壓器，電容器之一次開關，標準化，組合多層式箱體結構之設計，具有擴充容易，經濟、簡便、耐用，短交期的特色。

TECO's medium-voltage combination switches have been developed with special emphasis on compactness, light weight, easy maintenance, reliability, efficiency, economy, and reduced product time. They can be stacked up to three-high in the vertical sections. These high-voltage switches incorporate a new total mold Sf6 rotary-arc(HGR) high voltage magnetic contactor that is featuring extra compactness and high operation reliability.

#### STANDARD

#### 中壓綜合啟動開關

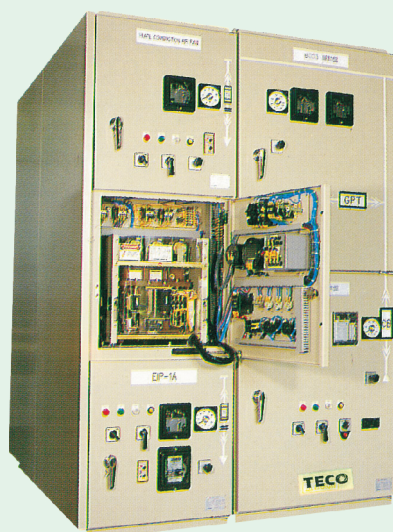
#### M.V. COMBINATION SWITCH

• CNS 3994 • JEM 1225 • IEC 62271-200

▼ HH系列 開關箱 二層式(固定型)  
(HH FIXED TYPE)



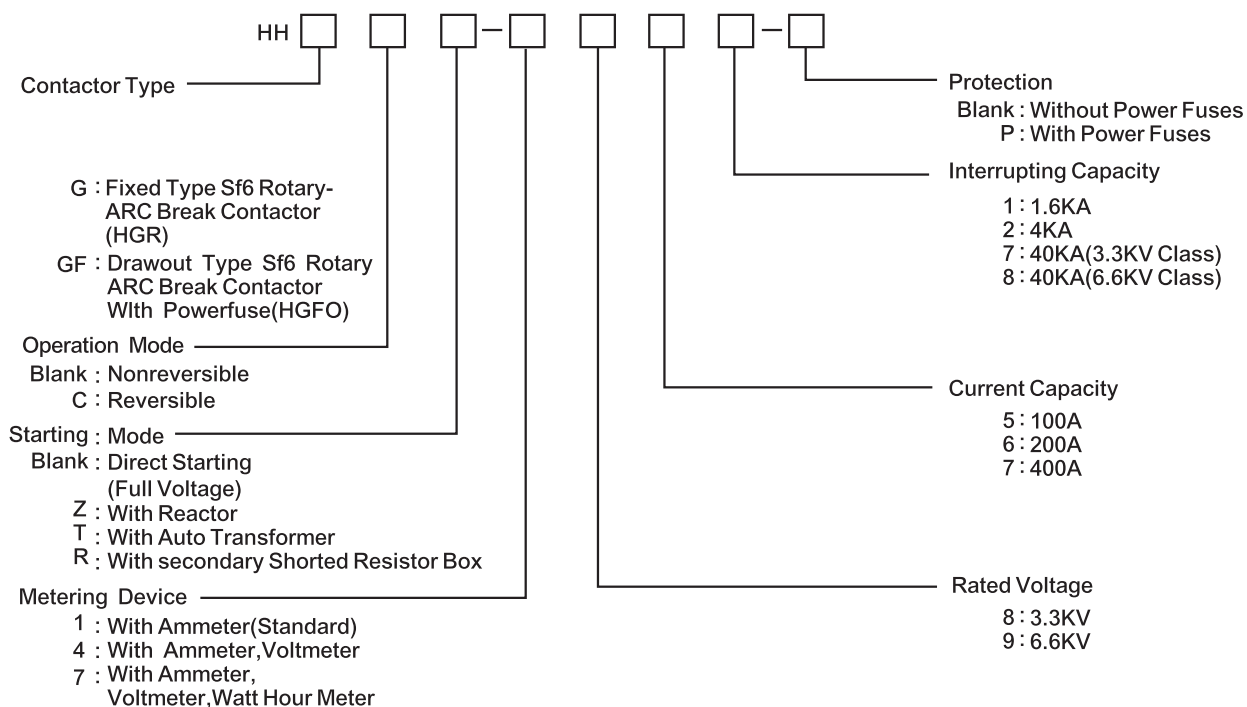
▼ HH系列 開關箱 三層式(抽出型)  
(HH DRAW-OUT TYPE)



## RATINGS AND SPECIFICATION

Type of Switches		Fixed Type Rotary-ARC Combination Switch			Draw-Out Type Rotary -ARC Combination Switch			
Type of Contactor		Magnetic Rotary-ARC Break Contactor(HGR)			Magnetic Rotary-ARC Break Contactor(HGR) with Power Fuses			
		HGR-851C	HGR-862C HGR-963C	HGR-873C HGR-974C	HGFO-857C	HGFO-867C HGFO-967C	HGFO-877C HGFO-977C	
Rated Insulation voltage	KV	3.6	3.6/7.2		3.6	3.6/7.2		
Rated Current	A	100	200	400	100	200	400	
Rated Frequency	Hz	50/60			50/60			
Rated Interrupting Current	KA	40			40			
Applicable Power Fuse	A	50,100,160,200,300,400			50,100,160,200,160X2,200X2			
Applicable Capacity (MAX)	Motor	KW	375	750/1500	1500/2000	375	750/1500	1500/2000
	Transformer	KVA	500	1000/1500	2000/3000	500	1000/1500	2000/3000
	Capacitor	KVAR	500	700/1000	1400/2000	500	700/1000	1400/2000
Starting Reactors		LZ-8□□□□,60,120,180,Sec Ratings(Optional) (50%)-65%-80%-100% Taps,50% Tap is Option						
Starting Auto-Transformer		LX-8□□□□,60,120,180,Sec Ratings(Optional) (50%)-65%-80%-100% Taps,50% Tap is Option						
Dimensions (mm)		700WX2250HX1100D Two-Layers			700WX2250HX1600D Three-Layers			
Painting		Munsell Notation 5Y 7/1						
Rated Busbar Current(A) For Horizontal		600.1000.1200.1600.2000						

