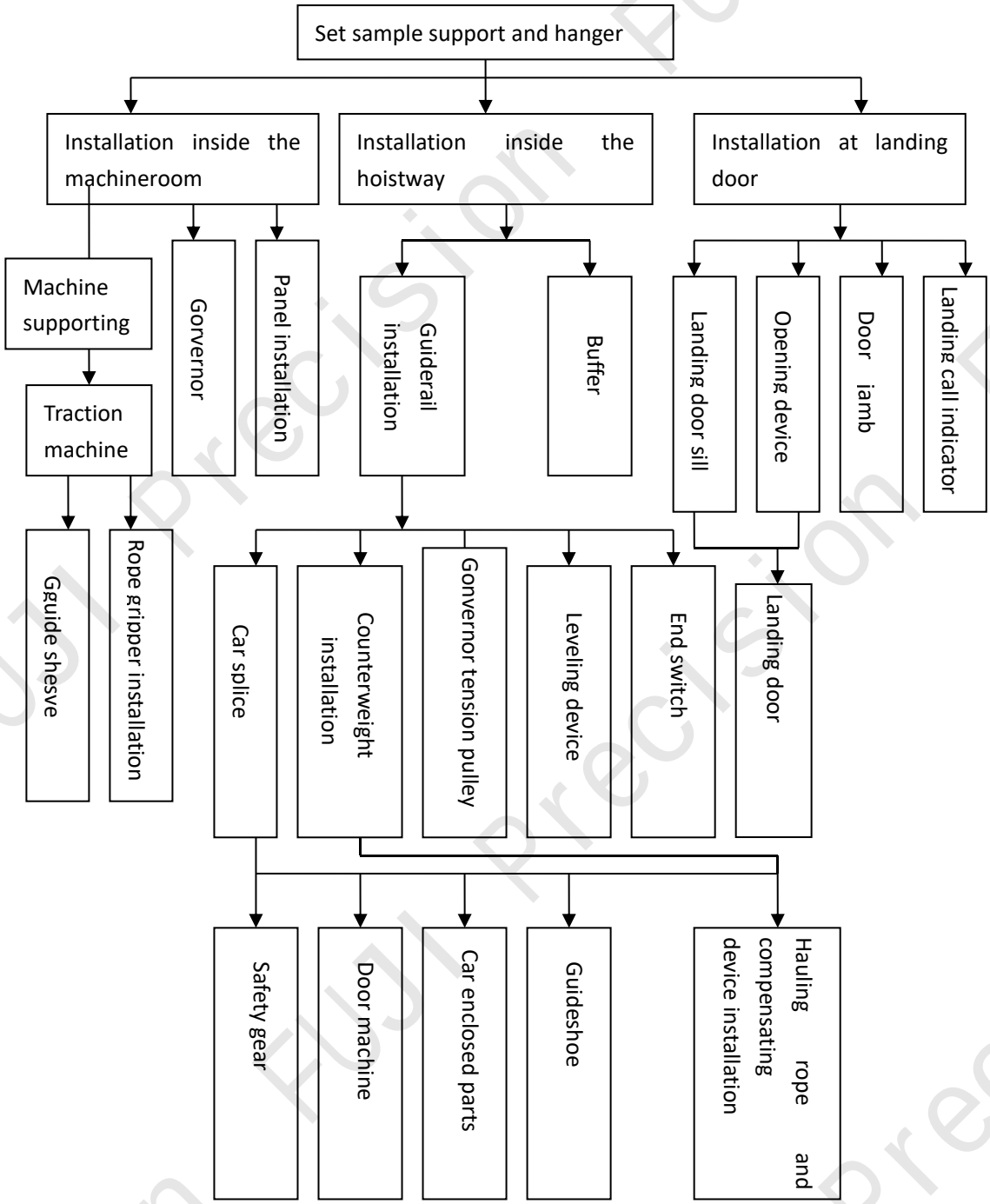
FUJI Precision Installation Manual

1、 一般规定 General

1.1 本说明书适用于本公司生产的电力拖动曳引驱动的各类电梯。本说明书中未涉及的安装质量和技术要求可按照 GB/T10058-1997《电梯技术条件》及 GB10060-93《电梯安装验收规范》中有关的规定。This specification can be applied to all the elevators driven by traction machine with electric power and produced by our company. The installation quality and technology requests those are not involved in this specification can be referred to the concerned rules in GB/T10058-1997 *ELEVATOR TECHNOLOGY CONDITION* and GB10060-93 *CHECKING-ACCEPTANCE CRITERION ABOUT ELEVATOR INSTALLATION*

1.2 本说明书的安装方法是我公司电梯的通用安装方法，有关具体的安装要求均在本说明书中有较详尽说明。当安装的井道机房土建布局情况与公司电梯安装井道机房布置图不一致时，请及时与本公司有关技术人员商量，采取特殊的安装方法。This brochure is the installation of the company's common elevator installation ,the specific requirements for the installation of more detail in the prospectuses. When installed wells road civil room layout ,inconsistent,please promptly with the company to discuss the technical staff to take special installation method.

1.3 电梯安装基本程序图 Elevator plan to install basic procedures


Set sample support and hanger
Installation inside the machineroom
Installation inside the hoistway
Installation at landing door
Machine supporting
Traction machine
Gguide shesve
Rope gripper installation
Gorvernor
Panel installation
Guiderail installation
Buffer
Landing door sill
Opening device
Door iamb
Landing call indicator
Car splice
Counterweight installation
Gonvernor tension pulley
Leveling device
End switch
Landing door
Safety gear
Door machine
Car enclosed parts
Guideshoe
Hauling rope and compensating device installation

1.2 本说明书共分为：安装前的准备工作；样板架制作和定位；导轨安装；机房设施；井道设施；门系统；电气设备安装等部分。

The specification includes: preparation work before installation; facture and orientation of model plate; installation of guide rails; facilities in machine room; facilities in well; door system; installation of electric equipment and so on.

2 安装前的准备

Preparation before installation

2.1 劳动力的组织

Organization of labor force

需要 2 名有一定电梯安装经验的钳工和 1 名熟悉电梯电气的电工组成安装队。

The installation team is made up of two locksmiths with elevator installation experience and one elector。

2.2 安装前清点、核对工作 Pre-installation inventory check 。

安装前由安装负责人员会同用户代表根据装箱单，核以所有的零、部件及安材料，并了解该电梯的型式及控制方式。根据电梯的土建布置图复核井道留孔、牛腿、底坑深度、顶层高度、提升高度、层站数、层门型式、井道内净平面尺寸（宽×深）。若发现差错则应通知有关部门及时更正。By the user before installation, installation of officers in light of the encasement, with all the zero-nuclear, security components and materials and understand the patterns and the elevator control 。Check the net plane size (width and depth) of the well, vertical degree, the holes in the well, the position of the pre-buried things, the depth of the pit, the height of the top floor, the number of the floors, hoist length, the supporting of the landing doorsill and so on according to the general plan for the elevator field, make some records about the measurement results, if there are something that is not in accordance with the blueprints of the building, ask the customer to amend them in time so as to go on with construction.

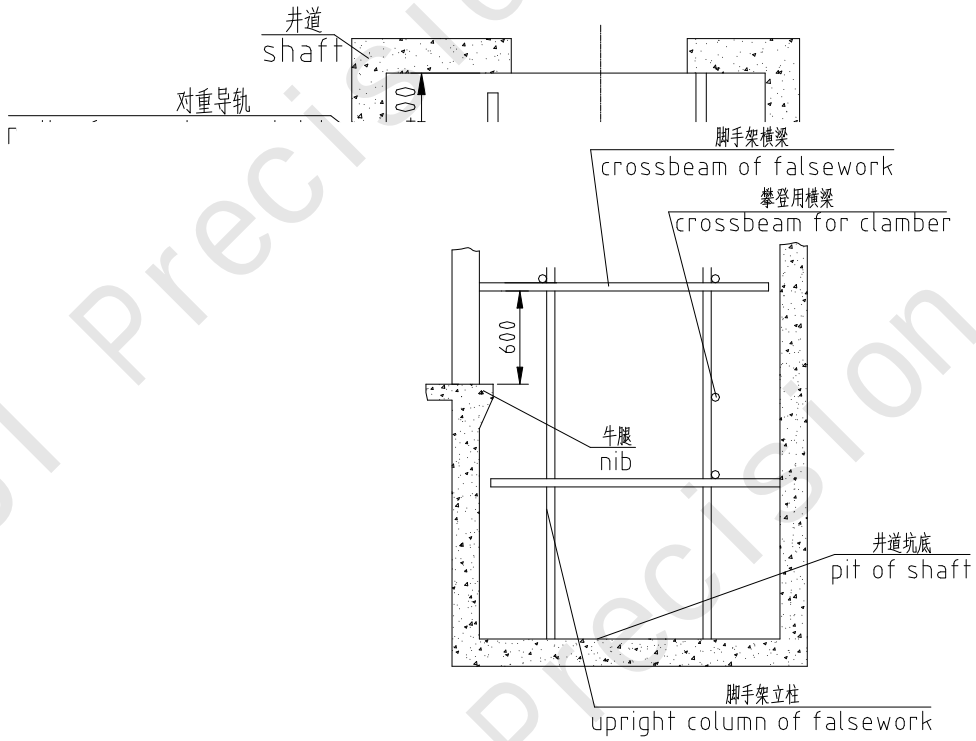
2.3 安装人员必须遵守的安全作业守则 Installation must comply with the security code

安装人员必须遵守的安全作业守则：工作时必须戴安全帽，系安全带及工具袋等。在井道内注意避免上、下同时作业，凡进行带电作业时，必须二人能上能下进行。Installation must comply with the security code : the work must wear a helmet, tool belts and bags, and so on. Road to avoid attention, the wells, operating under the same time, whenever Live homework, going to be for them.

开箱后所有零件应妥善保管，小件入库，大件如导轨、对重架、对重块等可堆放在一层电梯厅门附近(注意堆放整齐)。曳引机、控制柜、限速器装置运到电梯机房，这样可以避免二次搬运部件，便于施工，堆放时注意材料散放，避免楼板承重过大。

After the boxed are opened, all the components should be kept well, the little parts can be kept in the storeroom, and the big parts such as guide rail, counterweight frame, counterweight plate etc can be piled near the door of the first floor (piled orderly). The traction machine, control box and over speed governor should be transported to the elevator machine room, as a result, two times of transportation is avoided, what's more, it's more convenient for construction. The materials should

be put scatteredly for fear the load of the floor is excessively heavy.



底层脚手架立面图
pit falsework vertical section

顶层脚手架立面图
overgead falsework vertical section

3 样板架设与放线

Set up screed and determine the datum line

3.1 制作样板架

Make the frame of screed

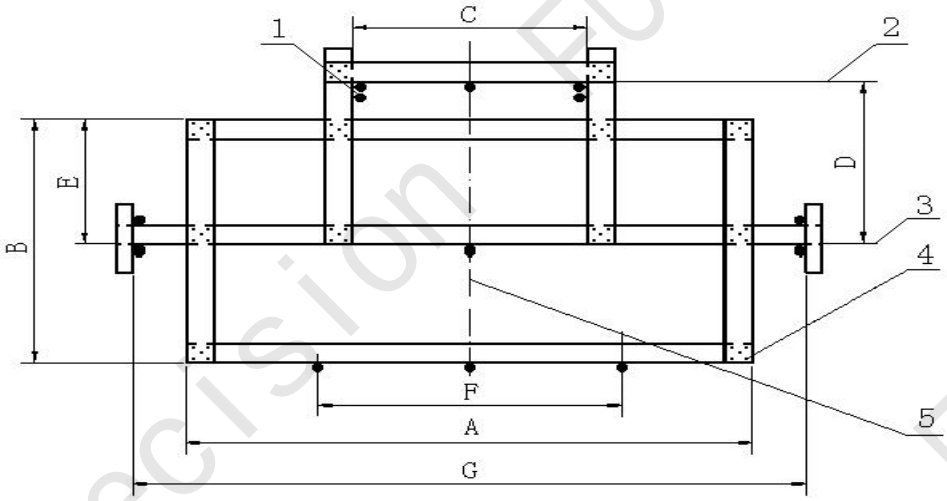


图 3-1 样板架平面示意图　　（对重后置式）

Fig. 3-1 The plane sketch map of the screed frame (counterweight arranged backwards)

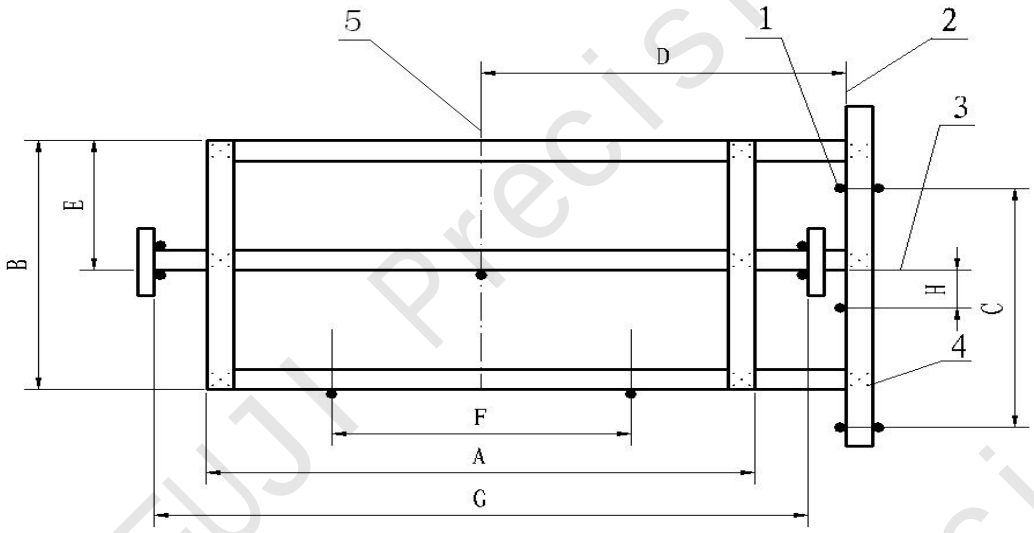


图 3-2 样板架平面示意图　　（对重侧置式）

Fig. 3-2 The plane sketch map of the screed frame (counterweight arranged aside)

图 3-1、3-2 说明

Explanations for Fig.3-1,3-2

A-轿厢宽 (width of car) B-轿厢深(depth of car) C-对重导轨架距离 (distance between the frame of counterweight guides) D-轿厢架对重架中心线的距离 (distance between the core lines of the frame of counterweight guides E-轿厢架中心线至轿底后沿间距(distance between the core line of car frame and the back edge of car bottom) F-开门净宽 (the net width of the door) G-轿厢导轨架距离 (distance between the guide frames of car) H-轿厢与对重偏心距离 (deflection distance between car and counterweight)

1-铅垂线(vertical line) 2-对重中心线(core line of counterweight) 3-轿厢架中心线(core line of car frame) 4-连接铁钉 (connection iron nail) 5 轿厢架 Y 向中心线(corelineof car frame in the Y direction)

3.1.1 根据电梯土建总体布置图制作样板架。样板架示意图见(图 3-1)、(图 3-2)。
Based on the general plan for the elevator field, make the frame of screed. The sketch maps of screed frame are shown in Fig. 3-1, 3-2.
3.1.2 制作样板架的木条应干燥，不易变形，四面铇平，互成直角。其断面尺寸可参照表 3-1 的规定。
The wood for making the screed frame should be dry and it should not be distorted easily. The four surfaces needed to be processed flatly and be vertical to each other. The sizes of its cross section are shown in Table3-1.

表 3-1 样板架木条尺寸
Table 3-1 Sizes of the screed wood bar

提升高度（M） hoist height	B-厚（mm） thickness	A-宽（mm） width
≤20	40	80
＞20	50	100

3.1.3 在样板架上标出轿厢中心线、门中心线、门口净宽线、导轨中心线，各线的位置偏差不应超过 0.5 毫米。
Mark the core lines of car and door, the net width lines of door, the core line of guide on the screed frame, and the position error of each line should be no more than 0.5mm.

