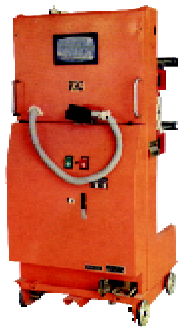
JYN2-10
型金属封闭移开式开关设备



概 述

JYN2-10型金属封闭移开式开关设备为三相交流50Hz、3-10kV单母线分段系统户内成套设备(以下简称手车柜)，作为接受和分配网络电能之用。

Summary

JYN2-10 Metal Clad Switchgear With Drawable Type is the set equipment of three phased alternating current 50Hz, 3-10kV single busbars system that used for accepting and distributing network power.

正常使用环境条件

2.1环境温度 上限+40℃ 下限-5℃
注：允许在-30℃时贮运。
2.2海拔高度不超过1000m；
2.3相对湿度可达100%(+25℃)；
2.4地震烈度不超过8度；
2.5没有火灾、爆炸危险，严重污秽、化学腐蚀及剧烈振动的场所。
注：(1)当实际使用条件与上述条件不同时，应由用户和制造厂双方协商。
(2)当海拔超过1000m时，按JB/Z102-1《高压电器使用于高拔地区的技术要求》规定处理。
(3)当海拔高度不超过2000m时，低压辅助设备不需要采取任何措施。

The normal environment conditions

2.1 Ambient temperature the upper limit +40℃ the lower limit -5℃
Note: It is permitted to preserve and transport under the condition of -30℃.
2.2Altitude of less than 1000m;
2.3Relative humidity may reach 100%(+25℃);
2.4Earthquake intensity of less than 8 degrees;
2.5There aren't the fire-hazard and the exploding hazard; and there aren't the serious dirtiness and the chemic corrosion and the intense vibration there.
Note: (1)When the actual using conditions are different from the foregoing ones, the user should treat with the manufacturer each other;
(2)When the altitude exceeds to 1000m, it should be disposed according to the rule of JB/Z102-1《the technical requirement about the use of high voltage appliance in the area with high altitude》;
(3)When the altitude is less than 2000m, it isn't necessary to take measures for the assistant device with low voltage;

型号及其含义

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- 环境特征代号
  - (TH)用于湿热带
  - (TA)用于干热带
  - (G)用于高海拔
- 接地代号J为接地开关接地(无接地开关则不标)
- 操动方式D为电磁操动 T为弹簧操动
- 断路器型号S为少油断路器 z为真空断路器
- 主回路方案号
- 额定电压(V)
- 设计序号
- 户内
- 移开式(手车式)
- 金属封闭开关设备

JYN2-10
Metal Clad Switchgear With Drawable

额定参数

本产品额定参数符合技术条件的规定。
4.1 主要参数（见表1）;
4.2主回路电器设备技术参数
a.少油及真空断路器。（见表1）
b.直流电磁操动机构（ 见表2、表 3）
c.弹簧操动机构（ 见表4）
d.电流互感器（见表5、表7）
e.电压互感器（见表8）
f.熔断器（见表6、表9）
g.避雷器（见表10）
h.电容器（见表11）
i.氧化锌压敏电阻（见表12）
j.接地开关(见表13)

The rated parameter

The rated parameter of this production is satisfied with the rule of the technical condition.
4.1Main parameter (seeing the table 1);
4.2The technical parameter of the electric appliance in the main circuit;
a. The breaker of the lack oil and the vacuum (seeing the table 1);
b. The operation machine of the DC electromagnet (seeing the table 2 and table 3);
c. The spring operation machine (seeing the table 4);
d. Current transformer (seeing the table 5 and table 7);
e. Voltage transformer (seeing the table 8);
f. Fusible cutout (seeing the table 6 and table 9);
g. Lightning-arrester (seeing the table 10);
h. Capacitor (seeing the table 11);
i. ZnO varistor (seeing the table 12);
j. Grounding switch (seeing the table 13).

设计和结构

本开关柜由固定部分的柜体及可移开部分的手车两部分组成。柜体又有仪表室、主母线室、电流互感器室及手车室四个基本小室用紧固件并装而成。顶进线室与母线桥按需要可用紧固件与柜件组成一体。上述各功能单元均由薄钢板弯制成型材组焊成为独立的柜架结构。根据选用不同的功能单元，可组合成多变的主回路方案，具有电缆进出线，架空进出线及左右联络等功能。

Design and structure

This cubicle switchboard is made up of two parts: the switchboard of the fixing parts and the handcart of the mobile parts. And the former is parallel installed through the fastening piece by four parts: the meter cabinet, the main busbars cabinet, the current transformer cabinet and the handcart cabinet. The top cable connected cabinet and the main busbars bridge may be fixed on the switchboard by the fastening piece in terms of the need. These function elements are all independent switchboard, which are group welded by the section material of sheet steel. According to the use of the different function elements, kinds of main circuit may be made, which act as the in-out wire of cable, the in-out wire of an aerial cable and the connection fore and after.

柜 体

柜体由手车室、主母线室、电流互感器室、仪表室等基本小室组成。各小室间、各柜间均有薄钢板隔开。如为终端柜另附有60mm厚的边屏。各室，各柜间装有供主回路母线通过的绝缘套管及防止事故蔓延的橡胶隔板。在手车室与互感器室，主母线室间的中隔板上，装有可供手车一次隔离插头通过并与柜体一次隔离静刀啮合分离的带有活门的六个触头盒。该活门可随手车的进出开启或关闭，闭合时自锁到位具有隔板的作用，检修隔离静刀时，又可按需分别打开。

仪表室与手车室之间隔板上装有减震器，可防止主回路元件的操作震动引起辅助回路元件的误动作。仪表室的门可装操作开关、指示仪表、信号继电器、信号灯、按钮、电压显示装置等元件，中间内门及后面底板可装继电器。后部为15回路的小母线室、下部装有辅助回路接线端子（可装D型端子约60个）。手车室右侧为辅助回路电缆小室直通仪表，并有盖板。顶部装有手车在试验及运行位置的定位联锁盒，通过盒内的行程开关可通断断路器分合回路并实行手车位置灯光指示。实现本车柜机械、电气联锁及柜柜间的电气联锁，柜底装有推进导向、手车接地锁定装置，与顶部联锁盒相配合，以防止手车在运行状态由于短路电流产生的电动斥力排斥车体移位，造成一次隔离插头起弧等事故。底板上装有明显的位置指示牌，手车室内还装有加热器，对于不在运行的开关设备可开启加热器以降低柜内湿度。柜左侧下部装有接地开关联锁指示位置。手车室大门装有厂标、铭牌、用途牌及一次模拟牌。前门及柜后封板为薄钢板弯制，上装有视察窗，打开柜内照明灯可观察运行情况。

柜、车右侧均装有鉴别同类手车与否的识别装置。手车室顶部装有保证一、二次隔离插头操作程序的联锁装置，还装有内部压力释放排气通道。柜后上部为主母线室，主母线最大截面为2（10×80），下部为电流互感器及电缆室，中间隔板由绝缘子撑上下三相隔离静刀。底部有活动盖板，可供4根电缆进出。接地开关装在手车室中隔板的背面，与后下封板之间装有机械联锁。 （见图1～3）。

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Switchboard

Some basic little cabinets make up of the switchboard, such as the handcart cabinet, main busbars cabinet, the cand the meter cabinet and so on. If it is a terminal cabinet, there will be additional screen with the thickness of 60mm. There are the insulating sleeves and the rubber separator between every cabinet and every broad, and the former provide for the busbars pass of the main circuit while the later is used to avoid the accident spreads. There are six contact boxes with the movable doors installed on the middle separator among the handcart cabinet, the transformer cabinet and the main busbars cabinets, which used to pass the once isolated plugs of the handcart and let the board and the once immobile knife insulate. These movable doors may be opened and closed along the in-out of handcart, and may act as the separator because of the self locking when they close, moreover may be respectively opened when the immobile knife is repaired.

