

培训资料 (Training Files)

AMWP-8100



浙江鼎力机械股份有限公司

Zhejiang Dingli Machinery Co.,Ltd

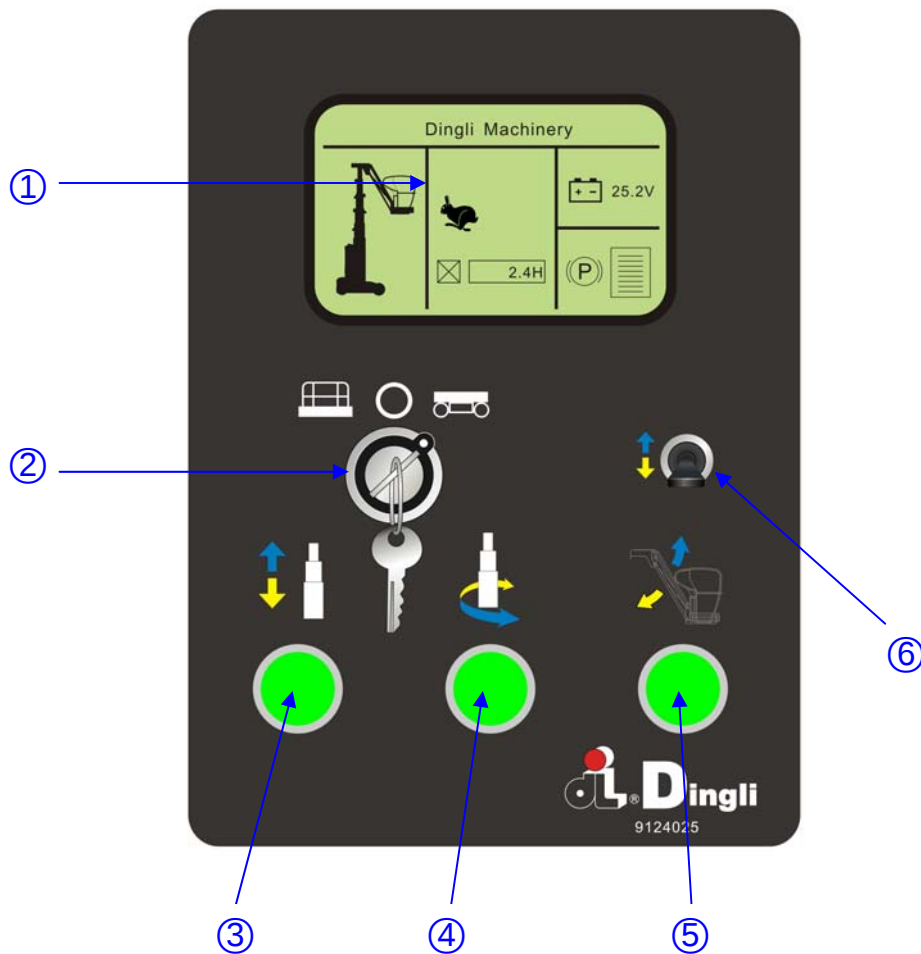
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操作

OPERATION

1、地面控制器（Ground Control Panel）



1 显示屏（LED）

信息显示和参数设定（Information display and parameters setting）

2 控制台选择开关（Key switch for platform / off / ground control selection）

3 臂式升降选择按钮

（Mast telescoping select button）

持续按住按钮激活桅柱升降功能
（Push and hold the button to active Mast elevation/lowering function）

4 回转选择按钮（Mast slew select button）

持续按住按钮激活桅柱回转功能

（Push and hold the button to active Mast elevation/lowering function）

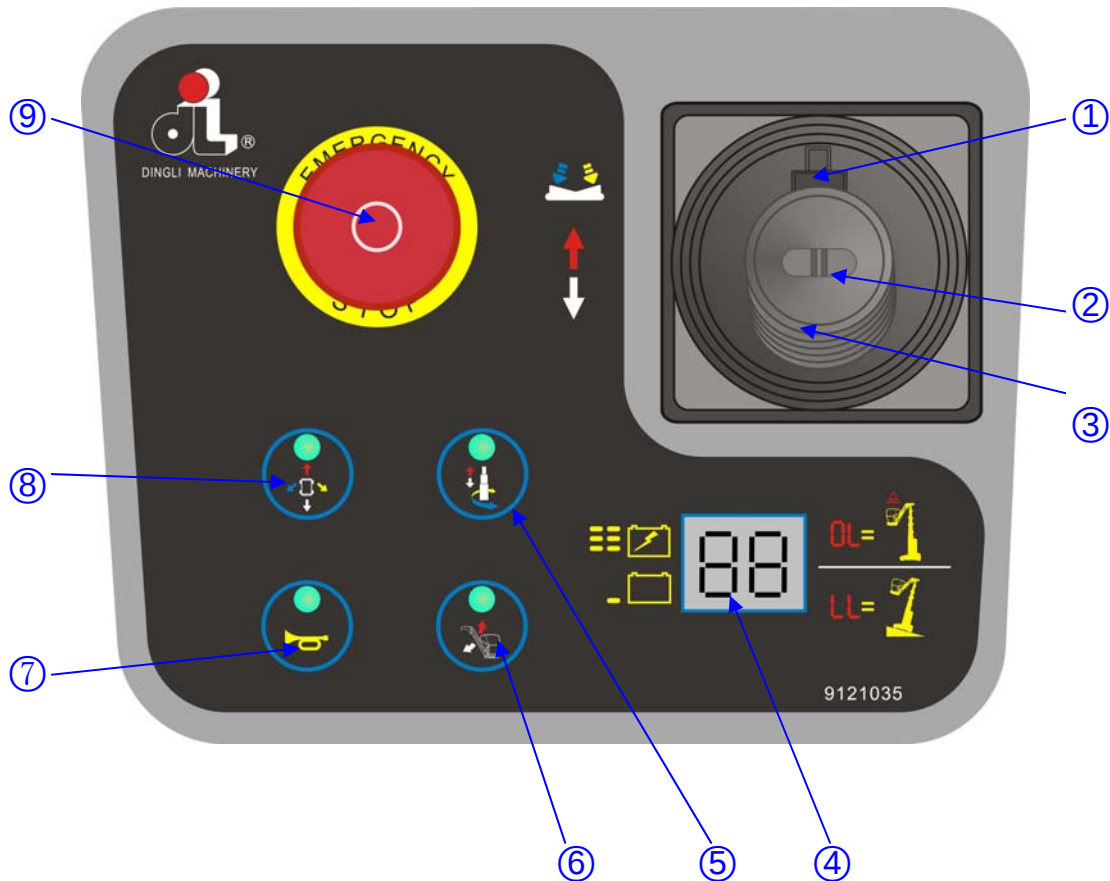
5 小臂选择按钮（Jib select button）

持续按住按钮激活小臂升降功能（Push and hold the button to active Jib elevation /lowering function）

6 动作开关（Movement function switch）

往上拨：桅柱上升/逆时针回转/小臂上升
（Move upwards: mast elevation, counter clockwise turntable rotation or jib elevation）；
往下拨：桅柱下降/顺时针回转/小臂下降
（Move downwards: mast lowering, lockwise turntable rotation or jib lowering）

2.平台控制（Platform Control Panel）



1 功能辅助开关（Function enable switch）

/lowering function）

2 拇指开关：行走转向功能/转台回转功能
（Thumb rocker switch for steer/Turntable
slew functions）

6 小臂升降选择按钮（Jib elevation select
button）

持续按住按钮激活小臂升降功能（Push
and hold the button to active Jib elevation
/lowering function）

3 比例控制手柄（Proportional control
handle）

7 喇叭（Horn）

4 故障代码显示和电池电量显示（Fault code
display and battery level indicator）

8 行走功能按钮（Drive function select
button）

5 桅柱升降选择按钮（Mast elevation select
button）

9 紧急停止按钮（Red Emergency Stop
button）

持续按住按钮激活桅柱升降功能（Push
and hold the button to active Mast elevation

3.刹车释放(Brake release)

3.1 用楔子垫住车轮，以防止机器滚动。

(Chock the wheels to prevent the machine from rolling.)

3.2 将地面和平台控制器上的红色“紧急停机”按钮均拉出到“开”位置。

(Pull out the red Emergency Stop button on both the ground and platform controls to the on position.)

3.3 打开钥匙开关选择地面控制，按住桅柱上升按钮和小臂上升按钮5秒以上，待等到蜂鸣器发出 嘀 嘀的响声后；显示器出现W28和W41循环提示。刹车已经释放。如果你想关掉刹车释放，只需关掉下控的钥匙开关。

(Turn on the keyswitch to Ground control position, press and hold the mast lift button and Jib lift button more than 5s until the beeper is working, the brake is released when W28 and W41 is displayed alternately. If you want to close the brake release, just turn off the key switch)

3.4 将地面和平台控制器上的红色“紧急停机”按钮均推到“关”位置。

(Push the red Emergency stop button on both the ground and platform controls to the off position.)

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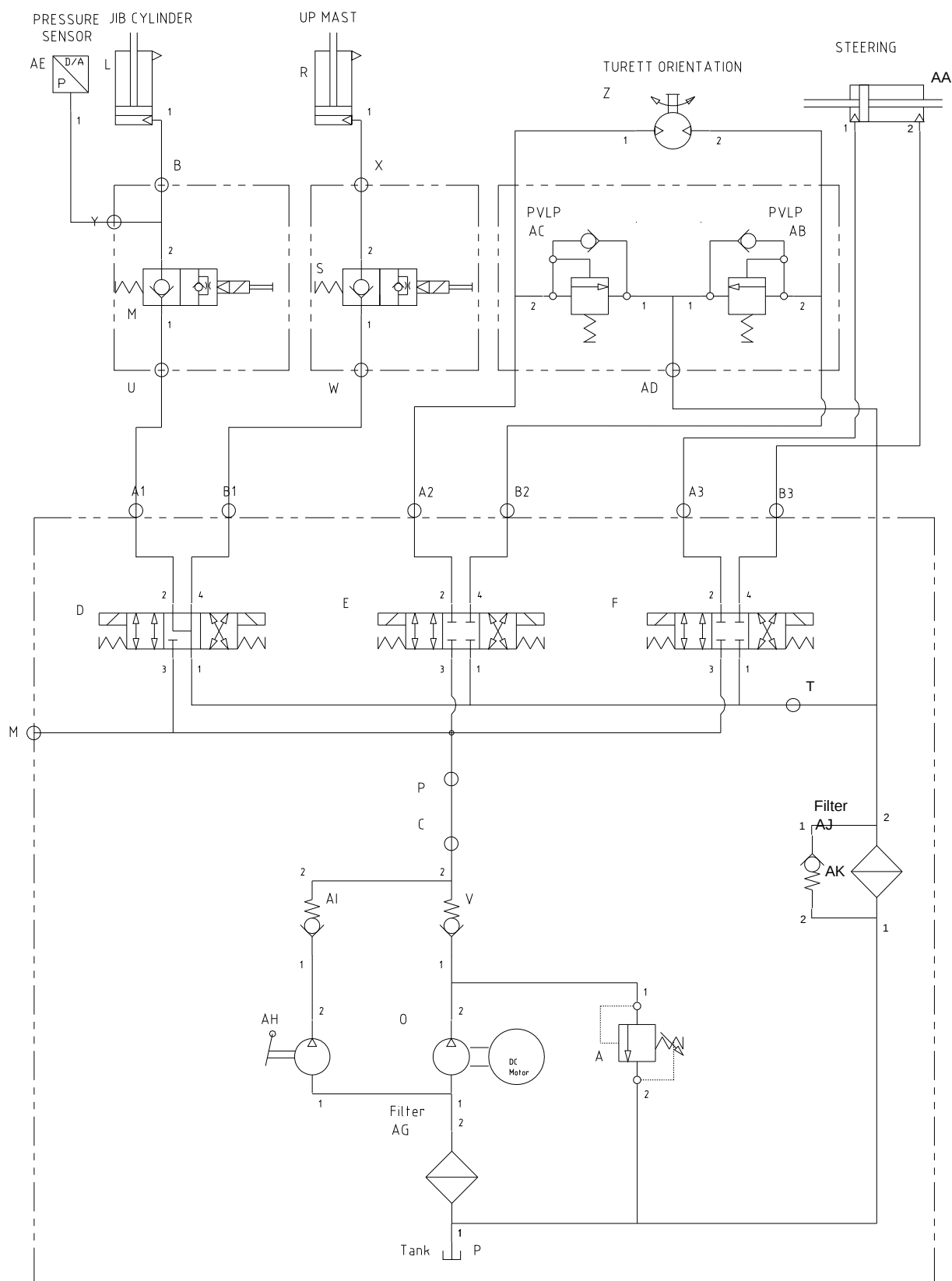
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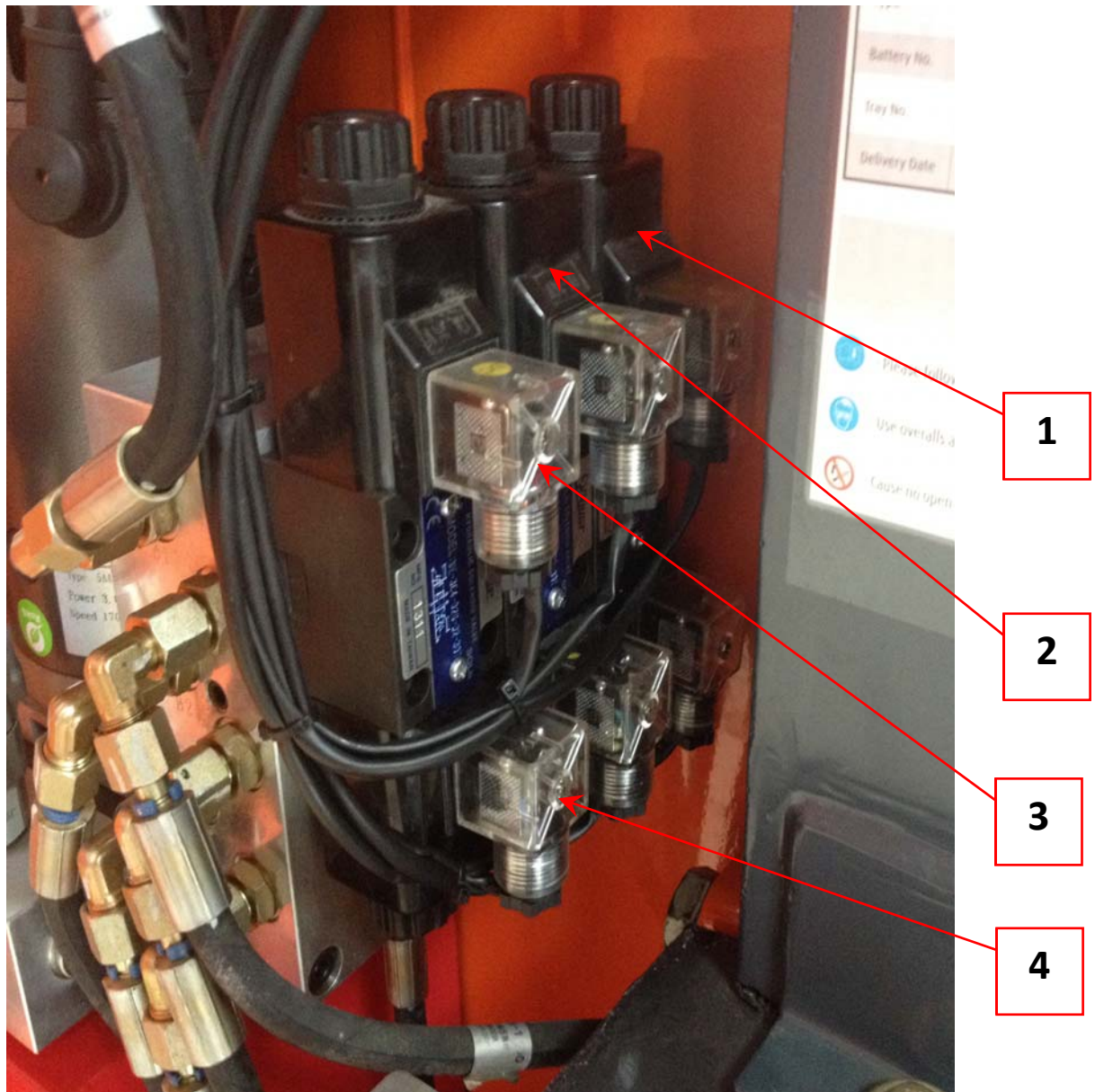
液压系统