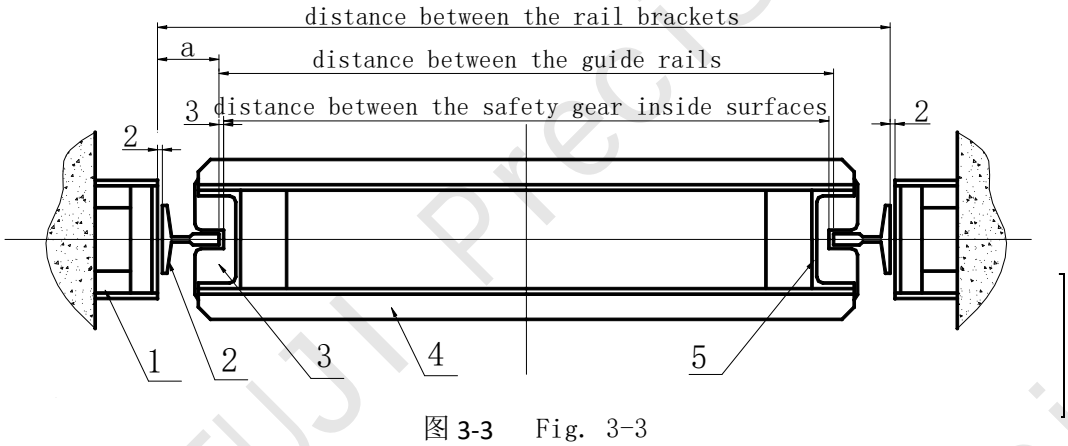


图 3-3 Fig. 3-3
1-guide rail bracket 2-guide rail 3-safety gear 4-under beam of the car bracket
5-upright beam of the car bracket

3.1.3.1 (图 3-1) 中的轿厢导轨距、对重导轨距尺寸,按照土建总体布置图要求,轿厢导轨架间距为轿厢导轨距加上 2 倍的导轨高 a 再加上 2～4mm 的调节余量,对重导轨架间距为对重导轨距加上 2 倍对重导轨高再加上 2～4mm 的调节余量。见(图 3-3)。
In Fig. 3-1, according to the requests of the general plan for the elevator field, the distance between car guide frame (shown in Fig. 3-1, 3-2.) = the distance between car guides + two times of guide height + 2～4mm of adjustment margin. And the distance between counterweight guide frame = the distance between counterweight guides + two times of counterweight guide height + 2～4mm of adjustment margin.
3.1.3.2 在样板架各标出点处用锯片锯出切口,并在其附近打一小钉子,以备悬挂铅垂线用见(图 3-4)。
Make a kerf with a saw at each mark on the screed frame and hammer a nail nearby, which is used for hanging the vertical string (refer to Fig. 3-4).

3.2 样板架的安置和悬挂铅垂线

Arrangement of screed frame and hanging of vertical line

3.2.1 在井道顶部距机房楼板 500mm 处的水平面上凿出 4 个尺寸为 150×150mm 的方洞,用两根截面为 100×100mm 的木梁置于孔内,用以托起样板。如(图 3-5) 。

Dig four 150×150mm square holes on the wall of the well, and there is 500mm interval between the hole and the floor of the machine room. Put two 100×100mm wood beams in the holes, which is used to support the screed. (refer to Fig. 3-5).

如果是混凝土井道，可以用角钢架设样板架。用 M16 膨胀螺栓将 6×63×63 角钢固定在混凝土墙上。见（图 3-5）。

If the well is made of concrete, the screed frame can be set up with angle iron. Fix 6×63×63 angle iron in the concrete wall with M16 expansion bolts. (refer to Fig. 3-5).

3.2.2 样板水平置于木搁栅上，要求水平度小于 2/1000，在样线悬挂处放直径为 0.5~0.7mm 的细钢丝至底坑处，并在线端挂 5-7Kg 的重锤，置于样板的切口处，形成重锤线。

Put the screed on the wood laying fence horizontally, the horizontal degree should be smaller than 2/1000, 5-7Kg hammer is suspended at the end of the string which diameter is about 0.5~0.7mm and it should reach the bottom of the pit.

3.2.3 样板架置放时应注意下列事项：

Attentions when laying the screed frame:

3.2.3.1 以层门口为基准,前后移动,测量层门口至样线的距离最小处应符合土建总体布置图要求,且两条门口样线与厅门外墙基本平行。

Select the landing door as benchmark, move forth and back, measure the distance between the landing door and the hanging string, and this distance must be in accordance with the requests on the general plan for elevator field, in addition, the two hanging string should be parallel to the outer wall basically.

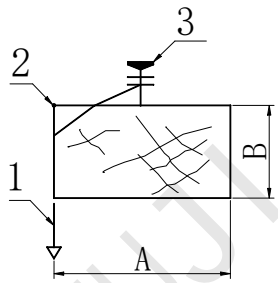


图 fig. 3-4

A- 木条宽 width B- 木条厚 height 1-plumb line 2-kerf 3-nail

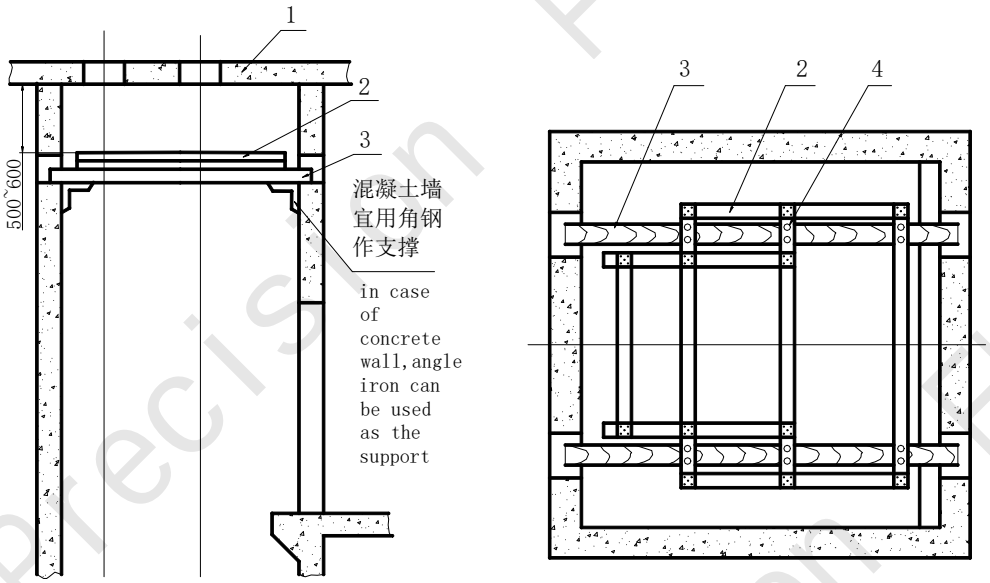


图 fig.3-5 样板架安置示意图 screed frame placement
1-机房楼板 machine room floor 2-样板架 screed frame
3-木梁 wood beam 4-固定样板架铁钉 fixed nails

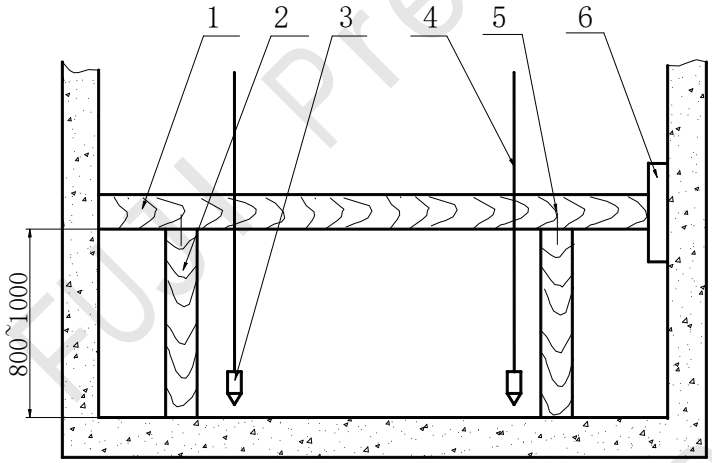


图 fig.3-6 底坑样板架 bottom screed frame in the pit
1- 底坑样板架 pit screed frame 2-撑木 wood support 3-铅锥 plumb
4-铅垂线 plumb line 5-U 形钉 U type nail 6-木楔 wedge

3.2.3.2 左右移动样板架，使导轨架距样线与井道墙面的距离，左右基本一致，同时应注意门线与厅门门洞基本一致。

Adjust the position of screed frame until the interval on both left and right side between the hanging

string and the well wall is basically in accordance, and at the same time the hanging string and the landing doorsill should be also in accordance.

3.2.3.3 确认样板架在井道内前后、左右的位置均合适以后，固定样板架。

Make sure that the screed frame is at a suitable position either in forth-back direction or in left-right direction, and then fix the screed frame.

3.2.4 待样板架固定稳妥后，在底坑距地面 800-1000mm 处固定一个与顶部样板相似的样板架，如(图 3-6)当每条样线与底坑样板架各点重合时，即用 U 型钉将样线固定于底坑样板架上。

After the screed frame is fixed reliably, fix a similar screed frame at the position where the distance between the pit and floor is about 800-1000mm (shown in Fig.3-6). When each hanging string is in superposition with each point of the screed frame in the pit, fix the hanging string on the screed frame in the pit with U-type nails.

顶、底部样板架间的水平偏移不应超过 1 毫米。

The horizontal deflection between the top and bottom of the screed frame should not exceed 1mm.

4. 导轨架及导轨安装

Installation of guide rails and rail brackets

4.1 导轨架安装

Installation of rail brackets

4.1.1 预埋钢板焊接式导轨架的安装法

How to install pre-buried armor plate welding rail brackets

根据样板架上的导轨架间距样线，确定每一档导轨架的长短。

According to the distance from the modle line of the guide rail brackets to the pre-buried armor plate(well wall), make the length of each rail bracket clear.

在两顶、底端导轨架上刻以校正用中心线以及校正线，并打上标记，安装时以此两刻线对准铅垂线来安装。

carve the central lines used for emendation as well as emendation lines on the top and bottom rail brackets, make some marks, (refer to fig. 4-1). the two lines will be used as the benchmarks of plumb lines during installation of the top and the bottom brackets.

校正两顶、底端支架的位置及水平。

Amend the position and level of the top and bottom brackets.

以两顶、底端导轨架为基准再敷设两根压板螺栓孔距的基准线，以此两线来安装中间各导轨架。导轨架与铅垂线间隙为 1 毫米，便于校正（见图 4-1）。

Based on the top and bottom rail brackets, lay two datum lines for the two rail clip bolt holes, which are used to install the rail brackets in the interspaces.

The interval between the rail bracket and plumb line is 1mm so that it can be amended.

焊接时需双面连续焊，焊后应清除焊渣，检查不应有夹渣、虚焊现象。焊后应油漆处理。

When welding the rail brackets, both two sides need to be welded continuously, and the welding dregs should be cleared away, there should be no false welding phenomena, what's more, the rail brackets should be painted after welding.

4.1.2 埋入式导轨架的安装法

How to install embedding style rail brackets

不用。

Not necessary.

4.1.3 膨胀螺栓导轨架安装法

How to install swelling bolts rail brackets

只有在混凝土墙上才可以使用膨胀螺栓安装导轨支架在导轨支架安装位置上，依据样线所指位置，在距中心线左右各 110mm 位置上打Φ22 的孔，该孔应用冲击钻施工，对重导轨距中心左右各 70mm。

Swelling bolts rail brackets only can be applied to concrete wall. At the installation position of rail brackets, according to the position marked by model lines, drill two Φ22 holes where both left and right sides are apart from the center line about 110mm, the two holes should be processed with striking drill. Drill two holes where it is apart 70mm from the center line of the counterweight guide.

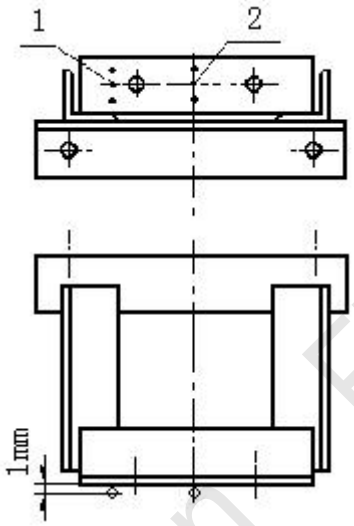


图 4-1 fig. 4-1

1- marks used for emendation

2-central lines used for emendation

在该孔内置入 M16 的膨胀螺栓，其中膨胀管应全部埋入墙内，其圆口端离墙面约 5mm 左右，将连接角钢用螺母加弹性垫圈与平垫圈固定在墙面上，要求：

Insert an M16 swelling bolts into each of the above hole, and the swelling tube should be embedded into the wall completely, the distance between the circular end of the swelling tube and the wall is about 5mm. Fix the angle iron with nuts, elastic gasket and flat gasket on the wall. What's more:

a 、连接角钢的安装水平度小于 1/100。

The horizontal degree of the connection angle iron should be smaller than 1 percent.

b 、螺栓扭矩应大于 200N。

The moment of torque of the bolt should be bigger than 200N.

c 、按 4.1.1 条放置样线及确定导轨支架长短。在连接角钢上面焊接导轨支架。

Based on Fig.4.1.1, set master line and determine the length of the rail brackets. Connect the rail brackets to the angle iron by meaning of welding.

4.1.4 导轨架的不水平度 a,见（图 4-2），无论何种形式和长度，不应超过 5 毫米。

The out-of-horizontal degree of the rail brackets can't exceed 5mm.

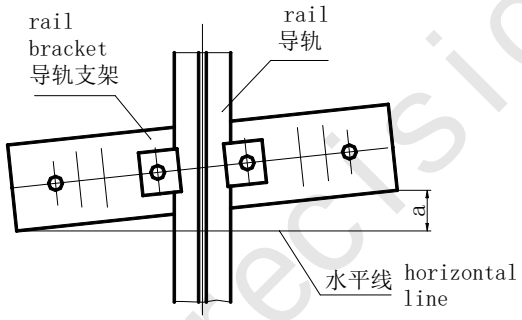
4.2 导轨的安装

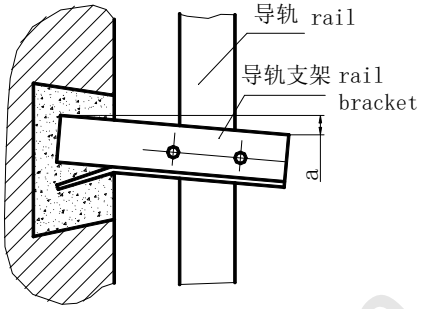
Installation of the guide rails

4.2.1 安装时应检查导轨工作面有无磕碰、毛刺和弯曲。拆除导轨架铅垂线，将导轨由底坑向上逐根立起，第一根导轨下端应安放在底坑平面上，导轨连接处应擦洗干净，修锉毛刺，用螺栓、导轨连接板连接牢固，用导轨压板略微压紧在导轨支架上，待校正后再行固定。

Check whether there are some concaves because of collision, burrs and bending on the working surface before installing. Remove the erect lines of the rail brackets, set up the guide rails, the bottom end of the first guide rail should be put on the floor of the pit, the junctures of the guide rails should be cleaned and the burrs should be rasped away. Fix the guide rails with bolts and connection boards firmly, and press the guide rails against the rail brackets with rail clips appreciably, fix

it after adjustment.





ail bracket

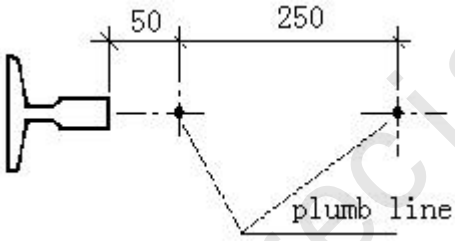
a 轿厢用 used for car　　b 对重用 used for counterweight

4.2.2 导轨的校正

Emendation of the guide rails

按图（4-3）距各列导轨侧工作面 50mm 及 250mm 处，从样板架上悬下铅垂线，准确地稳固在底坑样板架上，依据此样板线，导轨（含对重导轨）自下而上用 300 毫米钢直尺逐渐校正导轨间距和两列导轨的平行度。在校正导轨中，逐个拧紧导轨连接板的螺栓，并检查导轨接口状态。

According to the parameters marked in Fig. 4-3, suspend the erect lines from the top 1screed frame and fix them with the bottom screed frames precisely. Based on these screed lines, amend the distances between guide rails and the depth of parallelism between two guide rails with 300mm steel ruler from down to up. During emendation, screw down the bolts those connect the guide rails to the guide backing boards one by one, and check the junctures' condition.



