

DQC系列户内柜式气体绝缘开关设备(C-GIS)
DQC Series Indoor Cubicle-type Gas Insulated Switchgear(C-GIS)
12kV,...3150A,...40kA



江苏大全长江电器股份有限公司
JIANGSU DAQO CHANGJIANG ELECTRIC CO.,LTD.



DQC 系列

户内柜式气体绝缘开关设备(C-GIS)



DQC 系列户内柜式气体绝缘开关设备(C-GIS)是基于国际先进的固体绝缘技术、气体绝缘技术、真空开断技术、模块化插接技术并结合激光焊接技术、氦气检漏工艺的新一代产品,广泛用于小型变电所、开闭所、箱式变电站、住宅小区、工矿企业、大型商场等场所。产品具有高可靠性、免维护、小型化等特点。

DQC series indoor cubicle-type gas insulated switchgear called as C-GIS, is a kind of product which accords to the international advanced technique. Such as solid insulated, gas insulated, VCB and modular plug board, Combining the new He leak-check. The product is widely used in a variety of industries, such as small secondary substation, switching station, box type substation, residential quarter, industrial and mining enterprises, large shopping malls and other places. The product has high reliability, maintenance-free and miniaturization etc.

高可靠性

免维护

DQC(C-

小型化

GIS)

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使用环境

Operation Conditions

- 环境温度：
 - 最高环境温度 +65℃
 - 最低环境温度(户内) -40℃
 - 海拔高度：不超过4500m
 - 大气环境：不受污秽、烟尘、腐蚀性或可燃气体、盐雾等环境因素影响
 - 地震烈度：不超过8度
- 注：当海拔超过2000m时，请与制造商协商。

- Ambient temperature:
 - Max. +65℃
 - Min. (indoor) -40℃
 - Site altitude: not more than 4500m
 - Ambient air: The ambient air is not to be significantly contaminated by corrosive, flammable gases or salt etc.
 - Earthquake intensity: less than 8 magnitude
- Note:** Site altitude more than 2000m are to be agreed by the manufacture and operator.

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技术特点

Technical Advantages

- 高压带电部件采用气体绝缘，不受环境影响
- 结构紧凑，占地面积小
- 采用界面绝缘结构，实现高压部件的插接以及柜体的扩展
- 断路器与隔离开关之间采用有效的联锁，防止误操作
- 高压元件组成若干标准模块，采用插接式连接，应用方便
- 柜与柜之间采用固体绝缘母线连接，开关柜拼装时不涉及气体操作
- 采用激光焊接和氦气检漏技术，可靠性高
- 免维护

- Adopting gas insulated for high voltage electrification components, independence to environment influences.
- Structure compact, minimum space required.
- Adopting interface insulated structure, realizing high voltage electrification components insertion and switchgear extension.
- Adopting the effective interlocking between circuit breaker and the three position switch, preventing from mishandling.
- HV components constitutes some standard modules, adopts plug-in connection, application convenient.
- Adopting the solid insulation plug-in busbar connector, it is not need any gas operate. When connecting between cubicles.
- Technology of the laser weld and He Leak-check is applied, high reliability.
- Maintenance-free.



TRUMPF Laser Cell 6005三维激光加工机床
TRUMPF Laser Cell 6005 3D laser machine



SEILER公司的全自动氦检设备
Automatic helium leak detection equipment

3 技术参数 Technical Data

	单位 Unit	DQC-12
额定电压 Rated voltage	kV	12
额定频率 Rated frequency	Hz	50
额定工频耐受电压(1min) Rated power frequency withstand voltage (1min)	kV	42/48
额定雷电冲击耐受电压 Rated lightning impulse withstand voltage	kV	95/110
主母线额定电流 Rated current of busbar	A	...3150
分支母线额定电流 Rated current of tee-offs	A	...3150
额定短时耐受电流(4s) Rated short time withstand current (4s)	kA	...40
额定峰值耐受电流 Rated peak withstand current	kA	...100
气体密封室防护等级 Gas-tight enclosure protection level		IP67
开关柜体防护等级 Switchgear protection level		IP42
绝缘气体 Insulating gas		SF ₆
额定工作压力(20°C表压) Rated operating pressure (at 20°C, gauge)	Mpa	0.02
最低工作压力(20°C表压) Minimum operating pressure (at 20°C, gauge)	Mpa	0.01
外形尺寸(宽×深×高) Outline dimensions (W×D×H)	mm	(600-1000)×(1400-1950)×2400

