

Spiral rapid roll door

User manual

Preface

Our mission : Make good door , make safe door !

Thanks for purchasing and using the industry door from our company , our products are widely used for pharmaceutical , electronics instrument , bio-technology , chemical material production , logistic , etc. Feature with energy saving , environment protection , wind resistance , easy maintenance , we got good reputation from our customer .

Please keep the manual in safe place for future using , read the manual carefully before installation , operation and maintenance . Contact our service department incase problems found during operation or maintenance.

We reserve to right of modifying the wiring diagrams , architecture drawings , and changing the design of parts used in the product. All data, drawings and specification are subject to the manual updated version.

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Aluminum spiral speed door installation

Users notices

1 Review and inspection at site

- 1.1 Check quantity and specification with the order information .
- 1.2 No damage of the packing , spiral and side frame assembly parts totally 2 pieces, door panels pack by foam bag with cardboard paper , the controller , drive unit and accessories are packed by cardboard box.
- 1.3 Notify us immediately if goods received is not comply to the packing list after the case is open .

2 Attention and warning

Meaning attention and warning :

Attention: Further explanation to the operation instruction , gives warning to the customer to prevent unnecessary injury or damage caused by improper operation of the equipment.

Warning: Emphasis that serious personal injury or equipment damage will be created if ignore the warning .

3 Declaration

- 3.1 Suffering the consequences of injury or damaged by the customer if not following the operation instruction .
- 3.2 Suffering the consequences of injury or damaged by the customer if not using the authorized spare parts for replacement . We reserve the right of refusing repair in such case .

- 3.3 Not reading the manual carefully before installing and operating the equipment, the consequences of personal injury or equipment damaged will be suffered by the customer .
- 3.4 During the operation , once abnormal situation found , please get assistance from the professional technicians by referencing to the “trouble shooting “ part in the manual .if the problem still can’ t be solved , contact with us .

Chapter1 Preparation for installation

1.1 Installer

- 1 At least 3 installers needed.
- 2 Electric wiring and connection should be done by qualified person with relative professional license comply with national regulations.

Attention!!!

- ☆ Before installation , installers should accept safety training , installation and operation training to guarantee the operation and installation quality .
- ☆ Make reliable grounding to prevent unnecessary injury .
- ☆ Wiring job should be done by professional installers with license, follow the site operation regulation and requirements.
- ☆ Measurement, checking and preparation should be done before installation.

1.2 Site environment

- 1 Make sure there is no obstacles around the door hole during the door installation, Put the sign “Irrelevant person forbidden , no vehicle passing ” in that area.
- 2 Make sure the bottom of the both side frames and the floor are at the same level , then the bottom of the door panel will be in level status.
- 3 The product configuration is comply with the site environment requirement .

1.3 Tools and equipment

- 1 Electric drill : with hammer drill bits ($\Phi 12$ 、 $\Phi 14$) for concrete wall. The twist drill bits should be used for steel structure which the door is fix onto.
- 2 Different shims : use suitable shims for unlevel floor.
- 3 Electric insulation tape.
- 4 Cable channel and double side adhesive tape.
- 5 Laser leveler , ruler (0-10m) .
- 6 Hammer, wooden block ,crowbar.
- 7 Hand tools (Plier, screw driver, multi-meter) .
- 8 Electric socket , spanner 1 set, Allen key 1 set.
- 9 Electric cable and temporary power supply panel.
- 10 Scaffold : height=Door total height-1000mm .
- 11 Forklift truck (Lifting height higher than door height) Gantry crane or manual chain blocks should be provided by the end user.

1.4 Confirm the following information

- 1 All dimension in the manual is in mm.
- 2 confirm the correct installation location , and get the installation permission in advance.
- 3 Check the installation condition at site , makes sure there is no obstacles above the door lintel (extinguishing pipe , air condition pipe , power supply cable , etc.)
- 4 Prepare necessary material for installation , makes sure the smooth transportation of equipments .
- 5 Make sure the power supply has been arranged to the controller location. Make sure the power can be switched off independently without influencing the operation of other equipments.
- 6 When several doors are installed , make sure each door should be fitted to the correct door hole .
- 7 Should stop installation job immediately when door hole dimension incorrect is found , then notify our company .

1.5 Door hole dimension confirmation

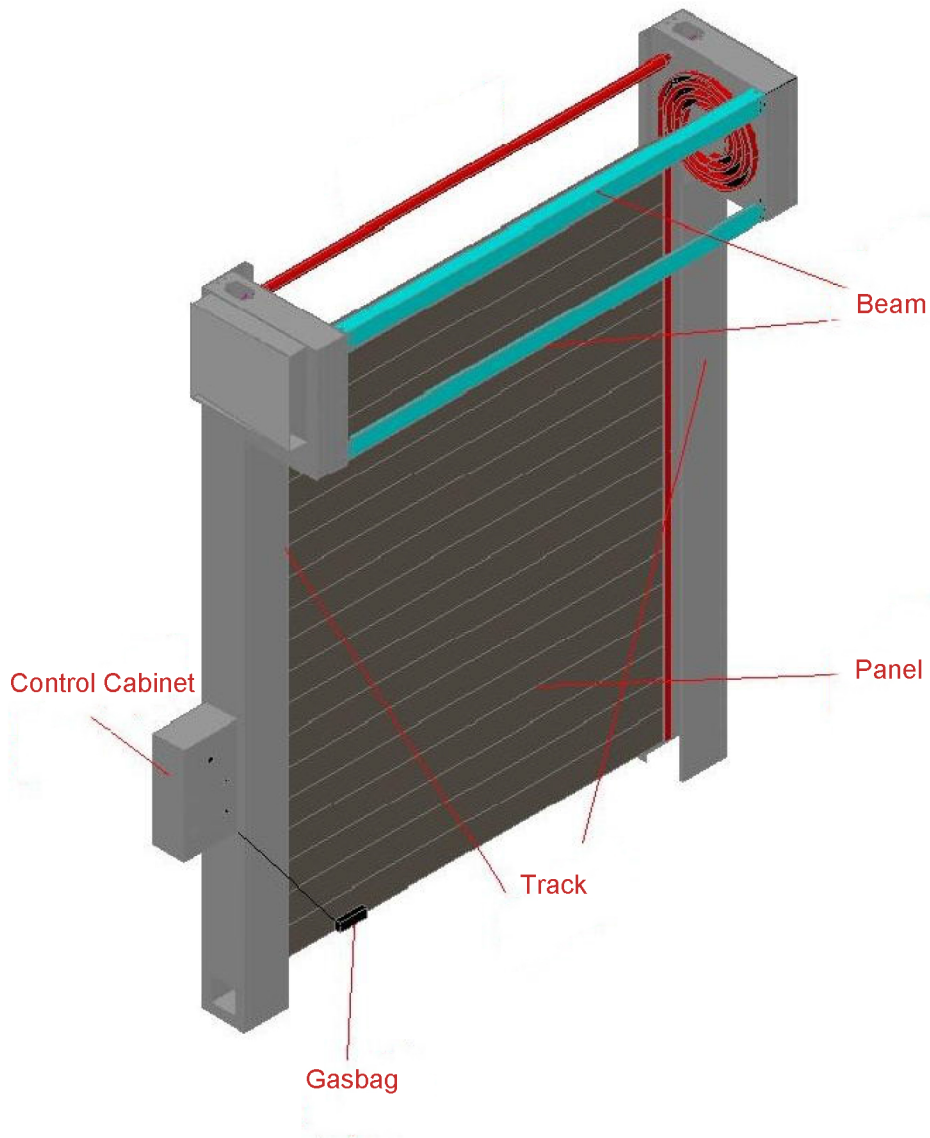
Attention!!!

☆ If the tolerance of the door hole actual dimension is within $\pm 3\text{mm}$, then the installation can be started.

☆ when door hole dimension incorrect is found, then notify our company.

