

## Research on Electrical Control of Elevator Brakes

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**Abstract:** As an important equipment of the elevator equipment safety system, the brake directly affects the safety, reliability and comfort of the elevator. In this paper, some related contents of elevator brake electric control are briefly analyzed and expounded, and some elevator brake electric control problems that should be paid attention to during inspection are put forward.

### 1. Introduction

As more and more high-rise buildings rise up, the number of elevators is increasing. The use of elevators provides convenience for people, and it also poses serious threats to people's personal safety and property, such as elevator brakes. Control problems. Therefore, the related problems of brake electric appliance control will be further studied below.

### 2. Elevator brake electrical control analysis

The elevator brake electric control system is an important part of the elevator equipment. It is mainly to ensure that the elevator is in a safe and stable operating state during the long-term operation and reduce the probability of running faults. Therefore, in the process of checking the elevator brake electrical control system, it is necessary to have a clear understanding and understanding of the relevant content, so as to ensure the pertinence and effectiveness of the inspection work, the specific inspection contents are as follows: (1) should be in the elevator The brake is equipped with an electric current control device. Usually, the number of the device is two. At the same time, the elevator brake is in a different state of rest, and the contactor does not show signs of starting. However, if the elevator is in operation, the contactor can be activated according to the situation to avoid elevator operation failure. (2) The action of the brake is mainly realized by the contactor circuit of the contactor. Therefore, if any abnormality occurs in the contactor during the actual operation, the elevator brake cannot effectively realize the control function. Therefore, it is necessary to install not less than 2 contactors in the elevator brake electrical circuit, for example, one contactor as the main brake contactor and the other can be replaced by the auxiliary normally open contact of the power contactor. Maximize the safe and reliable operation of the elevator. (3) Pay attention to check whether the anti-bonding protection of the elevator brake contactor is normal. Under normal circumstances, if the elevator is in a stopped state, any contactor will be disconnected. If a contactor contact is detected and found to be unable to open, the elevator should be stopped immediately.

### 3. Analysis of elevator control electrical control inspection

The electrical control check of the elevator brake is the key to ensure the reliable and safe operation of the elevator. It mainly judges the state of the system operation through the relevant data and information of the electrical control inspection of the elevator brake, and makes corresponding solutions for the abnormal situation existing therein. Effectively solve the problem and ensure the stable and safe operation of the elevator. Therefore, in the following contents, from the aspects of routine inspection problems, contactor inspection, etc., the elevator control electrical control inspection problem is briefly analyzed. The details are as follows:

(1) During the routine inspection, attention should be paid to checking whether the brake parts

are missing, such as loose screws and missing safety pins. At the same time, when the elevator brake is released, whether the brake arms on both sides are at the same time, and the clearance of the release brake should also meet the relevant requirements. Under normal circumstances, the clearance should be greater than  $\pm 0.7\text{mm}$ . In addition, the operating state of the brake arm action is also a focus of the test, mainly for the flexibility of the gate action, if there is a significant lag phenomenon, this indicates that the elevator brake has a hidden trouble. When the relevant phenomenon is found during the inspection, the elevator brake gate action part should be adjusted and maintained accordingly to ensure the normal operation of the elevator brake. (2) If there is oil, dust, rust and corrosion on the iron core of the elevator brake, it may cause an elevator brake accident. Therefore, in the process of routine inspection, this aspect should be given a certain degree of attention, and the elevator brake core should be treated and cleaned regularly to ensure the electrical control performance of the elevator brake to the greatest extent, avoiding operational failures and affecting the safety of the elevator. Sex and reliability.

In the process of electrical control inspection of elevator brakes, there are many contents included, and the contactor is one of them. Then, in the process of contactor inspection, it can be carried out from the following aspects: (1) When the elevator is at rest, if there is no current flowing through the circuit in the brake system and the traction machine system, the electromagnet of the elevator brake system is unattractive. existing. In order to ensure that the risk of safety will not occur in the event of failure of a single contactor, the number of elevator brake electrical control contactors must not be less than two. (2) Elevator brake electrical control By using the contactor, the elevator lines are connected together, so that the elevator running signal and information can be directly fed back to the elevator control center, and the staff can start other contactors according to the feedback data and information. At the same time, after the other contactors are started, it is necessary to adjust the parameters according to the running state of the elevator, in accordance with the operating state of the elevator, thereby ensuring the performance of the elevator brake electrical control and improving the safety of the elevator operation.

