

AMS

Medium Voltage Metal-Clad Switchgear

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AMS Medium Voltage Metal-Clad Switchgear

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Introduction



Overview



12kV AMS metal-clad switchgear

- AMS is a state-of-the-art switchgear jointly developed by German and Chinese experts.
- AMS is designed for the full range of medium voltage switchgear; Voltages range from 3.6kV up to 40.5kV.
- AMS is a fully metal-clad, air insulated, arc-proof and compact design switchgear
- AMS is equipped with the next generation cassette type of withdrawable embedded pole vacuum circuit breaker (VEP).
- High speed earthing switch with short circuit making capability is employed in AMS switchgear
- The mechanical strength and anti-corrosion properties of the structural frame of AMS are ensured by ALUZINC sheet metal with double bending and riveting fixing technology
- Optimized electrical field and electrode screen technology are adopted to achieve high insulation reliability of AMS
- AMS has a cable compartment with ample space and a cable connection height of up to 800mm
- AMS is designed with a perfect interlocking system which provides the highest level of safety for operating personnel and equipment.
- AMS has inspection windows for both circuit breaker and cable compartments through which the position of the withdrawable device, status of breaker and the condition of the cable connection can be easily observed.
- AMS can be equipped with traditional or integrated protection devices, as well as traditional CTs and VTs.
- AMS is a safe and reliable switchgear which has been widely accepted by various industrial sectors around the world.

Besides the cassette type of withdrawable VEP embedded pole vacuum circuit breaker, AMS can also be equipped with a SF6 gas insulated circuit breaker, a fused-contactor, a load-breaking switch, an isolation truck, and a VT truck, according to individual system designs. AMS metal-clad switchgear is constructed of ALUZINC sheet metal in a double bending process with rivet-fixing technology. The complete structural frame of AMS is fabricated using high precision assembly jigs, therefore high dimensional accuracy and high mechanical quality is guaranteed.

AMS series metal-clad switchgear is fully type tested in compliance with the following international and Chinese standards:

- IEC 62271:200
- IEC 60694
- DIN and VDE standards
- GB3906
- GB/T11022
- DL/T404

AMS series metal-clad switchgear can be used in power distribution systems of power plants, power utilities and all industrial sections as control and protection equipment for transformers, motors and capacitor banks etc.



40.5kV AMS metal-clad switchgear



Technical Data

Overview of the Technical Data of 12kV AMS Metal-Clad Switchgear

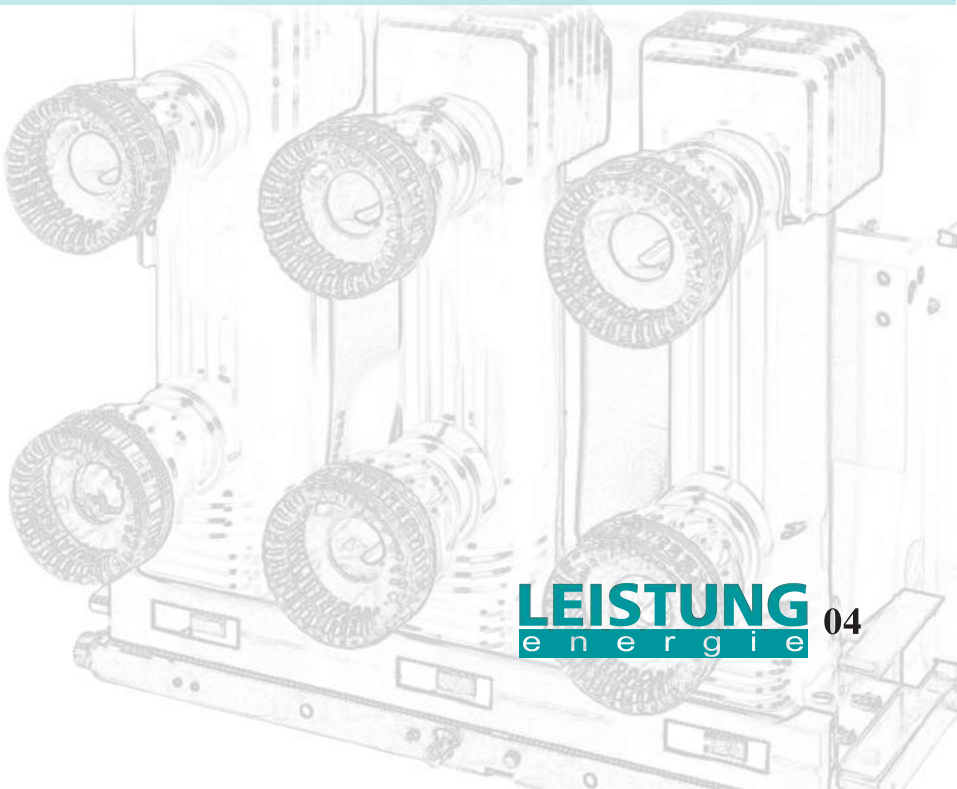
Description		Unit	Data
Rated voltage		kV	3.6/7.2/12/15/17.5
Rated frequency		Hz	50/60
Rated insulation level	Rated power frequency withstand voltage/1 min	kV	42
	Rated lightning impulse withstand voltage(peak value)	kV	75/95
Rated current of busbar		A	630/1250/1600/2000/2500/3150/4000*
Rated current of T-off bar		A	630/1250/1600/2000/2500/3150/4000*
Rated short time withstand current (4s)		kA	20/25/31.5/40/50
Rated peak withstand current (peak value)		kA	50/63/80/125/150
Resistance of main circuit		μQ	≤150+CT**(≤630A) ≤100+CT** (≤1250A) ≤70+CT** (≤2000A) ≤50+CT** (≥2500A)
Ingress Protection Degree			Enclosure IP4X, Compartment IP2X
Overall dimensions (w x h x d)		mm	650 (800, 1000) x 2250 x 1400

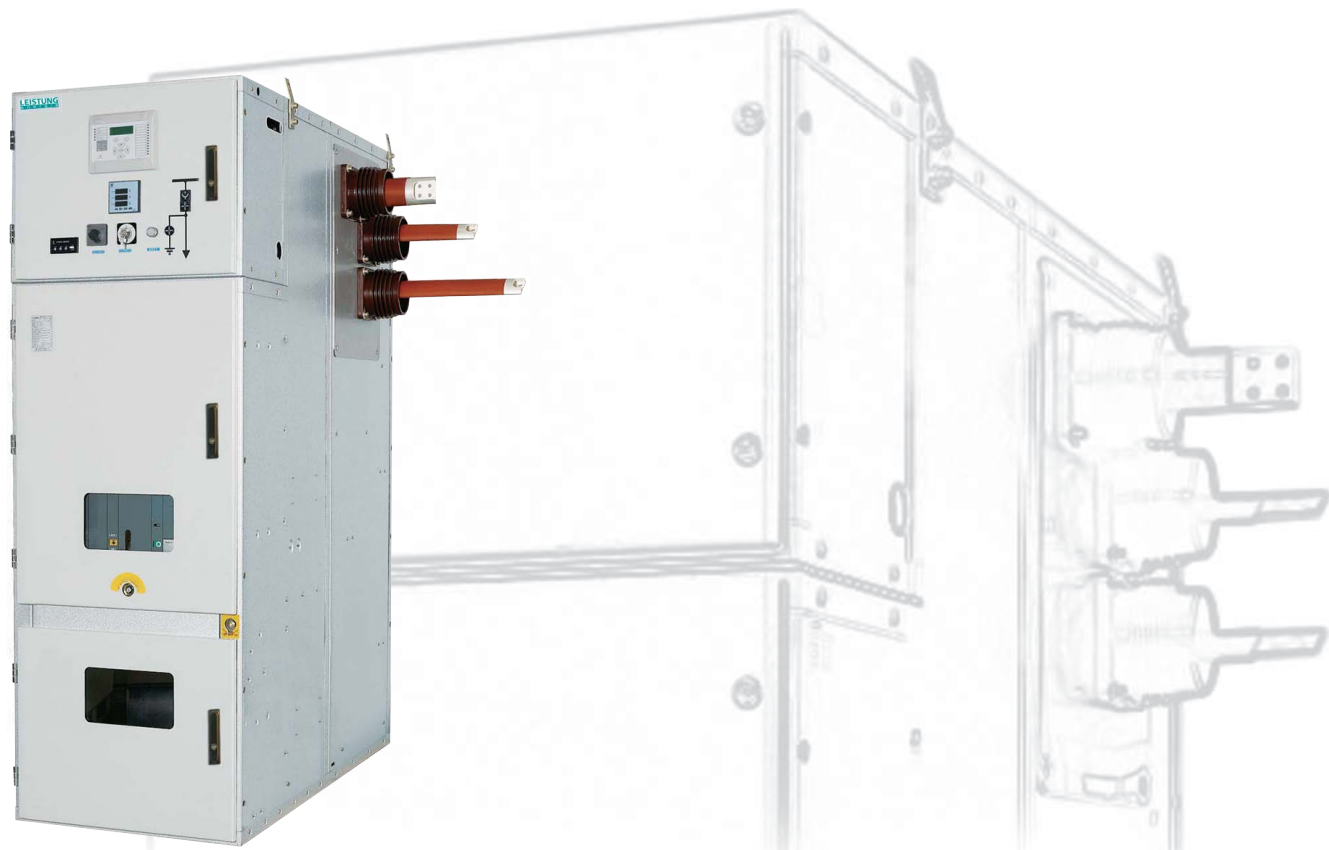
Note:
* - Forced cooling ventilation is required
** - DC resistance of current transformer

Overview of the Technical Data of 12kV VEP Embedded Pole Vacuum Circuit Breaker

Description		Unit	Data
Rated voltage		kV	3.6/7.2/12/15/17.5
Rated current		A	630/1250/1600/2000/2500/3150/4000*
Rated frequency		Hz	50/60
Rated insulation level	Rated power frequency withstand voltage/1 min	kA	42
	Rated lightning impulse withstand voltage (peak value)	kA	75/95
Rated short circuit breaking current		kA	20/25/31.5/40/50
Rated short time withstand current (4s)		kA	20/25/31.5/40/50
Rated short circuit making current (peak value)		kA	50/63/80/125/150
Rated peak value withstand current (peak value)		kA	50/63/80/125/150
Rated short circuit breaking times		No. of times	50/50/50/50/30
Electrical endurance		No. of times	274 (Class E2 in accordance with IEC 62271-100 and GB1984-2003)
Rated operating sequence			O-0.3s-CO-180s-CO(up to 40kA) O-180s-CO-180s-CO(50kA)
Rated auxiliary control voltage		V	AC110/220;DC110/220
Rated closing time		ms	35-70
Rated opening time		ms	25-40
Rated breaking time		ms	40-55

