

## JYN1-35(F)

AC metal sealed and movable switch board



### Overview

JYN1-35(F) AC metal sealed and movable switch board (in the following we call switch board) is a type of metal sealed switching equipment for interior device using three phases and 50Hz frequency AC, it can be used in power plant as well as on distribution equipment complex of single bus or single bus segment whose system rated voltage is 35kV, the maximal rated current is 1000A and the highest voltage does not exceed 40.5kV in transformer room. This type of switchboard has "five prevention" function: breaker for preventing operation by mistake, preventing lorry's pushing or pulling, preventing attachment to earth with electrical, preventing feeding earth connection and preventing entering electric gap by mistake.

### Ambient condition for normal operation

- a. Altitude does not exceed 1000m.
- b. Ambient temperature range from  $-5^{\circ}\text{C}$  to  $40^{\circ}\text{C}$  ( $-30^{\circ}\text{C}$  for storage or transportation).
- c. Relative humidity: average value is less than 95% per day, average value is less than 90% per month.
- d. Ambient atmosphere should not be apparently polluted by corrosive gas or steam.
- e. Having some durable dirty capacity no chronic spang.

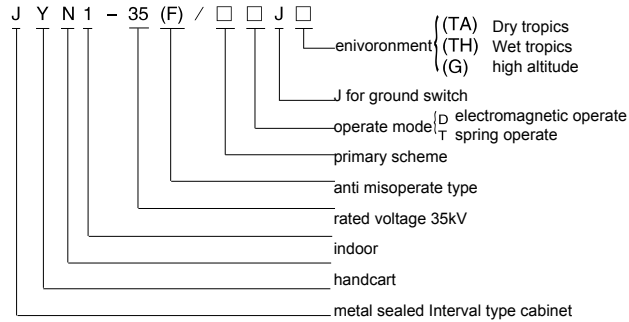
In any special case, custom should use it after negotiating and having made agreement with maker. As to inner insulation, the device need not special measures because its insulation is constant with any altitude and the same as low voltage accessory equipment in the case of altitude is less than 2000m.

# COMPLETE SETS OF EQUIPMENT

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### Model No.



### Technique data

The primary element assembled on the switch board includes lack oil circuit breaker or vacuum breaker ,function mechanism ,current mutual inductor ,voltage mutual inductor ,fuse ,lightning arrester ,electric power transformer and so on ,on the condition that the equipment has ,these elements should have their own technique characters .

Switchboard technique parameter shows on

table 1

code	Item	Unit	data	
1	rated voltage	kV	35	
2	max operate voltage	kV	40.5	
3	max rated current	A	1000	
4	rated break current	kA	16/20/25/31.5	
5	rated closing current (peak)	kA	40/50/63/80	
6	Ultimate breaking and closing current (peak)	kA	40/50/63/80	
7	4s thermal stable current(effect value)	kA	16/20/25/31.5	
8	shape(long x width x height)	mm	1818(mm) × 2400(mm) × 2925(mm)	
9	weight(oil breaker cabinet)	kg	1800 (including oil handcart weights 620)	
10	dynamic load weight	Upper	kg	约 500
		lower	kg	约 500
11	Protect level		IP2X	

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Lack oil circuit breaker technique data shows on

table 2

code	Item	Unit	data
1	rated voltage	kV	35
2	Max operate voltage	kV	40.5
3	rated current	kA	1250
4	rated breaking current	kA	16/20
5	rated closing current(peak)	kA	20/50
6	ultimate closing and breaking current(peak)	kA	20/50
7	4s thermal stable current(effect value)	kA	16/20
8	Inherent switching time equip ( CD10 ) CT10	s	≥ 0.06
9	closing time equip ( CD10 ) CT10	s	≥ 0.25 ≥ 0.2
10	operate circulation	breaking - 0.3s - closing and breaking - 180s - closing and breaking	

4.3 CT10type spring operation mechanism main parameter

Stock energy motor type:HDZ1-6.

Stock energy motor electric power : not more than 600 w.

Rated voltage stock energy time under rated voltage does not exceed 8 s .

(manipulative matrix does not exceed 7kg .m in the case of stocking energy by hand ).

Spring operation mechanism' s unlocking device category : divided activated undocking device (code 4),instantaneously over current undocking(code 1).

Instantaneously over current undocking device rated current : 5A

Undocking device composition .

Please negotiate with manufacture if you need other composition or lose voltage undocking device .

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4.4 Dividable activated undocking device and brake shut electromagnet data shows on table 3

parameter	type	shunt release						closing electromagnet					
		AC			DC			AC			DC		
rated voltage(V)		110	220	380	48	110	220	110	220	380	48	110	220
rated current (A)	iron core start	7	4	2.4	4.44	1.80	1.23	18	9.0	5	32	15.7	7.2
	iron core attract	4.6	2.5	1.4				14	7.1	3.6			
rated power (W)	iron core start	770	880	912	231.2	198.3	248.2	1980	1980	1900	1536	1727	1584
	iron core attract	806	550	532				1540	1562	1368			
active voltage range		65 ~ 120% rated voltage						85 ~ 110% rated voltage					

4.5 CD type spring operation mechanism technique data shows on table 4

Item	closing coil			breaking coil		
rated voltage(V)	DC110	DC220	DC24	DC48	DC110	DC220
active current(A)	229	111	22.6	11.3	5	2.5

Note: brake shut current refers to calculated count, real current is less than the calculated count

4.6 LCZ-35 current mutual inductor technique data shows on table 5,6 and diagram 1 table 5

Level combination	rated primary current(A)	rated secondary current(A)	class	rated secondary load(VA)	10% multiple no less than
0.5/3	0.5/0.5	20 ~ 100	0.5	50	
			3	50	10
0.5/B	3/3	20 ~ 800	B	20	27
3/B	B/B	1000	B	20	35

table 6

rated primary current (A)	rated thermal stable current (A)	rated dynamic stable current (A)	rated primary current (A)	rated thermal stable current (A)	rated dynamic stable current (A)
20	1.3	4.2	200	13	42.2
30	2.0	6.4	300	19.5	63.6
40	2.6	8.5	400	26	84.9
50	3.3	10.6	600	39	127.3
75	4.9	16	800	52	112
100	6.5	21.2	1000	65	141.4
150	9.8	31.8			

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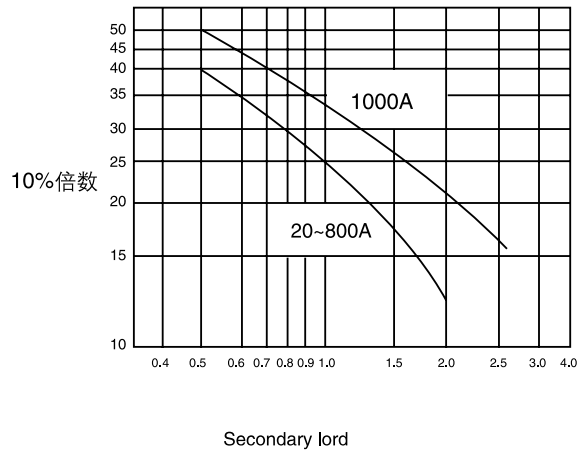


Diagram 1 LCZ-35 current mutual inductor grade B 10% multiple curve

4.7 Voltage mutual inductor technique data

table7

Model No.	rated voltage(V)			rated capacity(VA)			Max capacity(VA)
	primary coil A.X	basic secondary coil a.X	auxiliary secondary coil aD.XD	0.5 class	1 class	3 class	
JDJ2-35	35000	100	-	150	250	500	1000
JDJJ2-35	$35000/\sqrt{3}$	$100/\sqrt{3}$	$100/3$	150	250	500	1000