The absorber is installed on the separator between the meter cabinet and the handcart cabinet, which prevent the error operation of the assistant circuit parts due to the operation vibration of the main circuit parts. There are some parts installed on the door of the meter cabinet, such the indicating instrument, the signal relay, the signal light, the button and the display device of voltage and so on. The relay may be fixed on the middle separator and the back floor. The small busbars of circuit 15 lies in the back, and the connecting terminal of assistant circuit lies in the bottom, which used to install the sixty terminals with mode D. There is a small cable cabinet of assistant circuit connecting the meter in the right of the handcart, which is covered by the panel. The interlock box is fixed on the top, which used to decide the testing and running position of the handcart. The open-close circuit of the breaker may be opened or closed and the position of handcart may be showed through the position switch in the interlock box. In order to reach the interlock of the machines and electrics and that of the electrics between the boards, the pushing guide device and the locked device of grounding are installed on the bottom of the board and used with the top interlocked box. Thus some accidents may be avoided, for example the expulsive force bring the replacement of car body and make the once isolated plug bent because of the short circuit during the operation. There is the showing card of position on the floor and the heater in the handcart. The heater can reduce the humidity in the board for the switchgear on the fly. In order to operate the interlock of the showing position, the ground switch is set on the left bottom. The door of the handcart is made up of the factory brand, the nameplate, the purpose card and the once simulated card. The panels of the front door and the back cover are made of sheet steel and the inspection windows. The instance of operation may be viewed by opening the lights in the door. There is the identify device that used to distinguish the congener car on the right of the board and the car. In order to guarantee the operating program of the once and twice insulated plug, the interlock device is installed on the top of the handcart cabinet, yet the vent-pipe is installed to release the internal pressure. The main busbars cabinet lies in the back top of the switchboard, and the max section of the main busbars is 2(10x80), moreover the bottom is the current transformer cabinet and the cable cabinet, in addition the middle insulation separator support the up and down immobile knife. There is the movable cover plate on the bottom for the pass of four cables. The grounding switch lies in the back of the middle separator in the handcart cabinet, which can interlock by the machine under the back cover plate.

手 车

手车为钢板焊接而成 ，底部为四只滚轮，前轮为万向轮。使手车在柜外灵活转动。另装有定向板，与后轮配合使手车在柜内定向移动 。车底框装有接地导向锁定装置。还配有杠杆式省力推进机构。车正面右侧装有脚踏锁定跳闸机构。手车面板装有推车 手把、视察窗，对于断路器手车还装有分合计数指示装置及试验位置用分、合闸操作按钮。车顶右侧为手插式 24 芯二次辅助触头。手车后部可装断路器、一次隔离插头、变压器、避雷器、互感器、熔断器等元件，车内可装操动机构、接触器等元件，按需要可组成各种类型的手车。最基本的有断路器手车、电压互感器（避雷器）手车、隔离手车、接地手车、所用变手车、电容器避雷器手车及计量手车等。

Handcart

The handcart is made of the welding sheet, in the bottom of which there are four contact rollers, and the fore wheel is versatile so that the handcart can smart rotate. Moreover the directional plate and the back wheel can make the handcart directional transfer forward the switchboard. Additionally there is the pushing machine to save the labor by the lever principle. There is the tripped machine used to lock the paddle on the right of front face. The handcart panel is made up of the handlebar, the viewing window and the nameplate, furthermore there are the counting device of opening-closing and the opening-closing button of the testing position in terms of the breaker handcart. The right of the top is twice assistant plug with 24 core inserted by hand. The back may be made up of the breaker, once insulated plug, the transformer, the arrester, the mutual inductor and the fusible cutout and so on. The inside is the operating machine and

the contactor and so on. All kinds of car can be made according to the demand, but the basic car is made up of the breaker handcart, the voltage transformer (the arrester) handcart, the insulted handcart, the grounding handcart, the alterable handcart, the capacitor and arrester handcart and the measuring handcart and so on.

操作与闭锁

8.1带接地开关的断路器进出线方案

接到停电检修某柜的指令后,将此柜KK主令开关上的红色标牌取下与模拟板上相应位置的KK上红色标牌相互交换后翻身插入原位，变为绿色标牌。此时KK开关手把可操作分闸，分闸后，被KK开关把闭锁的程序钥匙才可取下，插入手车室大门的程序锁孔中，顺时针旋转90°，手车室大门解锁，当大门开启，钥匙即被闭锁在锁孔中。开启大门达90°踩动联锁踏板18，使上、下插销11、17从定位联锁盒的锁定孔中脱开（见图4）同时一方面联动脱跳板15、16机械动作断路器跳闸，另一方面释放行程开关限位板6使YWK常开接点复位，断路器合闸回路形成隔离断口（见图13、14、15），运行位置指示白灯2BD熄灭（防止了带负荷拉隔离插头）此时可用省力杠杆推进机构拉出手车。在运行到试验位置之间，由于上插销11端头被上定位联锁盒的端面闭锁，脱跳板15、16及YWK的常开接点使操动机构保持在脱跳状态，从而保证了断路器不能操动。当到达试验位置时，上插销11进入试验位置定位孔中，联动脱跳板16向下运动，脱跳板15被释放，同时上插销11的端头被行程开关限位板6压迫，试验位置行程开关SWK常开接点闭合，使试验位置指示灯2LD发光，此时按动手车面板上的按钮，即可使断路器作分、合等试验。要使手车退出试验位置，由于联锁挡板8脱离了手车顶板限制，二次插头座扣攀4解锁，转动扣攀拔下二次插头 3 即可拉出手车。察看仪表门上电压显示装置为无光电指示时，将操作手把插入柜左下方接地开关操作孔中逆时针90°旋转，接地开关指示牌指示接地，取锁操作轴释放了互感器室封板并闭锁手车进入运行位置。打开后下封板联动柜后柱上的锁板对接地开关操作轴实行反闭锁，保证在后封板打开时，接地开关分不了闸（见图5）。此即可对互感器室和手车室进行检修，检修完毕。必须关上后下封板，使操作轴解锁，才能顺时针转操动手把操动接地开关断开，接地指示为分闸，同时阻止手车进入运行位置的挡块解锁。手车开位置进入试验位置：先踩动联锁踏板18，使上插销11的端头不受联锁盒阻挡，同时联动脱跳板15、16动作跳闸（防止了手车带负荷合隔离插头）。将手车推入试验位置，此时由于联锁挡板8的阻碍，手车要进入运行位置前必须先插上二次先插头3并扣紧扣攀4，由连杆5将联锁挡板8提升至略高于手车顶板，此时手车才可推向运行位置，最后用省力机构将手车就位于运行位置（保证了辅助回路先于主回路接通）。上、下插销均进入锁定孔中，YWK常开接点闭合，运行位置指示白灯2BD 发光。在试验至运行位置之间，由于联锁挡板8受阻于手车顶板，而不能向下旋转，使扣攀4将二次插头3闭锁在插座上（保证了辅助回路后于主回路断开）。关上手车室大门，程序锁钥匙才可取出放入KK主令开关手把上。取下KK开关手把上的绿色指示牌与模拟板上对应的KKm上绿牌交换后，翻身插入原位，变为红色标牌。至此KK手把才可操作合闸投入运行。车面板上分合计数指示装置动作一次。

8.2母线分段方案

对于母线分段断路器与隔离手车间的操作程序由机械与电气联锁来保证。母线分段隔离手车室大门锁与母线分段断路器手车室大门锁完全相同。当隔离手车从运行位置退出时，必须操作母线分段断路器跳闸，取下KK手把上钥匙后才能打开隔离手车室大门，并将钥匙闭锁在门锁孔中。拉出隔离车时，必须先踩动联锁杆，使之联动JLXK1-411行程开关切换接点G，使母线分段断路器合闸回路亦保持一个断口（见图6），从而使隔离手车在未移动丝毫的情况下主、辅回路均已形成了隔离断口。此时仪表板上白灯亮，指示可操作隔离手车。当隔离手车恢复运行时 ，必须有钥匙才能打开隔离手车室大门，而母线分段断路器必在分闸状态才能取下钥匙。并且在隔离手车进入工作位置过程中，由于串接在分段断路器控制回路中的G接点的切换，使断路器合不了闸，唯有隔离手车到达并锁定在工作位置后， G接点复位，并需待大门关闭好，取下钥匙后才可操作分段断路器合闸，连通两段的母线（BD）熄灭。

