

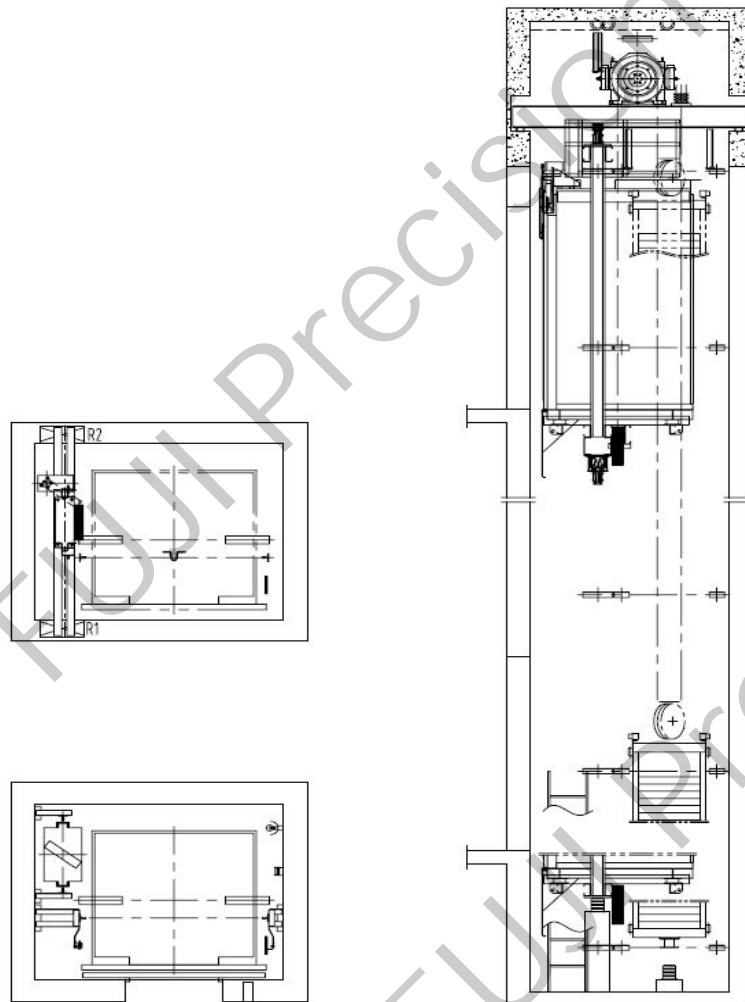
# TKJW 无机房轿底轮式客梯安装说明书-B

## B-Installation Manual of TKJW Series MRL

### Car-bottom-wheel Passenger Elevator

适用于曳引比为 2:1 的无机房轿底轮式客梯梯型  
Applicable to the MRL car-bottom-wheel passenger elevator models with a traction ratio of 2:1

(安装过程必须严格遵守此安装说明书)  
(The installation process must strictly abide by this installation manual)



1. 开工前的准备工作
1. Preparations before construction
2. 卸下及存放部件箱
2. Remove and store the component boxes
3. 井道内安装准备
3. Installation preparation in the hoistway
4. 放样线测量井道
4. Setting out for hoistway survey
5. 厅门安装
5. Installation of landing door
6. 曳引机安装
6. Installation of traction machine
7. 电梯导轨安装
7. Installation of elevator guide rail
8. 控制柜布线
8. Control cabinet wiring
9. 轿架安装
9. Installation of car frame
10. 轿厢安装
10. Car installation
11. 门机安装
11. Installation of door operator
12. 对重架安装
12. Installation of counterweight frame
13. 挂曳引钢丝绳
13. Hanging the traction wire rope
14. 补偿链安装
14. Installation of compensation chain
15. 井道开关电缆安装
15. Installation of hoistway switch cable
16. 最后调整、准备启动运行
16. Final adjustment for starting operation

## 1.1 对建筑结构的要求:

### 1.1 Requirements for building structure:

a. 在土建根据FUJIPN ELEVATOR 提供的建筑图纸完成建筑工程后, 由电梯安装施工人员对机房、井道和各层门口的结构及防火防水措施进行检测。

a. After the construction project of the civil engineering is completed in accordance with the architectural drawings provided by FUJIPN ELEVATOR, the elevator installation and construction personnel shall inspect the structure and fireproof and waterproof measures of the machine room, hoistway and doorways of each floor.

b. 电梯安装施工人员必须对井道进行检查, 保证井道大小和垂直度符合FUJIPN ELEVATOR 土建图要求。

b. The elevator installation and construction personnel must inspect the hoistway to ensure that the size and verticality of the hoistway meet the requirements of the FUJIPN ELEVATOR civil engineering drawings.

c. 在建筑结构, 井道和机房符合FUJIPN ELEVATOR 标准后方可进场安装, 否则与客户, 开发商进行协商并做出必要的整改工作或者向FUJIPN ELEVATOR 总公司提出现场土建问题。

c. The construction structure, hoistway and machine room shall meet the standards of FUJIPN elevator before entering the site for installation. Otherwise, discussion with the customer and the developer shall be made to conduct necessary rectification work or raise the site civil engineering issues to the head office of FUJIPN ELEVATOR.

## 1.2 施工现场的要求:

### 1.2 Requirements on the construction site:

a. 施工人员的工作环境必须保持清洁并注意防火。

a. The working environment of construction personnel must be kept clean, and pay attention to fire prevention.

b. 清除工作现场中可能会影响工作人员的不安全因素。

b. Remove the unsafe factors that may affect the staff in the work site.

## 1.3 施工人员的要求:

### 1.3 Requirements on construction personnel:

a. 进入井道的施工人员必须穿戴防护用具, 如安全帽、全身式安全带、安全鞋等。

a. Construction personnel entering the hoistway must wear protective tools, such as safety helmets, body harness, safety shoes, etc.

b. 全体现场人员要清楚的了解井道内工作的危险性, 并且所有的预防措施必须正确的使用。

b. All on-site personnel must clearly understand the dangers of working in the hoistway, and all preventive measures must be used correctly.

c. 当现场人员因某些因素使其工作能力或反应能力下降时, 必须停止工作并离开现场。

c. When on-site personnel decrease their working ability or response ability due to some factors, they must stop working and leave the site.

## 1.4 井道安全的要求:

### 1.4 Requirements on hoistway safety:

a. 两条生命线必须牢固的固定在机房, 并从井道的两个对角处放下。

1.4a. The two lifelines must be firmly fixed in the machine room and put down from the two opposite corners of the hoistway.

b. 为了确保生命线不受磨损, 应在弯曲部分, 梁或地面边缘等容易损伤生命线的快口部位实施保护措施。

b. In order to ensure that the lifeline is not abraded, protective measures should be implemented at the curved parts, beams or the edges of the ground and other sharp openings that are likely to damage the lifeline.

c. 为了提供坠落保护和防止落物, 要在各层的门口安装护栏和护网。护栏的大小和尺寸必须符合的FUJIPN ELEVATOR 要求。

c. In order to provide falling protection and prevent falling objects, guard rails and nets should be installed at the door of each floor. The size and dimensions of the guard rails must meet the FUJIPN ELEVATOR's requirements.

### 1.5 在开工之前每天必须进行以下项目的安全检查:

#### 1.5 Safety inspections of the following items must be carried out every day before the construction:

a. 电动设备和机械设备。

a. Electrical equipment and mechanical equipment.

b. 电器保护装置。

b. Electrical protection device.

c. 电梯在检修模式运行时, 保证所有安全回路的性能良好。

c. Ensure that all safety circuits have good performance when the elevator is running in Inspection mode.

e. 安全平台, 梯子, 门口保护, 头顶保护等。

e. Safety platform, ladder, doorway protection, overhead protection, etc.

### 1.6 工作中的安全注意事项:

#### 1.6 Safety precautions at work:

a. 根据工作环境的安全要求使用合适的安全防护用具。

a. Appropriate safety protection equipment shall be used according to the safety requirements of the working environment.

b. 井道的每层厅门处应提供安全防护并配有明显的警示标志。

b. The landing door of each floor of the hoistway shall be provided with safety protection and be equipped with obvious warning signs.

c. 施工人员与客户或开发商进行协调工作, 要求其提供三相五线制电源。

c. The construction personnel shall coordinate with the customer or developer and require them to provide three-phase five-wire power supply.

d. 正确连接电力线和接地线。

d. Correctly connect the power line and the grounding line.

e. 未经允许的人员不得使用FUJIPN ELEVATOR 的电源设备。

e. Unauthorized personnel are not allowed to use FUJIPN ELEVATOR's power supply equipment.

f. 在整个安装和调试阶段, 必须执行锁闭程序。

f. A locking procedure must be performed during the entire installation and debugging phase.

g. 在调试慢车前, 确保安全回路工作良好。

g. Make sure that all safety circuits are working well before debugging the slow car.

h. 在进行焊接, 钻孔, 挫平等工作时均需佩戴合适的防护眼镜。

h. Wear suitable protective glasses when welding, drilling, and flattening work.

i. 氧气和乙炔等危险气体必须由授权的人员来处理。它们应该被存放在通风良好的地方, 并防止暴露在高温或阳光照射之下。

i. The hazardous gas such as oxygen and acetylene must be handled by authorized personnel. It

should be stored in a well-ventilated place and protected from exposure to high temperatures or sunlight.

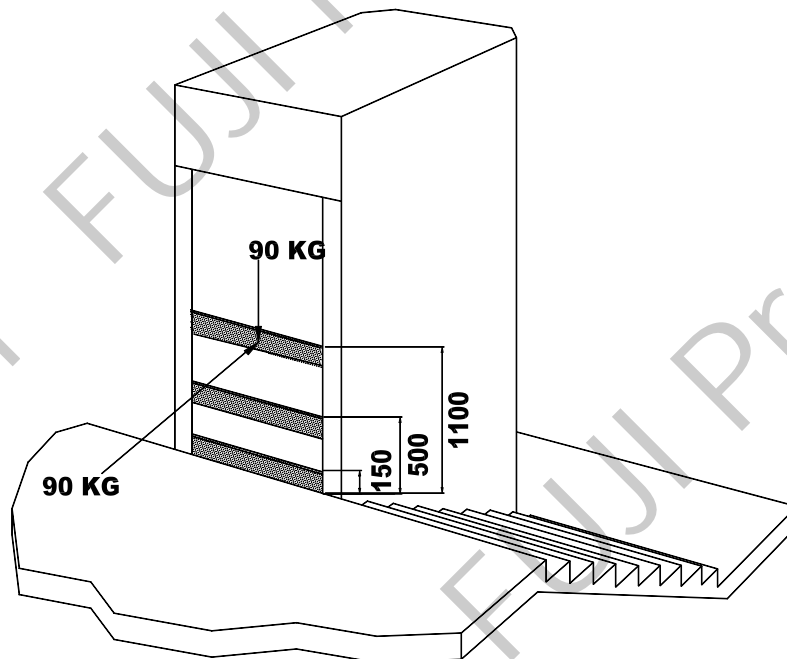
### 2.1 货物抵达现场后要做如下工作:

#### 2.1 The following operations must be done after the goods arrive at the site:

- a. 使用正确的工具卸下电梯部件箱。
- a. Use the correct tool to disboard the elevator component box.
- b. 由FUJIPN ELEVATOR 人员在场监督清点电梯部件并反馈部件问题。
- b. FUJIPN ELEVATOR's agent shall be present to supervise the inventory of elevator components and feedback the component problems.
- c. 在施工现场要具备安全干燥的材料存储室存放暂时不用的设备。
- c. A safe and dry material storage room should be provided at the construction site to store unused equipment temporarily.
- d. 按照安装需求将各部件搬运到适当位置, 清理现场残留杂物。
- d. Move the components to the appropriate location in accordance with the installation requirements and clean up the remaining debris on the site.

### 3.1 层门入口安装符合强度要求的保护装置(保护栏):

#### 3.1 The protection device (guard rails) that meets the strength requirements shall be installed at the entrance of the landing door:

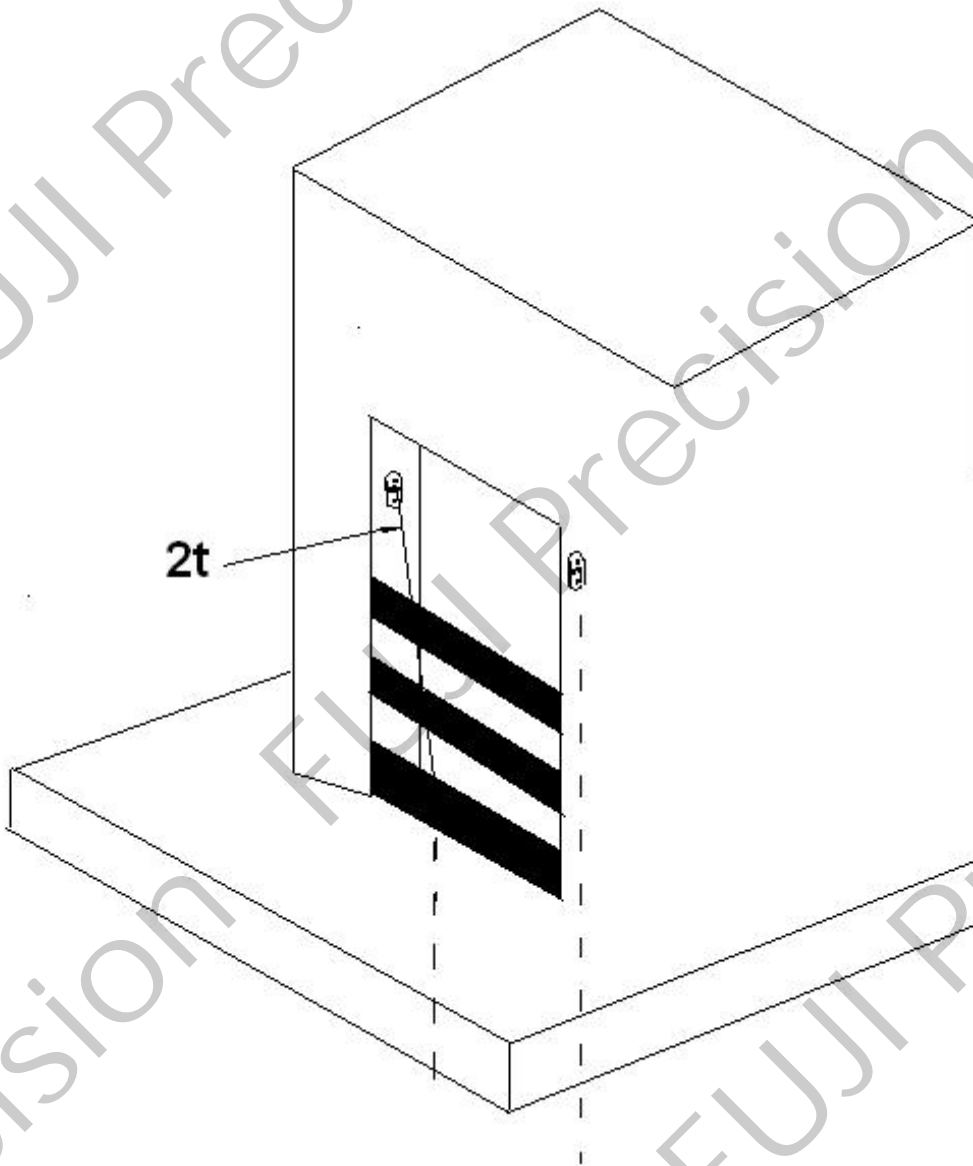


### 3.2 顶层井道外安装生命线:

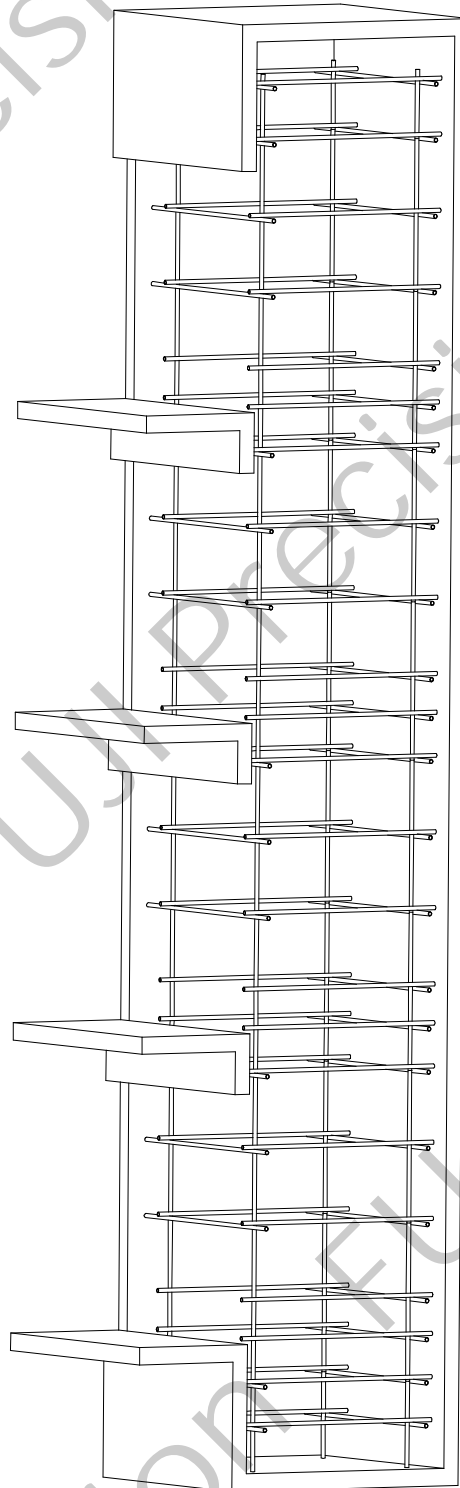
#### 3.2 Install the lifeline outside the hoistway on the top floor:

a. 为了确保生命线不受磨损, 应在弯曲部分、梁或地面边缘等容易损伤生命线的快口部位实施保护措施。

a. In order to ensure that the lifeline is not abraded, protective measures should be implemented at the curved parts, beams or the edges of the ground and other sharp openings that are likely to damage the lifeline.





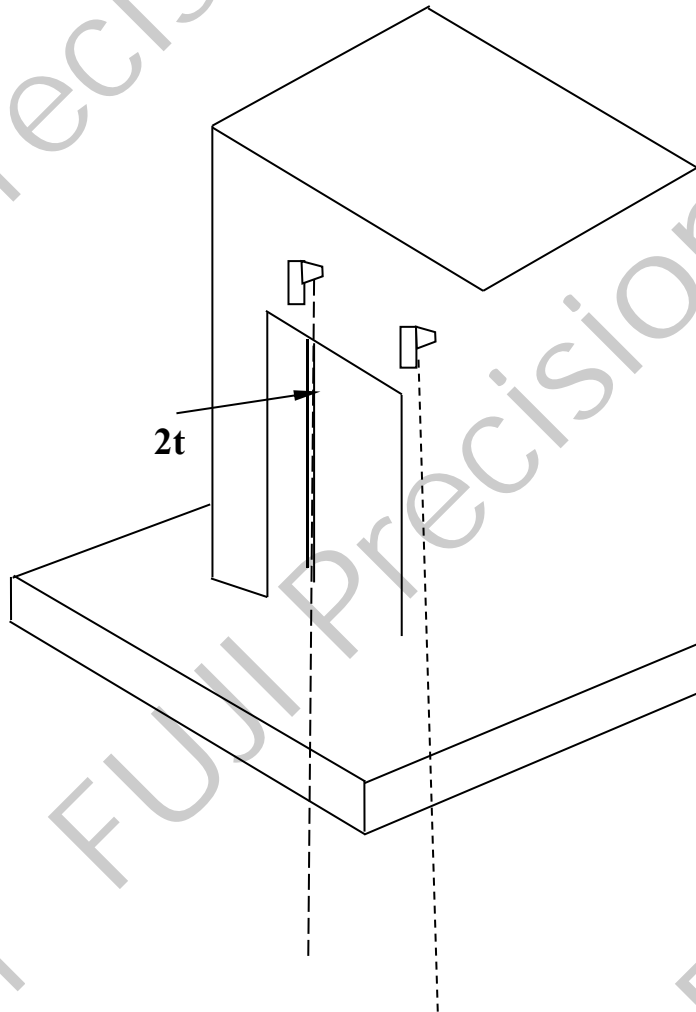
**3.3 按规范要求 在井道中搭建脚手架:****3.3 Set up scaffolding in the hoistway according to the specification requirements:**

### 3.4 井道内安装生命线:

#### 3.4 Install the lifeline in the hoistway:

a. 在进入井道之前,先在井道内固定连接两条生命线。为了便于在井道中操作,根据工地现场的情况和当地的有关规定,我们采用固定在可靠位置的生命线。

a. Firstly fix the two lifelines in the hoistway before entering. In order to facilitate the operation in the hoistway, according to the conditions of the construction site and relevant local regulations, we adopt a lifeline fixed in a reliable position.