4.8 FZ-35 type lightning arrester technique data

table8

Rated voltage (effective value) kV	Arc-extinction voltage (effective value) kV	power frequency discharge voltage (effective value) kV		impulse discharge voltage pre-discharge time 15~20ms (peak) kV	residual voltage(10/20ms) peak kV	
		no less than	no less than		5kA	10kA
35	41	82	98	no more than 134	no more than 134	no more than 148

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4.9 FYZ1-35 Zinc oxide lightning arrester technique data

table9

Rated voltage (effective) kV	arrester short-time Max operate voltage kV (effective)	critical point of action voltage (lower limit) kV (peak)	impulse voltage residual voltage (wave form 8/20 micro-seconds) (no more than) kV	breaking and making capacity(no less than 20)		protection ratio(no more than)	
				2ms square wave no less than (A)	18/40mS impulse current (no less than) kA (peak value)	impulse protect ratio U5kA	operate protect ratio U300A
35	41	59	126	300	10	2.1	1.8

4.10 RN 2 type high voltage rated current fuse technique data

table10

rated voltage kV	rated current kV	phase-loss capacity (3-phase) MVA	Max breaking current kA	Max current(peak) of ultimate short -circuit current breaking (A)	fuse resistance (Ω)
35	0.5	1000	17	700	315

4.11 Rw10-35/3 type limited current fuse technique data

table11

model No.	rated voltage kV	rated current kA	phase-loss capacity (3-phase) MVA	Max breaking current kA
RW10-35/3	35	3	1000	16.5

4.12 Sj-5/0.4/0.23 type distribution transformer technique data

table12

rated capacity kVA	rated voltage kV		rated current A		loss A	
	high-voltage	low-voltage	high-voltage	low-voltage	high-voltage	low-voltage
50	35	0.4	0.825	72.2	490	1325

resistance voltage %	without load current %	connection group	weight kg	
			total	oil weight
6.5	9	Y/Y0-12	880	340

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4.13 ZN23-35 inner high voltage vacuum breaker main technique parameter

table13

code	Item	Unit	data
1	rated voltage	kV	35
2	Max operate voltage	kV	40.5
3	rated insulation level	kV	power frequency 95 one min;thunder impulse(peak) 185
4	rated current	A	1600
5	rated short-circuit breaking current	kA	25/31.5
6	rated breaking current break number of times	次	20
7	rated short-circuit closing current(peak)	kA	63/80
8	rated short-circuit continuous time	s	4
9	rated operate sequence		break - 0.3 - close and break - 180s - close and break
10	closing time	s	≤0.2

## Structure

The switchboard belongs to interval mood structure and is composed by lorry and switchboard which is bend welded by steel plate and profiled bar. According to the use of lorry, it can be classified more than 7 sorts, such as breaker lorry, lightning arrester lorry, isolated lorry,“Y” connecting method voltage mutual inductor lorry, “V” connecting method voltage mutual inductor lorry single phase voltage mutual inductor lorry and station use trans former lorry. Demission of switchboard and lorry shows on diagram 1. inner structure sketch shows on diagram 2 and diagram 3. the switchboard is segmented some functional cell, which are discussed separately as follows:

### 5.1 Basic enclosure

The basic switchboard enclosure has IP2X degree of protection and can prevent finger or object whose diameter exceeds 12mm approaching powered part and contacting to motive part in the switchboard. Besides adopting metal hinge, high voltage interval gate adopts copper knitting thread connecting to switch board to assure earth connection.

In the front and on back side of switchboard, there are distinguishingly visiting window, which are made of insulate materials with well transparency and enough intensity.

### 5.2 Lorry room

There are two doors on the front down of the switchboard and if we open the door, we will find the lorry room in it. Between this room and up down contact point, there is an insulate isolating board for separating, at the same time a metal isolating board is set between the room and top bus. But as to breaker board, we adds a insulate isolating board in the metal isolating board in case the eruptive dissociate gas by breaker discharge onto metal skeleton when breaker cuts. At the lorry room bottom there are two lorry orbits, in which we have welded a location mechanism for lorry pushing in or pulling out, at the middle of which there are lorry conducting correct and earth connection devices.

### 5.3 Main bus and up isolated pin room

The main bus and up isolated pin room are settled at the upper part of switchboard. The main bus room is fixed on the column insulator like triangle inversely fixed in the upper part of switchboard. The main bus is not installed and prefabricated main bus will be supplied to customs with switchboard when the product went out of factory, after the switchboard has been assembled, the customs can install main bus as they like. Under the

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main bus there is an up isolated circuit connector, which can be current mutual inductor band pin and also can be column insulator or drifting wall bush plug according to the main connection project.

#### 5.4 Down isolated pin room

Down isolated pin room is under the up isolated pin room, there is a metal isolating board between them. The down isolated pin room not only serves for setting current mutual inductor or insulation circuit connector, but also permits earth switch or contact bus placing in.

#### 5.5 Contact bus

Contact bus adopts rectangular and pipe shape bus, which is laid in a carrel accessarily settled out of the down isolated pin room and switchboard like a triangle. Contact bus is prefabricated by maker and placed in switchboard, after switchboard has been assembled, we can in stall it according to diagram 4.

#### 5.6 Insulated isolating board and insulated trap door

Among switchboard lorry room, isolated pin room and cable room, there is a isolating board made of insulated material on which a insulated trap door is settled. In order to assure stuff' s safety as they entering the room, the isolating board and insulated trap door are all have IP2X degree of protection. The insulated trap door opens and locates on the open status when lorry are entering work position from test position, while it will be close when lorry out, close status trap door' s miss contacting always close except it has been open consciously.

Insulated trap door have two isolating board which can move left or right freely and a trap door which can move up and down, sideboard resets by spring and whose motion is controlled by special program, as the trap door does. When the lorry is pushing in, the insulated contacting block installed on lorry dynamic isolated plug frees the lock of trap door and sideboard by pressing the two sideboards simultaneously moving to left or right, and pushes the trap door to move up and located the trap door on open status. While lorry is being pulled out, the contact block presses sideboard to move and then closes the trap door, the sideboard locks the trap door by reset spring to realize self lock.

The dynamic isolated plug arm of lorry is covered by ring oxygen high temperature resilience dust insulate barrier in consideration of bettering electric field.

#### 5.7 Earth switch

As changeable element, earth switch can be taken or rejected according to the requirement of works, the breaker switches to isolated position when feeding out loop is being examined, And repaired, we should shut the earth switch to assure safety. The earth switch can endure dynamic steady current at 40KV and thermal steady current at 16kA(4s). The earth switch adopts hand operation-spring store energy mechanism and by the aid of releasing spring energy it can realize rapidly shut and cut, thus making the peed of shutting or cutting switch nothing to do with operators situation.

Operating program interlock of switch is showed in interlock part of this chapter. operating handle of earth switch is fixed in the left door.

#### 5.8 Powered monitor device

The charge monitor device is one of changeable element, whose function is to reflect the powered condition directly in the case of no voltage mutual inductor in switchboard. The powered monitor device is mainly used with earth switch in order to earth switch can determine whether the feeding circuit is powered or not in advance before earth switch shut. The powered monitor device is composed by voltage sampling thing in supporting insulator buried in the earth switch and terminal display fixed on the left door of switchboard. On the surface of terminal display there are three light emitting diode, which can show the three phase powered situation of feeding circuit A.B.C.if certain phase powers off, and the corresponding LED will go out, so we should examine the terminal display device periodically to determine whether there are disconnecting or



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imperfect connection or not in order to assure the correct display.