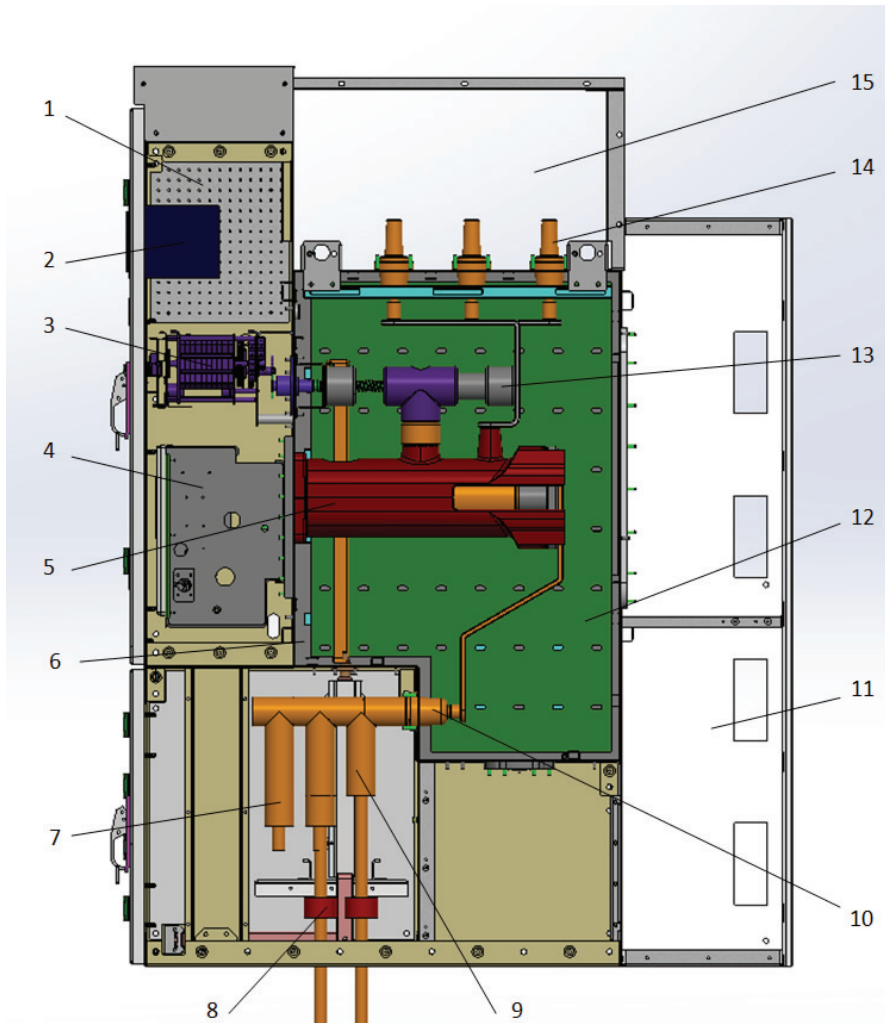
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结构示意图

Structure Sketch

12kV C-GIS 典型结构

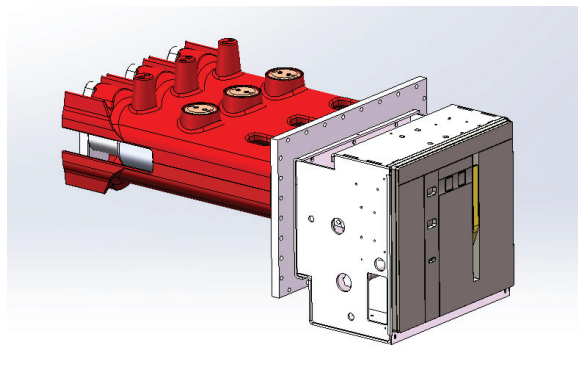
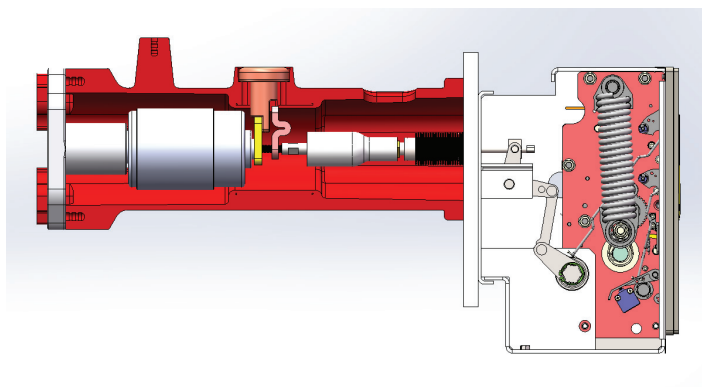
12kV C-GIS typical structure