The end user should correct the door hole before the installation can be started.

1 Product structure illustration.



2 Door hole dimension illustration

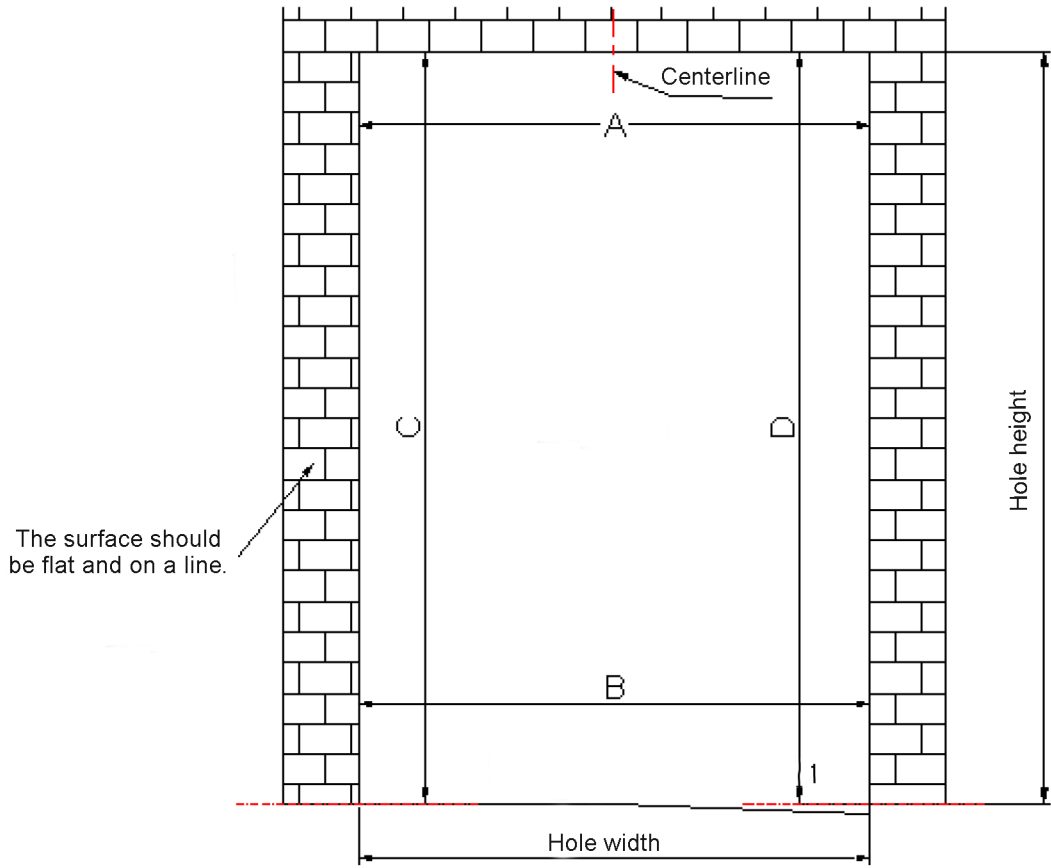


Figure 1.1 The surface should be flat and on a line

Remark: The drawing is only for standard installation , please make suitable adjustment according to the site environment .

- 1 The tolerance of wall dimension in horizontal and vertical should be within +/-3mm.
- 2 If the tolerance is higher than that value , the door hole should be leveled in vertical and horizontal.
- 3 Installation height of the controller: when there is no special requirement from the customer , the bottom of the controller should be above the floor 1300mm.

Chapter2 Installation

Warning!!!

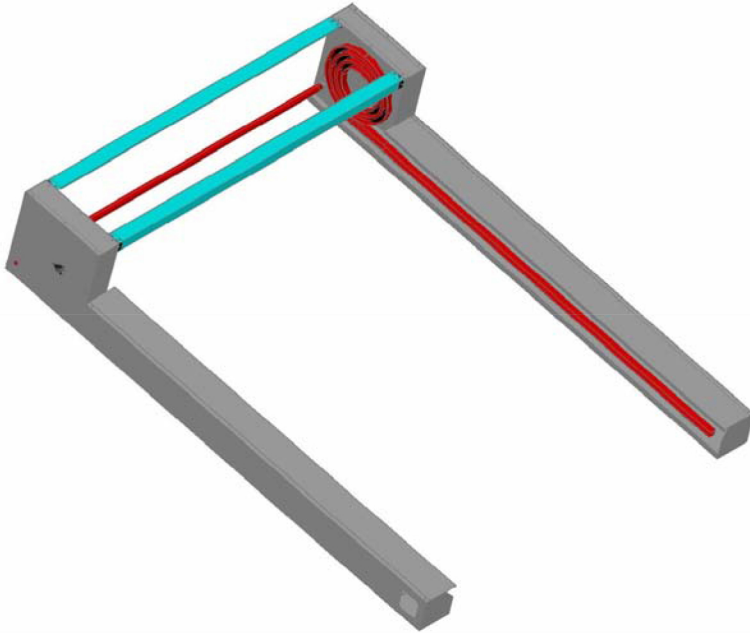
☆ During installing the door , passing through the door hole is forbidden , equipment damage and personal injury might happen caused by any falling down in accident.

☆ During the electric wiring , please strictly follow the operation regulation and have suitable working sign and protection measurement to prevent personal injury

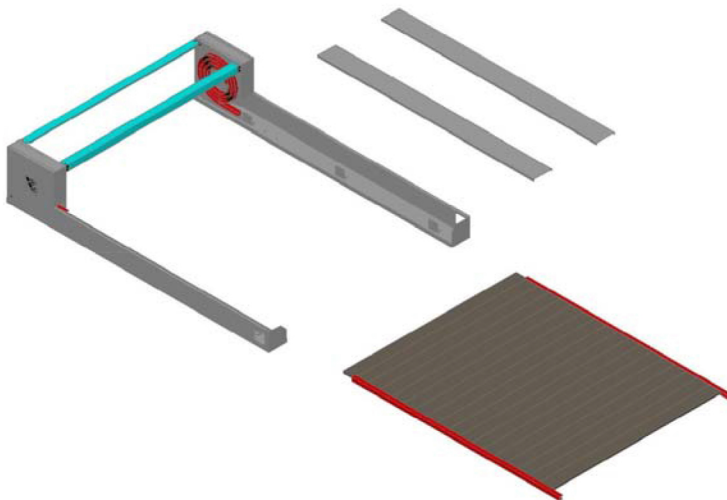
and equipment damage .

2.1 Door frame assembly

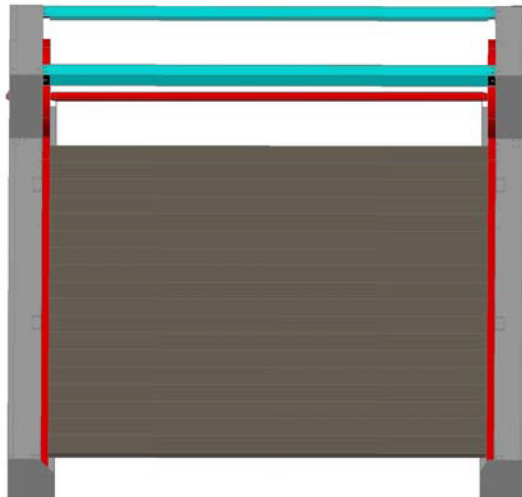
1) Connect the two side frames with the top cross beam and shaft coupler.