Note:
* - Forced cooling ventilation is required





Overview of the Technical Data of 24kV AMS Metal-Clad Switchgear

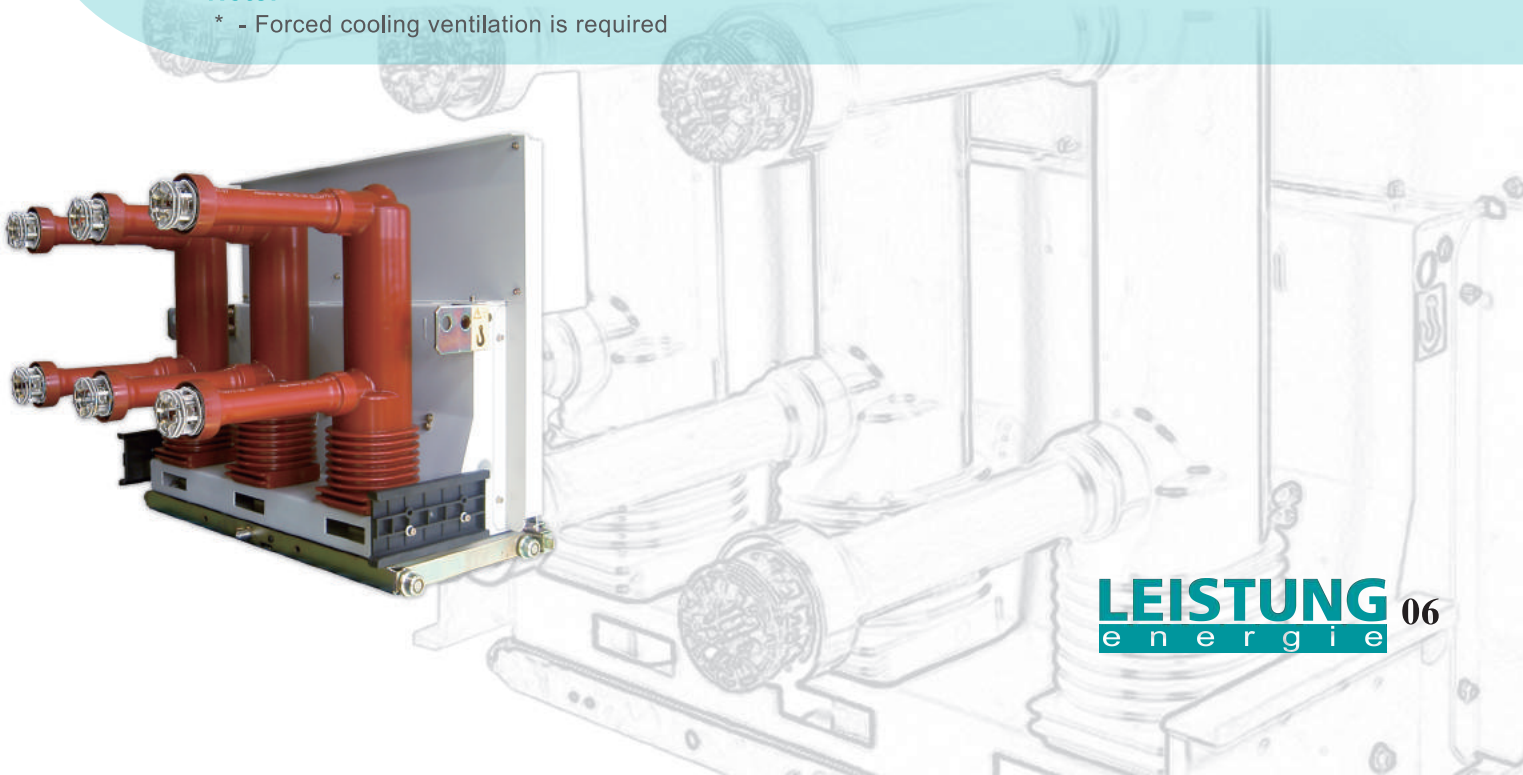
Description		Unit	Data
Rated voltage		kV	24
Rated frequency		Hz	50/60
Rated Insulation level	Rated power frequency withstand voltage/1 min	kV	50/65
	Rated lightning impulse withstand voltage (peak value)	kV	125
Rated current of busbar		A	630/1250/1600/2000/2500/3150/4000*
Rated current of T-off bar		A	630/1250/1600/2000/2500/3150/4000*
Rated short time withstand current (4s)		kA	20/25/31.5/40
Rated peak withstand current (peak value)		kA	50/63/80/100
Resistance of main circuit		μQ	≤150+CT** (≤630A) ≤100+CT** (≤1250A) ≤70+CT** (≤2000A) ≤50+CT** (≥2500A)
Ingress Protection Degree			Enclosure IP4X, Compartment IP2X
Overall dimensions (w x h x d)		mm	800 (1000) x 2250 x 1680

Note:
 * - Forced cooling ventilation is required
 ** - DC resistance of current transformer

Overview of the Technical Data of 24kV VEP Embedded Pole Vacuum Circuit Breaker

Description		Unit	Data
Rated voltage		kV	24
Rated current		A	630/1250/1600/2000/2500/3150/4000*
Rated frequency		Hz	50/60
Rated insulation level	Rated power frequency withstand voltage/1 min	kV	50/65
	Rated lightning impulse withstand voltage(peak value)	kV	125
Rated short circuit breaking current		kA	20/25/31.5/40
Rated short time withstand current(4s)		kA	20/25/31 5/40
Rated short circuit making current (peak value)		kA	50/63/80/100
Rated peak value withstand current (peak value)		kA	50/63/80/100
Rated short circuit breaking times		No. of times	50/50/50/30
Electrical endurance		No. of times	274 (Class E2 in accordance with IEC 62271-100 and GB1984-2003)
Rated operating sequence			O-O.3s-CO-180s-CO O-180s-CO-180s-CO
Rated auxiliary control voltage		V	AC110/220;DC110/220
Rated closing time		ms	35~70
Rated opening time		ms	25~40
Rated breaking time		ms	40~55
Mechanical endurance		No. of times	20000

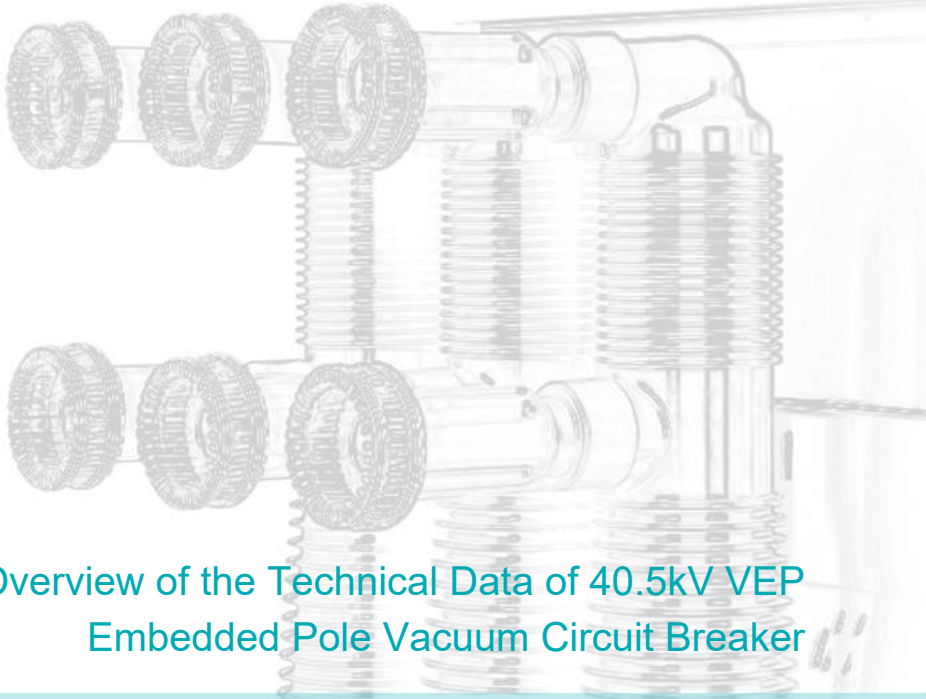
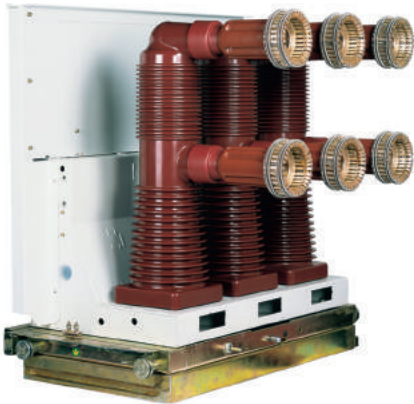
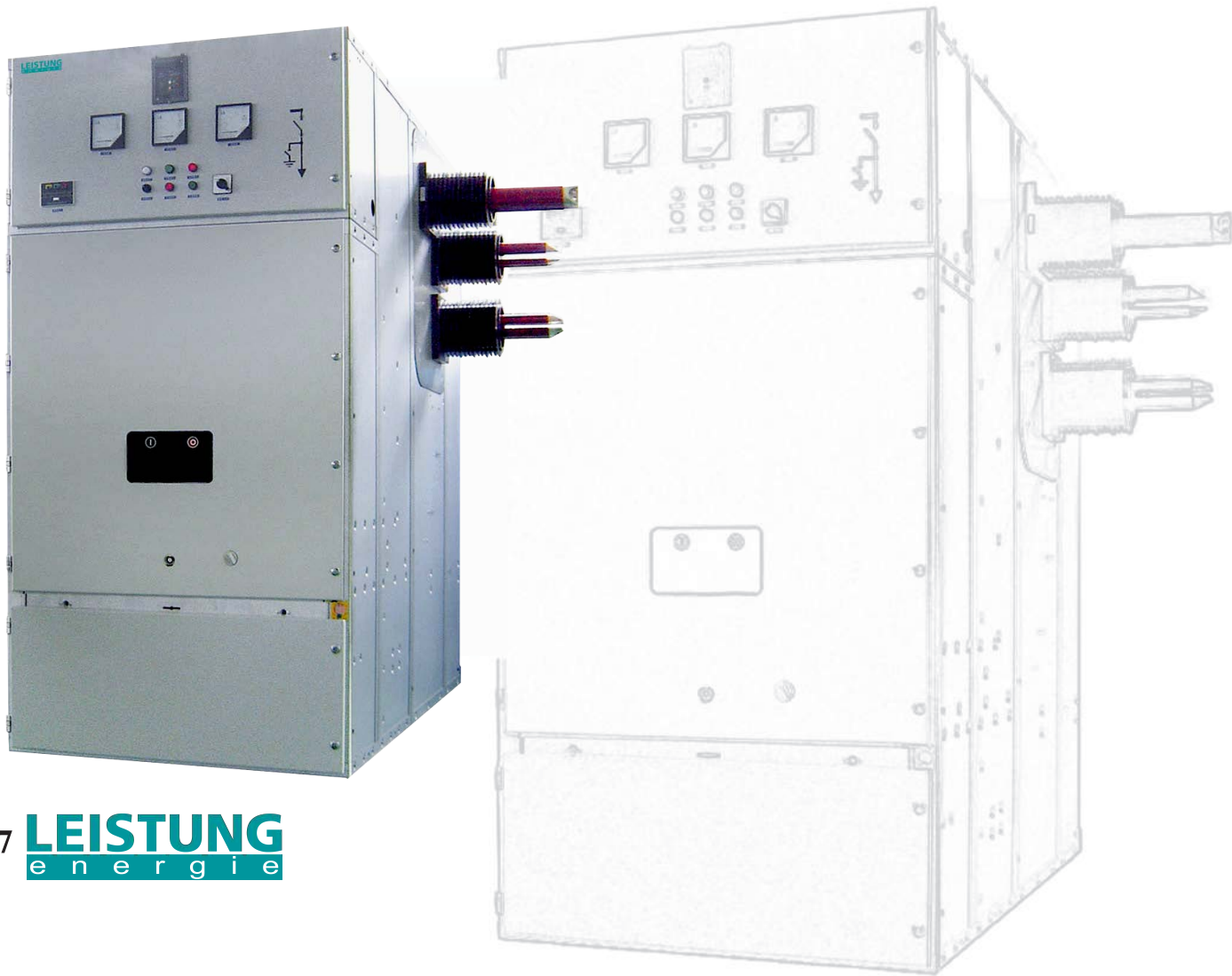
Note:
 * - Forced cooling ventilation is required



Overview of the Technical Data of 40.5kV AMS Metal-Clad Switchgear

Description		unit	Data
Rated voltage		kV	33/36/40.5
Rated frequency		Hz	50/60
Rated Insulation level	Rated power frequency withstand voltage/1 min	kV	95
	Rated lightning impulse withstand voltage (peak value)	kV	185
Rated current of busbar		A	1250/1600/2000/2500/3150*
Rated current of T-off bar		A	630/1250/1600/2000/2500/3150*
Rated short time withstand current (4s)		kA	25/31.5
Rated peak withstand current (peak value)		kA	63/80
Resistance of main circuit		μQ	≤145+CT** (≤1250A)
			≤100+CT** (≤1600~2000A)
			≤70+CT** (≤2500A)
Ingress Protection Degree			Enclosure IP4X, Compartment IP2X
Overall dimensions (w x h x d)		mm	1200 x 2400 x 2500