- | | | |
|---|--|--|
| 1. 低压室
Low-voltage compartment | 7. 避雷器
Surge arrester | 13. 三工位开关
Three position disconnector |
| 2. 控制单元
Control unit | 8. 电流互感器 (根据项目选择)
Current transformer | 14. 母线套管
Busbar bushing |
| 3. 三工位隔离开关操作机构
Three-position disconnector operating mechanism | 9. 电缆插头
Cable terminal | 15. 母线室
Busbar compartment |
| 4. 断路器操作机构
Circuit-breaker operating mechanism | 10. 出线套管
Cable bushing | |
| 5. 断路器
Circuit-breaker | 11. 压力释放通道 I
Pressure relief duct 1 | |
| 6. 充气间隔
Gas tank | 12. 绝缘气体
Insulating gas | |

5 主要元件 Main Components

真空断路器(型号DQV-X-12) Vacuum circuit-breaker(Model:DQV-X-12)



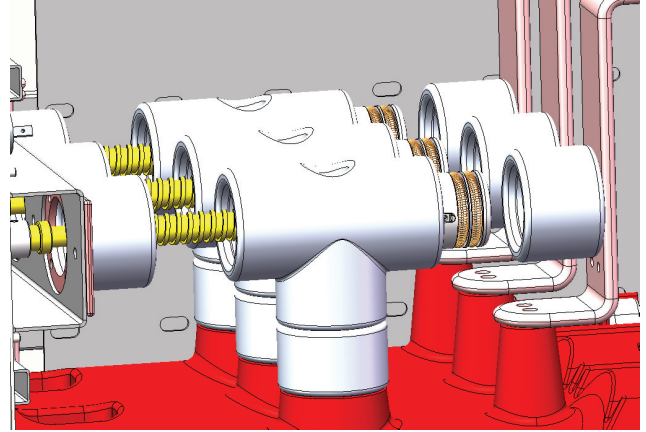
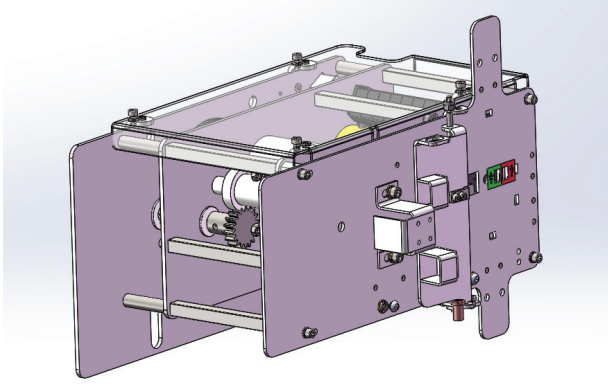
真空断路器特点 Vacuum circuit-breaker characteristics

- 真空断路器的功能包括：
 - 合、分额定电流
 - 开断短路电流
 - 与三工位开关配合进行接地操作
 - 断路器的三相极柱水平放置于气室内，与其它元件连接方便
 - 断路器的操动机构与极柱通过直动波纹管连接，传递动力
- Vacuum circuit-breaker performs the following function:
 - Opening and closing on rated current
 - Short-circuit breaking operations
 - Earthing function in conjunction with three-position switch
 - The circuit-breaker poles are installed horizontally in gas compartment easy connecting with other components
 - The circuit-breaker operating mechanism connected to the poles by a straight moving bellows, transmitting force