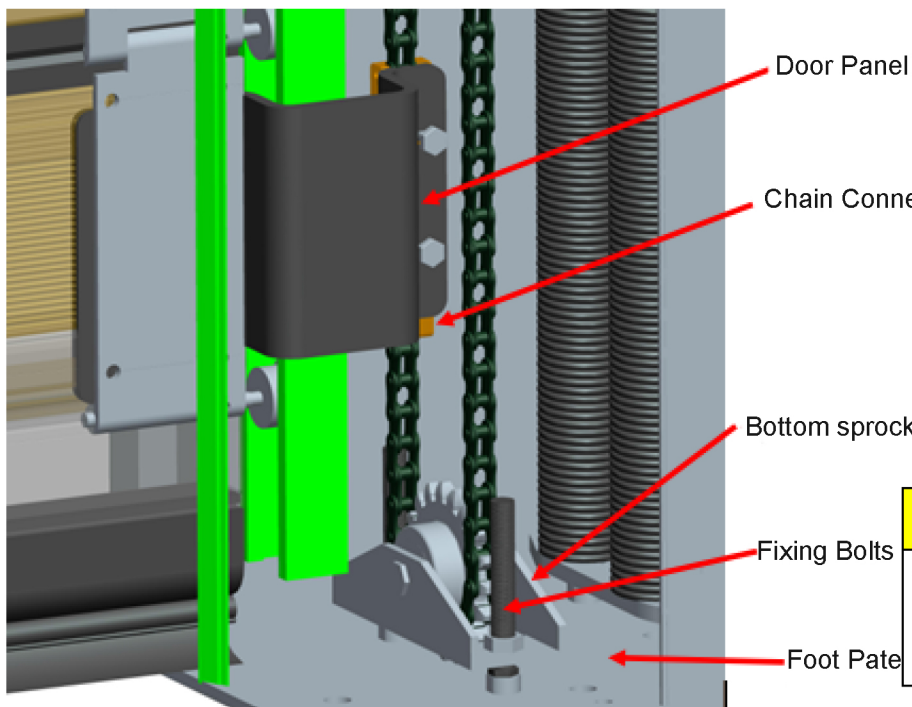
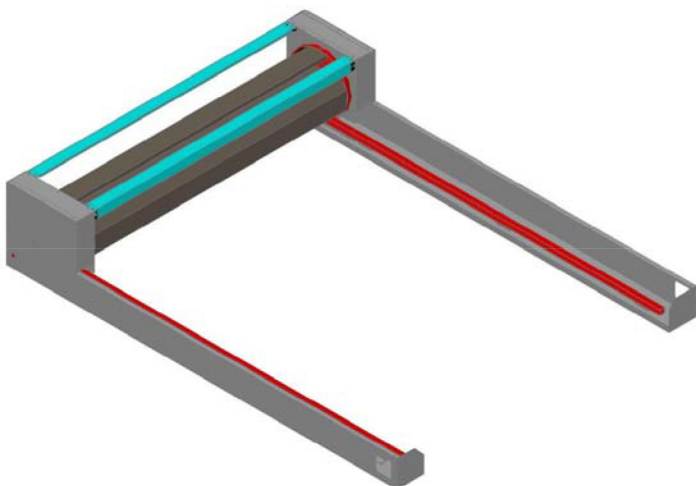
2) Remove the side frame covers , disassembly the two aluminum side tracks and slide them into each side of the unfolded door curtain .



3) Move the complete door curtain in between the two side frames , the exit of the aluminum side track in line with the entrance of the spiral track. , connect both side of the last door panel with the chain fixing plate, fix the aluminum side tracks onto the side frames with M8

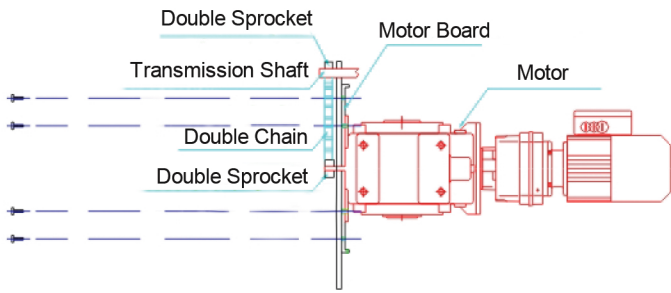


bolts.

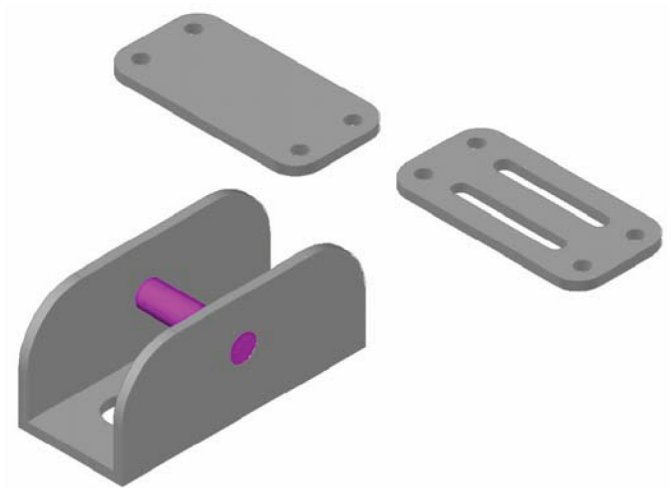


Warning!!!
☆ The upper and lower nuts of the fixing bolts are locked at the same time

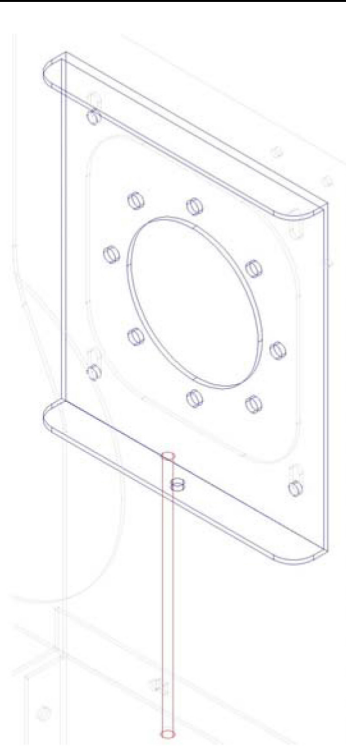
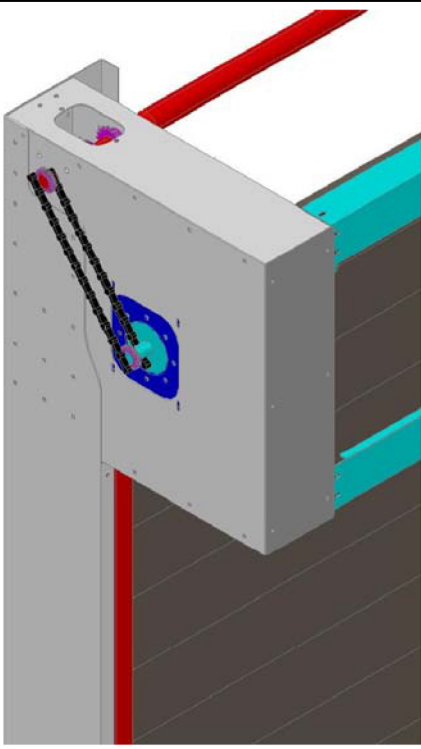
4) Lay down the door panels to assembly the drive unit. , push the panels back again to the spiral track to assembly the springs , notice the double chain assembly should be done latter..