4.3.1 对导轨及导轨接头处的技术要求：

Technology requests for the junctures between guide rails

4.3.1.1 校正基准线距导轨顶面 50mm,其误差小于 0.5mm。如图（4-3）所示。

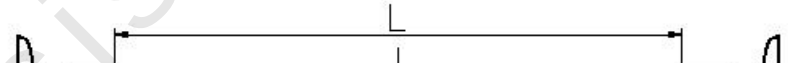
Adjust the distance between the datum line and the top surface of the guide rail until it is about 50mm and the error should be smaller than 0.5mm (shown in Fig.4-3).

4.3.1.2 两导轨的工作面应保持平行,其误差≤0.3mm。

The working surfaces between two guide rails should be parallel, and the error should be no more than 0.3mm.

4.3.1.3 两列导轨顶面之间的间距 L 的偏差（见图 4-4）在整个高度上均符合（表 4-1）规定。

The error of the distance between the top surfaces of two guide rails should accord with the regulations shown in Table



4-1.

表-4-1 两导轨间距离偏差 error limitation of "L"

导轨用途 Types of guide rails	轿厢导轨 rails of car	对重导轨 rails of the counterweight
偏差不应超过 （mm） Error limitation (mm)	+ 2 0	+ 3 0

4.3.1.4 导轨接头处的台阶 a 不应大于 0.05mm，可用 300mm 钢尺靠在导轨表面用塞尺检查（见图 4-5）
The bulge at the juncture between guide rails should be no more than 0.05mm, which can be checked with feeler leaf by set the 300mm steel ruler against the surfaces of the guide rails.(fig4-5)
4.3.1.5 导轨接头处的台阶应按规定的长度修光（见图 4-6）。导轨接头处修光长度为 150～300mm。
The bulge at the juncture between guide rails should be dressed smooth within specified length (shown in Fig. 4-6), which is between 150~300mm.

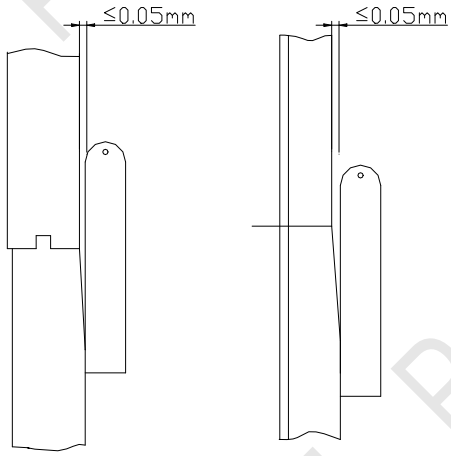


图 4-5(fig.4-5)

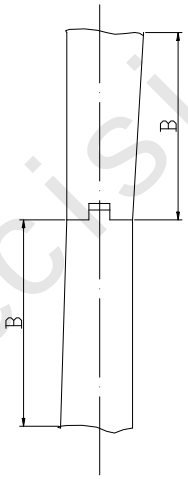


图 4-6 接头处修光长度
fig. 4-6 length dressed smooth at the juncture

5 曳引机的安装和调整

Installation and adjustment of traction machine

5.1 曳引机及悬挂系统的安装（参照本公司的电梯土建总体布置图）
Installation of traction machine and suspending system(Refer to the general arrangement blue-print of elevator field in our company).
5.1.1 确认机房楼板预留的曳引钢丝绳孔中心与井道的样板架上的轿顶轮轮缘中心和对重轮轮缘中心重合，否则应修正。该孔应为 200mm×200mm，保证钢丝绳距离孔边距离不小于 20mm。
There are two holes through which the hoist rope passes in the floor of the machine room. One center of the hole ,the flange center of the wheel on the top of the car should be on the same vertical line and the center of the other hole, the flange center of the counterweight wheel should be on the same vertical line, otherwise, it must be amended. In addition, the size of the hole in the floor of the machine room is 200mm×200mm, to ensure the distance between the hoist rope and the edge of the hole

is not smaller than 20mm.

5.1.2 搁机梁两端应架设在井道承重圈梁上，在该位置分别浇筑高 600mm 的混凝土基础(以导向轮不碰地面为准)，对该基础的要求是：

The beam supporting the machine should be fixed with the bearing beam in the well, pour 600mm concrete as groundwork, which should satisfy:

ａ、按机房土建总体布置图确定混凝土基础的位置和长度。

Based on the general arrangement blueprint of the machine room, determine the position and length of the concrete groundwork.

ｂ、该基础必须完全置于井道承重上。

The groundwork must be laid on the bearing beam in the well completely.

ｃ、两基础的高度差(水平差)不大于 5mm。

The height difference between two groundwork should be within 5mm.

ｄ、基础应浇筑密实。

The groundwork must be made thickly and solidly.

5.1.3 搁机工字钢架设时应注意：

Attentions during setting up the double T-steel supporting the machine:

ａ、搁机梁中心线与轿厢纵向中心线平行 。

The central line of the beam supporting the machine should be parallel to the vertical central line of the car.

ｂ、搁机梁架设时，两端应垫 10#槽钢，搁机梁两端深入基础内大于 75mm，且超过基础中心 20mm 以上。见（图 5-1）。

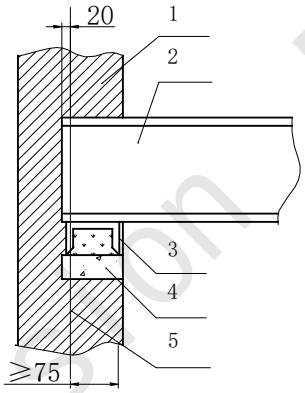


Fig. 5-1 placement of support beam of machine

1-wall 2-support beam of machine

3-double “T” beam 4- concrete

5-center line of the wall

When setting up the beam supporting the machine, 10# channel steel is needed to be underlain at both end of the beam. The length of the beam embedded into the wall should be at least 75mm, what’s more, it should exceed the central line of the wall at least 20 mm. The another end of the beam lied on the groundwork, it should exceed the central line of the groundwork at least 20 mm.

ｃ、两条搁机梁的不平行度小于 6mm，不水平度小于 1/1000。

The out-of-depth of parallelism between two beams supporting the machine should be within 6mm, and the out-of-depth of horizontality should be within 1/1000.

5.1.4 把曳引机机架安放在搁机梁上，在曳引机机架与搁机梁之间安装缓冲垫，各孔串入紧固螺栓。Setting fore set of rubber cushions on the beams supporting the machine. Then put the frame of the traction machine on rubber cushions . and connect every hole together with fastening bolt.

5.1.5 曳引机通过机房顶部的吊钩用 2T 的环链拉葫芦吊起置于曳引机架上。

Lift the traction machine with manual gourd and put it on the frame of the traction machine.

ａ、曳引机顶面吊环螺栓只承受曳引机本身重量，不允许悬吊额外载重。

The stationary rings bolt on the top of the traction machine can only bear the traction machine itself, any other extra load is not allowed.

ｂ、曳引机底座应保持水平。起吊时不准碰撞，防止损坏曳引机。

The pedestal of the traction machine should keep in level, and collision is not allowed during lifting for fear of demolishing the traction machine.

5.1.6 把曳引机安放在曳引机机架上，曳引机机座的孔与机架上孔对应对齐，各孔串入 M24 紧固螺栓，（螺栓的强度等级 12.9，拧紧力距 880Nm，待曳引机调整完毕时拧紧）。按照样板架调整好曳引机的水平安装位置。

Put the traction machine on the machine frame, the holes in the pedestal and the frame should be alignment correspondingly. Connect the pedestal and frame together with M24 fastening bolts, (the intensity class of the bolts is 12.9, and the moment of force is 880N, screw down the nuts after the traction machine is well adjusted). According to the screed frame, adjust the horizontal position of the traction machine.

5.1.7 曳引机及导向轮的安装位置误差。（图 5-2）

Toerlance of the traction and deflector sheaves（shown in fig. 5-2）

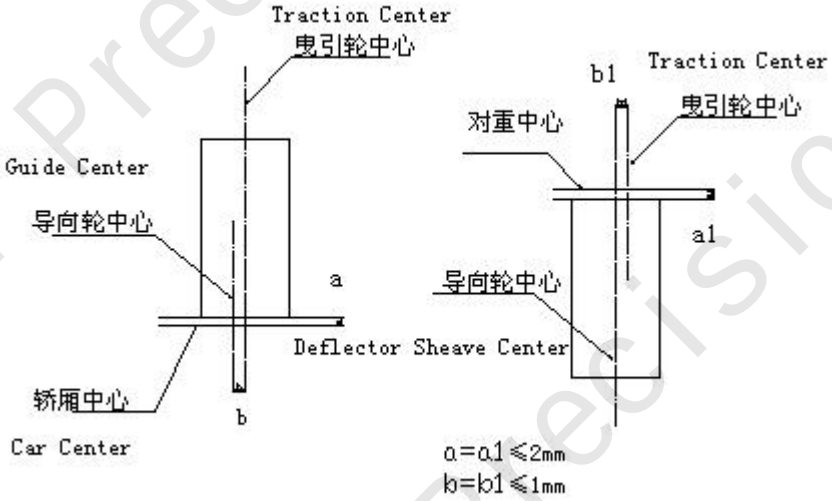


图 5-2　　fig. 5-2

5.1.8 曳引机的校正。

Emendation of the traction machine

a 、校正曳引轮的垂直度在曳引轮的内侧(靠齿轮箱一侧)置一铅垂线.，要求上沿与下沿的垂直偏差小于 0．5mm.（图 5-3）超差可用垫片方式调整.

Adjust the verticality of the traction machine. Set a plumb line at the inside of the traction sheave, the vertical error between the upper edge and the lower edge of the traction sheave should be within 0.5mm, which can be adjusted by meaning of filling pieces.

b、在曳引轮轮缘的中线置一铅垂线，该铅垂线必须与曳引轮轮缘中线和节径交点重合，将该铅垂线延伸至样板架上的轿顶轮轮缘中心和节径交点，与轿厢轿顶轮轮缘中线的相对误差小于 1mm。

Suspend a plumb line along the center line of the flange of the traction sheave, and the plumb line should be

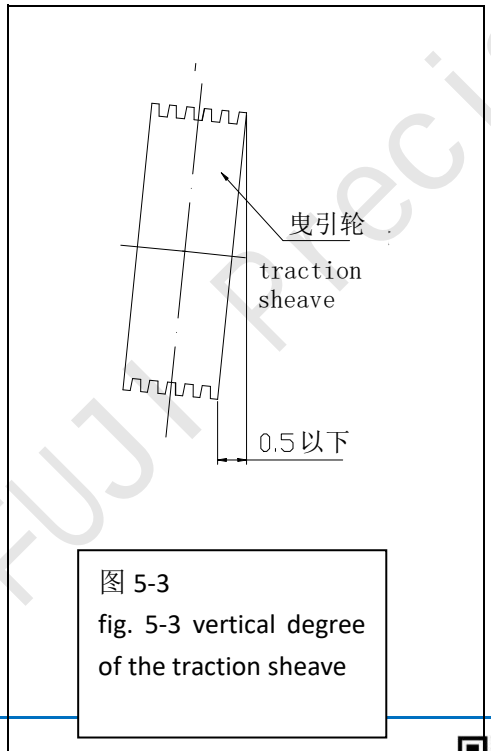


图 5-3
fig. 5-3 vertical degree of the traction sheave

in superposition with the intersection point between the center line of the flange of the traction sheave and the pitch diameter. Extend the plumb line to the intersection point between the flange center of the double wrap sheave and the pitch diameter, and the relative error should be within 1mm.

c、曳引轮与对重轮轮缘中线的相对误差小于 1mm。

The relative error between the midlines of traction sheave flange and counterweight sheave flange should be within 1mm.

d、在确认校正到位后，紧固所有紧固件，并再一次复查.确认无误后，再用混凝土浇筑密实，在浇筑混凝土前，部分点焊，电焊长度先将工字钢与槽钢的接触为 20-30mm，要求无虚焊，并清除焊渣。

After the position of the traction machine has been adjusted well, fasten all the components. Fix each end of the beams to the 10# channel steel by welding some points whose length is about 20~30 mm , after welding pour concrete into the pre frame hole on one side of the machine beams, pour concrete on the groundwork on the other side to make it height to cover the end part of the machine beams.

5.1.9 导向轮的校正。

Emendation of the deflector sheave

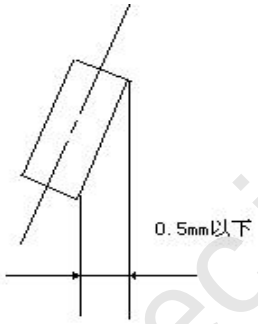


图 5-4
fig. 5-4 vertical degree of the deflector sheave

校正导向轮的垂直度在导向轮的内侧(靠齿轮箱一侧)置一铅垂线.，要求上沿与下沿的垂直偏差小于 0．5mm.（图 5-4）超差可用垫片方式调整.

Adjust the verticality of the deflector sheave. Set a plumb line at the inside of the traction sheave, the vertical error between the upper edge and the lower edge of the traction sheave should be within 0.5mm, which can be adjusted by meaning of filling pieces.

5.1.10 在曳引机机架的导向轮侧安装防震挡块。防止曳引机后移。

(not necessary)Install a quakeproof block beside the deflector sheave of the traction machine frame to prevent the traction machine from moving backwards.

5.1.11 曳引机配有防跳绳架，安装好钢丝绳后，调整防跳绳架，使钢丝绳和防跳绳架的间距不超过 1.5mm。

There is a rope rack that is used to prevent from rope skipping beside the traction machine, after installing the hoist rope, adjust the rope rack until the interval between the rope and the rack is within 1.5mm.

5.1.12 运行启动

Start running

检查曳引机是否已经加好了润滑油。在工作 5000 小时以后要求重新润滑主轴承。根据 DIN51502 使用轴承润滑油 KP2N-30,例如 Walalit LZ2 或 Kluberlub BE 41-542。

Check whether the traction machine has been lubricated. After the traction machine has worked for 5000 hours, the headstock must be lubricated again。 Adopt KP2N-30 lubrication such as Walalit LZ2 or Kluberlub BE 41-542。

通电试车一定要接入变频器。

When testing, transducer must be used.

弹簧刹车装置出厂时已经调整，在铭牌上可以看到预调整力距 M4。试车前要检查电机和刹车的功能。

The elastic break device has been adjusted before being sold out from factory, and the moment M4 adjusted in advance can be found on the nameplate. Before testing, the performance of motor and brake must be checked in advance.

5.1.13 完成上述安装校正后，在电动机尾轴端的机壳上及曳引轮轮缘处贴上轿厢运行标示。

After the installation and emendation work have been finished, make running marks on both the chassis of the motor and the flange of the traction sheave.

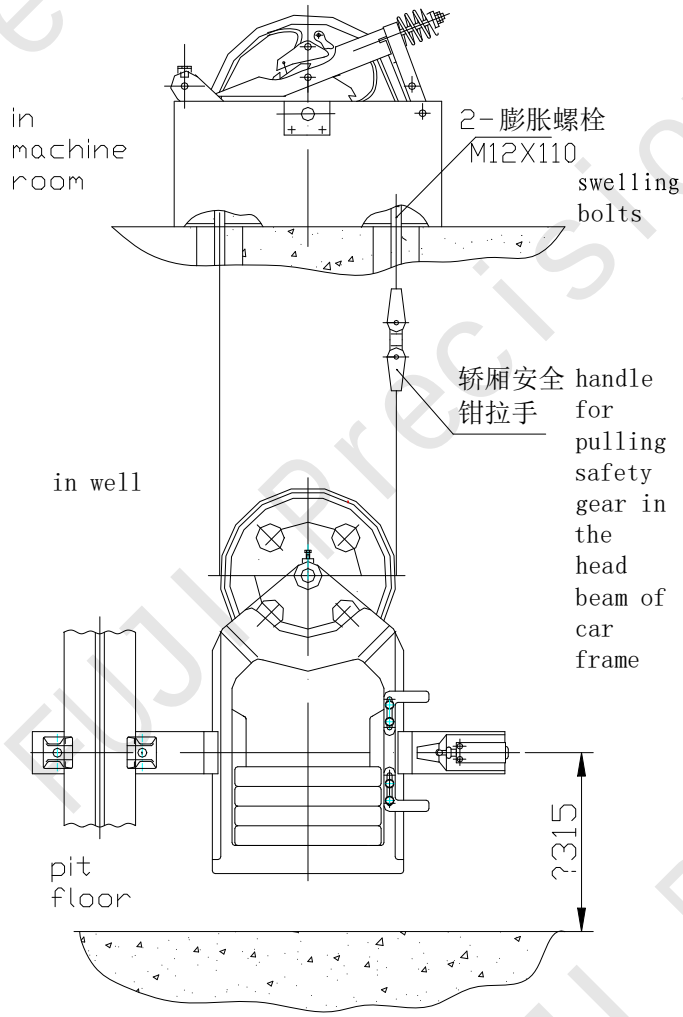


Fig. 6-1 over speed governor devices

Handle for pulling safety gear in the head beam of car

Swelling bolts in the machine room in the pit

6.限速器

Overspeed governor

限速器在出厂时均经严格检验和试验，安装时不准做随意调整及变动，以免影响限速器的动作速度．安装前应认真核对标牌，查验限速器的动作速度是否与电梯速度相符，查验铅封，检查限速器开关动作是否可靠。

Overspeed governors have been inspected and tested strictly before they leave factory, and they are not allowed to be adjusted at will for fear of influencing the action speed of overspeed governor. Check the scutcheon carefully before installation, and check whether the action speed of the overspeed governor is in accordance with elevator speed, check the lead seal, and whether the action of overspeed governor switch is reliable or not.

