

KRF/KLRP-2016.V1.0

Moving walk

Moving walk Installation Manual



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1 Preparation work before moving walk installation

1.1 Outline

The installation work of moving walk has close relationship with the customer. In order to work smoothly and improve efficiency, installation personnel shall keep good contact with the customer, and try to get their support for installation work as far as possible.

Before starting the installation, the installation progress requirements shall be confirmed by the customer. Installation company makes the installation plan according to the requirements and the installation work shall be performed as the plan.

The installation personnel shall read the installation manual carefully before starting the installation. It shall be informed to the relevant department to dispose timely when actual civil parameters and the parameters on civil drawing are unmatched. The company will investigate its responsibility if the product is damaged or affected the quality because of the incorrect installation or the installing behavior being not in conformity with the relevant provisions.


1.2 Safety Caution




1.2.1 Check before working

The installation personnel must hold a special operation certificate.



The installation personnel shall complete the security clarification and make the following safety inspection of the project before starting the everyday work.





- a. safety protection device;
- b. mechanical, electrical facilities (such as welding machine, lifting equipment, etc., especially the safety device);
- c. auxiliary tools (such as oxygen, acetylene);
- d. other operating equipment;
- e. warning labels.

No.	Material description	Quantity	Proposed sign position	Mark
1	Small children shall be held firmly	2	at the upper and lower end of glass	

No.	Material description	Quantity	Proposed sign position	Mark
2	Dogs shall be carried	2	at the upper and lower end of glass	
3	Use the handrail	2	at the upper and lower end of glass	
4	Push chairs not permitted	2	at the upper and lower end of glass	
5	Warning mark	1	at the upper end of large angle	<div data-bbox="1008 1581 1398 1791" style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Warning! Entering the machine room is permitted after the electrical system turn to inspection mode.</p> </div>

No.	Material description	Quantity	Proposed sign position	Mark
6	Warning mark	1	at the upper and lower end of large angles	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">Warning!</p> <p style="text-align: center;">Make sure nobody is in the machine room before starting the moving walk.</p> </div>
7	Warning mark	1	at the upper and lower end of large angles	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">Manual loosen rescue instruction</p> <p>First, enter into the machine room to cut off the drive power supply.</p> <p>Second, it needs two professional persons to cooperate manual brake release; one of them captures the flywheel and slowly moves it.</p> <p>Third, make sure that the moving walk runs normally after finishing the inspection work; then connect the drive power supply and start the moving walk.</p> </div>
8	Warning mark	1	at the upper and lower end of large angles	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">Warning!</p> <p style="text-align: center;">Note: Touching the moving parts is strictly forbidden.</p> </div>
9	Warning mark	1	at the upper end of large angles	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">Warning!</p> <p style="text-align: center;">The main power supply must be cut off when inspect the control cabinet.</p> </div>

No.	Material description	Quantity	Proposed sign position	Mark
10	Warning mark	1	at the upper and lower end of large angles	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Warning!</p> <p>Must have protective fences on every side when opening active cover plates.</p> </div>
11	Warning mark	1	On the host shield	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Warning!</p> <p>Standing on flywheel is strictly forbidden.</p> </div>
12	Must wear safety belt			<div style="border: 1px solid black; padding: 10px; text-align: center;">  <p>Must wear safety belt</p> </div>
13	Must hold certificate			<div style="border: 1px solid black; padding: 10px; text-align: center;">  <p>Must hold certificate</p> </div>

No.	Material description	Quantity	Proposed sign position	Mark
14	Must wear safety helmet			
15	Must wear protection gloves			
16	Safety shoes required in this area			
17	Must wear protective goggles			

1.2.2 Keep the working environment

Installation working site must be kept clean and tidy in order to prevent to be stumbled as working. And pay attention to the fire safety.

1.2.3 Safety matters at the work site

The cloth shall be unified as entering into the work site, such as overalls, safety helmet, safety shoes etc.

The multiple works shall be avoided to do at the same time on the different floors of the vertical working area as installing the moving walk. The regional safety work shall be done well in order to avoid people to be struck by falling objects.

1.2.4 The confirmation of moving walk transport mode

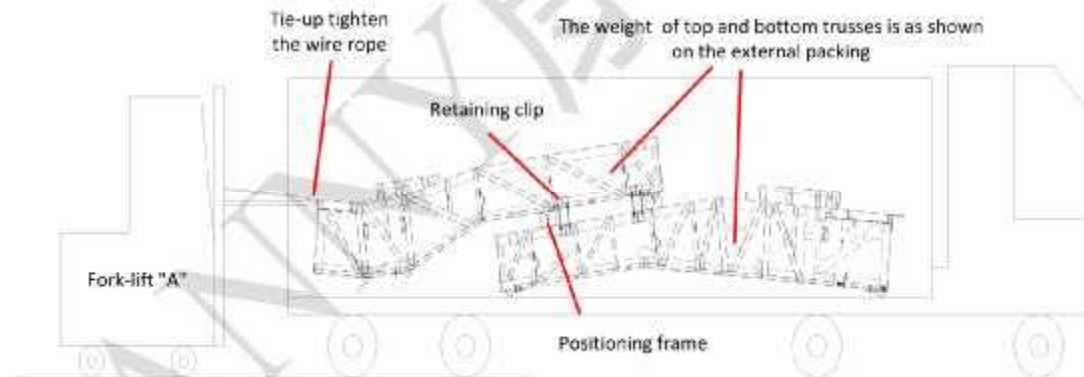
The moving walk is often transported in section. The transportation mode and lifting plan shall be confirmed before the transportation, and the transportation and hoisting plans shall be approved by relevant departments.

1.2.5 The procedure of unloading moving walk (2 piece truss)

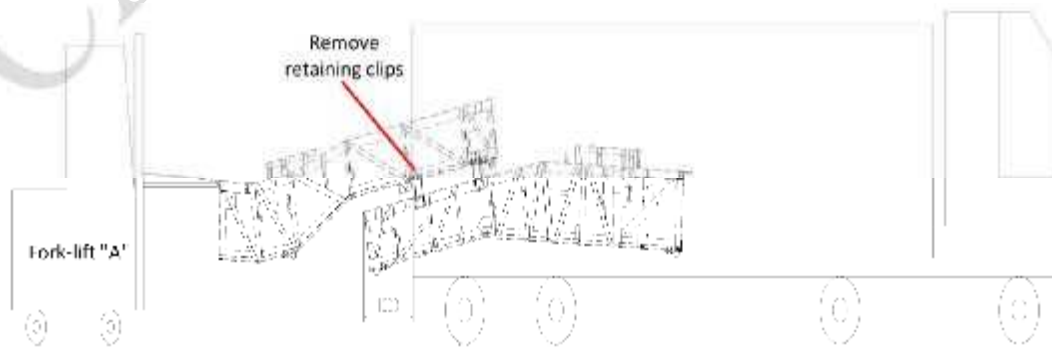
If the moving walk is transported by containers, the procedure of unloading moving walk at the construction site is as follows, which is for reference only;

1. Open the dry container door.
2. Tie-up tighten the wire rope between truss support angle and the jaw of Fork-Lift “A” (5 ton).

Note: Check whether the retaining clips between top truss and bottom truss are secured or not before standing unloading.



3. Pull the top truss outside by using fork-lift “A” until edge of bottom truss being sustained by 1000mm as shown in sketch drawing.

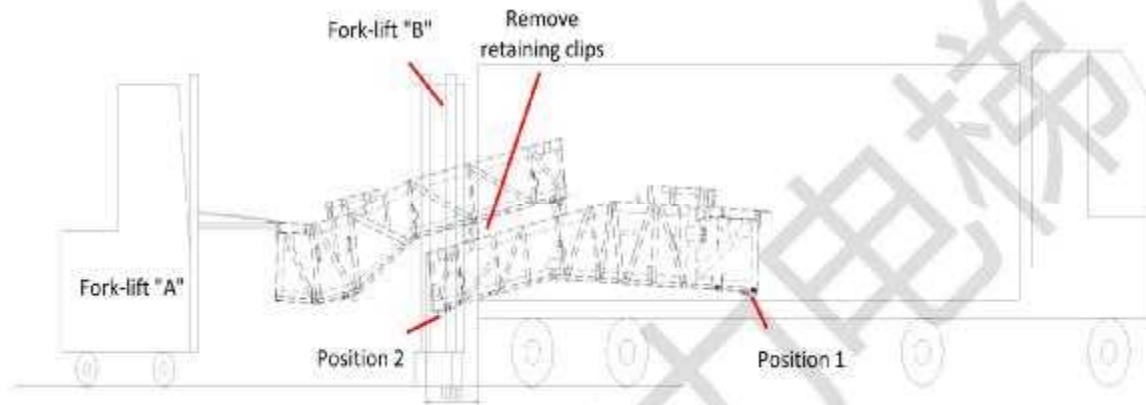


4. If there is crane at the site:

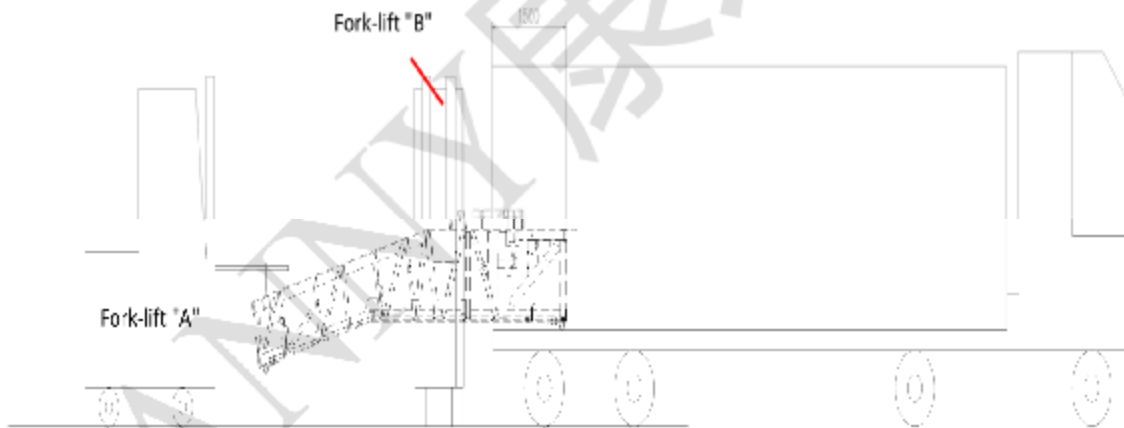
And then removed the retaining clips secured. By using crane, pull the top truss outside and put it down on the ground.

If there is no crane at the site:

And then removed the retaining clips secured. Pull the jaw of fork-lift "B" between top truss and bottom truss at the No.2 without moving. And made fork-lift "B" move zig-zag until the top truss comes outside.



5. Pull bottom truss outside by using fork-lift "A" and fork-lift "B" as shown in the picture.
Note: There are rollers at only 2 positions of bottom truss.



1.3 Preparations of the construction site

1.3.1 Negotiation work with the customer

Comply with the relevant rules and regulations, discuss and confirm the relevant installation provisions with the customer, such as construction plan, security regulations etc as entering into the construction site.

1.3.2 Civil verification

The installation personnel shall understand the technical parameters of the moving walk installed, such as width, lifting height and angle etc. Re-measure the civil dimensions according to the civil drawings of the moving walk, including the pit (bottom) length, width, depth, lifting height and the distances of the upper and lower horizontal supporting points. The bottom pit shall not ooze, the inner side of the pit shall be straightness, and the uneven phenomenon is not allowed. Notify the relevant department to correct in time if there is any problem after the civil re-measurement. The re-measurement of civil dimensions for moving walk shall be completed before the installation. The civil dimensions shall be strictly re-measured according to the confirmed and sealed construction layout drawings of the moving walk supplied by Canny Escalator Co., Ltd.

a. Re-measured the distance between the upper and lower horizontal supporting points of the moving walk, and recheck if it meets the requirement on the drawing according to the angle of the moving walk. Recheck if the step sizes, embedded parts and the levelness of the two horizontal supporting points meet the installation requirements. If not, please inform the relevant department to solve in time (refer to figure 2-1, 2-2).

b. The type KRF: Put the vertical collimator at point A and point B separately, then cast their shadow to point A" and B", and measure the length of diagonal line A'B", B'A". The length tolerance of them is +10/0mm.

c. The type KLRP: Measure the length of diagonal line A'B", B'A". The length tolerance of them is +10/0mm.

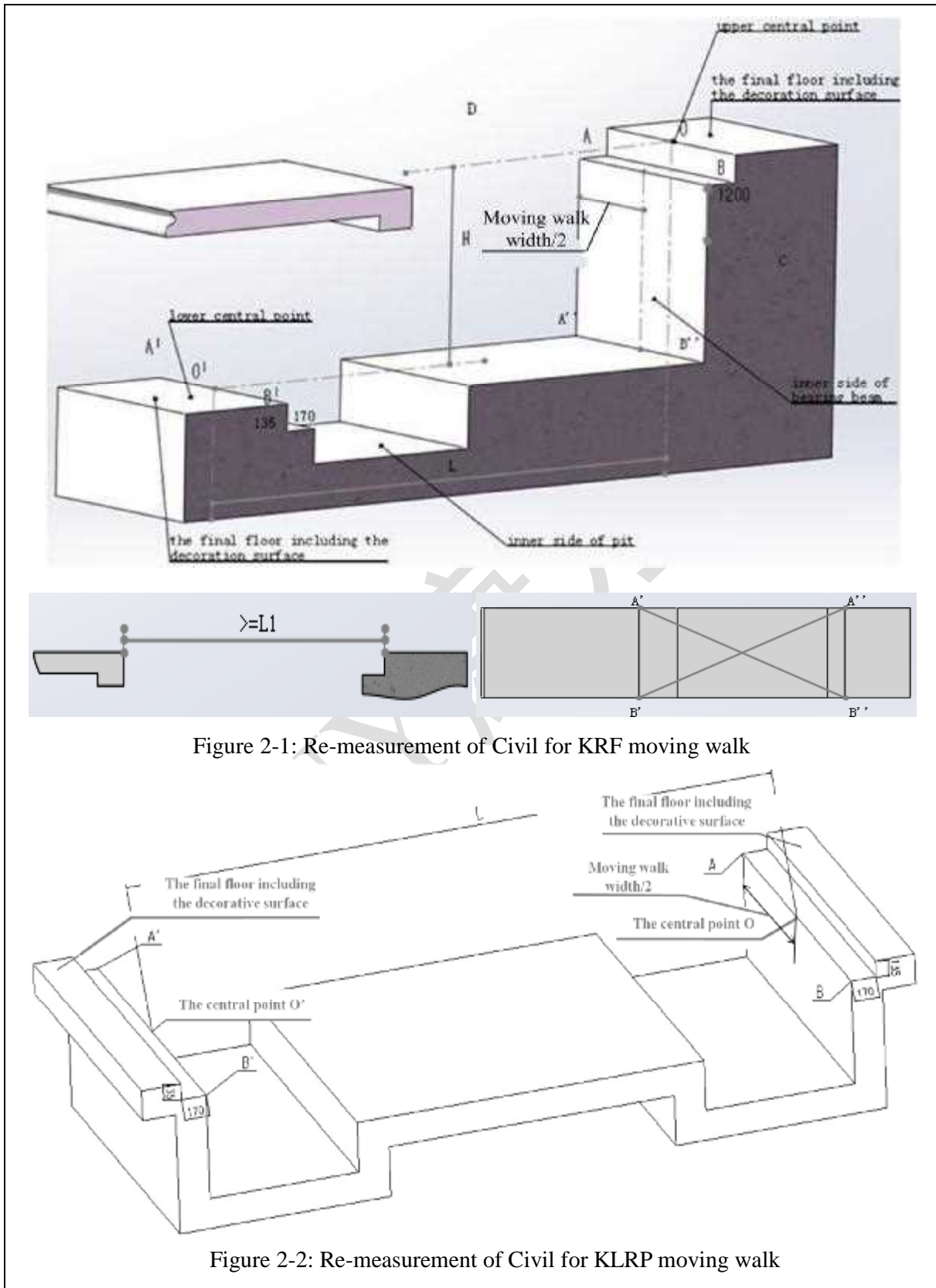


Figure 2-1: Re-measurement of Civil for KRF moving walk

Figure 2-2: Re-measurement of Civil for KLRP moving walk

d. According to the regulations of national standards, The clear height above the steps of the moving walk at all points shall be not less than 2300mm, the values of L1 are shown as follows:

Types of moving walk	L1 (mm)
KRF/KRF-B/KRF-RS10 (indoor)	14700+5.6713*T
KRF/KRF-B/KRF-RS11 (indoor)	13500+5.1446*T
KRF/KRF-B/KRF-RS12 (indoor)	12500+4.7046*T

e. KRF: Measure the rise, which is the vertical distance between the upper and lower finished floor levels. The method of measurement is that hanging the plumb line from the upper floor to the lower floor to find a measurement point and measuring the actual floor height H, the size is $H+5/0\text{mm}$.

f. KRF: Measure the level span, which is the projection distance between two supports of delivery floors. The method of measurement is that hanging plumb line from the upper supporting point to the lower floor to find a measurement point and measuring the horizontal distance L from the measurement point to the edge of the lower supporting beam, the size is $L+10/0\text{mm}$. It has two measurement points about the single mounted moving walk, and three measurement points about double-set mounted moving walks. Make sure the accuracy of the measured data.

g. Measure the level span for the type KLRP. The method of measurement is that finding out the installation central point 0 and point 0' of the whole moving walk and measuring the horizontal distance L between the two points, the size is $L+10/0\text{mm}$.

h. Find out the installation central point 0 ,0 ' of the whole moving walk in the upper and lower supporting beams and make the marks properly. And make the marks on the centers A. B and A'.B' of the upper and lower supporting beams (Moving walk Width/2), measure the step width $170\text{mm} +10/0\text{mm}$ of the upper and lower supporting beams, which shall meet the dimensional requirements in the civil drawings (Refer to Figure 2) to ensure that the horizontal distance of the width shall be identical during the installation of the moving walk. The allowance error of the civil work shall be below the requirements of the civil dimensions.

i. The inner sides of the upper and lower supporting beams close to the moving walk shall be vertical and straight within the height range of 1,200mm without any irregularity on the walls (Refer to Figure 2).

j. The civil work for the moving work with the pit shall meet the requirements in b, c, d, e, f and g. The symmetric centerline of the pit shall be identical with the symmetric centerline of the upper supporting beam. The pit shall not have any obvious deflection or irregularity without any water penetration. The length, width and depth of the pit shall meet the requirements in the confirmed civil drawings.

k. During the re-measurement, check if the step surfaces of the upper and lower supporting beams are embedded with steel sheets according to the requirements of civil drawings. The distance between the upper surface of the embedded steel sheets and the final decoration floor is $135\pm 5\text{mm}$. The embedment of the steel sheet shall be level, and the edge shall flush with the pit and supporting beams and shall neither exceed the supporting beams nor be placed askew.

1.3.3 Material storage

Ensure whether material storage area is safety, and whether the size is suited.



1.3.4 Determination of the installation plan




Determine the installation plan with customer after completing the preparations.

1.3.5 Confirmation of the lifting personnel

The lifting and positioning of moving walk shall be carried out by the professional team.







1.3.6 Preparation of tools at the construction site

No.	Name	Specification	Pattern
1	Torque wrench	1000N.m	
2	Adjustable wrench	8" 10" 12"	


No.	Name	Specification	Pattern
3	Hammer	1.5lb 2lb	
4	Rubber mallet	2lb	
5	Hacksaw		
6	Vise	2"	
7	File	8" 10"	
8	Flat file		
9	Ring clamp	6"	

No.	Name	Specification	Pattern
10	Hexagon wrench hole		
11	Flat chisel	8mm 10mm 12mm	
12	Butter injector		
13	The oil injector		
14	Chaser bearing	M3-M16	
15	Chaser	M3-M16	

No.	Name	Specification	Pattern
16	Polishing machine	φ120	
17	Electric drill	φ3-φ13	
18	Flashlight		
19	Hand-held lamp	~36V	
20	Flat head screw driver	4" 6" 8" 10"	
21	Phillips screwdriver		

No.	Name	Specification	Pattern
22	The electrician knife		
23	Long nose pliers		
24	Diagonal pliers		
25	Wire stripping pliers		
26	Test pen		
27	Level		

No.	Name	Specification	Pattern
28	Protractor		
29	Depth vernier caliper		
30	Vernier caliper		
31	Spiral micrometer		
32	Steel rule		
33	Steel belt		

No.	Name	Specification	Pattern
34	DB meter		
35	Stopwatch		
36	Clip-on current meter		
37	Megger		
38	Tachometer		
39	Multimeter		

2 Process description for the installation of moving walk

2.1 Opening the boxes to check materials

Outline: Confirm whether the arrival equipments or parts meet the site requirements, and ensure the normal implementation of the subsequent installation work.

protective articles



Tools

Details: crowbar, hammer, screwdriver

Steps	Operation	Remarks
1	Confirm the material yard and channel unobstructed	
2	Check whether the appearance of packing cases is intact	
3	Check the goods according to the packing list	
4	In order to prevent materials from damage caused by improper stacking and protection, Stack the materials neatly and orderly, and take the necessary safety measures.	
5	Clean up the residual impurities on the site for unpacking.	
6	The staffs of on-site inspection confirm signatures.	