### 3.5 井道照明安装说明:

#### 3.5 Installation instructions for hoistway lighting:

电梯井道照明采用 36V 电压供电,距井道最高点和最低点 0.5m 各设一盏照明灯具,中间按不大于 7 米距离设置。并在底坑设置检修插座。4.1 制作样板架,放铅垂线:

The elevator hoistway lighting adopts 36V voltage power supply, and a lighting fixture is set 0.5m away from the highest point and the lowest point of the hoistway, and lighting fixtures shall be set in the middle part with each distance of no more than 7 meters. And set up inspection sockets in the pit.

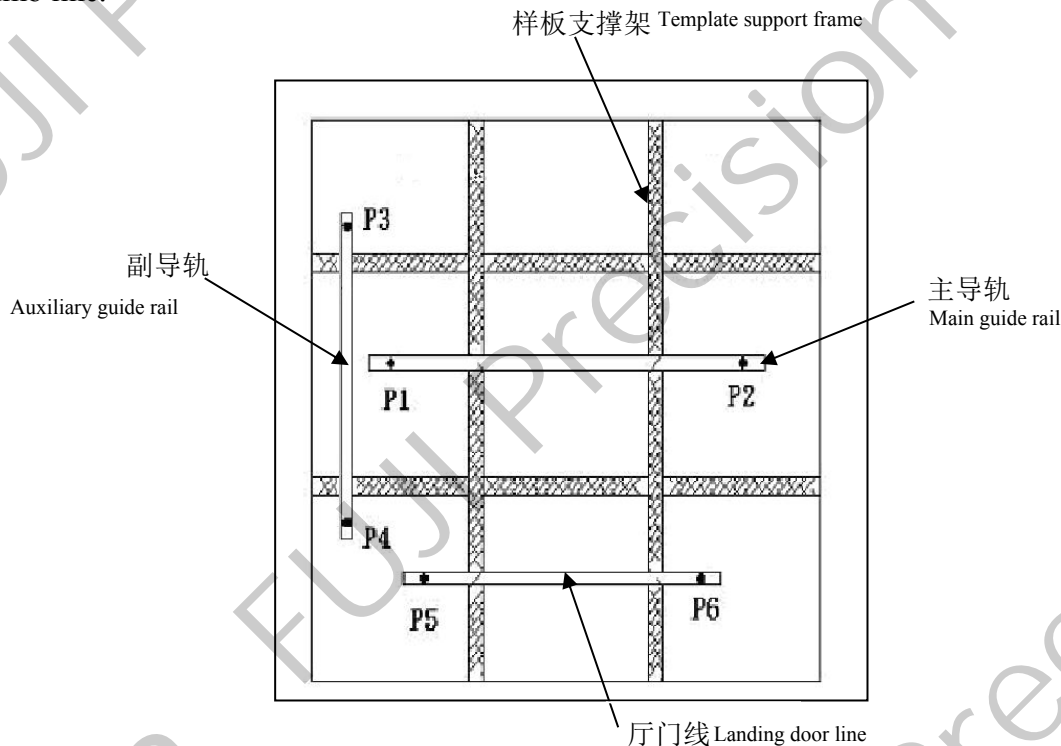


4.1 制作样板架，放铅垂线：

4.1 Make a setting-out plate rack and put the plumb line:

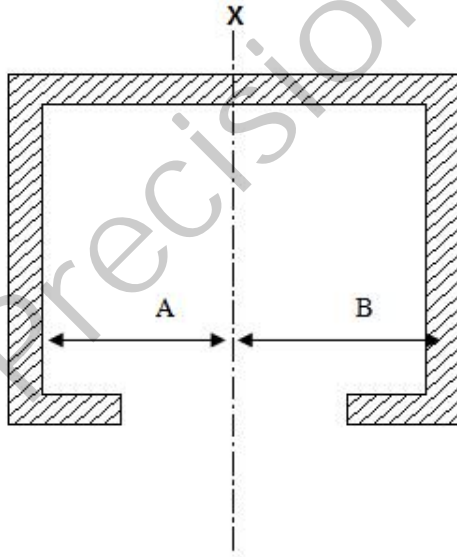
a. 上样板架装在井道顶层面下约 1 米的地方，下样板架在底坑之中，约底坑地面上 1 米的地方。上下样板形状一样。样板的位置应该不妨碍长久的电梯设备的打算的位置。在井道顶部安装样线板，根据布置图在样线板放线，调整下样板，在下样板的中心标志和铅垂线对齐之后，将铅垂线固定在下样板上。

a. The upper setting-out plate rack is installed about 1 meter below the top surface of the hoistway, and the lower setting-out plate rack is installed in the pit, about 1 meter above the ground of the pit. The upper and lower setting-out plate racks are the same in shape. The location of the setting-out plate rack should not interfere with the intended location of the long-term elevator equipment. Install the setting-out plate on the top of the hoistway, put the line on the setting-out plate according to the layout drawing, adjust the lower setting-out plate, and fix the plumb line on the lower setting-out plate after the center mark of the lower setting-out plate is aligned with the plumb line.



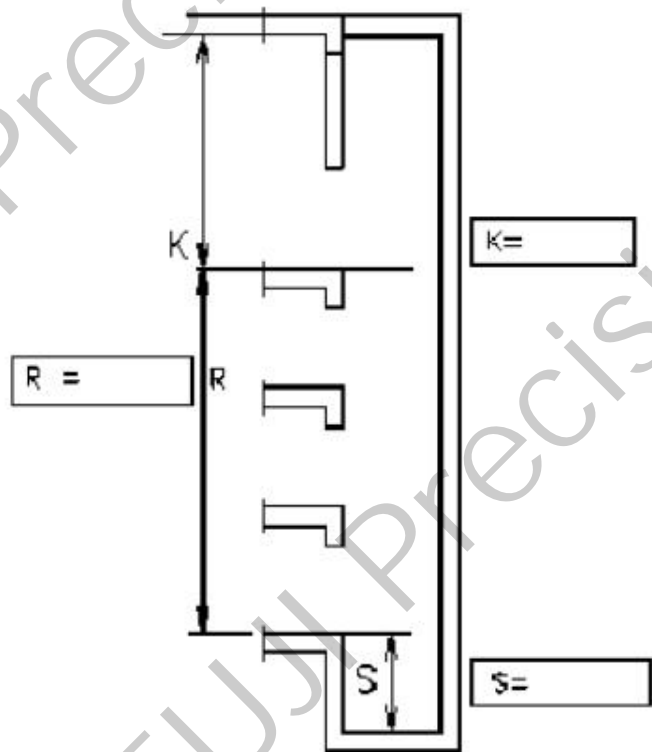
P1	轿厢导轨 铅垂线“1” CAR GUIDE RAIL PLUMB LINE "1"
P2	轿厢导轨 铅垂线“2” CAR GUIDE RAIL PLUMB LINE "2"
P3	对重导轨 铅垂线“3” COUNTERWEIGHT GUIDE RAIL PLUMB LINE "3"
P4	对重导轨 铅垂线“4” COUNTERWEIGHT GUIDE RAIL PLUMB LINE "4"
P5	厅门地坎 铅垂线“5” LANDING DOOR SILL PLUMB LINE "5"
P6	厅门地坎 铅垂线“6” LANDING DOOR SILL PLUMB LINE "6"

4.2 根据合同中的电梯设备土建布置图，确定轿厢中心线：  
 4.2 Determine the center line of the car according to the civil layout drawing of the elevator equipment in the contract:

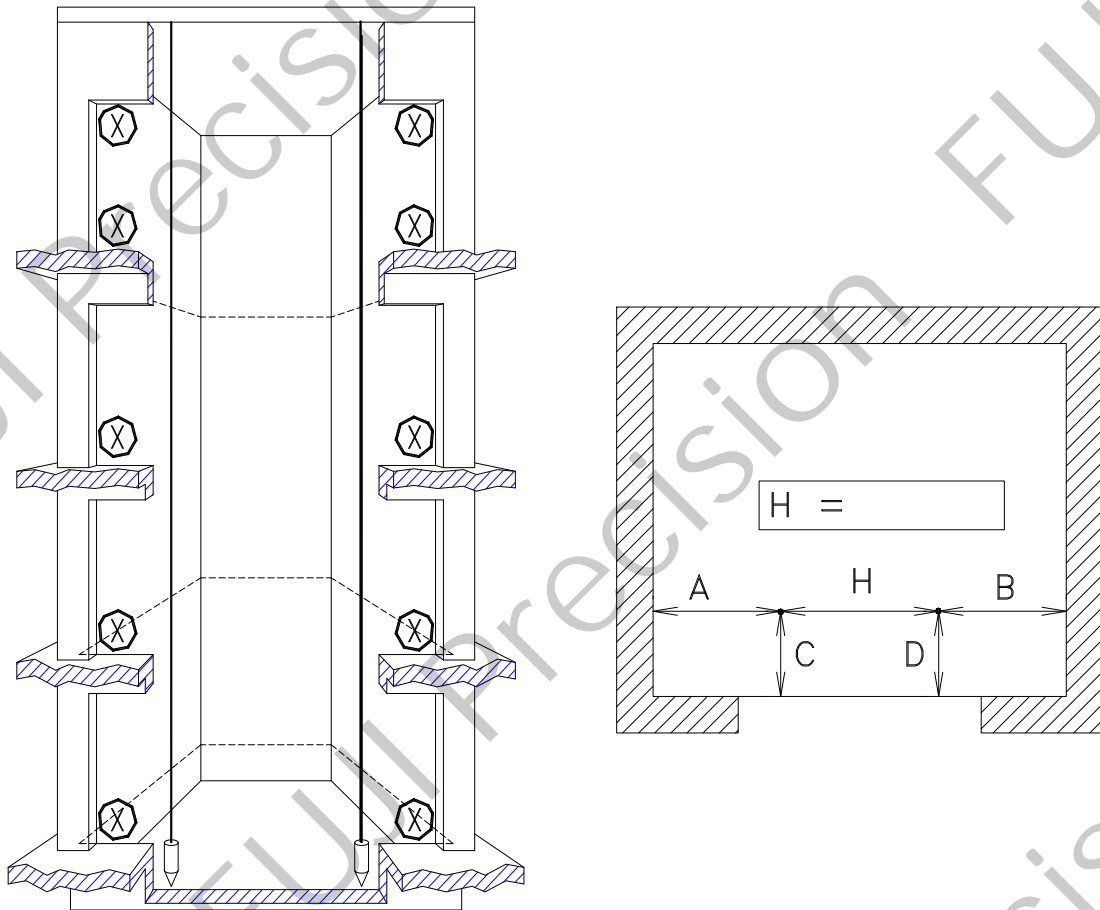


X = 轿厢中心轴线  
 X = Car central axis

a. 在井道内确定 K, R 和 S 尺寸, 查看是否符合布置图要求。  
 a. Determine K, R and S dimensions in the hoistway, check whether it meets the requirements of the layout drawing.



**警告/Warning**  
为了确保正确的安装，建筑公差应保证在一定范围。  
Building tolerances should be kept within a certain limits to ensure proper installation.



电梯行程高度 Elevator traveling height	建筑公差 Building tolerance
$R \leq 30 \text{ m}$	0~+25mm
$30 \text{ m} < R \leq 60 \text{ m}$	0~+35mm
$60 \text{ m} < R \leq 90 \text{ m}$	0~+50mm
$R > 90 \text{ m}$	符合土建布置图 Comply with civil layout

## 5.1 层门地坎、小门套安装:

### 5.1 Installation of landing door sill and narrow jamb:

a. 根据井道放样尺寸确定地坎进出位置;调整地坎中心与出入口中心一致,并在地坎中心做上标记;调整地坎水平度小于1/1000;地坎上平面需略高于楼层装置面,防止水流进入井道。

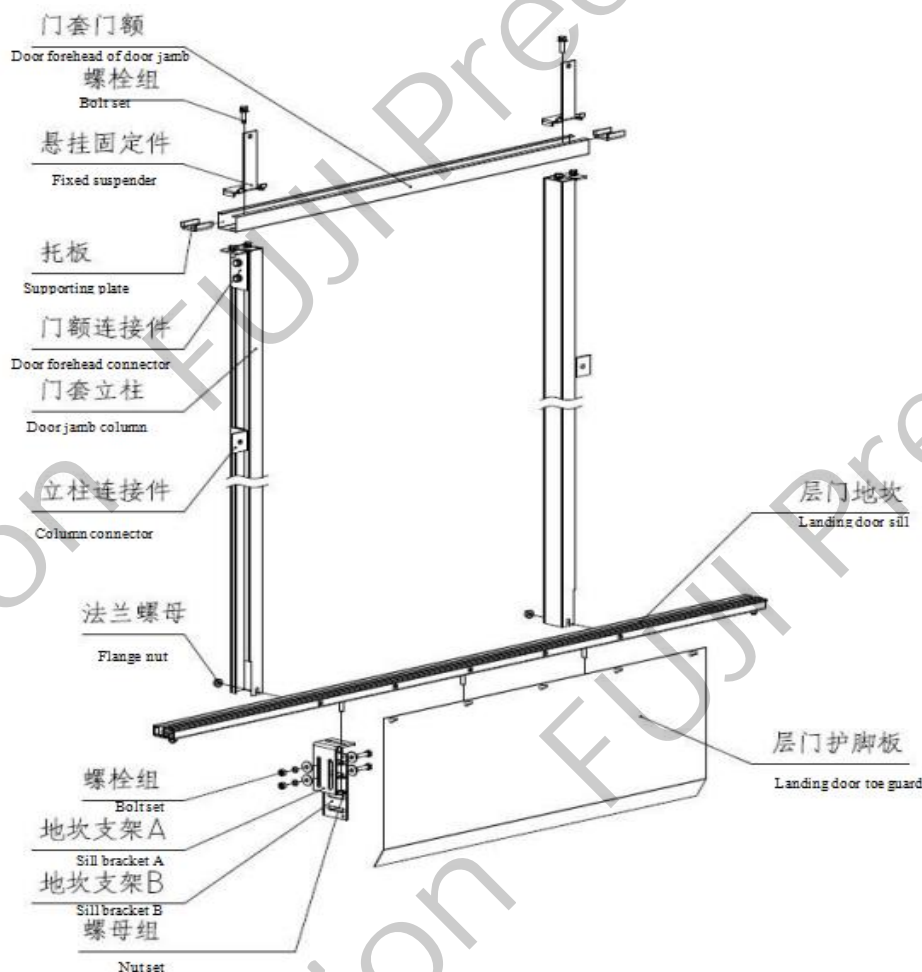
a. Determine the landing door position of the sill according to the setting-out size of the hoistway; adjust the center of the sill to be consistent with the center of the landing door, and mark at the center of the sill; adjust the levelness of the sill to be less than 1/1000; the upper plane of the sill should be slightly higher than the floor device surface to prevent water from entering the hoistway.

b. 把门套立柱、门套门额用连接件拼装,并装上悬挂固定件;将门套装在地坎上,调整门套立柱垂直度小于1/1000;门套中心与出入口中心一致,可参照地坎中心标记测量;门套门额下平面与地坎上平面尺寸为净门高,调节完成后锁紧法兰螺母。调节完尺寸后将立柱连接件与墙体固定。

b. Assemble the jamb column and jamb the door top with connecting pieces, and install the hanging fixing parts; put the door on the sill, adjust the verticality of the jamb column to be less than 1/1000; the center of the jamb is consistent with the center of the landing door, which can refer to the ground measured sill center mark; the size from the lower plane of the jamb top and the upper plane of the sill bottom is the net door height. Tighten the flange nut after the adjustment is completed. After adjusting the size, fix the column connector to the wall.

c. 把层门护脚板固定在地坎上。

c. Fix the landing door toe guard on the sill.

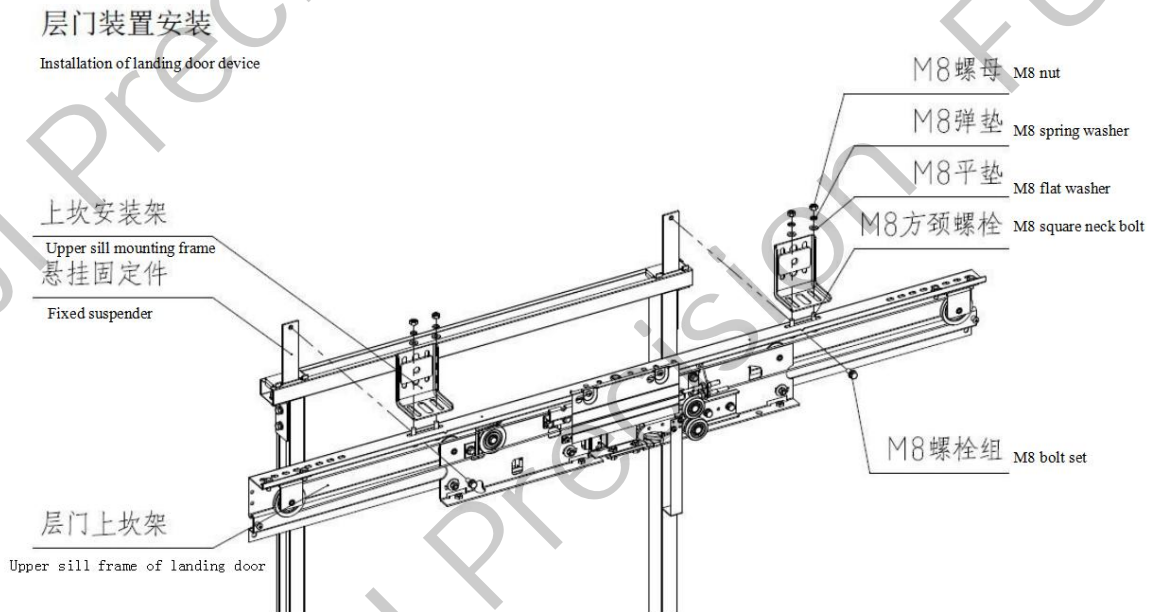


5.3 层门装置安装:

5.3 Installation of landing door device:

a.层门装置和门套连接按图示进行安装。同时在层门装置上部安装孔，用膨胀螺栓通过安装座把层门装置临时固定上。待上坎架调整完毕再拧紧螺栓、螺母。

a. The connection of landing door device and jamb is installed as shown in the figure. Meanwhile, through the mounting hole on the upper part of landing door device, use the expansion bolt to temporarily fix the landing door device through the mounting seat. Tighten the bolts and nuts until the adjustment of the upper sill frame is completed.