## TYPE DESIGNATION OF COMBINATION SWITCHES







## Reference Standards

● CNS3989 ● JEM 1195 ● NEMA ICS 2-322 ● IEC 60439

### ■ Specifications

Items		Specification	H1 Type				H2 Type																												
Construction	Protection		●	Enclosed type, or Dust-proof type				Enclosed type, or Dust-proof type																											
	Access front		●	Single front				Back to back																											
	Horizontal busbar			On the top																															
	Vertical busbar			On rear side of cabinet				On medium																											
	Unit number			Max 6x300mm				Max 12x300mm																											
Rating	Main insulation voltage			AC 600V																															
	Main rated voltage		●	Under AC 600V																															
	Control rated voltage		●	AC 110V, 220V ( ● AC 100V, 200V, 380V )																															
	Frequency		●	50 or 60 HZ																															
	Busbar current	Horizontal		600A, 800A, 1000A, 1200A, 1600A, 2000A, 2500A, 3200A,				600A, 800A, 1000A, 1200A, 1600A, 2000A, 2500A, 3200A,																											
		Vertical		350A, 400A, 600A				350A,400A,600A																											
	Short time current (0.5 sec)		●	30,42 , 50KA ( ● 100KA )				30, 42,50KA ( ● 100KA )																											
	Interrupting capacity		●	10-50KA ( ● 100KA )																															
Switching capacity of contactors			CNS C4084, JEM 1038,IEC60947-4-1																																
Door	Front door			Independent of each unit																															
	Rear door			2 Sheets				Independent of each unit																											
	Opening direction			Vertical wiring room; Right, Others : Left																															
Source	Main source		●	3φ 3W, 3φ 4w																															
	Connection for external wiring		●	<table><tr><td rowspan="5">CONN-SECTION \ Type</td><td>STANDARD</td><td colspan="3">OPTION</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>Source incoming</td><td>BT</td><td>TD</td><td>TD</td><td>BT</td></tr><tr><td>Load outgoing</td><td>BT</td><td>BT</td><td>TD</td><td>TD</td></tr><tr><td>Control Wiring</td><td>BT</td><td>BT</td><td>TD</td><td>TD</td></tr></table>				CONN-SECTION \ Type	STANDARD	OPTION			1	2	3	4	Source incoming	BT	TD	TD	BT	Load outgoing	BT	BT	TD	TD	Control Wiring	BT	BT	TD	TD	Note : BT : Bottom to top TD : Top to down			
			CONN-SECTION \ Type	STANDARD	OPTION																														
				1	2	3	4																												
				Source incoming	BT	TD	TD		BT																										
Load outgoing	BT	BT		TD	TD																														
Control Wiring	BT	BT		TD	TD																														
Unit	Unit construction		●	● Fixed type ● Draw-out type ( Max 600mm )																															
	Wiring connection type		●	<table><tr><td></td><td>Draw out</td><td colspan="3">Fixed</td></tr><tr><td>Source side</td><td>plug</td><td colspan="3" rowspan="3">Terminal Board</td></tr><tr><td>Load side</td><td>● Terminal board ● Plug</td></tr><tr><td>Control</td><td>● Terminal board ● Manual Plug</td></tr></table>					Draw out	Fixed			Source side	plug	Terminal Board			Load side	● Terminal board ● Plug	Control	● Terminal board ● Manual Plug														
				Draw out	Fixed																														
			Source side	plug	Terminal Board																														
			Load side	● Terminal board ● Plug																															
Control	● Terminal board ● Manual Plug																																		

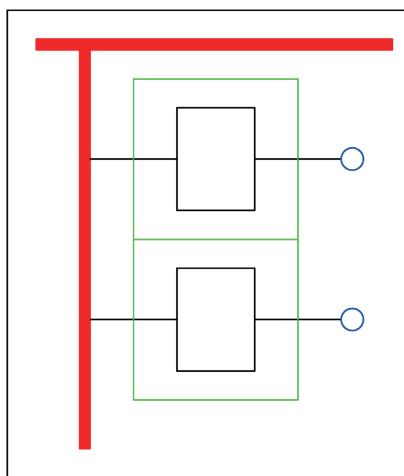
( ● While placing your orders, please confirm the points marked above )

## IEC 61439-2低壓配電盤

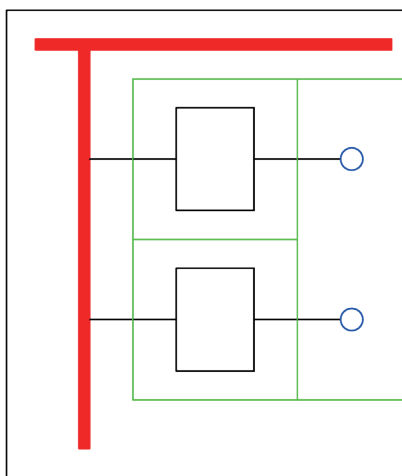
### IEC 61439-2 LOW VOLTAGE SWITCHGEAR

符合IEC 61439-2、Form 3a 和 Form 3b，可選配至Form 4b，完善的標準化設計，防止人員在操作時不會誤觸帶電部，確保操作人員安全無虞。

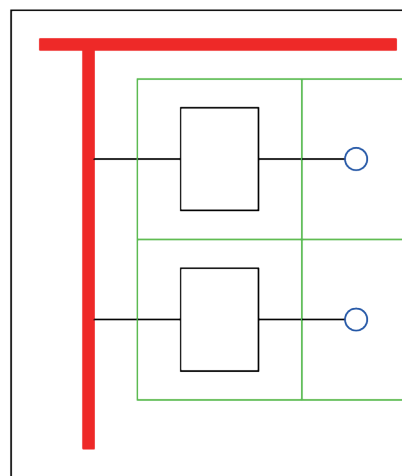
- a) 母線與功能單元隔離
- b) 所有功能單元單獨隔離
- c) 終端接線端子與功能單元組隔離
- d) 所有終端接線端子單獨隔離（選配）



