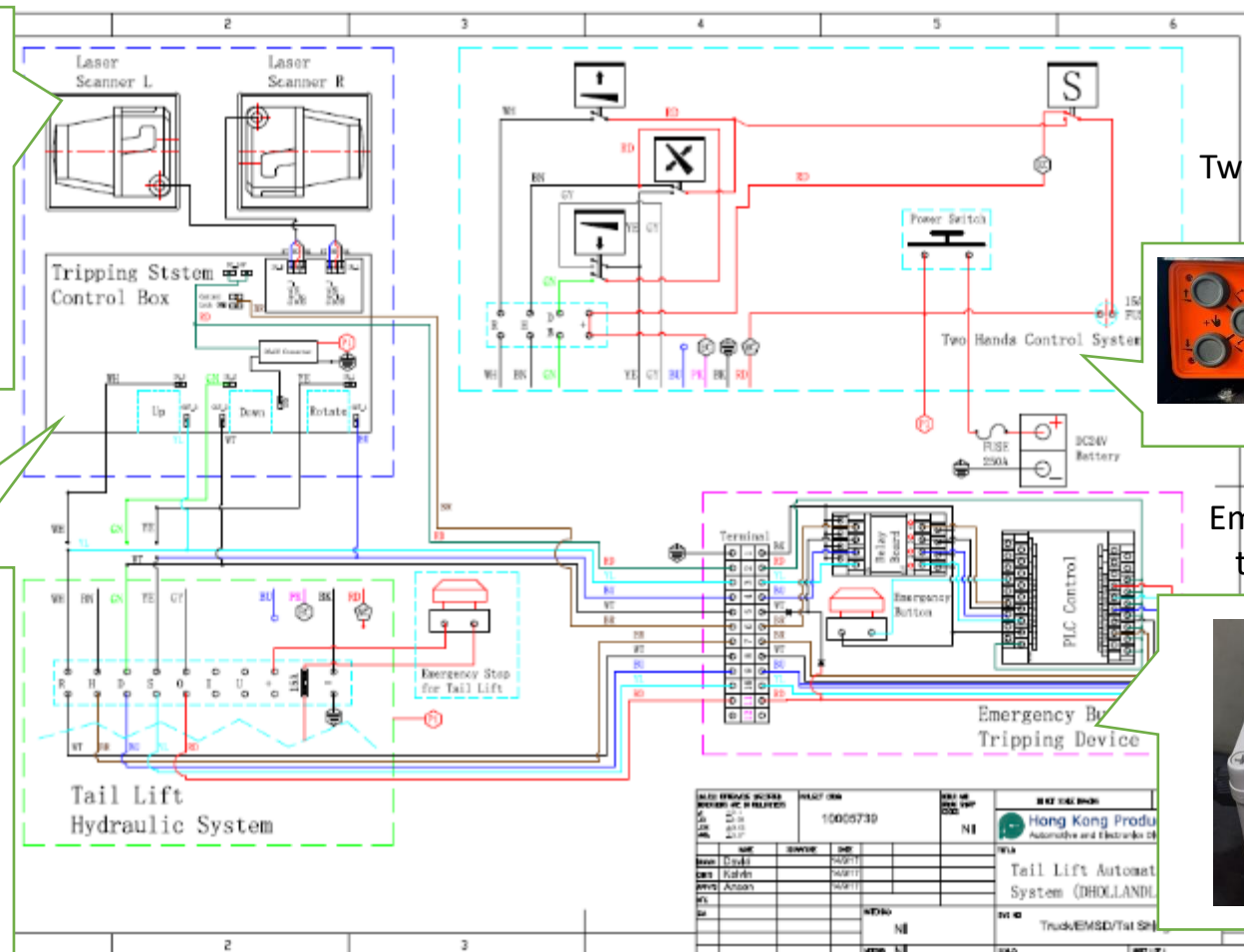


**All parts mentioned in this document are for reference only and the tail plate installation / contractor / person concerned may choose the appropriate part.**

## **Installation guideline of safety device and Flame/Explosion Proof boxes of tail lift**

# Agenda

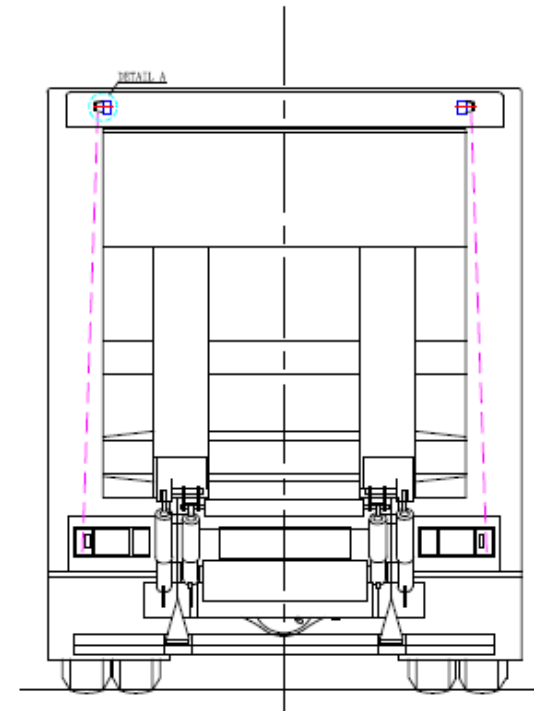
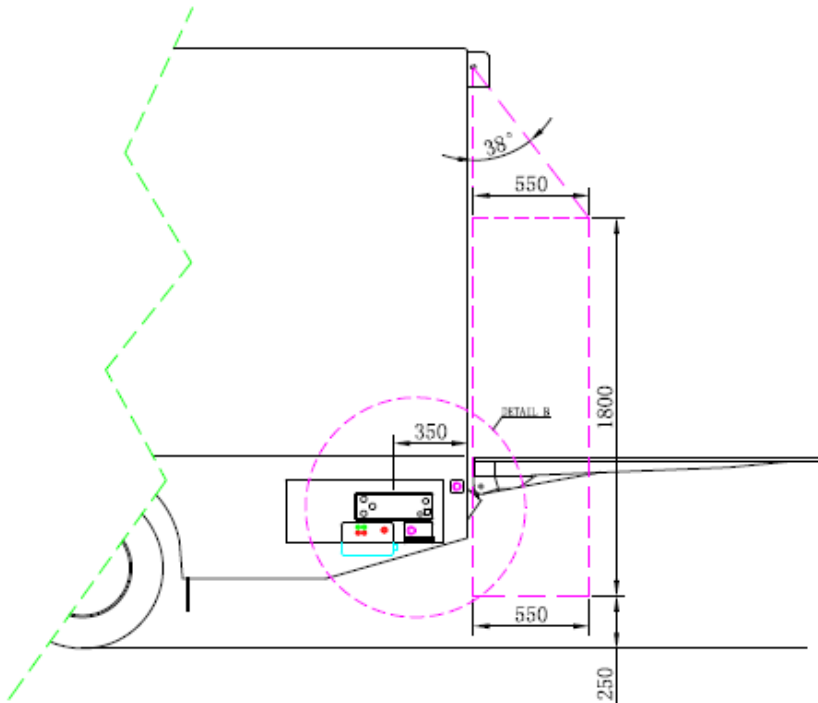
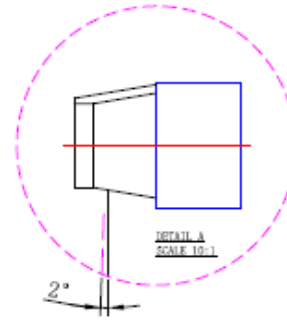
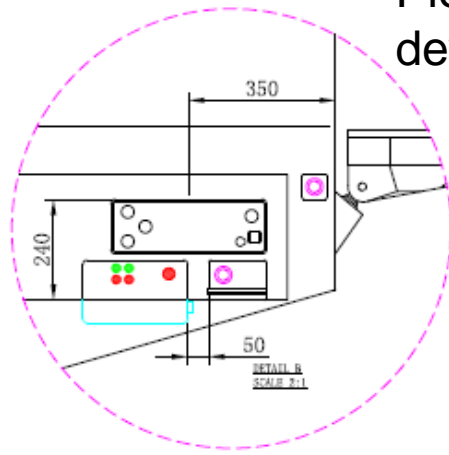
1. Overview of System layout
2. Introduction of installation tools and materials
3. Installation procedures
4. Testing & Certification