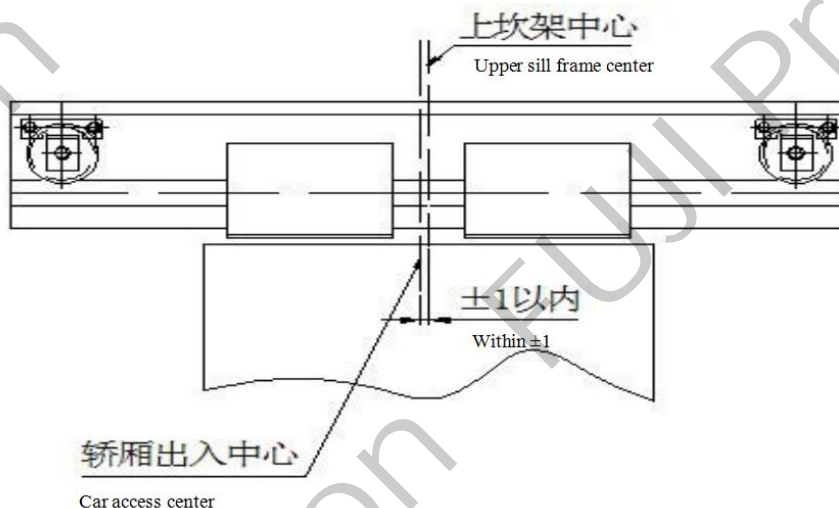


5.4 层门装置调节:

5.4 Adjustment of landing door device:

a. 上坎架中心确定及上坎架铅垂度的调整: 按下面左图要求调整上坎架中心。

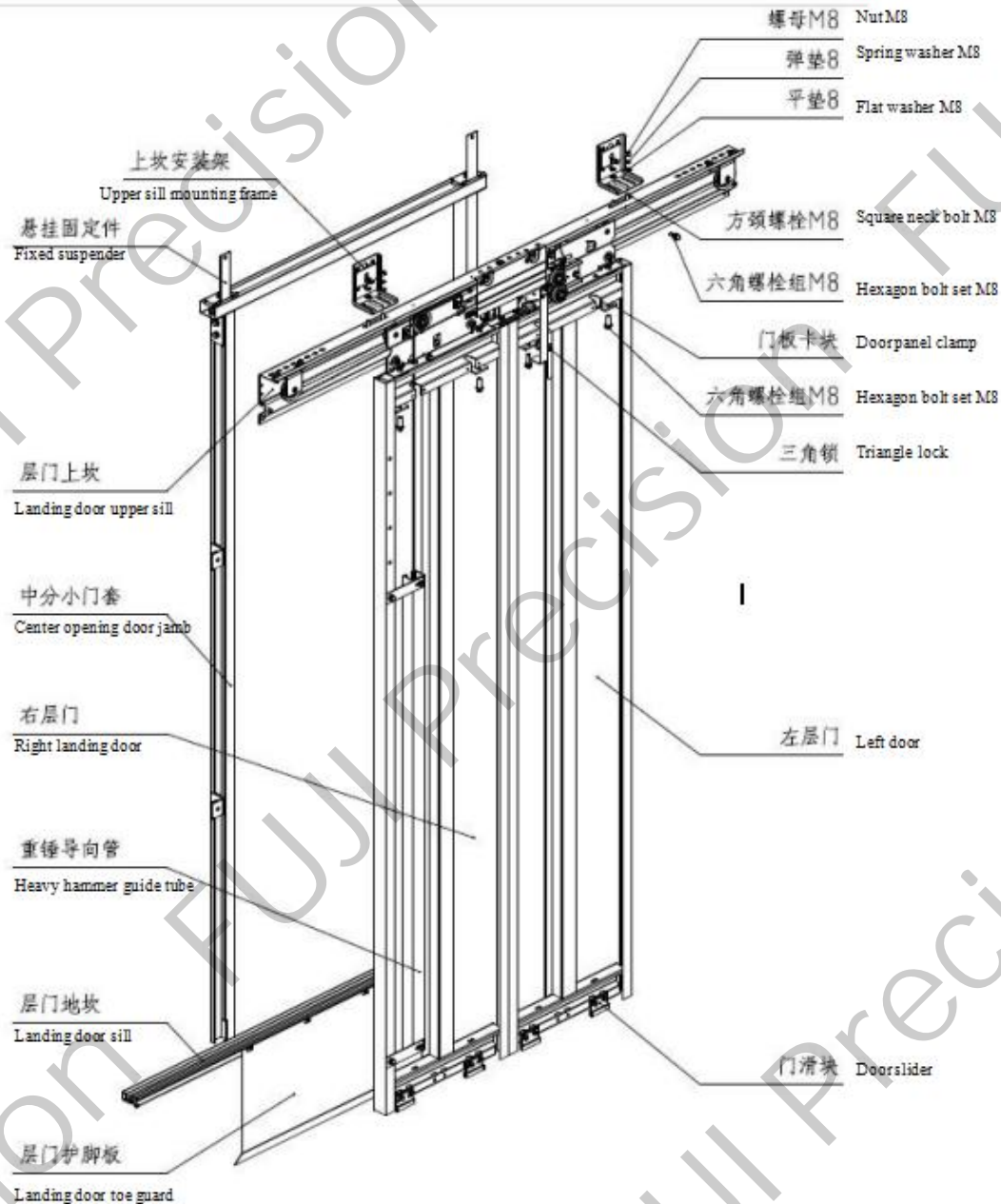
a. Determination of the center of the upper sill frame and adjustment of the verticality of the upper sill frame: Adjust the center of the upper sill frame according to the requirements of the left figure below.



b. 层门门板吊装、调整: 先将门挂板调整到位,再安装、调整层门门板。用钢板尺测量层门门板上下两端和门套间隙保证门板的铅垂度。



b. Hoisting installation and adjustment of the landing door panel: First, adjust the door hanging panel in place, and then install and adjust the landing door panel. Adopt a steel ruler to measure the gap between the upper and lower ends of the door panel and the jamb to ensure the plumbness of the door panel.



c. 重锤安装: 先将重锤导向件安装在门板上, 见上图示。然后将重锤装入导向件中, 将钢丝绳挂在滑轮上, 另一端固定在钢丝绳固定板上, 用螺栓固定防脱件, 使其与滑轮的间隙小于 2.5mm, 并且不碰到滑轮。

c. Installation of the heavy hammer: First install the heavy hammer guide part on the door panel, as shown in the figure above. Then put the heavy hammer into the guide part, hang the wire rope on the pulley, fix the other end on the wire rope fixing plate, and fix the anti-falling part with bolts so that the gap between the anti-falling part and the pulley is less than 2.5mm, and the anti-falling part does not touch the pulley.

d. 传动钢丝绳调整。

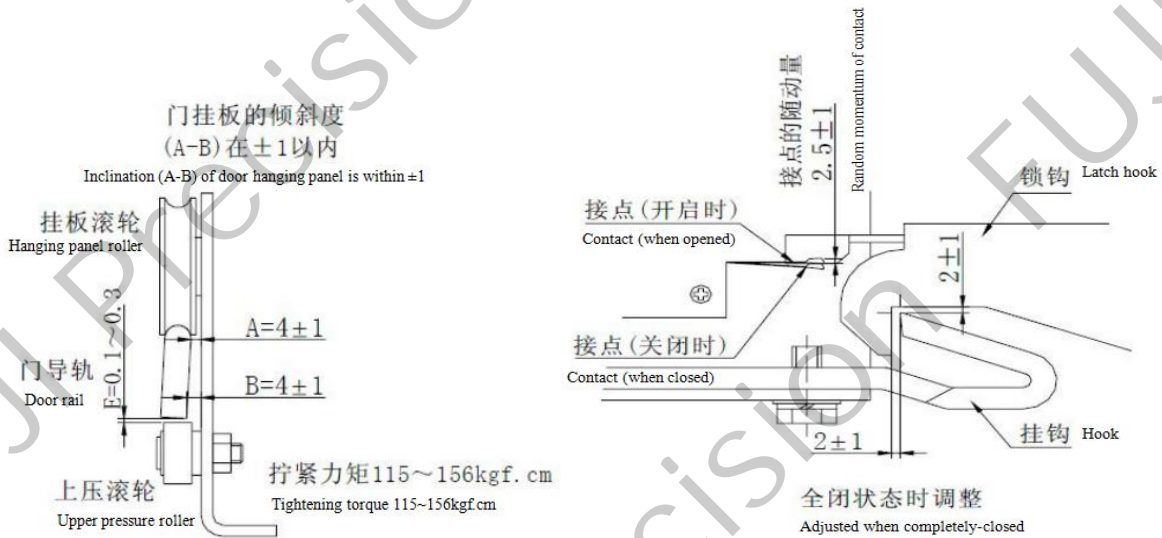
d. Adjustment of transmission wire rope.

层门装置钢丝绳张紧按开门机装置中的同步钢丝绳调整, 要求在门全开状态, 调整后用螺母紧固。



Rope tensioning of landing door device: Open the synchronous steel wire rope in the door operator for adjustment. It is required that the door is fully opened and tightened with a nut after adjustment.

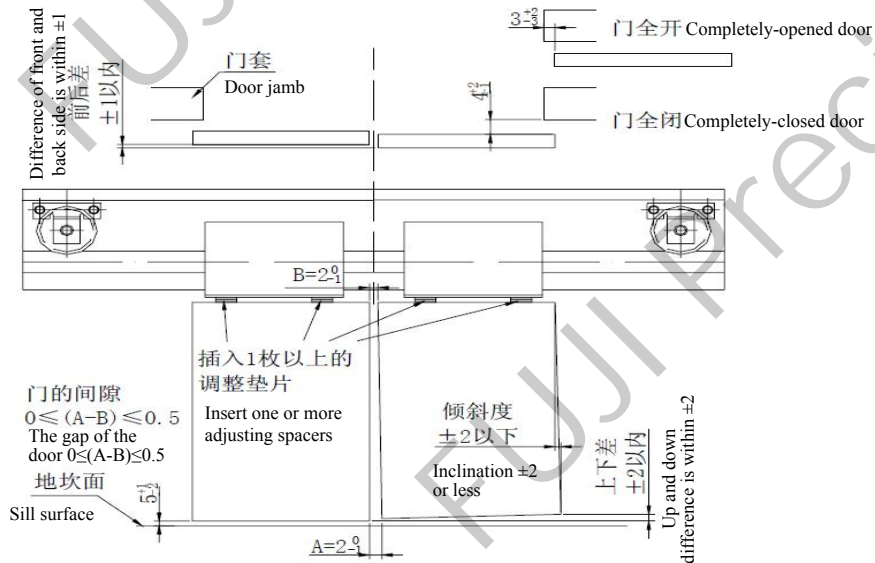
- e. 门挂板和门锁调整。
- e. Adjustment of door hanging plate and door lock.



5.5 厅门安装调节:

5.5 Installation and adjustment of the landing door:

- a. 厅门按示图安装。安装完成后，检查每扇门是否都能平稳而不带任何阻挡地运行。根据情况可以对滚轮和镶条进行调整。应确保门四周与框架的间隙均为4-6mm
- a. The landing door is installed as shown in the figure. After installation, check whether each door can run smoothly without any obstruction. The rollers and inserts can be adjusted according to the situation. Ensure that the gaps between the door and the frame are all 4-6mm



6.1 土建承重梁墙洞检查:

6.1 Inspection of the wall hole of the civil load-bearing beam:

- a. 承重墙洞的承重部分墙体必须是混凝土结构，强度≥C30。
- a. The wall of load-bearing part of the load-bearing wall hole must be a concrete structure with a strength ≥ C30.
- b. 两个承重墙洞间的高低差≤2mm。

- b. The height difference between the two load-bearing wall holes shall be  $\leq 2\text{mm}$ .  
c. 顶层地面至墙洞的高度误差 $\leq 30\text{mm}$ ，如果高度不够请用水泥加高。
- c. The height error from the top floor to the wall hole is  $\leq 30\text{mm}$ . If the height is not enough, please use cement to increase it.
- d. 承重墙洞下方墙体在长度方向的水平误差 $\leq 0.5/1000$ ，使用水平仪测量。
- d. The horizontal error of the wall below the load-bearing wall hole in the length direction is  $\leq 0.5/1000$ , and it could be measured with a gradienter.
- e. 井道内不得有突出的梁、柱等。井道壁的耐压 $\geq 24\text{MPa}$ 。推荐采用全混凝土结构形式制作，并可设预埋铁。如为实心砖墙结构，应按图设置预埋铁或在预埋铁的水平面上浇制圈梁，高度 $\geq 300\text{mm}$ 。如为空心砖墙结构，可选择用 C25 混凝土灌实墙体，并在预埋铁的水平面上浇制圈梁，高度 $\geq 300\text{mm}$ 。当井道前壁为砖墙结构时，应在门洞上方设置混凝土过梁，用于固定厅门支架，高度 $\geq 350\text{mm}$ 。
- e. There should be no protruding beams and columns in the hoistway. The pressure resistance of the hoistway wall is  $\geq 24\text{MPa}$ . It is recommended to adopt the form of full concrete structure, and there is no need to install embedded iron. If it is a solid brick wall structure, the pre-embedded iron should be set according to the figure or a ring beam should be casted on the levelness of the pre-embedded iron, with a height of  $\geq 300\text{mm}$ . If it is a hollow brick wall structure, you can choose to use C25 concrete to fill the wall, and cast ring beams on the levelness of the embedded iron, with a height of  $\geq 300\text{mm}$ . When the front wall of the hoistway is a brick wall structure, a concrete lintel should be set above the doorway for fixing the landing door bracket, with a height of  $\geq 350\text{mm}$ .
- f. 机房要求(无机房电梯不适用): 应考虑适于主机运输的通道, 门口处必须畅通, 门应向外开启, 并且能上锁。机房内的通风窗、排风扇等需安装完毕, 保持机房内相对湿度 $\leq 85\%$ , 温度 $+5^{\circ}\text{C} \sim 40^{\circ}\text{C}$ 。楼板预留孔四周需浇制 50mm 高翻口。地面应平整, 并能承受  $700\text{kg}/\text{m}^2$  的安装载荷(集中载荷另加)。电梯主机的承重梁(钢梁)必须支承在混凝土座上, 该座应一直延伸到建筑物结构的承重梁或承重墙上, 承重面应预埋相同尺寸的钢板, 厚度 $\geq 12\text{mm}$ , 承重面的入墙深度应越过墙厚中心 20mm, 且总深度不应小于 75mm。标准 240mm 的墙, 推荐承重面的入墙深度应 $\geq 200\text{mm}$ 。机房内吊钩应标明最大承重力。
- f. Requirements for the machine room (not applicable to elevators without machine room): The passage suitable for the transportation of the motor should be considered, the entrance must be unblocked, the door should be opened outwards, and can be locked. The ventilation windows and exhaust fans in the machine room must be installed to keep the relative humidity  $\leq 85\%$  and the temperature  $+5^{\circ}\text{C} \sim 40^{\circ}\text{C}$  in the machine room. A 50mm higher opening is required to be casted around the reserved hole of the floor. The ground should be flat and able to withstand the installation load of  $700\text{kg}/\text{m}^2$  (concentrated load is added separately). The load-bearing beam (steel beam) of the elevator motor must be supported on a concrete seat, which should extend to the load-bearing beam or wall of the building structure. The bearing surface shall be embedded with steel plates of the same size, with a thickness  $\geq 12\text{mm}$ , the depth of the bearing surface into the wall shall exceed the center of the wall thickness by 20mm, and the total depth shall not be less than 75mm. For a standard 240mm wall, it is recommended that the depth into the load-bearing wall from the surface should be  $\geq 200\text{mm}$ . The hook in the machine room should be marked with the maximum load-bearing capacity.
- ★ 检查现场土建的预留是否符合土建图要求, 若不符合, 停止安装并立即报告我司售后部门; 若现场土建符合图纸要求, 继续下步安装工作;
- ★ Check whether the on-site civil engineering reservation meets the requirements of the civil engineering drawings. If not, stop the installation and report to our after-sales department immediately; if the on-site civil engineering meets the requirements of the drawings, continue with the next installation work;

## 6.2 曳引机安装固定:

### 6.2 Installation and fixation of the traction machine:

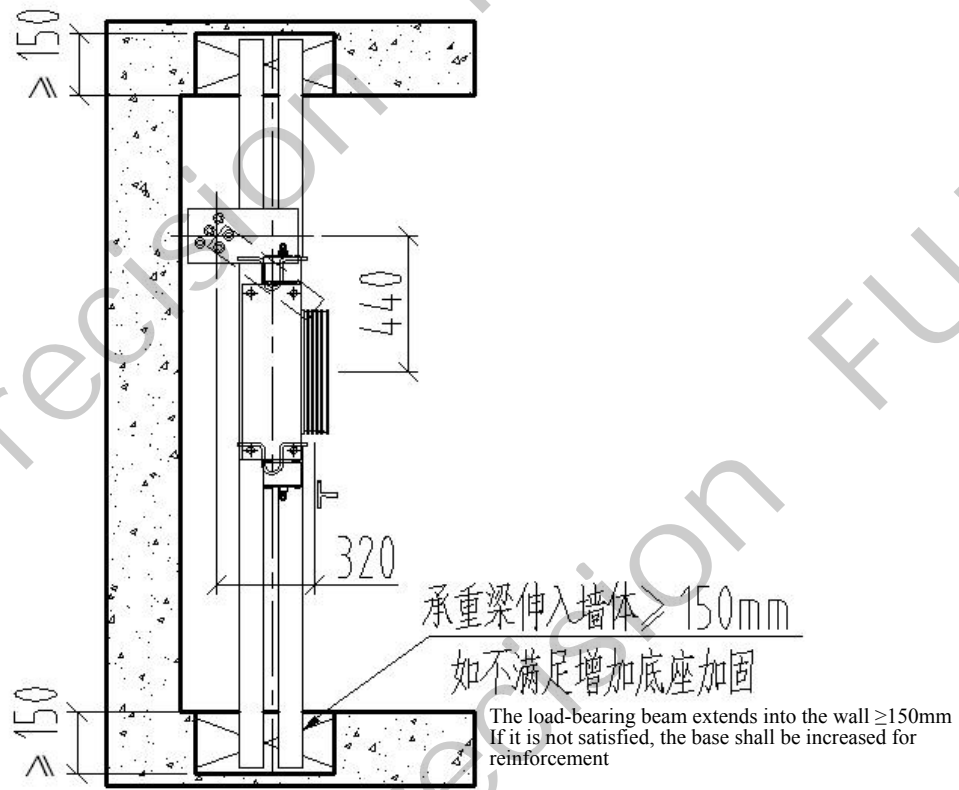
- a. 检查曳引机和承重梁的位置是否符合土建图要求。

- a. Check whether the positions of the traction machine and the load-bearing beam meet the requirements of the civil engineering drawings.
- b. 先将承重梁进入井道,安放在井道墙洞上, 保证曳引机安装面的水平度 (用水平尺测量)。
- b. First put the load-bearing beam into the hoistway and place it on the hole in the hoistway wall, please ensure the levelness of the traction machine installation surface (measured with a level ruler).
- c. 将曳引机吊装在承重梁上, 用螺栓安装紧固(注意对编码器的防护), 见下图。
- c. Hoist the traction machine on the load-bearing beam and fasten it with bolts (pay attention to the protection of the encoder), as shown in the following figure.
- e. 调整承重梁的位置,在曳引轮的节圆上挂垂线找正。
- e. Adjust the position of the load-bearing beam, and hang a vertical line on the pitch circle of the traction sheave for alignment.
- f. 确认对重绳头板位置与对重轮一侧保持竖直。
- f. Confirm that the position of the counterweight rope hitch plate is vertical to the side of the counterweight wheel.
- g. 待安装调节完成后将承重梁墙洞用水泥回填加固。
- g. After the installation and adjustment are completed, the hole in the wall of the load-bearing beam shall be backfilled and reinforced with cement.

