



協興工程
HIP HING ENGINEERING

新創建集團成員 Member of NWS Holdings

應用在新工程合約的創新工地安全措施
-密封式物料吊重機, 互鎖式天秤吊鉤, 搬土機
RFID控制系統



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內容

- 1.密封式物料吊重機
- 2.互鎖式天秤吊鉤
- 3.搬土機**RFID**控制系統



協興工程
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1. 密封式物料吊重機

物料吊重機



物料吊重機-表格1

表格一
FORM 1
[附錄 5 (續)]

業主或承辦商姓名或名稱
Name or Title of Employer or Contractor

建築地點地址
Address of Site

開始施工日期
Work Commenced Date

起重機每週一次的安全檢查結果報告
Construction Sites (Safety) Regulations
REPORTS OF RESULTS OF WEEKLY INSPECTIONS OF HOISTS

起重機類別及說明 Type of hoist and identification number and description	檢查日期 Date of inspection	檢查結果 Result of inspection State whether in safe working order	檢查者簽名及職銜 Signature and designation of person who made the inspection
(1)	(2)	(3)	(4)

任何合資格檢驗員或合資格的人，如向承辦商交付物料時有知任何有關該物料的安全問題，即應知照：一經定察，可處罰款二十萬元及監禁十二個月。
Any competent examiner or competent person who delivers to a contractor a certificate or makes a report which is to his knowledge false as to a material particular shall be guilty of an offence and shall be liable on conviction to a fine of \$200,000 and to imprisonment for 12 months.
CDSA F1

FORM 1
表格一
[附錄 5A]
[附錄 7A]
Factories and Industrial Undertakings (Lifting Appliances and Lifting Gear) Regulations
REPORTS OF RESULTS OF WEEKLY INSPECTIONS OF LIFTING APPLIANCES

Form approved by the Commissioner for Labour for the purposes of regulation 7A of the Factories and Industrial Undertakings (Lifting Appliances and Lifting Gear) Regulations

業主或承辦商(起重機械及起重裝置)報告
Name of owner
Address of installation
安裝地址

本表格乃由勞工處或其認可人士發給(起重機械及起重裝置)條例第 7A 條的附屬表格

Description of lifting appliance and means of identification 起重機械說明及識別標誌	Date of inspection 檢查日期	Result of inspection (including all working gear and anchoring or fixing plant or gear, and where required the automatic safety load indicator and de-rigging interlock) State whether in safe working order 檢查結果 (包括所有操作裝置及固定或固定裝置或裝置，在需要時包括自動安全負荷指示器及拆卸互鎖裝置)。 註明是否處於安全操作狀態。	Signature and designation of person who made the inspection 檢查者簽名及職銜
(1)	(2)	(3)	(4)

Any competent examiner or competent person who delivers to an owner a certificate or makes a report which is to his knowledge false as to a material particular shall be guilty of an offence and shall be liable on conviction to a fine of \$200,000 and to imprisonment for 12 months.
任何合資格檢驗員或合資格的人，如向擁有入交付物料時有知任何有關該物料的安全問題，即應知照：一經定察，可處罰款二十萬元及監禁十二個月。