A blue and black SICK laser scanner unit, featuring a prominent black cylindrical sensor housing and the SICK logo on the front panel.

A white, rectangular, waterproof enclosure with a red emergency stop button on the front and a hand resting on top.

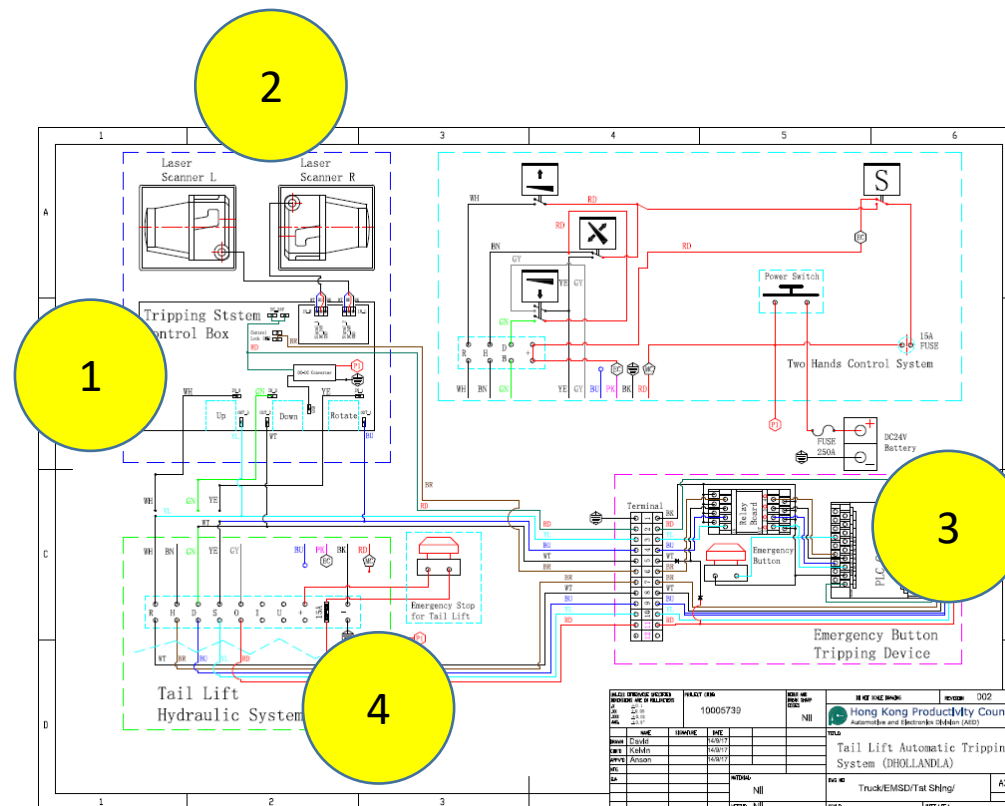
For details, please refer to attachment 1

Please refer the layout of the auto-tripping device of tail lift



# Overview of Installation procedures

1. Installation of control device
2. Installation of laser scanner
3. Connect the emergency box to the control box and hydraulic system
4. Connect the control box to the hydraulic system of tail lift
5. Performance test





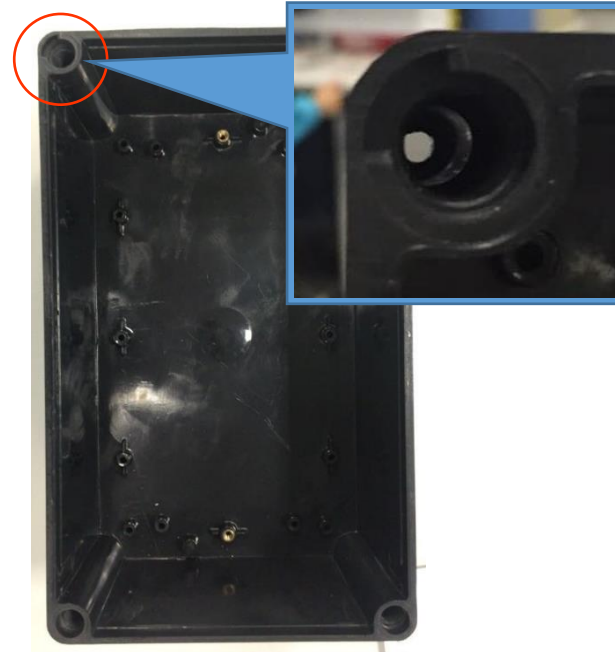
# 1. Installation of control device (1)



Step 1:  
Open the cover  
(Use hand driver, or else  
it could damage the  
plastic screw)



Step 2: Remove the  
circuit board in the box



Step 3: Weld an iron mount on  
the car body. Weld the case to the  
car body with an iron frame. Put  
the control box next to the two  
hand device.