Form 3a



Form 3b

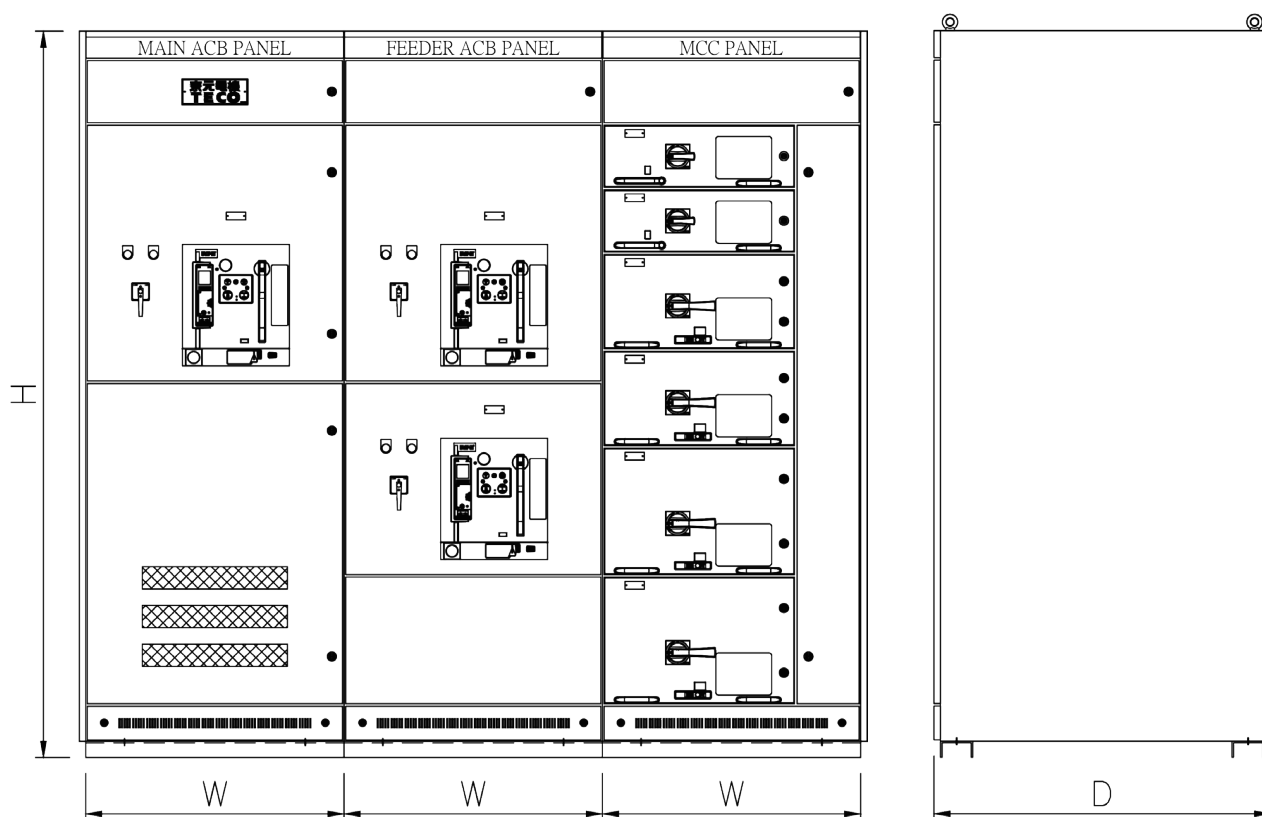


Form 4b



# 技術規格

依據標準	IEC 61439-2、CNS 61439-2
型式	屋內垂直自立型
額定絕緣電壓	AC690V / AC1000V
額定商頻耐受電壓	AC2200V 1min
額定衝擊耐受電壓	8kV / 12kV (1.2×50μ s)
額定電壓	AC480V
額定頻率	50Hz / 60Hz
水平母線額定電流	630A ~ 6300A
垂直母線額定電流	370A ~ 1200A
額定短時間耐電流	65kA 1sec
保護等級	IP40
機械衝擊防護等級	IK10



Dimension Unit : mm

W	800、1000、1200
H	2250
D	1040、1240



## 低壓動力中心

### LOW VOLTAGE POWER CENTER

東元低壓電力控制中心係針對國內各產業界在追求高品質，及高安全性之前提研發成功之產品，其中已經台電評審合格，並推廣至各電廠使用中。

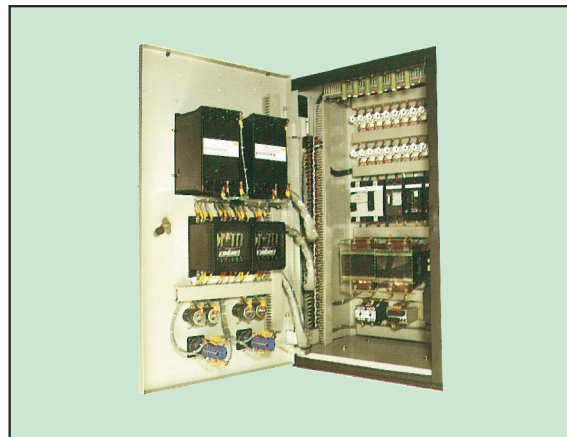
TECO Low Voltage Power Center is successfully developed under the prerequisite to provide co-traders of all sectors in pursuit of high quality and safety. Such a low tension power control center has satisfactorily passed the Type test of Taiwan power Company and is being introduced to power plants for use.