2.2 Hoisting, installation and positioning of moving walk

Outline: The hoisting and positioning of moving walk shall be carried out by the professional team.

2.2.1 Integral hoisting, installation and positioning of moving walk in the open area.

The normal transportation method is integral transportation. The special cable slings for lifting the upper and lower parts are accompanying with the moving walk at ex-factory, which are located at the four corners of the upper and lower parts of the truss. Hoist from these positions during the hoisting .It is not allowed to change the hoisting positions at will.

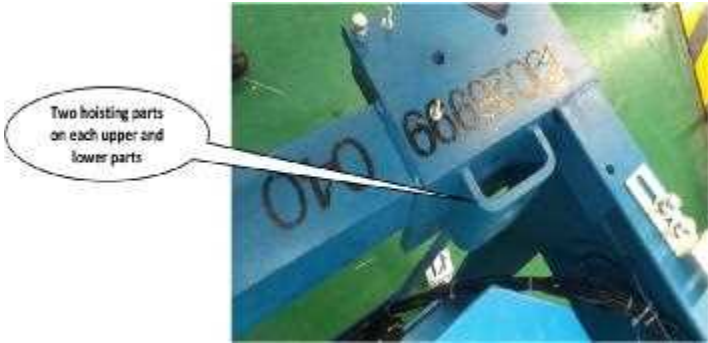


Protective articles

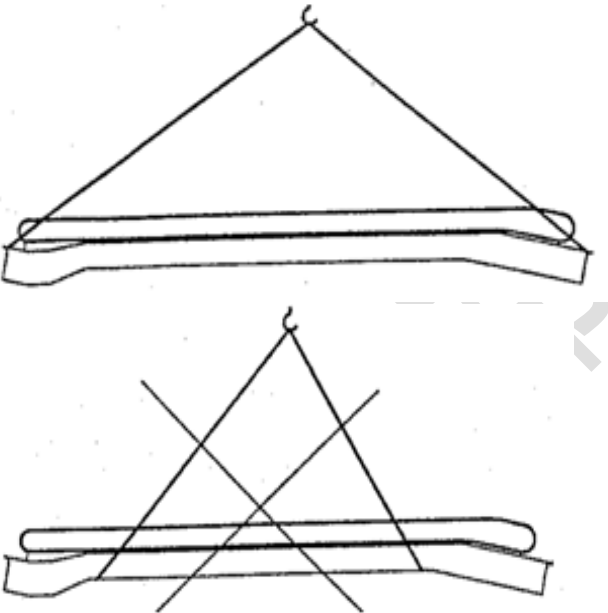
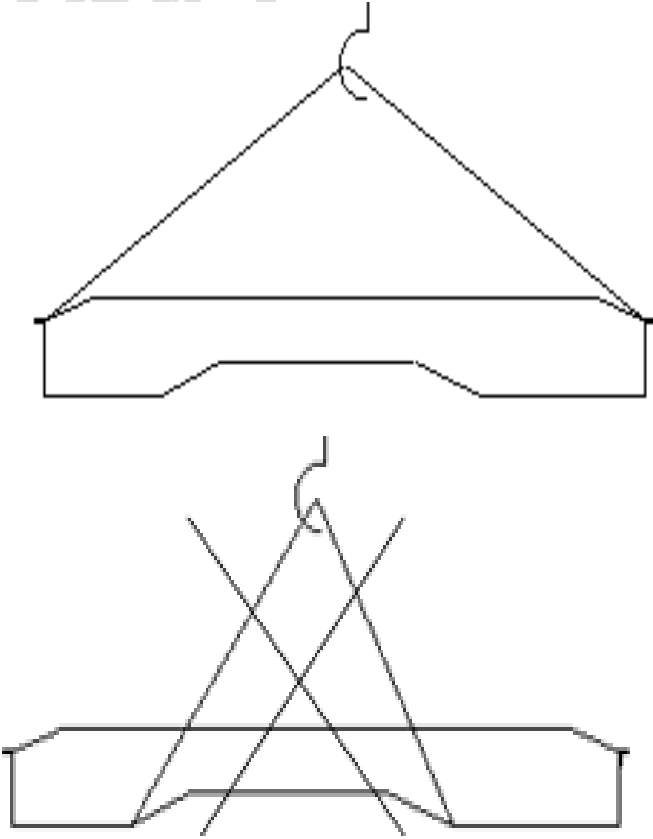


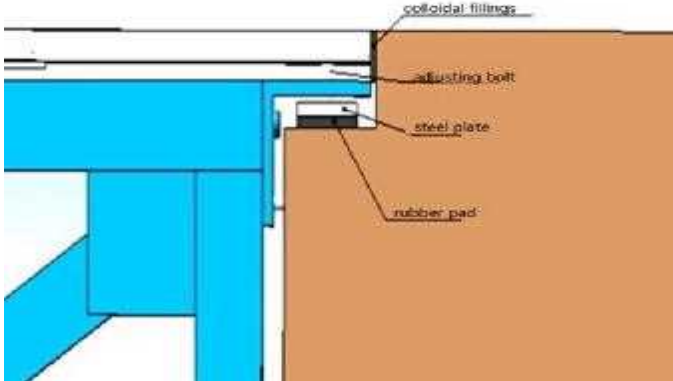
Tools

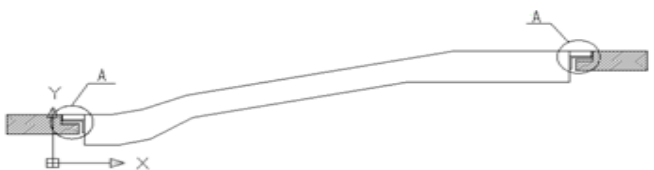
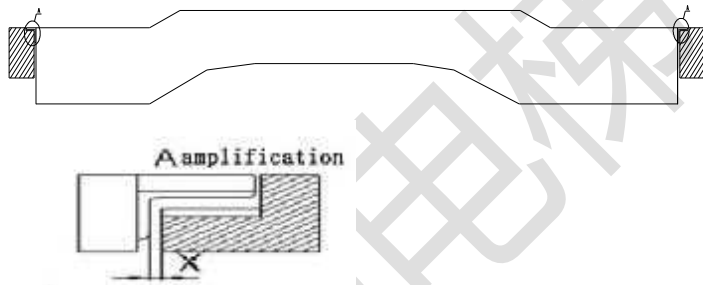
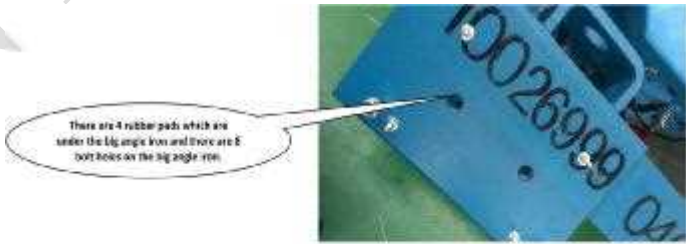

Details: steel tape, steel rule, spirit level, wrench etc.

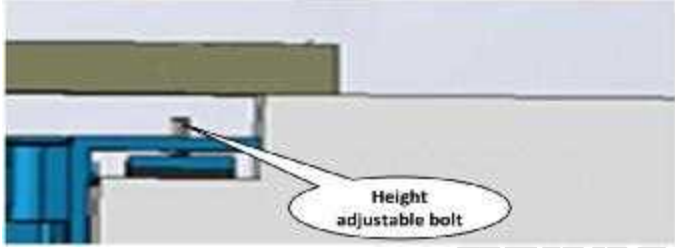
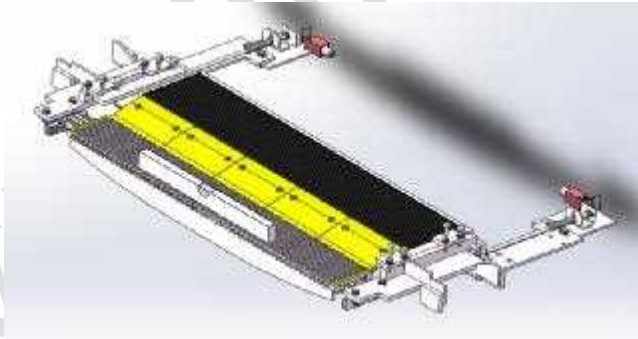
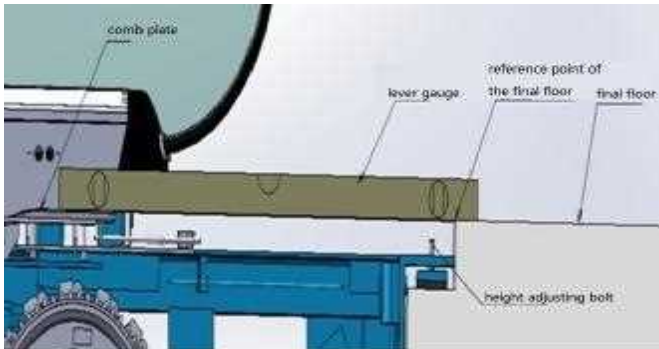
Steps	Operation	Remarks
1	Confirm the lifting area of moving walk	Make the relevant warning labels and monitor on the spot, and the irrelevant personnel can't enter the lifting area of moving walk.

Steps	Operation	Remarks
2	Confirm the lifting position of moving walk	<p>1. the hoisting position</p>  <p>2. The special cable slings for lifting the upper and lower parts are accompanying with the moving walk at ex-factory, which are located at the four corners of the upper and lower parts of the truss. Hoist from these positions during the hoisting .It is not allowed to change the hoisting positions at will.</p> <p>KRF:</p>  <p>KLRP:</p> 

<p>2</p>	<p>Confirm the lifting position of moving walks</p>	<p>3. angle of wire ropes KRF:</p>  <p>KLRP:</p> 
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Steps	Operation	Remarks
3	Preparation for lifting height and positioning of moving walk	<p>1. The moving walk shall be higher than the upper and lower supporting beams when it is hoisted in place. The upper and lower parts of the moving walk are in the level status and put down slowly so that the moving walk can be positioned on the upper and lower supporting beams and the moving walk center shall be basically identical with the civil centerline.</p> <p>Note: In order to make sure the upper and lower parts can be put down at same time, before hoisting the upper part, please use hand pulling block as the middle connection at jobsite. In this way, it will be more convenient for adjusting. And if possible, please use two hoists.</p> <p>2. The distances should be evenly distributed each other between multiple moving walks positioned in parallel, and the horizontal distance of the gaps between the upper and lower parts and the upper and lower supporting beams should be consistent.</p> <p>3. The backing plates and adjusting bolts should be installed before positioning the moving walk, The rubber backing plates should be put under the steel sheets.</p>
4	Position the upper and lower parts of moving walk	<p>The upper and lower parts of the moving walk are mounted on the upper and lower floors of buildings. In order to avoid the direct contact between the moving walk and buildings, vibration-damping hard rubber base plates are lined under the large angle irons of the truss to separate the moving walk from the buildings and reduce the transmission of vibration. Colloidal fillers are used to fill the clearance between the moving walk and the building. This kind of movable support should be adopted at one end of the moving walk at least.</p> 

Steps	Operation	Remarks
5	Requirements of positioning the upper and lower parts of moving walk	<p>KRF:</p>  <p>KLRP:</p>  <p>Note: conditions of satisfaction: X range: $10\text{mm} \leq X \leq 20\text{mm}$; As $x > 20\text{mm}$, it must be taken the strengthen measure to meet the strength requirements of the design, and agreed by the technology department.</p>
6	Adjusting the height of the upper and lower parts of moving walk	<p>The surfaces of the upper and lower floor plates of the moving walk shall be slightly higher than the final floors of the upper and lower floors. It can be adjusted up and down by the adjustable bolts at the upper and lower parts.</p>   <p>Note: If the opening in the civil engineering reserved too deep, it has been explicitly addressed in the chapter 1 about the civil review. Use backing plates and weld firm with embedded steel plates.</p>

Steps	Operation	Remarks
7	Adjusting the levelness of moving walk	<p>1. The levelness is adjusted by 4 height adjustment bolts at the upper and lower parts of the truss as well.</p>  <p>2. The levelness measurement (the tolerance is not more than 0.5 mm) The levelness of the transverse plane: level pallets at the upper and lower parts.</p>  <p>The levelness of the longitudinal plane: on the main beams of the both sides of the upper and lower parts of the truss (in the case, the floor plates of the upper and lower parts are not mounted) or the pallet levelness of the longitudinal plane at the upper, middle and lower parts.</p> 

2.2.2 Integral hoisting, installation and positioning of moving walk in the limited area.

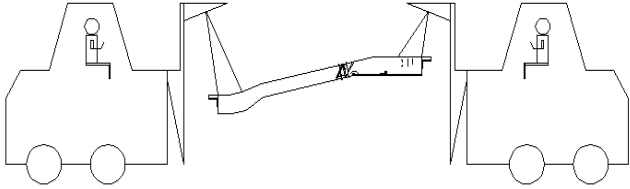
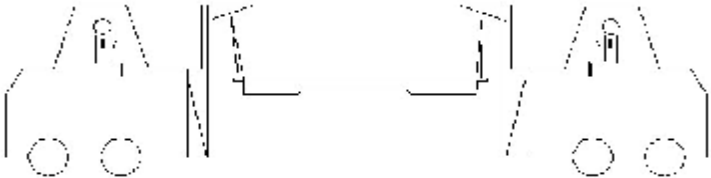
Outline: It is not applied to the integral hoisting by the heavy crane, and involves the situations equipments need to be shifted position.


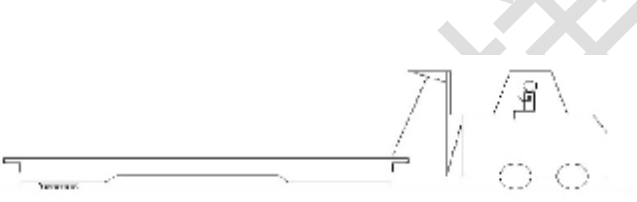


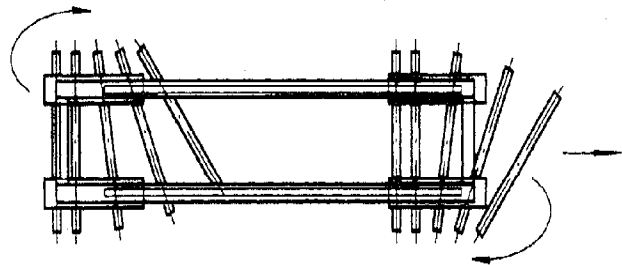
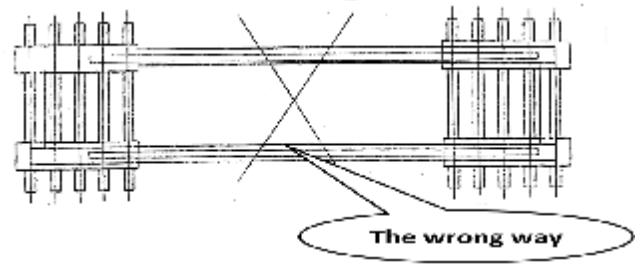
Protective articles



Tools

Details :crowbar, hammer, screwdriver, etc.

Steps	Operation	Remarks
1	Preparation work for shifting equipments	Clear channels and check instruments
2	Unloading goods on the shifting tools by cranes	<p>The shifting ways as follows: 1. two forklifts</p> <p>KRF:</p>  <p>KLRP:</p> 

Steps	Operation	Remarks
2	Unloading goods on the shifting tools by cranes	<p>2. a forklift and tank KRF:</p>  <p>KLRP:</p>  <p>3. tanks KRF:</p>  <p>KLRP:</p>  <p>4. steel pipe</p>  

Steps	Operation	Remarks
3	The lifting of moving walk	<p>1. Before the entire moving walk is hoisted to the supporting beams, its upper part should be hoisted first, and the lower part must be pulled with the safety cable before hoisted. The safety cable of the lower part is loosened slowly while the upper part is hoisted up gradually, then upper part moves upwards slowly, and the lower part moves forward slowly.</p>  <p>2. The moving walk should be higher than the upper and lower supporting beams when it is hoisted in place. The upper and lower parts of the moving walk are in the level status and put down slowly so that the moving walk can be positioned on the upper and lower supporting beams.</p> <p>KRF:</p>  <p>KLRP:</p>  <p>Note: The lifting way as shown in the figure is not only, it can use multiple chain blocks if the site condition permits.</p>
<p>Note: Positioning and adjusting requirements of moving walk can refer to 2.2.1.</p>		

2.2.3 Joining, integral hoisting and positioning of sectionalized moving walk

Outline: 1. Due to the restriction by transportation or other conditions, the truss is sectionalized. The moving walk is hoisted integrally and positioned after on-site assembly.