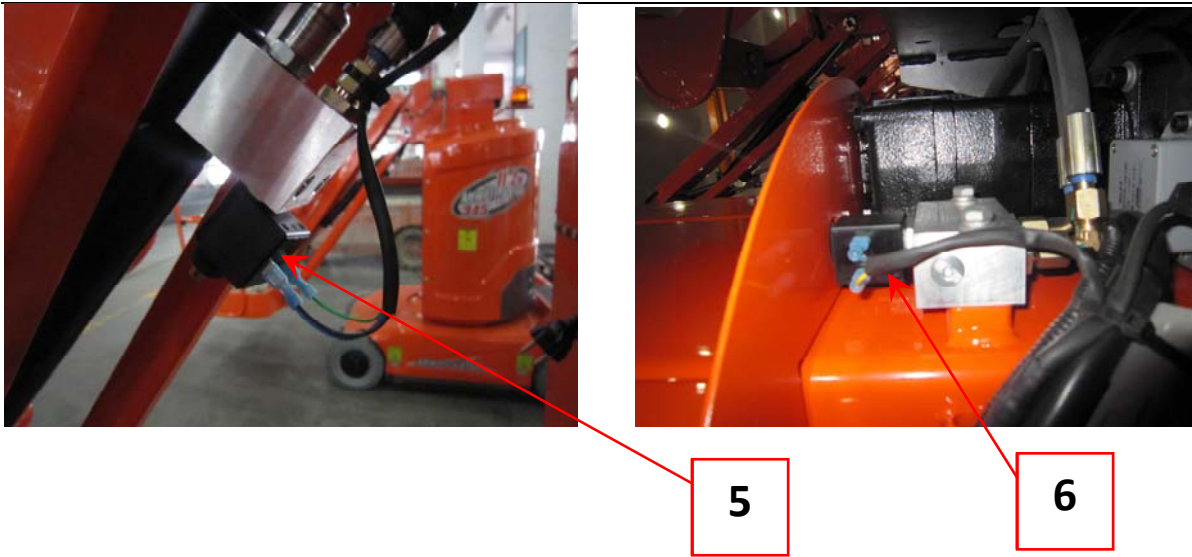
Hydraulic system

1. 液压原理图 (Hydraulic schematic)



1.1 阀块 (Manifold)





1、左右转向电磁阀

(Left/Right steering solenoid)

2、底座回转电磁阀

(Turntable left/right slew solenoid)

3、桅柱上升电磁阀

(Mast elevation solenoid)

4、小臂上升电磁阀

(Jib elevation solenoid)

5、小臂下降电磁阀

(Jib lowering solenoid)

6、桅柱下降电磁阀

(Mast lowering solenoid)

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电控系统

Electric control system

1.主要控制元器件（Major parts）

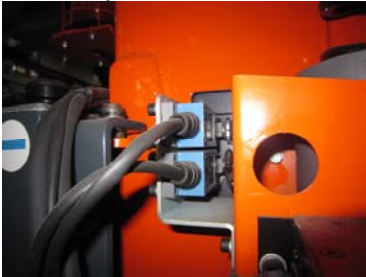
序号	配件	描述
1	主控制器 ECU 	整台机器的大脑，所有的输入输出都有它控制。 （ECU Control all input and output signal.）
2	水平传感器 Tilt sensor 	X轴设定最大倾斜角度 2.5 度为最大角度，Y轴设定最大倾斜角度为 2.5 度，当底盘在起升状态倾斜角度超过设定值，控制器发出倾斜报警并限制机器行走和起升的功能。 （The angle setting of X axle is 2.5 degrees and the angle setting of Y axle is 2.5 degrees.If the chassis angle more than the setting in elevated position,the tilt sensor alarm and stop drive and lift function.）
3	ZAPI 行走控制器 	用于比例控制驱动和起升电机的转速。（Motor controller for drive/lift and steering function.）
4	泵电机 Pump motor 	带动泵转动，驱动液压油运动实现功能。(Electric motor with hydraulic pump for lift function)

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5	充电器 Charger 	给机器上的电池充电。机器在充电过程中切断控制回路里的总电源。 (To charge the batteries; the control power will be cut off when charging.)
6	压力传感器 Pressure sensor 	实时监测小臂起升的压力，并配合小臂上的转角电位计，来实现超载报警并限制起升状态行走和起升的功能。(Working with jib angle potentiometer to monitor the Jib hydraulic oil pressure for getting platform overload warning function)
7	小臂转角电位计 Jib angle potentiometer 	来检测小臂角度的转角电位计 (To monitor the jib angle position)
8	上限位开关 Up limit switch 	桅柱起升最大位置限制开关。 (The maximum limit switch for lift; to cut off the lift function if activated)

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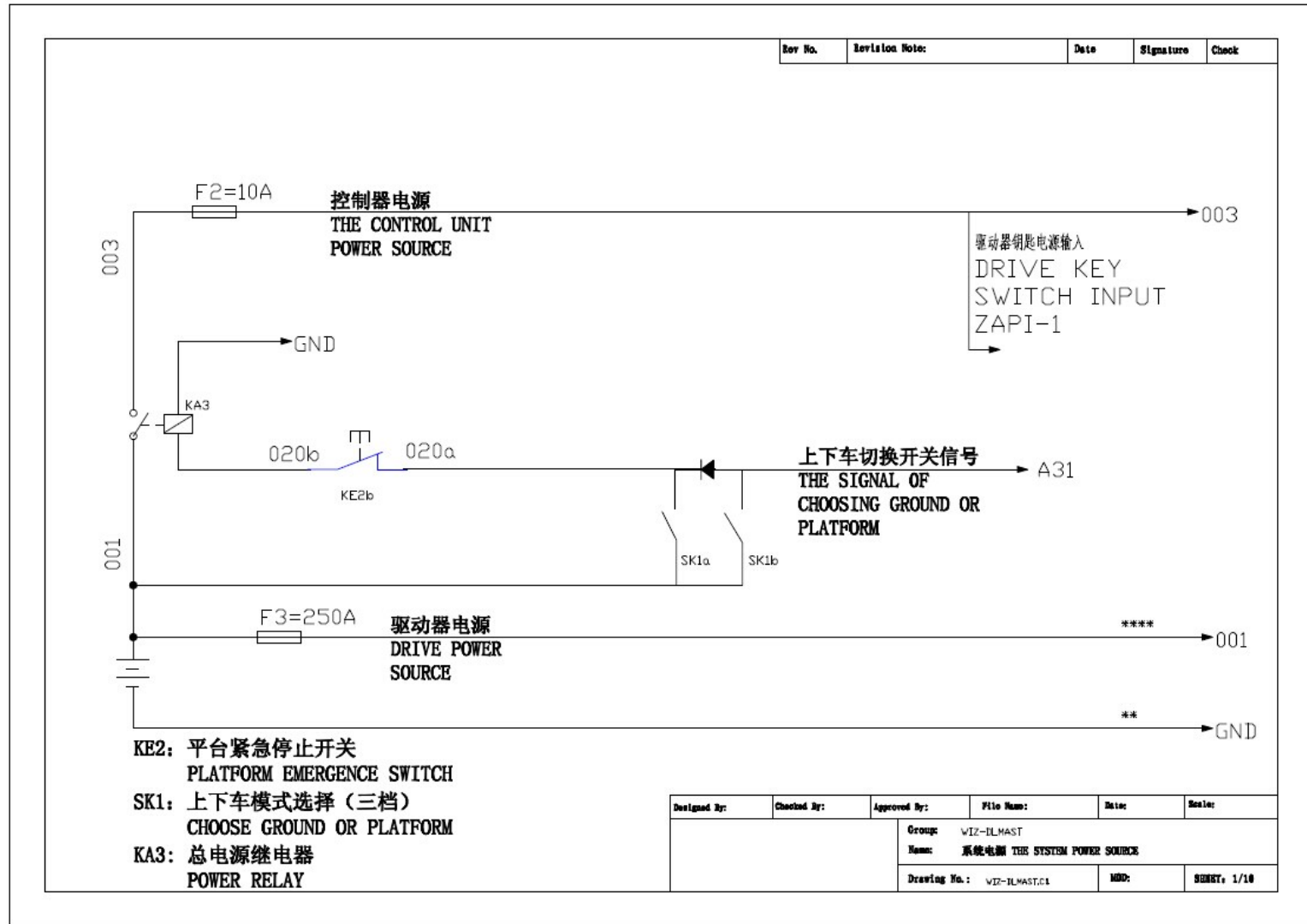
9	行走速度开关 Drive speed switch 	控制在起升状态慢速行走，收拢状态高速行走。 (To control low drive speed in elvated position and high drive speed in lowest position.)
10	坑洞保护开关 Pot-hole switch 	控制在起升状态慢速行走，收拢状态高速行走。实现当起升状态两侧坑洞开关没有打开状态的报警并限制行走和起升的功能。 (To control low drive speed in elvated position and high drive speed in lowest position; the machine will warn and limit drive and lift function if the pothole switches are not activited in elevated position)

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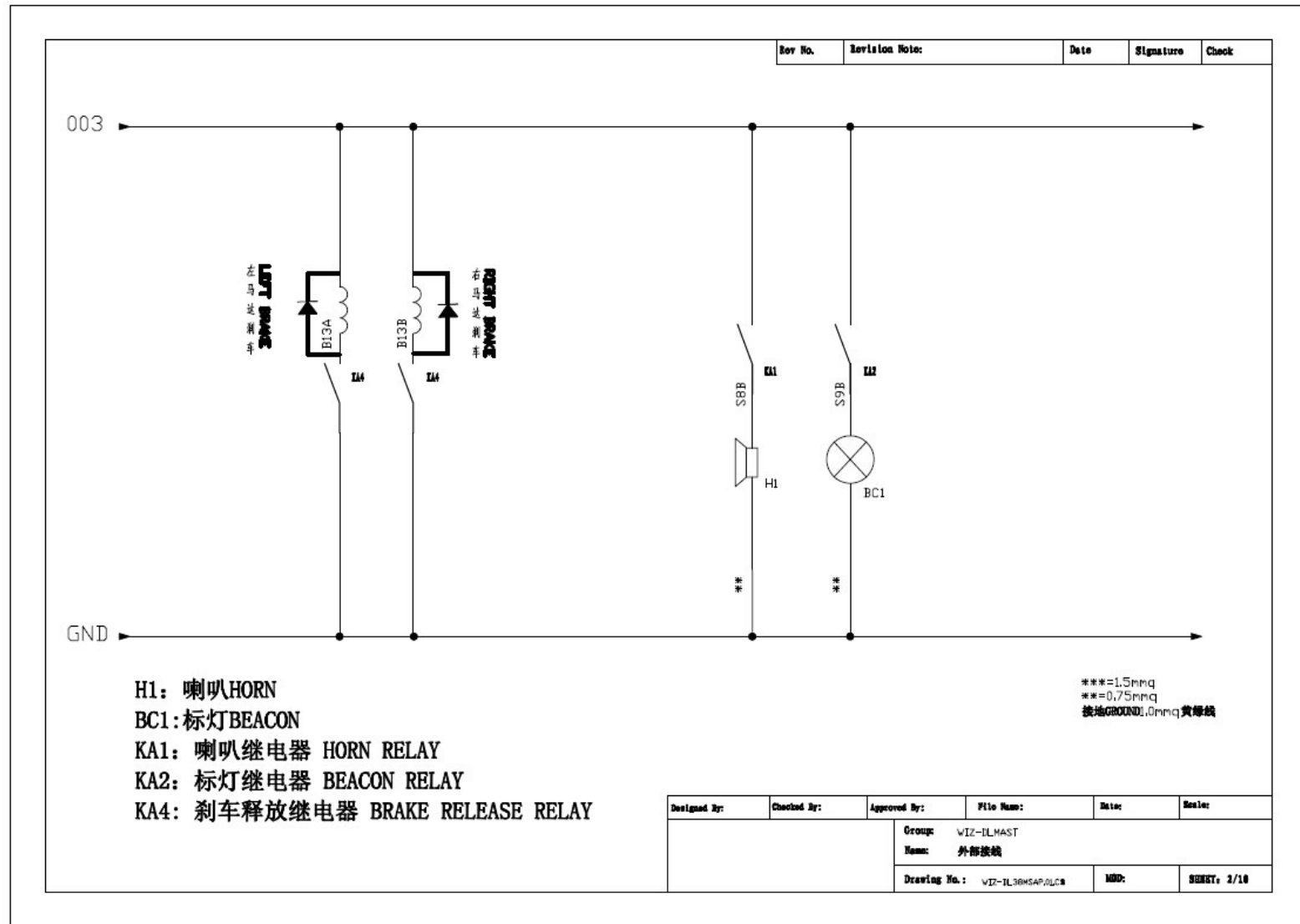
2、电路图 (Electric schematic)