### 6.3 曳引机安装注意事项:

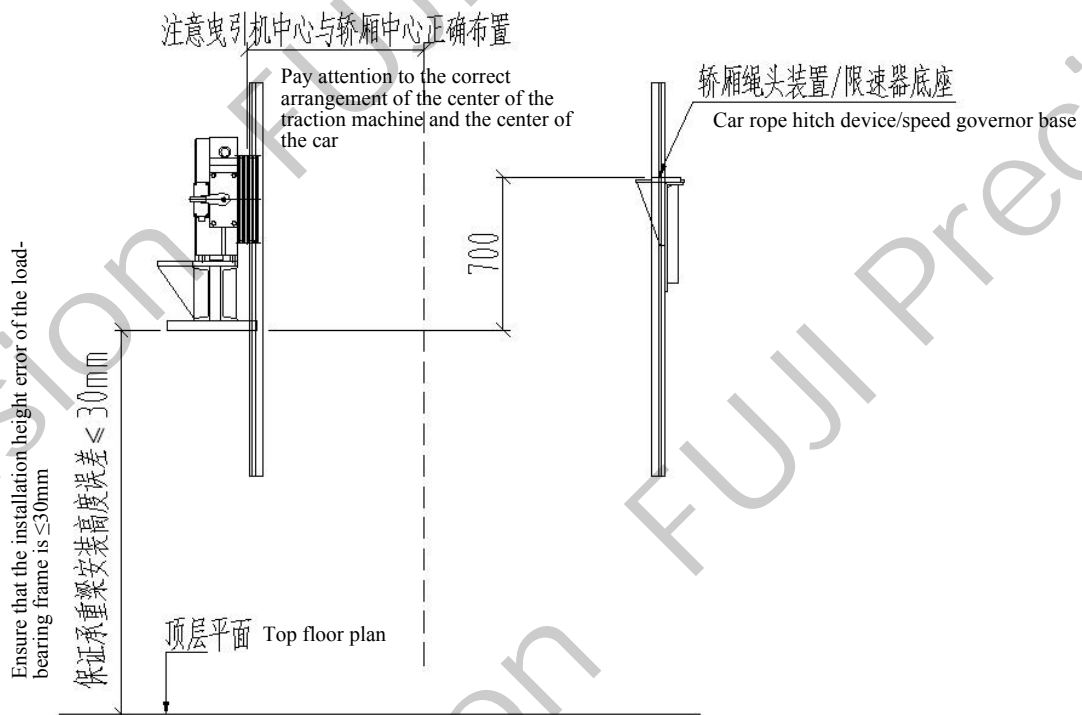
#### 6.3 Precautions for installation of traction machine:

- a. 允许在承重梁和墙洞承重墙体之间加垫片调整承重梁水平度,但不能在两者间产生悬空现象,垫片调整后,还需重复上述 6.2 e 的要求找正。
- a. It is allowed to add spacers between the load-bearing beam and the wall hole of the load-bearing wall to adjust the levelness of the load-bearing beam, however, there shall be no hanging phenomenon between the two. After the spacer is adjusted, it is necessary to repeat the above-mentioned requirements e of 6.2 for alignment.
- b. 承重梁伸入墙体必须 $\geq 150\text{mm}$ , 如果不满足要求, 在承重梁两头托板处增加底座加固。
- b. The load-bearing beam must extend into the wall  $\geq 150\text{mm}$ . If it does not meet the requirements, the base shall be added for reinforcement at both ends of the load-bearing beam.
- c. 按土建图布置曳引机位置, 宽度方向注意主机中心与轿厢中心的距离, 深度方向注意曳引轮中心与轿厢导轨中心同一平面上。
- c. Arrange the position of the traction machine according to the civil engineering drawings, pay attention to the distance between the center of the motor and the center of the car in the width direction; in the depth direction, note that the center of the traction sheave and the center of the car guide rail are on the same plane.



(图示仅供参考，以土建图为准。)

(The illustration is for reference only, and the civil construction drawing shall prevail.)



**7.1 电梯导轨安装:**

**7.1 Installation of elevator guide rail :**

a. 导轨清洁。

a. Clean the guide rail.

安全措施: 在进行清洁操作的过程中应佩戴手套和护目镜; 确保清洁设备经过公司的安全使用认证; 注意按照使用说明进行操作;

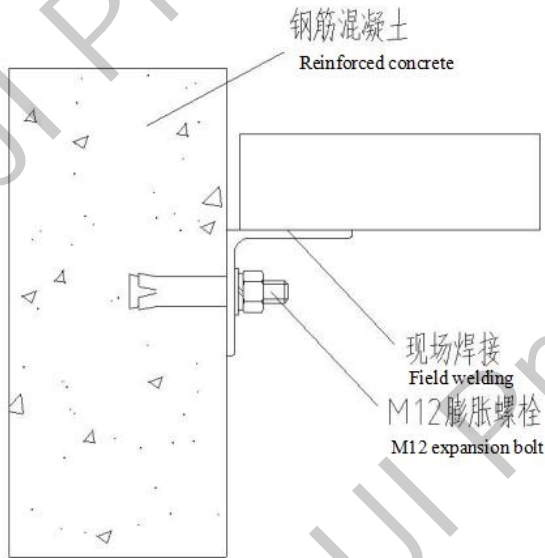
Safety measures: Wear gloves and goggles during the cleaning operation; ensure that the cleaning equipment has passed the company's safe use certification; pay attention to follow the instructions for use;

b. 安装导轨支架。

b. Install the guide rail bracket.

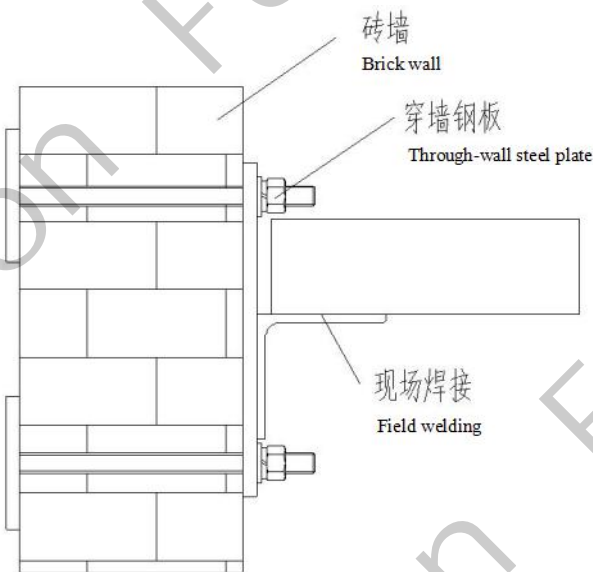
(注 :焊接时要使用防护镜)

(Note: Use goggles when welding)



(膨胀螺栓固定导轨支架)

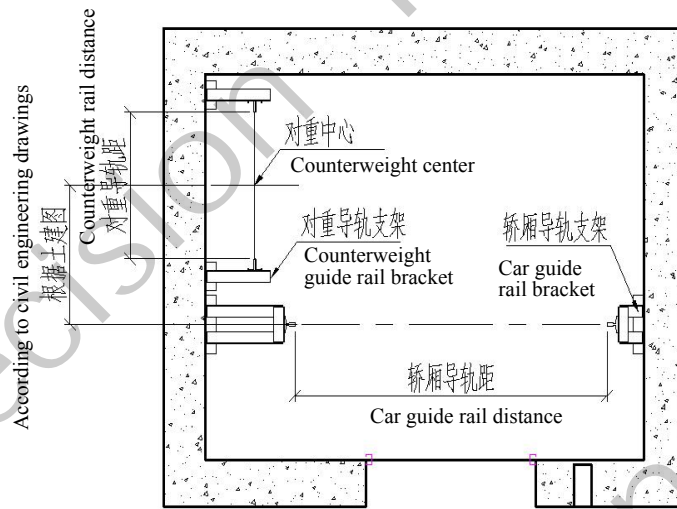
(Fix the guide rail bracket with expansion bolts)



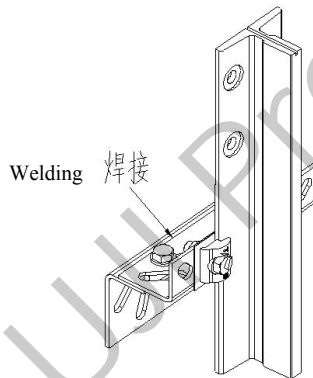
(穿墙螺栓固定导轨支架)

(Fix the guide rail bracket with wall bolts)

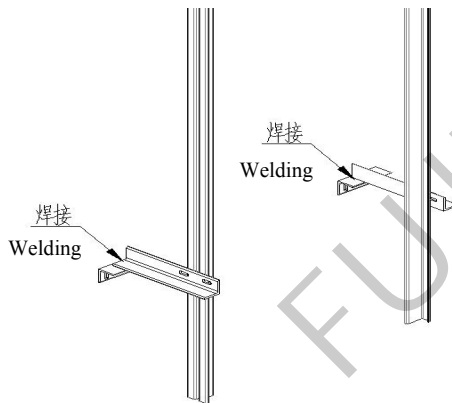




(图示为对重架左置)  
 (The picture shows the left-side structure of the counterweight frame.)



(轿厢导轨支架)  
 (Car guide rail bracket)



(对重导轨支架: 矩形支架焊接固定在底码上)  
 (Counterweight guide rail bracket: the rectangular bracket is welded and fixed on the bottom base)

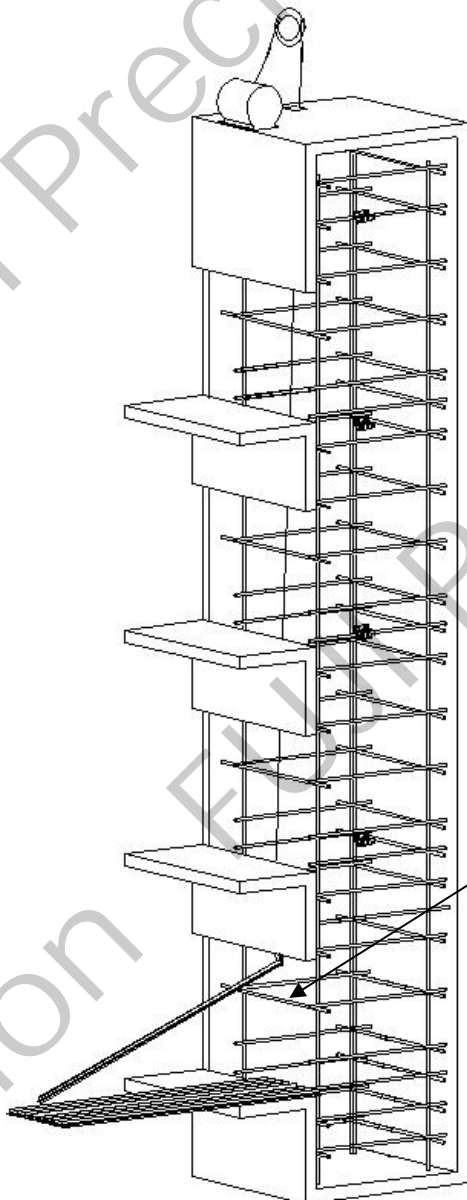


## 7.2. 导轨进入底坑:

### 7.2. The guide rail enters the pit:

a. 用卷扬机将导轨阴端向下阳端向上，依次吊入底坑。并利用井道空间，将导轨一端靠放在井道壁，每根导轨须竖直放置，并在阳端安装好接口板。

a. Use a hoist to move the female end of the guide rail downward and the male end upward, and then hoist it into the pit in turn. And use the space of the hoistway, put one end of the guide rail against the wall of the hoistway, each guide rail must be placed vertically, and install the interface board on the male end.



导轨进入时，拆掉此钢管，安装完导轨后，再安装钢管。

When the guide rail enters, remove the steel pipe; and install the steel pipe after finishing the installation of the guide rail.

b. 用卷扬机将导轨提起，由下往上安装固定在导轨支架上。

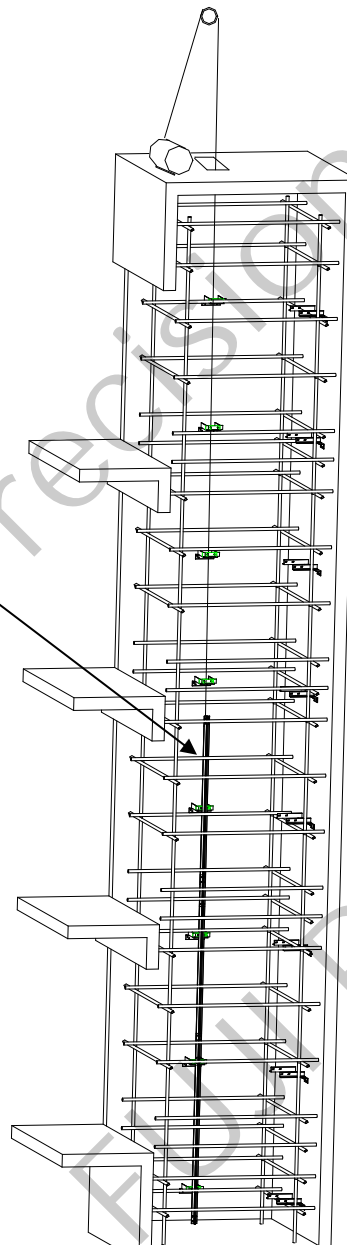
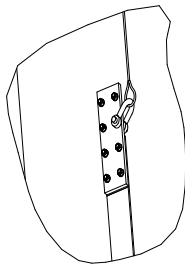
b. Lift the guide rail with a hoist, install and fix it on the guide rail bracket from bottom to top.

### 7.3 导轨起吊安装

#### 7.3 Hosting and installation of guide rail

- a. 用卷扬机将导轨提起，由下往上安装固定在导轨架上。
- a. Lift the guide rail with a hoist, install and fix it on the guide rail frame from bottom to top.
- b. 重要说明：因井道空间限制，应小心起吊。
- b. Important note: due to the limited space of the hoistway, lift carefully.

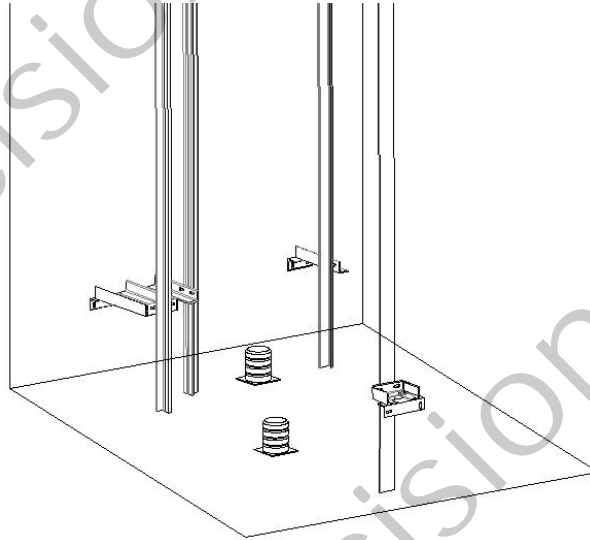
请注意吊钩  
Please pay attention  
to the hook



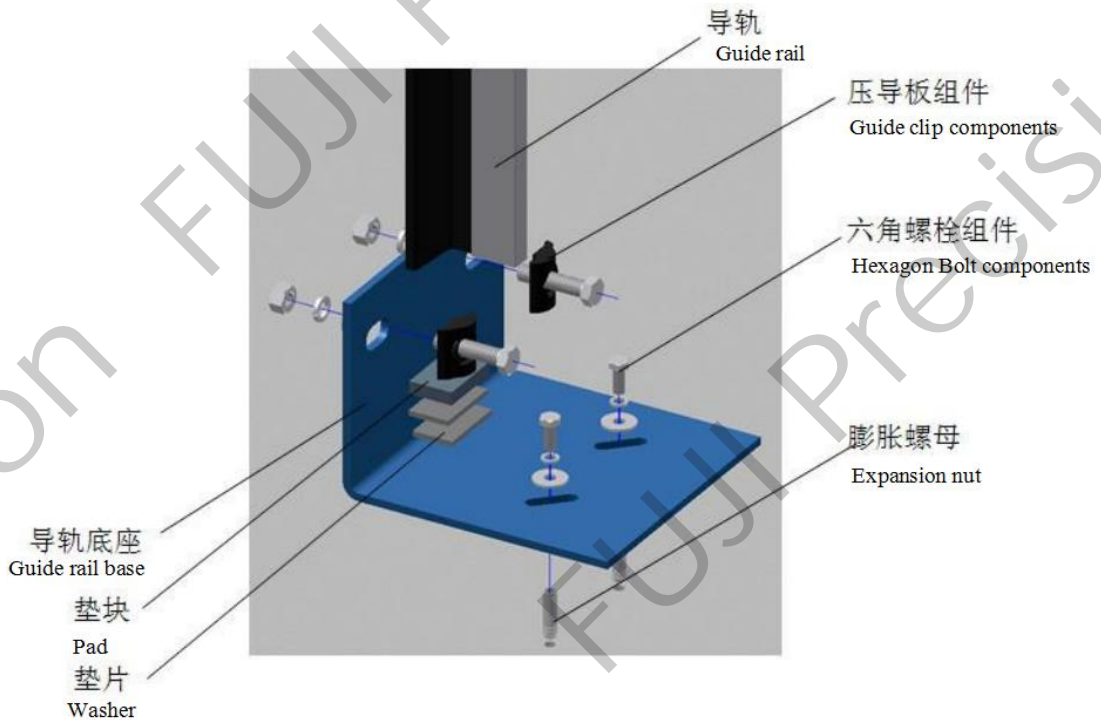
7.4 导轨底部安装:

7.4 Installation of the guide rail bottom:

- a. 导轨底坑布置图。
- a. Layout drawing of the bottom pit of the guide rail.



- b. 导轨底座安装示意图。
- b. Installation diagram of guide rail base.



7.5 导轨顶部安装:

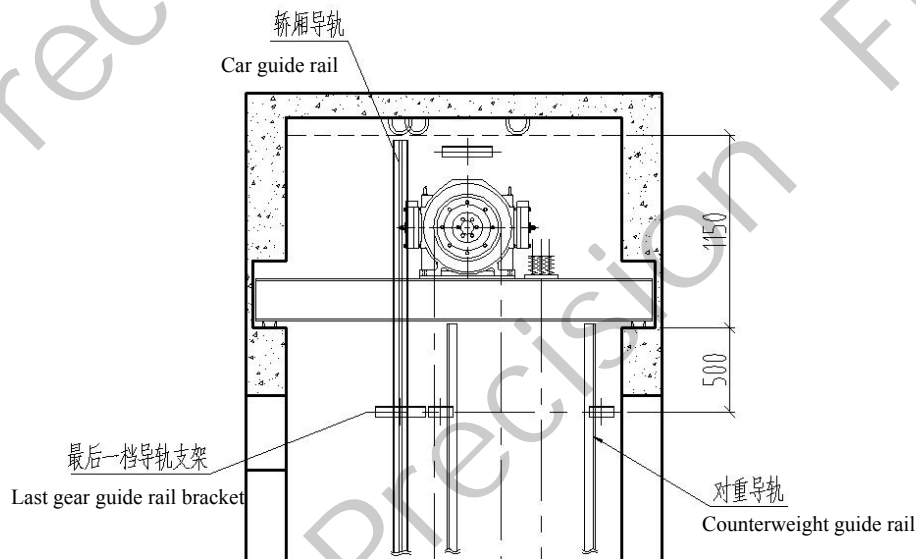
7.5 Installation of the guide rail top:

a. 主机侧对重导轨到承重梁的距离 $\leq 30\text{mm}$ 。

a. The distance between the counterweight guide rail on the motor side and the load-bearing beam is  $\leq 30\text{mm}$ .

b. 轿厢导轨竖到顶, 不与井道内其他部件干涉即可, 先计算好导轨的总长度再合理安装导轨。

b. The car guide rails is installed uprightly to the top and does not interfere with other parts in the hoistway. First calculate the total length of the guide rail and then install the guide rail reasonably.

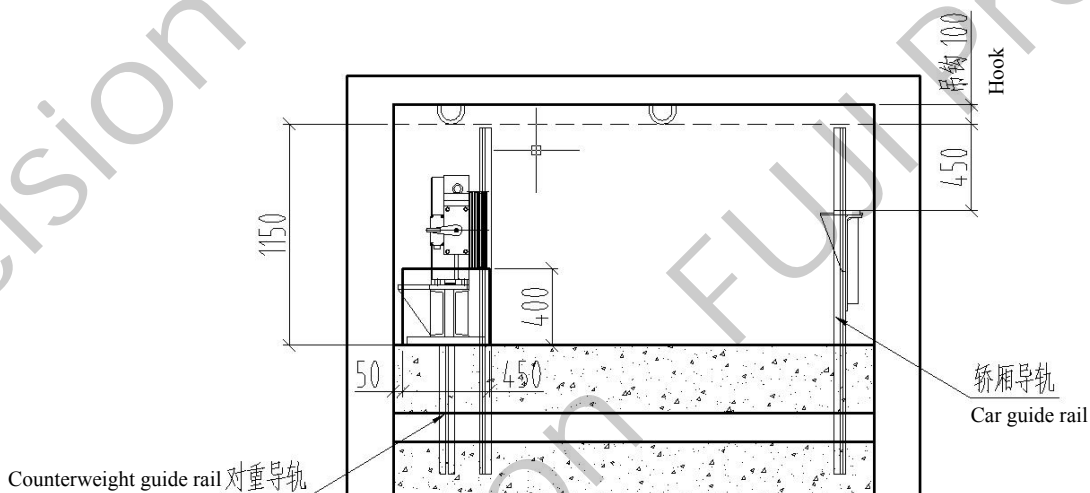


(导轨计算好总长度后, 截断导轨, 并将截断的导轨安装在最低部)

(After calculating the total length of the guide rail, cut off the guide rail and install the truncated guide rail at the lowest part)

c. 非对重侧轿厢导轨至顶层平面距离见土建图, 先计算好导轨的总长度再合理安装导轨。

c. Refer to the civil construction drawing for the distance from the non-counterweight side car guide rail to the top level plane, first calculate the total length of the guide rail, and then install the guide rail reasonably.



