SCQ120 施工升降机电气说明书

SCQ120 ELECTRICAL MANUAL

中国建筑科学研究院建筑机械化研究分院

Institute of Building Mechanization China Academy of Building Research

单位：廊坊凯博建设机械科技有限公司

Company: CABR Construction Machinery Technology Co., Ltd.

地址：河北省廊坊市开发区创业路 608 号

Add: 608 Chuangye Rd., ETDZ, Langfang, Hebei, 065001, P. R. China

电话：0316-6074668 传真：0316-6077891

Tel: +86 316 6074668 Fax: +86 316 6077891

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前言 Preface

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安装注意事项 Attention in install

- 请勿在下列场所使用：有油烟、导电性尘埃、腐蚀性气体、可燃性气体的场所；暴露于高温、结露的场合。电击、火灾也会导致产品损坏和恶化；
- Do not use it in the following place: be full of oil smoke, conducting dust, corrosive gas, and combustible gas; exposure to the high temperature, dew. Electric shock, fire can also cause the product damage and deterioration.
- 在进行螺丝孔加工和接线时，不要使金属屑和电线头掉入设备的内部，这有可能引起火灾、故障、误操作；
- When processing for screw holes and wiring, do not make the metal filings and wires falling into the device, which may cause a fire, failure, and malfunction.
- 避免带电状态进行接线、插拔电缆插头，否则容易导致电击，或导致电路损坏；安装、配线等作业，请务必在切断全部电源后进行；
- Avoid charged state for wiring and plugging the cable plug, otherwise electric shock or circuit damage will be easily caused. Turn off all of the power supply externally before installation or wiring work in order to avoid electric shock or damage of product.
- 安装和接线必须牢固可靠，接触不良可能导致误动作；
- The installation and wiring should be fixed and reliable, poor contact may cause incorrect operation.

1、概述 Introduction

SCQ120 施工升降机采用变频调速控制技术，实现速度 0～33m/min 无级调速、手动/自动运行，启动、制动平稳。

Based on the AC variable frequency regulating technology， the starting and braking of SC200 hoist are stable and speeds are infinitely variable within the range of 0~33m/min.

SCQ120 施工升降机具有以下特点：

1、启动、制动平稳、无冲击。

2、速度控制精度可达±2～3%，实现了升降机准确低速就位。

3、启动电流是额定电流的 1.50 倍。

4、机械磨损降低。由于启动时无冲击，大大降低了齿轮齿条等的机械磨损，制动器的磨损下降尤其明显。

SCQ120 hoist has traits as follows:

1、Starting and braking are steady with no pounding.

2、Speed control accuracy reachews ±2~3%, the hoist can in position at low speed accurately.

3、Starting current is 150% of rated current

4、Mechanical wear is reduced. Because the hoist has no strike at start，the wear are reduced evidently, especially the brake.

2、供电电源 Power supply

现场供电电源系统要求：三相五线制供电.

供电容量：≥60kVA/台

供电电压：380V±10%

供电频率：50Hz

电机功率：13KW×2/笼

工作电流：56A/笼

启动电流：84A/笼

主电源电缆型号: 3×16+2×6㎜^{2}

Power supply：3 phases +N+E

Power capacity：≥50KVA/double cage

Power Voltage: 380V±10%

Power frequency: 50Hz

Motor power: 13KW×2/cage

Working current: 56A/cage

Starting current: 84A/cage

Power cable model: 3×16+2×6 mm^2

3、升降机的操作 Operation the hoist

3.1、操作介绍 Introduction for Operation

升降机的操作共二个位置：吊笼内和吊笼顶操作。

There are two operation surface, inside cage operation surface and roof operation surface.

3.1.1、笼内操作台 Operate inside cage

将“Operate on cage roof”处插头拔下，关闭吊笼各门。运行前，按“启动”按钮，主接触器吸合、电铃警示，扳动“上升”或“下降”手柄，吊笼运行。遇到紧急情况时，马上按“紧急停止”按钮。升降手柄自带 2 档位速度档位。

Take down the " Operate on cage roof " plug, close all the cage doors. Press “START” button， and then turn “Up” or “Down” handle inside the cage, the hoist run. If emergency, press “Stop” button.The “Up” or “Down” handle has two speeds.

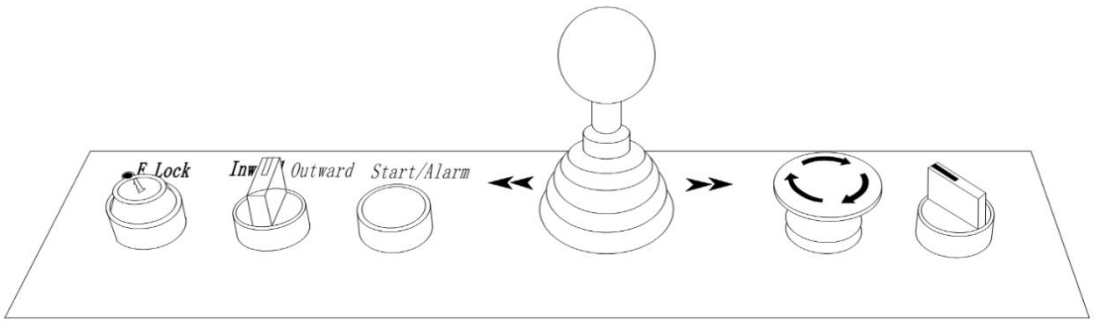


图 Fig.1 笼内操作台 Operate inside cage

3.1.2、笼顶操作台 Operate on cage roof

吊笼顶、笼内操作中，吊笼顶操作具有优先权。在架设、安装和检修时，应在吊笼顶操作，将“Operate on cage roof”插上。

The cage roof operation surface: it has priority. Please the " Operate on cage roof " on the plug into the socket and operate it on the cage roof when installing and checking.