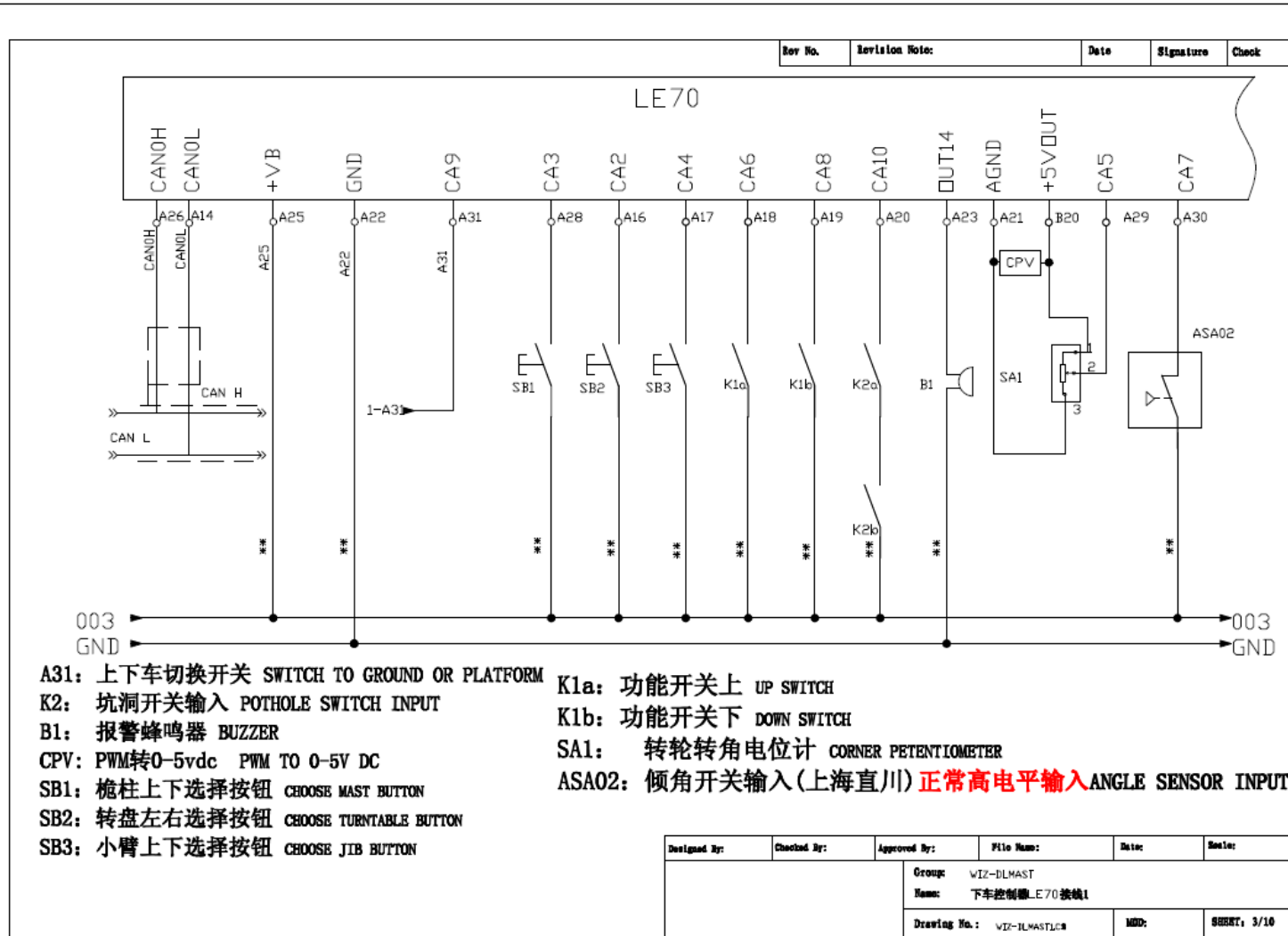


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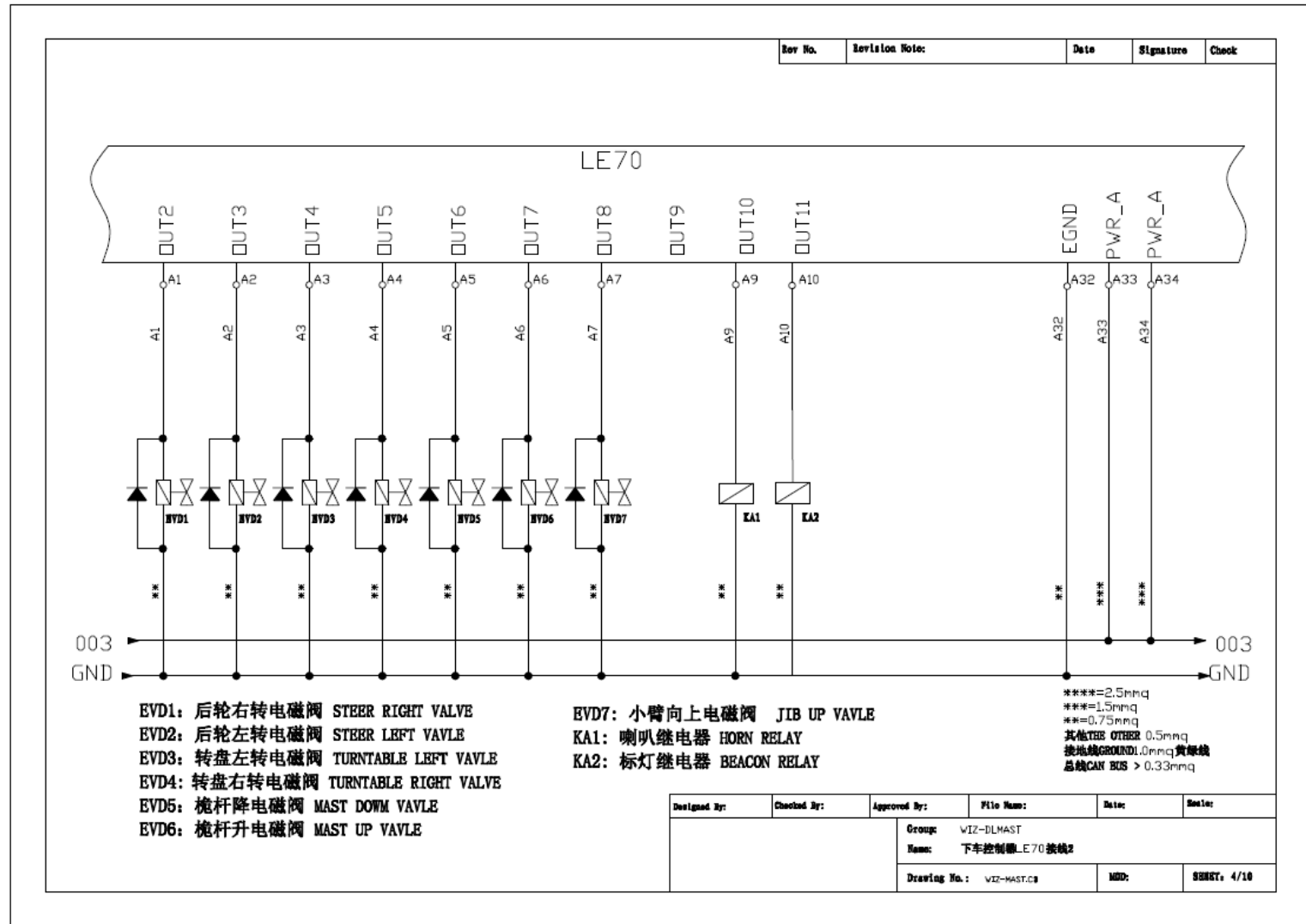




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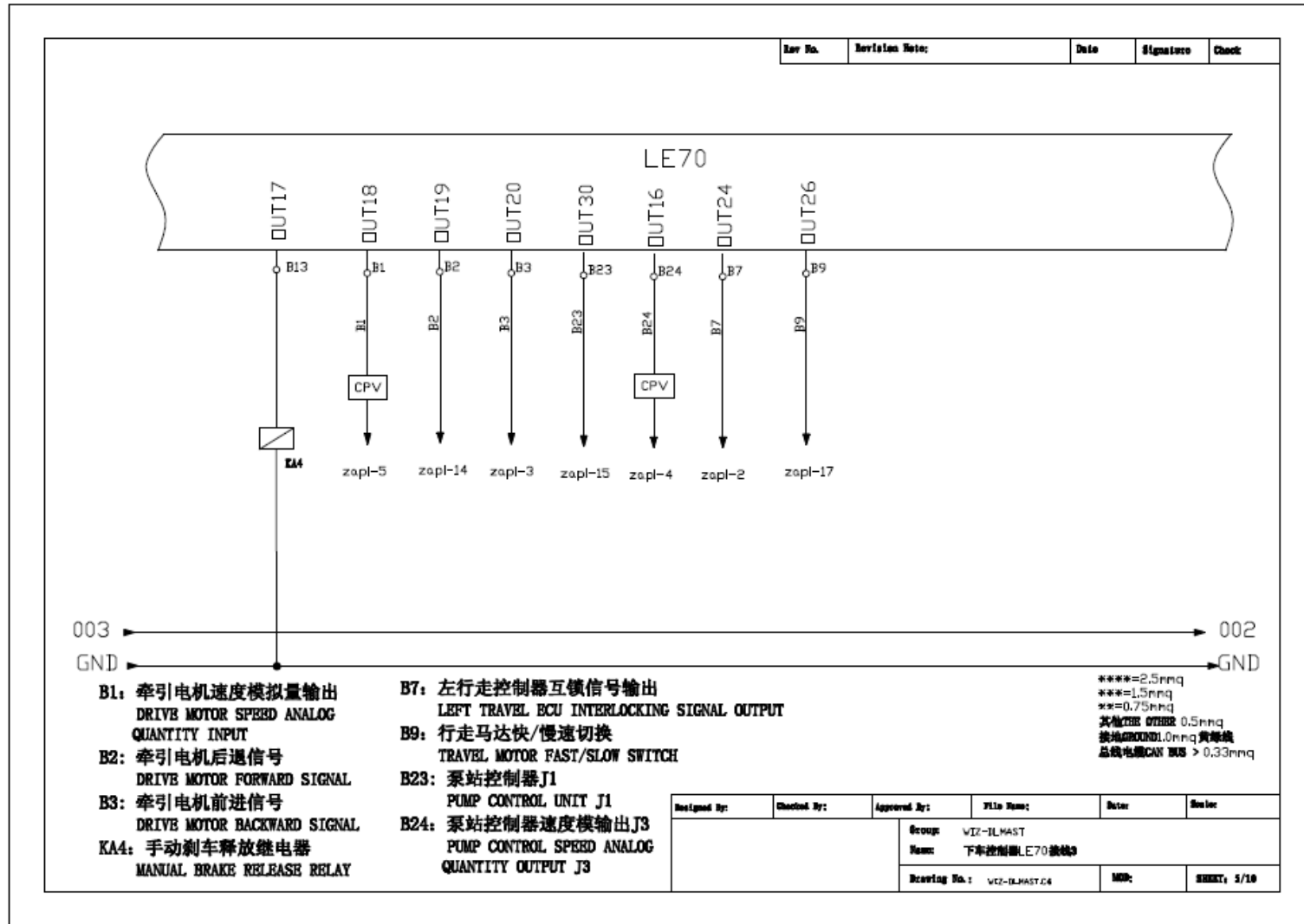


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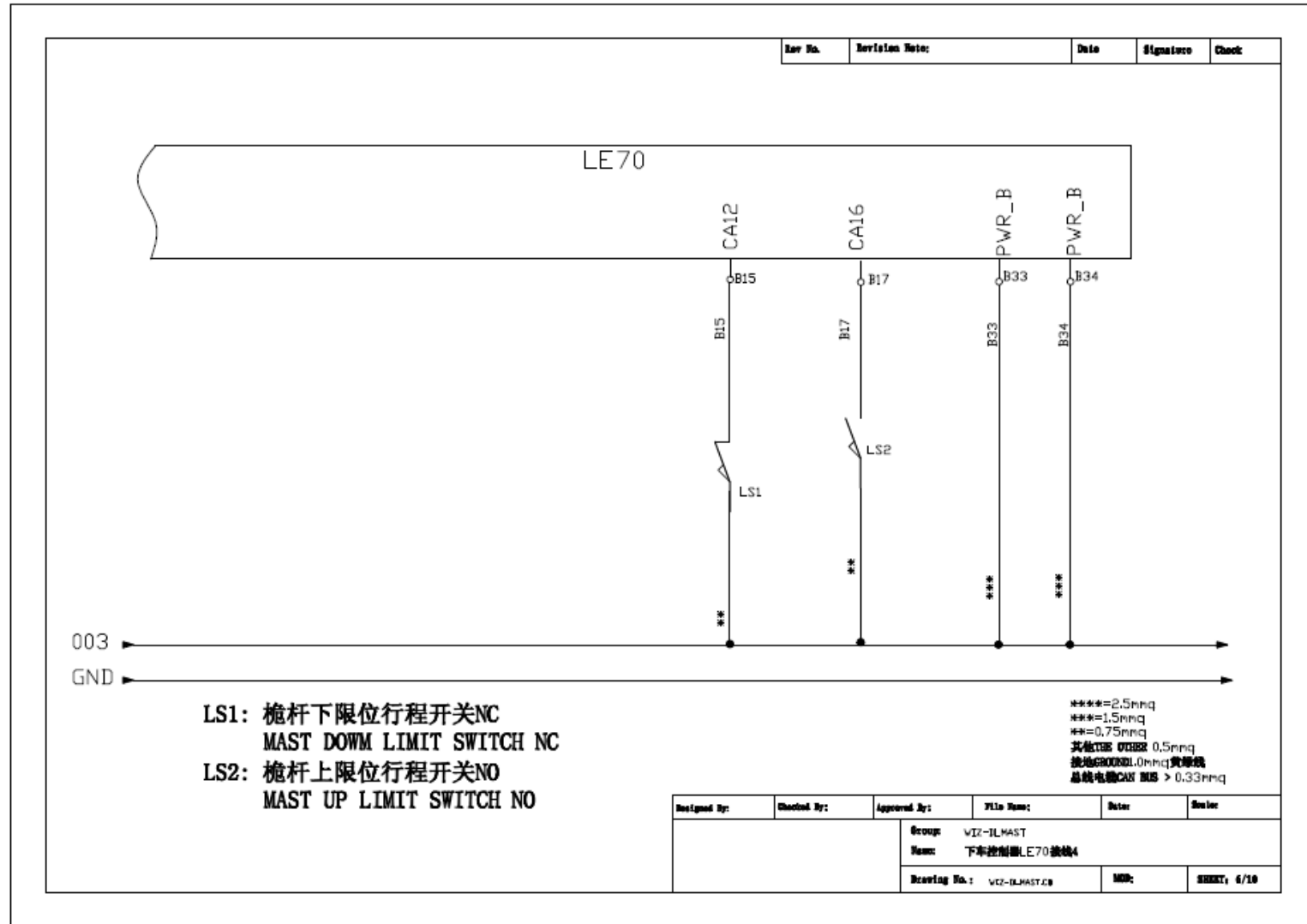
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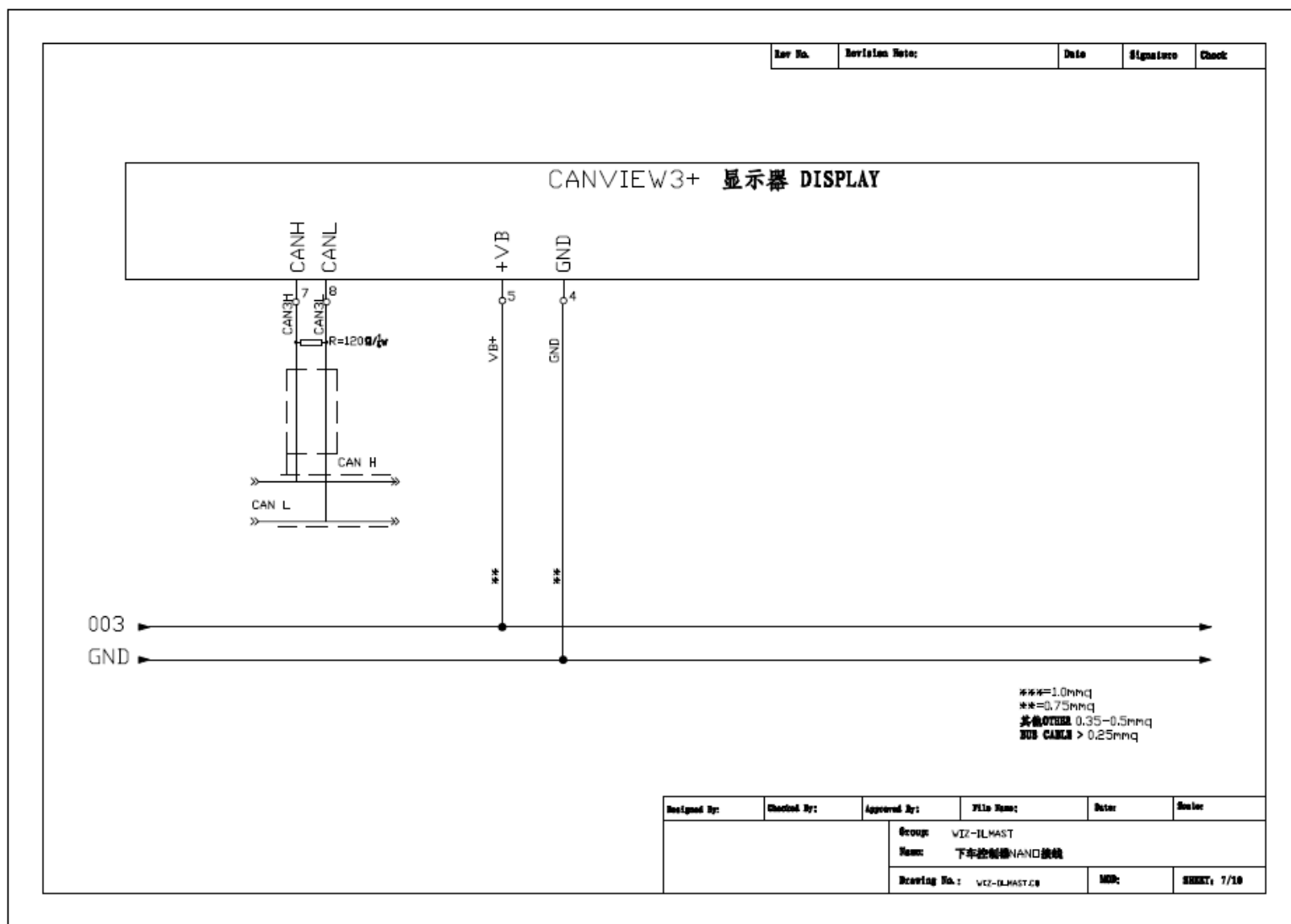