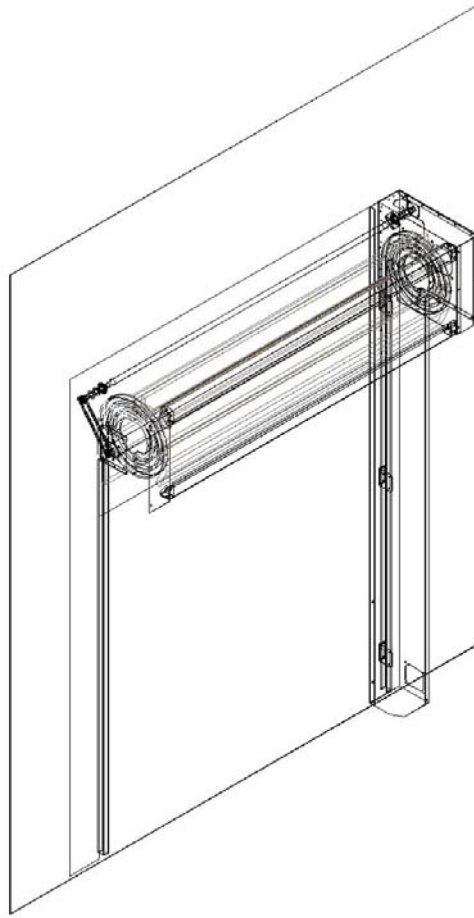
5) Unwind the high tensile belt on the top part and keep 1-2 dead wind , fix the belt with the spring fixing plates, Note: the fixing should be done with bolts while the spring is pull straight, fix the double chain onto the two chain sprockets at the motor side ,fasten the double chain with the internal lead screw to prevent it get



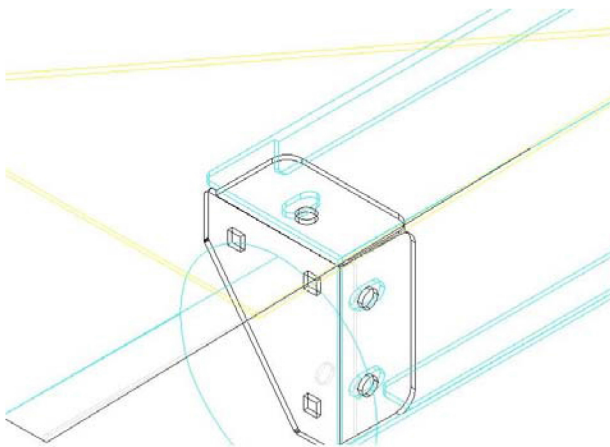
loose.



6) Lift up the pre-assembled complete door body with manual chain blocks or fork lift truck , put each side frames against onto each side of the door hole , fix by M12 anchor bolts on top of the door body if the door is fix onto the wall , if the door is fix onto the steel structure , please fix the door according to the enduser requirement.



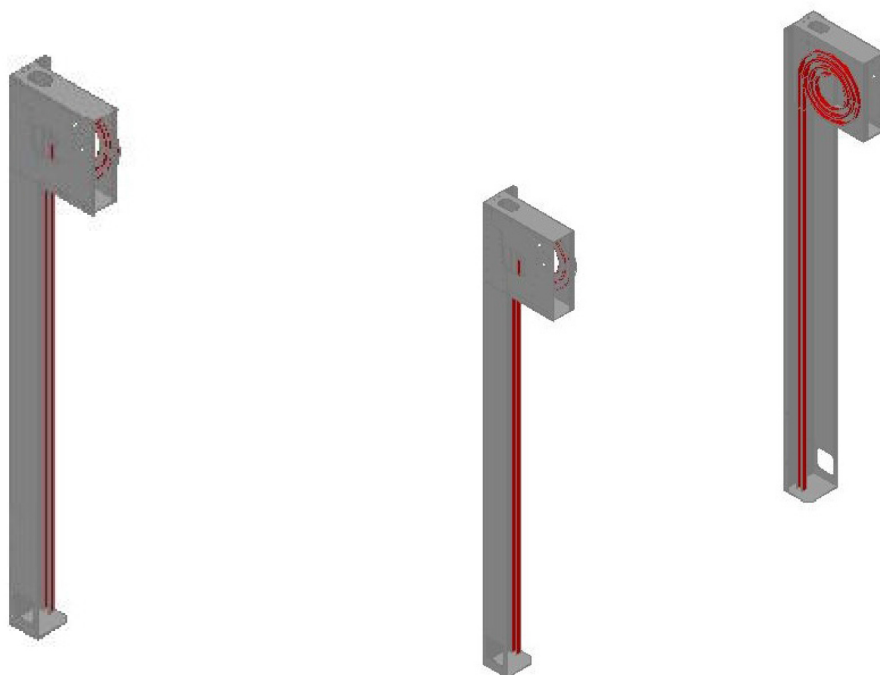
7) Calibrate the level and vertical of the door with infra-red leveler, fix the bottom part of the side frames with M12 anchor bolts, fix the door body top part with the triangle fixing brackets provided by our company.



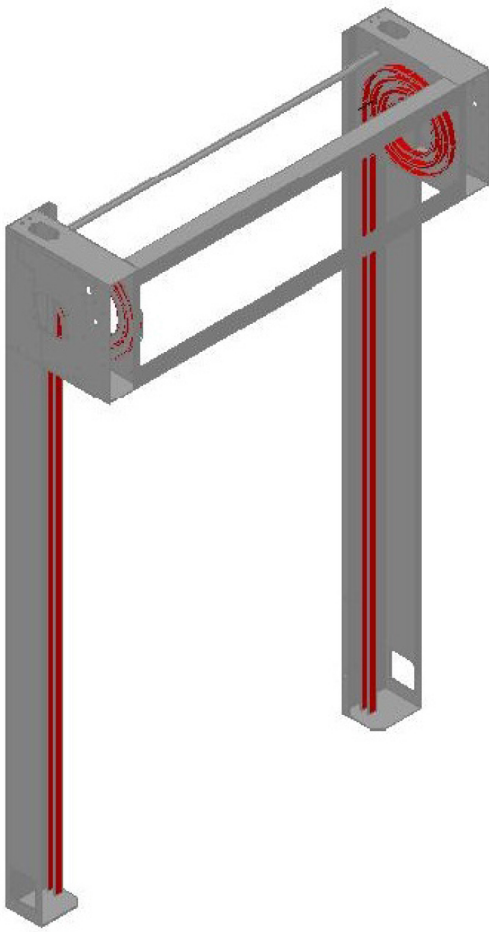
If forklift truck or manual chain blocks are not available, the following installation way can be used.

2-3 Use additional scaffolds

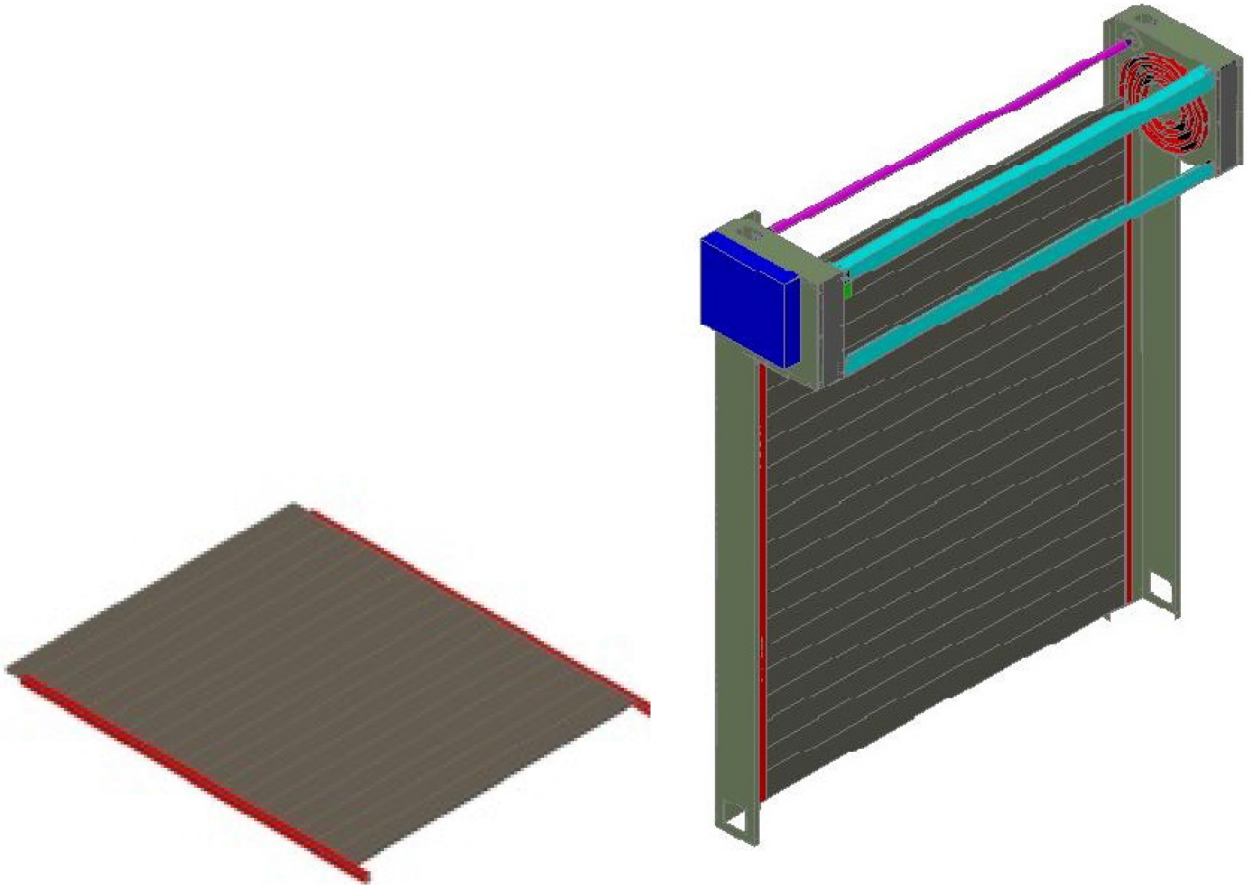
1 Measure and confirm the door hole size , rest one side frame onto one side of the door hole (with 3 or more person) , level it with infrared leveler , fix its top part and bottom part with anchor bolts , according to the customer requirement fix it onto steel structure or other structure , set up another side frame with correct distance from the side frame which has been fix . (This side frame is not necessary to be fix firmly at this stage) .