2. Breaking force of the steel wire rope used in the sectionalized moving walk shall not be less than 156 KN.



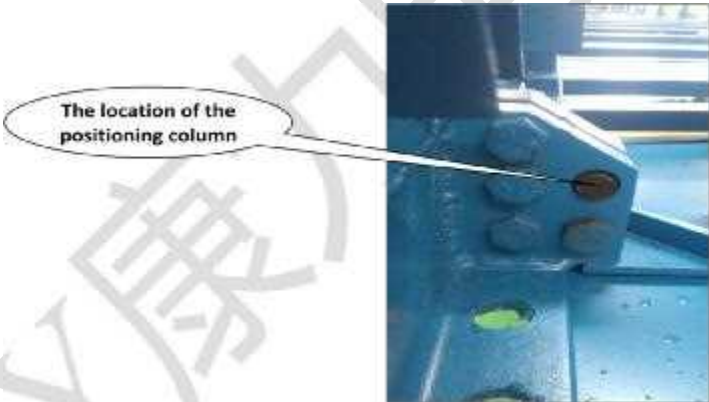
Protective articles

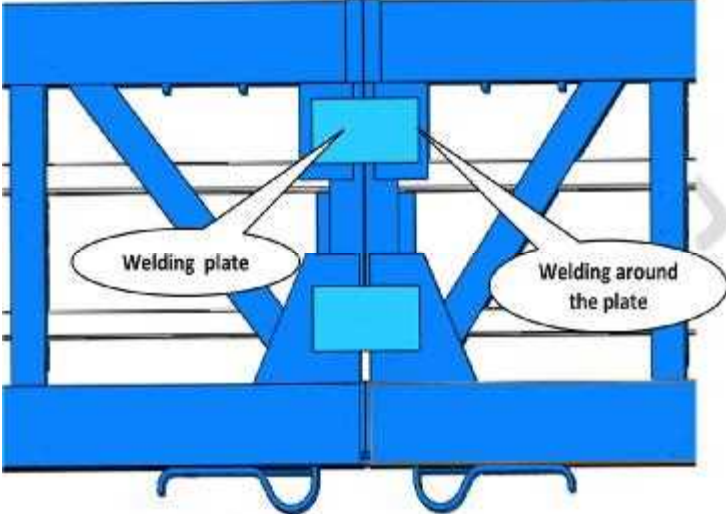
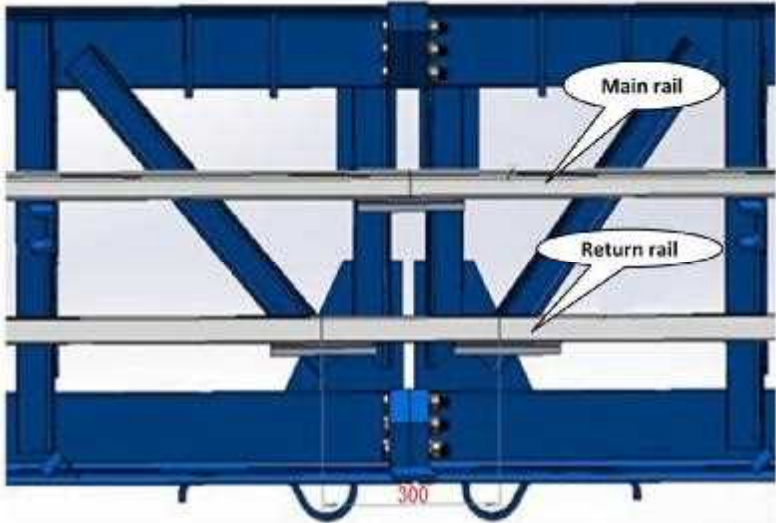


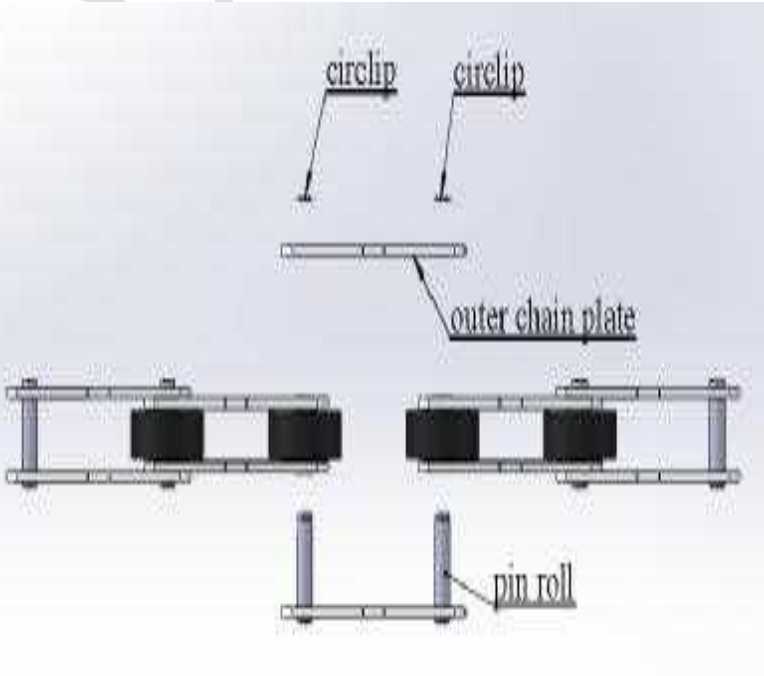
Tools

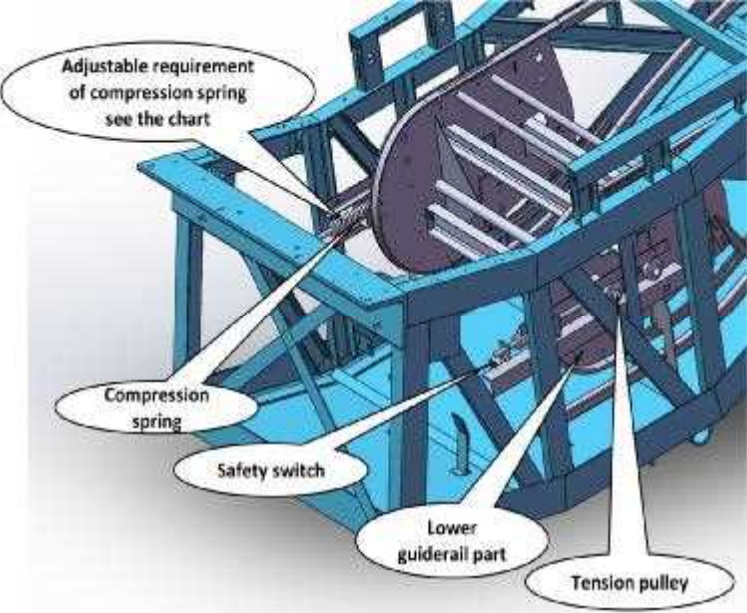
Details: steel tape, steel rule, spirit level, wrench, shifting tools (tanks, sleeper, steel pipe, forklift), etc.

Steps	Operation	Remarks
1	Confirm the lifting area of moving walks	Make the relevant warning labels and monitor on the spot, and the irrelevant personnel can't enter the lifting area of moving walks.
2	The lifting of sectionalized moving walks	<p>One end of the lifting is still in the original position, the other should be in the engaged place of the truss, Make sure that this position is connected reliably for fastening and hoisting to avoid the deformation of the truss.</p> <p>KRF:</p>  <p>KLRP:</p>  <p>Lifting method of sectioned truss</p> <p>Attention: If involving shifting position on site, it can refer to 2.2.2.</p>

Steps	Operation	Remarks							
3	Field assembly	<p>1. During assembling, the location column at one end should first get close to the location hole at the other end, and then insert the location column into the location hole slowly.</p> <p style="text-align: center;">KRF KLRP</p> <div style="display: flex; justify-content: space-around;">   </div>							
		<p>2. Assemble by the high-strength bolts equipped accompanying with the moving walk.</p> <div style="text-align: center;">  <p>The location of the positioning column</p> </div> <p>3. All high-strength bolts equipped accompanying with the moving walk should be screwed up according to the specified tightening torque by the special torque wrench, and then screwed up according to the specified testing torque one by one; Each can only be used once.</p> <p>4. At the same time, Pay attention to the joints of the step guide rails to prevent bent due to collision. Fasten the bolts at the binding site. (requirements of clipping force)</p>							
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">bolting specification</th> <th style="width: 33%;">rated torque</th> <th style="width: 33%;">testing torque</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">M16</td> <td style="text-align: center;">340Nm</td> <td style="text-align: center;">360Nm</td> </tr> <tr> <td style="text-align: center;">M20</td> <td style="text-align: center;">550Nm</td> <td style="text-align: center;">590Nm</td> </tr> </tbody> </table> <p>Note: Test whether the pre-tightening force meets the requirements with torque wrenches after the joints of sectionalized trusses are connected. If the indicator on the torque wrench has reached to testing torque, and the nut cannot be rotated further, it can be thought to apply a prestressing force.</p>	bolting specification	rated torque	testing torque	M16	340Nm	360Nm	M20
bolting specification	rated torque	testing torque							
M16	340Nm	360Nm							
M20	550Nm	590Nm							

Steps	Operation	Remarks
3	Field assembly	<p>5. The joints of sectionalized trusses should be reinforced by the additional welding plates, which are welded around.</p> 
4	Check and adjust the joint of truss	<p>Assure the vertical and horizontal precision requirements at the joints of the truss, and adjust by the adjusting shims if necessary.</p>
5	Check and adjust the guide rails at the joint of truss	<p>1. The joints of the pallet guide rails at the connections should be tight. The partial gaps at the joint should not exceed 0.05mm and the pallets of the joint should not exceed 0.05mm (use polishing machine to polish if necessary).</p> 

Steps	Operation	Remarks
5	Check and adjust the guide rails at the joint of truss	<p>2. The return rail of the main wheels has a 300 mm rail at the section. Other middle guide rails should be still installed according to the previous sectionalized method (refer to Figure).</p>
6	Check and adjust the pallet chains at the joint of truss	<p>Attention:</p> <ol style="list-style-type: none"> 1. The shaft circlips should be installed on the outside, and ensure that they are all valid. 2. After the moving walk was installed and debugged completely, check whether all of the chains have been lubricated sufficiently before running. 

Steps	Operation	Remarks				
7	Adjust the tension of the pallet chains	<p>The tension can be adjusted by adjusting the compression length of the tension spring according to the actual pallets movement status (refer to Figure).</p> 				
		Type	Pallet width	Lifting height H ($H \leq 10000\text{mm}$)	Length X after Compression of the tension spring (reference)	
		KRF	1000/800 mm	$H \leq 4000\text{mm}$		160mm
				$4000 < H < 6000\text{mm}$		157mm
				$6000 \leq H \leq 8000\text{mm}$		153mm
		Type	Pallet width	Level span L ($L \leq 100000\text{mm}$)		Length X after Compression of the tension spring (reference)
		KLRP	1400mm	$L \leq 40000\text{mm}$		95mm
				$40000 < L \leq 60000\text{mm}$		90mm
				$60000 < L \leq 80000\text{mm}$		85mm
				$80000 < L \leq 100000\text{mm}$		80mm
Note: The position and corresponding adjustment of moving walk shall refer to 2.2.1 and 2.2.2.						

2.2.4 Sectional lifting, installing and positioning of sectionalized moving walk with supports

Outline: 1. Due to the restriction by transportation or other conditions, the truss is sectionalized. The moving walk is hoisted sectionally and positioned at the construction site.



2. Breaking force of the steel wire rope used in sectionalized moving walk shall not be less than 156 KN.

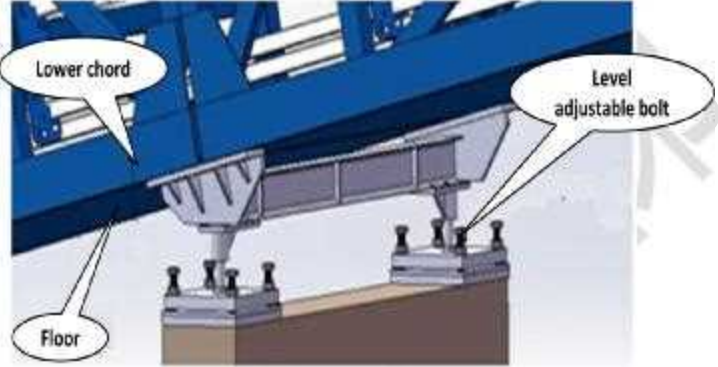
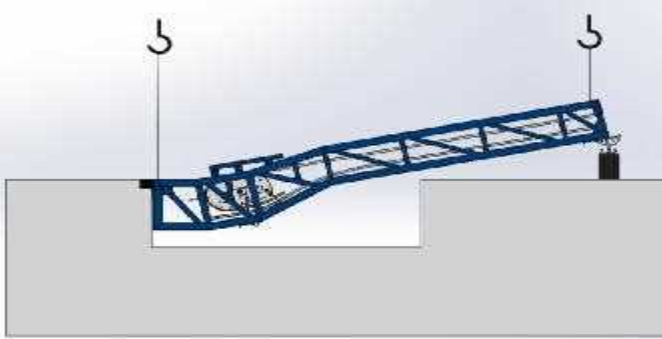
protective articles

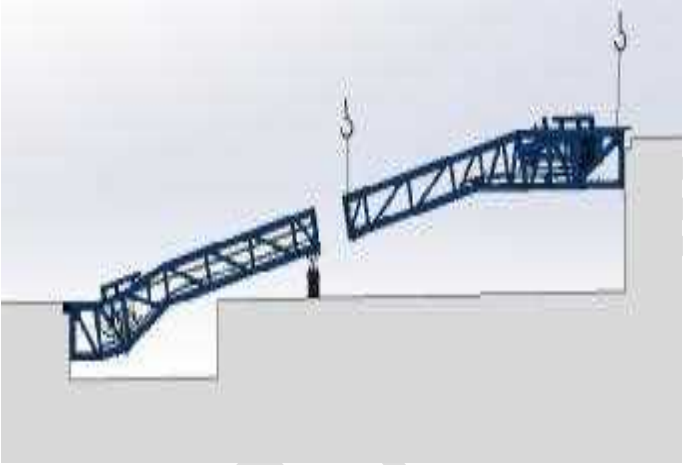
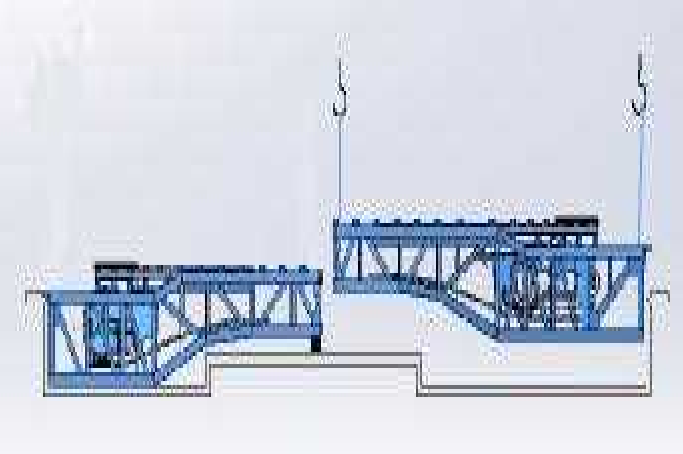


Tools

Details: steel tape, steel rule, spirit level, wrench, shifting tools (tanks, sleeper, steel pipe, forklift), etc.

Steps	Operation	Remarks
1	Confirm the lifting area of moving walk	Make the relevant warning labels and monitor on the spot, and the irrelevant personnel can't enter the lifting area of moving walk.
2	The lifting of sectionalized moving walk	<p>One end of the lifting is still in the original position, the other should be in the engaged place of the truss, Make sure that this position is connected reliably for fastening and hoisting to avoid the deformation of the truss .</p> <p>KRF:</p>  <p>KLRP:</p>  <p>Lifting method of sectioned truss</p> <p>Attention: If involving shifting position on site, it can refer to 2.2.2.</p>

Steps	Operation	Remarks
3	The hoisting and installing of sectionalized moving walk	<p>1. When the lifting height exceeds 2.2m, the deflection and span increase accordingly. The middle support should be set between the two supporting beams (refer to Figure). Adjustable bolts are installed on the middle support to support the truss. Necessary adjustments must be carried out during installation.</p>  <p>2. Place the lower part of the moving walk above the lower bottom pit and the middle support. Descend slowly after adjusted to a suitable position, and then put on the lower support and the middle support.</p> <p>KRF:</p>  <p>KLRP:</p>  <p>Attention: The position requirements of the lower part refer to 2.2.1.</p>

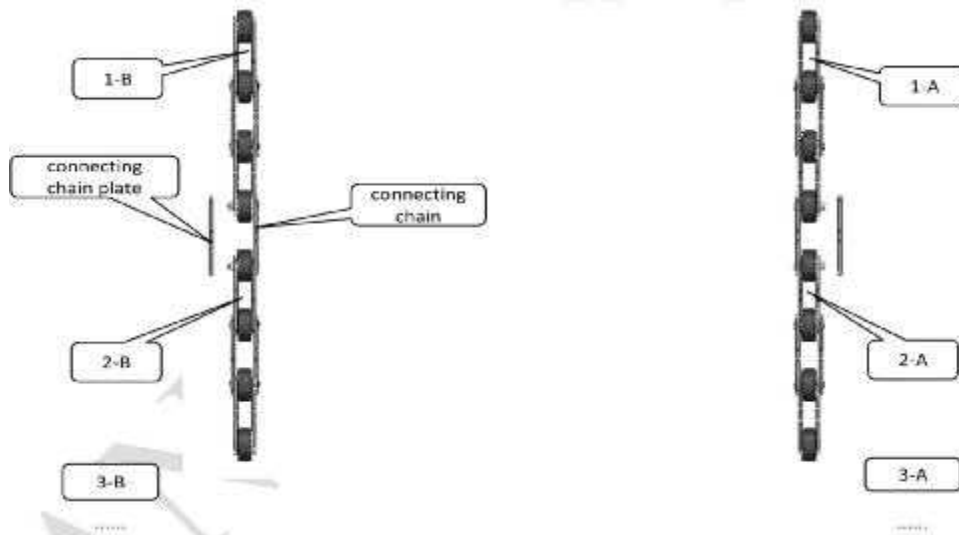
<p>3</p>	<p>The hoisting and installing of sectionalized moving walk</p>	<p>3. Then, place the upper part of the moving walk in the position as shown in the figure. Move the upper part of the moving walk to the joint of the sectionalized truss slowly, and adjust the position to make sure it can be matched with the flange face of the lower part.</p> <p>KRF:</p>  <p>KLRP:</p>  <p>Note: 1. The requirements of the joints refer to 2.2.3. 2. The other positioning requirements refer to 2.2.1. 3. If the moving walk with supports divides into more than three parts, the sequence of the lifting, installation and adjustment should be from the bottom to the top.</p>
<p>Note: The position and corresponding adjustment of moving walk can refer to 2.2.1, 2.2.2 and 2.2.3.</p>		

2.3 Installation instructions for pallet chains of moving walks

The pallet chains are the important parts of moving walks. In order to make the chains give play to good operating performance fully and prolong the service life, the right installation and operation of the chains is very important, which can guarantee the good operation of the chains and normal work of the moving walk.

1. The chains provided by our company have been segmented and matched according to the order form. During the final assembly, your company shall connect strictly according to the pairing sequence number provided by our company and never exchange freely. The left and right chains should be connected by the connecting chain respectively to assemble into the total segment number required by the order. If connecting chains out of sequence or separating the standard segment arbitrarily, it may influence the moving walk test or cause accidents.

2. When having the circular connection, the left and right chain should be connected according to 1-A corresponding to 1-B, 2-A corresponding to 2-B, 3-A corresponding to 3-B and 1-A connecting with 2-A, 2-A connecting with 3-A, 1-B connecting with 2-B, 2-B connecting with 3-B and so on. All of the locking elements should be installed correctly, bead flange should be installed in place and the opening angle of the split pins must more than 60°. Incorrect components and parts, incorrect installation or missing parts may cause accidents.



3. The pallet chains work as transportation. Chains are driven by chain wheel and guided by guide rails. So before the installation, make sure the correct installation of chain wheels and guide rails and other relevant components and parts. Pay particular attention to the planeness of the joint between guide rails to make sure there is no dislocation. And there shouldn't be welding slag or hard particle. Any one of them existing will influence the normal working of chains and will damage chains too.

4. During the installation and test of chains, the chains should be lubricated fully by injecting the clean and qualified lubricating oil (LAN-68). The lubrication mainly uses manual injection. And the both sides of the chains need to inject oil in order to make sure the lubricating oil is added between the sleeves and the pins equably in time, which always makes the chains in the lubrication state.

2.4 KRF: Installation of handrail system

Outline: The handrail system mainly composes of protecting glass, handrail guide rails and handrails. Because the protecting glass is tempered, Pay special attention to prevent the glass damaged during the installation.