**5.9 Earth conductor**

The copper earth conductor which cross island switchboard' s whole width direction is fixed down-back of the switchboard. If you are willing to connect the two device, please use the connect wire (a piece of copper bus) prefabricated by maker and located in the switchboard connect as diapeam4 shows, at the two end of earth conductor there are M12 flute which supply for connecting to the earth in transformer station.

**5.10 Accessory loop**

On the upper part of switchboard' s front face there are instrumental door for settling accessory loop device and shaking door structure relay room. On the both sides of the room .there are small bus traverse hole and fixed controlling cable flitch and the left is small bus terminal group. instrumental door and relay room are separated from high voltage interval by isolated board. They can be replaced in the case of main loop being powered and are used to examine instrument and relay so on and so forth accessory elements and connection. In regard to the accessory element needing frequently changing, such as alternation switch, button and hand reset signal relay and so on, should install the door of witch board terminal generally , a carrel is set in the left wicker, and in which the aerial switch of the station use transformer board is fixed.

**5.11 Terminal room**

The terminal room is set to the right of switchboard' s front face, in the center of which there are a group of accessory loop connection terminals. Light in the board and its switch is at the upper plate of the room. while at the lower place of which is M12 earth connection bolt for accessory loop earth connection, at the same time the right side of which is the line clip bracket of the fixed controlling cable. For customer.

**5.12 Movable pulling roller and alternate direction wheel**

At the entrance of switchboard lorry orbit, a movable conduct orbit which can turn up and down is set ,before the lorry pushing in and pulling out of the switchboard ,movable conduct orbit should be turned down first in order to the lorry can successfully in and out. It usually is turned up and placed in the board when need not , the structure of movable conducting orbit is showed by diagram5

in the front and on the back of the lorry, there are located wheel at the same time. When the lorry needs, roll out of the board, the flitch wheel special made by maker and supplied with board should be installed according to diagram6, and then operating rising and dropping screw to make the two front wheel disjoined to the ground at the just moment the lorry can easily and flexibly change direction from then on. the flitch wheel should be unlocked before the lorry has been pushed into the board.

**5.13 Lorry recognition unit**

This device is composed of 3 baffles installed down-left of lorry and 2 column pins installed at the position responding to the board, its function is that it can make different type of lorry not able to replace each other, but the same type can do. All kinds of lorry' s recognition unit code methods are showed on table 14

**5.14 Secondary plug (outlet)**

The accessory loop connection between lorry and board is realized by the outlet installed on the lorry and the plug installed on the board. The plug should be plugged in when the lorry is being pushed to the test position . in order to make the a accessory loop work .the plug should be unplugged before lorry is pulled to the test position and then the lorry can continue to pull out of the board the plug connection and lorry have interlocking device, the interlocking part of this chapter gives details.

**5.15 Small bus**

The switchboard is settled by 15 small bus connection terminal groups, among which there are 2 be A terminals to the use of electromagnetic mechanism shut small bus. The small bus is connected to the neighbor board through the terminal by BVR plastic copper stick soft wire, the wire group is fixed in the connection

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launder up too the relay room. The small bus distributed wire according to the electrical schematic supplied by customs and be assembled by customs themselves.

#### 5.16 Accessory loop controlling cable channel

The accessory loop controlling cable channel of switchboard is set at the upper place of the relay room (secondary cable ditch function),the controlling cable is conducted in through the cable ditch arrayed on the left or right of the switchboard and conduct in channel from the bottom of the switchboard left wicker or the bottom of terminal room, because the channel runs through the whole array, the controlling cable can get into other boards only being elicited from one board, at the same time the channel also can meet the demand of conducting cable from top if you make-105 rubber holes at the two end of the channel tap and break the film of rubber hole, every thing is ok.

If you want to examine or repair controlling cable, you should open the movable tap in front of the channel first.

#### 5.17 Lighting in board

Switchboard lorry room is prepared for a 220v lamp, the lamp and its switch are all fixed on the upper place of the terminal room, please open the terminal room door first if you want to operate the switch or replace the lamp

#### 5.18 Lorry' s position in the switchboard

The breaker and other lorries (except station use transformer lorry)have“work” and “test” the two position in switchboard, which is should on diagam7,the both gates of switchboard lorry room can be close on the two position, the dynamic and still isolated contacted point is in the distance of a insulated distance (300m) when lorry on test position. The station use transformer lorry only sets “work position” . The interlocking of all kinds of lorry position in switchboard is discussed in the interlocking part of this chapter.

#### 5.19 Lorry conducting correct and earth connection device

the switchboard adopts trop door structure, which needs a demanding error in the width direction when lorry id being pushed into the board. It is not enough only using of orbit. Therefore at the very center of the two orbit, an conduct orbit is set and with which a supporter like a exact square at the bottom of the lorry compose the conducting correct device. When the lorry is being pushed into the board, lorry orbit do the rouge correcting and then the conducting correct device do the exact correcting earth connection chip is set on the conducting correct device, with witch the spring contacted point located on the supporter like a exact square of lorry composed the earth connection device, which can automatic plug in as the lorry being pushed in . the earth connection devices are all close when lorry is on the test position ,work position and between them, thus can assure reliable earth connection to the board on above position .

#### 5.20 Pushing in and pulling out mechanism

The lorry' s being pushed in and pulled out can be realized by a mechanism composed by the parts listed by diagram8. whose operational principle is simply discussed as follows:

##### 5.20.1 Lorry' s being pushed in

If you are willing to push the lorry from out to the test position in the board, you should set the moving mechanism handle to “cut” status,(handle down), at this moment, because the location hook is on the dot line position the lorry can not be pushed in continuously for the location hook is being block pin, so when the situation happened, stop the lorry immediately and set the moving mechanism handle to “shut” position (handle up)rapidly at the same time, in this process the location hook will slide along to the “test position” location pin ,because of the link pushing, as a result, the lorry is on test position

##### 5.20.2 Lorry' s being pulled out

If you are going to pull the lorry to the test position or out. you should set the lorry' s dynamic mechanism

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handle down, first. in the process of operating the handle, the location hook's outside slope will slide up along to the block pin and the lorry moves out follows. when the location hook are moving to the dot line position, the lorry isolated touch part has been isolated, at this moment you must pull the lorry to the test position or out rapidly.

5.20.3 The lorry is out of the board as well as

Between work position and test position

the function of baffle showed on diagram 8 is to assure the location hook unlock when the lorry is between the testing position and work position, result in lorry operating handle can not being pushed to the "shut" position, at this moment, coupled with interlocking function, the baffle has assured the breaker can not be close between the two position.

In the case that lorry's dynamic mechanism's handle is on the "shut" position (handle up), since the location hook is blocked down by switch board door along angle steel, the lorry can not be pushed into the switchboard

5.21 Interlocking device

We consider sufficiently about the switchboard's operating program interlocking (machinery or electrical). Separately discussed according function as follows.