8.3接地手车

接地手车有方案42与43两种型式。车本体装有三相断路器，方案42为下部三相触头短接接地，方案43为上部三相触头短接接地。对于主母线、顶进线或下进线等功能单元，可按需选择接地车将所需检修的部分接地后即可安全检修。 接地车装有识别装置，具有互换性。对于双进线回路，它与母线分段断路器间装有程控锁。例表13组合方案下图所示，当要检修Ⅰ分段母线，按正常程序操作左端进线柜退出运行，并将手车拉出柜外，此时必须先操作母线段断路器分闸，才可取下钥匙插入接地车左侧程序锁孔中，顺时针旋转90°，使凸出侧板外的挡块解锁钥匙闭锁在锁孔内，至此接地车才可推入进线柜内。先将车锁定在试验位置，由于电气联锁（见图7），见车面板上白灯亮即可将车推入工作位置。考虑大检修时的安全，为防止馈出线反馈送电，电源进线端必须三相接地，此时，只要视接地平车面板上的三个红灯熄灭，意示进柜电源端无电压，才可合接地断路器，使进线电源三相接地，即可安全检修了。调整进线柜与接地车联锁挡块的相对位置，使除主母线外的其它单元的检修，与母联柜无程控闭锁。当主母线接地完毕，走到柜台维护走廊，对应母联柜与隔离柜的主母线室后封板上标有一次模拟线，并装有电压显示装置分别指示左右两段母线是否带电。视无灯光显示的那一侧排列即为建接地需检修的母线段，可用工具打开那一侧主车母线室后封板进行检修。

Operation and Locking

8.1 The inlet wire project of the breaker with the grounding switch

When some switchboard need to be stopped the electric and repaired, at first the red nameplate should be dismounted on the command KK switch and exchange the red nameplate on the KK of the corresponding position of the analogue board, then overturn and insert the former position, thus they will become green. In the way the handle of KK can open the brake, then the program key locked by KK can be dismounted and will be inserted into the program lock of the handcart cabinet, and clockwise rotated 90° so that the door of handcart is unlocked. When the door opens some angles, the key will be locked in the locking hole. In order to make the up-down blot 11 & 17 extract from the locking hole of the located interlock box, the door should be opened 90° and the interlock paddle 18 should be operated (seeing the pig. 4), meanwhile on the one hand that make the mechanical gang plank 15&16 run so that the breaker is opened, on the other hand the limited plank 6 of the position switch should be released so that the normally open node resume the original position, moreover the switch on circuit of the breaker become the insulated fracture (seeing the fig. 13, 14&15), and the showing light 2BD of the operating position will put out, then the handcart may be pulled out by using the lever pushing device. Between the running position and the testing position, the normally open node of the gangplank 15, 16 and YWK make the operating machine keep the dislocation state because the terminal of bolt 11 is locked by the end plane of the up located interlock box, thus the breaker will be ensure not to operate. When the testing position is reached, the up bolt 11 will enter into the located hole of this position, which make the gangplank 16 run down so that gangplank 15 is released, meanwhile the terminal of bolt 11 will be pressured by the limited plank 6 of the position switch, and the normal node of the position switch SWK will be closed in the testing position so that the green light 2LD shine, then the button of the handcart panel may be operated so that the test can be reached like the opening and closing of breaker. Because the interlock baffle 8 has been divorced from the limitation of the handcart top plank, and the buckle 4 of twice plug has been unlocked, the buckle should be rotated so as to pull out twice plug 3 if the handcart wants to be retreated from the testing position. When the voltage display unit isn't showed by the photoelectricity on the meter door, the operating handle should be inserted into the operating hole of the grounding switch under the left and be rotated 90° anticlockwise, moreover the display plate of the grounding switch shows on, meanwhile the operating axis of getting lock releases the cover of the mutual inductor and the position where the handcart enter into running is locked. In order to guarantee the switch closed when the rear cover is open, the operating axis of the grounding switch should be locked in reverse by opening the locking plate on the rear column of the interlock sheet of the rear down cover (seeing fig. 5). Then the mutual inductor cabinet and the handcart cabinet may be repaired. After the repair is finished, the rear down cover must be closed so that the operating axis can be unlocked, then the operating handle is rotated clockwise so that the grounding switch is closed, and the grounding display is on, meanwhile the link stopper used to prevent the handcart from entering into the running position is unlocked. How do the handcart enter from the transferring position to the testing position. At first the interlock paddle 18 is operated so that the terminal of the up bolt 11 isn't hold up by the interlock box, meanwhile the interlock gangplank 15&16 is run and reach tripping operation (prevent the handcart with the charge from insulating the plug), then the handcart should be push into the testing position. Because of the obstacle of the interlock baffle 8, firstly the twice plug 3 must be inserted and fastened the buckle 4, meanwhile the crank arm 5 hoists the interlock baffle 8 to the higher position than the top panel before the handcart enters the running position, finally the handcart may enter the running position by the labor saving machine (which guarantee the assistant circuit closed prior to the main circuit).

Thus the up-down bolts all enter the locking hole, and the normally open node YWK is opened, moreover the light 2BD of the running position shines. Between the testing position and the running position, the interlock baffle 8 may not be rotated up and down due to the obstacle of the top plank, so that the buckle 4 make the twice plug 3 locked on the plug seat (which guarantee the main circuit closed prior to the assistant circuit). After the door of handcart is closed, the program key can be extract from the handle of the demand KK. The green nameplate should be dismounted on the command KK switch and exchange the green name plate on the KKm of the corresponding position of the analogue board, then overturn and insert the former position, thus they will become red. Now the handle KK may be operated and open the brake to run, and the counting display device will be run once.

8.2 The subsection project of the busbars

In terms of the busbars subsection breaker and the insulated handcart the operation program is guaranteed by the interlock of the mechanic and electric. The door lock of the insulated handcart cabinet of the busbars subsection is the same as that of the breaker handcart cabinet of the busbars subsection. When the insulated handcart exits from the insulated position, the busbars subsection breaker must be tripped, and the door of the insulated handcart cabinet can be opened until the key is extracted on the handle KK, furthermore the key will be locked in the locking

hole of door. When the insulated handcart is extracted out, the interlock lever must be run firstly so that the position switch JLXK1-411 can transfer to contact G, thus the tripping circuit of the busbars subsection breaker will keep a fracture (seeing fig.6), therefore the assistant circuits all become the insulated fracture in the instance which the insulated handcart isn't move a bit. Now the write light shines on the meter plate, which imply to operate the insulated handcart. When the insulated handcart resumes the running state, the door of the insulated cabinet has to be opened only by the key, while the key can be only extracted out on the opening states of the busbars subsection breaker. Additionally during the insulated handcart enters into working position, the breaker cann't be switched on because of the switch of the contact G on the control circuit of the section breaker. Only after the insulated handcart reaches and is locked at the working position, the contact G can resume original position, furthermore the subsection breaker switches on after the door closes properly and the key is extracted out, now two busbars (BD) put out.

8.3The grounding handcart

The grounding handcart has two models: project 42 and project 43. The triphase contact is fixed on the car body, among which the project 42 is the bottom one and the project 43 is the top one, furthermore they are all short circuit to the ground. As far as the main busbars, the up inlet wire or the down inlet wire are concerned, the safe repair may be run after the part needed to repair is grounded according to demand. The identified device is fixed on the grounding car, and is of compatibility. For the circuit with two inlet wires, the course control lock is installed between the busbars section breaker and it. It is showed following figure about the group project of the table 13. When the subsection busbars I need be repaired, the left inlet wire switchboard will be stopped running in terms of the normal operating process, and the handcart be extracted out from the switchboard. Now firstly the busbars subsection breaker must be switched on, then the key may be extracted out and inserted in the left locking hole of the grounding car, furthermore the key is rotated 90° clockwise so that the baffle of the salient profile is unlocked and the key is locked in the locking hole, now the grounding car may be pushed into the inlet wire switchboard. At first the car should be locked the testing position because of the interlock of the electric (seeing fig.7), then the car can be pushed into the working position after the write light shines on the car face. Thought of the safety of the major repairs, the inlet terminal of the electric source must be triphase ground in order to prevent the reactive circuit from sending off the current. If the three red lights put out on the panel of the grounding car, it imply that the terminal of the electric resource is null voltage, then the breaker may be switched on so that the electric source of the inlet wire is triphase ground, now the repairs may be run. The other repair except the main busbars is locked by program control through regulating the relative position between the inlet wire switchboard and the interlock baffle of the grounding car. After the main busbars is grounded completely, if the right and left busbars are of electric should be checked on the voltage display device, moreover the once reactive circuit is signed on the rear cover of the corresponding main switchboard and insulated switchboard. In the side of the busbars needing to be repaired, if there is not the light, the rear cover of that main busbars may be opened by the tool and repaired.