2.4.1 Installation of protecting glass

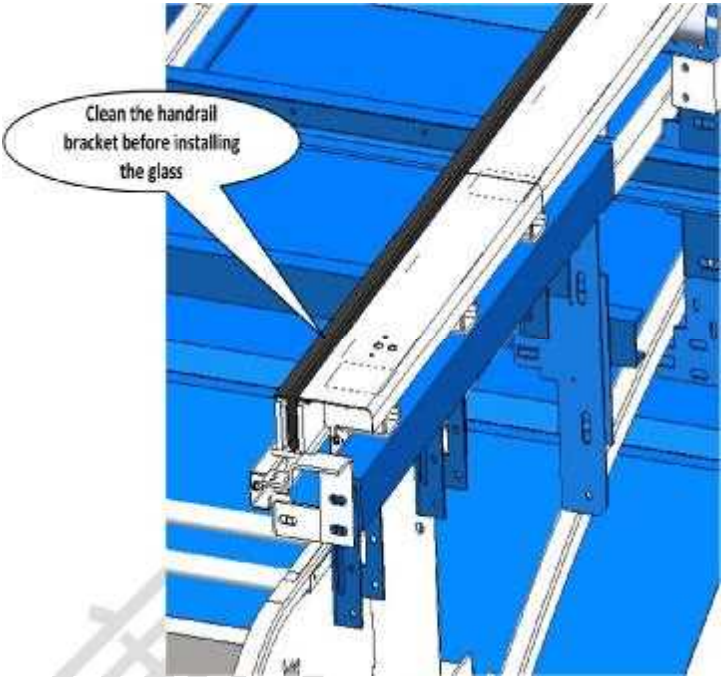
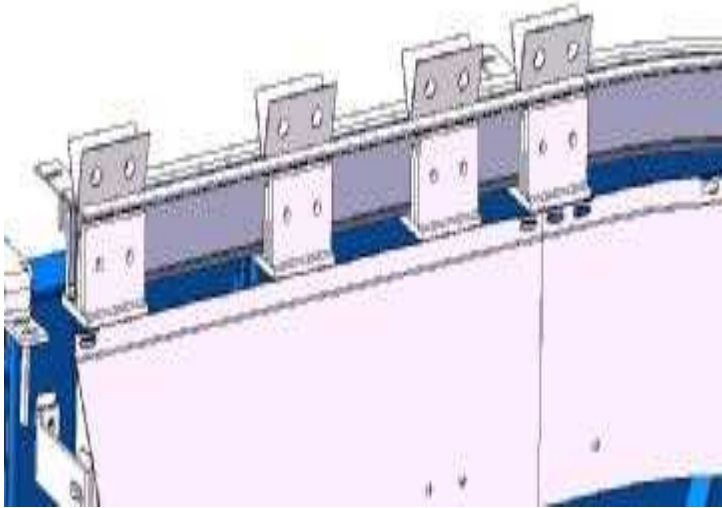
protective articles

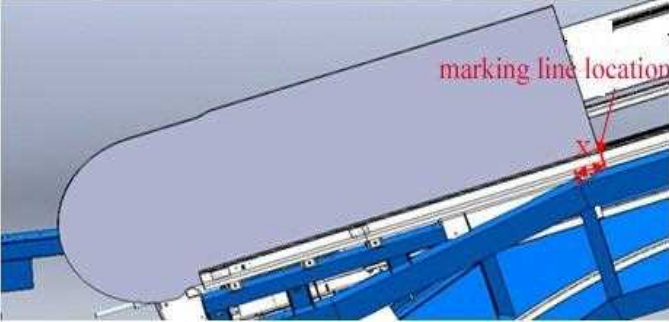
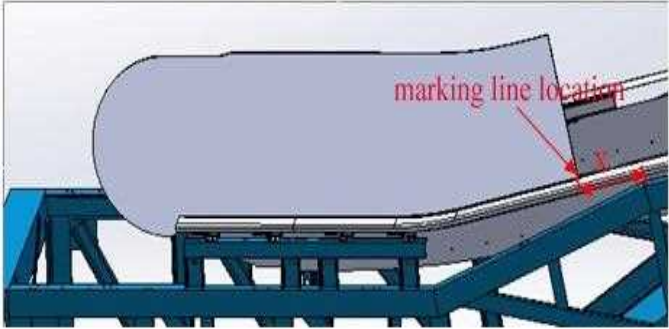
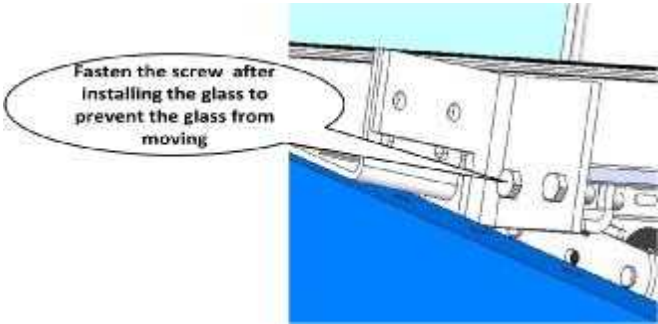


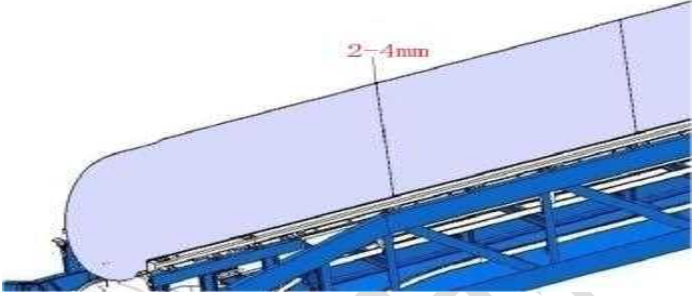
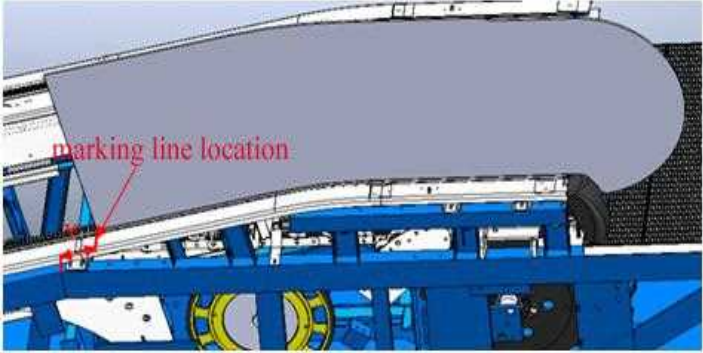
Tools

Details: sucking disk, small brush, open-end wrench

Steps	Operation	Remarks
1	Pull out the inner cover plates from the S strip at first	<p>Before the installation, remove the inner cover plates in order to easy installation and fixing.</p> 

Steps	Operation	Remarks
2	Clean the glass brackets	 <p>Clean the handrail bracket before installing the glass</p>
3	Put the liners into the glass clamping parts	<p>The liners must be placed in the glass clamping parts at the glass brackets and the joints of profiles.</p> 

Steps	Operation	Remarks														
4	Install the protecting glass at the lower part R	<p>1. Install the protecting glass according to the marking line at the lower part R.</p> <p>KRF/KRF-B:</p>  <p>KRF-RS:</p> 														
		<table border="1"> <thead> <tr> <th data-bbox="643 1152 1024 1203">Type of moving walk</th> <th data-bbox="1024 1152 1399 1203">Value X (mm)</th> </tr> </thead> <tbody> <tr> <td data-bbox="643 1203 1024 1247">KRF12/ KRF12-B</td> <td data-bbox="1024 1203 1399 1247">153.5</td> </tr> <tr> <td data-bbox="643 1247 1024 1289">KRF11/ KRF11-B</td> <td data-bbox="1024 1247 1399 1289">154</td> </tr> <tr> <td data-bbox="643 1289 1024 1331">KRF10/ KRF10-B</td> <td data-bbox="1024 1289 1399 1331">154.5</td> </tr> <tr> <td data-bbox="643 1331 1024 1373">KRF12-RS</td> <td data-bbox="1024 1331 1399 1373">442</td> </tr> <tr> <td data-bbox="643 1373 1024 1415">KRF11-RS</td> <td data-bbox="1024 1373 1399 1415">487.5</td> </tr> <tr> <td data-bbox="643 1415 1024 1444">KRF10-RS</td> <td data-bbox="1024 1415 1399 1444">533</td> </tr> </tbody> </table>	Type of moving walk	Value X (mm)	KRF12/ KRF12-B	153.5	KRF11/ KRF11-B	154	KRF10/ KRF10-B	154.5	KRF12-RS	442	KRF11-RS	487.5	KRF10-RS	533
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KRF12-RS	442															
KRF11-RS	487.5															
KRF10-RS	533															
<p>2. Fasten the screw on the glass brackets to prevent the glass from moving.</p> 																

Steps	Operation	Remarks														
5	The installation of the first piece of glass at the lower straight line part	<p>The liners should be filled between the adjacent two pieces of glass, and the installation clearance is not less than 2mm, the maximum is not more than 4mm.</p>  <p>Note: Installation steps of the protecting glass: (from down to up) the protecting glass at the lower part R → the protecting glass at the straight part → the protecting glass at the non-standard part → the protecting glass at the upper part R.</p>														
6	Install the protecting glass at the upper part R	<p>1. Install the protecting glass according to the marking line at the upper part R.</p>  <p>2. As shown in the table: Y</p> <table border="1" data-bbox="636 1398 1406 1797"> <thead> <tr> <th>Type of moving walk</th> <th>Values Y (mm)</th> </tr> </thead> <tbody> <tr> <td>KRF12/ KRF12-B</td> <td>182</td> </tr> <tr> <td>KRF11/ KRF11-B</td> <td>189</td> </tr> <tr> <td>KRF10/ KRF10-B</td> <td>196</td> </tr> <tr> <td>KRF12-RS</td> <td>157</td> </tr> <tr> <td>KRF11-RS</td> <td>179</td> </tr> <tr> <td>KRF10-RS</td> <td>201</td> </tr> </tbody> </table>	Type of moving walk	Values Y (mm)	KRF12/ KRF12-B	182	KRF11/ KRF11-B	189	KRF10/ KRF10-B	196	KRF12-RS	157	KRF11-RS	179	KRF10-RS	201
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KRF10-RS	201															
<p>Note: If the clearance between the protecting glass at the non-standard part and the upper part R is too large, Adjust the clearance between the rests of the protecting glass.</p>																

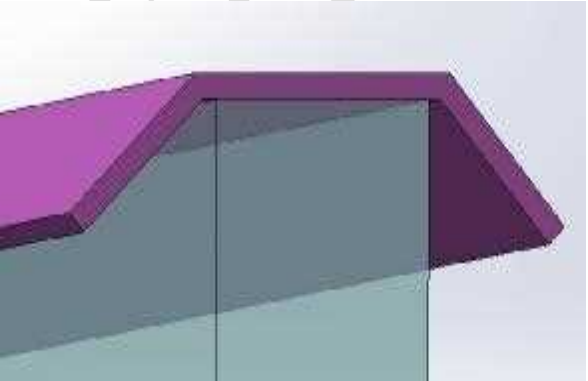
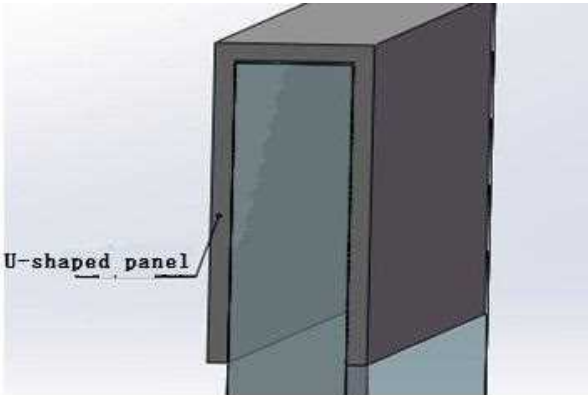
2.4.2 Installation of the handrail guide rails

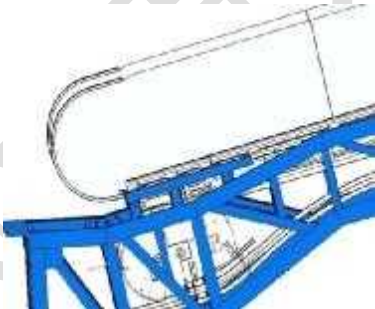

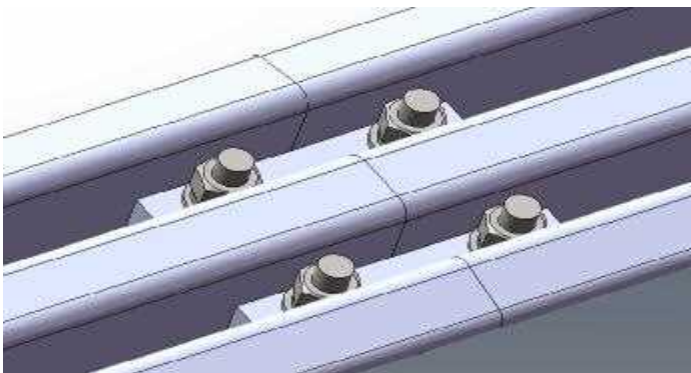
Protective articles


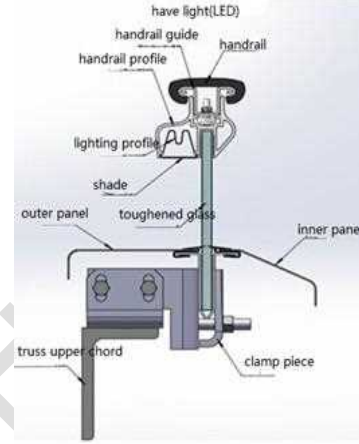
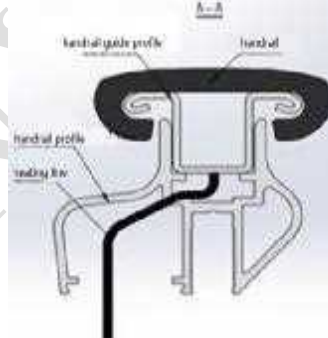
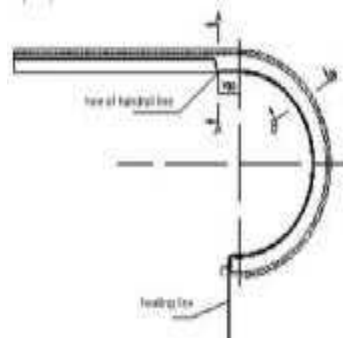
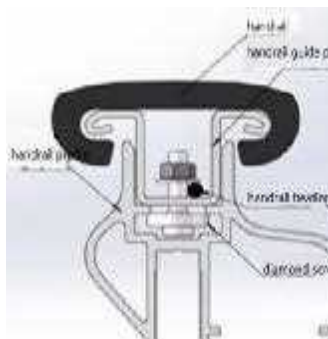
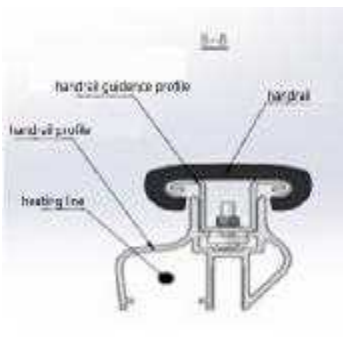


Tools

Details: wrench

Steps	Operation	Remarks
1	Paste liner or install fillet on the upper end surface of the protecting glass	<p>1. KRF: Paste double-sided adhesive on the whole upper end surface of the protecting glass.</p>  <p>2. KRF-B: The upper end surface of the protecting glass should be sheathed by U-shaped panels integrally.</p> 

Steps	Operation	Remarks
2	Install handrail brackets	<p>1. Steps: the handrail brackets at the head of the lower part → the handrail brackets at the straight part → the handrail brackets at the non-standard part → the handrail brackets at the upper part R → the handrail brackets at the head of the upper part.</p> <p>2. Install and fix the handrail brackets at the lower part.</p>  <p>3. The handrail brackets at the lower level part must parallel and close to the protecting glass.</p> <p style="text-align: center;">KRF/KRF-B KRF-RS</p>   <p>4. Install the handrail brackets at the straight part in turn; Use the junction plates at the joints of handrail brackets, as shown in the following figure.</p> 

Steps	Operation	Remarks
2	Install handrail brackets	<p>Note 1: If configuring the handrail lighting, lighting strip should be inset in advance when installing the handrail brackets on site.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>KRF /KRF-RS</p> </div> <div style="text-align: center;">  <p>KRF-B</p> </div> </div> <p>Note 2: Installation of the handrail heating line (only KRF-B moving walk)</p> <p>The way of the handrail heating wire: the power supply wire drawn from the contactor in the upper controller cabinet — the upper entrance — the heating wire hole of the head handrail brackets — the straight handrail guide rail — the lower tap</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div>

Steps	Operation	Remarks
3	Service the handrail brackets	<p>1. After the installation of handrail brackets is completed, Visual inspection shall be implemented, each joint shall be flat and smooth, and if the burrs are existed, the installers shall remove them by the file to scratch the handrails.</p> <p>2. The joints of handrail brackets shall be flat and smooth, the clearance is less than 1 mm, and the height of the step is less than 0.5 mm.</p> <p>3. The exposed redundant double-sided tape shall be removed by the blade.</p>

2.4.3 Installation and adjustment of handrails


Protective articles

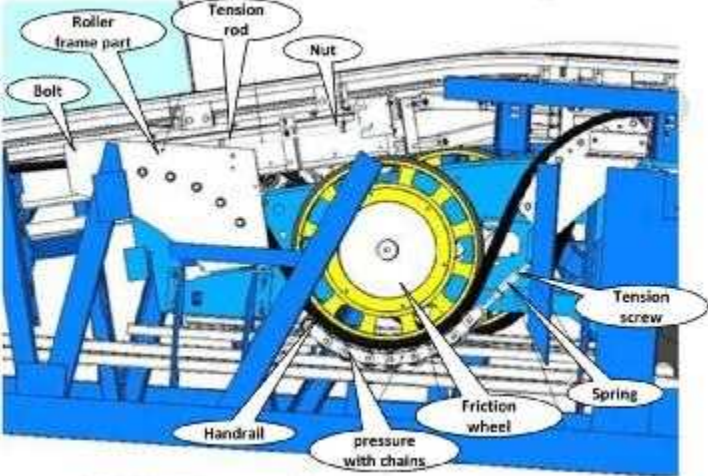





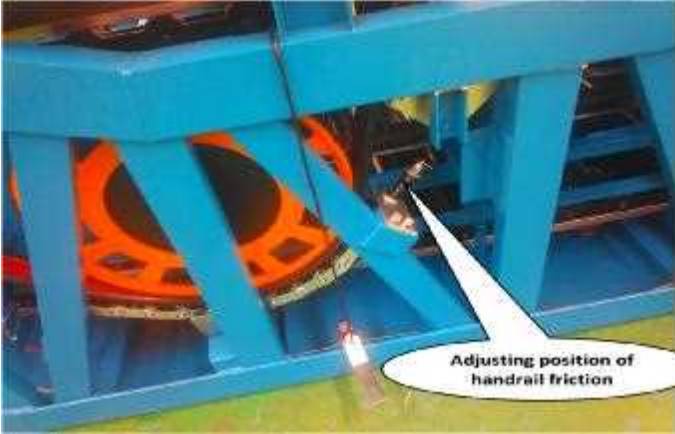
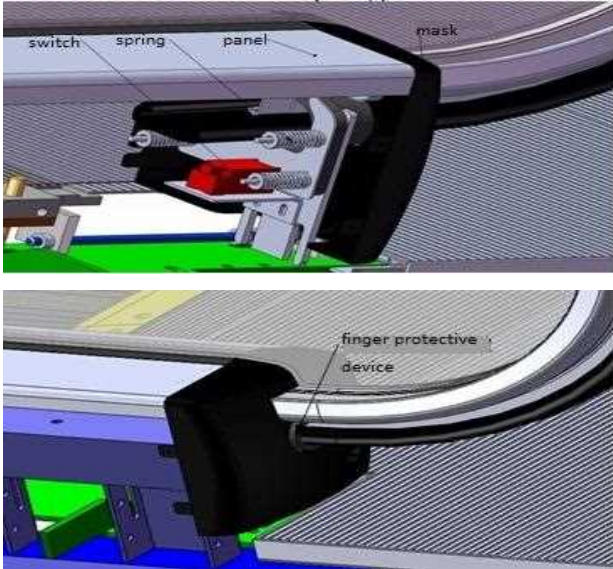
Tools

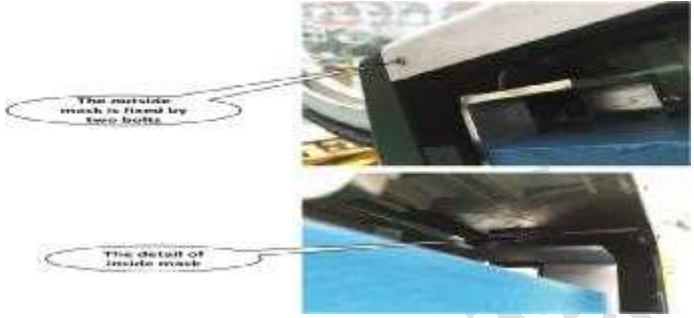
Details: retractor, wrench

Steps	Operation	Remarks
1	Check the moving components of the handrail	Make sure that each roller is flexible.