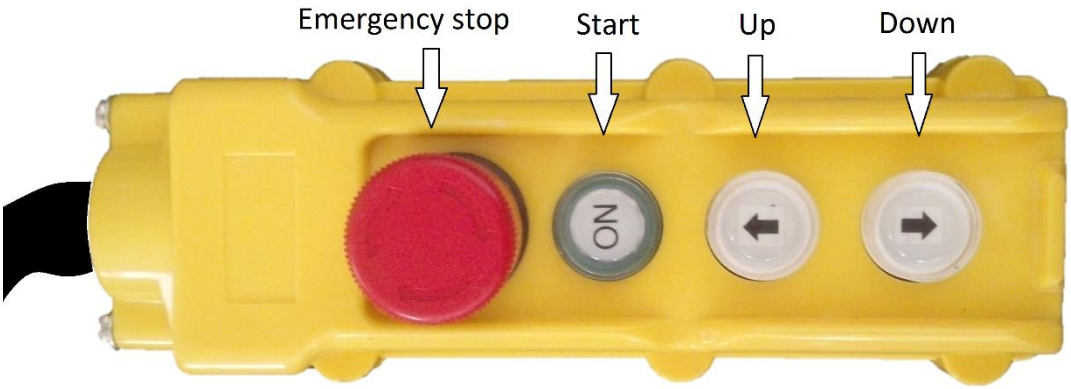


图 Fig.3 笼顶操作台 Operate on cage roof

3.1.3、调平操作 Leveling operation

在安装架设和正常使用过程中，可通过吊笼顶部操作盒的“里调 外调”按钮，可使吊笼调到水平位置。遇到紧急情况时，按“紧急停止”按钮。

During installation, erection and normal use, the cage can be adjusted to the horizontal position through the "inward outward" button on the top of the cage and in cage. In case of emergency, press the "emergency stop" button.

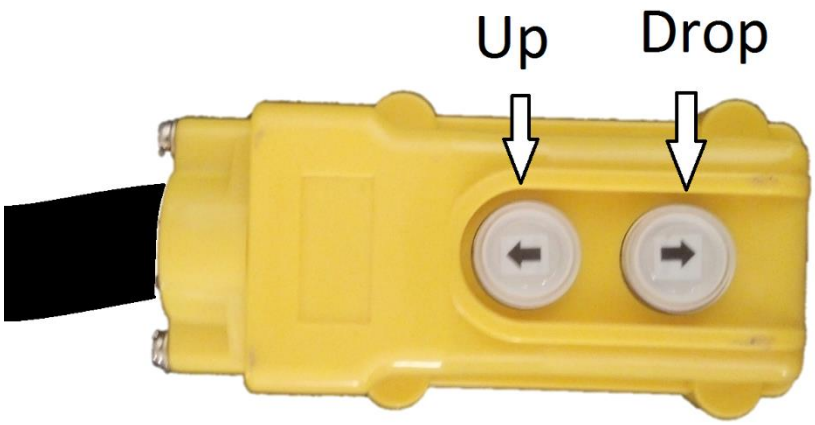
3.2、坠落试验时注意事项 attention for drop test

坠落试验前，请将“检修/笼内”转换开关置于“笼内”位置，然后按“电铃/启动”按钮，使主接触器吸合。所有人员离开吊笼，关闭吊笼各门。

Before the drop test, make the “check/normal” switch become “normal” switch, then press “Bell/Start” button into master contactor closing. All staff leave cage, close all the cage doors.

其他内容详见坠落试验

Drop test refers to “drop test”



坠落试验按钮盒 Operating box for drop test

3.3、称重校准 Weighing the calibration

设备在施工现场安装好后需要进行空笼校准，校准后就能使用称重功能了。校准办法是打开电箱的左门，按一下“空笼校准”按钮即可。

After installation of equipment, weighting is needed for calibration in the empty cage, we can use weighing function after calibration. Calibration method is to open the left door of the electrical box, click on the button of "empty cage calibration".