吊重機
Hoist

起重機械
Lifting Appliances

物料吊重機-基本設備



物料吊重機-基本設備



閘門



樓層顯示器

物料吊重機-基本設備



物料斗

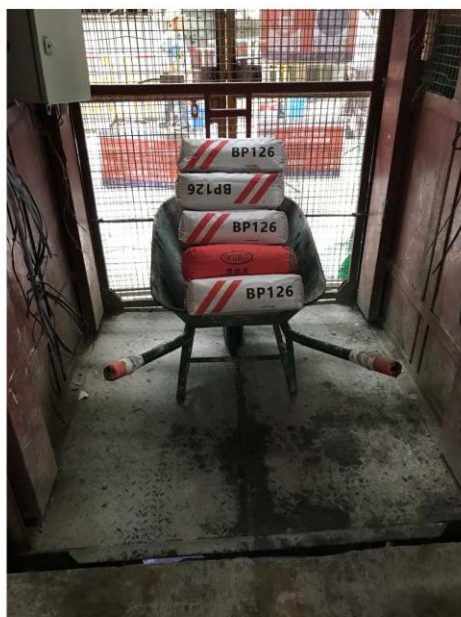


吊重威也

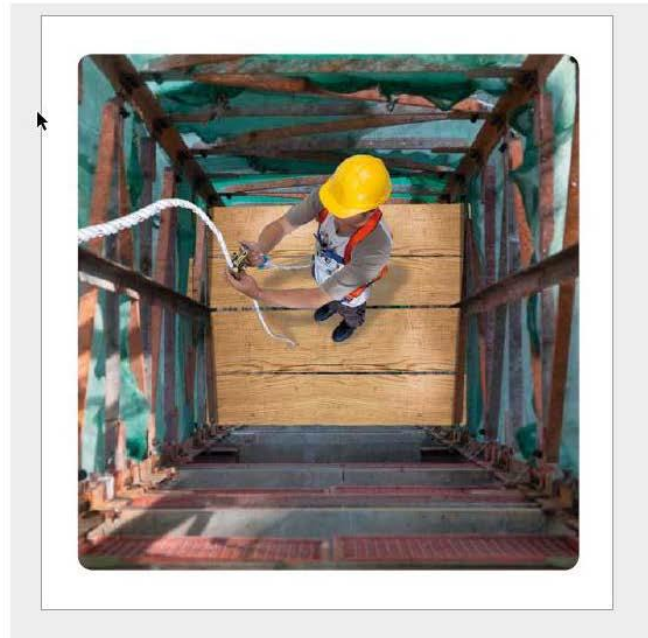
物料吊重機-基本設備



物料吊重機-操作安全



物料吊重機-架設安全



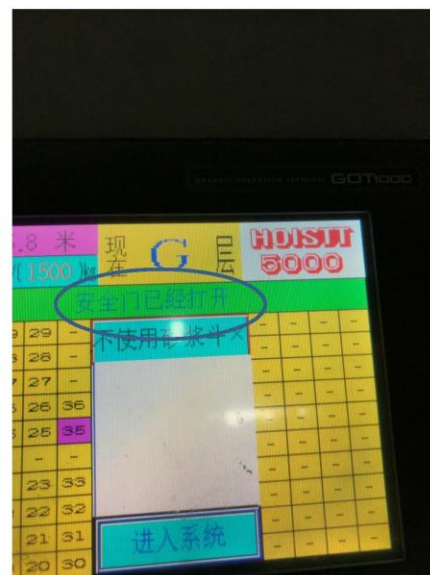
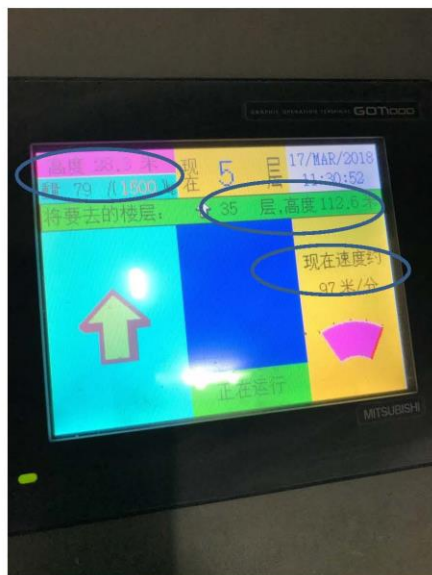
物料吊重機-架設安全



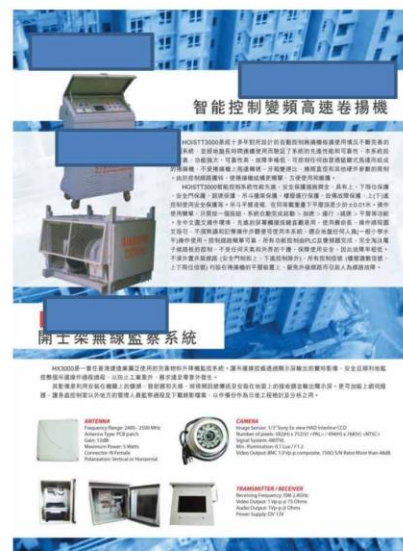
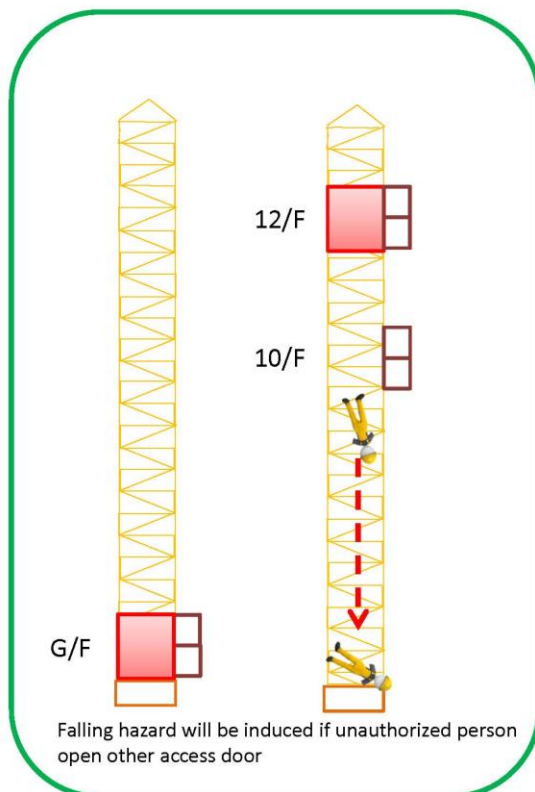
智能式-物料吊重機