5.21.1 Breaker lorry's machinery interlocking

Breaker and its coordinated electromagnetic operating mechanism or spring operating mechanism have machinery interlocking device. which assure that the breaker lorry can not choose but at "test" and "work" position, the breaker can be closed, but it can not be shut between the two position and when the lorry is on the "work" or "test position". as well as breaker shut and pulling the lorry, the breaker has been apart in advance before the isolated touch paw separate: the interlocking structure is showed on diagram 9, 10 and whose operating principle is simply discussed as follows:

From diagram 9 and diagram 10, we can see that: if the lorry has been located on "work position", the item 10 handle must be on the "shut" position. if the breaker has been closed, at this moment since item 5 location pin in plug in the lorry's dynamic mechanism's hole as well as the handle can not be pulled, the lorry can not move out of "work position". if you want to make the lorry move out of "work position" by (item 10) handle, you must pull the interlocking handle (item 4) to the left at first to make location pin (item 5) separate from lorry's dynamic mechanism's hole, thus the handle can be moved, when you pull the interlocking handle (item 3) to unlock the location pin (item 5), the off center axis (item 7) press the lever (item 2) to move and through the pin (item 6) to make unlock board (item 1) move up so as to separate the breaker, the same process as above when lorry on "test position", so when lorry is on test position, the breaker can be closed as handle (item 10) is on apart position, because flat (item 9) press the lever (item 2) tightly down ward, which makes the unlock board of operating mechanism always on "apart" position, at this moment no matter electromotive shut or hand shut does not work.

5.21.2 Isolated lorry and related breaker's electrical interlocking

to assure isolated lorry's operation have a reasonable program, isolated lorry and related breaker lorry set electrical interlocking devices which show as diagram 11 and diagram 12. which operating principle is simply discussed as follows CK interlocking

It is composed by JLXK1 type trip switch installed on the body of the board with a wheel and bump block installed on lorry. CK contracted point and its interlocked breaker PL (operating mechanism accessory switch of breaker) are in series in "shut/cut" loop, when isolated lorry is on "work" or "test" position, LX wheel is pressed by bump block to connect "shut" loop LX touch paw, thus the breaker can be shut. In case the lorry separate from "work" or "test" position, position CK reset and "shut" loop is cut off, as well as cutting switch immediately after "apart" loop. Having connected to the breaker, CK has a always open touching paw and a always close touching paw, when interlocking with the two breaker is needed, two CK should be installed (install three at most) according to the main structure DS electromagnetic interlocking

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It adopts JDSI type DC electromagnetic lock installed in the lorry operating mechanism's pin hole. Whose coil is serial with accessory switch "DL" always close connection point which can reflect the interlocked breaker position, when breaker is at the close status, DL connection point will be cut and electromagnetic lock loss charge whose lock is locked in the lorry's dynamic mechanism's lock hole to make the lorry can not be operated. there is no choose but the breaker apart and DL connection point connect as well as electromagnetic lock coil charge, the lock can be pulled out, thus to assure the isolated lorry can be pulled only in the case of separating from interlocked breaker. Above two electrical interlocking can be closed any type and they are also be used at the same time to realize the double interlocking

#### 5.21.3 Electrical interlocking of station use transformer lorry

In order to prevent the station use transformer lorry being pulled when there is load on it the LX19 type trip switch are installed on the moving mechanism of the lorry, whose always open connection point is serial with AC contactor coil installed on the transformer next side. (take advantage of the transformer own 380v power), when lorry is at "close" status (operating handle up), the lorry's dynamic mechanism flat moves up and pressed CK to connect, so as to connect to at contactor coil (CJ) and to make the transformer load, at this moment, If you pull lorry by mistake, the flat moves down and CK goes back immediately. the contactor has separated before the main loop still isolated touch paw, separated and secondary load of transformer also be cut automatically, interlocking operative principle shows on diagram13.

#### 5.21.4 Lorry location secondary plug interlocking

as lorry is being pushed on test position, secondary plug must be plug in first and then the lorry can enter work position, as well as when lorry is on work position, secondary plug should not be plug out. The switch board sets lorry location and secondary plug interlocking device, which is showed on diagram14, according to the diagram, when the lorry is being pushed on test position, the rod2 is blocked by location bracket installed on the body of board, so the lorry can not move forward any more, this moment, you should plug in secondary plug and then elevate handle, at the pulling of the rod1 the outlet is locked to make the secondary touch paw cannot be pulled out, because the handle has been elevated and fixed on the dot-line position, which make rod2 move up to the point at which the location bracket does not block the rod1 and then the lorry can be pushed to the work position. When the lorry is on this position, rod2 is blocked by location bracket, the handle cannot back and the locked secondary plug cannot unlock, although you have assured the lorry on this position, secondary plug cannot be pulled out. After lorry back from "work position" to "test position", the handle can be pulled down and secondary plug can be unlocked the interlocking, that is to say, it can be carried down.

#### 5.21.5 Earth switch and breaker lorry's machinery interlocking device

The earth switch and breaker lorry at the same board have machinery interlocking device, which assures breaker lorry is on test position as well as between work position and test position. at this moment, earth switches cannot be operated in all. There is no choose but when beaker lorry is on testing position as well as out of board the earth switch can be operated. On the contrary. when earth switch is closed, breaker lorry is also cannot be pushed from test position to work position.

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表 14

handcart type	code	baffle install hole										diagram
		1	2	3	4	5	1	2	3	4	5	
arrester handcart	1.2	○	○						□	□	□	
circuit break handcart	1.3	○		○				□		□	□	
isolator handcart	1.4	○			○			□	□		□	
Y type voltage transformer handcart	2.3		○	○			□			□	□	
V type voltage transformer handcart	2.4		○		○		□		□		□	
single-phase voltage transformer handcart	3.4			○	○		□	□			□	
所用变压器手车	4.5				○	○	□	□	□		□	

**installment**

6.1 dividing board

in order to be installed disconnecting to the wall, the switchboard is layout by single-row and double-row types, at the same time a bus bridge is settled , which is showed by diagram15 and diagram16, the fasteners for dividing board have been fixed in the arrayal hole in the board ,which should be fixed after dividing board arraying when the switch board is being installed, the orbit of lorry is not permitted to dangle and which should cling to then ground surface. After switch board has been installed, whose front, back ,left and right vertical error should not exceed 1.5/1000mm

6.2 main loop' s connection

the main loop' s connection adapts aerial and cable types, which are showed on diagram17 – diagram21. the two types' connection are both settled in additional locatable assemble carrel back to the switch board. This carrel is linked with back of switchboard by bolts. Install according to diagram, the drifting wall bush of connection and cable terminal box is prepared and installed by customs themselves.

6.3 controlling cable connection

controlling cable can be connected from lower position of switch board left door or from bottom of the terminal room, which also can be conducted from switchboard top tap rubber hole to controlling cable channel at the front top of switch board. The channel runs trough each switchboard, above which there are brackets for mounting cable. Controlling cable connection channel position can be fined out on diagram12.

6.4 basic style

the ground basic construction of installing switchboard should abide by related item in the “technical discipline of “electrical construction and acceptance” , in order to push lorry easily and conveniently and to make dust less and less, the operating hall should built by terrazzo ground, and the base launder steel' s burry sketch is showed on diagram23, the main loop cable ditch sketch is showed on diagram24

## COMPLETE SETS OF EQUIPMENT

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### JYN1-35(F)

AC metal sealed and movable  
switch board

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#### transportation and deposition

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In the process of switchboard's transportation and deposition, we should be attention:

- a. don't dump and turn over, invert and suffering violent rock;
- b. prevent rain and tide
- c. don't disassemble the electronic product and its units optionally
- d. place fair and softly in order to safe from undeserved pressure deformation

#### product set

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- a. product certificate of inspection
  - b. product operation instructions
  - c. array diagram and secondary assemble wiring diagram
  - d. packing slip
  - e. special tools and spare parts necessary
- the following data should be supplied when customer order goods

#### handbook for ordering good

- a. Main loop project serials or main connection system diagram
- b. Switchboard project diagram and layout diagram
- c. Accessory circuit project or accessory loop electrical principle diagram
- d. Main bus specification (or supply according to makers criteria) (contract according to customers need)
- e. Must to note whether need changeable equipment when ordering goods. Such as earth switch, powered monitor, connection carrel.