Steps	Operation	Remarks
2	Install the handrail at the upper head part	<p>Use the special tool to install the handrails on the handrail brackets at the upper head part and ensure the handrails do not slide.</p> 
3	Place handrails	<p>According to the location of the handrail installation, smooth the handrail and put it near pallets.</p>
4	Install the lower head handrail	<p>The same as the upper head handrail.</p>
5	Install the handrail at the middle part	<p>Install the handrails on the other handrail brackets.</p>

Steps	Operation	Remarks
6	Adjust handrail	<p>1. Adjust the tightness of handrail</p> <p>Unscrew the nuts on the tension rod and the bolts on the wheel shelf set. Moving the wheel shelf set left and right (up and down) to adjust handrail's tension. Fix all fasteners after adjustment.</p>   <p>Tighten the handrail by extending the screw</p>  <p>Keep the accuracy of the handrail running direction by adjusting the bolt against joint. [the down ward handrail of escalator offset the position of adjustment]</p>  <p>Keep the accuracy of the handrail running direction by adjusting the bolt against joint. [the up ward handrail of escalator offset the position of adjustment]</p>

Steps	Operation	Remarks
6	Adjust handrail	<p>2. Tension adjustment of Handrail drive</p> <p>Adjust the pressure chains to adjust the compaction degree of handrail. The tension of the pressure chains are maintained by springs. Adjusting nut position on the tension rod of the pressure chains can adjust the spring length; Accordingly the handrail tensioning adjusting is achieved. If the handrail tension is suitable, the friction wheel will drive the handrail running normally.</p> 
7	Check and adjust the protection switches at the entrance of the upper and lower handrails	<p>The protection switches are mounted at the handrail entrances to prevent foreign matters or children's hands from entering; the moving walk stops running once touching the protection switches. After the problem is settled, the switch will restore its original positions under the action of the spring.</p> 

Steps	Operation	Remarks
8	Install masks at exit and entrance	<p>1. Fix the outside mask</p>  <p>2. Fix the inside mask on the skirt by two bolts.</p> <p>3. Fix the inside and outside masks by the mutual bayonet.</p>
9	Check and adjust the running handrail	<p>1. Adjust the handrail drive device Control the moving walk to move upwards and see if the handrail runs in the middle of the driving wheel. If the handrail is deflected sideways, adjust mainly the rollers and guide blocks near the upper part, or also adjust the rollers and guide blocks near the upper part to make the handrail pass from right above the rollers. If the supporting plate of the drive is not adjusted, please adjusted it (generally, the supporting plate has been adjusted in the factory) until the handrail pass from the middle of the driving wheel. Then run in the opposite direction, if the handrail is deflected sideways, adjust mainly the rollers and guide blocks near the lower part. So adjust repeatedly until the handrail pass from the middle of the driving wheel. After the adjustment, tighten the fixing bolts.</p> <p>2. Adjust the handrail tension device Control the moving walk to move upwards and make the gaps between the handrail and both sides of the tensioning wheel unify by adjusting the bolts of the tensioning device if the handrail rubs against the tensioning wheel sides or the gap between them is too small. Control the moving walk to move down, and adjust by the same way to make the gaps between the handrail and both sides of the tensioning wheel unify. Adjust repeatedly until making the gaps between the handrail and both sides of the tensioning wheel unify.</p> <p>Note: The handrail is driven by friction. Because the number of the rotating parts and the guiding parts is more, the inspector must check each link carefully before the handrails run normally, and make sure the normal and synchronization of the two handrails operation.</p>

2.5 KLRP: Installation of handrail system

Outline: The handrail system mainly composes of protecting glass, handrail guide rails and handrails. Because the protecting glass is tempered, Pay special attention to prevent the glass damaged during the installation.


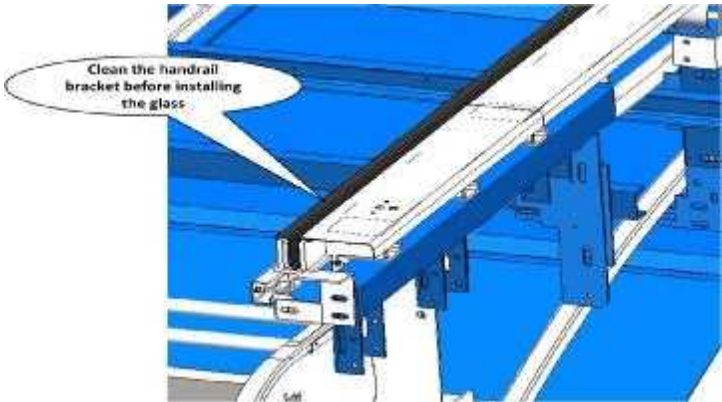
2.5.1 Installation of protecting glass

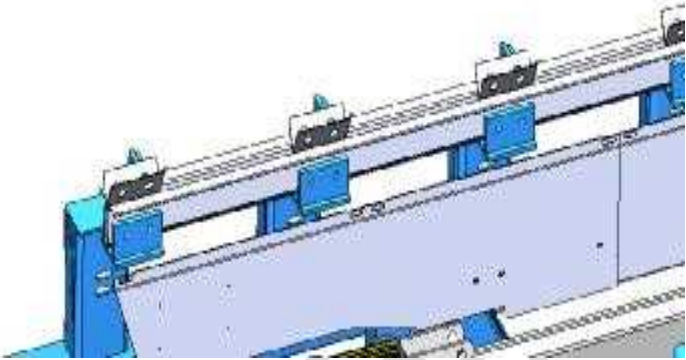
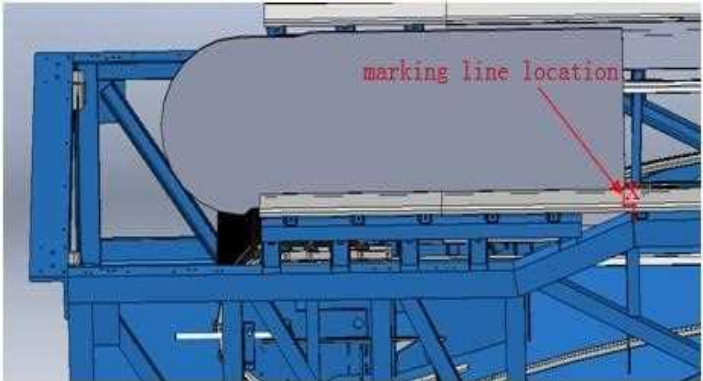
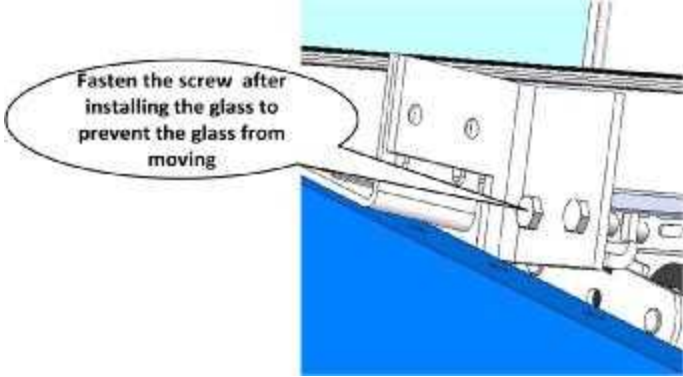
protective articles

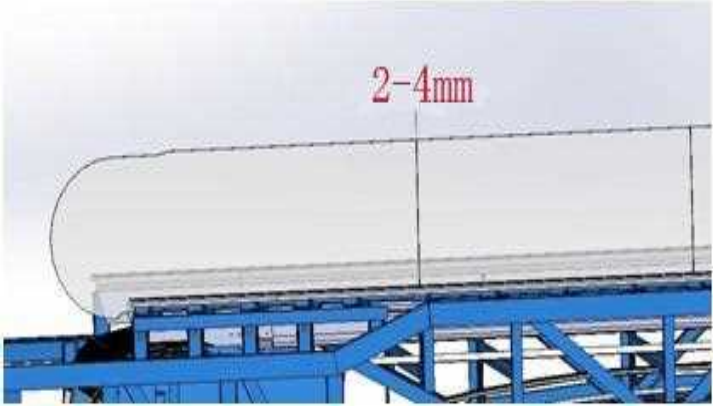
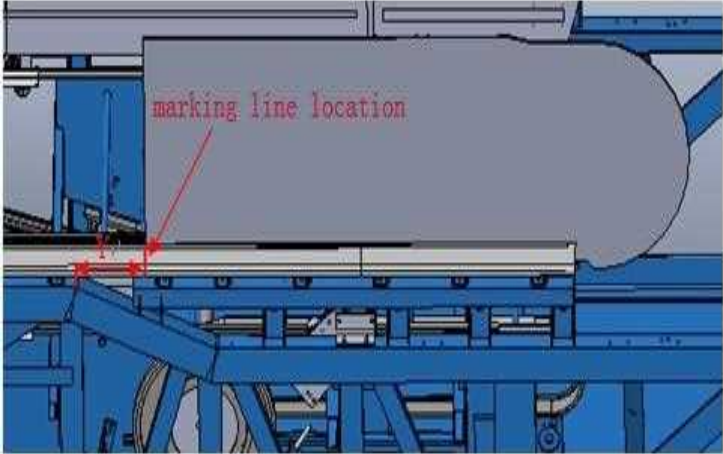


Tools

Details: sucking disk, small brush, open-end wrench

Steps	Operation	Remarks
1	Pull out the inner cover plates from the S strip at first	<p>Before the installation, remove the inner cover plates in order to easy installation and fixing.</p> 
2	Clean the glass brackets	

Steps	Operation	Remarks					
3	Put the liners into the glass clamping parts	<p>The liners must be placed in the glass clamping parts at the glass brackets and the joints of profiles.</p> 					
4	Install the protecting glass at the lower part R	<p>1. Install the protecting glass according to the marking line at the lower part R. KLRP:</p>  <table border="1" data-bbox="643 1314 1406 1398"> <thead> <tr> <th data-bbox="643 1314 1003 1360">Type of moving walk</th> <th data-bbox="1003 1314 1406 1360">Value X (mm)</th> </tr> </thead> <tbody> <tr> <td data-bbox="643 1360 1003 1398">KLRP</td> <td data-bbox="1003 1360 1406 1398">36</td> </tr> </tbody> </table> <p>2. Fasten the screw on the glass brackets to prevent the glass from moving.</p> 		Type of moving walk	Value X (mm)	KLRP	36
Type of moving walk	Value X (mm)						
KLRP	36						

Steps	Operation	Remarks				
5	The installation of the first piece of glass at the lower straight line part	<p>The liners should be filled between the adjacent two pieces of glass, and the installation clearance is not less than 2mm, the maximum is not more than 4mm.</p>  <p>Note: Installation steps of the protecting glass: (from down to up) the protecting glass at the lower part R → the protecting glass at the straight part → the protecting glass at the non-standard part → the protecting glass at the upper part R.</p>				
6	Install the protecting glass at the upper part R	<p>1. Install the protecting glass according to the marking line at the upper part R. KLRP:</p>  <p>2. As shown in the table: Y</p> <table border="1" data-bbox="634 1656 1406 1776"> <thead> <tr> <th>Type of moving walk</th> <th>Values Y (mm)</th> </tr> </thead> <tbody> <tr> <td>KLRP</td> <td>317</td> </tr> </tbody> </table>	Type of moving walk	Values Y (mm)	KLRP	317
Type of moving walk	Values Y (mm)					
KLRP	317					
<p>Note: If the clearance between the protecting glass at the non-standard part and the upper part R is too large, Adjust the clearance between the rests of the protecting glass.</p>						

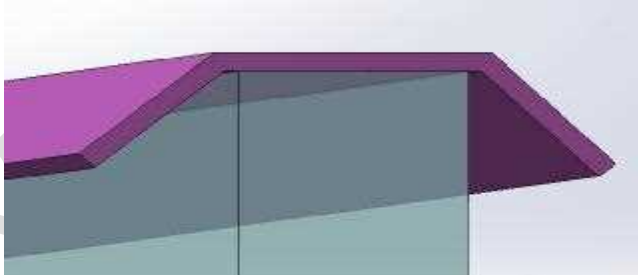
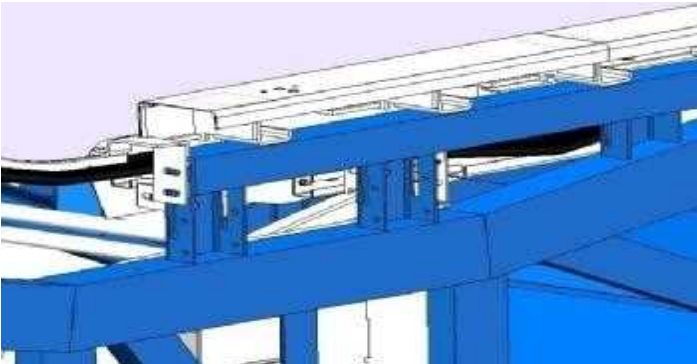
2.5.2 Installation of the handrail guide rails

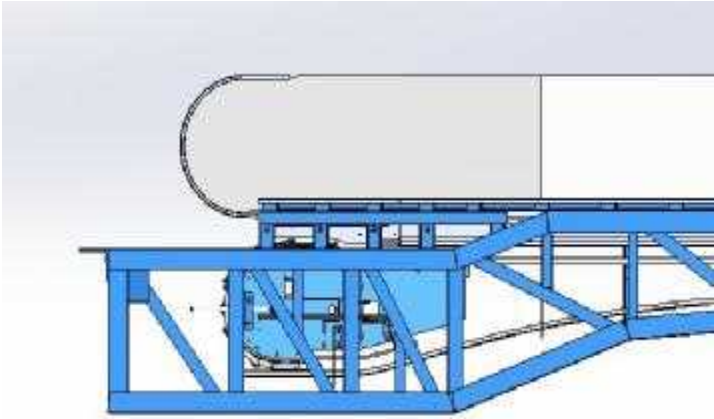
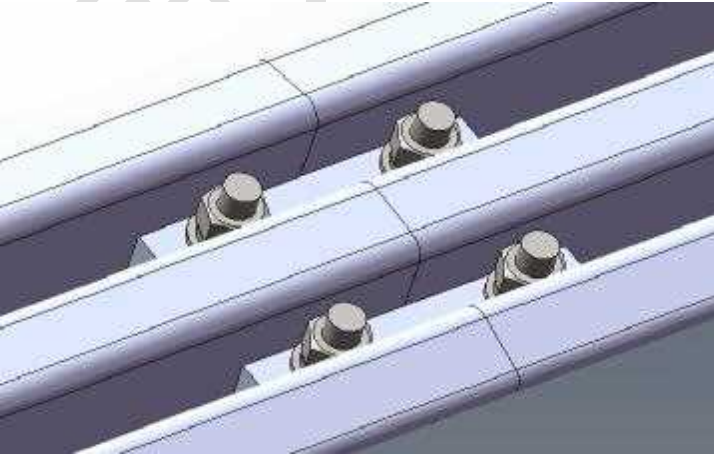
Protective articles



Tools

Details: wrench

Steps	Operation	Remarks
1	Paste liner on the upper end surface of the protecting glass	<p>Paste double-sided adhesive on the whole upper end surface of the protecting glass.</p> 
2	Install handrail brackets	<p>1. Steps: the handrail brackets at the head of the lower part → the handrail brackets at the straight part → the handrail brackets at the non-standard part → the handrail brackets at the upper part R → the handrail brackets at the head of the upper part. 2. Install and fix the handrail brackets at the lower part.</p> 

Steps	Operation	Remarks
2	Install handrail brackets	<p>3. The handrail brackets at the lower level part must parallel and close to the protecting glass. KLRP:</p>  <p>4. Install the handrail brackets at the straight part in turn; Use the junction plates at the joints of handrail brackets, as shown in the following figure.</p> 
3	Service the handrail brackets	<p>1. After the installation of handrail brackets is completed, Visual inspection shall be implemented, each joint shall be flat and smooth, and if the burrs are existed, the installers shall remove them by the file to scratch the handrails.</p> <p>2. The joints of handrail brackets shall be flat and smooth, the clearance is less than 1 mm, and the height of the step is less than 0.5 mm.</p> <p>3. The exposed redundant double-sided tape shall be removed by the blade.</p>

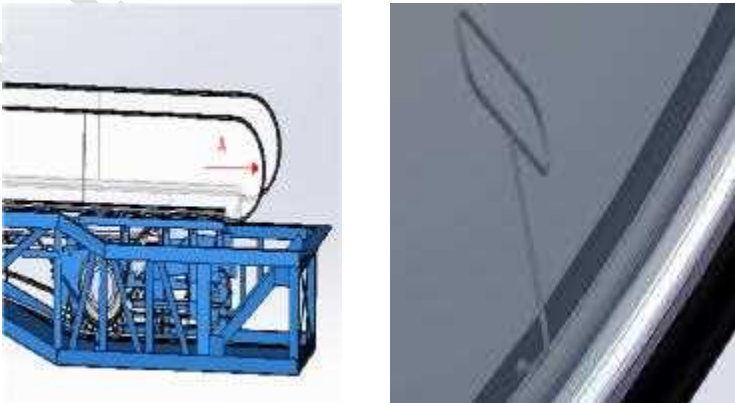
2.5.3 Installation and adjustment of handrails

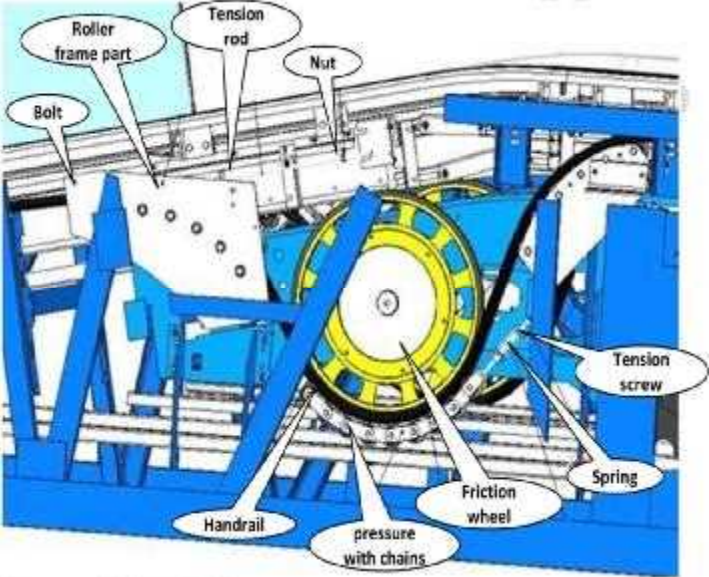


Protective articles


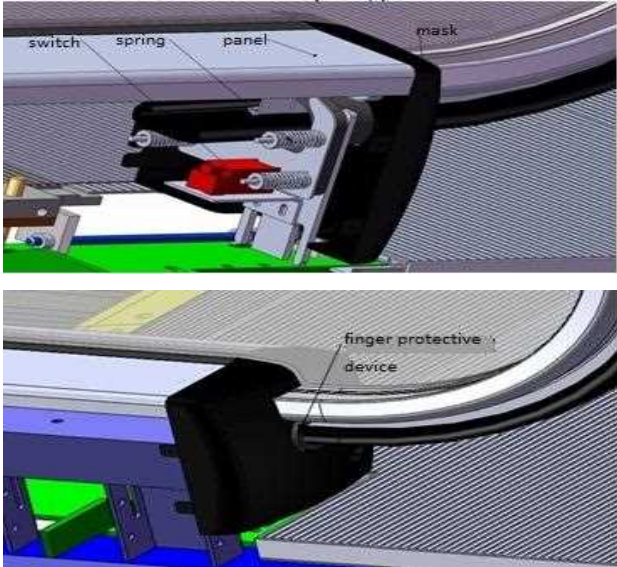


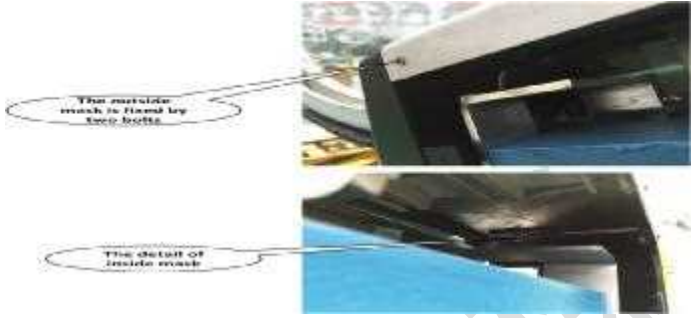
Tools

Details: retractor, wrench

Steps	Operation	Remarks
1	Check the moving components of the handrail	Make sure that each roller is flexible.
2	Install the handrail at the upper head part	Use the special tool to install the handrails on the handrail brackets at the upper head part and ensure the handrails do not slide. KLRP: 
3	Place handrails	According to the location of the handrail installation, smooth the handrail and put it near pallets.
4	Install the lower head handrail	The same as the upper head handrail.
5	Install the handrail at the middle part	Install the handrails on the other handrail brackets.