真空断路器技术参数 Vacuum circuit-breaker technical data

	单位 unit	DQV-X-12
额定电压 Rated voltage	kV	12
额定电流 Rated current	A	...3150
额定频率 Rated frequency	Hz	50
额定工频耐受电压(1min) Rated power frequency withstand voltage (1min)	kV	42/48
额定雷电冲击耐受电压 Rated lightning impulse withstand voltage	kV	95/110
额定短时耐受电流(4s) Rated short time withstand current (4s)	kA	...40
额定峰值耐受电流 Rated peak withstand current	kA	...100
额定短路开断电流(有效值) Rated short-circuit breaking current (rms)	kA	...40
额定短路关合电流(峰值) Rated short-circuit breaking current (peak)	kA	...100
机械寿命 Mechanical endurance	次 operations	30000

三工位开关 Three-position switch



三工位开关特点 Three-position switch characteristic

- 三工位开关的功能包括:
 - 母线联接
 - 隔离
 - 接地
 - 三工位开关位于气室内，其操动机构模块位于气室外，两者之间通过特殊的磁流体密封结构实现连接
 - 动触头通过绝缘丝杠驱动
 - 可手动或电动操作
- The three-position disconnecter performs the following function:
 - Connecting
 - Disconnecting
 - Earthing
 - The three-position disconnecter is located in the gas compartment, and the operating mechanism block is outside, realizing connection by the magnetic fluid sealing structure between both
 - The moving contact by the insulating spindle driving
 - Operate by hand or by a motor

隔离开关技术参数 Three position switch technical data

额定电压 Rated voltage	kV	12
额定电流 Rated current	A	...3150
额定工频耐受电压 (1min) Rated power frequency withstand voltage (1min)	kV	42/48
额定雷电冲击耐受电压 Rated lightning impulse withstand voltage	kV	95/110
额定短时耐受电流 (4s) Rated short time withstand current (4s)	kA	...40
额定峰值耐受电流 Rated peak withstand current	kA	...100
机械寿命 Mechanical endurance	次 operations	10000
相间距 Pole-centre distance	mm	160/210

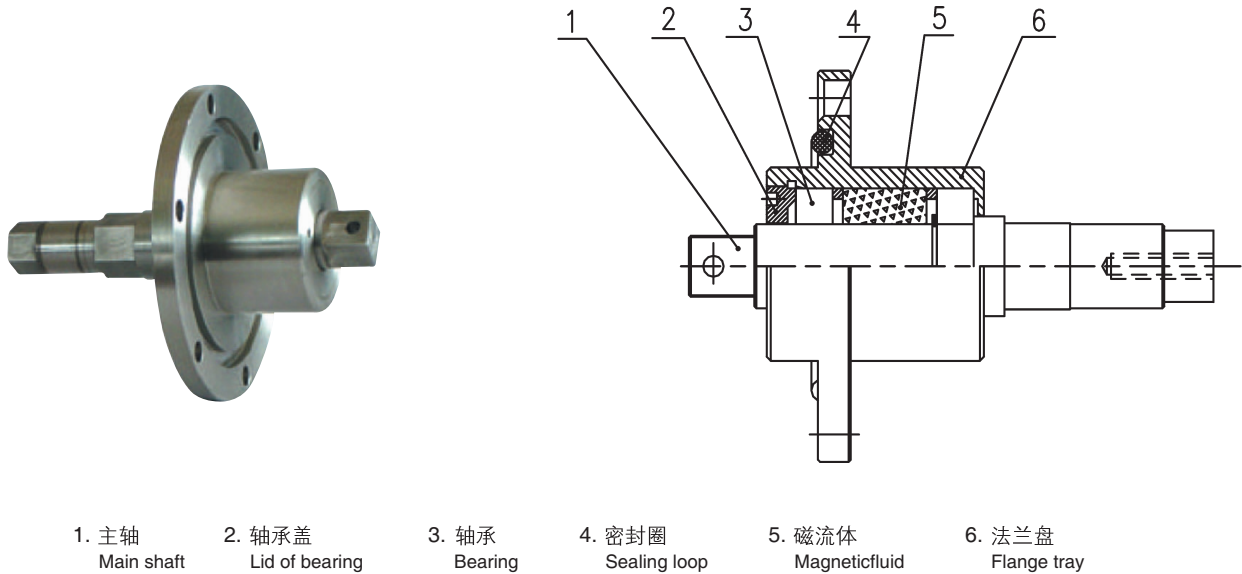
* 注：额定电流 > 1250A时相间距210mm
 Note: rated current more than 1250A distance 210mm