2 Connect the top cross beam , shaft coupler with the side frame then level it with the infrared leveler. After that fix the other side frame firmly .



3 Disassembly the aluminum tracks from the side frames and slide them onto each side of the unfolded door panels , fix the two aluminum track with the bottom panel at both side with self-tap screws to prevent the door panels slide out from the aluminum tracks while set it up . Put the pre-assembly door panels with the aluminum tacks up and join it with the spiral tracks.



4 Follow the steps of 3、4、5、6、7 (the set up steps assist with forklift truck or manual chain blocks)

Warning!!!

- ☆ Must use electric drill while doing the fixing job.!
- ☆ Must fix the side frames firmly to prevent accident caused by loose bolts!

5 Adjustment: After fixing , before assembly the motor chain , the door panel can be open 500-800mm automatically , the running should be smooth without noise .

Attention!!!

- ☆ The spring belts should not be twisted , cross over or conflict with other components in the side frames while running .

Warning!!!

- ☆ When installing the springs , the door panels must be pushed into the spiral tracks to prevent accident .
- ☆ During the door set up , for the first running before confirming the motor phase correct , the door should be stopped at the center height to prevent the door overrun and pass the zero position in case the door is stop at the top or bottom position

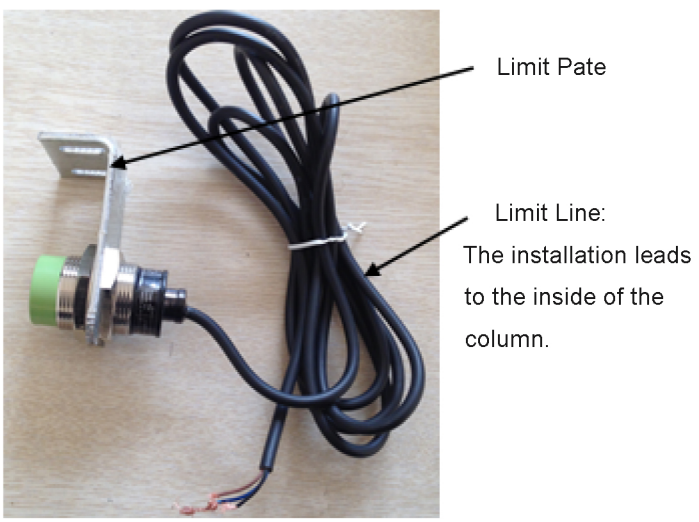
3 Adjustment: pull up the external chain , lower the door panels to see if the spring can balance the door panels weight .

Attention!!!

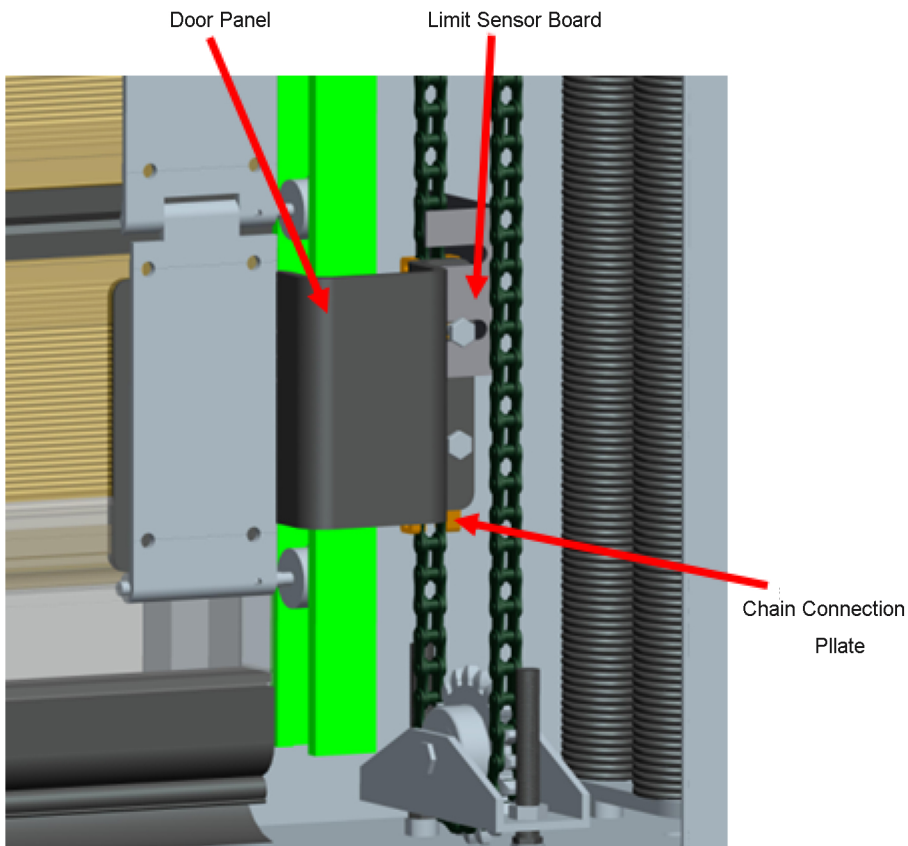
- ☆ The two chain fixing plates at each side of the side frames should be in level.
- ☆ the bottom beam of the door can be open or closed manually when it is at the position above the floor 500-600mm .
- ☆ The chain interconnection section pieces must be fix firmly !

4 Other accessories installation .

1) Installation position of the zero-position limit switch fixing plate .