Steps	Operation	Remarks
6	Adjust handrail	<p>1. Adjust the tightness of handrails</p> <p>Unscrew the nuts on the tension rod and the bolts on the wheel shelf set. Moving the wheel shelf set left and right (up and down) to adjust handrail's tension. Fix all fasteners after adjustment.</p>   

Steps	Operation	Remarks
6	Adjust handrail	<p>2. Tension adjustment of Handrail drive</p> <p>Adjust the pressure chains to adjust the compaction degree of handrail. The tension of the pressure chains are maintained by springs. Adjusting nut position on the tension rod of the pressure chains can adjust the spring length; Accordingly the handrail tensioning adjusting is achieved. If the handrail tension is suitable, the friction wheel will drive the handrail running normally.</p> 
7	Check and adjust the protection switches at the entrance of the upper and lower handrails	<p>The protection switches are mounted at the handrail entrances to prevent foreign matters or children's hands from entering; the moving walk stops running once touching the protection switches. After the problem is settled, the switch will restore its original position under the action of the spring.</p> 

Steps	Operation	Remarks
8	Install masks at exit and entrance	<p>1. Fix the outside mask</p>  <p>2. Fix the inside mask on the skirt by two bolts.</p> <p>3. Fix the inside and outside masks by the mutual bayonet.</p>
9	Check and adjust the running handrail	<p>1. Adjust the handrail drive device Control the moving walk to move upwards and see if the handrail runs in the middle of the driving wheel. If the handrail is deflected sideways, adjust mainly the rollers and guide blocks near the upper part, or also adjust the rollers and guide blocks near the upper part to make the handrail pass from right above the rollers. If the supporting plate of the drive is not adjusted, please adjusted it (generally, the supporting plate has been adjusted in the factory) until the handrail pass from the middle of the driving wheel. Then run in the opposite direction, if the handrail is deflected sideways, adjust mainly the rollers and guide blocks near the lower part. So adjust repeatedly until the handrail pass from the middle of the driving wheel. After the adjustment, tighten the fixing bolts.</p> <p>2. Adjust the handrail tension device Control the moving walk to move upwards and make the gaps between the handrail and both sides of the tensioning wheel unify by adjusting the bolts of the tensioning device if the handrail rubs against the tensioning wheel sides or the gap between them is too small. Control the moving walk to move down, and adjust by the same way to make the gaps between the handrail and both sides of the tensioning wheel unify. Adjust repeatedly until making the gaps between the handrail and both sides of the tensioning wheel unify.</p> <p>Note: The handrail is driven by friction. Because the number of the rotating parts and the guiding parts is more, the inspector must check each link carefully before the handrails run normally, and make sure the normal and synchronization of the two handrails operation.</p>

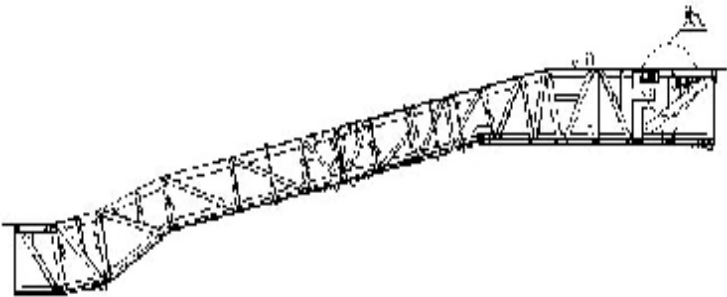
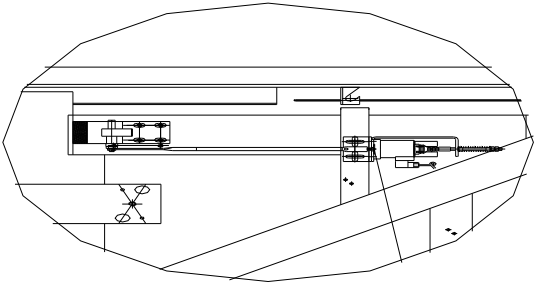
2.6 Installation and adjustment of the auxiliary brake

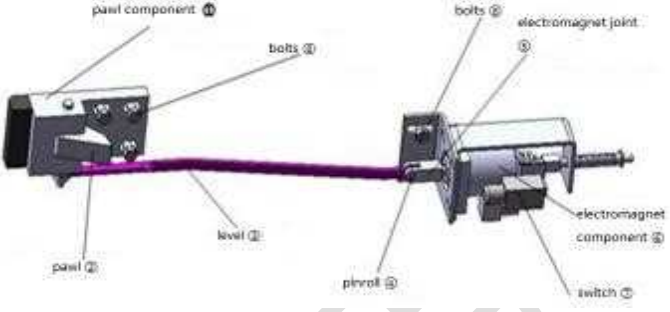
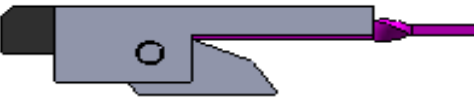
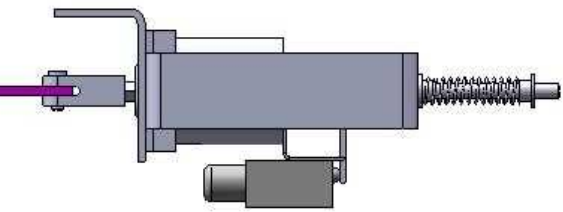
protective articles



Tools

Details: screwdriver, hexagon wrench, wrench

Steps	Operation	Remarks
1	Install the auxiliary brake	<p>1. The auxiliary brake is installed on the upper truss, and fixed by bolts. The specific location is as follows.</p>  <p>Figure 1: the installation position of the auxiliary brake</p>  <p>Detail with enlarged scale</p> <p>2. Remove the pin roll ④ and separate the electromagnet component ⑥ and the pawl component ①; Move the pawl pedestal up and down or forward and backward to make the pawl contact with the colliding block fully as the pawl is in the fully open state. Screw down the fixing bolts ⑨ after the adjustment, and push the lever ③ forward and backward manually, observe if the pawl ② rotation is normal. If there</p>

Steps	Operation	Remarks
1	Install the auxiliary brake	<p>is clamping stagnation phenomenon, it is necessary to replace the pawl and continue the above-mentioned adjustment.</p> 
2	Adjust the auxiliary brake	<p>1. Replace or adjust the electromagnet component, and fix it on the truss by the fixing bolts ⑧ initially; The power supply of the electromagnet component accesses to AC 220V; When the solenoid is fully energized, rotate the pawl manually to make it in a fully closed state (as figure 3), check if the hole of the lever and the one of the solenoid connector can correspond exactly, and if not, adjust the position of the solenoid assembly bracket (rough adjustment) and the solenoid connector (fine adjustment) to make them correspond, then plug pin and install the cotter pin.</p>  <p>The pawl is in the fully closed state</p> <p>2. Install automatic reset switch ⑦ and adjust the switch-hitting board, which make the switch action just completely as the solenoid absorbed completely.</p>  <p>The position of the switch (the pawl is in the fully closed state)</p>

Steps	Operation	Remarks
2	Adjust the auxiliary brake	<div data-bbox="722 294 1315 619" data-label="Image"> </div> <p data-bbox="743 646 1304 674">The position of the switch (the pawl is in the fully open state)</p> <p data-bbox="646 682 1406 751">Note: The switch is in the open state as the pawl is in half-open state.</p> <ol data-bbox="646 760 1406 1255" style="list-style-type: none"> 1. Insert the solenoid and the switch into the corresponding circuits in the control cabinet separately. Start moving walk for adjusting and ensure whether the pawl is absorbed. Start and stop the moving walk back and forth at least three times to ensure the pawl can make action normally. 2. The pawl may have three states as stopping the moving walk during use, as shown the following figures: When the pawl is in the state 1 or 2, they belong to the normal operation, and other operations do not need; When the pawl is in the state 3 (only with the auxiliary brake), we shall rotat the manual winding device to move the moving walk to make the pawl in the free state,than solenoid can be absorbed smoothly and run normally. <div data-bbox="690 1270 1380 1827" data-label="Image"> <p data-bbox="755 1495 945 1539">Figure 7 the pawl can be opened or closed freely.</p> <p data-bbox="755 1780 889 1801">The pawl is half opened</p> <p data-bbox="1112 1390 1247 1411">The pawl is stably blocked</p> </div>

2.7 Check and adjust the mechanical components

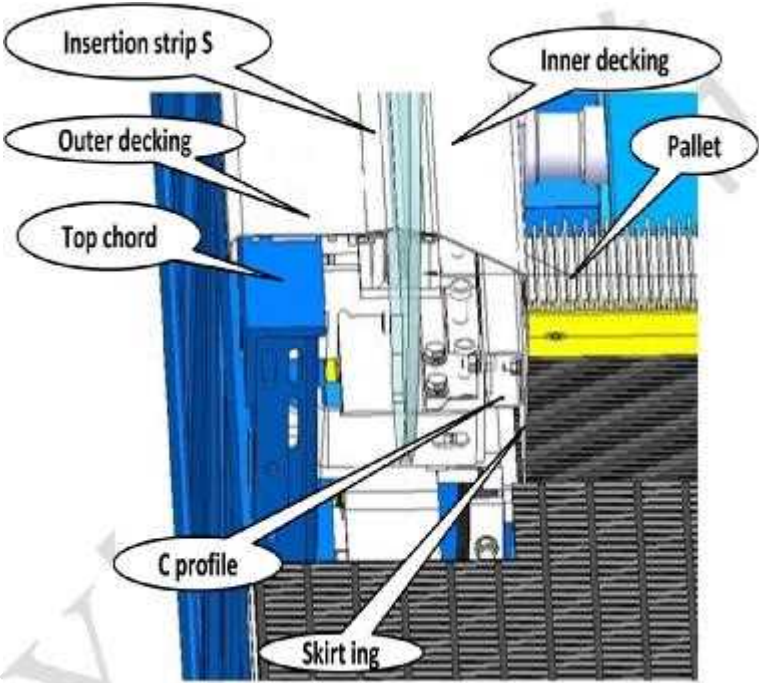
protective articles

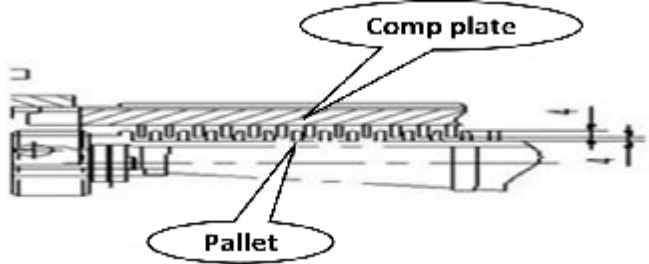
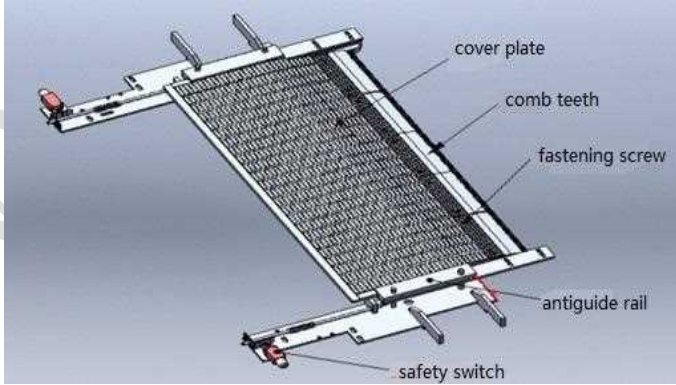
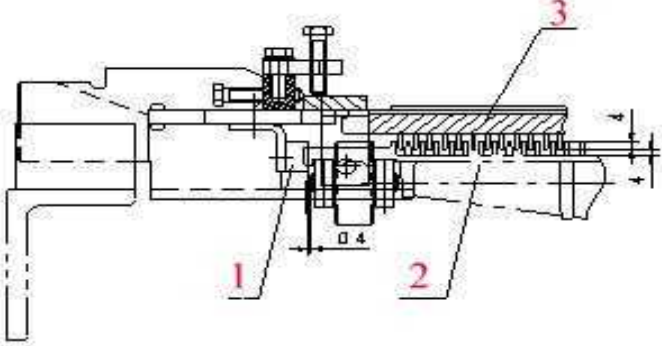


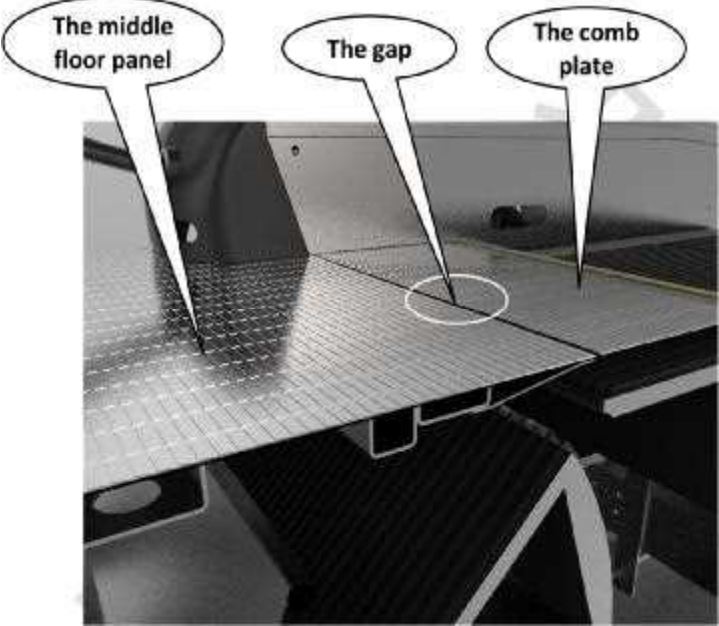

Tools

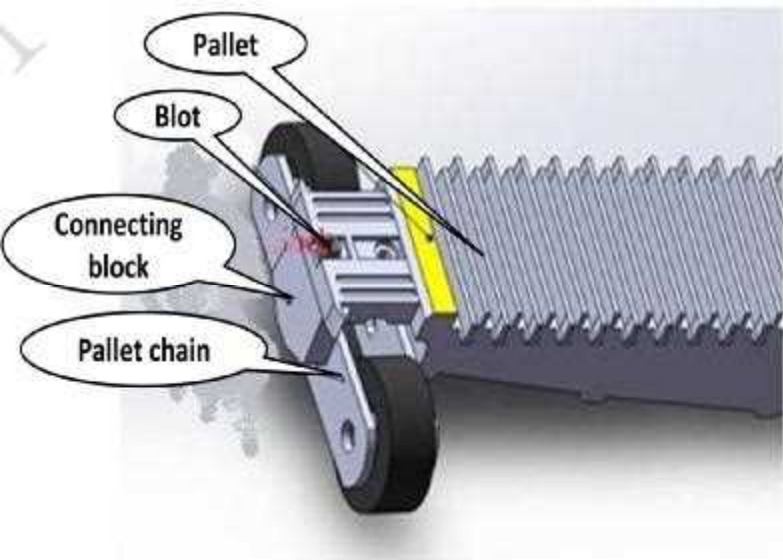
Details: crowbar, hexagon wrench, wrench, torque wrench

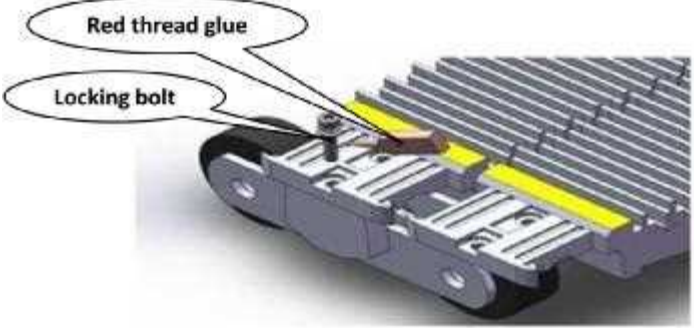
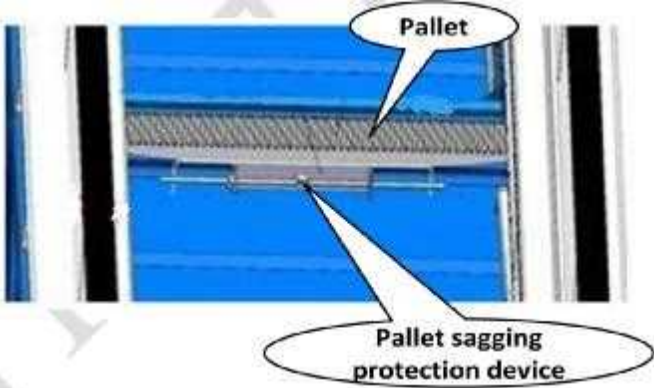
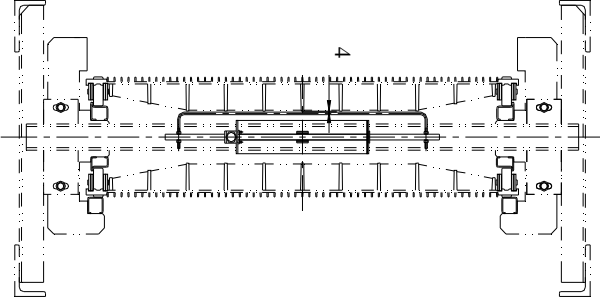
Steps	Operation	Remarks
1	Adjust the skirt gap	<p>1. The horizontal clearance of skirting shall not exceed 4 mm at either side, and 7 mm for the sum of clearances measured at both sides at two directly opposite points.</p> <p>2. The joints of the skirt should be smooth; The gap is less than 1 mm and the height of the skirts is less than 0.5 mm.</p> <p>3. Adjust the micro switch of the skirt</p>



Steps	Operation	Remarks
2	Install the inner decking	<p>1. Install the decking after installing and adjusting the handrails. 2. Install the cage nuts at the position of the threaded holes on the skirting. The threaded holes on the inner decking shall correspond to the cage nuts on the skirting, and then tighten the cage nuts.</p>  <p>Note: The joints of the inner and outer decking shall be smooth, the gap is less than 1 mm and the height of the decking is less than 0.5 mm.</p>
3	Check the clearance between pallets and skirting (check it at the lower machine room)	<p>The horizontal clearance of skirting shall not exceed 4 mm. If necessary, adjust the skirting or the pallets.</p>

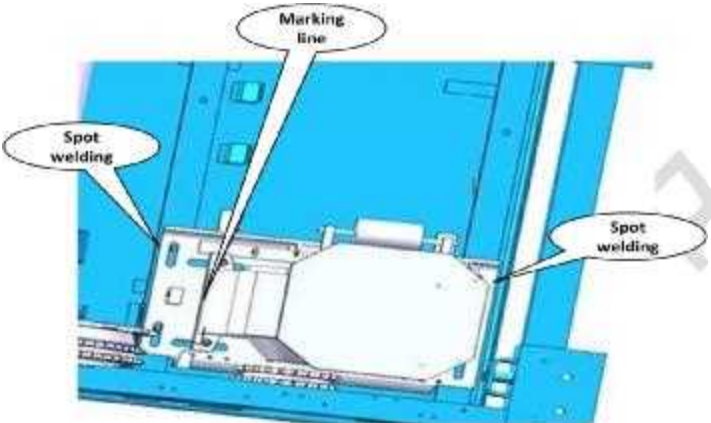
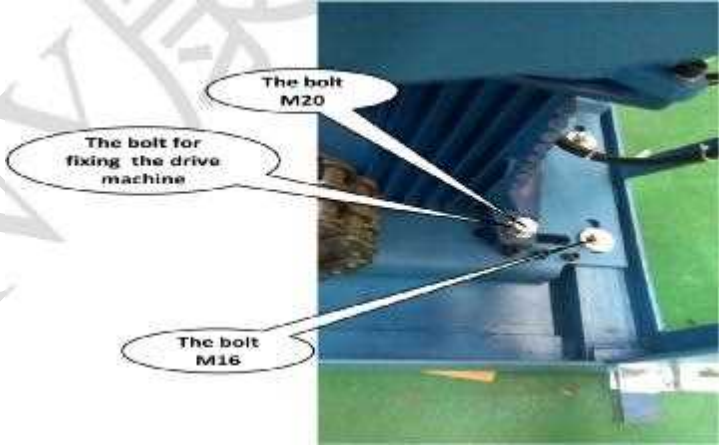
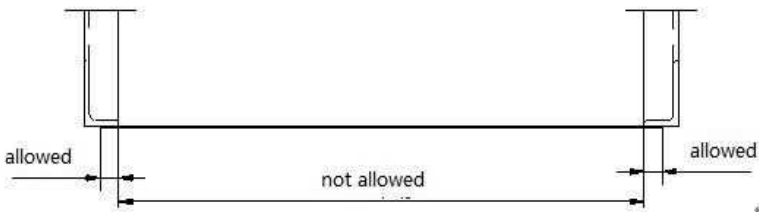
Steps	Operation	Remarks
4	Check and adjust the comb plate	<p>1. Check the mesh depth of the combs into the grooves. Requirements: The mesh depth of the combs into the grooves of the tread shall be at least 4 mm. the clearance shall not exceed 4 mm.</p>  <p>2. The comb teeth shall correspond to the pallet grooves. 3. The fitting situation about the both sides of the comb plate and the anti-meandering strips. Requirements: the gap with the anti-meandering strips should not exceed 0.4mm. Move the comb plates back smoothly. Adjust the gap by adjusting the adjusting bolts on the both sides of the anti guide rail and check whether there is enough oil inside the guide grooves at the same time.</p>   <p>1. Anti-meandering strip 2. Pallet 3. Comb plate</p>

Steps	Operation	Remarks
5	Install and check the floor plate	<p>1. The middle floor plate shall lie on the comb supporting plate and the gap between them shall be 6 mm to prevent the middle floor plate sag and flip over.</p>  <p>2. Besides using the supporting frame, it can also use the angle profile to fix the left and right sides of the middle floor plate on the truss to prevent the displacement, the turning and so on.</p> 

Steps	Operation	Remarks
6	The action test of the comb plate	<p>1. Before checking the upper and lower comb plates, the upper and lower floor plates shall be removed first. When there is a 45kg (the compression length is about 60-65 mm) horizontal thrust in the center of the comb plate, the protective switch for the foreign matters on the comb shall act and the moving walk stops running.</p> <p>2. In some conditions, if there is no spring dynamometer to measure the adjusting force of the comb plate at the installation site, the following methods can be used for the inspection:</p> <ol style="list-style-type: none"> 1) Remove one comb at the right and the left each; 2) Put a screwdriver in the gap between the fore left side of the comb plate and right pallet respectively; 3) Release the handwheel of the brake, make the pallets run by turn the flywheel on the rotating motor; 4) The comb plate shall move smoothly by the resistance force and drive the action of the safety switch; 5) The handwheel moves the pallet backward and the comb plate shall return to its normal position. Meanwhile, the safety switch shall be reset manually. <p>Note: There are two safety switches installed on every comb switch (each for the upper and lower parts). Adjust the switch to touch the waved plate. The moving walk cannot run once one of the switches is turned on.</p>
7	Inspection requirements of dismantling pallets	<p>1. Unscrewing the bolts on the pallet connecting blocks can dismantle pallets, but the new locking bolts shall be used in the pallet installation.</p>  <p>The diagram illustrates the process of dismantling a pallet. It shows a close-up of a pallet assembly with several components labeled: 'Pallet' (the main body), 'Blot' (a small component), 'Connecting block' (a metal block with a bolt), and 'Pallet chain' (a chain link). The diagram shows the connecting block being removed from the pallet, which is part of the dismantling process.</p>

Steps	Operation	Remarks
7	Inspection requirements of dismantling pallets	<p>2. Hexagon socket cap screws should be coated with red thread glue to ensure that the steps cannot be loosen easily as installing the pallets at the segments.</p> 
8	Check and adjust the pallet sagging switch	<p>Location: The pallet sagging protection devices are installed on the upper and lower parts of the moving walk.</p>  <p>Function: The protection switch will be actuated to shutoff the safety circuit power and the moving walk stops running once the pallets, main wheel and the step rollers are sagged or broken because of the deformation.</p> <p>Requirements: a vertical distance of 4 mm</p> 
9	Adjust the tension of the pallet chain	It can refer to 2.2.3.