吊运安装及调整

安装吊运

本产品系离墙安装式,柜体安装排列方式参见图8～10; 基础施工参见图11 ,基础平整每米允许误差不大于1mm （ 应符合"电力建设施工及验收技术规范"的有关条款规定 ）。 手车室底板不可悬空应靠在基础平面上,以承受车体的重量及操作震动力。

柜顶中部有四只吊环螺钉供吊装用。开关柜拆去包装后按排列图吊装,注意柜体底板的正面不可插入撬棒,以免受力变形。

柜后底部按排列方向敷设截面不小于30mm的接地母线并可靠接地。柜内应保持接地连续性。

调整与使用

开关柜按排列就位后,清扫配电室和开关柜内设备上的灰尘及杂物,对开关柜进行如下调整试验。

1.试验位置

手车置于试验位置,锁定轴销,应正确插入试验位置定位孔中,试验位置行程开关应要靠动作,插入二次插头,位置指示绿灯发光,操动手车面板上试验按钮,断路器能分合闸并正确计数指示。

2.工作位置

启用杠杆式省力推进杆,并踩动联锁杆将车移向工作位置,此时接地开关不能操动; 由于电气联锁及脱跳装置机械联锁的作用,使操动机构闭锁在脱扣状态直至达工作位置止,此时锁定轴销应正确插入工作位置定位孔中并联动位置行程开关切换接点。二次插头被闭锁在插座上, 关上手车室大门, 操动K K开关,断路器能可靠分合闸。工作位置指示灯发光。

3.接地触头应保证手车与柜体可靠联接,其接触电阻应不大于1000m

4.断路器内变压器油位应保持在油标红线之间;

5.一次隔离动静触头中心对称度为3mm, 触头啮合相对测量深度为2-5mm(见图12);

6.接上照明电源、合上开关,照明灯应点亮;

7. 断路器在每次短路跳闸后，必须对一次隔离触头和断路器进行检查；
8. 开关柜的运行参数不应超过表 1 规定的数值；
9. 断路器均有封装标记，用户在施工现场不准自行解体，当断路器需解体大修时，应按有关说明书规定进行。
安装调整结束后，应将一次及二次电缆孔堵死，以防止小动物及潮气侵入柜内。

主回路方案见表 14.
主回路组合方案见表15。
辅助回路典型接线见图13-15。
程序锁组合方案见表 16

运输及存放

开关板在运输与存放过程中应注意：
a. 不许倾翻、倒置和遭受剧烈震动；
b. 应防止雨淋受潮；
c. 不得随意拆卸电器产品及零部件。

产品成套性

本产品必须供应下列文件及附件：
a. 装箱清单；
b. 产品合格证；
c. 产品使用说明书；
d. 排列图及二次接线图；
e. 断路器专用工具及必要的备品备件；
f. 手车推进操作杆及接地开关操作手把；
g. 出国产品按供图目录及备件表供应。

订货须知

订货时用户应提供下列资料：
a. 主回路线路方案或主回路结线系统图；
b. 开关柜排列图及平面布置图，母线桥的数量及尺寸 L（见图 8 ）；
c. 辅助回路线路方案及电气原理图；
d. 主母线规格；
e. 每台柜内所装各种电器设备的规格、型号、数量及详细的设备清单。

Transportation, installment and adjustment

Installment and transportation

This product is fixed apart from the wall, and it is saw that the line type of switchboard in fig. 8-10 and the foundation building in fig. 11. Moreover the allowance error of every square meter should be less than 1mm about the foundation flattening (should comply with the rule on the 搐he technical specifications of the building and acceptance check of the electric power). The bottom board of the handcart cabinet should not hang in the air, while should depend completely on the foundation, so that can support the weights and the vibrational force.

There are four hanging rings with the bolt on the middle part of the top, which used to hoist. The switchboard dismounted the package should be hoisted according to the line chart. Noting that the crowbar should not be inserted into the front face of the bottom board for free the distortion due to force.

The grounding busbars with the section of less than 30mm is set up on the bottom of the rear switchboard according to the direction, and grounded reliably. The grounding continuity should be kept in the switchboard.

Adjustment and using

After the switchboard arrived at the proper position according to the array, the dirt on the device and the switchhouse should be cleaned, and the following adjustment should be done for it.

1. Testing position

The handcart should be set up the testing position, and the locking shaft should be inserted properly into the located hole of the testing position, and the position switch of the testing position should be run so that twice plug is inserted, moreover the display green light of the position shines, then the testing button may be operated on the handcart panel, the breaker can open and close the switch and there is proper counting display.

2. Working position

The pushing device with lever is firstly started, and the interlock shank should be stepped in order to push the handcart to the proper position, the moment when the grounding switch can not be operated. Due to the effect of the interlock of the electric and the deviated machine, the operating machine is locked on the releasing state until the working position

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is reached. Now the locking shaft should be properly inserted into the located hole of the working position so that the position switch is transferred to the contact. At first twice plug is locked in the plug set, then the door of the handcart should be closed and the switch KK operated, therefore the breaker can switch on reliably. Additionally the display light shines on the working position.

3. The grounding contact should ensure that the handcart can connect reliably with the switchboard, and the contact resistance should be less than 1000μ½.

4. The oil level of the transformer should keep between the red lines of the oil leveler in the breaker.

5. The symmetry of the static and dynamic contact of once separator is 3mm, and the relative measuring deepness is 2-5mm(seeing fig. 12).

6. After the lighting mains are connected, the light should shine when the switch is on.

7. After the breaker is tripped by the short circuit every time, once contact and the breaker must be checked.

8. Because all breakers have the capsulation sign, the user himself doesn't permit to disassemble. When the breaker need be disassembled and repair, the operation should be done according to the concerned handbook.

After the installment and the adjustment have been finished, the holes of once cable and twice cable should be plugged up, for fear that the little animals and the humidity enter into the switchboard.

It is showed about the project of the main circuit from the table 14.

It is showed about the group project of the main circuit from the table 15.

It can be known on the model connection project of the assistant circuit from Fig13-15.

It is saw about the group project of the program lock from the table 16.

Transportation and deposit

Attention paid in the transportation and placement of switch board

a. not be overturned, conversed or vibrated acutely.

b. be prevented from rain or damp.

c. electric products and components should not be disassembled randomly.

The whole set of products

The following papers and appendixes should be provided with the product

a. listing for encasement.

b. product certification.

c. instruction book for using product.

d. figures of arrangement and second time wire connection.

e. special tools for breakers and necessary spare parts.

f. operation bar for pushing handcart and handlebar for switch connecting ground.

g. provided according to contents of figures and spare parts tables for products shipped oversea.

notice for order

following information should be provided by the user who want to order.

a. main circuit scheme or figure of main circuit wire connection system.

b. figure of switch box arrangement and placement ichnography , the numbers and size of busbar bridges.

c. assistant circuit scheme and electric principle figure.

d. specification of main busbars.

e. specifications, type , number and detail listing of all kinds of electric equipments in the box.