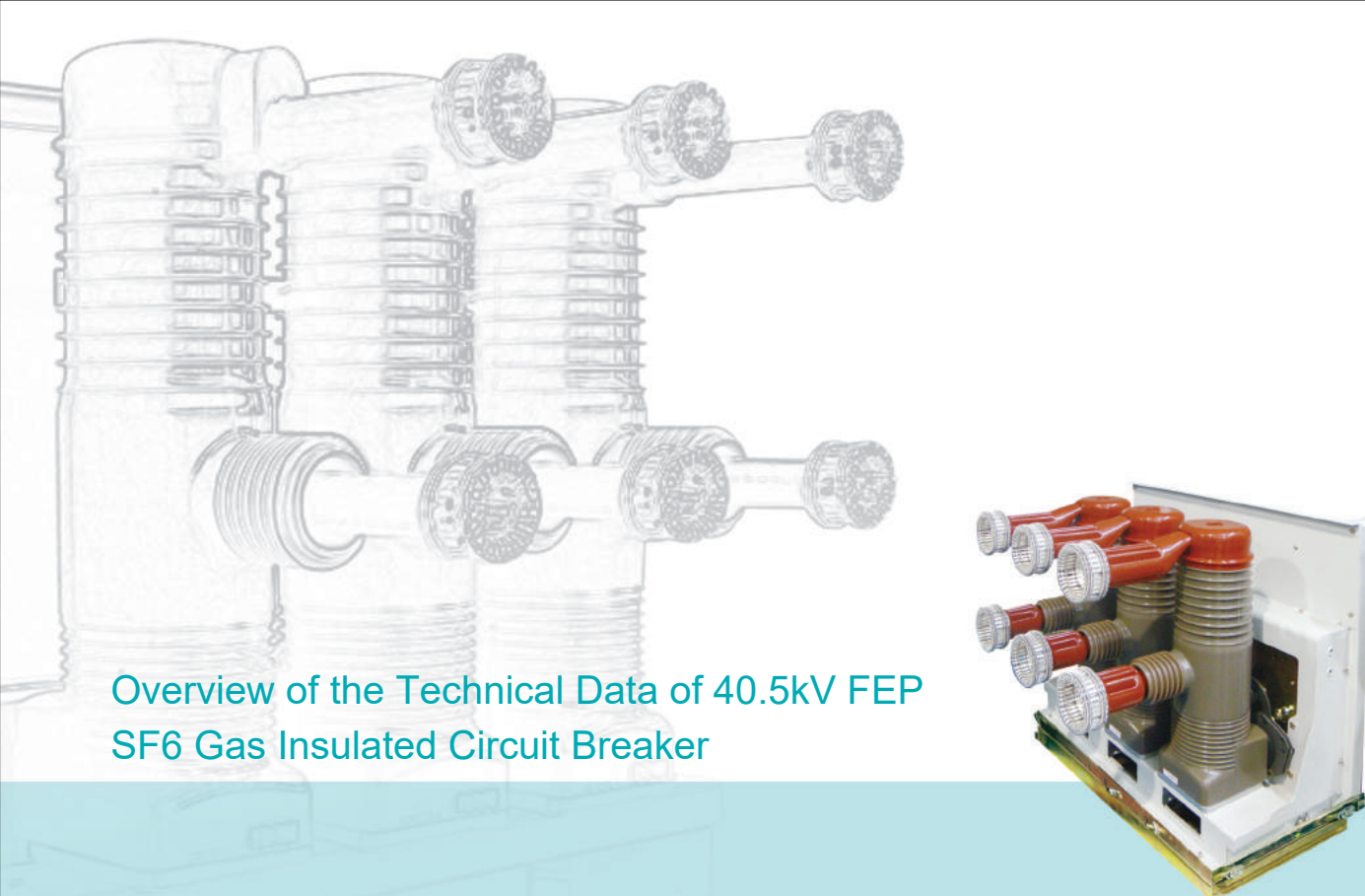
Note:
* - Forced cooling ventilation is required
** - DC resistance of current transformer



Overview of the Technical Data of 40.5kV VEP Embedded Pole Vacuum Circuit Breaker

Description		Unit	Data
Rated voltage		kV	33/36/40.5
Rated current		A	1250/1600/2000/2500/3150*
Rated frequency		Hz	50/60
Rated insulation level	Rated power frequency withstand voltage/1 min	kA	95
	Rated lightning impulse withstand voltage (peak value)	kA	185
Rated short circuit breaking current		kA	25/31.5
Rated short time withstand current (4s)		kA	25/31.5
Rated short circuit making current (peak value)		kA	63/80
Rated peak value withstand current (peak value)		kA	63/80
Rated short circuit breaking times		No. of times	50/50/50/50/30
Electrical endurance		No. of times	274 (Class E2 in accordance with IEC 62271-100 and GB1984-2003)
Mechanical endurance		No. of times	20000
Rated operating sequence			O-0.3s-CO-180s-CO O-180s-CO-180s-CO
Rated auxiliary control voltage		V	AC110/220;DC110/220
Rated closing time		ms	55~80
Rated opening time		ms	25~40
Rated breaking time		ms	≤60

Note:
* - Forced cooling ventilation is required



Overview of the Technical Data of 40.5kV FEP SF6 Gas Insulated Circuit Breaker

Description		Unit	Data
Rated voltage		kV	40.5
Rated current		A	1250/1600/2000/2500
Rated frequency		Hz	50/60
Rated Insulation level	Rated power frequency withstand voltage/1 min	kV	95
	Rated lightning impulse withstand voltage(peak value)	kV	185
Rated short circuit breaking current		kA	25/31.5
Rated short time withstand current (4s)		kA	25/31.5
Rated short circuit making current (peak value)		kA	63/80
Rated peak value withstand current (peak value)		kA	63/80
Rated operating sequence			O-0.3s-CO-180s-CO O-180s-CO-180s-CO
Rated auxiliary control voltage		V	AC110/220;DC110/220
Mechanical endurance		NO.of times	10000
Annual leakage rate		%/Y	<0.1
SF6 Rated pressure		MPa	0.35 ± 0.02
SF6 Alarm pressure		MPa	0.28 ± 0.01

Features

AMS: A Safe Switchgear



Metal-Clad Arc-Proof Switchgear

The enclosure of the AMS series switchgear is designed with an ingress protection degree of IP4X as per IEC 62271-200. The metallic and earthed enclosure protects operation personnel against contact with live parts and against contact with moving parts inside the switchgear panel. It also protects AMS series switchgear against the penetration of foreign objects which could cause a severe short-circuit fault on the system. It is now expected that manufacturers and end users must endeavor to prevent, under all circumstances, faults in switchgear installations in which internal arcing may occur, however, it is also known that such faults cannot be completely prevented in all cases. For this reason, in most countries around the world, the internal arcing test is compulsory for medium voltage metal-clad switchgear. Thanks to its completely metal-clad design and its sturdy hinge and door-locking system, AMS series switchgear has successfully passed the internal arcing fault test in accordance with IEC 62271-200 in all three high voltage compartments.

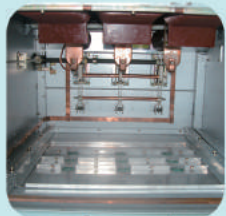
Pressure Relief Flap

On the top of all three high voltage compartments, the AMS series switchgear is equipped with pressure relief flaps which will open automatically to the rear side of the switchgear in the event of over pressure loading due to an internal arcing fault in the corresponding compartment. The pressure relief flaps prevent the following dangerous situations which will endanger the operating personnel or extend the effect of the fault to the whole switchgear system;

- burn-through of barriers to adjacent compartments.
- burn-through of partitions to adjacent panels.
- over-pressure loading to adjacent compartments and panels.
- properly closed doors, shutters, etc. being forced open.
- parts of switchgear flying off.



Busbar compartment of AMS-40.5kV



Cable compartment of AMS-40.5kV



Circuit breaker compartment of AMS-40.5kV

Features

AMS: A Reliable Switchgear

Comprehensive and Reliable Interlocking System

The AMS series switchgear is equipped with a comprehensive system of preventative mechanical interlocks to protect the equipment, operation and service personnel from the dangers of mal-operation. The interlocks are designed to prevent:

- A closed circuit breaker being inserted into or withdrawn from the service position.
- A circuit breaker being closed when not in the service, test position.
- A circuit breaker being racked into the service position if the secondary contacts plug has not been fitted.
- Insertion of the circuit breaker into the service position or withdrawal from the service position if the door of the circuit breaker compartment is opened.



Circuit breaker in service position

Compact Design for Cassette Withdrawable Type VCB

AMS series is designed for cassette type withdrawable VCBs. Each cassette is designed to save space inside the switchgear and eliminate any negative impact to the movable electric couplings between the circuit breaker and switchgear panel caused by irregular installation of foundations. Therefore, reliability of the temperature rise on movable electric coupling points is maintained, which is a critical point for all withdrawable switchgear.

Separated and Metal-Screened Channel for Control and Metering Cables

The control and metering cables inside the AMS series switchgear are installed in a separate and metal-screened channel, so that electrical and magnetic interference between high voltage path and secondary cables is avoided completely. This



Bending machine

- Closing of earthing switch when the circuit breaker is locked in the service position.
 - Opening of the cable compartment door when the earthing switch is in the open position.
 - Disengagement of the secondary plug from the socket when the circuit breaker is in the service position.
- The AMS metal-clad switchgear is equipped with shutters in front of the circuit breaker to provide the IP protection and prevent inadvertent opening which may cause danger, in some cases, to the operating personnel during maintenance.

Shutter Locking System

in the circuit breaker compartment which will automatically close and lock when the circuit breaker is in the test or racked-out position to provide the IP protection and prevent inadvertent opening which may cause danger, in some cases, to the operating personnel during maintenance.



Circuit breaker compartment of AMS-12kV

construction also provides prevention of electrical and magnetic interfaces between high voltage conductors and digital protection equipment located in the metal-clad and earthed compartments.

Precise and Rigid Panel Structure

The structural frame of the AMS series metal-clad switchgear is made of ALUZINC sheet metal processed by CNC punching and bending machines, so the very accurate overall dimensions of AMS is ensured, and interchangeability of withdrawable units between the panels of similar ratings is guaranteed. The main structural frame of the AMS series metal-clad switchgear is made of double bended 2mm ALUZINC sheet metal which is assembled on high precision jigs by very strong riveting and bolts with a strength grade above 8.8. As a result of this design, the strength of the AMS series switchgear can meet the operating requirements in the most critical conditions, such as offshore oil platforms and nuclear power plants. 12kV AMS metal-clad switchgear has successfully passed class 1 E qualification test for both thermal aging and seismic conditions.

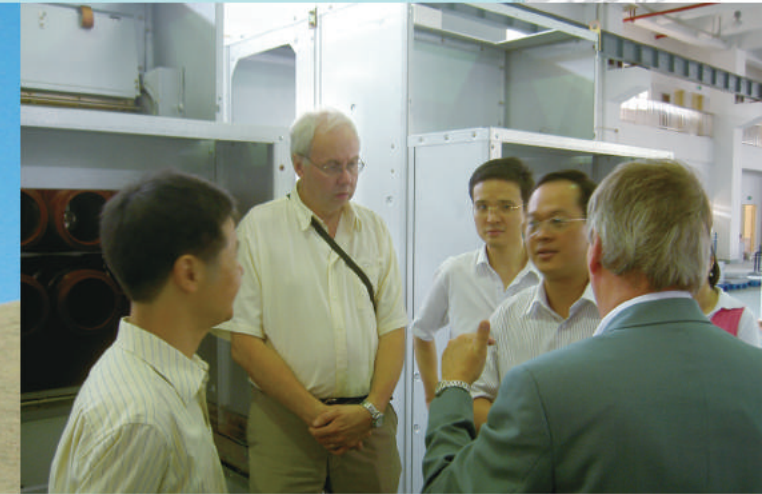


CNC punching machine

FEATURES

Features

AMS: A Flexible Switchgear



Highly Reliable Components

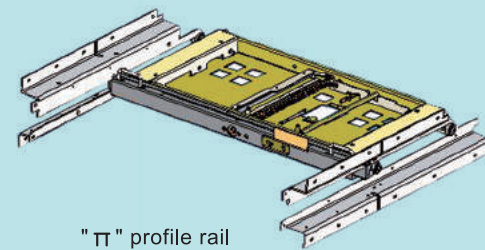
The reliability of the AMS series switchgear is fundamentally due to the reliability of all the components used within. Apart from the most advanced and reliable VEP embedded pole circuit breaker, all insulating components such as spouts, bushings, insulators, as well as instrument transformers, are strictly selected and have been qualified for a life span of 40 years by accelerated thermal aging tests.