4、电气图纸 Electric drawing

4.1、电气原理图 Electric principle drawing

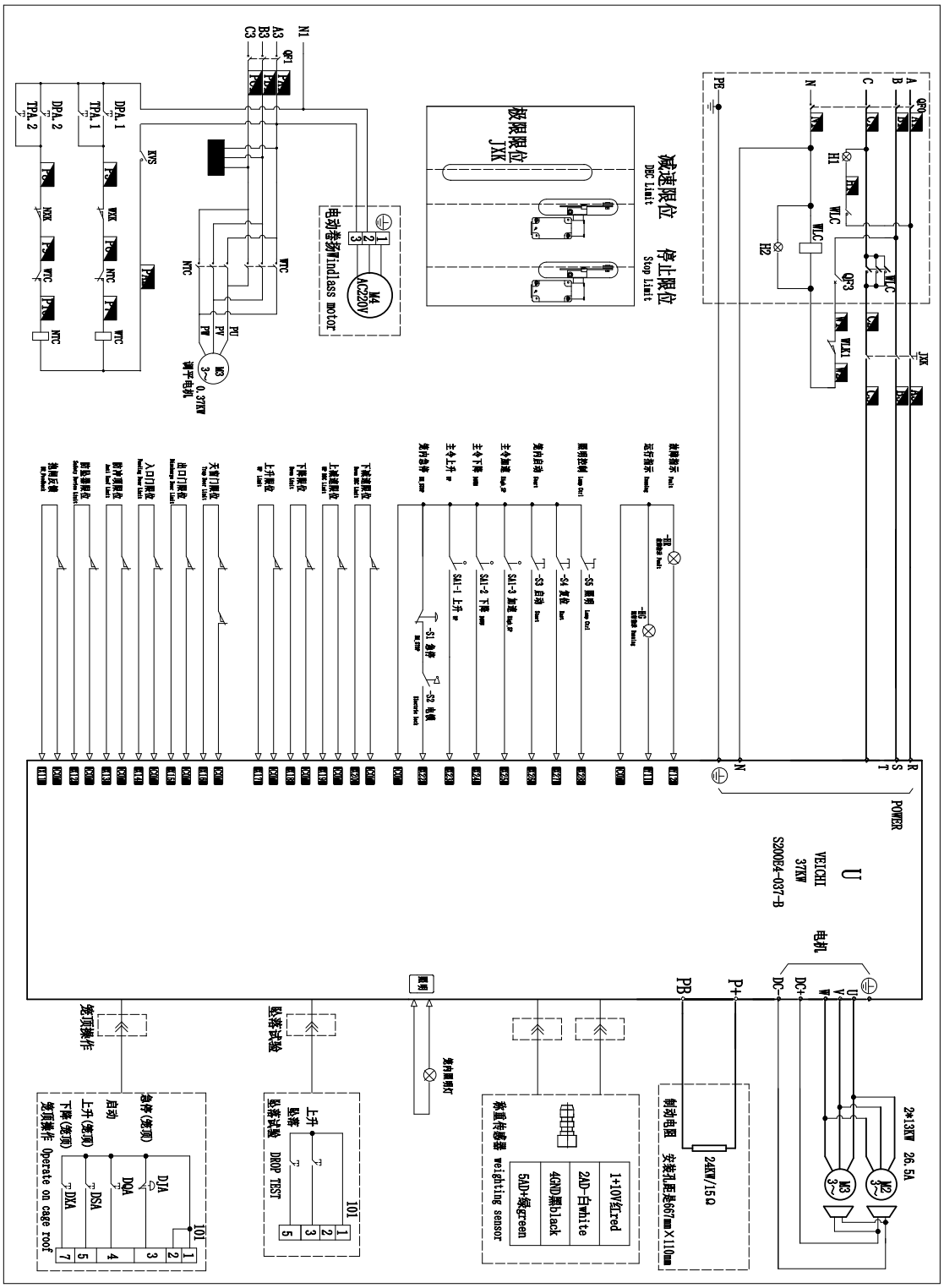


图 Fig.4 电气原理图 Electric principle drawing

5、维护保养与常见故障 Maintenance and common fault

5.1、维护检查 Maintenanceand inspection

5.1.1 日常检查 Daily inspection

1)电机无异常声音和震动

The motor should be not shock or unusual noisy

2)变频器显示的输出电流值不比平常的大。

The output current value shown on the transducer’s monitor displays should not be higher than the normal value.

5.1.2 定期检查 Periodic inspection

定期维修时，请确认以下的项目。

Check the following items during periodic maintenance.

检查时必须切断电源，在变频器的 LCD 以及 LED 显示熄灭后，请经过 5 分钟之后进行。切断电源后若立即触摸端子，则会有触电的危险。

Turn off the power, confirm that the LCD and LED indicators on the front cover be turned off, wait for five minutes, then begin inspection, which avoid electric shock.

表 4 定期检查

Table 4 Periodic inspection

项目 Item	内容 Inspection	解决方法 Resolvent
外部端子，安装螺丝，特别是接插件等等. External terminals，mounting bolt，especially connectors，etc	螺丝是否有松动? Are all screws and bolts tight?	拧紧松动的螺丝 Tighten loose screws and bolts
	接插件有否松动? Are connectors tight?	重新插接 Reconnect the loose connectors.
散热片 Cooling fins	是否积灰尘 Are the fins dirty or dusty?	使用压力(4~6kg.cm^2)的干燥空气清除 Clean off any dirt and dust with an air gun using dry air at a pressure (4~6kg.cm^2)

印刷电路板 PCBs	是否有导电性的灰尘和油腻吸附着？ Is there any conductive dirt or oil mist on the PCBs?	使用压力(4~6kg.cm^2)的干燥空气清除,若不能清除，更换印刷电路板。 Clean off any dirt and dust with an air gun using dry air at a pressure (4~6kg.cm^2). Replace the boards if they cannot be cleaned.
冷却风扇 Cooling fan	有无异常噪音，异常震动，是否超过累积运行时间2万小时 Is there any abnormal noise or vibration or has the total operating time exceeded 20,000 hours.	更换冷却风扇 Replace the cooling fan.
滤波电解电容 Smoothing capacitor	有无变色、异臭等异常 Are there any irregularities，such as discoloration or odor?	更换电解电容或变频器单元 Replace the capacitor or transducer.