#### FEATURES

- Power center consists of several sets of air circuit breaker vertical panels and each set of vertical panel is separated with metal partition into three(3) independent rooms. Facing the front of switch gear in the order from front to rear, these independent rooms are divided into three zones, namely, "Air Circuit Breaker Zone", "Bus Bar Zone" and "Cable Zone". "Air Circuit Breaker Zone" is subdivided into four(4) chambers and the highest chamber is "Low Voltage Compartment Chamber" while the other three(3) chambers are all "Air Circuit Breaker Chamber".
- Every air circuit breaker chamber shall be provided with a handle for open and close of the cubicle door. When the cubicle door is opened, circuit breaker is operated from the front. Also, Operation panel of the circuit breaker is provided with safety shielding thus preventing direct touch of any live part.
- Bus Bar Zone is used for connection of the bus bar of the main circuit with that of the Branch circuit. All the power side and load side terminals are fixed in the bus bar zone and all the fixing and continuity of the bus bar are completed in this bus bar zone.
- Bus bar zone, air circuit breaker zone and the cable zone are all separated with metal plates. When bus bar and its components parts are inspected or maintenance, access shall be made from the cable zone in the rear with all the metal partition plates removed.
- Junction bus bar which passes through the bus bar zone from the load side of circuit breaker are provided in the cable zone for connection of the cables between circuit breaker and the load. The terminal board for remote control circuits is provided in the same zone.
- A door with handle shall be provided in the cable zone. A movable shielding plate with proper size transparent, and excellent insulation material shall be provided in the cable zone to prevent touching of the live parts.
- In the power center, all control circuits required for the outside circuits shall be provided with raceways for connecting with the terminal board in cable zone.
- Ventilation shall be provided on the top and bottom of the cubicle rear door for heat dissipation and de-humidity. Also, sufficient ventilation ports shall be provided in the circuit breaker zone, bus bar zone and cable zone for convection and heat dissipation. Cap type ventilation ports with insect proof net shall also be provided at the top of bus bar zone.

#### RATING:

Standard:	ANSI C3720, JEM1265, IEC 60439, CNS 13542
Rated Insulation Voltage:	AC 600V
Rated Frequency:	50/60HZ
Rated Current:	630~6300A
Rated Short Time With Stand Current:	25KA, 42KA, 50KA, 65KA, 1sec



# 環路開關與架空開關

## Ring Main unit And Pole Switch

### Power Distribution Devices of High Reliability & Free Maintenance

The three phase three wire load break switches manufactured by TECO have two models as installation: Overhead(Pole-Mounted)model and Padmounted model. The product which is developed in SF6 gas for insulation and arc interruption can achieve optimum performance of reliability, long life time and free-maintenance. The operating mechanisms of the products comprise two kinds of manual-operating type and latch type.(The products can also be installed step-by-step from manual to latch and from FTU system to DAS system as customer demands , in order to reduce the initial invest cost and increase the invest profit.)Besides the above advantages, the switch can also provide safety, reliability and energy-saving characteristics and is helpful for the reliability of power distribution system.

### Application

- For distribution network
- For opening/closing of sections of loop system
- As sectionalisers

### Structures

- Weather-proof and anti-corrosion cubicle
- High insulation characteristics
- Excellent arc resistant of multi contacts
- Rotating arc quenching mechanism
- Fast closing and tripping mechanism
- Pressure-release Safety device

### Characteristics:

- Small dimensions, light weight Using SF6 gas as the insulating and arc quenching media, the product has the advantages of the small dimensions, low weight and easy installation.
- Excellent arc interruption, long electrical life
- The contacts are developed with multiple touching points and ROTARY-ARC quenching so that the switches have the stability characteristics of closing and interrupting. The arc quenching won't hurt its inner insulation which affects its insulating effects. Especially, the inner has the dryer, which can absorb the bad gas that is decomposed from SF6 at high temperature, it can avoid the insulation being degraded which affects the normal on/off function so this product can achieve high reliability and long electrical life.

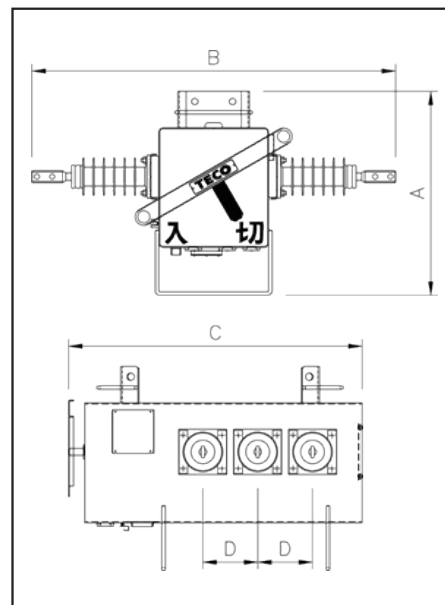




## Overhead Line Load Break Switch (Manual Type)



Dimensions



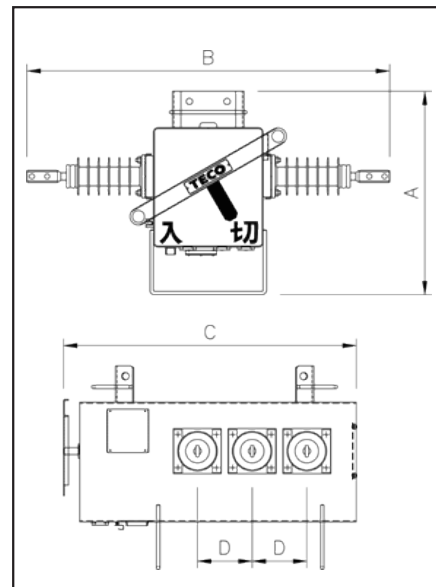
## ★ Specifications

Type	LFG—□□	15EH	25EH
Rated Max. Voltage	kV	15	25.8
Rated Continuous Current	A	600	
Rated Short-time Withstand Current (rms)	kA , 1sec	12.5	
Rated Peak Withstand Current	kA	31.5	
Impulse Withstand Voltage(1.2×50μs)	kV	110	150
Power-Frequency Withstand Voltage	kV , 1min	50	70
Electrical endurance	times	1,000	
Mechanical endurance	times	5,000	
Operation Strength	kgf	20~25	
Inter Pressure (at 20℃)	kg/cm2G	0.7	
Weights	kg	85	110
Dimensions (mm)	A	596.5	606.5
	B	1060	1292
	C	869	1030
	D	160	270

※1.For other specification,please contact us.