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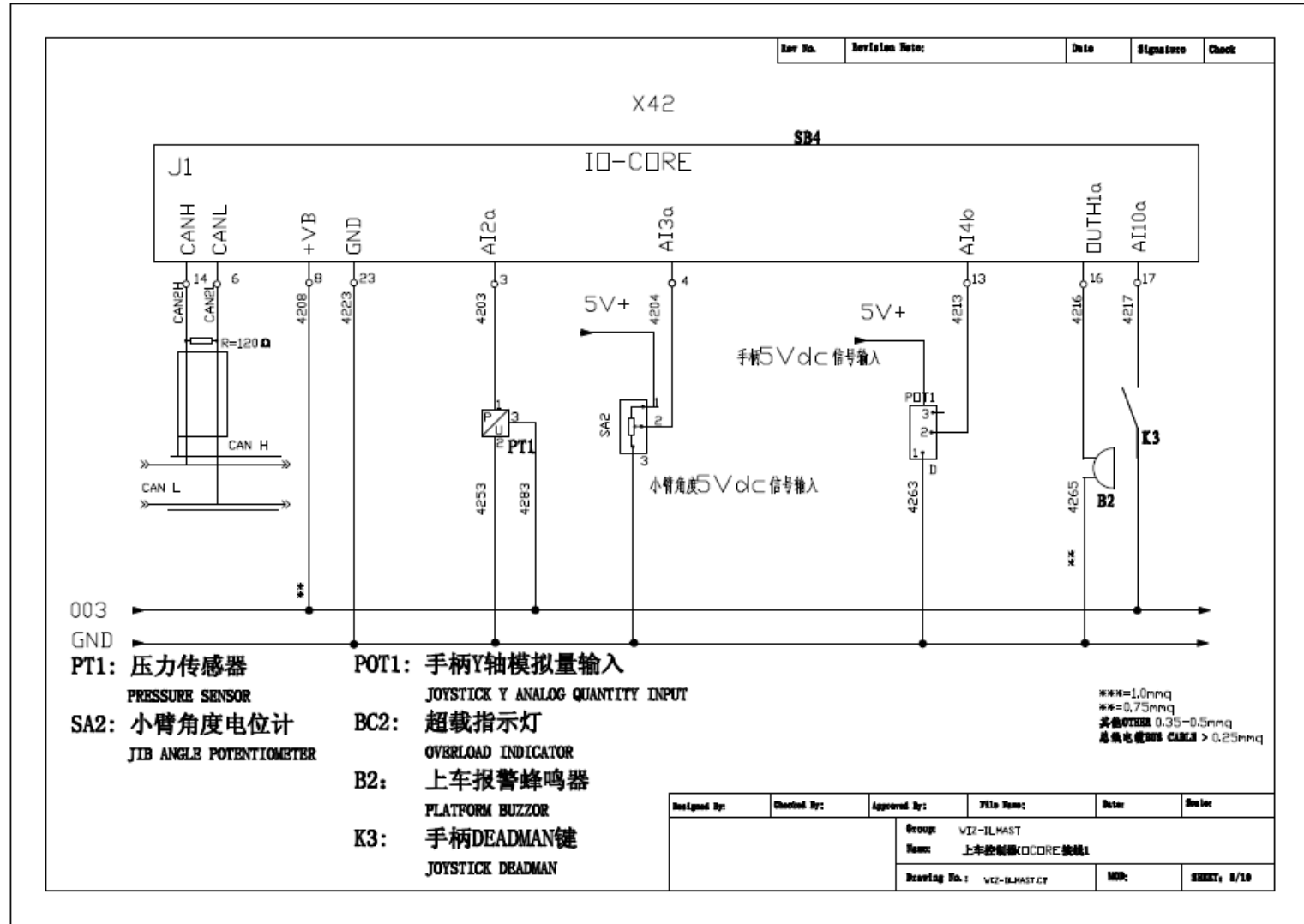




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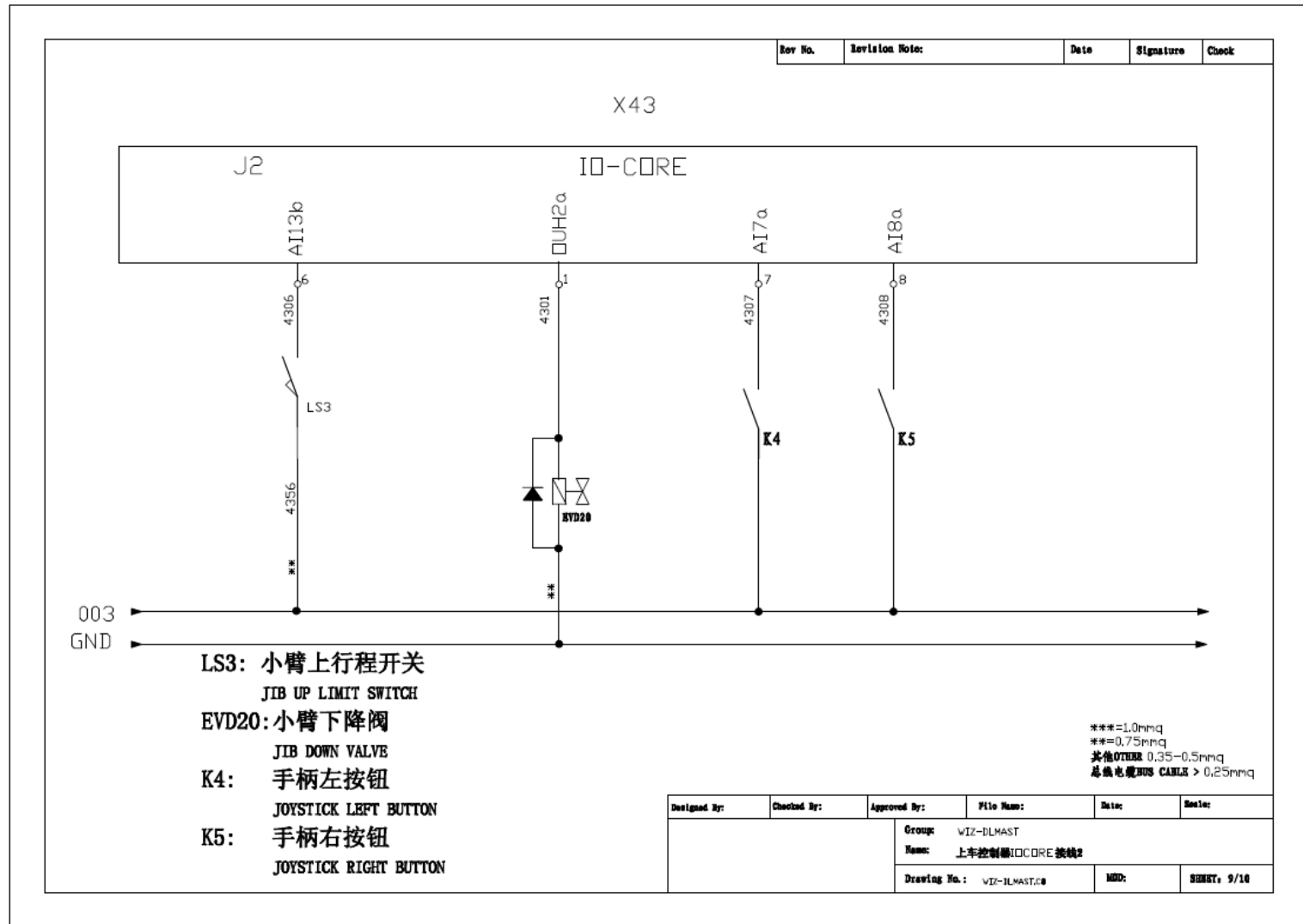
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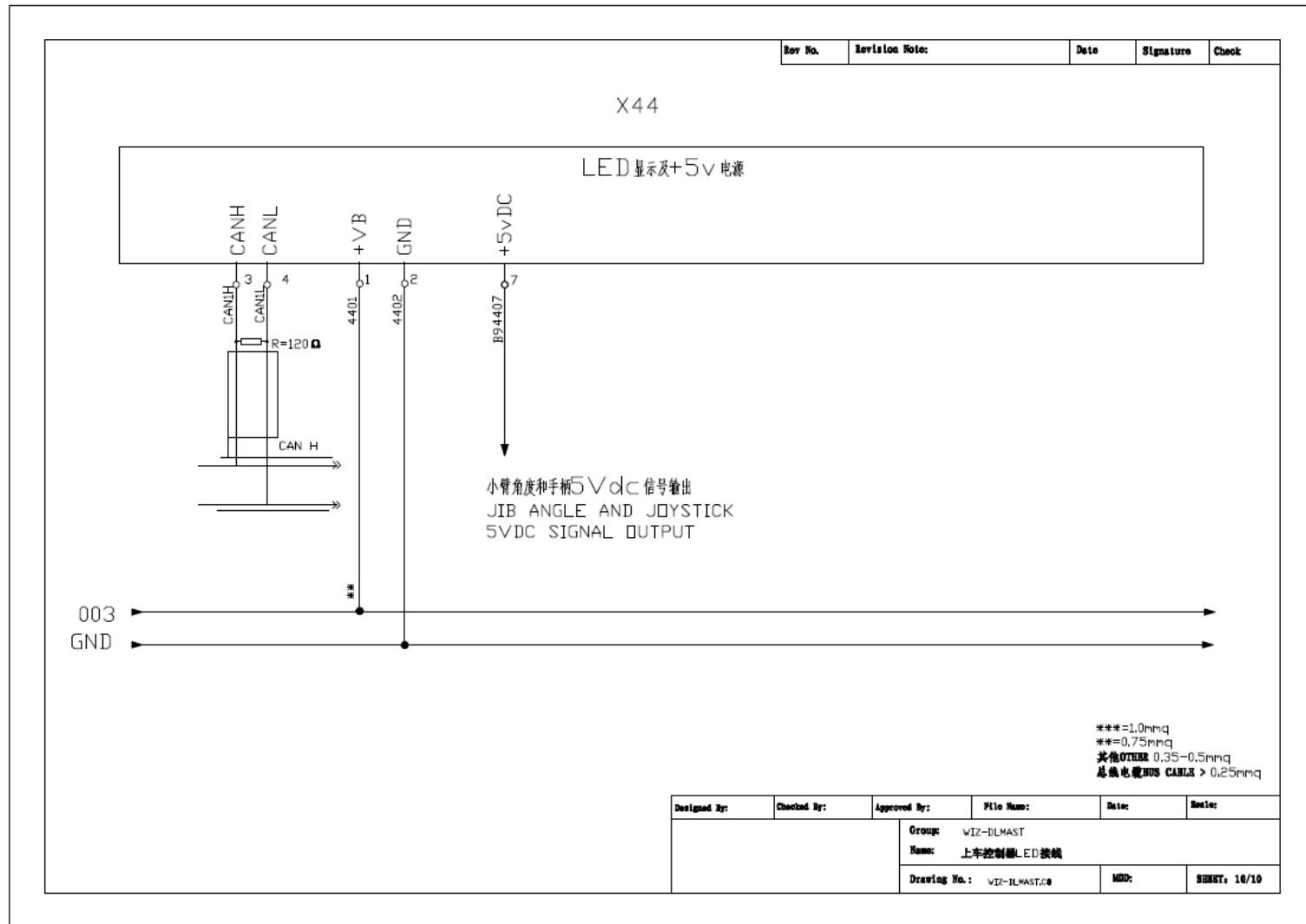


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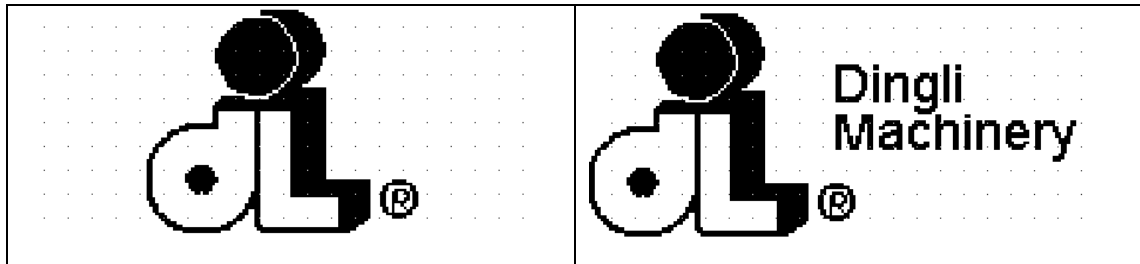




3、电气控制说明(Electric Control instruction)