5.1.3 零部件的定期保养 Periodic maintenance of parts

变频器由许多零部件构成，为了使变频器能够长时间的正常运行，有必要对照这些零部件进行定期保养、更换零部件。

The transducer concists of many parts，in order to keep the transducer operating normally for a long time，it is necessary to perform period inspections and replace parts according to their service life.

定期检查的期限，因变频器的周围环境、使用状况而不同。以下变频器的保养期限供参考。

Periodic inspection standards vary depending on the transducer’s installation environment and usage conditions. The transducer’s maintenance periods are as follows:

表 5 变频器零部件更换周期

Table 5 Parts replacement period

名称 Name	标准更换周期 Standard replacement period	更换方法 Method
冷却风扇 Cooling fan	2~3年 2 to 3 years	更换新风扇 Replace with new fun.
滤波电解电容 Smoothing capacitor	5年 Five years	更换新电容（检查后决定） Replace with new one,(Determine

		after inspection.)
制动继电器 Brake relay	-	检查后决定 Determine after inspection
保险丝 fuses	10年 ten years	更换新保险丝 Replace with new part
铝介质电容 Aluminum capacitors on PCBs	5年 Five years	更换新印刷电路板 Replace with new board. (Determine after inspection.)

5.2、常见故障 Common faults

5.2.1、根据变频器指示灯 the lights of Inverter

变频器箱门上带有常用开关的指示灯，控制回路电气故障可依据指示灯进行排查。

Inverter with limit switch indicator light on the door, Control circuit fault can be checked.

表 6 变频器指示灯的状态显示

table 6 the lights of Inverter

LED	LED state	变频器指示灯 state
超重预警	亮 light	超重预警 Will be overloaded
超重报警	亮 light	超载 overload
错断相动作 Fault phase action	亮 light	缺相 Fault phase action
防坠急停 Falling emergency stop	亮 light	安全器未动作 safty device isn’t acts
笼内急停 Cage inside emergency stop	亮 light	笼内急停未动作 E.STOP in cage isn’t acts
门限位 Door limit	亮 light	门全部关好 door have been closed
上限位 Up limit	亮 light	上限位未动作 upper limit switch isn’t acts
下限位 Down limit	亮 light	下限位未动作 lower limit switch isn’t acts
减速限位 Deceleration limit	亮 light	减速限位未动作 decelerate switch isn’t acts
主令上升 Up command	亮 light	主令上升 Up command
主令下降 Down command	亮 light	主令下降 Down command
主令加速 Acceleration mode	亮 light	主令加速 Acceleration command

5.2.2、根据变频器故障代码 Variable-frequency Drive

当发生异常情况时，请首先依照下表进行故障诊断。诊断结果为需要更换零

部件、或者无法按照以下内容解决跳闸问题时、请与经销商联系。

When a problem arises, diagnose it in accordance with the following table.If it is found that replacement of parts is required or the problem cannot be solved by any remedy described in the table, contact your Toshiba distributor.

故障代码 error code	内容 description	可能原因 possible causes	对策 Remedies
L.U.1 *L.U. 1*	停机时电压过低 Too low while stop	● 电源电压太低 Power supply is too low ● 电压检测电路异常 Voltage detection circuit is abnormal	● 检查输入电源，排除故障 Check input power, eliminate fault. ● 寻求厂家技术支持 Seek support from factory.
E.LU2 *E.LU2*	运行中欠压 Too low voltage in run	● 电源电压太低 Power supply is too low ● 电网容量太小，或电网内有较大冲击电流；Power capacitance is too small, or there is big impact current in the power grid. ● 变频器内部直流主接触器未吸合。Inner DC main contactor is not closed.	● 检查输入电源，排除故障；Check input input power, eliminate fault. ● 改善供电系统；Improve power-supply system. ● 寻求厂家技术支持。Seek support from factory.
E.oU1 *E.oU 1*	加速过电压 Acc over-voltage	● 电源电压波动超限；Power voltage fluctuation over limit. ● 启动正在旋转的电机。Start running motor.	● 检测电网电压，排除故障；Detect power voltage and eliminate fault. ● 等电机完全停止后再启动、将[F1.00]设置为 1 或者 2 。Restart motor until it totally stop. Set F1.00 as 1or 2.
E.oU2 *E.oU2*	减速中过压 Dec over-voltage	● 减速时间设置过短；Deceleration time is too short. ● 负载势能或惯量太大；Load potential energy or inertia is too large. ● 电源电压波动超限。Power voltage fluctuation over limit.	● 适当延长减速时间；Prolong deceleration time properly. ● 减少负载惯量，或增大变频器容量，或增设制动单元；Reduce load inertia or improve inverter capacitance or add braking unit.