## Overhead Line Load Break Switch (Mechanism Latch Type)

Dimensions



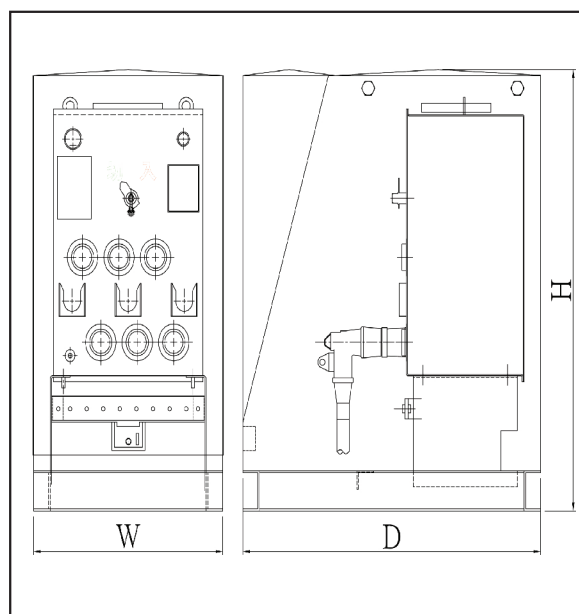
### ★ Specifications

Type	LFG—□□	15ER	25ER
Rated Max. Voltage	kV	15	25.8
Rated Continuous Current	A	600	
Rated Short-time Withstand Current (rms)	kA , 1sec	12.5	
Rated Peak Withstand Current	kA	31.5	
Impulse Withstand Voltage (1.2×50μs)	kV	110	150
Power-Frequency Withstand Voltage	kV , 1min	50	70
Electrical endurance	times	1,000	
Mechanical endurance	times	5,000	
Control Voltage		DC 24V	
Operation Strength	kgf	20~25	
Inter Pressure (at 20℃)	kg/cm <sup>2</sup> G	0.7	
Weights	kg	115	145
Dimensions (mm)	A	596.5	606.5
	B	1060	1292
	C	969	1130
	D	160	270

※1. For other specification, please contact us.

## Padmounted Load Break Switch (Motor Spring-Energy Charged, Mechanism Latch Type/Manual Type)

Dimensions



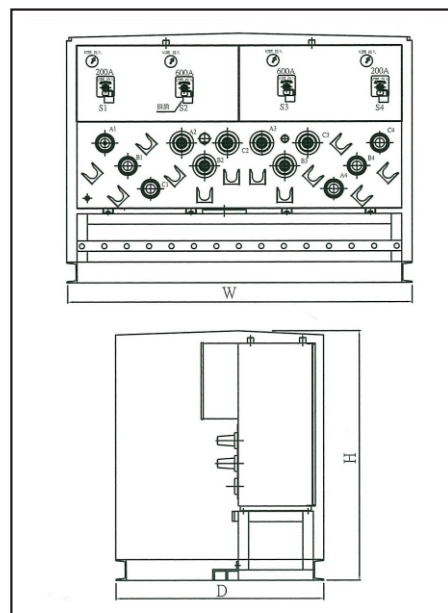
### ★ Specifications

2WAY Padmounted Line Load Break Switch			
Type	LSG-□□	22BHGN	22ERGC
Circuit		Main×1	Main×1
Rated Max. Voltage	KV	27	27
Rated Continuous Current	A	200	600
Rated Short-time Current (1sec)	KA rms	12.5	12.5
Rated Making Current	KA peak	31.5	31.5
Low Frequency Withstand Voltage	KV	60	60
Rated DC Withstand Voltage	KV	78	78
Partial Discharge Voltage	KV	19	19
Impulse Withstand Voltage	KV	125	125
Current Transformer		-----	600/1A
Operation Method		Manual	Manual / Electrical
Inner Pressure kg/cm <sup>2</sup> G at 20°C		0.6	0.6
Weights	Kg	130	150
Cubic Dimensions (W×H×D) mm		570×1100×900	1000×1200×950

※1. For other specifications, please contact us.

## Padmounted Load Break Switch (Motor Spring-Energy Charged, Mechanism Latch Type/Manual Type)

Dimensions



### ★ Specifications

4WAY Padmounted Line Load Break Switch					
Type	LSG-□	22ERJC		22EHJN	
Circuit		Main×2	Branch×2	Main×2	Branch×2
Rated Max. Voltage	KV	15/27			
Rated Continuous Current	A	600	200	600	200
Rated Short-timeCurrent (1sec)	KA rms	12.5			
Rated Making Current	KA peak	31.5			
Low Frequency Withstand Voltage	KV	60			
Rated DC Withstand Voltage	KV	78			
Partial Discharge Voltage	KV	19			
Impulse Withstand Voltage	KV	125			
Current Transformer		600/1A	200/1A	-----	
Operation Method		Manual/Electrical		Manual	
Inner Pressure kg/cm <sup>2</sup>	G at 20℃	0.5			
Weights	Kg	520		490	
Cubic Dimensions (W×H×D)	mm	1660×1200×1000		1660×1200×1000	

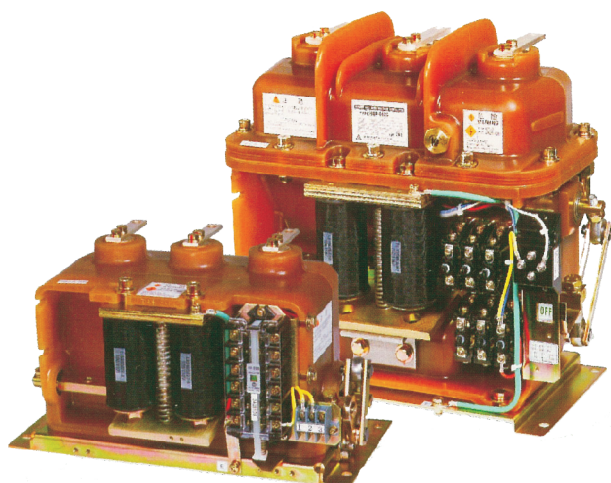
※1. For other specifications, please contact us.