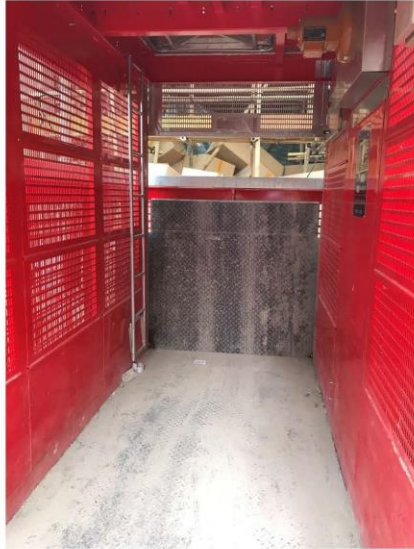
智能式-物料吊重機



智能式-物料吊重機



密封式-物料吊重機

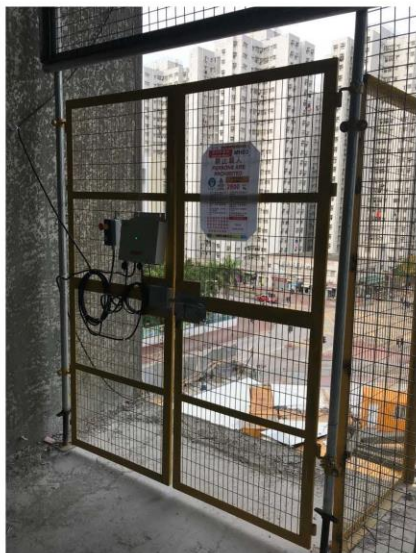


密封式-物料吊重機





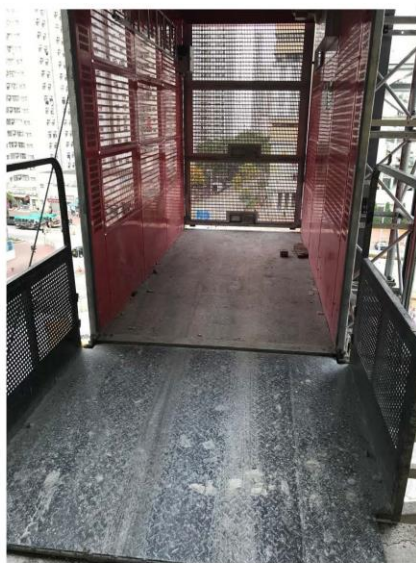
密封式-物料吊重機



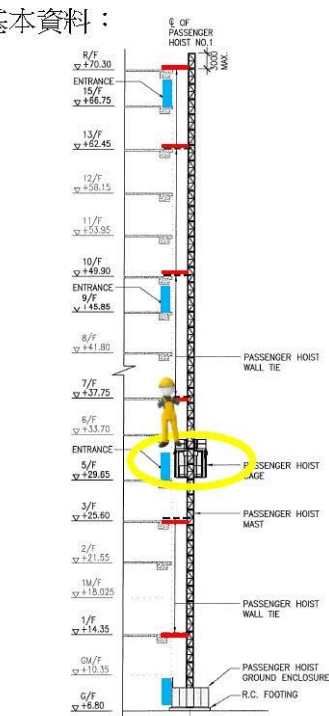
密封式-物料吊重機



密封式-物料吊重機



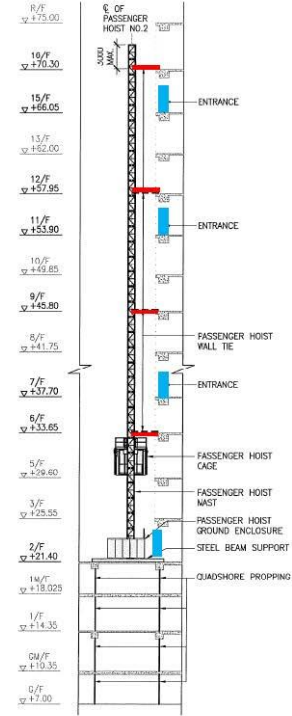
基本資料：



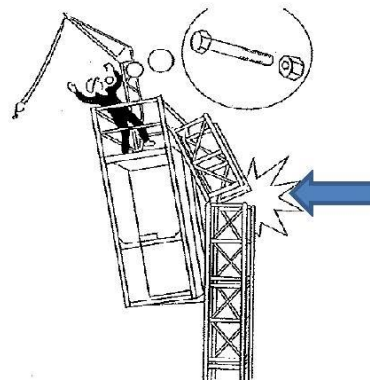
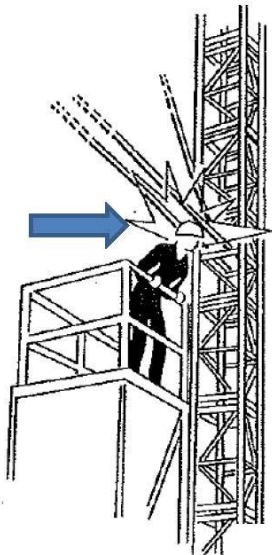
17W - ELEVATION FOR PASSENGER HOIST NO.1