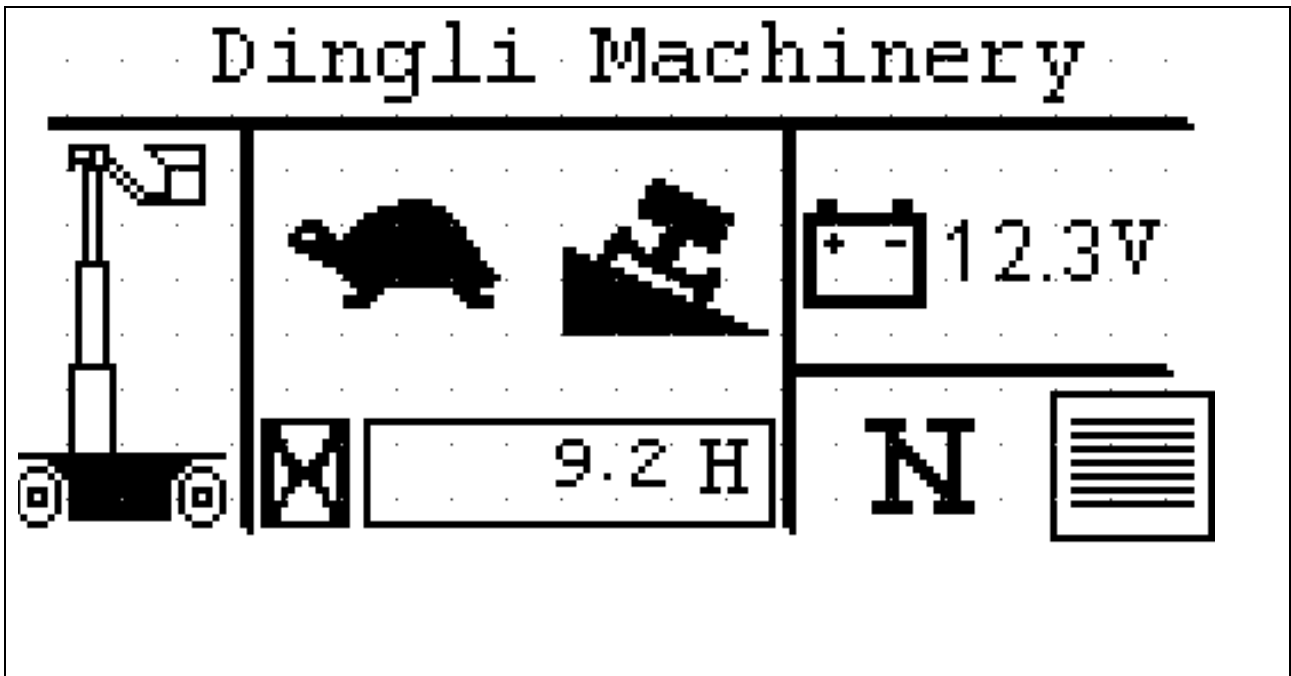
3.1 开机画面(Boot screen)

首先打开系统的电池开关，再打开下控箱的钥匙开关，左边位置为平台控制，右边位置为下车控制，显示器上电 9-30Vdc，进入初始画面，画面显示鼎力 LOGO,下表画面切换频率为 1S。(First, turn on the battery switch of the system.power, then switch the key on the ground controlling box. The left position means platform controlling and the right position means ground controlling. It enters into the boot screen when the display powered on 9-30Vdc., and display the LOGO of “DingLi”. The frequency of the switch picture is 1s)



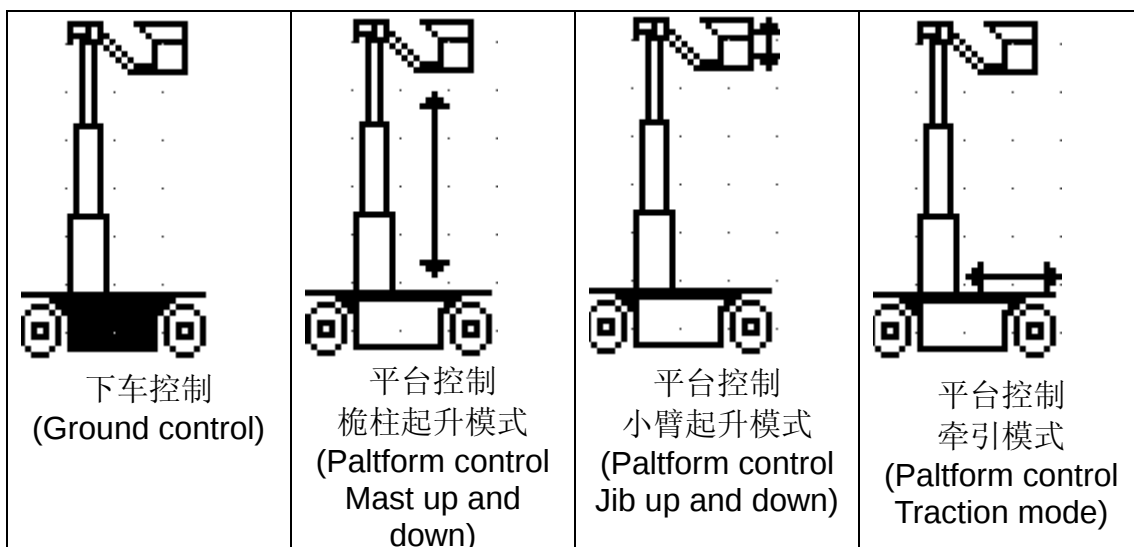
3.2 主界面(Main interface)

初始画面经过 3 秒后，进入套筒车的监测画面；(After three seconds in startup screen, it will turn into the monitor screen of the 12Mt Vertical Mast)



3.3 显示图标(Display icon)

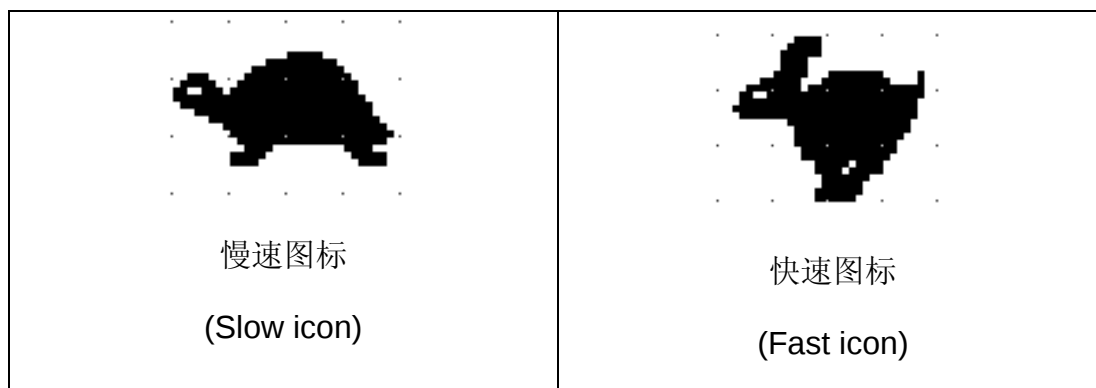
操作切换图标(Operation selected icon)



通过钥匙开关的选择，下车控制时，在无报警和限制的情况下，可进行套筒车的任何动作；平台控制时，必须激活 PCU 上面的薄膜按钮并以绿色 LED 灯表示激活状态，当系统断电时，平台控制选择按钮不具有记忆功能，需要再次激活薄膜按钮。(When the key's switch turn into the ground controlling, you can enable all actions when there are no alarm or limit. When the key turns into the platform controlling, you must activate the thin film button on the PCU and the green LED means activated state. When the system turn off the main power, the chosen button don't possess memory function, so you need activate the thin film button again)

下车控制时，PCU 面板上的三个功能选择按钮失效，仅喇叭按钮激活，用于在选择下车控制时，通过平台喇叭按钮还能提示现场工作人员。(When the key switch turn into the ground controlling, the three function chosen buttons lose efficacy on the PCU, only the horn button is activated. This condition is used for reminding the field man by the horn button)

快慢速切换图标(Switch speed icon)



快慢速图标通过件系统的以下的条状态自动切换慢速图纸，其他状态时，自动显示快速图标；(Under the following circumstances, the system will turn into slow icon automatically. Else it will turn into Fast icon)

A 桅柱脱离下限位置，自动显示慢速图标；(When the vertical mast takes off the lower position switch, it will turn into Slow icon)

B 小臂升到上行程开关，自动切换到慢速图标；(When the jib lift up to upper position switch, it will turn into Slow icon)

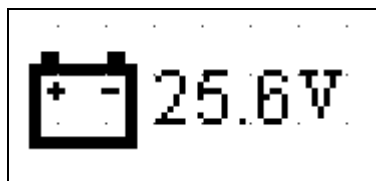
C 当电池电量低于 10%电量时，自动切换到慢速图标；(When the battery electric quantity is lower than 10%, it will turn into Slow icon)

倾斜图标(Incline icon)

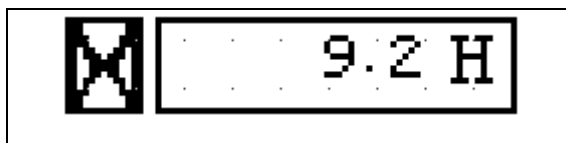


当套筒车底盘倾斜角度大于水平传感器 $X=2.5^\circ$, $Y=2.5^\circ$ 时，且桅柱脱离下限制位置时，倾斜图标自动切换；水平传感器角度设定通过外部设定，系统接受高电平常闭信号。(When the 12Mt Vertical Mast incline angle bigger than horizon sensor $X=2.5^\circ$, $Y=2.5^\circ$ and the vertical mast takes off the lower position switch, the incline icon will turn on automatically; The angle setting of the horizon sensor is through external set. The system receives the high level NC signal.)

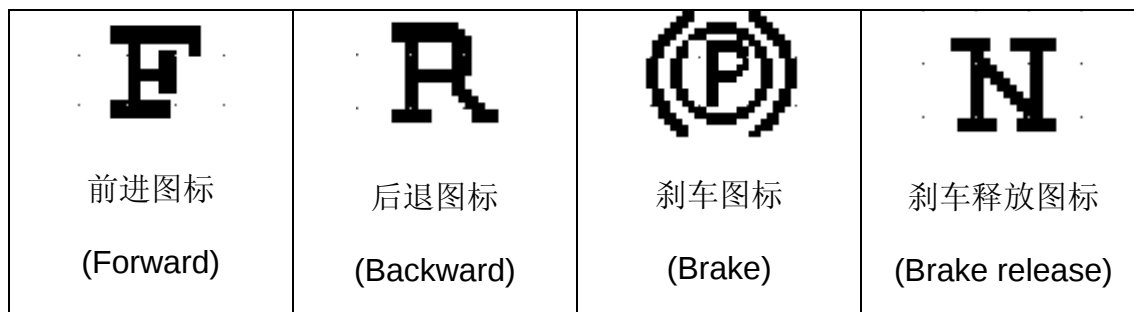
电池电压值(The battery voltage)



该图标显示系统电池的实时电压值，该数据通过 CAN 总线由 ECU 发送给显示器。当系统动作时，可以实时反应电压的波动状况。(The icon display the actual time voltage and ECU send the data to display by the CAN BUS. When the system is working, it will display the actual time voltage fluctuation.)

工作时间值(Working time)

该图标显示系统的工作时间，当系统工作时，该计时器自动记录累计工作时间，保存频率为 1 分钟/次，单位为：小时（H），最大可显示 9999.9H；可通过 VT3 软件 wincope.net 实现工作时间的清零。(The icon displays system of working time. When the system is working, the timer will add up the working time automatically. The save frequency is once a minute. The unit is hour (H). The maximum is 9999.9H; The software of the VT3 wincope.net can make the working time reset)

牵引模式图标(Traction mode icon)

显示器通过系统不同的牵引模式，显示前进，后退，刹车停止和刹车释放图标；(The display can shows forward, backward, brake and brake release icon by the different traction mode)

A 当套筒车钥匙开关选择到上车控制的牵引模式，手柄向前操作，套筒车向前方运动，根据系统的不同速度实时显示前进速度变化图标；图标以递加，循环的方式显示；(When the key switch turn into the platform controlling and enable traction mode, the joystick works forward, the 12Mt Vertical Mast will move forward. According to the different speed it shows the icon of forward speed change. The icon is showed in increase gradually and circulation ways.)

B 当套筒车钥匙开关选择到上车控制的牵引模式，手柄向后操作，套筒车向后方运动，根据系统的不同速度实时显示后退速度变化图标；图标以递加，循环的方式显示；(When the key switch turn into the platform controlling and enable traction mode, the joystick works backward, the 12Mt Vertical Mast will move backward. According to the different speed it shows the icon of backward speed change. The icon is showed in increase gradually and circulation ways)

行驶方向显示图标(Traction direction icon)



回退速度显示图标

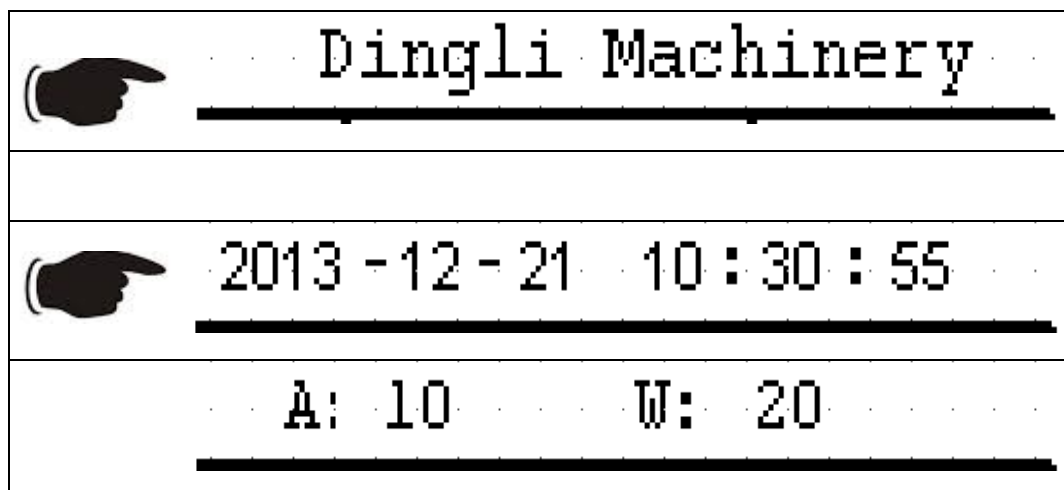
Backward icon

A 当套筒车进行除前进或后退动作时，如车轮转向，桅柱起升等动作时，刹车处于闭合状态，保证车轮处于静止状态，同时刹车图标被激活。(When the 12Mt Vertical Mast operate other actions except for traction, for example wheel steering, vertical mast lifting up, the brake will turn on, to ensure the wheel is in a state of rest. At the same time, the brake icon will be activated)

B 当套筒车的桅柱处于下限位，且钥匙开关处于下车控制时，按住下控面板的桅柱起升按钮和小臂起升按钮，保持 2s 后，刹车释放图标被激活，出现提示代码 W:28,同时刹车处于打开状态，在外力的作用下，车轮可以进行短时移动。在刹车释放模式下，为了保护减速装置，不可以长期处于该模式。(hen the vertical mast is on the lower position and the key switch turn into ground controlling, enable button of the vertical lifting up and jib lifting up for two seconds, the brake release will be activated and the displayer will shows the warning code "W:28". At the same time, the brake turn off. The wheel can move for short time under the action of the external force. In order to protect the brake equipment, it mustn't be on the brake release mode for a long time)

如果将刹车状态恢复到正常模式，需要按下急停按钮或者电池主开关，断电重启，刹车释放图标自动切换到刹车模式。(If you want to make the brake mode to normal mode, you need to press the emergency button or the battery master switch, the system will restart and the brake release icon turn into the brake mode automatically)

按钮图标(Button icon)



正常工作状态下，主界面的最上面显示鼎力公司的英文“DingLi Machinery”，触控屏幕的该区域，显示自动切换到实时时钟功能。再次触控，时钟和 logo 自动切换。(In the normal working states, the topside of the main interface displays the logo “DingLi Machinery”. If you touch the area on the screen, it will turn into the real-time clock. If you touch again, the clock and the logo will automatic switchover)

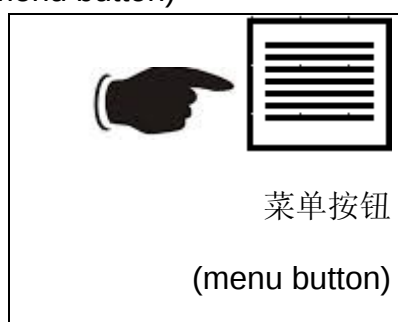
当有报警和提示时，该区域的触控功能失效，仅显示报警或提示代码，代码循环显示。

提示代码可以随着提示信息的减除而消失，但是报警代码，只有在报警减除时，断电重启才能减除此报警。(When the system has the alarm or warning, the touching function will be disabled. It will just show the alarm or warning list, the list will be showed circularly.