Robust Rail for Withdrawable Circuit Breaker

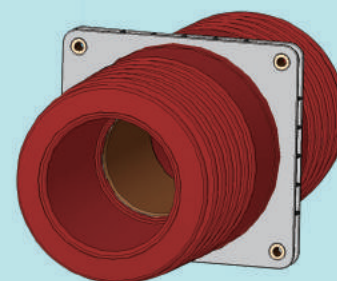
The strength of the rail is one of the most essential points in the prevention of overheating of the movable connection between the tulip contact and the contact pin inside the spout. In the AMS metal-clad switchgear, all rails are specially strengthened, and fixed on the double bended main structure frame with robust screws, hence the reliability of the movably connected current path can be assured.

Space Heaters

In order to avoid the risk of condensation inside the switchgear due to humidity, the AMS series metal-clad switchgear is equipped with space heaters in both cable and circuit breaker compartments. To guarantee efficiency, the space heaters should be permanently energized during the installation and commissioning periods, after which they can be either permanently energized or controlled by humidity sensors.



"T" profile rail



Bushing for 40.5kV AMS

Universal Application Purpose

AMS series metal-clad switchgear is designed for universal application in the field. 12kV AMS can be equipped with VEP embedded pole VCB, load break switch, fused contactor, etc. for different applications. For example, distribution transformers, capacitor banks, station transformers, and motor starters. 36kV AMS can be equipped with VEP embedded pole VCB, FEP SF6 Gas Circuit Breaker, load break switch or fuse link truck for station transformer applications.

Highest Resistance to Climate and Environment

AMS series metal-clad switchgear is equipped with the following components which provide the highest level of climatic and environmental independence:

- Epoxy resin embedded pole vacuum circuit breaker.
- Ribbed insulators and bushings.
- Totally enclosed under all operation conditions.

Thanks to these integrants, AMS series metal-clad switchgear has successfully passed the high altitude application tests up to 2000m above sea level, grade II pollution test, condensation test, and salty fog tests.

Remote Control Solution

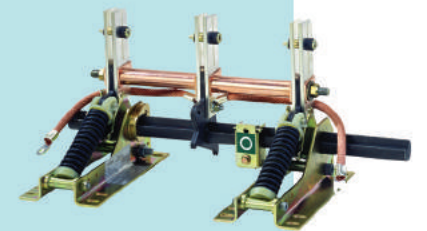
Electrical remote control from a central control room, which is a normal requirement for intelligent switchgear systems, can be provided by AMS series metal-clad switchgear for the following functions:

- Moving a motorized withdrawable unit into the test or service position.
- Opening and closing of the switching device.
- Feeder earthing and short-circuiting with motor driven earthing switch.

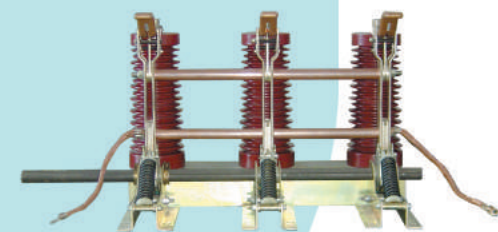
High Availability of Components

Most of the components used in AMS series switchgear are standards products which can be easily procured in the market:

- Standard insulators.
- Standard instrument transformers.
- Standard bushings.
- Standard dimensioned vacuum circuit breaker.



Short-circuit making capable
ESW-12kV earthing switch



Short-circuit making capable
ESW-40.5kV earthing switch

Features

AMS: A Flexible Switchgear



Flexible Arrangement in Switching Rooms

Both cable and copper bar can be connected into the AMS series switchgear from the top and bottom side. 12kV AMS metal-clad switchgear can be installed against the wall of the switching room, as all components inside the switchgear can be accessed from the front or top side of the switchgear. This means that all the commissioning and maintenance requirements can be carried out from the front or top side of the switchboard.

Comprehensive Variations Scheme

Besides basic incomer and feeder panels, AMS series metal-clad switchgear has a comprehensive variation scheme to satisfy various system configurations of power distribution systems. The main functional schemes are as follows:

- Basic incomer and feeder panels equipped with VEP cassette type withdrawable embedded pole vacuum circuit breaker. For 36kV AMS, SF6 gas circuit breaker are also available.
- Bus coupling panel equipped with VEP cassette type withdrawable breaker. For 36kV AMS, SF6 gas circuit breakers are also available.
- Bus riser panel with bus link truck for isolation of bus coupling panel.
- PT panel equipped with fixed or withdrawable installation potential transformers and fuses for bus bar voltage metering.
- Special metering panel equipped with withdrawable or fixed installation potential and current transformers with high accuracy, especially for kWh metering.
- Station transformer panel can be equipped with fused link truck or load break switch.
- 12kV AMS Fuse-contactor for panel equipped with a withdrawable fuse-contactor combination, used as control and protection equipment for transformers, capacitor banks and for frequently switched motors. The 12kV AMS Fuse-contactor panel is completely compatible with the AMS vacuum circuit breaker panel.



12kV VEC vacuum contactor with HV fuses

Easily Handled Service Trolley

The cassette type withdrawable VEP vacuum circuit breaker can be moved outside the AMS series metal-clad switchgear using an easily handled service trolley. There are two versions of the service trolley designed for AMS series metal-clad switchgear; The partially adjustable version for 12kV and 24kV, and the totally adjustable version for 40.5kV. The cassette type VEP vacuum circuit breaker on the totally adjustable version of the service trolley can be easily lowered to the floor by the gearing system set in the trolley, therefore only one of this version of the trolley is necessary for one 40.5kV substation. In order to ensure the safety of the VEP vacuum circuit breaker, both versions of the service trolley were designed with locking devices. Before removing the VEP, the service trolley shall be locked with the AMS switchgear panel, and after the VEP is removed from the AMS switchgear, it shall be locked on the service trolley.

Climate and Ambient Conditions

■ Normal operation conditions

Ambient temperature: $-15^{\circ}\text{C} \text{ --- } +40^{\circ}\text{C}$
 Daily average temperature: $\leq +35^{\circ}\text{C}$
 Environmental humidity:
 Daily average relative humidity: $\leq 95\%$
 Monthly average relative humidity: $\leq 90\%$
 Maximum operation altitude: 1000m above sea level

■ Special operation conditions

If AMS metal-clad switchgear is operated at a site with an altitude higher than 1000m above sea level, the decrease in insulating capacity of air will be considered, and, if it is necessary, methods will be taken to enhance the insulation capacity of AMS switchgear.

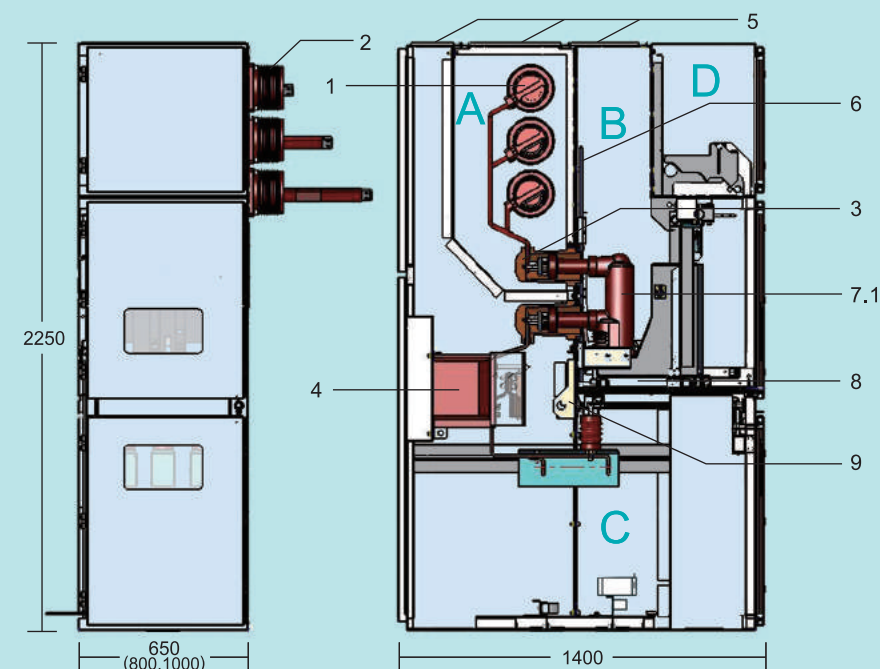
If operational ambient temperature is higher than $+40^{\circ}\text{C}$, the following actions will be considered:

1. Using a circuit breaker with higher rated current
2. Natural ventilation, i.e. prod-proof ventilation, slits on the middle plate and on the top of AMS switchgear.
3. Forced ventilation, i.e. prod-proofed ventilation slits on the top of high voltage compartments in conjunction with a fan in the middle plate.



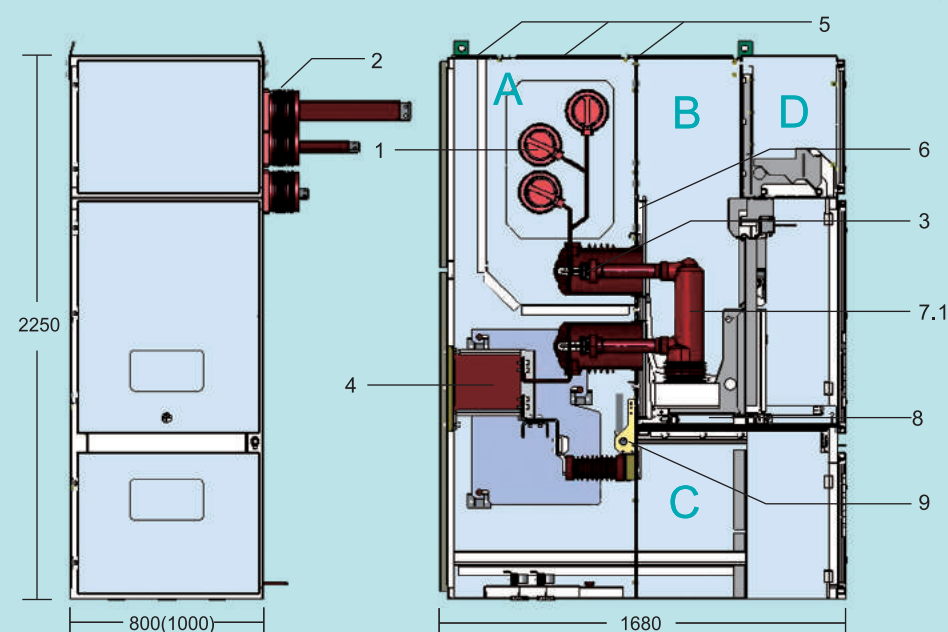
Totally adjustable service trolley for 40.5kV AMS

Product Structure Drawing

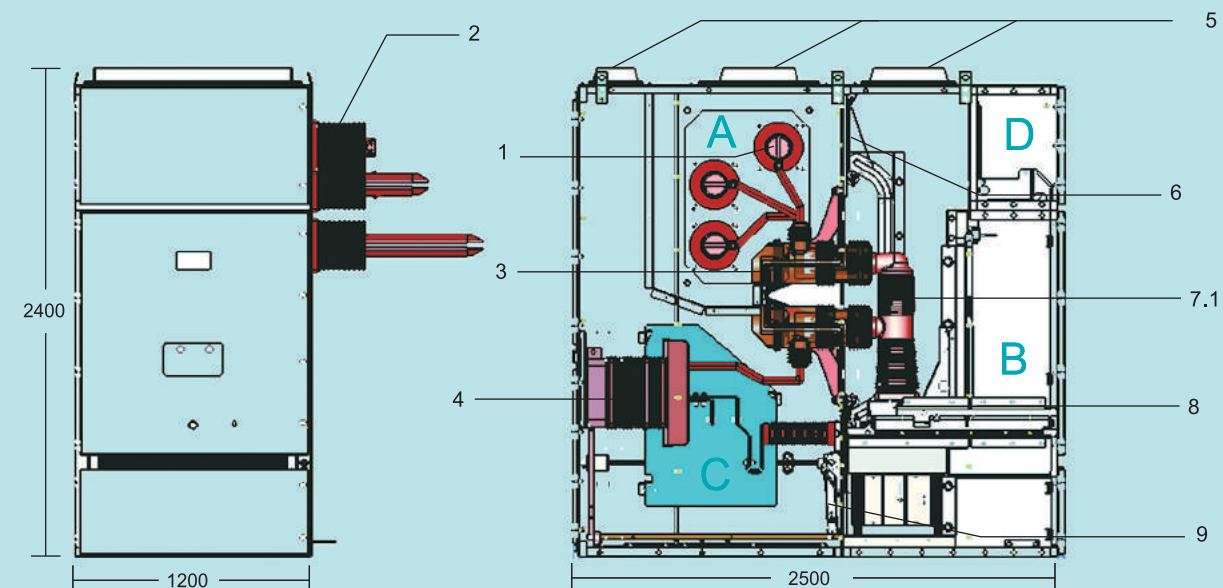


■ AMS 12kV

- A. Busbar Compartment
- B. Circuit Breaker Compartment
- C. Cable Compartment
- D. Low Voltage Compartment