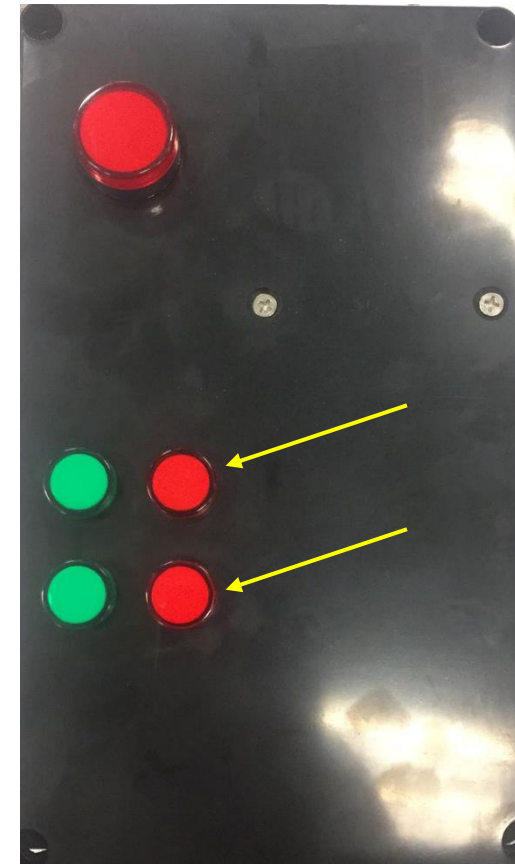
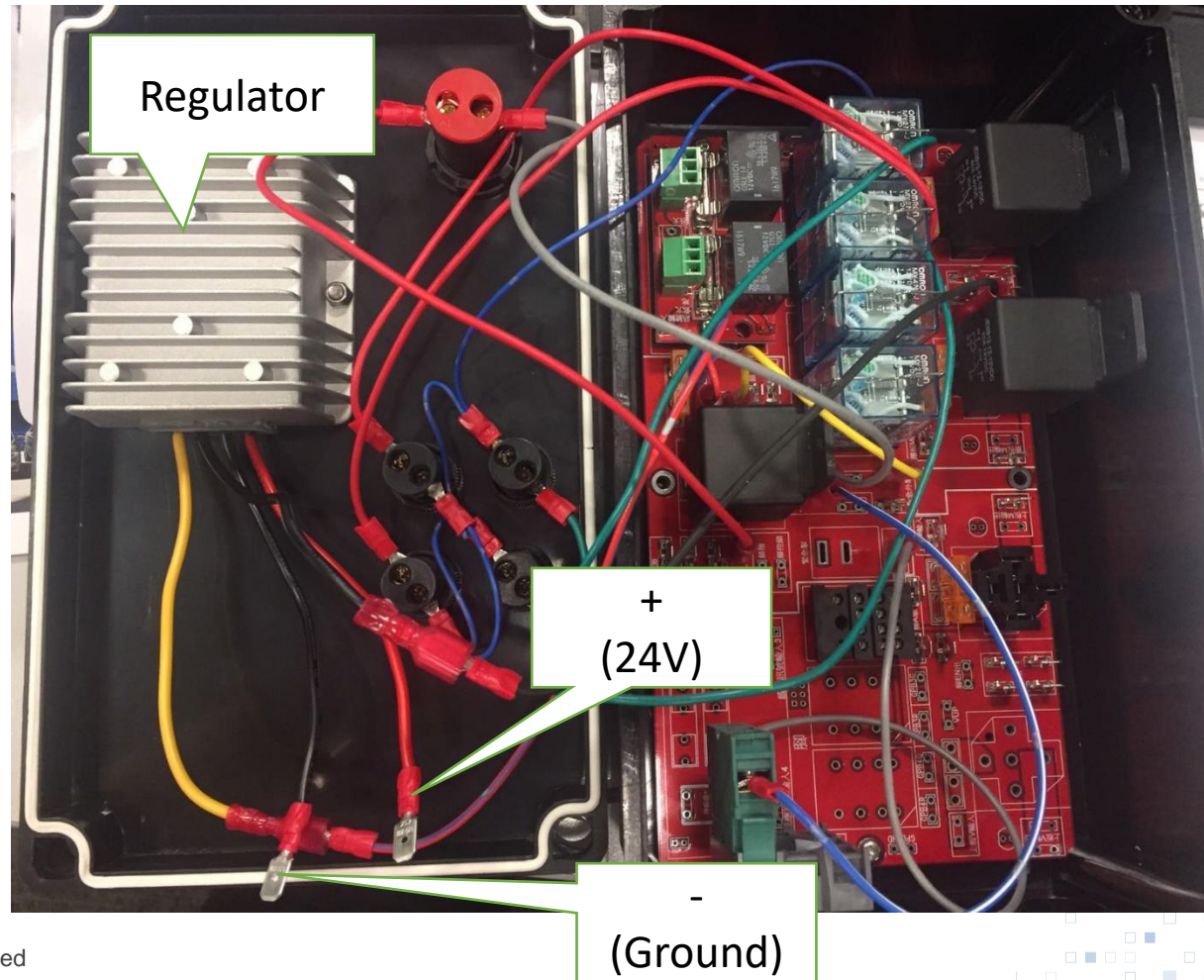


## 2. Installation of control device (2)

Step 4: Turn off the truck, re-install the circuit board to the control box

Step 5: Connect the car power (24V) and ground to the regulator of the control box

Step 6: Turn on the truck again, you should see two red indicators light on now



## 2. Installation of control device (3)

Step 7: Turn on the manual switch with key, you should see the top red indicator light on now.

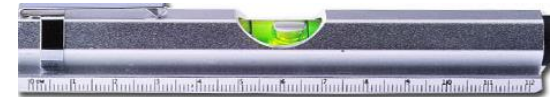
Step 8: The installation of the control box is completed!





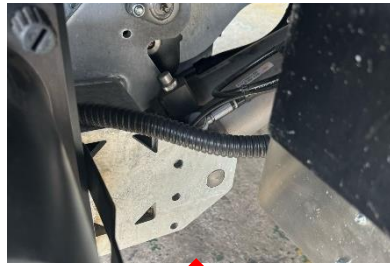
### 3. Installation of laser scanner (1)

Note: First of all, the installation must be conducted on a flat and horizontal place, otherwise it will lead to the calibration error of sensors.



### 3. Installation of laser scanner (2)

Step 1: Prepare 2 sets of wires from the system controller connected to the car into the left and right corner 2 (Note: Reserve longer wire at the right hand side to facilitate later work)



wire



Note: All wires should be protected by the metal hose.

All electric wiring shall be heavily insulated and resistant to abrasion and chemical action. The wiring fixed at positions behind the fire resisting shield shall be run in flexible metal conduit.

所有電線須高度絕緣及能抵抗磨損和具有抗化性能。位於防火板後的電線須套以金屬軟管。

### 3. Installation of laser scanner (3)

Step 2: Secure the Flame/Explosion proof cases on the vehicle.  
This part should be handled by tail lift manufacturers easily and thus no introduction for this section in this power point.