表1

开关柜额定参数 / 断路器型号 / 项目名称	ZN3-10/630-83	ZN5-10/1000-20	SN10-10 I C1000-16	SN10-10 II C1000-31.5	SN10-10 III C1250-14
额定电压(kV)	3,6,10				
最高工作电压(kV)	3.5,6.9,11.5				
开关柜额定电流(A)	630	1000	630	1000	1250
断路器额定电流(A)	630	1000	1000	1000	1250
开断电流(有效值)(kA)	8	20	1) 16/20	31.5	40
最大关合电流(峰值)(kA)	20	50	1) 40/50	80	100
动稳定电流(峰值)(kA)	20	50	1) 40/50	80	100
热稳定(2S)电流(有效值)(kA)	8	20	1) 16/20	31.5	40
开关柜相对地距离 mm	≥125				
开关柜相间距离 mm	≥140				
柜外型尺寸 宽×深×高mm	2)840×1500×2200 (2000)				
重量kg					

注：1)当为6kV及以下时。2)用户亦可选择2000mm高度；所用变压器方案柜案为1200mm。3)原型号为ZN3-10/600-8.7

Annotate: 1)below 6kv 2)users also can select the height 2000; the transformer scheme is 1200. 3)the initial type is ZN3-10/600-8.7

表2

型号 / 线圈操作电压V		CD10- Ⅰ	CD10- Ⅱ
		SN10-1 Ⅰ C/630-16 SN10-10 Ⅰ C/1000/16	SN10-10Ⅱ C/1000-31.5 SN10-10 ⅢC/1250-40
合闸	110	196	240
	220	99	120
分闸	24	37	37
	48	18.5	18.5
	110	5	5
	220	2.5	2.5

表3

名称 / 线圈操作电压V		电流电磁操作机构	
		ZN3-10/630-8	ZN5-10/1000-20
合闸	110	128	80
	220	64	40
分闸	110	5	5
	220	2.5	2.5

表4

机构型号	CT8 Ⅰ												
名 称	储能电动机	失压脱扣器	合闸线圈						分闸线圈					
额定电压V	～110 ～220 ～380	～110 ～220 ～380	交流			直流			交流			直流		
			110	220	380	48	110	220	110	220	380	48	110	220
额定工作电流A			<9.5	<5	<3	6.6	6	3.3	<2.5	<1.2	<0.8	1.9	1.0	0.51
额定电功率VA(W)	≤450	<40	<1045	<1100	<1140	316	660	726	<275	<264	<304	91.2	110	112
额定电压下储能时间S	<6													
过流脱扣额定电流A	5													

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表5

型号	额定电压kV	额定电流A	准确级次	二次负荷	1S热稳定倍数	动稳定倍数
JZJC-10	10	5～400	0.5B		75	150
		600～800			50	100
		1000			50	90
		1500			30	60

表6

型 号	额定电压kV	所配电容器容量Kvar	额定电流A
RNY1	6	10～13	2.7
	10	10～13	1.6

表7

型 号	配用继电器型号	继电器的作用刻度A	继电器的启动电流A	单相接地电流A
LJ1-Φ75	DL-31/0.2	0.1～0.2	0.1	10
	DD-31/60	0.03～0.06	0.03	≯3

表9

型 号	额定电压KV	额定电流A	熔断额定电流A	最大切断电流KV	最大切断容量(三相)MVA	切断极限短路电流时电流最大峰值(限流)kA
RN2-10	3	0.5		100	500	160
	6			85	1000	300
	10			50	1000	1000
RN3-10	3	20	2,3,5,7.5 10,15,20		200	24.5
	6					14
	10					8.6

表8

型 号	额定电压 kV	额定容量 VA			极限负荷 VA
		0.5级	1级	3级	
JDZ-6	3/0.1	30	50	100	200
	6/0.1	50	80	200	300
JDZ-10	10/0.1	80	120	300	500
JDZJ-6	$\frac{3}{\sqrt{3}}/\frac{0.1}{\sqrt{3}}-\frac{0.1}{3}$	30	50	120	200
	$\frac{6}{\sqrt{3}}/\frac{0.1}{\sqrt{3}}-\frac{0.1}{3}$	30	50	100	200
JDZJ-10	$\frac{10}{\sqrt{3}}/\frac{0.1}{\sqrt{3}}-\frac{0.1}{3}$	40	80	150	3000
JDJW-6	$6/0.1-\frac{0.1}{3}$	80	150	320	640

表10

型 号	额定电压 kv.r.m.s	来弧电压 kv.r.m.s	工频放电电压(干燥及淋雨状态) kv.r.m.s	工频放电电压(预放电时间1.5-20μS) kv(不大于)		冲击电流残压(波形8/20uS)kv(不大于)			
						FS、FCD		FZ	
						3kA	5kA	5kA	10kA
FS2-3 FS2-6 FS2-10	3	3.8	9～11	20	FZ	(16)	17	14.5	(16)
				21	FS				
	6	6.7	16～19	30	FZ	(28)	30	27	(30)
				35	FS				
FZ-3 FZ-6 FZ-10	10	12.7	26～31	45	FZ	(47)	50	45	(50)
				50	FS				
FCD3-3 FCD3-6 FCD3-10	3.15	3.8	7.5～9.5	9.5	冲击波形1.5/40μSkv	9.5	10		
	6.3	7.6	15～18	18		19	20		
	10.5	12.7	25～30	31		31	33		

注:括号内参考数

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表 11

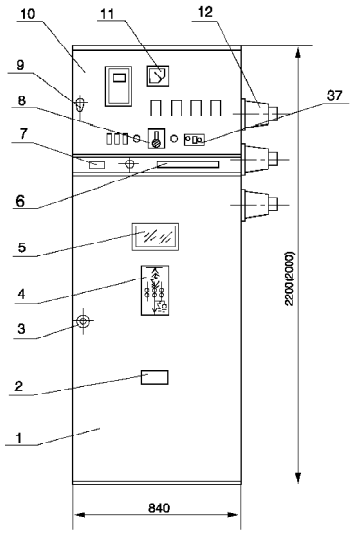
型 号	额定电压 kV	单台标称容量 kVar	单台标称电容 uf	频 率 Hz	出厂试验电压 kV		介质损耗 tgs
					极 间	对 地	
BW3.15-12-1	31.5	12	3.85	50	6.8	18	小于 0.3% (25℃±10℃ 的测量)
BW6.3-12-1	6.3	12	0.96	50	13.6	25	
BW10.5-12-1	10.5	12	0.347	50	22.6	35	

表 12

型 号	系统电压等级	最大允许工作电压	长期工作电压	二小时耐压	电压比 V100A/V1mA (不大于)	直流泄漏电流 (DC) 不大于		电压温度系数 1/℃ (不大于)	标称电压 (V1mA) kV (DC)	流通容量 (8/20 uS) kA (大于)
	kA (有效值)					外加电压 KV	电流 mA			
ZNR-LXQ-Ⅰ	3	3.8	1.9	3.8	1.4	42	30	1×10-3	5.5-6.5	5
ZNR-LXQ-Ⅱ	6	7.6	3.8	7.6	1.4	8	30	1×10-3	10.5-11.5	5
ZNR-LXQ-Ⅲ	10	12.7	6.35	12.7	1.4	14	30	1×10-3	18.5-19.5	5

表 13

型 号	额定电压	额定电流	2s热稳定电流 (有效值)	动稳定电流 (峰值)
JN□-10	10kV	1000A	31.5kA	80kA



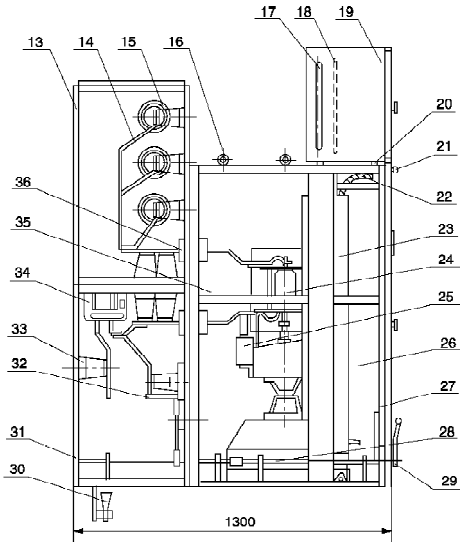


图1　JYN2-10型金属封闭移开式开关设备03方案总装配示意图

1.手车室门；2.铭牌 3.程序锁 4.模拟线标牌；5.视察窗；6.用途牌；7.厂标；8.带程序锁芯KK开关；9.门锁；10.仪表室门； 11.仪表；12.绝缘套筒；13.母线室；14.母线； 15.支持瓷瓶； 16.吊环；17.小母线；18.继电器安装板；19.仪表室；20.减震器；21.紧急分闸装置；22.二次插件及联锁；23.手车；24.断路器；25.氧化锌压敏电阻；26.分合闸指示；27.接地指示装置；28.接地开关与手车联锁装置；29.接地开关操作手把；30.电缆头；31.接地开关与后盖板联锁；32.接地开关；33.互感器室；34.互感器；35.手车室；36.一次触头盒。