6 特殊结构 Special Structure

磁流体密封结构 Magneticfluid sealing structure

- 零泄漏
- 可靠性高、寿命长
- 耐压性能好

- Zero leakage
- High reliability and long life
- Excellent withstand pressure



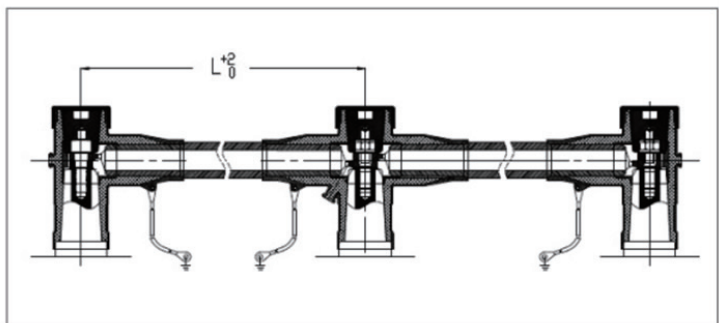
母线连接系统 Busbar connection system

- DQC-12可以配备外部固体绝缘母线，其额定电流有1250A/2500A/3150A三种。

*具体的尺寸说明和安装要求，见母线厂家资料。

- DQC-12 can be equipped with external solid insulated busbar for busbar extension. There are three kinds of busbar coupling: 1250A/2500A/3150A.

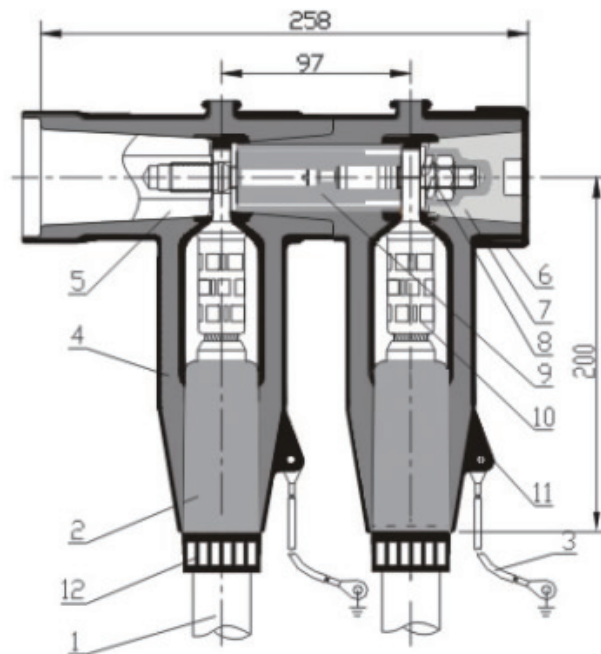
Detailed description and installation requirements, see busbar manufacturer information.



插接式电缆 Cable with plug-connectors

- DQC-12系列气体绝缘环网柜所有单元出线套管采用统一标准的C型电缆套管，安装尺寸符合DIN47636和EN50181，推荐采用屏蔽型欧式电缆头，厂家可以根据客户需求，采用国外品牌，也可以采用国产知名品牌。
- 可以提供双电缆进线，带后接式避雷器等特殊方案，需要在订货时明确电缆规格和数量。

- The DQC-12 are equipped with cable bushings which comply with DIN47636 and EN50181, Interface C with M16 x 2 metric threads. The European shielding cable terminations are recommended, which can be matched not only with the foreign brand products, but also with the domestic cable termination products as to meet the different customers' demands.
- Please specify if double set of cables, combination mode rear lightning arrestors or other special demand are needed.



- 具体的尺寸说明和安装要求，见电缆附件厂家资料
Detailed description and installation requirements, see cable connector manufacturer information

DQC系列户内柜式气体绝缘开关设备(C-GIS)

电压互感器

Voltage transformer

- 根据用户的需要，可以十分方便的安装电压互感器、电流互感器元件。
- 除采用常规电压互感器JDZ系列型号外，还可以选择特制的电缆插头式电压互感器：JSZV-10R型；大容量供电电源变压器DC-3，单只最大输出达到3kVA。

- The DQC-12 cable compartment size allows for the convenient installation of PT and CT.
- According to the customer's requirements, in addition to the conventional models JDZ type, special specifications of the Cable plug type voltage transformer JSZV-10R and the large capacity power supply transformer DC-3, output capacity up to 3kVA, also can be used.