			● 检查输入电源，排除故障。Detect input power and clear fault.
E.oU3 *E.oU3*	恒速中过压 Constant speed over-voltage	电源电压波动超限。 Power voltage fluctuation over limit.	● 检查输入电源，排除故障；Detect input power voltage and eliminate fault. ● 安装输入电抗器。Install input reactor.
E.oU4 *E.oU4*	停机时过压 Over-voltage while stop	电源电压波动超限。 Power voltage fluctuation over limit.	● 检查输入电源，排除故障；Detect input power voltage and eliminate fault. ● 寻求厂家技术支持。Seek support from factory.
E.oC1 *E.oC1*	加速中过流 Acc over-current	● 加速时间设置过短；Acceleration time is too short. ● 启动正在旋转的电机；Start running motor. ● V/F 曲线设定不适或转矩提升值过高；V/F curve setting is not suitable. Or torque boost too high. ● 变频器容量偏小。Inverter capacitance is too small.	● 适当延长加速时间；Prolong acc time. ● 等电机完全停止后再启动、将[F1.00]设置为 1 或者 2；Restart motor until it totally stop. Set F1.00 as 1or 2. ● 重新设定 V/F 曲线或转矩提升值；Reset V/F curve or torque boost value. ● 选用容量等级匹配的变频器。Select inverter with right capacitance.
E.oC2 *E.oC2*	减速过电流 Dec over-current	● 减速时间设置过短；Deceleration time is too short. ● 势能负载或负载惯量较大；Load potential energy or inertia is too large. ● 变频器容量偏小。Power voltage fluctuation over limit.	● 适当延长减速时间；Prolong deceleration time. ● 外接制动电阻或制动单元；Connect external braking resistance or braking unit. ● 选用容量等级匹配的变频器。Select inverter with right capacitance.
E.oC3 *E.oC3*	恒速过电流 Constant speed over-current	● 负载突变；Sudden load change. ● 电网电压偏低。Power grid voltage is too low.	● 检查负载的变化情况并消除之；Check load change and eliminate it. ● 检查输入电源，排除故障。Check input power, eliminate fault.
E.oL1 *E.oL1*	电机过载	● V/F 曲线设定不适或转矩提升值过高；V/F curve setting is not suitable. Or torque boost	● 重新设定 V/F 曲线或转矩提升值；Reset V/F curve or torque boost value. ● 检查输入电源；Check

		too high. ● 电网电压偏低；Power grid voltage is too low. ● 电机过载保护系数设置不当；Unright overload protection setting. ● 电机堵转运行或负载太重；Locked-rotor run or too heavy load. ● 通用电机长时间低速运行。Universal motor long time low speed run.	input power, eliminate fault. ● [F5.06/18]参数设置不合理；Unreasonable F5.06 setting. ● 调整负载工况或选用容量等级匹配的变频器；Adjust load or select inverter with right capacitance. ● 需要长期低速运行时，请选择变频专用电机。If need long low-speed operation, please choose special motor for inverter.
E.oL2 *E.oL2*	变频器过载 Inverter over-load	● 负载太重 Load is too heavy. ● 加速时间设置过短；Acceleration time is too short. ● 启动正在旋转的电机；Start running motor. ● V/F 曲线设定不适或转矩提升值过高。V/F curve setting is not suitable. Or torque boost too high.	● 选用容量等级匹配的变频器；Select inverter with right capacitance. ● 适当延长加速时间；Prolong acceleration time ● 等电机完全停止后再启动、将[F1.00]设置为 1 或者 2；Restart motor util it totally stop. Set F1.00 as 1or2. ● 重新设定 V/F 曲线或转矩提升值。Reset V/F curve or torque boost value.
E. SC *E. SC*	系统异常 System abnormality	● 加速时间设置过短；Acceleration time is too short. ● 变频器输出相间或对地短路；Short circuit between inverter output phases or earth. ● 模块损坏；Module is damaged. ● 电磁干扰。Electromagnetic disturb.	● 适当延长加速时间；Prolong acceleration time properly. ● 检查外围设备，排除故障后重启；Check periphery equipments and restart afrer fault eliminating. ● 寻求厂家技术支持；Seek support from factory. ● 检查系统布线、接地、屏蔽等情况并按照要求处理。Check system wiring, earth, shield and deal as required.
E.oH1 *E.oH1* E.oH2 *E.oH2*	逆变器过热 Inverter over-heat 整流桥过热 Rectifier over-heat	● 环境温度过高；Temperature is too high. ● 风道堵塞；Air channel is blocked. ● 风扇连线插件松动；Fan	● 使变频器运行环境符合规格要求；Make the environment meet the requirement. ● 疏通风道；Clear the air