6.1 限速器安装前应检查限速器动作方向是否与轿厢下行方向一至。

Before installing the overspeed governor, check whether the action direction of the overspeed governor is in accordance with the running direction of the car.

根据电梯土建总体布置图安装要求，将限速器安装在机房楼板上，限速器的安装示意图（见图 6-1）。

According to the installation requests on the general arrangement blueprint in elevator field, install the overspeed governor on the floor of machine room, and the installation sketch map of the overspeed governor is shown in Fig. 6-1.

6.2 从限速器绳轮节径处悬下铅垂线，通过机房楼板的限速器绳预留孔至轿厢架上安全钳的绳头拉杆中心点，再与底坑涨紧装置的轮槽对准，来确定限速器的正确安装位置，并将限速器安装牢固。

Through the hole on the floor of the machine room, an erect line suspends from the pitch diameter of the sheave of the over speed governor to the pitch diameter of the tension sheave .The center of the handle on the head beam of car should be in the erect line too. After amendment finished fix the over speed governor and install the rope.

6.3 限速器的安装应符合：

Installation of the overspeed governor should satisfy the following conditions:

a、绳轮的垂直误差不大于 0.5mm。

The vertical error of the sheave should be within 0.5mm.

b、限速器钢丝绳在电梯正常运行时不得触及夹绳钳，不得与轿厢相碰。

The rope in the overspeed governor can't contact the clamp and collide with the car when elevator is running normally.

涨紧装置的绳轮必须能够灵活转动，断绳开关动作可靠。

The sheave of the take-up should be able to rotate flexibly, the broken rope switch should work reliably.

7. 轿厢架、安全钳及导靴的安装

Installation of the car frame, safety clamp and guide shoes

7.1 放置安装轿架用的梁

Establishment of the beam used for installation of the car frame

轿厢架、轿厢一般应在最高层的井道内安装，在轿厢架进入井道前应拆除最高层的脚手架。在正对厅门口的井道墙上，平行地凿两个与厅门口宽度一致的 250 mm×250mm 的孔洞，用两根截面不小于 200 mm×200mm 的方木或金属梁，一端插入墙内，一端架于楼板上，校正两根横梁的平行度和水平度后两端固定，见（图 7-1）。

The car and car frame should be installed on the highest floor in the well, remove the scaffold on the highest floor before the car frame is sent into the well. Dig two parallel 250 mm×250mm holes between which the width is the same with that of the hall door in the well wall facing the hall door, insert one end of two 200 mm×200mm square wood or metal beam into the wall, and the other end is attached

to the floor, fix the two ends of the two beams after regulating their depth of parallelism and horizontal degree, shown in Fig. 7-1.

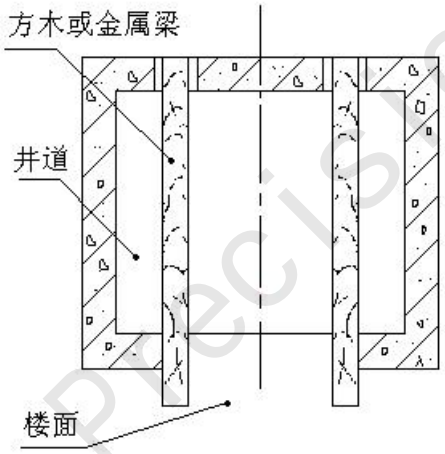


Fig. 7-1 井道平面 section of well
Well floor
Supporting beams

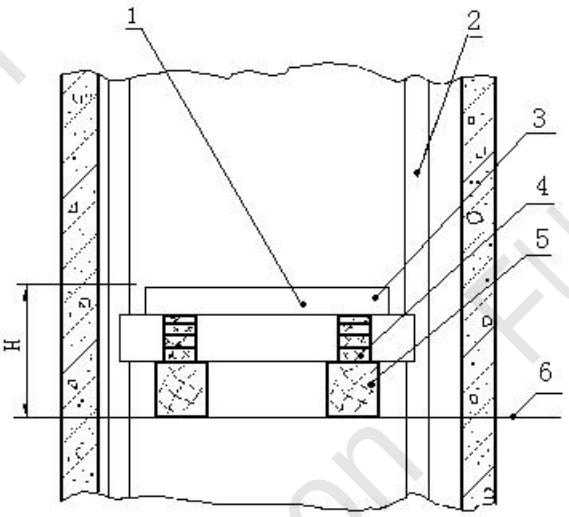


Fig.7-2 下梁的安装 installation of lower beam
1-lower beam 2- car rails 3- car platform
4-stow wood 5-supporting beam 6-top floor

7.2 轿厢架的安装
Installation of the car frame

将下梁平放于顶层井道内的支撑横梁上，见（图 7-2），校正下梁上平面的水平度不应超过 2/1000。

Put the lower beam on the supporting beam of the highest floor flatly in the well, shown in Fig. 7-2. Adjust the horizontal degree of the above surface of the lower beam to ensure it's within 2/1000.

7.3 安装安全钳钳体
Installation of the body of the safety clamp

7.3.1 查验安全钳铭牌上所标的导轨宽度、容许质量等项目是否与所装电梯相符。
Check whether the guide width, allowable mass, etc marked on the nameplate of the safety clamp accord with the elevator in installation.

7.3.2 查验安全钳上各铅封是否完整无损。安全钳在出厂时已经调整，不要随意变动。
Check whether the lead seal on the safety clamp is complete and without damage. The safety clamps have been adjusted well before they leave factory, don't change anything at will.

7.3.3 将安全钳与下梁用螺栓紧固
Fix the safety clamp and the lower beam with bolts

安放下梁时，对于渐进式安全钳保证两楔块与导轨的两侧间隙为 3 mm，见（图 7－3）。

When installing the lower beam, for asymptotic style safety clamp, ensure the gap between the two wedges and the guide rail to be 3mm, shown in Fig. 7-3.

7.4 使导轨顶面与安全钳楔块间的间隙两端一致后，将下梁稳固，防止移动。将两侧立柱与下梁连接牢固，在立柱整个高度上的垂直误差不超过 1.5mm。

Adjust the gap between the top surface of the guide rail and the wedge of the safety clamp until the two ends are consistent. Fix the lower beam, and connect the upright columns on both sides to the lower beam firmly, the vertical

error during the whole height of the upright columns is no more than 1.5mm.

7.5 用手拉葫芦将上梁吊 M 起，与两侧立柱连接。检查轿架的对角线，对角线的误差小于 2 ㎜。最后紧固轿架所有连接件。

Lift the upper beam with manual gourd and connect it to the upright columns on both sides. Check the diagonal lines of the car frame, which error should be within 2mm. Finally fix all the connection parts of the car frame firmly.

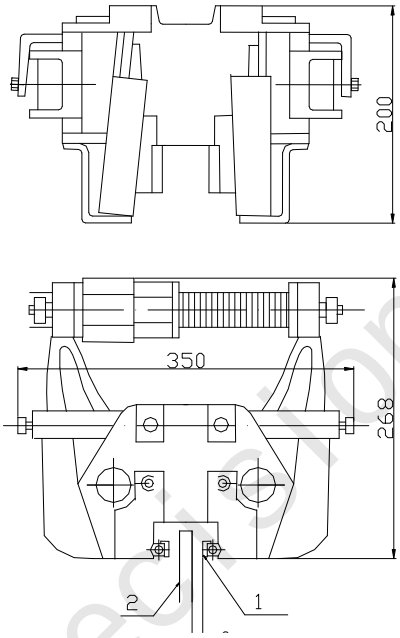


Fig. 7-3 渐进式安全钳 progressive safety gear 1 安全钳块 safety gear wedge shaped jaw 2 导轨 rail

7.6 装轿厢导靴

Installation of the guide shoes of the car

7.6.1 安装时，严格要求轿厢架和对重架上、下四个导靴位于一垂直平面上，以免轿厢架歪斜。

During installation, the four guide shoes of both the car frame and counterweight frame must be in the same vertical plane for fear of inclination of the car frame.

7.6.2 货梯用弹簧滑动导靴，应调整导靴间隙：尺寸 a 应为 3mm。见（图 7—3）。

Elastic sliding guide shoes are applied to freight lift, and the interval between guide shoes is about 3mm.

客梯用滑动导靴，滑动导靴与导轨端面间的间隙：要求两侧的间隙一致，导靴位置校正时应这样确认：当一侧导靴靴衬与导轨的间隙为零时，另一侧导靴靴衬与导轨的间隙为 0.5～1mm。

Sliding guide shoes are applied to passenger lift, and the gaps between the sliding shoes and the surface of the guide rail should satisfy the following requests: the gaps on both sides should be consistent, and the position of the guide shoes should be validated like this: when one side gap between the guide shoe busher and the guide rail is zero, the other side gap should be 0.5～1mm.

7.7 安装安全钳提拉机构

Installation of the lifting mechanism of the safety clamp

在组装完上梁后．将装在上梁的安全钳的各拉杆装好紧固。安全钳开关装好，调整两侧对称动作一致，安全钳开关动作可靠，使之在安全钳装置动作瞬时即断开控制回路，然后将带动楔块的拉杆旋入楔块，拧紧为止．最后再作一遍检查调整。

After the upper beam is installed, fix all the draw rods of the safety clamp on the upper beam. Install the switch of the safety clamp and adjust the switch to make the symmetrical actions on both sides in consistency. The action of the switch of the safety clamp must be reliable; the control circuit must be shut off by the switch immediately when the concerned mechanism of the safety clamp works. Then fix the draw rods with the wedges. In the end, check and adjust the related parts again when necessary.

7.8 将限位开关撞弓装在立柱上．并校正其垂直度误差不超过 2／1000。

Fix the cam of the limited switch with the upright column, and its verticality error must be within 2／1000.

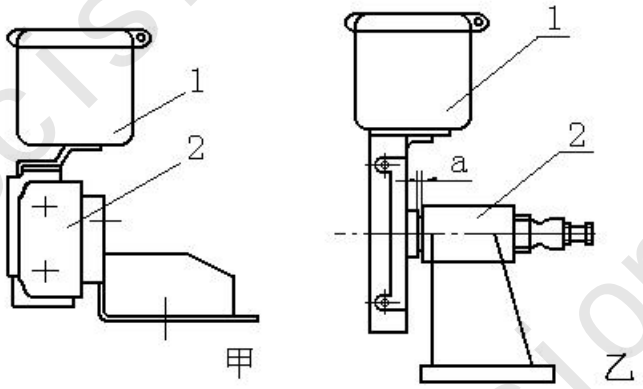


Fig.7-4 滑动导靴 sliding guide shoe

甲—客梯轿厢导靴 guide shoe of the passenger car

乙—货梯轿厢导靴 guide shoe of freight car

8．轿厢安装

Installation of the car

8.1 安装轿厢的轿底：

Installation of the car platform

8.1.1 将轿厢底放在轿架下梁上，按要求调整好前后、左右位置，与轿架下梁连接。

Put the car platform on the lower beam of the car frame, adjust its position well and fix it with the beam.

8.1.2 调整轿厢架拉条，使轿厢底盘上平面的水平度不超过 2／1000。

Adjust the draw bar of the car frame so that the horizontal degree of the above surface of the car chassis is within 2／1000.

8.2 安装轿厢

Installation of the car

8.2.1 将组装好的轿顶，用手拉葫芦悬挂在轿厢架上梁下面。

Suspend the car roof that has been assembled well below the upper beam of the car frame with manual gourd.

8.2.2 将四周轿壁与轿底、顶和轿壁之间用螺栓连接紧固。

Connect the car walls to the car platform and car roof with bolts.

8.2.3 放下轿顶，与轿壁连接紧固。

Lay down the car roof and connect it to the car walls.

8.2.4 安装轿顶卡板，校正所有轿壁的垂直度，不超过 2/1000，然后紧固所有螺栓。

Install the grip socket on the car roof and adjust the verticality of the car walls so that it doesn't exceed 2/1000, then screw down all the bolts.

8.3 将轿顶栏杆装好。货梯轿顶栏杆装在靠对重的一侧。分别与轿厢架立梁以及轿厢顶连接。
Install the balustrade on the car roof. The car roof balustrade of freight lift is installed on the side close to the counterweight, and it is connected to the upright column of car frame and the car roof.
8.4 安装扶手、整容镜、照明灯、吊顶、操纵盘等。
Installation of the handrail, dress-up mirror, lighting, hanging roof and operation board, etc.

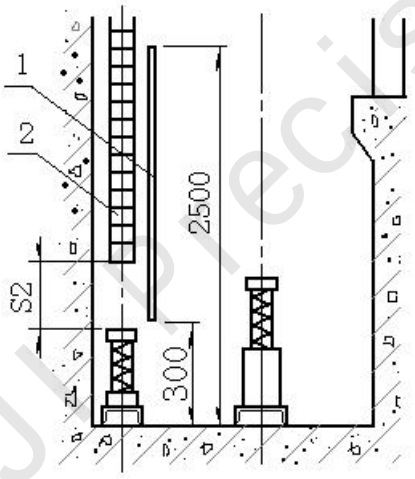
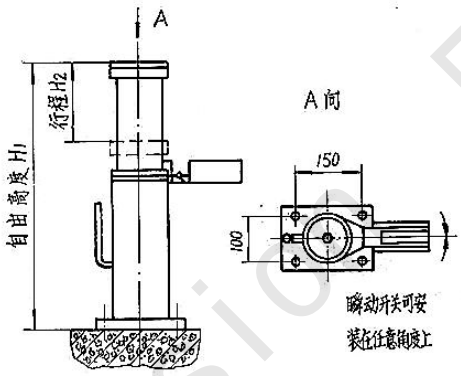


Fig.9-1 安全栅栏高 the height of safety fence
1-底坑安全栅栏 safety fence at pit 2-对重 counterweight



Instant switch can be on any direction

Fig.9-2 hydraulic buffer
H1-originality height
H2-working range

9. 安装对重架
Installation of the counterweight frame

9.1 安装方法
Installation method
9.1.1 距底坑地面约 5～6m 高处 在对重导轨的中心处，牢固地安装一个用以起吊对重的环链手葫芦。
Where it is about 5～6m high from the pit floor and in the guide rail center on the counterweight side, fix hat is used to lift the counterweight.
9.1 -2；图 10—2），将对重架悬至适当的高度、并在其底部用木楞垫稳固后
。
Acc ey size S2, which is shown in Table 10-2 and Fig. 10-2, suspend the height and fix its bottom with wood cushions. Then install the guide shoes, if there is diversion sheave, install it at the same time.
9.1.3 将对重块加装到对重架上，并紧固。
Put the counterweight piece on the frame and fasten them.
9.2 将底坑护栏安装在对重导轨支架上，底坑安全栅栏的底部距地应为 300mm、顶部距地应为 2500mm，见（图 9—1）
Attach the interior paneling of the pit to the bracket of the counterweight guide rail, the bottom

of the pit safety barrier is apart 300mm from the pit floor, and the top of the pit safety barrier is apart 2500mmm from the pit floor.