JYN2-10

Metal Clad Switchgear With Drawable

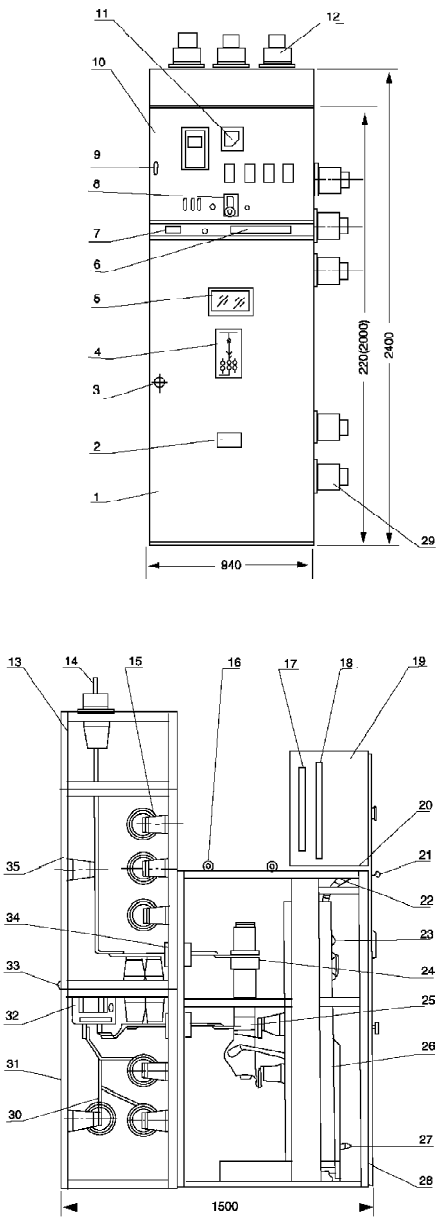


图2　JYN2-10型金属封闭移开式开关设备10方案总装配示意图

1.手车室门；2.铭牌 3.程序锁 4.模拟线标牌；5.视察窗；6.用途牌；7.厂标；8.带程序锁芯KK开关；9.门锁；10.仪表室门； 11.仪表；12.穿墙套筒；13.顶进线室；14.母线； 15.支持瓷瓶； 16.吊环；17.小母线；18.继电器安装板；19.仪表室；20.减震器；21.紧急分闸装置；22.二次插件及联锁；23.分合指示及计数装置；24.油标；25.断路器；26.手车；27.一次销定联锁机构；28.手车室；29.绝缘套筒；30.支母线；31.互感器室；32.互感器；33.高压显示装置；34.一次触头盒；35.母线室

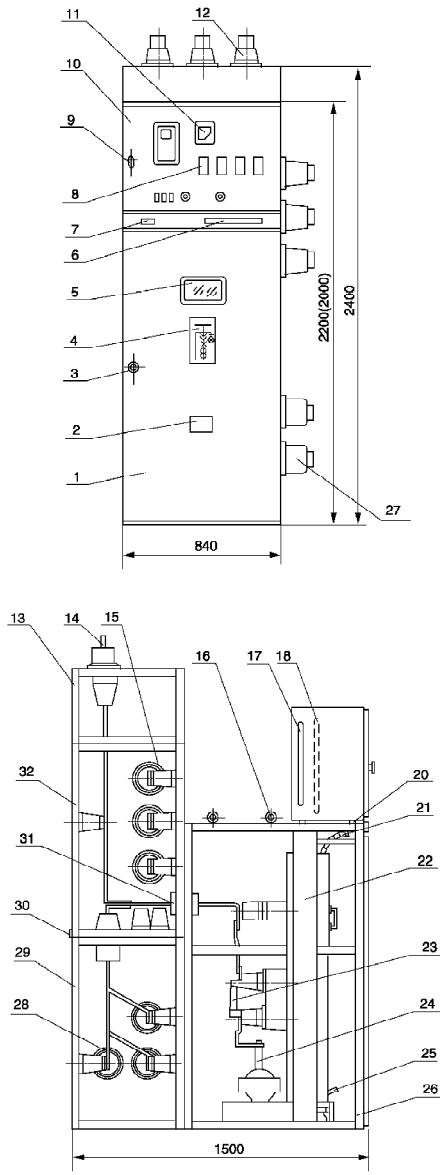
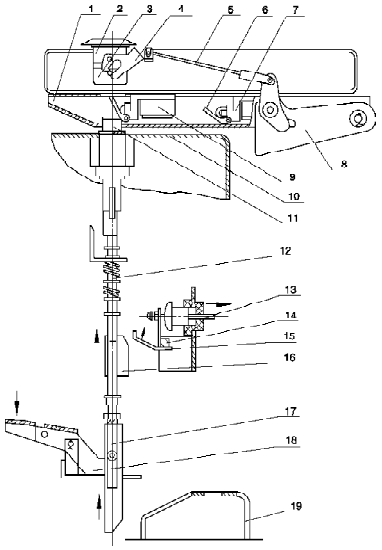


图3　JYN2-10型金属封闭移开式开关设备44方案总装配示意图

1.手车室门；2.铭牌 3.程序牌 4.模拟线标牌；5.视察窗；6.用途牌；7.厂标；8.继电器；9.门锁；10.仪表室门； 11.仪表；12.穿墙套筒；13.顶进线室；14.母线； 15.支持瓷瓶； 16.吊环；17.小母线；18.继电器安装板；19.仪表室；20.减震器；21.二次插件及联锁；22 手车.；23.熔断器；24.电压互感器；25.一次锁定联锁机构；26.手车室；27.绝缘套筒；28.支母线；29.互感器室；30.高压显示装置；31.一次触头盒；32.母线室；

JYN2-10
Metal Clad Switchgear With Drawable



1. 上定位联锁盒；
2. 二次插座；
3. 二次插头；
4. 二次插头座扣攀；
5. 连杆；
6. 行程开关限位板；
7. 运行位置行程开关 Y W K ；
8. 联锁挡板；
9. 试验位置行程开关 S W K ；１０. 手车顶板；
11. 上插销；
12. 联锁杆；
13. 操动机构脱跳轴；
14. 脱跳轴；
15. 脱跳板；
16. 脱跳板；
17. 下插销；
18. 联锁踏板；
19. 下定位联锁盒；

1. the interlock box for the up locating;
2. the twice plug;
3. the buckle of twice plug seat;
5. the connecting rod;
6. the limiting position plate of the position switch;
7. the position switch YWK on the running position;
8. the interlock baffle;
9. the position switch SWK on the testing position;
10. the top plate of the handcart;
11. the up bolt;
12. the interlock bar;
13. the deviating shaft of the operating machine;
14. the deviating shaft;
15. the deviating sheet;
16. the deviating sheet;
17. the down bolt;
18. the interlock paddle;
19. the interlock box for the down locating.