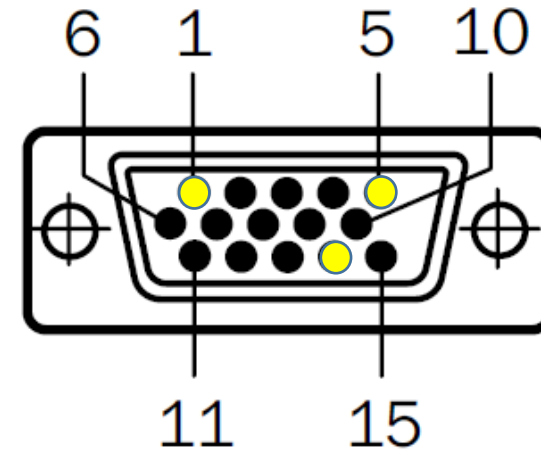


### 3. Installation of laser scanner (4)

Step 3: On the ground, first prepare the right controller, the use of welding iron to connect to the front of the wire



| 腳位 | 線色    | 說明   |
|----|-------|--|
| 1  | red   | + (24V)  |
| 5  | black | gound (GND)  |
| 14 | white | Signal output<br>(have object detected: 0V)<br>(no object detected: 24V) |



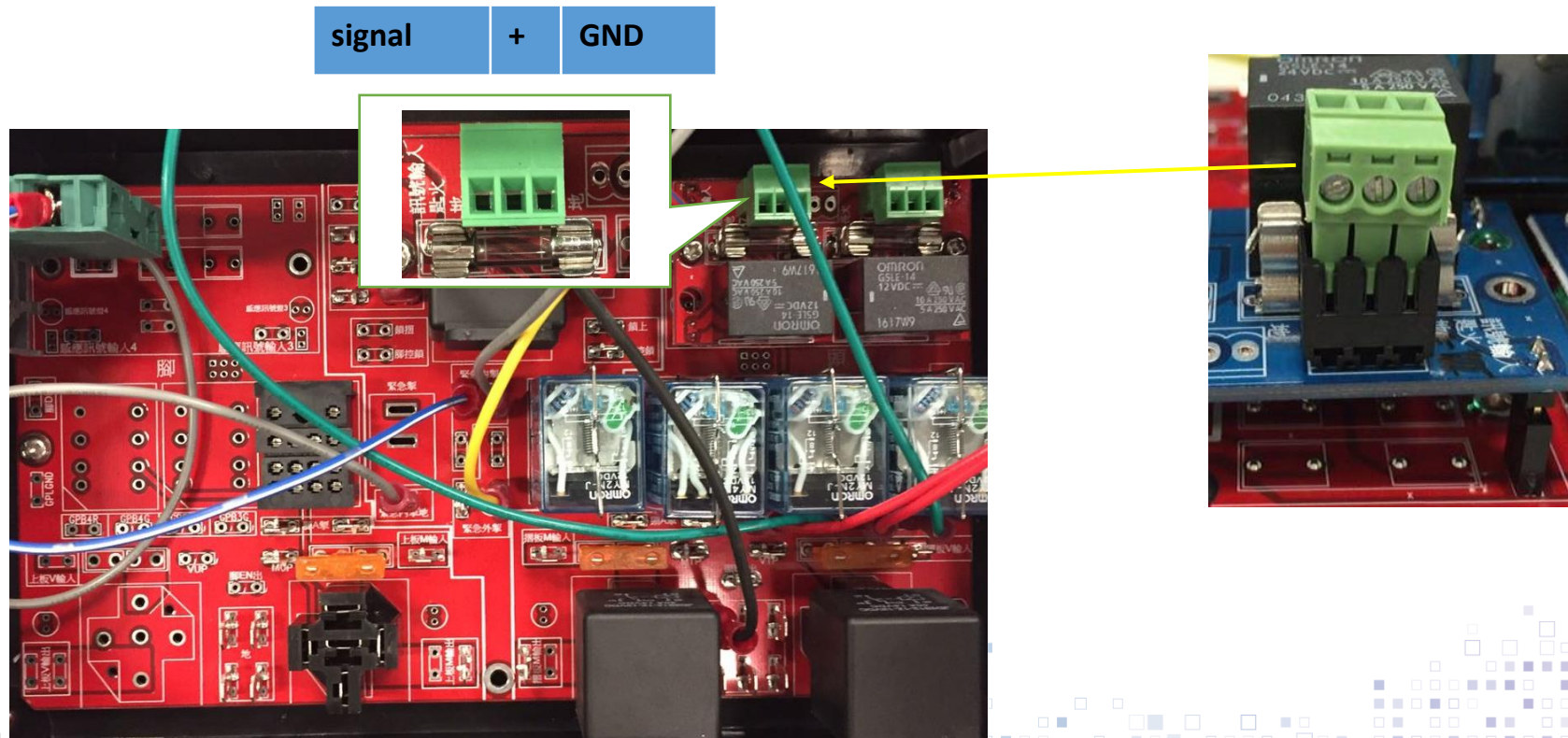


### 3. Installation of laser scanner (5)

Step 4: Turn off the truck

Step 5: Connect the 'signal', power and ground cable from the sensor to the socket of the board as shown below. Don't plug on board first

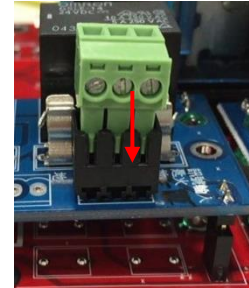
Step 6: Turn on the truck again. Use multi-meter to test the ground and power on the board to ensure the voltage is proper (i.e. 24V). If there is no power, please check the fuse that next to the socket



### 3. Installation of laser scanner (6)

Step 7: Turn off the truck, plug the male plug inserted on the circuit, turn on the truck again

Step 8: At this point the sensor should have been activated, the red light will keep flashing self-check and the red indicator of control panel should be lighted on.



Step 9: After 14 seconds, the sensor should stop flashing, green and

- If the sensor has not stopped flashing, please contact the manufacturer;
- If the sensor is green and the control panel does not turn green, check that the wire is complete and that the F-plug can receive the signal from the sensor (24V)
- If the sensor lights are lit, indicating that the protective cover, then you can first use the computer to adjust so as to eliminate the alarm

Status displays

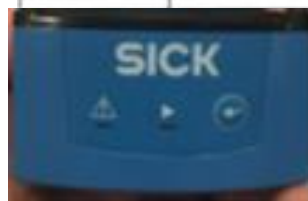
| LED ▲<br>(red) | LED ►<br>(green) | Status                        |
|----------------|------------------|-------------------------------|
| —              | ●                | Device ready/monitoring mode  |
| ●              | ●                | Field infringement            |
| ●              | —                | Error                         |
| —              | —                | Device without supply voltage |