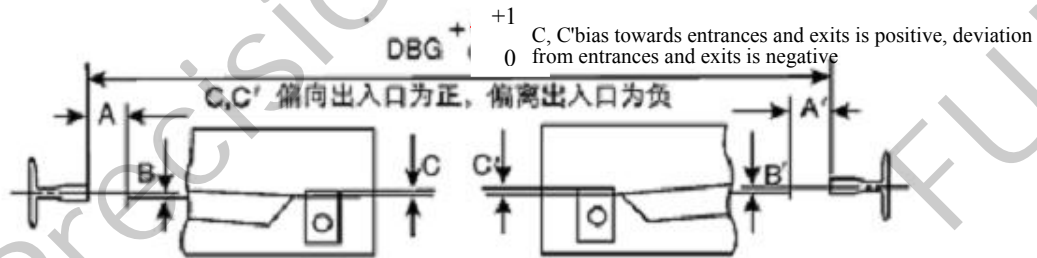
(导轨计算好总长度后, 截断导轨, 并将截断的导轨安装在最低部)

(After calculating the total length of the guide rail, cut off the guide rail and install the truncated

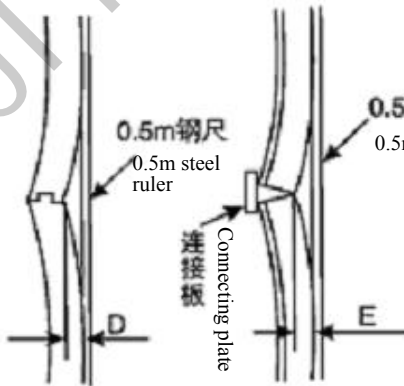
guide rail at the lowest part)

7.6 轿厢实心导轨调整及其标准:

7.6 Adjustment of the solid guide rail of the car and its standards:

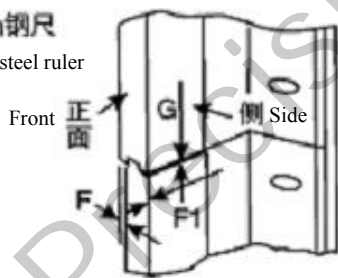


导轨中心及安装垂线  
Guide rail center and installation perpendicular

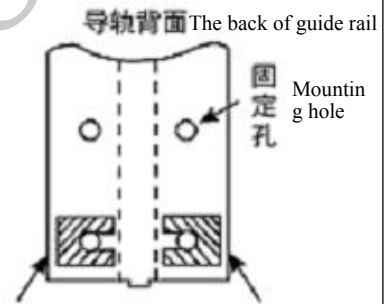


导轨侧面歪度  
Side skewness of guide rail

导轨正面歪度  
Frontal skewness of guide rail



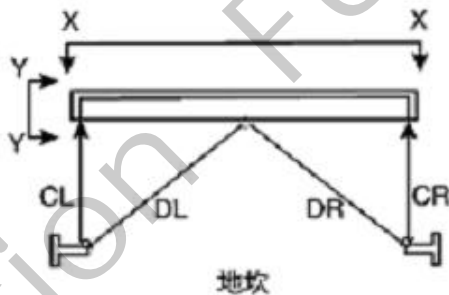
导轨接头之段差  
Section difference of guide rail joint



垫片使用之正确位置  
The correct position of the gasket

轿厢导轨歪度0.2mm以下,修光 > 200mm,台阶 < 0.03mm  
对重导轨歪度0.4mm以下,修光 > 150mm,台阶 < 0.10mm

Car guide rail skewness<0.2mm, trimming> 200mm, step <0.03mm;  
Counterweight guide rail skewness<0.4mm, trimming> 150mm, step <0.10mm



作业规则:

Operating rules:

1. 样板尺寸依图纸尺寸不得超差。  
1. The size of the model shall be based on the drawing, out of tolerance is not allowed.
  2. 托架与导轨、墙壁间使用垫片不得超过5mm,超过三件必须点焊。  
2. The gasket used between the bracket, the guide rail and the wall should not exceed 5mm, and the spot welded must be conducted if there are more than three pieces.
  - 3.
  4. 每根导轨至少应有2个导轨支架,间距不大于2.0m  
4. Each guide rail should have at least 2 guide rail brackets, and the spacing is not larger than 2.0m
  5. 导轨与连接板之组合必须确实清洁密合。  
5. The combination of the guide rail and the connecting panel must be clean and tight.
- 导轨与连接板之固定若必须使用垫片时,其垫片之位置必须正确,垫片突出时,必须向内打弯。  
If spacers must be used to fix the guide rail and the connecting plate, the position of the spacers must be correct. When the spacers protrude, they must be bent inward.

注意: 导轨与导轨接头处必须用锉刀手工锉, 严禁使用磨光机!

Note: The joint between the guide rails and the guide rail must be filed manually with a file, and it is strictly forbidden to use a grinder!

备注: DBG 为导轨面距

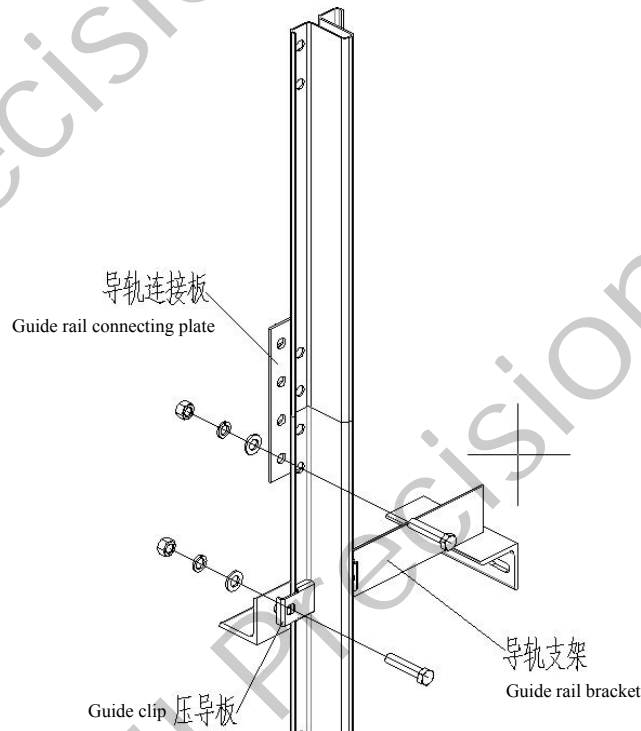
Remarks: DBG is the surface distance between guide rails.

## 7.7 对重空心导轨调整及其标准:

### 7.7 Adjustment of counterweight hollow guide rail and its standard :

a. 根据安装的导轨或铅垂线校准安装最底部导轨。用两根铅垂线，安装将更为精确，且更易于进行导轨校准。

a. Calibrate and install the bottom rail according to the installed guide rail or plumb line. With two plumb lines, the installation will be more precise and the guide rail calibration will be easier.



(注意: 螺栓头的直侧会降低压导板抵抗导轨滑移能力)

(Note: The straight side of the bolt head will reduce the ability of the pressure guide plate to resist the sliding of the guide rail)

b. 准备安装下一根导轨，注意按箭头同方向连接。

b. Prepare to install the next guide rail, and pay attention to connect it in the same direction as the arrow in figure.

(注意: 严禁一次性将所有导轨提升后再逐一安装)

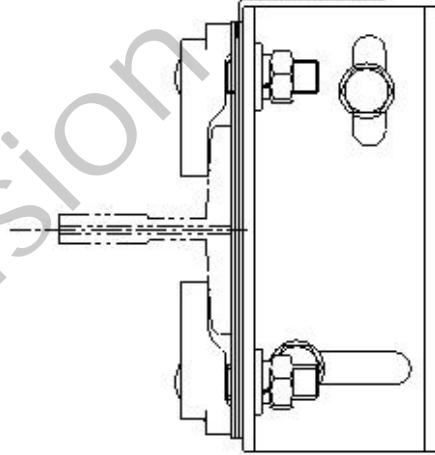
(Note: It is strictly forbidden to lift all the guide rails at one time and then install them one by one)

c. 当调整垫片超过2片时需对垫片进行点焊，使多片垫片焊成一体。

c. When the adjustment shim exceeds 2 pieces, spot welding of the shim is required to weld multiple pieces of shim into an integrated one.



超过2片调整垫片需要点焊。 The spot welding is required if there are more than 2 pieces of adjusting pads.



- d. 使用带直边的工具（如水平仪）进行校准  
 d. Use tools with straight edges (such as a gradienter) for calibration  
 （导轨校准后，用扭力扳手 40Nm 紧固所有的螺栓）  
 (After the rail is calibrated, tighten all the bolts with a torque wrench 40Nm)
- e. 安装导轨过程中，锉光滑梯级/间隙，细锉将梯级锉光滑，d1必须≤0.5mm, d2必须≤1.5mm。  
 e. In the process of installing the guide rail, file smooth steps/gap, and fine files will smooth the steps, d1 must be ≤0.5mm, d2 must be ≤1.5mm.
- f. 两列导轨共面偏差值A满足列表要求。  
 f. The coplanar deviation value A of the two rows of guide rails meets the requirements of the list.



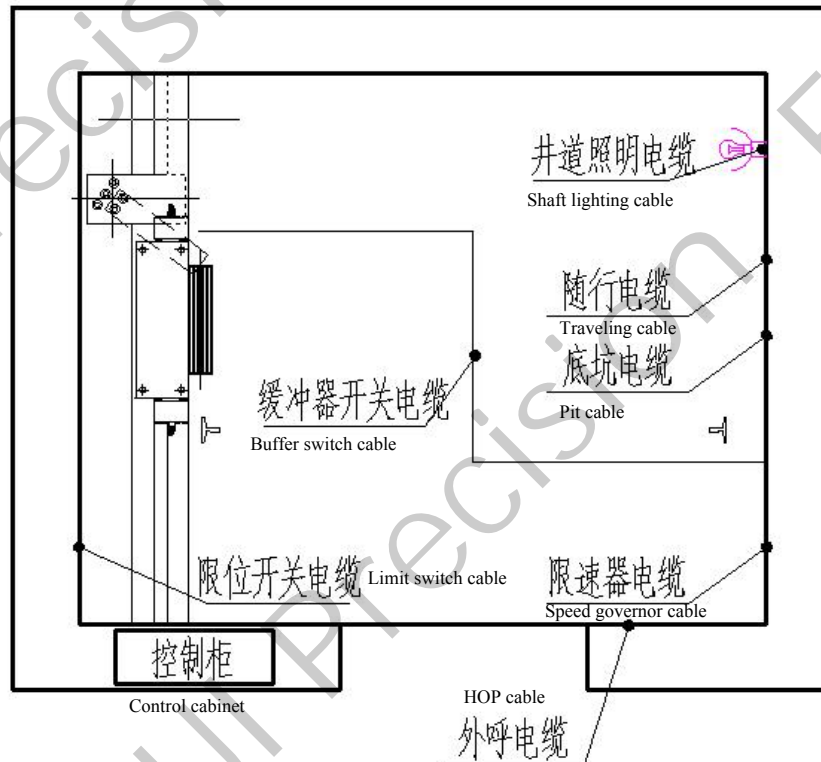
（导轨距每1000mm，A偏差值≤4mm）  
 (A deviation value of A is ≤4mm for every 1000mm of rail distance)

### 8.1 控制柜安装布线:

#### 8.1 Installation and wiring of control cabinet:

a.按照土建布置图所示位置安装控制柜，见下图。

a. Install the control cabinet in accordance with the position shown in the civil layout drawing, as shown in the following figure.



(承重梁右置) (The load-bearing beam is placed on the right)

b.注意控制柜视窗可以清楚的看到轿厢位置。

b. Note that the position of the car must be clearly seen from the window of the control cabinet.

### 8.2 井道顶层布线:

#### 8.2 Wiring of the hoistway top floor:

a.井道布线具体见电气敷设图。

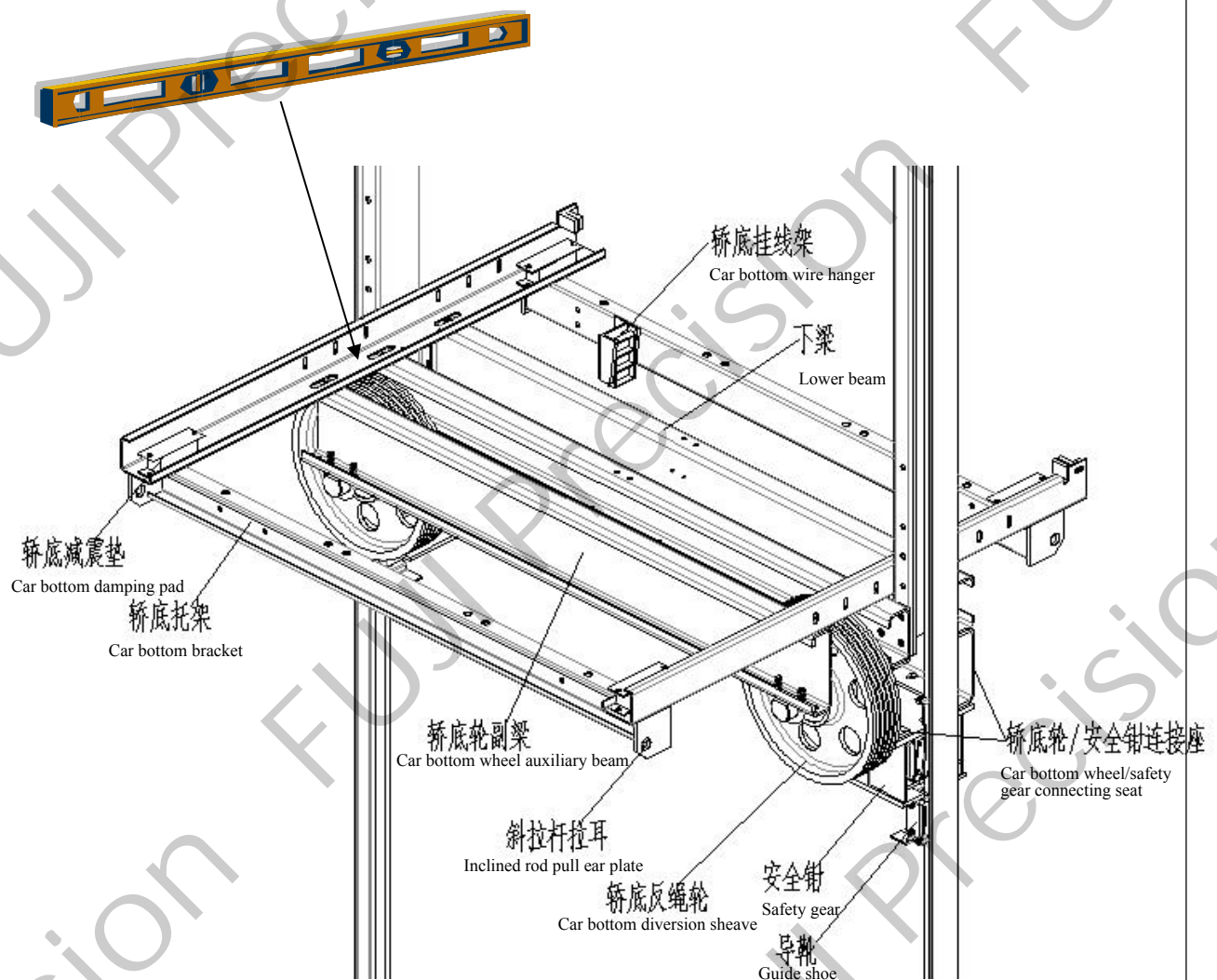
a. See the electrical wiring diagram for the wiring of the hoistway.

## 9.1 下梁、托架安装:

### 9.1 Installation of lower beam and bracket mount:

a. 导靴与安全钳组装好安装在下梁上, 接着将轿底托架与下梁固定, 用水平仪校正下梁、托架水平, 锁紧螺栓。

a. The guide shoe and the safety gear are assembled and installed on the lower beam, then the car bottom bracket is fixed to the lower beam, the lower beam and the bracket are leveled with a grader, and the bolts are tightened.



(如轿底托架不平, 请适量增加垫片调整, 不能用轿厢拉杆强行拖曳或用工具敲打, 此举会导致直梁变形或者轿底托架变形)

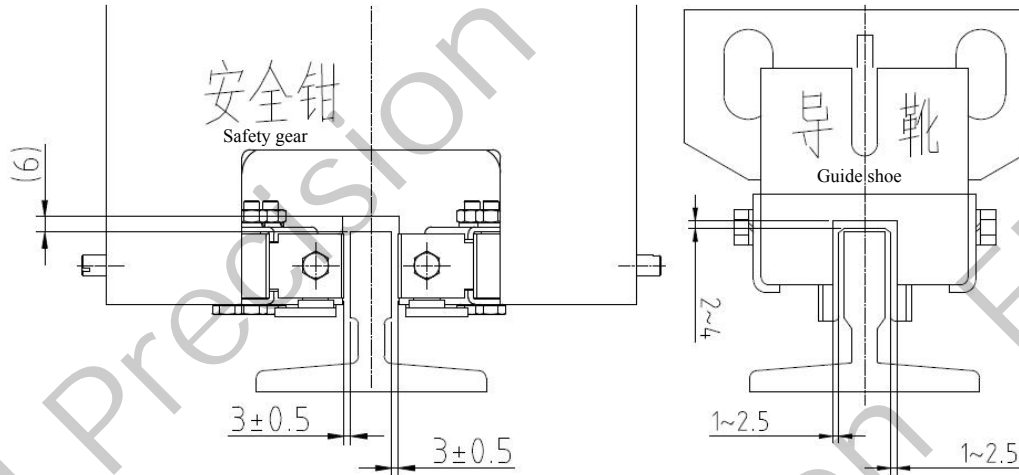
(If the car bottom bracket is not flat, please add a proper amount of shims to adjust. Do not use the car tie rod to forcibly drag or knock with tools, which may cause the straight beam or the car bottom bracket to deform)

b. 注意轿底托架前后方向, 保证轿厢中心正确。

b. Pay attention to the front and rear direction of the car bottom bracket to ensure that the center of the car is correct.

c. 安全钳间隙、导靴间隙按下图调整。

c. Adjust the clearance of safety gear and guide shoe as shown in the figure below.