WALL TIE SCHEDULE

WALL TIE LEVEL	R/F	
	13/F	
	10/F	16/F
	7/F	12/F
	3/F	9/F

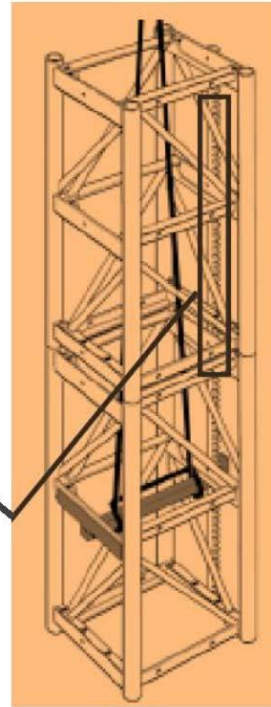
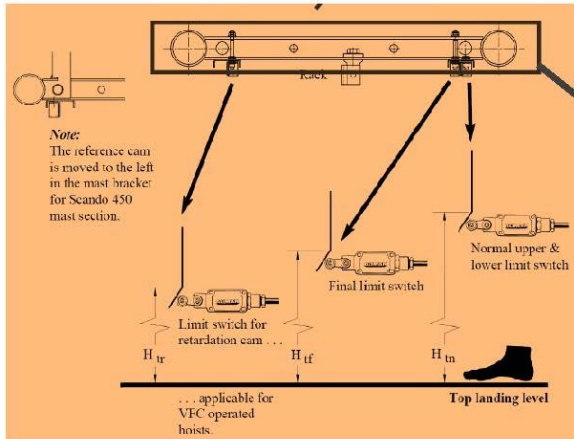


19W - ELEVATION FOR PASSENGER HOIST NO.2



7. 安裝限位及電源斷路掣，完成安裝工序

- 於齒條上安裝一般限位制
- 安裝最終限位制
- 安裝極限限位制



Cert no.: 18217MH02F2

表格二
FORM 2

[規例第35(1)條]
[reg. 35(1)]

建築地盤(安全)規例
吊重機的測試及徹底檢驗證明書
本表格乃由勞工處處長統籌測量(安全)規例第35(1)條的需要而認可

Construction Sites (Safety) Regulations

CERTIFICATE OF TEST AND THOROUGH EXAMINATION OF HOIST

Form approved by the Commissioner for Labour for the purposes of regulation 35(1) of the Construction Sites (Safety) Regulations

負責吊重機的承辦商姓名
Name of contractor responsible for hoist

建築地盤地址
Address of Site

1. (a) 吊重機的類別及識別編號及說明。
Type of hoist and identification number and description.

(b) 建造日期(如能確定者)，如適用時並填寫前次進行重大更改或重大修繕的日期。
Date of construction (if ascertainable) and, where applicable, date of last substantial alteration or substantial repair.

MATERIAL HOIST
Owner ID: M102
Maker: YHX
Type: Rack & Pinion driven
Model: SCH106-65A-FC-MS
Serial No.: 20180101
Year: 2018
Mast height: 1.5 m x 33 nos.
SWL: 3000 Kg
Remarks: -
Tested after hoist alteration

2. 設計及建造:
該吊重機各部份的構件構造是否良好(物料是否堅固及負重力是否充足)(以所能確定者為限)
Design and construction:
Are all parts of the hoist of good mechanical construction, sound material, and adequate strength (so far as ascertainable)?

Yes

附註: 倘進行任何更換或更改工程, 應詳細註明於下邊空白處。
Note: Details of any renewals or alterations required should be given in 5 and 6 below.

CSSR-F2-1

Cert no.: 18217MH02F2

(Space for continuation of entries)

(上述各項, 如定位不敷應用, 可在此處繼續填寫)

Remarks:

- For safety, ensure all landing door gates are locked when not in use at all times.
- Do not overload to the landing platforms

茲證明本人曾於 年 月 日 測試及徹底檢驗此吊重機, 而上述一切, I certify that on 27 February 2018 I tested and thoroughly examined this hoist 均為測試及檢驗結果的正確報告。 and that the foregoing is a correct report of the result.

註冊專業工程師簽署

Signature of Registered Professional Engineer

Ir K H Kwong

註冊資格

Qualification RPE (reg. no. RP0271497)

註冊界別

Discipline Mechanical

僱用執行此次測試及檢驗的人士、公司或機構的姓名或名稱及地址。
Name and address of person, company, or association by whom the person conducting the test and examination is employed.

The Standard Engineering & Consultants Ltd.
62, UG/F, Tuen Wan Garden, Tuen Wan, NT, Hong Kong

簽發日期

Date of certificate 27 February 2018

任何合資格檢驗員或合資格的人, 如向承辦商交付能明和有任何要項屬虛假的證明書或報告, 即屬犯罪, 一經定罪, 可處罰款二十萬元及監禁十二個月。

Any competent examiner or competent person who delivers to a contractor a certificate or makes a report which is to his knowledge false as to a material particular shall be guilty of an offence and shall be liable on conviction to a fine of \$200,000 and to imprisonment for 12 months.

CSSR-F2-4

Cert No.: 18217MH02F3

僱主或承建商姓名或名稱
Name or Title of Employer or Contractor
有限公司

建築地盤地址
Address of site
路地盤

表格三

FORM 3

建築地盤(安全)規例
吊重機

每六個月一次的徹底檢驗結果報告


本表格乃由勞工處處長為施行建築地盤(安全)規例第35(3)條而認可

[規例第35(3)條]
[reg. 35(3)]