系統準備完成

有物件進入

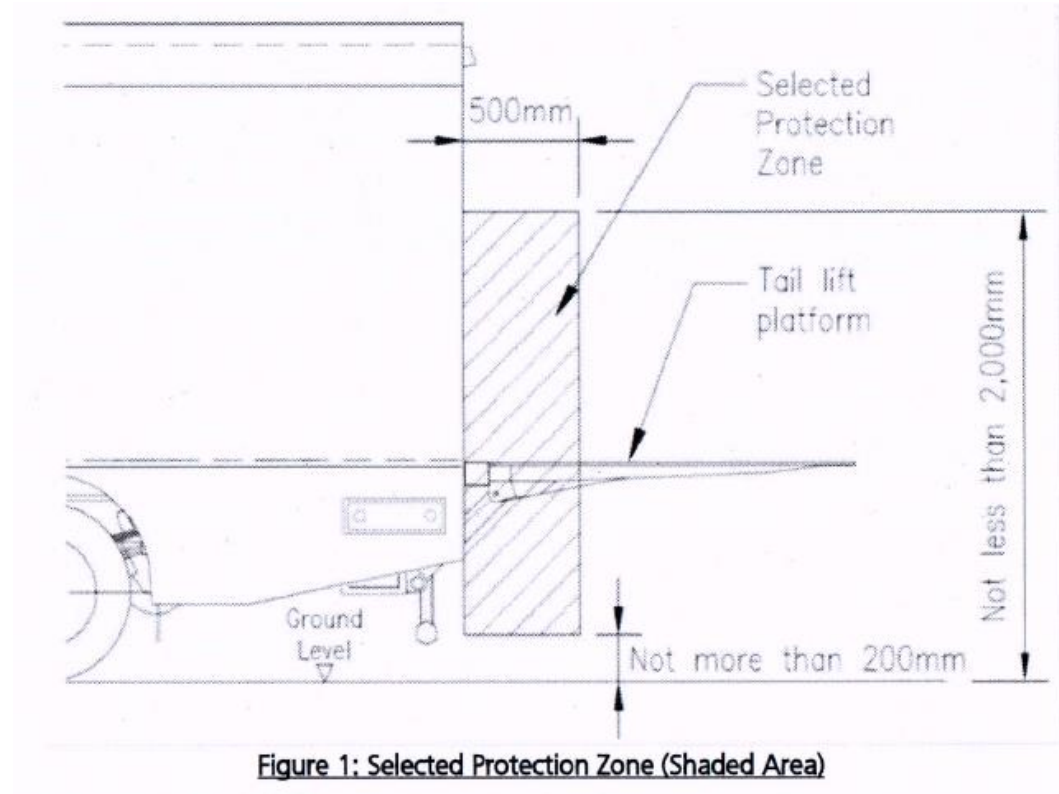
錯誤

沒有電源



### 3. Installation of laser scanner (7)

- Calibration of sensor, please refer to the attachment 2



Detection zone requirement of HK government

### 3. Installation of laser scanner (8)

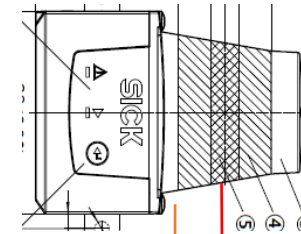
Step 10: Turn off the car and temporarily fix the sensor at the car corner  
(Position must be perpendicular to the tail plate and avoid the locking device)

Step 11: Turn on the computer and adjust the detection zone of sensor as shown in last page



Laser scanner

locking  
device

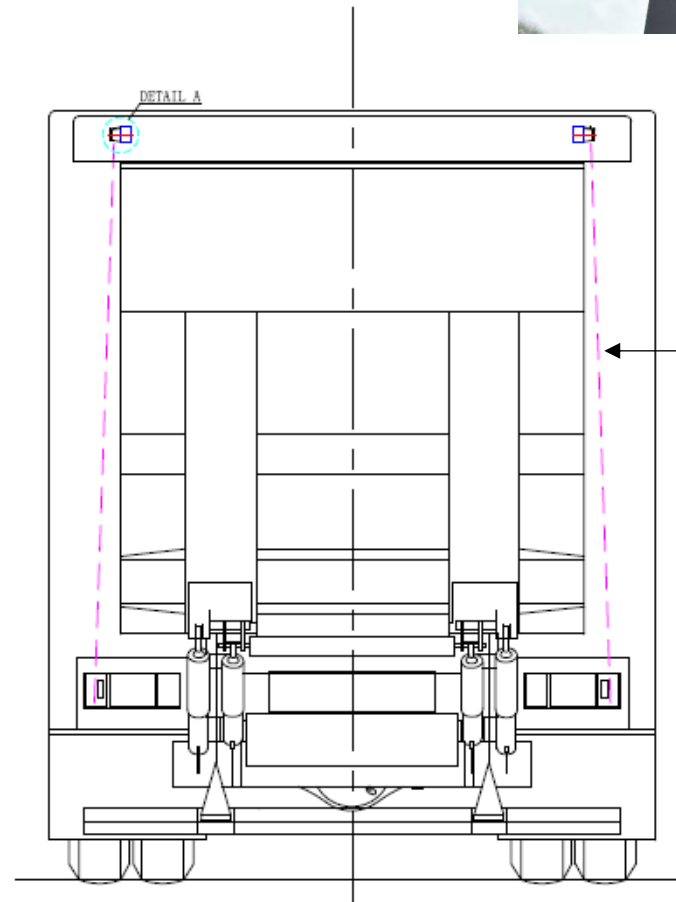
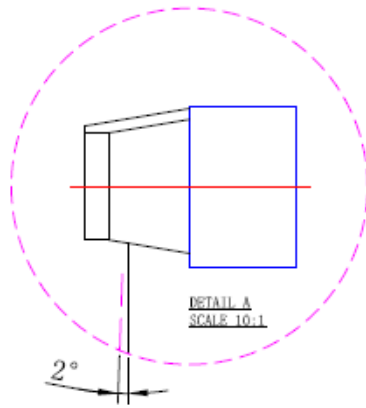


Tail lift  
platform

Detection  
beam

l  
o  
c  
k





Outward tilt 2 degrees could avoid some possible false alarm that triggered by the movement of the tail lift

### 3. Installation of laser scanner (9)

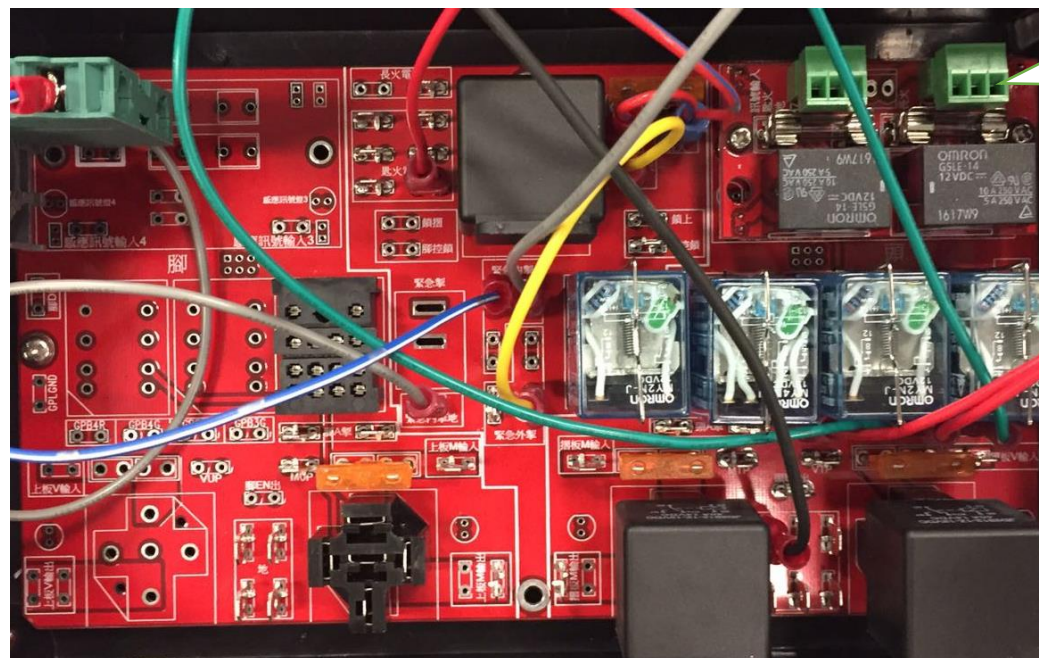
Step 13: Use object to trigger the sensor and see whether if the output of control box is correct or not