## 9.2 直梁、轿底、拉杆安装:

### 9.2 Installation of straight beams, car bottom and tie rods:

a. 直梁通过 M16×45 螺栓与下梁固定，在锁紧拼接螺栓之前需对直梁进行垂直校正。

a. The straight beam is fixed to the lower beam by M16×45 bolts. The straight beam needs to be vertically corrected before the splicing bolts are tightened.

b. 轿底通过减震垫与轿底托架连接，调整好轿底水平度后锁紧螺栓。

b. The car bottom is connected to the car bottom bracket through a shock absorbing pad, and the bolts are locked after adjusting the levelness of the car bottom.

c. 用水平仪及直角尺，测量轿底水平度，轿底与直梁垂直度。

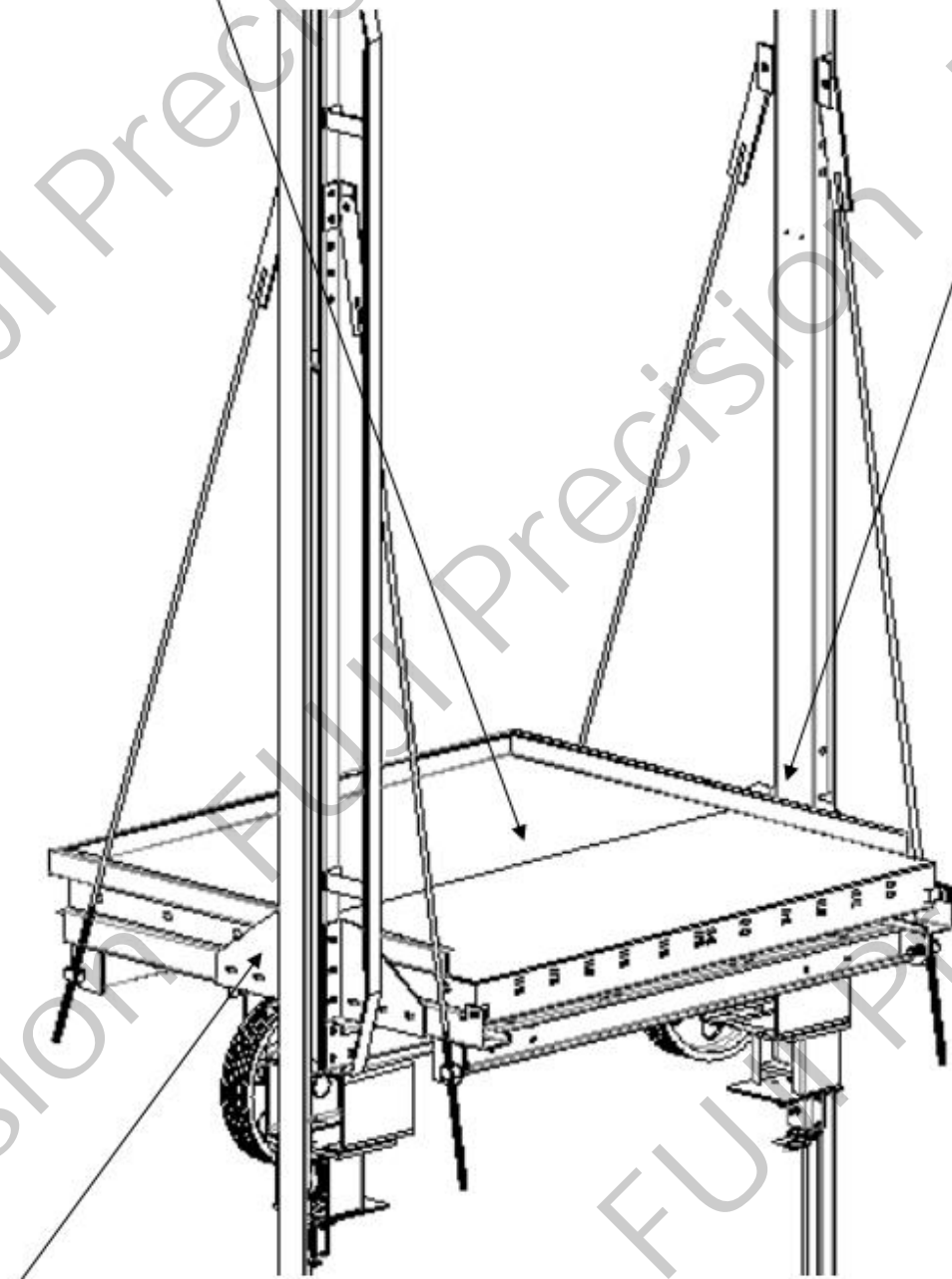
c. Use a level ruler and a square to measure the levelness of the car bottom and the verticality of the car bottom and the straight beam.

d. 按土建图限位开关位置合理安装限位开关撞弓。

c. Reasonably install the limit switch saltando according to the position of the limit switch in the civil engineering drawings.



(Measurement of levelness  
and verticality)  
(水平度、垂直度测量)



(当轿厢深度尺寸 > 1800mm 或轿厢侧面为观光轿壁时采用直梁拉板固定)  
(When the depth of the car is more than 1800mm or the side of the car is a sightseeing car wall, it shall be fixed by a straight beam pull plate)

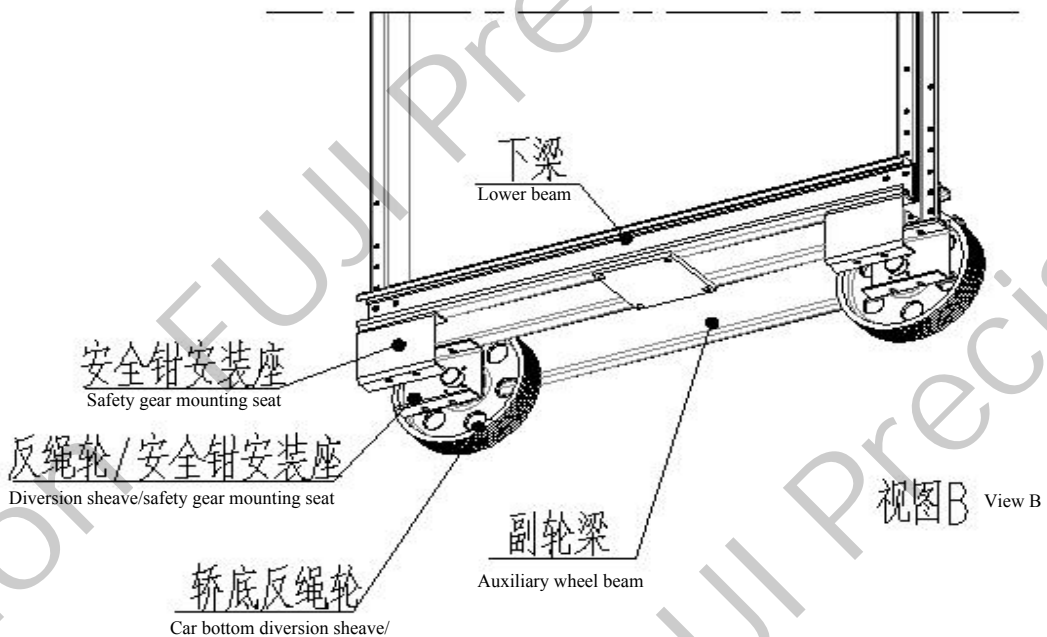
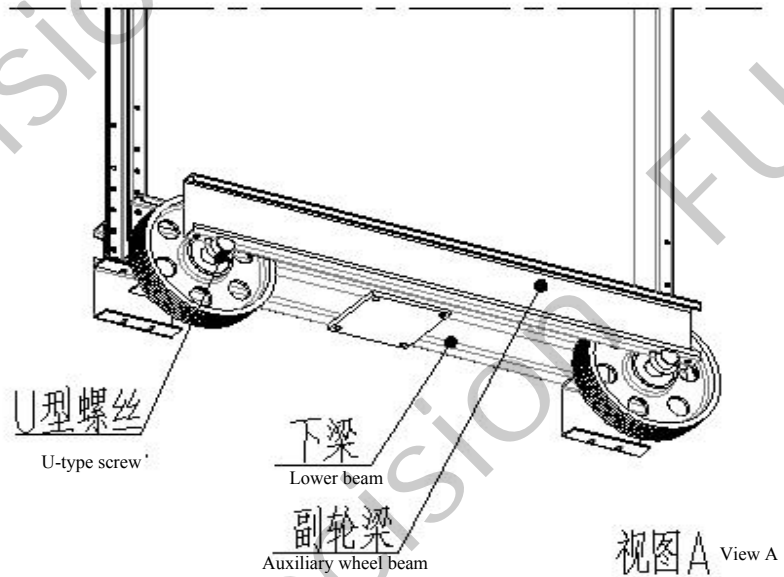


9.2 轿厢返绳轮装配安装:

9.2 Assembly and installation of car diversion sheave device:

a. 图示为轿底返绳轮装配。

a. The figure shows the assembly of the car-bottom diversion sheave device.



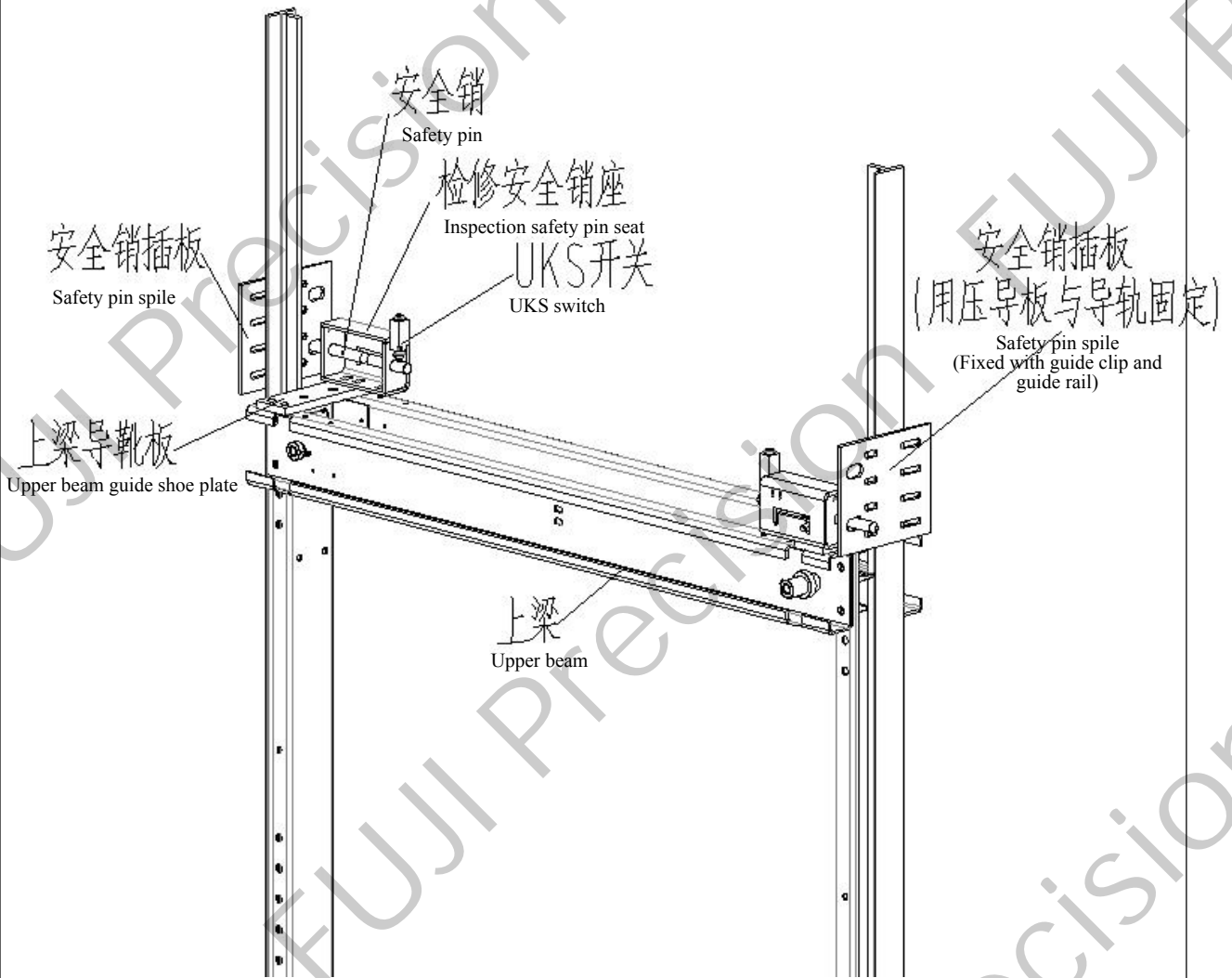
b. 轿厢架下梁装配通过 M16×45 螺栓与直梁固定, 在锁紧螺栓之前需对返绳轮装置进行水平校正。

b. The upper beam of the car frame is fixed to the straight beam by M16×45 bolts. The sheave return device is required to be horizontally corrected before the bolts are tightened.



9.3 轿厢架检修安全销安装:

9.3 Installation of inspection safety pin for car frame:



(检修安全销座采用 M16\*45 螺栓安装在上梁导靴板上, 在上图位置安装 UKS 开关)  
 (The inspection safety pin boss is installed on the upper beam guide shoe plate with M16\*45 bolts, and the UKS switch is installed at the position above)

**10.1 轿厢围壁安装:****10.1 Installation of car wall panel:**

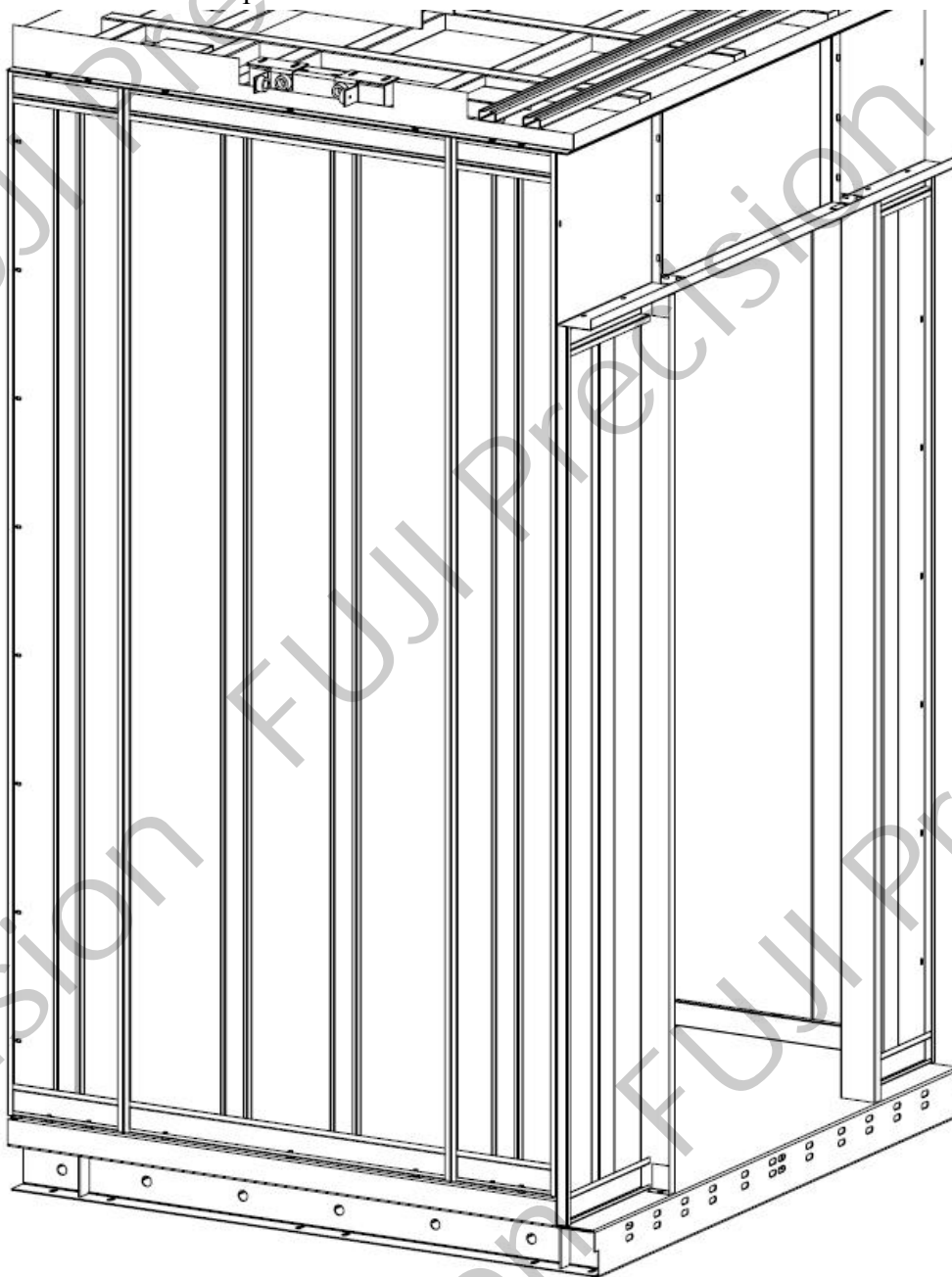
a. M6×25 六角螺栓轿壁顶底固定, M6×16 六角螺栓轿壁与轿壁固定, 保证轿壁垂直度。  
a. The top and bottom of the car wall are fixed with M6×25 hexagon bolts, and M6 × 16 hexagon bolts are used for fixing between car wall and car wall to ensure the verticality of the car walls.

b. 轿底安装。

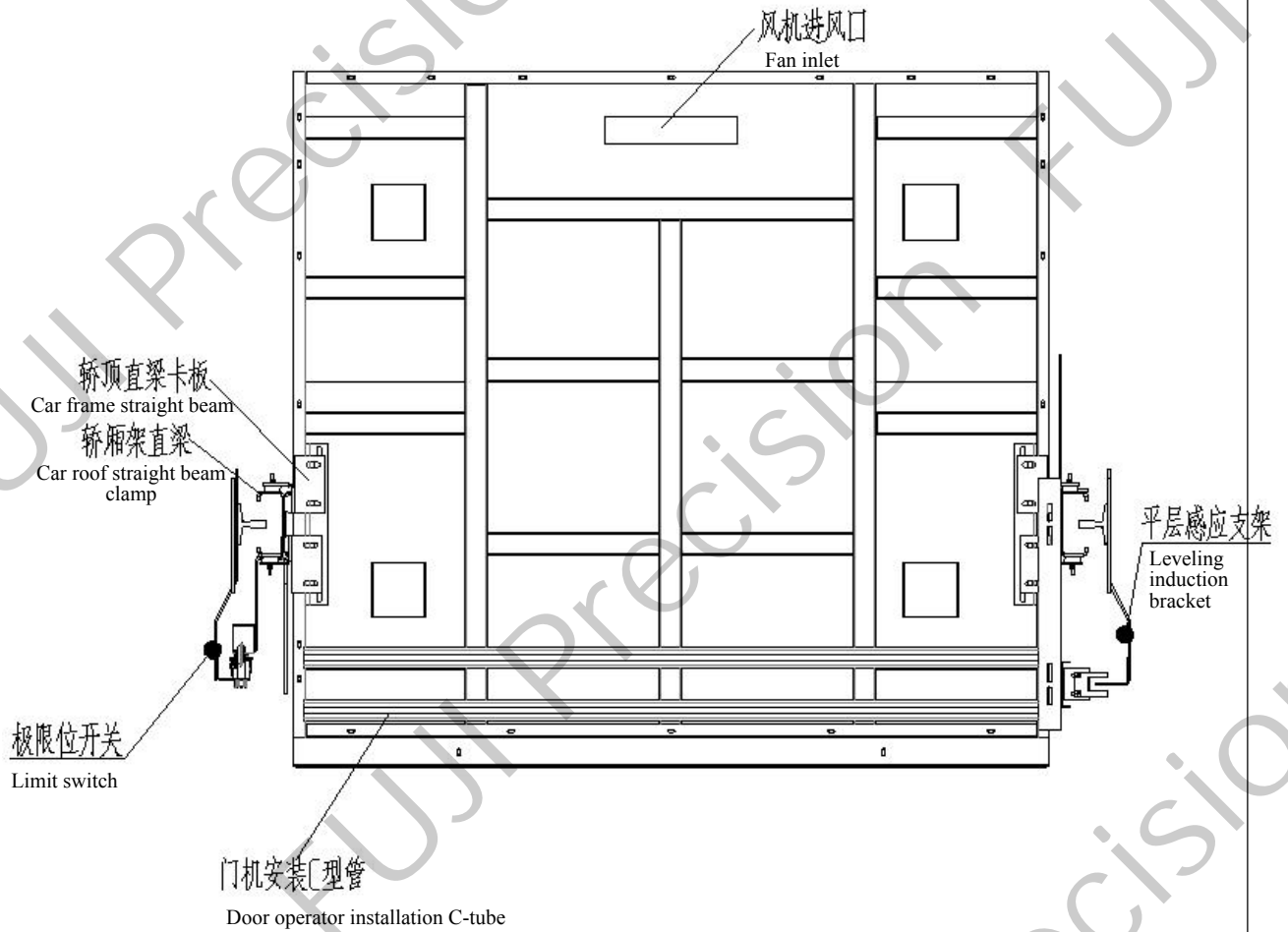
b. Installation of the car bottom.

c. 轿顶安装。

c. Installation of car top.