		connection parts is loose. ● 风扇损坏；Fan is damaged. ● 温度检测电路故障。Temperature detection circuit fault	channel. ● 检查并重新连线；Check and reconnect the wire ● 更换同型号风扇；Change the same new fan. ● 寻求厂家技术支持。Seek support from factory.
E.TE1 E.tE1	电机静态检测故障 Motor static detection fault	● 电机检测超时；Detection overtime ● 电机旋转中启动静态检测；Start static detection while motor is running. ● 电机与变频器容量差别过大；Capacitance difference is too big between motor and inverter. ● 电机参数设置错误。Motor parameter setting mistake.	● 检查电机连线；Check motor connection wire. ● 待电机停稳后进行检测；Detect after motor stopping totally. ● 更换变频器型号；Change inverter model. ● 按电机铭牌重新设置。Reset parameter according to nameplate.
E.TE2 E.tE2	电机旋转检测故障 Moror rotation detection fault	● 电机旋转中启动检测；Detect while motor is running. ● 电机带负载检测；Detect with load. ● 电机检测超时；Detection overtime ● 电机与变频器容量差别过大；Capacitance difference is too big between motor and inverter. ● 电机参数设置错误。Motor parameter setting mistake.	● 待电机停稳后进行检测；Detect after motor stop totally. ● 脱开电机负载重新检测；Re-detect without load. ● 检查电机连线；Check motor connection wire. ● 更换变频器型号；Change inverter model. ● 按电机铭牌重新设置。Reset parameter according to nameplate.
E.EEP E.EEP	存储故障 Memory fault	● 存储期间电磁干扰；Electromagnetic disturb in memory period. ● EEPROM 损坏 EEPROM damage.	● 重新输入并存储；resume load and save. ● 寻求厂家技术支持。Seek support from factory.
LIFE LIFE	GPS 动作 Reserved		寻求厂家技术支持 Seek support from factory.
E.ILF E.ILF	错断相故障 Input side open phase	变频器三相输入电源缺相。3-phase input power open phase.	● 检查三相输入电源电压及相数；Check 3-phase power supply and the phase.

			● 检查三相输入电源配线。Check 3-phase power supply wiring.
E.oLF *E.oLF*	输出侧缺相 Ouput side open phase	变频器三相输出缺相。3-phase output power open phase	● 检查三相输出电压及电流；Check 3-phase output voltage and current. ● 检查电机配线。Check wiring.
E.Gnd *E.Gnd*	输出接地 Output earth	变频器输出侧对地短路。Output earth terminal short circuit.	检查接线、电机绝缘。Check wiring and insulation.
E.HAL *E.HAL*	电流检测故障 Current detection fault	● 检测电路故障；Detect circuit fault. ● 电机相间不平衡。Phase imbalance	● 寻求技术支持；Seek for technic support. ● 检查电机及配线。Check motor and wiring.
E. EF *E. EF*	GPS 动作 Inverter external fault	GPS 动作远程控制 Peripheral equipment fault protection.	寻求厂家技术支持 Check peripheral equipment.
E.Pan *E.PAn*	键盘连接故障 Keyboard connect fault	● 键盘连线故障；Keyboard wire fault. ● 键盘组件损坏。Keyboard component damage.	● 检查键盘连线；Check keyboard wire. ● 寻求厂家技术支持。Seek support from factory.
E. CE *E. CE*	Rs485 通讯异常 Rs485communication fault	● 波特率设置不当；Unsuitable baud rate setting. ● 通讯连线断线；Communication wire breaks. ● 通讯格式与上位机不匹配。Communication format does not match upper machine.	● 设置匹配的波特率；Set suitable baud rate setting. ● 检查通讯连线；Check communication wire. ● 设置匹配的通讯格式。Set right communication format.
E.CPE *E.CPE*	参数拷贝异常 Parameter copy fault	● 参数拷贝通讯错误；Parameter copy communication is fault. ● 键盘连线故障。Copy keyboard is not match the inverter.	● 检查连线；Check wire. ● 寻求厂家技术支持。Select the specified external keyboard model.

5.2.3、其他常见电气故障 El.problem and probable Causes

表 7 常见故障分析

Table 7 El.problem and probable causes

	故障现象(Electric Problem)	故障分析(Analysis)
1	总电源开关合闸即跳 MCCB can not on	电路内部损伤，短路或相线接地 Damaged cable，short circuit，phase terminals grounded
2	按操作台启动按钮无法启动。 Press the start button but can not running	A. 检查操作台钥匙开关是否在“开”的位置。Check the key switch if in “ON” state or not. B. 检查急停开关是否旋开弹出。Check the emergency switch if unscrew pop- up or not. C. 检查防坠器是否动作或其常闭触点是否断开。Check the safety catcher is moving or not, or see the contactor is disconnect or not. D. 检查监控面板“笼内急停”、“防坠急停”指示灯是否处于常亮状态。Check the monitor panel “Emergency stop in cage” “Emergency stop in case of drop” indicator is “on” or not. E. 按“启动”按钮时，观察 MCU 板“启动”指示灯是否亮。Check the “start” button, and observe MCU board “start” is “on” or not.
3	电机启动困难，并有异常响声 Electric motor start difficultly with unusual noise.	1. 制动器没有打开 Brake can not work 2. 严重超载 Overload 3. 电源功率不足，或工地电源距升降机过远，供电电缆截面过小，致使启动压降过大。Power is not enough，or the power is too far，the cable is too small，result in the voltage decline too much. 4、一个电机反向。One motor reverse
4	上、下限位开关不起作用．但极限开关起作用 The cage can not stop automatic by the limit switch but can stop by 3 phases switch	1.上下限位开关损坏 Up and down limit switches are damaged． 2.限位碰块相对位置错误 Limit cam relative location is not correct。
5	操作时动作有时正常，有时不正常 The hoist travels abnormally at intervals	线路接触不好或虚接 Circuitry connection is Loosened