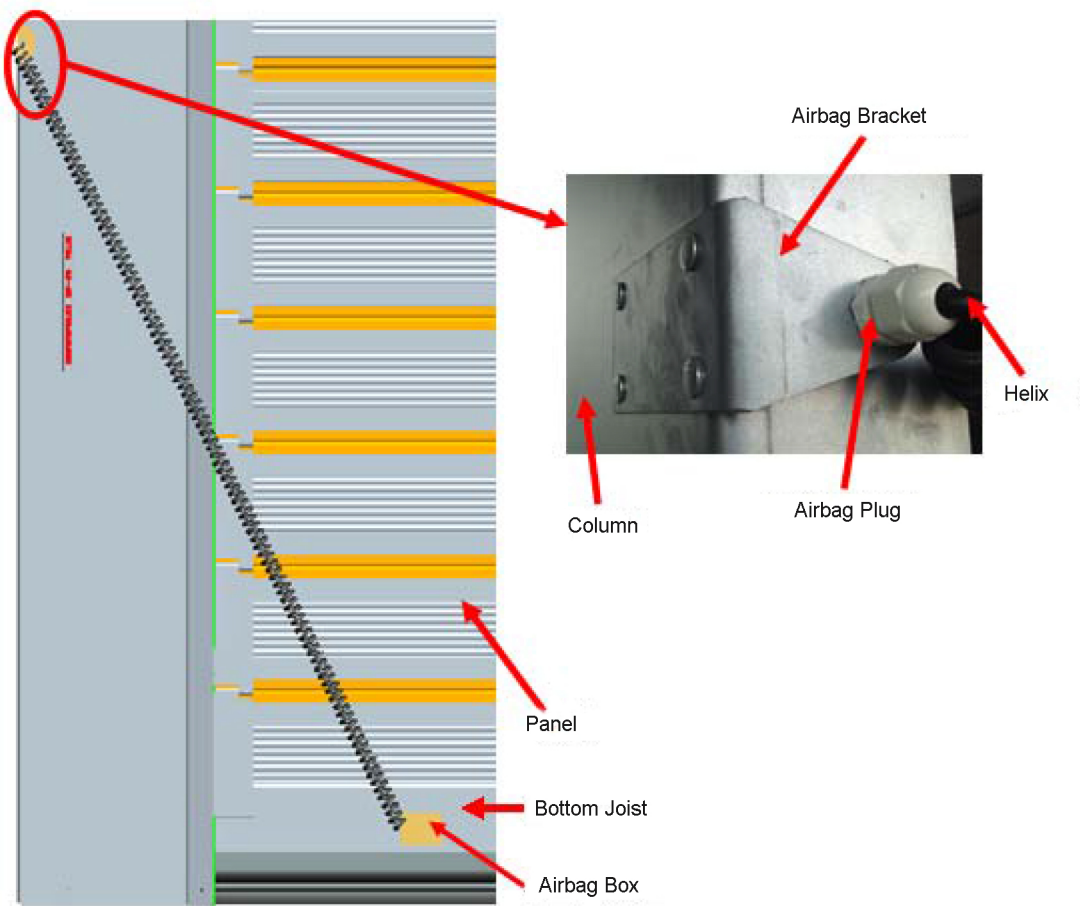
2) Limit sensing plate installation position :



Attention!!!

- ☆ The wheels should be running smoothly between the aluminum track and the spiral tracks .
- ☆ Make sure the side frames vertical , no slop to left or right , forward or backward. That will seriously influence the safely running of the door .

1) Pneumatic safety edge fixing position .



6. Motor installation

1 Wiring : cable channel locate at the outside of the side frames .ref. to the controller wiring instruction .

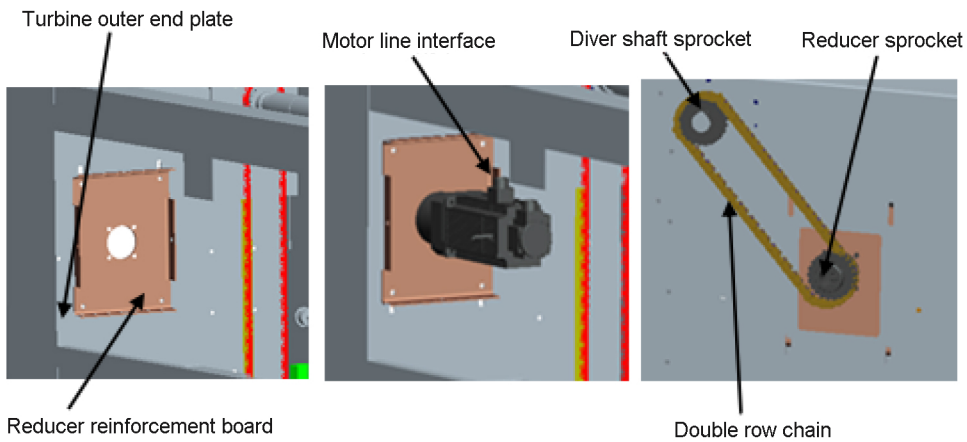
2 Installation

1) Fix the gear box fixing plate onto the spiral cover plate with M10 bolt, no need to be fix firmly at this stage .

2) Fix the drive unit (motor + gear box) onto the gear box fixing plate with M 10 bolts.

3) Move the gearbox fixing plate upwards to the end then assembly the double chain .

4) Fasten the M10 bolt at the bottom of the spiral track , make the driven chain in tension then fix the bolts on the gearbox fixing plate firmly .



Warning!!!

☆ When the reducer is fixed, the fixing screw should be locked under the long hole to avoid collision of the motor.

Warning!!!

☆ Chain tightness moderate, to avoid too tight or too loose when the transmission is poor or damage equipment.

Warning!!!

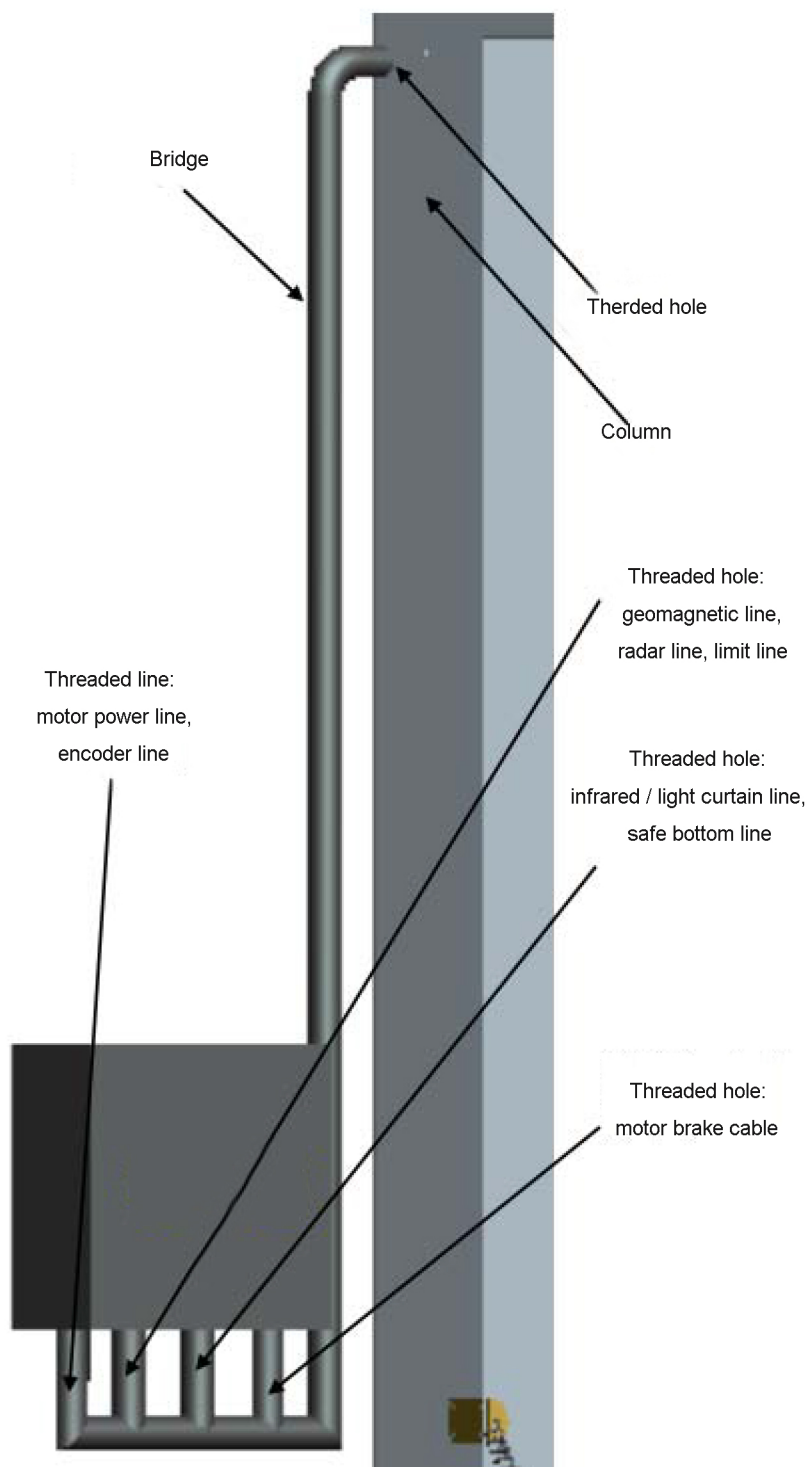
- ☆ To release the motor brake is forbidden , that would makes personal injury or equipment damage caused by the door panel falling down in high speed .
- ☆ Over limit speed running of the door is forbidden to prevent personal injury or equipment damage .
- ☆ All anchor bolts must be fix firmly to prevent personal injury or equipment damage .