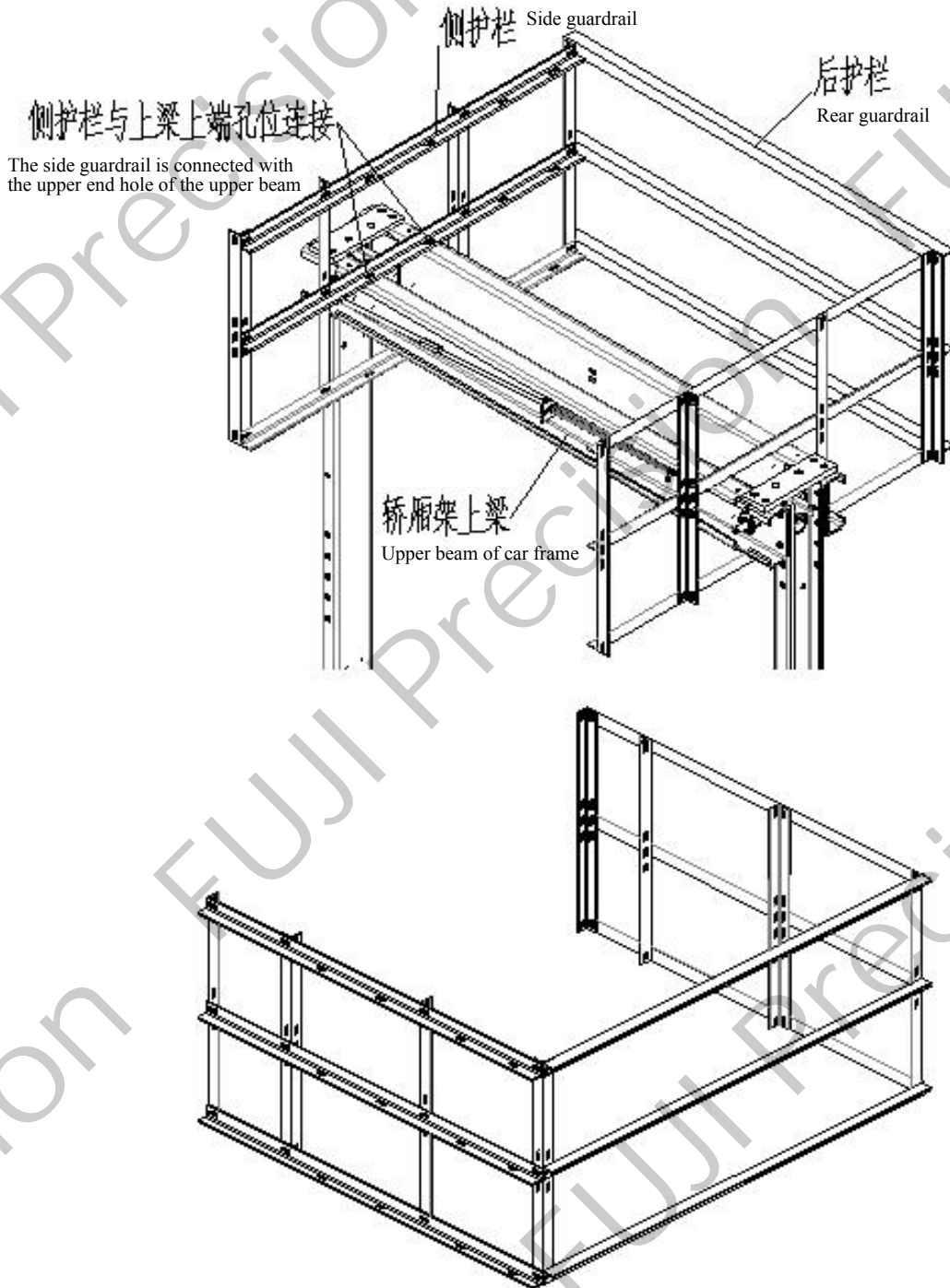


d.轿顶直梁卡板安装、风机安装、吊顶安装、平层感应器安装等示意图。  
 d. Installation diagram of car top straight beam clamp plate, fan, ceiling, leveling sensor, etc.



10.2 轿顶护栏安装:

10.2 Installation of car top guardrail:

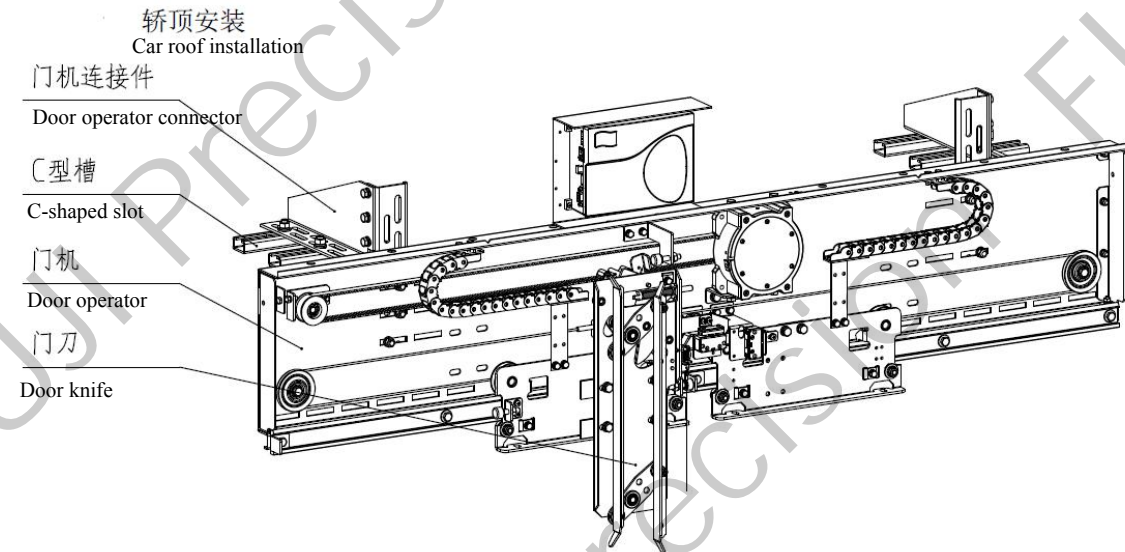


## 11.1 轿顶门机安装:

### 11.1 Installation of door operator on car top:

a. 轿顶安装门机用螺栓将门机通过安装座与轿顶 C 型槽进行固定。

a. Car-top-mounting door operator: Use bolts to fix the door operator to the C-shaped groove on the car top through the mounting base.

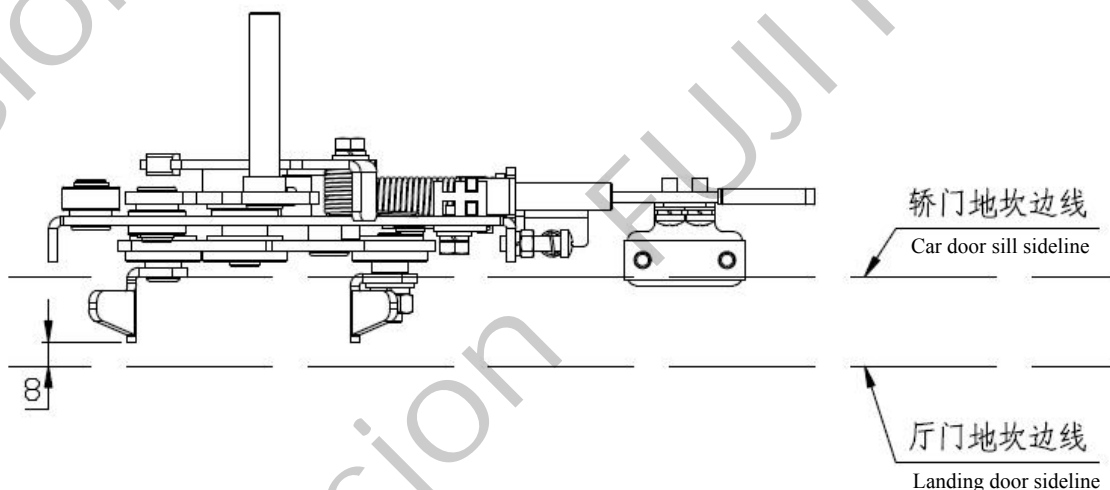


b. 轿顶安装门机左右调整: 将门机中心标记处放置铅垂线, 调整门机使门机中心与轿门出入口中心吻合, 保证门机中心与出入口中心偏差 $\leq 1\text{mm}$ 。

b. Left and right adjustment of car-top-mounting door operator: Place a plumb line at the center mark of the door operator, adjust the door operator so that the center of the door operator coincides with the center of the landing door and car door, and ensure that the deviation between the center of the door operator and the center of the landing door is  $\leq 1\text{mm}$ .

e. 调整门刀的进出确保门刀边沿与层门地坎的水平距离为  $8\pm 1\text{mm}$ , 紧固四个六角法兰面螺栓。

e. Adjust the entry and exit of the door knife to ensure that the horizontal distance between the edge of the door knife and the landing door sill is  $8\pm 1\text{mm}$ , and tighten four hexagonal flange bolts.





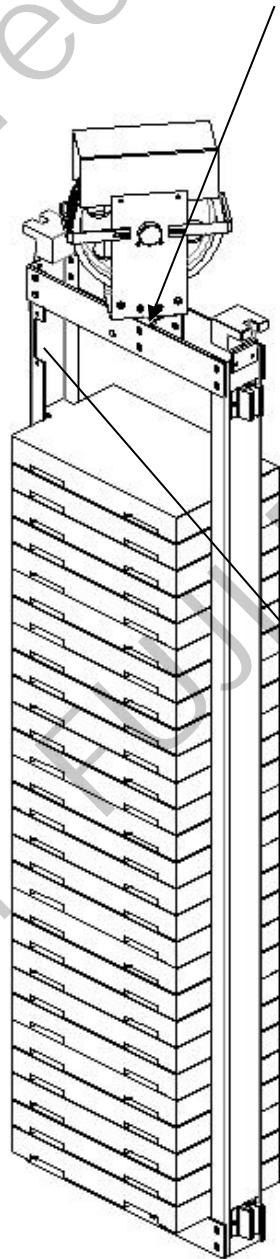
**12.1 对重架安装:****12.1 Installation of counterweight frame:**

a、对重架放入对重导轨框架中，装入规定的对重块，加载完毕后安装对重块防跳装置。

a. Put the counterweight rack into the counterweight rail frame, install the specified counterweight block, and install the counterweight block anti-jumping device after loading.

(对重轮定位完旋转角度后，需点焊固定，避免轮装置旋转。)

(After positioning the rotation angle of the counterweight wheel, it needs to be fixed by spot welding to prevent the wheel device from rotating.)



对重块防跳装置

Anti-jumping device for  
counterweight

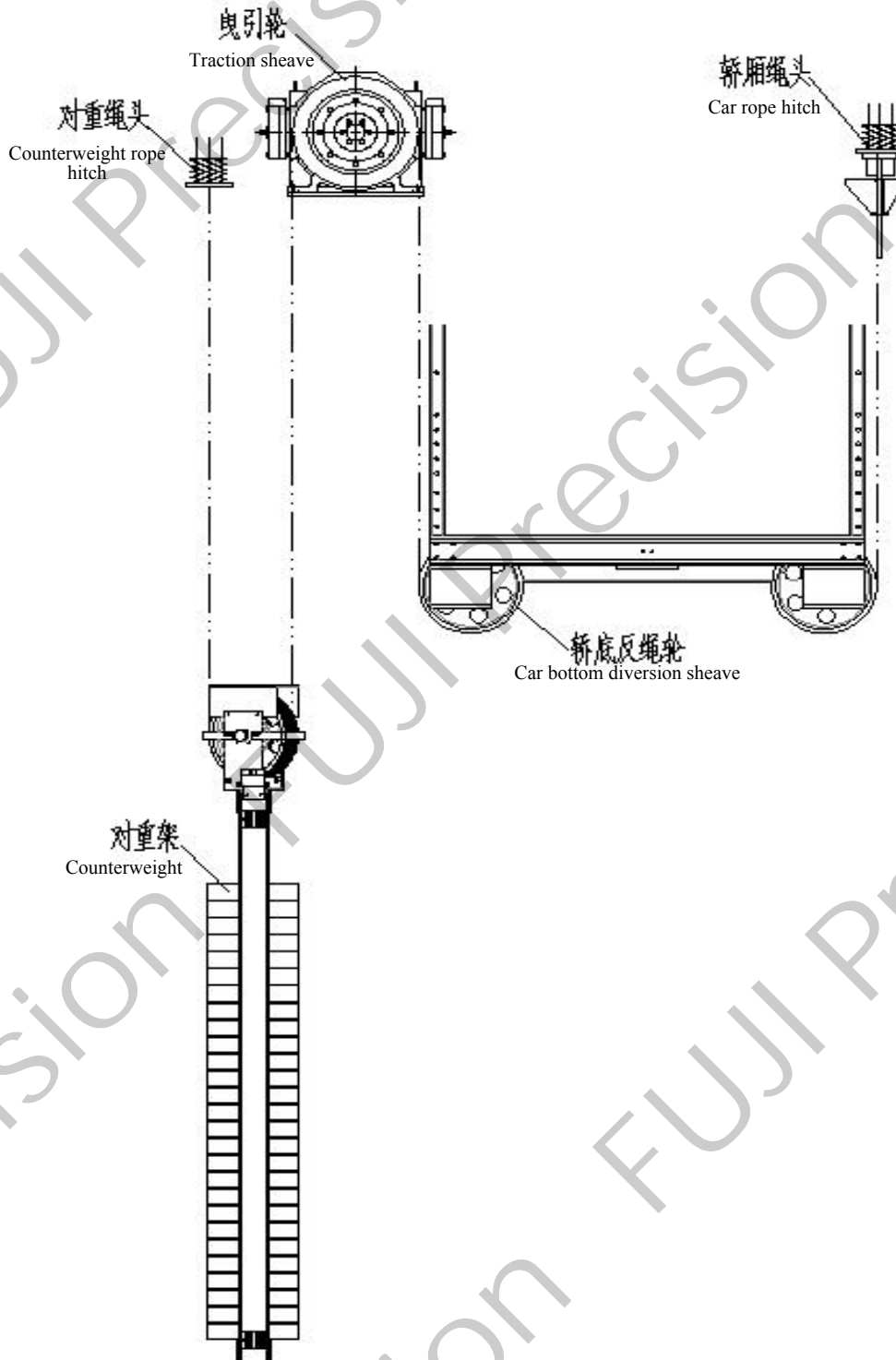


13.1 挂曳引钢丝绳:

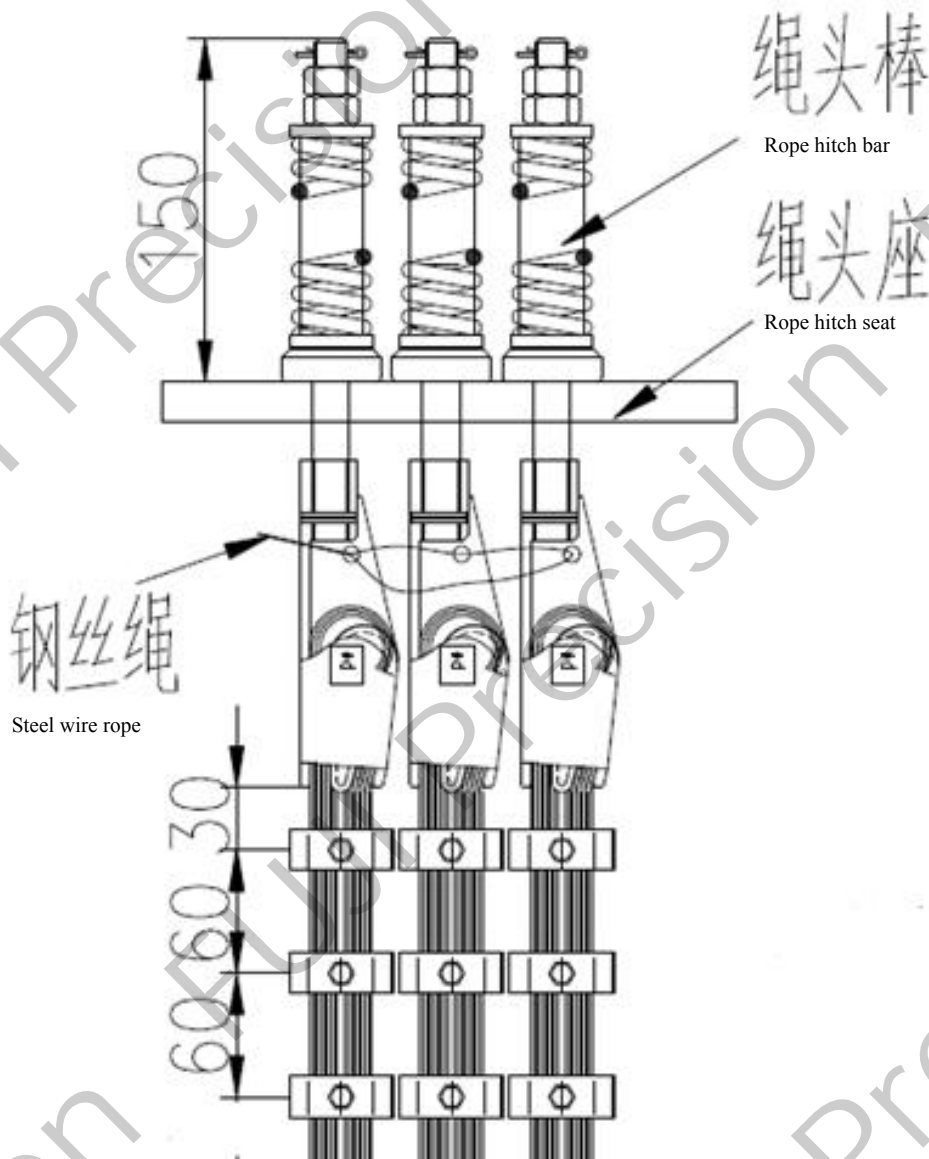
13.1 Hanging the traction wire rope:

a.按图示挂曳引钢丝绳，挂完以后对重架底座至缓冲器距离按土建图上值一致。

a. Hang the traction wire rope as shown in the figure. After hanging, the distance from the base of the counterweight frame to the buffer is consistent with the value on the civil construction drawing.



b. 绳头棒的安装固定示意。  
 b. The installation and fixation diagram of the rope-head rod.