	故障现象(Electric Problem)	故障分析(Analysis)
6	吊笼上下运行时有自停现象 The cage stops suddenly	1. 门限位开关接触不良 Door limit switches fault. 2. 线路接触不良 Circuitry connection is Loosened
7	电机发烫 Motor is too hot	1.制动器没完全打开 Brake is not synchronized 2.升降机长时间超载运行 Hoist run overload long time. 3.起、制动过于频繁 It is frequency for starting and brake 4.电压过低或过高 Power voltage is very low or high.
8	启动正常，操作主令手柄无法上行。 Normal start, the main operating handle can not upward.	A. 主令手柄推到上行位置时，观察监控面板“主令上升”指示灯是否动作（亮）。Push the main handle to upward, and observe MCU board “start” is “on” or not. B. 检查监控面板“上限位”指示是否正常（亮）。Check the monitor panel “upper limit” indicator normal or not (on). C. 检查监控面板“门限位”指示灯是否正常（亮）。Check the monitor panel “threshold” indicator normal or not (on). D. 上述如正常，观察监控面板↑有无上行状态指示。If above all is normal, then observe monitor panel ↑,and see if have the upward state indicator or not.
9	启动正常，操作主令手柄无法下行。 Normal start, the main operating handle can not downward.	A. 主令手柄推到下行位置时，观察监控面板 “主令下降”指示灯是否动作（亮）Push the main handle to downward, and observe MCU board “start” is “on” or not. B. 目测吊笼是否已在最底层位置，并检查监控面板“下限位”指示是否正常（亮）。Check the monitor panel “upper limit” indicator normal or not (on). C. 检查监控面板“门限位”指示灯是否正常（亮）。Check the monitor panel, “threshold” indicator normal or not. D. 上述如正常，观察监控面板↓有无下行状态指示。If above all is normal, then observe monitor panel ↓, and see if have the downward state indicator or not.

	故障现象(Electric Problem)	故障分析(Analysis)
10	吊笼运行时震动大 The cage is bigger shock when it is running.	1.齿轮啮合侧隙太大或太小 Engagement play is big or small between pinion and rack. 2. 滚轮间隙太小 The clearance between the guide roller and the mast pipe is small 3.齿轮、齿条啮合缺少润滑油 Engagement of pinion and rack is short of lubrication oil 4.标准节齿条连接处误差大 The link error between racks of mast is big.
11	吊笼启动或停止时有跳动现象 The cage shock suddenly when it is starting and stopping	电机与减速机间联轴器内橡胶损坏。 Rubber between shaft coupling of motor and reducing devices is broken down
12	运行停止时下滑严重 Serious decline stopped running	1.制动力矩不足 The brake torque of brake is too small 2、制动接触器粘连 Brake contactor damage
13	升降机运行中突然自动停止，不能继续运行 The hoist stop suddenly when works，and can’t start	变频器自动保护，查明原因前，不得运行 The transducer protect，don’t run the hoist before check the account
14	上或下行只有低速档无高速档。 Upward or downward only have low speed ,no have high speed	A. 将主令手柄推至向上(下)最大位置，并观察监控面板上“主令加速”指示灯是否正常(亮)。Push the main handle to the max. position(upward and downward),and observe monitor panel “Lord to accelerate” indicator normal or not. B. 目测吊笼是否仍位于在低速区间位置。并观察监控面板“减速限位”指示灯是否常(亮)。Attention the cage still in low speed position or not, and observe monitor panel “decelerate limit” indicator normal or not. C. 如吊笼已经离开低速区间位置，“减速限位”指示灯仍不亮，则检查减速限位开关是否接触不良或机械原因卡住不能复位。If cage already away from the low speed position, “decelerate limit” indicator still not “on”, then check the speed limit switch if have bad contact or machinery reason.

	故障现象(Electric Problem)	故障分析(Analysis)
15	运行时舒适度很差，上行时有“下坠”现象，上行时有“过冲”现象。 Bad comfort level in running state, having drop and over pulse phenomenon when upward.	“上升”和“下降”指令接反导致， 即：接线时一定要保证主令手柄上行接通时升降机处于上升状态、且键盘 FWD 键于常亮状态 ，主令手柄下行接通时升降机处于在下行状态，且键盘 FWD 键处于闪烁状态。 Caused by wrong connection between command “upward” and “downward”:When connect the main handle upward, make sure the lift is on “upward” state and the key FWD is always on “ON ”state. When connect the main handle upward, make sure the lift is on “downward” state and the key FWD is always on “twinkle ” state.
16	上电即跳底（下）笼箱或工地一级电箱漏电断路器。Power-on trip the cage or residual-current circuit breaker.	A. 电机有接外对地短路、碰壳、进水现象。检查电机绝缘。Motor have the “outside short circuit”, “case”, “water” phenomenon, check the motor insulation. B. 外接制动电阻对地短路、碰壳。External connection of brake resistor have the short circuit to earth, case.