（表 10—1）油压缓冲器规格表

Table 10-1 Specs form of oil buffer

规格 specs	额定速度 m/s rated speed	H1 mm	H2 mm	液压油用量 dosage of oil
HYF65	0. 63	346	65	0.4(升)
HYF80	1. 0	313	80	0.33(升)
YH1/175	1.6	600	175	2.1 kg
HY2/206	1.75	612	206	2.7 kg

10.缓冲器安装

Installation of the buffer

缓冲器有两种形式；弹簧缓冲器（蓄能型缓冲器）仅适用于速度＜1m / s 的电梯; 油压缓冲器（耗能型缓冲器）适用于各种速度的电梯，油压缓冲器的规格及形式，见（表 10-1 及图 10-1）。

There are two types of buffers: spring buffer (accumulation of energy buffer) is only applied to the elevators which speed is no more than 1m/s; oil buffer (consumption of energy buffer) can be applied to all kinds of elevators. The specs and shapes of oil buffer are shown in Fig. 10-1 and Table 10-1.

10.1 安装程序

Installation procedures

10.1.1 缓冲器安装的数量、位置尺寸应与电梯土建总体布置图符合。

The number and position sizes should be consistent with the general arrangement blueprint in elevator field.

根据轿厢在底层平层位置的 S1 尺寸和缓冲器的高度,见〔图 10—2〕,设置缓冲器安装座,利用土建预留的缓冲器预留钢筋浇制水泥缓冲器座.同时预埋好缓冲器安装用的地脚螺栓,见〔图 10-3〕。

According to the height of the buffer and the landing position of the car, which is shown in Fig. 10-2, set the installation pedestal of the buffer, build concrete pedestal on the pre-planned reinforcing steel bar for the buffer. At the same time, pre-bury the fang bolts those are used to install the buffer.

10.1.2 安装缓冲器，用水准仪和铅垂线（如有必要，使用垫片）调节缓冲器。

Install the buffer, and adjust it with level-meter and plumb-line (adopt cushions when necessary).

10.1.3 加油：用螺丝刀取下柱塞盖，将油位指示器打开，以便空气外逸。将 N 68 机械油加至油位指示器上符号位置。

Oil filling: remove the plunger cover with screwdriver; open the oil indicator so that air can escape out of it. Add N68 mechanical oil until it reaches the upper symbol on the oil indicator.

10.2 缓冲器的安装应符合下列要求：

Installation of the buffer should satisfy the following requests:

10.2.1 当缓冲器压缩时必须缓慢而均匀地向下移动，检查缓冲器行程，柱塞的复位和开关的功能，开关每次动作后必须由人工手动复位，电梯方能运行。

The buffer should move down slowly and evenly when it is compressed. Check the stroke of the buffer, the restoration of the plunger and the functions of the switch. The switch must be restored by hand

after it works, otherwise the elevator can't run.

10.2.2 轿厢、对重撞板中心与缓冲器中心的偏差不大于 20mm。

The warp between the center of the buffer and those of the car and counterweight should be within 20mm.

10.2.3 液压缓冲器柱塞垂直度上、下偏差不超过土 0.5mm。

The verticality of the plunger in the oil buffer should be within 土 0.5mm.

10.2.4 同一基础上的两个缓冲器顶部高度差不大于 1mm。

The height difference between the tops of two buffers on the same foundation should be within 1mm.

10.2.5 轿厢下梁、对重底的碰板至缓冲器的越程 S1、S2 见（图 10－2）应符合（表 10－2）的规定。

The over displacement S1、S2 from the lower beam of the car and the knocking plate at the bottom of the counterweight to the buffer is shown in Fig. 10-2 and Table 10-2.

10.2.6 弹簧缓冲器安装时，其顶面的水平度误差不应超过 4 / 1000。

When installing spring buffer, the horizontal degree of its top surface should be within 4 / 1000

表 10-2　　轿厢、对重的越程

Table 10-2 The over displacement of the car and counterweight

电梯额定速度(m/s) rated speed of elevator	缓冲器型式 types of buffer	越程 S1、S2（mm） over displacement
＜1.0	弹簧 spring	200～350
≤2.5	油压 oil pressure	150～400

注：底坑深度 P 应与电梯土建总体布置图相符合。

Remark: The pit depth P should accord with the general arrangement blue print in eleva

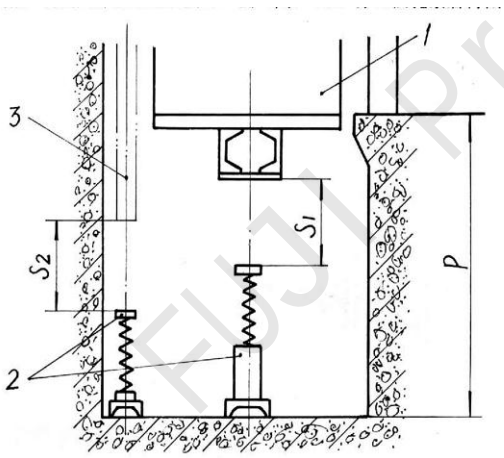


图 10-2fig. 10-2

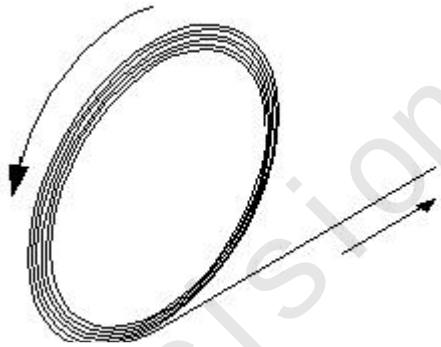


图 11-1 fig. 11-1

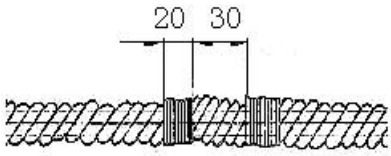


图 11-2fig. 11-2

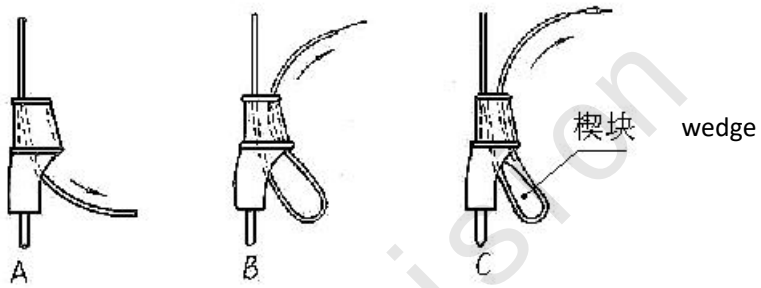


图 11—3 fig.11-3

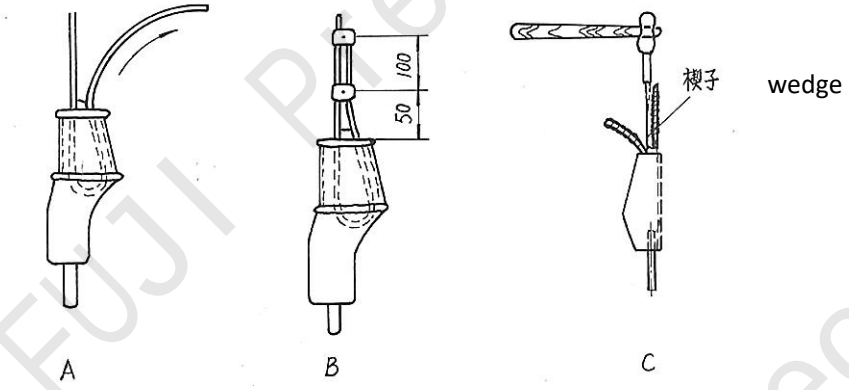


图 11—4 fig.11-4

11.悬挂装置安装

Installation of the suspending devices

11.1 解开(展开)钢丝绳必须象（图 11-1）所示那样，一面维持钢丝绳绕圈形状，一面接连不断的放出来。

Unwind the rope, like Fig. 11-1; maintain the coiling shape while spreading the rope continuously.

放钢丝绳时要注意地面清洁。注意不要使钢丝绳打折或扭曲。

The floor must be clean while spreading the rope. Try to avoid the rope from folding or twisting.

11.2 曳引绳的长度 L，按轿厢处于顶层平层位置，对重位于底层距缓冲器 S2（越程距离）处来确定，见（表 10-2）。并根据曳引方式、曳引比（有无导向轮、复绕轮、反绳轮）及加工绳头余量来计算，也可用细铁丝按上述要求，作实际测量来截取（当楼层较高时，应考虑钢丝绳的拉伸，一般延伸率以 0.5%计）。

The length of the rope is determined by the case when the car is at the leveling position on the top floor and the counterweight is at the ground floor being "S2" (over displacement distance, shown in Table 10-2) away from the buffer, at the same time, the traction method, traction ratio (with or without deflector sheave, double wrap sheave and diversion sheave) as well as the machining allowance of the rope end must be taken into account. On the other hand, it can be also measured with thin thread (when the building is tall, the tension of the rope should be considered, generally, the tension ratio is 0.5%).

11.3 楔型绳头安装程序

Installation procedures of the wedge shackles

11.3.1 为避免截绳时松散，应用细铁丝，按（图 11—2）分二段扎紧后再截断。

To prevent the rope from getting loose when it is cut, buddle the end with iron thread before cutting it (shown in Fig. 11-2).

11.3.2 留出 300mm 长的钢丝绳，按照（图 11-3）所示步骤，将钢丝绳环绕楔块后将楔块拉入绳头。

Encircle the wedge with about 300mm rope, then insert the wedge into the shackle, shown in Fig. 11-3.

11.3.3 所有钢绳安装毕，让轿厢和对重的重量坐在绳子上。

After the rope has been installed, it should support the weight of the car and counterweight.

11.3.4 检查钢丝绳的松紧，将过紧的钢绳松开，按图 11-4C 的方法，松开钢丝绳头，调整钢丝绳长度，直到所有钢丝绳安均有相等的张力为止。按图 11-4B 安装绳卡。

Check the tension state of the rope, if it's too tight, refer to Fig. 11-4C, loosen the shackle, and adjust the length of the rope until the tension in the whole rope is all the same. Finally install the blocks of the rope.

11.3.5 两次保护的安装见(图 11-5),用一段曳引钢丝绳穿过各绳头的锥体空间,绳的两端用两个钢丝绳卡紧固。

Two levels of safeguard is installed as Fig. 11-5, let one segment of rope pass through the cone space of each shackle,

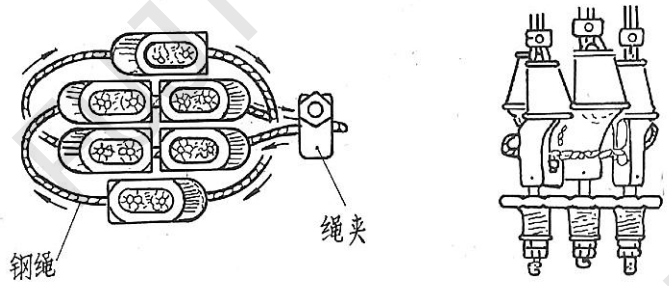


图 11-5 fig. 11-5

then fix the two ends of the rope with two clamps.

11.3.6 最后进行一次全面的检查和校正，调整绳头组合螺母，使各绳张力相近，其相互的差值不应超过 5%。

Finally, make a comprehensive check-up and adjustment. Adjust the combining bolts in the shackle so that the tension of each rope gets close and the difference is no more than 5%.

11.4 安装悬挂装置时应注意：

Attentions during installation of the suspending devices

(a) 彻底清除钢丝绳表面的砂粒、铁屑等杂物。

Clean the sand and scrap iron on the surface of the rope thoroughly.

(b)安装时应先安装轿厢顶部这端，在确认轿厢端安装稳妥后，才能将钢丝绳的另一端沿曳引轮槽和导向轮槽滑至对重端安装。

Install the rope at the top of the car first, only after this end has been installed can the other end of the rope be installed with the counterweight, in addition, the rope should reel through the traction sheave and deflector sheave.

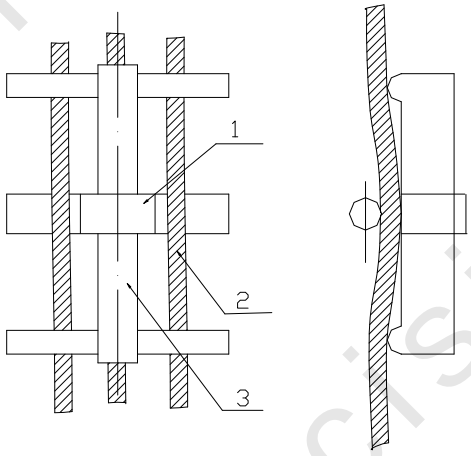


图 11－6　称重装置 fig. 11-6 weighting device

1－接线合子 junction box　2－曳引钢丝绳 traction rope

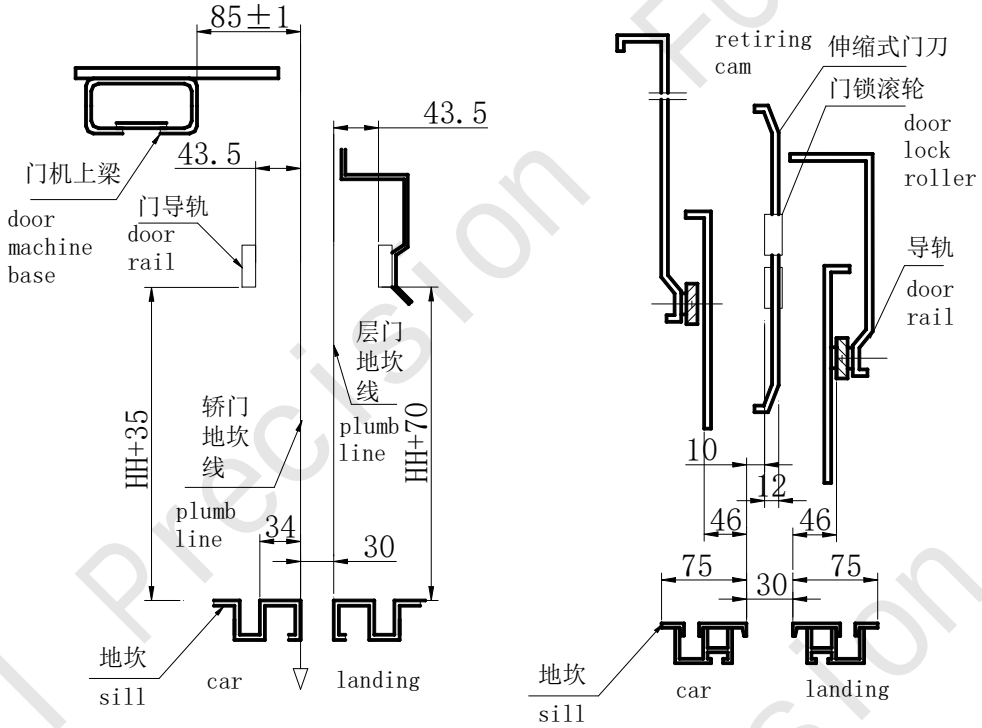
3－王字型智能传感器 “王”style of intelligent sensor

11.5 称重装置

Weighing device

称重装置安装在机房中的轿厢悬挂绳头一侧。安装位置在该绳头板靠近的下面。采用“王”字型智能传感器，见（图 11-6）。安装方法详见装置的安装说明书。

Weighing device should be installed on the side of the car in the machine room. The installation position is below the shackle plate, adopt “王” style of intelligent sensor, which is shown in Fig. 11-6. The detailed installation method is referred to the installation specification of the device.



HH- 出入口高度 height of entrance

Door machine on bracket 有门机架门机的中分门

door machine on roof of the car SELCOM 中分双折门机

图 12-1 门导轨与地坎的关系

fig. 12-1 position of door rail and sill of the center opening door

12.门系统 Door syste

12.1 开门机的安装

Installation of the door operator

SELCOM 门机无门机架，门机直接安装在轿顶上。门机的安装位置见随机安装说明。

There's no machine bracket for SELCOM door operator, and it is installed at the top of the car directly. The installation position of the door operator is referred to the installation specification attached to the machine.

12.1.1 有门机架门机的安装

Installation of the door operator with machine bracket.