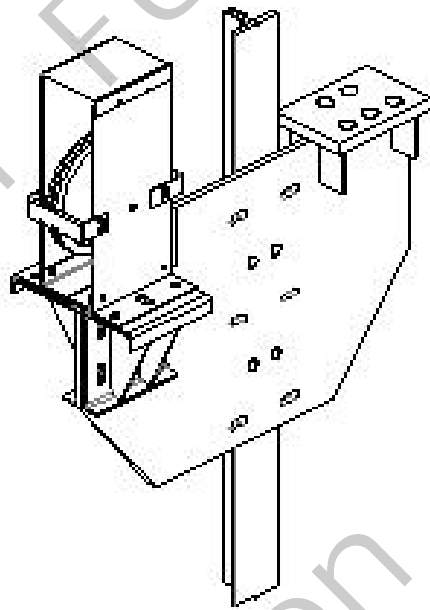
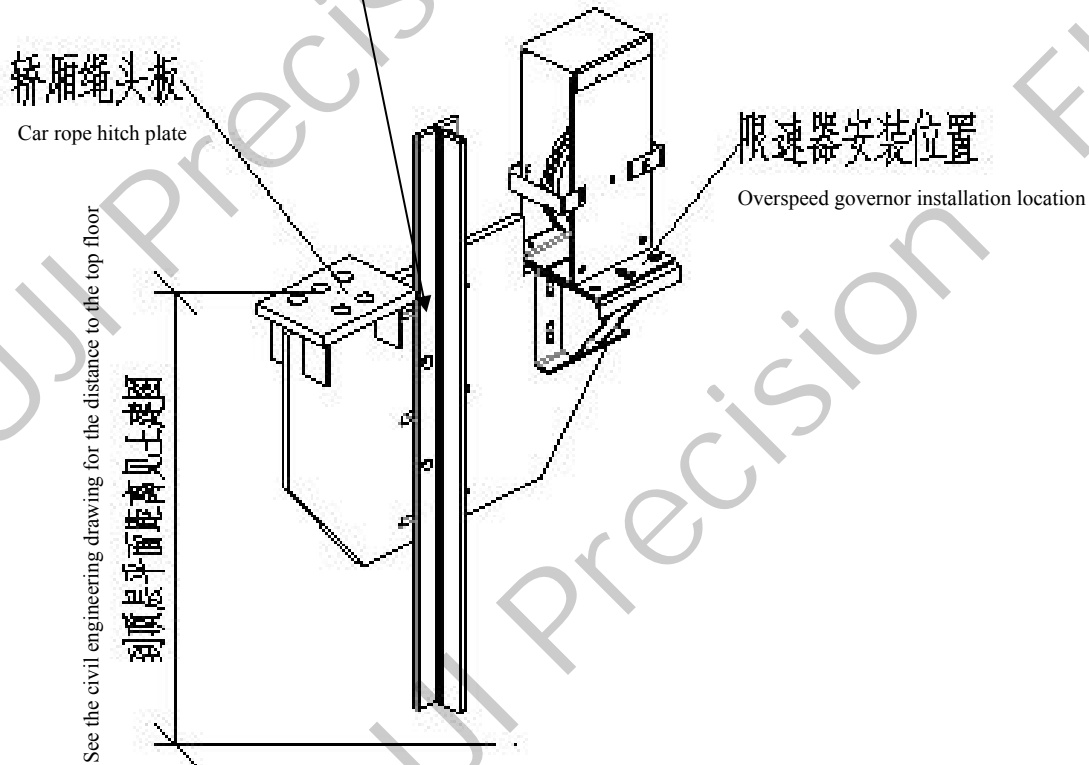
13.2 轿厢绳头座安装固定。

13.2 Installation and fixation of the car rope hitch seat.

a. 轿厢绳头座安装固定。

a. The installation and fixation of car rope hitch seat.

(其中一根 5 米导轨上预留有轿厢绳头座安装定位孔，导轨需计算好长度后再进行切割)  
 (One of the 5-meter guide rails is reserved with a positioning hole for the installation of the car rope hitch seat, and the guide rail needs to be cut after calculating the length)

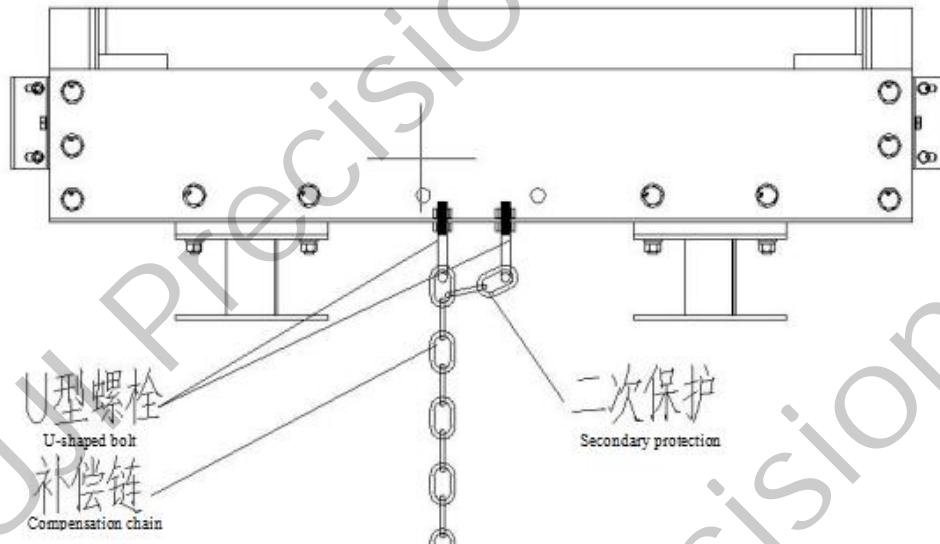


### 14.1 补偿链安装:

#### 14.1 Installation of compensation chain:

a.对重侧补偿链安装。

a. Installation of compensation chain beside counterweight.



b.导向装置安装。

b. Installation of guiding device.



导向装置  
Guiding device

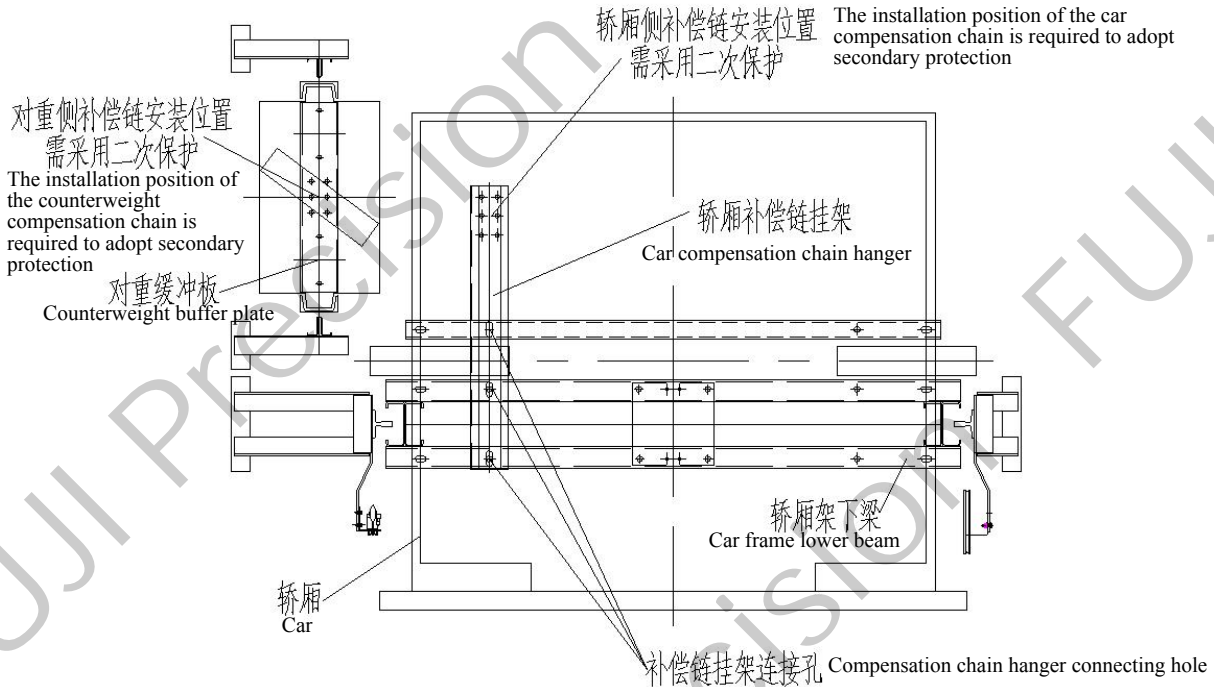
补偿链  
Compensation chain

注意：补偿链最小弯曲直径按外包装标识（例：9mm 包塑补偿链最小允许弯曲直径  $\geq 430\text{mm}$ ）。

Note: The minimum bending diameter of the compensation chain is marked on the outer package (e.g.: the minimum allowable bending diameter of the 9mm plastic-coated compensation chain is  $\geq 430\text{mm}$ ).

c.轿厢补偿链安装图。

c. Installation diagram of car compensation chain.

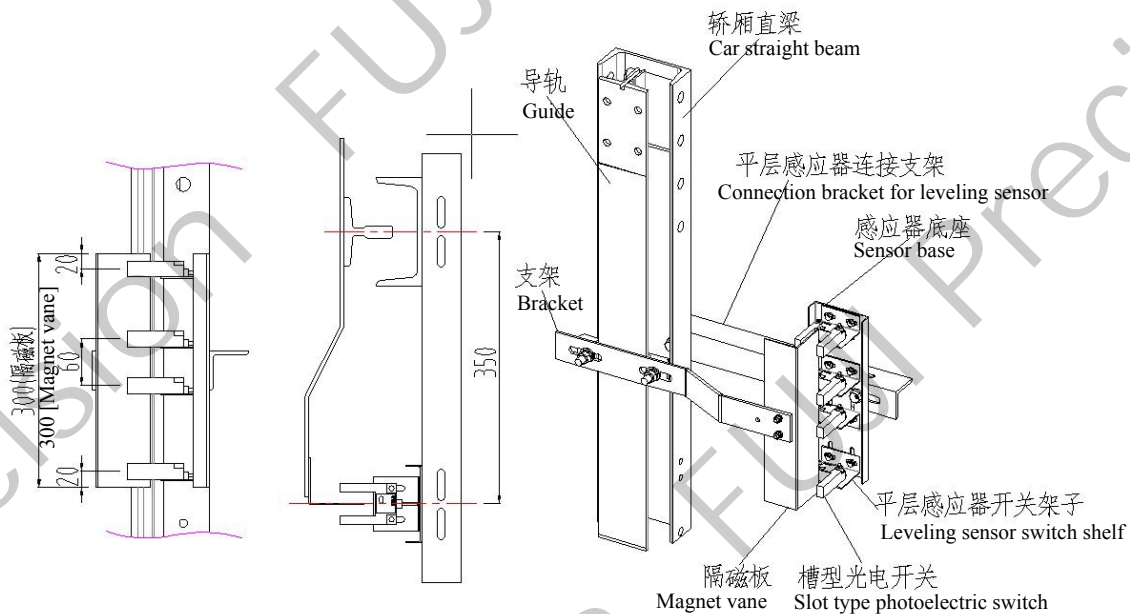


15.1 井道传感器安装:

15.1 Installation of hoistway sensor:

a. 当电梯平层时，调节隔光板在导轨上的安装位置，使之与传感器对准。

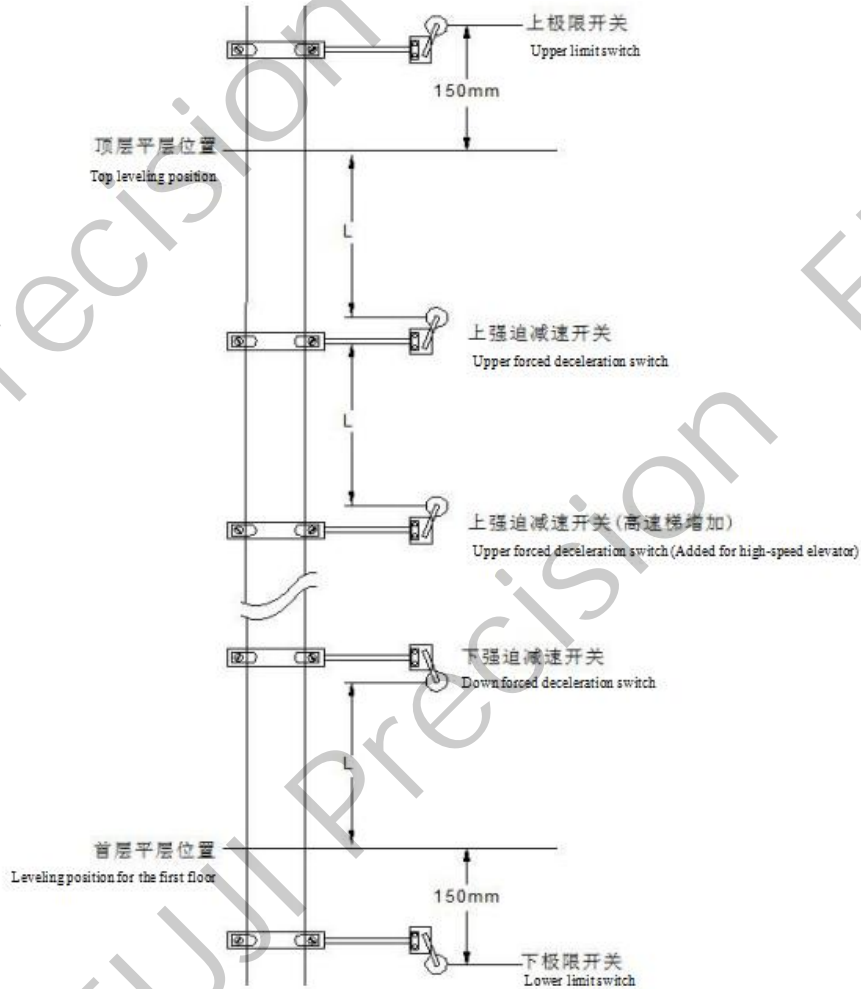
a. When the elevator is leveling, adjust the installation position of the light barrier on the guide rail to align it with the sensor.



第二位置传感器安装在限速器钢丝绳中间，支架连接在上梁导轨板上

The second position sensor is installed in the middle of the speed limiter wire rope, and the bracket is connected to the upper beam guide shoe plate.

15.2 井道限位开关安装:  
15.2 Installation of hoistway limit switch:

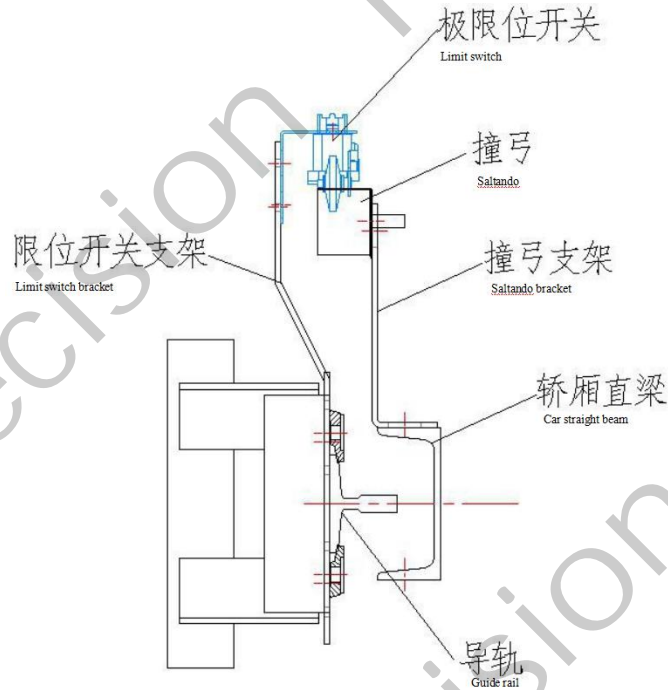


(防越程保护开关安装位置示意图)

(Installation position diagram of the anti-overtravel protection switch)

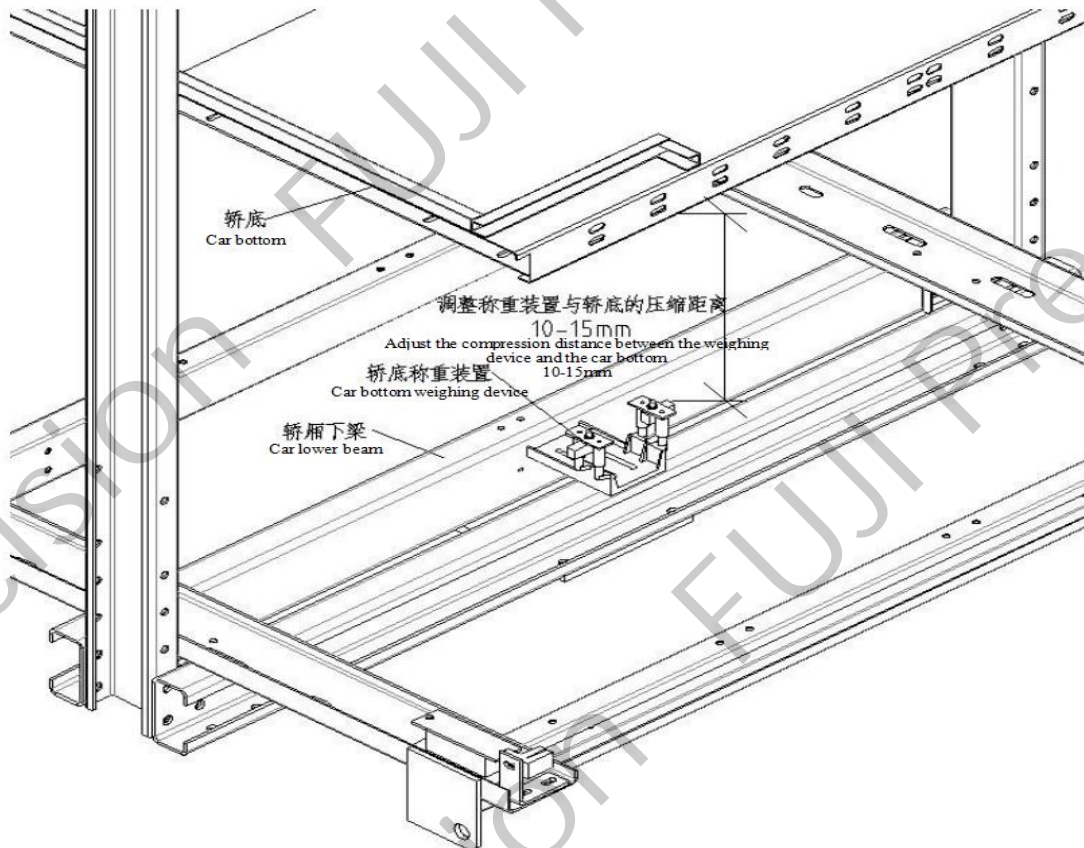
额定梯速(M/S) Rated elevator speed (M/S)	0.4	0.63	1	1.5	1.75	2	2.5	3	3.5	4
L一级强迫减速距离 (M) L level 1 forced deceleration distance (M)	0.6	1	1.4	1.9	2.2	2	2	2	2	2
L二级强迫减速距离 (M) L level 2 forced deceleration distance (M)	无 none	无 none	无 none	无 none	无 none	2.5	4	4	4	4
L三级强迫减速距离 (M) L Level 3 stage forced deceleration distance (M)	无 none	无 none	无 none	无 none	无 none	无 none	无 none	6	8	11





(限位开关、撞弓安装示意图)  
(Schematic diagram of limit switch and saltando installation)

**15.3 称重开关安装:**  
**15.3 Installation of weighing switch:**



(称重开关按图示安装，安装好后按调试说明书调试)

(The weighing switch is installed as shown in the figure, and it is debugged according to the debugging manual after installation)

#### 15.4 厅外呼梯盒安装及联线，安全回路接线：

#### 15.4 The installation and wiring of the HOP outside the hall, and the safety circuit wiring:

a. 呼梯盒底部与地面的距离必须为 1.2m，呼梯盒表面与外墙面的垂直度为 $\pm 1$ mm。

a. The distance between the bottom of the call box and the ground must be 1.2m, and the verticality between the surface of the call box and the outer wall is  $\pm 1$ mm.

b. 电气联线、安全回路接线见电气原理图：

b. See the electrical schematic diagram for electrical wiring and safety circuit wiring:

#### 16.1 最后调整、准备启动运行：

#### 16.1 Final adjustment and preparation for start-up running:

- 安装强迫关门装置

**Install forced door-closing device**

- 调整锁钩间隙

**Adjust the lock hook clearance**

- 调整层门门球

**Adjust the gateball of landing door**

- 调整门刀定位钩

**Adjust the door knife positioning hook**

- 调整同步齿形带

**Adjust the synchronus belt**

- 调整电机多楔带

**Adjust the motor multi-wedge belt**

- 调整联动钢丝绳

**Adjust the linkage wire rope**

- 调整滑板下滚轮

**Adjust the lower roller of the skateboard**

- 固定长门刀（当使用加长门刀时）

**Fixed the extended door knife (when extended door knife is adopted)**

以上关于门系统的调整，具体见门机调试手册；

**For the above adjustment of the door system, please refer to the door operator debugging manual for details;**

- a. 最终检查与试验：见电梯质量检验报告清单

**a. Final inspection and test: Refer to the list of elevator quality inspection reports**

- b. 移交：见用户移交清单

**b. Handover: Refer to the user handover list**