	故障现象(Electric Problem)	故障分析(Analysis)
17	运行中偶尔跳工地一级电箱漏电断路器。rip the residual-current circuit breaker while in running occasionally.	A. 由于变频器的输出是高频 PWM 信号，因此会产生一定的高频漏电流，请选用电流灵敏度为 200mA 以上的，动作时间为>0.1S 以上的漏电开关。As for the output signal of inverter is high frequency PWM, so will generate a certain mount of high frequency leakage current, please choose residual-current circuit breaker which current sensitivity above 200mA,action time more than 0.1S. B. 选用 B 类漏电保护开关，具有高频滤波和延时功能的脉冲电流敏感型的 RCD。Choose B type leakage protection switch, and pulse current sensitivity RCD which have high frequency filter and delay function. C. 调参数“F0.17=0.7-1.0, F0.18=1000”可显著减少跳漏电断路器的概率,但电机噪声会明显增大。Adjust parameter “F0.17=0.7-1.0, F0.18=1000” can reduce the trip time of leakage breaker, but motor noise will increase. D. 如跳工地一级漏电断路器，请检查是否分支线另接入了其它用电设备，如有则尽量断开。Please check if the branch line have connect other equipment or not, if connect, pls disconnect.
18	上电变频器无显示 Power on but inverter no display	A. 首先确认变频器输入端 R、S、T 电源电压是否正常。First confirm input R,S,T, supply voltage if normal or not. B. 若 R、S、T 输入电源正常，则说明一体机软起动电阻（20Ω/80W）烧坏。If R,S,T input normal, then show the soft starter resistance(20Ω/80W) broken. C. 软起动电阻烧坏是有原因的：检查制动电阻是否对地短路而构成回路，在上电瞬间接触器还没有吸合之前，导致大电流通过软启动电阻而烧坏。The soft starter resistance broken have some reason: check the resistance if short circuit or form a circuit, on power-on moment and before contactor close, big current flow the soft starter resistance.

	故障现象(Electric Problem)	故障分析(Analysis)
19	运行即跳 E.ILF 故障 Running and display E.ILF fault	检查三相电源是否缺相或三相电压不平衡现象。Check the 3 phase power if have phase loss or voltage unbalance phenomenon.
20	运行即跳 E.oLF 故障 Running and display E.oLF fault	A． 检查电机线是否有断线或一相接触不良。Check the motor connection line. B． 测量变频器三相输出电压是否平衡。Measure inverter 3 phase output voltage if balance.
21	上行正常，下行变频器报 E. SC 短路故障。Upward normal, but downward 60cm inverter display E. SC short circuit fault.	外接制动电阻短路。External brake resistance short circuit.
22	主令手柄给定上行或下行时，立即跳 E. SC 短路故障。Main handle run the upward or downward, inverter display short circuit fault.	A． 拆除电机线，如恢复正常，可能某一台电机绕组有匝间、相间有短路故障，或电机电缆有相间、对地短路现象。Dismantle motor line, if get normal, then one of the motor winding have the short circuit fault. B． 拆除电机线，如恢复正常，可能电机参数设置错误。Dismantle motor line, if get normal, then motor parameter have wrong setting. C． 拆除电机线，仍然跳故障。说明变频器内部有短路现象。Dismantle motor line, still in fault, then the inner part of inverter have the short circuit.
23	运行中跳 E.LU2“欠压”故障。“under-voltage” fault while in running state	A. 工地变压器容量太小，电缆太长、线径过细，导致运行时产生很大的压降。A. Transformer capacity is too small, cable too long, wire diameter too thin, these caused S200 building hoist integration special-purpose drive manual 28 big pressure drop while in running. B. 一体机内部主接触器未吸合。Main contactor not closed.

	故障现象(Electric Problem)	故障分析(Analysis)
24	运行中跳 E.oC1 或 E.oC3“过流”故障“Over current” fault E.oC and E.oC3 while in running state	A. 检查刹车是否可以正常顺利打开。Check the brake is open or not. B. 检查机械部分是否有卡住、卡死现象。Check the machinery part have the phenomenon of stuck-locked or not. C. 电机及电缆是否存在有外皮破损、绕组匝间、相间、对地短路现象。Check the cable and see if have broken or short circuit. D. 检查电源电压是否过低或过高。Check the power voltage if too low or too high.
25	运行中跳 E.oL1 或 E.oL2“过载”故障。“Over load” fault E.oL1 and E.oL2 while in running state	A. 负载太重，请检查是否超载运行或机械方面故障。Too heavy load, check if overload running or other machinery fault. B. 刹车没有动作或没有及时打开，请检查。Brake is no action or not open, pls check. C. 电网电压太低。Grid voltage too low.
26	运行中跳 E.oH1 或 E.oH2“过热”故障。“Over heat” fault E.oH1 and E.oH2 while in running state	A. 检查变频器运行时风机有没有正常工作，如风扇不能正常运行，需更换冷却风扇。Check fan is running or not, if not run,change the cooling fan. B. 变频器是否通风不良。风道堵塞，需要清理。If the air duct block or not. C. 周围环境温度是否太高。If the environment temperature is too high or not.
27	向下运行时或主令手柄回零时跳 E.oU1、E.oU2、E.oU3 “过压”故障。Downward while in running or main handle drop to zero E.oU1、E.oU2、E.oU3 ”over voltage” fault.	A. 制动电阻烧断或电线脱开。Resistance broken or electric line disjointed. B. 制动电阻选型阻值过大，功率偏小、材料易发生“温飘”现象。Sheet resistance of the resistance is too high, power too low, easy to get error.