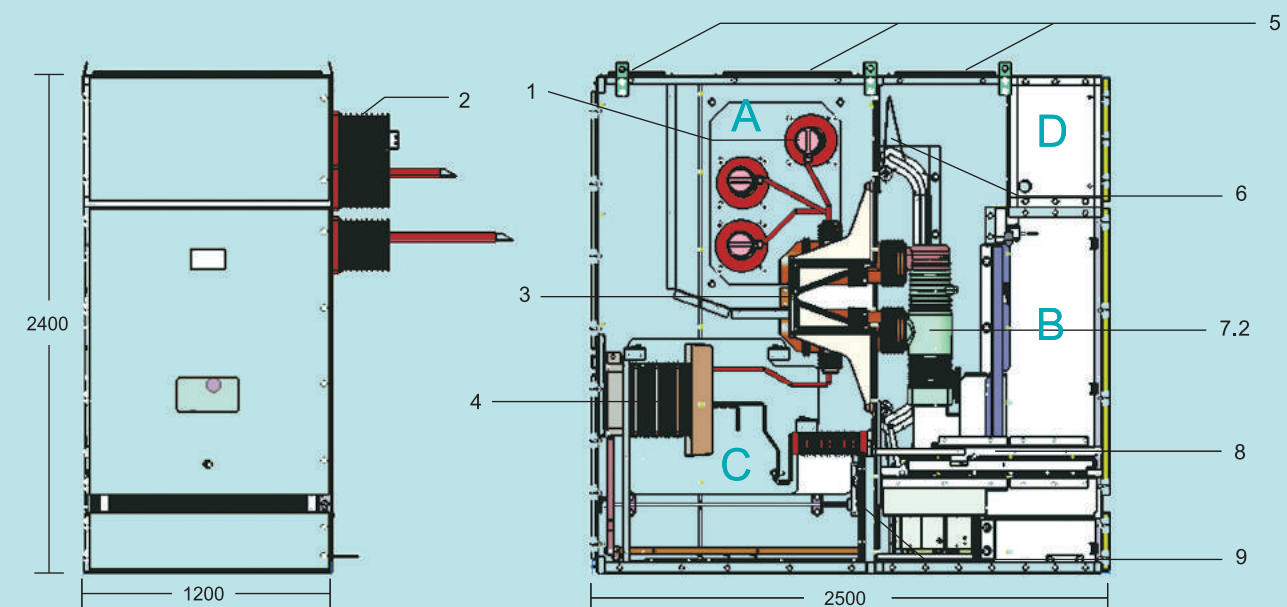


■ AMS 24kV



■ AMS 40.5kV(VPE)

- | | | |
|------------------------|--|---|
| 1. Busbar of D type | 5. Pressure release device | 7.2 FEP SF ₆ gas insulated circuit breaker |
| 2. Bushing | 6. Shutter | 8. "π" profile rail |
| 3. Spout | 7.1 VEP embedded pole vacuum circuit breaker | 9. ESW earthing switch |
| 4. Current transformer | | |



■ AMS 40.5kV(SF₆)

Primary Scheme of AMS (12kV)

NO.	001	002	003	004	005	006
Primary Schemes						
Dimension of Cubicle(W*D*H)	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250
Rated Current(A)	630~4000					
Main Apparatus	VCB(VEP)	1	1	1	1	1
	CT	2	2	2	3	3
	PT					
	Fuse					
	Earthing Switch		1	1	1	1
	Arrester			3		3
Application	I.F	I.F	I.F	I.F	I.F	I.F

NO.	007	008	009	010	011	012
Primary Schemes						
Dimension of Cubicle(W*D*H)	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250
Rated Current(A)	630~4000					
Main Apparatus	VCB(VEP)	1	1	1	1	1
	CT	2	2	2	3	3
	PT					
	Fuse					
	Earthing Switch		1		1	1
	Arrester					
Application	B	B	B	B	B	B

Meaning of code name in primary schemes
I-Incoming F-Outgoing D-Disconnecting B-Coupling R-Busbar Rising M-Metering P-PT T-CPT S-Arrester

NO.	013	014	015	016	017	018
Primary Schemes						
Dimension of Cubicle(W*D*H)	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250
Rated Current(A)	630~4000					
Main Apparatus	VCB(VEP)	1	1	1	1	1
	CT	3	3	2	2	2
	PT					
	Fuse					
	Earthing Switch		1		1	1
	Arrester					
Application	B	B	B	B	B	B

NO.	019	020	021	022	023	024
Primary Schemes						
Dimension of Cubicle(W*D*H)	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1600*2250	650/800/1000 *1600*2250
Rated Current(A)	630~4000					
Main Apparatus	VCB(VEP)	1	1	1	1	1
	CT	3	3	3	2	2
	PT					
	Fuse					
	Earthing Switch		1		1	1
	Arrester					
Application	B	B	B	B	I.F	I.F

Meaning of code name in primary schemes
I-Incoming F-Outgoing D-Disconnecting B-Coupling R-Busbar Rising M-Metering P-PT T-CPT S-Arrester

NO.	025	026	027	028	029	030
Primary Schemes						
Dimension of Cubicle(W*D*H)	650/800/1000 *1600*2250	650/800/1000 *1600*2250	650/800/1000 *1600*2250	650/800/1000 *1600*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250
Rated Current(A)	630~4000					
Main Apparatus	VCB(VEP)	1	1	1	1	1
	CT	2	3	3	3	2
	PT				2	2
	Fuse				3	3
	Earthing Switch	1		1	1	1
	Arrester	3			3	
Application	I.F	I.F	I.F	I.F	I+P	I+P

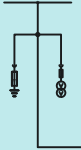
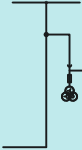
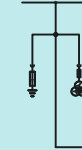
NO.	031	032	033	034	035	036
Primary Schemes						
Dimension of Cubicle(W*D*H)	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250
Rated Current(A)	630~4000					
Main Apparatus	VCB(VEP)	1	1	1	1	1
	CT	2	3	3	3	2
	PT	2	2	2	3	3
	Fuse	3	3	3	3	3
	Earthing Switch			1		1
	Arrester	3			3	
Application	I+P	I+P	I+P	I+P	I+P	I+P

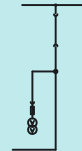
Meaning of code name in primary schemes
I-Incoming F-Outgoing D-Disconnecting B-Coupling R-Busbar Rising M-Metering P-PT T-CPT S-Arrester

NO.	037	038	039	040	041	042
Primary Schemes						
Dimension of Cubicle(W*D*H)	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250
Rated Current(A)	630~4000					
Main Apparatus	VCB(VEP)	1				
	CT	2				
	PT	3	2	3	2	3
	Fuse	3	3	3	3	3
	Earthing Switch					
	Arrester	3		3	3	3
Application	I+P	P	P	P+Arrester	P+Arrester	P+Arrester

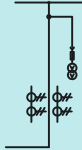
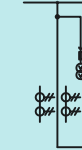
NO.	043	044	045	046	047	048
Primary Schemes						
Dimension of Cubicle(W*D*H)	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250
Rated Current(A)	630~4000					
Main Apparatus	VCB(VEP)					
	CT					
	PT	3	2	2	3	2
	Fuse	3	3	3	3	3
	Earthing Switch					
	Arrester	3				3
Application	P+Arrester	P+R	P+R	P+R	P+R	R+P+Arrester

Meaning of code name in primary schemes
I-Incoming F-Outgoing D-Disconnecting B-Coupling R-Busbar Rising M-Metering P-PT T-CPT S-Arrester

NO.	049	050	051	052	053	054
Primary Schemes						
Dimension of Cubicle(W*D*H)	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250
Rated Current(A)	630~4000					
Main Apparatus	VCB(VEP)					
	CT					
	PT	2	3	3		
	Fuse	3	3	3		
	Earthing Switch					
	Arrester	3	3	3		
Application	R+P+Arrester	R+P+Arrester	R+P+Arrester	R	R	D

NO.	055	056	057	058	059	060
Primary Schemes						
Dimension of Cubicle(W*D*H)	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250
Rated Current(A)	630~4000					
Main Apparatus	VCB(VEP)					
	CT					
	PT			2	2	
	Fuse			3	3	
	Earthing Switch					1
	Arrester					
Application	D+B	D+B	D+B+P	D+B+P	Outgoing phase changing	Outgoing phase changing

Meaning of code name in primary schemes
I-Incoming F-Outgoing D-Disconnecting B-Coupling R-Busbar Rising M-Metering P-PT T-CPT S-Arrester

NO.	061	062	063	064	065	066
Primary Schemes						
Dimension of Cubicle(W*D*H)	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250
Rated Current(A)	630~4000					
Main Apparatus	VCB(VEP)					
	CT	2	2	3	3	2
	PT	2	2	2	2	3
	Fuse	3	3	3	3	3
	Earthing Switch					
	Arrester					
Application	M	M	M	M	M	M

NO.	067	068	069	070	071	072
Primary Schemes						
Dimension of Cubicle(W*D*H)	650/800/1000 *1400*2250	650/800/1000 *1400*2250	1000 *1600*2250	1000 *1600*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250
Rated Current(A)	630~4000					
Main Apparatus	VCB(VEP)		Transformer 50/80/100kVA	Transformer 50/80/100kVA		
	CT	3	3			
	PT	3	3		2	3
	Fuse	3	3	3	3	3
	Earthing Switch			1		
	Arrester					
Application	M	M	T	T	P+Arrester	P+Arrester

Meaning of code name in primary schemes
I-Incoming F-Outgoing D-Disconnecting B-Coupling R-Busbar Rising M-Metering P-PT T-CPT S-Arrester

Primary Scheme of AMS (24kV)

NO.	073	074	075	076	077	078
Primary Schemes Primary Schemes						
Dimension of Cubicle(W*D*H)	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250	650/800/1000 *1400*2250
Rated Current(A)	630~4000					
Main Apparatus	VCB(VEP)					
	CT					
	PT	2	2	3	3	2
	Fuse	3	3	3	3	3
	Earthing Switch					
	Arrester	3	3	3	3	
	Application	P+B+Arrester	P+B+Arrester	P+B+Arrester	M	M

Meaning of code name in primary schemes
I-Incoming F-Outgoing D-Disconnecting B-Coupling R-Busbar Rising M-Metering P-PT T-CPT S-Arrester

NO.	01	02	03	04	05	06
Primary Schemes						
Dimension of Cubicle(W*D*H)	800/1000 × 1680 × 2250					
Rated Current(A)	630~4000					
Main Apparatus	VCB(VEP)	1	1	1	1	1
	CT	2	2	2	3	3
	PT					
	Fuse					
	Earthing Switch		1	1	1	1
	Arrester			3		3
	Potential Indicator	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement
Application	I.F	I.F	I.F	I.F	I.F	I.F

NO.	07	08	09	10	11	12
Primary Schemes						
Dimension of Cubicle(W*D*H)	800/1000 × 1680 × 2250					
Rated Current(A)	630~4000					
Main Apparatus	VCB(VEP)	1	1	1	1	1
	CT	2	2	3	3	2
	PT					
	Fuse					
	Earthing Switch					
	Arrester					
	Potential Indicator	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement
Application	B	B	B	B	B	B

Meaning of code name in primary schemes
I-Incoming F-Outgoing D-Disconnecting B-Coupling R-Busbar Rising M-Metering P-PT T-CPT S-Arrester