12.1.1.1 将门机架与轿厢立柱用螺栓连接，并用拉条连接门机架和轿厢架上梁。

Connect door machine bracket to the upright of car bracket, fixed whit bolts, and connect the diagonal brace of of the door machine frame to the head beam of car bracket.

12.1.1.2 将门机装置搬上轿厢顶与门机架连接，调整门导轨，门导轨的水平度≤1/1000，垂直度 a≤1/1000,见图 12-2。

Install the door machine to the machine bracket. adjust the door rail, the horizontal degree within 1/1000, the vertical degree "a" within 1/1000.(refer to fig. 12-2).

12.1.1.3 对于中分门机调整门导轨的中心，使与门入口中心线对准。偏差在 0±1 内。

对于双折门机，可以在门机横梁的关门一端，距关门端 123mm 处标出一点，此点应与门距样板线对齐。
In case of center opening adjust the center of the door rail to the plumb line of model frame, the error within 1 mm.
In case of two panel side-opening door, adjust the door head beam. Make a mark 123 mm distance to the door closing end of the door head beam. Adjust the mark to the plumb line of model frame.

12.2 轿门的安装
Installation of the car door

12.2.1 竖立门板，在门板和地坎之间 垫上 5mm 的垫块。用螺栓将门板与吊门板连接。必要时可以加调整垫。调整门板与门挂板前后位置，保证轿门周边与轿厢的间隙为 5mm。
Set up the door boards, and underlay a 5mm cushions between the door boards and the sill. Connect the doors to the door hanger with bolts. Add some adjusting cushions when necessary. Adjust the position of the door board so that the gap between the edges of the car door and the car itself is within 5mm.

12.2.2 调整偏心挡轮与门导轨的间隙，使间隙 C<0.5mm 见(图 12-2)。
Adjust the gap between the eccentric sheave and the guide rail of the door so that it is within 0.5 mm.(refer to fig. 12-2)

12.2.3 将门臂与轿门连接为一体。
Connect the door linkage and car door together.

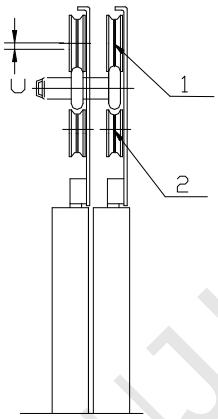


图 12-2 挡轮与导轨间的间隙
fig. 12-2 gap between eccentric roller and door rail
1 - 导轨 door rail
2 - 挡轮 eccentric roller

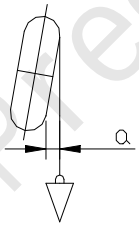


图 12-3 导轨的垂直度
fig. 12-3 vertical degree of the door rail

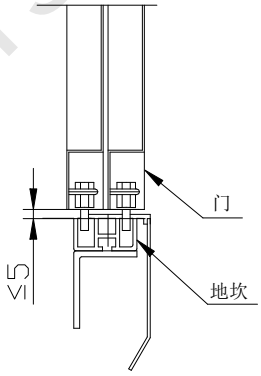


图 12-4 门扇与地坎间的间隙
fig. 12-4 the gap between door and sill

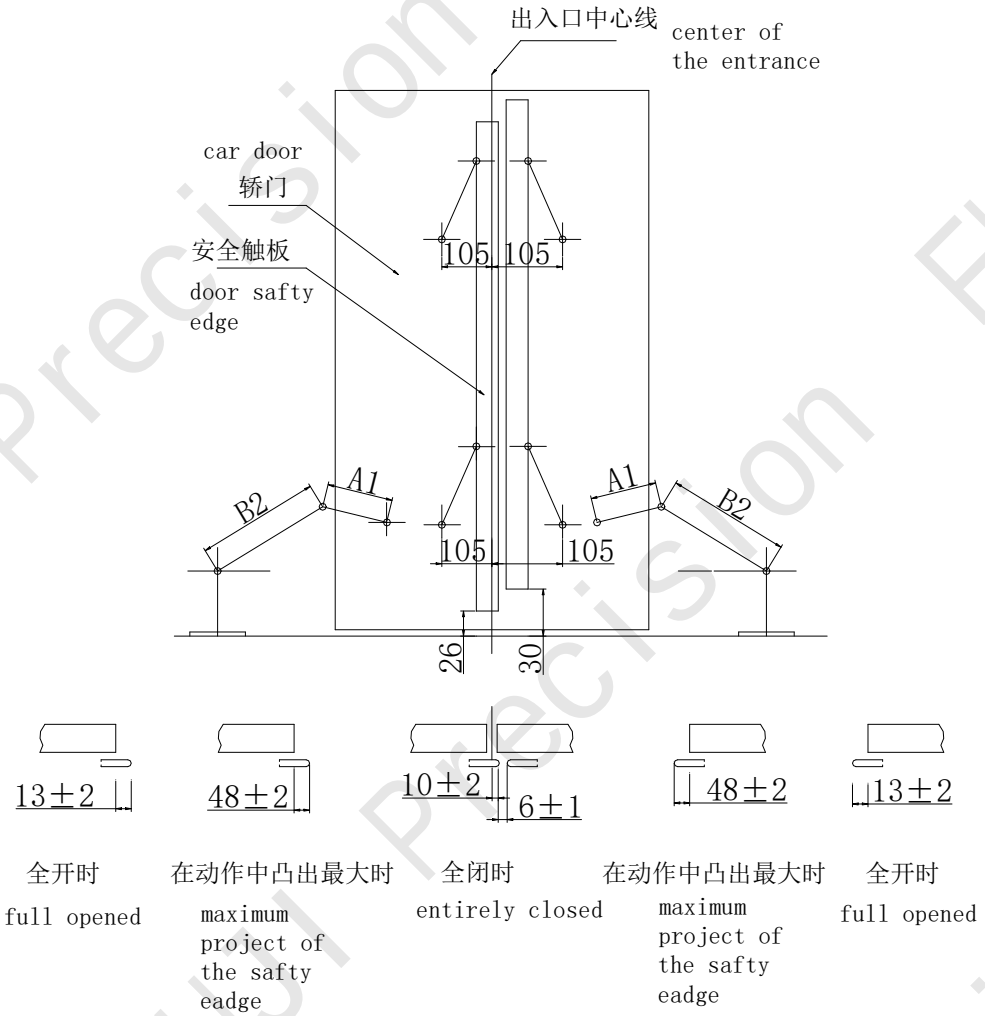


图 12-5 安全触板保护装置安装示意

fig. 12-5 installation of the safety edge of center opening

12.2.4 安装并调试安全触板

Installation of the safety edge with photoelectric protection device

将光电保护装置安置在安全触板之内，同时具备光电控制和机械控制双重保护功能， 见安装位置示意图（图 12-5）。

The installation of the safety edge with photoelectric protection device refer to the sketch map of the installation position, namely, Fig. 12-5.

12.2.4.1 关闭轿门，按照（图 12-5）所示位置安装安全触板。即左光幕安全触板凸出部分应超过门中心线 10±2mm。与右光幕安全触板间距 6±2mm。

Close door. Install safety edge according the position shown as fig. 12-5. Left safety edge is 10±2mm over the center of the center opening door, and is 6±2mm apart right safety edge.

12.2.4.2 当门动作时，左右安全触板凸出部分应凸出门边 48±2mm。见图 12.5。

when the door moving, the safety edge of the left and right panel should project 48±2mm apart panel edge.

12.2.4.3 当门全开时，左右安全触板凸出部分应凸出门边 13±2mm。见图 12.5。

when the door entire open, the safety edge of the left and right panel should project 13±2mm apart panel edge.

12.2.4.4 安全触板垂直度≤0.5/1000。

The vertical degree of the safety edge should within 0.5/1000.

12.2.4.5 安全触板离地坎面距离，左安全触板为 26mm,右安全触板为 30mm，见图 12.5。

The bottom of the left safety edge is 26 mm apart the sill. The bottom of the right safety edge is 30 mm apart the sill.

12.2.4.6 为达到上述要求,安装时上下活动支点中心与关门状态门中缝距离为 105mm。可以移动支架来实现。触板凸出距离可以通过 A1、A2 的长度来调节，参阅（表 12-1）。

To meet the requests of above item, both upper and lower support point of the safety edge should be 105 mm apart the center. It can be done by means of moving supporting frame. The length the safety edge projects can be adjust by changing the length of "A1" and "A2".

Table 12-1

JJ(net door width)	A1	A2	B2	C1
800	225	234	446	261
850	237	246	455	261
900	252	260	470	261
1000	279	286	495	261
1100	306	312	520	261

12.2.4.7 应按照装置的说明书进行调试。光电保护装置的引出线要可靠固定，其投影位置不能超出地坎范围，以免被层门部件构住。同样，引出线也不应与门机的运行部分相碰。

Debug it by referring to the specification of the device. The eduction wire of the photoelectric protection device must be fixed reliably, and its projection can't exceed the range of the sill for fear that the parts of the hall door hook it. In addition, the eduction wire can't knock against the running part of the door operator.

12.2.5 调试整个开门机、轿门系统。使轿厢门的行程为净门距。使轿门间的平面差≤1mm。

Debug the whole door operator and the car door system so that the journey of the car door is the net door distance, and the planeness of the car door is within 1mm.

12.3 层门的安装

Installation of the landing doors

12.3.1 层门地坎的安装

Installation of the landing sills

12.3.1.1 根据样板架上悬挂的门口铅垂线的宽度 F,安装前在地坎厚度 a 的平面上,刻以安装校正地坎用的标记,见〔图 12-6〕。

According to the width "F" of the plumb lines suspending in front of the door, make some marks used for installing and adjusting the sills on the plane of the sills before installation (see Figure 12-6).

12.3.1.2 安装层门地坎时，应将门套立柱紧固螺栓预先插入地坎立面的凹槽里，并移到门套立柱安装处。

When installing the landing sills, install the binding bolts of the upright columns of the door jambs into the grooves of the sills in advance, and move them beside the upright columns of the door covers to install.

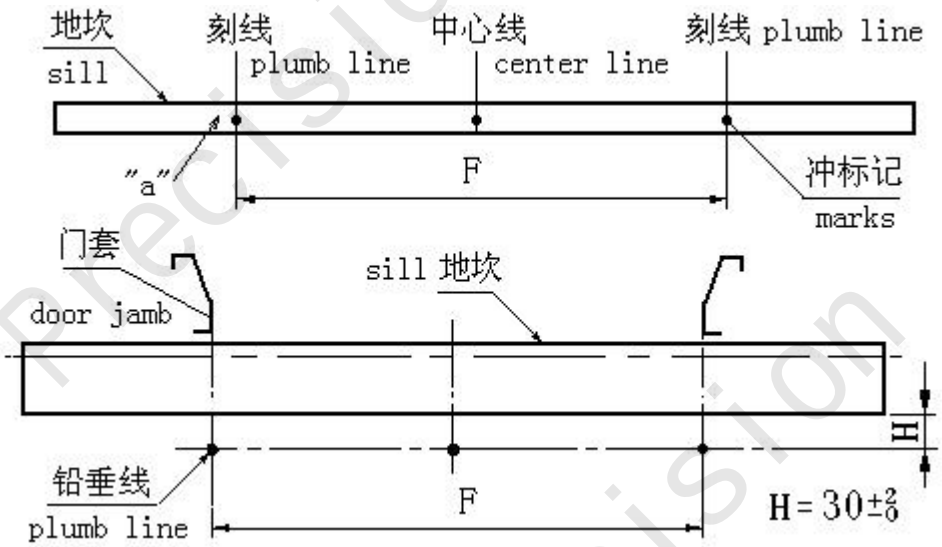


图 12-6 fig. 12-6

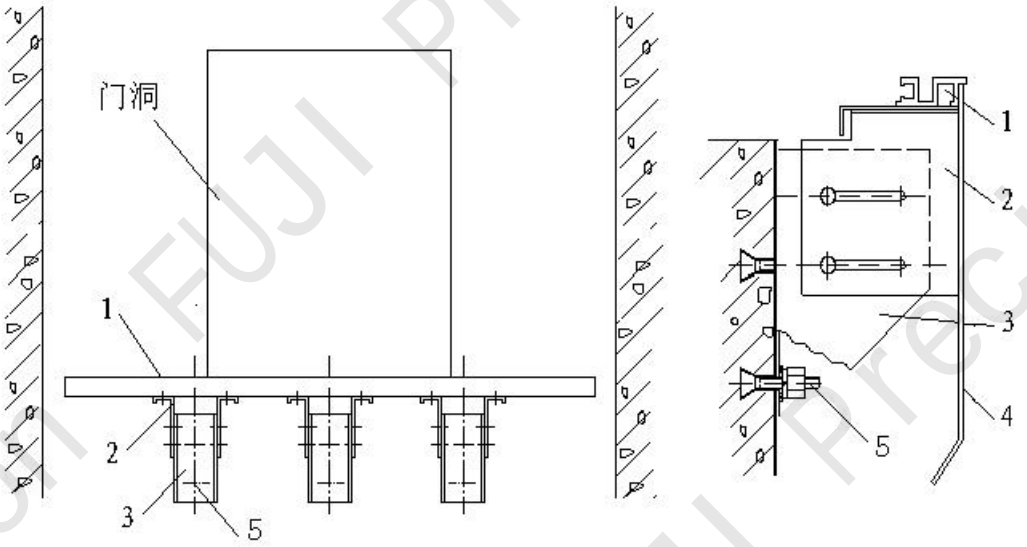


图 11—8 无混凝土牛腿的地坎安装

1——地坎 sill 2——地坎固定脚 sill supporter 3——固定支架 bracket
4——护板 guard board 5——膨胀螺栓 swelling bolts 门洞——door hole

12.3.1.3 将地坎、地坎托架、安装支架用螺栓连成一个整体。在墙面安装位置上用冲击钻打出Φ22 的孔，用 M16 的膨胀螺栓将地坎托架组件安装于规定的位置上,见〔图 12-7〕。

Connect the sills, the brackets of the sills and the installing kickstands together with bolts. Drill Φ22 holes at the installation position on the wall with percussion drilling and attach to the components of the sill brackets to the specified position with M16 expansion bolts, which is shown in Fig. 12-7.

12.3.1.4 用水平仪纠正地坎的水平度，误差不应超过 2/1000。地坎应高出装修后的地面 2～5mm，并抹成过渡斜坡。

Amend the horizontal degree of the sills with level-meter so that error is within 2/1000. The sill should be 2～5mm higher than the fitted floor and it should be processed into transition ramp.

12.3.1.5 各层门地坎至轿门地坎水平距离为 H ，见〔图 1 2 -6〕。

The horizontal distance between each landing sill and the sill of the car door is "H", which is shown Fig. 12-6.

12.3.2 层门套的安装

Installation of the landing doorjamb

12.3.2.1 将门套立柱与门套上梁联成一个整体后与地坎相连。

Unite the upright column of the doorjamb and the upper beam into a whole body, and then connect this body to the sill.

12.3.2.2 校正立柱的垂直度和横梁的水平度，其误差都应小于 1/1000。符合要求后，将立柱与墙壁固定。

Amend the verticality of the upright column and the horizontal degree of the horizontal beam so that the errors are within 1/1000. When the request is satisfied, fix the upright column against the wall.

12.3.3 层门装置的安装

Installation of the landing door devices

12.3.3.1 层门导轨与层门地坎的关系见（图 12-1）。

The relationship between the guide rail of the landing door and the landing sill is shown in Fig. 12-1.

12.3.3.2 根据放线使层门导轨部件精确对中,用膨胀螺栓或地脚螺栓将其紧固。其导轨水平度误差不小于 1/1000。

According to the hanging line, make the parts of the landing door guide rail center precisely, and then fix it with expansion bolts or anchor bolts. The horizontal degree error of the guide rail should be within 1/1000.

12.3.3.3 层门导轨与地坎应平行，在导轨两端和中间三处的偏差均不大于±1mm。

The guide rais of the landing doors should be parallel to the sills, the error o f the two ends and the center of the guide rail should within ±1mm.

12.3.3.4 导轨的垂直度误差 a,见〔图 1 2 -3〕不超过 0.5mm。

The verticality error of the guide rail, shown in Fig. 12-3, should be within 0.5mm.

12.3.4 层门的安装

Installation of the landing door

12.3.4.1 清洁顶部轨道，清洁层门地坎导槽。

Clean the top rail and the guide groove of the landing sill.