Construction Sites (Safety) Regulations
HOISTS

REPORTS OF RESULTS OF SIX-MONTHLY THOROUGH EXAMINATIONS

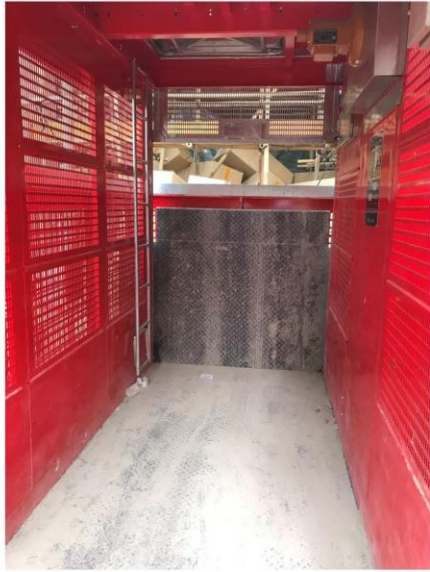
Form approved by the Commissioner for Labour for the purposes of regulation 35(3) of the
Construction Sites (Safety) Regulations

吊重機的說明， 例如：類別，識別標誌，容量 Description of hoist e.g. type, identification mark, capacity	前次徹底檢驗日期 Date of last previous thorough examination	徹底檢驗結果 詳細註明所需進行的修理工作或毛病所在 如無不妥，則註明「處於安全操作狀況」 Result of thorough examination. Enter details of repairs required or defects. If none enter "In safe working condition".	執行或負責 檢驗者簽署 Signature of person making or responsible for examination	檢驗日期 Date of examination
(1)	(2)	(3)	(4)	(5)
MATERIAL HOIST Owner ID: MH02 Maker: YHX Model: SCH300-65A-FC-MS Type: Rack & Pinion driven SWL: 3000 kg Serial No.: 26180101 Year: 2018 Mast height: 1.5 m x 33 nos. Landing Door: G(F&B), 1, 2, 3, 5, 6, 7, 8, 9 & 10/F Wall Tie: 1, 2, 5, 7, 9 & 11/F	01 February 2018	None "In safe working condition"	 Ir K H Kwong Reg. no.: RP0271497	27 February 2018 Remarks: For safety, ensure all landing gates are locked when not in use at all time. Tested after height alteration.

任何合資格檢驗員或合資格的人，如向承建商交付他明知有任何要項屬虛假的證明書或報告，即屬犯罪，一經定罪，可處罰款二十萬元及監禁十二個月。

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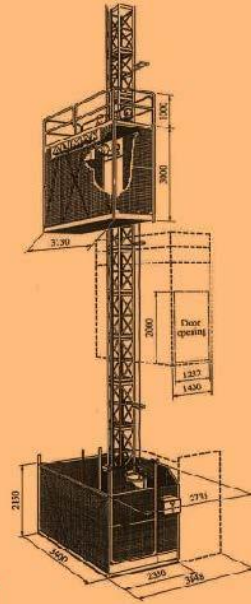
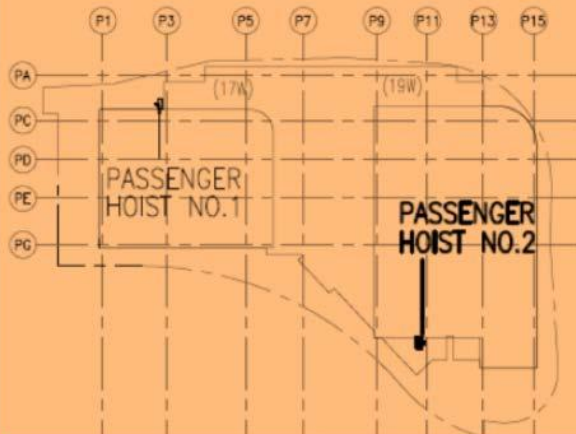


SPX1 - 安裝工人籠施工方案

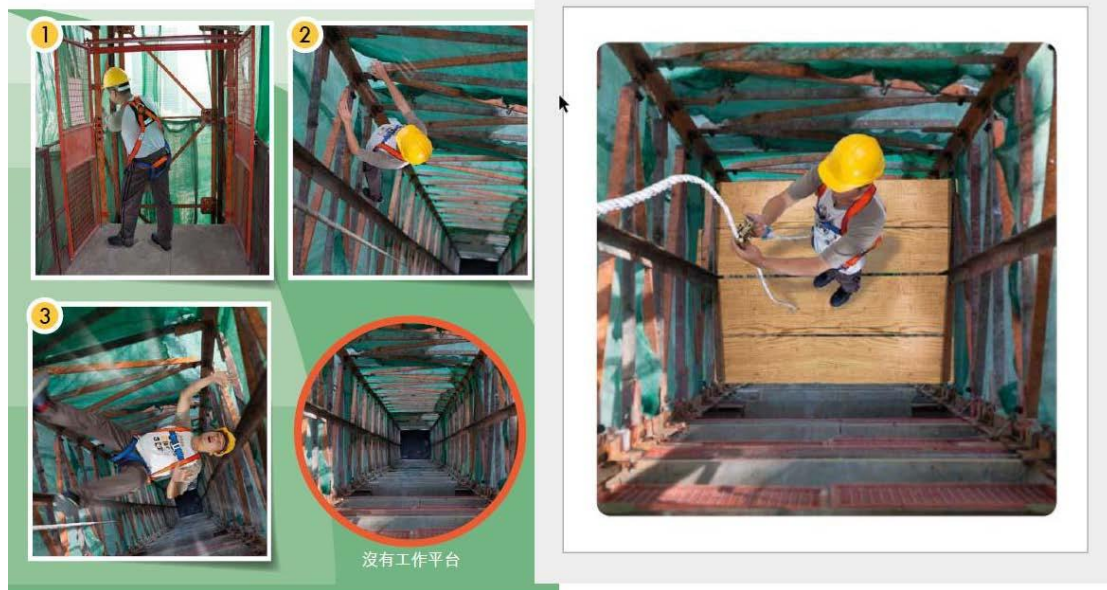
基本資料：

ALIMAK
SCANDO® 13/30 TD

- 1) 17W : 1部工人籠約安裝 66m高 及 4 套出入口層門
- 2) 19W : 1部工人籠約安裝 52m高 及 4 套出入口層門



安全載重：1300kg (約16人)