NO.		13	14	15	16	17	18
Primary Schemes							
Dimension of Cubicle(W*D*H)		800/1000 × 1680 × 2250		800/1000 × 2000 × 2250			
Rated Current(A)		630~4000					
Main Apparatus	VCB(VEP)	1	1	1	1	1	1
	CT	3	3	2	2	2	3
	PT						
	Fuse						
	Earthing Switch				1		
	Arrester					3	
	Potential indicator	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement
Application		B	B	I.F	I.F	I.F	I.F

NO.		19	20	21	22	23	24
Primary Schemes							
Dimension of Cubicle(W*D*H)		800/1000 × 2000 × 2250		800/1000 × 1680 × 2250			
Rated Current(A)		630~4000					
Main Apparatus	VCB(VEP)	1	1	1	1		
	CT	3	3	2	2		
	PT			2	2	2	3
	Fuse			3	3	3	3
	Earthing Switch	1	1		1		
	Arrester		3				
	Potential indicator	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement
Application		I.F	I.F	I+P	I+P	P	P

Meaning of code name in primary schemes
I-Incoming F-Outgoing D-Disconnecting B-Coupling R-Busbar Rising M-Metering P-PT T-CPT S-Arrester

NO.		25	26	27	28	29	30
Primary Schemes							
Dimension of Cubicle(W*D*H)		800/1000 × 1680 × 2250		800/1000 × 2000 × 2250			
Rated Current(A)		630~4000					
Main Apparatus	VCB(VEP)	1	1	1	1		
	CT	3	2	2	3		
	PT	3	3	3	3	3	3
	Fuse	3	3	3	3	3	3
	Earthing Switch	1	1	1	1	1	1
	Arrester	3	3	3	3	3	3
	Potential indicator	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement
Application		B	B	I.F	I.F	I.F	I.F

NO.		31	32	33	34	35	36
Primary Schemes							
Dimension of Cubicle(W*D*H)		800/1000 × 1680 × 2250					
Rated Current(A)		630~4000					
Main Apparatus	VCB(VEP)						
	CT						
	PT	2	3	2	2	3	3
	Fuse	3	3	3	3	3	3
	Earthing Switch						
	Arrester	3	3				
	Potential indicator	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement
Application		P+Arrester	P+Arrester	P+R	P+R	P+R	P+R

Meaning of code name in primary schemes
I-Incoming F-Outgoing D-Disconnecting B-Coupling R-Busbar Rising M-Metering P-PT T-CPT S-Arrester

NO.	37	38	39	40	41	42
Primary Schemes						
Dimension of Cubicle(W*D*H)	800/1000 × 1680 × 2250					
Rated Current(A)	630~4000					
Main Apparatus	VCB(VEP)					
	CT					
	PT					
	Fuse					
	Earthing Switch					
	Arrester					
	Potential indicator	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement
Application	R	R	D	D+B	D+B	Outgoing phase changing

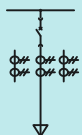
NO.	43	44	45	46	47	48
Primary Schemes						
Dimension of Cubicle(W*D*H)	800/1000 × 1680 × 2250					
Rated Current(A)	630~4000					
Main Apparatus	VCB(VEP)					
	CT		2	2	3	3
	PT		2	2	2	3
	Fuse		3	3	3	3
	Earthing Switch	1				
	Arrester					
	Potential indicator	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement
Application	Outgoing phase changing	M	M	M	M	M

Meaning of code name in primary schemes
I–Incoming F–Outgoing D–Disconnecting B–Coupling R–Busbar Rising M–Metering P–PT T–CPT S–Arrester

NO.	49	50	51	52	53	54
Primary Schemes						
Dimension of Cubicle(W*D*H)	800/1000 × 1680 × 2250					
Rated Current(A)	630~4000					
Main Apparatus	VCB(VEP)				Transformer 50/80/100kVA	Capacitor × 3
	CT	2	3	3		3
	PT	3	3	3		
	Fuse	3	3	3	3	3
	Earthing Switch					
	Arrester					3
	Potential indicator	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement
Application	M	M	M	T	M	

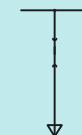
Meaning of code name in primary schemes
I–Incoming F–Outgoing D–Disconnecting B–Coupling R–Busbar Rising M–Metering P–PT T–CPT S–Arrester

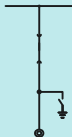
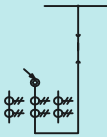
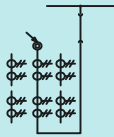
Primary Scheme of AMS (40.5kV)

NO.		01	02	03	04	05	06
Primary Schemes							
Dimension of Cubicle(W*D*H)		1200/1400 × 2500 × 2400			1200/1400 × 2800 × 2400		
Rated Current(A)		630~3150					
Main Apparatus	VCB(VEP) SF6CB(FEP)	1	1	1	1	1	1
	CT	3	3	3	6	3	6
	PT						
	Fuse						
	Earthing Switch		1				
	Arrester	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement
	Potential indicator	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement
Application		I.F	I.F	I.F	I.F	I.F	I.F

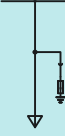
NO.	07	08	09	10	11	12
Primary Schemes						
Dimension of Cubicle(W*D*H)	1200/1400 × 2500 × 2400					
Rated Current(A)	630~3150					
Main Apparatus	VCB(VEP) SF6CB(FEP)	1	1	1	1	1
	CT	3	3	3	3	3
	PT					
	Fuse					
	Earthing Switch		1		1	
	Arrester	As per requirement	As per requirement	As per requirement	As per requirement	
	Potential indicator	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement
Application	I.F	I.F	I.F	I.F	I.F	I.F

Meaning of code name in primary schemes
 I-Incoming F-Outgoing D-Disconnecting B-Coupling R-Busbar Rising M-Metering P-PT T-CPT S-Arrester

NO.		13	14	15	16	17	18
Primary Schemes							
Dimension of Cubicle(W*D*H)		1200/1400 × 2500 × 2400				1200/1400 × 2800 × 2400	
Rated Current(A)		630~3150					
Main Apparatus	VCB(VEP) SF6CB(FEP)	1	1				
	CT	3	3			3	6
	PT						
	Fuse						
	Earthing Switch		1		1		
	Arrester	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement
	Potential indicator	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement
Application		I.F	I.F	D	D	D	D

NO.		19	20	21	22	23	24
Primary Schemes							
Dimension of Cubicle(W*D*H)		1200/1400 × 2500 × 2400		1200/1400 × 2800 × 2400		1200/1400 × 2500 × 2400	1200/1400 × 2800 × 2400
Rated Current(A)		630~3150					
Main Apparatus	VCB(VEP) SF6CB(FEP)					1	1
	CT			3	6	3	3
	PT						
	Fuse						
	Earthing Switch		1				
	Arrester	As per requirement	As per requirement	As per requirement	As per requirement		
	Potential indicator	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement
Application		D	D	D	D	B	B+(I)

Meaning of code name in primary schemes
 I-Incoming F-Outgoing D-Disconnecting B-Coupling R-Busbar Rising M-Metering P-PT T-CPT S-Arrester

NO.		25	26	27	28	29	30
Primary Schemes							
Dimension of Cubicle(W*D*H)		1200/1400 × 2500 × 2400					
Rated Current(A)		630~3150					
Main Apparatus	VCB(VEP) SF6CB(FEP)						
	CT				3		
	PT						
	Fuse						
	Earthing Switch						
	Arrester	3	3				As per requirement
	Potential indicator			As per requirement	As per requirement	As per requirement	As per requirement
Application		S	S+(F)	R	R	R	R

NO.		31	32	33	34	35	36
Primary Schemes							
Dimension of Cubicle(W*D*H)		1200/1400 × 2500 × 2400					
Rated Current(A)		630~3150					
Main Apparatus	VCB(VEP) SF6CB(FEP)					1	1
	CT			3	6	3	3
	PT						
	Fuse						
	Earthing Switch		1				
	Arrester				As per requirement	As per requirement	3
	Potential indicator	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement
Application		R+(I)	M	M	P	P	P

Meaning of code name in primary schemes
I-Incoming F-Outgoing D-Disconnecting B-Coupling R-Busbar Rising M-Metering P-PT T-CPT S-Arrester

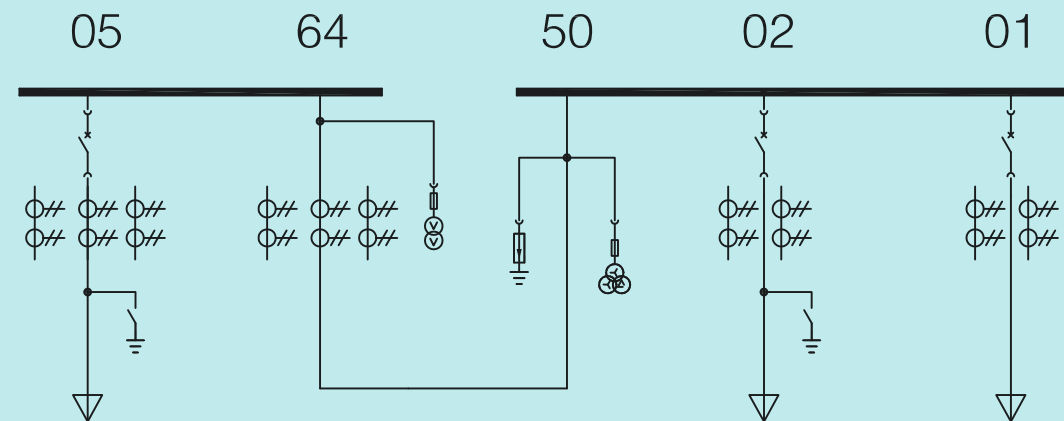
NO.		37	38	39	40	41	42
Primary Schemes							
Dimension of Cubicle(W*D*H)		1200/1400 × 2500 × 2400					
Rated Current(A)		630~3150					
Main Apparatus	VCB(VEP) SF6CB(FEP)						
	CT					3	3
	PT	3	3	3	3	3	3
	Fuse	3	3	3	3	3	3
	Earthing Switch		1		1		1
	Arrester	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement
	Potential indicator	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement	As per requirement
Application		P	P	P+(I)	P+(I)	P+(I)	P+(I)

NO.		43	44	45	46	47	48
Primary Schemes							
Dimension of Cubicle(W*D*H)		1200/1400 × 2800 × 2400			1200/1400 × 2500 × 2400		1200/1400 × 2800 × 2400
Rated Current(A)		630~3150					
Main Apparatus	VCB(VEP) SF6CB(FEP)	1	1				Transformer 50/80/100kVA
	CT	3	3				
	PT	3	3	3	3	3	
	Fuse	3	3	3	3	3	3
	Earthing Switch		1				
	Arrester	As per requirement	As per requirement	3		3	
	Potential indicator		As per requirement	As per requirement	As per requirement	As per requirement	As per requirement
Application		P+(I)	P+(F)	P+(I)	P+R	P+R	T

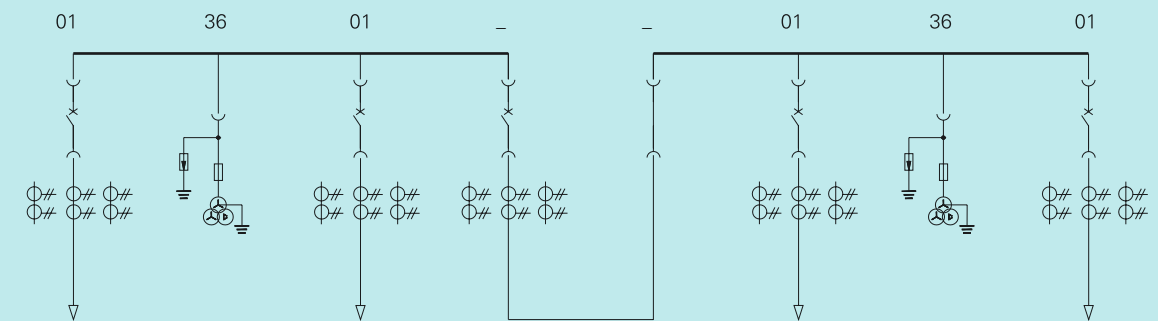
Meaning of code name in primary schemes
I-Incoming F-Outgoing D-Disconnecting B-Coupling R-Busbar Rising M-Metering P-PT T-CPT S-Arrester