12.3.4.2 竖立门板，在其底部垫上厚度为 5mm 的垫块，用螺栓将门板和层门吊板固定。调整门扇下端与地坎间的间隙,见〔图 12-4〕应不大于 6mm、必要时可以加调整垫。

Set up the door boards, underlay 5mm thick cushion at the bottom of the door and fix the door boards with the hanging boards together with bolts.

12.3.4.3 调整吊板架上的偏心挡轮与导轨下端面间的间隙 C,见〔图 12-2〕不应大于 0.5mm。

Adjust the gap between the eccentric sheave on the hanging boards frame and the below surface of the guide rail, which is shown in Fig. 12-2, and it should be within 0.5mm.

12.3.4.4 门扇与门套、门扇与门扇间的间隙均不应超过 4~6mm。

The gap between the doorjamb and the door panels as well as the gap between the door panels themselves should be within 4~6mm.

12.3.4.5 中分式门的门扇在对口处的平面差应小于 1mm。门缝的尺寸在整个可见高度上均不应大于 2mm。

The interval between the door panels of central opening door should be within 1mm at the entrance. The width of the door gap should be within 2mm for the whole visible height.

12.3.4.6 当轻微用力扒开门缝时，强迫关门装置应使之闭合。

When the door is unclenched a little with slight force, the forced closing device should be able to close it.

12.3.4.7 层门安装完毕后用手推拉，应运行平稳。

After the landing doors are installed, when they are pulled or pushed, they should run placidly.

12.3.5 门套的安装

Installation of jamb

12.3.5.1 位置要求

Position requirement

12.3.5.1.1 门套上框架安装时水平度误差应≤ 1/1000

The error of degree of level should ≤ 1/1000 when the upper frame of jamb is installed

12.3.5.1.2 门套直框架安装时垂直度应≤ 1/1000，如图 5-6 所示

The verticality should ≤ 1/1000 when straight frame of jamb is installed. Shown in picture 5-6:

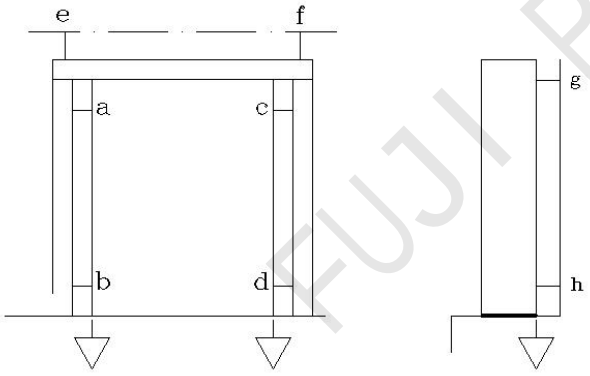


图 5－6

左 右 歪 斜 ：|a-b|

left and right skewness: |c-d

前 后 歪 斜 ：|g-h|

frontal and back skewness:

12.3.5.2 施工方法

Construction method

12.3.5.2.1 固定

fixing

用钢筋与墙部的钢筋（或地脚螺栓）和门套的装配支撑件进行焊接固定，如图 5-7

Melt and fix steel bar with steel bar on the wall(or anchor bolt) and strutting piece of jamb. Shown in picture 5-7.

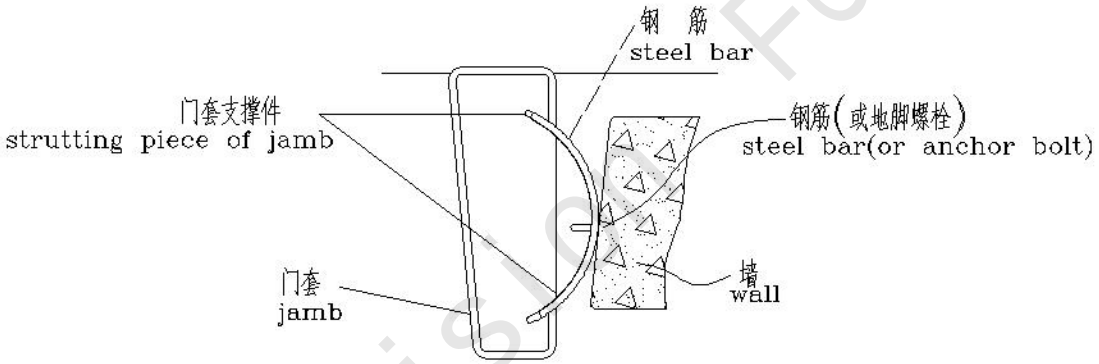


图 5-7

12.4 门系合装置的调整

Adjustment of the door interlock device

12.4.1 开门刀与各层门地坎和各层机械、电气联锁装置的滚轮与轿厢地块间的间隙见安装说明(在门机装箱内)。

The gap between the open operator and each landing sill as well as the gap between the trolleys of the mechanical & electric interlock on each floor and the car parcel are referred to the installation specification (in the box of door operator).

12.4.2 待电梯安装完试运行时、再核对一次相互之间的间隙，并把各联接部件加以紧固，以免运行时移动。

After elevator is completely installed, check the gaps again and reinforce every connection for fear of out of work during running.

12.4.3 当门扇全部关闭后，在层门外用手施加 150N 的力，作用在最不利的点上，门缝隙不得超过 30mm。

When the doors are completely closed, apply 150N force to the worst point by hand outside the doors, the gaps of the doors can't exceed 30mm.

13 电源及照明

Power supply and lighting

13.1 机房照明电源应与电梯电源分开，并应在机房内靠近入口处设置照明开关。

The power supply for the lighting in the machine room should be separated from the power supply of elevator. Install the lighting switch at the entrance to the machine room.

13.2 电梯主开关的安装应符合下列规定；

Installation of the governing switch of elevator should abide by the following rules:

13.2.1 每台电梯均应设置能切断该电梯最大负荷电流的主开关。

Governing switch that can shut off the highest load current of elevator must be installed with each elevator.

13.2.2 主开关不应切断下列供电电路

The governing switch can't shut off the following power supply circuit:

(a) 轿厢照明、通风和报警；
Car lighting, ventilation and alarm

(b) 机房、隔层和井道照明；
Lighting in the machine room, interlayer and well

(c) 机房、轿顶和底坑电源插座。
Electrical sockets in the machine room, on the top of the car and in the pit

13.2.3 主开关的位置应能从机房入口处方便、迅速地接近。
The position of the governing switch should be convenient to access from the entrance to the machine room.

在同一机房安装多台电梯时，各台电梯主开关的操作机构上应粘贴统一的识别标志。

When several multi-elevators are installed in the same machine room, uniform identifying marks should be stuck on the operation mechanism of each elevator-governing switch.

13.3 轿顶应装设照明装置，或设置以安全电压供电的电源插座。
It is necessary to install lighting device or electrical socket on the top of the car.

13.4 轿顶检修用 220V 电源插座（2P＋PE 型）应设置明显标志。
The 220V electrical socket on the top of the car that is used for checking should be made obvious mark.

13.5 井道照明装置的安装应符合下列规定：
Installation of the lighting device in the well should abide by the following rules:

13.5.1 电源宜由机房照明回路获得，且应在机房内设置具有短路保护功能的开关进行控制。
The power should be supplied by the lighting circuit of the machine room, and the switch that has the function of short circuit protection should be installed in the machine room.

13.5.2 照明灯具应固定在不影响电梯运行的井道壁上，其间距不应大于 7m。
The lights should be installed on the well wall where it doesn't affect elevator's running, and the distance between two lights should be no more than 7m.

13.5.3 在井道的最高和最低点 0.5 米以内各装设一盏照明灯。
Install a light in the well where it is apart 0.5m from the highest point and lowest point.

13.6 电气设备接地应符合下列规定：
The earthing of the electric device should abide by the following rules:

13.6.1 选用三相五线制供电电源。零线和接地保护线始终分开。
Adopt three phases and five wires style power supply, and the zero line and the earthing protection line should be always separated.

13.6.2 所有电气设备的外露可导电部分均应可靠接地或接零。接地电阻≤4Ω。
The exposed conducting parts of all the electric devices must be earthed or connected to the zero wire reliably, and the earthing resistance should be within 4Ω.

13.6.3 接地线应用黄绿双色铜材绝缘导线，最小截面不应小于 1.5 平方毫米。
The earthing wire should be yellow-green copper insulated conducting wire, and the smallest cross section area should be no less than 1.5mm

13.6.4 使用 PG 卡时，先拆掉接到 PG 卡上的屏蔽线，待确定电源为正规三相五线电源时，才接上屏蔽线。
When installing PG card, remove the shielding line connected to the PG card first. After confirming the power supply is regular three phases and five wires style, connect the shielding line to PG card renewedly.

13.6.5 线槽和线槽之间必须用接地线连接。
Link the trunking with earthing wires

13.7 电梯轿厢可利用随行电缆的钢芯或芯线作保护线。当采用电缆芯线作保护线时不得少于 2 根。
The component lines of the traveling cables can be adopted as the protection wires of the elevator car. If it's like this, at least two component lines are needed.

13.8 采用计算机控制的电梯，其“逻辑地”应按产品要求处理。当产品无要求时，可按下列方式之一进行处理：
For elevators controlled by computers, the "logical earth" should satisfy the products requests. If there's no production request, refer to the following ways:

13.8.1 接到供电系统的保护线（PE 线）上。当供电系统的保护线与中性线为合用时（TN－C 系统），应在电梯电源进入机房后将保护线与中性线分开（TN-C-S 系统，图 14-1），该分离点（A 点）的接地电阻值不应大于 4Ω。
Connect the "logical earth" to the protection wire (PE line) of the power supply system. When the protection wire and the neutral wire in the power supply system are combined together (TN-C system), separate them from each other after the elevator power is transmitted into the machine room (TN-C-S system, shown in Fig. 14-1), the earthing resistance at the separate point (A) should be within 4 Ω.

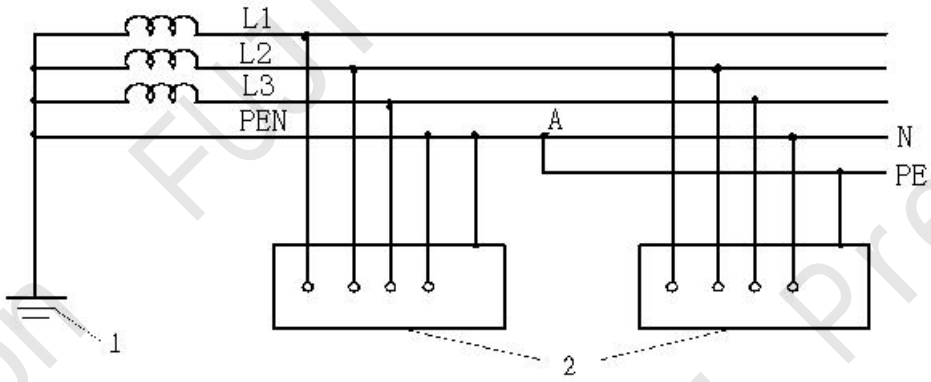
13.8.2 悬空“逻辑地”。
Keep the "logical earth" separate.

13.8.3 与单独的接地装置连接。该装置的对地电阻值不得大于 4Ω。
Connect it to the separate earthing device, the earthing resistance of which should be within 4Ω.

14 配线
Wiring

14.1 电梯电气装置的配线，应使用额定电压不低于 500V 的铜芯绝缘导线。
The wiring of the elevator electric device should adopt copper insulated conducting wire which rated voltage is over 500V.

14.2 机房和井道内的配线应使用电线管或电线槽保护，严禁使用可燃性材料制成的电线管或电线槽。铁制电线槽沿机房地面敷设时，其壁厚不得小于 1.5 mm。不易受机械损伤的分支线路可使用软管保护，但长度不应超过 2 m。
The wiring in the machine room and the well should be set in wire tube or wire groove for protection, and the wire tubes or wire grooves those are made of combustible material are strictly prohibited. When iron wire groove is laid on the machine room floor, the thickness of the wall should be at least 1.5mm. The branch circuit that is not easy to be injured mechanically can be protected by using soft tube, but the length should be within 2m.



1-电源接地极 earthing pole of power 2-外露可导部分 conduct part my be touching
图 14-1 TN-C-S system

14.3 轿顶配线应走向合理，防护可靠。
The wiring at the top of the car should be laid reasonably and protected reliably.

14.4 电线管、电线槽、电缆架等与可移动的轿厢、钢绳等的间隔距离：机房内不应小于 50mm；井道内不应小于 20 mm。

The gaps between the wire tubes, wire grooves, cable frame and the car, the rope should be within 50mm in the machine room, and within 20mm in the well.

14.5 电线管安装应符合下列规定：

Installation of the wire tubes should abide by the following rules:

14.5.1 电线管应用卡子固定，固定点间距均匀，且不应大于 3m。

Fix the wire tubes with clips, the fixation points must be distributed uniformly and the distance between two points should be no more than 3m.

14.5.2 与电线槽连接处应用锁紧螺母销紧，管口应装设护口。

Where it is connected to the wire groove, forelock it with lock bolts, and a guard should be provided at the end of the tube.

14.5.3 安装后应横平竖直，其水平和垂直偏差应符合下列要求：。

The wire tube should be straight in the horizontal plane and erect in the vertical plane after being installed, the horizontal and vertical error should satisfy the following requests:

（1）机房内不应大于 2‰；

In the machine room, it should be within 2/1000;

（2）井道内不应大于 5‰，全长不应大于 50mm。

In the well, it should be within 5/1000, and the total error should be within 50mm.

14.5.4 暗敷时，保护层厚度不应小于 15 mm。

If the wire tube is laid under cover, the protection layer should be no less than 15mm.

14.6 线槽通过线槽架安装。每根线槽固定在两根线槽架上,线槽架分别距离两端 150mm。用 PVC 涨管将线槽架固定在井道壁上。在线槽架上安装线槽。电线槽安装应符合下列规定。

The wire groove is installed via wire groove frame. Each wire groove is supported by two wire groove frames, and the wire groove frames are apart 150mm from each end of the wire groove. Fix the wire groove frames on the well wall with PVC expansion tube. Installation of the wire grooves should abide by the following rules:

14.6.1 安装牢固，每根电线槽固定点不应少于 2 点。并列安装时，应使线槽盖便于开启。

The fixation must be reliable, and at least two fixing points are needed for each wire groove. When the wire grooves are installed side by side, the covers of the wire grooves should be easy to be opened.

14.6.2 安装后应横平竖直，接口严密，槽盖齐全、平整、无翘角；其水平和垂直偏差应符合下列要求：

The wire grooves should be flat in the horizontal plane and erect in the vertical plane, and there should be no leakages at the interfaces. The covers of the wire grooves must be enough, flat and without wrapped corner. What's more, the horizontal and vertical error should satisfy the following requests:

（1）机房内不应大于 2‰；

In the machine room, it should be within 2/1000;

（2）井道内不应大于 5‰，全长不应大于 10 mm。

In the well, it should be within 5/1000, and the total length should be within 10mm.

14.6.3 出线口应无毛刺，位置正确。

There should be no burrs at the interface and the position must be correct.

14.7 金属软管安装应符合下列规定：

Installation of the metal soft tube should abide by the following rules:

14.7.1 无机械损伤，与箱、盒、设备连接处应使用专用接头。

There should be no mechanical injury, and special joints are needed where it is connected to other cases, boxes and equipment.