Steps	Operation	Remarks
10	Check and adjust the drive chain	<p>1. Loosen the anchor bolts on the traction machine. 2. The tension force of the drive chain is adjusted by loosening and tightening the adjusting bolt at the end of the rack.</p>  <p>3. The sagging adjusting height of the double row chain is not more than 15 mm, and it is not too tight .At the same time, adjust the drive chain protection switch to keep it effective.</p>
11	Check and adjust the handrail chain	<p>Adjust the tension of the handrail drive chain by adjusting the adjusting bolts on the side plate of the handrail shaft; The sagging height of the chain should not exceed 10mm, which is adjusted by dismantling 3 pieces of pallets and the handrail drive chain cover. As adjusting the tension, check the parallelism between the chain and the sprockets.</p> 

Steps	Operation	Remarks									
12	Check the position of fixing the electromotor	<p>The roulette is marked on the host baseboard (as shown in the figure), and check whether the displacement and loose welding spots exist.</p> 									
13	Check the fastening of the fixed bolts on the drive machine	<table border="1" data-bbox="597 892 1398 1024"> <thead> <tr> <th>Bolting specification</th> <th>Rated torque</th> <th>Test torque</th> </tr> </thead> <tbody> <tr> <td>M16</td> <td>340Nm</td> <td>360Nm</td> </tr> <tr> <td>M20</td> <td>550Nm</td> <td>590Nm</td> </tr> </tbody> </table> 	Bolting specification	Rated torque	Test torque	M16	340Nm	360Nm	M20	550Nm	590Nm
Bolting specification	Rated torque	Test torque									
M16	340Nm	360Nm									
M20	550Nm	590Nm									
14	Schematic diagram of the hole in the floor	<p>Schematic diagram of the hole in the floor</p> 									

2.8 Commissioning
Protective articles

Tools

Details: Universal Meter, Mega meter, Screwdriver, Wrench, Decibel Meter, Stop Watch

Steps	Operation	Remarks
1	After the moving walk is installed, it is necessary to clean the site as well as external and internal of the moving walk. The moving walk can run only when each safety protection facility is in the normal working status and the machine running and rotating parts such as the tractor, drive, driving system, pallet guide rails and chains etc. are sufficiently lubricated. Run the pallets up and down with a complete cycle and check again if there is any abnormal condition before it can continue running. The necessary adjustment shall be made to the running performance, startup acceleration, deceleration braking as well as the stable running status of the moving walk while the moving walk continues running.	
2	All pallets shall be able to pass through the comb plate smoothly.	
3	There shall be no friction between all pallets and skirtings.	

Steps	Operation	Remarks				
4	There shall be no friction during the entire meshing between two adjacent pallets.					
5	The nominal speed shall not deviate by more than $\pm 5\%$ at nominal frequency and nominal voltage.					
6	The speed deviation between the running speed of the handrail and speed of the corresponding pallet is 0~2%. Measure the running speed of the no-load handrail and the step separately at the same time in the up and down running direction.					
7	The pallet running speed is the designed speed. When the running speed deviation between the handrail and the corresponding pallet exceeds 0~+2%, it can be adjusted according to handrail drive.					
8	<p>The stopping distance for unloaded and downward moving loaded moving walk shall be in the following range:</p> <table border="0" data-bbox="389 1480 925 1564"> <tr> <td style="padding-right: 20px;">nominal speed</td> <td>rang of stopping distance:</td> </tr> <tr> <td style="padding-right: 20px;">0.5m / s</td> <td>0.2-1.00 m</td> </tr> </table>	nominal speed	rang of stopping distance:	0.5m / s	0.2-1.00 m	
nominal speed	rang of stopping distance:					
0.5m / s	0.2-1.00 m					
9	Each running part of the moving walk shall be normal and free from collision or any abnormal sound. During no-load running, the running noise measured at a place which is 1.m away from the upper side of pallet and floor plate shall not exceed 65dB(A).					

2.9 Trial Run

Protective articles



Tools

Details:

Steps	Operation	Remarks
1	Start the trial run after the commissioning of mechanical and electric parts. Make the cleaning and lubrication again before the trial run to ensure the cleanness of the moving walk and the sufficient lubrication of each machine component.	
2	Check that all parts are in the normal status before the trial run of the moving walk. Run up and down without load separately for one hour. The moving walk shall run normal and stable without noise.	

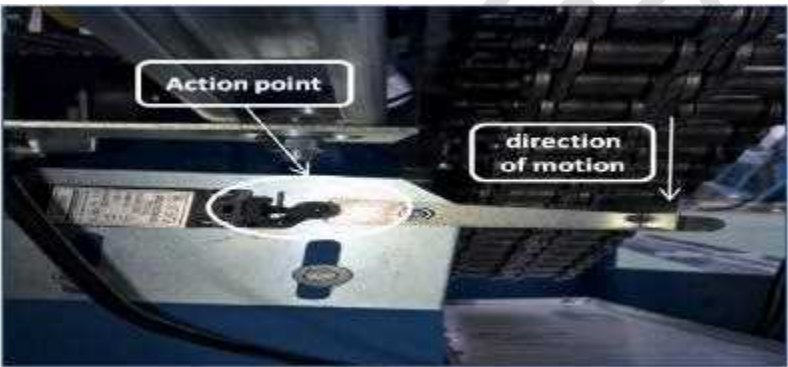
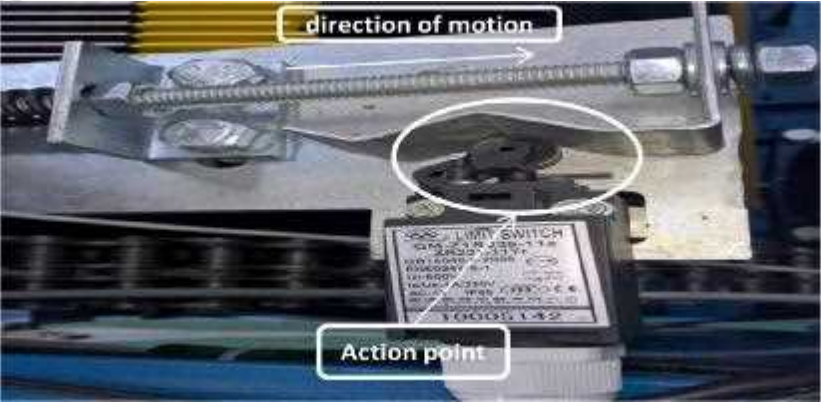
2.10 Inspect and Submit for approval
Protective articles

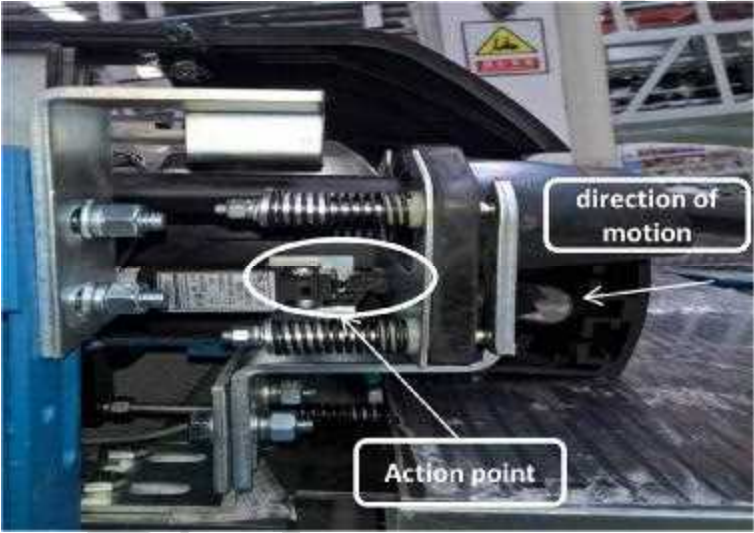
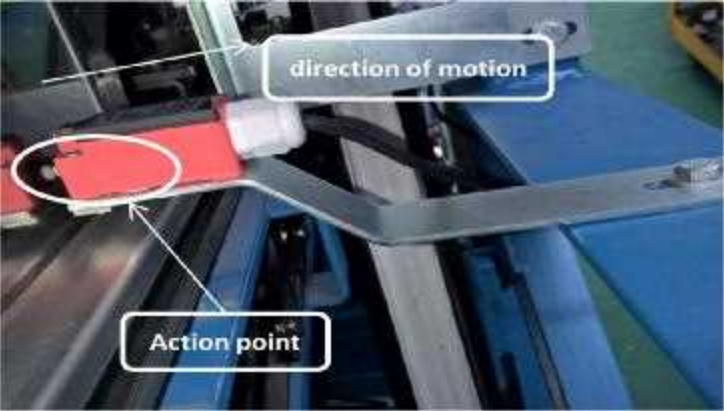
Tools

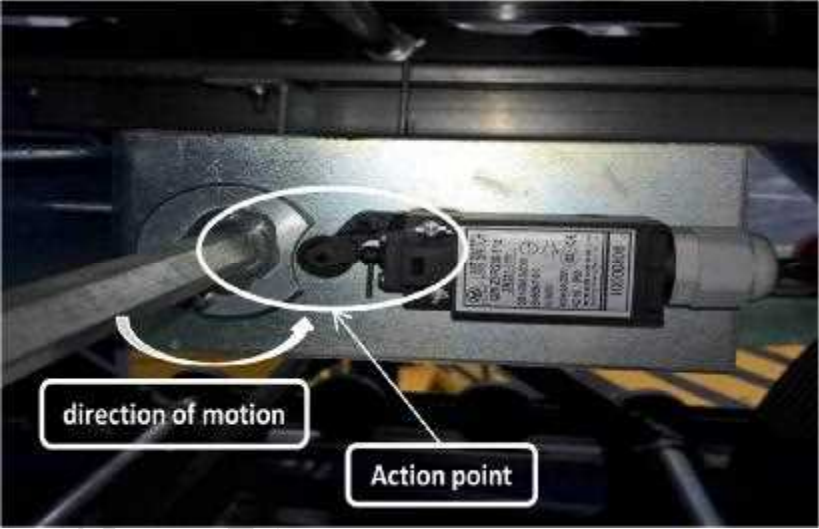
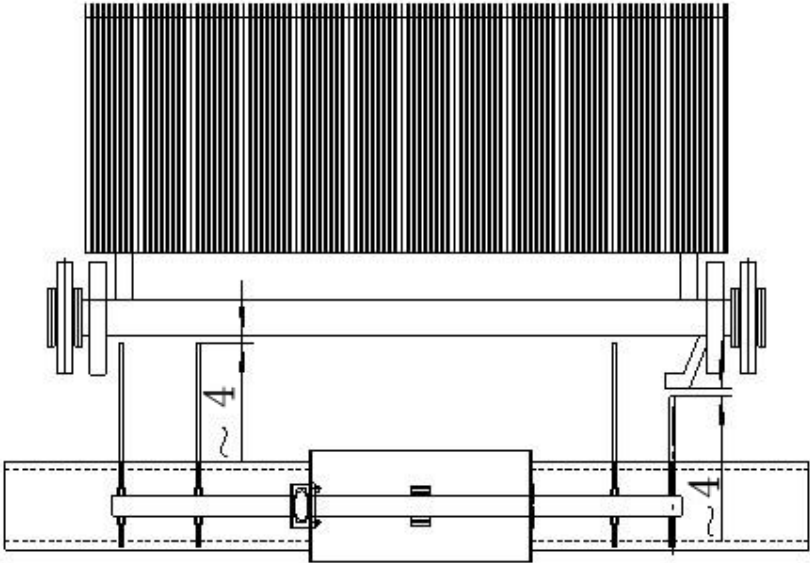
Details: Measuring Tape, Ruler, Universal Meter



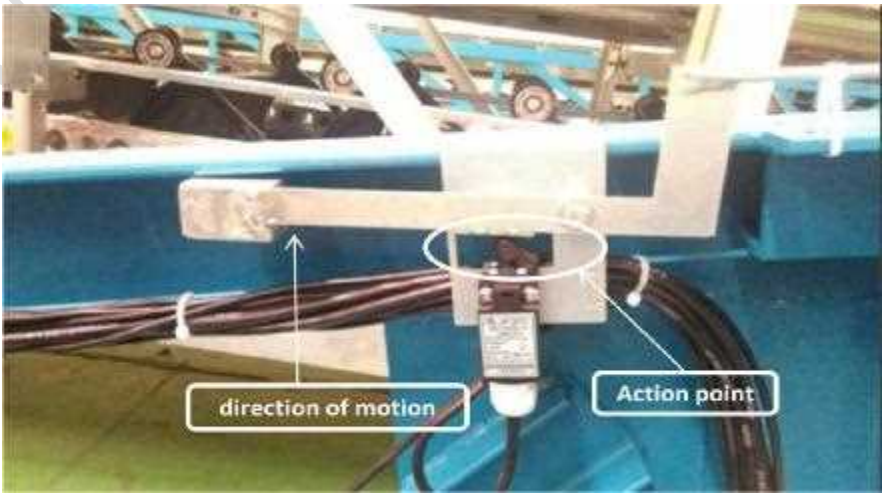
Steps	Operation	Remarks
1	Self-inspection	After the integral installation and commissioning, the self-inspection or mutual inspection shall be carried out and the relevant documents shall be filled according to the requirements. Then, submit them to the company for the final acceptance.
2	Final Acceptance by Quality Department	1. The installation staffs shall fulfill the rectification provisions raised by the inspection staffs from the quality department within the specified time period. 2. The inspection staffs shall be responsible for answering relevant questions raised by the installation staffs and urge the installation staffs to rectify them till they meet the requirements.
3	Final Acceptance by Government Authority	1. It shall be reported to the government authority for the acceptance 5 days in advance after it is inspected by the quality department and meet the requirements. 2. The installation staffs shall provide the full support and cooperation during the acceptance and shall fulfill the rectification provisions raised by the inspection staffs from the government authority within the specified time period.



3 Moving walk safety switch introduction description



Electrical switch	Example diagram description
<p>Broken drive-chain safety switch</p>	<p>1. Location: The broken drive-chain safety device is installed at the upper part of the moving walk.</p> <p>2. Function: When the drive-chain is broken or elongation, the broken drive-chain protection device will act and cut off the power supply of safety loop, and then the moving walk will stop.</p> <p>3. Requirement: The wheel contact of the broken drive-chain safety device is effectively connected with the knock-out pin pit, and the knock-out pin extends horizontally, the vertical distance between the knock-out pin and the drive-chain is about 20-30 mm.</p> 
<p>Comb plate protection switch</p>	<p>1. Location : The comb plate protection devices are installed at the upper and lower parts of the moving walk.</p> <p>2. Function: The step can't be engaged with the comb plate normal and it will be collided when foreign matter insert into the space between pallet and comb plate, then the protection will act and cut off the power supply of safety loop, and the moving walk will stop.</p> <p>3. Requirement: The distance between comb protective switches wheel contacts and the direction of contact surface of wave plate action is about 1mm.</p> 

Electrical switch	Example diagram description
Handrail belt protection switch	<p>1. Location: The handrail belt protection devices are installed at the upper and lower parts of the moving walk.</p> <p>2. Function: When any foreign matter is clamped at the entry of the steering end of the handrail, the protection will act and cut off the power supply of safety loop, and the moving walk will stop.</p> <p>3. Requirement: Handrail entry protective switch wheel contacts shall contact with the apron along the movement direction of the contact surface, but the apron can't squeeze switch.</p> 
Skirting protection switch	<p>1. Location: The skirting protection devices are installed at the upper and lower parts of the moving walk.</p> <p>2. Function: When a foreign matter is clamped between the skirting and the pallet edge, the skirting move outward to make the protection switch act and cut off the power supply of safety loop, the moving walk will stop.</p> <p>3. Requirement: The skirting protection switch is in contact with the skirting, but the skirting can't squeeze the switch.</p> 

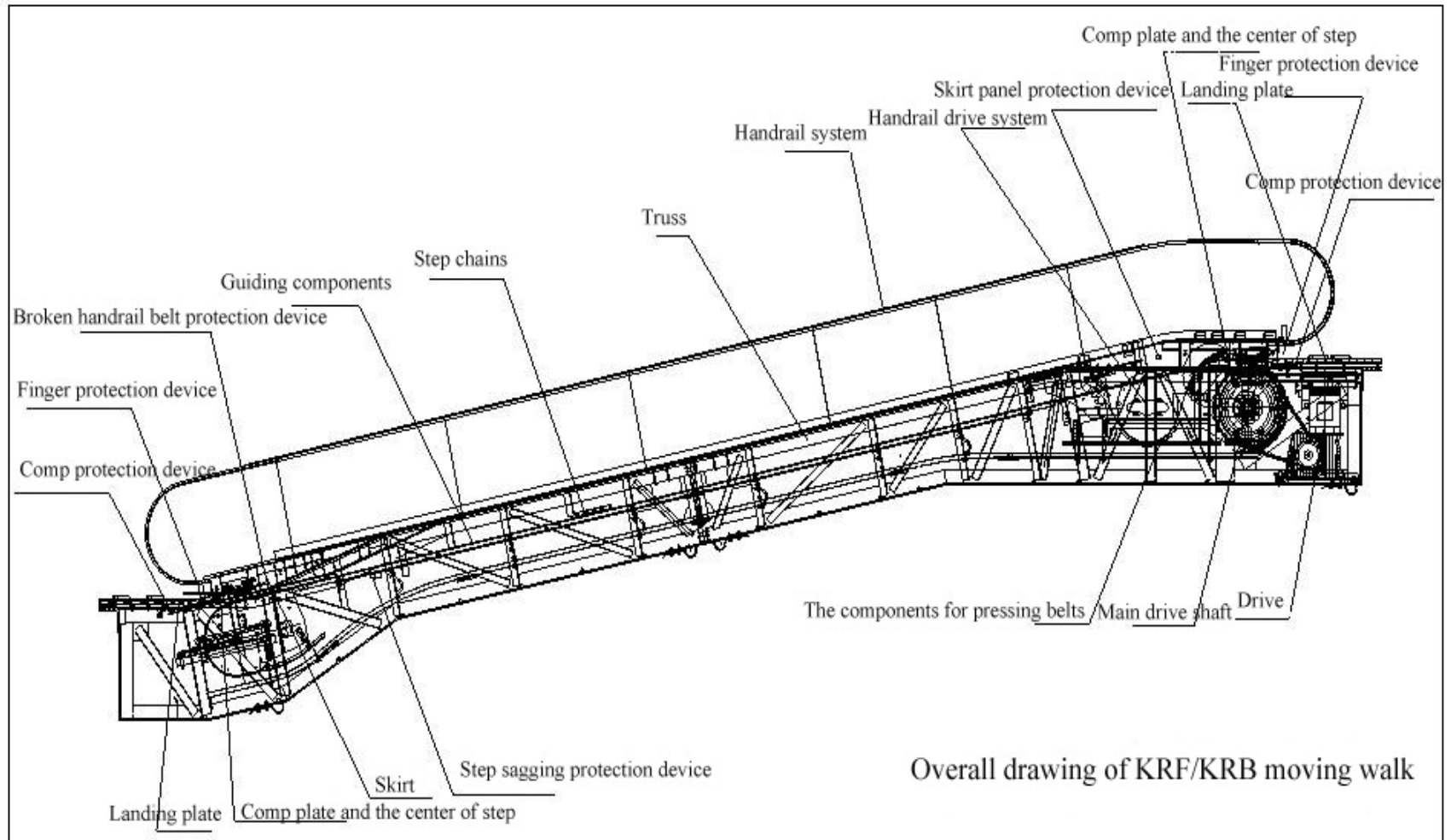
Electrical switch	Example diagram description
Pallet sagging protection switch	<p>1. Location: The Pallet sagging protection devices are installed at the upper and lower parts of the moving walk.</p> <p>2. Function: Once the pallets, the main wheels and the pallet rollers sag under the deformation or break, the protection switch will act and cut off the safety circuit power, the moving walk will stop running.</p> <p>3. Requirement: The wheel contacts of step sagging protection switch and the knock-out pin pits is effectively connected, the vertical distance between the knock-out pin and the shaft of the pallet is about 4mm.</p> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div>