Application Example

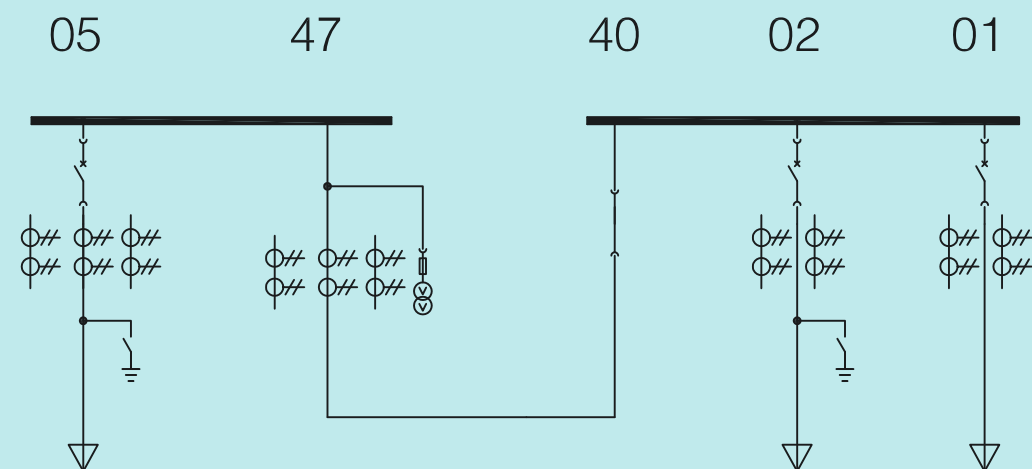
Application Example of AMS (12kV)



Application Example of AMS (40.5kV)



Application Example of AMS (24kV)



Installation of switchgear

Installation of AMS 12kV switchgear

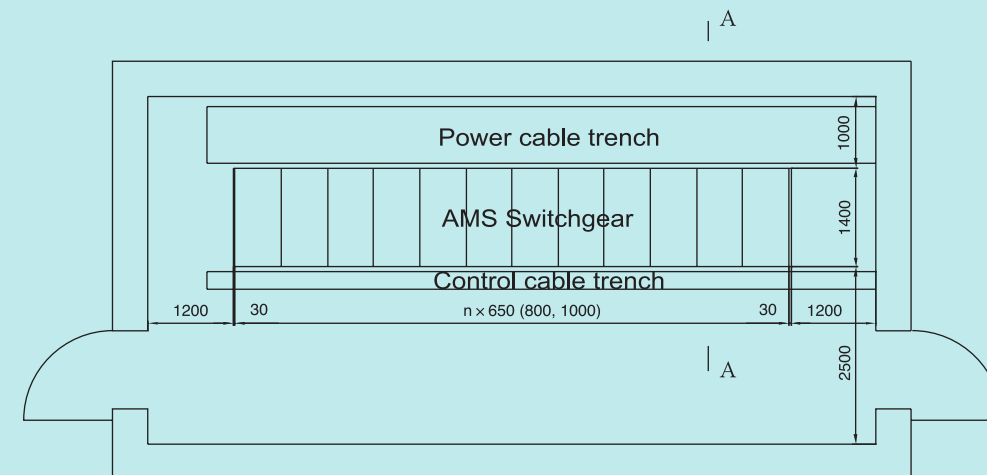


Figure1:plane diagram for switchgear arrangement scheme

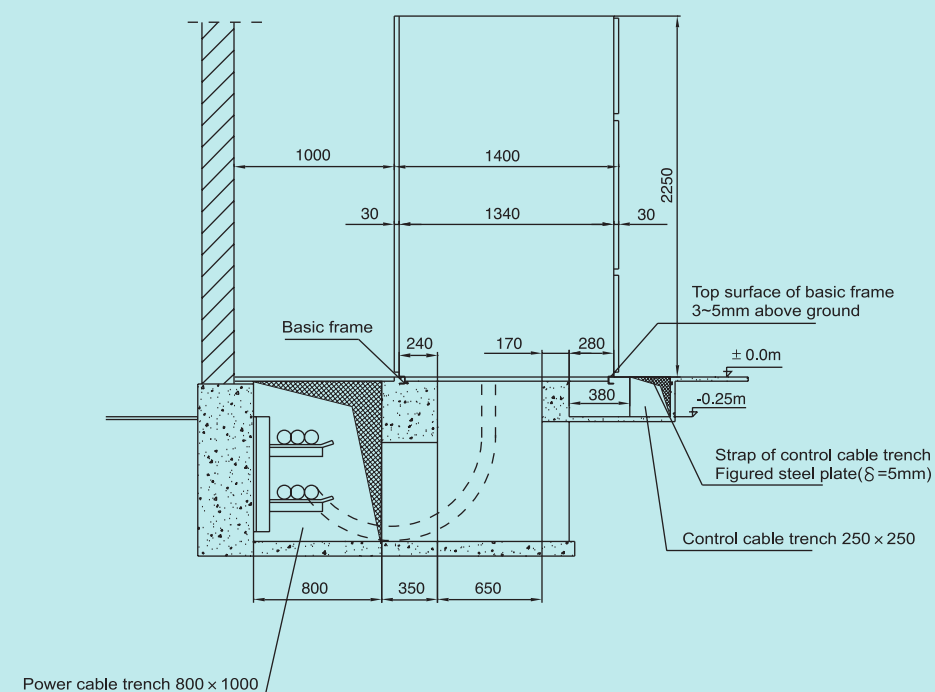


Figure2:plane diagram for switchgear arrangement scheme (section A-A)

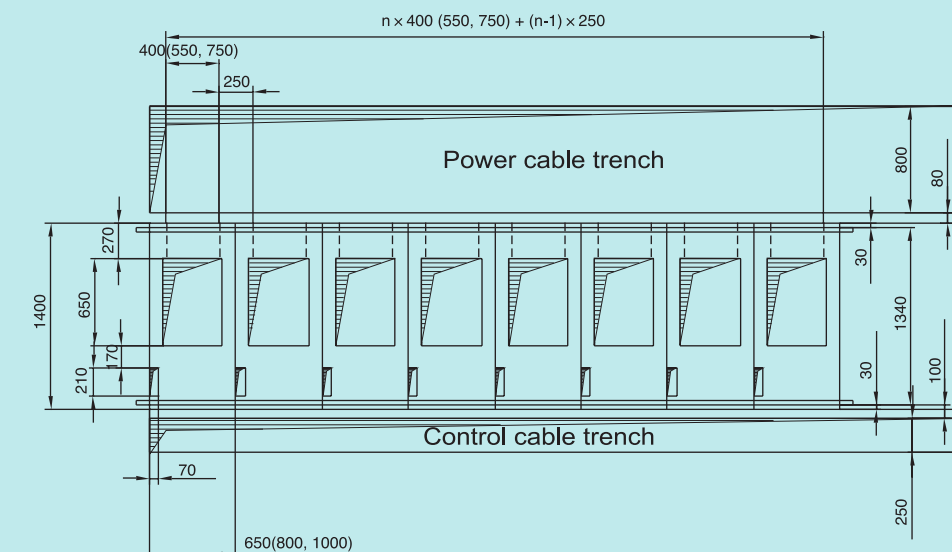


Figure3:Switch-room cable trench arrangement scheme

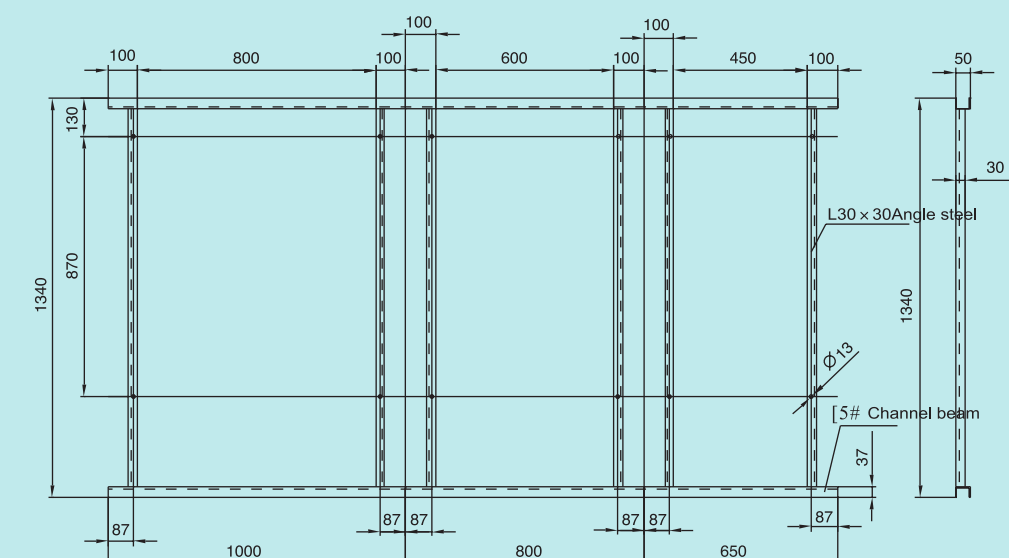


Figure4:Typical basic frame foundation (for 1000mm/800mm/650mm width dimension model)

Installation of AMS 24kV switchgear

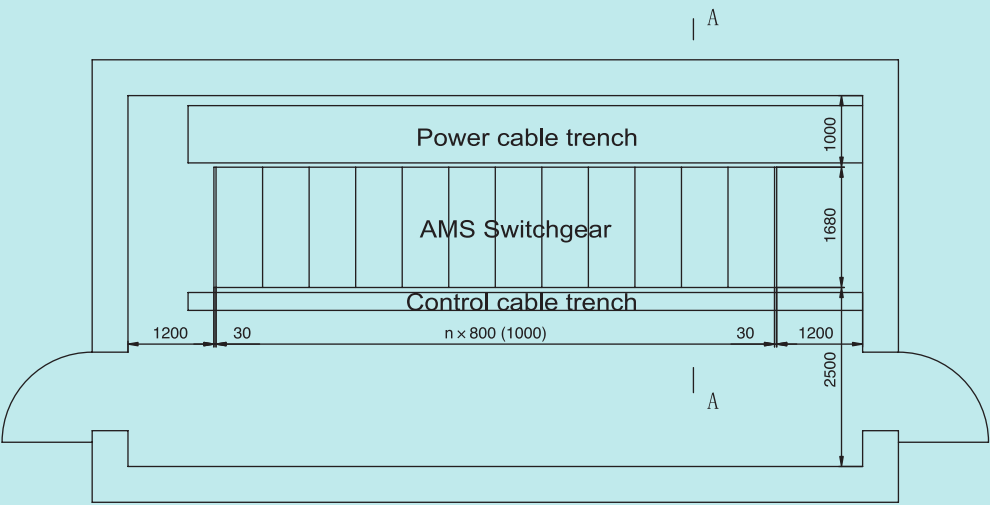


Figure1:plane diagram for switchgear arrangement scheme

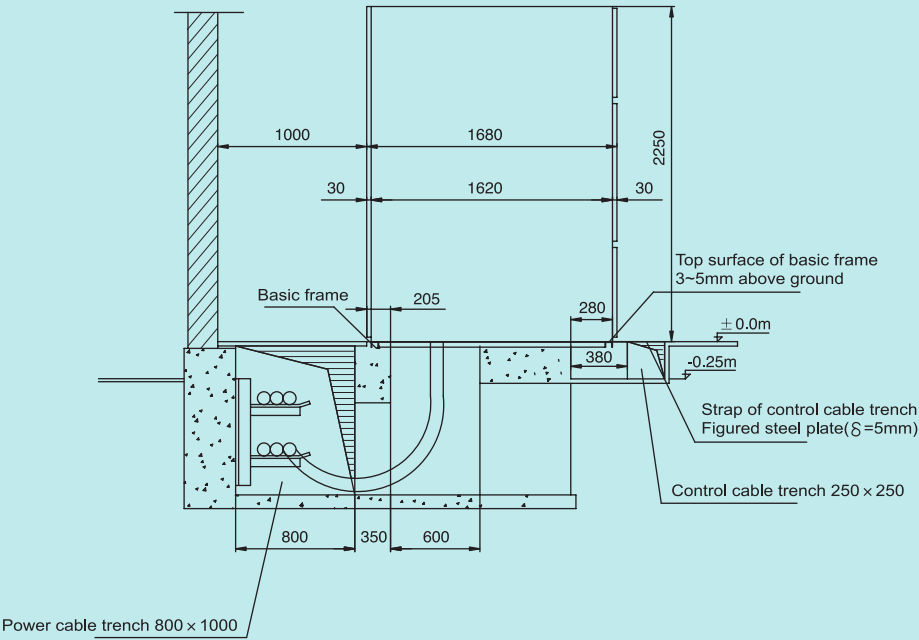


Figure2:plane diagram for switchgear arrangement scheme (section A-A)