14.7.2 安装应平直，固定点均匀，间距不应大于 1m，端头固定应牢固。
It must be installed flatly. The fixing points must be distributed uniformly and the interval should be within 1m. The ends should be fixed firmly.
14.8 电线管、电线槽均应可靠接地或接零，但电线槽不得作保护线使用。
The wire tubes and grooves should be earthed or connected to the zero line, but the wire grooves can't be used as protection wires.
14.9 接线箱、盒的安装应平正、牢固、不变形，其位置应符合设计要求。
The connection case or box should be fixed flatly, firmly and without distortion, and its position should satisfy the design requests.
14.10 导线（电缆）的敷设应符合下列规定：
Laying of the cables should satisfy the following rules:
14.10.1 动力线和控制线应隔离敷设。有抗干扰要求的线路应符合产品要求。
The power wires and controlling wires should be laid separately. The circuits those have anti-jamming requests should satisfy the requests for productions.
14.10.2 配线应绑扎整齐，并有清晰的接线编号。保护线端子和电压为 220V 及以上的端子应有明显的标记。
The wires must be colligated in order and marked with clear connection number. For the protection wire ends and the ends whose voltage is over 220V, there should be obvious marks.
14.10.3 接地保护线宜采用黄绿双色的绝缘导线。
The earthing protection wire should adopted as yellow-green insulated conducting wire.
14.10.4 电线槽弯曲部分的导线、电缆受力处，应加绝缘衬垫，垂直部分应可靠固定。
Insulated cushions should be laid where the wire grooves are winding or there are some forces against the cables, and the vertical part should be fixed reliably.
14.10.5 敷设于电线管内的导线总截面积不应超过电线管内截面积的 40%，敷设于电线槽内的导线总截面积不应超过电线槽内截面积的 60%。
The total cross section area of the conducting wires those are laid in the wire tubes should not exceed 40 percent of the inner cross section area of the wire tube, and the total cross section area of the conducting wires those are laid in the wire grooves should not exceed 40 percent of the inner cross section area of the wire grooves.
14.10.6 线槽配线时，应减少中间接头。中间接头宜采用冷压端子，端子的规格应与导线匹配，压接可靠，绝缘处理良好。
For the wires in the wire grooves, the number of the joints should be small. Adopt cold compression terminals as the mid-joints; the specs of the terminals should match the wires. In addition, the connection must be reliable and be in good insulation condition.
13.10.7 配线应留有备用线，其长度应与箱、盒内最长的导线相同。
There should be spare ones for the wires, which length should be the same with that of the longest wire in the case or box.
14.11 随行电缆的安装应符合下列规定；
Installation of the traveling cables should abide by the following rules:
14.11.1 随行电缆安装前，必须预先自由悬吊，消除扭曲。
The traveling cables must hang freely to get rid of distortion before installation.
14.11.2 随行电缆的敷设长度应使轿厢缓冲器完全压缩后略有余量，但不得拖地。多根并列时，长度应一致。
The laying length of the traveling cable should satisfy such a condition that it still has some margin when the buffer is compressed completely, but it can't contact the floor. If several cables are aligned

side by side, the length must be the same.

14.11.3 随行电缆两端以及不运动部分应可靠固定。

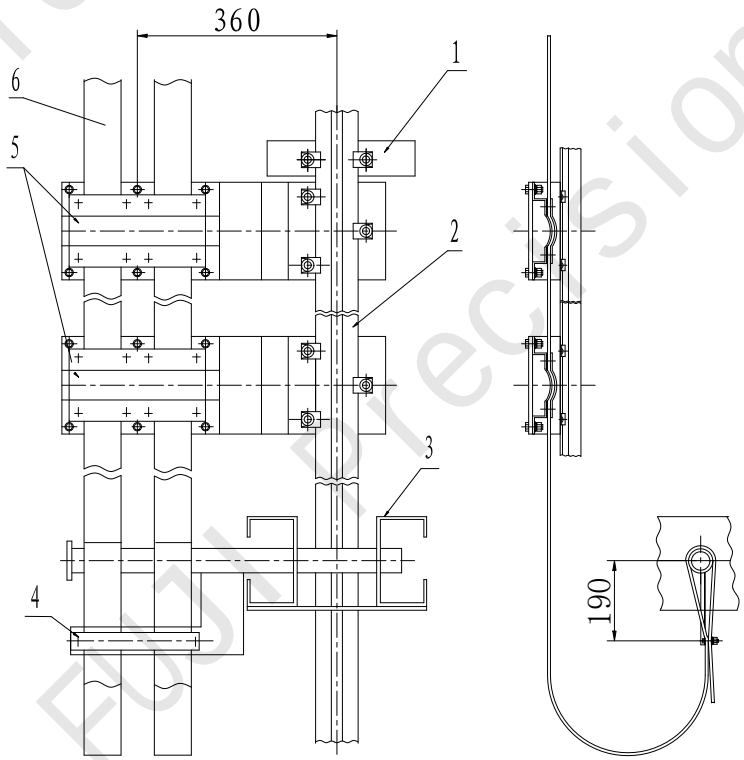
The two ends of the traveling cable and the sections those don't move should be fixed reliably.

14.11.4 扁平型随行电缆可重叠安装，重叠根数不宜超过 3 根，每两根间应保持 30～50 mm 的活动间距。扁平型电缆的固定应使用楔形插座或卡子（图 14-2）。

Flat traveling cable can be installed after being superposed, but the number of superposing cables is limited in three, and leave 30～50mm moving space between two cable. Fix flat cables with wedge sockets or holding-down clips (refer to Fig. 14-2).

14.12 随行电缆在运动中有可能与井道内其他部件挂、碰时，必须采取防护措施。

If there is possibility that the traveling cable might hook or strike other components in the well, some protection methods should be taken.



15 电气设备安装

Installations of electrical appliances

15.1 配电柜（屏、箱）、控制柜（屏、箱）的安装应布局合理，固定牢固，其垂直偏差不应大于 1.5。当设计无要求时，安装位置应符合下列规定。

Power distribution cabinets(panels, boxes) and control cabinets(panels, boxes) should be arranged properly and fixed firmly, the vertical deviations are not greater than 1.5‰. If there is no requirement with the design, the position of installations shall accord with the following provisions.

15.1.1 屏、柜应尽量远离门、窗，其与门、窗正面的距离不应小于 600 mm。

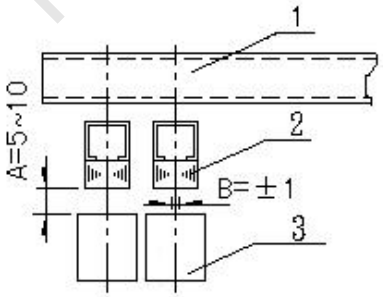
屏、柜的维修侧与墙壁的距离不应小于 600mm；其封闭侧宜不小于 50mm。
Panels and cabinets shall keep away from doors and windows; the distance between them shall be not less than 600mm. The distance between walls and the maintenance side of Panel and cabinet shall be not less 600mm. The distance between closing sides shall be less than 50mm.

15.1.2 双面维修的屏、柜成排安装时，当宽度超过 5 米时，两端均应留有出入通道，通道宽度不应小于 600 mm。
When panels and cabinets, which are maintained with both sides, are installed in rows, if the width is greater than 5m, both sides shall make room for passage whose width shall be not less than 600mm.

Fig. 14-2 扁平随行电缆安装 installation of the flat traveling cable

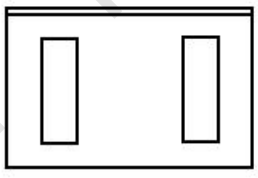
1—导轨支架 rail bracket 2—导轨 rail 3—轿架下梁 lower beam of car
4—轿底夹具 cable holder under car 5—电缆夹 cable clip 6—扁电缆 flat traveling

15.1.3 屏、柜与机械设备的距离不应小于 500mm。
The distance between machinery and panels, cabinets as well, shall be not less 500mm.



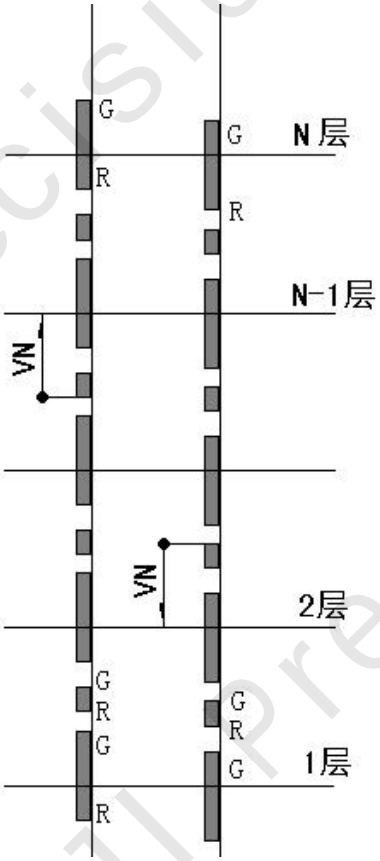
1—横梁 transom (in the well)
2—磁铁 magnet(in the well)
3—磁开关 magnetic switch(on the top of the car)

fig. 15-1 安装尺寸
installation dimension



向上减速 向下减速
向上平层 向下平层
磁开关 磁开关
up deceleration down deceleration
up leveling down leveling
magnetic switch magnetic switch

图 15-2 客梯井道磁开关排列示意图
fig. 15-2 arrangement of magnetic switch for passenger lift in well



R：磁钢 S 极 pole N of magnetic steel
G：磁钢 N 极 pole S of magnetic steel
VN：上/下减速距离 up/down decelerating distance

图 15-3 井道圆形磁钢排列
fig. 15-3 arrangement for circular magnetic steel in well

15.2 绝对值编码器的安装：
Installation for absolute-value coder

用膨胀螺栓将绝对值编码器固定在机房地坪上。其位置在轿厢与对重之间。尺寸按设计要求。
Absolute-value coder shall be fixed through expansion bolts on the level ground of machine room, which lies between car and counterweight. Size shall follow the design requirement.

15.2.1 其轮面的垂直偏差不应大于 0.5mm。
the vertical difference of 轮面 shall be not greater than 0.5mm.

15.2.2 编码器的同步带应保持垂直。安装前先用滑石粉润滑同步带。
The synchronous belt of coder shall keep vertical. The synchronous belt shall be lubricated using talcum powder before installation.

15.3 井道和轿顶传感器（双稳态磁开关）的安装
installation of sensors(bistable magnetic switch) in well and on the top of car

15.3.1 双稳态磁开关的功能：电磁开关由一个磁开关及两个小磁铁组成,它具有双稳态性。当轿厢上行时磁开关遇永磁铁的 S 极而使接点闭合并保持，直到再遇到永磁铁的 N 极时才断开。而在电梯下行时，遇 N 极永久磁铁则闭合，并保持，再遇 S 极永久磁铁才断开。其安装尺寸见(图 15-1)。
The function of bistable magnetic switch: electromagnetism switch which is bistable consists of a magnetic switch and two small magnets. During the time that car is lifted up, when magnetic switch touches pole S of Permanent Magnet, contacts is closed and keep closing until magnetic switch touches pole N of Permanent Magnet again; During descending, when magnetic switch touches pole N of Permanent Magnet, contacts is closed and keep closing until magnetic switch touches pole S of Permanent Magnet again. See figure 15-1 for installation dimension.

15.3.2 将尺寸 A 调至 5～10mm。开关与磁铁之间的侧向位移 B 为±1mm。在导靴被磨损的情况下，允许偏差如下：
A=3～12mm B=±3mm
Size A shall be between 5mm and 10mm. Lateral distance B between switch and magnet shall be ±1mm. On condition that guide shoe is wore down, the permissible variation is below:
A=3～12mm B=±3mm

15.3.3 支架应用螺栓固定，不得焊接。安装后应紧固、垂直、平整，其偏差不宜大于 1mm。
The bracket shall be fixed through bolt and forbid being welded. It shall be tightly, vertical, and regular after installation, the deviation shall be not greater 1mm.

15.3.4 将开关按设计要求安装在轿架或轿厢上。
According to the design requirement, switches shall be installed on the frame or car.

15.3.5 将反映井道位置的永磁铁组件按电气控制的要求组合，安装在井道的适当位置。具体尺寸按电气随机文件。
电梯磁开关排列示意图,见(图 15-2）。

电梯井道磁铁排列示意图,见(图 15-3)。

According to the requirement of electric control, components of permanent magnet, which indicate the well position, are combined and installed in a proper position. Detailed sizes follow the accessory files.

The sketch map of arrangement of elevator magnetic switch, see figure 15-2

The sketch map of arrangement of well magnetic switch, see figure 15-3

15.4 井道和轿顶传感器的安装

Installation of sensors in well and on the top of car

15.4.1 换速传感器和平层传感器在结构上是相同的,均有塑料盒、永久磁铁、感应器三部分组成。这种传感器相当于一种永磁式继电器,其结构和工作原理可用图(15-4)表示。图 a 表示未放入磁铁 3 时, 感应器 2 由于没有受到外力的作用,其常开接点 6 和 7 是断开的,其常闭接点 7 和 8 是闭合的。图 b 表示把永久磁铁 3 放进传感器后, 感应器的常开接点 6 和 7 闭合,常闭接点 7 和 8 断开,这一情况相当于电磁继电器得电动作。图 c 表示当外界把一块具有高导磁系数的铁板(隔磁板)插入永久磁铁和感应器之间时,由于永久磁铁所产生的磁场被隔磁板旁路, 感应器的接点失去外力作用,恢复到图 a 的状态,这一情况相当于电磁继电器失电复位。

The structure of change speed sensors is the same with that of levelling sensors, which consist of plastic box, permanent magnet and inductor. The sensors are equivalent to the permanent-magnet relay, the structure and working principle are shown in figure 15-4. Fig. a indicates that before magnet 3 is put into sensor, the make contacts (normally open) 6、7 is open, and the break contacts (normally closed)7、8 is close because external forces are not put on inductor 2. Fig. b indicates after permanent-magnet 3 is put into sensor, the make contacts (normally open)6、7 is open, the break contacts (normally closed)7、8 is close, which is equivalent to the condition that electromagnetic relays gain power supply to work. Fig. C indicates that if an iron plate with high-magnetic permeability (magnet-proof plate) enters between permanent magnet and inductor, the contacts of inductor will return to the state a without external forces because the magnetic field made by permanent magnet is shunted by the magnet-proof plate.

15.4.2 感应器的安装

installation of inductor

安装尺寸见(图 15-6)。a 为 5~10; b≤1。

See figure 15-6 for installation dimension. A is 5~10;b≤1.

平层感应器的安装。慢速点动，让轿厢地坎与厅门地坎平齐，此时上下平层感应器应都插入感应铁板，平层区见（图 15-5）。

In installation of Leveling sensor. Slow dot crawl makes the sill of car and hall door the same height, meanwhile, up and down leveling sensors shall enter the induction plate.see figure 15-5 for leveling zone.

层楼感应器的安装。用螺栓压道板将感应器支架安装在导轨上，在距离停平位置 870mm 处(0.5m/s，其他速度的电梯的减速距离见相应的随机文件)安装在轿厢上的减速铁板插入层楼感应器。减速区见（图 15-5）。

Installation of floor sensor. The sensor bracket is installed by 螺栓压道板 on the guide rail, decelerating iron plate, which is installed on the car where the distance from the stopping position is 870mm(0.5m/s, see the corresponding accessorial files for the decelerating distance of other elevators), enters storey inductor. See figure 15-5 for decelerating zone.

15.5 对不能安装在导轨接头或导轨支架处的感应器支架，用跨过导轨接头或导轨支撑架的方法安装见（图 15-7）；（图 15-8）。

For inductor bracket, which is hard to install at the place of guide joint or guide bracket, the installation methods are shown in figure 15-7/15-8.

15.6 层门（厅门）召唤盒、指示灯盒及开关盒的安装：

Installation of calling board of lading door (hall door), indicating light boxes and switch boxes:

15.6.1 盒体应平正、牢固、不变形；埋入墙内的盒口不应突出装饰面。

The bodies of boxes shall be level, firm and undistorted, the opening of boxes embedded in the wall shall stand out of the decorated surface.

15.6.2 面板安装后应与墙面贴实，不得有明显的凹凸变形和歪斜。

Panels shall be fixed firmly to the surface of wall after installation, which shall not have any obvious distortion and inclination.

将盒中电器零件全部拆出,妥善保管。按电梯土建布置图要求的位置尺寸,将盒体平整地用水泥浆与墙埋灌牢固,使盒边与墙抹平,注意勿使盒体挤压变形。待水泥固化后,测量金属软管长度,截管穿线与电线槽或接线箱连接,将盒中电器零件装好,按导线标注的线号接线,最后将面板盖上。

Electric parts shall be disassembled and kept carefully. According to position and dimension in the arrangement blueprint of elevators, the body of boxes shall be embedded firmly and regularly in the wall with grouts, and the margin of the boxes and the surface of wall shall be in the same plane. Note that avoiding the distortion of the body of boxes. Measure the length of soft tube after grouts solidify; the wire through cutting pipes shall be connected with wire slot or connection box, then assemble electric parts and connect the wire according to the wire labels, finally cover the panel.

图 15-4 干簧管传感器 上平层区 上减速区
a）放入永久磁铁之前 下平层区 下减速区