图4 一、二次联销及联销脱跳装置 fig.4. Once / twice associated pin and the their deviating device

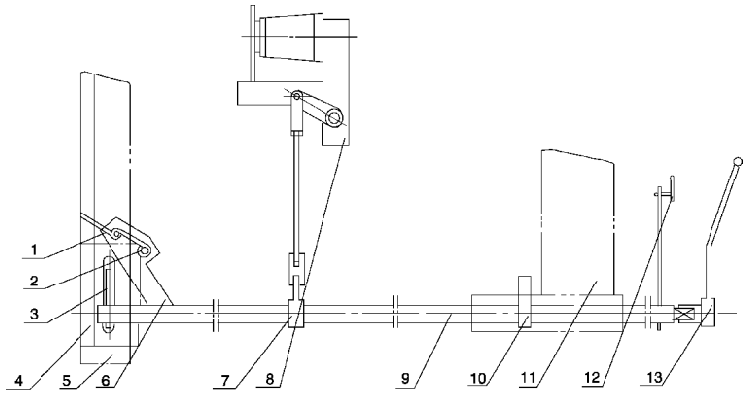


图5 接地联锁装置 Fig.5. The grounding interlock device

1. 扭簧；2. 滚轮； 3. 后盖板与接地开关闭锁轴； 4. 后盖板；5. 后立柱；6. 挡板；7. 接地开关(手动拉杆)；8. 接地开关；9. 接地开关操作轴；10. 联锁挡块； 11. 手车；12. 接地指示牌；13. 接地操作手柄。

1. the torsion spring; 2. the contact roller; 3. the locking shaft between the rear cover and the grounding switch; 4. the rear cover; 5. the rear upright column; 6. the baffle; 7. the grounding switch (the drag bar by the manually operation); 8. the grounding switch; 9. the operating shaft of the grounding switch; 10. the interlock link stopper; 11. the handcart; 12. the display plate for the grounding; 13 the operating handle for the grounding,

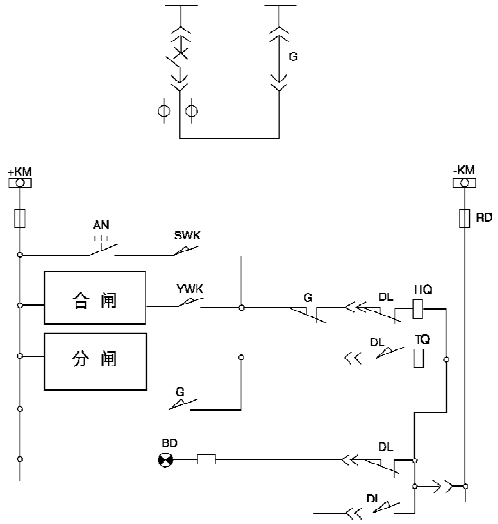
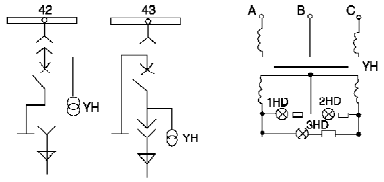


图6 隔离手车与母线分段断路器之间电气联锁原理图

figure 6 the principle of electric connecting locks between handcart and breakers of busbars

AN-LA18-22/ 黑	S W K Y W K -X2-N380V/3A	G-JLXK1-411
HC-CZO-40C	BD-XD5/ 白色	RD-R1-10/ □



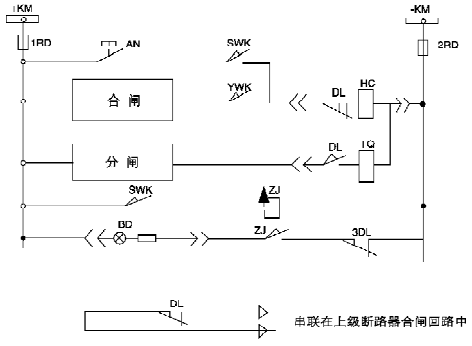


图7 接地手车电气联锁、控制原理图

figure 7 the principle of electric connecting locks and control of handcart connecting ground.

S W K Y W K -X2-N380V/3A	ZJ-DE-204	AN-LA18-22(黑)
HC-CZO-40C	BD-XD5(白)	1～3HD-XD13(红)
1～2RD-R1-10/ □	3DL- 分段断路器	

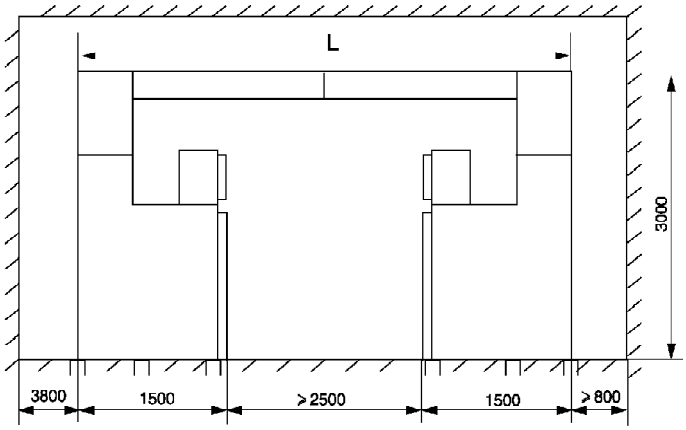


图8 母线桥 Figure 8 busbars bridge

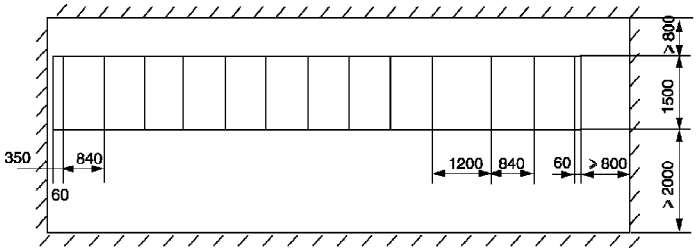


图9 单列布置参考图 Figure 9 the reference of single array arrangement

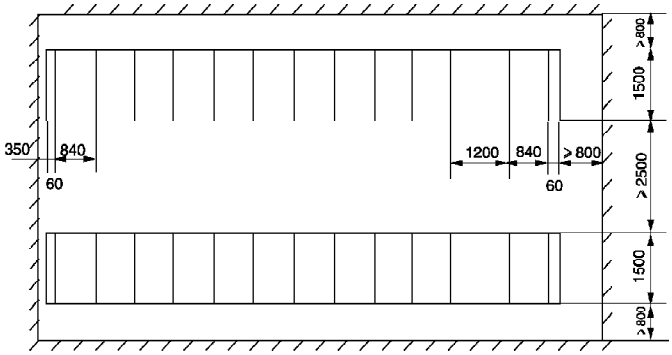


图10 双列布置参考图 Figure 10 the reference of double array arrangement

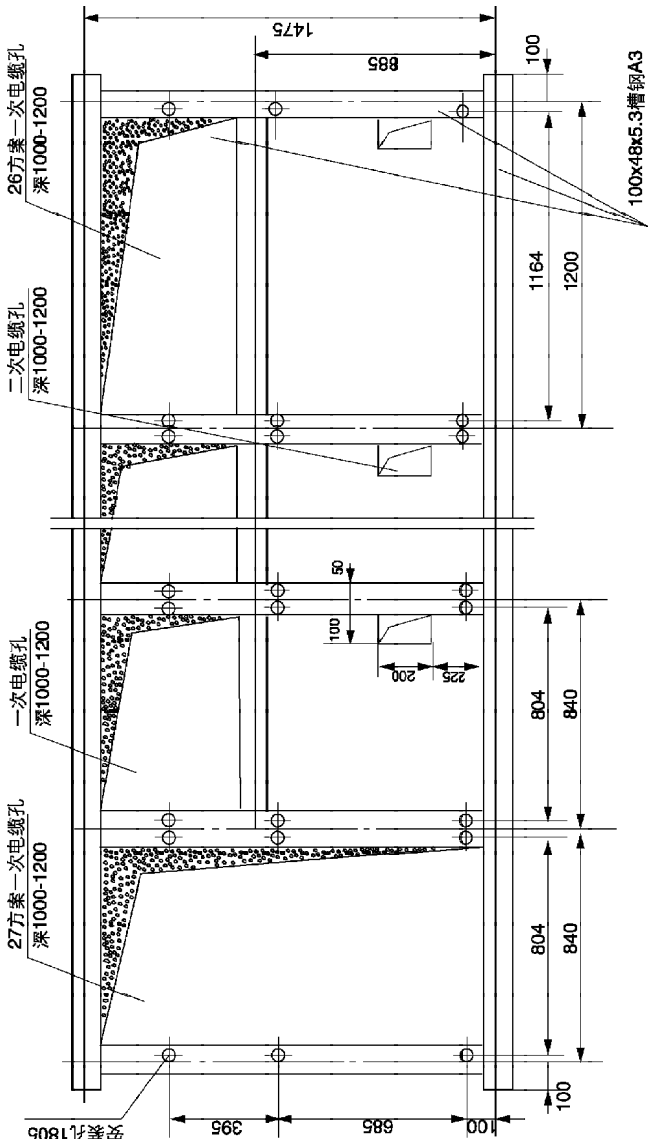


图11 安装基础参考图(槽钢与地面处于同一平面)