Warning list can disappear with the warning message deduction. But alarm list, but as to the alarm disappear you must restart the system can remove the alarm)

提示代码出现时，以脉冲方式激活上下车的喇叭；报警代码出现时，喇叭以长鸣的方式并且切断系统的所有动作。(When the warning list appeared, it will activate the buzzer by the pulse mode; When the alarm warning list appeared, the buzzer will ring endlessly. At the same time, any operation will cut off.)

主界面的右下角显示“菜单”按钮，系统进入菜单的目录按钮；(The bottom right corner of the main interface shows the menu button)



3.4 菜单界面(Menu interface)

菜单界面的 6 个图标多可以触摸控制进入到指定界面。(There are six icons in the menu interface. If you touch the icon, you can enter into the corresponding interface)

	返回主界面 (Return to the main interface)
	进入输入输出界面 (Enter into the input and output interface)
	进入工具设定界面 (Enter into the tooling setting interface)
	进入密码设定界面 (Enter into the password setting interface)
	进入报警代码注释界面 (Enter into alarm list annotation interface)
	进入提示代码注释界面 (Enter into warning list annotation interface)

3.4.1 输入输出界面 (Input and output interface)

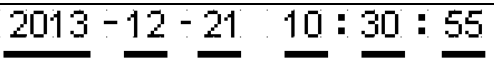
该界面显示主要输入输出的状态，包括输入模拟量，开关量和输出电磁阀的状态。触控每个界面的标题栏位置，系统会自动中英文版本的切换，断电重启的默认状态为英文版本。

(This interface shows the main input and output, include analog input, dight input and output solenoid valve. When you touch some interface title bar, the system will switch the chinese and english. If you restart, the default state is english.)

  Analog Input 1.Jib Angle 12345 2.Jib Pressure 12345 3.Steer potentiometer 12345 4.Y joystick 12345	  Analog Input 1. 小臂角度 12345 2. 小臂压力 12345 3. 转向电位计 12345 4. Y轴手柄 12345
---	---

3.4.2 工具设定界面 (Tooling setting interface)

该界面可以修改实时时钟的时间和显示器屏幕的背光灯的亮度调节。(The interface can adjustment the real-time clock time and the brightness of the backlight)

		返回到菜单界面(Return to the menu interface)
		保存设定(Save setting)
		图标闪烁，进入背光灯亮度修改状态 (This icon blink, it will enter into brightness control state)
		图标闪烁，进入时钟修改状态 (This icon blink, it will enter into adjustment clock state)
		光标闪烁，表示可以修改对应参数(The cursor blinks, you can change the corresponding parameter)
		时钟修改功能激活时，用于左移动光标 (When the adjustment clock state is activated, it uses for moving the cursor left)
		时钟修改功能激活时，用于右移动光标 (When the adjustment clock state is activated, it uses for moving the cursor right)

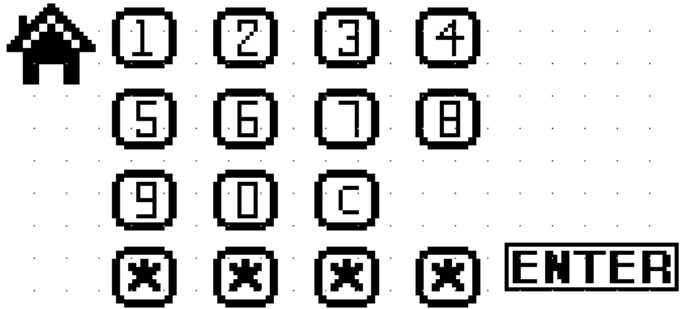
 	时钟修改功能激活时，用于增加时间设定值(When the adjustment clock state is activated, it uses for adding to the time setting value) 背光灯修改功能激活时，用于增加亮度值(When the brightness control state is activated, it uses for adding to the brightness value)
 	时钟修改功能激活时，用于减少时间设定值(When the adjustment clock state is activated, it uses for decreasing to the time setting value) 背光灯修改功能激活时，用于减少亮度值(When the brightness control state is activated, it uses for decreasing to the brightness value)

3.4.3 密码设定界面 (Password setting interface)

系统的校验功能和关键参数，需要密码才能进入修改。(If you want to change the verify function and the key parameter, you need the password setting)

注意：进入该界面需要经过培训的人员才能操作，因为不正确的设定，会导致系统没有任何动作。

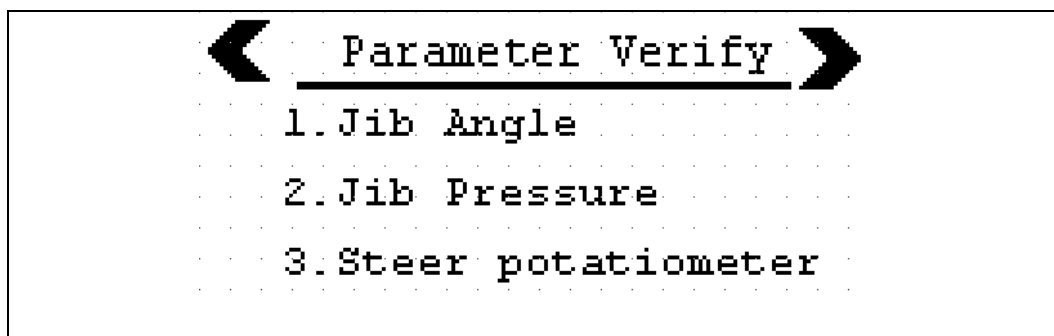
(Waring: If you want to enter into the interface, you must be a trained and qualified personnel. Because if your setting is wrong, the system will be no any operation.)

	
 	正确输入“3156”密码后，才能显示“ENTER”图标，其他状态该图标为隐藏状态。 (Only you input the “3156”correctly, it can show the icon “ENTER”. If not, the icon will be hidden)

正确输入密码后，可进入如下界面；(If you input the password correctly, it will enter into the following interface)

注意：进入该界面需要经过培训的人员才能操作，因为不正确的设定，会导致系统没有任何动作。

(Waring: If you want to enter into the interface, you must be a trained and qualified personnel. Because if your setting is wrong, the system will be no any operation)

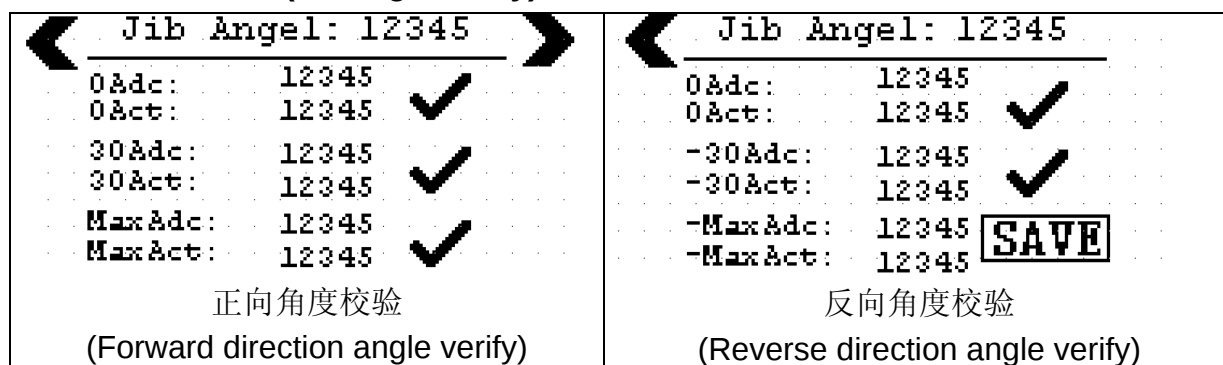


A 小臂角度校验，用于小臂的上下限位和称重功能；(Jib Angle, for jib upper and lower position, load function)

B 小臂压力校验，用于称重功能；(Jib pressure, for the load function)

C 车轮的转向校验，用于转向时的限制和减速转向功能；(Steer wheeling, for the limit of the wheeling steer and the speed cut function)

3.4.3.1 小臂角度校验(Jib angle verify)

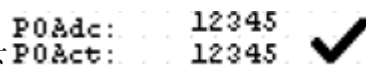


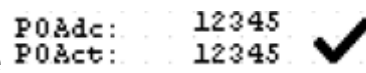
在进行角度校验时，需要带数显的水平尺肯定到小臂的臂架上，便于在任何位置能读出实际角度值。(When you verify the angle, you need a levelling instrument which can read out the digital. In order to read out the angle value, you need put the levelling instrument on the jib)

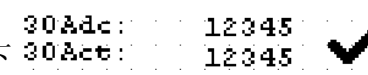


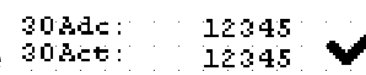
数显水平尺

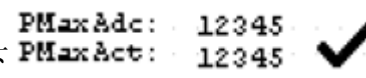
(Digital readout levelling instrument)

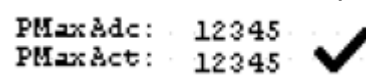
步骤 1: 将小臂角度调到正向 0 度位置, 按下  , 观察界面最上面的模拟量自动导入到“POAdc”位置。(Set the jib angle to 0 degree forward direction.

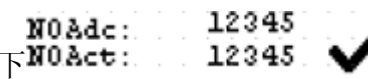
Press the  , the topside analog quantity will input the “POAdc” position)

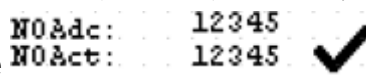
步骤 2: 将小臂角度调到正向 30 度位置, 按下  , 观察界面最上面的模拟量自动导入到“30Adc”位置。(Set the jib angle to 30 degree forward direction.

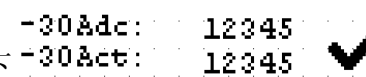
Press the  , the topside analog quantity will input the “30Adc” position)

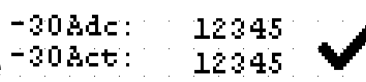
步骤 3: 将小臂角度调到正向最大角度位置, 按下  , 观察界面最上面的模拟量自动导入到“PMMaxAdc”位置。(Set the jib angle to maximum forward

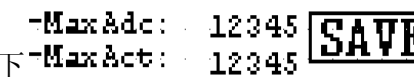
direction. Press the  , the topside analog quantity will input the “PMMaxAdc” position)

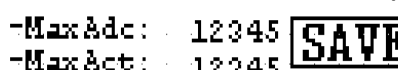
步骤 4: 将小臂角度调到反向 0 角度位置, 按下  , 观察界面最上面的模拟量自动导入到“NOAdc”位置。(Set the jib angle to 0 degree reverse direction.

Press the  , the topside analog quantity will input the “NOAdc” position)

步骤 5: 将小臂角度调到反向 30 角度位置, 按下  , 观察界面最上面的模拟量自动导入到“-30Adc”位置。(Set the jib angle to 30 degree reverse direction.

Press the  , the topside analog quantity will input the “-30Adc” position)

步骤 6: 将小臂角度调到反向最大角度位置, 按下  , 观察界面最上面的模拟量自动导入到“-MaxAdc”位置。(Set the jib angle to maximum reverse

direction. Press the  , the topside analog quantity will input the “-MaxAdc” position)

步骤 7: 记录以上所有数据, 断电重启, 确认模拟量是否保存到正确的位置。(Save above data and restart. Ensure the analog quantity is saved to the correct position)

3.4.3.2 小臂压力校验(Jib pressure verify)

A: 1234 P: 12345			A: 1234 P: 12345		
N50A:	12345	✓	P30A:	12345	✓
N50P:	12345	✓	P30P:	12345	✓
N25A:	12345	✓	P60A:	12345	SAVE
N25P:	12345	✓	P60P:	12345	
P0A:	12345	✓			
P0P:	12345	✓			
反向压力校验 (Reverse direction angle verify)			正向压力校验 (Forward direction angle verify)		

步骤 1: 放额定载重在平台上, 将小臂角度调到反向 50 度位置, 按下

N50A: 12345 ✓
N50P: 12345 ✓, 观察界面最上面的模拟量自动导入到“N50A”和“N50P”位置。

(Set the jib angle to 50 degree reverse direction. Press the the topside analog quantity will input the “N50A” and “N50P” position)

步骤 2: 将小臂角度调到反向 25 度位置, 按下 N25A: 12345 ✓
N25P: 12345 ✓, 观察界面最上面的模拟量自动导入到“N25A”和“N25P”位置。(Set the jib angle to 25 degree reverse

direction. Press the N25A: 12345 ✓
N25P: 12345 ✓, the topside analog quantity will input the “N25A” and “N25P” position)

步骤 3: 将小臂角度调到反向 0 度位置, 按下 P0A: 12345 ✓
P0P: 12345 ✓, 观察界面最上面的模拟量自动导入到“P0A”和“P0P”位置。(Set the jib angle to 0 degree reverse direction.

Press the P0A: 12345 ✓
P0P: 12345 ✓, the topside analog quantity will input the “P0A” and “P0P” position)

步骤 4: 将小臂角度调到正向 30 度位置, 按下 P30A: 12345 ✓
P30P: 12345 ✓, 观察界面最上面的模拟量自动导入到“P30A”和“P30P”位置。(Set the jib angle to 30 degree forward

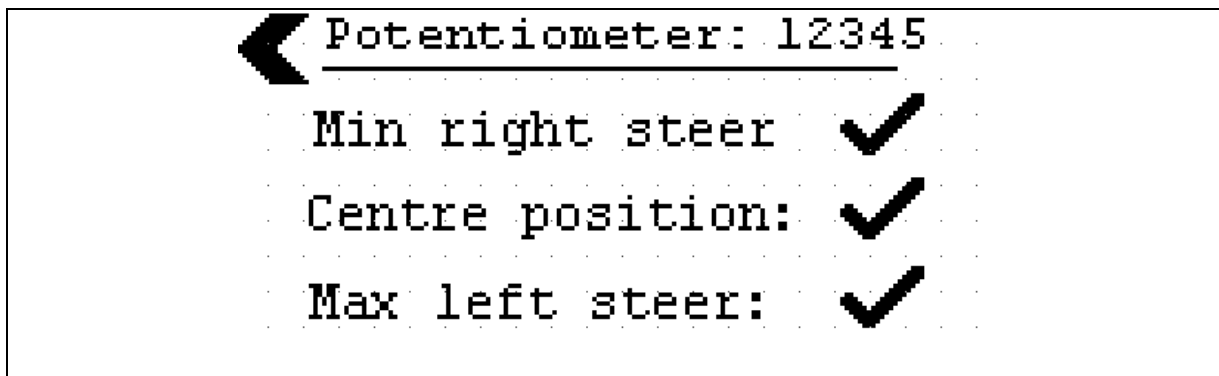
direction. Press the P30A: 12345 ✓
P30P: 12345 ✓, the topside analog quantity will input the “P30A” and “P30P” position)

步骤 5: 将小臂角度调到正向 50 度位置, 按下 P50A: 12345 SAVE
P50P: 12345 SAVE, 观察界面最上面的模拟量自动导入到“P50A”和“P50P”位置。(Set the jib angle to 50 degree forward

direction. Press the P50A: 12345 SAVE
P50P: 12345 SAVE, the topside analog quantity will input the “P50A” and “P50P” position)