# 中壓電磁接觸器

## MEDZUM-Voltage Magnetic Contactors

### A Wide Choice of Models to Meet Every Requirement

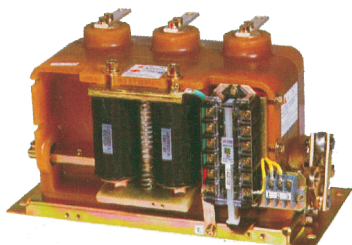


Highly evaluated molded type high-voltage electromagnetic contactors have been used in many fields of industry as switches for motors, transformers and capacitors. These contactors have enjoyed an enviable reputation attested by a great number of users for their outstanding characteristics such as stable switching performance, high dielectric strength, high reliability and properties even under the most extreme temperature and environmental conditions.

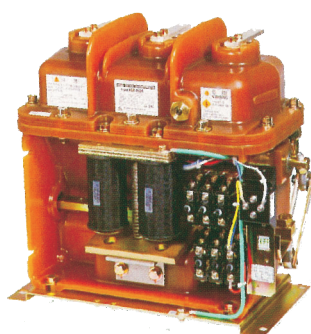
The most suitable selection for a variety of applications has become possible as a result of commercialization for a special model for 3.3 kV, 100A.

This new model will meet your requirements for reducing space and cost as well as increasing reliability.

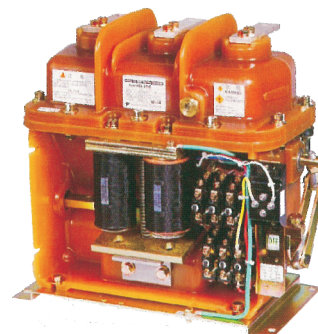
### Rotary-Arc-High-Voltage Magnetic Contactor (Stationary Type)



▲ Type HGR-851C,  
3.6kV, 100A

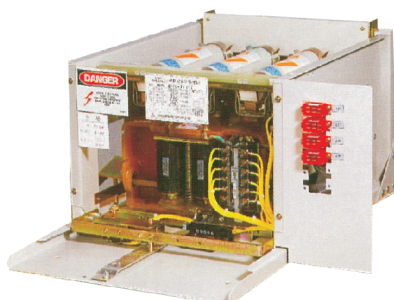


▲ Type HGR-862C(863C)  
3.6/7.2kV, 200A

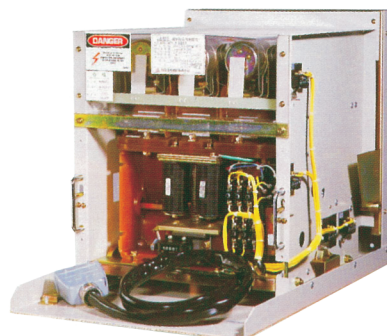


▲ Type HGR-873C(974C)  
3.6/7.2kV, 400A

### Rotary-Arc-High-Voltage Magnetic Contactor with Power Fuses (Drawout Type)



▲ Type HGFO-857C-F  
3.6kV, 100A, 40kA



▲ Type HGFO-867C-F  
3.6kV, 200A, 40kA

## RATINGS AND SPECIFICATIONS Standard

### ● Magnet Holding

Mounting Type		Stationary Type					Drawout Type									
Item																
Power Fuse		Unfused					Unfused					Fused				
Rated Insulation Voltage	KV	3.6	3.6	7.2	3.6	7.2	3.6	3.6	7.2	3.6	7.2	3.6	3.6	7.2	3.6	7.2
Rated Thermal Current	A	100	200		400		100	200		400		100	200		400	
Contactor Type		HGR-□					HGR(O)- □					HGR(O)- □				
		851C	862C	963C	873C	974C	851C	862C	963C	873C	974C	857C	867C	968C	877C	978C
Rated Operational Voltage	kV	3.6	3.6	7.2	3.6	7.2	3.6	3.6	7.2	3.6	7.2	3.6	3.6	7.2	3.6	7.2
Rated Frequency	Hz	50 / 60					50 / 60									
Rated Interrupting Current	kA	2.5	4	6.3			2.5	4	6.3			40				
Rated Short-Time Current (2 s e c)	kA	2.5	4	6.3			2.5	4	6.3			2.5	4	6.3		
Insulation Class	*4	3A	3A/6A				3B	3B/6B				3B	3B/6B			
Making Current Capacity		Class AC4 : 10 times rated current,														
Breaking Current Capacity		Class Ac4 : 8 times rated current														
Switching Frequency		1200 operations per hour														
Mechanical Endurance ( Number of times )		2,500,000			1,000,000		2,500,000			1,000,000		2,500,000			1,000,000	
Electrical Endurance *1 ( Number of times )		250,000			100,000		250,000			100,000		250,000			100,000	
Overcurrent Class		—					—					C				
Control Circuit	Rated Insulation Voltage ( V )	250					250									
	Rated Operational Voltage ( V )	100 / 110 VAC, 200 / 220 VAC ; 100 / 110 VDC, 200 / 220 VDC														
Auxiliary Contact Arrangement *2		3NO, 2NC					3NO, 2NC									
Maximum Load Capacity	Motor KW	375	750	1500	1500	3000	375	750	1500	1500	3000	375	750	1000	1500	2000
	Transformer kVA	500	1000	2000	2000	4000	500	1000	2000	2000	4000	500	1000	1500	2000	3000
	Capacitor*3 kVA	500	1000	2000	2000	4000	500	1000	2000	2000	4000	300	700	1000	1400	2000
Approx. Mass (kg)		11	23		26		52	100		110		56	110		120	
Standard		JEM-1167					JEM-1225									