Figure 11 the reference of foundation installation(box iron and ground are in one plane)

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Metal Clad Switchgear With Drawable

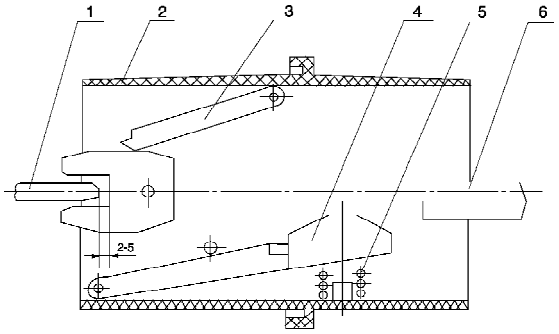

图12 一次隔离触头盒

Figure 12 one-time separated touching head box

1. 静触头；	1staticcontact
2. 绝缘筒；	2insulationcylinder
3. 帘板；	3 shade board
4. 撑板；	4 supporting board
5. 弹簧；	5 dynamic contact
6. 动触头；	remark: symmetry degree between static
注：动静触头中心对称度为3。	and dynamic contacts is 3

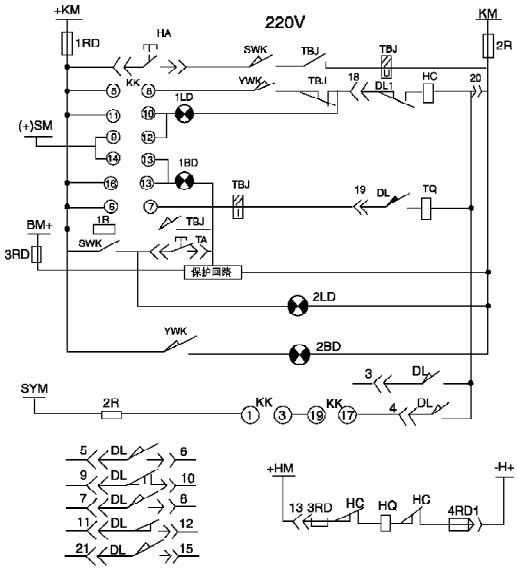

图13 电磁操动机构的断路器控制、信号原理图

Figure 13The principle of signal and control of breaker in electromagnetic operational mechanism

KK-LW2-Z-1a.4.6a.40.20/F8;
3/4 RD-RL1-60
SWK、YWK-X2-N380V/3A;
HA-LA18-221/黑

1LD
2BD -XD5/220V;
TBJ-DZB-214/220V;
HC-CZO-40C/220V
TA-LA18-22红/

1～3HD-R1-10/4;

2R-ZG11-50W1K$^{1/2}$

1R-ZG11-25W1$^{1/2}$

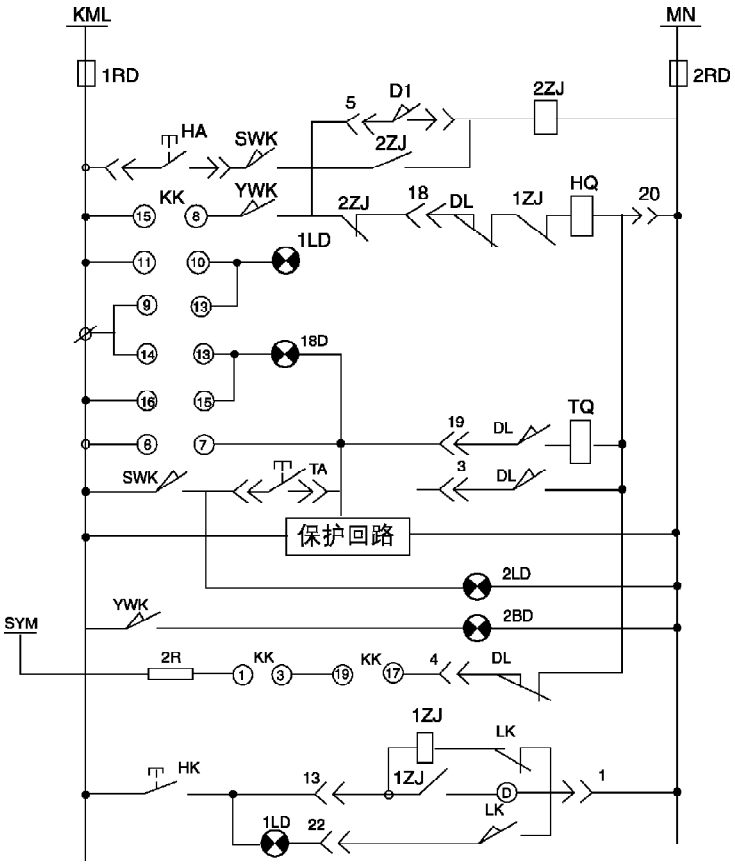

图14 CT8弹簧操动机构断路器控制信号电气原理图(交流)

figure 14the electric principle of control signal of breaker in spring operational mechanism

KK-LW2-Z-1a.4.6a.40.20/F8;1～2BD-XD5/220V白色；1～2LD-XD

5/22V绿色； UD-XD5/220V 黄色； 1～2LD-R,-10/4;

SWK
YWK -X2-N380/3A； 2R-ZG11-50W1K½ HQ-合闸线圈;

HQ-跳闸线圈；D-储能电机；LK-弹簧储能行程开关；

HK-LA18-22X； 1-2ZJ-52/ 220/220 V； HA-LA18-22/黑；TA-LA18-22/红。

JYN2-10
Metal Clad Switchgear With Drawable

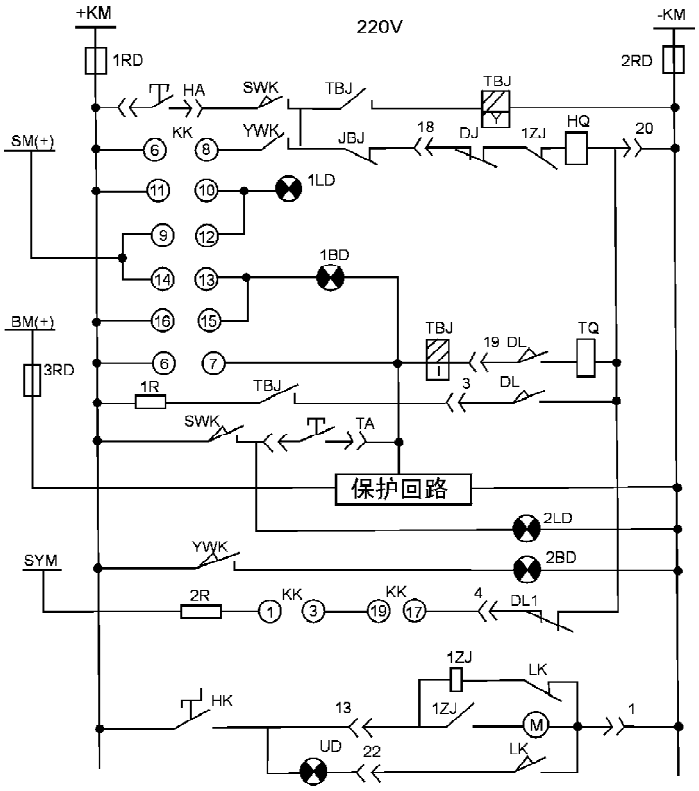

图15 CT8弹簧操动机构断路器控制信号电气原理图(直流)
figure 15the electric principle of control signal of breaker in spring operational mechanism

KK-LW2-Z-1a.4.6a.40.20/F8;
1～2LD-XD5/220V 绿色;
1～3RD-XD-10/4;
2R-ZG11-50W1K1/2
HQ- 合闸线圈;
D-储能电机;
HK-LA18-22X;
TBJ-DEB-214/220V;
HA-LA18-22/ 黑;
1～ZBD-XD5/220V 白色;
UD-XD5/220V 黄色;
SWK
YWK -X2-2380V/3A;
1R-ZG11-25W1K1/2
HQ- 分闸线圈;
LK-储能行程开关;
LZJ-DZ-51/ 220/220V;
TA-LA18-22/ 红。