- No object
- Object detected

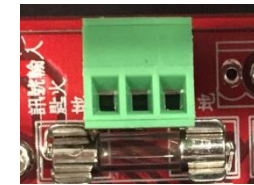


### 3. Installation of laser scanner (10)

Step 14: Install the right hand side sensor, repeat the steps 1-13 (but use other socket this time)

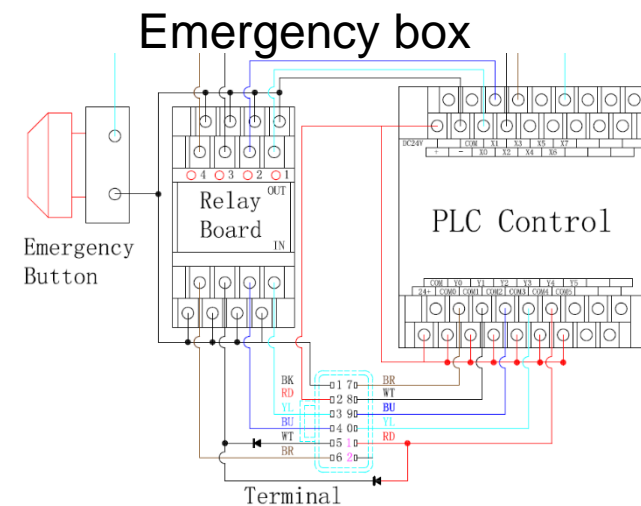
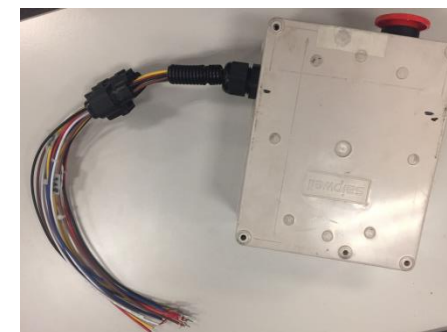
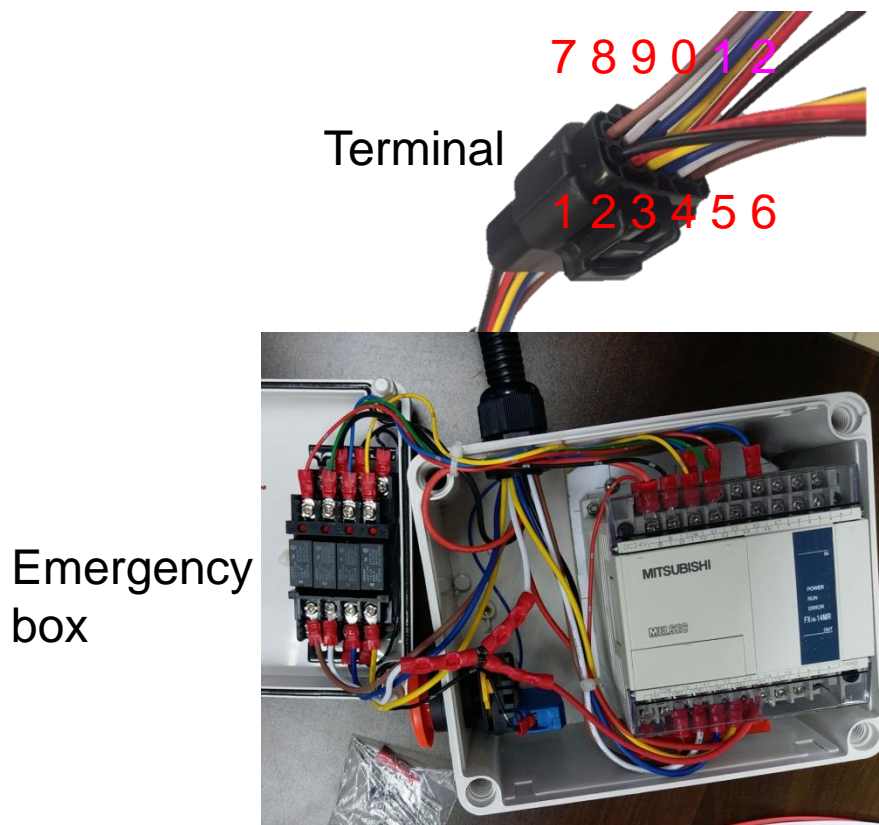


|        |   |     |
|--------|---|-----|
| signal | + | GND |
|--------|---|-----|



## 4. Connect the emergency box to the control box and hydraulic system (1)

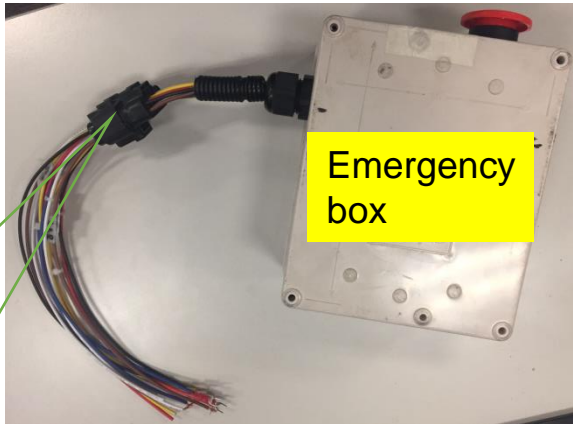
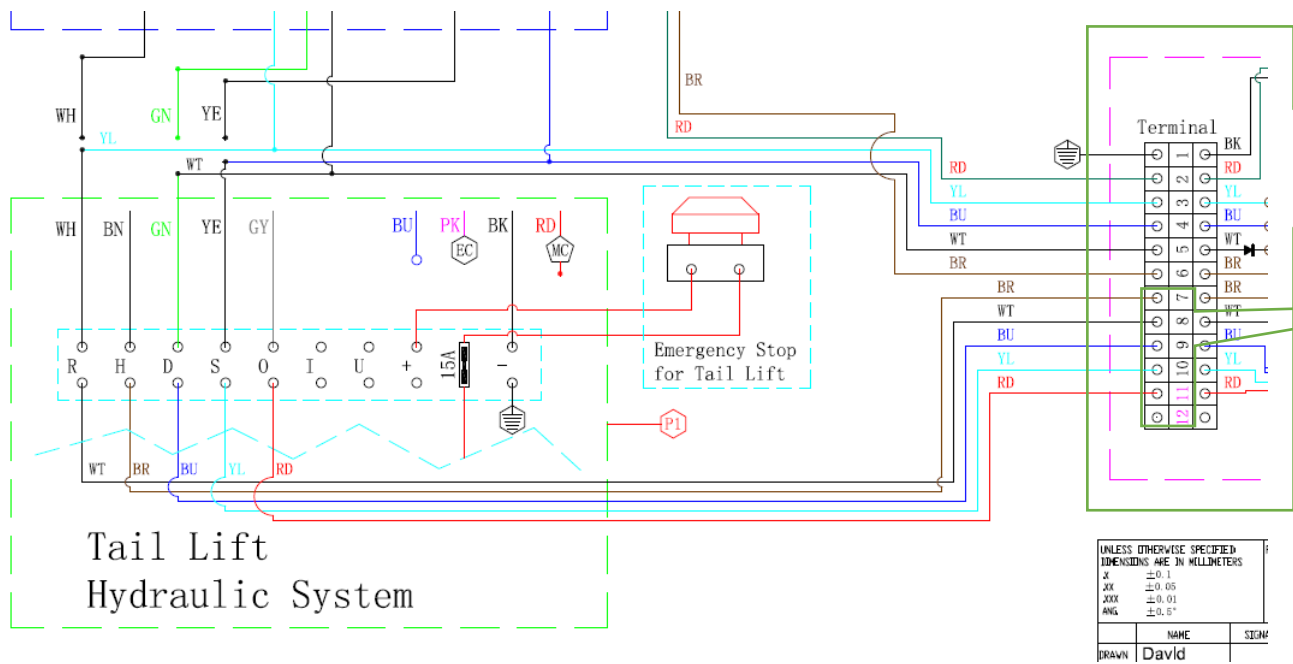
Step 1: Turn off the truck. Take out the emergency box that all cables shall be labeled.