**JYN1-35(F)**

AC metal sealed and movable switch board

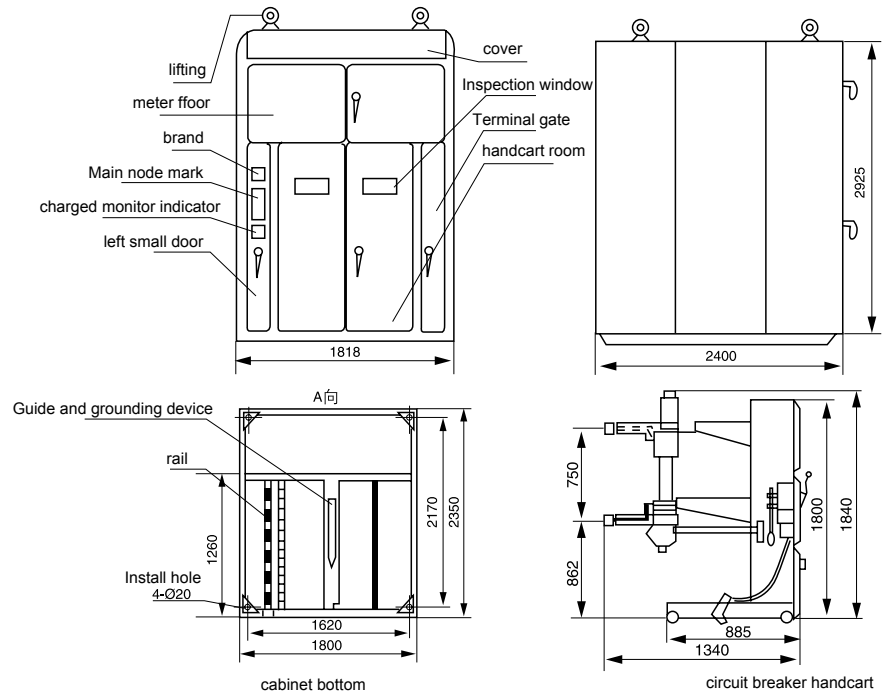
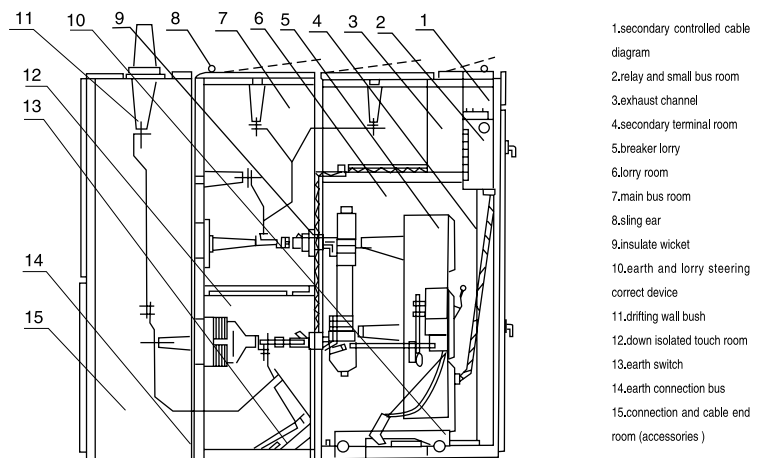


Fig 1 cabinet and handcart diagram



Inner structure of cabinet diagram(circuit breaker cabinet)

# COMPLETE SETS OF EQUIPMENT

## JYN1-35(F)

AC metal sealed and movable  
switch board

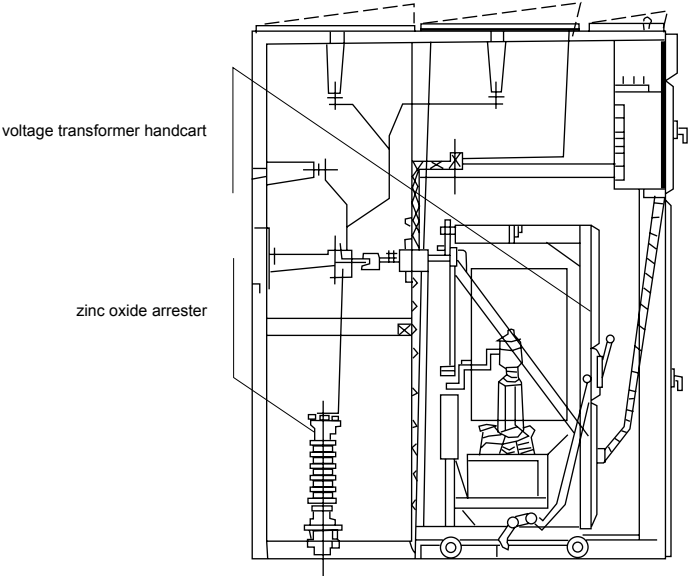


Diagram 3 inner structure sketch of board(voltage mutual inductor and lightning arrester board )