Comparison between HOISTT 3000 & HOISTT 5000

• HOISTT 3000



• HOISTT 5000



Prepared by: Michael Fan & Jay Fung
Checked by: Amby Ng

Control Program for HOISTT 3000 & 5000

No big difference were found between HOISTT 3000 & HOISTT 5000. However, more safety factors were provided in HOISTT 5000.

For HOISTT 3000, multi-level and multi remote control can be selected on the control panel and used respectively. For HOISTT 5000, only two remote control were used and inserted into control box at any two levels. HOISTT5000 program will automatically detect the pre-selected levels and the lifting tray will only displace between these two levels only. If more than two remote control are used at the same time, the program will stopped the operation immediately. Potential hazard for working in different levels for HOISTT 3000 was greater than that for HOISTT 5000.

• HOISTT 3000



You can multi select the floor in the main panel

• HOISTT 5000

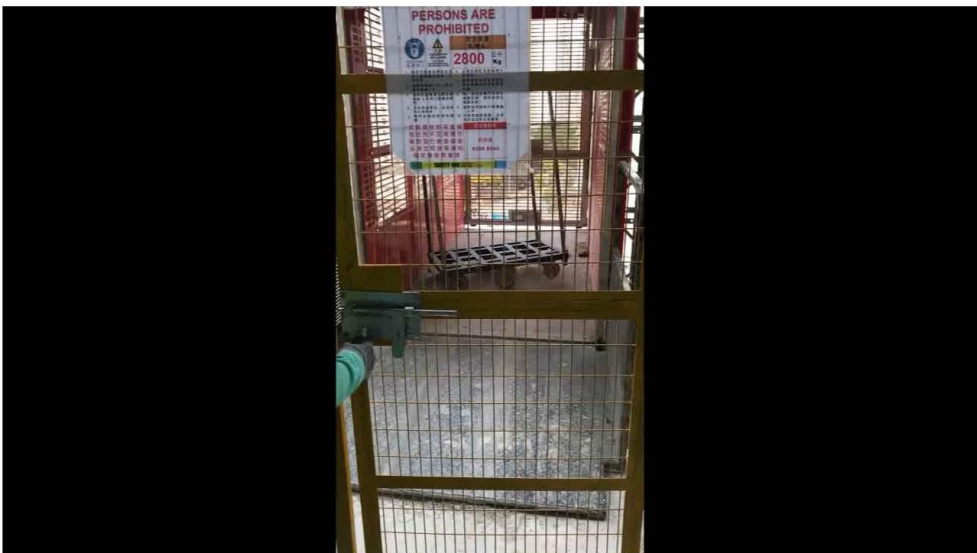


The lifting tray will only displace between two levels which has inserted the remote control to control box.

Summary

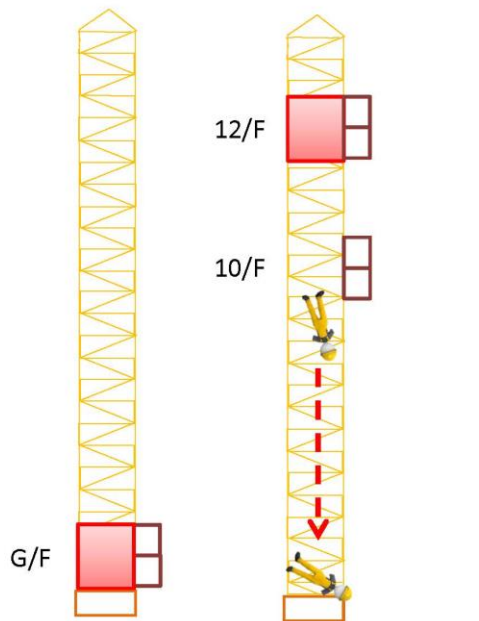
Key Card	Not Required	Required ✓	Only trained person can operate. (HOISTT 5000 is better)
Displacement of lifting tray	Multi levels	Only two pre-selected levels ✓	HOISTT 5000 's program ensured no multi levels works proceed. (HOISTT 5000 is better)
Door locking system	Padlock (Manually)	Electric-lock ✓	Electric-lock prevented unauthorized person open other access door which avoid falling hazard. (HOISTT 5000 is better)
Overall, the physical device and program of HOISTT 5000 provided more safety advantages over that of HOISTT 3000.			