#### **4. Electrical control of elevator brakes and line inspection methods**

When the elevator is in the normal running condition, the experiment can meet the corresponding regulations, but it can be operated in both the forward and reverse directions during the maintenance process, which will definitely affect the smooth operation of the brakes, resulting in the elevator being in an incomplete operating state. In the process of controlling the electric shock of each contact device on the brake coil circuit, the control is not independent, as long as there is no way to ensure independent work during the operation, it will have a certain impact on the effect of the brake. In the process of controlling the position of two mutual nitrogen contact devices in the brake coil circuit, when there is such a problem of adhesion, the system lacks feedback processing and monitoring, and the brake device generates corresponding power loss after the adhesion occurs. Protection, and then the elevator can run smoothly in both the forward and reverse directions. In the case of controlling the disadvantages of the two independent contact devices in the reporting coil loop to control the adhesion, the system will certainly make feedback processing or monitoring, the brake will lose power protection, may not pay attention to the fault problem, and then promote The elevator can run smoothly in both the forward and reverse directions. In the case where the two separate contact devices of the control station coil are electrically controlled to cause adhesion, one of the main faults and protections causes the elevator to operate normally, but the other key contacts lack fault recording and protection, resulting in The elevator can run in the opposite direction. There is also a situation that is more harmful, that is, the point of control of the two holding devices on the brake coil circuit, but one can be sucked in all cases, that is, in the implementation of an electrical device can be smoothly controlled Therefore, if the point is stuck, then the brake will not lose power protection, and the elevator will have a great danger such as rolling and topping.

To verify the brake circuit, it is necessary to be aware of the independence of the two contact devices in the brake coil. In the normal operation of the elevator, the two contact devices must be controlled by two independent signals instead of one. Signal control. At the same time, the coil must

not be the same PC signal control, so in the case of a signal control, as long as the fault occurs, the two contact devices have no way to release and run smoothly. However, in the process of operation, is it possible to use all the electromagnetic brake device coil electrical devices as the devices for disconnecting their current electrical appliances, and in the project for researching them, it is possible to treat all the independent electrical appliances as two The same protection, this means that as long as the elevator fee is running, there will be other guarantees that the brake device will not open, so it must be described according to the basis. In the process of specifying the number of electrical devices, it is necessary to fully consider not only the prescribed conditions but also the state in which the elevator is stopped. In the case where the elevator is stopped, the number of brake device current electrical devices is disconnected. There are also two ways to correctly understand the stop state of the elevator. The first one is the normal stop, that is, the elevator stops after it is quickly transported to the set position according to the normal operation. The second is that the fault causes the stop, that is, the stop of the elevator during the maintenance process, or the stop caused by the sudden failure. If in both cases, the stop occurs, but the brake still has current, which means that the electrical device is not A device that cuts off the current of the brake device. In distinguishing whether the operating contactor and the brake contactor are independent, the key issue is that the two regulations must be fully complied with to prove that the two are independent of each other. It is not possible to select the same coil palm actuator current electrical device signal, that is, the two coils must be connected in parallel, or else the control signal will only be indirectly due to the power supply to open the brake and the electrical device coil. It plays a role, so in such a situation, it will definitely lead to the occurrence of electric shock. Because the electric shock adhesion will cause the control device to communicate and open the brake. This shows that only two conditions are met to show that the two are independent of each other.

## 5. Conclusion

Through the further research and elaboration of the elevator brake electric appliance, we know that the elevator must control the elevator brake electrical control work, and only then can the occupant's safety be ensured. Therefore, it is hoped that through the elaboration of this article, it can provide some reference and help for elevator brake electrical control.

## References

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