# 4. Connect the emergency box to the control box and hydraulic system (2)

Step 2: Connect the cables (no. 7, 8, 9, 10, 11) from the emergency box to tail lift hydraulic system as shown below.



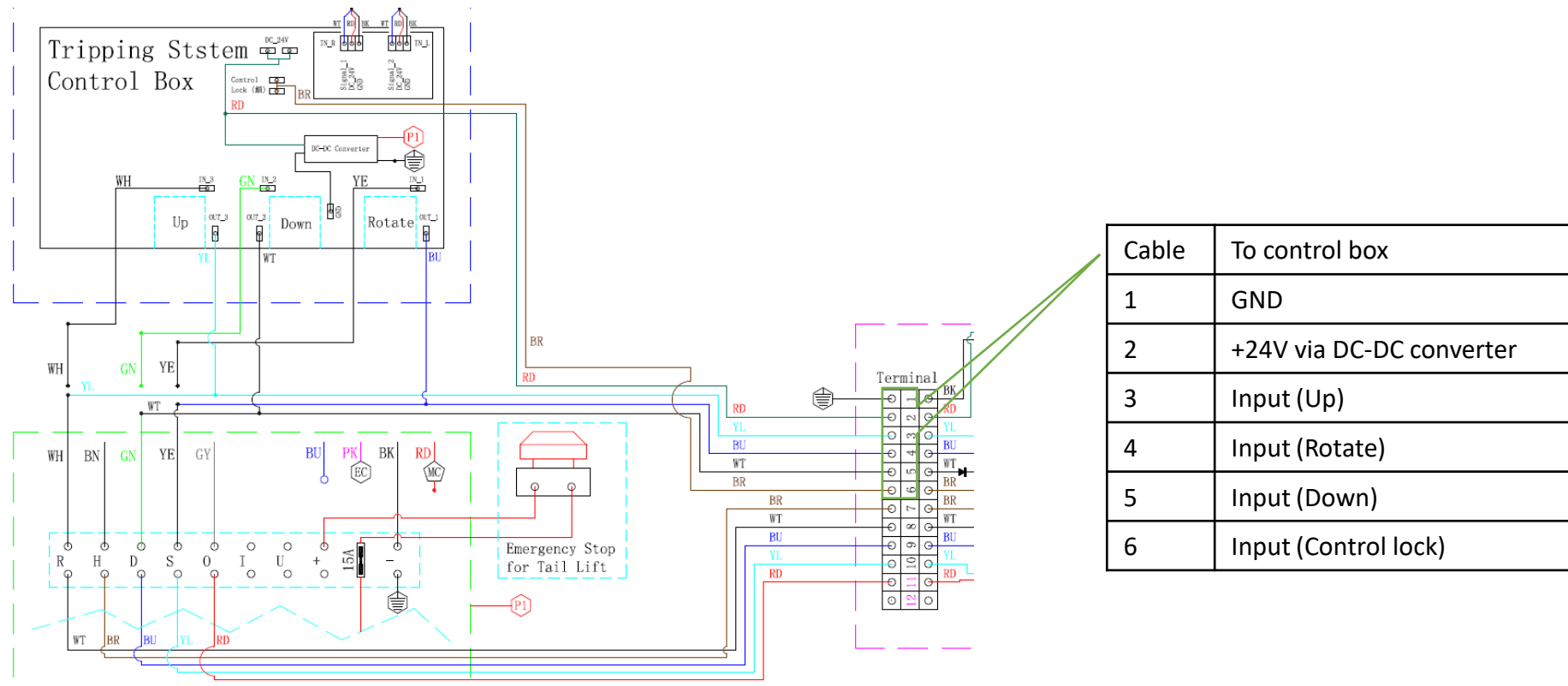
| Cable | To hydraulic system |
|-------|---------------------|
| 7     | Out to H            |
| 8     | Out to R            |
| 9     | Out to D            |
| 10    | Out to S            |
| 11    | Out to O            |
| 12    | N/A                 |

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN MILLIMETERS  
±0.1  
±0.05  
±0.01  
±0.5°  
NAME  
SIGN  
DAVID

For details, please refer to attachment 1

## 4. Connect the emergency box to the control box and hydraulic system (3)

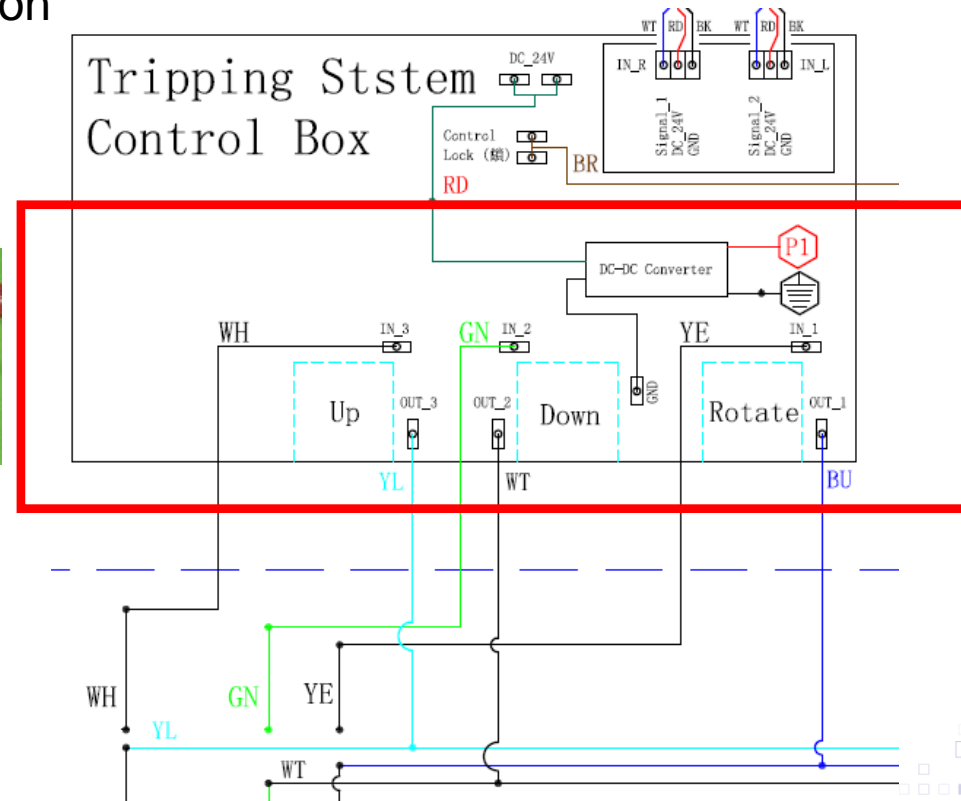
Step 3: Connect the cables (no. 1, 2, 3, 4, 5, 6) from the emergency box to control box as shown below.