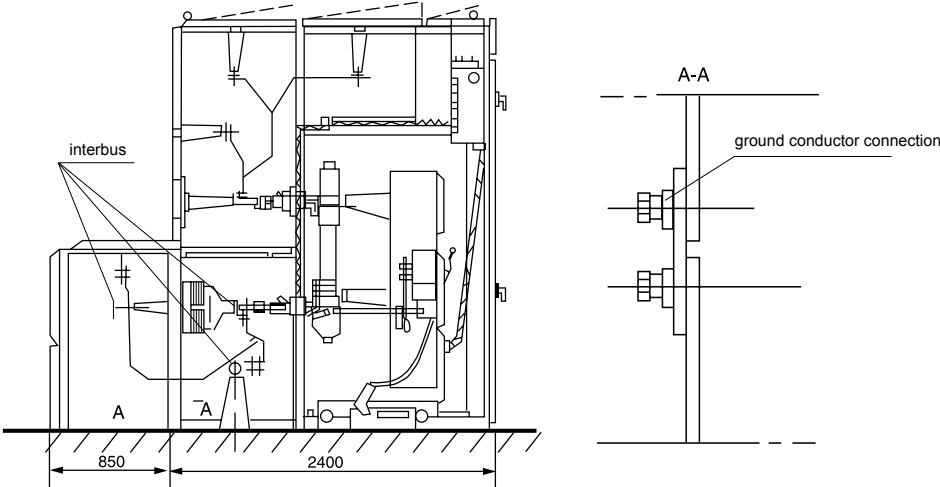


Diagram 4 constructional sketch of communicate bus



**JYN1-35(F)**

AC metal sealed and movable switch board

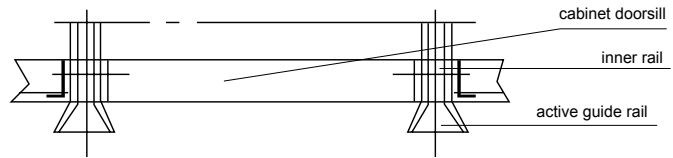


Diagram 5 dynamic steering orbit sketch

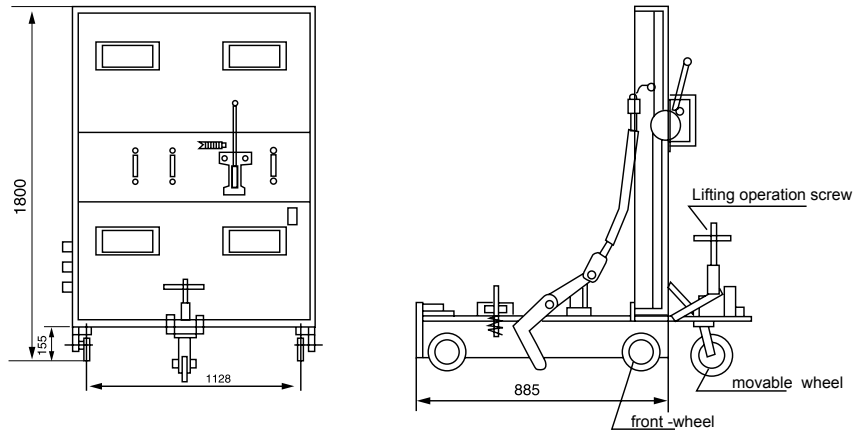


Diagram 6 lorry fiitch wheel sketch

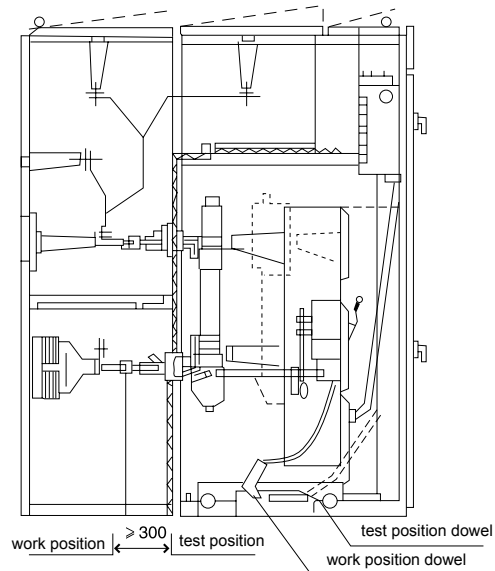


diagram 7 position sketch of lorry in switchboard

# COMPLETE SETS OF EQUIPMENT

## JYN1-35(F)

AC metal sealed and movable switch board

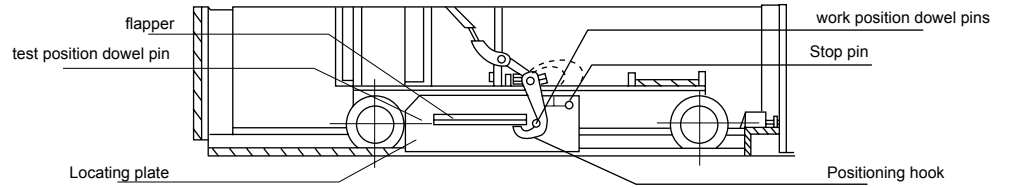


Diagram 8 pushing ,moving out mechanism sketch

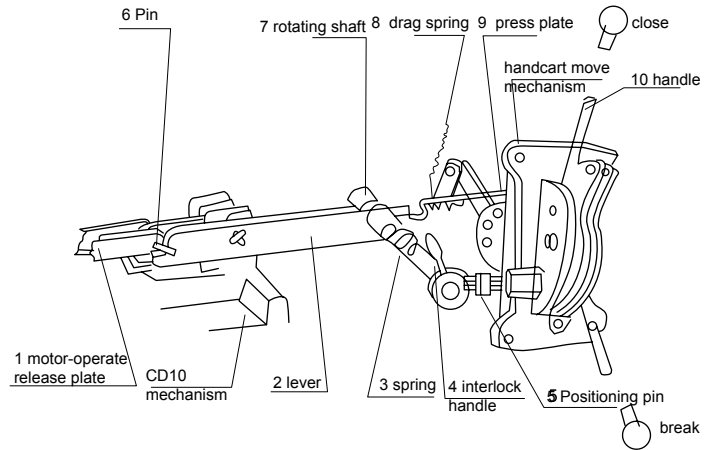


Diagram 9 machinery interlocking device sketch

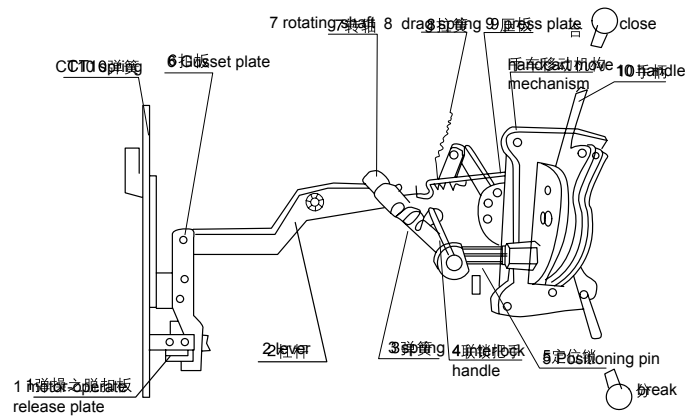


Diagram 10 machinery interlocking device sketch

**JYN1-35(F)**

AC metal sealed and movable switch board

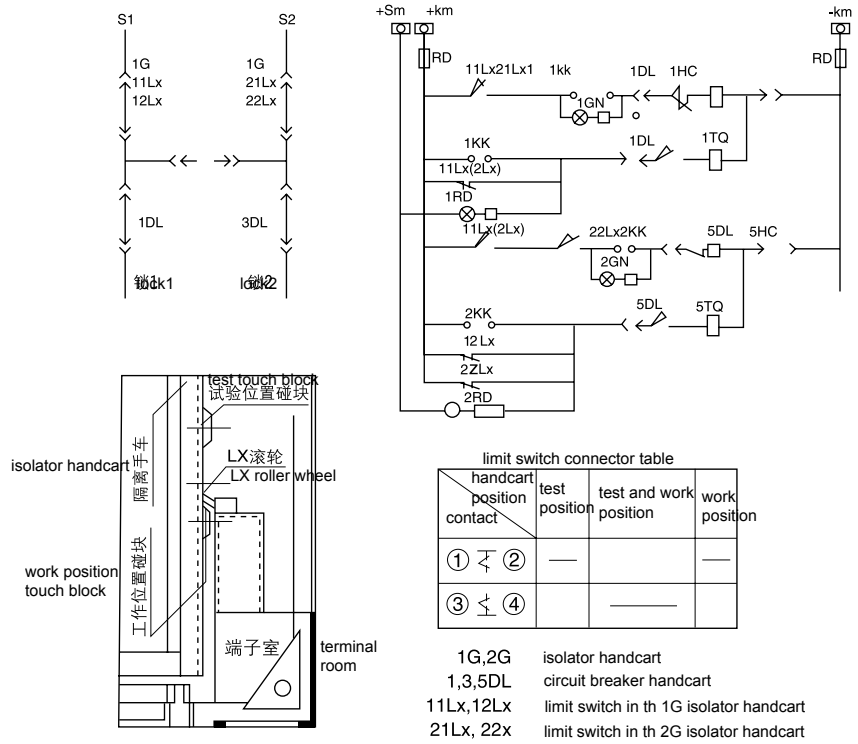


Diagram 11 interlocking sketch of isolated lorry(top view )

Note :graph showed position represents connected state in the case of isolated lorry is on work position