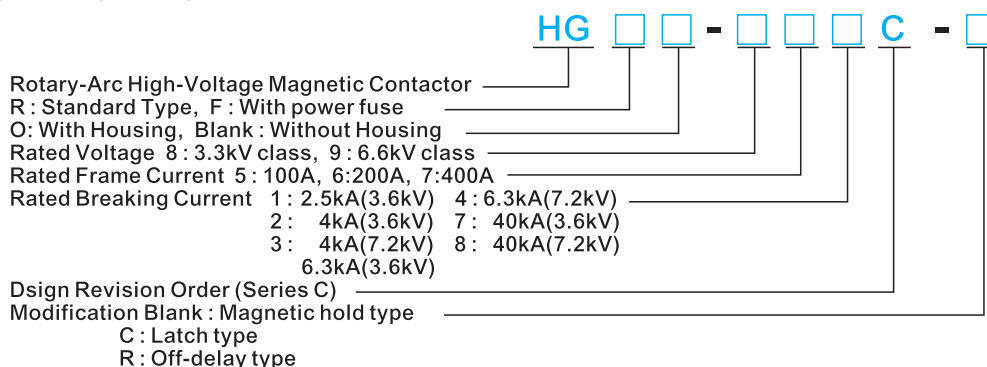
\*1 : The electrical endurance was tested at class Ac3 switching frequency.  
(600% of the rated current was input to check if more than 100%  
of the breaking current would flow.)

\*2 : The contact number of the auxiliary contactor is the number of contacts  
available for external use.

\*3 : When used on capacitor application, Reactor will need to be installed.

\*4 : rated withstand voltage : 3A/3B : 16/10kV , 6A/6B : 22/16kV  
rated impulse voltage : 3A/3B : 45/30kV , 6A/6B : 60/45kV

## NOMENCLATURE



## RATINGS AND SPECIFICATIONS Standard

### ● Magnet Holding(Off Delay : 2 secretary)

Mounting Type		Stationary Type					Drawout Type									
Item																
Power Fuse		Unfused					Unfused					Fused				
Rated Insulation Voltage	KV	3.6	3.6	7.2	3.6	7.2	3.6	3.6	7.2	3.6	7.2	3.6	3.6	7.2	3.6	7.2
Rated Thermal Current	A	100	200		400		100	200		400		100	200		400	
Contactor Type		HGR-□ -R					HGR(O)- □ -R					HGR(O)- □ -R				
		851C	862C	963C	873C	974C	851C	862C	963C	873C	974C	857C	867C	968C	877C	978C
Rated Operational Voltage	kV	3.6	3.6	7.2	3.6	7.2	3.6	3.6	7.2	3.6	7.2	3.6	3.6	7.2	3.6	7.2
Rated Frequency	Hz	50 / 60					50 / 60									
Rated Interrupting Current	kA	2.5	4		6.3		2.5	4		6.3		40				
Rated Short-Time Current (2 s e c)	kA	2.5	4		6.3		2.5	4		6.3		2.5	4		6.3	
Insulation Class	*4	3A	3A/6A				3B	3B/6B				3B	3B/6B			
Making Current Capacity		Class AC4 : 10 times rated current,														
Breaking Current Capacity		Class Ac4 : 8 times rated current														
Switching Frequency		1200 operations per hour														
Mechanical Endurance ( Number of times )		2,500,000			1,000,000		2,500,000			1,000,000		2,500,000			1,000,000	
Electrical Endurance *1 ( Number of times )		250,000			100,000		250,000			100,000		250,000			100,000	
Overcurrent Class		—					—					C				
Control Circuit	Rated Insulation Voltage ( V )	250					250									
	Rated Operational Voltage ( V )	100 / 110 VAC, 200 / 220 VAC ; 100 / 110 VDC, 200 / 220 VDC														
Auxiliary Contact Arrangement *2		2NO, 2NC					2NO, 2NC									
Maximum Load Capacity	Motor KW	375	750	1500	1500	3000	375	750	1500	1500	3000	375	750	1000	1500	2000
	Transformer kVA	500	1000	2000	2000	4000	500	1000	2000	2000	4000	500	1000	1500	2000	3000
	Capacitor*3 kVA	500	1000	2000	2000	4000	500	1000	2000	2000	4000	300	700	1000	1400	2000
Approx. Mass (kg)		11	23		26		52	100		110		56	110		120	
Standard		JEM-1167					JEM-1225									

\*1 : The electrical endurance was tested at class Ac3 switching frequency.  
(600% of the rated current was input to check if more than 100% of the breaking current would flow.)

\*2 : The contact number of the auxiliary contactor is the number of contacts available for external use.

\*3 : When used on capacitor application, Reactor will need to be installed.

\*4 : rated withstand voltage : 3A/3B : 16/10kV , 6A/6B : 22/16kV  
rated impulse voltage : 3A/3B : 45/30kV , 6A/6B : 60/45kV

### NORMAL SERVICE CONDITION

1. Altitude : Less than 1000m.
2. Ambient temperature : -5°C to 40°C
3. Humidity : 45% to 85%

#### Notes :

1. Short-time current, making current capacity, breaking current capacity, and switching capacity are performed by the magnetic contactor without a current limiting power fuse(PF).
2. The weight of the drawing type is the total weight including the housing , 2 each potential transformers(Pts),