Step 1: Turn off the truck, then disconnect the connection between two-hand system and hydraulic system, and re-connect the corresponding position to the control box as shown below (attachment 1)

Step 2: Turn on the truck, the system should be able to stop according to the sensor response to rise and closing action

Complete the connection here



## 6. Performance test

1. Please refer the detailed test plan (Attachment 3)
2. Upon successful testing, HKPC will issue a label to the truck. This label proves that the ATS of the truck is inspected by HKPC and meets the requirement.

<https://www.hkpc.org/zh-HK/our-services/smart-living/ats>



尾板安全升級計劃



六項尾板安全裝置功能驗收表

(香港短期專利註冊號碼：16113394.7)  
本人/公司之貨車尾板(車牌/車身號碼：\_\_\_\_\_) 改裝完成，  
現在香港生產力局代表見證下由加裝服務提供者/車房進行測試。  
尾板安全升級計劃查詢熱線：852-2788 5309

| 項目                                | 功能需求   | 符合                       | 不符合                      |
|-----------------------------------|--|--------------------------|--------------------------|
| <b>雙手控制裝置</b><br>英國歐盟標準 BS EN 574 |  |                          |                          |
| 1. 1.1                            | 當操作貨車尾板時，如鬆開該裝置其中一個或兩個操控起動器 (例如按鈕)，尾板 <input type="checkbox"/> 有 <input type="checkbox"/> 沒有 即時停止運作    | <input type="checkbox"/> | <input type="checkbox"/> |
| 1.2                               | 雙手控制裝置的起動器的邊緣相距為_____毫米 (標準：不少於 260 毫米)  | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>英國歐盟標準 BS EN 1756-1</b>        |  |                          |                          |
| 1.3                               | 雙手控制裝置須安裝其中心距離貨車尾部_____毫米 (標準：300 毫米至 600 毫米)<br>(請參考英國歐盟標準 BS EN 1756-1 條款 B.2.1)                     | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>2. 2.1 蜂鳴器</b>                 |  |                          |                          |
|                                   | 尾板 <input type="checkbox"/> 有 <input type="checkbox"/> 沒有 安裝適當的視聽信號裝置<br>(請參考英國歐盟標準 BS EN 1756-1 條款 6) | <input type="checkbox"/> | <input type="checkbox"/> |



尾板安全升級計劃

| 項目   | 功能需求   | 符合                       | 不符合                      |
|--|--|--------------------------|--------------------------|
| <b>4. 腳部防護裝置</b>                                     |  |                          |                          |
|  | 尾板 <input type="checkbox"/> 有 <input type="checkbox"/> 沒有 安裝有效的腳部防護裝置  | <input type="checkbox"/> | <input type="checkbox"/> |
|  | 機械裝置 <input type="checkbox"/> 電子裝置 <input type="checkbox"/><br>(標準：機械裝置防夾桿間度 85 毫米至 100 毫米)<br>(請參考英國歐盟標準 BS EN 1756-1 條款 B.2.4) |                          |                          |
| <b>5. 均速緩慢閉合尾板系統</b>                                 |  |                          |                          |
|  | 尾板開啟時間為_____秒  | <input type="checkbox"/> | <input type="checkbox"/> |
|  | 尾板關閉時間為_____秒 (標準：不少於 9 秒)<br>(請參考英國歐盟標準 BS EN 1756-1 條款 5.4.3)  |                          |                          |
| <b>6. 觸覺式裝置</b><br>(請參考英國歐盟標準 BS EN 1756-1 條款 B.2.5) |  |                          |                          |
| 6.1  | 觸覺式裝置系統 <input type="checkbox"/> 左(號碼加 L) <input type="checkbox"/> 右(號碼加 R) <input type="checkbox"/> 左右(號碼不變)                    |                          |                          |
| 6.2  | 觸覺式裝置系統 <input type="checkbox"/> 是 <input type="checkbox"/> 不是 由具有穩定的 24V DC 尾板系統控制箱供電   | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.3  | 觸覺式裝置系統 <input type="checkbox"/> 有 <input type="checkbox"/> 沒有 一個 5A 的保險絲保護<br>(請參考英國歐盟標準 BS EN 1756-1 條款 5.9)                   | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.4  | 所有電纜 <input type="checkbox"/> 有 <input type="checkbox"/> 沒有 被完全覆蓋並且沒有外露<br>(請參考英國歐盟標準 BS EN 1756-1 條款 5.7)                       | <input type="checkbox"/> | <input type="checkbox"/> |



尾板安全升級計劃

| 項目   | 功能需求  | 符合                       | 不符合                      |
|------|---|--------------------------|--------------------------|
| 6.10 | 底座 <input type="checkbox"/> 有 <input type="checkbox"/> 沒有 安裝橡膠墊片以吸收傳感器的位置變化   | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.11 | 整個系統裝置 <input type="checkbox"/> 是 <input type="checkbox"/> 不是 正確固定並且校準，不被 1) 尾板操作, 2) 車身 (包括上鎖裝置)和 3) 環境因素所觸發   | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.12 | 當特定目標進入系統操控區內時系統 <input type="checkbox"/> 可以 <input type="checkbox"/> 不可以 停止，並通過三次測試。<br>區域 A：在_____秒之內<br>區域 B：在_____秒之內<br>區域 C：在_____秒之內<br>(標準：0.5 秒之內) | <input type="checkbox"/> | <input type="checkbox"/> |

開度距離車尾最少 50cm, 高度需覆蓋整個合夾口的危險區域



(香港短期專利註冊號碼：16113394.7)  
☐願意 ☐不願意 把車主公司的名稱刊登於生產力局網頁作為公眾參考。

| 測試人<br>(改裝承辦商) | 驗收人<br>(車主 / 車主代表 / 公司代表) | 見證人<br>(生產力局) |
|----------------|---------------------------|---------------|
|                |                           |               |



On-site training and technical support service can be provided to the company after confirmation of the purchase of the system.

If you have any queries, feel free to contact us.

## Main Contact

**David Li**

Technical Officer

Smart City Division (SCD)

Hong Kong Productivity Council (HKPC)

Direct Line: (852) 2788 5417 | Email: [davidli@hkpc.org](mailto:davidli@hkpc.org)