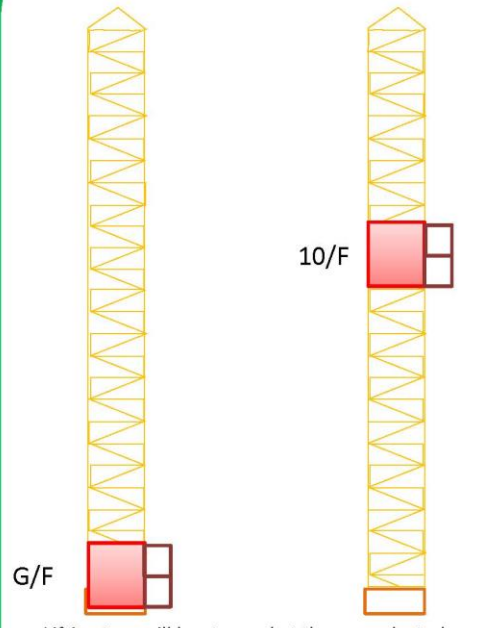


- HOISTT 3000



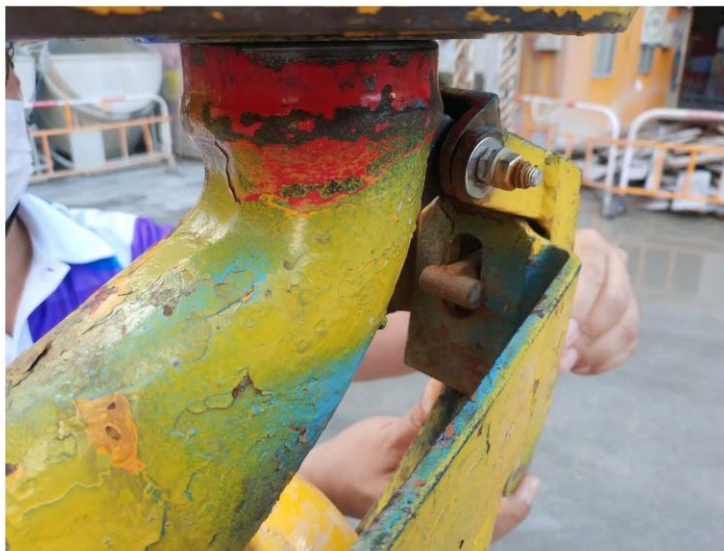
Falling hazard will be induced if unauthorized person open other access door

- HOISTT 5000



Lifting tray will be stopped at the pre-selected levels, and thus the pre-selected floor's door can be open.

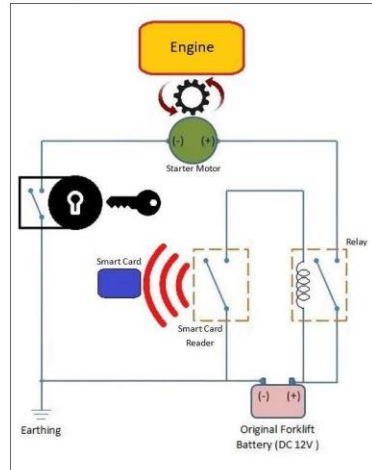
- 2. 互鎖式天秤吊鈎





• 3. 搬土機RFID控制系統

Wiring Diagram



Title: Site Safety Seminar for Capital Works New Works Contracts

Super Site Safety Seminar for
Capital Works New Works Contracts
16 July 2020

VO: Here is the footage from
Site Safety Seminar for Capital Works New Works Contracts
which was held on 16 July 2020

Super Senior Safety Officer, Hip Hing Engineering Company Limited
Mr. Albert CHEUNG
His presentation topic is
“Use of Innovative Safety Measures in New Works Contracts
- Fully Enclosed Material Hoist, Interlock Device for Tower Crane Hook,
RFID Card Control System for Loader”

VO: The speaker is Mr. Albert CHEUNG
Senior Safety Officer, Hip Hing Engineering Company Limited
His presentation topic is
Use of Innovative Safety Measures in New Works Contracts
Fully Enclosed Material Hoist, Interlock Device for Tower Crane Hook
RFID Card Control System for Loader

Mr. Cheung: Hi everyone,
I am Albert Cheung, Senior Safety Officer
Hip Hing Engineering Company Ltd
I am glad to have the opportunity today to share with you
some of the safety practices
and features currently implemented on our sites
I have chosen a few of these to share
First of all, an enclosed material hoist
Secondly, an interlocking device
for the lifting hook of a tower crane
And thirdly, using RFID technology to control a skid loader
or other plant systems
Most of my presentation will focus on the first feature
the enclosed material hoist
commonly called a ‘hoist’ or a ‘material lift’ by workers
This photo showed a material hoist
Usually, it was used during construction of a building
to transport materials from ground floor to all other floors
to facilitate different kinds of work
Soon, I will introduce to you an ‘enclosed material hoist’
which looks different from traditional material hoists
It need to observe Construction Sites (Safety) Regulations
It follows official requirements, such as related