## RATINGS AND SPECIFICATIONS Standard

### ● Latch Type

Mounting Type		Stationary Type					Drawout Type									
Item																
Power Fuse		Unfused					Unfused					Fused				
Rated Insulation Voltage	KV	3.6	3.6	7.2	3.6	7.2	3.6	3.6	7.2	3.6	7.2	3.6	3.6	7.2	3.6	7.2
Rated Thermal Current	A	100	200		400		100	200		400		100	200		400	
Contactor Type		HGR-□ -C					HGR(O)- □ -C					HGR(O)- □ -C				
		851C	862C	963C	873C	974C	851C	862C	963C	873C	974C	857C	867C	968C	877C	978C
Rated Operational Voltage	kV	3.6	3.6	7.2	3.6	7.2	3.6	3.6	7.2	3.6	7.2	3.6	3.6	7.2	3.6	7.2
Rated Frequency	Hz	50 / 60					50 / 60									
Rated Interrupting Current	kA	2.5	4		6.3		2.5	4		6.3		40				
Rated Short-Time Current (2 s e c)	kA	2.5	4		6.3		2.5	4		6.3		2.5	4		6.3	
Insulation Class	*4	3A	3A/6A				3B	3B/6B				3B	3B/6B			
Making Current Capacity		Class AC4 : 10 times rated current,														
Breaking Current Capacity		Class Ac4 : 8 times rated current														
Switching Frequency		300 operations per hour														
Mechanical Endurance ( Number of times )		250,000			250,000		250,000			250,000		250,000			250,000	
Electrical Endurance *1 ( Number of times )		100,000			50,000		100,000			50,000		100,000			50,000	
Overcurrent Class		—					—					C				
Control Circuit	Rated Insulation Voltage ( V )	250					250									
	Rated Operational Voltage ( V )	100 / 110 VAC, 200 / 220 VAC ; 100 / 110 VDC, 200 / 220 VDC														
Auxiliary Contact Arrangement *2		2NO, 2NC					2NO, 2NC									
Maximum Load Capacity	Motor KW	375	750	1500	1500	3000	375	750	1500	1500	3000	375	750	1500	1500	2000
	Transformer kVA	500	1000	2000	2000	4000	500	1000	2000	2000	4000	500	1000	1500	2000	3000
	Capacitor*3 kVA	500	1000	2000	2000	4000	500	1000	2000	2000	4000	300	700	1000	1400	2000
Approx. Mass (kg)		11.5	23		26		52	100		110		56	110		120	
Standard		JEM-1167					JEM-1225									

\*1 : The electrical endurance was tested at class Ac3 switching frequency.  
(600% of the rated current was input to check if more than 100% of the breaking current would flow.)

\*2 : The contact number of the auxiliary contactor is the number of contacts available for external use.

\*3 : When used on capacitor application, Reactor will need to be installed.

\*4 : rated withstand voltage : 3A/3B : 16/10kV , 6A/6B : 22/16kV  
rated impulse voltage : 3A/3B : 45/30kV , 6A/6B : 60/45kV

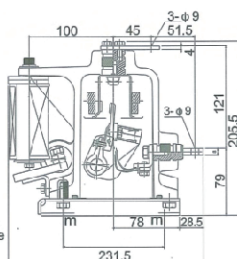
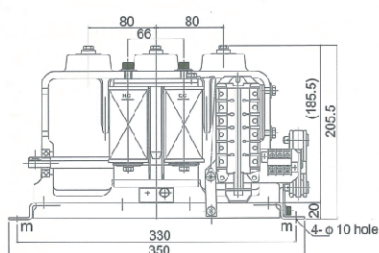


## Dimensions

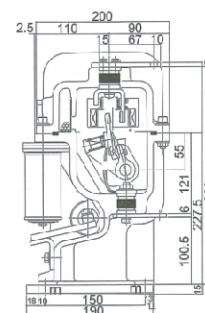
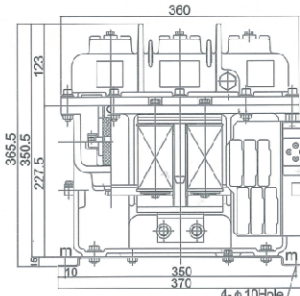
### Stationary Type HGR

in mm

• 3.6kV 100A



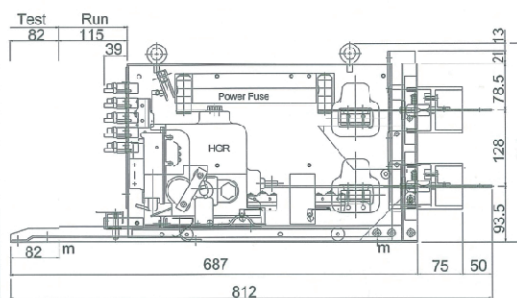
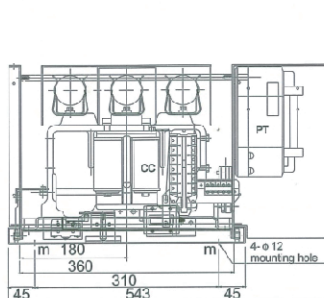
• 3.6kV 200/400A  
7.2kV 200/400A



### Drawout Type HGRO / Type HGFO (with power-fuse and housing)

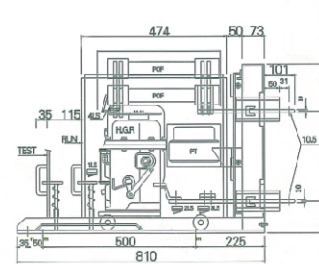
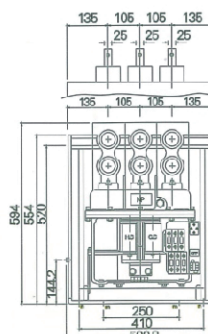
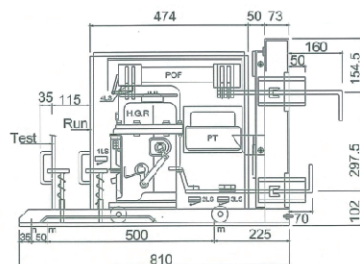
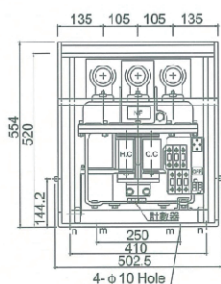
in mm

• 3.6kV 100A



• 3.6/7.2kV 200/400A

• 3.6/7.2kV 200/400A



[illegible]





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