电流互感器

Current transformer

- 电流互感器根据项目参数需要和安装条件，可以选择开启式，穿芯式，和跑道式产品。

- Core open type, Ring core type and racetrack core type Current transformers can be choose according to project requirements.



一次方案(典型方案)

Primary Schemes (Typical)

方案编号 Scheme No.		1	2	3	4	5
主接线方案 Single-line diagram						
用途 Application		馈线柜 Feeder	馈线柜 Feeder	馈线柜带线路PT Cable feeder+PT	馈线柜带线路PT Cable feeder+PT	馈线柜带线路PT Cable feeder+PT
额定电流 (A) Rated current		...3150	...3150	...3150	...3150	...3150
主要元件 Main Components	真空断路器 VCB DQV-X-12	1	1	1	1	1
	三工位开关 DQDS-12	1	1	1	1	1
	电流互感器 CT	3	3	3	3	3
	电压互感器 PT			3	3	1
	避雷器 Surge arrester CM-33/35		3	3	3	3
	带电显示器 Voltage indicator	1	1	1	1	1
	每相电缆根数 Cable per pole	1~4	1~4	1~4	1~4	1~4

方案编号 Scheme No.		6	7	8	9	10
主接线方案 Single-line diagram						
用途 Application		母联柜 Bus coupler	隔离柜 Disconnector	母联柜带母线PT Bus coupler+PT	隔离柜带母线PT Disconnector+PT	计量柜 Metering
额定电流 (A) Rated current		...3150	...3150	...3150	...3150	...3150
主要元件 Main Components	真空断路器 VCB DQV-X-12	1		1		
	三工位开关 DQDS-12	1	1	1	1	1
	电流互感器 CT	3	3	3	3	3
	电压互感器 PT			3	1	3
	避雷器 Surge arrester CM-33/35					
	带电显示器 Voltage indicator	1	1	1	1	1
	每相电缆根数 Cable per pole					

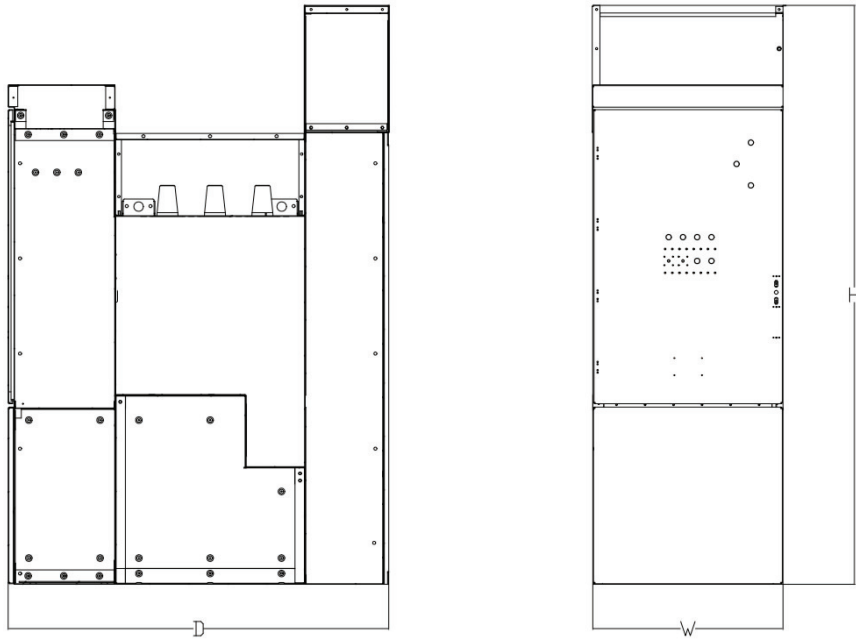
DQC 系列户内柜式气体绝缘开关设备(C-GIS)