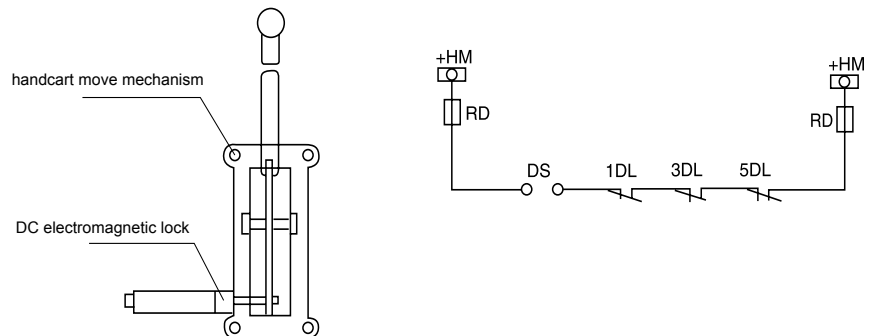


Diagram 12 DS interlocking sketch of isolated lorry

# COMPLETE SETS OF EQUIPMENT

## JYN1-35(F)

AC metal sealed and movable switch board

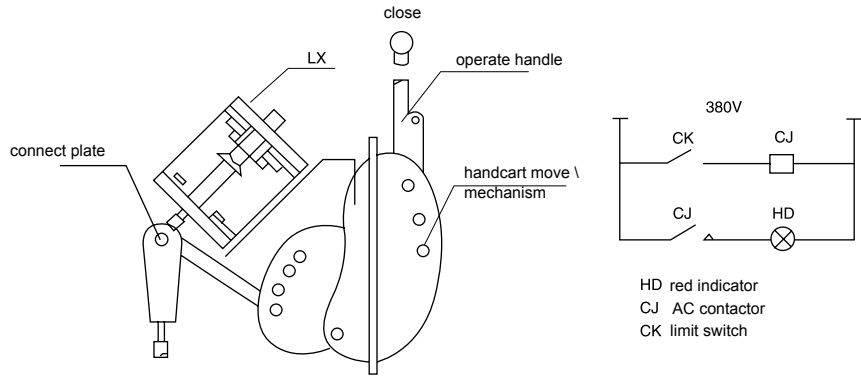


Diagram 13 ketch of trip switch located on lorry dynamic mechanism and electrical interlocking schematic

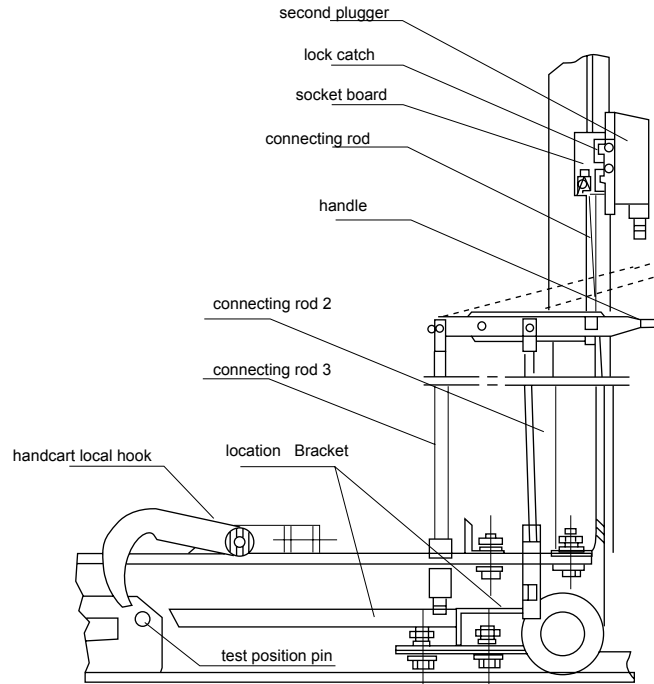


diagram 14 sketch of lorry position locating and secondary plug interlocking

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AC metal sealed and movable  
switch board

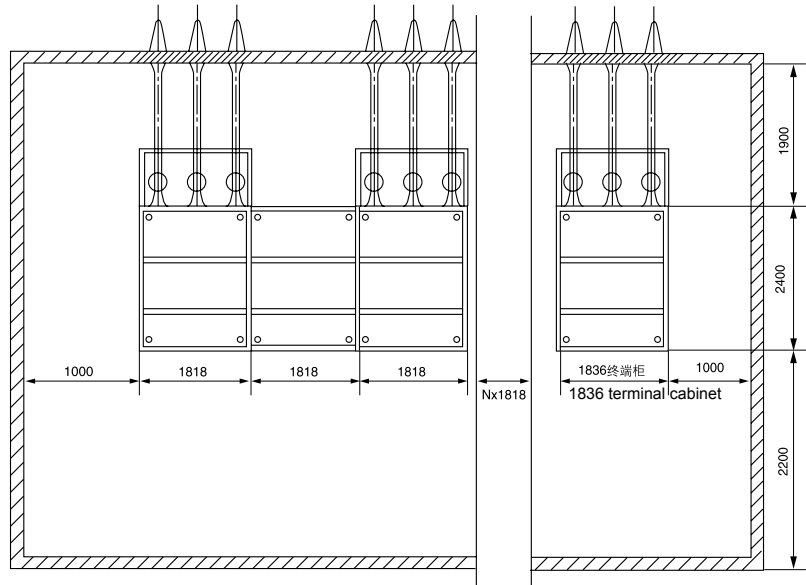


Diagram 15 single row layout sketch (top view)

Note : attention to aerial connection and not to be laid on the adjacent two board ,so as to assure  
examining and repairing distance