步骤 6: 记录以上所有数据, 断电重启, 确认模拟量是否保存到正确的位置。(Save above data and restart. Ensure the analog quantity is saved to the correct position)

3.4.3.3 车轮转向校验(Steer potentiometer verify)



在进行车轮转向校验时，需要将车轮打下全行程，确认界面最上面的模拟量是递增或递减的方式变化，否则需要重新安装转向电位计位置。(When you verify the wheel steering, you need to turn total excursion. Ensure the topside analog quantity is increase or decrease gradually. If not, you need reset the position of the potentiometer)

步骤 1: 将车轮转向转到右侧最小位置，按下 **Min right steer**  图标; (Turn to the min right steer, press the **Min right steer**  icon)

步骤 2: 将车轮转向转到最中心位置，按下 **Centre position:**  图标; (Turn to the center position, press the **Centre position:**  icon)

步骤 3: 将车轮转向转到左侧最大位置，按下 **Max left steer:**  图标; (Turn to the max left steer, press the **Max left steer:**  icon)

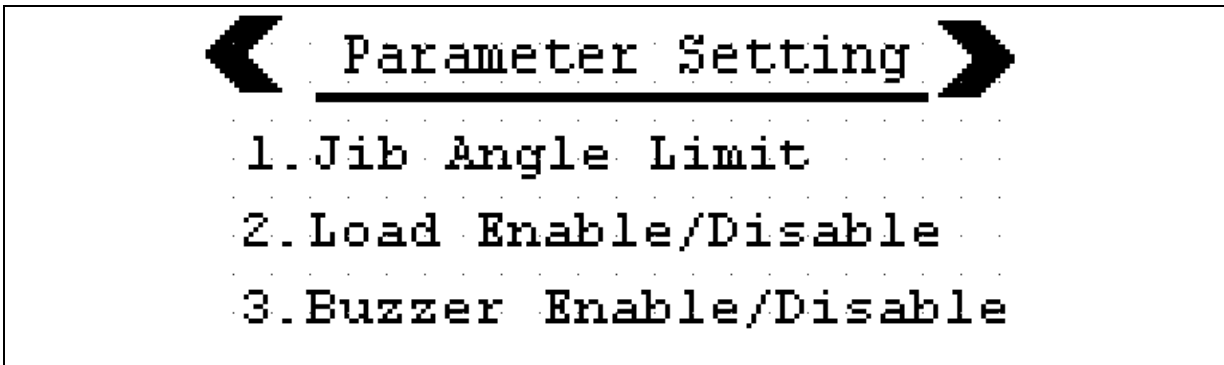
步骤 4: 断电重启; (Restart)

3.4.4 参数设定(Parameter setting)

正确输入密码后，首先进入参数校验界面，再按照如下的按钮，进入参数设定界面; (When you input the password correctly, you will enter into the parameter verify interface. Then according to the following button, you can enter into the parameter setting interface)

注意：进入该界面需要经过培训的人员才能操作，因为不正确的设定，会导致系统没有任何动作或者危险动作。

(Warning: If you want to enter into the interface, you must be a trained and qualified personnel. Because if your setting is wrong, the system will be no any operation or dangerous)

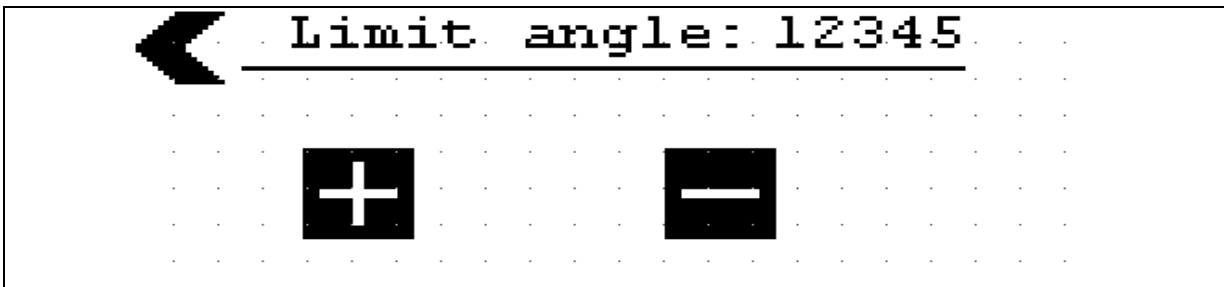


A 小臂下限角度设定，用于小臂工作斗底部到地面的距离；(Jib angle limit setting, for the distance from the bottom of the cage to the ground)

B 称重功能激活/禁止，用于选择是否需要称重功能；(The load function enable/disable, for chose the load function is on or off)

C 动作蜂鸣的激活/禁止，用于选择是否需要动作蜂鸣；(Buzzer enable/disable, for chose the buzzer is on or off)

3.4.4.1 小臂下限角度设定(Jib angle limit setting)

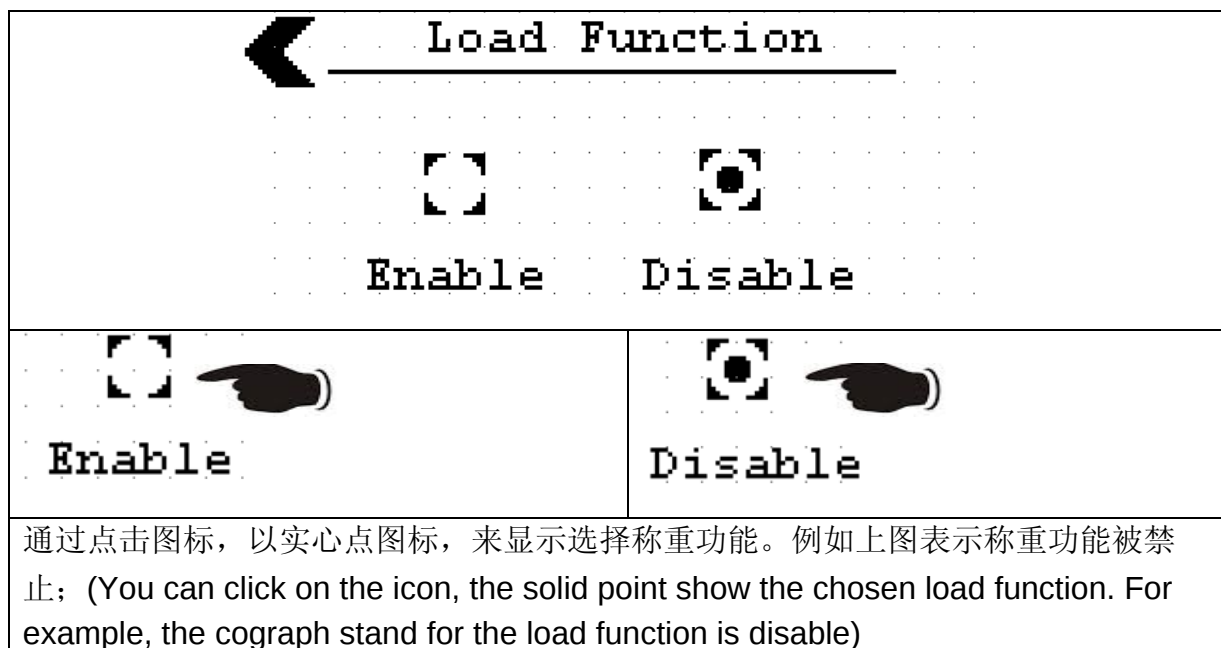


界面中“Limit angle”显示目前小臂下限角度的设定；设定范围为-450 到-600；(The “Limit angle” in the interface show the jib limit angle setting now; the range is -450 to -600)

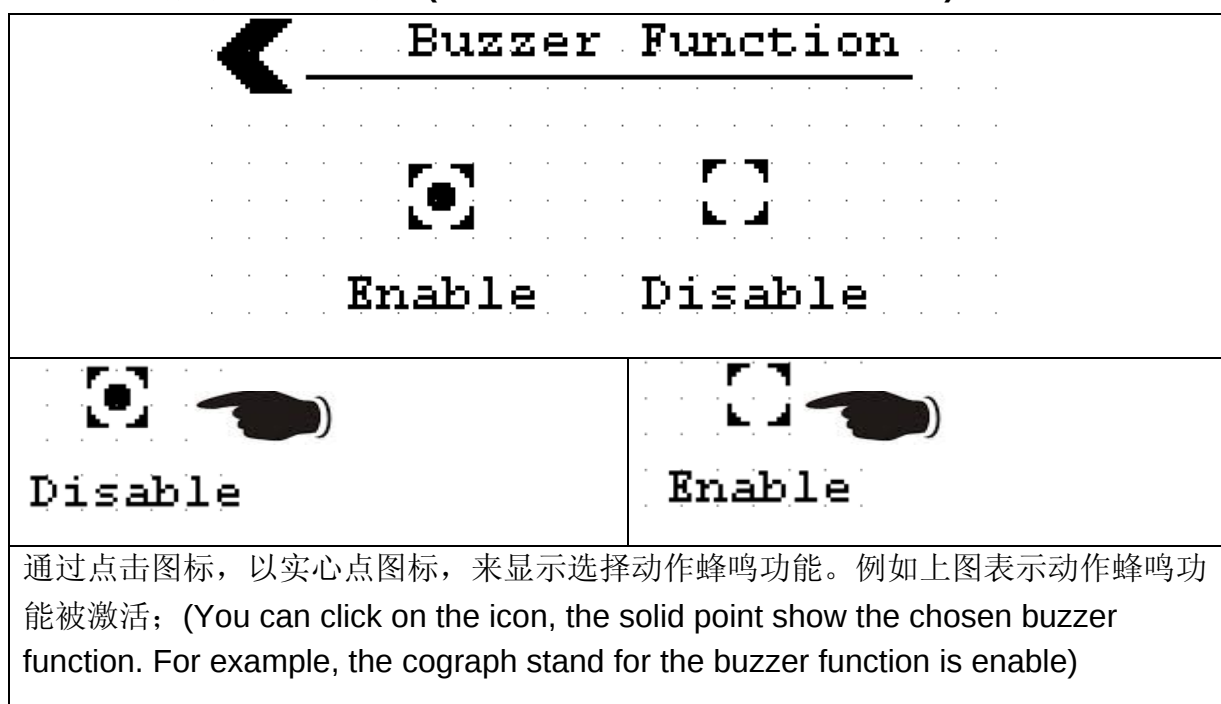
 代表每按一次，以 10 的步长递增，并且保存；( stands for you press it once, the angle will increase 10 and it will save automatically)

 代表每按一次，以 10 的步长递减，并且保存；( stands for you press it once, the angle will decrease 10 and it will save automatically)

3.4.4.2 称重功能激活/禁止(Load function enable/disable)

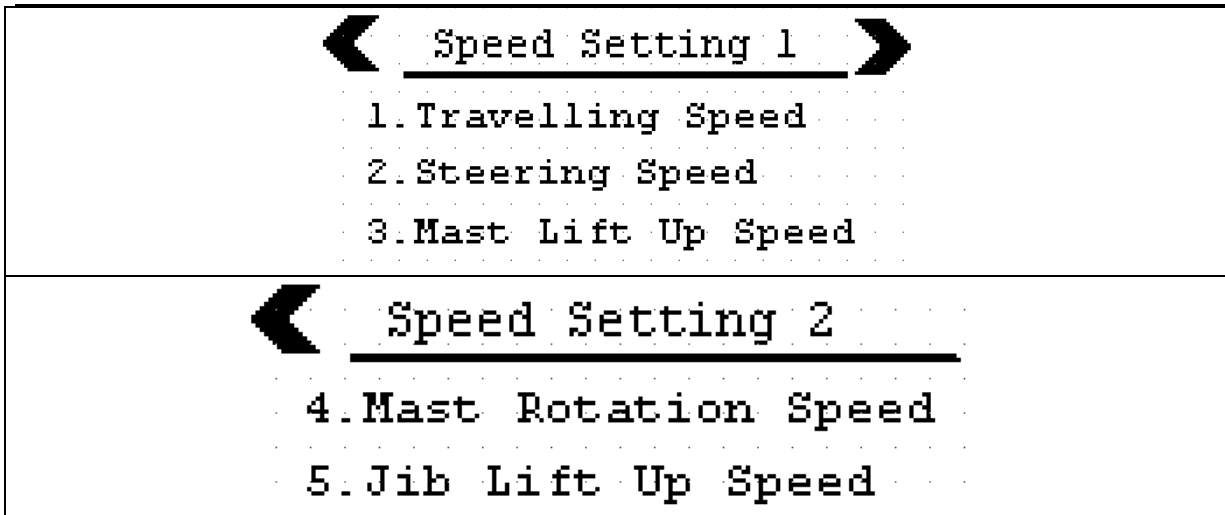


3.4.4.3 动作蜂鸣的激活/禁止(Buzzer function enable/disable)



3.4.5 速度设定界面





1.行走速度设定，用于调整套筒车前进后退速度及手柄使能的动作斜坡；(Travelling speed setting,it is used to adust the forward and backward speed and the joystick start/ stop slope)

2.转向速度设定，用于调整套筒车车轮转向速度；(Steering speed setting,it is used to adust the wheel steering speed)

3.桅柱起升速度设定，用于调整套筒车垂直桅柱起升速度；(Mast lift up speed setting,it is used to adust the vertical mast lifting up speed)

4.桅柱回转速度设定，用于调整套筒车垂直桅柱左右回转速度；(Mast rotation speed setting,it is used to adust the vertical mast left and right slewing speed)

5.小臂起升速度设定，用于调整套筒车小臂起升速度；(Jib lift up speed setting,it is used to adust the jib lifting up speed)

3.4.5.1 行走速度设定 Travelling speed setting,i

前进速度设定 Forward speed setting



界面中“Forward speed”显示目前套筒车前进速度的设定；设定范围为 1000 到 4400；(The “Forward speed” in the interface show the machine forward speed setting now; the range is 1000 to 4400)

 代表每按一次，以 50 的步长递增，并且保存；( stands for you press it once, the speed will increase 50 and it will save automatically)

 代表每按一次，以 50 的步长递减，并且保存； ( stands for you press it once, the speed will decrease 50 and it will save automatically)

后退速度设定(Backward speed setting)



界面中“Backward speed”显示目前套筒车后退速度的设定；设定范围为 1000 到 4400；
(The “Backward speed” in the interface show the machine backward speed setting now; the range is 1000 to 4400)

 代表每按一次，以 50 的步长递增，并且保存； ( stands for you press it once, the speed will increase 50 and it will save automatically)

 代表每按一次，以 50 的步长递减，并且保存； ( stands for you press it once, the speed will decrease 50 and it will save automatically)

3.4.5.2 前进启动斜坡设定 Forward start slope setting



界面中“F Start slope”显示目前套筒车的前进启动斜坡的设定；设定范围为 0 到 100；
(The “F Start slope” in the interface show the machine forward start slope setting now; the range is 0 to 100)

 代表每按一次，以 1 的步长递增，并且保存； ( stands for you press it once, the slope will increase 1 and it will save automatically)

 代表每按一次，以 1 的步长递减，并且保存； ( stands for you press it once, the slope will decrease 1 and it will save automatically)

3.4.5.3 前进停止斜坡设定 Forward stop slope setting



界面中“F Stop slope”显示目前套筒车前进停止斜坡的设定；设定范围为 0 到 100；

(The “F Stop slope” in the interface show the machine forward stop slope setting now; the range is 0 to 100)



代表每按一次，以 1 的步长递增，并且保存；



(stands for you press it once,

the slope will increase 1 and it will save automatically)