方案编号 Scheme No.		11	12	13	14	15
主接线方案 Single-line diagram						
用途 Application		母联柜 Bus coupler	隔离柜 Disconnector	PT柜 PT	PT柜 PT	馈线柜带母线PT Feeder+PT
额定电流 (A) Rated current		...3150	...3150	...3150	...3150	...3150
主要元件 Main Components	真空断路器 VCB DQV-X-12	1				1
	三工位开关 DQDS-12	1	1	1	1	1
	电流互感器 CT	3				3
	电压互感器 PT			3	3	3
	避雷器 Surge arrester CM-33/35			3		
	带电显示器 Voltage indicator	1	1	1	1	1
	每相电缆根数 Cable per pole	1~4	1~4			1~4

方案编号 Scheme No.		16	17	18	19	20
主接线方案 Single-line diagram						
用途 Application		馈线柜带母线避雷器 Feeder+Arrester	馈线柜带穿芯CT Feeder+CT	馈线柜带穿芯CT与线路PT Feeder+CT+PT	管母馈线 Feeder	管母馈线 Feeder
额定电流 (A) Rated current		...3150	...3150	...3150	...3150	...3150
主要元件 Main Components	真空断路器 VCB DQV-X-12	1	1	1	1	1
	三工位开关 DQDS-12	1	1	1	1	1
	电流互感器 CT	3	6	6	3	3
	电压互感器 PT			1		
	避雷器 Surge arrester CM-33/35	3				3
	带电显示器 Voltage indicator	1	1	1	1	1
	每相电缆根数 Cable per pole	1~4	1~4	1~4		