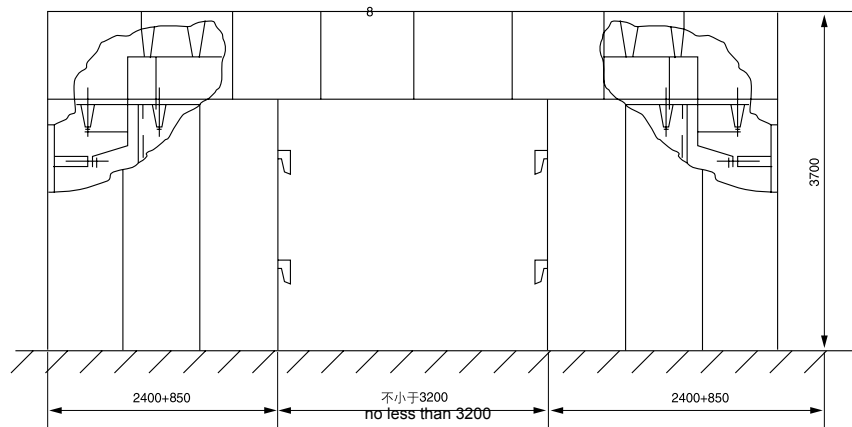


Diagram 16 double row layout bus bridge sketch

# COMPLETE SETS OF EQUIPMENT

## JYN1-35(F)

AC metal sealed and movable  
switch board

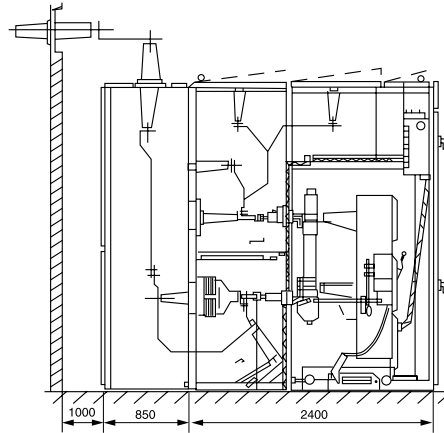


Diagram 17 sketch of board aerial  
connection from back

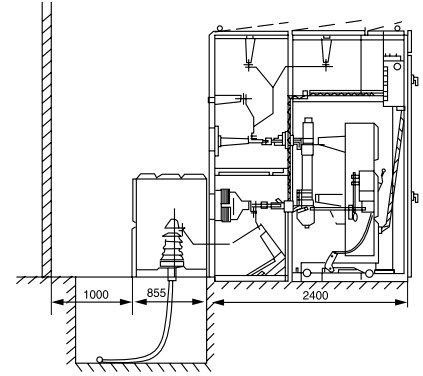


Diagram 18 the first sketch of cable connection

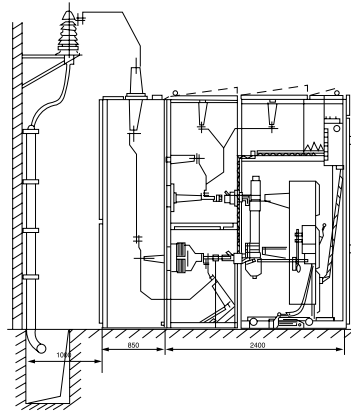


Diagram 19 the secondary sketch of cable connection

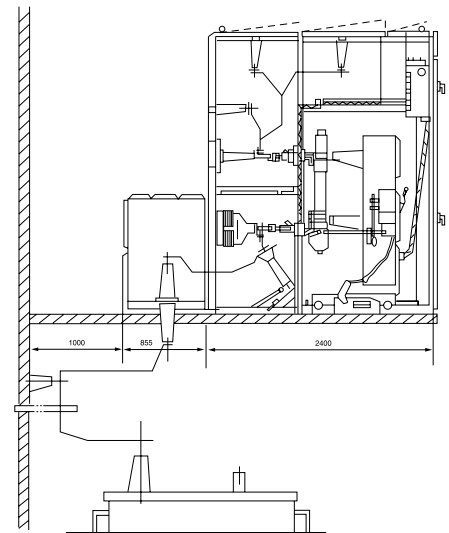


Diagram 20 upper layout ,drifting floor aerial  
connection sketch

**JYN1-35(F)**

AC metal sealed and movable  
switch board

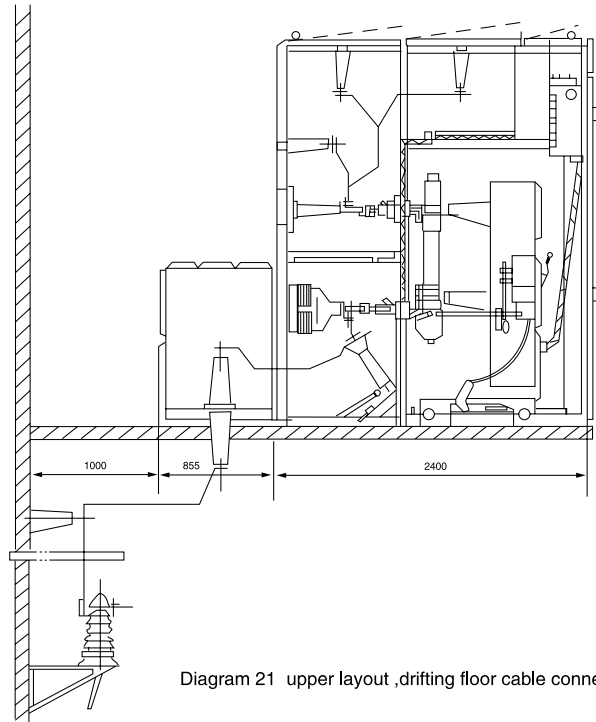


Diagram 21 upper layout ,drifting floor cable connection sketch

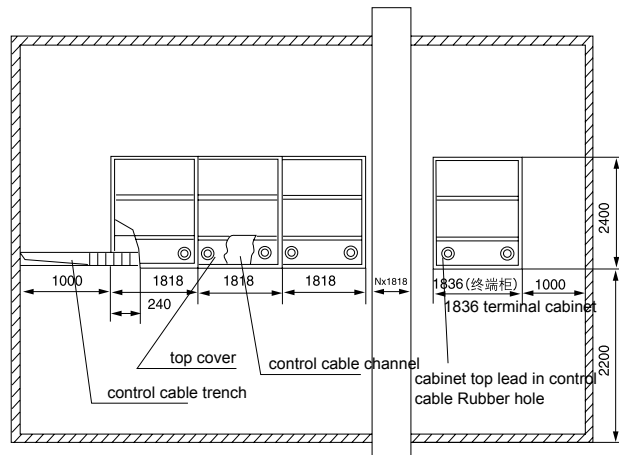


Diagram 22 control cable connection space diagram (top view )

# COMPLETE SETS OF EQUIPMENT

## JYN1-35(F)

AC metal sealed and movable switch board

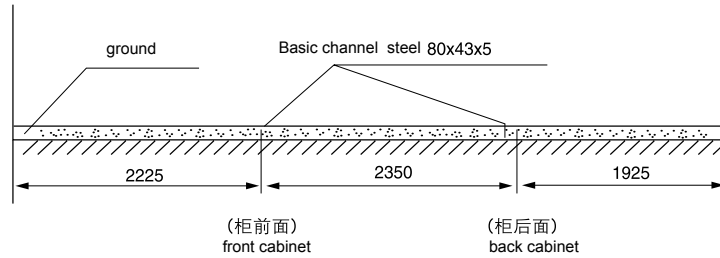


diagram 23 sketch about base launer steel bury(single side layout )

note : the upper surface of the base launer steel should be kept smooth after buried and be kept on a level with horizontal plane ,which does not stick out from horizon

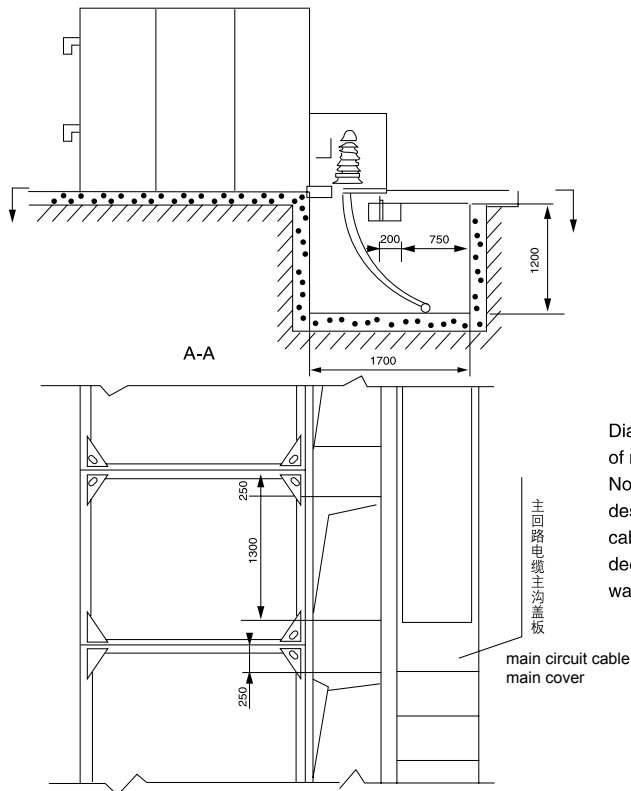


Diagram 24 cable ditch basic sketch of main loop

Note: the depth of cable ditch is designed according to single plastic cable situation ,the cable ditch should deepen in the case of using oil washing cable .