statutory forms, inspection intervals and safety conditions

Some basic features

Here at the centre of this photo was a controller

There were also a gate and a wire rope reel

These were common components of a material hoist

This was a gate on one of the upper floors

You can see clearly that there was a latch on the gate

and there was also a lock for safety management

which prevented workers from opening it without permission

On the right, there was a display showing the floor

for the ground-level operator

Skips for conveying materials was shown on the left

A steel wire rope connects to the top of the skip

Through a pulley, the rope was pulled by

the cable drum on the ground

Shortening or extending the cable controlled

the lifting or lowering of the skip

As for safety problems, dangers or risks

associated with operating material hoists

here are a few examples

In the first example, some workers

for the sake of convenience or other reasons

were in a bit of a hurry to move materials

so they opened the gate without waiting for

the skip to arrive at the floor

This created an empty space

which could potentially lead to a fall from height

Another example was when long objects

or scattered materials were placed inside the material hoist

In these cases, there was a chance for these objects

to fall off and down the shaft

Other accidents could happen in the erection process

‘Erection’ included the initial installation process and

addition and alteration work during building construction

Here in these photos, you can see

the risks involved when erecting a material hoist

For example, there was the danger of falling from height

after the gate was opened

Most of the time

workers carried out their jobs on a working platform

but often these working platforms were not ideal

and workers installing these platforms were at risk too

Now, I will introduce our new smart enclosed material hoist

Can it solve all the aforementioned problems?

First of all, what is meant by a 'smart' enclosed material hoist?
It included a smartcard, also called a 'cardkey'
that used RFID technology to switch this machine on and off
This prevented workers from copying a traditional key
Previously, if they copied the key
they could turn the machine on without our permission
Also, there was a display screen
It provided information to the operators on the ground
including the safe working load of the hoist
the actual loading, which floor it was travelling to
whether the gate on that floor was open or not
All this information was shown to the operator
There were two controllers
as shown in the picture on the left
in the middle with three white buttons and one red button
To operate, use the smartcard to turn on the machine
but at this stage, it could not be used yet
as you still need the two controllers
One of them was connected to the ground
You can see that it was connected to the control panel
The other controller was linked to the destination, e.g. 9/F
A worker had to go to the gate of 9/F
and connected to the controller at 9/F
before the materials could be directed to that floor
in this way, we could monitor and
ensure that workers were delivering to the specified floors
and no accidents would happen
If a worker wanted to deliver a load to 9/F
but it arrived on 10/F instead, accidents might happen
because the gate at 9/F might be opened and the worker could fall down
There was an accompanying electronic lock on the right
which could only open when the skip
reached the correct floor
As a traditional lock might be forgotten or not used by the workers
it is risky to leave the gate opened
As illustrated by diagram here, if the skip remained on 12/F
and the gate on 10/F was opened
then accidents might happen
This was something required our attention
The whole skip was sealed and enclosed, from top to bottom
preventing scattered materials from falling off
and long objects would not stick out
and would not hit the main structure of the material hoist
This was what the material hoist looked like from outside

There were top and mid rails, and toe boards on the car top
This was a space for maintenance workers
a working platform for them during alteration work
On the right was a floor control panel
It is the controller for different floors had to connect to
I will play a short video to let you see what it was like
This showed the condition when the skip was in operation
There was access for workers to transport the materials
This was about safety during erection
Here on this picture, it said 'Passenger Hoist'
We had borrowed some images of passenger hoists
for the purpose of illustration
On the left, we see a worker in a yellow safety helmet
He was standing on top of the material hoist
behind the rails, as I mentioned before
He was extending the main structure
and when a specified position was reached
a wall tie would be attached before extending the main structure
Throughout the process
the workers stood behind the rails on the working platform
which was much safer than before
something to bear in mind during erection
The position of the wall tie depended on the design
But it was not very clear here in Form 2 / Form 3
The platform was on 10/F, and the wall tie was on 11/F
We needed to ensure that the heights
of the wall tie and the platform were matching
This arrow pointed at the position where the worker
was standing just now during the erection of material hoist
This was an access inside the skip
The maintenance worker on G/F had to
first switch the machine to maintenance mode
Then, he would access the car top via here
and control the machine from this position
To repeat, the two pre-selected floors had to match
in order for the machine to work
meaning that a controller set to a certain floor was needed
before the machine could be directed to reach that floor
Here is a video of a material hoist without an electronic lock
and only with a common horizontal latch and lock
The gate could only be opened
when the loading and unloading ramp was lowered
Being transported from the ground level
the material load was collected on this floor

afterward, the first step was to lock the safety lock
and then put away the loading and unloading ramp
If any of the gates were opened during the whole process
the machine would stop immediately as a safety precaution
One more, this used an electronic lock
For material delivery
the loading and unloading ramp
would be lowered and the green light lightened up
then we could press the button to open the gate
To conclude
there were a few special features about this enclosed material hoist
Firstly, it was enclosed to prevent accidents arising from
falling objects or long objects hitting the hoist structure
Secondly, it used a smart display screen
that gave more information to the operator
Thirdly, using an electronic lock and two controllers
we could prevent the gate from being opened illegally
or without authorisation
The second part of my sharing was about this
interlocking lifting hook for tower cranes
I would not spend too much time talking about it
because it had been used on many sites
Similar designs were being adopted by different contractors
and industries with little differences
Now, I am sharing the hook design from our company, Hip Hing
There was a latch in our design
so there was an additional layer of protection
apart from the hook latch of the crane
Moving on
This was also used on sites right now
RFID control systems were added to
skid loaders or other kinds of equipment
The idea was to add a RFID card on top of normal keys
Like before, it would stop workers from copying keys
or turning on the equipment without authorisation

VO: Thank You For Watching