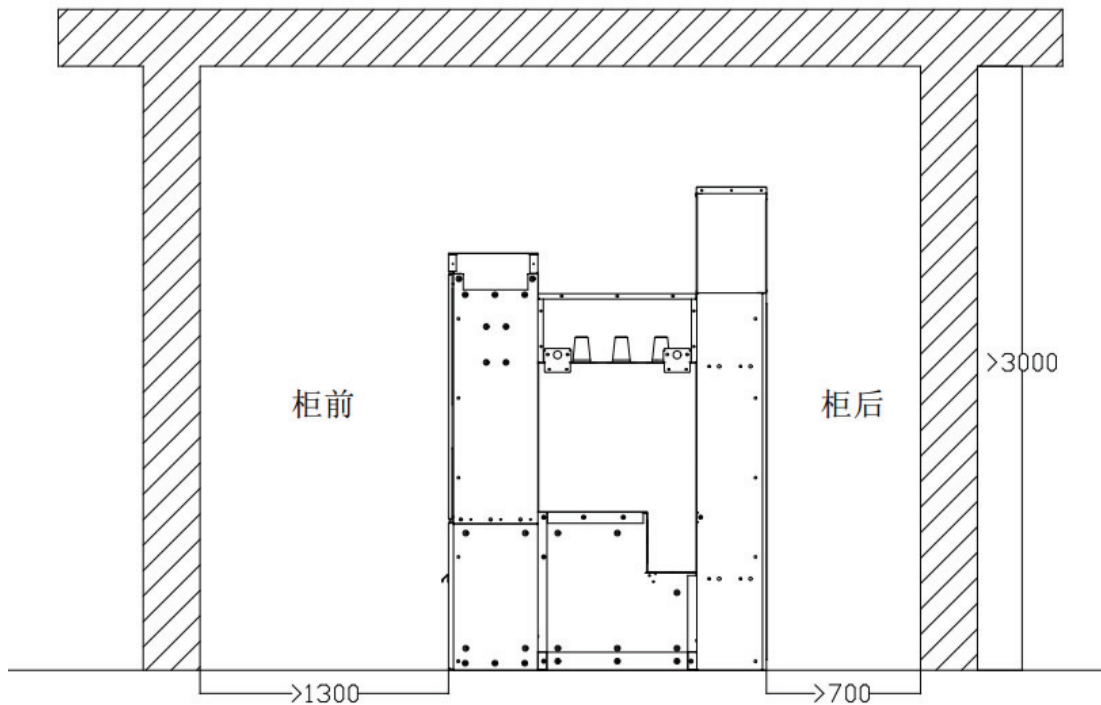
12kV C-GIS 安装 12kV C-GIS installation

开关柜外形尺寸图 Sketch of overall dimension for switchgear



W	D	H
600/800/1000	1400~1950	2100~2400

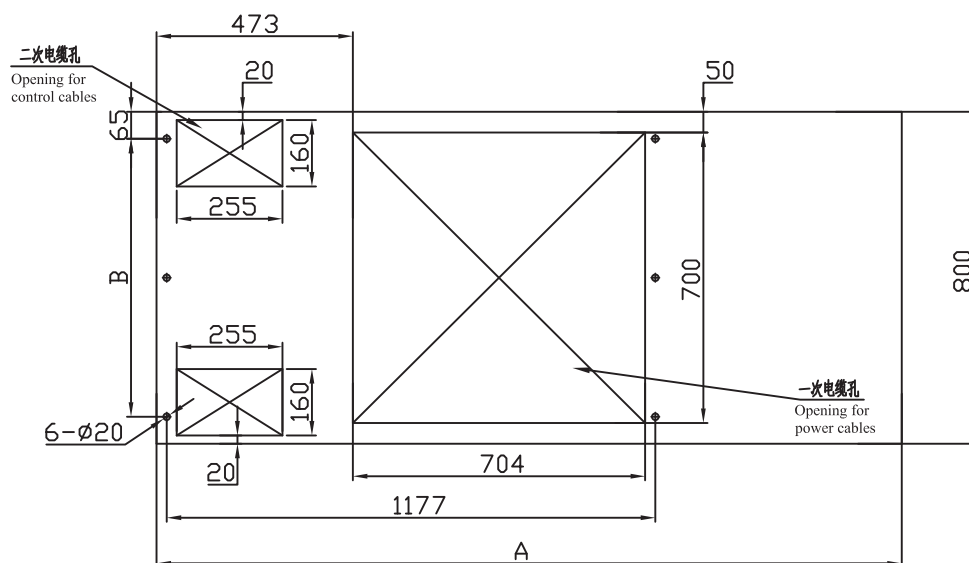
开关柜布置图 Sketch of switchgears for installation



(在预制仓内时, 此尺寸不准要求)

底板开孔及固定示意图

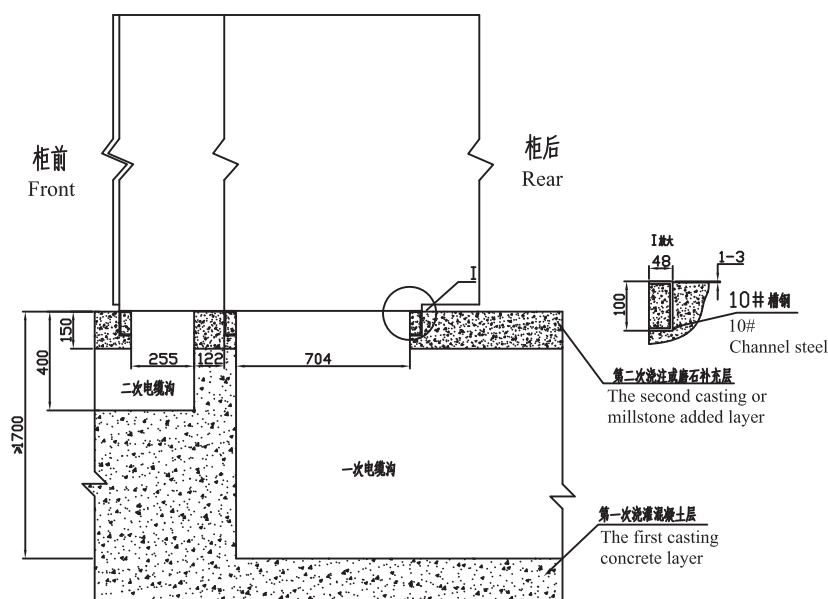
Sketch of floor cutouts and fix points



A	B
1400~1950	470/670/870

安装基础示意图

Sketch of installing foundation details



- 一次电缆终端安装严格按相关工艺要求
The fitting of primary cable terminals should be according to technology requirement strictly.
- 后侧两组槽钢已完全支撑气箱重量，位置不允许变动。
Two sets of channel steel at the rear side have fully supported the weight of the air box, and the position is not allowed to change.
- 其它详见“产品使用说明书”
Refer to "Operation Manual" for others.

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