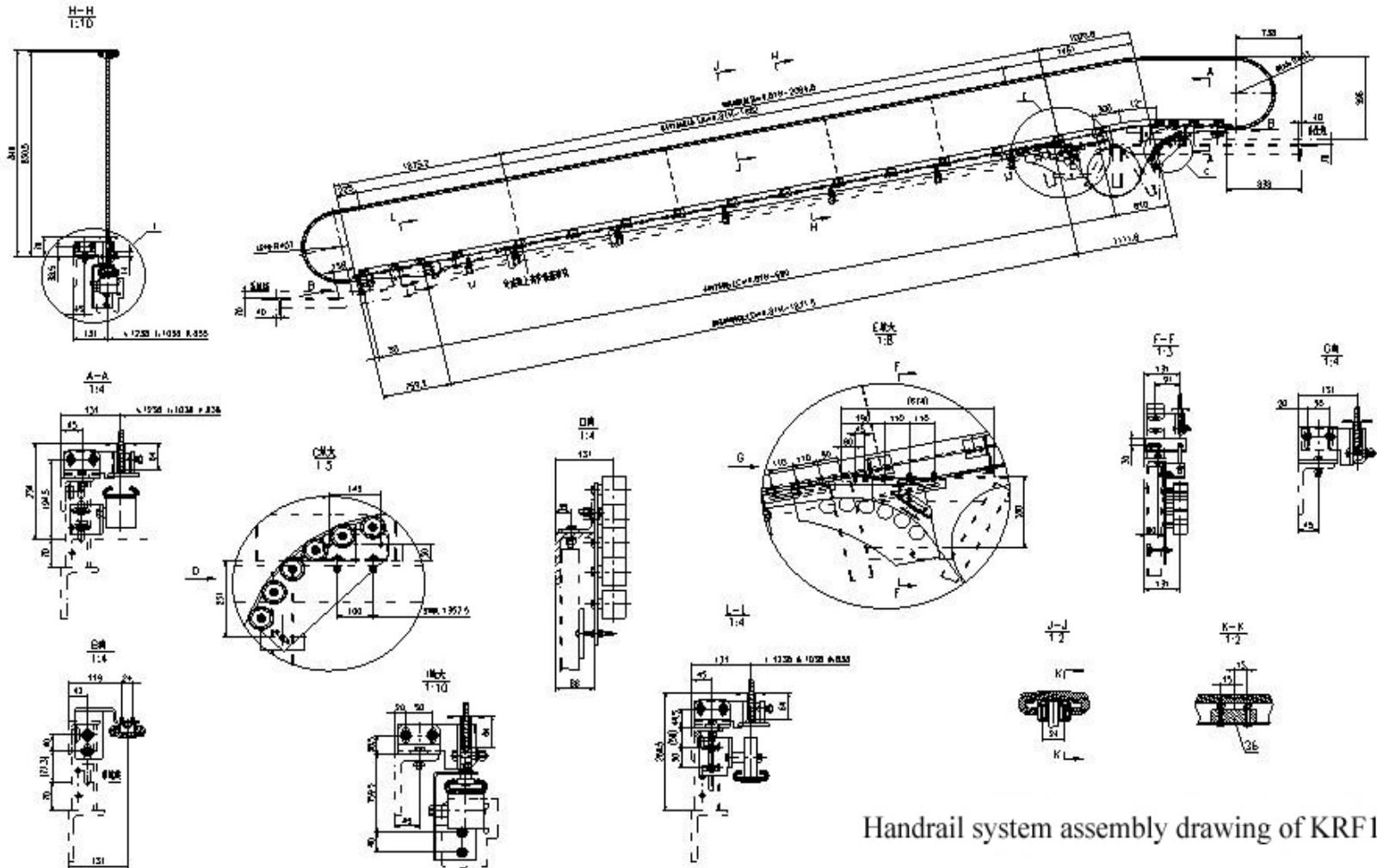
Electrical switch	Example diagram description
Pallet chain protection switch	<p>1. Location: The pallet chain protection switch is installed at the lower part of the moving walk.</p> <p>2. Function: When the pallet chain is broken or the distance of the tensioning device moving is more than $\pm 20\text{mm}$ during the application, the pallet chain protection device will act, the protection switch cut off the safety circuit power and the moving walk will stop running.</p> <p>3. Requirement: The distance between the pallet chain protection switch wheel contact and the wave plate along the movement direction of the contact surface is about 1mm.</p> <div style="display: flex; justify-content: space-around;">   </div>
Floor plate contact protection switch	<p>1. Location: The landing plate contact protection devices are installed at the upper and lower parts of the moving walk.</p> <p>2. Function: When the landing plate is opened abnormally; the protection switch will be actuated to shutoff the safety circuit power and the moving walk will stop running.</p> <p>3. Requirement: The protection switch wheel contacts and the bottom of the closed floor plate are effectively connected.</p> <div style="text-align: center;">  </div>

Electrical switch	Example diagram description
Pallet anti-reversal protection device	<p>1. Location: The pallet anti-reversal protection device is installed at the upper part of the moving walk.</p> <p>2. Function: Once the running speed exceeds 120% of the nominal speed, or it is less than 80% of the nominal speed, or the pallets are in the non-manipulating reversal state, the protection switch will be actuated to shutoff the safety circuit power and the moving walk will stop running</p> <p>3. Requirement: The clearance between speed detection switch and driving gear is 2+0.5mm.</p> <p>4. Test methods</p> <p>a: In the moving walk stopped state, exchange the speed detection signal A02 and A03 (damage defined retardation), moving walk will automatic stop after running start.</p> <p>b: In the moving walk stopped state, dismantle brake detection signal and manually open the brake. To running the hand-barring downwards, the speed detection signal act and fault is displayed as E.</p> 
Pallet missing protection switch	<p>1. Location: The pallet missing protection devices are installed at the upper and lower parts of the moving walk.</p> <p>2. Function: When pallet missing occurs during running of moving walk, the switch protection will act and cut off the power supply of safety loop, the moving walk will stop.</p> <p>3. Requirement: The effectively distance between the pallet missing protection device and pallet contact surface is 5mm.</p> <p>4. Test methods: Remove three pallets and run the moving walk, the pallet notch run to the upper or lower sensor position (stopped before comb position appears). Security features board display fault as step missing "8". Upper and lower positions shall test.</p> 

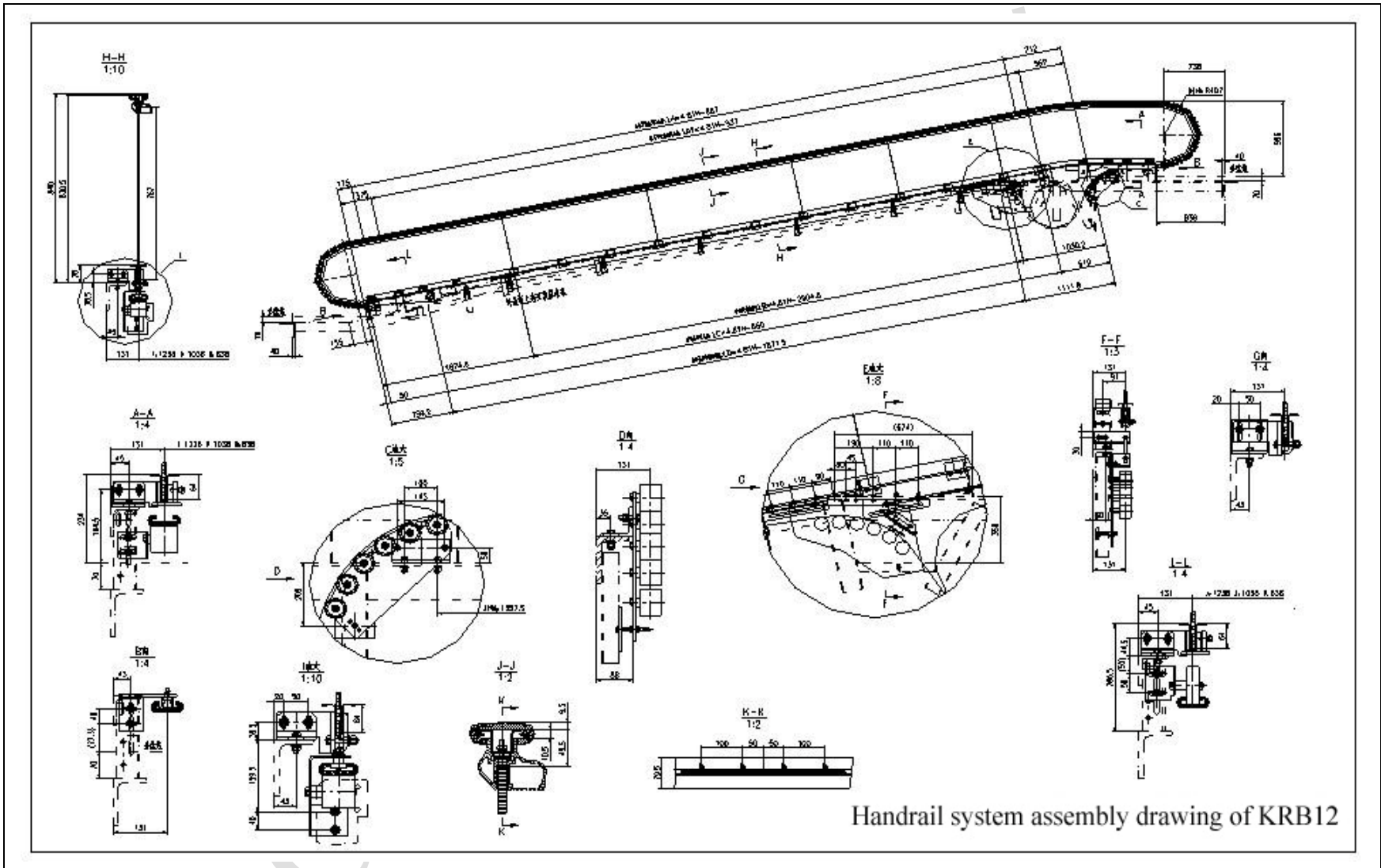
Electrical switch	Example diagram description
Handrail speed detection protection switch	<p>1. Location: The handrail speed detection protection device is installed on the lower part of the moving walk.</p> <p>2. Function: When the handrail speed deviates from the actual speed of pallet by more than 15% and the duration exceeds 15s, cut off the power supply of safety loop and the moving walk will stop running.</p> <p>3. Requirement: Handrail speed detection photoelectric shall aim at the center of the wheel hole and the gap is 2mm.</p> <p>4. Test methods: Remove the left or right handrail speed photoelectric (Security features board JP1.5 or JP1.6, don't remove all in the same time), run moving walk, Security features board display fault as handrail speed detection protection failure "3" after 5~10s later.</p> 
Brake protection switch	<p>1. Location: The brake protection device is installed on the motor at the upper part of the moving walk.</p> <p>2. Function: When the moving walk started, the brake system is not released, the moving walk can't be started; When monitor the moving walk running, once the brake command is inconsistent with the brake feedback logic, cut off the working brake and the power supply of safety loop, the moving walk will stop.</p> <p>3. Requirement: The brake detection switch is normally open signal detection point; it can effectively reflect the brake arm movements.</p> <p>4. Test methods: Remove the brake detection switch (Security features board JP2.9 or JP2.10) and run moving walk, Security features board display fault as brake protection switch failure "6" after 1.5s later.</p> 

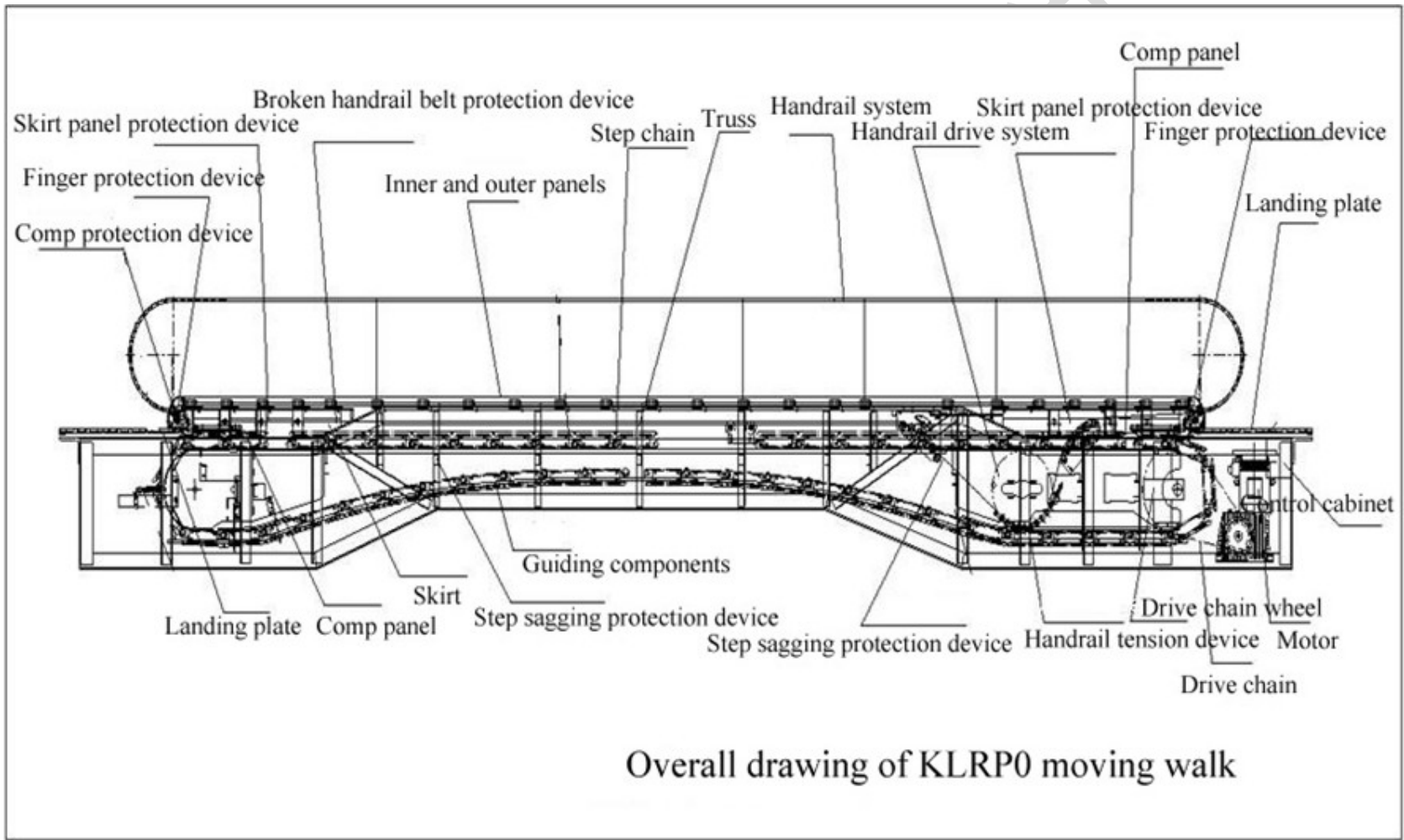
Overall drawing of moving walk and handrail system assembly drawing

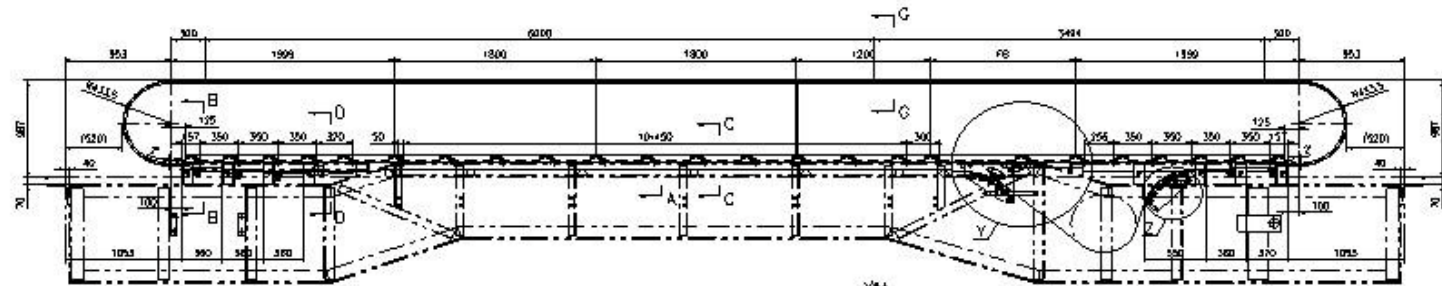




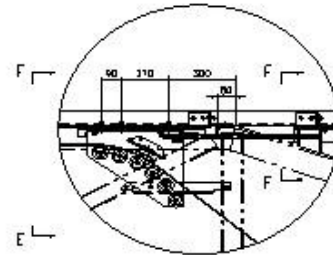
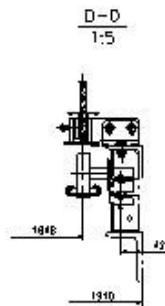
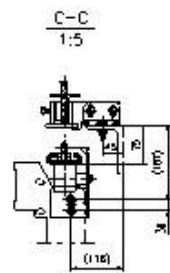
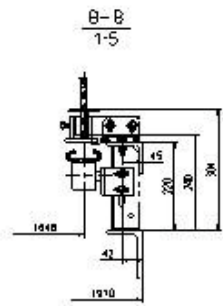
Handrail system assembly drawing of KRF12



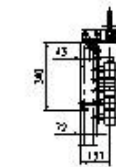




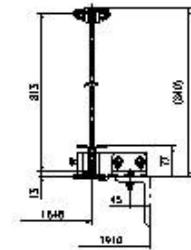
Y-A
1:10



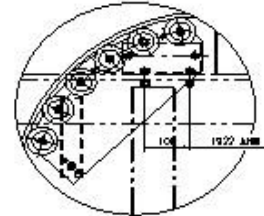
E-E
1:10



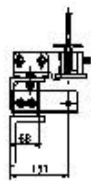
A-A
1:5



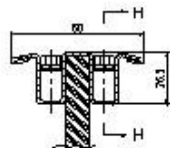
Z-A
1:10



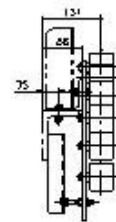
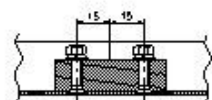
F-F
1:5



G-G
1:1



H-H
1:1



Handrail system assembly drawing of KLRP0