7. Controller installation

- 1 Wiring: In principle, the controller be installed at the same side as the motor.
- 1) Prepare the power supply cable to the location where the controller will be installed.
 - 2) Lead all cables from the cable channel(inside the side frames) to the location where the controller will be installed.
- 2 Fixing : Motor - LH. as example.
- 1) Controller installation height : If it is not specified by the customer , the bottom

8f the controller should be 1300mm above the floor:

2) Fixing: Fix the fixing brackets which attached with the controller to the wall With M8 anchor bolts for concrete wall /M6 self tap screws for steel structure :



Attention!!!

☆ Controller installation height : the bottom of the controller be fix above the floor 1300mm; or according to the customer requirement:

☆ The controller should be fix at the same side as the motor if space is available.。

3 Wiring

Attention!!!

- ☆ Wire correctly to prevent damage of equipment and potential error 。
- ☆ No loose connection to prevent spark caused by unreliable connection 。
- ☆ Keep 30mm extra cable length after cables are lead into the controller .Cut the extra length of the cables away and crimp terminals reliably 。

Warning!!!

- ☆ Make the grounding of the controller reliably , keep away the metal water pipes ,heating pipes , gas pipes , oil pipes , etc, keep away from the high power cable which might generated electric-magnetic interference.
- ☆ No conducted part of the cable be exposed , make water resistance and insulation protection in proper way 。

1) Wiring diagram

A、Wiring components - inside the controller.

B、Wiring guide - inside the controller .

2) Motor connection:

3 phase 380Vconnection



single phase 220V



3) Infra-red photocell connection:

In the normal status , the photocell with 5 cores , 2 led with green light , when there is obstacle between the transmitter and receiver , the receiver led turns red.

Warning!!!

- ☆ The equipment should be fix firmly without vibration!
- ☆ There should be no wind , fog, tree and other obstacle , flue fluorescent lamp around the equipment.
- ☆ If the photocell is exposed outdoor without cover protection , the water proof cover should be installed for the photocell!

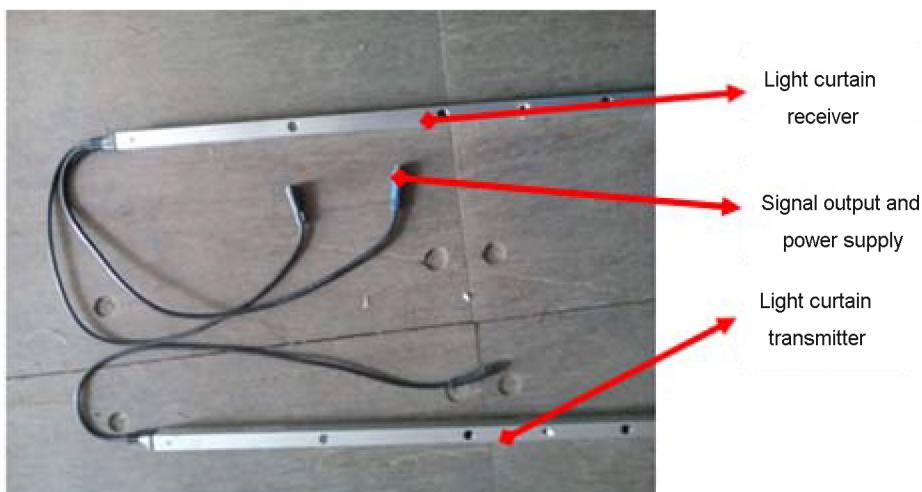
Installation position : according to the customer or site environment.

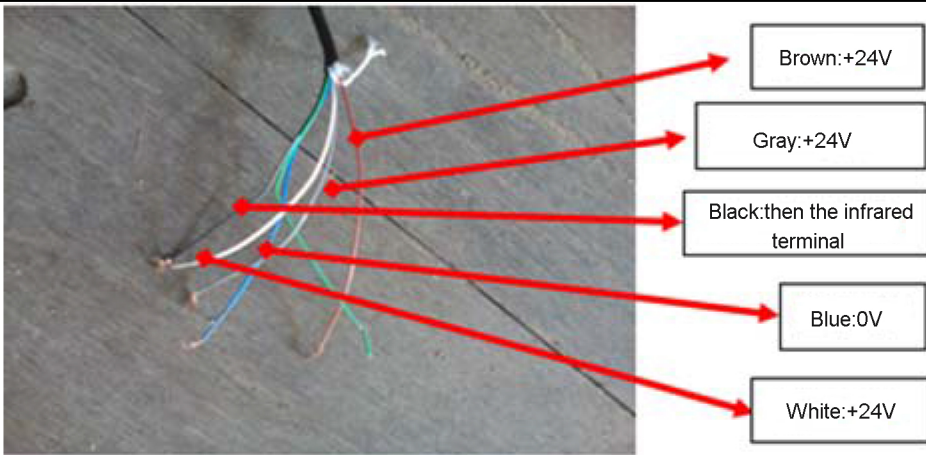
4) Safety edge (option) wiring :

A、 Installation position : 300mm distance from the inner edge of the hinge, 50mm distance from the aluminum bottom beam , keep the safety edge connection box horizontally , there is a 9V battery inside the box for the transmitter , connect the contact strip cable (2 cores) with the transmitter .

5) Light curtain (option) wiring :

A、 Installing position : Light curtain track in front of or behind the two side frames.





8 Installation inspection

Attention!!!

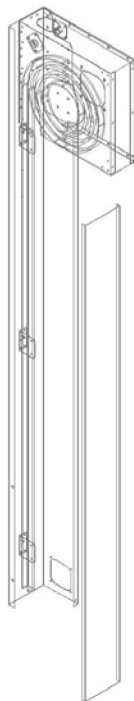
☆ After installation , check all assembly parts , make sure they are connected reliably .

8.1 Inspection items

Item	Project	Content
1	Side frames and tracks	No missing parts , bolts connection firmly .
2		The two side frames are rest on the wall tightly without gap , diagonal between the 2 side frames should be equal
3	Spiral	Connection parts be fix firmly , no missing bolts.
4	Door panel	No missing and loose bolts .
5		No fell off Seal strip from the panels
6		Connection calibrate between the side track and spiral track .
7	Springs	The spring belts and spring connection is reliable and no loose or missing parts .
8	Drive system	No missing of chain wheel , chain fixing parts , Fixing reliably .
9	Motor	Fix firmly .
10		Wiring of motor cable , encoder cable and brake cable in correct way.
11	Controller	Wiring tidily , no twisted .
12		No exposed cable end , make insulation protection.
13		Cable outside of the controller should be protected by insulation pipes, no exposing of cable directly .