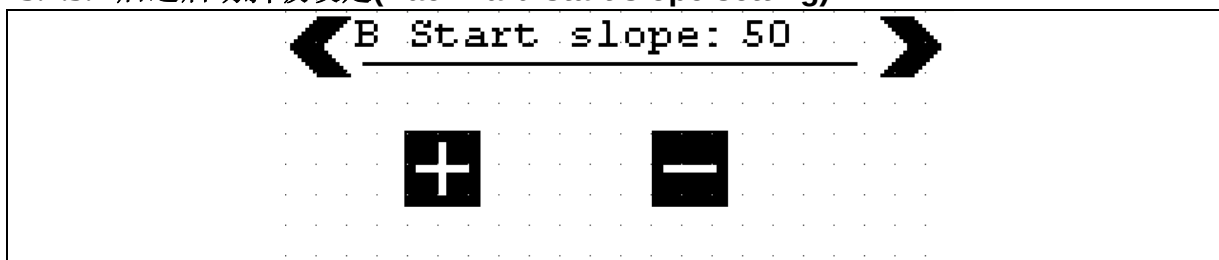
代表每按一次，以 1 的步长递减，并且保存；



(stands for you press it once,

the slope will decrease 1 and it will save automatically)

3.4.5.4 后退启动斜坡设定(Backward start slope setting)



界面中“B Start slope”显示目前套筒车后退启动斜坡的设定；设定范围为 0 到 100；

(The “B Start slope” in the interface show the machine backward start slope setting now; the range is 0 to 100;)



代表每按一次，以 1 的步长递增，并且保存；



(stands for you press it once,

the slope will increase 1 and it will save automatically)



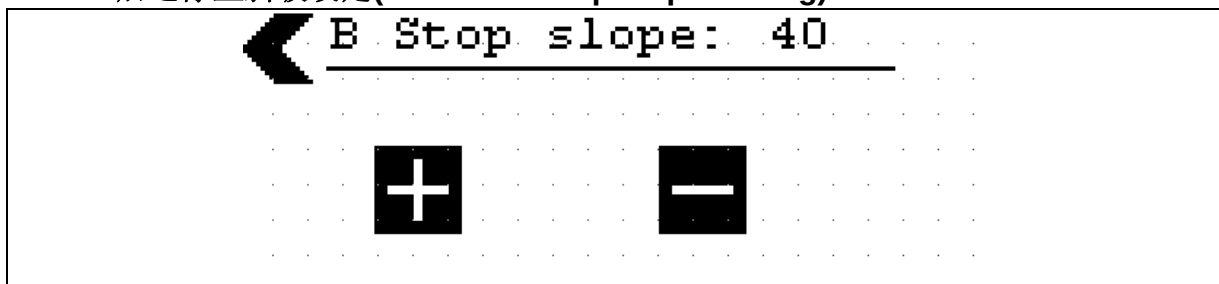
代表每按一次，以 1 的步长递减，并且保存；



(stands for you press it once,

the slope will decrease 1 and it will save automatically)

3.4.5.5 后退停止斜坡设定(Backward stop slope setting)



界面中“B Stop slope”显示目前套筒车后退停止斜坡的设定；设定范围为 0 到 100；

(The “B Stop slope” in the interface show the machine backward stop slope setting now; the range is 0 to 100)



代表每按一次，以 1 的步长递增，并且保存；



(stands for you press it once,

the slope will increase 1 and it will save automatically)



代表每按一次，以 1 的步长递减，并且保存；



(stands for you press it once,

the slope will decrease 1 and it will save automatically)

3.4.5.6 车轮转向速度设定(Steer speed setting)



界面中“Steer speed”显示目前套筒车车轮转向速度的设定；设定范围为 500 到 2000；

(The “Steer speed” in the interface show the machine wheel steering speed setting now; the range is 500 to 2000)



代表每按一次，以 10 的步长递增，并且保存；



(stands for you press it once,

the speed will increase 10 and it will save automatically)



代表每按一次，以 10 的步长递减，并且保存；



(stands for you press it once,

the speed will decrease 10 and it will save automatically)

3.4.5.7 桅柱举升速度设定(Mast lift up speed setting)



界面中“Mast up speed”显示目前套筒车桅柱举升速度的设定；设定范围为 1000 到 4400；

(The “Mast up speed” in the interface show the machine mast lift up speed setting now; the range is 1000 to 4400)



代表每按一次，以 100 的步长递增，并且保存；

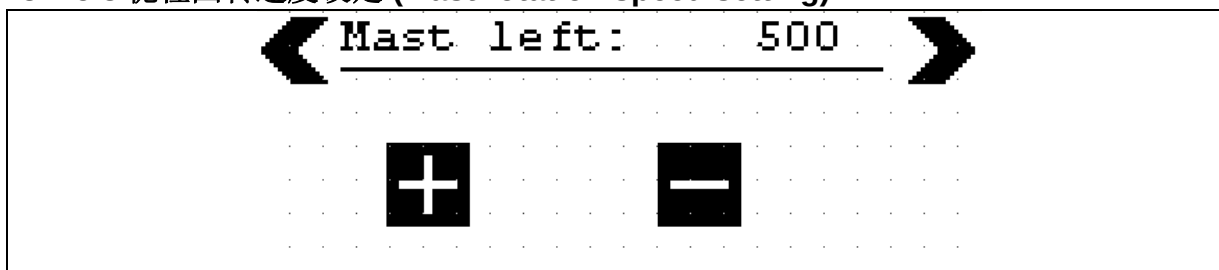


(stands for you press it once,

the speed will increase 100 and it will save automatically)

 代表每按一次，以 100 的步长递减，并且保存；( stands for you press it once, the speed will decrease 100 and it will save automatically)

3.4.5.8 桅柱回转速度设定 (Mast rotation speed setting)

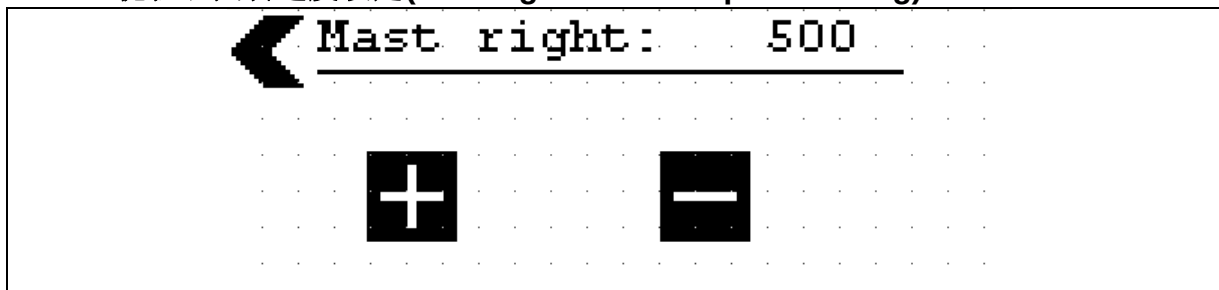


界面中“Mast left”显示目前套筒车桅柱左回转速度的设定；设定范围为 100 到 1500；
(The “Mast up speed” in the interface show the machine mast right rotation speed setting now; the range is 100 to 1500)

 代表每按一次，以 10 的步长递增，并且保存；( stands for you press it once, the speed will increase 10 and it will save automatically)

 代表每按一次，以 10 的步长递减，并且保存；( stands for you press it once, the speed will decrease 10 and it will save automatically)

3.4.5.9 桅柱右回转速度设定(Mast right rotation speed setting)



界面中“Mast right”显示目前套筒车桅柱右回转速度的设定；设定范围为 100 到 1500；
(The “Mast right” in the interface show the machine mast right rotation speed setting now; the range is 100 to 1500)

 代表每按一次，以 10 的步长递增，并且保存；( stands for you press it once, the speed will increase 10 and it will save automatically)

 代表每按一次，以 10 的步长递减，并且保存；( stands for you press it once, the speed will decrease 10 and it will save automatically)

3.4.5.10 小臂举升速度设定(Jib lifting up speed setting)

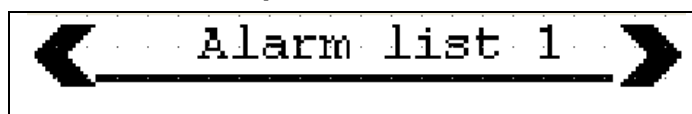
界面中“Jib up speed”显示目前套筒车小臂举升速度的设定；设定范围为 0 到 1000；
(The “Jib up speed” in the interface show the machine jib lift up speed setting now; the range is 0 to 1000)



代表每按一次，以 10 的步长递增，并且保存；(stands for you press it once, the speed will increase 10 and it will save automatically)



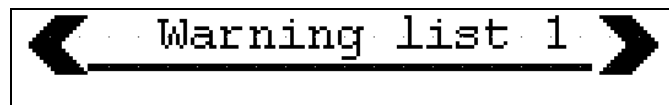
代表每按一次，以 10 的步长递减，并且保存；(stands for you press it once, the speed will decrease 10 and it will save automatically)

3.5 报警代码界面(Alarm list interface)

Display	Description (English)	中文故障描述 (Chinese)
1	locore CPUa canbus fault	IoCore 扩展模块 CPUa CAN 通讯报警
2	locore CPUb canbus fault	IoCore 扩展模块 CPUb CAN 通讯报警
3	NANO canbus fault	NANO 显示器 CAN 通讯报警
4	Canbus off	CAN 总线 busoff
5	Y joystick fault	Y 轴手柄故障
6	Steer Sensor Fault	车轮转向电位计故障
7	Jib Angle Sensor Fault	小臂角度传感器故障
8	Jib Press Sensor Fault	小臂压力传感器故障
9	Left motor brake coil open circuit	左电机刹车线圈开路
10	Left motor brake coil short circuit	左电机刹车线圈短路
11	Right motor brake coil open circuit	右电机刹车线圈开路
12	Right motor brake coil short circuit	右电机刹车线圈短路

13	LE70 memory P fault	控制器内部 P 存储器故障
14	LE70 memory R fault	控制器内部 R 存储器故障
15	LE70 pinout fault	LE70 控制器部分电磁阀输出针脚故障
16	zapi driver canbus fault	zapi 驱动器 can 总线故障
17	PCU canbus fault	上控手柄模块 CAN 总线故障
18	Reserved	备用

3.6 提示代码界面 Warning list interface



Display	Description (English)	中文故障描述 (Chinese)
21	Pothole Guard error	坑洞报警提示
22	Mast upper position limit	桅柱上限位提示
23	Mast lower position limit	桅柱下限位提示
24	Jib upper position limit	小臂上行程开关提示
25	LE70 memory P warning	控制器内部 P 存储器提示
26	LE70 memory R warning	控制器内部 R 存储器提示
27	Voltage of battery less than 70%	电池电压低于 70%
28	Manual brake release	手动刹车释放
29	Jib upper angle limit	小臂上角度限制
30	Jib lower angle limit	小臂下角度限制
90	90% Load pre-warning	90%负载预提示
101	Overload 220kg , PCU show "OL"	工作斗超载-220KG,PCU 显示“OL”
102	Tilt, PCU show "LL"	倾斜报警提示,PCU 显示“LL”
31	Serial error	串口通讯错误
32	EEPROM KO	存储器错误
33	Logic faulture	逻辑单元错误（钥匙开关电压信号不稳定）
34	Battery low	电量低 10%
35	Drive shorted	主接触器驱动短路
36	Contactor driver	主接触器不能闭合
37	FORW+BACK	同时有前进后退信号
38	Drive 1 KO	驱动 1 错误（控制器内部检测到主接触器

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		信号错误)
39	Drive 2 KO	驱动 2 错误 (控制器内部检测到 EB 信号错误)
40	EB1 DRV. Shorted	左刹车驱动短路
41	EB2 DRV. Shorted	右刹车驱动短路
44	AUX DRV. Shorted	Pin12 口短路
45	EB coil shorted	
48	Output mismatch	逻辑板和界面信号不匹配
49	Brake enable	
50	Steer out of RNG.	转向电位器超出设定值
51	Incorrect start	启动顺序错误
52	Mismatch N.	逻辑板和界面信号不匹配
53	A12 DRV. Fail	A12 驱动失败
54	AUX enable short	辅助使能短路
55	MC enable short	逻辑板主接触器使能短路
56	MC coil open	主接触器不能闭合
57	Wrong set BAT.	电压设置错误
58	Analog input	界面输入信号错误
59	Waiting for node	等待节点信号 (Power 有故障)
60	No CAN MSG.	无 CAN 通讯
61	Flash checksum	闪存检查
62	Wrong RAM memory	错误的 RAM 存储
63	Serial error	串口通讯错误
64	Logic failure	存储器错误
65	Left VMN low	左电机 VMN 低
66	Left VMN high	左电机 VMN 高
67	Right VMN low	右电机 VMN 低
68	Right VMN high	右电机 VMN 高
69	Pump VMN low	泵电机 VMN 低
70	Pump VMN high	泵电机 VMN 高
71	VMN low	
72	VMN high	
73	Contactor closed	主接触器粘连
74	Contactor open	主接触器无法闭合
75	Pump I=0 ever	泵电机工作时, 检测到电机电流为 0
76	Left STBY I high	电机停止时, 检测到左电机电枢有电流
77	Right STBY I high	电机停止时, 检测到右电机电枢有电流

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78	Pump STBY I high	泵电机停止时，检测到电机电枢有电流
79	High field CUR.	在电机静止状态下，检测到有励磁电流通过
80	No field CUR.	电机工作状态下，检测不到励磁电流
81	Capacitor charge	电容充电
82	High temperature	控制器温度过高（75）
83	Driver 1 KO.	驱动 1 故障
84	Driver 2 KO.	驱动 2 故障
85	Pump I SENS. KO	泵电流传感器故障
86	ARMDX. COIL shorted	右电枢短路
87	ARMSX. COIL shorted	左电枢短路
88	V field not ok	励磁电压故障
89	TH. sensor KO	控制器温度传感器故障
91	TRAC. SENS.KO	电枢传感器故障
92	Wait for enable	等待使能信号
93	Driver 3 KO	驱动 3 故障
94	TRAC. EN. shorted	行走使能短路
95	Pump EN. shorted	泵使能短路
96	Steer out of RN.	转向电位器超出设定值
97	Analog input	模拟量输入错误
98	SP. Mismatch	内部信号不匹配
99	No CAN MSG.	无 CAN 通讯
100	Flash checksum	闪存检查
103	Wrong RAM. memory	错误的 RAM 存储
104	FLDDX coil short	右励磁短路
105	FLDSX coil short	左励磁短路

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常规保养

Daily Maintenance

1、液压油更换 (Hydraulic oil change)

更换和测试液压油对于机器的性能表现和使用寿命是非常重要的。脏的液压油和滤芯可以导致机器性能不好，连续使用可能会导致零件损坏，如果在极端恶劣的环境下工作，需要更换液压油的频率要比平常环境多很多。

(Replacement and testing of the hydraulic oil is essential for good machine performance and service life. Dirty oil and suction strainers may cause the machine poorly and continued use may cause components damage. Extremely dirty conditions may require oil changes to be performed more often.)

建议每两年或者机器运行 1200 个小时，更换液压油。(Every 2years or 1200 hours of operation, hydraulic oil need to be changed.)

2、电池的维护 (Maintenance of battery)

2.1 每周检查和清洁一次(Weekly check and clean the battery)

2.2 每两周检查电池液面的状态，保证电池配备充足的电池液。

(Check the situation of water level of battery in two weeks, to make sure the water is enough in the battery.)