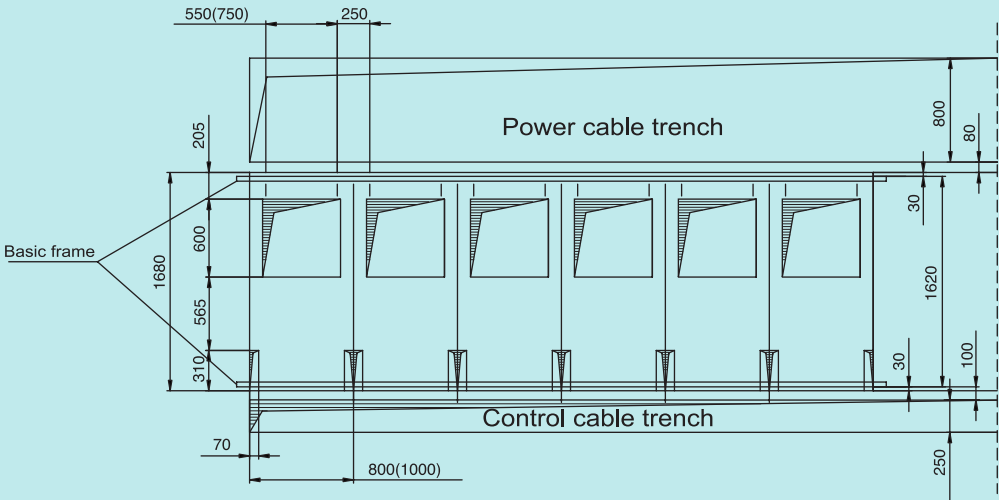


Figure3:Switch-room cable trench arrangement scheme

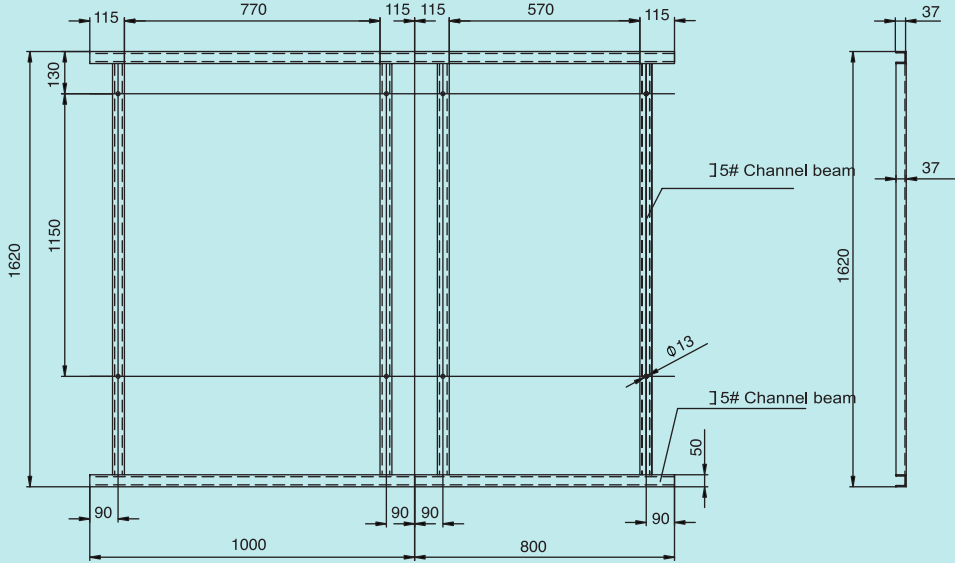


Figure4:Typical basic frame foundation (for 1000mm/800mm width dimension model)

Installation of AMS 40.5kV switchgear

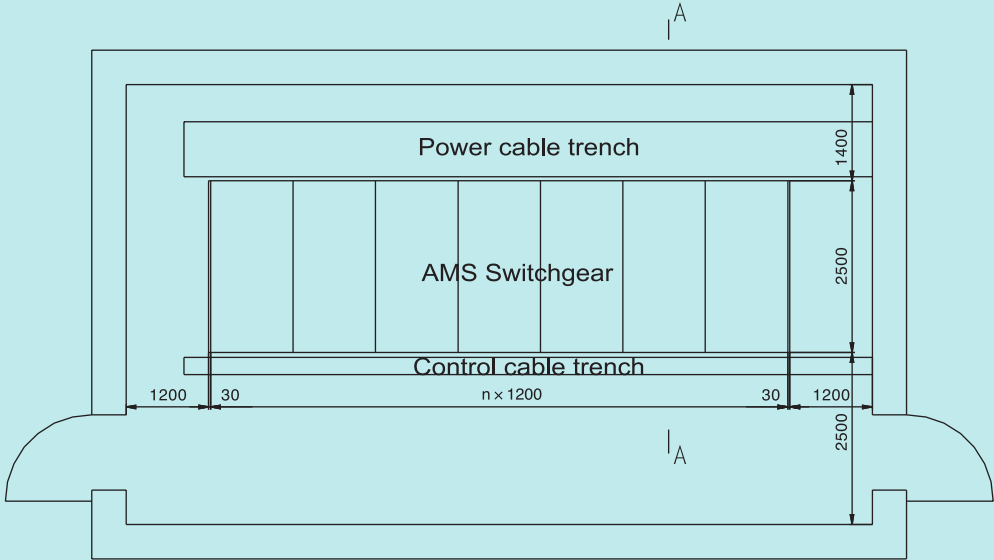


Figure1:plane diagram for switchgear arrangement scheme

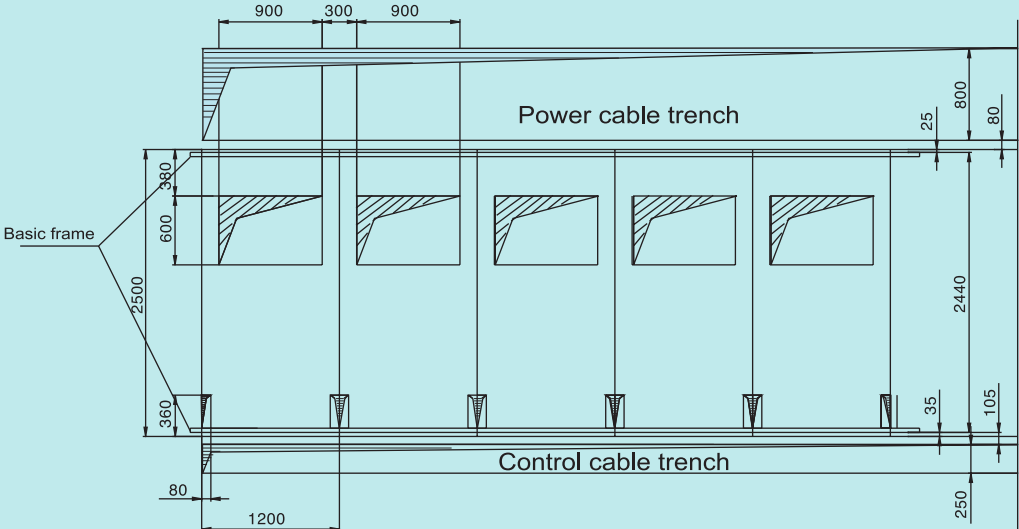


Figure3:Switch-room cable trench arrangement scheme

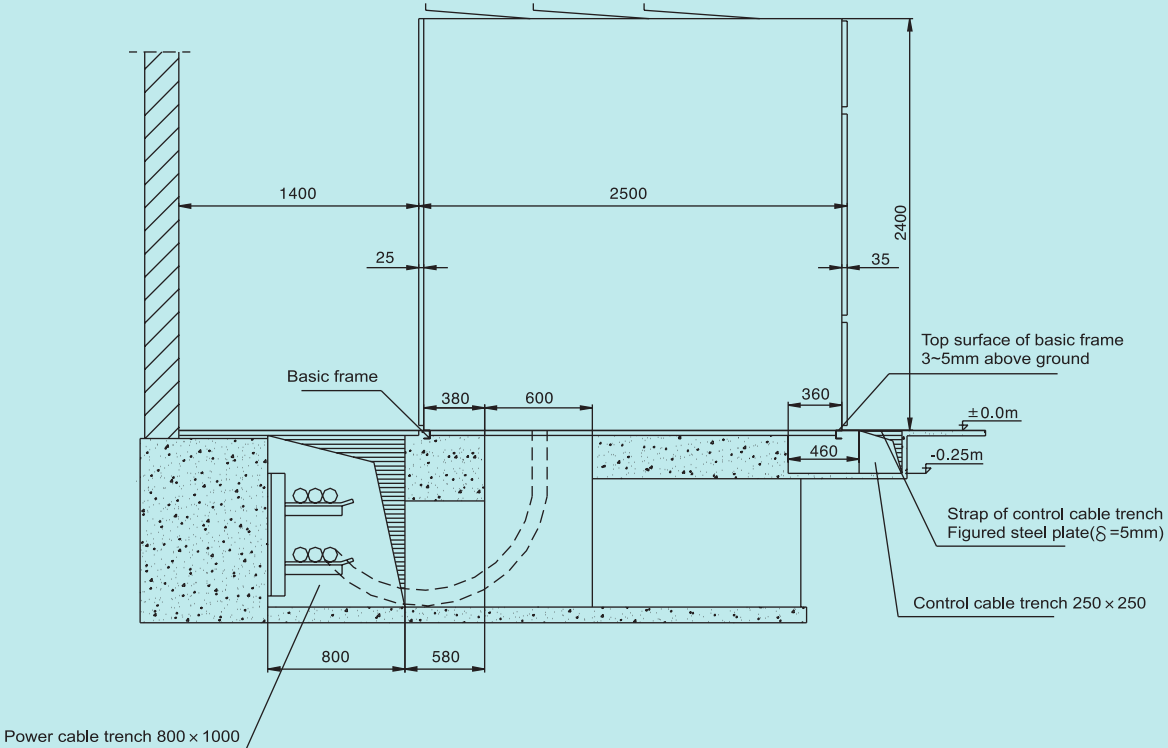


Figure2:plane diagram for switchgear arrangement scheme (section A-A)

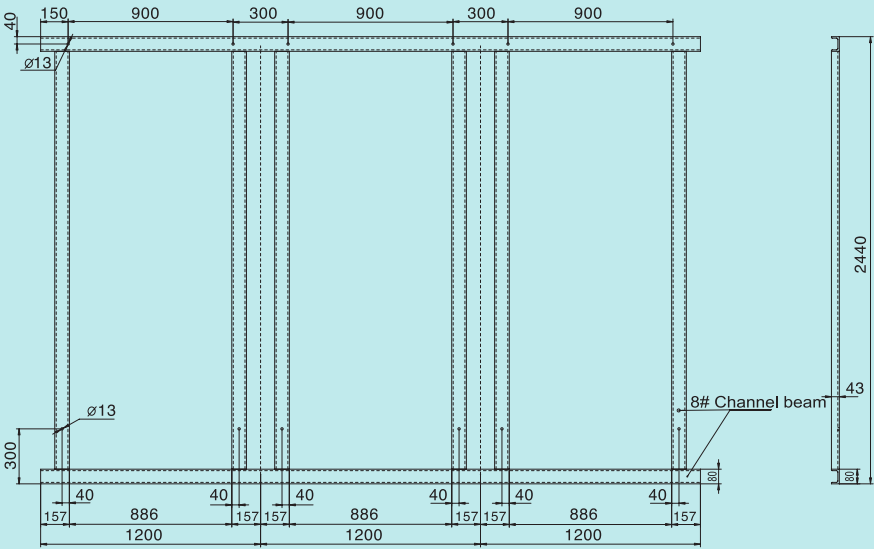


Figure4:Typical basic frame foundation