9 Side frame cover installation

After the installation items have been inspected , fix the side frame covers onto the side frames , fix the spiral cover onto the spiral track part.



Chapter 3 Commissioning

Warning!!!

- ☆ While the door is running , strictly forbidden to release the motor brake to prevent personal injury and equipment damage caused by door panels falling down in high speed .
- ☆ Don' t lean on the door to prevent personal injury and equipment damage .
- ☆ Don' t switch off the power supply knowingly while the door panels are moving to prevent personal injury and equipment damage .
- ☆ Don' t plug or unplug the connector of the sockets on the controller and drive unit, The equipment might be damaged or potential damaged might be created.
- ☆ The controller must be protective grounded.

3.1 System commissioning

End limit setting (short circuit X6 to COM)

1、Top limit confirmation

At the setting status (PLC IN6 LED on) , switch to manual mode , press open button ,confirm the open limit position after the door be open to the position

you need by pressing the stop(X4 LED on) and open button at the same time for 5 second .

2、Bottom limit confirmation

At the setting status (PLC IN6 LED on) , switch to manual mode , press close button ,confirm the closed limit position after the door be closed to the position you need by pressing the stop(X4 LED on) and close button at the same time for 5 second .

3 Automatic closing time setting

At the setting status (PLC IN6 LED on) ,press stop push button (IN4 LED on) , The automatic closing time will be decrease 1 second for each pressing of close button ,

The automatic closing time will be increase 1 second for each pressing of open button ,

Wiring

Terminals : PE U V W L02 N01 X0 X1 24V 0V X2 X3 X4 X5 X6 X7
24V 0V COM 24V 0V Infrared loop detector radar

Wiring instruction:

Single phase 220V : Line-L ,Neutral -N Three phase 380V : Line L ,L,L, Neutral N

Motor: U,V,W, in case the motor rotates in the wrong direction , please swap any two wires of the U,V,W
The remain two wires should be connected to LO2,NO1。

Encoder: Green, Yellow, Brown , white/pink/blue , should be connected to terminals XO,X1,24V, 0V correspondingly .(if the door can not be o[pen or close after the limit position setting is done , please swap the wire X0,X1)。(Attention : Short circuit the terminals of X6 and COM , set the top limit first then set the bottom limit later .)

Infrared photocell 1: Black be connected to “infrared “ terminal , blue/yellow be connected to 0V, brown be connected to 24V。

Infrared photocell 2: Black be connected to “infrared “ terminal , blue/white be connected to 0V, brown be connected to 24V。

Loop detector : 1, 2be connected to L,N; 3,4be connected to “loop detector“ & COM; 7,8 be connected to coil of the detector .

Safety edge wiring : the 2wires from the contact strip be connected to the transmitter of the safety edge , the 2wires from the receiver be connected to 24V、 0V, the output relay of the receiver NO & COM be connected to “infrared “ and “COM” terminal .

Manual push button : 3# - COM, 4# - X2 for open 、 X4 -stop 、 X3-close

(Attention : Short circuit the terminals of X6 and COM , set the top limit first then set the bottom limit later .)

Remote control wiring : red-24V, white-0V, blue-X2, white-X3, red-X4, black-COM.

Radar wiring : Brown-24V, green/yellow-0V, white-“radar” terminal 。

Interlock wiring :

- the YO from door #1 be connected to the X3 of door #2 ,
- the COM1 from door #1 be connected to COM0 of door #2;
- the YO from door #2 be connected to the X3 of door #1 ,
- the COM1 from door #2 be connected to COM0 of door #1.

Chapter 4 Maintenance

Attention!!!

- ☆ The daily maintenance of the door during the door operation period is important ,that help to extend the lifetime of the product and guarantee the safe operation .
- ☆ Please make the maintenance plan according to the actual working environment and the using frequency .we only provide information for your reference !
- ☆ Please prepare the necessary tools , material , for example air gun ,lubricate oil ,cleaning cloth , etc.

4.1 Maintenance items

Please make the maintenance plan according to the actual working environment and the using frequency .we only provide information for your reference ! We recommend at lease 1 maintenance per month for the following items .

item	project	content
1	Clean	Clean the door body with medium detergent by soft cleaning cloth.
2		Clean and remove dust from the tracks by air gun .
3		Keep fixing plate fasten and clean .
4	Fasten	Fixing parts , bolts , nuts should be no loose.
5		Wiring terminals should be fix without loose.
6		Join between parts should be fix reliably .
7	Lubrication	Lubricate for the bearing according to the using frequency .
8		Lubricate of the tracks according to the using frequency .
9		Clean the surface and remove the remain lubricate oil before applying new lubricant.
10	Operation	Test open , close , stop operation in normal status.
11		Test safety function of safety edge , photocell , radar , loop detector , push button , etc.
12		Check wiring inside and outside of the controller , make sure there is no cable damage and explosion .
13		Check spring , belt for spring , no twist and wear out .

4.2 Normal trouble shooting

For the Light curtain , infrared photocell , radar , loop detector ,etc , if they are not working reliably , check the FG terminal of the controller be grounded reliably or not .

4.3 Normal components maintenance

Please reference to the following maintenance information .

Attention!!!
<p>☆ Panels , aluminum bottom beam , bottom seal , hinges , spring end plugs , tracks , should be no wear out and damage without crash by accident or damaging knowingly . 、 But following the above mentioned maintenance items is necessary !</p> <p>☆ Customer can keep necessary wear components as spare parts for purchase from us when need to replace them .</p> <p>☆ When replace the component , please switch off the power and make necessary sign !</p>

Item	Name	Life time/cycles	Replacement
1	Center seal	3 years	Remove the used seal and replace with new one .
2	Side seal	2 years	Remove the used seal and replace with new one .
3	spring	120,000 cycles	1、Disassembly the spring fixing plates , put the fixing plates , bolts , and connecting parts in proper place and mark them. 2、Replace springs . 3、Reinstall springs .
4	Spring belt	600,000 cycles	1 Disassembly the spring belt fixing plates , put the fixing plates , bolts , and connecting parts in proper place and mark them. 2 Replace the belts . 3 Reinstall the belts .
5	Safety edge		1、Prepare $\Phi 8$ steel cable , length =door panel width +50cm 2、Remove contact strip , cut the end of the lead cable of the contact strip at the right side of the bottom beam. 3、Fix the contact strip remain lead cable firmly with the steel cable , pull the contact strip out from the left opening of the bottom beam . 4、With the help by the steel cable , bring in the new contact strip which lead cable is connected with the steel cable , pull the steel cable out until the lead cable spears . 5、Remove the steel cable and connect the contact strip with the safety edge transmitter in the box which attached to the bottom beam.
6	relay	100,000 hour	1 Disassembly the relay , put the relay in proper place and mark them. 2 Replace relay . 3 Reinstall relay .
7	Switching power supply	100thousand hour	1 Disassembly the switching power supply , put the switching power supply , screws , and connecting parts in proper place and mark them. 2 Replace the switching power supply . 3 Reinstall the switching power supply .
8	Battery	1 year	1 Disassembly the battery and fixing parts , put the battery , screws , and connecting parts in proper place and mark them. 2 Replace the battery . 3 Reinstall the battery .

Chapter 5 Service

5.1 Service system

- 1 One year warranty period is granted from the date the customer receive and inspect the goods
- 2 Maintenance service contract can be signed after the warranty period is expired according to the customer requirement.

5.2 After sales service

- 1 Customer archives and return visit.

We set up the customer archives after the product is delivery and set up . We will arrange period or non-period return visit to the customer to collect the customer opinions and suggestion which can help us to improve our product quality and service .

- 2 Service hotline :

Please call our hot line in case there is problem during operation or maintenance ,we will provide solution for you immediately .